“INTERNATIONAL WORKSHOP on SUSTAINABLE DIGITAL TRANSFORMATION AND SMART TECHNOLOGIES“

Topic: EU Policy and Global Standards for Sustainable Digital Transformation: Opportunities for EU–India Collaboration

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Outline

- ✓ About EU Project SESEI
- ✓ EU digital and sustainability strategies
  - ✓ EU Digital Strategy
  - ✓ European Green Deal
- ✓ Digital technologies enabling sustainability (5G/6G, AI, Data)
- ✓ Role of global standards: ETSI, 3GPP, and oneM2M
- ✓ EU–India collaboration opportunities

EU Project SESEI

SESEI | Seconded European Standardisation Expert in India

Enabling Europe-India Cooperation on Standards

SESEI: Local Representative of EU Standardisation Bodies in India

SESEI (**S**econded **E**uropean **S**tandardization **E**xpert in **I**ndia) ***is a local face for the European standardization community in India: Dinesh Chand Sharma***

Launched in Jan'13, currently in its sixth phase (Aug'24 to July'27)

Priority Sectors/topics: Aligned with EU-INDIA TTC & Connectivity Partnership

Digitization: Strategic technologies, digital governance, and digital connectivity

- Smart Cities, ITS, Quantum Technologies, Smart Grid/Meter, AI, 5G/6G, Open RAN, M2M/IoT, DECT, Data Privacy, Satellite Communication, Blockchain, Digital Signature, Smart Manufacturing, e-Accessibility, cybersecurity, digital skills and R&I etc.

Green & Clean Technologies:

- Clean Energy, Energy Efficiency (Green ICT), Environment, Circular Economy including Resource Efficiency, Waste Management, Energy storage technologies, Electric mobility, Green Hydrogen, Advanced biofuels including R&I etc.

Market access & Other topics of mutual interests:

- Rail, Ropeways, Machinery Safety etc.

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Introduction

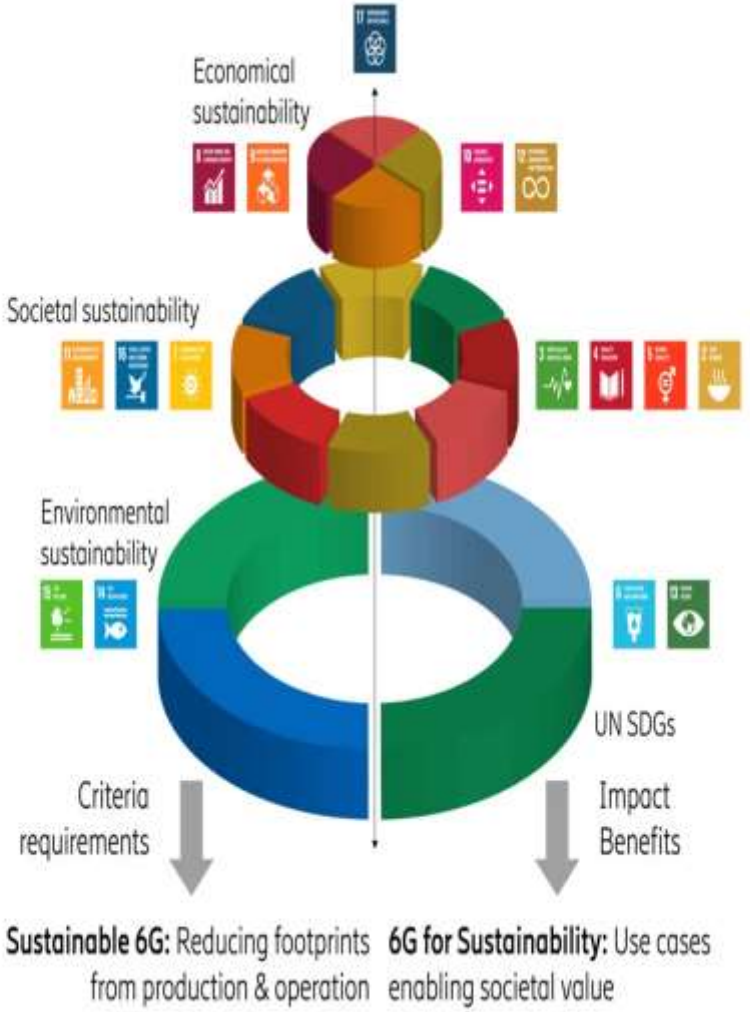
- Digitalisation is accelerating across all sectors
- Climate change requires sustainable solutions
- Digital technologies support energy efficiency and smart infrastructure
- International cooperation is essential for interoperability and innovation

EU promotes a ‘Twin Transition’

Digital + Green

Sustainability

- Refers to **energy efficiency/reduction of energy consumption**
- Sustainability also refer to:
  - ✓ **Reducing environmental impacts**
  - ✓ **Efficient processes** and **utilization of resources** in different industrial domains to support circular economy (Model of resource production & consumption)
  - ✓ **Reuse** of hardware, Software-based upgrades
- IMT-2030 (6G) is expected to address the need for increased environmental, social and economic sustainability, and support the goals of the Paris Agreement of the UN Framework Convention on Climate Change (SDGs)



EU Digital Strategy: Enabling Sustainable Digital Transformation

Vision:

- A *"Digital Commission"* that seamlessly connects **people, data, processes, and technology** to drive continuous transformation.

Key Objectives:

- **Foster a Digital Culture:** Promote a *"digital-first"* mindset with user-centric design, data-driven decision-making, collaboration, and digital skills.
- **Enable Digital-Ready Policymaking:** Integrate digital thinking **from the earliest stages** of the legislative process.
- **Empower Business Transformation:** Leverage technologies such as **AI, Big Data, Cloud, and Mobility** to optimize business and administrative processes.
- **Ensure a Seamless Digital Landscape:** Develop solutions that are **user-friendly, interoperable, and secure**.
- **Build Green & Resilient Infrastructure:** Support **sustainable, secure, and flexible digital infrastructure** for evolving needs.

