ILNAS Breakfast "New report Quantum Communication & Technical Standardization"

Introduction

14 November 2024

Jean-Philippe HUMBERT - Deputy Director, ILNAS

- **ILNAS**
  - o Public administration under the authority of the Minister of the Economy, SME, Energy and Tourism
  - o Creation: Law of May 20, 2008
  - o Legislation in force: amended Law of July 4, 2014 reorganizing ILNAS
  - o Total staff: 62 (November 2024)
  - o ISO 9001:2015 certification

- **National Standards Body (OLN)**
  - o Composed of 8 persons
  - o Close collaboration with the E.I.G. ANEC-N

- **Creation**: October 4, 2010

- **Status**: Economic Interest Group (EIG)

- **Objectives**: Promotion, awareness raising and training, applied research in the field of standardization and metrology in order to support companies' competitiveness in Luxembourg

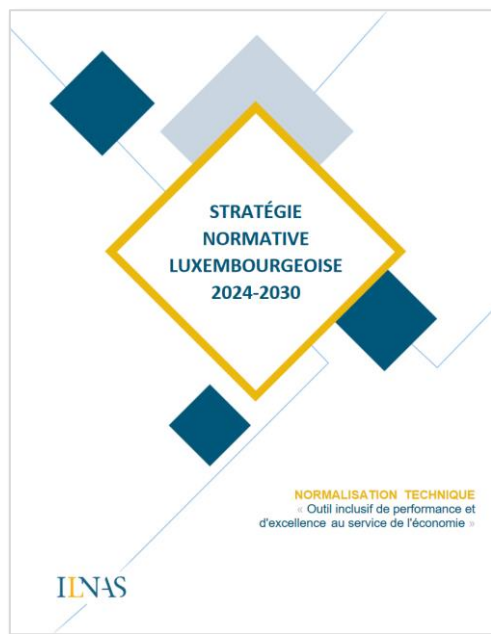- **Human resources**: 8 persons, including 4 employees in the standardization department (November 2024)

- **Partners**:

➔ Support for the implementation of the Luxembourg standardization strategy

Technical standardization
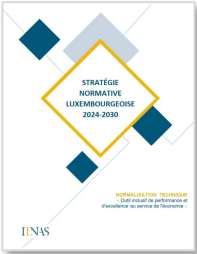**"Inclusive tool for performance and excellence to serve the economy"**

PERFORMANCE

- ❑ **Pillar 1 – Use of relevant technical standards**

- ❑ **Pillar 2 – Involvement in the standardization process**
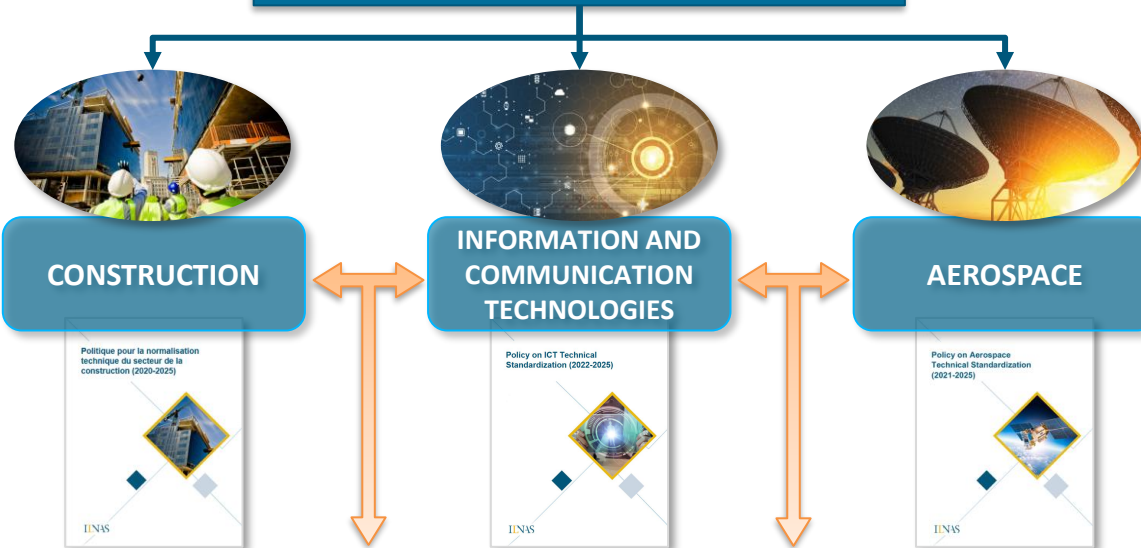
EXCELLENCE

- ❑ **Pillar 3 – Active participation of the NSB in the European and international standardization organizations**

- ❑ **Pillar 4 – Development of research and education about standardization**

STRATÉGIE
NORMATIVE
LUXEMBOURGEOISE
2024-2030

NORMALISATION TECHNIQUE
« Outil inclusif de performance et
d'excellence au service de l'économie »

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Technical standardization
"Inclusive tool for performance and excellence to serve the economy"

STRATÉGIE
NORMATIVE
LUXEMBOURGEOISE
2024-2030

NORMALISATION TECHNIQUE
« Outil inclusif de performance et
d'excellence au service de l'économie »

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3 growth sectors identified

2 relevant domains identified

CONSTRUCTION

INFORMATION AND COMMUNICATION TECHNOLOGIES

AEROSPACE

CONFORMITY

SUSTAINABILITY

Politique pour la normalisation
technique du secteur de la
construction (2020-2025)

Policy on ICT Technical
Standardization (2022-2025)

Policy on Aerospace
Technical Standardization
(2021-2025)

Politique normative nationale
« ISO CASCO » 2022-2030

Politique pour la normalisation technique
du domaine du développement durable
(2024-2026)

- ➢ **Computer Aided Design (CAD)**
- ➢ **Building Information Modelling (BIM)**
- ➢ **3D printing**
- ➢ **...**

- ➢ **Space data processing**
- ➢ **Space traffic management**
- ➢ **Smart Mobility**
- ➢ **...**

Identification of trans-sectoral standardization interactions

Policy on ICT Technical Standardization (2022-2025)

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"Foster and strengthen the national ICT sector involvement in standardization work"

→ Three lead projects

1 Promoting the ICT technical standardization to the market

2 Reinforcing the valorization and the involvement regarding ICT technical standardization

3 Supporting and strengthening the EaS and the related research activities
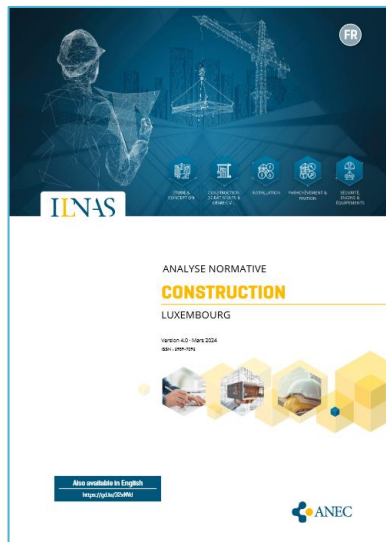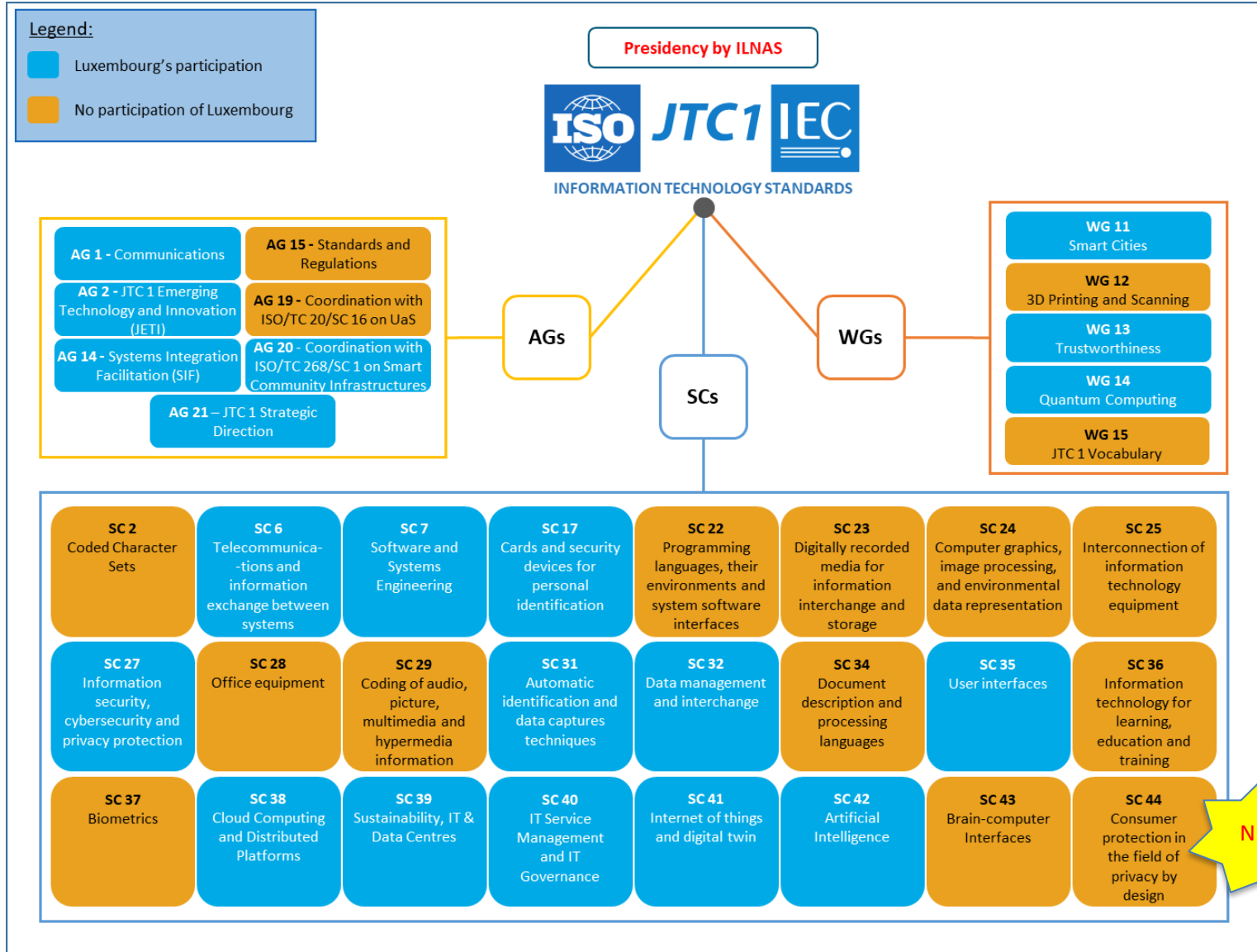
Politique pour la normalisation technique du secteur de la construction (2020-2025)

Politique normative nationale « ISO CASCO » 2022-2030

Policy on Aerospace Technical Standardization (2021-2025)

Politique pour la normalisation technique du domaine du développement durable (2024-2026)

