



FInest – Future Internet enabled optimisation of transport and logistics networks



D10.3 Exploitation Plan

| | | |
|------------------|--|-----|
| Project Acronym | FInest | |
| Project Title | Future Internet enabled optimisation of transport and logistics networks | |
| Project Number | 285598 | |
| Workpackage | #WP10 Dissemination, Exploitation, Standardization | |
| Lead Beneficiary | Arçelik | |
| Editor(s) | H.Gökmen | ARC |
| Contributors(s) | Michael Stollberg | SAP |
| | Fabiana Fournier | IBM |
| | Andreas Metzger | UDE |
| | Michael Zahlmann | KN |

| | | |
|---------------------------|----------------------|------|
| | Evert-Jan van Harten | AFKL |
| Reviewer | Fabiana Fournier | IBM |
| Dissemination Level | Public | |
| Contractual Delivery Date | 30.09.2011 | |
| Actual Delivery Date | 30.09.2011 | |
| Version | V1.0 | |

Abstract

This document provides the initial exploitation plan of FInest project. It will be revised and extended with an interim report at the end of the first year of the project. All exploitation activities carried out during the whole period will be reported at the end of project and it will include FI-PPP Phase 2 plan for exploitation of project results.

Introduction part of the document gives short information about transport and logistics industry in the European Union and provides the FInest project description and its expected results. The FInest project exploitation strategy is explained in the following section. Finally, the different strategies for different FInest partners; industrial, academic and stakeholder, are provided.

Document History

| Version | Date | Comments |
|---------|------------|---------------|
| V0.1 | 06-08-2011 | First draft |
| V0.2 | 24-08-2011 | Second Draft |
| V0.3 | 15-09-2011 | Third Draft |
| V1.0 | 30-09-2011 | Final version |

Table of Contents

| | |
|--|----|
| Abstract | 4 |
| Document History | 5 |
| Table of Contents | 6 |
| List of Figures | 7 |
| Acronyms..... | 8 |
| 1. Introduction | 9 |
| 1.1. Transport and Logistics Industry | 9 |
| 1.2. Project Description | 9 |
| 1.3. Finest Expected Results..... | 10 |
| 2. Finest Exploitation Strategy | 11 |
| 2.1. Finest Exploitation Principles | 11 |
| 2.2. Finest Exploitation Approach | 11 |
| 2.3. Open Source and Controlled Licenses..... | 12 |
| 3. Exploitation Strategy and Plans for Industrial Partners | 12 |
| 3.1. Kuehne + Nagel | 13 |
| 3.2. Port of Alesund..... | 13 |
| 3.3. Tyrholm & Farstad..... | 13 |
| 3.4. Arcelik..... | 14 |
| 3.5. Koç Sistem | 15 |
| 3.6. NCL Shipping..... | 16 |
| 3.7. Air France/KLM Cargo | 16 |
| 4. Exploitation Strategy and Plans for Industrial ICT Partners | 17 |
| 4.1. SAP..... | 17 |

| | |
|---|----|
| 4.2. IBM | 18 |
| 5. Exploitation by Research Institutions..... | 19 |
| 5.1. Marintek..... | 19 |
| 5.2. University of Duisburg Essen (Paluno & TUL)..... | 20 |
| 6. Conclusion and Future Work..... | 21 |

List of Figures

| | |
|--|----|
| Figure 1: Future Internet enabled Collaboration & Integration Platform for T&L | 10 |
| Figure 2: Arçelik's Brands..... | 14 |
| Figure 3: Arçelik's Global Operations Network..... | 15 |

Acronyms

| Acronym | Explanation |
|---------|---|
| ICT | Information and Communications Technologies |
| FI PPP | Future Internet Public Private Partnership |
| FOAK | First of a Kind |
| LCA | Local Competent Authority |
| LSP | Logistics Service Providers |
| SME | Small Medium Enterprises |
| T&L | Transport and Logistics |
| V1.0 | First draft |
| WP | Work Package |

1. Introduction

The aim of this document is to provide the initial Exploitation Plan of Finest project. The exploitation strategy which is described in the document is planned since the beginning of the project. This strategy will be updated during project lifetime based on the use cases, market needs, medium-and-long term trends, and the partners' interests'.

