

Location-Based Services 2002

Professional Location-Based Services in
Europe

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Executive Summary

Key Findings

The study examined the state of professional location-based services in the UK, German and Italian markets. The framework used to examine these markets searched for answers to the following questions. The key findings are presented below.

What is the current status of the markets (in particular, have there been significant changes to the status since the early 2001)?

Findings: There has not been significant movement forward in the development of the markets for location-based services, since concepts and potential services were announced as early as 2000. In the consumer market, there has not been significant indication of the end-users' willingness to use the services currently on offer, nor to pay a premium price for them. In the professional market, much of the activities, and thus much of the potential source revenue growth in the near-term, are currently concentrated in the sector of fleet management. Uncertainties about business and revenue models, as well as unresolved technology issues has slowed-down market take-up. The overall slow down in the telecommunication sector has also had a slowing-down effect on the LBS market.

The current slow-down in market take-up, has also affected the views on the scalability of market development. The more optimistic forecast of LBS revenues for Western Europe is approximately \$5.2 billion in 2005.

Regulatory issues have had a mixed impact on market development; sometimes perceived as a driver, while at other times, considered a barrier to development. Two regulatory issues that have this driver/barrier effect are privacy issues regarding the availability of end-user's location information data to third parties, and the EU telecommunication framework to require mobile network operators to accurately locate the position of an end-user calling into the emergency number 112.

In September the German ministry of transportation ordered an electronic toll collection system from the ETC consortium. The ETC consortium consisting of Deutsche Telekom, DaimlerChrysler (each 45 %) and the French highway operator Cofiroute (10 %). The system will be the largest professional LBS infrastructure in Germany and will provide access for third parties to offer additional Value Added Services on the infrastructure. This activity will function as a driver for the development of the LBS market in Germany.

What type of value chain exists?

Findings: The LBS value chain is characterised by complex inter-relationships, where companies play multiple roles rather than having one distinct role. This environment will continue in the near-term until the players in the value chain reach consensus regarding business and revenue models that work and perceived to be equitable. On the supply side of the value chain, the main players are the mobile network operators, terminal suppliers, portals, content suppliers, application platform providers, application developers, location server and gateway providers, location measurement technology providers and network infrastructure vendors. Government agencies, standards organisations and the automobile industry play a supporting role in the value chain, although in Germany, for example, the role of the automotive industry and the regulators can be viewed as more than supportive.

What are the LBS solutions being offered?

Findings: Although much has been said and written about the potential applications of LBS in different sectors of the professional market, the number of solutions that have been realised commercially to date for the professional market are fewer than expected. Solutions to the professional market are currently concentrated on fleet management. No commercialised solutions were found in other business sectors where LBS could potentially be deployed.

Who are the primary players?

Findings: On the supply side, the profession LBS market is dominated by a few automatic vehicle location vendors, that offer solutions based on proprietary technology. These service operators and the mobile network operators tend have the principal roles in the markets. This situation is specially noticeable in the UK and Germany. In Italy, application developers and application platform vendors, collectively called “specialized software vendors” in the Italian market, are perceived to have a primary role. The reason is that much of the current activities involve the build up of services for the operators that are targeting vertical sectors, and the specialized software vendors are the ones which have the required vertical market expertise to provide the solutions.

On the demand side, the primary players are the large companies, that have the budgets to demand customised solutions.

What are the existing business and revenue models?

Findings: The revenue sources are software licensing, maintenance payments, and application and/or content usage payments. Business models are based on who controls the flow of location information, service revenues, applications and content. The market is dominated by an operator-centric model where the operator of the service exerts much of the control over the above mentioned resources as well as control the interface to the end-user customer. Although this is the status quo today, there is no agreement among the players in the sector whether this is the model that will work to grow the market to its full potential.

How do the three markets compare?

In terms of overall development, the UK is the most developed, followed by Germany and Italy respectively. More solutions have been commercialised in the UK and Germany, whereas much of the solutions found in the Italian market are still in the proof-of-concept stage. The structure and character of the value chains found in the three market are similar to each other and reflect the value chain described earlier in this chapter. The following is comparison using the framework of market status, solutions, primary players, business and revenue models.

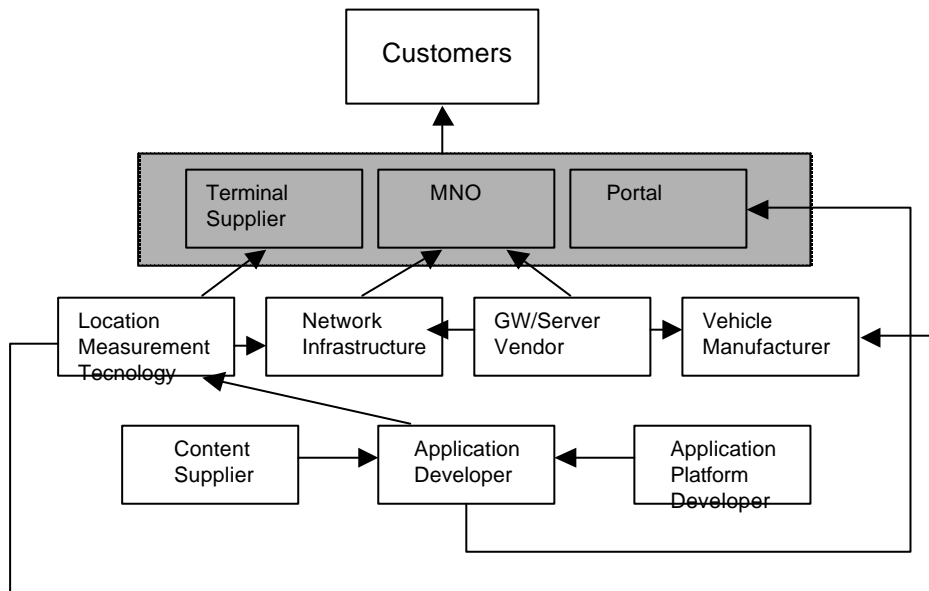
	United Kingdom	Germany	Italy
Market status	Commercialised solutions in fleet management	Early stage, commercialised solutions in fleet management	Proof-of-concept projects
Solutions	Fleet management focused	Fleet management focused	Fleet management focused
Primary players	Automatic vehicle location vendors, mobile network operator	Automatic vehicle location vendors, mobile network operator	Specialised software vendors (SSVs), mobile operator
Business models	Operator-centric	Operator-centric	Operator-centric
Revenue models	Software licensing, maintenance fees, application/data usage fees	Software licensing, maintenance fees, application/data usage fees	Software licensing, maintenance fees, application/data usage fees

LBS value chain

This chapter analyzes the LBS value chain. It illustrates the current structure of the value chain, examines the value-creation process for the consumer and the professional market, gives definitions of the roles of the players involved in the value chain, and looks into the business models used by the various players.

Structure of the Value Chain

The figure below is a simplified illustration of the value chain. The real-life structure of the value-chain is much more complex in terms of inter-relationships. The players interact with and overlap each other. They are suppliers to each other as well as other players in the mobile industry. Many types of solutions, delivery chains and revenue models appear credible enough to be implemented, but in this situation, it is difficult to define an exact framework for the industry, or to map the various players against this framework. The market has yet to determine which models work, and until this happens, companies involved in location-based services will continue to blur the divisions between their activities and those of potential partners.



LBS Value Chain

Roles of the Players

This section defines the roles of the various players in the value chain.

Main players

Mobile Network Operators – providers of mobile network access and carrier service, management and storage of positioning information, and in a majority of cases, provide interface to end-user customers.

Terminal Suppliers – developers of terminals used in end-user applications.

Portals – providers of interface to end-user customers, and aggregators of content.

Content Suppliers – producers of any kind of information that is geographically referenced.

Application Platform Providers – developers of software that acts as a “platform” for applications.

Application Developers – developers of applications that combine location information with other geographically organised information.

Location Server and Gateway Providers – developers of platforms used to obtain, store and manage positioning information; and developers of gateways that manage the interface between the platform and other network elements (i.e., provisioning, charging and billing systems).

Location Measurement Technology Providers – developers of systems that are used to calculate the position of mobiles.

Network Infrastructure Vendors – developers of infrastructure for positioning measurement.

Supporting players

Automobile Manufacturers – integrators of location-based solutions in vehicles.

Government Agencies

Standards Bodies

Value Creation for the Professional Market

Tracking solutions, for which few non-LBS substitutes are available, seem to have the most potential for value creation in the professional market. These solutions could gain wider usage as web-based application presentation makes them available to a much wider part of the vertical market segment. Developments in mobile terminals, especially the availability of cheap radio modems and data-only terminals, could make the tracking of a much wider range of objects possible.

Tracking things outdoors has been the bread-and-butter of professional LBS since its inception. In several vertical segments of the market, trucks, railway cars and carriages, shipping containers, and large pieces of construction equipment have been tracked. The focus of this activity is to prevent theft, recover stolen items or improve the usage of large and expensive assets.

Companies in the transport and distribution sector, the building and construction sector, as well as emergency services organisations are the most visible recipients of value provided by tracking solutions. Similar to its predecessor, the automatic vehicle location industry, the focus of professional tracking solutions has been on the largest organisations. These solutions are often sold with or integrated with operational management systems, and only the largest organisations can afford the upfront investment cost and overhead of such solutions. However, technological developments that enable the use of mobile location capabilities of public mobile networks, or the use of these networks as carriers of terminal-based positioning, provide the possibility of reducing the cost of location-based services. Also, the use of the ASP (Application Service Provision) model and the use of web-based interfaces to location-based solutions makes LBS affordable to smaller organisations as well.

Not enough data is available to suggest a significant take-up of location-based information services in the professional segment. However, the segment remains an attractive target for adding value to companies’ sales operations and other professional services. Interviews with leading players in the LBS sector suggest that future roadmaps are concerned more with deployments of currently available or proposed services when the next generation (3G) network technology is fully implemented, than with developing new services.

Value Creation for the Consumer Market

In the consumer market, location-based information services are slowly getting a foothold among early adopters, but signs of broader acceptance are yet to be seen. In Germany for example, forty percent of mobile phone users have not heard of location-based services. It could become important as mobile Internet services improve in bandwidth and robustness, and as new revenue models emerge (particularly sponsorship of content) and are accepted. The most common location-based information services found in the three markets we examined are:

- localised information (e.g., find the nearest taxi, hotel, restaurant, cash machine, “find a friend”)
- routing directions

Tracking can be found in the niche market segment of stolen vehicle recovery as applied to cars, boats and caravans. Interviews with leading players in the LBS sector also suggest that future services roadmaps targeted to consumers are concerned more with deployments of currently available or proposed services when the next generation network technology (3G) is fully implemented, than with developing new services.

Market Dynamics

Although LBS solutions targeted to the consumer market have captured the attention of both the mobile industry and the press, especially when coupled with speculations about the potential impact of regulatory requirements, the development of the consumer market has lagged behind that of the professional market. This is due to the uncertainties regarding what revenue and business models the market will accept, and also due to unresolved technology issues. Since LBS has historically gained its foothold in automated vehicle location, further development has gone a bit further, and revenue models are clearer.

In terms of applicability and cross-market usage, in both the professional and consumer markets, few location-based solutions have gained an established position. Thus far, tracking solutions have shown the most potential for wider take-up in both the professional and consumer markets. In the professional market, LBS has found widespread use in fleet management and asset or load management. While in the consumer market, tracking can be found in the niche market segment of stolen vehicle recovery as applied to cars, boats and caravans. The potential for tracking in both markets remain largely untapped. For example, according to a study by Ovum, in the UK market, lost shopping carts cost supermarket chains over one million dollars a year. And brewer chains lose even larger sums as a result of misplaced steel barrels. The tracking of people, both indoors and outdoors, has the potential for uptake in both markets when coupled with needs for safety. Applications such as mobile workforce management, personal safety systems, and medical monitoring all share the common concern of safety. A variation to the tracking of people application, which has potential for even broader consumer appeal, is the “find a friend” application. Users register a group, then all of group members receive information about each other’s locations. Other variations to the tracking function as applied to mobile games and entertainment have been proposed, but there have not been many compelling location-based game ideas so far.

Location-based information services have the potential for widespread use in the consumer market, but also suffer from several challenges that inhibit market take-up. For example, applications such as finding the nearest desired service and getting travel directions face usability challenges. Applications such as news and advertising face the challenges of user tolerance (“do I accept advertising sent to mobile terminal, and if so how much?”), quality of content (“how well do filters work in giving me just the news relevant to me?”), privacy issues, commercial infrastructure (“who pays for what and how is the payment made?”) and technical feasibility.

Business Models

There are several business models in operation or proposed, and to date, there is still no business model that can be considered “generic” enough to satisfy all players in the LBS sector. Business models found in the field today differ from each other primarily according to whether or not the Mobile Network Operator has a central role in the flow of location information and location service revenues. Business models that put the Mobile Network Operator in the central role, are mostly applied to, or proposed for the consumer market. Business models in which the central role is with the Terminal Supplier or the Application Platform Supplier tend to be more relevant for the professional market. Also, business models may vary somewhat according to what role a player has in terms of:

- Storing/managing positioning information
- Positioning measurement
- Creating and running applications

– Sourcing content

In the situation where the Mobile Network Operator has the central role, we find at least three variants that differ according to the type of relationship the Mobile Network Operator has with other players.

In one variant, the relationship of the operator with the other players is that of buyer-seller, rather than a partnership or through revenue sharing. The Mobile Network Operator buys infrastructure for measuring a user's position from suppliers, pays Application Developers to build software, and buys content either on a one-time license or per usage scheme. The Mobile Network Operator then operates the platform by itself. Revenue flows from the end-user customer to the Mobile Network Operator as a premium charge or/and increased airtime. This variation gives the Mobile Network Operator full control over the customer relationship and revenue flow but this also means that the operator takes all of the risks. In another variant of the model, the Mobile Network Operator creates a relationship with the Application Developer whereby the Application Developer hosts, operate and maintains the application software. In some cases, the Application Developer can also be given the responsibility for buying and integrating content. The Mobile Network Operator pays the Application Developer, as well as the Infrastructure Supplier, on a sliding scale fee scheme based on the scale of the implementation. The third variant involves switching the focus of revenue generation from end-user payments to payments by advertisers and sponsors. This third variant provides a scenario in which the revenue flow from the end-user customer can stay with the Mobile Network Operator, or it can flow instead first to the Application Developer, who would be responsible for integrating the advertising content to the LBS, and then shared with the operator. The majority of Mobile Network Operators in both Europe and other markets have resisted implementing this third scenario.

Terminal-based solutions, as used in fleet management and mobile workforce management, for example, tend to weaken the control of the Mobile Network Operator on positioning information and consequently also loosens the control the operator has over the end-user customer relationship. Although the Mobile Network Operator still receives payment for airtime, the end-user customer's contract can be with the company that provides the terminals and the application platform. Revenues are derived from subscription payment, usage payment, and fees to license client software or access network-based applications.

