REGIONE LAZIO

# GIUNTA REGIONALE

ESTRATTO DAL PROCESSO VERBALE DELLA SEDUTA DEL 13/04/2012

==========

ADDI' 13/04/2012 NELLA SEDE DELLA REGIONE LAZIO, VIA CRISTOFORO COLOMBO 212 ROMA, SI E' RIUNITA LA GIUNTA REGIONALE COSI' COMPOSTA:

| | | | | | |
|---|---|---|---|---|---|
| POLVERINI | Renata | Presidente | FORTE | Aldo | Assessore |
| CIOCCHETTI | Luciano | Vice Presidente | LOLLOBRIGIDA | Francesco | " |
| ARMENI | Fabio | Assessore | MALCOTTI | Luca | " |
| BIRINDELLI | Angela | " | MATTEI | Marco | " |
| BUONTEMPO | Teodoro | " | SANTINI | Fabiana | " |
| CANGEMI | Giuseppe Emanuele | " | SENTINELLI | Gabriella | " |
| CETICA | Stefano | " | ZAPPALA' | Stefano | " |
| DI PAOLANTONIO | Pietro | " | ZEZZA | Maria | " |

ASSISTE IL SEGRETARIO: Paolo IACCNIS

********** OMISSIS

ASSENTI: MATTEI - SENTINELLI

DELIBERAZIONE N. 144

Oggetto:

Adesione della Regione Lazio al progetto comunitario iScope per la definizione di servizi web intelligenti nel contesto delle "Smart Cities", finanziato al 50% dalla Commissione Europea nell'ambito del programma CIP 2007-2013. Cofinanziamento regionale pari ad euro 100.173,00 - Cap. C11103 - Es. Fin. 2012.

SEGRETERIA DELLA GIUNTA REGIONE LAZIO

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**OGGETTO: Adesione della Regione Lazio al progetto comunitario *iScope* per la definizione di servizi web intelligenti nel contesto delle *"Smart Cities"*, finanziato al 50% dalla Commissione Europea nell'ambito del programma CIP 2007-2013. Cofinanziamento regionale pari ad euro 100.173,00 – Cap. C11103 – Es. Fin. 2012.**

**LA GIUNTA REGIONALE**

**SU PROPOSTA** dell'Assessore all'Urbanistica;

**VISTO** lo Statuto della Regione Lazio;

**VISTA** la Legge Regionale 18/02/2002, n. 6, e successive modifiche ed integrazioni, recante *"Disciplina del sistema organizzativo della Giunta e del Consiglio e disposizioni relative alla dirigenza ed al personale regionale"*;

**VISTO** il Regolamento Regionale 06/09/2002, n. 1 e successive modificazioni ed integrazioni recante *"Regolamento di organizzazione degli uffici e dei servizi della Giunta Regionale"*;

**VISTE** le leggi regionali nn. 7 e 8 del 24 dicembre 2010 riguardanti rispettivamente la legge finanziaria regionale e il bilancio di previsione della Regione Lazio per l'esercizio finanziario 2010;

**VISTA** la decisione n. 1639 del 24/10/2006 con la quale il Parlamento Europeo ed il Consiglio istituiscono un programma quadro per la competitività e l'innovazione per gli anni 2007-2013 (CIP 2007-2013), al fine di perseguire gli obiettivi della rinnovata strategia di Lisbona e di favorire quindi la crescita e l'aumento dei posti di lavoro in Europa. Il programma quadro favorisce azioni a vantaggio della competitività e della capacità d'innovazione all'interno dell'Unione europea; tale programma vuole favorire in particolare l'utilizzazione delle tecnologie dell'informazione, delle ecotecnologie e delle fonti di energia rinnovabili;

**VISTO** il documento di definizione del progetto *iScope - interoperable Smart City services through an Open Platform for urban Ecosystems*, che è parte integrante della presente deliberazione (Allegato A);

**VISTA** la scheda di adesione della Regione Lazio al progetto iScope (Allegato B) che forma parte integrante e sostanziale del presente atto;

**CONSIDERATO** che il progetto iScope, così come descritto nell'allegato A, ha una durata di 36 mesi, vede la partecipazione di 22 partner europei ed ha un budget totale (50% finanziamento europeo e 50% cofinanziamento dei partner) pari ad € 4.039.969,00;

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**CONSIDERATO** che, come descritto nel documento allegato alla presente deliberazione (Allegato A), la Commissione Europea ha approvato e finanziato il progetto iScope per il 50% dell'importo totale;

**CONSIDERATO** che, come descritto nel documento allegato alla presente deliberazione (Allegato A), la somma che Regione Lazio dovrà investire nel progetto è di € 200.346,00, di cui il 50% (pari ad € 100.173,00) finanziato dalla Commissione Europea ed il restante 50% (pari ad € 100.173,00) cofinanziato dalla Regione Lazio;

**CONSIDERATO** che la parte di cofinanziamento regionale servirà interamente a coprire le spese del personale regionale, nonché l'uso delle attrezzature messe a disposizione del personale regionale che opererà per il progetto iScope e che quindi non saranno trasferiti altrove;

**CONSIDERATO** infine che la parte di finanziamento europeo servirà invece interamente a coprire la consulenza della Società Bic Lazio S.p.A., che lavorerà in affiancamento al personale regionale, relativamente agli aspetti tecnici, amministrativi e contabili del progetto iScope; le modalità di tale affiancamento saranno definite da atto successivo alla presente deliberazione;

**RILEVATO** che alla copertura della quota di cofinanziamento a carico della Regione Lazio, pari ad € 100.173,00, si provvede mediante prelevamento dal Capitolo C11103 denominato *"Cofinanziamento regionale di programmi ammissibili a finanziamenti comunitari e nazionali"*, Es. Fin. 2012, che ne presenta la necessaria disponibilità;

**RITENUTE** le finalità del progetto iScope utili alla predisposizione di servizi web che possano offrire benefici alla cittadinanza, attraverso la realizzazione delle cosiddette *"Smart Cities"*;

**RITENUTO** quindi di aderire in qualità di partner al progetto iScope;

**ATTESO CHE** il presente atto non è soggetto alla procedura di concertazione con le parti sociali;

All'unanimità e in conformità con le premesse

**DELIBERA**

- di aderire al progetto europeo denominato *iScope – interoperable Smart City services through an Open Platform for urban Ecosystems* (dettagliatamente descritto nell'Allegato A e B, che formano parte integrante della presente

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deliberazione), per la definizione di servizi web intelligenti nel contesto delle cosiddette *"Smart Cities"*; progetto finanziato dalla Commissione Europea nell'ambito del programma CIP 2007-2013. L'importo complessivo, pari ad € 100.173,00, quale quota di cofinanziamento regionale, sarà reso disponibile mediante il prelevamento dal Capitolo C11103, Es. Fin. 2012, che ne presenta la necessaria disponibilità.

Il Direttore della Direzione Territorio ed Urbanistica provvederà all'attuazione degli atti conseguenti alla presente deliberazione.

Il presente provvedimento è pubblicato sul BURL del Lazio.

LA PRESIDENTE: F.to Renata POLVERINI
IL SEGRETARIO: F.to Paolo IACONIS

ROMA 17 APR. 2012

Allegato A

Allegato B

SEGRETERIA DELLA GIUNTA REGIONE LAZIO

ALLEGATO A

ALLEG. alla DELIB. N. 144 /C
DEL 13 APR. 2012


Grant agreement for: CIP-Pilot actions

**Annex I - "Description of Work"**

Project acronym: i-SCOPE

Project full title: " interoperable Smart City services through an Open Platform for urban Ecosystems "

Grant agreement no. 297284

Version date: 2011-11-29

## Table of Contents

### Part A



### Workplan Tables

# A1:
## Project summary

| Project Number [1] | 297284 | Project Acronym [1] | i-SCOPE |
|---|---|---|---|

One form per project

General Information

| | |
|---|---|
| Project title [2] | interoperable Smart City services through an Open Platform for urban Ecosystems |
| Starting date [3] | 15/01/2012 |
| Duration in months [3] | 36 |
| Call (part) identifier [4] | CIP-ICT-PSP-2011-5 |
| Objective most relevant to your topic [7] | |
| Free keywords [8] | Smart Cities, Internet-based services, CityGML, 3D Urban Information Models, interoperability, location based services, Networked environments |

Abstract [9]


The latest generation of 3D Urban Information Models (UIM), created from accurate urban-scale geospatial information, can be used to create smart web services based on geometric, semantic, morphological and structural information at urban scale level, which can be used by local governments to
- improve decision-making on issues related to urban planning, city management, environmental protection and energy consumption based on urban patterns and its morphology,
- promote inclusion among various users groups (e.g. elder or diversely able citizens) through services which account for barriers at city level
- involve citizens at wider scale by collecting geo-referenced information based on location based services at urban scale.

Based on interoperable 3D UIMs, i-SCOPE delivers an open platform on top of which it develops within different domains three "smart city" services. These will be piloted and validated, within a number of EU cities which will be actively engaged throughout the project lifecycle. The services will address:
1) Improved inclusion and personal mobility of aging and diversely able citizens through an accurate city-level differently-abled-friendly personal routing service which accounts for data fed urban layout, features and barriers.
2) Optimization of energy consumption through a service for accurate assessment of solar energy potential and energy loss at building level.
3) Environmental monitoring through a real-time environmental noise mapping service leveraging citizen's involvement who act as distributed sensors city-wide measuring noise levels through their mobile phones.
All smart services will be based on already available technologies which will be integrated, deployed and made publicly available from a "3D smart EU cities" portal. Potential trust, privacy and data security risks and vulnerabilities, i.e. due to localisation of people, are integral part of the project and will be explicitly addressed.




# A2:
## List of Beneficiaries

Project Number [1] 297284 | Project Acronym [1] i-SCOPE

List of Beneficiaries

| No | Name | Short name | Country | Project entry month [4] | Project exit month |
|---|---|---|---|---|---|
| 1 | FONDAZIONE GRAPHITECH | FG | Italy | 1 | 36 |
| 2 | EPSILON INTERNATIONAL ANONYMI ETAIREIA MELETON KAI SYMVOULON (EPSILON INTERNATIONAL SA) | EPS | Greece | 1 | 36 |
| 3 | GEOFOTO DRUSTVO S OGRANICENOM ODGOVORNOSCU ZA FOTOGRAFSKE I GEODETSKE POSLOVE | GEOF | Croatia | 1 | 36 |
| 4 | Evrogeomatika s.d.o.o | EGEO | Serbia | 1 | 36 |
| 5 | GEIT ALANOVA GEVEINNUTZIGE GMBH | GEIT | Austria | 1 | 36 |
| 6 | VRIJE UNIVERSITEIT BRUSSEL | VUB | Belgium | 1 | 36 |
| 7 | V.O.S.S. Computer Grafik Systeme GmbH | VOSS | Germany | 1 | 36 |
| 8 | GiStandard Ltd | GIST | United Kingdom | 1 | 36 |
| 9 | INDECO SOFT SRL | IND | Romania | 1 | 36 |
| 10 | Cadzow Communications Consulting Limited | C3L | United Kingdom | 1 | 36 |
| 11 | REGIONI SPA | REG | Italy | 1 | 36 |
| 12 | GeoSYS Limited | GSYS | Malta | 1 | 36 |
| 13 | Department for Business, Innovation & Skills | DS | United Kingdom | 1 | 36 |
| 14 | Municipality of Indjija | INDJ | Serbia | 1 | 36 |
| 15 | EAIA NAKE | EAIA | Romania | 1 | 36 |
| 16 | Zadarska Zupanija | ZAD | Croatia | 1 | 36 |
| 17 | Grad Zagreb | ZAG | Croatia | 1 | 36 |
| 18 | MAGISTRAT DER STADT WIEN | WIEN | Austria | 1 | 36 |
| 19 | MUNICIPALITY OF DRAMA | DRAMA | Greece | 1 | 36 |
| 20 | NEWCASTLE CITY COUNCIL | NCC | United Kingdom | 1 | 36 |
| 21 | INFORMATICA THEMINA SPA | INFOTH | Italy | 1 | 36 |

# A2:
## List of Beneficiaries

| No | Name | Short name | Country | Project entry month[14] | Project exit month |
|---|---|---|---|---|---|
| 22 | REGIONE LAZIO | LAZ | Italy | | 36 |



# A3:
## Budget breakdown

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

One Form per Project

| Participant number in this project | Participant short name | Personnel costs | Sub contracting | Other direct costs | Indirect Costs | | Total costs | Max EU Contribution | Requested EU contribution |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cost model (a) | Value | | | |
| 1 | FG | 542,314.00 | 0.00 | 10,900.00 | | 162,874.00 | 716,088.00 | 358,344.00 | 358,344.00 |
| 2 | EPS | 152,820.00 | 0.00 | 9,000.00 | | 45,846.00 | 207,666.00 | 103,833.00 | 103,833.00 |
| 3 | GEOF | 135,000.00 | 0.00 | 34,000.00 | SFR | 40,500.00 | 209,500.00 | 104,750.00 | 104,750.00 |
| 4 | EGEO | 145,250.00 | 0.00 | 10,500.00 | | 43,575.00 | 199,325.00 | 99,662.00 | 99,662.00 |
| 5 | CEIT | 156,000.00 | 0.00 | 11,000.00 | | 46,800.00 | 213,800.00 | 106,900.00 | 106,900.00 |
| 6 | VUB | 211,050.00 | 0.00 | 9,000.00 | | 63,315.00 | 283,365.00 | 141,682.00 | 141,682.00 |
| 7 | MOSS | 310,800.00 | 0.00 | 27,000.00 | SFR | 93,240.00 | 431,040.00 | 215,520.00 | 215,520.00 |
| 8 | GIST | 107,640.00 | 0.00 | 9,000.00 | | 32,292.00 | 148,932.00 | 74,466.00 | 74,466.00 |
| 9 | IND | 128,975.00 | 0.00 | 12,800.00 | SFR | 38,692.00 | 180,467.00 | 90,233.00 | 90,233.00 |
| 10 | CSL | 129,500.00 | 0.00 | 9,000.00 | | 38,850.00 | 177,350.00 | 88,675.00 | 88,675.00 |
| 11 | REG | 186,000.00 | 0.00 | 9,000.00 | | 55,800.00 | 250,800.00 | 125,400.00 | 125,400.00 |
| 12 | GSYS | 60,451.00 | 0.00 | 6,000.00 | AIC | 18,135.00 | 84,586.00 | 42,293.00 | 42,293.00 |
| 13 | OS | 93,000.00 | 0.00 | 9,000.00 | | 27,900.00 | 129,900.00 | 64,950.00 | 64,950.00 |
| 14 | INDU | 22,000.00 | 0.00 | 8,000.00 | | 6,600.00 | 36,600.00 | 18,300.00 | 18,300.00 |
| 15 | BAIA | 52,500.00 | 0.00 | 10,500.00 | SFR | 15,750.00 | 78,750.00 | 39,375.00 | 39,375.00 |
| 16 | ZAD | 43,500.00 | 0.00 | 6,350.00 | | 13,050.00 | 62,900.00 | 31,450.00 | 31,450.00 |
| 17 | ZAG | 53,250.00 | 0.00 | 8,500.00 | | 15,975.00 | 77,725.00 | 38,862.00 | 38,862.00 |
| 18 | WIEN | 80,000.00 | 0.00 | 6,000.00 | SFR | 24,000.00 | 109,000.00 | 54,500.00 | 54,500.00 |
| 19 | DRAMA | 55,900.00 | 0.00 | 8,500.00 | SFR | 16,740.00 | 81,140.00 | 40,570.00 | 40,570.00 |
| 20 | NCC | 58,988.00 | 0.00 | 0.00.0.00 | | 17,376.00 | 82,764.00 | 41,382.00 | 41,382.00 |
| 21 | INFOTN | 54,250.00 | 0.00 | 7,500.00 | | 16,275.00 | 78,025.00 | 39,012.00 | 39,012.00 |

# A3:
## Budget breakdown

| Participant number in this project | Participant short name | Personnel costs | Sub contracting | Other direct costs | Indirect Costs | | Total costs | Max EU Contribution | Requested EU contribution |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cost model (a) | Value | | | |
| 22 | AZ | 111,035.00 | 40 000.00 | 16 000.00 | | 53,311.00 | 200,346.00 | 100,173.00 | 100,173.00 |
| TOTAL | | 2,890,323.00 | 40,000.00 | 242 550.00 | | 867,096.00 | 4,039,969.00 | 2,019,982.00 | 2,019,982.00 |

(a) AIC : Actual indirect costs ; SFR : Standard flat rate



**1. Project number**

The project number has been assigned by the Commission as the unique identifier for your project and it cannot be changed. The project number **should appear on each page of the grant agreement preparation** documents to prevent errors during its handling.

**2. Project acronym**

Use the proposal acronym as indicated in the submitted proposal. It cannot be changed unless agreed during the negotiations. The acronym **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

**3. Project title**

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

**4. Starting date**

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry into force of the Grant Agreement (the 'entry into force' is defined by the Commission). Please note that if a 'fixed' starting date is used, you will be required to provide a justification in connection with it.

**5. Duration**

Insert the duration of the project in full months.

**6. Call (part) identifier**

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

**7. Activity code**

Select the activity code from the drop-down menu.

**8. Free keywords**

Use free keywords from your original proposal; changes are not possible.

**9. Abstract**

**10. The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.**

**11. The number allocated by the Consortium to the participant for this project.**

# Workplan Tables

297284

i-SCOPE—interoperable Smart City services through an Open Platform for urban Ecosystems

CIP-ICT-PSP-2011-5

CIP-Pilot actions

# WT1
## List of work packages

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

LIST OF WORK PACKAGES (WP)

| WP Number [3] | WP Title | Lead beneficiary number [4] | Person-months [5] | Start month [6] | End month [7] |
|---|---|---|---|---|---|
| WP 1 | Requirement analysis, system specifications, data inventory, privacy and security analysis | 9 | 83.10 | 1 | 6 |
| WP 2 | Data collection and adaptation | 11 | 62.50 | 3 | 12 |
| WP 3 | Smart services | 2 | 39.00 | 5 | 15 |
| WP 4 | Deployment of "smart" services toolkit | 7 | 178.00 | 7 | 24 |
| WP 5 | Pilots deployment and assessment | 4 | 119.50 | 17 | 36 |
| WP 6 | Awareness, networking and dissemination | 5 | 75.10 | 1 | 36 |
| WP 7 | IPR management and exploitation | 3 | 42.70 | 7 | 36 |
| WP 8 | Project coordination | 1 | 40.00 | 1 | 36 |
| | | Total | 639.90 | | |



# WT2:
## List of Deliverables

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

List of Deliverables - to be submitted for review to EC

| Deliverable Number [8] | Deliverable Title | WP number [9] | Lead beneficiary number | Estimated indicative person-months | Nature [10] | Dissemination level [11] | Delivery date [12] |
|---|---|---|---|---|---|---|---|
| D1.1 | Use case analysis and user requirements | 1 | 9 | 36.50 | R | PU | 2 |
| D1.2 | Project requirements (incl. data/metadata, services, software and hardware) | 1 | 9 | 29.30 | R | PU | 4 |
| D1.3 | Security and Privacy analysis report | 1 | 10 | 5.00 | R | PU | 6 |
| D1.4 | System Architecture | 1 | 1 | 12.30 | R | PU | 6 |
| D2.1 | i-SCOPE overall testing and data collection protocol | 2 | 11 | 1.80 | R | PU | 5 |
| D2.2 | Report on data acquisition and analysis | 2 | 11 | 41.70 | R | PU | 11 |
| D2.3 | i-SCOPE data collection and harmonisation report | 2 | 11 | 19.00 | R | PU | 12 |
| D3.1 | Report on submission of CityGML core standard extension | 3 | 13 | 18.00 | R | PU | 9 |
| D3.2 | Report on submission of the ADEs | 3 | 8 | 18.00 | R | PU | 15 |
| D3.3 | Privacy and security policies | 3 | 10 | 3.00 | R | PU | 15 |
| D4.1 | Smart Cities Set of Services | 4 | 7 | 91.00 | P | PU | 24 |
| D4.2 | Smart Cities Web Client | 4 | 1 | 19.00 | P | PU | 24 |

# WT2:
## List of Deliverables

| Deliverable Number [#] | Deliverable Title | WP number [#] | Lead beneficiary number | Estimated indicative person-months | Nature [#] | Dissemination level [#] | Delivery date [#] |
|---|---|---|---|---|---|---|---|
| D4.3 | Smart Cities mobile Client Description | 4 | 1 | 1.00 | R | PU | 24 |
| D4.4 | Smart Cities mobile Client | 4 | 11 | 33.00 | P | PU | 24 |
| D4.5 | Smart Cities Service "Toolkit" description | 4 | 11 | 34.00 | R | PU | 24 |
| D5.1 | Methodology for testing the system | 5 | 4 | 7.00 | R | PU | 19 |
| D5.2 | Evaluation and assessment of the first prototype | 5 | 4 | 28.00 | R | PU | 22 |
| D5.3 | Report on Pilots in use | 5 | 4 | 39.00 | R | PU | 36 |
| D5.4 | Guidelines and best practices on pilots and their validation | 5 | 4 | 5.00 | R | PU | 36 |
| D5.5 | Final i-SCOPE toolkit | 5 | 4 | 24.00 | D | PU | 36 |
| D5.6 | Training Materials #1 | 5 | 4 | 5.50 | O | PU | 23 |
| D5.7 | Training Materials #2 | 5 | 4 | 5.50 | O | PU | 33 |
| D5.8 | Training Materials #3 | 5 | 4 | 5.50 | O | PU | 36 |
| D6.1 | Web-Site and web2.0 social networks | 6 | 1 | 6.00 | R | PU | 6 |
| D6.2 | Dissemination plan #1 | 6 | 1 | 1.00 | R | PU | 6 |
| D6.3 | Dissemination Plan #2 | 6 | 1 | 1.00 | R | PU | 12 |
| D6.4 | Dissemination Plan #3 | 6 | 1 | 1.00 | R | PU | 18 |
| D6.5 | Dissemination Plan #4 | 6 | 1 | 1.00 | R | PU | 24 |
| D6.6 | Dissemination Plan #5 | 6 | 1 | 1.00 | R | PU | 30 |



WT2:
List of Deliverables

| Deliverable Number [#] | Deliverable Title | WP number [#] | Lead beneficiary number | Estimated indicative person-months | Nature [#] | Dissemination level [#] | Delivery date [#] |
|---|---|---|---|---|---|---|---|
| D6.7 | Linkages to other projects #1 | 6 | 1 | 4.00 | R | PU | 12 |
| D6.8 | Linkages to other projects #2 | 6 | 1 | 4.00 | R | PU | 24 |
| D6.9 | Linkages to other projects #3 | 6 | 1 | 5.00 | R | PU | 36 |
| D6.10 | Living Lab #1 | 6 | 5 | 7.50 | R | PU | 18 |
| D6.11 | Living Lab #2 | 6 | 5 | 7.50 | R | PU | 36 |
| D6.12 | Dissemination Material | 6 | 1 | 0.50 | R | PU | 36 |
| D6.13 | External Publishing | 6 | 1 | 0.50 | R | PU | 36 |
| D6.14 | Final dissemination report | 6 | 1 | 0.50 | R | PU | 36 |
| D6.15 | Citizens involvement report #1 | 6 | 22 | 3.10 | R | PU | 6 |
| D6.16 | Citizens involvement report #2 | 6 | 22 | 3.10 | R | PU | 6 |
| D6.17 | Citizens involvement report #3 | 6 | 22 | 3.10 | R | PU | 12 |
| D6.18 | Citizens involvement report #4 | 6 | 22 | 3.10 | R | PU | 18 |
| D6.19 | Citizens involvement report #5 | 6 | 22 | 3.10 | R | PU | 24 |
| D6.20 | Citizens involvement report #6 | 6 | 22 | 3.10 | R | PU | 30 |
| D6.21 | Citizens involvement report #7 | 6 | 22 | 3.10 | R | PU | 30 |
| D7.1 | Exploitation plan #1 | 7 | 1 | 4.25 | R | PU | 15 |
| D7.2 | Exploitation plan #2 | 7 | 1 | 4.25 | R | PU | 24 |
| D7.3 | IPR & licensing policy | 7 | 3 | 9.00 | R | PU | 36 |

# WT2:
## List of Deliverables

| Deliverable Number [#] | Deliverable Title | WP number [#] | Lead beneficiary number | Estimated indicative person-months | Nature [#] | Dissemination level [#] | Delivery date [#] |
|---|---|---|---|---|---|---|---|
| D7.4 | Market and business plan #1 | 7 | 3 | 4.75 | R | PU | 9 |
| D7.5 | Market and business plan #2 | 7 | 3 | 4.75 | R | PU | 36 |
| D7.6 | Service Level Agreement | 7 | 4 | 11.50 | R | PU | 21 |
| D7.7 | Report on creation of S3S EEIG | 7 | 1 | 4.20 | R | PU | 36 |
| D8.1 | Project handbook | 8 | 1 | 1.00 | R | PU | 1 |
| D8.2 | Risk report #1 | 8 | 1 | 0.25 | R | PU | 3 |
| D8.3 | Risk report #2 | 8 | 1 | 0.25 | R | PU | 6 |
| D8.4 | Risk report #3 | 8 | 1 | 0.25 | R | PU | 9 |
| D8.5 | Risk report #4 | 8 | 1 | 0.25 | R | PU | 12 |
| D8.6 | Risk report #5 | 8 | 1 | 0.25 | R | PU | 15 |
| D8.7 | Risk report #6 | 8 | 1 | 0.25 | R | PU | 18 |
| D8.8 | Risk report #7 | 8 | 1 | 0.25 | R | PU | 21 |
| D8.9 | Risk report #8 | 8 | 1 | 0.25 | R | PU | 24 |
| D8.10 | Risk report #9 | 8 | 1 | 0.25 | R | PU | 27 |
| D8.11 | Risk report #10 | 8 | 1 | 0.25 | R | PU | 30 |
| D8.12 | Risk report #11 | 8 | 1 | 0.25 | R | PU | 33 |
| D8.13 | Risk report #12 | 8 | 1 | 0.25 | R | PU | 36 |
| D8.14 | Six-monthly progress report #1 | 8 | 1 | 1.00 | R | PU | 6 |
| D8.15 | Six-monthly progress report #2 | 8 | 1 | 1.00 | R | PU | 18 |
| D8.16 | Six-monthly progress report #3 | 8 | 1 | 1.00 | R | PU | 30 |
| D8.17 | Yearly report #1 | 8 | 1 | 1.00 | R | PU | 12 |
| D8.18 | Yearly report #2 | 8 | 1 | 1.00 | R | PU | 24 |
| D8.19 | Final report | 8 | 1 | 1.00 | R | PU | 36 |
| | | | Total | 597.00 | | | |



# WT3:
## Work package description

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**One form per Work Package**

| | |
|---|---|
| Work package number [3] | WP1 |
| Work package title | Requirement analysis, system specifications, data inventory, privacy and security analysis |
| Start month | 1 |
| End month | 6 |
| Lead beneficiary number [4] | 9 |

**Objectives**

This work package will involve to great extent the final users (i.e. city administrations) to collect different types of requirements necessary to drive all later project's activities. Involvement of the final users will take place through a series of organized workshops and interview (also via video conference).
With regard to this the goals of the work package are to identify:
- Type of users and precise use cases (T.1.1), through interviews and definition of UML use case modelling.
- User and training requirements (T.1.2), through interviews of stakeholders.
- Specific service (T.1.3) requirements, through analysis of required functions at service level.
- Hardware, software requirements (T.1.4), accounting for various software (both client and server) and hardware (incl. use of Braille displays).
- Data, metadata and modelling requirements (T.1.5), relatively to the datasets that will be used at pilot stage.
- Privacy requirements and potential vulnerabilities and risks (T.1.6), important given the use of mobile and location technologies.

All the information collected will be used in determining the software architecture for development of the prototype.

**Description of work and role of partners**

T.1.1 Definition of use cases
Task leader: IND Technical partners: FG, GEOF, IND, Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
The output of this task, lead by IND, is to precisely define the operational scenarios that the final i-SCOPE pilots will respond to, including the various actors involve. This task will involve all pilot-related partners (under coordination of LAZ) whose involvement will be essential to retrieve the necessary real-life requirements, as well as technical partners (FG, GEOF) all under leadership of IND. During later stages of development, all the use cases will be used to validate the developed solution (in the context of WP3) and verify its ability to implement the use cases used in analysis.
In defining the use cases we recognise we need to provide a flexible and practically usable system. Therefore we need to encompass all normal operating scenarios and then use these later to validate the compliancy of the solution to the initial requirements.
The first verbose (textual) description of the scenarios will be complemented by a formalized detailed description modelled as UML (Unified Modeling Language) Use Case diagrams. The supervision of the document will be in charge to IND. In order to facilitate re-use and to provide a more structured overview, the Use Cases will be classified as:
- common - by grouping those Use Cases of more general scope,
- scenario-specific (e.g. solar potential assessment, inclusive routing etc.).

The output of this exercise shall act as an input in T.1.6 as each use case has to be considered against its potential to impact privacy or to increase the risk of exploit by an attacker to any of the system security objectives.

T.1.2 Users and training requirements

Task leader: IND Technical partners: FG, EGEO Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ

This task, lead by IND, is concerned with the identification of all types of users and the definition and analysis of their needs/requirements according to the use cases defined in T.1.1. A methodological approach will be developed for this analysis, taking into account the following

- Specific requirements according to the different user profile, by FG.
- Deployment of the i-SCOPE toolkit, by EGEO.

The objective of the proposed methodology is to identify the major categories of functionalities of the system that best comply with the needs of the users and their perceived requirements. A key issue in achieving this goal relates to collecting the views of the users on potential system functionalities and performance. Interviews and surveys will be employed in order to perform this task under coordination of IND. The target groups, from the different pilots, will divided into several sub-groups. Specific attention will be paid to collection of requirements by people with impairments, in the context of the inclusive routing pilot, particularly in Vienna with involvement of partner CEIT. In this case users will be divided between people with low visual impairment, high visual impairment, blindness, and colour blindness. The latter group is particularly significant as the latter almost makes up to 10 % of the population, men being the majority. A further sub-target group will be made of elderly users because visual impairment increases especially at higher age caused by macula degeneration.

The resulting document (D 1.02 – Project requirements) is essential to create a benchmark to compare against features to be developed during later stages of the project.

The task will also focus on training requirements which will be collected by pilot partners lead by LAZ in order to identify which are the skills, competences, tasks and expertise that will have to be supported by the system. The analysis will also define aspects related with human factors specifically trainee's experiences and professional backgrounds. At this stage users will be called upon to identify the training criteria to be implemented with respect to scenario identified in T.1.1. A specific attention will be paid to national laws, regulations, and standards for training. Particular attention will be paid to ISO 10015 standards "Quality management - Guidelines for training"

T.1.3 Services requirements

Task leader: EGEO Technical partners: EPS, GEOI, VUB, MOSS, GIST, C3L, REG, OS

This task will specify, under coordination of EGEO, the technical, functional and non-functional elements of i-SCOPE. This task will identify the requirements regarding the smart services to be developed, their relation to existing OWS (OGC Web Services). This includes also definition of requirements in terms of performance, technology, platform support, programming language, data format and exchange etc.

T.1.4 Hardware and software client/server requirements

Task leader: REG Technical partners: FG, CEIT, VUB

This task, coordinated by REG, will define the requirements in terms of hardware and software platforms, of the various components of the system. This work will account for use cases and requirements defined within T.1.1, T.1.2 and T.1.3. Specifically:

- REG will define hardware requirements at server level.
- REG will define software requirements at server level including, but not limited to, overall server technology (e.g. J2EE), application server software technology (e.g. JBoss), mapping and GIS server (e.g. geoserver), catalogue technology (e.g. GeoNetwork), server processing libraries (e.g. 52 North WPS) etc.
- CEIT will define hardware requirements at mobile client level (including portable Braille displays or other assistive technologies).
- FG and VUB will define software requirements at mobile client level (Operating System, software libraries etc.). This includes specific requirement necessary for support of Braille displays such as Refreshabraille 18 American Printing House for the Blind, etc.

T.1.5 Data, metadata & modelling requirements

Task leader: IND Technical partners: EPS, GEOE, EGEO, CEIT, VUB, MOSS, REG, OS

The goal of this task, coordinated by IND, is to define requirements, in terms of reference data and metadata provided for the i-SCOPE pilots, with specific regard to Smart City Services information. Metadata are of primary importance for the proper functioning of the infrastructure, since they are necessary for users to find datasets and services and to understand an items correct use and purpose. This task will build on top of results from previous projects, which have dealt with relevant issues. These include, but are not limited to:

- BRISEDE (www.brisede.eu), coordinated by FG, concerned specifically with metadata requirements when dealing with geographical dataset enriched with temporal dimension in the context of environmental emergency.





- Ad Persolam (www.marketingpublictransport.eu), where BAIA has been a partner, concerned with promotion of the Local Public Transport in European medium-sized cities and is focused more closely on 7 pilot projects in 7 different European countries.
- CATCH (http://www.carbonaware.eu/home.html) where BAIA has been a Core Interest Group city together with Lisbon (Portugal), London Borough of Hounslow (UK), Odense (Denmark) and Rotterdam (Netherlands), concerned to reduce CO2 emissions of the urban transport sector by encouraging carbon-friendly travel choices.

The data modelling exercise shall act as an input to T.1.6 as data that has the potential to be privacy impacting will need to be isolated and protected.

T.1.6 Privacy Threat Vulnerability and Risk Analysis

Task leader: C3L Technical partners: GIST

The aim of this task, lead by C3L, is to identify the security and privacy requirements for all different components and subsystems of i-SCOPE, in order to undertake a 'Privacy Impact Assessment (PIA)' for the system and to identify by means of a structured 'Threat Vulnerability Risk Analysis (TVRA)', those areas of i-SCOPE where security countermeasures have to be applied. It should be noted that given the use of location based technologies, as in the inclusive routing pilot, this task becomes particularly important.

This task, with support from GIST, will identify those factors that will allow implementers to achieve and maintain the fine balance between security, privacy and inter-operability, whilst ensuring they have the opportunity to fine-tune these factors according to each deployment's particular needs.

An additional element closely related to this task is to address privacy in the context of the TVRA by merging in partnership with development of extension of the TVRA method security assessments with PIA. This will allow the technical aspects of privacy and security risks to be captured in a single report, whilst the business and organisational aspects of i-SCOPE privacy will be addressed in the PIA report itself.

Partner C3L, an expert in security, will play an essential role ensuring that the definition of requirements is in line with activities at ETSI (European Telecommunications Standards Institute), CEN (Comité Européen de Normalisation), ISO (mainly in TC204 covering ITS and JTC covering security methods), as well as in IETF and dedicated security standards groups covering key management and cryptography.

T.1.7 System architecture

Task leader: EGEO Technical partners: FG, EPS, CEIT, VUB, MOSS, REG

This activity will define the system architecture of the i-SCOPE smart city service infrastructure. This includes design of the set of software components and the client applications to be developed under EGEO. Special attention will be paid to software interfaces, between already available software components, namely:

- City model management and ingestion technology by MOSS
- Noise simulation component by MOSS.
- Noise mapping client and server technology by Sony CSL (for EPB project TAGora) and VUB (open source).
- Mobile 3D/AR client (with OpenLS support) by FG.
- Spatio-temporal processing services developed by project (coordinated by FG).
- Solar potential assessment technology, available from MOSS and as open source through GRASS project, under responsibility of MOSS.
- Semantic description technology (for creation of visually-impaired-friendly routing instructions) developed by CEIT.
- Mobile client technology supporting visually-impaired-friendly visual, spoken, and Braille output, developed by CEIT.

Their interfacing with components specifically developed in the context of the project will be clearly defined through detailed UML class diagrams. The outcome from all other tasks in this work package will be taken into consideration along with other critical factors (such as technology and implementation flexibility, scalability, adherence to industry standards, etc.).

The final i-SCOPE platform will be specified and implemented as an open design in a pre-competitive environment that provides easy customisability for better integration with existing platforms. The approach will be 'User-Centred Design' (UCD), also known as 'pervasive usability', in which specific attention is paid by users to the final infrastructure at each stage of the design process. The main difference from classical design strategy is that UCD fosters optimisation around the specific use cases, adapting the design to respond to the user requirements rather than assuming the user will change their existing behaviour.

This will be based on a multi-stage approach that will not only assume how the user will be using the system, but also assess the validity of assumption through test according to the use cases as defined in Task T.1.1 Definition of use cases. The results of this task, which will involve will bring to the definition of the UML-based document D.01.04 - i-SCOPE system architecture.

The output of this task shall act as an input to T.1.6 as the architecture may require to have elements that enable the privacy and security protection of the users.

**Person-Months per Participant**

| Participant number [9] | Participant short name [10] | Person-months per participant |
|---|---|---|
| 1 | FG | 9.50 |
| 2 | EPS | 2.50 |
| 3 | GEOI | 2.50 |
| 4 | FGFO | 11.60 |
| 5 | CEIT | 3.00 |
| 6 | VUB | 2.00 |
| 7 | MOSS | 4.00 |
| 8 | GIST | 4.00 |
| 9 | IND | 8.00 |
| 10 | CSI | 3.50 |
| 11 | REG | 5.00 |
| 12 | GSYS | 2.00 |
| 13 | OS | 1.50 |
| 14 | INDJ | 2.00 |
| 15 | SAIA | 2.00 |
| 16 | ZAD | 2.00 |
| 17 | ZAG | 2.00 |
| 18 | WIEN | 1.00 |
| 19 | DRAMA | 2.00 |
| 20 | NCC | 2.00 |
| 21 | INFOTN | 2.00 |
| 22 | LAZ | 0.00 |
| | Total | 83.10 |

**List of deliverables**

| Deliverable Number [11] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [12] | Dissemination level [13] | Delivery date [14] |
|---|---|---|---|---|---|---|
| D1.1 | Use case analysis and user requirements | 9 | 36.50 | R | PU | 2 |
| D1.2 | Project requirements (incl. data/metadata, services, software and hardware) | 9 | 29.30 | R | PU | 4 |





**List of deliverables**

| Deliverable Number [11] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [12] | Dissemination level [13] | Delivery date [14] |
|---|---|---|---|---|---|---|
| D1.3 | Security and Privacy analysis report | 10 | 5.00 | R | PU | 6 |
| D1.4 | System Architecture | 4 | 12.30 | R | PU | 6 |
| | | Total | 83.10 | | | |

**Description of deliverables**

D1.1) Use case analysis and user requirements: The definition of user requirements according to UML notation and definition of their requirements in terms of interface, usability etc. [month 2]

D1.2) Project requirements (incl. data/metadata, services, software and hardware): Collection of all the requirements in terms of services, hardware and software (both client and server), data/metadata requirements, as well as training requirements as resulting from T.1.3, T.1.4 and T.1.5. [month 4]

D1.3) Security and Privacy analysis report: This shall contain the output of task T.1.6 and also contain analysis of the use-cases from T.1.1, the data model from b and the architecture from T.1.7. The latter analyses may be prepared as separate sub-parts or annexes to align with the output of each of tasks T.1.1, T.1.5 and T.1.7. [month 6]

D1.4) System Architecture: The complete set of system specification including interface specifications, existing component and software module interfaces to be developed in the context of the project. [month 6]

**Schedule of relevant Milestones**

| Milestone number [15] | Milestone name | Lead beneficiary number | Delivery date from Annex I [16] | Comments |
|---|---|---|---|---|
| MS1 | i-SCOPE system specifications are defined | 9 | 6 | |

# WT3:
## Work package description

| Project Number [i] | 297284 | Project Acronym [ii] | i-SCOPE |
|---|---|---|---|

**Work package description**

| | |
|---|---|
| Work package number [iii] | WP2 |
| Work package title | Data collection and adaptation |
| Start month | 3 |
| End month | 12 |
| Lead beneficiary number [iv] | 11 |

**Objectives**

The goals of this WP is to provide the properly harmonised data (T.2.5) in terms of format, metadata etc), necessary to set-up and deploy the smart services developed in WP4, which will be collected during this task. To do so this WP will have to achieve the following actions.
- To survey data and services available (T.2.1)
- To collect GIS data available from the city administrations (T.2.2).
- To collect key reference data through airborne surveying campaign to be used as baseline to assess effectiveness of solar potential assessment services (T.2.3)
- To collect a significant sample noise data on the location where this pilot is planned to be used for technical activities (T.2.4).

Within this WP pilot-related partners will play a key role under coordination of REG (with regard to overall data collection, VUB as regard real-time noise data collection, and GEOF with regard to airborne acquisition

**Description of work and role of partners**

T.2.1 Survey of existing GI and services & analysis of their adaptation
Task leader: REG Technical partners: OS Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
Under guidance of REG this task will start with the definition of specific questionnaires and forms that will have to be filled in by the pilot-related partners as well as other data providers (OS) in provide the necessary information about resources available to the project. These include
- Dataset available (including quantity and quality, data format, size etc.
- Services available: type of geographical services (e.g. WMS, WFS, WCS etc.), including technical features (e.g. version of OWS - OGC Web Service), accessibility, supported format, URI, vendor/technology used for their deployment (e.g. Geoserver, ESRI, Intergraph etc)
- Availability of catalogue services (if any) as well as support for harvesting.
- Data and service metadata (including information stored and standard followed –if applicable–).

All the information will be collected online, within the private section of the i-SCOPE portal, through pre-set forms that will allow all partners to be constantly aware of the information available

T.2.2 Collection of data available at city level as well as through existing services
Task leader: REG Technical partners: GEOF Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
Under coordination of REG datasets surveyed during T.2.1 (or relevant sub-sets) will be collected by the various pilot-related partners and stored (via FTP) on the storage space dedicated to the project maintained by REG. This process will ensure that during the development stage the technical partners can access relevant data, properly harmonised (e.g. converted, re-projected), without having to rely or modify on any operational service that may be in place by the city administration (e.g. publicly available mapping or else GIS service).

T.2.3 Airborne infrared imaging acquisition and processing
Task leader: GEOF Technical partners: REG
This task will be carried out by partner GEOF and will be limited to the Croatian pilots. The task will require fitting a thermo-camera on one of their planes during an airborne surveying campaign. To avoid any further cost rising from a specific survey campaign this will be identified upfront at the beginning of the project (during T.1.1) during



WT3:
Work package description

the definition of the use cases. As detailed in WP4, the results of the acquisition campaign, i.e. infrared imagery duly processed, will be then ingested by REG in the data repository and used as baseline to assess simulation capability of the solar energy potential pilot.

T.2.4 Onsite noise level sample data acquisition
Task leader: VUB Technical partners: REG Pilot partners BAIA, WIEN, DRAMA, NEWC, INFOTN
This task, coordinated by VUB, will ensure the collection of sufficient and relevant noise data through the NoiseTube mobile application developed by Sony CSL and VUB. Survey campaigns will be carried out for at least 3 significantly different and consistent areas of each of the Pilots involved (e.g. city centre, residential area, industrial area), and focussing on at least 3 different time frames. The particularities of each campaign (i.e. duration of time frame and size of area) will be chosen so that a dataset of adequate size may be built up by having (at least) 5 users contribute to the measuring campaign, within the same time frame and area of interest. Details are to be defined during T.1.1. These campaigns will be run by staff from pilot-related partners involved in the noise mapping pilot. It should be noted that this task will not involve citizens for collection of data (as this will occur during the pilot stage), instead it will provide an initial set of relevant data, at the beginning of the project, to be used for technical and testing purposes. The data collected will be stored in the i-SCOPE data repositories and used by the technical partners which will be able to "play it back", for the technical activities of the project. This will be done with support by by REG through a dedicated WFS (Web Feature Service) or SOS (Sensor Observation Service) to be deployed by REG in the context of WP3.

T.2.5 Data fitting and loading to database
Task leader: REG Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
This task will ensure that data collected during the previous tasks is harmonised (in terms of data structure, format and metadata) according to the guidelines from WP3 by the various pilot-related partners. The task will be coordinated by REG, which is responsible for the management of the data and software infrastructure of the project. A registry, to be set-up by REG, will allow continuous monitoring of the data available, their properties and features as well as the fitting stage.

**Person-Months per Participant**

| Participant number [v] | Participant short name [vi] | Person-months per participant |
|---|---|---|
| 1 | FC | 3.50 |
| 3 | GEOF | 4.00 |
| 6 | VUB | 2.00 |
| 11 | REG | 15.00 |
| 12 | GSYS | 3.00 |
| 13 | OS | 1.50 |
| 14 | INDJ | 2.00 |
| 15 | BAIA | 5.50 |
| 16 | ZAD | 2.50 |
| 17 | ZAG | 3.50 |
| 18 | WIEN | 3.00 |
| 19 | DRAMA | 4.00 |
| 20 | NCC | 3.00 |
| 21 | INFOTN | 4.00 |
| 22 | LAZ | 3.00 |
| | Total | 62.50 |

# WT3:
## Work package description

**List of deliverables**

| Deliverable Number [i] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [ii] | Dissemination level [iii] | Delivery date [iv] |
|---|---|---|---|---|---|---|
| D2.1 | i-SCOPE overall testing and data collection protocol | 11 | 1.80 | R | PU | 5 |
| D2.2 | Report on data acquisition and analysis | 11 | 41.70 | R | PU | 11 |
| D2.3 | i-SCOPE data collection and harmonisation report | 11 | 19.00 | R | PU | 12 |
| | | Total | 62.50 | | | |

**Description of deliverables**

D2.1) i-SCOPE overall testing and data collection protocol: Description of the procedure necessary to ensure collection and validation of all the data available by the partner-related partners. [month 5]

D2.2) Report on data acquisition and analysis: Comprehensive report about the data collected, required adaptation in terms of data, file format, projection system, or metadata for each of the pilots. [month 11]

D2.3) i-SCOPE data collection and harmonisation report: Comprehensive report on process of harmonisation including required steps to certify adherence to standards (e.g. ISO19005 series, INSPIRE). [month 12]

**Schedule of relevant Milestones**

| Milestone number [v] | Milestone name | Lead beneficiary number | Delivery date from Annex I [vi] | Comments |
|---|---|---|---|---|
| MS2 | All datasets available to the project are available within the i-SCOPE repository | 11 | 12 | |



WT3:
Work package description

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**One form per Work Package**

| | |
|---|---|
| Work package number [iii] | WP3 |
| Work package title | Smart services |
| Start month | 5 |
| End month | 15 |
| Lead beneficiary number [iv] | 2 |

**Objectives**

The goal of this work package is to extend standards relevant to the creation of smart services, specifically in terms of:
- Core CityGML (from OGC), within T.3.1.
- Creation of two new ADEs (Application Domain Extension) to CityGML relevant to the domains subject of the pilots (solar energy potential assessment and inclusive routing), within T.3.2. It should be noted that there is no need to develop a Noise ADE as this is already available. The ADEs will be made publicly available to the community.
- Privacy and security standards, within T.3.3.

A detailed description of planned standardisation strategy is reported in B3.5. Security, privacy, inclusiveness, interoperability, standards and open-source.

