

# VIRTUAL RADIOLOGY

ON THE

# EUROPEAN LEVEL

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Belgium



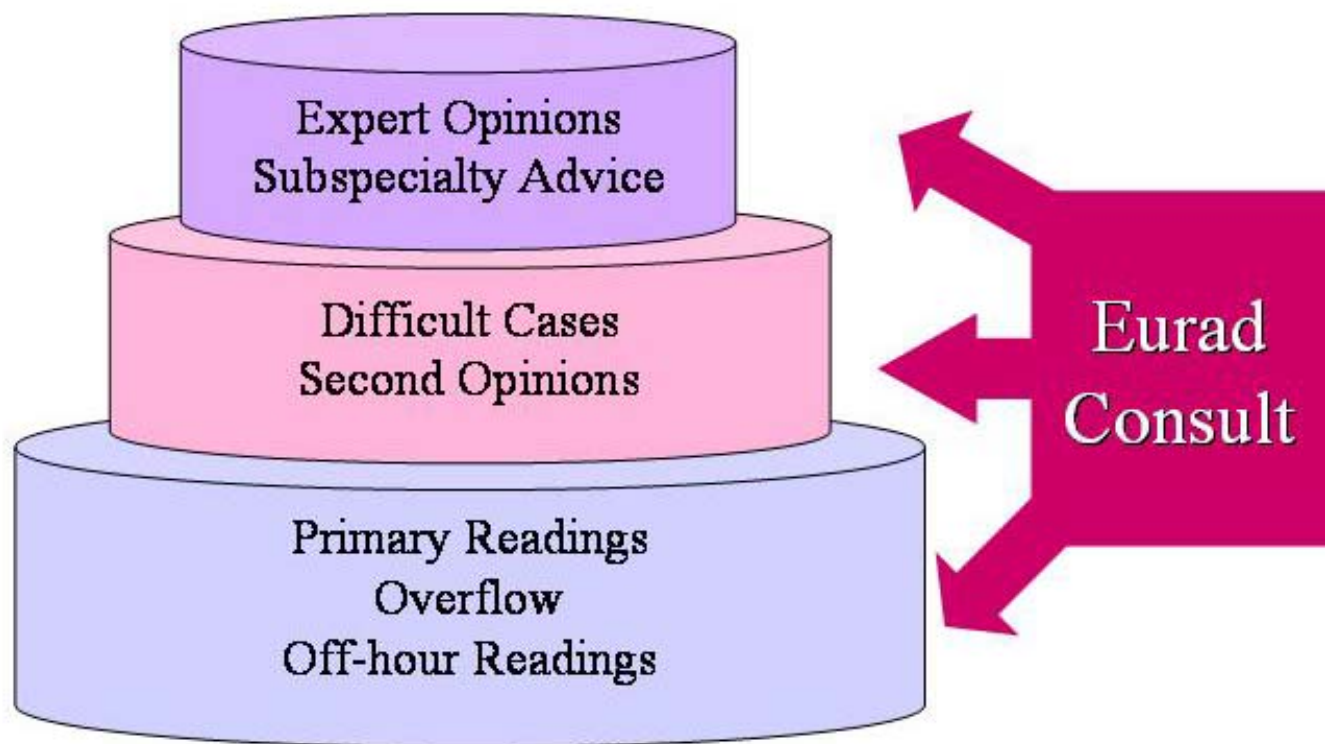
# Radiology in Europe

- The European commission's view is that medicine is a service industry
- The goal of of the EU is that services should be provided across the EU without restrictions
- The challenge for the EAR is to ensure for the patient that high standards of care are preserved.

# A Business Model

- Technical infrastructure
- Transmission protocols
- Security, privacy
- Liability
- Credentials of the radiologists

# Service Levels



Implementation of  
Teleradiology Services  
for Optimisation of  
Workflow  
Primary Readings

# Why Teleradiology

- To guarantee a continuation of activities in your department, or even
- To increase your radiological productivity
- To guarantee an acceptable report turnaround, or even
- To improve the report turnaround

# When Teleradiology?

- Shortage in staffing
  - Permanent: worldwide recruitment problems
  - Temporarily:
    - » Holiday
    - » Illness
    - » Training program
    - » Courses, meetings
- Work overflow, Excess volume
- 24/24-7/7 coverage

