

# Modeling and Analysis: Iteration and Time-boxing

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## Abstract

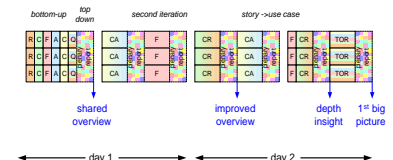
Modeling of Systems and their context is done to support communication with stakeholders, to facilitate reasoning about system requirements and design, to support decision making, and in general to create and maintain understanding, insight, and overview. The challenge in modeling is to find an appropriate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

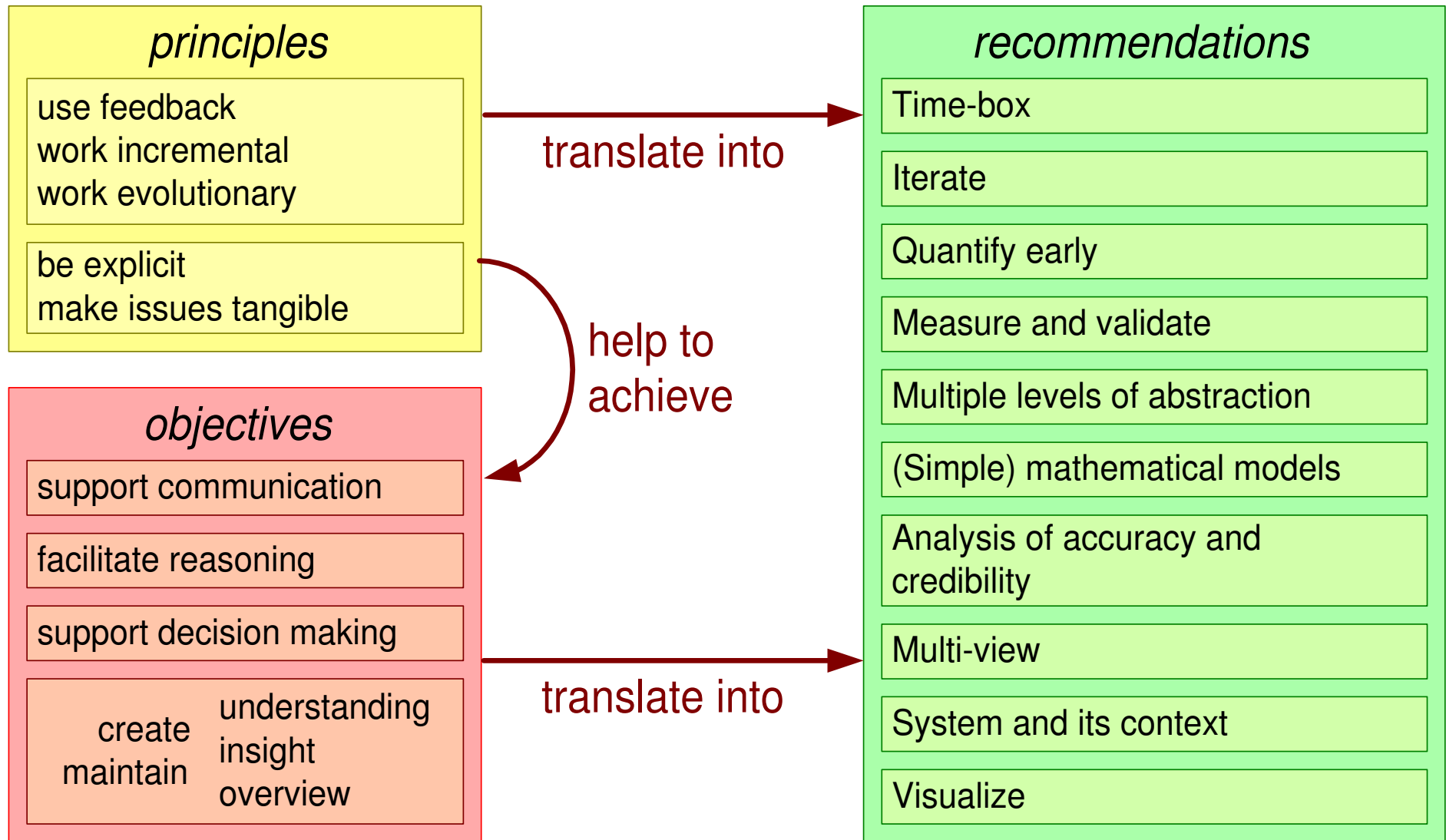
