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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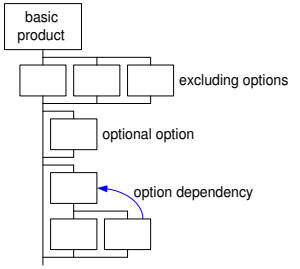


Example personal video recorder use case contents

typical use case(s)	worst case, exceptional, or change 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	functional multiple inputs at the same time extreme long movie directory behaviour in case of extreme many short movies
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	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

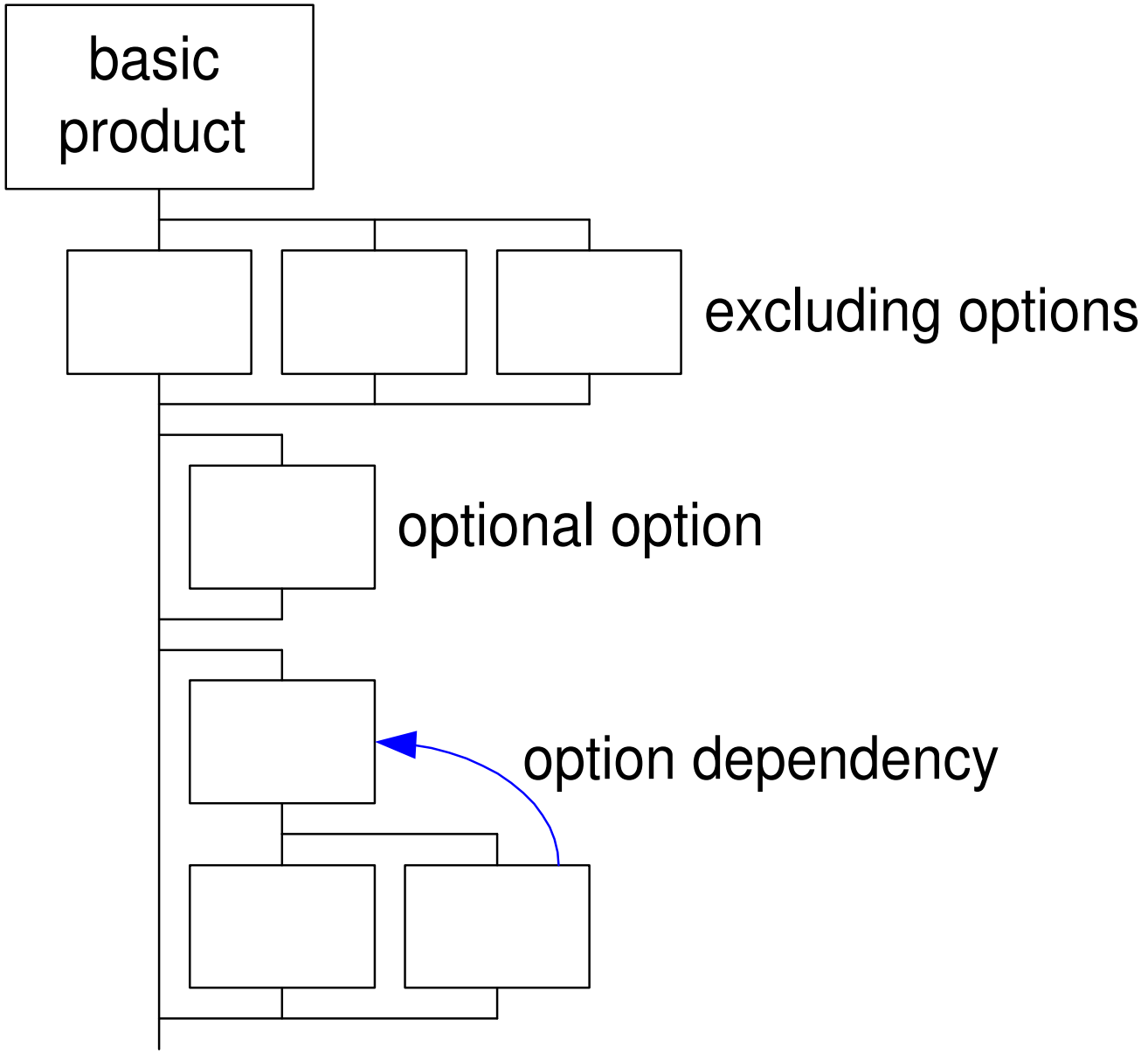
+ minimise the amount of required *worst case* and *exceptional use cases*

