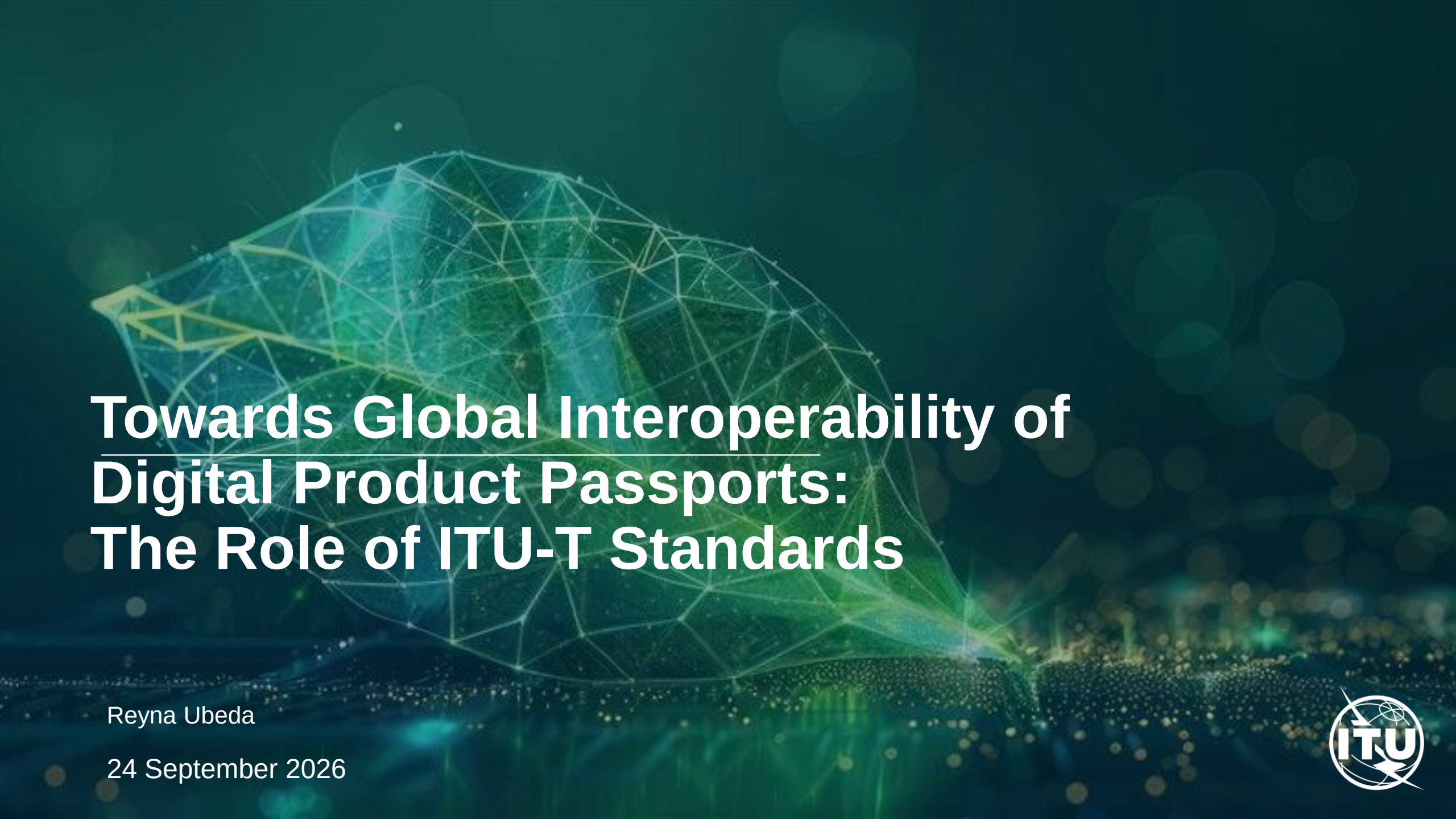




# **Towards Global Interoperability of Digital Product Passports: The Role of ITU-T Standards**

Reyna Ubeda

24 September 2026





United Nations specialized agency for information and communication technologies (ICTs)