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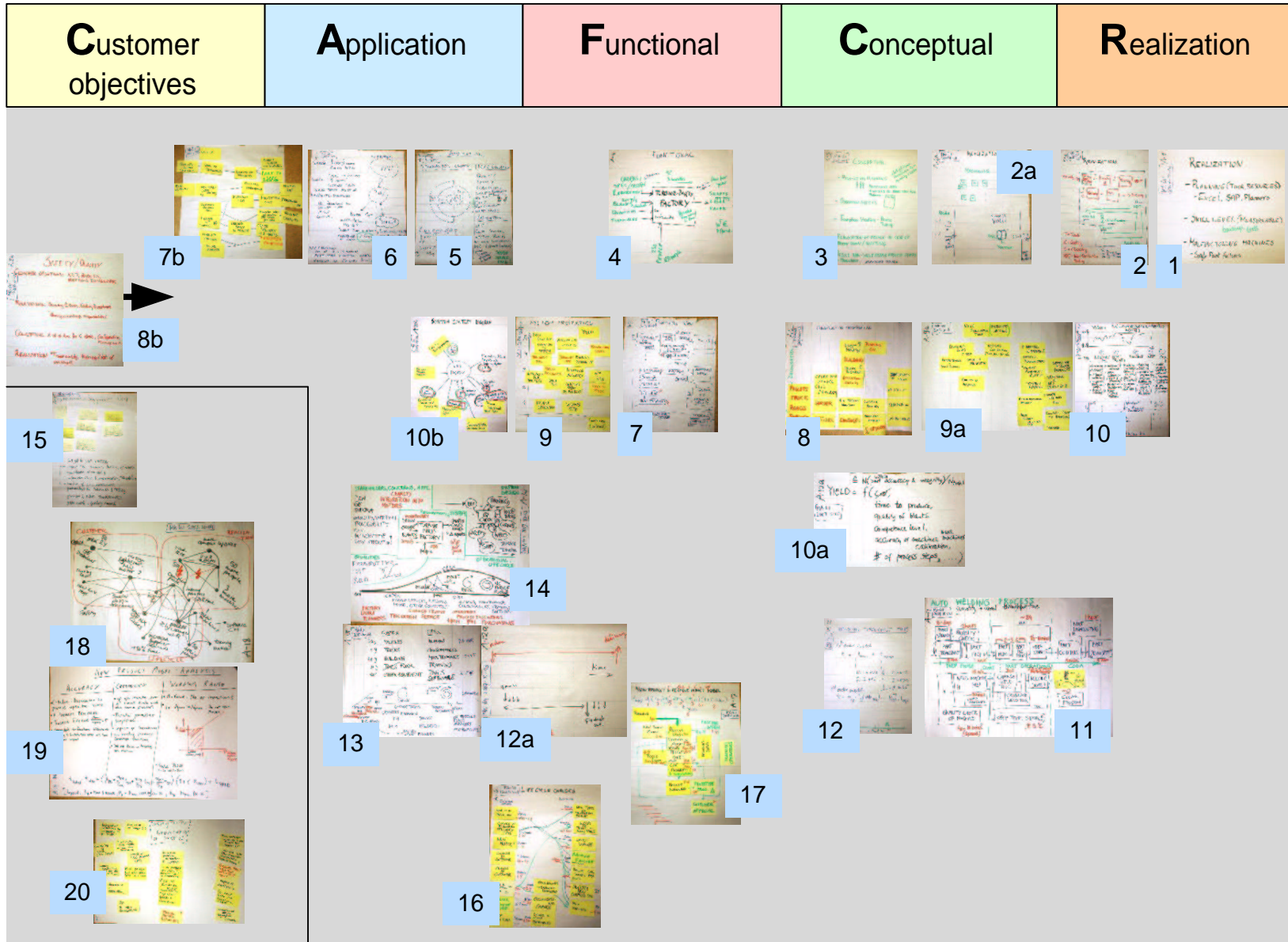
February 10, 2011  
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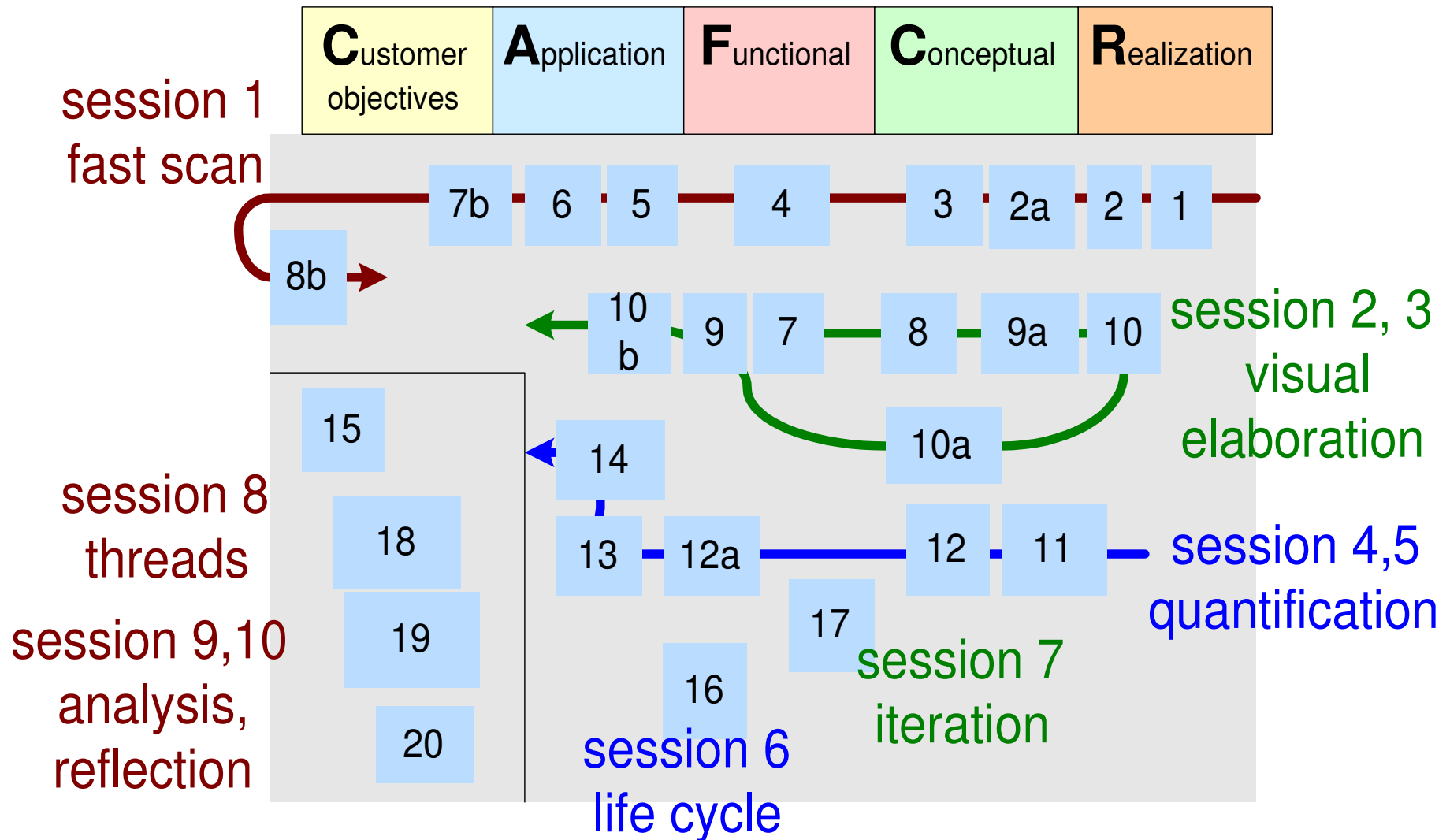
# Guidelines from Modeling and Analysis Course



