



Enabling Grids for E-science

gPTM3D : Grid-Enabling Interactive Medical Analysis

EGEE 1st EU Review – 9th to 11th February 2005

CERN

Cécile Germain

LAL & LRI – CNRS

NA4 Biomed

www.eu-egee.org

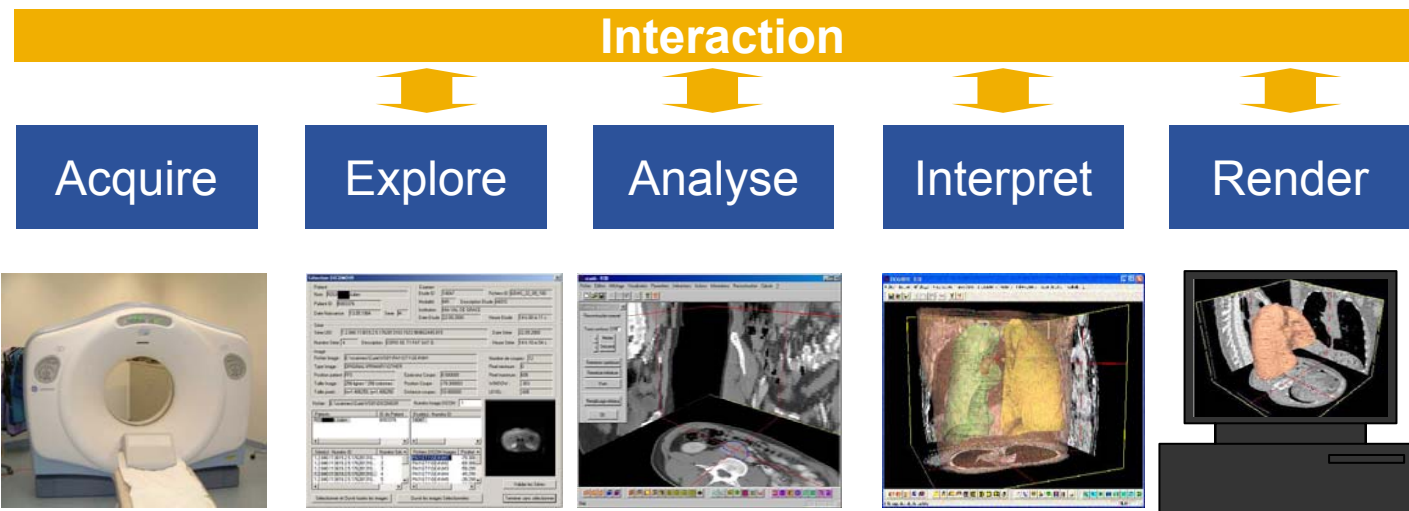


Information Society

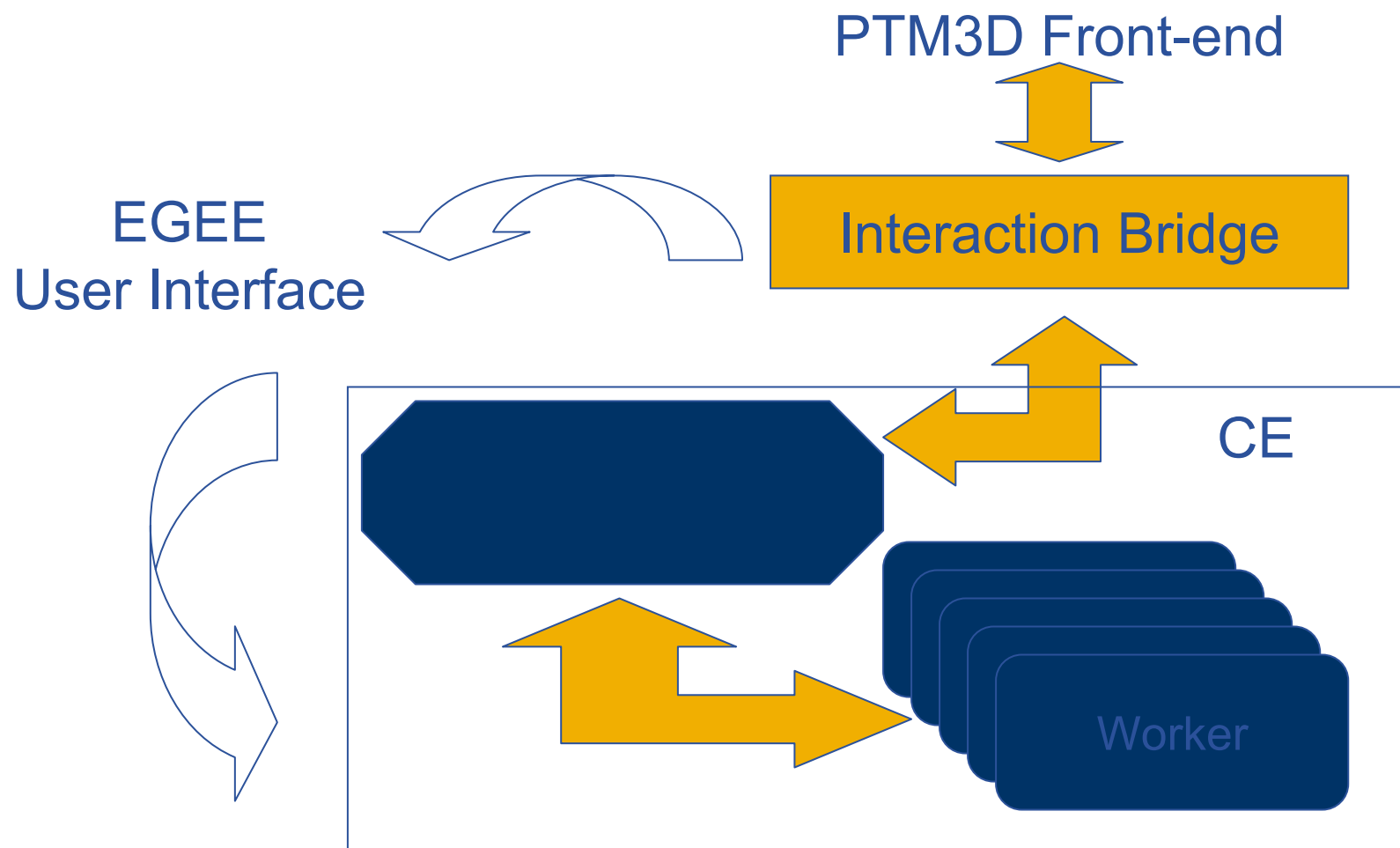


- **Goal: Grid-enable PTM3D**
 - PTM3D (Poste de Travail Médical 3D) is
 - A medical images analysis software developed at LIMSI (CNRS)
 - With **clinical** usage: CHU Tenon, Sainte Anne, FMP, ..., InfoRad
RSNA Certificates of Merit (2000, 2002, 2003)
 - Step1 (this demo): **interactive** response time for CPU-intensive **volume reconstruction**
 - Next steps: interactive response time for all components
- **Contexts**
 - Grid computational steering
 - Medical research and clinical requirements: [IMAGE'04 report](#)
- **EGEE status**
 - NA4 internal application
 - Collaboration with CNRS STIC labs and French research programmes