- excessive amounts of use cases propagate to excessive implementation efforts

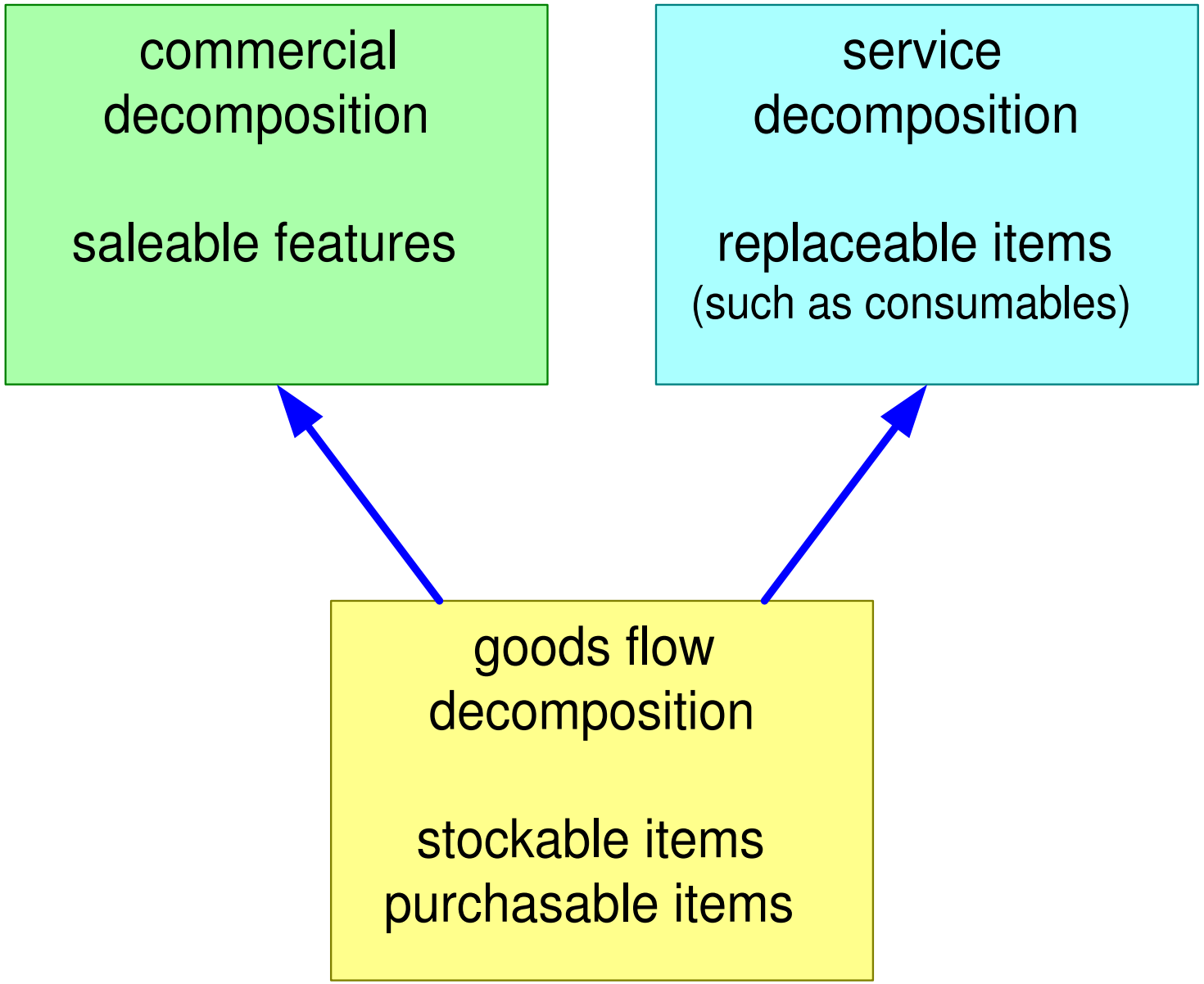
+ reduce the amount of these use cases in steps

