Future Internet Enterprise Systems (FInES) Cluster

Position Paper
Annex III
Summary of Knowledge Café Discussions
FInES Cluster Meeting, 16 June 2009, London

Final Version

(Version 3)

1 September 2009

Acknowledgements

The editors would like to thank the European Commission services for their support
in the planning and preparation of this document.
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FInES Cluster Position Paper

Annex III: Summary of Knowledge Café Discussions, FInES Cluster Meeting, 16 June 2009, London

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1 Introduction

Four knowledge cafes were organised for the FInES Cluster meeting held on 16 June 2009 in London[1].

The overall meeting was organised by the COIN Project with the support of the ONE Project and inputs from the Editors of the Position Paper.

Objectives of the Knowledge Cafes

- Overall objective - to elicit active inputs from stakeholders in relation to key strategic and technology issues, for contributing to the on-going discussions on the future of the FInES Cluster
- Specific objectives -
  - Input to the further development of FInES Cluster Position Paper
  - Input to the future orientation of the FInES research domain

Modality

A total of 4 parallel sessions corresponding to 4 issues, organised under 2 streams -

KC1 Strategic Issues

KC1a: Impact of current crisis on enterprises
Moderator: Roelof van den Berg, Erasmus Research Institute of Management
Rapportuer: Rui Neves-Silva, UNINOVA

KC1b: Future enterprises and their requirements
Moderator: Man-Sze Li, IC Focus
Rapportuer: Javier Vázquez-Salceda, UPC

KC2 Technology Issues

KC2a: ICT trends of particular relevance for enterprises
Moderator: Mehmet Kürümlüoğlu, Fraunhofer IAO
Rapportuer: Michele Missikoff, CNR LEKS-IASI

KC2b: ICT adoption and service paradigms for enterprises
Moderator: Claudia Guglielmina, TXT e-solutions
Rapportuer: Luigi Telesca, CREATE-NET

Participants rotated between KC1 and KC2 for the two set of parallel sessions, lasting 90 minutes each.

The following summarised the discussions of the individual knowledge cafes.

[1] http://cordis.europa.eu/fp7/ict/enet/fines-meeting-20090616_en.html.

2 KC1a: Impact of Current Crisis on Enterprises

Moderator: Roelof van den Berg, Erasmus Research Institute of Management
Rapportuer: Rui Neves-Silva, UNINOVA

Key issues:

- **Is this a purely a financial crisis or with a more broad underlay?**
- **Will old business models still be sustainable when the crisis is gone?**

The participants had somehow a common understanding that the old way of doing business will not return, even after the "economic crisis" has passed. The main reason for defending this belief is recognising that several aspects have emerged in the society and changed it for good. The participants discussed what was felt as a crisis of values. Three new aspects of society were particularly discussed: sustainability, relations between enterprises and their employees and involvement of all stakeholders. Regarding the first aspect of sustainability, the participants agreed that factors such as oil depletion, waste management, social tensions and overconsumption are forcing us to rethink the society we know and pay special attention to wealth and value creation. The second issue covered the direct relations between enterprises and individuals and how these have evolved. It was agreed that employees increasingly identify and share the objectives of the organisations they are in. In addition, employees are no longer seen as workforce or tools in a business, but have become real knowledge assets for the enterprises. The way in which the new generations relate and use ICT, i.e. being part of "digital generations", will definitely affect companies, probably enabling the appearance of new business models. Finally, the issue of stakeholder involvement covered the participation of different entities in enterprises, such as governments, NGOs (e.g. Greenpeace) etc.

- **How does the above affect the notion of enterprise?**

The participants concluded that "the enterprise" no longer exists. An enterprise can now be seen more like a collection of individuals and/or professionals sharing a common goal in a specific time-frame (not exclusively) and dynamically.

- **Is it a threat or an opportunity?**

There was a common agreement that the current crisis can be seen as an opportunity to innovate, find new markets and change society. The present crisis context provides an appropriate background for disruptive changes and innovation.

- **How could future internet help to overcome the crisis?**

The participants generally agreed that the future internet could especially support enterprises in involving all relevant actors in their businesses, while providing means for accountability and responsibility.
The future internet could provide solutions to enable a better design of products, permitting their traceability during their entire life-cycle. These new design solutions could also foster the participation of all relevant stakeholders, with special emphasis on consumers.

