

# Execution Architecture Soft Real Time design

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## Abstract

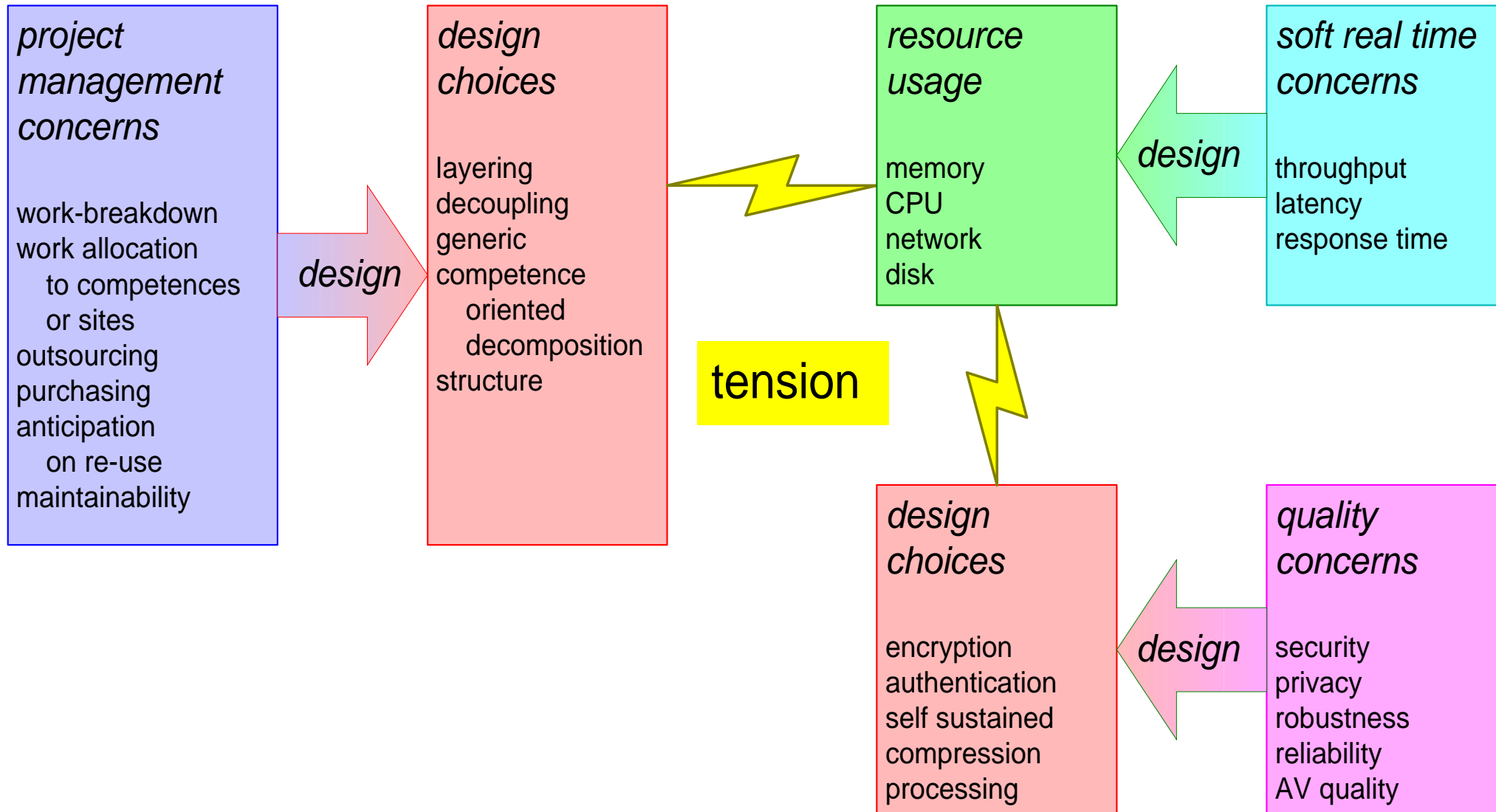
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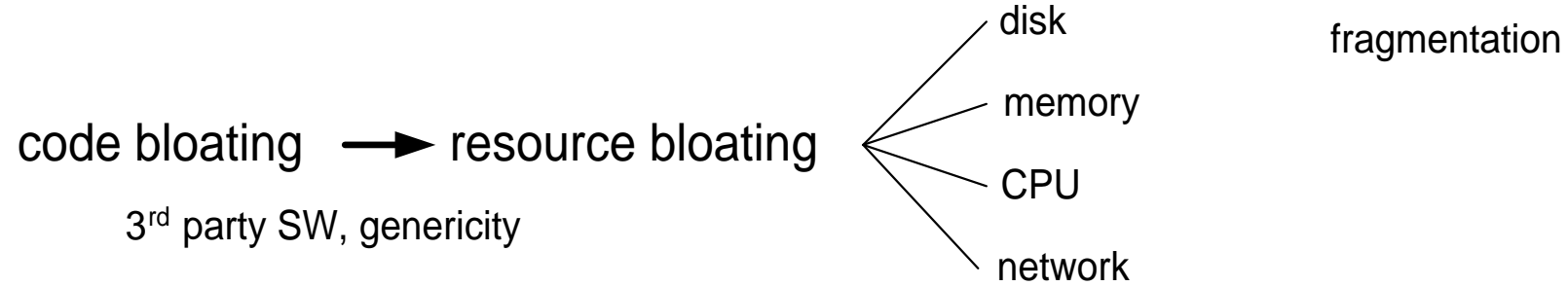
June 23, 2016  
status: planned  
version: 0.2

