

# From story to design illustrated by medical imaging

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## Abstract

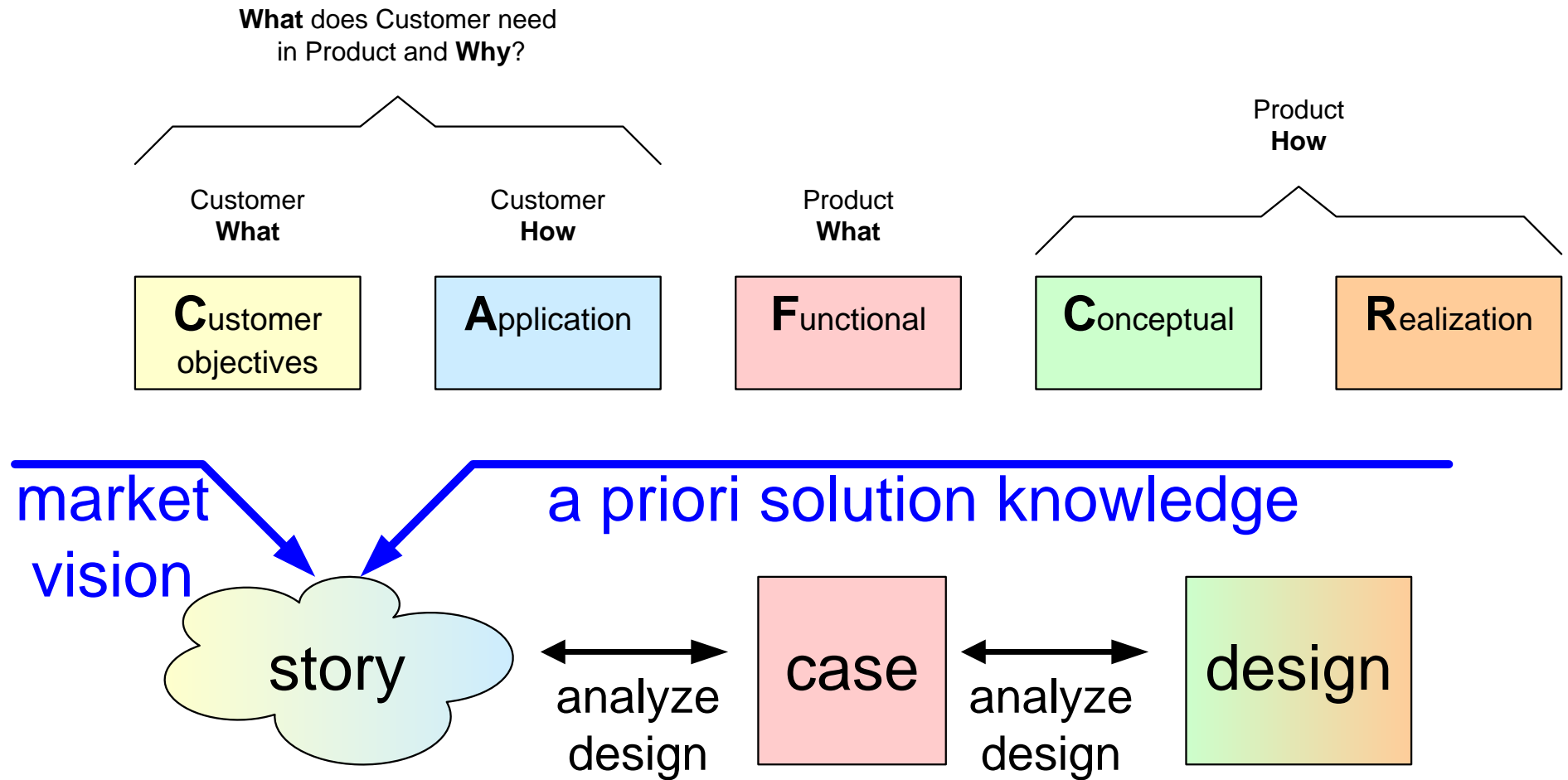
The medical imaging workstation is used as printserver for multiple X-ray examination rooms. A quantified story is used to understand the use of the system, and to analyse specification and design.

