research & innovation 2014

innovation is in our DNA

come with us to the future of technologies

Your business technologists. **Powering progress**

Atos

Research & Innovation

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Content

Innovation is in our DNA

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

This document presents the yearly report of the Research and Innovation group of Atos (ARI). 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, the group has been 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 successfully provided a study to helping to determine the feasibility of implementing a Cybersecurity center in the Republic of Korea for the World Bank.

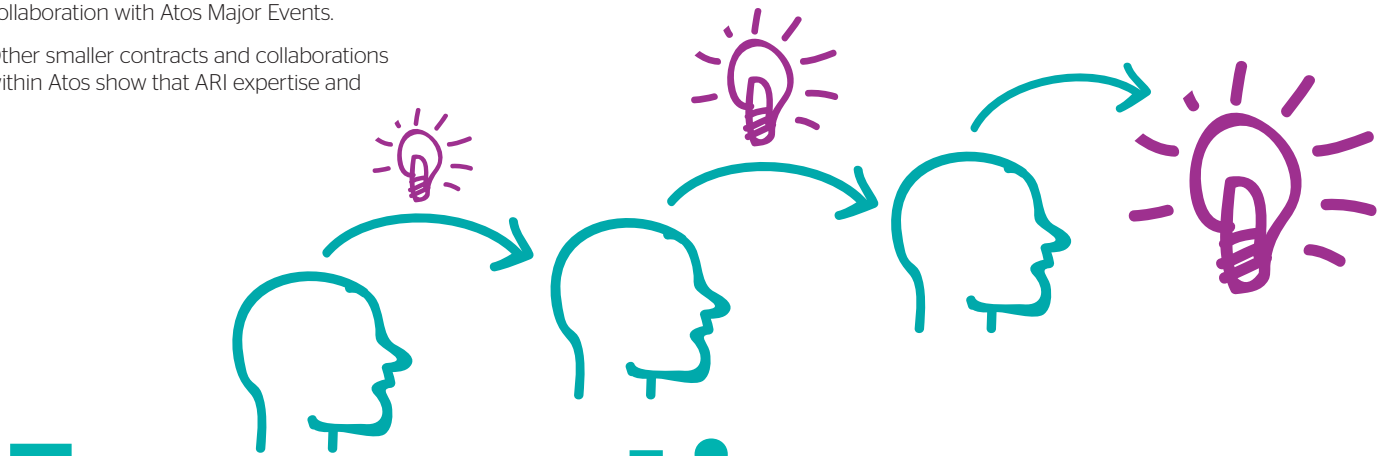
Additionally, based on components developed and knowledge acquired in media related R&D projects, ARI has been called to provide advanced services for the "Sport Media Application in Real Time" in the context of SOCHI and NANJING'14 Olympic Games, in collaboration with Atos Major Events.

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 an R&D project. Having brought successful results to the company, those workshops are now being promoted internally and to Atos customers.

Thanks to ARI, Atos is a full member of the Big Data Value Association (BDVA), launched in July 2014 [1]. The BDVA shall present an industry-led contractual counterpart to the European Commission for the implementation of the Big Data Value PPP and its main role is to provide the Big Data Value strategic research agenda (SRIA). Our membership is reinforced by the fact that the roles of Vice-President and Deputy Secretary-General of the Association are assumed by ARI.

By the end of 2014, the European Institute of Innovation and Technology (EIT) selected the strategic pan-European partnership to contribute to increasing the competitiveness of European Industry, improve the quality of life of Europe's citizens and the sustainability of healthcare system, one of the largest public funded initiatives for health worldwide. The Knowledge and Innovation Community (KIC) for EIT Health involves a consortium of 144 European companies, research institutes and universities in 9 EU countries. Atos Spain is proud to be one of the core partners. The Spanish node is co-led by our company, which is also member of the KIC supervisory board.

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 second company at European level and the first one in Spain with most participation in R&D projects [2]. This excellent position in the EU RDI arena raises the visibility, not only of ARI, but of Atos as a global company.



[1] http://www.bigdatavalue.eu
[2] http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/6th_fp7_monitoring_report.pdf

Objectives and Organization

The Research & Innovation group is the R&D 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.

The group focuses on projects development, combining economic exploitation of investigations' results and the most up-to-date technological achievements with high awareness of human factors (education sciences, disability-related issues, cultural diversity, and multilingualism).

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 various locations: Madrid, Barcelona, Bilbao, Valladolid, Santiago de Compostela, Santa Cruz de Tenerife in Spain, Brussels in Belgium, Istanbul and Ankara 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 fifteen Sectors within Atos established markets and eight 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.

Sectors

- Public Administration & Education
- Health
- Homeland Security & Defense
- Transport, Tourism & Environment
- Financial Services
- Manufacturing & Retail
- Transport & Trade Logistics
- Aeronautic & Construction
- Energy & Utilities
- Telecom
- Media
- Information Technologies

Research Labs

- Software Engineering
- Geo
- Knowledge
- Trustworthy Systems & Services
- Media
- Secure Identity Technologies
- Smart Objects
- Cloud & Services

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

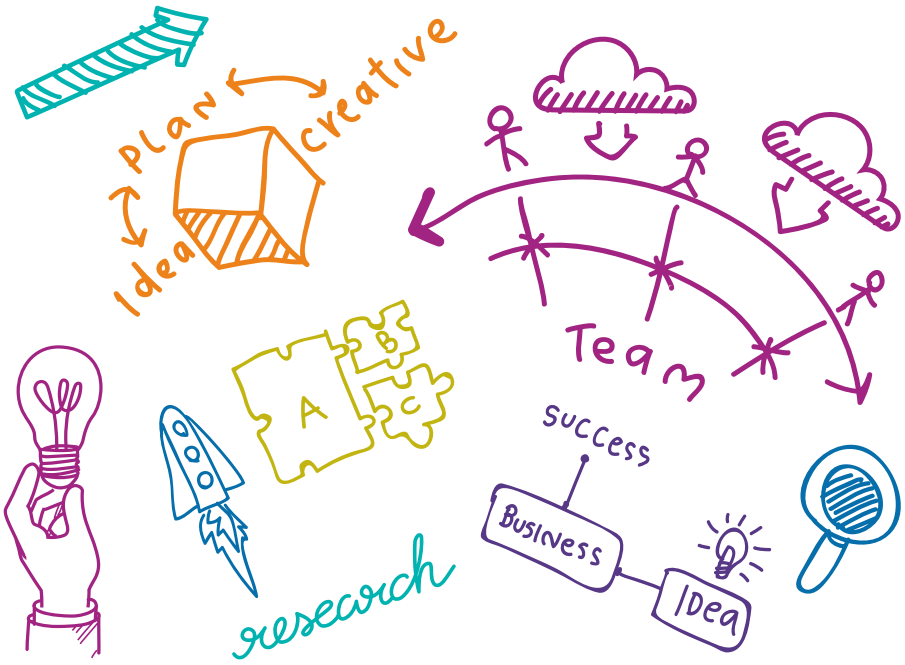
The Research & Innovation group is the research and development hub for new technologies and a key reference for the whole Atos group. Thanks to our large expertise in research, development and innovation projects, we are able to bring new solutions and innovative elements to customers' business.

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 (R&D&I) 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 R&D&I related services, such as advanced technology watch, innovation ideas channeling, evaluation and management, alignment of the organization's R&D&I strategy with public funding sources programs, proposal drafting and delivery support, successful proposals negotiations, and finally, proper project management office.

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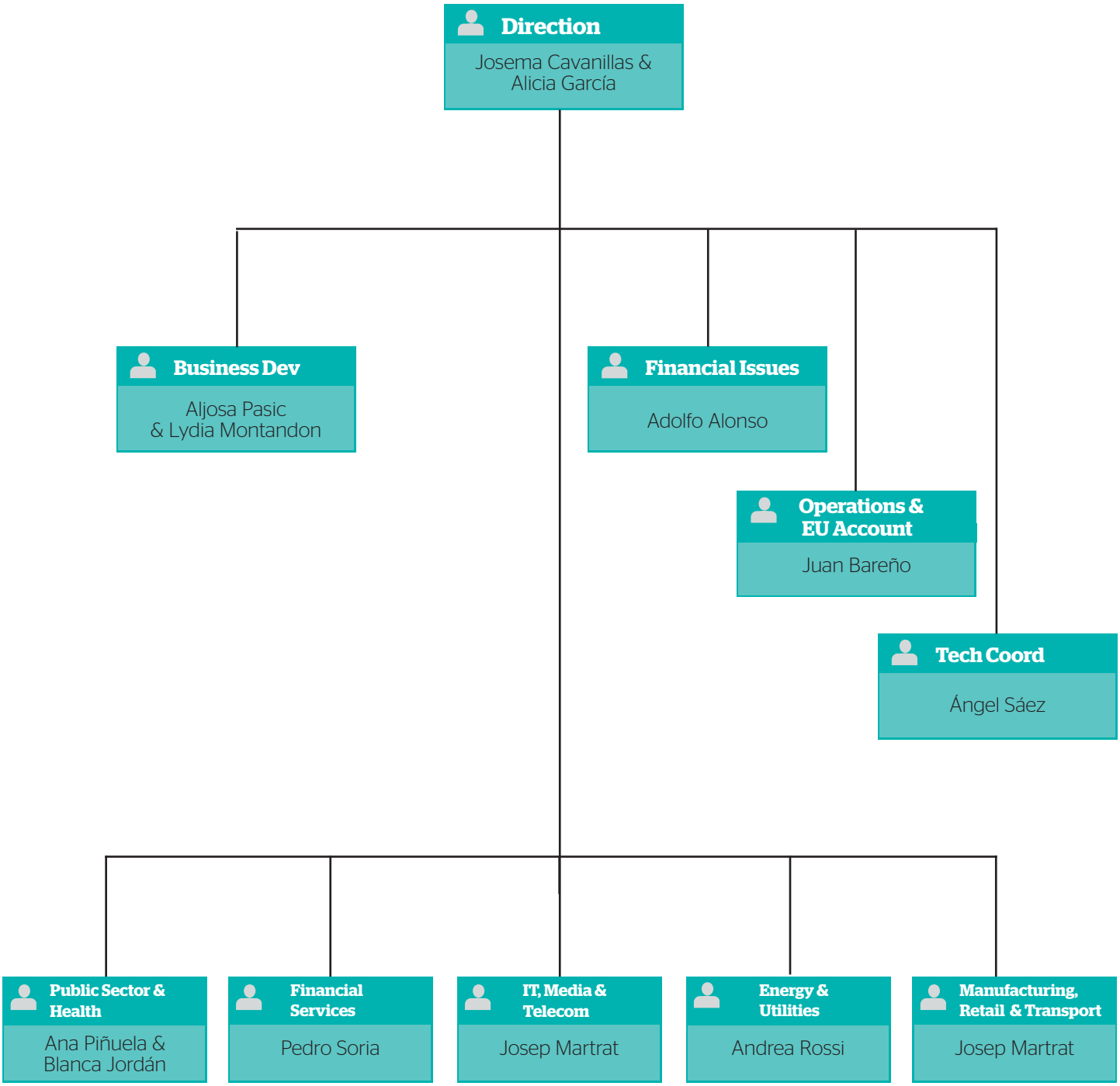
Structure

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 and Education

ICT is the key to promote smart, sustainable & innovative government and serves as a catalyst for improved and innovative education services

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, by automation and transformation of administrative processes and 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
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
CIUDAD 2020	Smart City project	CDTI	Breakthrough in energy efficiency, human behavior, environmental sustainability, mobility and transport, designing and implementing a paradigm of sustainable and efficient city supported on three key areas: Energy; Transport; Environmental Control.	innprontaciudad2020.es
Co-Cities	Cooperative Cities extend and validate mobility services	CIP	Co-Cities aims to extend and validate existing mobility services to improve current traffic information management in cities and urban areas introducing end-user and valued services allowing innovative cooperative feature based on the user feedback.	co-cities.eu
EMMA	European Multiple MOOCs Aggregator	FP7, ICT	EMMA platform gives learners across Europe multiple language access to free, massive, open, online courses (MOOCs) from prestigious European Universities.	europeanmoocs.eu
HOTEL	Holistic Approach to Technology Enhanced Learning	FP7	Aims to contribute to more effective, holistic and faster innovation cycles in European TEL, focusing on the design, testing and validation of a new innovation working method.	hotel-project.eu
Migration of ePractice to Joinup	Support to the migration of epractice.eu to joinup.eu	Client Project	Support to the contractors [Joinup TC] responsible for handling the technical migration process of ePractice.eu to Joinup.eu and hosting and maintenance services of the ePractice portal until the migration process is concluded.	joinup.ec.europa.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	ICT, CIP	Facilitating the fast creation of interoperable and socially-aware services for leveraging Internet of Things and Social Networking technologies.	radical-project.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
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.	strategic-project.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 and interoperability, artificial intelligence for decision support systems creation, remote monitoring and patient assistance. In the last years, bioinformatics, nanotechnology, algorithms development for genomic and proteomic data analysis were also considered.

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.
- 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:

- Omics Technologies and data analysis.
- Decision support systems design and development.
- Big data services within the healthcare domain
- Virtual Physiological Human.

Challenges

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

- Omics Technologies: Genes integral study (genomics), proteins (proteomics) and 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 and clinical practice.

- Virtual Physiological Human (VPH) is based on the development of in-silico models for all biological and physiological procedures of the human body. The Health sector focuses its research on the development of these models, as well as on the creation of the "infostructure" to support the whole research community. The final aim is to improve diagnostics methods and to offer personalized treatments based on the integration of individuals' molecular information (genotype) with physiological and phenotypic information. The ultimate goal is to achieve completely personalized medicine and drug delivery.

Blanca Jordan
Head of Sector

Current Research Topics and Findings

- Services to exchange, integrate and analysis 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
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
MovingLife	MObile eHealth for the VINdication of Global LIFEstyle change and disease management solutions	FP7	A roadmap for paving the way the deployment of mobile solutions.	moving-life.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 JU	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

Transport, Tourism & Environment

Application of innovative technologies to integrated transport and environment

Description

Being one of the strategic fields where Atos is providing services, the Research and Innovation group has a dedicated sector focusing on innovation and the future of technology in transportation and tourism. The Transport, Tourism & Environment sector (TTE) covers research and innovation for transportation, urban mobility, tourism and environment; and it is focused on Intelligent Transport Systems, Cooperative Systems for Urban Mobility and Sustainable and Secure transport as well as in developing IT solutions addressing all elements of the Tourism value chain. The GEO lab, within the TTE Sector in ARI, focuses its activity on those technologies that allow the integration, edition, analysis and graphical representation of spatial information.

