Development and implementation of a relational database to the NODC-IEO databases.

Optimization of storage efficiency, management and accessibility to the data.

I. Chamarro, E. Tel.

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

INSTITUTO ESPAÑOL DE OCEANOGRAFIA 1914

Since 1964, the Spanish Institute of Oceanography(IEO) has headed the National Oceanographic Data Center (CEDO/NODC) being responsible for the collection, storage and distribution of marine data. The NODC has implemented an infrastructure that reduces the time required to incorporate marine data and information from its acquisition to its the permanent databases. The development and implementation of a relational database (RDB) allows to establish a logical structure which determines a set of relationships between the data and the associated metadata.
The implementation of an RDB in the NODC-IEO databases presents important advantages from the point of view of metadata management. Problems of redundancy and data inconsistency are avoided favoring the standardization. In addition, allows a quicker access to the stored information and the regular updates.

The RDB has been made using PostGreSQL/PostGis(https://www.postgresql.org), a database management system developed as open source. The RDB is designed to containing the necessary information to generate the Common Data Index (CDI) files used by the Pan-European infrastructure for ocean and marine data management (https://www.seadatanet.org/). The database has been also designed to store information from the Cruise Summary Reports (CSR), Marine Organizations (EDMO) and Observing Systems (EDIOS) by inventory tables, as well as common vocabularies used for all these inventories and metadata. Linking the RDB with the MIKADO software tool (https://www.seadatanet.org/Software/MIKADO) allows the retrieving the necessary information to generate the CDI files that supports the SeaDataNet system from the RDB. Moreover, it supports the NODC-IEO contributions to the European initiatives like SeaDataCloud project[1] (SDC), EMODNET [2](set 4:Chemistry), as well as national requeriments.
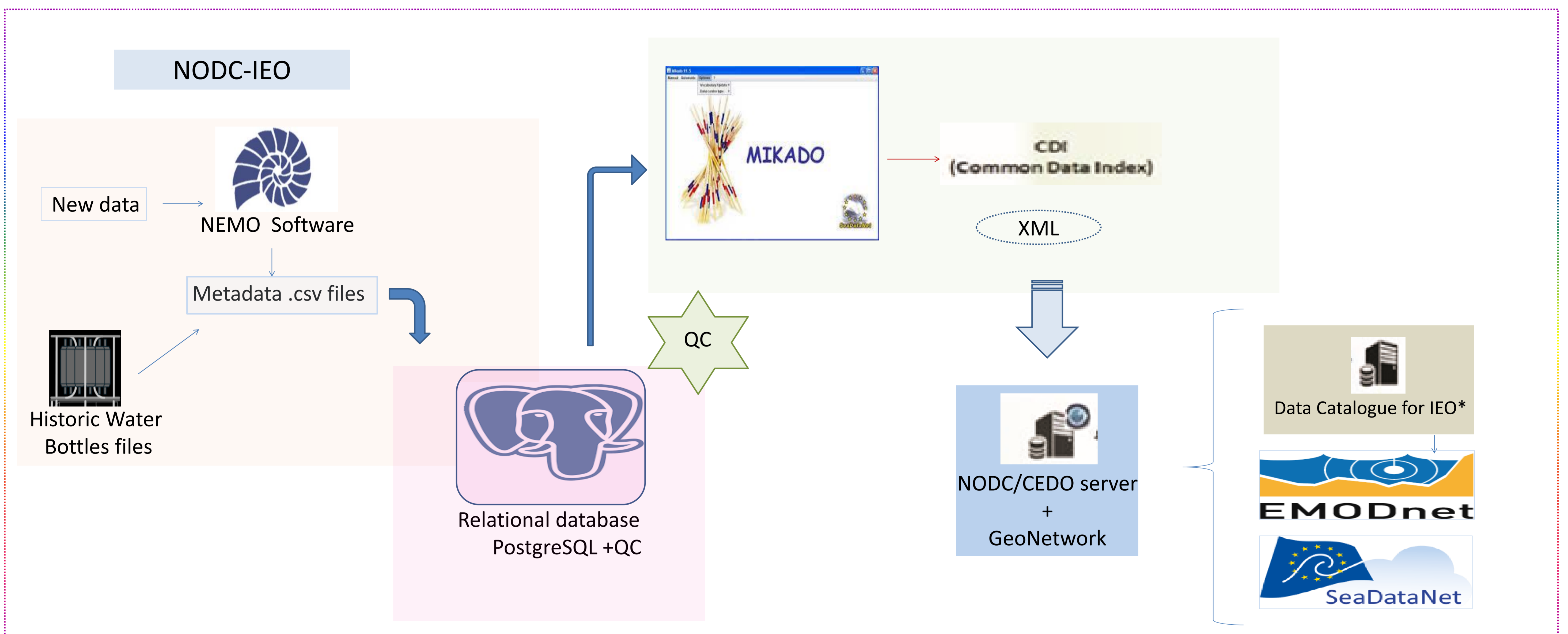
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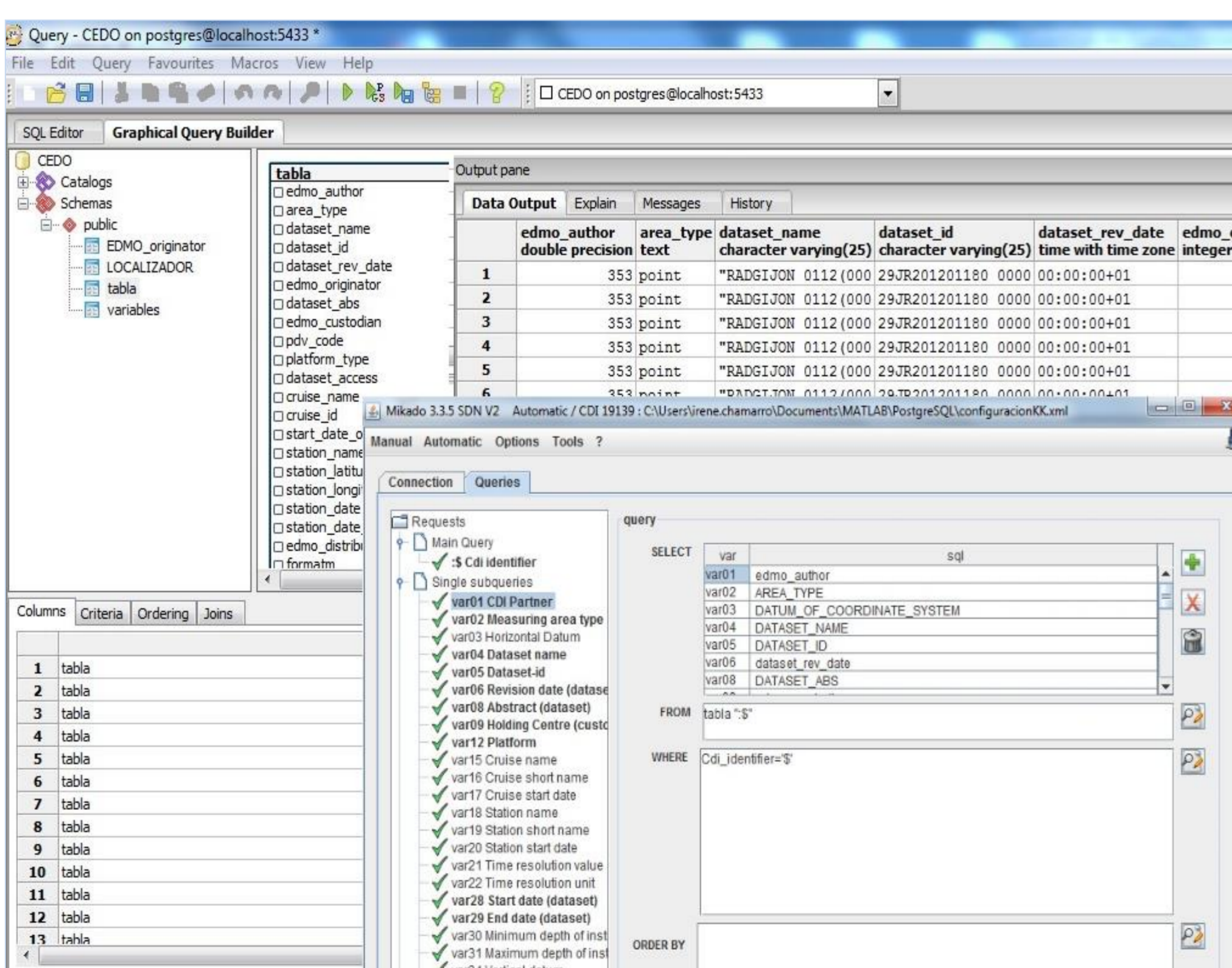
- NODC-IEO keeps water bottles data from 1961 to 2018 and on going. A big effort to update this historical data set is being made in the framework of EMODNET (Chemistry lot) initiative, including QC criteria revisions and vocabularies updates.

- As a national oceanographic data center, a continuous increase in the volume of information stored in its databases is expected. Regular updates of the RDB will be the key to optimizing storage efficiency, administration and access to data, achieving the national and international commitments.

- Currently the RDB is in the process of development, working on the correct design of the tables that feed the RDB so that the Mikado software allows obtaining the .xml files in internationally accepted formats.