194

Member States



+100

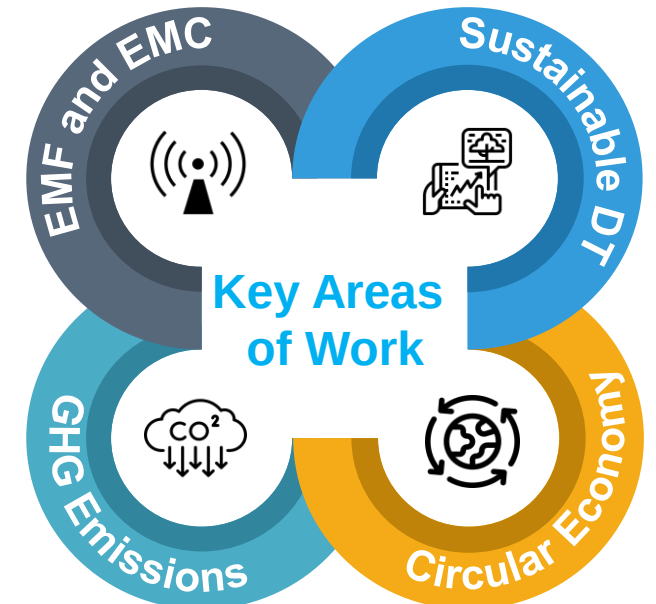
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companies, universities,  
research institutes and  
international  
organisations

