



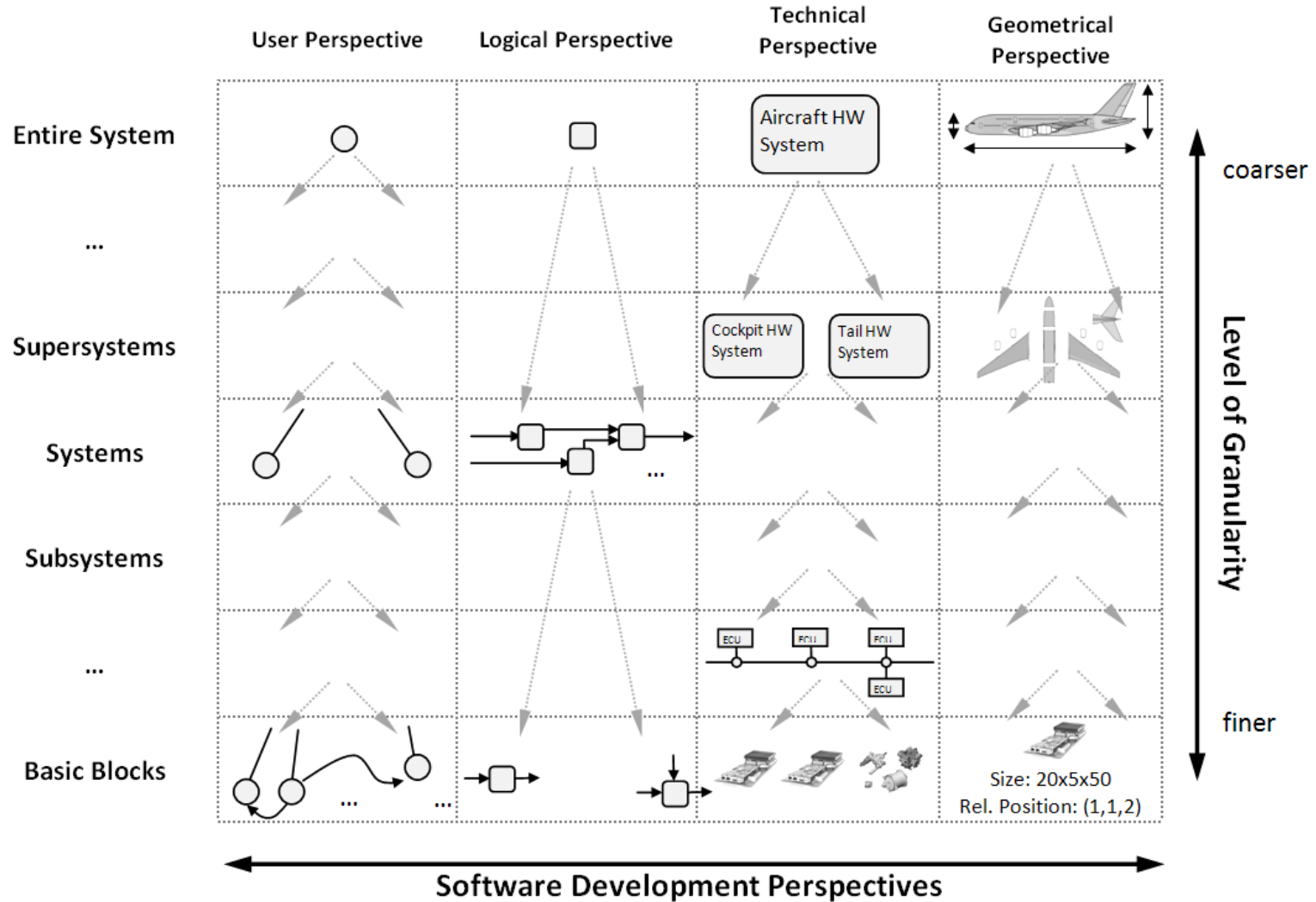
Software Plattform Embedded Systems 2020

