Enabling the business-based
Internet of Things and Services

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D12.7 Cluster Collaboration Plan

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Index:

1. Executive summary

This deliverable describes the cluster activities in relation to the ebbits project and provides a cluster collaboration plan for each cluster, outlining motivation, objectives and activities.

The European Commission is actively supporting and facilitating concertation and clustering activities involving the many research projects that are being funded under the 6th and 7th Framework Programme. The aim of the cluster work is to achieve sound IOT building blocks from projects and thus become a contact point for IOT research in Europe.

The ebbits project will actively participate in clustering activities with other ICT funded projects related to the area of the project and organised by the European Commission.

The clusters considered are: IERC (IOT European Research Cluster), FInES (Future Internet Enterprise Systems), Monitoring and Control cluster on Smart Buildings/Smart Spaces and CERP-IoT (Cluster of European RFID Projects). Ebbits will also be involved in the Future Internet Assembly (FIA).

In the FInES cluster, the ebbits project will take a leading role in terms of architecture and open infrastructure as well as physical addressing schemes and virtualisation. ebbits will lead two FInEs taskforces "Manufacture and Industry relationships" and "International Relations".

In the IERC cluster, the ebbits project will lead on Semantic Technologies and in the Monitoring and Control cluster on Smart Buildings/Smart Spaces, it will be the traceability scenarios with its complexity and heterogeneity that will be the expected point of interest.

A considerable number of partners have been involved in the CERP cluster and in the definition of the CERP-IoT Strategic Research Roadmap for the Internet of Things. Here the ebbits project will impact on the research clusters and liaise with the support actions and deployment projects represented in CERP.

In relation to FIA the ebbits project will arrange a bi-annual European workshop on "The Internet of People, Things and Services". The first conference will be organised in April/May 2012 as a workshop during the Future Internet Assembly (FIA). The main aim will be to demonstrate European advances in the field of interoperable semantic technologies for Internet-based business applications and disseminate ebbits results.

2. Introduction

2.1 Purpose, context and scope of this deliverable

The ebbits project has committed to actively participate in clustering activities with other related ICT funded projects organised by the European Commission.

The purpose of this deliverable is to outline the clusters relevant to ebbits and to provide a cluster collaboration plan for participation in the different clusters.

ebbits will seek to join a limited number of clusters in order to maximise the impact on future directions of the Internet of the Future, the Internet of Things and the Business based Internet of Things and Services.

2.2 Background

The aim of the task T12.4 - Clustering is to coordinate the active participation in clustering activities with other ICT funded projects related to the area of the project and organised by the European Commission.

The cluster work aims at achieving sound IOT building blocks from projects such as ebbits and thus becoming a contact point for IOT research in Europe.

3. Cluster Activities

3.1 The concept of clusters

The European Commission is actively supporting and facilitating concertation and clustering activities involving the many research projects that are being funded under the 6th and 7th Framework Programme.

The main objective of the "Concertation and Clustering" activities is to set up a framework of cooperation among research projects and to facilitate programme management by the Commission Services. The cooperation could take the form of knowledge sharing, procedures, peer discussion of intermediate results, interchange of deliverables, coordination of activities, etc.

Projects use the framework to start bilateral cooperation or, when justified, to cluster with other projects around specific topics of interest and eventually seek consensus on architectures, standards, inputs to policy, etc.

3.2 The ebbits commitment to clusters

The ebbits project will actively participate in clustering activities with other related ICT funded projects organised by the European Commission. The aim of the cluster work is to achieve sound IOT building blocks from projects such as ebbits and thus become a contact point for IOT research in Europe.

Moreover, ebbits will actively support and participate in the Future Internet Assembly (FIA)[1]. FIA is structured to permit open interactions and cross-fertilisation across technical domains and works towards creating value for the projects involved and development of joint strategic research agenda regarding common actions and requirements.

ebbits will contribute to the clustering activities by participating in workshops, expert groups and joint conferences. Further, the project will participate in the editing of cluster publications and contribute to research roadmaps; where relevant. Senior staff from ebbits will participate in cluster meetings and assume positions as leaders of certain activities as required.

