



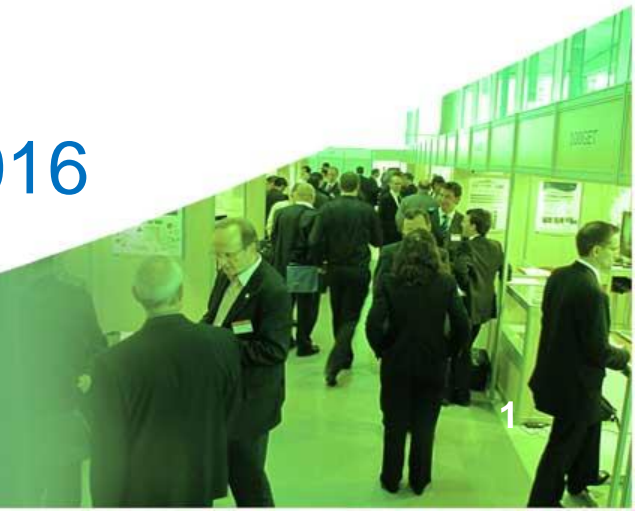
# eltic-Plus<sup>+</sup>

Smart Connected World



## Best of Celtic-Plus Projects Celtic-Plus Awards 2016

Celtic-Plus Event  
Stockholm, 28 April 2016



# Excellence Award

## Network Technologies Candidates

**HFCC/G.fast**

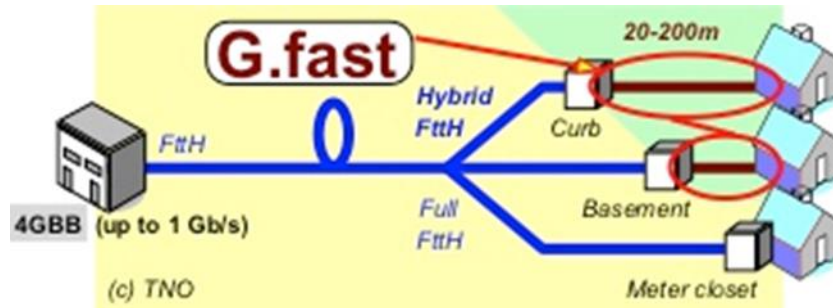
**OPERA-Net2**

**SASER**

**Seed4C**

# HFCC/G.fast (2013-2014)

## Hybrid Fibre-Copper connectivity using G.fast



**4G BB**  
HFCC/G.fast



# HFCC/G.fast Achievements



## Main achievement

With the new ITU “G.fast” Standard, telecoms providers can achieve a **throughput of nearly 1Gbps at 100m**, and up to 170 Mbps at 480m over standard copper lines.

## Demos (selection)

- GPON G.fast Integration TELNET
- Reverse Powering

## 9 participating countries

Austria, France, Germany, Hungary, Israel, Netherlands, Spain, Sweden, UK

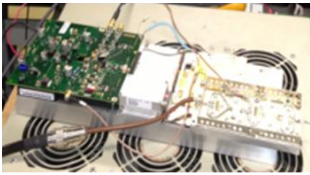
# HFCC/G.fast Consortium

- ADTRAN GmbH, Germany
- BT, Great Britain
- Dension Broadband Systems Kft., Hungary
- **Ericsson AB, Sweden Co-ordinator: Per Ola Börjesson**
- EUR AB, Sweden
- FTW, The Telecommunications Research Center Vienna, Austria
- Fundacion Tecnalia Research & Innovation, Spain
- Lund University, Sweden
- Marvell Hispania S.L., Spain
- Orange SA, France
- Sckipio Technologies, Israel
- Telefónica I+D, Spain
- Telnet Redes Inteligentes SA, Spain
- TNO, Netherlands

# OPERA-Net2 (2012-2015)

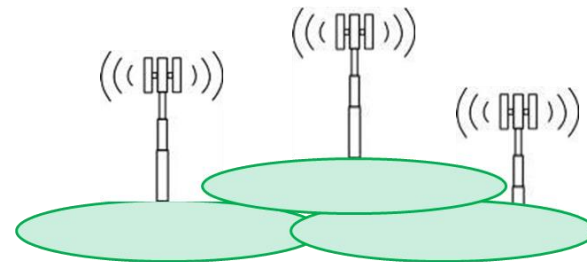
## Optimising Power Efficiency in mobile RAdio Networks 2

Energy efficiency at **Component and Equipment level**



Energy efficiency at **Network level**

Energy efficiency at **Site level**





Celtic-Plus

# OPERA-Net2 Achievements



## Main achievement

OPERA-Net2 developed solutions which considerably improve the **energy and material efficiency** of mobile radio networks, including new energy-efficient power amplifier transmitter hardware.

## Demos (selection)

- Hybrid energy site powering
- Water cooling, air cooling, and passive cooling
- New power amplification > increased efficiency (27%)

## 4 participating countries

Belgium, France, Finland, UK

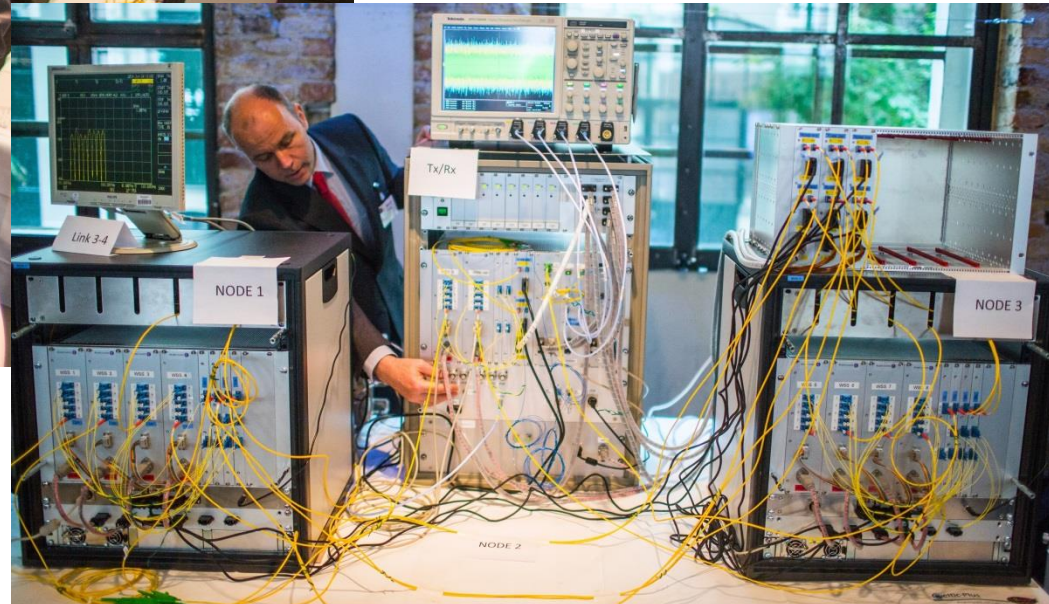
# OPERA-Net2 Consortium

- Alcatel-Lucent Bell Labs, France
- Alpha Technologies SA, Belgium
- Arelis Broadcast, France
- EFORE PLC, Finland
- Freescale, France
- Institut Telecom - Télécom Bretagne, France
- Nokia Oy, Finland
- **Orange SA, France**      **Co-ordinator: Marc Aubrée**
- Université de Caen, France
- University of Cardiff, UK
- VTT Technical Research Centre of Finland, Finland



