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Table of Contents

Table of Contents	i
List of Tables.....	i
List of Figures	i
Abbreviation List.....	ii
Executive Summary	iii
1 Introduction	1
2 GOOD ROUTE Value Chain & Exploitation Roadmap	2
2.1 GOOD ROUTE Value Chain.....	2
2.2 GOOD ROUTE position in the competitive market	3
2.2.1 The Personal Navigation Market	3
2.2.2 The Fleet Management and Automotive Market	6
2.3 GOOD ROUTE Exploitation Roadmap	10
3 GOOD ROUTE Exploitation Plans	13
3.1 GOOD ROUTE Exploitable Knowledge and its Use.....	14
3.1.1 GOOD ROUTE Exploitable Products	14
4 Conclusions	17
References	18

List of Tables

Table 1: OEM market for commercial vehicles.	7
Table 2: GOOD ROUTE Exploitable plans.	16

List of Figures

Figure 1: GOOD ROUTE value chain.	3
Figure 2: Personal navigation systems value chain.	4
Figure 3: GOOD ROUTE exploitation roadmap.....	11

Abbreviation List

Abbreviation	Definition
ADR	Accord Dangereux Routie
ASP	Application Service Provider
B2B	Business to Business
B2C	Business to Customer
CAN	Controller Area Network
CBA	Cost Benefit Analysis
CC	Control Center
CEA	Cost Effectiveness Analysis
CR	Conflict Resolution
DG	Dangerous Goods
DGV	Dangerous Goods Vehicles
DSS	Decision Support System
GPS	Global Positioning System
GSM/GPRS	Global System for Mobile Communications/General Packet Radio Service
JAVA	Programming Language
LSS	Logistics Support System
OBU	On Board Unit
OEM	Original Equipment Manufacturer
PC	Personal Computer
PDA	Personal Digital Assistance
R&D	Research and Development
SSN	Semantic Service Networks
TCP/IP	Transmission Control Protocol/Internet Protocol
TMC	Traffic Management Centre
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
XML	Extensible Markup Language

Executive Summary

The current Deliverable, entitled D9.4: “Exploitation and Business Plans” is prepared in the context of WP9: “Dissemination and Exploitation” of GOOD ROUTE project and provides the exploitation plans of GOOD ROUTE.

This document presents the GOOD ROUTE value chain, as envisaged by the GOOD ROUTE Consortium, the business cases which are further investigated in the context of D9.3: “CBA and CEA on developed applications” and the detailed exploitation plans per exploitable product of GOOD ROUTE (including the publishable summary for each of them). It is based upon the Exploitation Agreement of the GOOD ROUTE Consortium.

1 Introduction

The GOOD ROUTE exploitation plans, reported in this document, have been based on the market survey conducted since the first year and reported in D9.2: “Extended market report on GOOD ROUTE applications and preliminary strategy”. D9.2 provides an extended overview of the competitive to GOOD ROUTE market and its value chain, a short and updated overview of which is also provided herein (sections 2.1 and 2.2), which led to the identification of the business cases for GOOD ROUTE. The GOOD ROUTE business cases (deployment scenarios) have constituted the basis for the conduct of the Cost Benefit and Cost Effectiveness Analysis of D9.3: “CBA and CEA on developed applications”, the results of which have provided feedback for the preparation of this Deliverable. A full description of the deployment scenarios/business cases is provided in D9.3, together with the analysis that followed.

In the context of the GOOD ROUTE business cases, the exploitation roadmap (section 2.3), as well as the detailed exploitation plans for each product (Chapter 3), are provided in this document (the full version which is confidential). The detailed exploitation plans include:

- The title of the exploitable product;
- A short description of the functionality of the exploitable product;
- The Partners involved in the exploitation, their role and activities;
- The way the product might be exploited;
- Further additional research and development work;
- Intellectual Property Rights protection measures, if applicable;
- Any commercial contacts already taken, demonstrations given to potential licensees and/or investors and any comments received (market requirements, potential etc.);
- A publishable summary of the above.

It should be noted that exploitation plans have not been formulated for all GOOD ROUTE products/results; only for those that are considered more close to the market. In this sense, the exploitation plans presented in this document are subject to future changes, in case the current vision changes.

In addition, the GOOD ROUTE Consortium is bounded with an Exploitation Agreement. The Exploitation Agreement is currently in paper signing process by all Consortium Members and it has been formulated on the basis of the exploitation and business plans presented in this document.

