

Quality of Service for an Uncertain World

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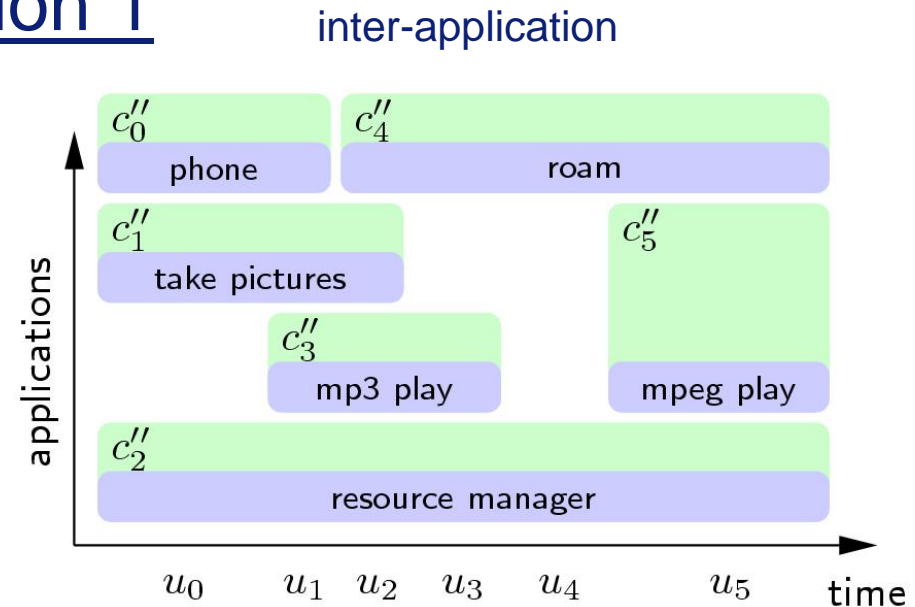
different sources of variation 1

arising from **demand side**:

1- application

- more modes
- concurrent applications
- higher semantic processing

- intrinsic



different sources of variation 2,3

arising from **supply side**:

2- manufacturing

3- operation

- intrinsic

different sources of variation 4

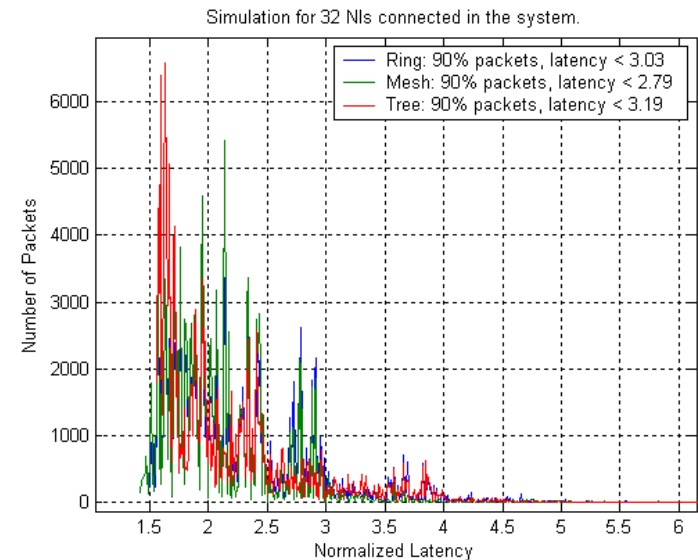
arising from **supply side**:

4- architecture

- multi-hop networks
- memory controllers
- multi-processors
- load balancing
- caches

- not intrinsic

architecture (NOC latency)

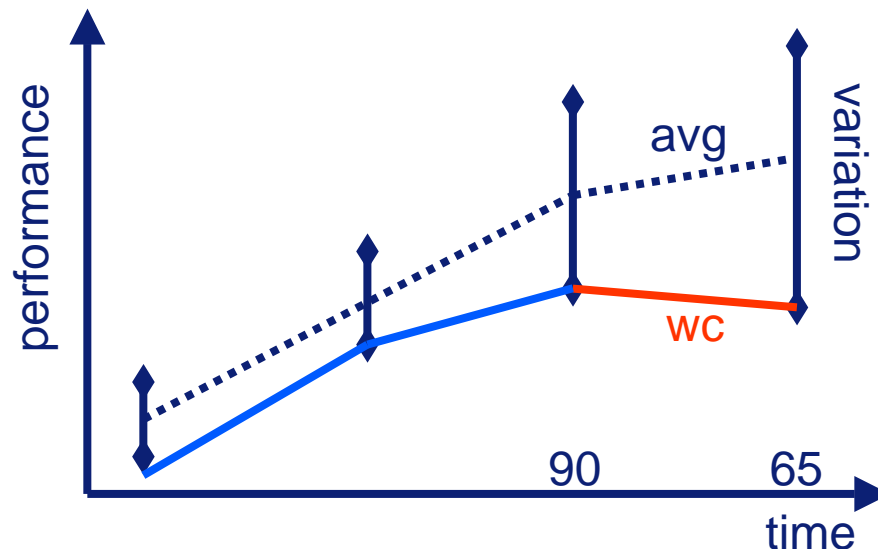


different sources of variation

variation = difference between average and worst-case (requested / offered) performance

dynamism = rate of variation

- **variation & dynamism** are increasing
- cost of worst-case design is too high
 - worst-case is often too pessimistic
 - sum of worst-cases versus worst-case of sum
- **worst-case performance decreases:**



goal

- integrated management of
 - resources
 - energy
 - performance
- in the presence of
 - manufacturing
 - operation
 - architecture
 - application
- variation & dynamism
- through quality of service

