

2005 Int'l Ubiquitous Computing Symposium (IUCS 2005)

intelcities

# Intelligent Cities

**Prof. Steve Curwell**

**University of Salford, UK**



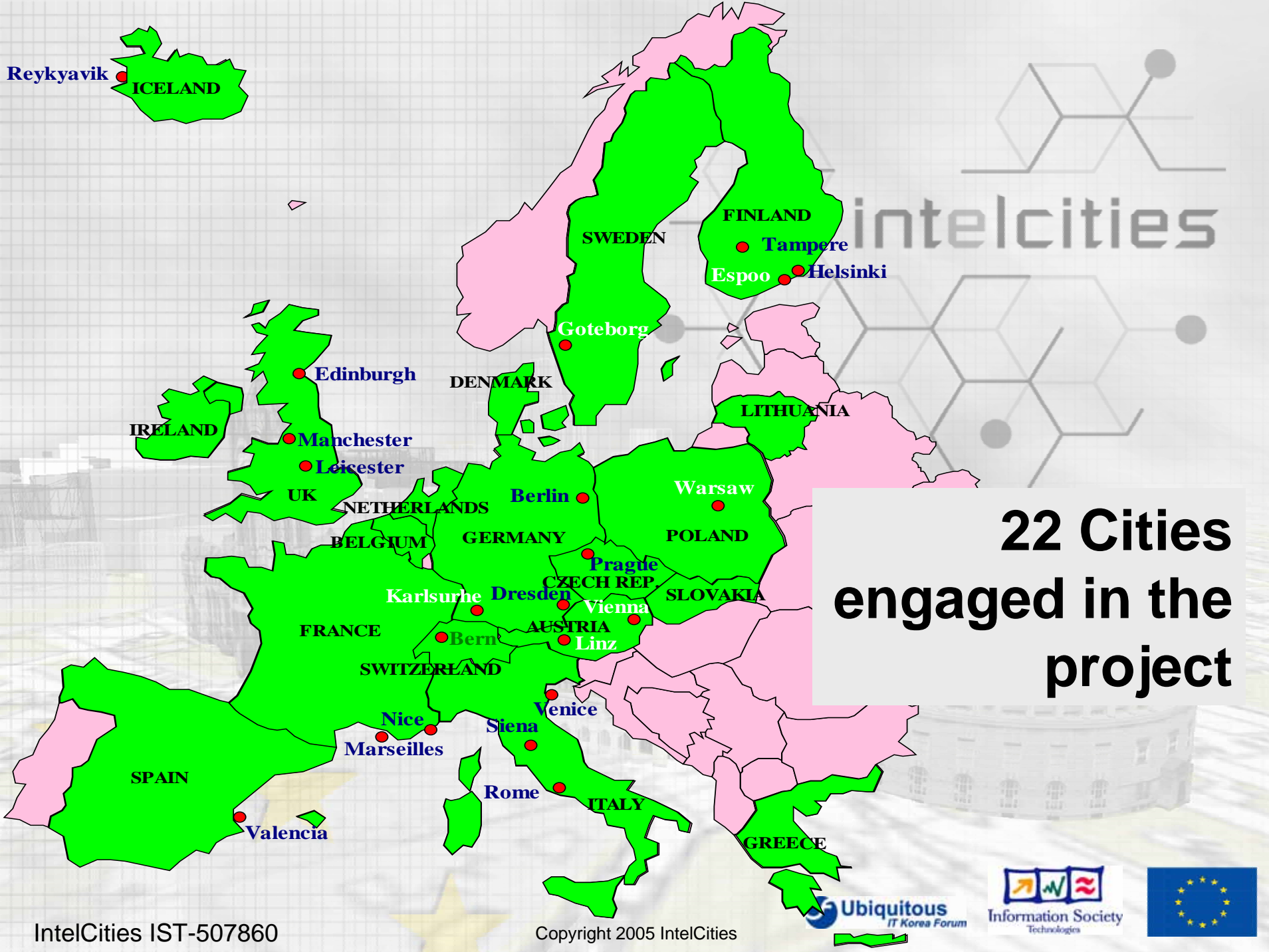
# What is Intelcities?

## The INTEGRATED PROJECT in a nutshell!



- ❑ Duration January 04 – September 05
- ❑ Budget: Euro 11.7M (EU Contribution 6.8M)
- ❑ Based on INTELCITY FP5 Roadmap project exploring KS by 2010 + SUD by 2030
- ❑ Critical mass of 18 cities, 20 ICT companies, 36 research groups including 16 SMEs in a total of 20 European Counties
- ❑ Prototype modules to be “built” in six cities to be linked together to demonstrate an Integrated Open eCity Platform.
- ❑ “Living-Lab” methodology based on Iterative learning where R & D pilot studies are embedded in cities and are meeting citizens’ needs
- ❑ Recognition of the need for new business models, e.g. PPPs which offer new ways of delivering services and business opportunities

**Coordinator – City of Manchester:** Dave Carter, Head of Digital Development Agency  
**Scientific & Technical Direction - University of Salford:** Prof Steve Curwell



# Strategic Vision for Cities



- Competitive, successful and sustainable cities with better quality of services for citizens and businesses.
- Achieved through enhanced, integrated e-Government services that facilitates more efficient and inclusive day to day management and medium term planning of cities.

