

# Module Modeling and Analysis course info

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## Abstract

This module provides the information about the “Modeling and Analysis” course.

# Modeling and Analysis Overview Content

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## *goal of this module*

Provide overview and context for complete course.

Understand and experience the connection between problem and solution.

## *content of this module*

Positioning of Modeling and Analysis (M&A)

Why, what and how of M&A

Program of the complete course

Overview of M&A approach

## *exercise*

Quick scan of one case

Electronic Patient Record, Video on Demand, or Health Care Archive

# Modeling and Analysis Overview

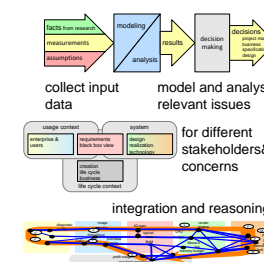
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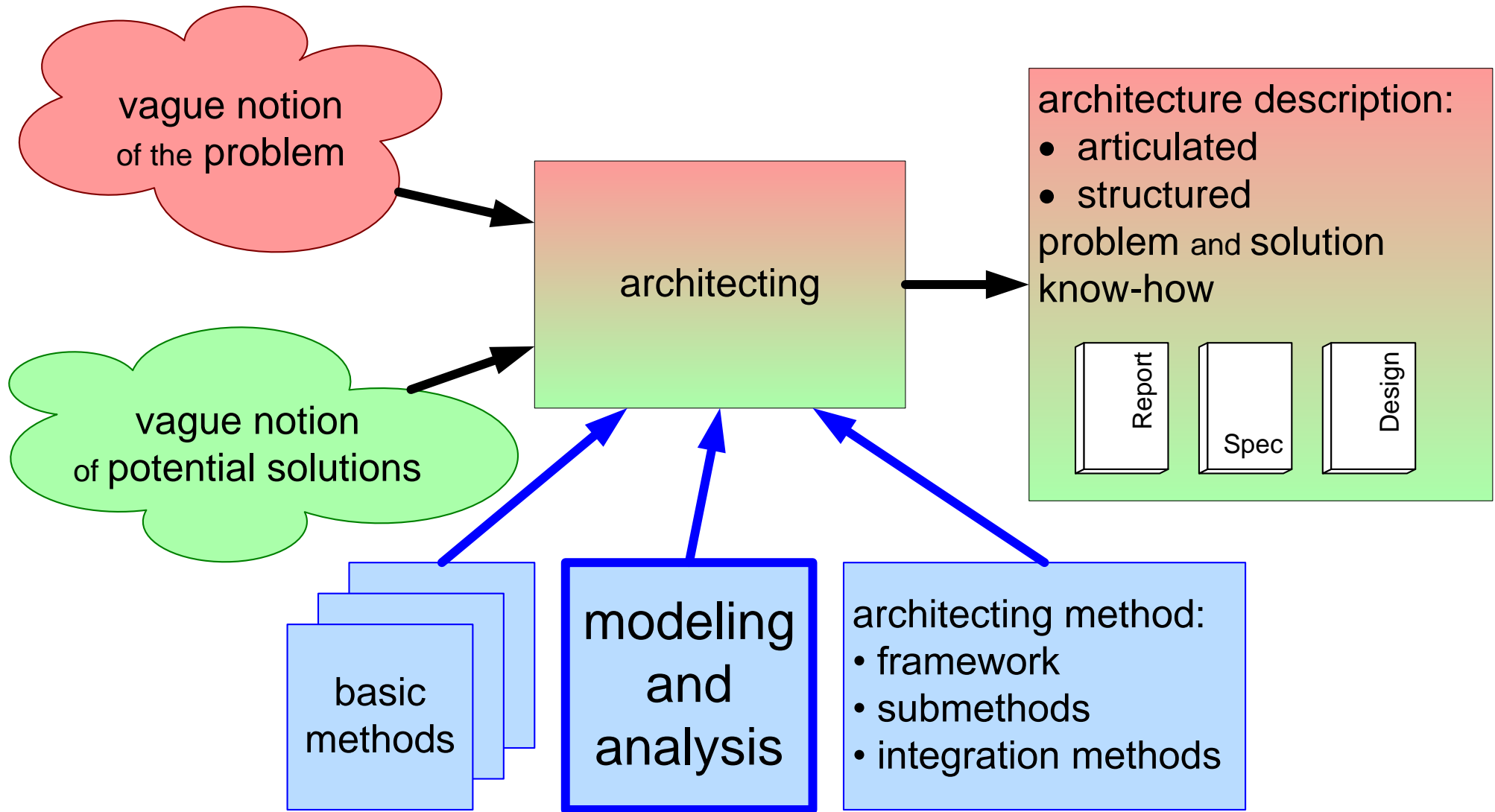
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## Abstract

The course Modeling and Analysis is described. The program consists of 10 modules. The course format, iterating theory, illustration and interaction is explained. The course heavily emphasizes the practical application of the method. This presentation shows the overview of the modeling and analysis approach and the methods and techniques that will be elaborated in the rest of the course.

