Living Labs
for **user-driven**
open innovation

AN OVERVIEW OF THE LIVING LABS METHODOLOGY, ACTIVITIES AND ACHIEVEMENTS JANUARY 2009

●●● **Directorate-General for the Information Society and Media**

Unit F4 New Infrastucture Paradigms and Experimental Facilities

Living Labs
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open innovation

European Commission
Information Society and media

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Foreword

Innovation is a costly process. Indeed only one out of 3000 product ideas makes it on the market, meaning that there are hundreds of unsuccessful ICT products beyond every success. Even successful products may be far from being user friendly. Surveys show that 75% of all users find their ICT tools more stressing than relaxing. In such a context, user-centric validation can play an important role in speeding up effectively the innovation process through addressing the actual user needs.

Living Labs are open innovation environments in real-life settings, in which user-driven innovation is fully integrated within the co-creation process of new services, products and societal infrastructures. In recent years, Living Labs have become a powerful instrument for effectively involving the user at all stages of the research, development and innovation process, thereby contributing to European competitiveness and growth.

By placing the user at the centre of the innovation lifecycle, the Living Labs concept is tightly linked to the second pillar "Strengthening innovation and investment in ICT research" of i2010, the EU policy framework for the information society and media. In the European Commission's DG Information Society and Media, the promotion and support of user-driven open innovation methodologies is a horizontal activity cutting across the different Challenges under the ICT priority of the Co-operation Programme of the Seventh Framework Programme as well as the Policy Support Programme of the Competitiveness and Innovation Programme (CIP).

Several integrated projects from the Sixth Framework Programme are developing and demonstrating interoperable collaboration environments supporting the user-driven open innovation process. Starting from Coordination and Support Actions under this Programme, the European Network of Living Labs (ENoLL) was launched in Helsinki at the end of 2006 under the Finnish Presidency. After these foundations of the Network were established enthusiasm and motivation among the stakeholders is growing. With the continuous support of the respective European Presidencies, the network has surpassed the mark of 100 European Living Labs in 2008. Growing political interest on the subject demonstrates the strategic importance of the Living Labs concept as a powerful mechanism to strengthen European "innovativeness".

This booklet gives a comprehensive overview of these activities, their achievements, and Living Lab methodology in general.

Antti Peltomäki
Deputy Director General

1 Living Labs for user-driven open innovation

What are Living Labs?

A Living Lab is a user-driven open innovation ecosystem based on a business – citizens – government partnership which enables users to take an active part in the research, development and innovation process:

- bringing the users early into the creative process in order to better discover new and emerging behaviours and user patterns;
- bridging the innovation gap between technology development and the uptake of new products and services involving all relevant players of the value network via partnerships between business, citizens, and government;
- allowing for early assessment of the socio-economic implications of new technological solutions by demonstrating the validity of innovative services and business models.

Benefits of Living Labs

The benefits for the different types of stakeholders to deploy user-driven open innovation and Living Lab methodologies can be summarised as follows:

- For the **users in their role as citizens and the community:** To be empowered to influence the development of services and products which serve real needs, and to jointly contribute to savings and improved processes through active participation in the R&D and innovation lifecycle.
- For the **SMEs, incl. micro-entrepreneurs as providers:** developing, validating and integrating new ideas and rapidly scaling-up their local services and products to other markets.
- For the **larger company:** making the innovation process more effective by partnering with other companies as well as end-users, which are rooted in active user experiences, increasing 'right the first time'.
- For **research actors, the economy and the society:** Stimulating business-citizens-government partnerships as flexible service and technology innovation ecosystems; integrating technological and social innovation in an innovative 'beta culture'; increasing returns on investments in ICT R&D and innovation.

Living Labs have in general an important role in filling gaps. They bridge the different gaps between technology ideation and development on the one hand, and market entry and fulfilment on the other. As flexible ecosystems, Living Labs can provide a demand-driven 'concurrent innovation' approach by iteratively engaging all the key actors across the phases, and putting the user in the driver's seat. Living Labs often start their bridging in the applied research phase. Taking the step from technology prototypes for innovative and visionary users to evolving products for pragmatic and mainstream user, also called crossing the "pre-commercial gap" or "chasm", is the major acting field for Living Labs as iterative user involvement adds significant value to the rapid prototyping and service/product development phases.
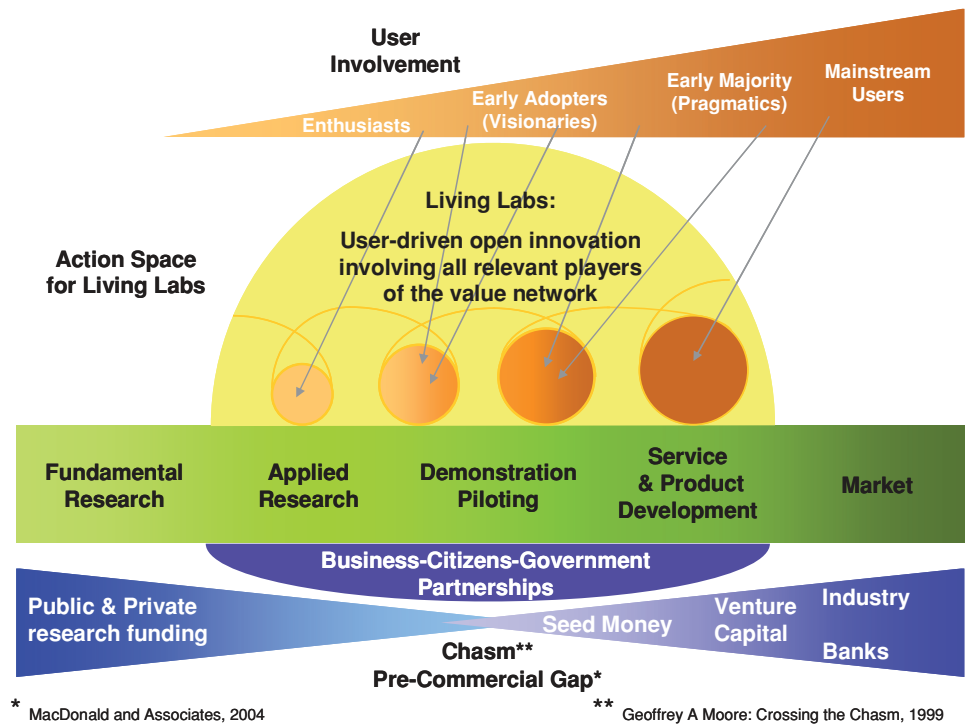
Action space for Living Labs along the technology adoption cycle

User-driven open innovation methodologies can significantly improve the efficiency of the innovation process and contribute to better take-up of R&D results, thereby improving the competitiveness of industry in Europe, in particular for SMEs, including micro-entrepreneurs.

Living Labs across domains and regions

There is a large number of Living Labs in Europe with a variety of different characteristics. The European Network of Living Labs ENoLL has now more than 100 members in 2008. Some focus on a particular technology such as mobile communications or RFIDs (Radio Frequency Identification), others focus on a particular industrial sector, again others focus on groups of services to local citizens, just to mention some of these characteristics.

There is an additional dimension – the European one, which is just starting to be explored: Small groups of Living Labs in different regions join forces by sharing knowledge, services and even developments based on win-win strategies to pave the way for co-selling developments and services on the European or global market rather than just on their local regional market. This "networked Living Labs" approach is of particular interest for SMEs and micro-entrepreneurs, which do not have the expertise and resources to expand their activities to other regions or across Europe due to different structural characteristics, regulations, or societal and economic structures in the respective regions and countries. Some typical examples are discussed below.

e-Wellbeing

e-Wellbeing is the ICT domain which reflects the lifelong care for the physical and psychological state of humans, incorporating practices for cure and care, and that focus on prevention, healthy and ambient assisted living. e-Wellbeing thus adresses e-Health as well as e-Inclusion concerns. In a fragmented domain like this, networked Living Labs can assist SMEs to get user contributions to grow into lead markets. This could happen for example in a process of pre-commercial public procurement, where Living Labs can be environments for providing user ideas and feedback into the procured research and development. Living Labs and Living Lab projects currently focus on issues such as monitoring, prevention and home care, and have started to network and scale up, or to transfer their innovative ICT supported services to larger national markets.

> *Living Labs have the potential for filling four critical gaps in the e-Wellbeing domain:*
> - *the gap between technology development and market implementation;*
> - *the gap between medical (clinical) trials and regular ICT trials;*
> - *the gap between individual e-Health and respective e-Inclusion initiatives;*
> - *the gap between vertical/localised approaches and horizontal/global approaches.*

e-Services in Rural or Developing Areas

Due to the high growth rates of emerging economies, socioeconomic processes are extremely dynamic and requirements change rapidly. Societal structures are getting more and more heterogeneous reflecting social and cultural diversity. This creates a need for designing, developing, and validating technology advancements in environments that do not simply allow being extrapolated from state of the art technologies. This particularly applies to regions with different economic and societal characteristics. First pilots show the benefits of interlinking and networking Living Labs in terms of reusability of components and platforms, co-innovation and interoperability.

> *Networks of Living Labs across regions offer a unique opportunity to tackle global challenges by linking local experimentation environments that engage a global representation of end users and economic players (incl. SMEs).*

e-Democracy and e-Governance

In this domain, Living Labs can have a crucial e-Participation role through engaging citizens on a broad scale. e-Democracy toolboxes have the potential to enable virtual participation in municipal decision-making organs, which however would demand legislation to be adapted, particularly when its use is extended to other rural regions and beyond.

Cross-regional networks of Living Labs have the potential to help local SMEs to broaden their range of activities across regional or national borders, with different requirements, legislation and regulation, thereby supporting lead market type initiatives.

ICT for Energy Efficiency

Living Labs have the potential to connect a wide range of innovative tools. They can support well-guided individual and group behavioural changes triggered by immediate sensory feedback showing the related actual savings in terms of money, energy, carbon footprint at individual and group levels, within and across regions and countries. Living Labs thereby contribute to empowering the users in their endeavours to efficiently use all kinds of energy. The Project "Digital Environment Home Energy Management System" (DEHEMS) started recently in the ICT domain "ICT for Sustainable Growth", using Living Labs methodology over 3 cycles to develop an innovative home-user tool for improving Energy Efficiency using ICT.

Living Labs have the potential to support the citizens as energy users in applying innovative ICT, in order to optimise energy consumption. Living Labs bring together a critical mass of users, thereby bridging the gap between the home-users, the technology providers, and the energy providers – for their own and for global benefit.