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

Commercial Decomposition



Logistic decompositions for a product

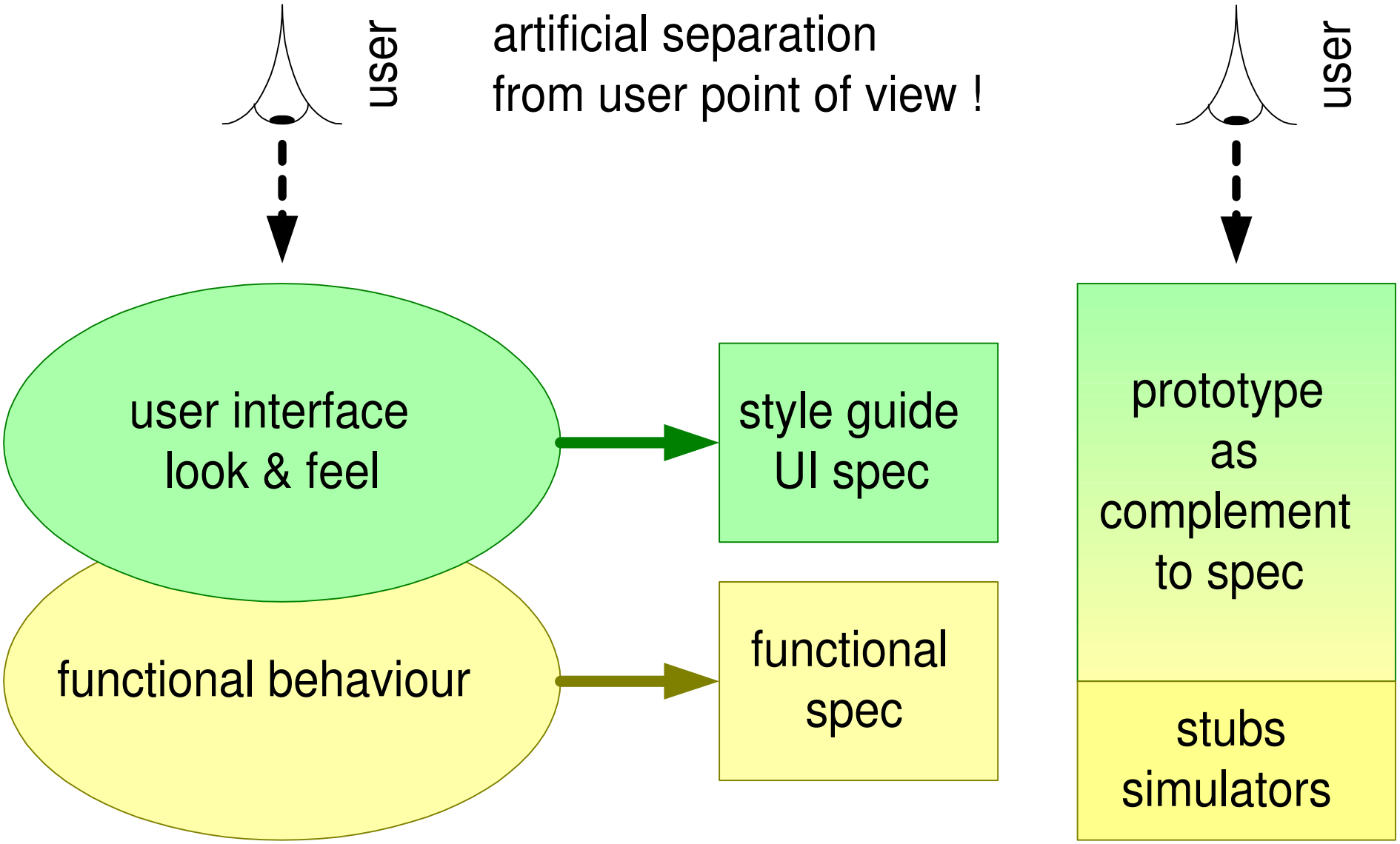


Mapping technical functions on products

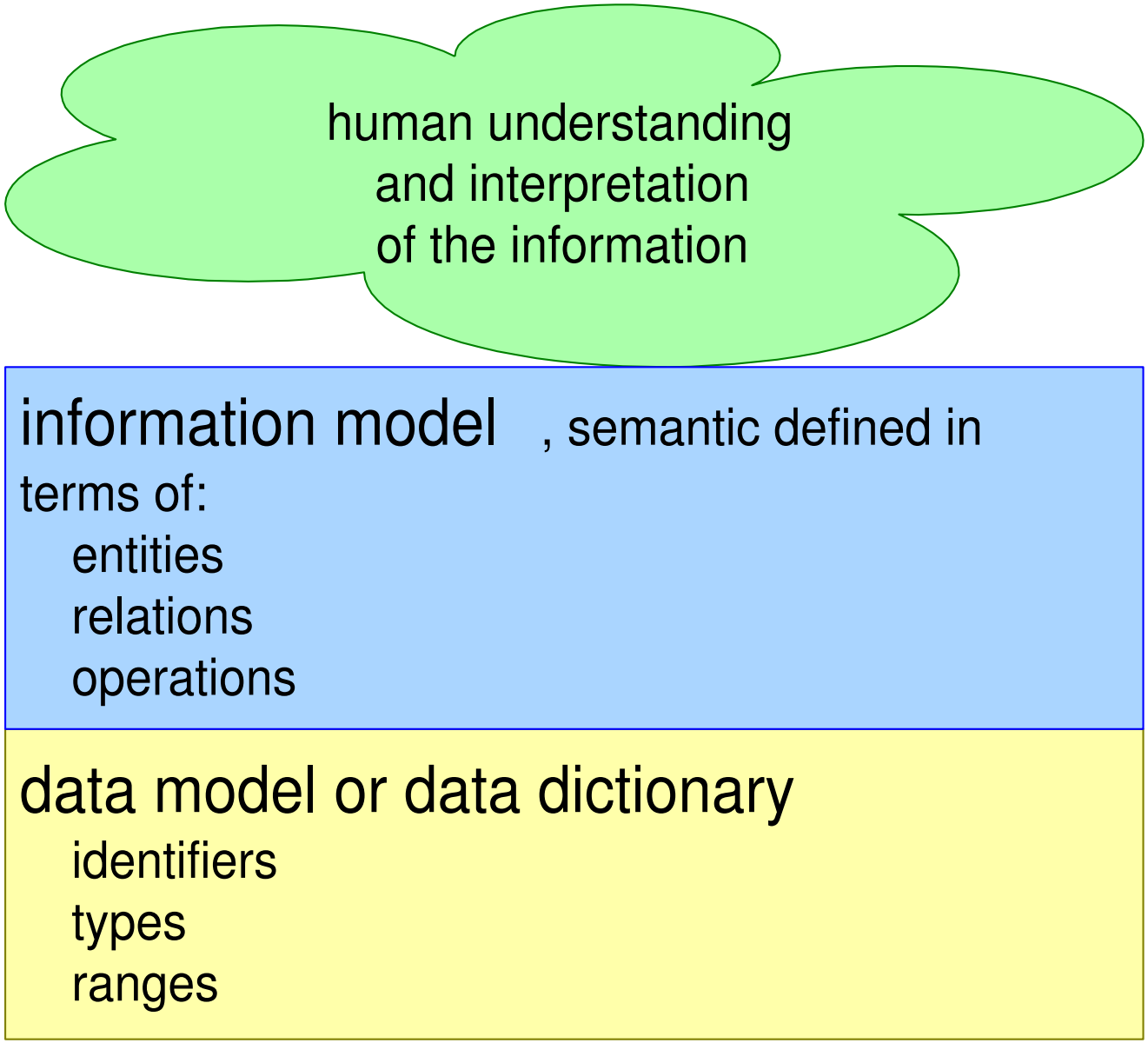
technical functions \ *products*	home cinema system	flat screen cinema TV	bedroom TV
HD display	+	+	-
SD->HD up conversion	+	+	-
HD->SD down conversion	+	+	o
HD storage	o	-	-
SD storage	o	-	o
HD IQ improvement	+	+	-
SD IQ improvement	+	+	+
HD digital input	+	+	o
SD digital input	+	+	o
SD analog input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

