research & innovation 2015

innovation is in our DNA

come with us to the future of technologies

Your business technologists. **Powering progress**

Atos

Research & Innovation

C/ Albarracín 25
28037 Madrid
Tel.: +34 91 440 88 00
es-atosresearch@atos.net
www.atosresearch.eu

This is a publication of the Research & Innovation group of Atos.
Publication closing date: 2015

Content

Innovation is in our DNA 4

Objectives and Organization 6

Capabilities 7

Structure 8

Sectors 9

Labs 32

Research Lines 43

Key Projects 49

Assets 62

Publications, Events & Awards 66

Platforms 73

Innovation is in our DNA

From R&D and Innovation to Business Development and Technology Transfer

This version presents the yearly report of Atos Research & Innovation (ARI) activities in 2015. Although Research, Development and Innovation (RDI) activities have been carried out in Atos Spain for more than 28 years, recent years are characterized by a wider strategic integration of research and innovation activities with Atos approach to business.

ARI focus is to investigate emerging technologies and anticipate market demand with innovative solutions. However, logically, one of the main challenges faced by the Research and Innovation group is to reduce the gap between R&D and the market. Due to the progress made in approaching different teams within Atos, as well as directly with potential customers, ARI is now able to transform acquired knowledge and project results into real business opportunities.

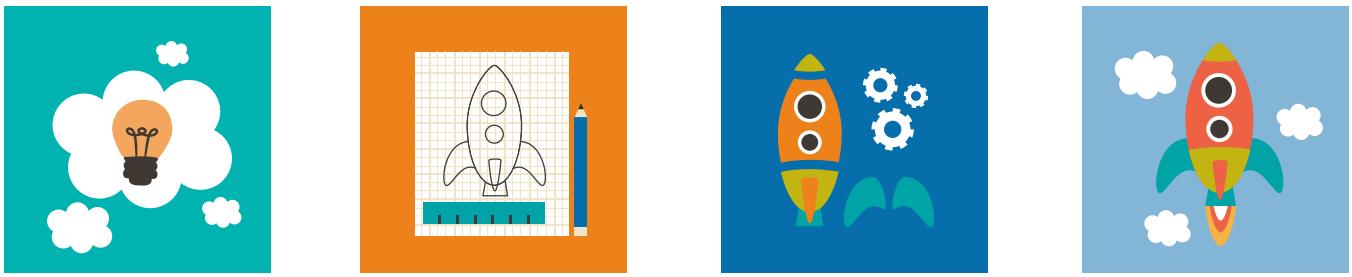
This year, ARI has proved its success in several projects, providing innovative services to customers. For instance, ARI has led efforts to achieve the core result in PRIPARE project, which consists in a privacy and security by design engineering methodology. This methodology addresses the whole personal data and system development lifecycle in full compliance with obligations related to Privacy Impact Assessment in the upcoming EU General Data Protection Regulation and in alignment with the most recent international standards and best practices in this area [1].

Furthermore, FIWARE [2] Project has come at the heart of Atos Smart City offering, showing an example of how research can be transferred to the market. Since this year, FIWARE is part of Atos portfolio and several commercial offers have been submitted to different cities. A complete offering has been set up around FIWARE for cities, with the challenge to approach other domains in the next future.

Other smaller contracts and collaborations within Atos show that ARI expertise and innovation focus is being recognized as a valuable source of business, such as the delivery of Innovation and Ideas Generation workshops based on a methodology developed within a R&D project. Having brought successful results to the company, those workshops are now being promoted internally at global level and to Atos customers.

Thanks to ARI, Atos is a full member of the Big Data Value Association (BDVA) [3] and the 5G Infrastructure Association [4]. Atos Spain is one of the core partners of the Knowledge and Innovation Community (KIC) for EIT Health, which involves a consortium of 144 European companies, research institutes and universities. The Spanish node is co-led by Atos [5].

Finally, the number and diversity of projects described in this report show the intensive activity of the Research & Innovation group. The latest EU FP7 statistics ranked Atos Spain as the first company at European level with most participation in R&D projects [6]. This excellent position in the EU RDI arena raises the visibility, not only of ARI, but of Atos as a global company.



Innovation

[1] http://pripareproject.eu
[2] http://booklet.atosresearch.eu/content/fiware-0
[3] http://www.bigdatavalue.eu
[4] https://5g-ppp.eu
[5] https://eithealth.eu
[6] http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf

Objectives and Organization

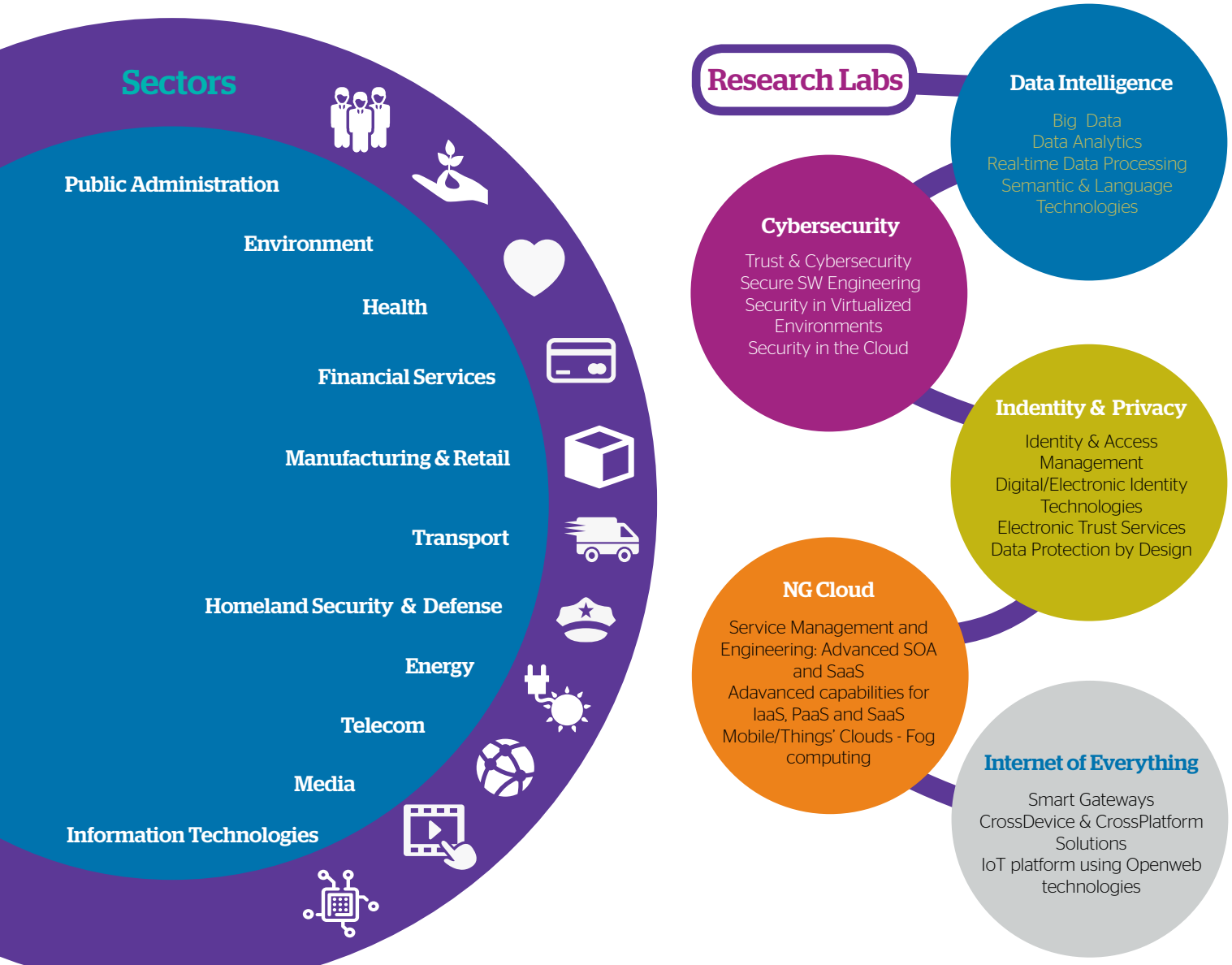
The main objectives of the Research & Innovation group are:

- Participate in research, development and innovation (RDI) projects that enrich Atos offer portfolio, market view or position with respect to emerging technologies
- Be a source of innovative ideas to be used by Atos sales force and technical staff
- Become an entry gate to European institutions for the different units and customers of Atos, thanks to the large background of European Commission projects (since 1987)
- Support Atos business units in other countries, as well as their customers, thanks to the network of public and private partners across Europe, which in turn, are current or potential customers of the company

Our team is distributed in several locations: Madrid, Barcelona, Bilbao, Asturias, Santander, Sevilla, Tenerife, and Valladolid in Spain, Brussels in Belgium, Istanbul in Turkey, and Bratislava in Slovakia.

The group is structured in a way to facilitate the relationships with the different Markets and Service Lines of the company. Thus, we are organized in ten Sectors within Atos established markets and five Technological Labs. The structure fosters the alignment of emerging technology research and development with the market / customer needs.

Our ultimate goal is to be at the upfront of R&D in Information and Communications Technologies (ICT), with a deep knowledge of business and societal applications.



Capabilities

The vision of the Research & Innovation group of Atos is mainly focused on applying the latest research outcomes to real world situations where Atos clients need solutions that go beyond what current products provide.

You will find in our group a source of innovative ideas and expertise in emerging technologies

The Research & Innovation group is the research and development hub for new technologies and a key reference for the whole Atos group. Thanks to our large expertise in research, development and innovation projects, we are able to bring new solutions and innovative elements to customers' business.

Our focus on the combination of advanced technological developments and commercial exploitation of project outcomes leads to innovative but realistic solutions

The group focuses on projects development, combining economic exploitation of research results and the most up-to-date technological achievements with high awareness of human factors (education, usability, inclusion, cultural diversity, and multilingualism).

Our capacity of coordinating international partnerships and our extended network of technology centers, universities and user organizations makes us a reliable business partner

Since 1987, the Research & Innovation group has been deeply involved in research, development and innovation (RDI) projects. We have become an extremely well-known player in the European research arena, with references in various Directorates-General of the European Commission.

Furthermore, Atos, as an ICT global player, is active in long-term EU working groups and therefore has a say in the definition of future funding programs. For more than 25 years, we have acquired valuable expertise in innovation management.

Based on the day-to-day activity in research and innovation projects, our group has developed efficient working processes, templates, knowledge base, and collaborative tools. From strategy to project management, from the generation of ideas to the identification of funding opportunities and selection of the right partners, from opportunities to results, the group covers all activities and is able to provide reliable support services to our customers.

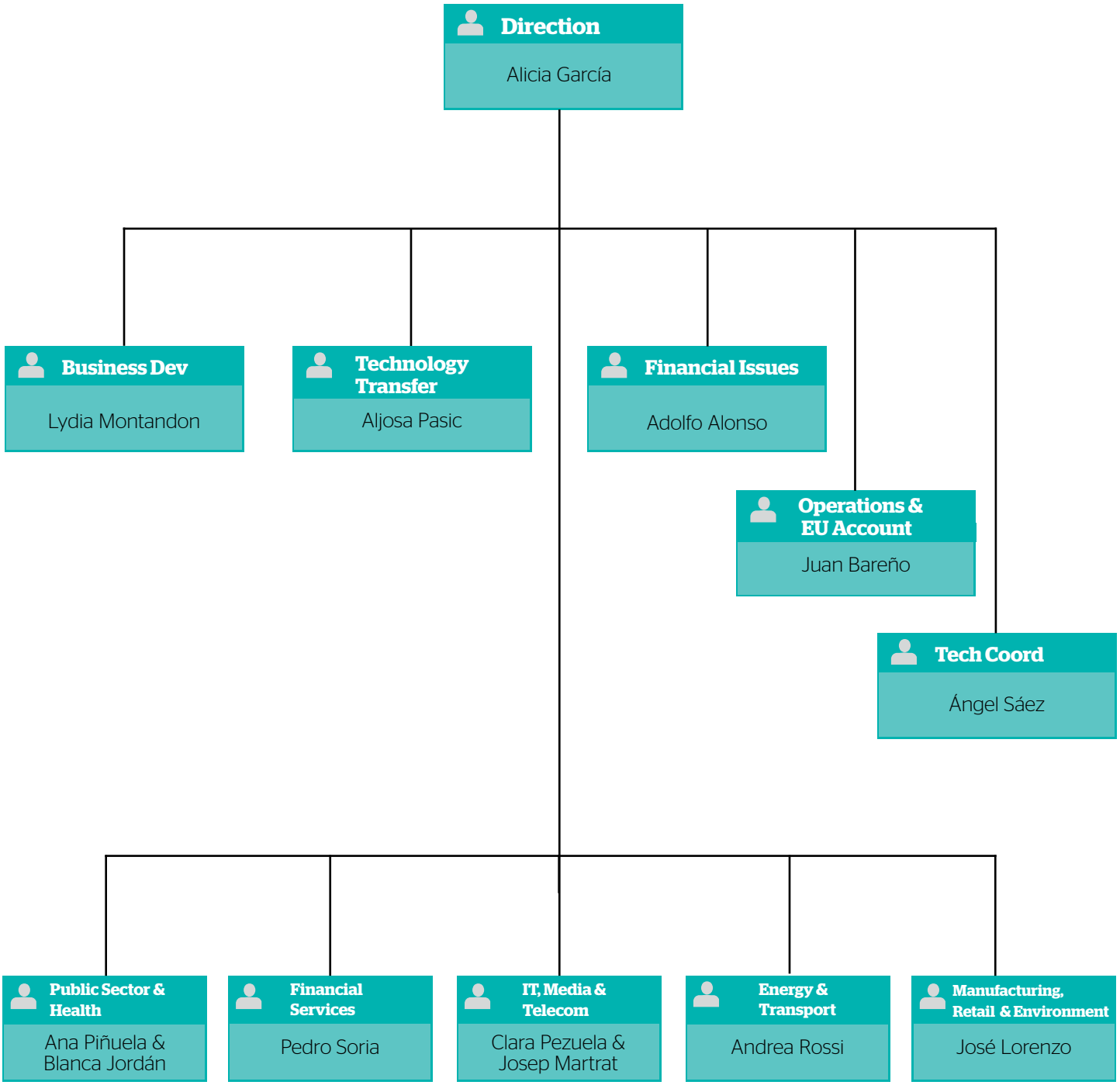
All these capacities build on the diversity and preparedness of our people. Our experts cover a wide range of disciplines, from emerging technological areas to social sciences and economics.

Teams are multi-disciplinary and multicultural, and are thus able to dialogue with customers and understand their needs. Atos customers can benefit from our group's RDI related services, such as:

- advanced technology watch;
- innovation ideas channeling;
- evaluation and management;
- alignment of the organization's RDI strategy with public funding sources programs;
- proposal drafting and delivery;
- proposals negotiations;
- proper project management office.

Structure

The following diagram shows the structure of ARI management staff. A head of market co-ordinates all RDI activities related to Atos main markets and guarantees fluid communication with commercial staff and customers.



Sectors

Public Administration

ICT is the key to promote smart, sustainable & innovative government

Description

The Public sector builds on the results of previous research in the eGovernment and Education areas and encompasses three complementary perspectives:

- R&D projects helping the public administrations to automate administrative procedures and processes and to provide more efficient and effective public services to citizens and businesses.
- R&D projects developing solutions to enhance learning such as learning at the workplace, collaborative learning, learning at school, higher education, accessible learning, authoring tools and adaptive learning.
- R&D projects developing smart cities infrastructures that offer added-value services to citizens in order to cope with societal challenges as well as to enable business services.

Goals

The Public sector has a threefold objective:

- Research, design and development of ICT tools that support public sector administrative processes in order to deliver seamless and faster public services.
- Adoption of emerging technologies that support new demands for services and contents in education.
- Design and deployment of new ICT tools and integration of existing technologies that allow emerging smart cities to offer sustainable and added-value services to the citizens.

Main Activities

The sector's main activities are listed hereafter:

- Management of market-driven projects.
- Promotion of project results to Atos customers in the Public and Education sector.
- Integration of research results into the public administration legacy systems.
- Definition and assessment of new and efficient services for Smart cities, focused on convergence of physical and virtual infrastructures, and citizen participation.
- Development of ICT tools that implement more efficient services with special focus on interoperability, cross-organizational flows, big and open data, cloud for public administrations, and smart cities.
- Development of ICT tools with strong education orientation focused on personalization, student experience and lifecycle management, contextualized eLearning.
- Elaboration of plans for the exploitation of research project result.
- Identification and execution of new business opportunities inthe Public and Education sector in line with innovative key offerings.

Challenges

This sector focuses on the following challenges:

- Single European administrative space: Implement the vision of seamless cross-organizational and cross-border services through adoption of technologies such as SOA (Service Oriented Architectures), semantic technologies, etc.
- More for less: Explore solutions, constraints and applicability for clouds of public services and open source.
- Sustainable IT: Explore the role of public administration as an early adopter of technologies such as migration to IPv6, Green IT etc.
- Open government: Releasing public data and using linked data techniques to help people understand how government works and how policies are made.
- Explore how public administrations can leverage big data techniques to save money in operational efficiency. Harnessing big data in the Public sector has enormous potential.
- Connected government: Explore possibilities of internet of things in order to improve efficiency and enable transformation of e-government processes.
- Competition between educational institutions turns students into clients. Learning environments based on serious games, education applications for mobile devices.
- Development, deployment and validation of sustainable and ICT-enabled added value services in smart cities, by leveraging existing technologies (i.e. Internet of Things, Social Networks, cloud,..) in different areas of activity with high potential benefit, such as energy efficiency and supply networks, mobility and transport, efficient resource management, innovative services and citizen participation.

Ana Maria Piñuela
Head of Sector

Current Research Topics and Findings

- Cross border authentication that allows citizens to access eGovernment services inside and outside their home country by using their national eID.
- Involvement of citizens in policy-making processes through innovative non-intrusive technologies such as social networks and virtual worlds.
- Participation of citizens in the policy development process and harmonization of policies across governmental levels (e.g. immigration policy).
- Implementation of web 2.0 governmental sites that allow interactive information sharing, interoperability and the dynamic collaboration of different kinds of users.
- User-centric design and living labs.
- Adaptive learning experience for students, collaborative learning environments, learning/training strategies, platforms to support learning processes and training.

Title	Project Title	Funding	Description	Web
EMMA	European Multiple MOOCs Aggregator	CIP	EMMA platform gives learners across Europe multiple language access to free, massive, open, online courses (MOOCs) from prestigious European Universities.	europeanmoocs.eu
MoveUS	ICT cloud-based platform and mobility service: available, universal and safe for all users	FP7	Changing European users' mobility habits by offering intelligent and personalized travel information services, helping people to decide the best transport choice and providing meaningful feedback on energy efficiency savings.	moveus-project.eu
Policy Compass	Policy Compass	FP7	Policy Compass will make better use of Europe's open public data resources and empower policy-makers and citizens (especially the younger generation) to better assess government policies in the analysis and monitoring phases of the policy cycle.	fp7-compass.eu
RADICAL	Rapid Deployment and adoption of sustainable socially-aware and intelligent sensing services for emerging smart cities	CIP	Facilitating the fast creation of interoperable and socially-aware services for leveraging Internet of Things and Social Networking technologies.	radical-project.eu
STORK 2.0	Secure idenTity acrOss boRders linKed 2.0	CIP	Operational open framework and infrastructure encompassing eID for secure electronic authentication of both legal and natural persons.	eid-stork2.eu
STRATEGIC	An advance service distribution network and tools for interoperable programmable, and exploitation of unified public cloud services	CIP	STRATEGIC offers a cloud enabled framework on various infrastructures with a set of services related to public bodies, opening new horizons in the secure and private migration, adaptation, governance and development of public cloud services.	strategic-project.eu

Environment

Emerging geospatial technologies that support the development of distributed geo-spatial processes

Description

The Environment sector covers research and innovation for environment, and focuses its activity on the design and implementation of information architectures, oriented towards the seamless geospatial data distribution and execution of distributed geospatial processes to improve the Natural Risk Management.

The team has developed (since 1999) a large number of consultancy and research projects dealing with the use of the current geographical information standards and linked in many cases with the European Policy Initiatives in this field (e.g. INSPIRE).

Goals

Main goal for the Sector is to promote the adoption of emerging geospatial technologies that support the development of distributed geo-spatial processes. Therefore, this sector is strongly linked to the Geospatial Information Research Line, and an important part of the technological activities raised by this sector are developed in the mentioned line.

Main Activities

The sector's main activities are listed hereafter:

- Research and development activities dealing with environmental challenges. This is mainly done through the active participation in market-driven R&D projects with geospatial technologies.
- Integration of in-situ & EO observations from environmental sensors.
- Expertise on OGC standards (WMS, WFS, WPS, WCS, SWE...).
- Implementation of geographical independent decision support and alerting systems for the prevention of disasters.
- Elaboration of business plans for the exploitation of research project results, oriented to the environment sector.

Challenges

This sector focuses on the following challenges:

- Multiple Risk Management. Extend the achievements reached in the FP6 project ORCHESTRA to multiple risk and emergency domains like early warning and tsunamis in FP7 project DEWS (www.dews-online.org), biodiversity, cultural heritage, agriculture and many other domains.
- Climate change adaptation measure planning and decision support.
- Observation Web. The research challenge to realize the Observation Web and the associated environmental enablers for the Future Internet leveraged by the work done in the Environmental Usage Area within the Future Internet PPP program of the European Commission.
- Earth Observation and Security. Extend the activity to Earth Observation and Security through the provision of inputs to the Copernicus and GEOSS initiatives.
- INSPIRE adoption. To be a reference partner for the Public Administration in the developments needed to adopt the INSPIRE directive.

