PAWiS – Simulation and Models

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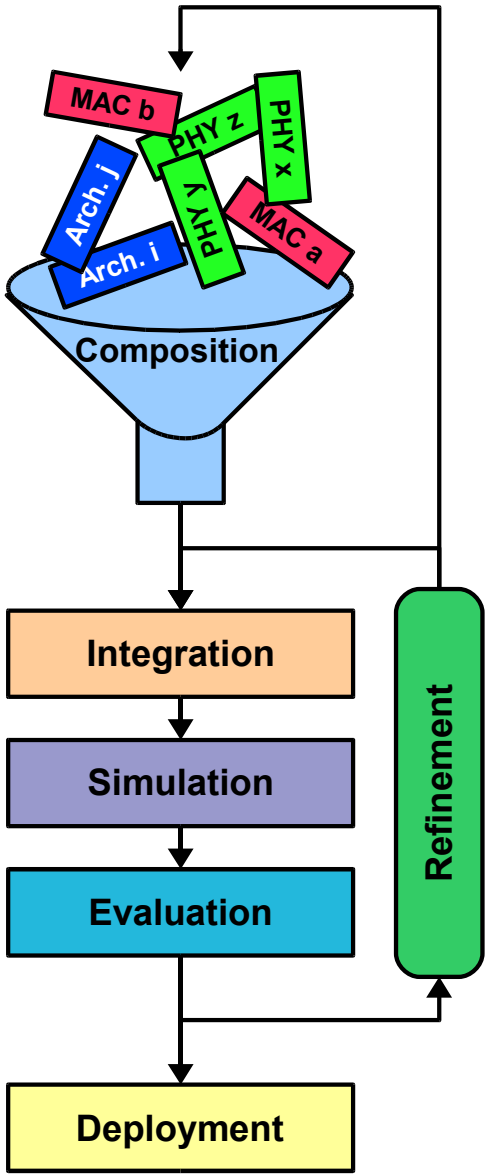
PAWiS Framework - Overview

