



ICT 7: Advanced cloud infrastructures and services

ICT 8: Boosting public sector productivity and innovation through cloud computing services

Jorge GASOS – DG CONNECT
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ICT 7: Cloud

FP7 ICT Work Programmes

WP 2007-2008 (Call 1): Service and Software Architectures, Infrastructures and Engineering: **€120 million**

WP 2009-2010 (Call 5): Internet of Services, Software and Virtualisation: **€110 million**

WP 2011-2012 (Call 8): Cloud Computing, Internet of Services and Advanced Software Engineering: **€70.0 million**

WP 2013 (Call 10): Software Engineering, Services and Cloud Computing: **€41.5 million**

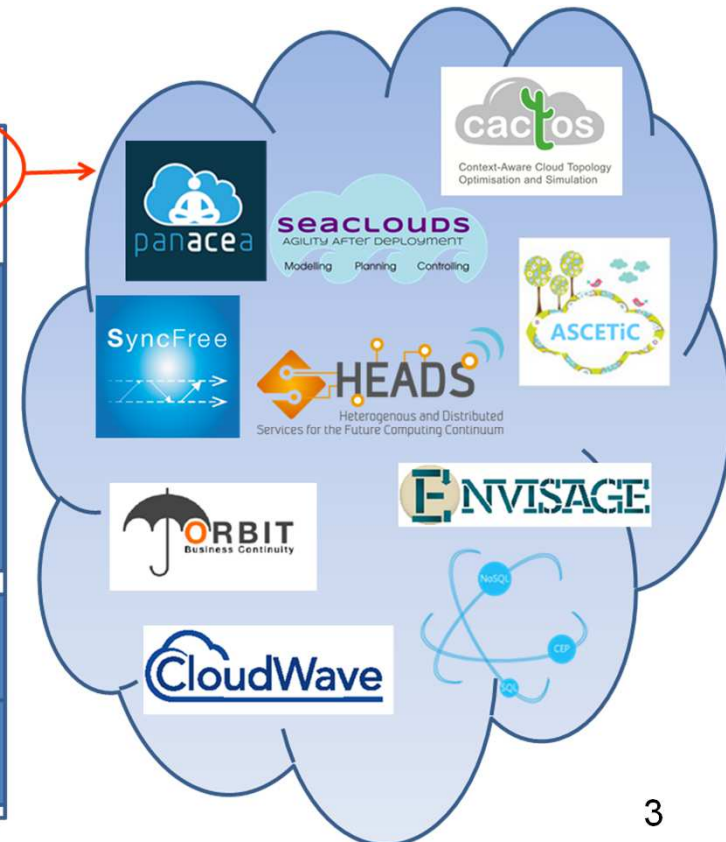
Total investment in the software, services and cloud computing area: **€341.5 million + part of Future Internet PPP**



Call 10

- Many running projects "in the cloud"

Software based Services	Cloud Computing		
Agile Software Prototyping	Heterogeneous clouds & IoT	Cloud Networking	Cloud reliability
<i>Mondo S-Case</i>	<i>Panacea SeaCloud Cactus SynchFree</i>	<i>Heads Ascetic</i>	<i>Orbit</i>
	Quality of Service	<i>Envisage Cloudwave</i>	
	Big Data	<i>CoherentPaas</i>	





Research and innovation:

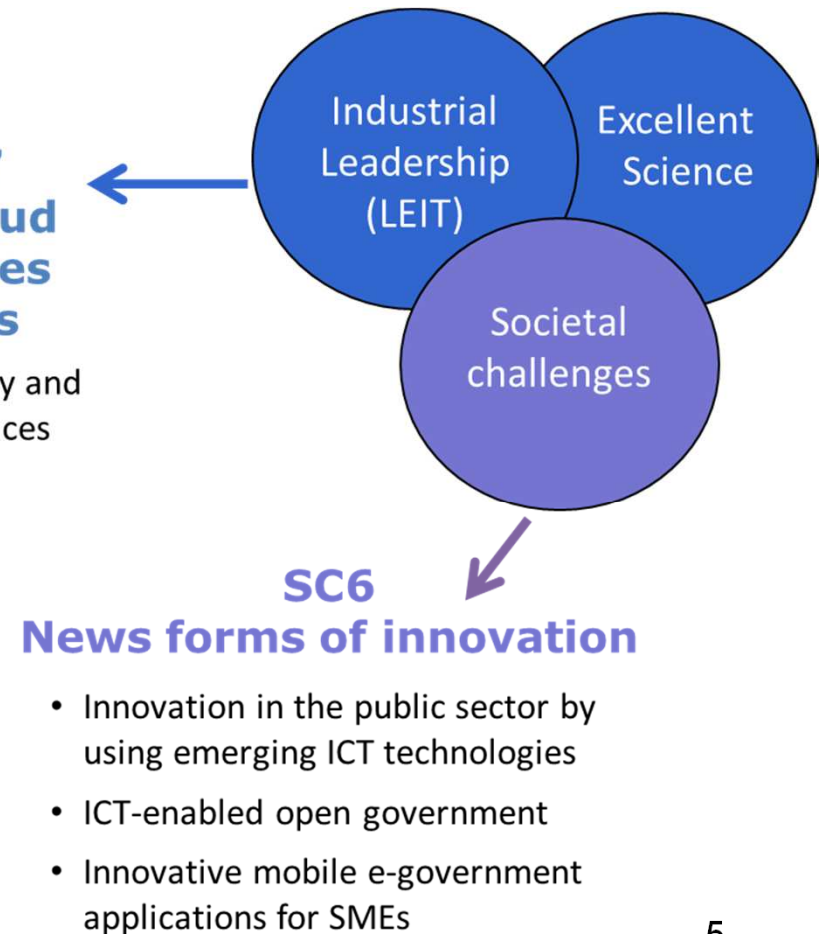
- High performance heterogeneous cloud infrastructures
- Federated cloud networking
- Dynamic configuration, automated provisioning and orchestration of cloud resources
- Automated discovery and composition of services (cloud of public services)
- Cloud security

66 M €; small and large projects; R&I

ICT-enabled public sector innovation: addressed in H2020 under the Industrial Leadership and Societal Challenges programmes

LEIT: ICT-7 Advanced Cloud Infrastructures and Services

- Automated discovery and composition of services





Innovation platforms for trusted cloud systems

- Open source software for innovative and trusted cloud-based services

5 M €; small projects; Innovation

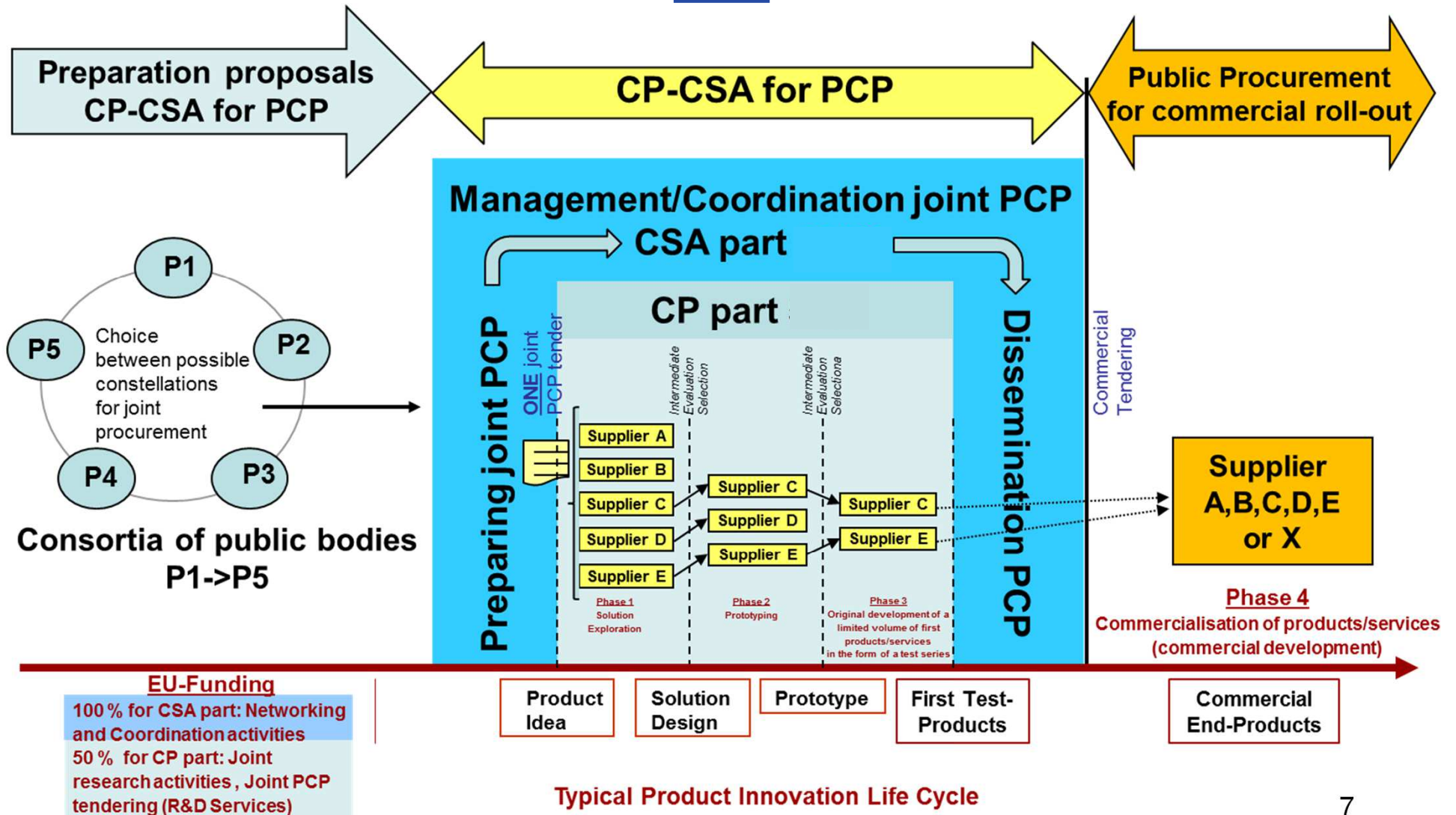
Coordination and support actions

- Reference models for SLAs in the cloud. Legal, economic and societal factors
- Collaboration among research projects