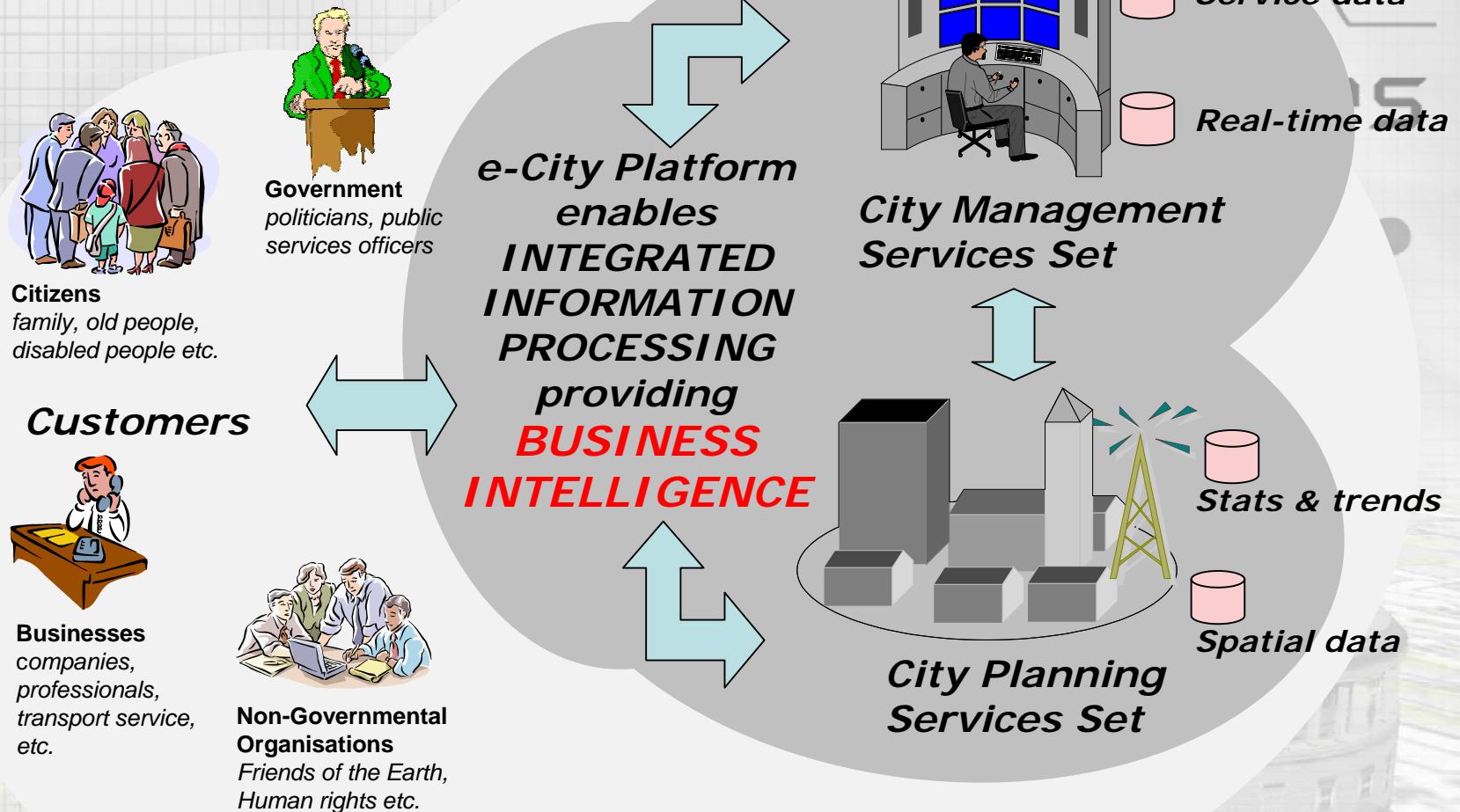
# Where cities are today



- Most cities have large investments in technology to manage and deliver services (legacy).
- Lack of confidence in existing commercial applications - examples of market failure in delivery of e-gov. systems
- E-government is as much about using technology to manage back office processes as it is about public facing services.
- Some 'city services' are between one part of the city administration to another or to another public body (e.g. central or regional government) - so happen without touching the public interface.
- The common thread is data – most of which is 'owned' by the city, or other public bodies that is contributing in some way to the service being delivered.



# e-City Vision for enhanced governance



**Intelcities will create and integrate a set of innovative, e-government services that will improve the management and planning of cities through *business intelligence*, leading to higher quality, more sustainable urban environments, delivered via the e-city platform**



# Shared Development



# Why an e-City Platform 1?



- Integrate related services to enhance service provision through **business intelligence**:
  - Make services more convenient, faster, more cost effective
  - Improve customer satisfaction
  - Promote social inclusion
- Promote economic regeneration
- Improve staff satisfaction
- Aid European Integration

Customer  
Centred



# Why an e-City Platform 2?



- For integration
  - To provide transversal low-level services (Security, Transaction...)
    - ⇒ Development of new services can concentrate on their business logic
  - To provide a Multi-Service access (one authentication for all services)
  - To attach external services (legacy, third-party)
- For interoperability
  - To provide a **common** and **open** framework
    - ⇒ Ensuring compatibility between services
    - ⇒ Perspectives of new innovative services to fulfil more complex needs

# European Shared development

European cities can share their developments because their services will be compatible thanks to the e-City Platform.



