

Computer-aided enterprise solutions

Large and complex products such as aircraft, land vehicles, and ships depend on accurate engineering information for their successful operation and maintenance throughout a life cycle often measured in decades. The supply network for the aerospace industry is becoming more and more global, and makes increasing use of digital information to design, manufacture, and support its products.

The Aerospace Industries Association (AIA) has recognized that the wide diversity of computer systems and information formats used in the supply network is becoming a barrier to effective communication of engineering information across the supply chain, resulting in unnecessary costs as vital information is manually converted or even reentered into new systems.

A survey of AIA's members revealed that only half believed there was seamless information flow to and from their internal systems, and suppliers reported that they needed to interface with their customers using an average of 5.8 different ways to do the same job. Information standards therefore offered a real business benefit in reducing the complexity and cost of communicating data, and it was apparent from survey results that where mature standards were available, they were being used as an alternative to trying to enforce common tools.

However, it was recognized that there are existing multiple standards that would be useful in facilitating the interoperability of engineering data, and that the absence of common selections by AIA member companies has resulted in the need for companies to support multiple standards, standardize applications, or implement point-to-point integrations. The AIA therefore commissioned a group of experts to develop strategic and tactical guidance for the industry adoption of common standards to enable interoperability for product definition data across the aerospace industry and with its customers throughout the product life cycle.


EDIG, the Engineering Data Interoperability Group, identified and prioritized the key business scenarios that require the product information throughout the life cycle of a product. The group undertook evaluations of standards that could be applied to ensure the accurate and timely exchange of product information, taking into account the functional requirements of the scenarios as well as architectural and strategic considerations. These included the openness and availability of the

standards, the level of support available from the originating organization, and the extent of global adoption. All these factors facilitate the implementation of standards.

The initial evaluation scope was for a maintenance and sustainment scenario. Based on their analysis and research, the EDIG concluded for this scenario that the scope and maturity of the ISO PLCS (product life cycle support) standard (ISO 10303-239—part of the award-winning STEP series of standards) covered the widest cross section of engineering applications. STEP (standard for the exchange of product model data) has been in use for over a decade to facilitate the flow of engineering information in both civil and military environments.

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The EDIG therefore recommended that AIA members and companies transition to standards-based interoperability solutions based on PLCS and its associated data exchange specifications, and the recommendations have been adopted by the AIA Technical Operations Council. Other business scenarios may result in different combinations of standards.

The evaluation team is now developing best-practice guidelines to help organizations develop their own business cases for transitioning to standards-based data exchange, optimizing their business processes, and developing, testing, and operating the necessary software solutions. Based on over a decade of experience, these guidelines will help companies make the transition to using PLCS to ensure interoperability. The first issue of these guidelines should be available by year's end, and a progressive expansion of the guidelines is planned, to include guidance for more of the business scenarios identified by the AIA members. 

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