The content of this document will be revised and extended with an interim report in M12. All exploitation activities carried out during the whole period will be reported in M24 and it will include Phase 2 plan for exploitation of project results.

1.1. Transport and Logistics Industry

Transport and logistics is a global industry accounting for approximately 7% of the GDP, and more than 5% of total employment, in the European Union. As a highly networked industry, the industry requires the smooth and agile interaction of a multitude of stakeholders and the integration of numerous operational procedures to move people and goods efficiently. The optimization of logistics processes is not only crucial for improving the business efficiency of involved commercial companies, but also has significant ecological impact: around 15% of the global greenhouse gas emissions are caused by transportation, where the total amount transport-caused emissions of ca. 6.7 GtCO₂e (giga-tons CO₂ equivalent emissions) in 2010 has increased by nearly 50% from the 1990 level and is expected to double again by 2030 (source: World Resources Institute, 2010, <http://www.wri.org/>).

We believe that Finest results can have a high potential to be commercially exploited in Transport and Logistics sector.

1.2. Project Description

The Finest project addresses international transport and logistics as a use case for the Future Internet. International transport and logistics operations are concerned with the planning and execution of the world-wide shipment of goods and people. International transport and logistics enterprises operate as global businesses and their activities constitutes the backbone of the European economy. Operating in a highly competitive, distributed, and agile industry, global transport and logistics service providers require novel ICT solutions for enhancing their inter-organizational collaboration capabilities in cooperative business networks. The planned services of Future Internet technologies can facilitate radical improvements in the business efficiency of this industry as well as contribute to positive socio-economic and ecological side effects.

Modern transport and logistics operations are highly distributed inter-business activities often spanning several countries and continents. The involved business partners each aim to optimize their individual complex supply and production chains. Existing ICT solutions – or, more precisely, those currently employed in the industry – are mostly designed for closed logistics supply chains with limited support for agile inter-organizational information exchange and collaboration. Although a wealth of business standards are used for information exchange in transport and logistics, there is high fragmentation in the ICT technologies used by different stakeholders for processing this information. In addition, legal and governmental regulations require contracts and transportation documents to be provided and carried along in paper form

forcing international logistics companies to conduct many of their information based activities in a highly manual manner. This hampers business efficiency and the innovation potential of all parties involved in modern transport and logistics, and, as a consequence, presents an obstacle to achieving a more reliable, lower cost and environmentally friendly industry.