Goals

This sector is specialized and dedicated to projects in the transport (in collaboration with the Transport & Trade Logistics - TTL - sector), tourism, human logistics, mobility and environment domains. Its activities are centered in the realization of R&D projects and the application of innovative technologies to the particularities of this sector.

One of the TTE goals 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 GEO lab described in the Technological Driven Research section. Important part of the technological developments raised by this sector are developed in the mentioned lab.

Main Activities

The sector's main activities are listed hereafter:

- Research and development activities dealing with transport challenges.
- Elaboration of business plans for the exploitation of research project results, oriented to transport and environment sectors.
- Identification and execution of new business opportunities in transport and tourism in line with innovative key offerings.
- 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.

Challenges

This sector focuses on the following challenges:

- Intelligent transport systems: To make mobility of people and goods across safer, more sustainable and efficient different transport modes.
- Cooperative systems and urban mobility: Traffic management information and travel planning.
- Future city tourism: Foster innovation in the user experience providing outstanding product and services along tourism value-chain.
- Big data in Transport and Tourism: provide new solutions to enhance competitiveness by exploiting existing data. Materialization of the opportunities by the analysis of high volumes of data in TTE sector and develop of emerging data-driven applications.
- 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.
- Multiple Risk Management. Extend the achievements reached in the FP6 project ORCHESTRA (www.eu-orchestra.org) to multiple risk and emergency domains like early warning and tsunamis in FP7 project DEWS (www.dews-online.org), biodiversity, agriculture and many other domains.
- 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

- Smart, green and integrated transport.
- Enable vehicle interaction with traffic management. Traffic Management as part of ERTICO's TM2.0 Platform activities.
- Integrated components for assisted rescue and unmanned search operations.
- Driving innovation in crisis management.
- Open Data building on geographic information.

Title	Project Title	Funding	Description	Web
ASTUTE	Pro-active decision support for data-intensive environments	ARTEMIS JU	ASTUTE objective is the definition of a reference architecture for the development of HMIs targeting proactive information retrieval and delivery based on situational context, user state information and user intentions.	astute-project.eu
Co-Cities	Cooperative Cities extend and validate mobility services	CIP	Co-Cities aims to extend and validate existing mobility services to improve current traffic information management in cities and urban areas introducing end-user and valued services allowing innovative cooperative feature based on the user feedback.	co-cities.eu
FOODIE	Farm-Oriented Open Data in Europe		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	HoliDes addresses development and qualification of Adaptive Cooperative Human-Machine Sys-tems (AdCoS) where many humans and many 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
T-TRANS	Enhancing the transfer of Intelligent Transportation System innovations to the market	FP7	Innovation mechanisms studies for the Intelligent Transport Systems (ITS) and identification of best practices for upbringing innovative ITS products and services to the market, through four selected use cases.	ttransnetwork.eu/ttrans

Aeronautics and Construction

Innovative ICT for the aeronautics and construction sectors

Description

The aerospace field is one of the most important drivers in technology research and innovation at worldwide level. Our research team has a long and proven record of more than twenty years delivering added-value aeronautic innovation projects, ranging from the design of new satellite based communication systems to the provision of algorithms, simulation components and integration platforms for the next generation of aeronautics systems of air navigation, approach and landing, with clients and partners such as the European Space Agency (ESA), the European Commission, Alcatel Space, BAE Systems, AENA, INECO, GMV, Indra, Boeing Research & Technology Europe, Egis Avia, Thales Alenia Space, or Telespazio.

The construction activity is vital for Europe both at economic and social levels, it represents more than 10% of the GDP within the EU and it is the biggest industrial employer in Europe. This sector is now facing a revolution with huge investments in new materials and the application of new business models based on new industrialized construction processes, all of them requiring the application of innovative information technologies.

Goals

To take active part in research and innovation projects and programs for the development and validation of solutions in following aeronautics fields: unmanned vehicles, trajectory based traffic operation, identification and prediction of vehicle trajectories, vehicle-to-vehicle trajectory negotiation, onboard software, simulation, support systems for air traffic management and flight security, aeronautical communications.

To search for, develop and disseminate new construction solutions and technologies focusing on our main construction research areas: energy efficiency and environment, advanced construction materials, ICT support for building, civil infrastructures and smart cities.

Main Activities

The sector's main activities are listed hereafter:

- Participation as a member of several relevant European Technology Platforms, such as ISI (SatCom), eMobility, Artemis (embedded systems) or Logistop (Logistics).
- Participation in the HALA! and ComplexWorld Thematic Networks of SESAR WPE.

- Collaboration with the Atos "Product Engineering" department in activities related to the design of airframe structures.

Challenges

Aeronautics:

- To get involved in the definition of global aviation's approach to sustainability.
- To contribute to the development of advanced multimodal transport solutions.
- To apply ICTs to the engineering of customer-oriented, time-efficient, cost-efficient, green and secure Air Transport Systems.
- To design new methodologies and procedures for the improvement of tactic and real time management of the operations needed to coordinate aircrafts, tickets, luggage and goods at airports, which are the main sources of delays in flights..

Construction:

- Use of new technologies and services, such as Internet of Things, semantic technologies, data and knowledge management, trust and security, which shall become key enablers of innovative business models based on the industrialization of construction processes.
- Development of a construction virtual environment, which will drastically reduce the current high level of fragmentation.

Jorge Pereira
Head of Sector

Current Research Topics and Findings

Aeronautics:

- System Wide Information management (SWIM)
- Continuous descent approaches of maximum predictability
- Development of simulation capabilities
- Risk management identifying emerging threats to aviation systems
- Trajectory computation infrastructure / Advanced aircraft performance model
- Advanced control and de-confliction algorithms
- Advanced operational concepts, decision-aid technologies, study of innovative business models

Construction:

- Generating optimal building controls from a Building Information Model (BIM).
- Development of real-time algorithms for energy-efficiency diagnosis and including sensors and diagnostics in building materials.
- Development of Decision Support System (DSS) that exploits comprehensive and transferable indicators easily understood by urban planners to find the best integrated building concept, and user to find the best way to control their buildings.
- Better knowledge about building life cycle energy performance and the importance of its adoption regarding reduction in building project execution times, costs and higher quality of the buildings.
- Standardization regarding communications and protocols to ease the interoperability and the communication among different devices.
- Industrialization of components for transport infrastructures using polymer based materials.
- ICT technologies (adapted ICTs, geo-positioning systems, smart-devices, RFID, QRCodes, etc.) for innovative component tracking, production and on-site assembly support.

Title	Project Title	Funding	Description	Web
IREEN	ICT Roadmap for Energy Efficient Neighbourhoods	FP7	Study of the ways ICT for energy efficient and performance can be extended beyond individual homes and buildings to the wider context of neighbourhoods and communities.	ireenproject.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

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
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
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
RADICAL	Rapid Deployment and adoption of sustainable socially-aware and intelligent sensing services for emerging smart cities	ICT, CIP	Facilitating the fast creation of interoperable and socially-aware services for leveraging Internet of Things and Social Networking technologies.	radical-project.eu
RECOBIA	Reduction of Cognitive Biases in Intelligence Analysis	FP7, SECURITY	Improvement of the quality of intelligence analysis by reducing the negative impact of cognitive biases upon intelligence analysis, assessment of cognitive biases how they affect the practice of intelligence analysis.	recobia.eu

Manufacturing & Retail

Intelligent technologies for manufacturing and retail challenges

Description

Manufacturing & Retail sector has a deep expirience 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

Silvia Castellvi
Head of Sector

- To optimize retailer processes and its client satisfaction: Smart labels management, consumer geolocatio, iBeacons and wearable technolgies.
- 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

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
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
SmartAgriFood	Smart Food and Agribusiness: Future Internet for Safe and Healthy Food	FP7	Application of FI technologies in the food and agriculture sector, developing a tracking and tracing system for product information exchange involving all stakeholders of the food supply chain, from the grower to the supermarket.	smartagrifood.eu
THINKING FACTORY			Development of a platform for the integration of Cyber-Physical Production Systems and the smart exploitation of the information and knowledge for advanced manufacturing	

Transport & Trade Logistics

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 to achieve 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 amongst 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	FREVUE aims to demonstrate 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.	
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

Homeland Security & Defence

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

Description

The sector of Homeland Security & Defense 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 (including the 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, border intelligence etc.).

Goals

The main goal of this sector is to encourage the adoption of emerging technologies in the HSD 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 offerings
- Management of market-driven R&D projects, elaboration of plans for the exploitation of research project results oriented to the HSD sector

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 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
- Economics of security

Title	Project Title	Funding	Description	Web
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
CIRRUS	Certification, Internationalisation and Standardization in Cloud Security	FP7	CIRRUS is a European research support project that aims to bring together different stakeholders with diverse interests in cloud computing (CC) security or privacy issues and to enable faster convergence and adoption of CC security standards.	cirrus-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	Based on previous Security foresight studies and horizon-scanning activities, 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
PACT	Public perception of security and privacy		Realization of a root and branch review of public perception of privacy and security, to collect empirical evidence, and to translate research into a privacy framework and a Decision Support System.	www.projectpact.eu
RECOBIA	Reduction of Cognitive Biases in Intelligence Analysis	FP7, SECURITY	Improvement of the quality of intelligence analysis by reducing the negative impact of cognitive biases upon intelligence analysis, assessment of cognitive biases how they affect the practice of intelligence analysis.	recobia.eu
SecCord	SECurity and trust COoRDination enhaced collaboration	FP7	SecCord provides coordination and services for the Trust and Security (T&S) research programme and its projects.	
VALUESEC	Cost-benefit Analysis of Current and Future Security Measures in Europe	FP7, SECURITY	Decision support tool-set to examine different aspects of the decision process and make decisions based on sound economic analysis.	valuesec.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.	

Energy & Utilities

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 E&U sector focuses on the electrical distribution grid operation and explores the major challenges faced by the European energy industry:

- How can we improve the distribution grid monitoring to cope with volatile states in the grid.
- How to integrate "smart" automation devices to increase the efficiency of the distribution grid.
- How to interoperate with the different roles e.g. operation of the smart meters, power and grid operation.

Main Activities

The E&U sector research lines & activities are related to the previosly 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.
- Efficient energy management in buildings, in buildings, public administrations and smart cities in collaboration with the Smart Objects lab.
- Green Vehicles: the large scale introduction of electrical and hybrid vehicles will have an impact on the energy infrastructure by providing the necessary charging points, but also 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. At the same time, the constant rise in market shares of electric vehicles will change consumer's perceptions and day to day behaviours concerning the charging of EV- batteries.
- Efficient Water Management in urban and rural areas through smart ICT applicantion and services for water utilities and consumers.
- In addition, the E&U sector has consolidated its position in the Smart Energy sector by being actively involved in the Future of Internet PPP for Smart Energy systems as well as in the EIT ICT Labs 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.

For most of the 20th century, the way energy (electricity, gas and water) was produced, distributed and consumed remained unchanged. There was no choice of supplier and no need to treat consumers as customers. Well now it's different. 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. 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, . At the same time, private and commercial consumers are being encouraged to reduce their energy use (electricity and water) and to participate in the generation, distribution and storage of electricity.

Andrea Rossi
Head of Sector

Current Research Topics and Findings

The main activities during last period in the E&U sector are in the context of the work done in the e-DASH, FINSENY, OPENNODE and SOMABAT 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 of 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).
- Scenarios Analysis for Distribution Networks, Regional-/Micro grids, Smart Buildings, Electric Mobility and Electronic Marketplace for Energy; identification and classification of functional and non-functional requirements and classified them as Generic/Specific Enablers, developed reference architectures common to the selected scenarios and prepared pan-European use case trials were the final outputs (FINSENY).
- 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)
- Developement 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).

Title	Project Title	Funding	Description	Web
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
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

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 (member of the Steering Board) and the 5G PPP initiative
- Foster the adoption of integrated networks and of spectral-efficient broadband wireless systems, novel Internet architectures and technologies..

This sector aims at the definition and adoption of assets for telecom industry through Atos sales channels. Our main partners are the Telefonica, Portugal Telecom, Telecom Italia, i2CAT, WIT-TSSG, UPC, NCSR, Fraunhofer, Ericsson, Juniper, Nextworks, Italtel among others.

Goals

The goals of this sector can be summarized as follows:

- Explore novel network architectures (such as C-RAN, Smallcells) and technologies (such as SDN/NFV) at system level.
- Study the convergence of telecom solutions and new business opportunities for operators, for instance with the explotion of bigdata for network management and QoE/QoS analysis.
- Align the research activity with the offering and activities of Atos (Next Generation Intelligent Networks, Context-aware mobility, Network Function Visrtualisation, OSS/BSS, etc.).

Main Activities

The Telecom sector's main activities are:

- Participation in projects concerning Future Networks.
- Reinforcing networking with stakeholders in telecom supply chain for further collaboration.
- Understanding Atos' global portfolio around Telecom.

As a result, the sector is currently involved in several exciting projects that cover a wide range of technological challenges such as femto-cloud (and the insights it may bring for the definition of 5G), large-scale federation of Future Internet experimental facilities, Network Function Virtualisation (NFV), Big Data in telecom and Recursive Internet. These projects represent a great opportunity to acquire wider knowledge around up-to-date wireless and fixed networking, in which we see important business opportunities that have to be explored.

Challenges

The sector's main challenges are listed hereafter:

- Future networks: new wireless systems (LTE/smallcells/...), innovative networking paradigms (Network Function Virtualisation, Recursive Internet).
- Combination of cloud computing and next generation networks. Cloud RAN (C-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.
- Mobility applications and mobile off-loading scenarios for telecom operators and associated industries.

Josep Martrat
Head of Sector

Current Research Topics and Findings

- Network Function virtualisation (NFV)
- Smallcells and femtocells combined with cloud computing.
- Large-scale federation of Future Internet facilities and services for experimental purposes.
- Recursive Internet applications.

Title	Project Title	Funding	Description	Web
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
T-NOVA	Network Functions as-a-Service over Virtualised Infrastructures	FP7	The T-NOVA project aims to address Network Function Virtualisation (NFV) challenges by designing and implementing an integrated architecture for the automated management of Virtualised Network Functions over Network/IT infrastructures.	www.t-nova.eu
TROPIC	Distributed computing, storage and radio resource allocation over cooperative femtocells	FP7	Combination of cloud computing with femtocell networking, thus enabling a capillary distribution of the cloud computing capabilities closer to a potentially huge number of mobile users.	www.ict-tropic.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 technologies such as digital content management, video analysis, 3D, etc.

