AI standardization to enable digital development

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Lead Standards Development Manager

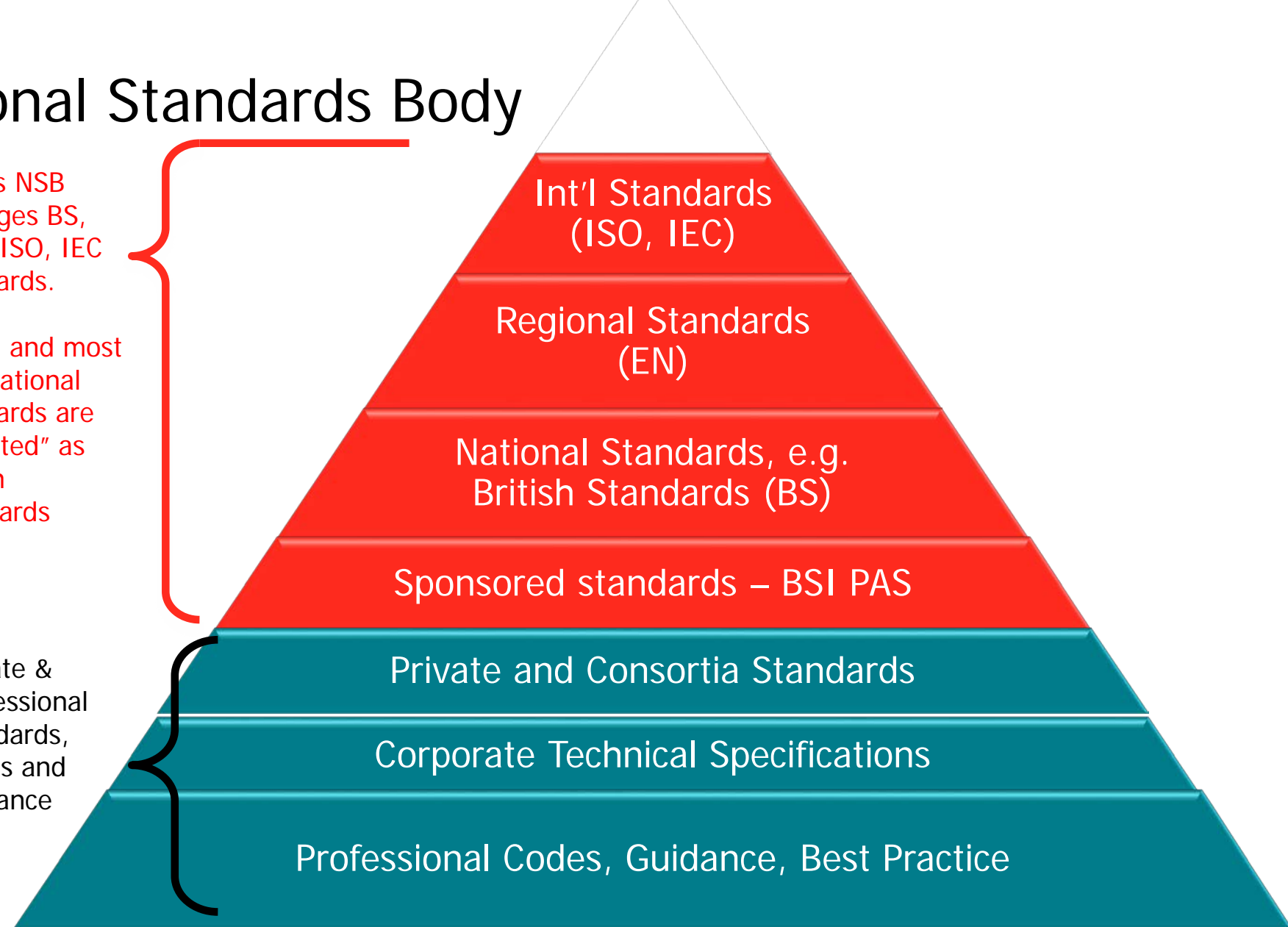NATO STO M&S Group Symposium 21 October 2022

