

OpenDX Format

IBM Visualization Data Explorer (dx) Format

- developed at IBM T. J. Watson Research Laboratory
- applied to a wide range of scientific disciplines.
- available to the public domain at <http://www.opendx.org/>
- supports a very rich variety of data types.
- file structure based on objects and their interrelationships.
- the basic object classes are data, positions, and connections.
- Data can have single or multiple dimensions (rank), and may have different sizes or types.
- may be included within the data file describing the structure of the data (the file header), or may be in a separate file from the header information in ASCII or binary form.
- Positions may be specified explicitly as coordinates, or implicitly by a grid.
- grid contains a size (1, 2, or 3 dimensions are common), an origin, and a step size or offset between points in each dimension.
- Connections define how the space between data points is going to be treated (i.e., whether interpolation will be performed, and if so, how).
- Typical connections include grid and triangular structures.
- associate positions with the data components by declaring a dependency in the definition of the data object.

```

# This example describes a regular grid
#
# object 1 are the regular positions. The grid is 4x2x3. The origin is
# at [0 0 0], and the deltas are 1 in the first and third dimensions, and
# 2 in the second dimension
#
object 1 class gridpositions counts 4 2 3
origin          0          0          0
delta           1          0          0
delta           0          2          0
delta           0          0          1
#
# object 2 are the regular connections
#
object 2 class gridconnections counts 4 2 3
#
# object 3 are the data, which are in a one-to-one correspondence with
# the positions ("dep" on positions). The positions increment in the order
# "last index varies fastest", i.e. (x0, y0, z0) (x0, y0, z1), (x0, y0, z2),
# (x0, y1, z0), etc.
#
object 3 class array type float rank 0 items 24 data follows
      1      3.4      5      2
      3.4      5.1      0.3      4.5
      1      2.3      4.1      2.1
      6      8      9.1      2.3
      4.5      5      3.0      4.3
      1.2      1.2      3.0      3.2
attribute "dep" string "positions"
#
# A field is created with three components: "positions", "connections",
# and "data"
object "regular positions regular connections" class field
component "positions" value 1
component "connections" value 2
component "data" value 3
#
end

```

Figure 1: Regular grid of points (3-dimensions) in dx format.