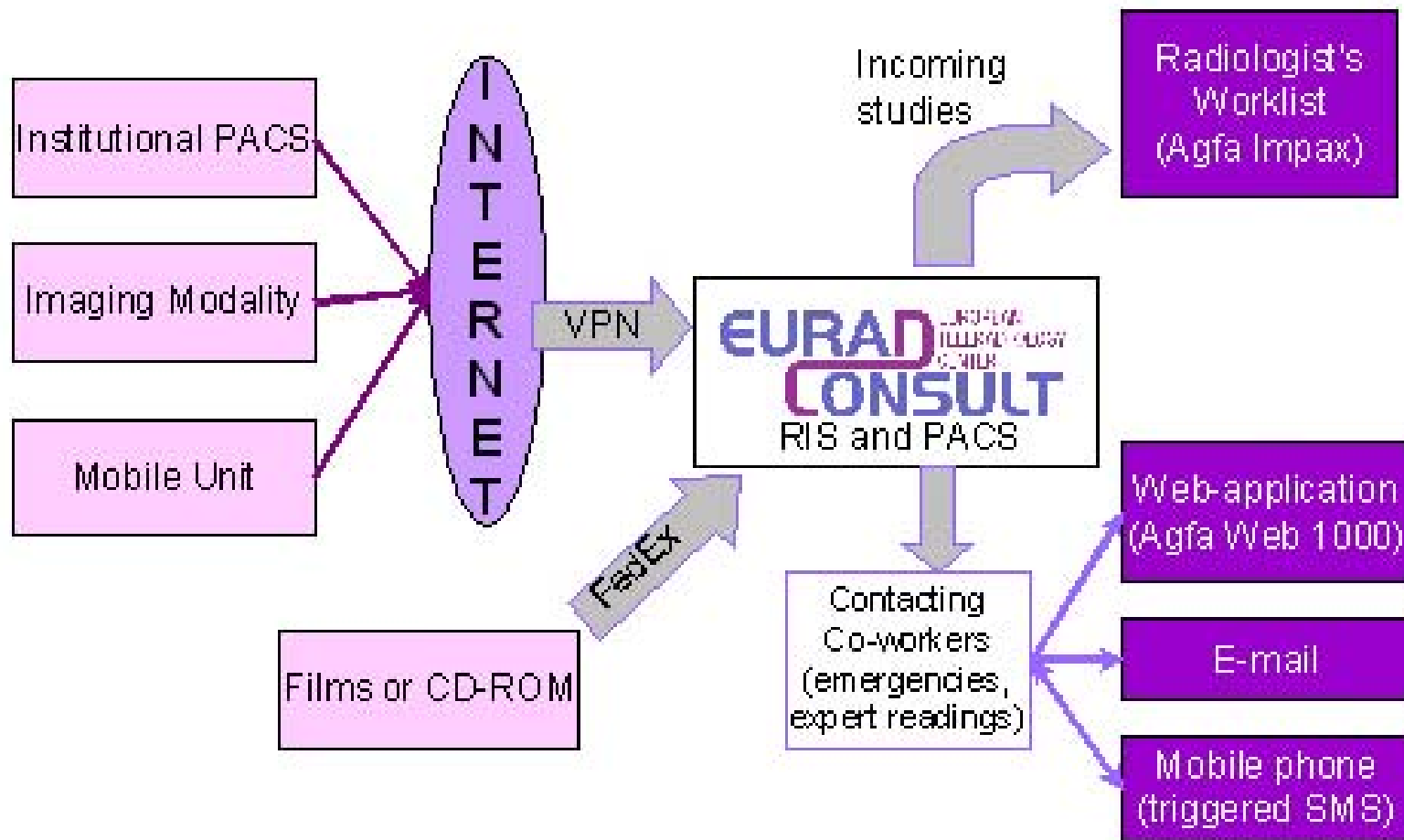


# Can teleradiology bring advantages to healthcare organizations?

- Ad hoc teleradiology:
  - Radiologist at home/Exotic locations
  - Preliminary read/Wet read
  - Web based
- Teleradiology centre:
  - High quality image interpretations in real time
  - Complex cross sectional studies
  - Final reports
  - Mature PACS

