

From story to design illustrated by medical imaging

by *Gerrit Muller* University of South-Eastern Norway-NISE

e-mail: gaudisite@gmail.com

www.gaudisite.nl

Abstract

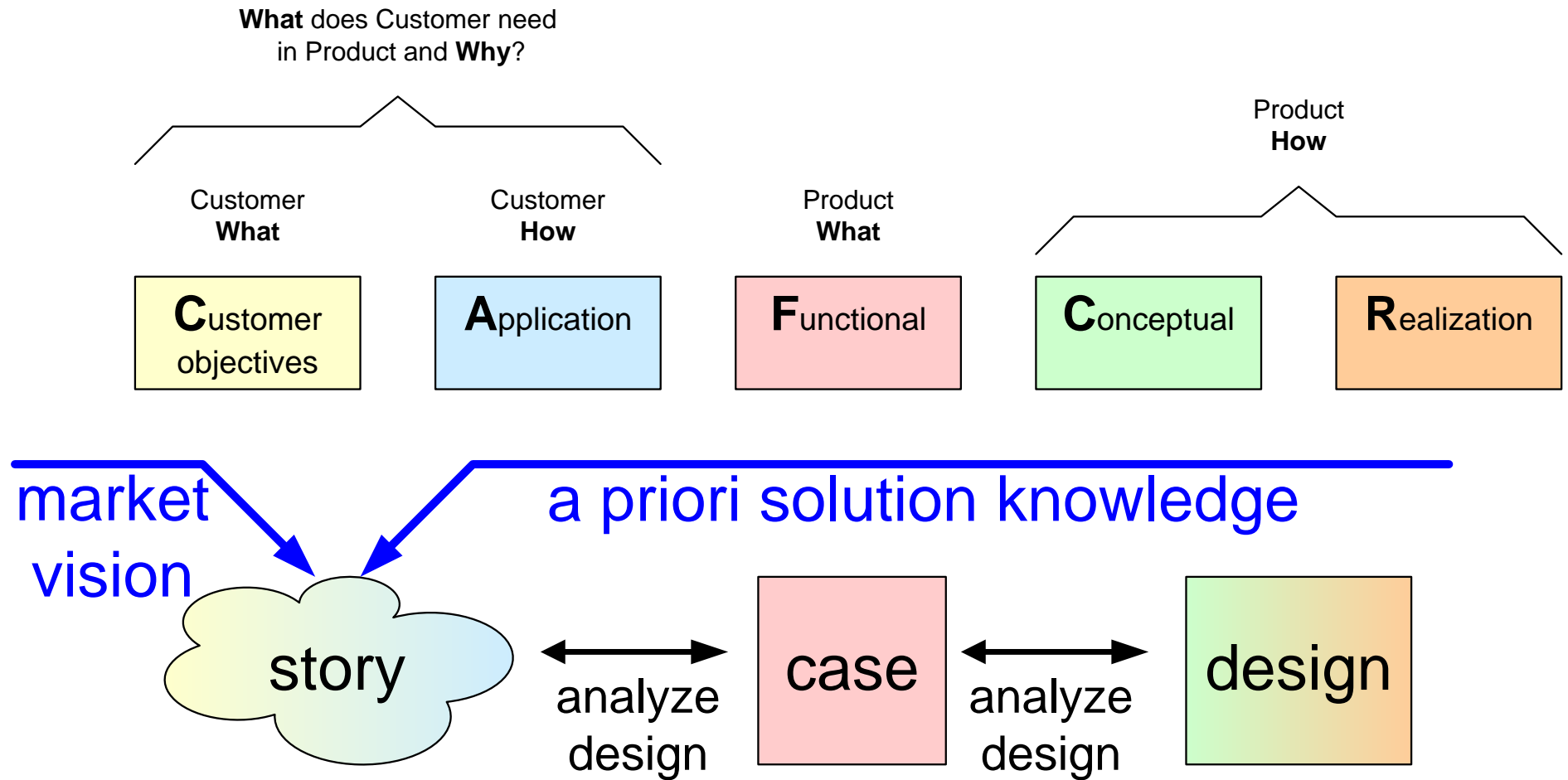
The medical imaging workstation is used as printserver for multiple X-ray examination rooms. A quantified story is used to understand the use of the system, and to analyse specification and design.

