

# Initial CAFCR scan

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## Abstract

This presentation guides a team through a quick CAFCR scan. Such quick scan with typically 15 minutes per view helps to build an initial overview of the problem and solution space.

### Distribution

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make a bottom-up analysis of your product:

1. realization
2. conceptual
3. functional
4. application
5. customer objectives
6. qualities

use time boxes of 15 minutes per view  
show the most dominant decomposition of that view, as diagram or as a list; some more guidance will be given per step.

# Exercise Bottom-up Scan CAFCR

make a bottom-up analysis of your product:

1. realization
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3. functional
4. application
5. customer objectives
6. qualities

use time boxes of 15 minutes per view

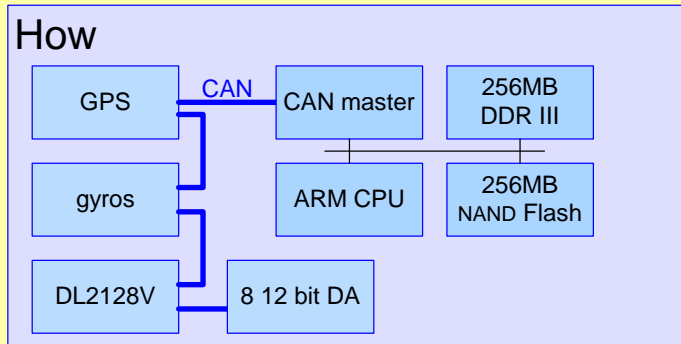
show the most dominant decomposition of that view, as diagram or as a list; some more guidance will be given per step.

# Do and Don't

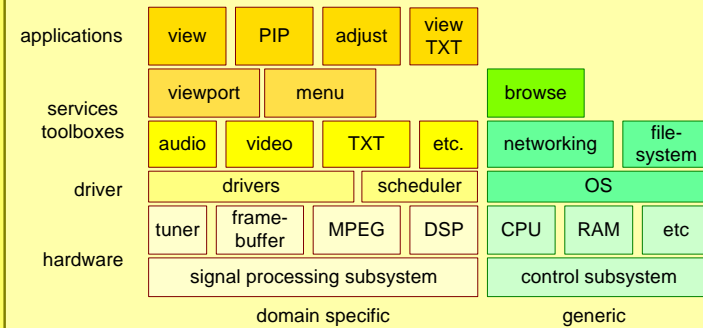
Do	Do not	Because
<ul style="list-style-type: none"><li>• start sketching/drawing as soon as possible</li><li>• use shared large sheets of paper (e.g. flip-over)</li><li>• number the flip-overs and add a title</li><li>• annotate (add notes) during discussions</li><li>• use yellow note stickers and flip-over markers</li><li>• be open for ideas and surprises</li></ul>	<ul style="list-style-type: none"><li>• write long texts</li><li>• immediately capture electronic</li><li>• have nice but volatile discussions</li><li>• write with pen or pencil</li><li>• Do not stick to the first solution</li></ul>	<ul style="list-style-type: none"><li>• sketches stimulate sharing and discussion</li><li>• sharing and discussion help to explore faster</li><li>• remembering the order gets challenging</li><li>• information and insight is quickly lost</li><li>• stickers are easily (re)moved</li><li>• you hopefully discover a lot; increased insight will change problem and solution</li></ul>

