SAE ITC
An SAE International Affiliate

SAE INDUSTRY TECHNOLOGIES CONSORTIA®

DIGITAL STANDARDS ALLIANCE
A Consortium of SAE ITC

SAE ITC Digital Standards Alliance

ASD SSG Introduction March 2026

DSA ASD SSG Introduction March 2026

Simon Powell – DSA Program Manager

Who are SAE ITC?

SAE ITC provides the resources and services for public and private organizations to collaborate in a **neutral forum** to drive **innovative solutions to key industry challenges**.

By providing a comprehensive legal framework for **pre-competitive collaboration** along with a suite of strategic and operational services, SAE ITC can help a new or existing program or consortia **quickly** impact their industry.

The Digital Standards Alliance is the latest of these Consortia adopting a trusted, successful approach.

MBSE | DIGITAL ENGINEERING | DIGITAL THREAD | ONTOLOGIES | PLM | TRACEABILITY ¦ QUALITY

DIGITAL STANDARDS ALLIANCE
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Accelerated aerospace delivery through digital standards collaboration

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Whitepaper download

Industry Members

BOEING
LOCKHEED MARTIN
RTX
Raytheon An RTX Business
Collins Aerospace An RTX Business
Pratt & Whitney An RTX Business
TERUMO*

SDO and Government Members

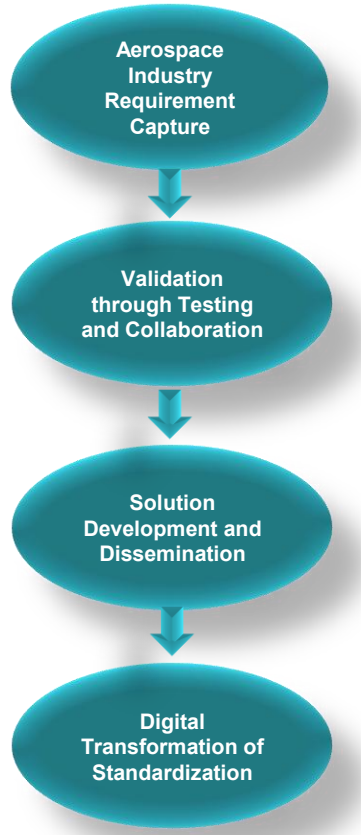
SAE INTERNATIONAL
AIA AEROSPACE INDUSTRIES ASSOCIATION
ASTM INTERNATIONAL
bsi
DIN Solutions
SIS Swedish Institute for Standards
UL Standards & Engagement
DEPARTMENT OF DEFENSE
NIST NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY U.S. DEPARTMENT OF COMMERCE

Vision: Lead the standardization industry in transforming standards into machine-interpretable, interoperable assets, driving efficiency and innovation.

Mission: Accelerate standards data integration and digital transformation for mobility and aerospace, working with standards development organizations (SDOs), industry, government, academia, and technology partners.

Approach: delivering projects to explore customer needs and solutions, delivered and tested in collaboration between SDOs and industry.

Output: Best practice, recommendations and technical advice for SDOs to bring accelerated digitalization to the aerospace, defense and mobility industry



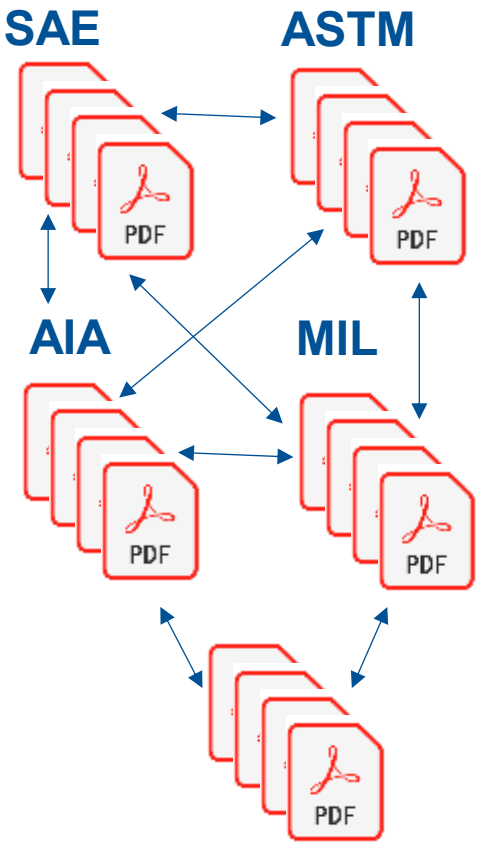
Aerospace Industry Benefits: Efficiency | Cost Reduction | Quality | Reusability | Speed of Delivery | Alignment | Interoperability