European Commission Activities

The Directorate General Information Society and Media (DG INFSO) of the European Commission is mobilising different types of instruments, supporting initiatives and actions related to Living Labs. Driven by the i2010 policy framework of DG INFSO, the promotion and support of user-driven open innovation methodologies is a horizontal activity cutting across the different Challenges under the ICT priority of the Co-operation Programme of the Seventh Framework Programme as well as the ICT Policy Support Programme of the Competitiveness and Innovation Programme (CIP).

The i2010 policy framework

By placing the user at the centre of the innovation lifecycle, the Living Labs concept is tightly linked to the second pillar "Strengthening innovation and investment in ICT research" of i2010, the EU policy framework for the information society and media. This policy is the guiding motivation for all activities on Living Labs in the DG INFSO.

An important aspect of the innovation strategy discussed during the i2010 mid-term review is the role played by consumers and end-users as a powerful source of innovation for companies engaging in user-driven open innovation. In particular, the review has addressed the role of the user in the light of the continuously changing landscape of information and communication technologies. As new services and applications are created and taken-up rapidly towards the mass-market scale, it is necessary to ensure that they meet the expectations of the consumers. The explosion of user created content is adding yet another dimension to the role of users in the information society. The Living Lab concept plays a crucial role in keeping the users continuously involved for as their expectations to be monitored and reflected into making better products and services.

> *The involvement of customers is one of the most significant sources of innovative ideas.*

Research Development Innovation Deployment

DG Information Society and Media activities

FP6/RTD
- LL related projects, 40M€: **C@R, Laboranova, Ecospace, CoSpace, WearIT@Work**
- Coordination Actions: CoreLabs, CLOCK

FP7/RTD
- Objective 1.6: Future internet experimental facility and experimentally-driven research ICT WP 2009/2010 (planned)
- Research Projects in ICT challenges using LL methodologies (planned)

CIP/PSP
- CO-LLABS CIP-PSP WP 2007
- CIP Pilots CIP-PSP WP 2009 (planned)

Other
- **Living Labs study**

European Network of Living Labs (ENOLL)

DG REGIO activities on "Regions for economic change"

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Competitiveness and Innovation Programme (CIP)

Under the ICT Policy Support Programme (PSP) of the Competitiveness and Innovation Programme (CIP), the project CO-LLABS, a Thematic Network on Living Labs, is preparing a potential CIP pilot structure, consisting of several cross-border multi-Living-Lab experiments. Each experiment would address a different domain and involve users at the early development stages. Special focus is suggested to be on the effective involvement of high-growth SMEs, including micro-entrepreneurs, as key users and providers. Across these experiments, best practices would be exchanged, and other synergies exploited. Project CO-LLABS is thereby paving the ground for **Living Labs pilot projects of cross-border multi Living Lab experiments which are called for under the ICT-PSP Work Programme 2009 of CIP.**

ICT Priority of the Co-operation Programme

Mainly under the Strategic Objective "Collaborative Working Environments" of the ICT theme under the Sixth Framework Programme, five Integrated Projects and three Co-ordination and Support Actions with a Community funding of over 40 M€ started in 2006. These projects are developing collaboration tools for co-operation in different kinds of partnerships. One of the major objectives cutting across this portfolio of projects is to apply, promote, pilot and demonstrate the methodology of Livings Labs in domains of particular importance for Europe.

In close collaboration, these projects have stimulated and supported the establishment of the European Network of Living Labs (ENoLL), which is exceeding the number of 100 members in 2008. ENoLL is organising its governance and co-ordination activities according to common cross-cutting interests and in specific interest areas shared by groups of members, such as health and inclusion, energy and environment, and other emerging key domains.

In order to bring the user in the research cycle, the **Work Programme for 2009-2010 of the ICT Priority of the FP7 Co-operation Programme,** encourages proposers under all ICT Challenges to apply advanced user-driven open innovation methodologies such as Living Labs for better discovering new and emerging behaviours and use patterns, as well as for assessing at an early stage the socio-economic implications of new technological solutions. In addition, in order to co-ordinate and exchange best practices of Living Lab type activities across the programme, the Commission considers calling for coordination and support actions for experience research and user-driven open innovation activities under the research objective in Challenge 1 on "Future Internet Experimental Facility and Experimentally-driven Research".

Other related activities

In addition, there are potential opportunities for the involvement of Living Labs in the **FP7 Capacities programme for Research Infrastructures** managed by DG Research, and in the **Interreg IVc** Programme managed by DG Regional Policy. Related to the latter case, Living Labs have demonstrated that they can be instrumental in promoting research, technological development and innovation in innovative regions. There are important links to Living Labs also in the **innovation policy activities** of DG Enterprise and Industry. Finally, a DG Information Society and Media **study on impacts and benefits** ensuing from Living Labs delivered their findings in 2008.
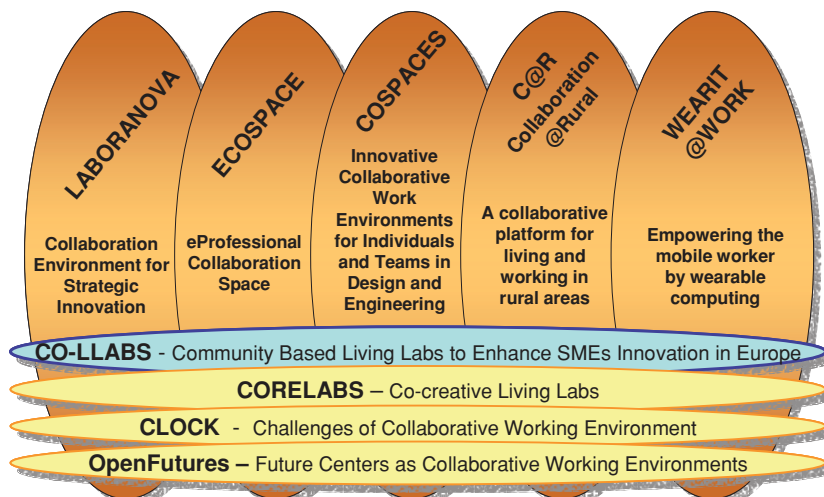
2 Major **Achievements** of **Living Lab** related **Projects**

As an introduction to the fact sheets of the individual projects, in this section the major achievements so far of the portfolio of research projects funded mainly under Strategic Objective "Collaborative Working Environments" of the ICT theme under Framework Programme 6 are summarised. The activities under the CIP-PSP theme "Sharing experience on ICT Initiatives for SMEs" project CO-LLABS complement the description focusing on innovation aspects.

Five Integrated Projects – Collaboration@Rural (C@R), CoSpaces, ECOSPACE, Laboranova and WearIT@Work – are developing collaboration tools for co-operation in different kinds of partnerships. Together with the three Co-ordination and Support Actions – CoreLabs, CLOCK, and OpenFutures – they apply, promote, pilot and demonstrate the methodology of Livings Labs in domains of particular importance for Europe.

All projects have strong industrial participation including some of the key players in the world, for example SAP, Microsoft, Philips, Siemens, Nokia, IBM, HP, Thales, ATOS Origin, Airbus, EADS, Fiat.

SME focus: All projects have a strong focus on SMEs both on the technology or service provider side and on the user side. The developed tools and services enable the partner SMEs to improve their services and products, to increase their action space beyond their region, and to establish strategic partnerships with other private or public organisations.

LABORANOVA — Collaboration Environment for Strategic Innovation

ECOSPACE — eProfessional Collaboration Space

COSPACES — Innovative Collaborative Work Environments for Individuals and Teams in Design and Engineering

C@R Collaboration @Rural — A collaborative platform for living and working in rural areas

WEARIT @WORK — Empowering the mobile worker by wearable computing

CO-LLABS - Community Based Living Labs to Enhance SMEs Innovation in Europe

CORELABS – Co-creative Living Labs

CLOCK - Challenges of Collaborative Working Environment

OpenFutures – Future Centers as Collaborative Working Environments

The European Network of Living Labs

The Living Labs movement started as a series of regional bottom-up initiatives throughout Europe. It was initially strong in the northern part of Europe which has strong traditions of usability and participation, innovation friendly environments, advanced IT infrastructure and high accessibility among SMEs and citizens. However, pilots and regional programmes have been set up in technically advanced areas all over Europe to develop and strengthen the ability of industry and organisations to co-operate with users and customers in order to produce competitive ICT-based services and products.

The European Network of Living Labs (ENoLL) was first launched by the Finnish Presidency in 2006 with essential support from the project CoreLabs, complemented by CLOCK, Open Futures and the Integrated Projects. The network had initially 19 members. It was widened by the second wave launch by the Portuguese Presidency in 2007. The CO-LLABS Thematic Network under CIP-PSP has been central in expanding the network in a third wave launch by the Slovenian and French Presidencies.

> In 2008, the European Network of Living Labs ENoLL has surpassed the mark of 100 European Living Labs. Growing political interest on the subject demonstrates the strategic importance of the Living Labs concept as a powerful mechanism to strengthen European "innovativeness".

The "overarching" objective of the European Network of Living Labs (ENoLL) is to contribute to the creation of a future European innovation system: ENoLL is a community of Living Labs with a sustainable strategy for enhancing systemic innovation. All ENoLL members offer innovation services, which are unique in one way or another. There are for example regional Living Labs with open innovation systems that involve citizens for improving local and regional services, there are corporate Living Labs for service and product development, and there are rural Living Labs for regional and rural development. As an umbrella, the ENoLL network facilitates the cooperation and the exploitation of synergies between the members or groups thereof:

- Offering networking possibilities
- Deriving and sharing benchmarking practices
- Sharing best practices
- Provisioning of services and tools
- Accessing different user communities