Metamodel for the Abstraction Layers

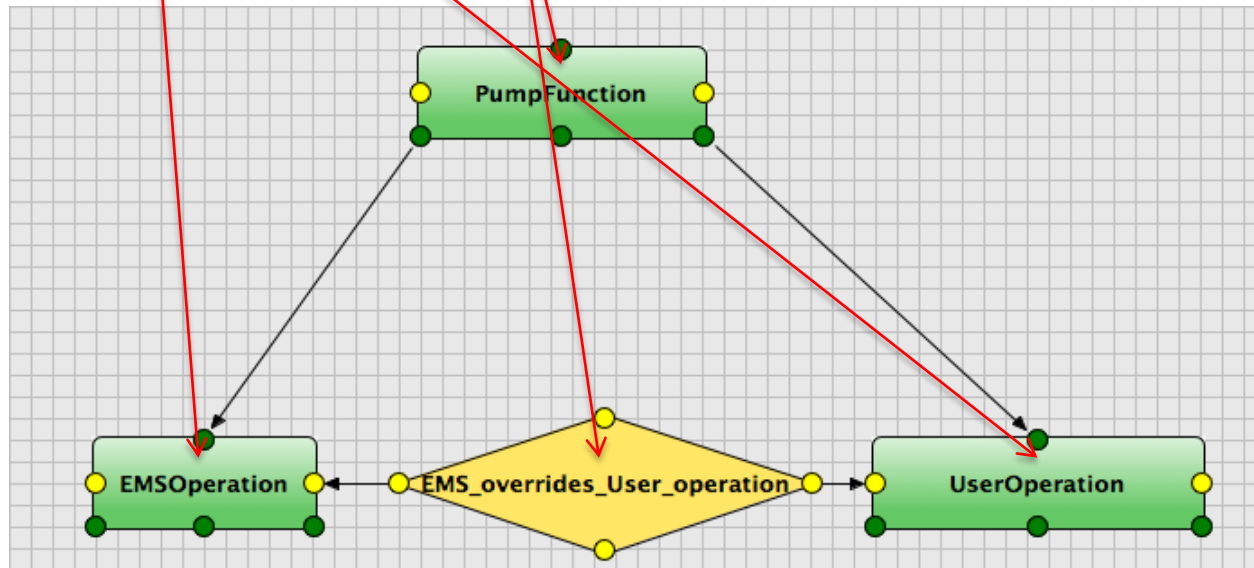
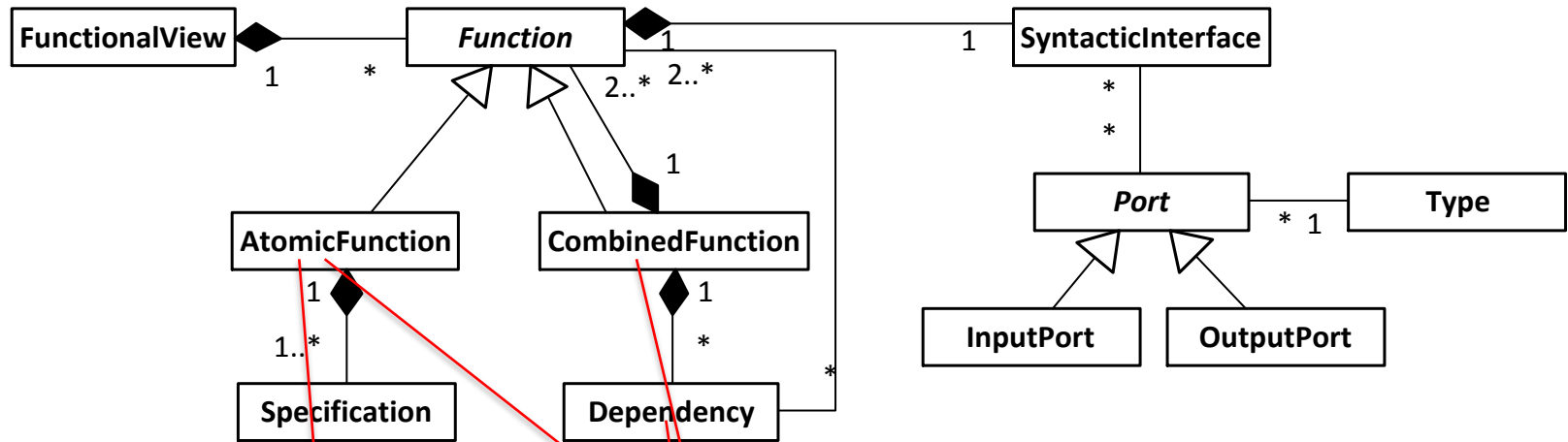
06.07.2010