LBS Solutions

This chapter takes a look at the existing solutions in the European market, categorised as consumer or professional services, with descriptions of the services. Although this section does list consumer-based solutions, the focus is on professional solutions.

Professional Solutions

We define a professional solution as a solution used in industry segments where the management of location information is necessary to the success of the business; or within organisations where LBS facilitates the operation of the business. Professional solutions categories covered in this report are further defined below.

Fleet Management

Fleet management solutions cover fleet management services - online or offline - for small, medium and large organisations. This definition is distinct from tracking. Solutions in this category provide software, hardware and consulting to help manage transport vehicles such as trucks, freights, rescue vehicles, taxis and public transport. The solutions cover the most common requirements of messaging, routing, dispatching, locating and status messaging.

Tracking

The tracking category is further divided into the sub-categories of vehicle tracking, asset tracking and people tracking. In vertical market segments, trucks, railway cars and carriages, shipping containers, and large pieces of construction equipment have been tracked. The focus is to prevent theft, recover stolen items or improve the usage of large and expensive assets. Vehicle tracking covers all applications that track vehicles, whether for the purpose of reporting, or for enabling stolen vehicle recovery. The term used here refers to live tracking. If a tracking application is not actually live it is called historical tracking in this report. Asset tracking covers applications that track assets which are not vehicles. This could, for example, include vending machines, heating and air-conditioning systems, and waste disposal systems. People tracking covers applications that enable mobile workforce management and lone-worker monitoring for safety. Mobile workforce management applications are used in a similar way as in fleet management, i.e., to ensure the most efficient deployment of mobile workers to assignments. Tracking a lone-worker for safety is used, for example, in security services where security guards operate alone.

Location-based Data Collection and Delivery

Location-based Data Collection and Delivery covers the specific collection and delivery of location-based data.

Consumer Solutions

We define a consumer solution as a solution used by a consumer to gain value by increased convenience, personal security, or saving money. Solutions found in the market today can be put in categories of tracking/finding and localised information.

Tracking/Finding

Most tracking/finding solutions in the consumer market attempt to address the consumer's need to find a desired location and receive directions on how to get there. This category also covers applications that provide consumers with some entertainment value or convenience. And although there is much discussion regarding providing consumers with applications addressing personal security and safety concerns, very few commercial applications are available. Tracking/finding applications include:

- Find a friend/mobile communities – share positioning information with friends/colleagues and interact.
- Routing – either as network-based service or part of a car's on-board navigation system
- Gaming – mobile games that use positioning information as a parameter.

Localised Information

Localised information applications provide information about a desired service based on the location of the customer and include:

- Nearest service – e.g., cash machine, hotel, cinema, restaurant, taxi
- Traffic information
- Weather information
- Events guide
- Tourist information
- Local billing

The European Market

LBS European Market Development

To date, the market development of LBS in Europe, as well as in other industrialized regions of the world, is largely driven by technology push and regulatory requirements. Availability of solutions in network technology, handsets, services and content continue to push the market. Also, due to the current financial challenges facing the telecommunications market as a whole, there is a trend to downsize and merge among the players, and this will affect the supply side of the market. On the consumer market side, there is still little evidence that customers will fully accept location-based services or pay a premium for them. Historically, the professional LBS market has been dominated by a few automatic vehicle location vendors. Barriers to entry in terms of technology have been high and most systems have been based on proprietary technology. Demand has been restricted to a small number of large customers who have been able to insist on customised solutions with a high degree of integration to their back-end systems.

A sampling of the various forecasts regarding projected revenues and usage for LBS in Europe, as well as the global market, shows that the development trend for the market is positive in general, but the forecasters' views as to the scale of the development run the range from optimistic to pessimistic. For example, Ovum forecasts that location-based services will generate around \$5.2 billion of revenue in 2005 in Western Europe. According to the Strategy Analytics report, location-based services are expected to generate \$9 billion in service revenues in Western Europe by 2005. Meanwhile, Location-based services will account for over 40% of an operators' mobile data services revenues in 2007, according to a new report from ARC Group. The market for telematics in Europe is expected to grow to approximately 4.1 billion Euros in 2005. The biggest markets for these services will be the UK, Germany and Italy. The UK market may be worth up to 1.5 million Euros in 2005. A substantial proportion of this market will be in solutions such as fleet management and vehicle tracking. According to UK-based BWCS, location-based services will generate a relatively disappointing \$3.7 billion worldwide or 5% of the total non-voice data revenues. As a result, wireless operators cannot depend on location-based services to generate new revenues. The current crop of LBS only generates a minimal increase in airtime revenues since most consumers don't bother with many current location-based applications due to a clunky and cumbersome user experience.

We provide below a sample of the forecast quoted from the Ovum study to illustrate the development trend for Western Europe and in the three countries covered by this report.

Western Europe

	2002	2003	2004	2005	2006
Total market revenues (\$ million)	561	1,597	3,395	5,180	6,607
Location services	344	986	1,820	1,923	1,609
Location-enabled advertising	24	109	507	1,109	1,671
Location-enabled e-commerce	194	502	1,067	2,147	3,327

UK

	2002	2003	2004	2005	2006
Total market revenues (\$ million)	92	258	530	877	1,200
Location services	55	155	278	312	279
Location-enabled advertising	3	16	75	192	304
Location-enabled e-commerce	33	86	177	373	617

Germany

	2002	2003	2004	2005	2006
Total market revenues (\$ million)	120	345	719	1,036	1,279
Location services	77	224	409	410	324
Location-enabled advertising	4	21	101	214	322
Location-enabled e-commerce	38	101	208	411	632

Italy

	2002	2003	2004	2005	2006
Total market revenues (\$ million)	96	288	630	956	1,207
Location services	55	168	326	344	289
Location-enabled advertising	5	22	99	201	291
Location-enabled e-commerce	36	97	206	411	627

Regulatory Issues

Regulatory requirements are acting as both a driver and a barrier to market development. Location-based services are currently not specifically regulated. Rules, which apply to any other kind of services in Europe, also apply to LBS. Location data is not specifically regulated yet in Europe either. It is not mentioned in the Telecom Data Protection Directive already applicable in and being implemented by member states (97/66/CE Directive), which mostly handles traffic data. Nevertheless, this directive is currently under revision and will very likely include new provisions on location data. The new rules will come into force in member states in January 2003 at the earliest. The regulatory question still pending concerns the format of how consent should be expressed? There are two choices available:

- To require explicit consent also known as opt-in. (I want to benefit from LBS, and therefore allow my mobile operator to process the location data for its own services/third party services.)
- To require implicit consent, also known as opt-out. (My location data is available to any party providing LBS, unless I oppose to it in the proper way).

As of today, and taking into account the lack of unified rules at the EU level, it is up to the user to choose between these two options. However, the 97/66 Directive currently under revision tends towards the opt-in form of expressing consent.

Europe has also taken longer than the U.S. to address the need to deliver location information for calls from mobile phones to emergency numbers. In 2000, the European summits held in Lisbon and Feira, Portugal endorsed the e-Europe action plan and recommended that all European citizens should have multilingual support and be automatically located on dialing 112 (the pan-European emergency number) wherever they are in Europe. The adoption of the EU's new telecoms regulatory framework in February suggests that by July 2003, mobile operators will be required to provide public safety answering points with the best location information they have available. Unlike in the U.S., this regulation does not define the level of location accuracy operators must provide. The European Commission has been reluctant to impose such specifications on a market that is already developing, and in several cases already offering, commercial location-based services. Operators and vendors claim that forcing operators to invest in high-accuracy technology could hold back the market. The European Commission has therefore pursued a soft-handed approach and in the past two years has been fostering debate and discussion within the sector. The commission has brought together emergency-service authorities, mobile operators, vendors and governments in working groups and research projects. The goal is to build consensus and ensure all the players are behind the proposals the commission will submit to the European Parliament and member states in late 2002. Thus far, the consensus is to pursue a market-led approach, leaving the choice of location technology and time frame to the Mobile Network Operator in the belief that they will upgrade their location technology for commercial services anyway. The recommendations suggest that progress should be reviewed in 2005 to determine whether more regulation is needed to speed up implementation.

ETC Consortium and TETRA

In September the German ministry of transportation ordered an electronic toll collection system from the ETC consortium. The ETC consortium consisting of Deutsche Telekom, DaimlerChrysler (each 45 %) and the French highway operator Cofiroute (10 %). The system will be the largest professional LBS infrastructure in Germany and will provide access for third parties to offer additional Value Added Services on the infrastructure. This activity is seen as a driver for the development of the LBS market in Germany.

TETRA (Terrestrial Trunk Radio), the open digital standard defined by the European Telecommunications Standards Institute (ETSI), has had a some activities to note. The first TETRA network in Germany was launched in April 2001 in Hamburg by RegioCall Mobilfunk GmbH. Dolphin Telecom the largest TETRA network operator has filed for insolvency in July 2001, but is still operating its network.

Today, the TETRA activities in Germany are inhibited by the lack of demand from the industry and the public sector.

Some pilot networks have been build in the public sector and the TETRA industry is waiting for the purchasing decision of the German government to build a network for BOS (Behörden und Organisationen mit Sicherheitsaufgaben (Authorities and Organisations with Security Responsibility). The decision is due in December 2002 and the major issue is the financing.

Another thread for TETRA in Germany are the potential health issues.

Currently no professional LBS provided via TETRA have been identified. However, there might be some activity in the government area that is not publicly accessible.

Multiple Market Players

The following is a list of companies that we have identified as the most active LBS professional market players across Europe. The country abbreviation in parentheses identifies the country chapter where more information can be found regarding the company.

Operator		
Company	Products	Partnerships
Vodafone (UK)/Vodafone Passo (DE)	CEO, Telematics, Traffic Services, Business Services	Merian Scout, Cybit

Vehicle Manufacturer		
Company	Products	Partnerships
Volvo Trucks (UK)	Dynafleet	n/a
Daimler Chrysler Fleetboard (DE)	Dispatch, Vehicle Management, Mapping, Freight Exchange	
Application Platform Provider		
Company	Products	Partnerships
AutoDesk (IT)	Location Services, MapGuide, OnSite Enterprise, OnSite View	BEA, SUN, Oracle, Vality, Siemens, Motorola, Ericsson, Lucent, Nokia, Michelin, Teleatlas, CDT, Traffimaster, Skygo, Mobilocity, Noblestar, Televoke, Clickmarks, KPMG
Webraska (UK/IT)	IbDN Fleet, ibDN Tracking	IBM, ITIS, Ericsson, Nortel, Oracle, CMG, Sun, Alcatel, Openwave, SAGEM, Navtech, Signalsoft (Openwave), CellPoint, CPS and Schlumberger
Application Developer		
Company	Products	Partnerships
Aventeon (DE)	Sales.ONE, Service.ONE, Pharma.ONE, Chem.ONE, Sync.ONE, Comm.ONE	CSS Computer Service Solution, Cap Gemini Ernst & Young, Ericsson, Toshiba
Euteltracs (UK)	Fleet Management	Qualcomm
Gedas (DE)	Logiweb, RVS	IBM, HP, Microsoft, Oracle, SAP
Mecomo (DE)	Mecomo QualityGate, NextDoor location finder, NextDoor Call Center, Join Address	WiGeoGIS
Minorplanet (UK)	Fleet Management	BT Cellnet, GE Capital Fleet Services, IT IS, TLS
PTV (DE)	Mecomo QualityGate, NextDoor location finder, NextDoor Call Center, Join Address	T-Mobile, Verkehrssysteme AG, Xtend SA
SICAD Geomatics (DE)	SICAD Mobile Suite	OGC, Oracle, Siemens
Thales (UK)	In vehicle communications and positioning units, Orchid Communications Hub, orchidtrak.com, Orchid Response Centre	BT Cellnet, Navtech, Vodafone, Debis, Trafficlinc, Hire Alliance
VeMIS (UK)	Fleet Management	Daimler Chrysler

Content Supplier		
Company	Products	Partnerships
MapInfo (IT)	Mapping, Routing, Geocoding, Data	Oracle, C.S.H. srl, Prosis, Tellus, Comtest
Trafficmaster (UK)	Trafficmaster Freeway, RAC Trackstar, Trafficmaster Monitor, Smartnav	Automobile Association, BMW GB, Citroen Trafficmaster Oracle, BT Cellnet, Orange, RAC, Deutsche Telekom AG, Lex Vehicle Leasing, Virgin, Motorola

Professional LBS in the UK

History of Professional LBS in the UK

The roots of professional LBS in the UK lie in the transportation sector. However, though rudimentary fleet management services were available, positioning was not necessarily the crucial component. Haulage firm managers were anxious to reduce fuel costs since these could account for a very large part of expenditure. "Performance monitoring" was the watchword and truck drivers could be taught to drive more economically. Fuel represents around 70% of vehicle running costs so this emphasis is not out of place, even today.

Volvo Trucks started out, as did VeMIS (now DaimlerChrysler owned), with a system focusing on economy gains. The systems employed, relied on two-way radio units for communication. Volvo has been developing fleet management and performance monitoring solutions since 1993 and VeMIS since 1994. Eagle eye followed a year later in 1995.

The information age and the Internet created new market opportunities. The arrival of ITIS in 1997, a traffic and travel information provider, coincided with the need for up-to-date, reliable information. Towards the end of the nineties, the opportunities were increasing with the rapid uptake of mobile communications. This development promised opportunities in the delivery of traffic information to mobile handsets and set the scene for many of the services available today. Trafficmaster is also keen to exploit the opportunities of the information age and the Internet. With the wider availability of positioning technologies utilising GSM and GPS, the transmission of accurate location-based data has given professional LBS services a new edge.

In the future, the most successful companies in this field are likely to be the ones that combine advanced positioning technologies with real-time traffic information. This is no easy task, since long-term strategic alliances across diverse industry sectors - from vehicle manufacturers to application builders and network operators - will have to be forged. It remains to be seen which companies will obtain the necessary strategic competitive edge.

Professional LBS Market Status in the UK

The European market for telematics in Europe is expected to grow to approximately 5.2 billion Euros by 2005. The UK will be one of the biggest markets for these services. The UK market may be worth up to 1.5 billion Euros in 2005. A substantial proportion of this market will be in professional location-based solutions such as fleet management and vehicle tracking.

Managing fleets effectively is a prerequisite for good business in the transportation sector. It is estimated that UK businesses lose £15 billion every year as a result of traffic and travel problems alone, and haulage firms are acutely aware of this problem and the impact it has on business. Fleet management solutions that incorporate real-time traffic data will undoubtedly help to recoup the loss. This report investigates twelve companies with important positions in the value network in the UK.

Professional LBS Solutions

The professional location-based services available in the UK can be grouped under fleet management, tracking, and location based data collection and delivery.

