

Mastering Systems Integration; Software and Integration

by *Gerrit Muller* TNO-ESI, University College of South East Norway

e-mail: `gaudisite@gmail.com`

`www.gaudisite.nl`

Abstract

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

Distribution

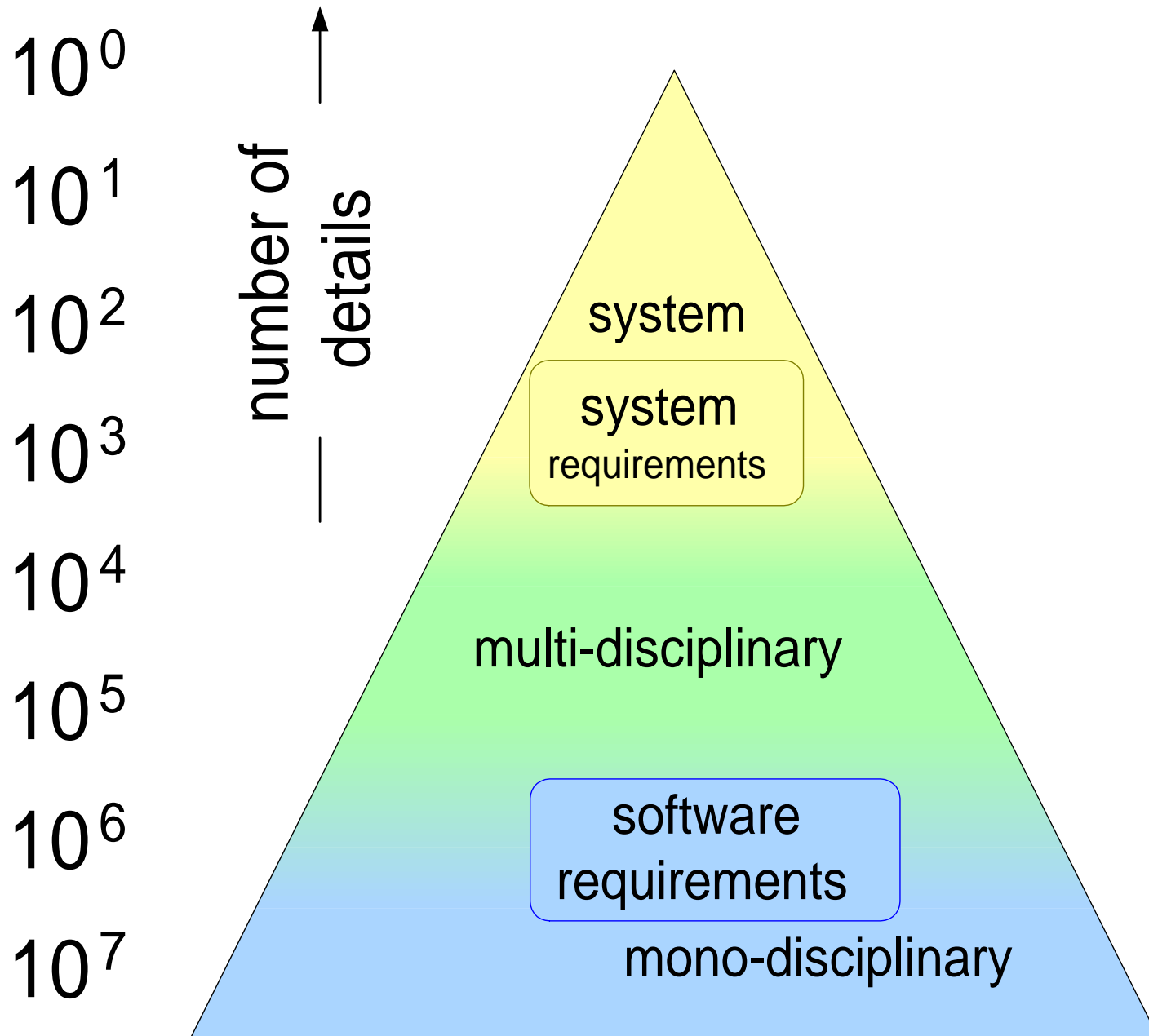
This article or presentation is written as part of the Gaudí project. The Gaudí project philosophy is to improve by obtaining frequent feedback. Frequent feedback is pursued by an open creation process. This document is published as intermediate or nearly mature version to get feedback. Further distribution is allowed as long as the document remains complete and unchanged.