ILNAS   ILNAS

Policies for the other sectors and domains are based on similar lead projects
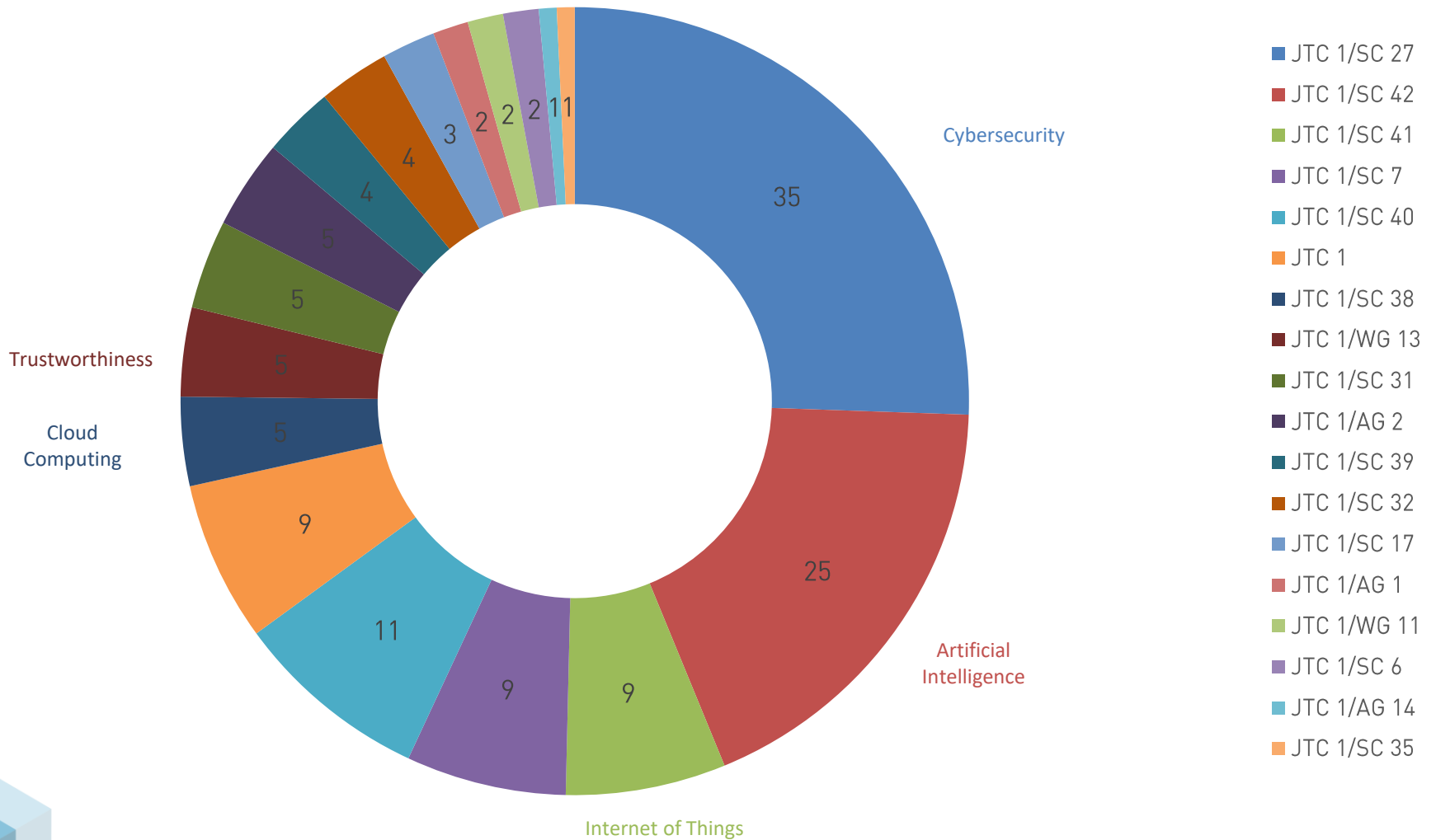
6

2024 - Standards Analysis

- **Content**

  o Standardization context of the related sectors

  o Presentation of European (CEN,CLC, ETSI) and international (ISO, IEC) technical committees active in the related sectors (distributed among subsectors relevant for the national economy)

  o Offer guidance to national stakeholders for a potential future involvement in the standardization development process
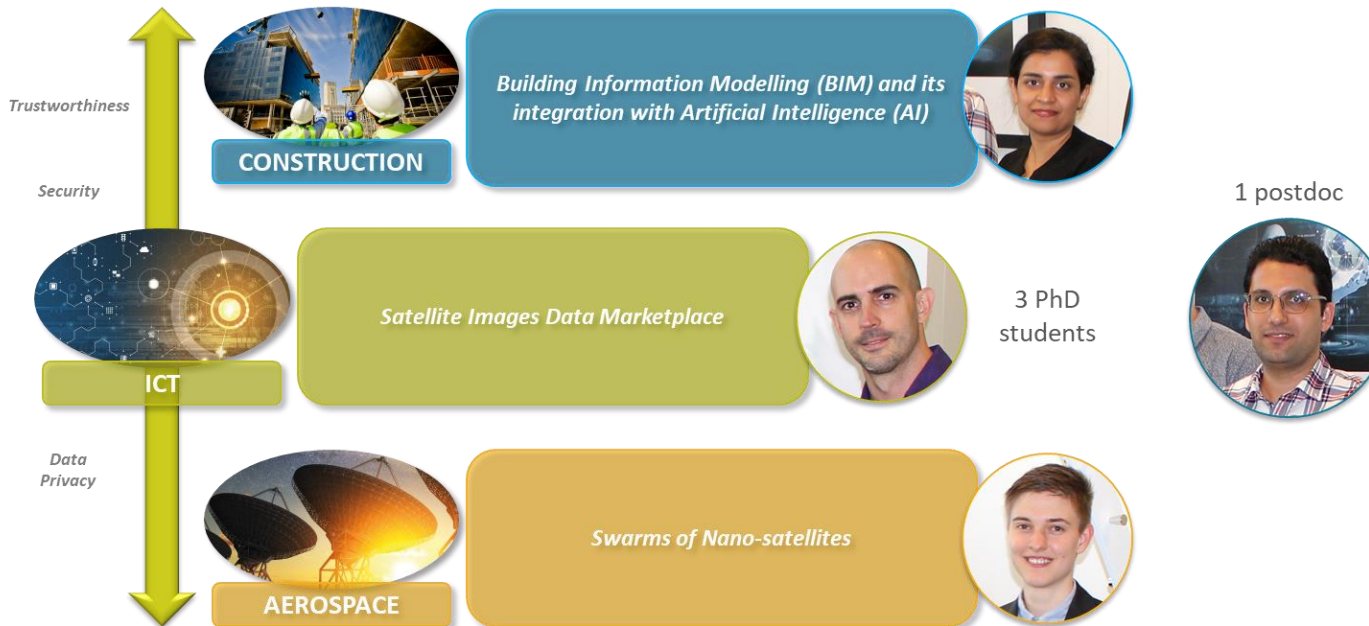
- **Updated annually (twice a year for ICT)**

ISO/IEC JTC 1

Legend:
- Luxembourg's participation
- No participation of Luxembourg

Presidency by ILNAS

ISO JTC1 IEC
INFORMATION TECHNOLOGY STANDARDS

AGs

- **AG 1 -** Communications
- **AG 2 -** JTC 1 Emerging Technology and Innovation (JETI)
- **AG 14 -** Systems Integration Facilitation (SIF)
- **AG 15 -** Standards and Regulations
- **AG 19 -** Coordination with ISO/TC 20/SC 16 on UaS
- **AG 20 -** Coordination with ISO/TC 268/SC 1 on Smart Community Infrastructures
- **AG 21 –** JTC 1 Strategic Direction

WGs

- **WG 11** Smart Cities
- **WG 12** 3D Printing and Scanning
- **WG 13** Trustworthiness
- **WG 14** Quantum Computing
- **WG 15** JTC 1 Vocabulary

SCs

SC 2 Coded Character Sets	SC 6 Telecommunica--tions and information exchange between systems	SC 7 Software and Systems Engineering	SC 17 Cards and security devices for personal identification	SC 22 Programming languages, their environments and system software interfaces	SC 23 Digitally recorded media for information interchange and storage	SC 24 Computer graphics, image processing, and environmental data representation	SC 25 Interconnection of information technology equipment
SC 27 Information security, cybersecurity and privacy protection	SC 28 Office equipment	SC 29 Coding of audio, picture, multimedia and hypermedia information	SC 31 Automatic identification and data captures techniques	SC 32 Data management and interchange	SC 34 Document description and processing languages	SC 35 User interfaces	SC 36 Information technology for learning, education and training
SC 37 Biometrics	SC 38 Cloud Computing and Distributed Platforms	SC 39 Sustainability, IT & Data Centres	SC 40 IT Service Management and IT Governance	SC 41 Internet of things and digital twin	SC 42 Artificial Intelligence	SC 43 Brain-computer Interfaces	SC 44 Consumer protection in the field of privacy by design

NEW

Reinforcing the valorization and the involvement regarding ICT technical standardization

ISO/IEC JTC 1

Legend:
- JTC 1/SC 27
- JTC 1/SC 42
- JTC 1/SC 41
- JTC 1/SC 7
- JTC 1/SC 40
- JTC 1
- JTC 1/SC 38
- JTC 1/WG 13
- JTC 1/SC 31
- JTC 1/AG 2
- JTC 1/SC 39
- JTC 1/SC 32
- JTC 1/SC 17
- JTC 1/AG 1
- JTC 1/WG 11
- JTC 1/SC 6
- JTC 1/AG 14
- JTC 1/SC 35

→ 62 national delegates registered in ISO/IEC JTC 1 (87 in total for the ICT sector)

- **13 ETSI members** **in Luxembourg**
  - Rank 16 of the countries with the most members worldwide (out of 61 countries)

SES — your satellite company — 1990

1994 — POST Technologies

2006

ILNAS — 2008

FBCONSULTING — THINK WIRELESS FOR TOMORROW — 2009

2012

FLUXTRUST — ANEC — 2015

OQ TECHNOLOGY — a sense for innovation iEE — 2020

aws — 2022

2019 — Nowina SOLUTIONS — SISVEL

SNT — securityandtrust.lu

ewitness — Certezze Digitali

ETSI

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Research program "Technical Standardisation for Trustworthy ICT, Aerospace, and Construction" (2021-2024) in collaboration with the University of Luxembourg

Trustworthiness

Security

Data Privacy

CONSTRUCTION

Building Information Modelling (BIM) and its integration with Artificial Intelligence (AI)

ICT

Satellite Images Data Marketplace

AEROSPACE

Swarms of Nano-satellites

1 postdoc

3 PhD students

→ **Last update presented during the World Standards Day event organized by ILNAS on the 15th October 2024**

https://ilnas-snt.uni.lu/

White Papers & Technical Reports ILNAS

2020-2024 - ILNAS Research activities

1 White Paper
published

ARTIFICIAL INTELLIGENCE

Technology review

Economic overview

Challenges

Technical Standardization

...