2 GOOD ROUTE Value Chain & Exploitation Roadmap

2.1 GOOD ROUTE Value Chain

To ensure an effective transformation of R&D results into marketable products, exploitation planning has been envisaged in the course of the project, reported in the current Deliverable. The market survey, provided in D9.2: “Extended market report on GOOD ROUTE applications and preliminary exploitation strategy” as well as the market survey performed in the context of WP3, has enabled the depiction of the competitive market environment, in which the GOOD ROUTE products are to penetrate into.

The GOOD ROUTE value chain, that will constitute the basis for the exploitation approach to be followed for the products of the project, is shown in the following picture. The “Service chain” and the “System development chain” are distinguished, whereas the nature of the depicted interactions throughout the value chain are characterised either as (Business to Business) B2B or as B2C (Business to Customer) relations.

The data needed (traffic info, etc.) are provided by the TMC’s, incorporated or linked to the Pilot sites, and are used to feed the GOOD ROUTE modules and services. The GOOD ROUTE services are linked to allied services (e.g. police, etc.) and in their integrated form, they constitute part of the final GOOD ROUTE application, which is incorporated partially in DG vehicles fleets and in TMC’s, whereas the main end-customer of that are the DG transportation companies (e.g. BP). Besides the services, the s/w and system modules constitute the “system part” and are also integrated in the GOOD ROUTE final application, to support the services finally provided.

Each identified exploitable GOOD ROUTE product is related to a respective role, defined in the GOOD ROUTE value chain of the following Figure.

All identified exploitable products are considered as main products, meaning that all of them are products that are needed for the GOOD ROUTE system’s deployment, and should be considered as “core” in the marketing approach.

As shown in the following figure and Table 2, the GOOD ROUTE products can be s/w, h/w or services. Finally, the GOOD ROUTE final Product will be a combination of software license set up and services.