Marseille



Develop a new service



**e-Administration (WP1)**

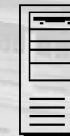
- Training programme
- Employment



Siena



Develop a new service



**e-Inclusion (WP2a)**

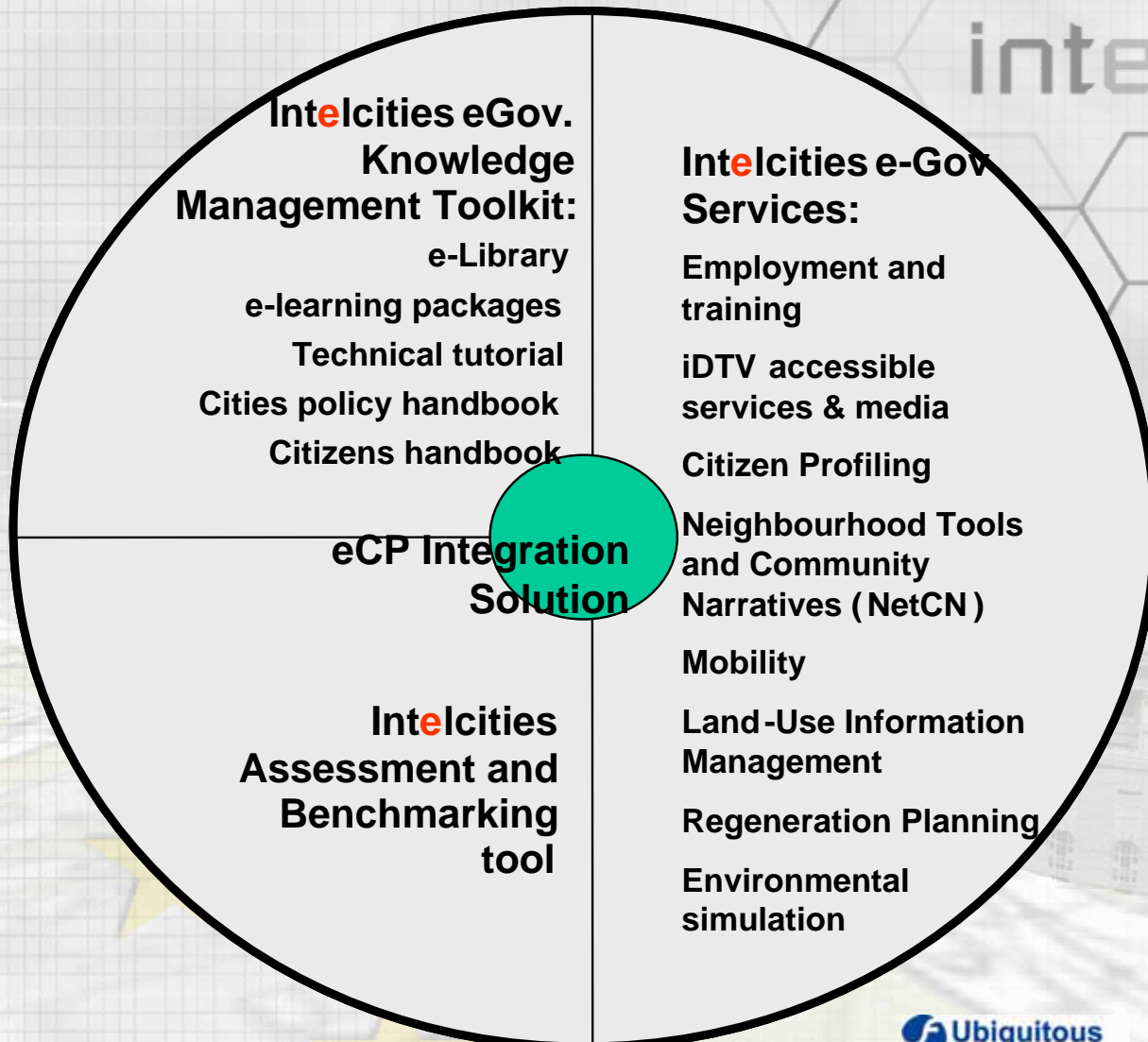
- Tele-assistance
- Procedure Monitoring



# European added value examples:

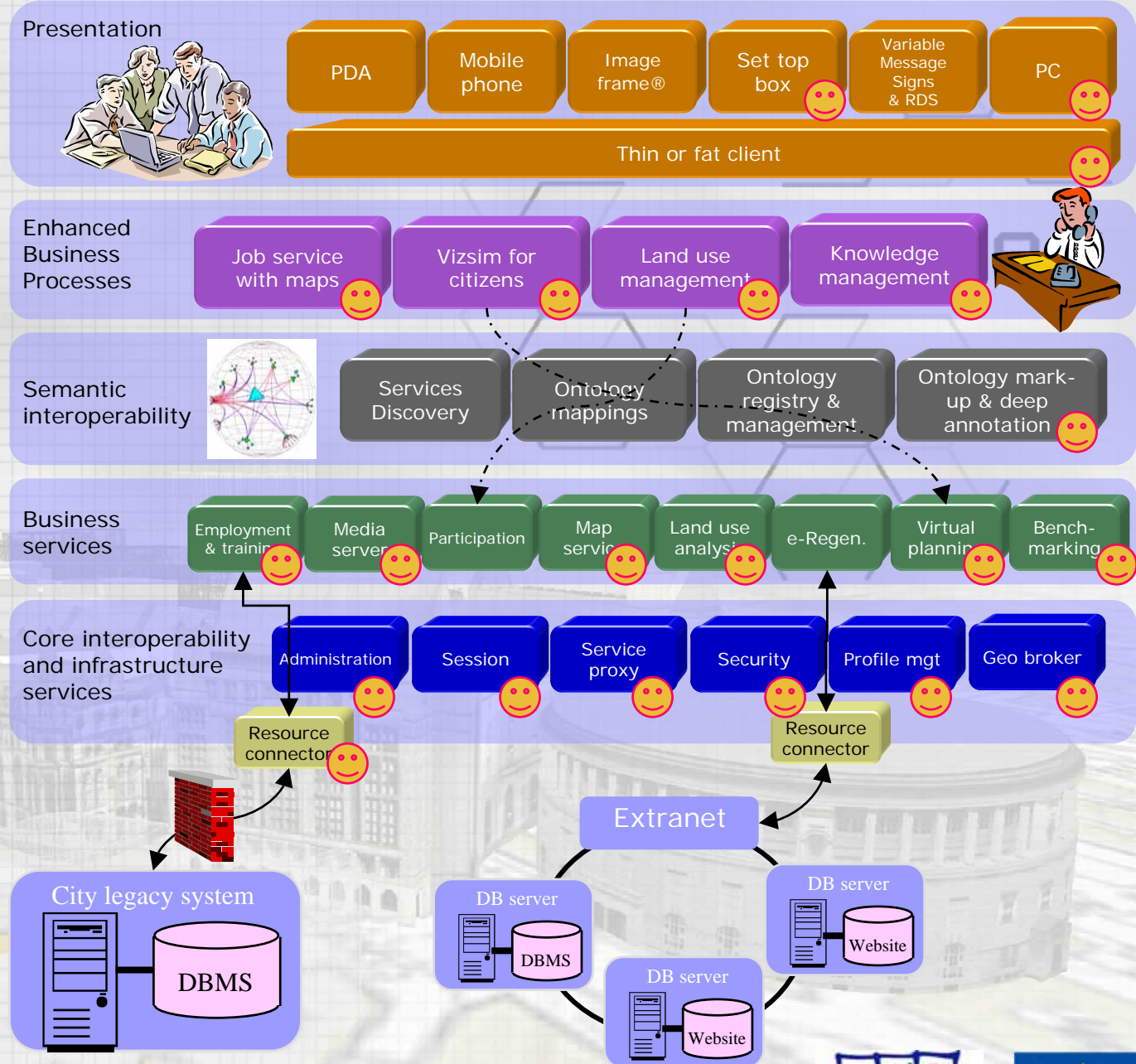
- **Employment search:** job offer and training opportunities spatially located - enabling all EU citizens to relate to jobs to housing, child care, transportation and mobility requirements in any city
- **Business relocation or start-up:** enabling EU businesses to find optimum location in terms of accommodation, market and logistics
- **Real-time city transport mobility management:** linking public transport, emergency services, traffic and events information – enabling journey optimisation across city, between cities in conurbations and across borders
- **Civil defence:** safety and risk management in terms of natural disasters and home security
- **Major event management:** sporting events, pop concerts, expo's – linking hotel, transport and crowd management
- **Urban planning and city management across borders:** understanding impacts of changes on adjacent communities

