Introduction to Medical Imaging Case Study

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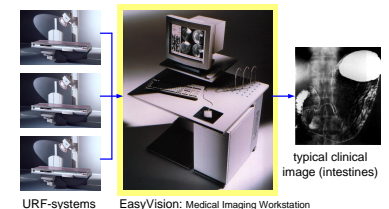e-mail: gaudisite@gmail.com

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Abstract

Easyvision is a medical imaging workstation used to enhance the printing functionality of URF systems. URF systems are used for gastrointestinal examinations. The reduced film usage is a direct economic justification for the use of Easyvision.

The technological challenge of this product is to build it entirely with standard off the shelf hardware components, while the performance and image quality are critical for a successful application. Many technical innovations were introduced to create this product family.
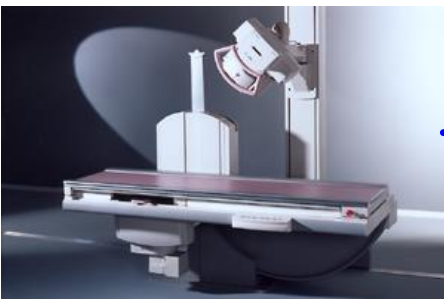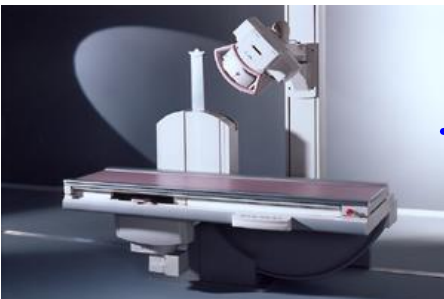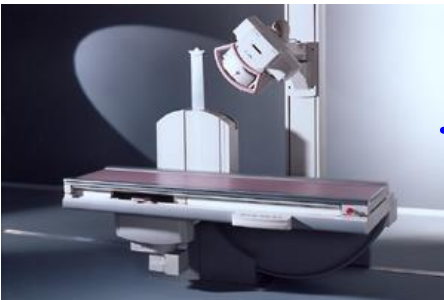
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URF-systems   EasyVision: Medical Imaging Workstation   typical clinical image (intestines)

