



IFM
PROJECT
INTEROPERABLE FARE MANAGEMENT

UITP IFM Forum annual report 2008

Deliverable 6.2a, version 2

March 2009

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| Grant Agreement number: | IST-2007-214787 |
| Project acronym: | IFM PROJECT |
| Project title: | INTEROPERABLE FARE MANAGEMENT PROJECT |
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0 About version 2 (management aspects included)

Directly after the mid term review meeting, UITP was asked to update this deliverable with the information as given in the mid term presentation of WP6 to better reflect the management aspects.

As a note to the reader: exactly this type of information has and had been submitted also in a document called "UITP periodic report". As not everyone may have access to this file, the content is repeated here.

0.1 A summary of progress towards objectives & details for each task

The objectives of work package 6 are:

- to monitor
- to discuss and
- to give advice to WP 1, 2, 3, 4 and 5 to ultimately approve (on the basis of consensus and no objection) the overall project result

Task 6.1: Consensus Building through UITP IFM Forum- Role of IFM Forum Members

In 2008, two of four planned UITP IFM Forum meetings have taken place as planned:

- Rome (10/11 March 08, hosted and sponsored by ASSTRA and ATAC)
- Lisbon (21/22 October 08, hosted and sponsored by LINK and all local operators)

In order not to repeat information, details on programme, agenda, and participation can be found in the minutes (deliverables 6.1 a and b). Presentations are freely available on request (This is a common UITP procedure since the attachments may be very heavy and many).

Participation has gone up from 18 (8 of the project) to 34 (11 of the project); down from 11 countries to 9; invitations have gone up from around 30 to 250 (For Delft, 300 invitations). There is a small core of people since the first Forum in 2007.

Major response came from Italy, Portugal, Netherlands, Sweden/Denmark, Japan and Austria. There were many discussions and questions but knowledge exchange went mostly one way. There is a huge difference in levels of knowledge among the forum members. The level of expertise (with the exception of TLS and a few others) is not up to par with that of most Project members. Most of them are there to listen and learn. There has been interest and (neutral) involvement from the industry (ao Gemalto and Scheidt&Bachmann) and consultants.

For most participants, the UITP IFM Forum is an important networking platform, for others it is like a "Master Class".

Two similar IFM Forum meetings are planned for 2009

- Delft (31 May/1 April) hosted by TLS and NEN.
- Vienna (20-22 October) hosted by VOR.

Task 6.2: Consensus building through UITP IFM Forum- Role of UITP and other IFM Project partners

For both Rome and Lisbon, UITP has organised:

- Combined project meeting + forum meeting + lunches + coffees + dinner + technical visit.
- Agenda, programme, invitations, registrations, hotel and travel recommendations
- Afterwards it has collected the presentations and written the minutes (deliverable 6.1 a, b).

The Project members have given presentations on their work packages (introduction, clarification and progress of work packages). The nature of their approach has changed for each Forum meeting according to the specific needs.

Thus far there has been good contact between the Forum and the Project, mainly simply because both attend and act at each others meetings!

Organisation of other related events/actions in 2008:

- UITP IT working bodies reporting (ITI Commission and ITSI Committee with representatives of VDV-KA, Calypso, CLUB and kontiki)
- Reporting at several other UITP working bodies (like the Security Commission)
- Study tour to Tokyo (marketing and ("interoperable") eTicketing Suica)
- Answer to the EC consultation on Air-Rail ticketing integration
- Network opportunity with new boss VDV-KA
- Organized a speaking opportunity for IFM Project at UITP World Congress. This was not an easy task since there could only be one IT session.
- A separate UITP IFM Forum web site was set up which was later hacked. Today there is information about the Forum on UITP's web pages under the topic of Projects. (Note: a web site is not a contractual obligation).

Organisation of other related events/actions in 2009:

- UITP World Congress and Exhibition (June)
- continued UITP (IT) working bodies reporting
- Publications in PTI (UITP's magazine, March, June)

Organisation of other related events/actions in 2010:

- continuation of the IFM Forum
- support / involvement IFM 2
- IT-TRANS 2010 + UITP IFM Forum publication

Task 6.3: Presentation of IFM Project outcomes in UITP IT-TRANS conferences

The topic of IFM was addressed in two of the five main sessions of IT-Trans 2008:

- The first session "From fare management to interoperable fare management" looked at interoperability in a broader perspective (London, Toronto, Tokyo and a presentation on fare policies in the eTicketing era).
- The second session "National interoperable fare management approaches" was dedicated to National IFM schemes with three speakers of the IFM Project (Calypso, VDV-KA and ITSO) and the Dutch OV-Chipkaart case.
- The IFM Forum itself was presented in a Workshop „eTicketing integration“

- Two key note speakers addressed the security aspect of eTicketing (relating to privacy and trust) “Theory of threats and precautions” and “Practical issues of risk management”.

