

Execution Architecture Soft Real Time design

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Abstract

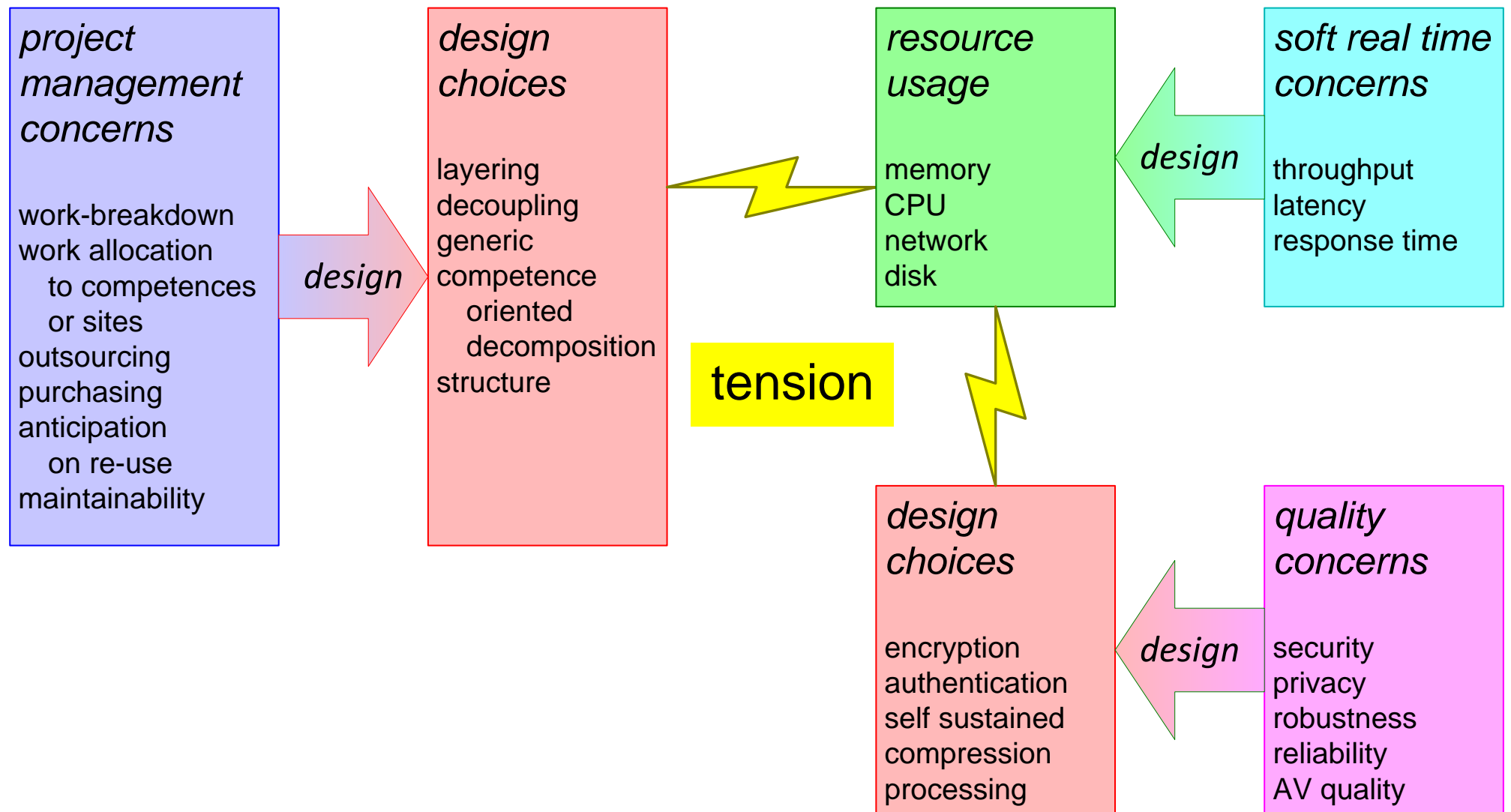
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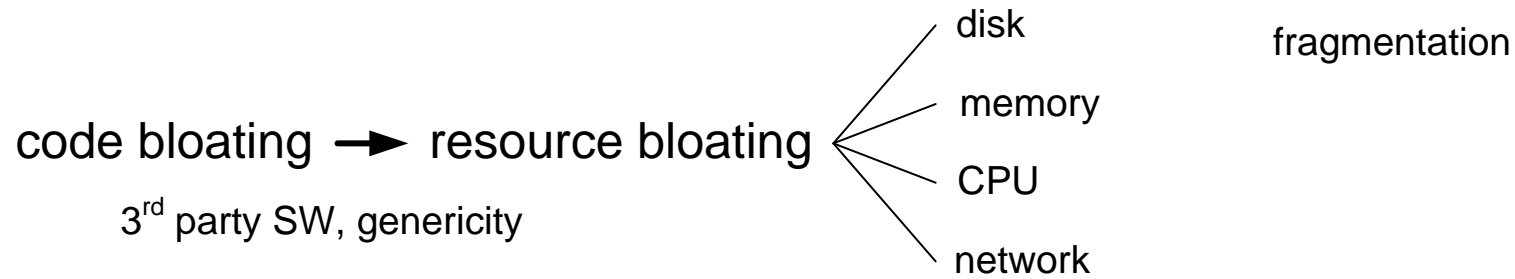
August 16, 2025
status: planned
version: 0.2

