STANDARDS ANALYSIS

ICT SECTOR

LUXEMBOURG

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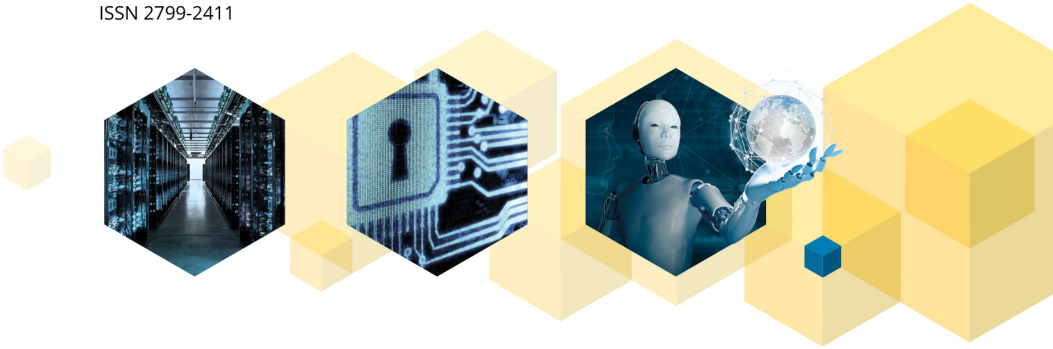

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ILNAS
Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services

ANEC
Agence pour la Normalisation et l'Economie de la Connaissance

FOREWORD

Technical standardization and standards play an important role in the support of economic development. Nowadays, almost every sector relies on standards to function day-to-day and provide services in an efficient manner. They can provide, for example, good practices for services and product development, governance, quality assessment, safety, trustworthiness, etc. Even if the application of standards remains voluntary, it yields a real advantage in creating added value to a product, service, or process. Standards are therefore considered a major source of benefits, and this is particularly true for Information and Communication Technology (ICT), which supports all other economic developments.

Indeed, the ICT sector has gained more and more importance in society as a whole in the few last decades, as evidenced for instance by the computerization of equipment in general, the advent of global connectivity, and more recently the emergence of smart paradigms such as the Internet of Things and Artificial Intelligence. We are probably only at the beginning of this transformation, wherein ICT domains fully converge. In this context, technical standardization plays a key role, for example to connect all ICT components, to make them interoperable and prevent vendor lock-in, to support the integration of multiple data sources or to provide the security and safety of the next digital world.

The Grand Duchy of Luxembourg has clearly understood the importance of the digital economy and has engaged since several years in an ambitious innovation strategy for the ICT sector, considering that the development of a trusted and sustainable economy will notably rely on a data-driven approach. The "*Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services*" (ILNAS) fully supports this development through the "Luxembourg Standardization Strategy 2024-2030", which identifies the ICT sector as key to fostering growth, along with the construction and aerospace sectors. In this context, ILNAS has developed the "Luxembourg's policy on ICT technical standardization 2022-2025", which aims to promote and strengthen the use of technical standards by the national market, to reinforce the positioning of Luxembourg in the global ICT standardization landscape, particularly through a stronger involvement of national stakeholders in the relevant standardization technical committees, and to pursue the development of research and education programs. In order to carry out this policy, ILNAS benefits notably from the support of the Economic Interest Group "*Agence pour la Normalisation et l'Économie de la Connaissance*" (ANEC GIE - Standardization Department).

In this frame, ILNAS is well involved in standardization education, as educational programs have been developed through a fruitful collaboration with the University of Luxembourg, the latest being the ongoing Master MTECH "Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions". This diploma allows national stakeholders to gain familiarity with Smart Secure ICT technologies, notably from the standardization and Technopreneurship points of view, to seize future business opportunities offered in this innovative area.

In parallel, ILNAS also has ongoing research activities, in particular in the ICT sector. Among the latest initiatives in this area is an ongoing research program between ILNAS and the Interdisciplinary Centre for Security, Reliability and Trust (SnT) of the University of Luxembourg entitled "Technical Standardization for Trustworthy ICT, Aerospace, and Construction (2021-2024)". It is exploring Digital Trust aspects of the three sectors, with ICT playing a horizontal role in the other two. The first results of this program were presented during the World Standards Day in Luxembourg in October 2023, with the publication of the White Paper "Trustworthiness in ICT, Aerospace, and Construction applications - Scientific Research and Technical Standardization". This was complemented, in October 2024, by the publication of the Technical Reports "Research-driven approach to standardization - ICT, Construction and Aerospace", presenting the progress of the research projects included in the research program.

On the other hand, ILNAS has published a series of White Papers and reports in order to inform the market about technical standardization developments in certain ICT sub-topics.

Within this global framework, this Standards Analysis "ICT Sector - Luxembourg" is intended to serve as a practical tool to discover the latest standardization developments in the overall landscape of ICT related technologies, from more seasoned topics such as software engineering and programming languages to more recent ones such as the Internet of Things, Cloud Computing, Artificial Intelligence or Quantum Computing. Therefore, the present document will allow national stakeholders to identify relevant standardization technical committees, with the ultimate objective to offer them guidance for a potential future involvement in the standards development process and allow them to discover the services provided by ILNAS at the national level regarding technical standardization.

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INTRODUCTION

The Information and Communication Technology (ICT) sector is a keystone of the global economy. Indeed, nowadays it provides pervasive support to all other sectors of activity. As systems become more and more digitized and intricate, the growth of the ICT sector is now driven by the ability of its multiple components to interoperate ("to talk to each other"). Standards can allow this interoperability between different products from different manufacturers, while offering solutions to ensure an adequate level of trustworthiness in their operation.

Luxembourg's economy benefits from a vibrant ICT ecosystem. It was composed of 3,068 companies in 2022 (6.8% of the total number of companies) [1] and represented 4.4% of the total employment at the second quarter of 2024[2]. ILNAS supports the economic development of the sector from the technical standardization perspective, through the implementation of the "Luxembourg Standardization Strategy 2024-2030" and the execution of the "Luxembourg's policy on ICT technical standardization 2022-2025". The institute undertakes multiple activities in order to develop a network of experts, support the transfer of knowledge and education about ICT standardization to national stakeholders, and strengthen their participation in related technical committees[3].

In addition, current developments of ILNAS are in line with the European standardisation strategy published in 2022 by the European Commission (EC), with the aim to further strengthen the European competitiveness and resilience. Indeed, the European Union intends to reinforce its role as a global standards-setter to ensure a resilient, green and digital Single Market and standards directly support European legislation, such as Cybersecurity Act, Data governance Act, Digital services Act. Within this framework, the EC also publishes each year, a Rolling Plan for ICT Standardisation, which provides a unique bridge between EU policies and ICT standardization activities. Upon consultation and dialogue across multiple stakeholders, it specifies the priority topics in ICT, overviews policies, legislation and standardization activities for each topic and identifies the challenges that can be tackled through different actions, including the standardization.

In this context, the current version of the Standards Analysis "ICT Sector - Luxembourg" reflects the main standardization activities of recognized Standards Development Organizations (SDOs) within the ICT landscape, taking into consideration the topics identified in the 2024 version of the Rolling Plan for ICT Standardisation. This analysis serves as a practical tool dedicated to national organizations, allowing them to identify technical standardization activities supporting their business. It provides a panoramic view of the technical committees working in the domain, so that national stakeholders, whether providers or users of ICT, can easily identify standards and committees relevant to their core business and needs.

This Standards Analysis is organized as follows:

- Chapter 1 outlines the objectives of technical standardization and introduces its landscape at the international, European and national levels.
- Chapter 2 proposes a description of the categorization of the ICT sector used in this Standards Analysis (ICT subsectors) to present the standardization technical committees identified.
- Chapter 3 constitutes the heart of the Standards Analysis. It provides an overview of the ICT standardization technical committees, spread out according to the categories from Chapter 2. Each technical committee is presented using a table (ID-card), which details the most relevant

[1] Source: LUSTAT - (DF_D1300) Population of active enterprises by branch (NACE Rev. 2) (number, relative shares, evolution)

[2] Source: LUSTAT - Domestic payroll employment by activity

[3] Note: In this report, the term "standardization technical committee" is generic and covers "technical committees", "subcommittees", "working groups", etc.

information about its activities and allows national stakeholders to easily determine their relevance in regard to their business.

- Chapter 4 presents opportunities related to standardization for national stakeholders. It also introduces the way ILNAS supports the national economy through technical standardization.

1 TECHNICAL STANDARDIZATION AND STANDARDS

Standardization corresponds to the definition of voluntary technical or quality specifications with which current or future products, production processes or services may comply. Standardization is organized by and for all relevant interested parties based on national representation (CEN, CENELEC, ISO and IEC) and direct participation (ETSI and ITU-T), and is founded on the principles recognized by the World Trade Organization (WTO) in the field of standardization (see Section 1.1).

Technical standards provide an effective economic tool for achieving various objectives, such as mutual understanding, reduction of costs, elimination of waste, improvement of efficiency, achievement of compatibility between products and components or access to knowledge about technologies[4]. The application of the fundamental principles stated by the WTO throughout the development of technical standards also guarantees the legitimacy of these documents.

In addition, technical standards play an important role for innovation. As pointed out by the European Commission (EC) in its communication on ICT Standardisation Priorities for the Digital Single Market: "*They guarantee that technologies work smoothly and reliably together, provide economies of scale, foster research and innovation and keep markets open*". It is all the more relevant in the current context, in which the world tends to become digitized, and everything becomes connected. Technical standardization is thus a keystone to ensure interoperability of complex ICT systems, thereby minimizing the barriers that may still exist to build the future of the digital world.

Finally, as stated in "An EU Strategy on Standardisation - Setting global standards in support of a resilient, green and digital EU single market", technical standardization is a core component in the EU's competitiveness not just at the European level, but at the international one as well.

1.1 Standardization Objectives and Principles

According to Regulation (EU) N°1025/2012, standardization is based on founding principles defined by the World Trade Organization, which are observed by the formal standards bodies for the development of international standards:

Transparency
All essential information regarding current work programs, as well as on proposals for standards, guides and recommendations under consideration and on the results should be made easily accessible to all interested parties.

Openness
Membership of an international standards body should be open on a non-discriminatory basis to relevant bodies.

Impartiality and Consensus
All relevant bodies should be provided with meaningful opportunities to contribute to the elaboration of an international standard so that the standard development process will not give privilege to, or favor the interests of, a particular supplier, country or region. Consensus procedures should be established that seek to take into account the views of all parties concerned and to reconcile any conflicting arguments.

[4] CEN-CENELEC, "Standards and your business," 2013

Effectiveness and Relevance

International standards need to be relevant and to effectively respond to regulatory and market needs, as well as scientific and technological developments in various countries. They should not distort the global market, have adverse effects on fair competition, or stifle innovation and technological development. In addition, they should not give preference to the characteristics or requirements of specific countries or regions when different needs or interests exist in other countries or regions. Whenever possible, international standards should be performance based rather than based on design or descriptive characteristics.

Coherence

In order to avoid the development of conflicting international standards, it is important that international standards bodies avoid duplication of, or overlap with, the work of other international standards bodies. In this respect, cooperation and coordination with other relevant international bodies is essential.

Development dimension

Constraints on developing countries, in particular, to effectively participate in standards development, should be taken into consideration in the standards development process. Tangible ways of facilitating developing countries participation in international standards development should be sought.

Standardization is an efficient economic tool offering the possibility to pursue various objectives, such as:

- Management of diversity;
- Convenience of use;
- Performance, quality and reliability;
- Health and safety;
- Compatibility;
- Interchangeability;
- Security;
- Trustworthiness;
- Environmental protection;
- Product protection;
- Mutual understanding;
- Economic performance;
- Trade;
- Etc.

1.2 Standardization Landscape

Regulation (EU) No 1025/2012 recognized:

- Three European Standardization Organizations (ESO):
  - European Committee for Standardization (CEN),
  - European Committee for Electrotechnical Standardization (CENELEC),
  - European Telecommunications Standards Institute (ETSI);
- Three international standardization organizations:
  - International Organization for Standardization (ISO),
  - International Electrotechnical Commission (IEC),
  - International Telecommunication Union's Telecommunication Standardization Sector (ITU-T).

Within this framework, each organization has its own scope of work:

- CENELEC and IEC are specialized in electrotechnical standards.
- ETSI and ITU-T are focused on telecommunications standards.
- CEN and ISO are in charge of the standards in other sectors.

At the national level, one or several national standards bodies serve the interests of the country within each of the European and international standardization organizations (e.g.: in Germany, on the one

hand DIN is the member of ISO and CEN, and on the other hand DKE is member of IEC, CENELEC and ETSI). In Luxembourg, ILNAS – the only official national standards body – is a member of the European and international standardization organizations CEN, CENELEC, ETSI, ISO, IEC and ITU-T.

The role of the national standards bodies has been reinforced by Regulation (EU) 2022/2480 (amending Regulation (EU) N°1025/2012), putting the decisions concerning Standardisation requests, European standards and European standardization deliverables exclusively in the hands of national standards bodies from the Member States of the European Union.

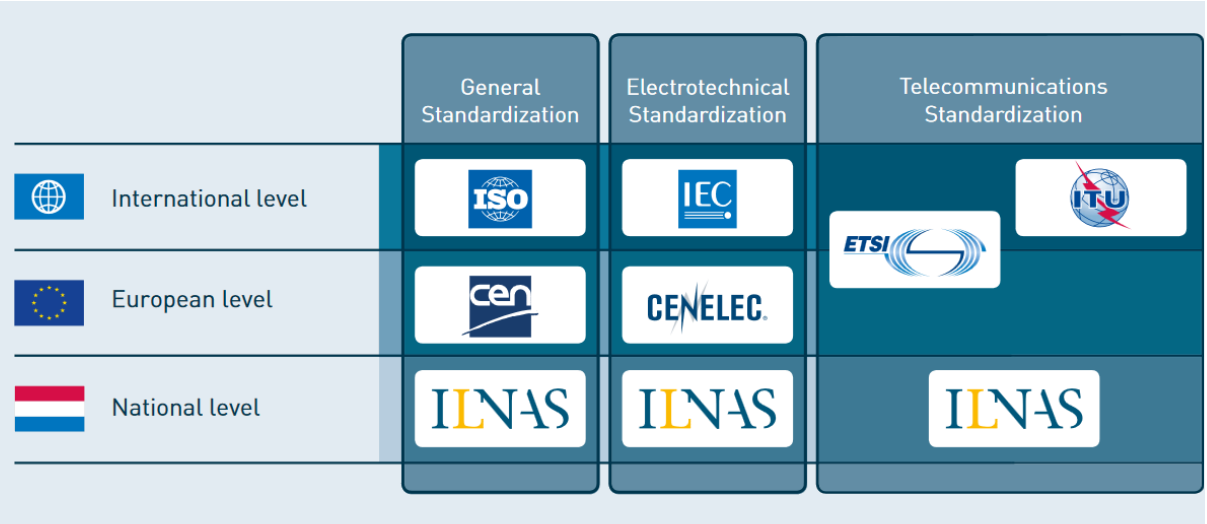

Figure 1: Interactions between the Standardization Organizations

Collaboration is another important aspect of standardization. Several bridges exist between the national, European and international standardization organizations in order to facilitate the coordination of standardization work in the different fields.

Indeed, to ensure transparency in the work, prevent standards duplication, and avoid conflicting requirements, agreements have been established between international and European standardization organizations.

In 1991, ISO and CEN signed the Vienna Agreement, which is based on the following guiding principles:

- Primacy of international standards and adoption of ISO Standards at the European level (EN ISO).
- Development of the standards at the European level (CEN), if there is no interest at the international level (ISO).
- When there is a common interest at ISO and CEN levels, a given project undergoes parallel development, with procedures in place to ensure the approval of standardization documents by both organizations.

Similarly, CENELEC and IEC signed the Dresden Agreement in 1996 with the aim of developing intensive consultations in the electrotechnical field. This agreement was superseded by the Frankfurt Agreement in 2016 with the aim to simplify the parallel voting processes, and increase the traceability of international standards adopted in Europe thanks to a new referencing system. It is intended to achieve the following guiding principles:

- Development of all new standardization projects by IEC (as much as possible).
- Work at the European level (CENELEC) if there is no interest at the international level (IEC).
- When a given project undergoes parallel development, ballots for relevant standardization documents are organized simultaneously by both organizations (IEC and CENELEC).

Under both agreements, 35% of all European standards ratified by CEN, as well as 74.5% of those ratified by CENELEC, are respectively identical to ISO or IEC standards[5]. In that respect, the European and international organizations do not duplicate work.

Similarly, ITU-T and ETSI have agreed on a Memorandum of Understanding (MoU) in 2000, lastly renewed in 2016, that paves the way for European regional standards, developed by ETSI, to be recognized internationally.

Agreements also exist between the standards organizations to facilitate their cooperation. For example, ISO and IEC have the possibility to sign conventions to create a Joint Technical Committee (JTC) or a Joint Project Committee (JPC) when an area of work overlaps the two organizations (e.g.: ISO/IEC JTC 1 for Information Technology or ISO/IEC JTC 3 for Quantum Technologies). Similarly, CEN and CENELEC have the possibility to create a JTC in areas covering the expertise of both organizations, such as in the ICT domain (e.g.: CEN/CLC/JTC 13 for Cybersecurity and Data Protection or CEN/CLC/JTC 21 for Artificial Intelligence).

ISO, IEC and ITU have also established the World Standards Cooperation (WSC) in 2001, a high-level collaboration system intending to strengthen and advance the voluntary consensus-based international standards system and to resolve issues related to the technical cooperation between the three organizations. Similarly, a cooperation agreement has been established between CEN, CENELEC and ETSI in order to facilitate cooperation and collaboration between the three ESOs, and to share their expertise of standards-making, particularly in the light of new technologies, mandated work and areas of common interest.

ISO and IEC Standardization Committees

ISO is the world's dominant developer and publisher of International Standards in terms of scope. It has over 25,000 standards published (21.2 % for the sole 'Information technology, graphics and photography' technical sector) and more than 4,000 standards under development[6]. ISO is in charge of developing International Standards for all industry sectors.

IEC prepares and publishes International Standards for all electrical, electronic and related technologies – collectively known as "electrotechnology".

To prevent an overlap in standardization work related to information technology, ISO and IEC formed a Joint Technical Committee in 1987 known as ISO/IEC JTC 1 *Information technology*. It has taken a leading role in ICT standardization in the last few years with the creation of working groups and technical subcommittees directly responsible for the development of ICT International Standards.

CEN and CENELEC Standardization Committees

CEN and CENELEC are two official European Standards Organizations (ESOs) closely collaborating through a common CEN-CENELEC Management Centre since 2010. They are notably in charge of developing ICT standards at the European level. Even if most of the ICT-related topics are being tackled at the international level by ISO/IEC JTC 1, complying with the "Vienna Agreement" set up between CEN and ISO, as detailed above, CEN and CENELEC have technical committees and additional other groups active in different areas of the ICT sector directly under their supervision.

The standardization activities of CEN and CENELEC are detailed in an annual common Work Program. They are active in several ICT-related areas covering both digital and smart society: e-Signatures, Intelligent Transport Systems, Smart Grids, Smart Metering, Internet of Things, Smart Homes, Smart Cities, Advanced Manufacturing, Artificial Intelligence, Blockchain and Distributed Ledger Technologies, Cybersecurity and Data Protection, Digital twin, Quantum technologies, etc.

[5] CEN CENELEC in figures – 2024 Q3
[6] ISO in figures

ETSI - European Telecommunications Standards Institute

ETSI is a leading standardization organization for ICT standards fulfilling European and global market needs. The European Union officially recognizes ETSI as an ESO. ETSI is active in ten ICT "sectors", regrouping a number of technical committees and covering a wide range of technologies, namely: Home and Office, Better living with ICT, Content Delivery, Networks, Wireless Systems, Transportation, Connecting Things, Interoperability, Public Safety and Security. The standardization activities of ETSI are detailed in an annual Work Program, whose last edition is covering the period 2023/2024.

ITU-T - International Telecommunication Union - Telecommunication Standardization Sector

The International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) is an "intergovernmental public-private partnership organization" which brings together experts from around the world to develop international standards known as ITU-T Recommendations, which cover defining elements in the global infrastructure of ICT. It is currently composed of 10 Study Groups working on different aspects of ICT.

1.3 National Actors

1.3.1 ILNAS - The National Standards Body

ILNAS (*Institut luxembourgeois de la normalisation, de l'accréditation, de la sécurité et qualité des produits et services*) is a public administration under the authority of the Minister of the Economy, SME, Energy and Tourism of the Grand Duchy of Luxembourg. Founded in 2008, ILNAS represents a network of competencies relating to quality, safety and conformity of products and services (see Figure 2), and its mission is to support national competitiveness. One of ILNAS' missions is to promote technical standardization. As such, it is the Grand Duchy's National Standards Body. ILNAS organizes its standardization work according to the Luxembourg Standardization Strategy 2024-2030, and associated ICT, Construction, Aerospace, CASCO and Sustainable Development national technical standardization policies.

Figure 2: The departments of ILNAS

Overall, the objectives are to make standards available to the national market, raise awareness on the use of technical standards, promote active participation in the development and publication of standards drafts, enhance Luxembourg's international visibility in standardization, and develop strong links between standardization, scientific research and education.

