S-19 Digital Engineering Committee

Report Out

Bruno Gracio, Craig McMillan, Adishesha CS, James Steele

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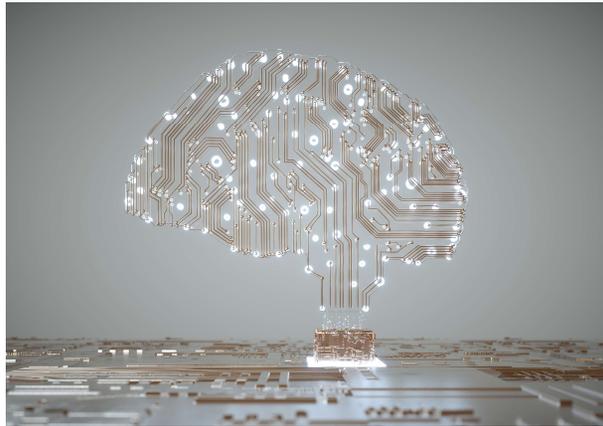
Slide 2

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              James Steele, 2026-03-02T15:43:02.807

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- **Intellectual Property Policy:**

- All committee participants shall familiarize themselves with SAE's Intellectual Property Policies related to Copyrights, Patents and Trademarks which are found in SAE International's Executive Standards Committee Governance Policy. Document sponsors and technical committee participants must acknowledge SAE International's IP Policy and the fact that all material, minutes, draft and released technical reports become the copyrighted property of SAE International through one or more means:

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- •Signing the committee attendance roster at meetings which contains a copy of the copyright policy acknowledgement statement

- •Acknowledging SAE International's Copyright Policy through selection of the acknowledgement statement option when accessing the SAE StandardsWorks web pages

- •Following the SAE policies and procedures for disclosure of patented technology as soon as any member believes that standard underdevelopment might infringe on any patented or licensed technology

- •Following the SAE policies and procedures for avoiding, if at all possible, the use of or listing in any standard any trademarked product or material

- *Please refer to the full explanation in the ESC (Executive Standards Committee Governance Policy document. Located on your committee's standards works page in the reference section.

- ESC Governance Policy

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Outline

- **General Description**
- **S-19 Leadership team and Footprint**
- **S-19 Initial product roadmap**
- **S-19 Meeting Cadence**
- **S-19 Upcoming Plenary Sessions**

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AIR – Aerospace Information Report

These Aerospace Technical Reports are compilations of engineering reference data, historical information, or educational material useful to the technical community.

ARD – Aerospace Resource Document

These Aerospace Technical Reports provide the reader with technical and non-technical information which may support a Technical Report. ARDs are issued for a limited time. Examples of ARDs include rationale reports, results of round robin or field testing, field data or experimental data, and compilations of industry research results, but may also report on state-of-the-art technology or be a technology needs-assessment. These documents shall have a maximum life of two years from adoption and cannot be revised or reaffirmed. The sponsoring Technical Committee can cancel this report by ballot at any time. Unlike the other Aerospace Technical Reports, ARDs are considered non-consensus documents and require only one level (Committee) approval.

ARP - Aerospace Recommended Practice

These Aerospace Technical Reports are documentations of practice, procedures, and technology that are intended as guides to standard engineering practices. Their content may be of a more general nature, or they may offer data that have not yet gained broad acceptance. The recommended practice should emphasize the capabilities and limitations of the information contained therein. A Technical Committee preparing such a report may add an introductory note stating, "This SAE International Recommended Practice is intended as a guide toward standard practice and is subject to change to keep pace with experience and technical advances."

AS – Aerospace Standard

These Technical Reports contain specific performance requirements and are used for: (1) design standards, (2) parts standards, (3) minimum performance standards, (4) quality, and (5) other areas conforming to broadly accepted engineering practices or specifications for a material, product, process, procedure, or test method.

