

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

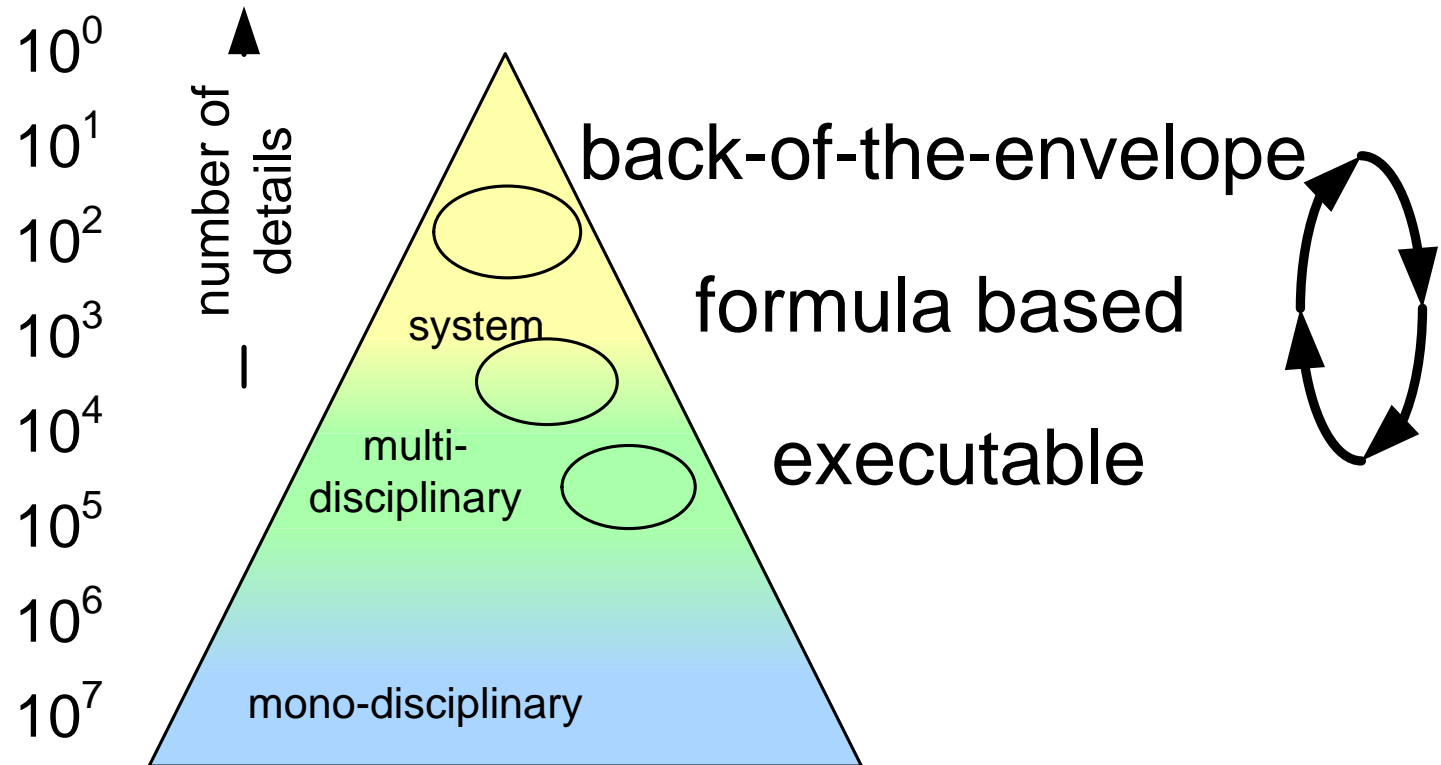
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logo
TBD

How to Model?

