GNU Health and Orthanc – The perfect companions

Integrating two great solutions

Dr. Axel Braun
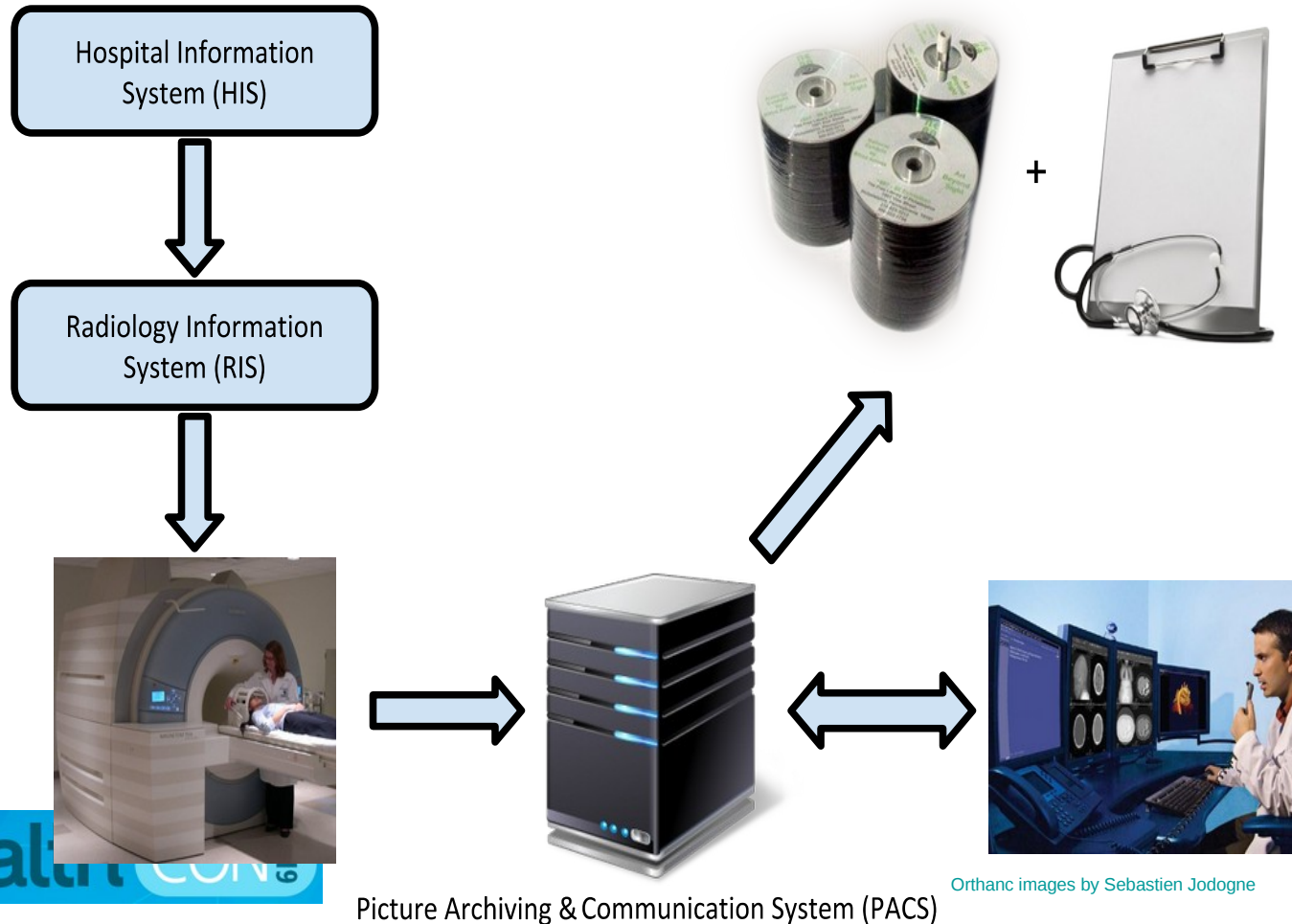
✉ axel.braun@gnuhealth.org

