

Future Internet PPP Project Abstracts and Contact Details

FI PPP Programme Negotiation Workshop 3-4 March 2011

Technology Foundation:

FI-WARE

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The goal of the FI-WARE project is to advance the global competitiveness of the EU economy by introducing an innovative infrastructure for cost-effective creation and delivery of services, providing high QoS and security guarantees. FI-WARE is designed to meet the demands of key market stakeholders across many different sectors, e.g., healthcare, telecommunications, and environmental services. FI-WARE unites major European industrial actors. The key deliverables of FI-WARE will be an open architecture and a reference implementation of a novel service infrastructure, building upon generic and reusable building blocks developed in earlier research projects. We will demonstrate how this infrastructure supports emerging Future Internet (FI) services in multiple Usage Areas, and will exhibit significant and quantifiable improvements in the productivity, reliability and cost of service development and delivery – building a true foundation for the Future Internet. From an architectural perspective, FI-WARE is based on the following main foundations: Service Delivery Framework – the infrastructure to create, publish, manage and consume FI services across their life cycle, addressing all technical and business aspects. Cloud Hosting – the fundamental layer which provides the computation, storage and network resources, upon which services are provisioned and managed. Support Services – the facilities for effective accessing, processing, and analyzing massive streams of data, and semantically classifying them into valuable knowledge. IoT Enablement – the bridge whereby FI services interface and leverage the ubiquity of heterogeneous, resource-constrained devices in the Internet of Things. Interface to Networks – open interfaces to networks and devices, providing the connectivity needs of services delivered across the platform. Security – the mechanisms which ensure that the delivery and usage of services is trustworthy and meets security and privacy requirements.

Use Cases:

ENVIROFI

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Large European communities generate significant amounts of valuable environmental observations at local and regional scales using mobile communication devices, computers and sensors which are mostly connected to the internet. These communities' environmental observations represent a wealth of information which is currently unused and therefore in need for integration with other fragmented data and information sources, traditionally managed by research and educational institutions and industries.

ENVIROFI will address such important issues by specifying the requirements, and building conceptual prototypes, of the specific enablers of the environmental usage area in the Future Internet. It will bring these diverse stakeholder communities together to understand environmentally observed processes with higher spatial resolutions and contextual situation awareness at an unprecedented scale. This achievement alone could have a profound socio-economic impact in Europe and contribute towards meeting the global challenges of industrial competitiveness and smart living in this decade.

ENVIROFI will explore the advances needed by the stakeholder communities for secure access to decentralized, interactive Internet-enabled geospatial and intelligent fusion services using data from authorities, researchers, people and private sector organisations. It will allow all these participants to plug in their personalised experiments and also feedback into the ENVIROFI Environmental Observation Web.

ENVIROFI will consolidate the Future Internet requirements from the Environmental Usage Area perspective and provide important specifications and prototypes of interoperable geospatial Environmental Enablers. These will be deployed in the Terrestrial, Atmospheric and Marine environments in collaboration with large stakeholder communities; and set the stage for large-scale trials in the Environmental Usage Area with a perspective of achieving sustainable socio-economic progress in Europe.

FINSENY

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The energy sector has entered a period of major change which will continue for many years to come. The increasing proportion of electricity from renewable sources means that the architecture of the energy grid will have to support the distributed, in addition to the centralised, generation of energy and to adapt to a highly volatile supply e.g. from wind and solar generators. From the consumption perspective, electric vehicles will demand new load management patterns in the grids. At the same time, private and commercial consumers are being encouraged to reduce their energy use and electronics manufacturers are striving to reduce the energy use of their products. The energy supply will need to evolve into a dynamic system to provide the smart energy infrastructure needed to

support society in 2020 and beyond. Future Internet technologies will play a critical role in the development of Smart Energy infrastructures, enabling new functionality while reducing costs.