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

The highpoint for 2014 for the Media sector has been working with Atos Major Events to provide the white label webcasting service for the 2014 Winter Olympic Games in Sochi, Russia..

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.

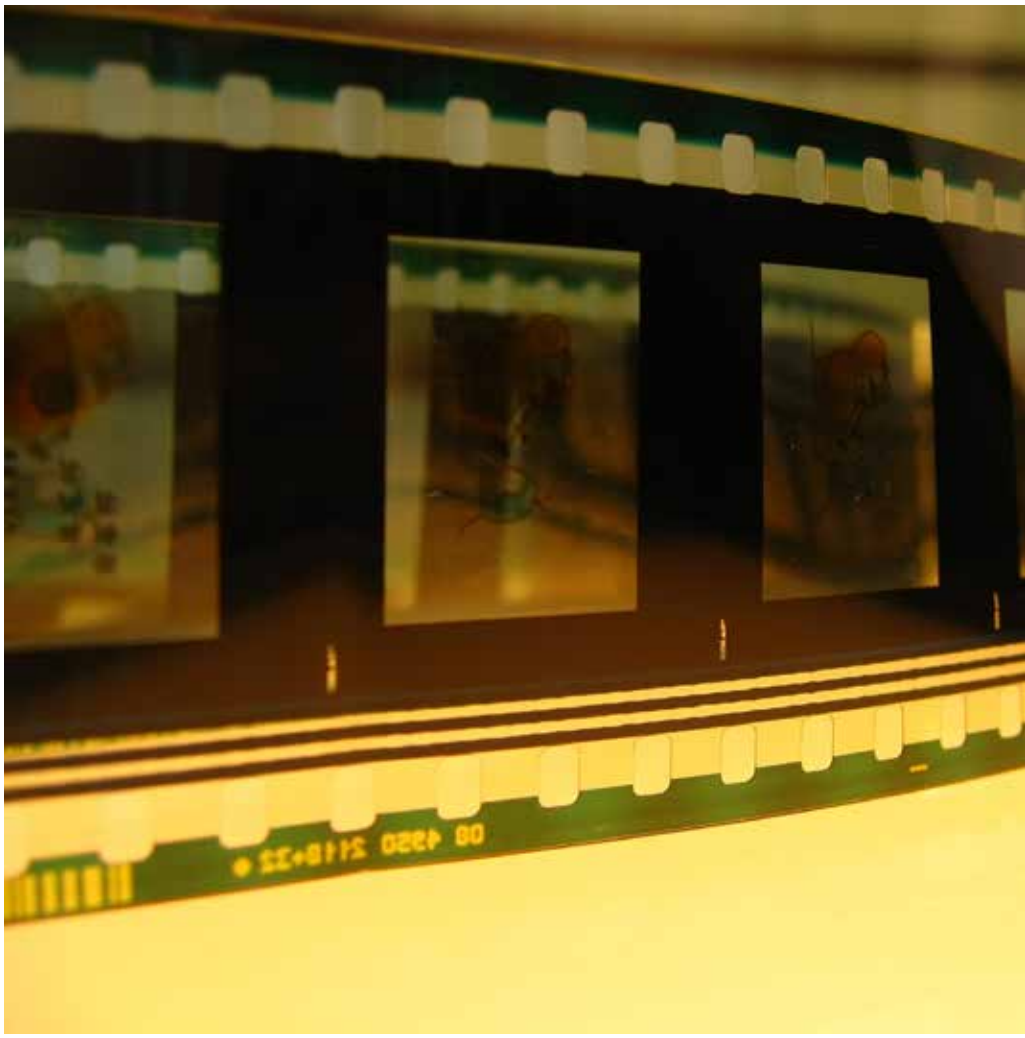
This sector is strongly linked to the Media lab described in the Technological Driven Research section.

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 (streaming, enriched metadata, social media, digital content distribution) into assets that are useful to the rest of Atos Group.

Paul Moore
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
ENSURE	Enabling kNowledge Sustainability Usability and Recovery for Economic value	FP7	Development of a digital preservation platform that takes into account long term lifecycle management, comparative cost analysis and legal aspects. Use cases in the health care and financial sectors to enable scalable solutions, considering cloud storage and virtual application image capture.	ensure-fp7.eu
Olympic Video Player	White Label webcasting solution for 2014 Sochi Olympic Games	Commercial	In collaboration with Atos Major Events the Media team in ARI is providing the white label webcasting solution for the Olympic Broadcasting Services for the 2014 Sochi Olympic Games.	
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

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 "Cloud&Services" and "Software Engineering" labs described in the "Labs" section.

The IT sector addresses the commercial and support actions projects while the labs are concentrated on research projects and most of the technological developments. The sector provides the required support to the labs 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, 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 and software engineering.

Challenges

This sector focuses on the following challenges:

- Advance capabilities for IaaS, PaaS and SaaS
- Service Management and Engineering: Advanced SOA and SaaS
- 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

Clara Pezuela
Head of Sector

Current Research Topics and Findings

The research topics are mainly addressed by the associated labs, they are therefore shared by 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 etc) materialized through the participation in several initiatives and platforms (PLANETIC, NESSI, FI-PPP, European Cloud Partnership, etc). While the labs are 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 markets needs..

Title	Project Title	Funding	Description	Web
PLANETIC	Plataforma tecnológica para la adopción y difusión de las tecnologías de información, electrónicas y de comunicación	Spanish Ministry of Economy and Competitivenes	Spanish technology platform for the adoption and promotion of electronic, communication and information technologies.	planetic.es

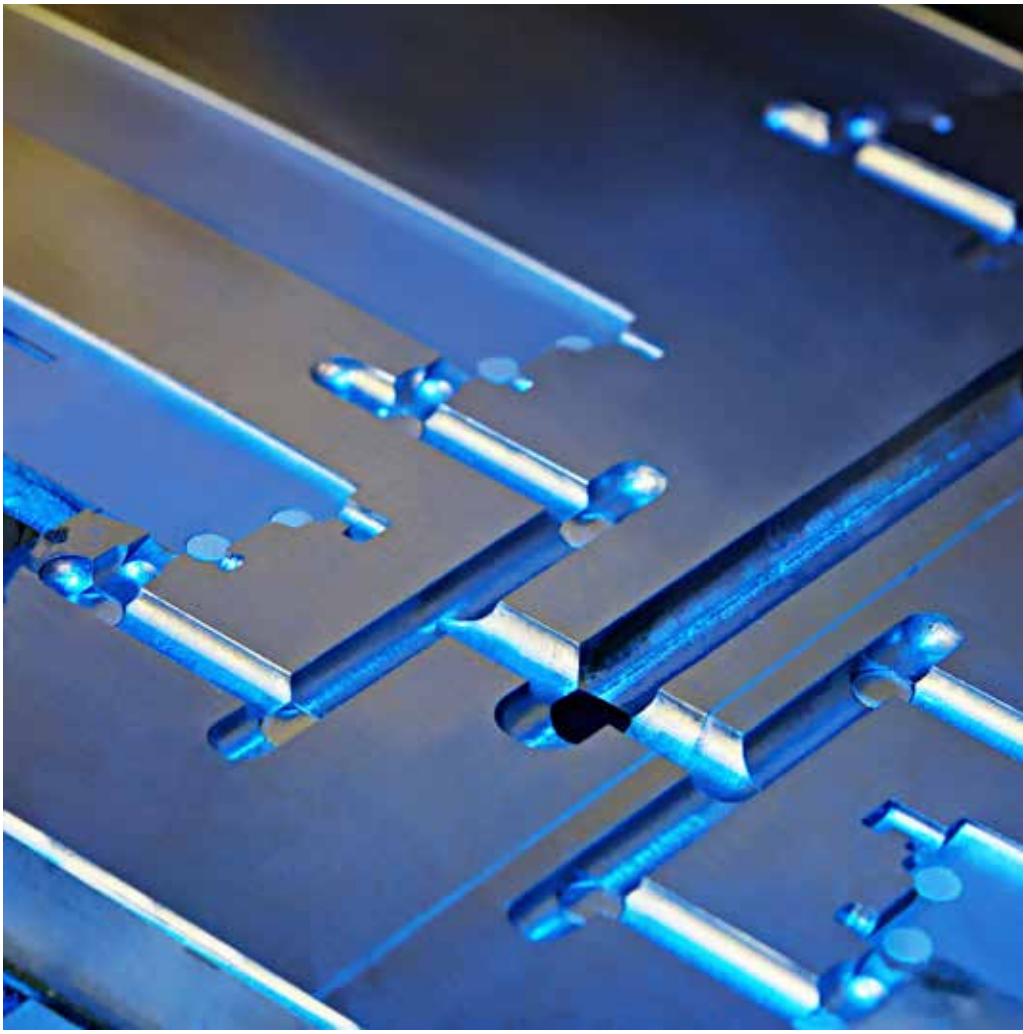
Labs

Trustworthy Systems & Services

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 Trustworthy Software and Systems (TSS) 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

The 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	CIP	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
ANIKETOS	Ensuring Trustworthiness and Security in Service Composition	FP7	Construction of a platform for creating and maintaining secure and trusted composite services, addressing service developers, service providers and service end users.	aniketos.eu
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
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
EFFECTS+	Coordination of Trust & Security in the Future Internet	FP7	Logistics and support for the coordination of the Trust and Security, Privacy, and Compliance for Future Internet through the structures and activities of the Future Internet Assembly (FIA), to build and maintain the community of interests in trust and security results.	effectsplus.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	The NECOMA project aimsat providing new means to understand cyberthreats and to mitigate their effect on infrastructure and endpoints.	necoma-project.eu
NESSOS	Network of Excellence on Engineering Secure Future Internet Software Services and Systems	FP7	Constitution and integration of a long lasting research community on engineering secure software-based services and systems.	www.nessos-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
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

Geo

Systems and architectures using spatial information to address the challenges presented within the environmental field

Description

The GEO lab assists (primarily) the Transport, Tourism and Environment sector within Research & Innovation with technical expertise. The lab's knowledge and technical expertise focus on those technologies that allow the integration, edition, analysis and graphical representation of spatial information.

Goals

The GEO lab aims at applying its knowledge and expertise in geospatial technologies to the design and implementation of open information architectures. Open architectures allow efficient distribution of and easy access to spatial information, as well as development of distributed geo-spatial processes by means of current standards and open-source technologies. These systems and architectures are used to address the challenges presented in various domains such as the health, environmental and crisis management fields.

Main Activities

The lab has a strong expertise and competence in open-source technologies and open international standards related to the geospatial field such as:

- OGC - Open Geospatial Consortium Standards.
  - SWE (Sensor Web Enablement) Standards: SAS (Sensor Alert Service), SOS (Sensor Observation Service), WNS (Web Notification Service) and O&M (Observations & Measurements).
  - OWS (OpenGIS Web Service) Standards: WMS (Web Mapping Service), WPS (Web Processing Service), WFS (Web Feature Service), WCS (Web Coverage Service) and CSW (Catalogue Service).
  - Other: GML, KML, SLD (Styled Layer Descriptor), WMC (Web Map Context).
- OASIS -W3C - World Wide Web Consortium: W3C Web Services, WSDL, RESTful services, XML, HTML5
- OASIS - Org. for the Advancement of Structured Info. Standards:
  - CAP (Common Alerting Protocol)
  - EDXL-DE (Emergency Data Exchange Language - Distribution Element)
- RM-OA (Reference Model for the ORCHESTRA Architecture, compliant with INSPIRE Directive)..

Through the participation and expertise gained in several projects the lab's activities are related to the following initiatives:

Active participation in the Open Geospatial Consortium (OGC).

- Active participation in the Open Geospatial Consortium (OGC).
- INSPIRE Directive Implementation Consultancy.
- Copernicus - The European Earth Observation Program.
- The Global Earth Observation System of Systems (GEOSS).

Challenges

This lab focuses on the following challenges:

- Contribution to the adoption, improvement and specification of standards related to the geo-spatial field (especially OGC standards).
- GIS applied to the fields of:
  - Mobile applications related to the so-called "Location Based Services" (i.e. augmented reality) and crowdsourcing for environmental monitoring and disasters management.
  - Agriculture.
  - Water Management.
  - Transport.
  - Tourism.
  - Climatology (i.e. climate change).

Miguel Ángel Esbrí
Head of Lab

Current Research Topics and Findings

- Earth observation: e.g. integration of remote and in-situ environmental data.
- Interoperability of systems used by the stakeholders involved in Risk Management (Planners, Protection Bodies and Policy Makers).
- Implementation of geographical-independent decision support and alerting systems for the prevention of disasters (i.e., forest fires, floods, tsunamis).
- Interoperable cloud platforms for the provision of open data and Future Internet services in the agricultural domain

Title	Project Title	Funding	Description	Web
DRIVER	Driving Innovation in Crisis Management for European Resilience	FP7	Extension of existing capabilities in Crisis Management and production of a portfolio of CM tools. Experimentation campaigns in tools and methods for responders, resilience of civil society and learning by both.	driver-project.eu
FOODIE	Farm-Oriented Open Data in Europe		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
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

Knowledge

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

Description

The Knowledge lab researches on novel technologies in The Knowledge 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 Knowledge 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 Knowledge Lab is researching on technologies related to the entire data value chain (data acquisition, pre-processing, analysis and usage). Of particular interest are the architectures, frameworks and techniques that are the foundations of any data-intensive related application. Big data analytics and data science are also 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 Knowledge 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 Knowledge lab is researching on technologies and their applicability related to data and meta-data management:

- Big Data: Under the Big Data umbrella, the Knowledge lab is particularly interested in pushing the state of the art in data acquisition from web resources and social networks, 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 Knowledge lab has also 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.

Challenges

The Knowledge lab is currently focused in the following main challenges:

- Big Data
  - Architectural approaches to deal with massive amounts of historical and real-time 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.