2 M €; CSA



ICT 8: PCP - PPI





Pre-commercial procurement for public sector cloud computing services (PCP)

- common requirements and terms of reference for future procurement of cloud computing services

9 M €; large projects; PCP

Public procurement of innovative cloud computing solutions (PPI)

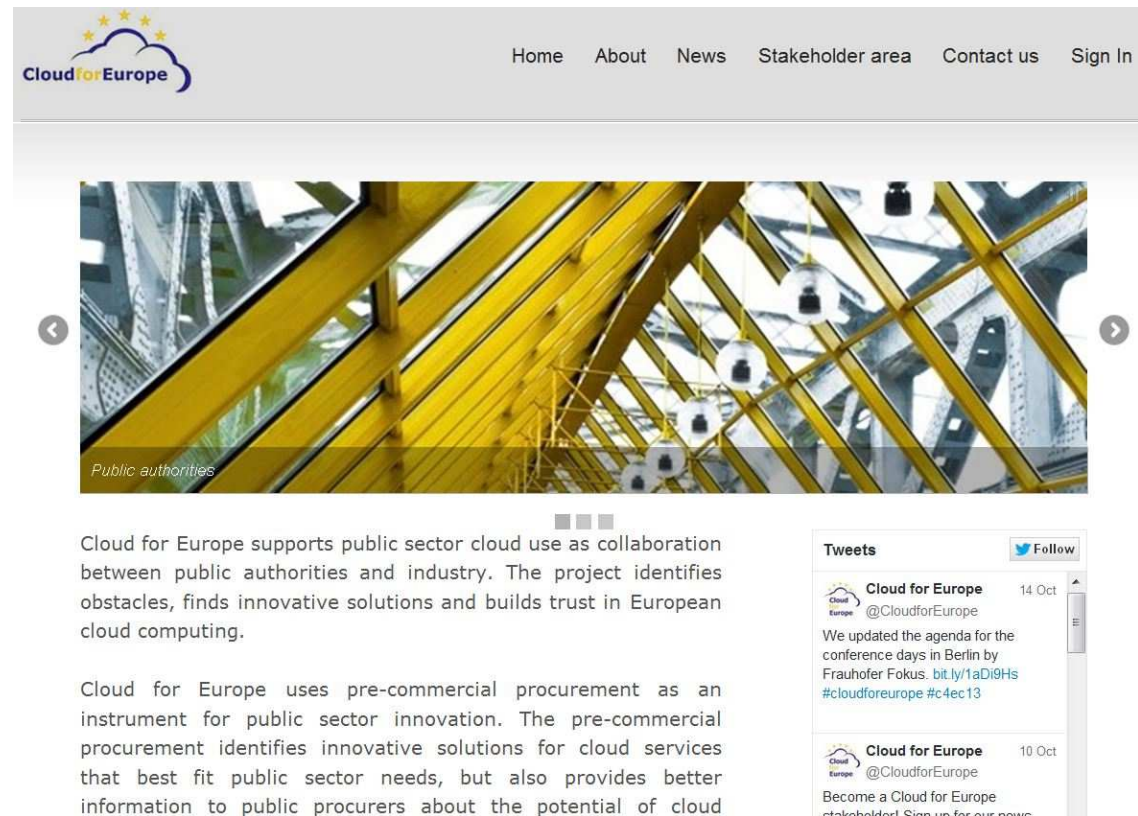
- organizing joint procurement of innovative cloud services by public authorities

13 M €; large projects; PPI



ICT 8: PCP - PPI

Building on work undertaken by the project C4E: www.cloudforeurope.eu



The screenshot shows the homepage of the Cloud for Europe website. At the top left is the "Cloud for Europe" logo, which includes a stylized cloud and the text "Cloud for Europe". To the right of the logo is a navigation menu with the following items: Home, About, News, Stakeholder area, Contact us, and Sign In. Below the navigation menu is a large banner image showing a modern building's interior with a prominent yellow structural frame and glass panels. The text "Public authorities" is overlaid on the bottom left of the banner. Below the banner are three small square icons. The main content area contains two paragraphs of text. The first paragraph discusses the project's goal of supporting public sector cloud use through collaboration and identifying obstacles. The second paragraph explains the use of pre-commercial procurement as an instrument for public sector innovation. On the right side of the page, there is a "Tweets" section with a "Follow" button. It displays two tweets from the account @CloudforEurope. The first tweet, dated 14 Oct, announces an update to the agenda for conference days in Berlin, mentioning Fraunhofer Fokus and including a link and hashtags. The second tweet, dated 10 Oct, is a call to action for stakeholders to sign up for news.

Cloud for Europe supports public sector cloud use as collaboration between public authorities and industry. The project identifies obstacles, finds innovative solutions and builds trust in European cloud computing.

Cloud for Europe uses pre-commercial procurement as an instrument for public sector innovation. The pre-commercial procurement identifies innovative solutions for cloud services that best fit public sector needs, but also provides better information to public procurers about the potential of cloud

Tweets [Follow](#)

Cloud for Europe @CloudforEurope 14 Oct
We updated the agenda for the conference days in Berlin by Fraunhofer Fokus. bit.ly/1aDi9Hs #cloudforeurope #c4ec13

Cloud for Europe @CloudforEurope 10 Oct
Become a Cloud for Europe stakeholder! Sign up for our news

Policy context: Cloud Computing Strategy

- 27 September 2012: COM on Unleashing the Potential of Cloud Computing in Europe. Accompanying Staff Working Document.
- The strategy is designed to stimulate the uptake of cloud computing across the economy
- Three key actions:
 - Mapping cloud relevant standards
 - Fair and safe contracts and SLAs
 - European Cloud Partnership





Further Information

Digital Agenda – Cloud Computing

<https://ec.europa.eu/digital-agenda/en/telecoms-and-internet/cloud-computing>

European Cloud Computing Strategy

<https://ec.europa.eu/digital-agenda/en/european-cloud-computing-strategy>

Sources:

Public consultation (<http://ec.europa.eu/digital-agenda/en/public-consultation-cloud-computing-software-and-services>)

Cloud Computing Expert Group (December 2012)

NESSI ETP Position Papers



HORIZON 2020

LE PROGRAMME DE RECHERCHE ET
D'INNOVATION DE L'UNION EUROPÉENNE



BROKERAGE SESSION

Cloud



Number of presentations

- 13 presentations:
 - 5 projects
 - 8 profiles



Project idea

NOW: 451 RESEARCH – PHILIP INGLESANT

NEXT: CSIT – GAVIN MCWILLIAMS



Research™

Uptime Institute™



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EU Analyst

451 Research, London
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WWW.451RESEARCH.COM • WWW.UPTIMEINSTITUTE.COM • WWW.YANKEEGROUP.COM

NEW YORK • BOSTON • SAN FRANCISCO • WASHINGTON DC • SEATTLE • DENVER • LONDON • MOSCOW • DUBAI • SAO PAULO • SINGAPORE

The 451 Group



- Unique combination of research, analysis & data
- Published syndicated research on emerging markets
- Daily qualitative & quantitative insight
- Analyst advisory, support
- Global events
- Go-to-market support






Research™

ANALYZING THE BUSINESS
OF ENTERPRISE IT INNOVATION

- 451 has research practices including Cloud, Data Centres, Eco-Efficient IT
- Dedicated European research practice area
- 451 leads Impact work packages: exploitation, dissemination, sustainability, standardisation
- Partners in over 6 major EU projects since 2007
- Dr. Inglesant has specialisations in Cloud and Future Internet
- Led Innovation work packages of Co-ordination and Support Action in Future Internet