By Royal Charter

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BSI as the UK National Standards Body

- Royal Charter company,

- Convenor role facilitating consensus on good practice business issues,

- Frameworks, principles, codes, guidance and technical specifications,

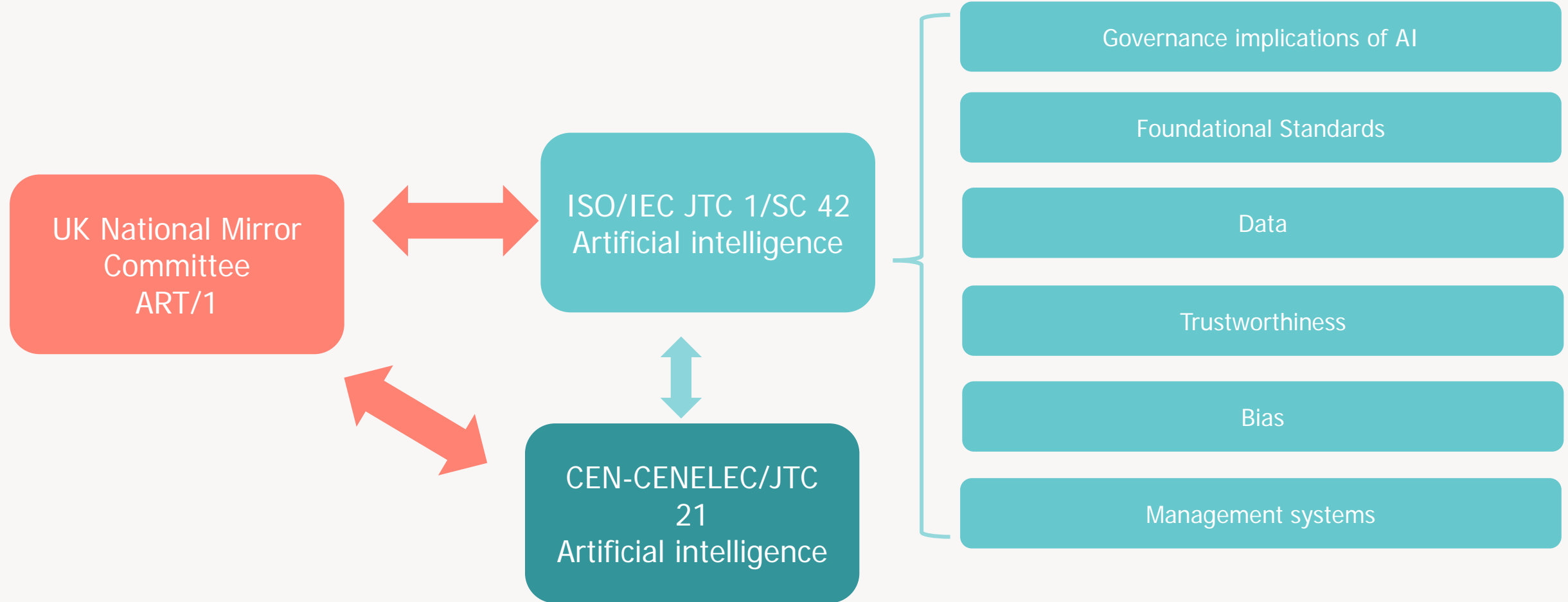- A coherent set of voluntary standards provide an alternative to regulation.

BSI as NSB manages BS, EN & ISO, IEC standards.

