AI Conformity Assessment

Japan AI Safety Institute (AISI) –
Business Demonstration WG
Conformity Assessment SWG

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Introducing leader of Conformity Assessment SWG

AISI Japan AI Safety Institute

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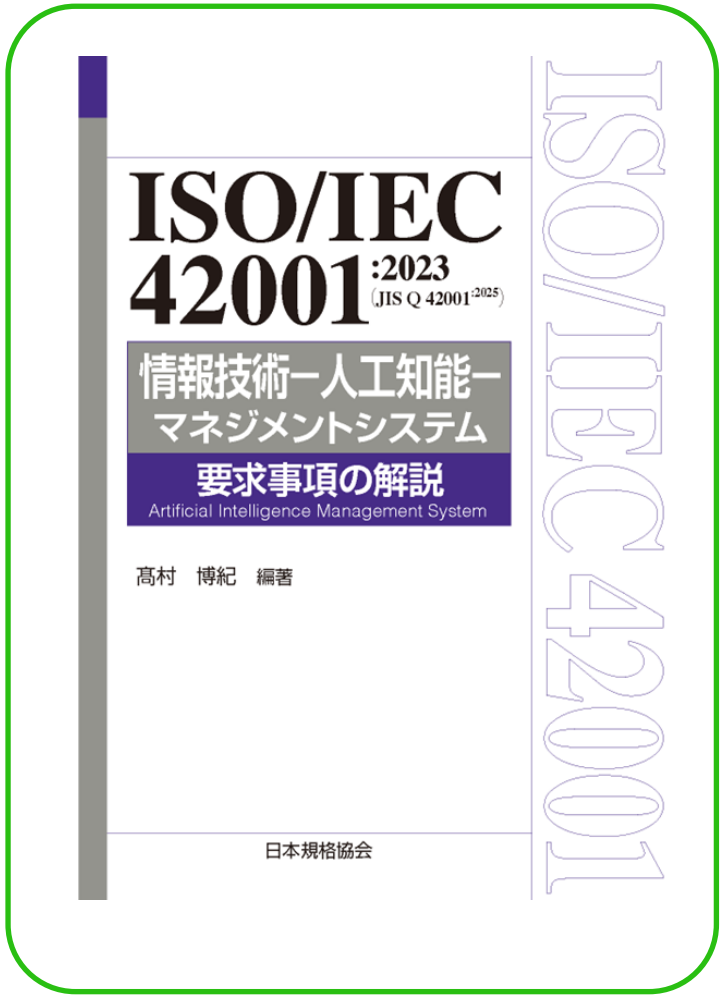
From Apr. 2024,
Standard Team, AI Safety Institute JAPAN

Serves as a Secretariat of ISO/IEC JTC1 SC42
Japan National Body



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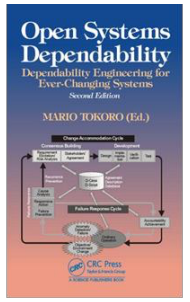
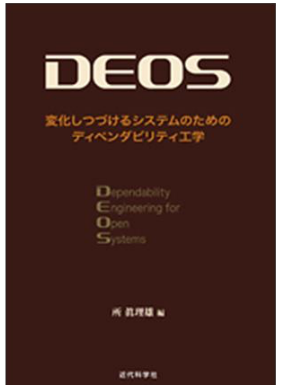
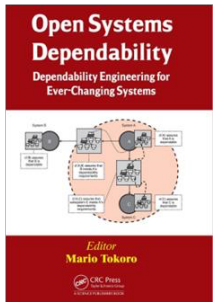
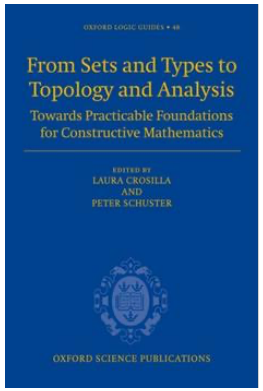
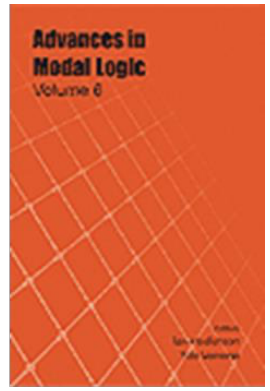






Dependability





Constructive Mathematics
Mathematical Logic

Conformity Assessment SWG

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- The Conformity Assessment SWG aims to establish AI conformity assessment methods, including self-declaration of conformity, through the activities of sector-specific SWGs.
- In collaboration with the Data Quality SWG, the SWG will explore composite evaluation approaches that consider the consistency of AI outputs and their context of use.