\# DocB on Freenode.net

🐦 @coogor

[m] @docb:matrix.org
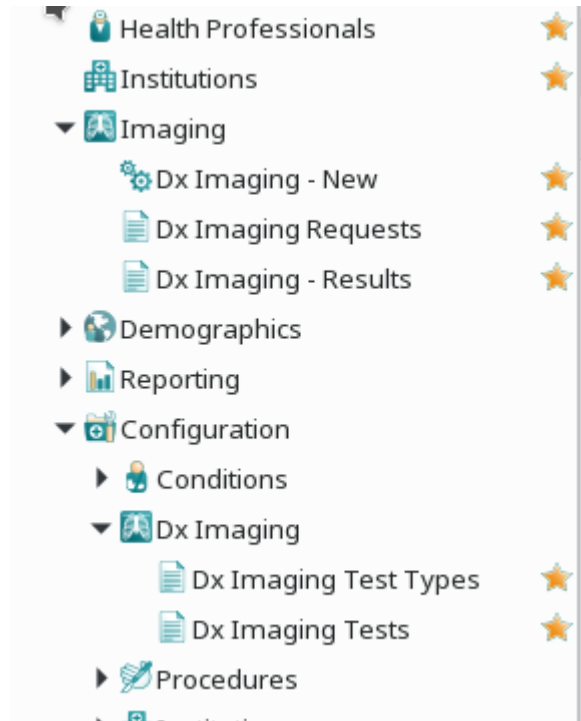
GNUHealth CON 2019

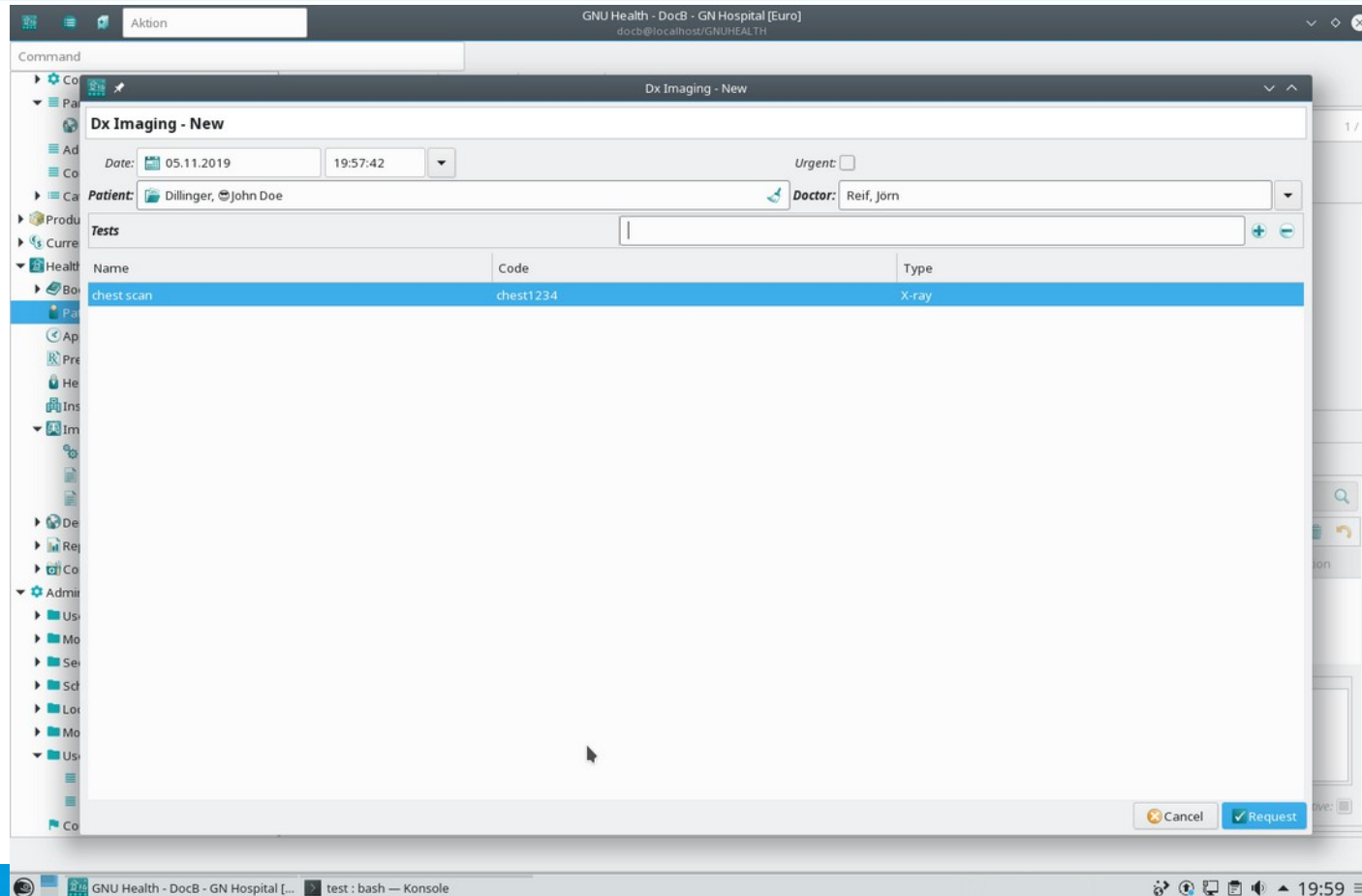# 'Standard' imaging workflow using DICOM