**Description of work and role of partners**

This WP will deliver significant standardisation activities, by extending current standards to cater for the specific requirements arising from the smart city services developed by i-SCOPE. The active role of several partners of the consortium in terms of standardisation activities, will ensure that results can be proposed for standardisation and therefore reused and given a life beyond the project. Specifically:
- Through the coordinator (FG) and GIST the project consortium will maintain working relations with standardisation organisation of geographic information, namely with CEN/TC 287. GIST is the secretary of CEN/TC 287 and created a "liaison of organisations to further network the geospatial arena in Europe. One such set of liaisons comes from establishing European-funded projects to CEN/TC 287 allowing the sharing of information between these parties. In addition CEN/TC 287 is writing a series of papers to be published one on best practices in European projects. There is the possibility that CEN/TC 287 could create a technical report on Smart Cities taken from this project.
- Through FG, OS, GIST i-SCOPE will also contribute to standardisation activities of the OGC – Open Geospatial Consortium [of which FG and GIST through CEN/TC 287 secretary are member] with particular attention to the activities of the CityGML Special Working Group (SWG) (by OS).
- Additionally through C3L the consortium will also promote standardisation with ETSI, CEN and ISO.

T.3.1 CityGML core standard extension
Task leader: OS Technical partners: EPS, VUB, MOSS, GIST
OS, EPS, VUB, MOSS, GIST will extend current CityGML standard to accommodate the requirements that will emerge in WP1. The final results, under coordination of OS, will be submitted by the consortium partners who are members of OGC – Open Geospatial Consortium CityGML SWG (Special Working Group of which OS is one of the main promoter) as official extension of current standard.

T.3.2 Application Domain Extensions (ADE)
Task leader: GIST Technical partners: EPS, VUB, MOSS, OS
This task, coordinated by GIST and with support from OS, will deliver three Application Domain Extension of CityGML required for the project's pilots.
- Solar potential assessment, by MOSS.
- Inclusive routing, by EPS.

- Noise, by VUB. It should be noted that, although a noise ADE is already available, this is designed to define all the components required to run simulation models (road segments, surfaces, reflection &c). However no functionality is provided to assign sound level values to street segments or areas (parks etc.), which is what will be done in the context of i-SCOPE.

CityGML's concept of Application Domain Extensions (ADE) offers a well-defined extension mechanism to augment the CityGML data model with application specific data. This application specific extension will be formally specified in an independent ADE XML schema file and can comprise additional property elements for existing CityGML objects as well as newly defined feature types. ADEs are associated with their own XML namespace which allows for integrating ADE data into CityGML instance documents.

The final results will be submitted by the partners who are members of OGC - Open Geospatial Consortium CityGML SWG (Special Working Group), namely OS and FG, as official extension of current standard.

T 3.3 Privacy and security policies

Task leader: C3L

This task will start will be carried on by C3L who will start by analysing potential risks and vulnerabilities in terms of privacy and data security in the specific context of i-SCOPE, taking into account issues related to the localisation of people, their preferences, etc.

This task will harmonize and extend the security model of i-SCOPE with the security models of key enabling technologies. Key to this will be development of risk analysis models, requirements and objectives capture, and cooperation with key standards bodies in the ITS and Networking field. This latter task will include cooperation with ETSI (European Telecommunications Standards Institute), CEN (Committee European Normin), ISO (mainly in TC204 covering ITS and JTC1 covering security methods), as well as in IETF and dedicated security standards groups covering key management and cryptography.

A key role that C3L will bring to the project is harmonisation of the project with on going best practices from standards developers of profile and user centred data control as explored in the ETSI work on UCI and UPM to guide output from city administration and TVRA (Threat, Vulnerability, and Risk Analysis) performed in WP1, to policy enforcement strategies.

As a result of this task D 3.03 - Privacy and security policies will be edited.

| Participant number [10] | Participant short name [11] | Person-months per participant |
|---|---|---|
| 1 | FG | 4.00 |
| 2 | FPS | 7.00 |
| 6 | VUB | 2.00 |
| 7 | MOSS | 7.00 |
| 8 | GIST | 8.00 |
| 10 | C3L | 4.00 |
| 13 | OS | 7.00 |
| | Total | 39.00 |

| Deliverable Number [14] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [15] | Dissemination level [16] | Delivery date [17] |
|---|---|---|---|---|---|---|
| D3.1 | Report on submission of CityGML core standard extension | 13 | 18.00 | R | PU | 9 |
| D3.2 | Report on submission of the ADEs | 8 | 18.00 | R | PU | 15 |





| Deliverable Number [14] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [15] | Dissemination level [16] | Delivery date [17] |
|---|---|---|---|---|---|---|
| D3.3 | Privacy and security policies | 10 | 3.00 | R | PU | 15 |
| | | Total | 39.00 | | | |

D3.1) Report on submission of CityGML core standard extension: Official report used for submission to OGC SWG (Special Working Group) of the CityGML as standard extension [month 9]

D3.2) Report on submission of the ADEs: Official report used for submission of the three ADEs of CityGML to OGC [month 15]

D3.3) Privacy and security policies. A report on privacy and security policies related to i-SCOPE services and client technologies taking into account issues related to the localisation of people, their preferences, etc. [month 15]

| Milestone number [18] | Milestone name | Lead beneficiary number | Delivery date from Annex I [19] | Comments |
|---|---|---|---|---|
| MS3 | Extension of CityGML submitted to OGC | 13 | 9 | |
| MS4 | 3 CityGML ADEs submitted to OGC | 8 | 15 | |

# WT3:
## Work package description

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**One form per Work Package**

| | |
|---|---|
| Work package number [3] | WP4 |
| Work package title | Deployment of "smart" services toolkit |
| Start month | 7 |
| End month | 24 |
| Lead beneficiary number [4] | 7 |

**Objectives**

The goals of this WP are:
1. To develop the different smart 3D services that can benefit from CityGML urban information model, according to the principles of service-oriented architecture using open standards (OGC). Core Service interfaces to be used will be those by OGC namely: OpenLS, WPS and W3DS. More specifically the smart services to be developed are:
- The "platform"-level CityGML data management services (T.4.1) to be developed by MOSS.
- Process management for thematic services (T.4.1), to be developed by MOSS.
- High-level smart city services in order to provide:
- Inclusive routing (T.4.2), to be developed by EPS and CEIT
- Noise level mapping (T.4.3), to be developed by VUB
- Noise level simulation (T.4.4), to be developed by MOSS.
- Solar energy potential assessment (T.4.5), to be developed by MOSS and IND.

2. A further goal of this WP is to deliver a:
- Web client (T.4.6), to be developed by EG
- Mobile client application capable to leverage on LBS (T.4.7), to be developed by EG, CEIT, VUB,
- Partner CEIT will be responsible for security and privacy

3. The last goal of the WP is to deliver an integrated client-server solution, during T.4.9, through the involvement of all the technical partners under coordination of REG. This task will ensure integration and extension of all technologies available to i-SCOPE, ready to be deployed as toolkit by city administration.

**Description of work and role of partners**

The i-SCOPE platform will be developed as a federation of smart services. This WP will in particular develop smart services capable to ensure maximums use of 3D urban-scale models. The integrated architecture of the i-SCOPE platform will be developed following a "four-tier" approach where the i-SCOPE clients stand at the top application level and communicate with the middleware of i-SCOPE, where the "smart city services" can do what in turn access the lowest data level, where there are the databases.
Specifically:
1. At the lowest level there are all the databases storing the various information necessary for the services to run (imagery, CityModels, maps, etc.).
2. The core low-level functions of the system will be bundled into a technology platform (T.4.1) that takes care for a cross service infrastructure of the system, particular for handling of 3D information and the CityGML format. This technology platform will be implemented based on the existing technology developed by partner MOSS.
3. At higher logical level, to be developed within the Tasks T4.2, T4.3, T.4.4 and T4.5, the thematic SMART City Services will be implemented. These services will enrich the information within 3D city models according to the definitions of the defined thematic ADEs (result from WP 3). Each of the service will implement its own WPS interface and will furthermore implement an interface to be executed from the technology Platform. The result for each of the services will be information that will be stored in the CityGML ADEs resulting from WP 3.
4. The fourth level of the SMART city services will be the user interface requesting the services and displaying the service results. The interfaces will be designed to maximize system's ease of use, learning curve and user adaptation and, most notably in the case of mobile applications, due to the nature of the information being exchanged, security/privacy. For this reason the results from an extensive requirement analysis, performed in WP1 will be essential.





From a technical standpoint the middleware levels will be deployed as JEE infrastructures where a number of EJB (Enterprise Java Beans) will be deployed on an Open Source application server (e.g. JBoss). Partner REG will be responsible for the deployment, configuration and maintenance of the Platform.

T.4.1 3D Service Technology Platform
Task leader: MOSS
This task will develop smart services capable to ensure maximums use of 3D urban-scale model. To do so the partner MOSS will extend existing technologies (e.g. novaFACTORY 3D) by creating a web-service software layer around the existing software components. Specifically will develop services for:
Services required for CityGML data management:
- Service to upload existing CityGML dataset
- Service to generate CityGML dataset from input data (LIDAR, floorplans, DTM)
- Handling of CityGML datasets to be accessed by thematic services
- Storing CityGML dataset including the enrichment from the thematic Services (for different ADEs)
- Providing services results to the applications using WFS, WPS
- Conversion of 3D models to create CityGML models
- Smart services supporting the citizen with intelligent access to information based on Location Based Services

Services required for platform management.
- Process orchestration (server side)
- Process monitoring
- Subdividing the area to be processed in tiles that can be handled and starting the services with the tiles

T.4.2 Designed-for-all personal routing service
Task leader: EPS Technical partners: CEIT
During this task EPS will customise existing OpenLS-compliant routing algorithm, developed in the context of BRISEIDE project, which relies on OpenStreetMap data. The existing algorithm will be adapted to cater for specific requirements of disabled people to account for barriers and other factors (e.g. slope of ramps) that are relevant to guidance of users with mobility impairments. As a result a tailored OpenLS service will be delivered. It is expected that this task will also require extension of the current OpenLS standard to cater for new features introduced. Specifically development of EPS will provide extension of OpenLS routing functions, while at the same time, CEIT's development will ensure extension of OpenLS support for directions.
More specifically during this task CEIT will extend the existing service technologies developed in the context of AmaroMap, which allows defining semantically-rich text-based description of environmental features based on vector GIS data, to provide support for OpenLS.
Furthermore during this task CEIT will provide previously developed SLDs (Styled Layer Descriptor) to be used to configure server-side rendering of inclusive routing in a visually-impaired friendly way (e.g. reducing unnecessary details, highlighting the route or relevant landmarks, by using high contrast colour schema).

T.4.3 Real-time environmental noise mapping service
Task leader: VUB
The real-time environmental noise mapping service will be developed by VUB. Existing server-side software components, developed as part of the NoiseTube system (initially developed within the scope of the FP6 project IACora by Sony CSL in collaboration with VUB) will be integrated with spatio-temporal services, developed in the context of BRISEIDE, to ensure interoperable provision of noise data over time through support of WCS (Web Coverage Service) and WMS (Web Map Service) standard. These activities will be performed by VUB with regard to noise-related assessment features and with regard to support of interoperable mapping standard.

T.4.4 Environmental noise simulation
Task leader: MOSS
This task will be carried out by partner MOSS. As shown in Figure 11, at page 17, existing technology for noise propagation calculation by MOSS will be extended in order to be exposed as interoperable smart service through WPS (Web Processing Service) standard. In particular during this task a software layer will be developed around the original technology providing standard and access to noise propagation simulation. The software component will act as a "proxy", taking requests as interoperable WPS standard, from the client or other services and in turn re-directing requests to native noise-simulation via QSI interface. The latter is an exchange data model (standard DIN 45687) developed for exchange of data between different noise modelling packages.
This approach will allow a "plug-in" approach whereby other different noise applications can be used at later stage within the i-SCOPE infrastructure by following a standard and communication interface.

The result of the process will be a returned as 3D city model to the client as CityGML similarly to what depicted in Figure 11, at page 17

T.4.5 Solar energy potential assessment service
Task leader: MOSS Technical partners: FG, GEOF, FGEO, IND
Partner IND will take existing solar simulation component (r.e.r.sun by GRASS project) and make it interoperable in the context of smart city services. Namely a service component will be developed by FG to transform existing CityGML to grid formats (as height function) to be then provided as input to the simulation component. In turn the result of the simulation will be provided a grid and vector data to ensure widest use within GIS contexts. This data will be then used by another service, to be developed by MOSS, to calculate
- Solar potential estimation of the cities roof structure.
- Estimation of costs for creation of solar power panels.
- Documentation of existing solar power panels
- Estimation of remaining solar power potential (potential – existing implementations)

Additionally, in the case of the Croatian pilot, this pilot will benefit from availability of thermal imaging, to be acquired through a survey campaign by GEOF. This information will be used to compare predicted results against real data through specific processing services, which have been developed in the context of the project BRISEIDE, and that will be deployed by EGEO and extended to the requirements of the project. As illustrated in , those services can be used to perform raster algebra operations necessary to automatically highlight differences between maps resulting from simulation and real surveying

T.4.6 Web client
Task leader: FG Technical partners: GEOF, EGEO, CEIT, VUB, IND, GSYS
This task will deliver i-SCOPE web-based clients. The latter will be based on the technology already developed by FG and further being extended in the context of the ICT-PSP project BRISEIDE (www.briseide.eu) and FP7 i-Tour (www.itourproject.com). More specifically FG will extend the existing 3D client to ensure compliancy with CityGML (at least up to LOD2) and the proposed ADEs (resulting from T.3.2). The involvement of the other partners will be minimal (0.5 MM each) and will be required to translate all the interfaces, messages etc. into the various languages (i.e.: English (original), Italian, French, Flemish, German, Rumanian, Croat, Serb, Greek, Malti.
To ensure compliancy with Directive 2003/4/EC on Freedom of access to information, the web client will also ensure that
- Data generated by i-SCOPE services on solar potential assessment and noise simulation will be public via the project webs to via the 3D Geobrowser developed by Graphitech. For this reason there will be a public version of the 3D Geobrowser, to be customised for use by the public, requiring minimal (or no) configuration, simply ensuring an easy-to-use interface to such environmental data.
- Similarly to the previous item, data on noise mapping will be also publicly available from the portal of the project via the 3D Geobrowser, in accordance to Article 8 of the Directive 2003/4/EC.
This will ensure that Article 1 - point a) and c) of the Directive will be satisfied as well as Article 7 point 1.
Additionally a form will be also included within the web client to allow access upon request to environmental information created through i-SCOPE services (for instance the value of noise at given level). This form will allow citizens to formulate requests automatically and to have them forwarded to the relevant point of contact at the public administration, in accordance with Article 3 of the Directive.

T.4.7 Mobile client for citizens
Task leader: REG Technical partners: FG, GEOF, EGEO, CEIT, VUB, IND, GSYS
Under coordination of REG, this task will bring to the development of the mobile client, which will leverage on the following existing mobile technologies. All of them are already available as Java application (for Android) therefore ensuring in principle complete integration. The following components will be integrated to ensure a consistent experience on the user side
- FG which has developed mobile Augmented Reality Functionalities as well as support for routing as OpenLS.
- VUB which has developed noise monitoring mobile applications (LGPL-licensed) designed to run on several mobile devices as part of the NoiseTube project (initially started by Sony CSL for FP6 project IAGora (http://noisetube.net).
- CEIT which has developed mobile technologies to provide routing instructions to visually impaired users through visual, voice-based and Braille output (through connection to mobile Braille display).
The respective aforementioned partners will cooperate to integrate the various components within a consistent client-side application. To this extent the architectural design stage (with n. T.1.7) will be essential to ensure





proper connection between the different already available components through appropriately designed software interfaces.
Similarly to the previous task the other partners (GEOF, EGEO, IND, GSYS) will be involved only (minimal effort of 0.5 MM each) to translate all the interfaces, messages, etc. into the various languages (i.e.: English (original) Italian, French, Flemish, German, Rumanian, Croat, Serb, Greek, Malti

T.4.8 Security and privacy enforcement
Task leader: C3L Technical partners: GIST
This task will be carried on by C3L with support by GIST. It will rely on the outcome of tasks T.1.6 and T.3.3 to defines the actual enforcement mechanisms of the smart city services, particularly those dealing with user-generated information and location based content. This is likely to be based on asymmetric cryptographic implementations of a privilege management framework using the structures of ITU-T X.509 PMI. For 3rd Generation UMTS terminals with an ISIM a single-sign on approach to authorisation will also be developed in parallel with contributions in the standards domains of ETSI and 3GPP. Both asymmetric and symmetric approaches will be developed towards a common authentication and authorisation framework extending control of data exposure through a "Consent validation and management" framework. The task therefore address issues such as:
- User Identity.
- Privilege.
- Digital Rights Management.
- Spatio-temporal rights/leases
- Relationship to "openness".
The task will also explore implication of the adoption of standard such as OASIS WS-Security/SAML/XACML as well as take account of results from standardisation efforts ongoing in ETSI, ISO and ITU-T on privacy enhancing consent and authorisation frameworks
This task will consider the integration with common consumer-facing authentication and identification systems as deployed in popular "social Web" sites. The exact selection here will depend both upon the evolving use cases and fast moving technology landscape, but is likely to emphasise the OAuth and OpenID protocols. Various versions of OAuth and OpenID are quite widely deployed in mainstream consumer sites (general social media sharing, and mapping/location themed), including Facebook, Twitter, MySpace, Flickr, Foursquare, Layar and many others. In application scenarios that involve any need to integrate end-user data with other information, OAuth (or some similar successor) is likely to be the preferred way to gain access. OAuth provides mechanisms for Web sites to allow their users to grant data access privileges to 3rd-party sites and services, to manage and revoke these permissions. C3L will evaluate the use of OAuth and related protocols in the context of i-SCOPE application scenarios.

T.4.9 Integration of new smart services with existing service infrastructures
Task leader: REG Technical partners: FG, EPS, GEOF, EGEO, CEIT, VUB, MOSS, IND, C3L
This task, coordinated by REG, integrate new services, developed in the context of T.4.1, T.4.2, T.4.3, T.4.4, T.4.5 with available services available from existing open source frameworks (e.g. GeoServer, GeoNetwork), necessary to provide low level functionalities, as well as services already available from BRISEIDE. In particular REG will ensure that existing spatio-temporal web services will be extended to provide the necessary raster algebra functionalities required to perform comparison, over time, between simulated and real-life data both in the case of solar potential assessment and noise simulation

Person-Months per Participant:

| Participant number [*] | Participant short name [**] | Person-months per participant |
|---|---|---|
| 1 | FG | 51.00 |
| 2 | EPS | 12.00 |
| 3 | GEOF | 9.00 |
| 4 | EGEO | 9.00 |
| 5 | CEIT | 20.50 |
| 6 | VUB | 20.50 |

# WT3:
## Work package description

### Person-Months per Participant

| Participant number [10] | Participant short name [11] | Person-months per participant |
|---|---|---|
| 7 | WOSS | 23.00 |
| 8 | GIST | 2.00 |
| 9 | IND | 13.00 |
| 10 | C3L | 7.00 |
| 11 | REG | 10.00 |
| 12 | GSYS | 1.00 |
| | Total | 178.00 |

### List of deliverables

| Deliverable Number [41] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [42] | Dissemination level [43] | Delivery date [44] |
|---|---|---|---|---|---|---|
| D4.1 | Smart Cities Set of Services | 7 | 91.00 | P | PU | 24 |
| D4.2 | Smart Cities Web Client | 1 | 19.00 | P | PU | 24 |
| D4.3 | Smart Cities mobile Client Description | 1 | 1.00 | R | PU | 24 |
| D4.4 | Smart Cities mobile Client | 11 | 33.00 | P | PU | 24 |
| D4.5 | Smart Cities Service "Toolkit" description | 11 | 34.00 | R | PU | 24 |
| | | Total | 178.00 | | | |

### Description of deliverables

D4.1) Smart Cities Set of Services: It covers the technical results of the Tasks T4.2., T.4.3. T4.4., T.4.5. The result will be a prototype of each of the services [month 24]

D4.2) Smart Cities Web Client: It covers the technical result of the Tasks T4.6. The result will be a prototype of each of the Web Client integrating each of the services developed within the WP. [month 24]

D4.3) Smart Cities mobile Client Description: It describes the Smart Cities mobile Client. The description covers both a technical and a non technical view. The technical view explains how to install and configure the client. The non-technical view explains how to use it from a users point of view. [month 24]

D4.4) Smart Cities mobile Client: It covers the technical result of the Tasks T4.7. The result will be a prototype of each of the mobile Client integrating each of the services developed within the WP. [month 24]

D4.5) Smart Cities Service "Toolkit" description: It describes the toolkit developed within WP4. This includes: - Smart Services developed within the WP (i.e. D.4.01). The description covers both a technical and a non technical view. The technical view explains how the service can be triggered and its configuration. The non-technical view explains how to use the service and which results to expect from a users point of view. - The deliverables also describes the Smart Cities Web Client (i.e. D.4.02). The description covers both a technical and a non technical view. The technical view explains how to install and configure the client. The non-technical view explains how to use it from a users point of view. - Finally the deliverable describes the Smart Cities mobile Client (i.e. D.4.03). The description covers both a technical and a non technical view. The technical view explains how to install and configure the client. The non-technical view explains how to use it from a users point of view. [month 24]



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Work package description

### Schedule of relevant Milestones

| Milestone number [39] | Milestone name | Lead beneficiary number | Delivery date from Annex I [40] | Comments |
|---|---|---|---|---|
| MS5 | Integrated i-SCOPE service toolkit available for download from the project website | 11 | 24 | |

# WT3:
## Work package description

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**Description of Work (Annex I)**

| Work package number [3] | WP5 |
|---|---|
| Work package title | Pilots deployment and assessment |
| Start month | 17 |
| End month | 36 |
| Lead beneficiary number [4] | 4 |

**Objectives**

The goals of this work package are:
- To define the deployment and evaluation methodology (T 5.1)
- To perform a number of assessment stages (T 5.1, T 5.3, T 5.4), involving city administrations, which will provide the relevant feedback to development team leading to the final release of i-SCOPE toolkit.
- To train operators from city administration to use i-SCOPE (T 5.5).

**Description of work and role of participants**

The overall pilot development lifecycle will be scheduled according to the following process:

T 5.1 Definition of pilot deployment plan and evaluation methodology
Task leader: EGEO Pilot partners: LAZ
Partner EGEO will be responsible to define a pilot, with support of LAZ (representing the final users) deployment plan at 3 different stage of development (alpha, beta, final) which accounts for:
- Availability of various components at various stage of release.
- Availability of relevant data from the city administration in the correct format.
- Availability of the relevant users.
- Availability of the necessary equipment: hardware or software infrastructure.
- Any other constrain, i.e. formal, administrative, cultural, legal, ethical (e.g. when involving users with impairments) which may arise from the pilot.

Additionally, during this task, EGEO will elaborate the methodology for testing and assessment of developed i-SCOPE system. The series of trials for the first (alpha) and interim (beta) prototypes will be designed. This task will define the qualitative and quantitative outcome of each of testing phases. The necessary simulated situations will be designed to guarantee the exhaustive system testing. This task will define functions of the trials, the number of users involved and their profiles (e.g. the level of familiarity with computer and navigation devices).

T 5.2 First trials and validation of the integrated system
Task leader: EGEO Technical partners: FG, EPS, GEOF, CEIT, VUB, MOSS, IND, REG Pilot partners: GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
Through the involvement of the different pilot-related partners, the prototype system will be tested in the different use cases defined in WP1. Scenario-based usability testing complemented with experts' inspection will provide accurate usability assessment. We expect to find different sets of problems because a wide variation in tasks as well as applied different usability assessment methods. The developed evaluation methodology will enable system validation and quantification of relevant human-computer interaction characteristics, accordingly identifying possible inherent weaknesses.
This task will organize the output of the performed trials into the list of instructions and recommendations for further improvement of the system. Results from this validation stage will be fed back to the development team for the release of the final Pilots.

T 5.3 Pilot deployment and validation
Task leader: EGEO Technical partners: FG, EPS, GEOF, CEIT, VUB, MOSS, IND, REG Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
This task will ensure deployment of pilots for each of the involved pilot related partners. Under coordination of EGEO, pilots will be set up and configured to operate in daily real-life scenarios. Smart services will be run on





hardware available to city administration or, alternatively on the server infrastructure provided for the project and maintained by REG. This task will last 12 months.
During the operational activity of the pilots, data on system use will be collected both automatically (e.g. through system log) and manually (e.g. by setting up web-based questionnaires to be used by users of the system to provide feedback). Results from system and users' feedback will be used to provide continuous improvement of the system. The completion of the operational stage will produce a list of recommendation that will be subsequently implemented during this task to deliver the final system.
The results of the pilot stage and their validation will be collected within a book (to be published as part of the project activities) which will be made available from the website as example of best practices.

T 5.4 Optimisation and release of final system
Task leader: EGEO Technical partners: FG, EPS, GEOF, CEIT, VUB, MOSS, IND, C3L, REG
During this task the various technical partners will implement applicable recommendations and improvements emerged from the pilot stage, bringing to the release of the final i-SCOPE toolkit. The latter will be available as Open Source through SourceForge or similar public repositories.

T 5.5 Training
Task leader: EGEO Technical partners: EPS, GEOF, CEIT, VUB, MOSS, IND, REG Pilot-partners GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
To foster the creation of the early adopters' community, i-SCOPE technical partners will organize, under coordination of EGEO, a set of tutorials and create related training materials with the aim of showing results to interested stakeholders, citizens and practitioners and giving them the chance to get in direct contact with i-SCOPE technology. Such tutorials will also enable to collect external feedback on i-SCOPE results.

**Person-months per Participant**

| Participant number [5] | Participant short name [6] | Person-months per participant |
|---|---|---|
| 1 | FG | 22.00 |
| 2 | EPS | 2.50 |
| 3 | GEOF | 4.00 |
| 4 | EGEO | 23.00 |
| 5 | CEIT | 3.50 |
| 6 | VUB | 3.50 |
| 7 | MOSS | 2.00 |
| 9 | IND | 2.50 |
| 10 | C3L | 1.00 |
| 11 | REG | 8.00 |
| 12 | GSYS | 4.50 |
| 13 | OS | 2.00 |
| 14 | INDJ | 7.00 |
| 15 | BAIA | 4.50 |
| 16 | ZAD | 4.50 |
| 17 | ZAG | 4.50 |
| 18 | WIEN | 2.50 |
| 19 | DRAMA | 4.50 |
| 20 | NCC | 2.50 |

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## Work package description

**Person-Months per Participant**

| Participant number [40] | Participant short name [41] | Person-months per participant |
|---|---|---|
| 21 | INFOTN | 4.50 |
| 22 | LAZ | 6.50 |
| | Total | 119.50 |

**List of deliverables**

| Delive-rable Number [44] | Deliverable Title | Lead benefi-ciary number | Estimated indicative person-months | Nature [45] | Dissemi-nation level [46] | Delivery date [47] |
|---|---|---|---|---|---|---|
| D5.1 | Methodology for testing the system | 4 | 7.00 | R | PU | 19 |
| D5.2 | Evaluation and assessment of the first prototype | 4 | 26.00 | R | PU | 22 |
| D5.3 | Report on Pilots in use | 4 | 39.00 | R | PU | 30 |
| D5.4 | Guidelines and best practices on pilots and their validation | 4 | 5.00 | R | PU | 36 |
| D5.5 | Final i-SCOPE toolkit | 4 | 24.00 | D | PU | 36 |
| D5.6 | Training Materials #1 | 4 | 5.50 | O | PU | 23 |
| D5.7 | Training Materials #2 | 4 | 5.50 | O | PU | 33 |
| D5.8 | Training Materials #3 | 4 | 5.50 | O | PU | 36 |
| | | Total | 119.50 | | | |

**Description of deliverables**

D5.1) Methodology for testing the system: The report will describe in details the evaluation methodology of the i-SCOPE system, including trials of the prototypes, qualitative and quantitative parameters to be assessed etc. [month 19]

D5.2) Evaluation and assessment of the first prototype: The report will contain the results and analysis of the first prototype evaluation and recommendations for further development. [month 22]

D5.3) Report on Pilots in use: The report will summarize experiences from the various pilots in operational scenarios, including collected data on system use, users' feedback, etc. [month 30]

D5.4) Guidelines and best practices on pilots and their validation: The experience collected during the pilot stage, as well as the recommendations emerging from the users will be collected and edited within a comprehensive book. The book will be printed through a publisher to be identified with in the course of the project. [month 36]

D5.5) Final i-SCOPE toolkit: Final i-SCOPE system which will be released as Open Source software after a final stage of development, accounting for the recommendations emerged at pilot stage. [month 36]

D5.6) Training Materials #1: Set of training materials and tutorials with the information on how to deploy, configure, use the i-SCOPE technology. This will include printed as well as multimedia material. [month 23]

D5.7) Training Materials #2: Second and updated version of training materials and tutorials with the information on how to deploy, configure, use the i-SCOPE technology. This will include printed as well as multimedia material. [month 33]



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D5.8) Training Materials #3: Third and consolidated version of training materials and tutorials with the information on how to deploy, configure, use the i-SCOPE technology. This will include printed as well as multimedia material. [month 36]

**Schedule of relevant Milestones**

| Milestone number [48] | Milestone name | Lead benefi-ciary number | Delivery date from Annex I [49] | Comments |
|---|---|---|---|---|
| MS6 | Training methodology | 4 | 19 | |

# WT3:
## Work package description

| Project Number * | 297284 | Project Acronym * | i-SCOPE |
|---|---|---|---|

**Work package description**

| | |
|---|---|
| Work package number * | WP6 |
| Work package title | Awareness, networking and dissemination |
| Start month | 1 |
| End month | 36 |
| Lead beneficiary number * | 5 |

**Objectives**

The objective of this WP are:
- To make the research results understandable to the public and policy makers through:
- The project website and social networks (T.6.1)
- Publications and dissemination activities (T.6.2).
- Events involving citizens (T.6.3).
- Events involving experts (e.g. workshops, conferences) (T.6.6)
- To activate dialogue and community participation with a network of other relevant initiatives as well as with ICT PSP joint working group (T.6.4).
- To establish interrelated regionally rooted stakeholder networks through the creation of a Smart City 3D Services (SC3S) Living Lab (T.6.5).
- To promote an i-SCOPE challenge to incentive take-up of i-SCOPE results and early adoption by interested citizens (in the case of mobile scenario) (T.6.3 Awareness initiatives targeted to citizens).

**Description of work and role of partners**

T.6.1 Project website and web 2.0 social networks
Task leader: FG
At the beginning of the project the coordinator (FG) will set-up a project website. The final intermediate results of the project will be available via a project website that will be accessible to all, and have a restricted area to project partners to serve as a discussion platform.
Also other web 2.0 social networks will be used by the partners to promote the project and its initiatives, such as Facebook, Twitter, and LinkedIn. The website and the web 2.0 accounts will be maintained by FG.

T.6.2 Dissemination plan and publications
Task leader: FG Technical partners: EPS, CEOF, EGEO, CERT, VUB, MOSS, GIST, IND, C3L, REG, OS
The aim of this task is to define a dissemination plan detailing all dissemination activities. The dissemination plan will reviewed every six months to take into account the project achievements. The plan will provide openness to all the developments in order to raise awareness for the project and applied standards.
Along the project the partners, under coordination of partner FG, will be involved in the publication of articles on scientific newspapers and peer-reviewed conferences, journals and books. The approved publications will be available on the internal document repository of the consortium and those with appropriate copyright permissions will be publicly available through the i-SCOPE website.
The project intermediate results will also be presented in form of papers and presentation in various conferences related to the following project topics:
- Smart Cities
- Sustainability in cities.
- Inclusive and Web-Accessibility.
- Urban Technologies

The aim of the task is also to deliver publications targeted to generic public. This will include design and production of project flyers, the brochure and newsletters to support the awareness and promotion of the i-SCOPE project its vision and concept. Project flyers will serve as i-SCOPE business card and will be widely distributed among general audience. The design of the brochure will revolve around the concept of a high quality



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cover that allows the inclusion of loose single pages within with a printout of 5000 units. The brochures will provide advanced information on project activities. The newsletters will be issued every six months and will cover the current progress of the project. The newsletters will be freely available through the project web website.

T.6.3 Awareness initiatives targeted to citizens
Task leader: LAZ Technical partners: EGEO, OS Pilot-partners GSYS, IND, BAIA, ZAD, ZAG, WIEN, GRAMA, AEWC, INFOTN, LAZ
This task, coordinated by LAZ, will take care of promoting awareness among citizens, via a series of workshops and presentations at local initiatives within the partners' network. Within these initiatives the project will be explained and when the project will be in an advanced phase, there will also be the possibility to test the prototypes. The following partner will organise awareness-raising events at the following as detailed below:
- IND and BAIA in Baia Mare / Romania conference / seminar and workshop on developing intelligent services towards the Public Authorities and the active involvement of the citizens and civil society in further developing and using such instruments
- BAIA in Baia Mare / Romania open day to present the proposed solutions to the citizens and to collect feed-backs and further requirements from them
- IND has planned 2 presentations organised targeted to environmental and economy related organisations, 1 advertisement campaign on local media (newspaper, radio, TV), 1-2 informative meetings with citizens
- WIEN has planned 5+ presentations to disabled association and at least 3 press releases
- ZAG has planned, an advertisement campaign for citizens during the events on Zagreb Faire, a presentation for citizens on Zagreb City Tribune, a workshop for associations that work in the field of renewable energy sources, a workshop for experts from Croatian Chambers of architects, machinery engineers and electrical engineers
- ZAD has planned 3 presentations to associations (NGOs, public institutions, SMEs etc.), 10 press releases, 1 advertisement campaign, 3 press conferences
- GRAMA has planned 4 presentations to 10 associations of mobility facing people, 1 advertisement campaign, a Press conference by the Deputy Mayor followed by continues press releases (up to 20 for the whole duration of the project).
- GSYS has planned, with support from MRA (Malta Resources Authority – See Annex I) a presentation MEPA (Malta Environment & Planning Authority), a presentation to Local Councils within the study area, 2 press releases
- NCC has planned publication of project results to CityLife to 120,000 homes, a presentation to Newcastle Climate Change Partnership, a presentation to various community groups, a presentation to Newcastle Community & Voluntary Sector, a presentation to NewcastleGateshead Initiative, a presentation to wider business membership groups such as Chambers of Commerce, a publication in local press & radio, set-up of stalls at festivals/events including Newcastle Green Festival (12 000 visitors)
- INFOTN has planned to feature articles and integration into the public website signposting users to the services, several targeted press releases via local papers, contact with known users groups where appropriate. Based on specific experiences and expertise INFOTN will also organise workshops with local stakeholders to increase visibility and awareness of project's achievements.
- LAZ has several press releases, public advertisement of the services through their websites as well as other initiatives targeted to citizens through a series of targeted campaigns.
- VELC has planned advertisement of the portal through their website and through presentations to local community.
The task will be lead by LAZ, that as public body can ensure the best citizen participation, and will collaborate with the other listed partners.
Besides these events it is worth noting that citizens will be directly involved in the collection of data within cities where the noise simulation pilot will be deployed. This will be an essential part of the project and the crowdsourcing approach fostered is being considered at the heart of this task (see WP4).
During this task EGEO will care of the development an i-SCOPE challenge to incentive early adoption of i-SCOPE technologies by interested citizens (in the case of mobile scenario), by involving all administrations and communities of stakeholders in order to maximise the impact of the initiative.
The involvement of the citizens will be ensured in a number of ways including, but not limited to:
- Starting of a forum (either from the website or via existing social network sites) for each city involved where citizens can communicate with the public administration, promote initiatives in the context of the project, highlight on possible issues, suggest further scenarios of use.
- Promotion of a contest, at EU level, on best possible use of the technologies developed by i-SCOPE context. The contest will be first run at local level, for each of the city administrations involved in i-SCOPE. The contest

will be designed to promote citizens to contribute with their own ideas on development of potentially high impact. The call of the contest will be written to stimulate:
o Revolutionary ideas that are likely to change smart cities in the near future.
o Challenges to existing assumptions prevalent in the smart cities community.
o Novel applications and that can create new services for smarter cities.
o New applications of technologies developed by i-SCOPE.
The best ideas collected by citizens at local level by a local panel set by each local administration will be then shortlisted for the international contest among all cities involved. A committee, selected among and (if necessary) beyond project partners, will select the best ideas that will be then publicly awarded during the i-SCOPE international event. The various prizes will be either in cash or "in kind", through engagement of sponsors such as industrial players (e.g. could provide a piece of equipment as prize) or other sponsors.
At the beginning of the project all project administration will have to draw a community involvement plan, which will be presented during the kick-off meeting, to show, from the very first stages, how the communities will be involved through the project. The plan will be reviewed every 6 months during each project meeting and will be regularly updated through a specific section within the reports.

T.6.4 Linkage with ICT PSP joint working group, with other local and EU projects
Task leader: FG Technical partners: EPS, EGEO, CEIT, GIST Pilot-partners: GSYS, INDJ, BAIA, ZAD, ZAG, WIEN, DRAMA, NEWC, INFOTN, LAZ
Particular attention will be paid to networking with other projects through the activities of other EU projects (e.g. LIFE 2.0 http://www.life2project.eu/) and most notably with those belonging to the ICT PSP joint smart cities portfolio. Experts from other projects will be invited to events of the projects (public sessions, workshops) and will be also involved in the Stakeholders Board (see section B3.2a. Project management) in order to:
- Ensure close ties with other ICT PSP projects of the smart cities portfolio.
- Verify, as part of quality procedures, that all requirements and other results are handled successfully and efficiently and their compliance with the overall ICT-PSP framework
- Maximise impact of several project by developing joint development agendas which maximizes synergies between different projects
- Maximise sharing of knowledge among partners.
- Maximise awareness through joint openness activities (joint workshops, conferences etc.).
- Enlarge community of stakeholders networking with city administrations involved in other ICT PS projects.
- Facilitate exchange of best practices among different stakeholders.

T.6.5 SC3S (Smart City 3D Services) Living Lab
Task leader: CEIT Technical partners: FG, EGEO Pilot-partners: GSYS, INDJ, BAIA, ZAD, ZAG, WITN, DRAMA, NEWC, INFOTN, LAZ
This task, coordinated by CEIT, will promote creation of a SC3S (Smart City 3D Services) Living Lab with involvement of communities and city administrations. Attention will be paid to introducing the project pilots within the Living Lab Network, ensuring that they will both integrate local actors' participation and municipality involvement.
The leader of this task will be Vienna, in cooperation with CEIT and FG, due to their experience in Living Labs and their activities with the Living Lab Network.

T.6.6 Workshops and i-SCOPE conference
Task leader: GIST Technical partners: FG, EPS, GEOP, EGEO, CEIT, VUB, MOSS, IND, C3L, REG
Pilot-partners: LAZ
The project foresees a number of workshops which will be organised to:
- Collect requirements from relevant users and stakeholders
- Ensure liaison with existing projects.
- Disseminate results and achievements of the project to the wider community beyond the consortium.
Workshops will be organised both at premises of the partners and in the context of relevant events e.g. international conferences, EU-promoted events, relevant fairs etc. on the following themes:
- Mobile technologies and smart cities (FG).
- Inclusive routing and open source data (EPS).
- Solar potential assessment (EGEO).
- Inclusive technologies for smart cities (CEIT)
- Noise mapping through crowdsourcing (VUB).
- Smart services platforms (MOSS).
- Processing services for smart services (IND).




# WT3:
## Work package description


- Privacy, security and smart services (C3L).
- Spatial Data Infrastructures and smart city services (REG)
- GIST will organise a number of workshop in the context of CEN TC 287 on various standardisation activities for smart services including but not limited to, CityGML, OpenLS.
Last but not least this task will see the organisation of a major EU conference on "Smart City 3D Services" to be organized by LAZ. This conference will not only present results from the project but it will also gather the international community in the domain of relevance marking a key moment during the project duration.

**Person-Months per Participant**

| Participant number [10] | Participant short name [11] | Person-months per participant |
|---|---|---|
| 1 | FG | 10.00 |
| 2 | EPS | 1.50 |
| 3 | GEOP | 1.50 |
| 4 | EGEO | 3.50 |
| 5 | CEIT | 3.50 |
| 6 | VUB | 1.50 |
| 7 | MOSS | 1.50 |
| 8 | GIST | 4.00 |
| 9 | IND | 1.50 |
| 10 | C3L | 1.00 |
| 11 | REG | 1.00 |
| 12 | GSYS | 3.00 |
| 13 | OS | 1.00 |
| 14 | INDJ | 5.00 |
| 15 | BAIA | 4.50 |
| 16 | ZAD | 4.50 |
| 17 | ZAG | 4.00 |
| 18 | WIEN | 2.50 |
| 19 | DRAMA | 4.00 |
| 20 | NCC | 4.00 |
| 21 | INFOTN | 4.00 |
| 22 | LAZ | 8.00 |
| | Total | 75.10 |

**List of deliverables**

| Deliverable Number [9] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [34] | Dissemination level [35] | Delivery date [36] |
|---|---|---|---|---|---|---|
| D6.1 | Web-Site and web2.0 social networks | 1 | 6.00 | R | PU | 6 |

# WT3:
## Work package description

| Deliverable Number [#] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [40] | Dissemination level [41] | Delivery date [42] |
|---|---|---|---|---|---|---|
| D6.2 | Dissemination plan #1 | 1 | 1.00 | R | PU | 6 |
| D6.3 | Dissemination Plan #2 | 1 | 1.00 | R | PU | 12 |
| D6.4 | Dissemination Plan #3 | 1 | 1.00 | R | PU | 18 |
| D6.5 | Dissemination Plan #4 | 1 | 1.00 | R | PU | 24 |
| D6.6 | Dissemination Plan #5 | 1 | 1.00 | R | PU | 30 |
| D6.7 | Linkages to other projects #1 | 1 | 4.00 | R | PU | 12 |
| D6.8 | Linkages to other projects #2 | 1 | 4.00 | R | PU | 24 |
| D6.9 | Linkages to other projects #3 | 1 | 5.00 | R | PU | 36 |
| D6.10 | Living Lab #1 | 5 | 7.50 | R | PU | 18 |
| D6.11 | Living Lab #2 | 5 | 7.50 | R | PU | 36 |
| D6.12 | Dissemination Material | 1 | 0.50 | R | PU | 36 |
| D6.13 | External Publishing | 1 | 0.50 | R | PU | 36 |
| D6.14 | Final dissemination report | 1 | 0.50 | R | PU | 36 |
| D6.15 | Citizens involvement report #1 | 22 | 3.10 | R | PU | 1 |
| D6.16 | Citizens involvement report #2 | 22 | 3.10 | R | PU | 6 |
| D6.17 | Citizens involvement report #3 | 22 | 3.10 | R | PU | 12 |
| D6.18 | Citizens involvement report #4 | 22 | 3.10 | R | PU | 18 |
| D6.19 | Citizens involvement report #5 | 22 | 3.10 | R | PU | 24 |
| D6.20 | Citizens involvement report #6 | 22 | 3.10 | R | PU | 30 |
| D6.21 | Citizens involvement report #7 | 22 | 3.10 | R | PU | 36 |
| | | Total | 62.20 | | | |

D6.1) Web-Site and web2.0 social networks: Description of project website and web 2.0 achievements after six months of operations. [month 6]

D6.2) Dissemination plan #1: Description of planned dissemination activities and strategies, including first list of dissemination activities (planned conferences, publications, presentations. Also includes description of awareness initiatives targeted to citizens. [month 6]

D6.3) Dissemination Plan #2: Description of planned dissemination activities and strategies, including first list of dissemination activities (planned conferences, publications, presentations. Also includes description of awareness initiatives targeted to citizens. [month 12]

D6.4) Dissemination Plan #3: Description of planned dissemination activities and strategies, including first list of dissemination activities (planned conferences, publications, presentations. Also includes description of awareness initiatives targeted to citizens. [month 18]

D6.5) Dissemination Plan #4: Description of planned dissemination activities and strategies, including first list of dissemination activities (planned conferences, publications, presentations. Also includes description of awareness initiatives targeted to citizens. [month 24]





D6.6) Dissemination Plan #5: Description of planned dissemination activities and strategies, including first list of dissemination activities (planned conferences, publications, presentations. Also includes description of awareness initiatives targeted to citizens. [month 30]

D6.7) Linkages to other projects #1: A report providing a comprehensive description of linkages to other projects, best practices, ICT PSP joint working group. The report documents also i-SCOPE workshops with experts and citizens for promoting awareness. [month 12]

D6.8) Linkages to other projects #2: A report providing a comprehensive description of linkages to other projects best practices, ICT PSP joint working group. The report documents also i-SCOPE workshops with experts and citizens for promoting awareness. [month 24]

D6.9) Linkages to other projects #3: A report providing a comprehensive description of linkages to other projects best practices, ICT PSP joint working group. The report documents also i-SCOPE workshops with experts and citizens for promoting awareness. [month 36]

D6.10) Living Lab #1: Description of Living Lab and presentation of examples. Description of the integration of i-SCOPE into Living Labs. [month 18]

D6.11) Living Lab #2: Description of Living Lab and presentation of examples. Description of the integration of i-SCOPE into Living Labs. [month 36]

D6.12) Dissemination Material: A collection of dissemination material such as power point, folders/flyers, posters, newsletters [month 36]

D6.13) External Publishing: The full list of publications edited by the project's partners. [month 36]

D6.14) Final dissemination report: Documentation of all dissemination strategies and activities [month 36]

D6.15) Citizens involvement report #1: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. The first deliverable is presented at the project kick-off. [month 1]

D6.16) Citizens involvement report #2: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. [month 6]

D6.17) Citizens involvement report #3: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. [month 12]

D6.18) Citizens involvement report #4: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. [month 18]

D6.19) Citizens involvement report #5: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. [month 24]

D6.20) Citizens involvement report #6: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. [month 30]

D6.21) Citizens involvement report #7: Contains description on involvement of citizens regarging both past activities and plan for the reminder of the project. This deliverable is updated on a six-months basis. [month 36]

| Milestone number [#] | Milestone name | Lead beneficiary number | Delivery date from Annex I [43] | Comments |
|---|---|---|---|---|
| MS9 | Website and web2.0 social networks are online | 1 | 6 | |
| MS10 | Final conference organised and all reports from all dissemination activities are ready | 1 | 36 | |

# WT3:
## Work package description

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**One form per Work Package**

| | |
|---|---|
| Work package number [3] | WP7 |
| Work package title | IPR management and exploitation |
| Start month | 7 |
| End month | 36 |
| Lead beneficiary number [4] | 3 |

**Objectives**

The objective of this WP is to delineate a common strategy towards exploitation of the i-SCOPE tangible and intangible results. This comprises:
- Editing of an exploitation plan, to be regularly updated during the project (T.7.1)
- Definition of IPR and Licensing policy (T.7.2).
- Creation of a market and business plan (T.7.3).
- Definition of a Service Level Agreement (SLA) (T.7.4).
- Formal creation of a S3S EEIG (Smart 3D Services European Economic Interest Grouping) which will have the challenging task to extend the scope of the project beyond the project duration and EU funding (T.7.5).

**Description of work and role of partners**

T.7.1 Exploitation plan
Task leader: FG Technical partners: EPS, GEOF, EGEO, CEIT,VUB, MOSS, GIST, IND, C3L, REG, OS
Each partner will develop a detailed exploitation strategy and this will contain a plan on how they intend to exploit the outcomes from this project. Partners' versatile backgrounds will bring various points of views on exploitable potential of project outcomes. The exploitation activities will be built upon the market state-of-the-art analysis in terms of key application domains, analogous initiatives and their solutions. Each of the individual exploitation plans will be integrated by FG into the overall exploitation plan, taking into account the particular strategy and market positioning of those partners involved. Under leadership of FG, this task will gather the industrial players as well as developer partners of i-SCOPE to define all aspects related with copyright and licensing issues. The exploitation activities achieved by the project consortium will consist of promoting, advertising and commercializing the data and tools developed within the project.