BLOCKCHAIN

INTERNET OF THINGS

CLOUD COMPUTING

MSS

4 National Technical Standardization Reports
published

2023

New Technical Standardization Report on Quantum Communication & Technical Standardization

Master MTECH (third promotion)

Master MTECH (2024-2026) – ILNAS in collaboration with the University of Luxembourg and the Chamber of Employees

PROGRAMME

STANDARDISATION	ECTS
Smart Secure ICT and Innovation	1
Technical Standardisation	3
TOTAL	4

SMART ICT	ECTS
Smart ICT Technologies I	5
Smart ICT Technologies II	5
TOTAL	10

DIGITAL TRUST FOR SMART ICT	ECTS
Security for Smart ICT I	2
Security for Smart ICT II	3
Trust Architectures for Smart ICT	4
TOTAL	9

TECHNOPRENEURSHIP	ECTS
Management of Business and Technical Innovation	3
Digital Intelligence	2
Legal Aspects	2
TOTAL	7

MASTER THESIS	ECTS
Master Thesis	30
TOTAL	30

60 ECTS

332 hours of teaching

Internship (+/- 750 hours)

September 2024 – September 2026

2 years lifelong-learning

7 students

11 Modules
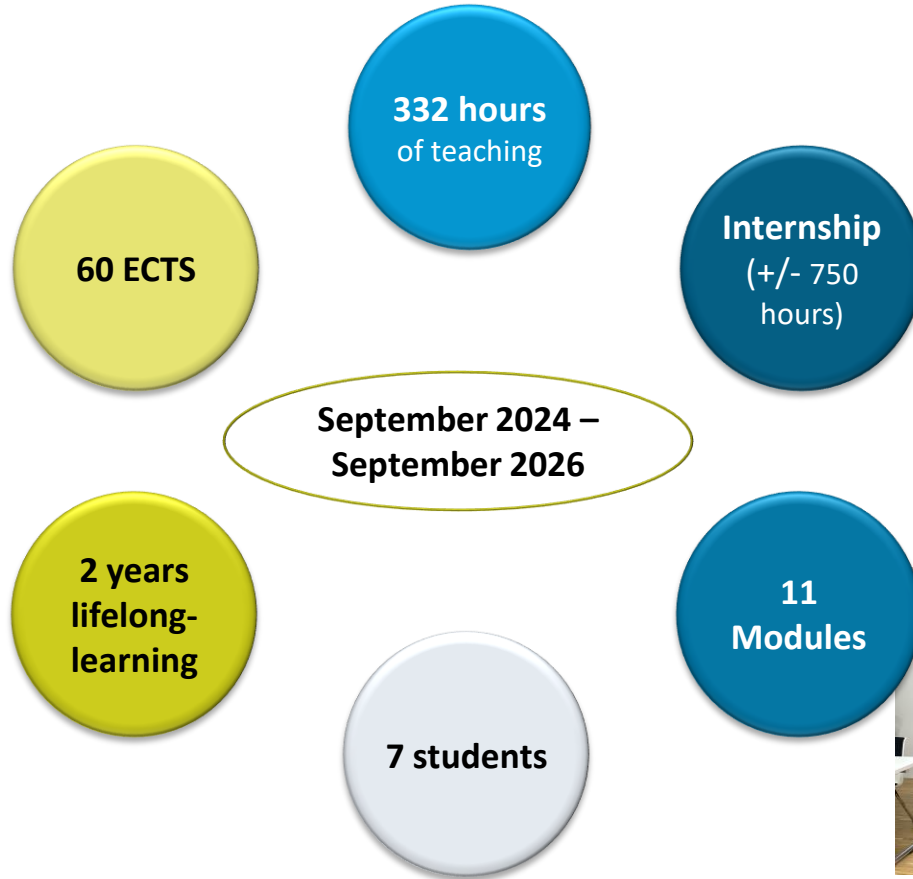
With the support of:
THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG
Ministry of the Economy

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ILNAS

→ **Portail qualité:**

www.portail-qualite.lu

→ **ILNAS e-shop:**

https://ilnas.services-publics.lu/

→ **Newsletters:** https://portail-qualite.public.lu/fr/support/newsletter.html

→ **Social Networks:**

ILNAS Breakfast "New report Quantum Communication & Technical Standardization"

ILNAS - Presentation of the National Standards Body (OLN)

14 November 2024

Nicolas DOMENJOUD – Responsible ICT & Technical Standardization, ILNAS

Coordinate and supervise the creation of national standards

o **Construction sector**

  ▪ Creation of a national standards office (in collaboration with CRTI-B) (2015)

  ▪ National standard about the living surface (2016)

  ▪ National annexes of the Eurocodes (2011 and 2019)

  ▪ National standard related to the technical controls of buildings (2021)

  ▪ National standard on building acoustics (2022)

  ▪ National annexes on concrete (2023)

  ▪ National standard on soil classification (ongoing)

  ▪ National annex to EN 1916 (ongoing)

o **Information and Communication Technologies (ICT) sector**

  ▪ National standard on e-archiving (2022 and 2024)

  ▪ National standard on information security in the context of the accreditation of laboratories (2020)

  ▪ National standard on vertical cabling (ongoing)

o **Other domains**

  ▪ National annex concerning the Winter Diesel (EN 590:2013+A1:2017/AN-LU:2019)

Standards catalogue

- 91 national standards (ILNAS)

- +97.000 European standards
(CEN, CENELEC and ETSI)

- +80.000 International standards (ISO and IEC)

- +50.000 German standards (DIN)

→ More than **225.000 available normative documents**

- Electronic format

- Languages : French, German & English

- Attractive prices

- Free access to draft standards in public enquiry (ILNAS, CEN, CENELEC, ETSI and IEC)

ILNAS
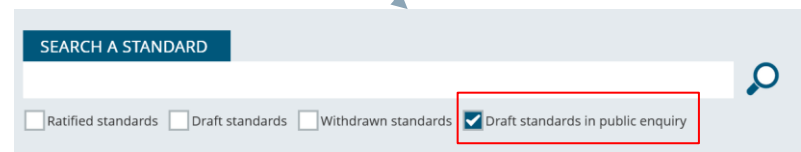
- Free consultation of European (CEN, CENELEC & ETSI), international (ISO & IEC) and national (ILNAS) standards

- Location:

    1. ILNAS
    2. Luxembourg Learning Centre
    3. LIST
    4. Université du Luxembourg (Kirchberg)
    5. Luxembourg House of Cybersecurity
    6. Chambre des Métiers
    7. Lycée des Arts et Métiers
    8. Atert Lycée Rédange
    9. Commune d'Echternach

- **Participation in standardization activities**
  - o Management of the participation of national experts who represent Luxembourg in the European and international technical committees
    - ▪ Open to all national stakeholders
    - ▪ Free of charge

- **National register of delegates**
  - o 309 experts registered (November 2024)
  - o 1046 registrations in technical committees
  - o Link: https://gd.lu/cCN7qg

Registre national des délégués en normalisation - Novembre 2024

Nombre d'inscriptions aux comités techniques :

ILNAS/OLN	121
CEN	280
CENELEC	11
CEN/CLC	53
CEN/CLC/ETSI	4
ECISS	0
ISO/IEC	268
ISO	299
IEC	9
Total	1046

Nombre de personnes inscrites : 309

ILNAS

1, av du Swing - L-4367 Belvaux - Tél. : (+352) 24 77 43 40 - Fax : (+352) 24 79 43 40 - Email : normalisation@ilnas.etat.lu - www.portail-qualite.lu

mercredi 13 novembre 2024   Approuvé par Jérôme HOEROLD   Page 1 sur 106

→ More information available on: https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html
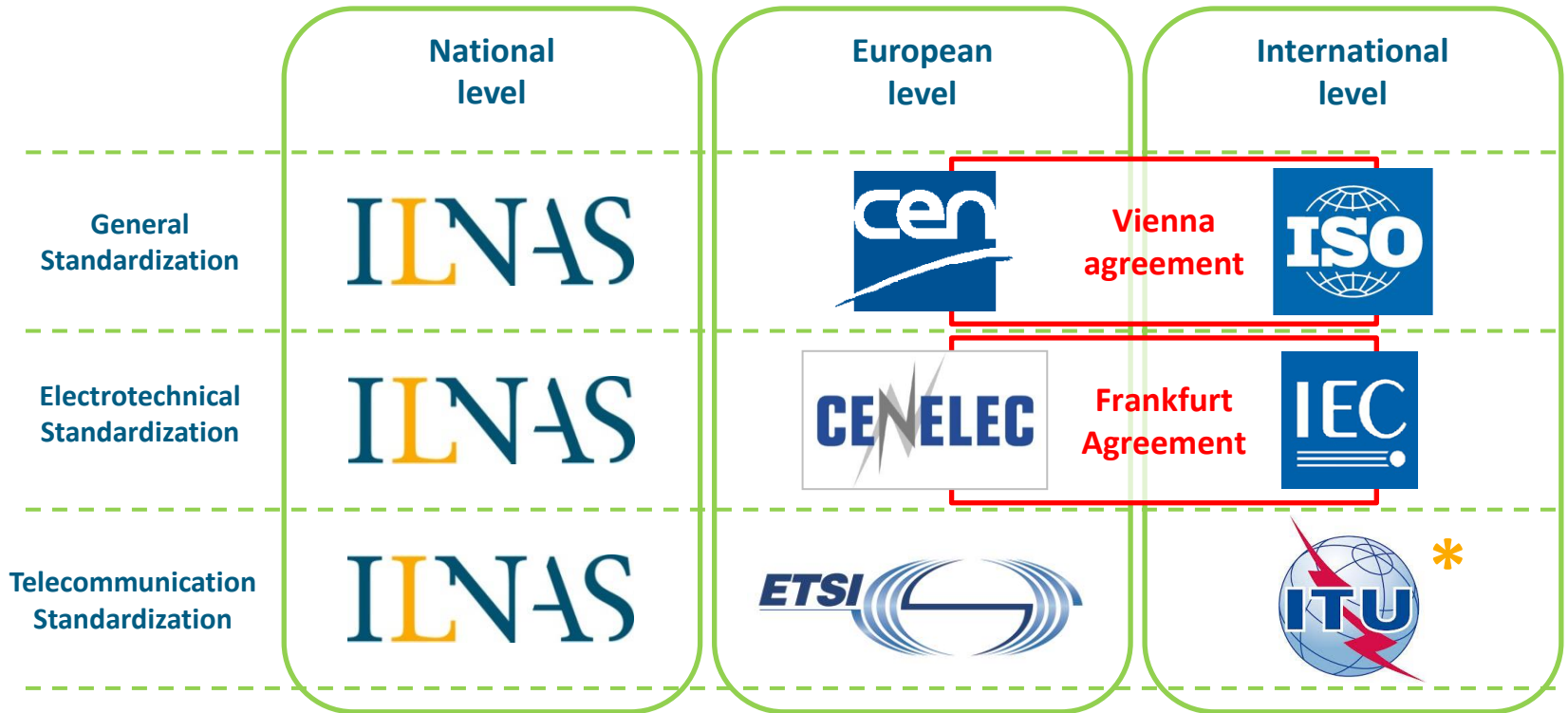
* ITU-T
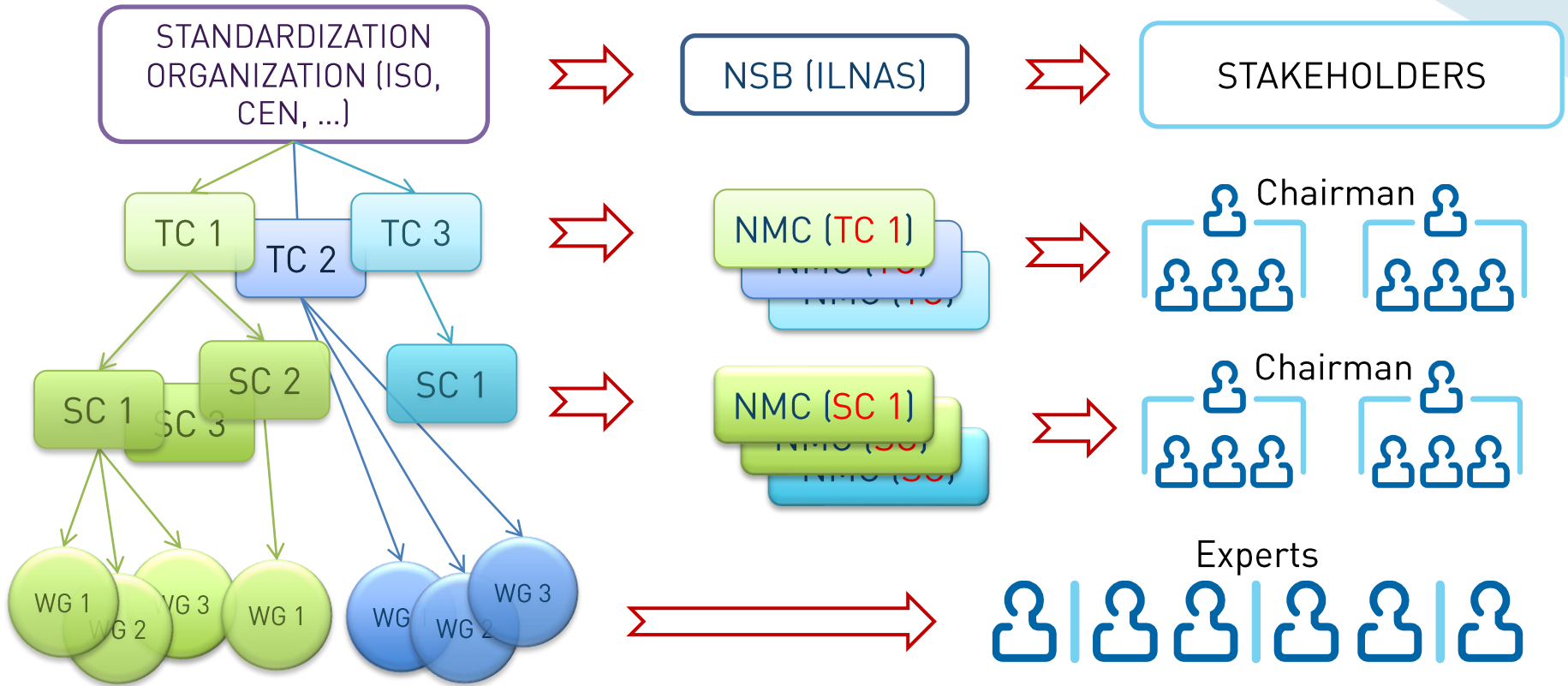
- **NSB**: National Standards Body
- **TC**: Technical Committee
- **SC**: Subcommittee - Entity established within a TC responsible for a large work program (focuses on an area of interest of the TC)
- **WG**: Working Group - Group established by a TC or SC that develops standards project(s) within the scope of activity of the TC/SC
- **NMC**: National Mirror Committee