The Challenge: Coping with the complexity of Cloud deployment and execution

- Options for service delivery and service consumption are growing exponentially
- For SMEs in particular: new opportunities, new challenges
- Changed supplier-consumer relationships
- Organisations will struggle with negotiating and monitoring service agreements
- Possibilities for deployment change rapidly

The Proposal: Cloud Control Plane and Execution Toolkit

- *Best Execution Venue*: pioneered by 451 Research
- Logical separation between management policies and underlying implementation
- Builds on Trust – Risk – Eco – Cost model implemented in OPTIMIS project
- Allows exploration of innovative, dynamic pricing models



Project idea

NOW:

CSIT – GAVIN MCWILLIAMS

NEXT:

EUREVA – PHILIPPE MARTINEAU

LEIT ICT-7-2014 Advanced Cloud Infrastructures and Services

TUTIS:

Environment for User-Centric Information Security



Queen's University
Belfast



Gavin McWilliams

January 2014



Academic Centre of Excellence in Cyber Security Research



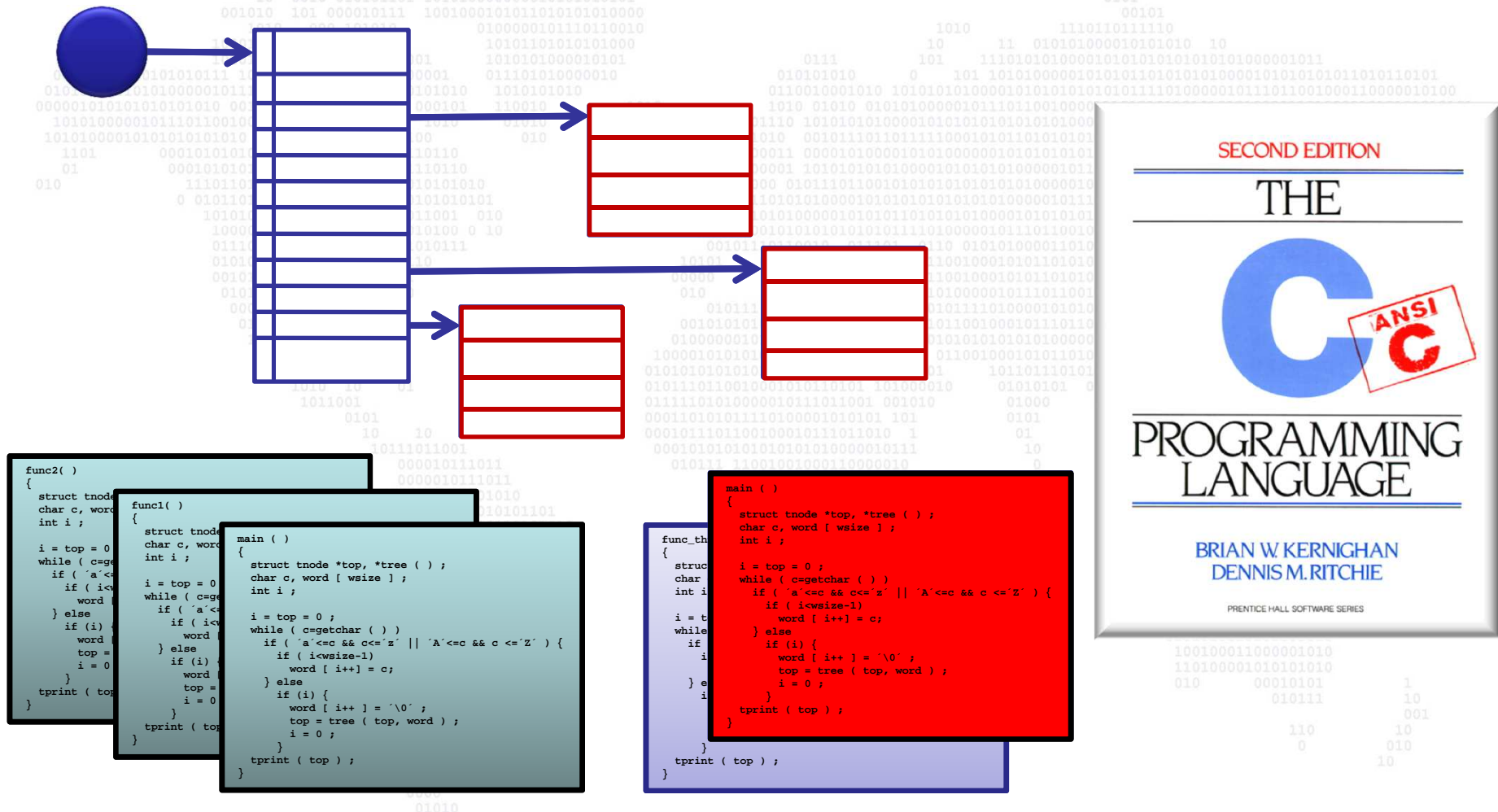
Cloud security:

Mechanisms, tools and techniques to increase **trust, security and transparency** of cloud infra and services, including **data integrity, localisation and confidentiality**, also when using **third party cloud resources**.

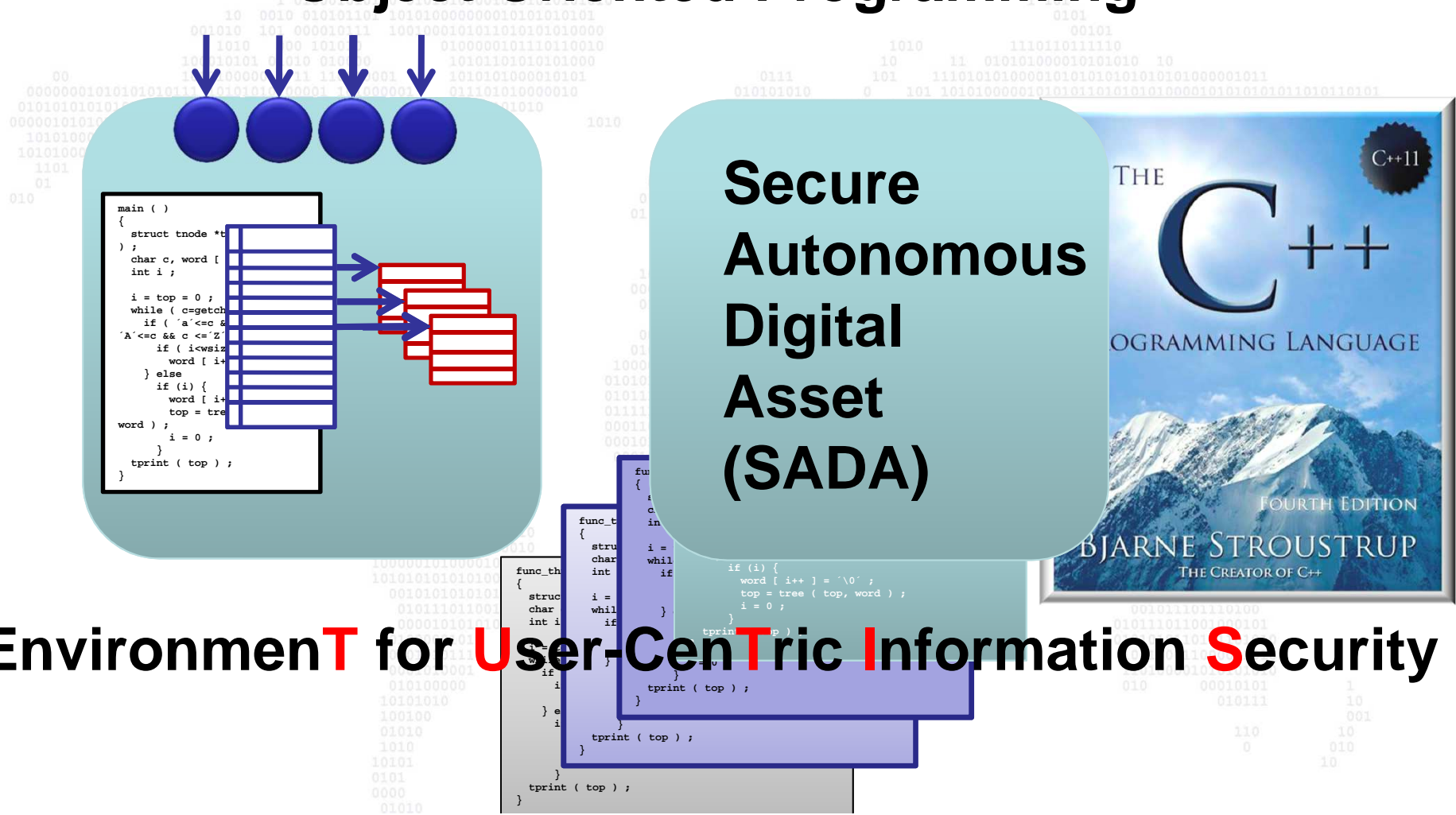
...an approach that can be implemented on multiple platforms.