logo
TBD

Tension between different types of concerns



Root causes of soft real time problems



abundant layering or decomposition

too fine granularity eg bitwise I/O

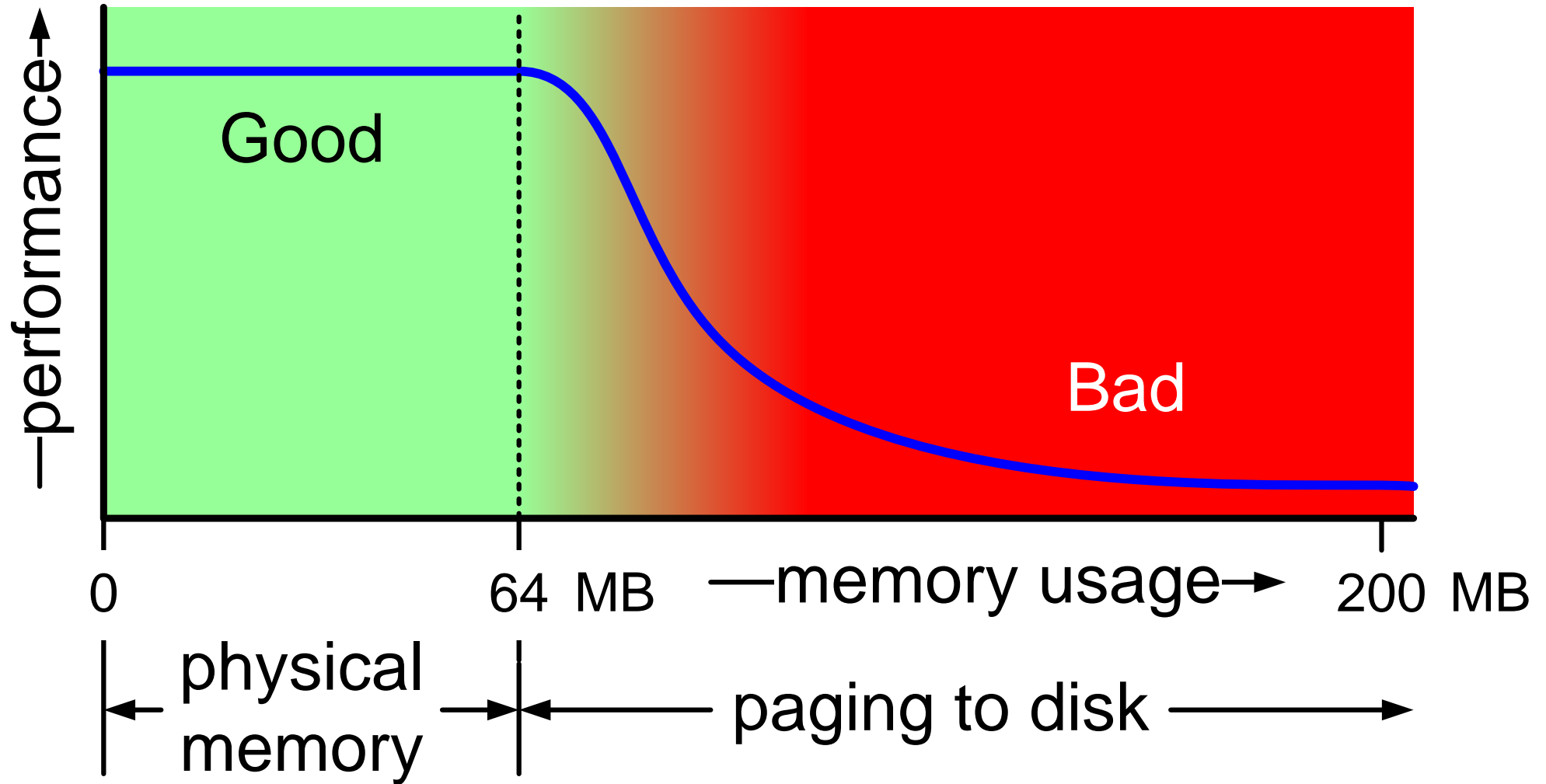