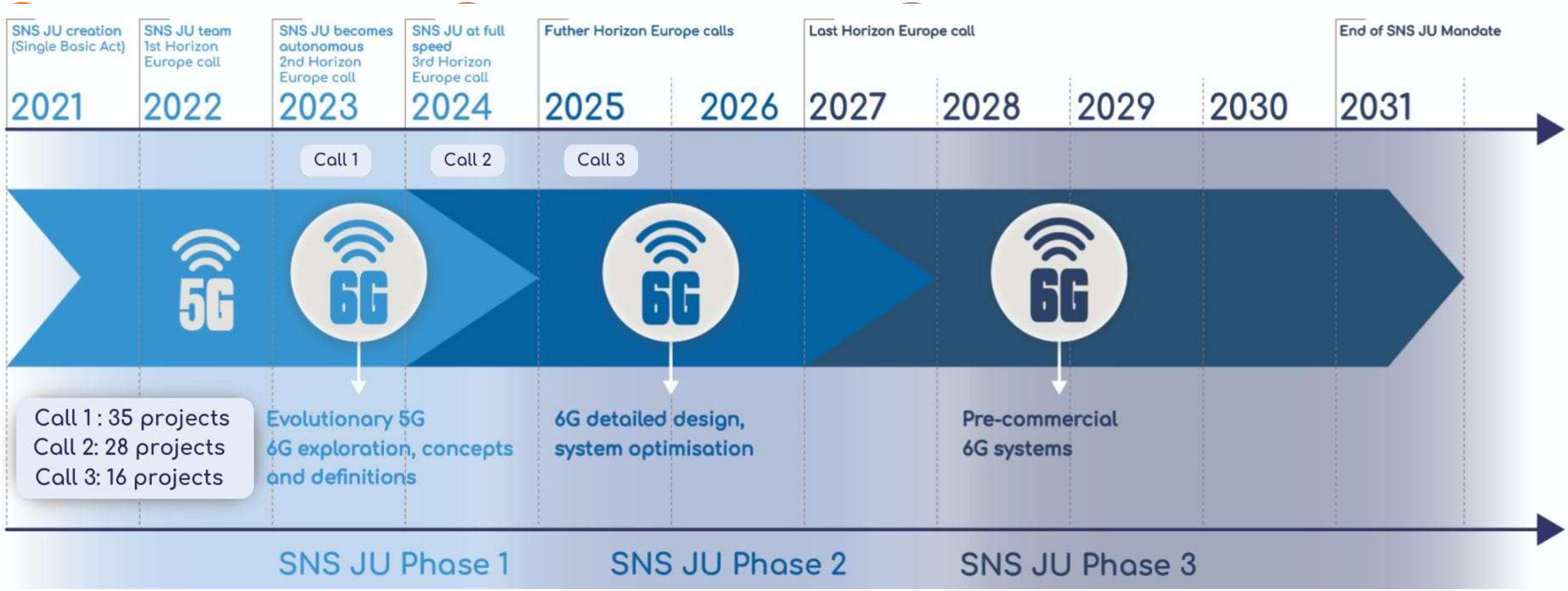
Guiding Principles:

- **Digital Partnerships:** Strengthen collaboration across EU institutions and stakeholders.
- **Digital Interaction First:** Prioritize digital communication with full accessibility.
- **Digital Empowerment:** Equip stakeholders with tools, skills, and innovation capacity.
- **Digital Sovereignty & Autonomy:** Promote **secure, independent, and sustainable** digital capabilities.
- **Digital Security & Resilience:** Ensure robust protection and rapid recovery from cyber incidents.

Digital Technologies Enabling Sustainability

- 5G / 6G networks
- Artificial Intelligence (AI)
- Data and cloud ecosystems
- Internet of Things (IoT)

Journey of 5G/6G in Europe till now



CEN CENELEC ETSI European Commission EFTA

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Technologies for the Sustainable 6G

Energy Efficiency

- Optimised control signalling
- Low-power consumption radio.
- Energy-harvesting technologies

Resource Optimization

- Virtualised shared Infrastructure ,Network slicing
- AI and ML
- Spectrum sharing technologies

Sustainable Materials

- Use of Biodegradable and recyclable materials
- Sustainable manufacturing processes
- Circular economy models

AI: Key policy initiatives in EU

- **EU strategy on AI** was published on 25th April 2018
  - ✓ aims at making the EU a world-class hub for AI and ensuring that AI is human-centric and trustworthy.
- In December 2018, Commission presented a **Coordinated Plan on AI**
  - ✓ to maximize the impact of investments at EU and national levels, to encourage synergies and cooperation across the EU, and to foster the exchange of best practices.
- In April 2021, Commission presented its **AI package**, covering:
  - ✓ Communication on fostering an European approach to AI;
  - ✓ a review of the Coordinated Plan on AI (with EU Member States);
  - ✓ Regulatory framework proposal on AI and relevant Impact assessment.
- In January 2024, Commission launched **AI innovation package to support AI startups and SMEs.**
- **European AI Office** was inaugurated in February 2024 as part of the Commission.
  - It plays a key role on the enforcement and implementation of the AI Act in collaboration with the member states.
- **EU AI Act** came into force on 1 August 2024.
  - ✓ aims to foster responsible AI development and deployment in EU.

✓ AI Continent Action Plan and Apply AI Strategy

- ✓ **AI Continent Action Plan 2025** focuses on developing trustworthy AI technologies to enhance Europe's competitiveness while safeguarding and advancing our democratic values.
- ✓ Launched in October 2025, the **Apply AI Strategy** complements the AI Continent Action Plan. It aims to harness AI's transformative potential by increasing AI adoption and integration across key industrial and public sectors, especially among SMEs, and support their specific needs.

