Rockwell Collins / Boeing
STEP AP 210 Data Exchange Project

What is the Project?
Officially initiated in April 1999 and planned for completion in December 2000, the Rockwell Collins / Boeing STEP AP 210 Project is a Printed Wiring Assembly/Printed Wiring Board data exchange activity between Rockwell Collins Inc. (Cedar Rapids, IA) and The Boeing Company (Seattle, WA).

The Project Goal
The goal of the Rockwell Collins / Boeing STEP AP 210 Project is to reduce waste, decrease the process flow time, and increase the overall quality of the PWA/PWB product. STEP AP 210 will be validated as the preferred format for exchanging PWA/PWB data between Rockwell Collins Inc. and The Boeing Company. Testing STEP AP 210 and AP 203 translators on designs from both companies will strengthen the design and manufacturing processes within Rockwell Collins and Boeing. The long-term goal is to support the utilization of STEP AP 210 in the manufacturing arena.

The Project Tasks
PWA/PWB datasets in the form of STEP AP 210 will be transferred between Rockwell Collins and Boeing. Each of the companies will utilize existing processes and/or develop new processes, as required, to examine and analyze the data. Results from the analyses will be fed back to the source company.

At The Boeing Company:
STEP AP 210 data files will be extracted from a handful of target PWA designs using the ITI Mentor Graphics to STEP AP 210 translator. These data files will be made available to Rockwell Collins.

Data files received from Rockwell will be examined from several perspectives: manufacturing/assembly, thermal/vibration and mechanical integration. Producibility and durability analysis will be performed on the data. In addition, the data will be loaded directly into the Mentor Graphics electrical design system and the Unigraphics Solutions, Solid Edge mechanical design system. Boeing will use this opportunity to test their software and processes on data coming from outside of the company. The results will be incorporated into Boeing processes as required and also returned to Rockwell Collins to enable better present/future designs. The project will provide visibility of Rockwell Collins PWA/PWB processes (finding 'best in class').

At Rockwell Collins, Inc.:
STEP AP 210 data files will be extracted from a group of target PWA designs using Rockwell Collins developed software. Rockwell Collins uses Zuken-Redac design software. If a
commercial Zuken-Redac to STEP AP 210 translator is available during the project, data sets from this translator will also be provided to Boeing.

Processes and methods to import the STEP AP 210 data received from The Boeing Company into Rockwell Collins PWA Manufacturing Systems will be examined. The data will also be examined with Rockwell Collins producibility processes. The results of the producibility analysis will be compared and contrasted to those produced by the Boeing processes. In addition, Rockwell Collins will utilize the Boeing Producibility Analysis process (with augmented constraints based on Rockwell Collins manufacturing processes). Rockwell Collins will provide Boeing with implementation and usage lessons learned enabling Boeing to refine their processes and tools. Rockwell Collins will load the data into their Unigraphics Solutions, SDRC Mechanical design system to determine the exchange capabilities of the STEP standard.

Why is this important?
The transfer of complete and unambiguous PWA/PWB data between contractors has been difficult to accomplish. Loss of data and/or errors in data translation could result in major complications in the products being developed. Using a specific vendor proprietary data set imposes a restriction that both contractors utilize identical CAD tools. Existing electronic CAD formats do not provide a complete data translation. It is envisioned that STEP AP 210 will support the complete and unambiguous translation of Printed Wiring Assembly and Printed Wiring Board data between Rockwell Collins, Inc. and The Boeing Company.

Key Technical Objectives of the Project

1. Determine the feasibility of utilizing STEP AP 210 in manufacturing, electrical design and mechanical design environments.
2. Determine process enhancements available as a result of using STEP AP 210 as a communications protocol between the above engineering environments.

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