T.7.2 IPR & Licensing policy
Task leader: GEOF Technical partners: FG, EPS, EGEO, CEIT, VUB, MOSS, IND, C3L, REG
During this task, under leadership of GEOF, the consortium will develop a copyright and software licensing model in order to identify specific terms of use of the results achieved during the course of the i-SCOPE project. The licence agreements to be defined will foresee specific needs of different i-SCOPE customers and potential resellers (e.g. final target users, data providers, industrial companies, etc.).
IPR terms will be also defined by the coordinator (FG) within the Consortium Agreement at the beginning of the project. This will include the state of the background IPR, the rights to use the foreground generated in the project and access rights. These will be the subject of specific IPR clauses, which will be developed according to the recommendations of the European Commission following the rules and regulations of the Grant Agreement.
In order to ensure most efficient dissemination of i-SCOPE solutions it will be primarily open platform, meaning that interested bodies will be able to use re-use its components. It will be accomplished by mechanisms like open source and also by publication of relevant documents. This approach will bring a further advantage to i-SCOPE which will leverage on the Open Source (OS) community in order to exploit the enormous potential of the OS world in terms of actual software component development and further dissemination. The OS community channel will amplify the potential adoption of the technology to a broader audience. On other hand scenario-related IPRs will be more restrictive.
For the software developed in i-SCOPE IPR strategies will be selected which will include handling of closed-source and also open-source software. Specifically the services will be developed as an Open Sources





and will made available through the most suitable channel (e.g. SourceForge, OSGeo etc.) to be detailed with in the Consortium Agreement.
This task also aims at defining a copyright and licensing policy. Through the involvement of experts from the industrial players of the consortium, licensing/clearings models, and of pricing models contributing to the i-SCOPE's business models for the take up of the project results as well as.
Consultants will be called upon, if appropriate, to deal with legal aspects and to ensure the compliancy with existing norms or directives during the definition of such agreements. The expertise of industrial consortium partners will be beneficial in matters related to IPR and licensing.

T.7.3 Market and business plan
Task leador: GEOF Technical partners: EGEC, IND, OS
After all exploitable outcomes of i-SCOPE project will be identified through Task 7.1 Exploitation plan, The task will produce a blueprint that will provide the foundation of any exploitation initiative through a Business Plan, thus benefiting from common knowledge and experience. The methodology revolves around the identification of the AS-IS business scenarios, thus identifying the target market, competition and internal competencies. This will lead to the creation of the appropriate i-SCOPE business model, where the corresponding market segments will be estimated according to the best practice models of market forecast.
To this extent both post-project technological and market feasibility of the i-SCOPE outcomes will be fostered.
After the conception of a business framework, the derivation of business models for different application cases derived from the i-SCOPE scenarios will follow.
A business model will be then defined by GEOF. Within the model the corresponding market segments will be estimated according to the best practice models of market forecast. This model will be the basis for a 5-year business including the required investments and the estimated Return on Investment (ROI). Final version of Market and business plan will be finished in M28 and will be essential to the creation of the S3S EEIG (refer to T.7.5 - Definition of S3S EEIG) with the final version following at M36.
In essence the methodology will produce a business plan that will also include a strategy, financial analysis with risk analysis. The risk analysis will be performed to detect any potential weakness and identify adequate solutions.
All i-SCOPE developments will be accompanied by the continuous technology and market watch by the involved partners, in order to identify the exploitation potential at the very early stage of the technology development. At a later project stage, the technology and the developed business models will be presented to the partners and evaluated by experts and members of the Stakeholders Board.
Consultants will be called upon by GEOF, if appropriate, to deal with legal aspects and to ensure the compliancy with existing norms or directives during the definition of such agreements. The expertise of the industrial consortium partners will benefit the project in matters related to IPR and licensing.
Legal and authorized use of the information freely available on the i-SCOPE web portal will be ensured.

T.7.4 Service Level Agreement (SLA)
Task leader: EGEO Technical partners: GEOF, MOSS, IND
i-SCOPE will also investigate how the use of a standardised open approach, based on OWS, allows also the definition of Service Level Agreement (SLA), identifying metrics (e.g. Average Speed to Answer – ASA, Time Service Factor – TSF, Turn Around Time – TAT, precision, accuracy etc.) required to define indicators such as availability, performance, service ability and, in more general terms, for guaranteeing Quality of Service (QoS).
To better manage i-SCOPE customers' expectations, the partners will explore specifics or performance criteria of how a service is to be delivered. This task will define how to measure and manage the i-SCOPE service.
This is clearly an extremely important item of documentation for i-SCOPE end user/customer. It will embrace a wide range of issues (e.g. service to be delivered, performance, tracking, reporting, problem management, legal compliance and resolution of disputes, customer duties and responsibilities, security, IPR and confidential information, termination).
The Service Level Agreement will define the relationship between the provider/ i-SCOPE and the recipient/user/customer. It will identify and define the customer's needs, provide a framework for understanding, simplify complex issues, reduce areas of conflict, encourage dialog in the event of disputes and eliminate unrealistic expectations.
EGEO will define minimum requirements for effective Service Level Agreement (service and management elements).
This task will also explore different approaches in Service Level management. Processes and methods of support as well as the management and reporting tools will be presented.

T.7.5 Definition of S3S EEIG (Smart 3D Services European Economic Interest Grouping)

Task leader: FG Technical partners: EPS, GEOF
This task, lead by FG, will bring to the creation of a formal legal entity (by M30) that groups the consortium partners as European Economic Interest Grouping (EEIG). This will be done through involvement of experts from EPS. The creation of an EEIG will allow establishing business based on the results of the market plan developed in T7.3 which will include the creation of a portal with e-commerce facilities.
European Economic Interest Grouping EEIG proposed as a best solution, as strategy for formalization of the modalities and the conditions that will govern the commercial exploitation of the project results. EEIG is a useful and very flexible legal instrument.
Partners in S3S EEIG will define needs and expectations, screen the legal database and prepare the establishing contract (statute).

| Participant number [9] | Participant short name [10] | Person-months per participant |
|---|---|---|
| 1 | FG | 8.00 |
| 2 | EPS | 1.70 |
| 3 | GEOF | 8.00 |
| 4 | FGFO | 10.00 |
| 5 | CERT | 1.00 |
| 6 | VUB | 1.00 |
| 7 | MOSS | 3.50 |
| 8 | GIST | 0.50 |
| 9 | IND | 7.50 |
| 10 | CSL | 1.00 |
| 11 | RCG | 1.00 |
| 13 | OS | 1.50 |
| | Total | 42.70 |

| Deliverable Number [11] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [12] | Dissemination level [13] | Delivery date [14] |
|---|---|---|---|---|---|---|
| D7.1 | Exploitation plan #1 | 1 | 4.25 | R | PU | 15 |
| D7.2 | Exploitation plan #2 | 1 | 4.25 | R | PU | 24 |
| D7.3 | IPR & licensing policy | 3 | 9.00 | R | PU | 36 |
| D7.4 | Market and business plan #1 | 3 | 4.75 | R | PU | 9 |
| D7.5 | Market and business plan #2 | 3 | 4.75 | R | PU | 36 |
| D7.6 | Service Level Agreement | 4 | 11.50 | R | PU | 21 |
| D7.7 | Report on creation of S3S EEIG | 1 | 4.20 | R | PU | 36 |
| | | Total | 42.70 | | | |





D7.1) Exploitation plan #1: - The goal of the deliverable is to guide partners in identification of exploitation objects that are specific for particular scenario or common on the project level. Furthermore it will help each partner develop their plan of exploitation activities where the partners will strengthen project's exploitation potential addressing in particular: - High connection to a number of other major EU projects (incl. ICT-PSP and other relevant ones in the umbrella of Energy and Smart Cities), who will work collectively with each other through Europe; - Contacts with industry and with the chain of stakeholders, data providers and users involved; - Collaboration with OS community; - Strong deployment activities and commercialisation of the Service. As market circumstances will change over time, Exploitation plan document will be developed in two phases. First exploitation plan document will be developed in M15 and will serve as starting point for development of IPR & licensing policy document as well as for creation of Market and business plan. [month 15]

D7.2) Exploitation plan #2: The Exploitation Plan #2 will be improving the analyses and outcomes of the Exploitation Plan #1. All the information will be considered as propaedeutic work for the business plan and major background of any commercial activities outgoing from the i-Scope Project. [month 24]

D7.3) IPR & licensing policy. The document will detail conditions for use of i-SCOPE platform, which will be available as open source, and on lease as a commercial product. The document will also address legal agreements with the users for exploitation purposes. The consortium will develop a copyright and software licensing model in order to identify specific terms of use of the results achieved during the course of the i-SCOPE project. The licence agreements to be defined will foresee specific needs of different i-SCOPE users (e.g. final target users, data providers, industrial companies, etc.). [month 36]

D7.4) Market and business plan #1: This document will set business goals, plans how to reach them and reasons why they are believed attainable. Market analysis will be made based on inputs provided by partners through questionnaires as part of the document. A market and business plan will be produced to delineate a common strategy towards exploitation of i-SCOPE results. Partners shall play a key role to identify a 5 years business plan including the required investments and the estimated ROI. First version of Market and business plan will be finished in M28 with the final version following at M36. [month 9]

D7.5) Market and business plan #2: This document will be the business plan review and update of Market and business plan #1. All the information, analysis and strategic issues will be mainly assessed and cross-checked with the contribution of all stakeholders and the stakeholders board members. The outcome will be an updated business plan ready to be used as basis for further business actions by the partners in order to concretely apply for commercial opportunities. [month 36]

D7.6) Service Level Agreement: Service Level Agreement (SLA): This shall mean specifications, protocols, system architectures and other similar guidelines related to multiservice system technologies that may be developed, adopted, published or otherwise made available by the i-SCOPE services. Whenever deployed, data providers will be able to clearly identify access to i-SCOPE services as regulated by the different rules as set forth by the SLA. [month 21]

D7.7) Report on creation of S3S EEIG: Report on creation of S3S EEIG will show strategy carried out for formalization of the modalities and the conditions that will govern the commercial exploitation of i-SCOPE results. [month 36]

| Milestone number [15] | Milestone name | Lead beneficiary number | Delivery date from Annex I [16] | Comments |
|---|---|---|---|---|
| MS11 | First Market and business strategy ready | 3 | 9 | |
| MS12 | Formal definition of the S3S EEIG | 3 | 36 | |
| MS13 | Final Market and business plan ready | 3 | 21 | |

# WT3:
## Work package description

| Project Number [1] | 297284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**One form per Work Package**

| | |
|---|---|
| Work package number [38] | WT3 |
| Work package title | Project coordination |
| Start month | 1 |
| End month | 36 |
| Lead beneficiary number [40] | 1 |

**Objectives**

The main objective of this WP are:
- To ensure all formal procedures, including contractual agreements, are properly dealt with (T.8.1).
- To ensure the project's goals and objectives are met in compliance with the project work plan (T.8.2)
- Risks are properly monitored (T.8.3) and relevant countermeasure taken.
- Highest quality standards are met (T.8.3).
- Costs are compliant with initial budget (T.8.4).

**Description of work and role of partners**

This WP will include routine and ad-hoc daily activities required to manage and supervise the project and to provide guide and advice to all partners. The responsibility for undertaking this WP will be the lead partner's (FG), who will appoint an overall Project Coordinator (PC).
A management structure will be deployed to ensure proper control over the project's activities (see section B3.2c Project management for further details). This will be based on the organization of several boards that will ensure proper implementation of the management strategy as well as adherence with administrative, financial, technical requirements. The objective is to ensure tracking of the activity to ensure completely satisfactory results and to guarantee the quality of planed milestones and deliverables.

T.8.1 Administrative project management
Task leader: FG with all other partners (for reporting)
This task includes the following activities:
- Definition of the Consortium Agreement (CA) at the start of the project. This will include definition of managing strategies and responsibilities,
- During the kick-off meeting, to be held at the leading partner's premises, the managing structure will be deployed. At this stage, members of the Project Office including the Data Manager (DM), Quality and Risk Manager (QRM), Operational Manager (OM) will be appointed (see section B3.2c Project management) together with Work Package Leaders (WPLs) and Task Leaders (TLs). Working teams according with relevant work packages will be defined. All partners will agree on their roles, responsibilities and scheduled activities.
- Registration of the Internet domain and start-up of the project internet website.
- Definition of the project's logo together with brochures, flyers templates for presentations and project-related documents.
- Deployment of a project communication infrastructures including virtual workspace for document sharing (e.g. WIKI or BSCW), a server for support of common software versioning (SVN). Communication between different partners will be fostered through regular calling of phone conferences as well as through information routing via e-mail.
- Deployment of a project management server, based on MS-Project or similar solution to allow access, through a protected web page, to all project partners and to the project officer, to the status of the project's ongoing activities.
- Definition of risk plan together with risk assessment, risk tracking strategies and relevant countermeasures.
- Editing of quarterly reports for internal use as well as for reporting to the European Commission.

T.8.2 Project Coordination
Task leader: FG





This task involves ensuring the proper coordination of the project including:
- Overall technical supervision
- Supervision of achievements as planned.
- Management of criticalities.
- Evaluation of technology results.
- Regular communication with the PO of the development of the project.

T.8.3 Project quality control
Task leader: FG
Additionally the necessary technical infrastructure for supporting, guiding and monitoring the development process will be set-up. Among the feature that will be part of the development environment are tools for task/bug tracking, developers' wiki, milestones and releases management, versioning, synchronous/asynchronous communication, etc. The development environment will be upgraded and checked during the project lifetime.
Quality management will performed by the continuous monitoring of the development process under the supervision of the Quality and Risk Manager (QRM) who will be responsible for editing of a quarterly risk analysis report.
In particular the QRM will be responsible also to monitor the section, within the report, called "community involvement plan" which is to be regularly updated by all the city administrations.

T.8.4 Project financial management
Task leader: FG
FG will be responsible for the financial monitoring in terms of cash flow and expenditures made within the context of the project. This will include assessment of the effort, in terms of man months, spent by each partner against the project plan and development. The task will also include submission of financial reports to the EC, and forwarding of project's funds to the various partners.

**Person-Months per Participant**

| Participant number [39] | Participant short name [41] | Person-months per participant |
|---|---|---|
| 1 | FG | 19.00 |
| 2 | EPS | 1.00 |
| 3 | GEOT | 1.00 |
| 4 | EGEC | 1.00 |
| 5 | CEIT | 1.00 |
| 6 | VUB | 1.00 |
| 7 | MOSS | 1.00 |
| 8 | GIST | 1.00 |
| 9 | IND | 1.00 |
| 10 | C3L | 1.00 |
| 11 | REG | 1.00 |
| 12 | GSYS | 1.00 |
| 13 | OS | 1.00 |
| 14 | INDJ | 1.00 |
| 15 | BAIA | 1.00 |
| 16 | ZAD | 1.00 |
| 17 | ZAG | 1.00 |
| 18 | WIEN | 1.00 |

# WT3:
## Work package description

| Participant number [#] | Participant short name [#] | Person-months per participant |
|---|---|---|
| 19 | DRAMA | 1.00 |
| 20 | NCC | 1.00 |
| 21 | INFOTN | 1.00 |
| 22 | LAZ | 1.00 |
| | Total | 40.00 |

| Deliverable Number [#] | Deliverable Title | Lead beneficiary number | Estimated indicative person-months | Nature [#] | Dissemination level [#] | Delivery date [#] |
|---|---|---|---|---|---|---|
| D8.1 | Project handbook | 1 | 1.00 | R | PU | 1 |
| D8.2 | Risk report #1 | 1 | 0.25 | R | PU | 3 |
| D8.3 | Risk report #2 | 1 | 0.25 | R | PU | 6 |
| D8.4 | Risk report #3 | 1 | 0.25 | R | PU | 9 |
| D8.5 | Risk report #4 | 1 | 0.25 | R | PU | 12 |
| D8.6 | Risk report #5 | 1 | 0.25 | R | PU | 15 |
| D8.7 | Risk report #6 | 1 | 0.25 | R | PU | 18 |
| D8.8 | Risk report #7 | 1 | 0.25 | R | PU | 21 |
| D8.9 | Risk report #8 | 1 | 0.25 | R | PU | 24 |
| D8.10 | Risk report #9 | 1 | 0.25 | R | PU | 27 |
| D8.11 | Risk report #10 | 1 | 0.25 | R | PU | 30 |
| D8.12 | Risk report #11 | 1 | 0.25 | R | PU | 33 |
| D8.13 | Risk report #12 | 1 | 0.25 | R | PU | 36 |
| D8.14 | Six-monthly progress report #1 | 1 | 1.00 | R | PU | 6 |
| D8.15 | Six-monthly progress report #2 | 1 | 1.00 | R | PU | 18 |
| D8.16 | Six-monthly progress report #3 | 1 | 1.00 | R | PU | 30 |
| D8.17 | Yearly report #1 | 1 | 1.00 | R | PU | 12 |
| D8.18 | Yearly report #2 | 1 | 1.00 | R | PU | 24 |
| D8.19 | Final report | 1 | 1.00 | R | PU | 36 |
| | | Total | 10.00 | | | |

D8.1) Project handbook. A document highlighting all procedures to be followed during the project including definition of deliverables, communication practices, publication guidelines, reporting instructions. [month 1]

D8.2) Risk report #1. Regular risk report including countermeasures. [month 3]

D8.3) Risk report #2. Regular risk report including countermeasures [month 6]





D8.4) Risk report #3. Regular risk report including countermeasures [month 9]

D8.5) Risk report #4. Regular risk report including countermeasures [month 12]

D8.6) Risk report #5. Regular risk report including countermeasures [month 15]

D8.7) Risk report #6. Regular risk report including countermeasures [month 18]

D8.8) Risk report #7. Regular risk report including countermeasures [month 21]

D8.9) Risk report #8. Regular risk report including countermeasures [month 24]

D8.10) Risk report #9. Regular risk report including countermeasures [month 27]

D8.11) Risk report #10. Regular risk report including countermeasures [month 30]

D8.12) Risk report #11. Regular risk report including countermeasures [month 33]

D8.13) Risk report #12. Regular risk report including countermeasures [month 36]

D8.14) Six-monthly progress report #1. Interim progress report on technical developments achieved. [month 6]

D8.15) Six-monthly progress report #2. Interim progress report on technical developments achieved. [month 18]

D8.16) Six-monthly progress report #3. Interim progress report on technical developments achieved. [month 30]

D8.17) Yearly report #1. Yearly report on technical as well as financial details on the project. [month 12]

D8.18) Yearly report #2. Yearly report on technical as well as financial details on the project. [month 24]

D8.19) Final report. Final comprehensive report to be submitted to the Commission [month 36]

| Milestone number [#] | Milestone name | Lead beneficiary number | Delivery date from Annex I [#] | Comments |
|---|---|---|---|---|
| MS14 | Appointment of the management structure | 1 | 1 | |

# WT4:
## List of Milestones

| Project Number [1] | 207284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**List and Schedule of Milestones**

| Milestone number [3] | Milestone name | WP number [4] | Lead beneficiary number | Delivery date from Annex I [5] | Comments |
|---|---|---|---|---|---|
| MS1 | i-SCOPE system specifications are defined | WP1 | 9 | 6 | |
| MS2 | All datasets available to the project are available within the i-SCOPE repository | WP2 | 11 | 12 | |
| MS3 | Extension of CityGML submitted to OGC | WP3 | 13 | 9 | |
| MS4 | 3 CityGML ADEs submitted to OGC | WP3 | 8 | 15 | |
| MS5 | Integrated i-SCOPE service toolkit available for download from the project website | WP4 | 11 | 24 | |
| MS6 | Training methodology | WP5 | 4 | 19 | |
| MS9 | Website and web2.0 social networks are online | WP6 | 1 | 6 | |
| MS10 | Final conference organised and all reports from all dissemination activities are ready | WP6 | 1 | 36 | |
| MS11 | First Market and business strategy ready | WP7 | 3 | 9 | |
| MS12 | Formal definition of the SBS EEIG | WP7 | 3 | 36 | |
| MS13 | Final Market and business plan ready | WP7 | 3 | 21 | |
| MS14 | Appointment of the management structure | WP8 | 1 | 1 | |



# WT5:
## Tentative schedule of Project Reviews

| Project Number [1] | 207284 | Project Acronym [2] | i-SCOPE |
|---|---|---|---|

**Tentative schedule of Project Reviews**

| Review number [6] | Tentative timing | Planned venue of review | Comments, if any |
|---|---|---|---|
| RV 1 | 12 | Indija | |
| RV 2 | 24 | Zagreb | |
| RV 3 | 36 | Newcastle | |

# WT6:
## Project Effort by Beneficiary and Work Package

| Project Number | 297284 | Project Acronym | i-SCOPE |
|---|---|---|---|

Indicative efforts (man-months) per Beneficiary per Work Package

| Beneficiary number and short-name | WP 1 | WP 2 | WP 3 | WP 4 | WP 5 | WP 6 | WP 7 | WP 8 | Total per Beneficiary |
|---|---|---|---|---|---|---|---|---|---|
| 1 - FG | 9.50 | 3.50 | 4.00 | 51.00 | 22.00 | 10.00 | 6.00 | 19.00 | 125.00 |
| 2 - EPS | 2.50 | 0.00 | 7.00 | 12.00 | 2.50 | 1.50 | 1.70 | 1.00 | 28.30 |
| 3 - GECF | 2.50 | 4.00 | 0.00 | 9.00 | 4.00 | 1.50 | 8.00 | 1.00 | 30.00 |
| 4 - EGEO | 11.50 | 0.00 | 0.00 | 9.00 | 23.00 | 3.50 | 10.00 | 1.00 | 58.10 |
| 5 - CEIT | 3.00 | 0.50 | 0.00 | 20.50 | 3.50 | 3.50 | 1.00 | 1.00 | 32.50 |
| 6 - VUB | 2.00 | 2.00 | 2.00 | 20.50 | 3.50 | 1.50 | 1.00 | 1.00 | 33.50 |
| 7 - MOSS | 4.00 | 0.00 | 7.00 | 23.00 | 2.00 | 1.50 | 3.50 | 1.00 | 42.00 |
| 8 - GIS | 4.00 | 0.00 | 8.00 | 2.00 | 0.00 | 4.00 | 0.50 | 1.00 | 19.50 |
| 9 - IND | 8.00 | 0.00 | 0.00 | 13.00 | 2.50 | 1.50 | 7.50 | 1.00 | 33.50 |
| 10 - CSL | 3.50 | 0.00 | 4.00 | 7.00 | 1.00 | 1.00 | 1.00 | 1.00 | 18.50 |
| 11 - REG | 6.00 | 13.00 | 0.00 | 10.00 | 8.00 | 1.00 | 1.00 | 1.00 | 40.00 |
| 12 - GSYS | 2.00 | 3.00 | 0.00 | 1.00 | 4.50 | 3.00 | 0.00 | 1.00 | 14.50 |
| 13 - OS | 1.50 | 1.50 | 7.00 | 0.00 | 2.50 | 1.00 | 1.50 | 1.00 | 15.50 |
| 14 - INDJ | 2.00 | 7.00 | 0.00 | 0.00 | 7.00 | 5.00 | 0.00 | 1.00 | 22.00 |
| 15 - SAIA | 2.00 | 6.50 | 0.00 | 0.00 | 4.50 | 4.50 | 0.00 | 1.00 | 17.50 |
| 16 - ZAD | 2.00 | 2.50 | 0.00 | 0.00 | 4.50 | 4.50 | 0.00 | 1.00 | 14.50 |
| 17 - ZAG | 2.00 | 3.50 | 0.00 | 0.00 | 4.50 | 4.00 | 0.00 | 1.00 | 15.00 |
| 18 - WIEN | 1.00 | 3.00 | 0.00 | 0.00 | 2.50 | 2.50 | 0.00 | 1.00 | 10.00 |
| 19 - DRAMA | 2.00 | 4.00 | 0.00 | 0.00 | 4.50 | 4.00 | 0.00 | 1.00 | 15.50 |
| 20 - VCC | 2.00 | 3.00 | 0.00 | 0.00 | 2.50 | 4.00 | 0.00 | 1.00 | 12.50 |
| 21 - INFOTN | 2.00 | 4.00 | 0.00 | 0.00 | 4.50 | 4.00 | 0.00 | 1.00 | 15.50 |
| 22 - LAZ | 6.00 | 3.00 | 0.00 | 0.00 | 6.50 | 6.00 | 0.00 | 1.00 | 26.50 |




# WT6:
## Project Effort by Beneficiary and Work Package


| Beneficiary number and short-name | WP 1 | WP 2 | WP 3 | WP 4 | WP 5 | WP 6 | WP 7 | WP 8 | Total per Beneficiary |
|---|---|---|---|---|---|---|---|---|---|
| Total | 83.10 | 62.50 | 39.00 | 176.00 | 119.50 | 75.10 | 42.70 | 40.00 | 639.90 |

**1. Project number**

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

**2. Project acronym**

Use the project acronym as given in the submitted proposal. It cannot be changed unless agreed during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

**53. Work Package number**

Work package number: WP1, WP2, WP3, ..., WPn

**56. Lead beneficiary number**

Number of the beneficiary leading the work in this work package.

**58. Person-months per work package**

The total number of person-months allocated to each work package.

**57. Start month**

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

**59. End month**

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

**69. Milestone number**

Milestone number: MS1, MS2, ..., MSn

**60. Delivery date for Milestone**

Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

**61. Deliverable number**

Deliverable numbers in order of delivery dates: D1 – Dn

**62. Nature**

Please indicate the nature of the deliverable using one of the following codes:

**R** = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

**63. Dissemination level**

Please indicate the dissemination level using one of the following codes:

- **PU** = Public
- **PP** = Restricted to other programme participants (including the Commission Services)
- **RE** = Restricted to a group specified by the consortium (including the Commission Services)
- **CO** = Confidential, only for members of the consortium (including the Commission Services)
- **Restraint UE** = Classified with the classification level "Restraint UE" according to Commission Decision 2001/844 and amendments
- **Confidential UE** = Classified with the mention of the classification level "Confidential UE" according to Commission Decision 2001/844 and amendments
- **Secret UE** = Classified with the mention of the classification level "Secret UE" according to Commission Decision 2001/844 and amendments

**64. Delivery date for Deliverable**

Month in which the deliverables will be available. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

**65. Review number**

Review numbers: RV1, RV2, ..., RVn

**66. Tentative timing of reviews**

Month after which the review will take place. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

**67. Person-months per Deliverable**

The total number of person-months allocated to each deliverable.

# PROPOSAL PART B

## ICT PSP fifth call for proposals 2011
## Pilot Type B

**ICT PSP Objective identifier: 5.1: Open Innovation for Internet-enabled services in 'smart' cities'**

Proposal acronym: *ESCOPE*
Proposal full title: Interoperable Smart City services through an Open Platform for urban Ecosystems

Project starting date: 15 Jan 2012
Name of coordinating person: Dr. Raffaele De Amicis

List of participants:

| Participant no.* | Participant organisation name | Participant short name | Country |
|---|---|---|---|
| 1 (Co-ordinator) | Fondazione Graphitech | FG | Italy |
| 2 | EPSILON International Anonymi Etaireia Meleton Kai Symvoulon (EPSILON International SA) | EPS | Greece |
| 3 | Geofoto Drustvo S Ogranicenom Odgovornosti Za Fotogrametrijske I Geodetske Poslove | GEOF | Croatia |
| 4 | Integrasmatika d.o.o. | EGEO | Serbia |
| 5 | CERT ALANOVA Gemeinnützige GmbH | CERT | Austria |
| 6 | Vrije Universiteit Brussels, Artificial Intelligence Lab, BrainSense | VUB | Belgium |
| 7 | M.O.S.S. computer Grafik Systeme GmbH | MOSS | Germany |
| 8 | GIST STANDARDS LTD | GIST | UK |
| 9 | INDECO SOFT SRL | IND | Romania |
| 10 | Cadzow Communications Consulting Limited | CCL | UK |
| 11 | REGGIANI SpA | REG | Italy |
| 12 | GeoSYS Limited | GSYS | Malta |
| 13 | Department for Business, Innovation & Skills | OS | UK |
| 14 | Municipality of Indjija | INDJ | Serbia |
| 15 | Baia Mare | BAIA | Romania |
| 16 | Zadarska Zupanija | ZAD | Croatia |
| 17 | Grad Zagreb | ZAG | Croatia |
| 18 | Magistrat Der Stadt Wien | WIEN | Austria |
| 19 | Municipality of Drama | DRAMA | Greece |
| 20 | Newcastle City Council | NCC | UK |
| 21 | Informatica Trentina SpA | INFOTN | Italy |
| 22 | Regione Lazio - Direzione Regionale Territorio E Urbanistica | LAZ | Italy |

Associated partners (letter of support attached to this proposal)

| Participant no.* | City administrations | Participant short name | Country |
|---|---|---|---|
| A1 | Trentino Network | TNET | Italy |
| A2 | Valletta City Council | VTLC | Italy |
| A3 | Malta Resources Authority | MRA | Malta |

**Table of Contents**

**List of acronyms**

**3GPP**: Third Generation Partnership Project
**ADE**: Application Domain Extensions
**API**: Application Programming Interface
**CEN**: Comité Européen de Normalisation
**DA**: Digital Agenda
**DB**: Database
**DM**: Data Manager
**DSM**: Digital Surface Model
**DTM**: Digital Terrain Model
**EEIG**: European Economic Interest Grouping
**ETSI**: European Telecommunications Standards Institute
**GA**: General Assembly
**GIS**: Geographic Information System
**GPU**: Graphical Processing Unit
**IETF**: Internet Engineering Task Force
**ISIM**: IP Multimedia Services Identity Module
**ISO TC204**: International Organization for Standardization Technical committees TC 204 - Intelligent transport systems
**ITS**: Intelligent Transport Systems
**JTC**: Joint Technical Committee
**KML**: Keyhole Markup Language
**LBS**: Location-Based Service
**LIDAR**: Light Detection And Ranging
**LOD**: Level of Detail
**OASIS**: Organization for the Advancement of Structured Information Standards
**OAuth**: Open Authentication
**OGC**: Open Geospatial Consortium, Inc.®
**OpenLS**: OpenGIS Location Service
**PC**: Project Coordinator
**PIA**: Privacy Impact Assessment
**PM**: Project Manager
**PO**: Project Officer
**QRM**: Quality and Risk Manager
**SAML**: Security Assertion Markup Language
**SB**: Stakeholder Board
**SLD**: Styled Layer Descriptor
**SOA**: Service Oriented Architecture
**TB**: Technical Board
**TL**: Task Leader
**TVRA**: Threat Vulnerability Risk Analysis
**UCD**: User-Centred Design
**UIM**: Urban Information Model
**UML**: Unified Modeling Language
**UMTS**: Universal Mobile Telecommunications System
**W3DS**: Web 3D Service
**WCS**: Web Coverage Service
**WFS**: Web Feature Service
**WMS-T**: Web Map Service Time
**WPL**: Work Package Leader
**WPS**: Web Processing Service
**XACML**: eXtensible Access Control Markup Language



# PROJECT PROFILE

**Proposal acronym:** *i-SCOPE*
**Proposal full title:** Interoperable Smart City services through an Open Platform for urban Ecosystems

**Description of the project activities**

**Description of the issue and proposed service/solution.**
*i-SCOPE* delivers an open source toolkit for 3D smart city services based on 3D Urban Information Models (UIMs) created from accurate urban-scale geospatial information. The smart services proposed address the following three scenarios: 1) **Improved inclusion and personal mobility of aging people and diversely able citizens**; 2) **Energy dispersion & solar energy potential assessment**; 3) **Noise mapping** & simulation.

**Target users and their needs**
1) **Diversely-abled citizens** needing customised routing instructions. Specifically: a) mobility impaired users or people with limited ambulation requiring barrier-free routing functionalities, b) visually impaired users who cannot read maps and need voice-based semantically rich routing instructions.
2) **City administrations** that need to define policies in terms of heat dispersion and solar potential at urban level
**Professionals** who need to have high precision solar potential assessment.
3) **City administrations** needing to assess noise through simulations as well as existing mapping data in order to create noise maps according to EU Directive 2002/49/EC. **Citizens**, who can access real-time data as well as accumulated maps on areas and time scales of interest.

**Usage**
1) An App for smartphone and apps will be used by citizens to guide them through the city along barrier free routes. Directions are provided as: a) Augmented reality on mobile devices b) spoken semantically rich instructions (describing the surrounding context in detailed manner) c) via portable Braille displays.
2) A 3D web application is used by city administrators and professionals to create very high resolution solar potential maps based on interoperable 3D models of city. Professionals can also select the 3D building and attach information (thermo images) on energy loss of a building, including certification information.
3) A 3D web application is used by city administrators and professionals to: a) create detailed noise maps, b) visualise in 3D real time noise mapping data, c) access historical data regarding noise maps. Citizens can use the App to provide real time measurements of noise levels in parts of the cities (e.g. to file an official complaint for excessive noise exposure e.g. due to vicinity of roadwork or entertainment venues).

**Technology.**
*i-SCOPE* integrates a number existing technologies as federation of interoperable web-services which will create interoperability through support of OGC standards. The project is based on use of CityGML as Urban Information Model on top of which 3D smart city services are created. Smart services will be accessible via a web based 3D client as well as through mobile applications that are used to crowdsource environmental (noise) data from the citizens. To do so *i-SCOPE* implements technology as Location-Based Service. For this reason *i-SCOPE* develops tailorable, secure privacy schemes to ensure the highest level of protection of users' information. Finally *i-SCOPE* will use ultrafast internet technologies (two fiber optic regional scale networks).

**Content**
*i-SCOPE* will require: 1) **3D models at urban scale as CityGML**. For those city administration not having already a CityGML model of the city this will be created through a dedicated set of web services integrated within the *i-SCOPE* toolkit, developed on top of technology by *VIRTUR* which uses standard GIS data such as LIDAR or floormaps to automatically create CityGML models of urban environments. 2) **Real-time noise measurements** necessary for the project activities will be collected during a surveying campaign planned with the city administrations involved by using noise mapping technology integrated by *UAB*. 3) **Airborne infrared imaging** will be acquired by partner *GAF* through a thermo camera to be fitted on one of their airplanes. To avoid any further cost rising from a specific survey campaign this will be identified at the beginning of the project.

**Sustainability**
The consortium plans to formalize modalities and the conditions that will govern the commercial exploitation of the project results after the end of the project and the Commission funding through European Economic Interest Grouping (EEIG) to be formally registered before the end of the project. The EEIG will ensure promotion of *i-SCOPE*, technological road mapping, development & maintenance of the *i-SCOPE* toolkit, consultancy, training.

**Ownership**
The *i-SCOPE* toolkit will be open source, so will be the specifications created during the project, i.e. extension

of current CityGML standard and creator of three Application Domain Extensions for the three project scenarios. The 3DG will be responsible for future development and maintenance of *i-SCOPE* toolkit.

| Information on the project phase and impact | |
|---|---|
| Number of users | 28,205 |

**Locations**

**Dublin, RS:** 50 citizens, 10 experts from different dept. of city administration, 30 professionals from private companies, 20 scientists

**Trento, IT:** 20 experts from different dept. of city administrations, 50 professionals, 30 scientists, 200 citizens.

**Baia Mare, RO:** 200 citizens (including children from schools) and representatives of the civil society, 20 experts from different departments of city administration, 20 professionals from 5 companies and 5 NGOs specialized in environmental and urban mobility aspects. At least 5 university staff and 50 of their students.

**Zadar, HR:** 20 operators in the country dept., 200 citizens

**Zagreb, HR:** 10 experts at city office for energy, environm. and sustain. devel., 50 professionals, 1,000 citizens.

**Wien, AT:** 5 operators from the IT dept, 50 citizens from local association supporting disabled people

**Brasov, GR:** 200 citizens, 10 operators at IT dept. of city administration

**NewCastle, UK:** 600 City Council Building Managers, 5,600 users from public sector partners (universities, health sector, community & voluntary sector, police, fire & rescue services, & commercial buildings), 30,000 users from City Council housing management organisations (Your Homes Newcastle), 20,600 private sector landlords, 10,000 users registered at Social Landlords, 60,000 users from private owner occupied residents.

**Malta Harbour area, MT:** 200 citizens (including children from schools), 30 experts from different departments of city administration.

**Lazio Region (incl Rome), IT:** 20 operators at IT dept. of city administrations, 500 citizens.

**Velletri, IT:** 5 experts at city administrations dept., 200 citizens.

| Information on what already exists | |
|---|---|
| A technically tested prototype of the service exists? | Yes |
| A business plan has been developed already for the service? | No |
| A service already exists? | Yes |
| Further localisation work is needed? | Yes |
| Further integration work is needed? | Yes |

**Existing prototype/service**

**Existing prototypes** to be integrated and made interoperable within *i-SCOPE* are: 1) 3D geobrowser by *FG* (both web-based and mobile devices); 2) spatio-temporal web processing services developed by the EU Project BRISEIDE; 3) OpenLS compliant routing technology based on OpenStreetMap data; 4) technology by *MOSS* to create 3D city models at urban scale (as CityGML) from geospatial data (e.g. LIDAR); 5) technology by *MOSS* for noise simulation; 6) technology by Sony CSL and *VUB* to create real-time noise maps (both mobile client and server); 7) technology by *CERT* to automatically create semantically rich routing instructions to visually impaired users.

**Existing services:** 1) BRISEIDE spatio-temporal processing services 2) *VUB* real-time noise mapping services.

**If running service exists:**

**Location(s)**

Real time noise mapping: The noise mapping system is freely available from the web and used worldwide. For an updated overview of worldwide use see: www.noisetube.net/stats.

BRISEIDE spatio-temporal processing services: services are being tested in several scenarios in the following areas: Italian national territory, Thessaloniki (GR), Navarra Region (ES), Hvar Island (HR), Cascais do Boule (PT), Metropolitan Lisbon Area (PT), Liberec Region (CZ), Province of Trento (IT).

**Number of users How many users does the service currently have?**

Real-time noise mapping: Original tests were performed in Brussels (75,000+ measurements), in Paris (35,000+ measurements), in Berlin (20,000+ measurements), in Florianópolis (BR) (15,000+ measurements). The noise mapping system is freely available for an updated overview of worldwide use see: www.noisetube.net/stats)

BRISEIDE spatio-temporal processing services: 30 experts across the aforementioned locations.

**Ownership Who is the owner / provider / maintainer of the running service?**

Real time noise mapping: BrusSense group at *VUB* is current maintainer of the service. The underlying was initially developed by Sony CSL in collaboration with *VUB* and has been released as open source.

BRISEIDE spatio-temporal processing services: currently being maintained by the BRISEID consortium. The service provider is partner *RRG*. The toolkit is being released as open source.

**Sustaining the service How is it currently sustained?**

Real-time noise mapping: resources provided by *VUB*.



BRISEIDE spatio-temporal processing services: resources for further piloting, test and running of services provided by EC funding (till mid 2012).

**Section B1, Relevance**

**B1.1. Project objectives**

**The proposed service/solution which the project aims to deliver**

The latest generation of 3D Urban Information Models (UIM), created from accurate urban scale geospatial information, can be used to create smart web services based on geometric, semantic, morphological and structural information at urban scale level.

Based on interoperable 3D UIMs, *i-SCOPE* delivers an open platform on top of which it develops, within different domains, various 'smart city' services. These will be piloted and validated, within a number of EU cities involved in *i-SCOPE* as visible in Figure 1.

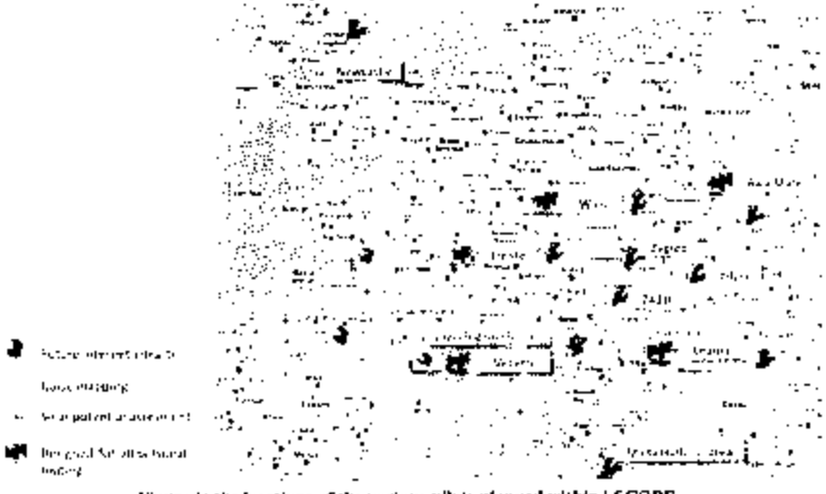



**Figure 1: the locations of the various pilots planned within i-SCOPE**

In terms of **products and services** *i-SCOPE* delivers an **open source toolkit** for 3D smart city services that will be deployed and made available through a 3D **smart city services portal**. *i-SCOPE* shall validate the toolkit and the portal by developing specific services as described in this document. The smart services address the following three scenarios:

1. **Improved inclusion and personal mobility** of aging people and diversely able citizens. To do so *i-SCOPE* delivers a set of smart services providing:
   - Accurate city level mobility impaired-friendly personal routing service (e.g. for people in a wheelchair) that accounts for detailed urban layout, features and barriers, accessible from the web and from 3D mobile clients;
   - Visually-impaired-friendly guiding services, capable to provide easy-to-read and easy to listen to guiding instructions; and,
   - Visually-impaired-friendly services capable to deliver automatically, starting from UIMs and GIS data, pre formatted text describing a given area (to help user localising themselves) or route (in case of guidance), suitable for portable screenreaders and Braille screens.

2. **Energy dispersion and solar energy potential assessment.** To do so *i-SCOPE* delivers services for city administrations, professionals and citizens, designed to:
    - Calculate solar energy potential at very high precision based on accurate 3D models of urban landscape;
    - Assess energy efficiency at urban scale through automatic generation of energy dispersion maps based on airborne survey campaigns; and,
    - Management of citizen-generated data on building energy dispersion
3. **Noise mapping and simulation.** To do so *i-SCOPE* delivers smart services that:
    - Calculate, in an interoperable manner, **noise levels** both through **simulation** and through mapping based on accurate UIMs
    - Create **real-time** and **accumulated noise maps** through data collected by citizens, who are involved as prosumers (producers and consumers) of environmental data, through the use of their mobile phones as "noise" sensors, measuring city-wide noise levels.

All the aforementioned smart services will be based on **already available technologies**, which will be integrated, deployed and made publicly available from a "3D smart city services portal" portal. The services will be deployed, for 12 months, in the locations illustrated in Figure 1, and will be validated in real life scenarios.

**The objectives of the proposed service/solution**

The objectives of *i-SCOPE* are to:

- Develop an open toolkit based on 3D UIMs according to the principles of service-oriented architecture using open standards (OGC). This includes services capable to create CityGML models from data such as surface models (e.g. LIDAR), terrain models and building floor plans.
- Develop smart services to **improve decision-making** in planning processes and policy design at city / regions management levels, with regard to issues related to **energy efficiency** and **noise levels**, based on urban pattern and its morphology.
- Develop smart services to **promote inclusion** and **mobility** of differently-abled people and elderly users through technology that help them overcome barriers at city level and that support them during their daily urban trips.
- Develop smart services that can involve citizens at wider scale by collecting **real-time location-based information** at urban scale.
- Test smart services within a variety of **network ecosystems** ranging from city-wide sensor networks (Vellern, Italy – see Annex I), to large scale regional optic fibre networks (in the case of Trento and Lazio Region, Italy – see Annex I), to mobile location based services.
- Develop **trustable, secure privacy schemes** to ensure the highest level of protection of users' information. This is necessary since such a set of real-time, location-based mobility services poses **significant security and privacy issues** (due to traceability of people's location, actions, travel plans etc).

Furthermore *i-SCOPE* aims at providing a significant contribution to standards in the domain of smart city services, through contribution to extension and wider adoption of CityGML as key enabling open standard for 3D smart city services. With specific regard to this, *i-SCOPE* has the following goals:

- **Promoting establishment of a common "Urban Information Model"** (UIM) to create specific applications on top of this. To do so *i-SCOPE* smart city services will rely on the use of CityGML, an international acknowledged standard. The outcomes of the project will neither be isolated nor stand alone. In contrast, applications realized in City A can be transferred and utilized in City B since both refer to a common standard. This is to be seen as a key for the cooperation within the project and also for the evaluation of the outcomes.
- Accelerate the uptake of CityGML as the **reference standard** to support simulation, by integrating or extending existing open platforms in several EU cities, making combined use of mobile technologies, location based services, sensor networks, high performance networks and 3D technologies to deliver



novel services for tourists, for local residents, for businesses and for public administrations.

- **Extending the core CityGML open standard (to be submitted to the OGC consortium) to define** specific CityGML Application Domain Extensions (ADE) relevant to the pilots selected, specifically in the domain of inclusive routing, solar energy assessment and noise mapping[1].
- **Promotion of a number of awareness activities to accelerate the uptake of CityGML** as the reference standard to support urban-scale smart services, sustainable planning and simulations.

**Figure 2: an example of UML Diagram of some of the components of the existing Noise ADE**

**Involvement of city administrations**

Additionally *i-SCOPE* will create an **open ecosystem** made of public administrations, industries, SMEs, universities and research centres, to promote sharing of best practices, fast uptake of the project services and transfer of knowledge across the EU. For this the project will be using the Living Lab methodology, based on experience from partners *UPM* and *TC* (both part of existing Living Labs) which will allow capturing user-driven requirements as well as the involvement of users during all the phases of development, testing, validation and deployment of the Pilots.

As detailed in the work package descriptions, the various cities have committed to a very active role within *i-SCOPE*, playing a key role from the definition of needs and requirements, collection and harmonisation of data, to technical development, throughout the development and until the assessment of the pilots.

The geographical distribution of partners is such that each city administration can closely cooperate with a technical partner at all stages of the project, creating an experimentation environment where users and producers co-create innovations within a **Public-Private-People Partnerships (PPPP)** for user-driven open innovation typical of Living Labs.

**The envisaged usage of the service and its added value for the users**

In general terms the smart city services developed in *i-SCOPE* are based on UIM. For this reason *i-SCOPE* delivers a framework of low level services necessary to create, wherever not available, a CityGML model from basic datasets. These services extend technology by partner *UPM* and allow creation of CityGML models from existing data such as surface model (e.g. LIDAR), terrain models and building floor plans.

On top of these low-level services, the project will focus on three scenarios, based on 3D urban models developing "high-level" smart functionalities as described below.

**Scenario 1: Improved inclusion and personal mobility of aging people and diversely able citizens**

[1] It should be noted that although a noise ADE already exists, this has been designed to define all the components required to run simulation models (road segments, surfaces, reflection etc). However no functionality is provided to assign noise level values to street segments or areas (parks etc.), which is what will be done in the context of i-SCOPE.

**Target users and their needs**

This pilot targets citizens and it particularly caters for social groups with special needs in terms of navigation and orientation, namely:

- Elderly and differently-abled people with limited ambulation (e.g. wheel-chair-users)
- Visual impaired people, people with bad orientation and, more in general, people who cannot read maps for either reasons, either contextual or physical,
- All users that need more supportive routing than existing interactive solutions provide (e.g. young parents navigating urban environments with pushchairs).

