

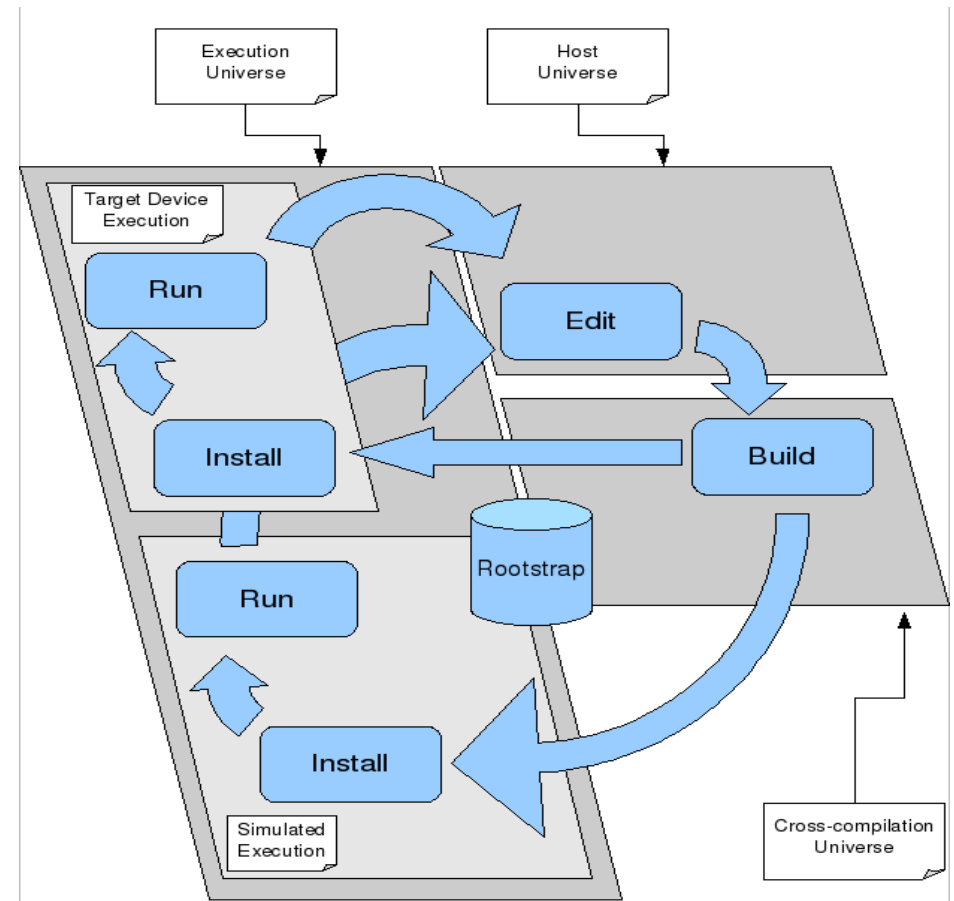
# Scalability of parallel workloads: the effects of granularity and scheduling in video processing

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# Mobile software development