Tomas Pariente
Asset Owner

- 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 Knowledge Lab current research topics are:

- Application of existing and new research technologies for Big Data, such as NoSQL (MongoDB, HBase, etc.), MapReduce (Hadoop) or real-time massive processing (Storm).
- 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 for the VPH infrastructure.
- 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
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.	fi-ppp.eu/projects/fi-ware
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 of a scalable platform for the joint development/enhancement and hosting of (multi-)language datasets, processing tools and basic services. Comprehensive online repository, underpinning research, technology transfer and industrial development efforts.	mli-project.eu
PHEME	Computing Veracity Across Media, Languages, and Social Networks	FP7	PHEME will combine big data analytics with advanced linguistic and visual methods. The results will be suitable for direct application in medical information systems and digital journalism.	www.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.	www.smartfp7.eu
VELaSSCo	VISUALIZATION FOR EXTREMELY LARGE-SCALE SCIENTIFIC COMPUTING	FP7	VELaSSCo aims at developing 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.	www.velassco.eu
VPH-SHARE	Virtual Physiological Human: Sharing for Healthcare	FP7	Development and deployment of the VPH “infostructure”, the computing infrastructure through which the VPH community will be able to store, share, reuse and integrate data, information, knowledge and wisdom on the physiopathology of the human body.	vph-share.eu

Smart Objects

Fostering holistic federation of IoT platforms as ICT infrastructure for Smart Environments...
Paving the way to Cross Domain Business Ecosystems

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, e.g.- 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-.

We currently understand the Internet of Things 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 IoT paradigm considers those networks composed by devices and objects creating and orchestrating services, and decision making mechanisms contributing to the satisfaction of information, interaction and actuation requirements from applications and users in smart ecosystems arising as the fusion of real, digital and virtual dimensions and making human life more intelligent.

Goals

Although main concepts and basic foundations of the IoT paradigm as summarized above have been elaborated and consolidated, further research and innovation efforts are required for releasing the full potential of such smart ecosystems, for enabling the federation of existing silo systems and platforms, and for involving broad categories of actors.

Main Activities

At technical level we focus on semantically enriched representation and virtualization mechanisms; Complex Event Processing; Trust and Reputation driven service orchestration mechanisms; and context aware integration technologies that, on the one hand rely on the representation of underlying objects (their availability, properties and functional capabilities), while on the other hand accounts for user and application domain requirements.

We participate in technological research activities looking both for deriving user situation-aware application requirements in real time, and also for producing virtualized IT object models and integration frameworks equipped with advanced features making the virtual IT objects robust and reusable in a broader IoT service context.

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 IoT services and applications, and the involvement of cross-domain actors in multisided business platforms.

Initiatives, results and trends in synergic research domains like cloud computing, big data and social networking are also carefully followed and applied as further foundations for our IoT modeling and integration efforts..

Andrea Rossi
Head of Sector

Challenges

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

- Adoption of a global approach for identification and naming of persistent and volatile objects.
- Standard adoption of IoT reference architectures.
- 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 the IoT environment.
- Deployment of large-scale testing and learning environments, allowing experimentation with complex sensor networks and innovation through reflection and experience.
- Development of sustainable business embracing the full potential of the Internet of Things.

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

Title	Project Title	Funding	Description	Web
C-PAS	Cyber Physical Production Assistance System	EIT ICT-Labs	Combination of recent technological innovations in the field of smart products and cross-enterprise eventing mechanisms to a cyber physical production assistance system (cPAS) improving production system efficiency and robustness.	
CIUDAD 2020	Smart City project	CDTI	Breakthrough in energy efficiency, human behavior, environmental sustainability, mobility and transport, designing and implementing a paradigm of sustainable and efficient city supported on three key areas: Energy; Transport; Environmental Control.	innprontaciudad2020.es
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
iCore	Empowering IoT through Cognitive Technologies	FP7	Cognitive framework comprising virtual objects, composite virtual objects and fuctional blocks for representing the user/stakeholder perspectives, reusable for various and diverse applications.	iot-icore.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

Cloud & Services

Contributing to Atos innovation strategy with regards to Cloud computing

Description

Cloud computing has now overcome the hype around the term. However, in order to exploit Cloud to its full potential, still aspects such as hybrid cloud models, sustainability, enhanced service provisioning and challenges brought by big data processing, mobile technologies and edge computing need to be further investigated. This is the Cloud & Service lab main mission, building upon more than ten years of experience performing insightful research in service engineering, distributed systems and cloud technologies.

Goals

The main goal of this lab is to contribute to Atos innovation strategy with regards to Cloud computing, Service Management and Architecture.

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
- Ad-hoc Cloud management
- Application offloading

Challenges

This lab addresses the following challenges:

Mobile/Things'Clouds – Fog computing

- Cloud Hybrid models: Interoperation, Portability, Federation and Brokerage
- SLAs, Trust and License Management for Cloud environments
- Energy efficiency in 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
- Integration of Things and Mobile heterogeneous resources into 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
- 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
ADAPTA	Treatment and integration of open data for advanced exploitation by citizens and companies	Spanish Ministry of Economy and Competitiveness	Design and implementation of standards and technologies that facilitate the adjustment, validation and integration of government and companies open-data	
ASCETiC	Adapting Service lifeCycle towards EfficienT Clouds	FP7, ICT	ASCETiC is focused on providing 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
BETaaS	Building the Environment for the Things as a Service	FP7, ICT	Laying the foundations for fast and cost-effective development of Machine-to-Machine applications, also providing an environment for their efficient execution.	www.betaas.eu
CloudSocket	Business and IT-Cloud Alignment using a Smart Socket		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, ICT	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
CoolEmAll	Platform for optimizing the design and operation of modular configurable IT infrastructures and facilities with resource-efficient cooling	FP7, ICT	Development of a range of tools to enable data center designers and operators to plan and run facilities more efficiently.	coolemall.eu
Eco2Clouds	Experimental Awareness of CO2 in Federated Cloud Sourcing	FP7, ICT	Identifying good practices to improve energy efficiency of cloud data centres: learn by applying adaptivity and flexibility in technology, work organization and aptitude.	eco2clouds.eu
GENIC	Globally optimized ENergy efficient data Centres	FP7, ICT	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
MODAClouds	MOdel-Driven Approach for design and execution of applications on multiple Clouds	FP7, ICT	Methods, decision support system, open source IDE and run-time environment for the high-level design, early prototyping, semi-automatic code generation, and automatic deployment of applications on multi-Clouds with guaranteed QoS.	modaclouds.eu
Panacea	Proactive autonomic management of Cloud resources	FP7, ICT	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, ICT	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

Secure Identity Technologies

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 creates 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 and ICT systems in general.

Goals

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

The Secure Identity technologies 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, 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 as a Service.
- Digital/Electronic Identity Technologies: Electronic certificates, on-line electronic IDs, smartcards...
- Identity and Access Management: Access Control, Identification, Authentication, Authorization, User Management.
- Privacy and Identity Data Protection: Privacy Enhancing Technologies, Identity Fraud and Theft Prevention, Privacy by Design.
- Biometrics: Multi-biometrics, mobile biometrics, crypto-biometrics, usability, standards.

Challenges

- Interoperable eID solutions will be key enablers of secure and seamless access to eServices (e.g. STORK/STORK 2.0)
- eID, eIDM and privacy-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 as building blocks for privacy-enhancing identity management.
- 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
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
FutureID	Shaping the Future of Electronic Identity	FP7	Building a comprehensive, flexible, privacy-aware and ubiquitously usable identity management infrastructure for Europe.	futureid.eu
IAM&DS FS	Identity and Access Management & Digital Signature – Feasibility Study	Client Project	Addressing specific needs about decentralized authentication, centralized authorization and digital signature. Analysis of similar available projects and designs different solutions for this specific environment.	
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 www.securityengineeringforum.org
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.	

Media Lab

Content personalization through content characterization, content annotation, data-fusion, profiling, social network analytics

Description

The Media lab researches on future technology that will allow new rich content creation, management and distribution improving consumers' experience and technology feasibility. Unconstrained by traditional disciplines, engineers, artists and scientists work conducting several projects that range from supporting consumer recommender systems for large sport events broadcast to new user interfaces for information retrieval or new codecs to support efficient audiovisual content distribution.

Goals

The main goal of this lab is the research, design and development of 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, data-fusion and profiling.
- Rich multimedia user experience.
- Social network analytics.

Main Activities

The lab's main activities are listed hereafter:

- Research on AV content distribution over heterogeneous networks, looking for innovative distribution paradigms including new codecs and multi-CDN and P2P mechanism.
- Sport metadata adaptation in media workflows, metadata generation systems, and standards definitions.
- Research advanced HMI to access to personalized content. Augmented reality.
- Social media analytics and especially how it can serve to enrich media.
- Second screen applications.

Challenges

This lab focuses 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

David Salama
Head of Lab

Current Research Topics and Findings

- Multiplatform live media content distribution.
- Live and on demand AV sport content description.
- Support on Sport data standardization.
- Social media analytics and how it can enrich media content.

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
Olympic Video Player	White Label webcasting solution for 2014 Sochi Olympic Games	Commercial	In collaboration with Atos Major Events the Media team in ARI is providing the white label webcasting solution for the Olympic Broadcasting Services for the 2014 Sochi Olympic Games.	
Olympic Video Player II	Solution for the visualization of the Nanjing'14 Olympic Games		In collaboration with Atos Major Events, the Media team in ARI has provided to the IOC a solution for Realtime Stats, including QoS, Recommendation and Search capabilities for for the worldwide audiences of the 2014 Nanjing Olympic Games (except China).	www.nanjing2014.org/en

Software Engineering

Next generation of smart and assisted software engineering, modernization and maintenance of large and complex ICT systems

Description

Software Engineering plays a key role in Information and Communications Technology (ICT), as it enables the enactment of business and personal activities fulfilling the expectations of European citizens in different sectors, which require creating and consuming Internet resources. As ICT systems are getting larger and are growing in complexity, the development and maintenance of such software systems require more advanced and smart software engineering methods and techniques. Moreover, software engineering for complex systems encourages the support for distributed collaborative development, as well as the adoption of reusable and sharable Open Source Software libraries and components.

Goals

The Software Engineering Lab aims at making as simple, accessible and cost effective as possible all phases of the software engineering life-cycle; from software conceptualization, modeling and design to software development and testing. In particular, the Software Engineering Lab addresses the challenge to cope with the increasing complexity of software engineering of large systems and the evolutionary maintenance and modernization of existing software systems. This encompasses collaborative software platforms, enriched SDKs, middlewares, modernization of legacy systems, etc. An additional goal is to guarantee the preservation and re-usability of software components.

Main Activities

The lab performs technical activities related to the following research lines:

- Automation of Software Engineering life-cycle.
- Discovery, Understanding and Modernization of legacy systems.
- Modeling and prediction of complex systems.
- Software tools for collaborative working in Open Source communities and enterprises.
- Research on advanced intelligent interfaces.
- Advanced semi-assisted choreography and orchestration of autonomous systems..

Challenges

This lab addresses the following challenges:

- Simplification of complex Software Engineering life cycles.
- Automation of the discovery and understanding of complex legacy systems.
- Enabling the evolutionary maintenance and modernization of legacy systems.
- Estimating the complexity of software development.
- Predicting the behavior of evolutionary development for complex autonomous systems .
- Enabling complex interoperability among autonomous systems.
- Providing rich-featured and user-centric desktop-like Web interfaces for Software Engineering.
- Smart and efficient reusability of open source software into industrial environments.

Jesús Gorroñogoitia
Head of Lab

Current Research Topics and Findings

- Model driven reverse and forward engineering based modernization of legacy systems.
- Dynamic orchestration of systems: Semantically-Driven Automated Service Composition for Business Process Management.
- Tooling for improvement of open source development, especially the resolution and proper assignment of bugs in communities of Open Source developers.
- Enhanced Collaborative software development environments and real time collaboration tools.
- Intelligent virtual open-source marketplace.

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
FIWARE	Future Internet Ware	FI-PPP	FI-WARE is a 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
IoTest	Internet of Things Environment for Service Creation and Testing	FP7	IoT.est will establish and ease the creation and provision of IoT enabled business services by bringing together the three disciplines Internet of Things, Service Engineering and Testing	ict-iotest.eu/iotest
MARKOS	The MARKet for the open Source An Intelligent Virtual Open Source Marketplace	FP7, ICT	Prototype of an automatic service providing an integrated view on the Open Source projects available on the web, focusing on functional, structural and licenses aspects of the software code released by the projects.	markosproject.eu
XIFI	eXperimental Infrastructures for the Future Internet	FP7- FI-PPP	The XIFI project facilitates the uptake, deployment and federation of several instances of such a common platform to pave the way for a unified European marketplace that is crucial for enabling commercial exploitation of FI resources.	fi-xifi.eu

Key Projects

ACDC

Challenges

ACDC brings together partners from 14 European countries, including public administrations, private sector organizations and academia, in order to achieve a sustainable victory over a powerful cyber threat commonly known as botnet. The project integrates the matured knowledge of our consortium into an integrated strategy ranging from adoption to governance, supported by a full service offer for controlling cyber security problems, particularly botnets.

Web	www.botfree.eu
Program	CIP-PSP programme
Budget	7,769,000.00€
Funding	530,750.00€
Date	Feb 2013 to Jul 2015
Coordinator	ECO VERBAND DER DEUTSCHEN INTERNETWIRTSCHAFT EV (ECO)

Value Proposition

ACDC will set up an European Advanced Cyber Defence Centre to fight botnets. ACDC's approach is to:

- foster an extensive sharing of information across Member States to improve the early detection of botnets,
- provide a complete set of solutions accessible online for mitigating on-going attacks,
- use the pool of knowledge to create best practices that support organisations in raising their cyber-protection level,
- create a European wide network of cyber-defence centres.

Outcomes

ACDC will deploy a comprehensive set of national support centres throughout 8 Member States interconnected to the ACDC central clearing house. Through this networked approach, ACDC will also pave the way for a consolidated approach to protect organisations from cyber-threats and support mitigation of on-going attacks through easy access to an increasing pool of solutions.

Business Impact

The proposed pilot addresses the identification, measurement, and analysis of botnets as well as the prevention, detection, mitigation, recovery, and evaluation of their impact. ACDC presents an end-to-end approach from detection to protection, manifested as five powerful services, operated by our member states:

- Service #1, the centralized clearing house, is our single point of contact for data storage and analysis. While
- offering a liberal input interface, the distribution of gained knowledge is done in a precisely defined data format,
- which is openly shared.
- Service #2, the support center, delivers structured information for stakeholders and affected end users, likewise. Here, disinfection tools can be downloaded and affected users, including small and medium enterprises, are supported in dealing with their incidents.
- Service #3 focuses on the detection and mitigation of infected websites.
- Service #4 focuses on the detection of network anomalies, including possible cloud- or mobile-based botnets.Both services are operated in a decentralized and distributed manner in order to achieve a high degree of diversification. Obviously, all data acquired using Service #3 and #4 is sent to the centralized clearing house for further analysis.
- Service #5 aims on the integration of tools for identification and removal of malware (e.g., bots) from end user devices.

