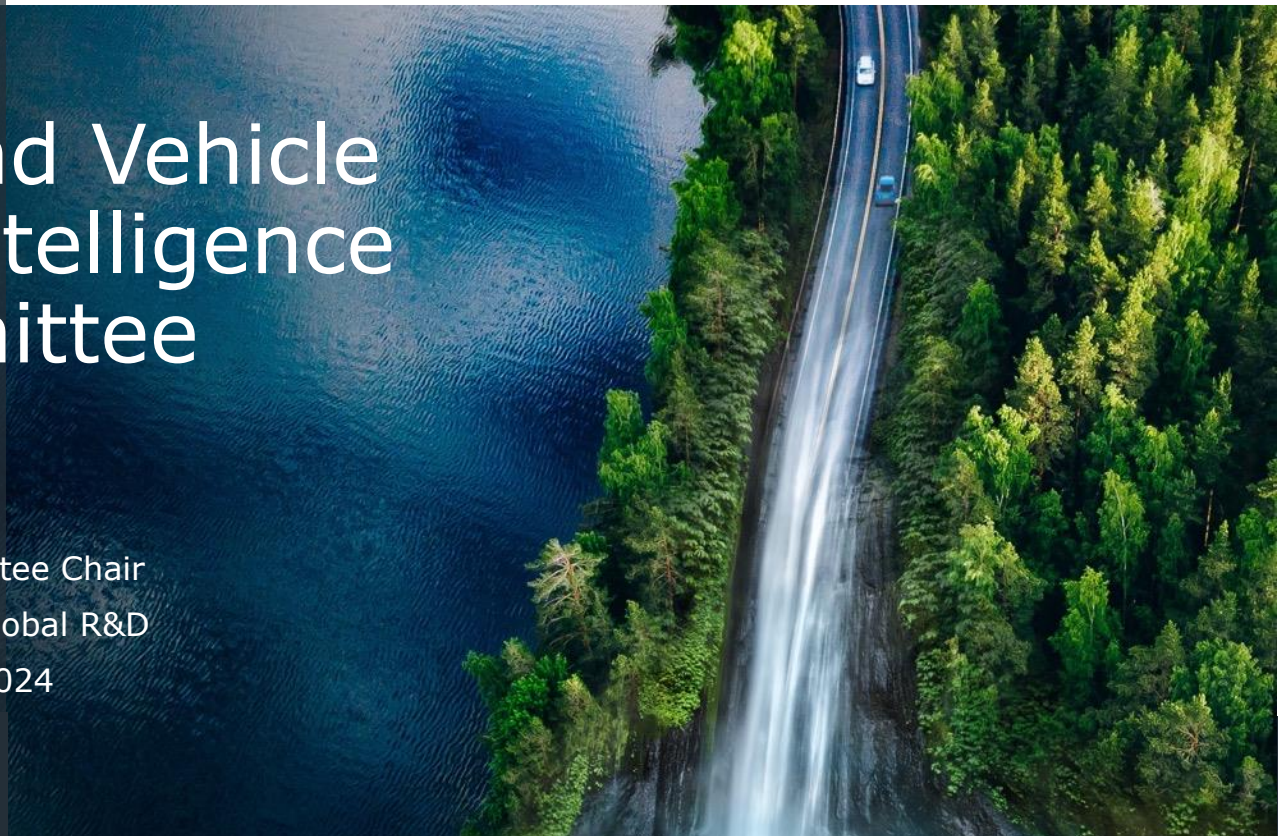


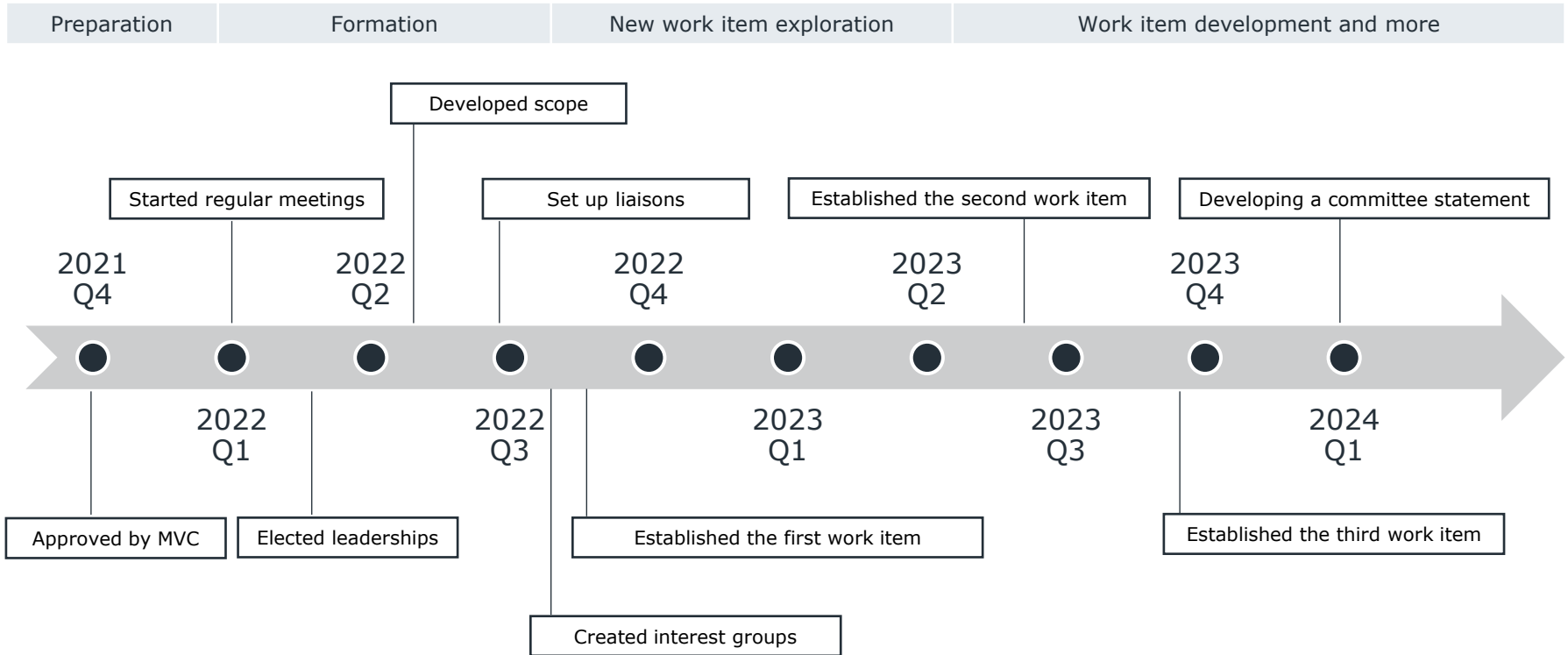
SAE Ground Vehicle Artificial Intelligence Committee

Wei Tong, Committee Chair
General Motors Global R&D
May/June 2024