ICT technologies, and particularly the future internet, could also provide means to create knowledge infrastructures that provide and foster knowledge sharing within an enterprise, but also among enterprises. These new knowledge sharing infrastructures should promote a

transparent involvement of all stakeholders. Key aspects to be considered are related to transparency of knowledge exploitation, societal impact of enterprises and accountability of all actors involved. Any new infrastructure should strongly discourage practices such as engineering for profit, and enable an analysis of short and long-term profit.

The future internet will also play an important role in supporting the creation of new business models, which should emerge from collaboration of all actors (economic agents). Enterprise network engineering could be a strong field for the future internet.

It was mentioned several times that different solutions are required depending on the situation (e.g. type of work or company).

- **Recommendations:**

It's not expected that SMEs do more than survive during the worst period of the current crisis without external support.

SMEs will be resistant to invest in new ICT, at least, during this difficult period. This also affects large ICT companies because their customer portfolio has shrunk.

Large companies are facing the crisis by reducing costs as much as possible (e.g. selling business units/outsourcing services as needed, renegotiating contracts).

Any new research and development should take into account previous work in various research domains: organisational design, complexity systems theory, social sciences.

The research community should, besides developing the new technologies, build the business case scenarios that demonstrate the REAL benefits of adopting the future internet technologies.

3 KC1b: Future Enterprises and Their Requirements

Moderator: Man-Sze Li, IC Focus
Rapportuer: Javier Vázquez-Salceda, UPC

Morning session

Question 1: V1 of the Position Paper identifies five themes on the requirements of future enterprises, are these adequate?

(People around the table were pointed to the position paper version 1, section 3.3, page 10)

Theme: Towards sustainable value creation

First idea: ***Sustainability and sustainable business operation should not be based solely on economical sustainability, but also on environmental sustainability***.

- Economical sustainability:
  - ICT may bring some minor cost reductions, but this will not be the main driving force of ICT adoption
  - Infrastructure (real, virtual) is difficult to build, costly, especially for SME's. ***ICT sustains new kinds of infrastructure, and in this way can ease enterprises to build their (business) infrastructures at lower cost.***

- Environmental sustainability:
  - (Until now) typically it is an external factor (society, customer concerns, policies), but ***becoming more and more a critical factor, even pre-requisite.***
  - May sustainability be based on the resources that you use (is a given resource sustainable, a part of the manufacturing process sustainable)? And then which information is needed to assess this?

Other ideas suggested by the current phrasing of the position paper:

- Sustaining dynamicity and change
  - The text in the position paper seems to talk more about ICT to sustain dynamicity, continuous change on enterprises.
  - This may need revision, as the spirit is to talk about sustainability beyond the economical one.
- Environments to sustain enterprises
  - Should the text talk about the sustainability of the business models (within enterprises) or the sustainability which environments should provide to enterprises?
    - The latter is related with concepts such as trust, governance models,
    - In fact a regulatory framework will be needed to create sustainable environments for safe interaction.

It was also noted that a reference is needed to the EU 2020 environmental objective.

Conclusion: sustainability has so many perspectives that the challenge is to bring them together in the future technologies and solutions.

Theme: New business models for future enterprises.

This theme and the rest were treated in questions 2 to 4.

Question 2: How Future enterprises will look like? How future businesses will make business? Do we need to rethink the concept of enterprises and enterprise networks?

Enterprises are already changing the way they manage knowledge and staff.

- In previous collapses people became redundant.
- In this crisis there seems to be a cultural change, not downsizing companies by reducing staff but distributing the downsizing effects on the same people
    - This may be because enterprises see their staff more and more as knowledge assets of the company, not only as work force.
    - ***The staff is becoming more flexible, as enterprises see their people as real assets with knowledge. Staff becomes more committed on making the company go on***.
    - Workers are willing to make some concessions to make the company carry on.

There are new ways to buy, to get new services (e.g. product lifetime maintenance).

- Industry should shift and try to get information already available (e.g. information about the way people buy or browse the website) to adapt their business.
- There is a trend of not only delivering a product but delivering (lifetime) services

You cannot shape the whole economy into a service economy.