Quantum Communication and Technical Standardization

14/11/2024, Rim DOUKHA, ANEC GIE

Main information

This report aims to support the national stakeholders by describing the field of quantum communication and relevant standardization activities that can contribute to its development and acceptance
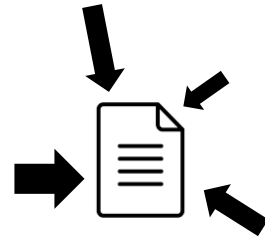
Purpose

- Identify relevant technical committees and standards in quantum communication
- Identify key projects advancing quantum communication
- Highlight the importance of technical standardization in quantum communication
- Explore standards developments that align with your business interests for potential involvement connected to your business in which participating in their development could be of interest

Content
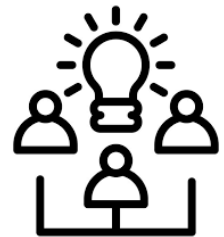
Part 1

Introduction to quantum technologies
- Overview

Part 2

Quantum computing
- Strengths of quantum computing
- Threats to communications security

Part 3

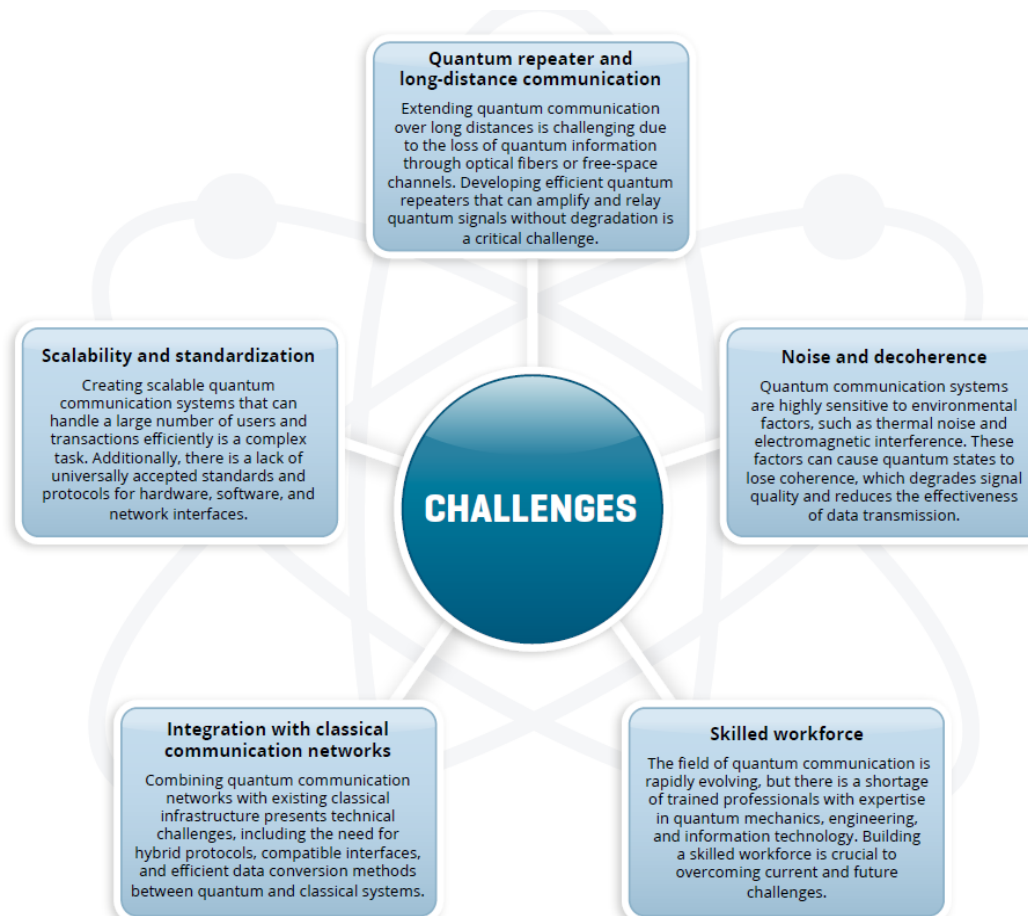**Quantum communication**
- Overview
- Main generations of quantum communication
- Challenges

Part 4

Quantum communication and technical standardization
- Definition of a standard
- Benefits of standardization
- Standards development organizations
- Standardization activities related to quantum communication and security

Part 5

Standardization opportunities in Luxembourg
- National standardization commission for quantum technologies
- Who can participate in standards development in Luxembourg?
- How to access the standards
- Good reasons to participate in standards development

Part 1

Introduction to quantum technologies
- Overview

- **Introduction to quantum technologies**
- **Key Concepts: Superposition and Entanglement**

Part 2

Quantum computing
- Strengths of quantum computing
- Security threats to communications security

- **Quantum computing leverages qubits to solve complex problems that classical computers cannot address.**
- **It also poses security challenges to current encryption methods, necessitating advanced solutions like Quantum Key Distribution (QKD).**

ILNAS

ANEC

Part 3

Quantum communication
- Overview
- Main generations of quantum communication
- Challenges

Main generations of quantum communication

- Main generations of quantum communication:

  - First generation: quantum key distribution (prepare & measure)

  - Second generation: quantum key distribution (photonic entanglement sources)

  - Third generation: quantum repeater (entanglement distribution)

Main challenges of quantum communication

Quantum repeater and long-distance communication

Extending quantum communication over long distances is challenging due to the loss of quantum information through optical fibers or free-space channels. Developing efficient quantum repeaters that can amplify and relay quantum signals without degradation is a critical challenge.

Scalability and standardization

Creating scalable quantum communication systems that can handle a large number of users and transactions efficiently is a complex task. Additionally, there is a lack of universally accepted standards and protocols for hardware, software, and network interfaces.

Noise and decoherence

Quantum communication systems are highly sensitive to environmental factors, such as thermal noise and electromagnetic interference. These factors can cause quantum states to lose coherence, which degrades signal quality and reduces the effectiveness of data transmission.

CHALLENGES

Integration with classical communication networks

Combining quantum communication networks with existing classical infrastructure presents technical challenges, including the need for hybrid protocols, compatible interfaces, and efficient data conversion methods between quantum and classical systems.

Skilled workforce

The field of quantum communication is rapidly evolving, but there is a shortage of trained professionals with expertise in quantum mechanics, engineering, and information technology. Building a skilled workforce is crucial to overcoming current and future challenges.