SAE GV AI Committee – Timeline

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SAE GV AI Committee – Scope and Members

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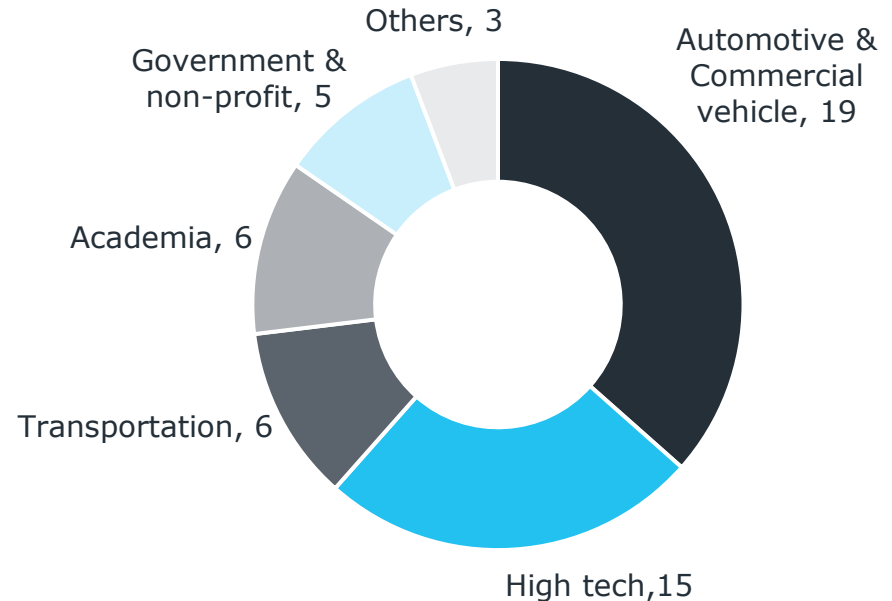
- Scope

