Universal database of Unified System of Information on the World Ocean

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To ensure the integrated provision of hydrometeorological information and information on marine activities to users, integration of distributed and heterogeneous data is needed. Integration is implemented with the help of the unified data description model based on 19115/19139 ISO standards, unified vocabulary of parameters, common codes and classifiers. For data held in various sources various types of physical storage are typical: factographic, object (images and documents), spatial, service. There are various types of data logical presentation: points, profiles, grids. The same attributes of data may be presented in various units of measurement and numerical systems. In addition, data management is required when data are downloaded, processed and used. For all of these processes data harmonization is necessary. Data harmonization is implemented with the help of the universal data base (UDB) developed as a result of data integration to allow data to be presented in a unified form to be further used for generation of information products (Figure 1).

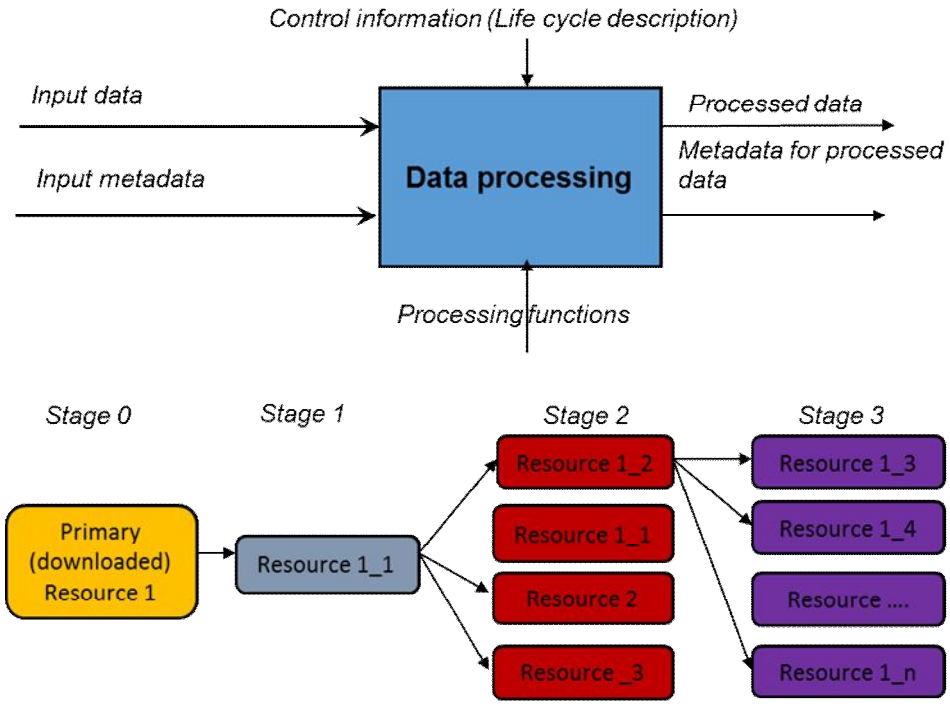

Figure 1: Pipelined data processing

The UDB provides a unified access to data and metadata. A set of parameters of the environment may change with time. These changes should traced automatically and the UDB should be adapted in due time to ensure adequate data downloading. The UDB should have a data model, which makes it possible to deal with any data being integrated due to the flat data structure used for all types of data. The UDB should include a set of functions for preliminary data processing (library of processing functions) such as conversion to unified units of measurement, filtration (e.g. by specific parameters), calculation of derived characteristics, integration of data from various sources, data accumulation in time, data indexation, etc. These functions are included into the data processing algorithm and are reflected in the data life cycle. Implementation of the algorithm, fixed in the data life cycle, results in

one or several derived tables of the data base. The UDB also manages the process of services updating.