# SASER (2012-2015)

## Safe and Secure European Routing



Photos: Copyright hannibal/BMBF

# SASER (2012-2015)

## Safe and Secure European Routing

SASER-  
SaveNet

SASER-  
SIEGFRIED

SASER-  
ADVantage-  
NET

SASER-Horizontal



## Main achievements (selection)

SASER has contributed to making communications networks in Europe **faster, more cost-effective, safer and more secure.**

### SASER-SaveNet

- 400 Gb/s optical transponder prototype
- Forward Error Correction (FEC)

### SASER-SIEGFRIED

- "Super Cleaner Tool" for improved network security

### SASER-ADVantage-Net

- 400G+ DCI prototype platform for flexible and secure Data Center Interconnects

# SASER Achievements

## Field trials/demos (selection)

Record-breaking transmission field trial of 38.4 Tbps over 762 kilometers Lyon-Marseille-Lyon fiber optic link

## 4 participating countries

Germany, France, Finland, Denmark

**Budget: 80 million euro**

**More than 60 partners**

- Alcatel THALES III-V Lab, France
- Alcatel-Lucent Bell Labs, France
- **Alcatel-Lucent Deutschland AG, Germany** Co-ordinator: Eugen Lach
- AMO GmbH, Germany
- Atesio GmbH, Germany
- Commissariat à l'Energie Atomique et aux énergies alternatives (CEA-LETI), France
- Docomo Eurolabs, Germany
- Finisar Germany GmbH, Germany
- Finisar UK Ltd., United Kingdom
- Fraunhofer Gesellschaft Heinrich Hertz Institut (HHI), Germany
- Fujitsu Semiconductor Europe GMBH, United Kingdom
- IHP GmbH, Germany
- Institut Telecom - Telecom SudParis (IT-TSP), France
- Institut Telecom -Telecom Bretagne (IT-TB), France
- Kylia, France
- Orange SA, France
- RWTH - Technische Hochschule Aachen, Germany

> *Continued*

- Socionext, Germany
- Technical University Berlin, Germany
- Universität Kassel, Germany
- University of Stuttgart – IKR, Germany
- University of Stuttgart – INT, Germany
- University Paris Sud, France
- University Rennes 1, France
- UPMC-LKB (LKB), France
- VectraWave, France

- 2NS - Second Nature Security Oy, Finland
- Coriant R&D GmbH, Germany
- Ekinops, France
- EXFO Oy, Finland
- FH Potsdam, IDL-Interaction Design Lab, Germany
- Fraunhofer AISEC, Germany
- Fraunhofer Gesellschaft Heinrich Hertz Institut (HHI), Germany
- Institut Mines Télécom, France
- Keopsys, France
- Konrad-Zuse-Institut Berlin (ZIB), Germany
- Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften, Germany
- Mikkelin Puhelin Oy, Finland
- **Nokia, Germany Coordinator: Marco Hoffmann**
- Orange SA, France
- Photline Technologies SA, France
- Ruhr Universität Bochum, Germany

> *Continued*

- Stonesoft, A McAfee Group Company, Finland
- Technical University Munich, Germany
- Technical University of Denmark, Denmark
- Technische Universität Dortmund, Germany
- Universität Kassel, Germany
- Universität Tübingen, Germany
- Universität Würzburg, Germany
- VTT Technical Research Centre of Finland Ltd., Finland



# SASER-ADVAntage-NET Consortium

- **ADVA SE, Germany**    **Co-ordinator: Michael Eiselt**
- Fraunhofer Gesellschaft Heinrich Hertz Institut (HHI), Germany
- Helmut-Schmidt-University Hamburg, Germany
- University Dortmund, Germany
- University of Kiel - Christian Albrecht University, Germany
- University Ulm, Germany
- VPIphotonics GmbH, Germany

## Horizontal activity

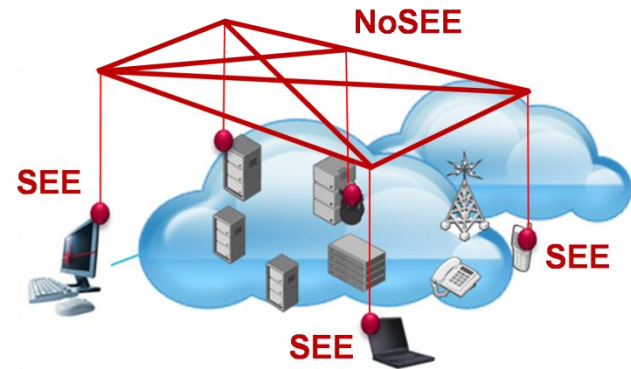
**SASER-Horizontal was led by Deutsche Telekom**

# Seed4C (2012-2014)

## Secured Embedded Element for Cloud



Isolated Security



Coordinated Security

## Main achievement

Seed4C developed a **cloud security concept** based on secure hardware elements, such as smart chips. This could contribute to implementing geographical control of data flows also known as Schengen Routing.