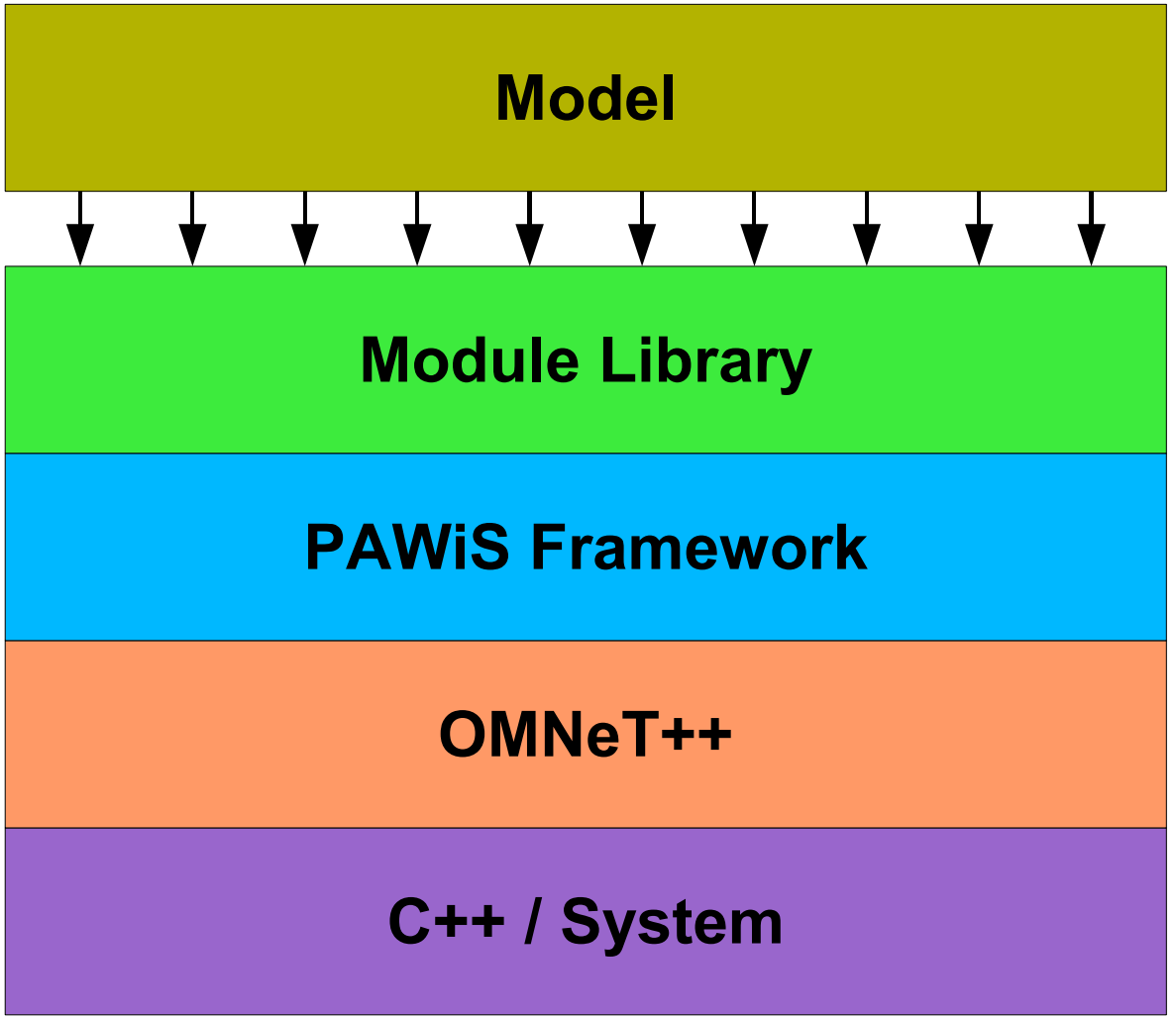
- Top Down development
- PAWiS Framework Concepts
  - Workflow – Design Refinement
  - User's View
- Intra Node
  - Modules
  - CPU
  - Power Meter
- Interface Specification, Module Library
- Extra Node
  - Environment
  - Air

PAWiS Framework - Concepts

