

Modeling and Analysis: Iteration and Time-boxing

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Abstract

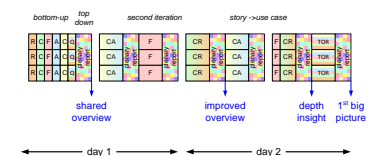
Modeling of Systems and their context is done to support communication with stakeholders, to facilitate reasoning about system requirements and design, to support decision making, and in general to create and maintain understanding, insight, and overview. The challenge in modeling is to find an appropriate abstraction level, and to make sufficient progress.

In this paper we discuss how time-boxing and iteration over multiple views and models helps to address both challenges. Time-boxing and iteration fit in a broader modeling method that we will discuss briefly to provide background.

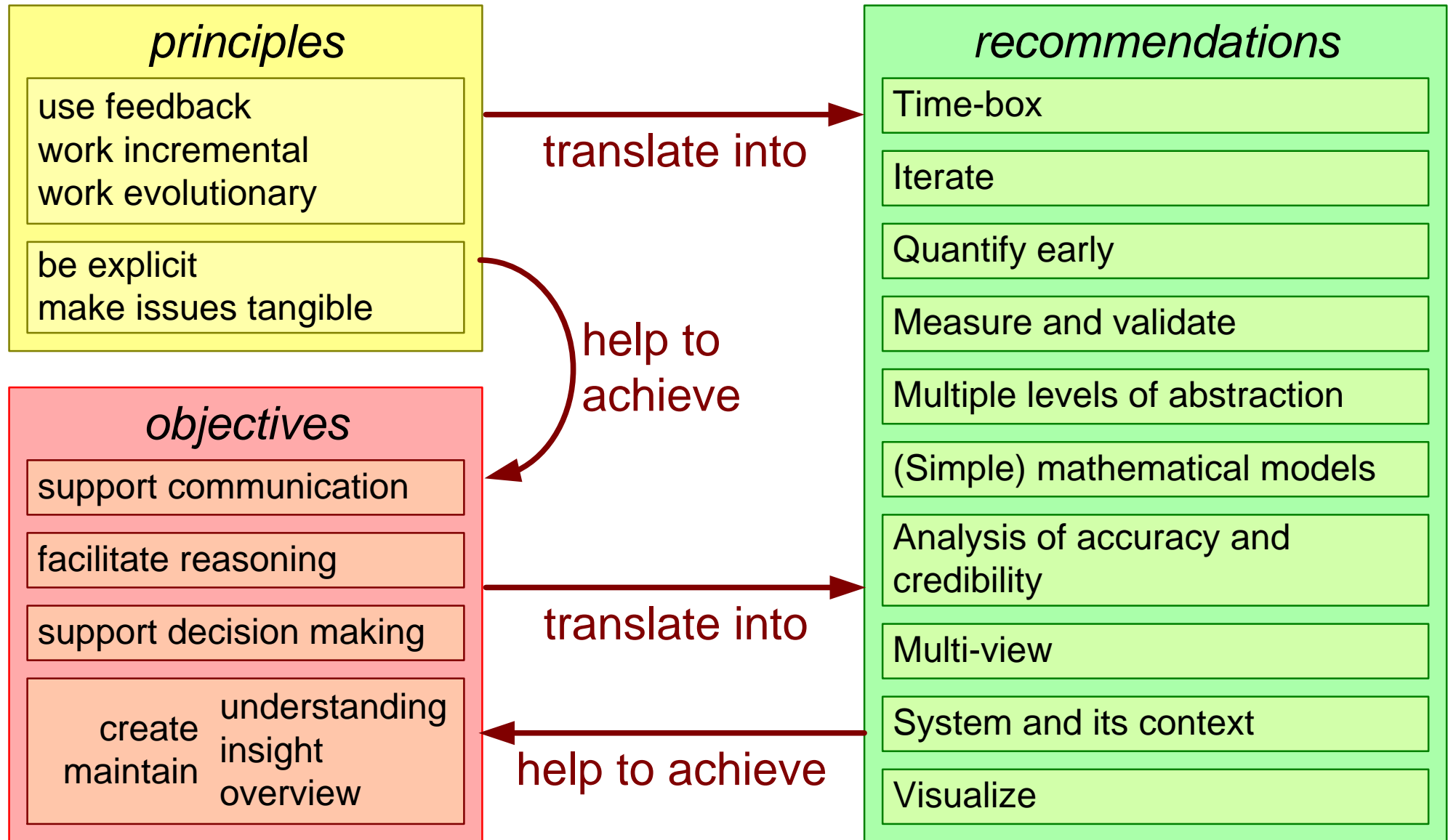
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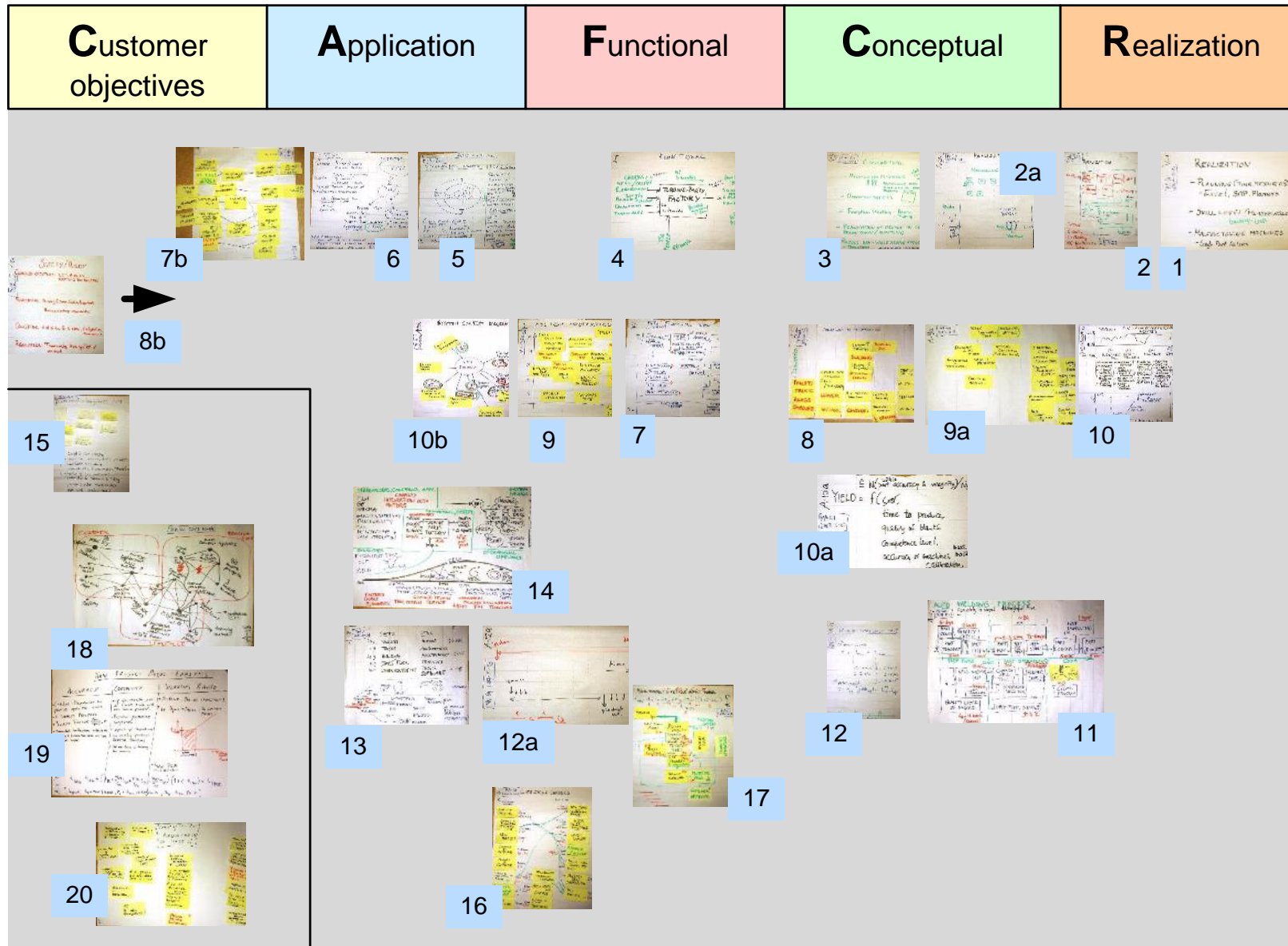
August 16, 2025
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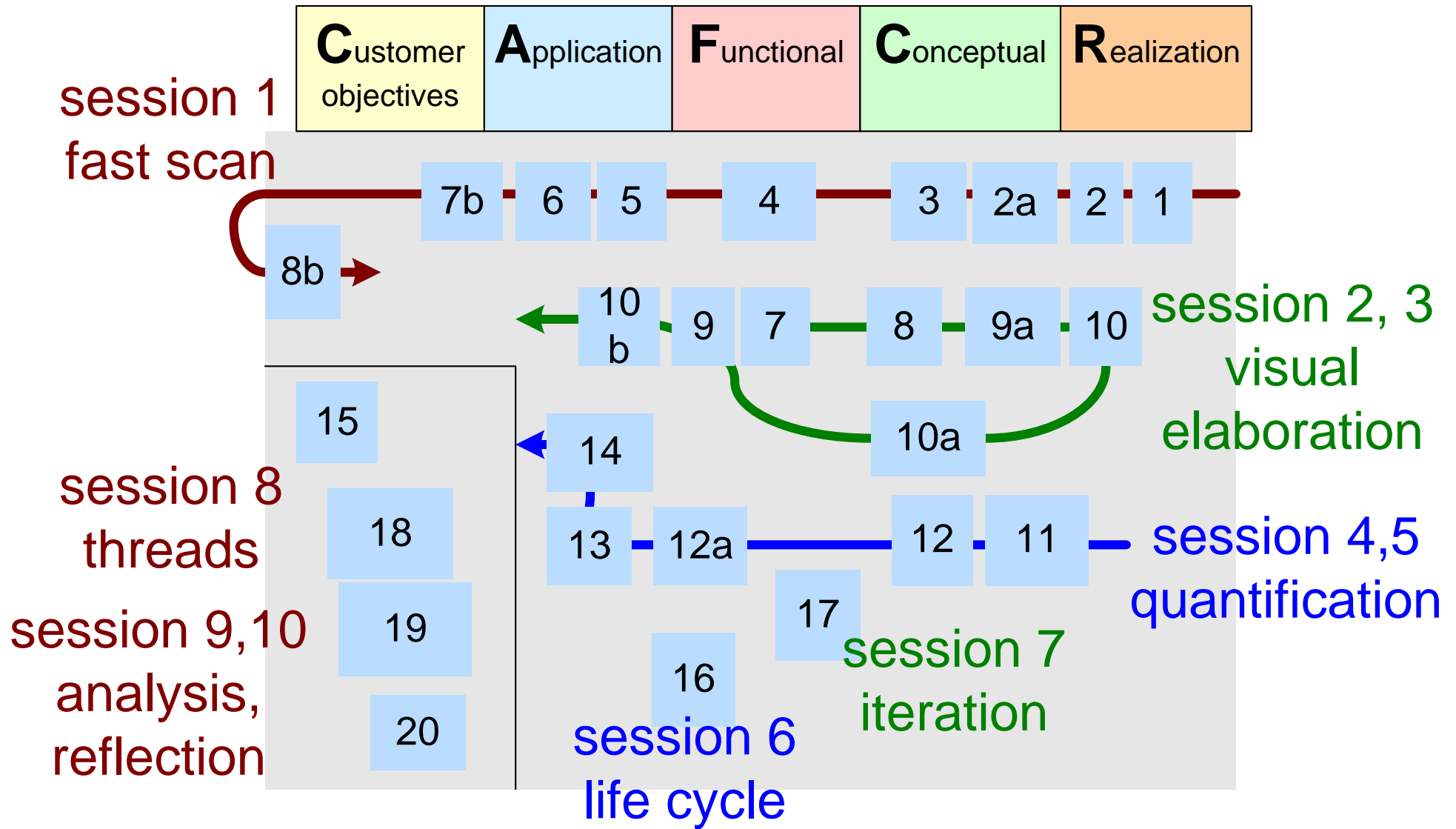
Guidelines from Modeling and Analysis Course



