

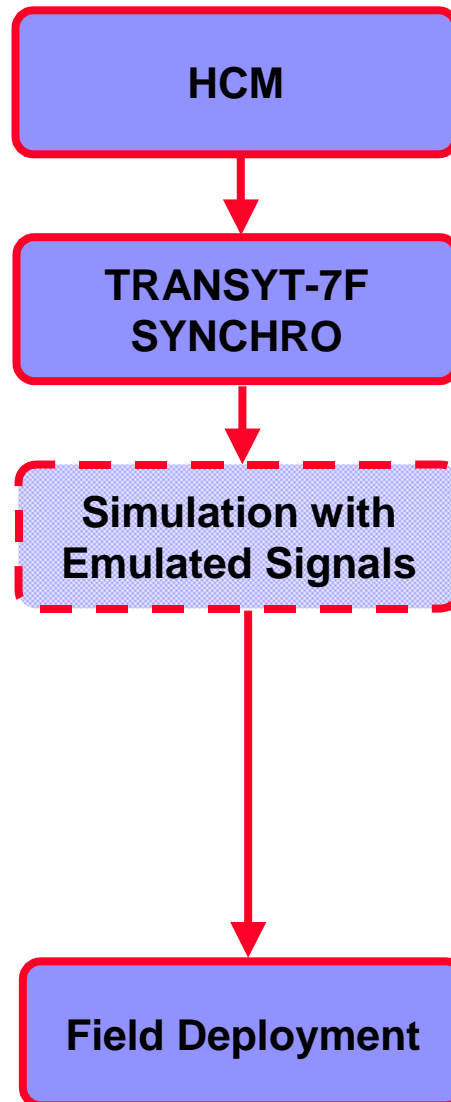
The Need for Controller Interface Devices