### Distribution

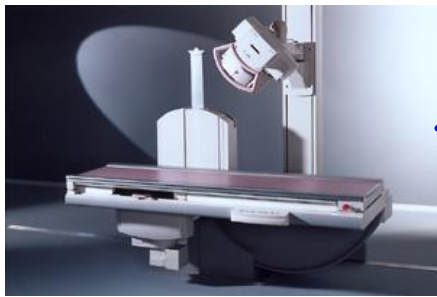
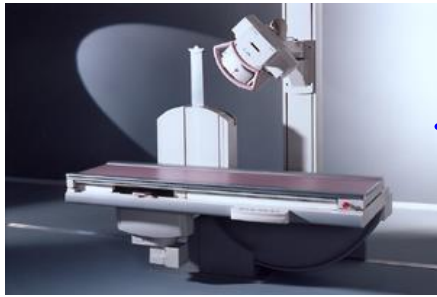
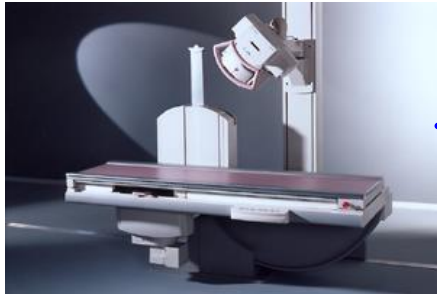
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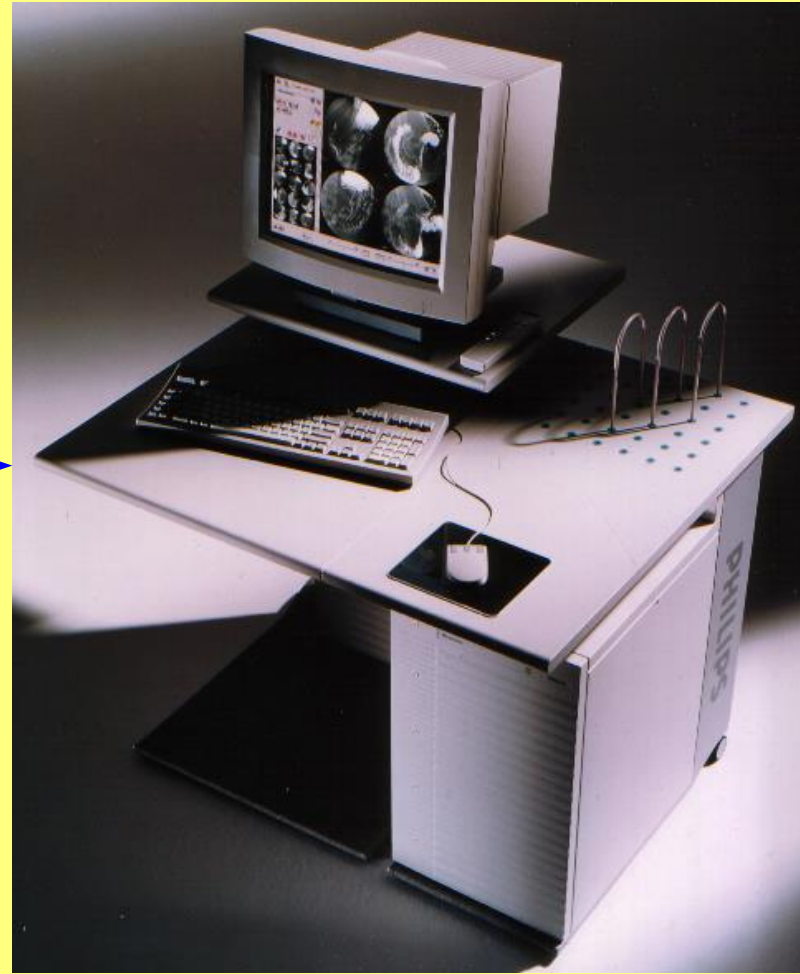
# From story to design



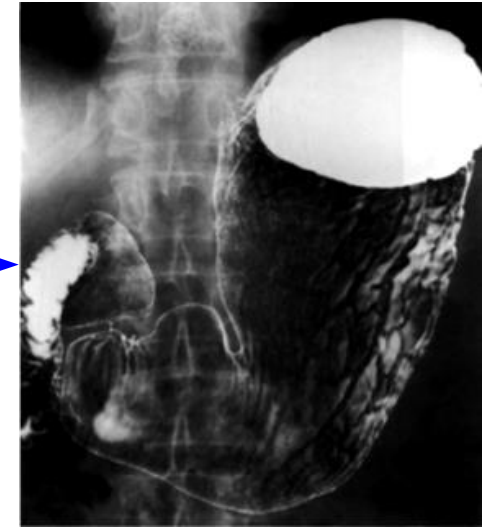
# Easyvision serving three URF examination rooms