IT-Trans 2010 will again have one IFM Project dedicated session, this time to present the results of the IFM Project.

A UITP Information Technology web site “information-technology.my-uitp.org” is in a testing phase which will also report on the IFM Project and Forum. This is however still (as it was last year) awaiting official approval as it deals with corporate identity and a possible change in strategy.

0.2 Clearly significant results

Within the IFM Forum (task 6.1) much selected information has been exchanged, although mostly one-way, and many discussions have taken place, both in and around the Forum meetings. Especially the topic of Privacy has raised enormous interest.

Currently, the list of invitees counts almost 300 handpicked, mainly however German and French stakeholders (but all others are represented as well: CLUB, ITSO, TLS, CALYPSO, VDV, Denmark, Norway and even SUICA). Although there is a hard core of returning Forum members, many join only once. The size of the group attending has however been increasing over the last three IFM Forum meetings.

The IFM Forum meetings have shown that there is an interest but that the backgrounds of the participants differ greatly resulting in an “imbalance” in the depth of the discussions. There has been impatience with some about the results produced and disbelieve that the Forum could actually influence the Project. Most people however, seem to be taking the platform as an opportunity to learn and get familiar with all aspects which they might face someday.

The most important result however as trivial as it may seem (and this is my personal opinion) is the conclusion that for many, the different “national” schemes have gotten a human face. This personal contact is clearly facilitating and benefiting mutual understanding and the will to possibly cooperate in finding solutions!

In task 6.3 especially the IT-Trans conference has created strong awareness among a large international audience around the topic of security and the need for interoperability. The conference clearly left the notion that all systems need to be “upgradeable” in their level of security (note: the OV-Chipkaart had just been hacked).

Latest (as an example): UITP has been approached by a large city “far away” currently going out for tendering an eTicketing system based on a European model (after the current model collapsed)! For several reasons UITP can not reveal the name yet. Project members have been providing advice through UITP.

0.3 Deviations

In the beginning it was difficult to find potential participants for the IFM Forum. This is probably due to the low number of real “experts” on this subject; the many different levels of national and local implementation; the low awareness of the need for interoperability, open source, etc. It seems that the number of persons,

who actually understand, for example security of their own scheme and that of another, can be counted on two, maybe four hands!

Also, in the beginning, the Consortium was divided in its opinion to just invite everyone or only selected people. The latter overcame the former and now over 300 handpicked people or on the list of invitees.

The nature of the interaction between Forum and project is changing. This has everything to do with a) the progress of the project and b) the knowledge level of the participants.

There has been very little informal exchange of information in which UITP has had to play a role. There are signs that this is starting now (more requests coming in) but up to now, most informal contact has been directly between WP leaders and Forum members.

0.4 Failing to achieve critical objectives

All critical objectives have been achieved (with the exception maybe of having a link from UITP's homepage to the IFM Project web site (no links directly from the homepage allowed!).

UITP has stayed well within the resources allocated to travel.

UITP labour costs (see more complete explanation elsewhere) are at maximum used up for 2/3. Without taking into account the costs of one assistant, the percentage is little over 50% used. In MM however, 4 of 4.4 have been used (2.9 if the assistant is not taken into account). The labour budget however, allows for almost 6 MM instead of 4.4 since the hourly labour rates are lower than anticipated. With the remaining resources, UITP will still be able to fulfil its tasks.

It should be mentioned that Yves Amsler is working free of charge as is Manfred Novy, the Chairman of the Forum. The same is true for the forum members and the local hosts.

The budget for experts (paying Forum members for their involvement) has been untouched. A first batch of it was intended for attracting participants from CEEC's (400€pp) but nobody applied. For Delft this amount has been increased to 600€pp and invitations have been personalised. Reactions have come in but nobody has yet accepted (UITP of course tries to detect less serious requests).

0.5 Corrective actions

As mentioned, the planned interaction between the Project and Forum members at Forum meetings has been adjusted to a more fitting and viable concept due to the low "level of expertise".

Furthermore, this time, the Delft IFM Forum will be completely dedicated to presentations and workshops by the work package leaders and will not have slots for "outsiders".

From now on, deliverables will be made available before Forum meetings on request / download.