April 2, 2017
status: planned
version: 0

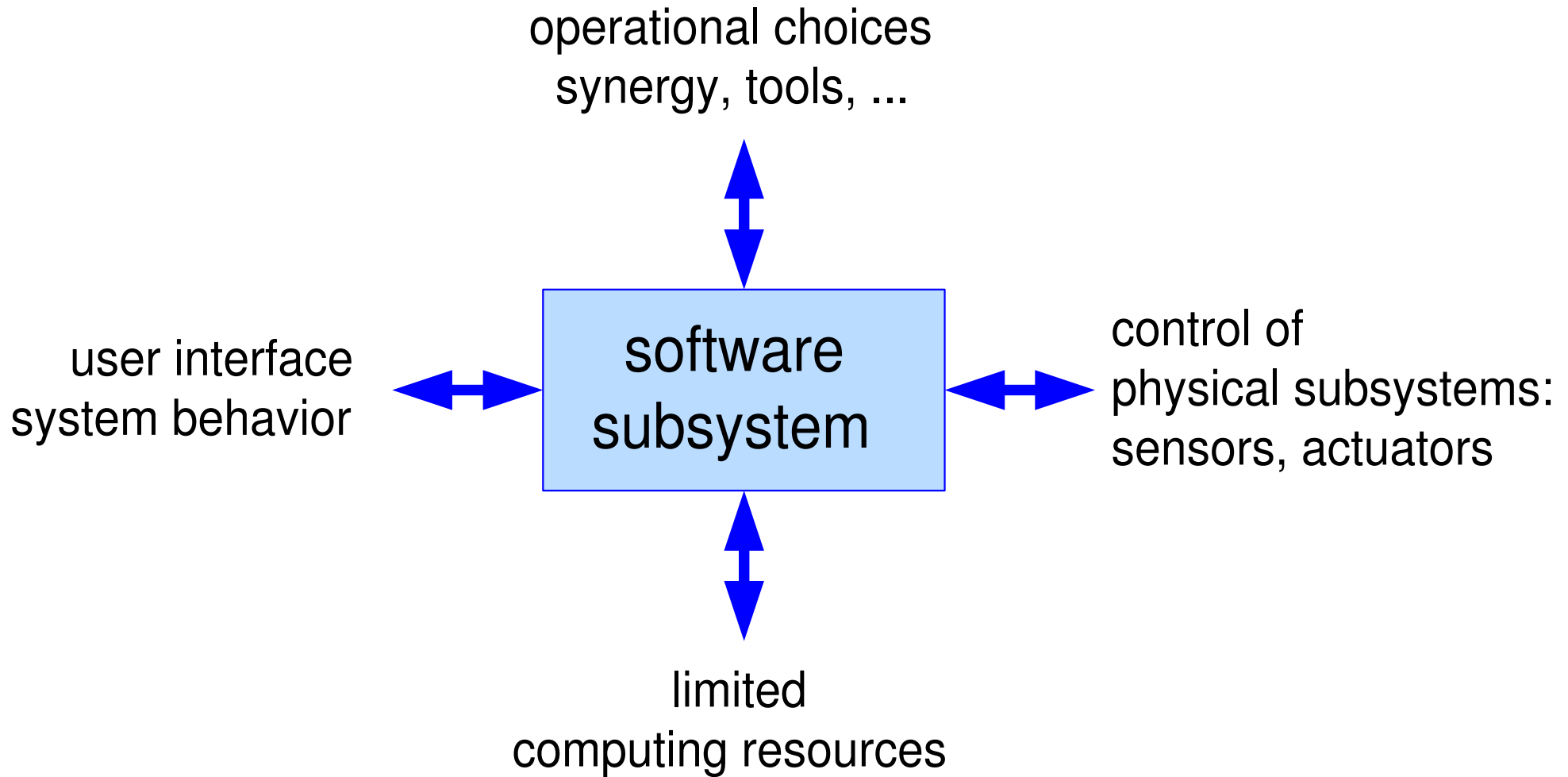
logo
TBD

When SW engineers demand "requirements",
then they expect *frozen* inputs
to be used for
the design, implementation and validation
of the software

