

ER-flow

G. Castelli

INAF-Osservatorio Astronomico, Trieste, Italy

December, 2013

# FP7 European Project



Grant agreement for: Coordination and support action

**Annex I - "Description of Work"**

Project acronym: ER-flow

Project full title: "Building an European Research Community through Interoperable Workflows and Data "

Grant agreement no: 312579

Version date: 2012-03-15

## List of beneficiaries

### A2: List of Beneficiaries

Project Number <sup>1</sup>	312579	Project Acronym <sup>2</sup>	ER-flow
-----------------------------	--------	------------------------------	---------

#### List of Beneficiaries

No	Name	Short name	Country	Project entry month <sup>10</sup>	Project exit month
1	THE UNIVERSITY OF WESTMINSTER	UoW	United Kingdom	1	24
2	MAGYAR TUDOMANYOS AKADEMIA SZAMITASTECHNIKAI ES AUTOMATIZALASI KUTATO INTEZET	MTA SZTAKI	Hungary	1	24
3	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	CNRS	France	1	24
4	STICHTING EUROPEAN GRID INITIATIVE	EGI.eu	Netherlands	1	24
5	Academisch Medisch Centrum bij de Universiteit van Amsterdam	AMC	Netherlands	1	24
6	TECHNISCHE UNIVERSITAET DRESDEN	TUD	Germany	1	24
7	LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN	LMU-MUENCHEN	Germany	1	24
8	UNIVERSITY COLLEGE LONDON	UCL	United Kingdom	1	24
9	THE PROVOST, FELLOWS, FOUNDATION SCHOLARS & THE OTHER MEMBERS OF BOARD OF THE COLLEGE OF THE HOLY & UNDIVIDED TRINITY OF QUEEN ELIZABETH NEAR DUBLIN	TCD	Ireland	1	24
10	ISTITUTO NAZIONALE DI ASTROFISICA	INAF	Italy	1	24

## List of work packages

### WT1 List of work packages

Project Number <sup>1</sup>	312579	Project Acronym <sup>2</sup>	ER-flow
-----------------------------	--------	------------------------------	---------

#### LIST OF WORK PACKAGES (WP)

WP Number <sup>53</sup>	WP Title	Type of activity <sup>54</sup>	Lead beneficiary number <sup>55</sup>	Person-months <sup>56</sup>	Start month <sup>57</sup>	End month <sup>58</sup>
WP 1	Administrative, Financial and Technical Project Management	MGT	1	6.00	1	24
WP 2	Knowledge Transfer Services	OTHER	2	29.00	1	24
WP 3	Infrastructure and Technical Support	OTHER	1	20.00	1	24
WP 4	Study on interoperability of the scientific data in the workflow domain	OTHER	3	30.00	1	24
WP 5	Application Support	OTHER	5	76.00	1	24
				Total	161.00	

## Communities

☞ Astrophysics

☞ Computation Chemistry

☞ Heliophysics

☞ Life Sciences

## Environment

☞ The ER-flow website

## The scientific objectives and goals

The Astrophysics community involved in the first year of the ER-flow project has selected six workflows which can be used as pilot in this particular research area to demonstrate how to develop, use and share workflows. These pilot workflows have been ported to the SSP and published in the SHIWA workflow repository. Thus, how to use the simulation platform has been demonstrated, as well as how the researchers can use these workflows in the experiments, and how they can modify them to create their own workflows.

## The Astrophysics workflows

Within the ER-flow project the Astrophysics community is represented by INAF (Istituto Nazionale di Astrofisica, Italy), that coordinates the activity. The six pilot workflows are:

- COMCAPT (Capture of comets from the interstellar space by the Galactic tide), provided by the Astronomical Institute of Slovak Academy of Sciences.
- FRANEC (Frascati Raphson Newton Evolutionary Code) / BaSTI (Bag of Stellar Tracks and Isochrones), provided by INAF - Osservatorio Astronomico di Teramo.
- LaSMoG (Large Simulation for Modified Gravity), provided by the University of Portsmouth (UK).



## The Astrophysics workflows

- MESTREAM (Modelling the dynamical Evolution of meteoroid stream), provided by Astronomical Institute of Slovak Academy of Sciences.
- Planck (Simulations of the ESA Planck satellite mission), provided by INAF - Osservatorio Astronomico di Trieste.
- VisIVO (Visualization Interface for the Virtual Observatory), provided by INAF - Osservatorio Astrofisico di Catania.

## Technical implementations

The six workflows have been coded in WS-PGRADE/gUSE (Web Services Parallel Grid Runtime and Developer Environment/Grid User Support Environment) architecture on SSP, and some of them are meta-workflows (i.e. composition of smaller workflows, that could eventually be the building blocks for new further workflows).

Through SSP are reached the resources belonging to 4 Grid Virtual Organizations (VOs):

- [astro.vo.eu-egee.org](http://astro.vo.eu-egee.org) (European astronomical catch-all VO)
- [inaf](http://inaf.org) (Italian national VO for astronomy)
- [planck](http://planck.vo.eu-egee.org) (VO dedicated to the ESA Planck satellite mission)
- [voce](http://voce.vo.eu-egee.org) (Virtual Organisation for Central Europe)

All the first year ER-flow applications use gLite as Grid middlewere.

## Future plans

For the second year of ER-flow other new Astrophysics communities have already been contacted, from France and Spain:

### 👉 France:

- 👉 Participation led by Astronomical Observatories of Strasbourg and Paris.
- 👉 Seven new groups could contribute with new astro workflows.

### 👉 Spain:

- 👉 IAA (Astronomical Institute of Andalucia).
- 👉 IFCA (Institute for Astrophysics of Cantabria).

For these new workflows it is forecasted to have them or some part of them coded not only in WS-PGRADE, but with other different developer environments (i.e. Taverna), so to guarantee the interoperability among them.

Link

👉 ER-flow Project Trieste link

## Conclusions

- ☞ We have established an expanding international Astro Community interested in workflow technologies
- ☞ We have demonstrated through SSP sharing of workflows and using resources belonging to different VOs

## Conclusions

- ☞ We have increased the numbers of meta-workflows and building block workflows and can exploit interoperability among them
- ☞ We have gained a lot of expertise in terms of deploying such advanced technologies not only for developers but also for end users