g.mcwilliams@qub.ac.uk

Algorithms + Data Structures = Programs



Project TUTIS Object Oriented Programming



Environment for User-Centric Information Security



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Philip Mills
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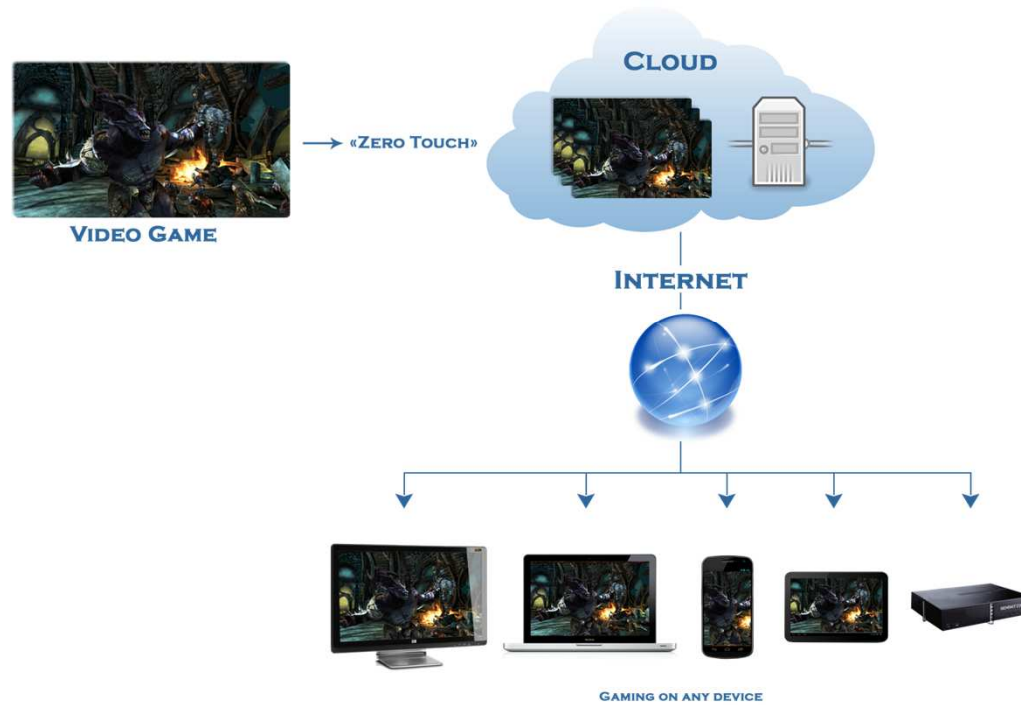
Project idea

NOW: EUREVA – PHILIPPE MARTINEAU

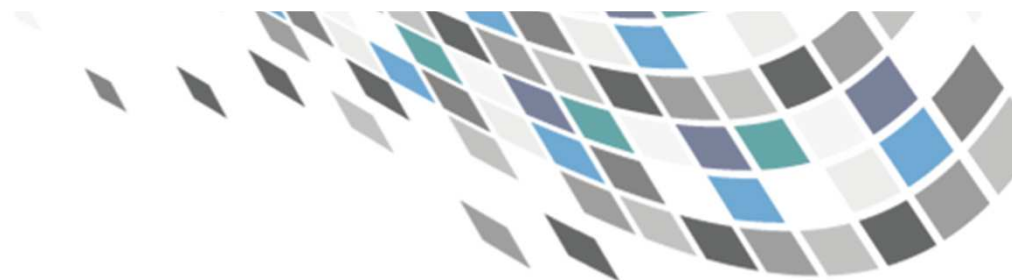
NEXT: W4 – JEAN-LOUP COMELIAU

Project idea

Enable real-time cloud interaction on any screen



swiich



Research topics

- Existing competencies
 - Real-time H264 image streaming on any device
 - Cloud-based server provisioning
 - Performances:
 - 720p images - 60FPS - 5Mbps
 - 100 ms round-trip latency

- Research topics
 - Real-time HEVC image streaming and interaction
 - 720p – 1080p and 4K or beyond real-time streams
 - 3D images
 - Cloud & network infrastructures

- Use cases
 - Gaming
 - Professional images
 - ...

Questions ?

Contact:

Philippe Martineau

CEO – Eureva

philm@eureva.fr

Tel: +33 6 99 43 44 55





Project idea

NOW: W4 – JEAN-LOUP COMELIAU

NEXT: TELECOM PARISTECH – AHMED HADDAD



Horizon 2020
10/01/2014

www.w4software.com



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loup.comeliau@w4software.com

INNOVATION &
EFFECTIVENESS
AGILE BPM
APPLICATIONS



W4 : Who we are - Skills

W4 : French SME - www.w4software.com

- Software Editor since 1996
 - First workflow on the web (WWW Workflow)
 - Business Process Management (BPM) Suites
 - Business Apps Automation environment
- Member of various organizations
Afdel, OMG, WfMC, Club des pilotes de processus...
- Experienced in European Projects
EMODE, SERVFACE, SERENOA, USIXML

Skills : Collaborative Business Applications

- Workflow, BPM and digitization solutions
- Data modeling and management, Information Systems, RDBMS...
- Graphical User Interface : web2.0 and mobiles

W4 : Horizon 2020 Project Idea

Project Idea:

Develop a social Business Process Management (BPM) Platform as a Service (PaaS) capable of executing any process modeled in BPMN2, with 3 types of cloud services :

- *Process orchestration services*
- *Data management services*
- *User Interface automation services*

Motivations :

- *Offer more standard solutions for business cases*
- *Favor business process interoperability*
- *Take advantage of new cloud resources to offer innovative “Social BPM”*
- *Push mainstream adoption of BPM in the cloud by adding the UI dimension to OMG’s BPMN2 standard*



Project idea

NOW: TELECOM PARISTECH – AHMED HADDAD

NEXT: CEA LIST – BASILE STARYNKEVITCH



« Cloud at hands for enhanced mobile user experience »

Scope: ICT07/2014 “Research & Innovation actions in Dynamic configuration automated provisioning and orchestration of Cloud resources”

Objective: Mechanisms to off-load computation and storage tasks from mobile devices onto the Cloud at both design and execution time

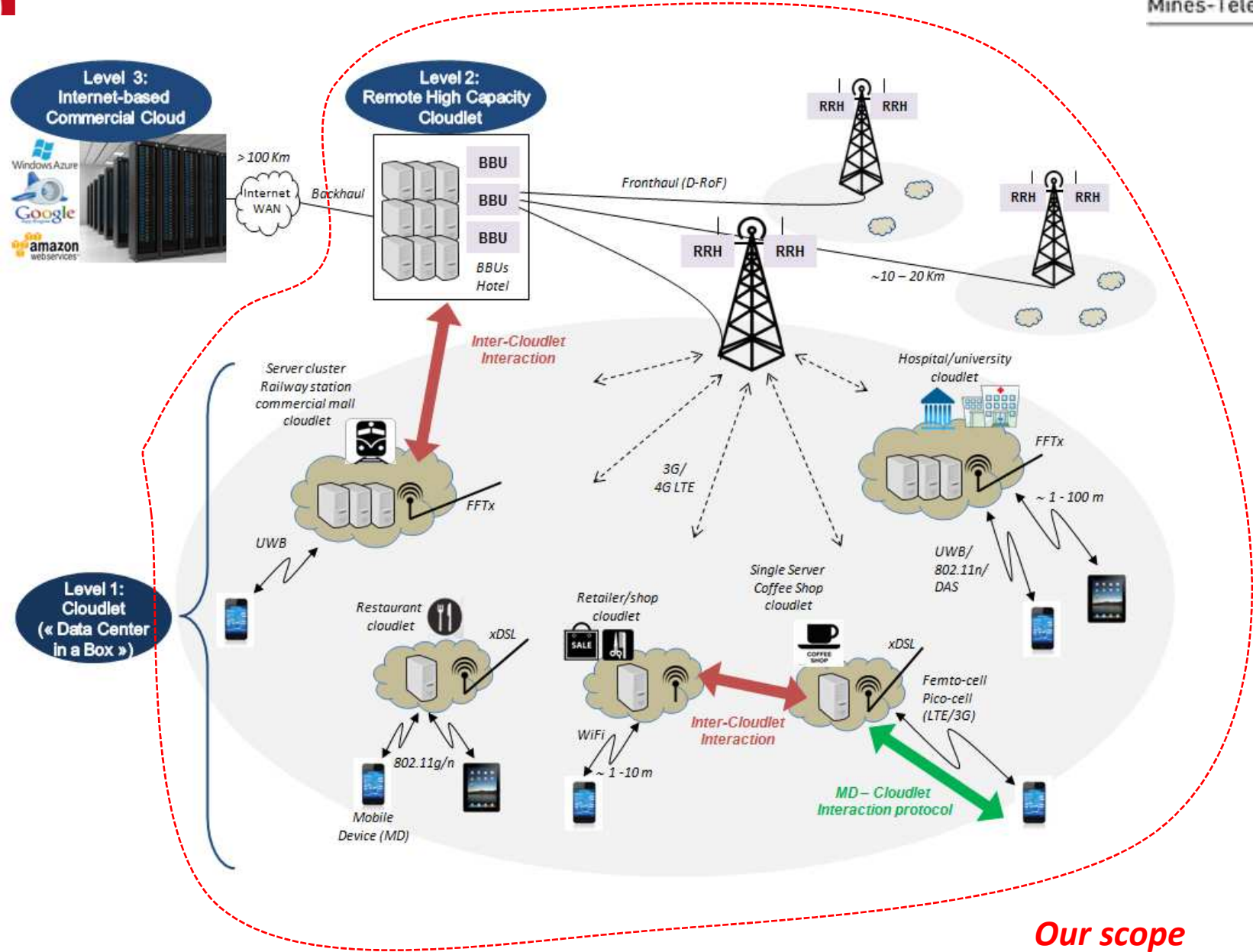
Maurice GAGNAIRE, Ahmed HADDAD, Sawsan AL ZAHR