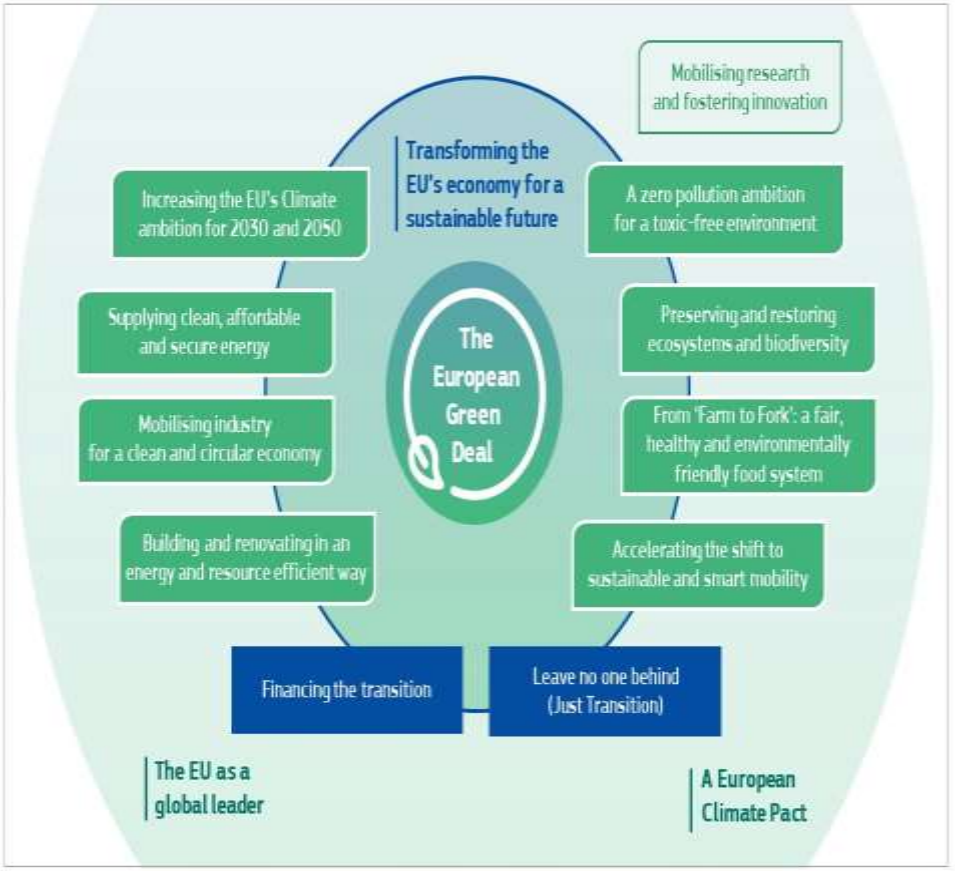
DATA: Key policy initiatives in EU

Europe

- European strategy for data aim to "create a single European data space – a genuine single market for data and is open to data from across the world
- **EU Data Act** address the fairness aspect and, also includes requirements to ensure interoperability within and across data spaces.
- **EU Data Governance Act** provides a framework to enhance trust in voluntary data sharing for the benefit of businesses and citizens.
  - ✓ Both personal and non-personal data are in scope of the DGA, and wherever personal data is concerned, the General Data Protection Regulation (GDPR) applies.
- General Data Protection Regulation (GDPR) sets out detailed requirements for companies and organizations on collecting, storing and managing personal data.
- Regulation on a framework for the free flow of non-personal data in the EU aims at removing obstacles to the free movement of non-personal data between different EU countries and IT systems in Europe.
- Open Data Directive regulates the re-use of publicly available information held by the public sector.

A European Green Deal (EGD)

- In December 2019, European Commission unveiled its European Green Deal (EGD), an ambitious plan to transform the EU's economy into a fair, **sustainable**, and prosperous one.
  - no net emissions of greenhouse gases by 2050
  - economic growth decoupled from resource use
  - no person and no place left behind
- EGD provides an action plan, to boost efficient use of resources by moving to a clean, circular economy and to restore biodiversity and cut pollution.
  - It outlines investments needed and financing tools available and explains how to ensure a just and inclusive transition.
  - It covers all sectors of economy, notably transport, energy, agriculture, buildings, and industries such as steel, cement, ICT, textiles and chemicals.
- It sets important policy goals to further advance the **sustainable transition** of packaging value chain, which include:
  - Ensuring that all packaging in EU market is reusable or recyclable in an economically viable manner by 2030.
  - Defining measures to reduce packaging waste.
  - Promoting a robust Single Market for secondary raw material to increase recycling.
- Commission has estimated that achieving 2030 climate and energy targets will require EUR 260 billion of additional annual investment, about 1.5% of 2018 GDP.



Ecodesign for Sustainable Products Regulation [ESPR]

- New Ecodesign for Sustainable Products Regulation (ESPR), came into force on 18 July 2024, is cornerstone of Commission's approach to more **environmentally sustainable and circular products**.
    - It replaces Ecodesign Directive 2009/125/EC and establishes a framework for setting eco-design requirements on specific product groups.
- ESPR is part of a package of measures that are central to achieving the objectives of 2020 Circular Economy Action Plan.
    - They will contribute to helping the EU reach its environmental and climate goals, doubling its circularity rate of material use and to achieving its energy efficiency targets by 2030.
- **Key features:**
    - Scope extension beyond energy-related products (with some exceptions, such as food and feed, as defined in Regulation 178/2002),
    - New requirements (track substances of concern)
    - Allows for 'horizontal' ecodesign requirements (e.g. electronic boards in appliances)
    - Increased focus on product information (**digital product passport** developed via standards)
    - Incentivising best performing products (ESPR labels – by delegated act for products not having energy label)
    - Development of standards by international and European standardisation organisations, including on the material efficiency of energy-related products.

