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Pre-Conference Workshop: A Practical Guide to Telematics – Business Models, Infrastructure and Cross-Industry Standards

The first day of the conference concentrated on telematics and especially from the UK perspective. The actual conference took place on the second and third days.

Telematics Overview – Business Models, Implementation and Revenue Streams

Nick Simmons, Integrated Transport Information Services

Mr. Simmons gave an overview of the telematics market. He stressed that the car manufacturers are looking for pan-European solutions. He claimed that standards are an important issue and that people want them and for the sake of standardisation are even ready to make compromises on the performance of the systems. The telematics market current penetration in Europe, excluding Germany, is very low (0-5%), but it is expected to grow. There are a number of players in UK, such as AA, RAC, TrafficMaster and ITIS, and no one is currently making a profit.

In the US telematics is already proving to be a success, e.g. GM OnStar plans to reach 2 million subscribers by the end of year 2001. The predicted growth for telematics equipped cars for some European countries by 2008: Germany 27%, France 16%, Italy 15%, UK 14% and Spain 9%.

Mr. Simmons enlightened the issued related to business models, implementation and revenue models via some case studies. For example NavTrack, which is a GPS and GSM equipped black box solution. The business model was to subsidise the aftermarket installation of the box and hope for income via the use. This has proved to be less successful business model. Another case study was telephone products for which the market research has indicated that routing, personalisation, multimodal content and proactivity are important for the consumers. What they learned was that billing is a huge issue when dealing with different network operators. He stressed that the base products need to be of good value and a variety of channels for consumer products need to be supported.

Examining the Infrastructure and Service Platforms of Cross Industry Applications

Trevor Platt, Serco

Mr. Platt raised the question of who will fund the infrastructure in the future. As an answer he listed the potential beneficiaries of increased use of public transport: the transport companies will get increased revenues, the road maintenance units will need to spend less for the maintenance and because of increased safety the health care costs would be less.

Regarding standards Mr. Platt claimed that currently standardisation work is too heavily dependent on government officials and that their expertise is not at the required level.

On the integration of multimodal content, he stated that it is more important to have something working with good quality of information before worrying of integrating with some other information sources.

He also stressed the importance of cultural differences: According to him, in Germany trains are generally on time whereas in Britain the infrastructure is unreliable. He asked whether the customers would be ready to buy expensive equipment to get such information that "the next bus will not arrive".

Regarding the GM OnStar's success in the US he claimed that the most popular service is to know the position of the vehicle just in case "something happens". He claimed that this is important in countries like the US where the distances are long, unlike in Europe.

The Operator's Perspective

Sam Mitchell, Orange

Mr. Mitchell gave the perspective of an operator and he focused on business to business. First he gave some statistics on the willingness of people to use their mobile phones: According to some study 1/3 would answer while in toilet, 1/3 would make a call while driving, 1/5 would answer while in church and 13% would answer in the cinema.

According to Mr. Mitchell every company can benefit from more effective communication – the success of a service comes from business relevance. He stressed the importance of collaboration and partnerships.

Regarding the future, he claimed that by 2009 30% of all devices will be communication enabled. The barriers are related to the limited awareness, the unavailability of proof of return of investment as well as poor tariffing, content and relevance. He reminded that the value chains are complex and include many players.

Assessing the Latest Trends in the Standardisation Process

David Clowes, ITS United Kingdom

Mr Clowes, the Secretary General of ITS United Kingdom gave a presentation on the trends in the telematics standardisation. He reminded that transport affects all aspects of our lives and the problems such as congestion and accidents are increasing. He stated that the technology provides some in-vehicle solutions for these problems such as information services, navigation and route guidance as well as driver assistance such as adaptive cruise control, lane following etc. For the public transport services such as automatic vehicle location, fleet management and route planning exist.

He reminded that the turnover for cars, buses and trains is slow, but for the transport infrastructure it is even slower. As an conclusion, it was stated that it is not important to talk about devices as it is to talk about the services.

1. The Business Opportunity for Location Based Services

Mike Short, Chairman of the Mobile Data Association showed some statistics on the GSM customer growth, wireless data revenues in his opening remark. In regards to handset developments he expected more content, graphics and multimedia.

The European Location Based Services Sector – A Market Overview

Eric McCabe, LIF, SignalSoft

Mr. McCabe gave first a general description on the LIF's vision.