Easyvision serving three URF examination rooms

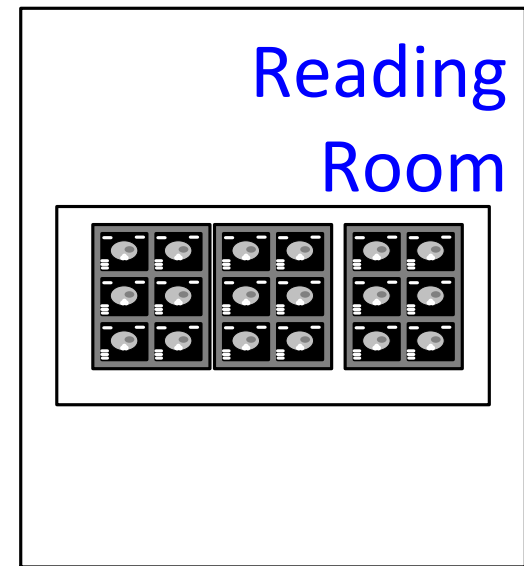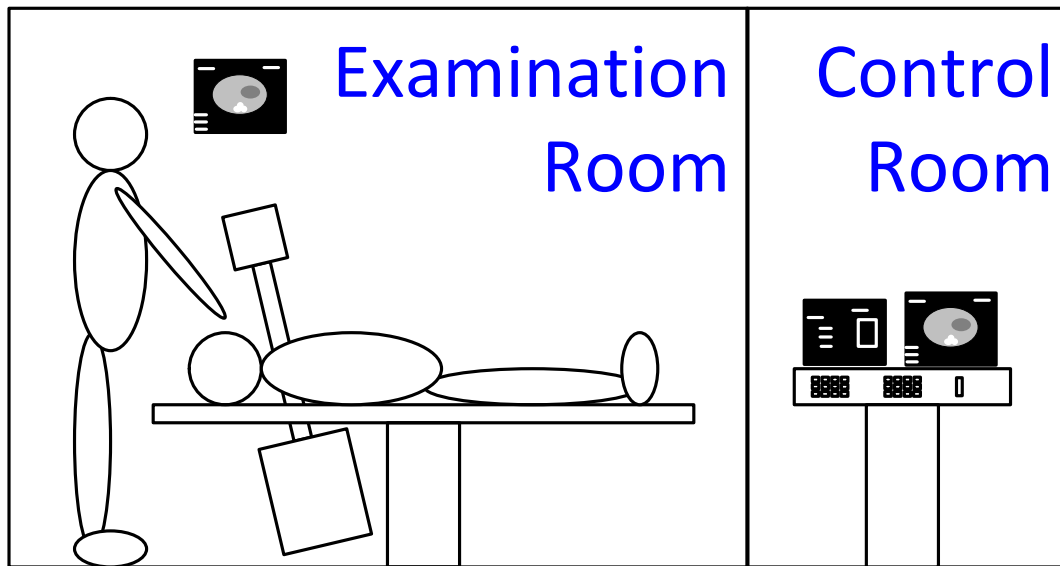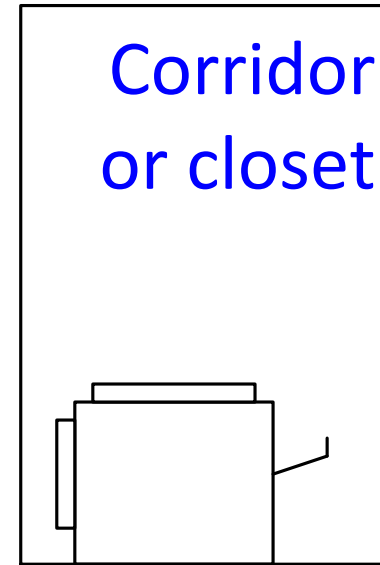