ISME

Intelligent Systems for Real-Time Monitoring and Smart Environments

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- **Rui Pinto** is an invited Teaching Assistant at FEUP and an Integrated member of SYSTE-ARISE, specializing in the digitization of industrial processes, Edge/Cloud Computing, and bio-inspired computing. He has contributed to several national and European R&D projects and published extensively on smart industry and Education 4.0 topics.

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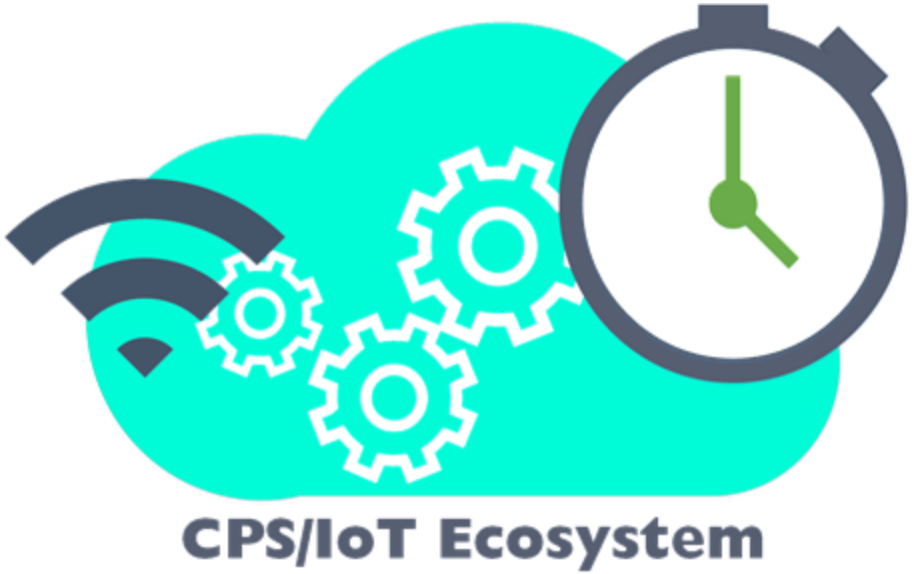
Context and Importance

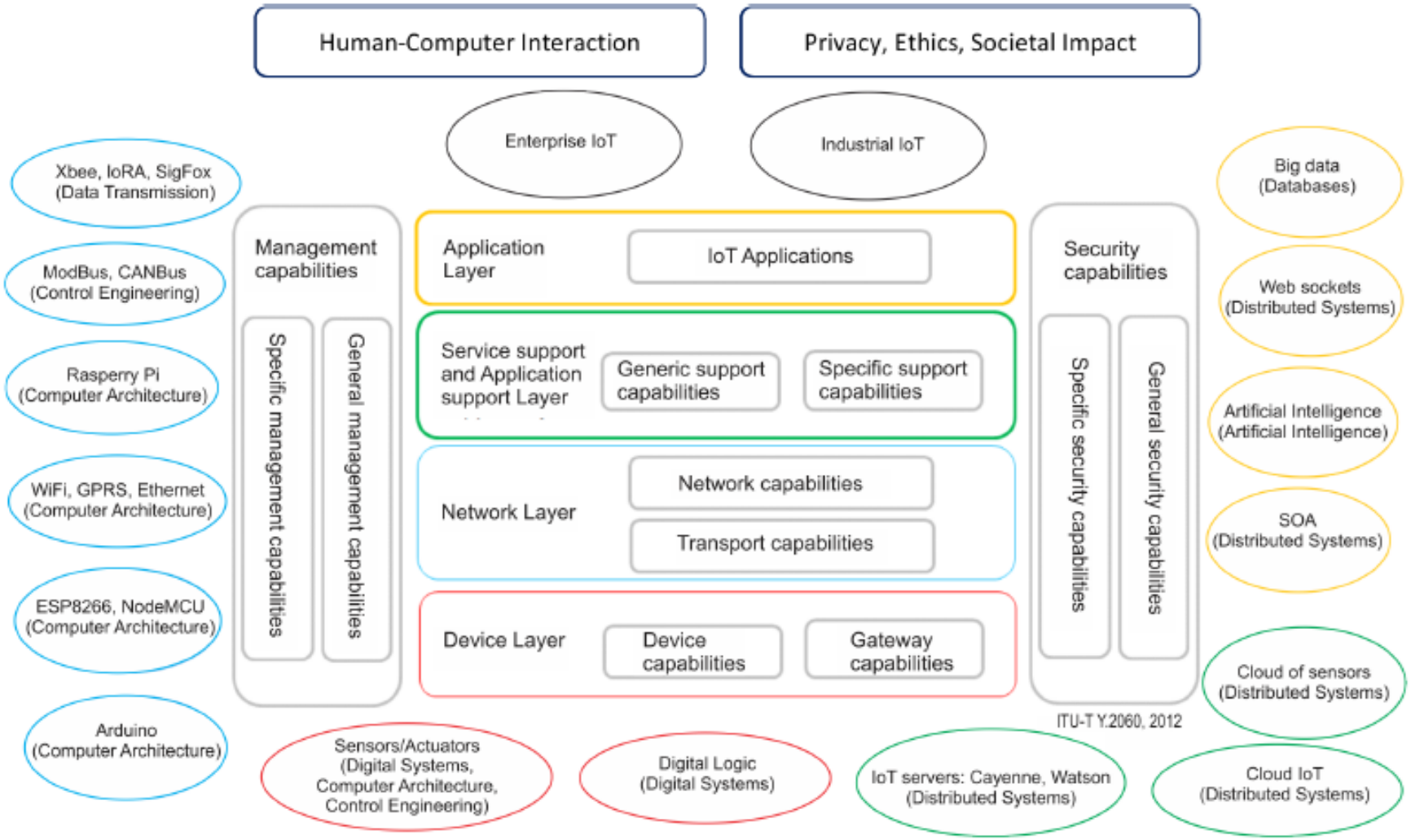
- Growing need for intelligent systems in monitoring and smart environments
- Role of IoT and CPS in transforming industries
- Relevance in environmental monitoring, smart infrastructure, and industrial automation



