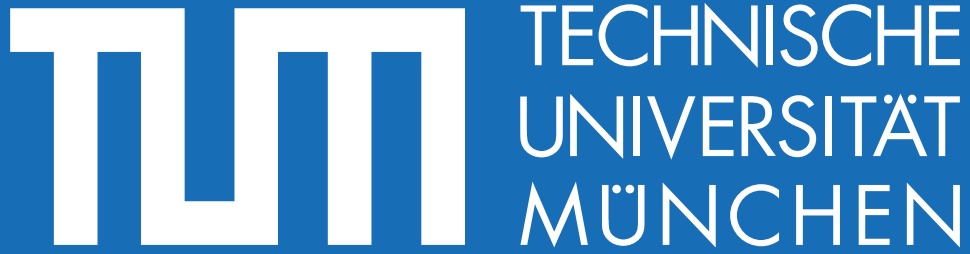


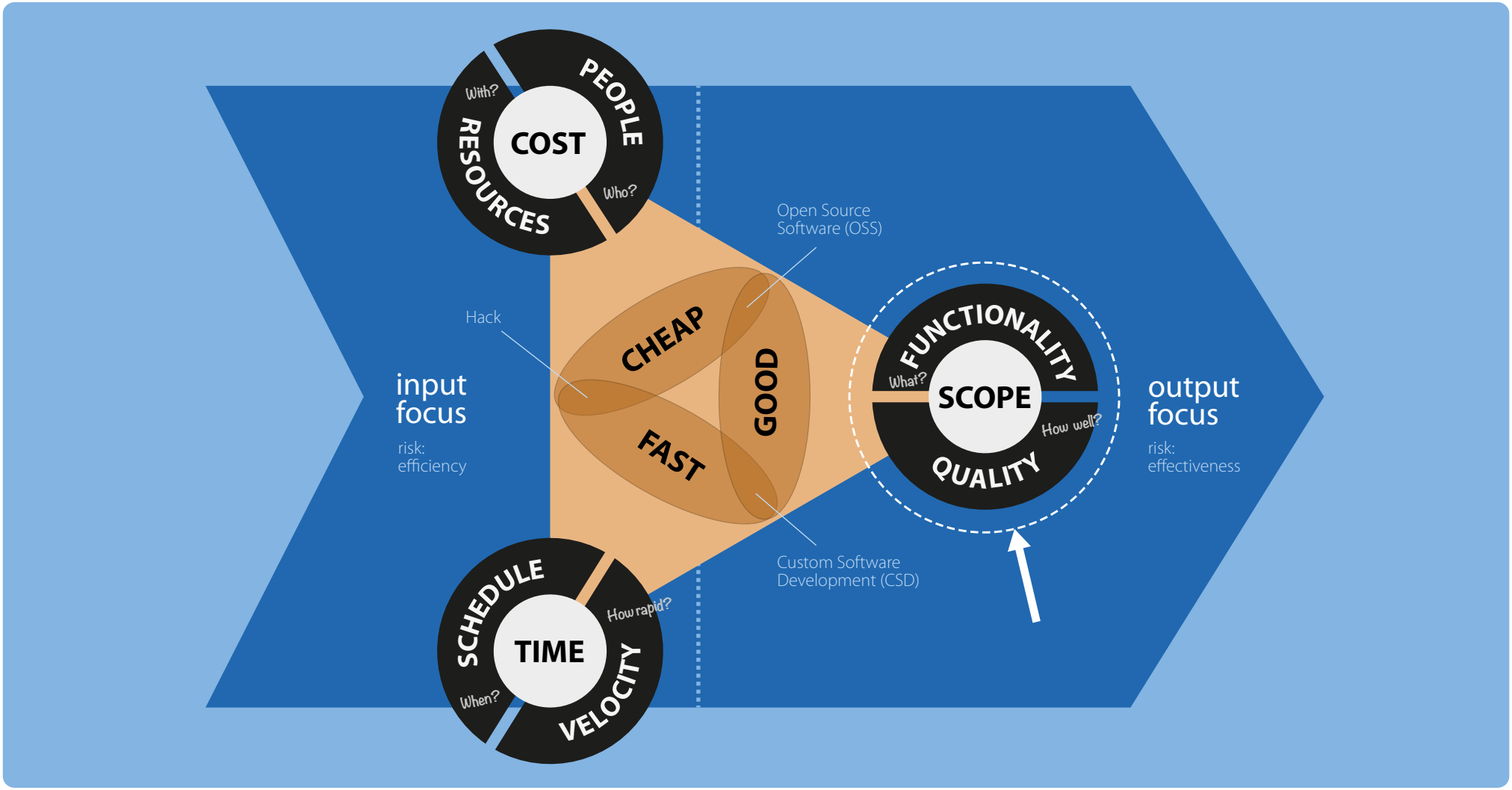
Software Engineering in der industriellen Praxis (SEIP)

