



HOST

High Performance Computing Service
Center

<http://host.hpc.uvt.ro>

FP7-REGPOT-CT-2011-284595-HOST
2012-2014



Main objectives

- Augment the R&D experience and knowledge of the HOSTing team in **HPC related fields**
- Exchange of know-how and experience with the **partner teams** and other specialists in the field of HPC services
- Improve of **e-infrastructure** and increase the number of users of the HPC center at UVT
- Attract foreign specialists to work with and in the HPC centre through a collaborative **open access programme**
- Establish new collaborative R&D relationships and increase the participation of the HOSTing team in **collaborative projects**



Actions

- Secondments at partner institutions
- Employment of experienced researchers
- Open access programme
- Scientific events organization
- Infrastructure upgrade





Partner institutions

- **EPCCC** – Edinburgh Parallel Computing Center, Edinburgh, UK
- **PSNC** – Poznan Supercomputing and Networking Center, Poland
- **UEX** – University of Extremadura, Spain
- **INRIA** – LaBRI Lab, Bordeaux, France
- **CINECA** – Bologna, Italy

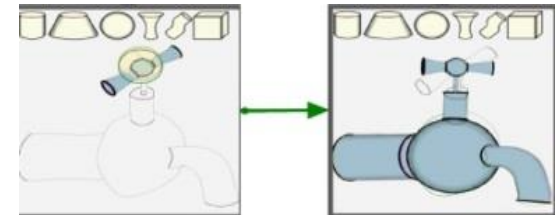
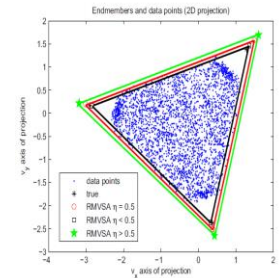
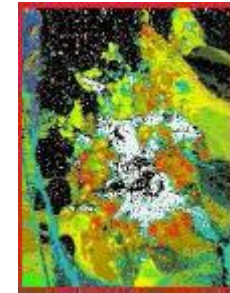
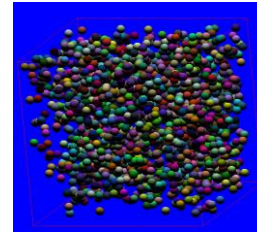


Research directions

- Cloud computing technologies for HPC service exposure
- Scheduling techniques for heterogeneous computing environments
- Parallel computing in image and data processing
- Large scale numerical computations
- HPC-based intelligent services

GPU acceleration of

- minimum volume simplex algorithm for endmembers extraction from hyperspectral images
- surface reconstruction
- sketch based modelling
- particle systems simulation
- fuzzy c-means segmentation of images
- evolutionary multiobjective optimization



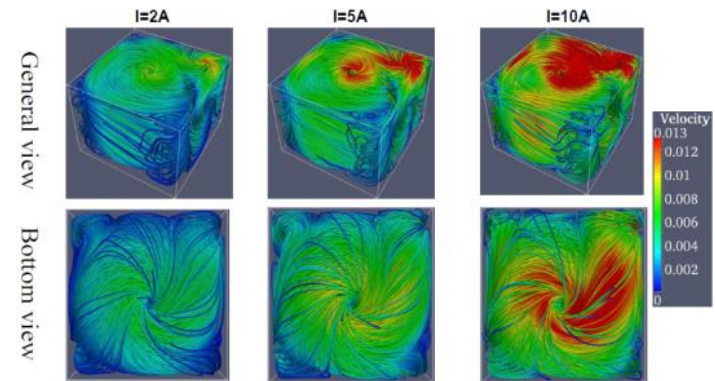
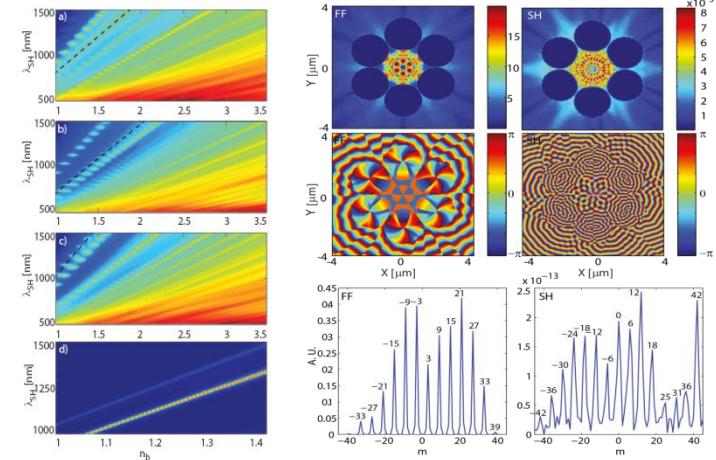


