System Integration How-To

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Abstract

In this document we will discuss the full integration flow. We will discuss the goal of integration, the relation between integration and testing, what is integration and how to integrate, an approach to integration, scheduling and dealing with disruptive events, roles and responsibilities, configuration management aspects, and typical order of integration problems occurring in real life.

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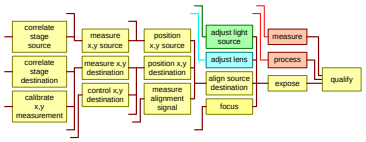
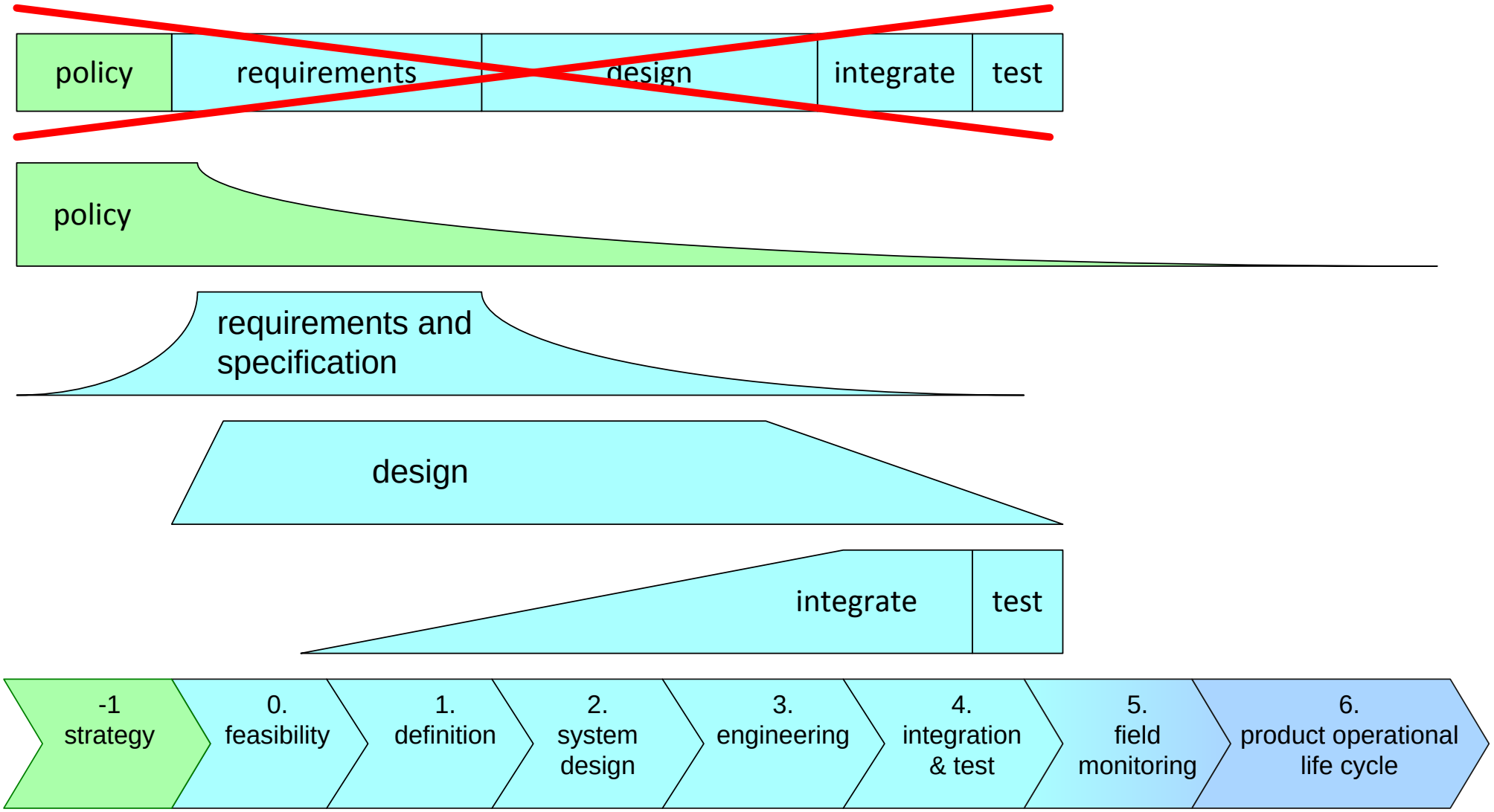
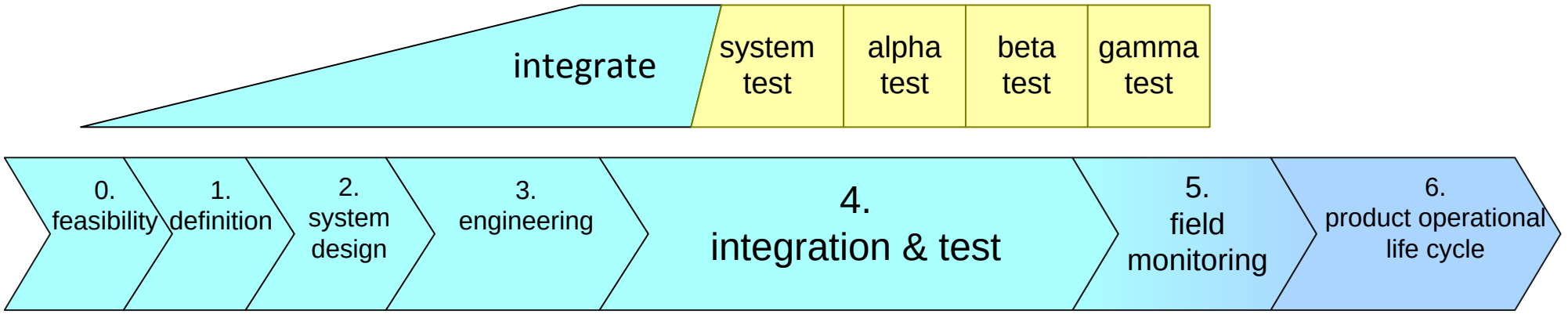


