

**CiViTAS**  
Cleaner and better transport in cities

**VANGUARD**  
.....

**Proceedings**

**CIVITAS VANGUARD  
CIVITAS MIMOSA**

**Training event**

**Intelligent Transport Systems  
for enhanced policy delivery**

**Bologna, 14-15 December 2011**

Status: final



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IS CO-FINANCED BY THE  
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# 1. Executive Summary

This report provides you with the proceedings of the seventh CIVITAS VANGUARD Training Workshop, which took place on 14 and 15 December 2011 in Bologna (Italy).

All PowerPoint presentations and the resource pack, as well as this report, can be downloaded from CIVITAS website<sup>1</sup>. Photographs of the event can be viewed on the website as well. The training was a joint initiative of the CIVITAS MIMOSA and the CIVITAS VANGUARD projects.

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<sup>1</sup> [http:// http://www.civitas.eu/index.php?id=12&event\\_id=421&more=](http://http://www.civitas.eu/index.php?id=12&event_id=421&more=)

# 2. Content

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### **3. Introduction**

This report gives an overview of the seventh CIVITAS VANGUARD Training Workshop, which took place on 14 and 15 December 2011 in Bologna (Italy). On 16 December, a site visit was organised to the city of Perugia. The training was dedicated to the subject of Intelligent Transport Systems (ITS), in order to support CIVITAS Plus cities other transport planners that are interested. Relevant theoretical background and good practice examples were shared with the participants, complemented with practical exercises and plenty of opportunity for questions and discussion to give the participants the necessary support for their local actions and challenges.

This document contains a report of the presentations and local challenge exercises. The information is presented in such a way that it can easily be transferred to other (local) training events within the CIVITAS programme, or beyond.

## 4. Programme

Wednesday 14 December

*Moderator: Rick Lindeman, NL Agency*

### Session 1: from objective to measure (focus on network management)

- 13:30 Opening session - introductions  
**Karen Vancluysen**, introducing the VANGUARD training programme
- 13:45 The potential of ITS to help cities reach urban transport objectives  
**Eric Sampson**, *University of Newcastle*
- 14:45 Presenting the Bologna case,  
*Cisium: Bologna's innovative traffic control centre*, **Fabio Cartolano**, *Responsible of ITS Unit - Bologna Municipality*  
*Bologna's University Area: some cases of ITS implementation* **Bologna Municipality**, **Mauro Borioni**, *Technician for Mobility Planning - Bologna Municipality*
- 15:30 Local challenges session - **From objective to measure?**  
How to link specific ITS measures to concrete urban policy objectives?
- Introduction (15 minutes)  
Break-out groups  
Plenary – presentations from subgroups – expert feedback from the trainers
- 17:30 Closing remarks

18:00 Training concludes

Thursday, 15 December 2011

*Moderator: Rick Lindeman, NL Agency*

### Session 2: Exploitation and deployment

How to implement ITS applications: juridical, financial, procurement, integration and maintenance issues

08:30 Meeting point at the Piazza Maggiore

08:45 Start of the Field trip

- University area access restrictions (1 hour)
- Transfer to the Municipality Headquarter
- Cisium visit (Municipality Headquarter, Cisium room) (1 hour)
- Coffee break

11:30 Plenary discussions (Municipality Headquarter, plenary room, 4<sup>th</sup> floor)

12:30 Lunch at the Krystall Canteen

**Session 3: Monitoring and evaluation (focus on smart ticketing systems)**

13:30 Presentation on subtheme 3: **Monitoring and evaluation**

**Steve Cassidy**, *MRC-McLeanHazel*

- City in the spotlight: Tallinn, presented by Tiit Laiksoo, city of Tallinn
- Why monitor and evaluate? How to monitor and evaluate?
- What opportunities offer ITS-generated data to improve urban transport?

16:30 Closing remarks and evaluation

17:00 Training concludes

18:00 Bus transfer to Perugia

**Friday 16 December 2011**

Study visit Perugia (optional) in cooperation with CIVITAS RENAISSANCE

09:30 Sangallo Hotel: Introduction to the visit

09:45 Via Masi. Access and egress gate to the LTZ

10:00 Pedestrian path inside Rocca Paolina. Escalators and elevators in Perugia

10:10 Piazza Italia - Corso Vannucci – Via dei Priori

10:20 Cupa Minimetro station

10:30 Minimetro route to Pian di Massiano Terminal

11:10 Pian di Massiano Minimetro Terminal, Minimetro route to Pincetto Terminal

11:30 Pincetto Minimetro Terminal and the Minimetro monitoring and control centre

11:45 Walk to Municipality offices

12:00 Mobility Department of Municipality of Perugia

ITS – the control centre and the integrated traffic platform

13:30 Bus transfer to Bologna

## 5. Proceedings

### Session 1: From objective to measure

#### *Introduction*

**Karen Vancluysen** gives a short introduction of the CIVITAS VANGUARD training programme. This training addresses the topic of ITS, not just from a technological point of view, but also as part of the local policy framework of implementing Sustainable Urban Mobility Plans and making cities more attractive for inhabitants, employers and visitors.