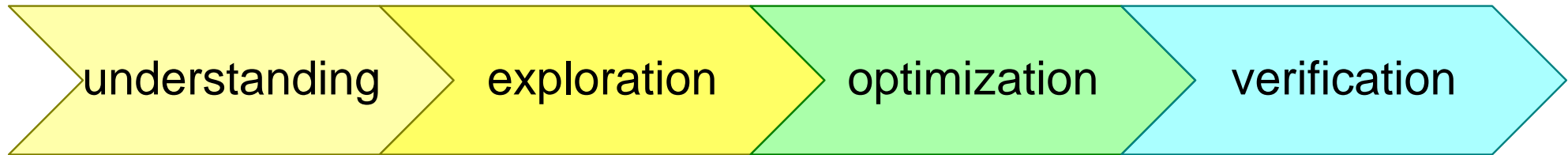


# Positioning Modeling and Analysis in Architecting



# Modeling and Analysis supports:

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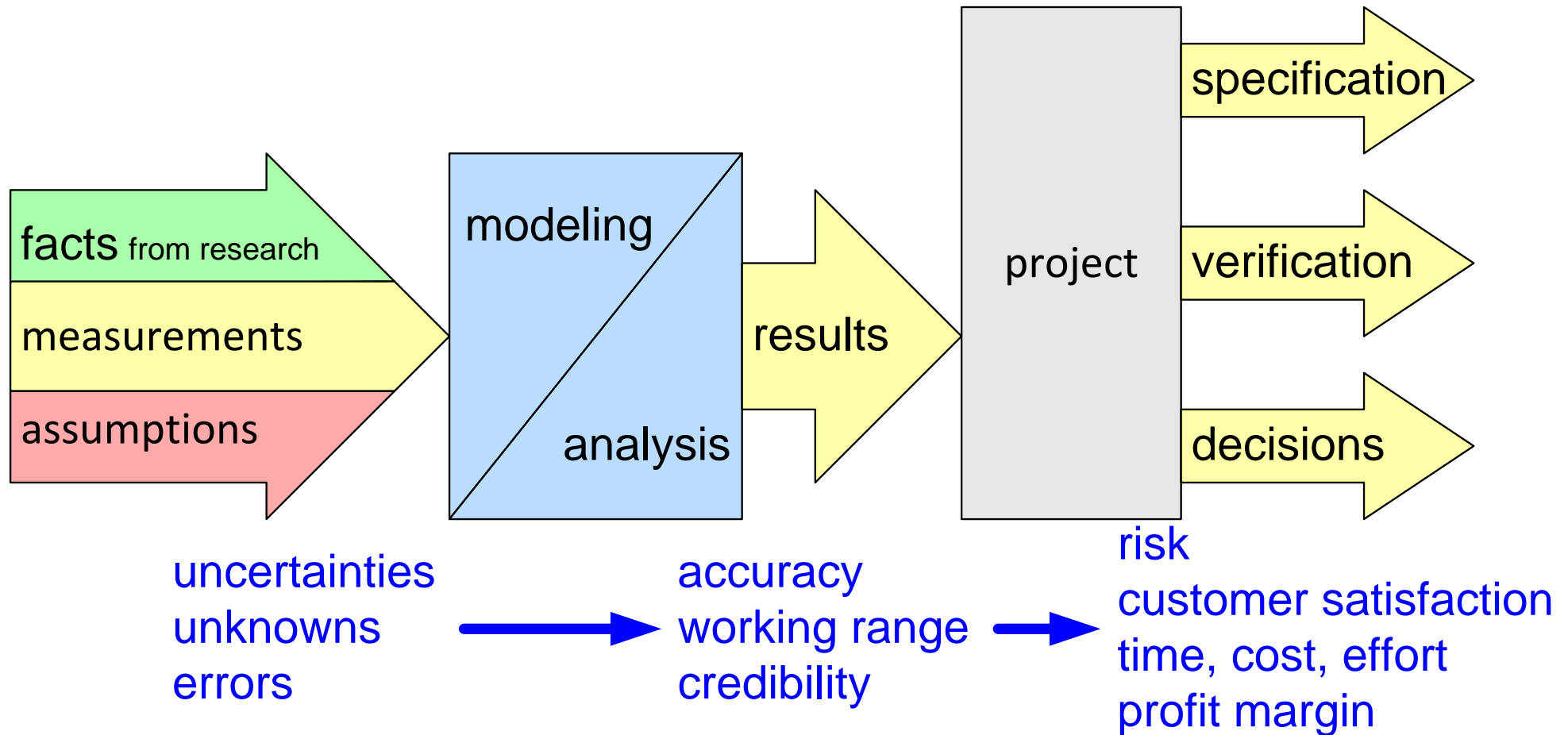
Type of model depends on project phase