Objectives of the Special Session

- Explore intelligent systems for real-time monitoring and smart environments
- Address challenges in environmental sensing, industrial automation, and decision-making
- Promote cross-disciplinary research and collaboration in IoT, CPS, and AI
- Foster innovative solutions for adaptive problem-solving and predictive maintenance

Key Topics Covered



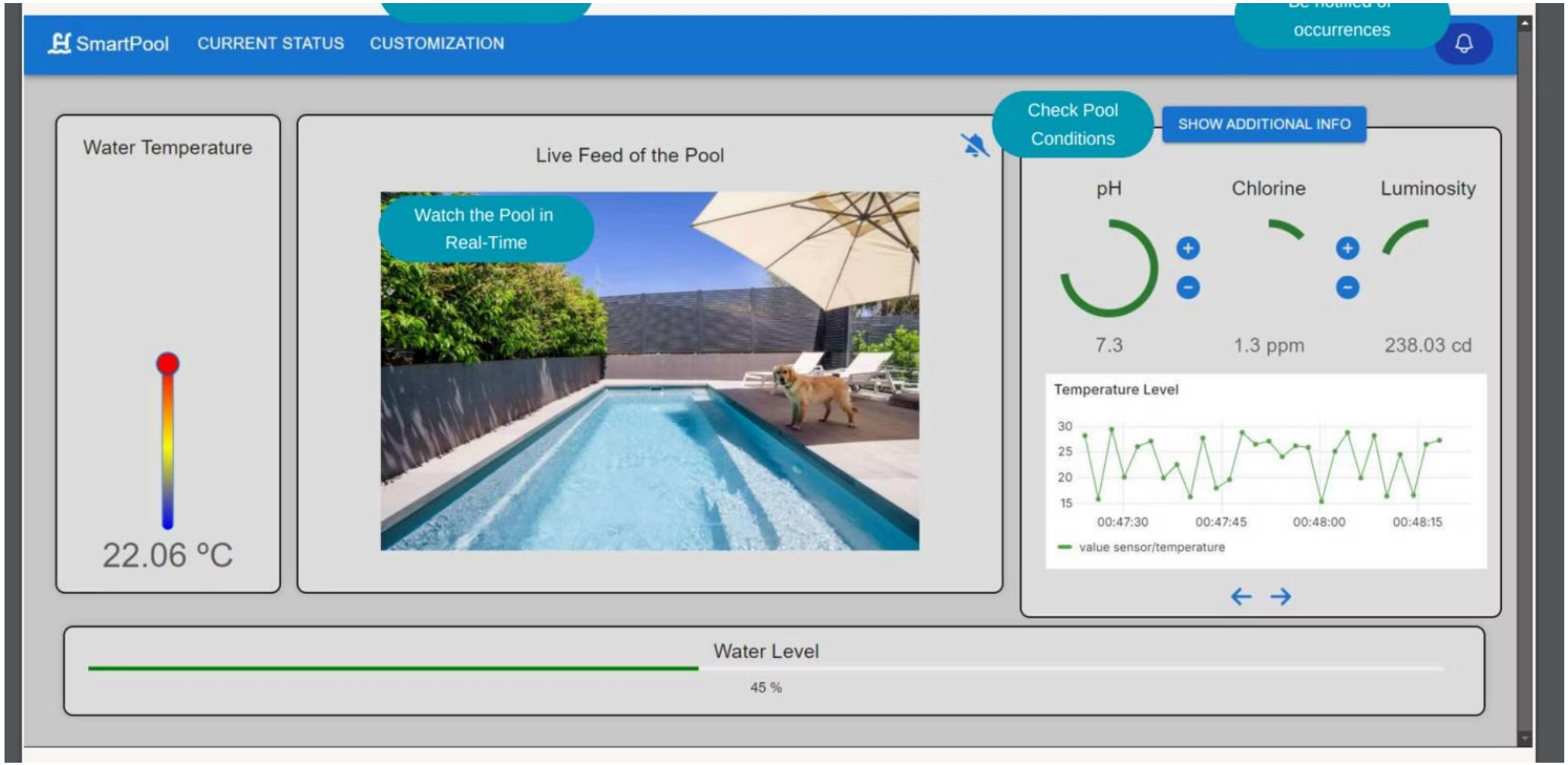
- ✓ Environmental sensing and monitoring
- ✓ Intelligent decision-making & adaptive problem-solving
- ✓ Smart manufacturing and industrial automation
- ✓ Cybersecurity and data-driven optimization

