



ALICE DAQ Simulation using Foresight

Giovanna Di Marzo Serugendo
IT / CE

Outline

- ▶ New Specification
- ▶ Improvement Simulation Performances
- ▶ Results up to 12 sec.
- ▶ Approach adopted

New Specification

■ Simulation too Slow:

- More Abstract Internal Behaviour
- Equivalent Observable Behaviour

■ New Specification

- Flows vehicle several data instead of one DDLs, RORCs, LDCs
- New way of sending data to GDCs
- Removal of Global Variables

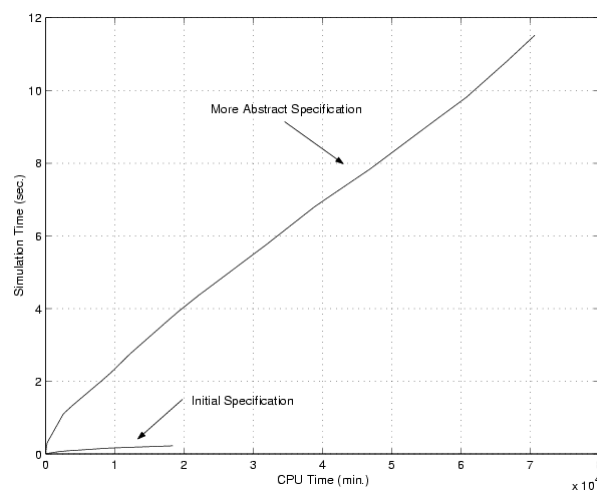
■ Improvement

- (0.3s -> 18000mins) vs (0.3s -> 191mins) => ~95 times faster

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3

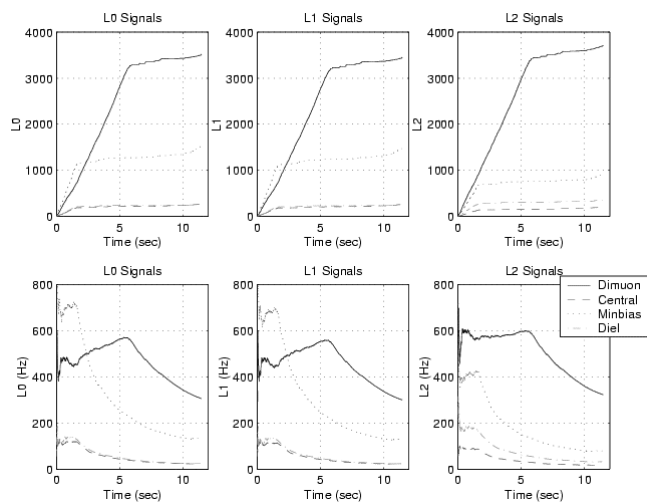
Simulation Performance



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4

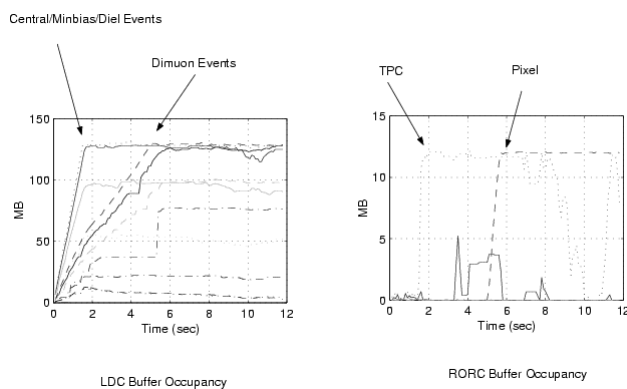
Results: Trigger



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5

Results: LDCs RORCs



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6

Results Available (up to 12 sec)

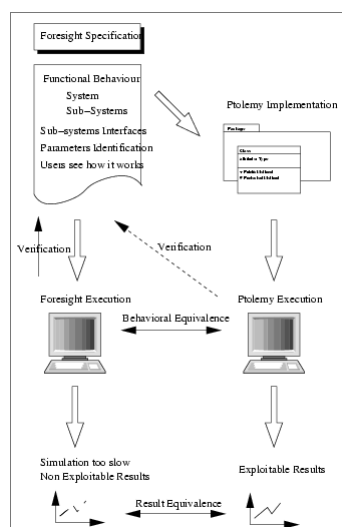
- ▶ Event Building Rate
- ▶ GDC Buffer Occupancy
- ▶ DDL Bandwidth Rate
- ▶ Detector buffer occupancy
- ▶ Other Algorithms
 - C/MB Trigger limitation (20Hz)
 - Different Set of parameters

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7

Approach Adopted

- ▶ Foresight specification
 - functional behaviour of system
 - functional behaviour of sub-systems
 - interfaces definition
 - parameters identification/value
 - execution of specification
 - valuable document
- ▶ Ptolemy implementation
 - equivalent simulation
 - considered correct implementation of specification
 - exploitable results



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8

Conclusion

▶ New Improvement

- Impossible without changing observable behaviour

▶ Formal Specification:

- Good for Definition and Documentation
- Complex system: Bad for long term simulation

▶ GUI

- Parameters settings
- Choice of Algorithm
- Starting Foresight Simulation