An incremental execution architecture design approach

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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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March 6, 2013
status: draft
version: 1.0
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Incremental approach

- determine most important and critical requirements
- analyse constraints and design options
- model
- analyse constraints and design options
- simulate
- build proto
- measure
- evaluate
- analyse

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EAAspiral
Decomposition of system TR in HW and SW

most and hardest TR handled by HW

new control TRs
Quantification steps

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Budget based design

can be more complex
than additions

t_{proc} + t_{over} + t_{disp} + t_{over}

SRS
\begin{align*}
t_{\text{boot}} & : 0.5s \\
t_{\text{zap}} & : 0.2s
\end{align*}

spec

feedback

measurements
new (proto)
system

micro benchmarks
aggregated functions
applications
profiles
traces

model

design estimates; simulations

budget

measurements
existing system

micro benchmarks
aggregated functions
applications

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EAAbudget