

Antwerp : Barcelona : Bologna  
Den Haag : Helsinki : Liège : Nice  
Manchester : Amaraoussion  
Berlin : London : Lewisham  
Nord Pas de Calais : Piemonte  
Ronneby : Salerno  
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# Introduction: the InfoCities Project

In this report, we summarise the feasibility phase of InfoCities, a major pan-European collaborative project. The feasibility phase ran from 1997 to 1999; the overall project will continue until 2006.

InfoCities was designed by the members of Telecities – an association of over one hundred European cities. The member cities in the feasibility phase of InfoCities were Antwerp, Barcelona, Bologna, Den Haag, Helsinki, Liège, Manchester and Nice. Altogether, InfoCities has created a large trans-European consortium characterised by broad-ranging and diverse project partners and participants, which continues to expand. In the feasibility phase, this included city councils (17), educational institutions, voluntary organisations, small and medium-sized enterprises (SMEs) and large corporations (35 companies). These are listed in the Appendix.

The objective of InfoCities is to evaluate the application of information and communication technologies (ICT) to deliver integrated public services, moving towards a 'one-stop' point of service delivery. The service areas chosen for the feasibility phase were education, health, transport, culture, electronic commerce and public information.

InfoCities also aims to improve access to public and city services for residents, and to offer value added services to businesses and professionals. Among those using InfoCities applications and services have been: residents, visitors and tourists using public access points (such as street kiosks and public library Internet access points), schools and other educational bodies, businesses and professional organisations (from SMEs to hospitals), households and community organisations.

The two-year phase to test the feasibility and validate the markets for InfoCities was a major project under the European Commission's TEN Telecom programme (Trans-European Networks for Telecommunication). This phase included agreeing common platforms and standards, selecting and demonstrating applications, and business planning. From a base of 160,000 residents, the phase exceeded its target of 5% or 575,000 in September 1998, with 904,618 residents using InfoCities services.

The key criteria for evaluation were:

- ▶ Interoperability
- ▶ User satisfaction
- ▶ Transferability: could these same services operate in different European cities? Which were the fundamental aspects of the service applications that might be transferred?

The feasibility phase led to decisions by contractors and partner organisations to invest in deploying some InfoCities applications as commercial products, with the target of reaching up to 10% of the resident population and preparing for the European rollout (2001-2006). Other applications need further development before commercial rollout.

## InfoCities in Context

When the InfoCities project was conceived, the explosive impact of the internet, and of de-regulation in the European telecommunications market, had not been fully anticipated. The rate of internet use has been striking. While less than 6% of people in the UK used the internet at home in 1997, the figures for 1999 show over 20% of the adult population in the UK and 25% in Belgium use the internet regularly.

In some areas, InfoCities participants have pioneered services and anticipated market developments (for example in the provision of free e-mail services to local residents); and gained a head start in areas such as electronic commerce. In other areas, participants discussed issues which were overtaken by external changes as some technologies became standard (for example, discussing what the project standard for e-mail should be X400 or internet; debating whether educational projects could be realistically delivered and accessed over the internet).



## Learning from InfoCities

A particular strength of the InfoCities project lies in the breadth of interest and the diversity of project partners. This allows and encourages partners to share expertise, skills and resources.

The InfoCities project has the strong advantage of cities working together across Europe. This has enabled participants to work towards shared platforms, not only in the underlying technologies and infrastructure, but also in defining and understanding the issues and problems, possibilities and solutions.

Perhaps more than anything else, InfoCities has already created a huge change among project participants in their 'cultures' and working practices – both individually and organisationally. These will continue to change and to extend the collaborations established across Europe and internationally as a result of the first phase of the project.



# Education Services

Education is an essential vehicle for economic and community development and for individual self-fulfilment. However, educational services are resource intensive: people require access to these services throughout their lives if they are to continue to be effective in a changing environment.

In a networked information economy, the need for people to replenish their skills throughout their working life and on a regular basis is paramount. New technologies themselves create change, and also have the potential to bring learning opportunities directly, flexibly and at a lower cost into the home, workplace and community.

Educational applications and services developed in several European cities as part of InfoCities have concentrated on interactive ICT applications for students at school; adult learners, including those who are socially excluded; and teachers and employees working in local councils and authorities.

These Infocities applications brought together into a Framework for Education (FrEd) fall broadly into two categories: information and training services, and the creation of online and computer-assisted learning programmes.

## 1: Information and Training Services

WHAT	WHO	WHERE
Course information Institutional information and policies	General public School students Parents Adult learners	Antwerp Manchester Nice
Council and local authority educational services	General public Municipal employees	Antwerp Manchester Nice
Web space and publishing	School students General public	Manchester
General awareness-raising and training	General public Teachers and trainers Workers	Antwerp Manchester

The services are delivered over optical fibre, cable television and PSTN/ISDN. Content is organised via web-servers using a series of co-ordinated web sites on the internet, restricted council or subscriber intranets, and online CD-ROM.

With these services, the rapidly increasing numbers of residents, employees, school students and excluded adults with internet access can find and use educational information and resources. These activities have linked organically with government and federal policies to expand the use of computers in schools, libraries and community venues.