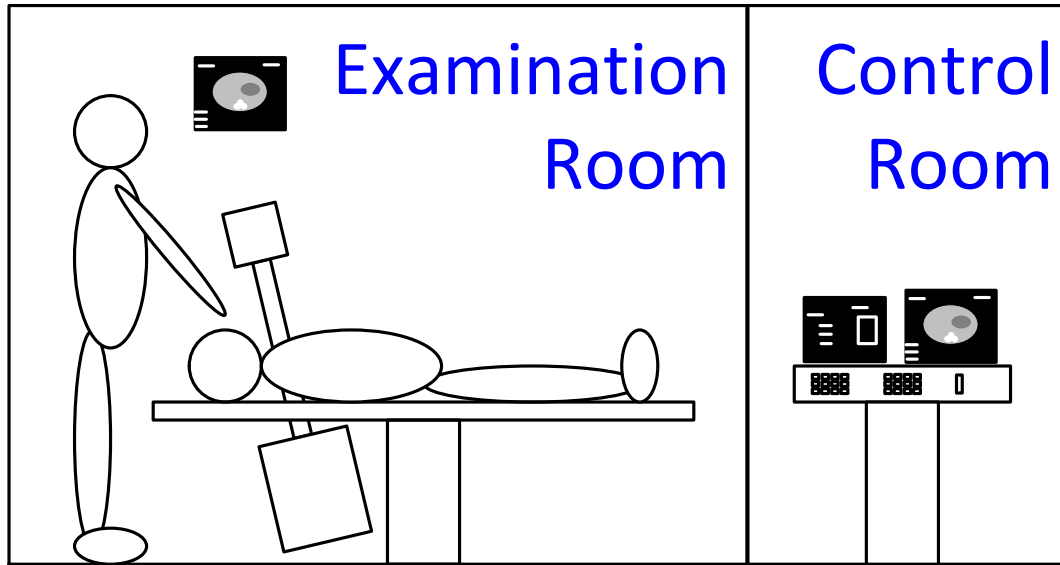URF-systems   EasyVision: Medical Imaging Workstation
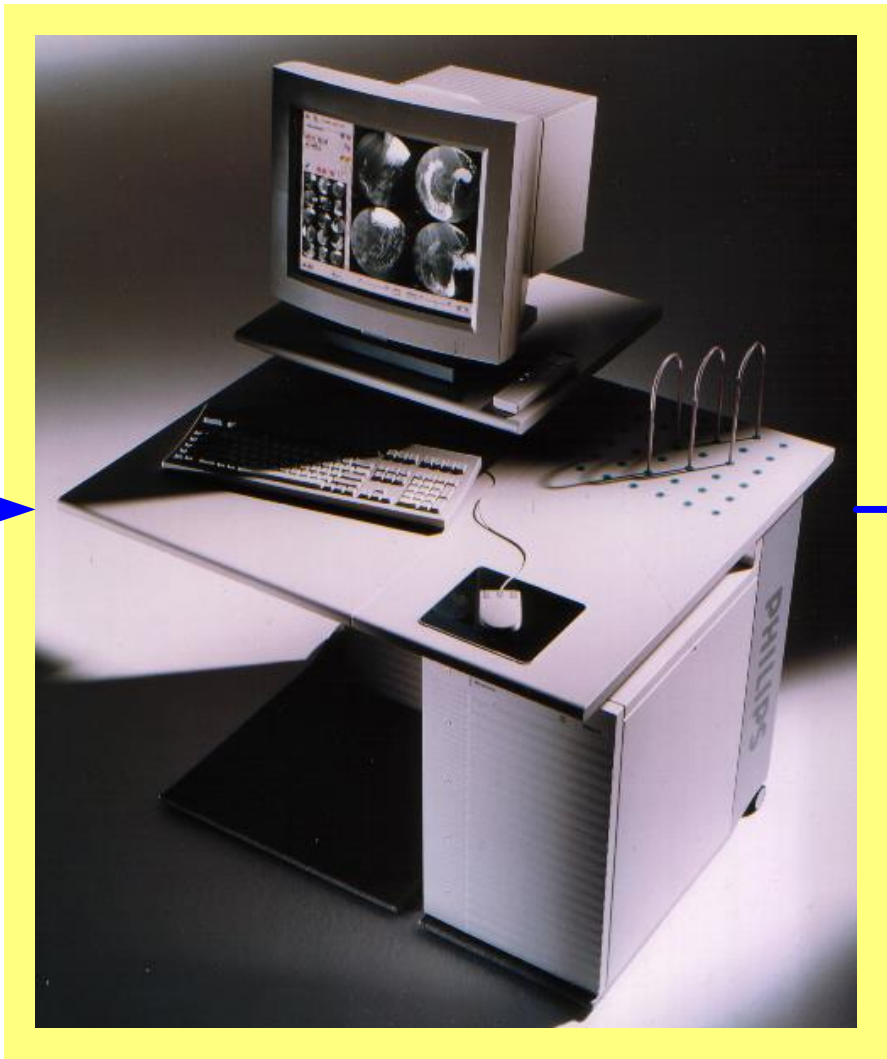
typical clinical
image (intestines)