1 Introduction

Two UITP IFM Forum meetings have been organised in 2008:

1. Meeting #2 in Rome, 11 - 12 March 2008, hosted by ASSTRA, sponsored by Met.Ro, technical visit by ATAC (public transport authority).
2. Meeting #3 in Lisbon, 22 - 23 October, hosted by LINK Consulting, sponsoring and technical visit by LINK Consulting, Carris (bus operator), Metro Lisboa, Comboios de Portugal (regional rail) and Transtejo (ferries).

Both meetings were held on the first day followed by a sponsored dinner and a technical visit on the second day.

Agenda, participants list, programme, presentations and minutes of both meetings have been made available already. This report inevitably repeats the content of these documents!

Associated information is available from the informal quarterly reports and the financial documents.

2 UITP IFM Forum meeting in Rome

2.1 *Participants*

Of the IFM Project, John Verity, Till Ackermann, Michel Arnaud and Oliver Althoff attended. Arnaud Pelletier and Jean-Louis Graindorge had to be excused due to health problems as was Gilles the Chantérac who had to attend to his mother. Phil Blythe and Hanna Bryan had another engagement in Japan.

From the IFM Forum, Manfred Novy, Yves Amsler and Johan van Ieperen attended. Both Chairman of UITP's IT Commissions had to be excused.

Following 13 IFM Forum members attended (10 countries):

- Stephan Helmreich, Austriatech, Austria
- Veli Heikkinen, Helsinki Metropolitan Area Council, Finland
- Gábor Rozsnyai, Traffic Card Center, Hungary
- Emanuele Proia, Asstra - Italian Public Transport Association, Italy
- Joao Miguel Carreira Almeida, LINK Consulting, Portugal
- Koen van de Putte, Syntigo, Belgium
- Ralph Gambetta, Calypso Networks Association, Belgium
- Jochem Baud, TransLink Systems, The Netherlands
- Rossella De Maria, ERG Transit Systems, Italy
- Nando Novelli, ERG Transit Systems, Italy
- Naoya Koide, Japan Rail East, Japan
- Margareta Berg, Swedish Public Transport Association, Sweden
- Jaap de Bie, Trans Link Systems, the Netherlands

Some 120 people, mainly French stakeholders, had been invited; 24 of them replied with interest but that they would not be able to attend.

2.2 Agenda

Following (main) points were on the agenda:

- Presentation host ASSTRA (eTicketing in Italy) Proia
- Foreword by the Forum Chairman (background, goals, process, etc) Novy
- Why an Interoperable Fare Management Project and Forum? Amsler
- Introduction and "Progress Report" on the IFM Project Verity

- WP 1 - Trust Management Model Verity
- WP 2 - Privacy Model Arnaud
- WP 3 - Application and Interoperable Media Verity / Arnaud
- WP 4 - IFM Organisation Ackermann
- WP 5 - Back Office IT System Ackermann

2.3 Minutes

Following is a selection from the minutes.

Manfred Novy was elected as the Chairman of the UITP IFM Forum during the 1st UITP IFM Forum where he took over from Jarl Eliassen, the Chairman of UITP's Information Technology and Innovation Commission. Manfred Novy is the interface between the IFM Project and the IFM Forum. He is assisted by Johan van Ieperen from UITP and Yves Amsler seconded by RATP to UITP as Euro Team Expert and Advisor to the UITP Secretary General.

Manfred Novy explained the eTicketing situation in Austria and how it has chosen to hook up with VDV-KA but operators are free to choose. However, only when they choose the recommended scheme will they be eligible for funding.

Emanuele Proia gave a short presentation about ASSTRA. There is no national scheme for electronic ticketing in Italy yet but ASSTRA wants to promote it, hence their interest.

Jochem Baud stated the 'new' approach that the Netherlands / TLS (Trans Link Systems) has towards the IFM Project which can be characterized as 'Expert role'. Their main focus for this role is in WP3 (Application and Interoperable Media) and WP5 (Back Office IT System).

Manfred Novy gave a long but rather necessary introduction. The aim of this paper was to stress the importance of the IFM Project work and the involvement of the Forum Members. The approach was to translate the Working Package topics into questions free of jargon and to arouse the interest of the Forum Members.

There was some criticism about the little progress the IFM Project had made and that the Forum had nothing much concrete to comment about. Furthermore, questions were asked as in how far the Forum actually will have any influence in the work of the Project.

Yves Amsler also mentioned that it is our job to identify other areas that need to be developed and that these might possibly lead to proposals for other EU Projects on a bigger scale. This should be one of our aims (for example on the topic of Privacy and the needs for Public Transport Operators in light of fare management/electronic ticketing).