The Digital Standards Alliance™ (DSA™) - an SAE ITC consortium focused on best practices for the creation and use of digital standards across the product lifecycle.

*trial membership / Med Dev

SAE ITC

Interoperability of and between Digital Standards is critical



Internal Specifications

+

Design Process
Or
Test Process
Or
MFR Process
Or
…

=

Viable Digital Twins

Requirements, dependencies, relationships and contradictions…

require normalization and accurate integration into the target environment…

…to enable, for example, digital twins to accurately represent the physical world

Current Product Development and Supply Chain Process Challenges

Standards and technical documents as PDF do not meet user need in the following ways:

Quality

- Transcription errors
- Manual extraction of numerical/textual data
- Cost and risks incurred by copy and pasting errors from PDFs

Cost

- Hard to find standard parts
- Increased costs due to low-volume orders
- Increased material costs and redundancy

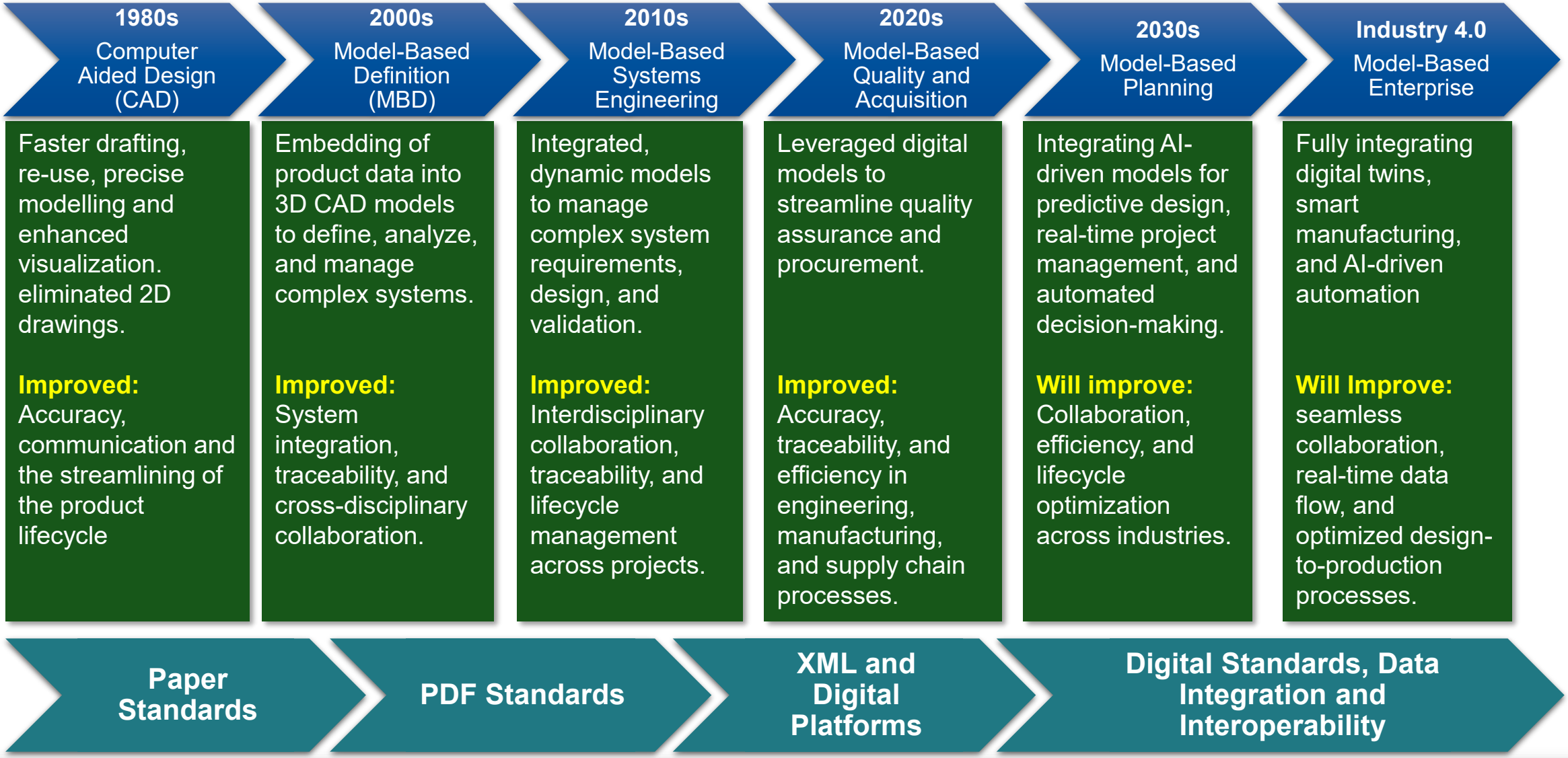
Integration

- Many legacy systems, especially in companies originating via mergers and acquisitions
- Little to no data migration/sharing between systems

Workflow Inefficiency

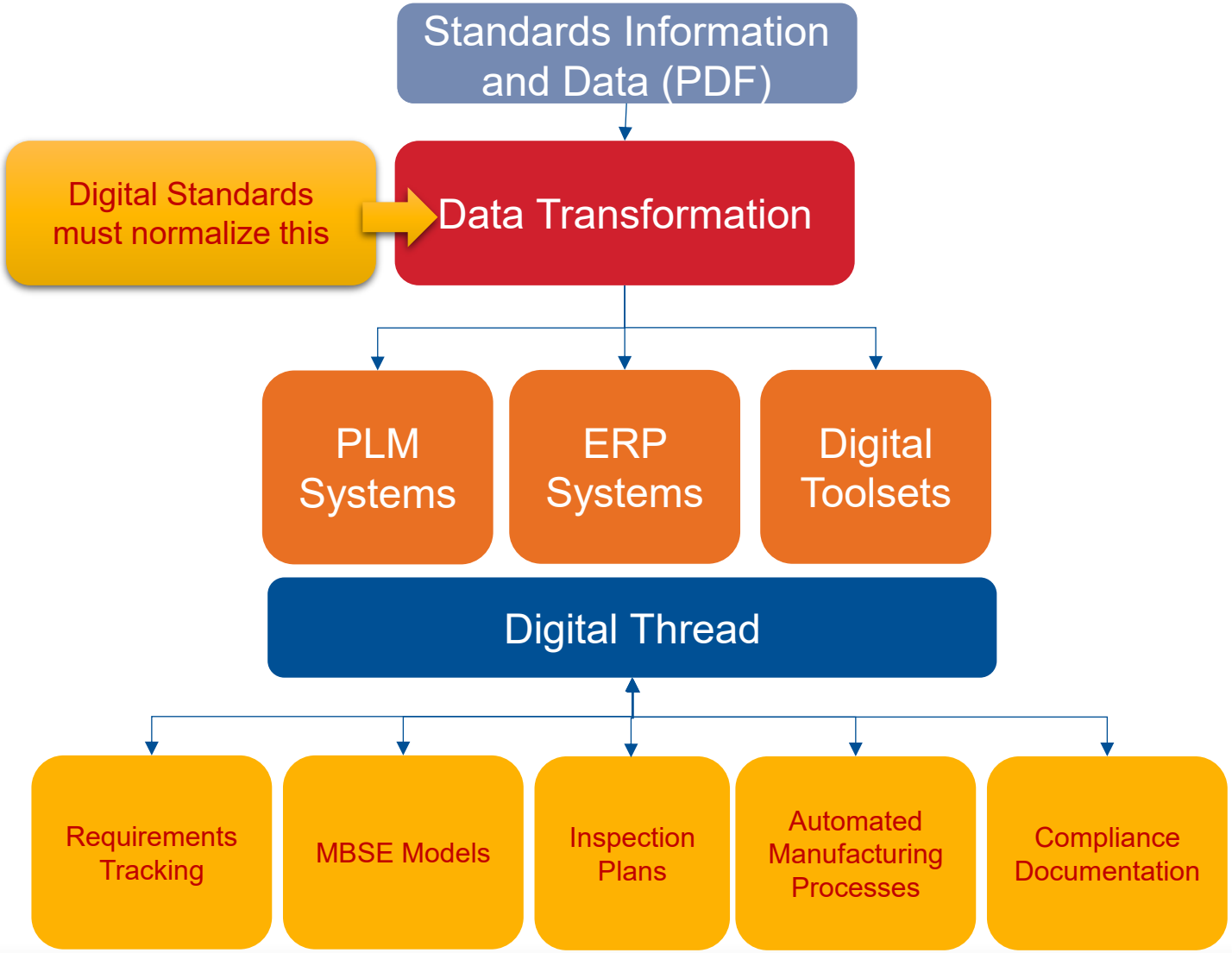
- Lots of redundant effort to deploy standards data
- Lots of rework to pull in standards data to multiple systems
- Lack of data normalization