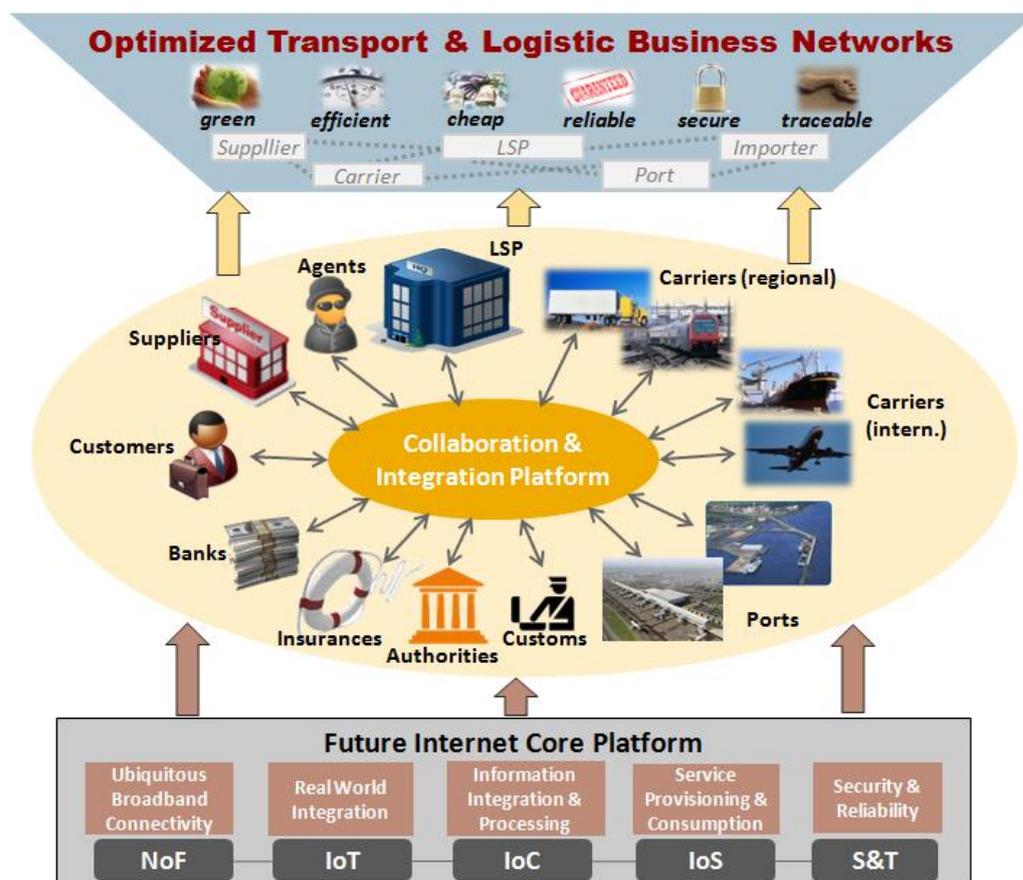


Figure 1: Future Internet enabled Collaboration & Integration Platform for T&L

1.3. Finest Expected Results

Figure 1 illustrates the overall vision of the Finest project. The two following requirements are necessary in order to provide adequate ICT support for the central business

- Efficient support for **inter-organizational collaboration in cooperative business networks** that operate in agile and dynamic environments and involve a multitude of stakeholders.
- **Seamless integration of information and data** in heterogeneous IT landscapes along with embedded facilities for **real-world data acquisition and integration**.

Central features of the platform are:

- **Information integration from legacy and third party systems** enabled by a **service-based integration layer** that works with established business standards;
- Support for the **planning and execution of multi-modal international transport from a global perspective** with message-based coordination among the involved business partners;

- Integrated techniques for **event-driven transport monitoring, tracking, and re-planning** on the basis of data integration from sensor systems and smart infrastructures;
- **Role-based views for the individual participants in logistics processes** along with **integrated security and privacy management** for access control to confidential information; and
- **Ubiquitous connectivity** for allowing access from anywhere at any time via any device.

The platform can most suitably be realized on the basis of an integrated Future Internet Core Platform as envisioned to be developed within the FI PPP. For realizing the desirable features, generic facilities for all technical building blocks that are considered for the Future Internet are required; on top of this, the desirable domain-specific capabilities for inter-organizational process coordination, transport monitoring and tracking, event-driven re-planning, and security and privacy management in business networks will be developed.

The FInest project will focus on international freight transport as the primary use case domain; the results can expectably also be applied in other areas such as passenger transport or cooperative business network management in multi-modal production supply chains.

2. FInest Exploitation Strategy

2.1. FInest Exploitation Principles

Exploitation is a key enabler for the success of the project and therefore the main exploitation principle will be the **alignment of business requirements with research objectives** throughout the project lifecycle maximizing both the interests of domain partners and research partners.

As mentioned in the exploitation approach below, one important aspect that is fully coherent with this mission statement is the **identification of expected results from the very beginning of the project and the translation of these results into exploitable assets**; this identification will vary as the project progresses and will depend on the particular focus of the project tasks being performed. However, having a “business image” of any assets being developed will help in the realization of exploitable and useful assets for the transport and logistics domain, and the definition of the right strategy for exploitation of the project results. An initial identification of expected outcomes is described in 1.3.

2.2. FInest Exploitation Approach

Based on the solid experience of the consortium, and lessons learned in previous projects, the approach that will be followed during the project to ensure that the results are exploited to their fullest is as follows:

- **What:** Specific elements of early requirements development and research activities act as enablers for future assets of the project. However, it is a mistake to postpone the identification of such assets until a very late phase of the project, since this does not allow for the identification of the implications, dependencies and decisions that have to be taken in order to successfully implement these assets and commercialize them. Therefore, besides looking at the external context of markets, competitors, etc, it is essential to “draw” a business and marketing image of the project that helps the consortium in achieving exploitable assets. Using the detailed business requirements developed early in the project and the detailed analysis of current ICT

gaps for the transport and logistics domain, a detailed business and commercialization plan will be developed in accordance to GA directives and will position the results of the FInest project so that they are easily recognized as leading to superior supply chain operations and can be quickly commercialized as the project progresses into the development phase.

