



UniversitätsKlinikum Heidelberg

# Development of a web portal for the exchange of medical information using Open Source Software

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# Agenda

- Background
- Objectives
- Methods and Materials
- Results
- Conclusions



## Background

- We have been running a teleradiology network within the Metropolitan Rhine-Neckar Region for six years now
- Objective of this network is the exchange of medical image data
- Growing network for more than six years
- About 100 partners
- Important partners: University Hospital Heidelberg and University Hospital Mannheim
- Project funded by Ministry for Social Affairs Baden Wuerttemberg



# Objectives of the project

## Expansion of the existing network

- Area-wide expansion within the region
  - Connect further partners
  - Development of a web portal for the exchange of medical information to integrate small partners like general practitioners
- Interdisciplinary expansion
  - Add other disciplines e.g. cardiology, neurology



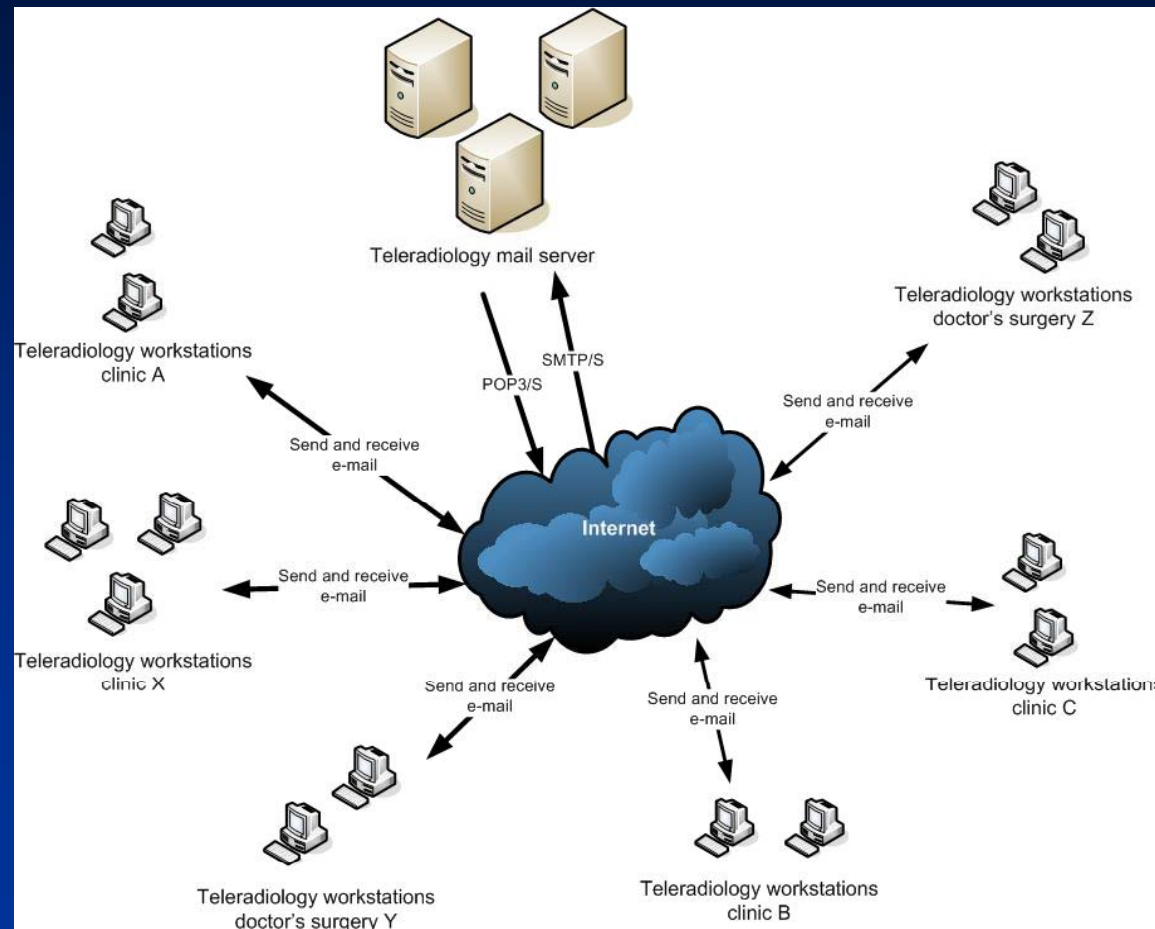
# Open Source and health care

## Why Open Source?



# Network architecture

## The architecture of the Teleradiology Network





# Open Source and the Teleradiology network

- Used Open Source Software
  - DBridge: free Java DICOM mail client for different platforms
  - DKON: DICOM mail server
  - StoreSCP-Client: extended OFFIS-DCMTK StoreSCP-Client