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

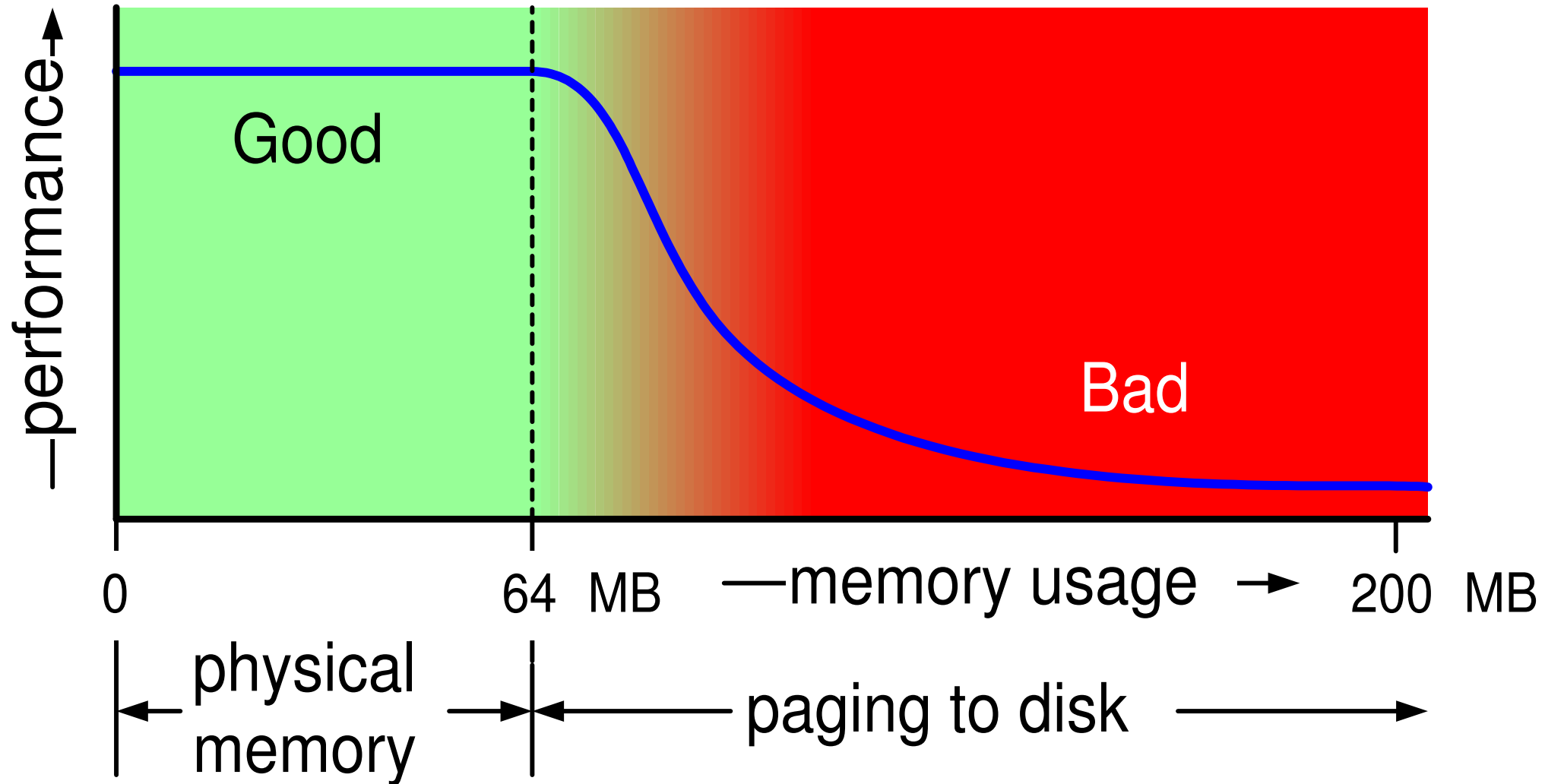
sequentialization

counterproductive optimization eg prefetching