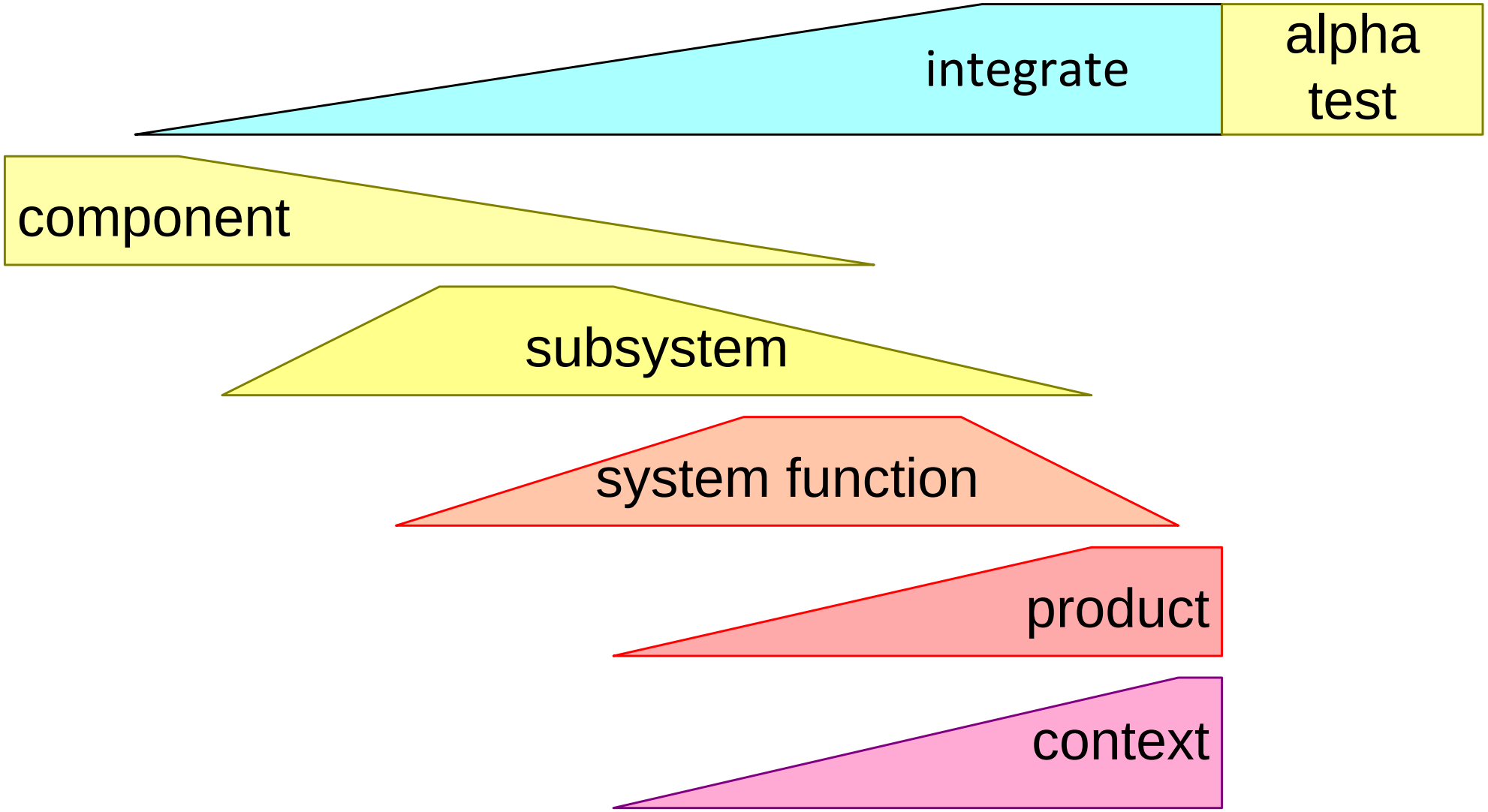
Typical Concurrent Product Creation Process



