Mastering Systems Integration; Software and Integration

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Abstract

Software has a number of characteristics, which impact systems integration.

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logo
TBD

System or Software?

When SW engineers demand "requirements",

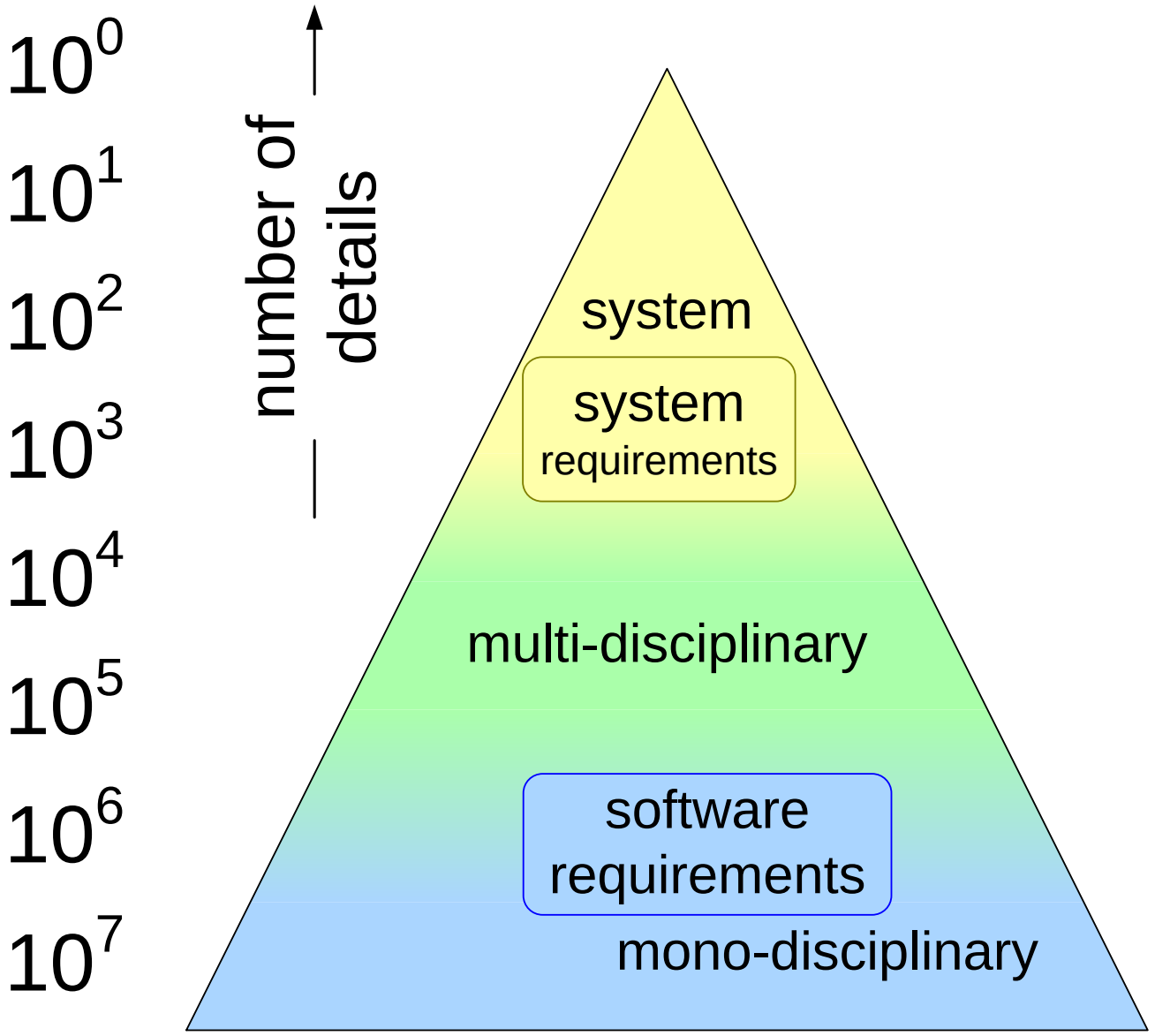
then they expect *frozen* inputs

to be used for

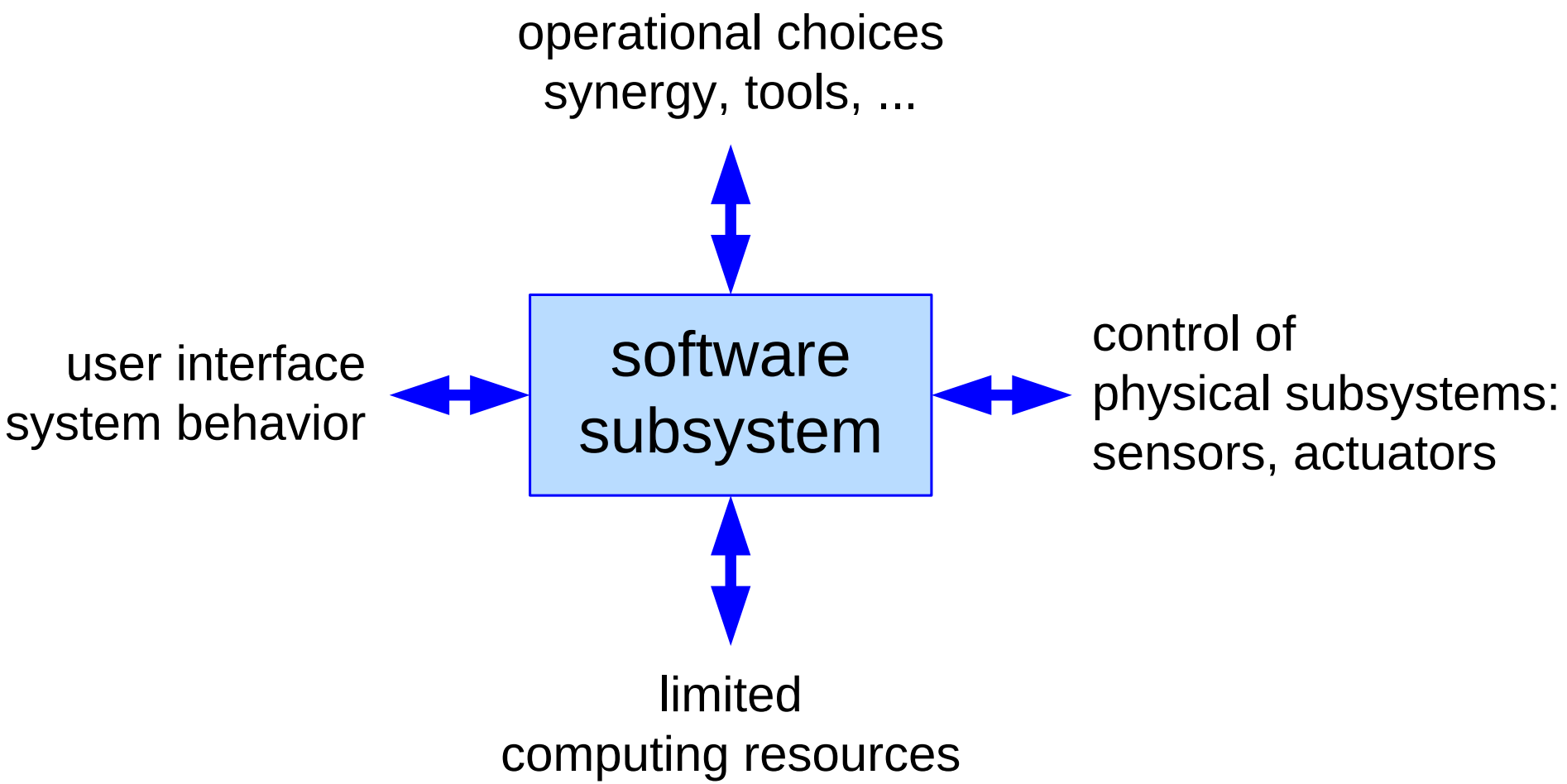
the design, implementation and validation