Revenue Generation Issues

There is no single way of generating revenue in this business area. It depends on the company involved and its position in the value network. To begin with, it would be helpful to analyse Vodafone and its Corporate Eye Online venture. In this particular case the pricing structure has been made transparent. The CEO Solution is a subscription service, costing £14.95 per month per

vehicle for fleet operators. Costs, however, can soon add up with 10p charged for each 'alert' and 20p for each information request over the Internet. With a fleet of 100 vehicles, the total outlay per month could be £1,895 or about £19 per vehicle. But this is if the vehicle is only monitored twice a day. Hence, accurately tracking a vehicle on its daily outings could be very expensive due to airtime costs.

With eagle eye, once again subscription fees are charged for fleet management and tracking services. There are two main levels of service - platinum and gold - as well as airtime costs for SMS position requests.

Cybit is able to offer some flexibility by reducing the initial outlay for the installation of new telematics equipment. Customers can lease (as well as purchase) the capital elements of the solution and pay a monthly subscription that varies depending on the level of services required.

New Volvo trucks may be bought with equipment already installed in the cab. Hence, in this case the higher purchase price of the truck reflects the greater technological sophistication. Older Volvo trucks can be fitted with compatible telematics equipment, as indeed can trucks from other manufacturers (though functionality may be limited). There is a subscription charge for Dynafleet. Volvo offers financing as well, so that the cost of installation can be offset. Each vehicle's position is fixed by GPS and the location ID is then transmitted as an SMS message to the office, resulting in additional airtime costs.

In the case of Thales and Euteltracs, there is a price for customisation. Both companies specialise in providing integrated solutions to trucking operators and shipowners. Since these solutions are not "bolt-on" ones, they are likely to incur much higher costs for custom-made sophistication in addition to the subscription charges.

VeMIS does things rather differently. Once the equipment has been purchased there are no running costs because it uses GPS and license-free radio units. However, extended service and maintenance agreements do incur extra costs. Customers who choose the option of GSM downloading will incur some airtime costs. The downloading of data can nevertheless be done for free via the license free local radio facility. VeMIS claims it has already installed 10,000 units across the country so it is likely the cost effective appeal of this solution will continue. Hence, in this case the revenue model does not rely on subscription fees.

ITIS generates income from providing real-time traffic data. Data is delivered to NavTrak (part of ITIS), which then sells its service offerings to consumers. Siemens VDO subscribes to traffic information. ITIS offers its customers Minorplanet's Vehicle Management Information. It is therefore likely that a revenue-sharing agreement exists with Minorplanet. Revenue is also generated from the agreement with Toyota. ITIS has therefore secured two main revenue streams - one from the B2B sector, the other from the consumer sector.

Trafficmaster, also a provider of real-time traffic data, is able to generate revenue from motoring organisations. The AA and the RAC motoring organisations both subscribe to a supply of live traffic information. Mobile networks - BT Cellnet, Vodafone, Orange and Virgin Mobile - also subscribe to live traffic information that is passed on to their subscribers. BMW and Citroen have both worked with Trafficmaster to provide integrated telematics solutions in their cars.

There is also a market for Trafficmaster products sold in retail outlets. These include: Trafficmaster Freeway - a speech-based live traffic information module offered for £79.99 including 12 months airtime, RAC Trackstar - a GPS based vehicle security tracking from £23.50 per month, and Trafficmaster Monitor for £19.50 per month (or purchased for £799 including fitting and three year's airtime) for traffic information broadcasts. Smartnav, which is due out at the end of 2002, is likely to be subscription-based. It combines satellite navigation, traffic information and a personal assistant to answer questions about the location of banks, restaurants, hotels and points of interest.

Main Players Profiles

The following is a list of the main players in the UK market.

Operator

Vodafone

Company Details

Vodafone's vision is: "to be the world's mobile communications leader - enriching customers' lives, helping individuals, businesses and communities be more connected in a mobile world." In the UK alone it has 13 million customers (Q2 2002). It is the largest company in Europe by market capitalisation and the largest telecommunications company of its kind globally with a customer base of over 95 million.

Contact details

Vodafone Group Plc

The Courtyard

2-4 London Road

Newbury, Berkshire

Tel: +44 1635 33251

Solution Offerings

Products:

- Corporate Eye Online (CEO), an Internet-based application. It is aimed at anyone who needs detailed information on vehicle and fleet movements within the UK and mainland Europe. The Corporate Eye Online solution has three main parts - the website, airtime and the vehicle tracking unit (VTU). The vehicle tracking unit consists of a TMX, puk antenna and wiring loom. There are over 70 qualified and approved engineers in the UK doing installations of the vehicle tracking unit. Information about the location of vehicles, together with information on vehicle speed, route, and ignition on and off times is supplied.

The CEO Solution costs £14.95 per month, with 10p charged for each "alert" and 20p for each information request over the Internet. With a fleet of 100 vehicles monitored for their whereabouts twice a day, the total outlay for the month would be £1,895 - about £19 per vehicle.

Customers

This is a new venture and no customers have been announced yet.

Partnerships

To implement Corporate Eye's strategy, it is necessary to partner with industry leading hardware vendors and suppliers.

Corporate Eye sees itself not just a provider of a fleet management service, but more of a virtual gateway and enabler for location-based applications. Its application is targeted at companies with sales staff, engineers, coaches, taxis or trucks on the road. There can be no doubt that Corporate Eye, with the backing of the Vodafone corporation, will likely become a major player as rapidly as possible.

Application Platform Provider

Webraska

Company Details

Webraska, a private company, provides solutions to Mobile Network Operators, Application Developers and Telematics Service Providers seeking ready-to-launch location-based applications and services. Webraska strengthened its market position via a merger with AirFlash, a provider of applications for network operators and wireless service providers (Sep 2001). Offices are established throughout Europe, North America, Australia and Japan.

Contact details

Webraska UK

12-14 Ansdell Street

London W8 5TR

Tel: +44 20 7073 2691

Fax: +44 20 7073 2735

Solution Offerings

Products:

- IbDN Fleet is an internet-based fleet management solution, for commercial fleet managers, jointly developed and commercialised by Webraska and Sidewinder in the US. It enables real-time route optimisation, taking into account traffic congestion, and is aimed at small fleet operators. The services are provided throughout Europe, North-America, Brazil and Australia.
- IbDN Tracking is a web-based application that aggregates sequential position reports from IbDN-Lite clients and displays the routes on a web interface. IbDN Tracking is available as a “standalone” product, or can be integrated in customers’ turnkey solution offering.

Customers

NEXO, the telematics platform of the Cobra Group, has selected Webraska's SmartZone Geospatial Platform to power its anti-theft, after-theft and tracking services (Q3 2002). Cobra provides electronic security solutions to major European, American and Japanese vehicle manufacturers. The company serves both the original equipment market (OEM) and the aftermarket, maintaining direct operations in France, Germany and Italy and servicing all other key markets through a network of 42 independent organisations.

Partnerships

Webraska’s strategic partners include: IBM (supplier of middleware), ITIS, Ericsson, Nortel (location-based wireless internet solutions), Oracle (location-based applications interface), CMG, Sun, Alcatel, Openwave, SAGEM, Navtech, CellPoint, CPS and Schlumberger. It is significant that Navtech supplies digital map data for Europe and that Webraska benefits from the location-based platform expertise of CPS (UK-based).

ITIS has recently selected Webraska’s SmartZone Geospatial Platform to power a vehicle tracking service (Q3 2002). ITIS Holdings is a provider of traffic information and location-based content to the telematics industry in the UK. ITIS is Webraska’s preferred supplier of traffic content for the UK, for all of its LBS and wireless navigation applications.

Webraska’s operations in the UK are clearly still at the planning stage but implementation of fleet management services should follow in the next year or so. Webraska is seeking a dominant market position in the UK, but currently only has an office there as opposed to extensive operations. Recent news points to the direction it hopes to take in the near future. With traffic information from ITIS, it will now have the real-time data it needs to run sophisticated fleet management applications. With Cobra as a customer, the tracking of stolen vehicles is evidently an area that Webraska will seek partnerships. Expect more security firms to buy Webraska's platform in the future.

Vehicle Manufacturer

Volvo Trucks (UK)

Company Details

With extensive experience of the haulage industry, Volvo Trucks uses its expertise to develop a solution aimed at this specific niche market. Dynafleet has been developed for Volvo trucks manufactured after 1993, but it can be installed in any other truck as well. The system now utilises the GSM network.

Contact details

Volvo Trucks and Bus Ltd,

Wedgnoek Lane,
Warwick CV34 5YA
Tel: +44 (0) 1926 401 777

Solution Offerings

Products:

- Dynafleet - Dynafleet consists of the following parts: Vehicle Management reports vehicle data and driving times to both the driver and the office. Back at the office, the information is analysed and used by the fleet manager and the wages office. Transport Management is a complete system for logistics functions, including vehicle position tracking and the capacity to send messages to and from vehicles.
- The Dynafleet computer program - All information and communication between the vehicle and office is processed at the office using the Dynafleet computer program. It should be noted that some Dynafleet features do not work in other non-Volvo trucks, since other manufacturers fit different types of tachograph and different electronic systems. In addition, older Volvo trucks cannot log all the vehicle information that Dynafleet has the capacity to process. Location, text messages and order processing work entirely independently of truck make.

Volvo Trucks has also developed a web-based service that permits easy vehicle tracking on the Web. Dynafleet Online allows access to vehicle data from the entire fleet. It gives the following information about how vehicles are being driven: the distance covered, fuel consumption, the next scheduled service, and environment-related reports. The haulage firm itself does not need to compile the data since it is done automatically. Vehicle and driver data can now be downloaded directly to the office via the GSM system. Information is displayed on a colour monitor in the truck.

Revenue is generated from the installation of hardware equipment in the trucks, and from subscriptions to Dynafleet.

Customers

Haulage firms that have a preference for Volvo trucks.

Dynafleet might suffer from a narrow market vision. The system can be fitted to non-Volvo trucks, but not all its best operational features can be guaranteed in action. Volvo's own research has focused on haulage firms and its solution is designed to fit this market niche well. However, many of its features such as vehicle tracking would be useful to companies in other sectors too. By broadening the marketing focus, Volvo could gain a much larger customer base.

The plan is to launch Dynafleet in different countries across Europe depending on variations in infrastructure and economic conditions. At the present time, there are offices in the UK, Austria, Belgium, Denmark, France, Finland, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Norway and Switzerland. Hence, Volvo Trucks and Dynafleet could become a formidable force in the medium term.

Application Developer

Cybit

Company Details

Cybit has become one of the UK's leading telematics service providers in the last few years. Cybit Ltd is the trading company of Cybit Holdings Plc, which is an AIM listed company, floated in March 2001. Cybit Ltd incorporates the trade brands Fleetstar and Fleetstar-Online. It is a provider of both asset and fleet management applications. Cybit has formed partnerships with many leading companies. Cybit offers an end-to-end customer service including provision of hardware, installation, systems integration, after sales service and airtime.

Contact details

Cybit Ltd
IT House

Chord Business Park

London Road

Godmanchester

Cambridgeshire

PE29 2NU

Tel: +44 (0) 1480 389 100

Solution Offerings

Products:

- Fleetstar - Fleetstar consists of a dedicated control centre that runs Windows-based software together with a small electronic module fitted into every vehicle in the fleet. The module uses the integrated GPS system to record a detailed history of each journey. The data is regularly transmitted back to the organisation's office via GSM communications technology. The Fleetstar system uses digital mapping supplied by Ordnance Survey and live traffic information supplied by Traffic Master.
- Smartnav - By pressing the Smartnav button in a vehicle, the driver is connected directly to a personal assistant. The assistant asks the driver where he wants to go and the route is then programmed into the navigation computer. The route is then sent to the vehicle and spoken turn-by-turn instructions are given.
- Cybitfleet – Cybit's hardware solutions are integrated via an Internet ASP software package. This allows authorised users to monitor those assets to which they have secure access. This solution combines a mapping engine using digital vector maps (to street level in the UK) with a Microsoft SQL Server position and event database.
- The software provides traditional track and trace functionality, so that the user can display the last reported position or event on the map, receive an asset's current position, and replay a journey.
- The software platform also allows jobs to be allocated to a vehicle or asset as well as the location of the job to be graphically shown on the same map as the vehicle. Internet messaging and two-way voice or text is also available - with the asset manager able to send messages to mobile units. Geo-fencing and exclusion zones can also be created.
- Fixed Asset Management - This solution claims to enable more cost-effective management and supervision of remote buildings and industrial applications including: vending machines, ticketing Machines, heating and air-conditioning systems water and waste disposal systems.

Customers typically purchase or lease the capital elements of the solution and pay a monthly subscription that varies depending on the level of services required.

Customers

Information not published.

Partnerships

Partnerships exist with the following companies:

- Vodafone
- Navtech
- Ordnance Survey
- Trafficmaster
- Siemens
- Lex Vehicle leasing

With their strategic partners, Cybit can cover the whole value network. Map data is bought from Ordnance Survey and Navtech, real-time traffic information from Trafficmaster and airtime from Vodafone. Cybit is therefore well positioned to offer end-to-end customer service and is expected to increase its market share in the next few months.

eagle eye**Company Details**

eagle eye has been a leading provider of vehicle management solutions since 1995. It has its headquarters in the North West of England.

Launched in June 2000, eagle eye's vehicle and fleet management solution is currently used by customers all over Europe. In November 2000, eagle eye tracking systems (UK) Ltd was acquired by eagle eye telematics plc. Eagle eye telematics plc is now listed on the Alternative Investment Market (AIM) in the UK. The company plans further European and international expansion.

Contact details

eagle eye

Apollo House

41 Halton Station Road

Runcorn, Cheshire, WA7 3DN

Tel: +44 (0) 1928 795 400

Solution Offerings

Products:

eagle eye's wireless fleet management solution features tracking, navigation, communication, information, reporting, control, safety and security services. The product solutions are aimed at supporting the needs of fleet operators of all sizes. There is also an asset tracking service. The system comprises the following parts.

eagle eye's Vehicle Communication Gateway (VCG) allows an organisation to manage and communicate with vehicles via GPS tracking and GSM technology.

A VCG unit is installed into vehicles that the organisation wishes to communicate with and manage. The organisation can then communicate with the vehicle via voice, data and SMS. This requires a computer base station with eagle eye's fleetserver software installed. The fleetserver software provides detailed UK street level mapping and all European A and B roads are supplied as standard. Users can customise the map to show specific locations.

Subscription fees are charged for fleet management and tracking services.

Customers

The Page Group was founded in 1946 as a haulage and demolition contractor. It has now grown to be one of the foremost transport companies in the South East. It has the capability of maintaining 125 vehicles and trailers for 1,000 clients.

Diamond H. Transport was formed by Roy Holding and two partners in 1975. The incorporation of Diamond H. Transport (Warrington) Ltd took place in 1978.

This company will be one to watch for in the future. It has been developing its own technology for 7 years but it remains to be seen whether or not it can compete with other established players like VeMIS who benefit from the financial backing of DaimlerChrysler.