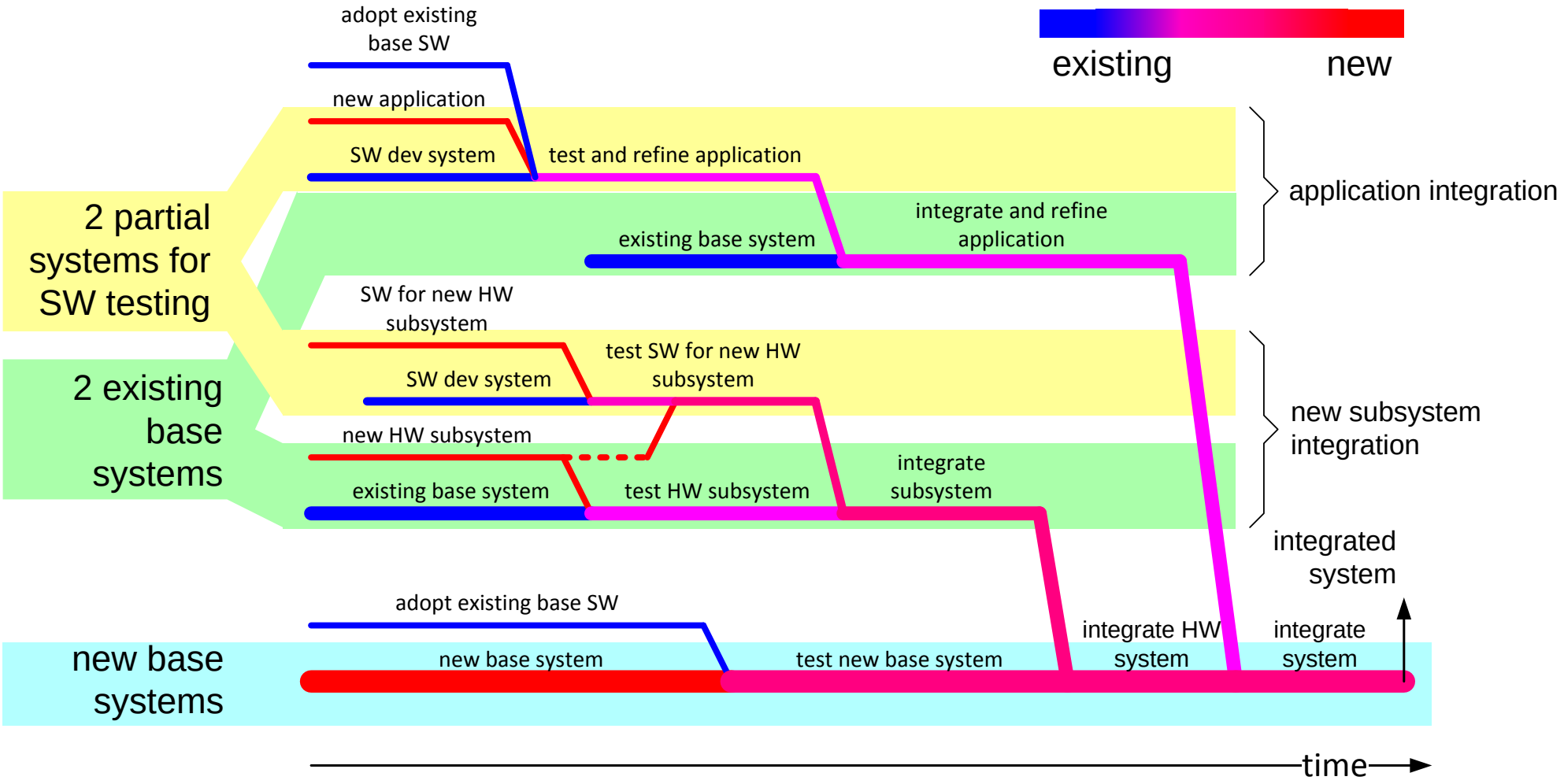
Zooming in on Integration and Tests