# Step 1: Realization View

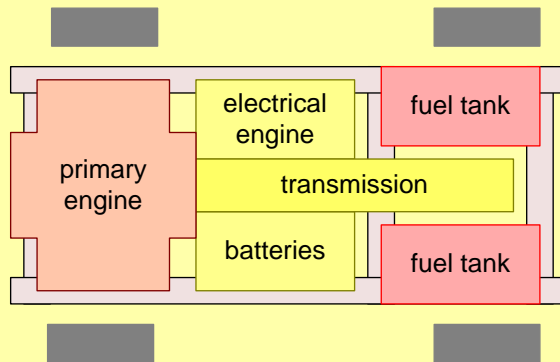
Choose 1 or 2 items from below



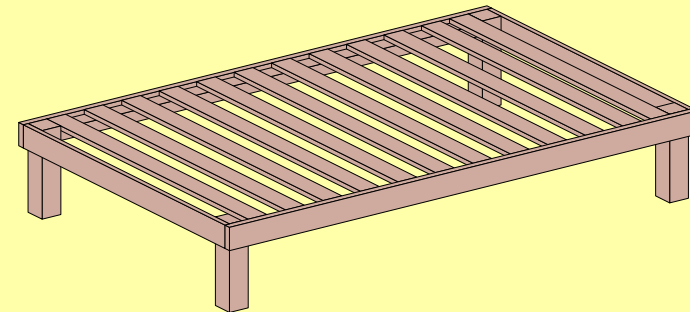
HW block diagram



SW layer diagram



2D layout of system internals



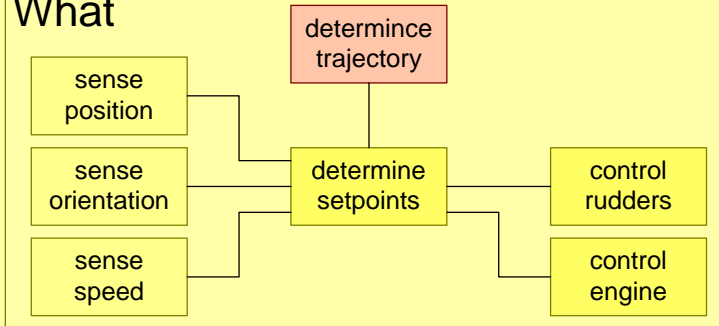
3D sketch of system internals

Annotate/mark most critical technologies or characteristics

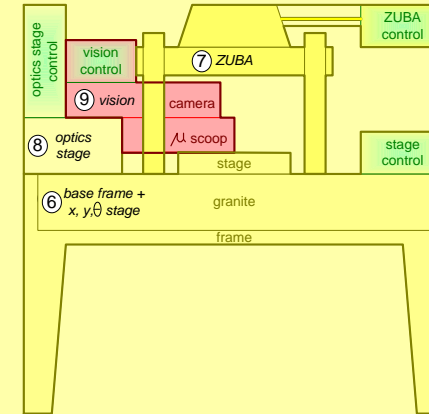
# Step 2: Conceptual View

Chose 1 or 2 items from below