- A pure service economy becomes a contracting economy that creates no value,
    - You end up pushing paper around but producing nothing.
- So ***the future economy will likely be a mixture of products and services***.
- For this diversity, various types of value creation will be needed.
    - ***Tools are needed to support value creation***.

Will business models be the same?

- ***No, we are already getting more and more a relationship between producer and consumer***, and consumer-centric strategies.
- Until now services (towards the user) were seen as the poor cousin of a company, but more and more they are becoming prominent.
- Typically the domain has been organisational-driven, but now it seems to be user-goal oriented. So business models need some re-shift.
- Will in the end the customer become part of the enterprise (e.g. as in end-user customisation, which is driven by the user).

New opportunities and expanding markets for enterprises

- Opportunities for new services composing existing services.
- Internet of things is opening a new market, new opportunities for enterprises.
- Lead users may be the ones that may drive the evolution of new markets or new market opportunities.
- Enterprises still have their own goals, but have more and more to check/rethink their aims or methods or opportunities.
- Some enterprises may even create new environments and play with it
    - E.g. eBay has created an electronic auctioning environment where it does not play as an active actor (buyer, seller) but as an institutional facilitator or third party. Its organisational (economical) aims are based on related services to the users that have attracted by its auctioning environment.
- Increase scarcity of resources and climate change may create new opportunities (e.g. manufacturer closer to the market).

    - ***ICT should be able to monitor/support this reorganisation, and reduce cost of reconfiguration.***
    - ***ICT should help making solutions portable to new markets or domains***.
- The new services should be flexible to adapt to different markets within Europe. ***This flexibility and adaptation should be supported by the tools.***

New business models taking into account intangible assets/products

- How do we evaluate intangible assets?
- More and more (small) enterprises will have to balance tangible (stocks, revenue, physical properties) and intangible (knowledge, branding, position in market, position in a value chain…) assets.
- ***Hypothesis: ICT may be useful to make/help the intangible assets become tangible ones, by a better management of the opportunities such assets may create***.
- Growth may not be good to be evaluated on solely economic term (e.g. GDP) but on non-economic ones. If countries did this change, this may also make a shift in the enterprises way to operate.
- Not everything should be left to the market. This shift to include intangible assets may also need a shift on regulatory frameworks supporting it.
    - This implies the need of policy makers to understand the new state of the internet and the potential future developments.

Shall we do a particular focus of ICT on particular enterprises? (E.g. environmental-friendly ones) Would that make sense?

- History has shown that this does not work.
- Furthermore it is difficult to foresee what would be the strategic decision to make in a continuous, changing market.

Will Cloud be predominant? May this be also pushed by the resource pressure? (e.g., reduce maintenance/ energy savings?)

- Concern: we do not want to be locked into a particular ICT system,
    - Clouds can have a locking effect.

Enterprise networks:

- Movement from human resource management to knowledge assets management may also have an effect on business networks. Organisations dynamically picking resources/assets from the network.
- We need to create/expand techniques and methods to adapt to new opportunities or to changes in the (market) environment.
    - There is no a one-way answer. Cross-fertilisation of ideas and methods from different fields may be needed
        - Virtual Organisations, Distributed Artificial Intelligence (team models, coalitions, distributed knowledge management, distributed problem solving), Game Theory and other approximations
    - You have to reinvent depending to new domains.
- Recommendation: ***Do not look to the structures, but the underlying needs, then the underlying ICT support needed, and then the means to dynamically change/adapt the network structure.***

Question 3: Technologies are enablers. What will FI technologies bring to enterprises – efficiency, differentiation, (value) innovation, or something else? And exactly how would FI technologies effect the anticipated change?

Defining the term Infrastructure:

- ***An infrastructure for enterprises is more than the hardware: should include services, middleware, languages, protocols…***
- You should be able to use the infrastructure to deliver for a initial fixed set of services, but then it should enable to adapt to new services and opportunities.
- The infrastructure should be stable.
- Idea: to have an equivalent to the http protocol for business, e.g., a business usage protocol: "You click to this link to get this capability."
    - A business level mashup could then be supported by a high-level message including concepts such as billing, service provision, etc.

Important: ***make sure that we keep it simple to the end-users (the SME's)***

Internet of Things:

- New options by the Internet of Things will need an standardisation to make it really useful, integrating different aspects of the current solutions.