S-19 General Description
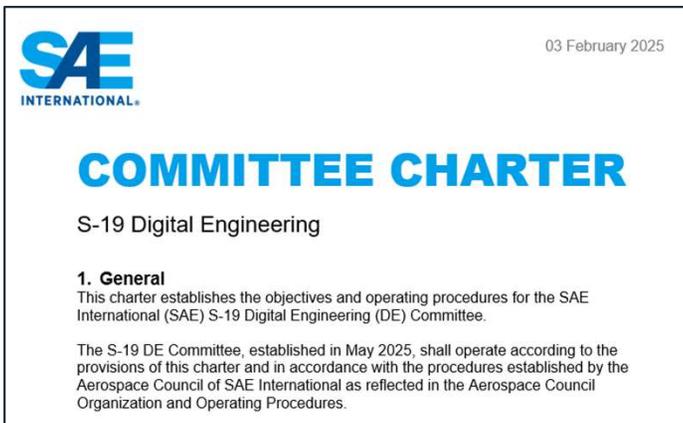
S-19 Digital Engineering Committee

- Established on **May 2025**

- Initial S-19 Virtual meetings in **September 2025**
  - Appointed first S-19 Leadership team

- First Plenary session in **February 2026** in Warrendale
  - Set initial list of voting members
  - Approved S-19 charter
  - Set first S-19 products
  - Setup first Working Groups to address the products

Digital Engineering Scope

Digital Engineering is a **model-centric**, **data-driven** approach that employs **authoritative digital artifacts**, reusability, interoperable models and integrated tool chains across disciplines to support the **entire system lifecycle**, enabling traceability, virtual verification and validation, data-informed decision-making, and collaboration between different organizations, to **streamline and manage the increasing complexity of systems**.

03 February 2025

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COMMITTEE CHARTER

S-19 Digital Engineering

1. General
This charter establishes the objectives and operating procedures for the SAE International (SAE) S-19 Digital Engineering (DE) Committee.

The S-19 DE Committee, established in May 2025, shall operate according to the provisions of this charter and in accordance with the procedures established by the Aerospace Council of SAE International as reflected in the Aerospace Council Organization and Operating Procedures.

[Charter Link](#)

S-19 Objectives

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- Develop and publish SAE Technical Reports for guidance on how standards should be represented in a model-based format

- Act as a key forum for enabling global adoption of Digital Engineering techniques for:
  - System Engineering and Integration Processes
  - Model-Based Engineering
  - Modeling & Simulation
  - Certification artifacts

- Review and support other SAE committees in the digitization of their standards and generation of standards regarding model-based engineering approaches

- Generate guidance on best practices for applying modeling and simulation to generate certification artifacts.

- Additional considerations for ensuring that the digital artifacts are protected from and IP and cybersecurity point of view.

S-19 Leadership team & footprint
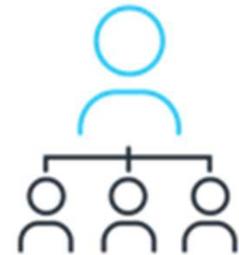
S-19 Leadership team

Chairperson

- Bruno Correia Grácio
- Associate Technical Fellow
- Boeing Technology & Innovation - Europe