Jose Lorenzo
Head of Sector

Current Research Topics and Findings

- Integrated components for assisted rescue and unmanned search operations.
- Driving innovation in crisis management.
- Open Data and Big Data building on geographic information.
- Research use of Copernicus Sentinel Data for wildlife monitoring.
- Secondary raw materials inventory..

Title	Project Title	Funding	Description	Web
BONVOYAGE	From Bilbao to Oslo, intermodal mobility solutions and interfaces for people and goods, supported by an innovative communication network	H2020, MG	Intermodal mobility solutions, interfaces and applications for people and goods, supported by an innovative communication network.	bonvoyage2020.eu
DRIVER	Driving Innovation in Crisis Management for European Resilience	FP7, SECURITY	Improving Crisis Management at Member State and EU level, solutions for civil resilience and professional response, methods and infrastructure for individual and organizational learning, policy & legal capabilities, societal impact.	driver-project.eu
FOODIE	Farm-Oriented Open Data in Europe	CIP	Open and interoperable agricultural specialized platform hub on the cloud for the management of spatial and non-spatial data relevant for farming production.	foodie-project.eu
HoliDes	Holistic Human Factors and Systems Design of Adaptive Cooperative Human-Machine Systems	ARTEMIS JU	Development and qualification of Adaptive Cooperative Human-Machine Systems (AdCoS) where many humans and machines act together, cooperatively, in a highly adaptive way.	holides.eu
ICARUS	Integrated Components for Assisted Rescue and Unmanned Search operations	FP7, SEC	Development of robotic tools (unmanned Search and Rescue devices) for detecting, locating and rescuing humans.	fp7-icarus.eu
SECONOMICS	Socio-Economics meets Security	FP7	Development of socio-economic methodologies, which can be adapted to different missions in security research; and definition of requirements by civil security end-users for large air transport systems Information and Communication Technologies.	seconomicsproject.eu
SMART GROUND	SMART data collection and inteGRation platform to enhance availability and accessibility of data and infOrmation in the EU territory on SecoNDary Raw Materials	H2020, WASTE	SMART GROUND project intends to foster resource recovery in landfills by improving the availability and accessibility of data and information on Secondary Raw Materials (SRM) in the EU.	smart-ground.eu

Information Technologies

The emerging technologies in cloud, services and software allow us to build the future Internet to address the major challenges of society and enterprises

Description

The Information Technologies (IT) sector addresses the IT market, including software companies, solutions integrators and software consultants.

This sector is strongly linked to the "Next Generation Cloud" Lab and "Software Engineering" and "High Performance Computing" research lines.

The IT sector addresses the commercial and support actions projects while the lab and research lines are concentrated on research projects and most of the technological developments. The sector provides the required support to the lab and research lines for the management of the projects and the exploitation of research results.

Goals

The sector has a twofold objective: on one hand, fostering the adoption and transfer of emerging technologies surrounding Cloud Computing, Parallel Computing, Software and Service Engineering to Atos business units. This goal allows further alignment of the research activity in these technologies with customers' needs, providing added value solutions to be included in the company's portfolio. On the other hand, promoting the use of produced R&D assets in the IT sector-related market.

Main Activities

The sector's main activities are listed hereafter:

- Research and development activities dealing with IT challenges. This is mainly done through the active participation in market-driven R&D projects with cloud technologies, service and software engineering, following as much as possible an open source approach.
- Collaboration with related Atos Business Units to collect requirements and provide them results and components from R&D projects.
- Promote the research results inside Atos, through Business Development, Scientific Community and Market Leaders.
- Developing support actions to create roadmaps and research agendas for future challenges in the domain of ICT, with special focus on cloud, HPC and software engineering.

Challenges

This sector focuses on the following challenges:

- Advanced capabilities for IaaS, PaaS and SaaS
- Service Management and Engineering: Advanced SOA and SaaS
- Fog Computing
- Software Engineering techniques for software modelling and development
- High quality user interfaces
- Business Process Management
- Eco-efficiency in data centers and software development
- Platforms for the Future Internet
- Open Source models, development and processes
- Advance features in high performance computing
- HPC for IoT and hybrid infrastructures

Clara Pezuela
Head of Sector

Current Research Topics and Findings

The research topics mainly addressed by the associated research lines and lab are shared with the sector as well. The sector's research activities are focused on being an active part of the future roadmaps definition in different domains (Future Internet, Green IT, Services, Cloud, Software Engineering, HPC, Big Data, IoT etc) materialized through the participation in several initiatives and platforms (PLANETIC, NESSI, FI-PPP, BDVA, European Cloud Partnership, etc). While the labs is more focused on research in the short-mid term, the sector participates in the definition of a longer term view. The sector is also the driver of the market needs towards the labs. In this way the labs research lines are aligned with Atos lab's needs.

Title	Project Title	Funding	Description	Web
ARTIST	Advanced software-based seRvice provisioning and migraTIon of legacy SofTware	FP7	Set of methods, tools and techniques that facilitate the transformation and modernization of legacy software assets and businesses.	artist-project.eu
CoeGSS	Centre of Excellence for Global Systems Science	H2020	Advanced decision-support in the face of global challenges. It brings together the power of HPC and some of the most promising thinking on global systems in order to improve decisions in business, politics and civil society.	coegss-project.eu
FIWARE	Future Internet Ware	FP7	Core platform that eases the creation of innovative applications by lowering the costs and complexity of serving large numbers of users globally and handling data at a large scale.	fi-ware.eu
FORTISSIMO-2	Factories of the Future Resources, Technology, Infrastructure and Services for Simulation and Modelling - 2	H2020	Project building on the highly successful Fortissimo project, part of the IM4S cluster bringing HPC and related services and expertise to new sectors and in particular SMEs.	
PLANETIC	Plataforma tecnológica para la adopción y difusión de las tecnologías de información, electrónicas y de comunicación	Spanish Ministry of Economy and Competitiveness	Spanish technology platform for the adoption and promotion of electronic, communication and information technologies.	planetic.es
SLALOM		H2020	Provision of two SLA reference models for cloud computing: one for cloudSLA legal contracts, and the other for technical SLA specifications.	slalom-project.eu
SUPERSEDE	SUpporting evolution and adaptation of PERsonalized Software by Exploiting contextual Data and End-user feedback	H2020	Feedback-driven approach for software life cycle management, with the ultimate purpose of improving users' quality of experience.	supersede.eu

Health

eHealth and telemedicine play a crucial role responding to the challenges of ageing populations faced by an increase in chronic diseases and a shortage of healthcare workers

Description

The Health sector counts with more than 15 years of experience in realizing research and innovation projects related to life and care sciences, in topics like medical images treatment and analysis, information management, EHR interoperability, artificial intelligence for decision support systems creation, remote monitoring and patient assistance. In the last years, we are focusing on bioinformatics, nanotechnology, algorithms and big data development for omics data analysis.

Goals

The main goals of the sector are:

- Research on the application of ICT to the health domain for the improvement of services for professionals and patients. Personalized Medicine.
- Direct application of knowledge and research results to the development of innovative solutions and services.
- Technology transfer from research projects to Atos customers in the field.

Main Activities

The sector's main activities are listed hereafter:

- Electronic Health record interoperability.
- Big data for Omics Technologies and data analysis.
- Big data for services within the healthcare domain.
- Decision support systems design and development.

Challenges

The main challenges addressed by this sector arise from the activities listed before:

- Investigate and include relevant standards for medical devices communication and electronic health records. For reaching this interoperability, we investigate the integration of widely used health dictionaries such as SNOMED and LOINC with the most accepted standards for medical devices such as the ISO/IEEE 11073 and the openEHR (www.openehr.org), ISO/EN 13606, HL7 for data interoperability.
- Omics Technologies: Analysis and integration of omics data, including the complete set of process and biochemical reactions related to biological processes (metabolomics) allows to reach a surprising understanding of the complex cellular system. Integration and analysis of data generated by these technologies are having a great impact in the biomedical research framework as well as in the clinical practice.

Blanca Jordan
Head of Sector

Current Research Topics and Findings

- Services to exchange, integrate and analyze the huge amounts of data collected from different sources into a global information infrastructure or "infostructure" (addressing semantic and standard interoperability, cloud and grid computing, network agility).
- Algorithms to model data and simulate physiological behaviour, and to extract information from this model/simulation (VPH - applications).
- Sensors networks to gather different physiological and environmental/ localisation data (Internet of Things).
- Ubiquitous and mobility-proof network to keep actors connected anytime anywhere (m-health).
- Clinical Decision Support Systems (CDSS).
- Information provision through Semantic Web Services.
- Integration of -omics research results for CDSS.

Title	Project Title	Funding	Description	Web
ACANTO	A CyberphysicAl social NeTwOrk using robot friends	H2020	The aim is to increase the number of older adults who engage in a regular and sustained physical activity.	ict-acanto.eu
Active@Work	Active Older Adults @ Workplace	AAL	The project will result in a Virtual Assistant tool able to assist senior workers, in particular those close to retirement age, to continue executing their daily work or to continue active despite their age.	activeatwork.eu
AHEAD	Augmented Hearing Experience and Assistance for Daily life	AAL	Integration and combination of advanced sensing devices and ICT based modules, using eyeglasses and hearing aid as a support for assisting elderly people.	ahead-project.eu
ALFRED	Interactive Assistant for Independent Living and Active Ageing	FP7	Development of a mobile personalized assistant for elderly people, enabling them to remain independent, facilitating coordination with their caregivers and promoting social inclusion	alfred.eu
DAPHNE	Data-as-a-Service platform for Healthy Lifestyle and preventive medicine	FP7	Development of a platform to deliver personalized guidance services for lifestyle management to the citizen/patient.	daphne-fp7.eu
HAIVISIO	Enhanced visibility and awareness in eHealth, Active Ageing and Independent Living projects	FP7	Fostering a common strategy for joint dissemination activities and exploitation plans for eHealth, Active Ageing and Independent Living projects.	haivisio.eu
MOBIGUIDE	Guiding Patients Anytime Everywhere	FP7	Development of an intelligent system for patients with chronic illnesses (cardiac arrhythmias, diabetes and high blood pressure). Patients wear sensors to monitor their biosignals, which are sent to a smart phone and then to a "back-end" computer.	mobiguide-project.eu
Multifun	MultiFunctional Nanotechnology for Selective Detection and Treatment of Cancer	FP7	Development of new systems based upon nanotechnology for the early detection of tumours and more effective treatments with fewer side effects.	multifun-project.eu
WITH-ME	European Platform to Promote Healthy Lifestyle and improve care through a Personal Persuasive Assistant	ARTEMIS	Provision of a health prevention platform and personalized services to improve patients' general health conditions and prevent occurrence from a range of diseases.	with-me-project.eu

Financial Services

Economies worldwide are adapting to the challenges of Future Internet and new ICT; the Financial Services industry is not lagging behind

Description

The world of Financial Services applications is changing due to the increased openness of IT environments, mergers and acquisitions, and above all, significant challenges brought on by customer and market dynamicity. The FS sector searches for the right answer to these changes and challenges by doing research into the Future of Financial Services.

For more than ten years, R&D projects have been developed in order to ensure secure transactions, provide higher availability, confidentiality and integrity of financial services, and in recent times new trends like Big Data and Competitive Intelligence are also paving new research in information management for financial services.

Goals

The goal of this sector is to ensure transition and explore the application of our research & innovation solutions in the financial services industry. These solutions are rooted in our activities in information security, semantic technology for the real time processing of data (e.g. news and transactions, among others), and smart city technologies.

The Research & Innovation Financial Services sector feeds requirements, business concerns and challenges of the Financial Services industry to motivate research activities in multiple areas of work, while also opening opportunities for exploitation of research outcomes in banking, insurance, and financial services.

Main Activities

The sector's main activities include:

- Helping Financial Services customers identifying R&D challenges and driving them into requirements for new R&D projects.
- Promotion of project results and developed assets to Atos customers in the Financial Services sector.
- Development of ICT systems and platforms that support innovation in Financial Services, both in their operation and in their business models.
- Elaboration of plans for the exploitation of research project results in the Financial Services market.

Challenges

Customers in the Financial Services market are faced with challenges of both technical and business nature that call for ICT-based solutions. This sector facilitates access to research and innovation outcomes that respond to the following challenges:

- Adapting business models to an economy driven more and more by management of information.
- Taking stock of the vast amounts of information owned by banks, to be exploited for the (business and operational) benefit of the organization.
- Security concerns over the use of emerging technology business models (like cloud computing).
- Exploiting the potential of mobile and social-networking technologies in banking, and in insurance.
- Management of compliance in a highly regulated business environment.

Pedro Soria
Head of Sector

Current Research Topics and Findings

Our group is working on some key topics with direct application in the Financial Services industry:

- Analysis of large amounts of information to derive intelligence for enhanced competitiveness and improved operational efficiency.
- Data trends and sentiment analysis.
- Security in cloud computing, allowing the adoption of models such as SaaS, PaaS and IaaS (identity as a service) by the Financial Services industry, largely reliant on legacy technologies.

Title	Project Title	Funding	Description	Web
CYSPA	European CYber Security Protection Alliance	FP7	Addressing trustworthy ICT through a European strategy to protect cyberspace, with target audiences ranging from research communities and industry to public authorities and infrastructure operators.	cyspa.eu
WITDOM	empoWering prIvacy and securiTy in non-trusteD envirOnMents	H2020	Automatic and efficient privacy provisioning solutions, keeping data confidential (encrypted and privacy-protected) in the un-trusted environment, while the data owner can operate with and make use of the data in the encrypted domain.	witdom.eu

Manufacturing & Retail

Intelligent technologies for manufacturing and retail challenges

Description

The Manufacturing & Retail sector has a deep experience and capacity in multiple areas: Design and integration of Collaborative Platforms (i.e. for Meta-Products development covering communication tools, PLM, ERP, ALM, PMS, etc.), Deploy and manage Manufacturing solutions on the cloud, Data acquisition from shop floor making use of smart objects, mainly in the scope of Internet of Things (IoT) oriented to Manufacturing Ecosystems, and subsequent integration of these data with different systems (consumers), Design and development of customized application platforms for development (SDK, SDI,...), Big Data applied to manufacturing and Security aspects.

The retail sector is one of the biggest users of ICT, and thus a driver of innovation. It has a major role to play in the development of a sustainable economy and also in allowing citizens to face the current economic downturn by giving them easy access to affordable and good quality consumables.

The Manufacturing and Retail sector researches on new solutions for a range of activities covering manufacturing processes, the factories of the future approach, food tracking & traceability, improvement of retailer business processes and client satisfaction through better information strategies and access to quality products.

Goals

The main goal is to help companies, in particular SMEs, to adapt to global competitive pressures by improving the technological base of manufacturing and retail across a broad range of sectors. This sector applies new IT advances to address the challenges and opportunities deriving from:

- The complex and globalized nature of manufacturing systems.
- The reduction in manufacturing timescales and acceleration of technological innovation.
- The growing need for sustainable, resource-efficient production.
- Food traceability and food chain integrity.
- Production flow improvement - lean factories.
- New channels to provide the right information to customers while preserving their privacy and trust.
- Branding management and its impact on manufacturing process.

Main Activities

- To identify research opportunities from national and international bodies aligned to Atos commercial divisions needs.
- Technology transfer to improve Atos solutions.
- Exploitation activities to steer the research towards market needs and to exploit research results.
- Commercial projects to final customers, including R&D support.

Challenges

- To develop Collaborative and Scalable Platform for Data visualization and analytics.
- To improve innovation activity. New ideas have to be transformed into new products and processes.
- Better knowledge of the context in the manufacturing process through any kind of sensor to support decisions thus optimizing the full process and resources consumed.
- Ensure the food chain integrity ("from farm to fork") through tracking and traceability.
- To optimize retailer processes and its client satisfaction: Smart labels management, consumer geolocation, iBeacons and wearable technologies.
- Consumer apps. development, App store, marketplace, payment systems. Back office for applications development and for applications commercialization.

Many of the manufacturing companies are SMEs and only a few of them have the research capacity and the financial potential to implement high-risk innovative manufacturing technologies.

Silvia Castellvi
Head of Sector

Current Research Topics and Findings

- Sustainable, resource-efficient manufacturing.
- Production technology to exploit the potential of emerging technologies (in particular novel bio- and nano-technologies).
- Leveraging simulation and modeling techniques to address manufacturing challenges.
- Interoperability of the value chain IT systems and support to collaborative decision.
- Flexible, rapidly responsive production systems for customized manufacturing.
- Smart agrifood: Food chain integrity, making certain that food is traceable, safe to eat, high quality and genuine.
- New product information channels using mobile devices for supermarket clients.

Policy makers are aware of the potential of manufacturing innovation to contribute to tackling social, economic and environmental challenges such as healthcare, sustainability, and mobility.

Title	Project Title	Funding	Description	Web
C2NET	Collaborative Cloud Manufacturing Networks	H2020-FoF	The creation of cloud-enabled tools for supporting the supply network optimization of manufacturing and logistic assets based on collaborative demand, production and delivery plans.	c2net-project.eu
EASY-IMP	EASY	FP7- FoF	Development of methodologies, tools and platforms for the design and production of personalized meta-products & services, combining wearable sensors embedded into garment with mobile and cloud computing.	www.easy-imp.eu
FIspace	Future Internet Business Collaboration Networks in Agri-Food, Transport and Logistics	FP7- FI-PPP	Multi-domain collaboration and integration service, based on FI-WARE core platform and Future-Internet technologies, enabling new business models in the fields of Agri-food, Transport and Logistics.	fispace.eu
FITMAN	Future Internet Technologies for MANufacturing industries	FP7- FI-PPP	Provision of the FI/PPP Core Platform with 11 industry-led use case trials which test and assess the suitability, openness and flexibility of Generic Enablers while contributing to the STEEP sustainability of EU Manufacturing Industries.	fitman-fi.eu
FRACTALS	Future Internet Enabled Agricultural Applications	FP7- FI-PPP	Support to the community of innovative ICT SMEs and web-entrepreneurs to develop FIWARE based applications with high market potential, addressing the needs of the agricultural sector	fractals-fp7.com
HoliDes	Holistic Human Factors and System Design of Adaptive Cooperative Human-Machine Systems	FP7	Development and qualification of Adaptive Cooperative Human-Machine Systems where several humans and machines act together, cooperatively, in a highly adaptive way.	holides.eu
OCTAVE	Objective Control of TAlker VErification	H2020, SECURITY	Integration of a commercial-grade and new, hybrid automatic speaker verification (ASV) systems with the latest environmental robustness and anti-spoofing technologies to deliver a scalable, trusted biometric authentication service (TBAS).	octave-project.eu
ROAD4FAME	Development of a Strategic Research and Innovation Roadmap for Future Architectures and Services for Manufacturing in Europe	H2020-FoF	To develop a holistic research and innovation roadmap for architectures and services, aligned with the concrete needs and requirements of manufacturing	road4fame.eu
THINKING FACTORY		Etorgai	Development of a platform for the integration of Cyber-Physical Production Systems and the smart exploitation of the information and knowledge for advanced manufacturing	

Telecom

Novel network architectures and virtualised software networks

Description

The Telecom sector aims at:

- Developing the technology for future 5G high-speed broadband and mobile network infrastructures.
- Contribute to Networld2020 ETP and the 5G PPP initiative (member of both Steering Boards).
- Foster the adoption of integrated networks as well as novel Internet architectures and technologies.

This sector seeks the definition and adoption of assets for the telecom industry through Atos sales channels.

Our main partners include key telecom industry players (such as Telefonica, Portugal Telecom, Telecom Italia, Deutsche Telekom, Nokia, Alcatel-Lucent, Ericsson, etc.), relevant European universities (UPC, UPM, NTUA...) and cutting-edge research centres (i2CAT, Fraunhofer, iMinds,...).

Goals

Our goals can be summarized as follows:

- Explore novel network architectures - such as 5G - and the applications these enable.
- Study 5G enabling technologies such as Network Function Virtualisation (NFV) and Software Defined Networks (SDN).
- Analyze the impact of virtualization on the telecom landscape, both from technical and business perspectives.
- Align the research activity with the offering and activities of Atos (Next Generation Intelligent Networks, Context-aware mobility, Cloud for Network Function Virtualisation, OSS/BSS, etc.), studying new business opportunities for operators.

Main Activities

From the innovation point of view, Atos is participating in initiatives that bring NFV closer to the market. As far as research is concerned, the combination of NFV and SDN for the construction of the 5G network is one of our main priorities.

The sector is currently involved in several exciting projects that cover a wide range of technological challenges such as NFV and SDN in the framework of 5G as well as Recursive Internet. In particular, we are very proud to participate in five of the first wave of European projects that are currently defining the 5G network to-be.

As an IT provider and system integrator with virtualization and cloud expertise, Atos expects to fully take advantage of 5G as a big opportunity for to become even more influential in the telecom sector and link our research results with Atos global telecom portfolio.

Challenges

The sector's main challenges are listed hereafter:

- Next generation communication networks (5G) and innovative networking paradigms (Network Function Virtualization, Recursive Internet).
- Combination of cloud computing and networking: Cloud RAN and Mobile Edge Computing (MEC).
- Global telecom solutions (i.e. Big Data for network management) in complex and heterogeneous environments for ubiquitous and reliable service delivery.
- Evolution towards Telecom Single Market. Trends and regulations.

Josep Martrat
Head of Sector

Current Research Topics and Findings

- Network Function virtualisation (NFV)
- Mobile Edge Computing (MEC)
- Large-scale federation of Future Internet facilities and services for experimental purposes.
- Recursive Internet paradigms.