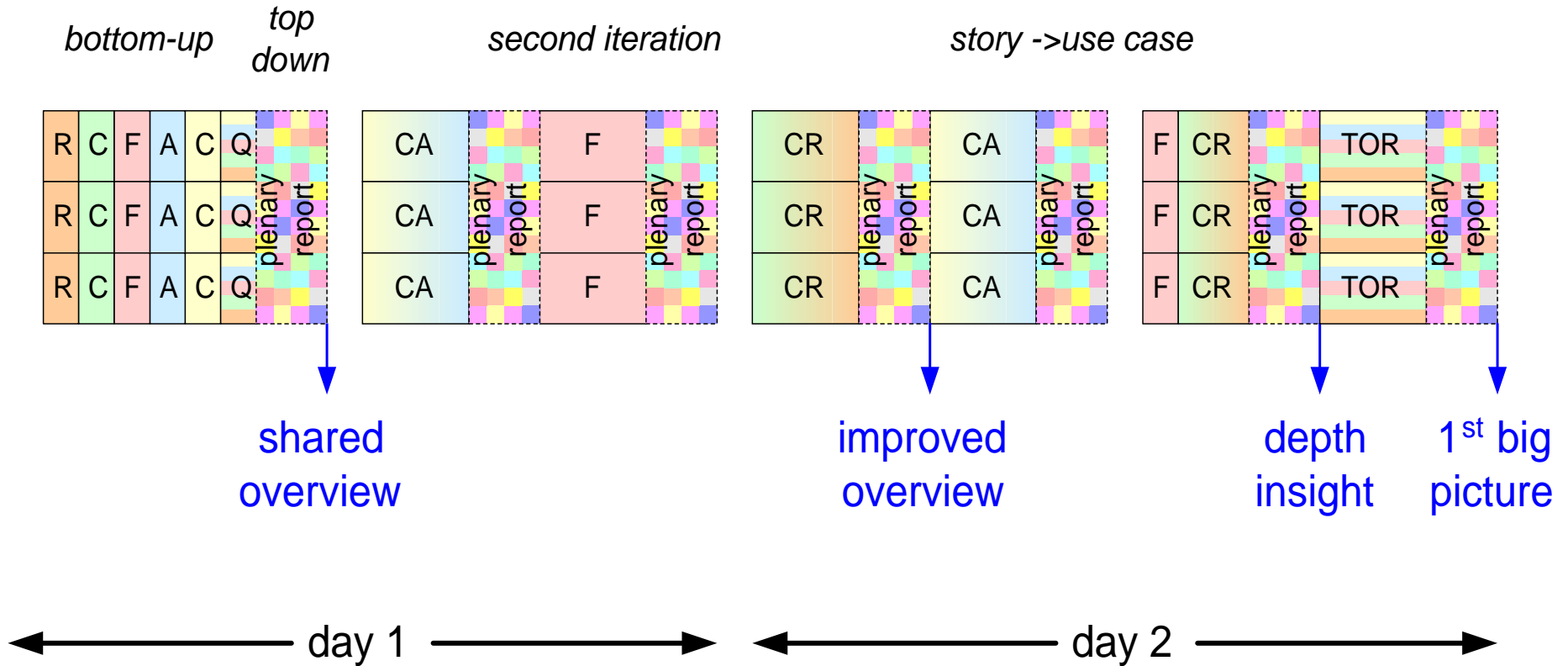
# Flip-overs of one week course



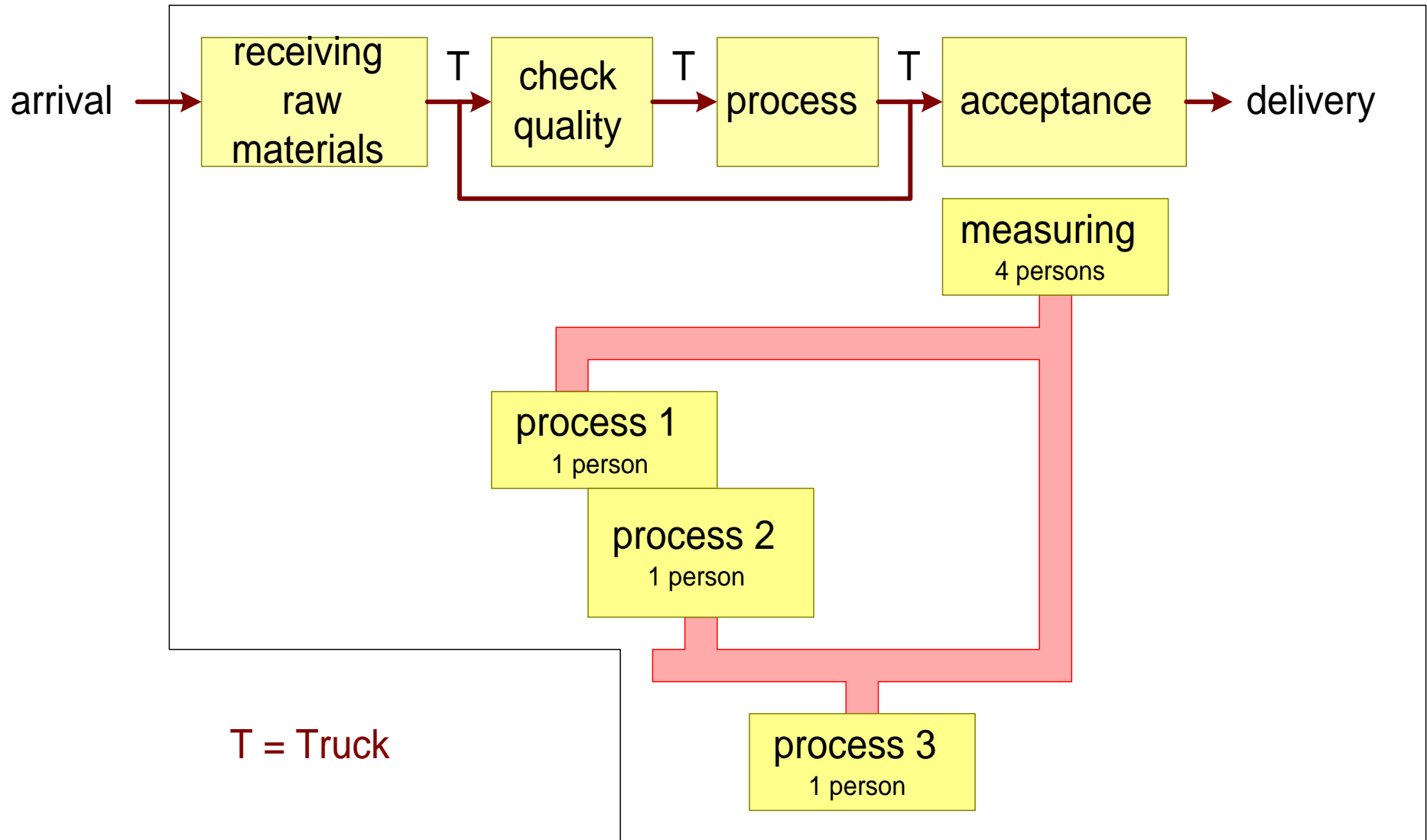
