



AI policies & Standards

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Outline

- About Project SESEI
- Standards, its importance and how they are different from Législation
- AI policies/new initiatives
- AI Standards
- Education and awareness in ICT standardization

Project SESEI

Project is a permanent presence in India

SESEI (Seconded European Standardization Expert in India) is a local face for the European standardization community in India: Dinesh Chand Sharma



Why SESEI: India is a major trade partners for Europe, Increasing role of standards to gain market access and Evolving & complex nature of regulatory and standardization landscapes, Sharing best practices, work together

Sector: ICT: M2M/IoT, Security, 5G, NFV/SDN, e-Accessibility, eHealth, eCALL ! **Electrical equipment including Consumer Electronics:** Smart Grid, Smart Meter, LVDC, Micro- Grid, Lift Escalator ! **Mobility:** Connected Cars, ITS, e-Mobility, Railways ! **Smart Cities:** Mobility, Waste, Energy, ICT ! **Energy Efficiency & Circular Economy etc.**

www.sesei.eu , www.sesei.in , www.eustandards.in

Standards & Legislation

What is a standard?

It is a document that defines technical or quality requirements with which current or future products, production processes, services or methods may comply



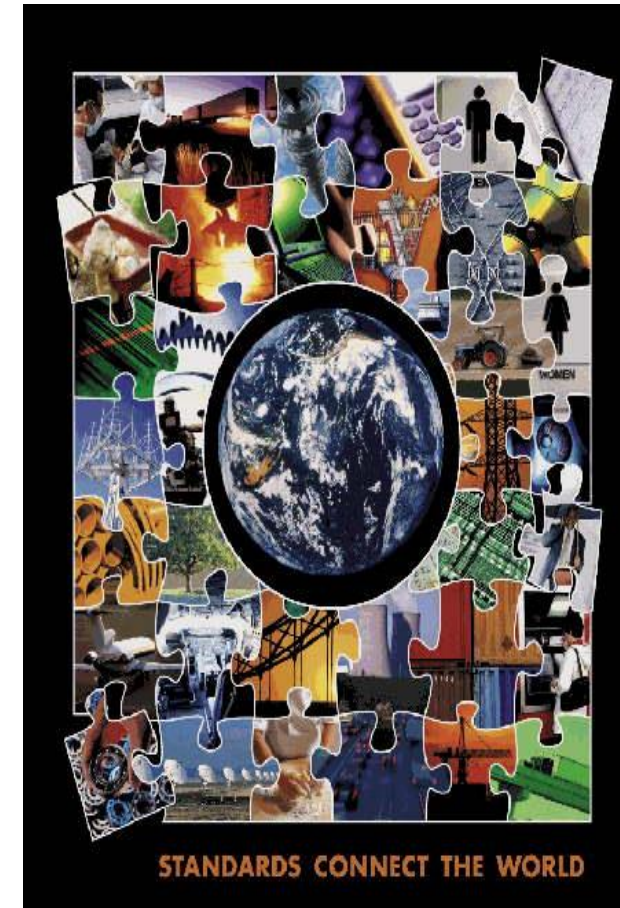
Standards are :

- Always voluntary
- Consensus based
- Established by all interested parties
- Driven mainly by Industry
- Drafted by technical experts
- Approved by a recognized, independent standardization body



Why standards are important?

- Enhance safety of products
- Promote common understanding
- Facilitate trade by reducing TBs
- Promote interoperability of products and services
- Benefits of economies of scale
- Support environmental sustainability
- Facilitate the uptake of innovation and reflect the outcome of research and development



Standards vs Législation

Standards :

1. Voluntary & Consensual
2. Developed by independent organisations
3. Revised every 5 years
4. Provide specifications and test methods (interoperability, safety, quality, etc.)



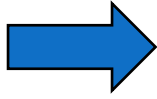
Legislation :

1. Mandatory & Imposed by Law
2. Established by public authorities
3. Revised when legislators decide
4. Gives requirements to protect public interests

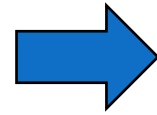
How Standards are Made?