- **Who:** *researchers are best for research but not for business* - We have a clear understanding that research alone is not enough for successful exploitation. This concerns not only the type of organization involved (academia vs. industrial), but the team involved in carrying out the work. The FInest project is a business requirement-driven research project requiring the significant involvement of domain experts from the commercial world of transport and logistics and from users of transport and logistics services. The Logistics Stakeholder Coordinator role that is included in the management structure of the FInest project has been established with the idea in mind that only through a broad outreach program that includes not only logistics and transport companies, but users of logistics services and other stakeholders that have requirements for collaboration activities similar to those in the logistics industry, can the results of the FInest project be exploited to their fullest. The FInest consortium will leverage its commercial partners and their contacts to drive the outcomes of Work Package 9 (WP9) "FI PPP Alignment" to create interest and demand in both the commercial and scientific domains for the results of the project.

- **When:** The FInest team will make exploitation a driver for research and innovation instead of being a passive element that comes into force at the end of the project. Inputs in all phases of the project will be focused on defining and refining the exploitable assets.

2.3. Open Source and Controlled Licenses

Given the open nature of the Future Internet and the important role that Open Source plays for dissemination and rapid uptake and exploitation of project results, the project will establish a professionally managed Open Source management process to ensure the correct choice of licenses and compliance within the project and enabling compliant use across subsequent uses of deliverables during the duration of the FI-PPP.

The Parties acknowledge that the use within the FI PPP of Software that is "open source" (as defined at <http://www.opensource.org/docs/definition.php>), and/or the release of Foreground upon license terms associated with such open source Software, may have benefits for the conduct of the Project and promote the Use and dissemination of the resulting Foreground. However, they also recognize that certain of such license terms may restrict the options that are available for Use and dissemination of the resulting Foreground, and accordingly they wish to regulate the use of open source code in relation to the Project and Use and dissemination of the results thereof.

3. Exploitation Strategy and Plans for Industrial Partners

The project objectives have mainly been driven by industrial needs. The plans for exploitation by the industrial partners are listed below:

3.1. Kuehne + Nagel

As one of the world's largest Logistics Service Providers (LSPs), Kuehne + Nagel has to develop and manage complex supply chains on behalf of its customers. The competitive nature of the market in which Kuehne + Nagel competes demands that these supply chains be set up rapidly, efficiently and effectively managed. Problems arise during the operation should not impact the service level agreed.

The Finest project promises to develop a set of new collaboration and management processes based on reusable and user focused tools. Kuehne + Nagel will be enabled to perform the supply chain creation and management services demanded by its customers in a more cost effective and high quality manner. The service provided by and through the Future Internet will enable Kuehne + Nagel to quickly respond to events that are happening in a supply chain network. The Finest project's ability to facilitate rapid supply network planning and re-planning enables the utilizing parties to develop improved solutions to identified problems.

This service capability will extend the possibilities of logistics service providers in general and, in the process, provide customers of these organizations with better service at a lower overall cost. This outcome is a key factor in why Kuehne + Nagel is participating in the Finest project and it will be a significant driver of business benefits to LSPs like Kuehne + Nagel and to their customers.

3.2. Port of Alesund

As a leading Norwegian port operating authority (Local Competent Authority – LCA), the Port of Ålesund manages the movement of thousands of containers into and out of Norway each year. The information requirements for the movement of the goods in these containers, the coordination of shipping and terminal resources to handle them, coordination with customs authorities and the National Competent Authorities (the Norwegian Coastal Administration), reports of statistics data, and for the management of risks due to the material being shipped as well as security related issues are extensive. Today such information is managed in a not optimal way making planning and replanning of transport services a difficult and resource intensive task.

The Finest project's promise of new tools for collaboration and planning within the supply chain, along with its focus on facilitating the integration of partner systems, will enable the Port of Ålesund to increase its services to its customers and provide better support for the various public entities as well as other actors that are using maritime services to and from the port. Port of Ålesund is excited by the potential of this project and expects to benefit significantly from its successful completion.

