# From Sustainable Development Data to a Human-centered Knowledge Society: the CODATA-O3D Approach

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O3D is one of the CODATA France projects, aimed at developing an international network - the O3D Club - enabling its members to acquire a scientific multi-disciplinary knowledge on all aspects of sustainable development. Members of the network are decision makers, scientists, academics, engineers, managers and politicians, all of them are aware that sustainable development requires a totally new approach to meet the challenges of an entirely new world. An important facet of the network is the focus put on the communication issues within the groups through conferences, seminars, workshops, publications, with the support of a Wiki database. The O3D project combines together several sustainable development axes, all expressed using the same framework (in order to simplify exchange issues), enabling members to be organized and to work in communities of interest. This way of working provides the members of the communities with a very high level of expertise both from a technical point of view and also in terms of management of those communities of interest. The work and the dissemination of the results are hosted on a Wiki providing a powerful information sharing platform available to all members of the different working groups.

Main principles and philosophy of the O3D project: The way of working consists in links built up between theoretical knowledge, and corresponding actions, using methods and tools suited to the specificity of sustainable development data and information : huge amounts of data, scattered over worldwide databases and warehouses, neither consistent, nor interoperable, not even expressed with the same units, and thus most of the time impossible to compare.

The O3D approach can be seen as a transition mechanism enabling a changeover from data (related to sustainable development) to a knowledge society integrating sustainable development issues. This transition is made up of several stages, as the degree of complexity of the problems increases, and leading to a higher degree of structuration of the information handled.

The initial stage corresponds to a stand-alone way of processing and analyzing data, through the use of search engines, bibliographies. The final stage offers a fully integrated and shared knowledge, highly complex but possibly complete, with completeness and consistency checking features (through the use of knowledge representation tools, such as ontologies), and highly shared among communities of people interested in the topics. In between,

several intermediate stages have to be developed, in order to set up the methodology support of the transition process.

This semantic integration of the different information sources provided by the transition process gives the user the feeling of using a homogeneous and centralized information system, even though the real system can be very complex !

The benefits of this approach are multiple, one of the most important being that this methodology provides a powerful way of controlling information, associated with automated inference and consistency checking tools : consistency checking of numerical data is easy to do, but here reasoning features apply to concepts (information, knowledge, organizations) and not on data. The contribution of the CODATA-O3D project is to provide methods and tools applicable to concepts, enabling the user of this kind of information to build up his own technical expertise, based on already existing sources.

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