Models have a goal

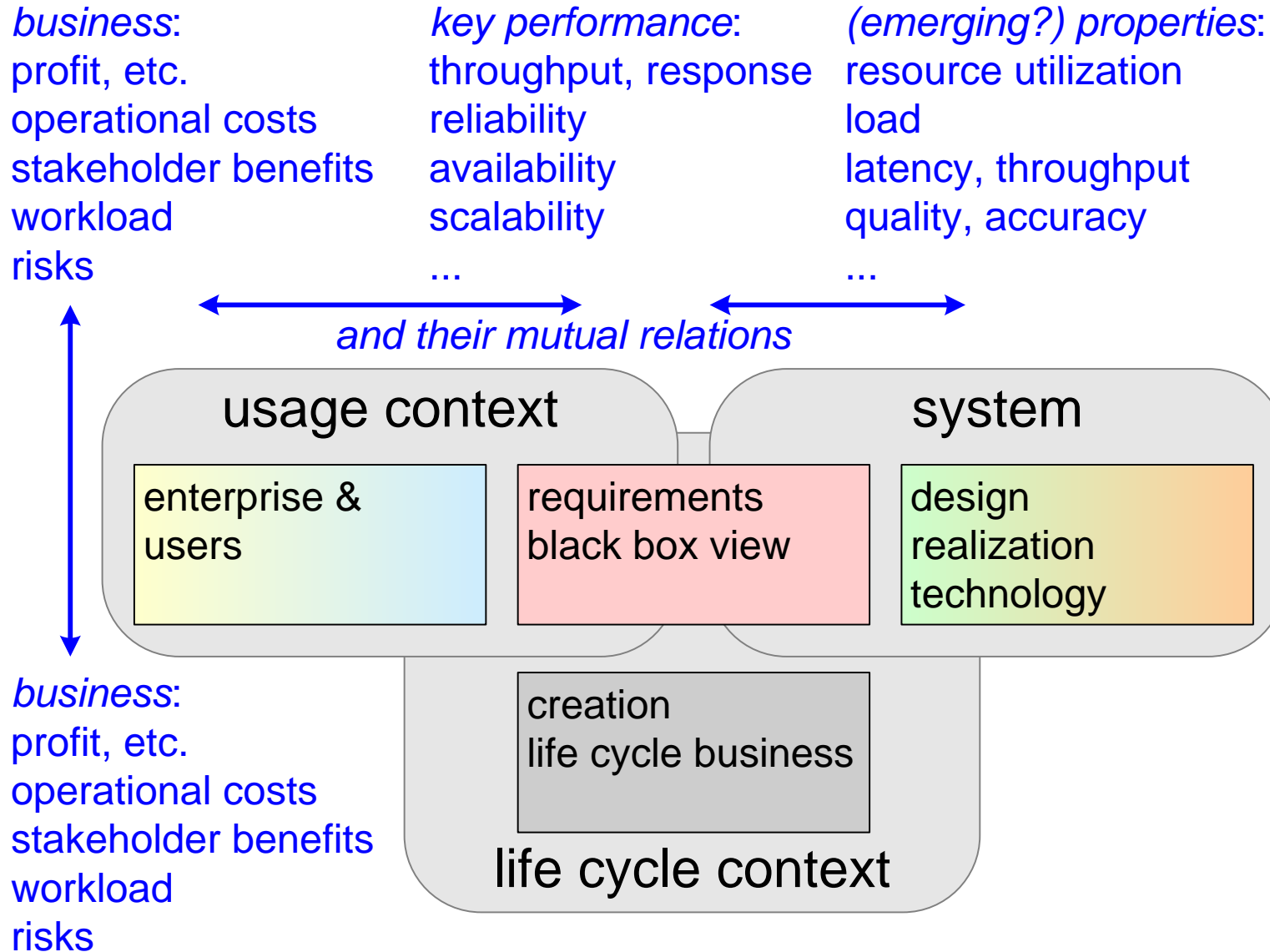
Goals evolve and models evolve

Techniques are used to reach this goal

# Purpose of Modeling



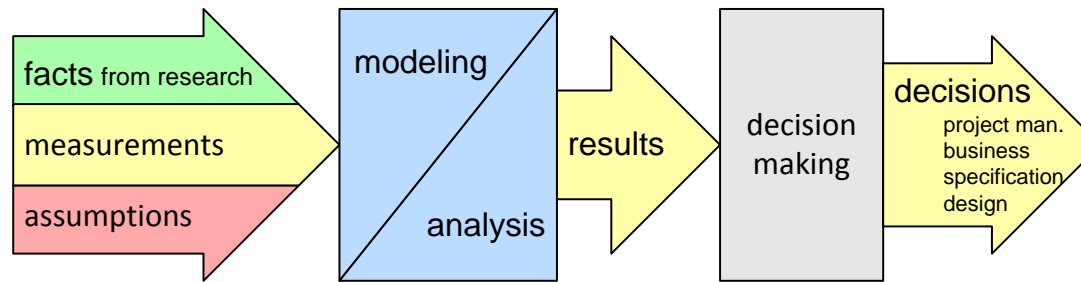
# What to Model?



# Program of Modeling and Analysis Course

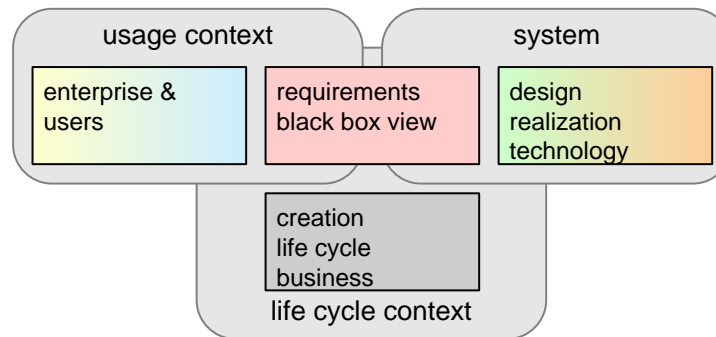
day 1	1. overall approach intro, overall approach, exercise overall approach
	2. input facts, data, uncertainties quantification, measurements, modeling, validation, technology background, lifecycle and business input sources
day 2	3. system modeling purpose, approaches, patterns, modularity, parametrization, means, exploration, visualization, micro-benchmarking, characterization, performance as example
	4. application, life-cycle modeling reiteration of modeling approach (see module 3), applied on customer application and business, and life cycle
day 3	5. integration and reasoning relating key driver models to design models, model based threads of reasoning, FMEA-like approach, modeling in project life-cycle
	6. analysis, using models sensitivity, robustness, worst case, working range, scalability, exceptions, changes