Title	Project Title	Funding	Description	Web
5G NORMA	5G Novel Radio Multiservice adaptive network Architecture	H2020	Development of a novel mobile network architecture providing adaptability in a resource efficient way able to handle fluctuations in traffic demand resulting from heterogeneous and dynamically changing services and to changing local context.	5gnorma.5g-ppp.eu
5G-CROSSHAUL	The 5G Integrated Fronthaul/ Backhaul	H2020	5G integrated backhaul and fronthaul transport network enabling a flexible and software-defined reconfiguration of all networking elements in a multi-tenant and service-oriented unified management environment.	xhaul.eu
5GEx	5G Exchange	H2020	The aim is to enable collaboration between operators regarding 5G infrastructure services.	
FED4FIRE	Federation for FIRE	FP7	Open and easily accessible facilities to the FIRE experimentation communities, which focus on fixed and wireless infrastructures, services and applications, and combinations thereof.	www.fed4fire.eu
PRISTINE	Programmability in Recursive Internet Network Architecture for European supremacy of virtualised networks	FP7	Demonstration of programmable functions in a recursive internet environment for several use cases (security, QoS, congestion control).	ict-pristine.eu
SESAME	Small Cells Coordination for Multi-tenancy and Edge Services	H2020	Small cells for 5G equipped with computing capabilities are exploited for network management and service delivery enhancement.	www.sesame-h2020-5g-ppp.eu
SONATA	Service Programing and Orchestration for Virtualized Software Networks	H2020	SDK and a modular orchestrator of network services for bringing NFV closer to the market in the framework of 5G.	sonata-nfv.eu
T-NOVA	Network Functions as-a-Service over Virtualised Infrastructures	FP7	Design and implementation of an integrated architecture for the automated management of Virtualized Network Functions over Network/IT infrastructures.	www.t-nova.eu

Energy

The way energy was produced, distributed and consumed remained unchanged for the past century. Today it's a totally different world: welcome to the century of smart energy

Description

The way we are generating, distributing, and using energy (electricity, water & gas) in Europe is changing rapidly and massively due to new opportunities to generate renewable energy, to control electricity usage and storage, to declining fossil energy sources, and to new national governments' regulation and European deregulation. Due to the introduction of smart energy grids and deregulation, new players are appearing and roles of incumbent players are changing. An ICT driven market place for energy must support all these players and roles by providing the necessary interfaces and information exchange. ICT energy systems and applications are at the very center of this change being key enablers for smart energy innovation in the three domains of electricity, water and gas.

Goals

The Energy sector focuses on the distribution grid operation and explores the major challenges faced by the European energy industry, not only within the electric segment:

- Improving the distribution grid monitoring to cope with volatile states in the grid.
- Integrate "smart" automated devices to increase the efficiency of the distribution grid.
- Harmonize the heterogeneous power sources and new consumption patterns that set grid requirements.
- Interoperability with the different roles e.g. operation of the smart meters, power and grid operation.
- Harnessing energy knowledge for water and gas distribution networks.

Main Activities

The Energy sector research lines & activities are related to the previously described goals and scenarios or application domains requiring more advanced ICT smart energy systems and technologies:

- The distribution network: advanced smart grid automation, control and management of distribution networks in order to meet the anticipated increased use of distributed energy generation and to tackle new challenges such as the charging of electrical vehicles.
- Microgrids: the introduction of distributed generation supports the establishment of regional/microgrids aggregating and largely autonomously controlling their own supply and demand side resources.
- Virtual Power Plants: to integrate and manage multiple distributed generation sources in a region (microgrids) as a unique source of energy empowering unified approach to grid balancing, demand response, etc.
- Efficient energy management in buildings, public administrations and smart cities.
- Green Vehicles: the large scale introduction of electrical and hybrid vehicles requires interaction between the energy infrastructure, the transport infrastructure, the vehicle information systems and the communication network infrastructure, in order to collect, process and deliver the needed information.
- Efficient Water Management in urban and rural areas through smart ICT application and services for water utilities and consumers.

In addition, the Energy sector has consolidated its position in the Smart Energy sector by being actively involved in the Horizon 2020 program, the Future of Internet PPP for Smart Energy systems as well as in the EIT DIGITAL and EIT KIC-INNOENERGY initiatives.

Challenges

The European energy & utilities market industry is facing major challenges towards the Energy and Climate targets for 2020 and beyond to reduce greenhouse gas emissions, increase the share of renewable energies and improve energy efficiency.

Deregulation, the green agenda, and ICT technology change have rewritten the utilities rulebook. Smart metering and the smart grid are at center stage of research, innovation and as well commercial deployments. Utility companies deliver precision billing, fine-tuning of supply/demand, and ultimately, combined usage of renewables across the low-voltage network.

Andrea Rossi
Head of Sector

The increasing proportion of electricity from renewable sources means that the ICT energy systems supporting the grid will have to be distributed and to adapt to a highly volatile supply (e.g. from wind and solar generators). From the consumption perspective, real-time adaption of fares to the cost of energy consumed will create and drive future consumption patterns. At the same time, private and commercial consumers are being encouraged to efficiently use their resources (electricity and water) and to participate in the generation, distribution and storage of electricity

Current Research Topics and Findings

The main activities of the Energy sector are in the context of the work done in the e-DASH, OPENNODE, SOMABAT and JOSPEL projects, trying to bring together relevant aspects of future ICT smart energy systems:

- Automation of the distribution network according to the Smart Grid paradigm developing an open secondary substation node which is seen as an essential control component of the future smart distribution grid, a Middleware to couple the SSN operation with the Utilities systems for grid and utility operation and a modular communication architecture based on standardized communication protocols to grant the flexibility required by the stakeholder diversification and to cope with massively distributed embedded systems in the distribution grid (OPENNODE).
- Sustainable integration of the electric vehicles developing an intelligent charging system for the real-time exchange of charge related data between Fleets of EVs (FEVs) and the grid allowing the management of high-current fast-charging for large numbers of FEVs in a brand-independent way; price-adaptive charging/reverse-charging; real-time grid balancing according to spatial and temporal needs and capacities; and a competent remote load charging process control in order to prevent damages of EV batteries (e-DASH).
- Development of a more environmentally friendly, safer and better performing high power Li polymer battery using novel breakthrough recyclable solid materials to be used as anode, cathode and solid polymer electrolyte, new alternatives to recycle the different components of the battery and cycle life analysis (SOMABAT).
- Deployment of a distributed ICT infrastructure, combining in-vehicle and cloud based approach collecting and processing data generated by the e-vehicle, and distributing commands for optimizing energy consumption of the different climate systems (Heating, Ventilation and Air Conditioning) for reaching a global energy savings of 50% (JOSPEL).

Title	Project Title	Funding	Description	Web
Contractual Research	Contractual Research Services in Slovakia	ERDF Slovakia	Smart Grid, Security and Big Data contributions to the International Centre of Excellence for Research of Intelligent and Secure Information and Communications Technologies and Systems in Slovakia.	
e-Dash	Electricity Demand and Supply Harmonizing for EVs	FP7	Harmonization of electricity demand in Smart Grids for sustainable integration of electric vehicles. This is addressed by an intelligent charging system supported with near real-time exchange of charge related data between EVs and the grid.	edash.eu
JOSPEL	Low energy passenger comfort systems based on the Joule and Peltier effects	H2020	Deployment of distributed ICT infrastructure in electric vehicles for enabling the application of innovative eco-driving strategies combined with efficient climate systems	jospel-project.eu
RepAIR	Future RepAIR and Maintenance for Aerospace industry	FP7	Research on future onsite maintenance and repair of aircraft by integrated direct digital manufacturing & development of a new set of technologies to maximize the benefits of 3D printing systems and bring further flexibility to produce parts at the right place and time.	rep-air.eu
SAGA	Security & Privacy-as-a-service toolbox	KIC InnoEnergy	Set of software tools & services continuously improving the security and privacy issues in the smart meter device market.	kic-innoenergy.com
SomaBAT	SOlid Material for High Power Li Polymer BATteries	FP7	Development of an environmentally friendly, safe and performing high power lithium polymer battery technology specifically targeted for electric vehicles.	somabat1.ite.es

Homeland Security & Defence

Promoting innovative solutions and emerging technologies for the protection of citizens, goods and infrastructures

Description

The sector of Homeland Security & Defense (HSD) coordinates the research and the commercial exploitation of assets produced by the group targeted to industry and public institutions in the defense and security arena, and especially to the homeland security field. Ministry of Interior, the National and Regional Police Forces and also all types of organizations that address or deal with crisis management, citizen safety, critical infrastructures, crime fighting, law enforcement and border intelligence.

Goals

The main goal of this sector is to encourage the adoption of emerging technologies in the Homeland Security & Defense sector, as well as identify business opportunities for Atos when these involve issues such as crisis management, emergency services, protection of citizens, goods and infrastructures, border surveillance and management or ICT support for law enforcement.

Main Activities

- Promotion of project results and developed assets to Atos customers in Homeland Security & Defense.
- Identification and pursuing new business opportunities in HSD in line with Atos innovative key digital services.
- Management of market-driven R&D projects, elaboration of plans for the exploitation of research project results oriented to security and civil protection.

Challenges

The HSD sector focuses on the following challenges:

- Link strategy and technology: the HSD sector is guided by political and strategic planning, such as the Common Security and Defense Policy (CSDP), which is now integrated into the EU Common Foreign and Security Policy (CFSP), or the Stockholm agenda. Here the challenges are to identify links between these guidelines and actions and emerging / future technologies, to explore "dual use" technologies (defense tech applicable in civil security and the other way round) and to deliver more for less (poll resources, cloud-based solutions, data and info sharing, etc.).
- Interoperability and collaboration: HSD organizations are immersed in the development of NATO, EDA or other EU cooperation frameworks that span a variety of topics from counter-terrorism and crisis management to operational data exchange or cybersecurity. Objectives are to avoid duplication, pool resources and foster EU excellence.
- Exploiting "data deluge": increasing availability of useful information allows the acquisition of knowledge and development of new generation of intelligence applications needed to enhance situational awareness and agility in decision making.

Fernando Kraus
Head of Sector

Current Research Topics and Findings

- Crisis Management and emergency services
- Cyber-security, understood as "traditional" ICT security with considerations of impact and scale (e.g. critical infrastructures, massive fraud etc.)
- Forensics of cyber-crime activities in the Cloud
- Cross border management and interoperability of operational data and information (e.g. ballistic databases)
- Biometric systems
- Complex event processing, different mining technologies (data, link, opinion, audio...), data and context fusion, visual analytics
- Design, modeling and simulation of forward-looking scenarios
- Decision Support Systems applied to security
- Chemical, Biological, Radiological and Nuclear related IT solutions

Title	Project Title	Funding	Description	Web
BODEGA	BORDERGUARD - Proactive Enhancement of Human Performance in Border Control	H2020	Investigation and modelling of Human Factors in border control to provide innovative socio-technical solutions for enhancing border guards' performance of critical tasks, support border management decision-making, and optimize travelers' border crossing experience.	bodega-project.eu
CIRAS	Critical Infrastructure Risk Assessment Support	DG Justice	Provision of a novel approach to security management in critical infrastructure protection (CIP), taking into account typical CI effects of inter-dependencies of systems, cascading and escalation of incident consequences.	ciras project.eu
DRIVER	Driving Innovation in Crisis Management for European Resilience	FP7	Improving Crisis Management at Member State and EU level, solutions for civil resilience, solutions for professional response ,methods and infrastructure for individual and organisational learning, policy & legal capabilities, societal impact.	driver-project.eu
FORCE	FOresight Coordination for Europe	FP7	Production of an Intelligent Decision Support System, evolvable and scalable with future Foresight research activities conducted in Europe to assist policy makers and stakeholders in the Security domain.	force-europe.eu
SecCord	SECurity and trust COoRDination enhaced collaboration	FP7	Coordination and services for the Trust and Security (T&S) research program and its projects.	seccord.eu
TOXI-TRIAGE	Integrated and adaptive responses to toxic emergencies for rapid triage: engineering the roadmap from casualty to patient to survivor.	H2020	The objective is to address the operational, technological, ethical and societal dimensions of CBRN response and recovery, and the economic base from which sustainable CBRN and multiuse systems are derived.	toxi-triage.eu
ZONeSEC	Towards a EU Framework for the Security of Widezones	FP7	Development of Knowledge Base services with visualization features. Pilots specialize in the detection of illegal unauthorized entrances to or trespassing premises; or actions to damage to or deployment of harmful devices on installations.	zonesec.eu

Transport

Innovation is essential if supply-chain stakeholders are to remain competitive

Description

Logistics is the backbone of economic activity and growth. It represents 10-15% of global GDP, and has made enormous impacts in terms of globalization and free trade as both an enabler and also an outcome. Moreover, supply chains are highly productive of data and yet these data involve different information systems, different user requirements, different business models and different deployment trajectories.

The Transport & Trade Logistics sector covers a range of activities to deliver advanced IT services, fast and robust solutions for the implementation, integrating interoperability, security, resilience and real-time optimization that enables the cost-effective, green and secure transit of goods through the Global Supply Chain and the urban logistics environment. Supply chain innovation is essential if manufacturing organizations are to remain competitive.

Goals

The research goals of the sector are focused on achieving competitive advantage required by supply-chain stakeholders in times of rapid changes to have a clear understanding of the direction of change, challenges and its implications for business or supply chain mechanisms. The main goals are:

- Advanced technology research, development, testing and evaluation to evolve and improve the mechanisms, business and security in the transport of goods in air, land and sea environments.
- To collaborate and work on relevant research projects.
- To disseminate and transfer relevant research findings in the logistics domain.

Main Activities

- Enable the interoperability and integration of systems, delivering cost reductions, greater efficiency and enhanced security.
- Development of enablers to unlock the real-time information exchange across suppliers, manufacturers, logistics providers and retailers without necessitating costly interfaces.
- Usage of open standards and lightweight communication mechanisms to expose a collaborative environment in the logistics sector.
- Encourage the exploitation of these best practice results through a targeted dissemination campaign aimed at decision makers in the logistics industry.

Challenges

- Supply chain visibility and transparency - Accurate data.
- Enable the interoperability and integration of systems, delivering cost reductions, greater efficiency and enhanced security.
- Development of connectivity infrastructure for collaborative and efficient data sharing among all stakeholders in the logistics sector
- Supply Chain Resilience - Develop the essential tools and processes necessary to create a capability of “design for resilience”.
- Security and facilitation.

German Herrero
Head of Sector

Current Research Topics and Findings

- Real-time Cloud Messaging AEON
- GlObal Operation Distribution System GOAL
- Urban logistics
- Green logistics
- Intermodal freight transport location based services
- Security in the supply chain
- Logistics Big Data
- Collaborative solutions as collaborative SCM
- Food supply chain optimization

Title	Project Title	Funding	Description	Web
BIVEE	Business Innovation and Virtual Enterprise Environment	FP7-FoF	Development of a conceptual reference framework, a novel management method and a service-oriented ICT platform to enable Business Innovation in Virtual Factories and Enterprises.	bivee.eu
Cassandra	Improving security through visibility	FP7	Development of a data sharing concept that allows extended assessment of risks by both business and government, addressing the visibility needs of business and government in the international flow of cargo, making container security more efficient and effective.	cassandra-project.eu
CO-GISTICS	Deploying Cooperative Logistics	FP7	Deployment of cooperative solutions for efficient and sustainable logistics across Europe, integration of existing freight and transport systems with innovative solutions such as cooperative services and intelligent cargo.	cogistics.eu
CORE	Consistently Optimised REsilient ecosystem in the Supply Chain	FP7	CORE will demonstrate how a powerful and innovative Consistently Optimised REsilient ecosystem implementation, integrating interoperability, security, resilience and real-time optimisation can produce cost effective, fast and robust solutions that will guarantee the efficient and secure transit of goods through the worldwide Global Supply Chain system.	coreproject.eu
FREVUE	Freight Electric Vehicles in Urban Europe	FP7	Demonstration to industry, consumers and policy makers how electric freight vehicles can provide a smart, clean and efficient solution to transport-related challenges currently affecting European cities.	frevue.eu
HOPE	Holistic Personal public Eco-mobility	FP7	Open platform capable of combining Interoperable Fare Management (IFM) and Traveler Information Systems (TIS). Smart Trip-Planning features will provide for reliable and comprehensive user experience, always proposing to travelers the best available options.	hope-eu-project.eu
iCargo	Intelligent Cargo in Efficient and Sustainable Global Logistics Operations	FP7	Design and implementation of a decentralised ICT infrastructure allowing real world objects, new planning services with CO2 calculation capabilities and existing systems to co-exist and efficiently co-operate at an affordable cost for stakeholders.	i-cargo.eu
Safepost	Reuse and development of Security Knowledge assets for International Postal supply chains	FP7	Integration of innovative screening solutions with operational postal processes and criminal and customs intelligence in a Europe wide cooperative distributed network.	www.safepostproject.eu

Media

New media and digital content management are quickly becoming strategic growth areas for Atos and this will drive the research topics of the media sector with a strong market orientation

Description

The Media sector encompasses two complementary perspectives:

- On one hand there is the media industry (broadcast, content production, press, etc.)
- and on the other, media and gaming technologies such as digital content management, 3D audio and video analysis, BigData social media analysis, augmented and mixed reality etc.

In terms of clients, there tend to be either very large media conglomerates and/or broadcasters or small, agile technology companies.

Moreover, the Media sector is supporting Atos Major Events for the 2016 Summer Olympic Games in Rio de Janeiro, Brasil.

Goals

The Media sector has the main goal to improve the positioning of Atos in Media, New Media and Digital Content Management. These areas are quickly becoming a strategic growth area for Atos and this will drive the research topics of this sector with a strong market orientation.

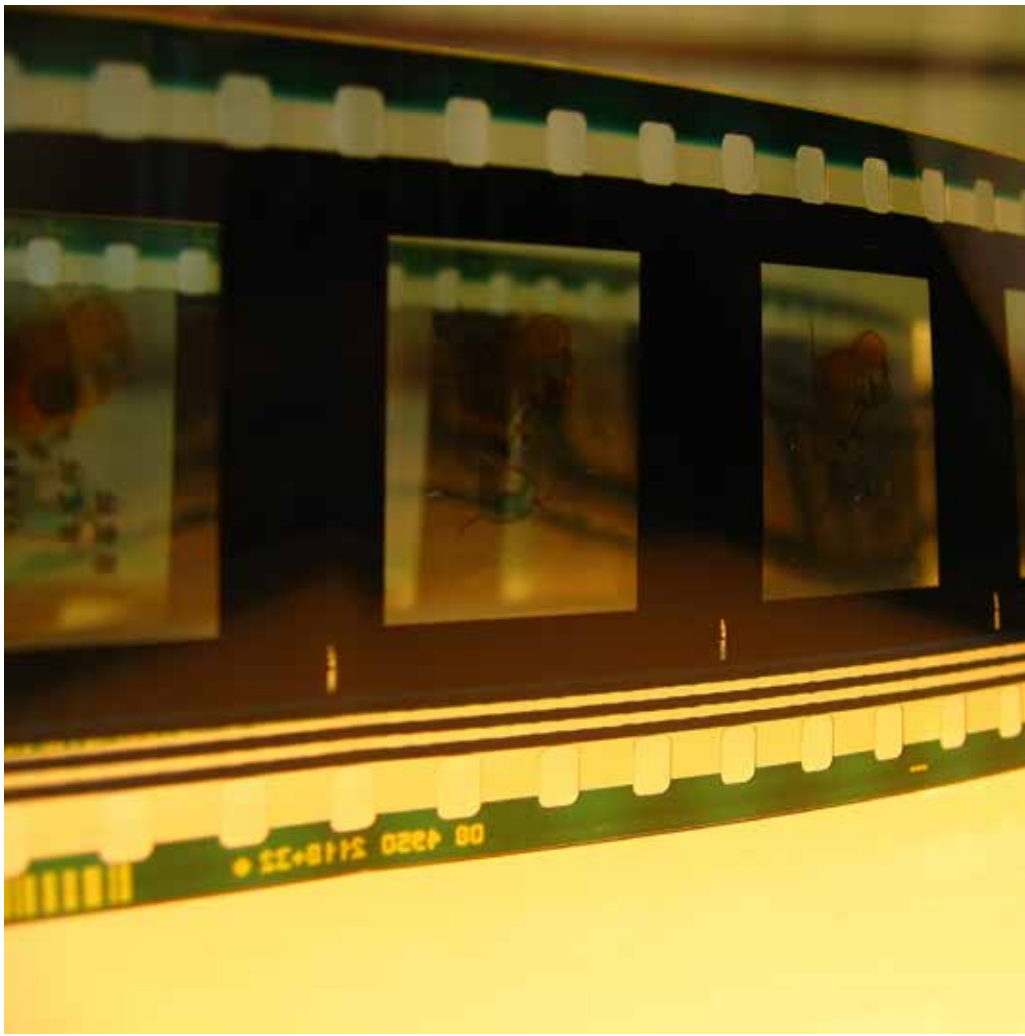
The Media Sector aims at designing and developing ICT tools that support:

- Multi-platform efficient Media content management, search, retrieval and content distribution.
- Content recommendation and personalized advertising through content characterization, content annotation, datafusion and profiling.
- Rich multimedia user experience.
- Social network analytics.
- Non-leisure gaming and gamification technologies.

Main Activities

The main activities of the Media sector in 2014, besides participating in R&D projects, have been the Olympic Broadcasting Services webcasting solution for the Winter Olympics 2014 in Sochi and also for the second Youth Olympic Games in Nanjing.

As well, the Media sector has participated in many strategic proposals for Atos at the corporate level and has helped define the portfolio for Atos Global Media. A promising new area of development is in the areas of second screen and real time social media analytics.



The sector also follows the activities of the New European Media (NEM) initiative.

Challenges

The biggest challenge is to convert the extensive knowledge accumulated by this sector during last years in different R&D projects related to media technologies into assets that are useful to the rest of Atos Group.