#### ***The potential of ITS to help cities reach urban transport objectives*** ***Eric Sampson, University of Newcastle***

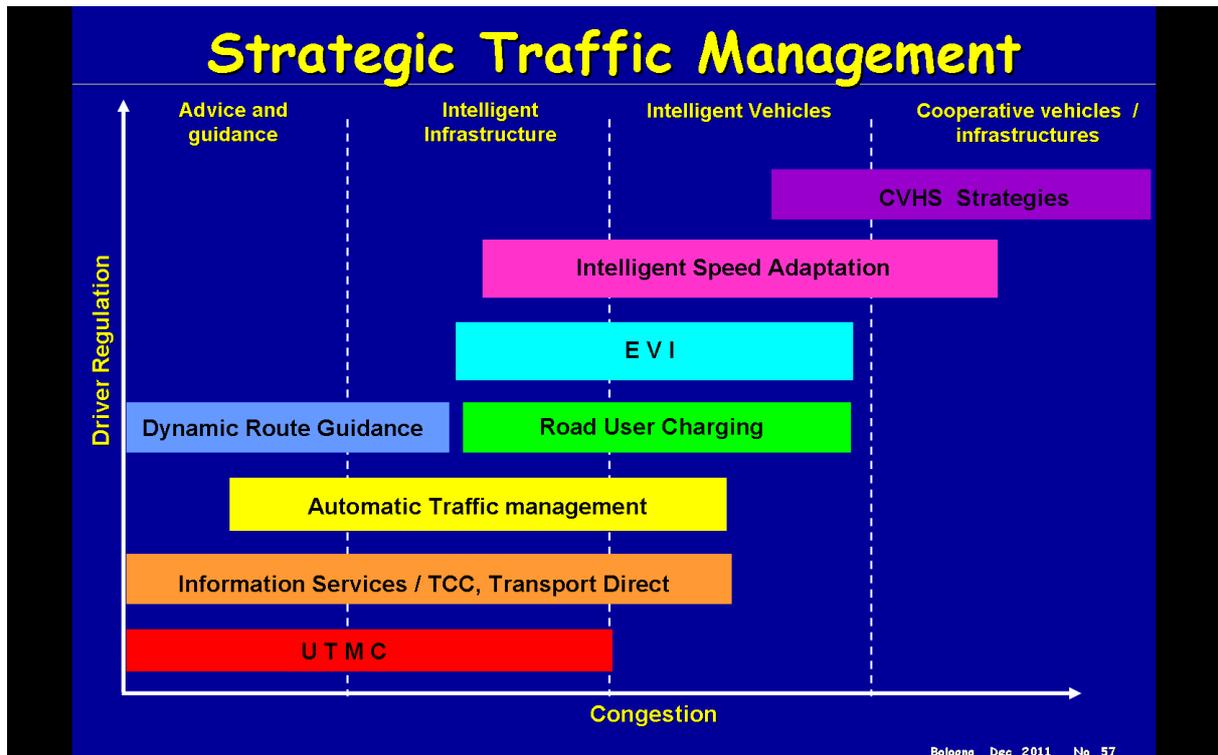
##### **“ITS are the means, not the end”**

**Eric Sampson** (University of Newcastle) starts his presentation from this broader perspective. The challenges for urban mobility are related to a vicious circle. Economic growth has an impact on transport (growth of trip rates, motorisation), which produces economic and environmental input, which inhibits transport services, which enables economic growth, and so on. Strategic transport planning has made a shift towards a complex policy area with many dimensions: safety, environmental impact, throughput, accessibility and inclusion, integration, privacy and security besides the technological and political dimensions. So changing transport demand is a mixture of enhancing vehicles and infrastructure and changing people and methods. Building a telematics & information infrastructure can integrate these aspects.

Eric's example of a crossroad in the city of Woking shows the evolution of ITS: from traffic signals driven by time (ITS 1), to a variation of clocks (ITS 2), to a system with sensors that reflect real-time traffic flows, what is really happening (ITS 3). Joining-up several junctions results in a network.

But “ITS are the means, not the end”, Eric warns. Make clear what will be the definition of your policy (high level) goal and then set specific objectives and policies to deliver this goal. For example, if your policy is “better public transport”, choose for a set of processes (e.g. location-based services) and tools (digital mapping, position location & GPS, real-time information, etc).

“The technology is there”, but key questions should be: What are the benefits and what is the costs/benefits ratio?



## Looking back and forward

In the future, Eric Sampson expects that information will be part of the infrastructure. Today, the driver is in full control of the vehicle. In 3 to 10 years, the driver is expected to be in command rather than in control. In 10 to 20 years, he expects automated highways to become a reality: "users are passengers".

When he looks at the history of ITS, he concludes that social sciences have not been brought in early enough. His recommendation is to start with stakeholder engagement from the beginning.

## The Bologna case

### Fabio Cartolano, City of Bologna

Fabio Cartolano explains Bologna's urban traffic plan and particularly the Limited Traffic Zone (LTZ). The LTZ covers 3.2 km<sup>2</sup>, which is basically matching the historic city centre.