Vice Chairperson

- Craig McMillan
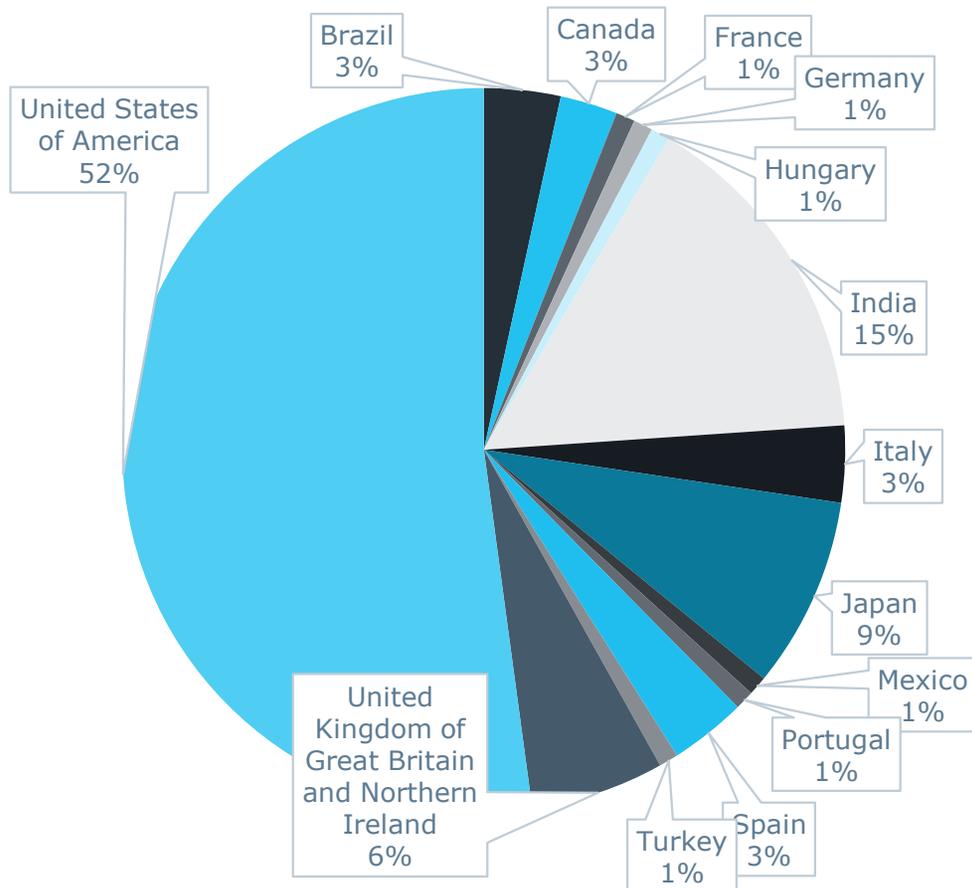- Advanced Programs Digital Leader
- GE Aerospace

Secretary

- Adishesha CS (Adi)
- Senior Technical Fellow
- Collins Aerospace | an RTX Business

S-19 Global Footprint*

Member's affiliations
- Aerospace India Association
- Airbus
- BAE Systems
- Bell Flight
- Boeing
- Collins Aerospace
- Embraer
- GE Aerospace
- IHI Corporation
- Infosys Limited
- Leonardo Helicopters
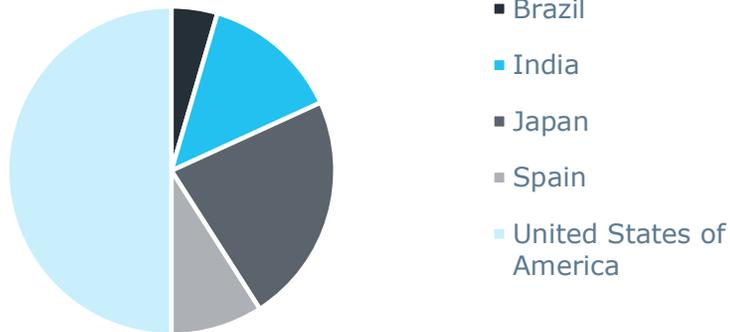- Mitsubishi Heavy Industries Ltd
- ...

Data as of February 2025

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S-19 Voting Members

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Voting Membership

- Brazil
- India
- Japan
- Spain
- United States of America

Membership Type

	0	2	4	6	8	10
Vice Chairperson - Producer	1					
Secretary - User	1					
Member - User				6		
Member - Producer						9
Member - General Interest			4			
Chairperson - Producer	1					