The sector focuses, concretely, on the following challenges:

- Content annotation and enriched metadata for multimedia.
- Multimedia search, distribution and retrieval.
- 3D and virtual worlds.
- Streaming (P2P, 3D, SVC, MDC, etc.).
- Social media analytics related to media content

Josep Martrat
Head of Sector

Current Research Topics and Findings

- Metadata, especially for sports
  - In video Mpeg, 7 MPEG 21, etc.
  - In Sport (SportML, EventML, Major Events)
- Realtime recommender systems
- Personalised Content
- Multimedia search adn retrieval
- P2P streaming
- Social media analytics
- Second Screen
- New user interfaces for access to multimedia (multitouch, Kinect, tablet)
- Digital archiving

Title	Project Title	Funding	Description	Web
CoNCEPT	COllaborative CrEative design PlaTform	FP7	Collaborative design platform for the early stages of the design process	concept-fp7.eu
ProsocialLearn	Gamification of Prosocial Learning for Increased Youth Inclusion and Academic Achievement	H2020	Delivery of a series of disruptive innovations for the production and distribution of prosocial games that engage children, and technology transfer from the games industry to the educational sector	prosociallearn.eu
SMART	Multimedia Search and Retrieval over Integrated Social and Sensor Networks	FP7	Research and implementation of a scalable open source next generation multimedia search engine that will be able to search information stemming from the physical world.	smartfp7.eu
Trillion		H2020	Open, flexible, secure and resilient socio-technical platform to foster effective collaboration of citizens and law enforcement officers.	trillion-project.eng.it

Labs

Data Intelligence

Helping to manage your data by researching on Big Data, Linked Data and Semantics

Description

The Data Intelligence Lab researches on novel technologies in the fields of Big Data, Semantics and Linked Data. These three complementary fields are amongst the technologies with more influence in the current business trends.

From companies to governments, from organizations to individuals, from the web to social networks, from traditional media to sensors, data is growing everywhere. Data is the new gold. The Data Intelligence Lab is monitoring and researching on Big Data solutions to cope with this data deluge, trying to help all possible stakeholders to better acquire, store, organize, annotate, curate, analyze and finally use the data. We see Big Data as a philosophy, as a new paradigm that allows performing data analytics where nobody has gone before.

The Data Intelligence Lab deals with technologies related to the entire data value chain (data acquisition, pre-processing, analysis and usage). Of particular interest for us are the architectures, frameworks and techniques that are the foundations of any data-intensive related application. Big data analytics, with especial focus on text analytics using Language Technologies, is one of the key pillars of the work carried out within the lab.

On the other hand, the world is now in the quest of opening data to the public. Especially, but not only, the Public Sector is clearly embracing the open data initiative. Within the Data Intelligence Lab we research and apply the Linked Data paradigm to help organizations that need to share data on the web and at the same time offering a programmatic interface allowing not only humans, but also machines (programs) to get automatic access and understanding of the data. The use of semantics and Linked Data is a key enabler of the use of public data in the future.

Goals

The main objective of the Data Intelligence Lab is researching on technologies and their applicability related to data and meta-data management:

- Big Data: Under the Big Data umbrella, the Data Intelligence Lab is particularly interested in pushing the state of the art in surfacing business intelligence from web resources and social networks, as well as investigating new solutions for big data storage, big data architectures, data visualization, data analytics and data science.

- Linked Data: Application of the Linked Data paradigm for data publication and linking.
- Semantics: Application of ontologies and language technologies for annotation, searching and extracting meaning from texts.

Main Activities

We believe there is no solution that fits-it-all, but general good architectural principles and best practices combined with an excellent knowledge of available tools and new research trends, make the difference between success and mediocrity.

- We are working in projects and solutions for big data architectures, with special emphasis in bringing together innovative technologies in sounding architectures fit for specific purposes.
- We are setting up and testing novel infrastructures for data acquisition and annotation, analyzing sentiments and bringing together semantics and big data.
- We have developed a Social Network monitoring tool called Capture that is the cornerstone of our knwledge transfer to commercialize research and innovation results.
- We are trying to add our 2 cents to the Linked Open Data initiative by bringing Linked Data technologies and our own developments to our projects, therefore promoting the uptake of open data.
- The Data Intelligence Lab has an extensive track record in projects and solutions dealing with semantic technologies, such as ontology engineering, semantic applications for enterprises, natural language processing in English and Spanish, among others.

Tomas Pariente
Head of Lab

Challenges

The Data Intelligence Lab is currently addresses the following main challenges:

Big Data

- Architectural approaches to deal with massive amounts of historical and streaming data in a coherent manner.
- Data acquisition from social networks, with special emphasis in gathering intelligence from Twitter.
- Use of Cloud Computing for storage and massive processing parallelization.
- NoSQL storage.
- Sentiment analysis.
- Machine Learning and Data Mining over large datasets.

Linked Data

- Seamless integration of LOD from multiple sources.
- Application development environments for LOD.
- Performance and information quality assessment.
- Usage and enhancement of open tools from the Linked Data community.

Semantics

- Triplestores usage and customization, and their applicability in Linked Data and Big Data solutions.
- Terminology servers and its application to semantic interoperability.
- Reusing and engineering ontologies for multiple purposes and domain.
- Natural Language Processing in Spanish and English, especially to understand sentiments and automatically linking datasets

Current Research Topics and Findings

The Data Intelligence Lab current research topics are:

- Application of existing and new research technologies for Big Data, such as NoSQL (MongoDB, HBase, etc.), MapReduce (Hadoop) or stream processing (Flink, Spark and Storm). Of special interest is our collaboration with the Apache Flink initiative for stream analysis using Machine Learning.
- Interpretation and analysis of unstructured textual resources using Natural Language Processing, Machine Learning and Data Mining techniques.
- Usage of Linked Data open tools for data publishing and linking.
- New algorithms and tools for semi-automatic dataset linking.
- Terminology server for the medical domain.
- Adding an abstraction layer for collaborative working on development of semantic applications (creation of workspaces, ontology versioning, triplestore abstraction).

Title	Project Title	Funding	Description	Web
BIG	Big Data Public Private Forum	FP7	Addressing technical, business and policy aspects of Big Data with the aims of shaping the future of the area, positioning it in H2020 and bringing stakeholders into a self-sustainable industrially-led initiative enhancing EU competitiveness.	big-project.eu
Contractual Research	Contractual Research Services in Slovakia	ERDF Slovakia	Smart Grid, Security and Big Data contributions to the International Centre of Excellence for Research of Intelligent and Secure Information and Communications Technologies and Systems in Slovakia.	
FI-WARE	Future Internet Core Platform	FP7	Core platform of the PPP Future of Internet, an innovative infrastructure for cost-effective creation and delivery of services, providing high QoS and security guarantees.	fi-ware.eu
LeanBigData	Ultra-Scalable and Ultra-Efficient Integrated and Visual Big Data Analytics	FP7	LeanBigData targets at building an ultra-scalable and ultra-efficient integrated big data platform addressing important open issues in big data analytics	leanbigdata.eu
MLi	Towards a MultiLingual Data Services infrastructure	FP7	Providing the foundations and roadmap of a scalable platform for the joint development/enhancement and hosting of (multi-) language datasets, processing tools and basic services.	mli-project.eu
PHEME	Computing Veracity Across Media, Languages, and Social Networks	FP7	Combination of big data analytics with advanced linguistic and visual methods. The results will be suitable for direct application in medical information systems and digital journalism.	pheme.eu
SMART	Multimedia Search and Retrieval over Integrated Social and Sensor Networks	FP7	Research and implementation of a scalable open source next generation multimedia search engine that will be able to search information stemming from the physical world.	smartfp7.eu
VELaSSCo	Visualization for Extremely Large-Scale Scientific Computing	FP7	Development of a new concept of integrated end-user visual analysis methods with advanced management and post-processing algorithms for engineering modelling applications, scalable for real-time petabyte level simulations.	velassco.eu
VPH-SHARE	Virtual Physiological Human: Sharing for Healthcare	FP7	Development and deployment of the VPH "infostructure", the computing infrastructure for the VPH community to store, share, reuse and integrate data, information, knowledge and wisdom on the physiopathology of the human body.	vph-share.eu

Next Generation Cloud

Contributing to Atos innovation strategy with regards to Cloud computing

Description

Cloud computing has now overcome the hype around the term. New scenarios and usages pose innovative requirements into the use of cloud including techniques for interoperability, application off-loading and migration between cloud systems; resilience of services deployed over diverse cloud models; and mechanisms to avoid vendor lock-in and for switching between cloud providers. In order to exploit Cloud to its full potential, still aspects such as hybrid cloud models, sustainability, enhanced service provisioning need to be further investigated. In addition, challenges brought by big data processing, IoT, mobile technologies and edge/fog computing offer new challenges to the area.

Investigation on these is this lab's main mission, building upon more than ten years of experience performing insightful research in cloud technologies, distributed systems and service engineering.

Goals

The main goal of this lab is to contribute to Atos research and innovation strategy with regards to Cloud developments, models and architectures:

Main Activities

Advanced capabilities for IaaS, PaaS and SaaS

- Accounting and monitoring
- Autonomic resource management
- SLA management
- Multi-cloud environments IaaS, PaaS and SaaS
- Experimental Facilities in Cloud
- Eco-efficiency in Clouds and Data Centres

Service Management and Engineering: Advanced Service Architectures and SaaS

- Cloud Service Composition, aggregation and orchestration
- Service, Application and Data Marketplaces
- Trust & Reputation Service Management
- License Management

Mobile/Things'Clouds – Fog computing

- Heterogeneous / Things virtualisation management
- Ad-hoc Cloud management
- Application offloading
- Local Cloud Management(Processors accelerations, QoS and traditional Cloud interoperability)

Challenges

This lab addresses the following challenges:

- Cloud Hybrid models: Interoperation, Portability, Federation and Brokerage
- SLAs, Trust and License Management for Cloud environments
- Energy efficiency in heterogeneous computing environments, Cloud computing and Data centres
- Big Data Storage and scalability in Big Data processing
- Cloud-based Experimental facilities
- Autonomic and self-healing capabilities for Cloud management
- Cloud Service composition, aggregation and orchestration
- Cloud Marketplaces, Vertical markets, Added-value services and Applications
- Cloud Standardisation and Compliance
- Scalability based on predictive models and including heterogeneous resources
- Heterogeneous and autonomic resource management
- Integration of edge and mobile devices into decentralised Cloud architectures for IoT services

Ana Maria Juan Ferrer
Head of Lab

Current Research Topics and Findings

- Cloud Service Lifecycle Management
- Architectures for Advanced Cloud Scenarios: Aggregators, Brokers, Federations and Multi-provider Clouds
- Multi-Cloud Service Orchestration and Composition
- Software application management in Cloud environments
- Integration of Things and Mobile heterogeneous resources into Fog computing environments and Clouds
- SLA and Trust Management for Clouds
- Green Data Centers and Eco-efficient Cloud services: Software and Cloud management systems for eco-efficiency gaining
- Service Management and Engineering
- Deployment automatization and scalability characterization for diverse application models
- Big Data processing scalability solutions
- Innovative methods and tools for autonomic resource management and automated and large scale Service Discovery

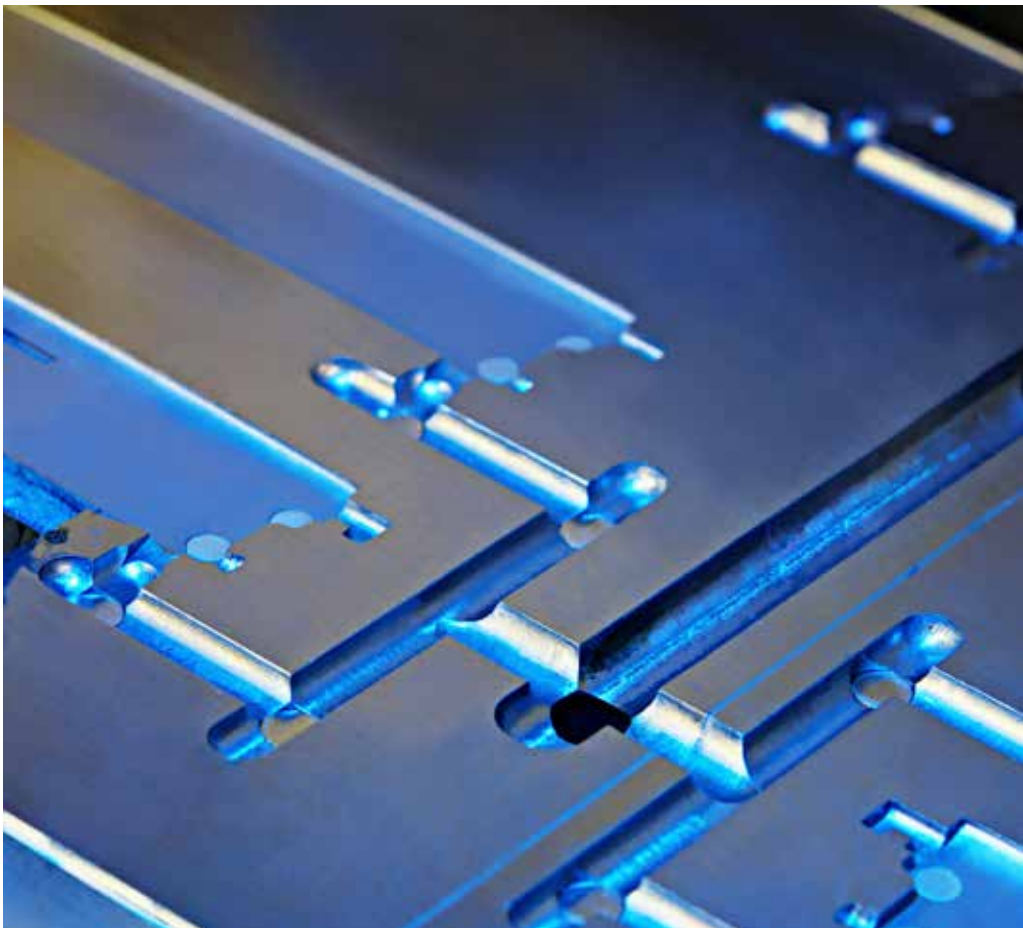
Title	Project Title	Funding	Description	Web
ASCETiC	Adapting Service lifeCycle towards EfficienT Clouds	FP7	Provision of novel methods and tools to support software developers aiming to optimize energy efficiency and minimize the carbon footprint resulting from designing, developing, deploying, and running software in Clouds.	ascetic.eu
CloudSocket	Business and IT-Cloud Alignment using a Smart Socket	H2020	Introduction of the BPaaS concept that fulfills the business process needs thanks to smart alignment techniques, packages BPaaS as "extended Cloudlets" autonomously deployable and including adaptive rules to appropriately react in a multi-cloud environment. The vision is to "plug business" into the "Cloud".	cloudsocket.eu
Cloudwave	Agile Service Engineering for the Future Internet	FP7	New modern cloud infrastructures and tools by enabling agile development and delivery of adaptive cloud services which dynamically adjust to changes in their environment so as to optimize service quality and resource utilization.	cloudwave-fp7.eu
GENIC	Globally optimized ENergy efficient data Centres	FP7	Development of a novel scalable, integrated management and control platform for data center wide optimization of energy consumption by integrating monitoring and control of the primary data center energy producing/consuming components.	projectgenic.eu
INDIGO-DataCloud	INtegrating Distributed data Infrastructures for Global ExplOitation	H2020	Development of an innovative cloud platform for the scientific community based on open source software and providing access without restrictions to a diversity of e-Infrastructures (public or commercial, GRID/Cloud/HPC).	indigo-datacloud.eu
Panacea	Proactive autonomic management of Cloud resources	FP7	Innovative solutions for a proactive autonomic management of cloud resources, based on a set of advanced machine learning techniques and virtualization	projects.laas.fr/panacea-cloud
SeaClouds	Seamless adaptive multi-cloud management of service-based applications	FP7	Solutions to enable seamless adaptive multi-cloud management of complex applications, by supporting distribution, monitoring and migration of application modules over multiple heterogeneous (PaaS) clouds.	seaclouds-project.eu

Cybersecurity

Addressing security, trust and privacy from a technological perspective, in an effort to ensure the security of citizens and organizations

Description

Trustworthy, secure and reliable ICT systems are crucial for a wide take up of converging digital services and a global requirement for the reliable and undisturbed functioning of our information society. In this scenario, the Cybersecurity (CS) lab is an interdisciplinary group that conducts research in the trust, security and privacy domains for the improvement of information technology security, as well as the increase of trust and dependability in systems and services.



Goals

Our ambition is to coherently address security, trust and privacy from a technological perspective, in an effort to ensure innovation in the field of secure software development, secure service composition, and secure service delivery. The goal is to find solutions for ensuring the security of citizens and organizations from threats such as terrorism, natural disasters and crime, while respecting fundamental rights, such as privacy.

Our research areas include, among others: cyber security, compliance & policy management, secure software engineering, security in virtualized environments, automated reconfiguration of security and high performance Security Information and Event Management (SIEM) systems:

Main Activities

The lab performs technical activities related to the implementation of:

- Innovative security mechanisms (e.g. dynamic or adaptive features).
- Compliance & Policy Management.
- Security event and information management infrastructure (e.g. evidence-based policy enforcement, including security/privacy event monitoring, collection and assessment).
- Security methodologies and frameworks (e.g. risk assessment and secure software development).
- CyberSecurity: fight against malware and botnets, improved resilience against cyber threats.

Challenges

This lab addresses the following challenges:

- Security in shared service applications and infrastructures such as Cloud.
- Security & Privacy in Social Networks.
- Security of ICT in large distributed IT systems (sensor networks, interconnected critical infrastructures).
- Information exchange, interoperability and data fusion for situational awareness.
- Context-aware security and context-aware privacy protection.
- Digital forensics (e.g. forensics in Cloud).

Rodrigo Díaz
Head of Lab

Current Research Topics and Findings

- Trust (establishment of trust relations, management of trust).
- High Performance Security Information and Event Management (SIEM).
- High Performance Compliance Management, including: Evidence Collection, Compliance Assessments and Accountability.
- Privacy by Design, Context-aware privacy enhancement and privacy preservation.
- Security for Virtualized environments.
- Secure Software Engineering.
- Automated Reconfiguration of Security.
- Risk and cost-driven security decision making.
- Prevention of crime and efficient collaboration of police forces.
- Data protection technologies and applications.
- Botnets detection and mitigation.

Title	Project Title	Funding	Description	Web
ACDC	ACDC - the Advanced Cyber Defence Centre		Bringing together organizations from 14 European countries, including public administrations, private sector and academia, in order to achieve a sustainable victory over a powerful cyber threat commonly known as botnet.	botfree.eu
Contractual Research	Contractual Research Services in Slovakia	ERDF Slovakia	Smart Grid, Security and Big Data contributions to the International Centre of Excellence for Research of Intelligent and Secure Information and Communications Technologies and Systems in Slovakia.	
CUMULUS	Certification infrastrUcture for MUlti-Layer cloUd Services	FP7	Development of an integrated framework of models, processes and tools supporting the certification of security properties of infrastructure (IaaS), platform (PaaS) and software application layer (SaaS) services in cloud.	cumulus-project.eu
FI-WARE	Future Internet Core Platform	FP7, ICT	Core platform of the PPP Future of Internet, an innovative infrastructure for cost-effective creation and delivery of services, providing high QoS and security guarantees.	www.fi-ppp.eu/projects/fi-ware
NECOMA	Nippon-European Cyberdefense-Oriented Multilayer threat Analysis	FP7	Provision of new means to understand cyberthreats and to mitigate their effect on infrastructure and endpoints.	necoma-project.eu
RERUM	REliable, Resilient and secUre IoT for sMart city applications	FP7	Architectural framework for dependable, reliable, and secure networks of heterogeneous smart objects supporting innovative Smart City applications.	ict-rerum.eu
TREDISEC	Trust-aware, REliable and Distributed Information SEcurity in the Cloud	H2020	Unified framework where resulting primitives are integrated, while following the end-to-end security principle as closely as allowed by functional and non-functional requirements.	tredisec.eu
VisiOn	Visual Privacy Management in User Centric Open Environments	H2020	Implementation of a privacy platform software components leveraging on existing software, tools and methodologies, which partners have developed in previous projects.	visioneuproject.eu
VPH-SHARE	Virtual Physiological Human: Sharing for Healthcare	FP7	Development and deployment of the VPH “infostructure”, the computing infrastructure for the VPH community to store, share, reuse and integrate data, information, knowledge and wisdom on the physiopathology of the human body.	vph-share.eu
WISER	Wide-Impact cyber SEcurity Risk framework	H2020	Action that puts cyber-risk management at the heart of good business practice, benefiting critical infrastructure and process owners, and ICT-intensive SMEs. Provision of a cyber-risk management framework able to assess, monitor and mitigate risks in real-time, in multiple industries.	cyberwiser.eu

Internet of Everything

Fostering holistic federation of IoT platforms as ICT infrastructure for Smart Environments

Description

In recent years the potential Internet of Things technologies have acquired high attention from many different players and gained further recognition as key enabler for citizen centric business generation in different application areas, such as Smart Cities, Smart Energy and Environmental Management and Protection, Smart Industry and Factories of the Future, Smart Home and Assisted Living, Public Safety, Agriculture and Tourism. The Internet of Everything concept goes one step forward involving People, Process, Data and Things under the same scope.

We currently understand the Internet of Everything as a paradigm considering the pervasive presence, in any context of the human activity, of sensing and actuating physical devices and ICT objects that are addressable, interconnected, and able to communicate and cooperate which each other. Furthermore, the IoE paradigm brings together devices, process, data, people and objects. It also includes services orchestration and decision making mechanisms, with the objective of creating a virtual dimension and make life become smarter.

Atos has a clear IoT end to end strategy aligned with the Group strategy, from IoT services to IoT platform. IoE will enable and empower our clients on their digital transformation journey and develop competitive advantage. The new IoE paradigm is not only about gathering data from objects, is about using these data in better decisions and integrated in the business processes.

We strongly support the usage of standard and open web technologies to construct the Internet of Everything. Internet appears as mechanisms to create, populate and share information between peers, machines, processes, humans; standards in Internet ensure the interoperability in the communications. The openness in technologies ensures that implemented standards are used without barriers, enabling freedom for researching, deployment and creation of new business models in a digital world.