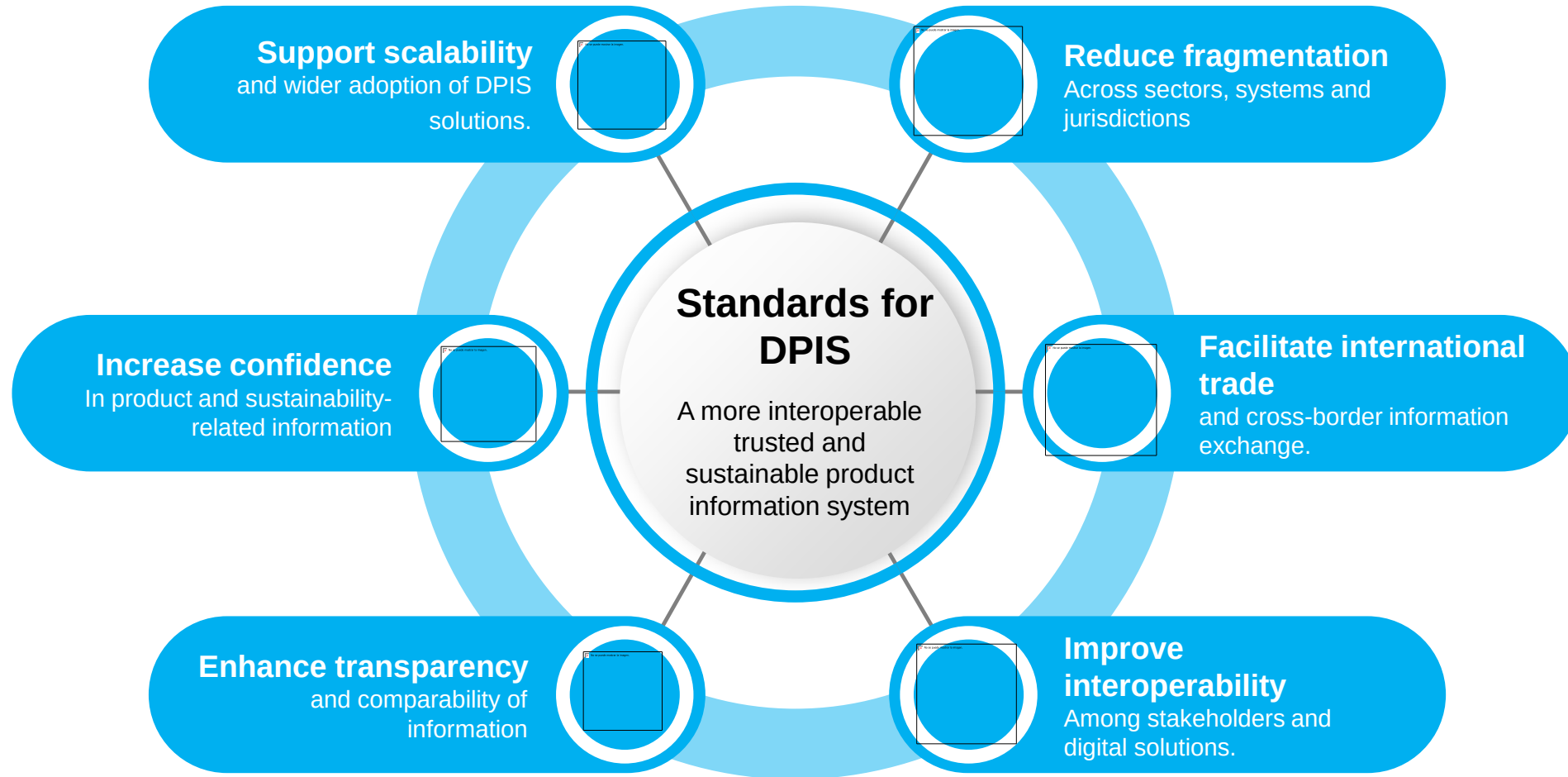
## ITU-T Standardization Sector

Sets International Standards for Climate  
Action and Sustainable Digitalization

ITU-T Study Group 5  
Environment, climate action, circular  
economy and electromagnetic fields



# Why standards matter?



# ITU-T Standards on E-waste & Circular Economy



**General  
Framework and  
Guidance**



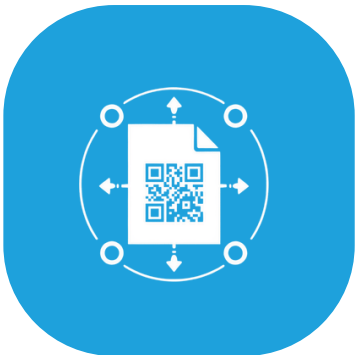
**Environmental  
Impact of  
Circularity**



**Product-Level  
Circularity  
Assessment**



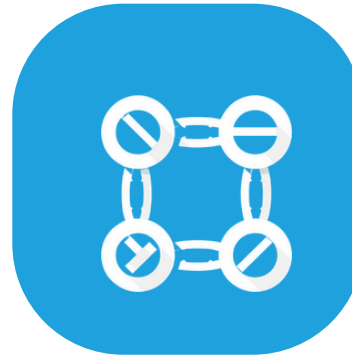
**Reduction, Circular  
Procurement &  
Durability**



**Traceability &  
Information Sharing**



**Stakeholder  
Engagement**



**Supply Chain**



**E-waste Management**

End of life

Recycling

Critical and  
rare metals

# Driving the circular economy through standards

To achieve a sustainable future, transitioning to a circular economy is crucial.