The IFM Forum and Project are also important for the IFM stakeholders to protect their interests especially since most European developments are strongly influenced by non public transport actors in general and by non local and regional public transport actors in particular. This is our chance to make a claim and to not be swallowed by laws and directives tailor made for private cars or high speed rail (e.g. 3rd Railway Package and TAP-TSI).

WP 1 → John Verity mentioned that the trust model is in many cases closely related to the privacy model

Jaap de Bie mentioned that there is a good document with guidelines and procedures on handling risk: TR 13335 (Technical Guideline) "Management of information and communications technology security".

There is also an interesting document from BSI (Das Bundesamt für Sicherheit in der Informationstechnik) which is called: „ Technical Guidelines for Implementation and Utilization of RFID-based Systems“. UITP and VDV have links to BSI and will try to obtain a copy of this German document and to see if there is an English version.

WP 2 → Michel Arnaud asked the Forum Members many questions and he agreed to bundle them and to send them to everyone of the Forum. He mentioned the fact that very few answers were coming in from his G29 request (Gilles de Chantérac had presented in 15 minutes the IFM Project and the Privacy Model issue before the G29 (representatives of the EU Commissioners).

For them it is clear that the link between Personal Data and Transit Data has to be cut (according to the concept of anonymity). There is actually already a paper (with rules) on this subject from one of the G29 working groups. The content of this paper is probably not very encouraging ("you have the right to be invisible in eTicketing").

It was also argued that the rules can never be interpreted so stringently because how can e.g. VISA otherwise do its work in these conditions, or telephone companies with monthly invoices? The observation was made that the G29 and Operators are "worlds apart" and the IFM Project is sitting in between and has to know the specific needs to establish the consensus finding process. IFM Actors have to create their own space.

The topic is going to be very difficult because many factors appear to be against our well intended purposes. For example: on average 80% of the French population is against someone knowing their personal data (How is this in your country?). The longer you can keep your data the better will your predictions be (how long can you keep your data?). Comparisons to Face Book (is the data deleted when your resign) and Google (keeping the data 18 Months instead of 30 years) were made: ("we keep it in case you come back to us"). According to the G29, even the chip number is personal data!

TransLinkSystems has a Handbook with their principles on Privacy. Privacy principles, as a part of the Roles, Rules and Regulations of any IFM project, have indeed been defined for the Dutch IFM scheme as well. The Handbook that contains these principles is however considered private and therefore cannot be distributed. Public privacy statements can be found on the website of TLS and the OV-Chipkaart (www.translink.nl and www.ov-chipkaart.nl). This does not limit TLS's cooperation in regard to WP1 as it does not require distributing the Handbook.

Gábor Rozsnyai mentioned that it is more important to define what you will/can do with the data than how long you can keep it. In this respect the “Hash Code” was discussed that can separate Personal and related Transit data but keeps a code that allows repairing the broken link in order for trusted partners to provide services (like sending a specified invoice to the customer). Till Ackermann mentioned that it will also make a difference when the customer agreed to sign a “contract”. Stephan Helmreich made a case for defining which data would have to be kept and what it could be used for: are there known formats for Operators?

More remarks: Privacy is very much an issue of lawyers versus business, system and company rules; In some cases you will have to prove that you are not doing anything against the rules; to prevent a political storm it might be better not to print names on the cards nor in electronic form; what about the tracking and tracing issue; digital signatures might bring solutions but so far required minimum transaction times will not allow for it; transferability of the media versus the owner; how the laws are “lived” can be different; are the privacy laws well adapted to the fast moving developments; payments are always connected to a person (or entity).

WP 3 → This WP was skipped (due to health problems of WP leader).

WP 4 & 5 → Till Ackermann gave a combined and brief presentation of WP 4 and 5.

It was discussed that the focus on business rules is also true and important for other working packages. As mentioned before, the IFM Project should maintain an oversight of the interfaces and overlaps and consider the holistic approach (the overall architecture).

Jochem Baud argued that it is difficult to give the answer within the intended frame of reference. Since each IFM scheme uses terminology that is local to the scheme, and most of the experts of IFM systems know most about their own architecture and scheme, it is likely that people answer from within their own frame of reference and can only guess about the intended frame of reference. He suggested to, at least, work through the list of questions and answers with each respondent, to synchronize minds and bring nuance to the answers. This remark on interpretation was not specifically for the questionnaire of WP4, but for any questionnaire that will be sent.

