

## H2020-EINFRA-2017

### EINFRA-21-2017 - Platform-driven e-infrastructure innovation

#### DARE [777413] “Delivering Agile Research Excellence on European e-Infrastructures”



## D8.4 Training and Consulting report I

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<b>Document description</b>	This deliverable reports on the training events organized by WP6 and WP7 groups to present the first implementation of their respective pilots in the DARE platform; inferred evaluation results are also summarised. Moreover, it presents other external events organised by the DARE partners in the reference period.

## Document Revision History

Version	Date	Modifications Introduced	
		Modification Reason	Modified by
<b>v1</b>	14/6/2019	Initial Structure	F. Magnoni (INGV)
<b>v2</b>	28/6/2019	Introductory sections	F. Magnoni (INGV)
<b>v3</b>	01/07/2019	Completion of introductory sections and sections on WP6 training	E. Casarotti (INGV)
		Sections on WP7 training and contribution on section 4	C. Pagé (CERFACS)
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<b>v5</b>	11/07/2019	Contribution on section 4	I. Klampanos (NCSR)
<b>v6</b>	12/07/2019	Document ready for internal review	E. Casarotti (INGV)
<b>v7</b>	16/07/2019	Comments from Reviewer received	H. Schwichtenberg (FRAUNHOFER)
<b>v8</b>	24/07/2019	Final document	F. Magnoni (INGV)

## Executive Summary

This report discusses the training events held by WP6 and WP7 groups to present the first release of the DARE platform and the specific implementation of their respective pilots to a selected target of users. Quantitative and qualitative evaluations of the training events are discussed by analysing user feedback through questionnaires. Recent events organized by DARE partners to promote the project are also presented together with other upcoming events.

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## List of Terms and Abbreviations

Abbreviation	Definition
RA	Rapid Assessment
ENES	European Network for Earth System modelling

## **1 Introduction**

### **1.1 Purpose and Scope**

The purpose of this report is to describe recent events organised by DARE partners to promote the project including the training events held by WP6 and WP7 to present their respective pilots to a selected target of users.

### **1.2 Approach and Relationship to other Workpackages and Deliverables**

This deliverable is closely linked to WP6 and WP7, responsible for the seismic and climate use cases respectively, and other work packages that participated in the organized events, both trainings and external events (WP2, WP3, WP4). Related deliverables are D6.3, D7.3, D8.2 that contain additional details on the trainings and other outreach events.

### **1.3 Methodology and Structure of the Deliverable**

The structure of this deliverable is as follows: first, the report briefly exposes the two main training events (organized by WP6 and WP7); in the last part, it describes the past and upcoming disseminating events organised by DARE.

## 2 WP6 -- EPOS training

This section describes the organisation of the WP6 training event and summarises the evaluation results.

### 2.1 Motivations

The training was motivated by the need to disseminate the DARE platform to the seismological community, exposing the platform to future users asking feedback to improve the architecture and orientate the second phase of the project.

### 2.2 Structure of the training

The WP6 training event was organised at INGV (Rome - Italy) on June 27th, 2019. To accommodate higher participation of researchers from INGV also working on the seismic monitoring system, a place close to the seismic monitoring room was chosen. A remote connection was necessary for trainers (see deliverable D6.3 for details). The agenda was the following:

09:00-09:05	Scope of the Training Evaluation	INGV	<i>Federica Magnoni</i>
09:05-09:20	Introduction on the DARE project and its main goals	NCSR	<i>Iraklis Klampanos</i>
09:20-09:50	Ground Motion Rapid Assessment (RA) test case within the EPOS use case: <ul style="list-style-type: none"> <li>● scientific problem and main step decomposition</li> <li>● Approaching the problem without and with DARE - Main advantages added by using DARE</li> <li>● Preliminary look at the whole workflow</li> </ul>	INGV	<i>Federica Magnoni</i>
10:05-10:20	Introduction on the APIs, containers, Kubernetes: <ul style="list-style-type: none"> <li>● Concepts and functioning</li> <li>● Components</li> <li>● Main advantages</li> </ul>	NCSR	<i>Athanasios Davvetas</i>
10:20-10:35	Introduction on dispel4py: <ul style="list-style-type: none"> <li>● Concepts and functioning</li> <li>● Main advantages</li> </ul>	UEDIN	<i>Amy Krause</i>
10:35-10:50	Introduction on provenance: <ul style="list-style-type: none"> <li>● Concepts and functioning</li> <li>● Main advantages</li> </ul>	KNMI	<i>Hans Verhoef</i>