Blind people using screenreaders or portable Braille displays for SmartPhones and iPads[1].

**Description of the typical use case**

An elderly or differently-abled user starts the *i-SCOPE* client (either online or as App for SmartPhone). The user can set his/her specific requirements:

- Mobility impairment,
- Visual impairment
- Limited orientation capability (e.g. elderly users or simply people not familiar with a given area).
- Support for Braille Displays

The client sends the request to the smart service which returns orientation and navigation information, specifically customised and formatted to cater for the specific user's preference and needs.

**Situation 1:** discovery. The user needs additional information on his/her position and the surrounding. Examples:

- "I am lost. Where am I?" function (for people unable to read street name signs), e.g. providing Address, coordinates, industrial area, city centre, residential area, pedestrian zone, main road in relation to landmarks that may be visible or known to the user.
- "What is next/close to me?" or "What is in my surrounding?" function: e.g. public buildings, supermarkets, houses with certain address, medical facilities, acoustic traffic lights, park/green spaces, crossings, square, other streets etc
- "Are there dangerous items next to me?" function: e.g. main roads, major crossing, bicycle lanes.
- By clicking on a continuing street section, the user moves further in the map and receives new detailed spatial information. In this way a holistic cognitive picture of an area can be build.

**Figure 3: example of Braille display: Refreshabraille 18 API, Inc. (priced at $250).**

**Situation 2: wayfinding/routing/navigation.**

- How can I get to a target point in the fastest/"safest"/most attractive way?

**Output 1 (for users with mobility impairment):** User-friendly instructions shown on top of images (captured

[1] In this context it is assumed the Braille display is connected to the SmartPhone or tablet via Bluetooth or other wireless connection.



by the Mobile Phone camera) of the surrounding scene (in Augmented Reality – AR) as visible in Figure 4.

**Figure 4: example of designed-for-all routing in AR.**

**Output 2 (for blind and high visually impaired users):** Easy to read map (clearly highlighting only most important items, high contrast etc.).

**Output 3 (for all users who cannot see/view small displays of mobile devices very well):** the digital map is automatically described in words; output is text which can be read out loud with a screenreader: the users gets voice descriptions/instructions and (optionally) output through Braille display.

**Innovative aspects**

Most routing and navigation systems have been developed for vehicles. *i-SCOPE* smart routing service returns orientation and navigation information, customised to cater for diversely able users, providing:

- Automatic map descriptions in words (e.g. for visually impaired users or in contexts where visual information cannot be accessed).
- Maps with larger fonts and/or mouse over acoustic descriptions.
- Navigation descriptions in easy to hear versions.
- Navigation directions provided in a format suitable for Braille displays.
- Information about the surrounding, i.e. streets (name of the street, lengths, type, crossings), landmarks (points of interest, orientation points) and areas (parks, squares).
- Navigation functionalities without distances (in meters) but based on landmark descriptions.
- Context awareness, through a "visual map in words" (automatically read aloud by the client) providing all the required spatial information.
- A visual map whose graphical appearance is adapted to the specific user requirements of visually impaired users.
- A simple button to invoke the "where am I?" function providing additional descriptions of the surrounding targeted to people with reduced orientation skills (e.g. elderly users).

**Details on technical solution proposed**

This scenario relies on integration of the existing Open Source technologies developed in the projects:

- BRISEIDE (ICT PSP), coordinated by partner *FG* and joined by *EPS* and *REG*, on spatio-temporal web services,
- i-Tour (FP7 STREP), of which partner *FG* is technical coordinator, on web services for automobility.
- AmaroMap (EU IPA), coordinated by partner *CUT*, on accessible maps for blind and extremely vision impaired users.

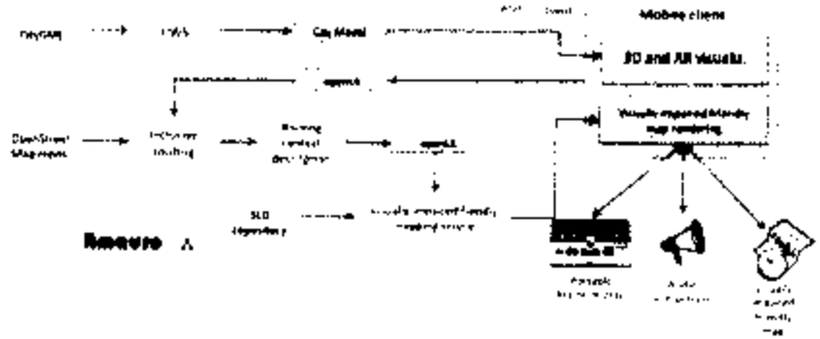



**Figure 5: the various components and interfaces which will be used within the inclusive routing pilot**

This scenario will require integration of the following pre-existing technologies.

**Smart-service-side components:**

- Partner *FHN* will adapt the routing algorithm already available through BRISEIDE. This already provides interoperable routing instructions (as OpenLS[1] services on top of data from OpenStreetMap (http://www.openstreetmap.org/). The extension will require support of differently-abled-friendly routing.
- Partner *CUT* will adapt existing technology developed in the project AmaroMap, which automatically creates spatial description, to support interoperable instructions through OpenLS. This will allow creation of instructions, from vector data, to describe the shape of crossings, blocks, etc. in words and in a standardised way.
- Existing SLDs (Styled Layer Descriptor as OGC specification), developed in the context of AmaroMap, will be used to create easy-to-read rendering of maps and routes (optimizing fonts, object size, colours – respecting the needs of colour blind people who make up to 10% of the population).

Additional technical details are provided within **WP4 as T.4.2 Disable-friendly personal routing service.**

**Client-side components (SmartPhones and tablets running on Android):**

- *UC* will extend the 3D client for mobile devices (smartphones and tablets), developed within i-Tour, to support visualisation of CityGML urban models. The client already supports routing through OpenLS.
- *CUT* will adapt the mobile software component, developed in the context of AmaroMap, to support interoperable exchange of data through OpenLS. The software sends the current and/or target position to the server and it receives as result the semantic description and:
  - Graphically renders as visually impaired map.
  - Reads aloud description of the route (based on landmarks) or of the surrounding area with all its attributes
  - Sends pre-formatted text to screen readers or Braille displays

Additional technical details are provided within **WP4 as T.4.7 Mobile client applications for citizens.**

## Scenario 2: Accurate solar energy potential assessment and support for mapping of energy dispersion

[1] OpenGIS Location Service (OpenLS) Implementation Standards: http://www.opengeospatial.org/standards/ols



**Target users and their needs**

- **Professionals** (engineers, town planners, architects) who need to have high precision solar potential assessment in the city fabric, at neighbourhood scale or even at level of buildings (available roofs surfaces). Looking for conjugating the right technological solutions to the specific characteristics of urban spaces.
- **City administrations** that need to define policies and plans to promote deployment of solar panels within specific areas of a city. 3D based services will permit to maximize the use of available surfaces without compromise the urban landscape, quite important issues in city centres having historical buildings.
- **City administrations** that wish to assess energy efficiency, in terms of heat dispersion, at urban level for planning or management purposes. This will permit as well to define precise regulatory policies for climate change purposes
- **Regional energy agencies**: to assess impact of energy saving policy when issuing white certificates. moreover, it will permit to design regional strategies for optimizing the private and public investments for management of renewable and natural resources at intercommunal, metropolitan and city regions **levels.**

**Description of the typical use case**

**Situation 1: city level solar potential assessment.**
An engineer from the local energy planning department accesses, through the 3D web client, the updated 3D CityGML urban model to create an updated solar radiation map. To do so he/she selects a portion of the city of relevance and selects the smart city service available through the IT service provider of the city administration. Optionally the operator specifies the time range (days of the year).

After the processing is complete the services returns either a set of maps or a 3D model. This is rendered according to solar irradiance and irradiation in the different components (i.e. beam, diffuse and reflected) in both clear sky conditions as well as overcast weather. Through a slider the operator can select the day of the year and the automatically renders the proper map over the 3D scene. The operator can also make the result public in which case becomes visible to all citizens through the portal. As a result citizens can access the 3D model of the city, select the day of the year, the weather condition and get a 3D representation containing the solar radiation information at urban scale.

**Situation 2: heat dispersion mapping.**
An engineer at Geofoto starts the 3D client and loads the latest result from an airborne survey onto the system including standard aerial imaging as well as thermal imaging acquired through a thermo-camera fitted on their plane (see Figure 6).

A "smart" service is available and it is being run on the company servers to extract a thermic dispersion map. This is stored in the geodatabase, and rendered over the 3D city model.

The thermic loss map is then made available[1] to the local city administration. Starting from the previously created simulation an engineer at the local urban planning department wants to assess the impact of a potential energy saving campaign based on improving insulation of buildings. To do so he/she needs to assess energy loss at large scale. To do so he/she starts up the 3D client and loads the data produced by *GUDU* and it overlays to the result of the solar simulation at different time of the year. A further smart service provides raster algebra functionalities identifying which areas are less lit (colder) and also subject to the highest energy loss.

**Figure 6: example of airborne thermo imaging at urban scale**

[1] The details of how the map is given to the administration are not explored in the project but may include normal commercial sales and marketing of the data

The resulting 3D model, showing energy loss at urban level, is made available to the community through the portal to increase awareness on those parts of the city that are less energy efficient.

**Situation 3: heat dispersion surveying.**
A house owner, after discovering, from the 3D city portal the poor energy efficiency of her house, decides to contract an engineer to design a better insulation system. The engineer runs a thermo-imaging survey. Through the 3D client the engineer uploads result of ground level thermo imaging survey campaign (see Figure 7) onto the city energy unit portal. The same process will be repeated after the new insulation system will be fitted together with information, certified by the engineer, who certificates the energy saving achieved. The information is used by the local energy agency to calculate local house taxation.

**Figure 7: example of thermo-imaging**

**Innovative aspects**

Current solar assessment GIS (e.g. ESRI Solar Analyst) calculate solar potential based on raster data that need to be created separately from existing terrain and, if available, merging building information. Other online services (e.g. Photovoltaic Geographical Information System by JRC) is simply based on the position (lat/lon) and through manual specification of the roof layout (orientation, slope etc.). *i-SCOPE* solar assessment is based on accurate 3D georeferenced models of urban environment and therefore accounts for:

- Real layout of roofs and other structures (e.g. walls, slabs etc.).
- Correct positioning.
- Shadowing effects induced by adjoining buildings as well as vegetation, infrastructures (e.g. power line posts).

Unlike other solution all the aforementioned information is **automatically** calculated from a high precision CIM available in the interoperable standard CityGML. In turn as output the services delivers:

- Interoperable provision of solar maps through Web Coverage Service (WCS) or Web Map Service Time (WMS-T).
- Solar simulations can be calculated through a remote service, based on interoperable standard WPS. This way any client (including commercial or open source GIS software) can perform simulations by invoking a smart service based on an interoperable protocol.

Finally we propose an innovative scenario to support the update of data on heat dispersion from community of citizens and professionals. This information can be later accessed by city administration for planning or taxation purposes. City administrations can easily create maps to show how policies have contributed to improving energy efficiency in areas of the city.

**Details on technical solution proposed**

This scenario relies on integration of the existing Open Source technologies developed in the projects:

- BRISEIDE (ICT-PSP), coordinated by *PG* and joined by *EPS* and *REG*, with regard to spatio-temporal web services based on WMS, WCS, WPS standard including ingestion services.
- Web-based 3D client technology developed by *PG* and extended in the context of BRISEIDE to access, from client side, time-rich data through WMS and WCS service protocols.
- r.SUN developed in the context of GRASS GIS Open Source initiative, which will be integrated to a WPS interface to ensure interoperable access to simulation functionalities.



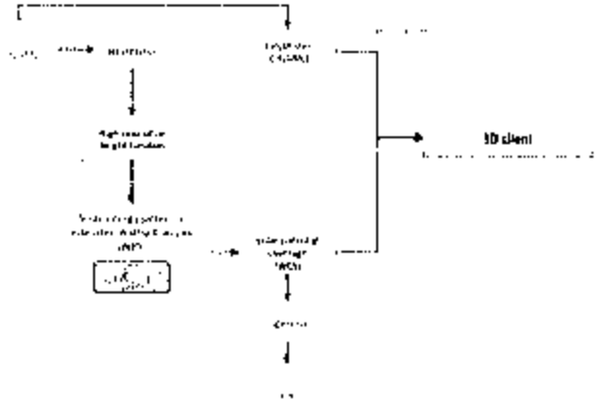



**Figure 8: high level components required for the solar assessment scenario**

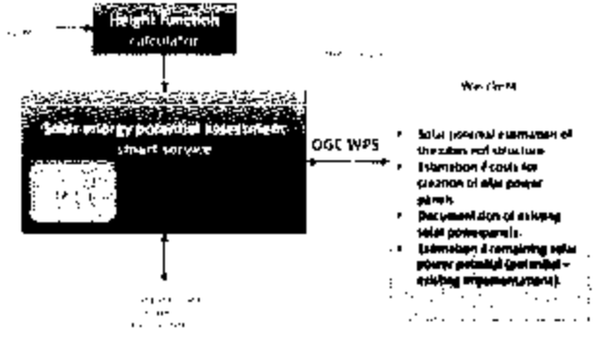



**Figure 9: solar energy potential assessment smart service**

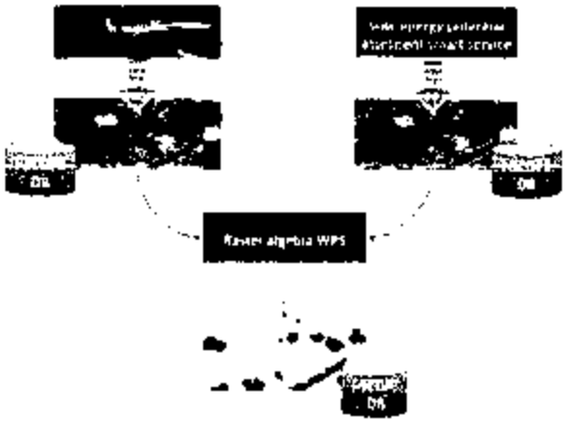



**Figure 10: data coming from airborne surveying can be stored within the repositories and the compared, through specific smart services, to results of simulations performed through yet another service.**

**Smart-service-side components:**

- As shown in Figure 8, within this scenario partner *IVD* will develop the WPS (Web Processing Service) layer on top of standard r.SUN simulation functionalities. *IVD* will develop a service capable to calculate efficiently (through use of Graphical Processing Units – GPUs) high accuracy coverage of height functions from CityGML models. Additionally partner *MOSS* will develop a further WPS layer to provide interoperable support of solar assessment potential based on their existing envision software.
- Partner *6cUAV* will develop the service necessary to create thermal dispersion map from airborne infrared data
- *RDG* will ensure adaptation of existing ingestion services (from BRISEIDE) to ensure support of thermal imaging as described in the aforementioned use case.

Further details are provided later in **WP4** within **T.4.5 - Solar energy potential assessment service.**

**Client-side components (SmartPhones and tablets running on Android):**

- *IVD* will extend current BRISEIDE 3D client to support CityGML with superimposed solar or thermal dispersion data. Current support for temporal data (via WMS or WCS) will have to be extended to allow interactive visualisation of time-variable data as textures of 3D urban model.

**Scenario 3: noise mapping and simulation.**

**Target users and their needs**

- **City administrators**, where operators from their agencies assess noise through simulation as well as existing mapping data in order to create noise maps according to EC Directive 2002/49/EC.
- **City administrations**, with no existing infrastructure for assessing noise through simulations (lacking professional equipment and expertise) and with limited means to establish these, can nevertheless establish noise maps with a low cost, user friendly, pervasive and participatory mobile sensing approach.



- **Citizens**, who can access real-time data as well as accumulated maps on areas and time-scales of interest.
- **Citizens** who can provide evidence when filing a complaint for excessive noise exposure (e.g. due to vicinity of roadwork or entertainment venues).
- **City administrators accessing** real time noise data (esp. from temporary noises usually not captured through noise simulation e.g. roadwork etc.), to assess specific conditions or to verify efficacy of specific urban level actions aimed at minimising noise levels.

**Description of the typical use case**

**Situation 1: noise simulation.**
An operator at a city administration prepares for a new noise simulation. The updated section of the 3D model is extracted from the relevant database. Through the 3D client a number of relevant noise sources are created over a given area. The operator then launches the simulation. As result the system visualises noise levels within the 3D model (see Figure 11).

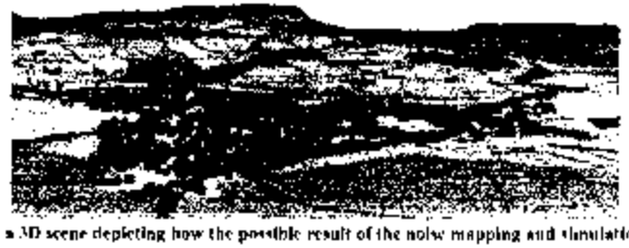


**Figure 11: a 3D scene depicting how the possible result of the noise mapping and simulation services**

**Situation 2: real-time noise mapping.**
A citizen downloads the *i-SCOPE* mobile client and installs it on his/her smartphone. While the user walks on the street he/she can measure the level of noise to which he/she is exposed, which is automatically annotated with location and time. He/she can also annotate the measurement with tags giving additional contextual information (e.g. pleasant, traffic jam etc.). This information can be used by (a group of) citizens to complain about a specific noise (e.g. excessive noise at night due to road works) or, properly anonymised, to create comprehensive noise maps that can be used to increase public awareness on the soundscape of urban areas. The information on noise level and location is sent, via the internet, to *i-SCOPE* smart services. The result is aggregated by the service and made available through the network from within the 3D web client as a noise map as shown in Figure 12.

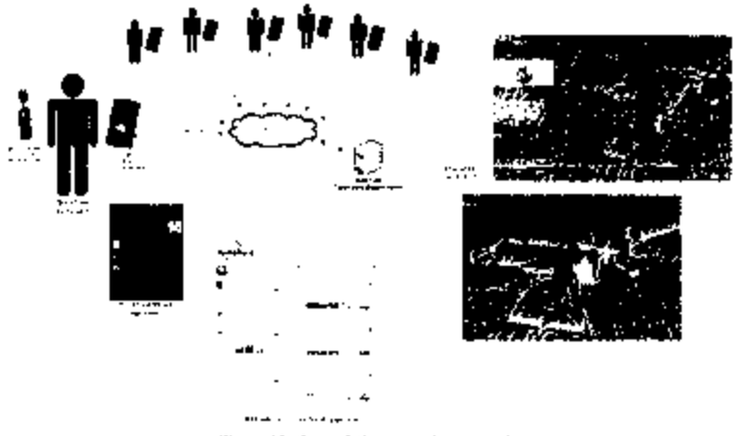


Figure 12: the real-time mapping scenario.

**Situation 3: assessment of noise levels according to the EU Directive 2002/49/EC**[1]
An operator at local planning department uses the *i-SCOPE* "services" to perform an analysis of noise level measurements collected by citizens (stored in an anonymised form in the city geo-database) over time periods of interest (peak hour, holiday periods). Through the client he/she can use a number of *i-SCOPE* smart services to perform statistical analyses. As a result a number of maps and charts are produced showing urban areas that are particularly susceptible to noise. This information will be used to define the best strategy to reduce citywide noise levels.

**Innovative aspects**

- Noise simulations can be calculated through a remote service, based on interoperable standard WPS. This way any client (including commercial or open source GIS software) can perform noise simulations by invoking a smart service based on an interoperable protocol.
- The EC Directive 2002/49/EC on the assessment and management of environmental noise requires large cities in Member States to produce noise maps and action plans to curb noise pollution. Current efforts to comply with the directive are based on simulations rather than field measurements, based on statistical data for transport: fair, train and large roads and industry. By using measurement data collected by citizens as well as by traditional sensors, possibly in combination with statistical data (e.g. on urban traffic flows), these existing efforts can likely be improved upon and will certainly throw a different light on the actual situation.
- Simulated maps are by construction dated (typically by hour), and they are in terms of averages over day, evening and night periods over a whole year. Real time maps provide finer granularity in terms of time as well as space.
- Simulated approaches map the situation at 4m above the ground at each house's most exposed facade, while real-time noise mapping through mobile sensor networks provides a people-centric view on urban

[1] It should be noted that Directive 2002/49/EC is written in terms of simulated noise maps, though specifications for measurements are included as well. It was developed at a time when city-wide measuring grid was not feasible, rather, measurements are required to calibrate simulation models. Within i-SCOPE we adhere to the directive insofar as they apply. For example, we comply with calibration, A-weighting, and $L_{den}$ measuring norms, while prescriptions for measurement height (4m, the average height of people's bedrooms) are ignored because they make no sense in a participatory setting.



soundscapes: it allows measuring noise levels in the streets where people are.

- Further innovative aspects of the proposed real-time noise mapping framework are:
  - low-cost facilitation of wide-scale people-centric daily sound level measurements (at dB(A)) with hardware that is already out there;
  - immediate correlation with subjective experience and source identification through tags entered by users;
  - comparison of time slots, areas and more generally, citizens' experiences through map querying;
  - geographic visualization of measured sound levels and iterative creation of collective noise maps;
  - improved decision making by better understanding urban noise pollution through data that was not available before;
  - direct feedback from and to citizens, thus engaging citizens according to the paradigm of "people as sensors" and creating potential for awareness-building;
  - high density (in principle) of information on noise levels both outdoor (e.g. on streets) and indoor (e.g. metro).

**Details on technical solution proposed**

This scenario relies on integration of the existing Open Source technologies developed in the projects:

- BRISEIDE (ICT-PSP), coordinated by *FG* and joined by *EPS* and *REG*, with regard to spatio-temporal processing required to perform statistical analysis on time-based noise data.
- Similarly to the previous scenario, 3D client technology, developed by *FG* and extended in the context of BRISEIDE to access, from client side, time-rich data through WMS and WCS service protocols.
- Sound measuring and mapping technology (respectively client and server), initially developed in the context of the FP6 project TAG by Sony CSL in collaboration with *VUB* and later extended by *VUB* in the context of Innoviris project 'Community memories for sustainable urban living'.

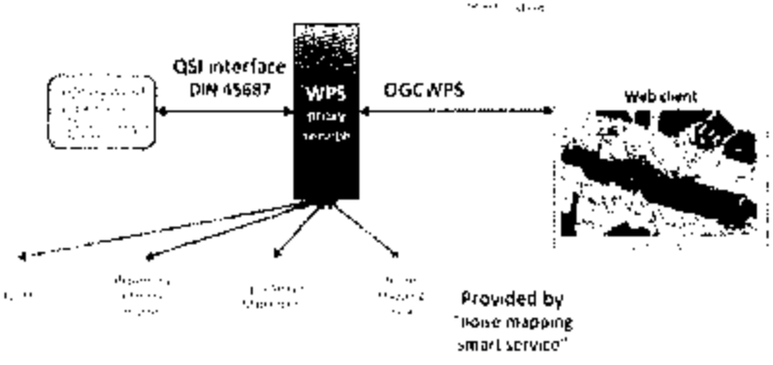



**Figure 13: the approach followed for the environmental noise simulation smart service**

**Smart-service-side components:**

- *MOSS* will extend existing noise simulation component to ensure interoperable access to noise simulation functionalities as a service. A detailed technical description is provided later within WP4 within **T.4.4 - Environmental noise simulation.**
- *VUB* will extend existing real-time mapping technology to support interoperable provision of data through WMS or WCS. A detailed technical description is provided within WP4 in T.4.3 Real-time

**environmental noise mapping service.**

**Client-side components (SmartPhones and tablets running on Android):**

- *CERTH* will integrate the NoiseTube mobile client application for measuring, designed to run on several mobile devices as part of the NoiseTube project (http://noisetube.net) with other mobile technologies as described within **T4.7 Mobile client applications for citizens.**
- *UG* will extend current BRISEIDE 3D client to support CityGML with superimposed noise mapping data. Current support for temporal data (via WMS or WCS) will have to be extended to allow interactive visualisation of time-variable noise data as textures of 3D urban model.



**The envisaged usage of the service**

| Pilot | Solar energy assessment | Noise mapping | Designed-for-all routing | Current situation | Envisaged usage of the service |
|---|---|---|---|---|---|
| Indjija, RS | X | | | Currently no solar potential simulation is made because the city administration does not have the required technology.<br>Diversely-abled friendly routing: there is not such a functionality. However an extensive mapping campaign has been carried on by the City Council with a local NGO leading to a diversely-abled-friendly map of the city. | Services will be made available to citizens from www.mdjin.net, the official website of the municipality. |
| Trento, IT | X | X | X | Solar potential simulation: No web-service is available to provide solar potential simulation neither to manage energy loss of buildings. The Province of Trento ranks among the area in the country with highest production of energy from solar source. However the Province has a well-established policy for energy loss certification. There is a formal procedure in place to be appointed as building energy auditor.<br>Noise mapping: no software as service is available. The Agency for Environmental Protection of the Province of Trento has made use of specific software. For outdoor simulation they use the software 'Mithra' produced by the French CSTB or software "IMMI" produced by the German Wölfel Meb & Software-Systeme GmbH. With regard to indoor spaces they use the "Ramsete" software developed by University of Parma. In all cases the creation of the simulation environment is extremely complex and does not allow interoperable access to GIS 3D data. | The routing service and the real-time noise mapping service will be made publicly available from the web and the routing/noise mapping App will be available to the citizens. The mobile App will further benefit from the availability of the city-wide public (free) wireless network (WiFi).<br>The solar potential simulation as well as the noise simulation service will be made available to the local Province officers and will be tested over the high-speed optic fibre network connecting the various public office across the entire Provincial territory. The infrastructure will be available to the project as it can be read from the Letter of Support from Trentino Network (responsible for the management of the infrastructure) Annexed to this proposal. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Baia Mare, RO | x | x | x | Solar potential simulation: Currently no solar potential simulation is performed due to lack of technology. Notably, the city is in the final stage of the Energy Strategy for the city which involves also solar potential scenarios.<br>Noise mapping: Currently no sound mapping is made because due to lack of technology. Based on the fact that Baia Mare is a former industrial city noise is a key issue in the administration agenda.<br>Diversely-abled friendly routing: in the Baia Mare Municipality the issue of a more inclusive urban environment is high in the administration agenda. | Services will be available to PCs at local departments.<br>Services will be made available to citizens at http://baiamare.ro/<br>In case of real time sound mapping pilot, the software will be available from the website of the city council for people to download it.<br>The municipality of Baia Mare will integrate *i-SCOPE* in the current website of the municipality with a view to develop a new geoportal with GIS functionality through the collaboration of *i-SCOPE* and other currently running projects. |
| Zadar, HR | x | | | Currently no solar potential simulation is performed due to lack of technology. Notably, the county has a Renewable Energy Resource and Energy Efficiency Increase Assessment Program in place. | Services will be available to PCs at local (JU) department.<br>Services will be made available to citizens at www.zadarska-zupanija.hr |
| Zagreb, HR | x | x | | Currently no solar potential simulation is performed due to lack of technology. Currently a survey of current situation is being performed. | Services will be available to PCs of experts at City Office for Energy, Environment and Sustainable Development.<br>Services will be made available to citizens at www.zagreb.hr<br>In case of real time sound mapping pilot, the software will be available from the website of the city council for people to download it. |
| Wien, AT | | | x | The city of Vienna manages a huge geodatabase with relevant information for such services, like road geometry, detailed information about pavement covering and obstacles | Services will be made available to citizens at www.wien.at, which is the central webportal to all services of the city government as well as the interactive citymap www.wien.gv.at/stadtplan/ |



| | | | | | |
|---|---|---|---|---|---|
| Drama, GR | x | x | | Sound mapping: *DRAMA* Municipality does not have any specific technics to map the noise pollution that plagues certain areas of the city center. They base noise registration at accounts provided by complaining citizens.<br>Diversely-abled-friendly routing: in the *DRAMA* Municipality the position on friendly routing has top priority in the administration agenda. It is a major policy of the Technical Infrastructure Department of the municipality to provide the basic infrastructure for differently-abled-friendly routings and then the Municipal Police assists in the maintenance of clear paths along the differently-abled-friendly routes. | The municipality of *DRAMA* will integrate *i-SCOPE* in the current website of the municipality with a view to develop a new geoportal with GIS functionality through the collaboration of *i-SCOPE* and other currently running projects.<br>*DRAMA* will use the mobilizing mechanisms to make the pilot interventions known to the citizens of the city. This is fairly easy and can be quite effectively done because *DRAMA* is not a very big city. Concerning the differently-abled-friendly Routing the administration will inform the citizens through the mass media, the municipal bi-monthly newspaper called "City and Life" and of course the web page of our municipality.<br>Furthermore, *DRAMA* will contact separately all the associations and organizations of disabled citizens. As it concerns the issue of "sound mapping" *DRAMA* will use similar means to disseminate the methodology of the practice and they will publish the results at the municipal web portal www.dimos-dramas.gr. |

| | | | |
|---|---|---|---|
| Newcastle, UK | x | | NCC currently model solar potential by generating a shortlist of properties and use GIS/LIDAR data to inform the appropriateness of roofs for deploying Photovoltaic panels. NCC can also shortlist based on tenure, age, housing type. This is not published and generates a list, in Excel, of appropriate homes. Local knowledge is then applied to further identify suitable homes. It does not take full account of the solar potential, this is done separately |

NCC will publish the end product on www.theenergyenablegroup.co.uk as a tool to all residents and businesses in Newcastle.

NCC will also use the product to help with their efforts at providing services to resident and help them secure low carbon retrofit packages to their homes. The software will also help commercial premises, community owned/occupied premises, our operational buildings and wider public sector partners buildings. Access to the software will also be provided though NCC's Customer Service Centres.

The piloting of the iSCOPE platform within NCC will allow for the user testing of the platform's functionality under Scenario 2: Energy dispersion and solar potential assessment via a number of approaches. The NCC Energy Team are currently undertaking a number of smaller Photovoltaic demonstration projects across different building types including residential properties, community centres, and operational buildings. These demonstration projects are driven by previous GIS analysis which has been provided through internal capacity. As the Energy Team move on to develop plans for a district-level photovoltaic project they will use the experience gained in conjunction with the GIS Team on demonstration installations to user test the functionality of the *iSCOPE* platform to assess it's end-user value.

This will provide the opportunity to feedback experience gained on actual installations which could further develop and fine-tune the platform with the aim of developing the analysis beyond the standard orientation, pitch, solar yield calculation.

The assessment of the platform against specific field-based constraints as experienced by different building types or location types could allow a further level of contextual intelligence to be developed within the platform.

Once NCC are comfortable with the functionality, accuracy, and stability of the platform it will be introduced to a wider stakeholder testing group involving local social landlords, the NCC private rented service (representing private residential properties), and Managers of NCC operational stock to further assess it's ease of use, and end user value.

A final stage of testing could potentially involve web based integration of a software client into the council's web-based services to allow open access of all or part of the platform to individual householders who wish to carry out an analysis of their own property.



| | | | |
|---|---|---|---|
| Malta Harbour area, MT | x | x | LIDAR data will be processed and analysed. 3D data will be used to perform solar analysis potential for the study area.<br>Noise measurements are done by Malta and Environment and Planning Authority (MEPA) periodically. Then iSCOPE will process the data, analyse it and make it available via through *i-SCOPE* web services<br>Web services will be available to PCs at government departments.<br>Web services will be made available to citizens at www.mapa.com.mt<br>Web services will be made available to citizens form the Local Council offices falling within the study area. |
| Lecce Region, IT | x | x | Solar Potential Simulation: Currently no solar potential mapping is made because the technology and required information is not available.<br>Noise Mapping: Currently no noise mapping mapping is made because the technology and required information is not available.<br>Services will be available from the PCs at local IT departments and will be available over the high speed fiber-optic network Megalab<br>Services will be also available from the geoportal of Regione Lazio from http://www.sitarweb.it/sitarweb/progetto.htm (available on line) |
| Velletri, IT | x | x | Solar Potential Simulation: Currently no solar potential mapping is made because the technology and required information is not available.<br>Noise Mapping: Currently no noise mapping mapping is made because the technology and required information is not available.<br>Diversely-abled-friendly routing: no specific service is available.<br>The service will be publicly available to citizens and mobile Apps will be free to download |

**Involvement of users**

| Pilot | Users and their involvement |
|---|---|
| Tekstilo, IT<br>Indrija, RS | 2 operators from the IT and GIS department, 5 operators from Directorate for construction of the Municipality of Indrija, 5 operators from other departments, 30 citizens from local organization Ecology association for sustainable development "Eko-lor", 20 citizens from local organization Ecology movement Beska, 30 representatives from companies from the Economic club of Indrija, 3 experts from Serbian Institute for Architecture and Urbanism, 12 scientists from other local institutes.<br>• 20 experts from different department of city administrations.<br>• 50 professionals.<br>• 40 scientists,<br>• 200 citizens. |

| | |
|---|---|
| Bala Mare, RO | Sound mapping: Target groups will be (a) the citizens who live in the city, (b) enterprises and (c) public institutions<br>Differently-abled-routing: Target groups will be (a) the citizens and (b) the inhabitants who face mobility problems<br>Solar Energy Assessment: Target groups will be (a) the citizens, (b) enterprises and (c) public institutions.<br>In total Bala Mare will mobilise:<br>• 200 citizens (including children from schools) and representatives of the civil society, 20 experts from different departments of city administration, 20 professionals from different companies will be asked to participate at the 3 pilot projects.<br>• 5 companies specialized in environmental and urban mobility aspects and 5 NGOs specialized in environmental and urban mobility aspects will be asked to involve their members in the 3 pilot projects<br>• At least 5 university staff will be asked to involve in the scientific approach of the 3 pilot projects and to involve their students at various stages of the projects.<br>• 10 operators at dept of county administration<br>• 200 citizens |
| Zadar, HR | • 10 experts at City Office for Energy, Environment and Sustainable Development<br>• approximately 50 professionals<br>• approximately 1000 citizens through various informative campaigns, lectures, presentations, flyers, posters |
| Zagreb, HR | • 5 operators from the IT dept<br>• 50 citizens from local association supporting disabled people will be recruited as follows:<br>  ◦ The major associations for disabled and handicapped people will be invited to test the pilot.<br>  ◦ The City Government will also invite additional persons via its printed and online medias. |
| Wien, AT | Sound mapping: Target groups will be the citizens who live in the city center and main throughways of the city. 15 groupings from citizens living along the main throughways and the city center will be asked to participate at the sound mapping exercise.<br>Differently-abled-friendly routing: Target groups will be (a) the citizens and (b) the inhabitants who face mobility problems. 50 citizens from local association supporting disabled people will be asked to participate at the "Friendly Routings" project. |
| Drama, GR | • City Council Building Managers – approx 600 users<br>• Public sector partners – universities, health sector, community & voluntary sector, police, fire & rescue services, & commercial buildings – approx 5,000 users<br>• City Council housing management organisations (Your Homes Newcastle – 30,000 users)<br>• Private sector landlords – approx 70,000 users<br>• Registered Social Landlords – approx. 10,000 users<br>• Private owner occupied residents – approx. 60,000 users |
| NewCastle, UK | Solar Potential: 200 citizens via the MRA applications for solar panels, 6 operators at MRA and Local Councils supporting solar initiatives<br>Noise Mapping: 100 citizens via the MEPA campaign on noise pollution, 20 operators at MEPA and Local Councils supporting better environmental standards |
| Malta, Harbour area, MT | • 20 operators at local city council departments,<br>• 500 citizens recruited through advertising campaign. |
| Lazio Region, IT | |



| | |
|---|---|
| Lazio Region, IT | • 5 experts at city administrations departments,<br>• 200 citizens recruited through advertising campaign. |

**Innovative Internet-based services and infrastructures**

As illustrated in the previous section *i-SCOPE* makes extensive use of Location Based Services (LBS) for both the real-time noise mapping and for diversely-abled routing.

Additionally *i-SCOPE* will have access, within three of its pilot locations, to ultrafast Internet connectivity namely:

- In the Lazio (Italy) pilot, through partner *LAZ*, *i-SCOPE* services will be tested over the high-speed fiber-optic network, the so-called Megalab (Metropolitan e-Government Application Laboratory), an initiative of the Lazio region which aims to establish a **fiber-optic high-speed computer link** between the center of Rome (Lazio Region), the Tor Vergata Research Area and Frascati (including connection to European Space Agency), creating the a **metropolitan network** (MAN Metropolitan Area Network). Megalab has been promoted by *LAZ* to boost regional competitiveness and to offer innovative services to both science and business market.
- In the Velletri (Italy) pilot, through associated partner *VELI* (see letter of support annexed to this proposal), *i-SCOPE* will have access to the citywide sensor network aimed at delivering value-added services to citizens, such as info giving support to differently abled or aged people. The **sensor network** in place is a wireless infrastructure, which is covering the downtown area and responding to the IEEE 802.15.4 standard. This network has been designed with the aim to complement high broadband infrastructures for pervasive applications on the city territories.
- In the Trentino (Italy) pilot, through associated partner *TNET* (see letter of support annexed to this proposal), *i-SCOPE* will have access to the provincial fiber-optic network. This is a 800 km long network, designed to support access networks all over the Trentino, to connect all the branches of government across the province.

### B1.2 EU and national dimension

**EU-level laws, strategies and regulations**

*i-SCOPE* is relevant to a number of EU objectives and policies in the domains of:

1. Smart cities.
2. Government and access to digital information and services to the citizens.
3. Accessibility and inclusion.
4. Sustainable Energy.
5. Noise.
6. Privacy and security.

Below we summarise the relevant Directives, plans or communication from the Commission, from other international institutions (e.g. UN) as well as national level initiatives of relevance for *i-SCOPE*.

**Smart Cities**

The smart cities objective for energy control and climate impact reduction aims to prove to citizens that their quality of life and local economies can be improved through investments in energy efficiency and reduction of carbon emissions. The contribution of *i-SCOPE* is in the development of smart services to improve decision-making at urban planning and city management levels, with regard to issues related to energy efficiency and noise levels, based on urban pattern and its morphology. Thus *i-SCOPE* will provide tools to allow Europe to measure and meet the smart cities objectives.

- COM(2006)105, 8.3.2006 – A European Strategy for a Sustainable Competitive and Secure Energy
- COM(2007)1, 10.1.2007 – An Energy Policy for Europe

- EC, 2011: A resource-efficient Europe - Flagship initiative under the Europe 2020 Strategy
- EEA, "Cities - Investing in Energy and Resource Efficiency", 2011
- EEA, 2010: The European environment - state and outlook 2010. Synthesis.
- OECD, 2011: Green Growth Strategy Synthesis Report.
- TEEB, 2010: The Economics of Ecosystems and Biodiversity
- UNEP, 2008: Green Jobs. Towards decent work in a sustainable, low carbon world.
- UNEP, 2011: Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication
- European Wind Energy Technology Platform;
- European Photovoltaic Technology Platform;
- Euracoal.
- OECD Round Table on Sustainable Development.
- EU Global Energy Efficiency and Renewable Energy Fund (GEEREF);

**Government and access to digital information and services to the citizens**

The openness principle of the European Union is captured at the heart of *i-SCOPE* which provides means of enabling access to the services of smart cities to the citizens of these smart cities. In particular *i-SCOPE* allows cities to claim conformance to Directive 2003/4/EC on Freedom of access to information enforces free access and dissemination of information regarding the environment. To this extent *i-SCOPE* will ensure:

- Data generated by *i-SCOPE* services on solar potential assessment and noise simulation will be public via the project website via the 3D Geobrowser developed by Graphitech. For this reason there will be a public version of the 3D Geobrowser, to be customised for use by the public, requiring minimal (or no) configuration, simply ensuring an easy-to-use interface to such environmental data.
- Similarly to the previous item, data on noise mapping will be also publicly available from the portal of the project via the 3D Geobrowser, in accordance to Article 8 of the directive.

This will ensure that Article 7 – point a) and b) of the Directive will be satisfied as well as Article 7 point. 1. Additionally a form will be also included within the web client to allow access upon request to environmental information created through *i-SCOPE* services (for instance the value of noise at given level). This form will allow citizens to formulate requests automatically and to have them forwarded to the relevant point of contact at the public administration, in accordance with Article 3 of the Directive

*i-SCOPE* also seeks to extend the national and wider EN work in this area to the smart-city user as defined by Greece in the eGovernment Interoperability Framework (eGIF) and the development of the Aarhus Convention for public participation in environmental matters

**Accessibility and Inclusion**

The *i-SCOPE* project is to be developed in line with the European Commission Communication on e-Accessibility in order to ensure *i-SCOPE* project does not exclude any member of society. This is achieved by compliance to the standards and guidelines established by ETSI and CEN (amongst others) to ensure eAccessibility and e-Inclusion in Europe.

The **European Telecommunications Standards Institute (ETSI)** produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and internet technologies.

The **European Committee for Standardization** (CEN) is a business facilitator in Europe, removing trade barriers for European industry and consumers. Its mission is to foster the European economy in global trading, the welfare of European citizens and the environment. Through its services it provides a platform for the development of European Standards and other technical specifications.

The European Union has several programmes and initiatives aiming at **e-Inclusion policy** and e-inclusion features prominently in the Digital Agenda for Europe adopted by the European Commission in May 2010. Under Pillar 6 (Enhancing digital literacy, skills and inclusion) of the Digital Agenda, the Commission proposes a series of measures to promote take up of digital technologies by potentially disadvantaged groups such as



elderly, less-literate, low-income persons. Improving access for people with a disabilities is another of the policy actions set by the Digital Agenda.

An important part of the e-inclusion agenda is also tacking **demographic ageing** with the help of ICT: a better quality of life for the elderly, reduced cost of care, business opportunities in the "silver economy". Under Pillar 7 (ICT-enabled benefits for EU society) the Commission will reinforce the Ambient Assisted Living (AAL) Joint Programme to allow older people and persons with disabilities to live independently and be active in society.

The **Lisbon Council** in 2000 agreed to make a decisive impact on the eradication of poverty and social exclusion by 2010. Through the Open Method of Coordination Member States are encouraged to set out concrete steps in their National Action Plans against poverty and social exclusion and to improve access to the new ICTs and opportunities new technologies can provide. The **Riga Ministerial Declaration on e-Inclusion** of June 2006 demonstrated the commitment of EU Member States. It has identified six themes which the European Commission uses to foster e-Inclusion. Overall objectives of the thematic areas include

- e-Accessibility - make ICT accessible to all, meeting a wide spectrum of people's needs, in particular any special needs.
- Ageing - empower older people to fully participate in the economy and society, continue independent lifestyles and enhance their quality of life.
- e-Competences - equip citizens with the knowledge, skills and lifelong learning approach needed to increase social inclusion, employability and enrich their lives.
- Socio-Cultural e-Inclusion - enable minorities, migrants and marginalised young people to fully integrate into communities and participate in society by using ICT.
- Geographical e-Inclusion - increase the social and economic well being of people in rural, remote and economically disadvantaged areas with the help of ICT.
- and Inclusive eGovernment - deliver better, more diverse public services for all using ICT while encouraging increased public participation in democracy.

**Sustainable Energy**

In addition to the EC initiatives for smart services supporting sustainable energy at urban scale the aim of *i-SCOPE* is to embrace the developments in smart Grids and smart-metering to ensure that the EU Energy **Efficiency Action Plan** (EEAP) and the EU directive on Energy End-Use Efficiency and Energy Services (2006/32/EC) can be delivered in smart-cities with direct consumer interaction.

- "A European Strategy for Sustainable, Competitive and Secure Energy" (COM(2006)105)
- "Action Plan for Energy Efficiency: Realising the Potential, Communication From The Commission", (COM(2006)545).
- Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings
- EU Energy Efficiency Action Plan (EEAP) 2006.
- EU Green Paper on Energy Efficiency, "Doing More with Less", (COM (2005)265).
- EU directive on Energy End-Use Efficiency and Energy Services (2006/32/EC).
- Sustainable Energy Europe Campaign (http://www.sustenergy.org/).
- GreenBuilding Programme (GBP)
- Solar Heating and Cooling Programme by the International Energy Agency (owned by European Commission), whose Task 36 addresses Solar Resource Knowledge Management.
- Intelligent Energy Europe (IEE).
- Implementing Agreement of the International Energy Agency SolarPACES (http://www.solarpaces.org/), PVPS (Photovoltaic Power Systems), SHC , Task solar
- "GRaBS - Green and Blue Space Adaptation for Urban Areas and Eco Towns"
- UK Climate Change Bill.

- UK New Building Regulations according to which by 2016, all new homes should be zero carbon (Code level 6)
- "Official Gazette of the Republic of Serbia", No. 72/2009, 81/2009, No. 84/2004
- "Official Gazette of the Republic of Serbia", No.135/2004 "Strategy of energy development for the Republic of Serbia until 2015", Serbian Parliament, 2005
- "National Sustainable Development Strategy", Government of the Republic of Serbia, 2008
- "Directive on measures of support for electrical energy production by using the renewable energy resources and combined production of electrical and thermal energy" ("Official Gazette of the Republic of Serbia", No. 99/2009)

**Noise**

The aim of *i-SCOPE* is to support cities directly to meet the requirements of The Environmental Noise Directive (END) (2002/49/EC). The directive, among other obligations, enforces member states to provide strategic noise maps on a regular basis (5 years) as of 2012, for major roads, railways, airports and agglomerations (>250k inhabitants), using harmonised noise indicators. These maps will be used to assess the number of people annoyed and sleep-disturbed respectively throughout Europe, to address issues emerged during each assessment period, and to create action plans for said target areas. Furthermore the Directive 2002/49/EC, Article 9 states that citizens must be provided with clear and accessible noise maps, disclosing areas exceeding value limits. Moreover the directive expresses the importance of the participation of all involved citizens, at all levels. This is directly addressed by *i-SCOPE* in, the expansion of scenario 3 (noise mapping and simulation), and in particular by the participatory mobile sensing approach proposed.

- 1996 Green Paper (COM(96)540) "Creation of a common framework for noise policies including improvement of monitoring process".
- Commission of the European Communities, Directorate General XI. Position Paper on EU Noise Indicators. Working Group on Noise Indicators. 27 August 1999.
- Sixth Community Environmental Action Programme (2002-2012) (COM (2001) 31) explicitly refers to noise mapping and mitigation.
- The European Commission's Green Paper on Future Noise Policy.
- The Environmental Noise Directive (or END) in 2002 (2002/49/EC).
- Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information.
- UK - Towards a National Ambient Noise Strategy. A consultation paper from the Air and Environmental Quality Division, Department for Environment: London. November 2001

**Privacy**

Privacy is a fundamental right established in the Organisation for Economic Co-operation and Development (OECD) Declaration of Human Rights, the EC Data Protection laws, and the EU Convention on human rights and which can be summarised as defining the following top level objectives for the system.

- Access to services should only be granted to users with appropriate authorization;
- The identity of a user should not be compromised by any action of the system;
- No action of the system should make a user liable to be the target of identity crime;
- No change in the ownership, responsibility, content or collection of personal data pertaining to a user should occur without that user's consent or knowledge;
- Personal data pertaining to a user should be collected by the system using legitimate means only,
- An audit trail of all transactions having an impact on personal data pertaining to users should be maintained within the system.