The proposed pilot will enable ACDC to not only identify and shut down command and control servers but to eliminate the actual weapons of a botnet – the bots..

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	
Budget	854,128.00€
Funding	616,815.00€
Date	Sep 2013
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:

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

COSMOS pilots: Real life scenarios that evaluate and showcase COSMOS technologies supporting sustainable smart city applications.

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.

BIG

Challenges

Building an industrial community around Big Data in Europe will be the priority of this project, together with setting up the necessary collaboration and dissemination infrastructure to link technology suppliers, integrators and leading user organizations.

Big Data Public Private Forum (BIG) will work towards the definition and implementation of a clear strategy that tackles the necessary efforts in terms of research and innovation, but it will also provide a major boost for technology adoption and supporting actions from the European Commission in the successful implementation of the Big Data economy.

As part of this strategy, outcomes of this project will be used as input for Horizon 2020 and will be sustained beyond the project duration. Foundational research technologies will be analyzed and assessed in BIG and technology and strategy roadmaps created, so that the business and operational communities understand the potential of these technologies and are enabled to implement appropriate strategies and technologies for commercial benefit.

To maximize the success of this initiative BIG has selected a balanced set of partners representing Academia and specially Industry.

Web	www.big-project.eu
Program	FP7
Budget	3,038,224.00€
Funding	2,499,998.00€
Date	Aug 2012 to Sep 2014
Coordinator	Atos Spain
Contact Name	Jose Maria Cavanillas de San Segundo
e-Mail	jose-maria.cavanillas@atos.net

Value Proposition

Big Data is an emerging field where innovative technology offers alternatives to resolve the inherent problems that appear when working with huge amounts of data, providing new ways to reuse and extract value from information.

Three main dimensions characterize Big Data: huge variety of data format, often time-sensitive and large. Big Data offers tremendous untapped potential value for many sectors but no specific intelligent-large-data-handling/ brokering industrial sector exists.

Furthermore, from an industrial adoption point of view, Europe is lagging behind US in Big Data technologies. A clear strategy to align supply and demand is needed as a way of increasing competitiveness of European industries.

Outcomes

BIG main goal is to address technical, business and policy aspects of Big Data with the aims of

i) shaping the future of the area

ii) positioning it in H2020

iii) bringing the necessary stakeholders into a self-sustainable industrially-led initiative to enhance EU competitiveness taking full advantage of Big Data

iCargo

Challenges

iCargo project aims at advancing and extending the use of ICT to support new logistics services that:

- synchronize vehicle movements and logistics operations across various modes and actors to lower CO2 emissions,
- adapt to changing conditions through dynamic planning methods involving intelligent cargo, vehicle and infrastructure systems and
- combine services, resources and information from different stakeholders, taking part in an open freight management ecosystem.

To achieve these targets, iCargo will design and implement a decentralized ICT infrastructure allowing real world objects, new planning services including CO2 calculation capabilities and existing systems to co-exist and efficiently co-operate at an affordable cost for logistics stakeholders.

Value Proposition

The iCargo infrastructure will include Intelligent Cargo items to facilitate reactive decision-making and to integrate information obtained from on-going execution (all modes) into planning processes to optimize environmental performances, including real-time information about traffic and transport infrastructure conditions.

iCargo will be an open decentralized market and ITC system without a central authority where stakeholders can easily discover services and exchange information. It will offer the following facilities:

- Demand publication – shippers will be able to communicate their demand and requirements.
- Services availability publication – carriers will be able to communicate their service descriptions and availability
- Door-to-door service planning – iCargo will be able to plan door-to-door logistics chains.
- Service execution and re-planning – iCargo will allow adaptive logistics chains where status is monitored and plans or synchronization adapted as necessary.
- Performance monitoring and reporting – iCargo will enable accurate and timely reporting of environmental indicators at a shipment and service level.

Web	i-cargo.eu
Program	FP7
Budget	16,923,953.00€
Funding	11,300,000.00€
Date	Nov 2012 to Oct 2015
Coordinator	Atos Spain
Contact Name	Servet Balcioglu
e-Mail	servet.balcioglu@atos.net

Outcomes

Expected ICT outcomes are:

Improved interpretation of data: Through the use of new semantic web technologies and standardization efforts (Common Framework) it should become easier to interpret data coming from business partners.

Better accessibility of data: Technical and organizational barriers for accessibility and connectivity should be reduced. iCargo aims to provide seamless connectivity, while maintaining secure and controlled access.

Improved organization of data: Through an entity centric approach and a reduction of complexity, the organization of data will be improved.

Business Impact

The iCargo results will present the following business opportunities for service providers:

- Easy discovery and management of logistics chains for clients
- Robust flexible supply chains
- Improved supply chain efficiency
- Reduced congestion and carbon footprint

The following business innovations are expected:

- Mechanisms to support collaborative planning including pooling and sharing resources. Ultimately, the customer decides which service will be used.
- Automatic possible logistic chains for a certain shipment, composed of the available transport services.
- New ways for the client to re-plan and change the logistic chain as goals and change.
- Logistic service providers well become more aware. This will allow them to optimize the use of transport resources.
- Gathering of data relevant to the environmental footprint from the logistic chain to be shared this with customers for reporting purposes.

KHRESMOI

Challenges

The KHRESMOI project faces the main challenge of creating a multi-lingual, multi-modal search and access system for biomedical information and documents that, in addtion, have the property of being qualified as trustable for the medical community.

Technological challenges are associated to the following research aspects:

- Foundational Research: effective extraction of information from text; automated 2D, 3D, 4D medical image analysis; linking structured information and unstructured text; support of multi-lingual search and adaptive user interfaces.
- Component Level research: results of foundational research will flow directly into new and existing components. Existing open source components for which consortium members are maintainers or contributors include: GATE, DAFFODIL, KIM, OWLIM, GIFT, MOSES.
- Integration: the components will be integrated into a robust, efficient and scalable test-bed for biomedical information search. At three milestones, integrated system prototypes are planned to be complete during the project, with an initial architecture to be ready by the end of the first year. Continuing foundational research incorporated into improved components will enhance the system.

Value Proposition

The systems will allow access to biomedical data:

- By combining multiple data sources and knowleged derived from various heterogeneous knowledge sources,
- analyzing and indexing multi-dimensional (2D, 3D, 4D) medical images,
- with improved search capabilities due to the integration of technologies to link the texts and images to facts in a knowledge base,
- in a multi-lingual environment,
- providing trustable results at a level of understandability adapted to the users.

Web	www.khresmoi.eu
Program	FP7
Budget	10,823,208.00€
Funding	8,035,729.00€
Date	Oct 2010 to Sep 2014
Coordinator	HES-SO
Contact Name	Blanca Jordán Rodríguez
e-Mail	blanca.jordan@atos.net

Outcomes

The KHRESMOI project offers the following set of results:

Components:

- Active learning algorithms, for an effective automated extraction of information from the text of biomedical documents (to extract relevant passages of documents tool).
- Scalable data base for storage of image data, collaborative annotation tool to afford annotation of large numbers of data within a feasible time frame, data anonymization workflow to delete patient data and automated analysis and indexing algorithms for radiological images in 2D, 3D and 4D.
- Backend results presentation, result understanding, support and translated result support tools, spelling correction tool, query reformulation and expansion tool and query translation support tool.
- Multilingual queries composer, summaries and excerpts generation from original retrieved documents, machine translation techniques applied over the excerpts and semi-automated maintenance and updating of the multi-lingual biomedical language resources.

System as a whole: KHRESMOI will be the first medical information search system that will make use of Haynes pyramid to adapt the information retrieved to improve user search experience, without requiring the user to make use of special "enhanced" search interfaces hidden behind links or buttons.

Business Impact

- Medical Impact: Improve the access to medical information for doctors, so that they have more time to talk to and to treat patients, having all the information required for doing so more effectively. Convert the flood of radiological image data into a boon instead of a curse.
- Scientific Impact: Address the lack of publicly available large-scale data sets and realistic task-based scenarios on which to assess new technologies. Make available cutting edge techniques implemented in open source software.
- Industrial Impact: Improve existing open source products' stability, features and performance, and hence their attractiveness and suitability for wider deployment.
- Public Impact: Members of the public will be using the Health on the Net search engine, improved by the KHRESMOI technology, relatively early in the project.

STORK 2.0

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), Antonio Paradell (antonio.paradell@atos.net), Alberto Crespo (alberto.crespo@atos.net)

Challenges

Secure means of identification and authentication is key to many electronic services in eGovernment. Several European countries have set up their national electronic identity (eID) infrastructures to support strong authentication to such services. These initiatives however have often emerged as national silos; cooperation for using eID across borders has not been on the agenda in most cases, creating interoperability issues.

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.

The STORK Pilot A has been focusing on eID's for citizens. However it has become clear that eID for legal entities demands supplementary attention. Where citizen's eID relate to the electronic identity of individual persons, eID for legal entities relates to legal representatives. Mandating from the organization to certain individuals is an essential element they received from their organization as a legal entity.

STORK 2.0 will contribute 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..

Value Proposition

STORK 2.0 project, coordinated by Atos Spain, will extend the functionalities to cover secure authentication of physical persons with powers or mandated to represent legal persons, with the aim to address a better convergence of public and private sector.

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 STORK 2.0 Consortium composed by 58 partners (19 Member States and Associated Countries), straightforwardly addresses those obstacles, which hinder further development and better use of ICT based products and services and which are barriers for the development of high growth businesses.

In summary, 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..

Outcomes

The expected 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, cross sector infrastructure developed:
  - eLearning & Academic Qualifications: cross-border academic services based on the exchange of identity attributes, e.g. secure provision of academic qualifications attributes to public and private employment stakeholders.
  - eBanking: EU citizens and business able to open and access bank accounts across borders.
  - Public Services for Businesses: legal entities able to use online public services for business in other countries, via the representation by their legal representatives or delegated persons/ entities.
  - Health: eID used in the health sector for authentication of patients and health care providers..

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..

TROPIC

Challenges

The number of smart mobile devices connecting to the Internet is exponentially growing. It is clear that the combination of mobile networks and cloud computing in the so-called "mobile clouds" is increasingly important to the Future Internet. The TROPIC project aims at exploiting the convergence of small cells LTE network infrastructure and cloud computing paradigms for distribution and provision of applications and services.

With the advent of more and more sophisticated applications for mobile users, high rate-demanding services and new habits of subscribers, wireless communications system designers are confronted to new challenges: providing ubiquitous availability, improving energy efficiency, enhancing system capacity and guaranteeing security. As some of these aspects cannot be simultaneously optimized in conventional systems, deployments based on Femto Access Points (FAPs), or small cells in LTE, are expected to play a significant role in future wireless communications.

As a parallel track, cloud computing is becoming more and more important as a flexible, robust, highly-scalable and cost-effective tool to design, implement and deploy applications, allowing low-complexity terminals to have access to much larger resources than those available on typical user equipment.

While small cell networking and cloud computing are typically seen as two distinct fields, the main goal of TROPIC is to bring them within a common framework in order to provide an innovative tool able to provide considerable advantages compared to the current scenario.

Web	www.ict-tropic.eu
Program	FP7
Budget	4,580,000.00€
Funding	3,390,000.00€
Date	Sep 2012 to Feb 2015
Coordinator	Universitat Politècnica de Catalunya (UPC)
Contact Name	Josep Martrat
e-Mail	josep.martrat@atos.net

Value Proposition

The new paradigm envisioned in TROPIC looks at the computation/communication/storage problem implicit in the development of many current applications for mobile terminals as a joint problem and, given the hardware and resource (e.g. battery) constraints, searches for the most effective solution in terms of computational capabilities and radio resource allocation.

The main objective is to offer an integrated framework combining both worlds and showing how to distribute the computation/communication capabilities between mobile handsets and the cloud efficiently (off-loading scenario in mobile clouds), in order to deliver services with provable QoS, in terms of latency, service continuity, etc.

Outcomes

TROPIC will produce a new component for LTE networks that will allow managing small cells as computing nodes optmising the operation from both radio and cloud points of view. This project will place Atos in a priviledged position for developing future applications to be run over these small cell clouds and to provide inputs to the future 5G architecture, as the TROPIC project takes part of the Radio Access Spectrum cluster of European projects that will influence the definition of future communication networks architecture.

Business Impact

The combination of the new paradigms employed in the project constitutes a realistic and technologically viable set of solutions that enable the achievement of the new small cell clouds paradigm. TROPIC will thus benefit to the at-home/office customers that can run applications above the capabilities of their devices and will have access to higher bit rate services, dedicated advanced small cell cloud applications and possible cheaper tariffs policies. At the same time, as the small cells cloud brings the cloud nodes closer to the end-user, the data flows routed through the ADSL backbone by the HeNBs will proportionally relieve outdoor macrocells of a substantial traffic load, lowering the congestion peaks and insuring better connectivity and QoS ad QoE for the other subscribers.

The benefits for the operators are even more significant, as the implementation of small cell clouds will translate in a direct financial benefit for the providers including a reduction in the costs of provisioning and being able to manage specific high consumer density situations; in addition the possibility of offering new dedicated small cell cloud-based services for the home/office will increase the market segment and attract new customers.

The TROPIC project targets to new concepts and techniques beyond the conventional cellular paradigm, and as such, it will benefit EU research community with respect to broader scientific knowledge to achieve higher spectrum efficiency, and enable new services, with better resource utilization and lower battery consumption. It represents an opportunity for researchers to cooperatively work on cutting-edge technologies beyond state-of-the-art and will contribute to the definition of 5G.

ARTIST

Challenges

The constant improvements to the speed, geographical coverage and reliability of Internet connections have increased the appeal of Cloud-based solutions. Traditional software solutions and service providers must adapt to the new reality of the Cloud, without disrupting the business continuity of their existing customers.

Given this need to support the evolution of the software and migrate it to the new service provision environment, companies must make a decision about whether to migrate their solutions, in which significant investments have been made, or to start from scratch, accepting the difficulty involved in calculating the cost of both options. Moreover, they must do so in a market where the Time to Market for products and services is critical.

The Advanced software-based seRvice provisioning and migraTIon of legacy Software, "ARTIST" project, proposes a software modernization approach using Model Driven Engineering techniques to assist the migration of non-cloud compliant applications to the cloud, allowing a cheaper and rapider alternative to redeveloping applications by hand. It reduces the risk, time and cost of migrating this software and lowers the barriers for service companies wanting to take advantage of the latest Cloud Computing and SaaS based technologies and business models.

