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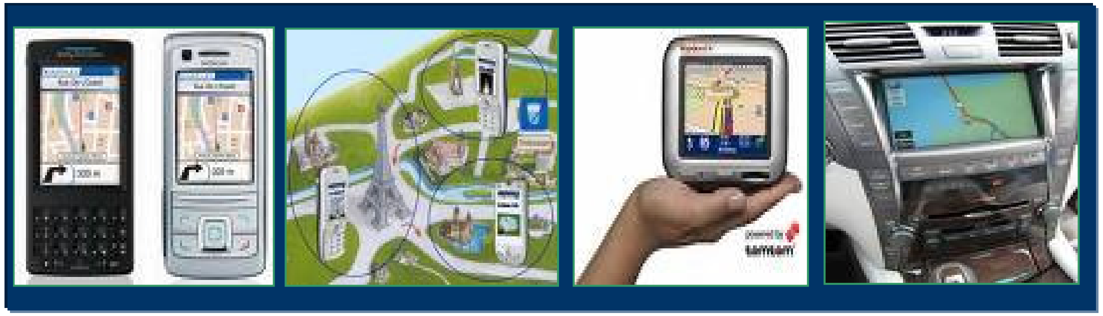
# Analysis of the European market for Telematics and Infotainment



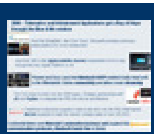
## European Automotive Components Expo

**May 7, 2008**
**Stuttgart**

**Presented by**
**Michael Minich**

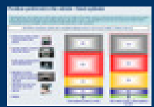
# Agenda

**Telematics and Infotainment**



**Highlights of 2007 – Vehicle Communication & Infotainment**

**Assessment of the European Market for Telematics and Infotainment**



**Voice of the Customer Study – Navigation & Related Consumer Expectations**

**Conclusions and Questions & Answers**

# **Highlights of 2007** – *New Global Market Leader for PNDs, OEM Market Also Catching up*

*Both acquisitions currently hampered by European Commission antitrust investigations – Statement of Objections being released to both TomTom and Nokia*

*Standardized technology neutral telematics platform rising in the market – **NGTP by BMW, Tema.mobility by Magnetti Mareli** and **Blue&Me Nav from Fiat***

***Volkswagen, Audi and Mercedes Benz** showing strong interest in adopting NGTP platform besides suppliers like **Continental, T-Systems and ATX***

***Garmin Global Market Leader for PNDs with over 12 Million sales.** Partnering with **Panasonic Automotive** worldwide to deliver custom OEM navigation solutions to various vehicle manufacturers*

***BMW** offering **internet connectivity** through **dedicated SIM card using EDGE technology (through NGTP Platform)***

***T Systems** to launch aftermarket **internet connectivity box** offering **internet access** through multiple **UMTS connections***

***Retains leadership position in Europe in 2007 with 48% market share.** Expanded portfolio to include value added services like Mapshare (1 million customers), TomTom HD Traffic (with Vodafone in Netherlands and soon coming to Germany and France)*

***EU HD Radio alliance** formed. **BMW and Navteq** expected to launch traffic information and LBS Products over HD Radio platform later this year*

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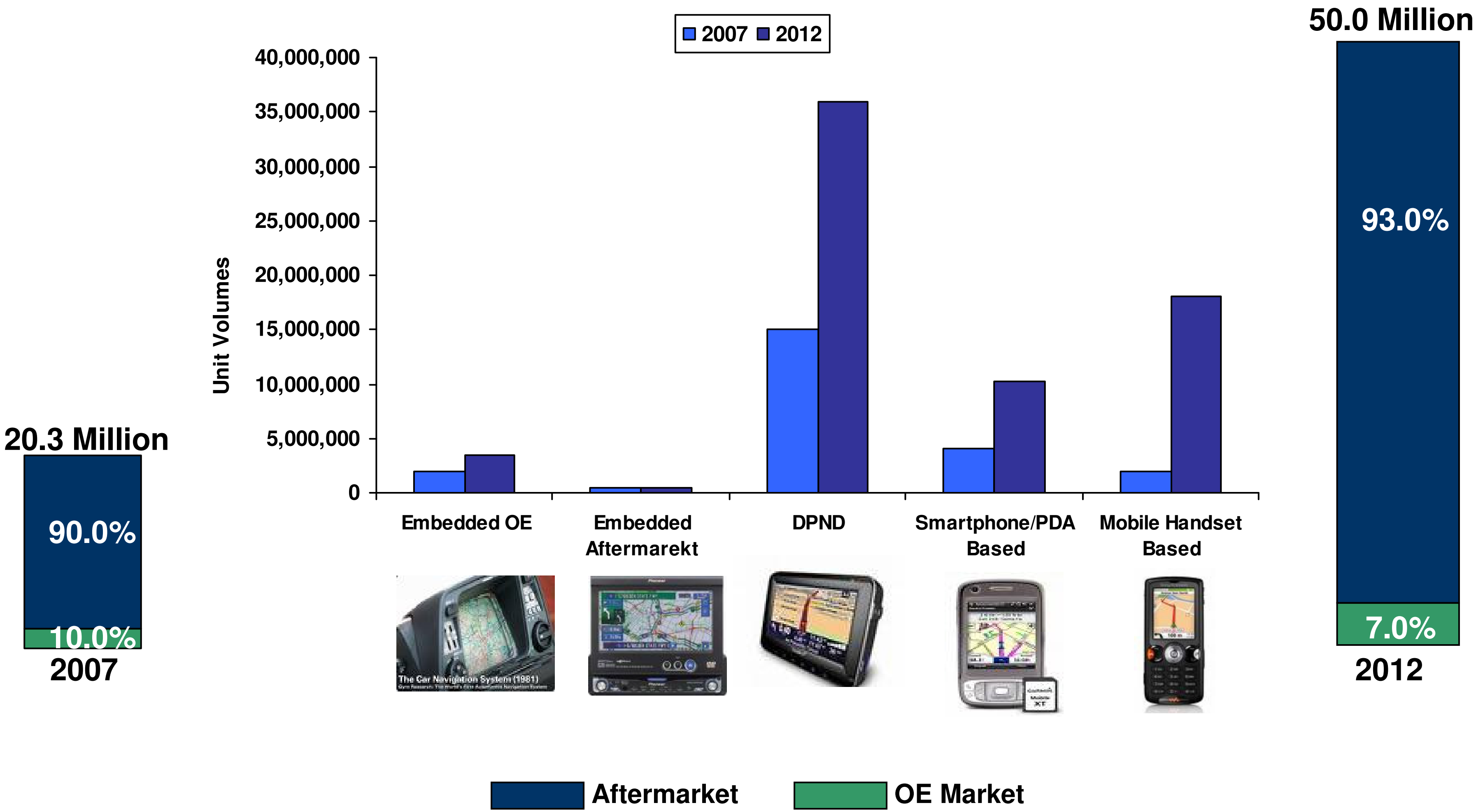
# Total Navigation Market Size – *Dedicated PND and Mobile Handset Based Navigation will keep the Aftermarket Dominant in terms of Total Volumes by 2012*

## European Total Market Units for Navigation Systems (OE & AM)



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**Connected Mobile Phones** *- Mobile Phones are best positioned to serve as connected devices enabling a whole range of telematics services in a very cost effective manner*

# **Vehicle Manufacturer Options**: *Telematics Services is now a reality, but the need of the hour is for the Auto industry to recognize growth of mobile device and start providing interface for that in the vehicle*

**Case:**

*Dedicated PND dominant in the market. But Mobile Phone Based Navigation Systems are expected to grow to 18 Million by 2012. More than 90% of Nokia phones to be GPS enabled by 2010. Clearly growing as the most popular choice*