Distribution

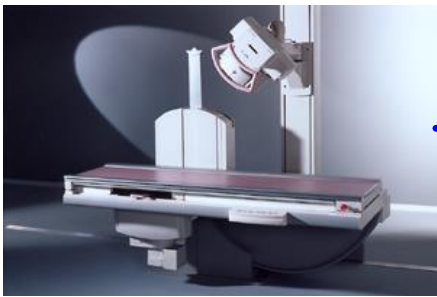
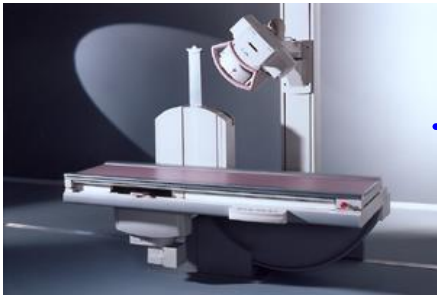
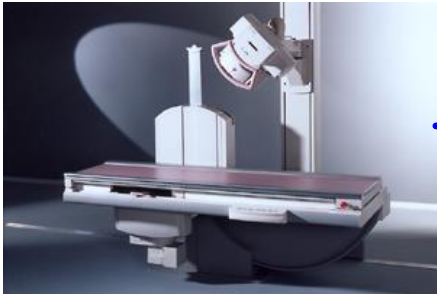
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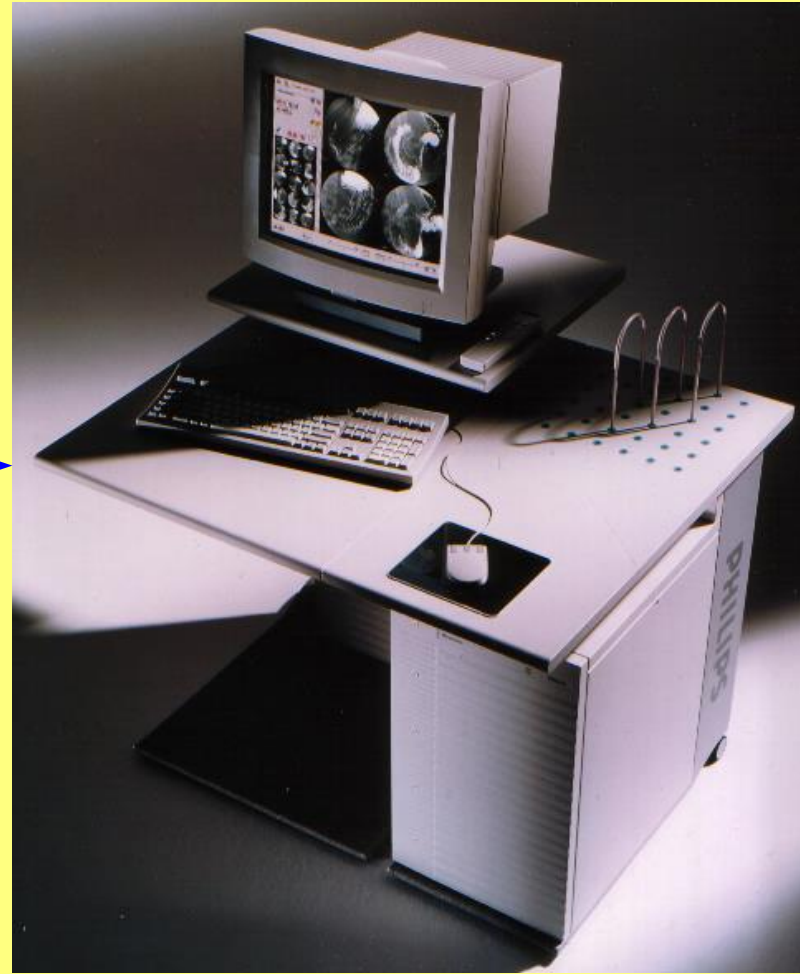
From story to design



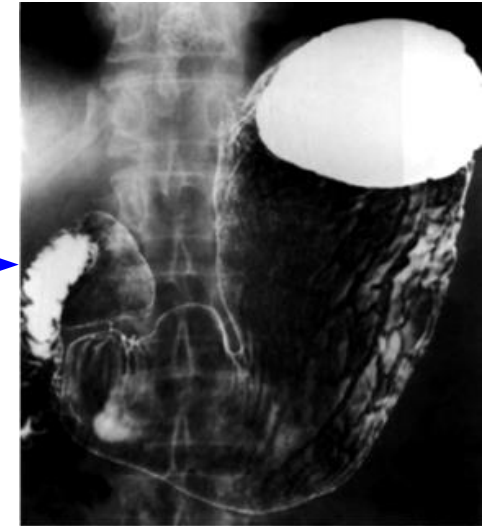
Easyvision serving three URF examination rooms