# Intelcities Assets: Products and Services





# The e-CP Service Oriented Architecture



# Profiling Service



MINN GARÐABÆR



**Minn Garðabær**

**Mál**

**Umsóknir**

**Umræður**

**Kannanir**

**Samráð**

**Hjálp**

**Um vefinn**

→ Minn Garðabær / Mínar stillingar /

Góðan daginn

**Guðjón Snær Steindórsson**

**Mín skráning | Útskráning**

Hvernig á að...

- fylla út umsókn
- senda erindi
- senda fyrirspurn
- taka þátt í umræðu
- taka þátt í könnun
- taka þátt í samráði

**Mínir tenglar**

- Garðaskóli
- Hofstaðaskóli
- Garðabær

## Mínar stillingar

Nafn: Guðjón Snær Steindórsson  
Netfang:   
GSM númer:   
Símanúmer:   
Tapað lykilorð sendist:   
Mitt litaval:

### Áhugasvið:

í boði

Annað  
Bæjarból  
Barnaskóli Hjallastefnunar  
Félagsstarf aldraðra  
Hæðarból  
Kirkjuból

Mitt val

Flataskóli  
Ásar

### Mínir tenglar:

í boði

Bókasafn Garðabæjar  
Félagsstarf aldraðra í Garðabæ  
Fjölbrotaskólinn í Garðabæ  
Flataskóli  
Garðalundur  
Golfklúbbur Kópavogs og Garðabæja

Mitt val

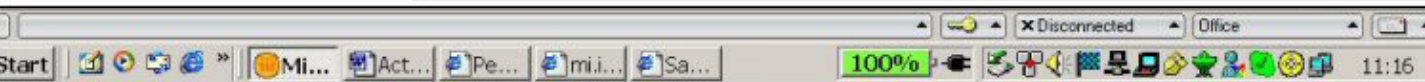
Garðaskóli  
Hofsstaðaskóli

Myndin mín:

Browse...

**Select you profile**

- make queries
- start discussion



# Employment and Training



Bienvenue sur le site Emploi / Formation de la ville de Marseille

Que recherchez vous ?

Emploi



Formation



[1 - Retour a la recherche](#) [2 - Liste des offres sélectionnées](#)

Liste des offres sélectionnées

Formation	Offre	Lieu de travail	Référence de l'offre	Date d'émission
	<a href="#">Chaudronnier - Soudeur TIG---</a>	Allemagne (Dresde)	1789	
	<a href="#">chaudronniers, serruriers, soudeurs, mécaniciens</a>	Allemagne (Dresde)	1560	
	<a href="#">Opérateur pliage, 1 métallier, 1 soudeur</a>	Allemagne (Dresde)	1101	
	<a href="#">Chaudronniers, soudeurs, mécaniciens</a>	Allemagne (Dresde)	896	





Welcome,

Mr. John Smith

- Home
- My Profile
- Log out

## > Job Offers > Job 1560 > Training 11040 > Video

### Video presenting the training program.

Video showing welder training at e-Topia training centre. The course for beginner is based on CS WAVE (Welder Apprentice Virtual Environment) platform. Duration : 2 weeks (retraining) to 10 weeks (complete training).



**eTopia Training Agency**

Welder Training - Beginner session

# Media Service



Contact: [Webmaster](#)  
© 2004-2005 IntelCities (FP6-507860)






# Parking Information Service

INTELCITIES - Microsoft Internet Explorer

Indirizzo: <http://www.ais.fraunhofer.de/intelcities/parken.html>

**Parking info**



Area - Downtown	Capacity	Not used
La Storta	930	93
Montebello	430	107
Fontana Candida	290	85
Borghesian	200	99
Ostia Lido Nord	970	377
Finocchio	180	54
Centro Carni	150	58
Osteria del Curato	230	0
Magliana	575	126
Via Taranto	355	300

INTELCITIES

<http://www.ais.fraunhofer.de/intelcities/parken.html>

Neue Seite 1 - Microsoft Internet Explorer

**Parking**

Tel: 0667102736 - 066782996  
Fax: 0667102998  
Piazza Campitelli 7, 00186 Roma



Public Park Hours: ? 24 hours  
Tariffs: ? 2,25 ?/hour.  
? Fractions of 5 minutes  
Contracting otions: ? Per hours  
? Renting  
Capacity: 930  
N? of car spaces: 339

[Book Online Now](#)



Welcome,

Mr. John Smith

- Home
- My Profile
- Log out

## > Job Offers > Job 1560 > Map Location > Proposal

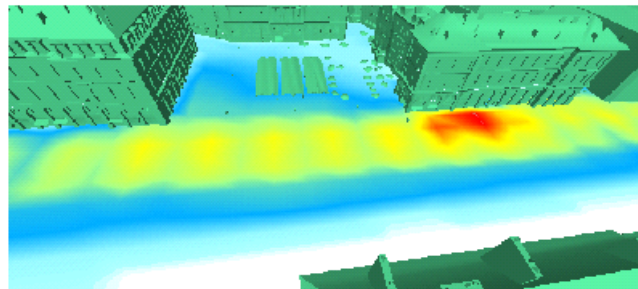
*Redevelopment proposal around the job offer location.*