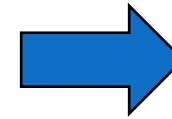
Anyone can suggest an idea for a new Standard



All ideas for new standards are assessed & stakeholders are consulted on the potential scope



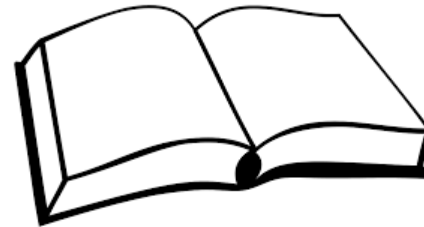
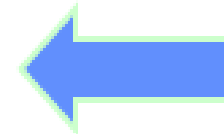
The Proposal is assessed and *if* approved a stakeholder group is formed



The Stakeholder group forms a committee to draft the standards



The draft is then issued for public consultation



Once the document passes final approval it is published



Standards are reviewed every five years some as early as two years from publication. The committee or drafting panel considers any comments they have received about standard and decides whether it needs to be withdrawn, confirmed or reconfirmed amended or revised. A decision to amend or revise the standard will lead to a new proposal for work

AI Policies & Standards

AI - Introduction

- Because of Digitization, Big Data, Deep Data, Data Science capabilities and availabilities (M2M/IoT, Smart Cities, Industry 4.0 etc.):
 - Artificial Intelligence (AI) is emerging very fast these days and is affecting widely the entire industry e.g. automation, data management, integration of smart technology.

“Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions”

- AI applies to a variety of sectors : smart manufacturing, robots, autonomous cars, virtual reality, healthcare, interactive speech interfaces, visual recognition, data analysis/manipulation, home appliances, cybersecurity or spatial programming.
- Over 60%-70% of the companies expect AI to have a high or a very high impact on business areas that are “entirely unknown to the company today”.

AI: Policies/New Initiatives



AI Policies/New initiatives: India

- In August 2017, Commerce Ministry established a **Task force on AI** to kick-start the use of AI for India's economic transformation.
- In Feb 2018, MEITY formed 4 committees to prepare a roadmap for AI.
 - Committees addressed citizen centric usage, data platform, skilling, reskilling, R&D, legal, regulatory, ethical and cybersecurity. Committees' reports are available **here**
- In June 2018, Government think-tank, NITI Aayog unveiled its **discussion paper on national strategy on AI** which aims to guide R&D in new and emerging technologies.
 - Identified five sectors including Healthcare, Agriculture, Education, Infrastructure and Transportation that can benefit from the adoption of AI
- In Feb 2021, NITI Aayog has also released "**Responsible AI for All**" approach document.
 - Part-1 aims to establish broad ethics principles for design, development and deployment of AI in India – drawing on similar global initiatives but grounded in the Indian legal and regulatory context.
 - **Part 2 - Operationalizing Principles for Responsible AI** was released in August 2021 which identifies the various mechanisms needed for operationalizing seven principles identified in Part-1.
- In May 2020, Ministry of Electronics and IT (MeitY) along with National e-Governance Division (NeGD), and NASSCOM launched 'National AI Portal':
 - AI Portal serves as a platform for AI-related news, learning, publications, events, and activities in India and abroad.
- Centre of Excellence (CoE) for AI by NIC:
 - CoE in AI by NIC has been established with the motto of 'Inclusive AI' for responsive governance, to work towards improving Govt. service delivery to citizens.



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AI Policies/New initiatives: Europe

EU strategy on AI:

- Published on 25th April 2018, in Commission Communication on AI for Europe.
- to achieve a major boost in investment in AI-related research and innovation and in facilitating and accelerating the adoption of AI across the economy.