legend	
+	present
o	optional
-	absent

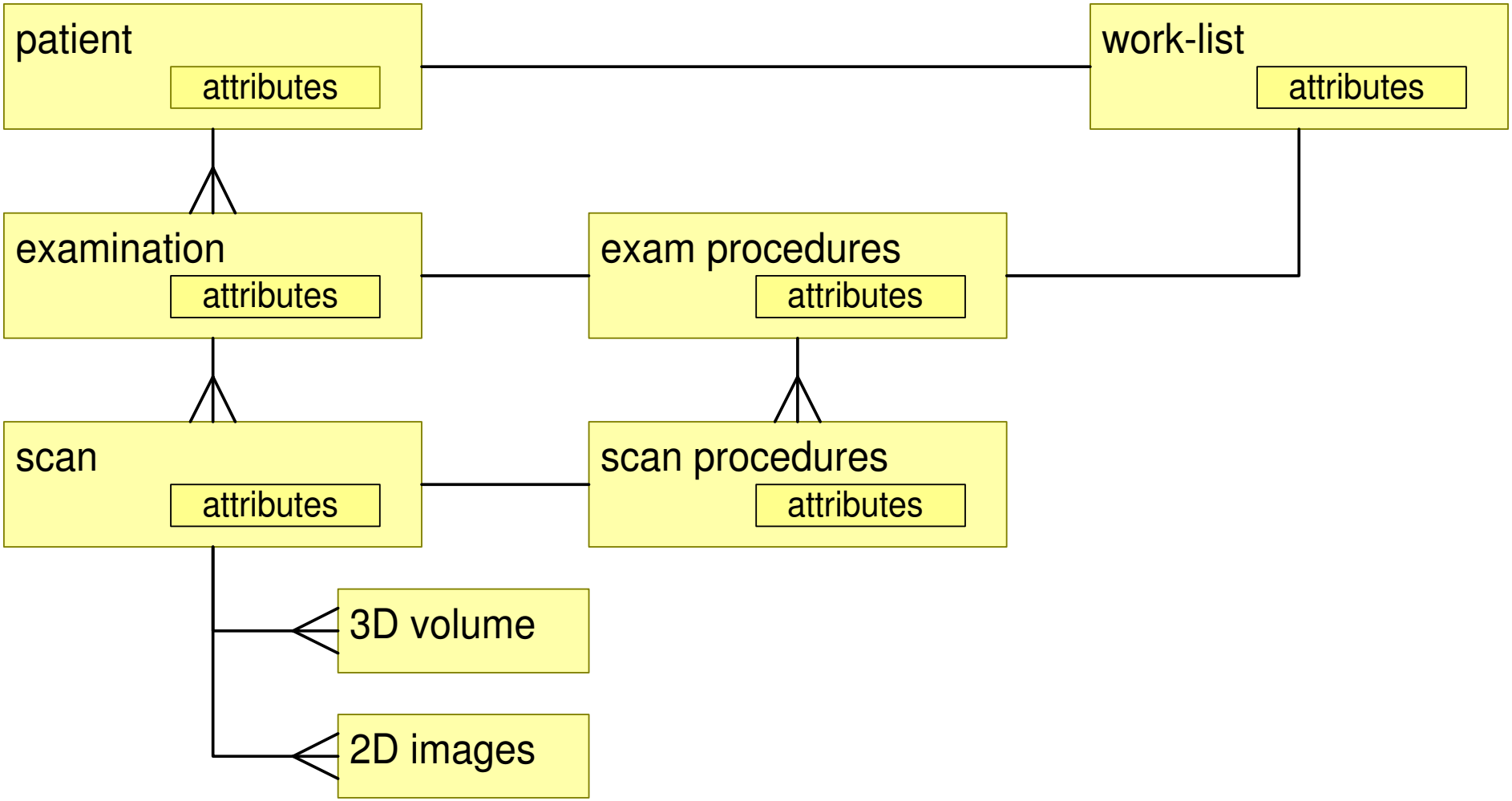
Relation between user interface and functional specification