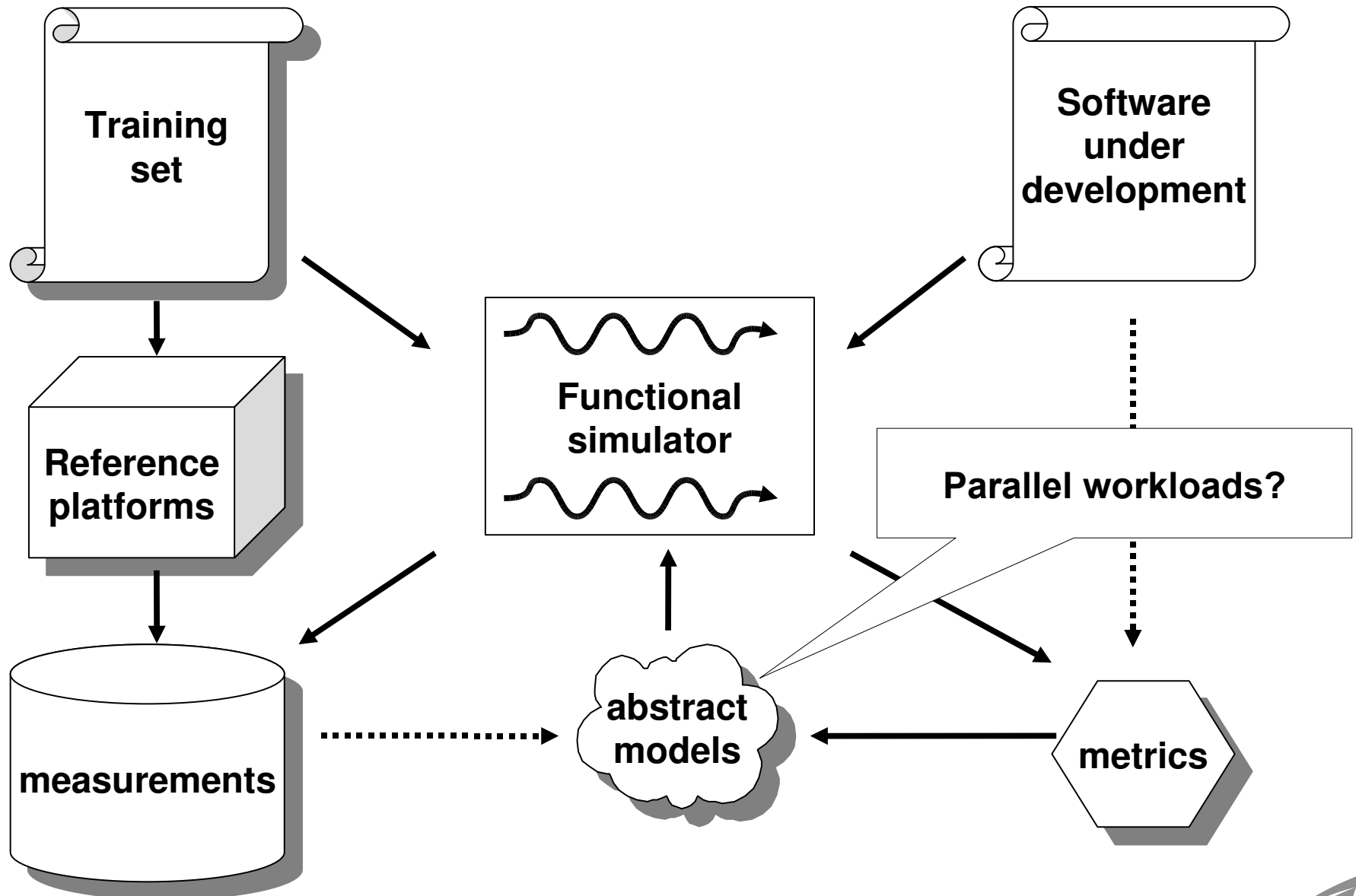
- Typically host  $\neq$  target
  - Cross development
  - Simulators
- Observability wall
  - Especially energy
  - Simulators functional
  - Limited I/O on target



