Dynamic Range of Abstraction Levels in Architecting

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Abstract

One of the challenges in architecting is to span many orders of magnitude in the level of abstraction. The system of interest itself can be viewed on many levels of abstraction. However, the context of customers, life cycle, and related products adds a few more orders of magnitude to be spanned.
Level of Abstraction Single System

- **Static system definition**
- **Monodisciplinary**
- **Number of details**
- **System requirements**
- **Multidisciplinary design**
- **Dynamic range of abstraction levels in architecting**

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RAPpyramid
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DRALpyramidGrowth
Product Family in Context

Dynamic Range of Abstraction Levels in Architecting

1. Number of details:
   - $10^9$
   - $10^6$
   - $10^3$
   - $10^0$

2. Levels of abstraction:
   - Parts, connections, lines of code
   - Multidisciplinary design
   - Stakeholders
   - Enterprise
   - Enterprise context

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RAPdiabolo
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Capturing all information that is required for: logistics, manufacturing, legislation, maintenance, life cycle support,
from needs and requirements to design: decomposition, interface definition, allocation, concept selection, technology choices

anticipating engineering needs and constraints
Architecting:
 realization and design choices in context

Some context details are essential

Some technical details are essential

Dynamic Range of Abstraction Levels in Architecting

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Frequently observed gaps

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DRALgaps