Goals

- Provide a full operative IoE platform capable of connecting People, Process, Data and Things in a standard, scalable an decoupled way. The resulting ecosystem enable multiple domain business and applications through a set of services for real time communications, data storing, monitoring, statistics, etc.
- Foster Open Standard Web technologies to create services, platforms and applications focusing on the growing needs of interoperability. IoT open standards interoperability is necessary for market adoption and horizontal solutions. Nowadays, business sectors like transport, energy or logistics are build over closed solutions, reminiscences from a less collaborative world. The growing irruption of web technologies (strongly linked to cloud support) exposes a new world of standard inter-operable communications that should guide the evolution of IoE.

Main Activities

At technical level we focus on developing a complete IoE platform where the embedded devices are complemented with the new landing of tiny computers and any kind of sensors. Smart gateways virtualize sensors (devices, actuators, etc.), powering them with connectivity capabilities and adaptable behavior. They act and react intelligently thanks to the analysis of surrounding data and communicate to the world through different services and integration frameworks. The top layer of the platform is composed by services managing resources, communications, data, statistics and monitoring in real time. The full stack IoE platform enables new applications and services for multiple domains, such as, transport, logistics, energy, smart cities, following the key principle of easiness during integration and development processes.

José Gato
Head of Lab

We participate in technological research activities looking both for deriving user situation-aware application requirements in real time and for producing virtualized IT object models and integration frameworks equipped with advanced features. Virtual IT objects become robust and reusable in a broader IoE service context and easily integrable with other platforms and services.

At the business modeling research level, our aim is to abstract technological heterogeneity of vast amounts of diverse real work addressable objects, to enable their use for enhancing IoE services and applications, and the involvement of cross-domain actors in multi-sided business platforms.

Challenges

Some of the pending achievements towards a mature implementation of the IoE paradigm are:

- Faster software developments and solutions using a complete ecosystem guided by common open standard technologies and architecture.
- The business of Open Standard APIs: implementing and exposing services and tools through APIs as a product. Restful interfaces support this approach making use of HTTPS protocol as standard for M2M, M2I, V2X, etc.
- Semantic interoperability of sensor information exchange models in heterogeneous environments.
- Adoption of governance mechanisms fostering innovation, trust, and fair data ownership management, while respecting security, privacy and complexity of new IoE environments.
- Bringing "agile developments" and "continuous integration" methodologies to provide deployment of large-scale environments.
- Development of sustainable business embracing the full potential of the Internet of Everything.
- Participate in R&D programs to propose innovative security environments

As a key actor in the European IoE research landscape, our lab addresses technological contributions to the solution of the mentioned issues aiming at ensuring wider adoption and implementation of the IoE paradigm.

Title	Project Title	Funding	Description	Web
COSMOS	Cultivate Resilient Smart Objects for Sustainable City Applications	FP7	Development of an IoT framework where things are able to learn based on others experiences while socially-enriched coordination considers the role and participation scheme of things, in and across networks.	iot-cosmos.eu
ENCOURAGE	Embedded iNtelligent COntrols for bUildings with Renewable generAtion and storaGE	ARTEMIS	Development of embedded intelligence and integration of technologies that will directly optimise energy use in buildings and enable active participation in the future smart grid environment.	encourage-project.eu
iKaaS	Intelligent Knowledge-as-a-Service	H2020	Intelligent, privacy preserving and secure Smart City Platform based on a Big Data resource and an analytics engine.	ikaas.com
MobiS	Personalized mobility services for energy efficiency and security through advanced artificial intelligence techniques	FP7	Development of a federated, customized and intelligent mobility platform by applying novel Future Internet technologies and Artificial Intelligence methods to monitor, model and manage the urban mobility complex network of people, objects, natural, social and business environment in real-time.	mobis-euproject.eu
P-SOCRATES	Parallel Software Framework for Time-Critical Many-core Systems	FP7	Development of an entirely new design framework, from the conceptual design of the system functionality to its physical implementation, to facilitate the deployment of standardized parallel architectures in all kinds of systems.	p-socrates.eu
RERUM	REliable, Resilient and secUre IoT for sMart city applications	FP7	Architectural framework for dependable, reliable, and secure networks of heterogeneous smart objects supporting innovative Smart City applications.	ict-rerum.eu
VITAL	Smart, secure and cost-effective integrated IoT deployments in smart cities	FP7	Development of a novel virtualization layer for the next generation of integrated and technology independent smart city systems in Europe.	vital-project.eu

Identity & Privacy

Securing corporate & personal identity in cyberspace

Description

Secure identity and privacy technologies are basic for citizens in the Digital Society & Economy: it is about protecting who and what we are in the context of fundamental human rights and freedoms including the right to personal data protection in all aspects of life.

Assurance of identity data security and better privacy protection both create key competitive advantage for Atos and for our public and private partners, having in focus both customer concerns in this regard and existing threats which create social alarm and hamper trust in eServices of global digital markets and ICT systems in general.

Goals

Secure identity schemes for Identity and Access Management and the protection of identity-related and other personal and sensitive information (in compliance with regulatory frameworks that guarantee citizen fundamental rights) are basic enablers of trust and security for end-users, and for the eco-system of stakeholders around ICT services.

The Identity and Privacy lab focuses on innovative technological trends in these areas to serve the needs of the Research and Innovation sectors and markets offering trustworthy solutions and assets and fostering competitive advantages in an increasingly complex and distributed environment (Cloud, Future Internet, Mobile & Bring-Your-Own, etc.) where eID and privacy can achieve for Atos customers compliance with regulatory requirements, more efficiency, competitive advantage and enhanced trust towards their end-users, reduced fraud and enhanced cooperation with stakeholders in the eServices value chains..

Main Activities

- Electronic Identity Management Technologies: Identity Lifecycle, Identity Federation and Assurance, Networked Identity, Identity and attributes as a Service.
- Digital/Electronic Identity Technologies: Electronic certificates, on-line electronic IDs, smartcards, travel documents, compliance with relevant Regulations (e.g. eIDAS, ICAO 9303...).
- Cryptography and Electronic Trust Services: homomorphic encryption Trusted data processing in untrusted environments, proxy re-encryption, searchable encryption, electronic signatures/seals, electronic registered delivery, timestamps, digital preservation.
- Identity and Access Management: Access Control, Identification, Authentication, Federation Gateways, eID brokers, Authorization, User Management.
- Data Protection by Design and Privacy Engineering Methodologies: Privacy and Security by Design, Privacy Enhancing Technologies (including pseudonymisation, differential privacy, user-defined data protection and sharing policies), User-centric multi-service privacy managers awareness and empowerment tools, Privacy Metrics, Identity Fraud and Theft Prevention.
- Biometrics: Multi-biometrics, mobile biometrics, crypto-biometrics, automated border control, usability, standards.

Challenges

- Interoperable eID solutions will be key enablers of secure and seamless access to eServices (e.g. STORK/STORK 2.0 and eIDAS)
- eID, eIDM, trust services, advanced cryptography and privacy/security-by-design as fundamental enablers of Trust in Future Internet & Cloud
- Complex Identity Federation & Data Exchange Scenarios (involving personally identifiable information)
- Strong (multi-factor) authentication
- Identity & Privacy Assurance
- Auditing and Compliance

Alberto Crespo
Head of Lab

Current Research Topics and Findings

- Privacy-enhancing technologies and advanced cryptography approaches as building blocks for privacy-enhancing identity management and data management in trusted and untrusted domains.
- Identity Management-as-a-Service (IDMaaS) & Networked Identity: authentication/identification services composable with other services in the Cloud (identity as a commodity).
- Methodological approaches: Privacy-by-Design (PbD) including Privacy Impact Assessment, cost & value of privacy compliance, full identity data lifecycle management...
- Biometrics: Crypto-biometrics, Cancellable biometrics, Mobile biometrics.

Title	Project Title	Funding	Description	Web
Contractual Research	Contractual Research Services in Slovakia	ERDF Slovakia	Smart Grid, Security and Big Data contributions to the International Centre of Excellence for Research of Intelligent and Secure Information and Communications Technologies and Systems in Slovakia.	
CREDENTIAL	Secure Cloud Identity Wallet	H2020	Innovative cloud based services for storing, managing, and sharing digital identity information and other critical personal data. Security of services relies on the combination of strong hardware-based multi-factor authentication with end-to-end encryption.	credential.eu
DAPHNE	Data-as-a-Service platform for Healthy Lifestyle and preventive medicine	FP7	Development of a platform to deliver personalized guidance services for lifestyle management to the citizen/ patient.	daphne-fp7.eu
FIDES	Federated Identity Management System	EIT-DIGITAL	Deployment of a working pilot of an open, federated, identity infrastructure service provider, delivers the implementation guidelines and defines the relevant business model.	
FutureID	Shaping the Future of Electronic Identity	FP7	Building a comprehensive, flexible, privacy-aware and ubiquitously usable identity management infrastructure for Europe.	futureid.eu
MOBIGUIDE	Guiding Patients Anytime Everywhere	FP7	Development of an intelligent system for patients with chronic illnesses (cardiac arrhythmias, diabetes and high blood pressure). Patients wear sensors to monitor their biosignals, which are sent to a smart phone and then to a "back-end" computer.	mobiguide-project.eu
MoveUS	ICT cloud-based platform and mobility service: available, universal and safe for all users	FP7	Changing European users' mobility habits by offering intelligent and personalized travel information services, helping people to decide the best transport choice and providing meaningful feedback on energy efficiency savings.	moveus-project.eu
PRIPARE	Preparing Industry to Privacy-by-design by supporting its Application in Research	FP7	Facilitating the application of a privacy and security -by-design methodology that will contribute to the advent of unhindered usage of Internet against disruptions, censorship and surveillance, support its practice by the ICT research community, foster risk management culture.	pripare.eu
PRISMACLOUD	Privacy and Security Maintaining Services in the Cloud	H2020	The main idea and ambition of PRISMACLOUD is to enable end-to-end security for cloud users and provide tools to protect their privacy with the best technical means possible - by cryptography.	prismacloud.eu
STORK 2.0	Secure idenTity acrOss boRders linKed 2.0	CIP	Operational open framework and infrastructure encompassing eID for secure electronic authentication of both legal and natural persons.	eid-stork2.eu
STRATEGIC	An advance service distribution network and tools for interoperable programmable, and exploitation of unified public cloud services		STRATEGIC offers a cloud enabled framework on various infrastructures with a set of services related to public bodies, opening new horizons in the secure and private migration, adaptation, governance and development of public cloud services.	www.strategic-project.eu
WITDOM	empoWering prIvacy and securiTy in non-trusteD envirOnMents	H2020	Automatic and efficient privacy provisioning solutions, keeping data confidential (encrypted and privacy-protected) in the un-trusted environment, while the data owner can operate with and make use of the data in the encrypted domain..	witdom.eu

Research Lines

Additive Manufacturing

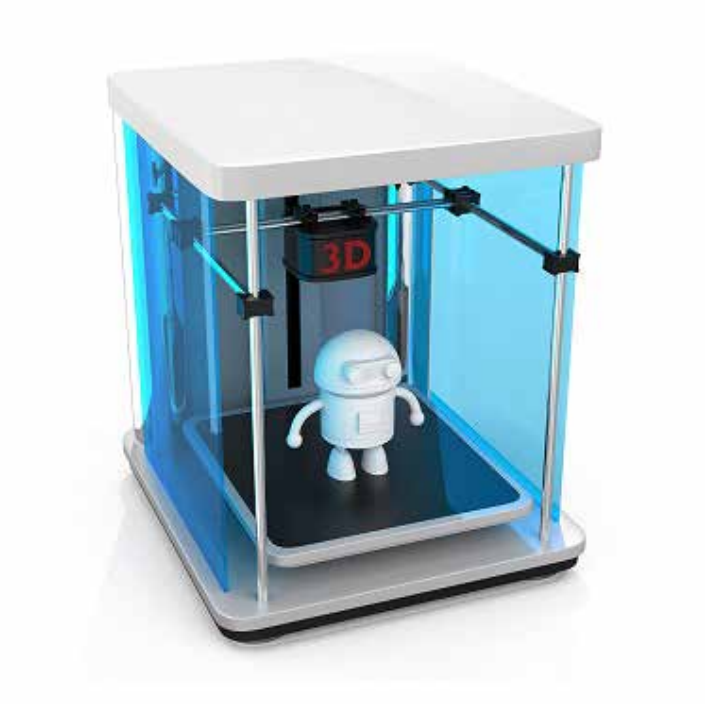
Have you understood the extraordinary potential of 3D printing?

Description

Established (analogue) fabrication methods and technologies will be replaced by Digital Fabrication technologies and solutions:

- Consumer goods will be personalized and produced on demand, while manufacturers will be able to use 3D printing to come up with radical new designs for everyday objects.
- This is expected to lead to a revolution in the manufacturing industry that needs to be anticipated, understood and supported.

According to Gartner's Top 10 Strategic IT Trends For 2015, "The cost of 3D printing will decrease in the next three years, leading to rapid growth of the market for these low-cost machines. Industrial use will also continue its rapid expansion." Gartner highlights that "expansion will be especially great in industrial, biomedical and consumer applications, highlighting the extent to which this trend is real, proving that 3D printing is a viable and cost-effective way to reduce costs through improved designs, streamlined prototyping and short-run manufacturing."



Market

Many of ARI sectors could be the target audience of 3D Printing research since it is a technology that is growing rapidly across a number of application areas.

- Health
- Information Technologies
- Manufacturing, Retail and Transportation
- Energy & Utilities

Atos has recently shown interest, identifying 3D Printing as a tendency to be followed (see Atos Ascent Scientific Community White Papers: 3D Printing, http://atos.net/content/dam/global/ascent-whitepapers/ascent-whitepaper-3d-printing.pdf)

Relation between the Research Line and Atos Portfolio

- The common opportunities related with 3D Printing are almost always aligned with the manufacturing and retail markets, but in a digital world, where democratization of information and flexibility are the cornerstone of the whole argument, it seems easy to conclude that the impact in the IT business will be also of paramount importance.
- A new technology as 3D Printing is emerging and Atos could improve its projects with it in markets like Manufacturing, Retail and Transport, Health or Media and Utilities.
- Innovation in 3D Printing or research in the ways to integrate or bring functionalities to 3D Printing products with different materials would be the next step in Atos projects.

Carlos Cañado

Geospatial Applications

Living in a spatially-enabled world

Description

Relation to current technological trends:

Cloud computing
Moving existing geospatial solutions in different domains to the cloud paradigm in order to accommodate to customers needs of scalability and performance:

- Open data for precision farming agriculture.
- Early warning systems on the cloud for increased performance and interconnection in Crisis Management.

Big Data and HPC
Geospatial solutions are inherently consumers and producers of large amounts of spatially-enabled information:

- Storage and (near) real-time analysis of large amounts of vector based-data (e.g., satellite imagery, VGI) and satellite imagery using well-known big data tools (e.g. Hadoop, MongoDB) complemented with GIS-optimized solutions such as Rasdaman or Geomesa.
- HPC for real-time execution of complex calculation and scientific models (e.g. tsunami simulations).

Internet of Things (IoT)

- Location awareness IS a core component of the Internet of Things.
- Sensor management/data access through OGC SWE standards (Working group in OGC to align SWE with IoT approach).
- Drones: affordable technology which allows incorporate different types of sensors (infrared and thermal cameras, substance detectors, etc.) applicable to several domains (search and rescue operations, crop and plague detection, archaeology, traffic control, etc.).

Crowdsourcing

- Commonly known also as Volunteered Geographic Information (VGI), which relies on web-based applications and/or mobile devices for collecting user-generated data.
- Community-based mapping (e.g. OpenStreetMap, crisis/disaster mapping).
- Crowdsourced sensoring: Typically used in the Environment domain (e.g., environmental observation through (human) sensors but also starting to grow its acceptance in disaster/hazardous events.

Visualization and GIS 2D/3D/4D

- Indoor geolocalization in buildings (e.g. use of beacons) and augmented reality for stock control.
- Analysis and visualization in 3D and 4D for fleet and traffic control.

Market

- Several years of expertise in GIS technologies and standards which have been applied in different projects/domains (e.g. OGC, INSPIRE, GEOSS, ORCHESTRA).
- Several years of expertise in the Environmental and Crisis Management domains.
- Strong partners network in the GIS community.
- DEWS Early Warning System as main result (currently used in three projects: FOODIE, DRIVER, ARTIST).
- Experience in integration of sensor data.
- Shifting to big data/cloud paradigm (experience being gained in FOODIE and DRIVER projects).
- Drones (new domain for us but with high potential of applicability).

Relation between the Research Line and Atos Portfolio

- Solutions/Projects are clearly aligned with Atos business areas and can provide support for bidding opportunities
  - Environment and Agriculture (e.g. Spanish Ministry of Environment and Agriculture) with FOODIE, ENVIROFI and EO2HEAVEN projects
  - Homeland and Security with ORCHESTRA, DEWS, ICARUS and DRIVER projects
  - SmartCities, Transport, Tourism and Health
  - Helix Nebula/Canopy
- Collaboration with other ATOS divisions in tenders
  - GEMMA Emergency Management Solution
  - Smart Cities (Madrid City Council)

Miguel Ángel Esbrí

High Performance Computing

Why do we need ever-higher performing computers?

Description

Many industrial scenarios require very advanced computation capabilities due to the big amount of data to be analyzed and to the really complex calculations to be performed. HPC is the technology which enables handling with such complexity, providing the technical solutions, which will bring industry to a new era where simulations, advanced modeling and improved visualization will enable the engineering and manufacturing of new products, so they will be more cost-efficient, safe and more advanced.

Non-functional properties in HPC/HTC:

- SLAs and related monitoring
- Nodes trust and dependability/availability-related metrics
- Energy management and cost
- Dynamic applications profiling and allocation

Optimization of resources allocation in HPC

- Hybrid solutions Cloud + Physical hardware
- Exploit existing infrastructures as much as possible (complementary applications)
- Non-functional properties-aware allocation

Exploit advanced virtualization in the HPC environment with accelerators (in different application domains):

- Traditional resources (CPUs, Storage and Network) through Containers
- GPUs
- FPGAs
- Others (MPPAs, DSPs...)

Programming models for exploiting HPC capabilities and co-design

Bring HPC to limited and embedded devices (IoT, robotics, Unmanned Vehicles...)

Market

Atos has already experience in many topics related to HPC and the domains where it can be applied:

- Previous Grid related projects (BeinGrid, Elegi, Akogrimo, Grasp, etc...)
- Cloud research – virtualization and HPC as a service...
- Research in the Big Data topic (VELASSCO)
- Research in Energy-related topics (ASCETiC, TANGO)

Thanks to this experience, several members of the team have knowledge about parallelization and the usage of accelerators.

Relation between the Research Line and Atos Portfolio

The acquisition of Bull has opened new opportunities related to HPC technologies. Atos Managed Services (MS) Line has expanded its offer in order to achieve full solutions:

- Deployment of Data Centres
- Maintenance & Improvements
- Monitoring of the Infrastructure

Consulting and Systems Integration has a line related to consultancy for configuring infrastructure needs, which may benefit from the knowledge generated by the HPC research line.

Finally, Bullion Servers is a Bull Product (http://www.bull.com/bullion-servers) which could benefit from the research performed:

- For Big Data and Cloud Computing mainly
- Massive In-memory processing
- Scalable

Javier Nieto

Software Engineering

Improve your productivity, release better quality software

Description

▶ **Model Driven Software Engineering (Design-Time)**

MDA/MDE forward engineering techniques and methods applied to the specification, program-comprehension, re-engineering (design-pattern driven) of software systems and code synthesis

▶ **Software modeling and simulation (Run-time)**

Research on techniques and methods that enable the specification and modeling of concerns on complex software systems and their simulation at model level, exploring the solution space

▶ **Aspect Oriented Software Engineering/ Modeling**

AOP/AOM techniques applied to the management of cross-cutting concerns, interweaving in complex software systems

▶ **DSL based software modeling and development: code generation and optimization. DSL applicability to HPC, embedded systems and IoT**

Development of model-based domain specific language supporting the modeling, optimization and code synthesis of software for different software domains

▶ **Vector Programming/Parallel programming**

Co-design development of techniques and tools that simplifies the adoption of vector/ Parallel programming in software development, exploiting the full potential of new CPU/GPU for desktop/laptop applications

▶ **Advanced User Interface design and development**

Development of techniques and methods simplifying the design and development of advanced user interfaces in a computing continuum, regardless the platform

▶ **Run-time dynamic adaptation**

Research on techniques and methods enabling autonomous, context-aware applications, supporting self* features, such as self-adaptation, self-healing, self-reconfiguration, etc.

▶ **OSS Community development**

Development of techniques, methods and tools enabling a collaborative software development lifecycle

▶ **Choreography Service composition**

Research on choreography techniques enabling a de-centralized coordination of software agents in mutual collaborations

▶ **Search-based software engineering**

Research on software optimization techniques aiming at improving software engineering evolution and maintenance. Automatic exploration of solution space and mapping to the problem space

▶ **Software architectures and methodologies**

Research on new software architectures and methodologies, including programming paradigms (functional programming, etc.)

▶ **Enterprise Application Integration, middleware**

Development techniques and tools enabling the interoperability of software systems, applied to EAI

▶ **Advanced Software Engineering automation techniques**

Research on the automation of software engineering techniques and methods, covering the entire software engineering live-cycle, particularly supporting software maintenance

Market

▶ Several years of expertise in software engineering technologies and standards which have been applied in different projects/domains, including:

- FP6: SECSE, MOMOCS
- FP7: NEXOF-RA, SOA4All, Qualipso, Cloud4SOA, MARKOS, ARTIST, ALERT
- H2020: SUPERSEDE

▶ Participation in Software Engineering initiatives: NEXOF Software Engineering, Software Engineering Cluster

▶ Main Assets:

- yourBPM: framework for dynamic service composition
- ARTIST: model-based framework supporting the re-architecture of legacy systems

Jesús Gorroñogoitia

User Experience

How to engage users and improve their motivation to learn, cooperate, create...