Value Proposition

ARTIST offers a set of methods and tools which provide an end-to-end and assisted migration service of non-cloud complaint applications to allowing the deployment in the cloud.

Unlike existing solutions that allow partially the migration process, but raise barriers when it comes to cost and complexity, ARTIST proposes a migration approach based on Model Driven Engineering techniques, covering the pre-analysis of migration feasibility and the post-certification of migrated solution. Subsequently, ARTIST forms a business investment and leads to lower costs and uncertainty, improved performance, greater customer satisfaction, more innovation and greater competitiveness.

Web	www.artist-project.eu
Program	FP7
Budget	1,446,744.00€
Funding	984,090.00€
Date	Oct 2013 to Sep 2015
Coordinator	Atos Spain
Contact Name	Clara M Pezuela
e-Mail	clara.pezuela@atos.net

Outcomes

The main result of the project is a tool-supported methodology to assist software companies in the migration of their applications to the cloud. This methodology is customized to the specific migration project and consists of three main phases: feasibility analysis, migration and verification.

In the feasibility analysis phase, ARTIST provides several tools that analyze the technical and business viability of the migration, helping in the decision of whether the migration is worthwhile or not.

Then, in the migration phase, through reverse engineering, we gather the knowledge and understanding of the application. Through forward engineering, we refactor and optimize the existing application and adjust the business model so it can be delivered on the cloud. Furthermore, we help users in selecting the best cloud provider for their needs.

Finally, during the verification phase, we validate the behavioral equivalence of the migrated application and the fulfillment of the optimization requirement. Besides, we certify that it is cloud-compliant.

Business Impact

Software modernization has existed for over two decades. In the case of large IT suppliers, it is usually seen as part of an application portfolio management offering. Such an offering seeks to rationalize, converge and harmonize the client's entire application portfolio, using various strategies including replacement with commercial-off-the-shelf software, rehosting, retirement, reengineering and modernization. In addition to the large IT suppliers, many SMEs operate, specializing in specific migrations, either subcontracted by a larger IT consultant or by the client themselves.

However, such market analysts are predicting a significant shift in the type of modernization being performed, and a move away from old programming languages modernization based on cost, to modernization of 4th generation language programs in order to reap the benefits of cloud computing, big data, mobility and social networking (what Gartner refers to as the technology nexus). Most prominent among these new-era modernization are the modernization to SaaS in the ISV market.

ARTIST is well-poised, ahead of the curve in this respect, as it includes business model transformation and cloud optimization at its core. It is driven by an understanding of the business dynamic, weighing up potential benefits with migration costs, running costs and risk.

The tools ARTIST provides set out, therefore, to:

- Reduce the risk of such an important decision, as companies are able to decide in a very early stage whether the migration to the cloud is the most suitable solution for that product, before the actual migration takes place.
- Reduce the effort and cost of a migration thanks to a (semi-)automatic approach.
- Reduce the deployment time and preparing the company to the provisioning phase, especially at organizational level, since the processes have been redefined while the migration was taking place.
- Foster the uptake of cloud – based applications by the European society with the creation of a certification model.

FITMAN

Value Proposition

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

FITMAN Trials (4 conducted by Large Enterprises, 6 by SMEs) will test and assess the suitability, openness and flexibility of FI-WARE 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.

Outcomes

TFITMAN REFERENCE PLATFORMS

FITMAN SMART FACTORY PLATFORM

The FITMAN Smart Factory platform is the composition of a set of FIWARE Generic Enablers (GEs) and Specific Enablers (SEs) which is concretized 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.

Web	http://www.fitman-fi.eu/
Program	
Budget	18,034,000.00€
Funding	
Date	Jan 2015
Coordinator	TXT
Contact Name	Silvia Castellvi
e-Mail	silvia.castellvi@atos.net

FITMAN DIGITAL FACTORY PLATFORM

The Digital Factory Reference Platform is composed by a set of Generic Enablers (GEs) and Specific Enablers (SEs) 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 (blue collar workers, engineers, production engineers, white collar workers) 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.

FITMAN VIRTUAL FACTORY PLATFORM

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

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 regards: tangible and intangible assets management and collaborative business process execution..

FITMAN Catalogue available at http://catalogue.fitman.atosresearch.eu

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) is a two year Coordination and Support Action which started on October 2013. 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	1,099,933.00€
Date	Oct 2013 to Oct 2015
Coordinator	Trialog
Contact Name	Alberto Crespo
e-Mail	alberto.crespo@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.

RADICAL

RAdical
RApid Deployment for Intelligent Cities And Living

Web	
Program	
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

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

RADICAL eases the fast creation of interoperable and socially-aware services, by leveraging Internet of Things and Social Networking technologies, emerging from the results of four R&D EU-funded projects: SmartSantander, BonFIRE, SocloS, and +Spaces.

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 belong to the areas of Cycling Safety, Green Products Management, Data Journalism, Participatory Urbanism, Augmented Reality and Eco-consciousness. These services are supported by five technical SMEs and accordingly replicated across five smart cities and one smart region. Over 2400 citizens will be actively involved in the co-creation, validation and evaluation of the RADICAL approach, on the basis of the Living Lab methodology, which will engage users of the entire stakeholder chain.

Outcomes

The RADICAL solutions and services include two main pillars, namely the RADICAL platform and the RADICAL (smart city) services.

RADICAL Platform

Overall, the main characteristics of the RADICAL platform are the following:

- based on mature background results of EU co-funded R&D projects, +SPACES, SocloS, SmartSantander.
- provides (through an application development environment) easy ways to assembly, 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, thereby supporting flexible service adaptation in different operational environments.

RADICAL Services

In order to validate and evaluate its platform, RADICAL will integrate and pilot, a wide range of high-impact added-value smart city services that leverage social networks and IoT. The RADICAL services will be piloted for more than 18 months in realistic settings and environments and across six smart cities and one region in different countries, namely the cities of Santander (Spain), Issy-les-Moulineaux (France), Athens (Greece), Genoa (Italy) and Arhus (Denmark) and the region of Cantabria (Spain). Following proper sustainability analysis, each one of the services will be deployed across more than one of cities and regions of the consortium, to demonstrate and evaluate the interoperability and replicability potential of the RADICAL approach.

Within each one of the cities the project will establish a more than a living labs approach, which will emphasize the participation of representative samples of the population in the use and evaluation of the services.

Overall, the RADICAL solutions will be co-created and validated with real users (according to a Living Lab approach in each city and region). Those users represent the stakeholder value chain and they will provide cyclic feedback to the consortium, enabling iterative improvements to the scenarios and services..

Business Impact

The RADICAL platform (including its replication and governance capabilities), 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. Overall, SMEs will benefit from RADICAL, since they will be able to satisfy demands of their existing customers (cities), while at the same time being in a position to replicate and diffuse their innovation across multiple urban environments.

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. At the same time, they will be offered a disciplined approach to the governance of the services in terms of legal, socio-economic and techno-economic aspects.

Finally, the RADICAL-based economic growth and development of the cities will also provide a range of business opportunities for businesses that operate in the city. Indeed, these businesses are seeking new development projects/opportunities and revenue streams. RADICAL will provide such opportunities, enabling them to leverage business opportunities stemming from the proliferating social networks and IoT infrastructures/services. The generation of such opportunities is another

SAGA

Web	kic-innoenergy.com
Program	
Budget	9,785,207.00€
Funding	1,915,809.00€
Date	Apr 2014
Coordinator	Atos Spain
Contact Name	Andrea Rossi
e-Mail	andrea.rossi@atos.net

Challenges

For addressing the challenges of improved security & privacy in the Smart Grid domain, and specifically in the deployment of smart meters, the SAGA project will deliver a set of software tools & services continuously improving the security and privacy issues in the smart meter device market. This set of tools & services (from now on the so called SAGA toolbox) will provide the ability of detecting in real-time malicious or unintentional abnormal behaviors of smart meters and to react appropriately, based on the context information available, to mitigate security threats. It also allows advanced, load-depending billing ("dynamic time of use") without violating the consumer's privacy.

Value Proposition

The SAGA toolbox will address the need of increased security & privacy needs in the deployment of smart meters that will be mandatory in the EU28 area by 2020. These needs for increased security & final customer's privacy will be of interest mostly for electric Distribution System Operators (DSOs) and Smart Meter manufacturer companies. Users tampering data on a large scale, disclosure of private metering information to third parties, or malicious attacks disturbing the communication of metering data could have in fact dramatic consequences for these two types of companies. DSOs could have their image and credibility dramatically compromised in the light of security threats and attack to their client base and the smart meter manufacturers could suffer from economic damages and losses of clients and revenues. The SAGA project will develop solutions to prevent such scenarios and that will satisfy both Smart Meters Manufacturers and European DSO and Energy Companies.

The primary customers of the SAGA toolbox will be anyway the Smart Meters Manufacturers but European DSO and Energy Companies will be the adopters of the meters and customers of the Smart Meters Manufacturers. Therefore they will be able to heavily influence the purchase of new technologies to be embedded in the Smart Meters. The need of increased security covers as well a potential threat that is perceived by both smart meter manufacturers and DSO and energy companies: that is to say the economic and social losses due to a potential cyber-attack to the energy grid.

Outcomes

SAGA offers a "Security & Privacy-as-a-service" toolbox, based on a platform integrating new secure and privacy features from the different technical components.

- The platform will have APIs available to allow service developers to use the security and privacy features and hiding the underlying complexity.
- For both the security and privacy features the local gateway (HEMS) will interface with the smart meter via the local communication port (e.g. P1).
- The smart meter will serve as the security token for the services on the service platform. Services will thus be secured with an extra user related token, which is also known at the back-end service platform and the DSO. Just like within the telecommunication also authentication and authorization of the HEMS/platform/service will take place to strongly reduce the probability of man in the middle type of attacks.
- Data will be encrypted with known (secure) encryption techniques but with more secure token-management and two-sided authentication and authorization.
- Basic user privacy will be maintained via obfuscation of his data in the cloud and only allowing usage towards the customer himself and/or services which are approved by the customer
- Special security features for e.g. time of use billing will be available by means of algorithms run in the smart meter. They can be configured via a User Interface of the service platform and provide only the result over a configured period of time of the final cost and will not pass on the granular consumption data. This is particularly interesting for customer wanting to save money via time of use contracts, but not willing to give the data to the DSO for detailed calculation of the bill.

Business Impact

Security & Privacy are end-to-end matters and the smart meter is a vital part in the chain. Any solution will have an effect on the meter data platform, so the market is really either the meter manufactures and / or the companies involved in the design of the data communication module and software components that fits into the smart meter. DSOs and Energy companies are then crucial in the purchase decision as final clients of the meter manufacturers. The SAGA toolbox offers a solution and different services for both targeting directly utilities companies and smart meter manufacturers.

SAGA plans to gain access to the market segments identified through its commercial partners (ATOS, XEMEX and ENERVALIS) depending on the customer targeted and the segment targeted in each commercial action and the sale of different product or service out of the SAGA modular toolbox. The focus will then be in Belgium, Holland and UK as primary regional market where the conditions for the purchase of innovative smart meter security & privacy software are more favorable or by proximity and easy access to for the SAGA consortium. The SAGA toolbox will differentiate itself for being the only solution offering continuous security updates and non-intrusive privacy technology for the smart meters. It will be a flexible solution customizable for different smart grid architecture set-ups, avoiding vendor lock-in situation for DSOs and Energy Companies towards smart meter vendors. On the other hand, it would allow smart meter manufacturer to be always on the forefront of the cyber-security and adding privacy features not included in the smart meter deployed so far and be more appealing towards DSOs and Energy Companies

SeaClouds

Web	seaclouds-project.eu
Program	FP7
Budget	786,648.00€
Funding	509,800.00€
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 (such as OASIS CAMP and TOSCA) in order 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. This include challenges in the following fields:

- Orchestration, verification and adaptation for the cloud
- Monitoring of services on multiple clouds
- Unified application management of services distributed over different cloud providers
- Standards for cloud interoperability.

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 (IDE, a range of Standardized Metrics and an Automated Auditing & Execution Engine) 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 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 reconfiguration process capable of preserving the soundness of the orchestration, by performing life-cycle management actions when required, by means of a unified management API, which will be a reference for major international efforts of standardization such as CAMP and TOSCA.
- 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 into SeaClouds, SeaClouds covers all future CAMP-compliant providers or tools, allowing application developers to manage applications hosted on multiple Clouds environments. Application packaging will be implemented 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

Assets

yourGEO

Description

Geospatial technologies include a range of modern tools, from Earth Observation (EO) and satellite images, to geographic information systems (GIS) and Global Positioning Systems (GPS) that allow the mapping and analysis of multiple layers of geo-referenced data. The Research and Innovation group of Atos has a proven record of building innovative solutions based on Open Geospatial Technologies.

Business Challenge

Many organizations face today a so-called "interoperability issue": a substantial portion of their IT expenditure is spent to support the maintenance of legacy systems, the vast majority of which were not designed to work together.

When it comes to Public Sector and, more specifically, to the need to consolidate information from disparate systems that support citizen protection, disaster management, criminal justice or other critical missions, this "interoperability issue" becomes even more than just an expenditure figure: geospatial service interoperability can save lives! Unfortunately, exchange of relevant information in these cooperative missions and applications is often limited to a raw data exchange level.

Solution

Interoperability and open standards are key features of Atos yourGEO solution that targets true efficiency, but also the flexibility in geospatial service composition. It is based on the service taxonomy of the Open GIS Architecture (ISO/DIS 19119) and provides

- Human interaction services (e.g. catalogue or map viewers)
- Model/information management services (e.g. feature, sensor information and map access services, catalogue services)
- Workflow/task services (e.g. service chaining support)
- Processing services (e.g. coordinate conversion, route determination and statistical calculation services)
- Communication services (e.g. data format encoding services)
- System management services (e.g. authorization and authentication support services)

These services can be composed and orchestrated in a flexible way so that yourGEO can be configured and adapted to any domain or application that relies on spatial data.

Benefits

yourGEO is a collection of services, tools and methodologies that can be used to develop specific applications including chains or compositions of cooperating services. Therefore, to invest in yourGEO means less need for reinvention of the wheel and saving money through redeployment of its interoperable geospatial services.

yourGEO facilitates the use of geospatial technologies. It provides an open and easy access to geographical information that can be used in a variety of applications and domains.

This asset is developed by a team led by Miguel Ángel Esbrí Palomares

yourMEDIA

Description

In the age of Web 2.0 and the convergence of IT services, telecommunications and entertainment towards the web, the lines drawn between each of these fields has become practically invisible. This opens many new opportunities for all stakeholders in the media value chain.