Pilots and proof-of-concept demonstrations for Living Labs methodologies

The research projects of the project portfolio have individually developed unique pilots and proof-of concept demonstrations for Living Labs methodologies in their respective domains. Although representing different sectors and domains, the partner Living Labs play a central role in each project and are fundamental for reaching their respective objectives. The issues addressed in this pool of showcases have a broad span: from wearable computing technologies to collaboration technologies for rapid prototyping; from particularly supporting rural areas to supporting densely populated urban areas; from industrial users to the citizen as a consumer; from continuous piloting to validation. The pool of showcases is used by ENoLL to promote the Living Lab concept.
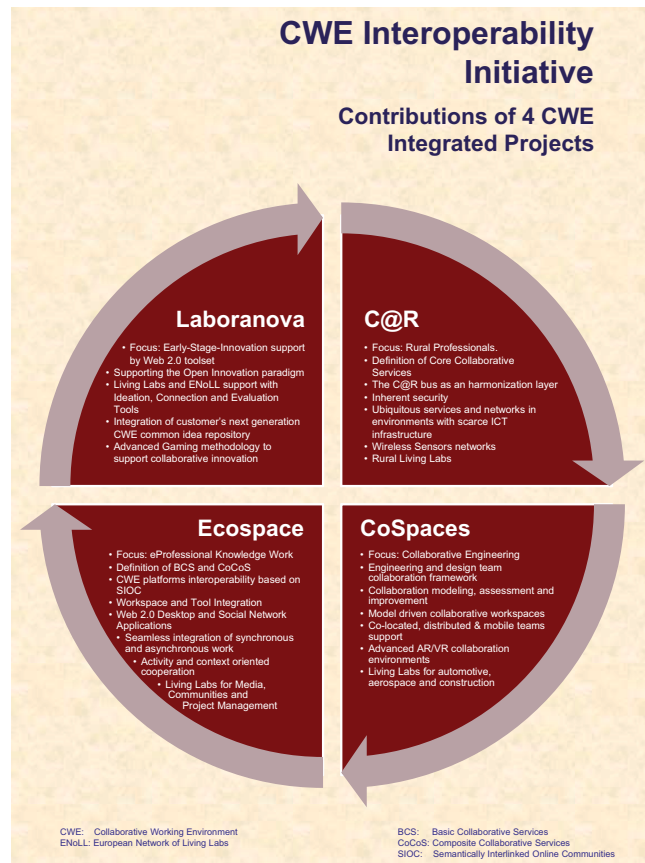
> *A pool of showcases for Living Lab relevant technologies, methodologies and tools is created in several Integrated Projects. They are used by ENoLL to promote user-driven open innovation methodologies.*

- **C@R:** The project has a close focus on user needs for software and business services development. The project includes socio-economic aspects of rural development, such as employment, out-migration, entrepreneurship, traditional activities and new rural settlements. C@R has identified specific schemes for knowledge-based occupations and innovations in traditional (rural) activities, as well as facilitated entrepreneurship in rural areas by collaborative-based SME incubators.

- **CoSpaces:** The CoSpaces Living Labs approach is the basis for the project's research work and can be viewed as a research and development approach uniting industry users and CoSpaces' RTD partners in the co-design and co-development of CoSpaces technologies. The CoSpaces Living Lab defines collaborative functionality requirements and tests and validates these when integrated within a CoSpaces workplace. When tested and validated, these functionalities will be delivered and classified within the CoSpaces toolbox. The toolbox will house all CoSpaces collaborative technologies and functionalities and will be categorised and classified to enable the composition of commercial offerings beyond the project on the basis of industry needs

- **WearIT@Work:** The project uses Living Labs methodologies to integrate mobile professionals in their different work environments. In their partner Living Labs, prototypes are designed and evaluated in close collaboration with the end users. Essential activities are workplace studies and design workshops at the end users' sites. Based on the know-how brought by the partners to the project, e.g. the belt computer QBIC, and results of the first and second innovation cycle, e.g. an interaction wristband and glove, a technology repository has been set-up on top of a collection of demonstrators. Using these methodologies, a jacket with integrated wearable technologies has been developed and is an example of a product ready to be marketed.

Interoperability of Collaborative Architectures

Living Labs related projects Laboranova , C@R, CoSpaces and ECOSPACE have identified interoperability between different collaboration environments as essential for seamless collaborative working. They have demonstrated the interoperability of different collaboration environments developed in their respective Integrated Projects.

Several integrated projects have developed an interoperability framework for collaboration technologies.

CWE Interoperability Initiative

Contributions of 4 CWE Integrated Projects

Laboranova
- Focus: Early-Stage-Innovation support by Web 2.0 toolset
- Supporting the Open Innovation paradigm
- Living Labs and ENoLL support with Ideation, Connection and Evaluation Tools
- Integration of customer's next generation CWE common idea repository
- Advanced Gaming methodology to support collaborative innovation

C@R
- Focus: Rural Professionals.
- Definition of Core Collaborative Services
- The C@R bus as an harmonization layer
- Inherent security
- Ubiquitous services and networks in environments with scarce ICT infrastructure
- Wireless Sensors networks
- Rural Living Labs

Ecospace
- Focus: eProfessional Knowledge Work
- Definition of BCS and CoCoS
- CWE platforms interoperability based on SIOC
- Workspace and Tool Integration
- Web 2.0 Desktop and Social Network Applications
- Seamless integration of synchronous and asynchronous work
- Activity and context oriented cooperation
- Living Labs for Media, Communities and Project Management

CoSpaces
- Focus: Collaborative Engineering
- Engineering and design team collaboration framework
- Collaboration modeling, assessment and improvement
- Model driven collaborative workspaces
- Co-located, distributed & mobile teams support
- Advanced AR/VR collaboration environments
- Living Labs for automotive, aerospace and construction

CWE: Collaborative Working Environment
ENoLL: European Network of Living Labs

BCS: Basic Collaborative Services
CoCoS: Composite Collaborative Services
SIOC: Semantically Interlinked Online Communities

Tools for highly innovative environments

Several integrated projects are working on the creation of next generation Collaborative Tools changing existing technological and social infrastructures for collaboration to support knowledge workers and e-Professionals, for example by making use of advanced game methodologies.

The input to innovation processes highly impacts the quality of the output. The Laboranova project supports early stage ideation and 'stage gate processes' between innovation stages in highly innovative environments like Living Labs that increase the quality and quantity of successful innovation. Laboranova has offered the other Integrated Projects and other Living Labs the opportunity to use selected Laboranova tools and to engage in their development.

The integrated projects have developed a significant number of tools for increasing the quality and quantity of successful innovation.

3CIP Thematic Network

COMMUNITY BASED LIVING LABS TO ENCHANCE SMES INNOVATION IN EUROPE

CO-LLABS

Scope

The over-all objective of the CO-LLABS Thematic Network is to achieve a European-wide adoption of ICT-based Living Lab services and practices to allow SMEs to improve their innovation capabilities and processes and become part of "*open innovation*" environments. Thus, CO-LLABS addresses Work Programme Objective 4.1b "t*o improve the capacity of businesses and in particular SMEs to benefit from ICT-based innovations in their products and services*".

To that end the CO-LLABS Thematic Network brings together a selection of Europe's most advanced Living Labs on the one hand and regional SME-innovation oriented organisations on the other to exchange practices of Living Lab support services, and identify and develop specific pilots in domains such as **e-health, energy, media, e-business** and **e-inclusion.** The work is grounded in thorough understanding of current Living Labs practices and experiences and strengthened by creating better insight in successful business models of future SME-oriented Living Labs. The CO-LLABS Thematic Network supports interaction with policy makers at regional, national and European level to establish consensus on the Living Labs approach as a cornerstone of European innovation policies, in particular at the regional and cross-regional level.

The underlying motivation is that Living Labs provide services to SMEs that would otherwise not be available to them. Focus is on how SMEs and their business partners can be involved in Living Labs in the best way in order to collaborate in open innovation, and on sharing experience among Living Labs initiatives and beyond as regards SME involvement in co-creation of Living Labs practices.

Contract number
ICT PSP/2007/1 – 224797

Type of project
Competitiveness and Innovation
Framework Programme

ICT Policy Support Programme

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Project website
http://www.ami-communities.eu/
wiki/CO-LLABS

**Community contribution
to the project**
483,000 EUR

Project start date
1 Apr 2008
(duration: 28 months)

Duration
28 months

Technical and innovation approach

The CO-LLABS Thematic Network acts as knowledge network and equally as innovation development network. Its over-all approach is to form a core of advanced **European Living Labs, Research Organisations** and **Innovation Agencies,** that have gained already strong experience in SME-oriented innovation, are ready to take next steps to introduce and implement the Living Labs approach, and also ready to transfer and share their experiences regarding the use of Living Labs services for new pilots development. To this core, a large set of other Living Labs (in earlier stages of development) will be added through our collaboration with the **European Network of Living Labs (ENoLL)** activity and our collaboration established with European innovation initiatives at regional level to support SMEs in ICT-based innovation.

The Thematic Network will focus on experience sharing in terms of user acceptance of innovative solutions provided by Living Labs, experience research centres and other similar initiatives. The concept of user experience is central, and Living Labs are considered as the key instrument to implement open innovation business models tailored to SME needs and creating user experience. In doing so, the Thematic Network will actively pursue the networking character and network effects of Living Labs Communities by sharing experiences and developing common approaches and practices.

Identifying and assessing best practices is in fact one of the major objectives of the CO-LLABS project. A specific activity line has been dedicated to Best practices focusing on how Living Labs and Experience Research services are supporting SMEs innovation. Other foreseen activities and outcomes in the CO-LLABS Thematic Network include the following:
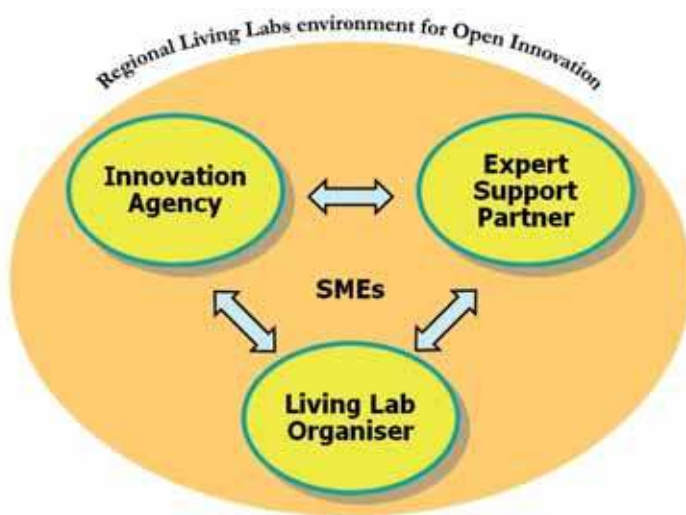
- Pilots development of SME-oriented Living Lab initiatives in domains of e-business, e-inclusion, e-health and others, and stimulating the collaboration among Living Labs, innovation agencies and business stakeholders to develop these pilots

- Living Labs business models and governance structures development for networks of Living Labs supporting SME innovation

- Network mobilisation, exploitation and dissemination to create an active community stimulating SMEs for open innovation and exchange experience in how to use the Living Labs concept for SME innovation

- Policy initiative development to stimulate Living Labs, Innovation Agencies and Research Organisations to work with SMEs on open innovation

- Elaboration of a joint action plan to establish self-sustainable pilots and ensure viability of the CO-LLABS network after its formal project duration.