Current Status and Issues

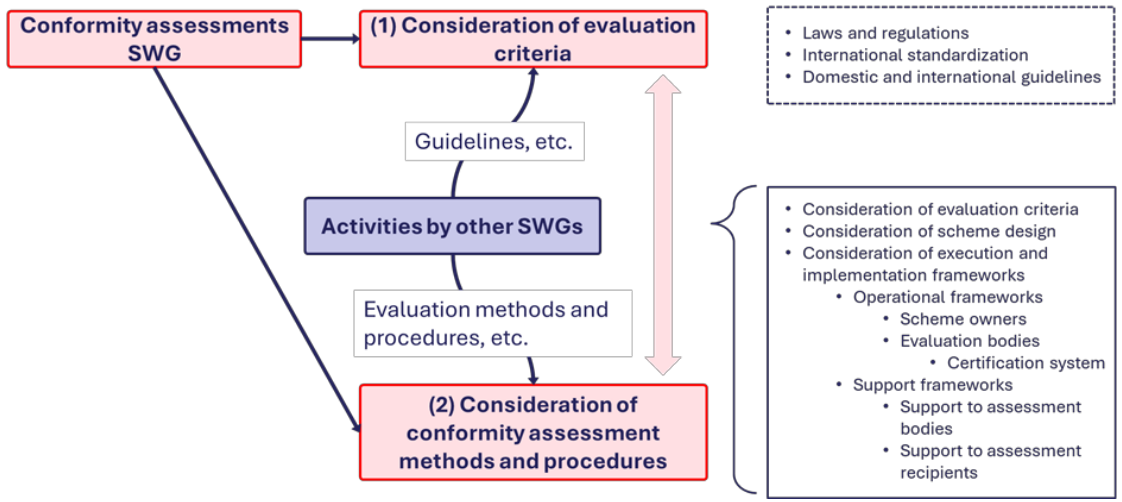
- Traditional conformity assessment frameworks cannot keep up with rapidly evolving AI technologies.
- ISO/IEC 42007, now under development, offers a high-level framework for conformity assessment for AI.
  - ➢ Flexible, appropriate evaluation methods and practical procedures are needed.

Approach to establishing conformity assessment methods

- Extract AI system requirements based on the activities of sector-specific SWGs

Steps: Hearing / Issue Identification → Scheme Design → Tool and framework development → Alignment with International Standards

- Explore composite evaluation methods in collaboration with the Data Quality SWG



SWG Roadmap

Short-term initiatives (FY2025)	Medium-term initiatives (FY2026–2027)	Long-term initiatives (future vision)
● Collaborate with sector-specific SWGs to conduct interviews about evaluation needs and the current conditions of assessment recipients ● Form a new SWG composed primarily of relevant organizations involved in conformity assessments, and analyze existing conformity assessment methods	● Design conformity assessment schemes to ensure comprehensive assurance and accountability, based on the international standardization discussions ● Engage in the elaboration and trial implementation of a conformity assessment scheme for AI to verify its effectiveness	● Develop guidelines aligned with international implementation models ● Work on the phased deployment, with the goal of establishing a practical, internationally interoperable framework

Organizations(Structure and Affiliated)

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BRIDGE 研究開発とSociety 5.0との橋渡しプログラム

Programs for Bridging the gap between R&D and the IDeal society (society 5.0) and Generating Economic and social value

AI Safety Institute（AISI）

Joint Certification for AI area
AI分野におけるJoint Certificationの検討

AISI Steering Committee

Business Demonstration WG

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Conformity Assessment SWG

Committee of Experts

Co-hosted

Japan Accreditation Board: 公益財団法人日本適合性認定協会（JAB）

ISMS Accreditation Center: 一般社団法人情報マネジメントシステム認定センター（ISMS-AC）

Japanese Standards Association：一般財団法人日本規格協会（JSA）

National Institute of Technology and Evaluation: 独立行政法人製品評価技術基盤機構（NITE）認定センター

Japan Quality Assurance Organization: 一般財団法人　日本品質保証機構（JQA）：Chair of ISO　CASCO(Japan)