Link between technologies and innovation:

- ***Toolkits are needed for knowledge management and exploitation, for finding (or supporting the user to find) new markets, new services, new products, new manufacturers***.

Freedom of Knowledge VS protection of IPR:

- This topic will be discussed in the afternoon session.

Question 4: What is our vision of Future Internet based Enterprise Systems 2025?

(People around the table are pointed to the position paper, page 12)

Page 12 states "The Future Internet is the Enterprise". You agree?

- No, ***Future Internet is customers & enterprise, interacting in a seamless way***
- Recommendation: to rephrase as "The Future Internet will enable enterprises to:"

Bullets 1, 2, 4 are ok.

New bullet (substituting item 3):

- "Enable and support collaboration between enterprises, new dynamic relationships, discovery of partnerships, opportunities and markets, and the management of the new risks involved."

New bullet:

- "FI enables business environments (ecosystems?) providing support for quality measures, guarantees, persistence, safety, trust, arbitration and other mechanisms that can reduce risks on both the customer and the provider side."
- Motivation for this new item:
    - FI should support those aspects already present in real world that can reduce the perception of risk from customers by, e.g., providing some arbitration.

.

What is then the difference between objective 1.2 (FI infrastructure) and 1.3?

- 1.2 is focused on the technologies themselves,
- ***1.3 should ensure that solutions from 1.2 are really effective for enterprises***.

The relation between consumers and enterprises should be adaptive. System should be able, by interaction, to adapt to new perceived user needs.

Future adoption also strongly depends on the population limitations on access and usage of technologies (digital divide).

Afternoon session

Question 0: Freedom of Knowledge VS protection of IPR

Companies have a tendency to protect knowledge, on the other hand there is so much knowledge at individuals and networks (social networks) that it would be difficult to contain/manage that in the long run.

- Individuals are keen to share Knowledge, while enterprises are not.
- There is a disagreement between the views of individuals, enterprises and legislation/Law about knowledge protection.
    - ***Need to change/rethink the rules of Intellectual Property (IP).*** Currently they are too protective on the owner. They thus very much limit the possibility to make business out of it.
    - Patent regulations need also to be revisited
        - Patents allow to disclose the knowledge, but its use is typically licensed (related to ownership of knowledge), undermining possible adoption.
            - Do patents work in practice against knowledge exploitation and adoption?
        - ***The spirit of the patent system is typically not observed***.
        - How long should a patent be? Does it make sense to have ICT-related patents applying for 20 years?
            - Rules could take into account if you really use the patent (then allowing extension), while if you do not use it then it is not longer extended).
            - Currently large enterprises tend to make patents to have a patent portfolio, and not always with the intention to use the knowledge or for it to be used by someone else.
                - Large companies tend to be stricter into protecting their portfolio. Small companies tend to be more open on knowledge sharing to a community
            - Business practices (e.g. Amazon 1-click) should not be patented.
        - It should also ease patent trading (to foster knowledge exchange and exploitation).
    - ***IP as an (electronic) object***. Who is the owner of this object? The creator? The community? Single or multiple ownership? (law is not clear on these aspects)

Role of knowledge sharing:

- ***Companies should start thinking on how to use/exchange knowledge, to use it in different, more sustainable way***. E.g. not to offer only a product, but services over the product.
- Knowledge flow between individuals and companies should be strengthened (all in the same boat).
- ***In order to effectively do business in a network, you will certainly have to share more knowledge than it is shared now***,

- In the network business have to become more transparent (expose a layer of collaboration, keep only capabilities, skills that makes us distinct).
  - Need for a model of partial observability.
  - ***This transparency may attract new users (help on service discovery) and even facilitate adaptation (help on service customisation).***
    - If I disclose a bit of my process may make it easier for others to get interested on it.
- It may need a shift in the culture: instead of 'not share' automatically, just not share explicitly some bits because of a particular strategy.
- Enterprises and networks are more and more dynamic. Enterprises may belong to more than one network, and share difference knowledge to those. Networks may appear and disappear.
- There is a need for a new legal framework to sustain some sort of Open (collaboration) Knowledge model.

Question 1: V1 of the Position Paper identifies five themes on the requirements of future enterprises, are these adequate?

(People around the table are pointed to the position paper version 1, section 3.3, page 10)

Theme: Towards sustainable value creation

Each company can target on one (or few) aspects of sustainability.