European AI alliance & high-level expert group on AI:

- In June 2018, EC launched “European AI alliance”, a multi-stakeholder forum, within the framework of the European Strategy on AI to share best practices, contribute to AI ethics guidelines, network and encourage activities related to AI development.
- AI alliance supported by High-Level Expert Group on AI (AI HLEG), appointed by EC to assist with policy development.
- In April 2019, AI HLEG presented Ethics Guidelines for Trustworthy Artificial Intelligence. It included seven requirement categories (accountability, human agency, technical robustness, privacy and data governance, transparency, non-discrimination, and societal well-being)
- In June 2019, AI HLEG published its second deliverable “Policy and investment recommendations for trustworthy Artificial Intelligence”. It covers 33 recommendations to guide Trustworthy AI towards sustainability, growth and competitiveness, as well as inclusion – while empowering, benefiting and protecting human beings.

Continue...

Coordinated Plan on AI

- In December 2018, EC presented a Coordinated Plan on AI with Member States to foster the development and use of AI.
- to maximise impact of investments at EU and national levels, to encourage synergies and cooperation across the EU, including and to foster the exchange of best practices.
- In April 2021, EC has published revised "Coordinated Plan on AI" which was built on the collaboration established between the Commission and Member States during the 2018 Coordinated Plan.

White Paper on Artificial Intelligence:

- In February 2020, EC launched White Paper on AI – “A European approach to excellence and trust”
 - It outlines Europe’s plans to regulate AI sector, adding to and expanding on the Commission's aims to better prepare Europe for the digital age.
 - It contains the Commission’s framework for a formal regulatory body focused on AI, but doesn’t propose specific rules or laws to be adopted.
- In April 2021, Commission published its AI package, proposing new rules and actions to turn Europe into the global hub for trustworthy AI. This package consisted of:
 - Communication on Fostering a European Approach to Artificial Intelligence;
 - Coordinated Plan with Member States: 2021 update;
 - Proposal for an AI Regulation laying down harmonised rules for the EU (Artificial Intelligence Act).



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AI Policies/New initiatives: United States

- **American AI Initiative**, established via Executive Order 13859, identified five key lines of effort which include increasing AI research investment, unleashing Federal AI computing and data resources, setting AI technical standards, building America's AI workforce, and engaging with our international allies.
- **Select Committee on AI**, launched in 2018 to coordinate Federal AI efforts, is being expanded and made permanent, and will serve as the senior interagency body referenced in the Act that is responsible for overseeing the National AI Initiative.
- **National AI Research Institutes** announced by White House and National Science Foundation in 2020 focus on a range of AI R&D areas, such as ML, synthetic manufacturing, precision agriculture, and extreme weather prediction.
- Regular updates to national **AI R&D strategic plan**, which were initiated by White House in 2019, are codified into law.
- Critical **AI technical standards** activities directed by White House in 2019 are expanded to include an AI risk assessment framework.
- In May 2019, United States has joined dozens of other countries in adopting the **OECD AI Recommendation**, the first intergovernmental standard for AI, which includes five complementary values-based principles and five recommendations to governments.
 - US has also joined G20 countries in supporting the **G20 AI Principles**, which are drawn from OECD Recommendation.
- In May 2021, White House Office of Science and Technology Policy released the new AI.gov — a website dedicated to connecting the American people with information on federal government activities advancing the design, development, and responsible use of trustworthy artificial intelligence (AI).



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AI Policies/New initiatives: Singapore

National AI Strategy 2019:

- In November 2019, Singapore launched a [National AI Strategy](#) which identifies five national AI projects including transport and logistics, smart cities and estates, healthcare, education, and safety and security.
- These projects are intended to address key challenges that will help ensure Singaporeans experience successful and sustainable AI innovation and adoption

Model AI Governance Framework:

- In January 2019, Singapore released [Model AI Governance Framework](#) which focuses primarily on four broad areas: internal governance, decision-making models, operations management and customer relationship management.

[AI Singapore \(AISG\)](#) launched in May 2017:

- to use AI to address major challenges that affect society and industry, to invest in deep capabilities to catch the next wave of scientific innovation, and to broaden adoption and use of AI and machine learning within industry.
- three key industry sectors: finance, city management solutions, and healthcare.
- Investment: \$150 million over 5 years.
- Two more programs launched by AI Singapore in December 2018 include AI for Everyone (AI4E) and AI for Industry (AI4I). These programs help showcase the utility of AI advances to a wider range of Singaporeans and to industry professionals.