National Institute of Advanced Science and Technology: 国立研究開発法人産業技術総合研究所(AIST)：Chair of SC42 Japan & experts

Conformity Assessment in ISO/IEC (CEN/CLC)

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- Conformity assessment is
  - “Demonstration that specified requirements (explicit needs or expectations) are satisfied” (ISO/IEC 17000:2020)
  - ISO CASCO develops standards for conformity assessment (framework)
    - ISO/IEC 170XX series are international standards for conformity assessment
  - IEC CAB develops conformity assessment schemes, etc.: CB Scheme, etc.
    - Regarding AI, currently establishing a task force

- Scheme designs and operations depend on the scheme owners
  - Management System (MS) certification, accreditation bodies assess certification bodies under the international forum IAF, while certification bodies assess organizations to grant certification (international but voluntary activity)
  - Meanwhile, the CE marking system is a European scheme (self-declaration of conformity may be valid): The relationship between law and (CEN/CLC) standards is clear (NLF: New Legislative Framework)
  - The JIS marking system is non-mandatory, but it is a national system based on ISO/IEC 17065.

Challenge & Current situations

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Traditional static and comprehensive conformity assessment framework adequately evaluate an ever-changing subject?

- ISO/IEC 17067 is currently under revision within ISO/IEC CASCO
- The international standard ISO/IEC 42001 for AI management systems has been published in 2023 (JIS Q 42001 was announced in August 2025)
- However, combinations of conformity assessment schemes (conformity assessment system) is determined by a scheme owner in a system design and operation (not specified in the standard).
- Considering conformity assessment for AI systems, it is necessary to develop an international standard that specifies (general) requirements for AI systems under ISO/IEC 42007.Can these be organized as general requirements? (Challenge)
- Meanwhile, international standards are also being developed for (general-purpose and/or specialized) AI systems across various sectors.

AI Conformity Assessment

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- EU AI Act states usage of harmonized standards (hEN), and conformity assessment is crucial for demonstrating compliance with the AI Act and related hEN standards.
  - While the use of hEN standards for implementing European regulations (NLF) is well-known.
  - Standards are more flexible than laws for amendments (including revisions).
  - Particularly for technologies like AI, where innovation progresses rapidly and societal impact is significant, it is necessary to clarify the relationship between law and standards while replacing compliance with the law with compliance with relevant standards.
- To consider Conformity Assessment for Digital service/Products (including AI systems)
  - **Ever-Change:** The subject is changing, environmental changes also occur, and governance and management must change accordingly
  - **Stakeholders are diverse:** Not only multi-stakeholders and supply chains, but also risk chains, value chains, etc., must be considered

Traditional static and comprehensive conformity assessment framework adequately evaluate an ever-changing subject?

What is truly necessary for AI conformity assessment (esp. Safety) ?