Jaap de Bie mentioned the fact that all WP’s will deliver ‘business rules’ of some sort. Although it was not established that there will be a deliverable ‘Business Rules’, there was consensus on the fact that the projects groups should coordinate to make these business rules clear and consistent. This discussion was left alone at that stage. Jochem Baud suggested that this coordination is formalized at some point. If this falls outside the scope of the project and funding thereof, TLS-OT (= Open Ticketing) offers to play a part in this.

WP 7 → It was argued that the Forum should be “sold” better to the outside and that for this we need arguments why IFM is an issue that should be on the agenda of everyone. People have to be convinced of the benefits of interoperability. The Forum Members can support the dissemination (for example with figures) by listing these benefits.

2.4 *Technical visit*

The technical visit was very well organised and with a large team, ATAC (The Rome Mobility Agency) presented their very highly developed system.

Gianluigi Di Lorenzo and two of his colleagues presented: "The evolution of Rome's AFC system integrating new ticketing and payments methods on smart card".

- Saluto di benvenuto (Dott. Maurizio Milan, Responsabile Direzione Bigliettazione Elettronica Atac SpA)
- Presentazione Atac, Agenzia per la Mobilità (Ing. Fabio Nussio, Responsabile Sviluppo Attività Internazionali Atac SpA);
- Sistema tariffario integrato Metrebus (dott. Benedetto De Angelis, Direzione Commerciale Atac SpA);
- Coffee Break
- Ruolo di Comune e Regione nella predisposizione delle tariffe (dott. Benedetto De Angelis, Direzione Commerciale Atac SpA)
- Tecnologie utilizzate nel sistema di bigliettazione; Tipologie di card e aspetti legati alla sicurezza; Sistema di integrazione tariffaria, clearing e progetti di interoperabilità tariffaria (ing. Gianluigi Di Lorenzo, Direzione Bigliettazione Elettronica e manutenzione
- Atac SpA);
- Visita alle apparecchiature di bigliettazione elettronica
- Fine lavori

2.5 *Available presentations*

Following presentations/files are available:

- This is ASSTRA.ppt
- IFM Forum foreword Novy.doc
- Why an Interoperable Fare Management Forum and Project
- WP 1 - EU-IFM Forum Mar08 presentation.ppt
- WP 2 - Privacy model Rome Michel Arnaud.ppt
- WP 3 - IFM - Project WP3 Application and interoperable media.pdf
- IFM Forum Rome WP4 und WP 5-0_v01.ppt
- ATAC / ATAC Information Technology & Innovation Commission.ppt
- ATAC / Presentazione_R11B.ppt

3 UITP IFM Forum meeting in Lisbon

3.1 *Participants*

Of the IFM Project, John Verity, Till Ackermann, Michel Arnaud, Oliver Althoff, Jean-Philippe Amiel, Gilles de Chantérac, Jean-Louis Graindorge and Francois Guillaume attended. Peter Stoddart was excused.

From the IFM Forum, Yves Amsler, Johan van Ieperen and Sian Lewis attended. Manfred Novy had to be excused due to hospitalisation. John Verity and Yves Amsler took over the role of IFM Forum Chairman. Jarl Eliassen, Chairman of UITP's ITI Commission was excused.

Following 23 IFM Forum members attended (9 countries):

- Almeida, João, Link, Portugal
- Berg, Margareta, Resekortet Sverige, Sweden
- Braz, Jacinto, Neves & Neves, Portugal
- De Bie, Jacob, Translink Systems, Netherlands
- Faro, Frode, Interoperabilitetsjenester As, Norway
- Ferreira, Joaquim, Transportes Terrestres, Portugal
- Figueira, Celeste, Transportes Terrestres, Portugal
- Gomes, Carlos, Transdev, Portugal
- Heikkinen, Veli, Tmi Veli Heikkinen, Finland
- Iwatsu, Keiko, Jr East, Japan
- Jebson, Andy, Scheidt & Bachmann Uk, United Kingdom
- Jimenez, José, Gemalto, Spain
- Kitamura, Kimihiro, Jr East, Japan
- Koide, Naoya, Jr East / Uitp, Japan
- Le Droumaguet, Dominique, Gemalto, France
- Mata, Filomena, Transportes Terrestres, Portugal
- Morishima, Yasushi, Jr East, Japan
- Moura Amaral, Antonio Pedro, Neves & Neves, Portugal
- Pham, Lucie, Veolia Transport, France
- Pinheiro, Antonio Sergio, Transportes Terrestres, Portugal
- Prieto, Cristina, Cp- Comboios De Portugal, Portugal
- Ramos Da Cunha, Alberto, Link, Portugal
- Ribeiro, Georges, Urge - Serviços, Portugal

Some 250 stakeholders had been invited; only 9 of them replied with interest but that they would not be able to attend. Besides the core of the Forum members, mainly people from Portugal visited the Forum for the first time. There was a large interest from Japan (SUICA/PASMO).

