

# Definition of texture format used in *Anatomist and AIMS*

Denis Rivière

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## 1 Syntax

The format description is written with the following elements. A *field* (written in bold and italics) represent an element that can be splitted in other elements. All fields are described in section 3. In *ascii* mode fields can be separated by one or more *space*.

Characters strings are represented in *verbatim* between quotes. For example, 'string' represent six *ascii* characters (each one coded on one byte).

## 2 Format description

A *tex* file contains the following fields :

*mode*

*textureType*

*numberOfTimeSteps*

*timeSteps*

## 3 Fields description

***mode***: The format can be written either as an *ascii* text file or as a *binary* file. The *mode* is used to identify the representation it can have three values :

- 'ascii': the file is in text format.
- 'binarABCD': the file is in binary format and uses *big-endian* byte order for numbers (such as Motorola or Sun processors for example).
- 'binarDCBA': the file is in binary format and uses *little-endian* byte order for numbers (such as Intel processors for example).

***textureType***: In *ascii* mode his field should contain the name of the texture type ('FLOAT', 'S16', 'U32', 'POINT2DF'), or in *binary* mode, a *U32* containing the size

of the typename string followed by the string itself ('FLOAT' etc). 'POINT2DF' is a couple of floating point numbers, ie 2 texture coords or a 2D texture.

**numberOfTimeSteps:** The texture format can represent several textures at different time steps. This is a *U32* representing the number of time steps.

**timeSteps:** This field contains *numberOfTimeSteps* times the following structure :

**instant:** a *U32* representing a time instant.

**vectorOf<texture>:** contains all the texture values, each associated to a mesh vertice (in the same order).

**U32:** A 32 bits wide unsigned integer (between 0 and 4294967295). In *ascii* mode it is written as a decimal number. In *binary* mode it is represented on four bytes with the choosen byte order (see *mode* above).

**S16:** A 16 bits wide signed integer (between -32768 and 32767). In *ascii* mode it is written as a decimal number. In *binary* mode it is represented on two bytes with the choosen byte order (see *mode* above).

**FLOAT:** A 32 bits wide real number (maximum 3.40282347e+38). In *ascii* mode it is written as a decimal number. In *binary* mode it is represented on four bytes with the choosen byte order (see *mode* above).

**vectorOf<field>:** where *field* is a field type. It represents a fixed length vector of elements of type *field*. It contains the size of the vector (i.e. the number of elements) as a *U32* followed by the elements.

**POINT2DF:** A vector of two 32 bits wide real numbers.

## 4 Example

Here is an example of an *ascii* tex file containing a 2D texture of 2 timesteps, for a mesh of 4 vertices.

```
ascii
POINT2DF
2
0
4 (-0.2,0.8) (0.8,8e-1) (-1,0) (0,0)
1
4 (-0.8,0.7) (0.7,-0.3) (-0.9,0.1) (0.2,0.3)
```