

# The conceptual view

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## Abstract

The purpose of the conceptual view is described. A number of methods or models is given to use in this view: construction decomposition, functional decomposition, class or object decomposition, other decompositions (power, resources, recycling, maintenance, project management, cost, ...), and related models (performance, behavior, cost, ...); allocation, dependency structure; identify the infrastructure (factoring out shareable implementations), classify the technology in *core*, *key* and *base* technology; integrating concepts (start up, shutdown, safety, exception handling, persistency, resource management,...).

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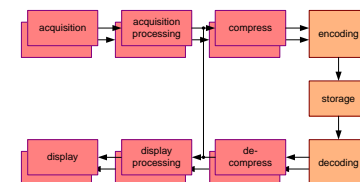
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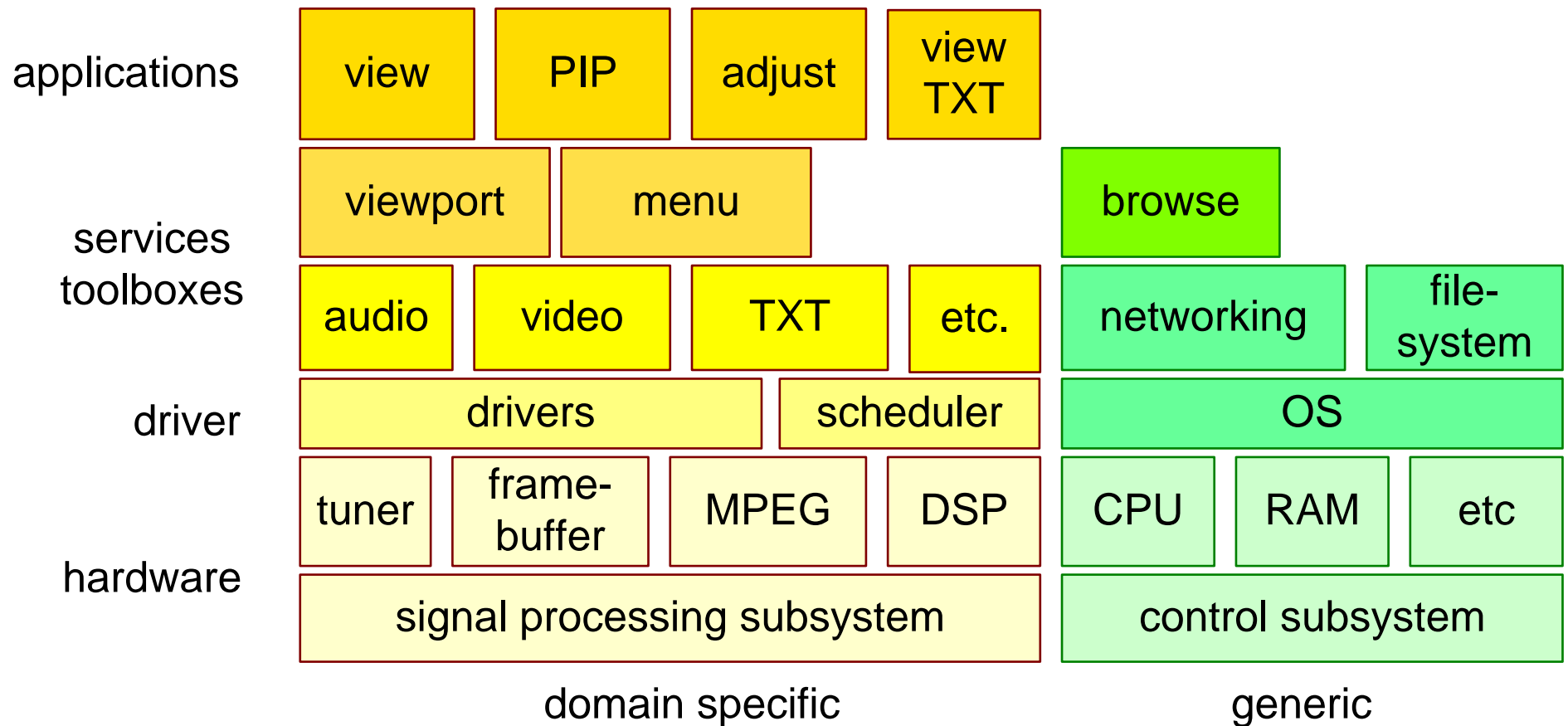
status: preliminary

