

## BIOLOG, AN INDUSTRIAL BIOSTRATIGRAPHIC DATABASE

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Developed at ELF EP since 1995, BIOLOG houses all biostratigraphic data from oil wells or sections.

Basically, BIOLOG stores taxa names and frequencies (quantitative or semi-quantitative) related to processed samples, and the interpreted results. The taxonomic part has recently been extended to accommodate taxa illustrations, and collections. The data model (fig. 1) described here has been developed prior to any implementation of the database, and any improvement follows the same path. The data model hence includes all concepts needed for the development of an image database, although this part of the database is now only in development.

### DATAMODEL :

By convention, the blue squares refer to entities, the yellow circles to the relationships between them. The numbers express the respective minimal and maximal admitted quantities of the linked item. This presentation is a simplification of the actual model (which includes moreover a dictionary, for the model is not sufficient for an unambiguous description). Note that for some items, the readability of the scheme imposed the duplication of the concept (even 3 “Author” for instance). The same name of entities refer to the same concept, while same names for the relationships are only admitted here as a simplification (all relationships are actually different). Underlined text refer to the attributes of the entities.

Four main items may be distinguished in the model :

### SAMPLES :

The samples are the elementary object observed. Their attributes are their type (cuttings, cores, outcrop...) and processing. It is important that the processing be an attribute at this level, for this allows the handling of non-taxonomic data

inherent to the processing (such as Palynofacies or Thermal Alteration Index for Palyno samples...etc..). Outcrop samples are indexed, so that they may be organized independently of their name. The samples are linked to collections, and to the taxonomy through the population observed.

### INTERPRETED DATA :

Because of the habit of merging samples to minimize their number, the limits between interpreted intervals may not be directly linked to the samples (moreover, some techniques other than Paleontology may contribute to the stratigraphic or environmental interpretation).

Four domains belong to the interpretation. All of them are defined as intervals, linked to a reference list containing the attributions. Biochronozones, as chrono stages and paleoenvironmental stages, are grouped into higher entities (Biozonations, Realms, and Domains). The lithoformations have been treated informally, although they could have been structured in a similar way.

### GEOREFERENCEMENT :

The presentation of the georeferencement made here is a simplification of the POSC approach (<http://www.posc.org>). The location of any information is regarded as a “Point”, defined through its geographic and depth coordinates. Being applied to the oil industry, the model admits specific items such as licenses, cores, and casings. The basic unit studied is the “Well segment”, i.e. a “branch” in a well (oil wells are often dichotomous, and the same depth may hence be encountered in different branches). Successive studies of the same section may be stored, as expressed by the 1,N in the relationship from the Well Segment to the Study (the database actually suggests different means of comparison –and eventual merge- between studies).

Outcrop studies are handled in a similar way.





