

Modeling and Analysis: Iteration and Time-boxing

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Abstract

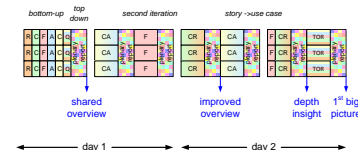
Modeling of Systems and their context is done to support communication with stakeholders, to facilitate reasoning about system requirements and design, to support decision making, and in general to create and maintain understanding, insight, and overview. The challenge in modeling is to find an appropriate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

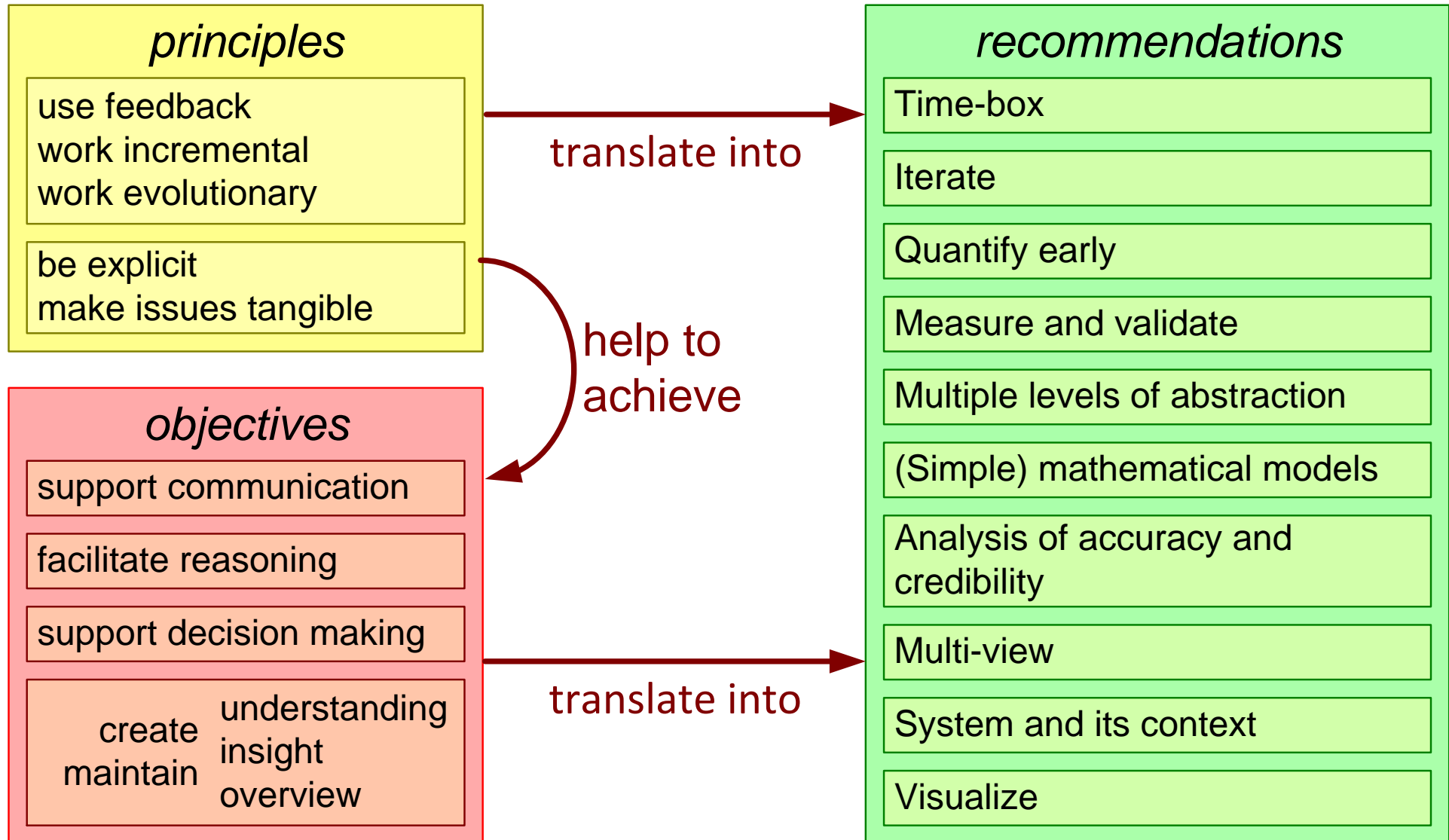
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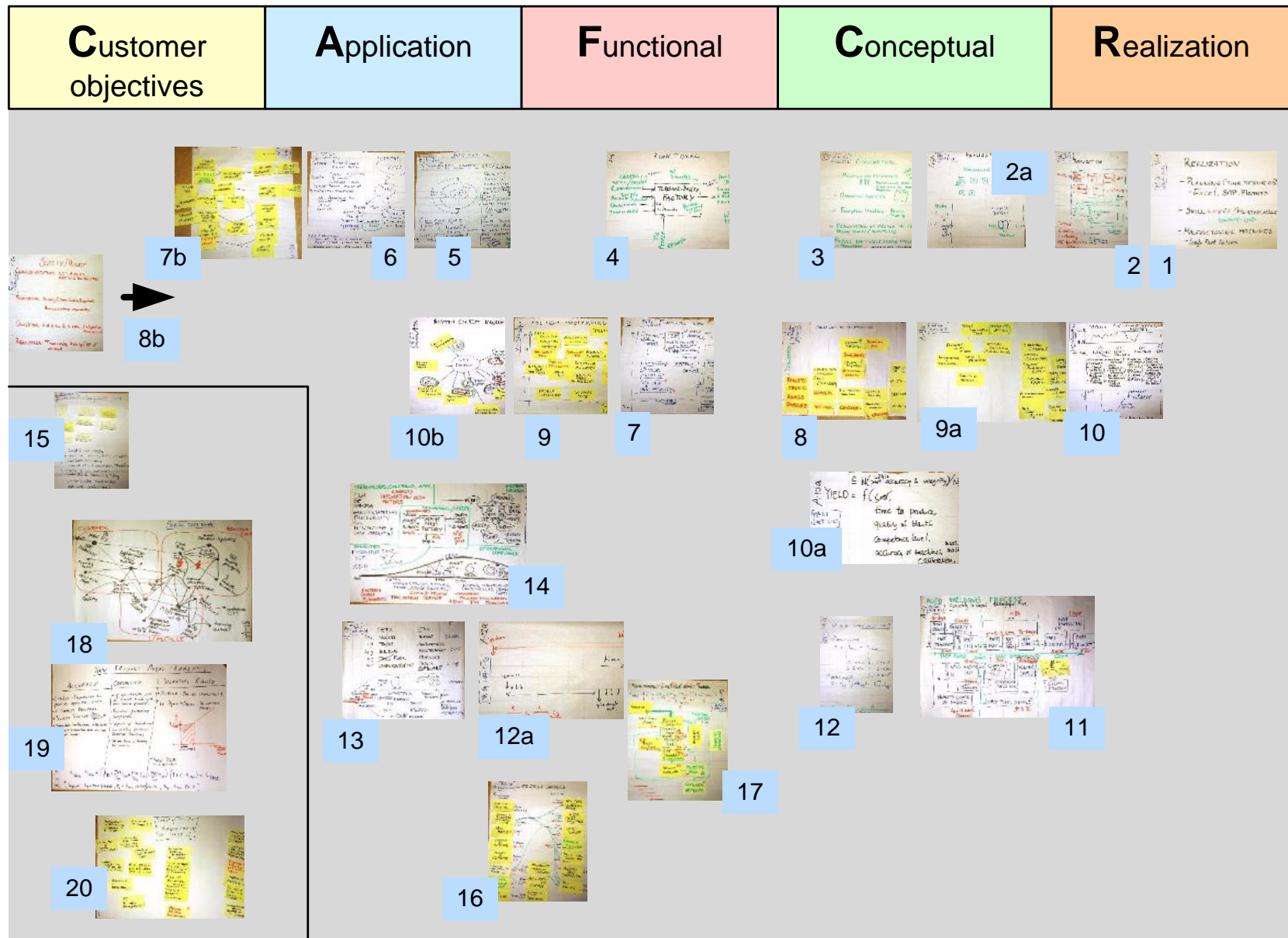
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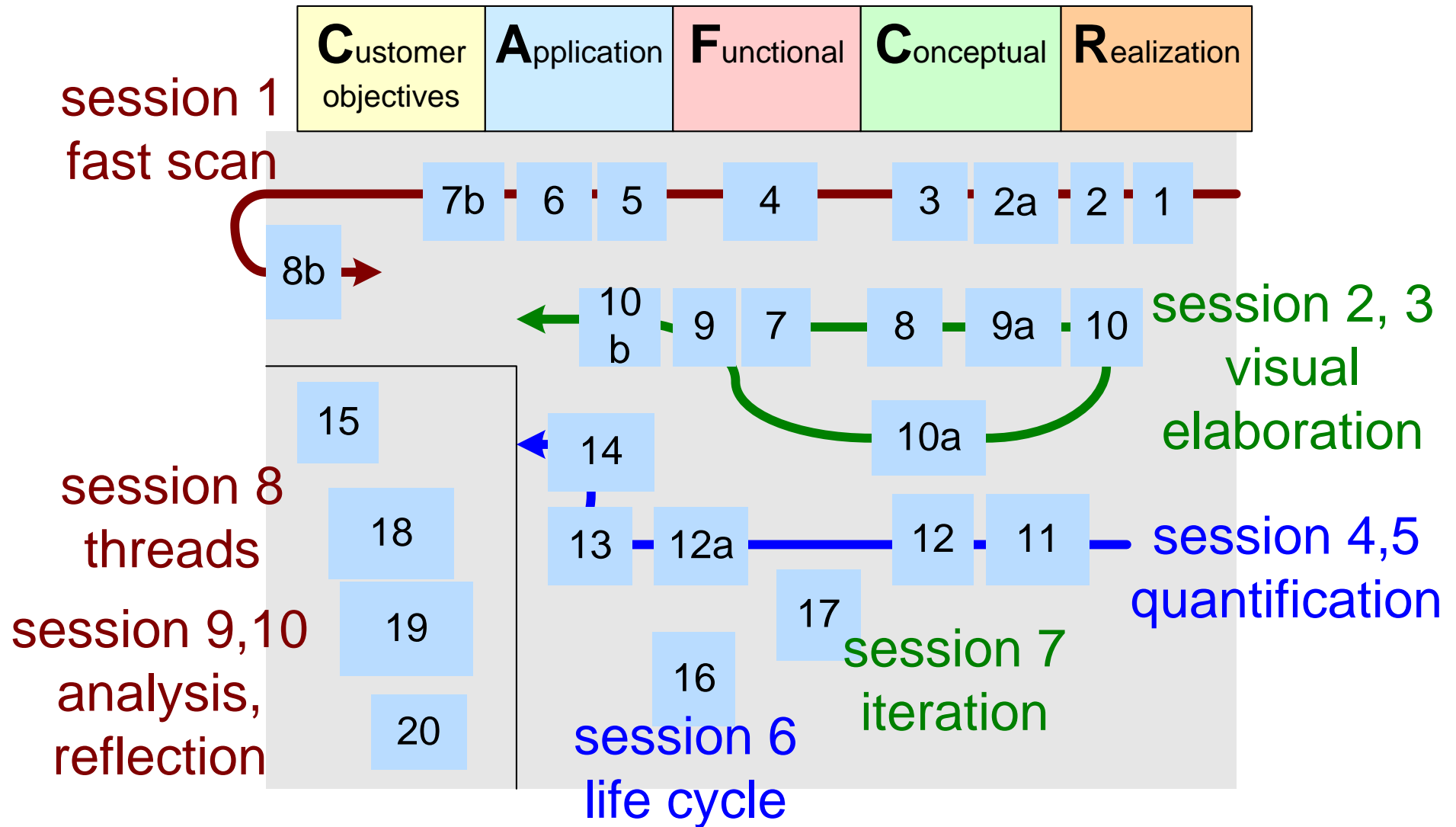
Guidelines from Modeling and Analysis Course