of the software

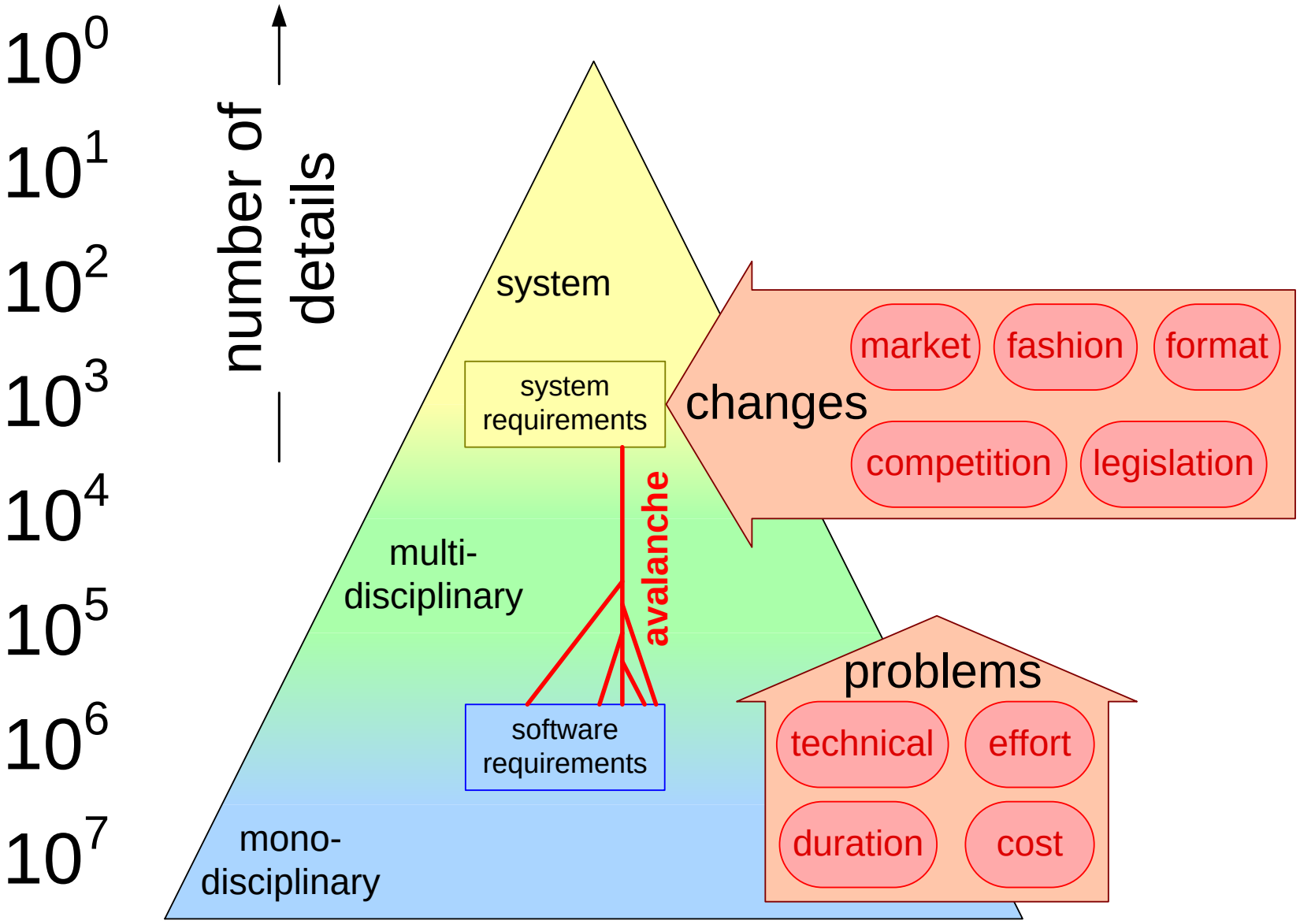
System vs Software Requirements



Why is the Software Requirement Specification so Large?



And why is it never up-to-date?