1.3.2 ANEC GIE

ANEC GIE (*Agence pour la normalisation et l'économie de la connaissance)* is an economic interest group whose partners are the ministry of the Economy, the Chamber of Skilled Trades and Crafts and the Chamber of Commerce. One of its main roles is to support ILNAS in its standardization missions. In particular, it implements the Policy on ICT Technical Standardization (2022-2025). In practice, this entails pursuing the following activities:

- Regularly informing the national market of the latest technical standardization developments.
- Actively promoting the use of standards and the benefits of participating in the standards development process.
- Animating trainings on technical standardization in relation to technologies of interest.
- Participating in national mirror committees for certain international technical committees.
- Supporting ILNAS in the production of national deliverables, such as white papers, national technical standardization reports, topic-specific standards' analyses, etc.
- Supporting ILNAS in its efforts to strengthen the ties between technical standardization, scientific research, education, and innovation, namely through research programs between ILNAS and the University of Luxembourg, and participation in the MTECH Master's degree (Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions).

2 ICT SUBSECTORS DEFINITION

This section defines the subsectors of ICT used to classify the technical standardization committees that are included in this Standards Analysis. Twenty subsectors are listed, in connection with European and national standardization policy objectives for the ICT sector as well as main potential areas of interest of the national stakeholders. For the sake of alignment with the standardization priorities of the European Union in support of the digital single market, this classification is inspired by the European Commission's Rolling Plan for ICT standardisation.

Indeed, the Rolling Plan (RP) is drafted by the European Commission in collaboration with the European Multi-Stakeholder Platform (MSP) on ICT Standardisation, in which ILNAS is the representative of Luxembourg. It is updated annually and lists all the topics identified as EU policy priorities where standardization, standards, or ICT technical specifications ought to play a key role in the implementation of the policy.

How these subsectors relate to the five major thematic areas identified in the RP is indicated. However, note that the mapping is not absolutely identical. This is mainly due to the fact that in the RP, technical committees may appear in multiple thematic areas, whereas they only appear once in the classification of this Standards Analysis.

KEY RP THEME	SUBSECTOR	DESCRIPTION
FOUNDATIONAL DRIVERS	**Data Economy**	The data economy is an ecosystem in which data is gathered, organized and exchanged by socio-economic actors in order to derive value from the gathered information. A variety of sources including sensors, social media, search engines, Internet of Things (IoT) devices can act as providers of data, which is then further stored in data centers (or in clouds) and made available for individuals or businesses to access for their benefit.
	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy Protection	Trust is essential in ICT and it is transversal to the sector in almost any aspect of hardware and software, ranging from consumer devices and equipment to service providers and data protection. Digital Trust in ICT has to deal not only with purely technical problems but also with social aspects and constraints that have to be addressed in a technical manner. Subtopics that are covered in this subsector include cybersecurity, information and network security, trustworthiness and privacy protection.
	Governance of IT	Corporate governance involves a set of relationships between a company's management, its board, its shareholders, and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined. The governance of IT is thus a component or a subset of organization governance, which is one key element in improving economic efficiency and growth as well as enhancing investors' confidence. Governance of IT can be defined as the system by which the current and future use of IT is directed and controlled.

KEY RP THEME	SUBSECTOR	DESCRIPTION
KEY ENABLERS	**Telecommunications and Networking, and Emergency Telecommunications**	Telecommunications refers to the theory and techniques of the transmission of signals by electromagnetic or electronic means. The telecommunications and networking subsector covers any transmission, emission or reception of signs, signals, writing, images, and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems. Emergency telecommunications consider the specificity of data, video and text communications in the context of emergency situations and the raising of alerts. With the growing need of high-speed connectivity, lower latency, cheaper cost, and network optimization across businesses, the telecommunications sector demands the use of new concepts, for example, a new generation of mobile communications or Automatic identification and data capture techniques (such as RFID).
	Cloud and Edge Computing	Cloud Computing is an IT paradigm that enables ubiquitous access to shared pools of services and system resources, which can be rapidly provisioned with minimal management effort over the Internet. Cloud Computing has enabled considerable new potential and changed the way business processes are addressed. It also permits new kinds of technologies to emerge. For example, it can provide the power necessary to store and process large volumes of data (Big Data analytics), as well as the connectivity and management infrastructure for the Internet of Things. The emergence of IoT and 5G has raised the need to reduce latency for easy and fast communication between devices. Edge computing is a method of optimizing Cloud Computing systems by performing analytics at or near the data source. It consists of reducing the communication bandwidth required between the sensors and the central data center. This approach leverages resources that might not be continually needed to be connected to a network such as smartphones, laptops, tablets, and sensors.
	Internet of Things	The Internet of Things (IoT) refers to an emerging paradigm consisting of a continuum of uniquely addressable things communicating with each other to form worldwide dynamic networks. It could be also represented as a network of uniquely identifiable connected devices such as objects, devices, sensors, and everyday items with computing services, which describes a world where anything can be connected and can interact in an intelligent fashion. Many services can be envisioned as a result of many objects playing an active role thanks to their connection to the Internet: real-time traffic updates, building automation and controls, automatic energy management, intelligent shopping applications, vehicle auto-diagnosis, assistance for elderly or disabled people to help them living independently, etc. The IoT is highly interrelated to other ICT areas like Sensor Networks or Machine-to-Machine (M2M) communications.

KEY RP THEME	SUBSECTOR	DESCRIPTION
KEY ENABLERS	**Electronic Identification and Trust Services, Including e-Signatures**	In an ever-more connected world, the reliance on digital services is naturally taking a larger and larger part in daily life. Thus, techniques need to be developed and improved to design and implement secure and efficient means of electronic identification of entities, be these organizations, objects or individuals. An appropriate level of security must also be endowed to the binding of a real-world identity to its digital representation, depending on the criticality of the services accessed.
	Accessibility of ICT Products and Services	Accessibility is a quality of being easy to approach, use, and understand. A lack of accessibility may lead to a certain degree of marginalization of some categories of users. Standard guidance can increase the quality of the interaction between systems (often computer-based) and the people who use and operate them. With respect to digital tools, improving accessibility can translate into hardware ergonomics, software ergonomics, human-centered design and appropriate user-system interfaces.
	Artificial Intelligence, Big Data and Virtual Reality	Artificial Intelligence (AI) refers to the ability of a computer or a computer-enabled robotic system to process information and produce outcomes in a manner similar to the thought process of humans in learning, decision-making, and problem-solving. AI can be understood as a set of techniques aimed at approximating some aspects of human or animal cognition using machines. Big Data can be defined as technologies and techniques that a company can employ to analyze large-scale, complex data for various applications intended to augment performance in various dimensions. It is defined in ISO/IEC 20546:2019 *Information technology -- Big data -- Overview and vocabulary* as "*Data set(s) with characteristics (e.g. volume, velocity, variety, variability, veracity, etc.) that for a particular problem domain at a given point in time cannot be efficiently processed using current/existing/established/traditional technologies and techniques in order to extract value*".
	Software and Programming Languages	A program is a set of instructions that help a machine or computer to function automatically and software is a set of programs combined to execute a specific task. Users can choose specific programming languages and software; they are now ubiquitous and extremely important elements in almost any technology-based system. This subsector covers guidelines of commonly accepted processes and supporting tools for the engineering of software products or systems.
	Quantum Technologies	Quantum information technology leverages the principles of quantum mechanics to process, store, and transmit information. It encompasses several subfields, such as quantum computing, quantum simulation, quantum key distribution, quantum cryptography, and quantum communication, all of which have significant potential for solving some of the most challenging problems in science and technology.

KEY RP THEME	SUBSECTOR	DESCRIPTION
SOCIETAL CHALLENGES	**E-Health, Healthy Living and Aging**	E-Health refers to the combined use of electronic communication and information technology in the health sector to enable better health and healthcare. It comprises technologies and guidelines in the field of health informatics, to facilitate capture, interchange, and use of health-related data, information, and knowledge, to support and enable all aspects of an overall healthcare system. Similarly, new technologies can be used to support the healthy mode of living (e.g.: personal health monitoring applications) and/or improve the living conditions of the elderly and people with disabilities.
	Education, Digital Skills, and Digital Learning	This subsector includes accepted methods and guidelines in the field of information technologies for learning, education, and training to support individuals, groups, or organizations, and to enable interoperability and reusability of resources and tools as well as to define a common language for professional digital and ICT competences, skills and knowledge applied across domains.
INNOVATION FOR THE DIGITAL SINGLE MARKET	**Fintech**	Fintech, or Financial Technologies, are essentially ICT techniques as applied to the world of finance. It is currently a topic at the top of the agenda in Luxembourg since Fintech are foreseen to rethink the traditional financial sector by exploiting the potential of new technologies.
	Blockchain and Distributed Ledger Technologies	A blockchain is a distributed and shared digital ledger that records all transactions that take place in a nearly-immutable, trust-spreading way. The ledger is decentralized in the sense that the database is replicated across many participants/nodes in the network, who collaborate via a consensus mechanism to create, make evolve and to keep track of records. Blockchains, and more generally distributed ledger technologies, are being considered nowadays to provide decentralized trust in many different fields, such as digital currencies, supply chains, and others.
SUSTAINABLE GROWTH	**Smart Grids and Smart Metering, Efficient Energy Use**	ICT is increasingly used in the energy domain in order to automate and optimize the production and distribution of energy, allowing on one hand to better synchronize the demand and supply between consumers and producers and on the other hand to improve the stability and availability of energy. The primary objective of this subsector is to manage energy production and distribution efficiently. It notably covers the design and operation of smart meters and smart grids.
	ICT Environmental Impact: Green ICT	It is a recognized fact that "*ICT is currently one of the fastest growing greenhouse gas-emitting and energy management sectors*"[7]. Green ICT focuses on the ability to reduce the environmental impact of IT (hardware and software) throughout its life cycle, for instance addressing waste associated with the use of hardware and software and energy consumption. It also involves the development and use of information systems that reduce the environmental impact (e.g.: energy savings) of products and services that require IT.

[7] Rolling Plan for ICT standardisation 2024 - ICT Environmental Impact

KEY RP THEME	SUBSECTOR	DESCRIPTION
SUSTAINABLE GROWTH	**Smart Cities and Communities**	A smart city refers to a "*community infrastructure with enhanced technological performance that is designed, operated, and maintained to contribute to sustainable development and resilience of the community*"[8]. It has many dimensions and encompasses many economic sectors and technologies. Different dimensions are proposed for a smart city (e.g.: smart economy, smart mobility, smart environment, smart buildings, smart people, etc.). In this frame, one can consider a smart city as a system of systems, meaning it is a complex construct that requires the development of many other technologies (e.g.: Internet of Things, Big Data, Intelligent Transport Systems, etc.).
	Intelligent Transport Systems	Intelligent Transport Systems (ITS) are "*transport systems in which advanced information, communication, sensor, and control technologies, including the Internet, are applied to increase safety, sustainability, efficiency, and comfort*"[9]. This subsector can significantly contribute to cleaner, safer, and more efficient transport systems. The most significant benefits from ITS are: minimizing the impact of traffic on the environment, improving energy efficiency and decreasing dependency on fossil fuels; reducing congestion and optimizing the use of existing infrastructure; encouraging the use of environment-friendly transport modes; improving traffic safety and security; increasing convenience of transport[10].
	Digitization of European Industry: Smart Manufacturing	The use of digital technologies to transform business has been among top priorities set by the European Commission for 2019-2024 period. European Industry and manufacturing have been considered as important application areas for digitalization. Smart Manufacturing aims at creating smart systems using modernization trends in the manufacturing environment. It corresponds to the use of smart ICT systems to transform the manufacturing environment, intending to maximize energy efficiency and productivity. Touching upon many technologies, it is an umbrella subsector which includes additive manufacturing (3D printing), automation processes and remote control of physical devices in the industrial context.
	Robotics and Autonomous Systems	"*Robotics is the science and practice of designing, manufacturing, and applying robots, which are programmed actuated mechanism with a degree of autonomy to perform locomotion, manipulation or positioning*"[11]. Other examples of autonomous systems include autonomous vehicles and UAVs (unmanned aerial vehicles). With the increasing role of AI, more and more objects and processes gain some level of autonomy. Since robots and other autonomous systems operate in environments that often include human presence, an important place is dedicated to the standardization of their safety.

[8] ISO/TS 37151:2015, Smart community infrastructures -- Principles and requirements for performance metrics

[9] ISO 17465-1:2014, Intelligent transport systems -- Cooperative ITS -- Part 1: Terms and definitions

[10] CEN/TC 278 website

[11] Based on the definitions provided in ISO 8373:2021, Robotics — Vocabulary

3 ICT SECTOR STANDARDS WATCH

The objective of this Standards Analysis "ICT Sector Luxembourg" is to facilitate the involvement the national stakeholders in the technical standardization process. To achieve this goal, this chapter regroups, according to the classification proposed in Chapter 2, the different relevant ICT technical standardization committees. This chapter mainly focuses on ISO, IEC, CEN, CENELEC, and ETSI.

3.1 Data Economy

ISO/IEC JTC 1/SC 2 CODED CHARACTER SETS			
GENERAL INFORMATION			
Creation date	1987	**Secretariat**	JISC (Japan)
Chairperson	Mr. Masaru Takechi	**Committee Manager**	Ms. Ayuko Nagasawa
Scope	Standardization of graphic character sets and their characteristics, including string ordering, associated control functions, their coded representation for information interchange and code extension techniques. Excluded: audio and picture coding.		
Structure	WG 2 Universal coded character set		
Webpage	https://www.iso.org/committee/45050.html		
STANDARDIZATION WORK			
Published standards	49	**Projects**	3
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	23 participating members		
O-Members	27 observing members		
Luxembourg's involvement	NO (no registered delegate)		

ISO/IEC JTC 1/SC 23 DIGITALLY RECORDED MEDIA FOR INFORMATION INTERCHANGE AND STORAGE			
GENERAL INFORMATION			
Creation date	1987	**Secretariat**	JISC (Japan)
Chairperson	Mr. Shoji Taniguchi	**Committee Manager**	Ms. Ayuko Nagasawa
Scope	Standardization in the field of removable digital storage media utilizing optical, holographic and magnetic recording technologies, and flash memory technologies for digital information interchange, including: - algorithms for the lossless compression of data; - volume and file structure; - methods for determining the life expectancy of digital storage media; - methods for error monitoring of digital storage media.		
Structure	-		
Webpage	https://www.iso.org/committee/45240.html		
STANDARDIZATION WORK			
Published standards	84	**Projects**	0
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	7 participating members		
O-Members	20 observing members		
Luxembourg's involvement	NO (no registered delegate)		

ISO/IEC JTC 1/SC 31 AUTOMATIC IDENTIFICATION AND DATA CAPTURE TECHNIQUES			
GENERAL INFORMATION			
Creation date	1996	**Secretariat**	ANSI (United States)
Chairperson	Mr. Henri Barthel	**Committee Manager**	Mr. Eddy Merrill
Scope	Standardization of data formats, data syntax, data structures, data encoding, and technologies for the process of automatic identification and data capture and of associated devices utilized in inter-industry applications and international business interchanges and for mobile applications.		
Structure	WG 1 Data carrier WG 2 Data and structure WG 4 Radio communications WG 8 Application of AIDC standards		
Webpage	https://www.iso.org/committee/45332.html		
STANDARDIZATION WORK			
Published standards	135	**Projects**	28
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	25 participating members (including **Luxembourg**)		
O-Members	26 observing members		
Luxembourg's involvement	**5 national delegates**		

ISO/IEC JTC 1/SC 32 DATA MANAGEMENT AND INTERCHANGE			
GENERAL INFORMATION			
Creation date	1997	**Secretariat**	ANSI (United States)
Chairperson	Mr. Karl Schendel	**Committee Manager**	Mr. Bill Ash
Scope	Standards for data management within and among local and distributed information systems environments. SC 32 provides enabling technologies to promote harmonization of data management facilities across sector-specific areas. Specifically, SC 32 standards include: - Reference models and frameworks for the coordination of existing and emerging standards; - Definition of data domains, data types and data structures, and their associated semantics; - Languages, services and protocols for persistent storage, concurrent access, concurrent update and interchange of data; - Methods, languages, services, and protocols to structure, organize, and register metadata and other information resources associated with sharing and interoperability, including electronic commerce.		
Structure	WG 1 eBusiness WG 2 MetaData WG 3 Database language WG 6 Data usage		
Webpage	https://www.iso.org/committee/45342.html		
STANDARDIZATION WORK			
Published standards	110	**Projects**	19
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	17 participating members		
O-Members	25 observing members (including **Luxembourg**)		
Luxembourg's involvement	**4 national delegates**		

ISO/IEC JTC 1/SC 34 DOCUMENT DESCRIPTION AND PROCESSING LANGUAGES			
GENERAL INFORMATION			
Creation date	1998	**Secretariat**	JISC (Japan)
Chairperson	Mr. Francis Cave	**Committee Manager**	Ms. Ayuko Nagasawa
Scope	Standardization in the field of document structures, languages and related facilities for the description and processing of compound and hypermedia documents, including: - languages for describing document logical structures and their support facilities; - languages for describing document-like objects in web environments facilities; - document processing architecture and formatting for logical documents facilities; - languages for describing interactive documents facilities; - multilingual font information interchange and related services facilities; - final-form document architecture and page information interchange facilities; - hypermedia document structuring language and application resources facilities; - API's for document processing.		
Structure	JWG 7 Joint JTC 1/SC 34 – TC 46/SC 4/WG: EPUB WG 4 Office Open XML WG 6 OpenDocument Format WG 9 Document semantics support WG 10 Schematron		
Webpage	https://www.iso.org/committee/45374.html		
STANDARDIZATION WORK			
Published standards	76	**Projects**	5
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	13 participating members		
O-Members	39 observing members		
Luxembourg's involvement	NO (no registered delegate)		

ISO/TC 46/SC 11 ARCHIVES/RECORDS MANAGEMENT			
GENERAL INFORMATION			
Creation date	1998	**Secretariat**	SA (Australia)
Chairperson	Ms. Michelle Tolliday	**Committee Manager**	Mr. Saim Riaz
Description	Standardization of principles for the creation and management of documents, records and archives as evidence of transactions and covering all media including digital multimedia and paper.		
Structure	AG 1 Strategic decisions AHG 7 Records management AHG 9 Digital preservation JWG 1 Joint ISO/TC 46/SC 11 - ISO/TC 307 WG: Blockchain WG 1 Metadata WG 8 Management systems for records WG 20 Records management capability assessment model WG 21 Disposition WG 22 Records management and AI **Joint working groups under the responsibility of another committee:** ISO/CASCO/JWG 60 Joint ISO/CASCO - ISO/TC 46/SC 11 WG: Development of ISO/IEC TS 17021-14 ISO/TC 42/JWG 26 Joint ISO/TC 42-TC 46/SC 11-TC 171 WG: Imaging system capability qualification for archival recording and approval ISO/TC 171/SC 2/WG 5 Joint TC 171/SC 2-TC 42-TC 46/SC 11-TC 130 WG: Document management applications-Application issues - PDF/A		

Webpage	https://www.iso.org/committee/48856.html		
STANDARDIZATION WORK			
Published standards	22	**Projects**	6
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	35 participating members		
O-Members	17 observing members (including **Luxembourg**)		
Luxembourg's involvement	**5 national delegates**		

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)		

CEN/TC 468 **PRESERVATION OF DIGITAL INFORMATION**	

GENERAL INFORMATION			
Creation date	2020	**Secretariat**	AFNOR (France)
Chairperson	Ms. Séverine Denys	**Secretary**	Ms. Anna Medan
Scope	Standardization of the functional and technical aspects of the preservation of digital information. In this field, the committee will develop a structured set of standards, specifications and reports, addressing business requirements, including compliance with the European legislative and regulatory framework (e.g. GDPR, eidos). This includes the following issues: - Maintenance of characteristics (integrity, authenticity, reliability, usability etc.) of digital information during its life cycle; - Design, implementation and management of preservation systems processes (availability, confidentiality, etc.); - Audit and quality control procedures for the preservation of digital information; - Interoperability and information exchange between systems and services; - Procedures and processes supporting legal admissibility. The committee will not develop any document that overlaps or substitutes published international or European standards, such as those developed by ISO/TC 46, ISO/TC 171, ISO/TC 20/SC 13, and ETSI. It will liaise with these committees to avoid any overlapping in the future.		