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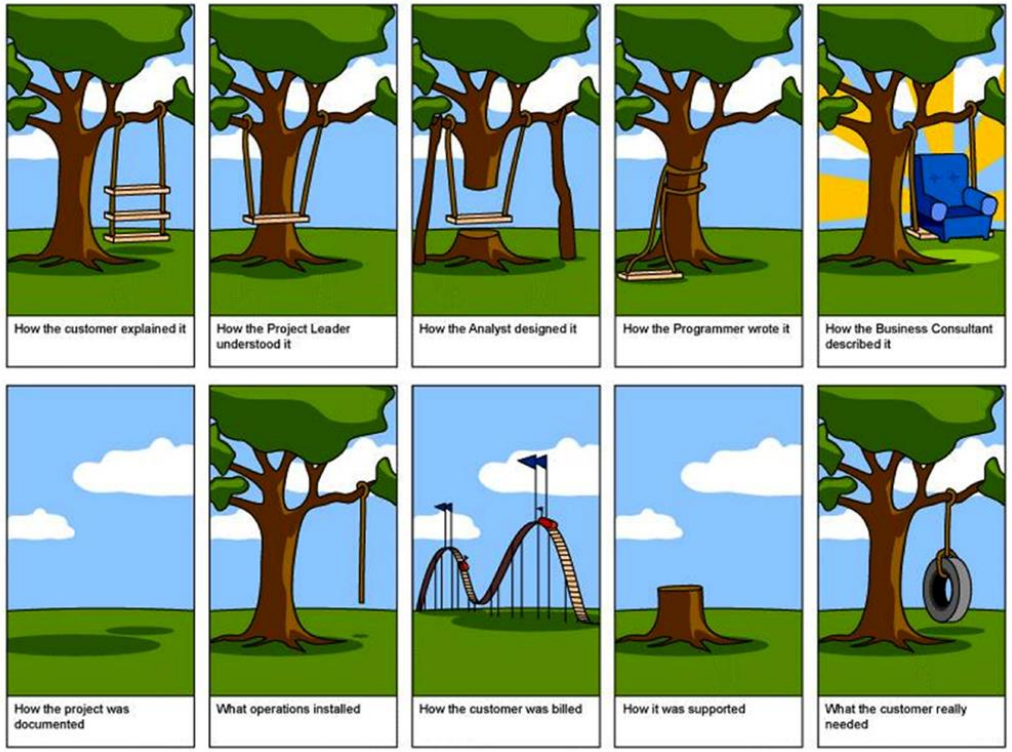
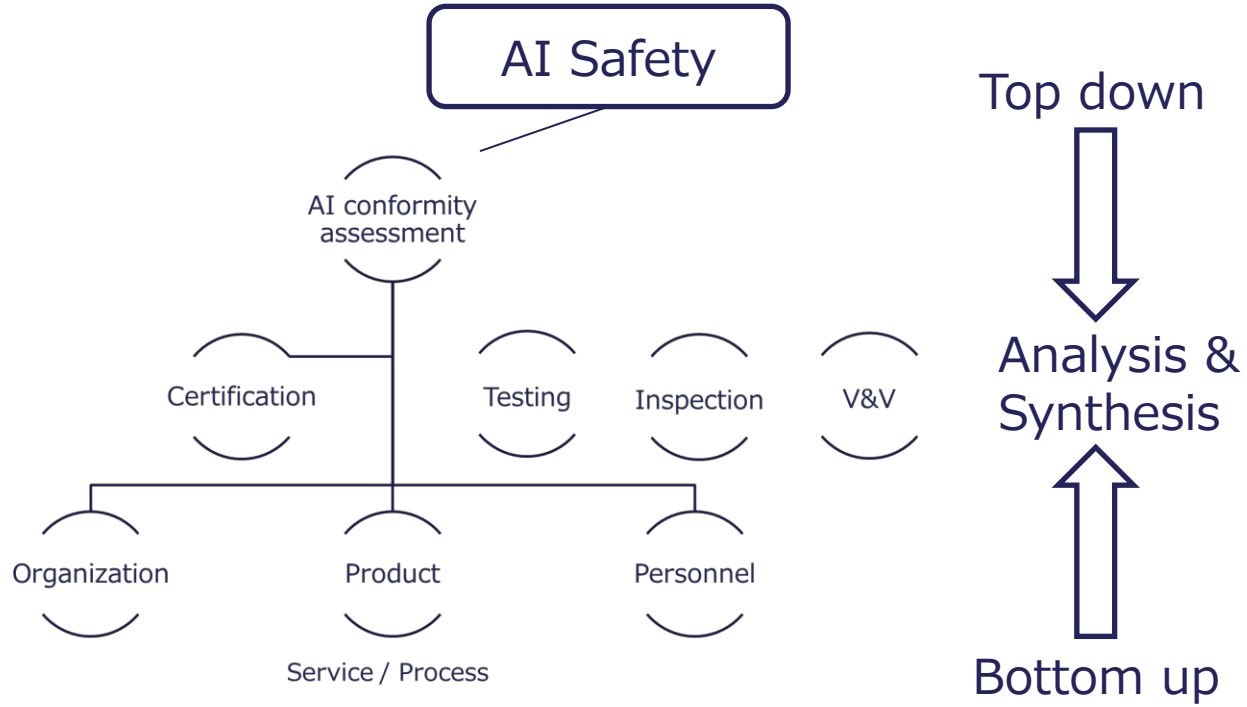
From Software development



- This painting is commonly known as the “Swing-Tree Story.” It is a very famous illustration that has long been used in software engineering, first appearing in the newsletter of the University of London Computer Centre in 1973.