ITU Publications  
Recommendations

International Telecommunication Union  
Standardization Sector

## Recommendation ITU-T L.1023 (08/2023)

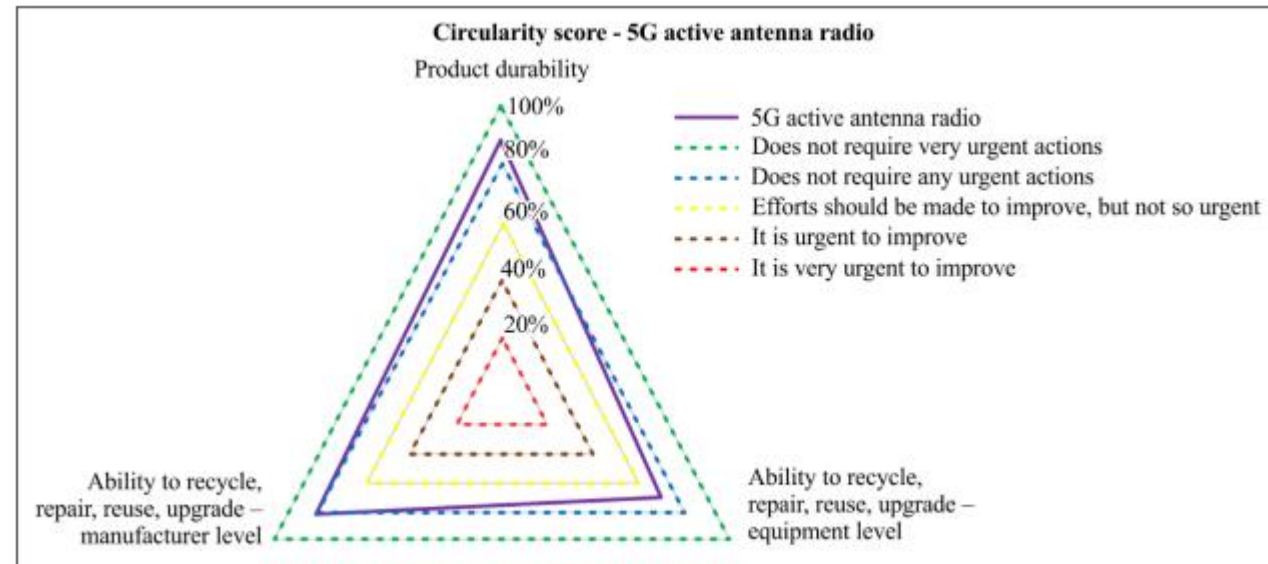
SERIES L: Environment and ICTs, climate change, e-waste, energy efficiency; construction, installation and protection of cables and other elements of outside plant

E-waste and circular economy

## Assessment method for circularity performance scoring



**Recommendation ITU-T L.1023:**  
Measures the circularity of products, guiding design towards sustainability.



Recommendation

**ITU-T L.1017 (08/2024)**

SERIES L: Environment and ICTs, climate change, e-waste, energy efficiency; construction, installation and protection of cables and other elements of outside plant

E-waste and circular economy

**Environmental performance scoring of smartphones**

Provides a method to evaluate an aggregate score, reflecting the overall environmental performance and considering material efficiency and LCA aspects



## Evaluated attributes

- Durability.
- Reparability, reusability and upgradeability.
- Recyclability and recoverability.
- Use of hazardous or restricted substances.
- Use of recycled materials.
- Characteristics of the product packaging.
- Environmental impact considerations.



# DPIS function and role of standards



System architecture



Product identification and traceability



Data exchange and interoperability



Data quality and governance



Security and privacy



Verification and conformity assessment



Data models and information categories

## EU DPP System standards (CEN/CENELEC JTC24)

EN 18216:2026: Data exchange protocols

EN 18219:2026: Unique identifiers

EN 18220:2026: Data carriers

EN 18221:2026: Data storage, archiving & data persistence

EN 18222:2026: APIs for the DPP's lifecycle management and searchability persistence

EN 18223:2026: System interoperability

EN 18239:2026: Access rights management, information system security & business confidentiality

