Astronomy ESFRI & Research Infrastructure Cluster

ASTERICS - H2020 - 653477

Repository of WP4 Products (mid-term delivery)

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Abstract

The Repository of WP4 Products lists the products of ASTERICS Work Package Data Access, delivery and interoperability. This deliverable D4.8 is the initial version of the repository, produced at the mid-term of the ASTERICS project. The repository will be maintained during the second half of the project, with a final version as Deliverable D4.15 at the end of the project.

I. COPYRIGHT NOTICE

II. DELIVERY SLIP

	Name	Partner/WP	Date
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III. DOCUMENT LOG

Issue	Date	Comment	Author/Partner
1	24 April 2017	Initial version	F. Genova/CNRS-CDS
2	27 April 2017	Final version taking the PM comments into account	F. Genova/CNRS-CDS

IV. APPLICATON AREA

This document is a formal deliverable for the GA of the project, applicable to all members of the ASTERICS project, beneficiaries and third parties, as well as its collaborating projects.

V. TERMINOLOGY

ANTARES	Astronomy with a Neutrino Telescope and Abyss environmental Research
ASTERICS	Astronomy ESFRI & Research Infrastructure Cluster
CDS	Centre de Données astronomiques de Strasbourg
CNRS	Centre National de la Recherche Scientifique
D	Deliverable
DADI	Data Access, Discovery and Interoperability
ESFRI	European Strategic Forum for Research Infrastructures
GAVO	German Astrophysical Virtual Observatory
GLADE	Galaxy List for the Advanced Detector Era
HiPS	Hierarchical Progressive Survey
IVOA	International Virtual Observatory
Km3NeT	Cubic Kilometre Neutrino Telescope
pgsphere	Provides spherical data types, functions, and operators for PostgreSQL
PostgreSQL	A relational database management system
VizieR	CDS' database of astronomical catalogues and large surveys
VO	Virtual Observatory
WP	Work Package

A complete project glossary is provided at the following page:
http://www.asterics2020.eu/glossary/

VI. PROJECT SUMMARY

ASTERICS (Astronomy ESFRI & Research Infrastructure Cluster) aims to address the cross-cutting synergies and common challenges shared by the various Astronomy ESFRI facilities (SKA, CTA, KM3NeT & E-ELT). It brings together for the first time, the astronomy, astrophysics and particle astrophysics communities, in addition to other related research infrastructures. The major objectives of ASTERICS are to support and accelerate the implementation of the ESFRI telescopes, to enhance their performance beyond the current state-of-the-art, and to see them interoperate as an integrated, multi-wavelength and multi-messenger facility. An important focal point is the management, processing and scientific exploitation of the huge datasets the ESFRI facilities will generate. ASTERICS will seek solutions to these problems outside of the traditional channels by directly engaging and collaborating with industry and specialised SMEs. The various ESFRI pathfinders and precursors will present the perfect proving ground for new methodologies and prototype systems. In addition, ASTERICS will enable astronomers from across the member states to have broad access to the reduced data products of the ESFRI telescopes via a seamless interface to the Virtual Observatory framework. This will massively increase the scientific impact of the telescopes, and greatly encourage use (and re-use) of the data in new and novel ways, typically not foreseen in the original proposals. By demonstrating cross-facility synchronicity, and by harmonising various policy aspects, ASTERICS will realise a distributed and interoperable approach that ushers in a new multi-messenger era for astronomy. Through an active dissemination programme, including direct engagement with all relevant stakeholders, and via the development of citizen scientist mass participation experiments, ASTERICS has the ambition to be a flagship for the scientific, industrial and societal impact ESFRI projects can deliver.

VII. EXECUTIVE SUMMARY

The Repository of WP4 Products lists products relevant to the three DADI strands of work: support to scientists in their usage of the Virtual Observatory (VO), support to the ESFRIs and pathfinders in their uptake of the VO, and technological activities to update the VO framework of standards and tools. These products are organised into several sections: scientific tutorials, VO-enabled tools, VO standards, data publication tools, and other products of DADI work. The initial version will be maintained until the end of the project by adding new products and updating the provided information when needed, with a final delivery at the end of the project.