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Part 4

Quantum communication and technical standardization

- Definition of a standard
- Benefits of standardization
- Standards development organizations
- Standardization activities related to quantum communication and security
- Standardization activities related to other quantum technologies

Benefits of standardization
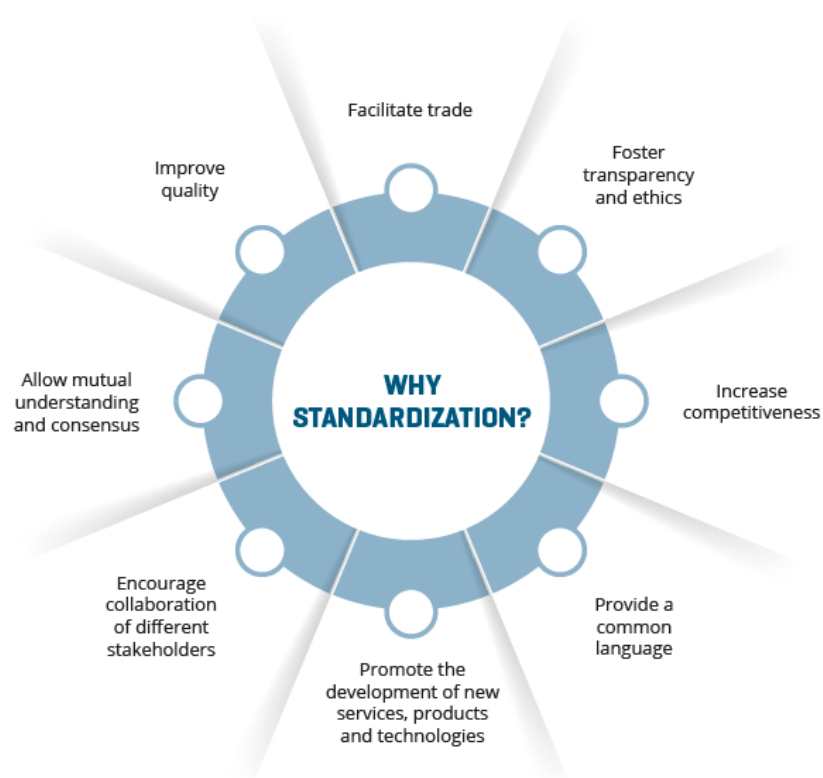
Standardization organizations

	General Standardization	Electrotechnical Standardization	Telecommunications Standardization
International level	ISO	IEC	ETSI / ITU
European level	cen	CENELEC	
National level	ILNAS	ILNAS	ILNAS

Technical committees – International level

ISO/IEC JTC 3 "Quantum technologies"

ISO/IEC JTC 1/SC 27 "Information security, cybersecurity and privacy protection"

ITU-T/SG 11 "Signalling requirements, protocols, test specifications and combating counterfeit telecommunication/ICT devices"

ITU-T/SG 13 "Future networks and emerging network technologies"

ITU-T/SG 17 "Security"

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Technical committees – European level

ETSI ISG "Quantum Key Distribution"

ETSI TC CYBER WG "Quantum-Safe Cryptography"

CEN/CLC JTC 13 "Cybersecurity and Data Protection"

CEN/CLC JTC 22 "Quantum Technologies"

Relevant standards in quantum communication **(extract)**

Committees	Document reference	Title	Date of publication
ISO/IEC JTC 1/ SC 27	ISO/IEC 23837-1	Information security – Security requirements, test and evaluation methods for quantum key distribution – Part 1: Requirements	08/2023
	ISO/IEC 23837-2	Information security – Security requirements, test and evaluation methods for quantum key distribution – Part 2: Evaluation and testing methods	09/2023

Ongoing projects in quantum communication

Groups	Document reference	Title
CEN/CLC JTC 22	/	Gap analysis of current quantum communication and quantum cryptography standards
	/	QKD and PQC – An equitable analysis and comparison of both technologies

Part 5

Standardization opportunities in Luxembourg
- National standardization commission for quantum technologies
- Who can participate in standards development in Luxembourg?
- How to access the standards
- Good reasons to participate in standards development

National standardization commission for quantum technologies

ILNAS/NSC 03
Quantum
Technologies

CEN/CLC JTC 22
Quantum
Technologies

ISO/IEC JTC 3
Quantum
Technologies
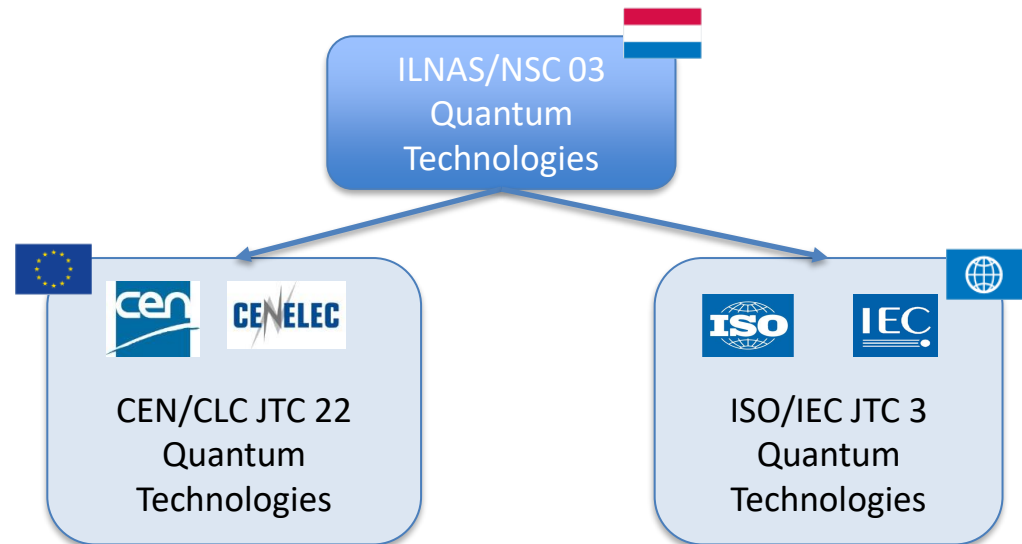
National standardization commission for quantum technologies
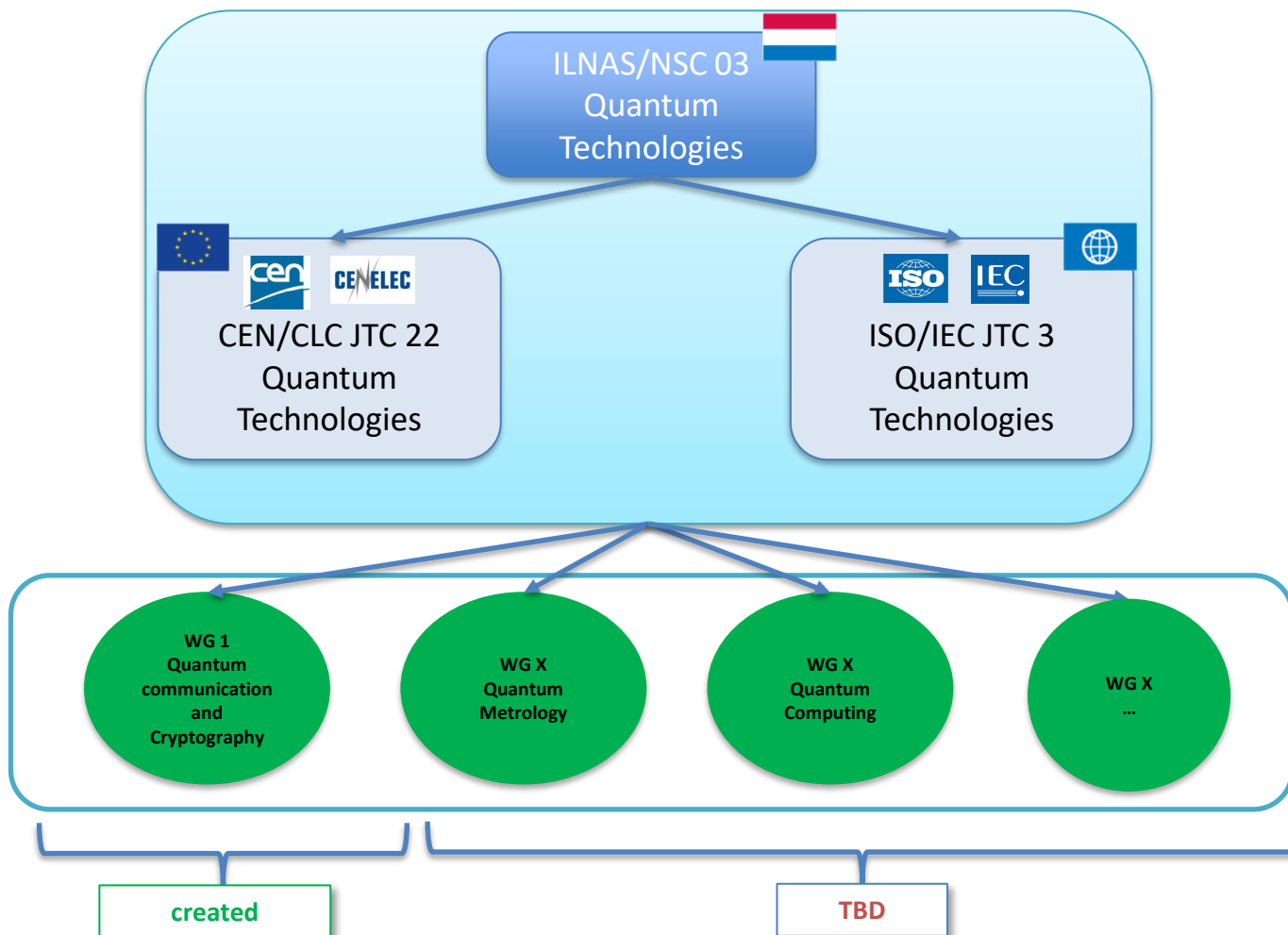
Consulting and purchasing standards

- Reading stations
- e-Shop

Who can participate?

Open to all socio-economic actors in Luxembourg

Costs of participation?

Registration is free-of-charge

How to register?

Registration is done using ILNAS/OLN/F001a form (Initial registration) or ILNAS/OLN/F001b form (Additional registration).

Why to get involved in standards' development ?

- Collaborate to defend common interests
- Learn about your competitors and their positions in meetings
- Promote your organization and your skills at national, European and international levels
- Access drafts standards and influence their content based on your know-how
- Propose new standards projects
- Increase your knowledge regarding the state of the art in standardization of your core business
- Anticipate the evolution of your activity sector's good practices
- Integrate strategic network of national, European or international experts

Main takeaways of the quantum communication report

- **Know the importance of technical standardization in quantum communication**
  - o Know some existing standards
  - o Know who is developing standards in quantum communication
  - o Follow their work, their evolution
  - o Join them as delegate to
    - Shape new standards that are in project form
    - Rework published standards that are under revision
    - Propose new standards and lead projects
- **Know what services ILNAS and ANEC GIE can offer to support you**
  - o Coach you as a delegate
  - o Serve as an interface to submit comments

DON'T HESITATE TO:

- **DIVE INTO THE DOCUMENT!**

- **CONTACT THE ANEC GIE PROJECT OFFICERS!**

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Policy on ICT Technical Standardization (2022-2025)

