International Journal of Core Engineering & Management
Volume-6, Issue-9, 2020 ISSN No: 2348-9510

INTELLIGENT INVENTORY MANAGEMENT USING SPEC2000

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Abstract

The Standard for the Exchange of Product data 2000 (SPEC2000) is a comprehensive set of specifications established by the Air Transport Association (ATA) to facilitate electronic data interchange within the aviation industry. SPEC2000 streamlines the exchange of technical and engineering data between airlines and their suppliers, encompassing aspects such as part cataloging, order management, maintenance, and logistics. By standardizing data formats, communication protocols, and business processes, SPEC2000 aims to enhance efficiency, accuracy, and interoperability throughout the aviation supply chain. This abstract provides an overview of SPEC2000's role in optimizing operations and improving collaboration within the aviation industry.

Keywords: In the context of SPEC2000, there are several key terminologies that are commonly used. Here are some of them:

1. *Message Set: A collection of messages that define specific business transactions or processes within the SPEC2000 framework. Examples include Order Management, Inventory Inquiry, and Repair Order.*
2. *Message Type: A specific type of message within a message set that represents a particular business transaction or activity. Examples include ORDERS, INVRPT, and REPAIR.*
3. *Data Element: The smallest unit of information exchanged within SPEC2000 messages. Data elements represent specific pieces of data, such as part numbers, quantities, or dates.*
4. *Segment: A group of related data elements within a message. Segments are used to organize and structure the data exchanged between trading partners.*
5. *Composite Data Element: A data element that consists of multiple sub-elements, each representing a different aspect of the data. Composite data elements are used to represent complex information in a structured format.*
6. *Qualifier: Additional information used to clarify or specify the meaning of a data element. Qualifiers are often used to indicate units of measurement, data formats, or special conditions.*
7. *Code List: A predefined list of codes used to represent specific values within SPEC2000 messages. Code lists help standardize the representation of common data elements, such as currency codes or country names.*
8. *Interchange: A complete set of messages exchanged between trading partners as part of a single transaction. An interchange typically includes one or more messages related to a specific business activity.*
9. *Trading Partner: An organization or entity that exchanges electronic messages with another organization using the SPEC2000 standard. Trading partners collaborate to*

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Volume-6, Issue-9, 2020 ISSN No: 2348-9510

conduct business transactions such as ordering parts, managing inventory, or requesting maintenance services.

Understanding these terminologies is essential for effectively implementing and utilizing the SPEC2000 standard within the aviation industry.

I. INTRODUCTION

ATA SPEC 2000 is an international standard created by the Air Transport Association (ATA) to optimize exchanges, communications, and information flows within the aeronautics industry.The purpose of the standard is to provide a structure, a method and rules that are common for writing, storing, and reading data for all the stakeholders in the aeronautical supply chain. Most of these standards were originally developed by the world's airlines and suppliers, but under the auspices of the Air Transport Association of America (ATA), recently renamed Airlines for America (A4A), one of the oldest and most influential aviation industry groups in the U.S. However, ATA/A4A launched the ATA e-business program in 2006 to formalize the process of international standards development and to provide the global aviation community with an open and consensus-based program where all participating airlines and suppliers had equal influence. This was particularly important since many of the standards were already used heavily by the international aviation community. Upon launching the program, ATA/A4A moved the full suite of e-business specifications that are covered in this article under the direct control of the international ATA e-business program. Due to the interdependent nature of the airlines business, and its dependence upon a small number of aircraft OEMs and suppliers, it was quickly recognized that significant productivity gains and cost reductions can be achieved through rapid, standardized communication of information. One of the key areas to address is the procurement/supply of aftermarket aircraft parts, as well as their repair and related activities (like warranties, reliability and performance metrics).

Spec 2000 is a comprehensive set of specifications that focus on aerospace/aviation industry e-business and center on the industry's interconnected global supply chain. It's commonly used by the world's airlines and suppliers, and helps in simplifying business processes. This helps increase operational efficiencies and cost savings by creating a common set of processes and data formats.

The Spec 2000 suite of standards can be compartmentalized into three major categories:

1. E-commerce standards: Encompass sourcing, order administration and invoicing, repair order administration and warranty claims.

2. File standards: Encompass provisioning, delivery configuration, inventory consumption, performance reporting and reliability data collection and exchange.