[1] http://www.future-internet.eu/home/future-internet-assembly.html

4. Relevant Clusters for ebbits

IERC European Research Cluster on the Internet of Things	**IERC *(IOT European Research Cluster)*** The IERC is bringing EU-funded projects together to define and promote a common vision of the Internet of Things. The ebbits project will participate actively in the cluster activities and will bring further potential to the cluster in terms of open service architecture and open governance schemes with a strong international perspective. http://www.internet-of-things-research.eu/
FInES Future Internet Enterprise Systems	**FInES *(Future Internet Enterprise Systems)*** The FInES cluster is composed of FP6 and FP7 funded projects, as well as experts and stakeholders from all over Europe. The aim of the cluster is to encompass past and current research experts and organisations focusing on benefiting all of us by offering an increased opportunity for synergy and enhanced collaboration among research projects. FInEs is uniting the previous Enterprise Interoperability and Collaboration (EI) and Digital Ecosystems (DE) clusters. http://www.fines-cluster.eu/fines/jm/
	Monitoring and Control cluster on Smart Buildings/Smart Spaces The cluster originates from the area of Networked Embedded and Control Systems and aims to assembly EU funded projects in Wireless Sensor Networks and Cooperating Objects and Middleware technologies. http://cordis.europa.eu/fp7/ict/necs/home_en.html
CERP-IoT Cluster of European Research Projects on the Internet of Things	**CERP-IoT *(Cluster of European RFID Projects)*** The CERP-IoT cluster is bringing EU-funded projects together to define and promote a common vision of the Internet of Things and is specially focused on the use of RFID in the product life cycle, which is relevant for the ebbits focus. http://www.rfid-in-action.eu/cerp
FUTURE INTERNET ASSEMBLY	**FIA *(Future Internet Assembly)*** FIA is structured to permit open interactions and cross-fertilisation across technical domains and works towards the creation of creating value for the projects involved and development of joint strategic research agenda regarding common actions and requirements. http://www.future-internet.eu/home/future-internet-assembly.html

5. Cluster Collaboration Plan

The following sections outline the plan proposed for each cluster.

5.1 Plan for FInES – Future Internet Enterprise Systems

ebbits has an important role in the FInEs Cluster in terms of architecture and open infrastructure as well as physical addressing schemes and virtualisation. Semantic interoperability and service openness of the platform are also key objectives in FInEs and ebbits will contribute to and take a leading role in this work.

ebbits will lead two FInEs taskforces "Manufacture and Industry relationships" and "International Relations".

5.1.1 Plan for Taskforce Manufacture and Industry

Jesper Thestrup from IN-JET has been elected as leader of this taskforce. The following plan has been proposed to the cluster and approved.

Motivation

The Manufacture and Industry relationships taskforce will support the overall FInES cluster objective to make "The full potential of the Future Internet accessible to, relevant for, and put to use by European enterprises including SMEs".

Most of the research undertaken at the European level, particularly in the Framework Programmes, has an underrepresentation of industrial participation and a noticeable weak representation of SMEs. Only 18% of FP6 funding was attributed to industry whereas higher education and research institutes received 69% of funding[2].

Although it is fully appreciated that research towards the Future Internet per se must be undertaken by research institutions and research companies with the appropriate skills and knowledge base to successfully face and overcome the complex challenges we are facing, we must be careful not to lose the opportunity to solidly root the Future Internet in the mainstream European enterprises; small industries, trading companies, service companies, etc.

Future Internet enterprise solutions must be developed for, deployed to and exploited by the European enterprises, including short and medium term solutions. It has been well argued how the lack of a business cases for Enterprise Interoperability is one of the leading causes for lack of uptake[3]. However, technical functionality, ease of operation, resilience and scalability, privacy and security and all other aspects of the multifaceted research work undertaken in the FI agenda needs to be addressed and European enterprises needs to be involved as users and potential beneficiaries of the Future Internet from an early stage.

Objectives and strategies

The Manufacture and Industry relationships taskforce will work towards involving a broad range of European enterprises in the work to complete the visions of the FInES cluster and put the Future Internet to work for European enterprises.

The overall strategy is to involve a broad range of industrial and other enterprises over the coming years in the work undertaken and the results obtained, primarily in the various research projects in the FInES cluster, but also beyond. The scope of involvement will be defined in a strategy plan, but could range from building on the already planned dissemination activities in the projects, to consultations and participatory workshops.

[2] Evaluation of Danish Participation in the 6th and 7th framework programmes, Danish Agency for Science, Technology and Innovation, Copenhagen, January 2010

[3] Unleashing the Potential of the European Knowledge Economy. Value Proposition for Enterprise Interoperability, European Commission, January 2008

The strategy may call for the following steps: 1) Prepare general awareness campaigns towards the enterprise communities about future business opportunities based on FInES. 2) Create powerful industrial commitment in professional clusters such as industry associations and confederations. 3) Verify opportunities to apply the FInES solutions in various business environments and involve other individual stakeholders mainly from SME clusters. 4) Promote and support pilot integration of FInES results in real enterprise environments.

The work in the task force will be closely aligned with the other FInES activities as well as the activities undertaken by the Future Internet Assembly (FIA).

Activities

In the first instance, the activities of the task force will focus on involving national and regional industrial associations. The major tools for creating impact in this area will be through conferences and workshops, topical meetings for targeted industry segments and service providers.

The following activities are proposed and subject to prioritisation and incorporation in an overall activity plan.