3.3. Tyrholm & Farstad

As a regional freight forwarding and terminal operator Tyrholm & Farstad provides its customers with superior service and quality. Unfortunately, the reach of a regional forwarding company is limited by its partner network and their capabilities. T&F is thus very excited about the potential that the Finest project and the Future Internet bring for it to expand well beyond its current level of forwarding activity and to integrate the best of a local company with a truly global service offering.

T&F is also excited about the benefits it sees for its customers in the enhanced ability that the Future Internet will bring to all parties in planning, tracking and responding to events in their supply chain. T&F will ensure that its customers understand the benefits that this will bring to them and fully expects to aggressively exploit the new service capabilities enabled through the FInest project and the Future Internet.

3.4. Arçelik

Arçelik Group has approximately 19,000 employees worldwide, 11 production plants in Turkey, Romania, Russia and China (please see **Figure 3** for Global Operations Network) sales and marketing offices in 18 countries with 9 brands (please see **Figure 2**). The Company provides products and services to its consumers in 115 countries.

Arçelik Group is currently negotiating with Defy Appliances Limited (“Defy”, a subsidiary of Franke Holding AG), the leading home appliances manufacturer in Southern Africa, for acquisition. The acquisition of Defy is in its final stage that needs completion of the necessary regulatory approvals and fulfilment of other conditions precedent, which are expected to be finalised in September 2011, following which closing is expected.



Arçelik's Global Operations Network will be extended with the acquisition of Defy to Southern Africa. This will be extending Arçelik's sales only operation to manufacturing and supply-chain operations in Southern Africa.

So, Arçelik, with widely distributed global operation network, needs rapid and secure supply network planning and re-planning due to the competitive nature of the markets. Arçelik needs right data at the right place and the right time in the right format, i.e., visibility of appropriate information in the supply chain to handle daily normal operations as well as exceptional events which may cause economical losses. FInest will provide a secure, collaborative supply chain management platform as a service to Arçelik. This platform will enable secure forecasting, planning and monitoring using modern Internet technologies in a more cost effective and high quality manner. Thus, Arçelik will benefit from this solution and exploit fully the project results. Arçelik has over 1400 suppliers; a significant fraction of those are SMEs, and customers and currently employs some operational tools and proprietary solutions for its current supply chain, production and logistics management.

Arçelik has already started to inform its suppliers and customers during bilateral meetings and company visits about the potential outcome of the FInest project to persuade them to benefit from FInest's results. By this way, the output of FInest will be used for further development and deployment within Arçelik and its suppliers and customers, as well as its group companies.

Figure 2: Arçelik's Brands

Arçelik Group belongs to the largest private conglomerate in Turkey, Koç Group, which operates in four core industries - Energy, Automotive, Consumer Durables, Finance - and had a consolidated turnover of 38.8 billion USD in 2010.

Koç Group companies active in the energy sector can maximize synergies among their petroleum products distribution networks and LPG distribution businesses with using the Finest results. In addition to the energy sector, through strong and committed joint venture partnerships with major international automakers, Ford, Fiat and Case New Holland, Koç Group is the largest automotive player in Turkey. Koç Group manufactures about half of all the motor vehicles in Turkey and is also responsible for about 50% of all Turkish motor vehicle exports. Therefore, Koç Group companies active in automotive sector together with their suppliers and customers can exploit Finest results as well.

Koç Group has a Koç Technology Board (KTB) which is covering all R&D and Innovation centres of Koç Group of companies to share their know-how and solutions first among the Koç Group of Companies and then spread throughout Turkey. KTB have 2-4 meetings annually and one Koç Group Technology Day every year.

Arçelik and Koç Sistem have made a presentation of Finest project and expected result during the 2nd planned KTB meeting which was taken place in Koç Holding Headquarters on the 8th of July 2011. There were many questions from the representatives of group companies and initial interest among the participants were high.



Figure 3: Arçelik's Global Operations Network

3.5. Koç Sistem

KoçSistem is one of the world's largest outsourcing services and systems integration companies providing complex ICT solutions and services for its respective customers. KoçSistem has engaged in several public and private projects to develop solutions for various sectors and widely makes use of these developments in commercial areas.