This is the redevelopment proposal for the "Einstein strass" in Dresden

*Simulations presenting the redevelopment proposal.*

Name	Date
PollutionSimulation	11 mai 2005
PollutionSimulation	12 mai 2005

*PollutionSimulation created at 11 mai 2005*



Simulation using MithraPol

Road type : street

Pollutant : NOX

Traffic :

Lights vehicles per hour = 200

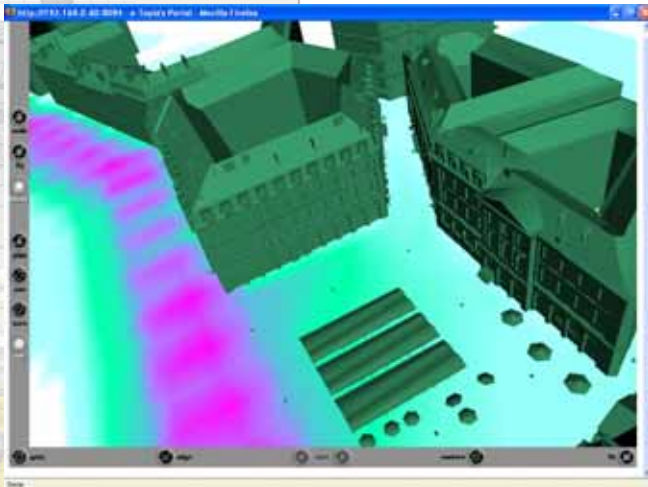
Heavy vehicles per hour = 20

2 wheels vehicles per hour = 30

Wind :

U = 0 m.s-1

# Pollution Service







EU

## benchmarking environment...

## ■ THEMATIC GROUPS

Section 1

## ■ INDICATORS

## 1. DEMO - Percentage of individuals regularly using Internet

- ☐ Percentage of individuals using Internet through PC
- ☐ Percentage of individuals using Internet through laptop
- ☐ Percentage of individuals using Internet through PDA
- ☐ Percentage of individuals using Internet through mobile
- ☐ Percentage of individuals using Internet through digital TV
- ☐ Percentage of individuals using Internet through Mobile 3G
- ☐ Percentage of individuals using Internet at workplace
- ☐ Percentage of individuals using Internet at education place
- ☐ Percentage of individuals using Internet at home
- ☐ Percentage of individuals using Internet at library

Reset Save &amp; Exit

Logout | Intelcities.com | Top



## e-Moderators

Voluntary residents moderating the discussion in the housing company's intranet built inside the HVV-portal.

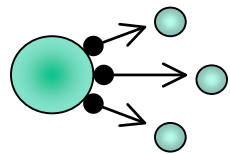
E.g. in the 'Sini' building: 1000 discussion threads on approx. 200 topics in one year among the residents.



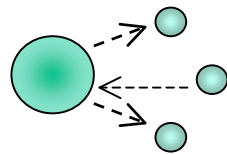


# Citizen Engagement

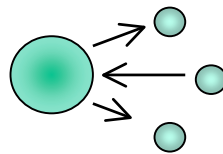
## The Citizen Engagement Matrix



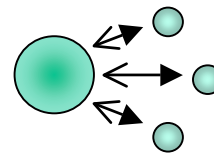
information  
and  
transaction



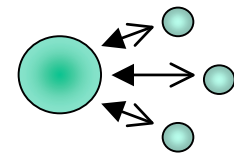
consultation



deliberative  
involvement



government-  
led active  
participation



citizen-led  
active  
participation

*increasing level of citizen involvement and influence on policy-making*

# e-Library module demonstration

## Annotated Document captured from INTELCITIES e-Library

Annotation Explorer - Mozilla Firefox

My Edinburgh - Document Annotations:

MyEdinburgh, Community Learning and Citizen Participation: Benchmarking the online [Service Development](#).

1. Introduction Launched in 2003, myEdinburgh.org was designed to improve citizens' awareness of, and access to, local learning opportunities in addition to boosting [ICT](#) familiarity and competency across the city. [Edinburgh's](#) online learning portal and Community [Grid](#) for Learning is highlighted by WP3 [[Analysis and Review of Current Practices and Legacy Systems](#) of Web Portals?] as an example of current best practice and can be analysed both in terms of present functionality and its relevance to the proposed e-City prototype. The following discussion considers the local and national strategic plans underpinning myEdinburgh.org, the delivery of aims and objectives and the functions and capabilities of the portal. 2. Summary of central and local [ICT](#)-related policies in [Edinburgh](#) Figure 1: Timeline summary of strategic planning and [ICT](#) developments in [Edinburgh](#). [Edinburgh's](#) information portal and Community [Grid](#) for Learning, myEdinburgh.org, was developed in response to both local and national policies and recommendations relating to community learning and digital inclusion (summarised in Fig.1). In 1999, the [Scottish Office](#) published Community Learning Circular No. 4/99 which set out priorities for future community learning strategic thinking. The paper specified that all local councils were to produce a generic Community Learning Strategy and a series of localised Community Learning Plans. The [City of Edinburgh](#) Council responded by establishing the [Community Learning Implementation Group \(CLIG\)](#) in 2000: a partnership comprising public, private, voluntary and community organisations. In 2001, CLIG published New Directions, a generic Community Learning Strategy for [Edinburgh](#) which listed a key aim as, 'active citizenship' increased use of [Information and Communication Technology](#) in local communities. Two other key [ICT](#) strategic documents were published in 2001. In March, the [City of Edinburgh](#) Council launched Delivering the [Smart City: A 21st Century Government](#) Action Plan which stated, 'Key to the success of the [Smart City](#) will be the development of a 'city portal' which will provide a single port of entry or gateway to all relevant services and information.' This action plan was followed in September by the Scottish Executive's national plan, Digital Inclusion: Connecting [Scotland's](#) People. The plan included details of [£23 million](#) lottery funding available across the [UK](#), allocated by the [New Opportunities Fund's](#) Community Access to Lifelong Learning programme plus information on the generic [National Grid](#) for Learning scheme and its offshoot, the community-specific Community Grids for Learning. Following the publication of these three documents in 2001 [Edinburgh](#) Learning, a collaborative city-wide venture of partners from private, public, business, voluntary and community sectors, was successful in an application to the [New Opportunities Fund](#) and was awarded [£0.5 million](#) to support a Community Access to Lifelong Learning Project. This funding was used to establish CityConnect in 2002 and, consequently, myEdinburgh.org in 2003. The [City of Edinburgh](#) Council's [Community Education Department](#) published a city-wide [ICT](#) plan in 2003, which aimed to integrate national and local policies. Figure 2 demonstrates the relationships between the various strategies. Figure 2 The relationships between national and local [ICT](#) planning. \* The [UK Government](#) is committed to achieving universal access to the Internet by 2005? 3. The aims and objectives of CityConnect CityConnect is the organisation delivering the development and implementation of [Edinburgh's](#) e-learning portal, myEdinburgh.org. Funded by the [New Opportunities Fund](#) ([£499,957](#)) and [Scottish Enterprise](#) ([£225,000](#)), the organisation's aims are congruent with the [City of Edinburgh](#) Council's thematic [ICT Community Learning Plan](#) and respond to specifications from local and national [ICT](#) strategies. The three key aims of CityConnect can be