Contact: maurice.gagnaire@telecom-paristech.fr

Phone: +33.1.45.81.74.11

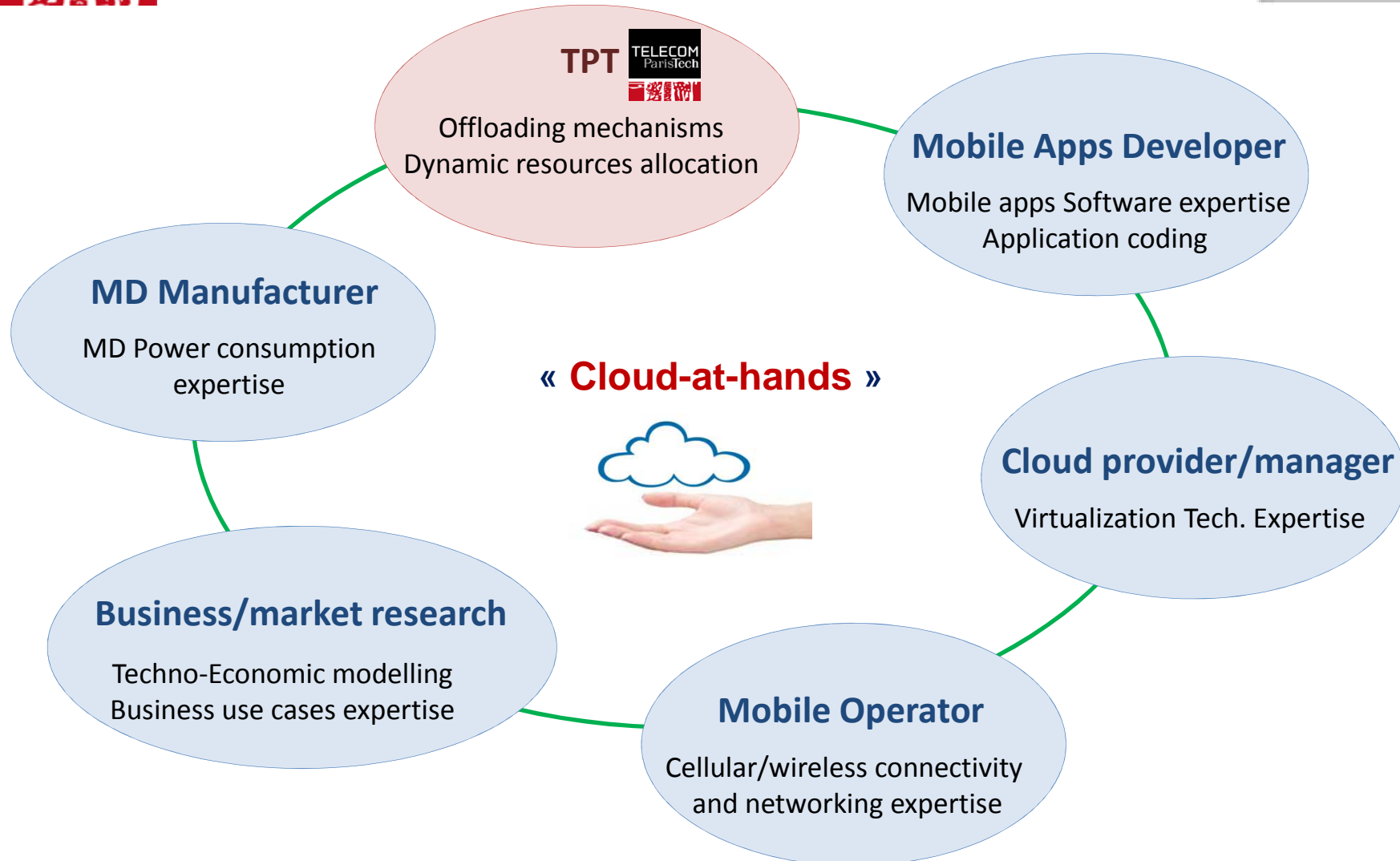
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Motivation and Objectives



Our scope

Consortium layout: expected partners





Profile

NOW:

CEA LIST – BASILE STARYNKEVITCH

NEXT:

JERUSALEM COLLEGE OF TECH. – YORAM HADDAD



list

Cloud/H2020: competence

Basile Starynkevitch, CEA, LIST [DILS]

CEA/Saclay b862 PC174, 91191 GIF/YVETTE CEDEX, France

basile.starynkevitch@cea.fr

- Works within the [GCC](#) compiler
- Developing [MELT](#), a domain specific language & plugin to customize GCC (see gcc-melt.org for more)
- Free software (GCC & MELT are GPLv3)
- Abilities: **compilation & static analysis** (of C, C++, Ada, Go, Fortran, D, ... source code compiled with GCC & MELT)



list

Cloud/H2020: “dreams”

I wish to participate in projects bringing:

.Compilation (GCC) & static analysis (MELT) **for** the Cloud:

.Validation of specific **coding rules** (to be defined) for cloud software (in C, C++, ... compiled with GCC)

.Optimization for/of cloud software: **whole system optimization??**

.Compilation (GCC) & static analysis (MELT) **on** the Cloud:

Take advantage of the power of the Cloud to compile software (embedded, Internet, HPC,) with powerful *optimizations* and **coding rules** validations

.Both?

Contact basile.starynkevitch@cea.fr



Profile

NOW:

JERUSALEM COLLEGE OF TECH. – YORAM HADDAD

NEXT:

AKKA – BENOIT BAURENS

ICT 7 : Federated CloudNet and Orchestration

- ▶ **Jerusalem College of Technology**
 - Oldest (since 1969) school of engineering in Israel (not university)
- ▶ **Computer Science Dept.**
 - 200 graduates per year
 - 30 faculty members
 - MSc devoted to Communication System Engineering

Dr Yoram Haddad
Tenured Senior Lecturer and Researcher
Head of FTNet Lab
haddad@jct.ac.il



בית הספר הגבוה לטכנולוגיה בירושלים
Jerusalem College of Technology

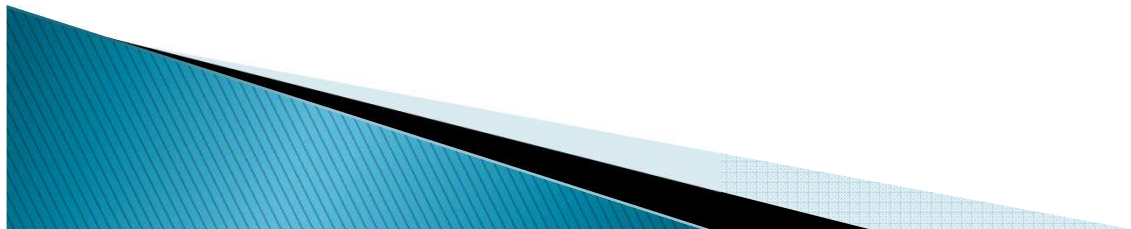
Future Networks(FTNet) Lab

▶ Orchestration

- Controller performance
 - Mathematical analysis
 - Experimental performance through Mininet
- Channel for flow state upload to controller
 - Coordinated access or Out-of-band: common control Channel

