

Navigating the Wireless Opportunity

This whitepaper is an extract from:

Portable Navigation & Wireless Tracking Western European Markets & Forecasts 2007-2012

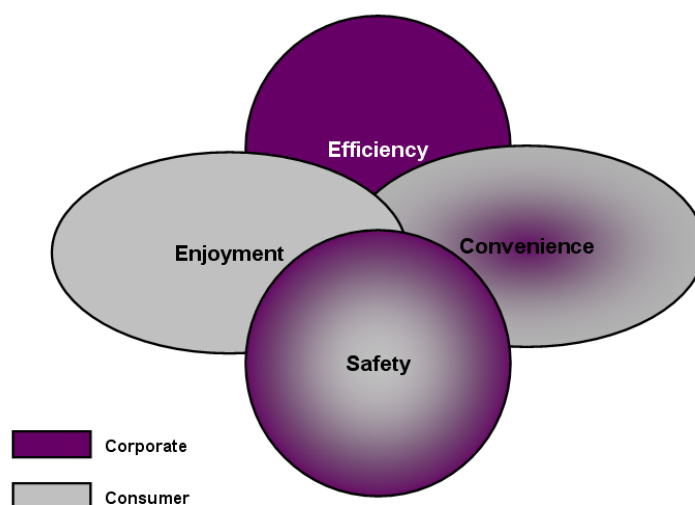


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White Paper – Navigating the Wireless Opportunity

In June 2005 Juniper Research published a comprehensive study on the global market for mobile location based services (MLBS). This was a time when the mobile industry was taking a more realistic view of the potential for location based services, following a number of years of hype and unfulfilled expectation. The last two years have seen location based services take giant strides forward in terms of delivering real business and consumer benefits. Juniper Research sees location based services as appealing to to four fundamental market needs as shown in Figure 1 below.

Figure 1: Location Based Services Address Four Fundamental Market Requirements



Source: Juniper Research

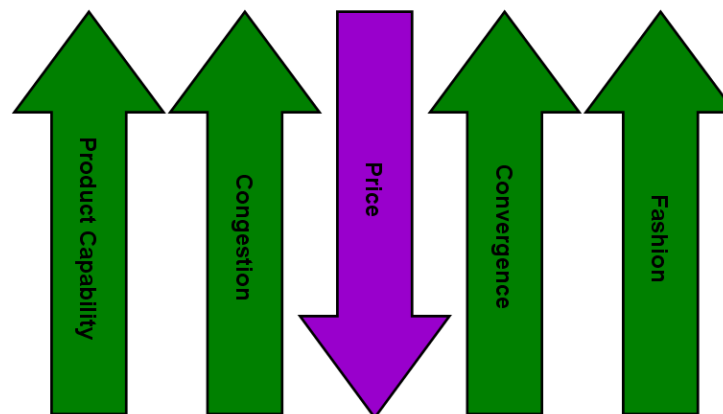
Focusing on these four fundamental requirements, it is not surprising that tracking and navigation applications were forecast to be key to the development of the market for location based services, particularly as precise location technology became more commonplace. Tracking and navigation deliver strong benefits in the areas of corporate efficiency, corporate and consumer safety and end user convenience. Navigation applications also deliver considerable “enjoyment” benefits, particularly where they include extensive POI (Points of Interest) location and local search capabilities.

Personal Navigation Solutions – “Must Have” Products for European Drivers

Satellite positioning based personal navigation solutions, “Sat Navs”, are rapidly becoming the “must have” consumer products for drivers in Western Europe. The last two years have seen an explosive growth in the market for personal navigation devices (PNDs) as affordable GPS technology has become available to the mass market. Product ranges from suppliers such as TomTom, Garmin, Navman, Mio etc fill the shelves of European consumer electronics and automotive accessory outlets and feature high on their web sales charts.

Key enablers of this explosive growth have been:

- Necessity – whilst few products are absolutely necessary, increasing congestion on European roads has brought products aimed at congestion avoidance to the fore.
- Affordability – GPS device prices have plummeted in recent years, as sales volumes have increased. Form factors have also got considerably smaller, enabling the incorporation of GPS technology in many more devices and particularly personally portable devices.
- Product capability – fuelled by increasing demand, product capability has improved over the last three years making hitherto top end features commonplace and shifting Sat Nav devices from “nice to have” to “must have” for many regular drivers.
- Peer group pressure – the domino knock-on effect and the realisation that someone else has something which is really useful. This is a powerful purchase incentive.
- Convergence in consumer electronics product – progress towards the ubiquitous personal entertainment and communications device continues, as manufacturers produce devices capable of running an wide range of applications with increasingly acceptable performance in all areas.