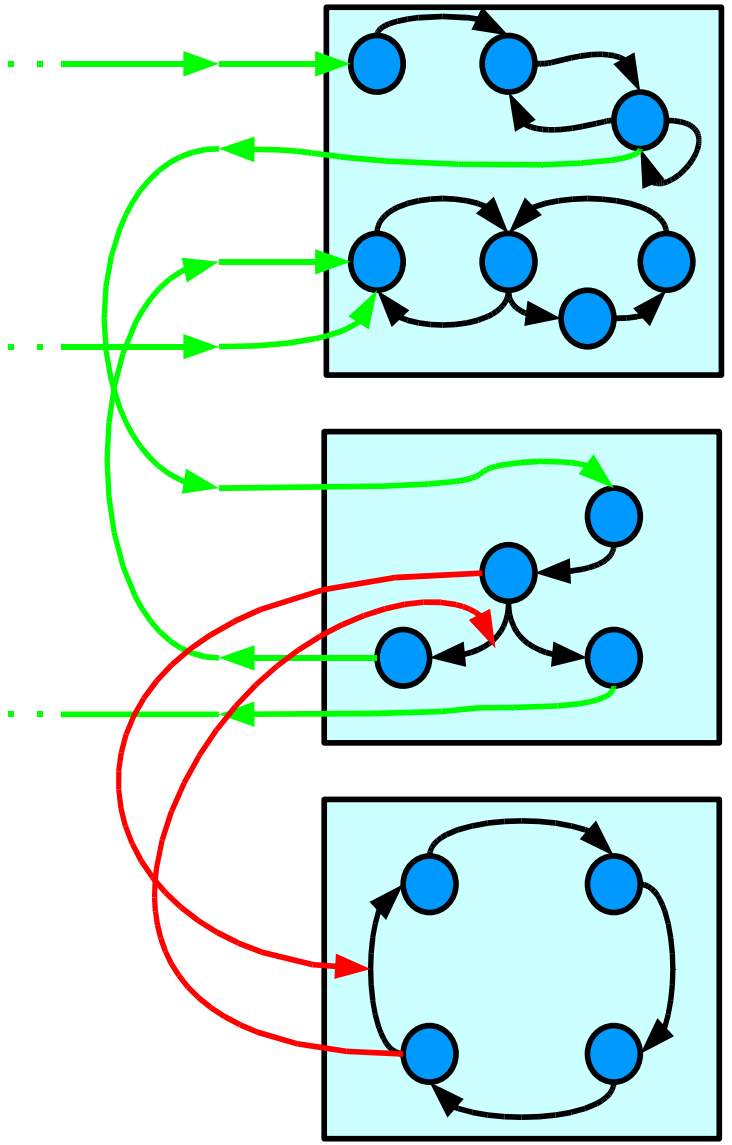
- Model
  - Network: outside of nodes
  - Modules: inside of nodes
- Virtual Prototype
  - Power Consumption
  - Timing Behavior
  - Function
  - Failures
- Module Tasks SW or HW
- Functional Interfaces
- Mediator HW ↔ Concept