Target users and benefits

Expected impacts of the CO-LLABS project can be identified at the level of individual Living Labs and at the level of the Network of Living Labs operating in a co-ordinated and synergic fashion. Major expected impacts of the Thematic Network of Living Labs are the following:

- The CO-LLABS Thematic Network results will enable public authorities and major stakeholders in the EU to implement Living Labs systems learning from Best practices, thereby providing an innovation platform to European Industry, and generating economy of scale for Living Lab services

- Improved competitiveness of European businesses and particular SMEs by providing them the tools to access Living Labs innovation services at a regional and European scale

- Further development of the capabilities of Living Labs to create markets for innovative ICT solutions and services for supporting processes of Open Innovation

- Identification of large scale pilots demonstrating the Living Lab approach and the benefits of synergy and scalability offered by the European Network of Living Labs for SME innovation.

CO-LLABS addresses the needs of SMEs through the formation of regional clusters of Living Labs, SME-oriented Innovation Agencies and research organisations. The SME-oriented Innovation Agencies will establish – and be responsible for – the relation with SMEs in their region. CO-LLABS does not work directly with individual SMEs, but Innovation Agencies and also Living Labs will do so. COLLABS will not itself establish Living Labs, it investigates how local and regional partners can work together in order to improve the regional innov-tion system and support SMEs. In doing so, SMEs will benefit from the project in multiple ways, in particular:

- Pilots will be developed to initiate and validate open inno- vation activities and SMEs can participate to the develop- ment of these pilots. Pilots will demonstrate strategies on how SMEs can participate in Living Labs

- Policy initiatives will be developed to stimulate Living Labs, Innovation Agencies and Research Organizations to work together with SMEs on open innovation

- Business models will be explored governing collaboration between Living Labs, SMEs and research organizations. This will benefit the provision of services to SMEs by Liv- ing Labs in an indirect way

The significant Living Labs movement which has been growing in the last years since the launch of the European Network of Living Labs (ENoLL) by the Finnish Presidency, on November 20, 2006, provides a favourable context for achieving the expected impacts. ENoLL is growing now with the Third Wave to add new members and sources of co-creative innovation in addition to the 51 Living Labs which have already joined the European Network.

The momentum is significant and the CO-LLABS network results can sustain the expectations by identifying and preparing for large scale pilots demonstrating the Living Lab approach and the synergy, scalability offered by the European network. Pilot cases have a strong potential of actually involving large number of users and also some distinct potential for SMEs, as co-creators, providers of innovative solutions and as main beneficiaries of the innovation.

Project partners

Organisation name	Country
Associazione ESoCE Net *(co-ordinator)*	IT
BIC Lazio S.p.A.	IT
Bremer Institut für Produktion und Logistik GmbH	DE
Mobile Technology Research Center, University of Bremen	DE
Fundació i2CAT, Internet i Innovació Digital a Catalunya	ES
Universitat Ramon Llull Fundació Privada	ES
Luleaa Tekniska Universitet, CDT	SE
Fachhochschule Vorarlberg GmbH	AT
Wirtschafts-Standort Vorarlberg GmbH	AT
Stichting Living Lab	NL
Stichting Center for Technology and Innovation Management	NL
Interdisciplinair Instituut voor Breedbandtechnologie, VZW	BE
Helsingin Kauppakorkeakoulu, CKIR	FI
Art and Design City Helsinki Ltd.	FI
Univerza v Mariboru	SI
INTELI – Inteligência em Inovação	PT
Alfamicro – Sistema de Computadores, Lda	PT
University of Szeged	HU
Wirelessinfo	CZ
Silicon Sentier	FR

Support Partners: Frascati Living Lab, ESRIN-ESA, BIG Bremen, CIDEM, Botnia Living Lab, VINNOVA, Living Lab Vorarlberg, Municipality of Leiden, IBBT iLAB.O, SITRA Helsinki City, Forum Virium, eLiving Lab, ICT Technology Network, RENER Living Lab, Rural Living Lab, Wirelessinfo Living Lab have contributed to the CO-LLABS proposal and expressed their support for the project.

Join the Support Partners' team: Copenhagen Living Lab, Lahti Living Lab, Laurea LL Network, LEVIER, VDC, Creative Knowledge Centre Living Lab, ITL, TLL Sicily, ECO LivingLab, Living Labs Minho, Slovenian Automotive, Zaragoza Living Lab, Manchester EastServe, Digital Lifestyles Centre, TRAIL, the Greek Centre for Renewable Energy Sources and other organisations have also recently expressed their support in favor of the CO-LLABS initiative.

You too can support CO-LLABS: the Letter of Intent is available at the AMI@Work on-line Communities web-site (www.ami-communities.eu)
http://www.ami-communities.eu/bscw/bscw.cgi/d360563/CO-LLABS%20supporting%20 letter%20of%20intent.doc

4 FP6 Coordination and Support Actions

CoreLabs

Scope

The objective of the Coordination Action project CoreLabs is to co-ordinate activities, in order to establish co-creative Living Labs, as the foundation of a common European Innovation System.

The activities to be coordinated towards that goal are:

- The harmonisation of existing and emerging Living Labs;

- Living Labs related current and future research initiatives (primarily Integrated Projects);

- Regional, national and IST RTD programmes;

- Living Labs related activities of stakeholder organisations (public, academic, civic, industry, SMEs etc).

This includes the co-ordinated synergistic development, harmonisation and networking of regional Living Labs initiatives, research projects, proposing a Living Labs certificate, the establishment of a methods-and-tools framework and the creation of a common European Road-map and policies on relevant research topics.

The concept of Living Labs is needed the mass deployment potential of ICT enabled collaborative environments solutions that stem from the results of research projects. Living Labs represent regional innovation environments, which focus on user communities that are embedded in "real life". Additionally to the technological aspects, Living Labs allow for an insight into the human dimension of technology, which is of paramount importance for the successful societal deployment of new technologies. As a consequence the Living Lab approach is con-sidered to be the natural candidate for the implementation of a large scale evaluation, demonstration and validation of activities, which are related to ICT RTD.

CORELABS

Type of project
Coordination Action

Contract number
FP6 – 035065

Project coordinator
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Project website
www.corelabs.eu

**Community contribution
to the project**
1,300,000 Euro

Project start date
1 March 2006

Duration
24 months

Project activities

By contributing to research excellence on an international scale, the results of the CoreLabs project will lead to the development of a new, more user-centric collaborative technology in Europe, so as to increase creativity and productivity in different industry sectors.

The following impacts can be expected:

- **Improving the existing telecommunications business.** It still needs to evolve as it faces more and more competition from other parts of the world.

- **Developing new business segments of IST.** It can develop components, systems, applications and also in the area of services. System integrators, application developers etc. can integrate this technology into their offerings thereby creating new value business opportunities.

- **Developing traditional business.** Manufacturers of machines, systems for maintenance etc. can integrate new technology into their systems by becoming more flexible, responsive, innovative and competitive.

By significantly contributing to the establishment of a European network of Living Labs (ENoLL), the project will generate a valuable impact for all innovation aspects, which were stated in the Strategic Objective 2.5.9. of the FP6 Work Programme and the i2010 Strategic Framework.

First of all, by creating a coherent methodology for the creation and evaluation of new services, products and applications in collaborative, multi-contextual, real-world environments, CoreLabs will lay the foundation for a solid, comparable evaluation of these services and products.

Employing the collaborative environments to connect all actors, from scientists to industry to from the ordinary citizen on the streets or at his home, the innovation process will be enhanced with a far wider and faster exchange of ideas, people and resources. The European network of Living Labs simultaneously benefits the concept of a regional Europe, by involving actors from various cultural, linguistic and regional backgrounds into the co-creation and evaluation process.

To summarise, the expected impacts described above can be characterised as follows:

- Vast improvement in research for new services, products and applications

- Greatly reduced international development, deployment, evaluation and market validation , due to a dedicated, collaborative Living Labs network

- Vast improvement in user acceptance, usability and usefulness etc of new services, products and applications, by involving citizens in evaluation on a European scale

- Greatly improved competitiveness for European SMEs due to the reduction of costs, lowering the market-entry barrier for new and innovative products, services and applications at international level.

Benefits and results

CoreLabs was successfully finished on 29 February 2008, with the following major achievements, based on CoreLabs coordination and facilitation. It surpassed the initially foreseen commitments, investigations and reports, by the CoreLabs Coordination Action:

* Clear top level commitment from Finnish, Portuguese and Slovenian presidencies on Living Labs (User-driven Open Innovation in Real-life environments), as a key element in a new European innovation system.

* The two-wave establishment of the European Network of Living Labs (see: www.open-livinglabs.eu), including 51 member Living Labs from 19 countries.

* Establishment of the Living Labs Portfolio Leadership Group with 24 (later increased to 30) delegates from industry, universities/institutes and public bodies.

* Catalysation of national and cross-national programme initiatives

* Spin-off company: Invivio (see: www.invivio. com)

Long-term impact of the CoreLabs project is that its results will help Europe to boost its creativity and productivity. Collaboration can increase the overall efficiency of the organisation and its deployment more 'user friendly'.

Future collaborative environments will significantly influence the way in which European citizens collaborate at work and, the way they live.

The societal implications of the envisaged ICT-enabled collaborative solutions need to take into account their development phases:

- the end users' needs (functional, ease-of-access and participation, inclusiveness etc.);

- the impacts of the underpinned new working and social interaction processes of the individuals' life;

- the impact of the new collaborative habits on the society as a whole.

In this context, the Living Lab approach presents itself as a collaborative research methodology for developing ICT-enabled solutions, which take into account the non-technical aspects, and leverage the creative interaction of technical developers and non–technical experts, for a breakthrough innovation.

It is worth noting that "co-creative" Living Labs are collaborative environments and therefore the relevant professionals will also belong to the emerging community of Living Lab researchers and methodology developers.

Project partners

Organisation name	Country
Lulea Tekniska Universitet	SV
Promei Modernizacios es Euroatlanti Integracios Projekt Iroda Kozhasznu Tarsasag	HU
Fachhochschule Vorarlberg GMBH	AT
BIG Bremer Innovations-Agentur GMBH	DE
Helsingin Kauppakorkeakoulu	FI
Verein zur Foerderung der Wissenschaftlichen Forschung in der Freien Hansestadt Bremen E.V.	DE
ATOS ORIGIN Sociedad Anonima Española	ES
Stichting Telematica Instituut	NL
Nokia OYJ	FI
International Business Machines Belgium	BE
ESOCE Net (European Society of Concurrent Engineering)	IT
Waterford Institute of Technology	IE

CLOCK

Scope

CLOCK is a Coordination Action focussing on Living Labs as a user centric design and development methodology. Three lines of action are being followed:

1) **Technology** – While CLOCK, as a Coordination Action, is not a project where hardcore technological research takes place, CLOCK provides support and coordination to other projects and groups doing this research, notably the Living Labs related Integrated Projects, the Open Collaborative Architectures (OCA) Group and the European Network of Living Labs (ENoLL). As part of its mandate CLOCK can make sure that the voice and needs of Living Labs are taken into account.