The aim of this measure is to reconcile mobility demand with the low capacity of the historic city centre, for traffic circulation and parking. In the past, this has often led to such heavy congestion that it distorts both architectural and environmental values and thus had a negative impact on the quality of life of the historic centre.

The LTZ access is based on an authorising system. Since 2005, the municipality has used an IT-based road user charging system called SIRIO involving the installation of 10 cameras at the main LTZ access points. Between 7 a.m. and 8 p.m. every day except Saturday, the system automatically issues fines to car drivers not authorised to enter the LTZ. All the streets which give access to the city centre are equipped with cameras in order to check if the vehicles accessing in the city centre are authorised. The cameras can read all car plates, check them with those contained in the database of authorised vehicles and, in case of violation, automatically send fines to the transgressors.

Inside the LTZ, there is another area called “T,” three main axes leading to the main square which are very important for public transport. In this area, restrictions are tighter than in LTZ and access is controlled by an IT system. Only motorcycles, disabled people, hybrid and electric vehicles, car-sharing vehicles and hotel shuttles are permanently entitled to enter the zone. Tickets were introduced to allow access to others on an occasional basis. This represents a flexible way to grant everybody (even if with several restrictions) access to the city centre. To avoid an increase in overall access to the LTZ area, such tickets are sold in limited numbers. There are two type of tickets: daily tickets (€ 5) and passes valid for four consecutive days (€ 12). Each month, only three daily tickets (or just one four-day ticket) can be validated for the same vehicle. These tickets can be bought by operators and citizens. For validation of the ticket, the holder sends a secret code and car plate number via SMS, web or call centre: if the process is valid, the vehicle is authorised to cross the IT camera control.

The LTZ was implemented in 1989, while a road user charging policy supported by an intelligent transport system (ITS) was introduced in 2005. Currently, access to the LTZ is regulated by the authorisation policy, which also includes a payment system. The road user charging scheme was launched in the context of the City Freight Delivery Plan (approved in March 2006). That plan was the key instrument through which the City of Bologna rationalised freight delivery in the city area.

A traffic control centre named Cisium has been developed to manage traffic in the entire metropolitan area. The main objectives of this measure are:

- to improve traffic control in the urban area;
- to provide real-time traffic information for citizens through different channels;
- to provide the municipality’s technicians with better traffic planning tools.

Cisium offers an integration of static data (cartography, mobility layers) and dynamic data (AVM, Utopia, VMS, parking information).

### **Impact**

Since the IT system was installed, the number of accesses to the LTZ has dropped with about 20-25%. Moreover, thanks to the introduction of these new road user charging initiatives, the number of freight operator permits has dropped with 27% while the number of total permits (operators plus citizens) has gone down with 10%.

Besides, it is a new way of working for the public administration to produce services like this and to present open data. This promotes real cooperation between public and private companies, universities and research institutes.

An example of this cooperation is the Infomobility project, which combines information about access permission, enforcement gates and car pooling and car sharing (See [www.wilab.org/content/infomobility](http://www.wilab.org/content/infomobility)).

In general, for the City of Bologna ITS saves money, optimizes efforts and creates a community of specialised users.

Future steps will be;

- join traffic monitoring and Infomobility contents;
- create a free Open Data repository;
- promote research and third-party development for citizens (apps, new services etc.)

One of the attendees remarks that ITS development is slow compared to ICT, because in the field of ITS “we only talk to each other”. Connecting devices with social media can be a good idea, as the Los Angeles example shows. When a busy freeway shut down, the Los Angeles

Police Department asked celebrities to join in its public service announcement strategy by tweeting the news of the closure to their fans. Tom Hanks and several other Hollywood celebrities joined this so-called “Carmaggedon twitter search feed”.

### ***Local challenges - From objective to measure?***

Prior to the training, participants had been invited to identify a particular ITS challenge from their own city that they wanted to discuss and receive feedback on during the break-out session. The overall focus of this interactive part of the training was to discuss and exchange on how specific ITS measures can be linked to concrete urban policy objectives.

Two real local challenges were presented, from Tallinn and Kaunas, and they were complemented with some hypothetical challenges that dealt with ‘real-life’ topics such as cross-border cooperation between operators (Ruse (BG)) and communication with and resistance from local shopkeepers (Salerno).

One recommendation coming out of the discussions was to invest in a dialogue between shopkeepers and the political level of your city. A challenge that is more difficult to overcome, is national legislation in one of the participating countries (Estonia) that restricts the use of personal and demographic data for public transport use and optimization.

## **Session 2: Exploitation and deployment**

This part of the training is mainly composed of a site visit to Bologna’s city centre and Lower Traffic Zone (LTZ). Special attention was paid to the University area, a semi pedestrian area in the north-eastern part of the city centre.

The Urban Traffic Plan of 2007 was the main instrument to realise a mobility change in the city of Bologna. This plan contains a broad mix of mobility goals: Reduce environmental and acoustic pollution, improve road safety, more use of public transport and less use of private vehicles, save energy in the transport sector, accessibility for all citizens and incentive less pollutant vehicles. ITS are one of the key factors to realise these goals, as Fabio Cartelano had already presented on the first training day.