10:50-12:30	Exploring the workflow in more details: <ul style="list-style-type: none"> <li>• Look at the API calls and the structure behind the dispel4py workflows using a Jupyter Notebook</li> <li>• Live demo testing the whole RA workflow</li> </ul>	INGV	<i>Federica Magnoni</i>
12:30-13:00	Questions and discussion Questionnaire of evaluation (Google form)	All All/INGV	<i>Emanuele Casarotti</i>

During the demo, the participants assisted to a live execution of the RA workflow through the Jupyter Notebook performed by the trainer (see deliverable D6.3).

For the evaluation of the training event, a Google Form anonymous questionnaire was prepared (available at this link<sup>1</sup>). It aims at establishing the competencies of the attendees together with their feedback on the first prototype of the DARE platform and the implementation of the specific RA test case.

## 2.3 Participants

The participants to the training were accurately chosen in order to provide useful feedback on the usefulness of the platform, additional developments to be made and bottlenecks to be solved. For the WP6 training, we selected 9 experts, all of them working at INGV in different technical and research areas. In particular 7 of them define themselves as research developers, 4 with a technical background on software and workflow development and implementation, computing (both cloud and HPC) and data-intensive analyses, and 3 with experience on both software development and domain-specific research. Some of these attendees are involved in the EPOS infrastructure. Finally, two of the attendees have a more scientific background with good knowledge of development and computing. The level of experience of the participants was quantitatively evaluated through question #1 of the questionnaire and results are reported in Figure 1.

This heterogeneity of expertise is typical of the seismological scientific environment of INGV where the domain experts are called to develop software and workflow to create scientific products for civil protection operational tasks. In this environment, the presence of participants with heterogeneous expertise is critical to expose the advantages and difficulties in using the DARE platform for the RA test case.

<sup>1</sup> <https://docs.google.com/forms/d/e/1FAIpQLSevBL6vVeyHlv2yBghodiUqi-ESOaSPIOdBtsInHLrkCC8QaA/viewform>

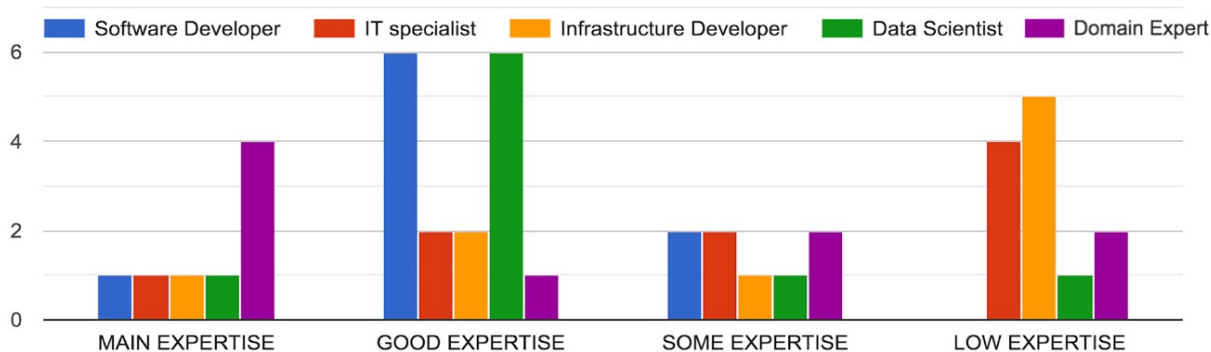


Figure 1: Expertise of the WP6 training participants

## 2.4 Evaluation results

A full description of the results is included in deliverable D6.3. The overall conclusion is a positive review, with a strong promising note since the attendees remark that the platform can ease and accelerate the development of workflows, including the integration of available e-infrastructure services. Attendees showed a high interest to use the platform for their future work. They suggested to provide more scientific examples of using the DARE platform, that is an understandable conclusion since the characteristics of the audience.