ILNAS

1 Promoting the ICT technical standardization to the market

2 Reinforcing the valorization and the involvement regarding ICT technical standardization

3 Supporting and strengthening the EaS and the related research activities
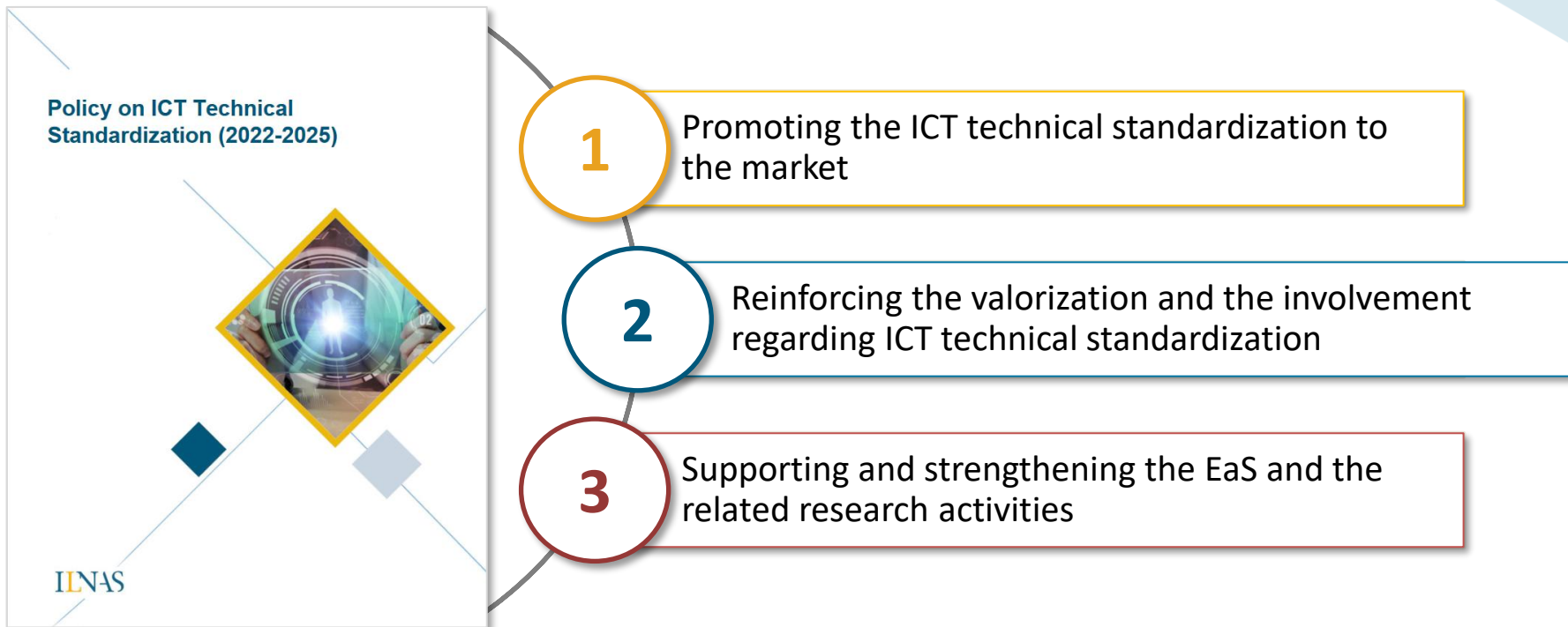
A main outcome of Project 1

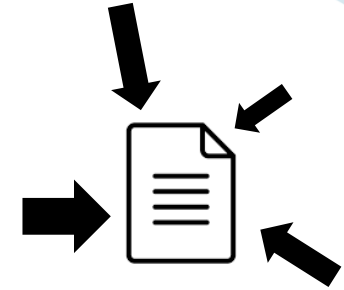*"Drawing up a yearly national standards analysis for the Smart Secure ICT sector"*

- Baseline resource
- Actionable, practical information
- Freely available online

Twice a year, actually Spring and Autumn
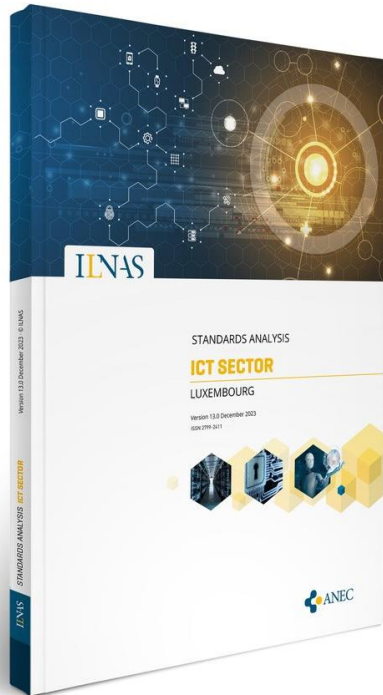
Main information
A single-document resource of technical standardization committees covering the overall ICT sector

Purpose
To help you identify quickly and efficiently those SDOs and committees relevant to your business

What aims?
- Sources of technical standards that might impact you
- Identify committees connected to your business within which participating might by of interest

An overview of ICT standardization overall

Artificial Intelligence	Digital archiving	Internet of Things
Programming languages	Digital Trust	Smart cities
Blockchain	Robotics	Green ICT
Cloud Computing	Software engineering	Financial technology

…and so much more…!
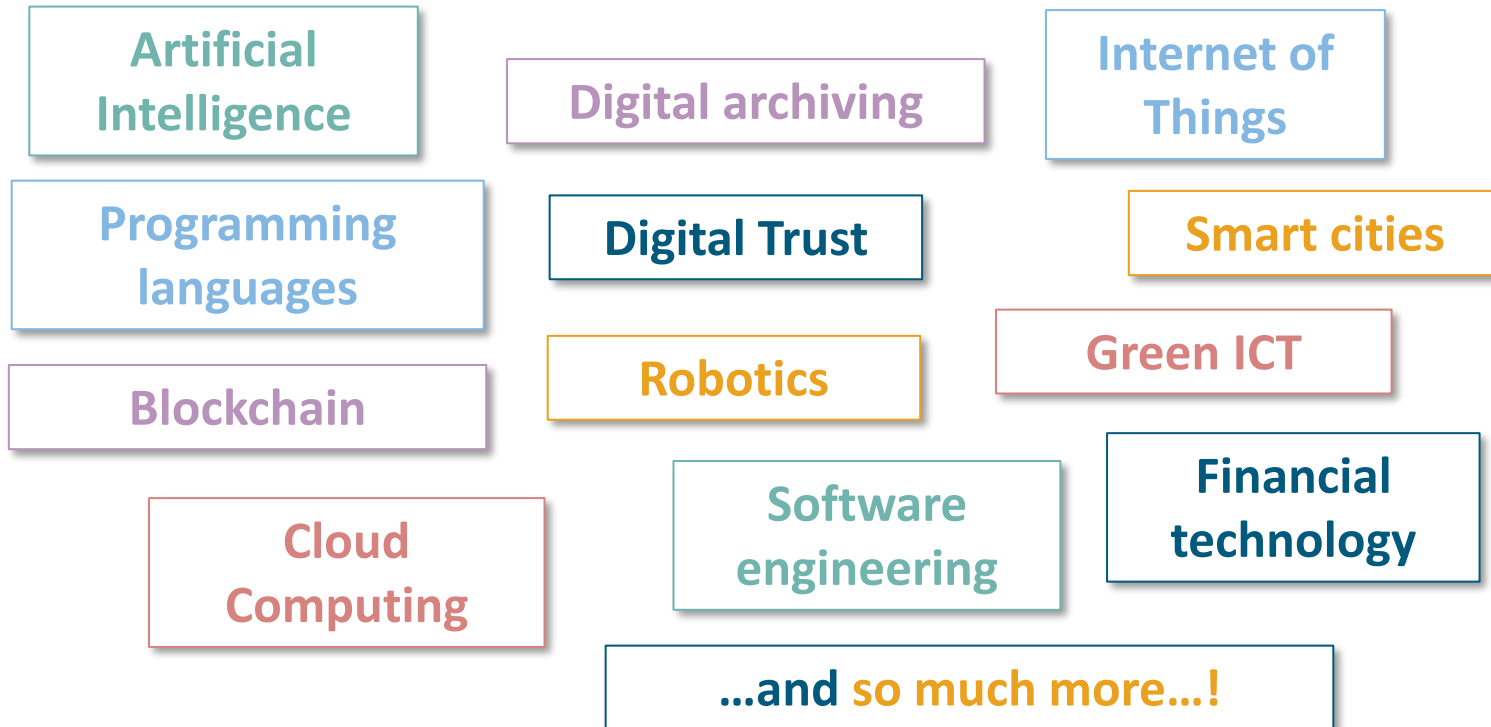
- *Budding technologies (and their security) → Budding committees in standardization… BUT ALSO*
- *Maintenance of standards, and contributions to standards projects, in "classic" topics*

Generalities on standardization

- Quick overviews of ISO, IEC, ITU-T, CEN, CENELEC, ETSI
- Definitions and purpose of standardization (World Trade Organization, European legislation)

A presentation of the main national actors

- ILNAS, your national standards body
- ANEC GIE, in support of ILNAS for the promotion and standardization…
  …and the delivery of services!
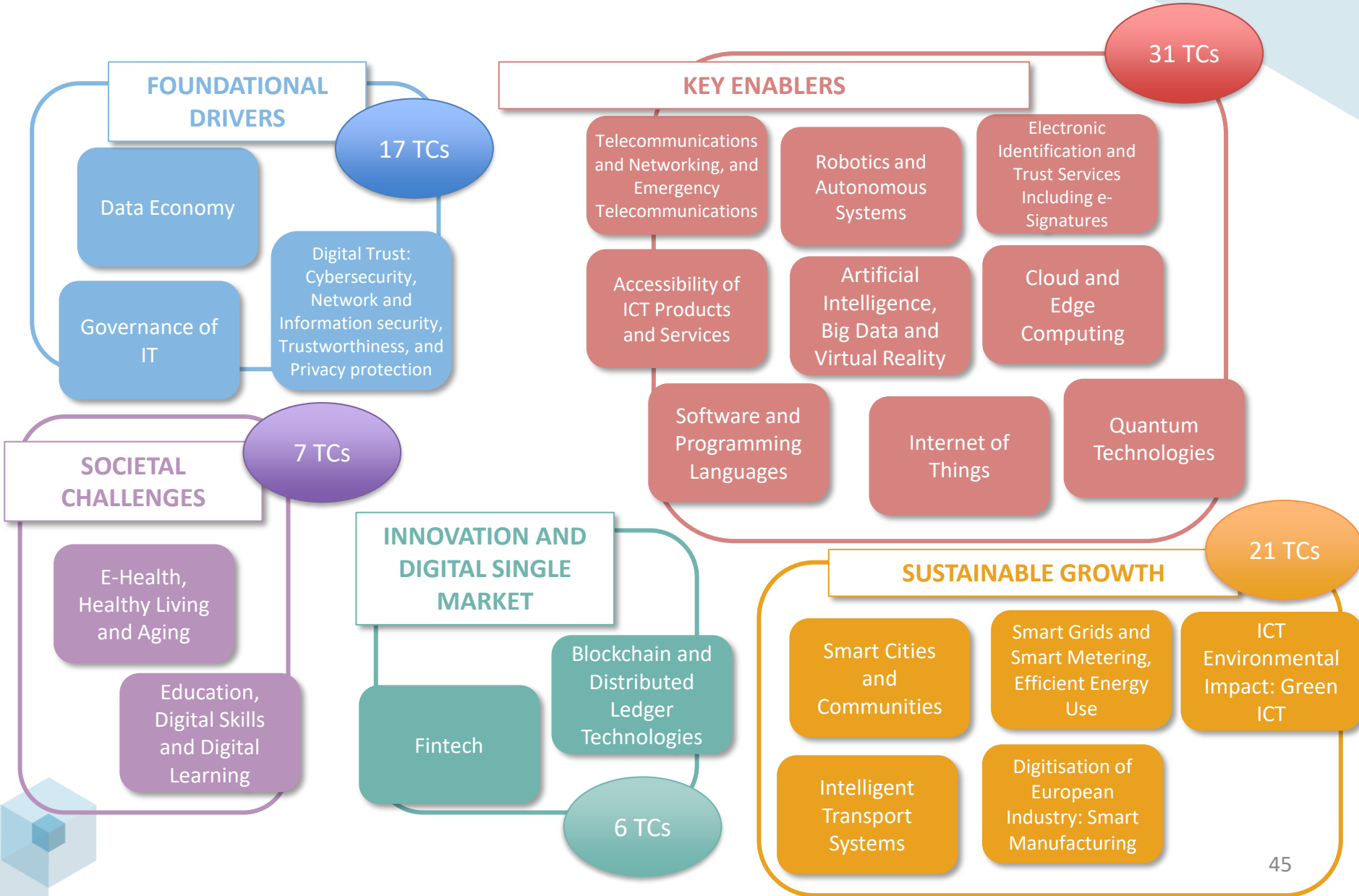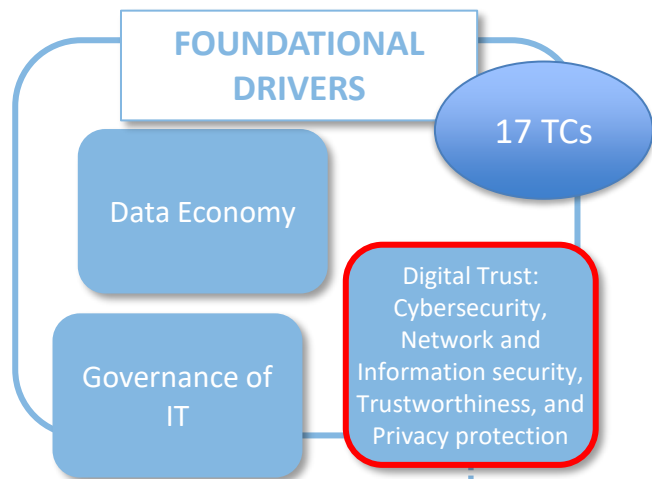
Your standardization partners in Luxembourg

