

Ultrasound Computer Tomography (USCT)

USCT application

- New method for early breast cancer detection
- Targeted at hospitals for cancer screening
- Main advantage:
3D imaging in a **reproducible** setup

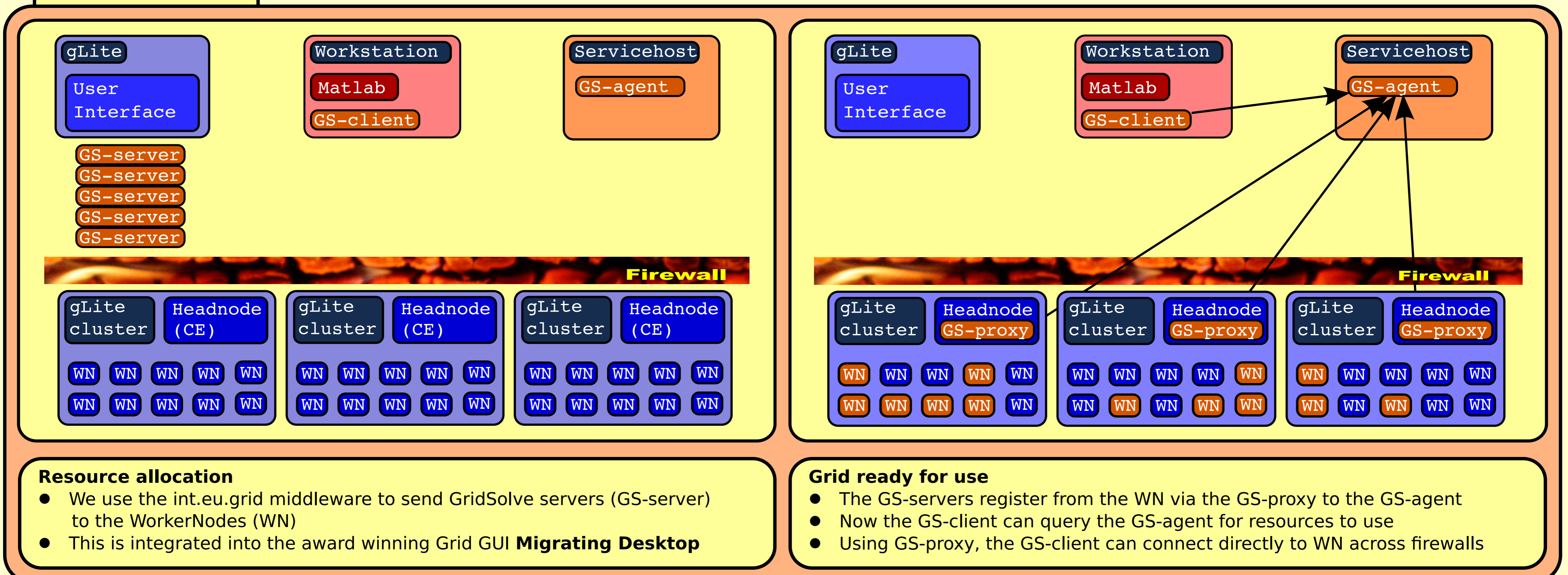
Application requirements

- One measurement
20 GB (12MB in demo)
- Reconstruction to 3D volume
100 Slices x 1 MPix => 10days
(1 Slice x 0,01 MPix => 20min)
- Developed in Matlab and Assembler

User requirements

1. Development
 - High computational power
 - In Matlab environment
 - For speedup of development
2. Production
 - 10 days of reconstruction is too long
 - Goal: ~30 Minutes

Architecture



Operation

Phantom

- This phantom is used for testing the measurement hardware and the software algorithms
- For measurement it is placed into the USCT

3D USCT demonstrator

- Measurement device, located under the treatment table on which the patient lies

Grid reconstruction in progress

- Every line of the image is processed on a different CPU of the int.eu.grid infrastructure

Final reconstruction of the phantom

- Speedup by using 40 CPUs of int.eu.grid is roughly 2h versus 60h on a laptop