Wants and Needs ⇒ Requirements is NOT easy

What is truly wanted and needed for conformity assessment in AI Safety?



Holistic Approach is necessary for AI safety

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- Holistic Approach is also necessary for AI Conformity Assessment
- ∑ Conformity Assessment Schemes ⇔ Conformity Assessment System

Conformity Assessment for
- Organization
- Personnel
- Product (Process, Service)

Inspection, Testing, V&V…

知りたいことは象とは何？であり、つまり、
知りたいことは、このAIって大丈夫？であるか
何をみれば大丈夫といえるのか？

How to combine each scheme to systems
Beyond the SLCA: System level conformity assessment

A simple question: limits of reductionism?

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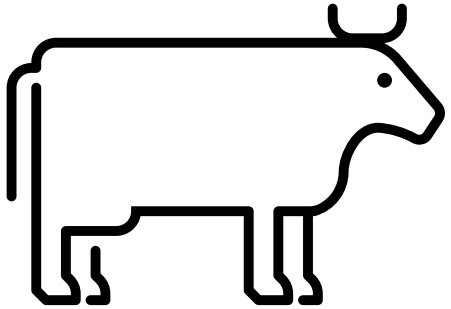
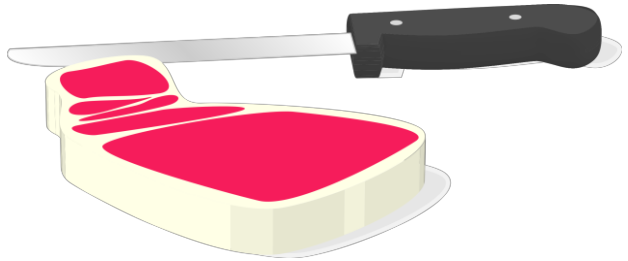
Properly raised, healthy cattle are delicious in every cut.



The tenderloin is good



System $\stackrel{?}{=} \sum$ Parts
Reductionism is enough?

the services/products created by the organization is properly managed and trustworthy enough?

An organization has obtained XX MS certification.
Some product has obtained product certification in an organization.

Is reductionism sufficient ?, AI
How XX is XX enough? , XX $\in$ {safety, secure, reliable,・・・}

Holistic approach is necessary for AI safety: Top-Down & Bottom-Up approaches

Hint for solutions: System Thinking, etc.

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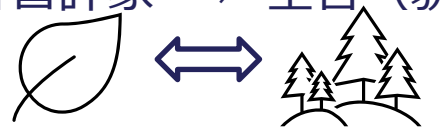
- 合成の誤謬（Fallacy of Composition）
- Total Optimization ≠ Σ Local Optimization
- Systems are connected: System of Systems, Open systems

"A system is a way of looking at the world."
"… a system, any system, is the point of view of one or several observers."
Gerald M. Weinberg (1975)
An Introduction to General Systems Thinking

木を見て森を見ず ⇒ 木も見て森も見る
群盲評象 ⇒ 全容（貌）把握



PICARD Theory of Systems

System = Holistic Image of { Parts, Interactions, Context, Actions, Relationships, Destination }

From the Point of View of an Observer

Holistic Approach to Finding the Whole Solution: Using Systems Principles & Concepts, James N Martin

- DEOS Project (JST CREST, Dr. M.Tokoro): IEC 62853 Open Systems Dependability 2018
  http://deos.or.jp/index-j.html
  https://www.kindaikagaku.co.jp/book_list/detail/9784764904613/
- Agile Governance (METI)
  https://www.meti.go.jp/press/2022/08/20220808001/20220808001.html
  https://www.meti.go.jp/shingikai/mono_info_service/governance_model_kento/index.html
  https://www.meti.go.jp/shingikai/mono_info_service/governance_model_kento/pdf/20250930_1.pdf
- SoS Governance guideline (NEDO 産業DX、Ritsumeikan Univ., Prof A.Tokuda)
  https://www.ritsumei.ac.jp/research/idx-agpf/250515-0039-01.pdf

