Module Functional View

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Abstract

This module addresses the Functional View.

Distribution

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status: draft
version: 0

logo
TBD

The functional view

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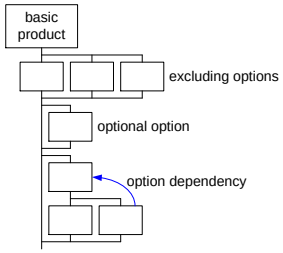
Abstract

The purpose of the functional view is described. A number of methods or models is given to use in this view: (use) case descriptions, commercial decomposition function and feature specifications performance models and specifications, information models. The role of standards is discussed.



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Example personal video recorder use case contents

typical use case(s)

interaction flow (functional aspects)

- select movie via directory
- start movie
- be able to pause or stop
- be able to skip forward or backward
- set recording quality

performance and other qualities (non-functional aspects)

- response times for start / stop
- response times for directory browsing
- end-of-movie behaviour
- relation recording quality and storage

worst case, exceptional, or change use case(s)

functional

- multiple inputs at the same time
- extreme long movie
- directory behaviour in case of
  - extreme many short movies

non-functional

- response time with multiple inputs
- image quality with multiple inputs
- insufficient free space
- response time with many directory entries
- replay quality while HQ recording

Recommendations for working with use cases

+ combine related functions in one use case

- do not make a separate use case for every function

+ include non-functional requirements in the use cases

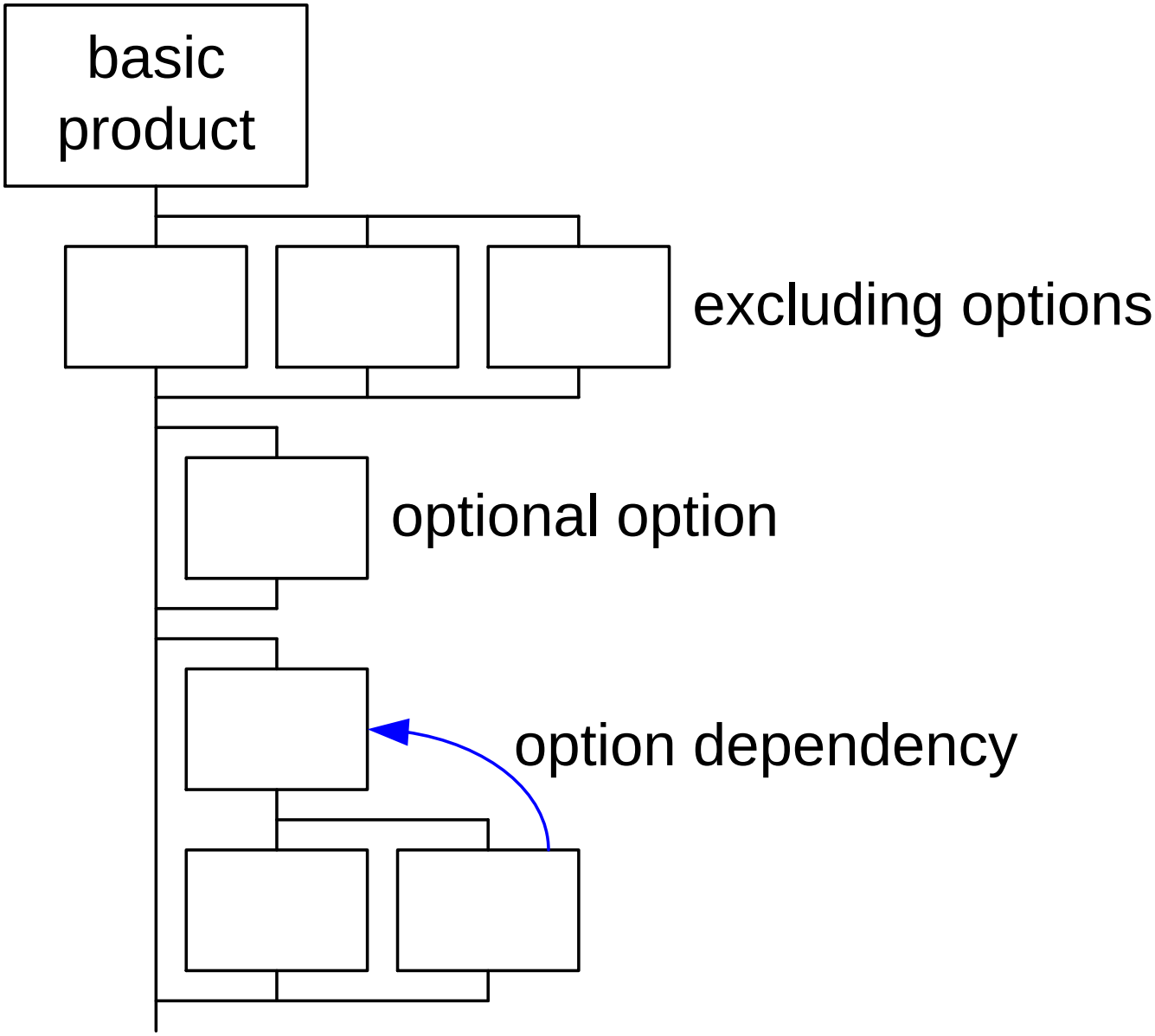
+ minimise the amount of required *worst case* and *exceptional use cases*