Figure 2: Person Navigation Market Drivers

Source: Juniper Research

The PND has clearly captured the public imagination and will continue to evolve to serve the requirements of drivers for high performance road navigation solutions and other specialist terrestrial navigation applications. However, as a number of industry players emphasised to Juniper “there are far more mobile phones than vehicles in the market”. In 2005 there were between 230 million and 240 million motorised road vehicles in Western Europe. Mobile subscribers in the same area for 2005 were just under 300 million. By 2010 the vehicle population is expected to have risen to nearly 250 million, whilst the mobile phone population is forecast to increase to 473 million. As a base for future mass market sales for personal navigation solutions, it is not surprising that eyes are beginning to turn to mobile phone subscribers and their increasingly capable multi-purpose handsets.

Wireless Tracking Applications Bring Business and Personal Security Benefits

Concurrent with the growth in navigation solutions, commercial organisations have been waking up to the business benefits of fleet tracking solutions. Fleet tracking applications of some description have been available since the GPS satellite network was made available for commercial use, but due to the size and cost of early receivers and the high cost of integrating tracking solutions with back office solutions, application was restricted to areas with the greatest immediate commercial benefit such as businesses in the transportation industry (commercial and public sector).

The cost of placing tracking units in vehicles has dropped dramatically in recent years as the cost of GPS receivers has plummeted, bringing the economics of vehicle tracking solutions to a wider spectrum of businesses.

Low cost tracking has also become available using mobile network location technology, although this has not gained as much ground as many would have thought, particularly in Europe, where location technology has been Cell-ID and its derivatives. However with SUPL compliant A-GPS positioning solutions being now introduced to European GSM/UTMS

networks the location accuracy barrier will be reduced, providing further impetus to the growth of tracking solutions to improve fleet utilisation and operating efficiency.

Stimulus to the take up of tracking applications for the tracking of both vehicles and staff by businesses has also come from the requirement to conform with working time/health and safety legislation. In both business and consumer sectors concerns over safety – personal, children, elderly relatives and even pets – have also generated renewed interest in people tracking technology and applications.

Market and Product Directions

Whilst demand for mobile navigation and tracking applications continues to increase dramatically in Europe, particularly in Western Europe, where high quality mapping information is available, there are a number of on-going debates on market and product direction. Some current hot topics are:

Original Equipment v Portable Solutions

It is Juniper's belief that originally installed solutions for both vehicle tracking and navigation will increase significantly over the forecast period and that this will restrict the opportunities for portable solutions and aftermarket sales, particularly towards the end of the period.

With eCall tracking requirements covering an increasing proportion of the vehicle fleet, some tracking capability will be in a high proportion of vehicles by the end of the forecast period. However this does not mean that they will be participating in regular tracking. Location for emergencies is what it says, and hopefully for the majority of drivers will not be needed at all. Similarly tracking vehicles that are stolen is something that doesn't happen very often in most vehicle's lives. Even with more originally installed vehicle tracking capability many solutions will make use of capability that is already there and there will still be a substantial aftermarket for enhanced products and services.

With regard to navigation, Juniper believes that original equipment solutions will permeate an increasing proportion of the commercial and private vehicle fleets, in the same way that in-vehicle entertainment became commonplace in virtually every road vehicle model, and recapturing some of the market share lost in recent years. Differentiation within vehicle models then focuses on the depth of functionality rather than whether the functionality is there at all. This will be driven by customer demand for integrated vehicle management and driver utility solutions, particularly linked with active safety features, cost reduction and also by advances in connectivity permitting the ease of update currently found with portable solutions.

Juniper also believes that an increasing number of people will have more than one navigation solution – one which is in-vehicle and has all the benefits of a tightly integrated in-vehicle solution and one which is portable (and probably serves a variety of purposes). PNDs which are portable, but not useful for other portable applications may begin to fall between the two stalls.

PND v Mobile Phone

In a similar vein, to the debate over originally installed equipment and portable solutions, is the debate over the role of the mobile phone as a multi-purpose device. Why carry more than one portable device when you can get all the functionality you want on one? This argument has been used with respect to office applications on smart phones, music and video playing capability and now navigation and tracking. Does the increasing capability of mobile phone devices herald the death knell for the PND?

The extremes of response to the “why carry more than one portable device?” question would be “exactly – I only want to carry one portable device” and “I carry multiple devices because no one device can be optimised for all these applications and I want the best performance in all the applications I use”. The reality is that most people fit somewhere in between.

People want different functionality and have different priorities. They have different standards and requirements with regards to things like audio quality, visual clarity, keyboard/control design, form factor etc. They will draw different lines. Some will undoubtedly opt for the single portable device for all their mobile applications, particularly as the quality penalty on individual decreases and for some even disappears. Others will opt for a number of devices, particularly where performance is paramount. Vehicle navigation is an application where performance is very often paramount. It impacts personal safety, time management and efficiency and Juniper believes that the market for solutions focused primarily on navigation will remain strong.