X-ray rooms from examination to reading around 1990

Examination Room

Control Room

Corridor or closet

Examination Room

Control Room

Reading Room

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XRayRoomsOld

USN   ESI

X-ray rooms with Easyvision applied as printserver

Examination Room

X ray source

detector

Control Room

console

Corridor or closet

printer

Examination Room

Control Room

Reading Room

light box

USN ESI
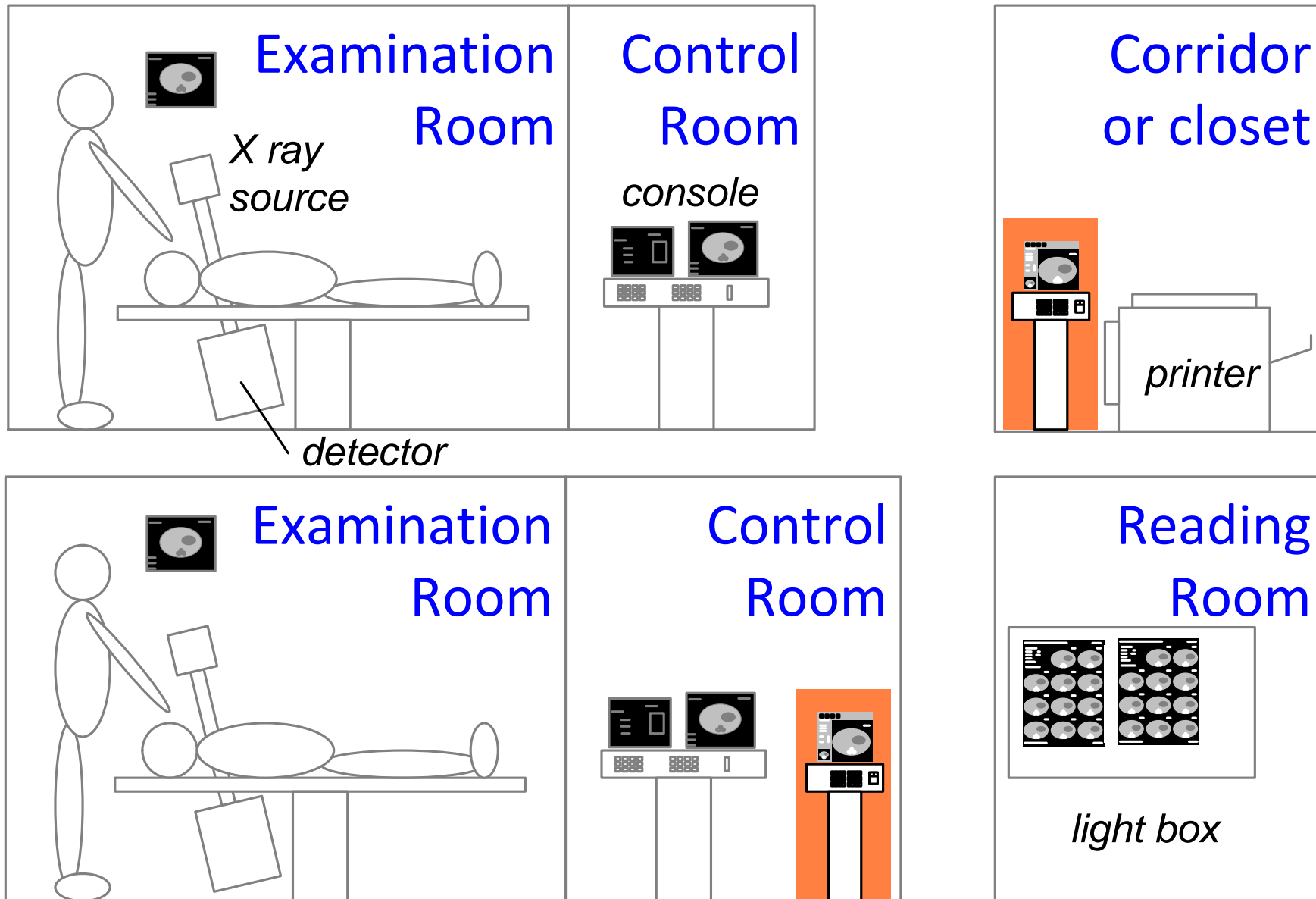
Comparison screen copy versus optimized film
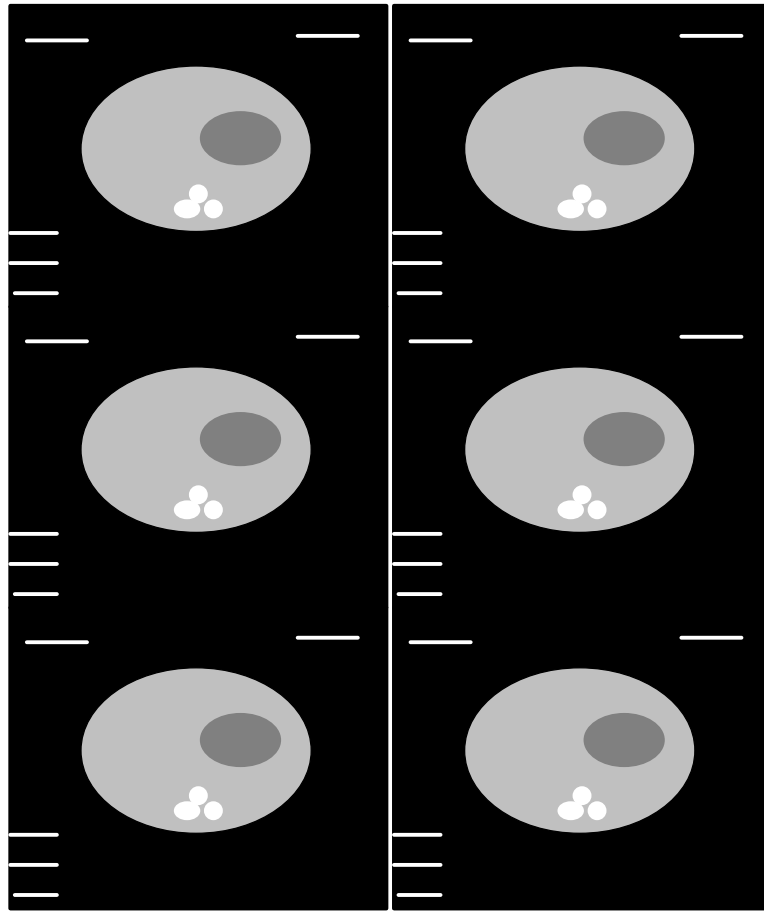
old: screen copy
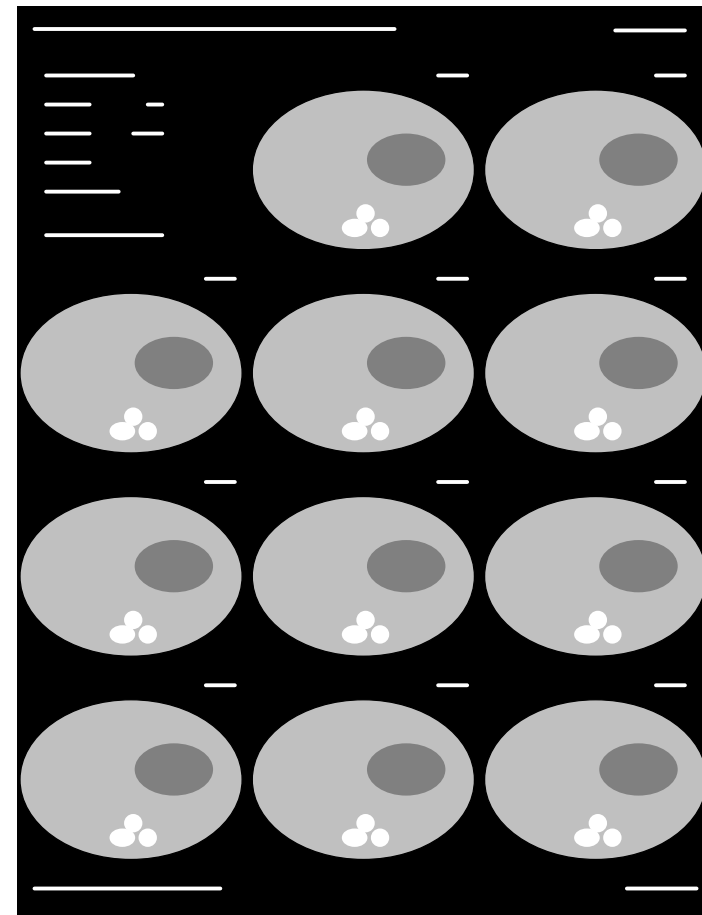
new: SW formatting

