Transactuations: Where Transactions Meet the Physical World

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When Smart Home Is Not Smart

Inconsistent Behavior

▎General SmartThings Discussion[1]

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[1] SmartThings Community: https://community.smartthings.com

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"… this system imo is a *hobby for Samsung* and has never been consistent since day one. There is *no way I would trust this system* to do anything beyond monitoring under sink leaks."

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Failures in IoT

- Device failures
  - Battery drainage
  - Subsystem failures
  - Etc.
- Network failures
  - RF interference
  - Copper slap flooring
  - Etc.
- Concurrent execution
  - Data race bugs

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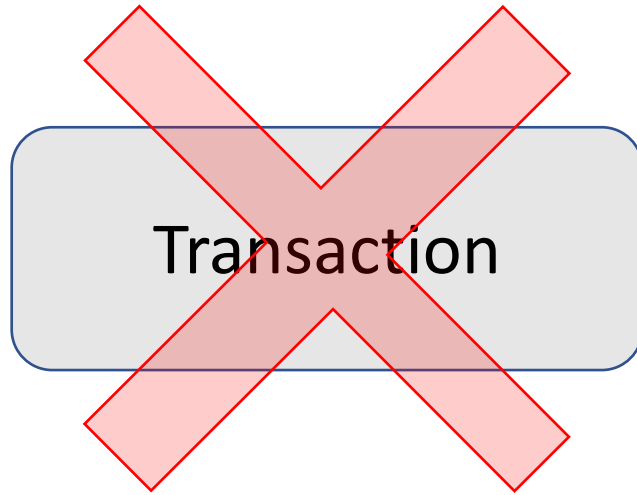- Concurrent execution
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Analyzed **182 apps** and
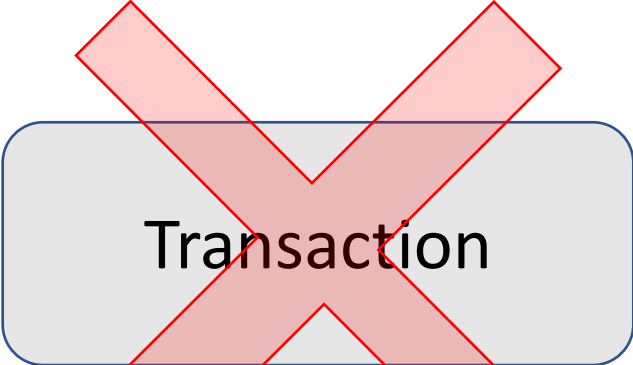found possible **309 problems**

Solution

Transaction

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- High-level abstraction for building reliable IoT applications

- Providing strong semantics for systems interacting with the physical world

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Track II: Session Runtimes