URF-systems

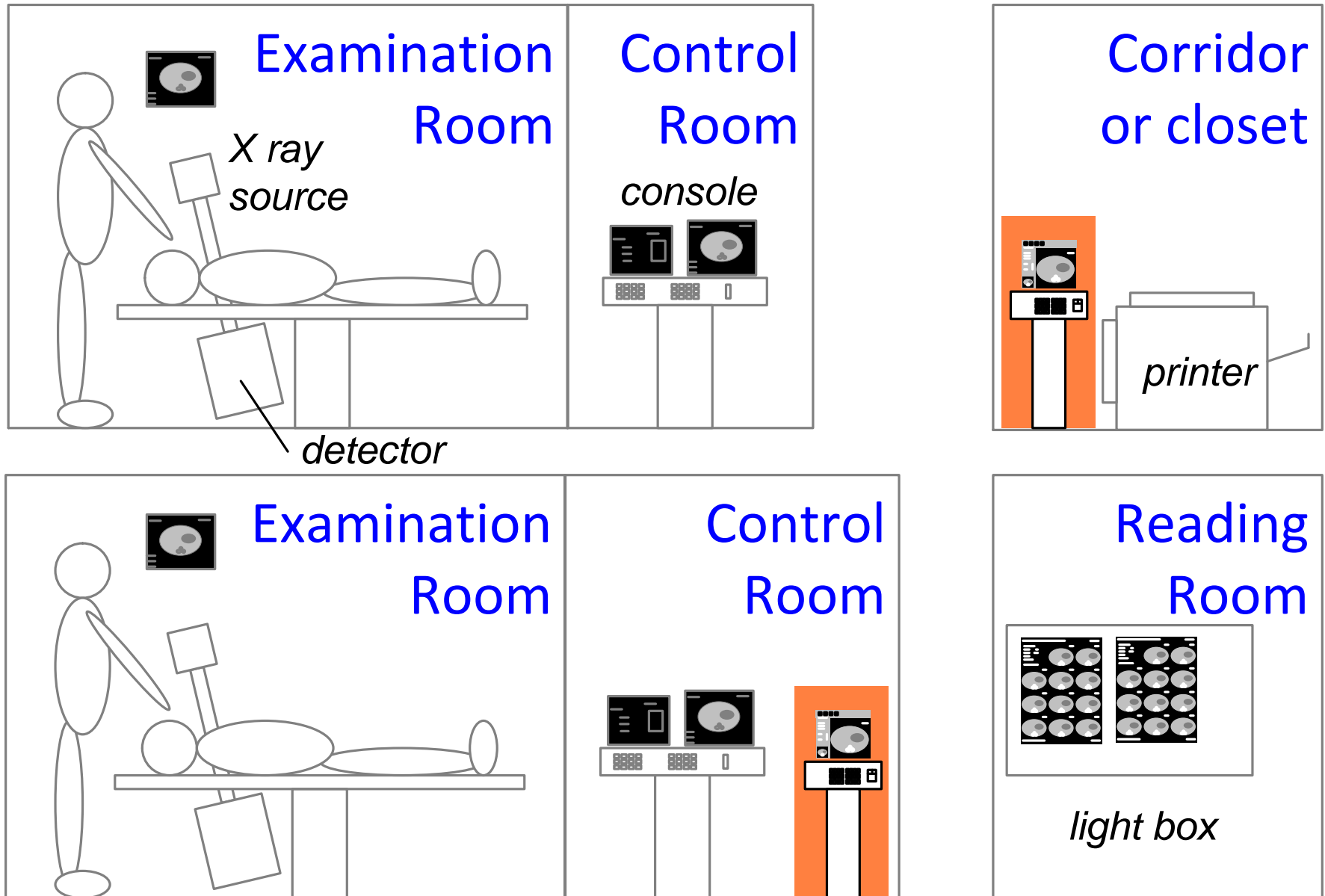


EasyVision: Medical Imaging Workstation

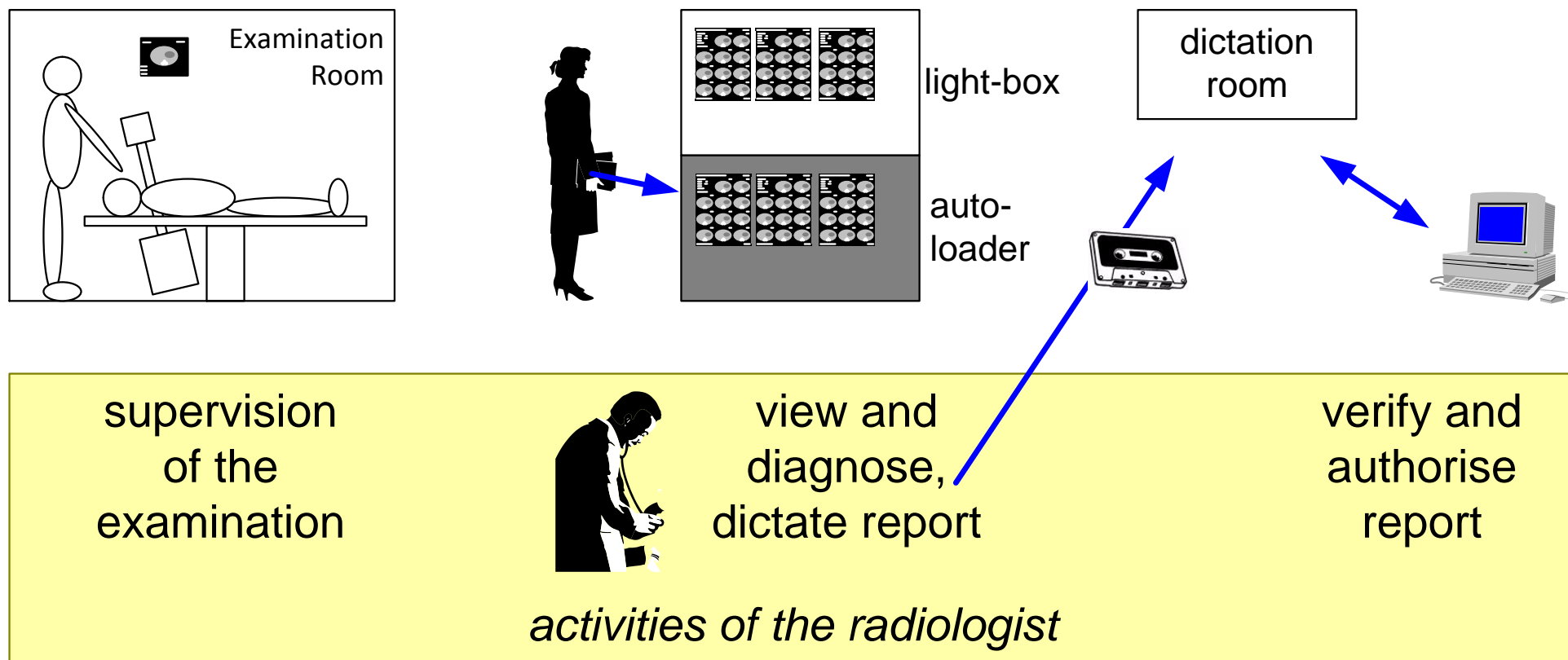


typical clinical image (intestines)