- Environmental sustainability and economic sustainability (as discussed in the morning)
- Social sustainability
  - Companies such as Microsoft and Google are interested into social sustainability (e.g. day-care centre for employees):
    - Here the idea is to give outstanding conditions (to staff) that will give back (economic) sustainability.
  - Another view: social sustainability as giving back to society part of what the company gets, because at the end this makes the company economically sustainable.

Economic performance should not be the only measure of success, but:

- Business wants to make profit. Sustainability measures are ways to get to its goal (e.g. ecological or social sustainability if this brings improvements on image or market share).
- ***It is in the rule of the legislator to make sure that (at least some level of) sustainability is achieved, especially if the customers are not pushing enough demanding such sustainability.***
- Also it should be taken into account that people may be influenced by advertisement. ***The legislator should ensure that communication to the user is proper***.

In order to establish something on the large scale, then you have to either build the proper regulatory or economic environment, that is, to give some incentives to sustainable measures.

- ***Regulatory frameworks should not be seen here as restrictive, but by giving positive incentives/measures.***

An open question: What would happen if there will be no (economic) growth in EU? What if deflation appears? Would than change the way enterprises operate? Would that affect sustainability?

Theme: New business models for future enterprises.

This theme and the rest were treated in questions 2 to 4.

Question 2: how Future enterprises will look like? How future businesses will make business? Do we need to rethink the concept of enterprises? And enterprise networks?

(It is agreed around the table the ideas from the morning session)

An extra statement: It is right now for humans and companies very difficult to envision totally different economic paradigms.

Question 3: Technologies are enablers. What will FI technologies bring to enterprises – efficiency, differentiation, (value) innovation, or something else? And exactly how would FI technologies effect the anticipated change?

ICT and environmental sustainability:

- Maybe ICT could help sectors on managing carbon-footprint or their energy/resource consumption
- We could even change current level of required mobility into ICT communication/teleconferencing or virtual presence.
    - E.g. tele-conferencing VS travelling to attend a meeting.

ICT main potential impact:

- ***Future ICT is not about value chain optimisation or efficiency, or differentiation, but on innovation.***
    - (e.g. sell mobility, not sell the cars).

ICT main potential sectors/markets:

- ***Software is immaterial, and thus has more potential to grow (sustainably) on immaterial services/things.***
    - Potential on the creation of technologies that allow you to consume immaterial products/services.
    - The new generation of people is already living partly on these new ideas
- ICT can also not replace technology, but ***enhance (existing) technology*** (e.g. intelligent networking of existing technologies).

Question 4: What is our vision of Future Internet based Enterprise Systems 2025?

(People around the table were pointed to the position paper version 1, page 12)

Main idea (same as in the morning session):

- Future internet as an atmosphere where individuals and business can interact seamlessly.

Potential dangers (dark future scenarios)

- small trends (Google, Facebook) may become globally spanning platforms (e.g. Google Wave) that then may control everything.
    - Everything could be controlled by 10-15 (partial, self-motivated) organisations.
    - Maybe this scenario would be ok if we ensure that new actors can raise and compete with the existing ones.
    - This means to avoid monopoly situations.
        - Suggestion: ***extend competitiveness legislation to the ICT market in respect to significant market power (SMP).***
- Cloud computing: Will all come in the end from clouds (and be locked into them)?

    - Companies may move their data to the cloud only if the connection will be reliable enough that it may not negatively impact their operations.
    - Danger: this may only be achievable by the big (existing) actors/companies, with little possible competition from new actors
        - Suggestion: ***If Clouds (and their services) become a basic structure/utility that citizens and enterprises become dependant on, then they should be regulated as such (as essential utilities).***
- As a summary: we don't want to live in the Matrix.

4 KC2a: ICT Trends of Particular Relevance for Enterprises

Moderator: Mehmet Kürümlüoğlu, Fraunhofer IAO
Rapportuer: Michele Missikoff, CNR LEKS-IASI

This short document summarises the main issues that emerged in the Knowledge Café KC2a, in the FInES Cluster Meeting of London.

We started with four main questions, but after a first analysis we realized that the first one was embodying the others. Therefore we started elaborating from the first Q1. The discussion started by considering the original drivers and hypothesis reported in the position paper, but then we decided to proceed first of all trying to identify the technologies that will support the Future Internet.