# Schematic flow



# Time-boxes and Iteration



# Initial 2D Model



# Lead-time Model

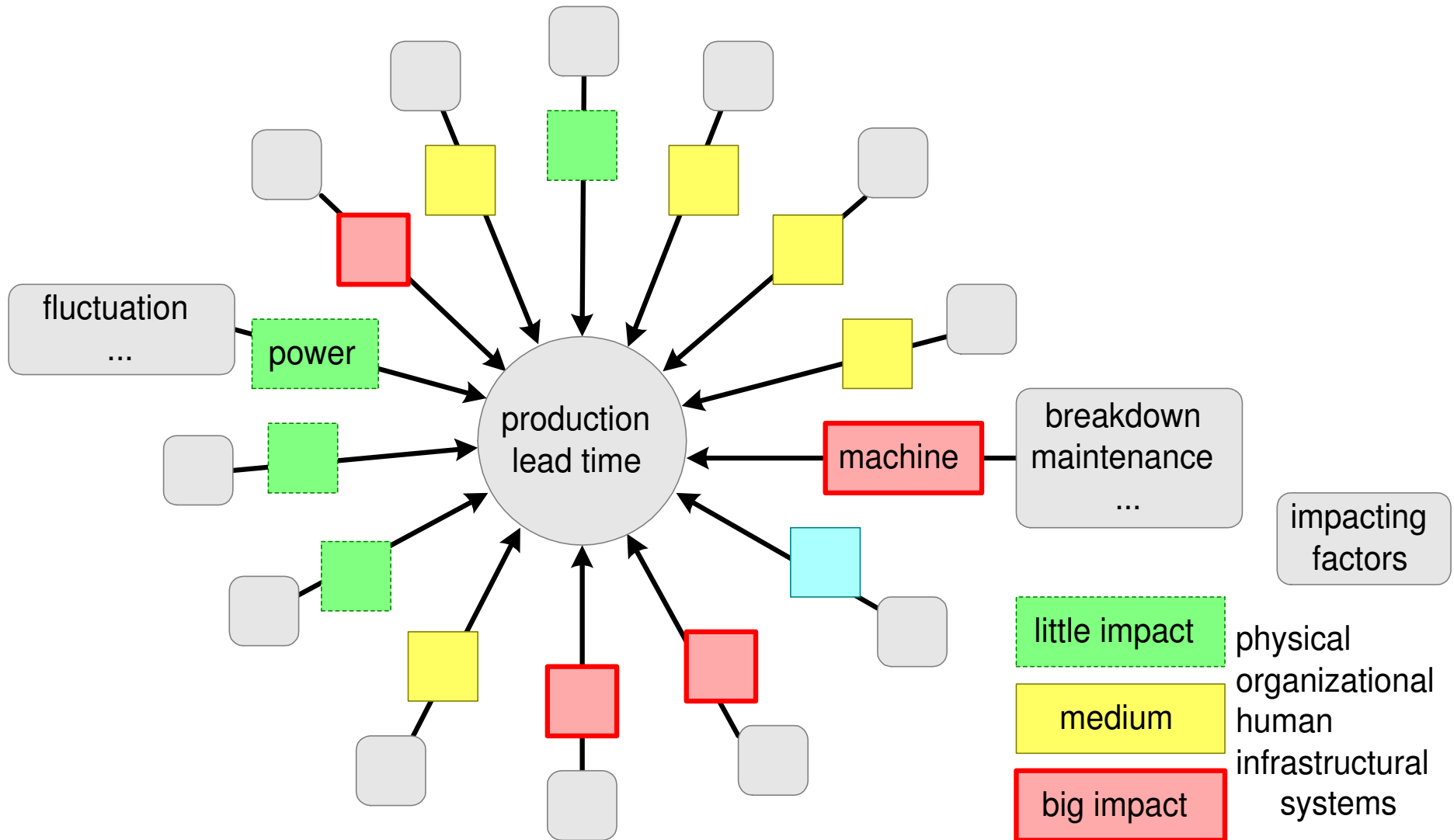
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$$t_{\text{lead time}} = t_{\text{processing total}} + t_{\text{handling}}$$