## Trials/Demos (selection)

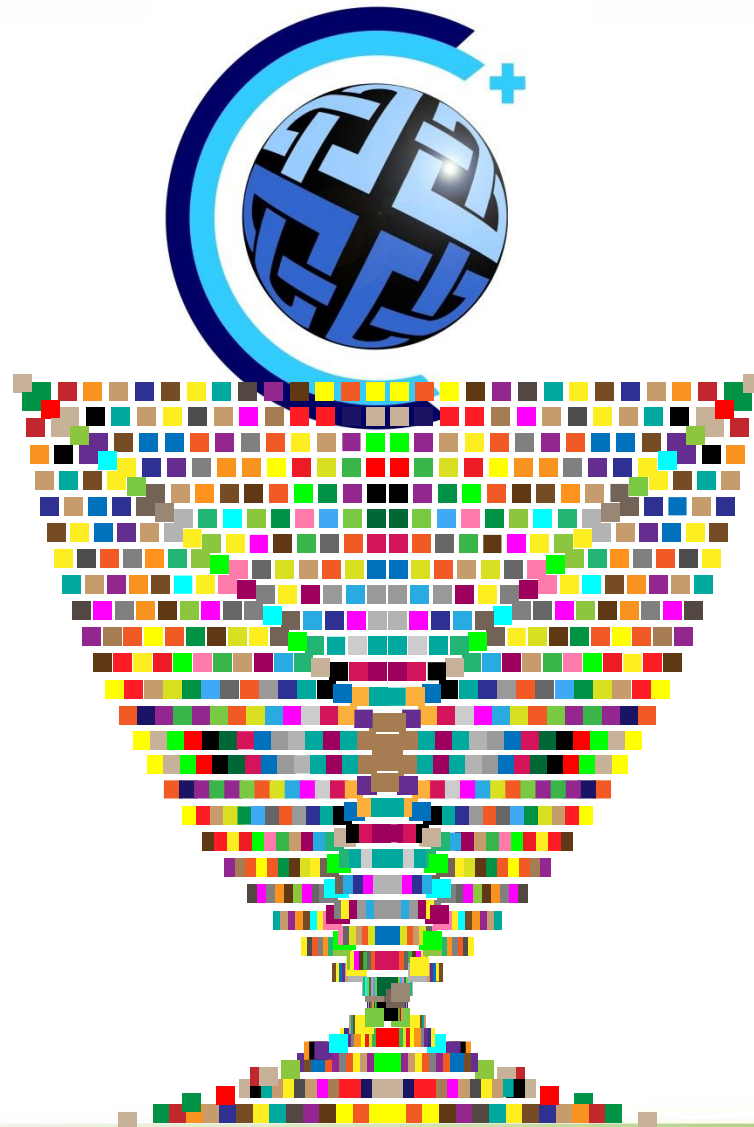
- Airport management system
- Data residency control in the cloud
- Security Monitoring in a cloud environment

## 4 participating countries

Finland, France, Korea, Spain

- **Alcatel-Lucent Bell Labs, France Co-ordinator: Stéphane Betgé-Brezetz**
- IKUSI (Ángel Iglesias, S.A.), Spain
- BISCAYTIK, Spain
- Cygate, Finland
- ENSIB, France
- Finceptum Oy (Novell Suomi), Finland
- Fundación Vicomtech, Spain
- Gemalto SA, France
- Innovalia Association, Spain
- INRIA, France
- Mikkelin Puhelin Oy, Finland
- Nextel S.A, Spain
- Nokia, Finland
- Software Quality Systems (SQS), Spain
- SOLACIA, Korea
- VTT Technical Research Centre of Finland, Finland
- Wallix, France

# Excellence Award: Network Technologies



# Excellence Award: Network Technologies



# Excellence Award

## Services and Applications

CoMoSeF

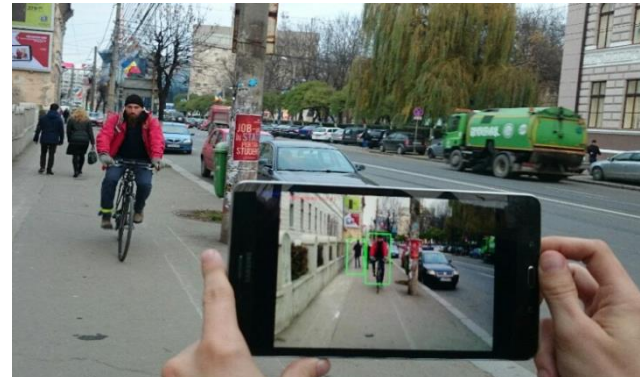
H2B2VS

Magician

QuEEN

# CoMoSeF (2012-2015)

## Co-operative Mobility Services of the Future







# CoMoSeF Achievements



## **Main achievement**

Cost-effective, co-operative mobility solutions to be deployed in different vehicles and traffic environments

## **Demos (selection)**

Exchange of traffic information between traffic authorities and road participants as well as between drivers of taxi fleets in Finland and buses in Turkey