Q1 – Hypothesis of ICT Trends and impact on Enterprises

Original drivers

- Social networking
- IOT
- Mobile computing

Original hypothesis

- Pervasiveness of the internet
- Portable and configurable applications
- Mobile computing
- Security

We re-elaborated the above topics, trying to identify the key technologies that will support the Future Internet. Such technologies have been organized in two groups, depending if they will be more relevant on the client side or the server side.

Future Internet

Server side

- IOS: Internet of Services
- IOT: Internet of Things
- IOK: Internet of Knowledge
- Cloud computing
- Interoperability, for effective cooperation of different internet resources
- Methods and tools for Quality of Services
- Advanced search & retrieval: beyond Google. Semantic engines, semantic annotations, ontologies
- BP / Enterprise modelling platforms
- New architectures, inspired by bio-computing. Autonomic computing

Client side

- Mobile Computing
- Open ubiquitous access
    - Intelligent monitor & control of access to info / services

    - Authentication, authorization, trust (on computer / on people) & security
- Federated governance of internet infrastructure; polycentric governance authorities
- Advanced search & retrieval: natural language and advanced graphics (e.g., 3D)
- BP / Enterprise modelling: advanced interfaces and methodologies. But also methods and tools for systematic approaches to enterprise management (i.e., Enterprise Engineering)

Particular attention has been devoted to the adoption of s**ocial networking, moving from fun to business.** The adoption of Web 2.0 will depend on the business sector and company size.

Business sector
- Cultural production, show business
- Retail: books, music
- The Long Tail: niche products
- Some enterprises need to deeply change
    - Tourism sector, Travel Agents
    - Banking & insurances
- All sectors where the customer gets involved in the product development. E.g.: design your kitchen

Company size
SMEs
- are more flexible
- seem more prone to adopt new, emerging social technologies

Big enterprises
- Don't want, for security issues, for privacy in pre-competitive issues, to open at a social level.
- Employees are against, fearing to be more controlled
- Big enterprises may partially adopt it, only specific sector. E.g., marketing, customer care. Not for product develop

Impact of Future Internet on Enterprises
- They will focus on core business
- Push to increase outsourcing
- Yielding to more flexible, adaptable enterprises supported by more flexible, adaptable ESA
- New organization / Mgt models, induced by the new ways of circulating information
- Decision method and logics will change, since the way the Mgt gets info changes
- Less hierarchy, more information flowing

Critical issues
At Enterprise organization level
- How to keep under control outsourcing
- Cultural resistance (beyond ROI) on innovation, resistance of groups of power
- Information flooding, difficulty in sorting out too many info (then, Intelligent aggregators, Anomaly Detection methods, etc.)

At employee level
- IPR of innovation. Employees don't want to give away good ideas
- Socio-ethical issue: the fear of the Big Brother.

- Unanticipated different (wrong) usage of personal info
- The missing link in networked communication: after People2People (Current Web) and Thing2Thing (IOT), we need Things2People

Vision

On technology side

- Bio-computing paradigm
- Self management of complex systems.
- Future Internet should operate how biological systems operate. High level of autonomy (autonomic computing), with a self-regulating behaviour mainly driven by constraints and incentives
- The information flooding will be mainly managed by machines for machines, and humans will be involved by exception of by will (Semantic filters and avatars will have a key role)
- From Cloud Computing to Invisible Computing

On the enterprise side

- Deep organizational changes
- The role of computers, networks and automation will dramatically increase, but mainly "underground" (see Invisible Computing)
- Services and things will operate / cooperate with a large level of autonomy
- Liquid enterprises, with fuzzy boundaries, with flexible behaviour, with evolving objectives

On human side: The "**Slow** movement"

- There is a limit to human capacity to sustain speed of machine. It is time to use machines to help humans to slow down.
- Delegating to machines the majority of trivial tasks
- Humans: doing less but more relevant
- Trading quantity with quality (learning to relinquish…)
- Move "speed" to machines, to help you to live at a human pace.

This vision is connected with the fact that we cannot continue to grow without considering a half of the Planet living miserably. And our socio-economic model cannot be simply extended to the whole population of the Planet. Furthermore, we are spinning around but we rarely take the time to ask ourselves if this is really the right way to go. Just paraphrasing a sentence coming from Vipassana Zen: "Life is something that happens while you're looking into your emails".