A group of handpicked potential participants from the CEEC's were offered 400€ reimbursement for their travel costs. No reaction was received.

3.2 Agenda

Following (main) points were on the agenda:

- | | |
|---|------------------------|
| • Presentation by host LINK | Almeida |
| • Brief Introduction and "Progress Report" on the IFM Project | Verity |
| • RKF-specification and status in Sweden and Denmark | Berg |
| • Fare Media Structure interoperability, Gemalto | Le Droumaguet |
| • WP 3 - Application and Interoperable Media | Amiel |
| • WP 4 & 5 - IFM Organisation - Back Office IT System | Ackermann |
| • Presentation on the Trans Link Systems Handbook | de Bie |
| • WP 1 - Trust Management Model | Stoddart |
| • WP 2 - Privacy Model | Arnaud |
| • Suica and Pasma Privacy and Interoperability | Morishima and Kitamura |
| • Your favourite potential EU projects related to IFM | Amsler (tbc) |

3.3 Minutes

Following is a selection from the minutes.

João Almeida of LINK Consulting presented the contactless ticketing system in operation in Lisbon. The system is operated by the OTLIS Consortium, comprising both private and public operators... devised a unified mission, decided on the appropriate technical solution and built a business approach. One important element was the branding of the system, which comprises 20 public transport operators. Different cards exist, including one card for infrequent travellers and tourists and another personalized card for monthly passes. Cards can be reloaded through a network of retailers and also through ATMs and online. The OTLIS global architecture comprises a management service centre to handle shared resources and is linked to the back office system of each transport operator. It also includes an embedded framework for terminals, meaning that terminals can come from any provider. The business model is such that the scheme generates profit for the operators themselves and not for the consortium. The Smartcities scheme sees the Lisbon smartcards used for other mobility and municipal services (such as parking and car sharing). Plans are underway to integrate the Smartcities embedded framework into the ticketing equipment. Future developments include plans to introduce a joint bank and PT card (EMV contactless smartcard) and NFC phones.

The guiding principle of the IFM Project is based on the UITP vision of seamless travel throughout Europe, as expressed in the publication "Everybody Local Everywhere". The Project is also firmly rooted in the ISO IFM standard, published in July 2007. The Project partners are now also looking to "IFM II" and will be putting a new project proposal to the European Commission. For the second phase of the Project, more funding will be available but new partners are also needed in order to contribute funding. Forum members were invited to contact UITP if they were interested in being part of IFM II.

- **WP 1** → So far, work has focussed on defining how the various IFM stakeholders can build trust. One conclusion is that the focus must not just be on technical matters, as business and commercial trust is also very important.

Also, the concept of security does not relate only to external attacks. It also involves elements such as system availability, integrity and reputation. Equally, it also relates to protection against internal system failures and internal attacks.

Gilles de Chantérac noted that security of the card and the reader is important but there is also a need to secure the internal back office systems from internal or external attacks and from internal failure.

- **WP 2** → Currently, two conflicting trends can be observed, namely the trend towards the provision of increasingly personalized services and the growing demand for protection of personal data.

Legal framework in Europe: EU Directive 95/46 concerns the protection of personal data. The key elements of the Directive are:

- Focus on reduced data retention period
- Requirement to guarantee anonymity
- Control of interconnection between data files
- Protection of the right to access one's own personal data

The G29 brings together representatives of national data protection agencies in the EU to analyse the implementation of article 29 of the above Directive.

A G29 Working Group has issued recommendations which include:

- Recommendation of privacy impact assessments
- If anonymity cannot be guaranteed, then transparency must be
- Data minimization and reduced retention period
- Protection measures to prevent hacking of personal data

In an e-ticketing system, one major concern is the need to prevent personal data being linked to transport data and to the card itself. However, personal data needs to be retained for administrative and commercial reasons.

ISO Standard 24014: In terms of privacy, the ISO Standard recommends that only relevant personal data should be taken and that the customer must have a choice as to whether they wish to provide this data.

Members expressed their belief that the transport industry must define its specific needs in terms of the use of personal data, despite the different approaches applied in different countries. This will allow the industry to be strong in the face of privacy authorities.