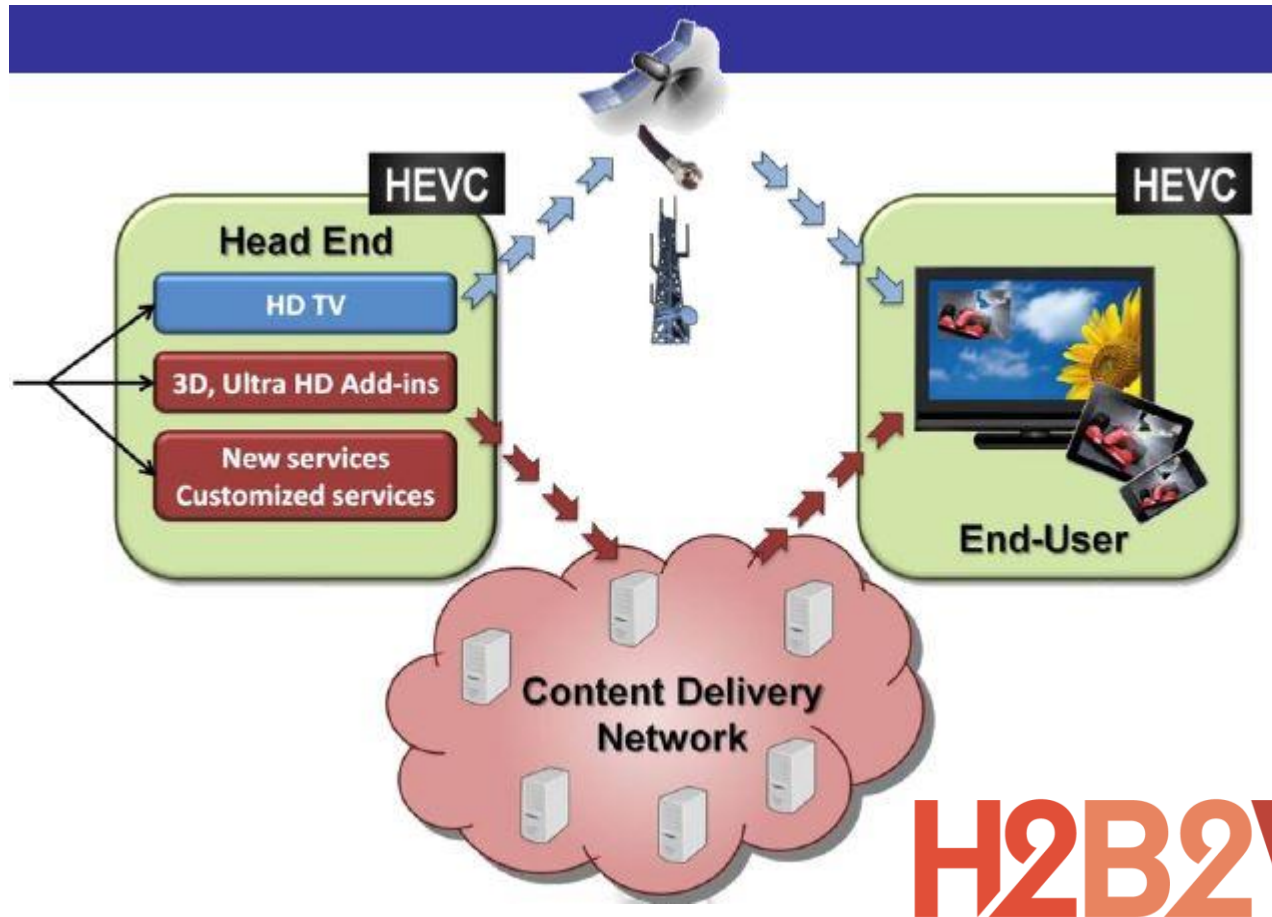
## **7 participating countries**

Finland, France, Korea, Luxembourg, Romania, Spain, Turkey

- Ángel Iglesias, S.A. (IKUSI), Spain
- AROBS Transilvania Software, Romania
- CBT, Communication & Multime-dia, S.L- Spain
- Centre Henri Tudor, Luxembourg Centria, Finland
- Entreprise des Postes et Télé-communications, Luxembourg
- Finnish Meteorological Institute, Finland
- HITEC, Luxembourg
- Infotripla Oy, Finland
- INNOVALIA (Asosacion de Em-presas Technologicas), Spain
- ISBAK A.S., Turkey KocSistem A.S., Turkey
- **Mobisoft Oy, Finland | Co-ordinator: Pekka Eloranta**
- Taipale Telematics, Finland
- Technical University of Cluj-Napoca, Romania
- Thales Communications & Security, France
- Ubridge Co Ltd, Korea
- UTC CNRS Heudiasyc, France
- Viveris Technologies, France
- VTT Technical Research Centre of Finland, Finland

# H2B2VS (2013-2015)

## HEVC Hybrid Broadcast Video Services



H2B2VS



# H2B2VS Achievements



## **Main achievement**

H2B2VS developed a solutions for hybrid distribution of TV programs where the main video is broadcast as usual and enriched with Internet services using HEVC compression.

## **Demos (selection)**

- Terrestrial demonstrator in France
- Cable and mobile demonstrator in Finland
- Satellite demonstrators in Spain and Turkey

## **5 participating countries**

Finland, France, Switzerland, Spain, Turkey



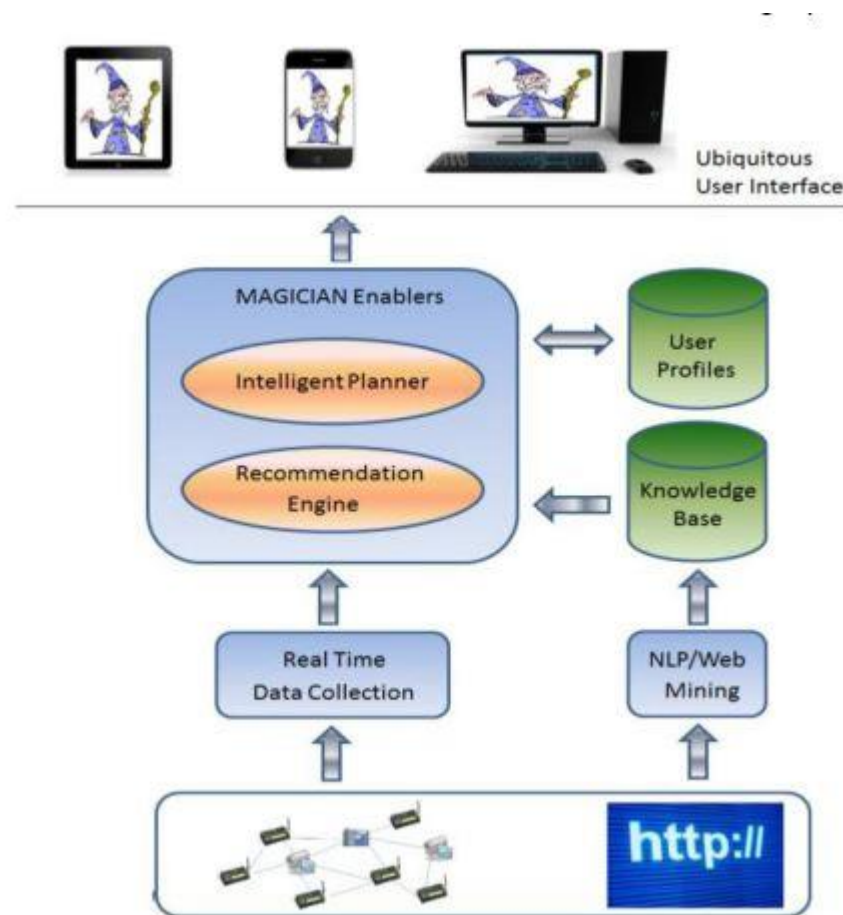
# H2B2VS Consortium



- Thomson Video Networks, France
- INSA de Rennes (IETR), France
- TDF SAS, France
- SmartJog SAS, France
- NexGuard France Labs S.A.S., France
- NAGRA France, France
- Télécom ParisTech, France
- VTT Technical Research Centre of Finland, Finland
- TUT-Tampere University of Technology, Finland
- Neusoft Mobile Solutions Oy, Finland
- Teleste Corporation, Finland
- Alcatel-Lucent España SA, Spain
- HISPASAT, Spain
- Nagravision, Switzerland
- EPFL, Ecole Polytechnique Fédérale Lausanne, Switzerland
- HES-SO Yverdon, Switzerland
- Argela, Turkey
- Basari Mobile, Turkey
- Vestel Electronics, Turkey

# Magician (2012-2015)

## Semantic Based Intelligent Entertainment Activity Planner



# Magician Achievements

## Main achievement

Magician has built a semantic based intelligent recommender system to improve the end users' leisure and entertainment experience. The system makes intelligent recommendations based on user profiles.

