GEDE DO Participation Request

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Dimitris Koureas & Peter Wittenburg

Within the framework of the DO activities we are committed to write a few papers which may shed light on the usefulness of the DO concept. Here we give a short overview:

1. The first paper is the one written by Wittenburg & Strawn which already got quite some attraction (Common Patterns in Revolutionary Infrastructures and Data: <http://doi.org/10.23728/b2share.4e8ac36c0dd343da81fd9e83e72805a0>)
2. The second one is currently being written by some C2CAMP and GO FAIR colleagues to look at DOs from a more computer science view.
3. **The third one will be a paper with views from scientific domains how they see the usefulness of the DO concept. Here Dimitris Koureas and Peter Wittenburg take the lead to kick it off. The hope is to have a paper until Christmas.**
4. A fourth one is currently being written by Erik Schulthes (GO FAIR) and Peter Wittenburg (RDA/C2CAMP/GEDE) about the relation between the DO concept and the FAIR principles. Erik already elaborated on this in his workshop talk.

What we have noticed in our various talks in the EC is that there is a great interest in this topic and that EC colleagues see now the potential of DO-based infrastructures to realise part of the EOSC, i.e. the purpose is to get the above mentioned papers as soon as possible without compromising on the quality of the content.

This is a request to interested scientific communities to describe their potential application of the DO concept within their infrastructure plans with the intention to integrate them where possible into the third paper to be written. Examples for such applications can be found in the GEDE Share[[1]](#footnote-2) to which you all should have access[[2]](#footnote-3). We will collect the contributions, probably discuss some questions with the proposers and then see how we can best integrate the contributions into the paper to be written. The contributions must make clear statements about the use case and the gain that are expected with the integration of the DO concept. In case of questions, don't hesitate to contact Peter (+49 15141858784).

Please submit a filled in template (see below) as is indicated below and provide references were possible. You can also attach papers to your contribution email, but these should not exceed 5 pages.

Please, submit the filled-in templates until 19. October 2018

Dimitris & Peter

GEDE DO Participation Template

## Name and Institution

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## Email and Telephone Number

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## Names of Collaborators

EISCAT\_3D system engineering group

## Research Community

EISCAT community

GeoSpace community

Atmosphere community

Astronomy community

## Major Goals of the Ongoing Infrastructure work

EISCAT scientific association was established in 1976 to conduct research on the lower, middle and upper atmosphere and the ionosphere using the incoherent scatter radar technique. With the construction of the new advanced radar system, EISCAT\_3D to be operational 2021, the scope of research and user community widens considerable.

## Potential of the DO Concept for your Work

The present EISCAT radars produces data in 3 levels. These do not have any PIDs or DOIs. We have some internal versioning of hardware, software and metadata. The data is mainly identified with time and source via database, with unique resource ids.

For EISCAT\_3D, this setup is far from sufficient. The system is much more complex with the source from many thousands of individual transmitters and receivers, each with unique properties. The transfer between different levels of data goes through many sets of processing steps, each with unique metadata. The operation itself is based on a database containing lists of events, Master Even List, with over 1000 events per second per station. As the user base will be widened to more communities, requiring data at various levels of processing. So, it’s needed a large number of identifiers for the many digital objects.

Since the same EISCAT\_3D data can be used in many ways depending on the scientific interest, it is extremely rich in nature. EISCAT will do reductions of data to a predefined number of high level data sets for mainly quick look accesses. However, the processes are based on sets of parameters, which often users wants to adjust to suite there needs. Also users will develop their own codes on the data. Scenarios like this need to be defined to instances of entries for formal Digital Objects.

EISCAT is rapidly moving to fully adopt the FAIR data principles. As EISCAT\_3D will run 24/7, as opposed to the present campaign based EISCAT, the main source of research will be accessing different data buffer stages or the eternal archive, the primarily principle is the Reuse. However, for Reuse to be efficient, the data has to be Findable and Accessible. Many of the users are collecting data also from other instruments, like in-situ measurements from satellites and ground based networks of cameras and geophysical data, and use these as triggers for selecting EISCAT data. So, the data has also to be Interoperable. Here, the use of DO is a vital ingredient.

EISCAT\_3D are involved in a number of projects to develop and utilise resources within large eInfrastructure networks. On the European level a Competence Centre for finding, accessing and processing is developed within EOSC-hub. Interoperability should be addressed withi the ENVRI-FAIR project. A more local project is the EISCAT\_3D Data Solutions within the Nordic eInfrastructure Collaboration addressing both the local data systems and a wider network structure following principles of the LHC. In all these projects the questions of DOs are central.

1. [https://datashare.mpcdf.mpg.de/index.php/apps/files?dir=/GEDE/digital%20objects/GEDE-DO%20meetings/workshop-september-18&fileid=63958403](https://datashare.mpcdf.mpg.de/index.php/apps/files?dir=/GEDE/digital objects/GEDE-DO meetings/workshop-september-18&fileid=63958403) [↑](#footnote-ref-2)
2. Those who presented their plans already at the recent workshop do not have to submit these templates since we discussed the slides already. [↑](#footnote-ref-3)