In the US the primary focus has been on the E911. Sprint has launched one A-GPS enabled phone from Samsung. Many of the biggest operators are working with E-OTD. In Japan NTT DoComo has launched a GPS-enabled handset. In the Korea applications are youth oriented and they are moving towards taking location into account. In Europe, the applications are coming and the infrastructure is being built. Operators in Europe have primarily started with Cell-ID.

According to McCabe the infrastructure exists and the operators may provide a limited number of applications. As the market matures, they will provide multiple applications and applications from outside service providers. In the next step there will be multiple applications provided by multiple operators (e.g. Vodafone around the world). In the final step full roaming will be supported.

In the discussion McCabe was asked what the LIF has delivered in the past 15 months. He answered that the LIF has influenced the ETSI 3GPP standardisation work and is about to release the LIF MLP interface.

He was also asked which applications could be considered as successful. As an example he gave Telia's FriendFind service, which exceeded 3 month goals in 3 days. He stated that it was a good example of wiral marketing effect, i.e. people inviting others to join in. As another example he mentioned mobile gaming. He continued that the business market is hard to tap because they want tailored services, but that they are willing to pay.

2. Emerging Services Provision Strategies

The Mobile Location Services Value Chain – Effective Strategies and Competitive Positioning

Nigel Couzens, wcities.com

Mr. Couzens first gave a business overview for the wcities, which develops a scalable technology platform, provides content and information services, as well as navigation and routing.

Mr. Couzens emphasized the importance of thinking of value as a set of desirable user-centric attributes, such as convenience, reliability, ease of use, relevance, reach, immediacy, quality and consistency. When these attributes are applied into the whole value chain you can sell value, not price, product or technology.

The traditional definitions for value chain are too simplistic for the digital economy as many enterprises are involved in the process of cooperatively planning, implementing and managing the flow of goods, services and information.

The operators have initial control of the market and they will control the location information. However they lack experience as content or application providers. The content providers have expertise in the content creation and aggregation. The portals are customer focused, but are vulnerable for others moving into the services space. The application providers have a global rollout capability and there are large numbers to choose from. The Middleware ventures mainly build infrastructure building blocks, but they are very vulnerable to competition from the “turn key solution providers”.

In regards to pricing models Mr. Couzens sees four main categories: pay per access, monthly subscription, pay per data volume and free of charge. Regarding the last category he warned that such services are many times seen as lacking in value.

As possible revenue sources he listed: subscription charges, pay per access charges, sponsorship and advertising, incremental network usage fees and carriage charges.

As a conclusion he stated that there is no consensus on pricing and revenue share models and that there are significant geographical differences as in Japan the revenue for the I-mode content 9% goes to the operator and 91% to the content/service provider. In Europe 85%/15% to 40%/60% splits are common.

LBS – Consumer Perceptions and Behaviour – Segmenting the Market to Encourage Up Take and Reduce Churn

Andrew Duncan, WILA, SignalSoft

Mr. Duncan started by pointing out that there are many players in the value chain of LBS. He defined there to be four information service concepts: b2c (“push”), c2b (“pull”), c2c (friendfind) and b2b.

Regarding killer applications Mr. Duncan stated that they vary from market to market and from operator to operator. He named a few examples such as location enabled dating or FriendFind services, ski resort information services, restaurant guides and booking services and workforce optimisation services. He emphasized that users are willing to pay for truly added value e.g. not where is the nearest 24-hour pharmacy but also how to get there.

In their focus group studies they have learned that nearly 100% users would be willing to pay $0,50 per transaction for localized information services, 75% would pay $1,00 per transaction and 0% would pay $1,25 or more.

In the future, the revenue models will be based on services paid by both the subscriber and the advertiser.

Determining and Combating User Privacy and Security Issues for Mobile Location Services
Alex Eckerström, Telia Mobile

In the EU privacy regulation it is stated that any data capable of infringing privacy should not be processed, without explicit consent, or unless public security is concerned, or unless it is necessary to protect the vital interest of the data subject which is incapable to give his consent. In LCS related Directive updates certain terms have been replaced with new ones, such as “telecomm” with “electronic communications”, “calls” with “transmissions”, “billing data” with “traffic data” etc. In addition “positioning data” is distinguished from “traffic data”. Also spam protection has been extended to cover “communication”, e-mail, SMS and fax.