AI: Standards



ISO/IEC JTC 1/SC42: Artificial Intelligence (AI)

- **ISO/IEC JTC 1/SC 42** is the international standards committee responsible for standardization in the area of AI
 - Serve as the focus and proponent for JTC 1's standardization program on AI
 - Provide guidance to JTC 1, IEC, and ISO committees developing AI applications
- **List of published SC 42 standards:**
 - ISO/IEC 20546:2019 Information technology — Big data — Overview and vocabulary
 - ISO/IEC TR 20547-1:2020 Information technology — Big data reference architecture — Part 1: Framework and application process
 - ISO/IEC TR 20547-2:2018 Information technology — Big data reference architecture — Part 2: Use cases and derived requirements
 - ISO/IEC 20547-3:2020 Information technology — Big data reference architecture — Part 3: Reference architecture
 - ISO/IEC TR 20547-5:2018 Information technology — Big data reference architecture — Part 5: Standards roadmap
 - ISO/IEC DTR 24027 Information technology -- Artificial Intelligence (AI) -- Bias in AI systems and AI aided decision making
 - ISO/IEC TR 24028:2020 Information technology — Artificial intelligence — Overview of trustworthiness in artificial intelligence
 - ISO/IEC TR 24029-1:2021 Artificial Intelligence (AI) — Assessment of the robustness of neural networks — Part 1: Overview
 - ISO/IEC TR 24030:2021 Information technology — Artificial intelligence (AI) — Use cases
 - ISO/IEC 24372 Information technology -- Artificial Intelligence (AI) -- Overview of computational approaches for AI systems
 - ISO/IEC 38507:2022: Information technology — Governance of IT — Governance implications of the use of artificial intelligence by organizations

European Telecommunications Standards Institute (ETSI)

ETSI Industry Specification Group on Securing AI (ISG AI) :

- responsible for developing technical specifications to mitigate threats arising from deployment of AI throughout multiple ICT-related industries
- Published Standards:
 - ETSI GR SAI 006 V1.1.1 (2022-03): The role of hardware in security of AI
 - ETSI GR SAI 001 V1.1.1 (2022-01): AI Threat Ontology
 - ETSI GR SAI 002 V1.1.1 (2021-08): Data Supply Chain Security
 - ETSI GR SAI 005 V1.1.1 (2021-03): Mitigation Strategy Report
 - ETSI GR SAI 004 V1.1.1 (2020-12): Problem Statement

ETSI ISG under the label Experiential Networked Intelligence (ENI)

- aims to help operators facilitate their network deployment by using AI techniques
- Published standards:
 - ETSI GR ENI 018 V2.1.1 (2021-08): Introduction to Artificial Intelligence Mechanisms for Modular Systems
 - ETSI GR ENI 010 V1.1.1 (2021-03): Evaluation of categories for AI application to Networks

ETSI also has other ISGs working in the domain of AI/ML. They are all defining specifications of functionalities that will be used in technology

- ISG ZSM is defining the AI/ML enablers in end-to-end service and network management.
- ISG F5G on Fixed 5G is going to define the application of AI in the evolution towards 'fibre to everything' of the fixed network
- ISG NFV on network functions virtualisation studies the application of AI/ML techniques to improve automation capabilities in NFV management and orchestration.



CEN-CENELEC JTC 21 on Artificial Intelligence

- CEN and CENELEC established **CEN-CENELEC JTC 21 'Artificial Intelligence'** based on the recommendations presented in the [CEN-CENELEC response to the EC White Paper on AI](#) and the [German Standardization Roadmap for Artificial Intelligence](#).
- **CEN-CENELEC JTC 21** is responsible for development and adoption of standards for AI and related data, as well as provide guidance to other Technical Committees concerned with AI.
 - identifies and adopts international standards already available or under development from other organizations like ISO/IEC JTC 1 and its subcommittees, such as SC 42 Artificial Intelligence.
 - focuses on producing standardization deliverables that address European market and societal needs, as well as underpinning EU legislation, policies, principles, and values.
- **JTC 21 activities:**
 - Mapping of current European and international standardization initiatives on AI
 - Identifying specific standardization needs
 - Monitoring potential changes in European legislation
 - Liaising with relevant TCs and organizations in order to identify synergies and, if possible, initiate joint work
 - Acting as the focal point for the CEN and CENELEC TCs
 - Encouraging further European participation in the ISO and IEC TCs



