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EDITORIAL



Dear reader,

In this issue we present four successful Celtic projects, which recently completed

their work. As the final reviews proved, we can indeed be proud of having so many excellent projects, achieving considerable impact, generating new products and business as well as helping to create new jobs.

The presented projects of this issue were looking at home automation and automatic home networks, efficient and user-centric systems for media distribution and content delivery, and advanced solutions for next generation wireless process manufacturing.

Celtic Call 8

On 8 March 2010, Celtic officially opened its call phase for new proposals in 2010. This 8th call will be carried out, as in previous calls, in two phases, a proposal outline phase and a full project phase. The two-phase concept is a useful means to avoid much work in preparing a fully worked out proposal without knowing if such a proposal would ever have a good chance of being funded or positively evaluated from its technological merits. Only positively rated proposal outlines will be invited to

submit a full project proposal during the second half of the years. This approach assures that the acceptance rates of full proposals are over 60 percent.

The submission deadline for project outlines is 14 May 2010.

At the Celtic Event in Valencia there will be a special Information and Brokerage Day on 13th April 2010 where interested people can present and discuss their project ideas with potential project participants or present their company for participation in a project. For further information about this information day you may check the Celtic Event Web site at www.celtic-initiative.org/Events/Celtic-Event10-Valencia/Information_day.asp.

Heinz Brüggemann
Director Celtic Office



RUBENS

A holistic approach to a new broadband media delivery paradigm

Broadband access networks stand at a key crossroad in their history. Similar to the experience of consuming “as you wish/when you wish” Internet content, the network evolutions promise to enable personalized consumption of media, both in terms of the presented content and consumption timing. A key question that both service and network providers have at this point is how this widening range of mostly multimedia-driven services can be combined with a “carrier-grade” network infrastructure in an economically viable way

This has been the starting point of the recently finalized CELTIC project RUBENS. The project brought together key European players to investigate how the network infrastructure can be reorganized to allow a more efficient media delivery for today’s and tomorrow’s services.

The RUBENS technologies

The RUBENS consortium investigated mechanisms that dynamically optimize the Quality-of-Experience (QoE) for a bouquet of services. The results of the project were organized around the RUBENS functional architecture depicted in figure 1. This architecture immediately reflects a key outcome of the project: there is no single technique that will yield the best QoE. Depending on a wide variety of environment variables (determined by subscriptions, content, and the offered services themselves), QoE needs to be optimized by tuning for instance the video quality, transport and network configuration in an orchestrated way, ensuring a stable and carrier-grade behaviour. The demonstrator presented at the final meet-

ing has shown the interworking of each of these mechanisms.

The economics view

Accompanying the technical studies, a techno-economical validation task supported technical decisions and provided guidelines for strategic decisions. The analysis was split in different questions (figure 2), each one investigated with appropriate scientific methods.

A major finding is that an implicit demand for QoE does exist. However, it remains to be explicated and initiated. An impor-



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for QoE enhancing technologies. The current best practice of over-dimensioning the network will become increasingly uneconomic and technologies that increase network efficiency like the ones developed in RUBENS will gain the centre stage.

