

# 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.

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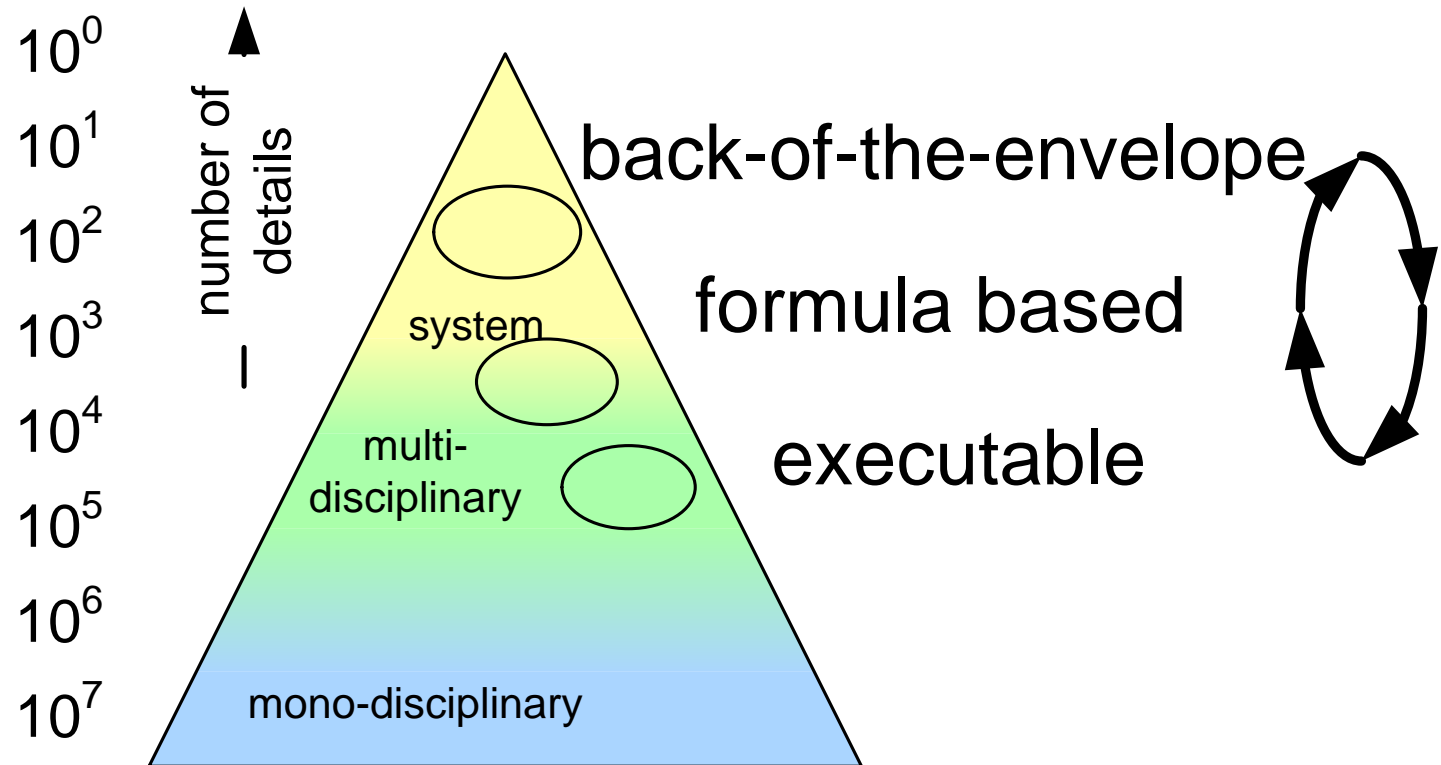
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logo  
TBD