Euteltracs**Company Details**

Euteltracs is a pan-European company, producing a two-way mobile satellite communication and vehicle positioning system dedicated to enhancing fleet management productivity. It offers custom-made systems and service for trucking operators and ship owners, as well as turnkey management software solutions. It has the backing of Qualcomm which is listed on Nasdaq.

Contact details

Qualcomm

Tel: +44 (0)1844 260 707

Solution Offerings

Products:

There are fleet solutions for hazardous loads, construction equipment, trucks and trailers, shipments of goods, and private fleets of vehicles.

These products promise to enable companies to communicate in real-time, send and receive data, and obtain vehicle positioning on all vehicles in their fleet. The data can be integrated into back-office systems.

Revenue is generated from the sale of custom-made systems to trucking operators and ship owners.

Customers

Information not published.

Partnerships

The most important relationship is with Qualcomm, which also is a supplier to two other brands in the telematics area. Over 400,000 vehicles already use OmniTRACS and OmniExpress. Eutelsat, another Qualcomm company, supplies the satellite communications technology.

There are other service providers in France, the Benelux countries, Denmark, Spain, Italy, Germany and Russia - all of which offer something similar derived from the Qualcomm corporation. Euteltracs has an enormous amount of expertise it can tap into from the experience gained in these markets and should be able to apply it equally in the UK when it has firmly establishes itself.

Minorplanet

Company Details

Minorplanet's mission is: "To be the best source of Vehicle Management Information (VMI) in the world, delivering huge cost savings and increasing customers' vehicle productivity by continually upgrading information software." Minorplanet is currently listed on the stock exchange and has offices in: England, Australia, France, Germany, Italy, Netherlands, New Zealand, South Africa, Scotland, Spain and the USA. The company has a client base of some 3000 businesses and employs 1,200 full-time staff.

Contact details

Minorplanet Systems

Greenwich House

Sheepscar

Leeds LS7 2AA.

Tel: +44 (0)113 3836300

Solution Offerings

Products:

At the heart of Minorplanet's system is a Data Collection Unit (DCU). It continually monitors and records the vehicle's position, speed and distance traveled anywhere in the world using GPS.

Features include:

- Live Tracking
- Journey Replay
- Journey Reports
- Exception Reports
- Route Planning
- Text Messaging

There is an agreement with ITIS through which ITIS markets Minorplanet's products for security and traffic information services under the brand name NavTrak.

Customers

Minorplanet claims over 3,000 customers ranging from Boots The Chemist and TLS Vehicle Rental to small fleet operators with three or four vehicles.

Partnerships

Minorplanet has the following strategic partners:

- BT Cellnet, the mobile Internet company has over 7 million customers using its voice services and over 600,000 subscribers to its Genie Internet service. It is wholly owned by British Telecommunications plc.
- GE Capital Fleet Services is the world's largest fleet services company with more than 1,000,000 vehicles under lease and fleet management. GE Capital has four member businesses in the UK - Avis Fleet Services, Leasecontracts, Cochranes Fleet Services and GE Capital Fleet Logistics.
- Integrated Traffic Information Systems (ITIS) is the UK's leading provider of real-time traffic and public transport information. ITIS markets Minorplanet products for security and traffic information services under the brand name NavTrak.
- American-owned TLS plc is one of the UK's fastest growing vehicle rental and contract hire companies, with a UK fleet of more than 30,000 vehicles.

Minorplanet is continuing to pursue a strategy of developing VMI business within the UK by establishing strategic alliances. The company is also actively seeking to sign distribution agreements with third parties in a number of different regions outside the UK.

Deals covering the USA, Spain, Holland, Germany, France, Eire, New Zealand, and Australia have already been concluded and expansion is set to continue elsewhere.

Thales (Orchid)

Company Details

Orchid is a wholly owned subsidiary of Thales, which is a global leader in three markets: aerospace, defense and information technology. Thales has 65,000 employees worldwide, a presence in nearly 50 countries and revenues of EUR 8.6 billion. Its main offices are in the UK, South Africa and Australia. The Orchid office was established in 1997. The company targets all organisations that have a requirement for integrating mobile voice and data communications with vehicle telematics.

Contact details

Thales Telematics plc

Compass House

Davis Road

Chessington

Surrey KT9 1TP

Tel: +44 (0)20 8974 1100

Solution Offerings

Product:

- Hardware - in-vehicle communications and positioning units
- Orchid Communications Hub
- Software Fleet Management system - orchidtrak.com
- Orchid Response Centre services

Orchid offers the following applications for its customers:

- Fleet management and vehicle security tracking.
- Managed fleet services via the Orchid Response Centre

- Off board navigation services
- Differential GPS providing precise position
- Direct data communications link to GSM network
- Short Message Service Centre (SMSC)
- GSM data channel for historical downloading of trip data

Orchid combines the technologies of GPS and GSM communications to provide real-time and historic management information for fleet managers and individual users. Individual users can also make use of the stolen vehicle tracking service, so clearly there is some overlap between the services provided in the B2B sector and in the consumer sector.

Revenue is generated from the sale of integrated solutions, and from subscriptions to the services.

Customers

Orchid is actively selling integrated solutions in a range of market sectors such as: Field Service Engineers, Dispatch and Couriers, Construction, Public Utilities, Contract Hire, Transportation and Distribution, Emergency Services, and Individual private users.

Partnerships

Orchid has the following strategic partners:

- BT Cellnet - Orchid customers can use the BT Cellnet network as an alternative service provider.
- Navtech - Navtech (Navigation Technologies) is a global market leader in digital map data. Navtech provide Orchid with comprehensive, up-to-date detail available for anywhere in the world. This enables street level mapping requirements to be fulfilled in most major towns and cities around the world.
- Vodafone - Airtime is provided by Vodafone.
- T-systems (Debis) - Debis provide a total billing platform as part of Orchid's end-to-end solution. Debis owns Europe's largest private data network providing fast, efficient and accurate billing services for some of the largest companies worldwide.
- Trafficlink - This partnership provides fleet managers with live information on traffic congestion and incidents. Trafficlink specialises in providing high-quality traffic and travel information. Since its launch in 1995, Trafficlink now serves more than 170 radio stations - or 70% of the radio broadcasting market.
- Hire Alliance - The Hire Alliance, a leading player in the plant and tool hire sector in the UK, has appointed Thales Telematics as its supplier of fleet management and security technology solutions for its members which number more than a 1000.

Orchid is one of the big players with lots of big strategic partners. With its feet firmly in the B2B sector, Orchid has been quick to capitalise on applications that also work in the consumer sector such as stolen vehicle tracking. It manages to cover a large part of the value network itself, providing hardware, software and the Orchid response centre.

Trackology

Company Details

Trackology is based in Hampshire in the UK, and is a provider of corporate tracking solutions. A relatively new entrant to the field of professional location-based services, it has begun to forge some useful partnerships. Trackology and its partners form a distribution network, which aims to ensure the availability of hardware used by the applications. Compatible hardware includes the Benefon Track handset. The question that needs to be answered is whether its business strategy rests to heavily on investment in one type of positioning technology that may or may not take off.

Contact details

Trackology

50 Christchurch Road

Ringwood

Hampshire

BH24 1DW

Tel: +44 (0)7000 145 145

Solution Offerings

Products:

- Corporate asset tracking
- Corporate asset monitoring
- Vehicle tracking
- Lone worker protection

In order to use each trackology application, the user needs a CURSOR-enabled mobile device and access to the Internet. CURSOR refers to the technology developed by Cambridge Positioning Systems (CPS) that provides the ability to locate GSM-based mobile devices.

Briefly, when the handset is either operated by the user or contacted by the trackology application, it is instructed to send information about the time of arrival of signals it receives. Once the position has been established, the position is delivered to the trackology application.

CPS is currently conducting trials with many major Mobile Network Operators worldwide. According to CPS, it could implement CURSOR across the whole of a UK network in around three months. On the handset side, ensuring that a mobile phone can become CURSOR-enabled requires an upgrade to the phone software.

It is not clear in this case whether or not revenue can be generated from the applications themselves without sufficient marketing.

Customers

Information not published.

Partnerships

Cambridge Positioning Systems (CPS) and Benefon are the two main partners in technology. The trackology applications rely on the CPS positioning method and collaboration with Benefon provides at least one compatible phone for the applications. The Hugh Symons Group has been employed to provide advice on product distribution and channels to the market.

The success of this company depends largely on whether phone manufacturers can be convinced of the need to include software upgrades in their new phones. Trackology is relying heavily on the widespread adoption of handsets that work with CPS positioning methods. At the present time, they have made sure that at least one handset from Benefon works with their applications. One problem is that customers of Trackology applications will have to buy the appropriate Benefon phone. In view of the fact that Trackology is currently looking for distributors of its applications, one is left wondering whether it can exercise enough power in the marketplace to sell its products. Selling its applications with Benefon phones may be difficult if the marketing effort is not strong and coordinated enough.

VeMIS

Company Details

VeMIS is the UK's long-time incumbent telematic solution provider. As one of the first companies to offer proven in-cab management systems to the UK market, VeMIS is widely recognised as a leader in its field. The company has more than ten years' experience and is part of DaimlerChrysler group, which has a 90% stake. To give an idea of its widespread usage in the UK and across Europe, the company claims more than 10,000 units have already been installed.

Contact details

VeMIS Ltd

18 Pebble Close

Pebble Close Business village

Tamworth, Staffordshire, B77 4RD

Tel: +44 (0)1827 311 912

Solution Offerings

Products:

The VeMIS 3 system uses GPS and radio units to provide an expandable telematics solution for an entire fleet. A brief description of its components is given below.

The VeMIS 3 on-board computer interfaces with sources of information such as the rev counter, tachograph, fuel meter, power-take-off, exhaust brake, and vehicle location. A trip computer displays fuel consumption where the fuel flow is monitored. This encourages the driver to drive economically to save fuel. A remotely activated economy coaching device reminds the driver of engine characteristics and limits for deceleration, speed and idle times. Hence, a more moderate driving style is encouraged.

The downloading of data is wireless and incurs no airtime cost. Data is simply downloaded from vehicles onto a depot-based PC or network using an air-time-free radio. Managers can modify the economy settings to target individual vehicles if desired. As an option, selected vehicles can be equipped with a GSM module and antenna - allowing for the downloading of data and the adjustment of settings in any area with GSM coverage.

There are some points about this system worth bearing in mind.

VeMIS is not, strictly speaking, an automatic vehicle location system. Rather, it is a driver and vehicle performance monitoring system, implemented primarily to encourage fuel consumption savings on a fleet of vehicles. Nevertheless, an historical vehicle tracking facility is currently available and a live tracking version is in the pipeline. Until this arrives, the system will continue to look rather dated.

The hardware has a life expectancy of 7-8 years or more. The on-board equipment is transferable from one vehicle to another, but this may require a new wiring loom to connect to the engine management system. VeMIS software is upgraded as part of the maintenance packages.

Once the equipment has been purchased, there are no running costs because it uses GPS and licence-free radio units. However, extended service and maintenance agreements do incur extra costs.

Customers

The list of companies includes the following, which are largely transportation and logistics companies, or companies whose operations are large enough to require such services:

- ASDA
- AF Blakemore
- HP Bulmer
- Coca-Cola
- DFDS
- Schweppes Transport
- Express Dairies Dist
- Faber Prest Steel Dist
- Fiege Merlin Distribution
- Graystons Automotive
- JR Harding & Sons
- Londis Holdings
- Interbrew
- D Morgan
- Parcelforce
- Peter Green Haulage

- Portsdown
- Shell Global Solutions
- Shell Bulgaria
- Shell Hungary
- Shell Romania
- G Stiller (Transport)
- TDG Logistics
- Thorntons
- Timbmet
- UCI Logistics
- Warwickshire Cnty Council Wiltshire County Council
- Wincanton Logistics

Partnerships

Clearly, the most important relationship is with DaimlerChrysler, which owns 90% of the company and determines the pace of research and development.

VeMIS is a company with a wealth of experience in the area of transportation and logistics. As a company with a longer history, it did not start out in the business of automatically providing information on the location of vehicles or their tracking. Strictly speaking, it does not currently offer an automatic vehicle location system. The future of the company may depend on whether it is able to offer live tracking to compete with similar market offerings. With the backing of the DaimlerChrysler group, technology upgrades, and therefore increased market competitiveness, should be realisable objectives.

Content Supplier

ITIS

Company Details

ITIS Holdings plc was formed in 1997 as a traffic and travel information business. Today, the company sees itself as a leading telematics company working with vehicle manufacturers, mobile networks, broadcast media, ISPs and fleet logistics companies. ITIS Holdings plc has been floated on London's Alternative Investment Market (Q4 2000) to raise the capital required to further develop its traffic content and grow its telematics service provision capability.

ITIS has already established itself through a formidable consumer telematics brand (NavTrak), for which it has developed a range of unique and innovative location-based driver services delivered via GPS/GSM.

Contact details

ITIS Holdings plc
The Warrant House
1 High Street
Altrincham
Cheshire
WA14 1PZ
Tel: +44 (0) 161 929 5788

Solution Offerings

Products:

ITIS has developed a unique system to collect and analyse traffic information using a combination of journalistic and Floating Vehicle Data (FVD). It provides journey time forecasts as well as real-time traffic updates. Content is delivered over a number of platforms including RDS-TMC, Digital Radio, IVR and directly to its own consumer telematics system, NavTrak.

Current services on offer include:

- Breakdown and Emergency
- TrafficWatch, and
- Navigate.

In the event of breakdown or emergency, the exact location of the vehicle can be pinpointed. TrafficWatch uses the Data Collection Unit (DCU) in the car to establish and track a customer's position. They can then be informed via their mobile phone of any significant traffic problems ahead on their route. Navigate gives turn-by-turn directions to the customer via their mobile phone.

Data is delivered to NavTrak, which sells its services to consumers. Siemens VDO buys traffic information. ITIS offers its customers Minorplanet's Vehicle Management Information. It is therefore likely a revenue-sharing agreement exists with Minorplanet. Revenue is also generated from the agreement with Toyota.

Customers

Recent contracts in the UK with Eddie Stobart Ltd, Britain's largest independent haulage and distribution organisation, and National Express have been signed.

Partnerships

As a result of a strategic partnership with Minorplanet, ITIS offers its customers Minorplanet's VMI (Vehicle Management Information) software. Utilised by companies who operate fleets of vehicles, VMI aims to improve productivity and reduces the costs of running a vehicle fleet.

ITIS and Toyota (GB) have announced the first commercial RDS-TMC service in the UK (Q2 2001). ITIS will supply traffic information content to a selected number of Toyota models via RDS-TMC (Radio Data System - Traffic Message Channel).