## Demo

- Recommendation application integration

## 2 participating countries

Hungary, Spain

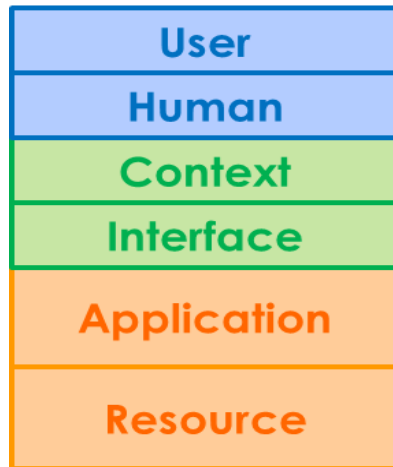
# Magician Consortium

- Gravity R&D Kft, Hungary
- ITAIINOVA, Spain
- **Ingeniera y Control Electrónico, S.A., Spain**  
Co-ordinator: Marcos Rubio





## Quality of Experience Estimators in Networks



# QuEEN Achievements

## Main achievement

QuEEN developed a **new quality-of-experience (QoE) agent**, which can flexibly aggregate QoE components. The project created a powerful quality assessment tool that adapts to various communications technologies.

## Demos (selection)

- Snow removal scenario: communication management of a fleet of snow ploughs
- EMO-Tracker: eye tracking & facial reading tech to build automatic visualizations of human moods

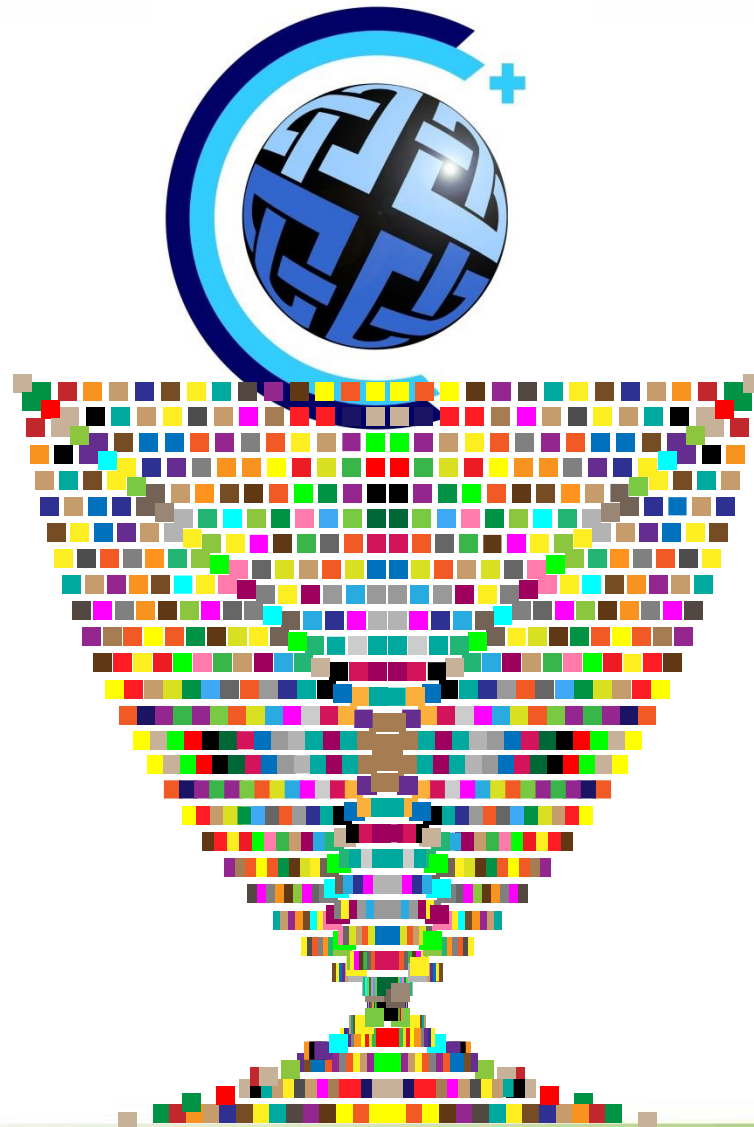
## 6 participating countries

Austria, Croatia, Finland, Germany, Spain, Sweden

# QuEEN Consortium

- Acreo AB, Sweden
- BTH - Blekinge Institute of Technology, Sweden
- Embou, Spain
- Ericsson AB, Sweden
- EXFO Nethawk, Finland
- **France Telecom, France**    **Co-ordinator: Frédéric Guyard**
- FTW - Telecommunications Research Center Vienna, Austria
- Hiberus TECNOLOGÍA, Spain
- IBBT, Belgium
- INDRA sistemas, Spain
- Info24, Sweden
- INRIA, Institut National de Recherche en Informatique et en Automatique, France
- Instituto Tecnológico de Aragón, Spain
- IP-Label Newtest, France
- Mobisoft Oy, Finland
- PPO Yhtiöt Oy, Finland
- Rugged Tooling Oy, Finland
- Technical University Berlin, Germany
- Telnet Redes Inteligentes, Spain
- University of Zagreb - Faculty of EE and Computing, Croatia
- VTT, Technical Research Center of Finland, Finland