Overview of Contributions

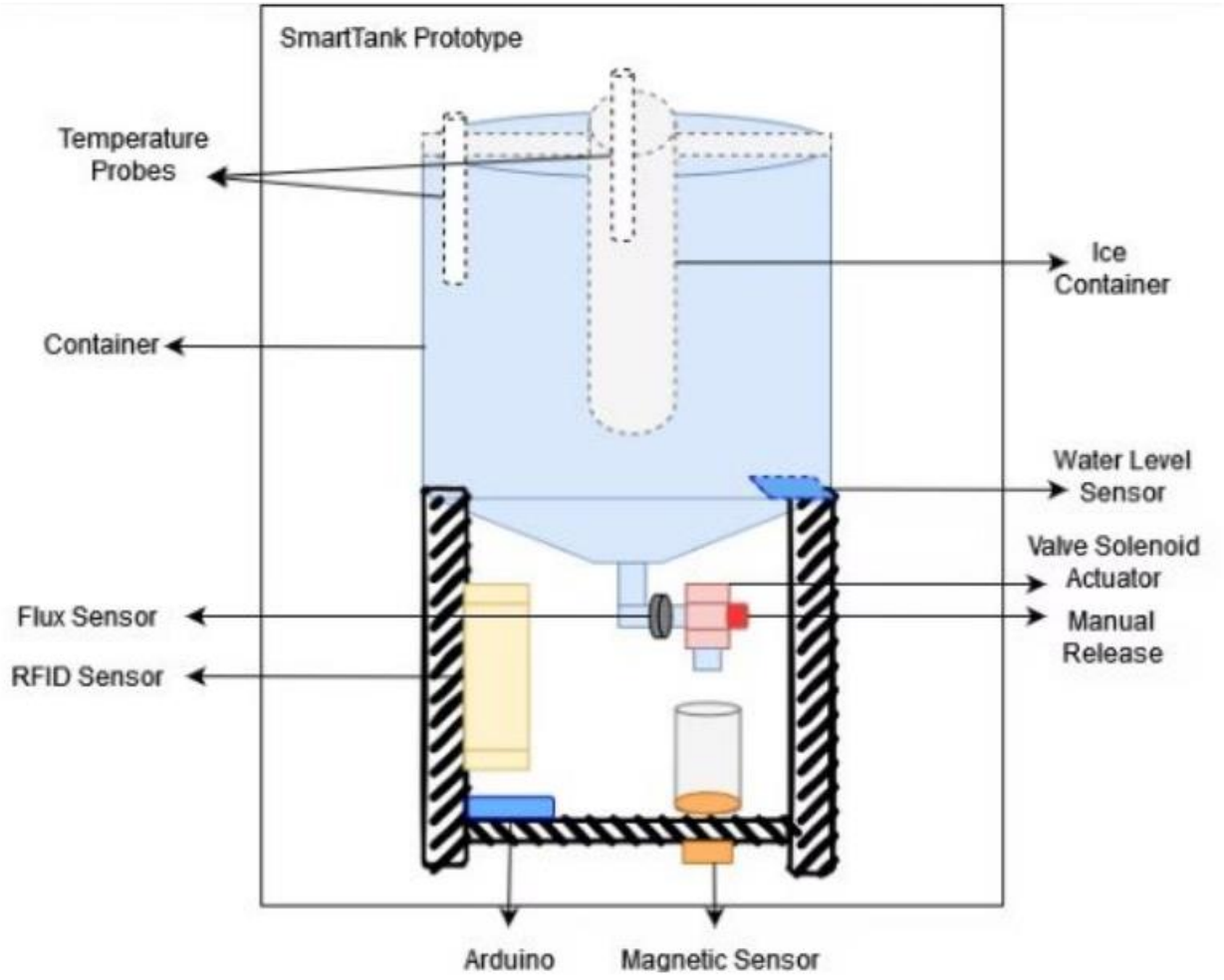
Common theme: Real-time intelligence and context-aware systems

