

Data-Exchange Standards and International Organizations, Adoption and Diffusion

by

Josephine Wapakabulo Thomas

Information Science Reference (IGI Global), Hershey, PA, USA, 2010

Review by

Ken Krechmer

January 9, 2010

This book, originally a PhD thesis, develops the factors that influence the adoption and diffusion of product data exchange standards, specifically ISO 10303 (STandard for the Exchange of Product data or STEP). Chapter One provides a short history of data exchange standards and an introduction to the book. Chapters 2, 3 & 4 include an extensive literature review, development of terminology, and the research philosophy underpinning the book. Chapter 5 reviews the ISO TC184/SC4 standardization committee (where STEP was standardized); chapter 6 reviews the English Ministry of Defense user community. By analyzing data from interviews, observations and questionnaires of standardization communities, developers and users, the author has created a base of valuable information about the creation, implementation and use of product data exchange standards. From this data the author details the issues (pro and con) that impact the decisions to create, implement or use product data exchange standards.

When product data inconsistencies have been responsible for very expensive errors in complex systems, they have made headlines, e.g., the Mars Climate Orbiter crash in 1999 and significant delays in the Airbus A380 development (2006). Even with such significant and preventable mistakes as examples, the adoption of STEP has been slow. The author rightly argues for greater use of product data exchange standards to reduce such mistakes. The most valuable part of this book (Chapters 7, 8 and 9) is the detailed discussion of the issues and the development of tools (checklists) to assist the implementation of product data exchange standards within larger development and user organizations.

The book describes the basic problems with the adoption and diffusion of STEP. These are the classical problems of compatibility standards adoption and diffusion:

- Lack of users' or developers' motivation to invest for the public good
- Technical risk of change
- Loss of market control (developers)

The author also identifies the major technical issues that hinder the adoption and diffusion of STEP:

- Lack of specific STEP Application Protocols
- Compatibility concerns about STEP syntax translators
- Semantic differences between different STEP Application Protocols

While all these concerns are realistic, the simple fact is that large complex systems become more risky without common product data exchange standards. Looking to the future, standardized adaptability mechanisms which can negotiate variation and allow for proprietary functionality could reduce some of these concerns.

Chapter 10 summarizes the author's recommendations. The 270 page text concludes with appendices that provide the interview questions and questionnaires as well as an acronym list and limited index.

The list price of Data-Exchange Standards on Amazon is shown as \$285.00 with copies available as "low" as \$170.69 (16 Nov 2009) -- a high price for a book. But it is a very low price to pay if it helps avoid a product data inconsistency which could cost an organization millions of dollars.