## 3 WP7 -- IS-ENES training

This section describes the organisation of the WP7 training event and summarises the evaluation results.

### 3.1 Motivations

The Climate Science domain is experiencing significant changes in how the researchers and users are accessing the data. The Research Infrastructure is quite advanced, with standardised file format and metadata, transfer protocols, dataset catalogs, a federation of data nodes for distribution, among others. Nevertheless, data access methods must evolve as most of the users or institutes are still downloading data subsets to analyse them locally. In deliverable D7.1, the reader will find a detailed description of the motivations and requirements, so it will not be reproduced here.

The evaluation training was designed to steer the development of the DARE platform for the Climate domain, as well as train future users of the platform. The training feedback are aimed at improving the architecture and platform as well as updating the requirements. Another important scope is to disseminate and advertise the platform for future use in the community.

### 3.2 Structure of the training

The training was organised in Utrecht, Netherlands, June 17th, 2019. It was a day before an IS-ENES technical meeting (Coding Sprint), at the same location, and it was organized by CERFACS. KNMI was also involved for the local organisation.

It took place in a meeting room in a hotel, with a table in a U shape. A remote connection was setup for remote attendees using Webex. The agenda was the following:



## Monday, 17 June 2019 – DARE Platform Evaluation

**Goal: Present the DARE Project Objectives and Platform.**

**Evaluation of the DARE Platform by attendees.**

**Venue: Hotel 'De Biltsche Hoek'**

Time	Topic	Lead by	Duration
13:30	<i>Welcome, Equipment set-up, Coffee &amp; Coffee</i>	WSC/MP	30'
14:00	<i>Practical Information &amp; Presentation of the Agenda</i>	WSC/MP	5'
14:05	<i>Objectives of the DARE Platform Evaluation</i>	CP	5'
14:10	<i>DARE Project: General Approach</i>	CP	15'
14:25	<i>DARE Climate Domain Pilot</i>	CP	15'
14:40	<i>DARE API</i>	CP	15'
14:55	<i>DARE dispel4py and provenance</i>	AS	20'
15:15	<i>Coffee break</i>	CP	15'
15:30	<i>Practical Implementation of the Climate Use Case</i>	CP	30'
16:00	<i>What DARE can do for you?</i>	CP	15'
16:15	<i>DARE Platform Evaluation &amp; Reporting (Google Form)</i>	All	30'
16:45	<i>Feedback on the Evaluation</i>	CP/All	15'
17:00	<i>Closure of DARE Platform Evaluation</i>		

The training was structured in a standard fashion, with introductory presentations followed by more detailed ones, and then ending with the evaluation itself. Attendees were strongly encouraged to ask questions during presentations. The introductory presentations were to allow participants to have an overview of the whole project and objectives, and how it sits with respect to other projects, infrastructures and services.

### 3.3 Participants

Participation to the training was by invitation only, and the targeted domains were software and infrastructure developers, as can be seen in Figure 2. Overall there were 16 participants, 4 people using the remote connection.

*Remote attendees*

- From DARE: 1 software developer from DARE, and 1 from the seismology domain
- From IS-ENES: 2 software/infrastructure developers

### Attendees in room

- From DARE: 3 software developers
- From IS-ENES: 9 software/infrastructure developers

They were quite active during the training, asking questions, having discussions at the end of presentations. Some of the attendees were from the DARE project itself. 8 attendees filled the evaluation form, and the results are presented and discussed in details in deliverable D7.3.