## 2: Online and Computer-Supported Learning

WHAT	WHO	WHERE
Communication projects between school based and adult learners	School students Excluded groups	Antwerp Manchester
Creation of city-wide systems for delivery of online learning	Council staff School students	Antwerp Manchester
Testing and assessment of results	Council staff General public	Antwerp Lewisham
Authoring and content creation work	Council staff School students Teachers General public	Antwerp Manchester Nice

In Manchester, school children have been able to email counterparts in other countries; ICT training has been organised through the Workers' Educational Association (WEA) for socially excluded adults. In Antwerp, all residents can apply for an e-mail address and web space from the city council. The city initially provided all the web-based content, but this was quickly overtaken by content created by residents. Through partnerships between different sectors - schools, adult learning services, libraries, councils, universities - participants in Manchester have created digitised materials and courseware. In Nice, the feasibility of using the existing cable television network for interactive services to PC-type terminals has been tested.

New technology offers the potential for providing custom-made interactive materials to meet the needs of specific learners, individually and/or in groups.

InfoCities applications, supported by the appropriate technical infrastructure, have replicated as far as possible the face-to-face, social and interactive qualities of the traditional classroom. Features such as e-mail, bulletin boards, chat-rooms, remote support and assessment by tutors, and the use of NetMeeting for internet videoconferencing have been used for activities such as: publishing student writings, trans-European collaboration (EuroNews Day), a link-up between deaf groups, training in multimedia and courseware development.

In Antwerp, the creation of EVILA, the European Virtual Learning Association provides web-based training courses for council staff, to their desktop or in dedicated learning centres. Trial courses included a language survival kit and an introduction to the Euro. In Manchester, schoolteachers have developed materials for their students to use as part of the curriculum. Focussing on socially excluded adults, the WEA has used a multimedia authoring tool so that its ongoing programmes may be accessed online via internet or CD-ROM by adult learners in libraries, community centres and schools. In Nice, Azurnet will provide access to interactive materials to subscribers using the existing cable TV network.

## Benefits of these Services

Education: supporting continuous learning, training and development for educational professionals, and keeping them up-to-date with developments in remote and computer enhanced learning. The services:

- ▶ provide new transferable skills
- ▶ increase education professionals' and their students' motivation by using more stimulating materials
- ▶ give structured access to a mass of curriculum materials and relevant information for teaching
- ▶ facilitate the assessment and marking of students' work
- ▶ promote the sharing of best practice
- ▶ allow networking with professional peers and amongst their own students.

Quality of life: providing school students and adult learners with easier and faster access to education and useful sources of knowledge for individual and community use.

Employment: creating new jobs and opportunities in the growing multimedia and netmedia sectors. In addition, the use of online learning creates opportunities for learning support workers, who facilitate learning and the use of ICT but do not need the long training required for a fully qualified teacher. This new source of service sector employment may provide career development for disadvantaged adults.



Flexibility of Service: Providing educational services tailored to specific needs and interests.

Sustainability: The extension of online learning and use of self-paced interactive materials - both with and without the use of a tutor - will lead to improved effectiveness and substantial cost reductions.

#### European Benefits

- ▶ Eliminating barriers to education is a crucial step towards eliminating social exclusion. The capacity building part of the programme for local residents focuses on developing ICT and multimedia skills in local communities so that local groups and communities can develop their own network-based services and communicate directly with similar groups and residents in other European states and regions
- ▶ Exchanging and transferring expertise on a cross-national basis between educational professionals
- ▶ Creating an educational system which is accessible to users/citizens across Europe from any country or region.



Contribution to the competitiveness of the European economy: More efficient educational services and the creation of a common culture of online learning will make a significant contribution to the growth of new industries across Europe.



# Public Transport Traveller Information Service

In large metropolitan areas, travellers may have difficulty in finding out how to get from one point to another using on public transport. Travel information is often dispersed and in different formats, adding to travellers' difficulties if they are planning a journey involving several services.

The Traveller Information System developed as part of InfoCities gives travellers up-to-date and integrated information about travelling in the city and getting to a tourist site or city facility. Information is provided in an interactive way that is easy to use and complements other city information sources.

The system has been validated in Barcelona, Nice and Den Haag with applications involving:

- ▶ Stand-alone kiosks located at different strategic points of the city
- ▶ Shareware downloaded to the desktop and updated directly from the internet
- ▶ CD-ROMs sold directly to the public
- ▶ On-line information provided as part of tourism and hotel information services
- ▶ Real time video camera road traffic information.

Within the application, travellers can enter the departure and destination points of their journey on the Trip Planner or, in some cases, select them from a list. The best choices for travel are given and shown on a map of the selected area; the route for each option is highlighted showing the transport service(s) to be used and the interchange zones.

In Barcelona, for example, the Trip Planner is accessible via the internet so that anyone can consult it, from anywhere in the world. Tourists or first time visitors to the city can plan their journey from the airport or train station to their destination using the public transport network. They can choose to read the information in Spanish,

Catalan or English.

Throughout Europe, there is a substantial demand for intelligent travel applications. Estimates suggest that there are some 300 websites presenting public transport information – i.e. almost 3 websites per city of 50,000 population. In addition, about 30 public access terminal applications offer a higher level of trip planning.



## Benefits of these Services

Education: Promoting public transport usage as a means of sustainable transport for Europe's cities.

Quality of life: Helping people to decide their travel patterns and plan their own time.

Flexibility of Service:

- ▶ Providing travel information on demand and up-to-date
- ▶ Integrating information about different forms of transport.

Environment: The application improves environmental conditions in cities, relieving the serious problems of pollution and congestion, by promoting and increasing the use of public transport instead of private cars.



# Health Care Services

Modern health care is highly specialised and uses information intensively. Information is often fragmented among the different operators and organisations delivering health care services. As a result, treatments may be less effective and more costly. This information must be organised flexibly and coherently in order to be accessible and effective.

ICT applications have the potential to overcome fragmentation by integrating information, and thus to improve the quality of care and increase the cost effectiveness of treatments. Such applications have been developed and tested in several European cities.

