Cooperative Cities extend and validate mobility services

WP2.2

D2.2 – User groups and interaction process

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List of the Co-Cities Project Partners:

Partner no.	Partner name	Partner short name	Country
1	AustriaTech Gesellschaft des Bundes für technologiepolitische Maßnahmen GmbH	ATE	AT
2	Softeco Sismat S.P.A	SOF	IT
3	Telematix Software, a.s.	TMX	CZ
4	Fluidtime Data Services GmbH	FLU	AT
5	Brimatech Services GmbH	BRI	AT
6	Tom Tom International B.V.	TOM	NL
7	The Regional Organiser of Prague Integrated Transport	PID	CZ
8	POLIS-Promotion of Operational Links with Integrated Services	POL	BE
9	Atos Origin Sociedad Anonima Espanola	ATO	ES
10	PTV Planung Transport Verkehr AG.	PTV	DE
11	Asociacion Cluster Del Transporte Y La Logistica De EUSKADI	MLC	ES
12	Regione Toscana	FIR	IT
13	Reading Borough Council	RED	UK
14	MemEx S.R.L.	MEM	IT

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1. Executive summary

The user-driven evaluation of Co-Cities services and systems is one of the key activities of the project. Following this aim, the underlying deliverable documents the activities of the Co-Cities SWP 2.2, focussing on the identification of Co-Cities stakeholder groups and their respective involvement during the pilot and evaluation phase. Within this context the assessment structure and methodologies used in order to derive service acceptance indictors are provided in a unified manner for all pilot regions, fully in line with state-of-the-art evaluation approaches.

Following the In-Time concept, extended within Co-Cities by means of a user feedback channel, main stakeholders and their relations are identified, forming the Co-Cities value network. Taking into account the two main user group clusters, namely professional and private users, the following Co-Cities user groups are identified and their characteristics are given:

- Urban commuters (typical age of 18-65 years, typically travelling on working days)
- Sub-urban commuters (typical age of 18-65 years, typically travelling on working days)
- Urban ad-hoc travellers (typical age of 18-75 years, typically travelling less than daily)
- Sub-urban ad-hoc travellers (typical age of 18-75 years, typically travelling less than daily)
- Tourist / leisure travellers (typical age of 18-75 years, typically travelling less than monthly)
- Business travellers (typical age of 20-65 years, typically travelling less than daily)
- Travellers with limited mobility (typical age of 18-65 years, typically travelling on a daily basis)
- Professional transport organisations (typically travelling on a daily basis)

In order to involve the various users in the Co-Cities evaluation in a valid manner, the study team introduced the Unified Theory of Acceptance and Use of Technology (UTAUT model) as a primary approach to assess user-driven service acceptance indicators and the resulting behavioural intention to use Co-Cities services. The UTAUT model identified four constructs to play a significant role as direct determinants of user acceptance and usage behaviour:

- Performance expectancy
- Effort expectancy
- Social influence
- Facilitating conditions

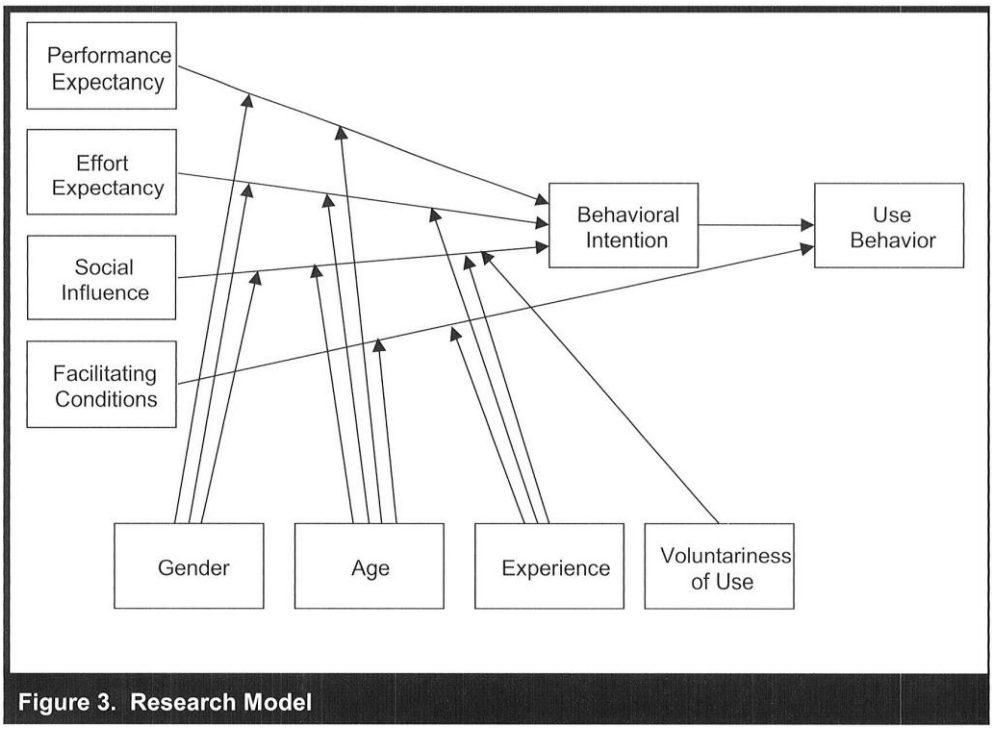

Figure 1: Unified Theory of Acceptance and Use of Technology (UTAUT)

Based on the UTAUT model the field design, including the user questionnaire and the test user distribution amongst pilot sites is, derived. Following the Co-Cities Description of Work the following quantities of service test users are planned as a minimum sample size for the individual tests sites.

Pilot site	Number of users Reference platform	Number of users Co-Cities service	Number of services	Total number of test users
Bilbao	30	50	3	180
Florence	20	40	4	180
Munich	20	30	5	170
Prague	40	50	3	190
Reading	20	30	3	110
Vienna	20	30	5	170
Total	**150**	**230**		**1.000**

Table 1: Minimum numbers of Co-Cities test users per pilot site according to the Description of Work

In order to derive statistical relevant figures, the goal is to gain more than 150 test users per pilot site, allowing also for quantitative analysis on city level.

The evaluation feedback given by Co-Cities test users in the individual pilot regions is collected by means of two channels:

- An icon-based feedback functionality right after the provision of the service information related to the selected journey, which is embedded directly in the service interface.
- An online questionnaire based on the UTAUT model introduced above.