2) **Policy** – New information and communication technologies have unleashed new empowering opportunities. However, without policy guidance through EU Presidencies and the Commission, higher European innovation capability and competitiveness cannot materialize to its full potential. CLOCK can play an important role in ensuring that Living Labs form a part of the policy agenda during Portuguese and Slovenian presidencies. CLOCK can as well play a role in positioning Living Labs for example on FP7, i2010, and regional policy agendas.

3) **Industry** – Without the active participation and support of industry Living Labs cannot flourish. CLOCK is working to promote the concept of Living Labs amongst European industry.

Type of project
Coordination action

Contract number
FP6 – 035296

Project coordinator
ATOS ORIGIN Sociedad Anónima Española

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Project website
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**Community contribution
to the project**
840,000 Euro

Project start date
16 March 2006

Duration
21* months

Project activities

There are important developments in the ICT environment that stem not only from new technologies but from a new understanding of the open collaborative architectures (OCA) which enable new forms of horizontal collaboration in diverse areas where user innovation creates value through various ad-hoc and ambient networks for services.

The development of web 2.0 as an user centric innovation platform shows that although the technology has almost remained the same for internet access (with some minor incremental updates), the attitude of the user in relation to the medium has drastically changed. This change led from a consumer oriented approach to a co-creative approach up to currently established co-creative collaborative networking patterns.

Various vertical business sectors have expressed strong interest to create Open Services Architectures (OSA) or (SOA) to develop Service Integration with open standard architecture principles to create convergence in service sector and provide process efficiencies. This European level convergence would enable seamless interoperability not only between industries but also between public and private sectors which constitute biggest share of service creation in Europe (media, health sector, transportation, education and training, construction and housing, etc.).

Special attention needs to be paid for these cross technology and cross business collaborative horizontal research needs that are well demonstrated. The Commission is supporting these needs of the Living Lab European initiatives with five current Integrated Projects, CoreLabs and CLOCK Coordination Actions and OpenFutures Specific Support Action. Living Labs and these projects work together in the Living Labs Portfolio Leadership Group and the OCA Working Group.

Benefits and results

Incorporating the user to the centre of the development process is vital to ensure that the SOA approach is successful in meeting the needs of people and thus fulfilling its business potential. For this reason fostering the creation of Living Labs and supporting them once created is so important. The CLOCK project, together with its sister Coordination Action CoreLabs, is playing a central role in advancing the Living Labs agenda and helping to create a climate in which Living Labs can flourish. CLOCK has been instrumental in creating the climate in which that the European Network of Living Labs can continue to do this important work in the future and thus ensuring that Living Labs fulfil their potential to really put the user at the centre of the development process.

Project partners

Organisation name	Country
ATOS ORIGIN Sociedad Anónima Española	ES
Lulea Tekniska Universitet	SV
Nokia Oyj	FI
Universitaet Bremen	DE
European Space Agency	FR
Alfamicro	PT
University of Maribor	SL
Helsinki School of Economics (CKIR)	FI

OpenFutures

Scope

Future Centers (FCs) are facilitated user-centred open innovation and collaborative environments which help organisations prepare for the future in a proactive, collaborative and systematic way. They create and apply knowledge, develop practical innovations, bring citizens in closer contact with government, and connect end-users with industry. They are used by government organisations to develop and test citizen-centred, future-proof policy options with broad acceptance by stakeholders. They help businesses to increase customer-driven, user-centred innovation and the quality of new products and services.

What do Future Centers and other future oriented open innovation environments do?

- Identify long term opportunities and threats;
- Create images of the futures – and catalyze their realization;
- Prototype new ways of work;
- Enhance internal innovation;
- Encourage new thinking, unexpected ideas, discontinuity;
- Challenge conventional thinking, accepted strategy, and basic assumptions;
- Explore and work with multiple perspectives.

Project activities

OpenFutures project explores Future Centers and other future-oriented open innovation environments from four perspectives:

- **The Organisational Perspective** – how do organisations establish, run and improve FCs? How can they integrate FC concepts into organisation strategy and structure? How does an organisation create value through Future Centers?

- **The Methodological Perspective** – which facilitation and thinking tools can be used in future-oriented open innovation and collaborative environments to enhance collaboration, future orientation, out-of-the-box thinking and "from-ideas-to-action" processes?

- **The Physical Perspective** – how does the physical design of a Future Center impact innovation and collaboration capabilities?

- **The Technological Perspective** – how can advanced information technologies assist in enhancing the impact of Future Centers (e.g. through creating and linking virtual FCs)?

OpenFutures conceptualises and packages the learning from some 30 FCs and other future – oriented innovation environments into an **open source "Operating System".** This is a practical guide and resource for working with FC concepts, intended for people working in existing centers, and for people who want to introduce a more systematic user-centred future orientation to their organisations through FC concepts. The operating system includes guidelines, methods, tools, best practices, "virtual tours" to existing future centers.

Benefits and results

Target group 1: organizations (public or private, from any domain) that establish a future oriented working environment, as part of their renewal and innovation strategy.

Target group 2: organizations charged with upgrading one of their existing working environments and add "a touch of future orientation" to it.

- Benefits: practical guidelines, best practices, tips and methods to support the planning, creation and operation of future centers and other future oriented CWEs.

Target group 3: the CWE and Living Labs family of projects.

- Benefits: learning from Future Centres how to add systematic future orientation to any type of open innovation environment or living lab.

Target group 4: academics interested in understanding the dynamics of future oriented working environments.

- Benefits: insights, based on real world cases, on the four perspectives of future oriented working environments.

Project partners

Organisation name	Country
Camera di Commercio Industria Artigianato e Agricoltura di Firenze	IT
Educore B.V.	NL
Innovatika Spolka z Ograniczona Odpowiedzialnoscia	PL
Ministerie van Economische Zaken	NL
Innovation Lab A/S	DK
IC Community AB	SV
The Institute for Democratic Education	IL
Delphi Technology and Consulting Limited	UK
Oekonomi- OG Erhvervsministeriets	DK
RON DVIR JAKOB – Innovation Ecology	IL
Edna Pasher Phd & Associates Management Consultant Ltd	IL
Instituto Nacional de Engenharia, Tecnologia e Inovacao	PT

5 FP6 Integrated Projects

C@R

Scope

"Rural" in Europe counts for 80% of European area and 22% of European inhabitants.

Rural development is not only about a competitive European agriculture, but also about meeting the expectations of citizens in rural areas, aiming to a deeper integration into today's society and promoting economic development.

There are however many barriers that hinder rural development, and the more severe ones include the lack of telecom infrastructures, hard environmental conditions, usability restrictions, lack of ICT literacy, difficulties on the introduction of new work methods and technology acceptance, long implementation times and the lack of common frameworks and opportunities for collaboration. Barriers are also related to heterogeneity of policies, cultural aspects, and working methodologies.

C@R's objective is to remove these barriers in order to improve rural development in an effective and harmonised way. **It aims to enable people in remote and rural Europe to fully participate in the knowledge society as citizens and as professionals.**

Technical and innovation approach

In line with the objective as stated above, C@R proposes a technological response and to adapt the *Living Labs* methodology as a way to involve rural constituency in RTD activities addressing collaborative technologies.

The following activities have been identified as part of C@R's approach:

- To provide a collaborative platform for rural communities, defined in cooperation with other Collaborative Working Environment communities.

Type of project
Integrated project

Contract number
FP6 – 034921

Project coordinator
Empresa de Transformación Agraria S.A, (TRAGSA)

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Project website
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**EC contribution
to the project**
8,649,900 Euro

Project start date
1 September 2006

Duration
36 months

- To demonstrate the use of the same platform integrating various tools for various rural user communities.

- To promote the user centric Open Collaborative Architecture (OCA) in the industrial, new business opportunity and emerging rural sectors, demonstrating to develop a few specialised examples of **Rural Living** Labs based on a common methodology and assessing benefits of results.

- To involve policy makers to analyse how to best support innovation and rural development addressing (EU) policies.

The C@R technical approach considers 3 layers:

RLL – Rural Living Labs, the layer that introduces RLLs as innovative research instruments for sensing, prototyping, testing, piloting, validating and refining complex solutions in multiple and evolving real life contexts involving rural users.

SCT – Software Collaborative Tools, the upper-layer C@R Service Architecture, that hosts 'more complete' services, often already customised to meet specific RLL user requirements; these services are based on orchestration of more elementary (core) services hosted by the CCS layer.

CCS – Collaborative Core Services, that hosts the base services and resources (networks, sensors, devices, software modules, localization sources, etc).

The adopted RLL user-oriented methodology and development approach aim to meet the highly specific but as well dynamic rural users' expectations and requirements. C@R's architecture then will be highly customizable to adopt to 'changing' and new requirements over time, an approach that permits C@R to substantially contribute to the definition of a user centric Open Collaborative Architecture (OCA). Furthermore, C@R will deepen on the evaluation of collaborative technologies in the rural economic and social backbones proposing a structured methodology to assess the impact of the technologies developed on the indicators of rural developments and supporting policy responses at national, European, and global levels.

Benefits and Results

C@R's target users included all rural inhabitants both @work and @life, trying to significantly enhance their quality of life and to revalorise rural settings.

C@R's RLLs have a specific focus on users in incubation processes, in open communities (examples include hiking, emergency, etc), eGovernance and fishery.

The main benefits of C@R can be expressed in terms of:

- *Impact on socio-economic aspects in rural development* related to employment, out migration, entrepreneurship, traditional activities and new rural settlements. Specific examples regard creation of emergent knowledge-based occupations and innovations in traditional (rural) activities, the facilitation of entrepreneurship in rural areas by collaborative-based SME incubators, increased competitiveness in the fishery sector, and the creation of conditions for sustainable development

of rural economies based on traditional activities. This development aims to attract new populations and retain young people, incrementing their ability to communicate and cooperate with each other and with external environments.

- *Policy development (strategic) impact* – C@R involves and tries to influence European policy makers across a wide range of policy domains to ensure C@R will bring important benefits throughout Europe's economy and society. We have already attracted attention to the methodology and the development related to our Living Labs, influencing policy decision making process and establishing robust PPP related to our Living Labs.

- *RTD activities impact: advance the state of the art and standards* – C@R is strategically focused on current and emerging standards and aims to influence these to best support collaboration in rural areas. E.g., C@R has lead the Open Collaborative Architecture (OCA) established across the IPs focused on collaboration at work; it has linked with other research activities and networked with Industry-driven European Technology Platforms initiatives.

The following provides a high-level overview of the seven C@R Rural Living Labs, all carefully selected and each one with expected high impact on rural development.