Thomas Kofler, Alexander Harhurin, Daniel Ratiu,
Florian Hölzl, Markus Hermannsdörfer, Martin Feilkas

Software Development Perspectives

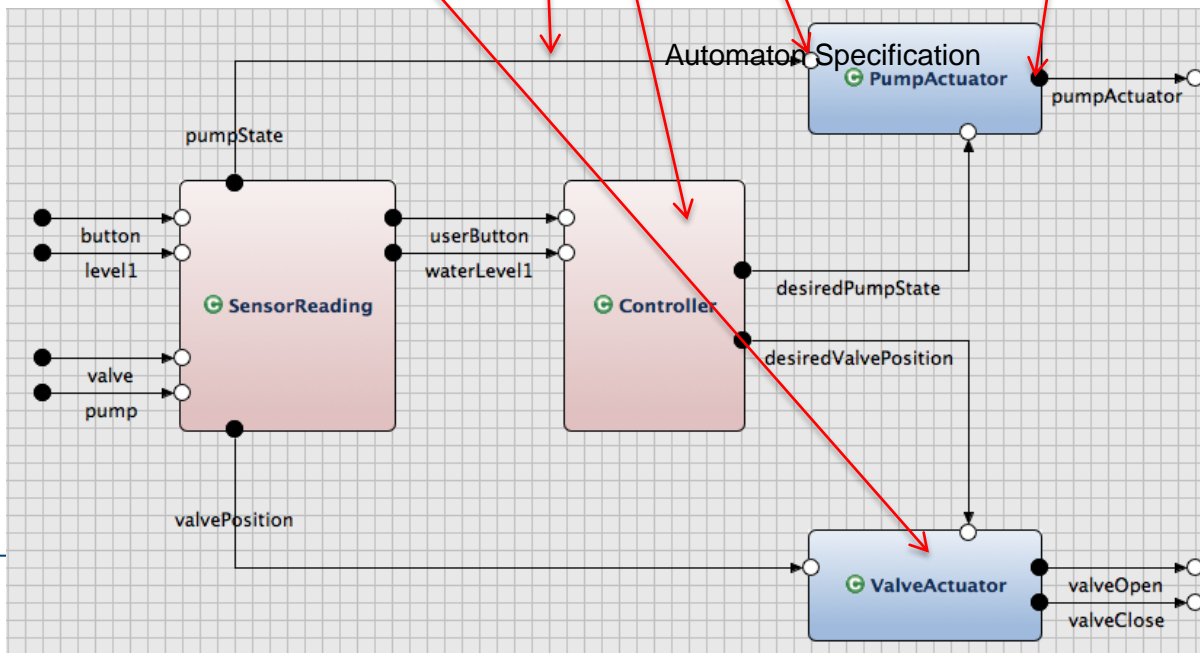
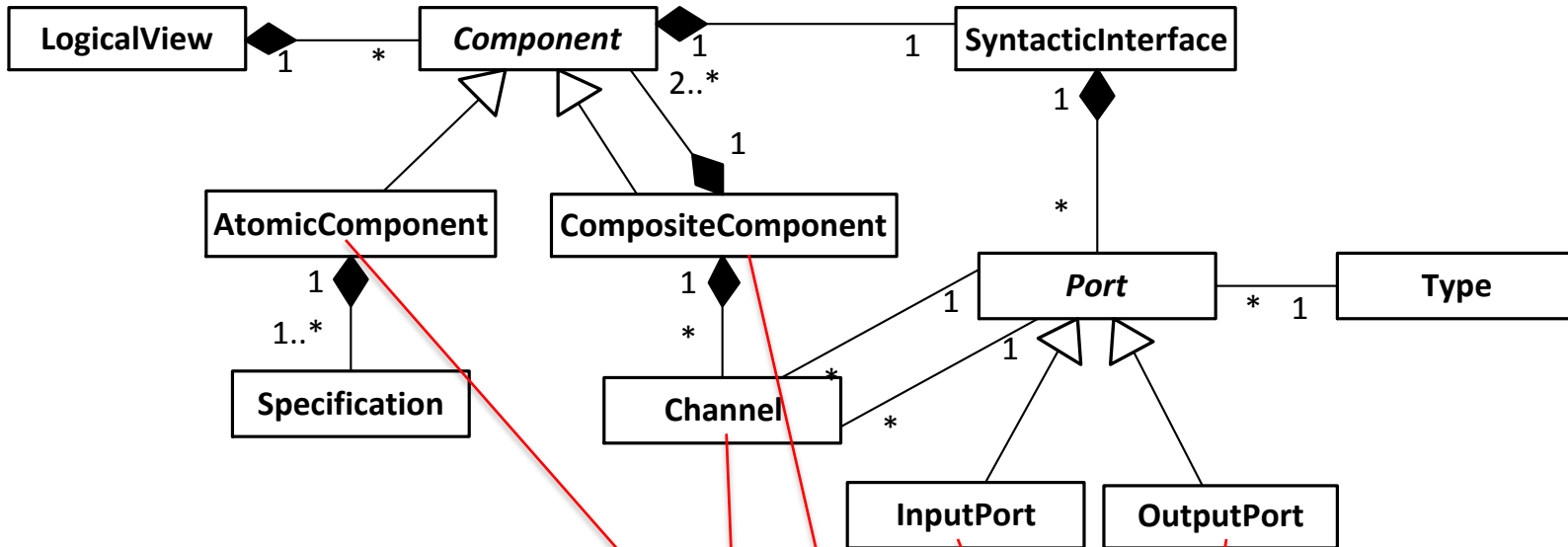