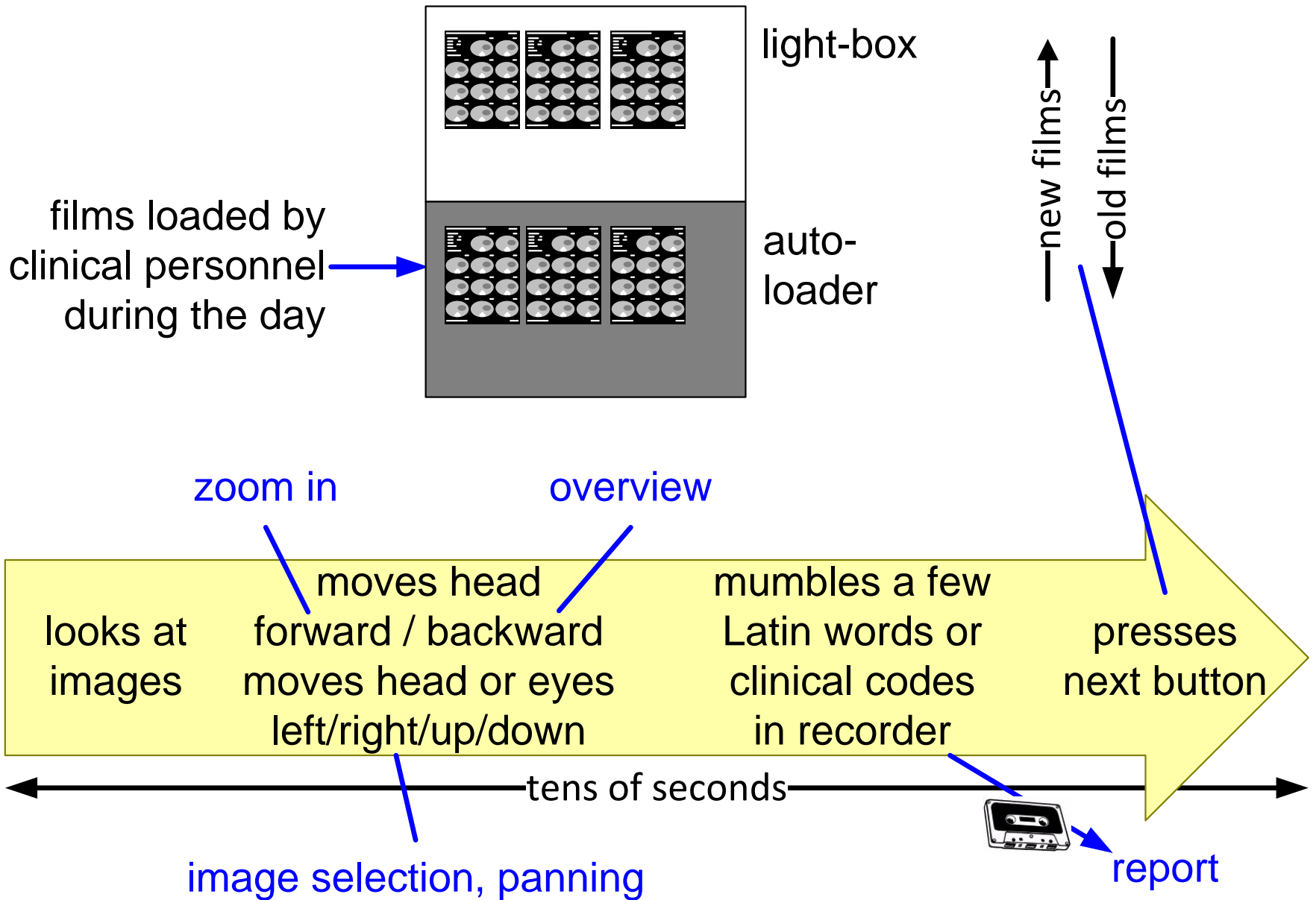
# X-ray rooms with Easyvision applied as printserver