The applications developed as part of the InfoCities project fall broadly into two categories: information services, and the exchange of patient-related data. They are organised in a cluster of co-ordinated web sites on the internet, and/or on restricted intranets. End-users can access services via leased lines or through city information networks.

## 1: Information Services

WHAT	WHO	WHERE
Continuous learning and medical forums	Doctors	Antwerp Lewisham
Information on hospitals, medical services, hospital amenities and admissions	Lay people /doctors	Nice
Interpersonal mail/File transfer	Medical staff	Antwerp Lewisham

This service supports the exchange of medical experience and scientific discussions. By March 1999, more than 45 discussion forums had been created, supported by scientific committees. 25 forums deal with medical subjects; others are concerned with computer technology, medical politics and administrative/organisational issues of practice.

The service also provides general information on hospitals and medical services. In Nice, the website provides users with information about free

consultations, screening tests, day nurseries, assistance for the elderly, healthy lifestyle advice, social addresses, disease prevention methods, dietary advice, and exercise. In Antwerp, the information service supports interpersonal mail and file transfer.

## 2: Exchange of Patient-Related Data

WHAT	WHO	WHERE
Exchange of messages related to the clinical and social care of patients	Medical staff	Lewisham Antwerp
Booking services	Medical staff	Bologna Lewisham Antwerp
Test results	Medical staff	Bologna Antwerp Lewisham

This service provides General Practitioners (GPs) with an electronic referral and booking system to their local hospital trusts and a pathology result service: every GP may receive her/his patient's results electronically directly from laboratories and hospitals.

In Antwerp, the service focused initially on clinical laboratory results and was soon extended to other types of information. (For example, notification of patient's admission to a hospital, notification of death, discharge letters and summaries, radiology reports, specialist reports, referral letters and other diagnostic reports). Security (confidentiality, integrity, certification of authenticity) has been a condition sine qua non for implementation.

In Bologna, the service is available in many pharmacies across the city and can be used to book a wide range of health care services.

In Lewisham, the service includes information exchange about clinical and social patient care. Health professionals may communicate and co-ordinate services using the NHSnet to obtain information both within the UK and in the rest of the world.

## Benefits of these Services

**Education:** supporting continuous learning, training and development for health care professionals, and keeping them up-to-date with medical issues.

**Quality of life:** improving the quality of life and work for residents and professionals.

For residents, the services offer easier and faster access to health care services and professionals, and quicker responses to their specific needs.

For professionals, the services:

- ▶ Promote more effective treatment, based on up-to-date information delivered more widely and quickly
- ▶ Provide access to detailed and integrated patient-related information
- ▶ Facilitate the circulation of results and statistics
- ▶ Rationalise and make better use of paramedical services
- ▶ Enable continuous learning and development.

**Flexibility of Service:** By improving their knowledge of supply and demand in health care, providers can respond to people's needs with greater flexibility.

Professionals can communicate more effectively

- ▶ with their health authorities, and may be encouraged to interact with other health care institutions.

To take part, hospitals and other organisations

- ▶ must adopt common standards for their own information systems, and be prepared to make the systems open and transparent.

**Environment:** reducing the use of toxic chemicals and pollutants by using electronic imaging.

**Sustainability:** The applications are viable when sufficient numbers of health care professionals

adopt them. When this level is reached, the applications increase the effectiveness of healthcare provision and contribute towards cost savings.

### European Benefits

- ▶ Eliminating barriers to health care by permitting easier access to services, and guaranteeing better service delivery. These are the first steps in eliminating social exclusion in health care and contribute to the overall quality of life for citizens of the European Union
- ▶ Exchanging and transferring medical expertise on a cross-national basis
- ▶ Increasing economic benefits over greater distances
- ▶ Sharing models of good practice
- ▶ Making the whole health care system visible and transparent to end-users/citizens.

**Contribution to the competitiveness of the European economy:** More efficient social and health care contributes to the competitiveness of the EU. Telemedicine is a significant export opportunity with the potential to bridge national barriers.

# : Cities and Culture

The aim of the group of applications developed as part of the InfoCities project was to:

- ▶ Capture the essence and particular qualities of everyday life in cities
- ▶ Provide access to cultural heritage materials thematically and/or by locality.

These applications were developed and tested in the cities of Antwerp, Bologna, Den Haag, Helsinki and Manchester. A modular approach was adopted which would allow cities different development options of the European base model.

## 1: City Cultural Listings

These include various options for presenting general listings – such as details of cultural institutions, collections and special exhibitions and events. Local examples have included the Interactive Culture Plaza in Den Haag; through to specialist services such as MadFort, a Manchester listings and information site aimed specifically at young people.

## 2: Virtual City Modelling

— Multimedia technologies have been used to create an introduction to the varied and diverse cultures of participating cities, building on the experience and input of people living in them.

The culture of Manchester is described through the eyes and ears of its inhabitants in an interactive web site called the Virtual City. It includes many different aspects of city life – such as shopping, cooking and eating, taxi journeys and club culture – and through InfoCities it was expanded to include the city cultures of Den Haag, Helsinki and Antwerp. The site will be used in the future for live Web broadcasting between different European cities.

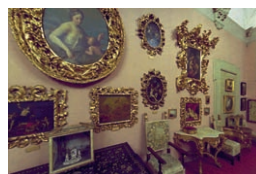
In Helsinki, The Lasipalatsi Digital Meeting Point builds on the past and future of the Lasipalatsi (Glass Palace), a well-known and historically important building. The Digital Meeting Point serves as a highly interactive forum to support the diverse range of cultural activities in the city.