Further information: <http://www.teleradiologie-rnd.de/>



# Objectives of the web portal

- Simple user-interface
- Simple exchange of medical information with other partners within the region
- “low frequented” users like general practitioners should be able to use the advantages of the network without any prior software installation
- Fallback option for existing solutions
- The portal must be secure
- Use Open Source software and components



# Open Source and the web portal

- Why Open Source? What is the benefit for us?
  - Implement a reference implementation with a minimal cost effort
  - The reference implementation can be adopted by any partner of the network
  - Each partner can install several instances of the portal without any licence fee



# Methods and Materials

- Specifications of the portal were discussed with radiologists and medical informatics scientists
- The communication is based on the open DICOM e-mail standard
- Open source tools are used for the development of the portal
- Used technologies and components should be open source
- Integration of the external DocCheck service



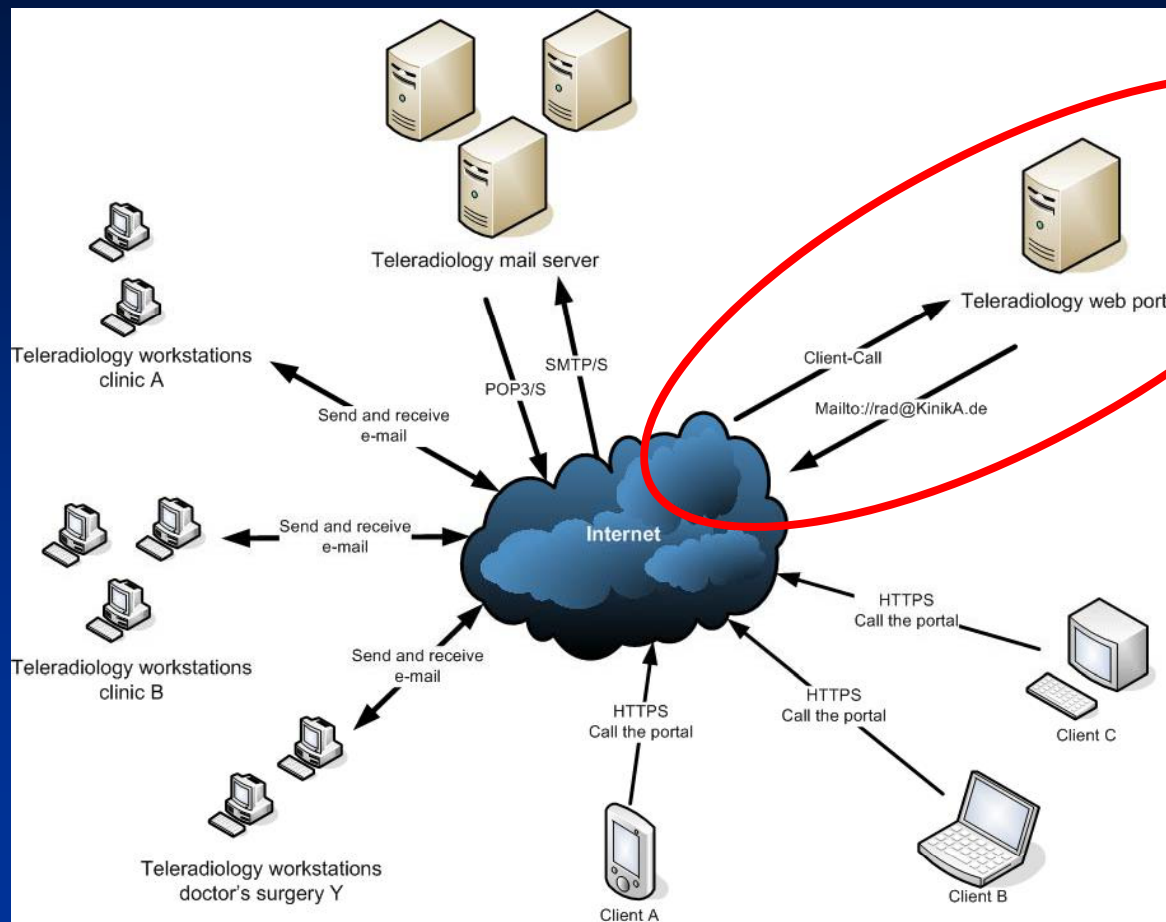
## Results

- The development is ongoing
- All components are open source
  - The portal itself was developed in Java, Java Server Pages and Servlets with a MySQL database in the background
- Integration of the external authentication service DocCheck
- Signature and encryption of all patient information on the client side corresponding to the DICOM e-mail standard