# Technical infrastructure

# Examinations



# Order Entry

Request



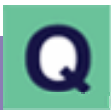
Qdoc

External call  
E-mail / Fax  
Image file in Impax

Order  
Communication

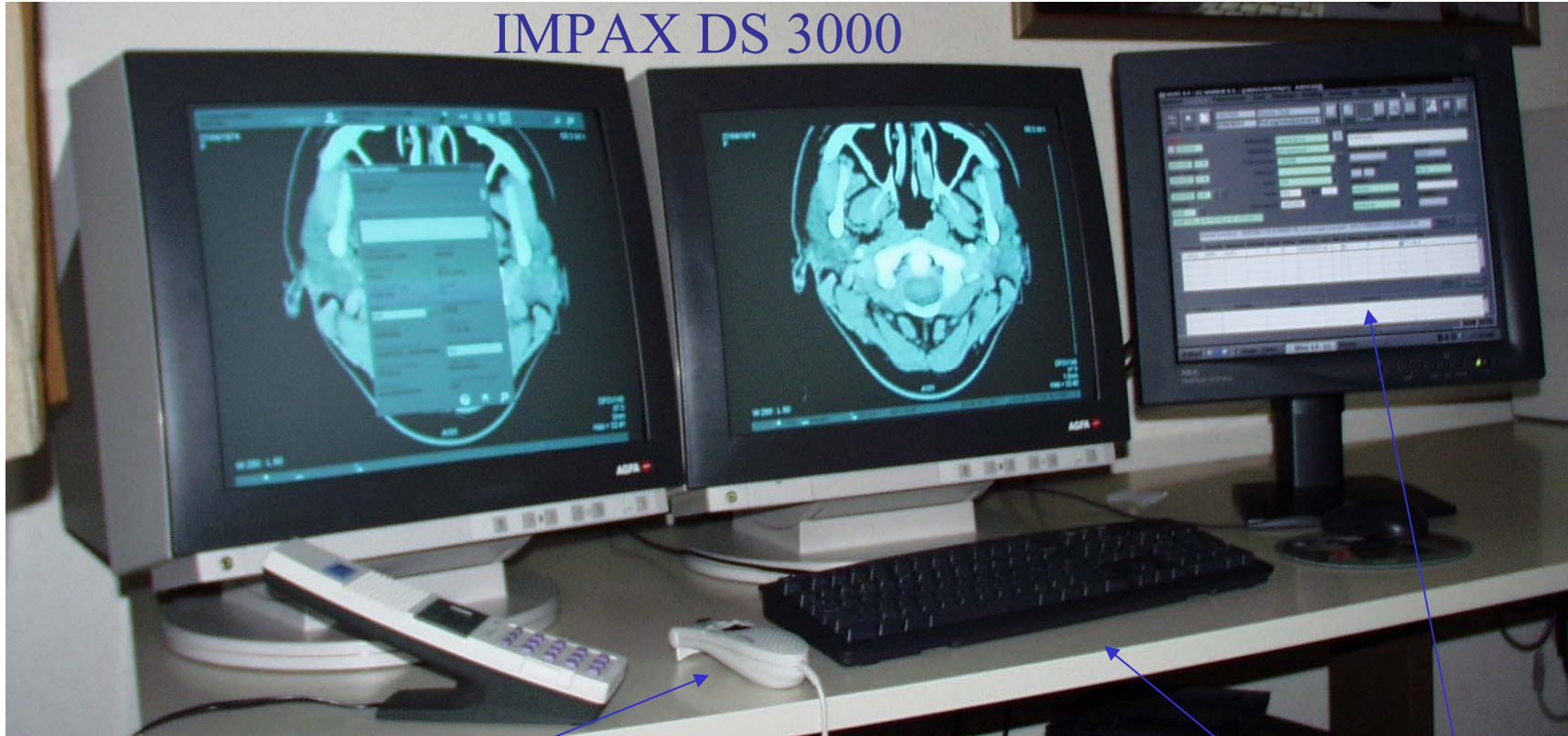
RIS

Order filled



# Reporting

IMPAX DS 3000



Speech recognition

Desktop integration:

Access to RI

1 mouse & 1 keyboard

# 3D

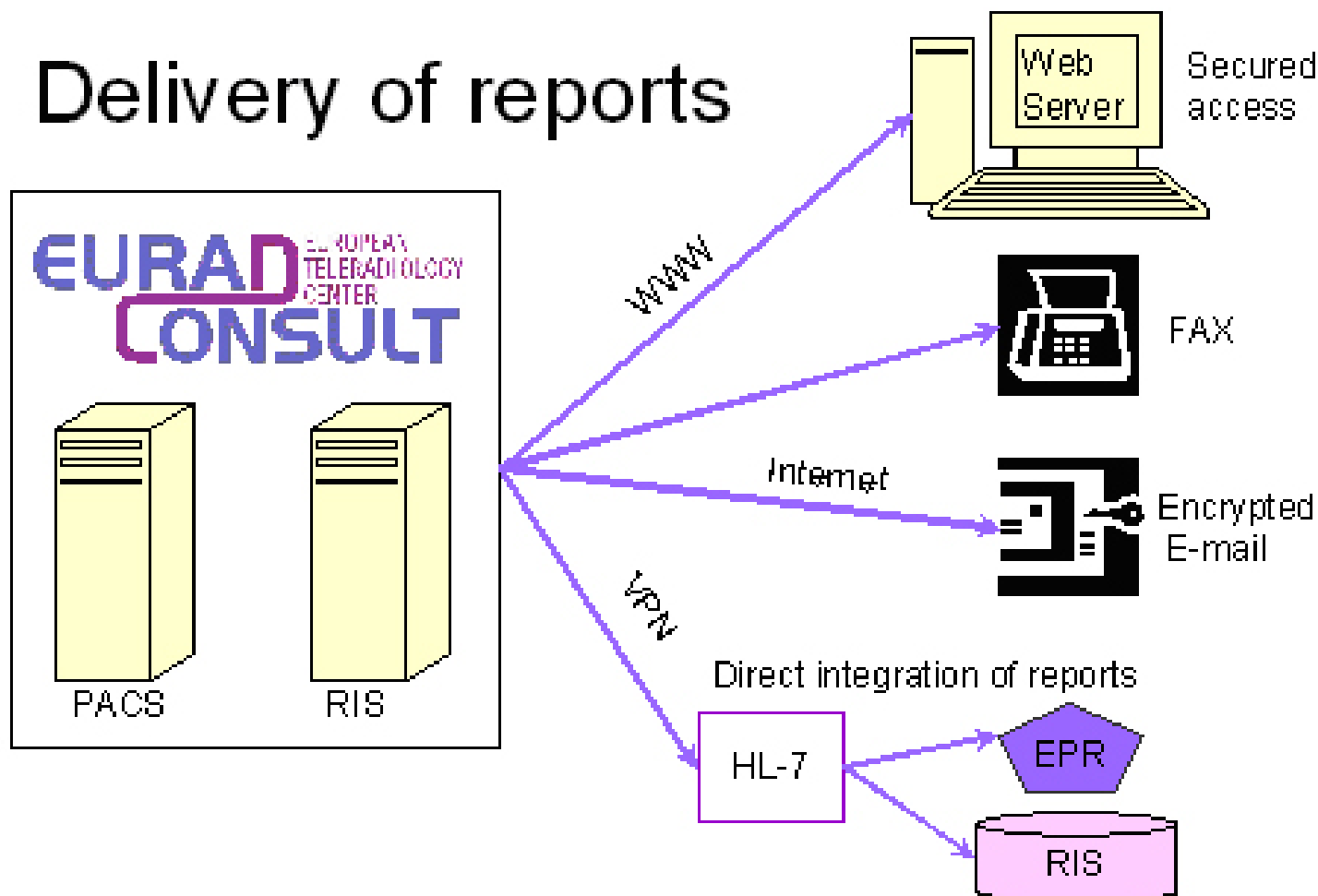


-MPR

-MIP

-Volume Rendering

# Delivery of reports



# Privacy

- EC Directive 95/46/EC:

*Personal data shall not be transferred to a country or territory outside the European Economic Area unless that country or territory ensures an adequate level of protection for the rights and freedoms of data subjects in relation to the processing of personal data.*



# Privacy

The Joint NEMA/COICIR/JIRA Security and Privacy Committee presents a logical allocation of rules that can help to meet the legal obligations under HIPAA in the US and similar regulations internationally.