# Excellence Award: Services and Applications



# Excellence Award: Services and Applications

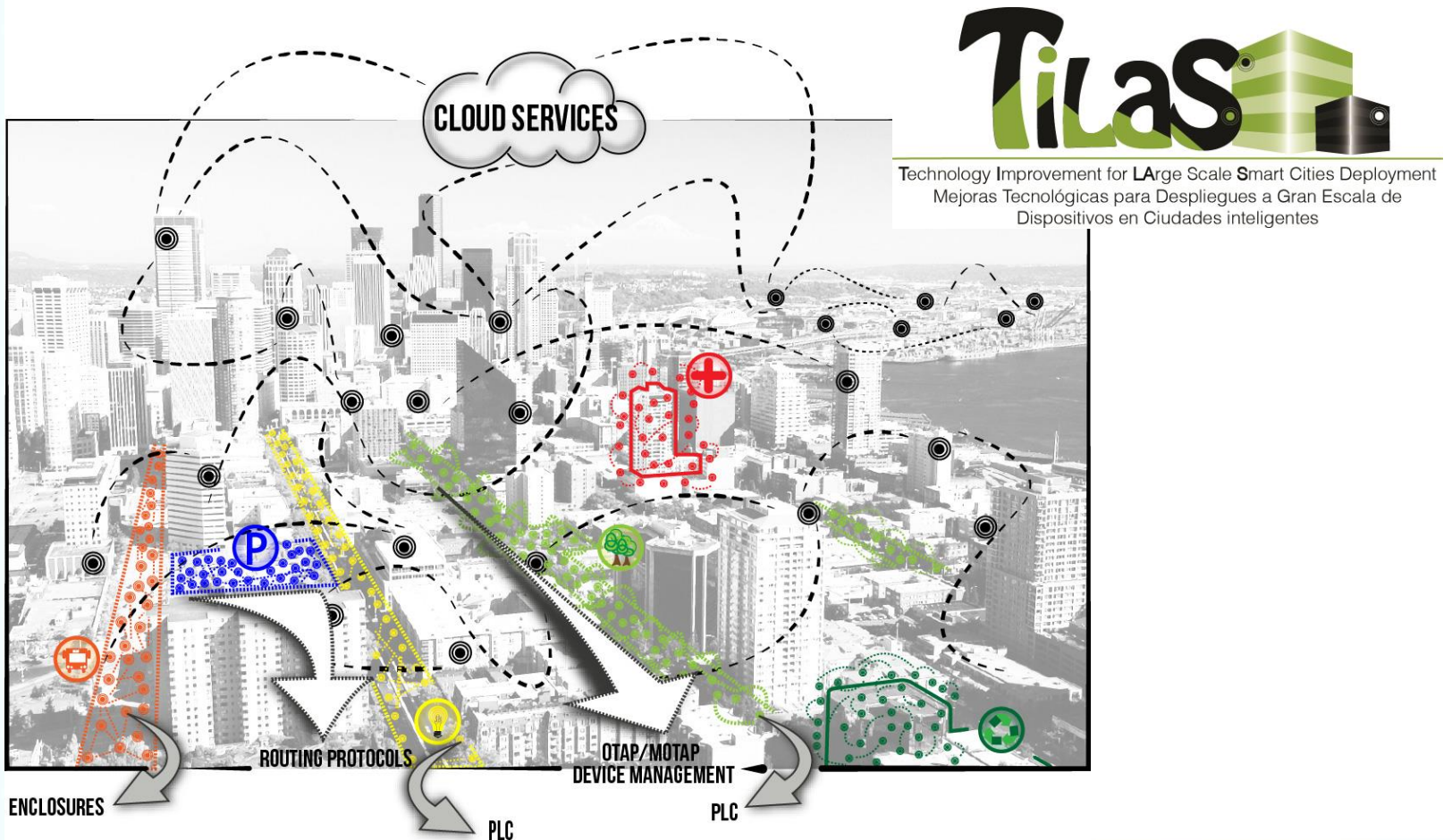


**Smart Cities**

**TILAS**

# TILAS (2013-2015)

## Technology improvements for large scale smart cities deployments



Technology Improvement for **L**arge Scale **S**mart Cities Deployment  
 Mejoras Tecnológicas para Despliegues a Gran Escala de Dispositivos en Ciudades inteligentes

# TILAS Achievements

## Main achievement

TILAS enhance the already deployed infrastructure in Santander's Smart City with its over 1,200 sensors. It provided solutions ranging from node testing, node packaging, latency reduction to over the air programming.

## Demos (selection)

- Traffic pattern monitoring
- Water management & monitoring
- Video surveillance with security features

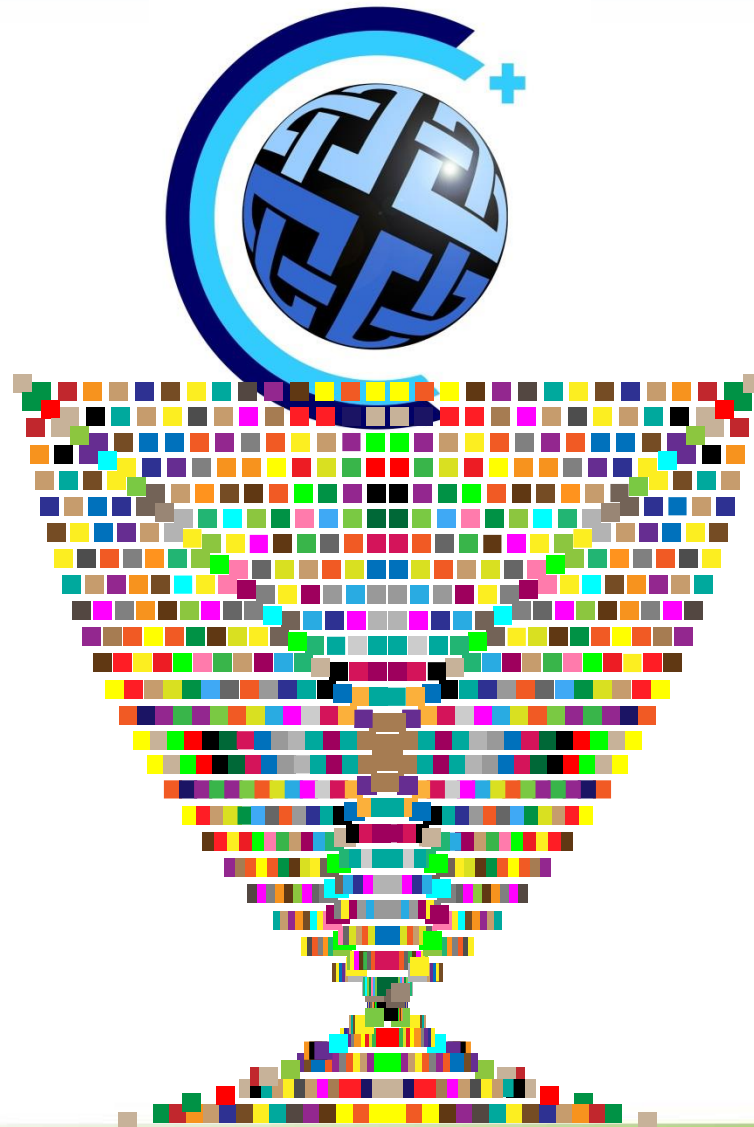
## 4 participating countries

France, Korea, Spain, Turkey



- Argela, Turkey
  - Bankoi, Spain
  - Commissariat à l'Energie Atomique et aux énergies alternatives, France
  - Gemalto SA, France
  - Pangaea, South Korea
  - **TST Sistemas, Spain**
- Co-ordinators: Aránzazu Sanz & Javier Valiño**
- TTI Norte, S.L., Spain
  - University Paris-Est Creteil, France
  - Webdyn, France