Currently activities for AI Conformity Assessment is

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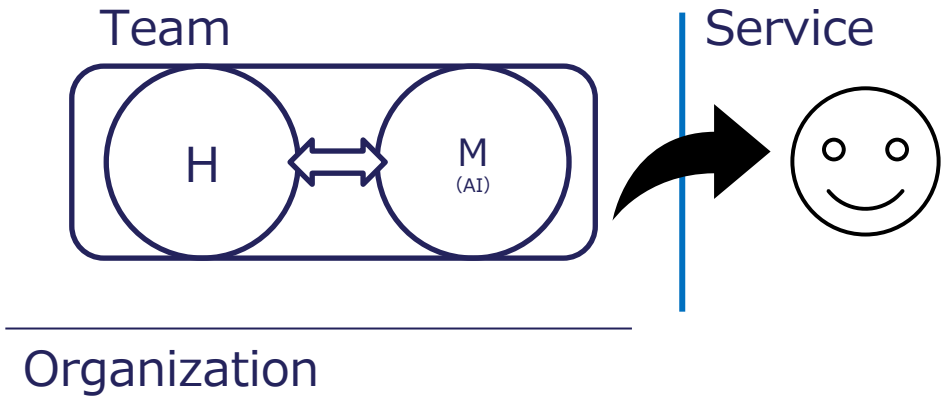
Conformity Assessment SWG is examining conformity assessment procedures when HMT is the subject of evaluation.

- Human-Machine Teaming（HMT）：「Integration of human interaction with machine intelligence capabilities」(ISO/IEC 22989,Artificial intelligence concepts and terminology:2022)
- HMT has 5 types; Human supervised, Human mentor, Peer-Peer, Machine mentor, and Machine supervised



What, How to Evaluate?

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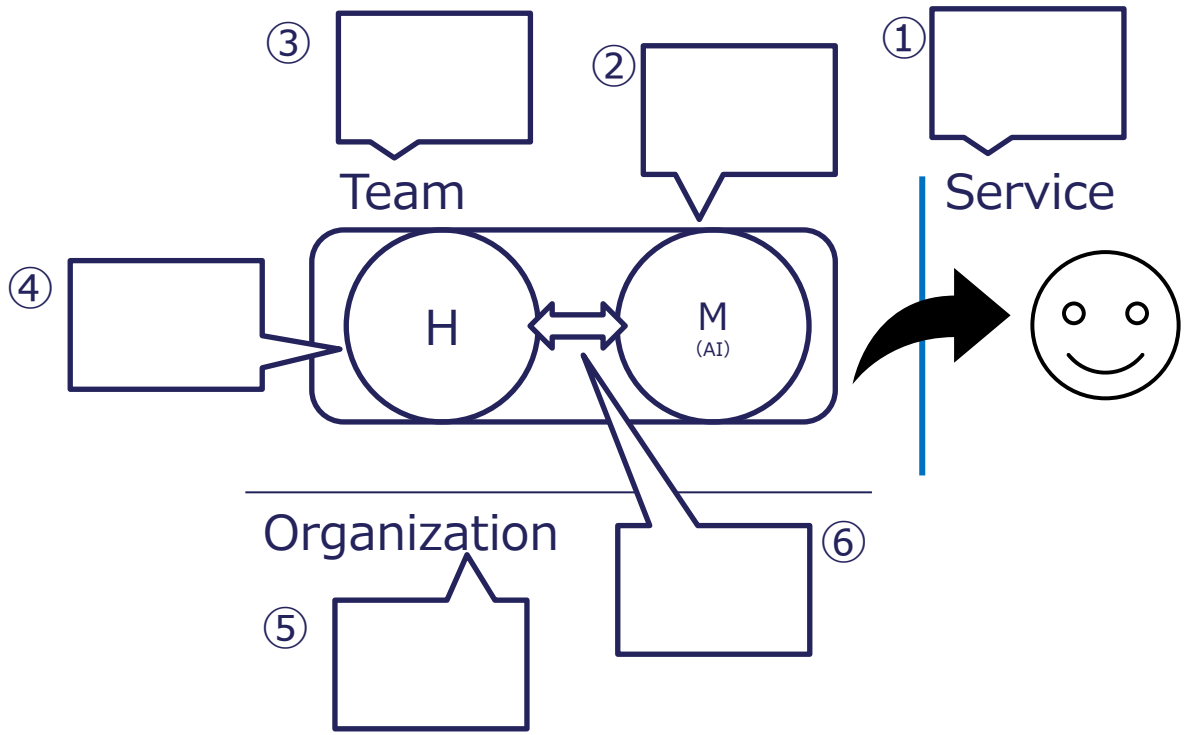
Object ?