## 2: Virtual Museum

In Europe, there are many thousands of museums holding many millions of objects and archives. These vast repositories of material are of enormous significance for our sense of the past and our understanding of regional, national, European and international cultures and histories. Yet the collections are held in many different museums so that our sense of the past is often partial, fragmented by geographical and disciplinary boundaries and limited by lack of information. It can be only be fully realised through accessing and bringing together collections from many places and people.

With the new open architecture of interoperable systems, museums and galleries can continue to use their own legacy systems, but can enrich, exchange and share data and offer it to local and remote users in different forms according to their interests. They can also use the enhanced capabilities of multimedia internet technologies to provide richer information, integrating personal testimony with audio and 3-dimensional realisation.

Antwerp's Patrimony On-Line is accessible via a series of innovative interactive public kiosks that link together local museums, libraries and public buildings and via the city's own intranet, as well as via the internet. The application provides integrated information about Antwerp's museums and their collections through images, text, sound and 3d.



Bologna del Musei is also a joint project between different museums in the city, for residents and visitors. The site provides up-to-date information on Bologna's exhibitions and cultural events, as well as details of the collections. A interactive CD ROM has been produced that illustrates Bologna's extensive cultural archive.

In Helsinki, The Virtual Museum explores the site of a former merchant's house - now the City Museum – to present historical Helsinki in images, text, sound, and 3-dimensional models. The site, which also provides archaeological and archive records, has attracted media interest and been used extensively by schools and universities. Unique to the site is virtual guide that helps users get the best

The concept of a networked heritage resource has been explored further through a partnership between Manchester and the National Museum of Denmark in Copenhagen to create Fibres, Fabrics and Fashion, an application which draws on textile and clothing collections. The application spans industrial, stylistic and personal perspectives; it brings together collections which are physically and geographically separate; it overcomes the problem that some of the textiles are so fragile that they cannot be put on extended display.

An advanced multimedia database has been developed using the new technologies found within component-based computing. These allow multiple software modules (components) to inter-operate with each other, thereby effectively creating a much larger software system. The modules can run on a single computer or many distributed computers across the Internet. The database allows users to search through records using natural language queries that go beyond traditional Boolean searches, allowing a

much more dynamic relationship with the querying process. The database also allows users to browse and search graphically using colour, pattern and shape.

## Benefits of these Services

### Education:

- ▶ Providing extensive and accessible information about museums' resources and collections, often for the first time
- ▶ Assisting a richer understanding of the cultural and personal histories of cities for the people who live in them and visit them
- ▶ Increasing residents' awareness and appreciation of their immediate and everyday surroundings.

### Quality of Service:

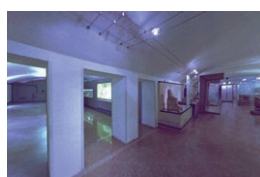
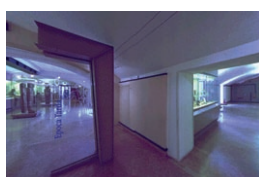
- ▶ Creating flexible, multi-level resources and flexible query systems to allow for the interests and needs of different users  
Using 3d modelling and other technologies to
- ▶ re-construct environments which no longer exist and to allow users to manipulate and explore collections in detail.

### Sustainability:

- ▶ Using new technologies to open up access to Europe's cultural heritage while preserving the collections themselves  
Promoting the collections of museums, to sustain
- ▶ and/or increase museum visiting and with the potential to generate income from commercial use of content.

### European Benefits:

Bringing together cities, histories and collections; making connections between different localities and cultures.





# Electronic Commerce: Market Place

Market Place is a generic set of applications developed within the InfoCities project to promote electronic commerce. Market Place allows improvements in business performance and commercial benefits to be evaluated. It provides guidelines for best practice to SMEs. In addition, solutions for secure electronic payment have been investigated.

Market Place covers business-to-business, business-to-administration and business-to-consumer information and transactions:

- Information on commercial activities, business
- ▶ support and ICT training
- ▶ Electronic catalogues of products and services
- Buying and selling products and services.

Four cities have been involved in demonstrating and verifying Market Place: Barcelona, Den Haag, Manchester and Nice.

In Barcelona, the City Council has developed an internet service to encourage SMEs to submit bids for public tenders. The site provides all relevant documentation and users can make appointments, consult business agents by e-mail, and submit their bids in electronic format.

In Den Haag, SMEs are offered incentives to make use of a range of support services through free internet access and free services:

- The Internet bus: an English bus equipped with five computers and software, visiting industrial areas to provide information and training on
- ▶ using the internet for business;
- Digital SME industrial square: a virtual zone with contact information about SMEs, links to the
- ▶ Chamber of Commerce etc.;
- Subsidised internet training (awareness, application and web marketing);

- ▶ SME Journal distributed via cable television and the Internet with yellow pages for SMEs (free of charge); weekly information bulletins; a virtual market place providing low cost opportunities to sell products); and business web pages.

In Manchester, local and regional SMEs have received advice and practical guidance on the business potential of the internet. A trial internet shopping site provided a free and secure operational framework for business-to-customer trading and market development. Through this pioneering initiative, valuable information about the pros and cons of collective support for SMEs has paved the way for successful commercial development. A further initiative, the Centre of Expertise in Electronic Commerce (CEeC), is a regional network based in Manchester and providing independent advice and support for SMEs and public bodies on using the internet for organisational change and commercial exploitation.