**Scenario:**

***Connected Nav – Mobile Phones Always connected, hence enables***

*Real Time Traffic Information, Easy Software Updates, Easy Content Updates (e.g. Map), Pedestrian Navigation Possible, Social Networking Tools, Advanced POI, LBS, Music Downloads, eCall, etc*

**Solution:**

***Auto Suppliers to Provide Interfaces for Mobile Devices inside vehicle***

1. *Wired Interface – Outdated. But connection to vehicle HMI possible enabling better user experience*
2. *Wireless Interface – Bluetooth A2DP & AVRCP growing segment. Enables connectivity and streaming*

**Technology :**

GPRS General Packet Radio Service

3G

***Low cost cellular internet technology seems the best fit***

1. *GPRS/3G – Widely available and established in Europe, penetration and subscribers rising to a huge number*
2. *WiFi – Cheaper, but automotive usage maybe erratic due to infrastructure lags. Also limited handsets have WiFi ( Blackberry, high end Nokia, Treo)*

- ***Flexible Business Models at MNO end ( Pay Per Use, Monthly)***
- ***Smart Packaging of Content***
- ***High Speed and Low Cost Cellular Technology (3G/GRPS)***
- ***Vehicle Manufacturer Interface for Connected Mobile Devices***

# **Telematics Platform**: *OE Market Aggressively venturing into standard platforms to push telematics services into mass market status, host of new efforts namely NGTP and TEMA.MOBILITY*

- Platform based on a **telematics black box (T-box)** with **SIM** and **UMTS technology**
- Basic concept is to **connect the vehicle to a mobile network** and enabling mobile broadband services
- The technology platform behind TEMA.MOBILITY is **open to different service providers** to add on services
- Platform ensures **cost effectiveness** for TSPs

- **Flexible, scalable and technology neutral** platform to deliver telematics services
- Platform open to multiple technologies namely **UMTS, WiFi, VoIP, etc**
- Focus is on providing **over the air telematics services** to in-vehicle devices
- Telematics service providers can now sell same service to **multiple vehicle manufacturers** over NGTP neutral platform
- Platform offered to other manufacturers on **creative commons license basis**

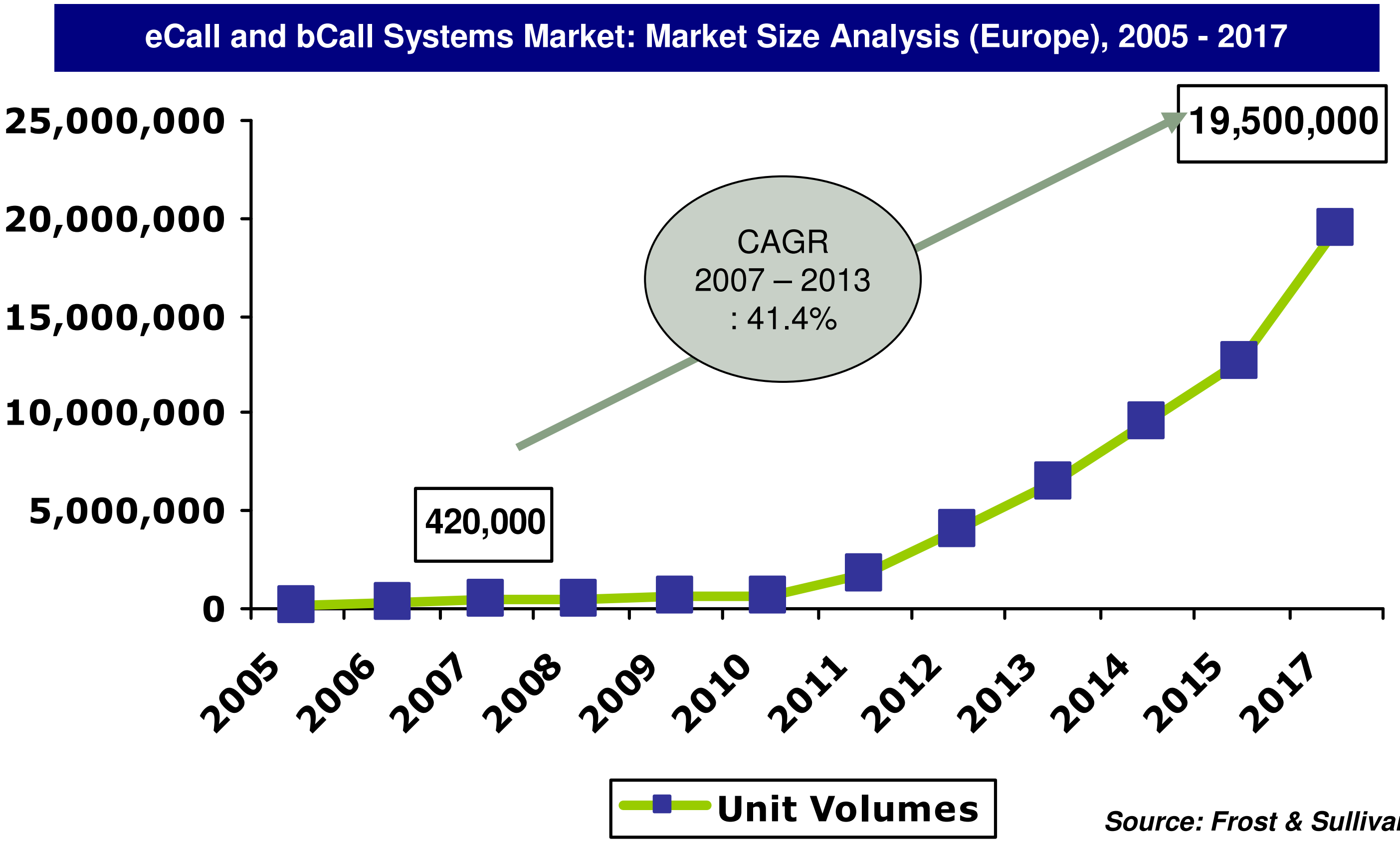
- Second generation **Blue&Me Nav** introduced on **Bravo** and **500**
- Fiat group sold more than **250,000 vehicles** with first generation **Blue&Me** on **Grande Punto**
- **Diagnostics** is the next feature expected to be included in this platform
- **Microsoft** clearly moving ahead in auto space as key supplier
- **Fiat & PSA** are the only OEMs to focus on telematics on such a grand scale

# **Digital Map Based ADAS**: *Aisin AW Europe making rapid strides in this market, Toyota and Lexus expected to take the lead in the EU Market*

| **Digital Map Based ADAS – Map is the primary sensor** | **Digital Map Based ADAS – Map is the secondary sensor** |
|---|---|
| Speed Alert Assistance | Adaptive Front Lighting (AFS) |
| Curve Warning | Adaptive Cruise Control |
| Predictive Powertrain Control/ Fuel Savings | Lane Keeping Assistance |
| Intersection Assistance | Lane Change Assistance |
| Enhanced Navigation | Stop & Go |
| Accident Hot Spot Warning | Collision Avoidance |
| Dynamic Pass Prediction | |

| Applications Already in the Market | Vehicle Manufacturer/Supplier Involved | Comments |
|---|---|---|
| Navi-matic Suspension Control (AVS - Adaptive Variable Suspension)<br>Navi-matic Automatic Transmission Control | AW Europe<br>AWTC Europe | Launched in Japan with Toyota and market ready in Europe |
| Adaptive Cruise Control with Digital Map | BMW | Available since late 2006 |

# **European eCall Market –** *2017 will be the time by when eCall can reach 100% uptake across all new vehicles, no mandatory legislation as of now, only voluntary agreement on new type approved vehicles post late 2010 or 2011*




*Source: Frost & Sullivan*

In terms of the voluntary agreement, the ACEA is proposing different types of solutions which offers vehicle manufacturers and suppliers the chance to bundle eCall with other telematics features in different flexible ways.