EN 18246:2026: Data authentication, reliability and integrity

## Information categories and DPP data

Information on Eco-design e.g., EU Ecodesign for sustainable product regulation

Product specific delegated acts

Methodological assessment standards

Sector specific standards

## ITU standards

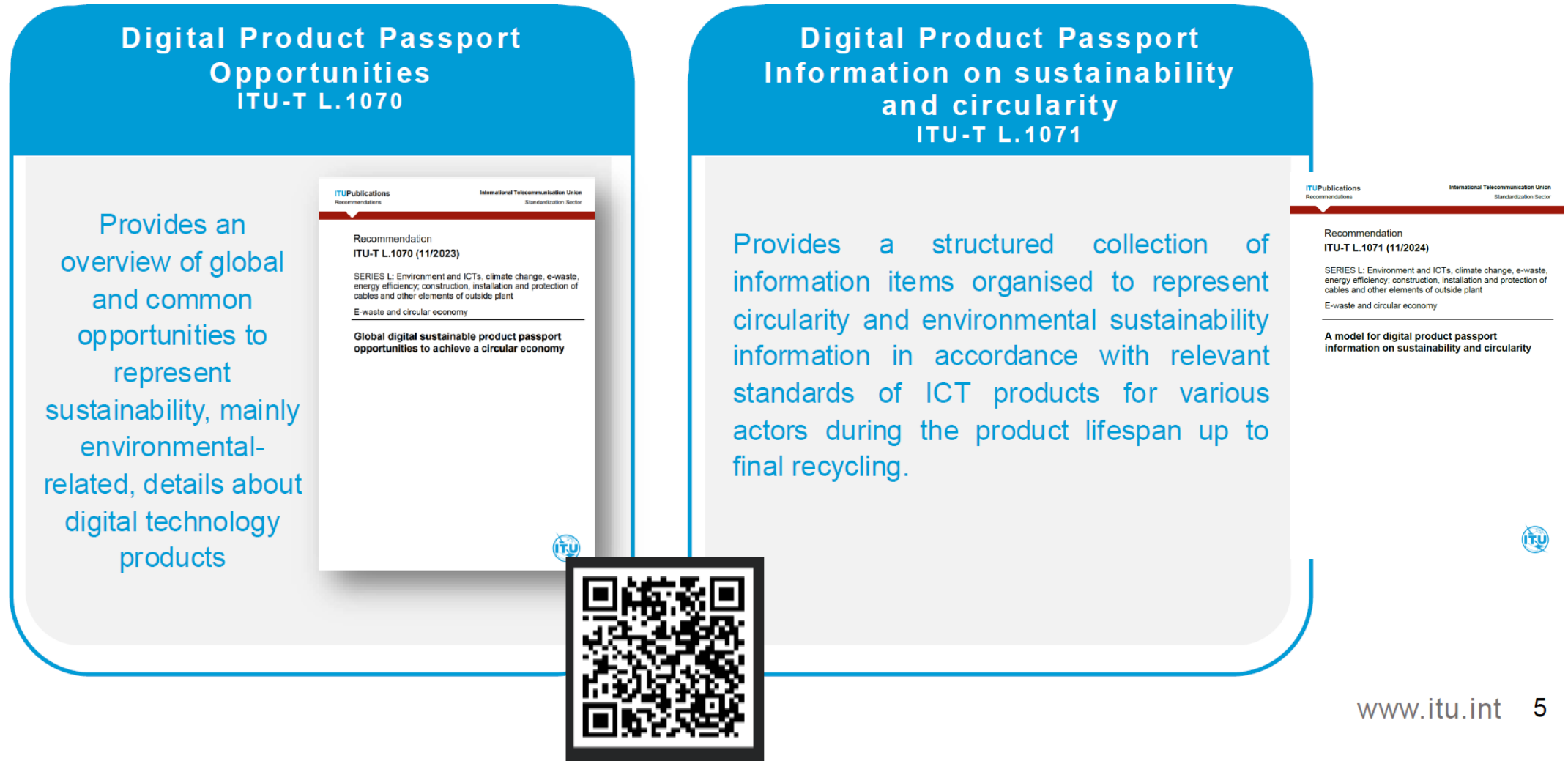
ITU-T L.1070 – Global Digital Sustainable Product Passport Opportunities to achieve a circular economy

ITU-T L.1071 - A model for Digital Product Passport Information on Sustainability and Circularity