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

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

**C**ustomer  
objectives

**A**pplication

**F**unctional

**C**onceptual

**R**ealization

factory  
lead time  
cyclic market  
ramp up new products

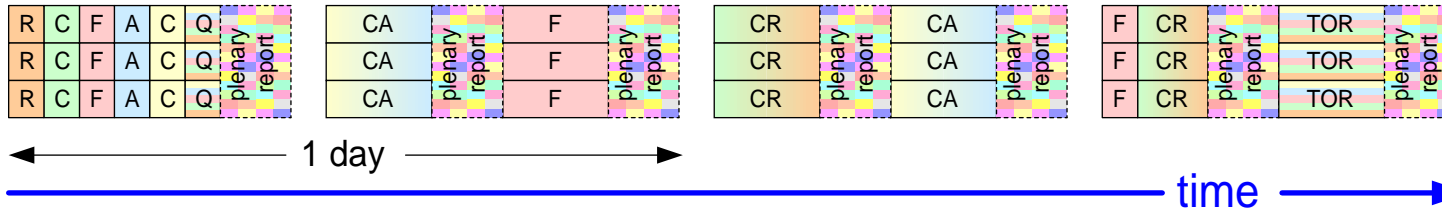
component factory  
lead time  
input variations  
resource variations  
cost, space constraints

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

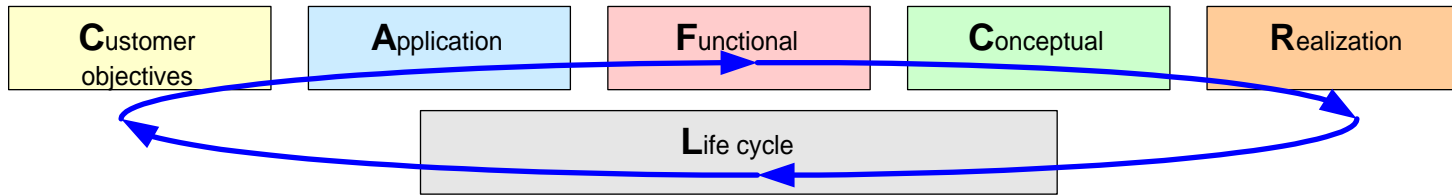
**L**ife cycle

evolution  
process  
people  
infrastructure  
finance

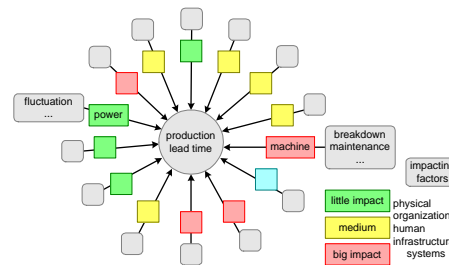
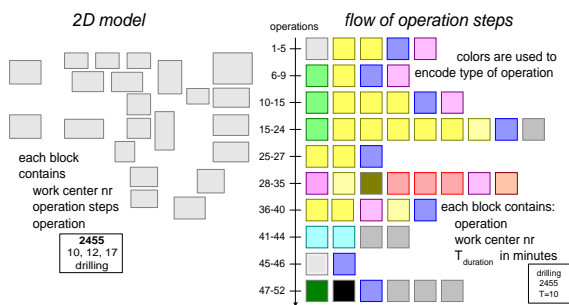
# Summary



time box



iterate



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

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

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

visualize

be specific

quantify

validate