Both user feedback channels are based on the active individual agreement of test users towards the collection and usage of the data gathered for research purposes. Furthermore, the protection of personal data is facilitated by doing it's collection itself anonymously.

This approach allows for focused and direct as well as more comprehensive user inputs, related to the Co-Cities services and related to travel environments to be given. As a direct result, test and evaluation results gathered for an individual pilot region are comparable amongst the different Co-Cities test-regions and with the assessment done in the In-Time project.

As a final step, ways of test user recruitment and potential interaction channels are identified, forming the very basis for test user involvement in the months to come. Within this context, service providers involved, Co-Cities services implemented, potential user groups and open user innovation channels, user groups involved and related time plans as well as approaches/methods of user recruitment and interaction channels are given for the respective pilot regions.

2. Introduction

2.1 The Co-Cities project

Co-Cities is a Pilot project setting up a mobile reference platform in cities and urban areas to introduce and validate cooperative mobility services. It develops a dynamic "feedback loop" from mobile users and travellers to the traffic management centres of cities and adds elements of cooperative mobility to traffic information services. The installations are based on the In-Time Commonly Agreed Interface (CAI) and the pilots will be run in the cities of Bilbao (SP), Florence (IT), Munich (DE), Prague (CZ), Reading (UK), and Vienna (AT).

The objectives of Co-Cities are:

- To extend the In-Time CAI with a 'feedback-loop' to extend mobility services with cooperative elements.
- To extend the number of cities which install this interface and connect it to the traffic management centre for a regular feed of data and information.
- To develop a fast and reliable validation process for cooperative traffic information services based on user feedback collected via the 'feedback-loop'.
- To make transport information services more attractive and appealing to users in urban areas.
- To contribute to the objectives of improved road safety, increased energy efficiency, higher comfort and, last but not least, sustainability of transport in urban areas.

For the purpose of traffic management in urban areas, this will be achieved by the deployment of both, the transport information services listed here below and their extension with a cooperative element:

- Interoperable and multimodal Real Time Travel & Traffic Information (RTTI) services to end-users from Traffic Information Service Providers (TISPs) will use different hardware and software platforms like personal navigation devices, smart phones and web services and develop Europe–wide services based on regional traffic and travel data.
- Business-to-business services will enable Europe-wide Traffic Information Service Providers (TISPs) to cooperate with regional and urban authorities in fields such as strategy-based routing and adaptive mobility services.

The central part of the Co-Cities concept is an interoperable and multimodal Regional Data/Service Server (RDSS), which is a service-oriented middleware infrastructure providing a number of data/services. These cover and enable the operation of end-user applications through TISPs.

For a detailed validation, the Co-Cities solution will be implemented and operated in six European pilot sites. Best practice cases for the development of cooperative mobility services in urban areas will be defined in a roadmap. The impact of this validation will be a faster take-up of best practices and an exchange of experience between public authorities and TISPs in Europe.

2.2 The Co-Cities SWP 2.2

The Cooperative Cities work package 2 addresses the definition of the Co-Cities services, related user groups and the validation strategy as a starting point for the project research and development activities. In the following the main tasks of WP2 are outlined:

- Service definition and use cases (SWP 2.1): Define the short list of services for the participating cities and the respective use cases with the necessary elements from an organisational and technical point of view, with the specific focus on cooperative elements of the services.
- User group definition and selection (SWP 2.2): Propose the user groups for the single service defined and the procedure how to involve them early in the development process. Define the necessary groups and their involvement in the process. Additionally to In-Time where B2B services were explored in Co-Cities the end user groups need to be involved, and this is the main effort in this SWP.
- Validation strategy (SWP 2.3): Define the testing and validation steps for the single service in the cities according to the following elements (based on use case list and user groups from previous SWP´s) - existing elements and access to common data interfaces - system extensions and their testing and validation, with requirements and pass criteria in the single validation steps - key aspects of the reference system and the test cases for services and the validation in the single cities.

As briefly described above, SWP 2.2 focuses on the identification of stakeholder groups, define a process how the user involvement and stakeholder feedback is planned as well as define the various user interaction channels. The three major tasks addressed in this work package are:

Task 1: Definition of stakeholders, user groups and segments per service

All stakeholders involved are identified to pave the way for future deployment. This is a key issue as different stakeholders (e.g. data and service providers, system operators, end user groups etc.) along the value chain may have not only divergent, but opposing interests in the system which have to be clearly stated early in the project. On the basis of services and use cases defined in SWP 2.1, expert interviews with project internal stakeholders of the test sites are conducted as all cities involved have experience about user groups, how their services are used and perceived by their users. Additional Information about the size of different user groups, as well as distributions of different factors (e.g. age, sex, kind of travel, regularity etc.) are collected in these interviews. From this analysis, stakeholders, user groups and segments are derived.

Task 2: Process description of user involvement and feedback collection

Within this task, the definition of a methodology for socio economic impact analysis (user involvement and feedback collection) is performed. Within this context a tailor-made tool enabling the measurement of marketing-related aspects and user acceptance indicators taking into account qualitative (interview) as well as quantitative (questionnaires) methods is set up. Together with the project partners of the different pilot sites specific validation parameters for user feedback are identified. A critical element for the survey design is the access to the respective users groups via the respective service providers of all test sites. It eases the process of gathering user feedback, by providing on-line questionnaires and/or user feedback embedded in the service environment.

Task 3: Definition of user interaction channels

Service Providers (project partners) at the respective test sites provide contact data of user groups in order to enable direct contact to potential test-users, open user interaction channels for user involvement and feedback collection as well as they support the definition of relevant user groups and segments on the basis of the data that the Service Provider has in the respective city. To ensure valid results when interacting with users, parameters are identified for the selection and recruiting of user groups participating in demonstrations. Based on the use cases selected for the single test sites, it is defined who will when and how recruit potential end users and stakeholders. End user selection requires a minimum number of test persons, taking into account selection criteria such as age, experience with travel management systems, gender, etc. The respective Service Provider supports these processes (user selection and interaction) by providing relevant data of and establishing contact to the respective users.

2.3 Scope of the document

The main scope of this document is to provide the basis for valid stakeholder involvement in the Co-Cities pilot demonstrations. Within this overall context, the following main topics are addressed:

- Identification and description of the Co-Cities value network and related stakeholders and user groups (chapter 3).
- Definition of the methodology and field design of the user involvement during the Co-Cities evaluation phase (chapter 4).
- Description of ways who to recruit and how to interact with test users in the individual pilot regions and related plans (chapter 5).
- Derive conclusions and recommendations out of the experiences made and information gathered (chapter 6).