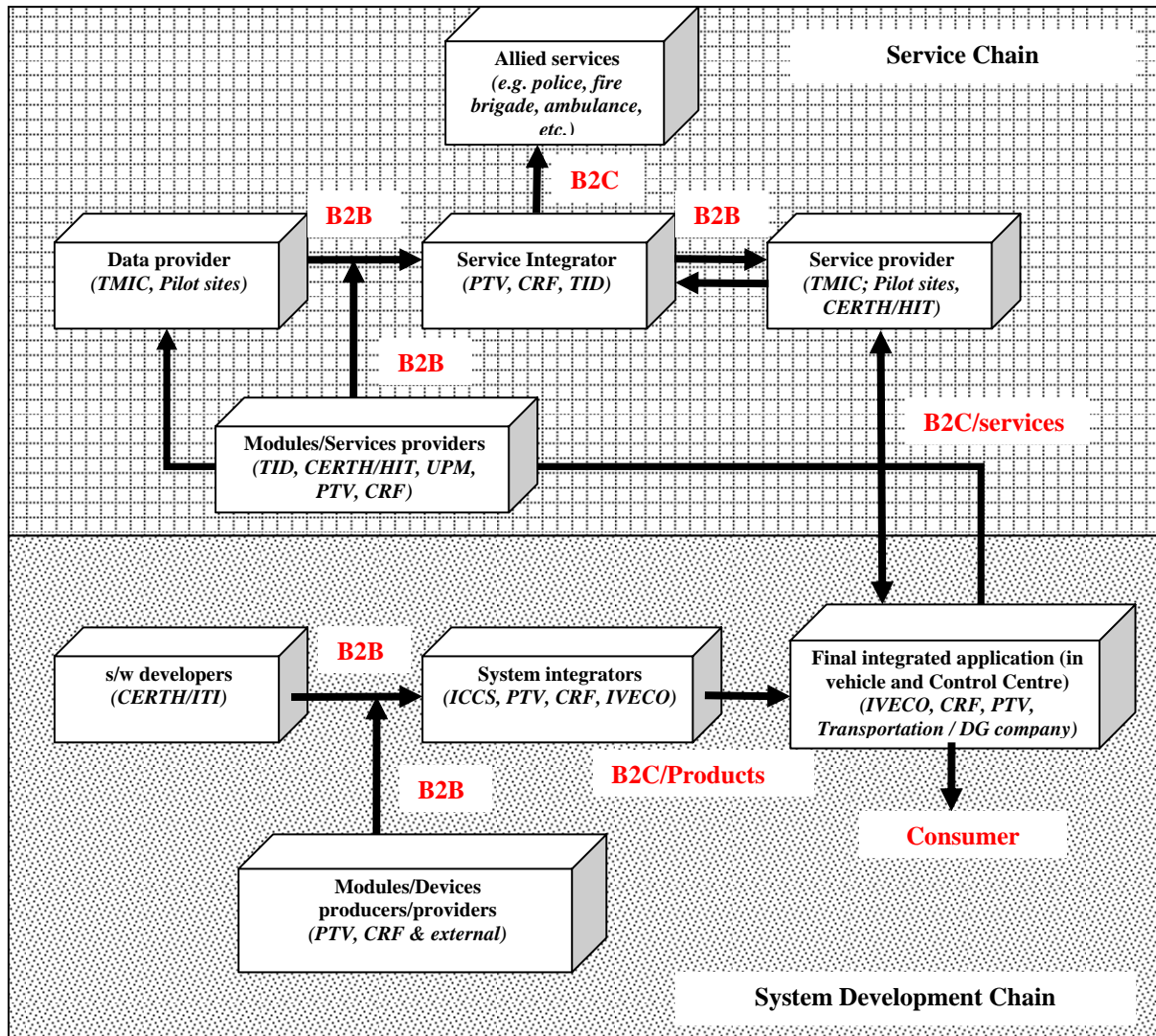


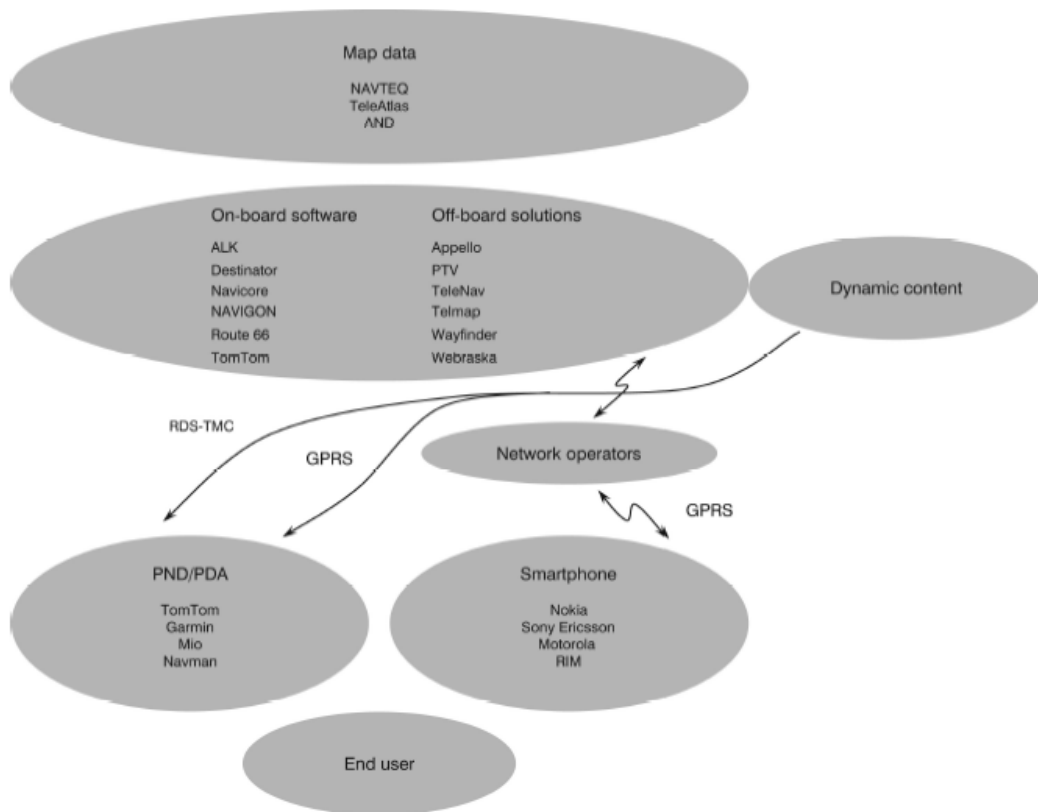
Figure 1: GOOD ROUTE value chain.

2.2 GOOD ROUTE position in the competitive market

The main market segments that are relevant to GOOD ROUTE are namely the personal navigations systems market and the fleet management systems/services one. This chapter presents in short how GOOD ROUTE is placed within these market segments through the respective players participating in its Consortium and how/up to which level this is going to enable the GOOD ROUTE penetration in the market.

2.2.1 The Personal Navigation Market

An overview of the personal navigation systems value chain is shown in the following figure.



Source: Berg Insight

Figure 2: Personal navigation systems value chain.