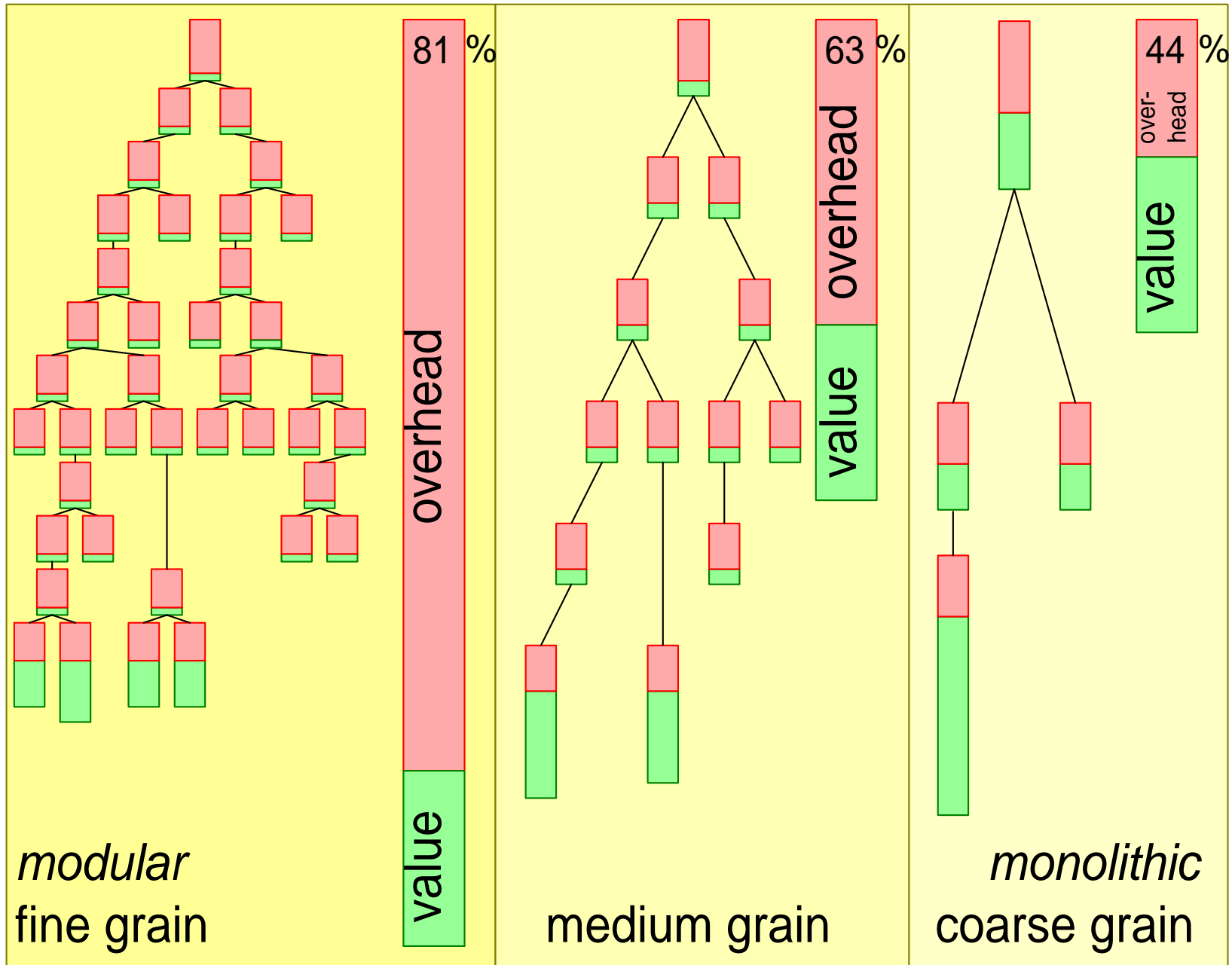
background activities virus scanners, firewalls, polling activities (Windows critical update)