- excessive amounts of use cases propagate to excessive implementation efforts

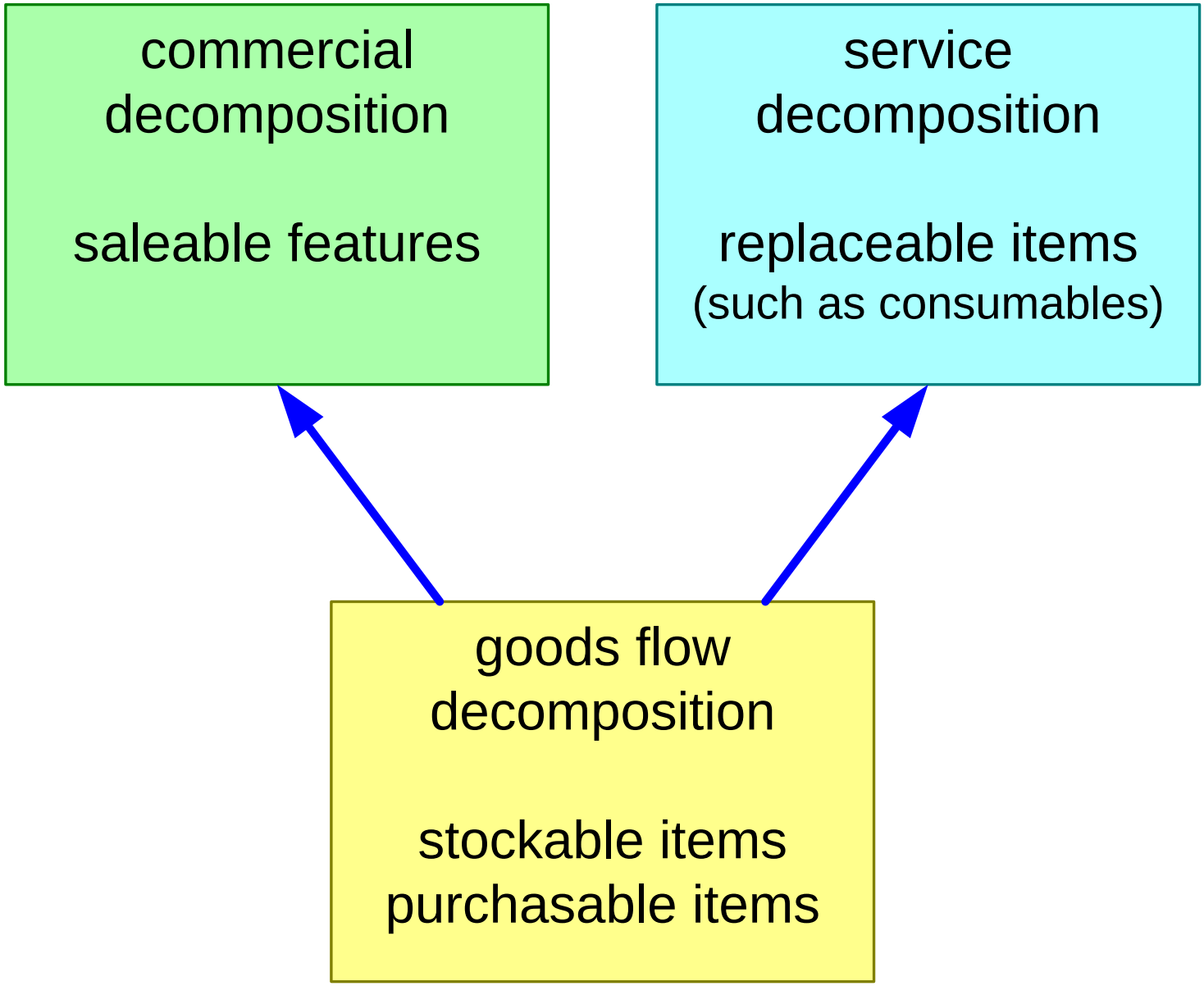
+ reduce the amount of these use cases in steps