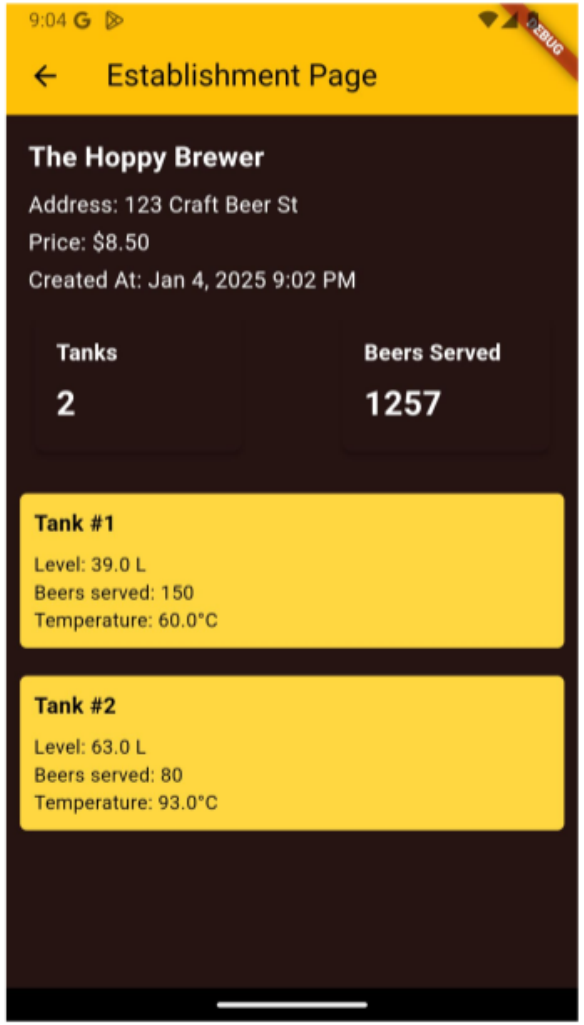
- **SmartPool**: CPS for real-time water quality management
- **SmartBeer**: Automation of beer dispensers
- **FurSight**: Predictive maintenance for industrial systems

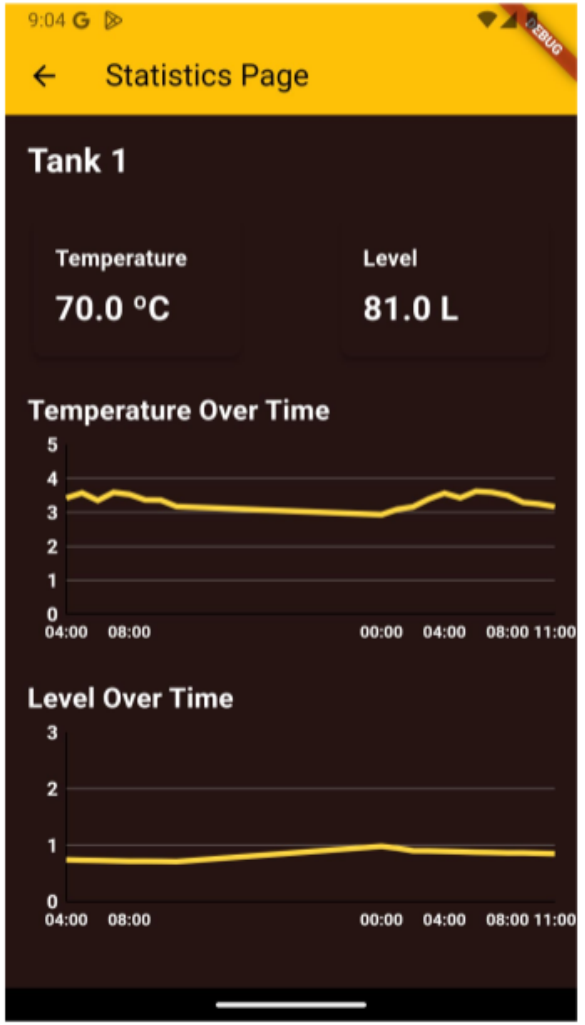
SmartPool: CPS for real-time water quality management