# Transmission

- It assumes that intranets connected to public networks are protected by suitable technology, such as properly configured firewalls and intrusion detection products. (VPN, SSL, IPSEC etc.)
- LAN to LAN VPN or Peer to Peer VPN eventually authentication token.
- High bandwidth connections, at least ADSL or cable

# Security

- Security rules:
  - Data confidentiality
  - Data integrity
  - Provision of service
  - Individual accountability
  - Non-repudiation
  - Immutability
  - Configuration management

# Liability

- Radiologists must be licensed for the referring country.
- Medico-legal insurance for each individual country

# Credentials of the radiologists

- Training in center of excellence
- License
- Country registration:
  - The Netherlands: BIG
  - UK: GMC
- Accreditation provided by Medical Advisory Board

# On-site control

- On-site presentation of radiologist
- Test cases sent from referring radiological dpt
- On-site approval of reports

# Inspiring Confidence

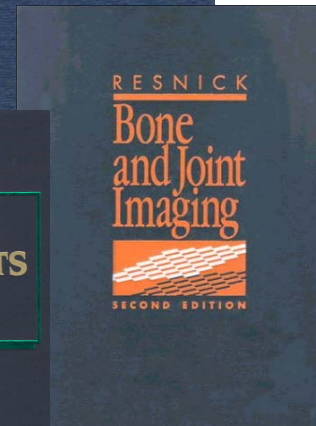
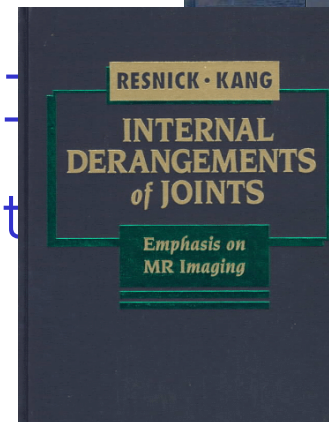
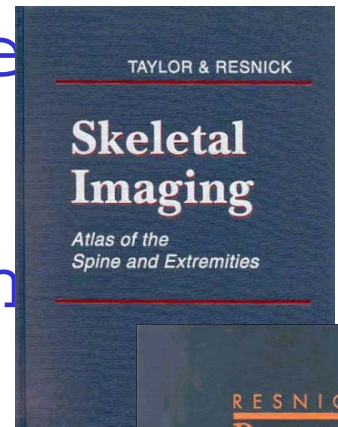
- Partnership local radiologist and teleradiology centre.
- Permanent communication methods:
  - On line RIS link request acceptance
  - Tele conference
  - Internet phone
  - Mobile phone
- Guaranteed Report Turnaround.
- Regular participation at on-site staff meetings
- Evaluation of performance in practice:
  - Quality check/feedback/monthly reports

European Teleradiology  
Network for Expert Readings  
and second opinions.



# Definition of Expert Opinion

- “the guy who wrote the book”
- internationally renowned
  - Author of books
  - (Most) cited in publications
  - Considered as an authority



# Who needs an expert opinion?

- Clinicians/radiologists confronted with
  - Very difficult diagnosis
  - treatment options
  - ? transfer to tertiary centre
- Patients with serious/uncommon disease
- Medico-legal:
  - Malpractice, fraud, liability

# Who generally provides expert opinions?

- Subspecialty radiologist
- Most often academic staff members
- Usually not structured / no infrastructure
- Usually no revenues
- Up to 20% of daily volume