As shown in Figure 2 above, PTV AG is one of the most important key players in off-board navigation solutions. For years, PTV products (VISUM, INTEROUT, etc.) have been established as European market leaders. PTV's fleet services provide vehicle fleet operators with tailor-made solutions. They are available as standard products, integrated into map&guide or as independent ASP services, with or without user interface or fully integrated into the user's software environment.

Moreover, the fact that besides Germany, where the parent company is located, there are numerous branches and subsidiaries in Europe and the USA, is quite promising with regard to the "Minimum Risk Guidance System" penetration in the European and international market (about 100,000 end-users will be targeted initially). Thus, PTV, is considered to have the relevant know-how and marketing profile to support the effective promotion and adoption of the GOOD ROUTE's "Minimum Risk Guidance System", which constitutes one of the core products of GOOD ROUTE, and actually really soon (in about one year after the end of the end of GOOD ROUTE, as shown in the exploitation roadmap below). The key advantage of the module is that it will be based on existing platforms and technologies, providing though the "safest route" option, which is an innovation in transport navigation and, in this way, the already established navigation market can be targeted without any technical or other barriers. The intention of PTV is to fully integrate the mobile navigation system with the back-end server platform of PTV. It will thus be possible to seamlessly exchange navigation relevant data between the mobile client, based on JAVA/OSGi, and the back-end platform, based on JAVA and SOAP Web services. Always under the condition of feasibility, the user will have the option to plan and calculate a route on the back-end system and navigate

with it on the mobile device. Routes calculated on the mobile device will be usable in the back-end system. The mobile navigation will run on several navigation clients (tablet PC's, PDAs and PDA-like smartphones), selected upon certain requirements regarding processing power. Depending on the available device, UMTS may be used for data transfer instead of GPRS.

In addition, the GOOD ROUTE Decision Support System (DSS) and the Conflict Resolution (CR) module provide the central functionality of GOOD ROUTE. In particular, both systems are integral to the Minimum Risk Guidance Module described above, so everything concerning the exploitation of that module also applies to the DSS and the CR module.

However, these modules are architected to stand on their own, as independent units, and as such can be made available to other on- and off-board route guidance system manufacturers as well.

Concerning the DSS, a stand-alone version or fall-back option provision, that would not rely on a back-end system, control centre or conflict resolution scheme, could be developed and marketed as an option, targeting an even wider DGV operator market segment. Such a system would use ADR-class dependent risk maps, that would provide pre-calculated and normalized (with respect to quantity of material transported) risk contours (similar to elevation contours), that the routing system would utilise, in order to calculate optimal routes with respect to risks and transport costs. Such a system could be developed independently of any (obviously more accurate) Control Centre-based system and can be useful in areas where no such control systems exist.

The GOOD ROUTE Conflict Resolution system, on the other hand, would, under normal circumstances, be accompanied by the DSS, however it can also be exploited independently of it, assuming another provider of candidate routes is available. Therefore, the conflict resolution services provided by it can also apply to situations where a variety of possibly conflicting routes are available, besides minimum risk ones. As such, it may be of interest to infrastructure Control Centres in the more general sense.

On the other hand, the "Data Fusion and Integration Module" is located in the back-end system of the GOOD ROUTE service platform. The module will be linked by SOAP Web services to other servers within the system, in order to be able to aggregate data from various distributed sources. In addition, the module will have a data exchange link (probably also SOAP) to the hybrid navigation application described earlier. The task of the data fusion module is to aggregate relevant information from different sources and combine it to new information, that is valuable for the actors in the value chain. This could be for example the combination of traffic information with weather information/road conditions or the combination of remaining travel time with pre-defined time slots, introduced by Traffic Management Centres. Through SOAP interfaces and the navigation application this information is also available to third parties. In this case, around 10,000 end-users are targeted.

The aforementioned outcomes have been disseminated within the framework of GOOD ROUTE through its various dissemination activities and channels; however the web site of PTV and company-specific dissemination channels (events, press-releases, etc.) will be also used for the dissemination of the tools, beyond the duration of the project.

Further research or development, licence agreements, marketing activities, private-public partnerships, information exchange and training sessions may be considered as potential follow-ups of the aforementioned implementations.

The Logistics module may be considered as the communication tool of the user-client with the operator of the GOOD ROUTE and will provide information on the routing (minimum risk path) and notification on the approval of passage for the critical infrastructure segments. This module would be primarily interconnected with the Control Centre, the DSS and the Conflict Resolution Module; therefore the exploitation plans for these systems are considered as a whole (at least currently), as can be seen in Chapter 3.