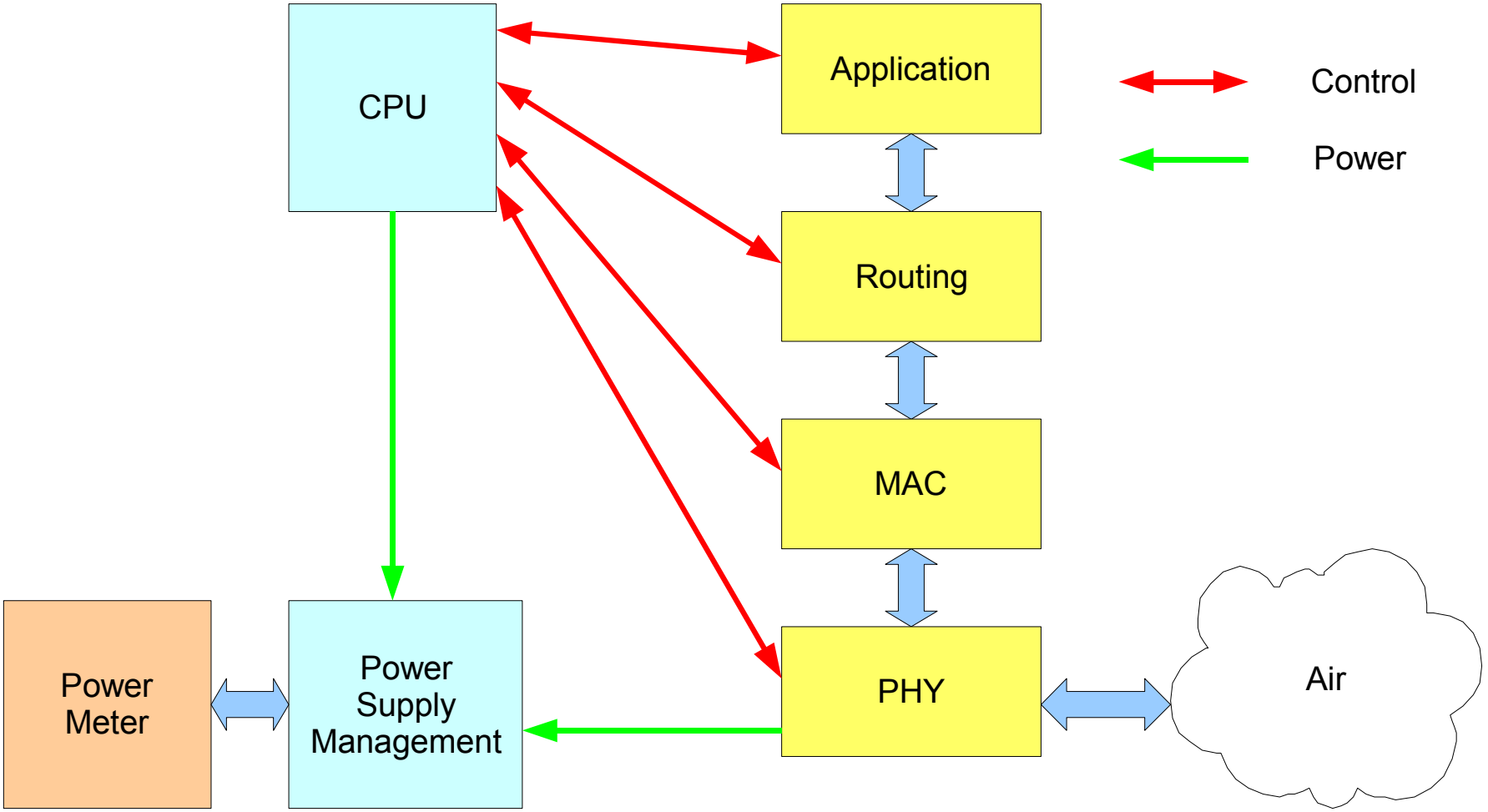
PAWiS Framework – User's View



PAWiS Framework – State Machine



PAWiS Framework – Simple Node

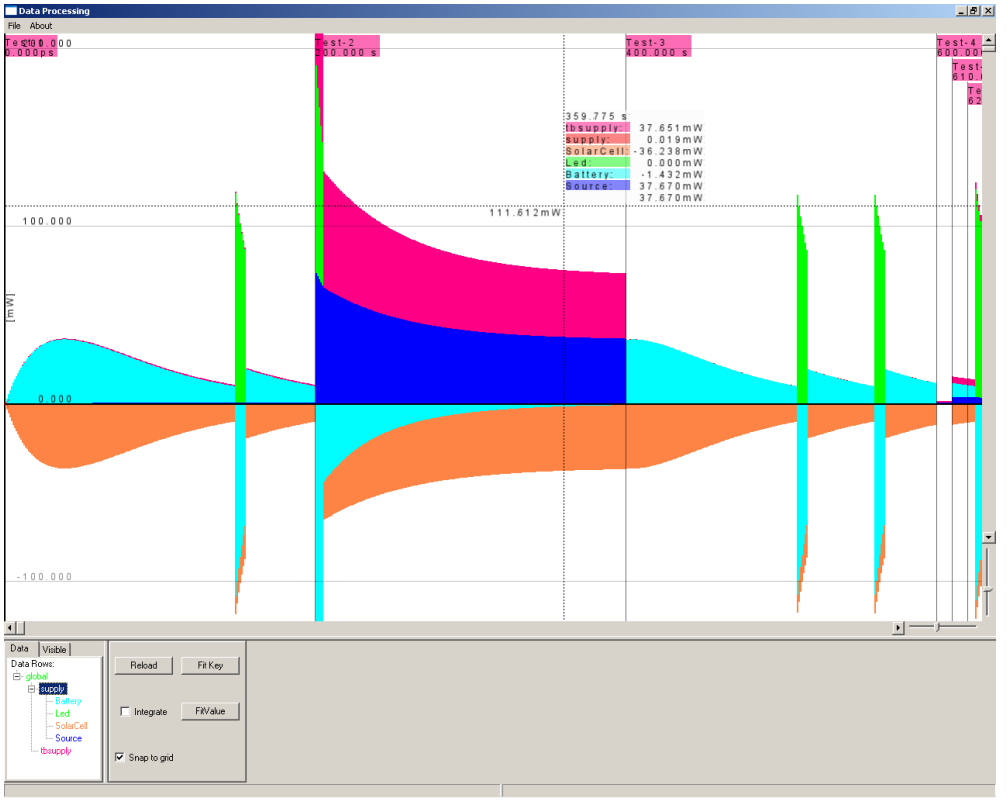


Software Tasks, CPU

- Software tasks
- Two-way simulation
  - Functionality
  - Timing, Power consumption
- Norm CPU
  - Replaceability
  - Scale timing and consumption
  - Processing unit proportion