The *i-SCOPE* project shall ensure that the privacy of users is respected whilst providing protection of the data at the core of the system and the interaction of users with that data in line with the data protection laws. Advice



will be sought in development of *i-SCOPE* through the Article 29 working party to ensure that the capabilities offered to citizens by *i-SCOPE* are consistent with the goals of privacy protection legislation in Europe.

NOTE: Under Article 29 of Directive 95/46/EC a "Working Party on the Protection of Individuals with regard to the Processing of Personal Data" has been established and may be contacted through the Article 29 Secretariat (http://ec.europa.eu/justice/policies/privacy/workinggroup/secretariat_en.htm) and the current members (http://ec.europa.eu/justice/policies/privacy/workinggroup/members_en.htm).

**Relevant projects and initiatives of interest**

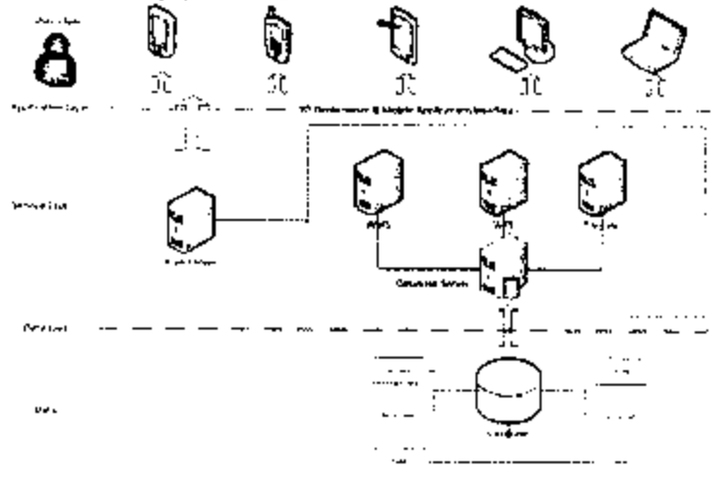
The following projects have been identified as having relevance to the *i-SCOPE* project and where necessary arrangements will be put into force to share project results and ensure harmonisation of impact.

- The FP6 project MESoR - Management and Exploitation of Solar Resource Knowledge, which exploits existing databases on solar resources including the European Solar Radiation Atlas (ESRA), the projects SoDa, Satel-Light, PVGIS, PVSAT, PVSAT 2 or Heliosat-3.
- The FP6 project IMAGINE - Improved Methods for the Assessment of the Generic Impact of Noise in the Environment (http://www.imagine-project.org/) with specific regard to categorization, modeling and mapping as defined by publicly available project deliverables.
- The FP6 project TAGora - Semiotic Dynamics in Online Social Communities (http://www.tagora-project.eu), which explores the use of tagging as a means of emerging resource and event categorization and description in online social communities. The NoiseTube participative noise mapping platform originates from the project.
- The ICT PSP project BRISEIDE (www.briseide.eu) on spatio-temporal interoperable web services (which involves *FG*, *GEOF*, *EPS*).
- The FP7 project i-Tour (www.alourproject.com) with regard to location based services supporting personal mobility (which involves *FG* and *GSL*).
- Project "Spatial, environmental, energy and social aspects of developing settlements and climate changes – mutual aspects" financed by the Serbian Ministry of Education and Science (2011-2014).
- Project "Improvement of utilization of solar energy in the Republic of Serbia" aimed to make the utilization of solar energy in Serbia systematic and on a wider scale. Coordinator of the project is Energy efficiency agency of the Republic of Serbia. (www.seea.gov.rs/Serbian/Prezentacija1.htm)
- Fund for environment protection of the Republic of Serbia financially supports utilization of renewable energy thorough its programmes. (www.sepf.gov.rs/)
- It is foreseen that a Fund for energy efficiency and renewable energy of the Republic of Serbia will be created during 2011. The purpose of the fund is to financially support utilization of renewable energy.
- "Serbian Energy Efficiency Project" funded by World's Bank credit. Aim of the project is to improve energy efficiency in public buildings - schools and hospitals and other social service buildings. Coordinator of the project is Energy efficiency agency of the Republic of Serbia. (www.seea.gov.rs/English/Prezentacija1.htm)
- The FP7 project SmartSantander (www.smartsantander.eu), on developing an in the world city scale experimental research facility in support of typical applications and services for a smart city, with the aim of reducing the technical and societal barriers that prevent the IoT concept to become an everyday reality.
- The LIFE 2.0 project (http://www.life2project.eu/) as well as other projects within the smart cities portfolio.

**B1.3. Maturity of the technical solution**

*i-SCOPE* integrates open source technologies and previously developed partner projects within a comprehensive toolkit promoting interoperability through the use of OGC and other open standards for data exchange and services. This allows for independent development and functionality deployment provided by different web services. In *i-SCOPE* pre existing technologies, wherever not available as services, will be

wrapped by a service layer in order to ensure compliancy with the overall schema. The following diagram provides an overview of the project architecture.



The following section provides extensive details on each technical component available, highlighting the developments already available and required as well as illustrating the integration required for each component.

**Data layer**

*i-SCOPE* will significantly rely on CityGML, as provided on the following websites (FTP: www.opengeospatial.org/standards/citygml & http://www.citygml.org/). CityGML is the open standard for interoperable encoding of 3D Urban Information Models. Since *i-SCOPE* refers to Smart Cities CityGML and its extension according to the requirements of the project is the most prominent solution. The standards is being developed by the Open Source community under coordination of *OS* and *OGC*. The specifications are publicly available. Various commercial and open source software creators provide support for it. As previously mentioned, *i-SCOPE* requires extension of the core standard as well as the creation of two Application Domain Extensions (ADEs) and the extension of a third one (on noise) of the current CityGML.

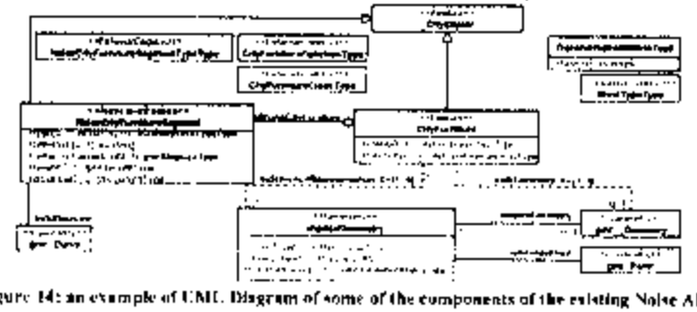


**Figure 14: an example of UML Diagram of some of the components of the existing Noise ADE**

This will extent modelling capabilities making CityGML compliant to the requirements of the three scenarios tackled by the project:

- Sun Potential Mapping
- Noise Mapping
- Differently-abled-friendly routing

Further details are provided in **WP3** within **T.3.1 CityGML core standard extension** and **T.3.2 Application Domain Extensions (ADE)** which are tasks handling the usage and extension of CityGML.



**Service Layer**

*i-SCOPE* services will integrate the BRISEIDE (www.briseide.eu) platform along with the processing services required. The toolkit is currently undergoing extensive testing in several pilots across Europe and provides services to access spatio-temporal data both in terms of data access and data processing.

*i-SCOPE* will also extend the routing algorithm developed by BRISEIDE. This is based on OpenStreetMap available dataset, and it can exposed as an OpenLS service. Additionally in *i-SCOPE* the new service, to be developed by *UPS*, will provide a routing algorithm that will be friendly to people with disabilities. For example; the dataset will provide information on ramps to get on the pavement after crossing a street. The routing algorithm will use this datasets to provide the person using the *i-SCOPE* service with routes that:

- Require the lesser effort to get from point A to point B;
- are the quickest in terms of time
- are the shortest in terms of overall length
- always accounting for the requirements of disabled people.

*i-SCOPE* will also rely on integration of enVision technologies developed by *MOSS*, which represent state of the art in their domain and have been also awarded the 2010 Geosciences Innovation Award. The technology. The solution is in use by several administrations in Germany.

Specifically *i-SCOPE* will integrate a tool to generate 3D city models based on existing geodata. This process can provide the best results when using high resolution and high accuracy surface models such as LiDAR produced datasets. In addition, it combines data such as terrain models and floor plans to produce as much a realistic effect as possible. The aforementioned technology as provided by *MOSS* will be customized and adapted to *i-SCOPE*'s requirements in order to operate as a web service. To achieve this, a software layer will be developed around the initial standard application enabling it to provide interoperable access to simulation functionalities via a WPS (Web Processing Service). *i-SCOPE* will also integrate existing *MOSS* noise simulation technology, currently developed on top of Oracle and ESRI technology. To do so an WPS component will be developed to ensure interoperable communication with noise simulation software as interoperable web service.

*i-SCOPE* will also use services developed by *UAU*. The service is based on geographic information systems (GIS) extended with algorithms that can create semantic spatial descriptions automatically. The spatial description derives from vector data so that a largescale mapping is possible. This method makes it possible to describe the shape of crossings, blocks, etc. in words and in a standardised way. Core of the service is a platform (database). Interfaces can provide automatic data updates. The semantic and the automated generated textual description of the urban space is created on the server with GIS methods in the background or directly running within.

The basic geographic data is open data based (OpenStreetMap). OpenStreetMap data has been created by its community, is free to download, contains a great variety of attributes and is kept up to date in a satisfying way. Besides that, the geodatabase is prepared to add more exact data, for example data provided by the local community governments. As a first sample the City of Vienna will provide data as a test region.

*i-SCOPE* partner *UAU* will integrate noise level mapping technology into the *i-SCOPE* service layer. This will be based on NoiseTube, a technology initially developed within the scope of the FP6 project TALOnet by Sony CSL in collaboration with *UAU* and later extended and improved by *UAU*. The NoiseTube system consists of two parts. One part is an application for smartphones allowing users to collect geo-located noise level measurements and share them in real-time. The second part, the NoiseTube server software, accumulates and stores all shared data and uses it to generate noise maps (as OGC KML files), user tag clouds and basic statistical noise information. These results are currently made available through the NoiseTube website (http://www.noisetube.net). The solution is stable and currently available for public use. The source code (both of the client & server application) are released under the terms of the LGPL v2.1 open source license. This license allows the technology to be used by non-LGPL licensed software (as a "library") as long as

changes/improvements to the technology itself are released under LGPL. To operate within the *i-SCOPE* service layer the existing NoiseTube server software will be extended with support for the OGC standard WCS.

*i-SCOPE* provides a service for sun potential calculation and production of solar irradiation maps. In order to achieve this the "r.SUN" function – module of GRASS will be customized by *IND* and integrated in the platform's functionality by creating a WPS interface. This function as part of GRASS is provided freely and the source code is available under an open source license (*OS* community[1]). The function will be used in a variety of scenarios again through the development of a software layer developed around it and enabling it to provide interoperable access to the "r.sun" functionality through a Web Processing Service.

**Application layer**

The web client will be based on 3D Geobrowser, developed by *FG* to access and manage geographical information according to OGC standards. This is a mature software, written in Java for maximum compatibility, that currently supports: 1) exchange of map information in a totally interoperable manner; 2) loading of CityGML models as LOD0 and LOD1; 3) access to processing features as WPS. The 3D Geobrowser allows for user interaction with large 3D geo-referenced environments. Operators have to refer to an extremely wide range of heterogeneous multi-source, multi-dimensional, time-varying information sources, including GIS maps, aerial or satellite images, morphology of the terrain data (Digital Terrain Model - DTM or Digital Surface Model – DSM). The variety of data & processes intrinsically cooperative - as diverse operators may be involved – underlines the importance of developing user-friendly universal interfaces. Navigation and data access must be complemented with functions that enable operators to analyze interrelations between spatial information, data patterns and environmental effects through interactive data processing. The system is being used to access a very wide range of geospatial data in 3D, in the following contexts:

- Since 2006 by 10+ engineers at urban planning department of the city of Trento (Italy).
- Since 2006 it is operational and available to all the users of the of the website of local Italian tourist board at http://www.apttuscolano.it/
- Since 2008 by 5+ engineers at National Park Adamello Brenta in Italy
- It has been used by several thousand people in the context of a exposition in Bruxelles and in other cities across EU.
- From Q3 2011 will be used by 200+ engineers from motorway A22 in Italy.
- From Q3 2011 will be used by several operators across Europe in operational scenarios in the context of BRISEIDE.

The system is based on an enterprise level SOA designed to provide all the access, management and processing functionalities of multi-dimensional GIS and satellite data through OGC – OpenGIS Consortium compliant web services. The system delivers a web-based 3D and OGC compliant solution capable to provide interoperable access to geographical information through web services such as WMS, WFS, WCS, and WPS, and provide a strong support to operators looking for decision support through an ideal environment for analysis that integrates computational and visual techniques. The application is Java developed extending the NASA World Wind APIs. Within *i-SCOPE* the 3D Geobrowser will be extended by *FG* to provide support for CityGML LOD2. A further extension is required to allow for interactive visualization of time varying data (e.g. noise or solar simulation) on top of the 3D urban model. Further limited development is required to customise the graphical user interface.

[1] under consideration of FHK – a stakeholder of Graphitech



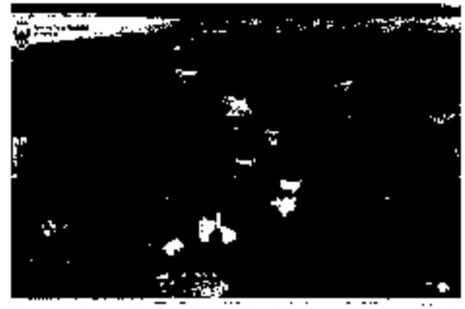


**Figure 15: the 3D web-based GeoBrowser by Graphitech**

The *i-SCOPE* mobile client will integrate the following three existing technologies. All the solutions are developed in Java for Android, thus integration will essentially be ensured through definition of common communication interfaces. The three technologies to be integrated are:

1. A mobile 3D and Augmented Reality application for personal mobility developed by the FP7 project i-Tour by *FG*. The system supports exchange of data via WMS, WFS and OpenLS and a first version is being tested in a large test-bed in the Naples area, in Italy.
2. A mobile technology developed by *CERT* which sends to the server the position of the user together with the target point of the user, where the semantic description is generated. This description is transmitted back to the mobile device where a voice output of the surrounding with all its attributes is performed.
   The technologies chosen to access the textual output are screenreaders or Braille displays for blind and high visually impaired people. Screenreaders are available commercially or open source. In addition to the textual description a visual map for people with lower visual impairment will be developed using SLD (Styled Layer Descriptor; OGC specification) as well as acoustic mouse-over systems on static maps. In this context WCAG 2.0 Guidelines (Web Content Accessibility Guidelines) are of high importance. These are part of a series of web accessibility guidelines published by the W3C's Web Accessibility Initiative and aim at making content accessible, primarily for disabled users, but also for all user agents, including highly limited devices such as mobile phones.
3. Sound level measuring technology based on the NoiseTube mobile client, initially developed within the scope of the FP6 project TAGora by Sony CSL in collaboration with *VUB* and later extended by *VUB*. The solution is stable and currently available for public use on Android and Java ME platforms; an iPhone version is under development. Sound levels are calculated at 2s-intervals (from 1s-recordings), tagged with time, location and user comments, and uploaded to a central database (controlled by the NoiseTube server software) as tuples (dB(A) value, latitude, longitude, time, tags-entered-by-users), where noise maps are produced in real time. These results are available from the NoiseTube website at: http://www.noisetube.net/setup. Original tests were performed at Brussels, BE with more than 75000 measurements, Paris, FR with more than 35000 measurements, Berlin, DE with more than 20000 measurements, Florianópolis, BR with more than 15000 measurements, etc. The source code (both of the client & server application) are released under the terms of the LGPL v2.1 open source license. This license allows the technology to be used by non-LGPL licensed software (as a "library") as long as changes/improvements to the technology itself are released under LGPL.

**Section B2. Impact**

**B2.1a. Target outcomes and expected impact**

*i-SCOPE* is facing very critical issues connected to the future quality of life and economic/financial performances of our cities and city regions. Decision making processes, at local, regional and national scale, are more and more connected to the use of complex tools based on articulated and multi *i-SCOPE*s informative systems and related digital tools.

The three adjectives (smart, inclusive and sustainable) characterizing the EU2020 strategy request for major change in the way of defining the way of being competitive and at the same time keeping under control the unbalances connected to regional disparities, but even to look for more effective and efficient solutions in the se of digital data. In fact, this way, especially those connected to the definition of smart solutions for the economic growth of European cities, city-regions and major scale territories, is strictly connected to the proper design of an EU Digital Agenda (DA).

The *i-SCOPE* outcomes are to identify in set of tools, services and policies that will contribute to major horizontal tasks connected the EU digital Agenda (e.g. access of data owning to public sector information, and enhancing the EU innovation capacity), but, at the same time, the project's outcomes will affect and impact on the realms of a) interoperability and standards of spatial data, b) the research and innovation sectors and c) trying to propose effective solutions to major social challenges (e.g. ageing issues). These latter realms constitute key pillars of the DA for Europe. Outcomes, indeed, will depend on what is going to happen during the project's evolution and implementation, but even on what is going to take priority in the next years among the many issues now designing the frame of the DA and the evolution/adaptation of the ICT PSP objectives. In accomplishing major requests of the DA, *i-SCOPE* is addressing in this design phase the ICT PSP work programme specific criteria in order to completely target its WP Objectives (WPOs), in particular, it is worth remembering: a) *i-SCOPE* aims to innovate the capacity to facilitating the development of EU wide markets for innovative ICT based products and services and exploitation of digital content and b) *i-SCOPE* looks at the stakeholders in order to mobilize the suitable financial and human resources needed to carry out actions in support, precisely, of the WPOs.

The *i-SCOPE* objectives define the single steps to go towards the "Open Innovation for Internet-enabled services in 'smart' cities". The definition of an open toolkit based on 3D UIMs and on open standards will consent to enable in an accessible way a number of services/models that will consent of managing in a more proper way the modelling of city and territorial fabrics and to introduce new indicators (simple and aggregated), parameters for shaping local and territorial policies or simple guidelines for improving the design of solutions connected to use of energy, and or climate control orientated projects (see action 69 of the Digital Agenda [DA]: Assess whether the ICT comply with common energy and emission measures). At the same time, the development of smart services for managing complex governance questions can increase the participation of stakeholders in planning processes in making territorial and urban transformation more transparent and democratic (improving e-government services, DA act.89). Services to promote inclusion and mobility will impact on all those problem connected to demographic change matters, ageing and health *in primis*, that affect the daily quality of life of a growing number of persons in EU.

Moreover, citizens are, thanks to new mobile devices, the real and best sensors for collecting real useful data for correct town and regional planning. With regard to this, these *i-SCOPE* smart services involving citizens will strongly help decision making for city managers (innovative ways of government).

Finally, services based on network ecosystems will permit to create connections among the different ontologies grouping set of 3D data (from city level to the regional, inter-regional, cross border ones) permitting so to design data infrastructure that will permit to make coherent the use of data otherwise not easy to harmonize (improvement in use of digital content, innovation in internet and GIS enabled services, improving the adoption of an European interoperability strategy and framework DA, act. 24).

Concluding, the many *i-SCOPE* outputs, from the more technological ones to the definition of indicators and frames for policies, will fall on different categories (from meta data modelling, definition of platform to the design of services and urban/territorial policies) that cannot bring to a synthesis if not faced in the context of a pluralistic and multi-faced governance based on the directive and directions given by the EU. The questions connected to inter-regional/cross border use of data, those connected to the indications for the design of trans-national services (the market is definitively global), the other linked with the indication to provide for the



design of policies and strategies (the EU should provide a soft creation of coherence among all national and local policies in order to avoid unbalances in use of funds and in the definition of policy principles) are just few examples that demonstrate how the *i-SCOPE* purposes cannot be solved at local or at national level, but required to be set up, experimented and implemented at EU scale through the implementation of a partnership including, public administration (cities and regions) SMEs and research centres.

**iii) IPR issues**

Intellectual property rights (IPR) play an important role in standardization and in that context likelihood of having IPRs incorporated into *i-SCOPE* deliverables become necessary.

It is important for all partners involved in the *i-SCOPE* making process to be aware of their responsibilities and that there is good co-operation between all of them. All partners involved are fully entitled to hold and benefit from any IPRs which they may own, including the right to refuse the granting of licenses.

Addressing IPR issues through researches, analysis, negotiations will help to reduce the risk that investment in the preparation, adoption and application could be wasted because of IPRs not available under fair, reasonable and non-discriminatory terms and conditions. The analysis of IPR issues seek a balance between the needs for public use and the rights of the owners of IPRs.

The basic IPR principles will be defined, bearing in mind the size of the Project, the nature of the Consortium the diverse nature of the membership of the Consortium, the fact that a few companies will be heavy IPR contributors, therefore their legitime interests need to be protected at the beginning.

- Access rights - as the project is a collaborative effort, under certain conditions, a beneficiary/partner in project must grant the access rights to its background and foreground.
- Protection - foreground capable of industrial or commercial application must be adequate and effective protected.

The basic IPR rules in the *i-SCOPE*, regarding access rights and knowledge, will be defined in the Consortium Agreement, as well as the obligations of all partners to maintain confidentiality for know-how and any trade secrets when required to protect the legitimate interests of individual partner, and defines the rights and obligations for *i-SCOPE* partners. Consortium Agreement will govern IP sharing within the Consortium and it will be approved by all the partners in Consortium. IPR will be concise, flexible and clear, to a degree so that if necessary the legitimate interests of individual partners are always protected.

Dissemination does not adversely affect the protection of use or the knowledge generated. In all cases dissemination must safeguard IPR, confidentiality and the legitimate the interests of the partners. All beneficiaries/partners will have an obligation to protect "foreground" if it is capable of industrial or commercial exploitation.

During the *i-SCOPE* project suitable rights clearance framework will be developed. Open source and Close source strategies for IPR management will be explored and defined. It is crucial that risks are identified assessed, treated and monitored.

Licensing agreements that clearly assign the intended intellectual property ownership and IPR will be developed. As Licensing terms are not backed by the international IP treaties, nor by IP law, and use is regulated by the laws of each nation, intended and proper use may be defined within the license itself.

**iii) Multilingual and/or multicultural aspects**

All the front-end software developed (i.e. web and mobile) will be delivered in all the 23 languages of the consortium, that is: English, Italian, French, Flemish, German, Rumanian, Croat, Serb, Greek, Malt.

The basis for multilingualism of the services in *i-SCOPE* will be a template (expert system) which contains specified terms/words. In general the vocabulary for routing systems is clear and manageable as there is a limited number of defined terms. The template brings together these single terms to whole phrases, according to the terms and rules that have been defined in the template. Example: information such as "angle in from: 260 degrees" is translated into "sharp left". This means that for every input information, an adequate output (text, phrase) is defined. The template contains the rules for connecting the single terms in a meaningful way. In addition synonyms could be used, e.g. "go" instead of "walk", so that the text does not sound too monotonous.

With this template it is possible to provide multilingualism. Terms are predefined and limited. These terms only need to be translated in the required target language with the help of a translator.

Finally the portal will be edited in English with automatic translation to other languages. In case a user wishes the page to be translated into his/her own language, a button will provide the possibility of a machine translation of the page. In order the tool to be both cost effective and at the state of the art, we propose to use Google Translation APIs. Technically, Google's API will be used through a specific software module. A label will inform the user that the page has been machine translated.

### B2.2. Long term viability

The consortium plans to formalize modalities and the conditions that will govern the commercial exploitation of the project results after the end of the project and the Community funding through European Economic Interest Grouping (EEIG).

The EEIG will:

- Define strategic development roadmap,
- Develop extension of the *i-SCOPE* toolkit.
- Ensure maintenance and update of the *i-SCOPE* toolkit.
- Coordinate of development from the Open Source community of the *i-SCOPE* toolkit.
- Develop technical documentation.
- Provide consultancy of deployment of the *i-SCOPE* toolkit within public administrations.
- Provide hosting of services to customers whenever required.
- Provide training to users.
- Promote and advertise the *i-SCOPE* toolkit.

As the EEIG is currently the only vehicle offering firms/partners a framework for cooperation directly attached to the Community legal order, and it is largely independent from the various national legal systems of the EU. Potential of EEIGs will be fully presented to potential members/shareholders.

The EU Regulation steers the need for the harmonious development of economic activity throughout the Community and the establishment of a common market offering conditions analogous to those of a national market, and to achieve this, creation of suitable legal instrument at Community level in form of EEIG is made.

An EEIG is a form of lease LTD company, aimed to promote the interest of its members/shareholders. An EEIG is a vehicle which allows companies of individuals of different EU States to combine and register in any EU country a grouping which has a legal personality and can operate across nation frontiers.

Members/shareholders in EEIG remain economically and legally independent throughout their cooperation, and no start-up capital is required.

The purpose of the grouping is to facilitate or develop the economic activities of its members/shareholders by a pulling of resources, activities or skills which produce better results than the members/shareholders acting alone.

### B2.3. Wider deployment and use

Although the results of *i-SCOPE* will be validated in three different yet well defined scenarios, the toolkit will be generally extensible to a number of domains. Being able to use a urban information model with a framework for processing the information it refers to can be extremely useful in a large range of domains including:

- Cadaster,
- Land use,
- Hydrography,
- Civil protection and emergency management,
- Pollution and environmental protection,
- Resource and infrastructure management.

Results of *i-SCOPE* will be directly applicable by partners to other domains, directly extending existing project's infrastructures. As illustrated in Figure 1 the EU coverage, achieved by the consortium ensures a potentially wide replication of the project results across Europe. The project will facilitate deployment and use of the results through direct liaisons with a number of EU projects and initiatives maximizes the potential scope



of the project. To this extent there will be a specific tasks "**T.6.4— Linkage with ICT PSP joint working group, with other local and EU projects**" which foresees organization and coordination of joint activities including user meetings, seminars, guidelines definition to promote linkage with other relevant EU initiatives already joined by *i-SCOPE* partners and beyond.

Further deployment will be envisaged through the involvement of further stakeholders through partners' direct liaisons with communities such as:

- GMES - Global Monitoring for Environment and Security
- EEA - European Environment Agency
- INSPIRE - Infrastructure for Spatial Information in Europe
- GEO – Group on Earth Observation and GEOSS - Global Earth Observation System of Systems
- European Network of Living Labs (ENoLL), the international federation of benchmarked Living Labs in Europe and worldwide (http://www.openlivinglabs.eu), through the Living Labs Schweehat of which partner *CRIT* is the core and Trentino as a Lab (joined by partner *PG*).

The early engagement of city administrations in the project activities will ensure further involvement of other administrations through existing liaisons with other cities or through participation to common working group. This is the case for instance of Eurocities, the network of major European cities, of which Zagreb, Newcastle – partner of *i-SCOPE* are members. This includes activities of specific, yet relevant working groups such as:

- Nature Working Group
- Urban Research Working Group
- Clean Cities Working Group
- Working Group on Air Quality/Climate Change/Energy Efficiency
- Resource for culture Working Group

Additionally partner *NCC* will also provide further awareness to the project through CONCERTO and the Covenant of Mayors (http://www.eumayors.eu/) of which Newcastle City Council is one of the first signatories.

Another significant channel of dissemination of project result will occur through professional associations, both at national, EU level and International Level, of which the consortium partners are members, including but not limited to:

- EuroSDR the European Spatial Data Research Network, A not-for-profit organisation linking National Mapping and Cadastral agencies with Research Institutes and Universities for the purpose of applied research in spatial data provision, management and delivery, of which *OS* is member.
- Open Geospatial Consortium, Inc.® (OGC) of which *OS* and *PG* are members.
- ISO - International Organization for Standardization, CEN - European Committee for Standardization and ETSI - European Telecommunications Standards Institute through partner *CIL* involved in a number of working groups.
- OGC - Open Geospatial Consortium of which *OS* and *PG* are members

As detailed in the previous section after the project will end, the European Economic Interest Grouping (EEIG), to be formalised during the project will take over the projects results. In order to ensure sustainability a detailed business plan will be developed. In general we can state that the EEIG will initially ensure that city administrations partners of *i-SCOPE* will be granted free use of the services for a time span to be agreed during the project development. After this the cities will have to pay an annual fee to benefit from services being run by the EEIG. This initial set of customers will be used as showcase to involve further city administrations.

Each partner will play a key role at local and national level, however special importance will have the industrial partners being involved in the consortium, which will offer services, both at national and international level, in the geospatial domain to a number of local administrations in UK, Serbia, Greece, Croatia, Italy, Slovenia, Norway as well as outside Europe. Through their involvement it will be possible to engage further city administrations and extend results to other cities and countries beyond the project duration.

Further *PG* will ensure dissemination of result to a wider international community since *PG* is founding member of the international network GraphicsMedia.net (http://www.graphicsmedia.net/) and it is part of the

Consortium "Trento RISE" (Research, Innovation, and Education System) for EIT (European Institute of Innovation and Technology) - ICT Labs as EIT KIC (EIT Knowledge and Innovation Communities).



**Section B3. Implementation**

**B3.1. Consortium and key personnel**

**Fondazione Graphitech (*FG*) – Italy (www.graphitech.it)**

Graphitech - Centre for Advanced Computer Graphics Technologies is a no profit applied research centre which conducts research and development activities in the broad technology area of advanced computer graphics, mixed reality and communication and information systems. *FG* has been contributing towards the transfer of knowledge between the research sector and the industry through the promotion of research on advanced graphic, information processing and visual communication, including virtual reality and virtual engineering. Specifically its competences cover the following domains. 1) Augmented engineering including virtual and augmented reality, cooperative virtual environments, 3D visualisation and interaction; 2) Interactive systems, intel. visual programming, multi-modal dialogues; 3) 3D GIS and networked system for management and streaming of geospatial data. *FG* has been involved in several RTD and industrial projects both at the EU and at the national level focusing on intelligent multimodal interfaces, interactions with collaborative augmented reality environments, large scale visualization system for geographical data, web-service-based architecture to manage, distribute, navigate and interact with geospatial data. It is currently technical coordinator of the FP7 project i-Tour "Intelligent Transport system for Optimized URban trips" and coordinator of a ICT-PSP project *BRISEIDE* "BRIdging SErvices, Information and Data for Europe" of which is coordinator (www.briseide.eu), and coordinator of the project GEPSIS "Geographical Information Processing for Environmental Pollution-related Security within Urban Scale environments" funded by the NATO.

**Role in the project.**
*FG* is responsible for overall coordination of the project. Additionally it will play a key role in WP4 for the development of the web client, mobile components and rasterization component for solar potential assessment. Through extension of existing technology developed by *FG*, *FG* will also contribute to awareness and dissemination activities providing liaison with the EC as well as with other relevant projects (BRISEIDE and i-Tour). Last but not less *FG* will be coordinate and supervise INFOTN as far as the Pilot in Trento, Italy is concerned.

**Key Staff involved in the project.**

**Dr Raffaele De Amicis** is the Managing Director of Fondazione Graphitech, he holds a MEng in Mechanical Engineering and a Ph.D. on Surface Modeling in Virtual Environments from University of Bologna, Italy. He has been research fellow at the Industrial Applications Department of Fraunhofer Institute for Computer Graphics Research (IGD) in Darmstadt, Germany and senior researcher at the Interactive Graphics Systems Group, at TUD - Technical University of Darmstadt. He has been involved in several projects funded by the European Commission, NATO/OTAN - North Atlantic Treaty Organization, the local government and by several industries. His interests are in CAD, virtual reality, virtual engineering, geospatial analyses, science and technology policy. He has authored 3 books, contributed to 11 scientific texts, and he is author or co-author of more than 120 scientific papers. He also serves as Consulting Professor, in undergraduate courses in/on computer graphics, at the Department of Information and Communication Technology at the University of Trento, Italy. He is currently member of the Experts Board of the Italian Committee for Evaluation of Research (CIVR). **Dr Giuseppe Conti** is senior researcher at *FG* since 2002, he received a MEng in Civil Engineering and a PhD degree at the University of Strathclyde, Glasgow. He has worked for international engineering consultants UK. He has been involved in several EU and industrial projects dealing with issues related to the use of Virtual Reality to planning, large terrain 3D visualization and in the context of geobrowsers. He is the board of AM/FM GIS Italy association. He has been invited speaker at a number of international events including a number of NATO initiatives on GIS. He is scientific manager of the EC project i-Tour and operational manager of the project BRISEIDE. He has more than 90 publications in the field of computer graphics and applications. **Dr. Federico Prandi** has been working in *FG* since 2009. He received a master degree in Environmental Engineering and a PhD degree in Geodesy and Geomatic at Polytechnic of Milan, Italy. Since 2002 he conducts research on these topics within the framework of several national and international projects. He is technical manager of the project BRISEIDE. His main research interests include GIS, Cartography, and photogrammetry data processing. **Mr Diego Taglioni** started the career in 1996 at

Thamescentica Group, as patent manager and subsequently as marketing product manager for wireless networks and end-to-end application in the civilian sector for major accounts, such as telecom operators. He worked at NTT DoCoMo as business advisors for the strategic alliances with EU wireless operators. He has been the head of strategic alliances at WIND Telecommunications from 2001 up to 2006, being also the chairman of the international i-mode Alliance in 2004/06. From 2007 up to 2010 he worked as strategic consultant with focus on technology transfer activities and promoting spin-offs with major research centers in Italy. Since 2010 he has joined *EPS* as business development manager and quality manager for EU projects.

**EPSILON Internasional Anonymi Etairia Meleton Kai Symvoulon (EPSILON International SA) (*EPS*) – Greece (www.epsilon.gr/)**

Epsilon International SA (*EPS*, www.epsilon.gr) is a leading GIS Technologies Organization with history since 1985. The company has an international presence with offices and companies in Cyprus, Italy, Russia and south Munich. EPSILON has accomplished in recent years more than 200 major GIS and remote sensing projects in worldwide partnership, for instance with ESRI DE. The company: (a) conducts original research & technology development for new products, (ii) delivers consulting services, GIS & remote sensing applications in the sectors of water, environment, information society technologies, city management & emergency, statistics, economies, digital aerial photography, mapping and in other technology & sciences sectors, (iii) is generating and offering GIS & digital products, digital maps, digital statistical databases, GIS added value s/w products, mathematical environmental s/w and models for environmental decision-making based on multiple GIS technologies, and (iv) conducts training courses for its clients.

**Role in the project.**
*EPS* will be leader of WP3 responsible for creation of a CityGMl, ADE on differently-abled-friendly routing. Furthermore in the context of WP4 *EPS* will be in charge of development of the aforementioned routing service, based on existing (standard) routing technology developed in the context of BRISHDE. Furthermore *EPS* will provide technical support to the pilot in *DRAMA*.

**Key Staff involved in the project.**
**Prof. Marc Bonazountas** is a Civil Engineer. His expertise is in the entire broad spectrum of environmental sciences & engineering and in supporting peripheral domains of GIS, InfoSociety and space technologies. Prof. Bonazountas has authored 600+ publications, proceedings and white papers, and is on the editorial board of several scientific journals & organizations. Tenured Professor, NTUA 1990+, School of Civil Engineering, Department of Water Resources & Environment; Member of the Scientific Management Committee of the European Environment Agency (EEA, 2007-2010); Chairman of the Environment & Sustainability Standing Committee of the European Council of Civil Engineers (ECCE, 2007-2010). He was with Arthur D. Little Inc, Cambridge, Massachusetts, USA (1976-87); with Rhein-Main-Donau AG, Germany (1972-73). He has managed 60+ major ECRTD projects, has lead and guided 150+ major state-of-technology projects, has supervised 40+ major academic research projects. **Dr. Sotirios Kanellopoulos** is a Computer Sciences Engineer (Dr. Engr) working at Epsilon International SA R&D Department. He holds a Doctorate degree in Electrical and Computer Eng., NTUA. He has 10 publ. in International Journals and Conferences. His expertise is on Advanced Mathematics for Statistical / Stochastic Analysis & Engineering, Satellite Communications and Signal Processing for Telecommunications. He has worked as a research assistant at NTUA and Milan Polytechnic. He works on Data Modelling with GIS Technologies, Geospatial Statistics and Patterns for the Environmental & Geo-Marketing Sectors, on the Design and Integration of Large GIS systems & on WMS applications. **Mr. Irakli Karampournitidis** was born in 1982. He is an MSc Rural and Surveying Engineer and an MSc in Techniques and Methods in Spatial Design, Analysis and Management. Mr. Karampournitidis has experience in Geographic Information Systems on various software platforms including ArcGIS, AutoCAD Map 3D, Manifold GIS, GRASS, QGIS and Geomedia Professional. He has experience in software and algorithm development for GIS, WebGIS, Mobile GIS and Spatial Databases. Mr Karampournitidis has eight (8) publications concerning GIS, Quality Management Systems, WebGIS, Cartography and Artificial Intelligence. He is highly experienced in spatial databases such as MS SQL Server, MySQL, PostgreSQL and MS Access as well as development and management with procedural languages such as T-SQL and plpgsql. He also develops



GIS and other desktop, mobile and web applications using Microsoft.NET technologies and programming with VB.Net and ASP.Net.

**Geofoto Drustvo S Ogranicenom Odgovornosti Za Fotogrametrijske I Geodetske Poslove (*GEOF*) – Croatia (www.geofoto.hr/)**

The company was established in Zagreb, on 1st September 1993, with focus on the photogrammetric, geoinformation, cartographic and cadastral services. In past 17 years, it grew to GEOFOTO GROUP, which today has fourteen member companies, out of which each is leading in its local market.

The main activities are aerial photography, digital photogrammetry, cadastral survey, production of topographic and cadastral databases, design and creation of geoinformation systems and solutions and digital cartography.

Through member companies of the Group, company is represented around the world - in Europe through Infomax (Zagreb), Geofoto Zenit (Skopje), Geofoto London (London), Terramap Praha (Prague), Geofoto Scandinavia (Oslo) and Geofoto Belgrade (Beograd); in the Middle East through Geofoto Dubai; in Latin America through Geofoto Latinoamericana (La Paz) and Geofoto Argentina (Buenos Aires) and in North America through Terramap USA (NY) also as in Bulgaria (Geofoto Bulgaria) and Switzerland (International Geofoto).

As one of the top ten companies in the global market and leading company in domain of geodesy and geoinformation, in Europe, Geofoto Group employs more than 160 experts, whose knowledge is considered to be the main strength and value of the company.

International clients are Governments of Moldova, Sudan, Panama, Poland, Switzerland, Belarus, Italy, Hungary, Ukraine, BiH, Foreign governmental bodies (AUSTRALIA-Albania, SNA-Bolivia, Statens Kartverk-Norway, DARS-Slovenia, RGZ-Serbia, Danish Agency for Cartography and Spatial Data...), International Institutions (MCA, EU – CARDS, ITF, PHARE, World Bank), Boeing, etc. Domestically Geofoto is partner of Governmental bodies, Agencies and Institutions, City Administration Offices and large private companies.

In the beginning of 2010, European Bank for Reconstruction and Development became minority shareholder in Geofoto Group. Through this partnership with international financial institution present in 29 countries of Central Europe and Asia, management of the company gained additional support with important strategic decisions as well as support in further development of business model and production processes.

**Role in the project.**
*GEOF* will be responsible for development of service component necessary to process airborne infrared imaging. Furthermore *GEOF* will provide technical support to the two pilot locations in Croatia (in cooperation with partners *ZAD* and *ZAG*). Last but not least *GEOF* will be responsible for coordination of WP7 leading initiatives dealing with IPR management and exploitation (incl. business plan).

**Key Staff involved in the project.**
**Nika Jerićević** has extensive knowledge in defining the Intellectual Property Rights strategies and licensing policies for geo-information and information technology. She is consultant for Legal Issues and expert in Project Management and Quality control. **Dragan Divjak** is Head of Cartographic department. He received Master degree in Geodesy and Geoinformation from Faculty of Geodesy, University of Zagreb, Croatia. He worked for Croatian State Geodetic Administration as Head of Department for topographic databases. He is involved in implementation of Croatian NSDI as a member of technical group for technical standards and as a member of Croatian Standards Institute. His main competencies are spatial data management, topographic and cartographic systems, standardization and SDI.

[redacted] EvroGeomatika Ltd. (*EGEO*) - Serbia (www.evrogeomatika.co.rs/)

**Evrogeomatika Ltd.** is a private service company that offers and executes complete technology solutions in the field of geodesy, survey, cartography, photogrammetry, remote sensing, GIS and 3D modeling. Through strong cooperation with academic sector, Evrogeomatika provides wide range of optimal technical solutions for integration of different spatial data, their analysis and mapping in order to form and develop spatial information

systems using methods of GIS, remote sensing, digital photogrammetry, laser altimetry, GPS technology, graphic data base processing etc. As a leading Serbian company in its domain, Evrogeomatika conducted many national and international projects. To mention few of them: EU projects - Production of Nationwide Digital Orthophoto Plans of Serbia (from 2006- ) and CORINE Land Cover mapping in Serbia and Montenegro CLC 2000 and CLC2006 (2005-2008), Laser altimetry helicopter survey of corridor for future highway and 4D internet mobile government for the municipality of Rakovica. Evrogeomatika also acts as the National Reference Centre for land cover and is actively involved in GMES land monitoring activities.

**Role in the project.**

At the beginning of the project they will be involved in the collection of requirements and definition of the system specifications, in close cooperation with the Municipality of Indjija. *UGEO* will be then engaged in the creation of a WPS service for solar potential assessment. *EuGEO* will provide technical support for the deployment of one of the Pilots at the Municipality of Indjija ensuring technical support throughout the preparation, deployment and validation stage. Most relevantly *EGEO* will play a key role as leader for the WPS and therefore will be responsible for coordination of pilot's deployment and assessment.

**Key Staff involved in the project.**

**Dr. Ivan Nestorov** is the president and founder of Evrogeomatika Ltd. He is also professor of cartography related courses and senior researcher at the Department of Geodesy and Geoinformatics, University of Belgrade where he had received his Eng, MSc and PhD degrees. His expertise includes cartography, photogrammetry, GIS, remote sensing and spatial modeling. He has been project manager of the EU projects: Production of Nationwide Digital Orthophoto Plans of Serbia (from 2006- ) and CORINE Land Cover mapping CLC2000 and CLC2006 (2005-2008). He is the author of a number of research papers. **Dragutin Protic, MSc** is an Eng. in geodesy, geoinformatics and cartography and he also holds a MSc on Environmental Modeling and Remote Sensing and a PhD candidate. He principally works as a teaching assistant and research fellow at the Department of Geodesy and Geoinformatics, University of Belgrade. He was engaged by Evrogeomatika Ltd, as operational manager of EEA's CORINE Land Cover mapping projects (CLC2000 and CLC2006 update) in Serbia and Montenegro from 2005 till 2008 and as a consultant on FP7 HELM project. His research interests are in cartography, environmental modeling, remote sensing, GIS, virtual reality. **Jugoslav Beljin**, Eng. in geodesy, geoinformatics and cartography, is IT&GIS manager in Evrogeomatika. He has many years of experience in managing of both national and international projects. His expertise covers photogrammetry, GIS, geospatial modeling and applications development. **Dejan Raskovic**, Eng. in geodesy, geoinformatics and cartography, is employed in Evrogeomatika. He is IT&GIS expert and has been involved in several national and international projects: production of orthophoto of Serbia, CORINE land cover mapping, 4D information system of the Municipality of Rakovica. **Vladimir Vurenov**, Eng. in geodesy, geoinformatics and cartography, is employed in Evrogeomatika. As an expert in GIS and cadastre, he was involved in several projects with local governments in Serbia. **Milan Kilibarda**, Eng. in geodesy, geoinformatics and cartography, PhD candidate, is a research fellow at the Department of Geodesy and Geoinformatics, University of Belgrade. IT&GIS expert with specially interested in geospatial-temporal data modeling and open source application development. He has been engaged in CORINE land cover mapping project and FP7 HELM project by Evrogeomatika. **Jasna Petric**, B.Sc. in Spatial Planning, Ph.D., Senior Research Fellow in the Institute of Architecture and Urban & Spatial Planning's Centre for Spatial Development and Environment. She is expert in the field of sustainable urban development, demographic and socioeconomic analyses and projections, small and medium size town development.

**CEIT ALANOVA Gemeinnützige GmbH - Central European Institute of Technology – Austria (*CEIT*) (www.ceit.at)**

*CEIT* Alanova is an applied research institute based in Schwechat, Austria, with a team that consists of planners, geographers, environmental resources managers and technicians. Specifically its competences cover the following domains:

- Cities and Urban development - Holistic / Interdisciplinary / Trans disciplinary approaches
- Urban Planning and Regional Development



- Urban Technologies, Transport Technologies, Environmental Technologies
- Information and Knowledge Society
- Sustainability and Resource Management
- Geographic Information Technologies, GIS

***CEIT* has participated or is presently participating in several EU and National projects:**

- AIRCLIP - A research study on Airports and Climate Preservation.
- Busstop 3.0: Project on the future of public transportation stops.
- Airport Cities: Study on airport's strategic role in regional development.
- CentropeMAP/CentropeSTATISTICS: portal with datasets from local authorities of Centrope
- Plan4All: The harmonisation of spatial planning data according to the INSPIRE Directive
- AntaurisMap: interactive digital map for blind or visually impaired.
- UDmdata: harmonization of land cover and land use data according to the Inspire Directive
- MA1: mobility pass for residential Real Estate: calculation of mobility costs related to Housing
- Holreich: Research on technology based instruments and methods in urban and transport planning

**Role in the project.**

*CEIT* provides technical solutions, in the context of WP4, on how to make digital maps more accessible for all kind of users, especially for people with visual impairments who cannot see the information presented on small displays of mobile devices very well. Further, *CEIT* is leader of WP 6 – awareness, networking and dissemination, playing a key role in the establishment of the SCIS (Smart City 3D Services) Living Lab.

**Key Staff involved in the project.**

**DI Manfred Schrenk:** Managing director of *CEIT* ALANOVA, Organizer of international CORP-conferences since 1996 (www.corp.at), Lecturer at Vienna University of Technology, Vice President and treasurer of ISoCaRP - International Society of City and Regional Planners (www.isocarp.org), Board Member of OVGR - Austrian Spatial Planning Society (www.ovgr.at), Deputy president of AGEO – Austrian Umbrella Organisation for Geo-Information, (www.ageo.at), Director of the CORP – Competence Centre for Urban and Regional Planning (www.corp.at). Specialisation: Planning and ICT, Impacts of ICT on Spatial Development, Geographical Information Systems in Spatial Planning. **DI Wolfang Wasserburger**, Senior Consultant: Specialisation: Spatial planning, Transportation planning, (online-) GIS, Technological tools. **Julia Neudachmidt** Msg, Researcher, Specialization: GIS, international regional development. **Daniela Patti**, M.Sc., Researcher, Specialization: Urban and architecture design, sustainable planning

**Vrije Universiteit Brussel, Artificial Intelligence Lab, BrusSense (*VUB*) – Belgium (www.brussense.be)**

The *VUB*'s Artificial Intelligence Laboratory, AI Lab in short, was founded in 1983 by Prof. Dr. Luc Steels and is part of the Computer Science Department. Over the years, more than hundred researchers have worked at the laboratory. They have built a large number of artificial systems to investigate aspects of intelligence: knowledge systems, autonomous robots, machine learning systems, natural language processing components, design and implementation tools. The laboratory's main research themes are the origins of language and robotic agents. Since 2006, the lab has begun to focus its attention very seriously on sustainability issues, culminating in the establishment of the BrusSense subteam in 2009 (www.brussensehci). The BrusSense team works to continue and extend the NoiseTube project, which investigated participatory techniques for monitoring noise pollution. The team has implemented several case studies in urban areas to validate and fine-tune this approach while investigating technological, analytical and social techniques to improve upon and deal with gathered data. Special attention is given to comparing participatory sensing data with simulated modelling approaches, the traditional approach to pollution mapping. Currently BrusSense is looking into extensions of their approach towards atmospheric pollution.