Some results

Parallel implementations for efficient numerical simulations in:

- Computational photonics
- Crystal growth

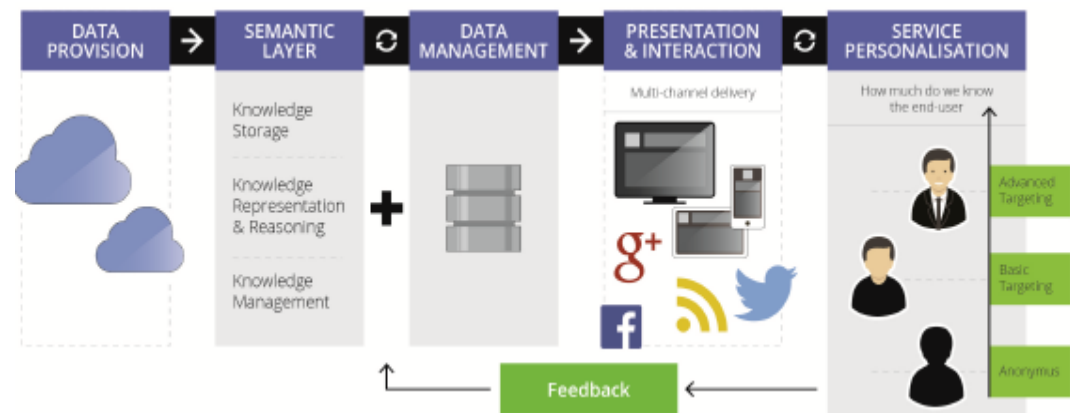
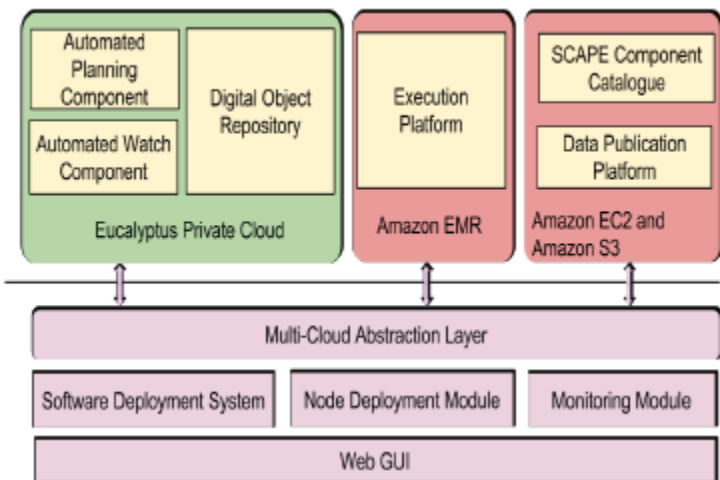
Empirical investigation of MPI open source applications





Some results

- A distributed machine learning environment
- Cloud deployment of digital preservation environments
- Integration of social media and open data in a cloud-based platform for public sector advertising



[Cross – collaboration with other projects (SCAPE, SEED)]



Open access & enhanced collaborations

Short and long term visits of researchers from:

- Institute Josef Stefan, Slovenia
- University of Extremadura, Spain
- University Autònoma Barcelona, Spain
- University Carlos III Madrid, Spain

Usage of the infrastructure by researchers of:

- Bulgarian Academy of Science
- Polish Academy of Science
- Braude College Israel



Events – national workshops

- Workshop of Clouds, Cluster and High Performance Computing infrastructures (26-27 April 2012)
- Workshop of e-Infrastructure for Public Sector (21-23 March 2013)
- Workshop on Intellectual Properties in ICT and e-Infrastructures (24-25 March 2014)
- Workshop of e-Infrastructure Services for Society (current event)



Events – international workshops

- Workshop on HPC Services (27-29 September 2012)
- Workshop on HPC for Scientific Problems (25-26 September 2013)
- Workshop on HPC Research Services (24-25 September 2014)



Following related events ...

... in the framework of SYNASC 2014 (22-25 September 2014)

- Tracks on Distributed, Symbolic and Numerical Computing, AI

Workshops:

- HPCRes - HPC Research Services
- MICAS – Management of resources and services in Cloud and Sky computing
- CTIC – Computational Topology in Image Context
- ACSys – Agents for Complex Systems
- NCA – Natural Computing and Applications

Tutorial on Model Driven Design of Cloud Applications with a priori Quality of Service Guarantees