Based on the information provided, the evaluation during the Co-Cities pilot phases is going to be structured and implemented at the respective pilot region.

3. Definition of stakeholders and user groups per service

3.1 Methodology

In order to define relevant stakeholders and user groups per Co-Cities service the following main information sources are taken into account.

Stakeholder identification

Due to the fact that Co-Cities builds upon the In-Time project outcomes, the stakeholder analysis takes fully advantage of the results generated in this project context. Stakeholder groups have been identified and initially described in the In-Time D 2.2.1 “Report on general stakeholder aspirations and expectations”, while their main commercial interests are dealt with in the In-Time D 6.3.1 “Business Plan (including the roll out strategy)”. The information provided serves as the basis for the analysis in Co-Cities, focussing on the extensions in terms of target groups (Business to Business → Business to Consumer) and services (more active integration of the service community).

User groups per service

The analysis performed in the course of the In-Time project, particularly within D2.4.1 “Report on user groups, their expectations and service definition shortlist”, is used as a basis for the work in Co-Cities. Information considered within In-Time will be validated based on expert inputs, mainly derived from service providers and pilot cities/regions participating in the Co-Cities project.

3.2 Value network and definition of stakeholders

The value network shown in the figure below schematically summarises the Co-Cities stakeholders and their main relations. It is based on the In-Time value network, described in the In-Time D2.2.1, and extends its structure with Co-Cities specific functionalities and value-adding elements, particularly triggered by the content and feedback provided by users.

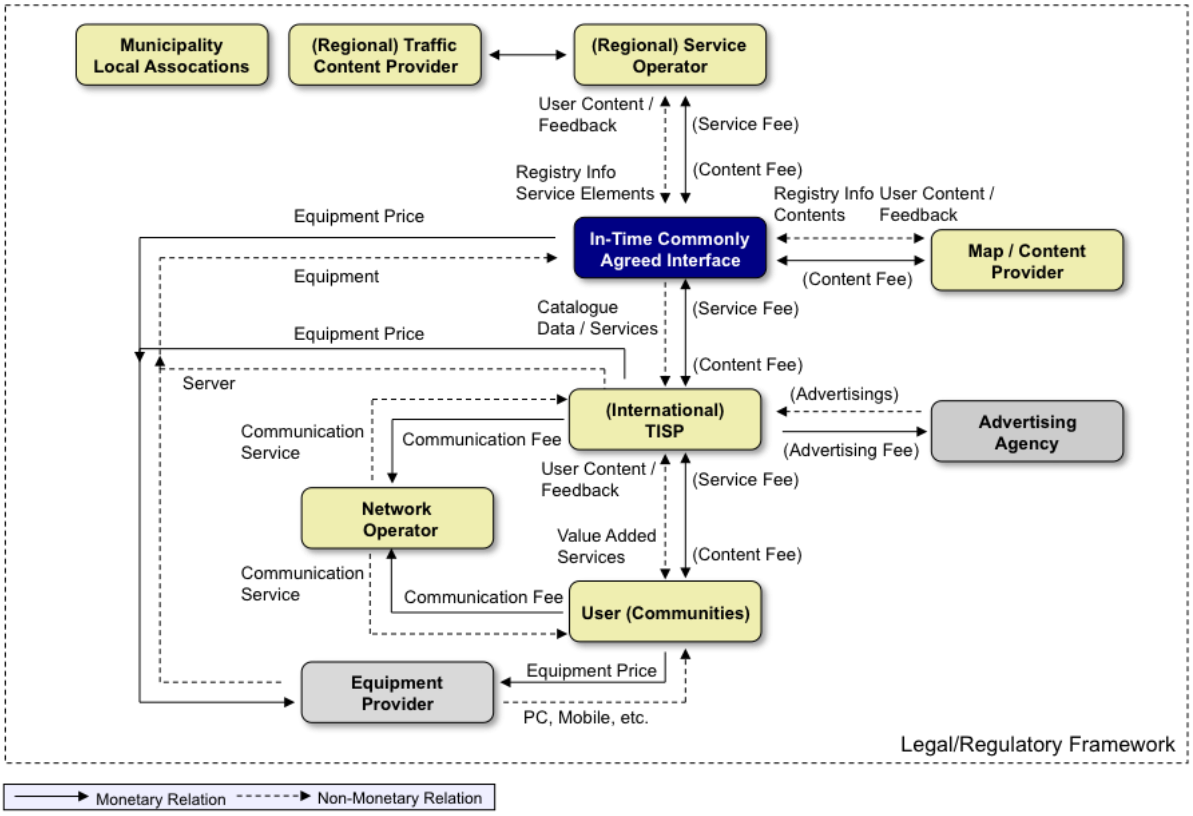

Figure 2: Co-Cities value network

The centre of the Co-Cities value network is the In-Time Commonly Agreed Interface (CAI) acting as a virtual link between regional traffic content providers (mostly under control of local authorities or associations and supported in their business by service operators) as well as map/content providers and international TISPs. By offering a content and service catalogue as well as interfaces for the demand-driven exchange of information, the CAI facilitates the provision of regional contents on an international basis without the need of bilateral agreements and significant investments. Based on this information TISPs may deliver its users or user communities travel-related value added services by means of Web, mobile applications or in-car navigation solutions by using communication channels provided by network operators (e.g. Internet or mobile network providers).

In addition to the In-Time service architecture, the overall value and quality of the service chain is improved by the fact that commercial and business service-users are providing contents and individual feedback. This information, e.g. on traffic jams, travel environments, available parking spaces but also on the quality of the provided services, further enhances the service data base and resulting service offerings. This user-generated information is provided within the service environment to the TISP, potentially forwarding this information also to the content and data providers involved in the service operation.

Besides the flow of information also monetary relations are indicated in the Co-Cities value network. In this context the following exchanges may be taken into consideration:

- Usage of the CAI: Handling fee by regional data/content providers and TISPs.
- Usage of the service / user-generated contents: Service fee paid by the service-users and/or fee for the user-generated content paid by the TISP, data/content providers and/or the provider of the In-Time CAI.
- Embedded advertising: Advertising incomes paid to the TISP by an advertising agency.
- Equipment and communication: Payments related to hardware and software and communication.

