





Mission









We focus on **R&D** to develop solutions to help service providers to launch new services based on innovative business models combining **IoT** and other technologies such as Artificial Intelligence, Machine Learning, Decision Support Systems, Data Analytics and Cybersecurity





Vision

We develop and operate **datAssist**[®], our end-to-end **IoT Software Platform**, work for the **next-generation IoT Sensors** and build vertical solutions in different areas such as Energy Management and Health Care

Group Profile


Research	 <p>Renewable Energy Management and Next Generation Batteries</p> <p>Foster new products, services and business models in an evolving and demanding scenario</p> <p><i>Battery Management Systems</i> <i>Self-Generation Control</i> <i>Smart Grids</i> <i>SW Services for Energy Trading</i></p>	 <p>Data Analytics for Gas Sensors</p> <p>Application of Data Analytics and Artificial Intelligence with innovative gas sensing technologies</p> <p><i>Air Quality Measurement</i> <i>Industrial Safety/Process Quality</i> <i>Elderly Care</i> <i>Food Status Control</i></p>	 <p>Next Generation IoT Sensors</p> <p>Develop and advance towards an IoT ecosystem based on open HW/SW strategies based on the RISC-V architecture</p> <p><i>Low Power Consumption</i> <i>Harvesting + Supercapacitors</i> <i>LPWAN + 5G communications</i> <i>Edge and Distributed Computing</i></p>	 <p>Data Security & Privacy in IoT</p> <p>Focus on Cybersecurity to overcome the intrinsic insecurity in IoT systems and help building a trustable IoT</p> <p><i>Security by Design</i> <i>Authentication & Authorization</i> <i>Secure Communications</i> <i>Blockchain/DLT Architectures</i></p>
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Background	<ul style="list-style-type: none"> ▪ SENSING & CONTROL: Spin-off company focused on Smart Home and Smart Energy  ▪ INTUO (H2020): Energy Demand and Energy Supply synchronization  ▪ SCANERGY (FP7): Energy trade by prosumers and management of produced/consumed electricity  ▪ iURBAN (FP7): Development of ICT energy services for prosumers, consumers and utilities  	<ul style="list-style-type: none"> ▪ PREMIA (RETOS): Reduction of energy consumption through incentives and self-learning  ▪ RADIO (H2020): Smart Home and assistant robot system addressed to elderly people  ▪ CORE ONE/GRASS (FP7): Graphene Sensors network applied to Ambient Assisted Living environments  ▪ ARMOR (FP7): Monitoring system for epileptic patients, home automation and medical services 
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On-going Work	<p>CUBER</p> <p>All-Copper Redox Flow Battery</p> <p>Validation of an all-copper redox flow battery used as a back-up power system in isolated locations and for energy management and grid balancing in renewable power production</p>  	<p>EDGE</p> <p>ADL Monitoring for Elderly Care using Gas Sensors</p> <p>Research on Data Analytics for elderly ADL (Activities of Daily Living) monitoring in homes by applying gas sensing technologies</p> 	<p>INDUSTRIAL PhD</p> <p>RISC-V Microprocessor for a Trustable IoT</p> <p>Development of a RISC-V ISA-based microprocessor optimized for IoT, making use of long-range communications and low-consumption technologies, as well as data security & privacy by design</p> 
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Group positioning & perspectives in front of Open-HW & RISC-V

R+D+i	<ul style="list-style-type: none"> ▪ Open HW/SW challenges proprietary IPs and fosters collaboration and technological evolution ▪ RISC-V architectures must play a key role in the European IoT industry ▪ Low-cost and low-power RISC-V cores and IPs for IoT, focusing on edge and distributed computing according to use cases ▪ RISC-V in IoT devices including next-gen technologies such as LPWAN/5G, self-discovery, self-configuration, distributed AI, security by design ▪ Running and Industrial PhD around RISC-V core for IoT with UAB / IMB-CNM ▪ Incorporating RISC-V in our R&D projects to support European-based technologies (ex. H2020 LC-BAT-13-2020 – Next-gen Batteries)
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Global Remarks	<p><i>“Now or never. RISC-V architectures must be incorporated in today’s developments to be part of tomorrow’s IoT devices. Europe needs to have an own technology competing for a leading position in the IoT escalade”</i></p> 
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