	Products in the scope of CEN/TC 457 “Digital preservation of cinematographic works” are excluded from the scope.		
Structure	WG 1 General concepts for preservation of digital information		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2878378&cs=16FD02B1BC3FC316038CE4FFC2E0C3888		
STANDARDIZATION WORK			
Published standards	0	**Projects**	2
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg’s involvement	**3 national delegates**		

3.2 Digital Trust: Cybersecurity, Network and Information Security, Trustworthiness, and Privacy Protection

ILNAS/NSC 01 CYBERSECURITY			
GENERAL INFORMATION			
Creation date	2021	**Secretariat**	ILNAS
Chairperson	Mr. Carlo Harpes (Chair) Mr. Johann Amsenga (Vice-Chair)	**Secretary**	N/A
Scope	Standardization in the field of Quantum Technologies		
Structure	WG 1 Cybersecurity management systems WG 2 Cryptography and security mechanisms WG 3 Security evaluation, testing and specification WG 4 Cybersecurity controls and services WG 5 Data protection, privacy and identity management WG 6 Product security WG 7 Trustworthiness		
Webpage	-		
NATIONAL MEMBERS			
Involvement and Organizations	**35 national delegates** ANSSI, ANEC GIE, CA Indosuez S.A., CTIE, CERTI-TRUST Interdigicert Europe S.A., FACTiven S.àr.l., ILNAS, INCERT GIE, Innoviction S.àr.l., itrust consulting S.àr.l., KYC3 S.à r.l., Luxcontrol A.s.b.l., LHC, LIST, PwC Luxembourg, RENE MARTH S.àr.l., University of Luxembourg		
COMMENTS			
The National Standardization Commission (NSC) 01 “Cybersecurity” is mirroring the work of the European and international technical committees related to Cybersecurity and data privacy (ISO/IEC JTC 1/WG 13, ISO/IEC JTC 1/SC 27, ISO/PC 317 and CEN/CLC JTC 13).			

ISO/IEC JTC 1/WG 13 TRUSTWORTHINESS			
GENERAL INFORMATION			
Creation date	2019	**Secretariat**	DIN (Germany)
Convenor	Mr. Johann Amsenga	**Secretary**	N/A
Scope	Terms of reference: - Serve as the focus and proponent for JTC 1s trustworthiness standardization program; - Develop standards for trustworthiness including foundational standards such as frameworks and ontologies for guiding trustworthiness efforts throughout JTC 1 and upon which other standards can be developed; - Identify gaps in trustworthiness standardization for consideration in proposing potential new work for the relevant JTC 1 subgroups; - Identify JTC 1, ISO, IEC and external organization entities that are developing standards and related materials that contribute to trustworthiness and for each entity investigate ongoing and potential new work; - Develop and maintain a list of existing trustworthiness standards produced and standards development projects underway within JTC 1.		
STANDARDIZATION WORK			
Published standards	1	**Projects**	1
NATIONAL INVOLVEMENT			
Luxembourg’s involvement	*Note: National participation in ISO/IEC JTC 1/WG 13 is done via ILNAS’ National Standardization Commission NSC 01 “Cybersecurity”, which centralizes and coordinates Luxembourg experts’ work in this field.*		

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 3 Security and privacy in AI and Big Data (BD) CAG Chair's Advisory Group JWG 6 Joint ISO/IEC JTC1/SC 27 - ISO/IEC JTC1/SC 37 Working group: Cybersecurity testing and evaluation of biometrics 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	246	**Projects**	73
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	53 participating members (including **Luxembourg**)		
O-Members	37 observing members		
Luxembourg's involvement	*Note: National participation in ISO/IEC JTC 1/SC 27 is done via ILNAS' National Standardization Commission NSC 01 "Cybersecurity", which centralizes and coordinates Luxembourg experts' work in this field.*		

ISO/PC 317 CONSUMER PROTECTION: PRIVACY BY DESIGN FOR CONSUMER GOODS AND SERVICES			
GENERAL INFORMATION			
Creation date	2018	**Secretariat**	BSI (United Kingdom)
Chairperson	Mr. Jan Schallaboeck	**Committee Manager**	Ms. Jean Stride
Scope	Standardization in the field of consumer protection: privacy by design for consumer goods and services		
Structure	TG 1 Communications group WG 1 Privacy by design		
Webpage	https://www.iso.org/committee/6935430.html		
STANDARDIZATION WORK			
Published standards	2	**Projects**	0
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	20 participating members		
O-Members	26 observing members (including **Luxembourg**)		
Luxembourg's involvement	*Note: National participation in ISO/PC 317 is done via ILNAS' National Standardization Commission NSC 01 "Cybersecurity", which centralizes and coordinates Luxembourg experts' work in this field.*		

CEN/CLC/JTC 13 CYBERSECURITY AND DATA PROTECTION			
GENERAL INFORMATION			
Creation date	2017	**Secretariat**	DIN (Germany)
Chairperson	Mr. Dr. Walter Fumy	**Secretary**	Mr. Martin Uhlherr
Scope	Development of standards for cybersecurity and data protection covering all aspects of the evolving information society including but not limited to: - Management systems, frameworks, methodologies; - Data protection and privacy; - Services and products evaluation standards suitable for security assessment for large companies and small and medium enterprises (SMEs); - Competence requirements for cybersecurity and data protection; - Security requirements, services, techniques and guidelines for ICT systems, services, networks and devices, including smart objects and distributed computing devices. Included in the scope is the identification and possible adoption of documents already published or under development by ISO/IEC JTC 1 and other SDOs and international bodies such as ISO, IEC, ITU-T, and industrial fora. Where not being developed by other SDOs, the development of cybersecurity and data protection CEN/CENELEC publications for safeguarding information such as organizational frameworks, management systems, techniques, guidelines, and products and services, including those in support of the EU Digital Single Market.		
Structure	WG 1 Chairman advisory group WG 2 Management systems and controls sets WG 3 Security evaluation and assessment WG 5 Data Protection, Privacy and Identity Management WG 6 Product security WG 7 Adhoc group EU 5G Certification scheme support group WG 8 Special Working Group RED Standardization Request WG 9 Special Working Group on Cyber Resilience Act WG 10 Cryptography		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2307986&cs=1BFE244DDA2A68D1B5C93795034A8DD05		

STANDARDIZATION WORK			
Published standards	53	**Projects**	21
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	*Note: National participation in CEN/CLC JTC 13 is done via ILNAS' National Standardization Commission NSC 01 "Cybersecurity", which centralizes and coordinates Luxembourg experts' work in this field.*		

CEN/TC 225 **AIDC TECHNOLOGIES**	

GENERAL INFORMATION			
Creation date	1989	**Secretariat**	TSE (Turkey)
Chairperson	Mr. Claude Tételin	**Secretary**	Ms. Aysegül Ibrisim
Scope	Standardization of data carriers for automatic identification and data capture, of the data element architecture therefore, of the necessary test specifications and of technical features for the harmonization of cross-sector applications. Establishment of an appropriate system of registration authorities, and of means to ensure the necessary maintenance of standards.		
Structure	WG 4 Automatic ID applications		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:6206&cs=1240DAEEB0C84DB1308ED97479093BF29		
STANDARDIZATION WORK			
Published standards	29	**Projects**	0
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

ETSI/TC CYBER **CYBER SECURITY**	

GENERAL INFORMATION			
Creation date	2014		
Chairperson	Mr. Alex Leadbeater		
Scope	The activities of ETSI TC CYBER include the following broad areas: Cyber Security; Security of infrastructures, devices, services and protocols; Security advice, guidance and operational security requirements to users, manufacturers and network and infrastructure operators; Security tools and techniques; Provision of security mechanisms to protect privacy; Creation of security specifications and alignment with work done in other TCs.		
Structure	WG QSC Quantum-Safe Cryptography		
Webpage	https://www.etsi.org/committee/1393-cyber		
STANDARDIZATION WORK			
Published standards	127	**Projects**	25
NATIONAL INVOLVEMENT			
Luxembourg's involvement	**5 national ETSI Members**		

ETSI/TC SET SECURE ELEMENT TECHNOLOGIES			
GENERAL INFORMATION			
Creation date	N/A		
Chairperson	Mr. Denis Praca		
Scope	The main responsibilities of TC SET are: development and maintenance of specifications for Secure Elements in a multi-application capable environment, the integration into such an environment, as well as the secure provisioning of services making use of such Secure Elements. The work of TC SET includes the development and maintenance of specifications for the SE and its interface to the outside world for use in telecommunication systems, for general telecommunication purposes as well as for Machine-to-Machine (M2M)/Internet of Things (IoT) communications. The committee's work comprises the interface, procedures and protocol specifications between the SE and entities (remote or local) used in its management. It also includes interfaces, procedures and protocol specifications used between such entities for the secure provisioning and operation of services making use of the SE; maintenance of mobile commerce specifications of the former EP M-COMM.		
Structure	WG REQ Requirements Working Group WG TEC Technical Working Group WG TEST Working Group "TEST"		
Webpage	https://www.etsi.org/committee/1411-set		
STANDARDIZATION WORK			
Published standards	1019	**Projects**	15
NATIONAL INVOLVEMENT			
Luxembourg's involvement	**1 national ETSI Member**		

3.3 Governance of IT

ISO/IEC JTC 1/SC 40 IT SERVICE MANAGEMENT AND IT GOVERNANCE			
GENERAL INFORMATION			
Creation date	2013	**Secretariat**	SA (Australia)
Chairperson	Ms. Patricia Kenyon	**Committee Manager**	Ms. Kylie Schumacher
Scope	Standardization in: - Governance of IT - Governance of data - IT service management - IT enabled services - business process outsourcing Serving as the focal point in these areas, SC 40 communicates, co-operates and collaborates with relevant committees (such as cybersecurity and privacy), external bodies and other stakeholders on topics of mutual interest.		
Structure	AG 2 Communication management CAG 1 Chair's Advisory Group WG 1 Governance of Information Technology WG 2 Service management – Information technology WG 3 IT-enabled services / Business process outsourcing **Joint working groups under the responsibility of another committee:** ISO/IEC JTC 1/SC 42 JWG 1 Joint Working Group ISO/IEC JTC1/SC 42 - ISO/IEC JTC1/SC 40: Governance implications of AI		
Webpage	https://www.iso.org/committee/5013818.html		
STANDARDIZATION WORK			
Published standards	31	**Projects**	10
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	35 participating members (including **Luxembourg**)		
O-Members	27 observing members		
Luxembourg's involvement	**11 national delegates**		

3.4 Telecommunications and Networking, and Emergency Telecommunications

ISO/IEC JTC 1/SC 6 TELECOMMUNICATIONS AND INFORMATION EXCHANGE BETWEEN SYSTEMS			
GENERAL INFORMATION			
Creation date	1988	**Secretariat**	KATS (Republic of Korea)
Chairperson	Dr. Hyun Kook Kahng	**Committee Manager**	Mr. Jungyup Oh
Scope	Standardization in the field of telecommunications dealing with the exchange of information between open systems, including system functions, procedures, parameters as well as the conditions for their use. This standardization encompasses protocols and services of lower layers including physical, data link, network, and transport as well as those of upper layers including but not limited to Directory and ASN.1: MFAN, NFC, PLC, Future Networks and OID.		
Structure	AG 1 Wearable devices AG 2 Concepts and terminology AG 3 Systematic review process AG 4 MCS innovation AG 5 Operations WG 1 Physical and data link layers WG 7 Network, transport and future network WG 10 Directory, ASN.1 and Registration		
Webpage	https://www.iso.org/committee/45072.html		
STANDARDIZATION WORK			
Published standards	403	**Projects**	26
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	18 participating members		
O-Members	36 observing members (including **Luxembourg**)		
Luxembourg's involvement	**2 national delegates**		

ISO/IEC JTC 1/SC 25 INTERCONNECTION OF INFORMATION TECHNOLOGY EQUIPMENT			
GENERAL INFORMATION			
Creation date	1990	**Secretariat**	DIN (Germany)
Chairperson	Mr. Rainer Schmidt	**Committee Manager**	Mr. Marco Peter
Scope	Standardization of microprocessor systems, interfaces, protocols, architectures and associated interconnecting media for information technology equipment and networks to support embedded and distributed computing environments, storage systems and other input/output components. Standards for home and building electronic systems in residential and commercial environments to support interworking devices (IoT-related) and applications such as energy management, environmental control, lighting, and security. Cabling system standards for information and communication technology (ICT), in all types of residential, commercial and industrial environments for the design, planning and installation, test procedures, automated infrastructure management systems and remote powering. NOTE: JTC 1/SC 25 standards reference IEC standards for cables, waveguides and connectors.		
Structure	AG 6 Future work in SC 25 WG 1 Home electronic system WG 3 Customer Premises Cabling		

	WG 5 Taxonomy and Terminology for Intelligent Homes **Joint working groups under the responsibility of another committee:** JWG 10 Industrial Cabling Managed by IEC/TC 65/SC 65C
Webpage	https://www.iec.ch/dyn/www/f?p=103:7:217463427240360::::FSP_ORG_ID,FSP_LANG_ID:3399,25

STANDARDIZATION WORK			
Published standards	241	**Projects**	20

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	29 participating members
O-Members	18 observing members
Luxembourg's involvement	NO (no registered delegate)

ETSI/TC ATTM **ACCESS, TERMINALS, TRANSMISSION, AND MULTIPLEXING**	

GENERAL INFORMATION	
Creation date	N/A
Chairperson	Mr. Dominique Roche
Scope	The scope of Technical Committee (TC) ATTM addresses operational aspects of Access, Terminals, Transmission and Multiplexing including all aspects within the ETSI scope covering cabling, installations, implementation of network services, signal transmission, multiplexing and other forms of signal treatment up to digitalization in private and public domain, excluding those aspects that relate to Hybrid Fibre-Coaxial cable networks.
Structure	WG AT2 Infrastructure, Physical Networks, and Communication Systems WG SDMC Sustainable Digital Multiservice Communities WG TG IC CG Task Group on Installation and Cabling WG TM 4 Fixed Radio Systems WG TM 6 Wireless Access Network Systems
Webpage	https://www.etsi.org/committee/1390-attm

STANDARDIZATION WORK			
Published standards	140	**Projects**	21

NATIONAL INVOLVEMENT	
Luxembourg's involvement	NO national ETSI Members

ETSI/TC EMTEL **EMERGENCY TELECOMMUNICATIONST**	

GENERAL INFORMATION	
Creation date	2005
Chairperson	Mrs. Cristina Lumbreras
Scope	The main objectives of TC EMTEL are: – to capture and consolidate the requirements from the relevant stakeholders; – to consider the appropriate scenarios including emergency communications: o of individuals with authorities/organisations, o between authorities/organisations, o from authorities/organisations to the individuals, o amongst individuals; – to identify gaps where existing standards do not fulfil the requirements and provide specifications and standards to fill these gaps, without duplication of work in other ETSI committees and partnership projects, or request other ETSI TBs to provide specifications to fill these gaps; – to develop and maintain the Standards and other deliverables to support the development and implementation of emergency communications standardization within ETSI;

	– to provide requirements on issues of network security, network integrity, network behaviour in emergency situations, and emergency telecommunications needs in networks; – to coordinate work on emergency communications in ETSI with relevant external groups.
Structure	-
Webpage	https://www.etsi.org/committee/1397-emtel
STANDARDIZATION WORK	
Published standards	49 **Projects** 8
NATIONAL INVOLVEMENT	
Luxembourg's involvement	**1 national ETSI Member**

ETSI/TC INT CORE NETWORK AND INTEROPERABILITY TESTING	
GENERAL INFORMATION	
Creation date	N/A
Chairperson	Mr. Giulio Maggiore
Scope	- Develop Core Network test specifications (interoperability, conformance, performance, security), based on, but not limited to, 3GPP specifications (including Virtual, Layered and Autonomic Networks); - Initiate and supervise interoperability events (such as Plugtests) related to Core Networks as well as other events (workshops and seminars); - Coordinate interoperability efforts with other organisations GSMA, IETF, OMA. - Endorse test specifications from/to other SDOs e.g. ITU-T.
Structure	INT AFI Autonomic Management and Control Intelligence for Self-Managed Fixed & Mobile Integrated Networks
Webpage	https://www.etsi.org/committee/1401-int
STANDARDIZATION WORK	
Published standards	240 **Projects** 19
NATIONAL INVOLVEMENT	
Luxembourg's involvement	NO national ETSI Members

ETSI/TC MSG MOBILE STANDARDS GROUP	
GENERAL INFORMATION	
Creation date	N/A
Chairperson	Mr. Dominique Everaere
Scope	The main responsibilities of ETSI TC MSG are: - Perform work regarding areas of activity as requested by mandates from the European Commission and all other tasks attributed to ETSI in support of European regulation of related systems; - Identify European Regulatory requirements on Cellular systems to be developed by 3GPP; - Develop Harmonised Standards covering essential requirements under article 3.2 of the Radio Equipment Directive 2014/53/EU and related ETSI deliverables for GSM, IMT systems and technologies evolving therefrom. Close liaison should be maintained with 3GPP, 3GPP2, IEEE and WiMAX Forum as well as related ETSI bodies which might be affected by the deliverables made by MSG; - Address issues relating to the transposition of 3GPP Technical Specifications and Technical Reports into ETSI Deliverables (noting that the transposition is performed by the ETSI Secretariat and is normally done without direct involvement of ETSI MSG);

	- Provide maintenance of the ETSI deliverables under its responsibility after publication and throughout their useful lifetime; - Avoid duplication of work in particular with 3GPP on the tasks described above; - Subcontract work as needed, e.g. to/by 3GPP.		
Structure	MSG TFES TC MSG / TC ERM Task Force for the production of Harmonised Standards under the RED for the IMT family		
Webpage	https://www.etsi.org/committee/1404-msg		
STANDARDIZATION WORK			
Published standards	119	**Projects**	14
NATIONAL INVOLVEMENT			
Luxembourg's involvement	NO national ETSI Members		

3.5 Cloud and Edge Computing

ISO/IEC JTC 1/SC 38 CLOUD COMPUTING AND DISTRIBUTED PLATFORMS			
GENERAL INFORMATION			
Creation date	2009	**Secretariat**	ANSI (United States)
Chairperson	Dr. Anish Karmarkar	**Committee Manager**	Mr. Bill Ash
Scope	Standardization in the areas of Cloud Computing and Distributed Platforms including: - Foundational concepts and technologies; - Operational issues; - Interactions among Cloud Computing systems and with other distributed systems. SC 38 serves as the focus, proponent, and systems integration entity on Cloud Computing, Distributed Platforms, and the application of these technologies. SC 38 provides guidance to JTC 1, IEC, ISO and other entities developing standards in these areas.		
Structure	AG 1 Stakeholder engagement AG 2 JTC 1/SC 38 Officers group AG 5 Long-term strategy AG 6 Collaboration with CEN-CENELEC/JTC 25 CAG Chair's Advisory group CG 1 Liaison coordination group for JTC 1/SC 27 CG 2 Liaison coordination group for JTC 1/SC 41 CG 3 Liaison coordination group for JTC 1/SC 42 CG 4 Liaison coordination group for JTC 1/SC 7 CG 5 Liaison coordination group for JTC 1/WG 13 WG 3 Fundamentals WG 5 Stakeholders considerations WG 6 Data, interoperability and portability		
Webpage	https://www.iso.org/committee/601355.html		
STANDARDIZATION WORK			
Published standards	27	**Projects**	14
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	27 participating members (including **Luxembourg**)		
O-Members	25 observing members		
Luxembourg's involvement	**5 national delegates**		

3.6 Internet of Things

ISO/IEC JTC 1/SC 41 INTERNET OF THINGS AND DIGITAL TWIN			
GENERAL INFORMATION			
Creation date	2017	**Secretariat**	KATS (Republic of Korea)
Chairperson	Dr. François Coallier	**Committee Manager**	Ms. Jooran Lee
Scope	Standardization in the area of Internet of Things and Digital Twin, including their related technologies: - Serve as the focus and proponent for JTC 1's standardization programme on the Internet of Things and Digital Twin, including their related technologies; - Provide guidance to JTC 1, IEC, ISO and other entities developing Internet of Things and Digital Twin related applications.		
Structure	AG 6 JTC 1/SC 41 Advisory Group AG 20 Sectorial Liaison Group (SLG 1) on Industrial sector AG 21 Sectorial Liaison Group (SLG 2) on Utilities AG 25 Use cases AG 28 JTC 1/SC 42 Liaison Group AG 29 Liaison Coordination Group on Communication and Networking AG 31 External liaisons collaboration WG 3 IoT Foundational Standards WG 4 IoT Interoperability WG 5 IoT Applications WG 6 Digital Twin WG 7 Maritime, underwater IoT and Digital Twin applications **Joint working groups under the responsibility of another committee:** JWG 3 IEC Smart Energy Roadmap Managed by SyC Smart Energy JWG 17 System interface between industrial facilities and the smart grid Managed by TC 65 JWG 24 IIoT applications in power systems management Managed by TC 57 JWG 32 Maritime and Underwater IoT Effects on Environment and Ecology linked to ISO/TC 43/SC 3 JWG 33 Embodied IoT Systems linked to SyC BDC		
Webpage	https://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:20486,25		
STANDARDIZATION WORK			
Published standards	47	**Projects**	31
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	31 participating members (including **Luxembourg**)		
O-Members	11 observing members		
Luxembourg's involvement	**9 national delegates**		

ETSI/TC Smart M2M SMART MACHINE-TO-MACHINE COMMUNICATIONS	
GENERAL INFORMATION	
Creation date	2014
Chairperson	Mr. Enrico Scarrone
Scope	The activities of TC Smart M2M will include the following: - Be a centre of expertise in the area of M2M and Internet of Things (IoT) to support M2M services and applications; - Maintain ETSI M2M published specifications; - Produce specifications as needed for regulatory purposes; - Transpose the output of oneM2M to TC M2M.