Layering of information definitions



Example partial internal information model

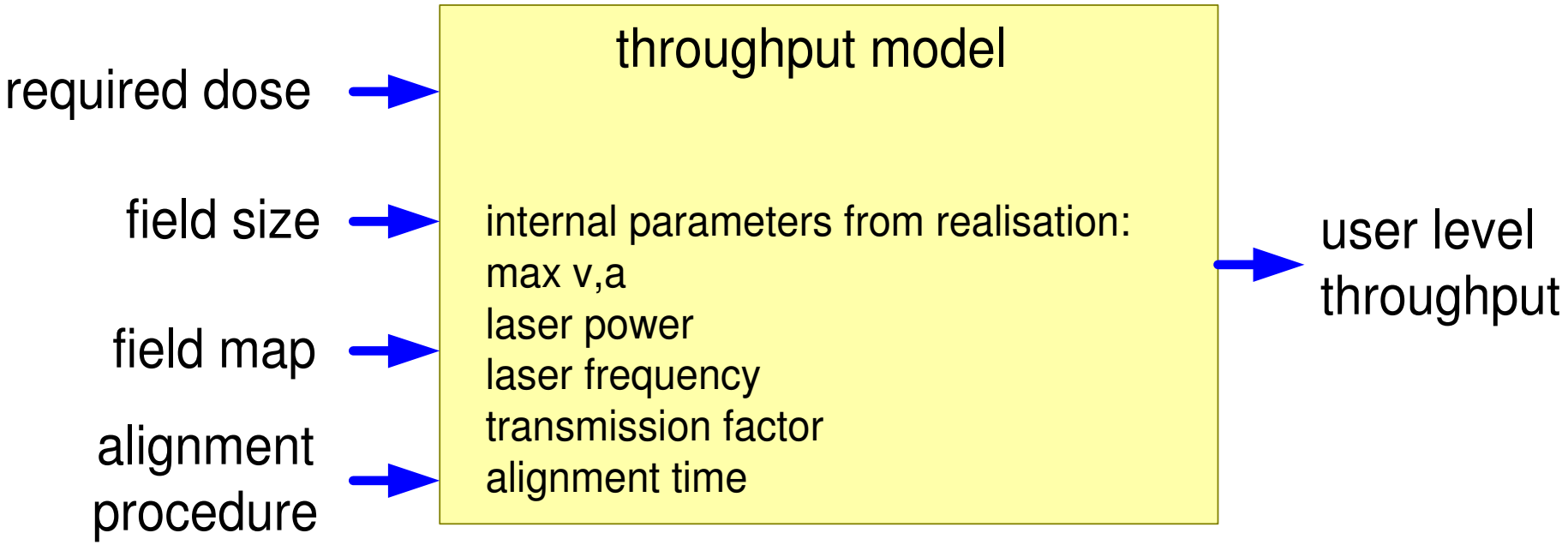


Small part of a datamodel