In the FINSENY project, key actors from the ICT and energy sectors will team-up to identify the ICT requirements of Smart Energy Systems. This will lead to the definition of new solutions and standards, verified in a large scale pan-European Smart Energy trial. Project results will contribute to the emergence of a sustainable Smart Energy infrastructure, based on new products and services, to the benefit of all European citizens and the environment.

As part of the FI-PPP programme, FINSENY will intensively analyse energy-specific requirements together with the other FI-PPP projects, develop solutions to address these requirements, and prepare for a Smart Energy trial in phase two of the programme. The growing FINSENY Smart Grid Stakeholder Group will provide broad visibility of the on-going project work in the energy community, enhancing the acceptability of the project results and facilitating the development of the smart energy market

FI-CONTENT

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This project addresses the FI Content Usage Call in a number of innovative, practical and useful ways. With inputs from 5 important content areas, spanning future uses of AV, games, Web, metadata and user created content, demonstrating usage beyond current state of the art, we have assembled a consortium including major content providers, games companies, hardware vendors, network operators, broadcasters, research institutes and academia to propose a number of novel and inventive scenarios for new forms of content.

We are providing the framework to allow practical transformations of our scenarios into technical deliverables, as well as rigorous project management to ensure this ambitious project succeeds in creating services and experiments. As individual members, we have extensive expertise in collaborative projects, and as a consortium we can demonstrate actual business and research needs for improvements to today's Internet which will drive and shape our groundbreaking work.

The project as a whole addresses 5 key areas where today's Internet can be improved, by providing concrete examples which we will demonstrate using use cases and scenarios: Lower latency and better QoS, direct Internet connectivity (a serverless world), usage which moves beyond a purely static text/plugin/browser based approach, better tracking of content provenance, and the ability to provide failover and resilience across different providers (eg mobile devices, crossing borders, or moving between different access points.)

Our approach will focus on early proof of concepts to facilitate just enough technical specification to deliver requirements to the Core Platform. This will allow us to rapidly propose new scenarios and use cases, and reject them at an early stage if they prove unsuitable. Within our overall content areas, we expect a number of our scenarios to progress through to Phase 2 of the FI project, where we will demonstrate concrete prototypes, SME engagement and running code.

FINEST

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Transport and logistics is concerned with the planning and execution of the world-wide shipment of goods and people. In this highly competitive, distributed, and agile industry, novel ICT solutions for optimizing the collaboration and information exchange in cooperative business networks are highly desirable. Future Internet technologies can facilitate radical improvements in business efficiency in this industry with positive impacts for society and the environment. The ultimate aim of the FInest project is to develop a Future Internet enabled ICT platform to support optimizing the collaboration and integration within international transport and logistics business networks. This shall be realized as a domain-specific extension of the FI PPP Core Platform.

As the initial FI PPP use case project focusing on international freight transport, the FInest project will design the envisioned solution and provide detailed specifications for its technical realization, define a representative set of real-world use case scenarios with detailed plans for conducting large-scale experiments, and design a suitable Future Internet experimentation environment for transport and logistics. The technology design will be driven by the actual business requirements determined by domain experts. The central research activities of the project will be the identification and detailed definition of the Generic Enablers required from the FI PPP Core Platform, and the analysis of existing R&D results for developing the domain-specific capabilities.

A comprehensive strategy for the dissemination, exploitation, and standardization of the platform will assure substantial impact and prepare for the broad industrial application of the project results by external stakeholders. To contribute to the overall success of the FI PPP program, the FInest project will closely collaborate with other projects and align with the mechanisms and regulations for the program-wide collaboration.

INSTANT MOBILITY

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The Instant Mobility project has created a concept for a virtual "Transport and Mobility Internet", a platform for information and services able to support radically new types of connected applications for scenarios centred on the stakeholder groups:

- multimodal travellers
- drivers & passengers
- passenger transport operators
- goods vehicle operators
- road operators & traffic managers.