- a few well chosen *worst case* use cases simplifies the design

Commercial Decomposition



Logistic decompositions for a product



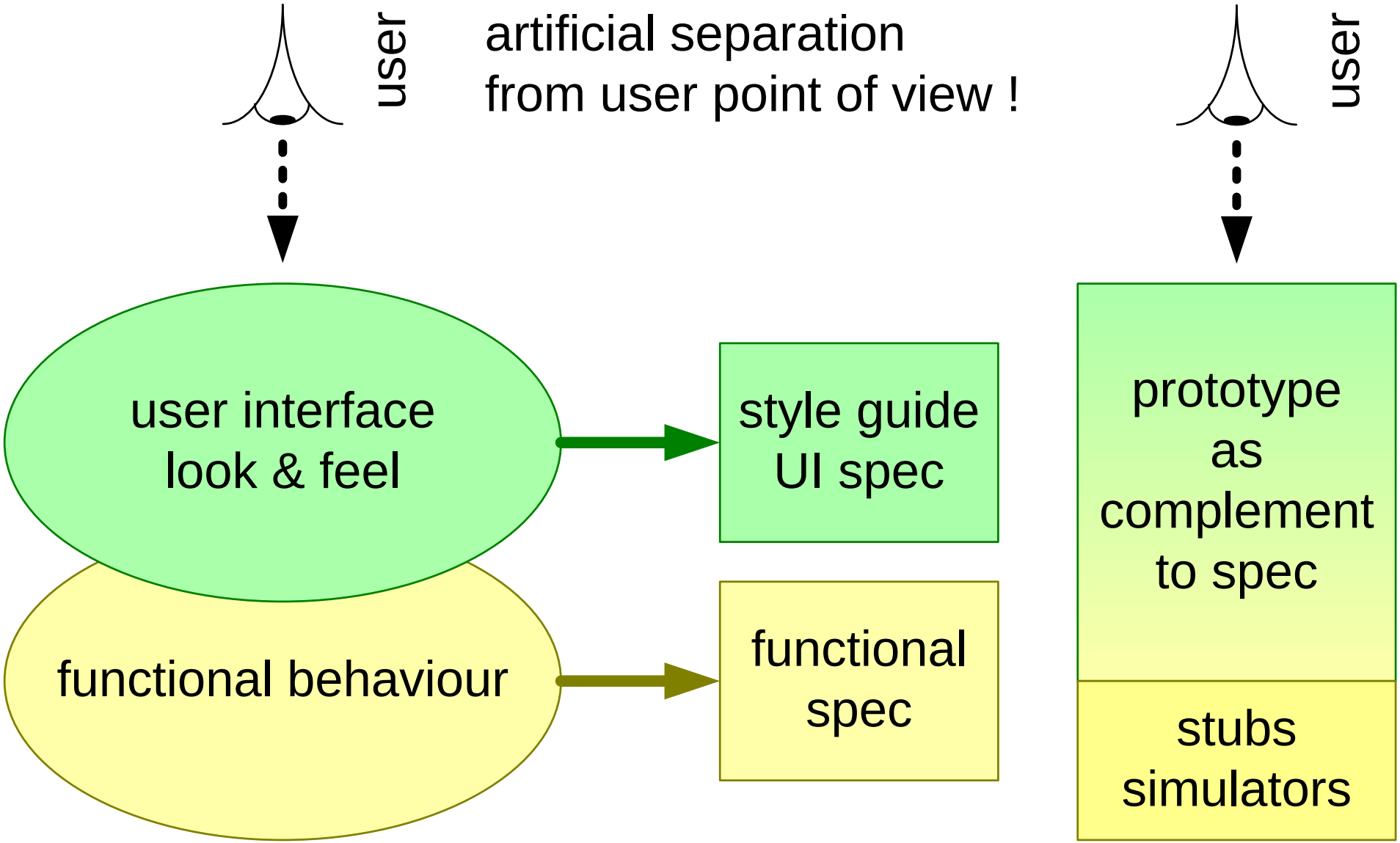
Mapping technical functions on products

technical functions \ *products*	home cinema system	flat screen cinema TV	bedroom TV
HD display	+	+	-
SD->HD up conversion	+	+	-
HD->SD down conversion	+	+	o
HD storage	o	-	-
SD storage	o	-	o
HD IQ improvement	+	+	-