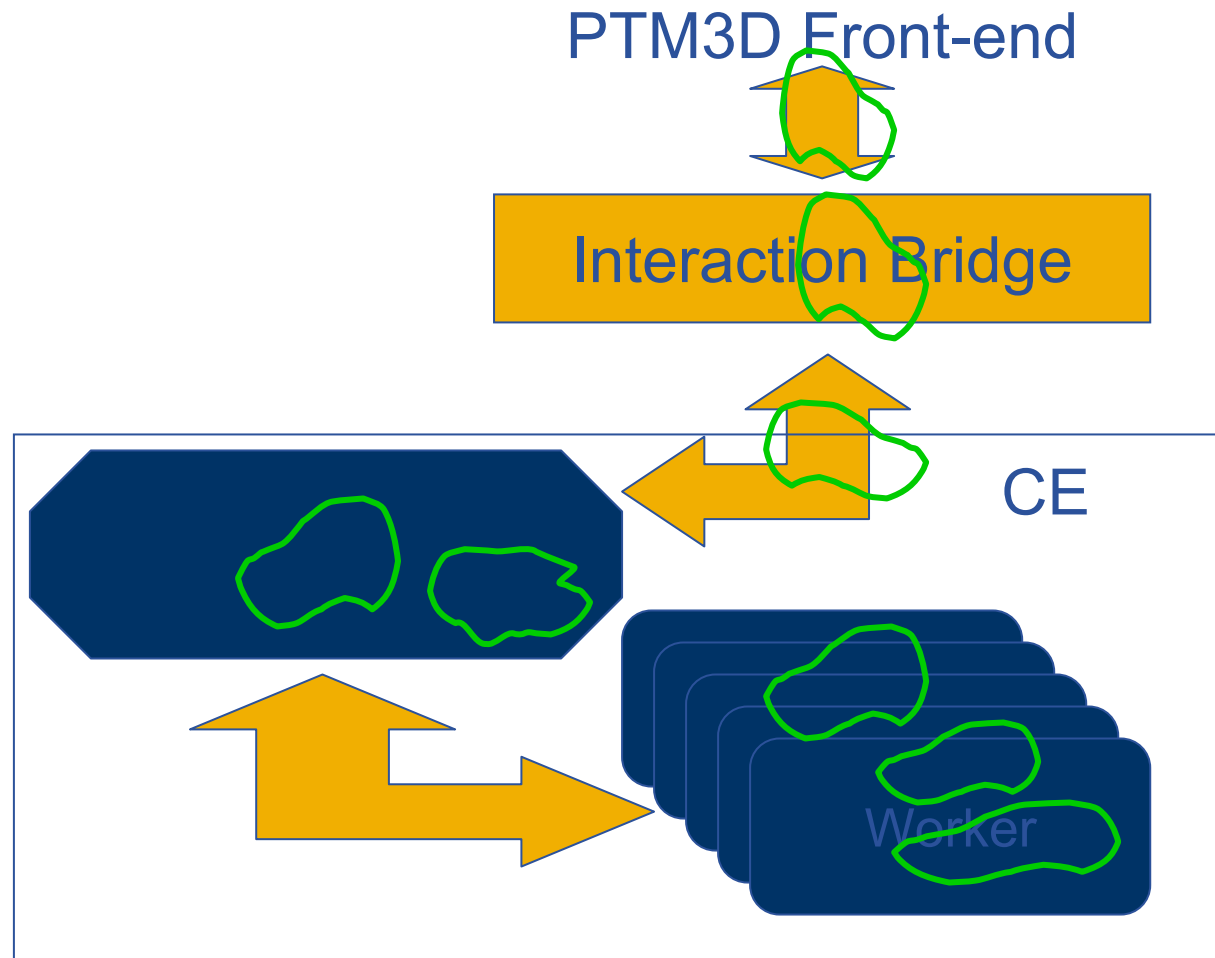
- **One data set is**
 - DICOM files: 100MB – 1GB
 - One radiological image: 20MB – 500MB
- **Complex interface: optimized graphics and medically-oriented interactions**
- **Expert interaction is required at and inside all steps**
 Poorly discriminant data, pathologies, medical windowing