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

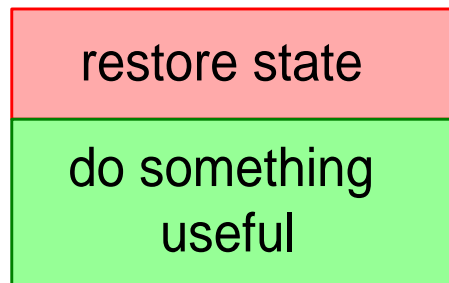
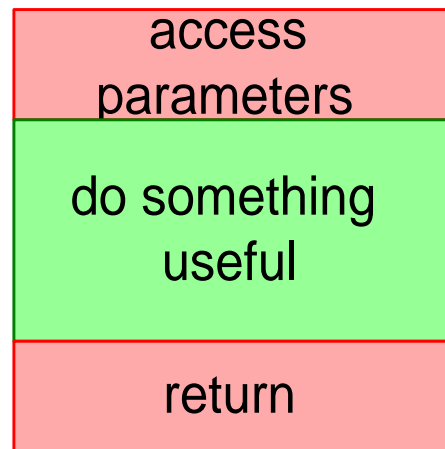
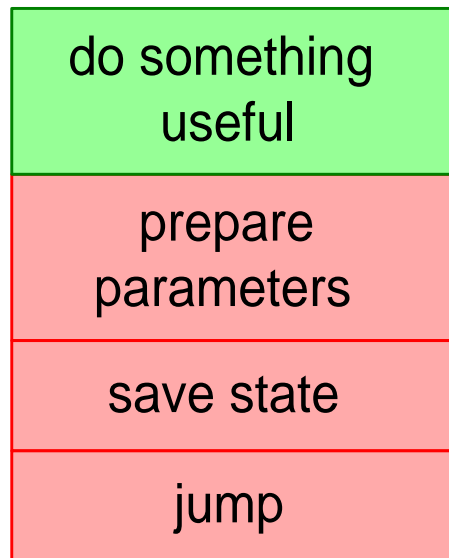
# Performance as function of memory use