▶ Network abstraction

- Primitives to abstract networks to present a Network OS(NOS) to developer





Profile

NOW: AKKA – BENOIT BAURENS

NEXT: JEMM RESEARCH – CHRISTOPHE TOULEMONDE

AKKA

engineering and technology consulting

Advanced Cloud Infrastructure and Services

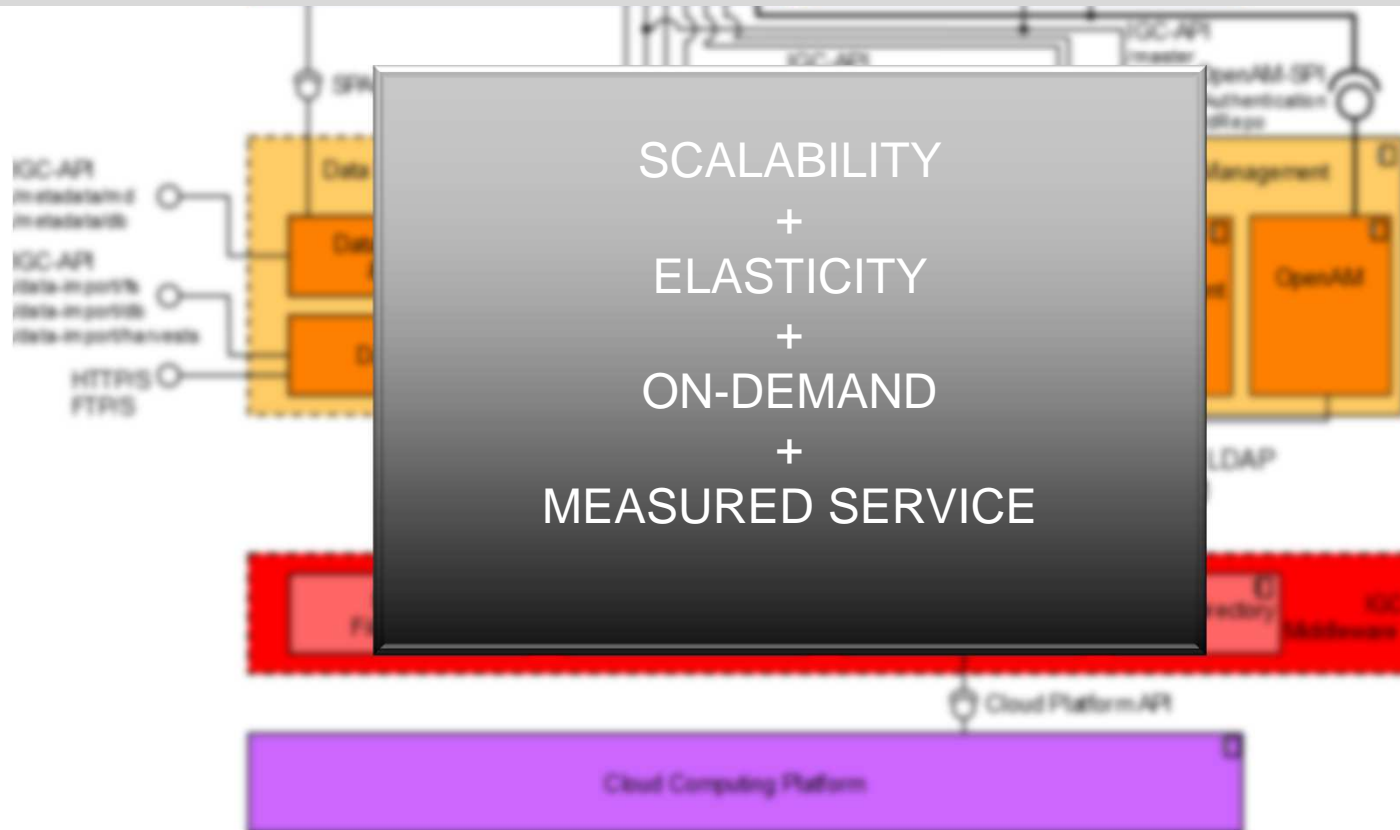
Our Competencies at a Glance

UK-FR FI & Cloud Brokerage event
Paris, Friday January 10th, 2014

Benoit BAURENS,
R&D Project Manager
benoit.baurens@akka.eu www.akka.eu

“Architecting” for the Cloud

It is not simply about *porting* applications and software stacks to the cloud, but rather to *integrate* them in a *scalable, elastic... framework*





Business Processes and Data Integration

Example of Recent Project's Coordination:

A **PaaS** Platform for GeoData Publication and Sharing Services



InGeoCloudS
Inspired GEOdata CLOUD Services





Profile

NOW:

JEMM RESEARCH – CHRISTOPHE TOULEMONDE

NEXT:

GMV – ALMUNEDA SANCHEZ GONZALEZ

An European IT Research and Advisory SME

JEMM research

www.jemmresearch.com

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France

+33 6 30 67 95 57
+33 1 39 16 48 81

Contact :
christophe.toulemonde@jemmresearch.com



Christophe Toulemonde founded JEMM Research, an European IT research and advisory firm. Christophe has more than twenty five years of IT experience in various areas and roles, including enterprise architecture, enterprise security, application development, technical support and software marketing and sales. He is a recognized expert in enterprise architecture, information security, and cloud computing. Before founding JEMM research, he covered integration and development strategies at Meta Group for EMEA. As CTO, he launched Datablue, an IBM subsidiary to support promote middleware on distributed platforms. During 15 years, at IBM in France and in the US, he held multiple technical and marketing management positions.

Sample Works



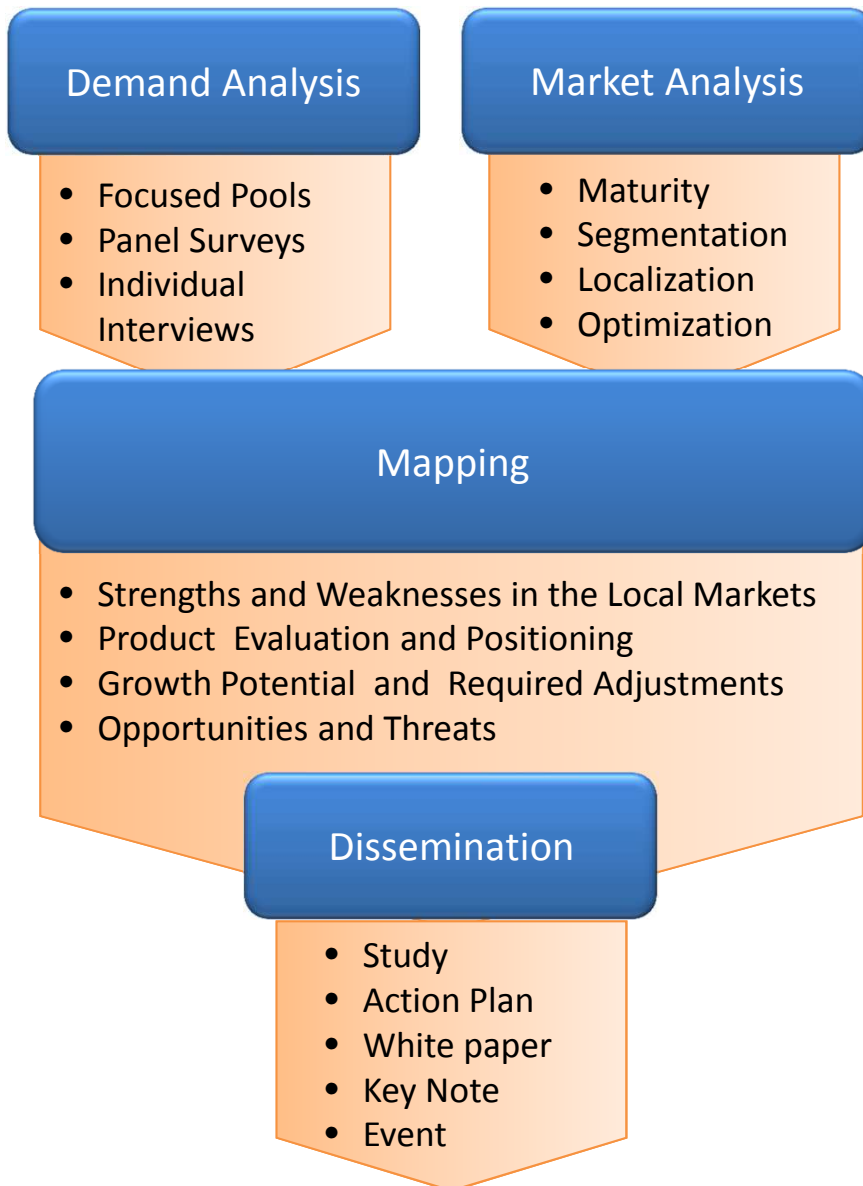
- Community :
“La Sécurité Intelligente”
- Market Analysis :
CISO at the crossroads of requirements



- Market Analysis
 - Mobility Observatory 2013
 - 2014 Business Intelligence Barometer

- GDFSuez
- Kingsfischer
- CCIP
- EDF
- Bouygues Telecom
- SABIC
- STC
- ...