Functional Perspective



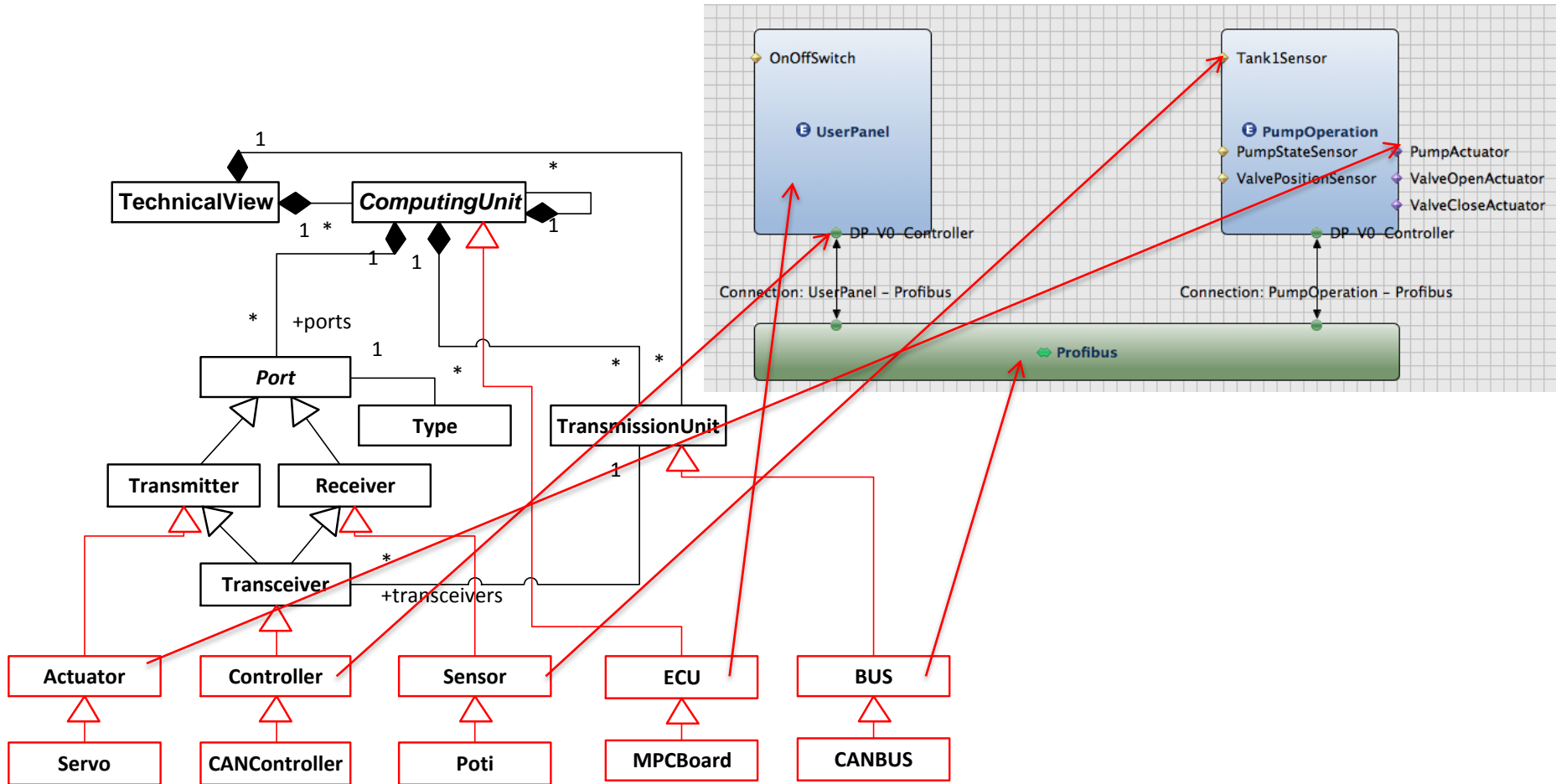
- Stream processing functions
- I/O Tables
- I/O Automata