Dr. Ralf S. Engelschall

ENGINEERING FUNDAMENTALS

Project Management Triangle

TECHNISCHE UNIVERSITÄT MÜNCHEN



Definition of a *Project*:
"*Temporary endeavor undertaken to create a unique product, service or result.*"
Temporary in that it has a defined beginning and end in time, and a defined scope and cost.
Unique in that it is not a routine operation, but a one-time, single-goal, and risk-containing operation.

Project Management *Iron Triangle*:
A project is constrained by **time**, **cost** and **scope**. No constraint in this triangle can be changed without affecting the others. Time splits into **schedule** and **velocity**. Cost splits into **people** and **resources**. Scope splits into **functionality** and result **quality**.

Project Management *Trilemma*:
"Fast. Cheap. Good. Pick two!"
Each project optimization effort has the choice among **three** favourable options — only **two** of them are possible at the same time.

ENGINEERING FUNDAMENTALS

Project Management Building Blocks

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STRUCTURE

Time Periods

Product Stage — STG — 1

Giant step in the development of the product, to deliver a distinct **major** version of the product.

Project Phase — PHS — 2

Major time period in the project process, to split the project into distinct **focus periods,** separated by major milestones.

Project Period — PRD — 3

Minor time period in the project process, to split the project phases into distinct time-, cost-, or scope-based **time units.**

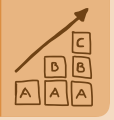
Work Streams

Organisation Scope — SCP — 12

Top-down scopes, Portfolio, Program and Project, to manage initiatives at different granularity levels.

Product Increment — INC — 11

Regular step in the development of the product, to deliver a distinct **minor** version of the product.



Disciplines Iteration — ITR — 9

Work stream consisting of a single sequential or parallel pass over all disciplines.

Disciplines Track — TRK — 8

Work stream consisting of a continuous repeated flow through the domain of related disciplines.

Engineering Discipline — DIS — 6

Distinct knowledge and work area of Software Engineering.

Process Flows

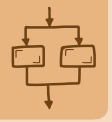
7

Flow Sequencing — SEQ

Sequential process flow of multiple disciplines, iterations, tracks, slices, increments, phases or stages.

Flow Parallelization — PRL

Parallel process flow of multiple disciplines or tracks.



Flow Interleaving — ILV

Interleaved process flow of multiple disciplines, iterations, tracks, slices, increments, phases or stages.

PROPERTIES

Progress Modes

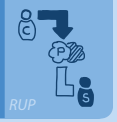
4

Voluntary (Supplier-Push) — VOL

Supplier pushes requirements and work packages **into** the project and controls the progress.

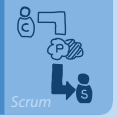
Planned (Customer-Push) — PLN

Customer pushes requirements and work packages **into** the project and controls the progress.



Agile (Supplier-Pull) — AGL

Supplier pulls requirements and work packages **out of** the project and controls the progress.



Lean (Customer-Pull) — LEA

Customer pulls requirements and work packages **out of** the project and controls the progress.

Work Focuses

5

Project Focus — PRJ

Focus on the project itself, to initiate, define, plan and successfully close it.

Technology Focus — TEC

Focus on the IT technology, to use it for implementing the solution.

Domain Focus — DOM

Focus on the domain, to analyse and specify it.

Environment Focus — ENV

Focus on the environment of the solution, to transition the solution into it.

Work Goals

10

Extension Goal — EXT

Following the goal of making a **functional** extension of the product to create a **new** increment.

Revision Goal — REV

Following the goal of making a **quality** revision of the product to improve an **existing** increment.

Reduction Goal — RED

Following the goal of making a **functional** reduction of the product to destroy an **existing** increment.

PROCESS BUILDING BLOCKS:
Every Project Management process in Software Engineering is made of the above building blocks. All building blocks can occur (structure) or be applied (properties) zero, one or more times in a particular process.

PROCESS TAILORING & CREATION:
To tailor an existing process, use the defined building blocks to better understand the given process. To create a process from scratch, decide on the building blocks by following steps 1 to 12 in the given order.

EF 04.2

process & building blocks