<http://maemo-sdk.garage.maemo.org/user-guide.html>



# Rapid feedback during development

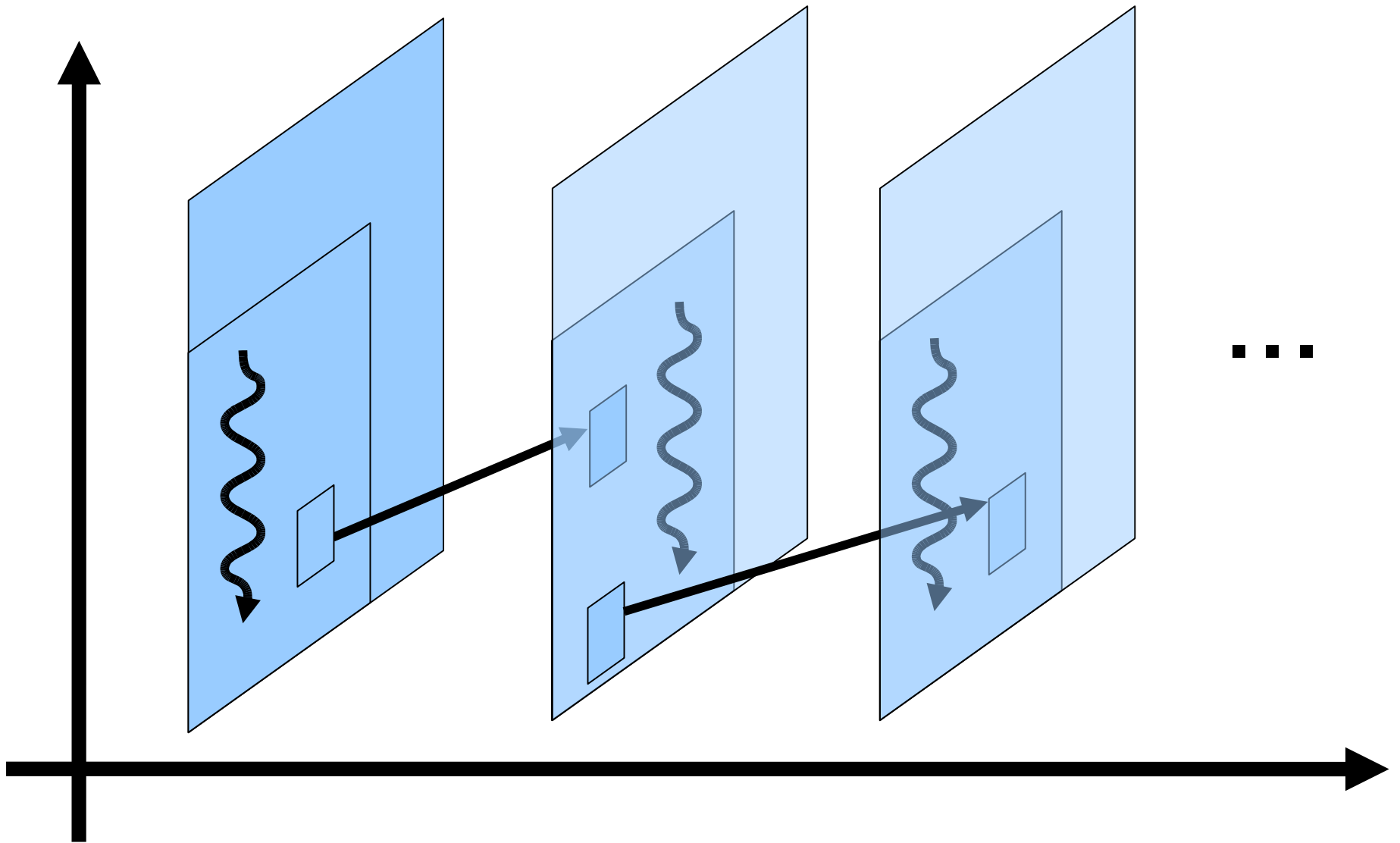


# Parallelism, scalability

- Parallel hardware is the trend
  - Also in mobile domain
- Writing parallel software is difficult
- Ensuring good performance is difficult
  - Tools can help in understanding performance
- Achieving scalability is essential
  - Ideal scalability vs real world scalability