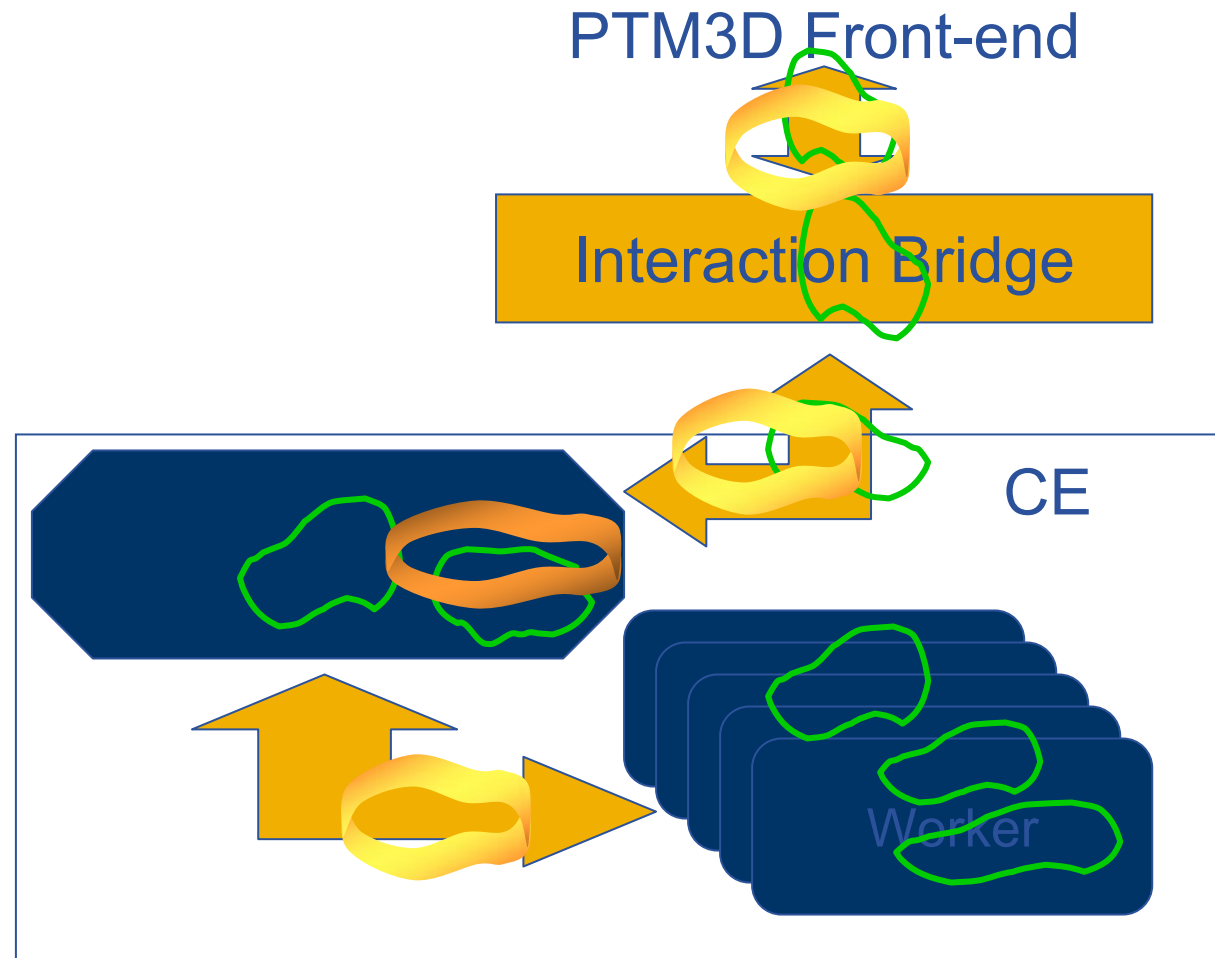
	Dataset	Input data	Output data	Tasks	Standalone Execution	Parallel Execution 14 procs.
Small body	87MB	3MB 18KB/slice	6MB 106KB/slice	169	5mn15s <i>1mn54s</i>	37s 18s
Middle body	210MB	9.6 MB 25KB/slice	57MB 151KB/slice	378	33mn <i>11mn5s</i>	2mn30s <i>1mn15s</i>
Lungs	87MB	410KB 4KB/slice	2.3MB 24KB/slice	95	36s	24s