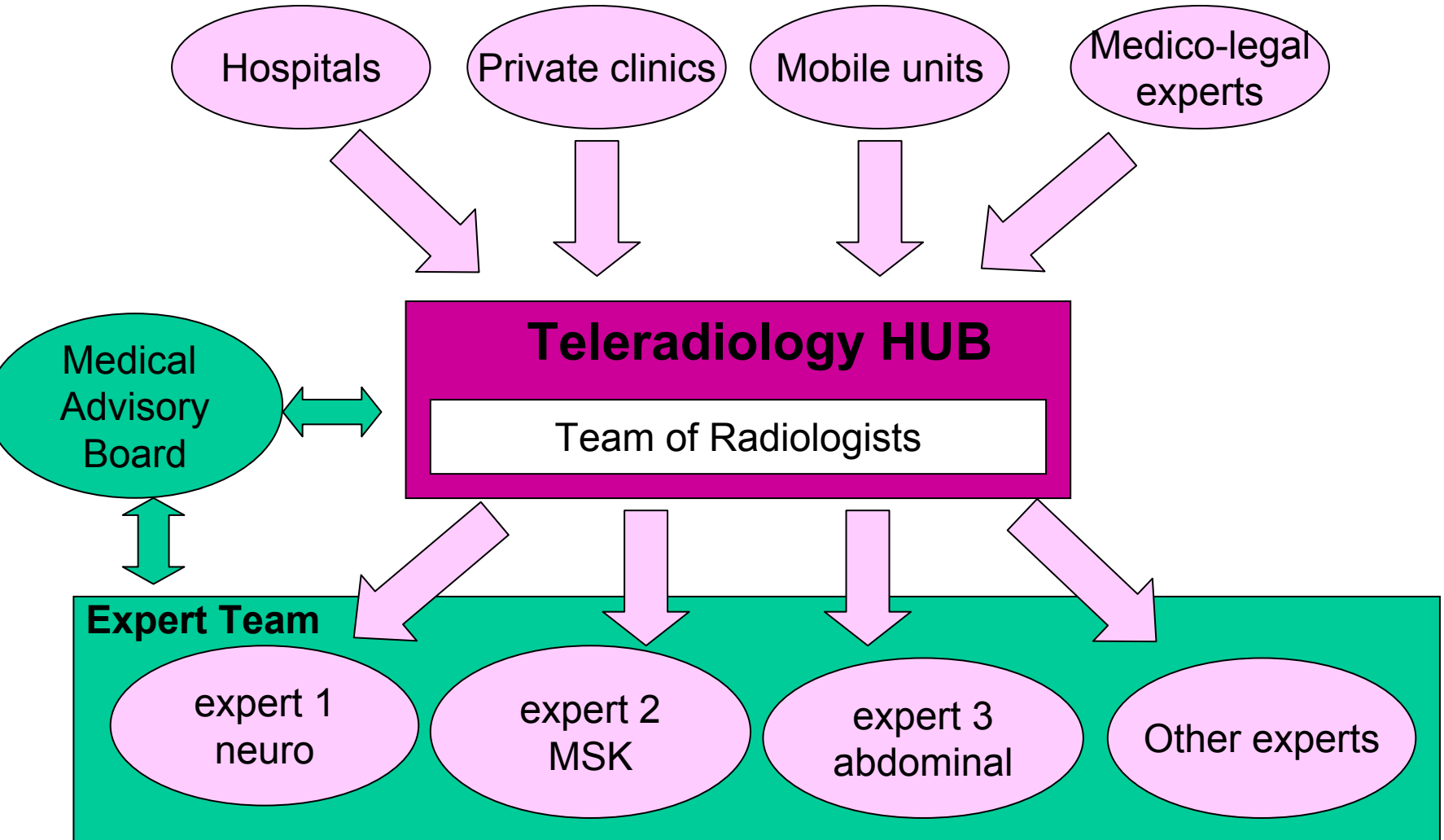
# Model for Expert Opinions

- Teleradiology: needs *careful planning & know how*
- “Teleradiology Hub” (TH)
  - staffed with team of radiologists
  - Centralises “difficult cases”
  - has established network with “guys who wrote the books”

# Model for Expert Opinions

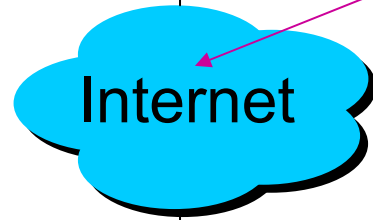
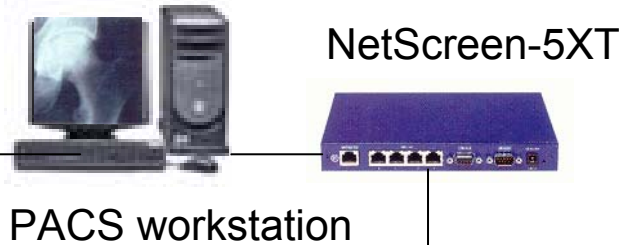
- Radiologist handles and prepares cases for transmission and reading
- Functions as a “filter” and coordinates transmissions