In Nice, the Télériviera cable TV service has been used for testing the commercial feasibility and uptake of subscription information services including:

- ▶ Public information on city culture, entertainment, traffic
- ▶ CD-ROM shopping and on-line consultation (pay-per-view)
- ▶ CGV global payment system including subscription fees and billing
- ▶ Real-time stock market information.

By mid-1998, around 6,000 businesses, professional organisations and firms in Europe were involved in Market Place; 250,000 European residents were customers and users of its products and services.

## Benefits of these Services

### Quality of life:

- ▶ Allowing people who are housebound and/or who live in remote or rural areas to purchase goods without having to travel
- ▶ Allowing people to purchase goods that are not available in their locality.

### Flexibility of Service:

- ▶ Citizens can purchase goods and SMEs can receive orders at any time of day or night
- ▶ Suppliers can be geographically flexible as long as they have an e-mail account and stock in hand.

Employment: providing opportunities for new jobs and making new technologies widely accessible. The challenges of electronic commerce are to enhance the commercial activities of companies worldwide and to allow everybody to enter the Information Society with equality of opportunity.

# City and Council Services: The Digital Town Hall

New technologies enable city councils to adopt "electronic government" by bringing together information and offering on-line services. At the least, these improve the speed and efficiency of transactions; at best, they encourage residents to participate in local policy and decision-making.

In The Digital Town Hall application developed as part of InfoCities, cities have integrated and upgraded existing on-line and off-line electronic services to provide information about councils, communities, local products and services. Some cities have created interactive services, electronic forms for data entry, etc. Residents can access The Digital Town Hall at home, in public buildings and kiosks. In some cities, penetration has already reached almost 100%.

The application includes:

#### City Maps:

Such maps are commonly found on web sites but, with The Digital Town Hall, they are dynamically linked to other information and services.

In Barcelona, the database of amenities and companies shows their location on the map; venues for events and activities are also located on the map. In Leipzig, specific information about businesses and public services is connected with the map. A traffic information system will be added, with road signs, signposts and updates such as time and place of roadworks. Transport services, water companies and other key businesses will be able to enter data for public access. In Hamburg, bus and train timetables are automatically linked to a map showing the departure and destination points.

#### City Information:

The Digital Town Hall provides a range of information and connection to services for residents, businesses, tourists and visitors.

Vienna On-Line One gives information about leisure and tourism, the environment, transport, culture, education, the media, the economy, town planning, and politics. This offers direct telephone

connection to key services such as the City Information Office, public transport, air quality and weather information lines. The web site also includes information about housing (ELWIS) and the current job market (AMS).

In Barcelona, the application gives events information. In addition, visitors, organisers and all schools in Catalonia may make direct bookings.

In Helsinki, users have the option of using the keyboard or new multimedia technologies such as the web-phone and videophone to access information and services. These include the Link Library of Helsinki City; an Events Calendar; virtual panorama tours for visitors; the virtual museum and the Digital Meeting Point.



#### Council Services:

The Digital Town Hall provides access to council information and services for residents, councillors and officers.

In Antwerp, this information is split into different quarters, like the city itself, to make it more familiar for residents. Home pages for individuals, the council and its departments are linked within these 'virtual quarters'.

In Barcelona, residents and officers can access and download council documents in the Public Documents Bookcase. In Den Haag and Antwerp,

the Council Information System shows the status of specific documents, actions taken and decisions made. Councillors can access the system from home and send comments via e-mail.

Bologna has created an interactive Electronic City Services Desk where users can find information about specific services, and access them directly. In Hamburg, the Citizens' Direct Information Service (DiBIS) provides information about council services and products and other services of public interest. It also provides e-mail for the whole of Hamburg.

In most councils, officers use intranets and e-mail. Antwerp's intranet also offers an electronic telephone directory, including personal pictures; web links for access to public transport etc; a food and drink ordering service; and a bulletin board.

#### On-Line Data Collection:

The Digital Town Hall may also offer on-line forms to speed up processes. For example, in Helsinki, residents can submit automatic (telemetric) water meter readings. In East Germany, residents are legally required to register changes of address, but registration procedures are very time-consuming. Leipzig has developed a system for residents to notify changes of address via the internet or intranet, with any internet browser or at a kiosk, using a smart card system.

#### 'Tele-democracy' and Participation:

Residents may debate with politicians and experts about public projects through internet chats, discussion forums and voting in The Digital Town Hall. Helsinki and Barcelona have developed such 'tele-democracy' applications. In Barcelona, Spaces for Citizen Participation groups together citizen networks, human rights associations, and other

voluntary organisations in a virtual civic centre.

#### Business Services:

Companies can promote themselves and collaborate with others through a virtual Market Place where business information is displayed. In Den Haag, all the city's business parks are brought together at The Digital Town Hall. The site also provides information and detailed maps of properties for investment decisions or construction work. Leipzig offers a tendering service to SMEs: they add their business profile to the system and, when invitations to tender go out, these are automatically forwarded to businesses likely to be interested in submitting a bid.

#### Services for Tourists and Visitors:

Tourists and visitors can browse and plan their visit in advance by entering The Digital Town Hall via the internet.

When they arrive at their destination, tourists and visitors can use public access points. In Antwerp, a multimedia touch-screen kiosk focuses on four domains: city information; transport; cultural events; hotels, restaurants and cafés (HoReCa). Infoboosts are already installed in several public buildings and libraries, with free access to the internet. Nice provides a hotel booking service and a schedule of events. Visitors and tourists to Vienna have access through public internet terminals and kiosks (Vienna Access Points) to information about events, sights, and public transport.