However, when considering individually this component of GOOD ROUTE, this will also have a significant usability and market penetration, if considered as a routing tool (even if concerning the minimum risk route) for the companies that do not have routing systems and organize their routing on a planning level manually and empirically.

2.2.2 The Fleet Management and Automotive Market

The other main market segment relevant to GOOD ROUTE is the one of fleet management services. Fleet management services enable the management, tracking, maintenance and accounting of vehicles and fleets of all sizes, from transport and vehicle management to driver support services, in order to support customer in the day-to-day running of their core business. Advantages are in costs reduction for routine activities; better service and more customer satisfaction, delivering on time and keeping customer appointments much better; improved planning following each status change for vehicle, order or driver; better overview, for example vehicle positions; complete clarity of transport services; and so on.

Nearly all commercial vehicles manufacturers, including Scania, Volvo, Renault Trucks, Man, Paccar, Komatsu, DaimlerChrysler, Caterpillar provide a wide variety of Fleet Management Services. Many other companies operate on the same market with competitive offers in terms of pricing and functionalities, based on hardware mounted on the vehicles after the sales.

Whether services are offered by the OEM or supplied by an Aftermarket company, these usually involve various competencies, such as data warehousing, billing, hardware installation and maintenance or even service management:

- **Component Supplier** (Telecoms) provide components to enable telematics systems to communicate via a wireless network. Key market participants in this category include Alcatel, Sony Ericsson, Motorola and Nokia.
- **Component Supplier** (Processor) provide the processor component used within a telematic system. These processors are required to manage data obtained from receivers and sensors. Key market participants in this category include AMD, IBM, Intel and Motorola.
- **System Suppliers** provide complete or part finished systems that are manufactured using component parts. Key market participants in this category include Alpine, Aplicom, Datafactory and Gedas.
- **Firmware** (Software Platform) provide operating platforms or firmware for hardware that allow components within a telematics system to communicate

with each other for functioning as a complete unit. Key market participants in this category include IBM, Microsoft and Sun Microsystems.

- **Services** (inc. Airtime) companies provide services and airtime for telematics systems. This includes both service centres and web based service providers. Key market participants in this category include Cybit, O2, Sateltrack and Vodafone.
- **System Integrators** integrate complete telematics systems ready for both pre-delivery and retrofit. Key market participants in this category include Actia, DynaFleet, FleetBoard and Infotronics.

An overview of the OEM market for commercial vehicles is shown in the following figure.

Functionality / Competitor	Dynafleet (VOLVO Trucks)	Infom@x Web (Renault Trucks)	MAN-ERF Telematics (MAN)	Fleetboard (DaimlerChrysler)	SCANIA Fleet Management (Scania)	DAF telematics (DAF)	Blue & ME Fleet (IVECO)	
Messaging	X	X	X	X	X	X	X	Blue & Me Fleet
Maintenance plan management	X	X		X			X	
Mission / order management	Dynamic, with remote routing		X	X	X (with order status)	X	X	
Operating driver management (Reporting)	X	X	X	X	X	X	X	
Mapping	X	X	X	X	X	X	X	
Vehicle data analysis and reporting	X	X	X	X	X	X	X	
Geofencing	(end of 2007)		X	X	X	X	X	
Fleet maintenance plan management (Analysis of operating data)		Analysis of operating data for brakes and oil		Vehicle data for flexible maintenance is transferred				
Dynamic mission / order management								
Remote control	(if vehicle is locked/unlocked)							
Over the air software maintenance	(of TS, end of 2007)							
Anti theft protection	Through vehicle positioning		Through ecall		Through ecall			
Freight data analysis and reporting								
Freight tracking	Through messages			Through vehicle tracking				
Parcel tracking / Monitoring	Through messages			Through vehicle tracking				
Final customer order tracking	Through messages			Through vehicle tracking				
Electronic Ticketing								
Off board navigation								
On board navigation	X			Interfaced with messaging system (from scheduler)	X	Interfaced with messaging system (from scheduler)		
Traffic info	X (used for dynamic re-routing)							
Access to restricted / unauthorized areas								
Insurance service based on vehicle use								
Toll collection								
Telediagnosis (Analysis of DTCs)				X	X			
Chronotachograph / Driving hours	X		Download of tachograph and driving data	Download of tachograph and driving data				
E-call	(end of 2007)		SOS + Automatic roll over alarm		X			
Internet connection/ TV/ DVD	Internet (end of 2007)				TV/ DVD			
Camera viewer					X	X		

Table 1: OEM market for commercial vehicles.