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Other Global SDOs

ITU-T:

- ITU-T SG13 has defined Y.3172 for declarative specification of Machine Learning applications
- [ITU-T has a Focus Group on Machine Learning for Future Networks including 5G \(FG ML5G\)](#): to draft technical specifications for machine learning (ML) for future networks, including interfaces, network architectures, protocols, algorithms and data formats etc.
- [ITU-T Focus Group on "Artificial Intelligence for Health" \(FG-AI4H\)](#) is a collaboration of ITU with the WHO to form a Focus Group on artificial intelligence for health to establish a standardized assessment framework for the evaluation of AI based methods for health, diagnosis, triage or treatment decisions.
- [ITU-T Focus Group on "Environmental Efficiency for Artificial Intelligence and other Emerging Technologies" \(FG-AI4EE\)](#): to identifies the standardization needs to develop a sustainable approach to AI and other emerging technologies including automation, augmented reality, virtual reality, extended reality, smart manufacturing, industry 5.0, cloud/edge computing, nanotechnology, 5G, among others.

IEEE

- IEEE P7000 addresses specific issues at the intersection of technological and ethical considerations, in system design, explainability of autonomous systems, data privacy, bias, terminology and ontologies, KPIs for face recognition.
- IEEE ECPAIS (Ethics Certification Program for Autonomous and Intelligent Systems) has the goal to create specifications for certification and marking processes that advance transparency, accountability and reduction in algorithmic bias in Autonomous and Intelligent Systems (A/IS).
- IEEE A-IS is the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems and has the mission to ensure every stakeholder involved in the design and development of autonomous and intelligent systems is educated, trained, and empowered to prioritize ethical considerations.



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Standardization work in India

Bureau of Indian Standards (BIS):

- Division Council LITD of BIS through its subcommittee **LITD 30 on Artificial Intelligence (AI)** is responsible for developing standards in AI technology
 - Mirror committee of ISO/IEC JTC1/SC42 with same Title & Scope
 - **Published Standards:**
 - [IS/ISO/IEC 20546 : 2019: Information Technology - Big Data - Overview and Vocabulary](#)
 - [IS/ISO/IEC 20547-3 : 2020 ISO/IEC 20547-3:2020: Information technology Big data reference architecture Part 3: Reference architecture](#)

Department of Telecommunications(DoT):

- DoT and its technical arm Telecommunication Engineering Center (TEC) works in close coordination with ITU-T in its standardization work on AI which includes
 - AI for Good Global summit,
 - Focus Group on artificial intelligence for health (FG-AI4H)
 - Focus Group on Machine Learning for 5G
- DoT has formed a committee on standardisation in AI technologies:
 - to identify gaps and challenges towards developing standards in different areas of AI; develop these AI standards with India specific requirements and formulate the framework for AI Indian stack. Committee has invited papers on AI