# Overview of Approach



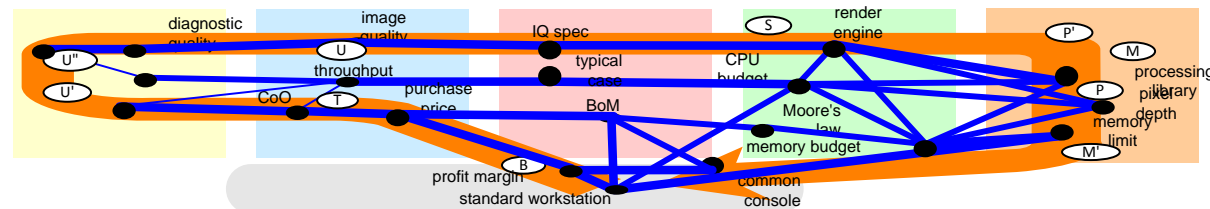
collect input data

model and analyse relevant issues

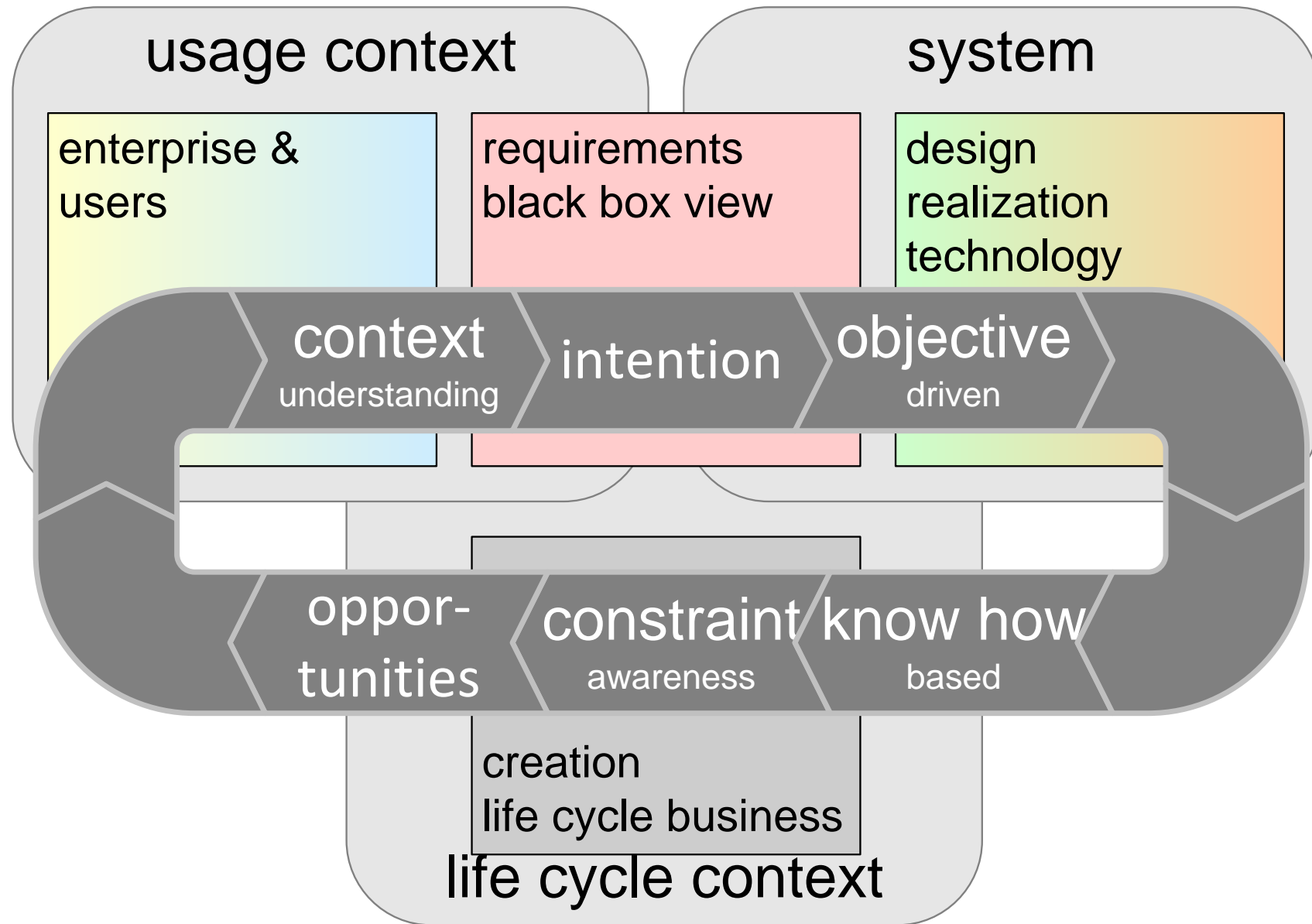


for different stakeholders & concerns

integration and reasoning



# Iteration over viewpoints



# Modeling and Analysis: Background of the Course

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## Abstract

The background ideas of the Modeling and Analysis course are collected in a number of diagrams. These diagrams are provided solely as background and probably should not be shown during the course itself.

### Distribution

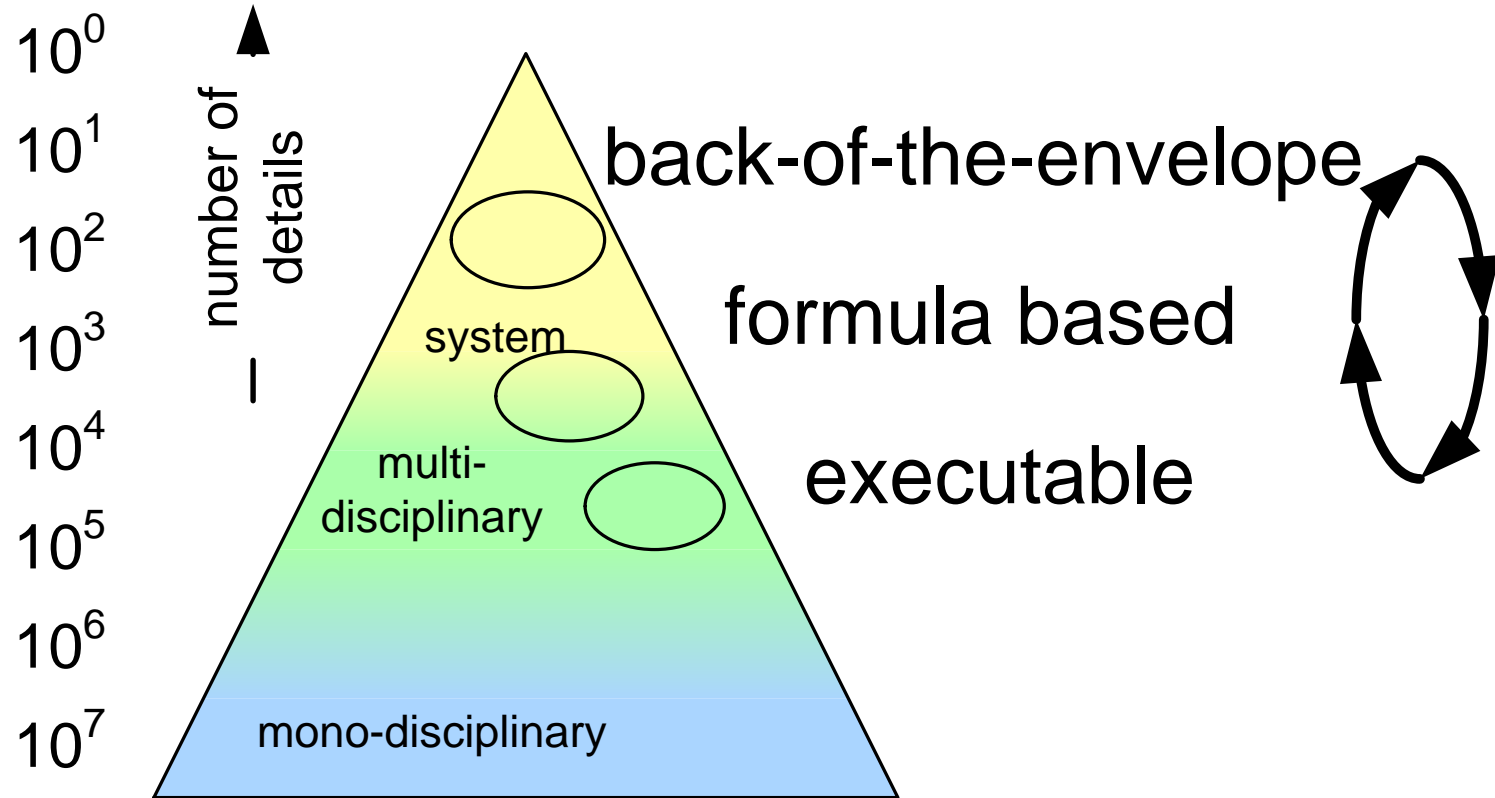
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status: planned  
version: 0.1