The **Soria** Living Lab	It focuses on technical support and services to entrepreneurs in Soria for promotion of business activities. Emphasis is on promotion of the tourist sector, of learning activities and of mycological resources.
The **Turku Archipelago** Living Lab	It focuses on municipal e-activities and the outsourcing industry which creates new businesses and jobs by leveraging the advanced telco infrastructure in the region.
The **Frascati** Living Lab	It supports the innovation and start-up of new enterprises and the participation of SMEs in the region and experiment new innovative (customizable) services in various sectors.
The **Sekhukhune** Living Lab	It introduces specific services through Infopreneurs™ which are service provider/ agents for rural small and micro enterprises.
The **Hungary** Living Lab	It focuses on innovative open rural communities and will experiment services and demonstrate benefits of setting up partnerships in vibrant and productive partnerships between the various agriculture sectors.
The **Czech** Living Lab	It deals with e-governance. It is concerned with where people live and work, the optimal vs. actual location of social and economic activity, and how resources are to be exploited to achieve socio-economic benefits.
The **Cudillero** Living Lab	It experiments applications based on collaborative technologies to improve processes in fishing arts characterised for being developed in small vessels and within distances to the shore that are less than 40 miles.

Project partners

Organisation name	Country
TRAGSA Empresa de Transformación Agraria S. A.	ES
European Space Agency	IT
Telefónica Investigación y Desarrollo	ES
SAP AG	DE
Helsinki School of Economics	FI
ATOS ORIGIN SAE	ES
TRAGSATEC Empresa de Tecnologías y Servicios Agrarios S. A.	ES
Philips Semiconductors Belgium N.V.	BE
Nokia	FI
Graz University of Technology	AT
Fraunhofer Institute for Applied Information Technology FIT	GE
Fraunhofer Institute for Factory Operation und Automation (IFF)	GE
Food and Agriculture Organisation of the United Nations (FAO)	IT
ArsLogica S.p.A.	IT
Zenon S.A, Robotics and Informatics	GR
Beijing Software Enterprise Advisory Center	CN
WirelessInfo	CZ

Universidad Politécnica de Madrid	ES
European Federation for Information Technology in Agriculture, Food and the Environment	IT
CityPassenger	FR
Gilat Satellite Networks Ltd.	IL
Loquendo S.p.A.	IT
Universidad del País Vasco	ES
GeoSpatial Partners s.r.l.	IT
University of Szeged	HU
University of Adama Mickiewicza	PL
Telefonica Pesquisa e Desenvolvimento	BR
Region Åboland r.f.	FI
University of Maribor	SL

CoSpaces

Scope

Engineering sectors in Europe are under global competitive pressure to reduce the lead-time for new products, to improve their quality, as well as their customer and market responsiveness. At the same time, the global marketplace is also offering European manufacturers new opportunities for expanding their businesses particularly in emerging countries. Many national governments from emerging countries are willing to invest or provide concessions to attract large manufacturing companies on the condition that genuine partnerships and plans for establishing local design and manufacturing operations are in place. This is causing the distribution and migration of engineering design and production activities throughout the world, in order to optimise the logistic and supply chain, and to differentiate products according to the needs and regulations of particular markets.

These distributed enterprises must embrace Concurrent Engineering principles during product life cycles to further reduce lead-time and improve quality. Concurrent Engineering practices involve stronger relationships and communication between extended enterprise partners, the use of digital mock-ups as a central repository for supporting concurrent activities, handling of large quantities of simulation data, working with data that is not fully validated, and reducing constraints related to communication between distant sites, amongst many other requirements. To support global operations, engineering industrials have an increasing need for developing and deploying new collaborative ways of working and extended technological support for advanced workspaces. Innovative deployment of collaborative workspace technology has the potential for offering an environment for distributed teams to be more flexible allowing the workers to work from anywhere and at anytime.

Type of project
Integrated project

Contract number
P6 – 034245

Project coordinator
The Open Group

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Project website
www.cospaces.org

**Community contribution
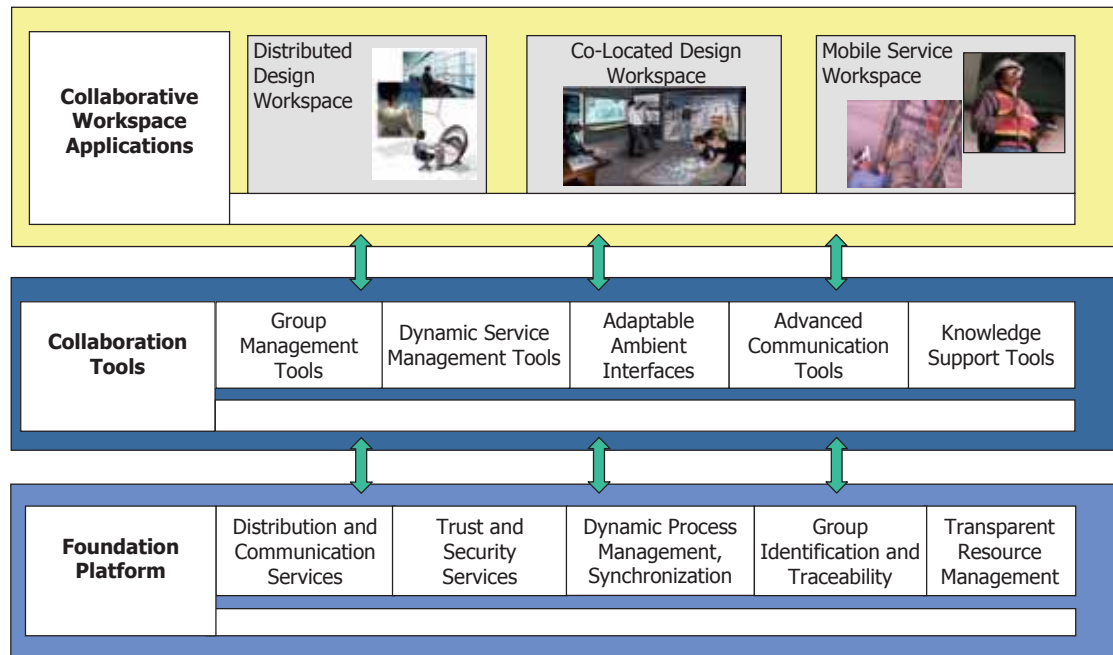to the project**
8,000,000 Euro

Project start date
1 May 2006

Duration
42 months

The overall objective of the CoSpaces project is to develop organisational models and distributed technologies that **support innovative collaborative workspaces** for individuals and project teams within distributed manufacturing enterprises. It will enable effective partnerships to collaborate, be creative, improve productivity, reduce the length of design cycles and take a holistic approach to implementing product phases. The project aims to achieve this through enhanced human communication, innovative visualisation, knowledge support and natural interaction. The CoSpaces project will validate these

to be easily adapted to suit the needs of specific users and their particular context.

Human factors experts will analyse current collaborative practices so as to understand current and emerging organisational and technological systems, and how worker-centric and team-centric collaboration can be enhanced. This work will explore the underpinning collaboration models which are necessary for developing and deploying new collaborative workspace technology. Within these models, the project will seek to understand problem solving, as

Collaborative Workspace Applications	Distributed Design Workspace	Co-Located Design Workspace	Mobile Service Workspace

Collaboration Tools	Group Management Tools	Dynamic Service Management Tools	Adaptable Ambient Interfaces	Advanced Communication Tools	Knowledge Support Tools

Foundation Platform	Distribution and Communication Services	Trust and Security Services	Dynamic Process Management, Synchronization	Group Identification and Traceability	Transparent Resource Management

CoSpaces Software Framework

collaborative workspaces in three key engineering sectors: Aerospace, Automotive and Construction.

Technical and innovation approach

The CoSpaces project will develop a collaborative engineering environment which supports real-time collaboration between geographically dispersed teams working within distributed engineering enterprises. The project will utilise advanced technologies including virtual reality, augmented reality, tele-immersive interfaces, mobile technologies, context-awareness and web services, to create human-centric collaborative workspaces. These will support advanced product design, downstream maintenance and constructability processes. Building on advances in web services and context modelling technology, the CoSpaces project will create a configurable and dynamic software framework that enables systems

well as participatory and knowledge based design requirements for innovative collaborative workspaces. Detailed task and user analysis will be conducted to identify, obtain participation, and reflect the needs, opinions and ideas of all stakeholders in the new collaborative workspaces.

A new and innovative distributed software framework will be developed to allow users to dynamically create distributed, knowledge-rich, worker-centric, adaptable and scalable collaborative work environments, on-demand. It will support increased creativity, productivity, and a holistic approach to managing product lifecycles. These collaborative work environments will provide interactive virtual meeting places for problem solving, conflict resolution, knowledge sharing and receiving real-time expert advice, and will offer seamless and natural collaboration amongst distributed knowledge workers and teams. The distributed software framework is being developed by focusing on four key research themes: Group Management, Knowledge Manage-

ment, Dynamic Service Management and Real-time Collaboration.

Benefits and results

The results of the CoSpaces project are aimed at European organisations in the Aerospace, Automotive and Construction industries, including both large manufacturers as well as smaller suppliers.

The project will deliver a new and innovative distributed software framework to allow users to dynamically create distributed, knowledge-rich, worker-centric, adaptable and scalable collaborative work environments, on-demand. These new work environments will be highly adaptable to the specific roles, tasks and context of each of the team members.

The software framework will support both co-located, geographically dispersed extended enterprise configurations, as well as mobile devices to enable workers on the production floor or construction site to fully participate in collaborative team analyses and real-time decision making.

Tools will be provided to assist organisations to migrate towards improved collaborative processes, and an open reference architecture will guide industrial organisations in exploiting new advanced workspace technologies within existing facilities and information technology infrastructures.

The research and development within the project will transform current working practices of individuals and teams within these organisations, enabling them to be more competitive, while creating an environment that supports and encourages greater innovation.

The technological advances from the project will substantially extend the state-of-the-art in collaborative work environments for engineering and provide users with several key benefits:

- New collaboration models will empower workers and teams to make better and more informed design and production decisions with increased participation from all stakeholders.

- Organisations executing complex processes to produce complex products will be able to better manage all aspects of product design and maintenance, improve cost effectiveness, better exploit concurrent engineering methods, and shorten time to market for their products.

- Dynamic engineering organisations, including smaller suppliers, will be able to work more effectively as networked or extended enterprises and to easily adapt and shape their collaborative workspaces according to specific product and business needs.

- Manufacturers will be able to more seamlessly integrate suppliers within design and production processes and to utilise suppliers from more regions enabling them to better manage product costs and improve quality.