If these proposed solutions go ahead and get approved, then the whole telematics market stands to gain

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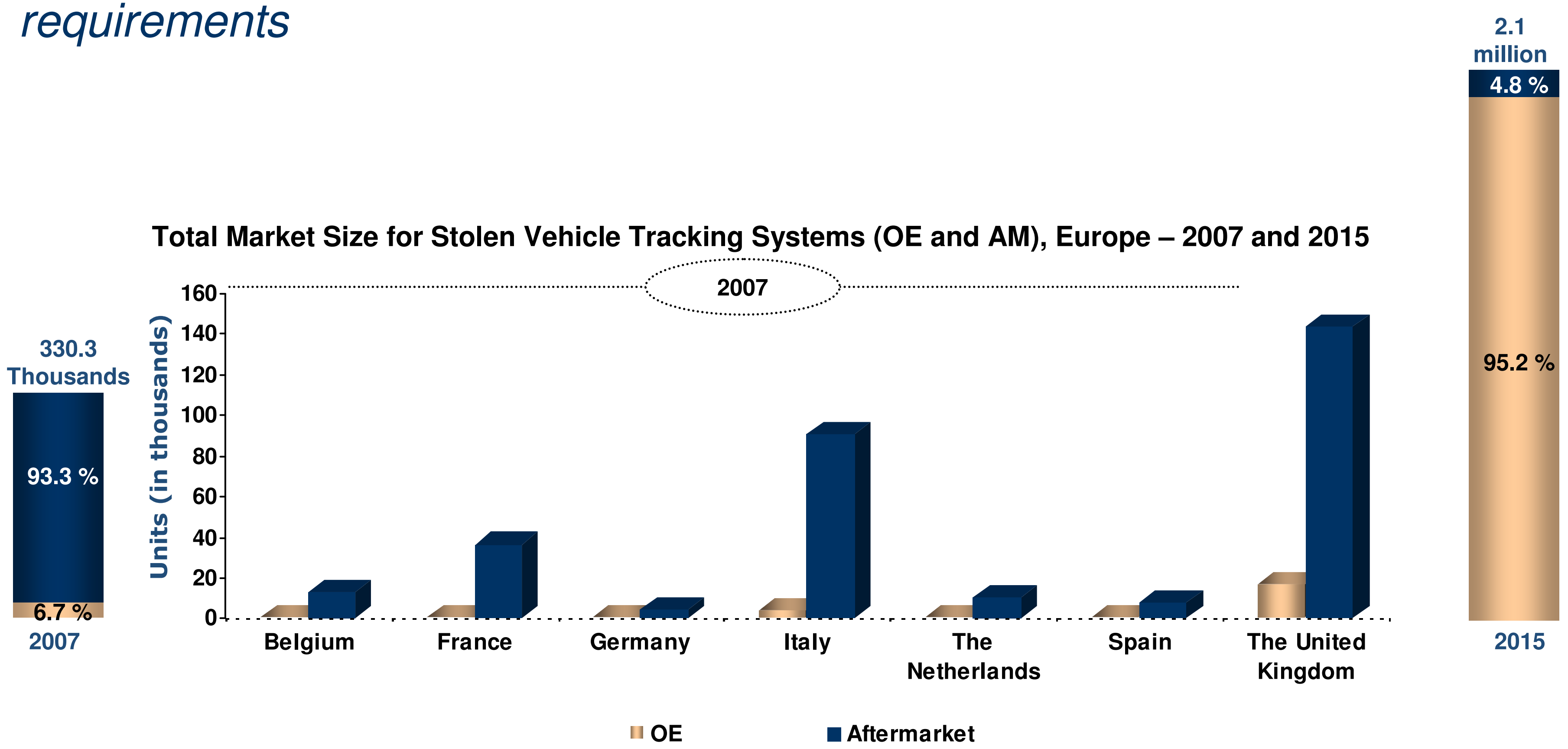
# **Total Stolen Vehicle Tracking Market***: United Kingdom is the leading country in Europe with high demand for SVT solution due to the insurance requirements*



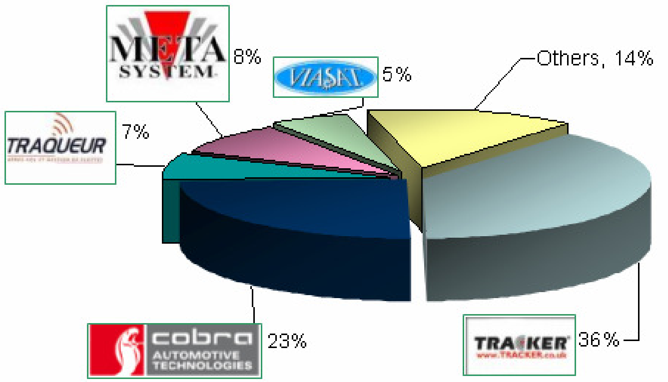

*Source: Frost & Sullivan*

- The insurance requirements in countries like the United Kingdom, Belgium, The Netherlands and Italy in the major driver to increase the demand of SVT.
- Being the major driver in the aftermarket, the insurance requirements has made the vehicle manufactures to integrate the SVT system to the vehicles at the assembly level as a product differentiator.
- Certain insurance companies in France and Spain offering discounts on the insurance premium is also the reason for the growth of SVT in those countries.

# Telematics Brings Fresh Opportunities for the Insurance Sector - *Stolen Vehicle Tracking & PAYD Opportunities*

### *Eurowatch manages the service in Europe for Jaguar and LandRover*


- Jaguar and LandRover currently provide a **complete Pan European service** for an active SVT system
- **GPS/GSM** tracking platform, **Car Installation kit** specific to each vehicle and a unique **Automatic Driver Recognition (ADR) system**




### *PAYD Vehicle Insurance – Yet Another Feather in the Cap of Telematics based Value Added Applications*

| Insurer | Partnering Companies | Launch Date of Product (Launched/Expected) |
|---|---|---|
| Norwich Union | $O_2$, Tera Data, Traffic master, Intech | Launched in 2006 |
| Zurich | Agents A.G. | Expected 2009 |
| Allianz | Proprietary (not looking for any partners) | Expected 2010 |
| Royal & SunAlliance | -NA- | Expected 2009 |
| AXA | Winterthur | Launch date yet to be finalised |
| Unipol Assicurazioni | Octotelematics, Metasystem | Launched in 2007 |
| Mapfre | IBM | Expected launch in 2010 |
| WGV | HP, Oracle | Expected 2009 |

# **Digital Radio Platforms –** *European Market is finally going to witness HD Radio and Satellite Digital Radio Service by 2009/2010*

*European HD Radio alliance formally formed in mid 2007. Services expected to be launched in Switzerland first and later rolled out on Pan European Level by 2009/2010 by iBiquity*

***Navteq** to launch traffic information and other LBS services by late 2008 on HD Radio platform, **BMW** also testing traffic information platform on HD Radio*

***DAB** digital standard still low on uptake rates. **UK and few parts of Germany** are key markets still*

***DAB** plus is the next expected standard from the DAB family **.Australia** has already adopted DAB plus*

***DRM** Is another vital standard emerging in the European arena*

***Worldspace** planning to launch Satellite Digital Radio for vehicles – **Aftermarket product by late 2008 and OE Solution for late 2009***