ILNAS

➡ Technical committees of interest broken down by sub-sectors

➡ Sub-sectors inspired by the European Commission's Rolling Plan for ICT technical standardization, which defines the most important standardization initiatives and actions supporting EU policies

➡ The Rolling Plan 2024 identifies around 260 actions grouped into 39 technological or application domains under 5 thematic areas: foundational drivers, key enablers, societal challenges, innovation for the single market and sustainable growth
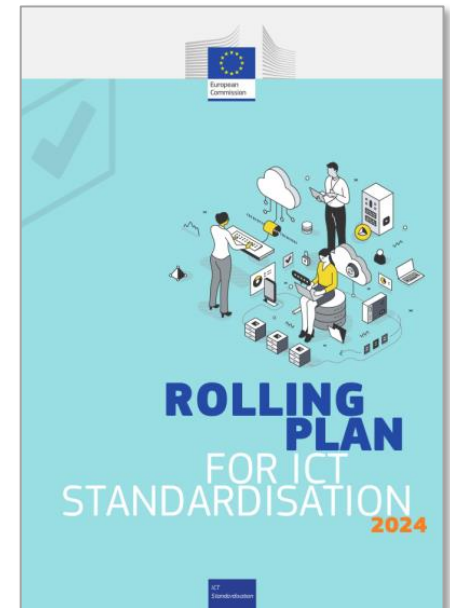
https://joinup.ec.europa.eu/collectio n/rolling-plan-ict-standardisation/rolling-plan-2024

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FOUNDATIONAL DRIVERS

17 TCs

- Data Economy
- Governance of IT
- Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection

KEY ENABLERS

31 TCs

- Telecommunications and Networking, and Emergency Telecommunications
- Robotics and Autonomous Systems
- Electronic Identification and Trust Services Including e-Signatures
- Accessibility of ICT Products and Services
- Artificial Intelligence, Big Data and Virtual Reality
- Cloud and Edge Computing
- Software and Programming Languages
- Internet of Things
- Quantum Technologies

SOCIETAL CHALLENGES

7 TCs

- E-Health, Healthy Living and Aging
- Education, Digital Skills and Digital Learning

INNOVATION AND DIGITAL SINGLE MARKET

6 TCs

- Fintech
- Blockchain and Distributed Ledger Technologies

SUSTAINABLE GROWTH

21 TCs

- Smart Cities and Communities
- Smart Grids and Smart Metering, Efficient Energy Use
- ICT Environmental Impact: Green ICT
- Intelligent Transport Systems
- Digitisation of European Industry: Smart Manufacturing

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ILNAS

FOUNDATIONAL DRIVERS

17 TCs

Data Economy

Governance of IT

Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection

- ILNAS/NSC 01 - Cybersecurity
- ISO/IEC JTC 1/WG 13 – Trustworthiness
- ISO/IEC JTC 1/SC 27 – Information security, cybersecurity and privacy protection
- ISO/PC 317 – Consumer protection: privacy by design for consumer goods and services
- CEN/CLC JTC 13 – Cybersecurity and data protection
- ETSI/TC CYBER – Cybersecurity
- …

ISO/IEC JTC 1/SC 27
INFORMATION SECURITY, CYBERSECURITY AND PRIVACY PROTECTION

GENERAL INFORMATION			
Creation date	1989	Secretariat	DIN (Germany)
Chairperson	Mr. Dr. Andreas Wolf	Committee Manager	Mr. Sobhi Mahmoud
Scope	The development of standards for the protection of information and ICT. This includes generic methods, techniques and guidelines to address both security and privacy aspects, such as: - Security requirements capture methodology; - Management of information and ICT security; in particular, information security management systems, security processes, and security controls and services; - Cryptographic and other security mechanisms, including but not limited to mechanisms for protecting the accountability, availability, integrity and confidentiality of information; - Security management support documentation including terminology, guidelines as well as procedures for the registration of security components; - Security aspects of identity management, biometrics and privacy; - Conformance assessment, accreditation and auditing requirements in the area of information security management systems; - Security evaluation criteria and methodology. SC 27 engages in active liaison and collaboration with appropriate bodies to ensure the proper development and application of SC 27 standards and technical reports in relevant areas.		
Structure	AG 2 Trustworthiness AG 5 Strategy AG 6 Operations AG 7 Communication and outreach (AG-CO) AG 8 Advisory Group on Conformity Assessment AHG 1 Resolution Drafting AHG 2 Security and privacy in IoT and Digital Twin AHG 3 Security and privacy in AI and Big Data (BD) CAG Chair's Advisory Group JWG 6 Joint ISO/IEC JTC1/SC 27 - ISO/TC 22/SC 32 WG: Cybersecurity requirements and evaluation activities for connected vehicle devices WG 1 Information security management systems WG 2 Cryptography and security mechanisms WG 3 Security evaluation, testing and specification WG 4 Security controls and services WG 5 Identity management and privacy technologies **Joint working groups under the responsibility of another committee:** ISO/TC 307/JWG 4 Joint ISO/TC 307 - ISO/IEC JTC 1/SC 27 WG: Security, privacy and identity for Blockchain and DLT		
Webpage	https://www.iso.org/committee/45306.html		
STANDARDIZATION WORK			
Published standards	238	Projects	70
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	56 participating members (including **Luxembourg**)		
O-Members	34 observing members		
	26 national delegates		
Luxembourg's involvement	*Note: National participation in ISO/IEC JTC 1/SC 27 is done via ILNAS' National Standardization Commission "Cybersecurity", which centralizes and coordinates Luxembourg experts' work in ISO/IEC JTC 1/SC 27, ISO/IEC JTC 1/WG 13, CEN/CLC/JTC 13, and ISO/PC 317.*		

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ILNAS

ISO/IEC JTC 1/SC 42 ARTIFICIAL INTELLIGENCE				🌐
GENERAL INFORMATION				
Creation date	2017	Secretariat	ANSI (United States)	
Chairperson	Mr. Wael William Diab	Committee Manager	Ms. Heather Benko	
Scope	Standardization in the area of Artificial Intelligence - Serve as the focus and proponent for JTC 1's standardization program on Artificial Intelligence; - Provide guidance to JTC 1, IEC, and ISO committees developing Artificial Intelligence applications.			
Structure	AG 3 AI standardization roadmapping AHG 4 Liaison with SC 27 AHG 7 JTC1 joint development review JWG 2 Joint Working Group ISO/IEC JTC1/SC 42 - ISO/IEC JTC1/SC 7: Testing of AI-based systems JWG 3 Joint Working Group ISO/IEC JTC1/SC42 - ISO/TC 215 WG: AI enabled health informatics JWG 4 Joint Working Group ISO/IEC JTC 1/SC 42 - IEC TC 65/SC 65A: Functional safety and AI systems JWG 5 Joint Working Group ISO/IEC JTC1/SC 42 - ISO/TC 37 WG: Natural language processing systems WG 1 Foundational standards WG 2 Data WG 3 Trustworthiness WG 4 Use cases and applications WG 5 Computational approaches and computational characteristics of AI systems			
Webpage	https://www.iso.org/committee/6794475.html			
STANDARDIZATION WORK				
Published standards	20	Projects	35	
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT				
P-Members	37 participating members (including **Luxembourg**)			
O-Members	23 observing members			
Luxembourg's involvement	22 national delegates			

31 TCs

KEY ENABLERS

- Telecommunications and Networking, and Emergency Telecommunications
- Robotics and Autonomous Systems
- Electronic Identification and Trust Services Including e-Signatures
- Accessibility of ICT Products and Services
- Artificial Intelligence, Big Data and Virtual Reality
- Cloud and Edge Computing
- Software and Programming Languages
- Internet of Things
- Quantum Technologies

- ▪ ILNAS/NSC 04 – Artificial Intelligence
- ▪ ISO/IEC JTC 1/SC 24 – Computer graphics, image processing and environmental data representation
- ▪ ISO/IEC JTC 1/SC 42 – Artificial Intelligence
- ▪ CEN/CLC JTC 21 – Artificial Intelligence
- ▪ ETSI/TC SAI – Securing Artificial Intelligence
- ▪ …

Also, some information on:

- ○ **ITU-T Study Groups**
- ○ **ETSI Industry Specification Groups**
- ○ **CEN/CENELEC Workshops**

SG	TITLE AND LINK	RELATED SUBSECTOR(S)
SG 2	Operational aspects	Telecommunications and Networking, and Emergency Telecommunication
SG 3	Economic & policy issues	
SG 5	Environment, EMF & circular economy	ICT Environmental Impact: Green ICT
SG 9	Broadband cable & TV	
SG 11	Protocols, testing & combating counterfeiting	Telecommunications and Networking, and Emergency Telecommunication
SG 12	Performance, QoS & QoE	
SG 13	Future networks	Cloud and Edge Computing Telecommunications and Networking, and Emergency Telecommunication
SG 15	Transport, access & home	Telecommunications and Networking, and Emergency Telecommunication
SG 16	Multimedia & digital technologies	
SG 17	Security	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy Protection
SG 20	IoT, smart cities & communities	Internet of Things