# Excellence Award: Smart Cities



# Excellence Award: Smart Cities



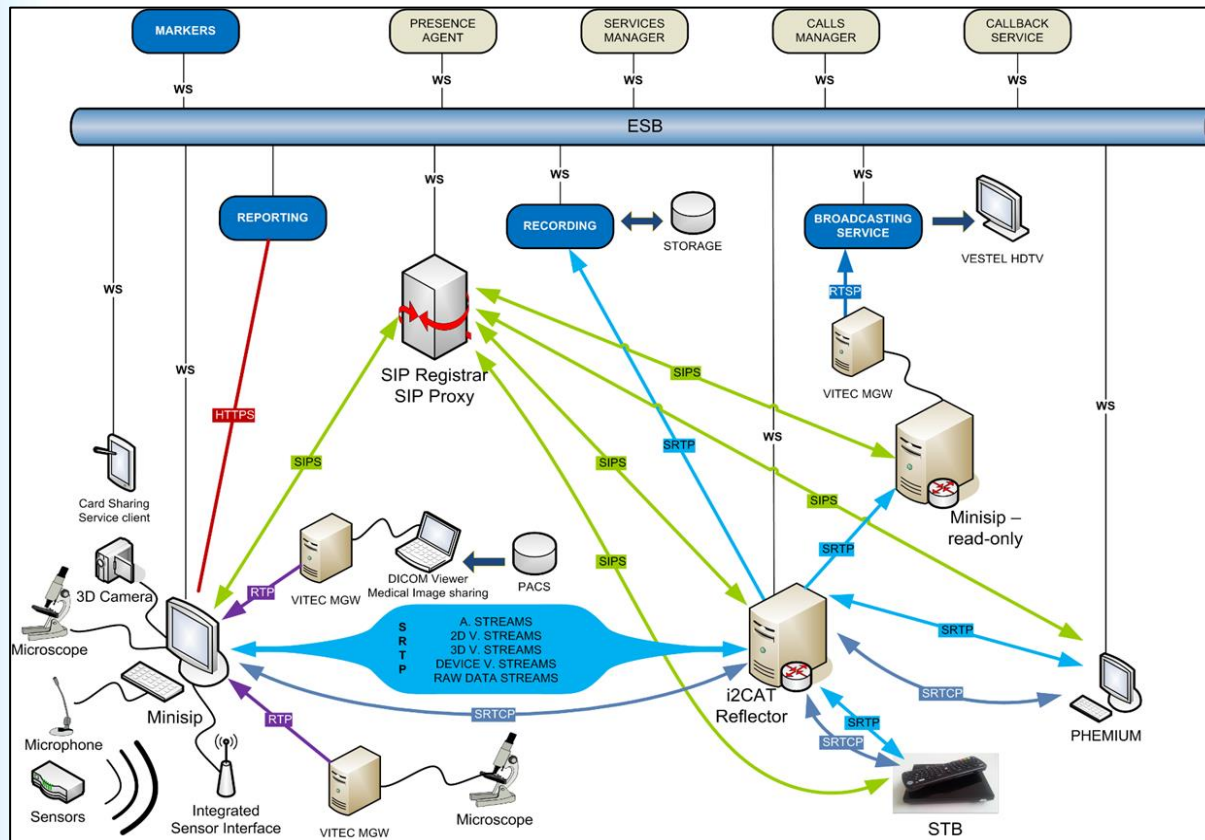
## Innovation Award Selected Projects

**HIPERMED**

**IPNQSIS**

# HIPERMED (2010-2013)

## High Performance Telemedicine platform



## Main achievement

Hipermed implemented a High Performance Telemedicine Platform based on a unified Service Oriented Architecture, which provides media over IP.

## **Trials/Demos (selection)**

Five healthcare scenarios (professional-to-professional and professional-to-patient) have been implemented on the platform and were validated by medical doctors.

## **Impact (selection)**

- New products: 7
- Improved products: 5
- New companies: 1 – VIDEOCAFE
- new permanent employees: 20