draft

version: 0.7



# Example construction decomposition simple TV



# Characterization of the construction decomposition

management of design

SW example

HW example

unit of  
creation  
storage  
update

file

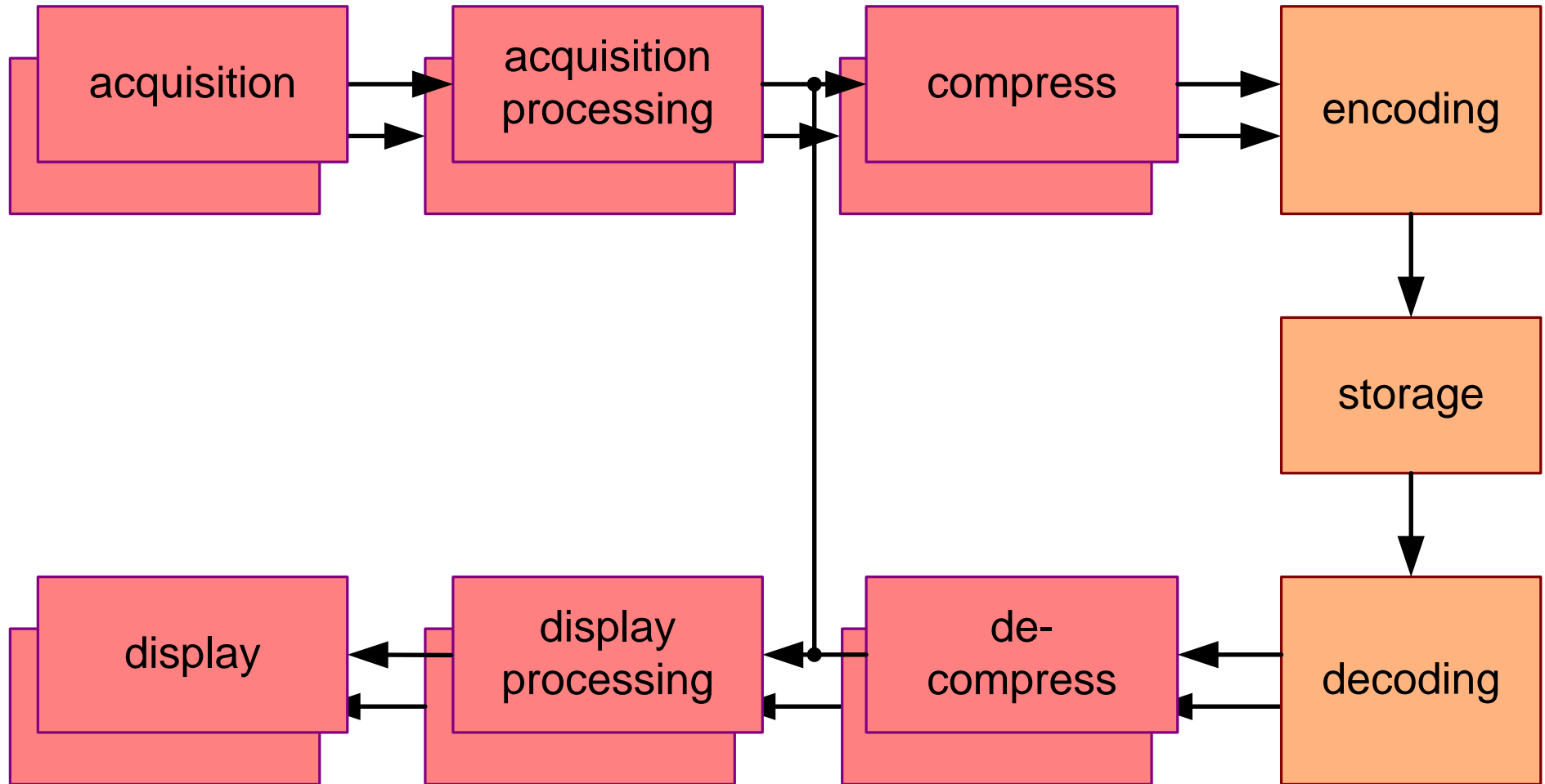
PCB  
IP cells  
IP core

unit of aggregation for  
organisation  
test  
release

package  
module

box  
IP core  
IC

# Example functional decomposition camera type device



**How;**  
what is the **flow** of **internal activities**  
to realise **external functionality**?

some keywords:

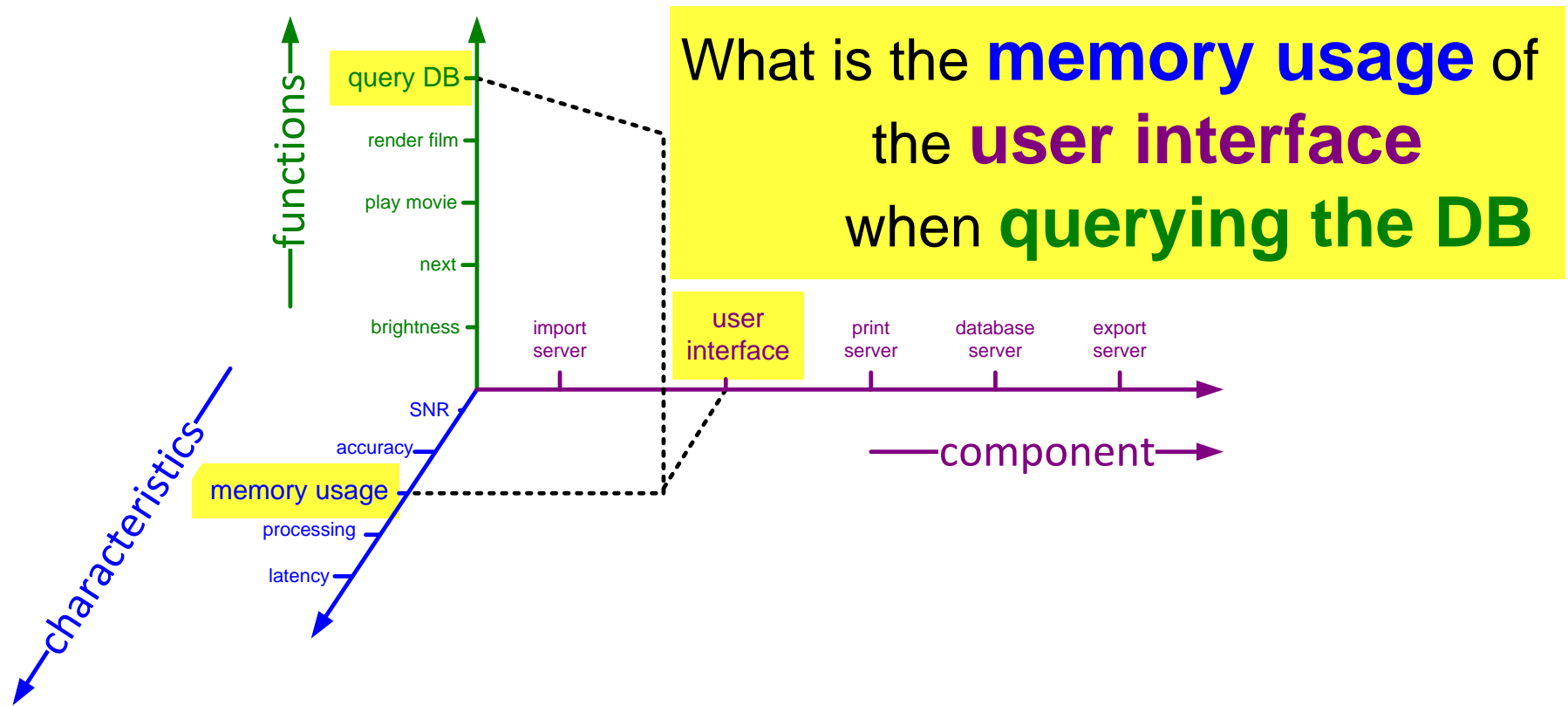
activities  
transformation  
input output