SIRIO is the enforcement system for access in the LTZ:

- LTZ area: 3.2 km<sup>2</sup> (around the 80% of the city centre).
- Restrictions from 7 AM to 8 PM, with no restrictions on Saturdays.
- LTZ access control: 10 gates monitored by cameras.
- The number of LTZ Access Authorisations is around 60,000.
- A road pricing scheme for occasional access.
- The system automatically generates fines for transgressors.

RITA is the name of the enforcement system for access to bus lanes and the “T” and “U” Areas:

- Access control to the “T” Area (3 main central roads): 3 gates.
- Access control to bus lanes: 8 gates.
- Access control to the “U” Area (university zone): 2 gates.
- Control for cars and motorbikes.
- Restrictions are effective 24 hours a day.
- The system automatically generates fines for transgressors.

The University area is a semi pedestrian area (24 hours a day) with an enforcement system for motorbikes too. Access authorisation is only for residents and freight operators, but guests can get a free access ticket. Access is controlled by 2 cameras and some electronic pillars.

The ITS results since 2004 are:

- A decrease of 25% of unauthorised cars in the LTZ.
- A decrease of 30% in the three main roads in the city centre.
- A decrease 70% of unauthorised vehicles in “U” area.
- A decrease of 70% of unauthorised cars in PT dedicated lanes

Downside of the ITS scheme has been the increase in the number of motor vehicles in the city of Bologna, because motorists are allowed to enter the LTZ. While the trend for cars showed a decreasing line (1999-2009 minus 10%), the number of motor vehicles has risen from 28.000 to 52.000 in the same period (+86%).

### **Session 3: Monitoring and Evaluation**

#### **Devil and angel**

The final part of the training is taken care of by Steve Cassidy (MRCMcLeanHazel). He relates ITS to a broader perspective of understanding travel behaviour and lifestyle needs. Urban transport policy should help to realise successful cities, by improving their performance. To do that, a focus on individuals' needs is required: “Where is the real value for your daughter? What is really important for her?”

He shows some examples from the Canadian city of Toronto. The regional public transport company TTC introduced an Airmiles Reward Program for rewarding their customers, which led to a 57% increase in public transport use. And a café that provided real-time information on public transport on a television screen received more customers.

So “eat your peas”, give incentives and understand that value comes in understanding the individual segment, the needs of individuals and communities. Besides, focus on the fact that “the devil and the angel is in the detail”.

In small groups, the participants practiced the ‘Value Pyramid’ for intelligent mobility in their own practice and tried to identify some of these ‘angels’: What services could really be a reward for the (non) traveller, for other population segments or for other generations? As a reward for their creative brainwork, participants of this “Climb The Pyramid” game took home a small piece of Scotland from Bologna.

## Annex 1: List of participants

| <b>First name</b> | <b>Surname</b> | <b>City</b>            | <b>Country</b>  | <b>Organisation</b>                                    |
|-------------------|----------------|------------------------|-----------------|--|
| Denis             | Barbieri       | Bologna                | Italy           | Regione Emilia Romagna                                 |
| Dubravko          | Baricevic      | Zagreb                 | Croatia         | Zagrebaki Elektrini Tramvaj                            |
| Mauro             | Borioni        | Bologna                | Italy           | City of Bologna  |
| Pierpaolo         | Campus         | Milano                 | Italy           | AMAT Milano<br>(Mobility Environment Territory Agency) |
| Fabio             | Cartolano      | Bologna                | Italy           | City of Bologna  |
| Steve             | Cassidy        | Edinburgh              | UK              | MRC McLean Hazel                                       |
| Paolo             | Confalonieri   | Monza                  | Italy           | Project Automation SpA                                 |
| Guido             | Di Pasquale    | Senigallia             | Italy           | Pluservice SRL   |
| Katerina          | Dimushevska    | Skopje                 | Macedonia       | JSP Skopje   |
| Vygintas          | Grinis         | Kaunas                 | Lithuania       | Kaunas City Municipal Administration                   |
| Ana               | Gruevska       | Skopje                 | Macedonia       | Public Transport Enterprise Skopje                     |
| Anu               | Kalda          | Tallinn                | Estonia         | Tallinn Transport Department                           |
| Srecko            | Krznaric       | Zagreb                 | Croatia         | Zagrebaki Elektrini Tramvaj                            |
| Tiit              | Laiksoo        | Tallinn                | Estonia         | City of Tallinn  |
| Giuseppe          | Liguoni        | Bologna                | Italy           | SRM  |
| Rick              | Lindeman       | Utrecht                | The Netherlands | NL Agency  |
| Raymond           | Linssen        | Utrecht                | The Netherlands | NL Agency  |
| Miklos            | Marton         | Budapest               | Hungary         | Regional Environmental Center                          |
| Fiona             | McLean         | Barcelona              | Spain           | Best Practice Mobility                                 |
| Branko            | Mikinac        | Zagreb                 | Croatia         | Zagreb Holding, Branch Zagreb Electric Tram            |
| Bruno             | Pereira        | Porto                  | Portugal        | City of Porto  |
| Dora              | Ramazzotti     | Bologna                | Italy           | SRM  |
| Imre              | Saar           | Tallinn                | Estonia         | Tallinn Transport Department                           |
| Eric              | Sampson        | Newcastle              | UK              | University of Newcastle                                |
| Bárbara           | São Martinho   | Porto                  | Portugal        | City of Porto  |
| Sonata            | Senkiene       | Kaunas                 | Lithuania       | Kaunas City Municipal Administration                   |
| Pascal            | van den Noort  | Amsterdam              | The Netherlands | Velo Mondial   |
| Karen             | Vancluysen     | Brussels               | Belgium         | Polis  |
| Daniela           | Vasari         | Marzocca di Senigallia | Italy           | Pluservice   |
| Carolina          | Vastola        | Bologna                | Italy           | Clickutility   |
| Silvia            | Zamboni        | Bologna                | Italy           | Ervet / Regione Emilia Romagna                         |