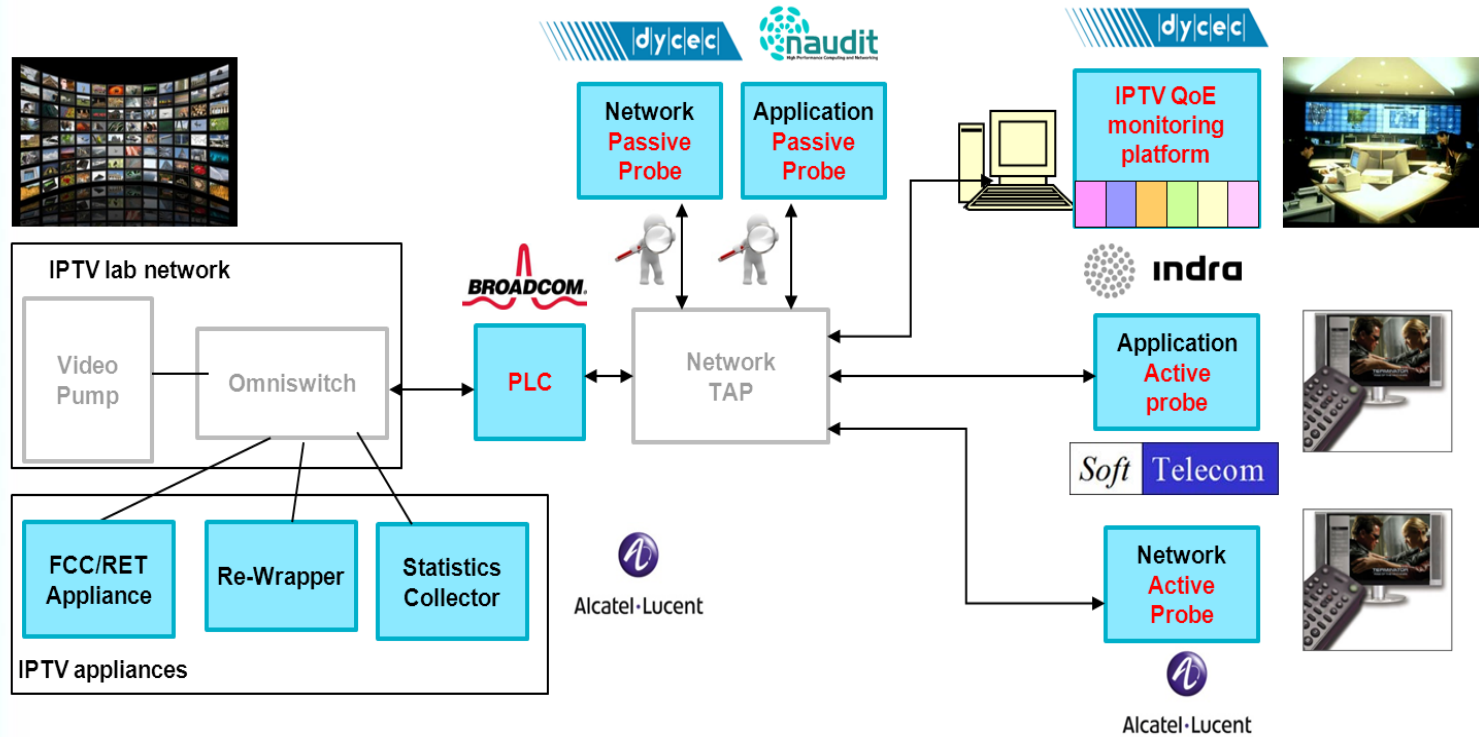
# HIPERMED Consortium

**5 participating countries:** France, Poland, Spain, Sweden, Turkey

- Androme Iberica, Spain
- Borderlight, Sweden
- Innova, Turkey
- Informatica El Corte Inglés, Spain
- Karolinska Institutet, Sweden
- **Merkum Energética, Spain**  
**Co-ordinators: Miguel Angel Palencia and Oscar Chabrera**
- Other Side Mirror S.L.U. (OSM), Spain
- Planet Media Studios S.L., Spain
- Poznan Supercomputing and Networking Center, Poland
- Royal Institute of Technology, Sweden
- Université de Lorraine, France
- Vestel Electronics, Turkey
- Vitec Multimedia, France

# IPNQSIS (2010-2013)

## IP Network monitoring for Quality of Service Intelligent Support





## **Main achievement**

IPNQSIS developed mechanisms that allow monitoring and managing service quality of IPTV, Mobile TV, VoIP and videoconferencing. These mechanisms enable optimizing the customers' Quality of Experience.

## **Trials/Demos (selection)**

- IPTV QoE monitoring
- Service optimisation (ALK/PRO/ACR/VTT)

## **Impact (selection)**

- 10 new products
- 16 improved products
- 1 new company created: Naudit Ingeniería (2011)
- 8 new permanent employees hired

## 4 participating countries:

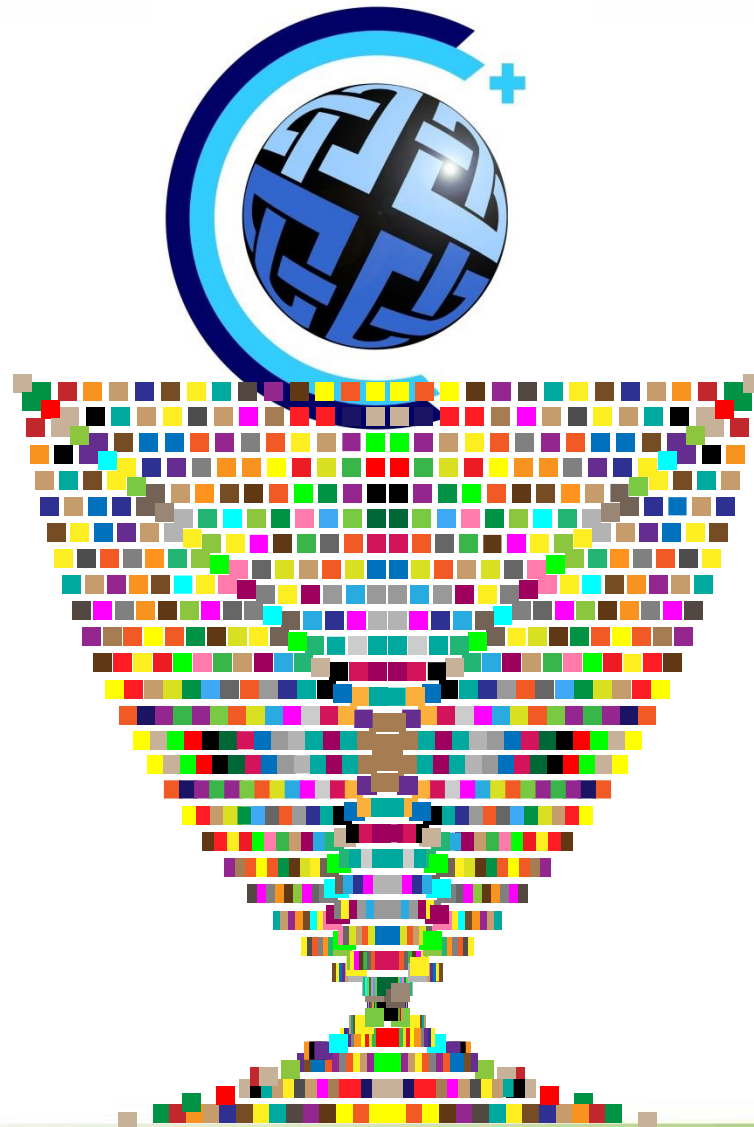
Sweden, Spain, France, Finland

- Acreo Swedish ICT AB, Sweden
- Alcatel-Lucent Espana SA, Spain
- Alkit Communications, Sweden
- Broadcom Networks Spain S.L, Spain
- Diseños y Consulting de Electrónica y comunicaciones, S.A., Spain
- Ericsson AB, Sweden
- **Indra Sistemas, S.A., Spain**    **Co-ordinator: Antonio Cuadra-Sánchez**
- Institut Telecom, France
- IP-Label Newtest, France
- Lund University, Sweden
- Naudit High Performance Computing and Networking, S.L., Spain
- NetHawk Oyi, Finland
- Net Technology, Finland

> *continued*

- PPO-Yhtiöt Oy, Finland
- Procera Networks, Sweden
- Softtelecom, Spain
- Vierling Communication, France
- Technical Research Center of Finland, Finland
- University Paris-Est Créteil, France

# Innovation Award



# Innovation Award



# Innovation Award