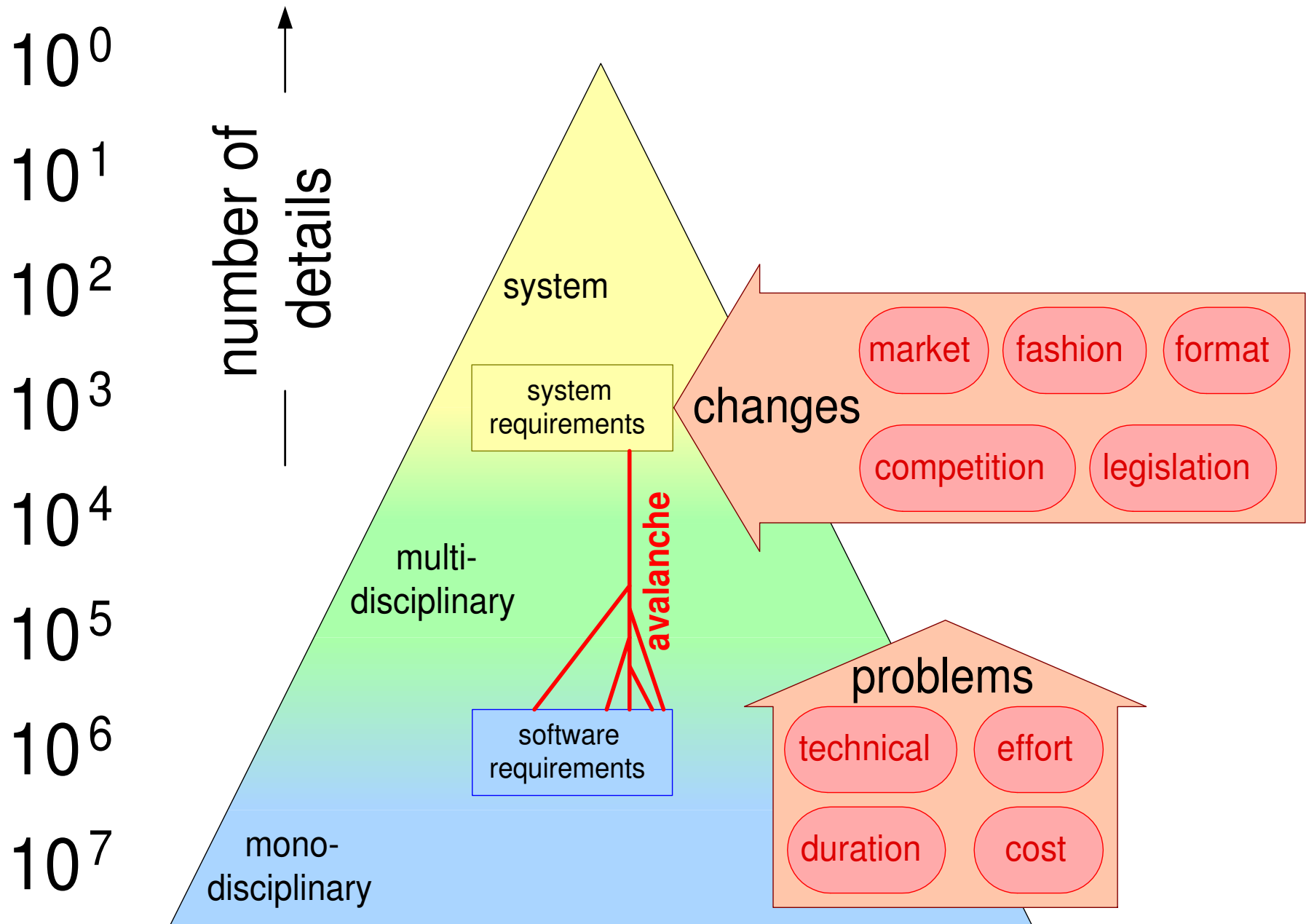
System vs Software Requirements



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

→ *concepts*
domain requirements
models

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