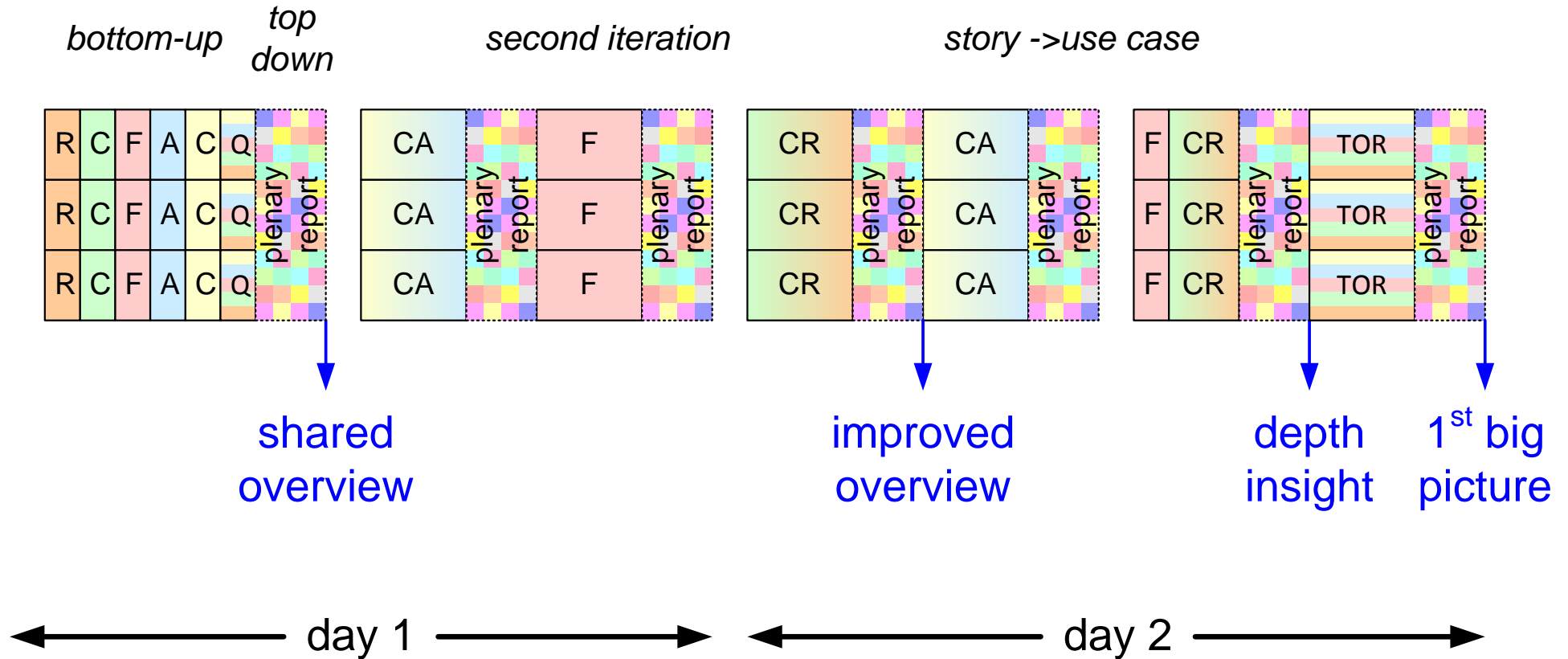
Flip-overs of one week course



Schematic flow



Time-boxes and Iteration



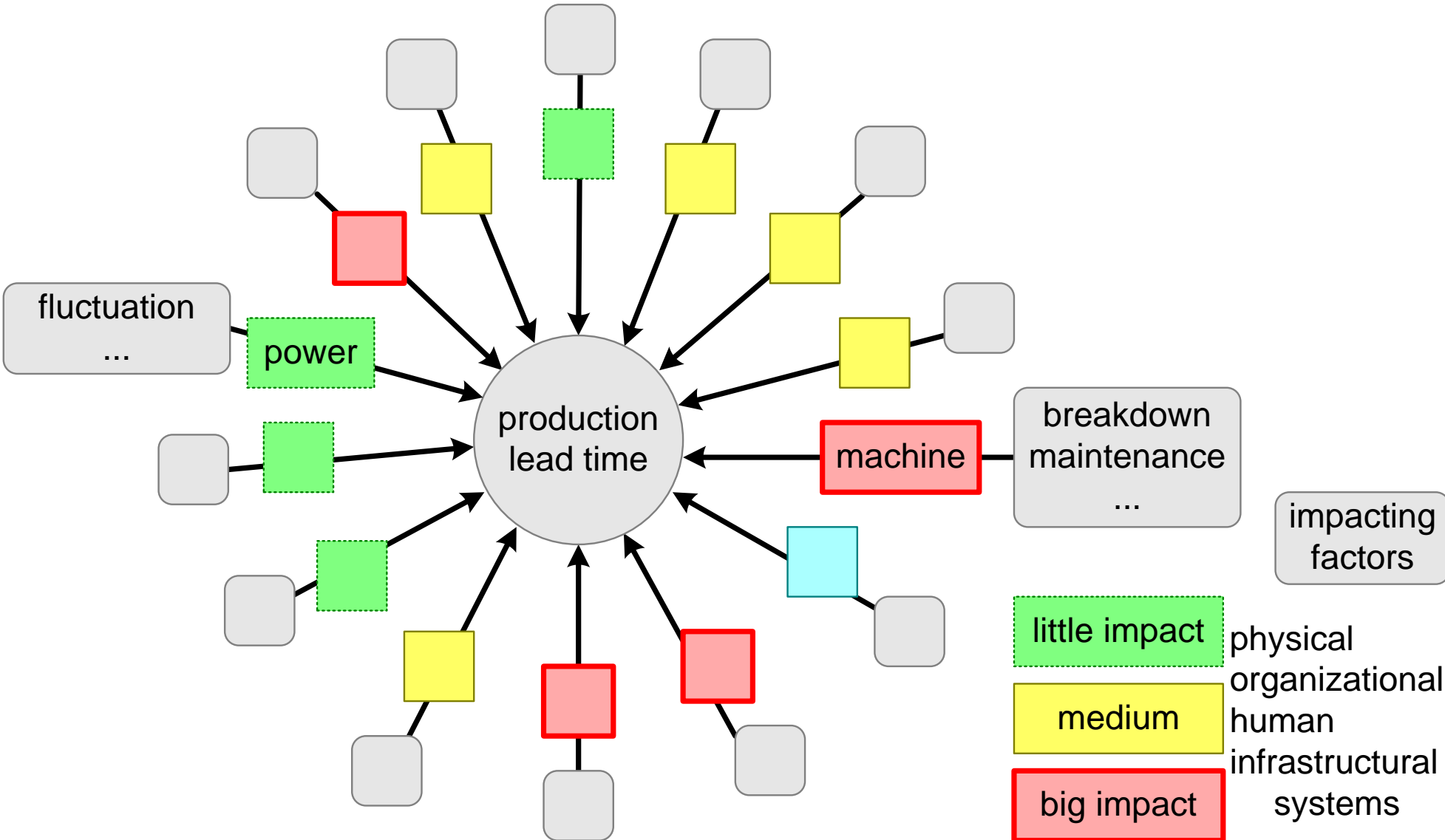
Lead-time Model

$$t_{\text{lead time}} = t_{\text{processing total}} + t_{\text{handling}}$$

$$t_{\text{processing total}} = \sum_{\text{all processes}} t_{\text{processing process}}$$

