An incremental execution architecture design approach

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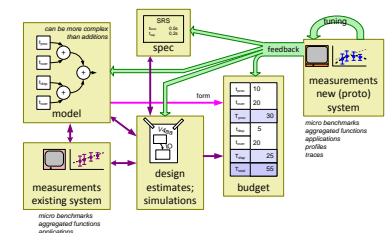e-mail: gaudisite@gmail.com

www.gaudisite.nl

Abstract

An incremental design approach for the execution architecture is described. The method is based on identification of the most critical requirement from both user as well as technical point of view. The implementation itself is based on quantified budgets. The creation, modification and verification of the budget is discussed.
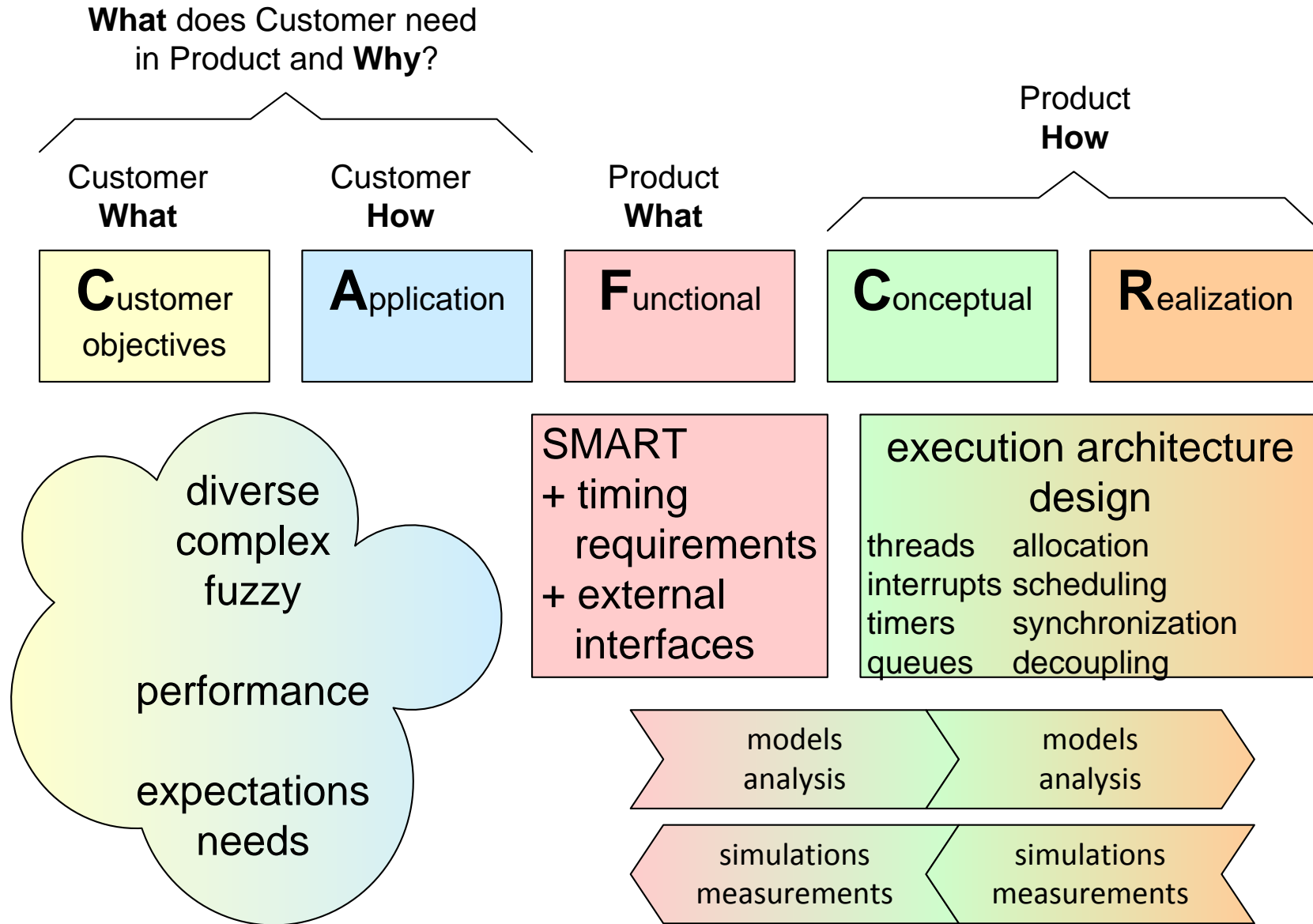
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status: draft
version: 1.0

Positioning in CAFCR

What does Customer need in Product and **Why**?

