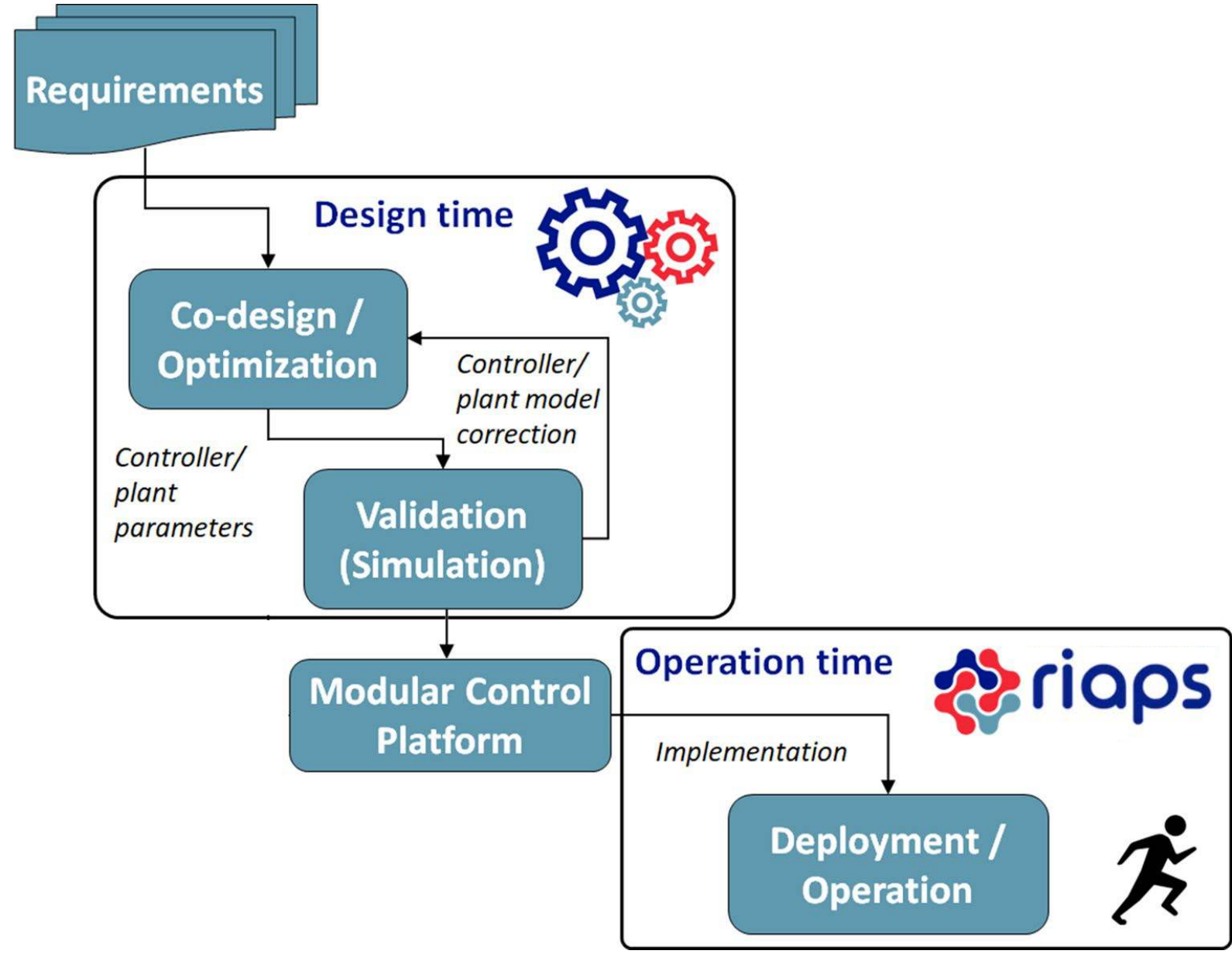


Problem

- Microgrids today achieve system stability through oversized DER, reliability through redundancy, and allow plug and play for small loads/DER