# Radiologist workspots and activities



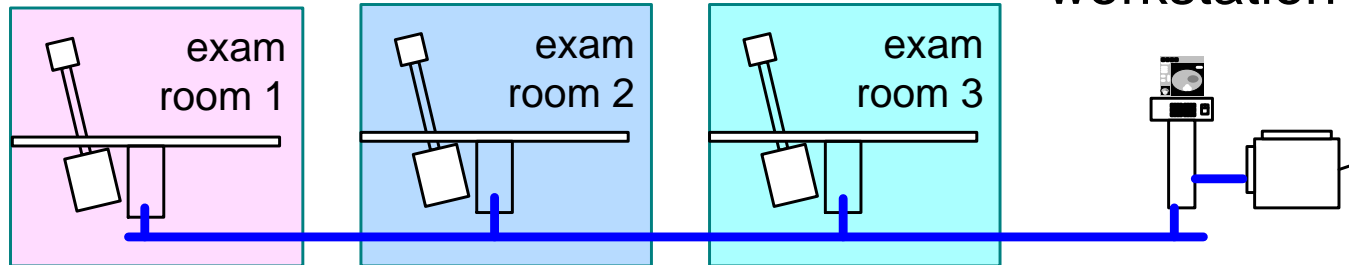
# Diagnosis in tens of seconds



# Typical case URF examination

3 examination rooms connected to

1 medical imaging workstation + printer

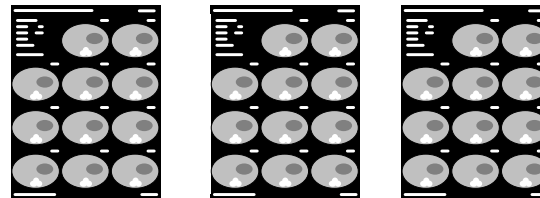


examination room: average 4 interleaved examinations / hour

image production: 20  $1024^2$  8 bit images per examination

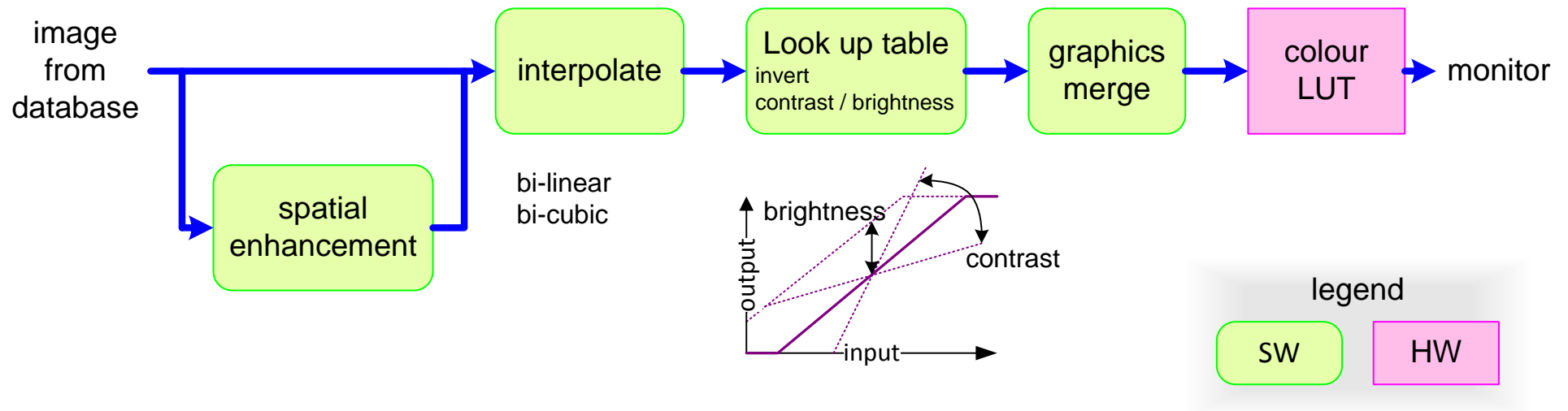


film production: 3 films of 4k\*5k pixels each



high quality output  
(bi-cubic interpolation)