how



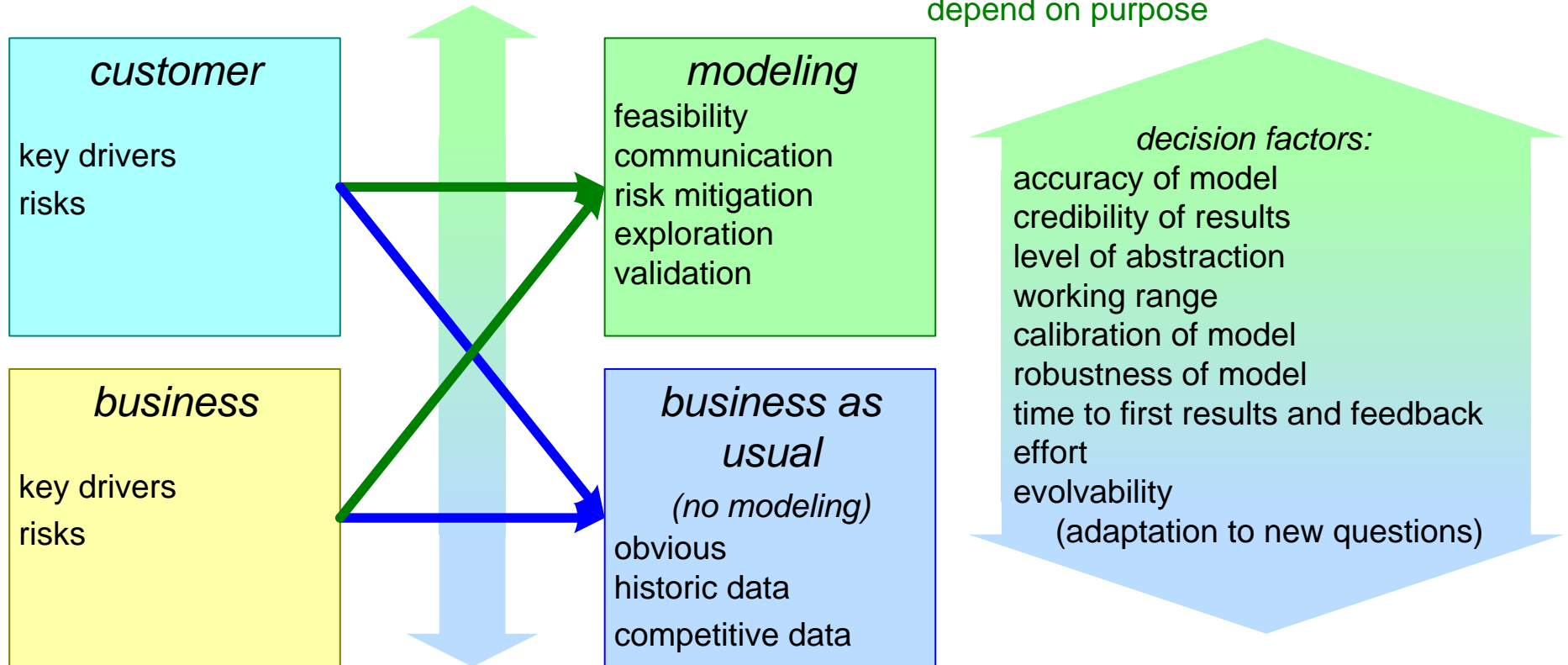
small, simple, goal-driven models

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?

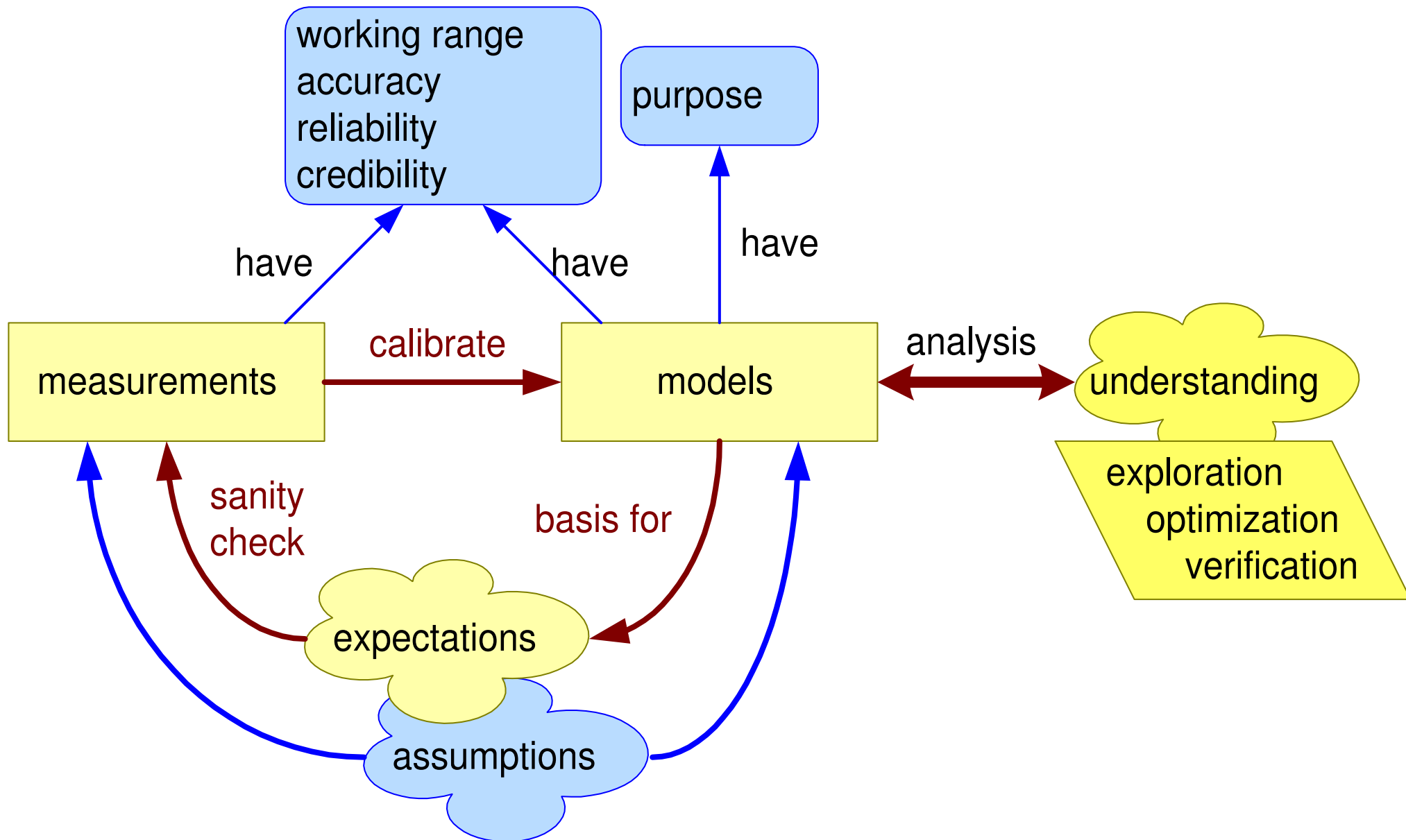
purpose and type of model
 depend on project life cycle

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, ...

usage context

enterprise &
users

requirements
black box view

system

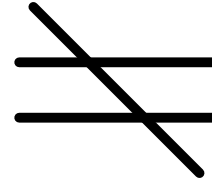
design
realization
technology

unexpected use
assumptions
uncertainties
unknowns
dynamics
interference

hidden properties
assumptions
unknowns
uncertainties
dynamics
interference

Model versus Reality

reality



model

complex
full of surprises

simplifications
assumptions
implementation

Starting Points of the Course

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

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