5 KC2b: ICT Adoption and Service Paradigms for Enterprises

Moderator: Claudia Guglielmina, TXT e-solutions
Rapportuer: Luigi Telesca, CREATE-NET

Questions and Issues:

1. Identify enterprise ICT adoption trends (ICT push or process/business push) towards Future Internet
2. Identify ICT adoption drivers and barriers
    a. Identify the expenditure trends and objectives
    b. Identify the enterprise expenditure budgets
    c. Distinction between SME vs Large Ent. If any.
3. Elaborate on impact of economic crisis on ICT adoption
4. What is the level of perception/diffusion/adoption of service paradigms? Drivers and barriers.
5. What is the attitude of CxO towards service paradigms for enterprises? And the IOS? The Future Internet opportunities? Billions of Services vs. Service Parks? Ecosystems vs. Clouds vs. Service Platforms
6. What enterprise functions can take advantage of service paradigms (in the short/long run)? Under what conditions?

The questions were presented to the 2 rounds of KC. No representative of the user community was present in the 2 tables. The questions were interpreted as topics for stimulating the conversation and elaborating on the KC topic.

One session provided a general consensus that the step-by-step approach to ICT adoption is still the most appropriate. Users need to be convinced and a soft transition is the winning choice.
Plug & play of services and applications attitude is also winning.

Companies need to be prepared to adoption and use of ICT. Develop / enhance / disseminate training strategies and programmes in order to decrease the learning curve.

- note that users ICT literacy is still low.

Companies follow mostly their business needs in the ICT adoption and in most cases fear of change is prominent.

One main barrier to ICT adoption is towards features / tools that introduce unsafe elements in their architectures (security mentioned often as barrier).

Companies need to have appropriate exit strategies from ICT adoption that results in unsatisfactory outcomes and effects – Provision of services that can be rolled back easily.

ICT and ICT Services need to be able to adapt easily to the users needs and systems in place (not the other way round: users to adapt to the services profiles).

- to this end the KC advocates users to be involved in the service development and definition.

SMEs cannot be easily classified in terms of approach to and adoption of technology.

- in some cases with low level tech approach (mail + mobile)
- in other cases the believers think there are new ways of approaching things (linked in, collaboration spaces, …)
- SMEs differentiated on attitude of decision makers / owners (from sceptical to enthusiastic)

There are visible trends of service adoption in the outsourcing of basic functions, in order to free resources for the core business.

System connectivity services (interoperability space) are considered as good subject to service paradigms.

One barrier to service paradigms adoption has been identified in the absence of Balance Scorecards for service adoption; it is felt that unless scorecards are available the companies may be hesitant in hooking in the new paradigms.

The second session provided a general consensus about the changing perception SMEs have regarding ICT. They now understand the impact of ICT on their business and they do not want to be excluded (not linked).

Experts suggested not to under-estimate the impact that service orientation could have on SMEs' internal processes. This is especially if processes are not well understood by the same SMEs owners or managers.

The uptake of those technologies is therefore limited by the lack of imagination of the end users. Participants confirmed that systems should facilitate business actors in understanding/defining formally their service requirements. The participants assumed that facilitating the requirements phase will facilitate the service selection and monitoring. Feedback mechanisms should in fact provide means to asses the impact (positive and negative) of selected services during the adoption and utilization phases.

There are also socio/technical issues associated with this service orientation. In particular legal/governance/trust issues need to be identified and studied to understand the overall sustainability of the model.

The experts also highlighted the need to understand how autonomic capabilities of the systems could reduce the management costs associated to ICT adoption. Management costs are very high for SMEs.

Users mashups could facilitate a proactive participation of the users and technological maturity is an key aspect to facilitate user acceptance. A strong scientific background will not be enough.

During the discussion some main drivers to service adoption were identified:

- well defined functionalities,
- demonstrability,
- usability,
- low cost to try and deploy,
- trust & security,
- dynamic licensing,

- well defined economic benefits,
- discoverability (among the lines of adoption).

The participants identified also some evolutionary or innovative features that the services should have. As an example the capability of the service to upgrade its own description over time considering adoption patterns could speed up the service selection and uptake. The services' autonomy should anyway be mitigated by some control functions that the services infrastructure should provide.