All EN and most international standards are "adopted" as British Standards

Private & professional standards, codes and guidance

Int'l Standards (ISO, IEC)

Regional Standards (EN)

National Standards, e.g. British Standards (BS)

Sponsored standards – BSI PAS

Private and Consortia Standards

Corporate Technical Specifications

Professional Codes, Guidance, Best Practice
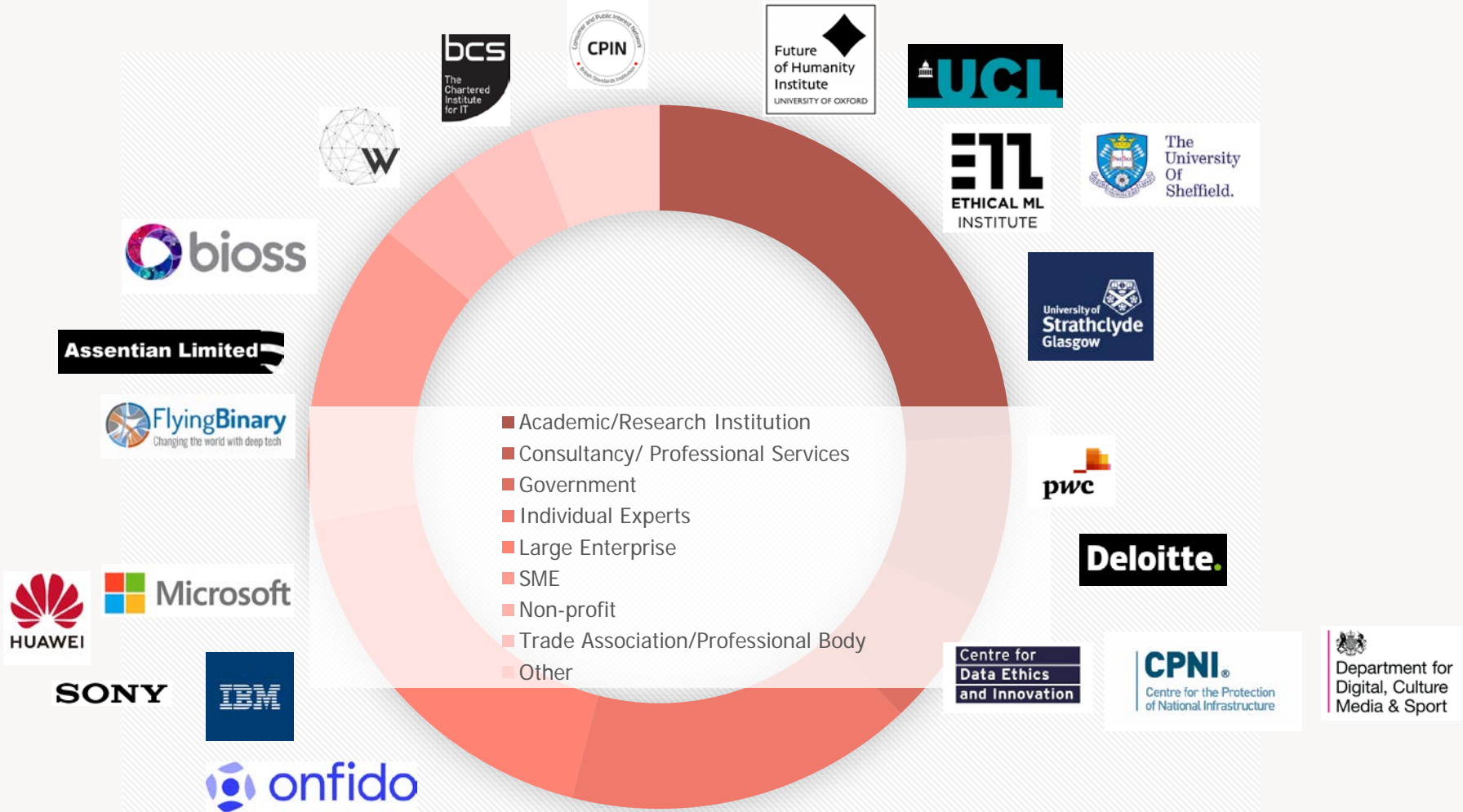
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UK and international engagement in AI standards