***Fiat and Worldspace** signed agreement in July 2007 for satellite digital radio marketing distribution on Fiat vehicles*

***Delphi and Ondas** working to bring satellite digital radio with 150 plus stations by 2010*

***Nissan along with Infinity brand** have already signed up for offering this SDR service on all its vehicles as option in EU post 2010*

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# Traditional Traffic Management System Using Roadside Infrastructure – *Challenged by new Solutions in the Future*

Tom Tom HD Traffic using drivers mobile phone for speed, direction of travel and vehicle positioning data. Service available in Netherlands, and soon to be rolled out in Germany, France and UK

**Launching a number of real time traffic information services namely**
- TrafficOne personalized traffic,
- TrafficHotline for on demand voice traffic data
- NexGen real time live traffic feeds
- Trafficbroadcaster for web and ad based traffic delivery
- JamCast for real time traffic news via radio and wireless platform

**BMW and Navteq** planning to launch real time traffic information services over HD Radio platform by second half of 2008

***European Consumers are willing to pay up to 20 Euros a month for real time traffic information services***

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# Preferences for Navigation Systems – *Touch Screen, Centre Console Display, toll roads and speed camera detection with Voice instructions and Ability to Prepare Routes at home Key Features*

**Display preference**

•**38%** of respondents **prefer screen to be located on the centre console**

**Automatic Destinations Detection**

•**18%** of respondents **use navigation to drive to known destinations**.

**POI Detection**

•**Toll roads & price, speed cameras** and **scenic routes** of most interest.

•**Information** must be **Dynamic**

**Navigation HMI Preferences**

• **52%** consumers prefer **touch screen**

• **23%** prefer **Voice Control Systems**

• **15%** prefer **separate switches for control**

**Occupants Signature**

- Manual Selection
- Biometric Sensors
- Wireless Transmitters

**Route Preparation and Calculation**

•**76%** of respondents **stated that the ability to prepare routes at home was important**.

**Preferred Instruction Mode**

• **39%** of respondents **prefer voice instructions that expand on instruction**.

**Dynamic Route Guidance**

•**65% want to search location by "shortest or quickest routes".**

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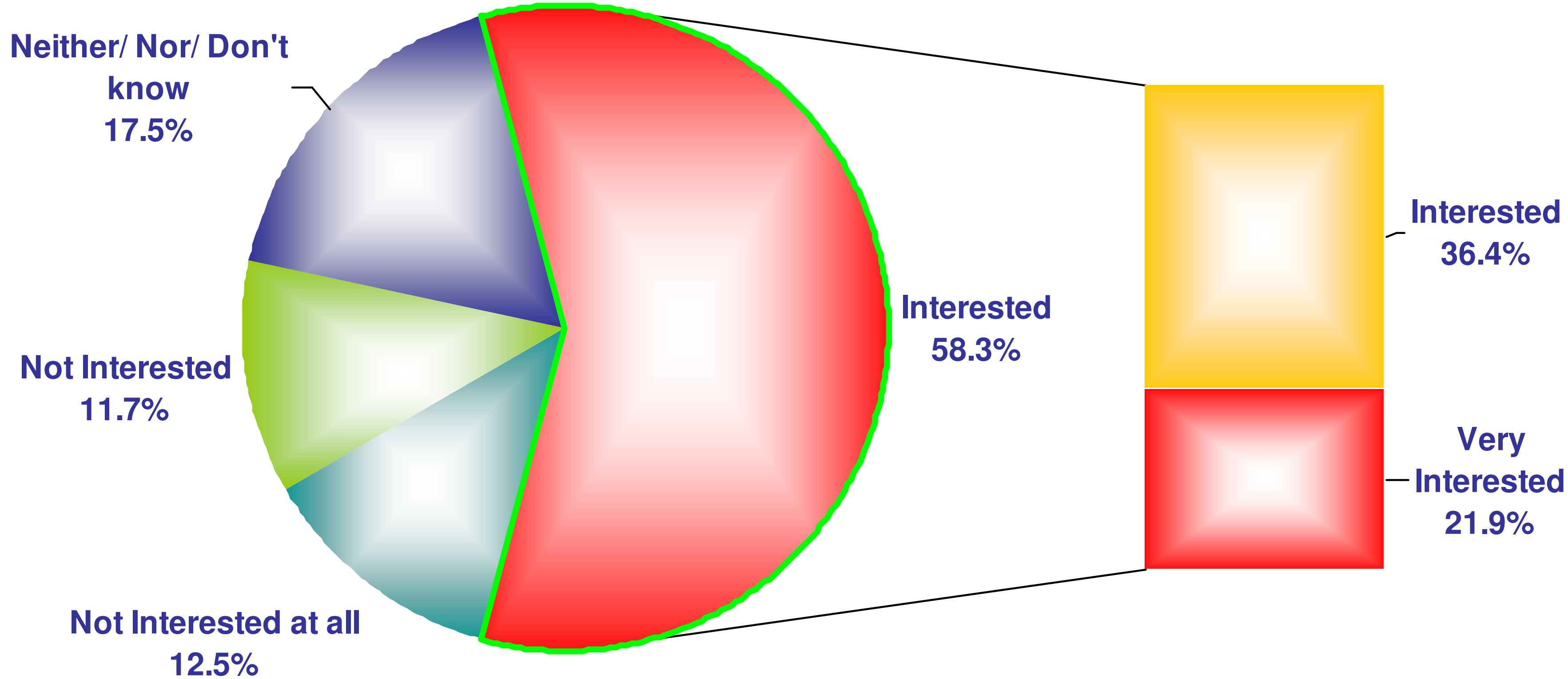
# 58% of non-navigation users are interested in purchasing Navigation Systems in the future