Product **How**

Customer **What**	Customer **How**	Product **What**		Product **How**

Customer objectives

Application

Functional

Conceptual

Realization

diverse complex fuzzy

performance

expectations needs

SMART
+ timing
requirements
+ external
interfaces

execution architecture design

threads	allocation
interrupts	scheduling
timers	synchronization
queues	decoupling

models analysis → models analysis →

simulations measurements → simulations measurements →

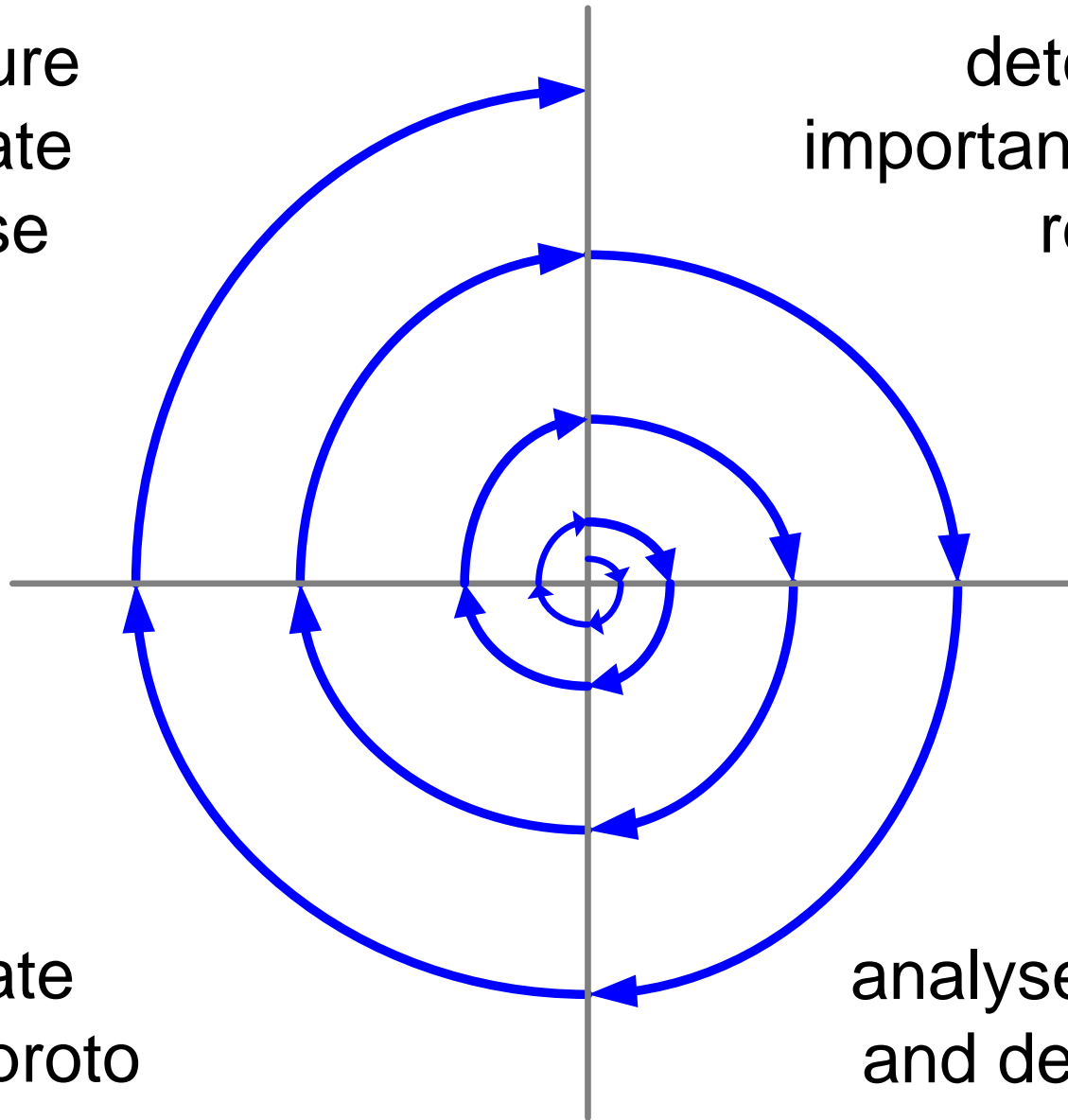USN ESI

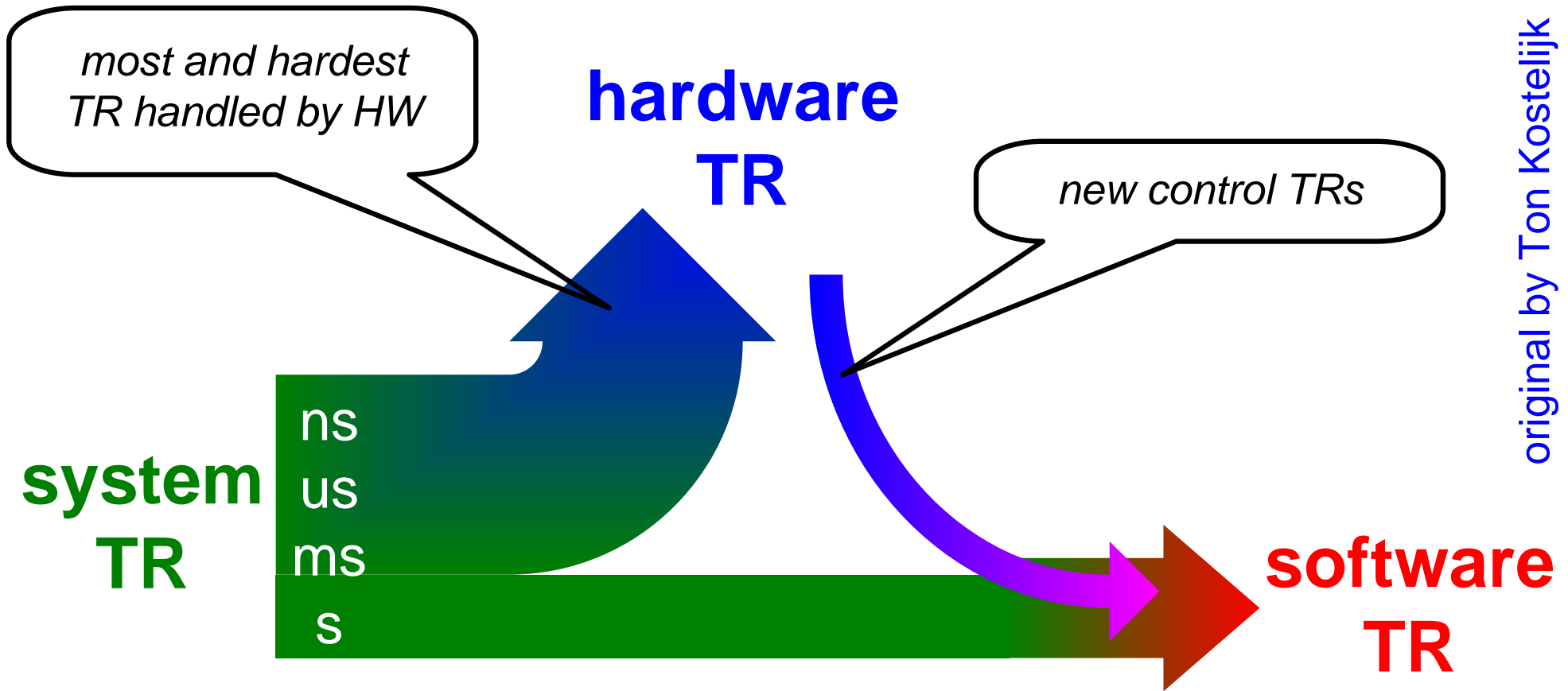# Incremental approach

measure
evaluate
analyse

determine most
important and critical
requirements

simulate
build proto

model
analyse constraints
and design options

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Decomposition of system TR in HW and SW

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EAAhwswRequirements

Quantification steps

Budget based design

can be more complex than additions

t_{proc}, t_{over}, t_{disp}, t_{over}

model

SRS

t_{boot}	0.5s
t_{zap}	0.2s

spec

feedback

tuning

measurements new (proto) system

micro benchmarks
aggregated functions
applications
profiles
traces

form

design estimates; simulations

V4aa

IO

budget

t_{proc}	10
t_{over}	20
T_{proc}	30
t_{disp}	5
t_{over}	20
T_{disp}	25
T_{total}	55

measurements existing system

micro benchmarks
aggregated functions
applications

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