The “FInest” project promises to develop a set of new collaboration tools that enable processes based, user focused services that will enable KoçSistem to create and extend supply chain focused services and solutions. These solutions and services will greatly benefit our customers who are involved in supply chain activities by allowing them to seamlessly integrate operations with their partners, lower over all supply chain costs and reduce carbon emissions in their transport operations.

The Future Internet will quickly respond to events that are happening in a supply network and, through the FInest project’s ability to facilitate close supply chain collaboration, enable partners to access Internet based Software as a service (SaaS) solutions that will keep their products flowing as required. This service capability will extend the capabilities of their processes, provide customers of these organizations improved service quality and reduce overall costs. The FInest project will be a significant driver of business benefit to our customers and extend our SaaS based services capabilities.

3.6. NCL Shipping

As one of Norway’s largest short sea shipping companies, NCL has the opportunity to leverage the results of the FInest project to increase the volume of short sea shipping conducted between Norway and the Continent. FInest promises to enable NCL to broaden the services it offers its customers and decrease the time it takes to move their products from Norwegian ports to their destinations.

In addition, by providing the ability to collaborate with distant service providers, the FInest project provides NCL with the chance to move beyond simply managing customer short sea shipment requirements, but increasing its reach through integration with other steamship companies to provide its Norwegian customers with global distribution capabilities. NCL is very excited about this opportunity and is committed to promoting the services of the Future Internet to its customers and exploiting these services in its own day-to-day business.

3.7. Air France/KLM Cargo

As one of the world’s leading air freight carriers, AF-KL Cargo must develop and manage complex supply chains on behalf of, and in concert with its customers.

The competitive nature of the air cargo market in which AF-KL Cargo operates, demands that these supply chains must be set up efficient and with sufficient flexibility. At the same time, they have to be managed effectively no matter what problems may arise during their operation.

Therefore, communication between supply chain members and interchangeability between different transport modalities are vital business requirements for the development of future hubs and the air cargo industry.

The FInest project aims at facilitating these business requirements by developing a platform for a set of new collaboration software services. This platform makes information sharing between supply chain parties possible and creates the necessary input for improved planning (planning platform) and executing of shipments within the chain (transactional platform).

The services, provided by FInest, will enable the industry the following features:

- Quick response to events that are happening in a supply network;

- Rapid executing supply network planning and re-planning;
- Developing improved solutions to structural problems.

These features will enable the industry to create flexible, effective and efficient supply chain services, as demanded by its customers.

At the end, the developments will also lead to better use of scarce resources and will be beneficial for sustainability and environmental considerations.

Benefits of this outcome do have the potential to be spread around the different partners in the supply chain, and will give a competitive edge towards competing hubs outside Europe.

This outcome is a key factor in why AF-KL Cargo is participating in the FInest project and it will be a significant driver of business benefits for the industry and its customers.

4. Exploitation Strategy and Plans for Industrial ICT Partners

The industrial ICT partners will extensively promote and commercialise FInest products and services. The plans for exploitation by the ICT partners are listed below:

4.1. SAP

SAP has grown to be the world's leading provider of business software solutions and is the world's largest inter-enterprise software company with dedicated solution in more than 25 industries, also covering the transport and logistics domain.

SAP Research is the technology research department of SAP. Representing integral part of the company's R&D activities, SAP Research is a Global Business Unit under the direction of SAP AG, operating more than a dozen Research Centers around the world. SAP Research is responsible for identifying, researching, understanding, developing and evaluating new and emerging technologies, processes and e-business solutions that strategically influence the future of SAP business applications. In order to achieve this, SAP Research conducts both academic and applied research with various collaboration partners in public R&D projects, and transfers the results into SAP products in close collaboration with the development groups. With this, a direct link between the research activities conducted in public projects and the development of the next generation of commercial business technologies is ensured. On the other hand, the close collaboration of SAP Research with the commercial product development allows identifying and particularly addressing industry-relevant challenges in European research projects as well as demonstrating and validating research results within real-world applications.