For anyone other than end users
- Things we must prevent from happening
- What must be done to eliminate worries, anxieties, dissatisfaction, and risks
- End users' wants and needs
- How can we be certain we've resolved their concerns?

For end users
- What should be avoided
- To prevent worry, anxiety, dissatisfaction, and danger
- What must be done
- End users' wants and needs
- What would confirm their concerns are resolved?

Future Plan

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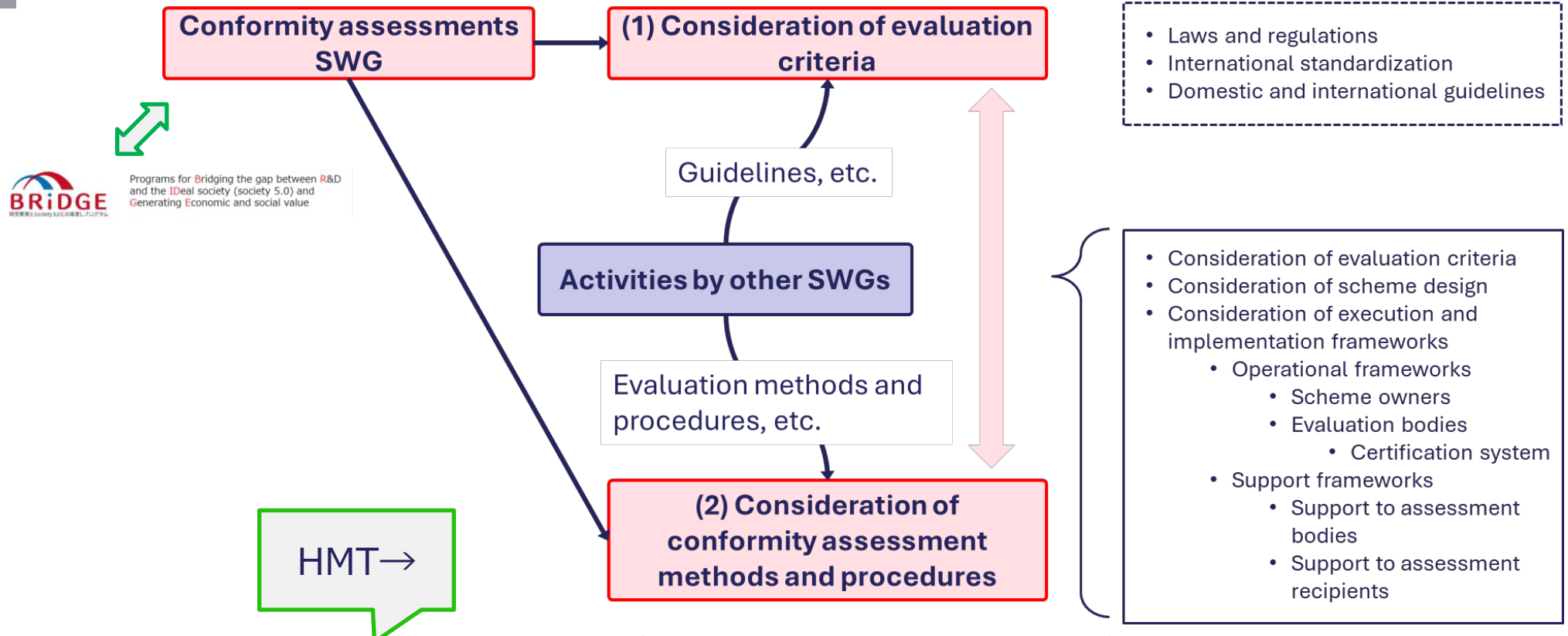

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More for Another Day

前後左右・上下を全ての方向をみつつ
N方良しとなるために