



**FP7 CWE for Enterprises and
Manufacturing**
**What's generic? and what should be
domain specific?**

Isidro Laso-Ballesteros

isidro.laso@cec.eu.int

1 June 2006

Brussels



Information Society

Vision


Vision: Enabling Productivity and Innovation through
empowering and motivating
people using technology to work together.

Technological Vision 2020:

In 2020, Collaborative Working Environments will offer a
ubiquitous hardware and software infrastructure
composed of resources delivering a new blend of
activity-oriented, context-aware flexible software
services providing pro-active support for dynamic
patterns of collaborative interactions between humans,
systems, machines and devices.




European Commission




Specific RTD challenges

- 1. Cooperativity of a Collaborative Environment.** With cooperativity we denote the usability of a CWE for a group and a collaborative process. *The challenge would be to both promote cooperativity in regards to existing tool use, and to embed cooperativity-supporting features in future collaborative tools;*
- 2. Modelling of collaborative context.** This requires research in the ability to present information with multiple methods and representations and to create audience specific views based on the different roles and IPR interests involved in a collaboration process. *From a user-oriented view this will result in a reduction of information and cooperation overload to reduce stress.*
- 3. Activity-oriented context-aware collaboration services supporting human interactions.** Today's work is characterized by multi-tasking and many interruptions. *This requires systems that allow users to develop and enhance their own collaborative environments, thus blurring the boundary between designing and using, and enable rapid context switching and that provide immediate awareness on the status of the collaborative process.*
- 4. Proactive collaboration aware artefacts and objects** are needed to transform static data so that the entire life cycle of shared artefacts is supported.
- 5. Support of pervasive collaboration.** This requires research in other media than the PC-based desktop: ePaper, augmented and mixed realities, ubiquitous and ambient technologies. Special focus must be on the use of these technologies in a collaborative setting and their integration in a collaborative environment.
- 6. Integration between synchronous and asynchronous work.** Current tools do not integrate both working patterns, but focus on one or the other. Therefore research is needed in environments allowing synchronous & asynchronous cross domain communication/collaboration.
- 7. Support for virtual communities of practice and of interest.** Communities have emerged as one of the primary CWEs within which knowledge activities are framed and enabled within and across organisational social boundaries. Specific methods and tools are needed for the creation, persistence and effective action within communities,




European Commission




Future and emerging technologies and concepts: Web 2.0

- **The vision now**
 - A set of basic and application technologies – Flickr, Technorati, folksonomy, social networks, tagging, ...
 - Coming from the base technologies, lead to different technology platforms which have to be integrated.
 - Granularity from person and team, service composition is at individual level.
 - The result will be a distributed information space, - machines supporting humans in selecting the right information,
- **Research challenges and issues**
 - *We need to define the scope of collaboration interests within the set of Web2.0 technologies, thus charting the important things we have to be focused on.*
 - *The majority of mechanisms for streaming media and content are not yet compatible with the current vision of Web 2.0, since the content of these streams is currently outside of the search space.*
 - *Related to this is the issue of ownership, this could be seen as vested in a community, which may eventually replace the publisher. It is however important to provide substitute for the quality indicators associated with the publisher-based model.*
- **Looking to the future – what is beyond Web 2.0 (Web 3.0)**
 - Move from the service composition on individual level in Web 2.0 to company and group level (from mySpace to mySME) – applying all these ideas from individuals to companies, now person to group granularity.
 - More business-oriented, more like group to organisation granularity
 - Machines will be a part of your extended network
 - Collaboration on a massive scale
 - Affinity of people to countries may be challenged since they would have closer affiliation in their communities – what would be the governments way of dealing with this?




European Commission




Information Society

Future and emerging technologies and concepts: Serious Games

- **Scope and relevance to CWE**
 - We are allowed to have a laugh whilst playing them, the idea is to use games and fun for serious and useful purposes.
 - Target is both on
 - learning how to do new things using customised learning strategies, based on games to introduce new concepts, skills, and social attitudes, and to
 - use them to perform work or work-related task with better efficiency and efficacy.
 - Example of the latter is the ESP Game – using competitive game to tag pictures for the purposes of the Semantic Web. "Pick-a-boo" is the most-recent extension, which is also used to identify important areas (parts) of the pictures.
 - Two other examples, oriented to children and learning skills, are O-GAME and Neopets.
- **The research challenges would be to:**
 - Devise gaming models and methodologies to increase motivation and enhance outcomes;
 - Provide mechanisms which create a sense of community by interconnecting people and allowing them to share experiences from the learning environment;
 - Study motivation and learning by exploration strategies in games and generate models and conclusions which are transferable to the serious games domain. This may happen at two stages:
 - Easily transferable elements such as user interfaces
 - Elements which would require further work before they can be transferred, such as advanced interaction within collaborative processes.
 - The processes of collaboration can be seen as analogous to the traces of action in a game, and following collaboration norms and rules can be facilitated by the same mechanisms which enforce the rules of the game.