sequentialization

counterproductive optimization eg prefetching

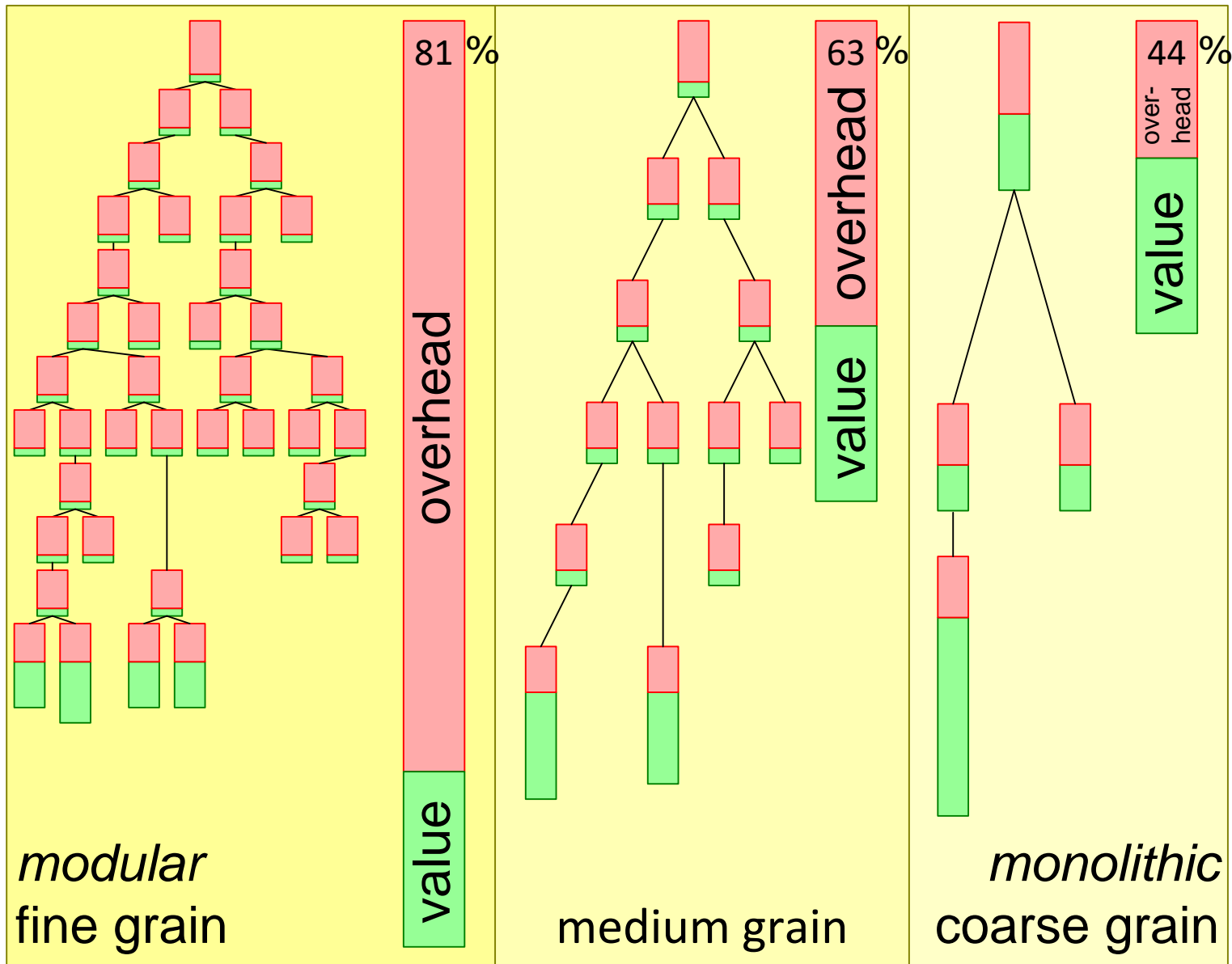
background activities virus scanners, firewalls, polling activities (Windows critical update)