ITIS has entered into an agreement to provide traffic information content for Siemens VDO Trading's range of in-car navigation systems (Q3 2001). Under the agreement, ITIS is integrating and supplying real-time traffic information to the VDO Dayton range of in-car navigation systems. Siemens VDO Automotive holds a leading position in the automotive market, supplying manufacturers, such as BMW, Land Rover, Renault and Peugeot as well having as an extensive distribution to the aftermarket.

ITIS' strategy is to enter into agreements with major transport and coach companies whose fleet travel millions of miles each year on key roads. ITIS will continue to ensure its dominant position by signing more such companies. To consolidate the progress ITIS has made since its listing in October 2000, it will need to continue to establish relationships with key, international vehicle manufacturers, further develop the NavTrak brand and launch new telematics packages.

Trafficmaster

Company Details

Trafficmaster provides digital traffic information. Though the company was built up in the UK, Germany is now central to the company's expansion strategy, being the largest single car market and home of the engineering operations for major manufacturers. Trafficmaster has established a new operation in Germany near Frankfurt called Trafficmaster Europe to reflect this emphasis.

Contact details

Trafficmaster Plc
University Way
Cranfield
Bedfordshire
MK43 0TR

Tel: +44 (0) 8705 561712

Solution Offerings

Mobile Phone Services:

- AA Roadwatch - the AA Roadwatch service is available on any mobile telephone network.
- RAC traffic alert - available on BT Cellnet, Vodafone, Orange and Virgin Mobile.

Products:

- Trafficmaster Freeway - This is a compact speech-based, live traffic information module, which gives advance warning of delays up to 12 miles ahead of the vehicle. This is battery-powered, portable and is offered for £79.99 including 12 months airtime.
- RAC Trackstar - GPS based vehicle security tracking device allows the tracking of stolen vehicle at street level in real-time. This service costs from £23.50 per month.
- Trafficmaster Monitor - Trafficmaster Monitor presents live traffic information to the driver. This in-car unit features advanced graphics displayed on a full colour touch-screen. Trafficmaster Monitor costs £19.50 per month or can be purchased for £799 including fitting and three year's airtime for traffic information broadcasts.
- Smartnav - Trafficmaster has recently launched Smartnav. Smartnav is an any-car system that combines satellite navigation, traffic information, as well as a personal assistant to answer questions about the location of banks, restaurants, hotels and points of interest. The expensive hardware and mapping database is housed off-board in the Smartnav central server computer. A key selling point is that the only hardware required in the car is a simple GPS satellite-based positioning device and a small telematics control unit (TCU) that receives the route data. Trafficmaster takes responsibility for updating the maps.

For products that represent the combined efforts of motor manufacturers and Trafficmaster, see the section entitled “Partnerships”.

The AA and the RAC motoring organisations both subscribe to a supply of live traffic information. Mobile networks - BT Cellnet, Vodafone, Orange and Virgin Mobile - also subscribe to live traffic information. The retail prices of individual products are listed above.

Customers

Information not published.

Partnerships

Trafficmaster has the following strategic partners:

- Automobile Association - Trafficmaster announced a 5-year contract (Q1 1999) to supply the AA with an exclusive feed of data directly from the fixed-sensor network. This increased the distribution of Trafficmaster traffic information to the country's 25 million drivers.
- BMW - BMW GB originally offered the BMW Monitor, displaying traffic congestion information for the whole Trafficmaster UK network on 7 series models only. The company is now offering Monitor across its entire UK car range of 3, 5 and 7 series models. BMW also include Trafficmaster.net, the Internet-based traffic information service, if the Communications Pack for a new car is ordered.
- Citroen Trafficmaster Oracle - Trafficmaster's fully integrated local broadcast traffic information module (Trafficmaster Oracle) is standard on the new Citroen C5 range and includes 12 months airtime. It provides location specific, speech-based warnings on traffic congestion via the car's stereo system. This is fully engineered into the vehicle and developed as part of vehicle engineering programme from the conceptual stage.
- BT Cellnet - BT Cellnet and Trafficmaster teamed up to launch BT Cellnet Traffic Line (Q3 1997), an innovative service which provides live, location-specific traffic reports direct to a mobile phone over the BT Cellnet digital network. By dialing 1200 on their mobile phone, motorists (or other consumers) can access a detailed traffic report. BT Cellnet's digital network identifies which cell site is handling the call and is then able to provide up to the minute information for the specific location. The information delivered

to the driver includes the location of the problem, the length of the tailback and the expected time delay.

- Orange - Orange Trafficmaster's joint venture company RAC Trafficmaster Telematics (RTT) is providing new traffic information services to the 10 million customers of the Orange mobile telephone network in the UK. By dialling 177 on their handset they can access live traffic reports for any motorway or trunk road via a simple keypad menu.
- RAC - Using Trafficmaster live traffic information, the RAC Traffic Alert service was launched in June 1998. The service provides a location specific traffic report in partnership with Trafficmaster.
- Deutsche Telekom AG - For the generation of live traffic information in Germany, Trafficmaster is using the GSM networks of Deutsche Telekom AG.
- Lex Vehicle Leasing - Trackstar has been selected as the sole supplier of vehicle security tracking systems to Lex Vehicle Leasing.
- Virgin - Trafficmaster supplies Virgin-branded live traffic information services on the Virgin Mobile network as part of Virgin Extras. Traffic information is accessed via the keypad menu.
- Motorola - Motorola is a key strategic partner and principal areas of co-operation include Motorola's 10% shareholding in Trafficmaster's German business, Trafficmaster Europe, and also in the provision of engineering and manufacturing support on various products and projects. Trafficmaster and Motorola have jointly produced Smartnav, a fully specified navigation system incorporating real-time, traffic-flow data. Motorola will provide the navigation server, part of its new iRadio navigation application. The Smartnav service is sold through automotive manufacturers, wireless carriers and aftermarket channels.

With roots in the UK, and further expansion into Europe already underway, Trafficmaster has recently announced that it will accelerate its push into the US telematics market with the acquisition of Teletrac of California. This strategic move illustrates how ambitious the company is.

According to the company, voice and screen-based consumer products, mobile telephones and the Internet are some of the new services that will be available in Europe in the near future.

Consumer Market Adaptation

Vehicle tracking is probably the service that lends itself best to consumer market adaptation. Thousands of cars are stolen in the UK every year and fitting a tracking device is a deterrent to thieves, and allows the owner and/or the police to track a stolen vehicle belonging to a private owner. It can also reduce insurance premiums.

There is certainly a market in the UK, but not everyone is able to afford a tracking device and willing to pay a subscription to use it. It is a useful optional extra to prevent the theft of an expensive car, so high-end users are likely to be targeted. There is also a question mark over how tracked stolen vehicles are to be recovered. Who, in fact, recovers the vehicle? Certainly, armed gangs in the stolen car trade are dangerous to approach, making police efforts critical to recovery. Do the police actually have the resources to chase every stolen car, even if it can be tracked?

There are good examples of stolen vehicle tracking services already on the market. Thales, through its Orchid subsidiary, offers individual users such a service. ITIS offers a service through its NavTrak-branded service, which is focused on the prevention of car crime. NEXO, the telematics platform of the Cobra group, has selected Webraska's SmartZone platform for just such a service (Q3 2002) and so we are likely to see that service on the market in 2003.

Given the fact the stolen vehicle tracking services are already on the market, it will only be a matter of time before the introduction of like services from other companies - the service from NEXO may well arrive first. Trafficmaster, eagle eye and Trackology are likely to follow suit.

It is clear that real-time traffic data is not just of interest to businesses but also to individuals who do not want to be caught up in traffic. In fact, in many ways the needs of the two groups are the same. Route optimisation and journey planning help commuters as well as truck drivers reach their destinations quicker.

Avoiding traffic congestion and finding the best route is a common goal, both in the consumer and business sector. This suggests that at the right price such services could be made very attractive to consumers. The difficulty may be in appropriately branding the services in the consumer sector to differentiate them from ones in the business sector. With this done, there are obviously economies of scale to be reaped.

ITIS already offers users its Breakdown and Emergency, Navigate and TrafficWatch services. These appear to have both the business and private user in mind. All three services can be used in situations faced by the two types of users. Trafficmaster had also realised the potential of feeding its live traffic information to consumers but it has taken a different approach. It prefers other well established motoring organisations like the AA and the RAC, and mobile networks like Orange, Virgin and BT Cellnet to assume the responsibility for marketing. This has the advantage of reaching an existing customer base without the difficulties of creating a completely new brand.

Successful adaptation for the consumer market is already underway. There is no doubt that these services are used by thousands of mobile subscribers across the country. In this respect, Trafficmaster may have a more viable business model, seeking market penetration by tapping into mobile networks' share of existing subscribers. ITIS is relying, at least partially, on the marketing success of NavTrak. Building market share may, therefore, prove a long haul for ITIS.

UK Market Conclusions

It can be assumed that the companies with the longest history in the professional LBS market might be best placed to increase their respective market shares. Volvo Trucks has specialised in telematics since 1993, and VeMIS (DaimlerChrysler owned) has been providing systems for eight years. However, both seem to suffer from blind spots in their business strategy and their success in the future will depend on how well they are addressed. Volvo Trucks, unsurprisingly, seem to prefer specialisation in systems for their own trucks. But its solution can be made to work almost as well in the trucks of other manufacturers. Volvo is concentrating on just this one niche, apparently without the vision to succeed in other services and market sectors. VeMIS offers a solution that can do away with airtime costs since it is based on a license-free radio system, yet no live tracking service is on the market, though one is in the pipeline.

All this leaves plenty of scope for newer entrants to dig their heels in and capture market share. Vodafone's Corporate Eye Online solution sounds elegant but can quickly run up high airtime charges. Thales (Orchid) has a solution with the flexibility to appeal to many market sectors and up-to-date technology too. Cybit offers a similar appeal and its solution also has many market sectors in mind. Eagle eye, though recently floated and with ambitious expansion plans, may not be able to gain a large enough customer base. Trackology may not survive because of problems distributing and marketing its solution, which relies on Benefon handsets. Of the two traffic information providers, Trafficmaster is enjoying an enviable market position - four mobile networks subscribe to its feed of real-time traffic information as opposed to one network for ITIS. A sounder business strategy may prove critical in the next few months.

It was noted that VeMIS does not currently offer live tracking and is not competitive in this regard. The whole point about currently available positioning technology, whether GPS, GSM or a combination of both, is that it allows for the provision of accurate positioning data automatically. Fleet management and vehicle tracking are the obvious applications for this relatively new positioning phenomenon.

The services with the greatest growth potential may lie in the other two areas - asset management and data collection and delivery. Vehicles are clearly not the only assets that need effective management. For example, vending and ticketing machines are often mobile and could benefit from the added level of monitoring, as could huge industrial cranes. In the age of the mobile Internet, both corporate and private users are interested in calling up information that can be utilised to make journeys quicker and provide useful location-based information. Branded Portals that users know and trust for reliable, up-to-date information are likely to hold the key to the success of many of these services.

As regards consumer adaptation, two areas are believed to be profitable in the changeover from business sector to consumer sector services. These two areas are: stolen vehicle tracking and data collection and delivery. It is easy to see why - these services just require a certain amount of brand differentiation to make them appeal to consumers as much as business users. In essence, the services themselves need not change much. Headway is being made in stolen vehicle tracking:

Thales and ITIS (through NavTrak) currently offer this service. And Webraska has just signed a deal with NEXO (Q3 2002).

In the second profitable area of data collection and delivery, the appeal of real-time traffic data to consumers is obvious. Both business and private users prefer to avoid congestion and arrive quickly and safely. The battle for the lion's share of the market is also underway. Trafficmaster in particular may win out because of its clever strategy of tapping into mobile subscribers through branded Portals.

Professional LBS in Germany

History of Professional LBS in Germany

In October 2000, the first LBS was launched in Germany. Vodafone D2 started with Passo (Traffic information), kompazz (shopping guide) and Hotelkatalog (hotel reservation) as pilot projects. T-Mobile launched its LBS enhanced portal in March 2001 and other operators followed soon after.

Passo was the first professional LBS provider in Germany offering telematic services and traffic information. Tegarom, a company owned by Deutsche Telekom and Daimler Chrysler, followed suit a couple months later. Both have implemented traffic information systems based on Floating Car Data (FCD) and beacons installed on bridges and traffic signs on the German highway network. As consumer usage of these services is still low, the products are geared towards business customers especially for fleet management and vehicle-centric navigation systems.

Professional LBS Market Status in Germany

The German market is still in at an early stage of development. Operators have not implemented LBS systems with full coverage and more importantly, the business models are not clear for third party access to LBS data, nor for revenue sharing with third parties. Analysts like Booz Allen Hamilton and Ericsson Consulting claim that marketing activities from operators have not been sufficient and the uncertainty of personal data privacy has inhibited the market to become a mass market.

The research institute Mori (www.mori.com) published market forecasts for Germany in mid 2001. The market value is forecasted to be 2.4 billion Euros per year. 42% of German mobile users have an interest to use location-based services and are ready to spend up to 10 Euros per month on it.

According to the Strategy Analytics report, LBS is expected to generate \$9 billion in service revenues in Western Europe by 2005. LBS will account for over 40% of an operators' mobile data services revenues in 2007, according to a new report from ARC Group.

In fact, as long as no hard data for Germany has been available, the best forecast is approximately 25% of the forecast for the whole of Western Europe.

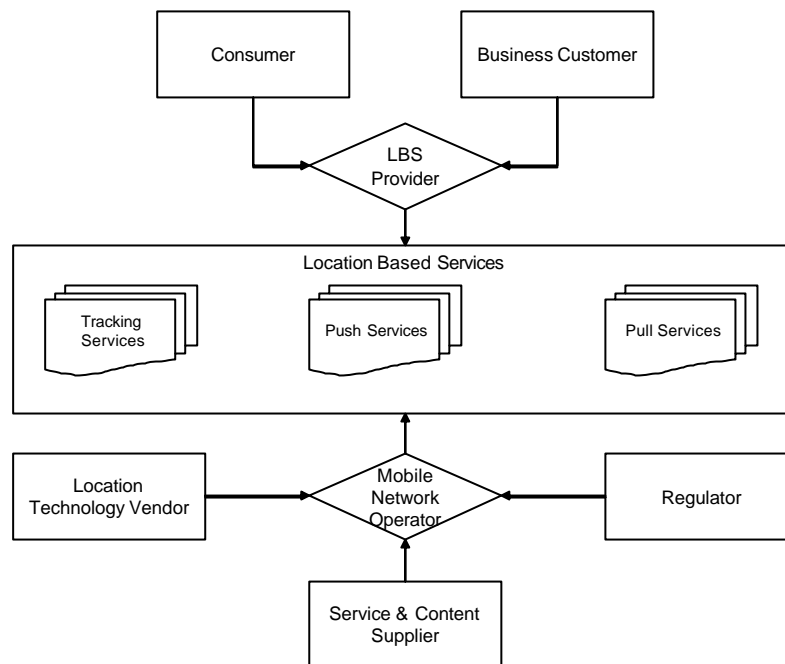
ETC Consortium: LBS Project in Germany

In September, the German ministry of transportation ordered an electronic toll collection system from the ETC consortium. The ETC consortium consists of Deutsche Telekom, DaimlerChrysler (each 45 %) and the French highway operator Cofiroute (10 %). The system will be the largest professional LBS in Germany and will provide access for third parties to offer additional value added services to the infrastructure. Tolls will be collected for trucks (12 tons and more) that use the German highway network. Some 3.4 billion Euros will be collected every year. The complete implementation of the system is estimated to cost between 6 and 8 billion Euros. The ETC consortium expects revenues from the operation of the electronic toll collection system of 700 million Euros.