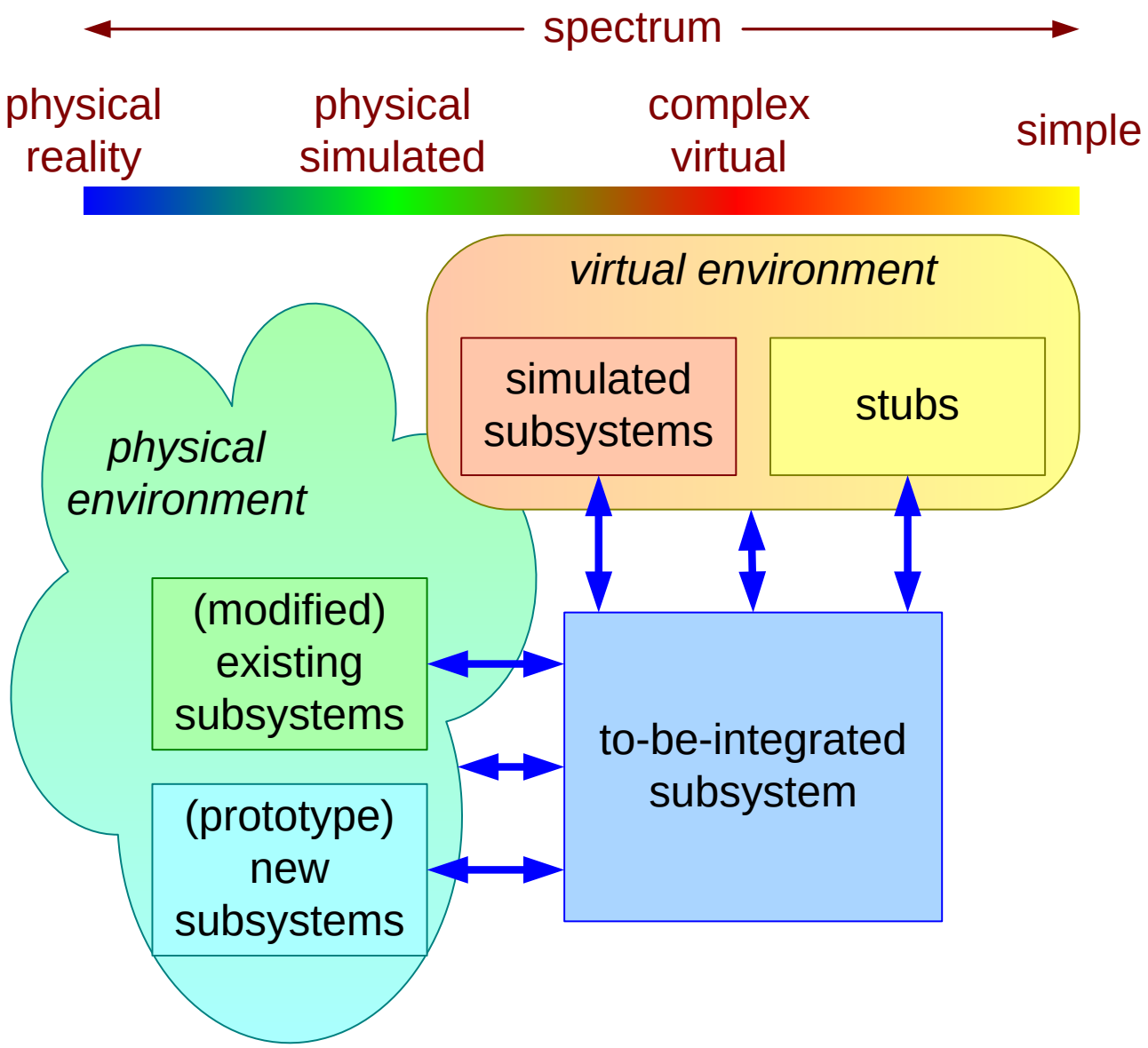
Integration Takes Place in a Bottom-up Fashion