Location service categories are: commercial, internal (for access network internal operations), emergency and lawful intercept. Positioning requests may be mobile originating (application in the terminal), mobile terminating (application in VAS node) or network induced (application in cell network).

3. Assessing opportunities in the Telematics Marketplace

Key Trends in Telematics
David Clowes, ITS United Kingdom

According to Mr. Clowes ITS covers all modes of transport on the surface. He gave a general presentation on the traffic management and information services, urban transport systems, public transport systems and interurban systems, driver assistance issues and made some remarks on future challenges.

4. Generating Revenue with Mobile Location Services

Analysing the Market’s Location Technologies and the Revenue Implications of their Use for Mobile Location Services
Jason Angelides, TruePosition

TruePosition was formed in 1992 to develop location technology and applications. Originally their focus was on child tracking. They have signed a national deployment with Cingular Wireless.

According to Mr. Angelides the most mature location technologies are Enhanced Cell ID, TDOA/AOA, E-OTD and A-GPS. Important factors related to them are yield (can position be determined), latency (how long to produce it), accuracy (of the system), velocity (speed and bearing of the terminal) and confidence factor (how good is that particular location).

	Enhanced Cell ID	TDOA	AOA	E-OTD	A-GPS
Yield:	99%	99%	99%	Variable	Low indoors, 95%

					outdoors
Latency:	1-5 sec	2-10 sec	2-7 sec	10-20 sec	10's of seconds
Accuracy:	Depends on Cell size and standard	40-250 m (5-100m)	70-200 m	100-300 m	5-100 m
Velocity:	NA	Available	Available	NA	Available

According to Mr. Angelides TOP 15 LBS applications are: proximity services, personalized traffic info, telematics services, stolen vehicle tracking, child tracking, medical notification, friend finder, pet tracking, fleet tracking, package tracking, trailer tracking, parolee tracking, LB advertising, navigation, lost and found. According to Mr. Angelides the functional compatibility of TDOA, E-OTD and A-GPS is at least moderately applicable for all these applications.

Panel Discussion: Location Based Promotions – Implementing Advertising to Wireless Devices

Aki Snellman (Add2Phone), Graham Brown (The WAP Group), Robert Dirskovski (The Direct Marketing Association), Steve Wunker (Brainstorm Marketing), Lars Becker (Flytxt)

Mr. Becker noted that you can make the users to tell their position, e.g. m-coupon could be received by sending a message with an ID from a banner nearby an outlet. Mr. Wunker pointed out that the use of home postal code is another method. When asked about the position of the operators Mr. Wunker replied that they own the customers and that e.g. 10 pence for location information does not leave a great deal of room for advertisement business. Regarding consumer acceptance Mr. Brown stated that spammers will not survive.

Mr. Becker asked Mr. Dirskovski whether it is possible to give permission for a company to track constantly, Mr. Dirskovski replied "no". Mr. Brown pointed out that it is important to get the customers to say "yes" for their positioning and not to worry about the legal implications. When asked what the panellists think about paying the customer for receiving adverts Mr. Wunker replied that it is a bad idea as it implies that the adverts are intrusive. Mr. Dirskovski added that it would not be accurate marketing and as such would not make any sense.

5. Launching Successful Mobile Location Services

Operator Case Study: Commercial Roll-Out and Deployment of Location Based Services

Jason Günther Fischer, max.mobil

Mr. Fischer gave a presentation on the max.mobil's experiences of commercial launch of LBS. Nowadays max.mobil is part of the T-Mobil Group.

Mr. Fischer pointed out that the business model and value chain for LBS is complicated and that there are different legal restrictions all over Europe. Their portfolio includes following services:

• Max.unterwegs	LB information service via SMS
• Max.wegweiser	LB information service via WAP
• Max.friendfinder	find a friend via WEB, WAP or SMS
• Max.flottensteuerrung	fleet mgmt via GPS and ASP (because of demanding customers)

The max.wegweiser is offered via T-Motion portal and its not yet available for GPRS. The max.unterwegs is part of max.quickinfo.service, which is a SIM toolkit application.

The max.friendfinder requires 32k SIM card and web access. It is available only for post-pay customers and only registered users can be tracked. The charge is € 0,22 for successful positioning per friend. If positioning is unsuccessful, or if the request is denied or the mobile is switched off the answer is always the same i.e. TIME OUT.