education
principles
heuristics
analysis and synthesis
processes

SW engineering focus

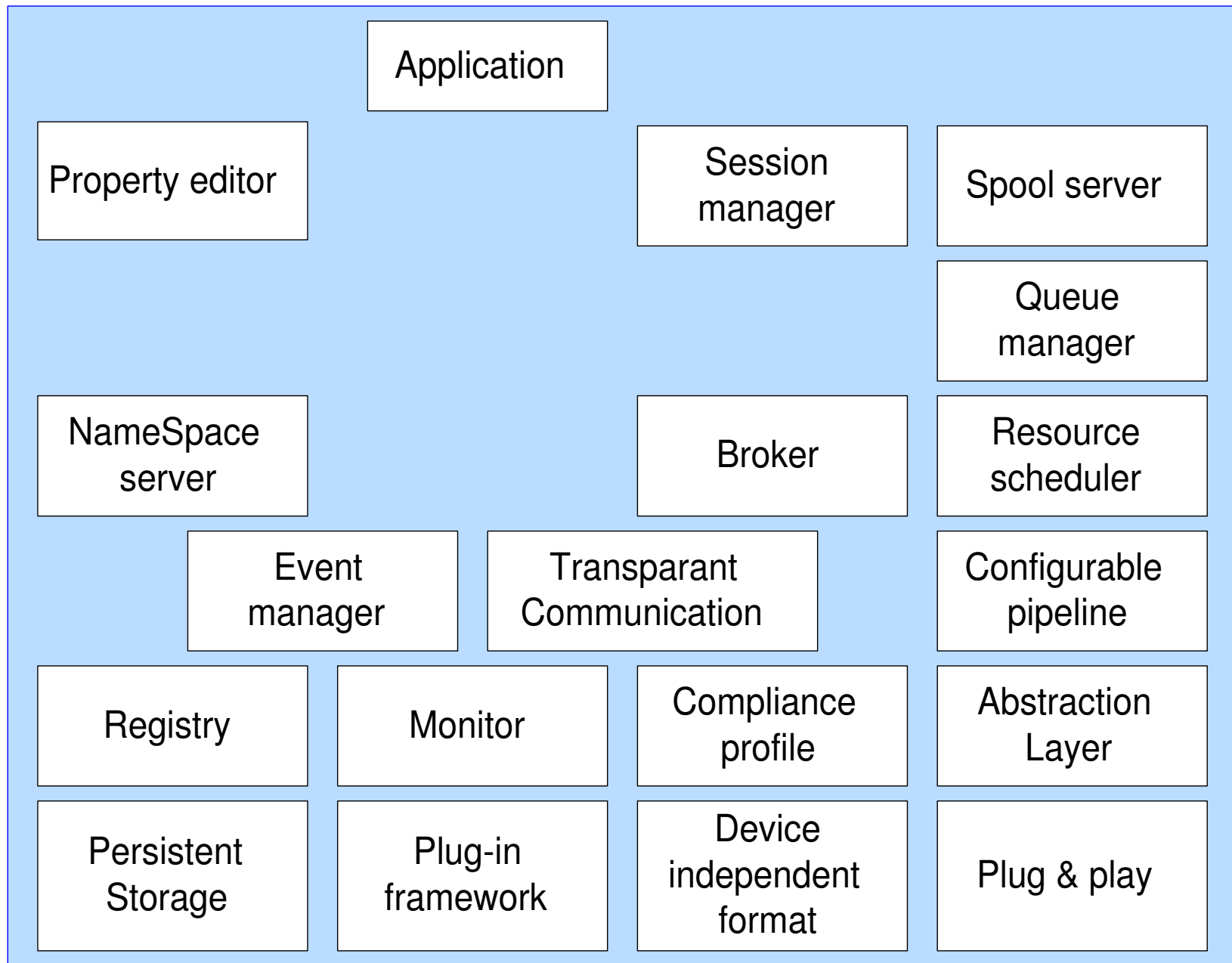
qualities
functionality
maintainability
variability