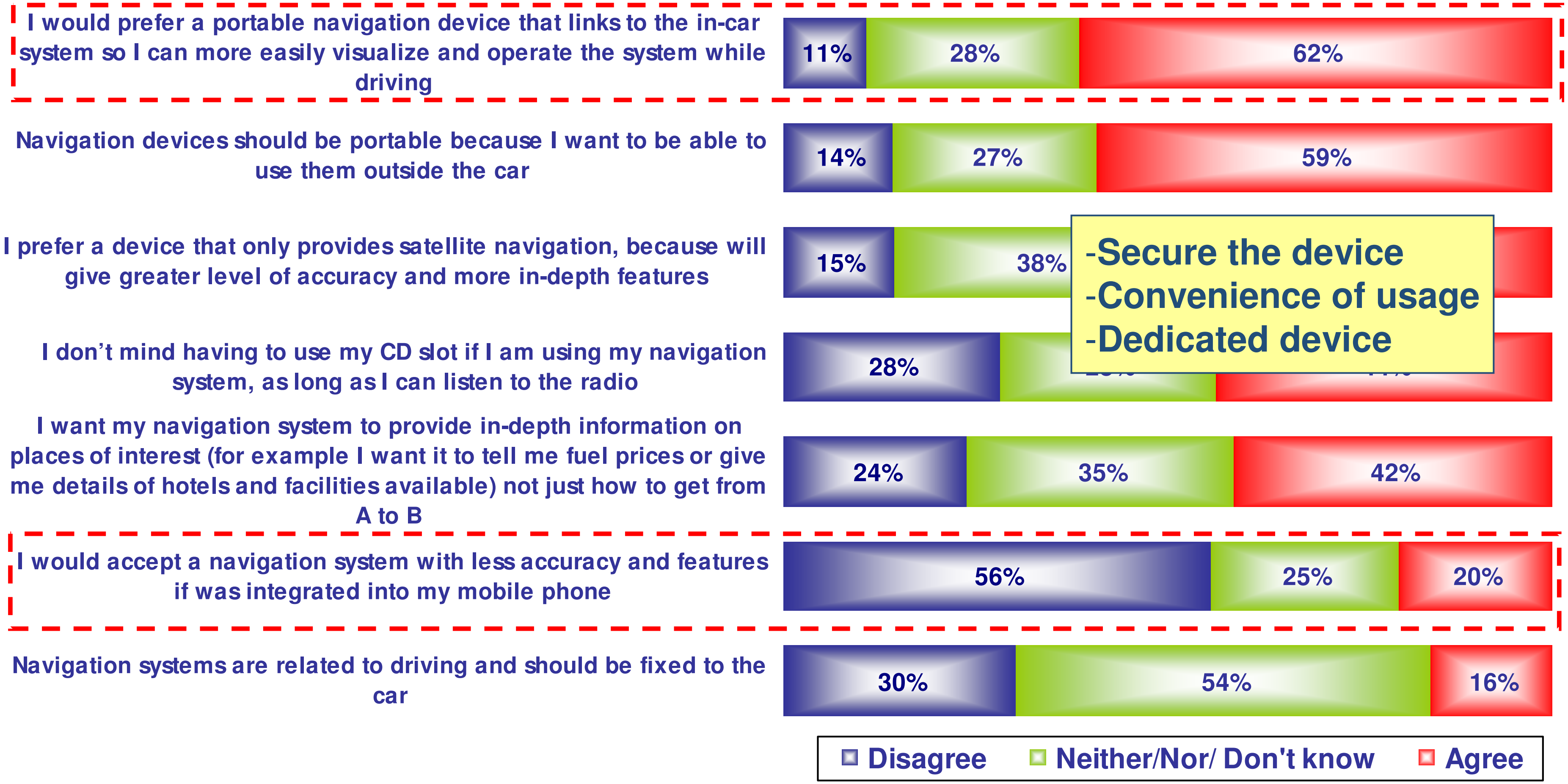
Q7 How interested are you in purchasing a navigation system in the future?




Base Non-users n=1,695

# Consumers want portable systems that can link to in-car systems – *Dockable PND is a more like the preferred option, TomTom already delivered such a system on Toyota Yaris in Europe*

Q46 Please rate your agreement with the following general statements….

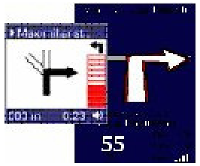



Base: Users n=1,974

# **Price Willingness to Pay** – *Consumer willingness to pay for PND closer to market price, but huge gap in consumer willingness and actual market price for embedded Systems*

**Lack of perceived value addition and mass market consumers price to value ratio not working out is the major reason for lower willingness to pay for fixed systems**

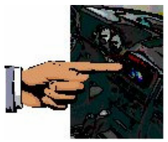
**GPS Turn-by-Turn System - The turn-by-turn type systems are basic systems equipped with…**

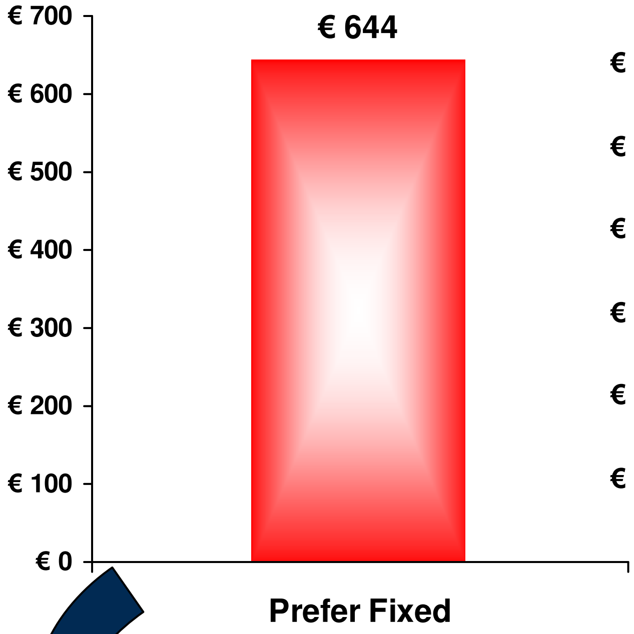


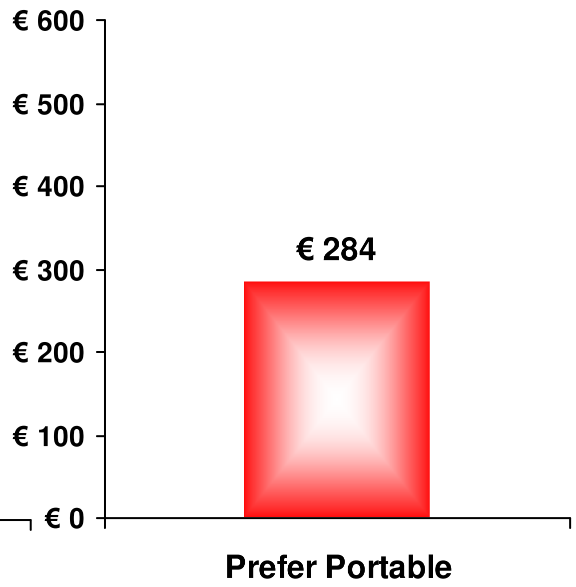
**Colour display with medium resolution - Is a clear screen but does not have as many pixels or dots per inch as brighter…**