Description

This research line has a bi-dimensional focus on general learning research concerns (vertical axis) and training and motivational support for domain specific applications (horizontal axis). It aims at developing innovative solutions to address:

- Latest and general educational challenges with the provision of technology support systems for formal, informal, no formal learning approaches
- Educational/training, pervasive and inclusive issues of the different applications or solutions created by the other ARI Labs and sectors, in terms of:
  - Personalisation.
  - Optimized operations and services to foster motivation and creativity through continuous awareness of learners and their location and status.
  - Effective communication and interaction between human-wearable devices; continuous biological monitoring, etc.

Learning Analytics as application of Big Data + Business Intelligence approach in educational settings with the purposes of understanding and optimizing learning and the environments where the learning occurs. It provides support the personalisation, progress monitoring and generation of recommendations for improvements in the learning contents and process designs as well as the individual performance.

Game based applications, such as Gamification, Virtual world, Simulations as mechanisms to foster the engagement, productivity as well as the development of high level skills like critical thinking, problem solving, creativity or soft skills. Such type of applications facilitates higher levels of participants' (learners) involvement in the planned activities through exploration, experimentation, competition or co-operation.

Technologies to support inclusion and accessibility in learning/interactive processes: Applications based on Wearable technologies and Human Machine Interfaces which facilitate the acquisition of information about learners with special needs (or not) to allow the personalisation of their learning activities and their integration in the educational process.

Context-aware technologies which leverage information about the end user to improve the quality of his interaction anticipating immediate needs and proactively offering enriched, situation-aware and usable content, functions and experiences. Technologies to gather information about the user and context of his interaction.

Social Networks and SNA: Social networking tools to foster the collaboration anytime, anywhere as means to support knowledge sharing and understanding, placing individuals at the center of the network. Social Network Analysis especially to address the study of user attributes, behavior and location-based interactions.

Market

Several years of experience of research related to::

- Learning and Instructional Design, Computer-supported Collaborative work, Game-based learning, Usability, Formal models for knowledge representation and application of emerging technologies in different research and development projects tackling Technology Enhanced Learning (TEL) challenges. (Projects EMMA, HOTEL, GALA, IntelLEO, STELLAR).
- Solutions to enhance and ensure the Usability and Accessibility of learning applications. (Projects EU4ALL, AgentDYSL).
- Training solutions and support for applications in different knowledge domains: Crisis Management (DRIVER), Health care (VERITAS).
- Human machine interfaces and context aware applications (Astute, Holides).

Active participation in international learning networks (JTEL; EATEL; SGS) and national networks (eMadrid).

Relation between the Research Line and Atos Portfolio

Our involvement in different research and development projects related to User and learning experience and their outcomes are aligned with different Atos areas of interest. This alignment allows us to provide of support and references for technology and knowledge transfer to existing Atos clients and new business opportunities such as

- Collaborations in the preparation of new project proposals for Public Sector and Education market
- Contributions to the definitions of Training and Gamification approaches to be applied in:
- Banking and Consulting
- Health care

Carmen Luisa Padrón-Nápoles

Key Projects

COSMOS

Challenges

In a world of multi-stakeholder information and assets provision on top of millions of real-time interacting and communicating things, COSMOS aims at enhancing the sustainability of smart city applications by allowing Internet of Things (IoT) based systems to reach their full potential. COSMOS will enable things to evolve and act in a more autonomous way, becoming more reliable and smarter.

Web	www.iot-cosmos.eu
Program	FP7
Budget	854,128.00€
Funding	616,815.00€
Date	Sep 2013 to Aug 2016
Coordinator	Atos Spain
Contact Name	Andrea Rossi
e-mail	andrea.rossi@atos.net

Value Proposition

Things will be able to learn based on others experiences.

Adaptive selection approaches will manage the uncertainty and volatility introduced due to real-world dynamics.

Management decisions and runtime adaptability will be based on things security, trust, administrative, location, relationships, information, and contextual properties.

Extended complex event processing and social media technologies will extract only the valuable knowledge from the information flows, and analytics on networks of data objects.

Additionally, real life scenarios that evaluate and showcase COSMOS technologies supporting sustainable smart city application:

Outcomes

Devices metadata: Extended things semantics structures with rich metadata capturing the "social-behavior" of things.

Situational awareness: Real-time analysis of streaming data and detection of events and their impact assessment.

Management framework: Decentralized management framework enabling the exploitation of a big number of things, while being runtime adaptable.

Security, privacy and trust: Hardware-coded security, privelets and security on storage enabling end-to-end security, privacy and trust provision.

Smarter and more autonomous things: Knowledge acquisition and analysis and experience description and sharing allowing things to evolve at runtime.

Reliable things and information: Identification of volatility and uncertainty patterns and prediction methods to ensure continuous data and information access.

IoT-targeted data stores: Workload optimized data stores enabling scalable, secure and reliable data management for IoT data storage, processing, retrieval and distribution.

Business Impact

The adoption of COSMOS will produce positive impacts on citizens, business, organizations and public administrations related to the city clusters, since the project tackles specific issues and challenges of those cities (environment, waste management, water management, mobility, transport, energy, social innovation, tourism...) thus producing benefits to the related stakeholders.

This is in fact one of the key aspects of COSMOS, when referring to a Smart City we are not focusing on just one single sector or interest group, instead we are referring to a network of interrelated activities, businesses, organizations, public administrations and, always, citizens that can only be understood with a view based on a multidisciplinary and multi sectorial approach.

STORK 2.0

Challenges

The lack of cross border interoperability of electronic identification for legal entities and mandates is hindering the realization of the Single Market and the Digital Single Market especially.

The Large Scale Pilot STORK removes such barriers by developing a de-centralized interoperability framework between national eID solutions. Specifically, STORK establishes a European eID Interoperability Platform that allows citizens to benefit from cross-border e-Services, just by using their national eID with full respect to data protection and privacy.

Value Proposition

STORK 2.0 takes a significant and pioneer leap from identifying and authenticating citizens, to the ability to authenticate legal entities and citizens and link the citizen to their role in the business world. STORK 2.0 will be linking the citizen and legal entities to attributes, delegations and mandates.

By enabling cross border and sector interoperability for legal entity eIDs a wealth of new pan European applications and services can be facilitated.

Web	www.eid-stork2.eu
Program	CIP, ICT, PSP
Budget	18,655,151.00€
Funding	8,762,974.00€
Date	Apr 2012 to Mar 2015
Coordinator	Atos Spain
Contacts	Ana Piñuela (ana.pinuela@atos.net) Alberto Crespo (alberto.crespo@atos.net)

Outcomes

STORK 2.0 contributed to the realization of a single European electronic identification and authentication area. It does so by building on the results of STORK, establishing interoperability of different approaches at national and EU level, eID for persons, eID for legal entities and the facility to mandate.

The obtained outcomes are:

- Common specifications for interoperable legal identities and mandates, on top of the interoperability infrastructure developed in STORK, following privacy rules (Art. 29 Working Party) and enabling secure working;
- Common Building blocks (Common code) including National integration - based on the specifications for interoperable components;
- Analysis of legal issues such as privacy/ data protection, liability, different National regimes;
- An update of the QAA model to include legal entities and mandate agreements;
- Four cross-border pilots running in real life settings with real impact demonstrating the use and societal impact of the cross border and cross sector infrastructure developed: Academic Qualifications, eBanking, Public Services for Businesses and Health..

Business Impact

The importance of STORK and STORK 2.0 must be related to European mobility of citizens and businesses and the tearing down of borders and incompatible technological, procedural, organizational and even legal barriers: today, companies that want to start a business in a new EU state, or people who want take a job abroad, or access benefits, have to spend a long time going through a range of bureaucratic procedures. This makes it harder to carry out cross-border working, slows down the process of developing a more open market and restricts economic growth.

STORK is already providing the fundamental infrastructure for citizens secure authentication to cross-border services in the fields of eProcurement, eHealth, eJustice, Civil Registries and Services Directive implementation. Building on STORK results, STORK2.0 will extend the European eID interoperability layer in order to improve the convergence between the public and private sector on eID and will provide electronic authentication to physical persons with powers or mandated to represent legal persons.

STORK and STORK 2.0 make a powerful contribution to accelerated deployment of electronic services for European citizens and businesses no matter their origin, fostering European competitiveness in the global Knowledge Economy..

SLALOM

Web	www.slalom-project.eu
Program	H2020
Budget	702,813.00€
Funding	221,813.00€
Date	Jan 2015 to Jun 2016
Coordinator	Atos Spain
Contact	Clara Pezuela
e-mail	clara.pezuela@atos.net

Challenges

One of the most important problems for Cloud adoption is uncertainty around cloud contracts and SLAs (Jurisdiction, liability, service definition, small print, etc.), which leads to risk and lack of adoption.

SLALOM aims to tackle different challenges and expects to address some of the top problems for potential adopters of Cloud services (Adopters -public administrations, large companies, and SMEs; Cloud Service Providers; Legal Firms and Profession -either providing services or expert groups influencing the practice on Cloud SLAs: Legal firms and Profession influencers; Policy Makers; Standardization bodies; Scientific Community and Researchers).

We identify the following top problems:

- Lack of knowledge about what are fair and reasonable contractual terms and conditions related to service levels.
- Lack of knowledge about how service levels need to be specified technically to provide meaningful protection for adopters.
- Lack of resources – financial and personnel – to be able to research the issues.
- Lack of clout to get some cloud service providers to offer fair and balanced provisions.

One of our most important goals is pursue "consensus" among adopters and providers, and create a practical reference for doing business in the cloud. It is important to hear what is important for all stakeholders in the marketplace. SLALOM takes a collaborative approach by contacting real market stakeholders, and Close the Gap between Cloud Adopters and Providers:

- Cloud Service Providers can base their own SLA contractual clauses and technical specifications on the SLALOM recommendations.
- Cloud Adopters will identify use of SLALOM to mean trustworthy and fair service level contractual terms and technical specifications.

Value Proposition

SLALOM is a ready to use Cloud SLAs. SLALOM will take theory to practice, providing a trusted verifiable starting point for providers and business users to negotiate SLAs for doing business in the Cloud in a simple, fair and transparent way.

ISO will tell you WHAT. SLALOM will help you with HOW. SLALOM provides additional assurance for the uptake of cloud services with its SLA model legal clauses and technical specifications, using a trustworthy base which is practical, fair, and understandable, while saving time and resources.

- Understandable: Cloud SLAs are not simple, but SLALOM is. We establish the baseline to allow you focus only on what matters so you can make the safe jump into the cloud! SLALOM provides guidance for the use of its model terms and specifications saving time and money.
- Practical: Make your life simpler. Forget about SLA uncertainty. SLALOM provides practical templates for SLA contractual clauses and technical specifications. Slalom gives you a trusted verifiable starting point for service providers and adopters to negotiate with its guidance materials and its flexible framework built on top of ISO, which can be adapted to suit a variety of requirements and verticals.
- Safe & Fair: Compete on value. Take it or leave it is not an option. SLALOM's model terms and specifications are designed to be fair and balanced, not giving hidden advantage to either providers or adopters. Consensus between all stakeholders and promotion of safe and fair models' is needed. We are aligned with organizations that are driving the uptake of recommendations both by cloud providers and consumers such as EC, standards organizations, and industry associations.

Outcomes

SLALOM offers a ready to use Cloud SLA baseline with template documents considering ISO standards that addresses technical and legal aspects. SLALOM outcomes will be:

- SLA Legal Terms
- SLA Technical Specifications

Business Impact

SLALOM will impact on both the cloud industry and market - both providers and adopters; and the research community advancing cloud computing and SLA capabilities.

- SLALOM will reduce or eliminate the most important barriers of cloud adoption (legal barriers, including liability, responsibility, data protection confidentiality, applicable law and intellectual property) by establishing the commonly accepted and comprehensive contract model specifying clear conditions for these aspects.
- Standardizing contract terms and conditions in Europe will encourage competition on price and value differentiation, which will leverage the creation of leaner, more differentiated companies are more competitive in the global marketplace

SLALOM provides additional assurance for the uptake of cloud services with its templates for SLA legal model terms (legal clauses for Master Service Agreement and Service Level Agreement) and technical specifications exploiting ISO standards that will set a trustworthy base, which is practical, fair, and understandable, while saving time and resources.

PRIPARE

Challenges

Privacy-by-design is becoming a pressing need for industry to adopt widely as it is becoming increasingly endorsed at European legal framework level, driven by factors like the need to be fully compliant in the management of increasingly larger volumes of business data (including personal and sometimes sensitive data) in a context of complex cross-border data flows and dematerialization of borders (e.g. Cloud Computing, IoT, Future Internet, Big Data, BYO...).

However, privacy-by-design is a concept which is widely used today, but its meaning remains vague and confusing when it comes to its implementation in practice as part of the engineering process of software and systems. Privacy engineering is still a rather young concept with multiple on-going standardization efforts and where best practices still need to be developed and agreed upon by a complex array of stakeholders.

Value Proposition

The EU co-funded project PRIPARE (Preparing Industry to Privacy-by-design by supporting its Application in Research). It has undertaken work to merge and connect existing best practices in the area of privacy-by-design; leveraging their best features whilst addressing their weak points, and thereby developing a unique methodology aimed at the complex ecosystem of all stakeholders involved in producing privacy-friendly systems, and which addresses the whole personal data and system development lifecycle (SDLC), thus contributing to the advent of unhindered usage of Internet against disruptions, censorship and surveillance.

Web	pripareproject.eu
Program	FP7
Budget	1,131,167.00€
Funding	1,099,933€
Date	Oct 2013 to Oct 2015
Coordinator	Trialog
Contacts	Alberto Crespo (alberto.crespo@atos.net) Nicolas Notario (nicolas.notario@atos.net)

Outcomes

The main outcome of PRIPARE is a privacy and security-by-design software and systems engineering methodology, developed using the combined expertise of the industry and the research community, taking into account multiple viewpoints (advocacy, legal, engineering, business), applicable by companies and organizations of all sizes during the full lifecycle of the system and for any personal data which may be collected, stored or processed, including special categories of personal data (sensitive data).

PRIPARE methodology is built upon the combination of best-of-breed privacy and security approaches such as privacy impact assessments or privacy risk management methodologies and is heavily influenced by existing standards (e.g. ISO29100, 29101 or OASIS PMRM and PbD-SE).

Business Impact

Systems engineered applying the PRIPARE methodology will be best prepared for the early-discovery of potential privacy issues, allowing organizations to:

- Optimize the costs of developing privacy-enhanced or respectful systems by addressing discovered issues in early phases of the engineering lifecycle.
- Avoid vis-à-vis costs costs associated to non-compliance of applicable regulatory provisions (i.e. fines with the forthcoming EU General Data Protection Regulation, may be up to the 5% of the organizations worldwide turnover) and lose of trust by customers, citizens and/or business partners.
- Benefit from the a strong competitive advantages that stem from offering secure privacy-friendly services and products.

- https://privacypatterns.eu
- http://www.securityengineeringforum.org

RADICAL

RAdical
RApid Deployment for Intelligent Cities And Living

Challenges

Exploring and addressing the challenges of urban social ecosystems has gained focus with various initiatives aiming at combining competitiveness and sustainable urban development. Several European cities have already deployed sophisticated ICT infrastructures as a means to offer added-value services to their citizens, in order to cope with societal challenges while at the same time enabling new business lines.

Nevertheless, to achieve efficient service provision, several dimensions – including technology, socio-economics, governance and legal – must be considered. While important research outcomes have been made available to tackle one or more of them, a structured and comprehensive, user-engaging and quick way for development and deployment of Smart City services is not fully supported yet.

Value Proposition

RRADICAL eases the fast creation of interoperable and socially-aware services, by leveraging Internet of Things and Social Networking technologies, emerging from the results of previous R&D EU-funded projects.

A number of services are being integrated, deployed and piloted on top of the RADICAL platform. This platform also facilitates tools for the smart governance and flexible replication of services across cities and regions, thus shortening the time to market and allowing SMEs, citizens and local authorities to get fully involved in the smart city business.

The RADICAL services relate to Cycling Safety, Participatory Urbanism, Augmented Reality and Eco-consciousness. Over 2000 citizens have been actively involved in the co-creation, validation and evaluation of the RADICAL approach, on the basis of the Living Lab methodology, which engages users of the entire stakeholder chain.

Web	www.radical-project.eu
Program	CIP
Budget	5,502,005.00€
Funding	2,751,000.00€
Date	Mar 2013 to Feb 2016
Coordinator	Atos Spain
Contact Name	Ana Piñuela
e-mail	ana.pinuela@atos.net

Outcomes

The main outcomes of the project are the RADICAL platform and the RADICAL (smart city) services. Overall, the main characteristics of the RADICAL platform are the following:

- provides easy ways to assemble, test, visualize and deploy services combining a variety of social participatory and sensor-based services, including their combinations.
- enables rapid service development and deployment, dealing not only with technical and technological aspects, but also with legal, governance and socio-economic aspects, through assessment and decision support mechanisms.
- provides tools for the management and provision of media-rich services by utilizing next generation access networks.
- open and extensible in terms of sensors, sensor networks, social networks and social media web sites.
- facilitates the deployment and testing of different deployment configurations.

The RADICAL services have been piloted for more than 18 months in realistic settings and environments and across six smart cities/ regions in different countries (Spain, France, Greece, Italy and Denmark).

Business Impact

The RADICAL platform can serve as a valuable tool for service integrator and application service providers (including SMEs) that are active in offering added- value social networking and/or IoT services to urban regions. In particular, following the end of the project, SMEs will be able to use the RADICAL platform to rapidly develop and replicate services across different urban regions.

In addition to delivering business benefits for the SMEs, RADICAL can also have a positive impact on the business development of the cities and the regions themselves. This is because it will offer a novel approach along with a flexible platform for the rapid and sustainable development, deployment and replication of ICT services. Based on the RADICAL approach, cities will be able to maximize the sustainability potential of their ICT services.

SeaClouds

Web	www.seaclouds-project.eu
Program	FP7
Budget	2,991,358.00€
Funding	2,190,000.00€
Date	Oct 2013 to Mar 2016
Coordinator	Atos Spain
Contact Name	Clara Pezuela
e-mail	clara.pezuela@atos.net

Challenges

SeaClouds project aims to solve the problem caused by the current lack of standardization in cloud services, which pushes cloud customers to end up "locked-in" with the chosen cloud provider(s). In the current situation, it is possible to deploy and monitor a stand-alone application, but not a complex one, and even if frameworks for complex applications on the Cloud can be used, this requires changing the code or using modelling languages.

The project works towards giving organizations the capability of "Agility After Deployment" for cloud-based applications, by supporting developers and application managers through the creation of an open source platform that leverages open standards to support the deployment of applications over multiple-clouds, the monitoring of such deployments, and the migration of application modules across different (both public and private) cloud providers if needed.

It presents a solution to the existing problems related to applications' portability and unified management of underlying heterogeneous clouds.

Value Proposition

SeaClouds is a framework that provides the foundation for allowing "Agility after Deployment" by providing necessary tools for Modelling, Planning and Controlling cloud application over technologically heterogeneous clouds.

In other words, SeaClouds can be defined as an open, generic and interoperable framework that enables a unified and standardized way to gather and monitor metrics from underlying providers. A detailed picture of cloud applications performance at runtime allows the management of underlying providers based on informed decisions of SLA compliance on multi-cloud infrastructures to assure quality of service on cloud applications built using SeaClouds IDE and framework. This allows organizations to embrace Cloud solutions and, at the same time, avoid risks of unreliability and lock-in.

Outcomes

The SeaClouds approach is based on the concept of service orchestration and it is designed to fulfill functional and non-functional properties over the whole application. Applications are dynamically reconfigured by changing the orchestration of the services when the monitoring detects that such properties are not respected. SeaClouds main result is the implementation of a novel platform, which performs a seamless adaptive multi-cloud management of service-based applications. More specifically:

- An IDE to design and manage at runtime cAn IDE to design and manage at runtime complex Cloud-based Applications as the result of the orchestration of various and technological dissimilar modules distributed among technological dissimilar cloud suppliers.
- Orchestration and Reconfiguration Mechanism: implementing application lifecycle management capability to dynamically deploy, migrate, replicate, and distribute modules compose applications among multiple Clouds, while checking both QoS violations and dynamic changes in the offer of the providers and the current demand.
- A range of standardized metrics provided by disparate underlying cloud providers, that will allow the runtime application monitoring of those services so as to assure the end-to-end QoS of the system, regardless of how it is distributed across different PaaS.
- An Automated Auditing & Execution Engine with the ability to dynamically migrate, replicate and distribute modules belonging to complex Application among multi and heterogeneous PaaS offering.
- Based on Standards by extending and incorporating CAMP. SeaClouds covers all future CAMP-compliant providers or tools, allowing application developers to manage applications hosted on multiple Clouds environments. Application packaging using the TOSCA specification for multi-cloud applications, and deployed being CAMP-compliant.

Business Impact

Expected impacts include:

- Accelerating the development and deployment of cloud computing and internet services
- Increasing Europe's ability to design and deliver innovative services with strong user engagement through better involvement of SMEs and individual researchers/developers
- Strengthening the European software industry with the knowhow to build complex services and big data management in a multi-layered cloud computing continuum
- Contribution to the development of international standards

AHEAD

Challenges

Hearing, eye-sight, memory, and coordination all decrease as a person is getting older. To improve the quality of life of elderly people, their lost senses could be technologically enhanced but unfortunately, most elderly have reservations regarding technology. Therefore, this proposal aims to make use of devices that elderly people have already adopted: eyeglasses and hearing aid.