- Develops Standards related to AI technology for the safe, secure and efficient operation of ground vehicles and transportation infrastructure
- Coordinates with and contributes to committees and task forces in the AI-related fields

- Leaderships

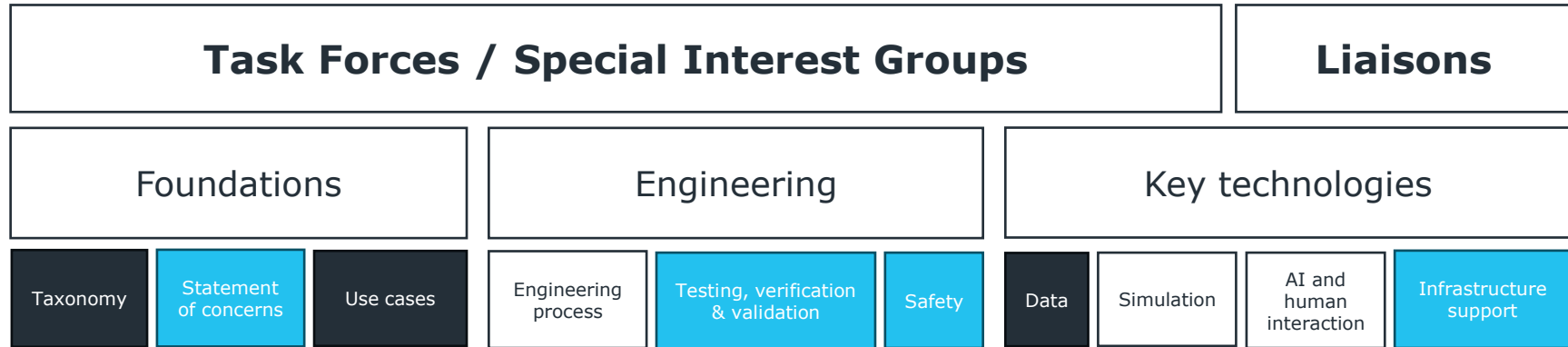
- Chair: Wei Tong (General Motors)
- Vice Chair: Lisa Savage (Aptiv)

54 Committee Members



SAE GV AI Committee – Focus Areas

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- TF with an active document under development
 - J3313: Artificial Intelligence - Terms & Definitions Taxonomy
 - J3312: Artificial intelligence (AI) — Use Cases in Ground Vehicle Applications
 - J3298: Artificial Intelligence Data for Ground Vehicle Applications
- Focus areas for new document development in 2024

Connection & Liaisons

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ISO/TC 22 Road Vehicles

- ✓ Identified related work
 - ISO/AWI PAS 8800 Road Vehicles — Safety and artificial intelligence
- ✓ Monitor work progress

ISO/TC 204 Intelligent Transport Systems

- ✓ Identified related work
 - ISO/PWI TR 12786 Intelligent transport systems — Big data and artificial intelligence supporting intelligent transport systems — Use cases
- ✓ Monitor work progress

UN GRVA Working Party on Automated/Autonomous and Connected Vehicles

- ✓ Appointed four liaison representatives
- ✓ Review documents

USCAR

- ✓ Appointed a liaison representative
- ✓ Identified related work and monitor work progress

The International Organization of Motor Vehicle Manufacturers

- ✓ Regular Sync-up meetings

SAE G-34, Artificial Intelligence in Aviation

- ✓ Appointed a liaison representative
- ✓ Identified related work
 - AIR6987: Artificial Intelligence in Aeronautical Systems: Taxonomy
 - AIR6994: Artificial Intelligence in Aeronautical Systems: Use Cases
 - AIR6988: Artificial Intelligence in Aeronautical Systems: Statement of Concerns
- ✓ Meet regularly between committee leaders

AI Taxonomy TF

J3313 WIP for Artificial Intelligence - Terms & Definitions Taxonomy

- All terms & definitions are expected to be clear & useful avoiding ambiguity, but applicable across all disciplines unless otherwise noted
- Requirements/recommendations will be included to document any unique nuances or applications on how a definition is applied or is unique to a particular ground mobility domain
- It is important for the public, media, especially any government agency, to understand the actual meanings and/or limitations in order to mitigate any confusion
- This will assist any government agency to eventually clarify any future AI enabled system policies used in the ground mobility domain.