Max.mobil carried out an interview of 320 WAP users with proper SIM cards one month after the launch of the services. 25% of the interviewed knew the LB information service and 6% of them used it actively (of which 20% via SMS, 80 % via WAP). They liked the service, its accuracy, speed and provided information. Regarding the max.friendfinder 45% of the interviewed knew the service and 20% of them used it actively (of which 30% via SMS, rest via WAP and WEB). Further 90% of the interviewed would like to have graphical information on the terminal.

As a conclusion Mr. Fischer stated that location itself is not a killer, but perhaps some related applications may be. Standards and interoperability are essential for the future to enable the roaming of LBS.

6. Sixth session

Key Business and Enterprise Applications using Mobile Location Services

Brian Walshe, BT Ignite Solutions

Mr. Walshe gave a presentation on BT Ignite Solutions offering for worker tracking. Their Bespoke Solutions to track the status of field worker are based on remote upload of current status form PDA and download of next job. Their Status Messaging solution is based on simple messaging from standard GSM handset.

Operator Case Study: Location Based Services and Roaming

Thomas Therkildsen, TDC Mobile International

TDC Mobile International has operations in Denmark, the Netherlands, Germany, Austria, Ukraine, Poland and Lithuania. Their international customer base is currently greater than the domestic one.

The major challenges related to location is the current inadequate accuracy for advanced business models, the difficulty to provide it across networks and the lack of international legal frame.

7. Key Technology Issues for Enhanced Services

The Level of Accuracy Required for Next Generation Applications and the Commercial Benefits

Chris Wade, Cambridge Positioning Systems

According to Mr. Wade the subscriber doesn't want any increase to the handset prices, or to the handset style and performance. He continued that the technology manufacturers see that now is the proper time to market. They claim to provide solutions which are standards compliant and hope for global adoption of their handsets and infrastructure. The operators on the other hand want solutions fully integrated to their 2G supplier, for low implementation costs and guaranteed evolution to 3G.

The technology choices for high accuracy are E-OTD and A-GPS. The previous requires software update to the handset whereas the latter requires hardware update as well.

According to Mr. Wade and in regards to E911 in the US, Nokia plans to include E-OTD in all future GSM handsets. He continues that Ericsson concurs that E-OTD is the most appropriate and feasible solution for GSM networks. Motorola plans to provide E-OTD equipped GSM handsets in Q4/01. The technology decisions for CDMA networks have been GPS based and for GSM networks E-OTD based.

According to Mr. Wade the accuracy of E-OTD in 2G is up to 50 m and it will be up to 15 m in 3G networks.

Indoor GPS – Technical Issues and Solutions

Javier de Salas, Global Locate

Mr. Salas started by claiming that location technology itself is a barrier to location based services. All network approaches suffer from coverage problems and all GPS systems suffer from signal acquisition problems. What is needed is a GPS system that can acquire signals indoors. A-GPS helps in two ways: firstly as the rate by data sent from satellite is 50 bits/second, the A-GPS speeds up the first fix; secondly by increasing the sensitivity as unlike any other GPS data, you can measure the distance indoors.

As the satellite moves on its orbit the frequency of the signal changes. Therefore traditional receivers start by going through different frequencies to find the highest peak. With the assistance information the receiver can limit which frequencies to look for. With enough correlators all code delays can be searched simultaneously.

For the operators implementing A-GPS assistance data can be outsourced to a third party. Very little investments are required and it is fast time to bring it to the market.

Mr. Salas showed a video with several tests using their GPS receiver with 16000 correlators. E.g. inside a shopping mall most points accurate to 50 ft and the worst 100 ft.

If no assistance is available the GPS receiver collects data for 20-30 seconds to obtain assistance data, which will do for a couple of hours. The assistance required is orbit data, rough position (~2 km) and rough time (~±2 sec). The Global Locate GPS chip will be available in phones by the end of 2002. When compared to the SnapTrack he stated that the architecture is completely different, as the SnapTrack solution requires a lot of RAM. Also the Global Locate solution does everything in real time.

Location Based Services Enabling Technology Update – Evolving Standards Within Third Generation Networks

Michael Sheldrick, Telcontar

Mr. Sheldrick started by defining LBS platform as a massively scalable server platform for building and deploying LBS solutions. Its components are application server, map database, spatial data management, positioning technologies and CRM, systems management and billing.