Hospital Information System (HIS)

Radiology Information System (RIS)

Picture Archiving & Communication System (PACS)

+

Orthanc images by Sebastien Jodogne

Image workflow in GNU Health

Requesting a new Image

Draft Image Request completed

Entering the Test Result manually

Integrating GNU Health with Orthanc

The Challenge: worldwide explosion of med. images

CT + MRI + PET-CT

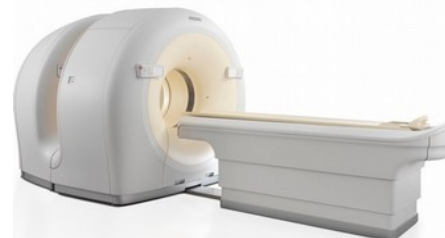Orthanc images by Sebastien Jodogne
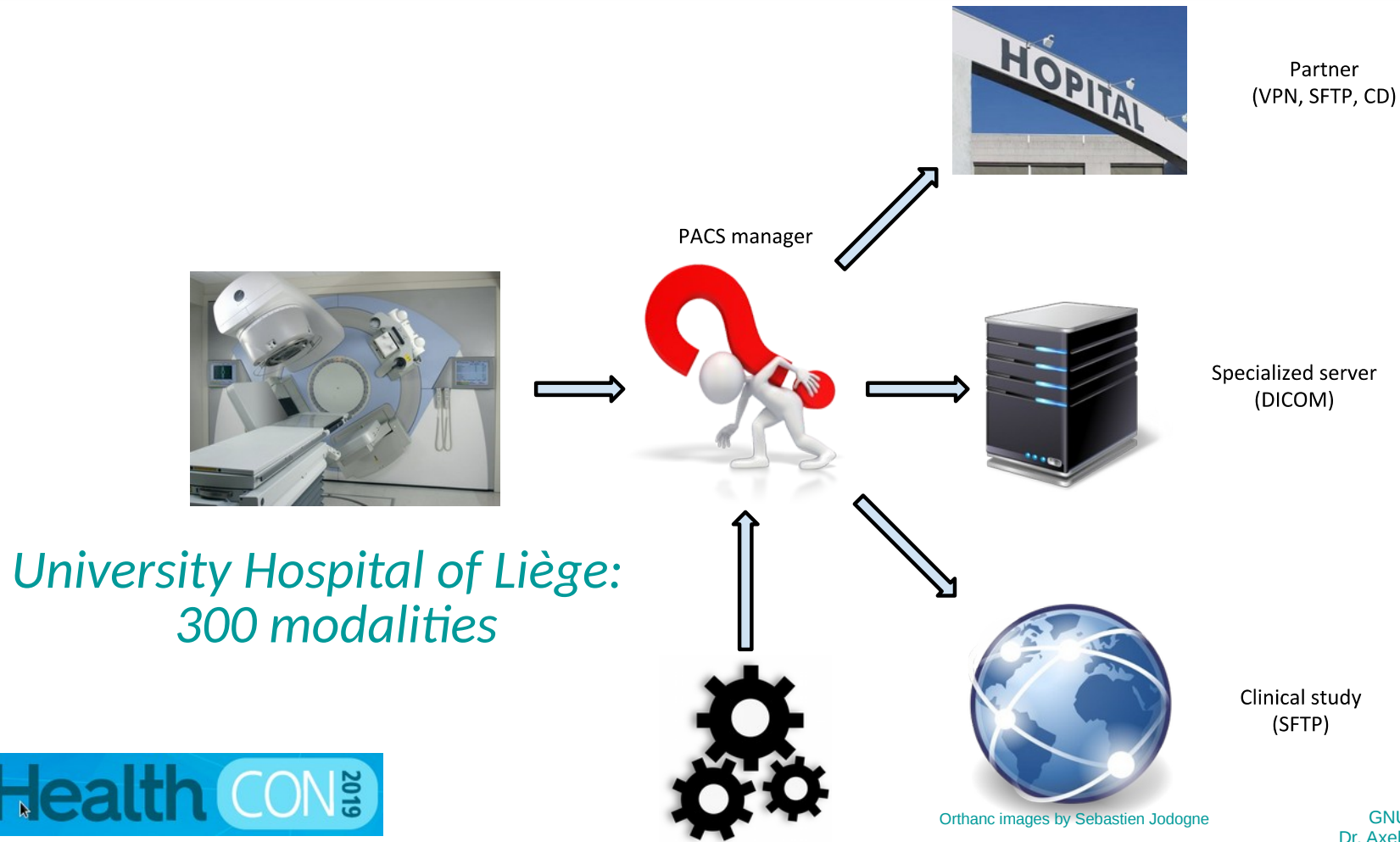
GNU Health and Orthanc
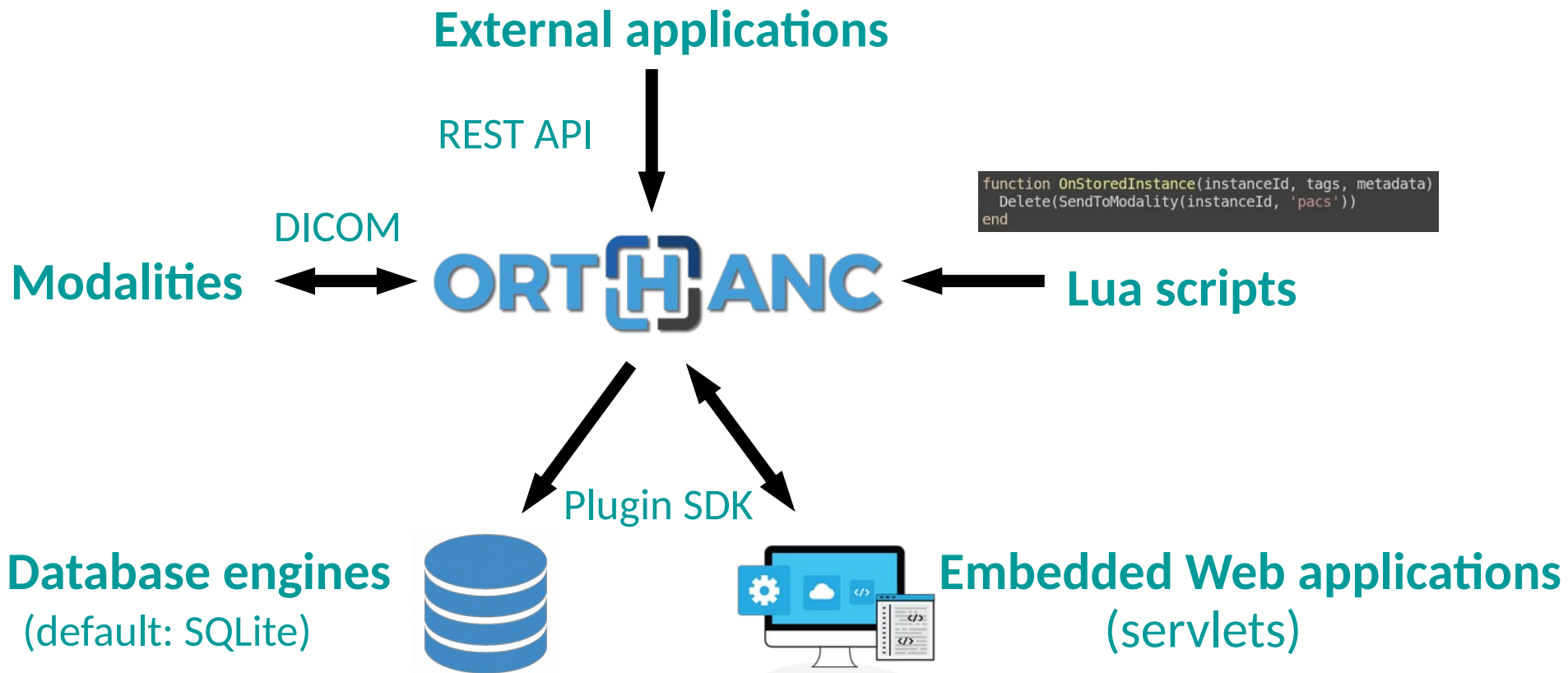Dr. Axel Braun CC-by-SA 4.0
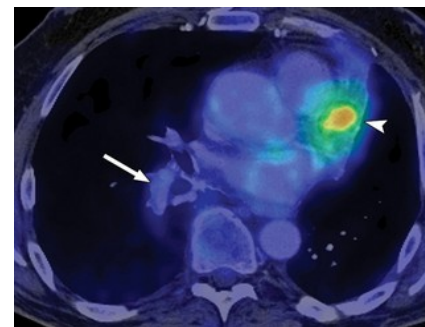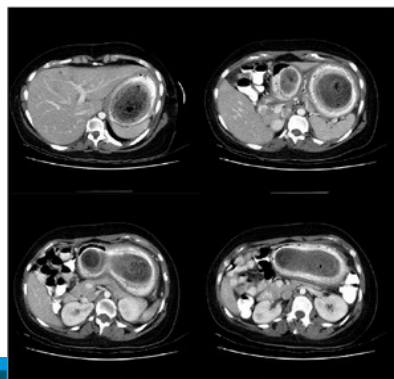
DICOM is a standard, but....