# How to Model?

how

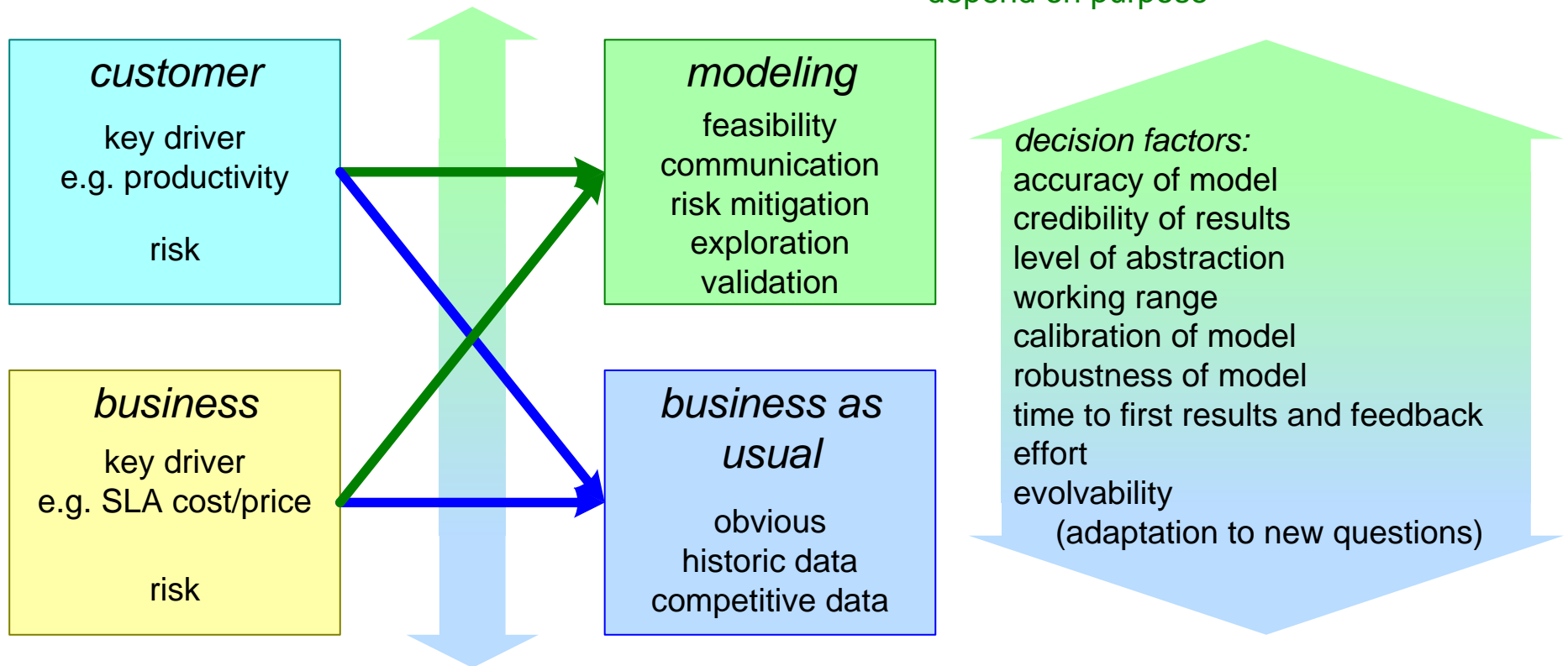


*small, simple, goal-driven models*

# What and Why to Model

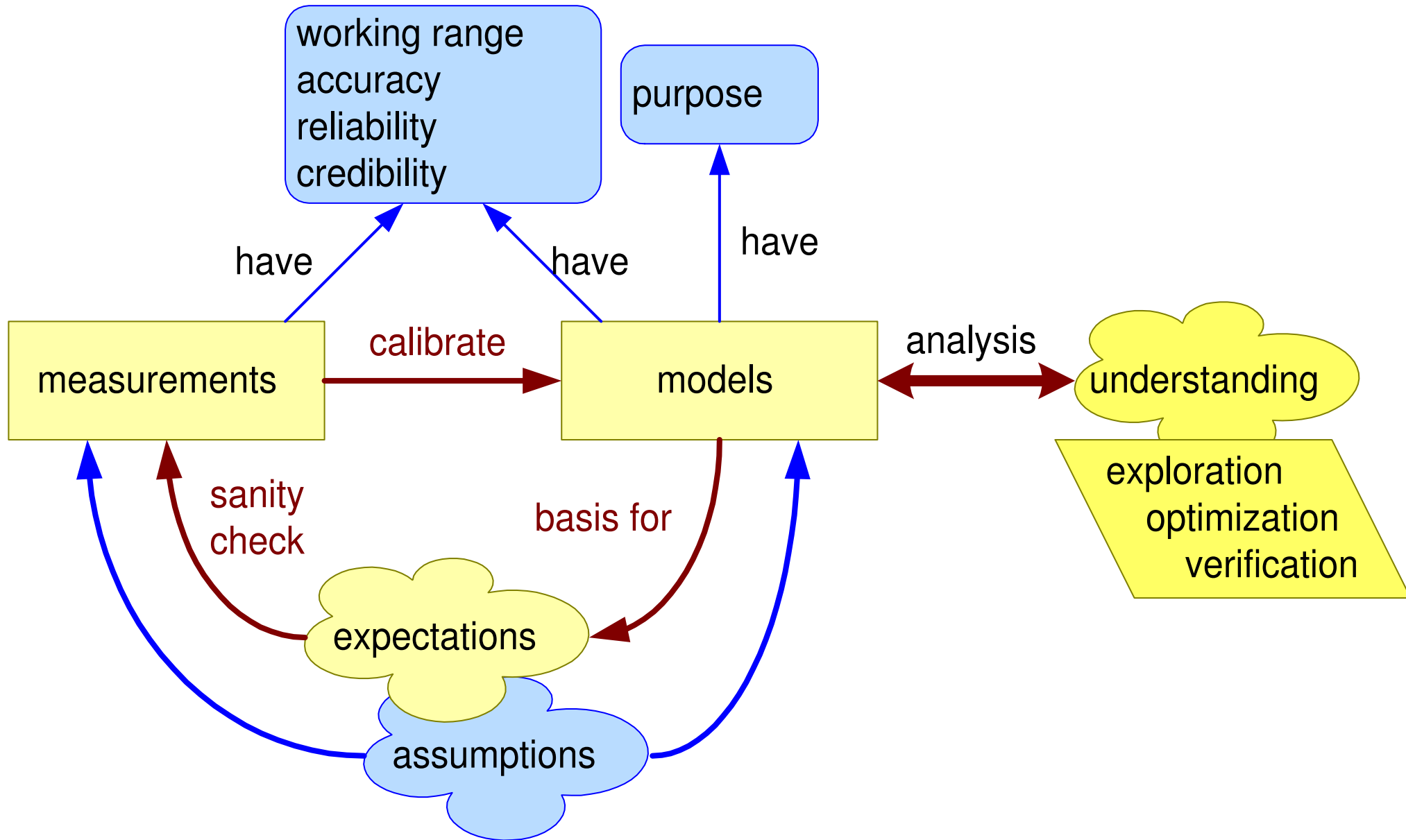
how well is the customer served?  
 how credible becomes the solution?  
 how much are time and effort reduced?  
 how much is the risk reduced?  
 how much is the solution improved?

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

unexpected use  
assumptions  
uncertainties  
unknowns  
dynamics  
interference

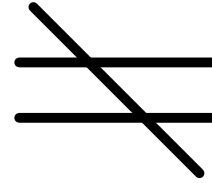
## system

design  
realization  
technology

hidden properties  
assumptions  
unknowns  
uncertainties  
dynamics  
interference

# Model versus Reality

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

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