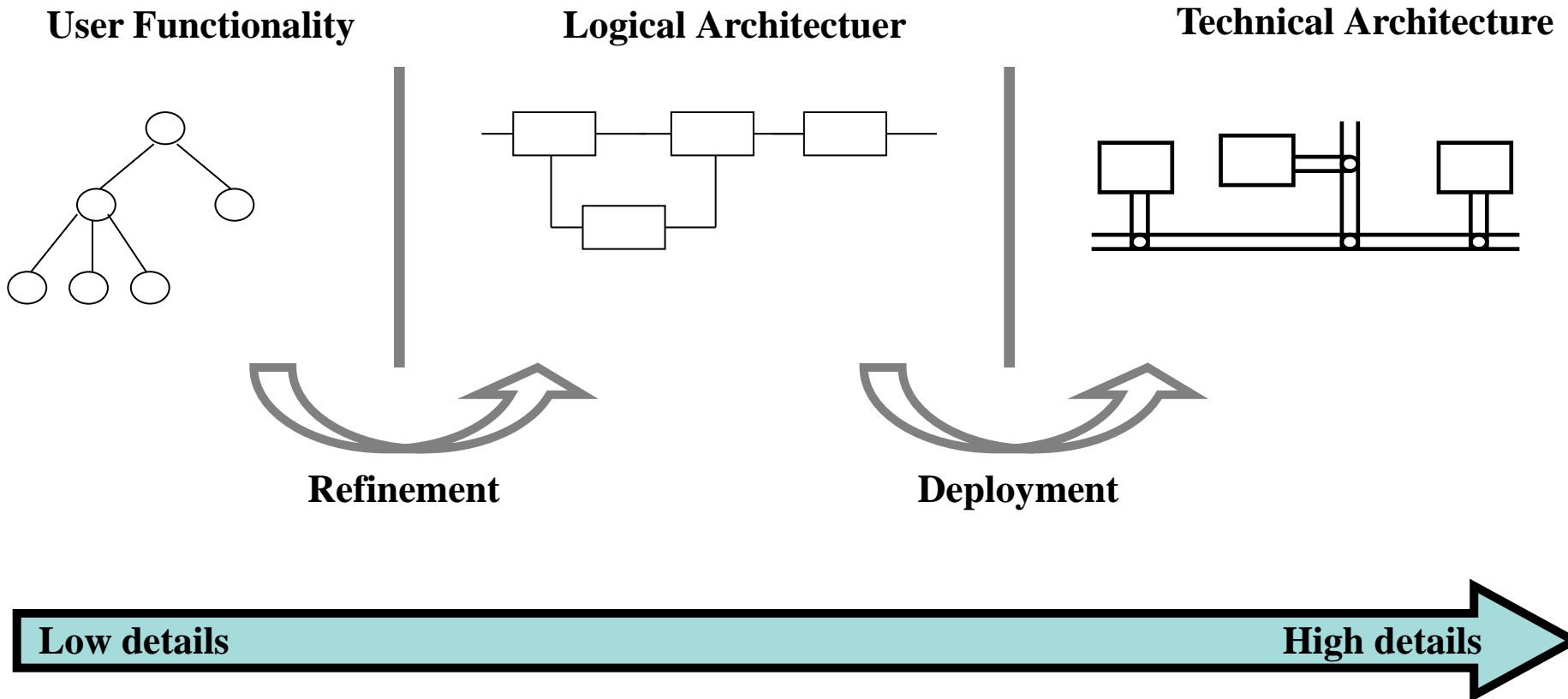
Logical Perspective



- Stream processing functions
- I/O Tables

Technical Perspective





Component and Port Mapping