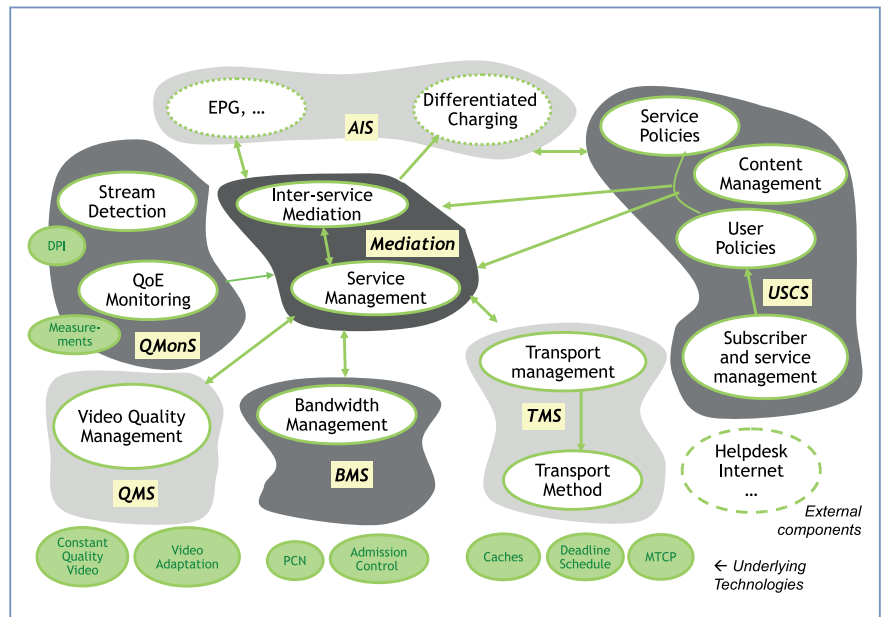


Figure 1: RUBENS functional architecture

tant driver is the increasing personalization of services, discontinuity of linear service perception and resulting larger diversity of consumer habits with demand for similar quality assurance but changes in duration, peak and sustainable bandwidth. This results in higher congestion probability, the major technical driver

Conclusion

Future multimedia content will evolve from static broadcast and on-demand to much more personalized and dynamic consumption patterns. RUBENS has shown that network operators can combine a more dynamic networks organization with value-added services that im-

prove the role of the network access provider in the value chain, in order to facilitate this (r-)evolution. With the largest European providers and the market leader for media delivery in the same consortium, RUBENS is well placed to prepare the resulting new product solutions and concepts for market deployment.

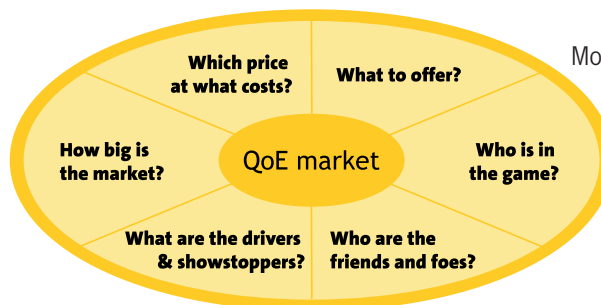


Figure 2: Techno-economic analysis

More information on the project results can be found at www.celtic-initiative.org/projects/rubens.

HERMES

Hyper-distribution of online media services

Communication habits as well as ways to access and consume online media are evolving tremendously these days. The trend is towards creation of media applications which are ubiquitously accessed through social Web services rather than traditional dedicated devices/channels and service contracts.

Social media is indeed solidifying its place within the realm of digital consumption. According to Juniper Research, worldwide revenues from social networking, dating and personal content delivery services will increase from \$572m in 2007 to more than \$5.7bn in 2012, with social networking accounting for 50 percent of the total by the end of this period. Therefore, content should be made accessible to a user anytime and everywhere, supported by trusting and “social proximity” models for communication and exchange. This is the target that the HERMES project

strives to achieve – explore enabling mechanisms for ubiquitous access to online audio/video content independent of its location and in combination with social communication services.

Main focus – unleashing viral media delivery models

HERMES provides means to mobile and IPTV users for ubiquitous access and sharing of their own media and communication/Web services. These exchanges are realized within a trusted user group, guaranteeing access rights and rewarding content owners, which could be professional studios or digital consumers themselves (for UGC – user generated content). Social activities between users are explored to determine possible dynamic social links of HERMES users for viral distribution and recommendation of personalized media. Therefore, project results have significant impact on five main service markets:



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- mobile content
- online video services
- smart-card services
- digital TV and
- social communities.

HERMES is mainly an intermediation platform (see figure) to link various online media sources and transparently distribute content towards users’ multi-modal terminals. The platform provides the following main features:

- Media (audio/video) portal with discovery, play list, recommendation and sharing functionalities

- Media format adaptation depending of user terminal
- Meta-data generation/indexing before media delivery to users
- Social networking analysis functionalities including gateways to social network Web sites
- User registration with user account and user preferences management.

Economic analysis and experimentation

The successful adoption of the Hermes platform in the highly dynamic environment of media and communication services requires a sound and viable business model. Some effort is therefore devoted to assessing the main economic and competitive features of a HERMES busi-

ness model by reviewing alternative offers for relevant market positioning of HERMES services and the associated differentiating strategy. The differentiation potential is evaluated along two dimensions:

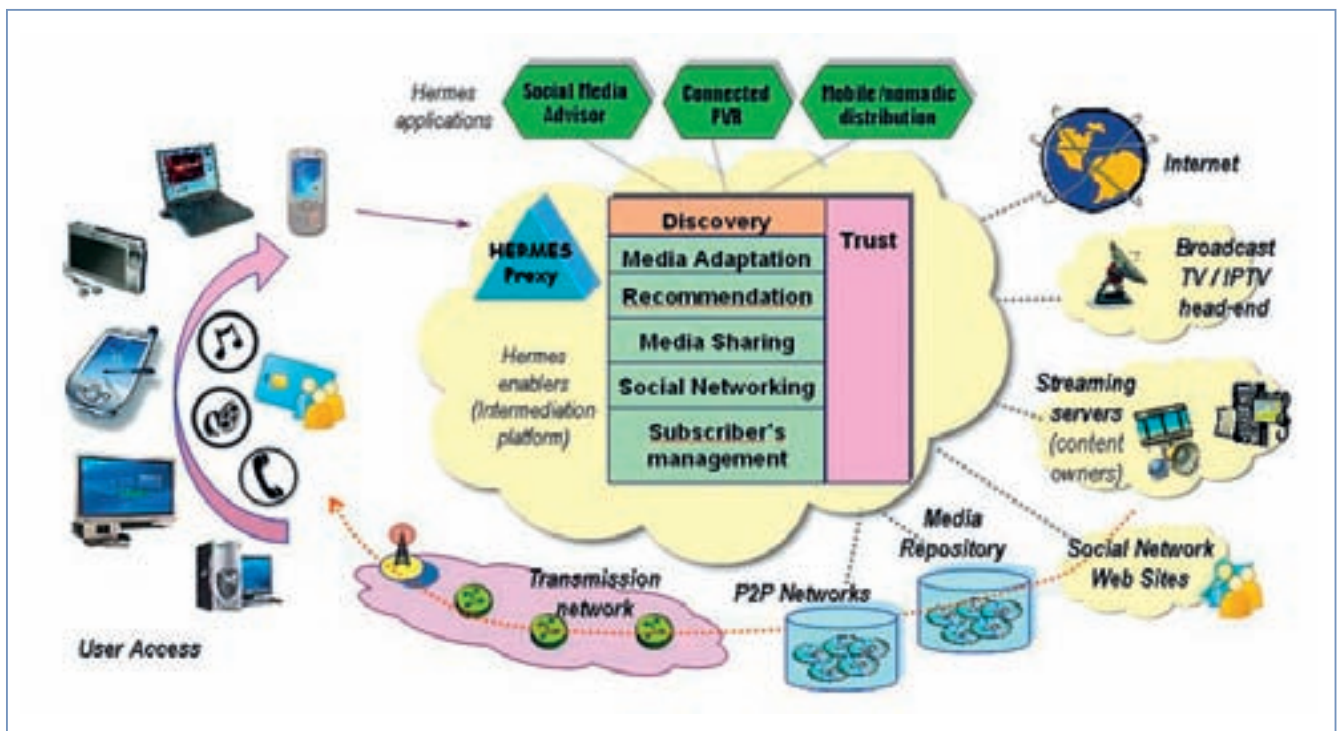
- 1 the balance between individual consumption and collective interactions, like content distribution and communities sharing networks.
- 2 the nature and degree of personalisation services.

The consortium also elaborated a series of 9 innovative services. Two of them – “Connected PVR” (Personal Video Recorder) and “Social Media Adviser” – will be showcased during the upcoming CELTIC Event in Valencia in April 2010.

Conclusion

HERMES surely constitutes an original and innovative offer for two reasons: a balanced offer of socialization services and painless access to media as well as sophisticated customization and integration capabilities.

Further information is available at www.celtic-initiative.org/Projects/HERMES



HERMES intermeditation platform

AuthoNe – Autonomic Home Networking

Our ambience is getting more and more enriched by technical equipment that aims to support us in our daily activities. In our homes these devices are motion detectors that turn on the light or start playing our favourite tune when we enter, microchips that control heating systems, Internet-enabled TV sets and set-top boxes or remote controls for various devices and functions.



The AuthoNe concept

The support that all these devices provide to residents in their daily lives can be enhanced by facilitating cooperation between them. An intelligent home network that has access to all entities in a house might optimize energy efficiency, for instance through demand driven heating. It could also increase safety and security via presence control of, e.g., iron and stove or via automated door/window locking mechanisms and enhance comfort by adapting to user needs and habits.

One of the major objectives of AuthoNe is to support this kind of cooperative scenarios by providing autonomic mechanisms for integrating new devices into home networks. Our focus is not only on enabling

devices to participate in the cooperative scenarios, but also to autonomously optimise the connected nodes all the time.

Knowledge sharing

Authone is creating a middleware that is especially taking into account the heterogeneous nature of home networks. Bridging the resource gap – e.g. computing power, memory, and bandwidth – is the first challenge. The range goes from a variety of low-resource embedded devices, like sensors

and actuators in light switches, to one or more powerful control servers that are installed in a typical home of the future.