# Presentation pipeline for X-ray images

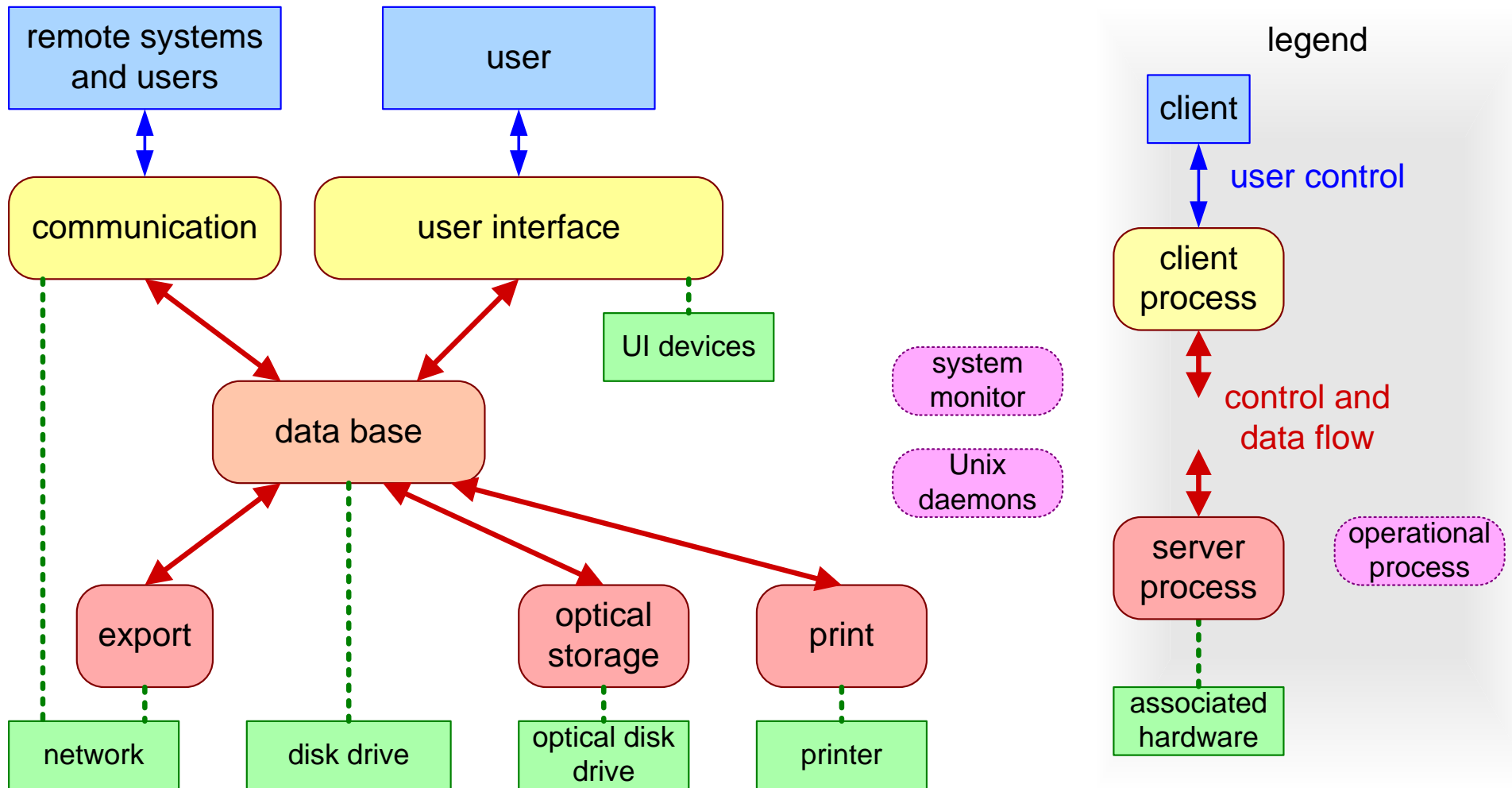




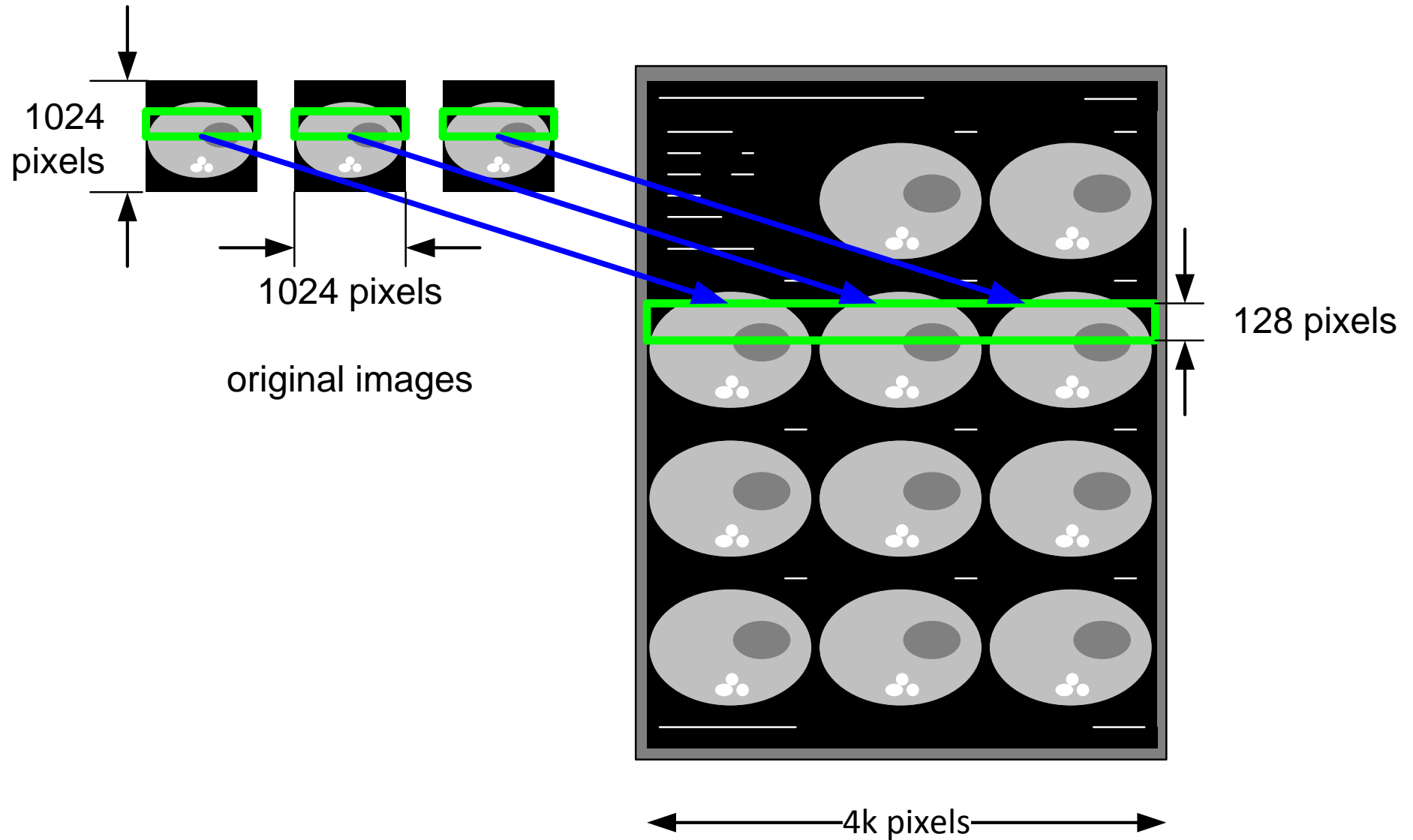
# Example of a memory budget

<i>memory budget in Mbytes</i>	code	obj data	bulk data	total
shared code	11.0			11.0
User Interface process	0.3	3.0	12.0	15.3
database server	0.3	3.2	3.0	6.5
print server	0.3	1.2	9.0	10.5
optical storage server	0.3	2.0	1.0	3.3
communication server	0.3	2.0	4.0	6.3
UNIX commands	0.3	0.2	0	0.5
compute server	0.3	0.5	6.0	6.8
system monitor	0.3	0.5	0	0.8
application SW total	13.4	12.6	35.0	61.0
UNIX Solaris 2.x				10.0
file cache				3.0
total				74.0