Done

# e-Library module demonstration

Searching the annotated documents' library using entity pattern search or predefined pattern capabilities

The screenshot shows the IntelCities e-Library interface. At the top, there's a navigation bar with links: COURSE EDITOR, DOCUMENT MANAGER, GROUP MANAGER, CALENDAR, FORUM, EMAIL/SMS, and SEARCH HELP. Below this is a 'WORK GROUP' section with a 'GO' button and a list of items: 'Communication', 'Test-course', and 'New test again'. A 'Search/ Semantic Search' section is visible, with filters for 'X, is a', 'and X', 'Y, is a', 'and Y', and 'Z, is a'. Each filter has a dropdown menu and a 'which name' field. The search results are displayed in a list with three items: 1. D9.2 - Assessment of the te Transfer Needs, 2. D9.4- E-Learning Materials Documents for Project Partners, and 3. My Edinburgh.

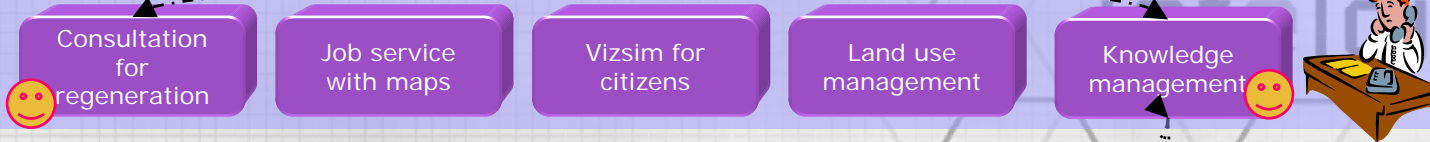
This screenshot shows the same IntelCities e-Library interface as the previous one, but with different search filters. The 'which name' fields are now set to 'is unknown', 'is exactly =', and 'is unknown'. The search results are displayed in a list with three items: 1. D9.2 - Assessment of the te Transfer Needs, 2. D9.4- E-Learning Materials Documents for Project Partners, and 3. My Edinburgh. Below the search results, there's a section for 'attribute restrictions' with three rows of filters. The 'Interested In' dropdown is set to 'X'. At the bottom, there's a 'Search for:' section with buttons for 'Documents', 'Entities', and 'Preferences'.

Search results: 1 - 1 of 1  
1 Social Inclusion Partnership  
Search results: 1 - 1 of 1

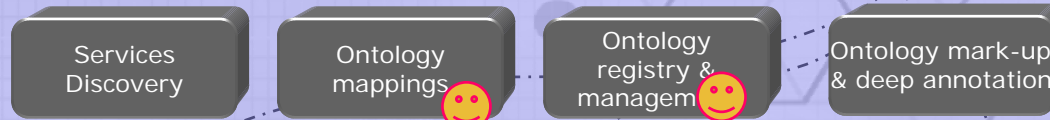
## Presentation



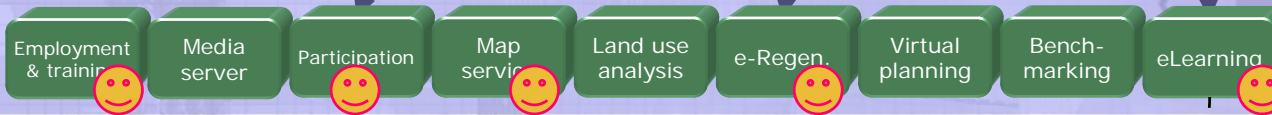
## Enhanced Business Processes Services



## Semantic interoperability



## Business services



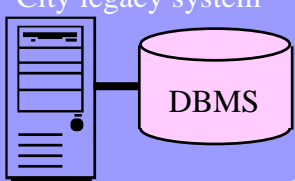
## Core interoperability and infrastructure services



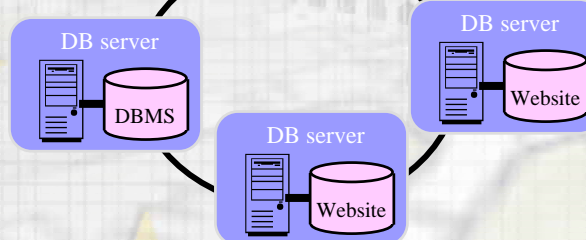
Resource connector



City legacy system



Extranet



Resource connector

# WP10 e-citizenship service





PDA

Mobile  
phoneImage  
frame@Set top  
boxVariable  
Message  
Signs  
& RDS

PC

Citizen

## Step 1

**Roadshows: consultation  
& envisioning activities**

## Step 2

**Inform architects of the eCity platform  
about the type of services**

## E-ADMINISTRATION

Communication

Events

Home

Internet  
PhonesBlock of  
flats

Neighbourhood

Totem

Cyber-café

City

e-thematic  
evenings  
On-line games  
Forums

World

Help among  
neighboursComputer  
trainingOn-line  
businessBlock of  
flats

Neighbourhood

City

World

Internet

Phones  
KioskTotem  
Road signs

Internet

Events on SMS

Help among  
neighboursBlock of  
flats

Neighbourhood

City

World

Kiosks

Public Internet  
PhonesSmart Infra -  
structureIntelligent  
devicese-learning  
Smart CardsShopping  
for books

intelcities

IntelCities-CITIZENS - Microsoft Internet Explorer

File Modifica Visualizza Preferiti Strumenti ?