Web	www.ahead-project.eu
Program	AAL
Budget	753,289.00€
Funding	301,320.00€
Date	Jul 2013 to Jun 2016
Coordinator	Atos Spain
Contact	Manuel Pérez
e-mail	manuel.perez@atos.net

Value Proposition

The hearing aid will not only be voice-controlled but will also become a communication device. As health management is important, the modified hearing aid will be able to measure vital signs such as heart rate, oxygen saturation and core body temperature. These measurements could also be used for detecting the emotional state of the user and act against depression. Finally, a 3D inertial sensor would record general activity and risky postural behaviors.

Our assistant will be wirelessly connected to a smartphone and be a part of a smart living environment. This can be used for compliance or for connecting the hearing aid to home automation systems and provide complementary services such as personal alarms (extension or replacement of the social alarm button), medication reminders, house warning, cooking and financial management assistance verbally conveyed into the wearer's ear.

Outcomes

The integration and combination of advanced and innovative sensing as well as ICT based modules will result in a completely new and innovative product (and services). Both the eyeglasses and the typical hearing aid will embed a microphone.

Business Impact

The emerging demographic situation in Europe increases the challenge of delivering social services and quality healthcare to all citizens, but especially those over 55. Current care models necessitate changes in the way services are delivered and how care and healthcare is integrated and managed and transferred to daily practice. Tele-monitoring services and the development of sophisticated personal wearable sensors and wearable medical devices can considerably improve the management of chronic conditions associated to aging.

The WHO estimated that between 360 and 570 million people globally have significant hearing loss impacting significantly their daily life and social interactions. The AHEAD platform specifically supports management of hearing impaired people with the main focus on providing daily life support to those over 55 years, as well their relatives and their professional caregivers.

AHEAD provides care-related and communication services on a hearing glasses system. As it is mentioned, the project is mainly orientated for elderly people with hearing impairments but AHEAD services are in general also suitable of being used for younger hearing impaired people as well for elderly people without hearing problems.

The hearing glasses system consists of traditional eye glasses and hearing aids together with built-in physiological sensors all wireless connected with the smartphone. Voice-based interaction allows the elderly users to interact naturally with the system without the need to learn new and complex interaction techniques. Many patients suffering from hearing impairment are at risk of developing social isolation and sometimes social exclusion and depression that must be considered in their management.

The aim is to manage "the complex user" which entails lifestyle support and affective feedback to the patient together with simultaneous sensor monitoring in order to improve daily quality of life and even detect adverse events.

FIWARE

Challenges

Internet is transforming the daily life of individuals and businesses. How can the new opportunities be captured and ultimately translated into local economy growth? Building an ecosystem open, sustainable and global.

Why Smart City is not yet a reality? Because too much technology focus, paid by technology supplier and despite they are promoting Open Data, there is no real monetization and business model on data yet.

An "Economy of Data" organization targets potential users and providers of data to form a multi-sided market, building shared data asset platforms to be used by the participating players.

Value Proposition

FIWARE proposes an open solution, alternative to existing proprietary Internet platforms. Besides, it is modular, so one can use only what is needed; and interoperable with other platforms and systems through well defined interfaces (APIs) based on standards. It favors a smooth integration with existing systems since it behaves as non-intrusive solution. As it avoids the vendor lock-in, the solution is portable across different platform providers.

On the other hand, the ecosystem provides a critical mass of developers by fostering cooperation and competition. This allows saving costs by sharing resources and responding to economy of scales.

Web	www.fiware.org (web site) catalogue.fiware.org (Catalogue)
Program	FP7
Budget	1,749,615.00€
Funding	900,995.00€
Date	Sep 2014 to Dec 2016
Coordinator	Telefonica
Contacts	clara pezuela (clara.pezuela@atos.net)

Outcomes

An interoperable and open software platform for 'smart' applications, combining Cloud, IoT, Security and Big Data. Thus, the platform is a sum up of cloud hosting capabilities, a set of basic functional components (called Generic Enablers) and a rich number of added-value functions offered "as a Service".

A powerful open innovation ecosystem where key players can meet. Offered to developers for free, they can experiment and deploy showcase using FIWARE technology and exploiting published open data.

Business Impact

- FIWARE provides the passing from experimental ecosystem (FIWARE Lab) to a commercial ecosystem.
- FIWARE providers hosting experimental/ commercial applications from startups/ SMEs.
- SMEs and startups may use FIWARE Lab for experimenting. After that, SMEs and startups will generate demand for commercial FIWARE services.
- Once the FIWARE commercial ecosystem matures, 'early adopters' will have a competitive advantage.
- Although it is possible to apply it in many other domains, Smart City is the preferable domain for the use of FIWARE, because it reduces complexity, integrating a variety of smart cities-related systems.

FISPACE

FIspace
Business Collaboration

Challenges

The main challenge faced by the FIspace project was the development of an integrated and extensible collaboration service, together with an initial set of domain applications, establishing the standard for supporting and optimizing inter-organizational business collaboration in global transport, logistics, and agri-food business.

Web	www.fispace.eu
Program	FP7
Budget	20,140,410.00€
Funding	13,499,000.00€
Date	Apr 2013 to Sep 2015
Coordinator	Wageningen UR
Contact	José Lorenzo
e-mail	jose.lorenzo@atos.net

Value Proposition

FIspace facilitates:

- Seamless cross-organizational collaboration (information exchange, communication, coordination of activities).
- Unprecedented transparency, visibility and control of processes (using Internet-connected sensors and IoT devices).
- Rapid, easy, low cost development and deployment of customized solutions (apps and services).
- Agile formation of business networks and ecosystems (social networks and app/service markets).

Outcomes

FIspace is a Future-Internet-based extensive SaaS-Platform that enables the seamless, efficient and effective business collaboration across organizational boundaries and facilitates the establishment of ecosystems with business benefits for both stakeholders from industrial sectors as well as the ICT industry.

FIspace has developed a multi-domain collaboration and integration service, based on FIWARE core platform and Future-Internet technologies, enabling radically new business collaboration opportunities between actors in a supply chain and software service providers;

The FIspace service is an open service that can be extended and customized for specific stakeholder demands by integrating domain apps (similar to the iPhone and Android business models);

A domain app store facilities the marketing of targeted applications that take advantage of the collaboration and mash up services of the FIspace and its underlying FI-WARE generic enablers;

A collaboration manager for business-to-business networks that supports the planning and execution of business operations from a global perspective with message-based coordination among the involved business partners;

Integrated techniques for monitoring and tracking on the basis of data integration from the Internet of Things, including sensor systems and smart item technologies accessible via FI-WARE generic enablers;

Information integration from legacy and third party systems enabled through a service-based integration layer that is enabled and supported by FI-WARE generic enablers;

Role-based views for the individual participants in the business networks along with integrated security and privacy management for fine-grained access control to confidential information.

FITMAN

Challenges

The mission of the FITMAN (Future Internet Technologies for MANufacturing industries) project is to provide the FI PPP Core Platform with 10 industry-led use case trials in the domains of Smart, Digital and Virtual Factories of the Future (FoF).

Value Proposition

FITMAN Trials - 4 conducted by Large Enterprises, 6 by SMEs - will test and assess the suitability, openness and flexibility of FIWARE Generic Enablers, while contributing to the STEEP (social-technological-economical-environmental-political) sustainability of EU Manufacturing Industries.

The use case trials belong to several manufacturing sectors such as automotive, aeronautics, white goods, furniture, textile/clothing, LED lighting, plastic, construction, and manufacturing assets management.

Web	http://www.fitman-fi.eu/
Program	FP7
Budget	18,034,000.00€
Funding	12.890.000,00€
Date	Jan 2015
Coordinator	TXT
Contact Name	José Lorenzo
e-mail	jose.lorenzo@atos.net

Outcomes

The FITMAN Smart Factory platform is the composition of a set of FIWARE Generic Enablers (GEs) and Specific Enablers (SEs) which is materialized in a functional platform for the Smart Factory domain and deals with the optimization of the production processes (in terms of production costs reduction, efficient energy usage, improvement in production reliability, production machines usage, etc.) via the monitoring and management of the production process and of its components. In this sense, it aims to collect information form the shop floor to support the real time decision making exploiting data collected and to improve predictive maintenance by monitoring the machinery.

The Digital Factory Reference Platform is composed by a set of Generic Enablers and Specific Enablers arranged through suitable open interfaces (Open APIs) in order to facilitate the development of advanced functionalities to the user. The reference platform is intended to facilitate the fast and cost effective development of innovative services and applications that connect people with the information required to perform their tasks. The reference platform is specially intended to provide support in the development of advanced & 3D data visualization services and applications.

The Virtual Factory Platform is composed of a set of 6 Generic Enablers and 7 Specific Enablers collaborating together in order to offer advanced functionalities to the user.

Business Impact

The platform can be seen as a Business Collaboration Platform where actors of the Virtual Enterprise can collaborate among them in order to achieve business goals. Major functionalities provided regarding: tangible and intangible assets management and collaborative business process execution.

The Fitmanovationlab AKA FIWARE for Industry is initially powered by the FITMAN EU project, and it is the European community and two-sided digital platform where ICT Industry can locate resources and expertise to develop FIWARE-enabled digital platforms and where Manufacturing Industry can find FIWARE-enabled reference implementations of Industry 4.0 business processes for their competitive advantage. The synergies between LAB-HUB-ACADEMY and SHOWCASE pillars make FIWARE for Industry the digital innovation environment for Industry 4.0 Factories of the Future.

It is accessible through the following links:

- www.fitmanovationlab.eu
- www.fiwareforindustry.eu
- www.fiware4industry.com

PHEME

Challenges

Social media poses three major computational challenges, dubbed by Gartner the 3Vs of big data: volume, velocity, and variety. Content analytics methods have faced additional difficulties, arising from the short, noisy, and strongly contextualized nature of social media. In order to address the 3Vs of social media, new language technologies have emerged, e.g. using locality sensitive hashing to detect breaking news stories from media streams (volume), predicting stock market movements from microblog sentiment (velocity), and recommending blogs and news articles based on user content (variety).

PHEME will focus on a fourth crucial, but hitherto largely unstudied, challenge: veracity. It will model, identify, and verify phemes (internet memes with added truthfulness or deception), as they spread across media, languages, and social networks.

Value Proposition

PHEME will achieve this by developing novel cross-disciplinary social semantic methods, combining document semantics, a priori large-scale world knowledge (e.g. Linked Open Data) and a posteriori knowledge and context from social networks, cross-media links and spatio-temporal metadata. Key novel contributions are dealing with multiple truths, reasoning about rumor and the temporal validity of facts, and building longitudinal models of users, influence, and trust.

Web	www.pheme.eu (web site)
Program	FP7
Budget	4,269,938.00€
Funding	2,916,000.00€
Date	Jan 2014 to Dec 2016
Coordinator	University of Sheffield
Contacts	Tomas Pariente
e-mail	tomas.pariente@atos.net

Outcomes

In particular, PHEME will deliver a veracity framework able to track rumors over time, providing a set of state-of-the-art components and algorithms for social media veracity checking. Results will be validated in two high-profile case studies: healthcare and digital journalism.

Business Impact

The techniques developed in PHEME will be generic with many business applications, e.g. brand and reputation management, customer relationship management, semantic search and knowledge management. In addition to its high commercial relevance, PHEME will also benefit society and citizens by enabling government organizations to keep track of and react to rumors spreading online.

Of especial interest is the potential impact for detection and veracity checking of news of journalists. This has already attracted attention to journalists around the globe, and the proof is that the project is now known by the media informally as the “Twitter lie detector”.

T-NOVA

Challenges

Network Functions Virtualisation (NFV) is an emerging concept, which refers to the migration of certain network functionalities, traditionally performed by hardware elements, to virtualized IT infrastructures, where they are deployed as software components. NFV leverages commodity servers and storage, including cloud platforms, to enable rapid deployment, reconfiguration and elastic scaling of network functionalities.

T-NOVA is implementing a management/orchestration platform for the automated provision, configuration, monitoring and optimization of Network Functions-as-a-Service (NFaaS) over virtualized Network/IT infrastructures. T-NOVA leverages and enhances cloud management architectures for the elastic provision and (re-)allocation of IT resources assigned to the hosting of Network Functions. It also exploits and extends Software Defined Networking (SDN) platforms for efficient management of the network infrastructure.

Value Proposition

T-NOVA proposes a NFV marketplace that allows network services and virtual functions by a variety of developers to be published and brokered/traded with. Customers can browse them and select those that best match their needs, as well negotiating the associated SLAs and billing models. T-NOVA allows:

- The advertisement of network virtual functions. Through a customer front-end, developers describe their functions, and customers place their requests for services and virtual appliances.
- Function discovery, resource trading and service matching taking into account the offered/requested SLAs.
- Configuration and automatic deployment of virtual functions by federated management and optimization of networking and IT resources, including Wide Area Network (WAN) resources, in-network cloud (compute/storage) assets and data center clouds. Monitoring aspects are also important.
- Billing of functions and application of adjustments according to SLAs evaluation, not only between service providers and final customers, but also between service and infrastructure providers.

Web	www.t-nova.eu
Program	FP7
Budget	9,914,449.00€
Funding	6,743,000.00€
Date	Jan 2014 to Dec 2016
Coordinator	National Centre for Scientific Research "Demokritos"
Contacts	Josep Martrat
e-mail	josep.martrat@atos.net

Outcomes

T-NOVA is building a marketplace for the commercialization of virtualized network functions, including a Function Store similar to the Apple AppStore and Google Play Store, which will increase the impact of NFV in the global market.

This platform can also be used as a dashboard for service providers and customers to control their offerings and subscriptions, as well as to keep track of usage for billing purposes.

T-NOVA also provides an orchestration platform for the automatic deployment of virtual network functions over shared network and IT infrastructure.

Business Impact

T-NOVA brings a very attractive revenue source for communication service providers (CSP), who are able to monetize their infrastructure by offering new services and by charging customers according to the actual usage of in-network resources, as opposed to claiming low, flat fees for plain connectivity services providing applications "over-the-top" with no QoS guarantees and no in-network treatment. Fast Service Rollout, flexibility, scalability, security and high availability are also benefits T-NOVA brings to CSPs.

Moreover, vendors will be able to widen their target customer groups by advertising their virtual appliances and reduce their time-to-market in the global marketplace.

For software players, the function development, exchange and trading processes take place in a multi-actor ecosystem (including SMEs), allowing them to expose their products into the global networking marketplace.

Assets

AEON

Manage your real-time communications needs

Description

Mobility, advanced analytics, cloud-based computing, advanced predictive analytics, and the Internet of Things (Gartner estimates that the IoT will include 26 billion units installed by 2020) offer us the ability to deliver new and improved solutions.

Moreover, when end-user organizations push their on premise applications into cloud environments, the need for an abstraction of messaging capabilities (rather than application specific messaging) becomes particularly pronounced. The traditional messaging approach is poorly suited where vendor and language-specific messaging constrains the applications to use proprietary protocols. Cloud Messaging allows greater flexibility in using the technical environments and the language API's of choice, with the necessary messaging abstracted via a Cloud Messaging Platform. It also allows synchronous or asynchronous communications across networks with greater technical simplicity and efficiency.

In this context, AEON is a cloud-based service aimed at integrating applications, devices and services on a many-to-many system, enabling messaging between various entities that wish to communicate with each other seamlessly and reliably.

Business Challenge

- There is a trend towards more devices, applications and data sources being connected to and serviced from the cloud. Cloud Messaging represents one of the most ambitious and challenging of all cloud computing business models.
- AEON offers cloud services to facilitate communications' needs: communicate applications, devices and services through a real time network.
- AEON enables enterprises to achieve seamless integration of business processes spanning multiple applications, clouds and smart devices.

Solution

We consider an entity as anything that can participate in a given enterprise business process. With cloud message queuing, the subscriber to a service does not need to understand the protocol used by the service provider or vice versa but can focus on requesting the required business functionality.

AEON platform offers a shared cloud-based message queuing framework enabling messaging between various entities that wish to communicate with each other seamlessly and reliably using standard vendor neutral protocols

Data push model: AEON develops a publish/subscribe pattern through customized channels to stream data and signal from any device in in a global real time network, but also can store all real-time data, manage node presence notifications or permissions for real-time apps or data

Benefits

Communicate applications and services through a real time network

Easy to use, easy to integrate in developments: AEON provides an SDK to connect your services and devices over a globally scaled real-time network

Performance, Scalability and Reliability: High performance for message delivery and data exchange between business processes and devices and from device to device. AEON is able to handle multiple types and priorities of messages, whilst at the same time providing the necessary Quality of Service. AEON provides reliable messaging with durability and persistence and needs to scale well for extremely large volumes.

Big Data: AEON can take care of the cloud messaging of the data capture from M2M environments and big data flows.

This asset is developed by a team led by Germán Herrero Cárcel

Capture

Description

In recent years the Web has become not only a place to consume and search for content, but an active environment where people and organizations create content and exchange data and knowledge. User-generated content, especially coming from social networks (SN), blogs or forums, is of a highly dynamic nature. The amount of content available even for specific topics is mind blogging. There is a clear need of tracking, filtering and analyzing this content in an automatic way in order to make sense of it and enable different usages of the data.

Capture implements advanced data collection and information integration technologies to gather and harmonize data from multiple sources into a single coherent representation. The acquired data is then analysed providing insights and metrics coming from social media. These metrics provide a view of what is going on on the web that can serve as an input for multiple applications and business scenarios, such as brand management, product placement, media tracking, financial sentiment over time, reputation on the web, etc.

Business Challenge

In the age of Internet, business decisions are increasingly dependent on the just-in-time delivery of relevant information and knowledge. While in the past this information used to be structured, in today´s world there is increasing dependence on unstructured sources of information, such as the Internet, and subjective inputs, such as sentiments, assessments, opinions, rumors, beliefs, etc.

Internet texts such as weblog articles and forums provide, for example, a massive amount of potentially useful information. An analyst or decision maker would have to collect, filter, assess, and interpret all these texts with respect to a current object of interest. However, accomplishing this task cannot be done manually due to time constraints in decision making and the enormous amount of documents.

Customers and R&D projects are asking for versatile tools that allow the acquisition of intelligence from Social Networks and apply it to the decision making process.

Solution

Capture provides automated methods for knowledge and intelligence processing and management, from data acquisition all the way to the final application services that include decision support, visualization, etc.

This application layer can be developed in a fast and cost-effective way thanks to previous implementations of Capture and the reuse of previously developed services for a broad range of sectors and applications, such as reputational risk in finance, rumor detection, security in smart cities, etc.

Capture is based on state-of-the-art big data technologies. The solutions uses Open Source frameworks and tools ranging from Apache Hadoop and Storm for distributed processing, to Apache HBase and Solr for storage and information retrieval. Capture extracts data from SN and RSS feeds using open APIs and tools delivering a set of metrics for specific scenarios.

Capture resembles the water cycle:

- by drinking from Data Sources (Twitter, RSS...), each delimited by queries to a Social Network;
- feeding Data Channels, or data flows related to several sources, usually about related topics;
- stored in thematic Data Pools, or functional topic-based repositories of annotated data;
- accessible via Solr queries;
- and processable in the cloud as-a-service using big data technologies;

Benefits

Capture is an Atos offering in Social Network analytics, providing several APIs and integration points in order to ease the process of delivering data and insights to people or external applications.

Capture provides an innovative dashboard with advanced reporting tools leaving the insights at the fingerprints of the users.

This asset is developed by a team led by Tomás Pariente Lobo

RDI Support Services

Description

Based on its day-to-day activity, the research and innovation group of Atos has developed efficient working processes, methodologies, knowledge and collaborative tools that can be expanded for the benefit of customers.

From strategy to project management, from the generation of ideas to the identification of funding opportunities and selection of the right partners, from opportunities to results, our extensive experience enables us to provide reliable Research, Development and Innovation (RDI) support and consulting services.

Business Challenge

The challenge is to improve the competitiveness of companies and / or public bodies through the integration of research, development and innovation activities in their operations. Research and innovation public programmes support organisations in carrying out innovative projects.

However, not all organisations have the expertise or the abilities to manage this support properly. Furthermore, to remain competitive, businesses need to internationalise their knowledge or technology, entering projects that cannot be performed individually, but in cooperation with partners all over Europe and beyond..

Solution

The research and innovation group of Atos offers support services that cover the whole cycle, from identification of funding sources and programmes, to proposal preparation, including the establishment of partnerships.

Support services also include the negotiation of contracts, as well as the following administrative / financial management and technical coordination of funded projects.

Additional services are related to the innovation process and consider emerging technologies watch, ideas generation, innovation management, etc.

All those activities are supported by state-of-the-art methodologies and IT tools in order to offer efficient and skilful support.

Benefits

The benefits for our customers are increased possibilities to start and undertake research and innovation activities. It also allows them to network and cooperate with key players in RDI (e.g. research institutes, universities, companies, etc.), which is an added value in view of the creation of partnerships, alliances and internationalisation. Benefits can be summarised as follows:

- Be at the cutting edge of innovation.
- Access to and participation in R&D programmes.
- Work in collaboration with organisations all over Europe.
- Gain competitiveness.