SAP is strongly committed to provide its customers with the tools required to implement innovative, customized and high quality business processes and services. For this, there are continuously ongoing efforts on enhancing existing solutions as well as developing new technologies in order to better serve the business needs of customers. Consequently, the expected FInest project results are very relevant and have the potential to directly impact SAP's future product portfolio in the areas of Transport Planning, Business Collaboration, Business Intelligence and Supply Chain Management. Within transfer projects in close collaboration

between SAP Research and specific Industry Business Units (IBU's), state-of-the-art research results add value to current products and are evaluated by SAP's customers in various industry branches. The strong link to the product groups moreover assures a maximal orientation on customers' requirements and product portfolio relevance.

In particular, the following expected results of the Finest project appear to be of high relevance for the design and development of SAP's future product portfolio:

- Experience, insights, and best practices for the design of domain-specific platforms on the basis of generic platforms using Future Internet technologies (IoS, IoT, Security / Privacy / Trust, etc.) and the cost-efficient development of individualized customer applications on top of this; this strongly corresponds to the envisioned architecture of 'next generation on-demand business solutions' that is pursued by SAP's global technology strategy; the expertise on this will mostly be gained via the R&D work in WP3 "Solution Design and Technical Architecture" of the Finest project
- The 'Business Collaboration Module' developed in WP5, which can serve as the basis for novel products to better support the inter-organizational cooperation in collaborative business networks, which might also be applicable to other domains than transport and logistics
- The e-contracting module developed in WP8, which can serve as the basis for better supporting the (semi-)automated establishment as well as for ensuring the 'execution in accordance to contract', and might be applicable to other domains such as supply chain management, production and manufacturing, etc.

In addition, the direct and close interaction with experts from the transport and logistics domain that is conducted in the Finest project in form of the 'technology pull' concept is considered to be highly valuable, as this allows obtaining direct feedback and the specific demands of already existing as well as of potentially new customers. Also, the cooperative R&D efforts conducted within the Future Internet PPP program allow SAP Research to closely collaborate with already existing as well as with new research partners in the important and broad field of the Future Internet.

The following means and channels will be utilized for exploiting the Finest project results for SAP:

- Awareness generation of SAP Research and of SAP Product Development Groups on the Future Internet R&D activities, and particularly of the Finest project
- Presentation and transfer of the Finest research results depicted above to the respective SAP Product Development Groups, esp. those concerned with transport and logistics (SAP Transport Management, SAP Supply Chain Management)
- Alignment and cooperative development of demonstrators and early prototypes with other public research projects that address complementary technical and solution-oriented aspects for future transport and logistics solutions.

4.2. IBM

IBM will strive to utilize the results of Finest in its capacity as a software vendor that produces middleware and services platforms, and products in the Business Process Management as well as the Event Processing areas. IBM has a rich tradition of exploiting Research technology in its products. Indeed, several technologies developed by IBM's Haifa Research Lab play a major role in IBM's products. These products play a prominent role in the infrastructure of many

organizations including hundreds of European companies. IBM will target the following possible channels to contribute to FInest exploitation:

- Joint programs between IBM Haifa, partner of FInest consortium, and IBM Software Group, the product delivery organization of IBM. Within this program, IBM Research will work towards providing technology transfer to the product organization, and assist in the productization of those results. As IBM is one of the major software vendors, such technology transfer may have a significant effect on exploitation of the project results in the commercial world.
- Collaboration between IBM Haifa Research Lab and Software Industry Solutions organization in IBM. During September 2011, IBM announced the launching of the Industry Solutions organization within Software Group. Its aim is to co-create products and services with customers, integrating them into core processes. The FInest IBM team will strive to engage new collaboration with this new group for the T&L domain.
- FOAK (First of a Kind) program of IBM Research – An IBM investment program (research and Sales and Delivery) to promote the use of new technologies in real client situations, with the objective to mainstream these technologies in IBM Software/Hardware/Services products. IBM aspires to engage a new FOAK project to test FInest technology in the field.
- Presentation of FInest technology in executive meetings, specially with subject matter experts in the T&L domain.
- Industrial training through the provision of professional and corporate courses to potential users.

5. Exploitation by Research Institutions

Exploitation and further use of FInest results from academic partners are listed below:

5.1. Marintek

MARINTEK is involved in several research projects concerning maritime transport, logistics, and the work processes and information flow in the maritime transport sector.