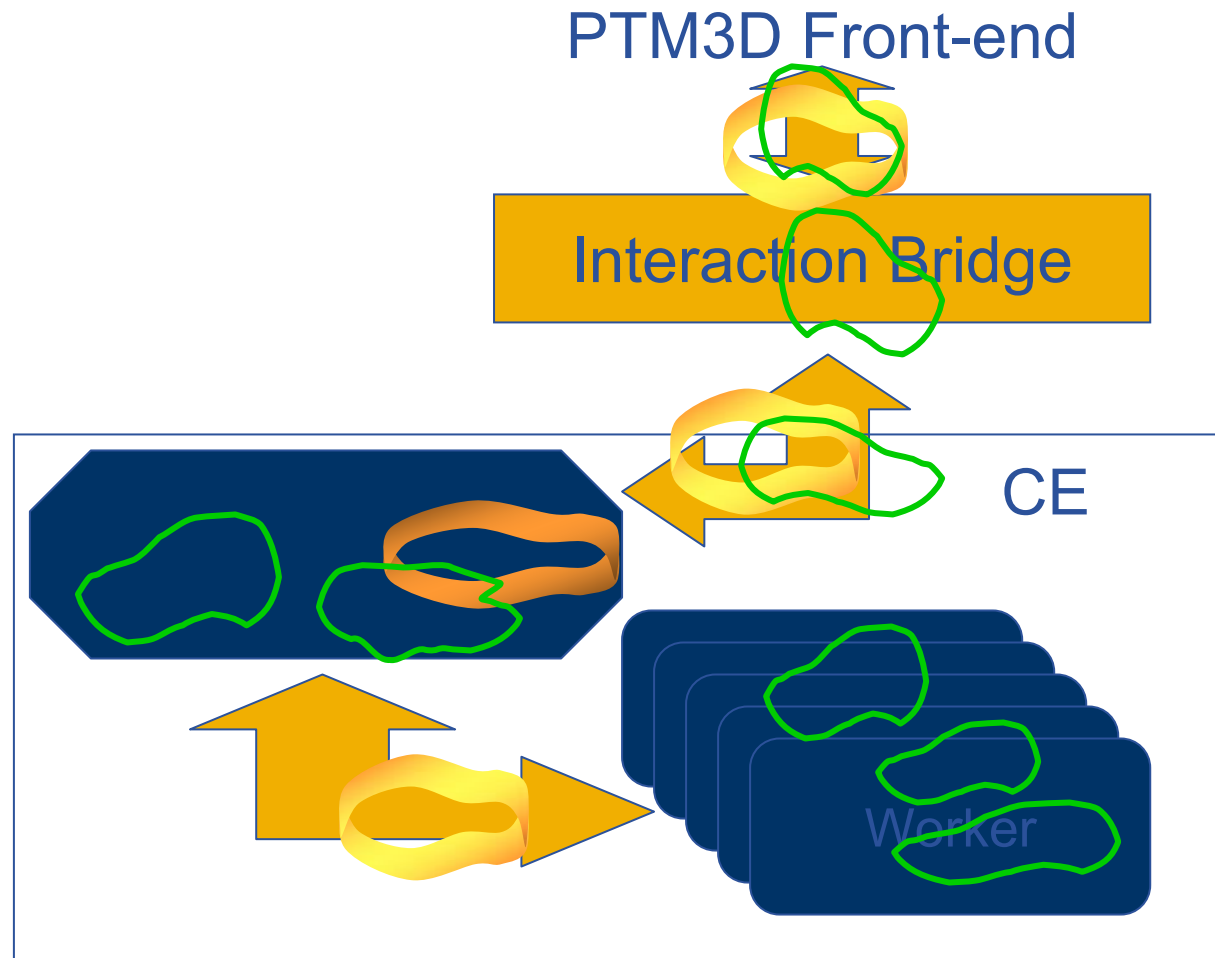
- Stage data
- Pull model: workers pull contours at their own pace