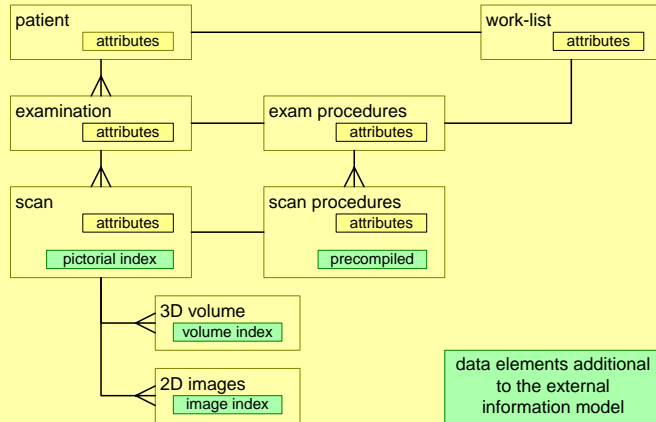
What



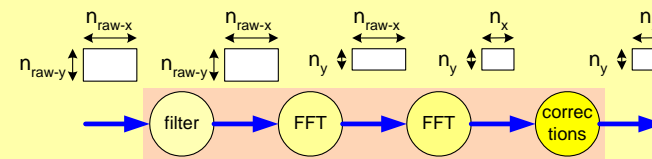
functional model



subsystem decomposition



information model

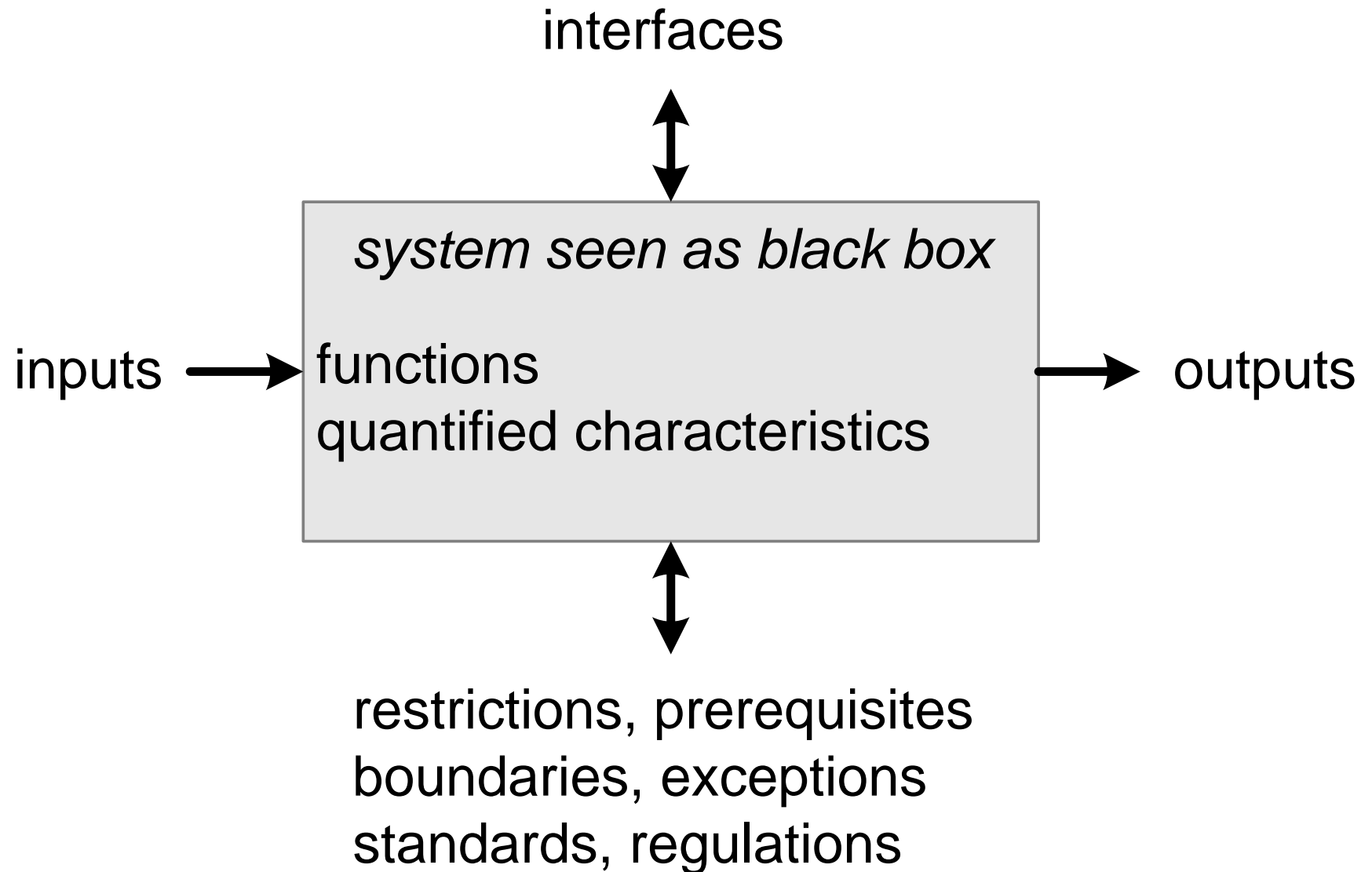


$$t_{recon} = t_{filter}(n_{raw-x}, n_{raw-y}) + n_{raw-x} * (t_{fft}(n_{raw-y}) + t_{col-overhead}) + n_y * (t_{fft}(n_{raw-x}) + t_{row-overhead}) + t_{corrections}(n_x, n_y) + t_{control-overhead}$$