#### Special Needs:

In Hamburg, summary pages are provided in nine languages for residents whose first language is not German. A Braille-optimised layout service is provided for people with sight impairment. People using wheelchairs can find information about access and services. In Vienna's kiosks, equipment can be adjusted for people in wheelchairs.

### Benefits of these Services

#### Quality of Life:

- ▶ Many people - especially older people and people with disabilities – are unaware of technologies that may improve their quality of life. Through using local information services, many have become aware of them and used them to improve their living conditions
- ▶ The integrated services encourage co-operation between residents and public, private and voluntary sector organisations.

#### Participation:

- ▶ With access to a higher quality of information, residents may gain a better understanding of developments in their cities and may be encouraged to enter political discussion and debate. In the long run, this would benefit the whole city and even affect national policies
- ▶ Discussion groups increase the transparency of councils and emphasise the role of residents in decision-making. They enhance cultural contacts and exchanges at every level (local, national, European and international).

#### Efficiency and Service Quality:

- ▶ The Digital Town Hall provides users with easy access to current information. Thus they are able to anticipate and respond quickly to changes. Users don't need to understand internal, departmental structures and protocols in order to access the information and services they want. Until now, they have often been frustrated and unable to resolve more complex problems and queries<sup>1</sup>. They may be able to resolve even complex problems when services are integrated and available in their homes through desktop computers and/or interactive cable television
- ▶ Private companies have collaborated with city councils, ensuring a unified strategy and platform for ICT and more comprehensive data collection and storage
- ▶ Officers can work more quickly by accessing all services through a single interface
- ▶ Integrated systems provide a strategic tool, enabling the council to target services to residents' requirements and to monitor take-up and satisfaction. Councils can also remove duplication and reduce the costs of information and service provision
- ▶ Economically innovative services are created which offer new and added value for residents, businesses and councils
- ▶ The application simplifies Council business and maintains or increases public confidence in council processes
- ▶ The quality of presentation is improved because the technical requirements of publishing information on the Internet are far higher than the media normally used to disseminate council information.

<sup>1</sup> It is estimated that around 20% of the problems and queries of most residents are not answered to their satisfaction with conventional systems. The proportion is much greater among people with disabilities.



#### European Benefits:

The Digital Town Hall provides services at local, national and European level: for example, employment opportunities across the European Union; publicising information from the European Parliament, Commission, and Court of Justice; offering consumer advice.

The application stimulates travel and tourism within the EU by providing integrated information about aspects such as public transport, cultural and local attractions.



# The Benefits of InfoCities

In addition to the benefits of each application, these include:

## Education:

- ▶ Providing more democratic and innovative ways of learning and access to new resources and 'just-in-time' information; developing life-long learning;
- ▶ Building awareness and skills about new technologies and their use;
- ▶ In turn, expanding people's awareness of new opportunities (including educational opportunities) and enabling them to use and benefit from these opportunities.

## Service Quality and Flexibility:

- ▶ Providing services which people can use at their own convenience, at home or in their neighbourhood, at any time of day or night;
- ▶ Providing integrated services which allow for and respond to complex queries;
- ▶ Encouraging greater communication and exchange of 'best practice' between service providers.

## Employment:

- ▶ Introducing new ways of working, using new technologies;
- ▶ Stimulating the emergence of new professions;
- ▶ Leading to the development and penetration of new markets;
- ▶ Providing easier and more focused access to job offers, and increasing people's awareness and aptitude for the job market;
- ▶ Leading to shifts in the job market (for example, the need for warehousing is reduced when web orders and sales are combined with just in time delivery).

## Environment:

- ▶ Saving resources;
- ▶ Offering access to people in their homes and neighbourhoods, so reducing journeys for routine queries or tasks. This reduces traffic in accordance with Agenda 21 (to reduce CO2 emission);
- ▶ Investigating solutions for urban pollution using new technologies.

## Transferability/Scalability:

- ▶ By using common standards and addressing common needs, services can be integrated and extended over a wider area of the region, internationally, and to other sectors.

# How the Project was Organised

## Management Structure

The InfoCities project, as its name implies, took the individual city as its basic unit. The eight principal cities involved<sup>1</sup> were validation sites for the applications developed and monitored.

Each city also had 'supporting partners', mainly voluntary and commercial organisations, and Bologna had two associates<sup>2</sup> who also acted as validation sites. In addition, four towns/cities<sup>3</sup> and two regions<sup>4</sup> formed an Advisory Board, responsible for socio-economic validation.

Each principal city also took lead responsibility for a work theme<sup>5</sup>. The lead cities, corresponding work themes and other participating cities were:

LEAD CITY	WORK THEME	PARTICIPATING CITIES
Antwerp	Education	Manchester and Nice
Barcelona	Transport	Nice and Den Haag
Bologna	Health Care	Antwerp, Lewisham and Nice
Manchester	Culture	Antwerp, Bologna, Helsinki and Den Haag
Nice	Electronic Commerce	Barcelona, Manchester and Den Haag
Helsinki	Public and Civic Services	Antwerp, Barcelona, Bologna, Liège, Manchester, Nice, Salerno and Den Haag

The overall co-ordinator of the project was the city of Den Haag, who also chaired the Management Board. This consisted of representatives of the eleven main contractors and work theme leaders of each principal city as their deputies.

## Communications

Even technology-focused projects such as InfoCities can't function adequately without face-to-face communication. The main meetings took place quarterly, in various participating cities<sup>6</sup>; additional meetings were convened by lead cities around their working theme<sup>7</sup>.

E-mail was used extensively for file transfer (text and images) as well as for exchanging straightforward text messages. All reporting was carried out electronically, using templates which were e-mailed to all participants to enter their up-to-date information.