data flow  
control flow

multiple functional decompositions  
are possible and valuable!

# Question generator for multiple decompositions

How about the **<characteristic>**  
of the **<component>**  
when performing **<function>**?



Critical for system performance

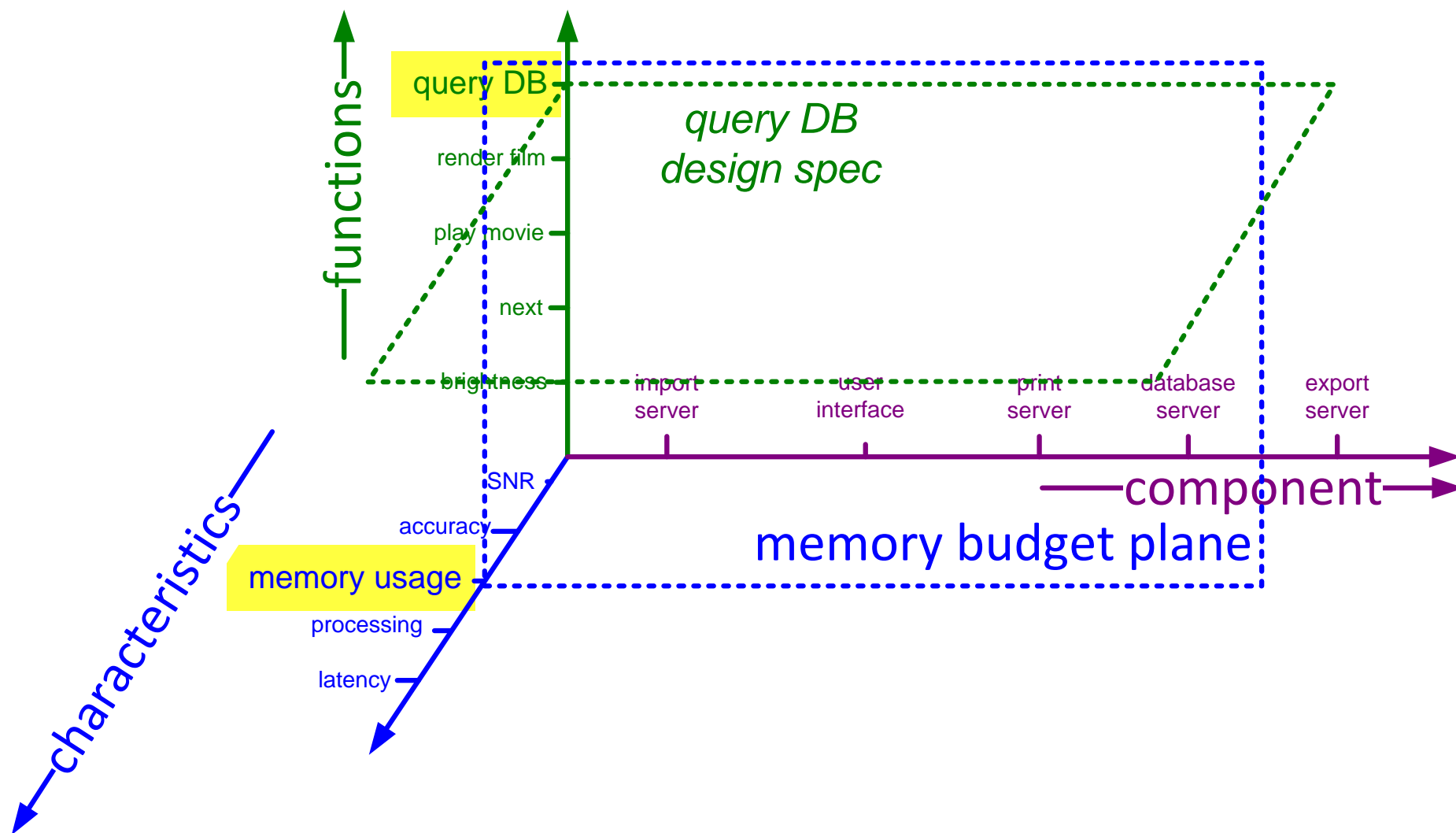
Risk planning wise

Least robust part of the design

Suspect part of the design

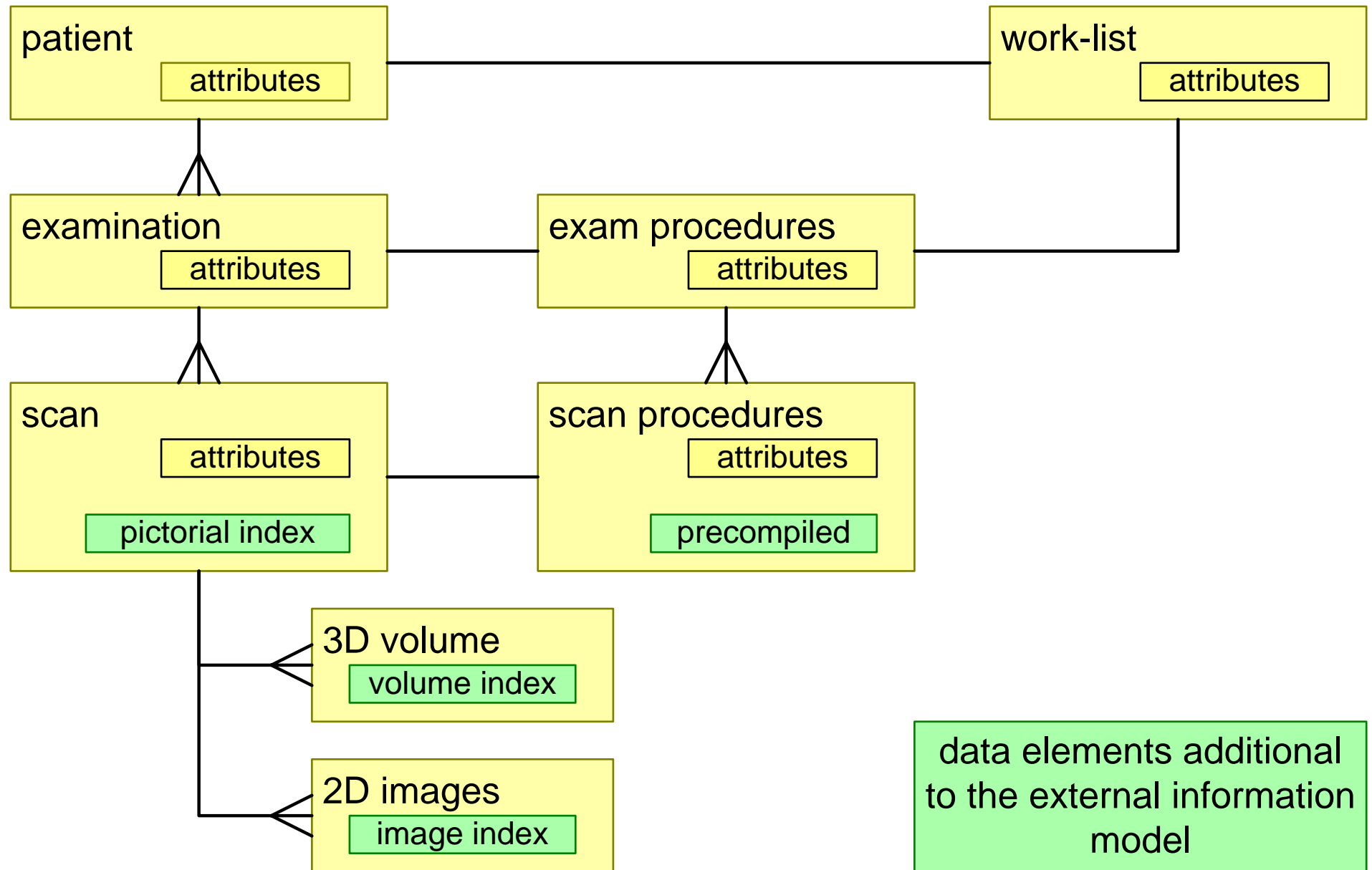