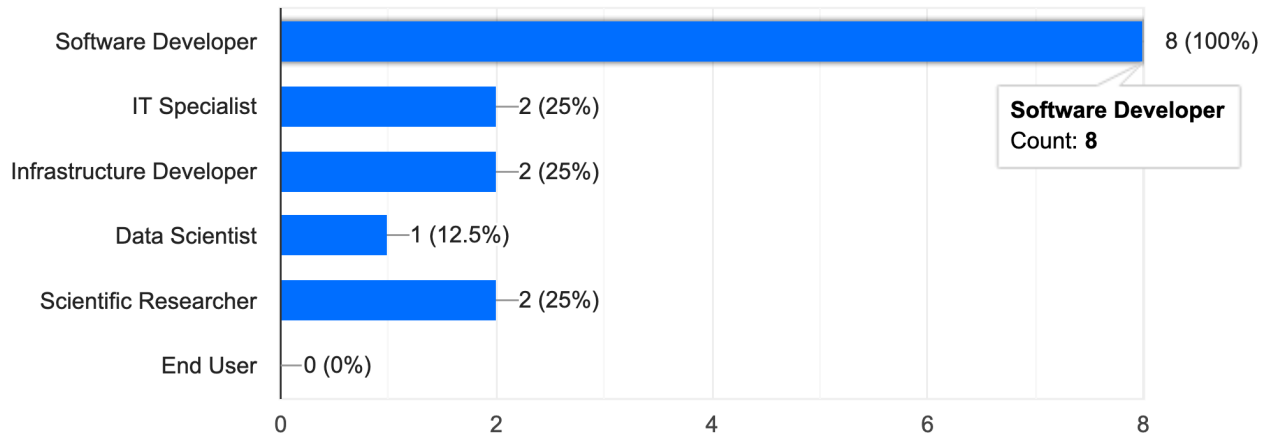


Figure 2: Expertise of the WP7 training participants

## 3.4 Evaluation results

The evaluation was quite positive, and the participants were quite satisfied in how it was organised. The feedback will be quite useful for the next DARE development phases, and a second training is expected to be organized in the second half of the DARE project. A full description of the results is included in deliverable D7.3.

## 4 Other events organized by DARE

In the following we describe the events, occurred (or that will occur) in the reference period, that the DARE partners have directly organised or in which they presented focused sessions.

Other dissemination and outreach events in which DARE partners participated are described in deliverable D8.2 (containing also other details on the events described in the following).

### 4.1 IWSG 2018 – 10<sup>th</sup> International Workshop on Science Gateways

On June 13th-15th, 2018, the 10th International Workshop on Science Gateways was held in Edinburgh, Scotland<sup>2</sup>.

The workshop had the scope to bring together researchers and scientists from different research domains, along with developers, to discuss problems and solutions in the area, to identify new issues,

<sup>2</sup> <https://sites.google.com/a/nd.edu/iwsg2018/>

to shape future directions for research, foster the exchange of ideas, standards and common requirements and push towards the wider adoption of science gateways.

The workshop was organised by the team member Malcolm Atkinson (UEDIN).

## 4.2 6<sup>th</sup> Hellenic Forum: The role of Research e-infrastructures in the National Research Agenda

On July 10th, 2018, DARE organised the workshop ‘The role of Research e-infrastructures in the National Research Agenda’ in the frame of the 6<sup>th</sup> Hellenic Forum, at the NCSR Demokritos campus in Athens, Greece<sup>3</sup>.

Over 80 delegates participated in the workshop, amongst which the Secretary General for Research & Technology, Ministry of Education & Religious Affairs Dr. P. Kyprianidou, who discussed the role of e-Infrastructures whilst presenting current issues and directions in strengthening the role of national research e-infrastructures.

The workshop was organised by Vangelis Karkaletsis, DARE project coordinator (NCSR).

## 4.3 American Geophysical Union (AGU) 2018

In the last American Geophysical Union (AGU) Meeting, held in Washington from December 10th to 14th 2018, the project DARE presented the session ‘IN31A: Innovative Data-Driven Platforms and VREs for Complex Earth, Space, and Environmental Sciences Applications’ featuring both oral<sup>4</sup> and poster presentations<sup>5</sup>. This session focused on innovative approaches to manage huge data volumes and complex infrastructure interactions including architectures, workflow systems, provenance, front-ends and services designed to enable large-scale data-driven research products; methods of sharing developments; recognised challenges; and future visions.