3.3 Main user groups and related services

Due to the fact that Co-Cities service values are generated on various levels in the value chain, the main user groups of Co-Cities services are positioned on different levels in the value network. They comprise:

Business users – TISPs, data traffic and content providers , authorities

TISPs, data/content providers and authorities are using business services provided by the Co-Cities service environment in order to extend their business and/or service reach as well as to provide citizens with improved travel information service offerings.

Service elements directly related to this user group are business offerings like the registry, service/content catalogue, and functionalities allowing the receipt and processing of end-user generated contents (feedback information).

End users – Consumers and professional travellers

The final user of Co-Cities services is typically the customer of a TISP connected to the In-Time CAI. This may be a person who is primary interested in getting information to reach a better way of travelling or a faster or more convenient way to get and to stay someplace or a business entity, typically improving the efficiency of transports or professional processes. Furthermore, end users provide contents and feedback to their TISP in order to further enhance the respective service offerings.

Considering the individual target groups, Co-Cities user groups can be clustered as follows:

- Business users: Organisations or entities using the service for business reasons. This group includes for instance transport organisations, taxis, ambulances, sales forces, etc.
- Private users: Persons using the service for their travels in order to make them more fast, convenient or environmental friendly. This group comprises for instance urban/sub-urban commuter and ad-hoc travellers, tourists, (international) business travellers.

The different user groups may use different hardware and software platforms in order to use the Co-Cities services. Furthermore, parts of these user groups are foreseen to provide contents within the Co-Cities service environment and their contributions are fed-back into the respective Co-Cities services (User-Generated Contents).

Based on the demonstration results gathered in the course of the In-Time project, the Co-Cities user groups may be characterised as shown in the table below.

User group	Typical age	Examples / kind of travels	Frequency of travels	Expected frequency of service usage per year	Service platform used
Urban commuters	18 - 65	Employees, scholars/students to go to work / school / university	Working days (++)	Medium (++) Focus on real-time information	Smartphone, navigation device
Sub-urban commuters	18 – 65	Employees, scholars/students to go to work / school / university	Working days (++)	Medium (++) Focus on real-time information	Smartphone, navigation device
Urban ad-hoc travellers	18 - 75	Shoppers, going out, get-together, going to doctor, bank	Less than daily (++)	High (+++) Routing and real-time information	Web, smartphone, navigation device
Sub-urban ad-hoc travellers	18 - 75	Shoppers, going out, get-together, going to doctor, bank	Less than daily (++)	High (+++) Routing and real-time information	Web, smartphone, navigation device
Tourist / leisure travellers	18 - 75	Individuals, families, groups of people for sightseeing and sports	Less than monthly (+)	Low Focus on routing information	Web, smartphone, navigation device
Business travellers	20 – 65	Business people arranging meetings, international business trips	Less than daily (++)	High (+++) Routing and real-time information	Web, smartphone, navigation device
Travellers with limited mobility	18 - 65	Temporary handicapped (pram, carrier bag) and disabled persons	Daily (+++)	Medium (++) Special routing and real-time information	Web, smartphone, navigation device
Professional transport organisations		Delivery services, taxis, sales force, civil servants, rescue services	Daily (+++)	High (+++) Routing and real-time information	Dispatching centre application, smartphone/ navigation device

Table 2: Main Co-Cities user groups and their characteristics

Based on the main Co-Cities user groups described above their matching with Co-Cities service groups as derived in the Co-Cities D2.1 are shown in the following table.

User group	Parking	Traffic information	Public transport	Journey planning	Map information	Freight traffic
Urban commuter	X	X	X		X	
Sub-urban commuter	X	X	X		X	
Urban ad-hoc traveller	X	X	X	X	X	
Sub-urban ad-hoc traveller	X	X	X	X	X	
Tourist / leisure traveller	X	X	X	X	X	
Business traveller	X	X	X	X	X	
Handicapped travellers	X	X	X	X	X	
Professional transport organisations	X	X		X	X	X

Table 3: Matching of Co-Cities user groups and Co-Cities service groups

4. User involvement and feedback collection process

4.1 Methodology

The main aim of the user involvement within Co-Cities is to collect and analyse valid test-user feedbacks related to user acceptance indicators and marketing-related aspects. Starting from the Extended Technology Acceptance Monitor model used in the project In-Time (D 2.5.1 "Test and evaluation plan: User groups, service guidelines, methodology and indicators for traffic impact assessment") the study team decided to use the Unified Theory of Acceptance and Use of Technology (UTAUT) for the analysis within Co-Cities. This approach allows for the basic comparison of user-feedback gathered in In-Time and Co-Cities while taking into consideration recent developments in economic impact analysis.

The following figure shows schematically the UTAUT model (Venkatesh et al, 2003, p447f):

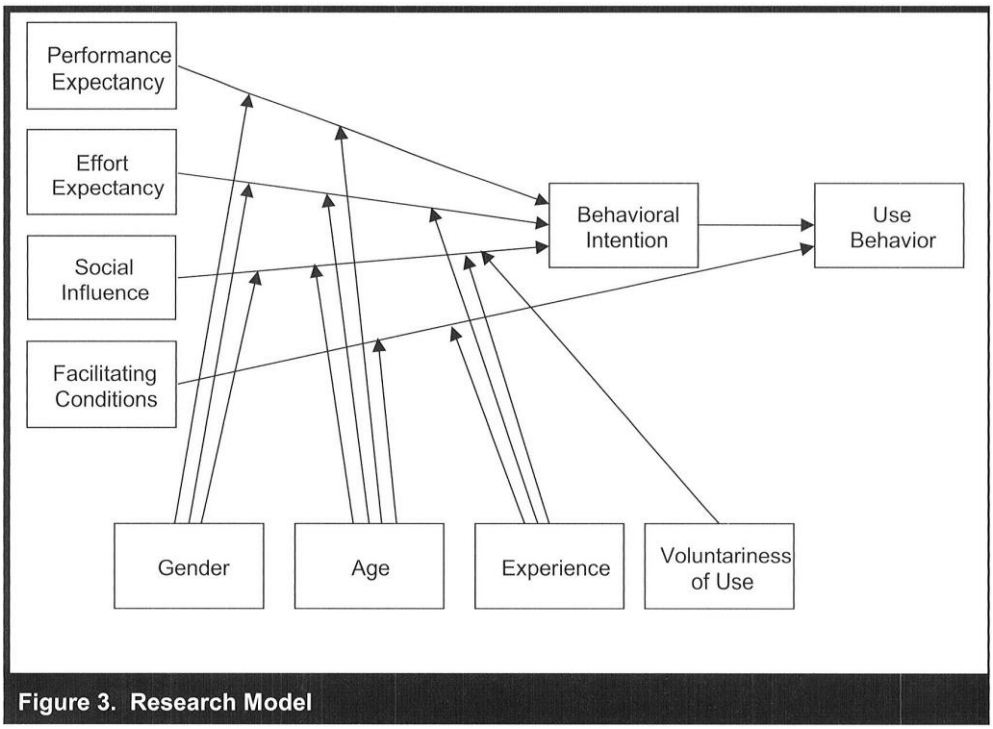

Figure 3: Unified Theory of Acceptance and Use of Technology (UTAUT)