Professional LBS Solutions

The professional location-based services available in Germany can be grouped under fleet management and tracking.

Professional LBS Value Network in Germany



The main players involved in professional LBS in Germany today are the mobile operators, the telecommunication industry and the automotive industry in offering traffic information services, operating data collection systems for actual traffic, and fleet management services to the logistics industry. Although the roles of the players identified in Germany can be categorised according to the simplified LBS value chain presented earlier, a slightly different view, as seen from the German perspective, is presented here for contrast.

LBS Provider

The LBS Provider has the key role for availability and integration of LBS into standard products. This LBS Provider firstly fulfills the classic intermediary role, aggregating and matching demand and supply. Secondly, the LBS Provider adds value by performing additional roles such as: mediator of consumer and supplier information, or as an assembler of formerly discrete products and services, thus offering a new value proposition. The LBS Provider has two key roles: to create sustained and loyal relations with customers; and to grow, organise, and sustain relationships within the LBS value network.

In Germany LBS Providers are car manufacturers (Audi, Volkswagen, DaimlerChrysler, BMW) or suppliers of car electronics (Blaupunkt) who bundle LBS with telematic products.

At the heart of the LBS value network model is the Mobile Network Operator. As a value network broker, the Mobile Network Operator is focusing on infrastructure development and provisioning and will outsource some of LBS development activities to third party providers (e.g. assembling the final product or service). In most LBS projects (e.g. ETC Consortium) the Mobile Network Operator is a partner in alliances or in full vertical integration.

Inter-organizational linkages

As there is no developed market for LBS products and services yet in Germany, most stakeholder in the value network will decide to model some relationships as alliances ranging from loose partnerships to full vertical integration. Fuller vertical integration will also include a reallocation of property rights and integration of operations, such as IT systems (e.g. Tegarón, Passo, Gedas).

Component Suppliers Coupled with Alliance Agreements

The suppliers in the value network provide essential elements of the finished product or service. If the component being produced enjoys high asset specificity, then both sides take an interest in a sustained and eventually formalized relationship. If a component supplier is manufacturing a commodity or commoditized product, then the services broker and supplier are more likely to organize their exchange relationship than through authority relations.

Revenue Generation Issues

Revenue sharing with third parties is still a major issue in Germany. The only official public business model proposition comes from E-Plus Mobilfunk for services and content offered via the i-mode portal: 86% for the content/service provider and 14% for E-Plus.

In general, there was nearly no revenue sharing possibility with mobile operators before the introduction of premium SMS this summer. As premium SMS is still in being piloted, the revenue sharing models offered by mobile operators differ and are not fixed. The generic approach depends on the end consumer price of the premium SMS – between 0,29 € and 2,99 €. The operator takes between 80% and 45% for service operation and payment collection, where 55% is granted for the highest end consumer price.

The major payment method for content delivery to mobile phones in Germany is via premium IVR systems.

Main Players Profiles

The main players in Germany are as follows:

Operator

Vodafone Passo GmbH

Company Details

The Vodafone Passo GmbH is owned by Vodafone and has some 200 employees. Revenues are not published.

Contact details

Niederkasseler Lohweg 20

40547 Düsseldorf

Tel: +49 211-5368-0

Solution Offerings

Products:

Telematics

- Emergency and Breakdown Services
- Remote Diagnostics
- Traffic Information / Dynamic Navigation
- Mobile Web
- Point of Interest Services (Data and Operator based)

Traffic Services

- Internet route planning
- Internet traffic jam ticker
- Internet traffic jam maps
- Actual traffic news for mobile handsets
- Traffic plus: news and guidance for mobile handsets

Business Services (SMS/WAP):

- Traffic telematics

- Content packaging
- Content provisioning
- Systems integration

Customers

BMW Group

Interspe Hamann

Schenker

Partnerships

Merian Scout

Tegaron Telematics GmbH

Company Details

The Tegaron Telematics GmbH is owned by Deutsche Telekom AG and Daimler Chrysler Services AG and has some 200 employees. Revenues are not published.

Contact details

Am Propsthof 74

53121 Bonn

Tel: +49 (0) 180 5 23 40 00

Fax: +49 (0) 228 5201 909

Solution Offerings

Products:

Navigation

- Tegaron Scout
- Audi telematics II
- Mercedes-Benz Dynaps

Information

- Tegaron Info (Voice/WAP)
- T-D1 Travel Service (Hotel etc)

Security

- Mercedes-Benz Teleaid
- Audi telematics I
- Renault Odysline
- T-D1 breakdown service

Mobility

- Voice Portal
- Multi Channel Portal
- Mobility Module

Customers

Volkswagen

Audi

Renault

Partnerships

Devices:

- Blaupunkt
- Peiker
- Skeye
- Compaq
- Mitsubishi Electric Telecom Europe S.A.

Data and technology:

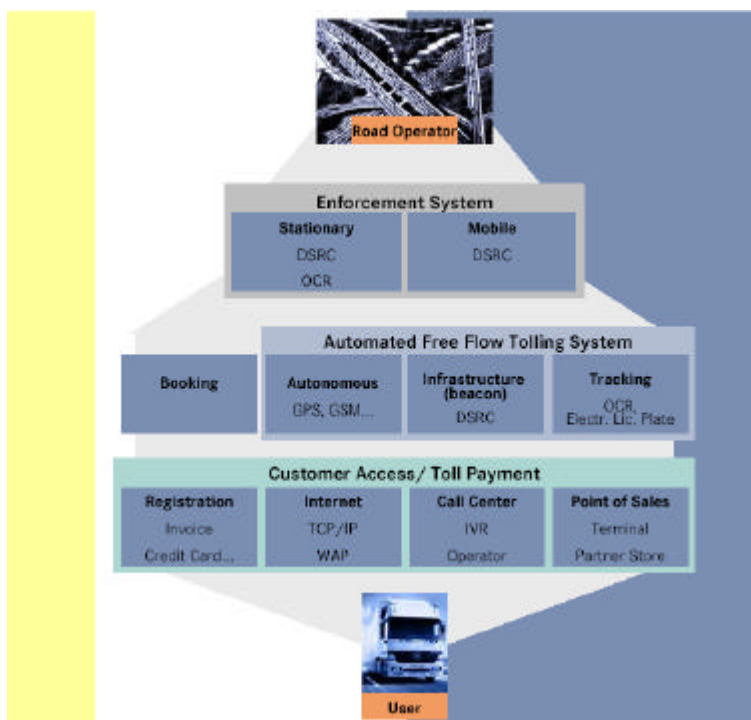
- DDG Gesellschaft für Verkehrsdaten GmbH

Distribution:

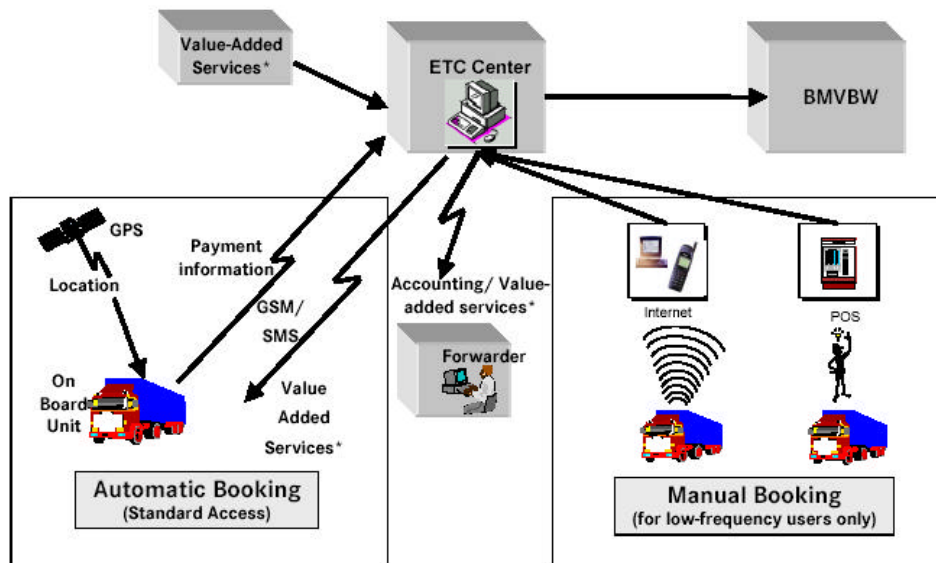
- T-Mobile
- Debitel
- Hutchison Telecom
- Volkswagen
- Audi
- Renault
- Daimler-Chrysler
- Mercedes Benz

ETC Consortium

The ETC consortium consists of Deutsche Telekom, DaimlerChrysler (each 45 %) and the French highway operator Cofiroute (10 %). No further company information available today other than mentioned above.



System illustration



* Commercially separated; subject to approval of Ministry of Transportation

Communication flow illustration

Vehicle Manufacturer

DaimlerChrysler FleetBoard

Company Details

FleetBoard is a business unit of DaimlerChrysler trucks.

Contact details

<http://www.fleetboard.de>

Solution Offerings

Products:

- Dispatch
- Vehicle Management
- Mapping
- Freight Exchange

FleetBoard is based on modern, cost-effective technology. Telematics, GSM communication and the Internet are the components that are used to secure success.

The Internet is the medium used to exchange data between the FleetBoard head office and the hauler's office - if required, internal programs can also be integrated via an XML interface. The FleetBoard head office is connected through the cell phone network to trucks –and data is communicated via the SMS channel of the European GMS networks.

The driver is fully integrated into the system via the FleetBoard driver workplace. The on-board computer stores important data such as new trip information and displays it on the driver's screen. A specially designed keyboard enables the driver to pass on his own status reports to the head office.

FleetBoard uses the CAN Bus technology of modern commercial vehicles for vehicle management purposes. If vehicles have been equipped with FleetBoard, which can be factory-fitted as an optional extra, the relevant data can be accessed through the CAN bus interface - no need for extra

sensors - giving an unprecedented level of detail. The FleetBoard on-board computer analyses and transmits the data to the server at the FleetBoard head office. From here, the reports and data can be accessed via the Internet, anytime and anywhere - provided that the user has the relevant access authority, which is allocated by the user.

Application Platform Providers

Dialogs

Company Details

DIALOGS Software GmbH is one of the most important and established IT specialists in the field of mobile data communication.

Contact details

DIALOGS Software GmbH

Selkamp 10

D-44287 Dortmund

Tel.: +49 231 44 91-0

Fax: +49 231 44 91-100

Solution Offerings

Products:

- SMS Distribution Center
- SMS Server
- Open Net Access Pro

Customers

FedEx

Hornitex

Kodak

TUI

VIVATECH Software

Company Details

VIVATECH Software Berlin GmbH was founded in 1999. Originating from the VIVATECH Software GmbH & Co.KG - a Universität Karlsruhe (TH) / FZI spin-off. VIVATECH provides products and technologies for use in Location-based services, MultiMedia Services and 3D Visualization.

Contact details

VIVATECH Software Berlin GmbH

Warschauer Strasse 38

10243 Berlin

Tel: +49-(0)30-294945-60

Fax: +49-(0)30-294945-30

Solution Offerings

Products:

- Odysseus - Services Integrating Framework: Using VIVATECH's Service Framework it is possible to simply integrate all kinds of services into a suite of custom-tailored user applications.

- PocketMap3D - 3D Navigation for WinCE: Featuring a WinCE 3D render engine developed by VIVATECH, PocketMap3D is the right solution for 3D navigation - onboard and off board.

Customers

Wapme Systems

Partnerships

Nokia

Application Developer

Aventeon GmbH

Company Details

Aventeon was founded in November 2000 in Seattle, Washington and Munich, Germany, by a team of wired and wireless Internet experts. Today, Aventeon maintains technology and business centers in Munich, Amsterdam, Seattle, and Hyderabad, India. The special application integration and content syndication expertise derives from the leading positions of Aventeon's founders in leading global technology and IT companies.

Aventeon develops and markets software products that empower the mobile employee to access information and execute applications from mission-critical enterprise systems and the Internet – anywhere, anytime. Instead of displaying applications separately on a mobile device, Aventeon's products actively integrate and match enterprise information and applications with each other and the employee's mobile PIM (Personal Information Manager – calendar, contacts, task list and email).

Contact details

Gabelsbergerstr. 47

80333 Munich

Germany

Tel.: +49 (89) 37 49 73 72

Fax: +49 (89) 32 15 27 50

Solution Offerings

Products:

- Sales.ONE - Mobile Empowerment of Sales Professionals
- Service.ONE - Empower the mobile service force
- Pharma.ONE - Specific solution for the pharmaceutical industry
- Chem.ONE – Specific solution for the requirement of the chemical industry
- Sync.ONE – Advanced synchronization of all important Personal Information Management (PIM) applications
- Comm.ONE – Aventeon's solution for mobile carriers and Portals

Customers

Deutsche Post

Netway

T-Mobile

Vodafone

Partnerships

CSS Computer Service Solution

Cap Gemini Ernst & Young

Ericsson

Toshiba

Brodos AG

Company Details

Brodos AG was founded in 1993 and has its home office in the North-Bavarian town of Baiersdorf. It develops and markets business applications for mobile messaging (Brodos messaging) and prepaid systems (Brodos CashUp). Today, the firm has 140 employees internationally, and sales of 70 million Euro in the year 2000. The work of Brodos is strictly user-oriented, and its innovative technologies make Brodos the quality leader in Europe as an infrastructure developer and supplier. These two areas of business position Brodos in important growth markets.

Contact details

Erlanger Straße 9-13

D-91083 Baiersdorf

Tel: +49 9133 / 7770 - 0

Fax: +49 9133 / 7770 – 4125

Solution Offerings

Products:

- Brodos Messaging (mobile services)
- Brodos Cash Up (Pre paid platform)

Customers

Lycos

Motorola

SAP

Xonio

Partnerships

Gemplus

Lucent Technologies

Oracle

ComROAD

Company Details

ComROAD was founded in 1995. The corporation's headquarters is located in Unterschleißheim near Munich. ComROAD is active in the area of transport telematics & Mobile Online Services. The Global Transport Telematic System includes all hardware and software components for mobile communication – from the operating software for telematics providers to powerful browsers for various terminals.