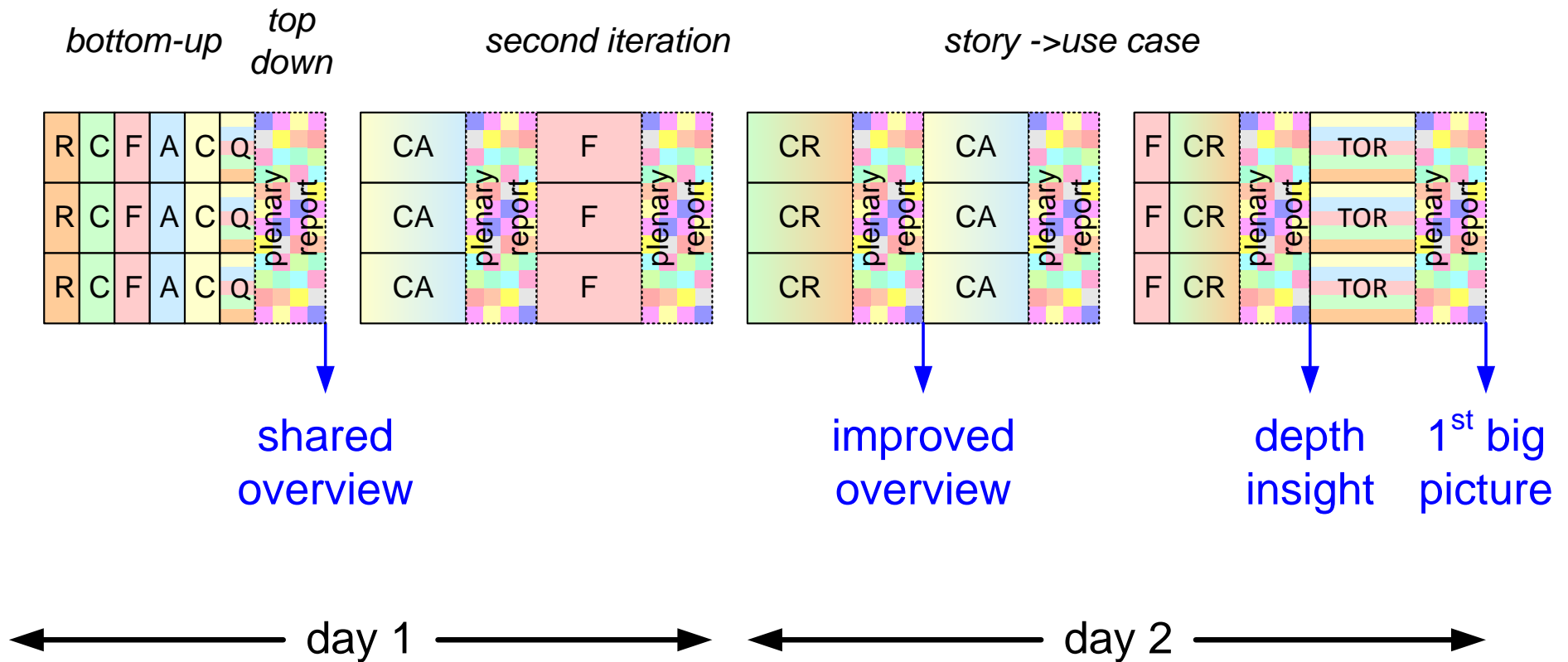
Flip-overs of one week course



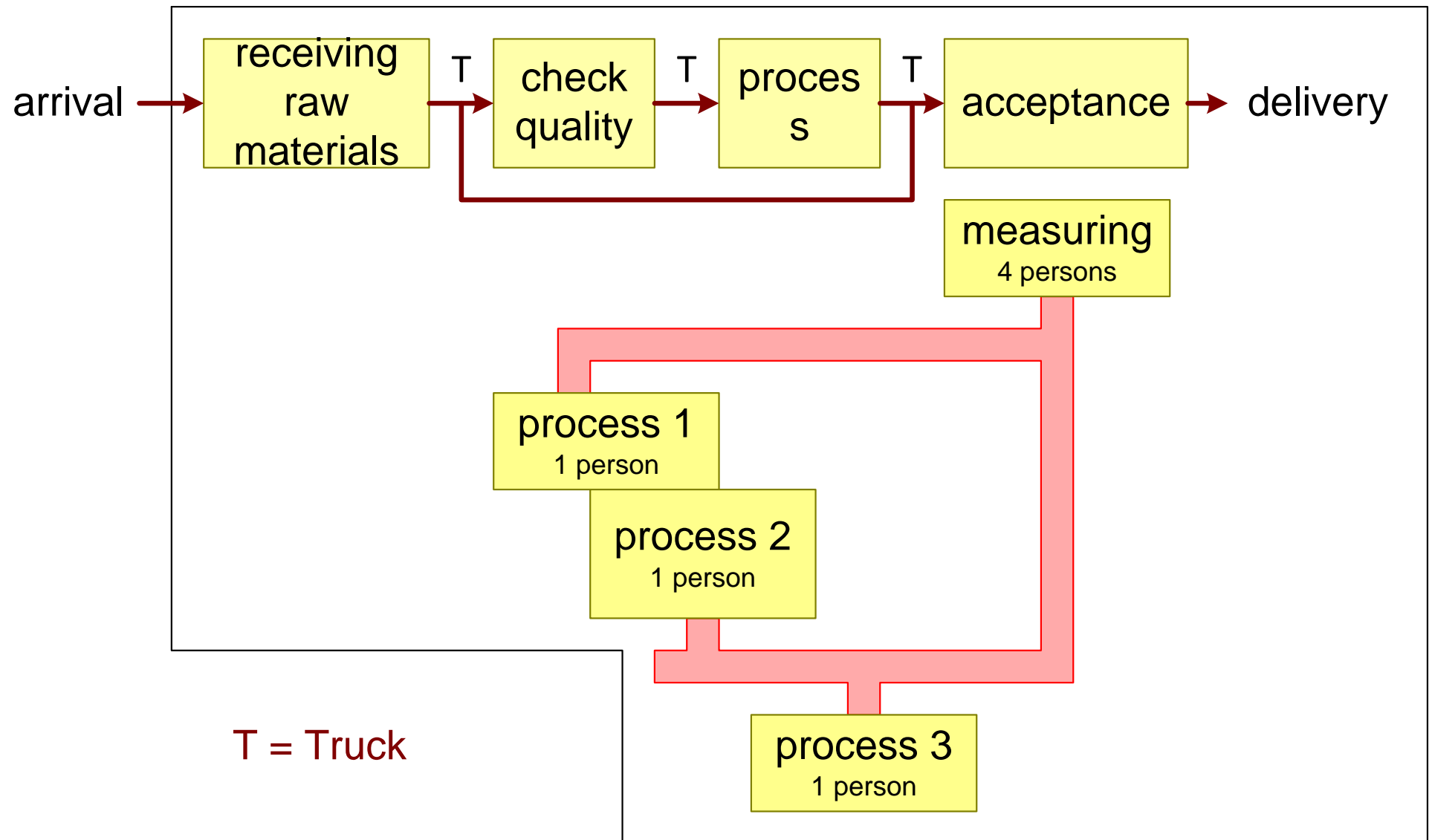
Schematic flow



Time-boxes and Iteration



Initial 2D Model



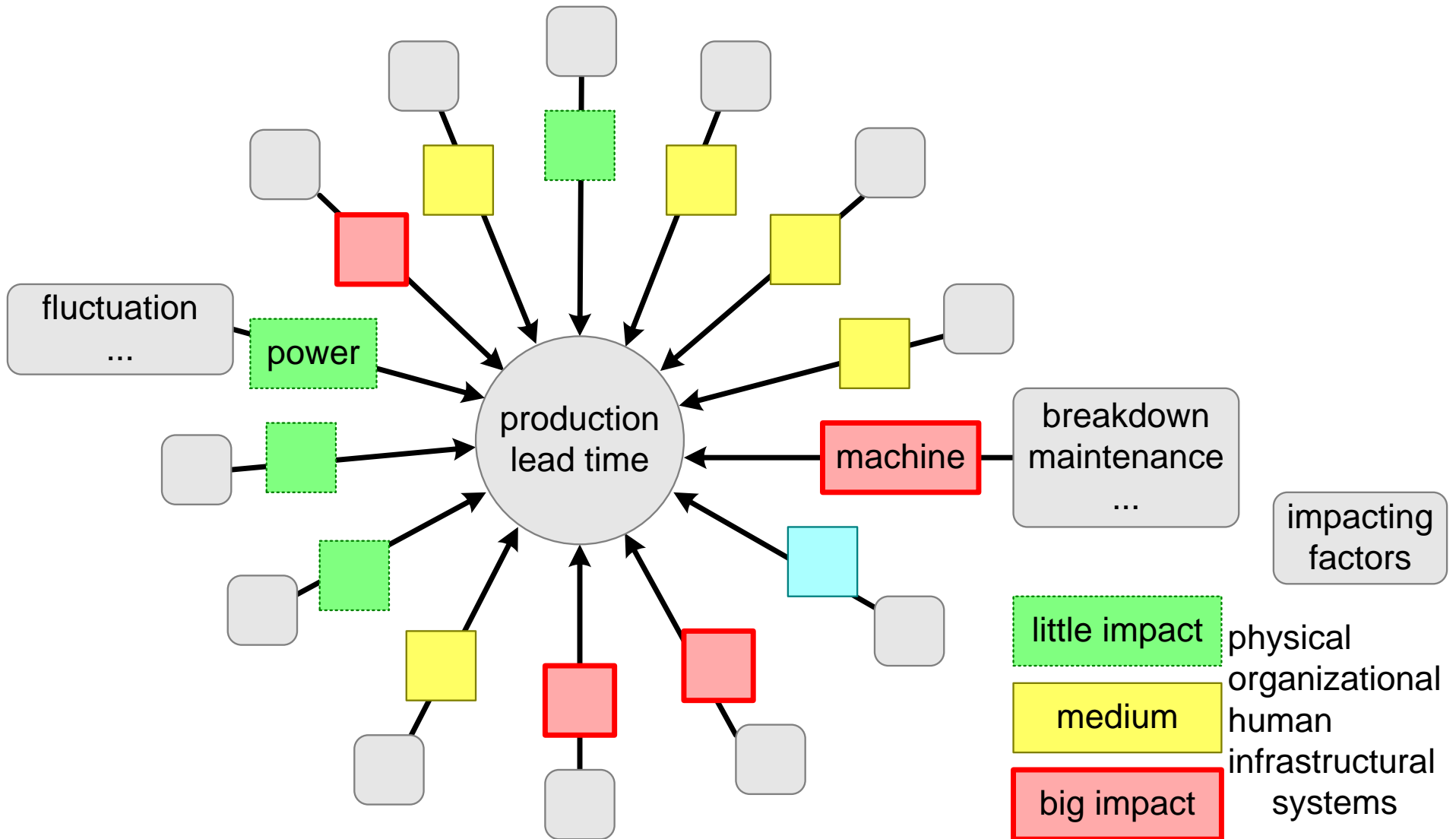
Lead-time Model