Publishing of information material
The taskforce will seek to publicise various marketing material such as leaflets, fliers, brochures, etc. The aim is to transcribe the relatively inaccessible material produced in FInES to a form and a language which is more accessible to enterprises and SMEs across Europe (funding needs to be identified).

It is not foreseen that the taskforce itself will engage in producing position papers, analysis, etc. beyond what is needed to realise the objectives.

Website
The taskforce will contribute to the FInES website or to the European Future Internet Portal. The website will be completely targeted to a business audience and will follow the same communication dogma as for the other publishing material.

Conferences, workshops, etc.
The taskforce will seek, and recommend its members to participate in a wide range of industrial seminars and congresses, association thematic meetings, tradeshows, etc. with the aim to raise awareness and create interest in the FInES work.

European events
The taskforce will aim to organise European events with the theme of Future Internet and Enterprise Systems, Internet of People, Things and Services and similar theme. An annual conference similar to the "European Sustainable Energy Week" will be considered.

Aligning of cluster project events with EU or national events will be attempted.

Stakeholder engagement
The taskforce will actively seek to engage the stakeholders, first through bilateral talks and visit to national business communities in the relevant countries of the partners. Also European level umbrella organisations will be approached.

Later, the taskforce will seek to attract and engage individual performers (opinion leaders, innovation clusters, pilot owners, living labs, etc.) and interested enterprises in the work.

Demonstration and pilot preparation
The taskforce will align with and draw on demonstration activities performed by the involved projects. The aim is to bring about a wider European audience than is practical for a single project and perhaps join demonstration efforts by several projects. If possible, the taskforce will also encourage and support the formation of pilots for bringing the research results into the business communities and demonstrate the advances and the opportunities. This activity could be aligned with the FI-PPP and the projected calls for Use Case scenarios and experimentation.

5.1.2 Plan for Taskforce International Relations

Markus Eisenhauer from FIT has been elected as leader of this taskforce. The following plan will be proposed to the cluster.

Motivation

Globalisation of research and innovation and global competition are putting a new emphasis on the role of European Clusters and the need to globalise their activities and to cross-fertilise their development. The FinES Cluster increasingly sees the need to link with other activities in the area of Future Internet and enterprise systems at an international level, building on similarities and complementarities in order to strengthen the position of Europe. It will be extremely valuable to improve international visibility, exchange information and experience, establish networks in special technology or application fields with the access to new market knowledge and know-how.

As cooperation is based on shared interest, topics like interoperability of enterprises and consensus on standards will be key features for innovation and exchange. With respect to the digital agenda and topics stipulated from manufacturing and industry, most specifically those relevant for SMEs, an exchange of the FinES Cluster with activities in the BRIC countries (Brazil, Russia, India, China) but of course as well with the US, Japan and South Korea will be of outmost importance and will stimulate and facilitate the global outreach of the FInES cluster and enhance its awareness.

Activities

The activities of the taskforce on International Cooperation so far include a Keynote on IoT and report on FInES activities at Rio-Info, held in Rio de Janeiro from 31 August to 2 September 2010. Rio-Info is a traditional annual conference of business and technology in ICT and the biggest event in Brazil. The talk was very well received and raised a lot of interest among the audience. It formed the basis for more intense discussions with several Brazilian Universities, Research Institutes and Industry and helped in the consecutive submission of a proposal to the ICT EU-Brazil Coordinated call.

Another important topic is activities related to developing world countries. A first activity will be to focus on African countries. The FInES-cluster will organise a workshop on Networked Enterprises: Potential and Opportunities for Businesses in Africa at the IST-Africa 2011 in Gaborone, 11 - 13 May 2011. The idea is to support the Implementation of Africa-EU Partnership on interoperability of enterprises; strengthening the research dimension of IT in manufacturing and industry between the European Commission and African countries, including long term perspectives aligned with EU priorities and recommendations for a future Africa.

In general the strategy would be to align cluster project events with EU or national events in order to minimise conflicts and reach an extended community.

An interesting topic would as well be to organise an annual workshop similar to the "European Sustainable Energy Week" with international focus.

The work in the task force will be closely aligned with the other FInES task force activities as well as the activities undertaken by the IERC – IoT Cluster and the Future Internet Assembly (FIA).

5.2 Plan for IERC – IOT European Research Cluster

Markus Eisenhauer (FIT), Maurizio Spirito (ISMB) and Peter Rosengren (CNET) will participate in this cluster.

IoT has the potential to enhance Europe's competitiveness and will be an important driver for the development of an information based economy and society. A wide range of research and application projects in Europe have been set up in different application fields. Communication between these projects is an essential requirement for a competitive industry and for a secure, safe and privacy preserving deployment of IoT in Europe.