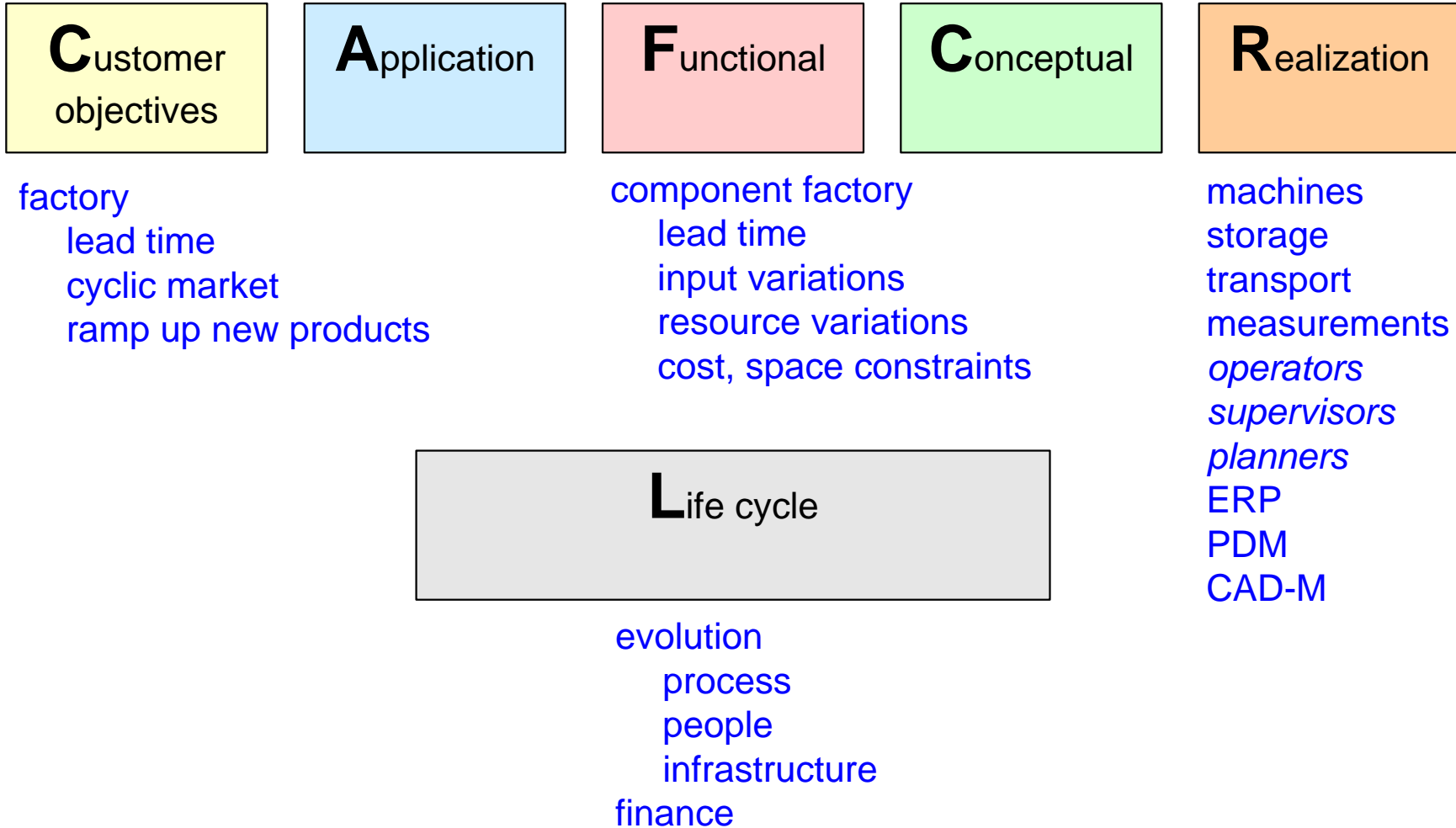
e.g. $t_{\text{drill 1..n}} + t_{\text{grind 1..m}} + \dots$

