ABSTRACT
Bathymetric products result of measurements carried out by various organizations whose responsibilities and objectives differ significantly from one to another: oceanographic institutions, universities, hydrographic offices and private companies. Collecting soundings by these organizations to make bathymetric products is time consuming and expensive. Many of their data sets are not indexed in public catalogues. Policies of data providers might restrict their access especially in cross border areas or require long, and not always successful, negotiations. Lack of common approaches (metadata and data content) make processing complex and sometimes impossible.

A general mechanism to create DTM (Digital Terrain Model) has been developed to provide bathymetric data from multiple data providers. This has been done in the framework of the European Emodnet hydrography, Geo-Seas and SeaDataNet (SDN) initiatives and distributed marine data infrastructures.

1. GENERAL REQUIREMENTS
- Convergence towards an unified format (S-100)
- Generaly decimated
- Some HO are related to the defence sector
- Limited number of source datasets (at the highest resolution)
- Variable from free to access to the licence
- Dictated by the nature of the data
- Some HO are related to the defense sector (S-100)
- Limited number of source datasets
- Holes permitted
- Smoothing must be limiting
- Smoothing should be application dependent
- Interpolation

2. SOURCE DATA SAMPLING
- Predefined regular rectangular grids with common origin
- Unique hierarchy of resolution
- Use of SDN Common Data Index (CDI) to identify source datasets (DS)
- Multi layer grids to transport information for DS aggregation, lineage and quality assessment
- Convergence with INSPIRE

3. AGGREGATION MECHANISM
- Mechanism easy to implement
- Preservation of the data providers policies
- Promotion of their datasets indexed in SDN/Geo-Seas CDI catalogue
- Faster and simplified data access (depending on selected resolution)
- Easier quality assessment and lineage control
- Harmonized data content and format
- Usability
- Access to metadata of source datasets using CDI Id

4. MULTI LAYER PRODUCT GRID (product)
- Predefined grids
- Convergence (of resolutions)
- Use of SDN Common Data Index (CDI)

5. PRODUCT AND VIEWING SERVICES
- New services can be offered such as 3D viewing using tools such as the Globe 3D viewer (Ifremer), a freeware adapted to the Geo-Seas purposes.
- Both the DTM products and the corresponding services are designed to help end-users to access bathymetric products, metadata and other qualitative attributes and to assess the quality of the source data sets and their fitness of use.

6. CONCLUSION
- The success of the european projects using similar principles and procedure shows that the proposed mechanism to provide data has been well accepted by many partners as it preserves their interest while giving more visibility on their activities.
- This mechanism allowed a decentralized cooperation for the production of large coverage synthesis, using decimated grid and leaving source datasets (at the highest resolution) held and managed by the data provider.
- This decentralization allowed also a closer interaction with local actors. Overall, the mechanism contributed to create the EMODNET 15" DTM of the European Seas in a remarkable short time.

http://www.emodnet-hydrography.eu/
http://www.geo-seas.eu/
http://www.seedatunet.org/