In delivering these benefits the CoSpaces project will enable European engineering organisations to be more competitive in a global marketplace while creating new opportunities for expanding their businesses at home and in rapidly growing emerging markets.

Project partners

Organisation name	Country
The Open Group	UK
Universitait Leiden	NL
Pragmasis – Sistemas de Informacao Lda	PT
Societa Finanziaria Laziale di Sviluppo – FI.LA.S. S.P.A.	IT
Varinex Informatikai RT	HU
Virce – Kompetenzzentrum Virtuelle Realitaet und Kooperatives Engineering W.V.	DE
Centre Europeen de Recherche et de Formation Avancée en Calcul Scientifique	FR
CIMPA	FR

Consultores de Automatizacion y Robotica S.A.	ES
The University of Nottingham	UK
Technology Application Network Limited	UK
The University of Salford	UK
Uninova – Instituto de Desenvolvimento de Novas Tecnologias	PT
ESOCE Net (European Society Of Concurrent Engineering)	IT
COWI	DK
Universitaet zu Koeln	DE
National Technical University of Athens	EL
Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V.	DE
Universitaet Stuttgart	DE
Active Knowledge Modeling AS	NO

ECOSPACE

Scope

The main project objective is the realisation of new collaborative working environments based on a better understanding of the work environment, the development of collaboration services as a collaboration platform, and new innovative user-centric collaboration tools that reduce the complexity of today's technology-centric applications.

Accordingly, the objective of ECOSPACE, embedded in several living labs within different application areas, is to develop:

1. Innovative working paradigms through research and understanding of eProfessional work and organisation.
2. A reference architecture and interoperability concepts for a user-centric integration of collaboration tools
3. Collaboration layer middleware services to ensure seamless and instant collaboration among knowledge workers in group forming networks, beyond organisational boundaries.
4. New collaboration aware tools that reduce the complexity of collaboration in dynamic work environments supporting users for creative and knowledge intensive tasks. Instant collaboration is supported by the integration of asynchronous and synchronous collaboration tools, which results into augmented virtual presence/social networks and rich virtual collaboration.

Technical and innovation approach

The technical approach of ECOSPACE is the development and evaluation of collaborative functionality prototypes according to the reference architecture and collaboration middleware & services as either new collaboration tools or extending existing collaboration tools intended to support both asynchronous and synchronous aspects. This type of collaboration environment will enable knowledge workers, and especially eProfessionals, to easily network together, form groups and professional virtual communities for stimulating creativity and innovation while increasing productivity. Part of the innovation approach

Contract number
FP6 – 035208

Type of project
Integrated project

Project coordinator
Fraunhofer FIT

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Project website
www.ip-ecospace.org

Community contribution to the project
7,600,000 Euro

Project start date
1 May 2006

Duration
36 months

and foundation for the technical development are requirements derived from several living labs and experiment results for different business sectors driven by Virtuelle Fabrik (complex project management), De Agostini (media lab), and FIT/EsoCE-Net (professional communities).

After two years, ECOSPACE has developed a Collaborative Working Environment (CWE) reference architecture as well as a large set of collaboration services and tools in an interoperable collaborative environment. Some of the used concepts have already been contributed to standards (W3C). The following figure illustrates key developed elements such as CWE Reference Architecture, Composite Collaborative Services (CoCoS), extended SIOC ontology, Distributed Document Context (D2C), CWE widgets and CWE portal or dashboard.
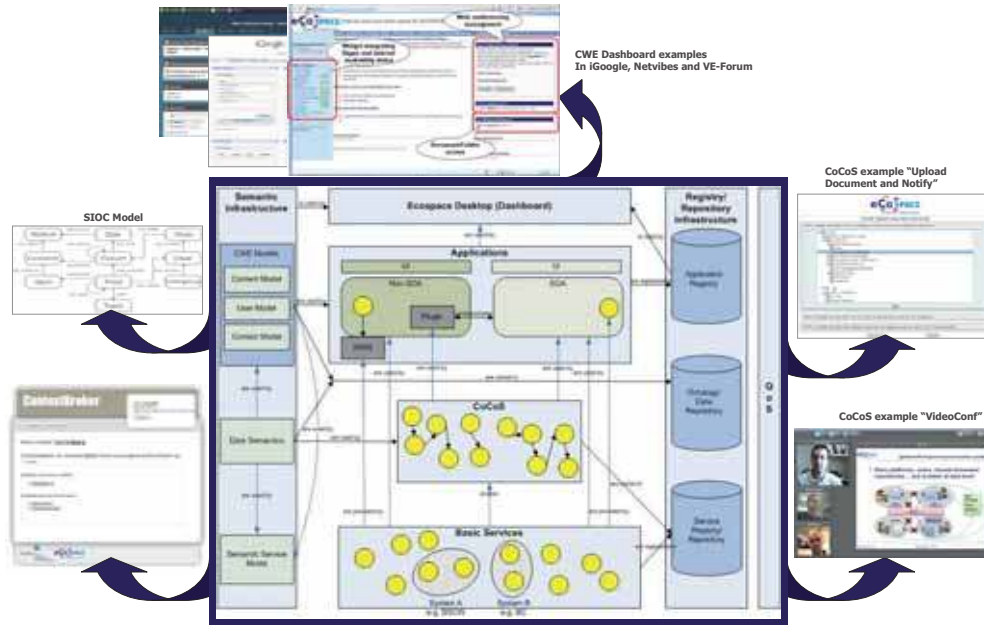
On the application level, current ECOSPACE results include concepts and prototypes for a sharing support framework, a knowledge mining application for Shared Workspace and a People-Concepts Networking approach. The vision of ECOSPACE to realise an integrated and activity oriented, instead of an application focussed, environment leads to the development of concepts and implementation of an activity space environment that integrates the tools required for a certain activity and combines these activity and expectation oriented awareness mechanisms. Flexibility is achieved through a portal and widget based approach that enables users to individually combine and configure the required collaboration functionalities.

Target users and benefits

Target users of ECOSPACE will be eProfessionals. We consider an eProfessional as a Professional whose business and tasks can only be achieved using modern cooperation technologies. These technologies enable an eProfessional being part of groups and communities as well as knowledge networks, and being involved in distributed cooperation processes that have not been possible before. Being an eProfessional is not a profession of its own, but it exists in combination with a business profession such as consultant, engineer, journalist, scientist etc. An eProfessional:

- Is linked to a normal organisation by employment, but may also act in a self-employed way. The work is often performed at mobile workplace.
- Is involved in many different projects within groups, communities, projects, and with external partners in different organisations. Often these projects are constructed around highly complex and creative task that require a high coordination effort.

- Requires the availability of the workplace in different situations, locations and places and the ad hoc availability of a cooperation environment.
- Requires support for the ad hoc identification and connection with other eProfessionals based on similar and complementary interest and knowledge. Tasks can be solved only gathering and relying on information from different sources (data and people)
- Requires the dynamic ad hoc creation of collaboration with different people and groups.

eProfessionals are both a result of new flexible business models and also the necessary prerequisite for their implementation. A collaborative environment that can adequately support the needs of an eProfessional must provide services on demand, based on the flexible work tasks of the user.

ECOSPACE enables eProfessionals to get access to both, their individual shared workspace and groups or communities shared workspaces wherever they are, whenever they need it independent of organisational boundaries. For example users, will no longer think in term of IT such as "exchange or upload this file, open an ftp session, send document as e-mail attachment, set-up a videoconference session". They will rather think in terms of activities such as "share this document with my colleagues involved in the approval procedure", or "give visibility of my publication list, biography and research topics to my colleagues in the professional community". No longer users need to know by heart all the details of the single collaboration application tools (functions, configurations, user management), in order to activate and use them properly. No longer must users learn new collaboration tools whenever they participate in a new team that uses different products.

ECOSPACE provides the interoperability that enables users to connect their preferred tool to the global workplace similar to the ease by which today users can exchange email between different organisations, using different tools. No longer are users drowned by the complexity of multi-channel communication in the dynamic work environment. ECOSPACE empowers users to instantly plan and monitor cooperation activities in different teams and communities using a personalised, dynamic workplace, generated on-the-fly according to the context-specific needs. To demonstrate the feasibility of the CWE reference architecture based interoperability approach, ECOSPACE has developed a shared workspace interoperability demonstrator between BSCW, Business Collaborator and MS-SharePoint.

Project partners

Organisation name	Country
Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. FIT	DE
Business Collaborator	GB
CeTIM – Center for Technology and Innovation Management	DE
Istituto Geografico de Agostini S.P.A	IT
EsoCE-NET	IT
ETRA Group	ES
Hewlett-Packard Italiana SRL	IT
National University of Ireland – Galway	IR
SAP AG	DE
Stiftung Produktive Schweiz	CH
SPIN! Media Tecnologies BV	NL
TXT e-solutions SPA	IT
Universidad de Murcia	ES
Universidad Politécnica de Madrid	ES
VE-A	NL
Virtech Ltd	BU
Virtuelle Fabrik	CH

Laboranova

Scope

Laboranova is a project that aims at developing distributed IT-based tools for support of innovation processes in companies and organizations. The tools should be able to support both the early phases of innovation and later phases, and focus on both organization internal processes of ideation and connection and a framework for evaluation of innovative ideas through prediction markets. The structure of the project can be seen from the following illustration – the "temple" model:
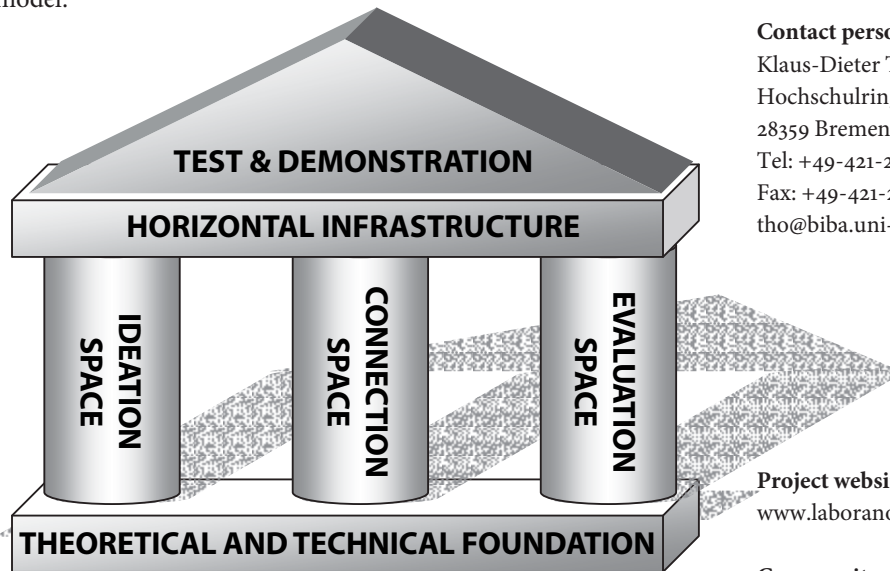
The issues surrounding innovation are becoming more and more critical to the advanced economies. Innovation is seen as the central driver of the economy and lots of effort is put into improving the organization and management of innovation processes. Innovation policies adress the high level initiatives that governments and organizations like the EU can take. We also need to understand and facilitate the actual processes of innovation going on in the companies and organizaitons – private and public. The tendencies have been to go from a project management and engineering approach to a more desingoriented approach also inspired from the experience with the developemnt of software,

Type of project
Integrated project

Contract number
FP6 – 035262

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Universität Bremen

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Project website
www.laboranova.com

Community contribution to the project
7,000,000 Euro

Project start date
1 June 2006

Duration
42 months

where participatory design, rapid prototyping, agile methods have been emerging and become prominent. Still designing software one needs to have ideas about what the software should do and be interacting with the users. That is where the need for new ideas – innovation – comes in. Laboranova is attempting to provide tools for helping in that early phase and also support – through iterations of its various parts – the process of developing and maturing ideas. Ideation, connection with knowledge and experience resources and evalution through prediction markets provide a cycle for the innovator or innovating organization.