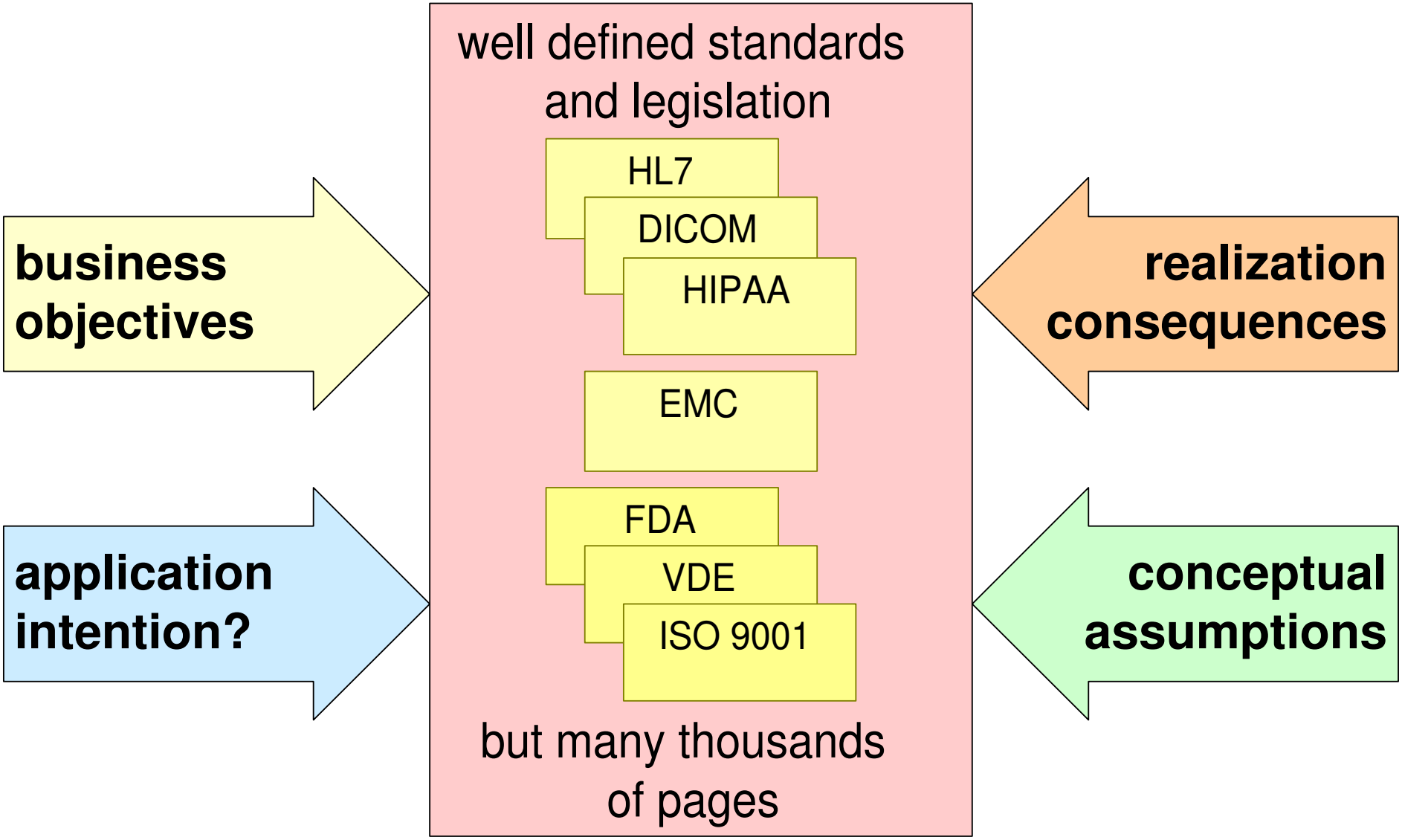
12 bit Image:
- nx: 16 bit unsigned integer
- ny: 16 bit unsigned integer
- pixels[nx][ny]: 16 bit unsigned integers [0..4095]