This asset is developed by a team led by Lydia Montandon

Publications, Events & Awards

Publications

Research & Innovation 2015

Title	ARI author/s	Details
Reducing IoT / PbD Dilemma by enriching authorization with reputation mechanisms	Darío Ruiz	ERCIM news 103 Discussion on the incompatibility of the PbD paradigm and the IoT concept and the incorporation of the reputation of the users in the authorization phase as a way to mitigate this incompatibility
Citizens' Perspectives on Surveillance, Security and Privacy: Controversies, Alternatives and Solutions	Jaime Martin et al.	Joint Conference of SurPRISE, PRISMS and PACT. Published by the Institute of Technology Assessment and Austrian Academy of Sciences in "Overview of the PACT Privacy Reference Framework for Security Technology (PRFST)", pages 32-34.
PACT's Decision Support System based on the Privacy Reference Framework for Security Technology	Jaime Martin	The Privacy & Security - Research Paper Series. Research Paper Number #12 ISSN 2279-7467 Edited by Centre for Science, Society & Citizenship Co-edited by University of Westminster, Communication and Media Research Institute.
Complex event processing in UNCAP project	Miguel Rodriguez-Fuentes & Guadalupe Rodríguez Díaz	http://www.gisprofessional.co. ukGIS Professional, Special Edition: September 2015.
Definition of a cloud-based platform architecture to foster sustainable mobility habits	Ross Little, Alberto Crespo et al.	Published and presented on the ITS World Congress in Bordeaux, France 5-9 October 2015
ARTIST: Model-Based Stairway to the Cloud	Jesús Gorroñogoitia et al.	Proceedings of tProjects Showcase at STAF 2015 conference, Jul 2015, L'Aquila, Italy The ARTIST EU project proposes a comprehensive model-based modernization approach, covering both business and technical aspects, to cloudify already existing software.
Exploiting Local Clouds in the Internet of Everything Environment	Francisco Javier Nieto, Sergio García Villalonga	23rd Euromicro International Conference on Parallel, Distributed and Network-based Processing (PDP 2015)The paper describes an algorithm we have designed for computational resources allocation in the IoT field, balancing local and remote resources for VMs deployment.
Energy efficiency embedded service lifecycle: Towards an energy efficient cloud computing architecture	Ana Juan Ferrer, David Garcia	CEUR Workshop Proceedings The paper argues the need to provide novel methods and tools to support software developers aiming to optimise energy efficiency and minimise the carbon footprint resulting from designing, developing, deploying and running software in Clouds, while maintaining other quality aspects of software to adequate and agreed levels. A cloud architecture to support energy efficiency at service construction, deployment, and operation is discussed, as well as its implementation and evaluation plans.
The Role of SLAs in Building a Trusted Cloud for Europe	Ana Juan Ferrer, Enric Pages	SpringerLink, Lecture Notes in Computer Science, Trust Management IX The European commission recognises Cloud potential to improve competitiveness by enabling transformation to better connected and efficient society. However, still trust and security concerns hamper its massive adoption, both in private and public sectors.
PRIPARE: Integrating Privacy Best Practices into a Privacy Engineering Methodology	Nicolás Notario, Alberto Crespo...	Published in International Workshop on Privacy Engineering (IWPE) 2015 Proceedings.
A STRATEGIC Project - boosting the adoption of public cloud services	Nuria Rodríguez Domínguez	EC newsletter, 24/02/2015
A Cloud Orchestrator for Deploying Public Services on the Cloud – The Case of STRATEGIC Project	Nuria Rodríguez Domínguez et al.	Book "Trust Management IX", pp 217-225Publisher: Springer International Publishing

Title	ARI author/s	Details
New Horizons for a Data-Driven Economy (A Roadmap for Usage and Exploitation of Big Data in Europe)	Ricard Munné, Pedro Soria, Elsa Prieto et al.	A Roadmap for Usage and Exploitation of Big Data in Europe. Editors: Josema Cavanillas et al.
FOODIE: Farm-Oriented Open Data en Europa	Miguel A. Esbrí	Sociedad Española de Cartografía, Fotogrametría y Teledetección (SECFT). Boletín Informativo Núm. 14
An INSPIRE-based vocabulary for the publication of Agricultural Linked Data	Miguel A. Esbrí et al.	12th OWL: Experiences and Directions Workshop (OWLED) Co-located with the 14th International Semantic Web Conference (ISWC) - the premier international forum for the Semantic Web community. October 2015, Bethlehem, Pennsylvania, U.S.A.
Blog Post #07 – Visualisation in Policy Compass	Nadia Politou, Miquel Mila	PolicyCompass Blog
ASCETiC: Adapting Service lifeCycle towards EfficienT Clouds	Ana Juan, David García et al.	European Project Space. Cases and Examples ISBN 978-989-758-034-5; Scitipress. Pp.89-106. Barcelona 2014.
CoolEmAll: Models and Tools for Planning and Operating Energy Efficient Data Centres	Lara Lopez, Enric Pages et al.	Handbook on Data Centers ISBN 978-1-4934-2092-1; Springer, p.191-245
Virtual Security Appliances: The Next Generation Security	Aurora Ramos et al.	Proceedings of International Conference on Computing, Management & Telecommunications - (ComManTel 2015). This paper describes the operation of the NFV marketplace and orchestrator proposed by T-NOVA deal with a virtual network security appliance.
A Seamless Integration of Computationally-Enhanced Base Stations into Mobile Networks towards 5G	Miguel A. Puente et al.	Proceedings of Vehicular Technology Conference VTC'15 This paper presents a seamless approach for the deployment of computationally-enhanced Small-Cells, also applicable to macro base stations, with no impact on the LTE-A architecture.
5G NORMA: A NOvel Radio Multiservice adaptive network Architecture for 5G networks	Miguel A. Puente et al.	Proceedings of EUCNC'15 5G NORMA proposes an adaptive 5G mobile architecture based on SDN and NFV which enables adapting the network to the specific service requirements, resulting in a novel service- and context dependent adaptation of network functions.
Solving the interoperability challenge of a distributed complex patient guidance system: A data integrator based on HL7's Virtual Medical Record standard.	Carlos Marcos, Carlos Cavero et al.	Journal of the American Medical Informatics Association. JAMIA 2015

Events

Research & Innovation 2015

Event	Presentation Title	Presentation Speaker	Venue	Date
Seminarios de la Unidad docente de Geografía, Universidad de Alcalá	De la I+D+I al Negocio	Lydia Montandon	Madrid, Spain	Jan
Connected Smart Cities Conference	FIWARE and FIWARE Lab opportunities for Cities & Panel "From city pilots to city deployments in community-driven cities". https://www.eventbrite.com/e/connected-smart-cities-conference-tickets-14661965333	Nuria de Lama	Brussels, Belgium	Jan
Open Europe: Open Data for Open Society. International Conference	Europe: Big Data Challenges and Opportunities. http://lata.org.lv/conference-2015	Nuria de Lama	Riga, Latvia	Feb
"Las Jornadas de la RAI: ""Tecnología y Salud"""	Oportunidades para las empresas (http://www.raing.es/es/actividades/las-jornadas-de-la-rai-tecnolog-y-salud)	Blanca Jordan	Real Academia de Ingeniería -...	Feb
Open Europe: Open Data for Open Society.	FIWARE: Future Internet Opportunities using Open Data. International Expert Panel Discussion (http://lata.org.lv/conference-2015/)	Nuria de Lama	Riga, Latvia	Feb
Trust in the Digital World 2015	STORK 2.0 Pilots: Bringing citizens, public and private sector closer towards the single European electronic identification & authentication area	Alberto Crespo	Madrid, Spain	Feb
CloudExpo Europe 2015 London	Presentation of benefits and work done around SLALOM initiative to help close the gap on Cloud SLA contracts	Daniel Field	London, UK	Mar
EL FUTURO A TRAVÉS DE LOS DATOS	Towards interoperability profiles for open platforms. (http://planetic.es/jornadaBigData)	Nuria de Lama	Madrid, Spain	Mar
European Summit on Innovation for Active and Healthy Ageing	Towards interoperability profiles for open platforms (http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=2015-summit)	Nuria de Lama	Brussels, Belgium	Mar
Net Futures	Start and grow your business with FIWARE, Organizer, moderator and speaker (http://netfutures2015.eu/)	Nuria de Lama	Brussels, Belgium	Mar
CIRAS 1st Stakeholders' Workshop	CIRAS project overview (http://www.cirasproject.eu/content/ciras-1st-stakeholders-workshop)	Jaime Martín	Katowice, Poland	Mar
PRIPARE Privacy Training Workshop	PRIPARE Methodology	Nicolás Notario	Ulm, Germany	Mar
XVIII Reunión de Presidentes del Club Málaga Valley ""Startup Paradise: Ecosistema, tecnología y negocio"	Ecosistema FIWARE: motor de negocio en la UE (http://www.digitalmalaga.com/evento/100/xviii-reunion-de-presidentes-del-club-malaga-valley)	Nuria de Lama	Malaga, Spain	Mar
Cybersecurity & Privacy Innovation Forum 2015 (CSP Forum 2015)	The path towards privacy-by-design practice	Nicolás Notario	Brussels, Belgium-Management Centre Europe	Apr
Cybersecurity & Privacy Innovation Forum 2015	WITDOM: Empowering Privacy and Security in Non-Trusted Environments	Alberto Crespo	MCE Conference Centre, Brussels...	Apr
EGI Conference 2015	Big Data Value in Europe (http://conf2015.egi.eu/)	Nuria de Lama	Lisbon, Portugal	May

Event	Presentation Title	Presentation Speaker	Venue	Date
iHub Bootcamp	FIWARE: Challenges & Opportunities (https://www.eventbrite.co.uk/e/2nd-ihub-bootcamp-26th-27th-of-may-in-vienna-at-parkhotel-schonbrunn-tickets-16767929328?aff=erelexpsim)	Nuria de Lama	Vienna, Austria	May
FIWARE Accelerate in Birmingham	FIWARE: Future Internet Open Platform (http://www.finodex-project.eu/content/fiware-accelerate-birmingham-uk)	Nuria de Lama	Birmingham, UK	May
Open Innovation 2.0 Conference 2015	Quadruple Helix Innovation: Industrial views (http://ec.europa.eu/digital-agenda/en/news/save-date-open-innovation-20-conference-2015)	Nuria de Lama	Espoo, Finland	Jun
Gestión de Crisis y cooperación de la sociedad civil y militar	Proyecto Driver	Jaime Martín	Unidad Militar de Emergencias, Torrejón, Spain	Jun
Road2CPS Roadmapping Workshop	Atos Vision on Cyber-Physical Systems (http://www.road2cps.eu/)	Nuria de Lama	Paris, France	Jun
FORCE Design Experts Workshop	Mapping tool and interface of the FORCE Intelligent Decision Support System	Jorge Rodriguez	Madrid, Spain	Jun
Cloud World Forum	SeaClouds organized its First Industrial Workshop to present the First Integrated Platform demo.	Francesco D'andria	London, UK	Jun
EMMA-JTEL Summer school	"Choosing a MOOC approach that meets your objectives and suits your available resources" http://project.europeanmoocs.eu/project/get-involved/summer-school/programme/sessions-emma-summer-school-programme/#D1S6	Carmen L. Padrón-Nápoles	Ischia, Italy	Jul
Tsunami Decision Support Systems 2015 - TDSS 2015	Crisis Management Technology Workshop on behalf of DRIVER Project	Miguel A. Esbrí	Joint Research Centre, Ispra, Italy	Jul
OpenLivingLab Days 2015	Living Labs, what path for the future? Industry needs & new Innovation ecosystems (http://openlivinglabdays.com/)	Nuria de Lama	Istanbul, Turkey	Aug
I Jornadas Nacionales de Investigación en Ciberseguridad	Invited Keynote: Cybersecurity from research to practice: what can we learn from EU projects (http://jornadasciberseguridad.riasc.unileon.es/charlasinvitadas.html). Also interview for the RTV of Castilla y León: http://www.rtvcyl.es/Leon/532a1b72fd5da253662c (go to minute 1:00)	Aljosa Pasic	Leon, Spain	Sep
IST Cloud and Big Data Conference	Industry End-User Big Data Success Stories, Member of the Steering Committee and session moderator (http://www.isc-cloudbigdata.com/)	Nuria de Lama	Frankfurt, Germany	Sep
EECA Cluster awareness raising and networking activities in Tbilisi	Collaboration Opportunities in the Big Data Public Private Partnership and the Future Internet Programme (http://eeca-ict.eu/usefull-information/news/133-join-the-eeca-cluster-awareness-raising-and-networking-activities-in-tbilisi-ge)	Nuria de Lama	Tbilsi, Georgia	Sep

Event	Presentation Title	Presentation Speaker	Venue	Date
Industry Track at Tenth European Conference on Technology enhanced Learning (ECTEL2015)	"Open issues and how to make effective Technology transfer to solve education problems (http://ectel2015.httc.de/index.php?id=725) Chair of the industry track sessions	Carmen L. Padrón-Nápoles	Toledo, Spain	Sep
Industry Track at Tenth European Conference on Technology enhanced Learning (ECTEL2015)	The EMMA experiences combining MOOCs, Game based and LA approaches (http://ectel2015.httc.de/index.php?id=725)	Carmen L. Padrón-Nápoles	Toledo, Spain	Sep
Workshop at IAA "Smart Mobility Services for the Smart City: Architectures and Solutions towards a Service Market Place"	Moderator Panel "Technical solutions for the urban mobility of the future"	Jose Lorenzo	IAA, Frankfurt, Germany	Sep
ICT Event 2015	FIWARE, the "Airbus" of the Future Internet, Organizer and speaker https://ec.europa.eu/digital-agenda/events/cf/ict2015/item-display.cfm?id=15753	Nuria de Lama	Lisbon, Portugal	Oct
Jornada "Actividades y Oportunidades de Colaboración con el Centro Común de Investigación Europeo (Joint Research Centre)"	Colaboración empresa privada - JRC en el ámbito de los datos geoespaciales	Jose Lorenzo	Ministerio de Economía y Competitividad, Madrid, Spain	Oct
ICT Event 2015	Big Data Value, the new oil of the EU economy and the Big Data Value PPP, the instrument to make it happen, organizer & speaker - https://ec.europa.eu/digital-agenda/events/cf/ict2015/item-display.cfm?id=15814	Nuria de Lama	Lisbon, Portugal	Oct
Open Days 2015 European Week of Regions and Cities	Smart City Economics (Panel Open & Agile Smart Cities – Creating the European Smart City Market) - (http://ec.europa.eu/regional_policy/opendays/od2015)	Nuria de Lama	Brussels, Belgium	Oct
WorldView Global Alliance User Conference 2015	Framing a European Partnership for a Big Data Value Ecosystem (http://www.euspaceimaging.com/conference)	Jose Lorenzo	Munich, Germany	Oct
Infoday Horizonte 2020 Espacio Convocatoria 2016	Experiencia en Horizonte 2020 Espacio y Mesa redonda "Lecciones aprendidas convocatorias 2014-2015"	Jose Lorenzo	CDTI, Madrid, Spain	Oct
ICT 2015	Cloud challenges to high demanding privacy scenarios	Nicolás Notario	Lisbon, Portugal	Oct
DSS and Qualitative Criteria Assessment Workshop	CIRAS and VALUESEC Decision Support system overview and demo of prototype	Jaime Martín	Madrid, Spain	Nov

Prizes and Awards
2015

ARTEMIS Recognition Certificate 2015 - results that count

Congratulations to the coordinator and all partners on the successful completion of the ARTEMIS 'ENCOURAGE' project of Call 2010. ENCOURAGE developed embedded intelligence and integration technologies that directly optimise energy use in buildings and enables active participation in the future smart grid environment.

Best Joint Paper Award at Cloud Forward 2015

The joint paper produced by the collaboration established between ARTIST and MODAClouds projects won the Best Award Paper with "A Joint Benchmark-Analytic Approach for Design-Time Assessment of Multi-Cloud Applications" presented at the Proceeding of the 1st International conference on Cloud Computing, Information Technology, Big Data and Big Data Management (Cloud Forward 2015). Pisa, Italy. October 6-8 2015. Authors: Athanasian Evangelinou, Michele Ciavotta, George Kousiouris, Danilo Ardagna

ITEA Award of Excellence for MEDIATE

At the Co-summit, the ITEA Board Support Group presented 3 ITEA Awards of Excellence. These awards go to high-level technical contributions based on true European collaboration that provide significant results and promote the program and its goals. This year the ITEA awards of Excellence focused on the key achievements for ITEA: Business impact and Standardization. MEDIATE is one of this year's awards winners and received the Award of Excellence in the category "Business impact".

MODAClouds Project ends with "EXCELLENT" at final review

The MODAClouds Project received the "EXCELLENT" grade during its final review held in Brussels last November 19th, 2015. The project ended with the release of MultiClouds DevOps Toolbox, a number of technologies created to help along the whole Cloud lifecycle for Multi-Cloud scenarios with strong focus on Business-Driven QoS and DevOps. The project members have also started MultiClouds Alliance, an initiative to extend the life of the project results beyond the project life. The results and the Alliance can accessed at www.MultiCloudDevOps.com.

MODAClouds

Best Industry Paper

The best industry paper award was granted to Aljosa Pasic for the paper "Research-to-market transition in European Cybersecurity Projects". The award included an invitation to present the paper at CyberCamp 2015 (https://cybercamp.es), taking place in Madrid in November 2015, 26-29.

Platforms

Platforms

Introduction

Even though most Public Bodies carry out public and private consultations to elaborate their research program, in the last years there has been an industry-led movement aiming at better coordinating and defining research areas and instruments, both at European and National levels. The main benefit of these initiatives is that industrial partners, including SMEs (in many cases also academia and research centers), discuss which are the main priorities for the sector in terms of R&D and provide this input to the related funding organisations. This ensures a greater impact of the program. The main characteristics of these initiatives are that they are well organized, with mechanisms for open participation and represent a critical mass of stakeholders with a unique voice. Therefore, they are considered the natural interface to interact with a specific industry or sector.

Nowadays the spectrum of initiatives is quite vast in terms of both thematic areas and instruments. From an instrument point of view we can distinguish ETP (European Technology Platforms), JTI (Joint Technology Initiatives), Lead Market Initiatives and PPP (Public Private Partnerships).

From the viewpoint of research areas, we depict hereafter a brief classification of current ETP, JTI, PPP and other initiatives. It is by no means a complete list, but a selection of some relevant initiatives for Atos, where the Research & Innovation group plays a major role.

Nuria De-Lama
ICT Program Manager

Public-Private Partnerships (PPPs)

Our company is a major partner in Future Internet-related initiatives being member of the FI PPP Steering Board and Industrial Advisory Board. Since 2014, Atos is a founding member of the Big Data Value Association (BDVA), assuming the roles of Vice-presidency and Deputy Secretary-general. We are also member of the 5G PPP Steering Board.

5G www.5g-ppp.eu	
BDVA www.bigdatavalue.eu	
Future Internet www.fi-ppp.eu	
NIS Platform resilience.enisa.europa.eu/nis-platform	

European Technology Platforms (ETPs)

Atos is a founding member of the European Technology Platform NESSI (Networked European Software and Services Initiative) and sits on the steering board of NetWorld2020.

NANOMEDICINE www.etp-nanomedicine.eu	
NEM nem-initiative.org	
NESSI www.nessi-europe.com	
NETWorld2020 www,networld2020.eu	

National Technology Platforms (NTPs)

At national level, Atos is currently holding the Presidency and Secretary of PLANETIC for ICT, as well as the Vice-presidency of es.Internet for Future Internet technologies, and is member of several others, such as PESI, Logistop, eVIA for Health and Independent Living.

ES.INTERNET esinternet.imasdtic.es	
eVIA evia.imasdtic.es	
LOGISTOP www.logistop.org	
NanoMed www.nanomedspain.net	
PESI www.pesi-seguridadindustrial.org	
PLANETIC www.planetic.es	
PTFE www.ptferroviaria.es	

EIT Knowledge and Innovation Communities (KICs)

Atos is a core member of the KIC EIT Health and an official member of the KIC EIT Digital associated node Madrid.

EIT DIGITAL www.eitdigital.eu	
EIT HEALTH www.eithealth.eu	

Standardization Organizations

ETSI www.etsi.org	
OASIS www.oasis-open.org	

Special Interest Groups

Smart Cities Platform eu-smartcities.eu	
CELTIC celticplus.eu	
EOS www.eos-eu.com	
ERTICO ertico.com	

About Atos

Atos SE (Societas Europaea) is a leader in digital services with 2014 pro forma annual revenue of circa € 11 billion and 93,000 employees in 72 countries. Serving a global client base, the Group provides Consulting & Systems Integration services, Managed Services & BPO, Cloud operations, Big Data & Cyber-security solutions, as well as transactional services through Worldline, the European leader in the payments and transactional services industry. With its deep technology expertise and industry knowledge, the Group works with clients across different business sectors: Defense, Financial Services, Health, Manufacturing, Media, Utilities, Public sector, Retail, Telecommunications, and Transportation.

Atos is focused on business technology that powers progress and helps organizations to create their firm of the future. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and is listed on the Euronext Paris market. Atos operates under the brands Atos, Atos Consulting, Atos Worldgrid, Bull, Canopy, and Worldline..

Research & Innovation

Asturias
Marqués de Santa Cruz, 7 1º B
33007 Oviedo
Spain
+34 984 10 68 61

Barcelona
Avda. Diagonal, 200
08018 Barcelona
Spain
+34 93 486 18 18

Bilbao
Camino Capuchinos de Basurto, 6 - 3ºB
48013 Bilbao
Spain
+34 94 439 92 88

Bratislava
Einsteinova 11
851 01 Bratislava
Slovakia
+421 2 68526801

Istanbul
ITU ARI Teknokent 2
Buyukdere Cad. A Blok Floor3
Maslak 34398 Istanbul
Turkey
+90 212 286 46 66

Madrid
C/ Albarracín, 25
28037 Madrid
Spain
+34 91 440 88 00

Santander
C/ Real Consulado s/n.
Polígono Industrial de Candina
39011 Santander, Cantabria
Spain
+34 94 235 59 31

Sevilla
Avenida Kansas City, 9
Edif. Realia, Mód. 3-6
41007 Sevilla
Spain
+34 955 512 108

Tenerife
C/ Fuentes Santa Cruz, 3
Edif. Ciudamar - Oficinas 2º
Santa Cruz de Tenerife
Canary Islands
Spain
+34 91 440 88 00

Valladolid
C/ Andrés Laguna 9-11
Edificio Zarzuela, Planta 1
Parque Tecnológico de Castilla León
47151 Boecillo, Valladolid
Spain
+34 983 10 29 97

For more information:

Please, contact **es-atosresearch@atos.net**
or visit **www.atosresearch.eu**