To arrive at their Unified Theory of Acceptance and Use of Technology (UTAUT), the authors reviewed eight of the most prominent models in information technology acceptance research. Four constructs are identified to "play a significant role as direct determinants of user acceptance and usage behaviour":

- Performance expectancy
- Effort expectancy
- Social influence
- Facilitating conditions

These four elements are theorised to be the determinants that influence the behavioural intention to use a certain technology. The first three elements (performance expectancy, effort expectancy, social influence) are theorised to have a direct influence on behavioural intention, which in turn influences use behaviour. Facilitating conditions are understood to directly influence use behaviour.

Performance expectancy (direct determinant of intention)

"Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (p.447). In the context of the Co-Cities project, the term "job performance" refers to the achievement of goals as set out in the service description. Performance expectancy has been shown to be the strongest predictor of intention. Age and gender have moderating effects on the influence of performance expectancy, in the sense that effects will be stronger for men and young men in particular.

Effort expectancy (direct determinant of intention)

"Effort expectancy is defined as the degree of ease associated with the use of the system." (p.450) This aspect is of particular importance in early stages of uses and becomes less important over longer periods of usage, which highlights its relevance for the goals to be achieved in the validation process for Co-Cities. Taking gender and age into account, the authors (Venkatesh and other p. 450) argue that the influence of this construct will be "stronger for women, particularly younger women, and particularly at early stage of experience".

Social influence (direct determinant of intention)

"Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system." (p.451) Importantly, research has found that social influence is not significant in voluntary contexts.

Facilitating conditions (direct determinant of usage)
"Facilitating conditions are defined as the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system." (p. 453) Facilitating conditions refer to the "technological and/or organisational environment that are designed to remove barriers to use" (p.453)

It has to be noted that relationships between different concepts of this model are moderated by the factors of gender, age, experience and voluntariness of use. The influences of age and gender often interact with a tendency of gender differences to lessen with higher age.

4.2 Test user distribution amongst pilot sites

Based on the Co-Cities Annex I the following quantities of service test users are planned for the respective test sites. Taking into consideration the specific test setting within Co-Cities, testers/stakeholders using the reference platform and users experiencing specific, regular Co-Cities services are distinguished. Consequently the minimum number of test users experiencing regular Co-Cities services will be 850 amongst all test sites, providing their feedback to the evaluation team. The 150 persons foreseen to perform tests in Co-Cities pilot regions based on the reference platform primary comprises technical testers and stakeholders, the quality of Co-Cities services is demonstrated to.

Pilot site	Number of users/stakeholders Reference platform	Number of users / Co-Cities service	Number of services tested	Total number of test users
Bilbao	30	50	3	180
Florence	20	40	4	180
Munich	20	30	5	170
Prague	40	50	3	190
Reading	20	30	3	110
Vienna	20	30	5	170
Total	**150**	**230**		**1.000**

Table 4: Minimum numbers of Co-Cities test users per pilot site according to the Description of Work

In order to derive statistical relevant figures, the goal is to gain **more than 150 test users per pilot** site, allowing also for quantitative analysis on city level.

The service users involved in the pilot tests are briefly characterised in chapter 3.3, while their description and the way planned of contacting them is described in chapter 5 for the specific test sites and related service implementations.

4.3 User feedback collection design

The evaluation feedback given by Co-Cities test users in the individual pilot regions is collected by means of two channels:

- An icon-based feedback functionality right after the provision of the service information related to the selected journey, which is embedded directly in the service interface.
- An online questionnaire based on the UTAUT model introduced above.

Both user feedback channels are based on the active individual agreement of test users towards the collection and usage of the data gathered for research purposes. Furthermore, the protection of personal data is facilitated by doing it's collection itself anonymously.

This approach allows for focused and direct as well as more comprehensive user inputs related to the Co-Cities services and related travel environments. Their analysis and combined interpretation forms the basis for a valid picture related to acceptance indicators and a resulting intention to use Co-Cities services in the user groups addressed. Information related to future service adaptations and improvements are provided directly by the test-users to the respective TISPs, data/content providers and authorities, forming the basis for mid- and long-term service evolution.

In this context, the user-based assessment of the quality of contents and service elements provided by Co-Cities is the clear focus of the evaluation performed. The analysis of the user feedback collected addresses the following topics based on the UTAUT model:

Behavioural intention to use the system

- The test user intends to use the system in the next <n> months.

Performance expectancy

- The test user would find the system useful in daily life and/or the job.
- Using the system enables the test user to accomplish travels more quickly.
- Using the system enables the test user to accomplish travels more conveniently.
- Using the system enables the test user to accomplish travels more efficiently.
- For professional users: Using the system increases productivity.

Effort expectancy

- The interaction with the system is clear and understandable.
- It would be easy for the test user to become skilful at using the system.
- The test user would find the system easy to use.
- Learning to operate the system would be easy for the test user.

Attitude toward using the technology

- Using the system is a bad/good idea.
- The system makes life and/or work more interesting.
- Working with the system is fun.
- I like working with the system.

Social influence

- People who influence the behaviour of the test user think that she/he should use the system.
- People who are important to the test user think that she/he should use the system.
- Professional users: In general, the organisation has supported the use of the system.
- In general, my social environment has supported the use of the system

Facilitating conditions

- The test user has the resources necessary to use the system.
- The test user has the knowledge necessary to use the system.
- The system is not compatible with other systems/services the test user uses.
- A specific person (or group) is available for assistance with system difficulties.

The questionnaire to collect the feedback from the test users in the respective Co-Cities pilot sites can be found in chapter 7.1. Its structure and content are partly similar to the end-user survey performed in the project In-Time, in order to allow a cross-validation of results.