## Annex 2: Evaluation

### Participants

The training was attended by 30 participants, including staff and trainers. Of these 30 participants, 13 had completed the quick scan during registration and 13 filled in the evaluation form after the training.

### Expectations participants

During registration each participant had to fill in some questions about their level of experience on the topic of ITS, if they have ever been involved in setting up ITS applications and about their expectations for the training.

The quick scan revealed that the training on ITS in Bologna would be attended by a heterogeneous group of participants in terms of level of experience. 40% of the respondents have no or only limited experience in ITS applications but the remaining 60% is highly and medium experienced. Also, 60% of the respondents have been involved in the implementation of ITS applications once or a few times whereas 25% never have.

In 71% of the cities of the respondents, there are already ITS applications implemented and in 21%, it is planned to be implemented.

Almost all participants (83%) wanted to get to know practical examples during the conference. Learning about theoretical models and doing practical exercises is for the half of the respondents a learning request.

### Evaluation training

Each participant was asked to fill in an evaluation form during and after the training and to hand it in immediately. We received 13 completed evaluation forms. This is a response rate of 45%.

### Content evaluation

The participants gave a very good evaluation of the content of the training. 69% of the participants evaluated the content as being very good and the remaining 31% found the content as good (see Figure 1). All of them would also recommend the training to others (see Figure 2). 85% of the participants agreed that the proportion theory and practice during the training was properly balanced (see Figure 3).

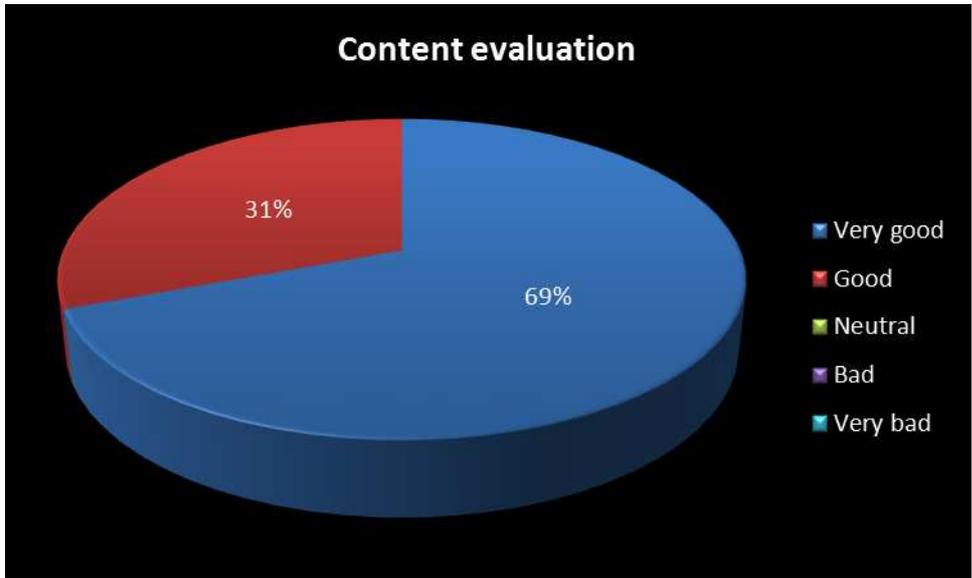


Figure 1: How do you value the training in terms of content?