	TC Smart M2M will aim at referring to existing work done elsewhere, or encouraging existing groups to fulfil Smart M2M requirements. The TC will undertake necessary work that is not being provided for elsewhere.
Structure	-
Webpage	https://www.etsi.org/committee/1414-smartm2m

STANDARDIZATION WORK			
Published standards	131	**Projects**	16

NATIONAL INVOLVEMENT	
Luxembourg's involvement	**1 national ETSI Member**

ETSI/TC SMARTBAN SMART BODY AREA NETWORKT	
GENERAL INFORMATION	
Creation date	N/A
Chairperson	Mr. Lorenzo Mucchi
Scope	The activities of TC SmartBAN include the: - standardisation activities in all relevant areas to and preparation of ETSI deliverables for the wireless Body Area Network for personal welfare; - close liaison with ETSI TC ERM, TC M2M, 3GPP and other relevant ETSI TBs; - co-ordination of Health ICT related requirements in order to produce a consistent set of ETSI deliverables and to undertake measures to efficiently continue and stimulate further Health ICT related work within ETSI; - provision of mechanisms for the effective liaison between ETSI TBs and with relevant external organisations such as SDOs, professionals from the areas of BAN applications, end-user representatives, local, national and regional Government Authorities, the European Commission, EU projects and Emergency Authorities/Organisations; - organisation of regular meetings/workshops with appropriate wireless Body Area Network for personal welfare stakeholders; - establishment of external relationships (and joint working groups) where and when ever needed, including co-operation with CONTINUA Alliance, Bluetooth SIG, CEN, CENELEC, ISO, HL7, IHE etc. Formal relationships will be established using the normal processes via the ETSI Secretariat (Partnerships).
Structure	-
Webpage	https://www.etsi.org/committee/1413-smartban

STANDARDIZATION WORK			
Published standards	14	**Projects**	10

NATIONAL INVOLVEMENT	
Luxembourg's involvement	NO national ETSI Members

3.7 Electronic Identification and Trust Services, Including e-Signatures

ISO/IEC JTC 1/SC 17 CARDS AND SECURITY DEVICES FOR PERSONAL IDENTIFICATION			
GENERAL INFORMATION			
Creation date	1987	**Secretariat**	BSI (United Kingdom)
Chairperson	Mr. Dr. Peter Waggett	**Committee Manager**	Ms. Jean Stride
Scope	The current area of work for JTC 1/SC 17 consists of: - Identification and related documents; - Cards; - Security devices and tokens; and interface associated with their use in inter-industry applications and international interchange.		
Structure	AG 1 Registration Management Group (RMG) AG 3 Digital wallets CAG 1 Chair's advisory group WG 1 Physical characteristics and test methods for ID-cards WG 3 Traveller identification WG 4 Generic interfaces and protocols for security devices WG 8 Integrated circuit cards without contacts WG 10 Motor vehicle driver licence and related documents WG 11 Application of biometrics to cards and personal identification WG 12 UAS license and Drone/UAS security module		
Webpage	https://www.iso.org/committee/45144.html		
STANDARDIZATION WORK			
Published standards	127	**Projects**	27
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	35 participating members (including **Luxembourg**)		
O-Members	23 observing members		
Luxembourg's involvement	**3 national delegates**		

ISO/IEC JTC 1/SC 37 BIOMETRICS			
GENERAL INFORMATION			
Creation date	2002	**Secretariat**	ANSI (United States)
Chairperson	Mr. Patrick Grother	**Committee Manager**	Ms. Michaela Miller
Scope	Standardization of generic biometric technologies pertaining to human beings to support interoperability and data interchange among applications and systems. Generic human biometric standards include: common file frameworks; biometric application programming interfaces; biometric data interchange formats; related biometric profiles; application of evaluation criteria to biometric technologies; methodologies for performance testing and reporting and cross jurisdictional and societal aspects. Excluded is the work in ISO/IEC JTC 1/SC 17 to apply biometric technologies to cards and personal identification. Excluded is the work in ISO/IEC JTC 1/SC 27 for biometric data protections techniques, biometric security testing, evaluations and evaluations methodologies.		
Structure	WG 1 Harmonized biometric vocabulary WG 2 Biometric technical interfaces WG 3 Biometric data interchange formats WG 4 Technical Implementation of Biometric Systems WG 5 Biometric testing and reporting		

	WG 6 Cross-Jurisdictional and Societal Aspects of Biometrics AHG 1 Inclusive terminology in SC 37 standards
Webpage	https://www.iso.org/committee/313770.html

STANDARDIZATION WORK			
Published standards	142	**Projects**	15

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	32 participating members
O-Members	21 observing members
Luxembourg's involvement	NO (no registered delegate)

CEN/TC 224 **PERSONAL IDENTIFICATION AND RELATED PERSONAL DEVICES WITH SECURE ELEMENT, SYSTEMS, OPERATIONS AND PRIVACY IN A MULTI SECTORIAL ENVIRONMENT**	

GENERAL INFORMATION			
Creation date	1989	**Secretariat**	AFNOR (France)
Chairperson	Mr. Nicolas Bigand	**Secretary**	Ms. Aylin Kip
Scope	The development of standards for strengthening the interoperability and security of personal identification and its related personal devices, systems, operations and privacy in a multi sectorial environment. It covers: - Operations such as applications and services like electronic identification, electronic signature, payment and charging, access and border control; - Personal devices with secure elements independently of their form factor, such as cards, mobile devices, and their related interfaces; - Security services including authentication, confidentiality, integrity, biometrics, protection of personal and sensitive data; - System components such as accepting devices, servers, cryptographic modules. CEN/TC 224 multi-sectorial environment involves sectors such as Government/Citizen, Transport, Banking, e-Health, as well as Consumers and providers from the supply side such as card manufacturers, security technology, conformity assessment body, software manufacturers.		
Structure	WG 17 Protection Profiles in the context of SSCD WG 18 Biometrics WG 19 Breeder Documents WG 20 European Digital Identity Wallets		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:6205&cs=1E59B4D3EFD280E27AAC0C16CC13CD4FD		

STANDARDIZATION WORK			
Published standards	66	**Projects**	10

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
Members	34 members of CEN/CENELEC
Luxembourg's involvement	**2 national delegates**

ETSI/TC ESI **ELECTRONIC SIGNATURES AND INFRASTRUCTURES**	

GENERAL INFORMATION	
Creation date	N/A
Chairperson	Mr. Nick Pope
Scope	TC ESI is responsible for standardization within ETSI supporting current and upcoming technology for Electronic Signatures and related services (e.g. registered electronic delivery, electronic seals) as well as trust service infrastructures supporting such services. This is aimed at supporting regulatory requirements such as the eIDAS Regulation as well as general commercial requirements.

	TC ESI is the lead body within ETSI in relation to electronic signatures, related services and trust service Infrastructures, to protect electronic transactions and ensure trust and confidence with business partners, including the preparation of reports and other necessary activities, by: - Developing generic standards, guides and reports; - Liaising with other ETSI bodies; - Liaising with bodies external to ETSI; - Establishing a continuing work plan.		
Structure	-		
Webpage	https://www.etsi.org/committee/1399-esi		
STANDARDIZATION WORK			
Published standards	261	**Projects**	32
NATIONAL INVOLVEMENT			
Luxembourg's involvement	**6 national ETSI Members**		

3.8 Accessibility of ICT Products and Services

ISO/IEC JTC 1/SC 35 USER INTERFACES			
GENERAL INFORMATION			
Creation date	1998	**Secretariat**	AFNOR (France)
Chairperson	Dr. Alain Couillault	**Committee Manager**	Mrs. Liv Lehmann
Scope	Standardization in the field of user-system interfaces in information and communication technology (ICT) environments and support for these interfaces to serve all users, including people having accessibility or other specific needs, with a priority of meeting the JTC 1 requirements for cultural and linguistic adaptability. This includes: - user interface accessibility (requirements, needs, methods, techniques and enablers); - cultural and linguistic adaptability and accessibility (such as evaluation of cultural and linguistic adaptability of ICT products, harmonized human language equivalents, localization parameters, voice messaging menus); - user interface objects, actions and attributes; - methods and technologies for controlling and navigating within systems, devices and applications in visual, auditory, tactile and other sensorial modalities (such as by voice, vision, movement, gestures); - symbols, functionality and interactions of user interfaces (such as graphical, tactile and auditory icons, graphical symbols and other user interface elements); - visual, auditory, tactile and other sensorial input and output devices and methods in ICT environments (for devices such as keyboards, displays, mice); - user interfaces for mobile devices, hand-held devices and remote interactions.		
Structure	AHG 3 Accessibility of Internet of things user interfaces WG 1 Keyboards, methods and devices related to input and its feedback WG 2 Graphical user interface and interaction WG 4 User interfaces for mobile and wearable devices WG 5 Cultural and linguistic adaptability WG 6 User interfaces accessibility WG 9 Natural user interfaces and interactions WG 10 Affective computing user interfaces		
Webpage	https://www.iso.org/committee/45382.html		
STANDARDIZATION WORK			
Published standards	91	**Projects**	20
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	18 participating members		
O-Members	20 observing members (including **Luxembourg**)		
Luxembourg's involvement	**1 national delegate**		

ISO/IEC JTC 1/SC 43 BRAIN-COMPUTER INTERFACES			
GENERAL INFORMATION			
Creation date	2022	**Secretariat**	SAC (China)
Chairperson	Ms. Yuntao Yu	**Committee Manager**	Mr. Bing Cui
Scope	Standardization in the area of Brain-computer Interfaces for information technology to enable communication and interaction between brain and computers that are applicable across application areas. - Serve as the focus and proponent for JTC 1's standardization program on Brain-computer Interfaces, including the development of foundational standards;		

	- Provide guidance on Brain-computer Interfaces to JTC 1, IEC, ISO, and other entities developing applications of BCI. Excluded: standards for human implants and medical applications.
Structure	AG 3 Chair's Advisory Group AG 4 Liaisons and Communications Advisory Group WG 1 Foundational standards WG 2 Applications WG 5 BCI Data ahG 6 Ethics and Trustworthiness ahG 7 Application of Non-Invasive BCI for Disorders of Consciousness
Webpage	https://www.iec.ch/dyn/www/f?p=103:7:410548623915282::::FSP_ORG_ID,FSP_LANG_ID:28794,25

STANDARDIZATION WORK			
Published standards	0	**Projects**	8

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	13 participating members
O-Members	11 observing members
Luxembourg's involvement	NO (no registered delegate)

ISO/TC 159/SC 4 ERGONOMICS OF HUMAN-SYSTEM INTERACTION

GENERAL INFORMATION			
Creation date	1983	**Secretariat**	BSI (United Kingdom)
Chairperson	Mr. Jonathan Earthy	**Committee Manager**	Mr. Andrew Barrett
Scope	Standardization in the field of ergonomics/human factors, in particular the interaction between and within systems (often computer-based) and the people (who use, operate, and are affected by them as well as those who develop, manufacture, evaluate, install and maintain them). Areas of standardization include: hardware ergonomics (including input, display, and interactive devices), software ergonomics (including interaction and interface design), ergonomics of the context of use (including tasks, environments, and workplaces), and human-centred design processes and methods (including usability engineering, accessible design, and participative design methods).		
Structure	CAG Chairman Advisory Group JWG 28 Joint ISO/TC 159/SC 4 - ISO/IEC JTC 1/SC 7 WG: Common industry formats for usability related information SG 2 Work Coordination WG 2 Visual display requirements WG 3 Controls, workplace and environmental requirements WG 5 Interaction and presentation of information WG 6 Human-centred design processes for interactive systems WG 8 Ergonomic design of control centres WG 9 Tactile and haptic interaction WG 12 Image safety **Joint working groups under the responsibility of another committee:** JWG 28 Joint ISO/IEC JTC 1/SC 7 - ISO/TC 159/SC 4 WG: Common industry formats for usability-related information		
Webpage	https://www.iso.org/committee/53372.html		

STANDARDIZATION WORK			
Published standards	85	**Projects**	10

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	22 participating members
O-Members	18 observing members (including **Luxembourg**)
Luxembourg's involvement	**1 national delegate**

CEN/CLC/ETSI JTB eAcc EACCESSIBILITY			
GENERAL INFORMATION			
Creation date	2021	**Secretariat**	UNE (Spain)
Chairperson	Ms. Susanna Laurin	**Secretary**	Mr. Fernando Machicado
Scope	To develop standardisation documents common to CEN, CENELEC and ETSI in the field of the accessibility of ICT products and services		
Structure	WG 1 CEN/CLC/ETSI TR 101551 and CEN/CLC/ETSI/TR 101552		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:855949&cs=1E4D1604D14C923D402E4962C66AD84D4		
STANDARDIZATION WORK			
Published standards	4	**Projects**	1
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	**3 national delegates**		

ETSI/TC HF HUMAN FACTORS			
GENERAL INFORMATION			
Creation date	N/A		
Chairperson	Mr. Matthias Schneider		
Scope	The Human Factors committee is the technical body within ETSI responsible for Human Factors issues in all areas of Information and Communications Technology (ICT). It produces standards, guidelines and reports that set the criteria necessary to build optimum usability into the emerging digital networked economy (DNE). The HF committee co-operates with other groups within ETSI and outside to assist them to produce standards, or other deliverables, which are in accordance with good Human Factors practice. Within ETSI it has a special responsibility for "Design for All" addressing the needs of all users, including young children, seniors and disabled people. Human Factors is the scientific application of knowledge about human capacities and limitations in order to make products, systems, services and environments effective, efficient and easy for everyone to use. It is a key factor for the commercial success of any ICT product or service in the digital networked economy.		
Structure	-		
Webpage	https://www.etsi.org/committee/1400-hf		
STANDARDIZATION WORK			
Published standards	113	**Projects**	11
NATIONAL INVOLVEMENT			
Luxembourg's involvement	**2 national ETSI Members**		

3.9 Artificial Intelligence, Big Data and Virtual Reality

ILNAS/NSC 04 ARTIFICIAL INTELLIGENCE			
GENERAL INFORMATION			
Creation date	2024	**Secretariat**	ILNAS
Chairperson	Ms. Emilia Tantar	**Secretary**	N/A
Scope	Standardization in the field of Artificial Intelligence		
Structure	WG 1 Foundational standards WG 2 Conformity assessment WG 3 Data WG 4 Trustworthiness WG 5 Engineering aspects of AI systems WG 6 Use cases and applications		
Webpage	-		
NATIONAL MEMBERS			
Involvement and Organizations	**25 national delegates** ANSSI, Amazon Web Services EMEA S.àr.l., ANEC GIE, Barreau de Luxembourg, Black Swan LUX S.A., CERTI-TRUST Interdigicert Europe S.A., CSSF, Everis Spain SLU, ILNAS, INCERT GIE, ITTM, Linklaters LLP, LIST, PATENT 42 S.A., POST Luxembourg, PwC Luxembourg, Sumitomo Mitsui Trust Bank S.A., Tarkett S.A., University of Luxembourg		
COMMENTS			
The National Standardization Commission (NSC) 04 “Artificial Intelligence” is mirroring the work of the European and international technical committees related to AI (ISO/IEC JTC 1/SC 42 and CEN/CLC JTC 21).			

ISO/IEC JTC 1/SC 24 COMPUTER GRAPHICS, IMAGE PROCESSING AND ENVIRONMENTAL DATA REPRESENTATION			
GENERAL INFORMATION			
Creation date	1987	**Secretariat**	BSI (United Kingdom)
Chairperson	Prof. Myeong Won Lee	**Committee Manager**	Ms. Jean Stride
Scope	Standardization relating to: - computer graphics, - image processing, - virtual reality, augmented reality, and mixed reality, - environmental data representation, - visualization of, and interaction with, information Excluded: efficient coding of multimedia.		
Structure	CAG Chair’s Advisory Group WG 6 Computer Graphics and Virtual Reality WG 7 Image processing and interchange WG 8 Environmental representation WG 9 Mixed and Augmented reality (MAR) continuum concepts and reference model WG 10 Representation and visualization of information for systems integration WG 11 Health, safety, security and usability of Augmented & Virtual Reality (AR/VR) JWG 12 Joint ISO/IEC JTC 1/SC 24 - ISO/IEC JTC 1/SC 36 WG: VR/AR/MR based ICT Integration Systems standards **Joint working groups under the responsibility of another committee:** JWG 16 Joint ISO/TC 184/SC 4 - ISO/IEC JTC 1/SC 24 - ISO/TC 171/SC 2 WG: Formats for visualization and other derived forms of product data		
Webpage	https://www.iso.org/committee/45252.html		

STANDARDIZATION WORK			
Published standards	92	**Projects**	15
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	16 participating members		
O-Members	24 observing members		
Luxembourg's involvement	NO (no registered delegate)		

ISO/IEC JTC 1/SC 29 **CODING OF AUDIO, PICTURE, MULTIMEDIA AND HYPERMEDIA INFORMATION**	

GENERAL INFORMATION			
Creation date	1991	**Secretariat**	JISC (Japan)
Chairperson	Dr. Gary J. Sullivan	**Committee Manager**	Ms. Mayumi Koike
Scope	Standardization in the field of: - Efficient coding of digital representations of images, audio and moving pictures, including: o Conventional (natural, computer-generated and immersive) images, moving pictures and audio, o Invisible light and other sensory (such as medical and satellite) images, o Static and dynamic graphic objects; - Efficient coding of other digital information, including: o Multimedia, environment and user related metadata, o Sensor and actuator information related to audiovisual information, o Other digital data in agreement with the relevant committee, such as genomics; - Digital information support, including: o Synchronization, presentation, storage and transport of single or combinations of media, o Media security and privacy management, o Quality of Experience evaluation and system performance metrics.		
Structure	AG 1 Chair Support Team and Management AG 2 MPEG Technical coordination AG 3 MPEG Liaison and communication AG 4 JPEG and MPEG Collaboration AG 5 MPEG Visual quality assessment WG 1 JPEG Coding of digital representations of images WG 2 MPEG Technical requirements WG 3 MPEG Systems WG 4 MPEG Video coding WG 5 MPEG joint video experts team with ITU-T SG 16 WG 6 MPEG Audio coding WG 7 MPEG 3D graphics and haptics coding WG 8 MPEG Genomic coding		
Webpage	https://www.iso.org/committee/45316.html		
STANDARDIZATION WORK			
Published standards	610	**Projects**	103
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	30 participating members		
O-Members	18 observing members		
Luxembourg's involvement	NO (no registered delegate)		

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	AHG 4 Liaison with SC 27 AHG 7 JTC1 joint development review JAG Joint Advisory Group on AI and sustainability with ISO/IEC JTC 1/SC 39 and JTC 1/SC 42 JWG 2 Joint Working Group JTC 1/SC 42 - JTC 1/SC 7: Testing of AI-based systems JWG 3 Joint Working Group JTC 1/SC 42 - TC 215 WG: AI enabled health informatics JWG 4 Joint Working Group JTC 1/SC 42 - IEC TC 65/SC 65A: Functional safety and AI systems JWG 5 Joint Working Group JTC 1/SC 42 - TC 37 WG: Natural language processing systems JWG 6 Joint Working Group ISO/IEC JTC1/SC42 - ISO/CASCO: Conformity assessment schemes for AI 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	33	**Projects**	35
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	41 participating members (including **Luxembourg**)		
O-Members	25 observing members		
Luxembourg's involvement	*Note: National participation in ISO/IEC JTC 1/SC 42 is done via ILNAS' National Standardization Commission NSC 04 "Artificial Intelligence", which centralizes and coordinates Luxembourg experts' work in this field.*		

CEN/CLC/JTC 21 ARTIFICIAL INTELLIGENCE			
GENERAL INFORMATION			
Creation date	2021	**Secretariat**	DS (Denmark)
Chairperson	Mr. Sebastian Hallensleben	**Secretary**	Mr. Kim Skov Hilding
Scope	The JTC shall produce standardization deliverables in the field of Artificial Intelligence (AI) and related use of data, as well as provide guidance to other technical committees concerned with Artificial Intelligence. The JTC shall also consider the adoption of relevant international standards and standards from other organisations, like ISO/IEC JTC 1 and its subcommittees, such as SC 42 Artificial intelligence. The JTC shall produce standardization deliverables to address European market and societal needs and to underpin primarily EU legislation, policies, principles, and values.		
Structure	WG 1 Strategic Advisory Group (SAG) WG 2 Operational aspects WG 3 Engineering aspects WG 4 Foundational and societal aspects WG 5 Joint standardization on Cybersecurity for AI systems		

Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2916257&cs=11D701467243B7C63DEF4702C86E0138A		
STANDARDIZATION WORK			
Published standards	8	**Projects**	34
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	*Note: National participation in ISO/IEC JTC 1/SC 42 is done via ILNAS' National Standardization Commission NSC 04 "Artificial Intelligence", which centralizes and coordinates Luxembourg experts' work in this field.*		

ETSI/TC SAI **SECURING ARTIFICIAL INTELLIGENCE**	
GENERAL INFORMATION	
Creation date	2023
Chairperson	Mr. Cadzow Scott
Scope	The aim of Technical Committee Securing Artificial Intelligence (TC SAI) is to develop technical specifications that mitigate against threats arising from the deployment of AI, and threats to AI systems, from both other AIs, and from conventional sources. Whilst in the short to medium term the focus of TC SAI will be on the application of Machine Learning (ML) the group shall also give guidance and evaluation reports to ETSI and its stakeholders on the wider developments of AI. TC SAI addresses 4 main aspects of AI security standardisation: 1. Securing AI from attack e.g. where AI is a component in the system that needs defending. 2. Mitigating against AI e.g. where AI is the 'problem' (or used to improve and enhance other more conventional attack vectors), 3. Using AI to enhance security measures against attack from other things e.g. AI is part of the 'solution' (or used to improve and enhance more conventional countermeasures), 4. Societal security and safety aspects of the use and application of AI.
Structure	-
Webpage	https://www.etsi.org/committee/2312-sai
STANDARDIZATION WORK	
Published standards	7	**Projects**	10
NATIONAL INVOLVEMENT	
Luxembourg's involvement	NO national ETSI Members