URF-systems

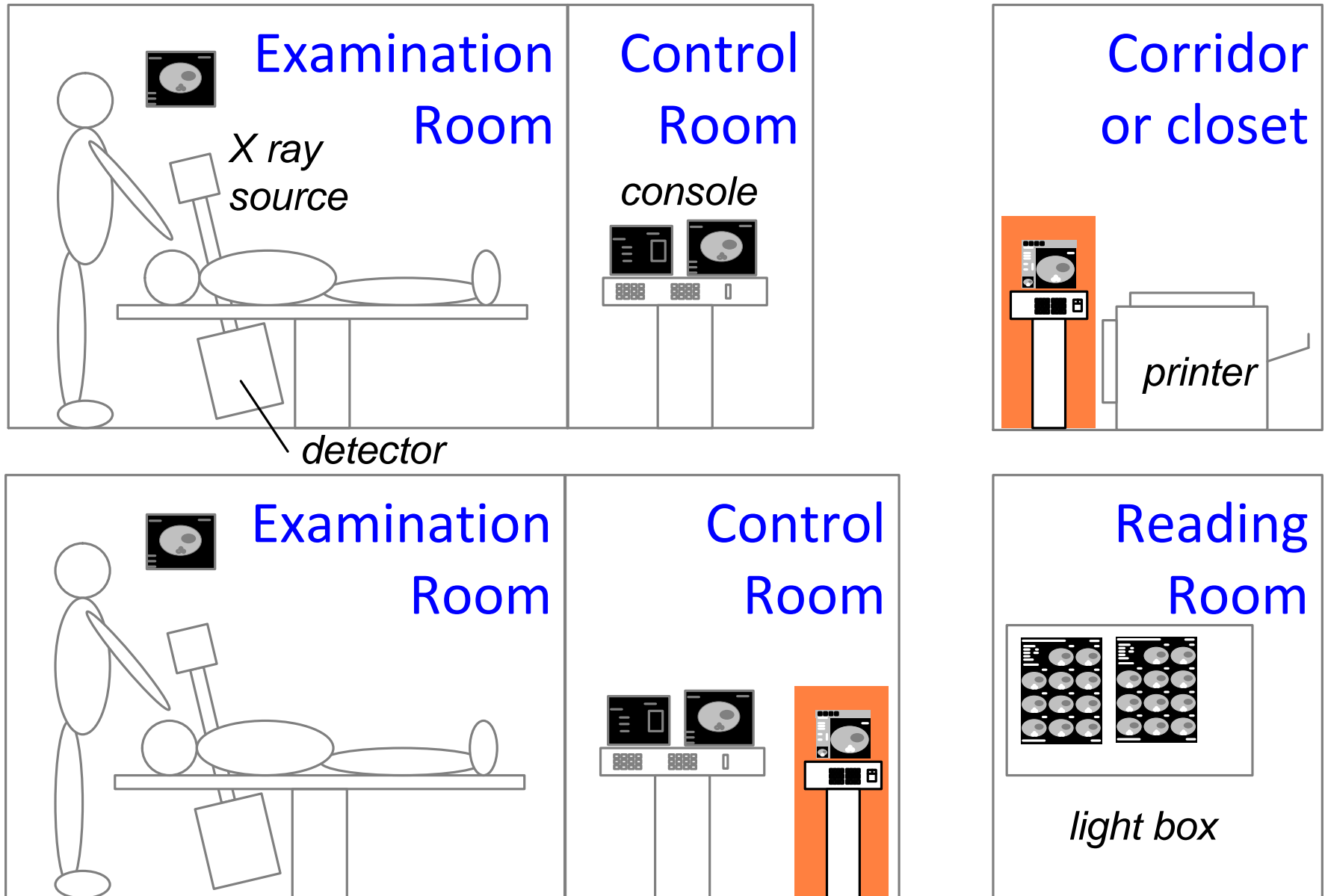


EasyVision: Medical Imaging Workstation

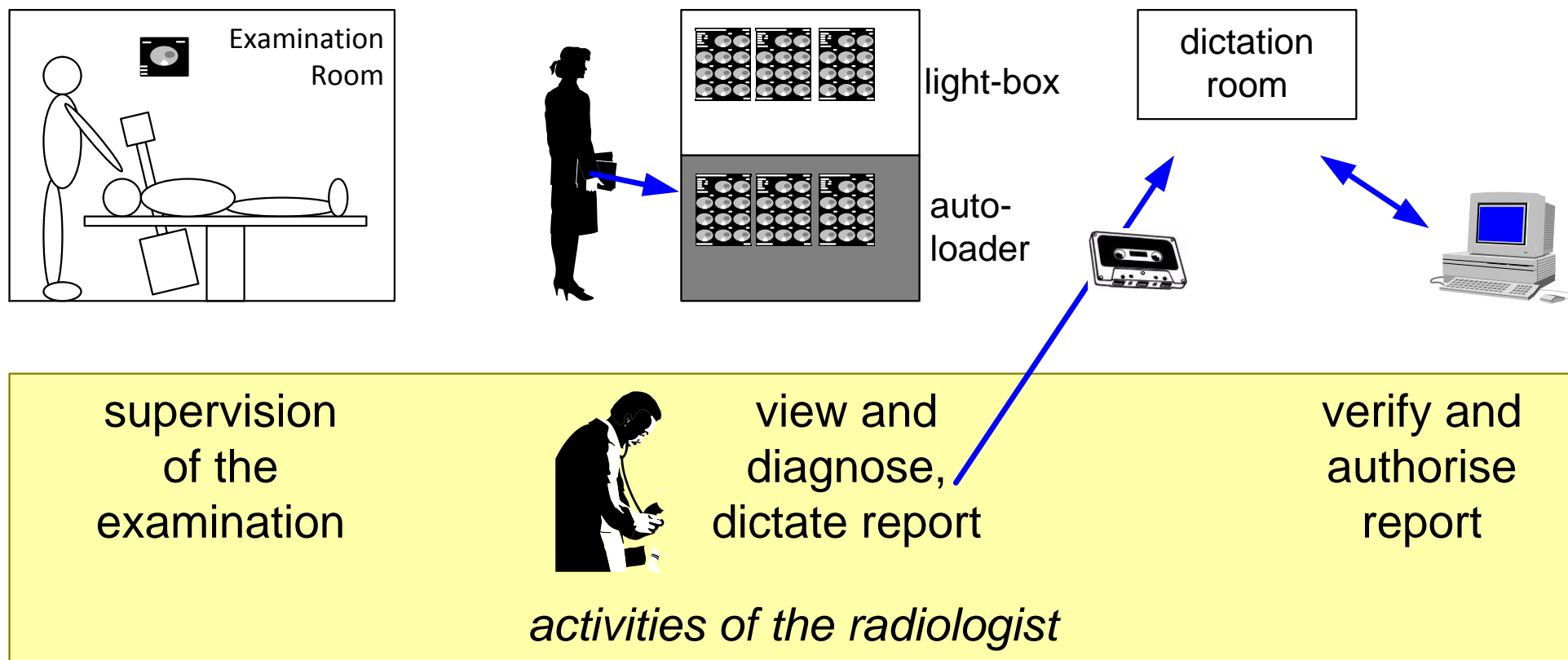