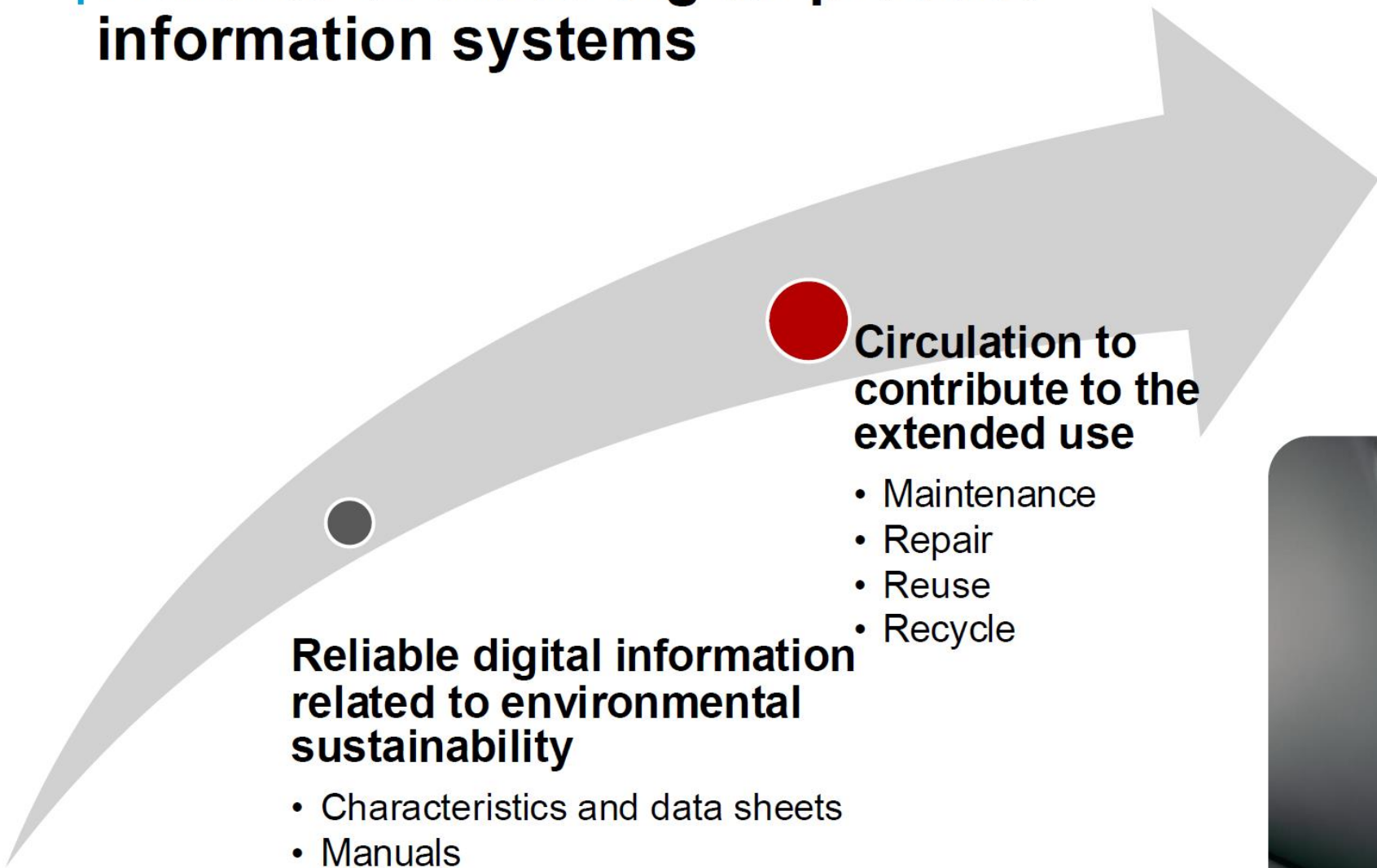
# Digital Product Information Systems

- *ITU definition*

*Digital Product Passports: Structured collection of product-specific data conveyed through a unique identifier.*



# Benefits of these digital product information systems



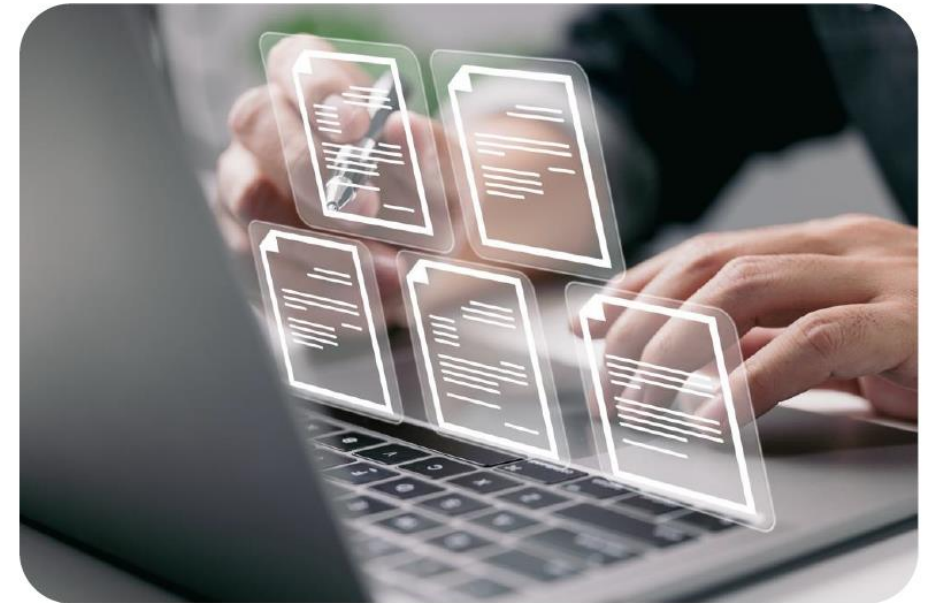
## Reliable digital information related to environmental sustainability