Component Deployment

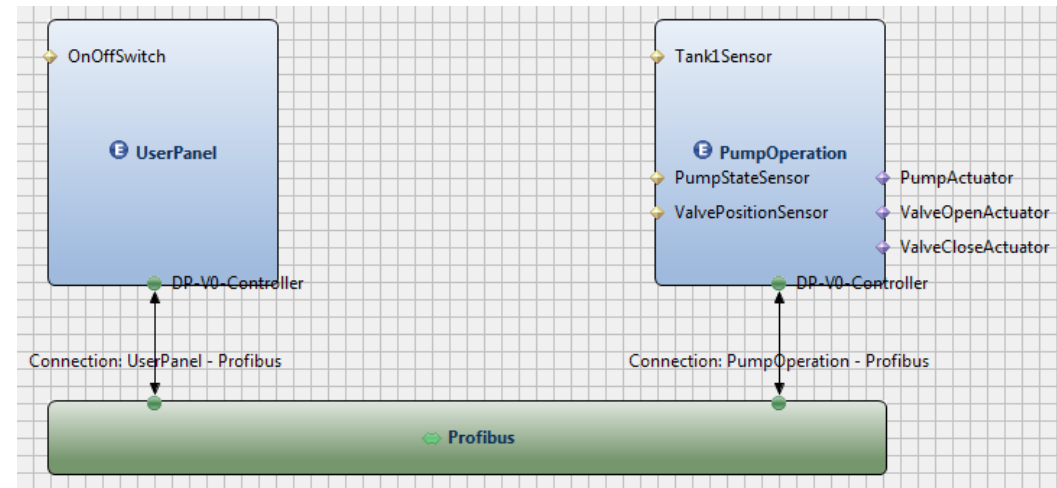
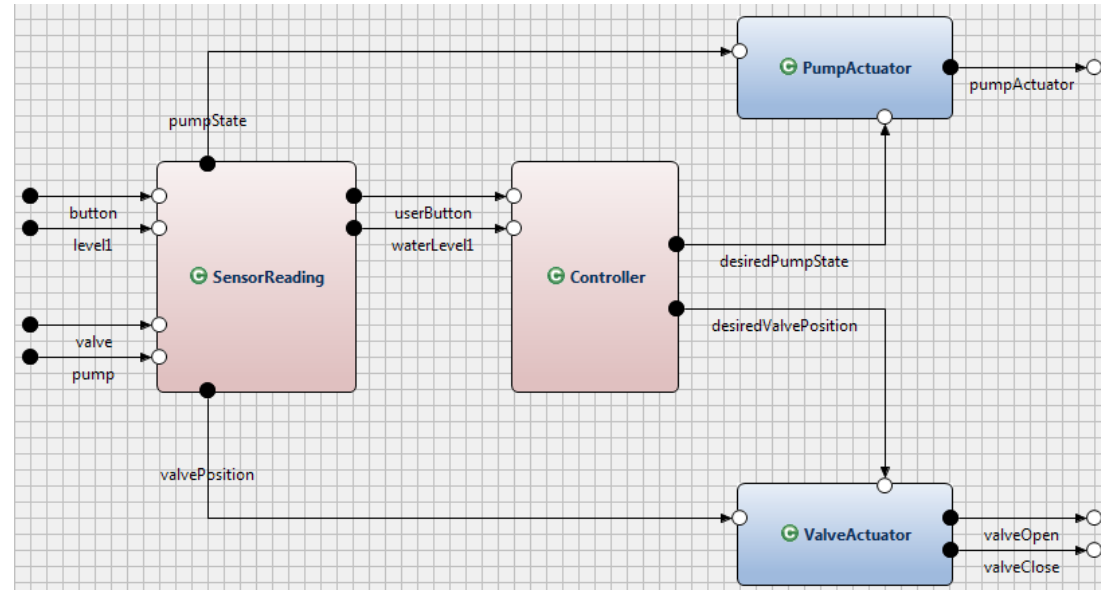
Double-click ECU to add mapping. Double-click component to remove