typical clinical image (intestines)

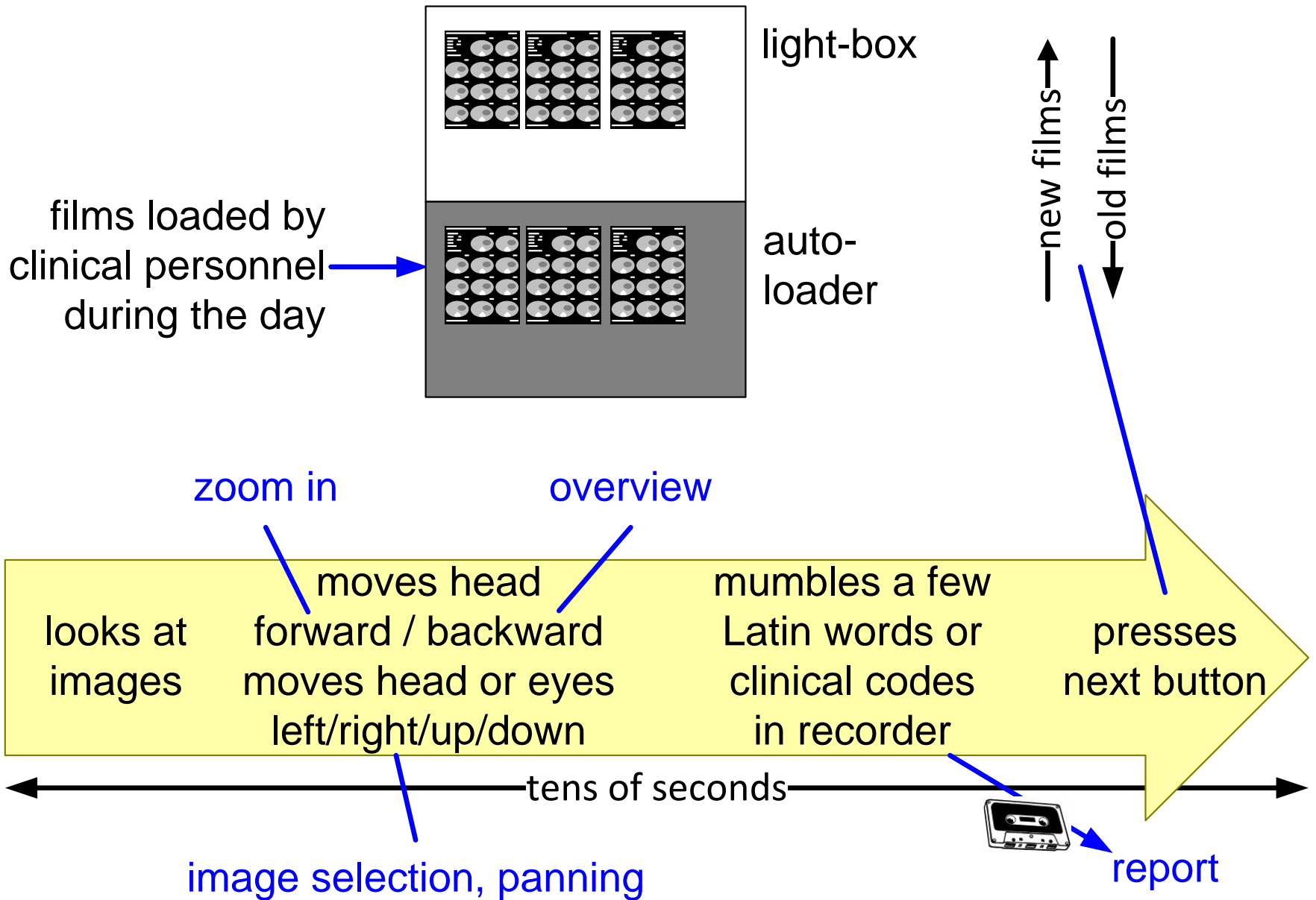
X-ray rooms with Easyvision applied as printserver