Transition from Previous System to New System



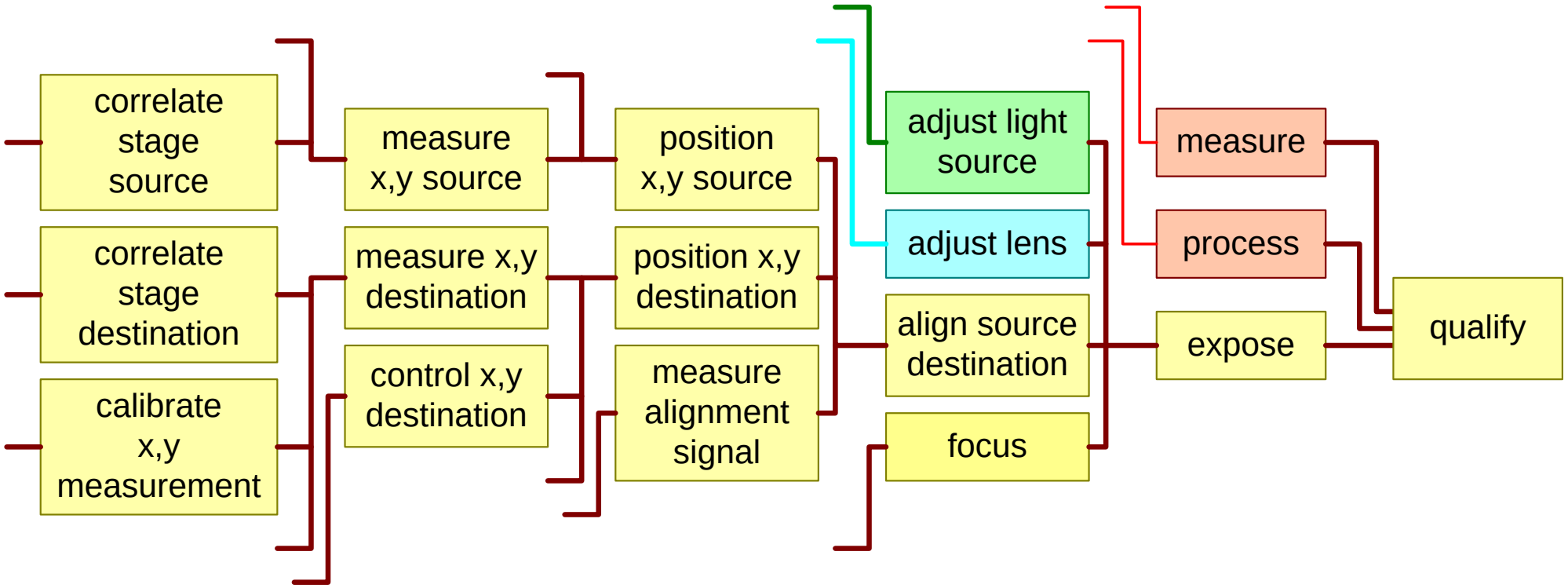
Alternatives to Integrate a Subsystem Early in the Project



Stepwise Integration Approach

1	Determine most critical system performance parameters.
2	Identify subsystems and functions involved in these parameters.
3	Work towards integration configurations along these chains of subsystems and functions.
4	Show system performance parameter as early as possible; start with showing "typical" system performance.
5	Show "worst-case" and "boundary" system performance.
6	Rework manual integration tests in steps into automated regression tests.
7	Monitor regression results with human-driven analysis.
8	Integrate the chains: show system performance of different parameters simultaneously on the same system.