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

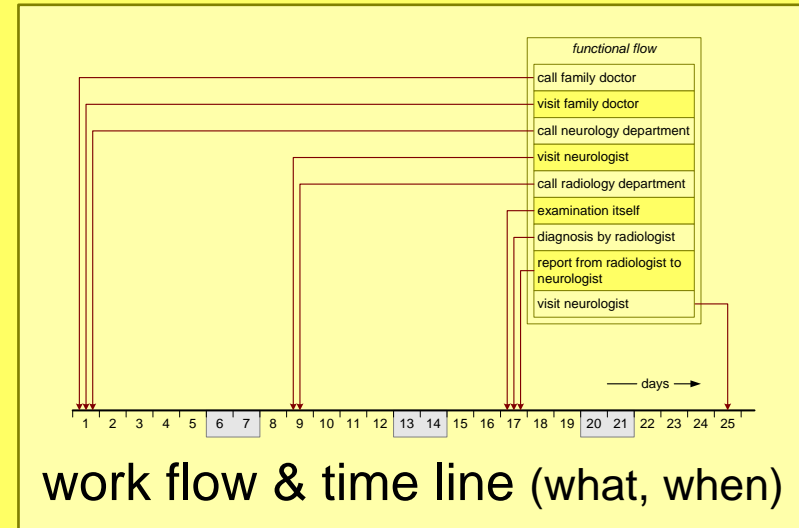
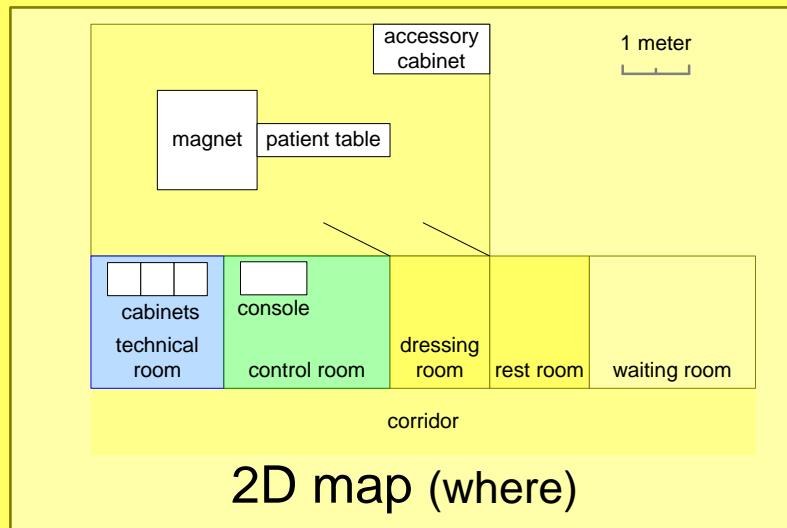
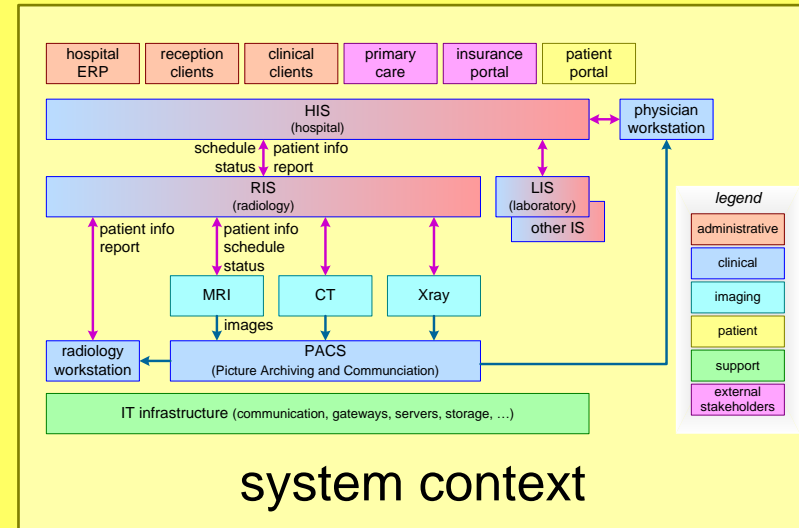
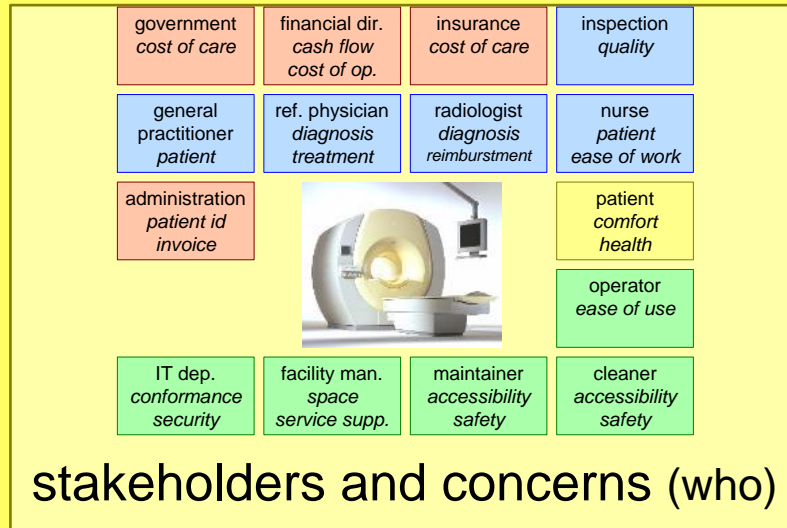
performance model