The second focus is on knowledge representation by means of a flexible data model especially being designed by the project.

Security

Security is essential in our scenario. We introduce a home-local public key infrastructure for that purpose. Our initial “layman proof” registration process equips all nodes with the necessary key and certificate material. Additionally, we equip the network with autonomously adapting trust ratings. Our identities and trust rat-



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ings are available to services like video streaming, allowing them to profit from our security mechanisms as well.

Remote access

When interconnecting home networks we have to consider that every home is protected by a combination of NAT/Firewall. Thus, AuthoNe delivers concepts that allow for the secure autonomous configuration of such devices in order to support service usage across multiple domains.

Partners of the Authone project are Siemens CT, Hirschmann Automation and Control GmbH, TU München, Fraunhofer FOKUS (all Germany, partially funded by BMBF) Ginkgo Networks, France Telecom, Université Pierre & Marie Curie (all France), Sony-Ericsson, Lund University (both Sweden).

Further information is available on the Celtic website at www.celtic-initiative.org/Projects/OOClosed-projects/AUTHONE and on the website of the German partners at www.authone.de.

LOOP

Next generation solutions for wireless process manufacturing

The LOOP project takes a step towards Next Generation Network (NGN) solutions to open up new market opportunities in wireless process manufacturing for the automotive industry.

The NGN vision is tending towards a converged wireless networking world, where the user will be able to attain any service at any time on effectively any network that is optimized for the application at hand. The convergence of Internet and mobile services is currently being addressed by the IMS (IP Multimedia Subsystems) platform, driven mainly by the operators to promote market opportunities in combining the appealing services of the Internet with the roaming capability of mobile networks. However, this convergence does not go far enough, and there is a clear need to enhance legacy architectures to provide cost-effective end-to-end communications. This will



raise significant research challenges: undeniably, system coexistence solutions for Wireless Area Networks (WAN) and Long Term Evolution (LTE) RAN (see figure) and their impact on the 3GPP System Architecture Evolution require further innovation to deliver new market opportunities.

Impact of LOOP

LOOP has transferred engineering know-how to meet the short-term market requirements for operators to anticipate the commercial deployment towards NGNs in terms of delivering dual mode terminals to allow efficient mobility between legacy systems and WiFi; new network equipment to support the notion of “co-operative networks”; new testing equipment to allow coverage planning and QoS delivery for WiMAX; and identifying cost-effective wireless deployment scenarios based on cognitive radio.

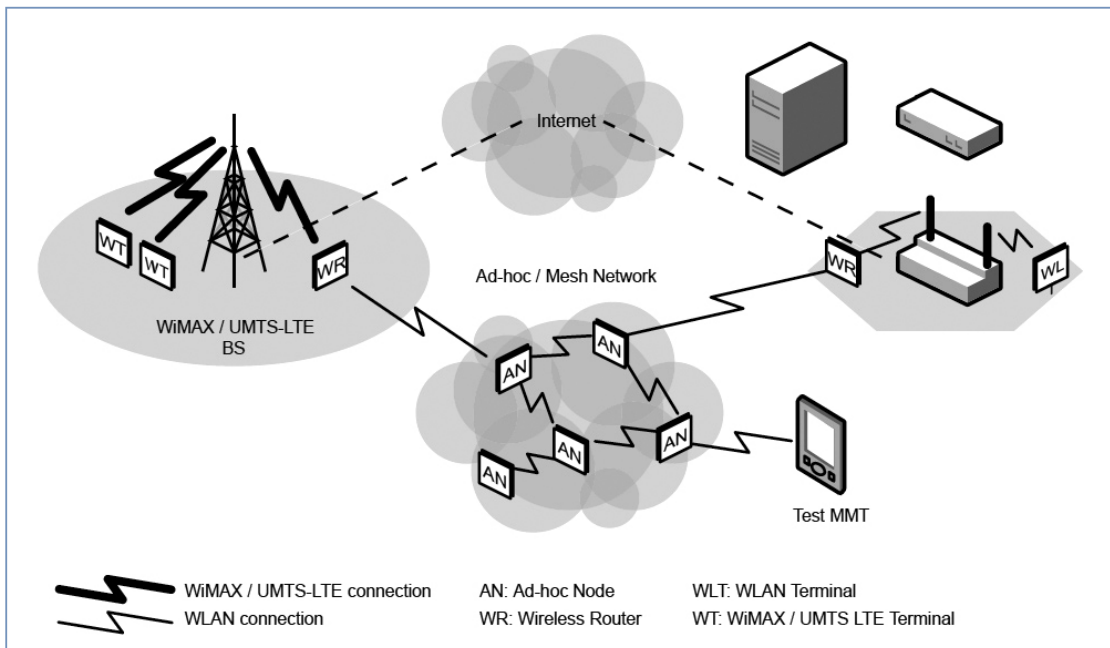


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However, LOOP’s legacy will be the inspiration for new opportunities in the wireless market for process manufacturing. This market is expected to grow at a pace