Order of Functions Required for the IQ of a Waferstepper



Roles and Responsibilities During the Integration Process

project leader

organization
resources
schedule
budget

systems architect/ engineer/integrator

system requirements
design inputs
test specification
schedule rationale
troubleshooting
participate in test

system tester

test
troubleshooting
report

logistics and administrative support

configuration
orders
administration

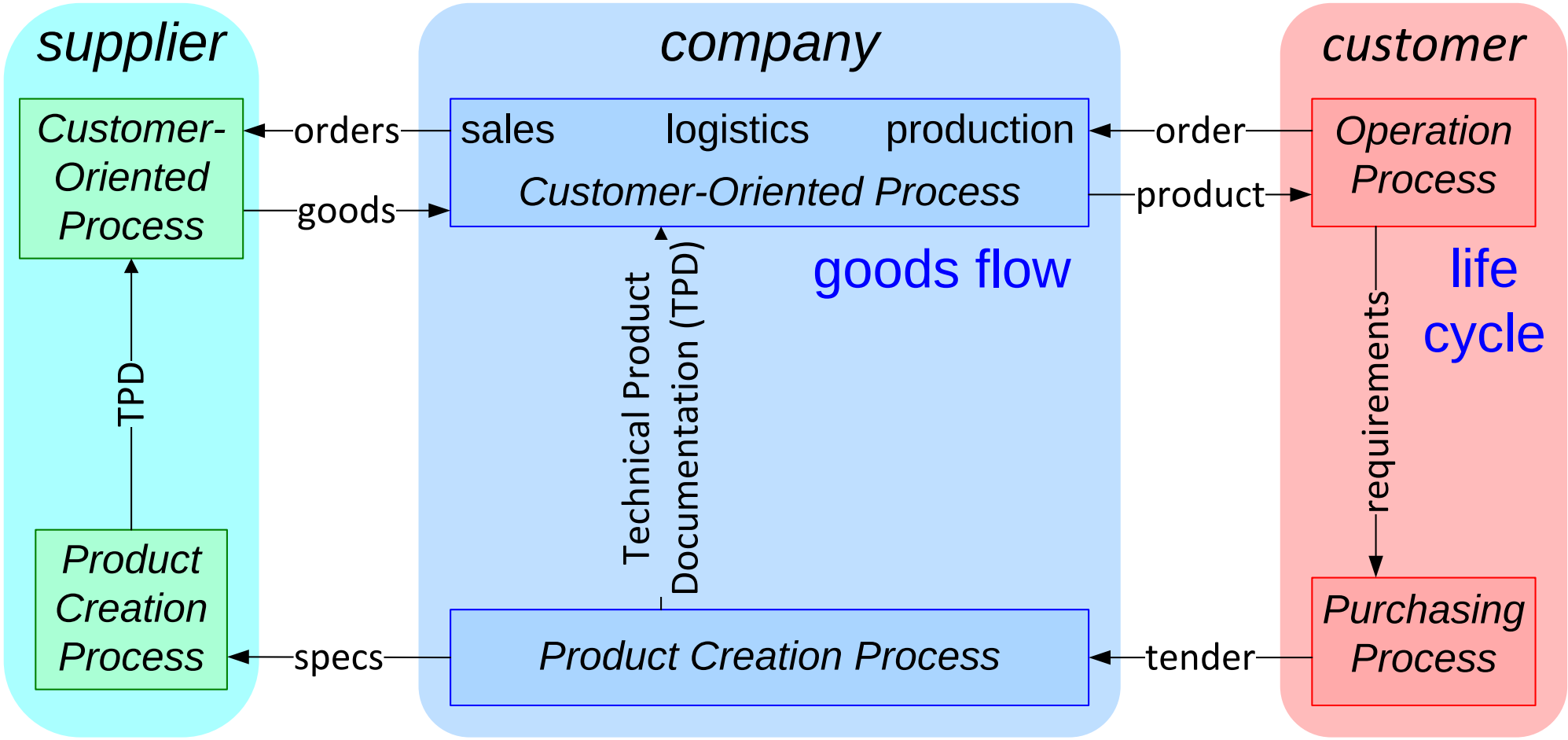
engineers