Business Challenge

A particular area of interest is the area of live sporting events. As the World Technological Partner for the Olympic Games, Atos has been in a unique position to transform viewers from passive receptors to creators of their own viewing experience.

Central to yourMEDIA is the Quality of Experience (QoE) of media consumption over the Internet. yourMEDIA provides efficient distribution methods, based on understanding the capabilities and limitations of the physical layers, the service and content providers, as well as viewers´ context and feedback.

Solution

yourMEDIA solution integrates state-of-the-art software and services for multimedia content analysis, distribution and management, media search and retrieval, semantic annotation of multimedia objects, WebTV, interactive television, as well as support modules for user generated media content.

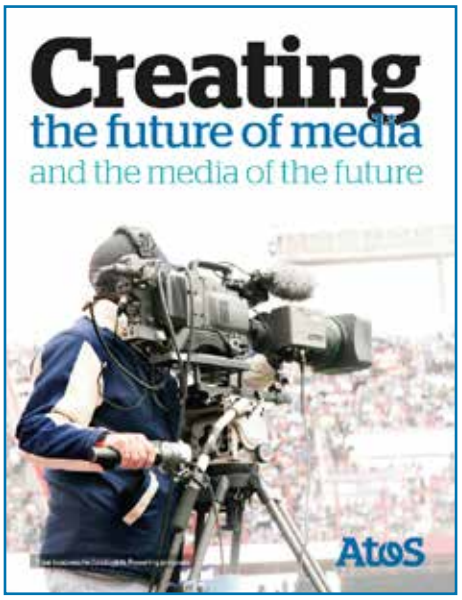
It uses open and widely accepted standards, such as the SportML (Sports Markup Language) for the description of content which is being extended for enhanced automatic content annotation, as well as improvements in terms of performance and accuracy.

Benefits

The main advantages underlying yourMEDIA solution are:

- Taking advantage of the richness of new content: Automatic 3D model creation and camera calibration allow annotation systems to have a better understanding of the scene and therefore to be able to generate rich metadata.
- Exploiting the new distribution channels: Benefiting from social networking related information.
- Enhanced interactivity: User Generated content providing information about their context (e.g. location) or comments (e.g. recommendations).

This asset is developed by a team led by David Salama Osborne



yourSAM

Description

User-centric identity management technologies are crucial to ensure that systems and services (traditional and cloud-based) are accessed by users in a secure and private way. In most web-based transactions, service providers and end-users need to establish a trustworthy relation guaranteeing integrity, quality and provenance of data. Thus, "circles of trust" are created using electronic identity information, allowing as well strong authentication of the involved parties.

Business Challenge

Identity and Access Management (IAM) solutions help you to manage users, policies (governing roles) or attributes in a simple, consistent and effective manner. Placing IAM in the Cloud gives even greater benefits, such as cost efficiency and interoperability.

Business models and relationships are evolving towards increasing cross-border exchanges (between governments, private organisation, citizens, universities...), along with growing trends to offer composable electronic services based on Cloud technology, to which trust anchors are also being moved. This challenge also represents big opportunities for all kinds of organisations when identity and access management are offered and managed "as a service".

Interoperability of personal information and identity together with fine-grained policy management is a frequent problem in cross-federation service access control. Effective exchange of authentication information or attributes when transmitted from one federation to another often requires adequate translation procedures e.g. to ensure proper format handling.

Within the context of identity federations and service requests across different "circles of trust", discovering one or more authentication or attribute providers is not an easy task because components of one "circle of trust" should not know which components exist in a different "circle of trust".

Another frequent problem in cross-federation service access control is interoperability. If authentication information or attributes are transmitted from one federation to another, an important translation process has to be considered. For instance, the federations that are exchanging the information may use different attributes for the same purpose. In such a case, a translation from one attribute to another has to be carried out, but the value of that attribute may remain unchanged.

Solution

yourSAM open-standards based, federated and scalable architecture is the answer to several requirements identified in a growing number of service transactions that span different "circles of trust", e.g. service providers, domains or federations.

yourSAM is the first solution that integrates STORK and SEMIRAMIS specifications and approaches for cross-country electronic ID interoperability. Our extensive experience in access control area, as well as in cloud based solutions, enables us to provide a unique offering that combines security, cost efficiency and performance.

The implemented architecture and highly customisable functionalities are related to authentication, authorization policies and auditing between components (AAA), privacy-related issues, duties separation, user consent to release personal information, collaboration and trust management between identity federations, origin discovery service and policy management.

Administration of attributes is done by means of a "trust circle" administrator that connects to yourSAM components, such as IA and FP. Policies and rules are defined at different levels so that both administrator and end-user can define what attributes can be obtained within their "trust circle". yourSAM provides attribute name translation services for many widely used attribute formats, such as those from governmental sector federations, university federations or telecommunication sector domains.

While policies defined by the user govern the release of personal information, overall Policy Management functionality deals with the definition, storage, and, eventually, disposal of access control policies defining which (authenticated) components/entities/parties are entitled to access services and information.

Pseudonyms establishment is done between the Authentication Provider and yourSAM Identity Aggregator (IA) and Federation Proxy (FP) components. In this mode, the user/citizen selects the Authentication Provider responsible to authenticate him/her for a specific service. It also includes the selection of the Attribute Providers.

This asset is developed by a team led by Alberto Crespo García

Once authenticated, yourSAM's focus is on managing the access control to information about users, e.g. employees, citizens or students, when such information is requested from third parties. The attribute management includes collection and aggregation of distributed attributes, consent management, as well as authorization decision that takes into account the information obtained from the authentication process done previously.

A privacy-respecting audit function gives assurance to end-users by providing full traceability and usage information to allow reconstruction of whole transaction chains when needed. yourSAM includes embedded mechanisms for end-to-end security..

Benefits

With yourSAM, users will be able to define different attribute release policies for particular service providers at different hierarchy levels allowing the components at the boundaries of the circles of trust to allow or deny attribute release beyond them, providing as well translation services for many widely used attribute formats.

yourSAM works with several methods that can be used for authentication, depending on the existing infrastructure, desired quality of authentication assurance (QAA in European countries using STORK or LoA in USA), business model or trust relationships (e.g. moving trust "anchor" to the cloud).

yourSAM complements Identity and Access Management solutions with fine-grained authorisation policies enabling attribute transfer across different "trust circles", whether this circle is a department, an organisation, a country or a

yourCYSEC

Description

yourCYSEC solution provides scalable data acquisition and collection of huge amounts of security events from diverse and geographically-spread nodes. In addition, it performs a distributed and near real-time aggregation, dissemination and processing of events, which leads to a reaction ranging from alert generation and incident notification to more automated actions.

Business Challenge

Cybersecurity infrastructure and general-purpose ICT infrastructures alike are becoming an attack targets to facilitate attacks on other types of services. Neutralization of such cybersecurity measures or the introduction of false or erroneous information into ICT control systems can be part of attackers' strategy.

The majority of current commercial products in cybersecurity have serious limitations when it comes to implementing them at a large scale. Current products focus principally on analyzing events from a single organization and mainly at network layer, without correlation with events/information from higher layers. They are supervision-oriented and have limitations in managing heterogeneity.

Furthermore, they have no embedded elasticity for data storage or correlation processing, no automatic reactions to identified attacks, etc.

Solution

One of the main values of yourCYSEC is the clear decoupling between the monitored target and the CIEM (Cybersecurity Information and Event Management) monitoring system. It enables rapid adaptation to varying target/CIEM system combinations and deployment across layers and organizations.

Resilient operation against faults and attacks of incremental severity is achieved by its architecture, with a resilient event bus in the heart of communication.

Benefits

Scalability, versatility and resilience, as well as a combination of characteristics, such as security by design, timeliness and multi-tenancy make yourCYSEC a unique solution that can be deployed on top of exiting security solutions.

This asset is developed by a team led by Rodrigo Díaz Rodríguez

yourCIM

Description

yourCIM is a modular cloud infrastructure manager comprising open source components with standard-based interfaces. The solution provides a cost effective alternative to expensive proprietary systems. yourCIM is enhanced with innovative features and is as simple and efficient to use as well-established commercial products.

Business Challenge

Infrastructure-as-a-Service (IaaS) provides customers with computer resources on-demand through the Internet and on a pay-as-you-go basis. Under the hood, this simple concept is composed of numerous components and services which must be orchestrated and managed in a simple and secure way: hypervisors, pricing and billing, virtual machine management and data management are all components of an IaaS solution. Replacing parts of this solution with free and open-source components is a guaranteed way to reduce licensing costs and avoid vendor lock-in.

As we go further up the cloud stack to platform-as-a-service (PaaS) and software-as-a-service (SaaS) we find a greater variety of possible functionalities. YourCIM incorporates elements at the PaaS level to assist management of different services running in different PaaS and on different IaaS, asd which help application developers identify the right PaaS provider for them. YourCIM has modules which avoid vendor-lockin for application developers.

Solution

yourCIM is a modular solution designed to provide a cost-effective and innovative management of private Cloud infrastructures and platforms. It has been developed and extended through multiple research activities, with a strong focus on Quality of Service (QoS) and Service Level Agreement (SLA) monitoring.

Furthermore, it includes a number of innovative features, such as license and automated applications elasticity. Various projects have tested the solution under different conditions and with a heterogeneous mix of resources at various levels of the cloud stack.

Benefits

The advantages of yourCIM are the followings:

- Open Source. Pay no license fees and be able to modify the source code to your requirements, whilst benefiting from future releases and community produced developments at zero cost.
- Pick and choose modules. To customize your IaaS infrastructure balancing features from yourCIM with those available from other vendors – tailored to your budget and your requirements.
- Advanced features. From the cutting edge of European research: for example elastic on-demand licensing modules and features for future cloud scenarios including hybrid cloud.
- Focus on QoS and SLA monitoring. yourCIM is designed for your peace of mind.
- Avoidance vendor lock-in. By using standards-based and open components, yourCIM frees you from long term licensing commitments.

This asset is developed by a team led by Ana María Juan Ferrer

yourBPM

Description

Enterprises everywhere are moving towards a Service Oriented Architecture (SOA). However, many companies realize the need to make improvements by involving business units in matching SOA to their business processes. Business Process Modeling (BPM) allows representing processes and is used to provide understanding of business processes.

Business Challenge

Many organizations today use web-based tools to search, model, annotate, modify, share, analyze, and execute administrative procedures in the form of business processes. However, these actions are usually executed by IT experts who must continuously interact with business end-users in order to properly address requirements. This means high costs and low flexibility, since it is often impossible to quickly address new challenges and requirements, such as compliance.

SOA and BPM platforms are usually designed for software developers and business process experts. Usually, end-users, who are real experts in their domain, lack the necessary background in enterprise software.

Solution

To help those experts, yourBPM offers an "abstraction" layer, thus closing the gap between the existing heavyweight enterprise services and the end-user designed composite processes. The solution provides an intuitive environment for lightweight service composition and consumption.

yourBPM uses the latest standards and is based on principles of openness and decoupling of modeling from execution. Customers who want to avoid vendor lock-in and to address scalability issues should choose yourBPM.

Benefits

yourBPM suite that brings various advantages, matching SOA and BPM in different domains, such as the public sector, telecommunications or financial domains. By enabling end-users, such as civil servants, administrative staff, financial controllers, etc. to directly model and compose services, yourBPM is bringing efficiency and effectiveness gain, as well as other strategic advantages.

The modularity of SOA allows customers to buy only those services that they really need (instead of complete products), reducing the total cost of ownership (TCO) of their IT infrastructure. End-users can handle themselves simple process development tasks, thus avoiding need of a 'more expensive' IT development project.

This asset is developed by a team led by Jesús Gorroñogoitia Cruz

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 advance data collection and information integration technologies to gather and harmonise 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, rumours, 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.

Capture offers a solution open, innovative and adaptable to the needs of costumers and organizations to gather and extract facts and intelligence from Social Networks.

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, visualisation, 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, rumour 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.

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

yourEHRM

Description

Moving Electronic Health Records to the Cloud has several advantages, from accessibility to timeliness, based on the assumption that citizens are able to update their health record with information regarding their current state, diseases or habits.

Business Challenge

Enhancing efficiency and friendliness in healthcare has been governments' objective for many years. However, migrating health records to electronic format is not sufficient.

yourEHRM offers a platform for enabling new generation of service-provider to patient relationships, where patients are actively involved in the control of their own healthcare.

It enables them to change from a re-active to a pro-active attitude. Availability and accessibility of information from anywhere at any time, as well as the improved management of health records, are great benefits for the whole society.

The existing EHRM solutions often have interoperability problems, since the different system components do not have a common nomenclature, data types, message syntax and encoding rules.

Solution

yourEHRM uses standards that enable medical information exchange. The solution is designed and developed with personalisation of healthcare systems in mind, in which sensors and battery powered devices are easily integrated in order to produce the latest updates.

It also integrates the data from the heterogeneous and fragmented healthcare information systems and devices based on information models, which conform to common EHR standards.

yourEHRM solution is also able to manage core patient-specific data, data from hospital electronic management records (EMR), data from wearable mobile Body Area Network (BAN) sensors, etc.

This includes importing/exporting required hospital data, once a day, into a well-defined data model and abstraction integrator, receiving and processing bio-signals from the BAN system continuously, normalised to a common medical waveform format, etc. It also includes a visual interface that can be used by patients, to manage their data in the PHR.:

Benefits

yourEHRM is a solution that reduces the risk of duplication of patient examinations, as it incorporates case history into the diagnosis, and allows to balance the assessment of patient's overall conditions. It is based on open standards and contains a number of connectors to additional tools or functionalities from decision support tools to telemedicine sensor kit components..

This asset is developed by a team led by Carlos Cavero Barca

yourRDI 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 programs support organizations in carrying out innovative projects.