More information>>

Importance of Global/EU standards

Why Global/EU standards are important?

It is widely accepted that standards play a vital and often invisible role in supporting economic growth:

- Ensure interoperability across technologies

- Enable global markets and innovation

- Improve safety, reliability and cybersecurity

- Reduce fragmentation in digital ecosystems

World of Standardization

Objective - Avoid duplication of work at Indian, European and International levels with an aim for a identical worldwide standards

"Vienna Agreement" with

Chemistry, Material, Energy, Environment, Transport, Construction, Services, eMobility etc

"Frankfurt Agreement" with

Electricity, Electro-technical

MoU for telecommunications sector (ITU-T), Agreement on radio-communication sector (ITU-R)

Information & Communication Technologies (ICT)

Founding Partner to 3GPP & oneM2M

Founding member of ISO and working with IEC since 1911

DoT/TEC are member of ITU-T and WPC for ITU-R

Organisational Partner of 3GPP and Partner Type 1 of oneM2M

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ETSI: A European Standards Organization

- ETSI is a brainchild of European industrial policy
- It produces standards in support of European Union policies and legislation, e.g.
  - Radio
  - e-ID, e signatures
  - Security
  - Accessibility
- It contributes to ICT radio frequency requirements to the European co-ordination process
- ETSI works in close cooperation with CEN and CENELEC, the other two ESOs
- Work closely with National Standards Organizations (NSOs) in the European countries.
- EC and EFTA are Counsellors of ETSI

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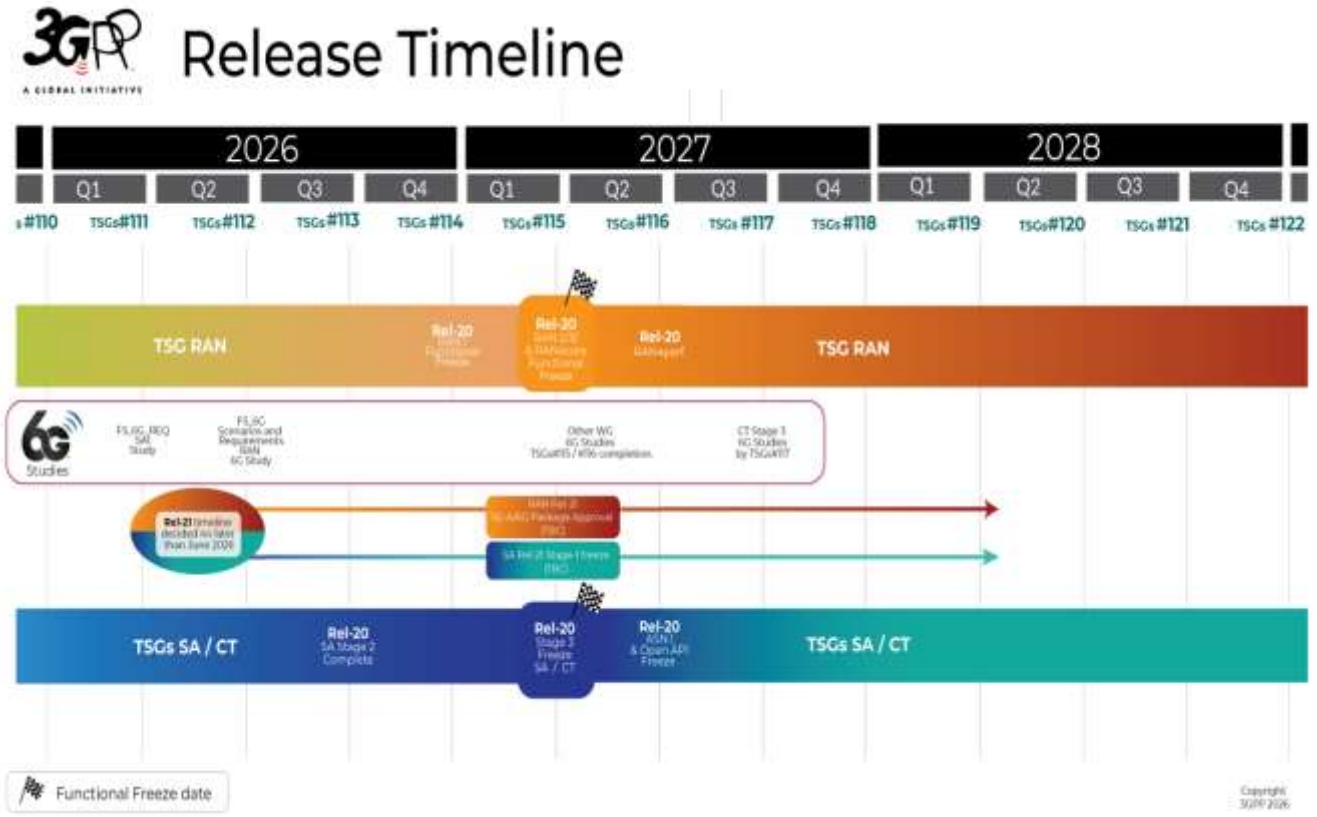
3GPP standards eco-system

(Source: extract from https://www.3gpp.org/about-3gpp/15-bodies-with-which-3gpp-has)