**Role in the project.**

*VUB*'s role in the *i-SCOPE* project is concerned with the noise mapping & simulation scenario, in particular in terms of software and know-how for real time participatory noise mapping, i.e. through mobile phones to be carried on in the context of WP4. Furthermore *VUB* will extend CityGML Noise ADE to include the functionalities requested by the project, *VUB* will ensure the interoperability of the NoiseTube client and server software with other components of the project's larger architecture. The team will guide at the levels of data collection, compatibility with *OGC* standards and running of the noise mapping service in the actual pilots.

**Key Staff involved in the project.**

**Prof. Dr. Wolfgang De Meuter** holds a M.Sc. in Computer Science and a Ph.D. in Sciences from the *VUB*. Since 2007 he is professor at the *VUB*'s Computer Science Department, where he is actively involved in shaping and organising the curriculum. He is founder and head of the internationally recognised ambient-oriented programming subgroup at SOFT, and has received the prestigious Dahl-Nygard prize in 2008 for his research in this area. Next to core computer science courses he teaches several specialised courses on distributed and ambient-oriented topics. With his group he is an active publisher at several international fora. He is also program chair of Coordination2011, has successfully promoted 4 PhDs and is currently promoting 10 running PhD projects.

**Dr. Elly D'Hondt** is a post-doctoral researcher at the *VUB*'s computer science department. She holds degrees in physics, computer science and mathematics and has a keen interest in multidisciplinary research. She received her Ph.D. in 2005 from the *VUB*, co-supervised by Prof. Dr. Prakash Panangaden of McGill University, for being one of the instigators of the development of programming languages for distributed quantum computation. Recently she decided to contribute to the global sustainability effort by aligning her research with it. She obtained a fellowship of the Institute for the encouragement of Scientific Research and Innovation of Brussels (IWOIB). She is currently investigating the accuracy of pollution maps created through participatory measuring campaigns, a new, scalable approach almost orthogonal to the current governmental and EU-regulated techniques for pollution mapping, which rely on simulation models. She has implemented case studies in the Antwerp and Brussels area with the aim of improving living conditions in the city. She has published papers at prestigious conferences and in ISI-indexed journals and was a visiting researcher at Canada's University of Ottawa and McGill University and at the University of Oxford.

**Matthias Stevens** holds a Master's degree in Computer Science from the *VUB* and a Bachelor's degree in Applied Computer Science from University College Ghent (Hogeschool Gent). He is currently a Ph.D. student at the Computer Science department of the *VUB* with a grant of the Flemish Fund for Scientific Research (FWO). Matthias worked as a research trainee at the Sony Computer Science Lab (CSL) in Paris where he was involved in start of the NoiseTube project. He has published several conference papers and a journal paper on the topic. Additionally, Matthias has been involved with the artist collective Nogo Voyages from Paris to create novel locative storytelling experiences. His principal research interests are participative sensing, citizen science, ubiquitous computing, location-based services, geographical information systems and locative art and storytelling.

**M.O.S.S. computer Grafik Systeme GmbH (*MOSS*) - Germany (www.moss.de)**

*MOSS* is a leading provider of spatial-based information and technology solutions, offering unparalleled expertise in applying advanced GIS technologies for Spatial Data Infrastructure, Web Mapping Services, Environmental Data Management and Automated 3D Mapping and Modelling. Incorporated in 1987, *MOSS* integrates its enterprise-scale software products and extensive consultancy service portfolio to build complete GIS solutions designed to custom-fit each organisation, driving their cost effectiveness and adding to the business value chain. In addition to the leading position in meeting the requirements of mapping and surveying agencies, *MOSS* also serves diverse markets including Government, Environment, Energy, Utilities, and Infrastructure. At the core of *MOSS*' offerings are its products novaFACTORY, envVision, WEGA Web, Robyn®, and solutions based on products of its partner ESRI, the world market leader in GIS. *MOSS* is ESRI Business Partner since 2002, is among the ArcGIS® Solution Partners and develops and sells its own product family nova based on ArcGIS® technology. *MOSS* has a total of around 70 employees and operates from its headquarters in Taufkirchen near Munich, Germany, its offices in Essen and Dresden, and through its subsidiary CADMAP Consulting Ingenieurgesellschaft mbH. The collaboration between *MOSS* and major GIS



system providers allows a neutral position. As a solution provider we acquire knowledge about technologies of different suppliers to be able to consult our customers in the best way and to be able to integrate our products smoothly into existing system environments. *MOSS* is a member of the most important institutions of the GIS world. *MOSS* is a member of and contributing to the following initiatives that are related to the *MOSS* activities in the project:

- OGC, managing amongst other standards the CityGML Standard relevant for this project.
- Supporting the European Commission INSPIRE initiative as editor of the Team of experts working on the definition for the annex III theme Environmental Monitoring Facilities
- Initiative SIG 3D, initiator of the CityGML standardisation
- BrenoERTNER, national network of companies related to noise simulation, mapping, monitoring

The contributions and activities within the different initiatives allows *MOSS* on one hand to be aware of new tendencies, requirements, standards and current developments, on the other hand *MOSS* is in direct contact with the stakeholders related to the companies business.

**Role in the project.**

Within the project *MOSS* is acting with two main focuses:

- *MOSS* acting as integrator, and leader of WP4 on development of smart services. Within this part of the contribution, *MOSS* delivers to the project is based on the already existing products novaFACTORY 3D and envVision. novaFACTORY 3D is used as generator of 3D city models and manages them according to the CityGML standard, envVision Service NOISE is an environment to support the noise reduction of governments by integrating the different information related to noise reduction planning and providing them towards noise simulation. With the systems *MOSS* will provide a backbone to the technical infrastructure of the project and will extend and evaluate this based on the projects progress.
- *MOSS* contribution to dissemination and exploitation, *MOSS* will disseminate results of the project into to initiatives *MOSS* is active in (e.g. resulting ADEs towards OGC). The project results and the dissemination activities should result into a commercial exploitation, *MOSS* will contribute to this exploitation activities.

**Key Staff involved in the project.**

**Dipl.-Ing. Daniel Holweg** has been working as Head of Professional Services for *MOSS* Computer Grafik Systeme GmbH since 2010. From 2007 to 2010 he has been working as Services Director at Bentley Systems. From 2001 to 2007 he has been working as researcher at Fraunhofer Institute for Computer Graphics (Fraunhofer-IGD) and was heading the Graphic Information Systems department of since 2003. His research activities lies in the domain of 3D GIS, open distributed environments and information management. Within this domain he is author of several scientific articles and organiser of workshops for related topics. From 2003 to 2008 he was Vicepresident of German Umbrella Organisation for Geoinformation (DDGI) and since 2004 he was representing the DDGI at the European Umbrella Organisation for Geographic Information (EUROGI) as a member of the EUROGI Executive Committee of. Daniel Holweg was involved or even coordinates different national and international research and development projects, like HUMBOLDT (GMES), ESDI-NET+ (e-content), Servigis (national), INVISIP (ICT), LuVEUS (ICT) or WIDE (ICT).

**Geographic Information EUROPEAN STANDARDS GISTANDARDS LTD (*GIST*) - UK (www.gistandards.eu)**

Martin Ford is the director for GiStandards Ltd, a new start up company. However, *GIST* unincorporated has been active for many years in the field of geospatial and environmental information. The company has experience in organising international workshops, which attract high level international speakers and delegates. Topics have included climate change, biodiversity issues, land cover and land use, incident management and location based services. A 2008 workshop was held in the United Nations General Assembly in Bonn. 20 countries were represented and 160 global experts, including members of the World Bank, met to discuss environmental issues around land cover and land use relating to Spatial Data Infrastructure. In 2009 a similar styled workshop was held in Madrid, hosted by the Department of Environment. This workshop was pivotal in contributing to the establishment of the new thematic working groups of INSPIRE, relating to environmental issues. This *GIST* workshop enabled GMOSS, GMES, INSPIRE and CEN/TC 287 to be brought together for the first time, providing needed input to the INSPIRE TWGs. *GIST* has been involved with standards writing

for the last 15 years dealing with environment, geospatial, incident management and eGovernment. *GIST* hosts several websites, including the CEN/TC 287 website including several portals.

**Role in the project.**
*GIST* will participate to definition of requirements in WP1 with particular attention to existing standards. Then it will contribute to the standardisation activity planned for WP3 (both at the core CityGML level and to create new ADEs). Finally *GIST* will ensure dissemination and awareness activities also through a number of workshops organised with CEN/TC 287.

**Key Staff involved in the project.**
**Martin Ford** is the founder of *GIST* and currently holds the post of secretary of CEN/TC 287. In his role as secretary he has created a stronger working relationship between DG- JRC, OGC, GMES, GEOSS, ISO/TC 211 and CEN/TC 287. Previously he held the post as President of the Italian Commission for Geographic Information and of convenor of ISO/TC 211 WG8 Location Based Services, and he is the author of IS- 19132 Geographic information – Location- Based Service- Reference model as well as several other standards and guidelines.

**INDECO SOFT SRL (*IND*) – Romania (http://www.indecosoft.ro/)**

Indeco Soft is a leading developer and implementer of eGovernment software in Romania as well as one of the most important integrator of IT solutions for local and central administration (being partner of more than 750 public institutions) who increased its presence with a solution called SIGIMA that aims to assist public administration high-level management in the analysis and decisions establishment processes as well as in setting policies and regional development strategies, involving the management of information, resources, costs and relations with partners and citizens. Combining our clients' and our IT specialists' knowledge with permanent law analysis and using modern quality management technologies and our software development teams abilities, we give our products an optimal processing approach, with full security and control management. The user easily links in our products functionality the processes and the documents flow. Information, communication and technology performance, all found in our applications, next to multi-valent assistant teams, will always be a pleasant way of approaching and solving the problems that define every user responsibility. Some of other projects developed are First workable system in Romania for payment of fees and local taxes through credit card using the internet; Partner in elaborating the new strategy and the Integrated Urban Plan of Baia Mare. Issuance of an dedicated Project Management software for both individual projects & the project portfolio of the Municapality; Partner in an URBACT project (LUMASEC) dealing with the management of Brownfield sites – the project will be follow up with a dedicated GIS for Urban Planning; Issuance of the Romanian One Stop Shop in cooperation with the Electronic Payment Association of Romania (APERO).

**Role in the project.**
Indeco Soft will be actively engaged at a 3 level approach: WP leader for WP 1; Task Leader for T 1.1; T.1.2 & T.1.5 and Assistance to the other partners in developing the activities related to the project in close cooperation with the Municipality of Baia Mare. *IND* will be engaged in Deployment of "smart" services (solar potential assessment), in the Awareness, networking and dissemination, in the IPR management and exploitation. *IND* will play a key role in the deployment of the Pilots for *BAIA* ensuring technical support throughout the preparation, deployment and validation stage and will contribute to the Awareness, networking and dissemination of the project by organizing workshops and seminars for the Romanian Public Authorities (the Romanian Municipalities Association http://www.amr.ro/ & the Electronic Payment Association of Romania http://www.apero.ro)

**Key Staff involved in the project:**
**Ciprian Gliga**-General Manager, activating in field of IT since 1995 as diplom-engineer in Computers Science and graduated as MSc in Management. In the beginning worked at Mining Research Institute as a 2D & 3D computer graphic modeller. Involved in public administration software and consultancy, taking part in development of eGov tools, management of integrated IT projects & elaboration of local strategic development



plans / **Flavia Vlasin**-Technical manager running the development, quality assurance and support department-graduated as a software developer at the Romanian Babes-Bolyai University and skilled in SQL server 2008 Database Development and Project management. Working as a software developer being involved in various national projects involving Enterprise Resource Planning Systems Solutions & Integrated Information System for Public Administration / **Vlasin Rubik**-graduated in economics in 2004 from the University of North Baia Mare and trained in project management, ESRI software and in ArcGIS configuration and tuning for SQL Servers. GIS workflows and analysis, Multiuser Geodatabases, ArcGIS Server and Managing and editing workflows in a Multiuser Geodatabase having knowledge also of similar GIs software such as : ArcGIS, Autocad Maps, MapSys / **Dr Ing. Pietro Elisei**-Town and Regional Planner providing services & consultancy in strategic planning, urban renewal/regeneration and regional development. Active as Secretary General of Planum.net (Rome, Bologna, Milan), the European Journal of Planning Online, Researcher for DipSU (Department of Urban Studies, Faculty of Architecture, Ortigia/A), researching on Design of Urban Policies (focusing on EU promoted Urban Initiatives) & Tools for Territorial/Regional Competitiveness, as International Expert in Integrated Planning/Urban Regeneration for contracts promoted by the EU Commission and The Romanian Ministry for Housing and Regional Development and as independent researcher in Urban Policies and as practitioner in Urban Planning.

**Cadzow Communications Consulting Limited (*C3L*) – UK (www.cadzow-consulting.co.uk/)**

Cadzow Communications Consulting Ltd (www.cadzow.com) is a privately owned consulting company with specialism in standards development for security in communications networks. Specific competences are found in:

- Digital Private Mobile Radio - PMR (TETRA – Terrestrial Trunked Radio);
- Next generation networking (TISPAN, 3GPP, CDMA2000);
- Emergency Telecommunication (EMTEL);
- Intelligent Transport Systems (ETSI ITS)
- Lawful interception and security regulation.

In addition the company has been involved in defining the roadmap for future development of RFID technology in Europe and for defining a roadmap for deployment of eHealth technologies in Europe.

**Role in the project**
*C3L* will be responsible for all the activities with any impact on privacy and security. The standards effort will be achieved through key teams in ETSI (European Telecommunications Standards Institute) and shall undertake the PIA (Privacy Impact Assessment) and TVRA (Threat, Vulnerability, and Risk Analysis) for use of data and privacy in *i-SCOPE* leading to the development of a security process and architecture model.

**Key Staff involved in the project**
**Mr Scott Cadzow** is the director and technical lead in *C3L*. His interests are in the deployment of assurance paradigms for security in standards with a view to leading towards comparable metrics to be applied to security products and systems. In undertaking these roles he acts as rapporteur for a large number of ETSI standards and chairs a number of standardisation groups in ETSI and ISO including:

- Chair of EP7 (Our Project Steering Committee (rotating position expired February 2011)
- Chair of ETSI TC ITS WG5 (Security)
- Chair of ISO TC204.16.7 (Security)
- Vice-chair ETSI TC TETRA 6 (Security)
- Vice-chair TA SEPG (Security)

**Reggiani SpA (*REG*) - Italy (http://www.reggiani.it/index_en.htm)**

**Reggiani** is a private ICT company based in Italy, providing to the public and private market ICT solutions based both on the customisation of Open Source products and on in-house developed products.

Our main activities are focused on the following technologies: web application development, consultancy in GIS field, RFID and LPC support to public bodies, Reggiani manages its own data center to provide hosting and added value internet services. During last years Reggiani increased its presence in the international market, serving companies in different EU countries. In EU market Reggiani has been developed a specific expertise in providing support to EU institutions in LTC matters. In this field we take part in the following projects: BRISEIDE: CIP-ICT-PSP 2009 3, (BRIdging SErvices, Information and Data for Europe); European Foundation for the improvement of living and working conditions (management of the hardware and software web portal and infrastructure); Europol (Management of the hardware and software web portal and infrastructure); **OPOCE General Contract n°10224 provision of electronic publications**; (Lot 3: Electronic publishing based on open source platforms); **ESP-DESIS DG DIGIT**(Lot 1: IT related projects). Within the latter framework contract, Reggiani consultants supported the DG JRC-IES (Institute for Environment and Sustainability) in its activity of **coordinating the technical development of INSPIRE, and providing prototype applications**, such as the European Geoportal.

**Role in the project.**

*REG* will set up, run and maintain the deployment platform and the server-side data and service infrastructure needed to the project . Through the platform *REG* will provide access to the GeoPortal and services' catalogue. In particular, *REG* will overview the process of data collection adaptation and ingestion. *REG* will also take care of the pilots support for technical and other matters related to the data management and to the platform.

**Key Staff involved in the project.**

**Milan Kalas** graduated as a civil engineer at the Slovak Technical University in Bratislava in 1999. At the same university he received the Ph.D. degree in the field of Hydrology and Water Management in 2006.

He has started his professional carrier at the Dept. of Land and water Resources Management of the Slovak technical university in 1997 as software developer. In 1999 he has stated working at the same department as PhD research associate and assistant lecturer. He was involved in various national and international research projects, where he was mostly responsible for hydrological modeling and programming. He held seminars in hydrology, mathematical modeling in hydrology, GIS, computer methods in water resources management.

In March 2005 he joined the Joint Research Center of the European Commission, working mostly on the development of the European Flood Alert System (EFAS). During his stay in JRC he was responsible for the implementation of the Danube river basin in EFAS. He has strongly contributed to the development of system architecture of EFAS. His personal skills include excellent assertion in team work, dynamic peer consultation, excellent communication skills, strong sense of responsibility and high motivation

He has an extensive knowledge of the GIS implementation, knowledge and use of numerous GIS software packages, web based and desktop GIS application in open source and the following software packages: ArcObjects, MapObjects, PeRaster, GDAL, R, MapWinGIS, ChartDirector.

**Andrea Pagni** has a degree in electronic engineering. He is a system administrator responsible for the management of Reggiani's data center. He has more than 10 years of experience in Server environment on Windows 2003, Windows 2000 and Linux platforms, Client (Windows XP and Windows 2000), Terminal Server, Networking and general Internet Security. Specialised in Analysis, Design, Deployment and Troubleshooting. In particular, he has analysed and implemented projects of: migrations to Active Directory and Exchange 2003; migrations from traditional clients to Microsoft Terminal servers; creation of new informatics infrastructures; server consolidation; high availability with Microsoft cluster and Linux heartbeat; management of backup/restore, disaster recovery; Linux server installation and integration in Windows environment; VMWare virtualizations; installation and configuration web filters, installation and configuration of anti SPAM software; installation and configuration of Fortinet, Cisco PIX, Check Point, Atlantis, Clavister, Digicom, gilsense and monowall firewalls.

**GeoSYS Limited (*GSYS*) – Malta (http://www.geosys.com.mt/)**

**GeoSYS Ltd-Malta**, was founded in May 1995 and started out business in the field of software development of ERP systems and IT training from its premises in Gzira. GeoSYS ventured into value added reselling and systems integration in CAD, GIS, project management and business intelligence in quick successive steps and firmly established itself as a market leader in the respective fields. The Company operates from its modern dedicated premises in Triq ir-Rosselli, Kappara. GeoSYS is an equal opportunities employer and continually invests in the training of its people. This has enabled the Organisation to support a team of individuals to achieve specialization in their fields. GeoSYS is the ESRI Partner in Malta, and as such, it can also be considered a Leader in GIS in Malta, delivering data, applications and integrated WebGIS systems.

**Role in the project.**

*GSYS* will be gathering and analysing data for the area of study within the Maltese Islands supporting associate partner *MRA* (see Annex I). *GSYS* will be using base LIDAR data in order to be able to perform 3D modelling of the area of study and generate analytical maps for both solar radiation and noise mapping. *GSYS* will be also responsible for data transformation with regard to Maltese pilot. All data will be tailor made in order to make it accessible via open web services. Further awareness and exploitation at Maltese national level will be ensured.

**Key Staff involved in the project.**

**Mr. Travis Brannon** (BSc, MSc; GeoSYS Ltd Malta) is a GIS Software Engineer with significant experience in ESRI GIS Software Development and Customization, Systems Architecture, Project Management, Product Support, Training, Quality Assurance. **Mr. Nick Spiteri** (BSc, MSc; GeoSYS Ltd, Malta) is an ESRI GIS Product Manager. He possesses deep knowledge of ESRI's product line-up, in particular ArcGIS Desktop and Extensions, Arc GIS Server (.NET), ArcIMS and ArcSDE.

**Department for Business, Innovation & Skills, Ordnance Survey (*OS*) – UK (www.ordnancesurvey.co.uk/)**

*OS*, the national mapping agency of Great Britain, employs 1,113 staff and collects, maintains and distributes up-to-date, national coverage data of the topography of Great Britain at a range of themes and scales in both digital and analogue (map) form. Core activities are the capture, storage, management, production and supply of geographic information (GI) to a very broad range of customers. Ordnance Survey maintains a core, large-scale database of the whole of Great Britain containing around half a billion records and makes an average of 5000 updates to this database every day, resulting in an underpinning reference framework which is heavily relied upon by its customers. Ordnance Survey is a non-ministerial government department and an Executive Agency responsible to the Secretary of State for Communities and Local Government, operating as a Trading Fund. It sustains itself by raising revenue through licensing the intellectual property rights in its data under Crown copyright. Products are licensed both directly to customers and also via more than 500 private sector partners including value-added resellers, a specialist network of retailers and a wide range of publishers.

Ordnance Survey is highly respected throughout the world for its operational capability and the quality of its data products. It is active in the development and deployment of GI data standards. In 2001 it became one of the first major data providers to publish its core products in GML, and more recently it has been highly involved in the development and publication of CityGML. Ordnance Survey is taking a leading role in the UK implementation of INSPIRE.

**Role in the project.**

*OS* will deploy its world renowned expertise in geographic information and infrastructures in support of this project. *OS* will

- develop and extend CityGML data models based on the requirements identified within the project
- work with the Open Geospatial Consortium to align future revisions of CityGML with the outcomes of *I-SCOPE* and feed the latest developments into *I-SCOPE*
- provide Ordnance Survey data in project areas and provide consultancy to ensure data can be exploited
- make experience in maintaining geographic data available to develop long-term strategies and operational guidelines to support the maintenance and hence long-term sustainability of 3D models
- feed experience gained within *I-SCOPE* into future product development work to create geographic data products that support 3D models or can be used within 3D environments

The overall value that *OS* will add to the *I-SCOPE* project will be to ensure that the application of CityGML technologies is supported with robust standards, specifications to maximise its enduring value.

**Key Staff involved in the project.**

**Carsten Rönsdorf** has overall responsibility for the central production repository for *OS* products. Having worked with geographic 3D models since 1996, he is an acknowledged expert in 3D city models. He as *OS*'s nominated representative to the British Standards Institution and ISO TC211 technical committees on geographic information. As chair of the CityGML specification working group at the Open Geospatial Consortium, he has delivered the first version of the international CityGML standard in August 2008. **Peter Parslow** leads data modelling work at *OS* for deriving products at multiple resolutions from a single database. He is custodian of *OS*'s product GML schemas and UML best practice, and provided technical input to various INSPIRE data and metadata documents. He previously led the UK Hydrographic Office's data modelling work to establish a single consolidated Hydrographic Database suitable for all their navigational products, building on the ISO TC211 standards, in particular the General Feature Model. **Mark Silkman** is responsible for defining the future development of 3D products. He has a central role in developing *OS*'s position with respect to the third dimension and has extensive experience of the GI market in Great Britain. **Dave Capstick** has extensive experience in working with 3D city models, data modelling and database technology. He has responsibility for much of the 3D research that is conducted within *OS*. He has been highly involved with CityGML through the CityGML SIG 3D group and has much experience in the generation of CityGML datasets. **Lynne Allan** is responsible for the technical development of Ordnance Survey product portfolio with particular interest in elevation and 3D. She previously was the senior technical manager for all elevation products and is currently a member of the INSPIRE Elevation Technical Working Group.

**Municipality of Indjija (INDJIJA) – Serbia**

**(http://www.indjija.net/code/navigate.php?Id=10 )**

Indjija is a town in the Srem region located on the southern slopes of Fruska Gora, 40 km north east of capital Belgrade. It is on the half way between Belgrade and Novi Sad – on the place where the two important European corridors intersect: Corridor 10 (highway E-75) and Corridor 7 (the River Danube). The Municipality of Indjija covers an area of 395 km², and consists of 11 settlements. Indjija is located at 45°03' north latitude and 20°05' east longitude, at 113m above sea level. Indjija has 82,750 residents and a population density of 136/m2. Indjija is one of the most developed municipalities in Serbia strongly oriented towards use of new technologies in city administration and public services. The municipality has developed an operational e-government public service - System48. System48 is a comprehensive management and accountability system which is partly GIS oriented, allowing municipal leadership to monitor the work of its departments and public utility enterprises, make informed decisions, and improve the overall quality and cost-effectiveness of service delivery. A vital component of the System48 is the portal allowing citizens and businesses alike, to report their concerns and problems related to a variety of issues in regards to the provision of municipal services. Indjija also has established and maintain GIS portal of the municipality enabling the users to view and search the various spatial data: cadastral, infrastructure, addresses, urban plans

**Role in the project.**

Municipality of Indjija will ensure, through close cooperation with partner *EGEO*, deployment of a further Pilot. Their role will be therefore essential at the early stages of the project as well as during the pilot developments, deployment and validation. Last but not least the Municipality will be actively engaged in awareness, networking and dissemination activities, providing the platform to disseminate result at local, national and international level through the activities of the project, with particular relevance to the Living Lab

**Key Staff involved in the project.**

**Mile Budrozic**, holds MSc in mathematics and has been working on different IT related projects in the Municipality of Indjija for 13 years. Since 2009, he is director of the Agency for IT, GIS and communications of the Municipality of Indjija. **Dejan Petrovic**, employed in the Agency for IT, GIS and communications of the Municipality of Indjija. Expert in development of web and desktop GIS applications, geospatial data creation, manipulation and modeling. **Maja Grubotovic**, economist, treasurer of the Municipality administration. She worked in the Mayor's office on several international projects where she gained valuable experience. **Jelena Mladjan**, economist, associate for international projects. Expert for economic sustainability of project results



**Baia Mare (*BAIA*) – Romania (http://baiamarecity.ro)**

Baia Mare, is the city capital of Maramures county, according to the 2002 census, has 137,921 inhabitants and expanses over 23,247 ha. Baia Mare has long been a mining town with related industrial areas for processing of copper, lead, silver and gold. Baia Mare in the last fifteen years has undertaken a development path that will move the city towards forms of economy more linked to services and new technologies (based on R&D). This path of development of a post-industrial economy is not easy, even if Baia Mare is a very dynamic city, continuously expanding and changing and able to be a frontrunner as regarding innovation. The municipality has implemented a graphic interactive system for administration management–SIGMA which is a software solution that combines advanced management capabilities with basic GIS functions, the interface being built over an interactive digital map. The aim of this approach is to assist public administration high-level management in the analysis and decisions establishment processes as well as in setting policies and regional development strategies, involving the management of information, costs and relations with partners and citizens in order to facilitate a better and faster data interpretation through a graphical geospatial representation.
Baia Mare was involved in several projects such as: Ad Personam (www.marketingpublictransport.eu) to promote Local Public Transport in medium-sized cities; CATCH-Carbon Aware Travel Choice (http://www.carbonaware.eu/home.html); BHC-Building Healthy Communities (http://urbact.eu/en/projects/quality-sustainable-living/building-healthy-communities-bhc/homepage/); LUMASEC-Land Use Management for Sustainable European Cities (http://urbact.eu/en/projects/metropolitan-governance/lumasec/homepage/).

**Role in the project.**

Assist with Requirement analysis, system specifications, data inventory, privacy & security analyses, data collection. Assist with Deployment of "smart" services toolkit especially by participating to pilot actions (Disable-friendly personal routing service; Environmental noise simulation, Solar energy potential assessment service) as well as to assist in the development of Mobile client applications for citizens and Integration of new smart services with existing service infrastructures. Assist with Pilots deployment and assessment. Assist with Awareness, networking, and dissemination, especially with Awareness initiatives targeted to citizens and Workshops. Assist with the validation of results in operational scenarios during the pilot stage. To exchange best practice with other cities.

**Key Staff involved in the project.**

**Project coordinators – 3 persons** (without financial involvement). **Mr. Cătălin CHERECHEȘ** - Mayor of Baia Mare as general coordinator of the project. **Ms. Carmen POP** - Economical Director as financial coordinator. **Mr. Vasile BARBUL** - City Manager as Technical coordinator.

**Management of the Project – 3 persons. Mr. Edmund FUTO** - as urban coordinator, Chief Architect of City Hall Baia Mare, experience in Urban and architecture design, sustainable planning. **Ms. Mariana POPESCU** - Chief of Environmental Department as project management, engineer, Polytechnic Institute of Iasi, over 21 years of experience in the environmental protection: environmental quality monitoring, evaluation of environmental impact of different activities, elaboration of strategies and action plan for environmental improvement, international programs and projects, member from 1998 in National Association of Environmental Managers and Assessors. **Mr. Dorin MICLAUS** - Chief of Strategy, Development, Cooperation department as strategy coordinator. Polytechnic Institute of Timisoara (electronic engineer) and Martin School of Public Policy and Administration Lexington, Kentucky USA, over 11 years of experience in project management and over 4 years experience in strategic planning.

**Project Implementation Unit – 8 persons. Ms. Bianca RODEA** - as transport expert, University of Baia Mare, Faculty of Letters, experience in the elaboration and implementation of projects with external financing, the local urban development plans - including: improving the urban public transport by extending the trolley network and related infrastructure in Baia Mare and a Trans border project with Ukraine for resolving emergencies situations. **Mr. Dan CARPOV** - as ITC expert – postgraduate degree in Informatics and Programming, Technical University of Cluj Napoca, postgraduate in Project Management at Nord University Baia Mare, experience in project implementation, experience in project management for the Municipality. **Ms. Simona FABIAN** - as environmental expert related to noise, Chemical engineer, University of Cluj Napoca City, Faculty of Chemical Technology, experience in implementation of environmental projects with European financing / **Ms. Adina DUMITRU** - as solar energy expert, **Mr. Andrei BAKK** - as Urban expert, experience

in urban and architecture design; he has 15 years of experience within Municipality / **Mr. Stefan PASKUCZ** – as Architectural expert, **Ms. Raluca SIMON** as accounting expert, economist, University of Cluj-Napoca, Faculty of Economics and Business Administration, experience in implementation of project, Ms. **Delia VARGA** as communication and PR expert, Translator Conference Interpreter for English/ French University of Baia Mare, Faculty of Letters, experience in implementation of project.

**Zadarska Županija (*ZAD*) – Croatia (http://www.zadarska-zupanija.hr/)**

Zadar County was established by the Law on Counties, Cities and Municipalities in the Republic of Croatia, as one of the 20 Croatian counties. According to law, the county is a local (regional) government whose area represents natural, historical, transport, economic, social and self-governing entity, and is organized to perform the tasks of local (regional) interests. It consists of County Assembly, County President and Administrative Departments.

County Assembly is the representative body of citizens and the entity of the County that enacts general and other documents required by law. Zadar County in its scope performs matters of local (regional) importance, especially those relating to: education, health, social welfare, agriculture, economic and tourism development, regional development, planning and environment, It employs 181 employees, mostly highly educated except for auxiliary staff. All of the employees are equipped with PCs and other items, Zadar County's previous experiences in CBC and international projects include the following projects:

- Development of the Business and Investment Climate in Croatia through programme of Ministry of Economy, Labour and Entrepreneurship (financed through CARDS 2002) – County programme management was responsible for programme implementation
- Sustainable Development of War-affected areas through CARDS 2002 – County Programme management unit
- Local Partnerships for Employment through CARDS 2002 – Partner
- ADRIATUR through INTERREG 3A – Partner
- DAMAC through INTERREG 3A – Partner
- BANS through INTERREG/CARDS – PHARE – Lead external partner

Zadar County seat is in Zadar, the largest city in Zadar County, which has about 75 000 inhabitants.

**Role in the project.**

*ZAD* will be responsible for another pilot. Hence their responsibility will be in terms of definition of requirements and their data collection and adaptation for use within the pilot. *ZAD* will be also responsible for support to deployment of the pilot and for the testing in operational conditions. Last but not least *ZAD* will contribute to awareness and dissemination activities towards other cities and their citizens, as well as to exchange of best practices among cities.

**Key Staff involved in the project.**

**Olivio Mestrović**, B.Sc. is an eng. in geodesy and the Head of Administrative Department for Physical Planning, Environmental Protection and Communal Affairs in Zadar County. As such, and also as Head of State Cadastre Administration – Regional Office in Zadar which was his previous engagement, has extensive knowledge and experience in various work fields which include implementation of several EU funded projects and UNDP/GEF/Zadar County project Sustainable Energy Management in buildings.

**Lovro Jurišić**, B.Sc. is employed as Assistant Head of Administrative Department for Development and European Processes in Zadar County. He also performs role of substitute member in Joint Monitoring Committee, certified lecturer for the PCM and is involved in all the European funded projects in Zadar County.

**Antonella Zrilić-Vučić**, B.A. is an Advisor in Administrative Department for Physical Planning, Environmental Protection and Communal Affairs in Zadar County. Her current activities include work on Register of Environmental Pollutants as well as on Energy Efficiency project conducting in Zadar County.

**Zvonimir Borkin**, B.A. is employed as Senior Associate in Administrative Department for Physical Planning, Environmental Protection and Communal Affairs in Zadar County. His work has wide scope – environmental



protection, maritime domain, administrator for future Geographical Information System of spatial data for Zadar County and also has some experience in EU funded project proposals.

**Grad Zagreb (*ZAG*) – Croatia (www.zagreb.hr)**

City of Zagreb is the biggest city in Republic of Croatia and the capital. It has 779,145 inhabitants (data from 2001) and area 641.355km$^2$.

City of Zagreb is cultural, scientific, economic, political and administrative center of the Republic of Croatia with seat of Parliament, President and Government of the Republic of Croatia. It is a unit of local administration and at the same time of regional administration at county level. The City is independent in decision-making within its sphere of powers pursuant to the Constitution, the law and the Statute. City Administration bodies are the City Assembly as representative body and the Mayor as executive body. Organization of city administrative bodies is composed of 12 City Offices, 1 City Bureau and 3 City Services. They are responsible to the Mayor and to the City Government. By performing administrative and professional activities, the city's administrative bodies enforce the laws and other regulations, decisions, by-laws and other deeds passed by the City Assembly and Mayor, monitor the state in the administrative areas for which they are founded, settle administrative issues, implement supervision, undertake measures for which they are authorized legally or based on some other regulations, and prepare decisions, by-laws and other deeds. The number of employees in the city administrative bodies is 2,763.

City Office for Energy, Environment and Sustainable Development is responsible for following scope of work: energetic and planning of energy development; heating energy and continuously ensuring making of distribution of heat energy, energy efficiency in directly consumption; market of gas and development his system on the city's area; sustainable development; renewable energy sources; ecological acceptable fuel; environment protection; air protection; water protection; management of waste; protection from noise; maintaining of administrative buildings, installations, equipment and device. The City Office for Energy, Environment and Sustainable Development has 120 employees.

The City of Zagreb has been active on the international plan through its membership in international and intercity organizations and associations (Eurocities, Energy Cities, The Assembly of the European Regions AER, Metropolis, Major Cities of Europe IT Users' Group, Impacts, Union of the capital cities of the central and south-eastern Europe…) and by participating in numerous international conferences on the development and advancing local self-administration and on the projects important for the development of the cities.

The City of Zagreb is one of the first European capitals, that, recognizing its importance and potential for development of energy sustainable urban European Union joined the Covenant of Mayors. The Covenant of Mayors was accepted by the City of Zagreb Assembly on the 30$^{th}$ October 2008. Sustainable energy action plan of the City of Zagreb is a key document for the implementation of energy efficiency, renewable energy sources and environmentally friendly fuels projects at the town level.

**Role in the project.**

*ZAG* will be responsible for a pilot site. They responsibilities include preparatory work, in terms of definition of project's requirements, data collection and transformation and proper preparation of the pilots. The various services will be then tested by operators of *ZAG* in operational conditions, by providing feedback on use during a 12 months period. Last but not least *ZAG* will take part to dissemination and awareness activities.

**Key Staff involved in the project.**

**Mr. Marijan Maras**, B.Sc. electrical engineer, University of Zagreb, Faculty of Electrical Engineering and Computing, is Head of City Office for Energy, Environment and Sustainable Development. He has 31 years of professional experience of which 24 years of experience within Municipality. **Mrs. Melita Borić**, B.Sc. civil engineer, University of Zagreb, Faculty of Construction, is advisor of Head of City Office for Energy, Environment and Sustainable Development. She has 30 years of professional experience of which 24 years of experience within Municipality. **Mr. Danijel Matić**, B.Sc. mechanical engineer, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, is expert advisor for energy management in City Office for Energy, Environment and Sustainable Development. He has 32 years of professional experience. **Mr. Drago Vasilj**, B.Sc. electrical engineer, University of Zagreb, Faculty of Electrical Engineering and Computing, is expert advisor for public lighting and infrastructure of energy, City Office of Energy, Environment and

Sustainable Development. He has 29 years of professional experience. **Mrs. Anica Dymić**, Law MSc. University of Zagreb, Faculty of Law, is leader of Legal Acts, City office for Energy, Environment and Sustainable Development. She has 14 years of professional experience.

**Magistrat Der Stadt Wien (*WIEN*) – Austria (www.wien.at)**

Vienna (original in German: Wien) is the capital of the Republic of Austria and one of the 9 federal states of Austria. *WIEN* is Austria's primary city, with a population of about 1.7 million (2.4 million within the metropolitan area), and is by far the largest city in Austria, as well as its cultural, economic, and political centre. It is the 10th-largest city by population in the European Union. *WIEN* is host to many major international organizations, such as the United Nations and OPEC. *WIEN* lies in the east of Austria and is close to the borders of the Czech Republic, Slovakia, and Hungary. These regions work together in a European Centrope border region.

In a 2005 study of 127 world cities, the Economist Intelligence Unit ranked *WIEN* first for quality of life. This assessment was mirrored by the Mercer Survey in 2009 and 2010. *WIEN* was ranked 1st globally for a culture of innovation in 2007 and 2008, and 2nd globally in 2009 from 256 cities in the Innovation Cities Index. As a city, *WIEN* regularly hosts urban planning conferences and is often used as a case study by urban planners.

The City of *WIEN* is a unit of local administration and at the same time of regional administration at the level of a federal state. *WIEN* is independent in decision-making within its sphere of powers pursuant to the Constitution. City Administration body involved is the central department of the head of the city administration with its unit for Organization and Security and administration department 14 Information and Communication Technology.

The City of *WIEN* has committed itself to the concept of Open Data – an open and transparent system that makes city data available to citizens for their further use. The city administration has thus decided to open its data records to the population, businesses and the scientific community. Relevant data range from statistics and geographic data to traffic and transport to economic figures. Personal data are strictly excluded from the Open Data concept.

**Role in the project,**
*WIEN* will ensure, through close cooperation with partner *CITY*, deployment of a further pilot with focus on differently abled-friendly routing. *WIEN*'s role will be therefore:

- Assist with the definition of requirements for the pilot and support of the pilot development and deployment.
- Assist with the validation of results and support during the pilot stage to assess the pilot in operational scenarios.
- Awareness, dissemination and exploitation activities of the project outputs to citizens, internal stakeholders and external exchange of best practice with other cities.

**Key Staff involved in the project,**
**Josef Dirmüller, Dipl.-Ing. (FH),** department for organization and security, business unit in the central department of the head of the city administration, is responsible for updating and operationalizing the ICT strategy of the City of Vienna (*WIEN*), for geo-information and for Open Government Data.

**Wolfgang Jörg, Mag.,** municipal administration department 14 Information and Communication Technology, coordinator of ViennaGIS, coordination of provision of spatial data / test data, coordination of deployment of Geo-services.

**Rainer Haselberger, Dipl-Ing,** municipal administration department 34 Information and Communication Technology, head of unit responsible for environment, transport and businesses in this field.



**Municipality of Drama (*DRAMA*) – Greece (www.dimos-dramas.gr)**

*DRAMA* **Municipality** is located in Northern Greece at the border area with Bulgaria and Turkey. It a dynamic municipality with very active citizens that are protective of the welfare of the city the strive for the development and prosperity of the region. The Municipality of *DRAMA* has a very active role in fostering social activities and supplying to the citizens supportive services in all types of expressions. The Municipality has a very well structured and operating social development department that caters to the needs and requests of the citizens while at the same time looks after the part of the citizens that belong to the least fortunate in terms of subsistence levels of face impairment problems.

**Role in the project,**
The Municipality of *DRAMA* will play an active role in the pilots with particular emphasis in the tool for **Disable-friendly personal routing service,** and **Real-time environmental noise mapping service.** In this regard it will actively support definition of requirements, data collection and adaptation as well as pilot testing. Furthermore, they will work at awareness, networking and dissemination activities. The Municipality will adapt the dissemination strategy of the project to the local requirements and norms and introduce a dynamic and effective strategy of promotion of the project.

**Key Staff involved in the project,**
**Alkis Papademetriou** is a developmental economist and is adviser to the Mayor in the field of Programming and Social Affairs of the Municipality. He has a Master Degree in Economics and in French Literature from NYU in New York, USA. He has worked for a number of years at the Headquarters of the United Nations at New York in projects aiming in the development of least developed nations of Africa and S. America. He is working as an independent consultant for the EU for approximately 20 years taking assignments in Eastern – Central Europe before accession to the EU and recently to Turkey, Ukraine and Georgia. He works as advisor to the Mayor of *DRAMA* with his main objective to manage and implement EU funded programmes and projects that will contribute to the development of the society and the facilitate the services provided by the municipality to the citizens. He is a highly experienced expert in issues of regional development and cross border cooperation while he has also worked as peer evaluator in several EU assignments. **Giannis Kalaitzidis**, an air engineer and urban development expert working as an advisor to the Mayor of the *DRAMA* Municipality on issues of urban development and urban planning. Mr. Kalaitzidis oversees the activities and works for the implementation in an effective and efficient manner of all the technical and infrastructure projects implemented by the Municipality. He has experience in applied methods for project implementation and he knows how to overcome problems and adapt the works to the environment and requirements of the local society. **Katerina Toslidou**, is a high level staff member in the Department of Programming and Social Affairs of the *DRAMA* Municipality specializing in issues of urban and city development through the funding from national and EU funded programmes. She has a vast experience in the preparation of proposals and development plans and in the compilation of Technical Fiches for project applications. Ms Toslidou holds a degree from the University of Aegean in Environmental Studies and an MSE from "Metsovio" Polytechnic University of Athens in Civil Engineering and over the years she has been working in the field of management and implementation of EU and ROP funded projects.

**Newcastle City Council (*NCC*) – UK (http://www.newcastle.gov.uk/)**

Newcastle City Council is the Local Authority covering the city of Newcastle upon Tyne and is one of the largest public sector organisation and employer in the North East of England. Newcastle has been acclaimed the most sustainable city in the UK two years running in an influential new report acknowledging success in

promoting environmental and sustainability issues. Forum for the Future, a sustainable development group which works with leading organisations in business and the public sector, analysed environmental performance, quality of life and future proofing for the UK's 20 largest cities. Newcastle was elevated to the top of its environmental league table and in a strong overall performance finished fourth in both quality of life and future proofing. The City's new climate change programme is also cited as a key contributor to this award and noted for it comprehensive coverage. The City's climate change strategy can be found at www.thebiggreenpledge.org.uk as can the early publication of GIS based resources to help encourage behavioural change by residents. To date, we have only published aerial thermal data, although the full strategy sets out some of our ambitions to published roof orientation data to further help our residents install low carbon measures. We also aim to develop this to support public, commercial and third sector buildings.

The City Council has an extensive track record in securing and successfully delivering a wide range of European supported projects including European interventions targeting the environmental and sustainability agenda. Newcastle has recently completed the ACT2 project, part of the CONCERTO initiative funded by the 6th Framework. *NCC* is also involved as a partner in the C-Liege project led by EIT (Roma) and funded by the IEE (2010 call).

Newcastle City Council is one of the first signatories of the EU "Covenant of Mayors agreement" which commits the council to reducing carbon emissions by at least 20% by 2020. Our Sustainable Environmental Action Plan (SEAP) was approved in October 2010 together with the City Climate Change Strategy. The City is taking the regional lead on developing financial packages for low carbon retrofits to homes and would be able to disseminate the findings and tools from this project across all local authorities in the North East and beyond. In the UK, FITs and RHI projects help set out the financial support for the installation of solar projects and work to date in Newcastle has already utilised GIS to help identify suitable properties for photovoltaic panels on social housing.

**Role in the project.**
*NCC* will host one of the pilots of *i-SCOPE*. Their activities include definition of requirements, data collection and adaptation and support in the deployment and assessment of the services. *NCC* will also take part to awareness and dissemination activities for instance through initiatives such as Covenant of Mayors, CONCERTO.

**Key Staff involved in the project.**

**Adrian McLaughlin** has over 10 years experience working in Local Government implementing sustainability across all services. He completed MSc (Distinction) Environmental Management (2001) & BSc (Hons) Environmental Management (1999) and is Associate Member of Institute of Environmental Management & Assessment (IEMA) & Regional Steering Broad member. EMAS background, focused on climate change, both mitigation & adaptation, author of the City's climate change strategy & action plan (2020) and developed the Covenant of Mayors SEAP. Lead contact at Newcastle City Council on climate change. Representative on most relevant regional and national bodies, including co-lead for the English Core Cities Climate Change Programme. **Brian Williams** - is the Lead GIS Officer for Newcastle City Council and holds a 1st class Honours degree in Environmental Management. Brian has ten years of experience in GIS and has worked on a wide range of projects including the support to the Virtual Newcastle Gateshead Initiative http://virtualng.northumbria.ac.uk/ and leading the analysis work to identify suitable VHN housing and council assets that are suitable for the installation of solar PV as part of the carbon route map programme.

**Informatica Trentina (*INFOTN*) – IT (http://www.infotn.it)**

**Informatica Trentina S.p.A (*INFOTN*)** is an enterprise of around 300 people, owned by public shareholders, mainly the Autonomous Province of Trento, Italy. *INFOTN* is in charge of the ICT needs of its shareholders and it acts as Regional Catalyst for Innovation in ICT through "Trentino as a Lab" (TasLab) initiative. TasLab is a cooperation cluster whose goal is to develop a regional innovation network to bring together researchers, industries and institutions and to enable, throughout a particular innovation infrastructure, a continuous and systematic innovation process on the territory as a driver of socio-economical development. As coordinator of TasLab, *INFOTN* has been in charge the development of the ICT innovation strategy of the Autonomous Province of Trento promoting services in each ICT domain, i.e. eInclusion, eEnvironment, eTourism,



eGovernment, throughout the collaboration among the innovation stakeholders. The peculiar aspect of our innovation framework is the presence of careful and innovative Lead Users, represented by the Autonomous Province of Trento and the Municipalities of Trentino and they representations bodies (Consortium), willing to experiment innovative ICT solutions and the availability of technology test-beds for the development and validation of new services and products in real-life user-focused environments. For this reason, *INFOTN* can give a strong contribution accelerating the regional development with ICT-innovation strategies, in particular sharing pro-actively the innovation strategies, models and methodologies developed inside the projects towards the main actors, namely: citizens, SMEs, Public Bodies, Research Centres etc. TasLab as Funding and Effective Member of the European Network of Living Labs International Association (ENOLL Aisbl), in which Council is represented and founding member of the Italian Network of Living Labs, whose vision and mission totally embraces the project's targets. *INFOTN* has coordinated several innovation projects. The most relevant are:

- Casalgrasa (completed in 2006) on semantic interoperability in social care and health applications.
- eProcurement (completed in 2008) on end users and aims at design and development of new goods and services purchasing model for the Autonomous Province of Trento.
- The design of "Trentino as a Lab innovation network", project co-financed by ESF, aimed to develop the organisational and technological infrastructure of the TasLab innovation Network.