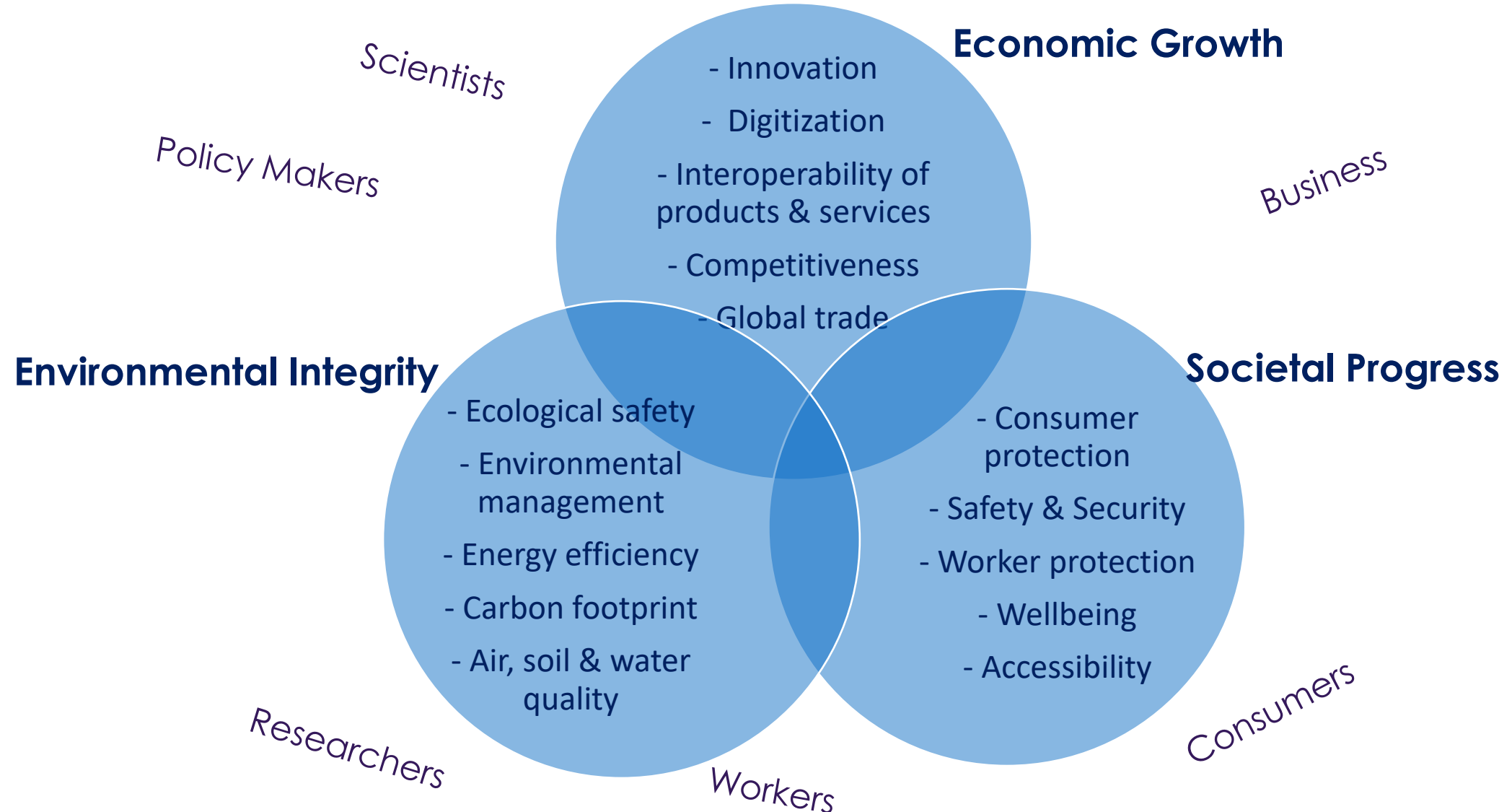
Education about ICT standardization

Education and awareness in ICT standardization

- Education about Standardization (EaS) is teaching pupils, students, CEOs, managers, employees in business, and life-long learners the subject of standards and standardization.
- It may cover followings topics as below:
 - ✓ Standardization basics
 - ✓ The standards ecosystem
 - ✓ The production of standards
 - ✓ Standardization and innovation
 - ✓ A Strategic perspective on standardization
 - ✓ A business perspective: Standardization and intellectual property rights (IPR)
 - ✓ The economic benefits of standards
- European institutions have shown their support to education about standardization
 - ETSI leads as the premier body for education and awareness in ICT standardization – and continue encouraging the new generation of standards people – It has developed a [second edition of our successful textbook](#) and further teaching materials. For more details, please [click here](#)



Need for EaS?



Thank you!

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