The IERC - IoT European Research Cluster - European Research Cluster on the Internet of Things is bringing together EU-funded projects with the aim of defining a common vision and the IoT

technology and development research challenges at the European level in the view of global development. The rationale for IoT is to address the large potential for IoT-based capabilities in Europe, coordinate/encourage the convergence of ongoing work on the most important issues and to build a broadly based consensus on the ways to realise IoT in Europe.

The main objectives of the IERC are to:

- Establish a cooperation platform and develop a research vision for IoT activities in Europe and become a major entry and contact point for IoT research in the world.
- Define an international strategy for cooperation in the area of IoT research and have an overview of the research priorities at the global level.
- Coordinate the cooperation activities with other EC Clusters and ICT projects.
- Coordinate and align the SRA agenda at the European level with the developments at the global level.
- Organise debates/workshops leading to a better understanding of IoT and Future Internet technology, and adoption.

Peter Rosengren from CNET has been elected as leader of Semantic Technologies in this cluster. The activities and plans for participating in this cluster are:

- Presentation at IST2010 at IERC cluster meeting 29 September, 2010
- Presentation at cluster meeting during EWSN Week 23-25 February, 2011
- Participation at IoT Week in June 2011
- Contribution to IERC position paper for framework 8, suggesting further research activities into Semantic Technologies for IoT.
- Contribution to IERC position paper for framework 8, suggesting further research activities into "Resource-constrained scenarios for business based IoT".
- Suggest involving IERC into collaboration with Brazil with a focus on IoT for manufacturing.

Moreover, the technical approaches proposed by ebbits with respect to some self- and context awareness properties in heterogeneous IoT networks will be of interest for this cluster. In particular, ebbits will address novel cognitive approaches that, by leveraging opportunistically on the time-dependent available heterogeneous network resources, support seamless continuous access to the information network and handle intermittent network connectivity in harsh and/or mobile environments.

5.3 Monitoring and Control cluster on Smart Buildings/Smart Spaces

Markus Eisenhauer from FIT and Peter Rosengren from CNET represent ebbits in this cluster. The following plan will be proposed to the cluster.

The ubiquity of heterogeneous sensors in the monitoring control domain, from temperature sensors to accelerometers in our smart phones to sophisticated CCTV systems for surveillance, opens a great potential: namely to start capturing this "intelligence" to inform our decisions with the help of these increasingly networked systems. What is needed is to jump from isolated Embedded Systems into fully networked, cooperating embedded solutions. However, control and actuation needs to be based upon reliable data. Thus, the underlying systems must be reliable (and available) themselves. Security and Privacy concerns need to be addressed as well. The next step is to move towards networked, cooperative embedded intelligence and from heterogeneous sensing to understanding of the underlying phenomena to modelling and simulation to informed data aggregation and data fusion to expert systems to effective control (open or closed loop) through cooperation. The goal is to make the most of the heterogeneity and "diversity" in order to improve sensing and eventually adaptation and actuation: Starting from piecemeal optimisation of elemental (sub) systems to cooperative optimisation of the overall system, or of composite systems. The challenge is to strike a balance between autonomy and this "global" optimisation.

It is all about getting the right and necessary information and making it available at the right time to the right people and the right process in order to cooperatively optimise a system or composite systems.

The traceability scenarios from ebbits with its complexity and heterogeneity will be of outmost interest to this cluster.

5.4 Plan for FIA – (Future Internet Assembly)

ebbits will actively support and participate in the FIA. The ebbits project will arrange a bi-annual European workshop on "The Internet of People, Things and Services". The first conference will be organised in April/May 2012 as a workshop during the Future Internet Assembly (FIA). The target audience for the first event will be computer scientists and industrial researchers. The main aim will be to demonstrate European advances in the field of interoperable semantic technologies for Internet-based business applications and disseminate ebbits results. The second conference will focus on agriculture.

Markus Eisenhauer (FIT), Peter Rosengren (CNET), Ralf Ackermann (SAP), Roberto Checcozzo (COMAU) and Jesper Thestrup (IN-JET) will constitute the organising committee in preparation for the workshop at the FIA meetings. The first workshop will be focused on industry while the second will focus on agriculture.

5.5 Plan for CERP-IoT (Cluster of European RFID projects)

A large number of ebbits partners have been involved in this cluster and SAP, FIT, CNET, TUK, and IN-JET were involved in the definition of the CERP-IoT Strategic Research Roadmap for the Internet of Things.

Some of the work in this cluster has moved to other clusters such as FInES where the work of RFID will continue. ebbits (IN-JET) is together with the "RACE network" and the FInES cluster arranging a workshop in Denmark on 3 May 2011 to introduce RFID/IoT in Enterprise Systems for product management.

6. Conclusions

The proposed activities consider the active participation of the ebbits partners in exchanging information and knowledge with other related ICT funded projects. The project is involved in info days, expert groups, IST conferences and other events organised by the EC. The project is also strongly represented in clusters, where the activities proposed will actively support the creation of proper IOT building blocks.