**Role in the project.**
*INFOTN* will ensure involvement of final users in the pilot, namely the Consortium of Mountains' Water Basins – Bacini Imbriferi Montani dell'Adige (BIM Adige), which collects 129 Municipalities into the Consortium whose mission is to foster rural development throughout the exploitation of renewable energy sources and the smart management of environment. More specifically *INFOTN* will ensure:

- Pilot examination, as the coordinator of the real living lab, by involving local stakeholders.
- Pilot validation, by involving final users and by promoting the adoption of user centric approach.
- Communication and Dissemination, through its local and international network of expert and partners.

**Key Staff involved in the project.**

**Dr Pavel Shvaiko** is an innovation and research project manager at *INFOTN*. He holds a PhD from the University of Trento. He has co-authored and co-edited a number of books, contributed to, and published in various international journals, conferences and workshops in the fields of Semantic Web, Artificial Intelligence, Information Systems and GIScience. He participated in several EU, national, and industrial projects, e.g., Knowledge Web NoE (FP6), OpenKnowledge STREP (FP6), SGC semantic geo-catalog (regional project) on the themes of semantic heterogeneity management and knowledge management for geographic data. **Ivan Pilati** is an innovation and research project manager at *INFOTN*. He has a Master degree in "eBusiness and ICT strategic management" from Polytechnic of Turin, and degree in Economics - University of Trento - Italy. He has worked in USA and Spain, and then in Fiat Engineering Spa as Business Manager and Project Manager. He was CIO and ISSO in Fiat Engineering Spa and Mario Tecnimont Spa. **Valentina Ferrari** holds a PhD in Environmental Economics from Trento University and Universitat Autonoma de Barcelona. She got a master's degree in Economics. She worked as consultant for the CREAF (Centre for Ecological Research and Forestry Application) in Barcelona, the Centre for Alpine Ecology in Trento, the Centro Studi Demani Civici e Proprietà Collettive in Trento and the Trento University Economics Department. She worked for Centro Ricerche Fiat and for ITS - Techno Innovation South Tyrol in Bolzano. Since 2008 she works for *INFOTN* working as Innovation and Research Project Manager.

**Regione Lazio - Direzione Regionale Territorio E Urbanistica (*LAZ*) – Italy (http://www.regione.lazio.it/rl_urbanistica/)**

Lazio Region is a local autonomous authority with its own statute, power and functions in accordance with the principles established by the Constitution.

The most important functions of Regione Lazio are involve the health sector, social welfare, training, vocational education, town planning, public housing, economic development, tourism and cultural activities, agriculture, forestry, mining, regional public transport, public works, environment, and implementation of EU regulations and policies.

The Regional Urbanism Directorate is responsible for the production of the regional technical cartography.

At the same time, it ensures the dissemination of geographical data, produced by the other regional directorates, by the means of the SITR (Regional Spatial Information System).

At this stage, the Directorate is involved, at institutional level, in:

- Design of National Spatial metadata profile as extension of INSPIRE profile
- Design of common national minimum data set for spatial planning
- Design of networking infrastructure based on INSPIRE recommendation
- Design an interoperability model both on vertical and horizontal level

This activity is developed in the context of an inter-institutional board, founded by the Ministry of Innovation

**Role in the project.**
*UC* will be in charge of a further pilot hence they will be active throughout of the project from the definition of requirements, to data collection and harmonisation, to pilot testing. With particular regard to pilot stage *UC* will have a driving role with the other pilot-related partners. Additionally *UC* will play a key role in terms of dissemination having the leadership of the **T.6.3 Awareness initiatives targeted to citizens**. Last but not least *UC* will be responsible for the organisation of the *i-SCOPE* international conference which will be hosted in Rome

**Key Staff involved in the project.**

**Procaccini Patrizia** - Experience in the fields technical cartography, GIS, topographic data bases, metadata, communication standards. **Varcasia Sergio** - Over ten years of activity in geographical information systems, digital urban representation, interactive multimedia, Web management. **Simone Patella** - Software Engineer, experience in software analysis and design (design patterns and frameworks), desktop and web application development (Java, C++, J2EE), database model design and administration, geographical information systems.



**B3.2a. Chosen approach**

*i-SCOPE* is a PilotB project, as it harnesses ICT technology into one single federated framework, pursuing a global goal. The main goal of the *i-SCOPE* is to deploy a number of services to be available through the "3D smart EU cities" portal to support inclusive personal mobility, environmental (noise) monitoring and sustainable energy assessment. The project maximizes resources and competences from its consortium members comprising RTD partners, industries, SMEs and, most notably, city administrations. As visible from the following table the project harnesses a variety of competences, with a strong competence in terms of system integration and geographical information, both essential to the success of such a Pilot B.

From the geographical point of view the consortium has been structured so that each city administration works in close relationship with one of the main technology provider. This ensures a strong bond between the final users and those in charge of the deployment of the Pilot B and it ensure better involvement of all the users within the consortium activities. Geographical proximity is also essential to ensure fast communication and prompt feedback during the Pilot stage.

To run it effectively, it is divided in 8 work packages comprising those devoted to technology-related activities (WP1-WP2-WP4-WP5), to testing and validation of Pilot (WP5), one devoted to outreach awareness, networking and dissemination (WP6), one focusing on IPR management, exploitation and standardization (WP7) and, last but not least, one focused on the challenging activity of project management and consortium coordination (WP8)

The technical WPs will bring to the delivery of a number of project pilots to be realised in the locations and municipalities foreseen in the project (10 full partners and 2 participating as associates partners).
To reach such goals the project will realise and extensive number of evaluation and finally testing activities to validate and assess the overall project results in regard to the pilot activities with specific focus on:

1. the requirements, characteristic and final outcomes of the specific and overall developments of the *i-SCOPE* (with specific regard to the technical infrastructure both as overall and each pilot site).
2. assessment of all the preparatory activities (both on the technical and users side) for each of the pilots.
3. overall and final testing and verification in order to start-up the project pilots.
4. overall evaluation and assessment of the pilot activities (after start-up) and of the overall project results.

The overall organisation of the pilot evaluation, validation and assessment activities will be realized within the *i-SCOPE* project through the following process so-called ***"i-SCOPE Pilot validation and assessment protocol"***.

**Preparatory actions (WP1)**

As a very first step the work will be focussed on the creation of a Scenario building and analysis activity. This activity regards the definition of a number of scenarios and use cases (that will be built also through the involvement of the end users with the realisation of focus groups and in-depth interviews). On the basis of such scenarios the end users will be asked to provide: i) and initial feedback on the project foreseen services and features; ii) a specific indication of the characteristics/data that they will be willing to have available in the *i-SCOPE* system portal; iii) a set of specific requirements, key features (including also information on data format) in regard to the data they will be providing (or willing to use) within the system. During this phase also work to collect both user and technical requirements and to realise their first analysis will be realised.

At the end of this phase a number of focussed experimentations will be conducted to realise a final definition of the *i-SCOPE* scenarios and of the data collection models and guidelines (data sheet formats) that will be validate by the project partners and then provided to the end users to be used in the *i-SCOPE* system. The outcome of the work will be an abstraction of the features and services to satisfy the final users, a full scenario description able to capture the mapping between end user needs and all the specific functionalities offered and required to the *i-SCOPE* system and to guide the further steps of the validation protocol activities.

At this stage a key role will be played by the various technical partners that are related, and geographically close to, the pilot-related partners. Those technical partners in fact will be responsible for engaging administrations in the definition of all technical requirements also through the organisation of workshops and specifically organised sessions at the public administrations' premises. During this WP existing data and services will be made available by the public administrations will be then collected and made available for use

within the *i-SCOPE* infrastructure. The analysis will be built onto previous results from EU projects joined by the consortium partners, including BRISEIDE (www.briseide.eu), v-Tour (www.ilovetour.com). As a result the *i-SCOPE* will produce reference architecture, including existing services and smart 3D services to be developed within the project.

**Data modelling, harmonization and fixing (WP2)**

During this phase a specification of the activities earlier performed will be realized. In particular the end users will be asked to participate to initial testing with specific regard to the data that they will provide and use. This will be the first *real* experimentation foreseen in the *i-SCOPE*. While in WP1 users will be asked to provide their inputs and feedback on the basis of the scenarios and use cases defined, in WP2 end users will be asked to access the system (with a very basic interface that will be made available through the *i-SCOPE* simulation platform, see paragraph below) and to insert their data in the system platform. The users will insert their data on the basis of the guidelines provided by the *i-SCOPE* partners team. After this process the suitability and fittingness of the data inserted by the end users will be verified: as an outcome a final guideline and definition of data format will be arranged in the *i-SCOPE* system.

**Standardisation (WP3)**

During this phase the technical partners will define common data model that can suit the specific requirements emerging from WP1.

**Development of the services (WP4)**

The technical activities will proceed with the actual implementation of the services resulting in the first version of the *i-SCOPE* service toolkit. The toolkit will consist in a number of specific technologies to support the initial experimentation of the *i-SCOPE* and she in particular all the activities to be performed to reach validation and verification in regard to the data collection, harmonization data fixing methodologies and formats. The platform will be able to support as a "real world" all the services envisioned by the *i-SCOPE* project and to be realized at the beginning of the pilot activities.

To conduct initial experimentation before the start of the pilot and collect early results, suggestions and recommendations from the project end user the platform will be made available to all the project partner who will be involved in the testing and pilot activities.

**Progressive improvement, evaluation and final data testing (WP5)**

A first verification will be realized with a following real test: i) all pilot users will be access the *i-SCOPE* portal and will performed a specific task (defined on the basis of the use cases defined during the phase 3); ii) during the task execution the users activities will be monitored (through the Mikogo desktop sharing application) and also registered in real time (with Camtasia system); iii) a final and overall data testing work will verify if all the data to be used in the *i-SCOPE* portal have been properly and correctly exposed by the pilot users

**Validation and assessment (WP5)**

In this phase all the necessary activities to make the pilot ready for start will be realized. Final specific implementation, refinement and overall fine-tuning of the *i-SCOPE* system and feature will be realized. Both on the organization and technical everything will have to ready and validation to; a specific pilot start-up methodology and overall plan will be defined during the project to support this work,

**Project pilot trials start up (WP5)**

After the realisation of all the above activities the final system will be implemented with all its characteristic and all the end users will have the possibility to effectively and easily use the *i-SCOPE*: the project pilots will be ready for start-up. The project evaluation protocol will be a continuous process that will be realized all thought the project: also during this final phase will be evaluation and testing activities will be performed as well to optimize the *i-SCOPE* features.

The process overall process is illustrated in the following figure.



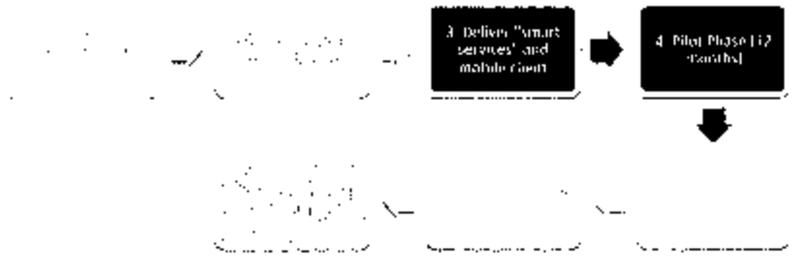



**Figure 16: sequence of activities during the technical development of the project**

The project also foresees two "horizontal" work packages. The first (WP 6), is devoted to awareness, networking and dissemination, aimed at spreading the results of the project and involving the widest number of stakeholders. To this extent it is worth highlighting that the work package will bring to the creation of a S3S (Smart 3D Services) living lab. This will initially involve the city administrations that have joined the consortium and it will be enlarged throughout the project with other city administrations and relevant stakeholders at the EU level. During this WP a number of openness events will be organised including workshops and an international conference on smart services. Openness activities will be supported by city administrations as well as by partners such as INFOTN with significant experience in organisation of similar events.

The second "horizontal" work package (WP 7) will deal with exploitation of project's results. This will include definition of exploitation plan, definition of licensing policy and creation of a market and business plan. The final outcome will be the creation of a S3S EEIG – Smart 3D Services European Economic Interest Grouping which will survive beyond the project duration. The challenging goal of this task is in fact to identify the best possible business plan that can ensure survival of the initiative beyond the project duration and EU funding.

Last but not least, the eight work package will be devoted to project coordination, including administrative project management, quality control and financial management.

**Open user-driven innovation**

The user-driven open innovation within the project is guaranteed, from an organisational point of view, by the coordination of (potential) users directly within the consortium. Tasks detailed from a detailed analysis of man months allocated by the various partners for each task. More specifically:

- At design stage, during WP1, all user partners will be involved specifically within T.1.1 - "Definition of use cases" and T.1.2 "Users and training requirements". Early engagement of citizens will be promoted by local city administration, for instance through local organisation, to the maximum technically possible extent.
- All partners will be involved during the collection of relevant data, in the context of WP2, specifically within T.2.1 "Survey of existing GI and services & analysis of their adaptation" and T.2.2 "Collection of data available at city level as well as through existing services". Those cities involved in the corresponding use cases will also be involved within T.2.3 "Airborne infrared imaging aquisition and processing" and T.2.4 "Onsite noise level sample data acquisition".
- All user partners will be directly responsible for fixing their own data, with the support of key technical partners lead by REG, clearly showing the great degree of commitment by the partners. This will be done in the context of T.2.5 "Data fixing and loading to database". This will require their active engagement, based on results of analysis of the project and not just passive observation of activities being carried out by third parties.
- All user partners will be involved during development of the toolkit through early testing of first technical results. This will be done in the context of T.5.2 "First trials and validation of the integrated system" and will require close cooperation between final users and technical partners. Feedback by users

to the technical partners will be key for further developments.

- All user partners will be involved in the pilot stage, in close cooperation with technical partners, providing continuous feedback to the development team on functionalities, performances and other issues emerging from the use in a real-life operational scenario.
- Open innovation from citizens will be also promoted in the context of T.6.3 "Awareness initiatives targeted to citizens" in the context of which all cities administrations will be involved.
- Further open innovation is expected to emerge from awareness, best practice exchange and liaison activities in the context of T.6.4 "Linkage with ICT PSP joint working group, with other local and EU projects" and T.6.5 "SCOS (Smart Cities 3D Services) Living Lab", both joined by all the city administrations.

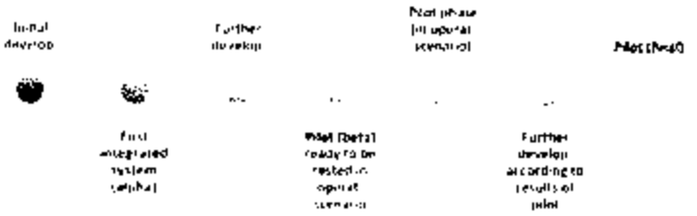



**Figure 17: the overall pilot development lifecycle**

### B3.2b. Work plan

A detailed description of the different work packages, tasks and their timing is illustrated in the following Gantt chart



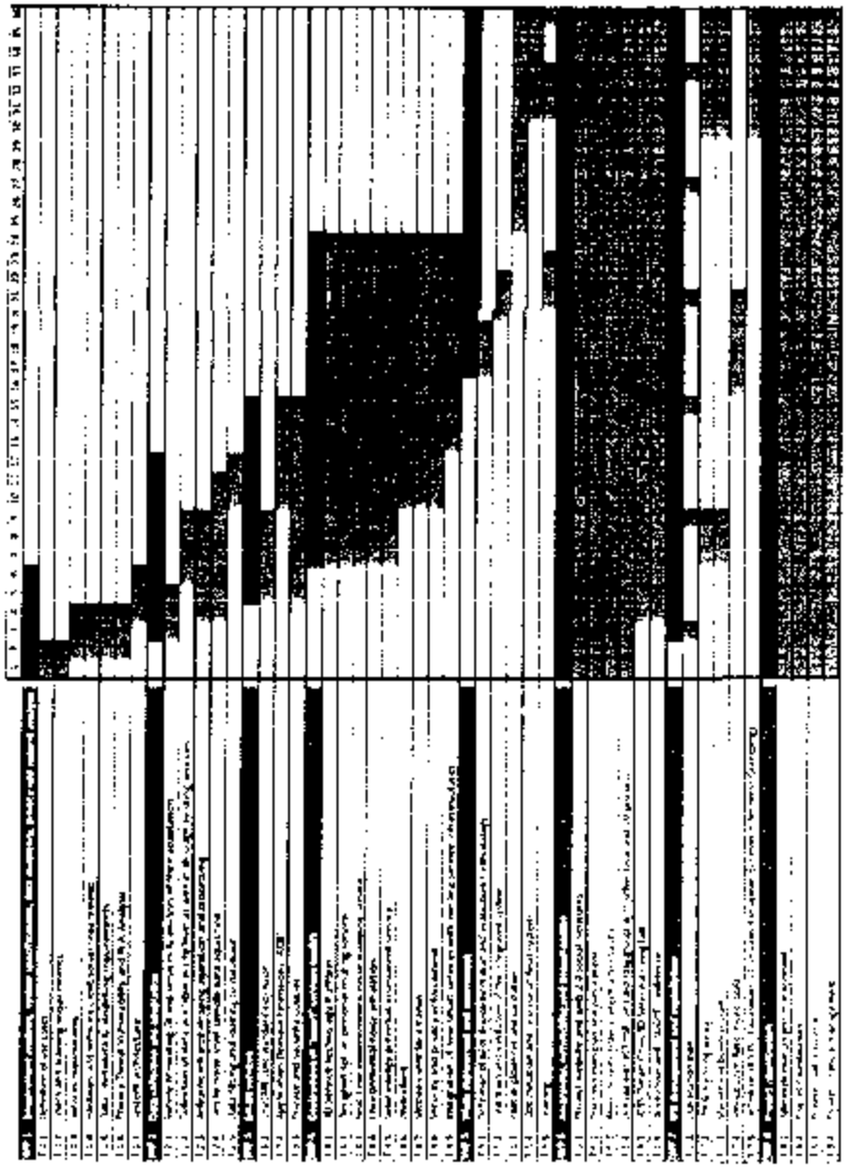


**Table 5: Summary of staff effort**

| Participant No. | Participant Short name | WP1 | WP2 | WP3 | WP4 | WP5 | WP6 | WP7 | WP8 | Total Person Months |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | FG | 9,5 | 3,5 | 4,0 | 51,0 | 22,0 | 10,0 | 6,0 | 19,0 | 125,0 |
| 2 | EPS | 2,5 | 0,0 | 7,0 | 12,0 | 2,5 | 1,6 | 1,7 | 1,0 | 28,3 |
| 3 | GEOF | 2,5 | 4,0 | 6,0 | 9,0 | 4,0 | 1,5 | 8,0 | 1,0 | 36,0 |
| 4 | EGEO | 11,6 | 0,0 | 6,0 | 9,0 | 23,0 | 4,5 | 10,0 | 1,0 | 58,1 |
| 5 | CERT | 3,0 | 0,0 | 6,0 | 20,5 | 3,5 | 3,5 | 1,0 | 1,0 | 32,5 |
| 6 | VUB | 2,0 | 2,0 | 2,0 | 20,5 | 3,5 | 1,5 | 1,0 | 1,0 | 33,5 |
| 7 | MOSS | 2,0 | 0,0 | 7,0 | 23,0 | 2,0 | 1,5 | 3,5 | 3,0 | 42,0 |
| 8 | GIST | 4,0 | 0,0 | 8,0 | 2,0 | 0,0 | 4,0 | 0,5 | 1,0 | 19,5 |
| 9 | IND | 8,0 | 0,0 | 0,0 | 13,0 | 2,5 | 1,5 | 7,5 | 1,0 | 33,5 |
| 10 | CTL | 3,5 | 0,0 | 4,0 | 7,0 | 1,0 | 1,0 | 1,0 | 1,0 | 18,5 |
| 11 | REG | 0,0 | 13,0 | 0,0 | 10,0 | 8,0 | 1,0 | 1,0 | 1,0 | 40,0 |
| 12 | CSYS | 0,0 | 0,0 | 0,0 | 1,0 | 0,0 | 1,0 | 0,0 | 1,0 | 3,0 |
| 13 | OS | 1,5 | 1,5 | 7,0 | 0,0 | 2,0 | 1,0 | 1,5 | 1,0 | 15,5 |
| 14 | INDI | 0,0 | 7,0 | 0,0 | 3,0 | 7,0 | 3,0 | 0,0 | 1,0 | 21,0 |
| 15 | BAIA | 0,0 | 2,5 | 0,0 | 3,0 | 0,0 | 2,5 | 0,0 | 1,0 | 9,0 |
| 16 | ZAD | 0,0 | 0,5 | 0,0 | 3,0 | 0,0 | 2,5 | 0,0 | 1,0 | 7,0 |
| 17 | ZAG | 0,0 | 1,5 | 0,0 | 3,0 | 0,0 | 2,0 | 0,0 | 1,0 | 7,5 |
| 18 | WIEN | 1,0 | 0,0 | 0,0 | 3,0 | 1,0 | 2,5 | 0,0 | 1,0 | 8,5 |
| 19 | DRAMA | 0,0 | 0,0 | 0,0 | 3,0 | 0,0 | 1,0 | 0,0 | 1,0 | 5,0 |
| 20 | NEWC | 0,0 | 0,0 | 0,0 | 3,0 | 1,0 | 4,0 | 0,0 | 1,0 | 9,0 |
| 21 | SHEF | 0,0 | 0,0 | 0,0 | 3,0 | 0,0 | 2,0 | 0,0 | 1,0 | 6,0 |
| 22 | LAZ | 8,0 | 0,0 | 0,0 | 3,0 | 2,0 | 8,0 | 0,0 | 1,0 | 22,0 |
| | Total | 67,1 | 35,5 | 59,0 | 205,0 | 95,0 | 60,1 | 42,7 | 40,0 | 574,4 |

**Table 6: Risk assessment**

| Description of possible risk | Impact | Probability of occurrence (low, medium, high) | Remedial Actions |
|---|---|---|---|
| | **Risks related to technical issues** | | |
| Incompatible data format: during the ingestion of data into the SDI platform (T2.5) data collected may be not in the proper format | High | Low | T2.1 (Data collection protocol and overall methodology) will address specifically data format issue |
| Unavailability of required data: pilots are unable to provide data. | High | Low | A preliminary survey has been done at proposal stage and data are available, an in depth analysis will be conducted in task 2.1: if a lack of data is highlighted, external data sources will be identified. |
| Missing style and legend information | Medium | Medium | In case data miss style and legend information, the WP leader will assist pilot in completing the data. |

| | | | |
|---|---|---|---|
| Difficult inter-vendor integration among software components at mobile client | Low | Low | Each software component is deployed as independent service. Integration is achieved through communication between different components. |
| Incompatibility among software components at server level | Low | Low | Adopt a modular software approach and well defined interfaces between components will be defined at the beginning of the development. In case of incompatibility an external component will be developed and interfaced with the remaining infrastructure through standardised communication channels. |
| Insufficient 3D information on city models | Low | Medium | CityGML 3D models at low level of details are created by GT from building footprint and elevation. |
| Insufficient route information | Low | Medium | Concerted measurement & awareness actions. Interpolation techniques |
| Problem to integrate r.sun component at server level. | Low | Low | GT will benefit from the know how of FBK (one of its shareholder), formerly known as ITC, which is the main developer of the GRASS (http://grass.itc.it) of which r.sun is a component. |
| **Risks related to management** | | | |
| A partner leaves the consortium | Low | Low | The activities are provisionally re-distributed, meanwhile the coordinator, with support from other partners. The coordinator identifies another partner in the same geographical area with similar competences. |
| Failure to secure IPR right clearance from third party | Low | low | Appropriate mitigation strategy |
| Failure to secure IPR | Low | low | Appropriate IPR and licensing strategies |
| **User-level risks** | | | |
| Poor involvement of city administrations | Medium | Low | Users (city administrations) will be involved throughout the project. Geographical vicinity with a technical partner, with close liaison with the city administration, means constant engagement with the project and that in case of poor involvement the technical partner will provide stronger support to activities of relevance (e.g. deployment of pilots at city premises). |
| Marginalization of some city administrations within networking activities and exchange of best practices. | Low | Low | The technical partner, related to the city administration, will provide support for those activities. |
| Difficulty to start a liaison with other EU initiatives | Low | Low | Given the role of this risk is minimal as most of the other partners are directly involved in a number of related EU projects as partners or as coordinators. |



### B3.2c. Project management

#### Project management structure

The **Project Office**, established by the Project Coordinator, is in charge for the day-by-day operations of the project and it is responsible for administrative, technical, financial management of the project. As illustrated in the following figure, the office is constituted by the following:

- The **Project Coordinator (PC)**, who will be Dr Raffaele De Amicis (*FGI*), is responsible for project management, for planning of project execution and for coordination of project partners to ensure timely and effective implementation of the planned activities. The PC shall guarantee the liaison with the European Commission concerning strategic matters of the project. All decisions with contractual implications will be discussed by the PC and the Project Office which will be established for daily project operations. It is the responsibility of the PC to promote gender equality in the project as well as issues related to the research activities conducted within the project. The PC is also responsible for possible conflict resolution, and when necessary the PC shall make a request for a Steering Committee resolution vote. In particular the PC will
  - supervise the scientific, technical, financial and administrative progress of the Project, and;
  - keep informed the Commission of all the relevant information as specified in the EC Contract,
  - communicate all information in connection with the Project to the Commission;
  - receive the entire financial contribution from the Commission;
  - coordinate the reporting to the Commission on the basis of the information gathered from the beneficiaries,
  - prepare periodical accounts as requested by the Commission and prepare within a reasonable time an actual statement upon request of the Commission or any of the beneficiaries.
  - inform the Commission of the distribution of the funds among the beneficiaries, specifically the amounts allocated and the dates of payment to each beneficiary;
  - ensure the signature, by all beneficiaries, of the EC Contract;
  - coordinate the relations between the beneficiaries and implement an efficient management;
  - coordination of the project;
- An **administrative assistant** will support the PC in monitoring project progress internally (to other project partners) and externally (to the EC) as well as all other administrative issues.
- The **Operational Manager (OM)**, who will be Dr Giuseppe Conti (*FGI*), will be responsible for activities related to:
  - Technical activities related to deployment of e-SCOPE software components and analytics.
  - Dissemination work packages
  - Exploitation work packages
  - Moderation of the stakeholders' board.
- The **Data Manager (DM)**, who will be Dr Federico Prandi (*FGI*), will be essential to ensure compliance with the guidelines defined within the INSPIRE (Infrastructure for Spatial Information in Europe) Directive 2007/2/EC, more EC Directive 2003/98/EC and Directive 2003/4/EC on Freedom of access to information. The DM will be responsible of managing:
  - Data surveying.
  - Data assessment.
  - Data collection.
  - Data enrichment
  - Data validation.
  - Data ingestion

  Furthermore he is responsible for:
  - Organization of test session and deployment of *e-SCOPE*.
  - Definition of best practices together with cities administrations.
- The **Quality and Risk Manager (QRM)**, who will be Mr Diego Tagliani (*FGI*), is responsible for assessing the general risk in the project execution. This risk is mostly connected to delays and errors in project activities and deliverables. The QRM will assure that the quality of all deliverables was examined before being released. The QRM will also detect the risks connected with delays and deviations in project progress, with the communication and integration of outputs of different tasks. When such critical situations are identified, the QRM will communicate these risks to the Operational or Technical Manager, who

undertake corrective actions for mitigating potential risks. It is the duties of the QRM to organize meetings and provide communication facilities (e.g. web portal, e-room).

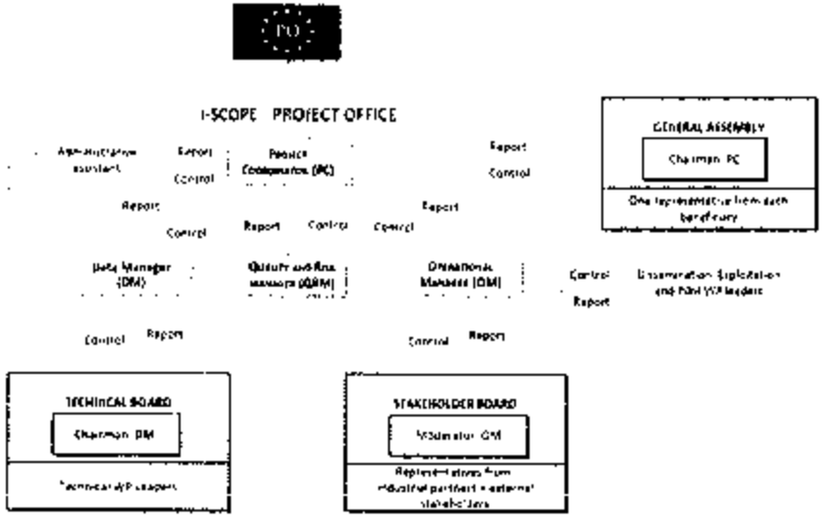



Figure 18: *i-SCOPE* project management structure

Additionally the following managing bodies are envisaged:

- The **General Assembly (GA)** is the decision making body for any issue concerning the proper operation of the Consortium and the Project. It is composed by one representative from each beneficiary, who must be authorised to fully bind its organisation to decisions made in the General Assembly. The Project Coordinator chairs the General Assembly while the Operational Manager acts as rapporteur. Any expert or qualified person may be invited to attend meetings of the General Assembly with a role of advisor. A member from the European Comission may participate at the meetings of the General Assembly.
- The **Technical Board (TB)** is the decision-making body on matters and issues at technical level. It is constituted by one representative from the different technical WP leaders and is to be appointed at the kick-off meeting. The TB is chaired by the Technical Manager. This is the decision-making body on matters and issues at technical level.
- The **Stakeholders Board (SB)** is formed by key representatives from the project's users (City and public administrations) and companies as well as by representatives from other stakeholders who will be interested and committed in *i-SCOPE* throughout the project through other openness and linking activities (as planned in WP7). The SB is chaired by the Operational Manager. The SB will insure openness and visibility of the project: it will update *i-SCOPE* with requirements and perspectives city administration and industrial partners. Activity dissemination and project visability may be achieved through organization of the workshops. The Operational Manager will report about SB activities to the PC.

**Management of intellectual property rights**

*i-SCOPE* aims at delivering new services with potentially high commercial value when exploited. To avoid dissention and conflicts inside the project team, both existing rights to pre-knowledge and ownership rights to items developed during the project must be managed well. To handle these issues the following legal agreements will be implemented:



- A consortium agreement, addressing issues such as intellectual property rights (IPR), confidentiality issues, voting rules, monetary obligations, etc. This will be based on suitable project agreements of similar nature, but adapted according to the specific objectives of *i-SCOPE*.
- A commercialisation agreement to regulate exploitation and commercialisation phases (see WP 6 - IPR management and exploitation).
- If necessary, any specific documents concerning confidentiality.

At the beginning of the project IPR terms will be defined by the Consortium Agreement at the beginning of the project. The state of the background, the rights to use the foreground generated in the project and access rights will be the subject of specific IPR clauses which will be developed according to the recommendations of the European Comunission following the rules and regulations of the PSP programme.

**Communication and collaborative work environment**

To ensure the quality of the project progress, the mechanism on continuous quality control will be defined. The role of quality monitoring of project work and deliverables will be assigned to Quality and Risk Manager whose focus will be definition of quality standards, assessment and assurance of high-quality deliverables. Specifically, the mechanisms on quality assurance are:

- Defining quality standards in advance and verifying the performed work against the imposed standards.
- Defining a Quality Assurance procedure for project deliverables including a number of beforehand approved steps and procedures applying the above quality standards.
- Defining a peer-review procedure of project day-to-day operation and final project results in which the **Quality and Risk Manager** and principal partners of the deliverables will be involved to evaluate their quality.

At the intervals decided in accordance with the EC, the consortium will show the project's results for reviews. This external quality review is beneficial for the project progress, as usually projects tend to become introspective. To efficiently rectify the project work according to the results of the internal and external reviews all the stakeholders will be involved throughout the iterative process of design, implementation, and testing. The development methodology will be coherently circular, aimed at maximizing the productivity and geared toward the users' real needs. This is a fast-paced development approach bounded by stated time scheduling and driven by ambitious goals makes the project a venturesome and hence requires solid risk management.

The following steps on risk management will be held regularly during the project execution:

- **Risk identification**, involving a broad spectrum of the participants in the project.
- **Risk assessment**, evaluating factors describing the estimated likelihood of a risk (weather it might happen or not) and its expected impact on the project should it occur (risk level)
- Developing risk mitigating actions. There will be clearly defined actions to be undertaken and corresponding assignment of the responsibilities should risk elements occur.
- Continuous monitoring of the risk environment of the project through a risk log.

**Reporting**

The following **reports** on regular basis are foreseen to track the project activities and risks:

- **3-month brief Per-Partner reports** in which each partner briefly communicates the on-going activities within the project and points out any relevant issue. These reports are further consolidated by WP leaders into three-month reports. These reports will be used for assessing the project activities according to the predefined quality standards and success indicators. Quality and Risk Manager will collect and process the reports and if needed take the corrective action in project work.
- **Six-month and annual reports** will be compiled by WP leaders. These reports will be further integrated into a project comprehensive report by the Quality and Risk Manager to highlight change in strategy, issues with project partners and involved key personnel, project results and resources, risk analysis as well as growth of the stakeholder community. The Quality and Risk Manager will verify the project results communicated in 6-month WP reports against evaluation plan, quality assurance plan and dissemination plan. These reports will also survey the activities of the Management and SB.

**Project Meetings**

The following project meeting are foreseen:

| N. | Meeting type | Date | Location (partner) |
|---|---|---|---|
| 1 | **Kick-off** | **M1** | **Trento, IT (*FG*)** |
| 2 | Project meeting | M6 | Vallena, MT (*eVES*) |
| 3 | **Project meeting** | **M12** | **Indjija, SR (*INDJ*)** |
| 4 | Technical meeting + mid-project review | M18 | Baia Mare, RO (*BMU*) |
| 5 | **Project meeting** | **M24** | **Zagreb, HR (*ZAG*)** |
| 6 | Project meeting + conference | M30 | Rome, IT (*FAC*) |
| 7 | **Project meeting + technical meeting + final project review** | M36 | Newcastle, UK (*NCL*) |



**B3.3. Resources to be committed**

**Project costs**

Section B3.1, "Consortium and key personnel" has described clearly that *i-SCOPE* partners will mobilise an adequate number of senior human resources to ensure smooth development of the project work plan.

As detailed in the figure below, the majority of the project costs are for personnel.

**Other direct costs**

As visible from Figure 19, other costs have been kept to less than 6%, the latter comprising travelling costs, expenses for organising meetings, workshops and conferences.

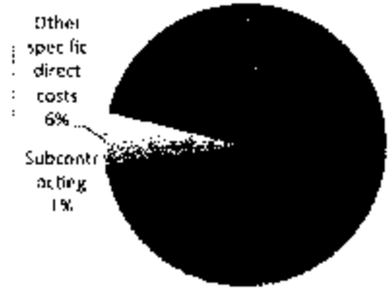



**Figure 19: overall cost distribution**

A further more detailed description of other costs is provided in the table below.

| N | Acron | travels for meetings | cost for organising project meetings | other travels | cost for organising workshops and conferences | software & hardware | rental of hardware | other | Total other direct costs |
|---|---|---|---|---|---|---|---|---|---|
| 1 | FG | € 5,000 | € 2,000 | € 4,000 | | | | | € 11,000 |
| 2 | FPS | € 5,000 | | € 4,000 | | | | | € 9,000 |
| 3 | UPOT | € 5,000 | | € 4,000 | | € 2,000 | € 33,000 | € 500 | € 14,000 |
| 4 | UGLO | € 5,000 | | € 4,000 | € 1,500 | | | | € 10,500 |
| 5 | CTIT | € 5,000 | | € 4,000 | € 2,000 | | | | € 11,000 |
| 6 | VUB | € 4,500 | | € 4,500 | | | | | € 9,000 |
| 7 | MOSS | € 5,000 | | € 4,000 | | € 18,000 | | | € 27,000 |
| 8 | GIST | € 5,000 | | € 4,000 | | | | | € 9,000 |
| 9 | IND | € 5,000 | | € 4,000 | | | | € 4,000 | € 13,000 |
| 10 | CSL | € 5,000 | | € 4,000 | | | | | € 9,000 |
| 11 | RUG | € 5,000 | | € 4,000 | | | | | € 9,000 |
| 12 | USYS | € 5,000 | € 1,000 | | | | | | € 6,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 13 | OS | € 5.000 | | € 4.000 | | | | € 9.000 |
| 14 | INSI | € 5.000 | € 1.000 | | € 2.000 | | | € 8.000 |
| 15 | BATA | € 5.000 | € 1.000 | | € 2.000 | € 2.500 | | € 10.500 |
| 16 | ZAD | € 5.000 | | | € 1.350 | | | € 6.350 |
| 17 | ZAG | € 5.000 | € 1.000 | | | € 2.500 | | € 8.500 |
| 18 | WIFN | € 2.500 | | | | € 2.500 | | € 5.000 |
| 19 | 3BMS | € 5.000 | € 1.000 | | | € 2.500 | | € 8.500 |
| 20 | NEWC | € 5.000 | € 1.000 | | | | | € 6.000 |
| 21 | INDRA | € 5.000 | | | | € 2.500 | | € 7.500 |
| 22 | LAZ | € 5.000 | | € 1.000 | € 8.000 | | | € 16.000 |
| | | € 107.500 | € 8.000 | € 51.000 | € 16.850 | € 32.500 | € 18.000 | € 9.000 | € 242.850 |

As detailed in the previous table, travel cost has been articulated in costs for project meetings (planned every 6 months plus the kick-off at the beginning of the project) and in "other travels costs" necessary for:

- Conferences, workshops.
- Standardisation meetings (e.g. *CSL*).
- Travel costs at national level (e.g. *EGEO* which plans travels between Belgrade - where they are located - and Indjija, or *OS* plans to travel between they headquarters and Newcastle).

As visible from the previous table no major hardware costs has been foreseen (except for some standard PCs and servers), as all partner will mostly make user of their own existing hardware resources. The only exceptions, regarding these costs, are:

- *GEOF* has allocated a budget of 2.000 euros for two laptops and 18,000 euros to rent a thermo camera to be fitted on their airplanes to acquire urban scale thermo imaging which will be used to assess existing energy efficiency of a test area (the information will be made available through the pilot) and to validate the energy simulations. The cost has been planned based on the offer from IDI systems - includes rental, installation and training, insurance, hotel and daily allowances for rental company
- *MOSS* has allocated 18,000€ for Trimbles Building Generator and DTMaster,
- *LAZ* has allocated a budget of 8,000€ for the international conference.
- Cities involved in pilot requiring mobile phone use (e.g. noise simulation) have been allocated 2,500 Euros each for acquisition of approx. 10 smartphone (final number will depend on exact specification required by the software).

It should be noted that in *I-SCOPE* framework of services will rely on a wide range of Open Source technologies therefore software costs necessary to develop the framework components will be limited.

Finally other direct costs include 5.000€ from *GEOF* as cost for plane usage – fuel, permits pilots, for acquisition of thermal cameras and 3,800€ from *IND* for dissemination and advertisement costs.

**Subcontracting**

Activities which are to be subcontracted to by *LAZ* relate to the technical activities necessary to ensure proper data conversion and fitting as well as definition of data model requirements, which will be subcontracted to an external consultant. Specifically *LAZ* will subcontract for 40,000 Euros activities to external consultants experts of 3D, according to the I-SCOPE project requirements. The Lazio Region Directorate for Urban Planning, has just began to implement activities on 3D systems. That's the reason why the Lazio Region decided to participate to the I-SCOPE project, in order to make progress on that purpose. Consequently, the use of 3D experts is fundamental in order to participate to this project. The 3D experts will be also subcontracted on training tasks, in order to transfer their knowledge, implemented during the I-SCOPE project, to the Lazio Region Personnel.

**Resources allocation (by WP)**



With regard to effort distribution the following two figures shows how most of the resources have been booked for technical activities (WP1, WP2, WP3, WP4, WP5), including extension of current standards and development. 17% has been allocated to deployment of pilots. Other horizontal activities (dissemination, exploitation, IPR management, business plan) account for 21% while man months allocated to management have been kept to a low level (5%).

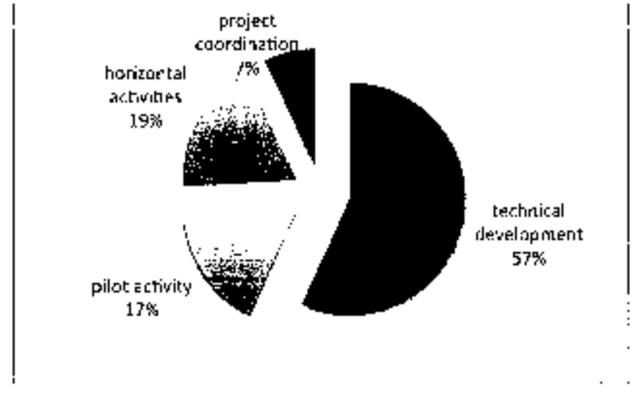



Figure 20: overall effort (in MM)

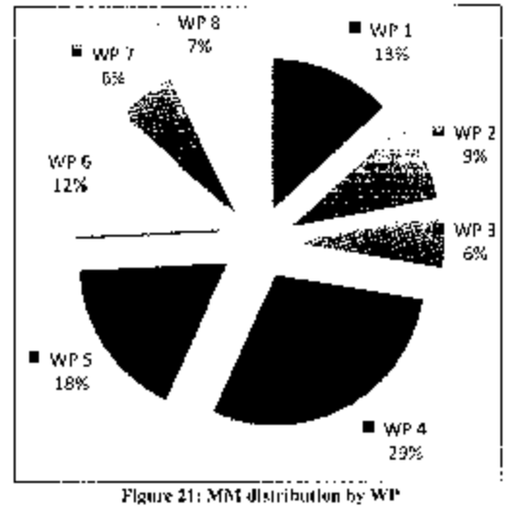



Figure 21: MM distribution by WP

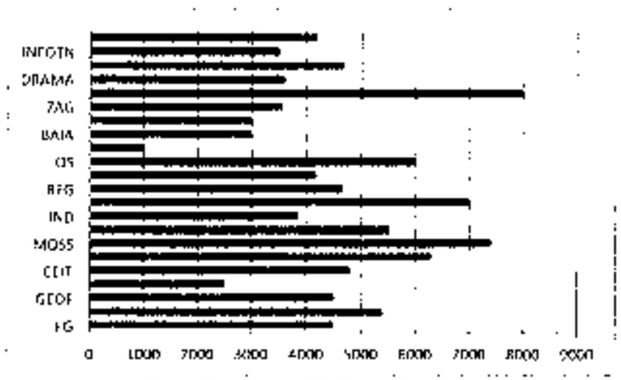



**Figure 22: costs per MM for each partner**

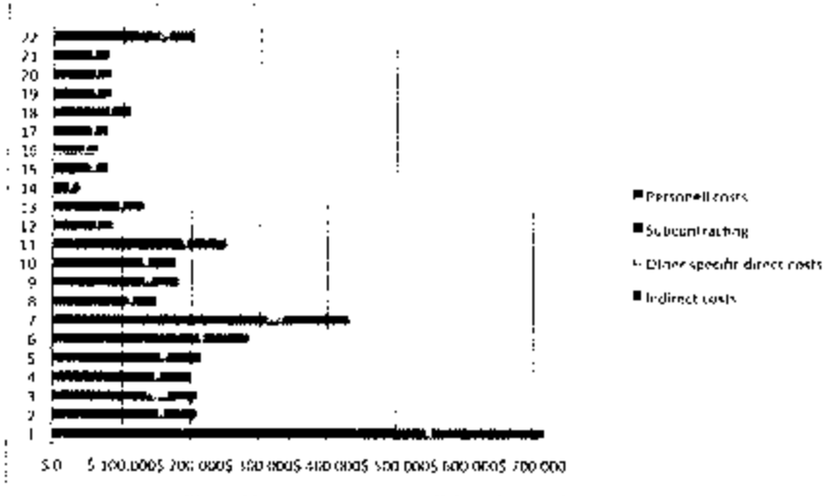



**Figure 23: cost per partner per WP (in Euros) (Y=partner N)**



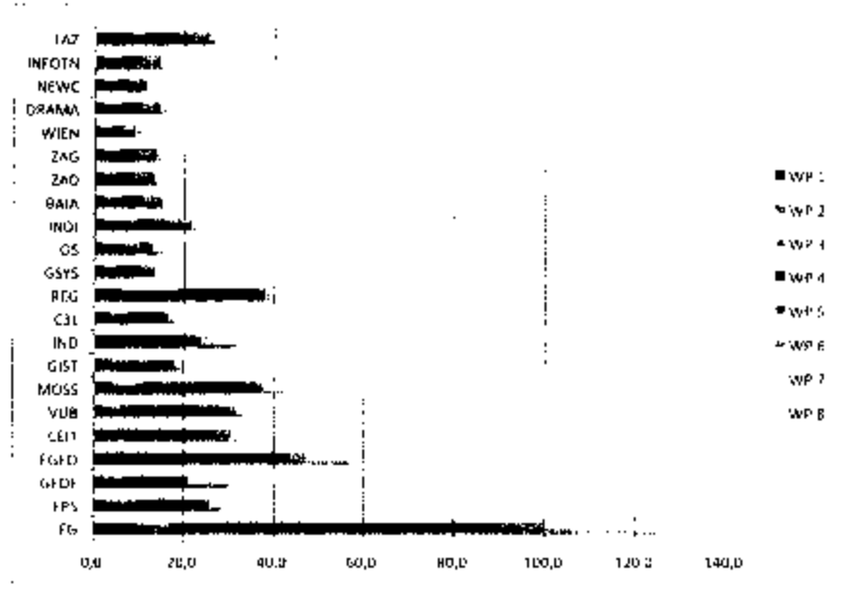



**Figure 24: effort per partner per WP (in man months)**

**Contribution in kind**

The Consortium will complement contribution provided by the EU with its own resources. *RFG* will put at the disposal of the project the needed hardware and software infrastructure. From the software point of view, a complete **SDI platform** based on the Intergraph suite will be available. The suite will permit the data collection, development activities of the geospatial web applications and its deployment and publishing. Preliminarily we consider that the following should be used: SDI webmapPro; SDI Pro; SDI portal. The solution will permit the following operative solutions:

- OGC-Standard services exposure: To allow the integration of SDI datasets and expose them as OGC Standard interfaces
- SDI Catalog Services: To provide data consumption layer, centralizing all SDI base value added services references
- Authentication/Authorization: To provide protection methods, rights management and profiling in a distributed SDI architecture
- Metadata Validation: To provide and guarantee quality, compatibility and usability of SDI data
- Logging and monitoring: To support SDI infrastructure operative steps for performance improvement and system stability check

From the hardware point of view, *RFG* manages its own **data center** and will put at disposal a virtual server to run SDI platform and related services, e.g. connectivity to the Internet. This dedicated structure delivers services with high level of availability. The data center is currently used to provide hosting for some EU institutions also in the european domain. The solution is based on some basic points:

- Solution based on logical/physical layers;

- Redundancy;
- No single point of failures;
- Centralized data storage (SAN);
- Indipendentcy from hardware server platform (Virtualization);
- Scalability for every component;
- Fully centralized management;
- Fully Disaster Recovery / Business continuity capability / Features capability.