National Standards Bodies do not write standards, the stakeholder committees do
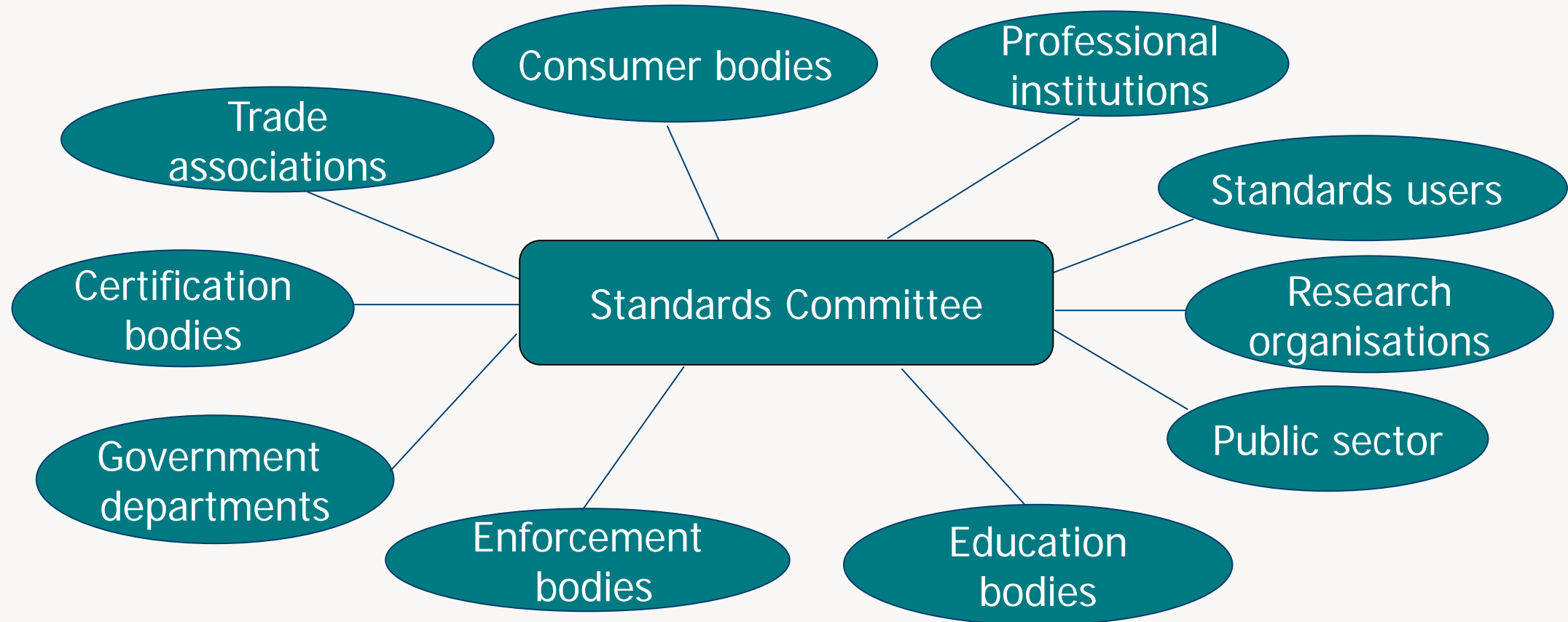
ART/1: Diverse and growing membership

Chart legend:
- Academic/Research Institution
- Consultancy/ Professional Services
- Government
- Individual Experts
- Large Enterprise
- SME
- Non-profit
- Trade Association/Professional Body
- Other