Table of Contents

1. Introduction

The Data Access, Discovery and Interoperability (DADI) Work Package of the ASTERICS project maintains a repository of its "products", with a first delivery at the project mid-term (April 2017, D4.8). The repository will then be regularly maintained with a final delivery at the end of the project. DADI has three strands of work:

- Support to ESFRIs and pathfinders in their uptake of the Virtual Observatory framework, including workshops involving the wider European data provider community
- Support to the scientific community in the usage of VO-enabled data and tools
- Technological activities to update the VO framework to optimize it to include ESFRI and pathfinder data and taking into account feedback from the ESFRIs and pathfinders and science users

2. Repository content

DADI has several kind of "products". Some have been developed totally or partially with DADI support. The Repository is aimed at providing useful information on DADI activity to stakeholders, so we included in addition some products which are also key components of the project with respect to the ESFRI facility and science needs.

The products in the Repository can be broadly classified in several categories:

- Scientific tutorials describing real use cases of VO-enabled data and tools, prepared and updated in particular in the framework of the annual DADI Schools
- VO-enabled tools in support to the ESFRI facility and science needs identified by the DADI
- VO standards in support to the ESFRI needs identified by the project
- Tools in support to data publishing in the VO
- Other results of collaborative work

DADI also organised many workshops which are direct products of its activities. The repository refers to the list of the Workshops, with a link to the meeting agenda and all the material presented, in DADI Wiki site: https://www.asterics2020.eu/dokuwiki/doku.php?id=open:wp4:start#events_organised_by_asterics_wp4. Some of the workshops were formal deliverables included in the project initial description of work, others were organised at the request of the ESFRI/pathfinder

partners on topics of specific interest to them, with in particular a series of Provenance Workshops.

Presentations of DADI participants in the Interoperability meetings organised twice a year by the International Virtual Observatory Alliance IVOA can also be considered as DADI "products".

Figure 1 displays the initial version of the repository.