3.10 Software and Programming Languages

ISO/IEC JTC 1/SC 7 SOFTWARE AND SYSTEMS ENGINEERING	

GENERAL INFORMATION			
Creation date	1987	**Secretariat**	BIS (India)
Chairperson	Dr. Sundeep Oberoi	**Committee Manager**	Ms. Reena Garg
Scope	Standardization of processes, supporting tools and supporting technologies for the engineering of software products and systems. Note: The processes, tools and technologies are within the scope of JTC1 terms of references and exclude specific tools and technologies that have been assigned by JTC1 to other of its SC's.		
Structure	AG 1 Chair's Advisory Group AG 2 Business planning group AG 3 Communications and outreach AG 4 Standards management AG 5 Architecture and future watch AHG 7 Open source software AHG 9 AI-based software development AHG 10 Green software AHG 11 Low code development WG 2 System software documentation WG 4 Tools and environment WG 6 Software Product and System Quality WG 7 Life cycle management WG 10 Process assessment WG 19 Techniques for Specifying IT Systems WG 20 Software and systems bodies of knowledge and professionalization WG 21 Information technology asset management WG 22 Vocabulary validation WG 24 Systems and software standards for Very Small Entities WG 26 Software testing WG 29 Agile and DevOps WG 30 Systems resilience WG 42 Architecture **Joint working groups under the responsibility of another committee:** JWG 2 Joint Working group JTC 1/SC 42 – JTC 1/SC 7: Testing of AI-based systems JWG 28 Joint TC 159/SC 4 - JTC 1/SC 7 WG: Common industry formats for usability related information		
Webpage	https://www.iso.org/committee/45086.html		

STANDARDIZATION WORK			
Published standards	221	**Projects**	39

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	37 participating members (including **Luxembourg**)
O-Members	25 observing members
Luxembourg's involvement	**9 national delegates**

ISO/IEC JTC 1/SC 22 PROGRAMMING LANGUAGES, THEIR ENVIRONMENTS AND SYSTEM SOFTWARE INTERFACES			
GENERAL INFORMATION			
Creation date	1987	**Secretariat**	ANSI (United States)
Chairperson	Mr. David Keaton	**Committee Manager**	Mr. Bill Ash
Scope	JTC1/SC 22 is the international standardization subcommittee for programming languages, their environments and system software interfaces. SC 22 is oftentimes called the “portability subcommittee”.		
Structure	WG 4 COBOL WG 5 Fortran WG 9 Ada WG 14 C WG 17 Prolog WG 21 C++ WG 23 Programming Language Vulnerabilities WG 24 Linux		
Webpage	https://www.iso.org/committee/45202.html		
STANDARDIZATION WORK			
Published standards	111	**Projects**	16
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	27 participating members		
O-Members	20 observing members		
Luxembourg’s involvement	NO (no registered delegate)		

3.11 Quantum Technologies

ILNAS/NSC 03 QUANTUM TECHNOLOGIES			
GENERAL INFORMATION			
Creation date	2024	**Secretariat**	ILNAS
Chairperson	N/A	**Secretary**	Ms. Rim Doukha
Scope	Standardization in the field of Quantum Technologies		
Structure	-		
Webpage	https://portail-qualite.public.lu/fr/normes-normalisation/secteurs/tic/quantum-technologies.html		
NATIONAL MEMBERS			
Involvement and Organizations	**6 national delegates** ILNAS, PWC Luxembourg, RHEA GROUP, SES		
COMMENTS			
The National Standardization Commission (NSC) 03 “Quantum Technologies” is mirroring the work of the European and international technical committees related to Quantum Technologies (ISO/IEC JTC 3 and CEN/CLC JTC 22). The NSC 03 has been created in February 2024.			

ISO/IEC JTC 3 QUANTUM TECHNOLOGIES			
GENERAL INFORMATION			
Creation date	2024	**Secretariat**	BSI (United Kingdom)
Chairperson	Dr. Haeseong Lee	**Secretary**	Mr. Petar Luzajic
Scope	Standardization in the field of quantum technologies. The scope includes standardization in the field of quantum technologies, including quantum information technologies (quantum computing and quantum simulation), quantum metrology, quantum sources, quantum detectors, quantum communications, and fundamental quantum technologies. The JTC will coordinate the results of these efforts with relevant committees and subcommittees that have within their scopes the development of specific sector-based applications of quantum technologies. Excluded: Specific sector-based applications and standardization in the fields of information technology (JTC 1 and its subcommittees), nanotechnology (IEC TC 113 and ISO TC 229), fibre optics (IEC TC 86), cryogenic vessels (ISO TC 220), and semiconductors (IEC TC 47).		
Structure	PT 18157 PT ISO/IEC TR 18157 AG 1 Strategic planning AG 8 Chair’s Advisory Group 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		
Webpage	https://www.iec.ch/dyn/www/f?p=103:7:::::FSP_ORG_ID:49854		
STANDARDIZATION WORK			
Published standards	0	**Projects**	2
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	27 participating members (including **Luxembourg**)		
O-Members	11 observing members		
Luxembourg’s involvement	*Note: National participation in ISO/IEC JTC 3 is done via ILNAS’ National Standardization Commission NSC 03 “Quantum Technologies”, which centralizes and coordinates Luxembourg experts’ work in this field.*		

CEN/CLC/JTC 22 QUANTUM TECHNOLOGIES			
GENERAL INFORMATION			
Creation date	2022	**Secretariat**	DIN (Germany)
Chairperson	Mr. Oskar Van Deventer	**Secretary**	Mr. Marius Loeffler
Scope	The JTC shall produce standardization deliverables in the field of Quantum Technologies including quantum enabling technologies, quantum sub-systems, quantum platforms & systems, quantum composite systems as well as quantum applications covering the following areas: Quantum metrology, sensing and enhanced imaging, Quantum computing and simulation; Quantum communication and cryptography, as well as provide guidance to other technical committees concerned with Quantum Technologies. The JTC shall also consider the adoption of relevant international standards and standards from other organisations, like ISO/IEC JTC 1 and its subcommittees. The JTC shall produce standardization deliverables to address European market and societal needs, as well as underpinning EU legislation, policies, principles, and values.		
Structure	WG 1 Strategic Advisory Group WG 2 Quantum Metrology, Sensing and Enhanced Imaging, and Quantum Enabling Technologies WG 3 Quantum Computing and Simulation WG 4 Quantum Communication and Quantum Cryptography		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:3197951&cs=15741D1431D56DC6C1EC9D1C3C9B8A385		
STANDARDIZATION WORK			
Published standards	0	**Projects**	9
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	*Note: National participation in CEN/CLC JTC 22 is done via ILNAS' National Standardization Commission NSC 03 "Quantum Technologies", which centralizes and coordinates Luxembourg experts' work in this field.*		

3.12 E-Health, Healthy Living and Aging

ISO/TC 215 HEALTH INFORMATICS			
GENERAL INFORMATION			
Creation date	1998	**Secretariat**	ANSI (United States)
Chairperson	Mr. Todd Cooper	**Committee Manager**	Ms. Rachel Hawthorne
Scope	Standardization in the field of health informatics, to facilitate capture, interchange and use of health-related data, information, and knowledge to support and enable all aspects of the health system.		
Structure	SC 1 Genomics Informatics CAG 1 Executive council, harmonization and operations CAG 2 Advisory group JWG 1 Joint ISO/TC 249 - ISO/TC 215 WG: Traditional Chinese Medicine (Informatics) JWG 7 Joint ISO/TC 215 - IEC/SC 62A WG: Safe, effective and secure health software and health IT systems, including those incorporating medical devices MA 1 ISO 27269 Maintenance Agency TF 1 Task Force on Quantities and Units to be used in e-health TF 3 Outreach & Communications TF 5 AI technologies in health informatics TF 6 Process and quality improvement TF 7 Telehealth and Virtual Care (TVC) Standards WG 1 Architecture, Frameworks and Models WG 2 Systems and Device Interoperability WG 3 Semantic content WG 4 Security, Safety and Privacy WG 6 Pharmacy and medicines business WG 10 Traditional Medicine WG 11 Personalized digital health **Joint working groups under the responsibility of another committee:** JWG 1 Joint ISO/TC 249 - ISO/TC 215 WG: Traditional Chinese Medicine (Informatics) JWG 3 Joint Working Group JTC1/SC42 - ISO/TC 215 WG: AI enabled health informatics		
Webpage	https://www.iso.org/committee/54960.html		
STANDARDIZATION WORK			
Published standards	246	**Projects**	62
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	36 participating members (including **Luxembourg**)		
O-Members	33 observing members		
Luxembourg's involvement	**3 national delegates**		

IEC/SyC AAL ACTIVE ASSISTED LIVING			
GENERAL INFORMATION			
Creation date	N/A	**Secretariat**	JISC (Japan)
Chairperson	Mr. Dejun Ma	**Secretary**	Mr. Hajime Yamada
Scope	The Systems Committee shall: - Create a vision of Active Assisted Living that takes account of the evolution of the market. - Foster standardisation which: enables usability and accessibility of AAL systems and services. - Enables cross-vendor interoperability of AAL systems, services, products and components. - Addresses systems level aspects such as safety, security and privacy.		

	- Communicate the work of the SyC appropriately to foster a strong community of stakeholders.
Structure	WG 1 User Focus WG 2 Architecture and Interoperability WG 3 General specifications, Quality and Conformity assessment WG 4 Regulatory Affairs WG 5 AAL in the connected home environment WG 7 Cooperative multiple systems in connected home environments - Functional safety of electrical/electronic safety-related systems - AAL aspects MT 6 International Electrotechnical Vocabulary - Part 871: Active Assisted Living JWG 9 Ageing-inclusive living in smart home AG 1 Chair's Advisory Group - Strategy and Coordination
Webpage	https://www.iec.ch/dyn/www/f?p=103:186:412103166380165::::FSP_ORG_ID,FSP_LANG_ID:11827,25

STANDARDIZATION WORK			
Published standards	14	**Projects**	7

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	10 participating members
O-Members	17 observing members
Luxembourg's involvement	NO (no registered delegate)

CEN/TC 251 HEALTH INFORMATICS

GENERAL INFORMATION			
Creation date	1990	**Secretariat**	NEN (Netherlands)
Chairperson	Mr. R.A. Stegwee	**Secretary**	Ms. Margot Verbeek
Scope	Standardization in the field of Health Information and Communications Technology (ICT) to achieve compatibility and interoperability between independent systems and to enable modularity. This includes requirements on health information structure to support clinical and administrative procedures, technical methods to support interoperable systems as well as requirements regarding safety, security and quality.		
Structure	WG 1 Enterprise and Information WG 2 Technology and Applications		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:6232&cs=179BCDF5F3C53AF099558615A53207584		

STANDARDIZATION WORK			
Published standards	118	**Projects**	30

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
Members	34 members of CEN/CENELEC
Luxembourg's involvement	NO (no registered delegate)

CEN/CLC/JTC 16 ACTIVE IMPLANTABLE MEDICAL DEVICES

GENERAL INFORMATION			
Creation date	2017	**Secretariat**	DKE (Germany)
Chairperson	N/A	**Secretary**	Mr. Klaus Neuder
Scope	To standardize all active implantable medical devices and their accessories.		
Structure	-		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2401823&cs=1064128213BC2CC6BE5082D7DBBB2D792		

STANDARDIZATION WORK			
Published standards	11	**Projects**	1
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

ETSI/TC eHealth eHEALTH	
GENERAL INFORMATION	
Creation date	2007
Chairperson	Mr. Suno Wood
Scope	The activities of TC eHEALTH include the following broad areas: - preparation of ETSI deliverables for describing Health ICT related requirements for relevant stakeholders including health professionals and other end-users; - co-ordination of Health ICT related requirements in order to produce a consistent set of ETSI deliverables and to undertake measures to efficiently continue and stimulate further Health ICT related work within ETSI; - provision of mechanisms for the effective liaison between ETSI TBs/ISGs and with relevant external organizations such as SDOs, Health professionals, end-user representatives, local, national and regional Government Authorities, the European Commission, EU projects and Emergency Authorities/Organizations; - provision of a centre of expertise in the area of requirements for Health ICT systems and be able to offer advice to ETSI Technical Bodies/ISGs, the ETSI Board and the General Assembly. - organization of regular meetings/workshops with appropriate Health ICT stakeholders.
Structure	-
Webpage	https://www.etsi.org/committee/1396-ehealth

STANDARDIZATION WORK			
Published standards	7	**Projects**	2
NATIONAL INVOLVEMENT			
Luxembourg's involvement	**1 national ETSI Member**		

3.13 Education, Digital Skills and Digital Learning

ISO/IEC JTC 1/SC 36 INFORMATION TECHNOLOGY FOR LEARNING, EDUCATION, AND TRAINING			
GENERAL INFORMATION			
Creation date	1999	**Secretariat**	KATS (Republic of Korea)
Chairperson	Mr. Jon Mason	**Committee Manager**	Ms. Sunyoung Youn
Scope	Standardization in the field of information technologies for learning, education, and training to support individuals, groups, or organizations, and to enable interoperability and reusability of resources and tool. Excluded from this scope are: - Standards or technical reports that define educational standards (competencies), cultural conventions, learning objectives, or specific learning content; - Work done by other ISO or IEC TCs, SCs, or WGs with respect to their component, specialty, or domain. Instead, when appropriate, normative or informative references to other standards shall be included. Examples include documents on special topics such as multimedia, web content, cultural adaptation, and security.		
Structure	AG 1 Business planning and communications AG 2 Emerging Technologies (AGET) AHG 5 Blockchain in Education AHG 6 Artificial Intelligence for Education (AIEd) TCG Terminology Coordination Group WG 3 Learner information WG 4 Management and delivery WG 7 ITLET - Culture, language and individual needs WG 8 Learning Analytics Interoperability WG 9 Online Course Information Model **Joint working groups under the responsibility of another committee:** ISO/TC 249/JWG 12 Joint ISO/IEC JTC 1/SC 24 – ISO/IEC JTC 1/SC36 WG: VR/AR/MR based ICT Integration Systems standards		
Webpage	https://www.iso.org/committee/45392.html		
STANDARDIZATION WORK			
Published standards	55	**Projects**	12
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	22 participating members		
O-Members	27 observing members		
Luxembourg's involvement	NO (no registered delegate)		

CEN/TC 428 ICT PROFESSIONALISM AND DIGITAL COMPETENCES			
GENERAL INFORMATION			
Creation date	2007	**Secretariat**	UNI (Italy)
Chairperson	Ms. Mary Cleary	**Secretary**	Mrs. Veronica Salsano
Scope	CEN TC 428 is responsible for all aspects of standardization related to maturing the ICT Profession in all sectors, public and private. This includes, at a minimum, activity related to four major building blocks of ICT Professionalism: - Competences (standardization of a common language of digital and ICT Professional competences, skills and knowledge applied in all domains); - Education and certification; - Code of Ethics; - Body of Knowledge (BoK). The main areas of standardization where CEN TC 428 will develop its activity are as follows:		

	- Definition, maintenance and evolution of digital Professional competences in all sectors, always looking at current business adoption and new emerging technologies and trends as they become relevant to the ICT profession as a whole (e.g. security, fintech, cloud, blockchain); - Interaction with different frameworks; - Curricula guidance; - ICT Professional Role Profiles; - Guidance for assessing the published standards; - Body of Knowledge (BoK) for ICT; - Development of an education and certification model related to e-CF; - Developing a sustainable code of ethics in the ever-changing ICT world. All conceptual developments shall be consistent and interrelated.
Structure	WG 1 Ethics and other Transversal aspects WG 2 Competence, skills, knowledge and roles WG 3 Education and Training WG 4 Quality, Strategy and Outreach
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:1218399&cs=16D21D7497970A5A38FB4CCE737358BFE

STANDARDIZATION WORK			
Published standards	10	**Projects**	0

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
Members	34 members of CEN/CENELEC
Luxembourg's involvement	NO (no registered delegate)

3.14 Fintech

ISO/TC 68 FINANCIAL SERVICES			
GENERAL INFORMATION			
Creation date	1972	**Secretariat**	ANSI (United States)
Chairperson	Mr. James Northey	**Committee Manager**	Ms. Janet Busch
Scope	Standardization in the field of banking, securities and other financial services.		
Structure	SC 2 Financial Services, security SC 8 Reference data for financial services SC 9 Information exchange for financial services AG 2 Standards Advisory Group AG 3 Best practices AG 4 Sustainable finance Advisory Group AG 5 Digital currencies AG 6 Artificial Intelligence CAG Strategic Leadership Group JWG 1 Joint ISO/TC 68- ISO/TC 307 WG: Digital Currencies TAG 1 Fintech Technical Advisory Group TG 1 Communications		
Webpage	https://www.iso.org/committee/49650.html		
STANDARDIZATION WORK			
Published standards	76	**Projects**	27
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	39 participating members (including **Luxembourg**)		
O-Members	46 observing members		
Luxembourg's involvement	**1 national delegate**		

ISO/TC 68/SC 2 FINANCIAL SERVICES, SECURITY			
GENERAL INFORMATION			
Creation date	1981	**Secretariat**	BSI (United Kingdom)
Chairperson	Ms. Lauren Jones	**Committee Manager**	Ms. Sarah Horsfield
Scope	Standardization for information security management and operations in financial services, excluding security and operations in reference data for financial services (covered by TC 68/SC 8) and information exchange for financial services (covered by TC 68/SC 9).		
Structure	CAG Chair's Advisory Group WG 8 Public key infrastructure management for financial services WG 11 Encryption algorithms used in banking applications WG 13 Security in retail banking WG 16 Security aspects related to third party payment service providers (TPP's) WG 17 Security aspects of digital currencies WG 19 Security aspects of code-scanning payment		
Webpage	https://www.iso.org/committee/49670.html		
STANDARDIZATION WORK			
Published standards	19	**Projects**	10

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	21 participating members
O-Members	22 observing members (including **Luxembourg**)
Luxembourg's involvement	**1 national delegate**

ISO/TC 68/SC 8
REFERENCE DATA FOR FINANCIAL SERVICES

GENERAL INFORMATION			
Creation date	2017	Secretariat	SNV (Switzerland)
Chairperson	Mr. Dominique Tanner	Committee Manager	Ms. Sandra Roth
Scope	Standardization in the field of reference data for financial services.		
Structure	CAG Chair Advisory Group AG 2 Instrument Identifier Advisory Group MA (Voting Members) ISO 20275 Maintenance Agency MA 1 (Voting Members) ISO 4217 Maintenance Agency MA 2 (Discussions) ISO 4217 Maintenance Agency MA 3 (Discussions) ISO 20275 Maintenance Agency MA 4 (Voting Members) ISO 10962 Maintenance Agency MA 5 (Discussions) ISO 10962 Maintenance Agency MA 6 (Voting members) ISO 5009 Maintenance Agency MA 7 (Discussions) ISO 5009 Maintenance Agency WG 3 Digital Token Identifier – DTI WG 7 Natural persons identifier WG 10 Revision of the FISN WG 11 Verifiable LEIs (vLEIs)		
Webpage	https://www.iso.org/committee/6534796.html		

STANDARDIZATION WORK			
Published standards	22	Projects	4

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	29 participating members (including **Luxembourg**)
O-Members	9 observing members
Luxembourg's involvement	**2 national delegates**

ISO/TC 68/SC 9
INFORMATION EXCHANGE FOR FINANCIAL SERVICES

GENERAL INFORMATION			
Creation date	2017	Secretariat	AFNOR (France)
Chairperson	Mr. Pierre Epaillard	Committee Manager	Ms. Aylin Kip
Scope	Standardization in the field of information exchange for financial services.		
Structure	AG 1 ISO 20022 RA Oversight Group MA 1 MA ISO 18245 Retail financial services - Merchant category codes MA 2 ISO 8583 Financial-transaction-card-originated messages -Interchange message specifications TG 1 Cards standards WG 1 ISO 20022 Semantic Models WG 3 Revision of ISO 8583 and ISO 18245 WG 4 ISO 20022 Revision WG 5 Improving transparency in financial and business reporting - Harmonization		
Webpage	https://www.iso.org/committee/6534831.html		

STANDARDIZATION WORK			
Published standards	35	Projects	12

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	25 participating members (including **Luxembourg**)
O-Members	7 observing members
Luxembourg's involvement	**1 national delegate**