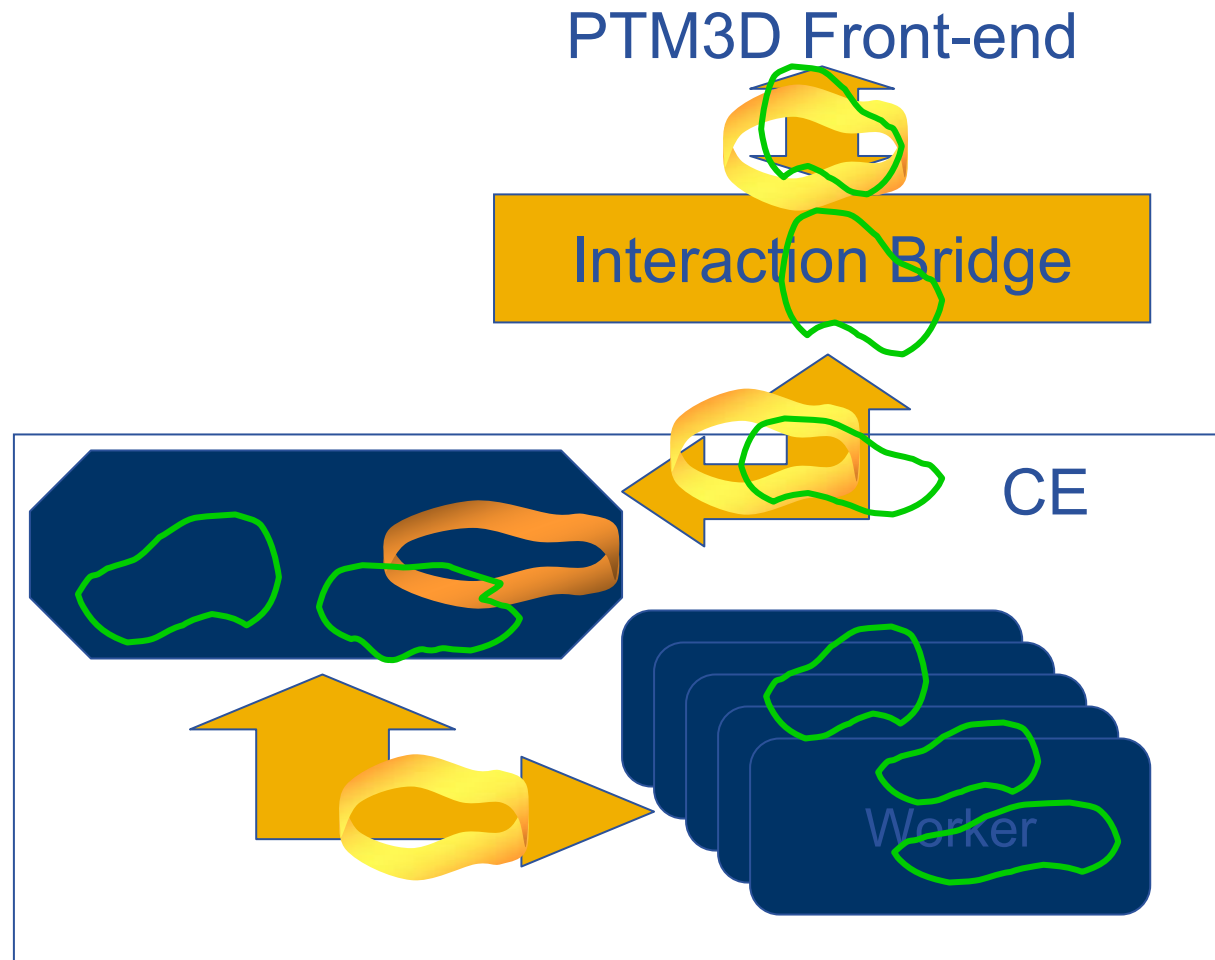
- Stage data
- Pull model: workers pull contours at their own pace