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

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

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

Customer
objectives

Application

Functional

Conceptual

Realization

factory
lead time
cyclic market
ramp up new products

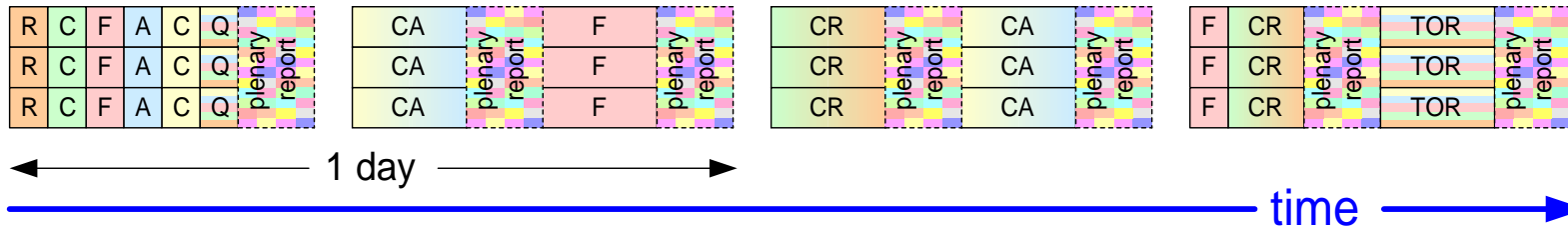
component factory
lead time
input variations
resource variations
cost, space constraints

machines
storage
transport
measurements
operators
