Medical Image Management: A Market Perspective

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What the market is facing today...

- PACS today is about
  - How effectively information and images are shared across an health-care enterprise
  - Integration of all the health-care enterprise aspects
    - Wide use of DICOM and HL7 (integration profiles)
  - The term PACS is continously changing its meaning
    - Picture Archiving and Communication concept is too limited
    - Information sharing involves a greater number of elements than just “pictures” and it’s a complexity increasing process that takes in consideration several other aspect than just “archive” and “communicate”

What the market is facing today

- Increasing multi-vendor involvement in standards usage
  - DICOM
    - Managed by a balanced and supervised effort of a group of Users and Vendors
      - Users define the scope
      - Vendors define how to reach the goal
    - DICOM is a critical component of a PACS
      - Implementing DICOM requires skill, expertise and large multi-vendor test-beds
  - HL/7
    - Allows integration with other Hospital-wide systems
  - Information integration profiles
    - Which standard for what purpose by who

A continous evolution in needs

- Once pulled together, the information must be communicated and shared across the enterprise continously
  - The enterprise continues to grow, expand and change
    - Complexity of communications across information systems
  - Communication of information is a continual journey rather than a destination
  - Caregivers want to work more efficiently and rapidly to meet the demands of their organizations and patients
    - To improve the clinical decision making process, caregivers need access to all relevant patient information

The PACS nowadays

- PACS today are the result of the convergence of both technological and economical factors
  - Actual developments are
    - expanding the PACS concept
    - taking benefit of the growing use of
      - Standards
      - ICT technology
        - » computers and network speed, archival devices, etc.
      - Integration
      - Quality Assurance

PACS: Technology aspects

- Information and Communication Technology
  - Increasing computing and networking capacity
    - On the other hand, the average complexity of each study is increasing
      - Average is now 100MB per study
      - Multimodality studies
      - Monomodality study with one or more prefetched studies
  - Decreasing cost of digital storage devices
    - The actual media cost per GB stored on optical tape can get as low as €0,5

PACS: Economic aspects

- Serious concerns from health-care management over cost control
  - TCO of equipment has been virtually uncontrollable
  - To control TCO
    - Paradigm shift from the “own the equipment” concept to “pay as you go” concept
    - ASP
- Cost-effectiveness of use
  - Information availability in a consistent integrated context

What is the "feeling" around…

- PACS actual average worldwide satisfaction rates
  - <u>81%</u> of users are satisfied or very satisfied
  - <u>65%</u> of users assert it is really cost effective
  - <u>97%</u> of users recommend PACS implementation to other institutions
- The distribution percentage of the images outside the radiology department is 85%
  - Technique of dissemination
    - <u>58%</u> via DICOM (stable)
    - <u>18%</u> through Web-based tools (increasing)
    - <u>9%</u> through proprietary protocols (strongly decreasing!)

Source: Journal of Digital Imaging, Vol 13 No 4, Nov 2000

What is out there…..

- Several medium to large radiology department have now successfully implemented PAC system across Europe
  - Use in clinical routine practice
  - On 100% of PACS installed in Europe
    - 5% are in Small hospitals (0-199 beds)
    - 12,5% are in Medium hospital (200-499 beds)
    - 82,5% are in Large hospitals (> 500 beds)
  - PACS have a yearly growing rate of 39%
  - PACS cover most used modalities
    - CR, MR, CT, XA, RF, NM, US

Source: Journal of Digital Imaging, Vol 13 No 4, Nov 2000

What is out there….

- Global actors in Europe include
  - GEMS, Marconi Medical Systems, Siemens Medical Systems, Agfa, Eastman Kodak, Philips Medical Systems
    - Installed base ranges: 50 to 100 sites each
- Smaller but definitely active players
  - Sectra Imtec, Applicare (now GEMS), Image Devices, Tiani, Teinos/ATS, Etiam, Medical Insight, Rasna Imaging Systems, Chili Software, AISoftw@re (…)
    - Installed base ranges: 10 to 50 sites each
- Actors who have sales through OEMs
  - Sectra Imtec (Philips), Image Devices (Sterling and Marconi Medical Systems), Rasna Imaging Systems (GEMS, Esaote, AMIS, Teinos/ATS, Medical Insight and Marconi Medical Systems)

Beyond integration…

- Quality Assurance
  - all the physician activities need to be improved
  - integration means bringing together different systems
    - This brings mulitple angles (each vendor has its own)
    - This affects
      - How images are displayed across different systems
      - How reports are created and displayed across different systems

Beyond integration….

- Image presentation
  - need to define methods and procedures to obtain a consistent image presentation
- Report creation and storage
  - need to reach an interpretation process which produces standard and comparable reports