Project Objectives

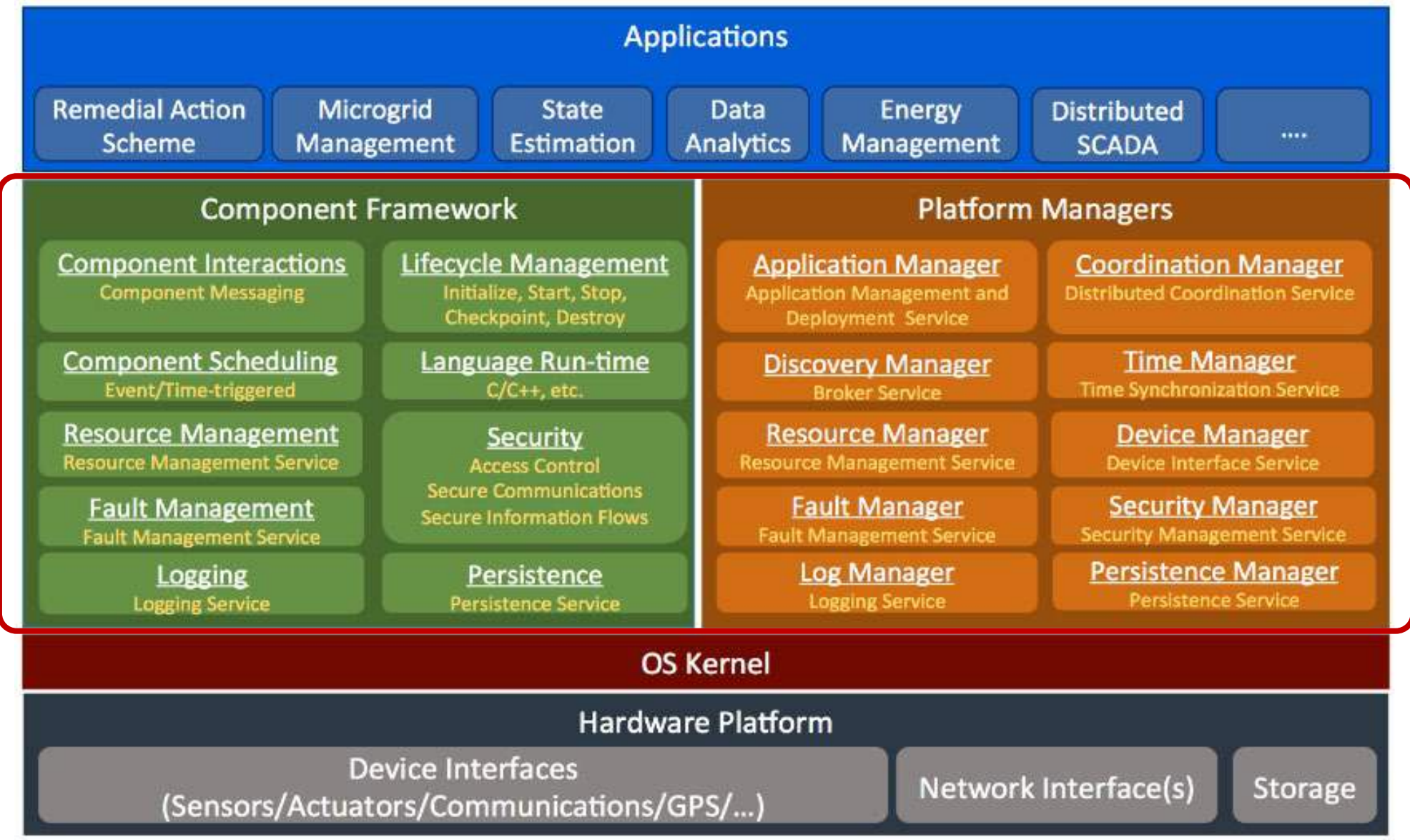
- Develop a tool suite that systematically designs all aspects (plant & control) of a microgrid (MG), given a set of design objectives and performance constraints
- Tool predicts & achieves the desired MG performance & reliability metrics with significantly smaller and/or less capable & less expensive components.