Among all players, IVECO in specific, designs, builds and markets a comprehensive range of light (2.8 – 6 tones GVW), medium (6 – 16 tones GVW) and heavy (over 16 tones GVW) commercial vehicles for use on and off the road, engines for vehicle and industrial applications, passenger transport vehicles, special vehicles, fire fighting

vehicles. IVECO has numerous research and development centres in 19 countries on the five continents and operates in over 100 through joint ventures, licensees and participating investments countries.

It is also important to highlight that some trends coming from a comparative analysis of competitors' offer show a rising role for services affecting key issues like security, safety, reliability and regulatory compliance. They include:

- Over the air software maintenance (Volvo and Mercedes);
- Telediagnosis (Mercedes);
- Use of smart cards for driver identification (Mercedes, Renault);
- Management of driving time (Scania, Renault);
- Integration of PDAs for a more flexible mission management (Mercedes).

Therefore, the considerable impact in productivity, the interest and the efforts in developing these functionalities shown by its competitors should persuade IVECO to evaluate the opportunity to provide these services, improving, in this way, its commercial proposal.

Services within the red area in Table 1 will be, of course, a part of the telematic platforms in the next future. The capability to offer these services could be the key that will keep a company one step ahead of its competitors.

Therefore, implementing these functionalities, IVECO could not only bridge the gap with its competitors but even could enter upon a leadership position between the original equipment manufacturers.

For its development plans of telematics, IVECO required a specific version of the IVECO telematic platform to be installed on commercial vehicles. This new unit adds to the original features (GPS receiver, GSM/GPRS module, Bluetooth, USB port, K-lines and CAN busses) the possibility to manage 24V power supply.

Moreover, the CAN interfaces have been redesigned in order to have two high speed and one low speed CAN busses. For HMI aspects, Convergence for POTR also has an ad hoc front panel with buttons and display.

In addition, most of platforms available on the market have large displays (e.g.: 6" for Volvo Dynafleet; 10,4" for Scania Fleet Management) used for different purposes. So, the navigation can exploit this display to show the map, but in other situations it can work as virtual keyboard (if touch screen) or can be integrated with a DVD reader. A safety oriented use of the display is achieved by showing views from cameras installed to monitor vehicle's blind spots.

To make easier the data entering, the presence of an alphanumeric keyboard represents an essential factor that could be really appreciated by the drivers for some functions (mission management, reporting, messaging etc.).

Finally, other possible interfaces and expansions consist of badge readers for an automatic driver identification (adopted in the Renault Infomax system), or also the interface with the chronotachograph.

The IVECO OBU capabilities in terms of interfaces look in line with the competitors' products. The several telematic platforms enable on average the same kind of services, and also the basic hardware features coincide. This is true especially for the long range communication technologies: GSM/GPRS is a widespread module that allows the interaction between vehicle and back-office. Obviously the GPS receiver is essential to guarantee functions like the vehicle tracking or navigation. Besides the interface with the vehicle networks (CAN bus, K-lines), convergence offers a higher degree of integration with personnel devices or resources via Bluetooth and the USB port.

Thus, IVECO, is considered as an appropriate actor for the first adoption and promotion of GOOD ROUTE application in the relevant market.

In addition, IVECO will be further supported in this task by CRF, a member of FIAT Group, which in cooperation with other stakeholders (i.e. Magneti Marelli, etc.), is well known for the development, among other, of intelligent software and hardware solutions for on-board and integrated communication platforms in the transport area.

However, IVECO as well as the whole automotive industry need to further question consumer's actual willingness to pay upfront and ongoing fees for telematics services, and particularly consider previous experience of services that failed to attract drivers.

Whether or not consumers are willing to pay initial or ongoing fees for GOOD-ROUTE-like services, vehicle manufacturers still need to consider the following issues:

- Cost of hardware ~ A Telematics Control Unit of the future will typically costs upward of €100.
- Cost of communications ~ Vehicle manufacturers must consider the ongoing costs of sending data over a GSM/GPRS network.
- Cost of infrastructure ~ Once sent, the cost of the infrastructure required to process, store and re-route the data can be extremely high.

One opportunity for vehicle manufacturers to cover part of the costs could be the European Commission's target of fitting E-call systems into new cars by 2009. This could potentially cover the initial cost of fitting communication hardware in each vehicle.

Into the bargain, vehicle manufacturers have a careful relationship with their dealerships and are generally unable to force dealers to adopt particular services. The difficulty for vehicle manufacturers will be in convincing dealerships to invest in new in-dealer infrastructure, required to support remote diagnostic applications.