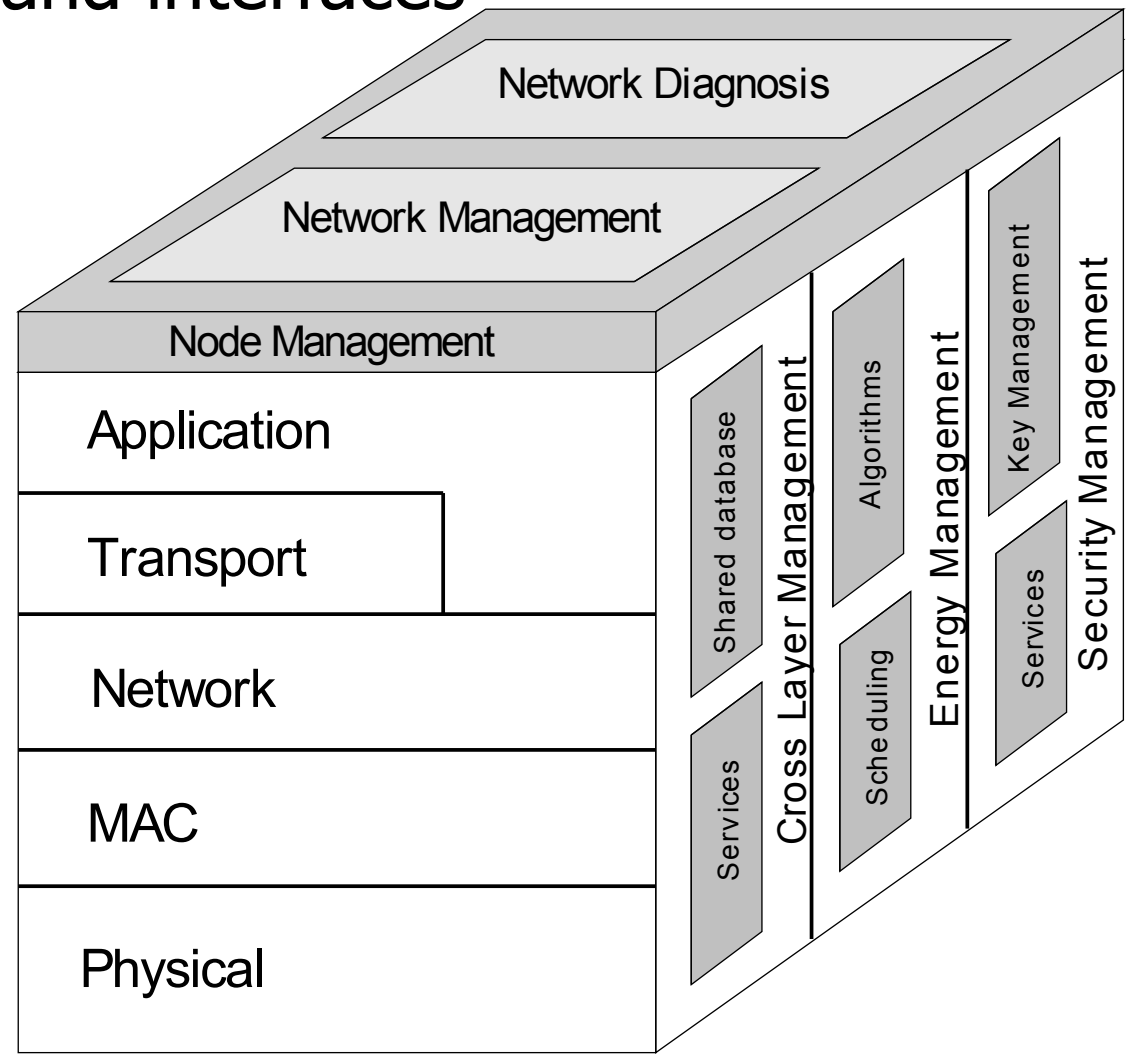
Power Meter

- Hierarchical power supply
- Sources
  - Efficiency (LDO or DC/DC)
  - Output resistance
- Consumers
  - HW Tasks
  - CPU: consumes power on behalf of SW modules
- Values provided by data sheets, measurement
- Values collected in log file
- Post Processing: Analysis