Forum members were invited to complete the questionnaire on privacy. However, some members expressed concern that they had been unable to complete the questionnaire due to its complexity, as it relies heavily on terminology used in the ISO standard. It was agreed that telephone interviews with Michel Arnaud could be carried out. Also, a simplified version of the questionnaire will be produced, along with instructions and model answers, in order to facilitate the process.

- **WP 3** → The aim of this WP is to specify IFM from the customer media point of view. Work so far has defined two subsystems of the fare management system in an IFM system:
 - Organisation subsystem - This can be online or offline and can be used by a single or multiple operating entities that must share the same set of specifications
 - Customer media subsystem - This comprises an active customer media (for example a microprocessor card) and a passive CM

The two subsystems need to be able to communicate with each other to carry out a transaction. Furthermore, it has been decided that the vision of a unified technical and application environment is not realistically achievable with an EU IFM.

The WP has also defined two “needs for interoperability”. One is the local, everyday use level. The other is the Europe-wide level, which can be viewed as an on-demand service.

In terms of customer media, the concept that is currently considered most viable would be to allow travel in a foreign network using a local transaction and a local application issued by the “foreign” transport operator or authority. This local interoperable application will be downloaded onto foreign interoperable media (Everybody Local Everywhere). This will require commercial agreements to be in place between service providers (commercial vendors) and the owner of the customer media.

Gilles de Chantérac commented that the aim is to define a common way of downloading different applications onto one medium. Thus, the way in which the local application has been implemented in the local area will remain in place. Nor will local clearing functions need to change.

John Verity stressed that the above concept relies strongly on trust, in that the local authority has to trust foreign media.

- **WP 4 & 5** → One clear finding is that different security approaches are used in different ticketing schemes. For example, the VDV Core Application uses an asymmetric keys solution.

Mr Ackerman presented the model of the ticket Germany scheme:

- Customer can use same media wherever he travels in Germany
- There is a common customer interface in place
- Payment can be made using interoperable stored value or an interoperable bank account
- PT companies are free to set tariffs
- A common security system is in place using asymmetric encryption and public key infrastructure However, communication between the reader and card is symmetric, to ensure speed
- Clearing is provided for common payment products
- A standard is in place to regulate organisational cooperation

The necessary conditions for a Europe-wide interoperable system are:

- Mutual downloads
- Security management
- Proven secure use of application download

Gilles de Chantérac commented that one clear point to emerge from this WP and discussions is that it is important to develop a timescale for interoperability. The concept of common stored value for example could be something that would come in a later phase.

Forum members expressed concern that it was not clear whether the Project will look towards using stored value and this needs to be clarified.

Given the development of EMV technology, and the possibility of using EMV media, some members felt it was unnecessary to explore stored value options. However, others noted that the difficulty of reaching agreements with banks was a major barrier.

Another concern was the fact that different national governments have different rules in place regarding e-money. Furthermore, operators have to have complete trust in technical solutions and the public authorities if using stored value.

John Verity commented that it would be useful to discuss further the issue of products in the IFM model at the next Forum meeting.

- **Presentation** → RKF specification and status in Sweden and Denmark.

PTAs from Sweden and Denmark came together in 2000 to form a travel card association. Resekortet i Norden owns and administers the technical specification for the travel card system and is also responsible for the distribution of code keys.

In Sweden, the PTAs guarantee a minimum level of interoperability based on two principles:

- A card issued in the local PTA must be able to be used in another authority's system to buy a single ticket;
- The fare must be lower than for a single ticket.

In the Swedish system, there is a common standard for the contactless card and fare management systems are coordinated. However, different card suppliers are used in different cities and regions. In Denmark, the situation is completely different, in that there is interoperability between the bus, metro and trains, with one single supplier and issuer.

In Sweden, the aim is to achieve interoperability by 2012. This will be implemented in four phases:

- Step 1 will see a new fare management system introduced (most PTAs are still working on this step)
- Step 2 will see an e purse introduced with load value for single tickets, which will be able to hold tickets from other PTA systems
- Step 3 will see customers able to travel into adjacent PTAs and load products
- Step 4 (post 2012) smart media will be able to be used for pre-booked inter-regional travel.

- **Presentation** → Fare media structure interoperability

In an interoperable smart card scheme, security is a major issue, meaning that the way in which secret data is shared is vitally important. Asymmetric cryptography can be used to ensure security during authentication. The system uses one public and one secret key. As opposed to a symmetric cryptography process, asymmetric cryptography:

- Offers easier implementation for system integrators;
- Eliminates the need for SAMs;
- Means that only the public key needs to be transferred;
- Requires an available, auditable and reliable algorithm.

In such a system, the transport application remains the responsibility of the transport entity.