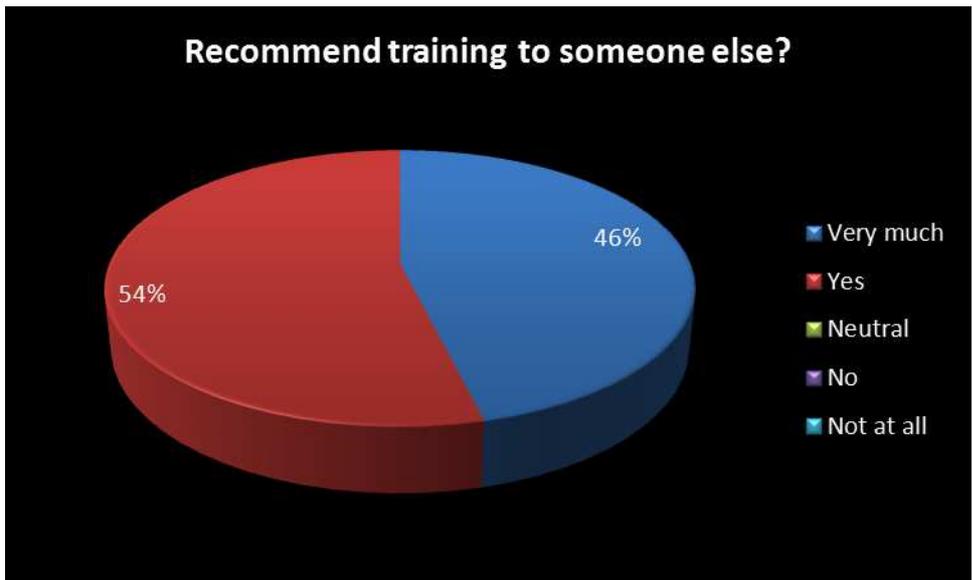
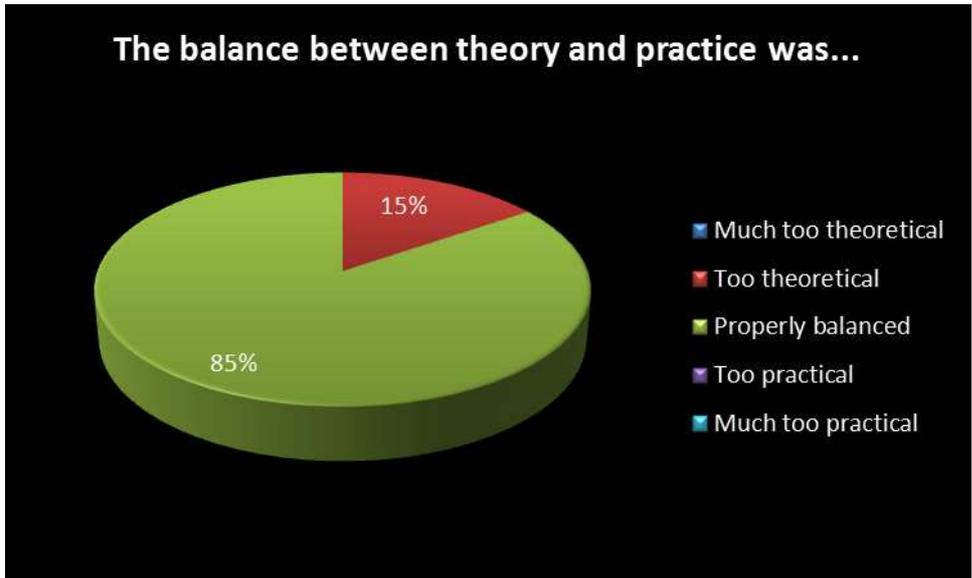
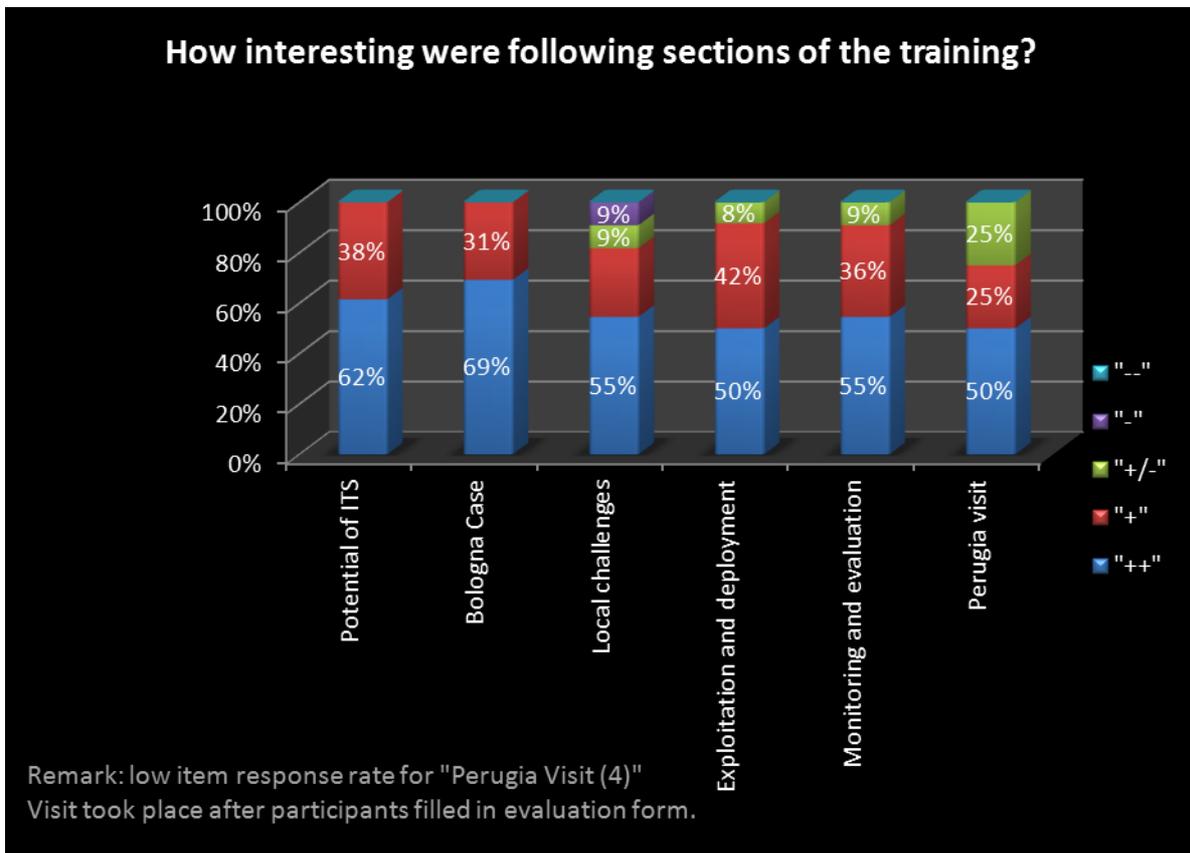