5. Test user recruitment and interaction channels per city

Note: Descriptions given for test user recruitment and interaction channels per Co-Cities pilot city is not final yet. Updates will be provided in the final document version 1.2 based on decision made related to the design of the service tests in the various pilot regions.

5.1 Bilbao

Service providers involved

The main service provider involved in the pilot region is the Bilbao Traffic Centre. In 2005 Bilbao Council approves a mobility plan, which is the first step to achieve a technological and structural renewal of the transport centre, in which new ITS equipment centralizes different systems providing transport and traffic services.

Services implemented

Bilbao has joined the Co-Cities project as a city, which didn't participate in In-Time project and hasn't implemented any In Time service yet. The following services are currently available in Bilbao:

- Related to individual transport: static and dynamic information about parking spaces, parking tariffs, traffic level and roadwork.
- Related to public transport: Network and timetable static information of all public transport modes (bus, tram, train and tube). Bus information service also includes dynamic information about estimated time of arrival.

Bilbao Council's goal is to enhance traffic, parking and bus information services adding end user feedback to these services. Therefore, the use cases Bilbao Council intends to implement within the Co-Ctities project are the followings: Parking information in urban areas, road side parking, traffic info feedback and dynamic public transport info feedback.

Potential user groups and/or open user interaction channels

User data is not available yet. As soon as the user groups are defined, Bilbao Council and MLC-ITS Euskadi will work together in order to select, among their contacts, people considered appropriate to participate as test-users in pilots.

User groups and segments involved in Co-Cities pilot tests

According to the selected use cases to be implemented in Bilbao, the following user groups are going to be distinguished:

- Parking users (inside parking).
- On street parking users.
- Private transport users who use TomTom navigation devices (responsible partner of some of the selected use cases is TomTom).
- Public bus users.

The communication campaign to user involvement is expected to start during the first half of 2012. The first contact with potential users will start one month before expected rollout of the pilot services. The actions to be performed for user involvement are the followings: Define the user groups to be involved in each pilot, contact Bilbao Council's and MLC's users who will participate in pilots and finally, explain to selected users how the pilot works and what their role in the pilots is.

Approaches/methods of user recruitment

The user recruitment will be achieved through the following channels: mails from MLC and Bilbao Council to their contact distribution lists, announces in MLC and Bilbao Council websites (www.mlcluster.com and www.bilbao.net) and perhaps through a publication of a press release.

Interaction channels with user groups

The interaction channel is going to be integrated into the Co-Cities feedback channel. User groups will also be in contact with Bilbao Council and MLC via Email, via web and in case of being necessary, through some physical meetings. Moreover, a twitter channel will be set up for Bilbao in order to interact with users.

5.2 Florence

Service providers involved

Regione Toscana has taken steps to entrust a private operator (Pluservice S.r.l., via tender) the realisation of the regional infomobility infrastructure (Muoversi in Toscana); The link between Muoversi in Toscana and the Co-Cities specifications will be performed by the Co-Cities partner company Softeco.

Services implemented

Within the Tuscany Region, Firenze and his metropolitan area (approx 600.000 inhabitants or 1.000.000 as Firenze – Prato – Pistoia conurbation), Livorno urban area and provincial area (approx. respectively 160.000 and 360.000 inhabitants), Grosseto urban area (approx. 80.000 inhabitants) and Lucca urban area (approx 85.000 inhabitants) are considered.

Related to static information, network and timetable data on all transports mode operated in Tuscany Region, parking information and a multimodal travel planner are available. Furthermore, a complete GIS of the road network, made and owned by Regione Toscana, oriented in the direction of flow and complete with addresses and house numbers is implemented. When it comes to dynamic information, a predicted arrival time at bus stop for selected test sites is provided .

Users are provided also with a toll free number (800-570-530) to communicate deficiencies and dysfunctions of the local public transport (LPT) of Tuscany, and presenting reports and recommendations and ask for information about rates, city buses, suburban and regional trains; The number responds from 8:00 to 19:00 Monday to Friday, and users can also send an Email to numeroverdetpl@regione.toscana.it.

Potential user groups and/or open user interaction channels

We suppose to use a selection of In Time final users; The selection will be done by Regione Toscana in collaboration with Softeco Sismat S.r.l. and MeMex S.r.l.

User groups and segments involved in Co-Cities pilot tests

The selection of users group should include a mix of age/sex and socio economic groups as a representative sample of urban and metropolitan population.

Time plan related to user involvement

Following the Co-Cities project plan the start of the communication campaign is planned as soon as the feedback loop will be ready for common testing/using (foreseen first half of 2012).

Approaches/methods of user recruitment

Users group will be recruited by using Web resources, such as Email advertisements, university mailing lists, and also by publication of public advertisements on the official regional administration Web site: www.regione.toscana.it.

Interaction channels with user groups

Fully integrated into Co-Cities feedback, the plan is to use the same communication channels as for user recruitment, adding, if possible, contacts through SMS text messages. It might be interesting to organize a start-up workshop for a better illustration of the project to the users group.

5.3 Munich

Service providers involved

The Verkehrsinformationsagentur Bayern is a public private partnership between the Bavarian Ministry of the Interior and Public Works and a consortium consisting of SIEMENS AG, PTV AG and others. The company is privately organised and provides data on the major interurban road network. The VIB is providing information services for the whole German region of Bavaria with approx. 18 Mio. inhabitants, the actual test site comprising the Bavarian capital of Munich features around 1.3 Mio. inhabitants.

Services implemented

The services implemented comprise parking (static), dynamic traffic information including road weather conditions and intermodal routing services. With the current In-Time demonstration, service 17 is directly addressed by the TISPs which, in turn, are not using the other services as routing is executed on RDSS side.

Potential user groups and/or open user interaction channels

The test users will be approached via different marketing channels:

- One of the largest free city magazines featuring event information, in-muenchen.de, provides the grounds for an online-advertising campaign. The target group of this site is the young to mid aged cosmopolitan citizen using various mean of transport as well as tourists representing urban/suburban commuters and ad-hoc travellers as well as tourists.
- Munich features two major universities, the Technical University of Munich and the Ludwig Maximilians Universität. Through contacts with university departments and as well as through direct advertising, test users shall be recruited from among the students and staff of the university. Those target groups represent daily commuters.
- Major industrial institutions will be approached in order to recruit test users from the business traveller target group.
- If specific services for handicapped services are tested, respective alliances are going to be approached and handicapped persons need to be included in the test campaign.