European Commission




Information Society

Future and emerging technologies and concepts: C-Pod

- **Would there be a C-Pod?**
 - A single-purpose devices such as iPods and Blackberry's have provide surprisingly popular with users, often creating strong branding ensuring customer loyalty even after the appearance of better competitive products.
 - Collaboration is also much wider than the single-focus activities such as listening to music or working with e-mail, supported by these two examples, so it suggests that it would be better supported by a multi-purpose device.
 - Convergence of hardware capabilities, and the need to avoid cluttering the user with too many gadgets invites us to consider C-Pod as a capability of a future super-device rather than as yet another device to be worn by the user.
- **Usage case for C-pod:**
 - A C-Pod would go beyond message-based primitives, and will package them in a problem-specific wrapper. The example below explore the combination of specific device capabilities and social networks.
 - Example 1. We now have many single households, and you would like to cook Indian in a company, this device may allow you to search through your social network for specific skills and characteristics, which you can combine in a company with a set of complimentary skills.
 - Example 2. We can use such a device to check the contents of our fridge before we start the cooking process, and even engage in a "virtual guide" mode of interaction to explore "what if" scenarios regarding different recipes.
 - You can have this C-Pod implemented in OGSi and deployed in such a way that services and features can be updated remotely without user participation.
- **Is C-Pod a platform or a solution?**
 - Blackberry is a solution, perhaps we may start with the solution but then eventually move to a platform. Building the device may then involve move parts of this upperware platform to the device.
 - C-Pod should look like a solution. You sell solution to customers, you see platform to developers.
 - Building a platform is an iterative process, it can never be delivered in one shot.
- **Research challenges**
 - Explore the lessons from iPod, this was the first device which allowed users to buy their music through it.
 - Research collaborative infrastructure which allows us to embed p2p functionality in the C-Pod, and combine this with server-based collaborative capabilities.




European Commission




Information Society

Future and emerging technologies and concepts: *c-Etiquette*

- **Definition and relevance**
 - *Etiquette in collaborative context (C-Etiquette) considers implicit rules and behavioural nuances which enable face-to-face collaboration between people. This may be considered to be an area of social science.*
 - *When the collaboration is mediated by technology, we have to deal with explicit models and representations of these to provide effective support for collaboration. C-Etiquette is thus important to structure groupwork and communication in the new, virtual context.*
- **Research challenges**
 - *Consider creating a set of social processes and methods designed to complement any technical solutions, the combined solution is likely to have a much better chance of being successful.*
 - *Define normative and indicative c-Etiquette models based on analysis of best practices in different collaborative communities and contexts.*
 - *Construct appropriate mix between individual and group tools so one can effectively support these norms?*
 - *Create effective models and representations to demonstrate emotional characteristics which to create feedback. For example one can use the traffic lights metaphor to indicate the time left till the end of a cyber-talk, when the speaker and the chair are not in a direct eye contact. Second generation such tools allow audience to ask the person to speed up, or slow down.*
 - *Consider the use of playing "serious games" to break the ice when people have not met before.*
 - *Identify the possible differences between community and corporate c-etiquette, in the latter you are dependent on your dependencies. In corporate environment you have to align the two, perhaps we need to have collaboration engineer.*




European Commission




Information Society

Future and emerging technologies and concepts: *Cooperativity*

- **Definition and scope**
 - *Cooperation is often taken to mean acting together, thus cooperativity is taken denote the usability of a CWE for a group and a collaborative process.*
 - *Analysing factors which contribute to cooperativity and creating appropriate metrics is important because the expected take-up of new ways of collaborative working, which would involve the end of the use of conventional documents.*
 - *Cooperativity is related to the inputs and outputs of the CWE, not to the way they are structured internally, although this internal structure may actually influence the cooperativity score.*
- **Research challenges**
 - *The main challenge would be to both promote cooperativity in regards to existing tool use, and to embed cooperativity-supporting features in future collaborative tools.*
 - *We need to devise a methodology to achieve and evaluate cooperativity. UI principles will be important seed in the process, but we need to look at this not just as a metric influencing – evaluate form.*
 - *It is important to determine which factors facilitate the uptake, and how is this related to the particular context.*
 - *This would lead to techniques to increase this flexibility.*
 - *Auditing is important in terms of health records, even started to be used on discussion newsgroups.*
 - *Differences from useability should be clarified. What about sociability, trust and privacy. Scale is also important (going from individual to organisation). Scaling up and scaling down.*