scalability of algorithm e.g. searching brute force works upto ca 10000 entries

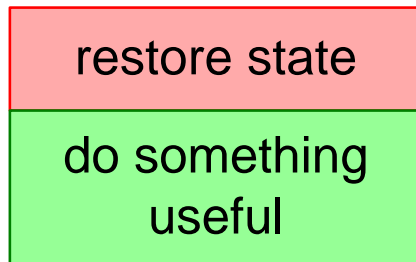
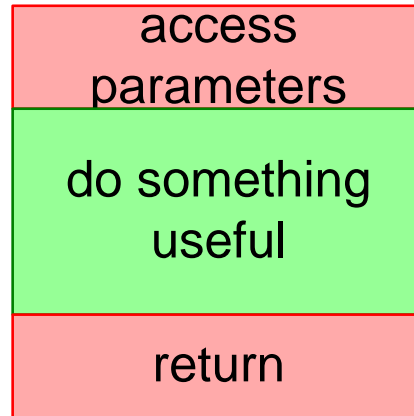
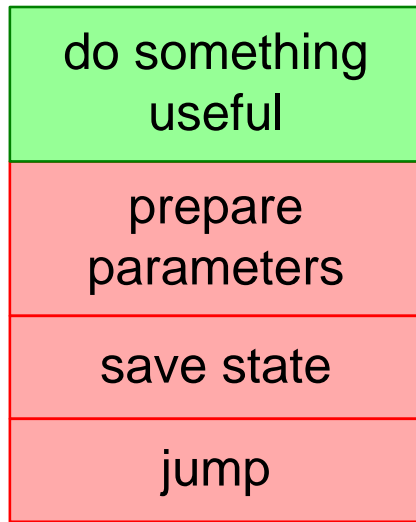
Performance as function of memory use