→ *concepts*
structure
(generic) mechanisms

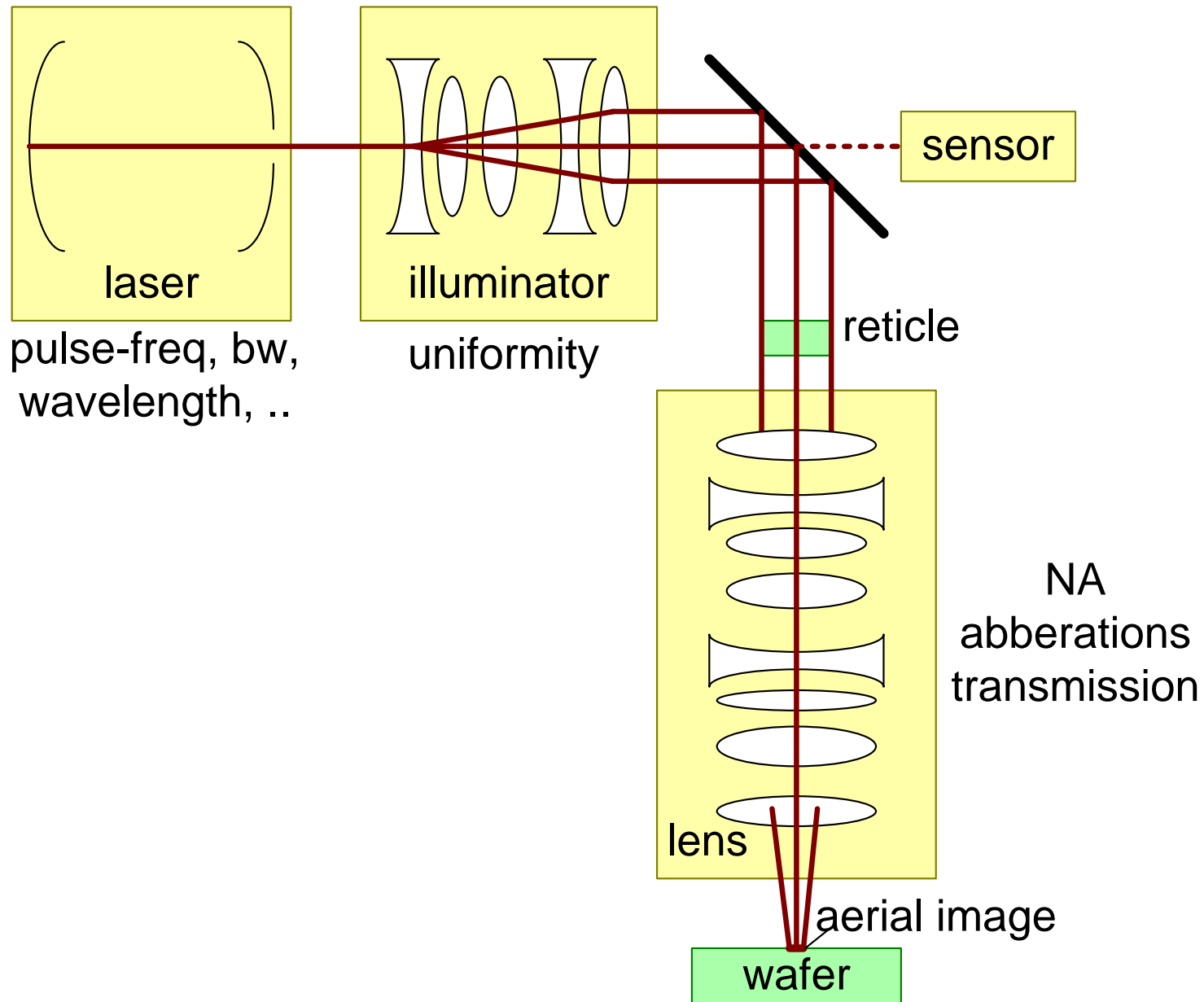
concerns
configuration management
release procedure
tools
SW processes
SW problems, change requests