Contact details

ComROAD AG

Edisonstr. 8

85176 Unterschleißheim

Tel: +49 89 31 57 19 0

Solution Offerings

Products:

- Global Transport Telematic System
- Security monitoring of vehicles and construction machinery
- Fleet management (communication with drivers, vehicles, shipments)
- Dynamic off-board navigation (taking traffic situations into consideration)
- Road assistance
- Data communication services (mobile Internet access)
- Information services (news, weather, stock market, up to date traffic information)
- Entertainment services (music, video, games)
- M-commerce (shopping, banking)

Customers

Distributors only

Partnerships

Clarity

Conversay

T&T Netcom

Intel

Wavecom

Condat

Company Details

Texas Instruments Incorporated owns 98.69% of Condat AG. The Wireless Communications Solution division of Condat AG is now also controlled by Texas Instruments. The Test Systems and System Integration divisions will continue as part of Condat Informationssysteme AG.

Contact details

Condat Informationssysteme AG

Alt-Moabit 91 d

10559 Berlin

Germany

Tel: +49. 30. 39 49-0

Fax: +49.30. 39 49-1300

Solution Offerings

Products:

Skyware Messaging

Skyware Enterprise

Location-Based Services (LBS) Package

Wireless Test Systems

Pharma Solutions

Customers

Omnitel Vodafone

Partnerships

ESRI

gate5**Company Details**

Gate5 AG is a software company specialised in the development of software technology and applications for next-generation context-sensitive mobile Internet services. Customers such as media groups, mobile operators and companies in the automotive sector license gate5 software products and solutions in order to deploy attractive value-added services for their customers. The company, founded in Berlin in 1999, today employs around 60 people, among them experts in the fields of software design, 2D/3D rendering, data security, object oriented and relational database architecture, as well as mobile telecommunications – all specialists who are among the best in their field.

Contact details

gate5 AG

Schönhauser Allee 62

10437 Berlin

Tel: +49.30.446 76-0

Fax: +49.30.446 76-555

Solution Offerings

Products:

- Mobile Community
- Mobile Guide
- Directory Services
- Automotive
- Business Solutions

Customers

Axel Springer Verlag

Daimler Chrysler

Falk

Siemens

Sony

Telefonica

Partnerships

Ericsson

IBM

Nokia

Siemens

Sun

Gedas**Company Details**

Gedas AG is one of the leading international information technology service providers for the automotive and manufacturing industries. The company develops, implements and operates individual IT solutions for the optimization of its customers' business processes. Gedas is based in Berlin and is a wholly owned subsidiary of Volkswagen AG.

Contact details

Gedas AG

Carnotstraße 4

10587 Berlin

Germany

Tel: +49.30.3997.2999

Fax: +49.30.3997.1970

Solution Offerings

Products:

- Logiweb - the gedas product solution and portal for e-logistics
- RVS - multi-purpose, multi-format communication system for data

Customers

Volkswagen Group

Deutsche Post

Deutsche Bahn

Maersk Sealand

Partnerships

IBM

HP

Microsoft

Oracle

SAP

IVU Traffic Technologies

Company Details

IVU Traffic Technologies was established 1976 and employs 420 employees. It has a turnover of 25,5 million Euros in 2001.

Contact details

IVU Traffic Technologies AG

Bundesallee 88

D-12161 Berlin

Tel: +49.30.85 906 - 0

Fax: +49.30.85 906 - 111

Solutions Offerings

Products:

- AFA®400 and AFA®420 - customer service with Ticket Vending Machines of the New Generation
- BASYS – solution for construction sites
- BERTA - integrated operation deployment planning for public transport companies in cities and metropolises
- BON® - vehicle monitoring system
- Combitour - software solution for waste management
- Contour Express
- Filialinfo
- filialWEB - geographical information on the net

- Fleetfinder
- i.box - terminals for buses and trains
- Infopool/fahrinfo
- MICROBUS
- MICROBUS-crew – personnel tracking
- Qbase - integrated public transport management
- ReadymixExpress – solution for concrete transport
- RentalsFleet - ASP solution for car rentals, car leasing and car sharing
- timeBASE – solution for personnel and material planning

Customers

Public transport sector

Partnerships

BMW

ESRI

MapInfo

Oracle

SAP

Siemens

Mecomo

Company Details

Mecomo was founded in 2000 and has 12 employees. Revenues not published.

Contact details

Mecomo AG

Carl-von-Linde-Str. 30a

D-85716 Unterschleissheim

Germany

Tel: +49 0 (89) 37 40 85 - 10

Fax ++49 0 (89) 37 40 85 - 45

Solution Offerings

Products:

- mecomo QualityGate
- NextDoor locationfinder
- NextDoor CallCenter
- Join Address

Customers

Mobilkom Austria

One Austria

Vodafone D2

Volkswagen

Partnerships

WiGeoGIS

PTV AG

Company Details

PTV was founded in 1979 and has more than 300 employees.

Contact details

PTV AG

Stumpfstraße 1

76131 Karlsruhe

Tel.: +49 -721-9651-0

Fax: +49 - 721-9651-699

Solutions Offerings

Products:

- mecomo QualityGate
- NextDoor locationfinder
- NextDoor CallCenter
- Join Address

Customers

Audi AG

Citroen

Epson

Kraft Foods

Langnese Iglo

Rockwool

Texaco

Partnerships

T-Mobile

Verkehrssysteme AG

Xtend SA

SICAD Geomatics

Company Details

Since 1979 SICAD has been an important pacemaker for geographical information systems. They have been involved in the development and optimization of spatial data processing - aimed at producing a computer that can actually "see". It has more than 1000 customers worldwide.

Contact details

SICAD Geomatics

GmbH & Co. oHG

Otto-Hahn-Ring 6

D - 81739 Munich

Phone: +49 89 / 636-02

Fax: +49 89 / 636-41342

Solutions Offerings

Products:

- SICAD Mobile Suite (Geocoding, Internet Map Services)

Customers

Public sector

Partnerships

OGC

Oracle

Siemens

wap3 Technologies

Company Details

Founded in May 2000, wap3 Technologies GmbH is a Mobile Application Provider focused on Community and Messaging Applications. Network operators and corporations use their applications to establish or upgrade their own mobile community services.

Contact details

wap3 Technologies GmbH

Venloer Str.2

D - 50672 Köln

Solution Offerings

Products:

- SMS Send / Receive
- SMS Office
- SMS Logos / Ringtones / Animations
- OTA WAP
- OTA GPRS
- OTA MMS
- MMS Services
- MMS Wizard
- Location-based services

Customers

E-Plus

Jamba

KPN

RTL

Sonera

T-Mobile

Content Suppliers

Wapme Systems

Company Details

Wapme Systems AG develops and operates software solutions and services for the integration of Internet content into mobile communications networks.

Contact details

Wapme Systems AG
Vogelsanger Weg 80
40470 Düsseldorf - Germany
Tel: + 49 (0) 211 - 748 45-0
Telefax: +49 (0) 211 - 748 45-299

Solution Offerings

Products:

- SMS/Premium SMS
- Value Added Services
- Software

Customers

aeonware AG
Satlantis Media AG
Telesens
Renault / Nissan Bank
Commerzbank

Partnerships

ORACLE Deutschland GmbH
Sun Microsystems GmbH
Microsoft GmbH
3Com GmbH
Cisco Systems GmbH
Nokia GmbH
Ericsson GmbH
Motorola GmbH

Consumer Market Adaptation

The consumer market for LBS in Germany is not at all at a mass-market level. In August 2002, TNS EMNID, a German analyst company, published the results of a study stating that 40 per cent of German mobile phone users do not know about location-based services at all. Around one third would use LBS if they would get appropriate information about them. One third would not consider using LBS today.

Types of services required:

- City Maps (49 %)
- Local shopping guide (32 %)
- Nearest late night pharmacy (31 %)
- Nearest ATM (28 %)
- Nearest fuel station (24 %)
- Nearest restaurant (19 %)

52% foresee data privacy as a serious issue. Some 40% would even consider cancelling their subscription when location tracing would become generally available. Only 11% would churn to a mobile operator that offers LBS if their current operator does not. Localized advertisements that are not permission-based could become another threat to the success of LBS. 77% would not allow advertisements without prior permission. The study concludes that 80% would use LBS if concrete

value added services would be available and marketed and only 20% would not consider using LBS services at all.

German Market Conclusions

As Europe's largest telecommunication market with some 60 million mobile subscriptions, Germany has the potential to become one of the leading markets for location-based services. Today, the most promising segment of LBS is the professional sector with existing services for traffic information and fleet management. The new electronic toll collection system for trucks is one of Europe's largest LBS projects in development and soon to be released.

There are several main indicators for future growth of location-based services in Germany:

- More attractive revenue sharing business models will reduce the investment risk of service providers and will increase the development of new services.
- Consumer market acceptance will benefit from a clearer data privacy protection and a marketing push of service providers.
- Shared infrastructure projects (like the ETC consortium), with interfaces for third party suppliers, will function as driver for the development of the LBS market. This is an important stimulus for future growth particularly in times when investments in new technologies and services are low.

Professional LBS in Italy

History of Professional LBS in Italy

Location-based services is a fairly recent application class. The earliest application we have identified dates back to 1996, when an Italian taxi operator implemented GPS in order to match inbound calls faster with available taxis. Another event to mention in terms of “history” is the global IBC conference that focused on location-based services and was held in Rome in June 2001 with several of the companies listed in this report attending.

Professional LBS Market Status in Italy

The overall notion expressed by interviewed companies is that the Italian market is lagging 12 months behind Northern Europe. There is a wait-and-see attitude that has slowed down the development of innovative concepts. Nevertheless, several active players can be identified as driving the development of this market: AutoDesk, a US based company with its European sales headquarters in Italy, Webraska a US/French company serving MNOs and the enterprise market, H3G as the first 3G license holder that will launch UMTS in Italy in December 2002 and will most likely feature general and professional LBS, and Ericsson, as a leading equipment vendor. Other companies active in the Italian market are MapInfo, Signalsoft (Openwave), MapQuest, Teleatlas and Specialized Software Vendors (SSVs) such as Microtec in Udine and MicroSAT in Rome.

The professional LBS market is driven by the deep vertical expertise of its niche players, e.g. an SSV such as Microtec that specialises in the implementation of location aware taxi call-centers. Vertical offerings in general do not build on the scale of the solution (mass market) but on the depth of it (integrated business rules of its customers). The call-center solution by Ericsson and Microtec for Samarcanda, for example, has been customised based upon a rich set of business rules provided by the customer as a result of ten years of taxi call-center operating experience. Operational improvements are not just derived from the GPS assisted localization of all circulating taxis, but also on additional information such as “taxi near, but occupied”.

While there is little public evidence of location-based services, there have been many projects underway as “proof-of-concepts” currently shelved due to the general market sentiment. We list seven LBS examples/projects:

Taxi Samarcanda

This example of professional LBS is provided by a taxi operator in Rome (“Samarcanda”). Samarcanda uses GPS and their existing radiofrequency network in order to receive and process the position of their fleet of 350 circulating taxis. The call center handles 5000 incoming calls per day and has been able to reduce response time from 4 minutes to 15 seconds. The operator matches the customer’s position with the closest taxi available and thereby provides a compelling service experience. The solution was implemented in 1996 and was at that time, one of Europe’s first location-based taxi services. Still today, there are only two other similar solutions running in Milan and Bologna. The solution was developed by Ericsson and Microtec and is rich in business rules provided by Samarcanda that help drive the efficiency of the circulating taxis. Investment in Samarcanda was one million Euros.

Fleet Security Management

DS ingegneria delivers together with MicroSAT a “Fleet Security Management” solution. The operator (ASP) of this service provides a vast array of security services to its customers such as truck tracking via GPS, panic button, speed control, remote engine block, event logging (for insurance purposes) and location-based services like recommendations to drivers based on their current position. Customers of this service are transportation companies paying 180 Euros per year, per truck as a flat fee and a variable amount for call-center assisted value-added location-based services. Note: In Finland, Sonera offers a wireless solution that enables advanced operational interaction between office systems and on-the-road units based on Cell ID. We have not come across similar MNO-based fleet management solutions in the Italian market.

Fiat Telematics & TIM MobileConnect

Autodesk, Telecom Italia Mobile (TIM) and TargaSys (a division of Fiat) have developed wireless location based data services such as a car navigation system, real-time traffic feeds, point-of-interest information such as landmarks, concierge services (e.g. airline, hotel and restaurant bookings) and mobile commerce services to wireless business subscribers and the upper range of Fiat cars. Using a GSM or GPRS-enabled mobile device, Connect TIM is activated by an SMS message generated by a personalised SIM ToolKit application. The SMS (containing the subscriber's location details based on Cell ID location based technology) is sent to the TargaSys contact center. The SMS triggers a personalized database that helps the operator respond to the individual's needs. The TargaSys contact center is staffed by 800 operators, supporting 14 languages and has an extensive network of content partners (POI information, traffic feeds, etc.)

MNOs

All Italian Mobile Network Operators (TIM, Vodafone, Wind and H3G) are known to have looked into the possibility of offering location-based services to their users. While most concepts remain on hold, TIM and Webraska announced in December 2001 the development of "the first GSM location-based services in Italy" that will allow users to find the best and quickest route to destinations providing graphic maps of Europe-wide itineraries with maps available over the mobile phone and traffic information in real time. The promise is to offer TIM's 22 million customers the best route to their destination such as hotels, restaurants, service stations, car parks, ATMs, hospitals, railway stations and airports together with information on how much travel time is needed to get there depending on the transportation means used (car, public transport, by foot). Users will be able to customize the information/alert levels and can choose between multiple access methods: WAP, SMS and the Internet through the UNI.TIM portal. The service was launched in May 2002 and is enjoying a continuously growing user base according to Webraska.

3G

H3G will be the first MNO to launch UMTS in Italy in December 2002 and has signed deals in the UK with five companies for the delivery of digital mapping technology and location-based services for its 3G services. According to a recent report "Location-based services will enable subscribers to pinpoint their positions on a digital map delivered to the third generation (3G) handset, then follow directions to distance-sorted services such as hotels, restaurants, shops and businesses using a detailed real-time display". Hutchison 3G will incorporate Ordnance Survey's detailed and intelligent digital map data into its 3G services, while Tele Atlas will provide mapping data for Britain and Europe, supplying detailed street plans for over 30,000 cities in Europe. IONIC Software and TCS will deliver a technology platform to support location-based services. The Italian incumbents are in a wait-and-see mode towards the rookie players and are expected to launch a pragmatic response based on first launch experiences of H3G.

Italian Automotive Club

The ACI has begun work on a project with the Italian Tourist Board to deliver location-based information about sites (POI) to tourists traveling through Italy. The project is not expected to go beyond a proof-of-concept for the time being.

Italian Autogrill

The leading operator of Italian autobahn restaurants is currently studying the possibility to push traffic information via SMS and MMS to cell phones on Italian motorways.

Professional LBS Solutions

The professional location-based services available in Germany can be grouped under fleet management and tracking.