logo  
TBD

# How to Model?

how



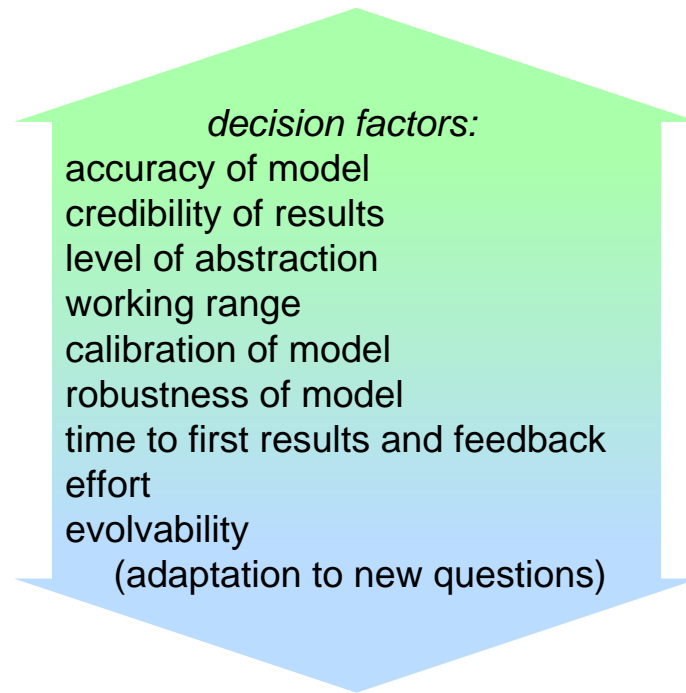
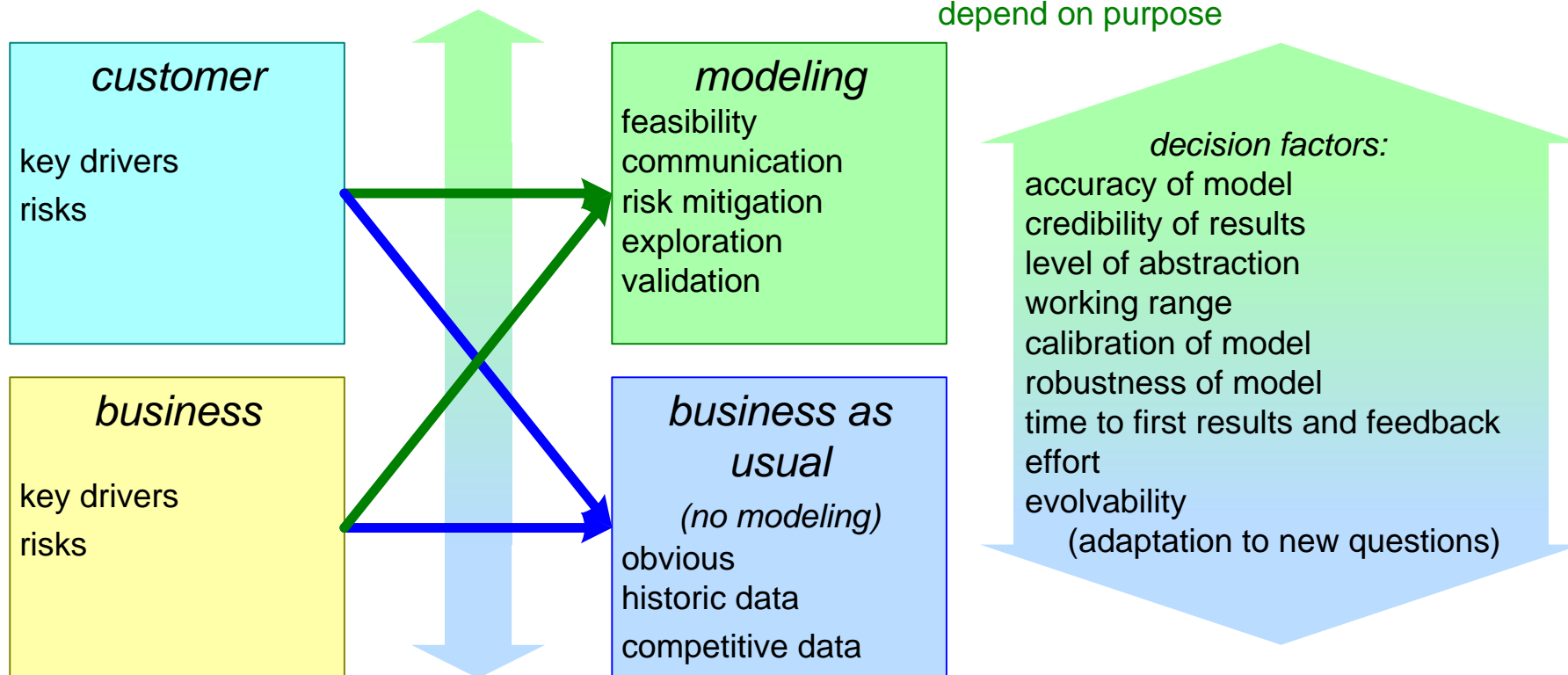
*small, simple, goal-driven models*