Design Engineering – Current State and the demand on Standards



Bridging the gap between Standards and Digital Engineering

- Every stage of the **product life-cycle** requires data and information from standards that is digestible, interpretable and maintainable.
- Every industry has its own **toolsets and processes** that need to interoperate with data in the correct format that can be trusted.
- The **digital thread** concept connects the virtual data locked in standards with performance and behavior in the physical world
- Aerospace is a **high-risk** industry – safety is paramount - there is no room for inaccuracy.
- **Industry currently carries the risk and burden of the digital transformation of the knowledge within standards and its own technical documentation in PDF format**



The Digital Standards transformation is HUGE

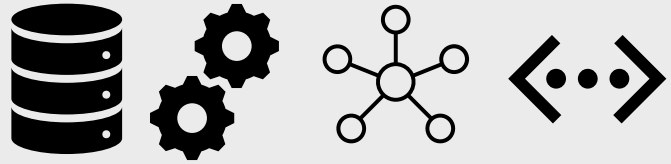
Every stage of the “value chain” of standardization needs to be updated to create a new process and lifecycle for standards that supports digital engineering and industry

Today

PDF, XML and Paper standards human readable, document based, limited in discoverability, machine readability and interoperability

- Authoring
- Production
- Publication
- Distribution
- Implementation
- Certification

Change



Tomorrow

Standards as machine interpretable and interoperable assets to meet market needs

Every stage of the standards lifecycle undergoes digital transformation. This change is immense for SDOs. SDOs need industry direction to help them determine their strategic investment choices

Shifting the activity from users to SDOs brings value

TODAY

SDOs author and distribute “flat” PDF standards

Standards processing, storage and use is **handled by the customer** at **great expense** and with the risk of **inaccuracy, inconsistency and inefficiency** (both internally and along the supply chain) often challenging existing licensing models

Source → Processing → Storage and Sharing → Use

TOMORROW

The standards industry must take ownership of the processing of its IP and store in such a way that industries can access and use it bringing **consistency, efficiency, accuracy and interoperability** whilst updating its IP, copyright and business models to support new usage models

Customers **can gain value from standards data directly** with far easier discovery and implementation through updated terms and licenses

Digital Standards Alliance – 3 main activity areas

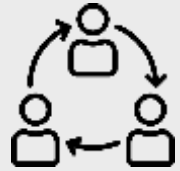
Influences the standardization and conformance industry in transforming multiple types of standards, creating efficiencies along the digital thread used in the design, manufacture, and support of the next generation of industry

Accelerate Standards Data Integration

Promulgation of digital standards of interest to be used in the entire product lifecycle.