- **Presentation** → Governance, roles, rules and regulations in Dutch e-ticketing

In implementing a nationwide e-ticketing programme, the Dutch faced several challenges, including:

- The high number of stakeholders
- The high volume of cardholders
- The complexity of the PT system

Given this complexity, there was a need to clearly define a business model, participant contracts, service agreements and rules and regulations. Trans Link Systems was established to define all of these requirements. Stakeholders comprised PTOs, interest groups, suppliers, opinion makers and public authorities.

The scheme's business model is based on the ISO 24014 standard, with a mixture of centralized and decentralized activities. Central clearing and settlement will be used for all smart card transactions. Security and asset management and customer

service are also centralized, although tariff setting is decentralised. Meanwhile, there is a central TLS back office.

Important lessons have been learned, including:

- The difficulty of defining governance from scratch;
- Balancing stakeholder management can be challenging;
- The buy-in of participants is crucial to success.
- **Presentation** → Suica and Pasma privacy and interoperability

JR East issued the Suica card in November 2001. The Pasma card, used by 104 transport companies, was introduced in 2007. Complete interoperability between the two systems was achieved in March 2007 and over 36 million cards are in circulation. An Interoperation Committee was established to manage this complex process. This included the establishment of:

- An IC card clearing data centre
- Standardized system specifications
- Standardized device specifications
- Common settlement server

In terms of privacy, the law in Japan draws a distinction between personal information, personal data and retained personal data. There are no rules in place concerning the retention period for personal data. It is not permitted to provide personal data to a third party without obtaining the prior consent of the person, except in the case where data is provided to trustees or for joint use.

The aim is to extend Suica and Pasma interoperability to other regions in Japan.

- **Presentation** → participation in EU projects and IFM II

Yves Amsler informed the Forum that the European Commission is keen to receive research proposals from the PT sector. Any members with ideas for future research actions were invited to contact Johan Van Ieperen at UITP.

He also encouraged members to express their interest in participating in the second phase of the IFM Project, IFM II. IFM II will need partners who are able to contribute funding to the project.

3.4 Technical visit

Again, the technical visit was very well organised by LINK Consulting and all the local operators (bus, metro, train and ferry) around the theme of “a journey around the interoperable ticketing system”, including:

- Get together in the Metropolitano de Lisboa (underground) head-quarters:
 - See the personalization of one “Lisboa Viva” contactless smartcard for frequent travelers based on the SIIT (Service Center and Clearing House) personalization stations
 - See the operation of the OTLIS Operators Consortium Personalization Services
 - See eventually some of the most common functionalities of the SIIT system (e.g. security and SAM management, clearing, etc)

- Distribute one “Viva Viagens” contactless paper ticket to each participant, loaded with Zapping travel units (Transport e-Purse) for all the mentioned trips
- Enter the Metropolitano station at Picoas and
 - Open the gates using the “Viva Viagens” contactless paper ticket
 - Travel on the underground until Restauradores/Rossio
- Enter the CP (railways) station Rossio and
 - Demonstrate the reloading of some “Lisboa Viva” cards on the ATM network
- Enter the Carris (urban bus) at Rossio and
 - Travel on the bus until Cais do Sodré
- Enter the Transtejo (boats, catamarans and ferries) at Cais do Sodré and
 - Travel on the boat until the south side of the River
 - Have lunch on a fish typical restaurant on the south side (not sponsored)
 - Travel back on the boat
 - Travel back on the underground

3.4 Available presentations

Following presentations are available:

- WP1, WP2, WP3 and WP4 & WP5
- EU-IFM - state of the project.ppt
- Presentation by local host LINK Consulting, João Almeida
- RKF specification and status in Sweden and Denmark, Margareta Berg
- Fare media structure interoperability, Dominique Le Droumaguet
- Governance, roles, rules and regulations in the Dutch e-ticketing programme, Jaap de Bie
- Suica and Pasmo privacy and interoperability, Mr Morishima and Mr Kitamura
- participation in EU projects and IFM II

4 Outlook

The two UITP IFM Forum meetings for 2009 are planned as follows:

- Meeting #4, Delft, 31 March with possibly a technical visit on the first of April, hosted by NEN and TransLinkSystems, sponsored by ?
- Meeting #5, Vienna, 21-22 October, hosted by Manfred Novy and VOR, sponsored by ?

The results of the IFM Project are planned to be disseminated at UITP’s IT-Trans February 2010 with a complete session dedicated to the project.

The IFM Project will also be presented in a main session of UITP’s World Congress and Exhibition in Vienna, June this year.