**Map image. Simply provides your route as if on a real map…**


**Front panel user-interface - Scrolls, buttons, keyboard, etc…**






| A&B | C | D&E | SUV | MPV |
|---|---|---|---|---|
| 589.442 | 631.892 | **660.442** | **729.117** | 635.563 |

Base prefer fixed n=570, prefer portable n=1,410

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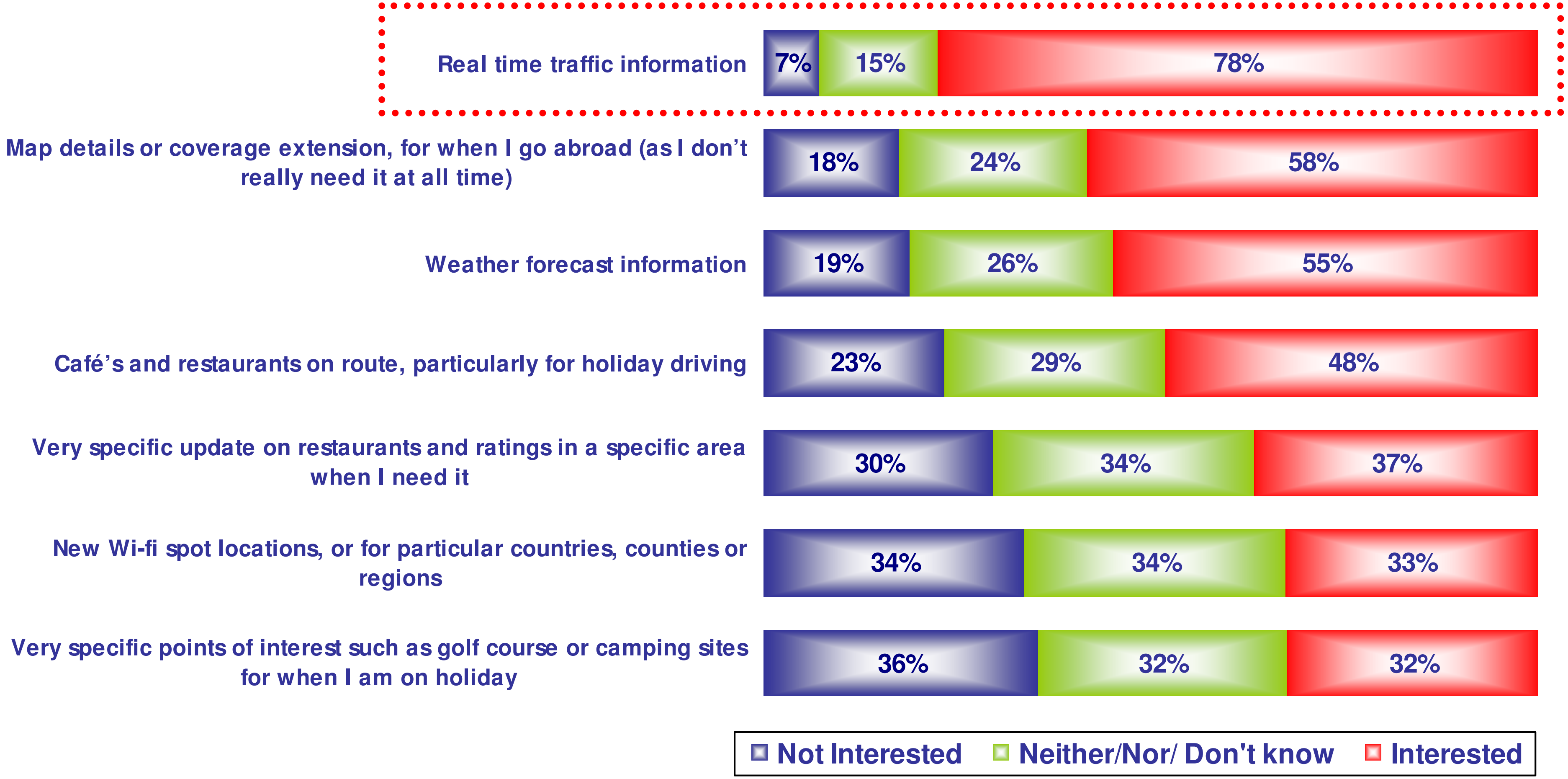
# Almost 80% of Consumers are Interested in Real Time Traffic Information as a Real Time Update Option

Q69 How interested would you be with a service that would provide you with information on demand (rather like ring tones or wall paper for your mobile phone)? Please rate how likely you would pay extra for updates on the following:




Base: n=1,974

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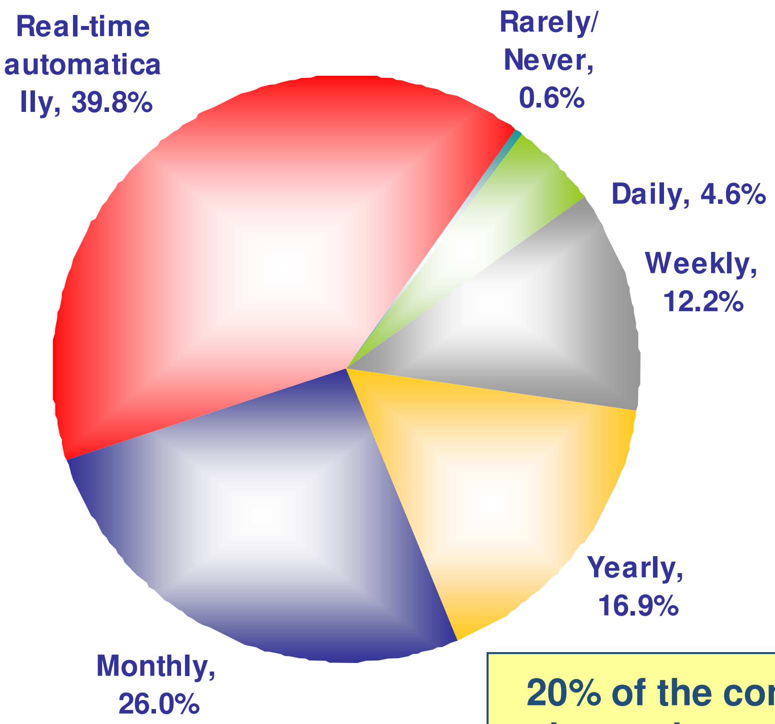
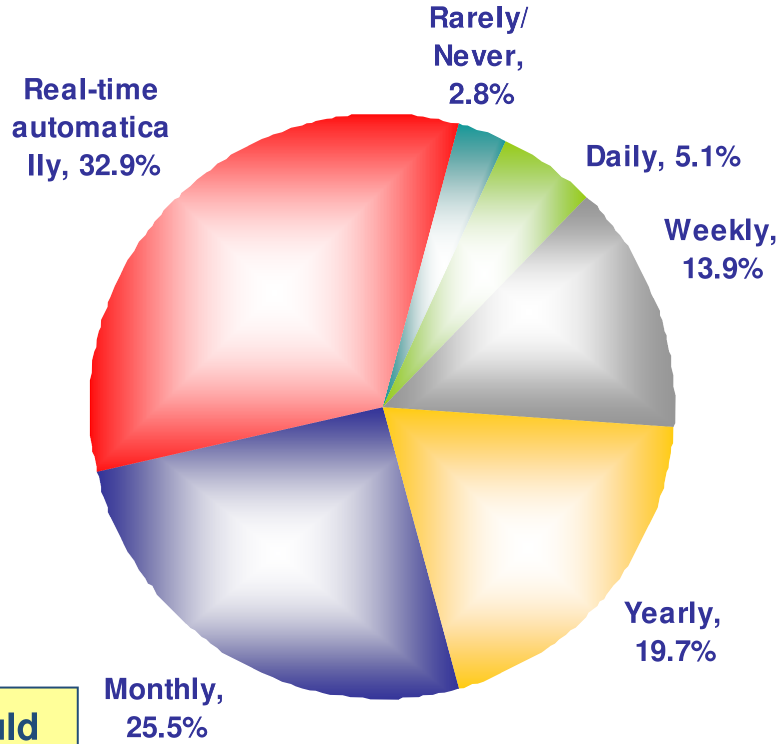
# **Map and LBS Updates –** *Majority Consumers want to update maps and points of interest on a monthly basis, this clearly gives a conclusion that some form of connectivity (to internet) should be there on Navigation devices*

Q63 How frequently would you expect to update your maps?




Q64 How frequently would you expect to update your points of interest?