Figure 2: Would you recommend the training to someone else?



**Figure 3: The balance between theory and practice**

Figure 4 shows the content evaluation per section of the training. Only the local challenges received a low percentage of neutral evaluation. Comments here were: 'Too short' for the potential of ITS, 'Too short' for the local challenges and 'Too long' for the Bologna case.



**Figure 4: Content evaluation per section**

Participants were asked which parts were most useful, which parts were of little use and which improvements could be made.

The potential of ITS was four times mentioned as the most useful. Also the Bologna case was mentioned twice. Monitoring and evaluation was mentioned once. Exploitation and deployment was also mentioned twice. Another part mentioned was: 'practical part'. Two respondents even said that everything was useful.

Only two respondents named parts that were of no use for them: 'Local challenges' and 'Monitoring and evaluation'.

Suggestions for improvements and changes were as follows:

- Improve timing. Day 1 was spoiled by wrong lunch timing.
- During a site visit, please take care not to lose members of the group. It is strange to be lost in an unknown city...
- Better time keeping.
- Better, clearer and louder presentations from speakers.
- More practical issues/exercises.
- Give more practical cases, including arguments why it was done.

### Event evaluation

The next figure (Figure 5) shows the evaluation of the event by the respondents. Almost all of the aspects are evaluated as +, ++. Only pre-event information (9% "-"), and practical organisation (8% "+/-" and 8% "-") received some comments.<sup>2</sup>

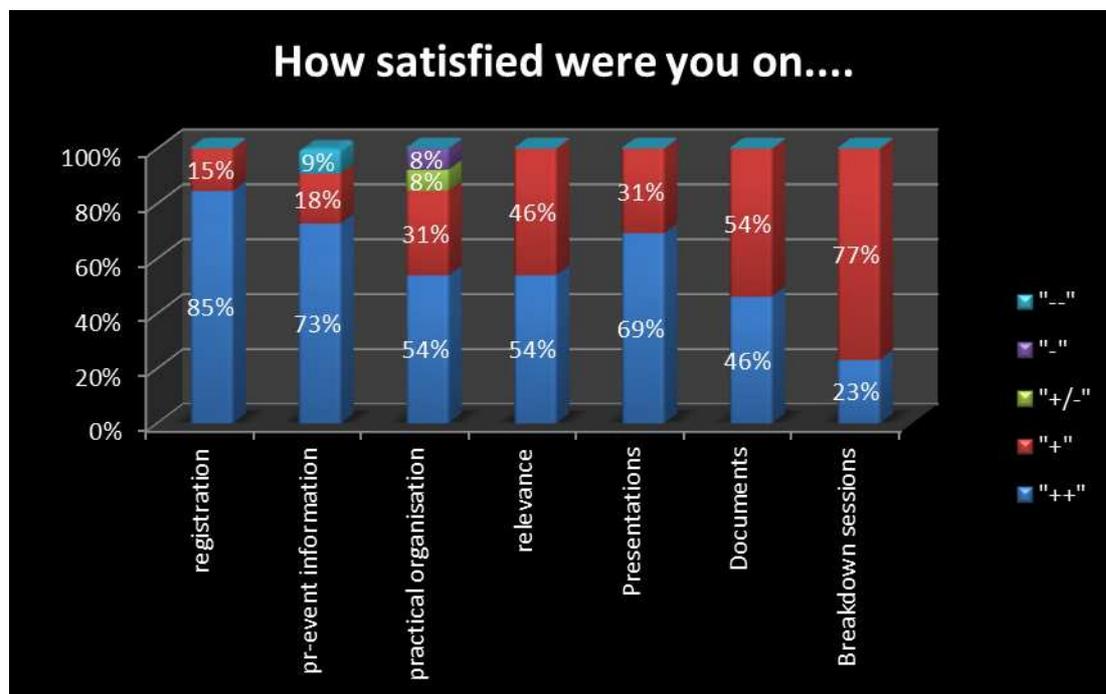


Figure 5: Level of satisfaction of several aspects of the event

<sup>2</sup> There was a general strike on the 16th of December in Italy, which caused some practical problems for the training.

## Impact evaluation

In order to be able to evaluate the impact of the training, participants were asked whether the training had allowed them to acquire the competence(s) they expected to acquire (process), whether the acquired competences were applicable to their professional situation (performance) and whether they would allow them to change or improve the current situation in their city/organisation (impact).

