Contribution ID: **104** Type: **Demonstration**

LINGA, The LInked Neuroscientific Grand chAllenge, A DCI Interoperability Exercise between EU FP7 SHIWA and EU FP7 outGRID

As a concrete outcome of the collaboration between the EU FP7 SHIWA (www.shiwa-workflow.eu) and EU FP7 outGRID (www.outgrid.eu) projects, LINGA is the first scientific challenge ever run across several international neuroscientific infrastructures, thus mixing heterogeneous DCI technologies at the same time.

LINGA is a large-scale neuroscientific experiment involving the simultaneous cooperation of 4 international DCIs, out of which 3 neuroscientific infrastructures with the neuGRID (www.neugrid.eu) in Europe, CBRAIN (https://cbrain.mcgill.ca/research/projects) in Canada, LONI (http://www.loni.ucla.edu) in the USA and last but not least the European Grid Initiative (EGI www.egi.eu). See « Virtual imaging laboratories for marker discovery in neurodegenerative diseases », published in July's Nature Reviews Neurology –Doi:10.1038/nrneurol.2011.99 for more details.

The LINGA workflow consists in running a computationally demanding image processing pipeline (i.e. cortical thickness extraction) onto the 3 different data sources, each of which being hosted and processed within one of the participating neuroscience DCIs (i.e. ANM@neuGRID, ICBM@CBRAIN and ADNI@LONI). Once the 11'000 patient scans analysed, outputs are then rapatriated in Europe into the EGI (represented by the LSGC computing resources) and statiscally compared along with selected meaningful criteria, in order to populate distribution graphs which are useful to neuroscientists.

In particular, 2 major components will be statistically processed to explain the outputs'variability. While testing a neuroscientific hypothesis, LINGA also stresses the importance and relevance of interconnecting similar initiatives worldwide. This interoperability exercise thus demonstrates how 4 separate DCIs can interoperate and accelerate research thanks to outGRID's recommendations and SHIWA's coarse-grained interoperability approach.

The LINGA challenge will be demonstrated using the SHIWA Simulation Platform, the LONI DPS service and the MOTEUR/P-Grade technology.

Required Facilities

The demonstration only requires a regular Internet connection and a plasma screen for displaying the portal and applications.

More information can be found at: http://www.shiwa-workflow.eu/wiki/-/wiki/Main/Applications

Duration (90min sessions)

Regular demonstration slot (ideally half a day or a day)

Primary authors: Mr MANSET, David (MAAT France); Dr MONTAGNAT, Johan (CNRS); Dr KACSUK, Peter (MTA SZTAKI); Dr TRUONG HUU, Tram (CNRS)

Co-authors: Mr REDOLFI, Alberto (FBF); Mr GRENIER, Baptiste (MAAT France); Prof. FRISONI, Giovanni (FBF); Dr REVILLARD, Jerome (MAAT France)

Presenters: Mr MANSET, David (MAAT France); Dr MONTAGNAT, Johan (CNRS); Dr KACSUK, Peter (MTA SZTAKI); Dr TRUONG HUU, Tram (CNRS)