# Test workload: x264

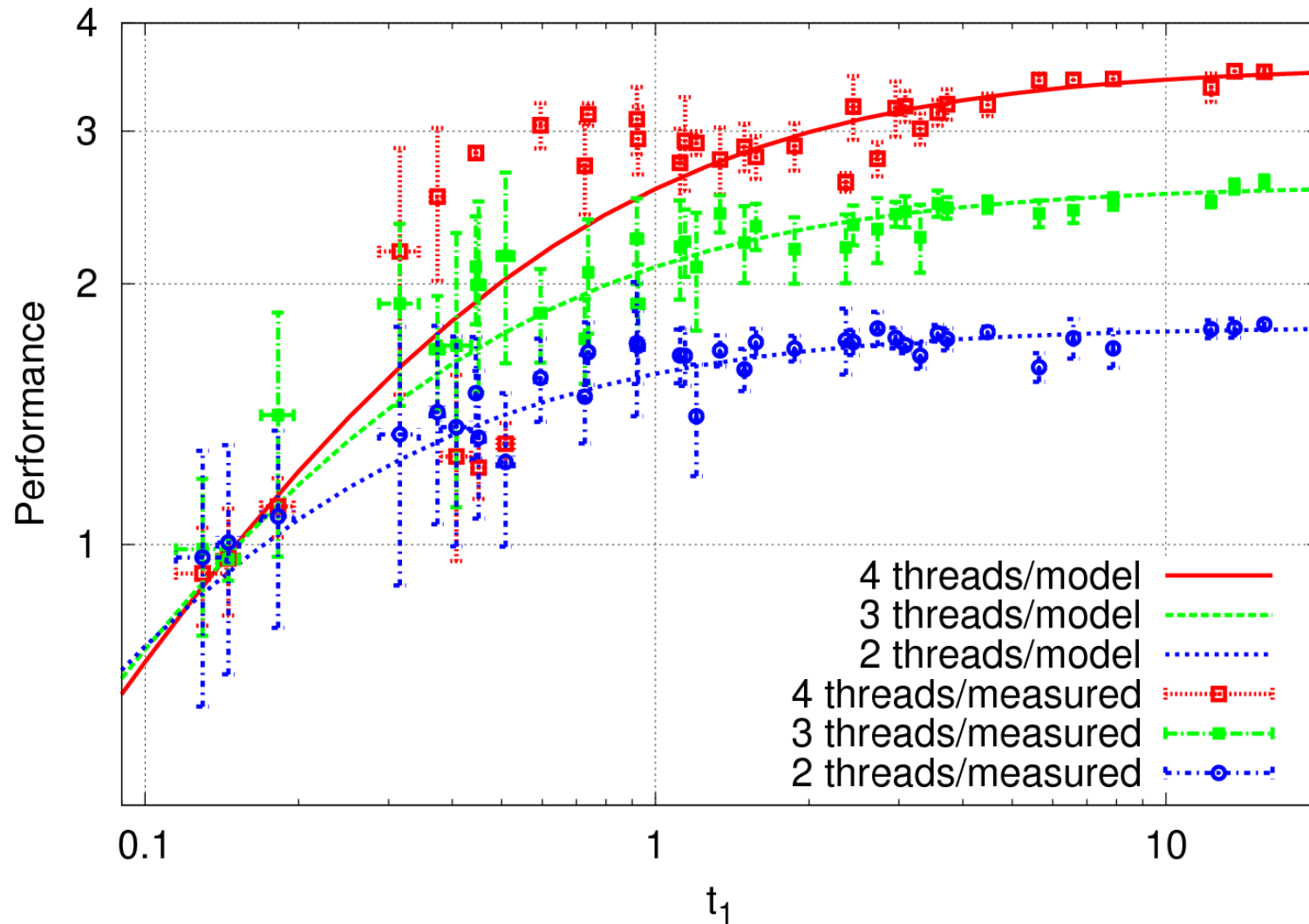


# Experimental setup

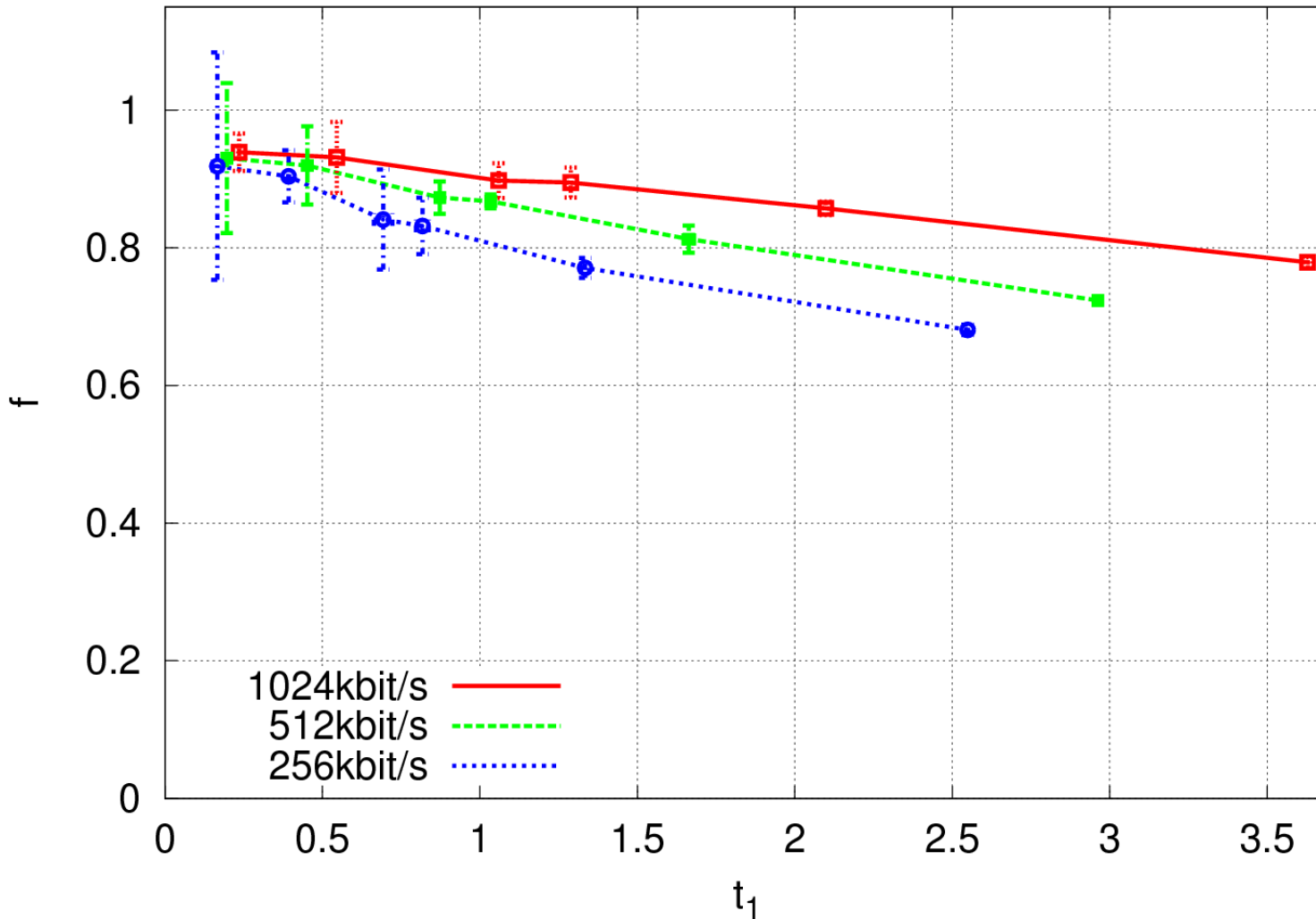
- Several platforms
  - ARM PB11MPCore
  - NEC NaviEngine (ARM11MPCore)
  - AMD Phenom
  - Intel Core2 Quad
  - Intel Atom 330
- Several Linux kernel versions
  - 2.6.21 – 2.6.28, O(1) and CFS schedulers