Life Cycle Model

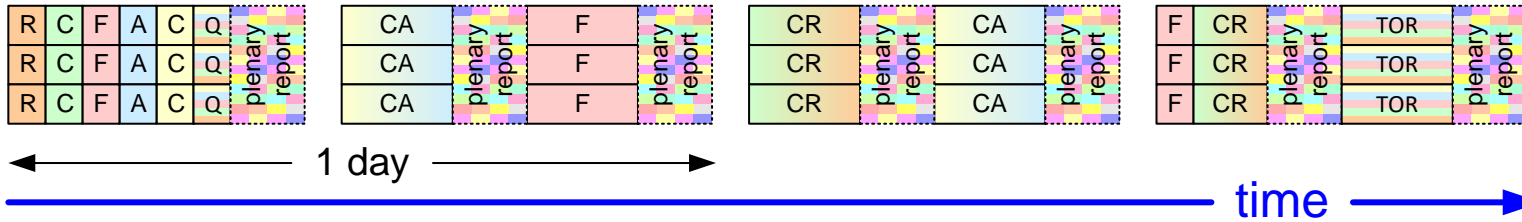


Models in CAFCR+

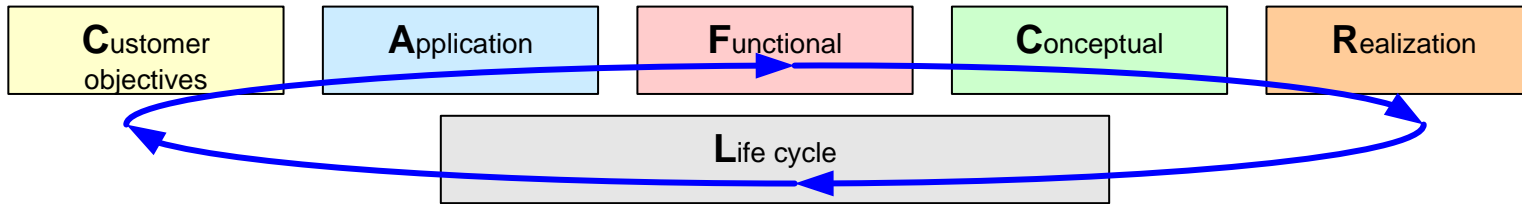
component qualities: safety, reliability, robustness, liability
factory qualities: predictable, traceable, timely



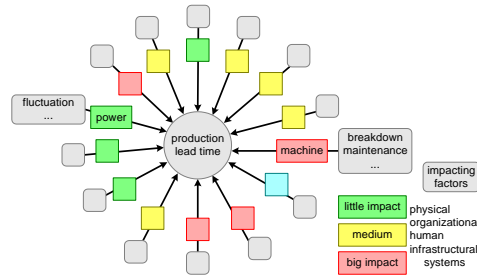
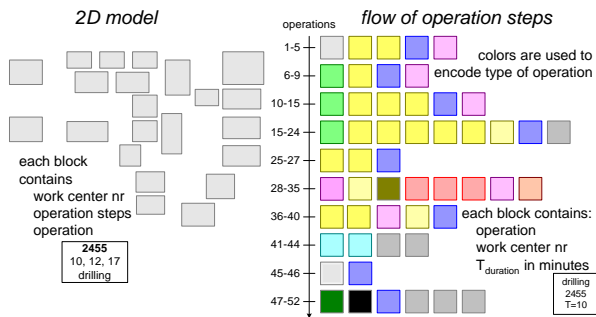
Summary



time box



iterate



$$t_{\text{lead time}} = t_{\text{processing total}} + t_{\text{handling}}$$

$$t_{\text{processing total}} = \sum_{\text{all processes}} t_{\text{processing process}}$$

e.g. $t_{\text{drill } 1..n} + t_{\text{grind } 1..m} + \dots$

visualize
be specific
quantify
validate