# Model Eurad Consult

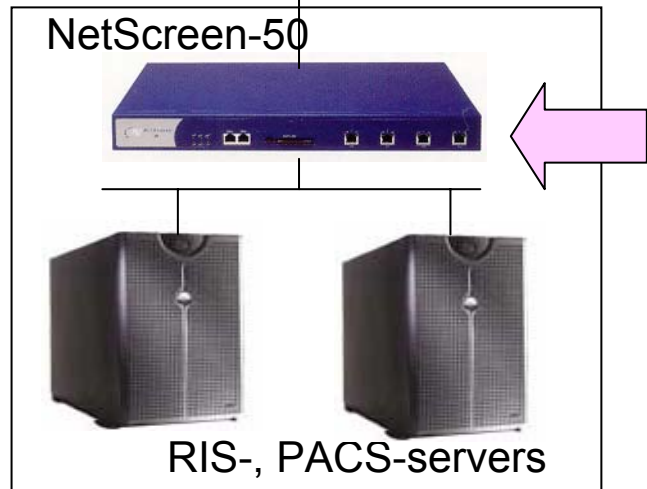


# Example of infrastructure

Requesting physician



Secured VPN-tunnel using the Internet with (3DES) encryption



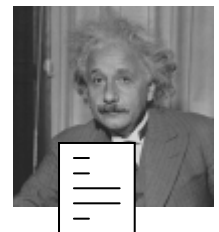
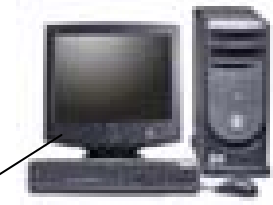
TELERADIOLOGY HUB



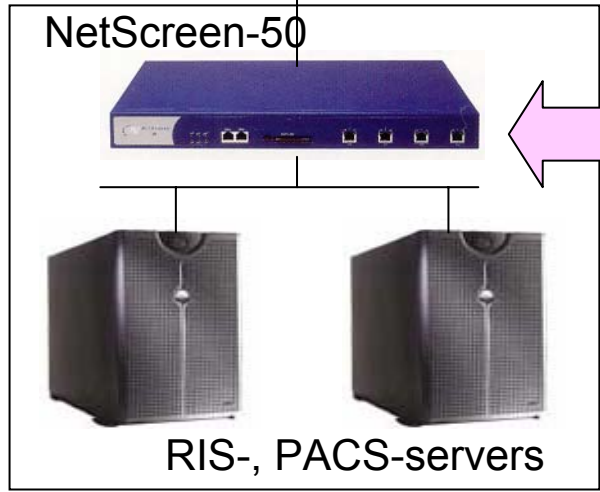
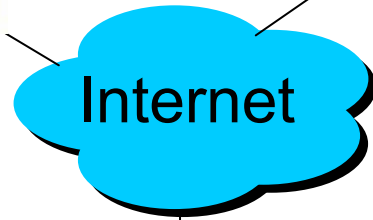
Requesting  
physician



NetScreen-5XT



PACS workstation



**TELERADIOLOGY HUB**





# Rationale for Teleradiology Hub

- Only 1 address to remember & to connect to
- Only 1 VPN between client and TH to reach network of subspecialty experts
- TH establishes all other network connections

# Rationale for Teleradiology Hub

- TH can assist in selecting most appropriate expert reader
- Communication facilitated through direct contact with radiologist; lower threshold

# Role of Teleradiology Hub

- Takes care of contracting, administration & billing
- Takes care of contracting & legal issues (liability insurance)
- Better control over workflow:
  - distribution of larger volumes over several readers
  - Better distribution in time for readers
  - Guarantee of continuity in case of absence

# Conclusion

- Following our business model a Teleradiology Service should be able to improve the workflow of a radiological department.
  - Teleradiology as the virtual extension of your practice
  - Teleradiology as an insurance
  - Teleradiology as recruiting a (virtual) radiologist

# Conclusion

The shortage of radiologists will persist, forcing radiology groups to become more efficient.

Turf battles will intensify. Some radiology groups will cede turf to other physicians because they are too busy to provide certain services; other groups will lose turf because they do not have the appropriate expertise in house

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J Am Coll Radiology 2004



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