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Current State of Practice



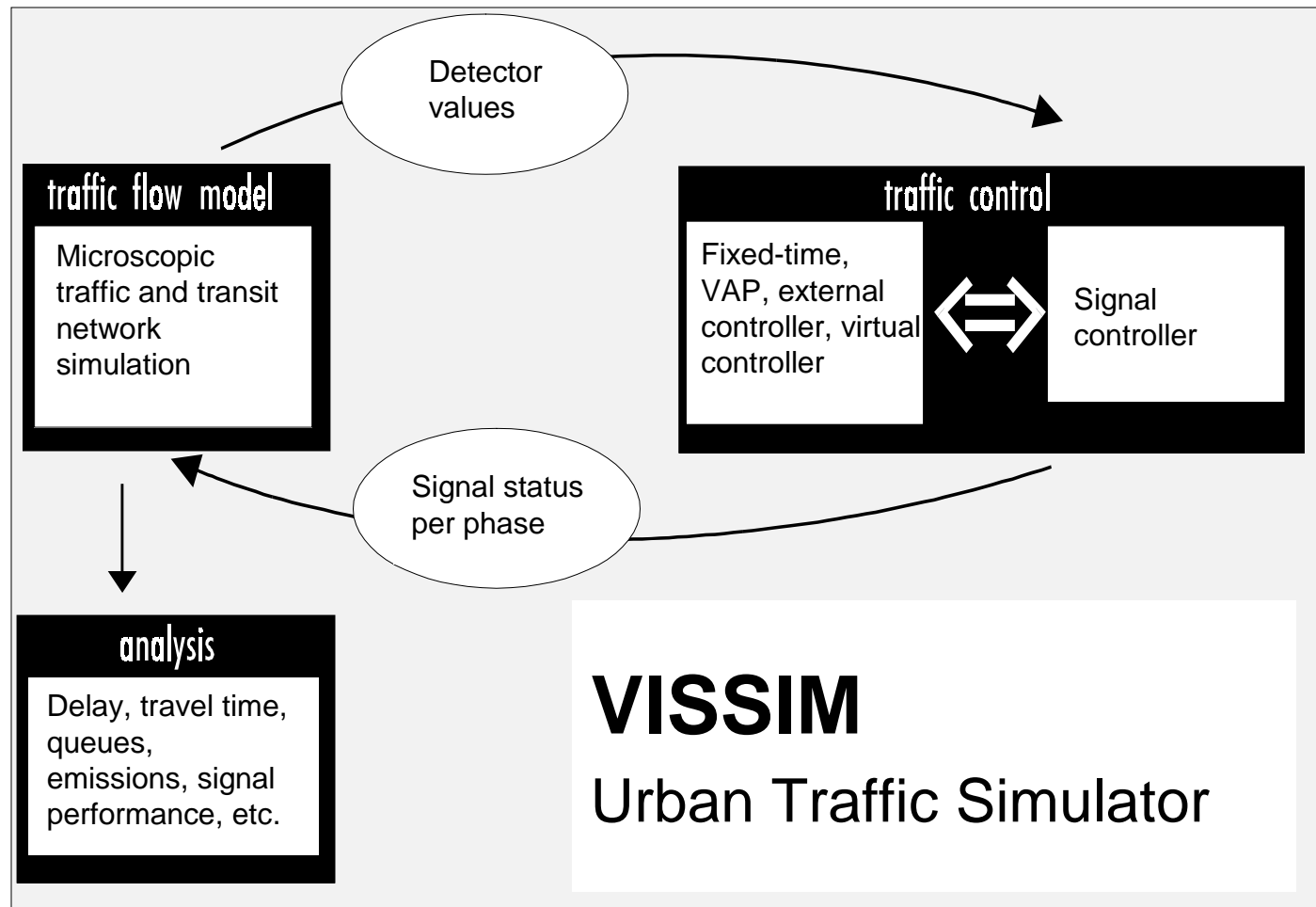


Problems with Current State of Practice

- ▶ **Simulation analysis does not reflect reality**
- ▶ Gap of knowledge between traffic engineers and signal engineers/technicians
 - ▶ Signal timing plans prepared independent of controller hardware/firmware capabilities often cannot be implemented
 - ▶ Signal engineers/technicians implement timing plans, which are not based on traffic engineering studies
- ▶ Controller implementation is too time consuming, thus complex control features are not used

