Areas of expertise

DSRL has extensive experience in many fields of the distributed systems related research areas such as:
- Energy efficiency in large scale distributed systems
- IoT and Blockchain technology
- Ambient assisted living (AAL)
- Big data analytics and Machine Learning
- Multidisciplinary optimization
- Complex systems modelling, simulation, optimization and adaptation
- Bio-inspired optimization

DSRL carries out research activities within several EU H2020 / PNIII projects and has developed techniques and tools for (i) nonlinear programming optimization of systems energy efficiency, (ii) energy flexibility assessment and budgeting, (iii) Demand Response load profile forecasting and estimation, (iv) load shifting/scheduling for energy consumption reduction, and (v) optimization of IT resources energy consumption. In the modelling and simulation domain DSRL has investigated and developed techniques for modelling of complex systems, machine learning for information extraction and decision making, multi-objective and multi-criteria problems solving using mathematical models and what-if model simulation. In relation with blockchain technology, DSRL has experience in the development of distributed shared ledgers, smart contracts, distributed peer to peer control and distributed consensus which has been successfully applied in domains such as management of smart grids and demand-response programs, ecosystem management and payment of ecosystem services trading, circular economy and smart manufacturing.

Team


Representative projects

- **H2HCare** - Social robot-based solution for elders’ Care management and coaching after discharge from Hospital to Home, AAL-2019, (2020-2023)
- **ReMember-Me** - Smart assistant to prevent and detect cognitive decline, promote cognitive function and social inclusion among older adults, AAL-2019, (2020-2023)
- **MedGuide** - Integrated System for Coordinated Polypharmacy management in Elders with Dementia, AAL-2016-
- Distributed systems technology and services for electronic registration, transacting and processing of assets, DSRL-MONTRAN USA, (2016-2019), ID 20143/2016
- GEYSER - Green nEtworked Data Centres as Energy PrOSumErs in smaRt city environments, EU FP7, ICT-2013.6.2: Data Centres in an energy-efficient and Environmentally friendly Internet, [http://www.geyser-project.eu](http://www.geyser-project.eu) (2013-2016)

**Significant results**

The most representative publications of the past 5 years:


1. Energy and blockchain services for smart grid
2. Energy efficiency and multidisciplinary optimization services
3. Green cloud scheduler service
4. Modelling and simulation services
5. Big data analytics platform as a service

**The offer addressed to the economic environment**

| Research & development | Core research areas: blockchain technologies, energy efficiency, ambient assisted living. Development services in the following domains: ambient assisted living, green computing and systems, intelligent systems, smart factories, bio-inspired distributed computing and systems, service oriented distributed computing and systems, autonomic computing and systems, distributed pervasive systems. |
| Consulting | Consulting services for development of blockchain-based decentralized systems, ambient assisted living systems, service oriented distributed systems, green systems, intelligent and bio-inspired systems. |
| Training | Training courses in the following domains: software engineering, information systems integration, web applications development, component-based and service-oriented distributed systems development, programming techniques and programming languages. |