Radiologist workspots and activities



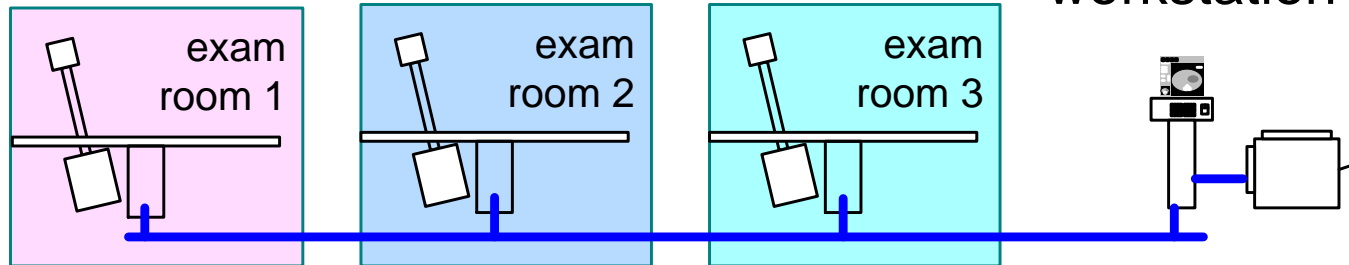
Diagnosis in tens of seconds



Typical case URF examination

3 examination rooms connected to

1 medical imaging workstation + printer

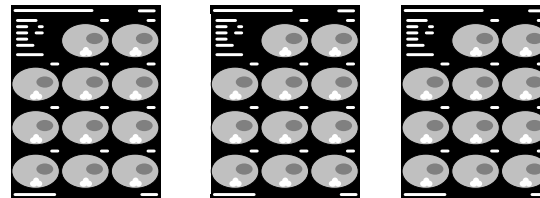


examination room: average 4 interleaved examinations / hour

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

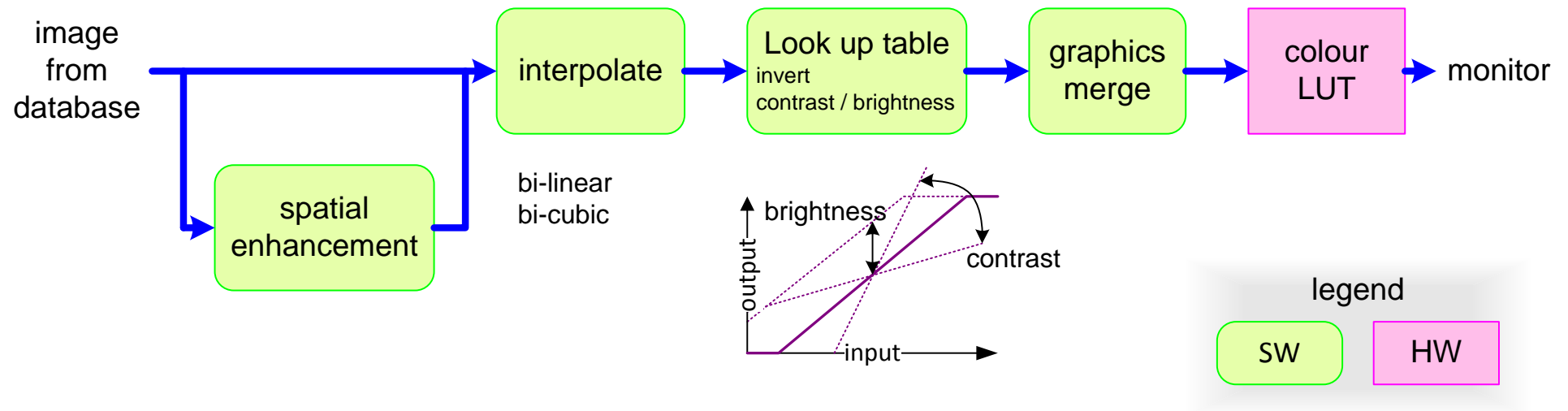


film production: 3 films of 4k*5k pixels each



high quality output
(bi-cubic interpolation)