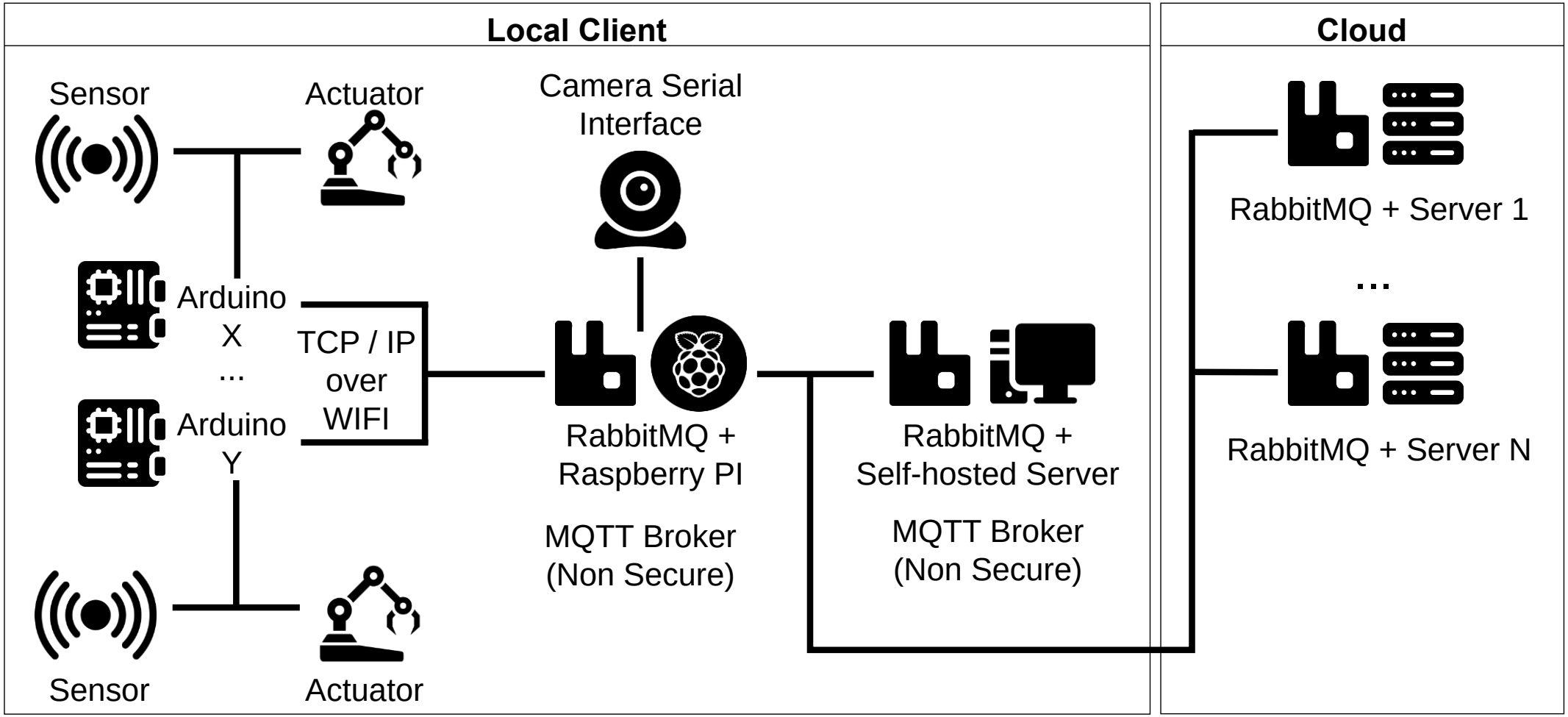
SmartBeer: Automation of beer dispensers







FurSight: Predictive maintenance for industrial systems



Projection on Future Challenges

- Scalability and interoperability in large-scale systems
- Security and privacy concerns with increased connectivity
- Energy efficiency and sustainability in intelligent systems
- Evolving AI and ML integration in real-time decision-making
- Call for continued research and collaboration