A Business Partner in the Project Consortium



- **Business and Social Values are Key Requirements from the Commission**
 - “Responding to the economic crisis to invest in future jobs and growth”
 - “Addressing people’s concerns about their livelihoods, safety and environment”
- **Your Business Partner to Sustain the Project Technical Achievements**
 - Providing the Foundations
 - Transitioning seamlessly from idea to markets (from TRL 6,7 or 8 to TRL 9)
 - Studying the impact of the deliverables beyond the native targets
 - Identifying market and demand requirements
 - Analyzing the social impact
 - Disseminating the results to the markets

Current Participation

- EURO-MILS FP7 Project
- *“Certified Trustworthy Embedded Platform for Avionics and Automotive”*
 - 14 European partners including Airbus, T-Systems, Thales, SYSGO, Universiteit Gent, Université Paris Sud...
 - 3 years, €6 millions
- JEMM Research Involvement
 - Project Business Concepts Reference
 - Industry Panel (40 advisors)
 - Value Analysis in Adjacent Markets





Profile

NOW:

GMV – ALMUNEDA SANCHEZ GONZALEZ

NEXT:

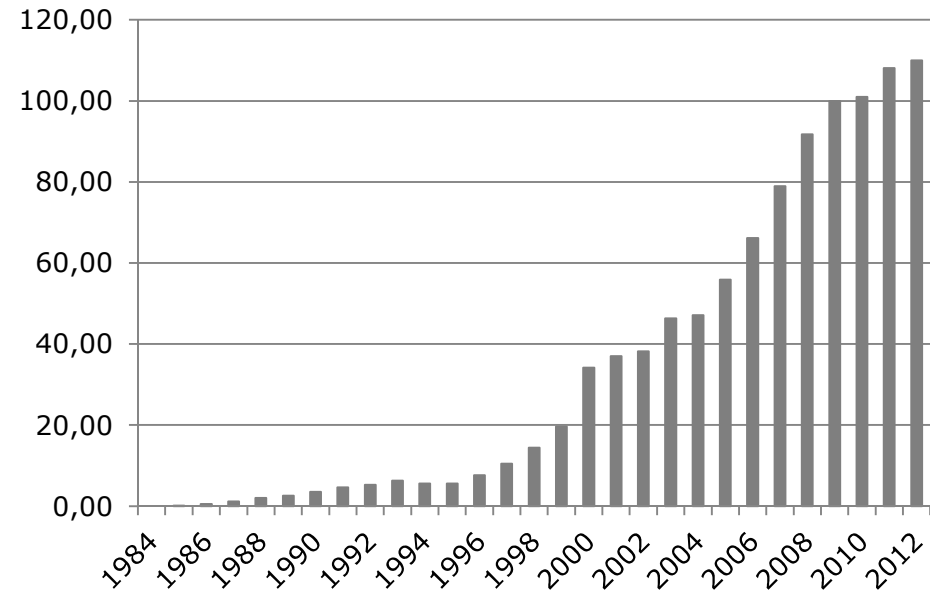
SOFTEAM – ALESSANDRA BAGNATO

H2020 LEIT ICT

**FUTURE INTERNET /
CONTENT
TECHNOLOGIES &
INFORMATION MNGT**

INTRODUCTION

1. Almudena Sánchez.
GMV Business Development
Executive
asanchez@gmv.com
2. Private equity. Annual Sales
(2012): 110 million euros
(65% international market)
3. Very well known and active on
standardization of space
scientific data, high
performance computing for
sensors processors,
technological partner within
ESA Climate Change Initiative
and playing a leading role on
ESA Long Term Data
Preservation.



BACKGROUND AND TOPICS OF INTEREST

- FP7, GMES-Copernicus, ESA Earth Observation and Climate Change Initiative references
- **BEinGRID, ARGUGRID, FIRE CCI, OSIRIS, GLOBAEROSOL, GMES Service Element Program Forest Monitoring, GMES Service Element Program PROMOTE, ESA Long Term Data Preservation, ESA Long term data Archive on new Technologies**
- Exploitation of space-based data for end-users to support the decision making
- Close relationship with many public and private stakeholders
- Access to global market
- ICT 7 – 2014: Advanced Cloud Infrastructures and Services
- ICT 15 – 2014: Big data and Open Data Innovation and take-up
- ICT 16 – 2015: Big data – research





Profile

NOW: SOFTEAM – ALESSANDRA BAGNATO

NEXT: IBM – CHRISTIAN DE SAINTE MARIE

SOFTEAM

an R&D company

name.surname@softeam.fr



SOFTEAM = 700 experts, 23 years of R&D



UML Tools

Software Architecture Modeling,
Open Source



Research

15+ EU Project including
FP7 ModaClouds and Juniper



Management

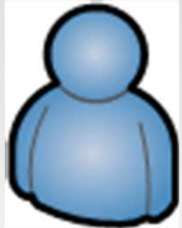
Consortium Coordination



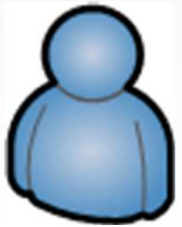
Standardization

SOA, Cloud, Enterprise Architecture,
Testing, System Engineering

Target: Cloud and Big Data architectures for software developers and business architects



Business
Architect



System
Architect



Developer



Cloud

How to help BAs to integrate cloud into enterprise systems?

How to migrate legacy to cloud?
How to design for multi-clouds?

How to automate deployment to multiple clouds?

MDE environment delivery

- SaaS mode
- Collaboration over cloud

Big Data

How to leverage Big Data in business architectures?

How to link business semantics with business objects?

How to port business objects to various Big Data models?

Model as a Big Data

- Storage, replication,
- Access , search



Profile

NOW: IBM – CHRISTIAN DE SAINTE MARIE

NEXT: UNIV. OF BATH – JAMES DAVENPORT

IBM France Lab interest in collaborative R&D projects

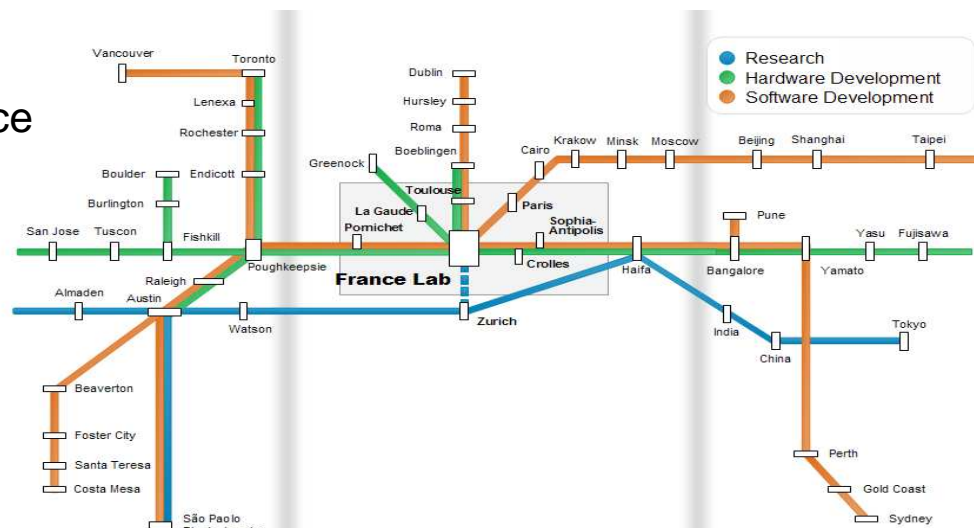


IBM France Lab is the R&D component inside IBM France

- Created 2010
- 700+, based near Paris, Nantes, Nice, Toulouse
- French expertise connected worldwide

IBM France Lab genealogy

- Centre Scientifique d'IBM France
- Innovation Lab in Montpellier
- ILOG
 - Worldwide leader in
 - rule based systems
 - constraint programming
 - math programming
 - 300+ R&D in France
 - Acquired by IBM in 2009
- Numerous smaller R&D teams from other acquisitions



CAS France Lab is the center for advanced studies inside IBM France Lab

- Missioned to support **innovation through collaboration** in IBM France Lab

Application lifecycle management



Jazz
System z

Business rules, events and decisions management



User Tools

Repository

Execution Server

Analytics and optimization



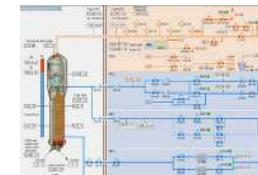
allocate aircrafts / crews?

cost / carbon emission?

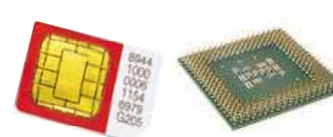
inventory cost / customer satisfaction?

risk / potential reward?

Visualization, mobility



Hardware



We are happy to look at all opportunities to participate in proposals or projects where we can contribute in our areas of competence

- We have **experience** in collaborative projects and in the preparation of proposals
- We are prepared to **invest** and to contribute **actively** in the right proposal

In the context of the “Cloud infrastructure and services” call, we are more particularly interested in exploring

- New usages of API fabric based on open API normalization (Cloud Foundry)
- Cloud-centric cognitive computing in an API eco-system (Watson)
- Continuity across private, public and hybrid Clouds
- SLA Policy authoring, governance and operation of Cloud resources, apps and services
- API and non-API based application composition

We are a product development unit, not a research lab

⇒ Guarantee of maximum **impact**



Profile

NOW:

UNIV. OF BATH – JAMES DAVENPORT

NEXT:

NATURAL SECURITY ALLIANCE – ANDRE DELAFORGE

Identity and Clouds

What makes (public) cloud computing different (from an internally-managed bureau = private cloud)?

- Loss of ownership of data (obviously)
- Loss of ownership of metadata (less obviously)
- This is actually the cause of much ill-expressed unease about cloud computing
- Loss of unified personnel/hierarchy information
- (including, but not limited to, passwords)
- How can I terminate an employee's right to use a remote facility?

