We focus our research in different aspects of the development and operation of Software and Systems. We apply our knowledge in complex, highly configurable and distributed systems with real time constraints which need a multi-disciplinary approach and require interoperability in the development.
## Research Areas

### Web engineering
- Automatic parameterization of highly configurable systems (online and offline).
- Search-based algorithms to generate, select and prioritize test cases. Generation of oracles.
- Tool integration using OSLC standard. Traceability between different artefacts.
- Continuous validation, integration, commissioning, operation and maintenance.
- Semantic Web technologies and data structures. Linked data from the perspective of open systems (Open source and Open data).
  - With this technology enriched structures could be provided to:
    - Facilitate to search contents and services.
    - Create intelligent agents for process automatization.
    - Extract, process and store knowledge (Knowledge management).
    - Integrate heterogeneous systems.
    - Compose complex systems.
    - Filter information
    - Enable semantic processing by machines
    - Standardize vocabularies

### Design-Operation Continuum Methods
- Design and Development of Distributed Control Systems with reliability and real-time requirements.
- Models@Runtime: Generation of software components able to be monitored and adapted in model terms at runtime.
- Runtime/Remote Monitoring and Verification of software components of Distributed Control Systems.
- IoT enabling software components: linking software controllers to IoT platforms.

### Remote monitoring and control
- We apply our knowledge in IoT-enabled smart Cyber Physical Systems and platforms, which drive the innovation in the scope of Industry 4.0, health and smart cities.
- Semantic Web technologies and data structures.
  - Linked data from the perspective of open systems (Open source and Open data).
  - With this technology enriched structures could be provided to:
    - Facilitate to search contents and services.
    - Create intelligent agents for process automatization.
    - Extract, process and store knowledge (Knowledge management).
    - Integrate heterogeneous systems.
    - Compose complex systems.
    - Filter information
    - Enable semantic processing by machines
    - Standardize vocabularies
Research and Industrial Projects

ARROWHEAD TOOLS
Develop smart solutions on Mobility, Energy saving and ICTs for the improvement of citizens’ quality of life.

PRODUCTIVE 4.0
Electronics and ICT as enabler for digital industry and optimized supply chain management covering the entire product lifecycle.

DIMAND
Innovative Training Network (ITN) is an European Training Network (ETN) programme in the area of Industry 4.0

ADEPTNESS
Design-Operation Continuum Methods for Testing and Deployment under Unforeseen Conditions for Cyber-Physical Systems of Systems

Industrial Projects
- Technological advice & Training
- System analysis and Design
- Prototypes
- Reengineering and refactoring
- Methodology improvement & deployment

2019
- 6 PhD Students
- 4 Engineers
- 10 European Projects
- 18 industrial projects
- 1.000.000€ budget
- 15 publications (2019)

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