

DynaMO: A framework to Optimize, Verify and Reconfigure Flexible Manufacturing Systems

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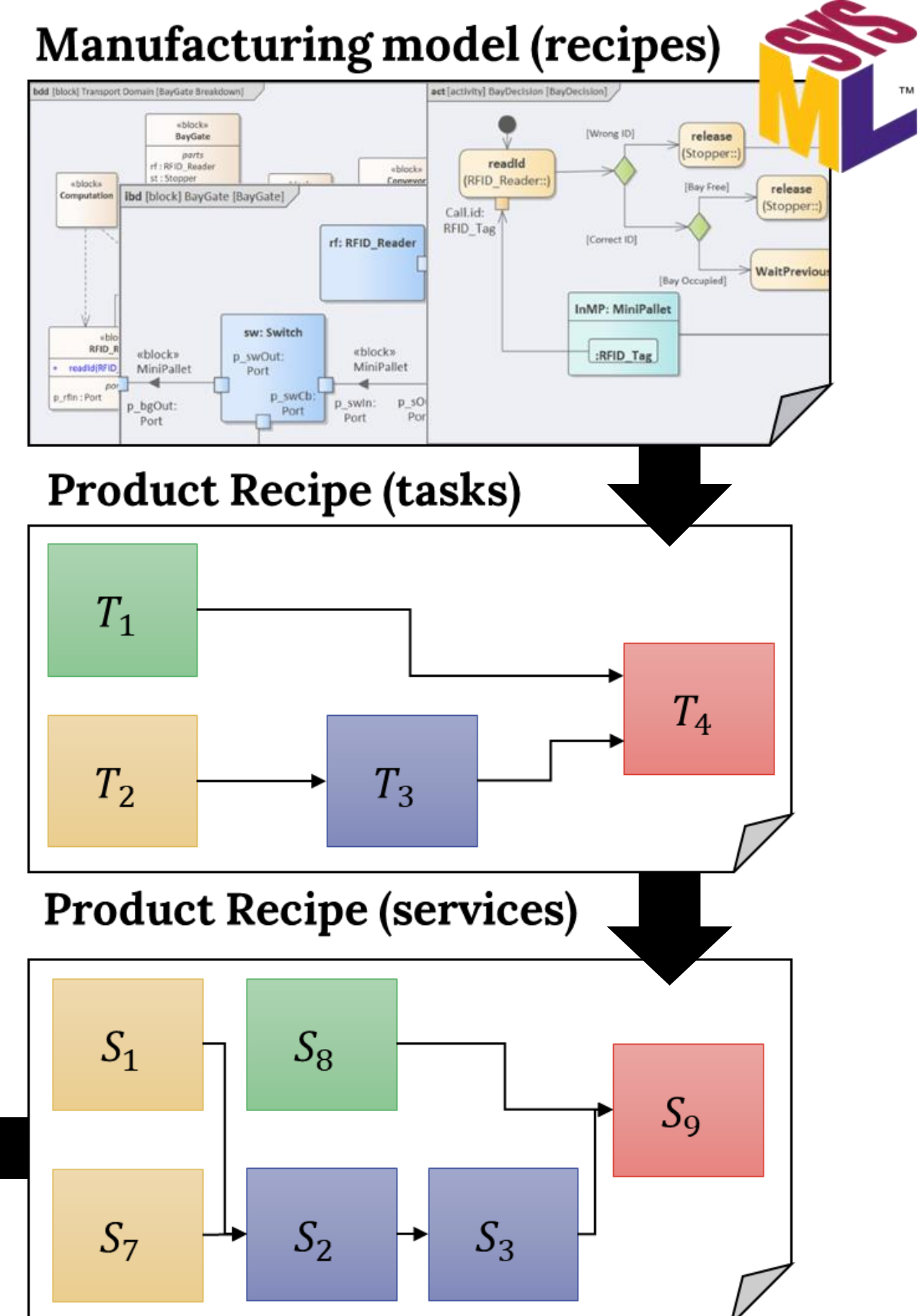
Motivations