# Step 3: Functional View; Top level Spec

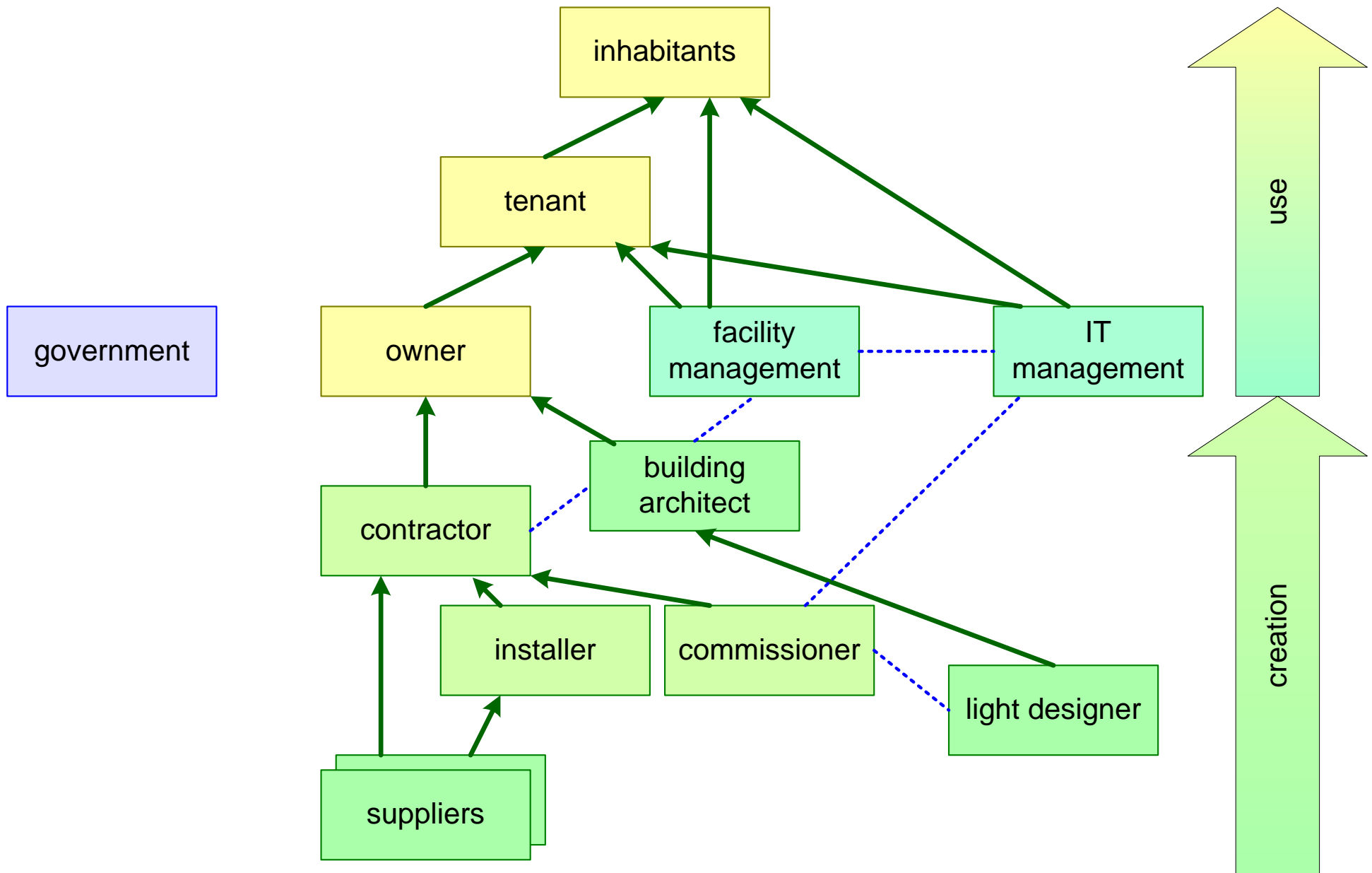


# Step 4: Application View

Chose 1 or 2 items from below



# Step 5: Customer Objectives View; Value Network





# Step 6: Qualities

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Determine the 5 most relevant qualities from the checklist

- Make the chosen qualities as specific as possible
- Explain for each quality why it is relevant

# Step 6: Qualities Checklist

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## usable

usability  
attractiveness  
responsiveness  
image quality  
wearability  
storability  
transportability

## dependable

safety  
security  
reliability  
robustness  
integrity  
availability

## effective

throughput or  
productivity

## interoperable

connectivity  
3<sup>rd</sup> party extendible

## liable

liability  
testability  
traceability  
standards compliance

## efficient

resource utilization  
cost of ownership

## consistent

reproducibility  
predictability

## serviceable

serviceability  
configurability  
installability

## future proof

evolvability  
portability  
upgradeability  
extendibility  
maintainability

## logistics friendly

manufacturability  
logistics flexibility  
lead time

## ecological

ecological footprint  
contamination  
noise  
disposability

## down to earth attributes

cost price  
power consumption  
consumption rate  
(water, air,  
chemicals,  
et cetera)  
size, weight  
accuracy

# Presentation

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Present the results top-down

Use two to three flip charts of the six that have been created.

Explain in five minutes the needs of the customer, the system, and the major design choices.