- experience based
- person based

# Addressing planes or lines

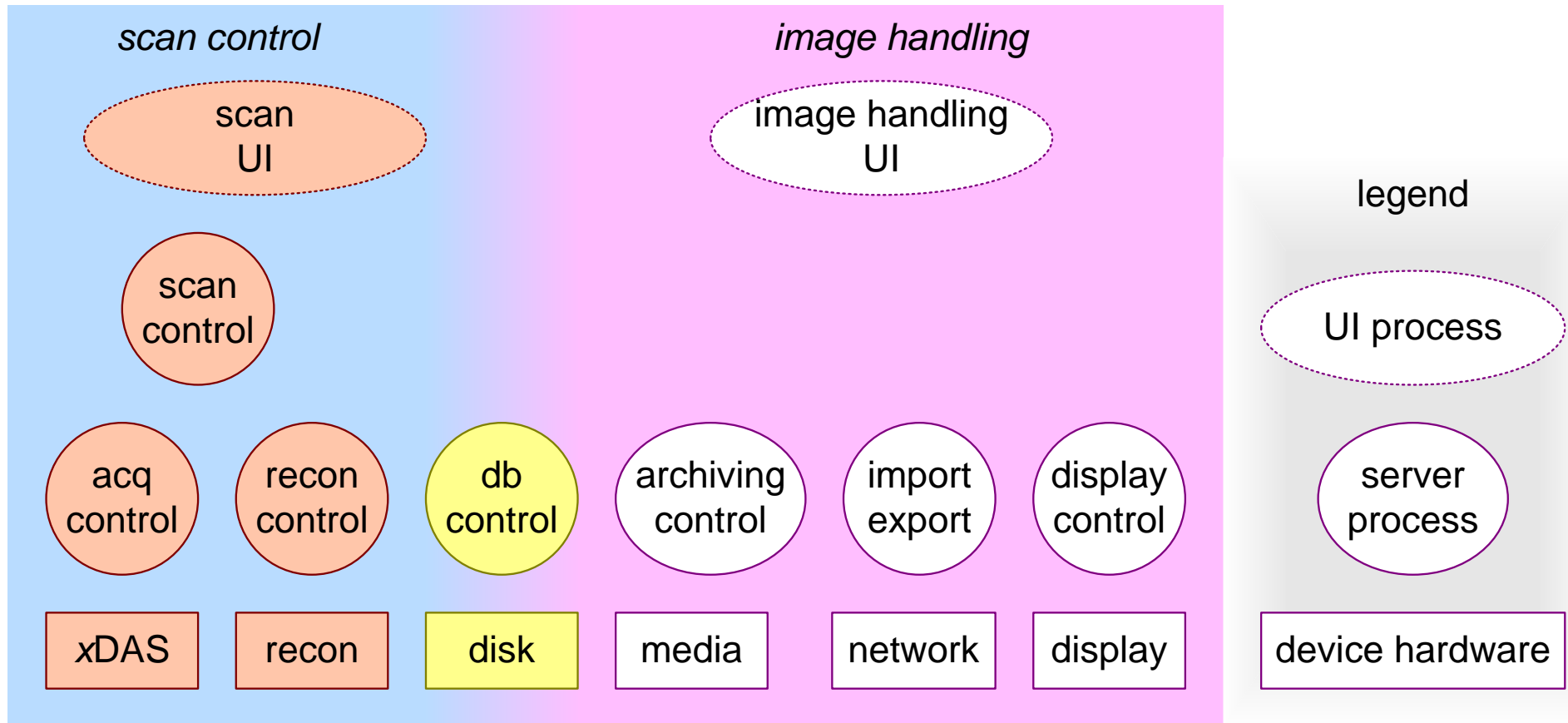




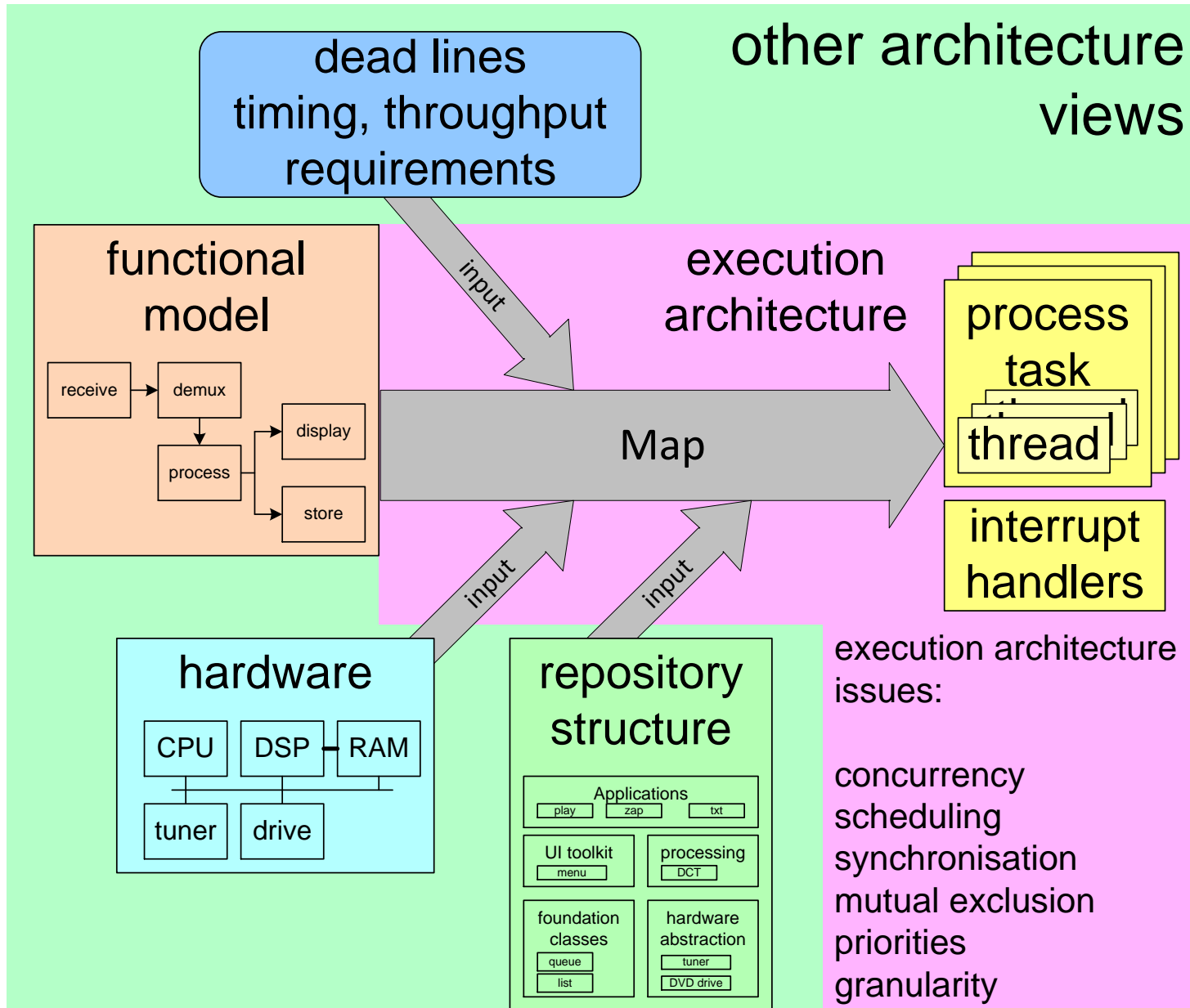
# Example partial internal information model