Indietro → → → Cerca Preferiti Multimedia

Indirizzo http://www.intelcitiesproject.com/wcm-site/jsps/index.jsp?type=page&amp;id=5537&amp;lg=EN

## The scenario:

Karen and Samira have been running their catering business from Karen's home for the past two years. Recently, they've started offering buffet lunches for offices in the City centre and dinner parties in their customers' homes – their business is doing well, but Karen is finding it increasingly difficult to park their van in her neighbourhood. In addition to parking difficulties, they're both conscious of the area's traffic congestion, particularly at peak times.



Karen and Samira have decided to look for new premises, with parking facilities which are both affordable and secure. They're looking for an area with good transport links, enabling them to reach their clients, both in the city centre and suburbs. If business continues to do well, they're planning to invest in another van.



## How can the eCity platform help Karen and Samira?

Due to the demands on their time, neither Karen nor Samira can search for





PDA

Mobile  
phoneImage  
frame@Set top  
boxVariable  
Message  
Signs  
& RDS

PC

Training and testing the eCity platform from a citizen perspective

## Training and testing the eCity platform

What do you think?

# Feedback from test-bed at Barco

We would now like you to draw on your experience and expertise to help us test whether the eCity Platform can also

Please read through the following instances, there may be more than one correct answer. It should take no longer than 5 minutes to do so.



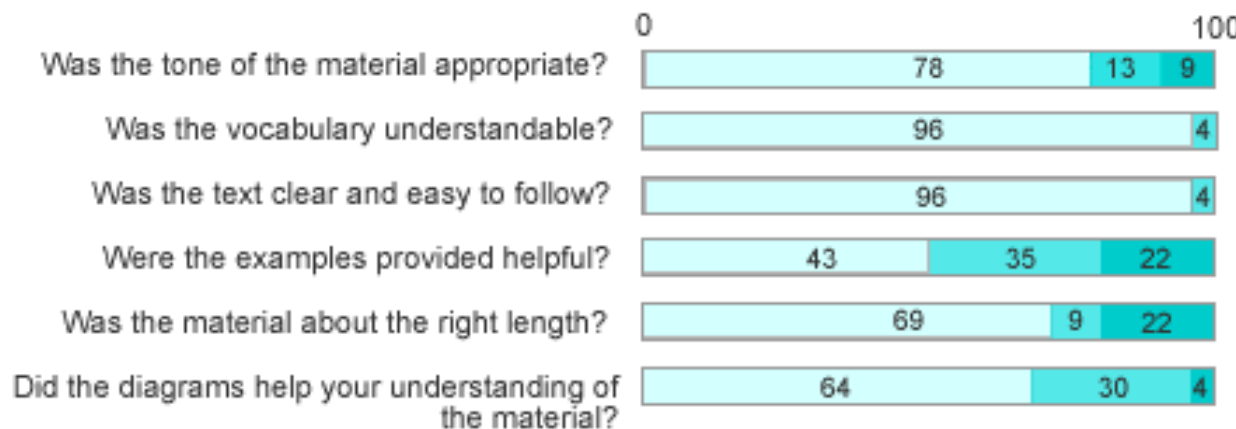
### Q1. How important is it for cities developing online services?

Please circle

- The ability new digital technology to speed up service delivery to citizens fast and flexible information which is current based.
- The need for citizens to have access to the services their city because new technologies help people who currently find it difficult to access and use city council services.
- The potential digital technology deliver services more cheaply.
- The opportunities new, e-city online services offer local authorities in terms of engaging in local issues and having a greater role in running of their city.
- Other (please specify and rate)

1 2 3 4 5

feedback responses (as %) - Barco



Key:

yes

not sure

no



PDA

Mobile  
phone

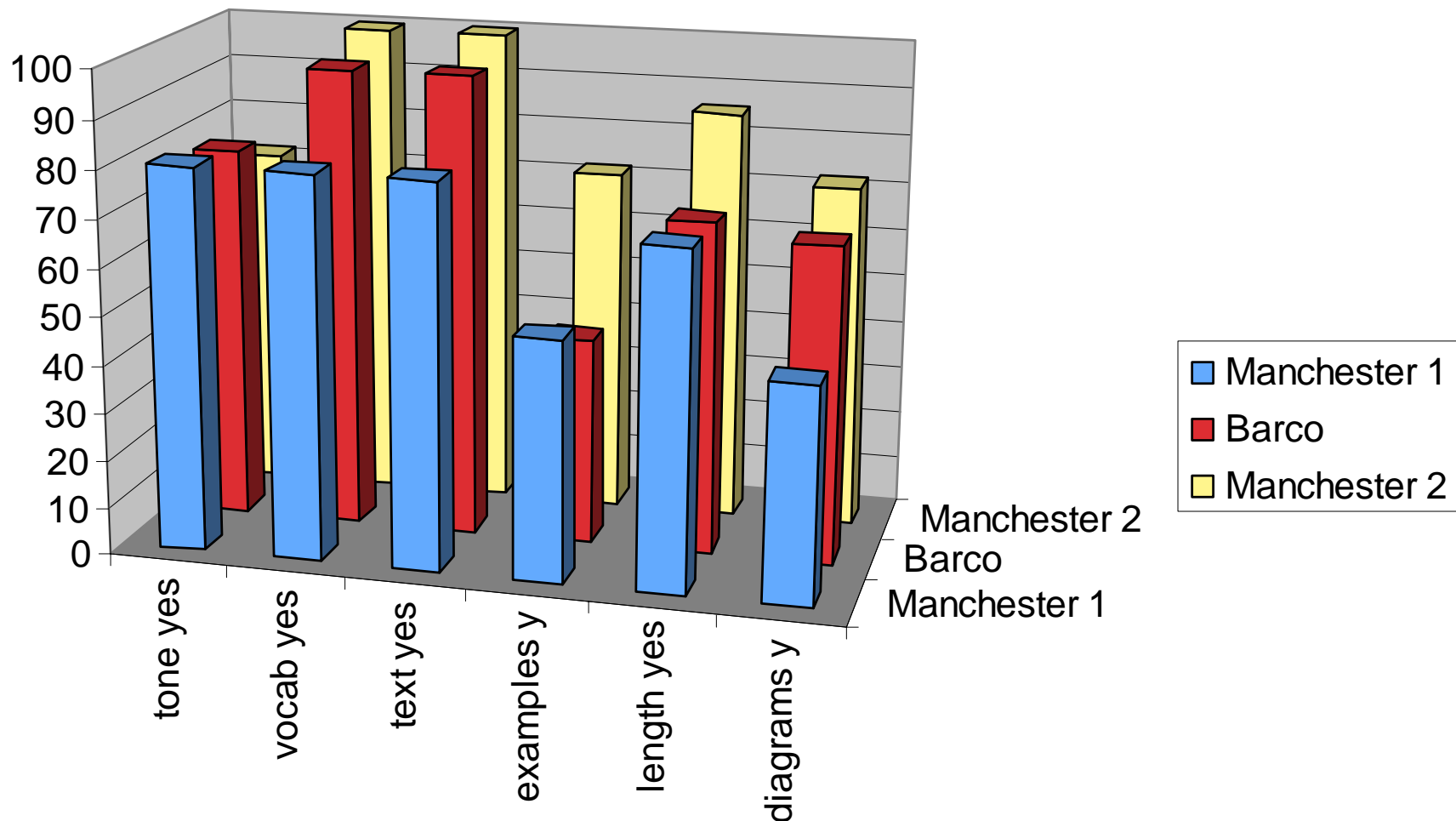
Image  
frame@

Set top  
box

Variable  
Message  
Signs  
& RDS

PC

Training and testing the eCity Platform from a citizen perspective





# Citizen home-page on the IntelCities eLearning platform

1. Videos on workshop events
2. Groups of lessons for citizens who want to learn more about “digital inclusion”

The “learn more” links to the e-Learning platform and connects to the available material, including two interactive video-lessons & a citizen handbook!

3. Links to a selection of pilot cities
4. A forum space with lists of upcoming events
5. Citizens newsletters for disseminating and engaging with the public

The screenshot shows a web browser window titled "IntelCities-CITIZENS - Microsoft Internet Explorer". The address bar shows the URL "http://www.intelcitiesproject.com/wcm-site/sps/index.jsp?type=page&id=55376&g=EN". The page content is titled "Elettronica per le telecomunicazioni - Microsoft Internet Explorer" and features a video player with a man speaking. The page is organized into sections with various links and content.

Callouts identify the following elements:

- Course's title
- Lesson's title
- Slide's Title
- Video
- monitor of reproduction
- Lesson's chapter Index
- Exercises
- PDF Lesson Document
- Buttons to enter the map of navigation, to return back to one page or to the home page
- monitor to move to next slide or to go back to previous one.





PDA

Mobile  
phoneImage  
frame®Set top  
boxVariable  
Message  
Signs  
& RDS

PC

Lessons learned

1. Increasing online citizen consultation/deliberation/ participation (empowerment) works to improve local authority planning and decision-making, rather than undermine it.
2. Gaining access to citizens is extremely difficult, even/especially where they are already engaged in 'leading edge' initiatives to roll out civic digital technologies
3. Maintaining a citizen focus is essential to the success of any new online services.
4. It is important to adopt – and maintain - a citizen-centred approach to the design and provision of on-line civic services
5. Front-end capacity building exercises are required if citizens are to engage effectively in decision-making about on-line civic services. These exercises should employ a three-staged approach: awareness, understanding and buy-in.



PDA

Mobile  
phoneImage  
frame®Set top  
boxVariable  
Message  
Signs  
& RDS

PC

Lessons learned

6. Engagement with citizens on on-line civic services needs not only to harness their enthusiasms for, but also substantively address their fears about, the impact of council services digital technologies both on their own lives and the society in which they live.
7. The standards of e-services citizens expect from their cities depends upon their familiarity with ICTs.
8. Futures techniques, like storylines, are necessary when imagining and testing innovative on-line services so that citizens can recognize themselves or empathize with others on whose behalf they are being asked to make judgements.
9. Strategies for implementing on-line civic services and promoting citizen engagement need to adopt bottom-up, multiple end-user perspectives that leave behind top-down, 'one size fits all' notions.

# Inter-relationship of Intelcities Components





# Engaging Cities to Exploit the value of the Intelcities Products



- Networked interconnection and interoperability of “bundled” city services (legacy & new)
- Shared access to collaborative knowledge base
- Development of new strategic management tools to meet the needs of decision-makers
- Potential for sharing future development costs = improved sustainability of solutions
- Easier access through semantic discovery

# Summary (3): Timetable for Future Action



- Briefings for city management boards and politicians (Oct. and Nov. 2005)
- Project workshops for city implementation plans (Nov. 2005 – Jan. 2006)
- Launch event for the “IntelCities Alliance” consortium at the Eurocities AGM (Lyon, November 21<sup>st</sup> 2005) with national follow up events in member states
- Dissemination programme:
  - Telecities conference, Prague, Oct. 13<sup>th</sup>/14<sup>th</sup> 2005
  - eChallenges 2005 conference, Ljubljana, Oct. 19<sup>th</sup>-21<sup>st</sup>
  - Eurocities AGM, Lyon, Nov. 21<sup>st</sup>
  - UK Government National Conference on eGovernment, Manchester, Nov. 23<sup>rd</sup>
  - EU High Level Ministerial Conference on eGovernment, Manchester, Nov. 24<sup>th</sup>/25<sup>th</sup>
  - Digital Metropoles Conference, Lille, Dec. 1<sup>st</sup> 2005