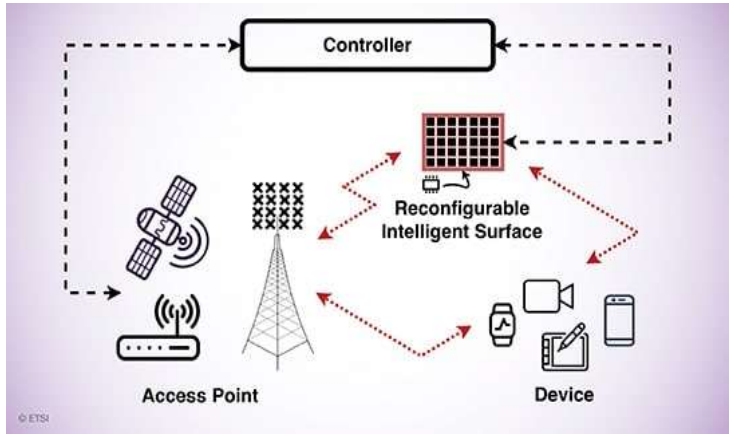
B5G/6G Research & Standards

- Operators are currently deploying 5G networks across the globe.
- It is important to use with caution when using the term 6G to avoid diluting the impact of present day 5G rollouts.
- Current assumption is that the first 6G services may be deployed as of 2030 or may be later…but of course expectations can and often do change due to global/market pressure.
- 3GPP is starting detailed studies on 6G that are expected to lead to the first release of 6G standards as part of Release 21.
- Additionally, Release 20 will continue to enhance 5G in the third release of 5G Advanced.



ETSI ISGs, recent pre-standards Groups for B5G / 6G

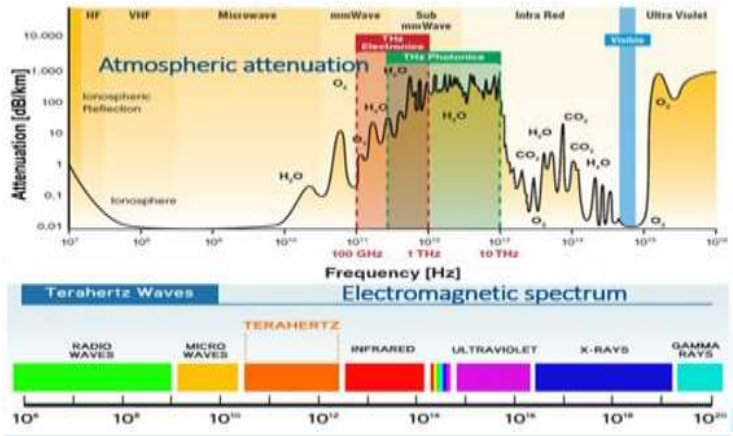
ISG RIS (Sept. 2021)



ETSI ISG RIS Mission:

Pre-standards activities based on outcome of research on RIS (Reconfigurable Intelligent Surfaces) from EU/UK collaborative projects, extended with relevant global initiatives, towards paving the way for future standardization of the RIS tech.

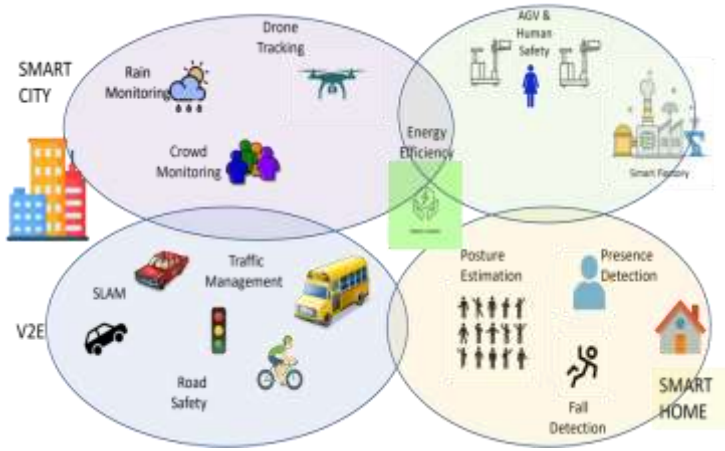
ISG THz (Sept. 2022)



ETSI ISG THz Mission:

Establish technical foundations for sub-THz (100 GHz -> 10 THz). Place for ETSI members *(and non-members)* to progress their pre-standardization activities resulting from EU/National research efforts in the domain of sub / full THz technologies.

ISG ISAC (Oct. 2023)



ETSI ISG ISAC Mission:

Provide an opportunity for members to coordinate their pre-standards 6G research efforts on integrated sensing and communication (ISAC) technology across various European/National funded collaborative projects, extended with relevant global initiatives.

AI Standardization

CEN/CLC/JTC 21 - Artificial Intelligence is responsible for producing standardization deliverables for AI and related use of data.

- EN ISO/IEC 22989:2023- Artificial intelligence concepts and terminology
- CEN/CLC ISO/IEC/TR 24027:2023- Bias in AI systems and AI aided decision making
- CEN/CLC ISO/IEC/TR 24029-1:2023- AI - Assessment of the robustness of neural networks - Part 1: Overview
- EN ISO/IEC 8183:2024- AI - Data life cycle framework
- EN ISO/IEC 25059:2024 - Software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - Quality model for AI systems
- EN ISO/IEC 23894:2024 - AI - Guidance on risk management
- EN ISO/IEC 23053:2023- Framework for AI Systems Using ML

ETSI Technical Committee on Securing AI (ISG AI) : responsible for developing technical specifications to mitigate threats arising from deployment of AI throughout multiple ICT-related industries

- ETSI TR 104 225 V1.1.1 (2024-04); Privacy aspects of AI/ML systems
- ETSI TR 104 067 V1.1.1 (2024-04); Proofs of Concepts Framework
- ETSI TR 104 066 V1.1.1 (2024-07); Security Testing of AI

ETSI ISG ENI (Experiential Networked Intelligence): aims to help operators facilitate their network deployment by using AI techniques

- ETSI GR ENI 009 V1.2.1 (2023-05); Definition of data processing mechanisms
- ETSI GS ENI 002 V3.2.1 (2023-04); ENI requirements
- ETSI GS ENI 001 V3.2.1 (2023-05); ENI Use Cases
- ETSI GR ENI 010 V1.2.1 (2024-06); Evaluation of categories for AI application to Networks