In the US AT&T and Cingular have chosen E-OTD for their GSM networks and Sprint and Verizon have chosen A-GPS for their CDMA networks. Mr. Sheldrick remarked that A-GPS is highly accurate but perhaps most expensive option. E-OTD and TOA on the other hand are inaccurate in dense urban areas because of low signal to noise ratio and signal multipath effects. They are also inaccurate in rural areas because BTSs may be far apart and the handset may see only one or two.

Regarding the interoperability issues standard LBS server interfaces are required. He emphasized that European solutions must be Pan-European. In addition seamless roaming of LBS services must be supported, which raises among other things the issue with billing. The GPRS and UMTS will bring an opportunity for compelling LBS applications. For maximum impact, location server platform should be open to 3rd party developers.

As new technologies he mentioned initiatives such as MAGIC and SLoP (by the IETF Spatial Location WG).

MAGIC Services Protocol: Connecting the Network to Space and Time

Karl Stephen Smyth, MobileGIS Limited

The MAGIC Services Protocol is a messaging standard that connects distributed models of real-world navigable spaces to fixed and mobile applications across wired and wireless networks. The protocol allows an application to connect to a server that can supply expert information and navigational guidance for a room, a building, a parking garage, a city, a national road network, etc. It is a protocol that allows you to publish information about a room, building, etc.

MSP is based on XML encoding of requests, responses and fault notifications using the SOAP message structure.

The MAGIC Services Initiative was launched in October 2000. It has twelve sponsors: Alpine, Blaupunkt, Increment-P, Microsoft, MobileGIS, Navigation Technologies, Panasonic, Telcontar, Tele Atlas, Siemens, Webraska and Xanavi.

Implementing Advanced Mobile Location Enabled Services

Aileen Heal, MapInfo

According to MS. Heal, today's environment is characterised by limited bandwidth, voice dominance, low penetration of micro browsers, smart phones. Most services are "web spill-over", mainly basic content and navigation services. After the hype and disappointment the market is in "realism" phase, which will be followed by considerable growth. The challenges for LBS application delivery are the requirements to work in a mixed network/protocol environment as well as to work in a mobile environment. The value of LBS is in the convenience, productivity and safety they bring.

Regarding which platform OS will be used for wireless applications she gave a table describing the current division of programmers: Java/J2ME 30%, Palm 25 %, Windows CE 21%, Linux 7%, EPOC 3% and other 14%.

MapInfo's Mobile Location Services Platform (miAware) is a XML API and it is a Java-based solution.

8. Creating and Delivering Effective Content for Location Based Services

L-Commerce – Making Location the Key Enabler for Mobile Commerce

Bryan Stockwell, Mobile Commerce

The product portfolio of Mobile Commerce includes multibearer proximity applications. Their customers include BT Cellnet (voice), T-Motion/One2One (WAP) and PocketThis (XML API). In addition they have a "business finder" application, which they have provided to T-Motion/One2One.

According to Mr. Stockwell the necessary components for LBS are a "pot of content", intelligent and flexible categorisation of data and finally automated and self locate tools. Mobile Commerce has several partners providing the content. Their value adds to the content includes data cleaning and geo-coding, enriching the content with other data, the categorisation, searching and filtering technologies as well as flexible locate technologies.

Having studied the use of their services for the proximity services the place of main use for contract subscribers is 30% within local area and 70% outside their local area. For Pre pay customers the split is 60% and 40%.

They believe that revenue sharing is a good model as it keeps the partners customer aware.

Mobile Location Infotainment and Gaming
Petter Nyborg, Pocket IT

Mr. Nyborg presented his company as bearing a complete offering on LBS for Mobile Internet and SMS. SidePocket includes the Location ASP services such as reversed geocoding, proximity, routing and mapping. The FrontPocket includes LB information services, navigation services and entertainment services. The BackPocket is their Location Platform.

Their revenue model for information services is based on revenue share with the operator. For the games it is based on premium billing and sponsoring.

Geographic Data for the Mobile Market – What does the Market Want
Nick Macready, Ordnance Survey

Mr. Macready gave a presentation on the data offerings of the Ordnance Survey. They have just released the OS MasterMap. He stressed that there is a difference between maps and geographic information. He also pointed out that the depiction of the data and the content are not the same. He claimed that the “four forces” for geographic datasets in a LBS environment are: coverage, content, currency and accuracy.