Best Practices and Education

Best practices for authoring and converting legacy standards into next generation standards for the digital age.



Liaison with Other Digital Initiatives

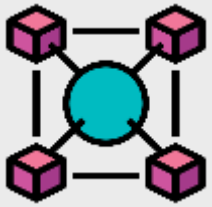
Collaborate with other initiatives and organizations to ensure interoperability of digital standards in larger ecosystems.

Digital Standards Alliance – Areas of work

The DSA will coordinate ambitious collaborative efforts to make progress in key areas to support the success of digital standards in the future

Ontology Working Groups

Identifying standards with similar subjects and contents and develop standard ontologies for common use



Interoperability and Authoring

Define interoperable formats and tools to support SDOs and companies in converting and/or authoring digital standards

Solutions for Legacy Standards

Define solutions for converting standards that have no established authors

Business Challenges

Develop guidelines around licensing, business models, pricing and other business challenges

Exploring over time, building on previous successes using methodology

DSA Strategic Focus 2026

SUCCESS = **Our Work is Driven by Meaningful Validated Customer Requirements** + **The Standards Industry has recognized DSA schemas and recommendations**

Purpose	2025 Goals	2026 Goals (measurable)	Project & Work
Accelerate Standards Data Integration	Standards Creation	Develop required framework for digital standard creation	P4 Standard Types; P3 Parts Ontology; Rec Paper 1: Digital Ready Standards
	Standards Production	Determine the IP production approaches, and impacts, for SDOs	P1 Auto Compliance; *P5 Persistent IDs*
	Standards Distribution	Frame DSA activity against the commercial realities of SDO economy	*Approach required*; P2 CAD Review
Best Practices and Education	Publish	Add tangible value to SDO and aerospace community	Rec Paper 1: Digital Ready Standards; *Rec Paper 2: CAD Review?*; *Rec Paper 3: Ontology Approach?*
	Recruit	Accelerate lead generation and membership	*DSA Bulletins x 4*; *Whitepaper x 2*; *Member Documents*
Liaison with Other Initiatives	Maximum Value	Participate in aerospace events where DSA can add most value	GPDIS 2026; ?; ?; ?; ?; ?
	Maximum Value	Amplify outputs that add value as a result of liaison	*Non-Member Documents with narrative*; *Ecosystem Commentary*
	USP	Make explicit our learnings from users	
Operations	Efficiency	Continually increase value for, and participation, from DSA members	*Formalize Working Groups*; *Assign Member Resource*; *Drive Member Advocacy*; *Co-Author or Adopt External Recommendations*; SAE ITC Strategic and Operational Review

Current Projects

P1 Automated Compliance	Modeling of Information from Standards from two SDOs (SAE and ASTM) to measure the effort to create, and the value of, the models and identify the hurdles and challenges for SDO to deliver
P2 CAD Review	Review of current CAD Models provided by SDOs by the relevant users of those models to assess their features and recommend improvements (in consensus across manufacturers)
P3 Parts Ontology	Building out a common ontology for standard parts based on existing information repositories for comparison and alignment between SDOs and manufacturers to enable future IP provision
P4 Standard Types	Classification of the different functional standard types to enable analysis of their requirements for digital provision to support their inherent characteristics and target outcomes
P5 Persistent IDs	Determination (in collaboration with standards groups worldwide) of the best strategy for Persistent Identifiers for standards and their component parts to enable interoperability
P6 Core Ontology	Participation in the review of the ISO IEC Core Ontology for SMART Standards, representing the views of industry in the future development of this critical element of standards infrastructure