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S-19 Initial Products

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S-19 Initial Products
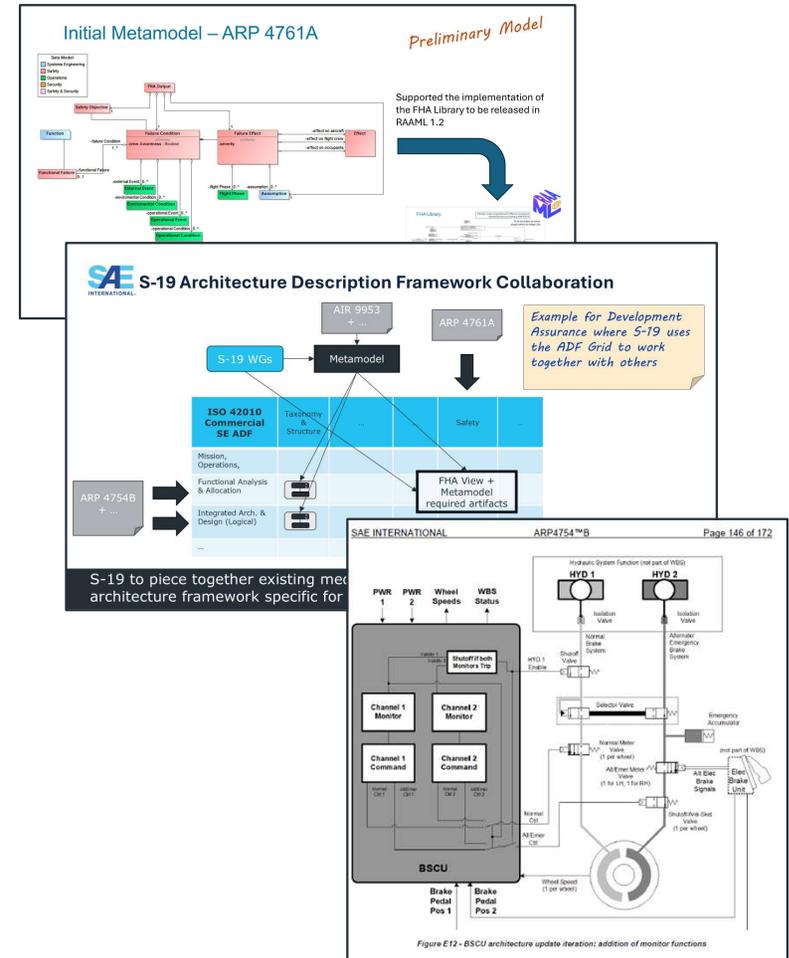
1. **S-19 Digital Engineering metamodel / ontology focused on aerospace systems:** focus on objects, attributes and relations between Digital Engineering terms to support the system development lifecycle using Digital Engineering artifacts.

2. **Architecture Description Framework (ADF) focused on the use of Digital Engineering for aerospace systems:** An ISO 42010 ADF containing (1) aspects, (2) domains, and (3) viewpoints representing stakeholder concerns.

3. **S-19 Example Use Case Model on how to apply the framework:** Similarse to the Wheel Brake System used by S-18. This example will implement the ontology concepts and the ADF framework for a particular aerospace system and serves as reference for industry implementation while keeping it tool and vendor agnostic

4. **Recommendation for SAE Digital-ready Standards.**

S-19 Initial Products

Team 1: Metamodel team

1. **S-19 Digital Engineering metamodel / ontology focused on aerospace systems:** focus on objects, attributes and relations between Digital Engineering terms to support the system development lifecycle using Digital Engineering artifacts.
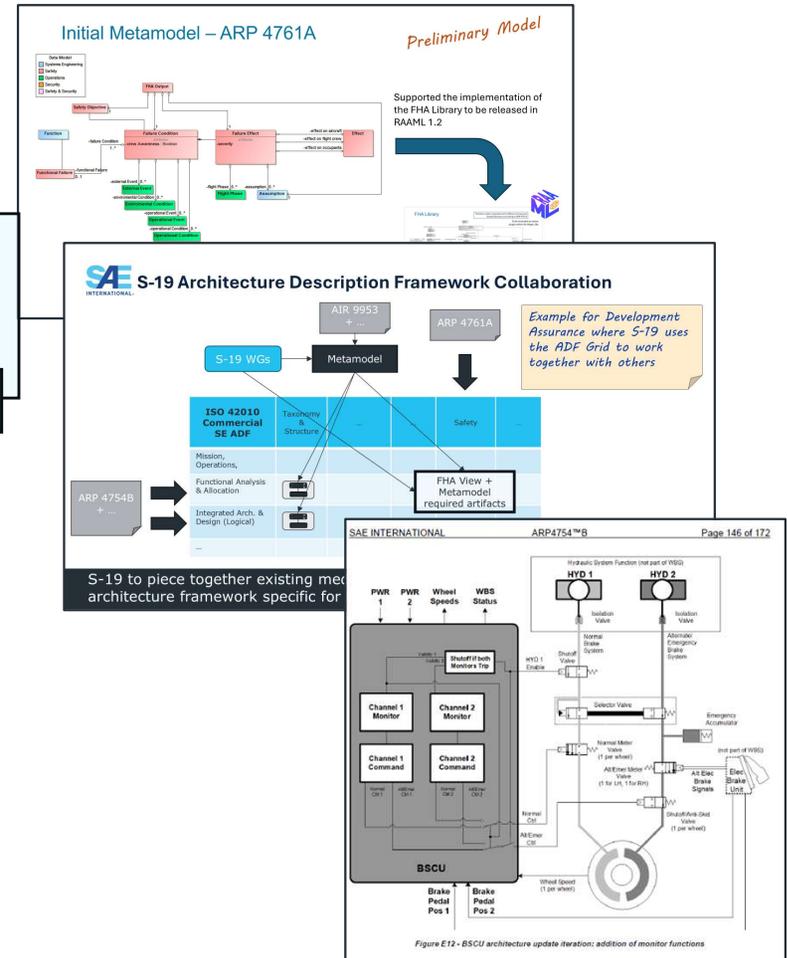
2. **Architecture Description Framework (ADF) focused on the use of Digital Engineering for aerospace systems:** An ISO 42010 ADF containing (1) aspects, (2) domains, and (3) viewpoints representing stakeholder concerns.