Table 1: ITU study groups

WS	TITLE AND LINK	RELATED SUBSECTOR(S)
CEN/CLC/WS DSO	Digital sovereignty	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection
CEN/CLC/WS SEP2	Industry Best Practices and an Industry Code of Conduct for Licensing of Standard Essential Patents in the field of 5G and Internet of Things	Internet of Things Telecommunications and Networking, and Emergency Telecommunication
CEN/CLC/WS AADSF	Age Appropriate Digital Services Framework	Accessibility of ICT Products and Services
CEN/CLC/WS INACHUS	Urban search and rescue (USaR) robotic platform technical and procedural interoperability	Robotics and Autonomous Systems
CEN/CLC/WS Monsoon	Predictive management of data intensive industrial processes	Artificial Intelligence and (Big) Data Digitisation of European Industry: Smart Manufacturing
CEN/CLC/WS SEP-IoT	Workshop on Best Practices and a Code of Conduct for Licensing Industry Standard Essential Patents in 5G and the Internet of Things (IoT), including the Industrial Internet	Internet of Things Telecommunications and Networking, and Emergency Telecommunication
CEN/CLC/WS ZONeSEC	Interoperability of security systems for the surveillance of widezones	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection
CEN/CLC/WS WiseGRID	Reference model for distribution application for microgrids	Smart Grids and Smart Metering, Efficient Energy Use
CEN/CLC/WS EFPFInterOp	European Connected Factory Platform for Agile Manufacturing Interoperability	Digitisation of European Industry: Smart Manufacturing
CEN/CLC/WS ZDMterm	Zero Defects in Digital Manufacturing Terminology	
CEN/WS Smart-CE-Marking	Smart CE marking for the construction industry	
CEN/WS TDT	Trusted Data Transaction	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection

Table 3: CEN and CEN/CLC Workshops (WS)

ISG	TITLE AND LINK	RELATED SUBSECTOR(S)
ARF	Augmented Reality Framework	Artificial Intelligence and (Big) Data
CDM	European Common information sharing environment service and Data Model	
CIM	Cross-cutting Context Information Management	Smart Cities and Communities, and Buildings
ENI	Experiential Networked Intelligence	Telecommunications and Networking, and Emergency Telecommunication
ETI	Encrypted Traffic integration	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection
F5G	5th Generation Fixed Network	Telecommunications and Networking, and Emergency Telecommunication
MEC	Multi-access Edge Computing	Internet of Things
mWT	Millimeter Wave transmission	Telecommunications and Networking, and Emergency Telecommunication
NFV	Network Functions Virtualisation	
NIN	Non-IP Networking	
OEU	Operational energy Efficiency for Users	ICT Environmental Impact: Green ICT
PDL	Permissioned Distributed Ledger	Blockchain and Distributed Ledger Technologies
QKD	Quantum Key Distribution	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection
RIS	Reconfigurable Intelligent Surfaces	Telecommunications and Networking, and Emergency Telecommunication
SAI	Securing Artificial Intelligence[11]	Artificial Intelligence and (Big) Data
THz	TeraHertz technology	Telecommunications and Networking, and Emergency Telecommunication
ZSM	Zero-touch network and Service Management	

Table 2: ETSI's Industry Specification Groups (ISG)

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Details on ILNAS and ANEC GIE products and services, related especially to ICT

- **Information dissemination**
  - Market meetings
  - News items in standardization
  - Standards watch service
- **Consulting and purchasing standards**
  - Reading stations
  - e-Shop
- **Getting involved in standards development**
  - Public enquiry commenting
  - Becoming a delegate in standardization
- **Research and education**
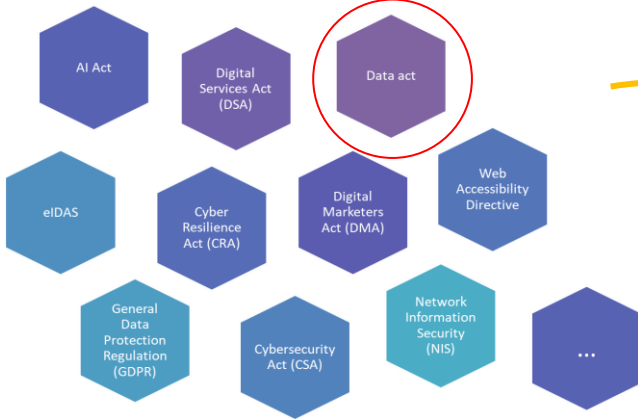 - White papers and technical reports
  - General and technical training sessions

Technical standardization
A support for complying with the EU regulatory ecosystem

A more and more complex EU regulatory ecosystem for the ICT sector

| 10 | EU Trusted Data Framework | Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance and amending Regulation (EU) 2018/1724 (Data Governance Act)

Regulation of the European Parliament and of the Council on harmonised rules on fair access to and use of data (Data Act) | A comprehensive set of standards, practices, and rules to ensure trusted, legally compliant data sharing across parties, including data intermediaries and altruism organizations. This encompasses data catalogue standards for publication and discovery of data assets, ontology standards for integration and use of shared data, and common KPIs to guide European data spaces towards cross-domain interoperability, enhancing transparency and usage. All actions will be coordinated closely with the European Data Innovation Board and, where relevant, the Data Spaces Support Centre. | Data producers and users encounter notable interoperability challenges when combining data from varied sources, both within and across sectors. Encouraging the adoption of standard, compatible formats and protocols for coherent data gathering and processing across sectors is vital, and can be promoted via the rolling plan for ICT standardisation and a fortified European Interoperability Framework. The primary goals are to enhance the Findability, Re-usability, and Interoperability of data—core tenets of the FAIR data principles—in bolstering the European Data Economy. Common European Data Spaces, supported by EU funding avenues like Horizon Europe and Digital Europe, each evolve at their unique pace. Ensuring interoperability across these spaces is essential, paving the way for generic tool development and aiding businesses active across multiple data realms. |

The 2024 annual EU work program for European standardization - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:C_202401364

CEN/CLC JTC 25
DATA MANAGEMENT, DATASPACES, CLOUD AND EDGE

GENERAL INFORMATION			
Creation date	2024	Secretariat	UNI (Italy)
Chairperson	Mr. Dipl.-Inf. Sebastian Steinbuß	Secretary	Ms. Helen Carnevale
Scope	Standardisation in the area of data management, dataspaces, cloud and edge, including: - data governance, data quality and data lifecycle management; - interoperability, portability and switch ability; - organizational frameworks and methodologies, including IT management systems; - processes and products evaluation schemes; - smart technology, objects, distributed computing devices, data services.		
Structure	WG 1 Advisory group WG 2 Dataspaces WG 3 Data management and governance WG 4 Cloud & Edge		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:3485479&cs=1EF27AE97B5DBDA9B990D3DAF8BD63366		
STANDARDIZATION WORK			
Published standards	0	Projects	0
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

Draft standardisation request as regards European Trusted Data Framework (05/11/2024) - https://ec.europa.eu/docsroom/documents/62854

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Technical standardization
A support for complying with the EU regulatory ecosystem

EU Directive / EU Regulation

Standardisation requests
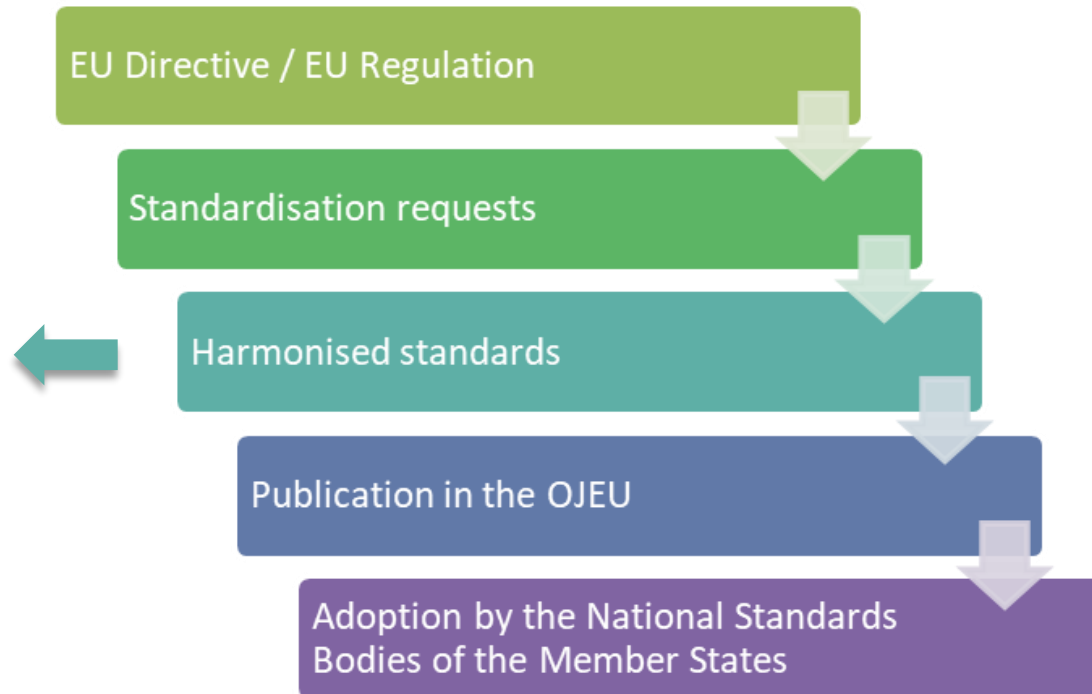
Can be used by manufacturers, other economic operators and conformity assessment bodies to demonstrate that their product, service or process complies with relevant EU legislation

Harmonised standards

Publication in the OJEU

Adoption by the National Standards Bodies of the Member States

Technical standardization
A support for complying with the EU regulatory ecosystem

CEN/CLC JTC 25 DATA MANAGEMENT, DATASPACES, CLOUD AND EDGE			
GENERAL INFORMATION			
Creation date	2024	Secretariat	UNI (Italy)
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Structure	WG 1 Advisory group WG 2 Dataspaces WG 3 Data management and governance WG 4 Cloud & Edge		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:3485479&cs=1E F27AE97B5DBDA9B990D3DAF8BD63366		
STANDARDIZATION WORK			
Published standards	0	Projects	0
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

The initial focus of the Committee's Work Programme is to support the standardization needs of EU regulations that are either already in place or under development, as part of the European Data Strategy. A key example is the harmonized standard on "interoperability" required by the EU Data Act to facilitate exchanges between different data spaces.

In particular, the following aspects will be addressed:
- Conceptional work, requirements and guidance on data management and dataspaces.
- Requirements and guidance on interoperability, portability and switchability;
- Terminology and concepts for cloud and edge;
- Adaptation of international standards for the applicability in the European context;
- Consider the outcomes of the CEN-CLC FG Data, Dataspaces, Cloud and Edge.

Participation of ILNAS to the JTC 3 Plenary Meeting (October 2024 - Edinburgh)

Ad-Hoc Groups	
ahG 2	Quantum terminology and metrics
ahG 3	Quantum Sensors (Sensing, Devices, and Imaging)
ahG 4	Quantum Communication
ahG 5	Quantum Computing and simulation
ahG 6	Quantum Random Number Generator (QRNG)
ahG 7	Quantum enabling technologies

Main takeaways:

✓ Strong competition between countries (regions) to impose their view on QT standardization

    ✓ EU focus is mainly on Quantum Communication

✓ First projects initiated (submitted to the vote of members)

    ✓ NP proposal on 'Quantum technologies – Terminology and quantities – General quantities'

    ✓ NP proposal on 'Quantum technologies – Terminology and quantities – General vocabulary'

ACCRÉDITATION

CONFIANCE NUMÉRIQUE

SURVEILLANCE DU MARCHÉ

MÉTROLOGIE

NORMALISATION

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