# What and Why to Model

how well is the customer served?  
 how credible becomes the solution?  
 how much are time and effort reduced?  
 how much is the risk reduced?  
 how much is the solution improved?

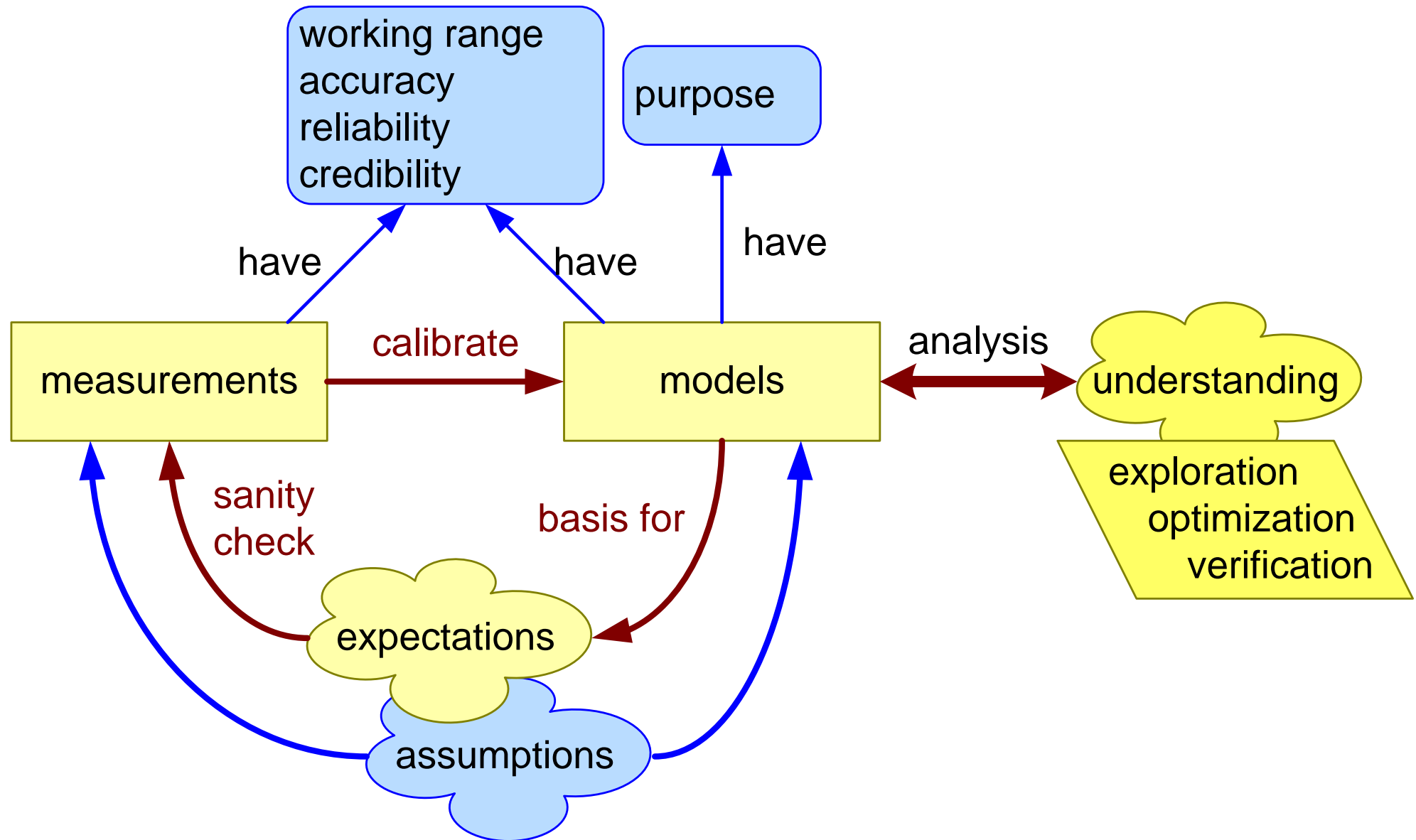
purpose and type of model  
 depend on project life cycle