User groups and segments involved in Co-Cities pilot tests

The user groups will mainly focus on urban/sub-urban commuters and ad-hoc travellers. Also tourists and business travellers are planned to be acquired. If specific services can be offered by a TISP for the TS Munich, also mobility handicapped test users are going to be approached.

Time plan related to user involvement

Following the Co-Cities project plan the Munich test-site leader supposes to start communication campaign just when test site for using feedback loop will be ready for common testing/using.

Approaches/methods of user recruitment

As described above, different media and approach technologies will be utilised for the recruitment of test users:

- Internet advertisements on in-muenchen.de, one of Munich´s largest free city magazines for events
- Direct contact with university departments
- Advertisements on the black boards of the Technical University of Munich and the Ludwig Maximilians Universität
- Directly approach leading industrial institutions in the region
- Approach alliances for the mobility handicapped persons (given the prerequisite that specifically designed services – esp. HMI – are available from the TISP in the region)

Interaction channels with user groups

The interaction channel is going to be integrated into the Co-Cities feedback. In addition the same communication channel as for user recruitment are foreseen for user interaction.

5.4 Prague

Service providers involved

There are about 1.300.000 inhabitants in the Prague area, which is divided into 10 urban districts. The Regional Organiser of Prague Integrated Transport provides the public transport data for this large area; The main service provider involved in the pilot region is Telematix Software. Telematix is currently developing a new cross-platform basic client for most frequently used operating systems in the following years - iOS, Android and Windows Phone.

Services implemented

There will be multi-modal journey planner implemented including public transport modes (tram, bus, subway) and pedestrian navigation.

Potential user groups and/or open user interaction channels

The communication campaign and services offered are targeting primarily the user groups mentioned above (Urban/Sub-urban commuter, Urban/Sub-urban ad-hoc traveller, Tourist etc.). Out of these user groups the following socio-economic subgroups are identified most interesting:

- Computer literate
- Middle and upper income group
- Age between 18-40 years
- Especially employees and students

The plan is to involve the user group of current Dynavix Navigation customers, currently including more than 11.000 Email contacts and a Facebook (800 fans) and Twitter (200 followers) community. Besides approaching the Dynavix users base, a public relations campaign in regional media is foreseen, constituting additional positive consequences with respect to dissemination of project results and awareness building related to new services.

User groups and segments involved in Co-Cities pilot tests

As mentioned above, the main group of test-users are going to be derived from current users of Dynavix software, where Co-Cities functionality would be promote as a free software with additional functionality to Dynavix navigation. User group can be divided into:

- Users using a free stand-alone client.
- Users using services as additional functionality embedded in the Dynavix navigation service.

Time plan related to user involvement

The time plan of user involvement depends on the Co-Cities deployment plan. The communication campaign should start in first half of 2012, when mobile client and also RDSS part will be ready for operation and mobile clients will be available for all operating systems at virtual markets.

Approaches/methods of user recruitment

The test site leader supposes to use direct marketing to Emails and social media. In addition, a PR campaign in the local media is going to be used in order to raise the interest of potential users in Prague.

Interaction channels with user groups

The interaction channel is going to be integrated into the Co-Cities feedback. In addition, Telematix will offer to users the communication via social networks (especially Facebook and Twitter) and via Email or a Web contact form managed by the Telematix support centre.

5.5 Reading

Service providers involved

There are about 230.000 inhabitants in Reading area (the borough of Reading has a population of 145.000). The Reading Borough Council provides the public transport data from this region. The main service provider involved in the pilot region is Telematix Software, named in subchapter 5.4.

Services implemented

There will be multi-modal journey planner implemented including public transport modes (bus) and pedestrian navigation. Service will use Reading's static and real time data including real time data for parking, public transport (bus and rail & park & ride) and incidents / congestion.

Potential user groups and/or open user interaction channels

Potential user groups will be identified through Reading's contacts, coordinated by Marc Allen. Reading have good working relationships with local business, hospital and University as well as their own staff and is going to use these contacts to identify a sample cross section of users. Depending on the exact timing of the trials it may be possible to combine the trials with a personalised travel planning campaign in Reading being funded through other research and central government and these opportunities will be explored as the project progresses. Users will use their own phones to explore the services, trial software licenses are expected to be provided for free.

As mentioned in subchapter 5.4, Telematix focuses primarily on the following socio-economic subgroups:

- Computer literate.
- Middle and upper income group.
- Age between 18-40 years.
- Especially employees and students.

User groups and segments involved in Co-Cities pilot tests

As mentioned above, the selected user groups are going to include the described socio economic subgroups to provide a representative sample and obtain feedback from a cross section of the population.

Time plan related to user involvement

Communication campaign is expected to start in first half of 2012, as soon as the RDSS part will be ready for operation and mobile clients will be available for all operating systems at virtual markets. The campaigns foreseen will be performed by Telematix Software in cooperation with Reading Borough and PBA.

Approaches/methods of user recruitment

Recruitment is planned by means of Email, website and fliers promoted through contacts in business, university, Reading staff and hospital. Furthermore social networks and communities the Borough of Reading uses at own communication campaigns (Facebook – 390 fans, Twitter – 240 followers) may be invited to join the Co-Cities test campaign.

Definition of interaction channels with user groups selected in the specific test site.

The interaction channel is going to be integrated into the Co-Cities feedback channel. Reading will look to use email / on-line questionnaires to engage with the user groups for the main feedback. In addition some face-to-face workshops are expected to be undertaken in order to further explore the findings. Reading may also use social networks (especially Facebook and Twitter) for the communication with test-users.

5.6 Vienna

Service providers involved

ITS Vienna Region was founded by the three federal states of the Vienna Region (Vienna, Lower Austria, Burgenland) as a cooperative project in the year 2006 to provide traffic management and information with a regional perspective. Today, it provides various services and data for users (e.g. AnachB.at an Advanced Traveller Information System; available online www.AnachB.at and as a mobile version), traffic management and e-government.

Services implemented

The following In-Time services were implemented during the In-Time Project and will be available for Co-Cities:

- In-Time Service 9 Dynamic Parking Information
- In-Time Service 17 Comparative Dynamic Multi Modal Journey Planning

Potential user groups and/or open user interaction channels

Data for contacting users directly is not available. It is foreseen to promote Co-Cities via existing services (see below).

User groups and segments involved in Co-Cities pilot tests

ITS Vienna Region provides information and services to all traffic participants, but is especially interested in supporting car drivers that are willing to change the means of transport and commuters.