Team 2: Grid team

3. **S-19 Example Use Case Model on how to apply the framework:** Similarse to the Wheel Brake System used by S-18. This example will implement the ontology concepts and the ADF framework for a particular aerospace system and serves as reference for industry implementation while keeping it tool and vendor agnostic

4. **Recommendation for SAE Digital-ready Standards.**

Initial Metamodel – ARP 4761A   *Preliminary Model*

Supported the implementation of the FHA Library to be released in RAAML 1.2

S-19 Architecture Description Framework Collaboration

Example for Development Assurance where S-19 uses the ADF Grid to work together with others

S-19 to piece together existing me... architecture framework specific for ...

Figure E12 - BSCU architecture update iteration: addition of monitor functions

S-19 Meeting Cadence

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S-19 Meetings

General S-19 Digital Engineering Meetings

- Cadence: Last Friday of the Month

	Tokyo	Delhi	São Paulo	Madrid	Seattle	Philadelphia
4th Friday	12:00am	8:30pm	12:00pm	4:00pm	7:00am	10:00am

- Purpose: General S-19 Topics and Working Groups Status Report

Metamodel Team Meetings

- Cadence: First and third Friday of the month

	Tokyo	Delhi	São Paulo	Madrid	Seattle	Philadelphia
1st/3rd Friday	12:00am	8:30pm	12:00pm	4:00pm	7:00am	10:00am

- Purpose: Work on Infrastructure for Metamodel

Grid Team Meetings

- Cadence: Second and third Friday of the month

	Tokyo	Delhi	São Paulo	Madrid	Seattle	Philadelphia
2nd Friday	12:00am	8:30pm	12:00pm	4:00pm	7:00am	10:00am
3rd Friday	10:00pm	6:30pm	10:00am	2:00pm	5:00am	8:00am

- Purpose: Establish ADF Framework

How to Join

Go to:

- StandardsWorks Homepage
- Create a Standardsworks account if you do not have one!
- Once you are logged in your initials will be displayed in the top right corner.
- Search S-19, or click the link here --> S-19 Committee
- Click Join Now!

- If any assistance is needed, please reach out to James Steele directly!
  james.steele@sae.org

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S-19
Upcoming
Plenary
Meetings

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Plenary Meetings

- **Extra Working Meeting: 2026 AeroTech**
  - US, June 2nd - 4th 2026, Palm Beach Convention Center
  - Opportunity for the working groups to have a face-to-face meeting since we already have a S-19 Room for AeroTech

- **2026 Fall Plenary Meeting**
  - Europe, Madrid (?)

- **2027 Spring Plenary Meeting**
  - US, AeroTech

- **2027 Fall Plenary Meeting**
  - Asia, Bengaluru (Bangalore)
  - Join with other committees working on digital standards and have a SAE Digital Engineering Event

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Slide 21

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Closure

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Backup