However, not all organizations have the expertise or the abilities to manage this support properly. Furthermore, to remain competitive, businesses need to internationalize 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 programs, 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 skillful 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 R&D&I (e.g. research institutes, universities, companies, etc.), which is an added value in view of the creation of partnerships, alliances and internationalization. Benefits can be summarized as follows:

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

This asset is developed by a team led by Lydia Montandon

AEON

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

Publications, Events & Awards

Publications

Research & Innovation 2014

PUBLICATION	AUTHOR/S	DETAILS
Towards more factual, evidence-based, transparent and accountable policy evaluation and analysis: The Policy Compass approach, Contributions to Section 7 Business Benefits	Mercedes Arjona et al	http://www.echallenges.org/e2014/default.asp?page=paper-repositoryChallenges e-2014 provides an international forum to foster ICT related entrepreneurship and innovation, share experiences, increase awareness of innovative applied ICT applications and research results, and identify opportunities for Horizon 2020,
Energy Efficiency Embedded Service Lifecycle: Towards and Energy Efficient Cloud Computing Architecture	Garcia, David, Juan Ferrer, Ana, et al.	Joint Workshop Proceedings of the 2nd International Conference on ICT for Sustainability 2014 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...
Exploiting Local Clouds in the Internet of Everything Environment	Nieto, Francisco Javier, Garcia, Sergio	The Internet of Everything is opening new opportunities and challenges which will be faced during the following years. Huge amounts of data will be generated and consumed, so Internet of Things frameworks will need to provide new capabilities related to...
SeaClouds: a European project on seamless management of multi-cloud applications	F. D'Andria, et al.	Software Engineering Notes of the ACM Special Interest Group on Software Engineering (SIGSOFT SEN), 39(1):1-4, January 2014 The adaptive management of complex applications deployed across multiple heterogeneous PaaS platforms is one of the problems that have emerged with the cloud revolution...
Principles of Pervasive Cloud Monitoring	Gokce Gorbil, David Garcia Perez, Eduardo Huedo Cuesta	SpringerLink Accurate and fine-grained monitoring of dynamic and heterogeneous cloud resources is essential to the overall operation of the cloud. In this paper, we review the principles of pervasive cloud monitoring, and discuss the requirements of a pervasive...
Software modernization and cloudification using the ARTIST migration methodology and framework.	Andreas Menychtas, Kleopatra Kon...	Scientific International Journal for Parallel and Distributed Computing. Vol 15, No 2 (2014)
Best Practices for Validating Research Software Prototypes - MARKOS Case Study.	Laskowska A., Gorroñogoitia Cruz...	eChallenges e-2014 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2014 ISBN: 978-1-905824-45-8
Use of the Virtual Medical Record Data Model for Communication among Components of a Distributed Decision-support System	Carlos Marcos et al.	http://ieeexplore.com/xpl/articleDetails.jsp?arnumber=6864418&searchWithin%3DUs... International Conference on Biomedical and Health Informatics (BHI), 2014 IEEE-EMBS, pp. 526 - 530
Coco-Cloud project: Confidential and compliant clouds	Cesar Mediavilla, Marina Egea et...	http://ieeexplore.com/xpl/articleDetails.jsp?arnumber=6864345&searchWithin%3Dme... International Conference on Biomedical and Health Informatics (BHI), 2014 IEEE-EMBS, pp. 227-230

PUBLICATION	AUTHOR/S	DETAILS
yourEHRM: standard-based management of your personal healthcare information	Carlos Cavero, Carlos Marcos, Ju...	http://ieeeexplore.com/xpl/articleDetails.jsp?arnumber=6864311&refinements%3D426... International Conference on Biomedical and Health Informatics (BHI) 2014 IEEE-EMBS, pp. 89-92
Visión 2020 para el hotel del futuro	Juan Andrés Alonso et al.	TuriTec 2014 X Congreso Turismo y Tecnologías de la Información y las Comunicaciones. TuriTec 2014. Málaga, 23-24 Octubre 2014
Implications of Learning Analytics for Serious Game Design	Carmen Padrón-Napoles et al	Implications of Learning Analytics for Serious Game Design "Implications of Learning Analytics for Serious Game Design", ICALT, 2014, 2014 IEEE 14th International Conference on Advanced Learning Technologies (ICALT), 2014 IEEE 14th International Conference on Advanced Learning Technologies (ICALT) 2014...
PRIPARE: A New Vision on Engineering Privacy and Security by Design	Nicolás Notario, Alberto Crespo et al.	PRIPARE: A New Vision on Engineering Privacy and Security by Design Published in Cyber Security and Privacy: 3rd Cyber Security and Privacy EU Forum (CSP Forum 2014), Athens, Greece, May 21-22, 2014, Revised Selected Papers. CCIS 470, pp.65-76. Frances Cleary, Massimo Felici (Eds.) Springer International Publishing,...
Ciudad inteligente y ciudadanos avanzados: un binomio ganador	Nuria Rodríguez et al	http://www.innprontaciudad2020.es/index.php/es/documentacion-ficheros-relativos-... Whitepaper for Ciudad2020 project
STRATEGIC: opening new horizons in the secure and privacy friendly migration, adaptation, governance and development of public cloud services	Nuria Rodríguez et al.	Chapter in the book for the European Project Space Vienna 2014. To be published by SCITEPRESS.
STRATEGIC: An advance service distribution network and tools for interoperable programmable, and exploitation of unified public cloud services	Nuria Rodríguez	http://www.cloudwatchhub.eu/concertation-position-papers Position paper for the ""Software Services & Cloud Computing" Concertation Meeting, organized by CloudWatch in September 2014.
Towards a Big Data Roadmap	Ricard Munné et al	NIST Special Publications NIST Web site. CSRC HOME > PUBLICATIONS > NIST SPECIAL PUBLICATIONS
FOODIE: Farm-Oriented Open Data in Europe	Miguel Ángel Esbrí et al.	17th AGILE International Conference on Geographic Information Science Poster abstract
FOODIE: Farm-Oriented Open Data in Europe	Miguel Ángel Esbrí et al.	FOODIE: Farm-Oriented Open Data in Europe EGU General Assembly 2014

Events

Research & Innovation 2014

EVENT	PRESENTATION TITLE	SPEAKER/S	VENUE	DATE
Cities of Tomorrow-Smart Connected Cities and Communities	Smart City linked to FI-WARE (http://ec.europa.eu/regional_policy/conferences/urban2014/index_en.cfm)	Nuria de Lama	Brussels, Belgium	Feb
European Data Forum 2014	Towards a Big Data Public Private Forum (http://2014.data-forum.eu/)	Nuria de Lama	Athens, Greece	Mar
Future Internet Assembly (FIA Athens)	FI-driven Digital Business Innovation: The only limit is your imagination! (https://www.fi-athens.eu/)	Nuria de Lama	Athens, Greece	Mar
Beyond MOOCs: The Future of Learning on the Future Internet	Future Internet and the future of workplace learning. http://www.fi-athens.eu/program/sessions/beyond-moocs-future-learning-future-internet; Slides: http://www.fi-athens.eu/sites/default/files/presentations/20140313_FIA_Presentatio_clpn.pdf	Carmen L. Padrón-Nápoles	Athens, Greece	Mar
ECFI (1st European Conference on the Future Internet)	Open APIs and Open Minds – Success stories of today, opportunities for tomorrow	Nuria de Lama	Brussels, Belgium	Apr
XIV Congreso Español sobre Sistemas Inteligentes de Transporte	Proyecto T-TRANS: Transferencia al mercado de la innovación en ITS	Jose Lorenzo	Madrid, ITS Spain	May
Cyber Security & Privacy Forum 2014	Integrating cross-border and cross-sector interoperability of personal identity and attributes: STORK, yourSAM	Alberto Crespo, Nicolás Notario	Athens, Greece	May
Cyber Security & Privacy Forum 2014	PRIPARE's new vision on engineering privacy and security by design	Nicolás Notario	Athens, Greece	May
NESSI Summit 2014	Big Data Value Innovation for Europe (http://www.nessi-europe.com/?Page=nessi_summit_2014)	Nuria de Lama	Brussels, Belgium	May
Annual Privacy Forum 2014	Chair Paper Session "Analysis of architectures"	Alberto Crespo	Athens, Greece	May
INSPIRE Conference 2014	Open Data for Stimulation of SME Businesses in Agriculture, Transport, Tourism and Environment - FOODIE Project	Miguel Ángel Esbrí	Aalborg, Denmark	Jun
Evolving Security & Privacy Requirements Engineering (ESPRE 2014)	Invited Talk: Market trends and business challenges in security and privacy requirements engineering (http://espre2014.org/invited-talk/)	Aljosa Pasic	Karlskrona, Sweden	Aug
European Conference on the Future of Internet	Demonstrations and presentations of the following projects: MOBIS, FITMAN, FI-SPACE, FRACTAL, FI-ADOPT, FI-WARE...(http://www.ecfi.eu)	Carmen Perea, Carlos Cavero & Mario..., Silvia Castellvi & Jesus..., Nuria de Lama, David Salama	Munich, Germany	Sep
Identity Services for Government, Mobility & Enterprise (WORLD e-ID Congress)	STORK 2.0: Achievements Towards A Single European eID Area (http://www.worlde-idcongress.com/program?postTabs=1#crespo)	Alberto Crespo, Aljosa Pasic	Marseille, France	Sep
Advances in Securing Embedded, Mobile and Cloud Services & Ecosystems	Requirements and Recommendations for Assurance in the Cloud Security (http://www.chip-to-cloud.com/program?postTabs=1#p1a2)	Aljosa Pasic	Marseille, France	Sep
Final Workshop of CIRRUS project	Welcome Note from the Projects Coordinators (http://www.cirrus-project.eu/sites/default/files/content-files/articles/CIRRUS_Final%20event%2020140910%20PRESENTATIONS.pdf)	Aljosa Pasic	Brussels, Belgium	Sep
"Software Services & Cloud Computing" Concertation Meeting	STRATEGIC: An advance service distribution network and tools for interoperable programmable, and exploitation of unified public cloud services	Nuria Rodriguez	EC, Brussels, Belgium	Sep

EVENT	PRESENTATION TITLE	SPEAKER/S	VENUE	DATE
Workshop at 9th European Conference on Technology enhanced Learning (ECTEL2014)	"Supporting innovations in Technology Enhanced Learning workshop" (http://ectel2014.httc.de/index.php?id=682#HOTEL; Slideso http://hotel-project.eu/es/content/supporting-innovation-technology-enhanced-learning-workshop)	Carmen L. Padrón-Nápoles	Graz, Austria	Sep
Can MOOCs save Europe's unemployed youth? (ECTEL 2014)	"How can the EMMA approach to learning analytics improve employability?" (http://openeducationeuropa.eu/en/MOOCsworkshop ; Slides http://goo.gl/QdNQGC)	Carmen L. Padrón-Nápoles	Graz, Austria	Sep
World e-ID Congress 2014	STORK 2.0: Achievements Towards A Single European eID Area	Aljosa Pasic	Marseille, France	Sep
NIS WG3/CAPITAL/CSP FORUM	Keynote talk seminar on Seminar on Road Mapping Cybersecurity Research and Innovation (https://www.cspforum.eu/news/seminar-on-road-mapping-cybersecurity-research-and-innovation-nis-wg3-capit)	Aljosa Pasic	Florence, Italy	Oct
ICT of the Future	FIWARE: Towards a European Web development Infrastructure (https://www.ffg.at/iktderzukunft/Auftaktveranstaltung2014)	Nuria de Lama	Vienna, Austria	Oct
MULTI-SITE FIWARE EVENT: Connecting cities to the Internet of the Future	The WONDERS of FIWARE: How and why to use it! (http://www.fi-ware.org/multisiteevent)	Nuria de Lama	Seville, Spain	Oct
Big Data ISC	New Horizons for a Data-Driven Economy – A Roadmap for Big Data in Europe (http://www.isc-events.com/bigdata14/#)	Nuria de Lama (& Ed Curry)	Heidelberg, Germany	Oct
ICT Proposers Day	FIWARE Technologies (http://ec.europa.eu/digital-agenda/en/ict-proposers-day-9-10-october-2014)	Nuria de Lama	Florence, Italy	Oct
EU-EECA R&I collaboration in the field of ICT	FIWARE: Opportunities on Future Internet (http://www.eeca-ict.eu/usefull-information/events/icalrepeat.detail/2014/11/12/28/-/networking-event-community-building)	Nuria de Lama	Baku, Azerbaijan	Nov
SECONOMICS Summit	Security issues in Urban Public Transport (http://seconomicsproject.eu/sites/default/files/content-files/topics/SECONOMICS_SUMMIT_WP3_PANEL_INTRO_v02_1.pdf)	Ricard Munné	EU Commission Covent Garden,...	Nov
Towards a Cloud of Public Services' workshop	STRATEGIC: An advance service distribution network and tools for interoperable programmable, and exploitation of unified public cloud services	Nuria Rodríguez	EC, Brussels, Belgium	Nov
Security Research Conference and CPExpo	Privacy by design and the societal aspects of security (http://www.centrocongressigenova.it/cp-expo-2014/agenda-programme/)	Aljosa Pasic	Genova, Italy	Dec
Open Standards for ICT Procurement: Sharing of Best Practices	Open ICT architectures: FIWARE (https://ec.europa.eu/digital-agenda/en/news/open-standards-ict-procurement-sharing-best-practices)	Nuria de Lama	Brussels, Belgium	Dec
FRACTALS Infoday	FIWARE Platform, Open Source–Open Specification What's the benefits for app developers? (http://www.eventbrite.com/e/fractals-info-day-istanbul-tickets-13951189383)	Nuria de Lama	Istanbul, Turkey	Dec

Prizes and Awards

2014

Best position paper in Concertation Meeting IoS 2014

ARTIST project won the prize for the best position paper in the Concertation Meeting for the Cloud, Software and Services unit projects on September 2014 in Brussels.

Olympic Video Player

A special Award from the Olympic Golden Rings 2014 was granted by the International Olympic Committee (IOC) for the Olympic Video Player. ARI was part of the team that contributed to it work. Watch the video here: https://www.youtube.com/watch?v=GSJdHologVc.

Best Short Paper "Implications of Learning Analytics for Serious Game Design"

Granted during the ICALT 2014 Conference, held in Athens, Greece. Information available at http://ask4research.info/icalt/2014/node/14.

Partnerships, Platforms, Communities, Networks, Clusters, Associations, etc.

Introduction

Even though most Public Bodies carry out public and private consultations to elaborate their research programmes, 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 centres), discuss which are the main priorities for the sector in terms of R&D and provide this input to the related funding organisations. Thus, ensuries a greater impact of the program. The main characteristics of these initiatives are that they are well organised, 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), SET-Plan (Strategic Energy Technology Plan), 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
Representative to the European Commission

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	
EXCEL www.ecsel.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 www.bigdatavalue.eu	
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, NanoMed, eNEM or the Spanish Railways Technology Platforms..

eNEM www.idi.aetic.es/enem	
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)

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

ICT-LABS www.eitictlabs.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 2013 pro forma annual revenue of €10 billion and 86,000 employees in 66 countries. Serving a global client base, the Group provides Consulting & Systems Integration services, Managed Services & BPO, Cloud operations, Big Data & 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, 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.

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