supervisors
planners
ERP
PDM
CAD-M

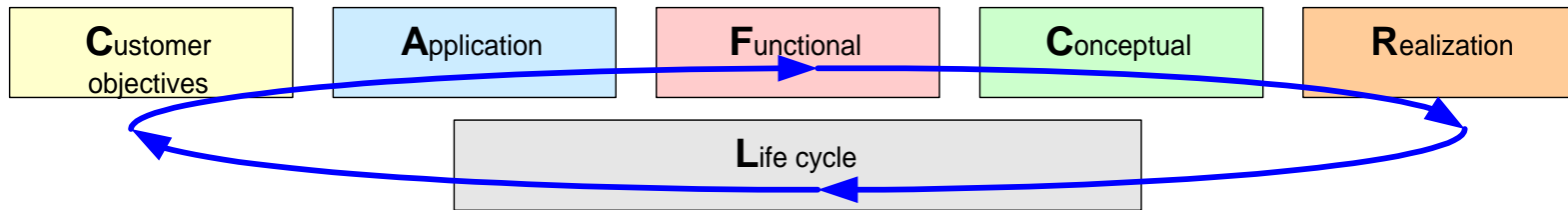
Life cycle

evolution
process
people
infrastructure
finance

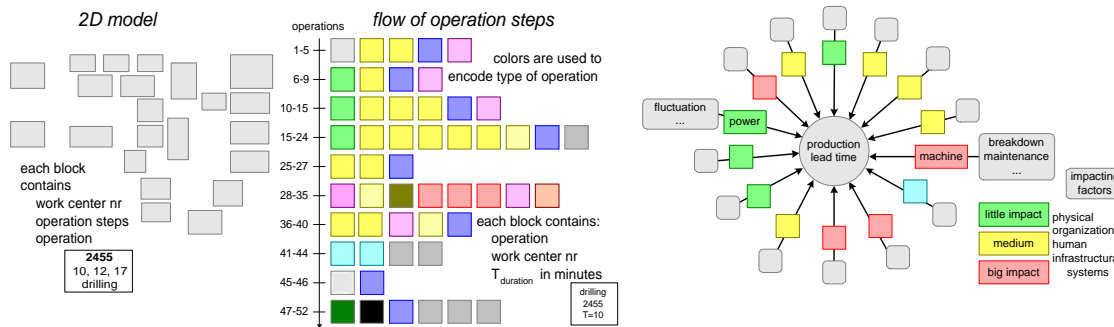
Summary



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