design
component test
troubleshooting
participate in test

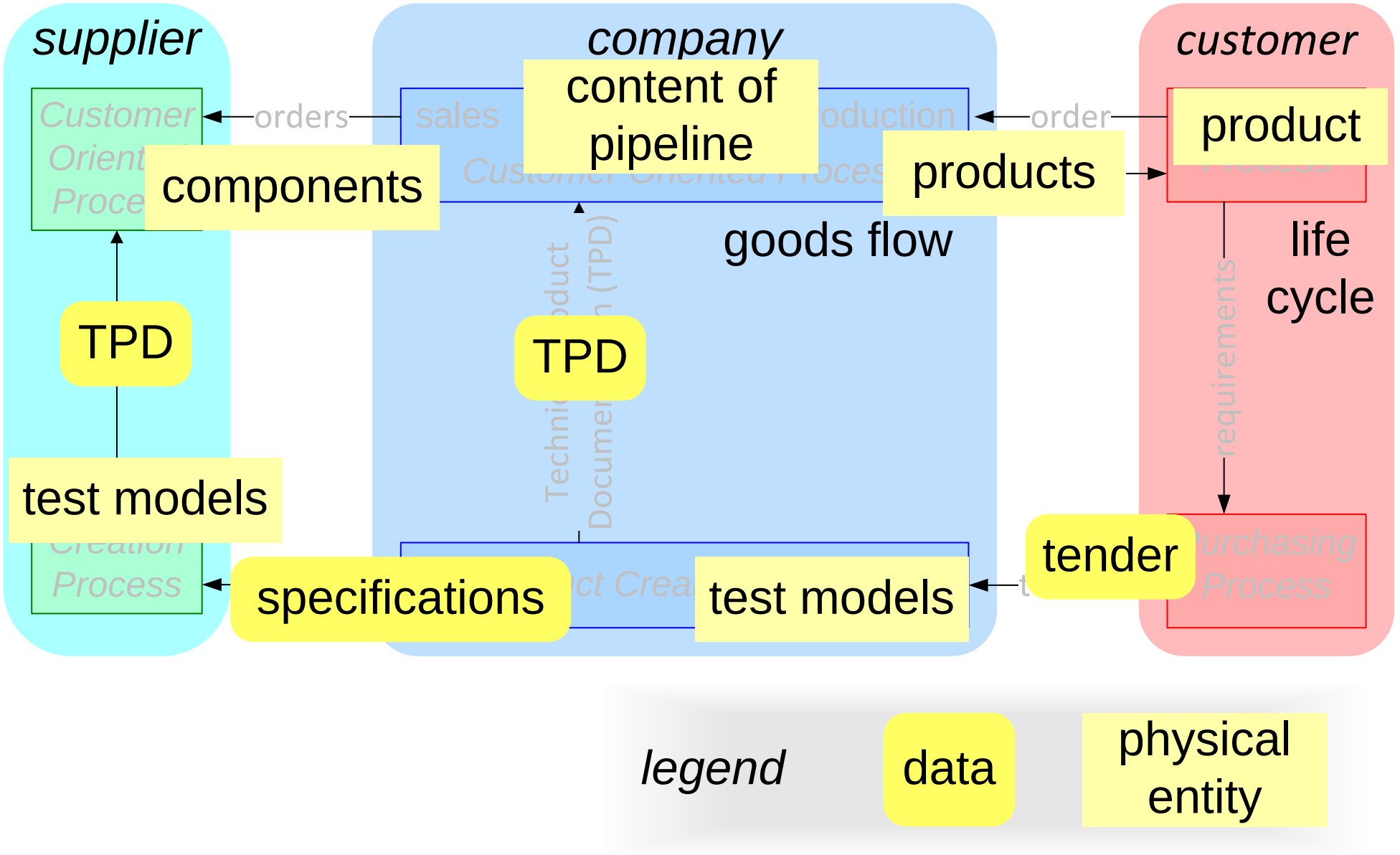
machine owner

maintain test model
support test

Simplified Process Diagram



Configuration Management Entities



Typical Order of Integration Problems

1. The (sub)system does not build.
2. The (sub)system does not function.
3. Interface errors.
4. The (sub)system is too slow.
5. Problems with the main performance parameter, such as image quality.
6. The (sub)system is not reliable.