Built upon Resilient Information Architecture Platform for Smart Grid (RIAPS)

- Provides an 'Operating System' (like Android for Smart Phones) that enables the construction of distributed software 'apps' that run the microgrid.
- Supports IoT technologies (e.g. interface to building energy management systems)
- Supports machine learning apps on edge devices (e.g. NVIDIA boards)

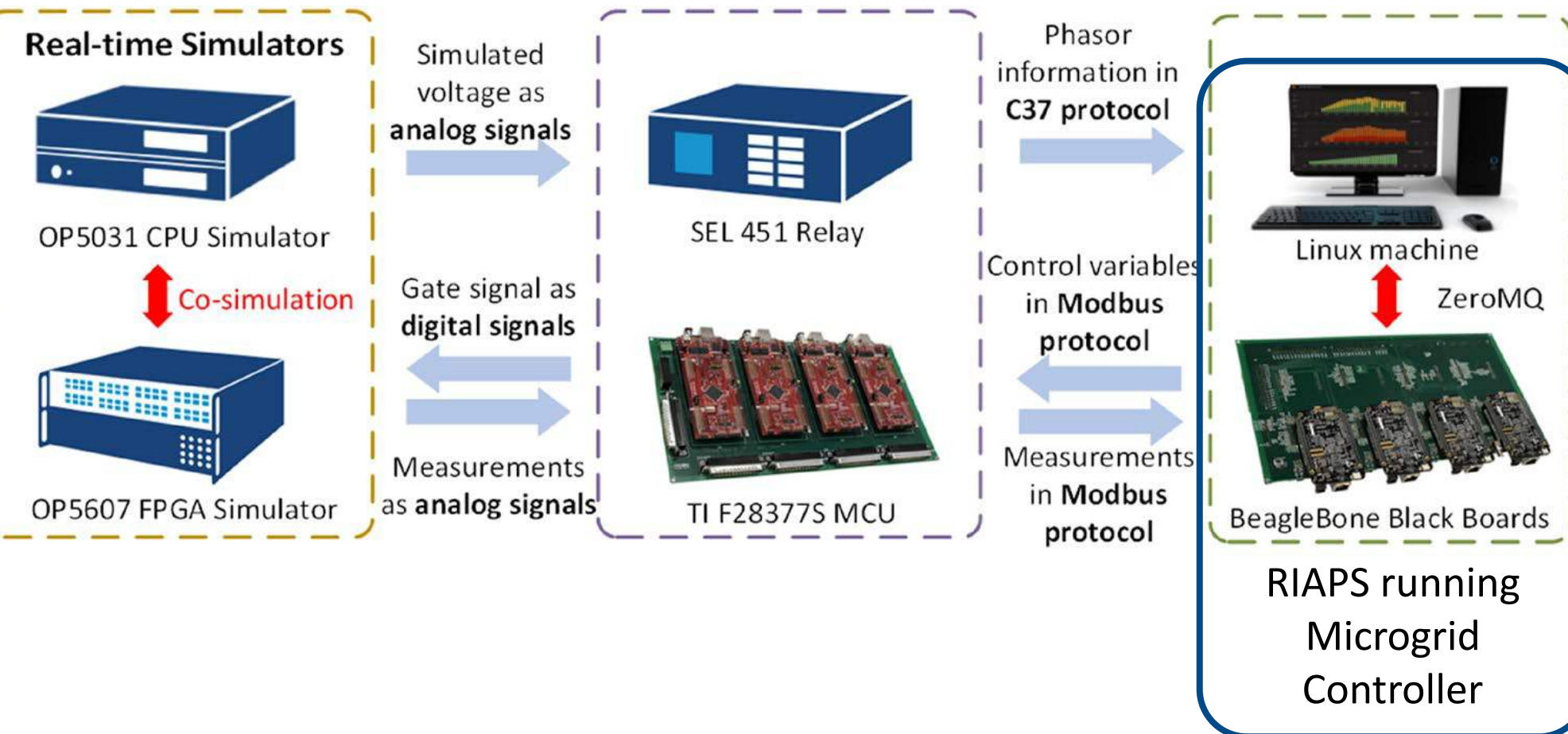
RIAPS Stack



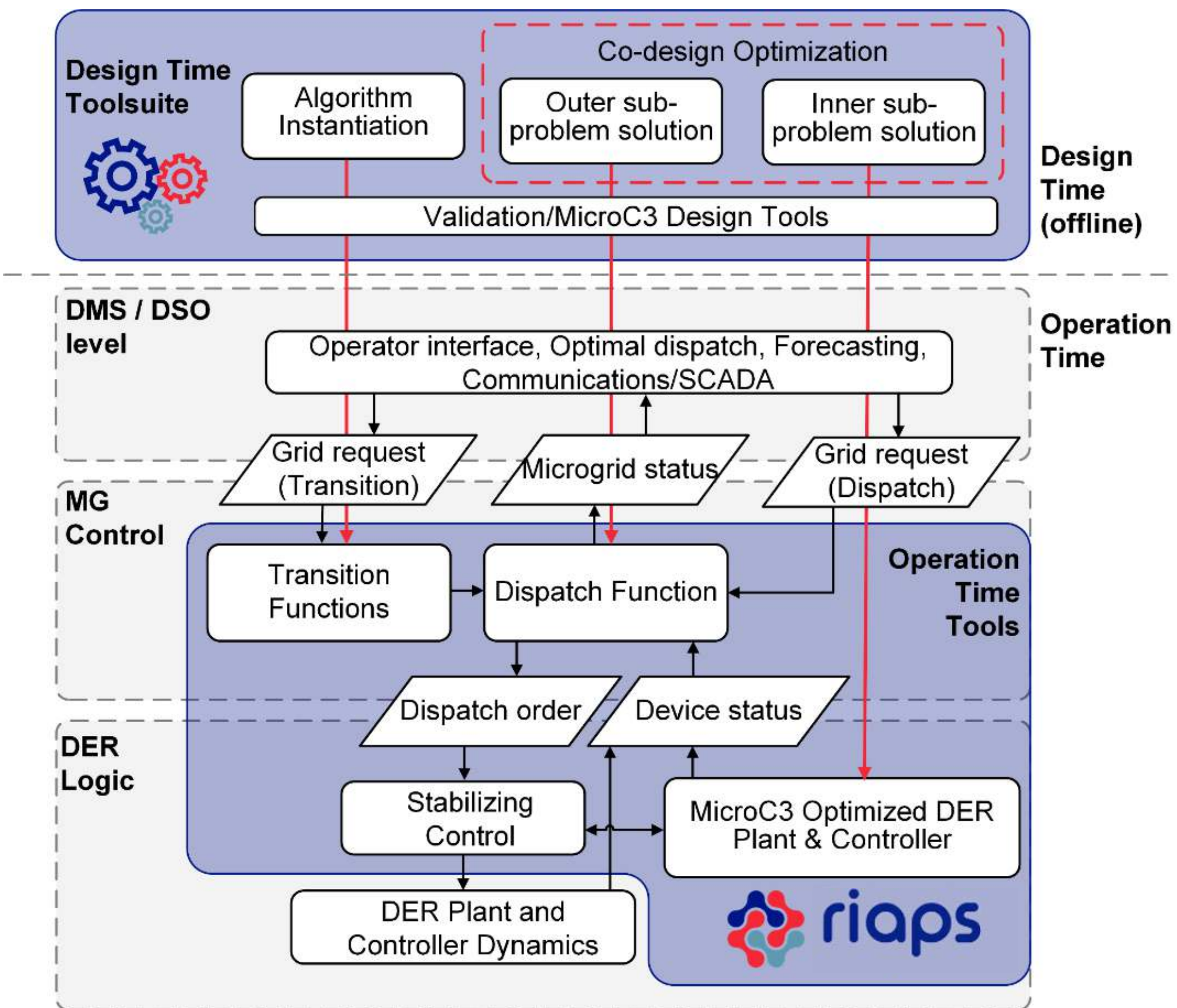
Built upon Microgrid Control Platform (MCP)

- Open source, reusable platform
- Distributed and resilient
- Easily configured for nested microgrids
- Supports plug-and play integration
- Provides additional intelligence to legacy devices

HIL Implementation



MicroC3 Stack



Key Outcomes

- Scalable Algorithms for Co-Design that define the MG design and implementation
- Run-time Platform that implements TSN and provides visibility and control at primary, secondary and tertiary level
- Seamless integration into a single tool that starts with system sizing and delivers executable code on distributed controllers located at each asset.