20 to 50% less film needed

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Challenges for product creation

ca 1 film / minute
film = 4k*5k pixels

print
throughput

subsecond retrieve
screen = 1k*1k

view
response time

image quality   image processing

tension

product policy:
standard HW
SW "only"

40 MHz CPU
64 MByte memory
10 MBit/s ethernet
1 GByte disk
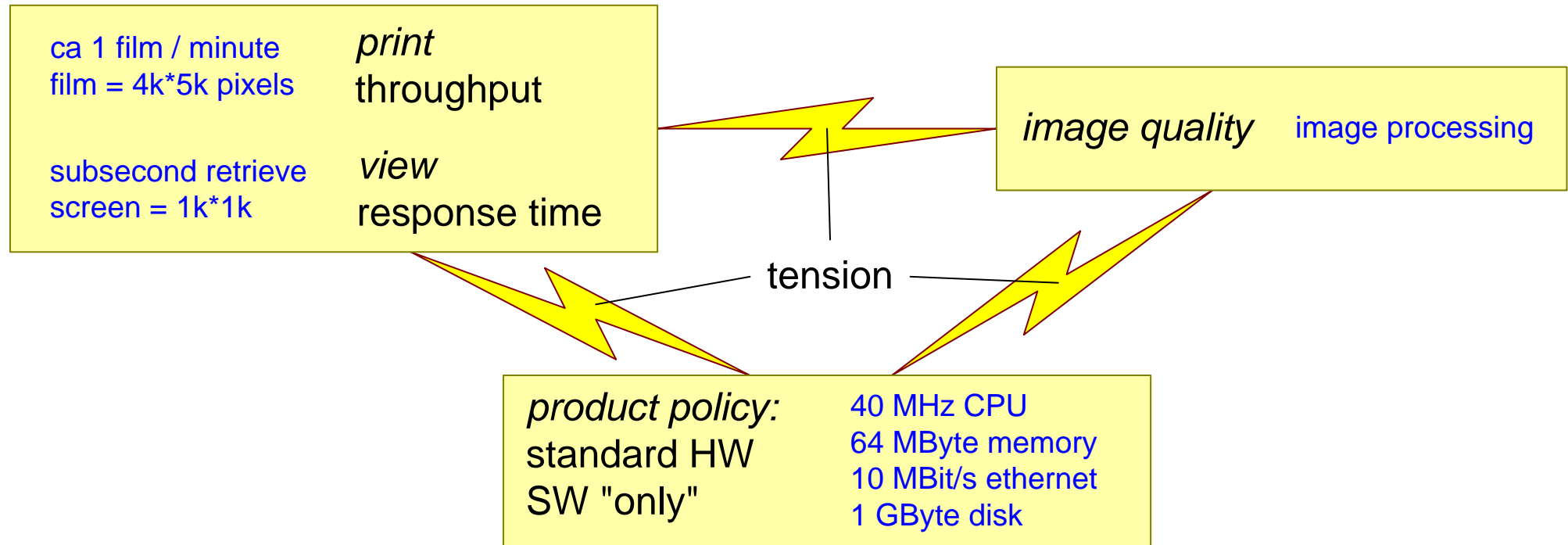
Top level decomposition