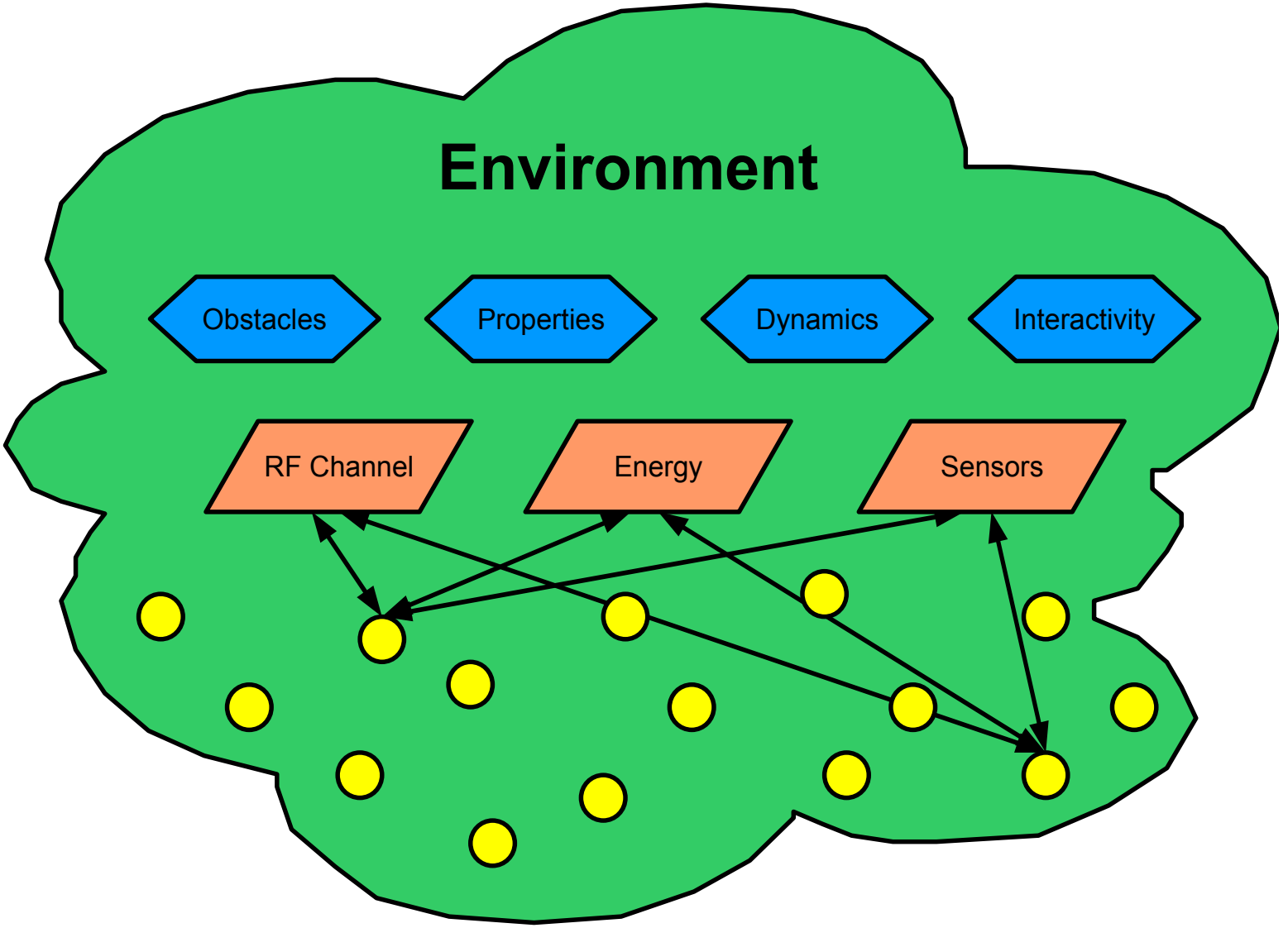


Interface Specification

- Standardized modules and interfaces
- Protocol stack
- Cross-Layer Planes
- Node Management
- Module Library