The project will define requirements for Future Internet technology tools and enablers, so that all these services will be available to any Internet-connected user, whether using a portable, vehicle-based or fixed terminal. These requirements will underpin a set of technical specifications for both domain-specific and FI enablers that will in turn be created as software conceptual prototypes for a virtual demonstration. The project will prepare a plan for implementing in Phase 2 some limited-scale trials in a number of real cities, using a Transport and Mobility Internet platform as subset of the full FI

PPP core platform. Instant Mobility will also study the non-technical framework conditions that may support or hinder eventual deployment of FI-enabled online services in the T&M domain. The project will put forward its research results for support to standardisation, either for FI standards for standards in the T&M domain.

OUTSMART

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The goal of OUTSMART is to contribute to the Future Internet (FI) by aiming at the development of five innovation eco-systems. These eco-systems facilitate the creation of a large variety of pilot services and technologies that contribute to optimised supply and access to services and resources in urban areas. This will contribute to more sustainable utility provision and, through increased efficiency, lower strain on resources and on the environment. Reaching this goal requires the whole value chain, namely city authorities, utilities operators, ICT companies as well as knowledge institutions in order to have an industry driven approach when developing advanced services and technologies.

OUTSMART services and technologies will be based on an open and standardised infrastructure as envisioned by the FI Private Public Partnership (FI PPP) and provided by a service framework designed to facilitate provisioning, development and access. To this extend, OUTSMART will (1) deliver a set of detailed functional and non-functional requirements for an FI enabler platform and corresponding business framework able to support the above described eco-systems; (2) provide a specification of the domain specific enabler functionality with corresponding service interfaces compatible and aligned with Core Platform components to be specified alongside this project effort; (3) provide a realisation of prototypes of domain specific functionality for the envisioned eco-system and a validation thereof in early field trials in the envisioned use cases; (4) deliver a business framework specification which serves as blue print for the foreseen local eco-systems able to provide their sustainability beyond the PPP funding lifetime by creating favourable conditions for local investment and innovation; and (5) deliver a detailed plan for pilot services in the envisioned local eco-systems, which act as initial light house show cases for Europe in the utility and environment applications domain.

SAFE CITY

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Safecity deals with smart Public safety and security in cities. The main objective is to enhance the role of Future Internet in ensuring people feel safe in their surroundings at time that their surroundings are protected. Safecity is the result of the elaboration of a vertical Use Case Scenario based on Public Safety in European cities. The main goal of this project is to collect specific requirements driven by relevant users on the Future of Internet versus to the generic ones that will be collected through other objectives. The methodology follow to achieve this goal is as follow: 1. The definition of specific scenarios with the finality to negotiate with available infrastructures to support Safecity functionality, considering the involvement of main cities in Europe as Madrid, Helsinki, Athens, Bucharest, tockholm etc along others.

An Experts Committee integrated by other relevant European cities and Public Safety agencies will support this project. 2. Collection of specific enablers, technical and functional requirements on the Future Internet in relation with Public Safety in contraposition of the generic ones and how the business process may be supported. 3. Elaboration of a conceptual Safecity prototypes and early trials in order to study the feasibility of this initiative. The demonstration of the concept will be carried out in Madrid as main city but other specific requirements will be demonstrated in a second city as Helsinki due to the contrast with Madrid. 4. A strong liaison with other FI-PPP use cases and the FI Core Platform will be essential to the success of the project. For that, Safecity will support the FI-PPP Essential Interworking programme governance and activities that will ensure the integration of the Project activities.

SMARTAGRIFOOD

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The SmartAgriFood project addresses the food and agribusiness as a use case for the Future Internet. The intelligence, efficiency, sustainability and performance of the agri-food sector can be radically enhanced by using information & decision support systems that are tightly integrated with advanced internet-based networks & services. Concurrently, the sector provides extremely demanding use cases for Future Internet design from physical layer all the way up to the service layer.