3.15 Blockchain and Distributed Ledger Technologies

ISO/TC 307 BLOCKCHAIN AND DISTRIBUTED LEDGER TECHNOLOGIES			
GENERAL INFORMATION			
Creation date	2016	**Secretariat**	SA (Australia)
Chairperson	Dr. Scott Farrell	**Committee Manager**	Ms. Amy Howie
Scope	Standardization of blockchain technologies and distributed ledger technologies.		
Structure	AG 1 SBP Review Advisory Group AG 2 Liaison Advisory Group AG 3 Digital currencies AHG 4 DLT and carbon markets CAG 1 Convenors coordination group JWG 4 Joint TC 307 - JTC 1/SC 27 WG: Security, privacy and identity for Blockchain and DLT WG 1 Foundations WG 3 Smart contracts and their application WG 5 Governance WG 6 Use cases WG 7 Interoperability WG 8 Non-Fungible Tokens **Joint working groups under the responsibility of another committee:** ISO/TC 46/SC 11/JWG 1 Joint ISO/TC 46/SC 11 - ISO/TC 307 WG: Blockchain		
Webpage	https://www.iso.org/committee/6266604.html		
STANDARDIZATION WORK			
Published standards	12	**Projects**	11
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	44 participating members (including **Luxembourg**)		
O-Members	19 observing members		
Luxembourg's involvement	**10 national delegates**		

CEN/CLC/JTC 19 BLOCKCHAIN AND DISTRIBUTED LEDGER TECHNOLOGIES			
GENERAL INFORMATION			
Creation date	2019	**Secretariat**	UNI (Italy)
Chairperson	Mr. Andrea Caccia	**Secretary**	Ms. Carla Sirocchi
Scope	To prepare, develop and/or adopt standards for Blockchain and Distributed Ledger technologies covering the following aspects: - Organizational frameworks and methodologies, including IT management systems; - Processes and products evaluation schemes; - Blockchain and distributed ledger guidelines. The JTC will focus on European requirements, especially in the legislative and policy context, and will proceed with the identification and possible adoption of standards or other relevant documentation already available or under development in other SDOs or regulatory bodies, which could support the EU Digital Single Market and/or EC Directives/Regulations. Special attention will be paid to ISO/TC 307 standards. If required these standards will be augmented by CEN TRs and TSs.		
Structure	WG 1 Decentralised identity management WG 2 Environmental sustainability		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2702172&cs=148F2B917E4B67BCFD6FE36CE0EA923AC		

STANDARDIZATION WORK			
Published standards	1	**Projects**	3
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	**2 national delegates**		

3.16 Smart Grids and Smart Metering, Efficient Energy Use

IEC/SyC SMART ENERGY			
GENERAL INFORMATION			
Creation date	N/A	**Secretariat**	IEC
Chairperson	Mr. Pascal Terrien	**Secretary**	Mr. Stephen Dutnall
Scope	Standardization in the field of Smart Energy in order to provide systems level standardization, coordination and guidance in the areas of Smart Grid and Smart Energy, including interaction in the areas of Heat and Gas. To widely consult within the IEC community and the broader stakeholder community to provide overall systems level value, support and guidance to the TCs and other standard development groups, both inside and outside the IEC. To liaise and cooperate with the SEG Smart Cities and future SEGs, as well as the future Systems Resource Group.		
Structure	WG 2 IEC Smart Energy Development Plan WG 6 Generic Smart Grid Requirements WG 8 Distributed energy trading infrastructure JWG 3 IEC Smart Energy Roadmap linked to ISO/IEC JTC 1/SC 41 AG 1 Technical Committees Forum AG 4 Advisory group on Forums of SDOs & Regional Coordination Organizations ahG 9 Smart Hydropower ahG 11 ahG on Energy flexibility and residential DSR: common ground JPT 3 IEV part on terminology relating to systems, smart and digital Managed by TC 1 CAG 7 CAG Chair's Advisory Group		
Webpage	https://www.iec.ch/dyn/www/f?p=103:186:412103166380165::::FSP_ORG_ID,FSP_LANG_ID:11825,25		
STANDARDIZATION WORK			
Published standards	13	**Projects**	10
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	21 participating members		
O-Members	10 observing members		
Luxembourg's involvement	NO (no registered delegate)		

CEN/TC 294 COMMUNICATION SYSTEMS FOR METERS			
GENERAL INFORMATION			
Creation date	N/A	**Secretariat**	DIN (Germany)
Chairperson	Mr. Dipl.-Ing. Achim Reissinger	**Secretary**	Mrs. Mareike Tscheuschner
Scope	Standardization of communications interfaces for metering and submetering systems for Water, Fuel Gases, Heat and similar energies and fluids where the protocols are applied to the meters, sensors and actuators and systems used to provide metering services. Security features like Confidentiality, Authenticity and Integrity are provided at the application and lower layers. Cooperation with CENELEC and ETSI, in relation to consistent protocol and use of spectrum, is an essential condition for achieving interoperability between entities in systems. Excluded from this scope are areas, which are under the responsibility of CLC/TC 205 and CEN/TC 247.		
Structure	WG 2 Data exchange for meters on DLMS/COSEM systems WG 4 Data exchange for meters on M-Bus systems WG 5 Data exchange for meters on wireless M-Bus systems WG 7 Adaptation layer		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:6275&cs=16B74FE5CD11284942332D060BF8398B8		

STANDARDIZATION WORK			
Published standards	9	**Projects**	5
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

CEN/CLC/ETSI CG-SG COORDINATION GROUP ON SMART GRIDS

GENERAL INFORMATION			
Creation date	N/A	**Secretariat**	NEC (Netherlands)
Chairperson	Mr. Jörg Seiffert	**Secretary**	Mr. Arie Hardenbol
Scope	The CG-SG advises on European standardization requirements relating to smart electrical grid and multi-commodity smart metering standardization, including interactions between commodity systems (e.g. electricity, gas, heat, water), and assesses ways to address them. This includes interactions with end-users, including consumers/prosumers. Its aim is to promote the deployment of open and interoperable data architectures, based on European and international standards. The scope also includes any standards needed to design, operate and maintain electrical grids securely and efficiently. In the specific area of metering, its scope includes electricity, water, gas and heat/cooling metering devices and systems, and associated architectures. Within its scope the Group will address the European requirements resulting from the Clean Energy Package, including secondary legislation, and any other relevant Commission initiatives. The CG-SG shall also receive inputs from and provide input to the European Commission's activities related to standardization in the field of smart grids and meters. With respect to international standardization activities on smart grids and meters, the Group shall monitor the progress of the relevant standardization activities in ISO, IEC and ITU, and promote coordination between the European activities and those at the international level and promote when needed the consideration of European requirements within international standardization. The Group shall not develop standardization deliverables (e.g. European Standards, Technical Specifications, Technical Reports), but may develop informative material intended for the public domain after approval by the CEN and CENELEC Technical Boards (BTs) and ETSI Board.		
Structure	WG EUPOL WG Privacy and Security WG STD WG SmartMeters	EU policy Privacy and Security Coordination Group on Smart Energy Grids - Set of Standards Smart Meters	
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2252899&cs=163CBA1F1D1A26EC737AC8934C9951AFF		

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)		

3.17 ICT Environmental Impact: Green ICT

ISO/IEC JTC 1/SC 39 SUSTAINABILITY, IT AND DATA CENTRES			
GENERAL INFORMATION			
Creation date	2012	**Secretariat**	ANSI (United States)
Chairperson	Mr. David Reiner	**Committee Manager**	Mr. Bill Ash
Scope	Standardization of assessment methods, design practices, operation and management aspects to support resource efficiency, resilience and environmental sustainability for and by information, data centres and other facilities and infrastructure necessary for service provisioning. To avoid any duplication of work and to support innovation, SC 39 will engage in active liaison and collaboration with: - other JTC1 entities; - ISO TC 207, ISO TC 242, ISO TC 257; - IEC TC 100, IEC TC 111, IEC PC 118, SMB SG 4, IEC/TC 57/WG 2 and IEC/TC 9; - ITU-T SG 5; - Any other appropriate body including external organizations (e.g. consortia).		
Structure	WG 1 Resource Efficient Data Centres WG 3 Sustainable facilities and infrastructures WG 4 Eco-design of digital services		
Webpage	https://www.iso.org/committee/654019.html		
STANDARDIZATION WORK			
Published standards	29	**Projects**	9
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	26 participating members		
O-Members	13 observing members (including **Luxembourg**)		
Luxembourg's involvement	**4 national delegates**		

ETSI/TC EE ENVIRONMENTAL ENGINEERING	
GENERAL INFORMATION	
Creation date	1997
Chairperson	Mr. Beniamino Gorini
Scope	The Technical Committee EE is responsible for defining the environmental and infrastructural aspects for all telecommunication equipment and its environment, including equipment installed in subscriber premises. Wherever possible this will be achieved by references to existing international standards. The field includes: - Environmental Conditions (WG-EE1); - Power Supply, Bonding and related topics (WG-EE2); - Mechanical Structure and Physical design of equipment and structures; - Environmental affairs (WG-EEPS); - Environmental matters associated with Mobile ICT devices (WG M-ICT).
Structure	WG EE 1 Environmental Condition WG EE2 Power supply WG EE M-ICT Environmental matters associated with Mobile ICT Devices WG EEPS Eco Environmental Product Standards Group
Webpage	https://www.etsi.org/committee/ee

STANDARDIZATION WORK			
Published standards	221	**Projects**	29
NATIONAL INVOLVEMENT			
Luxembourg's involvement	NO national ETSI Members		

3.18 Smart Cities and Communities

ISO/IEC JTC 1/WG 11 SMART CITIES			
GENERAL INFORMATION			
Creation date	2013	**Secretariat**	SAC (China)
Convenor	Mr. Heng Qian	**Secretary**	Mr. Hongwei Zhang
Scope	- Serve as the focus of and proponent for JTC 1's Smart Cities standardization program; - Develop foundational standards for the use of ICT in Smart Cities - including the Smart City ICT Reference Framework and an Upper Level Ontology for Smart Cities - for guiding Smart Cities efforts throughout JTC 1 upon which other standards can be developed; - Develop a set of ICT related indicators for Smart Cities in collaboration with ISO/TC 268; - Develop additional Smart Cities' standards and other deliverables that build on these foundational standards; - Identify JTC 1 (and other organization) subgroups that are developing standards and related material that contribute to Smart Cities, and where appropriate, investigate ongoing and potential new work that contributes to Smart Cities; - Develop and maintain liaisons with all relevant JTC 1 subgroups; - Engage with the community outside of JTC 1 to grow the awareness of, and encourage engagement in, JTC 1 Smart Cities standardization efforts within JTC 1, forming liaisons as is needed; - Ensure a strong relationship with Smart Cities activities in ISO and IEC.		
STANDARDIZATION WORK			
Published standards	8	**Projects**	5
NATIONAL INVOLVEMENT			
Luxembourg's involvement	**2 national delegates**		

ISO/TC 268 SUSTAINABLE CITIES AND COMMUNITIES			
GENERAL INFORMATION			
Creation date	2012	**Secretariat**	AFNOR (France)
Chairperson	Mr. Bernard Gindroz	**Committee Manager**	Ms. Svitlana Grand-Chavin
Scope	Standardization in the field of Sustainable Cities and Communities will include the development of requirements, frameworks, guidance and supporting techniques and tools related to the achievement of sustainable development considering smartness and resilience, to help all Cities and Communities and their interested parties in both rural and urban areas become more sustainable. Note: TC 268 will contribute to the UN Sustainable Development Goals through its standardization work. The proposed series of International Standards will encourage the development and implementation of holistic and integrated approaches to sustainable development and sustainability.		
Structure	SC 1 Smart community infrastructures SC 2 Sustainable cities and communities - Sustainable mobility and transportation AHG 1 PWI Harbour Cities CAG 1 Chairman Advisory Group TG 1 Awareness-raising, communication and promotion TG 2 Collection of cities good practices and needs TG 3 Supporting the strategic positioning of ISO/TC 268 WG 1 Management System Standards		

	WG 2 City indicators WG 3 City anatomy and sustainability terms WG 4 Smart processes and operating models for sustainable communities WG 5 Risk Finance WG 6 Harbour cities services
Webpage	https://www.iso.org/committee/656906.html

STANDARDIZATION WORK			
Published standards	55	**Projects**	19

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	44 participating members
O-Members	29 observing members (including **Luxembourg**)
Luxembourg's involvement	**2 national delegates**

ISO/TC 268/SC 1 **SMART COMMUNITY INFRASTRUCTURES**	

GENERAL INFORMATION			
Creation date	2012	**Secretariat**	JISC (Japan)
Chairperson	Mr. Takahiro Kihara	**Committee Manager**	Ms. Ritsu Hamaoka
Scope	Standardization in the field of smart community infrastructure, including basic concepts to define and describe smartness of community infrastructure as an integrative large scale product, harmonized metrics for benchmarking, usage of the metrics for application to the diverse types of communities, and specifications for measurement/reporting/verification. ISO/TC 268 SC1 focuses on technical aspects of smart community infrastructure which are basic structures that support the operation and activities of urban communities, e.g. energy, water, resource management systems, ICT infrastructure. The concept of smartness is addressed in terms of performance relevant to technologically implementable solutions, based on multiple aspects including sustainability. NOTE TC 268/SC 1, within the Scope of TC 268, addresses subjects that can relate to the scope of other technical TC/SCs in ISO/IEC only when such TC/SCs are not addressing smart community infrastructure issues. In doing so, TC 268/SC 1 in principle collaborates with such relevant TCs/SCs, through liaison mechanism or joint work. TC 268/SC1 intends to disseminate the documents developed by those relevant technical TCs/SCs by referring to them. Excluded: Standardization of subjects covered by TC 268/SC 2.		
Structure	CAG 1 Chairman's Advisory Group TG 2 Smart Community Infrastructure - Pilot Testing WG 1 Infrastructure metrics WG 2 Integration and interaction framework for smart community infrastructures WG 4 Data exchange and sharing for smart community infrastructure WG 5 Power plant WG 6 Disaster risk reduction WG 7 Utility tunnel **Joint working groups under the responsibility of another committee** JWG 1 Joint ISO/IEC JTC 1 - ISO/TC 268/SC 1 WG - Smart city infrastructure planning		
Webpage	https://www.iso.org/committee/656967.html		

STANDARDIZATION WORK			
Published standards	18	**Projects**	6

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	27 participating members
O-Members	19 observing members
Luxembourg's involvement	NO (no registered delegate)

ISO/TC 268/SC 2 SUSTAINABLE CITIES AND COMMUNITIES - SUSTAINABLE MOBILITY AND TRANSPORTATION			
GENERAL INFORMATION			
Creation date	2021	**Secretariat**	JISC (Japan)
Chairperson	Mr. Masanori Misumi	**Committee Manager**	Mr. Koichi Matsuoka
Scope	Standardization in the field of Sustainable mobility and transportation will promote and support a multi-sectorial integrated approach of sustainable cities and communities with a long-term vision based on the purposes of sustainability defined in ISO 37101. The SubCommittee will consider organisational issues, infrastructures and services in the mobility and transportation options for cities and communities, including those related to new technologies (i.e. electric, hydrogen, autonomous). The proposed series of International Standards will provide requirements, frameworks, guidance and supporting techniques and tools for cities and territories, as well as all mobility and transportation stakeholders to plan, develop, operate, maintain and manage sustainable mobility and transportation systems and services with a long-term vision. Excluded: Road Vehicles covered by ISO/TC 22, Intelligent transport systems covered by ISO/TC 204, Railway applications covered by ISO/TC 269, and Electrical equipment and systems for railways covered by IEC/TC 9. Note: To ensure the development of a consistent set of standards on Sustainable mobility, ISO/TC 268/SC2 will liaise with relevant ISO and IEC committees.		
Structure	AHG 1 Smart operation and maintenance WG 1 Digital governance WG 2 Platform and services		
Webpage	https://www.iso.org/committee/8742800.html		
STANDARDIZATION WORK			
Published standards	18	**Projects**	6
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	21 participating members		
O-Members	17 observing members (including **Luxembourg**)		
Luxembourg's involvement	**1 national delegate**		

IEC/SyC SMART CITIES ELECTROTECHNICAL ASPECTS OF SMART CITIES			
GENERAL INFORMATION			
Creation date	N/A	**Secretariat**	IEC
Chairperson	Mr. Michael John Mulquin	**Secretary**	Mr. Gennaro Ruggiero
Scope	To foster the development of standards in the field of electrotechnology to help with the integration, interoperability and effectiveness of city systems. Note 1: This will be done: - by promoting the collaboration and systems thinking between IEC/TCs, the SyC and other SDOs in relation to City systems standards, - by undertaking systems analysis to understand the needs for standards and assess new work item proposals (NWIPs) related to city systems, - by developing systems standards where needed and by providing recommendations to existing SyCs, TCs/SCs and other SDOs. Note 2: Overall common city goals include, for example, sustainable development, efficiency, resilience, safety and support for citizens' engagement and participation. However, an individual city will follow its own approach. Note 3: "Cities" refers to any geographically located population.		
Structure	WG 1 Terminology WG 2 Market Relationship WG 3 Reference Architecture		

	MT 15 Maintenance of IEC 63152 – City Service Continuity against disasters, the role of the electrical supply JWG 14 Smart Cities Reference Architecture linked to ISO/TC 268 JWG 16 City Information Modelling and Urban Digital Twins linked to ISO/IEC JTC 1 AG 10 Cooperation AG 11 Communications, Outreach, Promotion & Advocacy based Strategy Advisory Group (COPAG) AG 12 City Observatory & Research Advisory Group (CORAG) ahG 6 Developing good working practice in the Governance Framework ahG 8 Strategy ahG 9 Sustainable Digital Transformation of the Urban Landscape ahG 17 Project incubation ahG 18 Smart Lamp Post JPT 3 IEV part on terminology relating to systems, smart and digital Managed by TC 1
Webpage	https://www.iec.ch/dyn/www/f?p=103:186:412103166380165::::FSP_ORG_ID,FSP_LANG_ID:13073,25

STANDARDIZATION WORK			
Published standards	14	**Projects**	15

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	18 participating members
O-Members	17 observing members
Luxembourg's involvement	NO (no registered delegate)

CEN/TC 465 SUSTAINABLE CITIES AND COMMUNITIES			
GENERAL INFORMATION			
Creation date	2019	**Secretariat**	AFNOR (France)
Chairperson	Mr. Holger Robrecht	**Secretary**	Ms. Svitlana Grand-Chavin
Scope	Standardization in the field of Sustainable Cities and Communities, covering the development of requirements, frameworks, guidance and supporting tools and techniques. The proposed standardization plan will be developed to assist cities and community decision making, and support their implementation of sustainability and sustainable development. Standardization will focus on the development of a holistic and integrated approach in response to the needs of European Cities and Communities in both rural and urban areas. It is proposed that the standardization activities focus on: - the purposes of urban sustainable development as defined by ISO 37101 related to Sustainable Cities and Communities, namely resilience, attractiveness, well-being, social cohesion, preservation and improvement of environment, responsible resource use, aligned with the main pillars of sustainable development (economic, environmental and social); - all innovative approaches to solution and service delivery, designed for use by all Cities and Communities, Citizens and their interested parties as a means of achieving the sustainability of urban and rural development, with the aim of continuously improving solutions and services.		
Structure	WG 1 Nature-Based Solutions WG 2 Services to citizens WG 3 Territorial Resilience Development		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:2691595&cs=1B4B2B4D071921D6418AE8D855A9F8585		
STANDARDIZATION WORK			
Published standards	2	**Projects**	3
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

3.19 Intelligent Transport Systems

ISO/TC 204 INTELLIGENT TRANSPORT SYSTEMS			
GENERAL INFORMATION			
Creation date	1992	**Secretariat**	ANSI (France)
Chairperson	Mr. Koorosh Olyai	**Committee Manager**	Ms. Jennifer Collins
Scope	Standardization of information, communication and control systems in the field of urban and rural surface transportation, including intermodal and multimodal aspects thereof, traveller information, traffic management, public transport, commercial transport, emergency services and commercial services in the intelligent transport systems (ITS) field. Excluded: in-vehicle transport information and control systems (ISO / TC 22). Note: ISO/TC 204 is responsible for the overall system aspects and infrastructure aspects of intelligent transport systems (ITS), as well as the coordination of the overall ISO work programme in this field including the schedule for standards development, taking into account the work of existing international standardization bodies.		
Structure	AG 2 Identifiers AG 3 Operational improvement group (OIG) AG 4 Program coordination AG 5 Publication and marketing review JWG 1 Joint ISO/TC 204 - ISO/IEC JTC1 WG: City data model transportation planning WG 1 Architecture WG 3 ITS geographic data WG 5 Fee and toll collection WG 7 Cooperative systems WG 8 Public transport/emergency WG 9 Integrated transport information, management and control WG 10 Integrated transport information, management and control WG 14 Vehicle/roadway warning and control systems WG 16 Communications WG 17 Nomadic Devices in ITS Systems WG 18 Cooperative systems WG 19 Mobility integration WG 20 Big Data and Artificial Intelligence supporting ITS **Joint working groups under the responsibility of another committee:** JWG 11 Joint ISO/TC 211 - ISO/TC 204 WG: GIS-ITS		
Webpage	https://www.iso.org/committee/54706.html		
STANDARDIZATION WORK			
Published standards	347	**Projects**	77
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	36 participating members (including **Luxembourg**)		
O-Members	27 observing members		
Luxembourg's involvement	**1 national delegate**		