3. Traceability standards: Encompass bar code/RFID-based and include bar-coded shipping label, bar-coded parts identification, RFID parts identification and traceability data.

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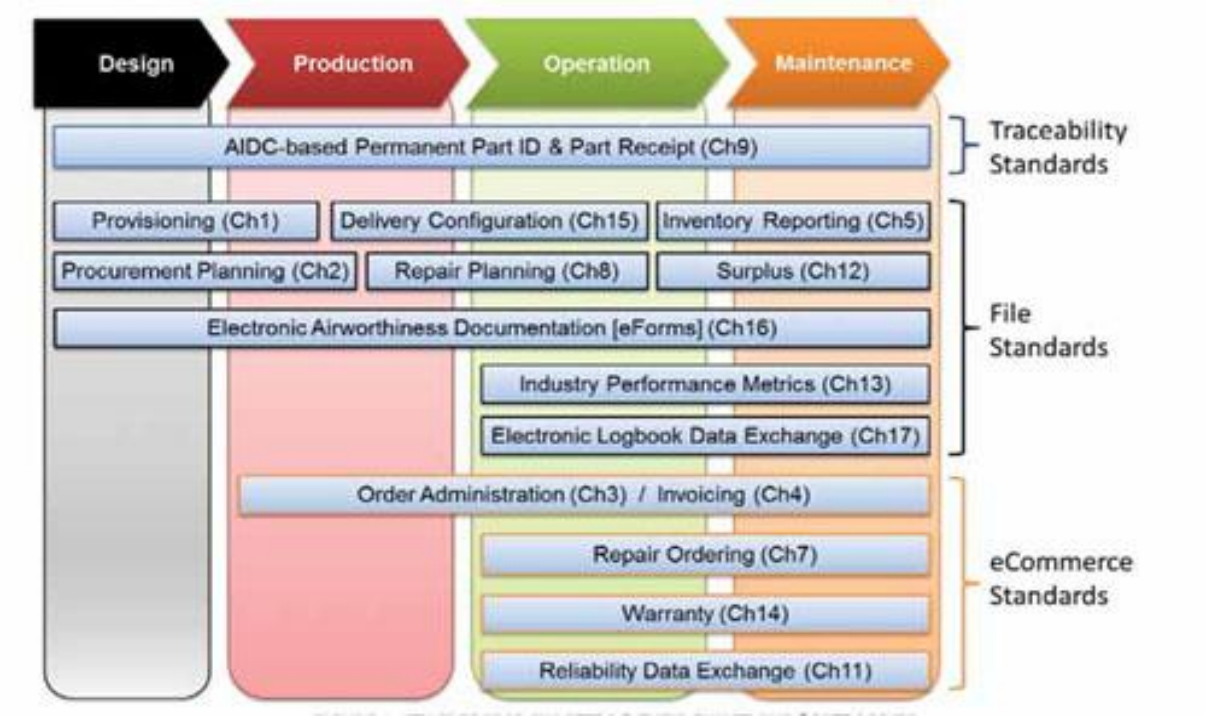

These three categories are organized into major chapters (as shown in Figure 1 below), each designed to stand alone for ease of understanding, as well as ease of implementation. A common support data dictionary (CSDD) document defines common elements used throughout the Spec 2000 standards.

Many of the world's largest airlines, OEMs, suppliers and aftermarket service providers use Spec 2000 for some portion of their aircraft spare parts transactions. Examples of this include:

1. Published estimates from various sources indicate that ~1,000 companies worldwide use Spec 2000 to transact aircraft parts-related business. Accurate totals for the numbers of orders placed were not available, but the volume of parts handled is high.

2. Airbus and Boeing use Spec 2000 in handling orders from airlines for aftermarket parts, using Type B and XML. Most of the larger suppliers also used to support airline/operator customers and other aftermarket service providers.

3. A majority of the larger airlines use Spec 2000 to transact orders for parts electronically, such as American Airlines, Delta Airlines, United Airlines, British Airways, Air Canada and Air France, among dozens of others globally.

Example: Air France/KLM E&M uses Spec 2000 EDI (which uses IATA Type B messaging to send/receive) to automatically send ~70 percent of its orders, with the remainder going via fax/standard mail.