Different Focus of Software and System

System engineering focus

qualities
productivity
image quality
reliability

concerns

concepts
domain requirements
models

integral design (quality, balance)
system context
lifecycle
operational processes

education
principles
heuristics
analysis and synthesis
processes

SW engineering focus

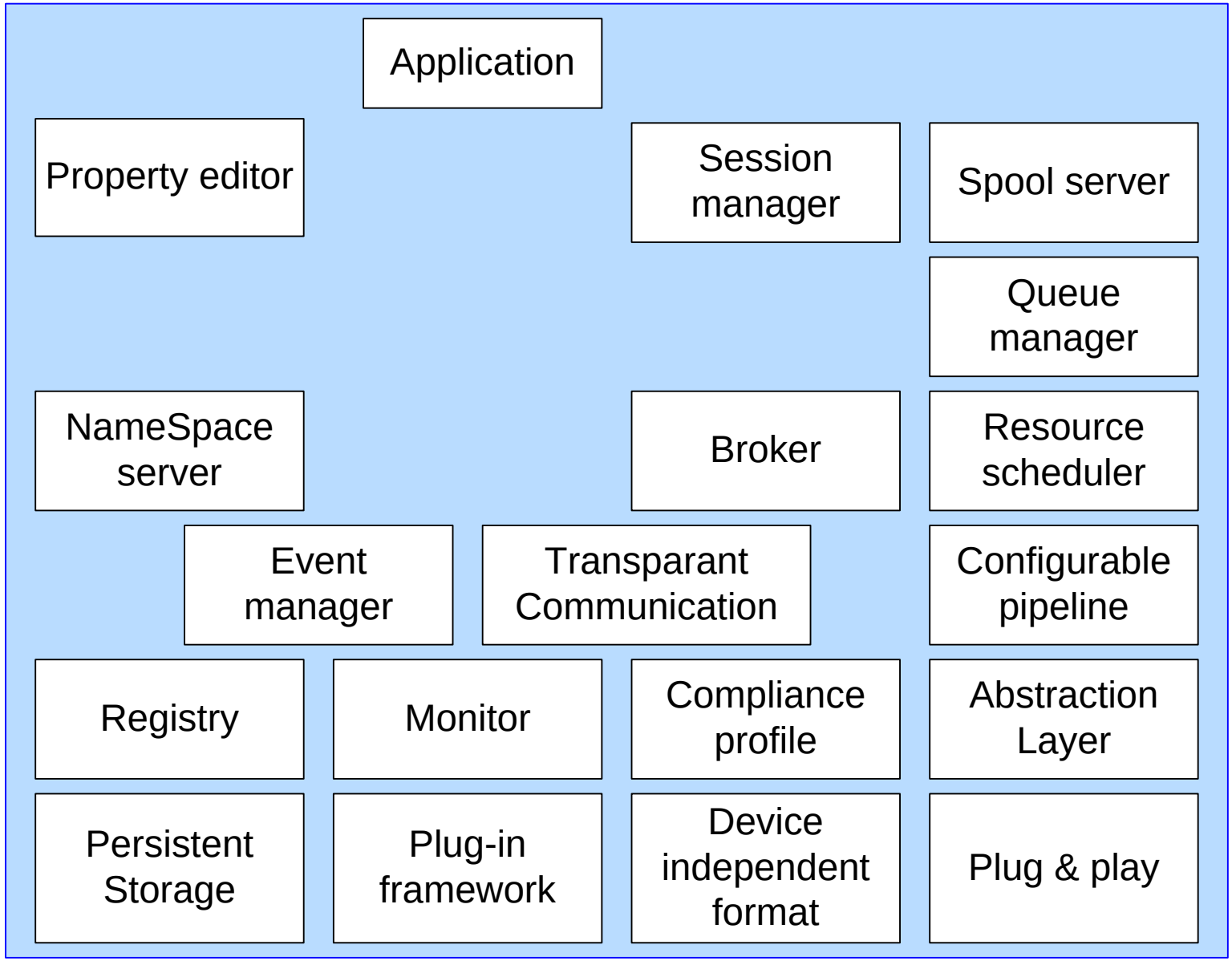
qualities
functionality
maintainability
variability

