

Non - Duality of Program and Behavior

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Duality

Hardware and software work together and execute programs fundamentally due to “duality” of code and data.

Program/code explain the data, and the data explains the same program.

Program and Behaviors

- Non duality between program and behavior.
- System and network behaviors are orthogonal to the program.
- Hence exists “out of band” systems design and techniques to deal with behavior diagnosis and remediation.

So what's the problem ?

- Increases the complexity of techniques and system design, impedes scalability of behavior diagnosis techniques and systems.
- Fundamentally limits the scalability of distributed systems.

Is there another way ?

- Can the process model be changed to move towards duality of program and behavior?
- Can program = code + data + behavior ?

Thoughts ?

- Process model providing way to incorporate input/output of the process behavior state machine.
 - Dynamic code generation to change program behavior at runtime.
- Process model providing way to incorporate a control theoretic feedback control loops.