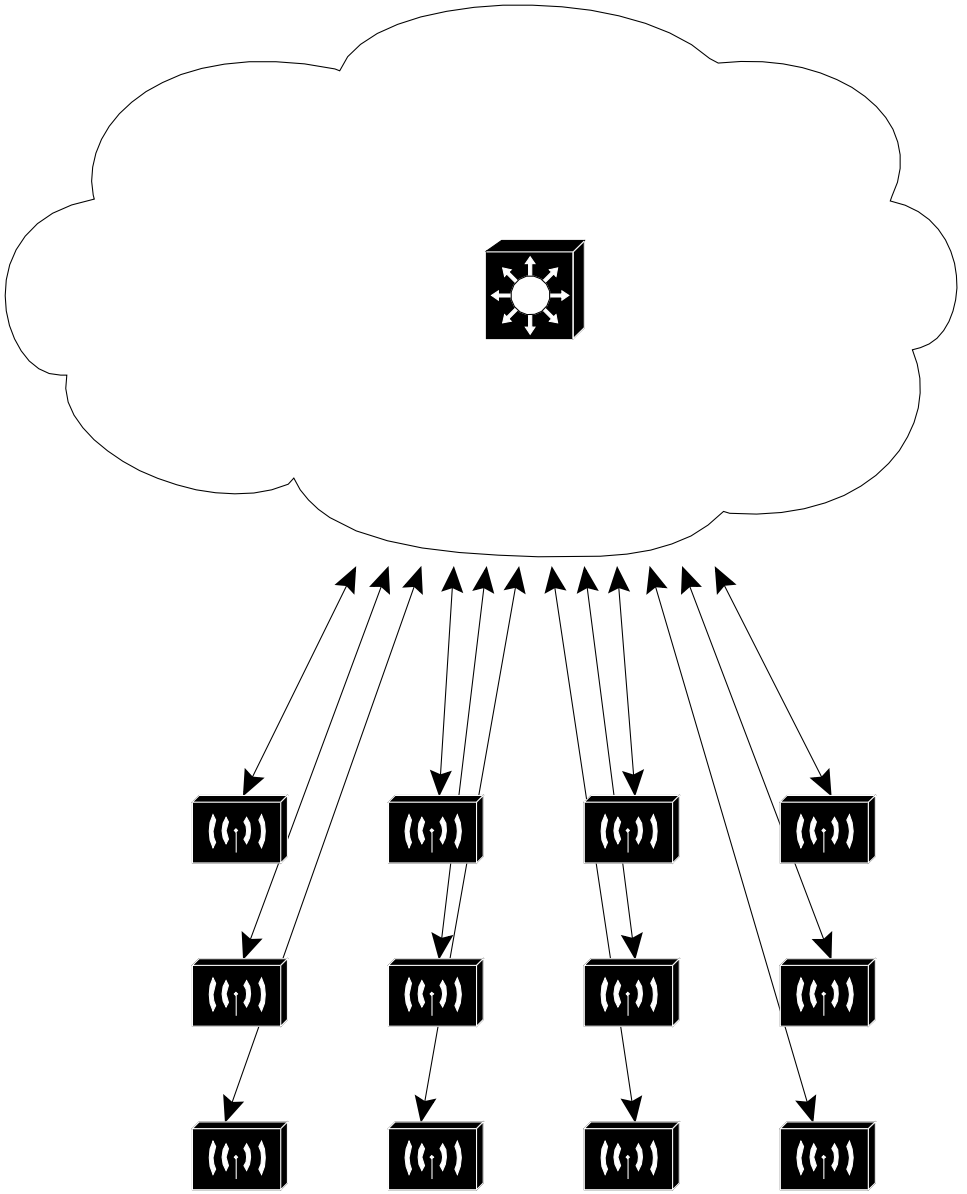


Environment - Scenario



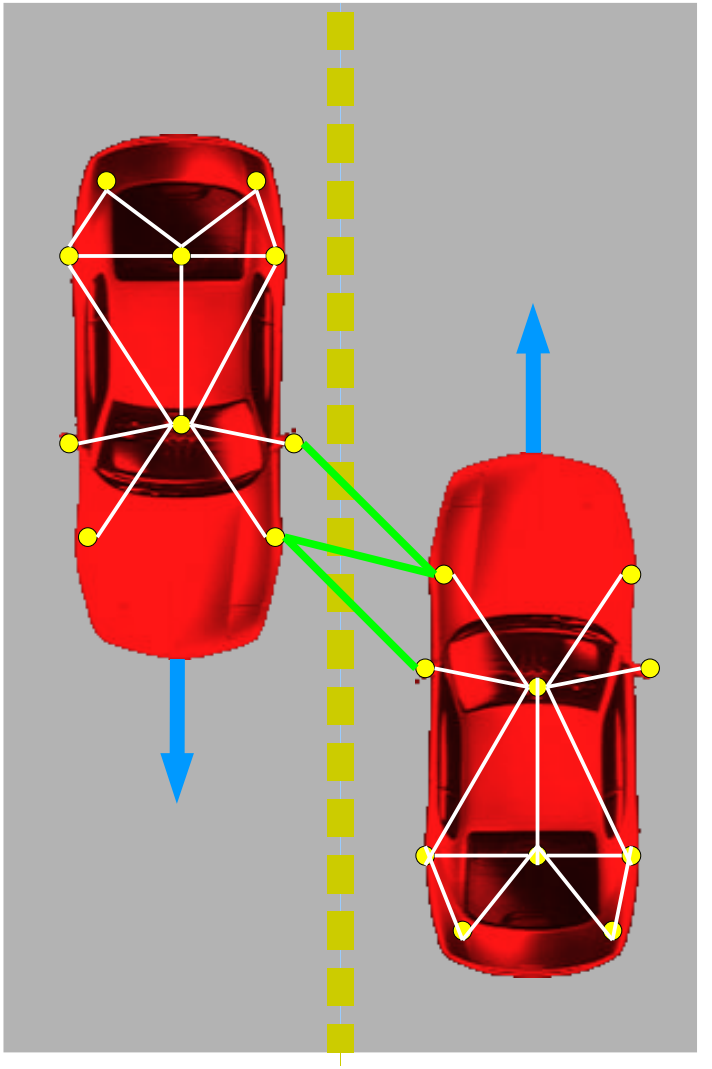
RF Interface

- global “Air” object
- acts like a Switch
- considers 3D arrangement, obstacles
- calculates attenuation
- every node connects to it
- “RF Messages” are distributed
- use BB equivalent instead of real RF



Future Path

- Air
  - Interferers
  - Obstacles
- Interactivity
  - Human Interaction
  - User Interface
- SystemC Integration



Summary

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