* The DICOM standard is very complex, both for users and developers

* Not every PACS comes with teleradiology (remote expertise)
    ⇒ need to combine vendors

* Many specialized vendors, with costly, proprietary and monolithic ecosystem
    ⇒ high risk of lock-in, few agility

* Interoperability is checked in "Connectathons" where vendors meet
    (N^2 complexity) ⇒ no reference implementation

* Few IT expertise in hospitals about imaging
    ⇒ need to share knowledge

Heterogeneous modalities ⇒ very problematic in emerging economies!

Automation of Imaging Workflow

Partner
(VPN, SFTP, CD)

PACS manager

Specialized server
(DICOM)

*University Hospital of Liège:
300 modalities*

Clinical study
(SFTP)

Orthanc images by Sebastien Jodogne

Orthanc is a microservice for medical imaging

External applications

REST API

Modalities ←DICOM→ **ORTHANC** ← **Lua scripts**

```
function OnStoredInstance(instanceId, tags, metadata)
  Delete(SendToModality(instanceId, 'pacs'))
end
```

Plugin SDK

Database engines
(default: SQLite)

Embedded Web applications
(servlets)

New module: health_orthanc

Kudos to Chris Zimmerman!

Our specialist for interfaces
- HL7/FHIR
- Orthanc

How to use health_orthanc?

health_orthanc comes with GNU Health-Sources

On openSUSE, it is a separate pa
* as this is probably not needed o

How to install?