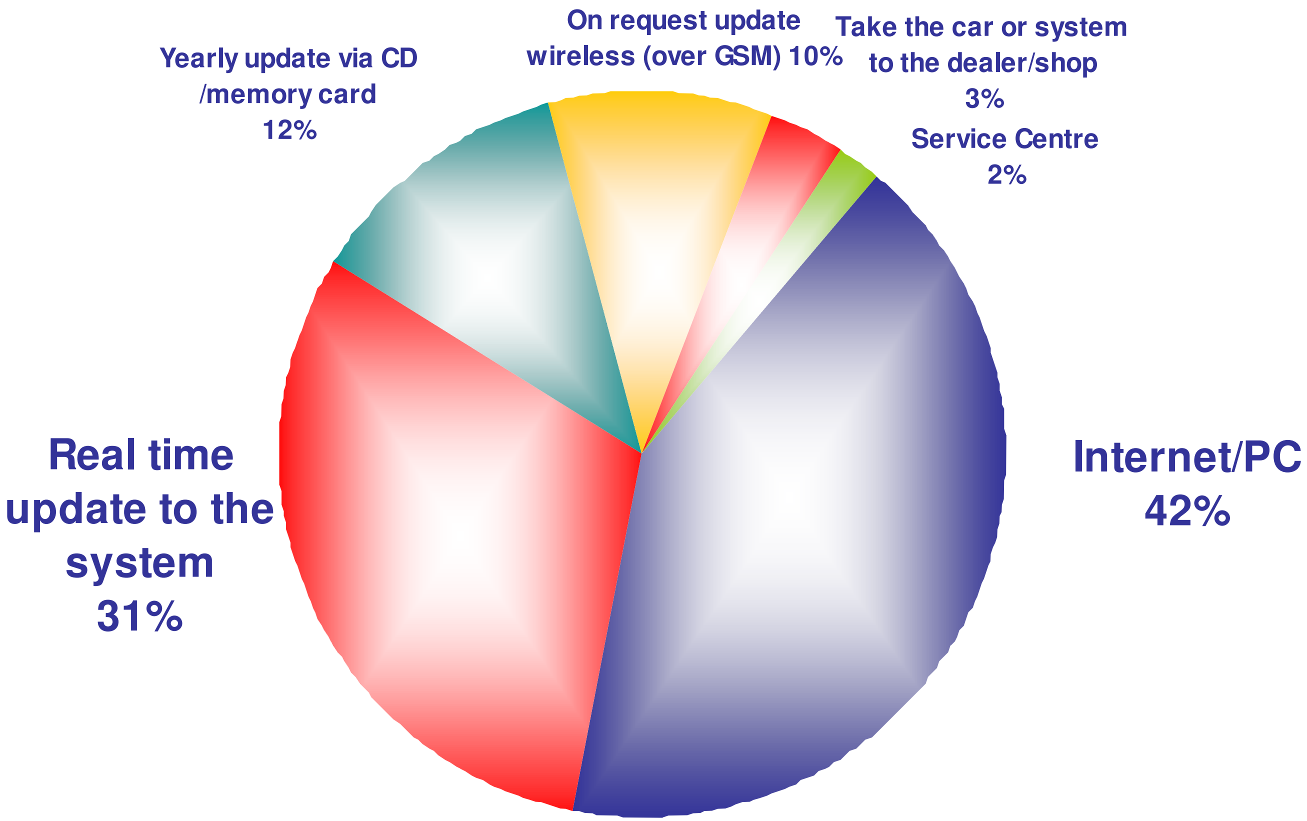



**20% of the consumers would be ready to pay €15-20 per months for map updates and location based services**

Base n=1,974

# **Map Update Options –** *31% of consumers seem to be in favor of the real time dynamic wireless map updating method, a technique that was exhibited by Aisin AW during the recent Frankfurt Show – "Map on Demand"*

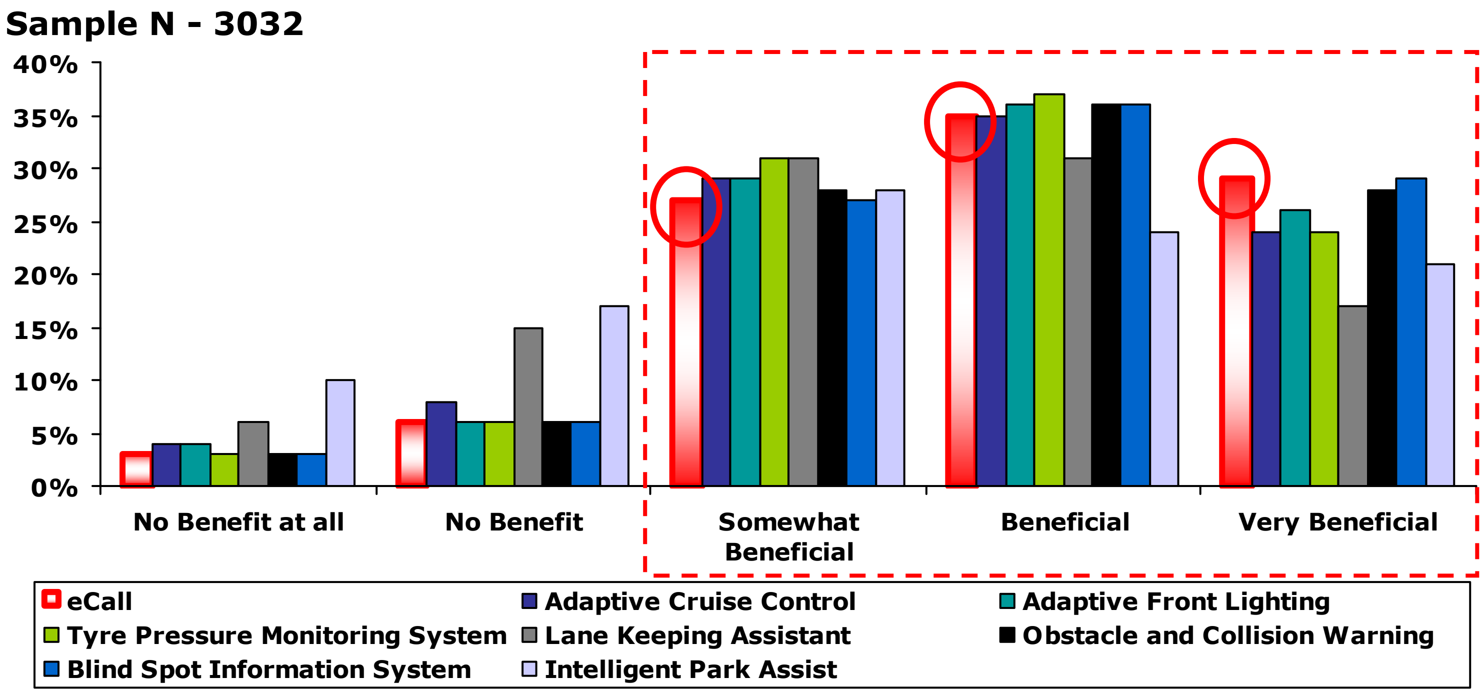
**Q62 What do you feel would be the most appropriate form of updating the map and points of interest information used by the navigation system? (Select only one)**




Base n=1,974

# Consumer Perceptions & Willingness to Pay for eCall – *eCall along with TPMS and BLIS Considered Beneficial features by Customers in Europe*