CEN/TC 278 INTELLIGENT TRANSPORT SYSTEMS			
GENERAL INFORMATION			
Creation date	1992	**Secretariat**	NEN (Netherlands)
Chairperson	Mr. Hans Nobbe	**Secretary**	Mr. Paul Folten
Scope	Standardization in the field of intelligent transport systems, encompassing services and techniques to achieve road safety, environmental sustainability and traffic efficiency, and		

	to improve the travel experience; applying information and communication technologies between vehicles/infrastructure/other road users. The following are included: aspects of cooperation (C-ITS); intermodality and multimodality; traffic management; mobility information; mobility integration; mobility as a service; systems and services for vulnerable road users; ITS services for automated vehicles; parking management; user fee collection; public transport management; eCall; after-theft vehicle recovery systems; kerbside and pavement management. Mobility accessibility for all users is an important aspect of ITS standardization.
Structure	WG 1 Electronic fee collection and access control (EFC) WG 3 Public transport (PT) WG 4 Traffic and traveller information (TTI) WG 7 ITS spatial data WG 8 Road traffic data (RTD) WG 15 eSafety WG 16 Cooperative ITS WG 17 Mobility integration
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:6259&cs=164A194F2D8EB9ACD98538F3DDE9CA11B
STANDARDIZATION WORK	
Published standards	201 — **Projects** 55
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
Members	34 members of CEN/CENELEC
Luxembourg's involvement	**2 national delegates**

ETSI/TC ITS INTELLIGENT TRANSPORT SYSTEMS	
GENERAL INFORMATION	
Creation date	2012
Chairperson	Mr. Andersen Niels Peter Skov
Scope	TC ITS shall have the following responsibility: - Development and maintenance of Standards, Specifications and other deliverables to support the development and implementation of ITS Service provision across the network, for transport networks, vehicles and transport users, including interface aspects and multiple modes of transport and interoperability between systems, but not including ITS application standards, radio matters, and EMC; - Scope includes communication media, and associated physical layer, transport layer, network layer, security, lawful intercept and the provision of generic web services.
Structure	WG 1 Application Requirements and Services WG 2 Architecture and Cross Layer WG 3 Transport and Network WG 4 Media and Medium Related WG 5 Security
Webpage	https://www.etsi.org/committee/1402-its
STANDARDIZATION WORK	
Published standards	438 — **Projects** 60
NATIONAL INVOLVEMENT	
Luxembourg's involvement	**1 national ETSI Member**

3.20 Digitization of European Industry: Smart Manufacturing

ISO/IEC JTC 1/WG 12 3D PRINTING AND SCANNING			
GENERAL INFORMATION			
Creation date	2018	**Secretariat**	SAC (China)
Convenor	Prof. Kyu-Won Shim	**Secretary**	Ms. Yaeseul Park
Scope	- Serve as a focus of and proponent for the JTC 1 standardization program on 3D Printing and Scanning; - Develop ICT related foundational standards for 3D Printing and Scanning upon which other standards can be developed; - Develop other 3D Printing and Scanning standards that are built upon the foundational standards when relevant ISO and IEC committees that could address these standards do not exist or are unable to develop them; - Identify gaps and opportunities in 3D Printing and Scanning standardization; - Develop and maintain liaisons with all relevant ISO and IEC committees as well as with external organizations that have interests in 3D Printing and Scanning; - Engage with 3D Printing and Scanning communities to raise awareness of JTC 1 standardization efforts and provide an open platform for discussion and further cooperation; - Develop and maintain a list of existing 3D Printing and Scanning standards produced and standards development projects underway in ISO TCs, IEC TCs and JTC 1.		
STANDARDIZATION WORK			
Published standards	3	**Projects**	6
NATIONAL INVOLVEMENT			
Luxembourg's involvement	NO (no registered delegate)		

ISO/TC 184 AUTOMATION SYSTEMS AND INTEGRATION			
GENERAL INFORMATION			
Creation date	1983	**Secretariat**	AFNOR (France)
Chairperson	Mr. Benjamin Martinez	**Committee Manager**	Ms. Isabelle Pereira
Scope	Standardization in the field of automation systems and their integration for design, sourcing, manufacturing, production and delivery, support, maintenance and disposal of products and their associated services. Areas of standardization include information systems, automation and control systems and integration technologies. Note: There will be active collaboration with the relevant technical committees responsible for areas such as machines, manufacturing resources and facilities, robotics, electrical and electronic equipment, PLC for general application, quality management, industrial safety, information technologies, multi-media capabilities, and multi-modal communication networks.		
Structure	SC 1 Industrial cyber and physical device control SC 4 Industrial data SC 5 Interoperability, integration, and architectures for enterprise systems and automation applications AG 2 Digital Twin AHG 2 Environmental criteria AHG 3 Liaison review AHG 4 Smart manufacturing - next steps CAG Chair's Advisory Group JWG 21 Smart Manufacturing Reference Model(s) linked to ISO/TC 184 TF 3 2026 Supermeeting WG 6 Asset intensive industry interoperability		

Webpage	https://www.iso.org/committee/54110.html		
STANDARDIZATION WORK			
Published standards	914	**Projects**	60
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	24 participating members		
O-Members	22 observing members		
Luxembourg's involvement	NO (no registered delegate)		

ISO/TC 184/SC 1 INDUSTRIAL CYBER AND PHYSICAL DEVICE CONTROL

GENERAL INFORMATION			
Creation date	1985	**Secretariat**	DIN (Germany)
Chairperson	Mr. Jörg Meyer	**Committee Manager**	Mr. Christian Neumeister
Scope	N/A		
Structure	WG 7 Data modelling for integration of physical devices WG 9 Interfaces between manufacturing systems WG 10 Numerical control systems for machine tools - Technical requirements WG 11 Reference model for cyber - Physically controlled smart machine tool systems		
Webpage	https://www.iso.org/committee/54124.html		
STANDARDIZATION WORK			
Published standards	28	**Projects**	6
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	12 participating members		
O-Members	12 observing members		
Luxembourg's involvement	NO (no registered delegate)		

ISO/TC 184/SC 4 INDUSTRIAL DATA

GENERAL INFORMATION			
Creation date	1984	**Secretariat**	ANSI (United States)
Chairperson	Mr. Kenneth Swope	**Committee Manager**	Ms. Dana Tripp
Scope	Standardization of the content, meaning, structure, representation and quality management of the information required to define an engineered product and its characteristics at any required level of detail at any part of its life-cycle from conception through disposal, together with the interfaces required to deliver and collect the information necessary to support any business or technical process or service related to that engineered product during its life-cycle. Note: Life-cycle includes recursive recycling to a terminal state.		
Structure	AG 0 Change management advisory group AG 2 Implementation Forum AG 3 Core terminology for industrial data AHG 3 UUID management for industrial data JWG 16 Joint ISO/TC 184/SC 4 - ISO/IEC JTC 1/SC 24 - ISO/TC 171/SC 2 WG: Formats for visualization and other derived forms of product data JWG 24 Joint ISO/TC 184/SC 4 - IEC SC3D WG: Use of IEC CDD for ISO data dictionaries and ontologies PPC Policy and planning committee QC Quality committee TF 1 ISO 10303 SMRL architecture innovation TF 2 SC 4 reference model for industrial data TF 3 SC 4 common change process		

	WG 3 Oil, Gas, Process and Power WG 11 Implementation methods and conformance methods WG 12 STEP product modelling and resources WG 13 Industrial Data Quality WG 15 Digital manufacturing WG 21 SMRL Validation Team WG 22 Reference data validation team WG 23 Vocabulary validation team WG 25 ISO CDD Validation Team WG 26 Ontology-based interoperability **Joint working groups under the responsibility of another committee:** JWG 12 Joint TC 59/SC 13 - TC 184/SC 4 WG: Development of building data related standards
Webpage	https://www.iso.org/committee/54158.html

STANDARDIZATION WORK			
Published standards	814	**Projects**	30

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	22 participating members
O-Members	12 observing members
Luxembourg's involvement	NO (no registered delegate)

ISO/TC 184/SC 5 INTEROPERABILITY, INTEGRATION, AND ARCHITECTURES FOR ENTERPRISE SYSTEMS AND AUTOMATION APPLICATIONS

GENERAL INFORMATION			
Creation date	1970	**Secretariat**	ANSI (United States)
Chairperson	Dr. Charlotta Johnsson	**Committee Manager**	Mr. Wallie Zoller
Scope	Standardization in the field of automation systems and their integration for design, sourcing, manufacturing, production and delivery, support, maintenance and disposal of products and their associated services. Areas of standardization include information systems, automation and control systems and integration technologies. Note: There will be active collaboration with the relevant technical committees responsible for areas such as machines, manufacturing resources and facilities, robotics, electrical and electronic equipment, PLC for general application, quality management, industrial safety, information technologies, multi-media capabilities, and multi-modal communication networks.		
Structure	AG 1 SC5 Advisory Group JWG 5 Joint WG ISO/TC 184/SC 5 - IEC/SC 65E: Enterprise-control system integration SG 7 Interoperability of simulation models on different platforms WG 1 Modelling and architecture WG 4 Manufacturing software and its environment WG 5 Open systems application frameworks WG 9 Key performance indicators for manufacturing operations management WG 10 Evaluation of energy efficiency and other relevant factors of a manufacturing system with respect to its environmental influence WG 12 Convergence of informatization and industrialization WG 13 Equipment behaviour catalogue WG 14 Mass customization WG 15 Model-based standards authoring study group WG 16 Supply chain interoperability and integration (SCII) WG 17 Interoperability of simulation models on different manufacturing platforms		
Webpage	https://www.iso.org/committee/54192.html		

STANDARDIZATION WORK			
Published standards	67	**Projects**	21

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	18 participating members
O-Members	14 observing members
Luxembourg's involvement	NO (no registered delegate)

IEC/SyC SM SMART MANUFACTURING			
GENERAL INFORMATION			
Creation date	N/A	Secretariat	ANSI (United States)
Chairperson	Mr. Udo Bausch	Committee Manager	Mr. Wallie Zoller
Scope	To provide coordination and advice in the domain of Smart Manufacturing to harmonize and advance Smart Manufacturing activities in the IEC, other SDOs and Consortia.		
Structure	WG 1 Use Cases & Supporting IT Tools WG 2 Terminology WG 3 Navigation Tools for SyC SM AG 1 Marketing, Outreach and Communication ahG 5 SRG Review ahG 6 Develop a Strategic Business Plan (SBP) for SyC SM ahG 7 Collaborative Safety for Smart Manufacturing ahG 8 Data spaces for Smart Manufacturing ahG 9 Key Performance Aspects for Smart Manufacturing JPT 3 IEV part on terminology relating to systems, smart and digital Managed by TC 1 CAG 1 Chair's Advisory Group OF 1 Smart Manufacturing Standards Map (SM2)		
Webpage	https://www.iec.ch/dyn/www/f?p=103:186:412103166380165::::FSP_ORG_ID,FSP_LANG_ID:22328,25		
STANDARDIZATION WORK			
Published standards	3	Projects	1
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	19 participating members		
O-Members	11 observing members		
Luxembourg's involvement	NO (no registered delegate)		

CEN/TC 310 ADVANCED AUTOMATION TECHNOLOGIES AND THEIR APPLICATIONS			
GENERAL INFORMATION			
Creation date	1993	Secretariat	BSI (United Kingdom)
Chairperson	Mr. Steven Carter	Secretary	Ms. Sophie Erskine
Scope	Standardization in the field of automation systems and technologies and their application and integration to ensure the availability of the standards required by industry for design, sourcing, manufacturing and delivery, support, maintenance and disposal of products and their associated services. Areas of standardisation may include enterprise modelling and system architecture, information and its supporting systems, robotics for fixed and mobile robots in industrial and specific non-industrial environments, automation and control equipment and software, human and mechanical aspects, integration technologies and system operational aspects. These standards may utilise other standards and technologies beyond the scope of TC 310, such as machines, equipment, information technologies, multi-media capabilities, and multi-modal communications networks.		
Structure	WG 1 Systems architecture		
Webpage	https://standards.cencenelec.eu/dyn/www/f?p=205:7:0::::FSP_ORG_ID:6291&cs=1CFCF7BD7724745E1244888BF6EA45B75		

STANDARDIZATION WORK			
Published standards	7	**Projects**	3
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
Members	34 members of CEN/CENELEC		
Luxembourg's involvement	NO (no registered delegate)		

3.21 Robotics and Autonomous Systems

ISO/TC 299 ROBOTICS			
GENERAL INFORMATION			
Creation date	2015	**Secretariat**	SIS (Sweden)
Chairperson	Mr. Tomas Lagerberg	**Committee Manager**	Ms. Katarina Widström
Scope	Standardization in the field of robotics, excluding toys and military applications.		
Structure	AG 1 Communications group CAG Chair's Advisory Group JWG 5 Joint ISO/TC 299 - IEC/SC 62A - IEC/SC 62D WG: Medical robot safety SG 1 Study group on common robotics safety standard WG 1 Vocabulary and characteristics WG 2 Service robot safety WG 3 Industrial safety WG 4 Service robot performance WG 6 Modularity for service robots WG 7 Management system for service robots WG 8 Biomechanical Data and Validation Methods for Physical Human-Robot Interactions WG 9 Electrical interfaces for industrial robot end-effectors WG 10 Industrial mobile robot interoperability and communication WG 11 Measuring energy consumption for industrial robots		
Webpage	https://www.iso.org/committee/5915511.html		
STANDARDIZATION WORK			
Published standards	32	**Projects**	15
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	28 participating members		
O-Members	12 observing members		
Luxembourg's involvement	NO (no registered delegate)		

3.22 Technical Committees Falling Outside of the Classification

ISO/IEC JTC 1 INFORMATION TECHNOLOGY			
GENERAL INFORMATION			
Creation date	1987	**Secretariat**	ANSI (United States)
Chairperson	Mr. Phil Wennblom	**Committee Manager**	Mrs. Lisa Rajchel
Scope	Standardization in the field of information technology.		
Structure	SC 2 Coded character sets SC 6 Telecommunications 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 capture 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 and 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 AG 1 Advisory Group on Communications AG 2 Advisory Group on 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 Unmanned Aircraft Systems (UAS) AG 20 Coordination with ISO/TC 268/SC 1 on Smart Community Infrastructures AG 22 Coordination with World Economic Forum AHG 4 Collaboration across domains AHG 5 JTC 1 Standards Made Freely Available AHG 7 Supplement alignment AHG 8 Succession Planning CG 1 Strategic coordination group on data management and data governance CG 2 Strategic coordination group on Metaverse JAG JTC 1 Advisory Group JWG 1 Joint ISO/IEC JTC 1 - ISO/TC 268/SC 1 WG - Smart city infrastructure planning WG 11 Smart cities WG 12 3D Printing and scanning WG 13 Trustworthiness WG 15 JTC1 vocabulary **Joint working groups under the responsibility of another committee:** JWG 1 Joint ISO/TC 204 - JTC1 WG: City data model transportation planning		
Webpage	https://www.iso.org/committee/45020.html		
STANDARDIZATION WORK			
Published standards	3532 (537 under the direct responsibility of JTC 1)	**Projects**	520 (25 under the direct responsibility of JTC 1)

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	41 participating members (including **Luxembourg**)
O-Members	62 observing members
Luxembourg's involvement	**9 national delegates**

ISO/IEC JTC 1/SC 28 OFFICE EQUIPMENT			
GENERAL INFORMATION			
Creation date	1990	Secretariat	JISC (Japan)
Chairperson	Mr. Takashi Ito	Committee Manager	Mr. Nobuaki Hamada
Scope	Standardization of basic characteristics, test methods and other related items of products such as 2D and 3D Printers/Scanners, Copiers, Projectors, Fax and Systems composed of their combinations, excluding such interfaces as user system interfaces, communication interfaces and protocols.		
Structure	AG Advisory Group WG 2 Consumables WG 3 Productivity WG 4 Image quality assessment WG 5 Office Colour WG 6 Sustainability requirements **Joint working groups under the responsibility of another committee:** JWG 27 Joint ISO/TC 42 – JTC 1/SC 28 - ISO/TC 130 WG: Image permanence & durability test methods and specifications for digital prints in commercial applications JWG 14 Joint TC 130 - TC 42 - JTC 1/SC 28 WG: Print quality measurement methods		
Webpage	https://www.iso.org/committee/45314.html		
STANDARDIZATION WORK			
Published standards	39	Projects	6
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT			
P-Members	11 participating members		
O-Members	20 observing members		
Luxembourg's involvement	No (no registered delegate)		

IEC/SyC BDD BIO-DIGITAL CONVERGENCE			
GENERAL INFORMATION			
Creation date	2024	Secretariat	IEC
Chairperson	Mr François Coallier	Secretary	Mr. Ruggiero Gennaro
Scope	Systems level standardization activities in the domain of bio-digital convergence for the IEC, including ISO/IEC JTC 1. - Facilitate outreach and influence the work on bio-digital convergence with ISO, other SDOs, and industry consortia, in collaboration with relevant IEC entities and thus facilitate the advancement and coordination of bio-digital convergence standardization. - Collection, evaluation, and classification of existing standards that are relevant in the field of BDC. Identification of gaps. - Identify and assess potential new forthcoming bio-digital convergence topics and problematics that may become relevant to IEC activities and recommend to the SMB an appropriate course of action to meet the needs of the global community.		
Structure	WG 1 Reverse Engineering of Living Systems WG 2 Life Systems and Bioengineering WG 3 Human Augmentation Technologies WG 4 Agricultural Bioengineering WG 5 Environmental Bioengineering		

	JWG 33 Embodied IoT Systems Managed by ISO/IEC JTC 1/SC 41 AG 14 TSF Reverse Engineering of Living Systems AG 15 TSF Life Systems and Bioengineering AG 16 TSF Human Augmentation Technologies AG 17 TSF Agricultural Bioengineering AG 18 TSF Environmental Bioengineering ahG 7 Bio-digital convergence ethical and societal considerations CAG 6 Chair's Advisory Group OF 8 Open Forum – Reverse Engineering of Living Systems OF 9 Open Forum – Life Systems and Bioengineering OF 10 Open Forum – Human Augmentation Technologies OF 11 Open Forum – Agricultural Bioengineering OF 12 Open Forum – Environmental Bioengineering OF 13 Open Forum – Transfer of former SEG 12 Members
Webpage	https://www.iec.ch/dyn/www/f?p=103:186:412103166380165::::FSP_ORG_ID,FSP_LANG_ID:49793,25

STANDARDIZATION WORK			
Published standards	0	**Projects**	2

INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT	
P-Members	8 participating members
O-Members	14 observing members
Luxembourg's involvement	NO (no registered delegate)

IEC/TC 100
AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT

GENERAL INFORMATION			
Creation date	-	**Secretariat**	Japan
Chairperson	Mrs. Ulrike Haltrich	**Secretary**	Ms. Mahiru Uehara
Scope	To prepare international publications in the field of audio, video and multimedia systems and equipment. These publications mainly include specification of the performance, methods of measurement for consumer and professional equipment and their application in systems and its interoperability with other systems or equipment. Note: Multimedia is the integration of any form of audio, video, graphics, data and telecommunication and integration includes the production, storage, processing, transmission, display and reproduction of such information.		
Structure	TA 1 Terminals for audio, video and data services and content TA 2 Colour measurement and management TA 4 Digital system interfaces and protocols TA 5 Cable networks for television signals, sound signals and interactive services TA 6 Storage media, storage data structures, storage systems and equipment TA 15 Wireless Power Transfer TA 16 Active Assisted Living (AAL), wearable electronic devices and technologies, accessibility and user interfaces TA 17 Multimedia systems and equipment for vehicles TA 18 Multimedia home systems and applications for end-user networks TA 19 Environmental and energy aspects for multimedia systems and equipment TA 20 Analogue and digital audio WG 11 User's Quality of Experience (QoE) on Multimedia Conferencing Services WG 12 Multimedia systems and equipment for metaverse PT 63448 Low and Ultra-low Latency Communication and Control Systems PT 63558 Automatic speech recognition: Classification by acoustic and linguistic indicators in the real environment. PT 63565 Visual comfort of display terminals MT 61947 Electronic projection - Measurement and documentation of key performance criteria MT 62394 Service diagnostic interface for consumer electronics products and networks - Implementation for ECHONET		

	AG 3	General Maintenance Team (GMT)
	AG 13	Chair's advisory group (CAG)
	AG 21	Terminology
	ahG 10	TC 100 strategic priorities and future topics and Use cases and related studies
	EG 5	Editing Group
	JAG 22	Coordination of standardization activities relating to the scope of TC 100 and TC 110 linked to TC 110
Webpage	https://www.iec.ch/dyn/www/f?p=103:7:504511597878065::::FSP_ORG_ID,FSP_LANG_ID:1297,25	
STANDARDIZATION WORK		
Published standards	576	**Projects** 11
INTERNATIONAL MEMBERS AND NATIONAL INVOLVEMENT		
P-Members	22 participating members	
O-Members	24 observing members	
Luxembourg's involvement	NO (no registered delegate)	

3.23 ITU-T Study groups

ITU-T study groups (SG) enable ITU-T members to work collaboratively to develop standards known as ITU Recommendations for the various fields from a telecommunications perspective.

Participation in an ITU-T SG is done directly by the entity interested, and not through ILNAS. Table 1 lists the existing SGs.