- ▶ **E** UserPanel
 - ▶ PumpingSystem.SensorReading.UserButtonReader
 - ▶ PumpingSystem.Controller
- ▶ **E** PumpOperation
 - ▶ PumpingSystem.PumpActuator
 - ▶ PumpingSystem.ValveActuator
 - ▶ PumpingSystem.SensorReading.PumpSensorReader
 - ▶ PumpingSystem.SensorReading.TankSensorReader
 - ▶ PumpingSystem.SensorReading.ValveSensorReader

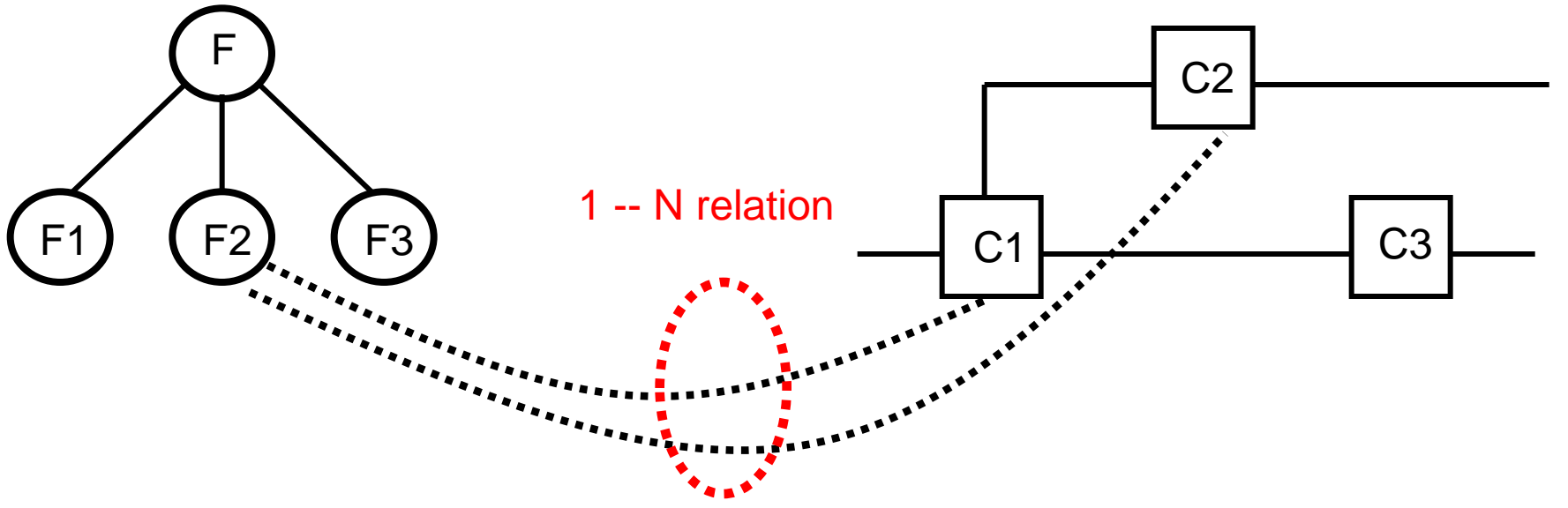
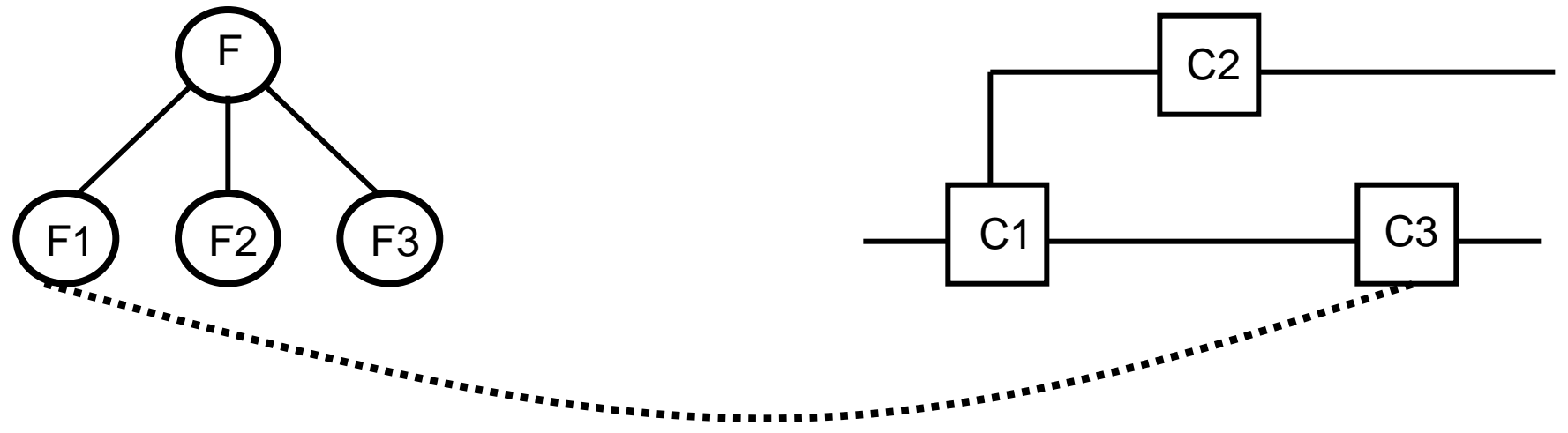
Port Mapping

Select hardware ports to map io-ports of the logical archit

- ▶ **E** PumpOperation (PumpActuator, ValveActuator, I
 - DP-V0-Controller
 - ◆ PumpStateSensor
 - ◆ Tank1Sensor
 - ◆ ValvePositionSensor
 - ▶ **P** PumpActuator
 - ⬆️ pumpActuator (PumpActuator)
 - ▶ **P** ValveCloseActuator
 - ⬆️ valveClose (ValveActuator)
 - ▶ **P** ValveOpenActuator
 - ⬆️ valveOpen (ValveActuator)
- ▶ **E** UserPanel (UserButtonReader, Controller)
 - DP-V0-Controller
 - ⬆️ desiredPumpState (Controller)
 - ⬆️ desiredValvePosition (Controller)
 - ◆ OnOffSwitch



Transitions between the layers



- Formal models of individual layers
- Ongoing research: Transitions between the layers