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From the ORFEUS centralized archive to the EIDA distributed data centre

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The ORFEUS data centre, initially designed as a single and centralized data centre, has evolved through a number of European infrastructural projects towards an efficient federation of data and services governed within ORFEUS now known as the European Integrated Data Archive (EIDA; http://www.orfeus-eu.org/eida/eida.html). The EIDA federated data centre today openly distributes data from more than 5500 stations via 11 data centres distributed across Europe in a fully transparent way.

The rapid growth of seismology in Europe - from the ∼30 openly available off-line stations in 1987 when ORFEUS started, to the current situation with thousands of stations, many available in near real-time - required ORFEUS to move from a single centralized archive to a federated approach. EIDA formally started in 2013 and since then has grown in terms of the number of contributing data archives, the volume of these archives, the variability of the data, as well as the number of users and the volume of downloads. The recent integration of the National Observatory of Athens (NOA) data centre as the latest EIDA node, the integration of the AlpArray Seismic Network (AASN) into EIDA through 7 nodes and the ongoing integration of more multidisciplinary data for Near Fault Observatories (NFO) and other thematic services within the European Plate Observing System (EPOS) are a clear evidence of the success of EIDA.

The EIDA Next Generation (NG) concept currently being developed within EPOS-IP, leveraging on other European projects (e.g. EUDAT, ENVRI+, etc) and on the commitment of the individual EIDA nodes, will provide additional federated services like standard quality assurance, routing and mediator services. These services will allow the user to perform complex data requests with the possibility of filtering using standard quality metrics. In order to reach the goal of building a federated European data centre that serves the widest amount of quality controlled seismic data with the smallest delay, the near future challenges will remain with the incorporation of new data from the EuroMed region into EIDA and with the management of an ever-growing federated archive.