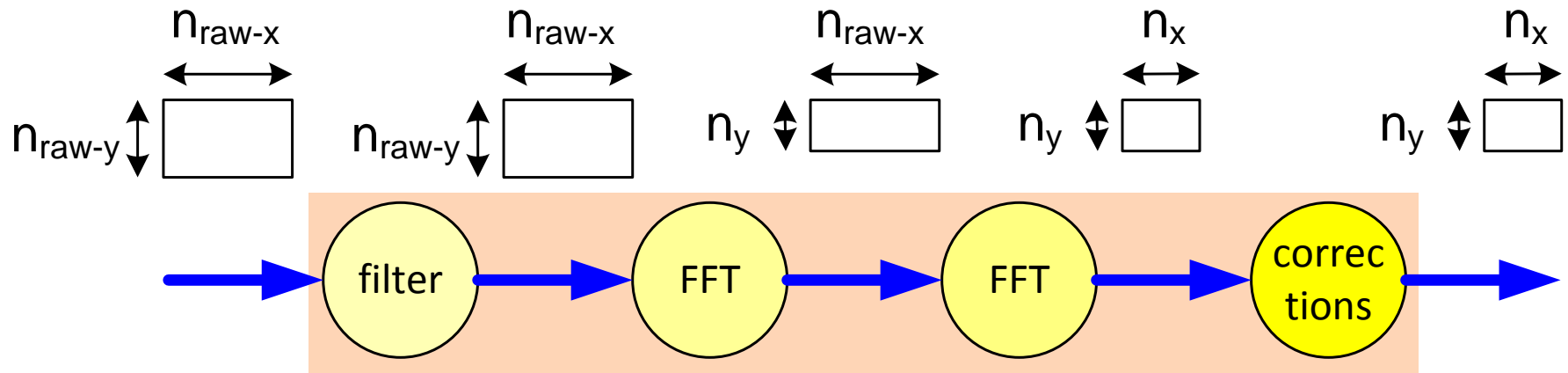
# Example process decomposition



# Execution architecture



# Performance Model



$$\begin{aligned}
 t_{\text{recon}} = & t_{\text{filter}}(n_{\text{raw-x}}, n_{\text{raw-y}}) + \\
 & n_{\text{raw-x}} * ( t_{\text{fft}}(n_{\text{raw-y}}) + t_{\text{col-overhead}} ) + \\
 & n_y * ( t_{\text{fft}}(n_{\text{raw-x}}) + t_{\text{row-overhead}} ) + \\
 & t_{\text{corrections}}(n_x, n_y) + \\
 & t_{\text{control-overhead}}
 \end{aligned}$$