SD IQ improvement	+	+	+
HD digital input	+	+	o
SD digital input	+	+	o
SD analog input	o	+	+
6 HQ channel audio	+	o	-
2 channel audio	-	+	+

legend

+	present
o	optional
-	absent

Relation between user interface and functional specification



Layering of information definitions

human understanding
and interpretation
of the information

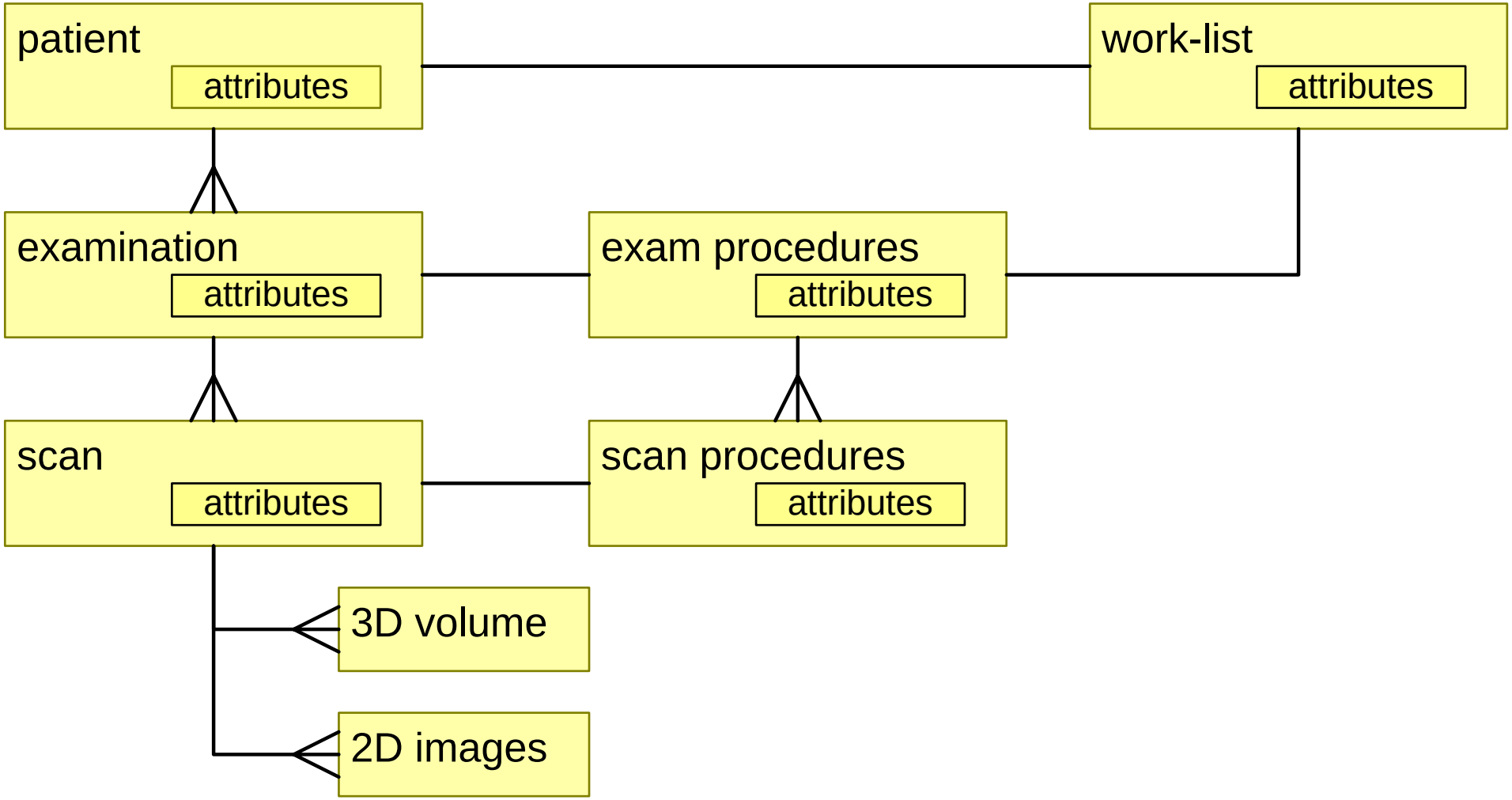
information model, semantic defined in terms of:

- entities
- relations
- operations

data model or data dictionary

- identifiers
- types
- ranges

Example partial internal information model

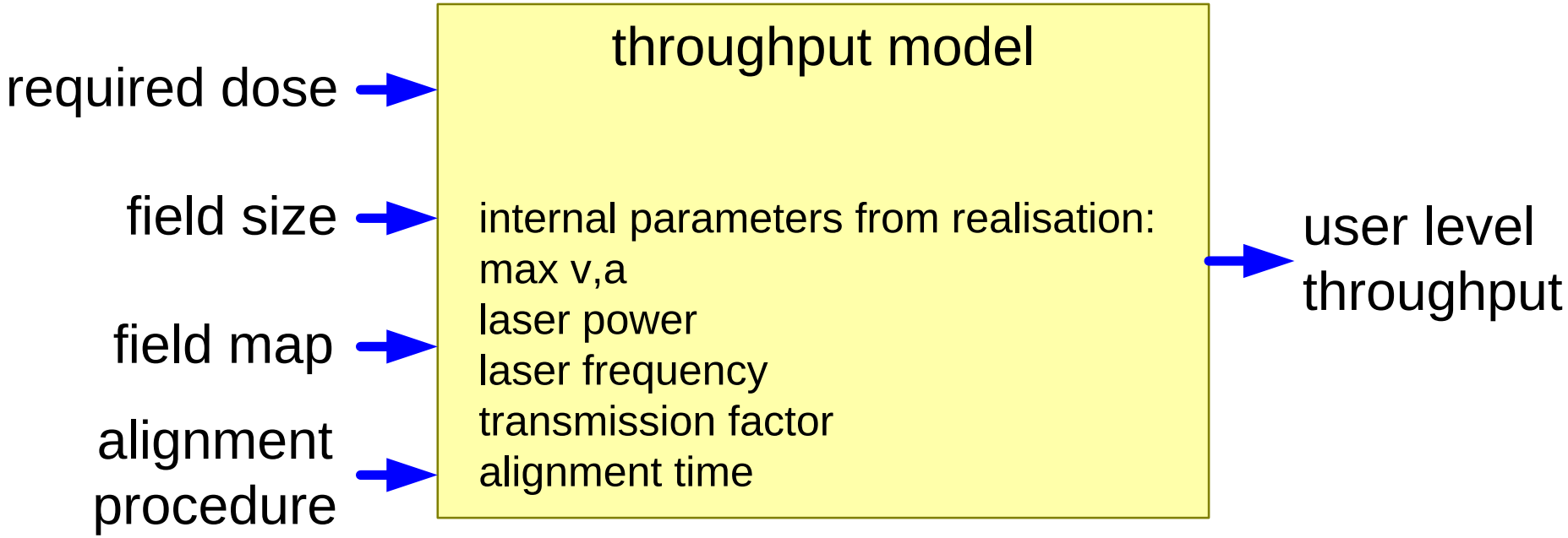


Small part of a datamodel

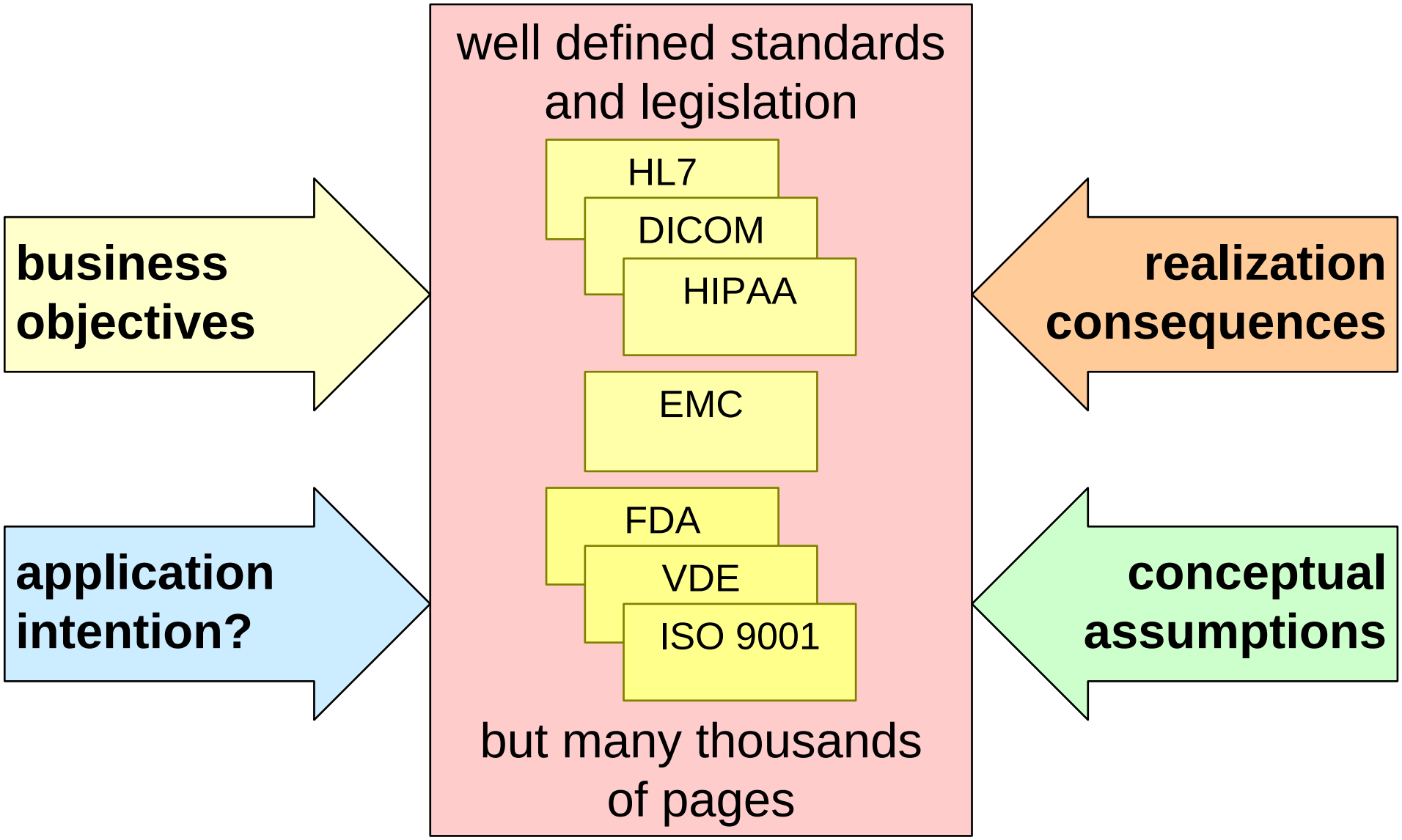
12 bit Image:
- nx: 16 bit unsigned integer
- ny: 16 bit unsigned integer
- pixels[nx][ny]: 16 bit unsigned integers [0..4095]

16 bit Image:
- nx: 16 bit unsigned integer
- ny: 16 bit unsigned integer
- pixels[nx][ny]: 16 bit unsigned integers