concepts
structure
(generic) mechanisms

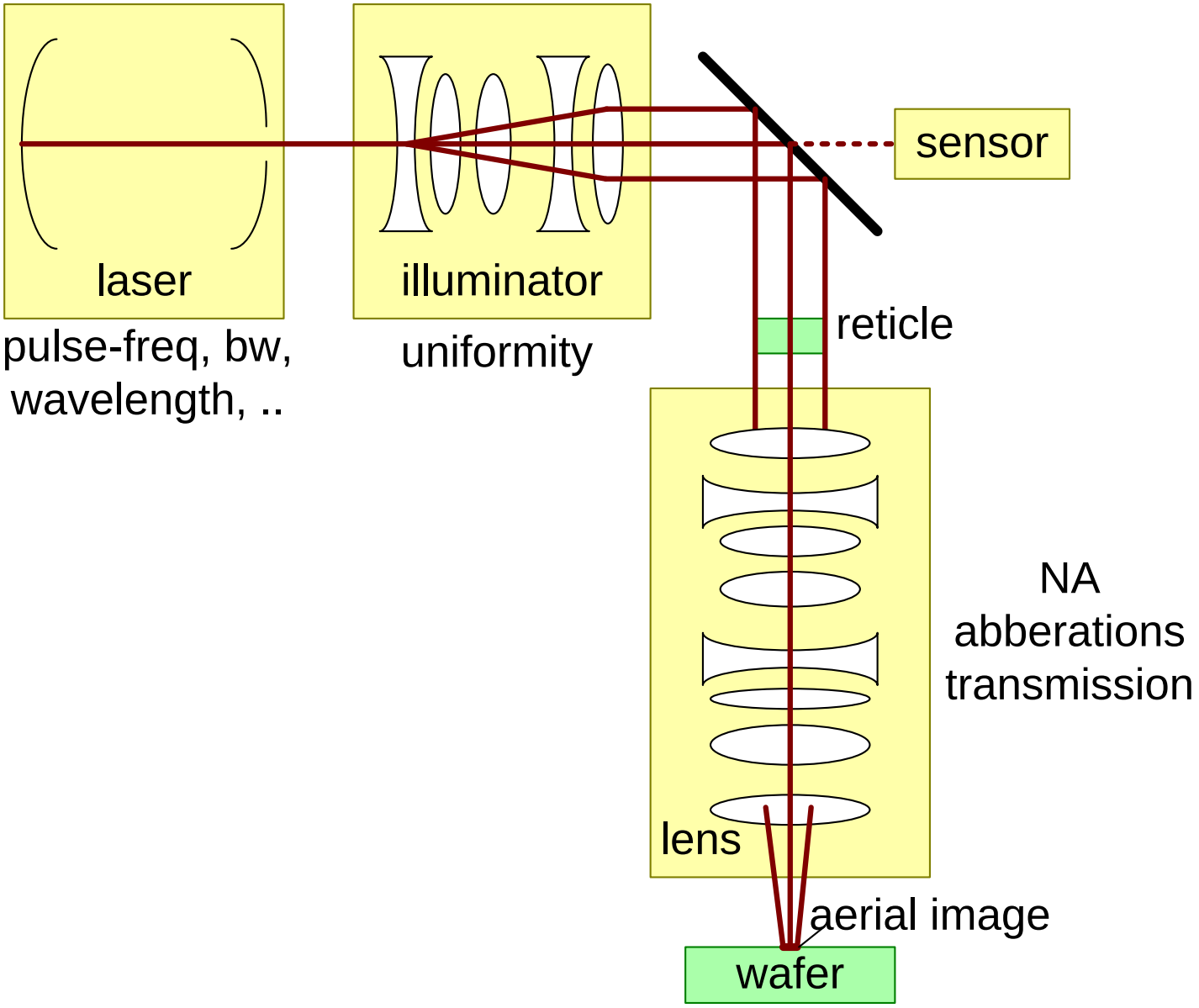
concerns
configuration management
release procedure
tools
SW processes
SW problems, change requests