2) Best Practices and Education

Publish

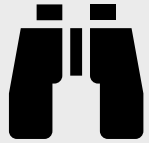
Create the required recommendations, guidance and best practice to support the digital transformation efforts of SDOs

Promote

Help industry understand our mission and the altruistic nature of our ambitions, **and the urgency**

Educate

In time, develop the materials and processes required to improve and accelerate adoption of best practice



Plan

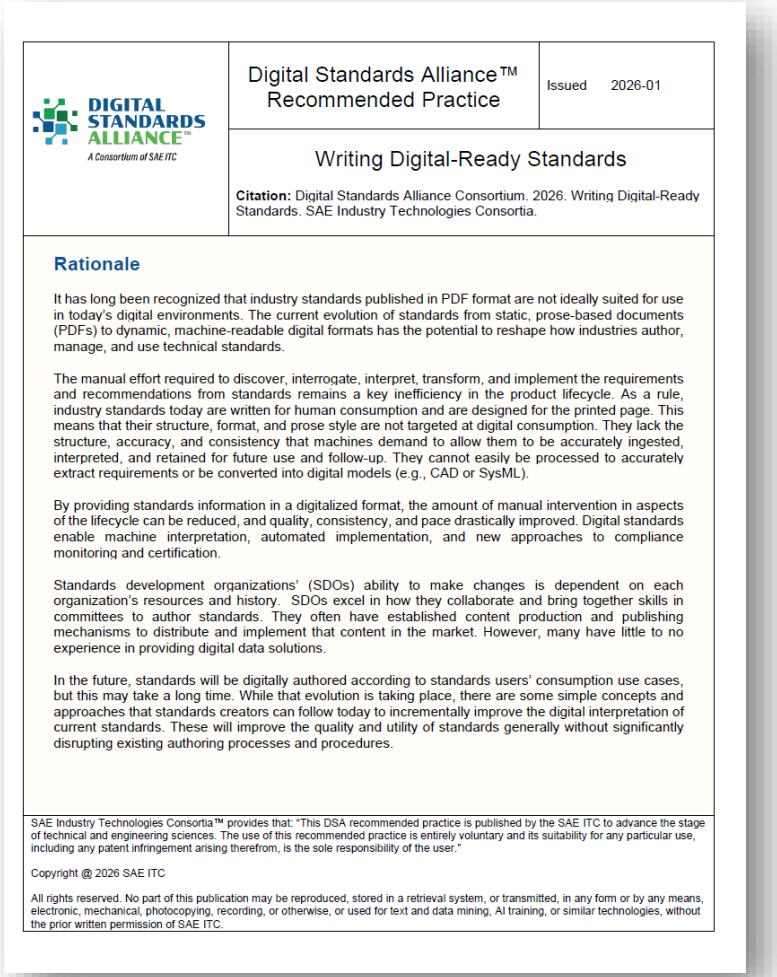
Look for the next challenge in the roadmap to help the standards industry innovate for the future

DSA Recommendation Paper – *Writing Digital Ready Standards*

Download from:

- https://www.sae-itc.com/programs/dsa/writing-digital-ready-standards

- Guidelines for committees and technical authors on how to improve the authoring and editing of standards and technical documents to improve their readiness for digital processing our machine interpretation
- Gives advice on:
  - Content structure
  - Table Structure and Content
  - Syntax and Definitions
- Authored based on work from SAE International with added input from across the DSA Membership



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Digital Standards Alliance™ Recommended Practice

Issued 2026-01

Writing Digital-Ready Standards

Citation: Digital Standards Alliance Consortium. 2026. Writing Digital-Ready Standards. SAE Industry Technologies Consortia.