- Characteristics and data sheets
- Manuals
- Guides

## Circulation to contribute to the extended use

- Maintenance
- Repair
- Reuse
- Recycle

## Responsible and verifiable recycling and management



# Information contained

- Materials
- Design
- Use, maintenance and repair instructions
- Ways to recover and disassemble components and recycle them
- Equipment life
- Energy consumption

**Relevant useful information on**

- Specifications
- Programming
- Firmware
- Software

**Includes**

- Raw materials (scarce, critical and secondary)
- Adverse social and environmental risks due to the presence of hazardous substances

**Pays special attention**

- Provide monitoring
- Facilitating procurement proceedings
- Reversed logistics
- Facilitate extended producer responsibility

**Manufacturers**



# | Ongoing work

**L.DPP4C** - Consumer-oriented environmental information and reversed value chain information about ICT goods on digital product passports

- Will analyse the use of DDP to provide information to customers and how this information needs to be conveyed to consumers.
- Will define which product information is useful to be included in DPP with particular attention to the reverse value chains and how to present it.

Inputs are welcome



# Ongoing work on DPP system architecture – ITU-T SG20

## ITU-T Y.DPP-ICT

Requirements and System Architecture of Digital Product Passport for ICT Goods

- Linking ICT goods to their digital passports across the full lifecycle (manufacturing to end-of-life)

## ITU-T Y.DPP-trust

Trust framework for DPP systems supporting IoT-enabled product lifecycle data management

- Trust framework for digital product passport (DPP) systems
- Enabling secure, interoperable and transparent lifecycle data management for IoT-enabled products

## ITU-T YSTR.OS-DPP-ICT

A case study of an open-source Digital Product Passport system for ICT goods use case

## Standard under development

### **L.DPIS** - Guidelines for a modular and scalable data system design for Digital Product Information Systems (DPIS) for ICT goods

- Relevant data categories and subcategories, in order of importance.
- Support the design of DPIS approaches for ICT products, facilitating:
  - traceability,
  - circularity, and
  - informed decision-making across the product life cycle.

#### Data categories

- General product information
- Materials and composition
- Instructions and lifecycle information
- Environmental life cycle assessment
- Social life cycle assessment
- Compliance
- Circular Economy R-Strategies



Inputs are welcome



One planet  
connect with care

Sustainable  
Digitalisation



# ITU Capstone project

**Sciences Po - France**

**Which (sustainability-, design-, and lifecycle-related) data is technically feasible for smartphone manufacturers to provide to a Digital Product Passport, and where do feasibility limits emerge across the supply chain?**

**University of Pennsylvania**

**Digital Product Passports for Consumer Information and Communication Technology: Designing Information for Transparency and Circular Economy in Latin America**



# Upcoming events

***ITU-T SG5 Meeting***  
Geneva, Switzerland,  
20 – 29 October 2026

More information [here](#).





# Thank you!

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**Email**

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**Website**

[SG5: Environment, climate  
change and circular economy](#)

# | Beneficiary users

- Facilitates the activities of product operators:
  - Manufacturers
  - Buyers
  - Owners
  - Repairers
  - Remanufacturers
  - Recyclers
  - National authorities
  - Auditors
- It could empower consumers with relevant information.
- It may have different content depending on the role and accreditation of the operator.