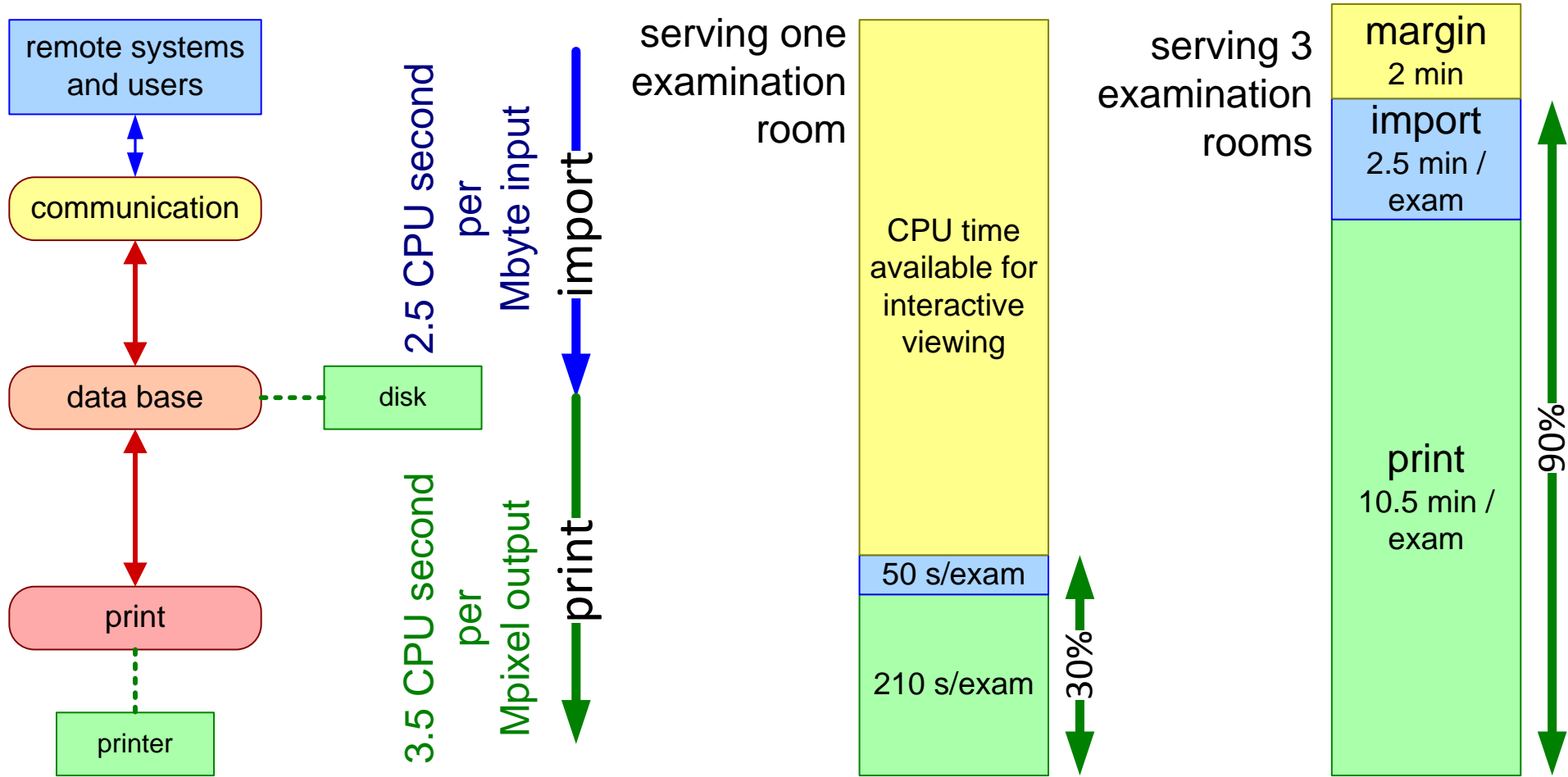
# Concurrency via software processes



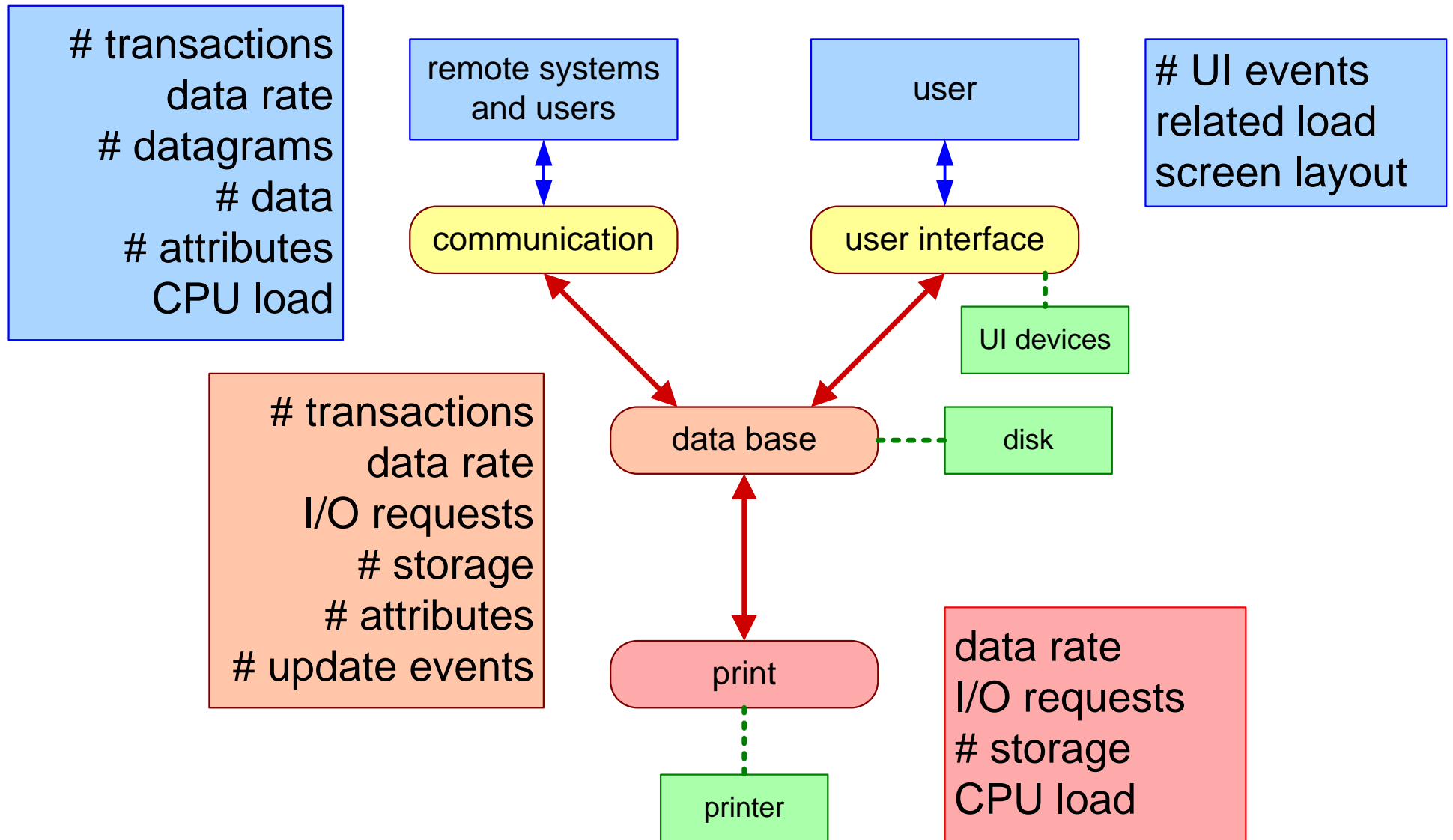
# Print server is based on banding



# Server CPU load



# Analysis in realization view



# Criteria for a good story

**C**<sub>ustomer objectives</sub>  
**A**<sub>pplication</sub>

- accessible, understandable

"Do you see it in front of you?"

**C**<sub>ustomer objectives</sub>  
**A**<sub>pplication</sub>

- valuable, appealing

attractive, important

"Are customers queuing up for this?"

**C**<sub>onceptual</sub>  
**R**<sub>ealization</sub>

- critical, challenging

"What is difficult in the realization?"

"What do you learn w.r.t. the design?"

**A**<sub>pplication</sub>

- frequent, no exceptional niche

"Does it add significantly to the bottom line?"

**A**<sub>pplication</sub>  
**F**<sub>unctional</sub>

- specific

names, ages, amounts, durations, titles, ...