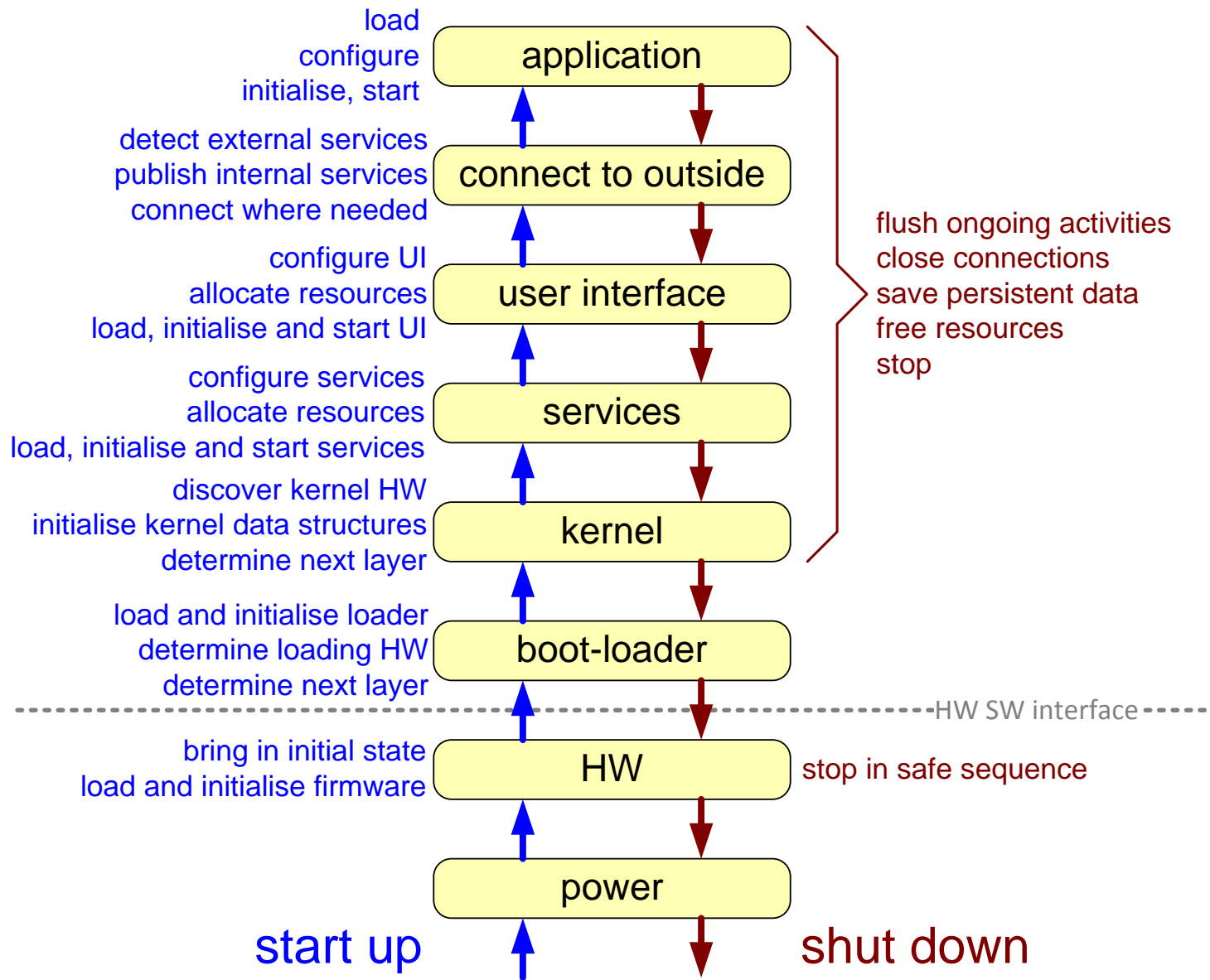
$$t_{\text{fft}}(n) = c_{\text{fft}} * n * \log(n)$$

# Safety, Reliability and Security concepts

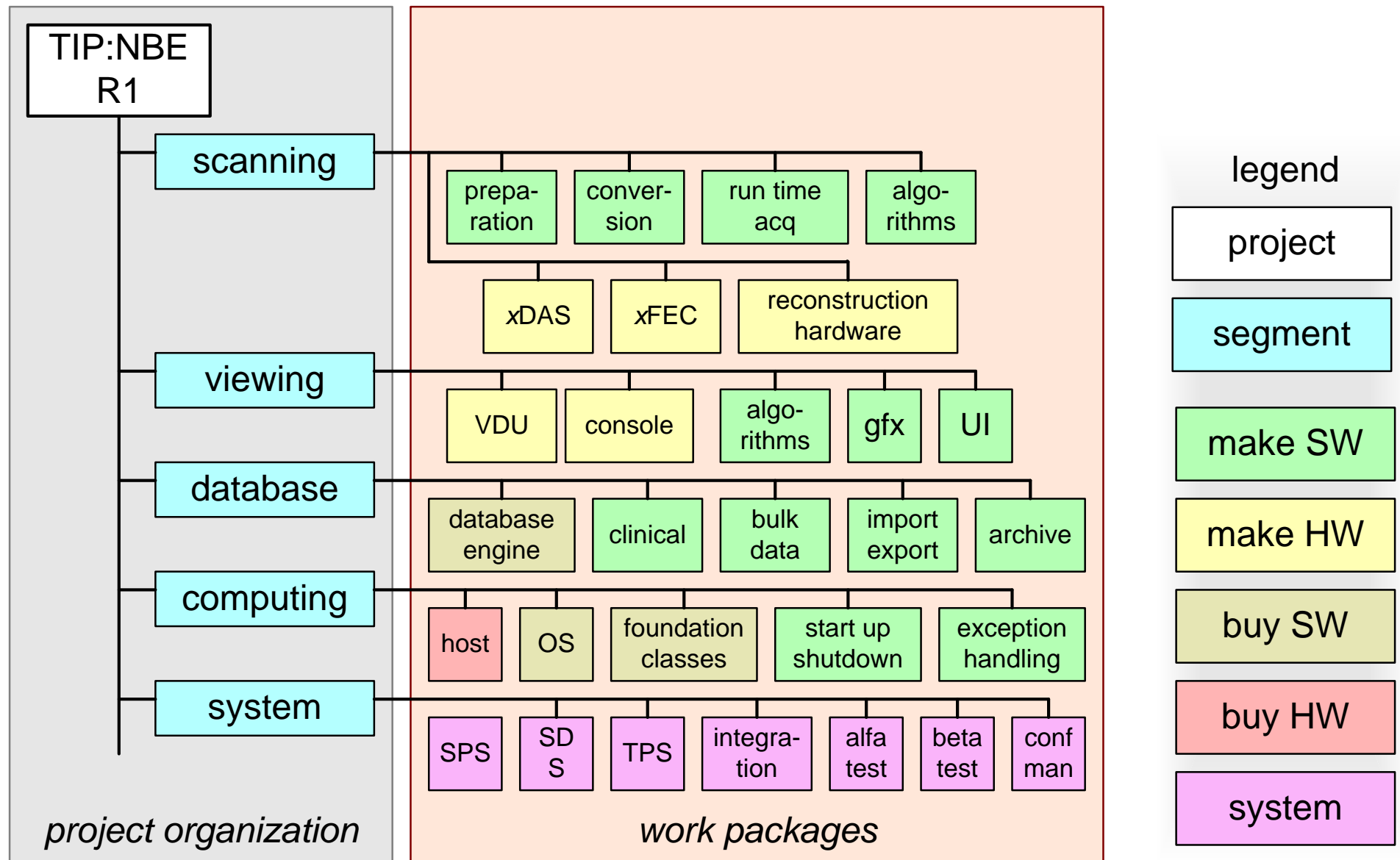
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- containment (limit failure consequences to well defined scope)
- graceful degradation (system parts not affected by failure continue operation)
- dead man switch (human activity required for operation)
- interlock (operation only if hardware conditions are fulfilled)
- detection and tracing of failures
- black box (log) for post mortem analysis
- redundancy