Overhead penalty of modularity

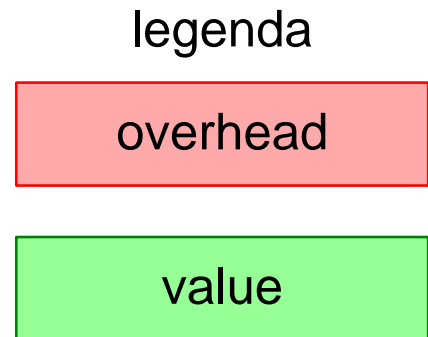


Function call overhead

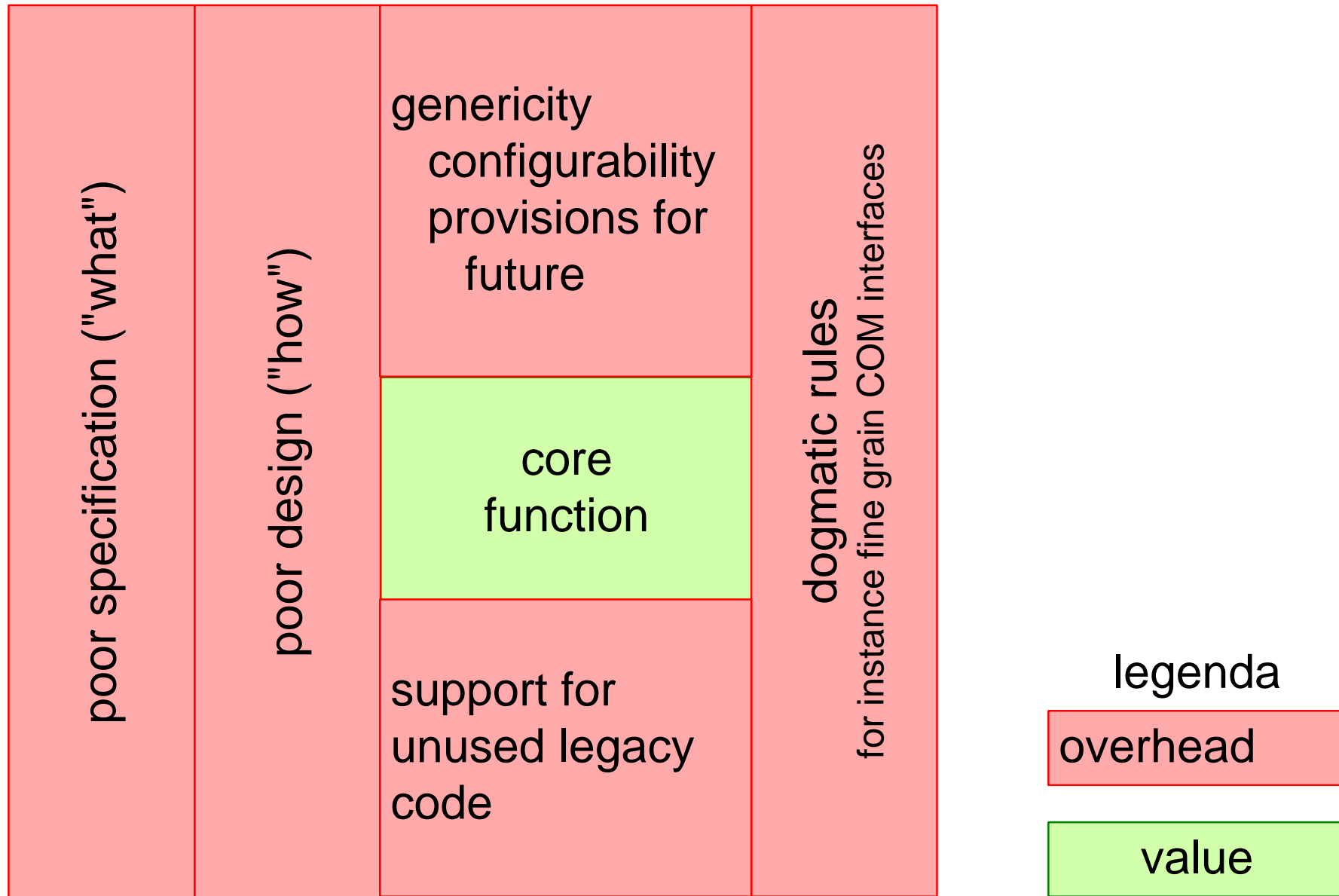


Load and depth dependent
(hidden) side effects

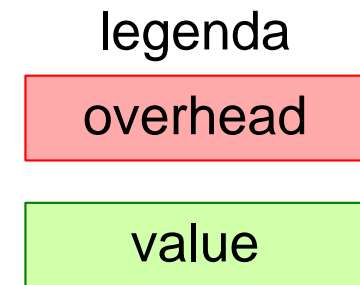
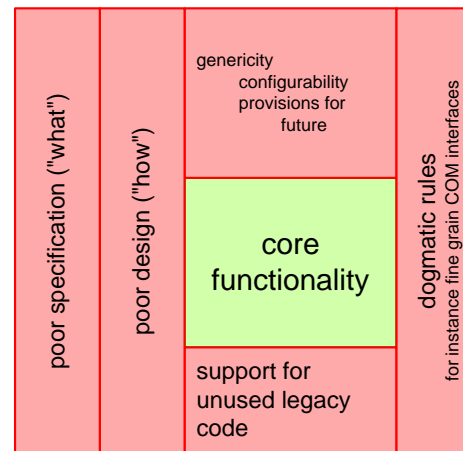
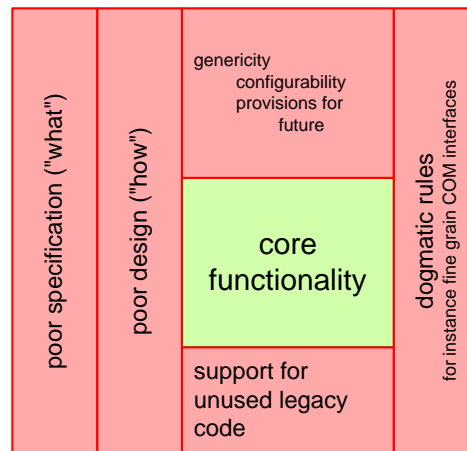
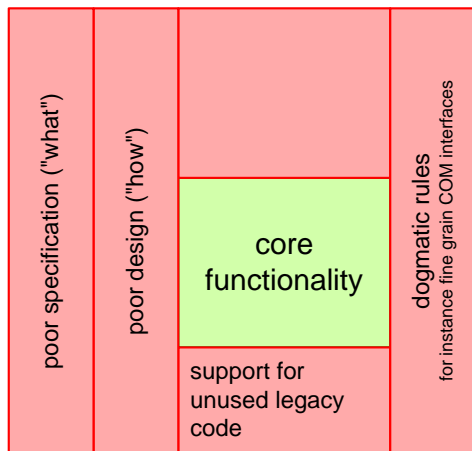