Dealerships may see such services as a threat to their independence and revenues. Therefore, vehicle manufacturers must find non-intrusive methods of linking them in order to attract a high proportion of dealers.

2.3 GOOD ROUTE Exploitation Roadmap

Provided the competitive market context urging for robust and mature applications able to penetrate into the market as fast as possible, the following roadmap has been envisaged for GOOD ROUTE exploitation.

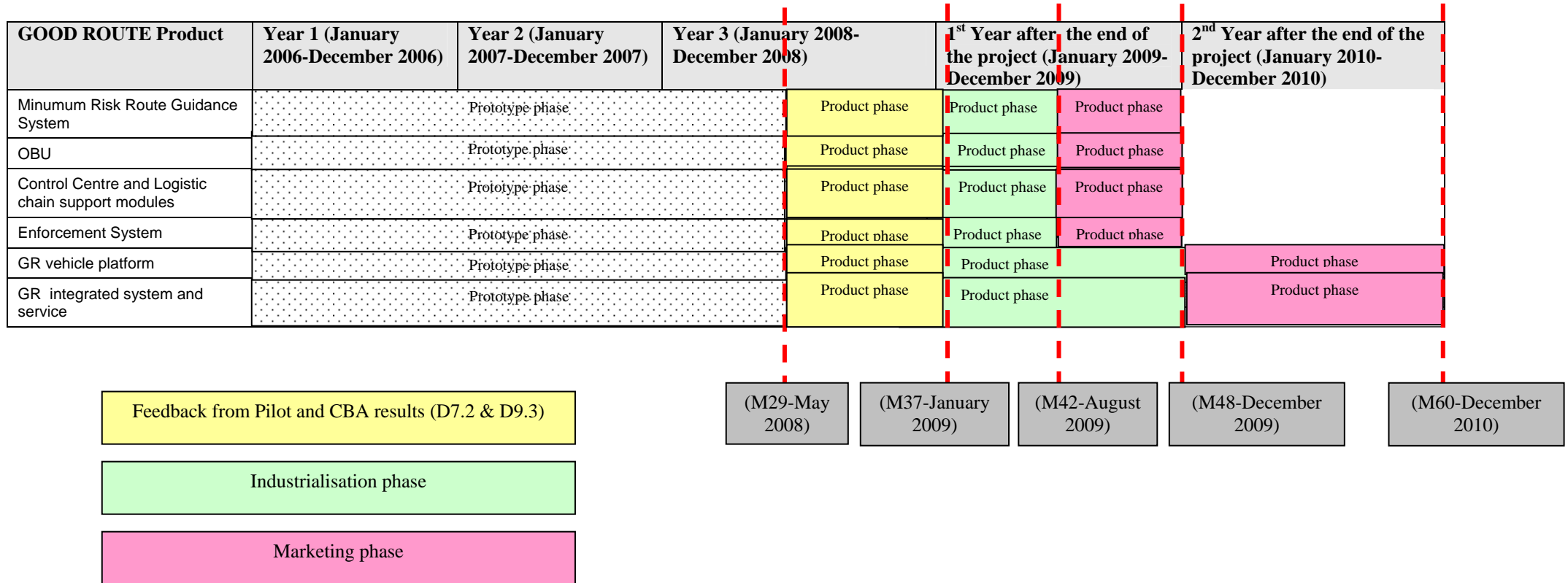


Figure 3: GOOD ROUTE exploitation roadmap.

As it is shown in the above figure, all products of GOOD ROUTE, considered as exploitable, are currently available as prototypes and have been assessed in the context of the scheduled Pilots. Right after the prototype phase, the product phase follows, which is distinguished in three sub-phases, namely the phase where the prototypes are optimized upon the results of the Pilots (taking also feedback from the Cost Effectiveness and Cost Benefit results, when applicable), the industrialization phase, and finally, the marketing phase. As it is obvious, for the standalone products, like the Minimum Risk Route Guidance system or the enforcement system, etc., the industrialization phase is foreseen to be completed much

earlier than for the vehicle platform and the integrated system and service. Thus, the marketing phase for the vehicle platform and the integrated service is expected to start around the beginning of the second year after the end of the project (January 2009) and end around December 2010.

3 GOOD ROUTE Exploitation Plans

An overview of the envisaged GOOD ROUTE exploitation plans is provided in the table of the following section. The detailed exploitation plans per exploitable product are provided in the full version of the Deliverable, whereas, it should be noted that the exploitation rights per Partner are in accordance with the Consortium Exploitation Agreement.