Data Standardization

CEN-CENELEC/JTC 13 'Cybersecurity and data protection' produced below and is developing another set of 21 ENs (15 from ISO/IEC)

- **EN 17529:2022-** Data protection and privacy by design and by default
- **EN 17740:2023** - Requirements for professional profiles related to personal data processing and protection
- **EN 17799:2023** - Personal data protection requirements for processing operations

CEN/TC 224 'Personal identification and related personal devices with secure element, systems, operations and privacy in a multi sectorial environment' produced below and is developing 10 (all homegrown),

- **CEN/TS 15480-2:2012** - Identification card systems - European Citizen Card - Part 2: Logical data structures and security services
- **EN 1545-1:2015-** Identification card systems - Surface transport applications - Part 1: Elementary data types, general code lists and general data elements

CEN and CENELEC JTC 25- Data management, Dataspaces, Cloud and Edge

CEN/TC 468 'Preservation of digital information' is developing two ENs

ETSI TC Electronic Signatures and Trust Infrastructures (ESI)

- ETSI EN 319 412-1 Certificate Profiles; Part 1: Overview and common data structures
- ETSI TS 119 512 Protocols for trust service providers providing long-term data preservation services

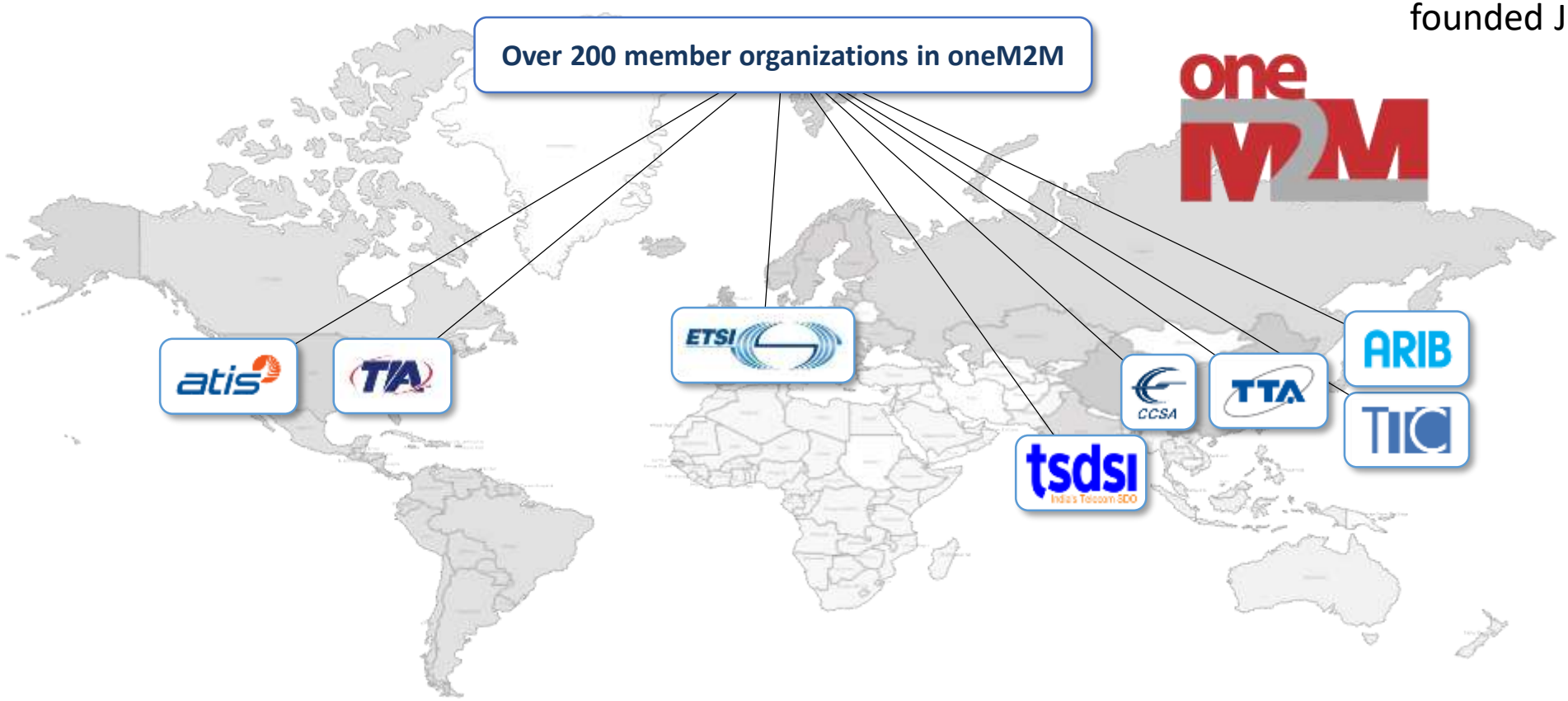
ETSI TC CYBER

- ETSI TR 103 305-5 Critical Security Controls for Effective Cyber Defence; Part 5: Privacy and personal data protection enhancement
- ETSI TS 103 523-3 Middlebox Security Protocol; Part 3: Profile for enterprise network and data centre access control
- ETSI TS 103 458 Application of Attribute Based Encryption (ABE) for PII and personal data protection on IoT devices, WLAN, cloud and mobile services - High level requirements

Many more……

oneM2M Partnership Project

founded July 24th, 2012



www.oneM2M.org

All documents are publicly available

Source: oneM2M

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oneM2M Published Specifications

Release 1

- Registration
- Discovery
- Security
- Group Mgmt.
- Data Mgmt. & Repository
- Subscription & Notification
- Device Management
- Communication Mgmt.
- Service Charging
- Network Service Exposure | App & Service Mgmt.
- HTTP/CoAP/MQTT Bindings