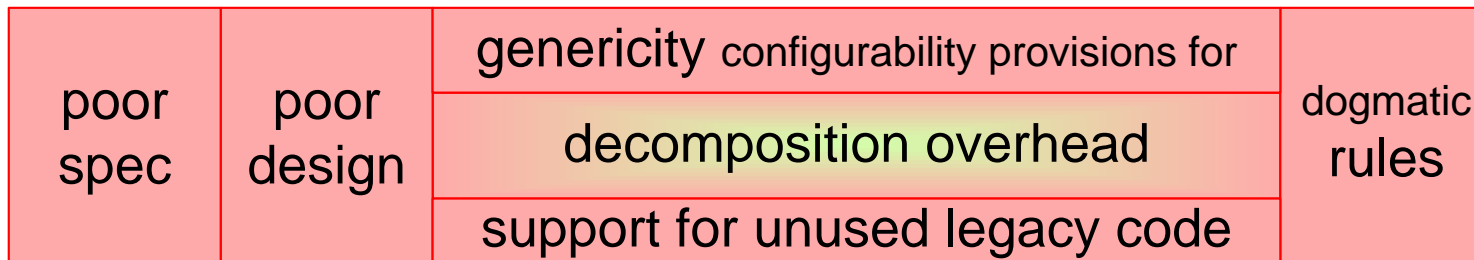
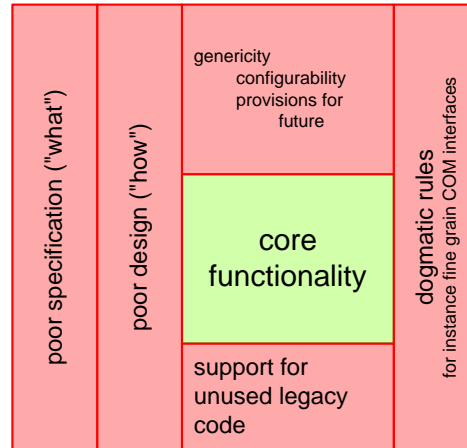
pipeline flush
I-cache disturbance
D-cache disturbance



Bloating explained



Bloating causes more bloating



causes even more bloating...

Bloating causes performance and resource problems.
Solution: special measures: memory pools, shortcuts, ...