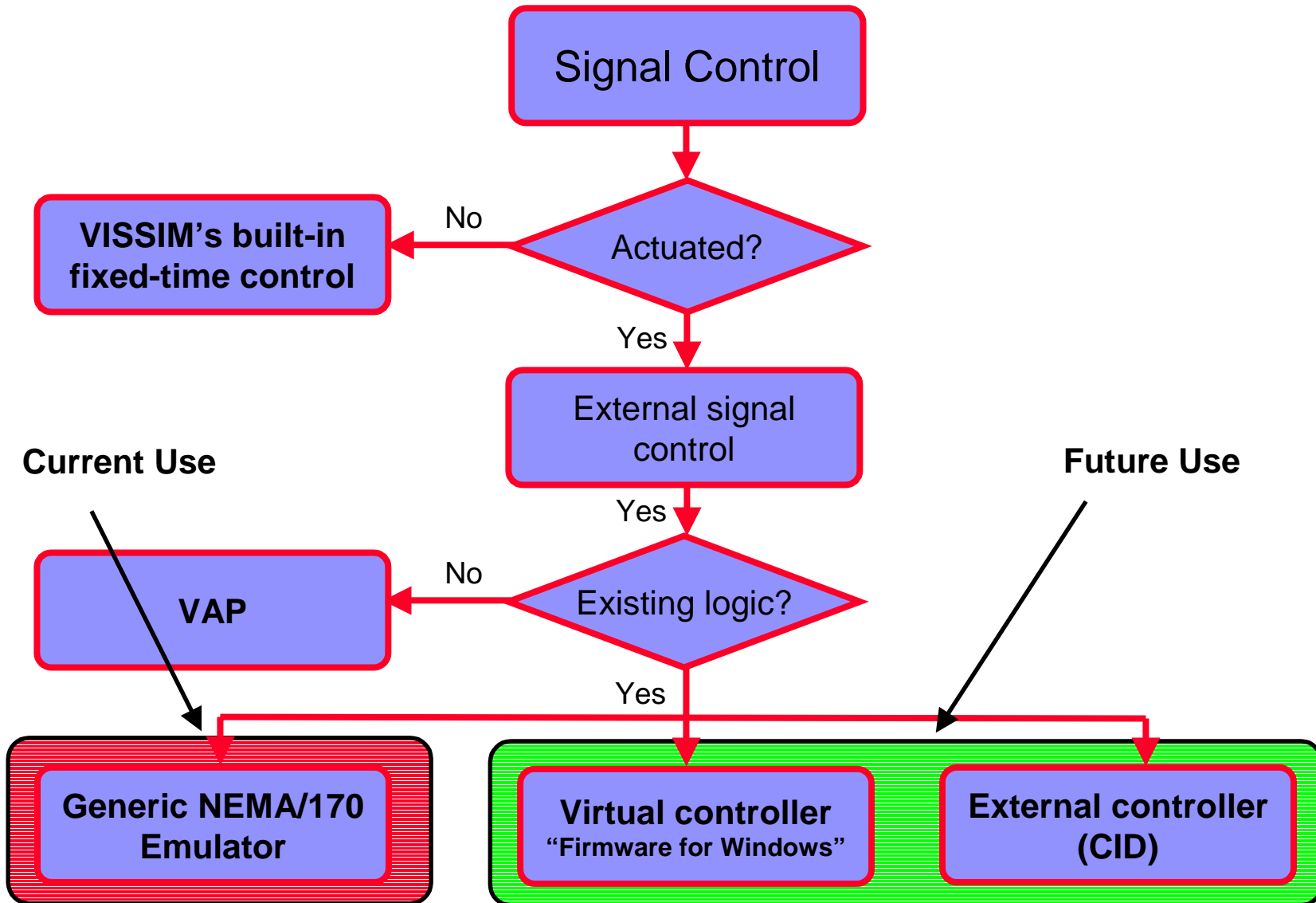


Typical Simulation Model Architecture





Signal Control Options in VISSIM





Virtual Controller “Firmware for Windows”

▷ Advantages

- ▷ **Simulation analysis does reflect reality**
- ▷ Makes available some controller functions that cannot be emulated easily, e.g.
 - ▷ RR preemption
 - ▷ LRT and bus priority
 - ▷ Alternative coordination modes
 - ▷ Vendor specific features
- ▷ Bridges the gap between traffic engineer and signal engineer/technician
- ▷ Allows traffic engineer to develop and test timing sheets to be deployed in the field

▷ Disadvantages

- ▷ Requires O/S-based firmware, not available for older controllers

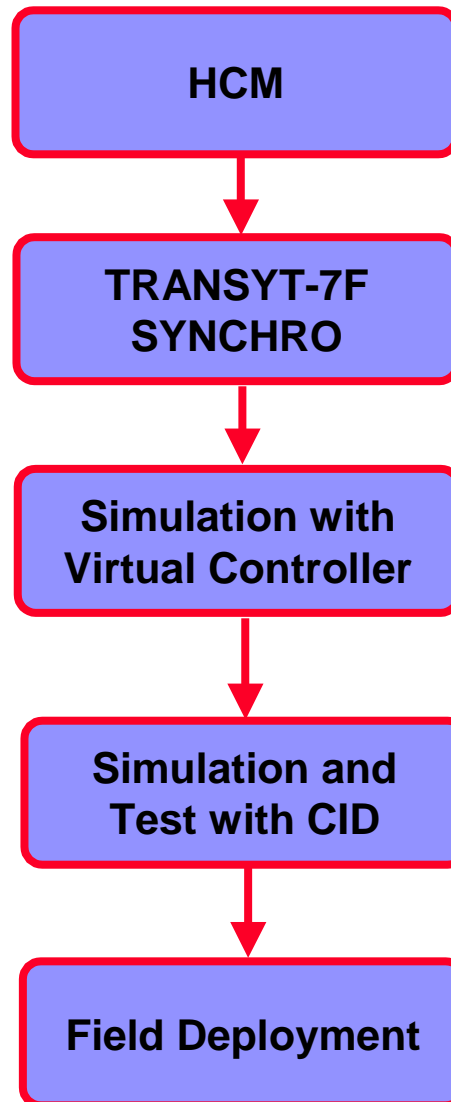


External Controller (CID)

- ▷ Advantages (in addition to Virtual Controller)
 - ▷ Makes available some controller functions that cannot be emulated easily, e.g.
 - ▷ Hardware specific features
 - ▷ Allows extensive “bench-testing” of controllers before field deployment
 - ▷ Works with any controller
- ▷ Disadvantages
 - ▷ Much slower than software-only simulation (has to run in real time)
 - ▷ Network size restricted due to real-time requirement
 - ▷ Requires many controllers to simulate large networks



The Ideal Work Flow





N. First Street at Tasman Drive (San Jose, CA)

- ▷ Evaluation of future traffic and LRT operation with McCain Vector Controller
- ▷ Problem
 - ▷ True representation of controller's LRT priority is critical!
- ▷ Approach
 - ▷ Emulation of Vector Controller in VISSIM
- ▷ Preferred Approach
 - ▷ CID II for traffic analysis
 - ▷ CID II for controller testing
 - ▷ CID II for field implementation
 - ▷ Virtual Vector Controller for future traffic analyses