education
languages
operating systems
algorithms
formal methods

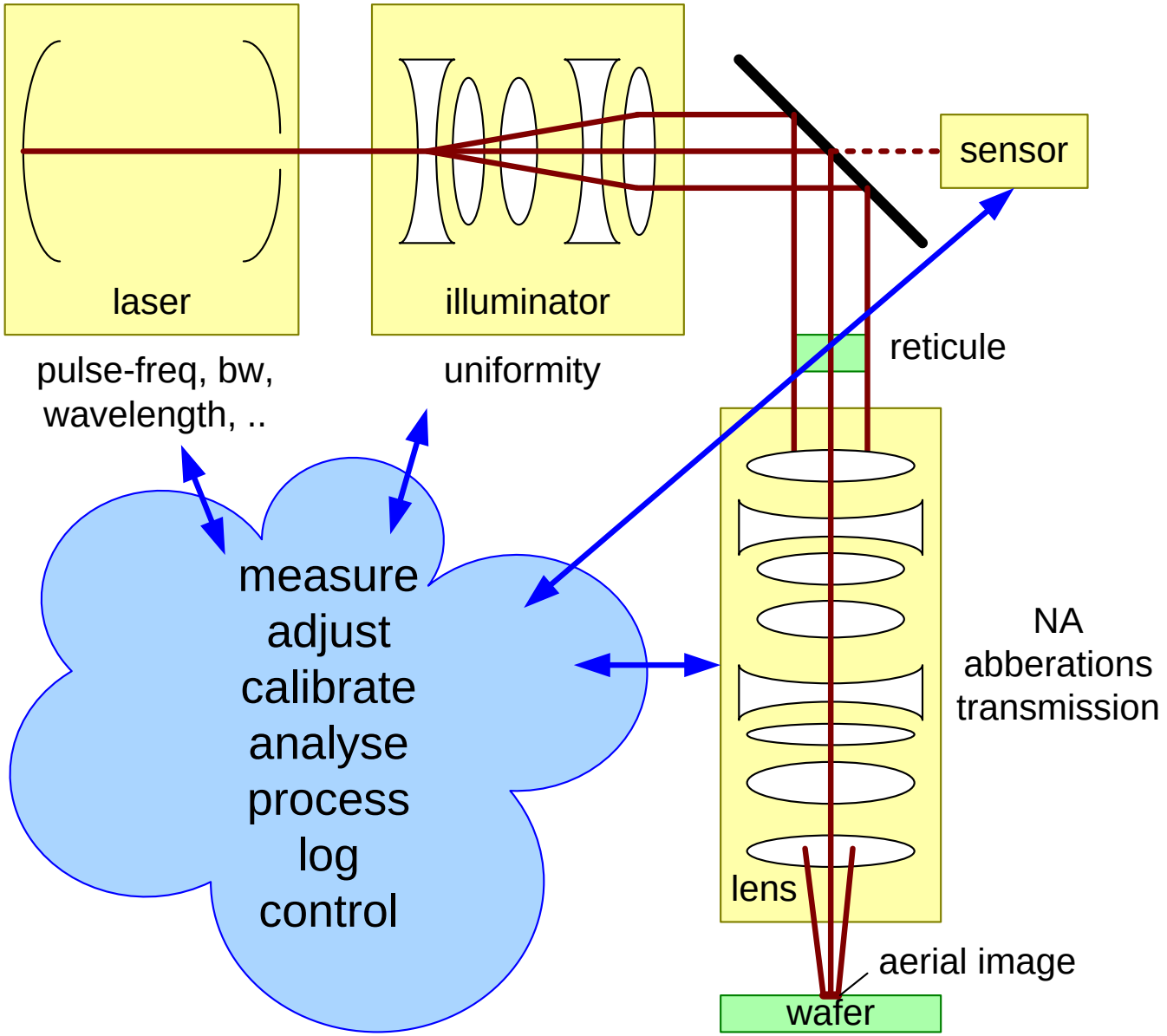
Caricature of a SW Architecture



Caricature of Physics Systems View



Relation SW and Physics



Symptoms of too isolated SW efforts

symptoms	*counter measures*
SW people are clustered together	colocation per function, subsystem or quality
SW is alpha tested before system integration	continuous system integration
SW team uses own specification and design process	higher level processes are shared
SW specification is in SW jargon or formalism	interaction between SW, HW and system engineers

Hardware Software System