Preliminarily we consider that the a virtual server with the following feature should be used:

Virtual server with VMWARE, OS: Windows Server 2008 R2 64-bit, 8 Gbyte RAM, CPU Intel Xeon X5660 2.86 GHz (2 processors), 500 GB disk space and access to a relational database.

The above lists of hardware and software are draft: the actual list of hardware and software to be provided will be defined during inception phase of the project.

Additionally *GEOF* will provide use of one of **their airplanes** for surveying activities foreseen within the project. The airplane will be fitted with a thermo camera to acquire the imaging necessary to the Croatian pilot. No cost for the survey will be charged to the project.

**Figure 25: one of the airplanes of *GEOF*'s fleet**



**B3.4, Indicators**

**Involvement of users in the various locations**

| | citizens | experts (within City Dept offices) | professionals (external to City Dept offices) | Staff from academia |
|---|---|---|---|---|
| Indija | 50 | 10 | 30 | 20 |
| Trento | 20 | 50 | 30 | 200 |
| Bula Mare | 200 | 20 | 20 | 55 |
| Zadar | 200 | 10 | | |
| Zagreb | 1,600 | 10 | 50 | |
| Wien | 50 | 5 | | |
| Drama | 200 | 10 | | |
| NewCastle | 120,000 | 20 | 4,950 | 50 |
| Malta | 200 | 20 | | |
| Lazio | 500 | 20 | | |
| Velletri | 200 | 5 | | |
| Total | **122,620** | 180 | 5,080 | 325 |

**Table 7: Indicators**

| Indicator No. | Relating to which project objective / expected result? | Indicator | Method of measurement | Expected Progress Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|---|---|
| 1 | Involvement of citizens | Number of citizens mobilised by the city administrations for the pilots regarding collection of data from users | Number of people involved (incremental). | 15,000 | 40,000 | 122,620 |
| 2 | Involvement of experts from different dept. of city administrations | Number of experts from different dept. of city administrations testing and using services | Number of people involved (incremental). | 10 | 100 | 180 |
| 3 | Involvement of professionals from private companies | Number of professionals from private companies testing and using services | Number of people involved (incremental). | 100 | 3,000 | 5,080 |
| 4 | Involvement of scientist | Number of scientist testing and using services | Number of people involved (incremental). | 10 | 40 | 275 |
| 5 | Dissemination, training and hosting | N. of training workshops organised by *i-SCOPE* partners with stakeholders | | 2 | 5 | 10 |
| 6 | Standardisation activities | Awareness initiatives towards | N. of presentations | 2 | 5 | 7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | the standardisation activities | standardisation community (e.g. OGC, CEN/TC 287, etc.) | | | |
| 7 | Exploitation and results publicity | N° of conferences organised by *i-SCOPE* | | 0 | 0 | 1 |
| 8 | Making *i-SCOPE* community | Number of additional city administrations joining the *i-SCOPE* Forum within the countries where the partners are located | | 3 | 5 | 5 |
| 9 | Scientific and commercial visibility | Number of articles, papers, publications | | 5 | 10 | 10 |
| | | Number of conferences and events with *i-SCOPE* evidence | | 2 | 3 | 3 |
| | | Publication of newsletter | Number of email addresses to which the newsletter is sent | 30 | 60 | 100 |
| | | Public presentations performed | Number of public presentation made | 10 | 20 | 20 |
| 10 | Market analysis (national / international) | Number of market researches made by the partners in project | Number of market reports produced | 1 | 1 | 2 |
| 11 | Exploitation plan | Number of per partner exploitation plans | Number of exploitation plans | 1 | 1 | |
| 12 | Identification of similar solutions that exist on market | Number of researches and questionnaires by the partners in project | Number of questionnaires collected | 10 | 20 | 20 |
| 13 | Promote sharing of best practice | Publication of best practices short papers | Number of best practices available from the website | 1 | 3 | 5 |
| 14 | Licensing policy | Number of position papers about licensing modelling and regulatory framework | Number of papers | 2 | 2 | 2 |
| 15 | SLA processes | Number of questionnaires, surveys and researches by the partners in project | Number of questionnaires collected | 10 | 10 | 10 |

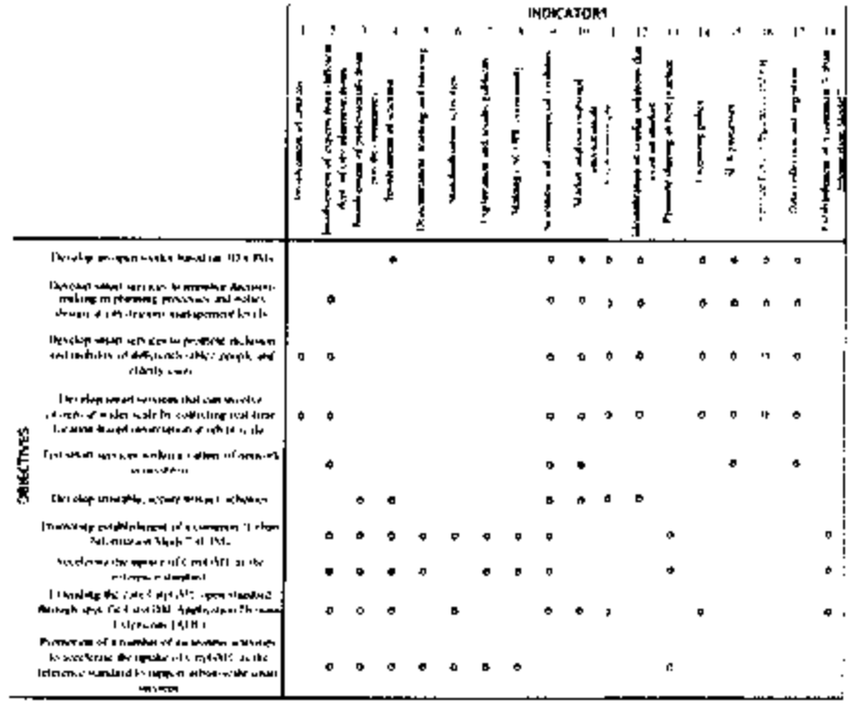


| | | | | | |
|---|---|---|---|---|---|
| 16 | Service Level Objectives (SLO) | Number of parameters to be targered by end users, in order to ensure minimum level of Quality of Service (QoS). | List of KPO (Key Performance Indicators) | 10 | 20 |
| 17 | Data collection and ingestion | Number of data set collected and ingested in the system | Result of the ingestion. | 50 | 70 | 100 |
| 18 | Establishment of a common "Urban Information Model" | Number Cities using CityGML | | | 10 |

The results of performance measurement and evaluation (indicators and their values) will be part of the progress reporting to the Commission.

The following table associates the various indicators to the project's objectives.

**Table 7a: association between indicators and project objectives**



**SMART classification of indicators**

The following tables illustrate how each requirement can be considered as SMART (Specific, Measurable, Achievable, Realistic, Time-bound)

| N.1 | Involvement of citizens |
|---|---|
| Specific | This indicator regards the amount of population involved in the pilot's activities at all stages. This includes laypeople, mobilised for instance through local organisations and NGOs, as well as students, for instance involved through local universities partners of the project. |
| Measurable | Whenever a project activity involving citizens will be organised the participants will be asked to sign on a "list of participants". Whenever the activity requires independent involvement of people (e.g. during pilot stage when users will be able to download and use the software), a registration (or other registration/check-out mechanisms) will be implemented. Reporting will include also a specific field for the number of people involved in the activities of the project. |
| Achievable<br>Realistic<br>Time-bound | To make sure this indicator is both achievable, realistic and time-bound each city will be asked to prepare, and update at 6-months interval, a plan where they detail how to involve citizens and how many. |

| N.2 | Involvement of persons from different dept. of city administrations |
|---|---|
| Specific | This indicator regards the number of people involved within the project belonging to technical staff, engineers, technical management and other offices at the various departments of city administrations. |
| Measurable | Reporting will include the number of experts involved in the project. |
| Achievable<br>Realistic | The objective is both achievable and realistic in that it relies on involvement of internal staff within public administration. |
| Time-bound | Precise timing of the involvement is already defined intrinsically within the technical description through the various tasks, since the role of technical experts will be essential during WP1, for the definition of requirements, and during pilot stage (WP5). |

| N.3 | Involvement of professionals from private companies |
|---|---|
| Specific | This indicators regards the number of private companies involved in the activities of the project, be this requirement definition, exploitation or awareness. |
| Measurable | Each partner will be asked to list, within their regular reporting, the companies that have been exposed to the project's activities, detailing date of the meeting, name of the meeting, number of attendees by the company, name of the company, venue of the meeting. |
| Achievable<br>Realistic<br>Time-bound | The indicator is both achievable, realistic and time-bound in that the majority of the technical partners involved (from research centres to companies) have frequent contacts with companies in the field. City administration will also have to play a role in that they will have to expose results of the project to the local companies. Partners will be asked to provide evidence of the involvement, including all details of those companies involved, during the regular reporting (on quarterly basis). |

| N.4 | Involvement of scientist |
|---|---|
| Specific | This indicator regards the number of staff from academic and research institutes that will be involved in the activities of the project, be this requirement definition, exploitation or awareness. |
| Measurable | Each partner will be required to list, within their reporting activity, the scientific partners they have involved in the project. |
| Achievable<br>Realistic<br>Time-bound | The indicator is both achievable, realistic and time-bound in that the majority of the partners involved (specifically research centres to companies) have frequent contacts with other institutions in the field. Furthermore it is expected that further involvement will occur through other research projects, where the partners are involved, in the context of which |



| | several liaison activities that will be organised. Partners will be asked to provide evidence of the involvement, including all details of those involved, during the regular reporting (on quarterly basis). |
|---|---|

| N.5 | Dissemination, training and linkages |
|---|---|
| Specific | This indicator regards the number of training sessions organised by the partners in the context of T.5.5. |
| Measurable | The indicator is clearly measurable in the number of training sessions to be organised in the context of T.5.5. |
| Achievable<br>Realistic | Given the number of city administrations the number of session planned is realistic since it includes at least one training session organised for each city. |
| Time-bound | The indicator is clearly bound to the timing of T.5.5. |

| N.6 | Standardisation activities |
|---|---|
| Specific | This indicator regards the number of meeting, workshops, papers or proposal for standard extension, organised or presented to the standardisation activities. |
| Measurable | This is clearly measurable in terms of meetings or presentations organised within standardisation bodies (e.g. OGC, CEN, CEN), in terms of position papers presented to the standardisation communities, and in terms of submission of extension to standards filed during the project. |
| Achievable | The indicator indeed is achievable and realistic considering the goal of WP2, whose main achievement is the submission of: 1) the extension of core CityGML standard, 2) of several ADEs to be developed in line with the various pilots' scenarios, and 3) extensions to existing standards in the domain of privacy and security. |
| Realistic | The indicator is realistic in that several partners are active or promoters of standardisation activities. These include:<br>▪ Graphitech, member of OGC Technical committee.<br>▪ Ordnance Survey, member of OGC Technical committee and coordinator of the SWG (Standard Working Group) of CityGML.<br>▪ GISTANDARD, which is in charge of CEN TC 287 secretariat<br>▪ CEL, actively involved (also as chair) of several initiatives in the context of ISO and ETSI regarding privacy and security. |
| Time-bound | Precise timing is defined for all the standardisation activities in the context of WP2 and its corresponding deliverables. |

| N.7 | Exploitation and results publicity |
|---|---|
| Specific | This indicator regards the number of conferences organised in the context of *i-SCOPE*. |
| Measurable | There is one major event to be organised as part of T.6.6. |
| Achievable<br>Realistic | Several partners have experience in the organisation of several conferences and events the international level. This includes Graphitech (which has been organiser of events of similar scope also in the context of EU or NATO projects) and GISTANDARDS which regularly organises events at the international level. |
| Time-bound | The timing of this indicator is strictly bound to T.6.6. |

| N.8 | Missing *i-SCOPE* community |
|---|---|
| Specific | This indicator refers to the number of further city administrations that will be involved to extend the scope of the project. |
| Measurable | This is clearly measurable by the number of city administrations that will sign an agreement with *i-SCOPE* |
| Achievable<br>Realistic | The number of city administration is commensurate to the scale of current consortium and accounts for the fact that several partners are actively involved in living labs initiatives as well as other projects involving cities with similar attitude. |

| | |
|---|---|
| Time-bound | Time-wise the turning point will be the availability of the *i-SCOPE* system, ready to be deployed, planned at M24. From this date, until the end of the project (M36), it will be important to enlarge the scope of the project by including further city administrations as further test beds. |

| SoI | Scientific and commercial visibility |
|---|---|
| Specific | **This indicator refers to the number of publications, events where the project will be presented, number of persons to which the newsletter will be sent and number of presentation to the public of the project's results.** |
| Measurable | All the aforementioned figures will have to be specified, by each partner, within the quarterly report (for internal use). |
| Achievable<br>Realistic | **Given the number, profile and experience of the partners the figures are both achievable and realistic.** |
| Time-bound | This indicator is not time bound, as it will be part of activities to be carried on throughout the project. |

| SLA6 | Market analysis (national - international) |
|---|---|
| Specific | **The market analysis will be run every year by the project team in order to track market trends and produce an assessed technology watch, which has to be aligned with the pilot activities and results.** |
| Measurable | One market report per year, in accordance with what all the major consulting firms are producing (e.g. Gartner Magic Quadrant, McKinsey Report, BCG Focus). |
| Achievable | **The market analysis will be edited and assessed with the contribution of all the public administration and stakeholders board.** |
| Realistic | The reporting will be further assessed directly and indirectly with the end-users among a participatory approach thanks to the newly web 2.0 tools. |
| Time-bound | **All the reporting activities will be run during the project lifecycle and results will be exposed once a year as the contribution of the Project team** |

| SLA7 | Exploitation plan |
|---|---|
| Specific | ***i-SCOPE* project team has planned to issue at least two exploitation plan in order to drive the activities foreseen for the business outcomes of the Project.** |
| Measurable | In the first two year of the Project lifecycle, the team will report two document in which all the exploitation activities will guide lined in full details in order to manage the business plan. |
| Achievable<br>Realistic | **The exploitation plan(s) is gathering information in a life document that will include all the aspects and information on the field by all the partners as well as the assessed activities and advises by the stakeholder board. Also the liaisons with other EU Projects in the Smart Cities context will be taken into account for a whole analysis of the promotion opportunities of the project.** |
| Time-bound | As stated above the exploitation plan will report information on the field that will be gathered by the Project team and formalised in the yearly report. |

| SLA12 | Identification of similar solutions that exist on market |
|---|---|
| Specific | **The *i-SCOPE* team will issue questionnaires both to internal and external users and stakeholder of the Project.** |
| Measurable | All the questionnaires will be issued through the web channel (*i-SCOPE* Project Portal) and the results will be stored in an *ad-hoc* database in order to be analysed under qualitative and quantitative methodologies by the Project team. |
| Achievable | **Through the Project web portal it will be almost immediate to issue all the questionnaires in order to reach a wide community of end-user that in this way will act with a grassroot approach.** |
| [illegible] | The team is getting in use to manage the issuing of technical and market questionnaire, and |



| | |
|---|---|
| | also the analytical competences and their tools are the most updated techniques in place. |
| Time-bound | **Most of the questionnaire are connected each other, and those will be issued at the same time because of covering different area of implementation within the same pilot activities.** |

| SLA | Protocol, sharing of best practice |
|---|---|
| Specific | **The intention of the *i-SCOPE* Project team is to be proactive in the community and looking forward to establishing the liaisons with all the other projects in the Smart Cities context.** |
| Measurable | At least to take part to the workshop and meeting of the other projects once a year in order to network and exchange best practice. |
| Achievable | **At least one attendee by one partner to take part to the other project meeting is an achievable result in order to exchange best practice and results.** |
| Realistic | Participating at the other project meeting by one of the partner's representative can be easily reached and agreed during the project lifecycle. The attendee will represent all the Project team. |
| Time-bound | **Once a year to take part in the other project meeting can be manageable.** |

| SLA4 | Licensing policy |
|---|---|
| Specific | **The position papers onto the licensing policies will help the Project team to drive the both the exploitation activities and business prospective of *i-SCOPE*. This paper will define the guidelines for implementing a general licensing policy for the business outcomes of the Project.** |
| Measurable | Two position paper a year to be issued within each semester. |
| Achievable | **The Project team has considered hiring experts by some of the partners in the project that will be dedicated to the papers issuing.** |
| Realistic | Two position paper can be |
| Time-bound | **One paper per semester.** |

| SLA5 | SLA processes |
|---|---|
| Specific | **The Project team will perform a continuous tracking also on the service level quality, which will be deployed during the implementation phase and the pilot activities. This approach must be assessed during life questionnaires to be issued directly through all the communication channels (including the Project's web portal).** |
| Measurable | All the questionnaires will be listed and stored in a specific database. The outcomes will be published and ready for use for the editing of the SLA Position Papers. |
| Achievable | **Similarly to other indicators' policy, the use of the Project web portal it will assure an immediate way to reach the end-users and stakeholders.** |
| Realistic | The questionnaires will be drafted by the technical team and appropriately reviewed by the experts. |
| Time-bound | **Most of the questionnaire are surely linked each other, and those will be issued in parallel.** |

| SLA16 | Service Level Objectives (SLO) |
|---|---|
| Specific | **This list of indicators will be exclusively based on a quantitative analysis made by the technical team and the SLA expert team.** |
| Measurable | The number of them is specifically addressed in order to measure the quality of services issued during the project and specifically for the pilot activities. |
| Achievable | **The list of SLOs will be defined during the pilot activities that will provide directly an assessment procedure in order to verify their effectiveness.** |
| Realistic | The amount of them is an appropriate set of giving direct measurement of the quality of services. |
| Time-bound | **The SLOs will be issued starting only from the second year, in line with the pilot activities.** |

| SLA17 | Data collection and inversion |
|---|---|

| | |
|---|---|
| **Specific** | **This indicator regards the amount of data sets (e.g. vector layers, ortho-imagery, etc.) that will be made available to the project and processed (adapted) and then ingested to the system for use during the pilot stage.** |
| **Measurable** | An online form (e.g. through Google Doc) will be set up to ensure that all partners have constant visibility over the data being collected or processed (adapted) and further ingested to the system. Each partner will be asked to update continuously the form to make sure progress is constantly monitored in an analytic manner. |
| **Achievable Realistic** | **This indicator will rely on activities of city administrations and on their datasets, currently used for a number of governing activities (e.g. planning). This ensures that this is both achievable and realistic, in that it does not depend on external players or data providers to be brought into play.** |
| **Time-bound** | The time scale of this indicator is strictly defined in the context of WP2. |

| N. 18 | Establishing/using a common "Urban Information Model" |
|---|---|
| **Specific** | **This indicator regards the use of CityGML as standard for city administration activities (e.g. planning).** |
| **Measurable** | The number of cities that will adopt CityGML as standard across EU (note: some of the city administrations already involved do not use CityGML as standard and plan to do so in the context of *i-SCOPE*). |
| **Achievable Realistic** | **This indicator will be strongly influenced by the delivery of the *i-SCOPE* toolkit, in that it will provide a platform for effective use of CityGML. The liaison that city administrations involved in the consortium have already in place with other local administrations as well as the relationship among partners (including national mapping agencies such as OS) with further city administrations makes this indicator achievable and realistic.** |
| **Time-bound** | The time constraints set for this indicator are the availability of the first *i-SCOPE* toolkit (M24), on the one side, and the end of the project, on the other (M36). |

**SPICED classification of indicators**

The following tables illustrate how each requirement can be considered as SPICED (Subjective, Participatory, Interpreted and communicable, Cross checked and compared, Empowering, Diverse and disaggregated).

| N. | Relating to which project objective / expected result? | Subjective | Participatory | Interpreted and communicable | Cross-checked and compared | Empowering | Diverse and disaggregated |
|---|---|---|---|---|---|---|---|
| 1 | Involvement of citizens | Cities have a key role in that they have strategies with local organisation and population | City administrations have been asked to provide specific figures on this indicator. Also the citizens will contribute directly thanks to the web 2.0 tools, which will be widely used during the pilot activities | | Participation of stakeholders and private citizens will be compared and cross checked against various phases particularly: 1) collection of requirements 2) pilot stage and assessment 3) awareness activities 4) training activities 5) dissemination activities 6) standardisation activities 7) exploitation activities | A continuous monitoring and reporting activities, scheduled on a quarterly basis, will ensure that the process of assessment of the indicators will enable self awareness, among various partners, of the activities and progress of the project. | People from different societal groups will be involved (e.g. students, workers, pensioners). Analysis of their feedback will account for different groups and gender. |
| 2 | Involvement of experts from different dept of city administrations | City administrations have direct control over internal officers | | | | | |
| 3 | Involvement of professionals from private companies | | | | | | |
| 4 | Involvement of scientist | Universities and research centres involved will have access to a large pool of scientists in the field | | | | | |
| 5 | Dissemination, training and tutoring | Several training sessions will be organised directly between technical partners and city administrations | | | | | |
| 6 | Standardisation activities | Several partners involved are directly involved in the current standardisation activities | Activities regarding standardisation have been designed with and agreed upon the various partners. The pre-standardisation activities will be also including the involvement of friendly users group | | | | |
| 7 | Dissemination and results publicity | Graphitech has already organised several events (e.g. orientation days, workshops or conferences) with analogous profile | All partners, including cities, will be actively involved in the organisation of the i-SCOPE dissemination events. Specific measurable exposure will be given to those administration that will contribute to the pilot activities | | | | |
| 8 | Making i-SCOPE community | Several partners have direct links with a number of city administrations. A partner (OS) is a national mapping agency with strong relationships with city administrations in the UK. The Project Consortium is also participated by medium and large towns, which can directly promote i-SCOPE with other level of the governmental bodies in their respective countries | | | | | |
| 9 | Scientific and commercial visibility | All technical partners continuously join events (conferences, workshops) to present their activities. During the pilot activities it will be involved as much as possible number | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | of end-users. Those results will be also reported to the business community in order to investigate market opportunities for the i-SCOPE services and applications | | | |
| 10 | Market analysis (national / international) | | The market analysis will also take into account the use of web 2.0 tools for driving and supporting surveys | | |
| 11 | Exploitation plan | | The exploitation plan will be a participatory work by all the partners with the assessment done by the stakeholder committee(s) | The exploitation plan will have the typical form of an yearly report, and it will easy to get by readers | |
| 12 | Identification of similar solutions that exist on market | | Questionnaires will be issued onto the Project's web portal, many web 2.0 tools will be put in place in order to manage the questionnaires activities | | |
| 13 | Promote sharing of best practice | | | Attendance and proactive participation to the other Smart Cities Project in the community | |
| 14 | Licensing policy | The licensing policy will be adjusted to the needs of the project and the end users | The licensing scheme will also meet the expectation given by the last technical and societal trends in the use of the networked technologies | The license scheme will be easily recognised and related to the law | The most used licensing scheme will be taken into account |
| 15 | SLA processes | | | SLA Position Paper will be issued and edited by the Project experts | |
| 16 | Service Level Objectives | | | | SLOs will be issued only |



| | | | |
|---|---|---|---|
| | (SLO) | | during and after the pilot activities, the approach will guarantee also a self-assessment voice of users |
| 17 | Data collection and ingestion | Previous experience in the context of BRISEIDE from Fondazione Graphitech, RISCHIANI and Epsilon ensures that a strong methodological approach can be implemented on the basis of similar experiences. | A set of guidelines will be prepared and sent to all city administrations |
| 18 | Establishment of a common "Urban Information Model" | Active participation from several partners to initiative regarding city planning ensures links to several key stakeholders at EU level. | |

### B3.5. Security, privacy, inclusiveness, interoperability; standards and open-source

**Standardisation**

*i-SCOPE* will use standardization as a means to exploit the impacts of the project result and to best leverage the public funding of this project. It will go about this in two ways: Firstly, through monitoring of standardization bodies, *i-SCOPE* will ensure that the research results produced by the project will be aligned with existing and emerging standards from the relevant communities, for example OGC - Open Geospatial Consortium (of which partner ***FG*** and ***GIST*** are members), ETSI, CEN, ISO, CEN TC 287 (through partner ***GIST***). Secondly, through establishing new pre-standardisation groups and contributing to ongoing standardisation efforts. *i-SCOPE* will provide feedback to the standardisation process by providing experiences, lessons learned, and research results.

With regard to standardization of the aim is to contribute to standardization of the services based on the user location.

- Relevant contribution to standardization is expected in the field of UIM (Urban Information Models) and Smart Cities, with particular regard to initiative from OGC – Open Geospatial Consortium (through ***FG*** and ***GIST*** who are members of OGC) and more specifically the CityGML WG (http://www.opengeospatial.org/standards/citygml). Initially the plans for *i-SCOPE* in terms of extension of current standard (e.g. through new ADE) will be presented to the OGC community in order to gain consensus on the route to adoption of the *i-SCOPE* technology into the OGC standards baseline. This might lead to the introduction of change requests, discussion papers, best practices or even candidate standards if necessary to the relevant standards and Working Groups (WG).
- The standardization will also take into account existing standards including EN ISO 19132 Location based services reference model (of which ***GIST*** was the project lead, 19133 tracking and navigation of which ***GIST*** was the convenor, Location Services (OpenLS) from OGC (http://www.opengeospatial.org/standards/ols) will be the basis for development of location awareness services. Specifically development of ***EPS*** will provide extension of OpenLS routing functions, while at the same time, ***CEIT***'s development will ensure extension of OpenLS support for directions. Particular attention will be paid to requirements emerging from hand-over solutions, e.g. when continuing from outdoor to indoor localization or as well as within different localization technologies.
- Geo Rights Management (GeoRM) WG (http://www.opengeospatial.org/projects/groups/geormwg)
- Additional minor contribution is expected to other related standards such as IndoorML standard by OGC (http://portal.opengeospatial.org/files/?artifact_id=36910) that provides well-defined interfaces to connect semantic models of topographic spaces.

***FG*** and ***GIST*** will maintain working relations with standardization organization of geographic information, namely with CEN TC287, and the OGC of which it is an associated partner. Results will be first presented to OGC Technical Committee meetings and then proposed as extension/change of existing standards, as OGC best practice, or as candidate OGC standards. The task will also establish a project liaison with CEN/TC 287 through ***GIST*** and actively participate in their work plan to create deliverables that will also increase the longevity of the project. Similar liaison activities will be made with ISO/TC 211 – Geographic Information.

These relationships will spread the *i-SCOPE* results throughout the global geospatial standards community.

In the areas related to privacy (of location, behaviour and identity), standardization activity will be coordinated through the EU standardization bodies ETSI and CEN and their relationships to ISO and ITU-T. As the activities of the Ethical Issues Committee (see Section B3.2e, **Project management**) will advise on standardization activity and resolution of privacy issues this activity will also coordinate the review of appropriate regulation and resulting requirements for updates to existing standards that arise from the particular use of personal data in *i-SCOPE*.

With regard to standardisation and noise, the approach proposed makes it easy to make use of existing noise simulation technology provided they comply to QSI interface (DIN 45687). The QSI exchange format was developed on the basis of ESRI shapefile format, as a standardised exchange model data between different noise modeling software.



Last, but not least, specific attention will be paid to national laws, regulations, and standards for tracing. Particular attention will be paid to ISO 10015 standards "Quality management - Guidelines for training".

The significant attention paid by the project to standardisation activities will be result in a continuous update of the other project within the Smart City portfolio. This will regard extension of possible standards, milestone achievements, presence to standardisation meetings, to name but a few.

**Inclusiveness**

In this context WCAG 2.0 Guidelines (Web Content Accessibility Guidelines) are of high importance. These are part of a series of web accessibility guidelines published by the W3C's Web Accessibility Initiative and aim at making content accessible, primarily for disabled users, but also for all user agents, including highly limited devices such as mobile phones.

The technologies chosen within *i-SCOPE* to access the textual output are screenreaders or Braille displays for blind and high visually impaired people. Screenreaders are available commercially or open source. In addition to the textual description a visual map for people with lower visual impairment will be developed using SLD (Styled Layer Description; OGC specification) as well as acoustic mouse-over systems on such maps.

The differently-abled-friendly routing service to be developed in *i-SCOPE* is based on geographic information systems (GIS) extended with algorithms that can create semantic spatial descriptions automatically. The spatial description derives from vector data so that a large-scale mapping is possible. This method makes it possible to describe the shape of crossings, blocks, etc. in words and in a standardised way. Core of the service is a platform (database). Interfaces can provide automatic data updates. The semantic and the automated generated textual description of the urban space is created on the server with GIS methods in the background or directly running within. For the mobile version the position of the user is identified by the application or by the online version, both deriving from GPS or mobile cell locations. The position of the user is sent to the server, where together with the target point of the user, the semantic description is generated. This description is transmitted back to the mobile device where a voice output of the surrounding with all its attributes is performed. In this case a permanent communication link between mobile device and server is required.

**Open Source**

*i-SCOPE* will deploy, in the context of modules and services an open source software infrastructure, which will be made available to module administrators and data providers. Moreover, in order to ensure interoperability open standards and procedures will be followed as analyzed in the previous paragraph of Standards.

*i-SCOPE* is expected to benefit from Open Source frameworks and tools, and/or contributing, wherever required, to their implementation and adoption as standard technology. The adoption of open standardised technology will have a positive impact on the adoption of *i-SCOPE* within a wider stakeholder community, beyond the partners directly involved in the project.

All development of *i-SCOPE* will be open source providing to the community the ability to fully support the project after its closure and add new functionality according to existing or new needs that may arise.

**Data & Protocols**

Datasets will be provided through OpenStreetMap. OpenStreetMap is open source and freely available to the community. It has been developed by the Open Source community and is being updated and maintained by its user base. Guidelines for the update service of OpenStreetMap are available at the project's wiki at https://wiki.openstreetmap.org/wiki/Wiki_guidelines. The guidelines refer to items such as:

- Understandability
- Structure
- Conflicting information and
- Duplication

Also *i-SCOPE* will significantly rely on CityGML as provided in the following websites (http://www.opengeospatial.org/standards/citygml & http://www.citygml.org/). CityGML is the open standard for interoperable encoding of 3D Urban Information Models.

**Browsing & Mobile Applications**
The application used to browse the services and the environment of *i-SCOPE* is the 3D Geobrowser developed by 1&1. The basis of the software is the Java Version of the Open Source NASA World Wind Browser.

The mobile application for 3D and Augmented Reality is based on Java, developed for Android and provided as Open Source.

**Servers and Web Services**
*i-SCOPE* will be based on a variety of server applications to disseminate the information to the public user base as of below:

- The web component based on the Open Source Apache Web Server available at http://httpd.apache.org/
- The DBMS to support the spatial database of the project is available at *RTG*
- Web Services such as WMS, WFS etc will be based on GeoServer which is of course open source and written in Java and Maven available at http://geoserver.org/display/GEOS/Welcome
- Tiling service provided by OpenStreetMap available at www.openstreetmap.org
- Routing service as OpenLS service based on OpenStreetMap
- BRISHDI Platform (www.brisk-it.eu)

**Functionality**
All additional functionality developed for each component of the project will follow the open source model. Specifically the project will make use of the r.sun function of GRASS which is open source and available at grass.itc.it. This function calculates sun irradiation and produces relevant to the measurements maps.



**Annex 1. Letters of support**

Trentino Network

Dr. Raffaele De Amicis
Managing Director
Fondazione Graphitech

Phone : +39 0461 283307
Email : raffaele.de.amicis@graphitech.it

To: Fondazione Graphitech
Fondazione Graphitech
Via Alla Cascata, 56C
38123 Povo - Trento
ITALY

**Letter of Support**

On behalf of Trentino Network S.r.L., I would like to express interest in and support to the project *i-SCOPE: Interoperable Smart City services through an Open Platform for urban Ecosystems* to be submitted within the ICT PSP fifth call for proposals 2011, under the Theme 5 "Open Innovation For Internet-Enabled Services", Objective 5.1: Open Innovation for Internet-enabled services in 'smart' cities.

Our Company is interested in this project due to the high value of the potential pilot activities to be run and the involvement of a broadband infrastructure in order to execute services to be tested

Trentino Network has a fiber optics network, which is called TestBed and is open to test new services with research partners and companies, it is our aim and willing to offer the access to such infrastructure to innovative projects as i-Scope

Yours sincerely,

Alessandro Zorer
Chief Executive Officer
Trentino Network





# COMUNE DI VELLETRI
## PROVINCIA DI ROMA

Dr Raffaele de Amicis
Managing Director
Fondazione Graphitech

Phone : +39 0461 283307
Email : raffaele.de.amicis@graphitech.it

To: Fondazione Graphitech
Fondazione Graphitech
Via Alla Cascata, 56C
38123 Povo - Trento
ITALY

**Letter of Support**

On behalf of City of Velletri, I would like to express interest in and support to the project *i-SCOPE: Interoperable Smart City services through an Open Platform for urban Ecosystems* to be submitted within the ICT PSP fifth call for proposals 2011, under the Theme 5 "Open Innovation For Internet-Enabled Services", Objective 5.1: Open Innovation for Internet-enabled services in 'smart' cities

Mainly our interest is on the possibility to offer the access on our citywide sensor network aimed at delivering value added services to citizens, such as the ones with respect to differently abled or aged people

The sensor network in place is a wireless infrastructure, which is covering the downtown area and respecting the IEEE 802.15.4 standard. This network has been designed with the aim to complement high broadband infrastructures for pervasive applications in the city territories

Yours sincerely,

Mayor of City of Velletri
Fausto Servadio

CITTÀ DI VELLETRI

MRA

MALTA RESOURCES AUTHORITY

31st May 2011

Dr R De Amicis
Fondazione Graphitech
Via Alla Cascata, 56/C
38123 Povo - Trento
ITALY

Dear Dr De Amicis,

LETTER OF INTENT

On behalf of the Malta Resources Authority, I would like to express interest in, and support to, the project I-SCOPE interoperable Smart City services through an Open Platform for urban Ecosystems to be submitted within the ICT PSP 5th call for proposals 2011, under the Theme 5 "Open Innovation For Internet-Enabled Services", Objective 5.1: Open innovation for internet-enabled services in 'smart' cities.

The model building and testing of a GIS based 3D study on site-specific solar energy potential for the Greater Harbour Area is an effort that we support. The Malta Resources Authority will not be financially supporting the project I-Scope or its activities, but will contribute resources, at its discretion, to those activities falling within the Authority's interests. The Authority actively promotes the use of renewable energy sources, including solar power.

Regards,

Ing Anthony Rizzo
Chief Executive Officer

Millennia • 2nd Floor • Abel Muzzi Road • Marsa • MRS 9064 • Malta
Tel: +356 21220516 • Fax: +356 21655200 • E-mail: [illegible] • www.mra.org.mt

ALLEG. alla DELIB. N. 1144 6

DEL ....13 APR 2012....

ALLEGATO B

DIREZIONE TERRITORIO E URBANISTICA
IL DIRETTORE

**Non-Exclusion declaration – Pilot B**
***Certification and Declaration on Honour***

***I certify***

- that our organisation is committed to participate in the following project *I-SCOPE Interoperable Smart City services through an Open Platform for urban Ecosystems.*
- that the information relating to our organisation set out in the A2 forms is accurate and correct,
- that the estimated costs meet the criteria for eligible costs for ICT PSP projects, as established by the ICT PSP model grant agreement and our normal cost accounting principles, and that they reflect the estimated costs expected to be incurred in carrying out the work described in Part B of the proposal (Description of work).

As required by Article 114 of the Financial Regulation and Article 174 of the Implementing Rules to the Financial Regulation **I declare on my honour** that our organisation is NOT in any of the following situations of exclusion as specified in Articles 93 and 94 of the Financial Regulation:

- it is bankrupt or being wound up, is having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, is the subject of proceedings concerning those matters, or is in any analogous situation arising from a similar procedure provided for in national legislation or regulations
- it has been convicted of an offence concerning its professional conduct by a judgement which has the force of *res judicata*;
- it has been guilty of grave professional misconduct proven by any means which the contracting authority can justify;
- it has not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which it is established or with those of the country of the contracting authority or those of the country where the contract is to be performed;
- it has been the subject of a judgement which has the force of res judicata for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the Communities' financial interests;
- it is currently subject to an administrative penalty imposed the European Community, consisting in the exclusion from contracts or grants financed by the Community budget, and/or the payment of financial penalties;
- is subject to a conflict of interest or;
- is guilty of misrepresentation in supplying information required by the European Community as a condition of participation in a procurement procedure or grant award procedure or failed to supply this information.

REGIONE LAZIO

*Arch. Demetrio Carini*
*Direttore Regionale*
*Regione Lazio – Direzione Regionale Territorio e Urbanistica*
*31/05/2011*



ASSESSORATO ALLE POLITICHE DEL TERRITORIO E DELL'URBANISTICA
DIPARTIMENTO ISTITUZIONALE E TERRITORIO
DIREZIONE TERRITORIO E URBANISTICA

VIA GIORGIONE, 129
00147 ROMA

TEL. +39 06 5168
FAX +39 06 5168
www.regione.lazio.it

# A2.1:
## Who we are

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project number [1] | 297284 | Project acronym [2] | i-SCOPE | Participant number in this project [10] | 22 | Participant short name [11] | LAZ |

One form per participant

Legal data

| | |
|---|---|
| If your organisation has already registered for CIP or FP7, enter your Participant Identity Code [12] | 961452361 |
| Participant legal name [13] | REGIONE LAZIO - DIREZIONE REGIONALE TERRITORIO E URBANISTICA |
| Participant short name [11] | LAZ |
| Status of validation [14] | DRAFT |

| Legal address of the participant | | | |
|---|---|---|---|
| Street name [15] | Via del Giorgione | Number [16] | 129 |
| Town [15] | Roma | | |
| Postal code / Cedex [15] | 00147 | | |
| Country [16] | Italy | | |
| Internet homepage (optional) | http://www.regione.lazio.it/rl_urbanistica/ | | |

| Registration data of the participant | |
|---|---|
| Legal registration number [17] | not applicable |
| Place of registration [17] | not applicable |
| Date of registration [17] | 01/01/1900 |
| VAT number [18] | 80143490581 |
| Legal form [19] | Region |

| Legal Entity Appointed Representative (LEAR) [20] | | | |
|---|---|---|---|
| Family name | | First name(s) | |
| Phone 1 [21] | | Phone 2 [21] | |
| E-mail | | Fax [21] | |

# A2.2:
## Who we are

| Project number [37] | 297284 | Project acronym [38] | i-SCOPE | Participant number in this project [39] | 22 | Participant short name [40] | LAZ |
|---|---|---|---|---|---|---|---|

[redacted]

[redacted]

Certain types of organisations benefit from special conditions under FP7 participation rules. If you are one of these, please tick the appropriate box(es) below. [27]

Your organisation is:

- ☐ Natural person
- ☒ Legal person
  - ☐ Non profit
    - ☐ Research Organisation
  - ☒ Public body
    - ☐ International organisation
      - ☐ International organisation of european interest
  - ☐ Secondary and higher education establishment
- ☐ Enterprise
  - ☐ SME

Indirect costs [41]:

- ☐ Actual indirect costs [42]
- ☐ Simplified method [43]
- ☐ Standard flat rate [44]
- ☒ Special transitional flat rate [45]

REGIONE LAZIO



2011-08-30 14:31

# A2.3:
# Authorised Representatives

| Project number [1] | 297284 | Project acronym [2] | i-SCOPE | Participant number in this project [10] | 22 | Participant short name [11] | LAZ |
|---|---|---|---|---|---|---|---|

One form per participant

| First authorised representative to sign the grant agreement or to commit the organisation for this project | | | |
|---|---|---|---|
| Family name | CARINI | First name(s) | DEMETRIO |
| Title [34] | Dr. | Gender [35] (Female – F / Male – M) | M |
| Position in the organisation [36] | | DIRECTOR | |
| Department/Faculty/Institute/Laboratory name/... [37] | | Regione Lazio - Dip. Istituzionale e Territorio - Dir. Territorio ed Urbanistica | |
| Address (if different from the legal address) [12] | | | |
| Street name [13] | VIA DEL GIORGIONE | Number [13] | |
| Town [15] | | | |
| Postal code / Cedex [15] | | | |
| Country [16] | Italy | | |
| Phone 1 [21] | +390651688247 | Phone 2 [21] | |
| E-mail | dcarini@regione.lazio.it | Fax [21] | |

| Second authorised representative to sign the grant agreement or to commit the organisation for this project | | | |
|---|---|---|---|
| Family name | PROCACCINI | First name(s) | PATRIZIA |
| Title [34] | Dr. | Gender [35] (Female – F / Male – M) | F |
| Position in the organisation [36] | | OFFICE MANAGER | |
| Department/Faculty/Institute/Laboratory name/... [37] | | Regione Lazio - Dip. Istituzionale e Territorio - Dir. Territorio ed Urbanistica - Office Sistema Informativo Territoriale Regionale | |
| Address (if different from the legal address) [12] | | | |
| Street name [13] | VIA DEL GIORGIONE | Number [13] | 129 |
| Town [15] | ROMA | | |
| Postal code / Cedex [15] | 00147 | | |
| Country [16] | Italy | | |
| Phone 1 [21] | +390651685938 | Phone 2 [21] | |
| E-mail | pprocaccini@regione.lazio.it | Fax [21] | +390651685921 |

# A2.4:
## How to contact us

| Project number [1] | 297284 | Project acronym [2] | i-SCOPE | Participant number in this project [10] | 22 | Participant short name [11] | LAZ |
|---|---|---|---|---|---|---|---|

[redacted]

[redacted]

| Person in charge of administrative, legal and financial aspects in this project | | | |
|---|---|---|---|
| Family name | PROCACCINI | First name(s) | PATRIZIA |
| Title [34] | Dr. | Gender [35] (Female – F / Male – M) | F |
| Position in the organisation [36] | | OFFICE MANAGER | |
| Department/Faculty/Institute/Laboratory name/... [37] | | Regione Lazio - Dip. Istituzionale e Territorio - Dir. Territorio ed Urbanistica - Office Sistema Informativo Territoriale Regionale | |
| Address (if different from the legal address) | | | |
| Street name [13] | VIA DEL GIORGIONE | Number [14] | 129 |
| Town [15] | ROMA | | |
| Postal code / Cedex [16] | 00147 | | |
| Country [17] | Italy | | |
| Phone 1 [20] | +390651685938 | Phone 2 [21] | |
| E-mail | pprocaccini@regione.lazio.it | Fax [21] | |

| Person in charge of scientific and technical/technological aspects in this project | | | |
|---|---|---|---|
| Family name | PATELLA | First name(s) | SIMONE |
| Title [34] | Dr. | Gender [35] (Female – F / Male – M) | M |
| Position in the organisation [36] | | EMPLOYEE | |
| Department/Faculty/Institute/Laboratory name/... [37] | | Regione Lazio - Dip. Istituzionale e Territorio - Dir. Territorio ed Urbanistica - Office Sistema Informativo Territoriale Regionale | |
| Address (if different from the legal address) [12] | | | |
| Street name [13] | VIA DEL GIORGIONE | Number [14] | 129 |
| Town [15] | ROMA | | |
| Postal code / Cedex [16] | 00147 | | |
| Country [17] | Italy | | |
| Phone 1 [20] | +390651688722 | Phone 2 [21] | |
| E-mail | spatella@regione.lazio.it | Fax [21] | +390651685921 |



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# A2.5:
# Our commitment

| Project number [1] | 297284 | Project acronym [2] | i-SCOPE | Participant number in this project [10] | 22 | Participant short name [11] | LAZ |
|---|---|---|---|---|---|---|---|

One form per participant

1- As an authorised representative to sign the grant agreement or to commit the abovementioned organisation, I am fully aware that a grant agreement may not be awarded to an applicant who is, at the time of a grant award procedure, in one of the situations referred to in Articles 93(1), 94 and 96(2)(a) of the Council Regulation (EC, Euratom) N° 1995/2006 of 13 December 2006 on the Financial Regulation applicable to the general budget of the European Union [OJ L 390, 30/12/2006, p1].

As a consequence, I certify that:

- In compliance with article 93(1) of the abovementioned Regulation, none of the following cases apply to our organisation:
  - a) it is bankrupt or being wound up, is having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, is the subject of proceedings concerning those matters, or is in any analogous situation arising from a similar procedure provided for in national legislation or regulations;
  - b) it has been convicted of an offence concerning its professional conduct by a judgment which has the force of res judicata;
  - c) it has been guilty of grave professional misconduct proven by any means which the contracting authority can justify;
  - d) it has not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which it is established or with those of the country of the contracting authority or those of the country where the contract is to be performed;
  - e) it has been the subject of a judgment which has the force of res judicata for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the Union's financial interests;
  - f) it is currently subject to an administrative penalty referred to in Article 96(1) of the above-mentioned regulation.
- In compliance with article 94 of the abovementioned Regulation , and as far as the current grant award procedure is concerned, our organisation:
  - g) is not subject to a conflict of interest;
  - h) has not made false declarations in supplying the information required by the Commission as a condition of participation in the grant award procedure or does not fail to supply this information;
  - i) is not in one of the situations of exclusion, referred to in the abovementioned points a) to f).

2- As an authorised representative to sign the grant agreement or to commit the abovementioned organisation, I also certify that our organisation:

- is committed to participate in the abovementioned project;
- has stable and sufficient sources of funding to maintain its activity throughout its participation in the abovementioned project and to provide any counterpart funding necessary;
- has or will have the necessary resources as and when needed to carry out its involvement in the abovementioned project.

3- As an authorised representative to sign the grant agreement or to commit the abovementioned organisation, I finally certify that all the information relating to our organisation set out in the different Grant Agreement Preparation Forms are complete, accurate and correct; and that the estimated costs meet the criteria for eligible costs for CIP ICT-PSP projects – as established by the EU model grant agreement – are notably based on our usual accounting and management principles and practices, and reflect the costs expected to be incurred in carrying out the foreseen work described in Annex I (description of work).

4- Our organisation is fully aware that the Commission may impose administrative or financial penalties on legal entities who are guilty of misrepresentation in supplying the information required by the Commission as a condition of participation in the grant award procedure or fail to supply this information; have been declared to be in serious breach of their obligations under any contract/grant agreement covered by the budget of the Commission. Such penalties shall be proportionate to the importance of the contract/grant agreement and the seriousness of the misconduct, and may consist in their exclusion from the contracts and grants financed by the budget of the Commissionfor a maximum period of ten years and payment of financial penalties.

5- As an authorised representative I certify that the information given in the form A2.2 is correct.



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# A2.5:
# Our commitment

| Participant legal name [35] | REGIONE LAZIO - DIREZIONE REGIONALE TERRITORIO E URBANISTICA | | |
|---|---|---|---|
| Family name of authorised representative | CARINI | First Name(s) | DEMETRIO |
| Date | 05/09/2011 | Signature of the authorised representative to sign the grant agreement or to commit the organisation[36] | Il Direttore Regionale Territorio e Urbanistica arch. Demetrio Carini |
| Family name of authorised representative | PROCACCINI | First Name(s) | PATRIZIA |
| Date | 09/09/2011 | Signature of the authorised representative to sign the grant agreement or to commit the organisation[36] | |