# The updated network architecture

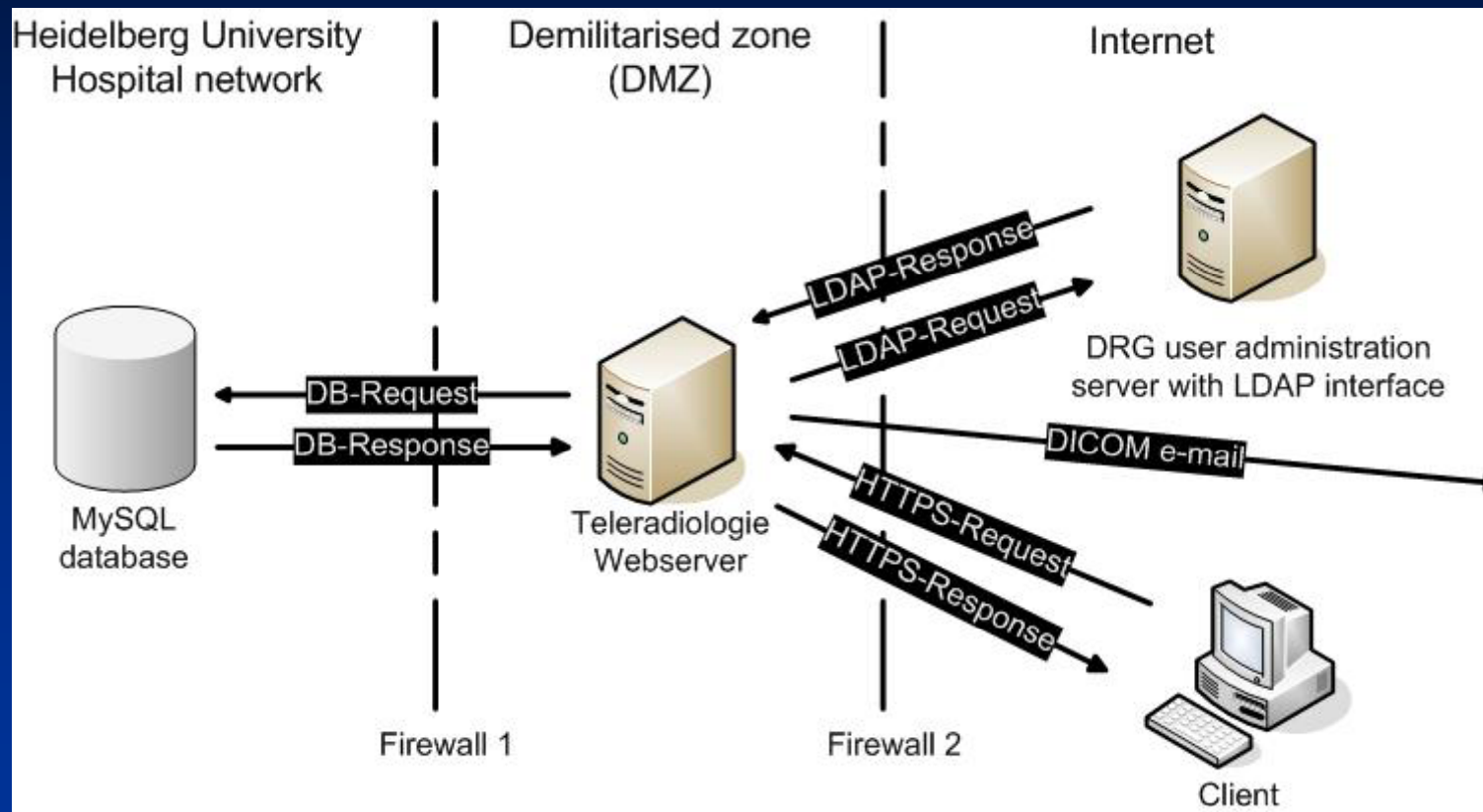
- The architecture of the network after the portal integration





# Portal architecture

- Detailed figure of the portal architecture





# Benefit of Open Source

- Cost-effective
- Flexibility
- Various possible applications
- Multiple installations without licence fees
- Adoptability



# Conclusions

- The portal offers the possibility to use the advantages of the teleradiology network free of charge and without any effort
- Each partner of the network can adopt the source code of the portal to special requirements and deploy its own installations



Thank you for your attention!

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