AI Use Cases TF

J3312 WIP for Artificial intelligence (AI) – Use Cases in Ground Vehicle Applications

- Given the rapid interest in AI and deployment of AI solutions, it is important to understand the various use cases for AI technology applications to ground vehicles and transportation infrastructure for safe, secure, and efficient operation.
- As AI solutions are deployed in the ground mobility domain, it is important for the public, industry, and government to understand potential applications of AI in ground vehicles and transportation infrastructure.
- This will assist the public, industry, and government agencies to eventually clarify any future AI enabled system polices by understanding the type of inputs and outputs to the AI models for different applications and any assurance gaps such as safety, reliability, or other assurance concerns.

Data TF

J3298 WIP for Artificial Intelligence Data for Ground Vehicle Applications

- **Improve Data Quality:** By creating standards for data collection, formatting, and sharing, the task force can ensure that all data used in transportation AI systems is of high quality, reliable, and consistent. This can help to reduce errors, improve accuracy, and increase the effectiveness of the AI systems.
- **Foster Interoperability:** Establishing data standards can also help to promote interoperability between different transportation systems and stakeholders. When all parties adhere to the same standards, data can be more easily shared and integrated, leading to greater efficiency, collaboration, and innovation.
- **Increase Trust:** Standardization can also help to build trust among stakeholders by ensuring that data is collected and used in an ethical and transparent manner. This can help to address concerns around data privacy and security, and build confidence in the reliability and fairness of AI systems in the transportation sector.
- **Enhance Regulatory Compliance:** By aligning data standards with relevant regulations and guidelines, the task force can help to ensure that transportation AI systems comply with legal and ethical requirements. This can help to avoid potential legal liabilities and reputational risks, and enable transportation companies to operate with greater confidence and clarity.

Verification & validation TF

- V&V of AI based components and systems are very important and demand rigorous methods and tools as next generation ADS function may employ AI based components. V&V of AI based systems are relatively less mature and practitioners are handicapped with the lack of experience and commercial tools. There are several verification techniques proposed recently by academic and industrial researchers for AI/ML applications and there is a need for adopting them to industrial practice.
- The purpose of this Task Force is
 - to review the existing practices and catalogue them with necessary information,
 - to provide (taxonomical) guidelines on the application of these approaches ,
 - to identify gaps and deficiencies in the existing approaches and develop requirements for enhancements

Statement of Concerns SIG

- With the rapid advancement of AI technology, AI-based components and systems are swiftly emerging within the ground mobility domain. However, AI technology differs significantly from conventional technologies familiar to industry stakeholders in the development of safety-critical components and systems. Unlike conventional technologies, AI involves complex human-like functions such as recognition, comprehension, and decision-making, which were not prevalent in the past. These functions pose challenges in determining system specifications and thoroughly testing and validating the products, potentially leading to significant safety concerns. Moreover, established processes, tools, methods, and standards for developing safety-critical systems may encounter challenges when applied to AI.
- The purpose of this SIG is fourfold:
 - Identify the distinctions between AI technology and conventional technology.
 - Identify gaps and deficiencies in existing approaches compared to AI approaches.
 - Analyze the impact of AI technology on existing practices.
 - Assess the compatibility of AI with existing processes, methods, and standards.

Committee Contact

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For further information or joining the SAE GV AI committee, please contact

- Committee Staff Engineer/Government & UN Technical Liaison
 - William Gouse S.William.Gouse@sae.org
- Committee Chair: Wei Tong wei.tong@gm.com
- SAE committee manager: Jennifer Collins Jennifer.Collins@sae.org
- SAE product manager: Adrian Guan adrian.guan@sae.org



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