3.1 GOOD ROUTE Exploitable Knowledge and its Use

3.1.1 GOOD ROUTE Exploitable Products

An overview of the GOOD ROUTE Exploitation Plans is provided in the following table.

Project exploitable result	Relevant Exploitable knowledge	Main Exploitation Partner	Type of product	Main Responsible Partner profile	Prototype available	Time to Market (after the end of the project)	Target Market	Target price (in €)	Target annual sales	Respective Role depicted in Figure 1
Minimum Risk Route Guidance System (D2.2, D2.1)	Risk Estimation and DSS Algorithms	PTV & CERTH/ITI	s/w and service	Major route guidance system developer.	M29-May 2008	12 months	ADR transportation companies	Pay per use (varying policies). No extra cost if navigation/routing s/w already exists, else around 500€	4500	PTV acting as system integrator of the minimum risk route guidance system and CERTH/ITI as s/w provider.
OBU (D3.2)	-	IVECO & CRF	s/w and h/w	Major truck manufacturer.	M29-May 2008	12 months	ADR vehicles	500	4500	CRF acting module/device producer/provider with regard to the OBU and the respective sensors and IVECO as system integrator .

Project exploitable result	Relevant Exploitable knowledge	Main Exploitation Partner	Type of product	Main Responsible Partner profile	Prototype available	Time to Market (after the end of the project)	Target Market	Target price (in €)	Target annual sales	Respective Role depicted in Figure 1
Control Centre and Logistic chain support modules (D4.2, D4.1)	Semantic Service Network and data fusion algorithms, GR ontological framework	PTV (with the support of TID and CERTH/HIT)	Service, s/w and h/w	Major developer and TMC supplier.	M29-May 2008	12 months	All actors of the logistic chain (i.e. TMC & ADR owners)	100000/year for TMC operators. 1000/month for connected businesses (depending upon use, type of business per vehicle, etc.).	10	PTV acting as module/device provider and as system integrator . TID and CERTH/HIT acting as module/service providers .
Enforcement System (D5.2)	-	CRF & UPM	s/w and h/w	Major telematic systems supplied & Local Node system developer	M29-May 2008	24 months	Authorities	2000 per installation and 500/year for service.	100	CRF acting as module/service provider (with possible outsourcing) . LST/UPM acting as module developer (with royalties) .
GOOD ROUTE vehicle platform (D6.3)	-	IVECO & CRF	s/w and h/w, integrated on vehicles	Major truck manufacturer (IVECO) and automotive services provider (CRF)	M29-May 2008	24 months	ADR transportation companies	2000-3000 per vehicle (depending upon equipment).	4500	IVECO acting as system integrator and carrier of the final integrated application in vehicle , supported

Project exploitable result	Relevant Exploitable knowledge	Main Exploitation Partner	Type of product	Main Responsible Partner profile	Prototype available	Time to Market (after the end of the project)	Target Market	Target price (in €)	Target annual sales	Respective Role depicted in Figure 1
										by CRF.
GOOD ROUTE integrated system and service (D6.2)		PTV (with the support of CRF)	s/w and h/w, integrated at local TMC and provision of service	TMC and telematic solutions system developer	M29-May 2008	24 months	TMC of all types of infrastructure	Modular combination of the above costs.	Combination of the above	PTV is co-developer/operator of several TMC's (i.e. Bavaria) and CRF is equipping several infrastructures with telematic systems (i.e. Trento).

Table 2: GOOD ROUTE Exploitable plans.

4 Conclusions

GOOD ROUTE project resulted in 6 exploitable products that can be commercialised as stand alone or in combination. Depending upon the business case actually followed (three have been devised and are analysed in D9.3: “CBA and CEA on developed applications”), all of them are profitable and viable in the market. Furthermore, behind each one, there is at least one Industrial entity, strong in the relevant market, to undertake its industrialization and marketing; with the exception of the enforcement system, for which external support is currently sought. Target prices and sales volumes have been estimated and an Exploitation Agreement (detailing final IPR and exploitation strategies) has been agreed by the Consortium and is under signature procedures.

The fact that all GOOD ROUTE modules are being integrated into existing products and platforms (i.e. PTV route guidance services, Blue&Me of CRF, IVECO OBU's) allows their first commercialization (without the need to wait for patents, spin-off companies, etc.) in a time where speed is vital and new developments are hindered by lack of investments. Thus, the rapid integration of GOOD ROUTE functions into product series and their fast commercialization are seen by the Consortium as the sole viable way forward, in today's economic and market climate.

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