# Overhead penalty of modularity



# Function call overhead



Load and depth dependent  
(hidden) side effects

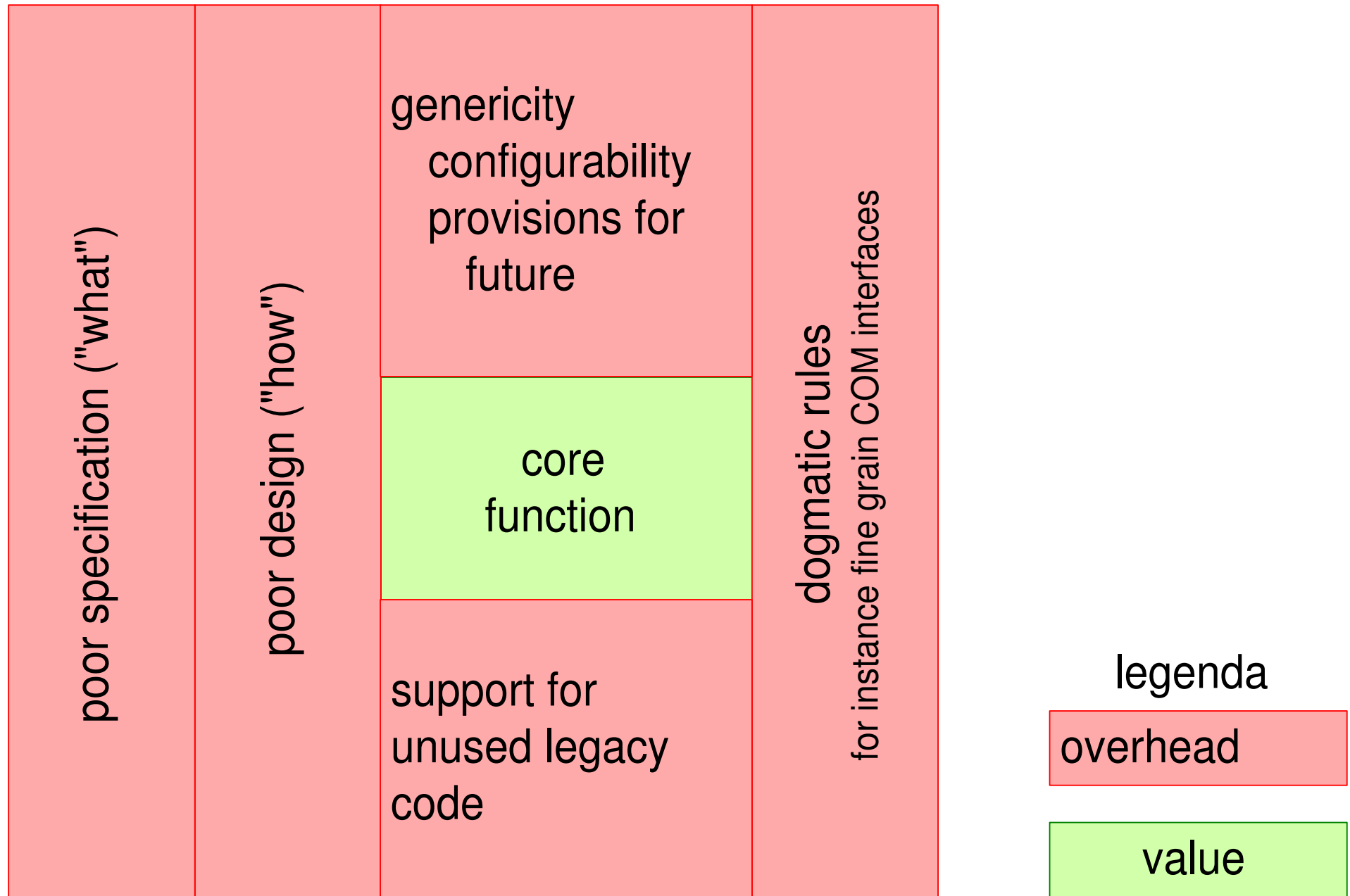
pipeline flush  
I-cache disturbance  
D-cache disturbance