This project will focus on three sub systems of the sector - smart farming, focussing on sensors and traceability; smart agri-logistics, focusing on real-time virtualization, connectivity and logistics intelligence; and smart food awareness, focussing on transparency of data and knowledge representation. Using a user-centred methodology, the use case specification will be developed with a particular focus on transparency and interoperability of data and knowledge across the food supply chain.

Project results will include: -Use Case descriptions for smart farming, including sophisticated and robust broadband sensing and monitoring of animals and plants -Use Case descriptions for smart agri-logistics, including intelligent transport and real-time logistics of agri-food products -Use Case descriptions of smart food awareness, focussing enabling the consumer with information concerning safety, health, environmental impact and animal welfare -Identification of generic requirements for the generic enablers -Extensive community and user organisation involvement both in requirements gathering, pilot demonstration, and evaluation -Specification of interfaces and functionalities for integration to Core Platform, -Significant contributions to standardisation and regulatory bodies in Europe. Key features of SmartAgriFood concepts will be demonstrated and verified by simulations and experimental systems within this project and by large scale demonstration as intended in Phase II.

Capacity Building and Infrastructure:

INFINITY

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The INFINITY Support Action will have a positive impact on the success of the FI-PPP programme. Through collaboration with organisations across Europe, INFINITY will capture and communicate information about available infrastructures and any interoperability requirements and issues. INFINITY will document any usage-related operational constraints and seek to identify and foster federation opportunities that could facilitate large scale experimentation and testing. A dynamic innovative repository based on a set of community-driven Web tools will be realized to promote the evolving vision of available infrastructures "as a living organism". This is supported by a methodology that will promote a consistent categorisation of the infrastructure resources, thereby facilitating a mapping between Use Case requirements and infrastructure offerings. The efficient gathering of data about the available infrastructures is ensured by including key representatives of the important public and private infrastructure stakeholders directly in the consortium and/or as members of a "Concertation Board". The Web repository, the close co-operation with the FI-PPP Facilitation CSA and the specific expertise and relationships of the partners will:

- support the Core Platform by consolidating detail about existing and emerging advanced infrastructures, and help define the required Generic Enablers for seamless integration and enable new and innovative experimentation.
- stimulate infrastructure owners to effectively "bridge the gap" between their current capabilities and Use Case requirements, thereby encouraging investment in upgrades and standards to realise these opportunities, and leading to greater sustainability.

The project will produce an evolving series of recommendations, roadmaps, tactical actions and strategies that will enhance the potential for the identified infrastructures to participate in the trialling of FI-PPP Use Cases as the Programme progresses towards Phase 2.

Programme Facilitation and Support:

CONCORD

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Concord Future Internet PPP programme Facilitation and Support action advances the European Future Internet research by supporting European Commission in successful implementation of a coherent FI PPP programme. Concord will coordinate and facilitate the alignment of FI PPP activities to ensure the relevance, rigor and robustness of the co-created Future Internet concepts, visions and roadmaps. The methodology used is an applied SECI model with a spiral development process. CONCORD advocates fair, open and inclusive procedures for the supported parties to achieve commonly agreed goals. Reflecting this, CONCORD creates an open and transparent decision-making mechanism and collaborative environment where all projects are in a systematic manner contributing to, and accountable for, their contributions towards the success of the FI PPP Programme as a whole. CONCORD will facilitate horizontal cross-project knowledge transfer and co-creation in various collaboration levels, as well as with the related external groups. It will further support the projects' integration and implementation with the development of guidelines regarding handling technical and non-technical horizontal functionalities related to standardization, legal framework, SME and user involvement and cross-project collaboration. CONCORD addresses the identified challenges and conflicting interest within the community through structured discussions and meetings, while maintaining a neutral approach to the subject matter. CONCORD seeks consent and minimizes dominance by a few participants through set rules for participation and interactions. CONCORD will focus on future oriented strategic planning for FI PPP and bringing a valuable contribution via unbiased outsider attention to FI PPP structure and processes. CONCORD will leverage on past work and investments when designing and facilitating the development of an overall system level programme view and collaboration across all FI PPP projects.