LOOP scenario



close to 30 percent per year; faster than the market for wired solutions. Nevertheless, adoption of wireless technology is still low and most managers are reluctant to introduce radio solutions; key impediments being latency and performance issues. In LOOP, these challenges have been addressed for metrology-based applications in the automotive industry. The SMEs have highly benefited from their participation due to new opportunities to expand their commercial activities by integrating ubiquitous monitoring and management tools on their 3D coordinate

measurement machine product range. These new features will allow for a new type of services and business models. Such services rely heavily on intensive communication and contextualised exploitation of the ubiquitous multimedia information made available by LOOP technology throughout the factory shop-floor.

Outlook

The impacts of NGN are expected to be significant to the ICT market: NGN will provide, firstly, the vehicle for enhancing access to communication services and

applications. Secondly, NGN will provide a basis for the Ubiquitous Network Society, where easy-to-use networks are connected at anytime, anywhere, with anything and for anyone. LOOP is one piece in the jigsaw, but more investment is required to realise this vision by addressing new emerging challenges that include energy-efficient and secure communications.

You can find more information at www.theloopproject.com

Celtic projects

Over 1,000 proposal participants from 31 countries

The recent project statistics prove it again: Celtic is one of the most attractive research and development programmes in the European information and communication technologies sector. Not only companies and academic institutions from Europe are eager to participate, also non-European participants are involved.

As a European R&D programme that supports privately and publicly funded ICT R&D projects, Celtic is a well considered initiative. More than one thousand organisations from thirty-one countries worldwide have been involved in Celtic projects proposals, from thirty-one countries worldwide.

The participating organisations are mainly from Eureka countries, such as Austria, Belgium, Switzerland, Cyprus, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Monaco, The Netherlands, Norway, Poland, Portugal, Romania, Russia, Sweden, Slovakia, Turkey, and



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South Korea that has recently joined Eureka. However, there are also participants from non-Eureka Countries, such as Canada, Japan, South Africa, and Zambia. Currently, around five hundred organisations from twenty-five countries are involved in ongoing Celtic projects.

There are different ways of measuring Celtic project participation by country. One relevant way is to look at how much each country invested in the projects, regarding budget and effort, and considering both public and private contributions. Regarding the investments, for all Celtic projects until today, it is France, Spain, Germany and Finland that are the most participative countries. Other examples with high participation in terms of investment are Sweden, Israel, Belgium, Norway, Turkey, Ireland, and Luxembourg.

A different way of analysing project participation by country is looking at the number of projects in which each country's participants are involved. When looking at the number of projects per country, it is Spain, France, Finland, Sweden and Israel that are the most participative countries in Celtic projects. Other examples of countries participating in a significant number of projects are Sweden, Israel, Germany, Turkey, Greece, Belgium, Ireland, United Kingdom, Luxembourg, and Norway.



Celtic project participation by country in the period from 2003 to 2010

From both presented ways of considering Celtic project participation by country, the most participative ones are indeed France and Spain, regarding the number of projects and the public or private investment. Germany, despite the fact that the number of projects is low, is also significantly investing in Celtic projects, and Luxembourg and Finland are the most participative countries considering the investment per capita.

The Celtic Label indicates the most promising projects from those selected in a process which involves both the Celtic Core Group and the Public Authorities. Celtic has at the moment thirty-six running projects, eleven projects in the set-up phase, and forty-four that have already finished. A new call for projects is now open and accepting new proposals until 14 May 2010.

IMPRINT

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About Celtic

Celtic is a Eureka cluster, which initiates and runs privately and publicly funded R&D projects in the field of telecommunications. The cluster, which runs until 2011, is supported by most of the major European players in communication technologies. Celtic projects are focusing at telecoms networks, applications, and services looking at a complete system approach. The size of the Celtic budget is in the range of 1 billion euro. Celtic is open to any kind of project participants from all Eureka countries.