type of model and views  
 depend on purpose

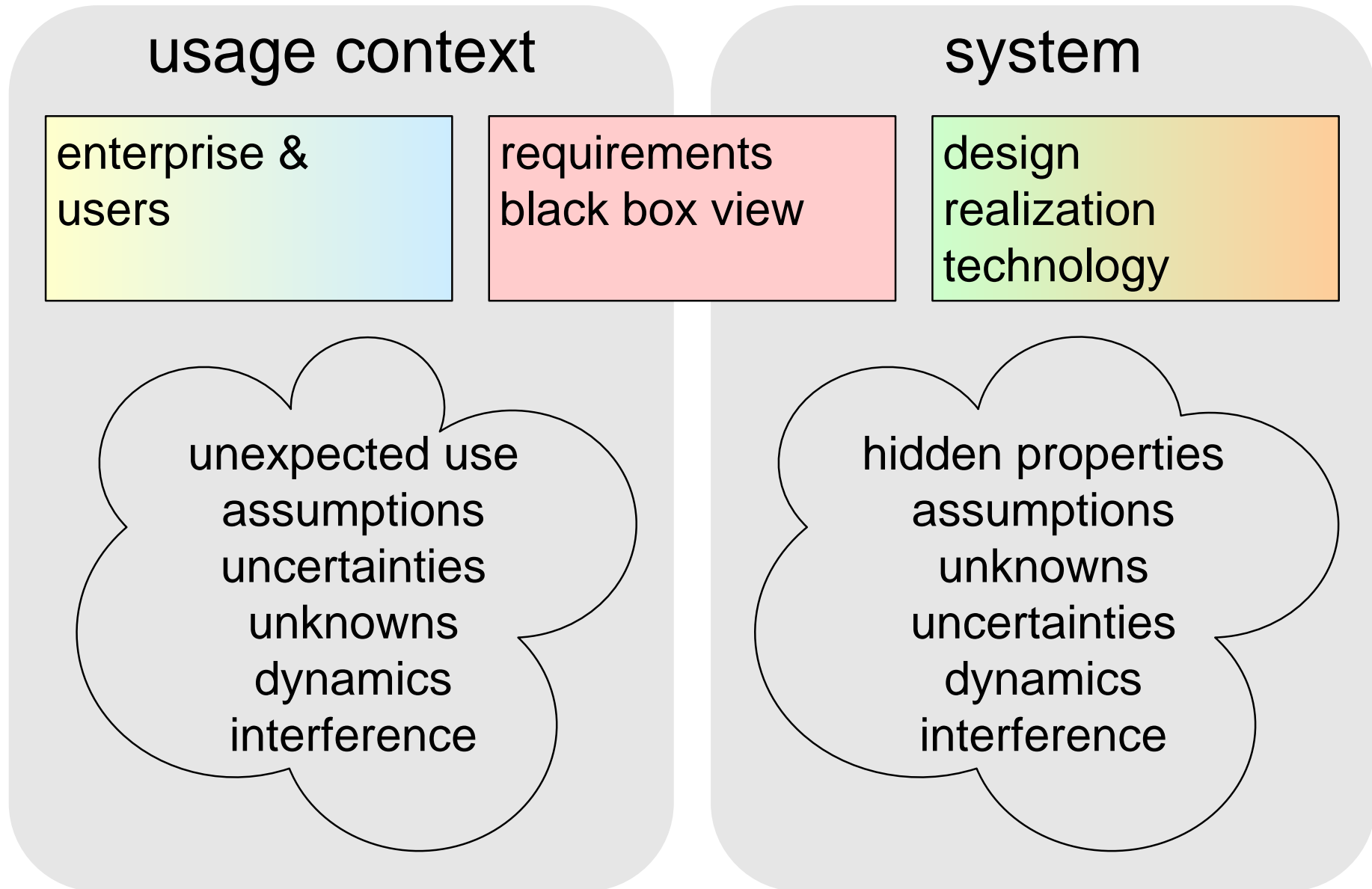


how much effort is needed to create model(s)?  
 how much effort is needed to use and maintain model(s)?  
 how much time is needed to obtain useful result?

# Models, Measurements, Expectations and Assumptions



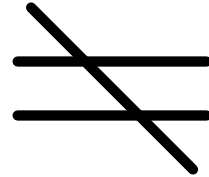
# Unknowns, Uncertainties, ...



# Model versus Reality

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reality



model

complex  
full of surprises

simplifications  
assumptions  
implementation

# Starting Points of the Course

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practical, immediately applicable in day-to-day work

(inter)active: daily hands-on exercises on case(s)

target: understanding, insight; way-of-working

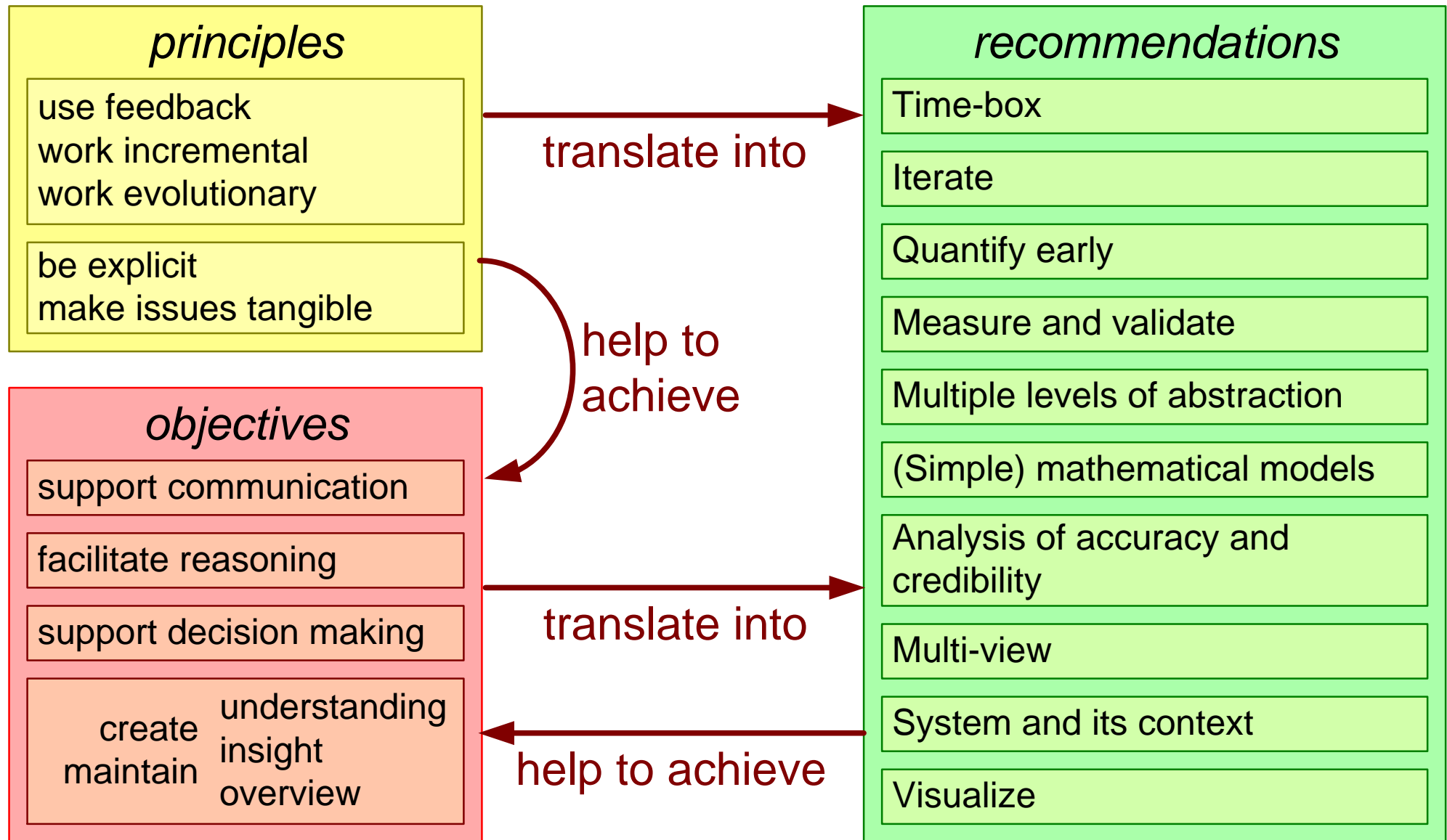
method, tool, language and domain agnostic