Release 2

- Time Series Data
- Flexible resources that can be customized by app developers
- Semantics Description & Discovery
- Security Enhancements: Dynamic Authorization / Content Security / E2E Security
- WebSocket Binding
- Ontology for Home Area Information Model
- oneM2M App-ID Registry
- oneM2M Interworking: LWM2M / AllJoyn / 3GPP Triggering

Release 3

- Semantic Querying/Mashups
- 3GPP SCEF Interworking: Non-IP Data Delivery / UE Reachability Monitoring / Device Triggering / Etc.
- Transaction Management
- Service Layer Routing
- Common oneM2M Interworking Framework: OCF, OPC UA, OSGi, Modbus
- oneM2M Conformance Tests and Profiles
- Security Enhancements: Distributed Authorization, etc.
- Ontology-based Interworking

Release 4

- Fog/Edge Computing: Service Provisioning / Service Pooling, etc.
- 3GPP Interworking: Session QoS / V2X / NIDD Enhancements / Charging
- Vehicular Centric Features: Mobility, low latency, …
- Semantic Reasoning & Ontology Mapping | Service/User Subscription
- Security Enhancements: User/Data Privacy, etc.
- W3C WoT Interworking
- SDT4.0 and the information models for multiple domains 2
- Streamlining oneM2M protocol
- oneM2M Conformance Tests

https://www.onem2m.org/technical/published-specifications

oneM2M Future Feature development

Release 5

TECHNICAL REPORTS

REQUIREMENTS TS-0002

TECHNICAL SPECS

- AI enablement
- Support of Data Protection Regulations
- Support of Data License Management
- Advanced Semantic Discovery
- Enablement of IoT in the metaverse
- Digital Twins Enablement in oneM2M
- Integrating NGSI-LD API in oneM2M
- Additional Interworking (e.g. OGC's Sensor Thing API)
- Enhanced Filter and Queries
- Enhanced Public Warning Service Enabler
- Effective IoT Communication to Protect 3GPP Networks (cont'd)

EU Standards in support of sustainability

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ETSI/CEN/CLC TCs

ETSI TC-EE : Environmental Engineering (EE)	**CEN/TC 473:** Circular Economy	CLC/TC 111X: Environment	**CEN/CLC/JTC 10:** Material efficiency aspects for products in scope of Eco-design legislation
CEN/CLC/JTC 14: Energy management and energy efficiency in the framework of energy transition	**CEN/CLC/JTC 24:** Digital Product Passport - Framework and System	CEN/TC 350: Sustainability of construction works'	CEN/TC 465: Sustainable Cities and Communities
CEN/TC 383: Sustainably produced biomass for energy applications	CEN/TC 249: Plastic	CEN/SS S26: Environmental management	CEN/TC 478 'Water resilience and sustainable use'

Many more…..

ESG standards

Environmental

- Emissions, adaptation to climate change, circular economy and biodiversity are some of the key elements in this area. The environmental aspect is the area of sustainability that has traditionally had the longest history and the most regulation associated with it through national and European policies. Below are standards that support organizations in defining and achieving their goals in these areas while helping them to comply with the applicable regulatory frameworks.

ESRS	EU standard
ESRS 1 General Requirements	**EN ISO 14008:2021** Monetary valuation of environmental impacts and related environmental aspects **EN ISO 14007** : Determining environmental costs and benefits **EN ISO 22301** Security and resilience – Business continuity management systems – Requirements **EN ISO 14063** Environmental management - Environmental communication - Guidelines and examples **EN ISO 14015** Environmental management - Guidelines for environmental due diligence assessment
ESRS-E Environment	**EN ISO 14001:2015** Environmental management systems — Requirements with guidance for use
ESRS E1 Climate	**EN ISO 50001:2018** Energy management systems — Requirements with guidance for use **EN 16247-1:2022** Energy audits - Part 1: General requirements **EN 19694-1:2016** Stationary source emissions - Determination of greenhouse gas (GHG) emissions in energy-intensive industries - Part 1: General aspects **EN ISO 14064-1** Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals **EN ISO 14067** Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification **EN ISO 14064-3** Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements **EN ISO 14031** Environmental management - Environmental performance evaluation - Guidelines **EN ISO 22301:2019** Security and resilience – Business continuity management systems – Requirements **EN ISO 14090:2019** Adaptation to climate change – Principles, requirements and guidelines **EN ISO 14091:2021** Adaptation to climate change - Guidelines on vulnerability, impacts and risk assessment
ESRS E2: Pollution	**EN ISO 15175:2018** Soil quality — Characterization of contaminated soil related to groundwater protection Parts of **EN ISO 16198:201**5 Soil quality — Plant-based test to assess the environmental bioavailability of trace elements to plants (ISO 16198:2015) **EN ISO 19204:201**7 Soil quality — Procedure for site-specific ecological risk assessment of soil contamination **EN ISO 15799:2022** Soil quality - Guidance on the ecotoxicological characterization of soils and soil materials **EN ISO 14067:2018** Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification
ESRS E3 Water and marine resources	**EN ISO 15175** Soil quality — Characterization of contaminated soil related to groundwater protection **EN ISO 14046:2016** Environmental management - Water footprint - Principles, requirements and guidelines **EN ISO 14044** Environmental management – Life cycle assessment – Requirements and guidelines **EN 16941 series**: Use of rainwater and greywater
ESRS E4 Biodiversity and ecosystems	Strategic and operational consideration of biodiversity. **ISO 17298** (standard under development) Design and implementation of projects with biodiversity net gain. **ISO 17620** (standard under development) Natural capital accounting. **ISO 1405**4 (standard under development)
ESRS E5 : Resource use and circular economy	**EN ISO 14040** Environmental management – Life cycle assessment – Principles and framework **EN ISO 14009** Environmental management systems - Guidelines for incorporating material circulation in design and development **EN ISO 14006** Environmental management systems – Guidelines for incorporating ecodesign **EN 17267:2020** Energy measurement and monitoring plan - Design and implementation - Principles for energy data collection **EN 45552:2020** General method for the assessment of the durability of energy-related products **EN 45553:2020** General method for the assessment of the ability to remanufacture energy-related products **EN 45554:2020** General methods for the assessment of the ability to repair, reuse and upgrade energy-related products **EN 45556:2019** General method for assessing the proportion of reused components in energy-related products **EN 45557:2020** General method for assessing the proportion of recycled material content in energy-related products **EN 45558:2019** General method to declare the use of critical raw materials in energy-related products **EN 45559:2019** Methods for providing information relating to material efficiency aspects of energy-related products

ESG standards: Social

- These standards help organizations to balance business objectives with social interests, increasing the social commitment of their policies and programs.