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

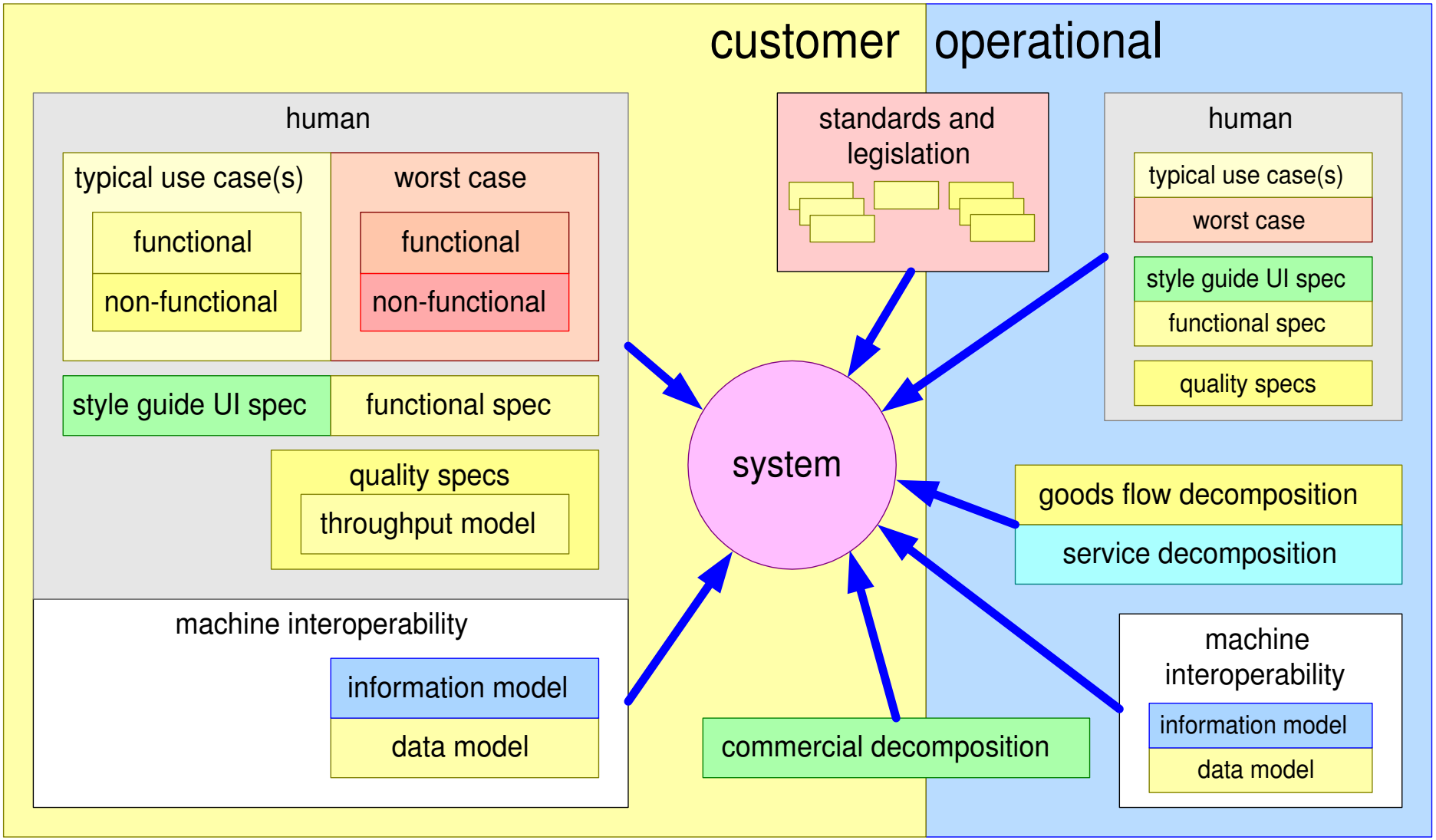
Example of performance modelling



The role of standards



Functional view summary



Functional view = What: externally observable