Rationale

It has long been recognized that industry standards published in PDF format are not ideally suited for use in today's digital environments. The current evolution of standards from static, prose-based documents (PDFs) to dynamic, machine-readable digital formats has the potential to reshape how industries author, manage, and use technical standards.

The manual effort required to discover, interrogate, interpret, transform, and implement the requirements and recommendations from standards remains a key inefficiency in the product lifecycle. As a rule, industry standards today are written for human consumption and are designed for the printed page. This means that their structure, format, and prose style are not targeted at digital consumption. They lack the structure, accuracy, and consistency that machines demand to allow them to be accurately ingested, interpreted, and retained for future use and follow-up. They cannot easily be processed to accurately extract requirements or be converted into digital models (e.g., CAD or SysML).

By providing standards information in a digitalized format, the amount of manual intervention in aspects of the lifecycle can be reduced, and quality, consistency, and pace drastically improved. Digital standards enable machine interpretation, automated implementation, and new approaches to compliance monitoring and certification.

Standards development organizations' (SDOs) ability to make changes is dependent on each organization's resources and history. SDOs excel in how they collaborate and bring together skills in committees to author standards. They often have established content production and publishing mechanisms to distribute and implement that content in the market. However, many have little to no experience in providing digital data solutions.

In the future, standards will be digitally authored according to standards users' consumption use cases, but this may take a long time. While that evolution is taking place, there are some simple concepts and approaches that standards creators can follow today to incrementally improve the digital interpretation of current standards. These will improve the quality and utility of standards generally without significantly disrupting existing authoring processes and procedures.

DSA Whitepaper – *Digitalization of Standards*

Download from:

- https://www.sae-itc.com/programs/dsa/whitepaper
- Overview of the reason for the existence of the **Digital Standards Alliance**
- The challenges facing Standards Development Organizations in transforming their outputs to machine interpretable, interoperable content
- What SDOs and Industry can do to prepare for the digitalization of standards today

3) Liaison with Other Digital Initiatives

An Information Hub for Digital Standards Work

To support the aerospace industry in understanding what is happening with digital standards at ISO, IEC, ANSI, CEN CENELEC.

Don't Reinvent the Wheel

Liaison and learning with established digital groups specializing in data exchange and interoperability

Eat our Own Dogfood

Best practice exists for what needs to be achieved - through standards - DSA recommends adopting these

Awareness

Promote activity ensuring it is complementary to progress being made. Be part of the solution, not the problem

INCOSE, OMG, digital twin CONSORTIUM, PDES, Inc. Connecting the Digital Enterprise, PROSTEP integrate the future, ICG, AIAA, NASA, DRIVE, ASD, AEROSPACE & DEFENSE PLM ACTION GROUP, DTO, ADS

Why is the Digital Standards Alliance different?

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Dedicated Resource	The DSA is dedicating its resources wholly to addressing this issue (and those made available by its members). Its resources are not assigned to multiple activities.
Best Practice	The DSA will manage a formal program of work activities, **following SAE ITC's successful model,** and drive results from its members and stakeholders – publishing its outcomes (and its view of the progress of others) as free recommendation and guidance.
Global	The DSA will be formed from members from around the globe, and is targeting global, interoperable solutions between SDOs and industry from around the world. Geographic solutions are not solutions to this challenge.
Customer-Led	Like all SAE ITC consortia, the DSA has been created by industry to demand action from SDOs – equally DSA will push industry to speak with one voice to support SDO decisions
Commitment	The question to ask when joining the DSA is not "what do I get?" but "how can I contribute?". Membership is not a passive activity. Members provide resource, input and feedback to support the DSA in meeting its goals and the expectations of industry.

Membership means commitment and collaboration, not observation.

