

Deployment and evaluation of FIELD-II Matlab ultrasonic simulator on EGEE

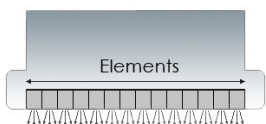
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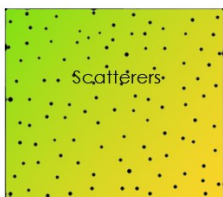
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FIELD-II: principle

Probe



Medium



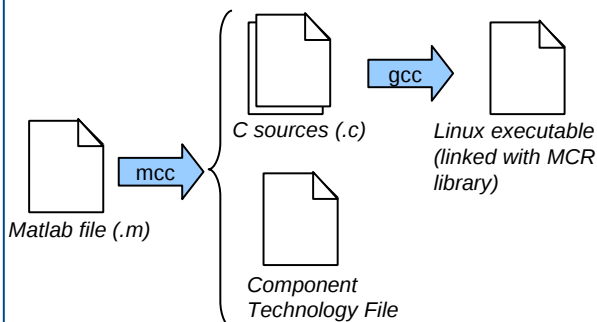
Parallelism exploitation:

- On probe elements (image lines)
- On mediums

<http://server.elektro.dtu.dk/personal/jaj/field/>

Running Matlab code on EGEE

- Compilation with Matlab Compiler



- Deployment: on-the-fly download and installation of Matlab Compiler Runtime (free)

<http://www.mathworks.com/products/compiler/>

Execution environment

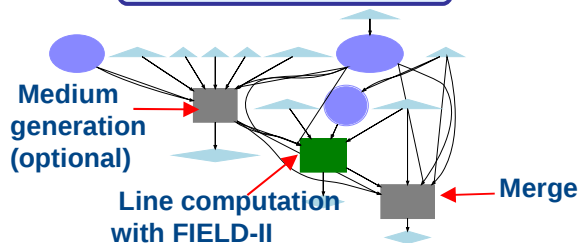
- Middleware-independent application description with **workflow** (MOTEUR)
- Execution with **pilot jobs** (DIANE)
- **GUI** for input/output file browsing on LFC (VBrowser)

<http://modalis.polytech.unice.fr/software/moteur/start>

<http://cern.ch/diane>

<http://www.vl-e.nl/vbrowser>

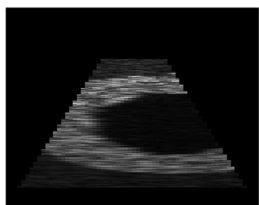
FIELD-II workflow



Results

Application

- Simulation of 1920-line 2D+t cardiac sequence (500,000 scatterers per 2D image)

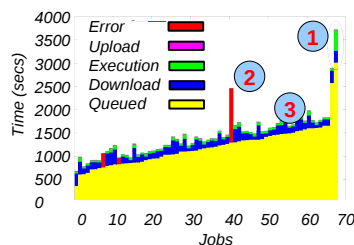


Performance

	Elapsed	Throughput	Error
Grid	3H	4.6 sec/line	12%(*)
Local	16H	219 sec/line	0%

- (*) 2% after CE blacklisting
- DIANE pilot registration: 4 pilot/min

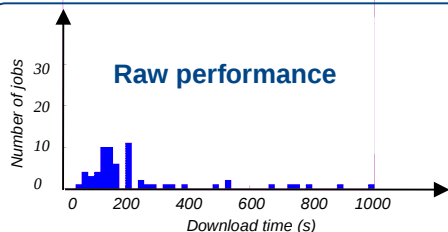
Remaining issues



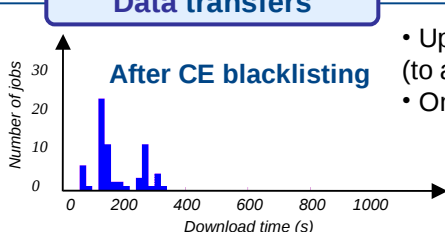
- 1 Merge cost
- 2 Output transfer errors
- 3 Input download time

Data transfers

Raw performance



After CE blacklisting



- Upload test before job execution (to avoid lately-detected upload errors)
- On-going improvements:
 - Make lcg-c* use close SEs
 - Share files (e.g. MCR) among tasks executed by a pilot