ISO/IEC/JTC 1/SC 42 AI activities

- Internationally there are 35 participating members, 15 observing members, 24 projects under development, 15 published projects
- There are six working groups covering topics such as foundational terminology, management systems, bias, risk management, data, governance and trustworthiness
- UK are active members with many experts on various work streams and have successfully proposed new standards ideas for development
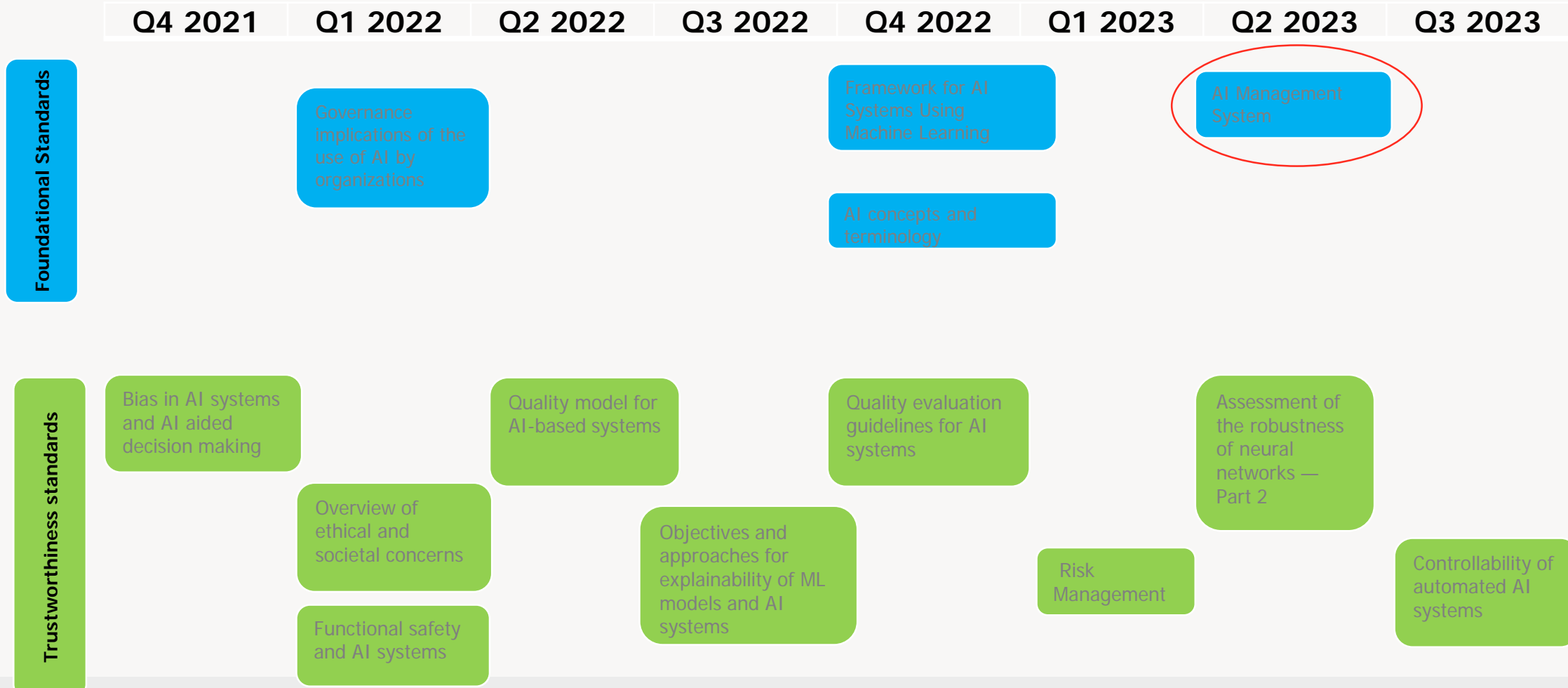
CEN-CENELEC/JTC 21 Activities

- European specific work programmes for regional needs
- Development of harmonized standards in support of the European AI Act
- Membership not unique to EU nations, UK leads on key development areas including conformity assessment
- Alignment and adoption of international standards

Forthcoming AI standards – Data, use case & computational approaches

	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	TBD
Data				Process management framework for big data analytics			Data quality for analytics & ML		Data life cycle framework
Use cases & applications							AI system life cycle processes / Guidelines for AI applications		
Computational approaches & characteristics	Overview of computational approaches for AI systems					Assessment of machine learning classification performance		Reference architecture of knowledge engineering	