zypper install gnuhealth-orthanc

Activate the module

A new entry in the menu appears
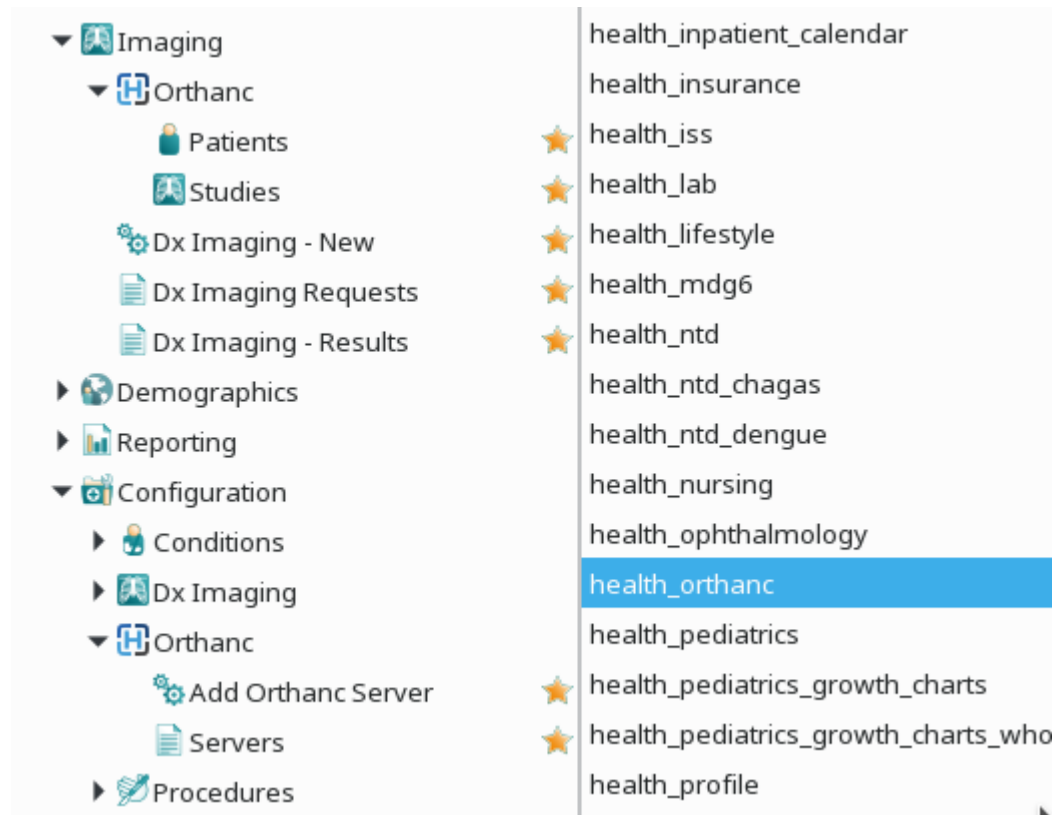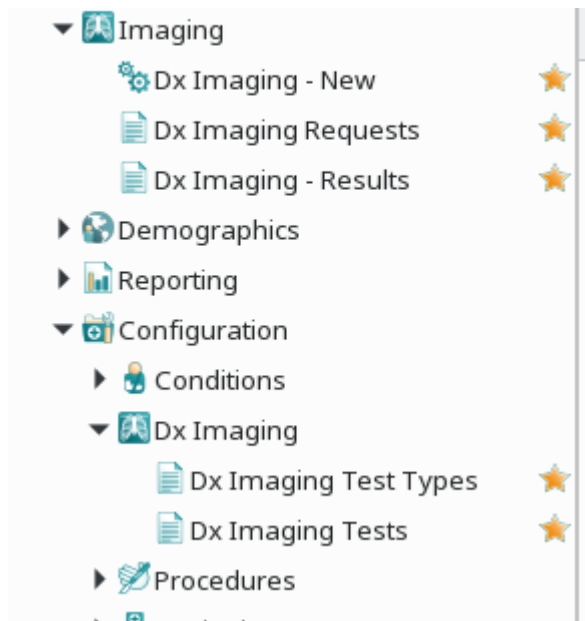
Adding an Orthanc-Server

Synchronization

Assign GNU Health Patient to Orthanc Patient (if not requested with PUID)

Patient View

Click URL Icon to view result

Images are held on Orthanc-Server

* Transparent indexing: Patient → Study → Series → Instance
* Preview 2D Images
* Send to other modalities in 1 click
* Inspect medical data, ZIP, anonymize,...

Studies to a patient

Studies to a patient - details

View all images to a patient

View all images to a patient

Conclusion

* Othanc is a perfect complement to GNU Health

* Image workflow improves use in GNU Health

* All build on open technologies / free software

Thank you!

Questions?