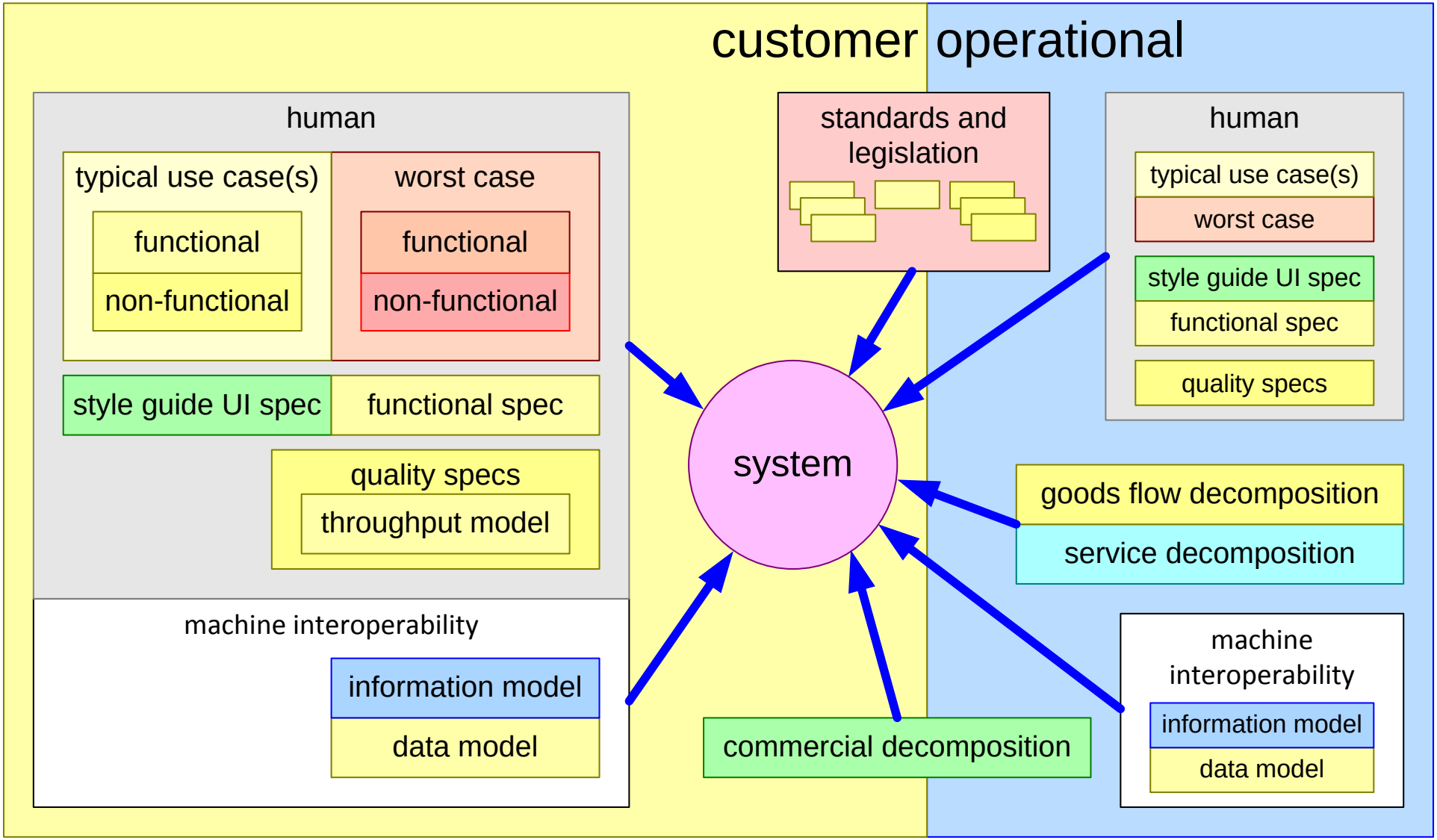
Example of performance modelling



The role of standards



Functional view summary



Functional view = What: externally observable

Exercise Functional View

- Make an overview of functions, performance figures, interfaces and optional features
- identify "most important" (related to CA-views)
- identify "most challenging" (related to CR-views)
- explain why "most important" or "most challenging"
- present in 5 minutes

Goals:

- create awareness of the breadth of the specifiation
- share the spec with the team
- create a "living" image of the Functional view

Exercise Functional View, second iteration

- Define a typical case, both functions and quantitative
- Create a single page product specification
- Define a worst case, suitable for design exploration and verification