SG	TITLE AND LINK	RELATED SUBSECTOR(S)
SG 2	Operational aspects of telecommunications and ICTs	Telecommunications and Networking, and Emergency Telecommunication
SG 3	Tariff and accounting principles and international telecommunication/ICT economic and policy issues	
SG 5	Environment, EMF & circular economy	ICT Environmental Impact: Green ICT
SG 11	Signalling requirements, protocols, test specifications and combating counterfeit telecommunication/ICT devices	Telecommunications and Networking, and Emergency Telecommunication
SG 12	Performance, quality of service and quality of experience	
SG 13	Future networks and emerging network technologies	Cloud and Edge Computing Telecommunications and Networking, and Emergency Telecommunication
SG 15	Networks, technologies and infrastructures for transport, access and home	Telecommunications and Networking, and Emergency Telecommunication
SG 17	Security	Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy Protection
SG 20	Internet of Things, digital twins and smart sustainable cities and communities	Internet of Things; Smart Cities and Communities
SG 21	Technologies for multimedia, content delivery and cable television	Telecommunications and Networking, and Emergency Telecommunication

Table 1: ITU study groups

3.24 ETSI Industry Specification Groups and CEN/CLC Workshops

3.24.1 ETSI Industry Specification Groups

An Industry Specification Group (ISG) is a quickly set-up type of ETSI structure that produces deliverables related to a very specific technology area. It is a structure that operates alongside ETSI technical committees, and within which both ETSI members and non-members can participate. The deliverables produced are either informative reports (known as Group Reports) or recommendations (known as Group Specifications).

As is the case for ETSI TCs, registration to an ISG is done directly by the entity interested, and not through ILNAS. Table 2 below lists the existing ISGs.

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
F5G	5th Generation Fixed Network	Telecommunications and Networking, and Emergency Telecommunication
ISAC	Integrated Sensing And Communications	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	
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
THz	TeraHertz technology	Telecommunications and Networking, and Emergency Telecommunication
ZSM	Zero-touch network and Service Management	

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

3.24.2 CEN/CENELEC Workshops

CEN, CENELEC, or CEN/CENELEC Workshops (WS) are structures set up to quickly produce documents that are considered reference documents by those entities participating in the Workshop. These are typically set up for rapidly evolving technologies or fields. The documents produced are known as CEN (or CENELEC) Workshop Agreements, or CWAs. While they are meant to be quickly produced reference documents, a process exists to make them into European standards, if deemed suitable.

Participation in a Workshop is done directly, and notably is open also to non-Europeans. Registration in a Workshop is not done through ILNAS.

Table 3 below lists some of those WS that exist, relevant to ICT.

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

WS	TITLE AND LINK	RELATED SUBSECTOR(S)
CEN/WS JXF	XFS for the Java Platform	Fintech
CEN/WS IHAN	Elements of fair and functioning data economy: identity, consent and logging	Data Economy Digital Trust: Cybersecurity, Network and Information security, Trustworthiness, and Privacy protection
CEN/WS ICT	ICT/SKILLS Workshop (IT profiles and curricula)	Education, Digital Skills, and Digital Learning
CEN/WS SensorAPI	CBRNe SENSOR API Network Protocols, Data Formats and Interfaces	Internet of Things Telecommunications and Networking, and Emergency Telecommunication
CEN/WS XRLPA	eXtended Reality (XR) for Learning and Performance Augmentation	Education, Digital Skills, and Digital Learning Artificial Intelligence, Big Data and Virtual Reality
CEN/WS COVR	Safety in close human-robot interaction: procedures for validation tests	Robotics and Autonomous Systems
CEN/WS XFS	eXtensions for Financial Services	Fintech
CEN/WS XFS	Assessing machine learning-based pandemic crisis prediction and management tools in STADEM trials	Artificial Intelligence, Big Data and Virtual Reality

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

4 OPPORTUNITIES FOR THE NATIONAL MARKET

The purpose of this Standards Analysis "ICT Sector - Luxembourg" is to encourage the participation of national stakeholders in technical standardization, as doing so would directly contribute to supporting and stimulating the Luxembourg ICT market's competitiveness, visibility and performance. Many national organizations are involved in ICT technical standardization, offering them unique opportunities to participate in the process and help design the future global ICT landscape, in all topics ranging from Software Engineering to the new Smart ICT paradigms (e.g.: Quantum Technologies, Artificial Intelligence, Blockchain), and through Information Security and Digital Trust. This chapter provides an overview of ILNAS developments aiming at facilitating the involvement of stakeholders in the technical standardization process, for the benefit of the national economy.

The ICT sector is, at a national level, the most active standardization sector. Luxembourg is a "P-member"[12] of ISO/IEC JTC 1 and represents national interests in its plenary meetings. 87 delegates[13] from the country are currently involved in international and European technical standardization committees of the ICT sector. However, considering the size and richness of the ecosystem of organizations involved in ICT in Luxembourg, ILNAS believes that ICT standardization technical committees could still attract more national stakeholders and make them benefit from related opportunities. In this way, ILNAS, with the support of ANEC GIE, is following ICT-related technical committees to provide the most relevant information to the national ICT community.

In short, ILNAS, with the support of ANEC GIE, undergoes different activities to inform national stakeholders and support their normative steps. The opportunities presented in this chapter are available at the national level and should be considered by stakeholders as a series of proposals, inviting them to go further and to engage in activities to take advantage of standardization.

4.1 Information about Standardization

4.1.1 Awareness Sessions

Interested national stakeholders can contact ILNAS and ANEC GIE to set up a dedicated awareness session. This kind of meeting aims at providing basic knowledge about standardization as well as information that meets the standards-related interests of the requesting organization. A sample of relevant technical committees and standards projects under development is given to allow one to take advantage of standardization, for example by registering in the identified technical committees.

Aside from making direct contact, interested stakeholders can also fill out a declaration of interest in ICT standardization that ILNAS and ANEC GIE will act on.

4.1.2 ICT Standards Watch

The objective of this Standards Analysis is to facilitate the identification of technical committees in the ICT domain that meet organizations' potential interests. In addition, ILNAS, with the support of ANEC GIE, proposes a focused standards watch service to answer the needs of a given national organization. This service consists in the analysis of relevant standards (both published and under development) and technical committees related to a specific need identified by the requesting organization. A standards watch report is delivered at the end of the process, and some additional steps can be proposed by

[12] P-members actively participate by voting on the standard at various stages of its development, while O-members can observe the standards that are being developed, offering comments and advice. See the ISO website for more detail.
[13] Some experts are registered in more than one technical committee.

ILNAS and ANEC GIE, such as registration in one or more targeted technical committees to allow the follow-up of the relevant standardization developments by the requesting organization. This service can also consist in the verification of already-established standards catalogues.

4.1.3 General Dissemination of Normative Information

Publications

ILNAS, with the support of ANEC GIE, regularly publishes and disseminates reports and White Papers at the national level to provide valuable information on ICT standardization topics to the market. They are freely available on the Portail-Qualité.

News Items

ILNAS and ANEC GIE regularly publish, on the Portail-Qualité, news items related to recent developments in technical standardization, and encourage interested parties to take advantage of these developments. Anyone interested can register to the Standardization Newsletter to receive a summary of these news items.

Technical Standardization Data Sheets

Data sheets providing information on technical committees and relevant technical standards in specific focused areas are freely available on the Portail-Qualité. They are covering different ICT topics, such as Blockchain and distributed ledgers, Cloud Computing, Digital Twin, Quantum technologies, etc. They can ideally complement the Standards Analysis with examples of standards and projects in these areas.

Videos Promoting Standards and Standardization

The application and uptake of ICT standards is also a key opportunity that the market can take advantage of. In order to encourage this, videos dedicated to certain standards series are produced and made freely available on the ILNAS Luxembourg YouTube channel (along with other promotional videos).

4.1.4 Purchase of Standards

The ILNAS e-Shop is a catalog of more than 210,000 normative documents. It offers the possibility to purchase national (ILNAS and DIN), European (CEN, CENELEC and ETSI[14]) and international (ISO and IEC) standards in electronic format at competitive prices. This catalog is available in three languages: English, French and German.

4.1.5 Free Consultation of Standards

ILNAS offers the possibility to consult its entire standards' catalog free of charge through dedicated reading stations located in different places in Luxembourg[15]. This service allows, for example, interested organizations or individuals to consult a standard before its purchase on the ILNAS e-Shop.

[14] ETSI standards are available free of charge

[15] The full list can be found at this location: https://portail-qualite.public.lu/fr/normes-normalisation/achat-consultation-normes.html

4.1.6 Standardization Research Results

Technical Standardization for Trustworthy ICT, Aerospace, and Construction (2021-2024)

ILNAS and the Interdisciplinary Centre for Security, Reliability and Trust (SnT) of the University of Luxembourg have recently launched a new research program entitled "Technical Standardization for Trustworthy ICT, Aerospace, and Construction (2021-2024)". Covering all three of the priority sectors identified in the Luxembourg Standardization Strategy 2024-2030 (ICT, construction, and aerospace), this program is exploring reliability, security and privacy aspects in all three sectors, with ICT playing a crucial transversal role.

The first results of this program have been presented during the World Standards Day in Luxembourg in October 2023, with the publication of the White Paper "Trustworthiness in ICT, Aerospace, and Construction applications - Scientific Research and Technical Standardization". In addition, Technical Reports presenting the progress of the research projects included in the research program have been published and presented at the occasion of the World Standards Day 2024 in Luxembourg. The Technical Reports "Research-driven approach to standardization - ICT, Construction and Aerospace" are freely available online.

4.2 Training in Standardization

4.2.1 Training Catalogue

ILNAS, with the support of ANEC GIE, develops a training catalogue annually, which is updated according to market expectations. There are online training videos on general aspects of technical standardization that are available free-of-charge (e.g.: Standardization and conformity, Standardization and Legislation, Standardization in the ICT sector), and technical trainings on specific ICT standardization topics:

- Standards for Interoperability and Portability in Cloud Computing;
- AI Standards watch: standards relevant to the proposed AI Act;
- Quantum technologies and technical standardization;
- Workshop: Artificial intelligence and technical standardization.

These trainings aim at meeting the expectations of national stakeholders in terms of normative knowledge in the relevant fields, in particular in ICT. Based on courses proposed in the training catalogue, customized training sessions can also be organized. Any request will be evaluated and a dedicated training program will be proposed to serve specific professional development needs.

4.2.2 Professional "Master in Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions"

ILNAS, supported by ANEC GIE, with the University of Luxembourg and the Chamber of Employees (CSL) have developed a Master entitled "Master in Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions". It started in 2021 and is designed for experienced professionals who wish to develop their technological skills in the field of Smart Secure ICT and technopreneurship.

This program focuses on Smart Secure ICT and provides students with the Smart ICT concepts and tools at their disposal to develop their sense of technical innovation (or "technopreneurship"). Digital

Trust is also a central component, and it is not only treated from the point of view of security, but also considering other aspects like reliability, accountability, privacy, transparency, integrity, legitimacy, etc. in order to allow the adoption of Smart ICT technologies and the development of innovative services, products, and businesses. The Master's program tackles various aspects of Smart ICT and their applications, such as the development of Cloud Computing, Internet of Things, Artificial Intelligence or Blockchain and Distributed Ledger Technologies. International experts address these Smart ICT concepts, along with the concepts of information security and Digital Trust, which are essential now more than ever.

This program provides lectures from three points of view:

- Technical: providing the fundamentals of Smart ICT technologies and security techniques and the latest scientific developments;
- Technopreneurship: in order to highlight major opportunities for technical innovation;
- Technical standardization: plays a key role within the program, as an important source of knowledge and good practices, while defining the future ICT. Concretely, technical standardization remains a main keystone between Smart ICT technologies, the related Digital Trust needs, and the development of business innovation, as it points the way forward.

4.3 Involvement in Standardization

4.3.1 Becoming a National Delegate in Standardization

Benefits of Participation in ICT Standardization Technical Committees

In Luxembourg, registration in technical committees from ISO, IEC, CEN or CENELEC is free-of-charge. Participating in ICT standardization technical committees offers a broad set of opportunities and benefits, such as:

- Giving your opinion during the standardization process (comments and positions of vote on the draft standards);
- Showcasing your know-how and good practices;
- Accessing draft standards;
- Anticipating future evolutions of ICT standardization;
- Collaborating with strategic partners and international experts;
- Enhancing the visibility of your organization at national and international level;
- Identifying development opportunities;
- Making your organization competitive in the market.

Participating in the Training for New Delegates in Standardization

ILNAS can organize trainings for newcomers in technical standardization, who have registered in a technical committee. They are encouraged to participate in order to better understand the roles and missions of delegates in standardization on one hand, and to become familiar with the tools and services at their disposal for this work on the other.

In addition, ILNAS has also created a video training for new delegates, as well as other standardization training videos covering certain general aspects. All these videos are available online.

Support to National Delegates

As the national standards body, ILNAS, with the support of ANEC GIE, offers its support to national delegates of the different committees at the national level. These duties are of primary importance and well stated in the "Luxembourg's Policy on ICT technical standardization 2022-2025", which aims at developing the ICT technical standardization representation at the national level.

Particularly in the ICT sector, ILNAS, with the support of ANEC GIE, proposes a dedicated coaching service that is available for any registered national delegate, who requires assistance for the achievement of her/his standardization work.

Stronger Commitment as a National Delegate (Chairman, Head of Delegation, Editor of European or International Standards)

Registration as a national delegate offers possibilities to assume different levels of involvement, such as:

- Chairman of a national mirror committee: each national mirror committee has to nominate a chairman who will be in charge of the organization of the national community of delegates registered in that particular committee. Indeed, the chairman has to vote on the draft standards on the basis of the consensual position agreed between the economic entities represented within the national mirror committee.
- Head of delegation: a national delegate can be nominated by the national mirror committee to represent its position during plenary meetings of the corresponding international or European technical committees.
- Editor or co-editor of standards documents: each standards project is subject to a call for participation. In this frame, a national delegate can choose to actively participate in the project as an editor or co-editor. He will then take the responsibility to ensure the successful conduct of the project until its publication.

4.3.2 Commenting Standards under Public Enquiry

ILNAS proposes, through its e-Shop, the opportunity to submit comments on the standards under public enquiry. Every interested national stakeholder can propose changes to a draft standard, regardless of whether this stakeholder is officially registered in the technical committee responsible for the development of that standard.

4.3.3 Proposing New Standards Projects

National stakeholders can propose new standardization projects at international, European and national levels through ILNAS. The national standards body offers its support to ensure the good implementation of the process and the project's compliance with the related rules and legislation.

This opportunity can allow national stakeholders to take a leading role in the standardization of a specific domain and to benefit from the definition of future market rules.

HIGHLIGHTS OF OPPORTUNITIES AT THE NATIONAL LEVEL

Luxembourg offers different opportunities to national stakeholders to enable them to take advantage of technical standardization, summarized as follows:

- To be informed about standardization:
  - Benefit from dedicated awareness sessions.
  - Identify the most relevant ICT technical standardization committees and standards projects using the standards watch service.
  - Consult ILNAS publications on ICT standardization.
  - Consult freely national, European and international standards.
  - Benefit from the ICT standardization research results at the national level.

- To be trained in technical standardization:
  - Participate in the trainings on ICT standardization.
  - Participate in the professional “Master in Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions”.

- To be involved in standardization:
  - Become national technical standardization delegate:
    - Participate in ICT technical committees,
    - Register in the training for new delegates in standardization,
    - Benefit from the support offered by the national standards body,
    - Take on additional responsibilities as a national delegate (chairman, head of delegation, editor of European or international standards project).
  - Submit comments on draft standards under public enquiry.
  - Propose new standards projects.

As long as the stakeholders of the sector wish to seize these opportunities, ILNAS, supported by ANEC GIE, can facilitate getting on board the overall process.

As the national standards body, ILNAS offers national stakeholders the possibility to follow specific standardization activities of technical committees, either at European or international level. It supports those who are interested to participate in standardization activities, namely by providing information and delivering trainings. Therefore, resources from ILNAS and ANEC GIE are specifically dedicated to these aspects and are able to efficiently support and inform prospective national delegates.

CONCLUSION

The ICT sector is constantly evolving. From the continued improvement of traditional topics to the development of new and innovative digital products and services, ICT constitutes a major source of economic development and directly participates in the resolution of current environmental and social concerns. Moreover, ICT plays a crucial role to support innovation and foster the development of all the other economic sectors where applications and services offer new opportunities. This is particularly true of Smart ICT technologies such as Quantum Computing, Cloud Computing, the Internet of Things, Artificial Intelligence, and Blockchain. At the same time, providing confidence in digital services and securing complex systems remain essential to reap the full benefit of ICT.

Rapid technological advancements in ICT and their widespread adoption have resulted in a huge demand for and development of relevant technical standards. In this context, standards are key not only to support the development of ICT, but also to address the arising challenges. On the one hand, technical standardization plays an important role to give a first-hand insight into the latest developments, thus supporting innovation, and also to contribute to the harmonization of systems and procedures, opening access to external markets, ensuring constant progress, and building trust. On the other hand, standards contribute to promote and share good practices and techniques available through the market. They ensure the quality, security and performance of products, systems, and services. They also facilitate dialogue and exchange between various stakeholders. In this sense, standardization represents an important economic lever to improve business productivity.

ICT is one of the growth sectors identified in the "Luxembourg Standardization Strategy 2024-2030", since it supports many innovative or smart developments. ICT is indeed one of the most competitive economic sectors in the Grand Duchy of Luxembourg, which has high-quality communication infrastructures, hosts several world-leading ICT companies as well as many start-ups[16], and is composed of a market of many companies, associations, administrations, and experts. Luxembourg is also particularly active in creating a secure environment for developing a trusted data-driven economy.

ILNAS, with the support of ANEC GIE, constantly analyzes ICT technical standardization developments and actively supports national stakeholders who want to be involved in this area, according to "Luxembourg's Policy on ICT technical standardization 2022-2025". The main objectives of this policy are to foster and strengthen the national ICT sector's involvement in standardization work. To achieve this, ILNAS is conducting three intertwined projects:

a) Promoting ICT technical standardization to the market;
b) Reinforcing the valorization and the involvement regarding ICT technical standardization;
c) Supporting and strengthening education about standardization and related research activities.

In line with the first project, this Standards Analysis "ICT Sector - Luxembourg" constitutes a tool to foster the positioning of Luxembourg in the ICT standardization landscape. It highlights the opportunities offered to the national market to participate in standardization.

Similarly, for the second project, ILNAS, aided by ANEC GIE, offers its support to different industries/organizations through standardization according to the nature of their business at the national level. ICT related technical committees already benefit from a good national representation with 87 national delegates currently registered to participate in one or several of these normative domains[17]. This figure demonstrates the interest of individuals and industries/organizations in technical standardization. ILNAS has also undertaken other initiatives to facilitate the participation of national stakeholders in specific ICT standardization areas, such as the creation of National Standardization

[16] See for instance the "Startup Ecosystem" website for more information.
[17] Note that certain experts are registered in more than one technical committee

Commissions (NSC), offering a single access point to multiple international and European technical committees active in specific areas. The first one, dedicated to cybersecurity, was created in 2021, and two new NSCs were created in 2024: ILNAS/NSC 03 “Quantum Technologies” was launched in February 2024 and ILNAS/NSC 04 “Artificial Intelligence” was kicked off in September 2024. ILNAS intends to adopt the same approach for other ICT topics in which several technical committees are active to continuously improve the experience of its national standardization delegates and facilitate their understanding of the overall standardization picture in their domain.

Finally, conforming to the third project of the policy, ILNAS, with the support of ANEC GIE, has undertaken concrete developments for strengthening education and research activities in the area of technical standardization. It includes the launch of the professional Master MTECH “Master in Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions”, that is running since February 2021 and saw its last cohort starting in September 2024. ILNAS and the University of Luxembourg are also implementing the research program “Technical Standardization for Trustworthy ICT, Aerospace, and Construction (2021-2024)”, which is exploring Digital Trust aspects of the three sectors, with ICT in particular playing a horizontal role in the other two. The first results of this program were presented during the World Standards Day in Luxembourg in October 2023, with the publication of the White Paper “Trustworthiness in ICT, Aerospace, and Construction applications - Scientific Research and Technical Standardization”. This was complemented, in October 2024, by the publication of the Technical Reports "Research-driven approach to standardization - ICT, Construction and Aerospace", presenting the progress of the research projects included in the research program.

In parallel, ILNAS, with the support of ANEC GIE, aims to create awareness and interest concerning relevant standardization developments within the national market, with the publication of White Papers and National Technical Standardization Reports on Smart ICT technologies.

The three projects of the “Luxembourg’s Policy on ICT technical standardization 2022-2025” will allow the national market to make rapid progress and reap the benefits of technical standardization effectively. A proper understanding of the stakes associated with ICT standardization is key to adopting the appropriate position across the standardization landscape and benefit from all the related opportunities. Driven by the motto of the Luxembourg Standardization Strategy 2024-2030: “Technical standardization – An inclusive tool for performance and excellence to serve the economy”, ILNAS, with the support of ANEC GIE, stands ready to encourage and assist each initiative in this process.

Please fill out the satisfaction survey:

https://gd.lu/7tS0ms

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ILNAS
Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services

ANEC
Agence pour la Normalisation et l'Economie de la Connaissance

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