A web-based application called Basic Support for Co-operative Work (BSCW), developed to facilitate co-operative working, was also used in Manchester.

This provides workspaces for registered users. They can then invite others to register to share the workspace by taking part in forums, uploading files in all formats, convening face-to-face or virtual meetings, 'chatting' in real time, and emailing each other directly from the workspace.

Various forms of videoconferencing were explored both for internal communication and in the applications themselves. These were monitored under the working theme of Generic Services.

The two main levels used in InfoCities for multipoint desktop videoconferencing were:

- ▶ Base level: here, all encoding/decoding is handled by software, together with a low cost camera. (For example, Microsoft Netmeeting software which is free to Microsoft Windows users.)

<sup>1</sup> Antwerp, Barcelona, Bologna, Helsinki, Liège, Manchester, Nice and Den Haag

<sup>2</sup> Lewisham and Salerno

<sup>3</sup> Amaroussion, Rönneby, Stockholm and Vienna

<sup>4</sup> Nord Pas de Calais and Piemonte

<sup>5</sup> Known as a 'workpackage'

<sup>6</sup> The quarterly seminars were held in: Den Haag (March 1997), Helsinki (June 1997), Nice (September 1997), Berlin (December 1997), Amaroussion (March 1998), Manchester (June 1998), Antwerp/Liège (September 1998), Hamburg (December 1998) and Den Haag (March 1999)

<sup>7</sup> These meetings, again in chronological order, were: Manchester (Culture), Antwerp (Education) and Helsinki (Public and Civic Services).



- ▶ Enhanced level: here, a dedicated conference card is used in conjunction with the supplier's software to carry out encoding/decoding on the card. This reduces the loading on the PC and, in general, enhances video and audio quality. (For example, VCON, PictureTel).

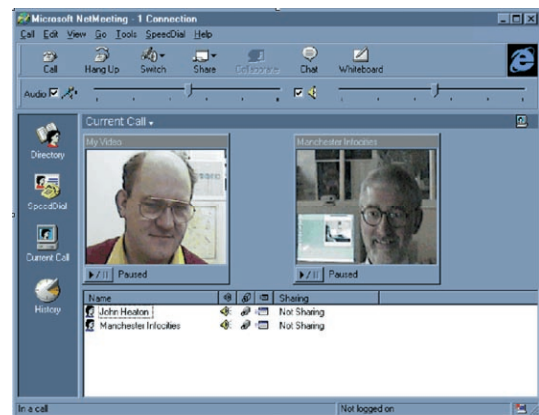
InfoCities project participants used desktop videoconferencing to share information, applications and events through data collaboration. Here, the text and/or audio capability of the desktop system is used to enhance the conference/presentation. For example, it was used between participants to clarify and confirm project details. It was also used to assist SMEs in preparing business plans in other European languages. SMEs were able to share documents and spreadsheets with a translator in an appropriate country. The translator was able to give advice on the nuances of their language in order to ensure the business case would be presented in the best possible form.

InfoCities project participants also used video conferencing for quality video. Here, the application demands full screen presentation and full motion with television quality images. This was used to share local events more widely. For example, the fiftieth anniversary of the Mark 1 computer, built in

1948 and the first computer to run a stored program, was celebrated at Manchester University where it was originally developed. A lecture given in Manchester was transmitted to an audience of interested people in Antwerp.

Other examples explored include:

- ▶ Distance education and collaborative working involving audio and video interaction;
- ▶ Interaction where the camera is used to show object detail, eg manufacturing, medical ( telediagnosis ), healthcare ( videoconsultation ), transport ( remote camera control ).



#### Monitoring and Reports:

Monitoring was carried out quarterly. Each validation site reported to work theme leaders with data including descriptions of applications being validated, technology used, feasibility of the applications, activities and developments since the previous report, population reached by the applications, other statistics, and financial indicators. This information was checked and collated by work theme leaders, often using videoconferencing to clarify aspects of the data submitted. They then passed it to the Project Co-ordinator in Den Haag, who compiled the report and submitted it to the European Commissioner. At the end of the feasibility phase of InfoCities, Business Plans were produced, outlining in considerable detail how the applications developed under InfoCities would or could be exploited and deployed commercially. A full Final Report was also produced.

#### Technical Development, Generic Services and the Reference Model:

InfoCities also took an overview of common services to be used by each city in developing applications, in order to maximise interoperability and minimise "reinventing the wheel". Some of these decisions were easy, such as to use the web as the normal means of access to material created as applications, and to use Internet Email ( STMP ) for intercommunication. Other areas explored have exciting possibilities for the future, but standards are not as clear.

Technical developments were addressed by all eight cities working together with telecommunications partners to examine aspects of infrastructure, internet bandwidth and the market for European broadband connections.

Building on the technical work, a group of cities – Den Haag, Manchester, Antwerp and Helsinki – pooled resources and expertise to examine a number of generic ( supporting ) services for the interactions between cities.

In addition to the e-mail and IP-based interactive conferencing services described above, these included a Reference Model for application services to ensure compatibility and interoperability. This is a key technical outcome of InfoCities: applications developed using this model can be used across the widest possible community.

Two levels of network service: a Basic Mode and an Enhanced Mode, are defined in the reference model. Each level of service can be met by a range of technologies ( e.g. Dialup, ADSL, Cable Modem, Satellite ) so that the model is not prescriptive.

Applications are then designed around these two levels so that customers can access the application in Basic or Enhanced Mode, depending on the infrastructure at their access point. Obviously the modes give different levels of functionality, but the model ensures this is designed into the application.