Figure 6 provides an overview of the responses to these questions. As you can see in the figure, the training did have a high impact on the participants.

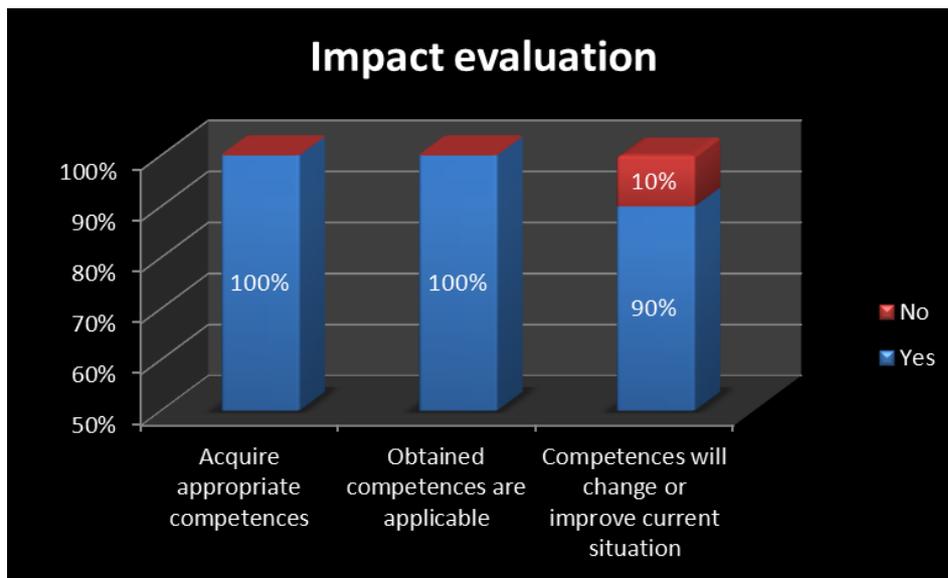


Figure 6: Impact evaluation

Comments that were made on 'Acquire appropriate competences':

- 'I've got precious information that enriched my competences'.
- 'Sharing experience is always very useful'.
- 'It helped to learn what was done in Bologna and what is going on in other cities'.

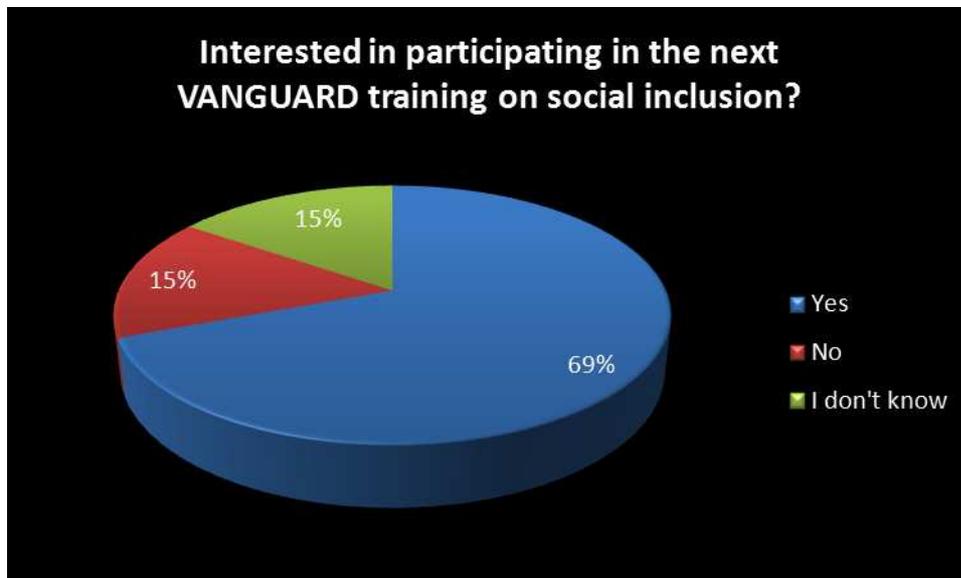
Comments that were made on 'Obtained competences are applicable':

- Because I deal with ITS. Now I can speak in terms of communication in order to gain citizen acceptance.
- I'm working on ITS applications so the obtained competences are applicable.
- As we will be preparing documents to start on establishing ITS, the competences are applicable.

Comments that were made on 'Competences will change or improve current situation':

- Share the knowledge with other colleagues.
- It is a political decision and not a technical decision.
- Not all things can be obtained during one training.

## Next training



**Figure 7: Next training**

As can be seen in Figure 7 69% of the participants are interested in participating in the next VANGUARD training. 15% indicated 'I don't know'. The most important reason here is that participants can't decide themselves.

### **Conclusions**

The training on ITS has received a good evaluation. The content as well as the event itself, received very positive responses. The training has also left an impact on almost every participant. It allowed them to acquire the competence(s) they expected to acquire and these competences can be applied to their professional situation. 90% of the participants even stated that these competences will enable them to change or improve the current situation in their city/organisation.

If anything, the practical organisation received some comments. Timeline, starting and ending on time is appreciated.