This is arguably the most visible and highly used aspect of Spec 2000, since large sums of money are directly involved. There are several ways in which buyers and sellers can transact business for aftermarket aircraft parts and services.

Procurement departments place orders with a supplier using a standard format for electronic transmission (as defined in specific chapters of Spec 2000), and per a standard process, as well as handle status checks on orders, change orders, shipping status and other related functions.

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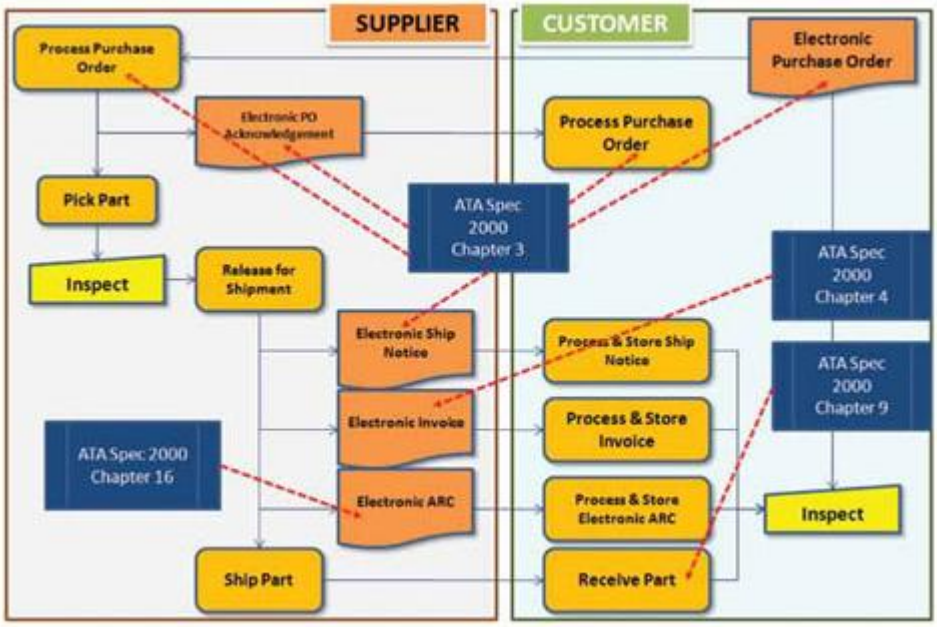
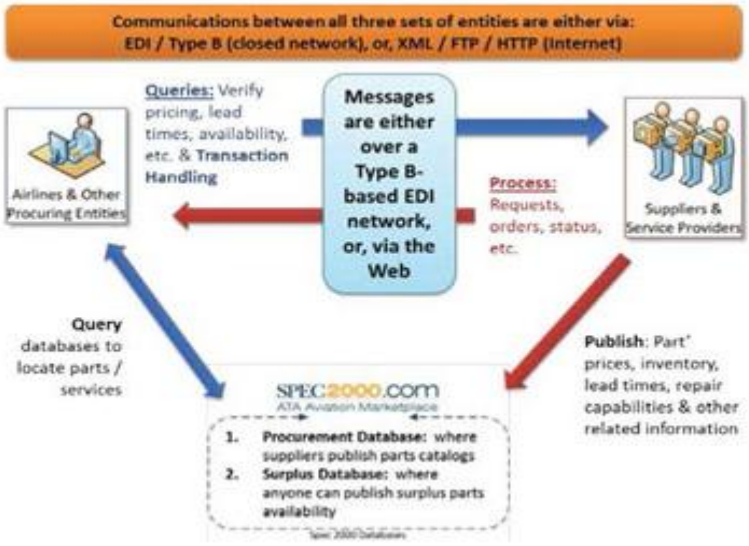


The use of newer Spec 2000 representations created for Internet messaging use is known as extensible markup language (XML). XML evolved from the Type B-focused message formats.



II. SOLUTION WHICH WAS DEVELOPED

Developed a MQ series batch process to read the SPEC200 messages from external vendors to Aircraft maintenance application by using Mainframe technologies like JCL, Natural Adabas, ARINC middle ware vendor for all the aircraft parts orders which includes Repair orders, Purchase orders and warranty orders for Aircraft maintenance hangars/stores which helps quick turnaround for clients and vendors so that it will reduce their waiting times and increase productivity which leads to cost savings compare to manual process.

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