A further specific area of investigation that came out of the work on the reference model was the role of Intelligent Agents in supporting services and interaction across cities.

All the InfoCities applications use European standards. These include: MPEG; MPEG2 ISO; Ethernet; HTML; VRML; Internet IP; X400; DVB-ETSI; H.323. Network access is provided through PSTN; Euro-ISDN; CATV; XDSL; cable modems; migration to ATM; ATM. User interfaces are PC, kiosk, interactive television and cable television.

# : What's Happening Now

Infocities was devised as a ten-year project. Following the initial two-year feasibility and validation stages, the partner cities are committed to expanding the user base of their successful applications.

A principal outcome of the project was an evaluation of the commercial/business potential of the applications. This has led to the formation of local public-private sector partnerships designed to roll out the applications at a city level, and to act as a knowledge resource to other cities and partnerships wishing to build on the InfoCities experience.

In some instances, such as Health and Transport, applications are being marketed directly to other European cities and relevant agencies. In other more conceptual areas such as Public Information and Culture, development is continuing under such initiatives as local democracy or tourism. Elements of Electronic Commerce are incorporated across all the subject areas.

In addition, a further TEN-Telecom project has been proposed, based on the business plans developed in InfoCities. The project is called VirtuHalls and will be set up by a public-private partnership in the cities of Den Haag, Nice, Hamburg and Vienna. VirtuHalls will function as locally-branded 'portals' to public and private services for local residents, SMEs and visitors.

Initially four VirtuHalls will be established:

- ▶ Municipal VirtuHall – providing public information and services to local government officers, local residents and other interested parties.
- ▶ Business VirtuHall – encouraging the use of the internet for transacting business and promoting the city.
- ▶ Housing VirtuHall – focusing on the provision of services and information relating to the housing market.
- ▶ Social Care VirtuHall – on-line information about the provision of social care.

Information about this new project or any of the existing InfoCities developments can be obtained from the InfoCities contacts.

# Where to Find Out More about InfoCities

## InfoCities Co-ordination and VirtuHalls:

Martin van Rossum  
Managing Director  
M. van Rossum Management  
Consultant Ltd  
Brucknerlaan 21  
Rotterdam ZH 3055 SC  
The Netherlands  
Tel.: +31-70-402.08.24  
Mobile: +31-653.85.99.25  
Fax: +49-(23)-19.07.04.03  
Email: mvanrossum@quicknet.nl  
URL:  
<http://www.infocities.eu.int>

## Local contacts:

### Den Haag

André van der Meer  
City of Den Haag  
Postbus 12600  
2500 JD  
Den Haag  
Netherlands  
Tel.: +31-70-353.52.32  
Fax: +31-70-353.52.32  
Email: vandermeer@the Hague.nl  
URL:  
<http://www.denhaag.nl/infocities>

### Antwerp

Ingrid Heylen  
Computer Supported Education  
Generaal Armstrongweg 1  
B-2020 Antwerpen  
Belgium  
Tel.: +32-3-216.76.61  
Fax: +32-3-216.79.00  
Email:  
ingrid.heylen@telepolis.antwerpen.be  
URL:  
<http://www.antwerpen.be/telepolis>

### Barcelona

Simon Hayes,  
Barcelona Tecnologia SA.  
Carrer 60, num. 25-27,  
Sector A - Zona Franca  
08040 Barcelona SPAIN  
Tel.: +34-93-431.46.50  
Fax: +34-93-431.41.63  
Email: btsa@teleline.es  
URL:  
<http://www.bcn.es/iinfocit.htm>

### Bologna

Chiara Mancini  
Project Manager  
International Project Office - Comune  
di Bologna  
Via Zamboni 8  
Tel.: +39-051-21.88.27  
Fax: +39-051-21.88.25  
Email:  
Chiara.Mancini@comune.bologna.it  
URL:  
<http://www.iperbole.bologna.it>

### Helsinki

Annakaisa Tschokkinen  
Project Manager, EU Coordinator,  
EURESCOM TLM for Finnet Group  
HELSINKI TELEPHONE CORPORATION  
RESEARCH  
Kutomotie 14  
P O Box 138  
FIN-00381 HELSINKI  
Finland  
Tel.: +358-9-606.28.35  
Mobile: +358-50-598.68.27  
Fax: +358-9-606.48.39  
Email: tschokki@rc.hyp.fi  
URL:  
<http://www.hel.fi/eng>

### Liege

Guy Maréchal  
PROSI  
Avenue Emile de Béco, 46  
B-1050 Brussels  
Belgium  
Tel./Fax/Rep: +32-2-648.98.28  
Email: g.marechal@skynet.be

### Manchester

Dave Carter  
EuroCities Contact Officer  
Economic Initiatives Group  
Manchester City Council  
Town Hall Extension  
Albert Square  
Manchester M60 2LA  
Tel.: +44-(0)161-234.15.04  
Fax: +44-(0)161-236.54.05  
Email:  
dave.carter@manchester.gov.uk  
URL:  
<http://www.infocities.g-ming.net.uk>

### Nice

Jean-Michel Cardì  
SIGMA Technologies  
Villantipolis n 7  
473, Route des Dolines  
06560 VALBONNE  
France  
Tel.: +33-4- 93.65.22.20  
Fax : +33-4- 93.65.39.31  
Email : sigma@sigmaonline.com  
URL: <http://www.ncnumericable.com>

Nord Pas de Calais and Vienna have  
also published InfoCities websites at:

<http://www.iris-nordpasdecalais.org/infociti.htm>

and

<http://telecity.wien.at/infocite.htm>





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