European Commission




Information Society

Focus and prioritising

- **3 Building blocks:**
 - Collaboration services and tools that foster value creation, exploitation and preservation and stimulate creativity.
 - Reference models and patterns for collaborative working environments.
 - New methods and concepts of work in various collaboration environments
- **What should be generic? and what should be domain-specific?**



European Commission




Information Society

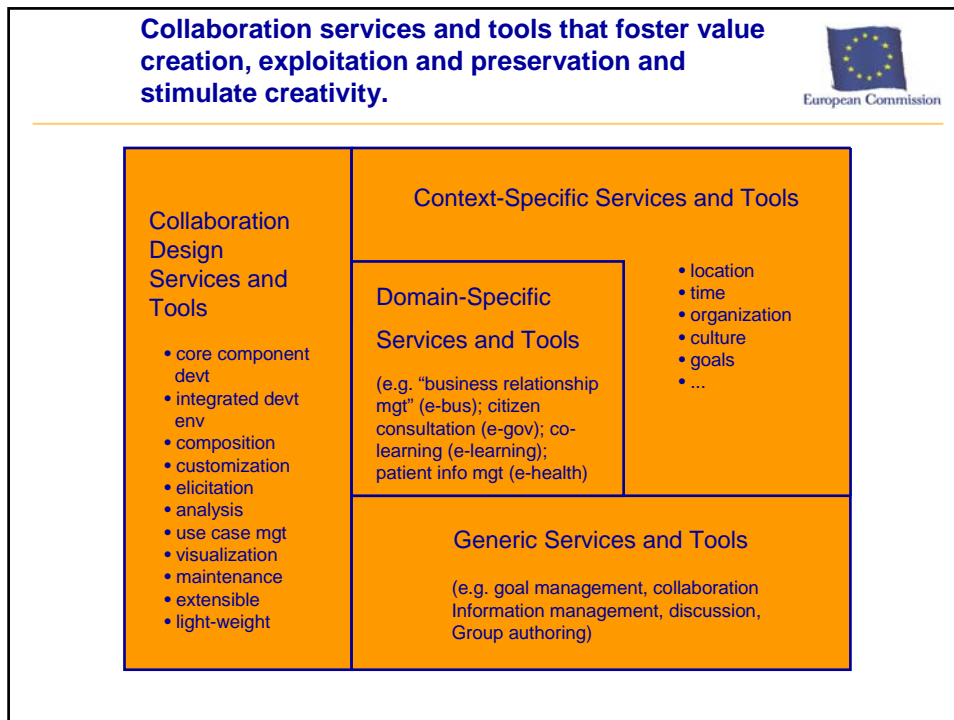

Building blocks 1

Collaboration services and tools that foster value creation, exploitation and preservation and stimulate creativity.
Services can be layered in three blocks: generic services that define basic components; domain-specific services that build on top of generic services and support the creation of application-specific collaboration environments; context-specific services that can build on both the previous blocks to create new services related to pervasive collaboration, self-organization, etc. Any layer of the above architecture has to be supported by services and tools for collaboration design.

- Context-specific services: education and training tools, spontaneous communities, customer services, collaborative intelligent monitoring, collaborative problem solving
- Domain specific services: Multi organization collaborative business process, concurrent engineering, collaborative reconfiguration of assembly and manufacturing lines,
- Basic services: personal and group information management, discussion services, decision making services, goal management, group authoring, collaboration auditing services, group and activity management, resource discover, content and authoring provisioning, trust and reputation management, large-scale opinion management, team calendar management,
- Collaboration design tools for generation, composition, discovery and scheduling of customised context aware collaboration tools/services





European Commission

Building blocks 2

- **Reference models and patterns for collaborative working environments.** This will allow more consolidated and highly semantic interoperable and flexible cross-domain working environments. Built-in support will be provided for allowing collaborating entities to re-structure the team forms, and support evolving collaboration patterns and integration between synchronous and asynchronous work. Provide a framework to build activity oriented, context aware collaborative services on appropriate level of abstraction based on generic communication and coordination primitives and mechanisms, through automatic service composition and integration of basic components, addressing as well security, privacy and IPR issues.







Information Society

Building blocks 3

- **New methods and concepts of work in various collaboration environments**, such as cooperativity, denoting the usability of a CWE for a group and a collaborative process, c-etiquette, considering implicit rules and behavioural nuances in collaborative work, and communities of practice and of interest. These should be focused on the usage of the system through groups in a creative process so that organisations can leverage the full potential of CWEs to stimulate innovation, boost productivity and ensure that work goals are achieved. The challenge would be to both promote cooperativity in regards to existing tool use, and to embed cooperativity-supporting features in future collaborative tools




European Commission




Information Society

Discussion point for today

- **What should be generic?
and what should be
domain-specific?**
 - Reference model
 - Collaboration services
 - Concepts & methods



European Commission



Information Society

Thank you for your attention !



European Commission