Professional LBS Value Network in Italy

The professional LBS value network has the following structure: hardware vendors (e.g. Position Determining Equipment), software companies (e.g. Application Server or OAM&P System), content providers (e.g. graphic data or POI information), professional services firms/SSV (e.g. hardware, software and solution implementation), carrier network operator (e.g. GPRS flat fee per-

unit) application service providers (e.g. fleet security management call center operator) and the customer (e.g. transportation company and its field force of truck drivers).

Professional location-based services are less driven by what the end-user wants (e.g. truck driver) but by what the operator (e.g. the transportation company) needs – for example tracking, monitoring and security features. A key actor of the professional LBS is therefore the SSV, the Specialized Solution Vendor that builds a solution based on its vertical expertise and knowledge of the customer's business process. The SSV is likely to select hardware, software and content components in order to build a customised solution for the operator's operational need rather than for the end-user of the application.

While general location-based services for the mass market are more likely to be built within the vertical value chain of the Mobile Network Operator (owns brand, network, billing, applications and sometimes even the device (e.g. Sendo phone), we find a more horizontal structure within the professional LBS market, where hardware, software, content, network and professional services (implementation) compete on a solution by solution basis for business. Hence, the market player's efforts concentrate on the operator of the solution and its business needs rather than on the end-user of the application and its user-needs.

Revenue Generation Issues

While the business model for general location-based services (mass market) is still in a trial and error phase ("No one really knows."), professional LBS is driven by operational gains and cost savings and its second tier of revenues is based on a clearly distinct business model: The first tier of revenues is generated in both cases (general and professional LBS) by hardware sales, license fees, implementation and maintenance. The operator of professional LBS either sells the solution as an ASP, e.g. a fleet management or security service charging a user fee (per truck or per driver per year) or the operator factors in the costs of the application into the operating expenses (in-house ROI solution).

Main Players Profiles

The following is a list of the main players in the Italian market.

Operator

TIM

Company Details

TIM operates in the Italian market, in Europe and Latin America. Including LatAm, TIM Group reached a total target of 37,3.8 million subscriber lines as of 30th September 2002. TIM is the Italian market leader in terms of subscriber base and one of the three 3G licence holders.

Contact details

TIM

Via Luigi Rizzo, 22

Roma

Tel: 0039.06.36881

Solution Offerings

Products:

- i-TIM – TIM's 24.2 million customers are able to find the best route to reach their destination, e.g., hotels, restaurants, service stations, car parks, ATMs, hospitals, railway stations and airports, listed by the time it takes to get there and obtain a map of their itinerary. The calculation of travel times takes into account traffic conditions and the means of transport used (car, public transport or on foot). The solution is powered by Webraska. The services are available to the i-TIM customers via multiple access methods: WAP, SMS and Internet through the UNI.TIM portal.

- Connect TIM - Connect TIM delivers navigation, concierge and mobile commerce services to wireless business subscribers. Autodesk MobileConnect extends to mobile devices the Connect telematics solution, developed jointly with TargaSys, a division of Fiat Auto. Using a GSM or GPRS-enabled mobile device, Connect TIM is activated by an SMS message generated by a personalized SIM ToolKit application developed by TIM. The SMS, containing the subscriber's location details based on TIM Cell location based technology, is sent to the TargaSys contact center. The SMS triggers a personalized database that helps the operator respond to the individual's need.

Customers

TIM offers its Location Based Services via its GSM network to 24.2 million Italian mobile phone customers.

Partnerships

- AutoDesk
- Webraska
- TargaSys (Fiat)

Network Infrastructure Vendor

Ericsson

Company Details

Ericsson is the largest supplier of mobile systems in the world. The world's 10 largest mobile operators are among Ericsson's customers and some 40% of all mobile calls are made through Ericsson systems. Ericsson provides total solutions covering everything from systems and applications to services and core technology for mobile handsets. With Sony Ericsson we also are a top supplier of complete mobile multi-media products. Ericsson has been active worldwide since 1876 and the company has today around 71,700 employees in more than 140 countries. The headquarters is located in Stockholm, Sweden.

Contact details

Ericsson Telecomunicazioni S.p.A

Via Anagnina, 203

00040 Morena – Roma

Tel. 0039.06-72581

Solution Offerings

Products:

- LBS Infrastructure - Ericsson has a 40% market share in infrastructure for LBS and is a main driver of standardisation of location-based services.

Customers

Ericsson customers in Italy are:

- Telecom Italia
- TIM
- Wind
- Albacom
- Tiscali
- H3G
- EdisonTel
- KingCom
- Tibercom

- Elitel
- LTS
- Noicom

Partnerships

- Osservatorio Mobile Internet (LUISS University Roma)
- AutoDesk

Application Platform Provider**AutoDesk****Company Details**

Founded in 1982, Autodesk is the world's leading design software and digital content company. Autodesk offers solutions for professionals in building design, geographic information systems, manufacturing, digital media, and wireless data services. By delivering progressive products and services, Autodesk helps customers create, manage, use, and maximize the value of their digital data throughout the lifecycle of their projects.

Contact details

Autodesk Italy SpA

Strada 4, Palazzo A5

20090 Milanofiori, Assago - Milano

Tel: Country Manager Fabio Lazzarini – Tel. +39.02. 3355687707

Solution Offerings

Products:

- Autodesk Location Services - Autodesk® Location Services provides a complete solution that enables wireless carriers and operators to quickly and reliably offer location-based services to their subscribers without costly development efforts.
- Autodesk MapGuide - Autodesk MapGuide® 6 software delivers intelligent designs, maps, and GIS data online, enabling anytime, anywhere access to and interaction with cross-functional geospatial information.
- Autodesk MapGuide Commerce - Autodesk MapGuide® Commerce is for large organizations that build and deploy commercial location-based services for profit. It features the same robust functionality found in Autodesk MapGuide®-regarded as a highly scalable, top-performing web mapping solution-along with a license agreement designed for businesses that host and deliver commercial location-based services.
- Autodesk OnSite Enterprise - Autodesk® OnSite Enterprise delivers live, interactive digital design, mapping and database information from your organisation's central server to Microsoft® Windows® CE-based mobile computing devices.
- Autodesk OnSite View - Autodesk® OnSite View delivers mobile viewing of design data using handheld and tablet computing devices. It enables you to review, mark up, and measure AutoCAD® DWG and DXF™ design data as well as Autodesk MapGuide® map data in a robust, precise environment away from the desktop.

Customers

AutoDesk's public list of Italian customers of "AutoDesk Location Services" are:

- Fiat
- Telecom Italia Mobile

Partnerships

Autodesk® Location Services maintains partnerships with leaders in the wireless data services industry in the following areas.

- Technology and Hardware: BEA, SUN, Oracle, Vality
- Infrastructure: Siemens, Motorola, Ericsson, Lucent, Nokia
- Content: Michelin, Teletlas, CDT, Trafficmaster
- Applications & Solutions: Skygo, Mobilocity, Noblestar, Televoke, Clickmarks, KPMG

AutoDesk is Application Partner of Telecom Italia Mobile (TIM) - location-enabling applications and services offered to TIM's enterprise customers.

Kivera

Company Details

Kivera makes products that enable their business partners to provide mobile location services: maps, driving instructions, and proximity searches (find me a Chinese restaurant within five miles of my current location). Kivera provides its products for Web, wireless, and in-vehicle applications.

Headquartered in downtown Oakland, California, Kivera was founded in May 1997 to develop critical navigation and location-based technologies for mobile applications. Kivera's navigation and location-based applications are among the most efficient, accurate, and advanced products on the market today.

Contact details

Represented in Italy by: Andiamo

8, rue de la Morâche

1260 Nyon - Switzerland

Tel : +41 22 990 10 25

GSM : +41 79 202 56 40

Fax : +41 22 990 10 26

Solution Offerings

Kivera has developed an interactive mapping platform for:

- Mobile directory assistance, including local area searches for Yellow and white page listings, events, and attractions.
- Route planning for drivers, pedestrians, hikers, and bikers in unfamiliar surroundings.
- Emergency services including enhanced 911, tow-truck dispatch, and stolen vehicle tracking

Products:

- Kivera Location Engine - Standard Edition
- Kivera Location Engine - Enterprise Edition
- Real Time Traffic/Rerouting Function Pack
- Application Server Production Pack

Customers

Italian customer list not published. International customers are as follows:

- American Automobile Club
- Automobile Club
- AT&T Wireless
- Cross Country Automotive Services
- MetroOne Telecommunications, Inc.
- Switchboard
- Toyota

- Virgin Mobile USA
- Verizon Wireless
- YellowPages.com

Partnerships

Kivera maintains the following partnerships:

- Sun
- Volt Delta
- Bootstrap
- NavTech
- and GDT.
- Technology and Hardware: IBM WebSphere, iPlanet/SUN, Sensoria
- Applications & Solutions: WokUp!

Webraska

Company Details

Webraska specialises in Software (Platforms and Applications) for LBS (Location-based services) and Telematics. Webraska is a worldwide provider of wireless navigation services and LBS technologies. The company offers a full range of products designed to develop and launch internet based wireless navigation and location-based and telematics services and applications for consumer and enterprise markets. On September 2001 Webraska merged with AirFlash to create worldwide leader in Location-Based Service. Webraska powers the LBS and telematics offering of more than 15 wireless operators and service providers in four continents, having an end-user footprint of over 100 million subscribers. Webraska provides the advanced software solutions required to develop, integrate and deploy location-based services. Webraska's carrier-grade offering includes the SmartZone(tm) Geospatial Platform, the SmartZone(tm) LBS Application Platform, the patented and award-winning car navigation solution, IbDN(r) Lite, and over 30 other ready-to-deploy market-proven applications such as maps and directions, traffic alerts, yellow pages, BuddyFinder and m-Vite.

Contact details

Webraska Italy

Via Mario Pagano, 14

20145 Milano

Tel: +39.02.439122403

Fax: +39.02.43912411

Solution Offerings

Products:

As far as the Professional/Enterprise markets are concerned, Webraska offers a suite of applications based on patented IbDN (r) (Internet Based Distributed Navigation) technology that includes:

- IbDN (r): turn-by-turn navigation application for PDAs, offering complete wireless navigation for Consumer and Professional users and that can be part of a 3rd Party provided Mobile Work Force Automation suite.
- IbDN (r) Tracking: adds advanced Tracking features to IbDN (r)
- IbDN (r) Fleet: adds Fleet Management features to IbDN (r)

Webraska's SmartZone(tm) Geospatial and Applications Platforms power the enterprise applications provided by a number of SSPs (Specialized Service Providers) operating in the telematics and fleet management industry. In addition to that, specialized versions of Webraska's

BuddyFinder application have been deployed for Professional use, allowing to locate and to share information with colleagues (ColleagueFinder) or to manage a small fleet of Taxis (TaxiFinder) etc.

Webraska sells its applications and platforms, and can charge maintenance fees.

Customers

Webraska's customers are organizations with large mobile customer bases: wireless carriers, car manufacturers, telematics service providers, content providers (map providers, yellow pages, automobile clubs, travel guides, portals) and application developers (system integrators, software vendors & wireless applications developers).

Webraska's public list of customers is (in Italy not willing to disclose all deals due to non-disclosure agreements):

- ADAC
- E-Plus
- KnightRidder
- Orange Switzerland
- Orange France
- Orange UK
- Sensis
- SFR
- Shell Mobile
- Telecom Italia Mobile
- O2 Germany
- Vizzavi

Partnerships

Webraska's strategic partners include: IBM, Ericsson, Nortel, Oracle, CMG, Sun, Alcatel, Openwave, SAGEM, Navtech, Signalsoft, CellPoint, CPS and Schlumberger.

Content Supplier

MapInfo

Company Details

MapInfo provides location-based solutions and services that help organisations better understand their customers, citizens and markets to gain a competitive advantage and disseminate information across the enterprise.

The cornerstone of all MapInfo solutions is location information. Customer addresses, phone numbers, store sites, service and sales territories - even the location of a traveling individual with a cell phone - offer a springboard to a wealth of other valuable information including customer buying patterns, demographic and lifestyle information, nearby businesses, routing directions, traffic patterns and more.

Headquartered in Troy, NY, MapInfo Corporation was founded in 1986 and became a public company in February 1994. With more than 600 employees worldwide, MapInfo's global footprint includes subsidiaries in Canada, the United Kingdom, Germany, Australia and Japan; distribution relationships throughout Europe and Asia; and a worldwide network of channel partners.

Contact details

MapInfo Ltd

Italian Branch Office

Via Monte di Pietà, 21

20121 Milano

Tel: +39 02 86 337 333

Fax: +39 02 86 337 400

Solution Offerings

Products:

- Mapping
- Routing
- Geocoding
- Data

Customers

MapInfo's list of Italian customers is:

- Portale ItaliaOnLine
- Tecnocasa
- Blu
- Municipio di San Remo
- Meta di Modena

Partnerships

MapInfo Italy's partners are: Oracle (strategic partner), C.S.H. srl, Prosis, Tellus, Comtest (Channel Partners)

Consumer Market Adaptation

One announcement has been made of LBS in the consumer space (Webraska and TIM in December 2001) but no general location-based service is fully deployed in Italy. The reason (barrier) might be that the existing mobile phone network (GSM) does not provide enough features and functions to fulfill an operator's demands for a secure interface and the user's need of easy-to-use and useful services since privacy, roaming and charging related issues are not thoroughly covered. In order to get LBS successfully implemented, the following areas need to be investigated in more detail: privacy, charging, standards related issues, roaming and last but not least, end-user usability.

While there are many proof-of-concepts ready to be deployed by MNOs, there has only been one public announcement of a large scale general LBS solution made by TIM and Webraska in December 2001. It is more likely that mass market LBS based on GSM will be dropped completely in favor of 3G network services. As stated before, the MNO incumbents in Italy will follow with interest the portfolio of services that H3G will offer in December 2002 when it launches the first UMTS network in Italy. Mapping and tracking (buddy finder) will be likely mass-market features of the 3G network service, either from the beginning or during subsequent marketing campaigns of the system.

Italian Market Conclusions

Our conclusion is that location-based services are not yet broadly accepted in Italy – not by the operators of closed professional networks (police, transportation, security) not by MNOs nor by the public in general. Decision makers are looking at the technology but remain unsure about what they exactly want or what the end-user will exactly need. There is the perception in the market place that no innovative service is out there at the moment.

By talking to the major players in the LBS sector, we have found the sector to be unanimous in the view that location-based services will require the types of data speeds and devices/displays promised by 3G in order to achieve mass-market acceptance. In the meantime, subscribers can only look forward to low-accuracy, click-intensive offerings, which in our view will require too much input and patience on the part of the user to be truly successful.

Most probably enterprises will adopt professional LBS via UMTS faster than the consumer market because enterprises will unlock productivity gains and a visible ROI with LBS which already provides the needed business model whereas operators will want to continue their quest to find applications their customers will not only use but also be willing to pay for.

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