legenda

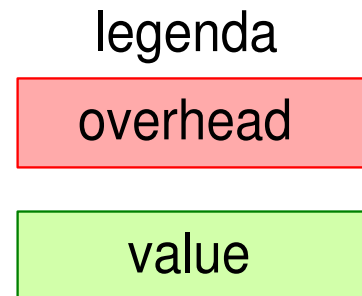
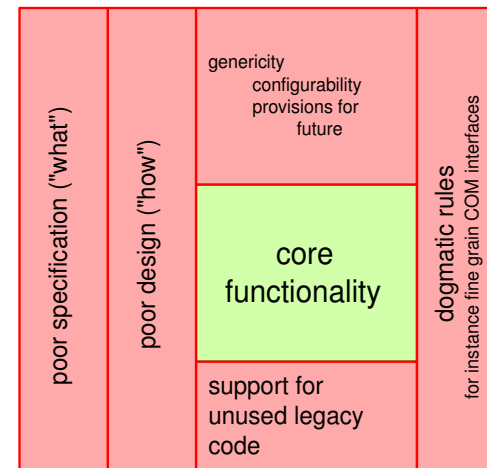
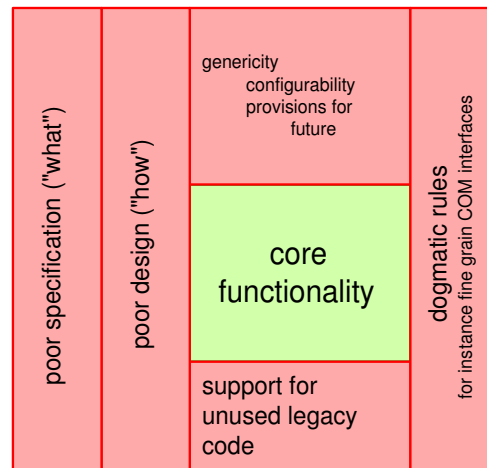
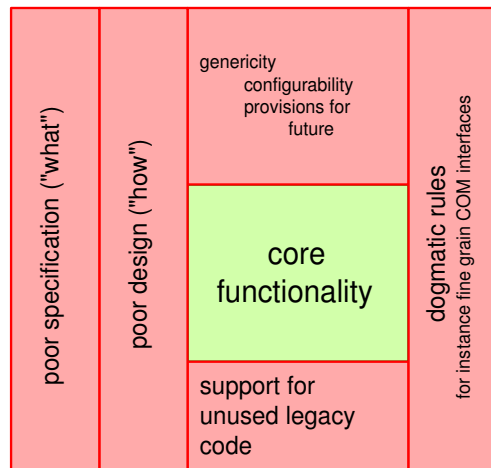
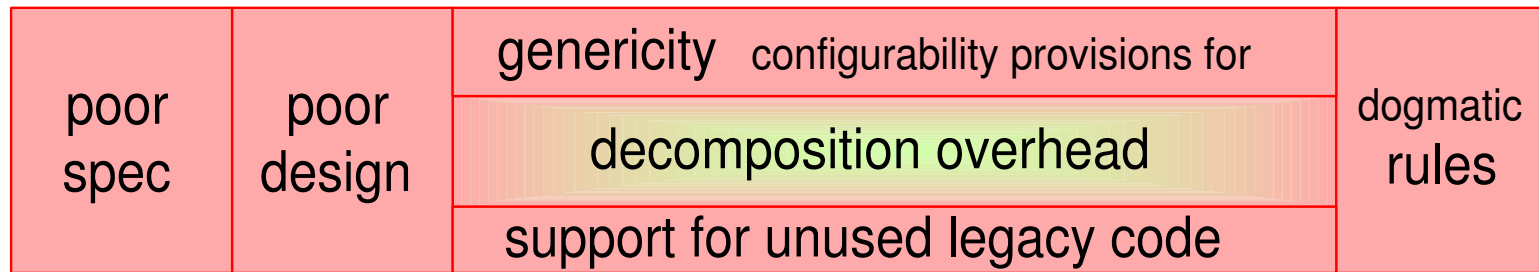
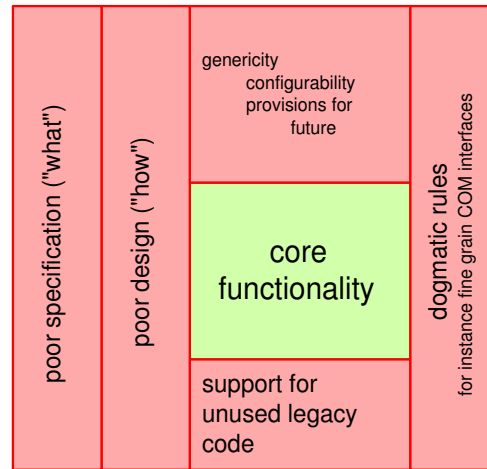
overhead

value

# Bloating explained



# Bloating causes more bloating





# causes even more bloating...

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