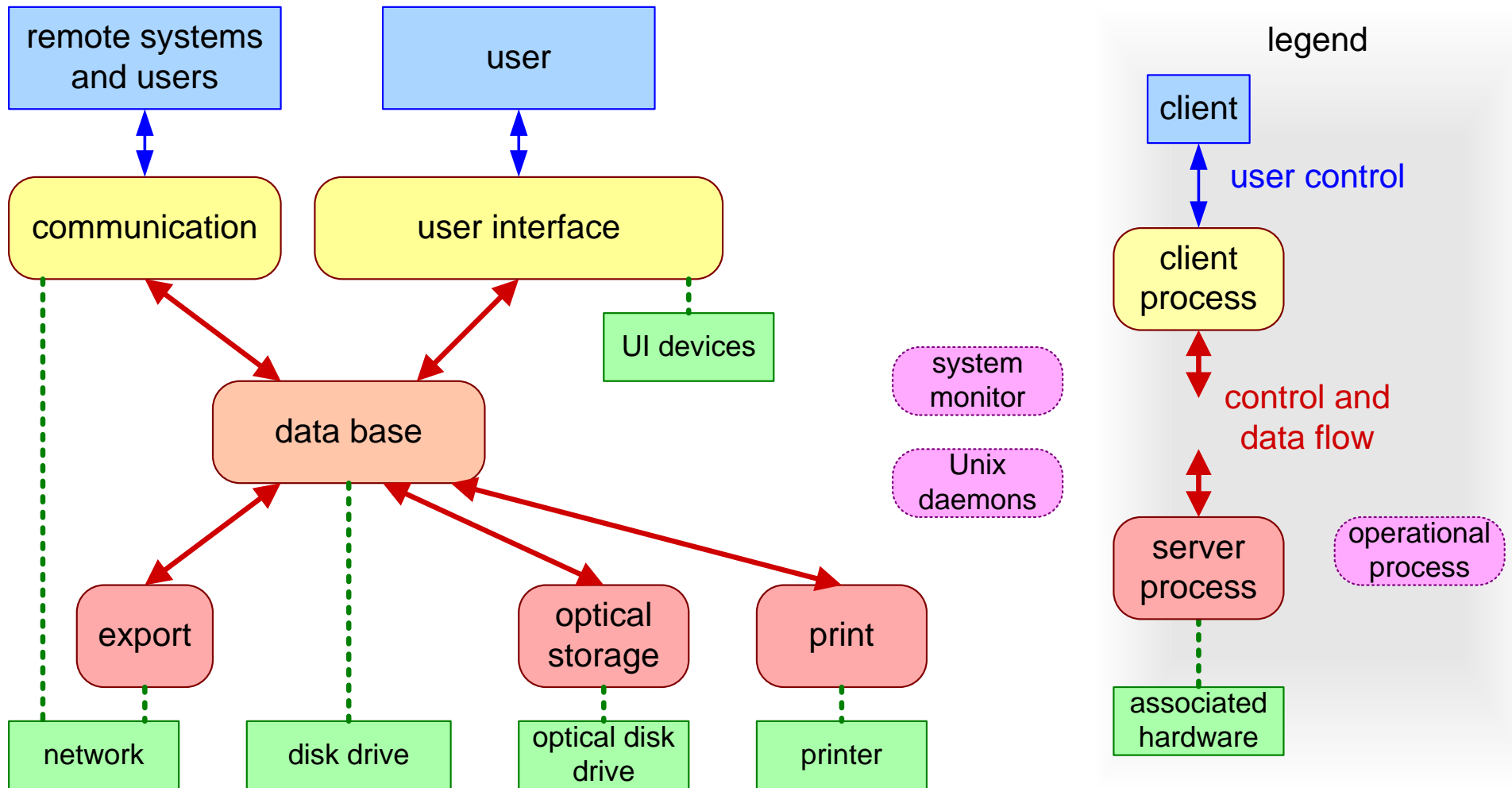
Presentation pipeline for X-ray images



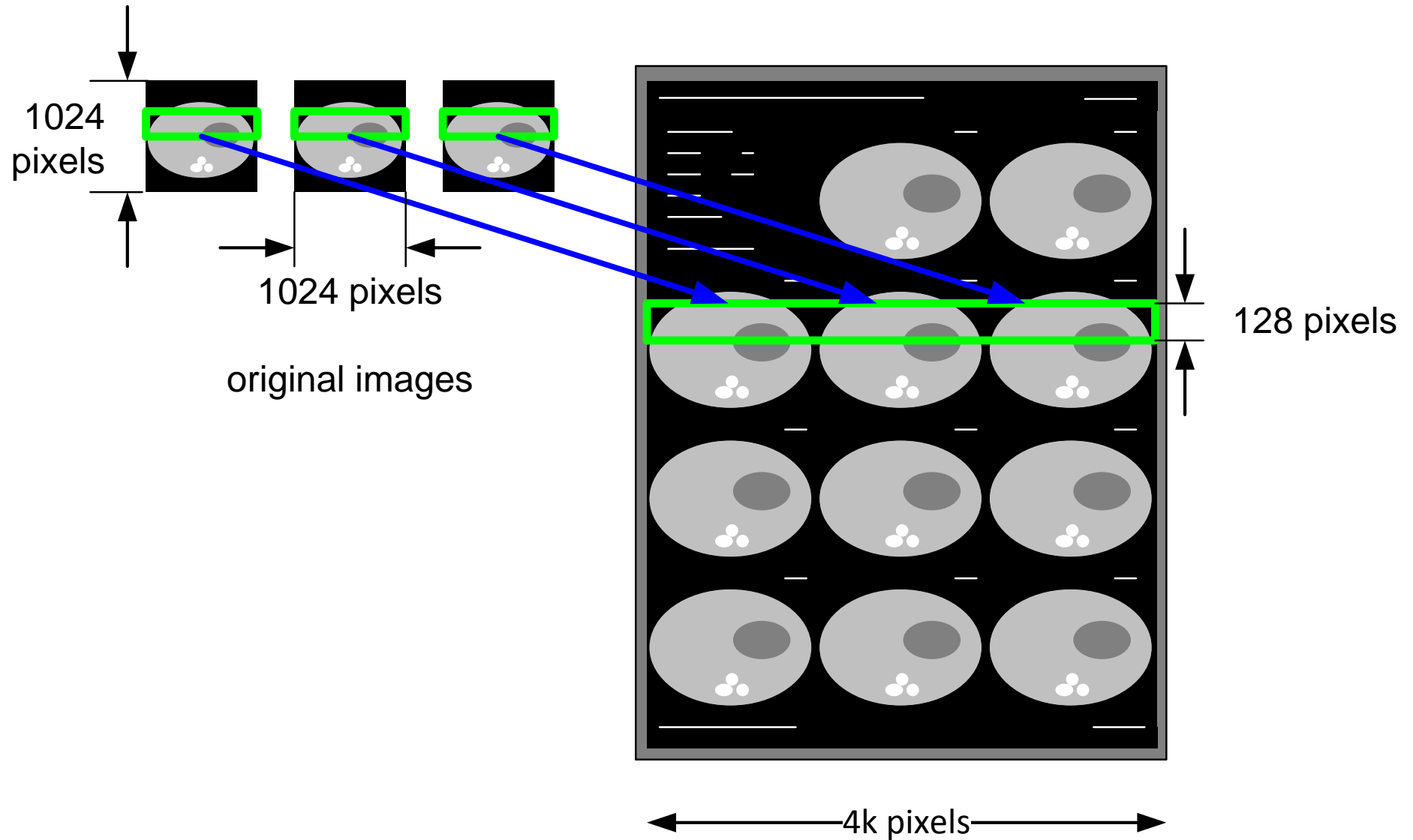
Example of a memory budget

<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

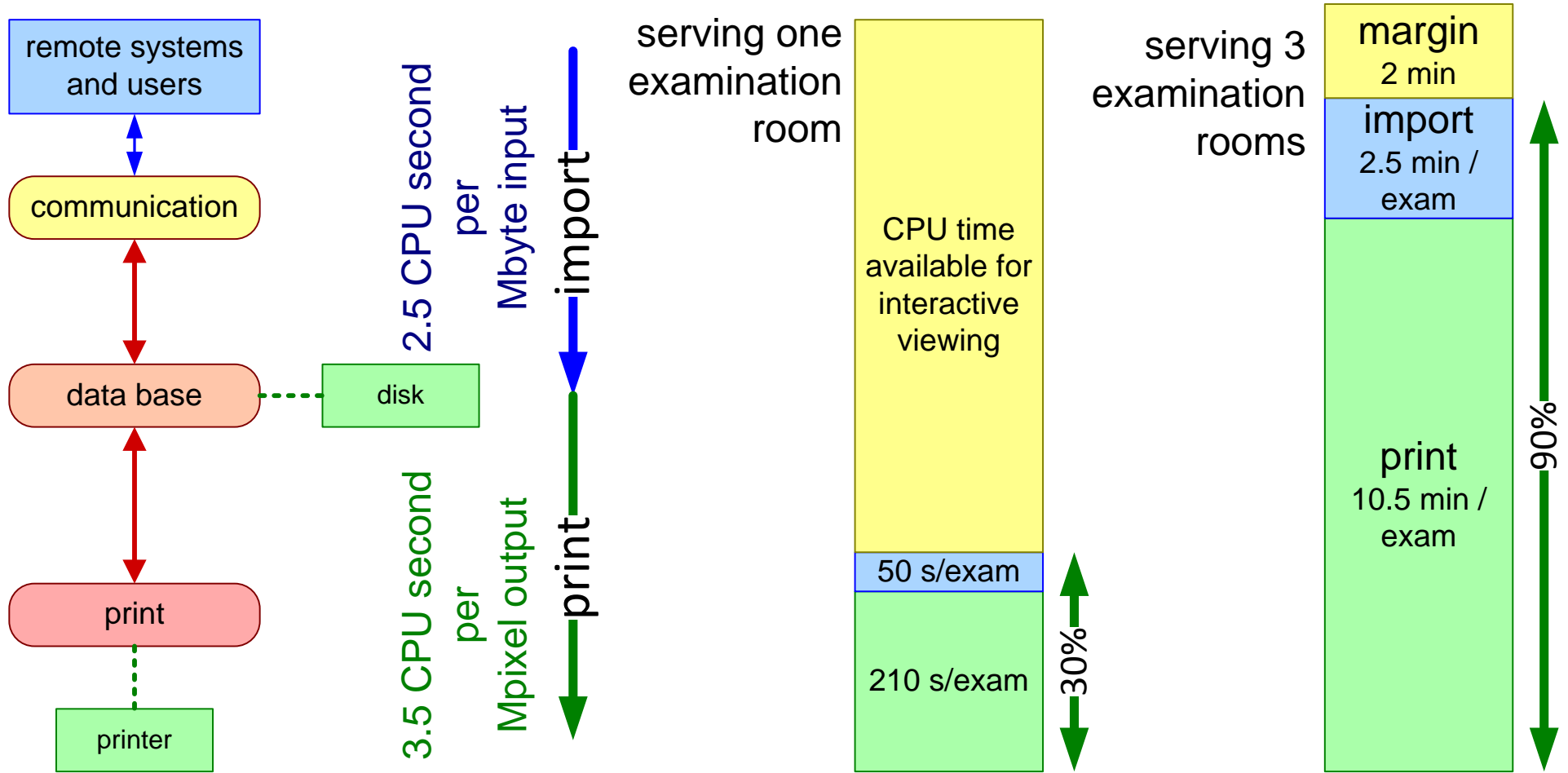
Concurrency via software processes



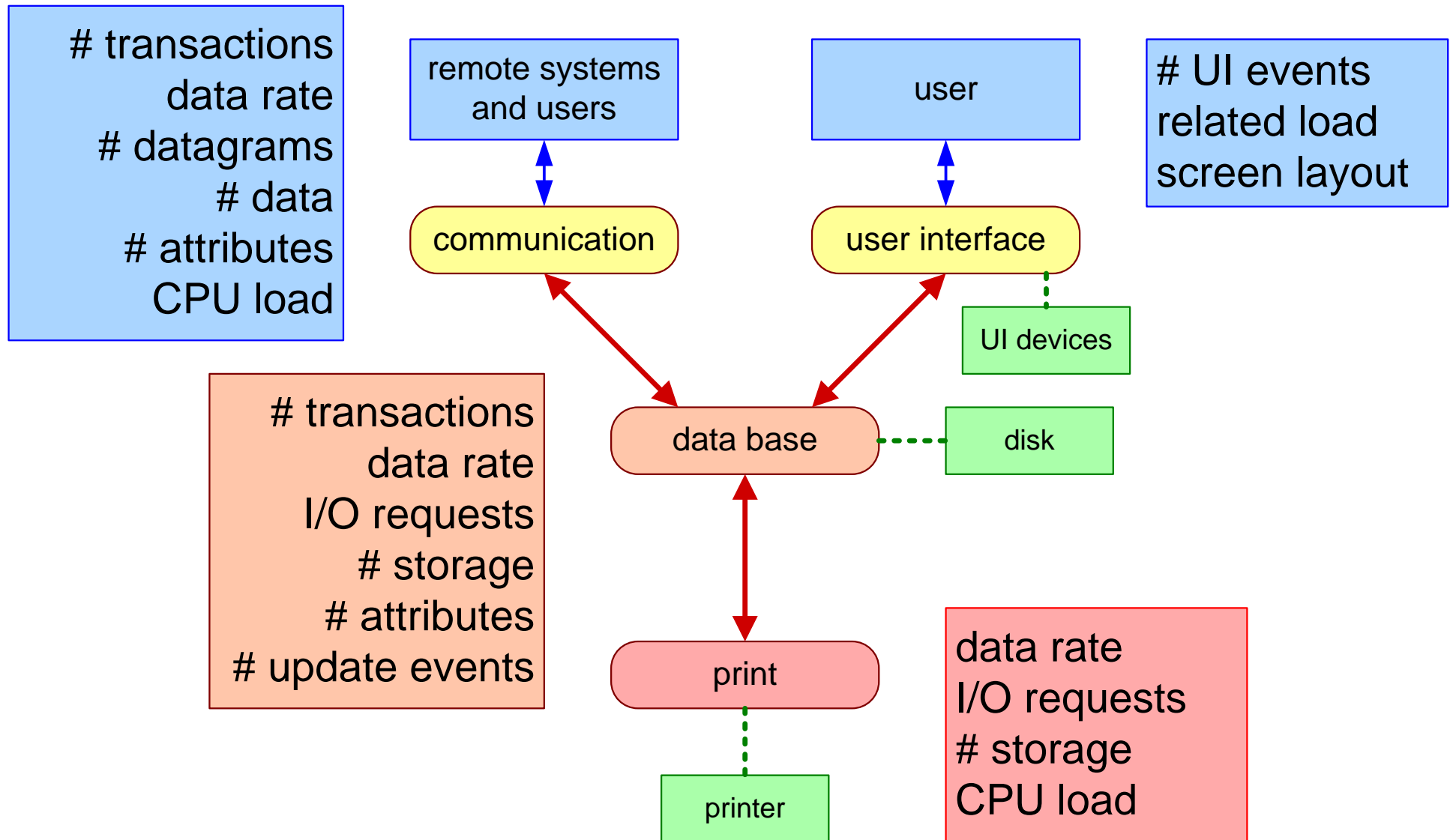
Print server is based on banding



Server CPU load



Analysis in realization view



Criteria for a good story

C_{ustomer objectives}

- accessible, understandable

A_{pplication}

"Do you see it in front of you?"

C_{ustomer objectives}

- valuable, appealing

A_{pplication}

attractive, important

"Are customers queuing up for this?"

C_{onceptual}

- critical, challenging

R_{ealization}

"What is difficult in the realization?"

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

A_{pplication}

- frequent, no exceptional niche

"Does it add significantly to the bottom line?"

A_{pplication}

- specific

F_{unctional}

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