Technical and innovation approach

The Laboranova project is aiming at an integrated system developed through user scenarios and Living Labs in an iterative development process. The innovation approach is based on the ideas in user-centred innovation and open innovation. At one and the same time the Laboranova is a software-development project and a project investigating innovation processes and innovation management through the conceptual clarification and design of supporting tools. The use of learning and simulation games – based on the research of central partners in the field of social learning games – is a particular feature. The project has produced extensive overviews of state of the art in the field and conceptual models of the three pillars and is working on creating a unifying framework that will make it possible to have a connected system that will support the above mentioned use cycles. In the connection space area work has been done on the search and use of relevant knowledge and human resources in relation to innovation processes and the theoretical understandings needed to create tools that can support such processes.

Benefits and results

The users foreseen will be both SME's, large companies, NGO's, Living Labs and the European Network of Living Labs. The benefit to the organization will be help in organizing and managing innovation processes with a large degree of user and/or employee involvement where the processes can be both centrally located or dispersed in distributed organizations.

Laboranova will be developed in interaction with users and user organizations as diverse as the manufacturing company Danfoss, the software company SAP and organizations such as the corporate university ISVOR and the Spanish organization Infonomia – a living-lab like network in Catalonia – and the Danish network of innovation organizations IKI. The two last organizations will provide a test space for the running of prediction markets and thereby the use in evaluation of innovative ideas of what has been called "the wisdom of crowds". The Laboranova system will provide a toolset for a large range of businesses, but also a test-bed and a platform for experiments with the organization and management of innovation processes. The combination of Living Labs as a focus for user-centred innovation and prediction markets as an evaluation feature is quite unique, and if Laboranova is used by a large range of organizations and the experiences collected and analyzed it could provide important new knowledge in the innovation field.

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Project Partners

Organisation name	Country
Institut Européen d'Administration des Affaires	F
Université Paris IX Dauphine	F
Planet	GR
Universitat Politècnica de Catalunya	E
Lulea Tekniska Universitet	S
European Society for Concurrent Engineering	IT
University of Nottingham	UK
AGiLiENCE Sarl	F
Insitute of Communication& Computer Systems	GR
Center for Usability Research & Engineering	A
FIAT/ ISVOR	IT
The European Association of Innovating SME's	UK
SAP	D
The Danish Research Center on Gender Equality at the Roskilde University	DK
Danfoss	DK
Kartoo	F
Universitat Ramon Llull Fundacio Privada	E
Learning Lab Denmark at the Danish School of Education, Aarhus University	DK
Bremer Institut für Produktion und Logistik GmbH	D
Universität Bremen	D

wearIT@work

Scope

Wearable mobile computing requires a new working paradigm. Complex tasks are supported with a minimum of active human-machine interaction. Instead of working at the computer the user is supported in primary tasks (e.g. maintaining a mechanical part) by the computer in an ambient way. Mobile professionals keep their attention focused on the work environment supported by valuable information provided by LivingLab solutions of wearIT@work.

- The break-through of **wearable computing** is still missing; only a few solutions are an economic success.

- As the way of working is drastically affected by wearable computing the **user acceptance** is a key issue.

- With the four application domains of **healthcare, production, maintenance** and **emergency response** most important sectors of Europe's economy are addressed.

- For Europe with its high labour costs it is a chance when **productivity and quality of life** are increased by unobtrusive information provisioning solutions of wearIT@work.

- **New business** for the technology providers, systems integrators and consultants are generated.

Standardization activities based on the open wearable computing platform and software framework have an effect especially past the project.

Technical and innovation approach

In **LivingLabs** prototypes are designed and evaluated in close collaboration with the end users. Essential activities are **workplace studies** and **design workshops** at the end users sites.

Type of project
Integrated project

Contract number
P6 – 004216

Project coordinator
Universitaet Bremen

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Project website
www.wearitatwork.com

Community contribution to the project
14,297,149 Euro

Project start date
1 June 2004

Duration
60 months

Based on the **know-how** brought by the partners to the project – like the belt computer QBIC – and results of the first and second innovation cycle – like an interaction wristband and glove – a **technology repository** was set-up beside a collection of **demonstrators**.

A new generation of optimised **collaborative man-machine interfaces,** with body near context detection and innovative input and output devices has been developed. Further hardware and a first version of the software framework are available.

The **open wearIT@work hardware platform** (OWCP) consists of a core wearable computing unit, input and output devices, general peripherals, and sensor and communication subsystems. The platform provides the end-user with a seamless access to heterogeneous networks and allows the integration of different sensor devices for the context detection and for human computer interaction devices reflecting the working environment requirements.

The **open wearable computing software framework** (OWSF) is based on the common hardware platform OWCP. The OWSF impacts the exploitation of wearable computing solutions within and outside the project.

The addressed standardization pushes developers of devices, components and systems.

Beside a service registry and high level services the OWSF covers core services like context awareness, communication, I/O, and security.

A **technology repository** of wearIT@work hardware and software components as well as solutions with the indication of maturity levels based on the definition of the US DoD[1] was set up and published on the project homepage to let people use project results also outside of it.

The **Open Wearable Computing Group** (www.OWCG.org) was established by the project and prepares the ground for a paradigm-centered standardization body coping with the different aspects related to wearable computing in an interdisciplinary fashion, bringing together developers, integrators, users, policy makers, associations, etc.

Benefits and results

Benefits coming from wearIT@work results are manifold, e.g. showed the evaluations with end-users in the aircraft maintenance domain with its demand on structured information and extensive documentation that 50% of the time workers spent to catch up print outs and document on paper tasks performed; this time can be saved using the wearIT@work solution.

However, the wearIT@work solutions are not only applicable for the aircraft maintenance domain but also for other application areas like maintaining machines, trains, chemical or power plants as in all these domains paper based work can be replaced by wearable computing solutions.

A *Jacket*, with integrated wearable technologies was developed and is an example of a product ready to be marketed. It is further developed by the project partner Grado Zero Espace for different application domains where based on RFID tags context relevant information can be accessed using a wireless IT infrastructure. As a result the new generation of optimized collaborative man-machine interfaces (glove with WUI toolkit of the OWCF), with body near context detection will already be marketed at this stage of the project. Further hardware and a first version of the software framework are available.

With the OWCG we allow other parties to start a dialogue with the project partners for further development and exploitation.

Thus we address standardization issues and push developers of devices, components and systems to participate.

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1   TRL: Technology readiness levels (US Department of Defense) DOD Deskbook 5000.2-R

Project partners

Organisation name	Country
Gespag	AT
Rosenbauer	AT
Systema	AT
Multitel	BE
ETH Zürich	CH
Skoda	CZ
BIBA	DE
BIA	DE
Carl Zeiss	DE
DoCoMo	DE
Fraunhofer FIT	DE
Infoconsult	DE
Microsoft	DE
Mobile Solution Group	DE
SAP	DE
Siemens	DE
Universität Bremen	DE
Universität Paderborn	DE
Universität Passau	DE
Mobintech	DK
Tekniker	ES
Paris Firebrigade	FR
EADS	FR
Thales	FR
Ionian	GR
Edna Pasher	IL
CIT	IR
ENEA	IT
Giunti Labs	IT
Hewlett Packard	IT
Grado Zero Espace	IT
TEAM	IT
Comarch	PL
CDT	SE
Mobilera	TR
TXT	IT
ActValue	IT

PAESTUM	IT
Comunità Montana della Lunigiana	IT
In2	DE
HKU	NL

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Websites

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FIRE: cordis.europa.eu/fp7/ict/fire
IPv6: ec.europa.eu/information_society/policy/ipv6

Who's who in Unit F4

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Max Lemke, Deputy Head of Unit

Living Labs team

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Olavi Luotonen, Project Officer
Marika Kaliff, National Expert

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Fabrizio Sestini, Project Officer
Georgios Tselentis, Project Officer
Marek Kolodziejski, Project Officer
Jacques Babot, Project Officer

IPv6 team

Jacques Babot, Project Officer
Georgios Tselentis, Project Officer

**For contacts in other relevant application-oriented units of DG INFSO,
please refer to the following websites**

Unit H1 "ICT for Health"
ec.europa.eu/information_society/activities/health

Unit H2 "ICT for Government and Public Services"
 ec.europa.eu/information_society/activities/egovernment

Unit H3 "ICT for Inclusion"
ec.europa.eu/information_society/activities/einclusion

Unit H4 "ICT for Sustainable Growth"
 ec.europa.eu/information_society/activities/sustainable_growth

Living Labs
for **user-driven**
open innovation

**AN OVERVIEW OF THE LIVING LABS
METHODOLOGY, ACTIVITIES AND ACHIEVEMENTS
JANUARY 2009**

Information about the activities of the European Commission on user-driven open innovation activities and Living Labs
ec.europa.eu/information_society/activities/livinglabs

Thematic Portal on Information Society
ec.europa.eu/information_society

European Future Internet Portal
future-internet.eu

The European Union window to research and technologIcal development and information about the ICT Programme (CORDIS)
cordis.europa.eu/fp7/ict

**ICT Policy Support Programme (ICT PSP)
 of the Competitiveness and Innovation Programme (CIP)**
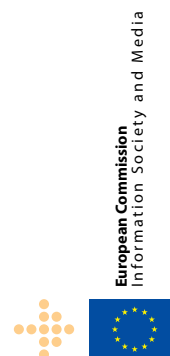ec.europa.eu/information_society/activities/ict_psp

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