Technology innovations
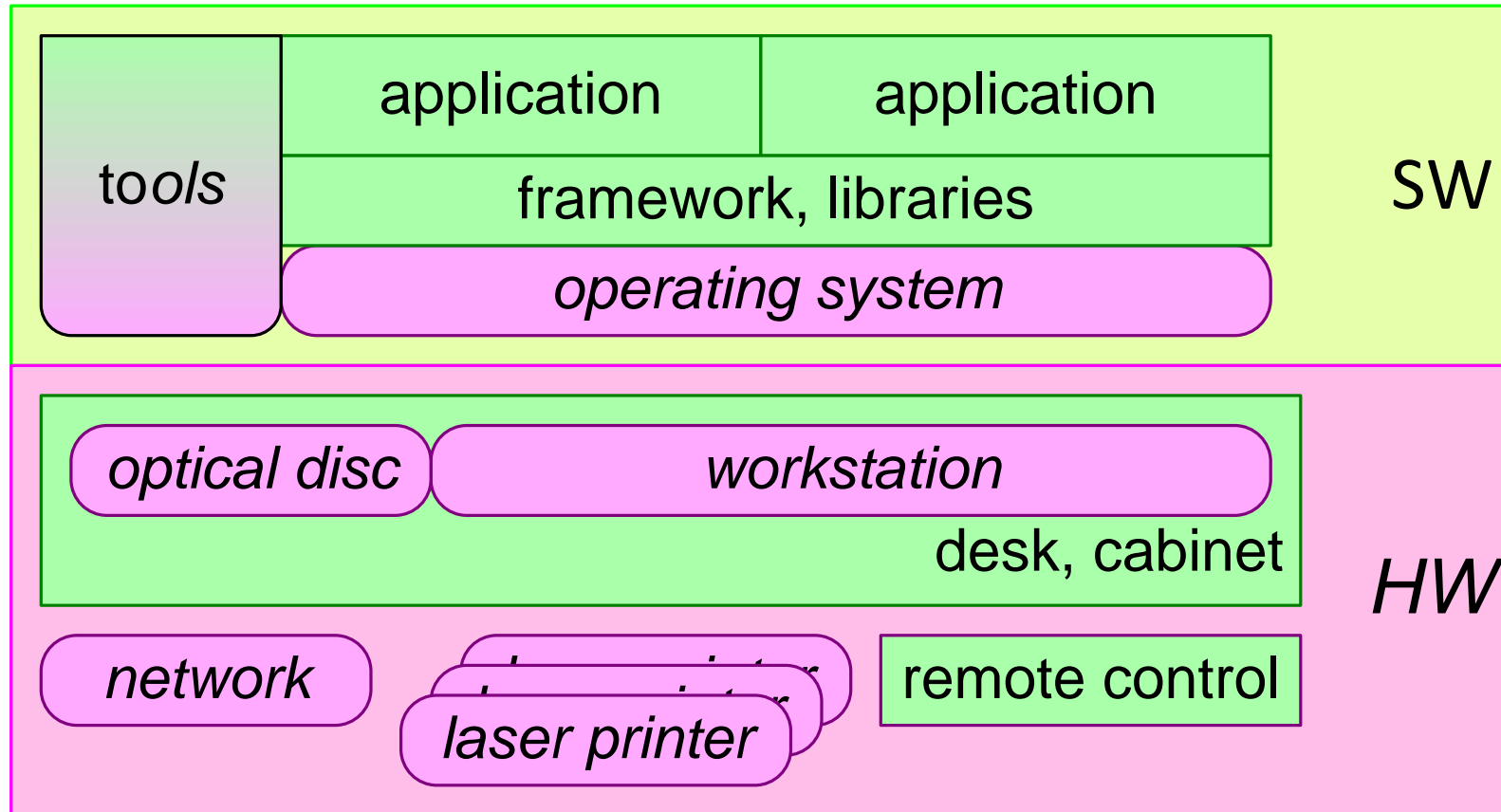
- standard UNIX based workstation
- full SW implementation, more flexible
- object oriented design and implementation (Objective-C)
- graphical User Interface, with windows, mouse et cetera
- call back scheduling, fine-grained notification
- data base engine, fast, reliable and robust
- extensive set of toolboxes
- property based configuration
- multiple co-ordinate spaces

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