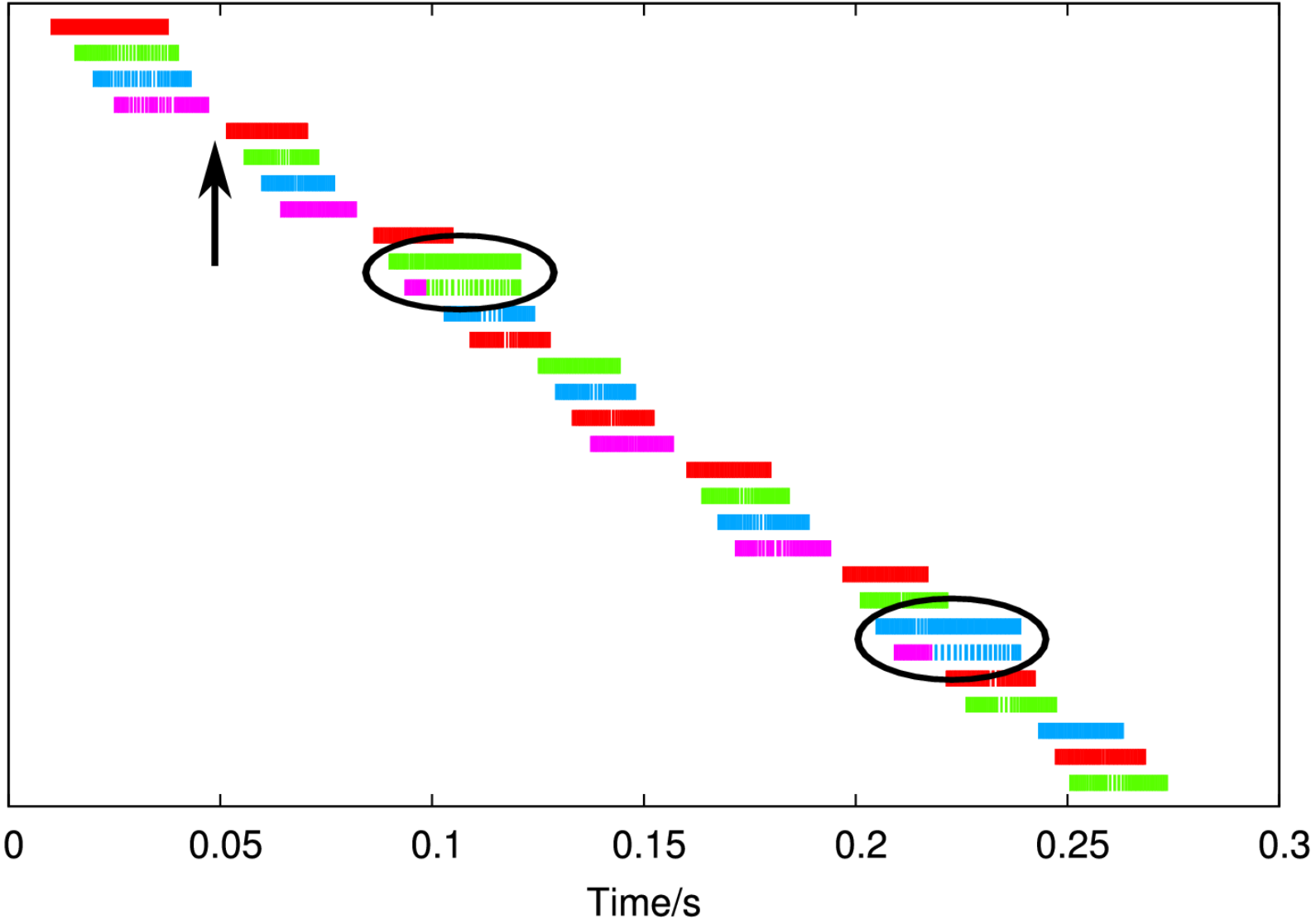
# Parallel workload behavior



# Can be understood?



# Scheduling



# Summary

- Encouraging result
  - Parallel performance can be understood
- Challenges to be tackled
  - How to determine areas of turbulence?
  - Characterizing more dynamic workloads
- Practical trials in simulators
  - Especially scheduling seems challenging