- They provide guidelines to improve the opportunities and management of disadvantaged groups and communities, both in their value chain and in their own work environment, while helping them to take these needs into account when designing their activities, products and service

ESRS S1: Own workforce	EN ISO 45001 Occupational health and safety management systems — Requirements with guidance for use EN ISO 26000:2020 Guidance on social responsibility
ESRS S2: Workers in the value chain	EN ISO 45001 Occupational health and safety management systems — Requirements with guidance for use
ESRS S3 : Affected communities	- -
ESRS S4: Consumers and end users	EN ISO 9001:2015 - Quality management systems – Requirements EN ISO 9004:2018 Quality management - Quality of an organization - Guidance to achieve sustained success EN 17161:2019 Design for All. Accessibility following a Design for All approach in products, goods and services. Extending the range of users

ESG standards: Governance

- These good governance standards help organizations to establish practices, policies and structures that enable them to direct and control their operations in an ethical and transparent way.

- They facilitate the identification of and compliance with the legal frameworks that apply to them while helping them to prevent irresponsible or fraudulent business practices.

- They also offer support to increase their resilience through risk management and business continuity in the face of adverse contexts.

ESRS G1 : Governance Business conduct

- EN ISO 26000:2020 Guidance on social responsibility

- **EN 31010** Risk assessment techniques

- **EN ISO 22301** Business continuity management.

EU-India Partnership

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EU-India: New Strategic Agenda

- **On September 17, 2025, European Union (EU) unveiled a new "Strategic EU-India Agenda" to significantly deepen and broaden cooperation with India across multiple sectors.**
  - This builds on Strategic Partnership established in 2004 and is underpinned by shared interests and complementary strengths.

Five Pillars

PROSPERITY AND SUSTAINABILITY	TECHNOLOGY AND INNOVATION	SECURITY AND DEFENCE	CONNECTIVITY AND GLOBAL ISSUES	ENABLERS ACROSS PILLARS
• Boosting trade and investment; strengthening supply chains and economic security; and advancing the clean transition and resilience.	• **Supporting critical emerging technologies**; advancing a conducive digital environment; and promoting research cooperation.	• Deepening engagement on regional security; countering traditional and hybrid threats; and boosting defence industrial cooperation.	• Strengthening regional connectivity; promoting cooperation in third countries; and shaping effective global governance.	• Expanding skills mobility; promoting mutual understanding; involving business communities; and reinforcing institutional architecture.

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EU-India TTC – What's in it

WG1: Strategic technologies, digital governance and digital connectivity

Areas to be explored:

- Digital connectivity
- Artificial Intelligence
- 5G/6G (*MoU b/w B6GA and 6G-IA*)
- High performance and Quantum computing
- Semiconductors (*EU-Ind signed MoU in Nov'23*)
- Cloud systems
- Cybersecurity
- Digital skills
- Digital platforms

WG 2: Green & clean technologies

The group focuses on **standards**, emphasis on research and innovation.

Areas to be explored :

- Research and Innovation
- Wastewater treatment
- Recyclable Plastics
- Waste to Energy
- E-mobility and battery performance and recycling
- Green hydrogen and green ammonia
- Liquid fertilizers

WG 3: Trade, investment and resilient value chains

- The resilience of supply chains and access to critical components, energy, and raw materials.
- To resolve identified trade barriers and global trade challenges by promoting cooperation in multilateral fora.
- Towards **promotion of international standards** and cooperation on addressing global geopolitical challenges.

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Other Partnership Projects/instruments

EU-India connectivity partnership:

- EU and India have also signed a connectivity partnership to support sustainable digital, transport and energy networks, and the flow of people, goods, services, data and capital centred on equity and inclusivity for the benefit of both India and the EU and assisting in global development efforts, based on Sustainable Development Goal principles that no one is left behind.

EU–India Global Gateway

- Strategic partnership under **EU's Digital & Connectivity Strategy with** Priorities around **Emerging tech, Cybersecurity, DPI, Trusted digital infra, Online platforms**
- Initiatives:
  - **EU-India Global Gateway Conference for Connectivity Investments in North-Eastern India (Shillong Conference-2023)** – Digital, Energy & Transport sectors
  - **Trilateral cooperation** in Africa, Indo-Pacific, Central Asia
  - **India–Middle East–Europe Economic Corridor (IMEC)** → Transport, energy & **digital connectivity**

SESEI Project (Phase VI: 2024–2027)

- Managed by **CEN, CENELEC, ETSI, EC-DG INTPA, EFTA**
- Enhances visibility of **European Standardization System (ESS)** in India
- Supports EU–India alignment in **standards, regulations, policies**
- Priority Areas are aligned with EU-India TTC topics:
  - **Digitization**: AI, 5G/6G, **IoT,** Quantum, Smart Manufacturing, e-Signature, e-accessibility etc.
  - **Green & Clean Tech**: Clean Energy, EVs, Green Hydrogen, Circular Economy etc.

SESEI Seconded European Standardisation Expert in India
Enabling Europe-India Cooperation on Standards

Conclusion

- Digital transformation and sustainability are interconnected
- Global standards enable interoperability and innovation
- EU policies promote sustainable digital ecosystems
- EU–India cooperation can accelerate innovation

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