MARINTEK aims to build upon results from the FInest project in current and future research activities, and will also use the project work to build and strengthen the competence of the institute in the fields of Future Internet solutions for the maritime transport sector. Knowledge building in emerging technologies that can be used to improve information flow and work processes the maritime sector is of high importance to MARINTEK, both in order to provide good research results in ongoing projects as well as generating new research projects.

A Future Internet platform with extensions in the transport and logistics domain will be an important base on which solutions for the maritime transport sector can be built, and by

participating in the FInest project, MARINTEK will both be able to focus part of the project's work on challenges that are important to the maritime sector as well as gaining valuable experience and knowledge of the use and possibilities of Future Internet solutions.

5.2. University of Duisburg Essen (Paluno & TUL)

Strengthening research and collaboration: UDE will exploit the results of FInest to **augment its research** in the promising field of software- and service-based systems and further improve its already strong international reputation. Furthermore, the use of Future Internet technologies in the transportation and logistics sector holds many opportunities for the consideration and processing of diverse research questions. In the coming years, the general applicability of technologies and intermediate results in the different areas of transportation and logistics are to be examined in detail as much as the transferability of the results obtained from one logistics area to another one, e.g. from the transportation sector to the warehousing area. The advancement of the results obtained in FInest will contribute to shaping the research agendas and collaboration strategy of UDE. In particular, gains in efficiency, transparency, security and cost reduction enabled by Future Internet technology and ICT will drive subsequent research proposals.

More concretely, UDE will exploit FInest's transport and logistics scenarios as a baseline for empirical validation of research results and collaborative research with related projects and researchers (most notably from the NoE S-Cube, which is coordinated by UDE). In fact, first activities concerning such an exploitation of FInest results has already led to a first, joint publication¹.

Teaching: UDE will use the results gained from FInest to strengthen the **quality of teaching and education** by conducting a knowledge transfer to young academics. This is of utmost importance for UDE, as its educational portfolio demands an increased focus on the core areas of competence in the development of software-intensive systems and in the understanding of requirements in the operative business of such systems. Advancement in knowledge and competence is therefore key: (1) For software engineers to understand the challenges of real application domains and how they can be addressed by novel FI technology; (2) For logisticians to understand how to handle the challenges of the future with the help of arising technologies and new process organizations.

Training and Consulting Services: To transfer knowledge to practitioners and thereby to strengthen industrial contacts and collaboration, UDE plans to offer **training and consulting services** in the area of Future Internet technologies. Such services will be appealing to practitioners as – due to the nature of the PPP Use case projects – the results will be applicable in the near future and thus an education in this field promised competitive advantages. Especially, due to the combination of skills and competencies of the two units Paluno (Ruhr Institute for Software Technology) and the Department of Transport Systems and Logistics (TUL) such services will cover software engineering, information and communication technologies, as well as transportation and logistics.

¹ A. Metzger and C. Cassales Marquezan, "Future Internet Apps: The next wave of adaptive service-oriented systems?" in ServiceWave 2011, Research Track, ser. LNCS, A. Zisman, I. Llorente, M. Surridge, W. Abramowicz, and J. Vayssiere, Eds. Springer, 2011.

6. Conclusion and Future Work

The initial FInest exploitation plan is based on conservative assumptions. It provides different strategies by different partners to use FInest results in real industrial environment and to spread it to others within the eco-system of corresponding partner.

The FInest exploitation plan will be hand in hand with dissemination plan and with this way information flow to and from external parties will be provided. This will help FInest partners to tailor project outcomes and results in such a way as to make them relevant beyond the life of the project. In addition to this, partners will generally keep on identifying groups and organisations that could potentially be interested in FInest outcomes and determine whether any modifications would be required for them to be able to exploit it. It is also necessary to keep regional, national and European authorities and policy-makers in the loop to communicate FInest project results which may require new policies for deployment of project results.

This initial plan will be updated at the end of the first year of the project to a more concrete plan, based on the feedbacks from project partners' activities and information collected from external organizations and groups. This plan will be finalized at the end of project for the second phase of FI PPP programme and it will include the exploitation activities carried out during the whole project life.