Juniper Research believes that mobile phone navigation will make some inroads into PND navigation over the next five years, but probably not as much as originally installed solutions. Mobile phones will certainly take an increasing portion of the portable navigation market, but many users of mobile phone navigation will also have better featured/larger screen applications for serious vehicle navigation, whether PND, or originally installed equipment.

What will have a big impact on the uptake of portable navigation solutions is the increasing availability of SUPL compliant A-GPS handsets in the GSM dominated European markets. Whilst it is relatively easy to use a GPS receiver with a bluetooth enabled mobile phone, it is not as convenient as having the GPS receiver embedded in the phone. This will increase the uptake of mobile phone navigation, particularly off-board solutions. However not all of this will be direct revenue generating except for mobile operators, who will gain data revenues. An increasing amount of low cost, or even free mapping and rudimentary navigation software is now available for mobile phones and even comes preloaded on higher spec models. Such solutions are designed to increase the usage of mobile data services generally and location based services in particular, or may even be primarily for handset differentiation. These solutions may be perfectly adequate for ad-hoc pedestrian and vehicle navigation for many users.

Wireless Connectivity

Most industry analysts see connectivity, and particularly wireless connectivity, as the way forward for navigation and tracking solutions. Few PNDs have integrated wireless connectivity, but an increasing number offer bluetooth connectivity to wireless devices, primarily mobile phones, to enable hands free calling and OTA update of dynamic data. The inclusion of FM transmitters is also providing connectivity to in-vehicle entertainment systems, although it should be noted that FM transmitters are not permitted in all European countries due to RF restrictions.

PDA suppliers are also embracing wireless connectivity as an essential component for a multi-use business tool, in order to survive against the smartphone onslaught. This is reenergising the demand for PDA navigation applications and also opening up new opportunities in workforce tracking and workflow management. As noted above it is also merging the worlds of PDAs and smart phones.

On the tracking side, wireless connectivity allowing real time tracking and communication between driver and base, is now becoming the norm is systems designed to deliver a range of business and personal benefits in addition to historical reporting.

Industry Consolidation

The resolution of all the issues above will see increasing convergence of products and overlapping functionality. In order to acquire technology, channels, customers, new markets and in some cases to hedge their bets, suppliers are forging an increasing number of alliances, mergers and acquisitions. Both the navigation and tracking sectors are seeing supplier consolidation, with both vertical and horizontal integration. Examples in the last couple of years of both vertical and horizontal integration include:

- TomTom acquisition of Datafactory and now Tele Atlas
- Garmin acquisition of leading European distributors
- Cybit acquisition of mapAmobile, BlueFinger and Thales Telematics

This consolidation trend is forecast to continue through the forecast period as the location based services industry matures and as different sectors of the industry expand and contract. Some mergers and acquisitions will undoubtedly move outside the tracking and navigation sphere. For example, wireless community services have some proven synergies with map based tracking and navigation.

Western European Market for Wireless Tracking Solutions

Vehicle tracking services have been targeted at the business community by mobile service providers for many years, using a combination of cell ID location and GPS, in conjunction with specialist integrators and application service providers. Mobile operators saw these services as a way of adding value for business customers and stimulating business data traffic.

However, corporate vehicle tracking applications have not taken off as rapidly as many predicted and certainly cell ID (mobile network based positioning) based solutions suffered from low accuracy outside metropolitan areas (whether or not it was needed). However, a number of factors are bringing about a change in market sentiment and Juniper Research believes that good growth can be expected from corporate vehicle tracking applications over the next five years driven by:

- Legislative push – to comply with working time legislation, emergency location requirements and duty of care obligations.

- Commercial pressure – to make optimum use of expensive assets (vehicles and staff) through better scheduling and route planning and also to avoid fraudulent claims relating to the whereabouts of staff and vehicles.
- Competitive pressure – as more businesses adopt tracking solutions to gain better control of their supply and distribution chain operations, the more evident the business benefits become and competitive pressure reinforces the trend in order to match competitive performance.
- Technological advance – enabling previously somewhat separate technologies to be linked to provide more accurate positioning, richer business information and more user acceptable applications. An example of the latter being combined tracking and navigation, whereby operatives accept the privacy implications of being tracked for the benefits of satellite navigation.

On the consumer side there has been a reluctance on the part of the market to adopt people tracking solutions in the face of privacy and data security objections. However the fact is the mobile phone is a trackable device, whether or not it is GPS enabled. GPS certainly adds accuracy to location, but it is not essential for a mobile phone. Other wireless connected GPS devices can also send location information back to a remote tracking operator. People tracking, offers a range of applications waiting to be exploited, if the ethics and safety of doing so can be assured.