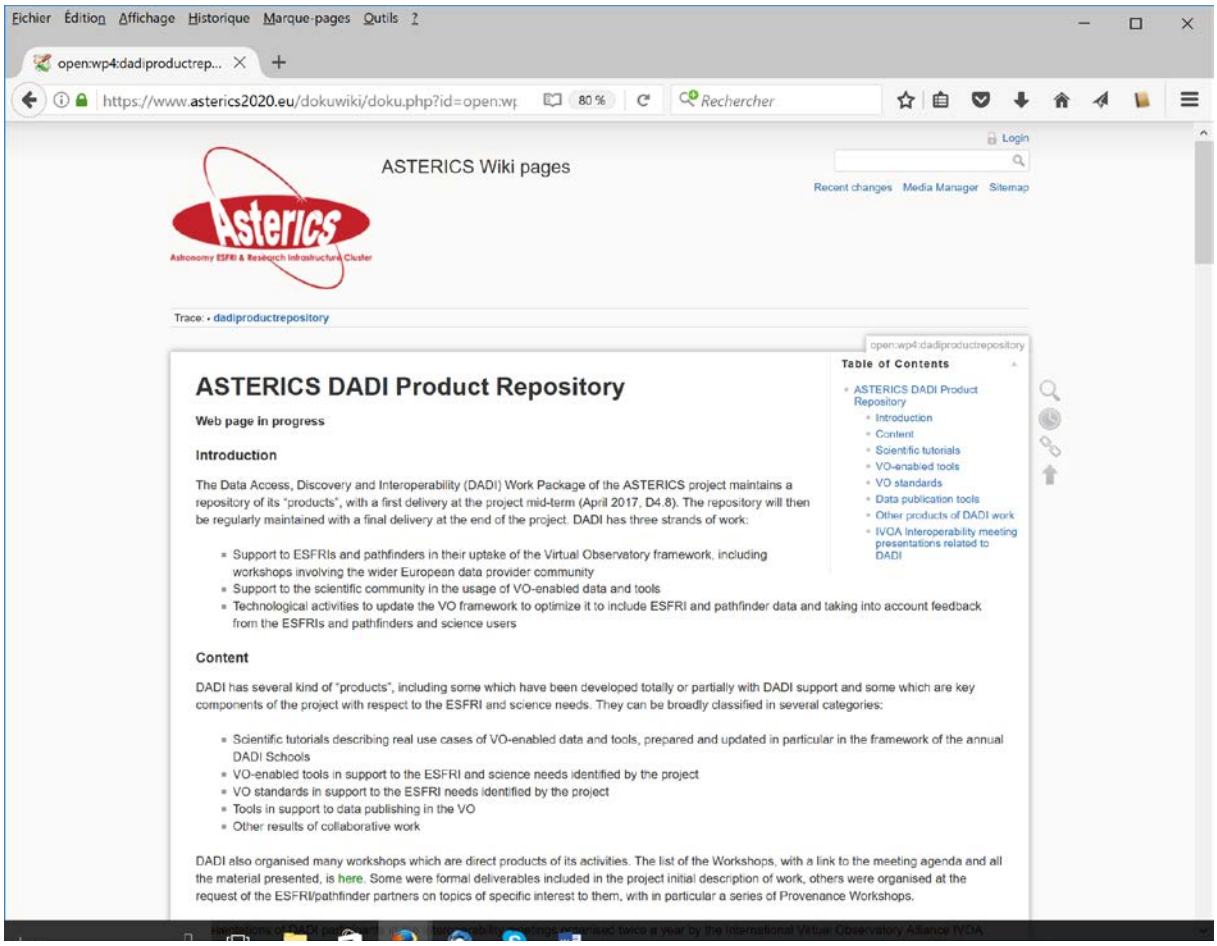

Figure 1: The repository of WP4 products

2.1. Scientific tutorials

The scientific tutorials prepared for the DADI Schools are provided on a sustainable web page from the Euro-VO web site http://www.euro-vo.org/?q=science/scientific-tutorials. The repository lists their last version to date, as well as additional tutorials prepared for different occasions by the DADI teams.

For each tutorial, the title, a link, a short description and the date of the current version and the Schools at which it was presented if relevant are provided.

2.2. VO standards

The repository lists the tools which were used in the scientific tutorials. A more complete list of VO-enabled applications can be found on the IVOA site at http://www.ivoa.net/astronomers/applications.html.

For each tool, the name, a link to the web site, a short description and the producer are provided.

2.3. VO-enabled tools

The VO standards and their history can be found in the IVOA Documents page: http://www.ivoa.net/documents/ . Several are particularly linked to DADI, either because they tackle DADI initial priorities, multi-dimensional data and time domain, or because they deal with topics which appeared as priorities for the ESFRIs, in particular HiPS and Provenance. The repository provides a short description of these standards of particular interest for DADI.

For each standard, their topic, the IVOA "category" (i.e. the IVOA Working Group in charge), the standard name, a link, a short description, and the current IVOA status, are provided.

2.4. Data publication tools

The list includes the data publication tools demonstrated during the Training sessions of DADI Workshops (only one of those, the Heidelberg European Data Provider Forum and Training Event[1] D4.6, has been held at the time of writing of this document). An excellent introduction to publishing in the VO, which can be used as a reference, was presented at this by Grégory Mantelet and can be found at http://www.g-vo.org/edp-forum-2016/slides/mantelet_VODataAccessService.pdf.

For each resource or set of resources, the name, a link, a short description, and the name of the producer, are provided.

[1] http://www.g-vo.org/edp-forum-2016

2.5. Other products of DADI work

This category contains other data products, which cannot be classified in one of the previous categories. In April 2017, it includes for instance the maintenance of pgsphere, an extension of the PostgreSQL database system widely used by astronomical data providers, the publication of ANTARES data in the VO by GAVO, which resulted from a discussion at the First ESFRI Forum and Training Event[2], and the inclusion of the GLADE catalogue in VizieR, which was initiated at the Gravitational Wave workshop[3].

2.6. Presentations related to DADI in the IVOA Interoperability meetings

The first IVOA meeting during ASTERICS was held just after the beginning of the project, too early to report on "DADI products". Three other meetings with a significant input from DADI were held during the first two years of the project:

- Sydney IVOA Interoperability meeting[4] - 29 October - 1 November 2015
- Cape Town IVOA Interoperability meeting[5] - 8-13 May 2016
- Trieste IVOA Interoperability meeting[6] - 21-23 October 2016

The list of talks presented at each of these meetings by participants working in European laboratories on topics discussed during DADI meetings is provided from the Repository.

3. Next steps

As explained, the repository will be regularly maintained until the end of the project, in particular after each relevant workshop and taking into account the new relevant IVOA standards.

[2] https://www.asterics2020.eu/dokuwiki/doku.php?id=open:wp4:wp4esfriforum1
[3] https://www.asterics2020.eu/dokuwiki/doku.php?id=open:wp4:wp4gwstrasbourg2016
[4] http://wiki.ivoa.net/twiki/bin/view/IVOA/InterOpOct2015
[5] http://ivoa2016.sa3.ac.za/
[6] http://www.adass2016.inaf.it/index.php/13-ivoa-interop