**Consumer perceptions and Benefits – eCall and Other Active Safety Systems**

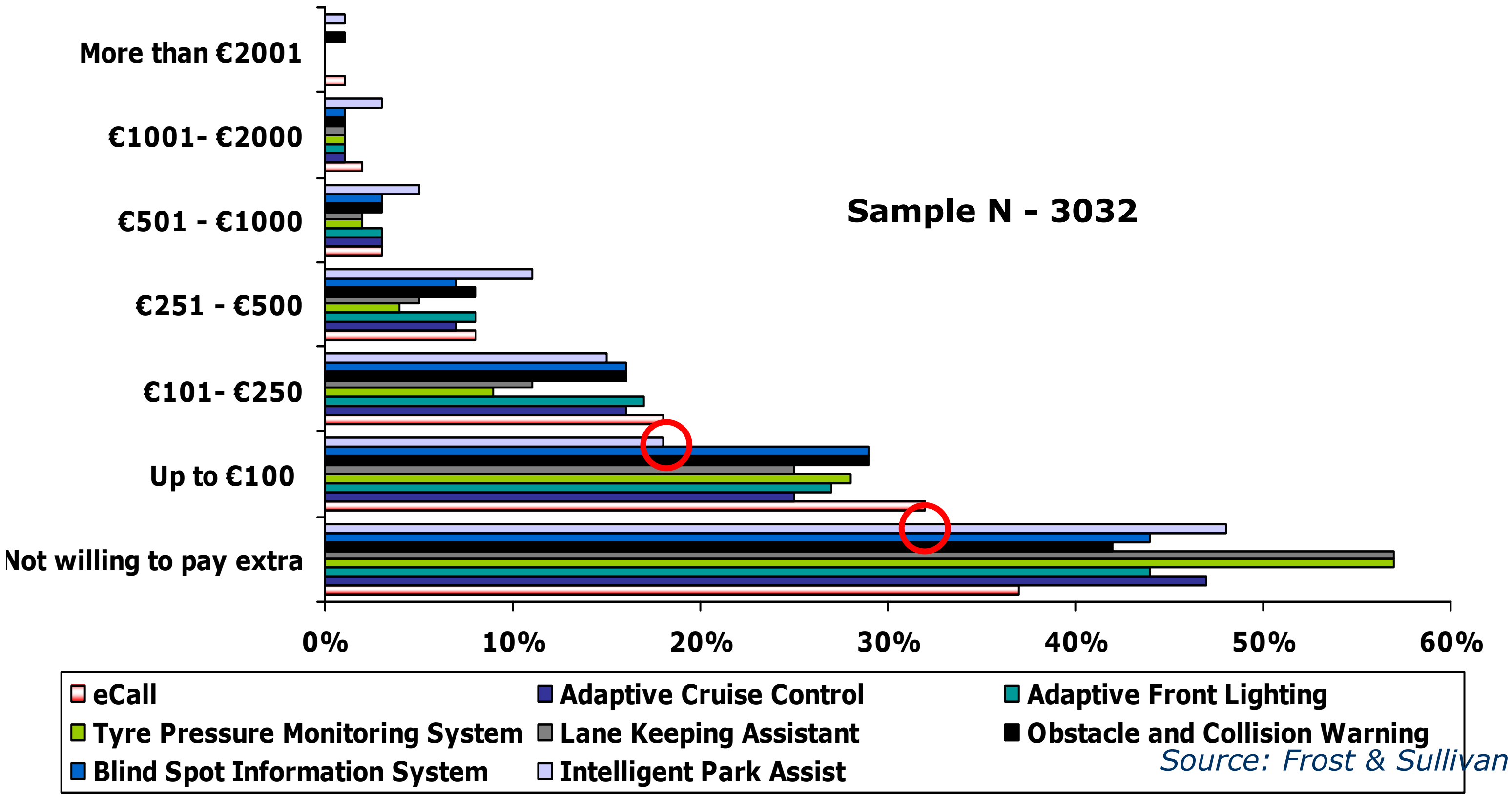



*Source: Frost & Sullivan*

- It can be clearly seen from the Chart that close to 91% consumers consider eCall a very beneficial feature (including somewhat beneficial, beneficial and very beneficial)
- Other features that comes close to eCall falling under the active safety segment are Tyre Pressure Monitoring Systems (TPMS) and Blind Spot Information Systems (BLIS) because of the benefits it provides in terms of preventing accidents

# Consumer Perceptions & Willingness to Pay for eCall *– 37% of consumers don't want to pay extra for eCall, 32% are ready to pay upto 100 Euros only*

**Consumer Willingness to Pay for eCall and other Active Safety Systems**




*Source: Frost & Sullivan*

- It can be seen clearly from the chart that eCall and some key active safety applications like BLIS and Lane Keeping Assistant, TPMS are expected to be a part of the vehicle cost by consumers and majority of them are willing to pay only less than 100 Euros for the same
- This leads to the conclusion that vehicle manufactures must provide interfaces to low cost mobile phone based eCall solutions priced within 100 Euros which is a good opportunity for them

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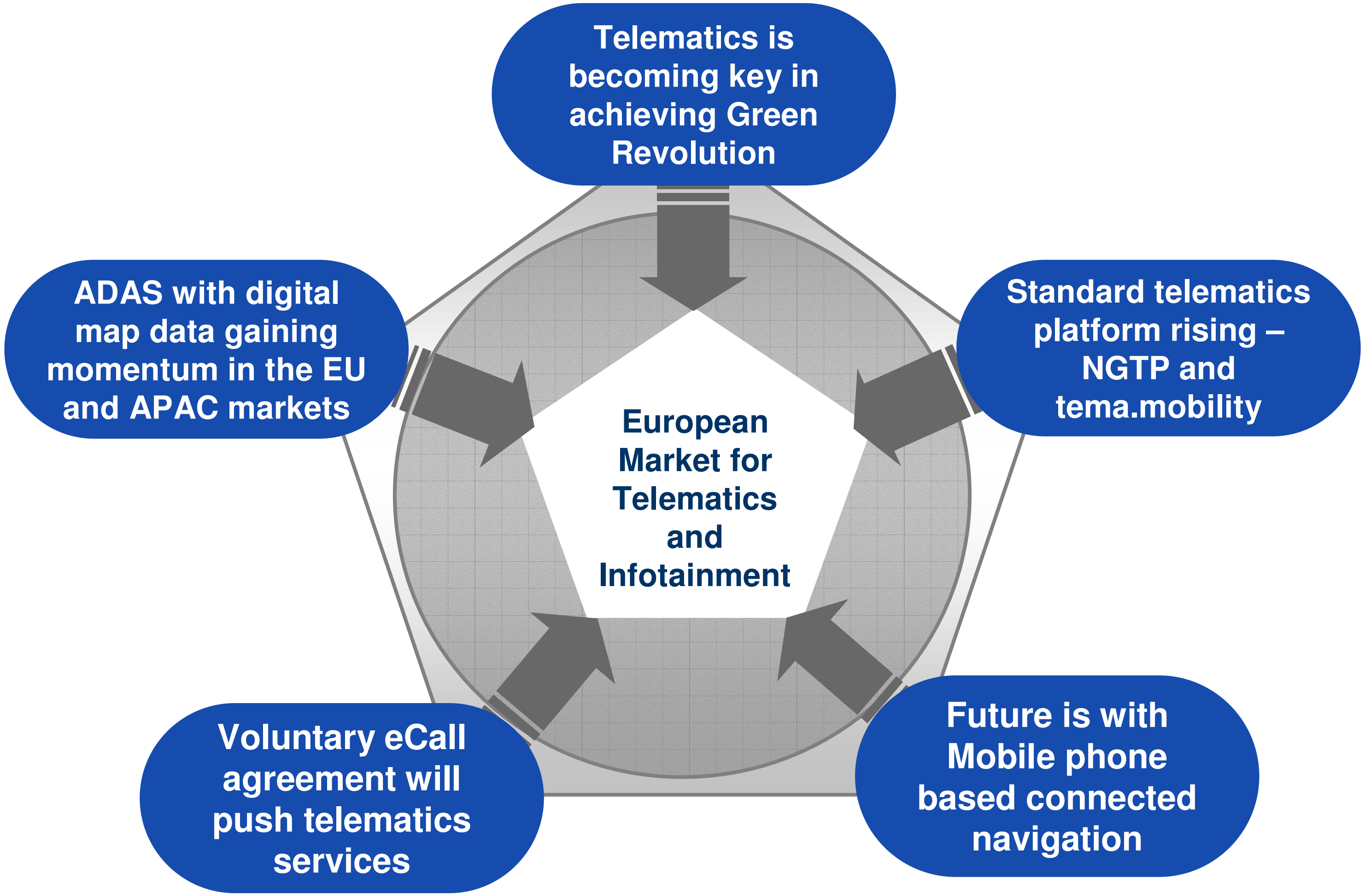
# **Conclusions** – *Global Telematics Market is Set to take off, thanks to many local initiatives*



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# Thank you very much for your attention!


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