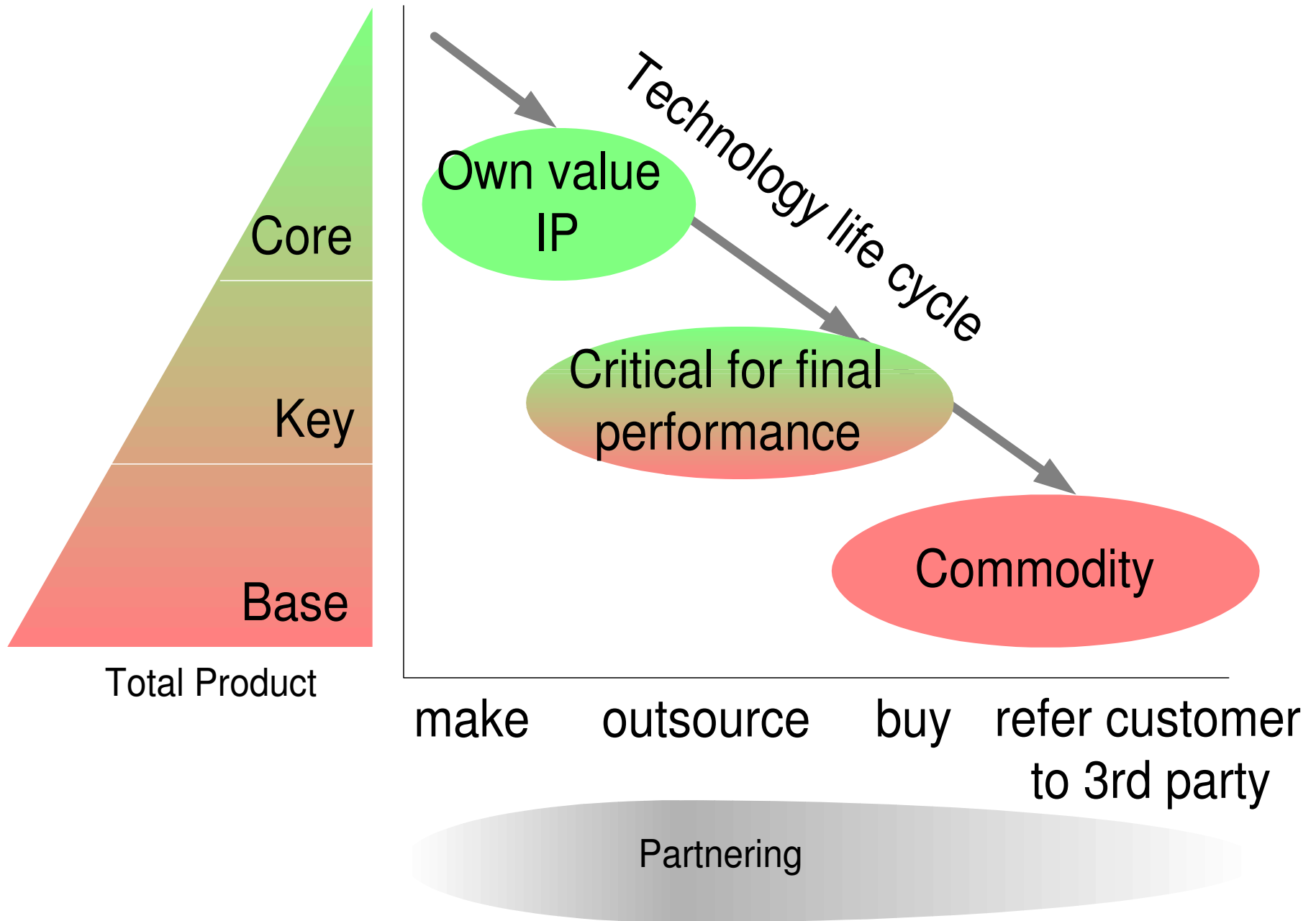
# Simplified start up sequence



# Example work breakdown



# Core, Key or Base technology





# Example integration plan