Time plan related to user involvement

The timing of user involvement depends on the Co-Cities time plan, especially the rollout of the Co-Cities services.

Approaches/methods of user recruitment

It is planned to implement a banner on AnachB.at to promote Co-Cities and recruit users.

Definition of interaction channels with user groups selected in the specific test site.

Users will be able to interact with ITS Vienna Region via the Co-Cities-Apps (feedback) and the ITS Vienna Region website (Email support).

6. Conclusions and recommendations

The user-driven evaluation of Co-Cities services and systems is one of the key activities of the project. Consequently, main user groups, their matching with Co-Cities services and ways to involve test users in the demonstrations performed are given. Furthermore the assessment structure and methodologies used are provided in a unified manner for all pilot regions, fully in line with state-of-the-art evaluation approaches (Unified Theory of Acceptance and Use of Technology).

As a direct result, test and evaluation results gathered for an individual pilot region are comparable amongst the different Co-Cities test-regions and with the assessment done in the In-Time project. These activities allow a harmonised collection, analysis and assessment of user-driven evaluation data and resulting learning amongst test regions.

In order to derive valid evaluation results in the course of Co-Cities the following recommendations are made by the SWP2.2 team:

- Implementation of harmonised user-driven evaluation methods, data collection approaches and data analysis amongst all Co-Cities pilot cities.
- Start test user recruitment as focused and as early as possible in the project in order to gather a representative sample size (one of the main experience out of the In-Time project).
- Combine the user-driven evaluation (described in the underlying document) with technical-focused service validation in order to derive a comprehensive picture related to the Co-Cities service quality and resulting improvements. Technical validation is planned in the Co-Cities SWP 2.3.

7. Annex

7.1 Questionnaire to collect test user feedback

You have just participated in a test of Co-Cities value added services. In our continuous attempt to adapt these offerings to your needs, we kindly ask for your participation in our survey. The completion of the whole questionnaire will take about 15 minutes. Of course, all the information will be handled anonymously; Data will not be disclosed to any other party.

Thank you very much!

PERSONAL TRIP DATA

1. I am

Female ☐ Male ☐ ……. years old

2. I regularly use travel-related information services (besides Co-Cities) already.

Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree ☐ No opinion ☐

3. I regularly use travel-related information services (besides Co-Cities) provided via

the Web ☐ my Mobile ☐ the media (e.g. TV, radio) ☐

GENERAL ASPECTS

4. In which pilot site did you participate in?

Bilbao	Florence	Munich	Prague	Reading	Vienna
☐	☐	☐	☐	☐	☐

5. Which Co-Cities solution platform did you use?

OP1	OP2	OP3
☐	☐	☐

6. Which Co-Cities service did you use?

S1	S2	S3	S4	S5
☐	☐	☐	☐	☐

7. I used Co-Cities services

Daily	Weekly	Monthly	Less than monthly
☐	☐	☐	☐

8. I used Co-Cities services primary as

Urban commuter	Sub-urban commuter	Urban ad-hoc driver	Sub-urban ad-hoc driver	Tourist / leisure traveller	Business traveller
☐	☐	☐	☐	☐	☐

Handicapped traveller	Professional transport organisation	Other
☐	☐	☐

If you selected the option "Other", please specify:

……

……

9. I used Co-Cities services primary in the following context(s)

Driving in my car	Driving with public transport	During cycling	During walking	During my job on the road	At home
☐	☐	☐	☐	☐	☐

CO-CITIES SERVICE EXPERIENCE

10. During the participation in the Co-Cities demonstration, which experiences were most surprising to you?

Positive:

……

……

Negative:

……

……

11. What are the main differentiators of Co-Cities services with respect to other travel-related information services?

Positive:

……

……

Negative:

……

……

12. Co-Cities services are provided with a very good quality.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

If you select “Disagree” or “Strongly disagree”, please specify:

……

……

13. Traffic information provided by Co-Cities is up-to-date.

Never	Rarely	Sometimes	Often	Always
☐	☐	☐	☐	☐

14. Using Co-Cities services eases my daily life.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

If you select "Disagree" or "Strongly disagree", please specify:

……

……

15. I intend to use Co-Cities services on a regular basis within the next 6 months.

Yes	No
☐	☐

If you do not intend to use Co-Cities, why not?

……

……

16. I find Co-Cities useful in my travels.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

17. Using the system enables me to accomplish travels or transports more quickly.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

18. Using Co-Cities enables me to accomplish travels or transports more conveniently.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

19. Using Co-Cities enables me to accomplish travels or transports more efficiently.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

20. For professional users: Using the system increases my productivity.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

21. My interaction with the system would be clear and understandable.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

22. It would be easy for me to become skilful at using the Co-Cities services.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

23. I would find the Co-Cities system easy to use.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

24. Learning to operate Co-Cities would be easy for me.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

25. Using the system is a good idea.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

26. The system makes travelling more interesting.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

27. Working with the Co-Cities service is fun.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

28. I like working with the Co-Cities system.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

29. People who influence my behaviour think that I should use the system.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

30. People who are important to me think that I should use the system.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

31. In general, my social environment has supported the use of the system

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

32. Professional users: In general, the organisation has supported the use of the system.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

33. I have the resources necessary to use the system.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

34. I have the knowledge necessary to use the system.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

35. Co-Cities is not compatible with other systems/services I use.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

36. To my knowledge, a specific person (or group) is available for assistance with system difficulties

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

37. I am aware of the feature to provide content to Co-Cities

Yes	No
☐	☐

38. I provide content to Co-Cities

Never	Rarely	Sometimes	Often	Always
☐	☐	☐	☐	☐

39. Which are the main benefits provided by Co-Cities services form your perspective?

Please specify:

……

……

……

40. In case there are any usage constraints from your perspective, please specify.

……

……

……

ADDITIONAL FEEDBACK

41. What would be the maximum price you would be willing to pay for using Co-Cities (one-time costs)?

Euro ……

42. What would be the maximum price you would be willing to pay for using the Co-Cities service (monthly costs)

Euro ……/ month

43. Advertising integrated in the Co-Cities service is fine with me if I do not need to pay for the services in this case.

Strongly agree	Agree	Disagree	Strongly disagree	No opinion
☐	☐	☐	☐	☐

If you (strongly) disagree, please specify:

……

……

44. What might hinder the usage of Co-Cities? Which service elements shall be improved?

.....

.....

.....

.....

.....

45. Is there any other feedback you would like to give to the Co-Cities team?

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