Data exchange

3D-XML (3 Dimensional – Extensible Markup Language Developed by Dassault Systems, 3D-XML is considered as an ideal 3D file format for quick and easy sharing of 3D data. According to Ball, Ling and Patel (2008), ‘ 3D-XML is a lightweight and standard XML-based format that represents product graphics using NURBS-like freeform surfaces rather than tessellating polygons, and communicates product geometry, product structure, and graphical display properties using an XML schema’.

Advantages:

3D-XML is considered as an ideal format for rapid loading and transferring of 3D data over the network due to fact that it compresses the data sizes up to 90 percent smaller than those of existing formats, without compromising the geometric representation (James 2006).

3D-XML format supports seamless integration with a number of office productivity software and popular web browsers; for example, 3D-XML files can be embedded into a Word or PowerPoint document by a simple drag-and-drop operation (James 2006).

3D-XML technology makes 3D data accessible to the extended enterprise as a whole, hence, enabling users to add extra dimension to their documentation as well as improve their collaboration with others (James 2006).

3D-XML allows incorporation of PLM (Project Life Cycle Management) information into various forms of communication such as technical documentation, maintenance manuals, marketing brochures, websites, emails and many others. (Dassault Systems n. d.)

Disadvantages:

Products developed by Dassault Systems are only capable of supporting

3DXML format (Wikimedia 2008).

It is still believed that ‘ the exact implementation of 3DXML has yet to be determined’ (Ancona 1998).

IGES (Initial Graphics Exchange Specification):

According to Leondes (2002, p. 379), ‘ IGES is a standard used to exchange graphics information between commercial CAD systems’. He further described that IGES includes four sections: the Start Section that provides a human readable prologue to the file, the Global Section that contains information describing the preprocessor and information needed by postprocessor to handle the file, the Directory Entry Section which provides an index and contains attribute information and topological information about each entity, and the Parameter Data Section that contains geometrical parameter data associated with each entity (Leondes 2002, p. 379 – 380).

Advantages:

IGES is based on American National Standards due to which its implementation has been adopted by almost every commercial CAD/CAM system (Leondes 2002, p. 380).

IGES can represent any CAD model precisely due to wide range of entities of points, lines, arcs, splines, NURB surfaces and solid elements that it provides (Leondes 2002, p. 380).

IGES is capable of representing geometry precisely (Leondes 2002, p. 380).

Few data conversions, smaller data files and simpler control strategies are also considered strong aspects of IGES (Leondes 2002, p. 380).

Disadvantages:

Not suitable for RP&M due to containing lot of unnecessary details such as electrical and electronic application information and architecture and

construction information (Leondes 2002, p. 380).

The algorithm for slicing an object in the IGES format is more complex than that in the STL format (Leondes 2002, p. 380).

Creating the support structures in IGES format is not an easy process (Leondes 2002, p. 380).

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