Juniper Research believes that tracking people through their mobile phones, or mobile communication enabled devices, will begin to take off over the next five years, although in revenue terms it will continue to lag vehicle tracking applications. The most common use of mobile phone location information for people tracking/location is in buddy finding applications. This will remain so, but it will also remain a largely ad-hoc activity.

More regular tracking of people through mobile communications devices will be driven by concerns over personal safety, duty of care obligations in businesses, or a more general drive for improved business efficiency.

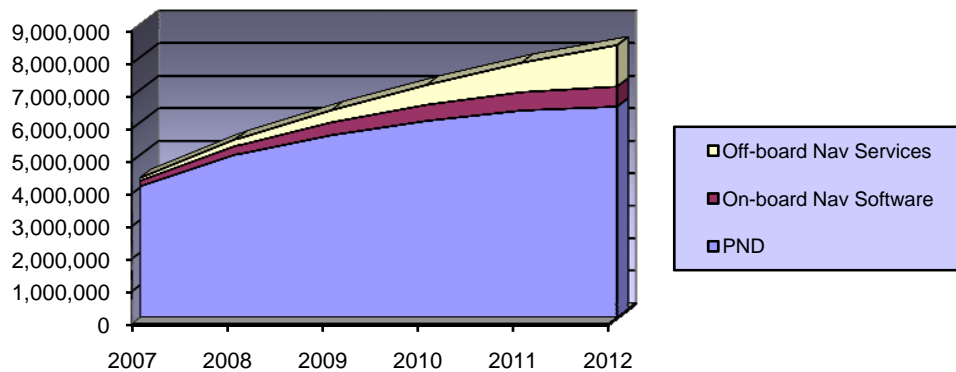
Western European Market for Portable Navigation Solutions

Juniper estimates that there are currently nearly 34 million users of portable navigation solutions of all types in Western Europe. The vast majority of these are using PNDs. By the end of the forecast period in 2012 this user base is expected to have increased more than 3 fold, but only half of these will be PND users, the rest will be using on-board, off-board, or hybrid solutions on multi-purpose devices. However, it should be noted that use of one product type does not preclude the use of another to suit different circumstances. There will be a growing number of people using both PNDs/in-car solutions (for serious car navigation) and mobile phone solutions for other personal navigation purposes.

Figure 3 shows Juniper's forecasts for the size of the portable navigation solutions market in Western Europe, broken down by type of solution, together with forecasts through to 2012. The total value of the portable navigation solutions market in Western Europe is estimated to be just under €4.3 billion in 2007. This is forecast to grow to just under €8.4 billion by 2012, despite continued and fierce price erosion. This represents a cumulative average annual growth rate of 14.5% per annum, with higher growth in the earlier years, levelling out as the

Western European market becomes saturated and competition from factory fitted integrated solutions increases.

Figure 3: Portable Navigation Solution Revenue Growth (€ 000s) in Western Europe 2007 – 2012



Source: Juniper Research

Within the revenue total, cumulative average annual growth for the three product sectors is forecast to be 10% pa for the PND sector, 30% for software solutions which are predominantly on-board and 71% for solutions which are predominantly off-board, although this last figure is from a very low base. Growth in PND revenues looks very low by recent standards, but it should be remembered that this is an average figure encompassing continued strong growth for the the next two years, and low revenue growth thereafter.

At the moment PNDs are must have consumer electronics devices for drivers and the leading brands are acquiring the same sort of brand recognition within their sector as the iPod and Walkman brands within the portable music sector. However, whilst the market for dedicated personal navigation devices will not go away, Juniper believes that this type of device will begin to loose some of its dominance of the personal navigation sector by the end of the forecast period.

Order the Full Report

Portable Navigation & Wireless Tracking: Western European Markets & Forecasts 2007-2012

This whitepaper is taken from the report entitled “Portable Navigation & Wireless Tracking: Western Europe 2007-2012”.

This extensive study presents the current and future opportunities for portable tracking and navigation products and services in Western Europe from 2007 to 2012. The report contains a thorough analysis of three key product areas: personal navigation devices; personal navigation software for handheld computing devices; and mobile phones & wireless connected tracking devices & services (for vehicles & people). The substantial 250 page report focuses on navigation and tracking relative to terrestrial (mainly road) mapping information and examines a number of technology issues associated with providing location based services as well as competing tracking technologies such as RFID. The report analyses integrated personal navigation solutions (e.g. PNDs) as well as navigation solutions for portable computing devices, Smartphones and mobile phones and third party traffic and travel information services delivered by mobile phone. Furthermore, this methodical report also covers developments in products for vehicle and person tracking applications whilst providing a practical five year forecasting suite.

For more details on this report visit the website www.juniperresearch.com or phone +44 (0)1256 830002

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