- The 4th industrial revolution is evolving fast:
 - Production systems turning into complex **cyber-physical production systems (CPPSs)**
 - Machines providing multiple functionalities and **variations**
- New **production paradigms**
 - **Dynamic reconfiguration**
 - **Flexible Manufacturing**
 - **Service-oriented Manufacturing**
- **Complexity** induced by a plethora of functionalities and processes

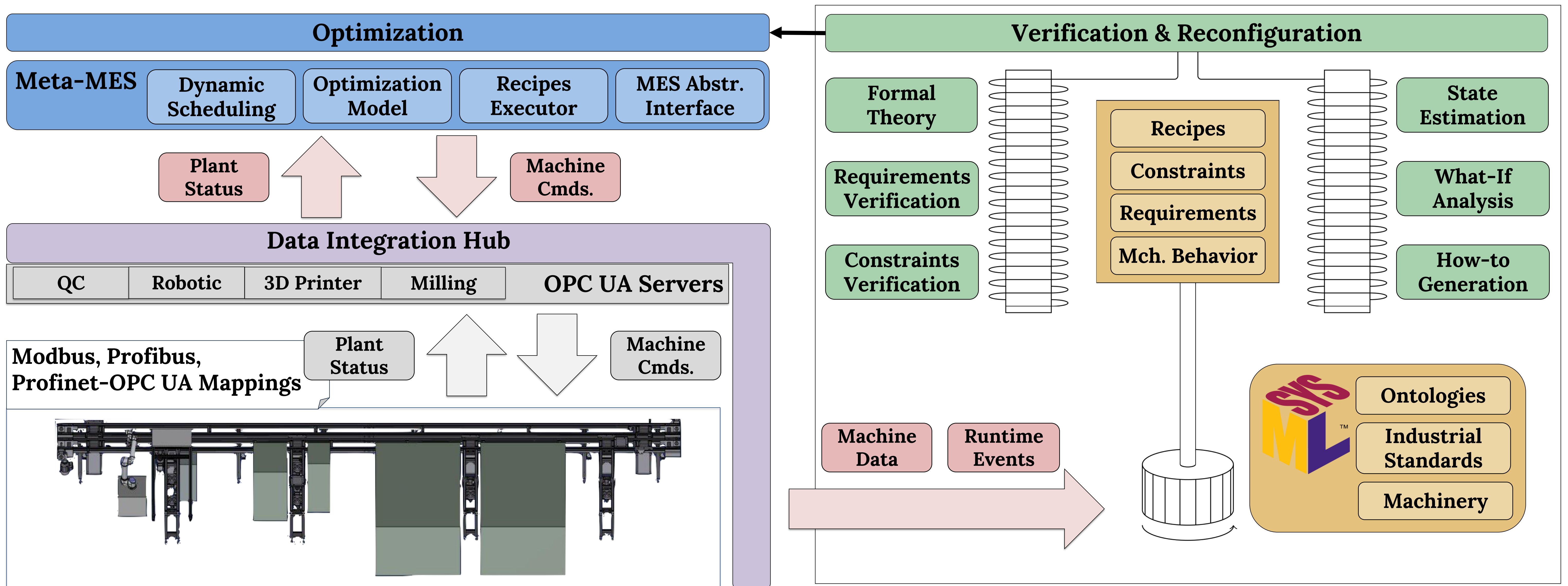


Background

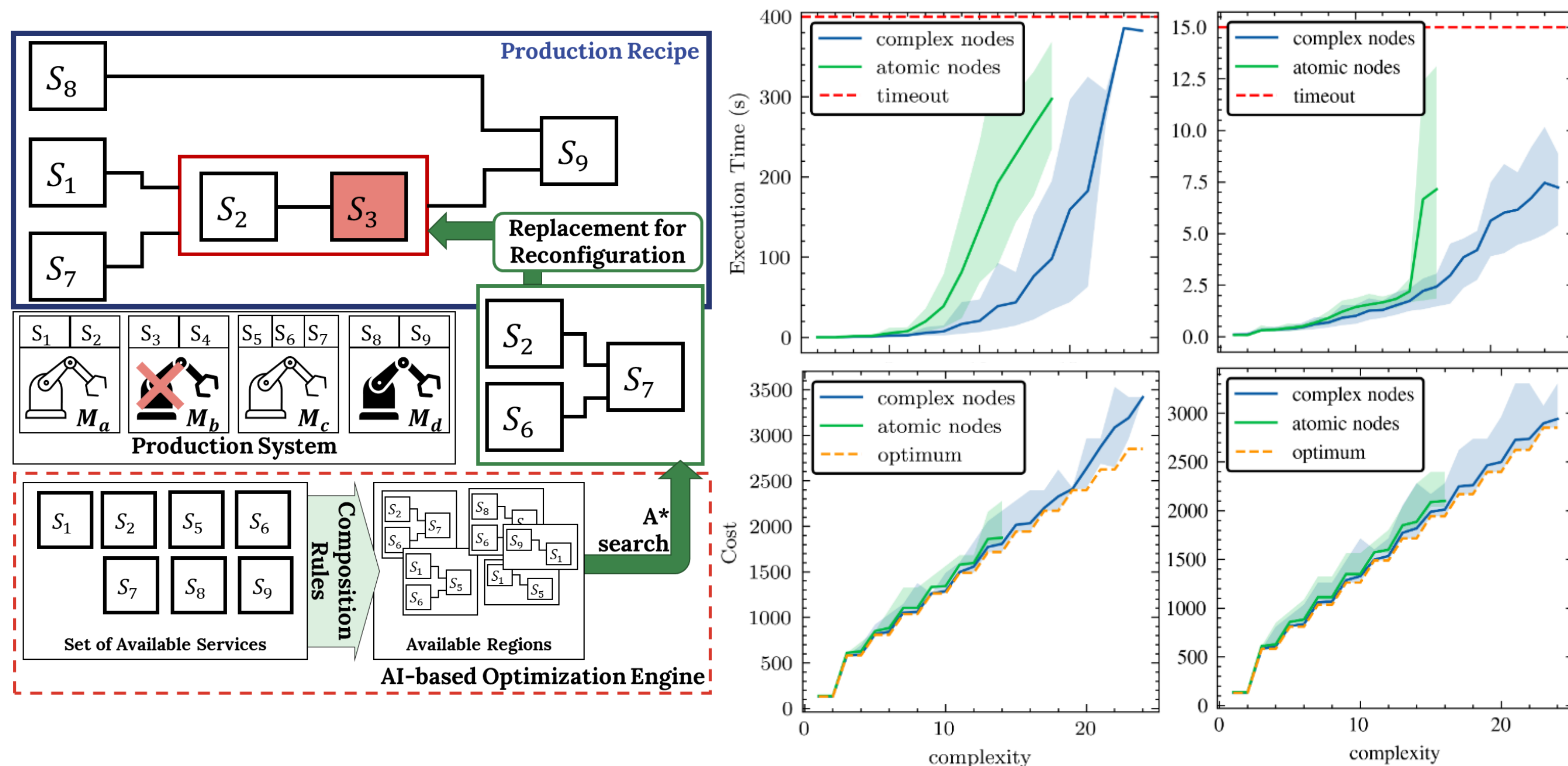
- **Systems Modeling Language (SysML)**
 - Provides **behavioral, structural, and parametric diagrams**
 - Allows specifying **processes, control software, protocols, etc.**
- **Service-oriented Manufacturing**
 - **Service: a functionality provided by a machine**
 - **Services are executed on-demand**
 - **Production recipe as a set of services**



Overview



Use-case: Region-based Reconfiguration



References

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Take Home Message

Model-based framework, enabling CPPSs verification, reconfiguration, and optimization in a closed loop.