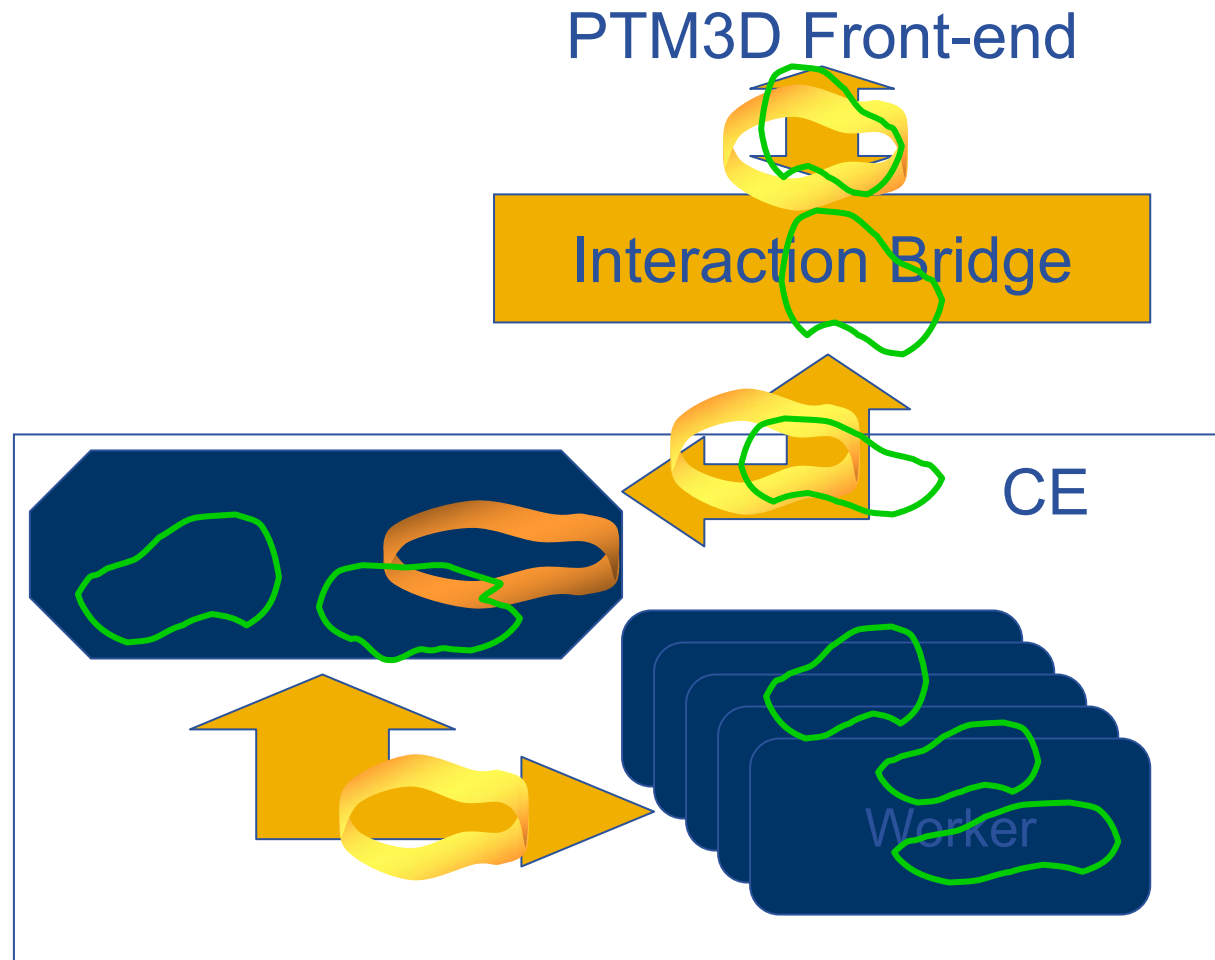
- Stage data
- Pull model: workers pull contours at their own pace