education
languages
operating systems
algorithms
formal methods

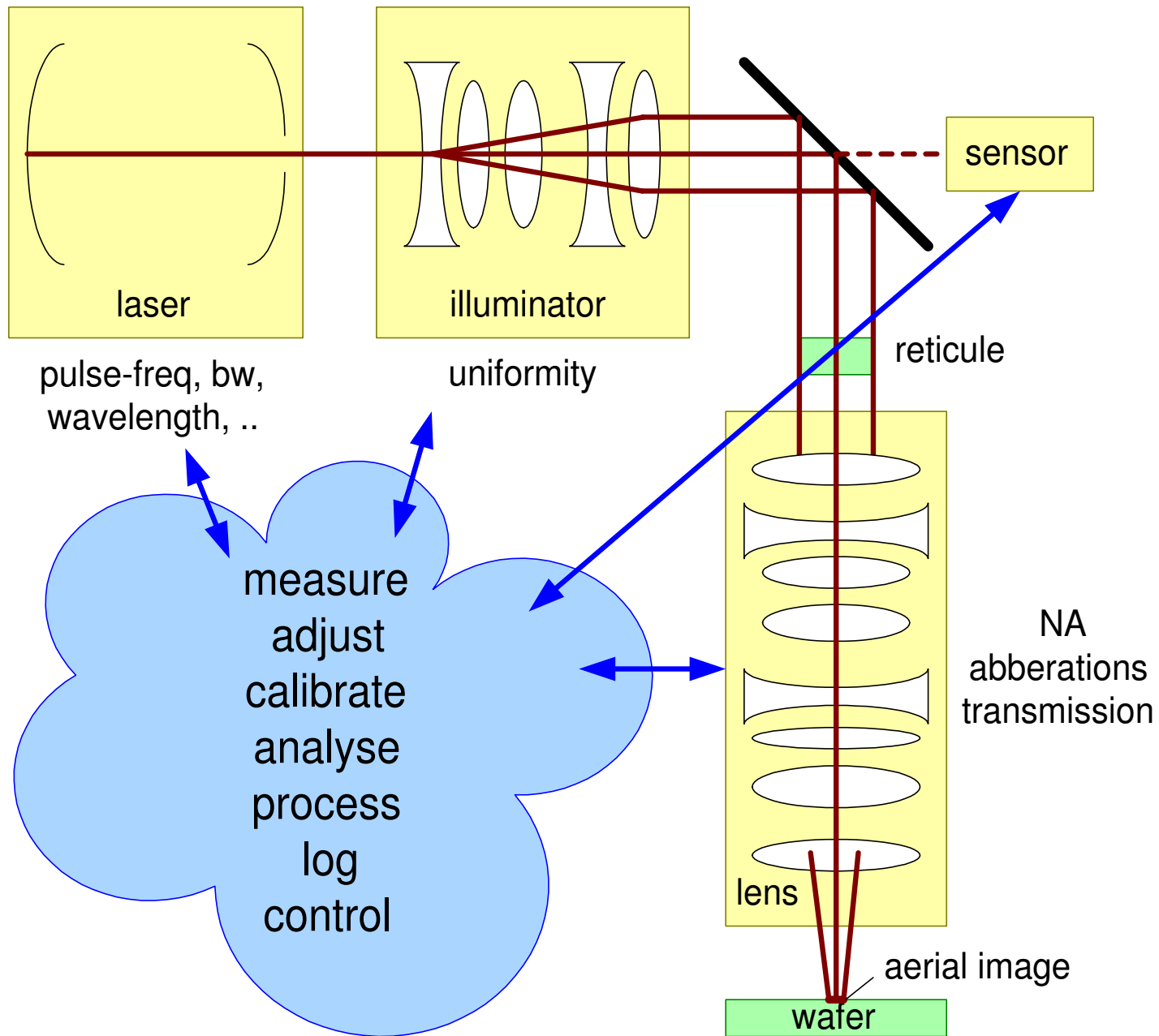
Caricature of a SW Architecture



Caricature of Physics Systems View



Relation SW and Physics



Symptoms of too isolated SW efforts

symptoms

SW people are clustered together

SW is alpha tested before system integration

SW team uses own specification and design process

SW specification is in SW jargon or formalism

counter measures

colocation per function, subsystem or quality

continuous system integration

higher level processes are shared

interaction between SW,
HW and system engineers

Hardware Software System