The session was co-organised by the team members Christian Pagé (CERFACS), Rosa Filgueira (UEDIN) and Iraklis Klampanos (NCSR). Attendance and number of abstracts were good, as the session got an oral slot, and another smaller session in the same topic was merged to the DARE-organised session.

## 4.4 DARE-DEEP-XDC Co-Organised Workshop 2019

DARE, along with DEEP and XDC jointly organised a clustering workshop on July 10th 2019, where other related EC-funded projects and initiatives were also represented. All six EINFRA-21 projects (DARE, DEEP, EUXDAT, FREYA, PROCESS and XDC) attended as well as other EOSC-hub partners, EC officials and other stakeholders. This action was primarily designed to form a common discussion platform between the EINFRA-21 projects and lead to synergies between them in order to avoid technical and other types of overlap. Technical discussions, primarily aimed at EINFRA-21 projects, followed in the morning of July 11th, which led to a list of concrete directions to be explored between projects in the near future.

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<sup>3</sup> <http://project-dare.eu/2019/03/08/dare-organises-einfrastructures-workshop-at-6th-hellenic-forum/>

<sup>4</sup> <https://agu.confex.com/agu/fm18/meetingapp.cgi/Session/60642>

<sup>5</sup> <https://agu.confex.com/agu/fm18/meetingapp.cgi/Session/56641>

## 4.5 Bridging from Concepts to Data and Computation (BC2DC) 2019

We have organised the workshop ‘Bridging from Concepts to Data Computation (BC2DC)’<sup>6</sup> collocated with the eScience 2019 International Conference<sup>7</sup>, which will be celebrated next September 24th to 27th in San Diego, California (USA). BC2DC workshop has been co-organised by team members Iraklis Klampanos (NCSR), Rosa Filgueira (UEDIN) and Malcolm Atkinson (UEDIN) in collaboration with Rafael Ferreira da Silva (USC).

BC2DC aims to address the issue of technological and methodological diversity and how bridging them via concept-based systems benefits research developers to deliver increasingly complex eScience systems. In particular, we are welcoming contributions in areas such as semantic concept description and implementation; specification and execution of conceptually formulated methods; component descriptions facilitating reliable composition; architectures, frameworks and design patterns delivering flexible use and incremental composition, etc.

Our expectation is that we will receive 10-15 submissions. We will welcome full lengths and short articles, and extended abstracts.

## 4.6 American Geophysical Union (AGU) 2019

Also this year, the project DARE has been granted by a session at the AGU Fall Meeting, held in San Francisco from December 9th to 13th. The session ‘IN021: Data-Oriented and Self-Optimizing Architectures and Workflows for Earth, Space and Climate Science Applications’<sup>8</sup> has the goal of discussing innovative approaches and new ideas on data distribution platforms, architectures, and workflows themselves to support research in Earth and Space Sciences.

The session has been co-organised by the team members Christian Pagé (CERFACS), Iraklis Klampanos (NCSR), Rosa Filgueira (UEDIN) and Alessandro Spinuso (KNMI).

## 5 Conclusions

In the reference period, DARE partners participated in several workshops or meetings and, in addition, directly organized sessions and training events to promote the project and obtain important feedback for the development of the second phase of the project.

In particular, the training events held by WP6 and WP7 to present their respective pilots to a selected target of users show quite promising outcomes. The DARE platform is recognised as a tool which meets domain specific communities’ expectations easing and accelerating the development of workflows and integrating available e-infrastructure services. The feedback will be quite useful for the next DARE development phases, and a second training is expected to be organized in the second half of the DARE project.

Especially during the WP6 demo, the attendees suggested to provide more scientific and operational examples with the use of the platform. Even if the DARE platform is oriented for research developers, this is a reasonable request and is a strong remark that the user test cases of WP6 and WP7 will be crucial both for the second phase of the project and for the dissemination of the platform.

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<sup>6</sup> <https://bc2dc.github.io/>

<sup>7</sup> <https://escience2019.sdsc.edu>

<sup>8</sup> <https://lnkd.in/gVUNvJp>