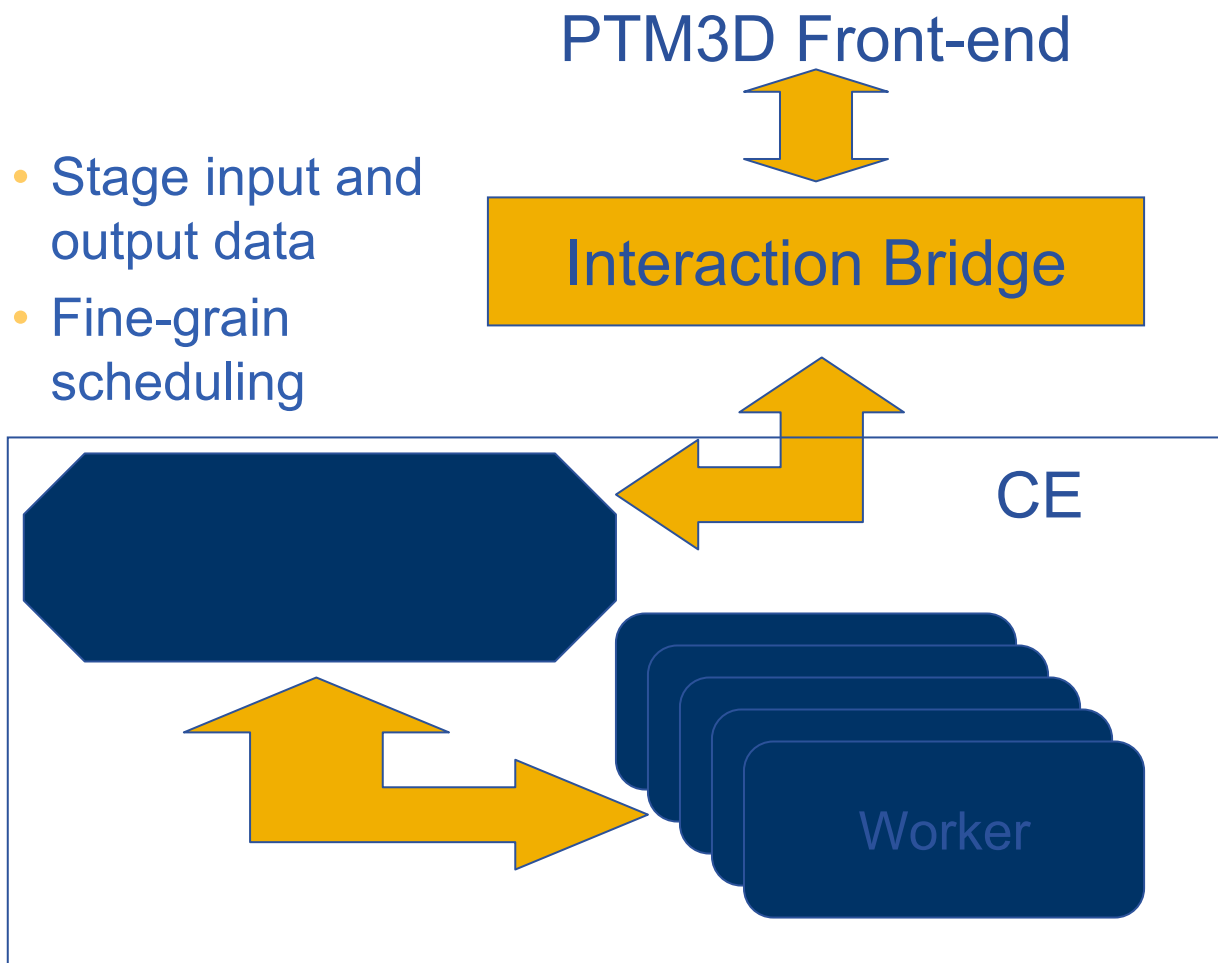


- Stage data
- Pull model: workers pull contours at their own pace



- Stage data
- Pull model: workers pull contours at their own pace





- Stage input and output data
- Fine-grain scheduling

- Stage input and output data
- Negotiate for interactive vs batch
- Admission control
- Schedule interactive jobs
 - No reservation
 - **Soft** real-time scheduling

- **Technical**
 - Convergence with other EGEE applications : AliEn, DiRac
 - Port to gLite
 - Scheduling policy: Time-sharing and QoS across the scheduling stack
 - GGF GRAAP and GSA
 - Admission control from sensors
 - Interact with *remote* data
 - Clinical research: evaluate registration algorithms on large existing databases – [ACI AGIR](#)

- **Dissemination: demonstrations at**
 - HealthGrid 2005
 - Journées de la Société Française de Radiologie 2005
 - InfoRad-RSNA 2005

Planning percutaneous nephrolithotomy