Attribute-Based Authentication [1, 2]

- The cloud's mechanisms are set up (at contract time) to trust the user's attribute-issuing mechanisms
- Can be set up to allow a tracing authority (arbiter)
- Who is involved at global setup, and then only in the event of dispute

1) D. Khader, L. Chen, and J.H. Davenport.

Certificate-Free Attribute Authentication.

Proc. Cryptography and Coding, pages 301-325, 2009.

2) E. Ghadafi, A. El Kaafarani, and D. Khader.

Decentralized Traceable Attribute-Based Signatures.

To appear in Proc. CT-RSA 2014, 2014.

See: Cloud Accountability Project <http://www.a4cloud.eu/>



Profile

NOW:

NATURAL SECURITY ALLIANCE – ANDRE DELAFORGE

NEXT:

NONSTOP

Profile /
Competencies
projects

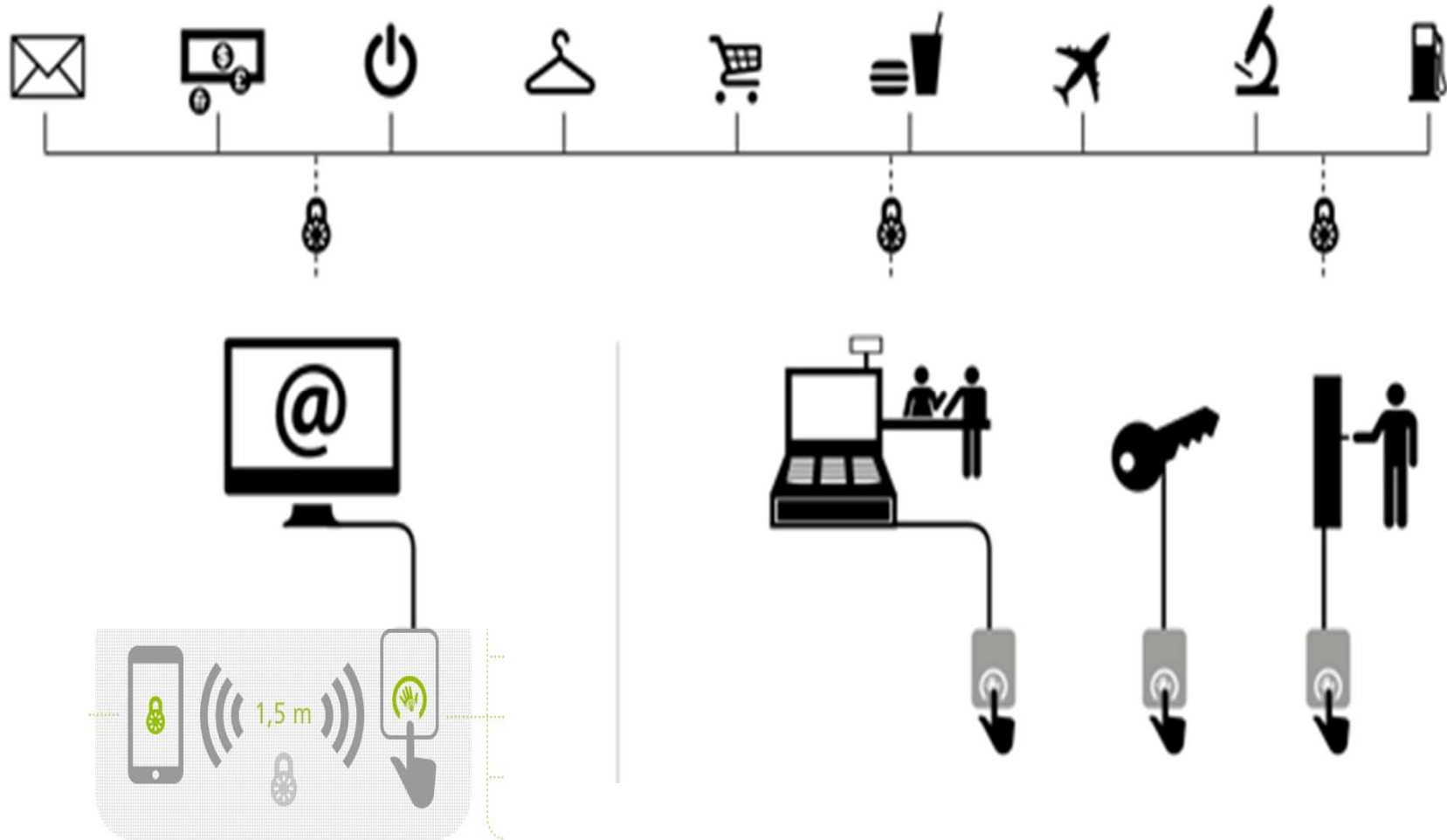


Natural Security for Horizon

2020 ICT

10th of January, 2014

Strong Authentication Standard



Based on business requirements



- Natural Security is an authentication standard for online & offline transactions, based on :
 - specifications available to all vendors
 - evaluation & certification process
- Natural Security Alliance :
 - support & develop uses cases of the Natural Security Standard
 - Member of Fido Alliance
 - Working group on online authentication



BizRaiser



Profile

NOW: NONSTOP

NEXT: END

Who are we ?

- Contact: Pascal.Gallard@nonstop.fr
 - Website: <http://www.nonstop.fr>
- Architect of reliable and highly available IT
 - Created in 1998
 - Expert in continuity and disaster recovery plan
- Both hardware and software solutions
- One decade of
 - Technology watch and import
 - r&d projects

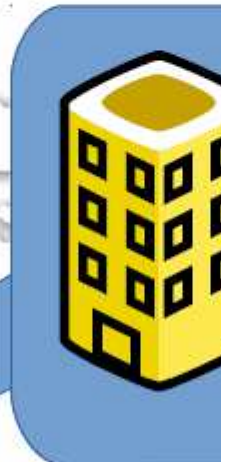


Europe-wide distributed C

- Mesh of Datacenters me-centric (user-centric)
 - Don't move to the cloud: be part of the cloud

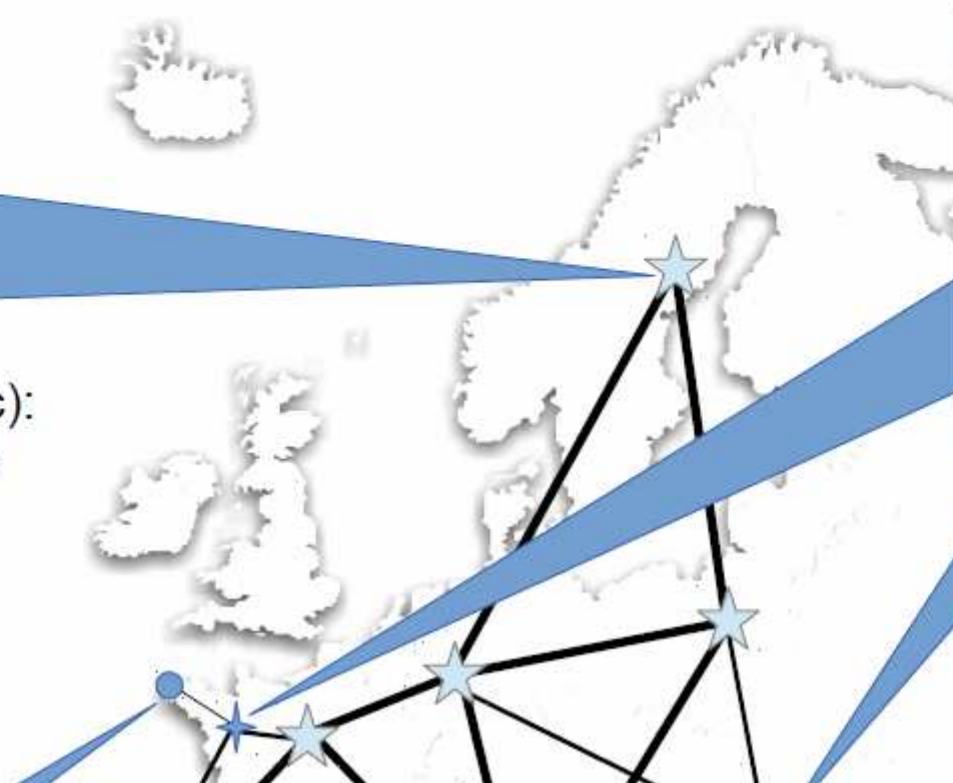



Expansion place (shared dc):
Running area for resources



my
Pro
res
rul

Subsidiary:





Partnerships

- Challenge:
 - How to build a trusted and reliable DC on top of a partly corrupted components ?
 - Backdoors, DC failures, Deny of service
- Early step experience at French level
 - Nuage project (<http://www.nuage-france.fr>)
- Expertise needed:
 - Strong authentication and encryption
 - Meshed and virtualized networks (LISP / TRILL)
 - Local carriers
 - Distributed storage provider
 - Ready to integrate on other big data project



Thank you