Forthcoming AI standards – Foundations Standards and Trustworthiness

Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023

Foundational Standards

Governance implications of the use of AI by organizations

Framework for AI Systems Using Machine Learning

AI Management System

AI concepts and terminology

Trustworthiness standards

Bias in AI systems and AI aided decision making

Quality model for AI-based systems

Quality evaluation guidelines for AI systems

Assessment of the robustness of neural networks — Part 2

Overview of ethical and societal concerns

Objectives and approaches for explainability of ML models and AI systems

Risk Management

Controllability of automated AI systems

Functional safety and AI systems

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AI Management System

- Management System Standards (MSS) are standards that set out requirements or guidance to help organizations manage their policies and processes to achieve specific objectives. MSS are designed to be applicable across all economic sectors, various types and sizes of organizations and diverse geographical, cultural and social conditions.

- The origins of some of the world's most used Management Standards can be traced back to British Standards produced by BSI. For example, ISO 9001 on Quality Management (BS 5750) ISO 14001 on Environmental Management (BS 7750) and ISO 27001 for Information Security (BS 7799)

- ISO/IEC 42001, AI Management System (in development)
  - Specifies the requirements and provides guidance for establishing, implementing, maintaining and continually improving an artificial intelligence management system within the context of an organization.
  - It will help the organization develop or use artificial intelligence responsibly in pursuing its objectives, and to meet applicable regulatory requirements, obligations related to interested parties and expectations from them.

https://www.iso.org/management-system-standards.html for details about management systems standards

Future work

- Foundational and technical standards have already been published with more expected to publish in 2023

- Horizonal subject by nature which leads to collaborative discussions with other committees and industries. These include developments in trustworthiness, data, security as well as new subject areas for collaboration such as medical devices

- Original work is always welcomed and proposals incubated together with international communities

- Certification, compliance, conformity assessment and assurance
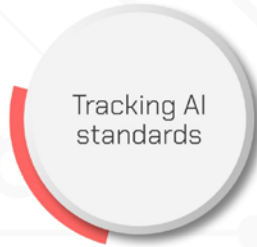
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AI Standards Hub Pilot

The Alan Turing Institute, supported by BSI and NPL, will host and pilot the AI Standards Hub, working with DCMS and the Office for AI.

This new scheme will aim to bring together expertise across the UK AI ecosystem, empowering businesses, innovators and civil society to engage in global AI standards development. This will help scale up the UK's cutting-edge contributions to global AI standardisation - improving governance of AI technologies and unlocking the UK's economic potential in this area.

The Alan Turing Institute

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NPL

UK Government

AI STANDARDS HUB

Four functions to be trialled, through the pilot

Tracking AI standards

Convening, connecting, and community building

Education, training, and professional development

Thought leadership & International Engagement

Curating information about technical standards development initiatives in an accessible, user-friendly and inclusive way.

Bringing the UK AI community together to encourage more coordinated engagement in global AI technical standards development.

Hosting events and developing materials to help businesses, researchers, policymakers and other stakeholders engage in AI technical standards development, and collaborate internationally.

Exploring international collaboration with similar initiatives to ensure the development of technical standards are shaped by a wide range of AI experts, in line with our shared values.

Impact

Increased awareness and contribution to global AI technical standards development.

UK innovation is exported globally through the standards development process.

Global AI technical standards better support the UK's pro-innovation AI governance approach.

National AI Strategy

HM Government

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@officeforai

Useful links

- ISO/IEC/JTC 1/SC 42 work programme

https://www.iso.org/committee/6794475.html

- CEN/CENELEC/JTC 21 brief

https://www.cencenelec.eu/news-and-events/news/2021/briefnews/2021-03-03-new-joint-tc-on-artificial-intelligence/

- ART/1 national committee

https://standardsdevelopment.bsigroup.com/committees/50281655

- Committee membership application

https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/how-to-get-involved-with-standards/become-a-standards-maker/apply-to-be-a-committee-member/

- AI hub

www.aistandardshub.org

https://twitter.com/AIStandardsHub

Thank you. Questions?

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