SAE ITC

Value Proposition of the true Digitalization of Standards

The provision of interoperable digital data and knowledge from standards dynamically drives immense measurable benefits at every stage of the product life-cycle and throughout the supply chain

Quality

- Removes transcription errors
- Reduces costly product redesign and reworks
- Consistent in every system
- Auditable authoritative source of truth

Reusability

- Digitalized standards data transferrable throughout the product lifecycle
- Reduces need for cross-references in design assets

Reduced Customization

- Standard parts and their properties are discoverable and comparable
- Reduces unnecessary customer part development

Cost Saving*

- Removes the immense effort involved for clients in discovery, interpretation and extraction of value from PDF or paper standards

Interoperability

- Systems through the supply chain and through the product lifecycle depend on consistent authoritative information
- Simpler basis for AI augmentation

*see next slide

Digital Standards – ROI Illustration

An *illustrative* summary of the impact of accelerating the journey to standards digitalization (for a large OEM)

Does not even consider compliance validation!

Costs of current non-digital standards use

Task	Hours	Cost
Discovery	4000	$240,000
Includes searching for, enriching and monitoring standards		
Interpretation	4500	$240,000
Includes mapping, extracting requirements, understanding change impacts and parsing standards into requirements or modelling systems		
Implementation	26,000	$2,678,400
data transformation	26,000	$1,560,000
Prototyping	6000	$600,000
Data Management	8723	$523,400
Includes data transformations, data entry, rework, CAD modelling, prototyping and data management		
TOTAL	**49223 hours**	**$3,193,4000**

Costs when using digital standards (future)

Task	Hours	Cost
Discovery	800	$48,000
Includes searching for, enriching and monitoring standards		
Interpretation	600	$21,000
Includes mapping, extracting requirements, understanding change impacts and parsing standards into requirements or modelling systems		
Implementation	5763	$425,400
data transformation	2600	$156,000
Prototyping	1640	$178,400
Data Management	1523	$91,400
Includes data transformations, data entry, rework, CAD modelling, prototyping and data management		
TOTAL	**7163 hours**	**$494,800**

Illustrative Assumptions:

- 100 standards parsed/year
- $60 per hour engineer cost
- 40 projects/year
- 6 physical prototypes per project
- 20 hours per physical prototype
- $1000 per physical prototype

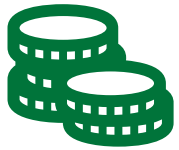
Savings of:
85% effort
42,000 person-hours
$2.7m
per year in effort spent discovering, interpreting and implementing standards

This simple conservative illustration shows that investing in accelerating the journey to digitalization has an impressive ROI – for both customers and SDOs.

Illustrative savings: 85% effort, 42,000 person-hours, $2.7m per annum

Benefits of DSA Membership

The need for this problem to be solved is inescapable. Efforts to do so in the past through the normal mechanisms of the standards community have **failed**. The DSA is an **non-profit,** positive attempt to play a part in helping the standards industry to survive, transform and then thrive and support industry



Value & Efficiency

Membership fees are not paying into some abstract pot. They are only funding the resources that are driving the work – **exclusively and directly**.

More members = more work, more progress & lower fees.

Be Part of the Global Solution

Members can influence and steer what becomes the industry best practice, not have it imposed upon them.

An opportunity to shape the future of standards

Cost and Time Savings*

The future payback for the Aerospace Industry is **immense** if it can play its part in addressing the issue

The alternative is to tolerate today's inefficiencies and inaccuracies for many years to come

Participation Required from Industry Stakeholders

- Executive Committee (**Boeing, Lockheed Martin, AIA, SAE International**)
- OEM members (**RTX: Collins, Pratt and Whitney, Raytheon, Terumo**)
- SDO members (**DIN Solutions, ULSE, ASTM, BSI, SIS**)
- Liaison Members (**Department of War DSPO, NIST**)
- More members joining in H1 2026 (Manufacturers, Liaison, Technology and SDO)
- Further Engagement with Industry, Government, Academia, Technology.
- Priority now is further engagement with aerospace manufacturers in Europe and US

- DSA is publishing recommendations.
- Projects are now in flight.
- Get on board to influence.

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Customer quote: "DSA are not admiring the problem; they are doing something about it"