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.
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
X-ray rooms with Easyvision applied as printserver

Examination Room

Control Room

Corridor or closet

Reading Room

X-ray source

detector

console

printer

light box
Comparison screen copy versus optimized film

old: screen copy
new: SW formatting

20 to 50% less film needed
Challenges for product creation

**Product Policy:**
- Standard HW
- SW "only"
- 40 MHz CPU
- 64 MByte memory
- 10 MBit/s ethernet
- 1 GByte disk

**Image Quality**
- Image processing

**Print**
- Throughput
- View
- Response time

**Tension**

**Ca 1 film / minute**
- Film = 4k*5k pixels

**Subsecond retrieve**
- Screen = 1k*1k

**Product Policy**: Standard HW SW "only"

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

**SW**
- application
- framework, libraries
- operating system

**HW**
- optical disc
- workstation
- desk, cabinet
- network
- laser printer
- remote control

Legend:
- **tools**
- **SW**
- **HW**
- **make**
- **buy**

Introduction to Medical Imaging Case Study

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IMI 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