# Modeling and Analysis Questions

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1. Why do we model? - what are indicators that modeling and analysis beyond "business as usual" architecture is needed. What questions trigger M & A.
2. What do we model? - what kinds of views do we need to consider (4+1, IBM GS Method, Zachman, CAFCR)
3. When do we model? - what models are needed at various points in the project lifecycle.
4. What is the appropriate type of model? - formula, visualization, executable, simulation
5. What is the required accuracy of the model? - when do we achieve the desired risk mitigation
6. What is the appropriate level of abstraction? - how much details have to be taken into account, versus how much effort can we afford
7. How to calibrate models? - models are based on facts and assumptions. The model outcome depends strongly on these input data. Note again the tension between effort to make and calibrate versus the value in terms of risk mitigation.
8. How to use models?

# Recommendations as Red Thread



## Electronic Patient Record:

+ relevant health care related information available at the right place for the right person

## Long Term Health Care Archive:

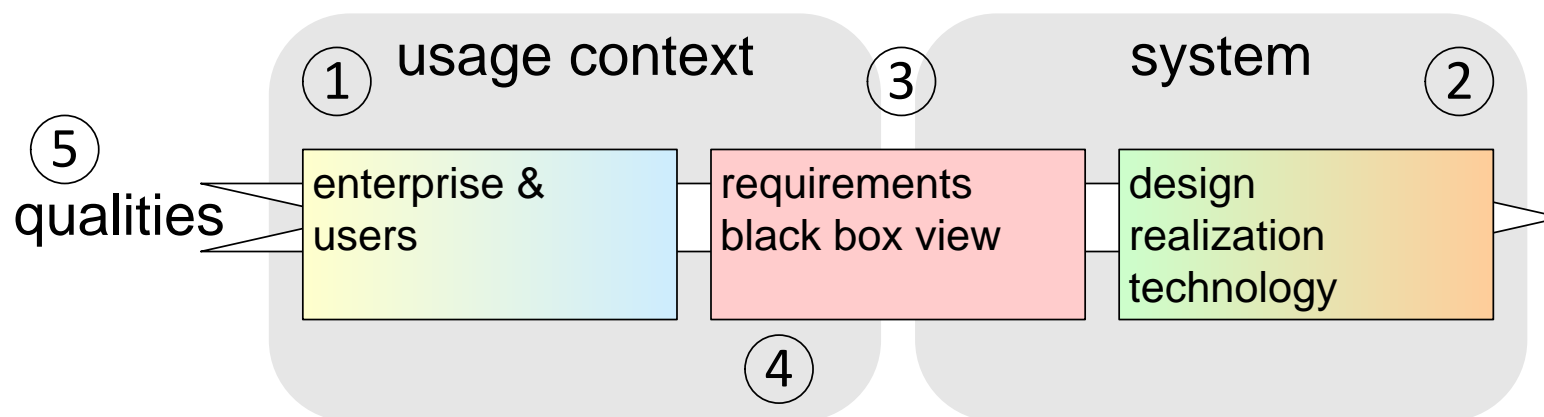
+ extreme robust, persistent, high availability archive for large chain of hospitals

## Video on Demand Backoffice:

+ large scale content database with fast response download capability including billing, DRM et cetera

# Modeling and Analysis Exercise

- make a quick scan over the following views: ①
- 0. what is this exercise about?
- 1. context: stakeholders, concerns, application
- 2. system design and realization
- 3. requirements
- 4. operational context
- 5. qualities
- use time boxes of 15 minutes per view
- show the most dominant decomposition(s) of that view, as diagram or as a list; quantify whenever possible



- + collectively we know quite a lot
  - + broad overview in short amount of time
  - ~ some "hot" issues appear to be less relevant
  - #questions >> #answers
- baseline for next refining steps

## *Conclusions*

Modeling and Analysis must provide more *in-depth* answers for questions that are *breadth* relevant.

Modeling and Analysis is a means that supports *requirements* management, *architecting* and *project* management.

Modeling and Analysis ranges from *business* aspects to *technical* decisions.

Good models are *small, simple* and *goal-driven*.

## *Techniques, Models, Heuristics of this module*

Context viewpoints

Fast iteration based on time-boxing