Foreword

In accordance with the proposed modification of the title and the scope of CEN/TC 353, a new proposal for CEN/TC 353 Business Plan (BP) has been drafted. The Business plan aims to provide a concise and up-to-date overview of the important business, technological, environmental, accessibility and social trends in the field addressed by the work of the CEN committee. The BP shall provide an analysis of these trends as well as an explanation of the linkages between them and the priority areas in the standards development work of the technical committee.

BUSINESS PLAN

CEN/TC 353

STANDARDISATION OF LEARNING TECHNOLOGIES (EdTech)

EXECUTIVE SUMMARY

1. Background of CEN TC 353:

In the last decades, learning was strictly connected to physical presence and one-to-one lessons. Nowadays the student is not a passive user but rather a direct sponsor and supporter of his educational path. The new technological devices and ICT technology are enabling new forms of knowledge transfer and new ways to provide educational experiences.

However, the current landscape of standardization related to the interaction among learning objects, learning management system and modern technologies (augmented / virtual reality, gamification, simulation, etc.) appears fragmented. Each training organization uses learning technologies and develops methodologies that are suited to its IT design needs. To meet the expectations of the societal task given to schools, a more harmonized approach is required. Every educational institutions should be free in choosing the learning technologies that provides the best educational outcome, regardless of supplier. To support the educational institutions in their job and facilitate the choise, there is a need for standards that supports technological and pedagogical freedom.

CEN / TC 353 aims to bring together any form of educational technologies (ex. classroom simulation, coaching, virtual reality, gamification, etc.) through the definition of standards that allows the various ICT technologies to interact and work together to support the "business case" of our educational and training institutions.

The European Standards (EN), Technical Specifications (TS) and Technical Reports (TR) developed will support European policies with regard to all levels and types of formal and informal learning, education and training from kindergarten, to a lifelong perspective.

The goal of this committee is to develop, support and facilitate a more harmonized and standardised European EdTech ecosystem that gives value to all stakeholders, users

and beneficiaries and ensure that European learning, educational and training institutions remain competitive.

CEN / TC 353 has developed, approved and published several European Norms (EN) in the past that are also the basis of current and future standardization.

2. Business environment of the CEN/TC 353

a. Brief description of the EdTech ecosystem

In the last few years, there was a high growth and adoption of education technology:

- global EdTech investments reaching US$18.66 billion in 2019 and
- the overall market for online education projected to reach $404[1] Billion by 2025.

With the advent of COVID-19, there has been a significant surge in usage of language apps, virtual tutoring, video conferencing tools, or online educational products.

Hardware and software aids (open source applications available on the web, multimedia materials, virtual workspaces, clouding computing, etc.) are increasingly used in education in order to:
- make the learning environment more comfortable and exciting;
- promoting new educational experiences,
- encouraging a greater participation and cooperation between learners;
- to favour the differentiation of didactic paths and the development of talents in a much more democratic and fair way;
- to break down the barriers that increase the gap between companions.

Beginning from the previous challenges and perspective of how teaching/learning methodologies and education technologies are evolving, CEN/TC 353 highlights the need:
- to study and understand how new technologies such as virtual/augmented reality, gamification, etc. are transforming the way to do didactic, both in distance and in presence;
- to understand what are the strengths and weaknesses of existing standards and how they are used by different training bodies and the training market in general;
- to define a standard which, filling the gaps in the current standards, allows the interaction of the various training ICT technologies, present and future.
- to develop application profiles of global standards to be implemented in Europe.

Application sectors involved in the EdTech ecosystem may include:
- universities, schools and other educational establishments;
- education and training authorities (national as well as regional);

---

[1] https://www.holoniq.com/notes/global-education-technology-market-to-reach-404b-by-2025/

- providers of professional and vocational education and training;
- non-formal and informal learning processes and opportunities;
- open and innovative learning, education and training;
- software and system developer and providers that support educational contexts;
- providers of pedagogical services;
- publishers and broadcasters of educational content.

b. European EdTech context, its issues and its potential standardisation perspective

The current European Educational Technology context is characterised by:

- a large number of "proprietary" platforms and tools;
- low reusability of material among the different platforms;
- lack of a shared standard perspective.

Usually the various institutions are unwilling to accept the "*modus operandi*" of other institutions and the need of a cultural change emerges.

The European EdTech industry appears disjointed. Each training organization use EdTech in the way that suited their organizational and technological needs and this leads to the necessity of a standard approach which can be used in different domains (figure 2).
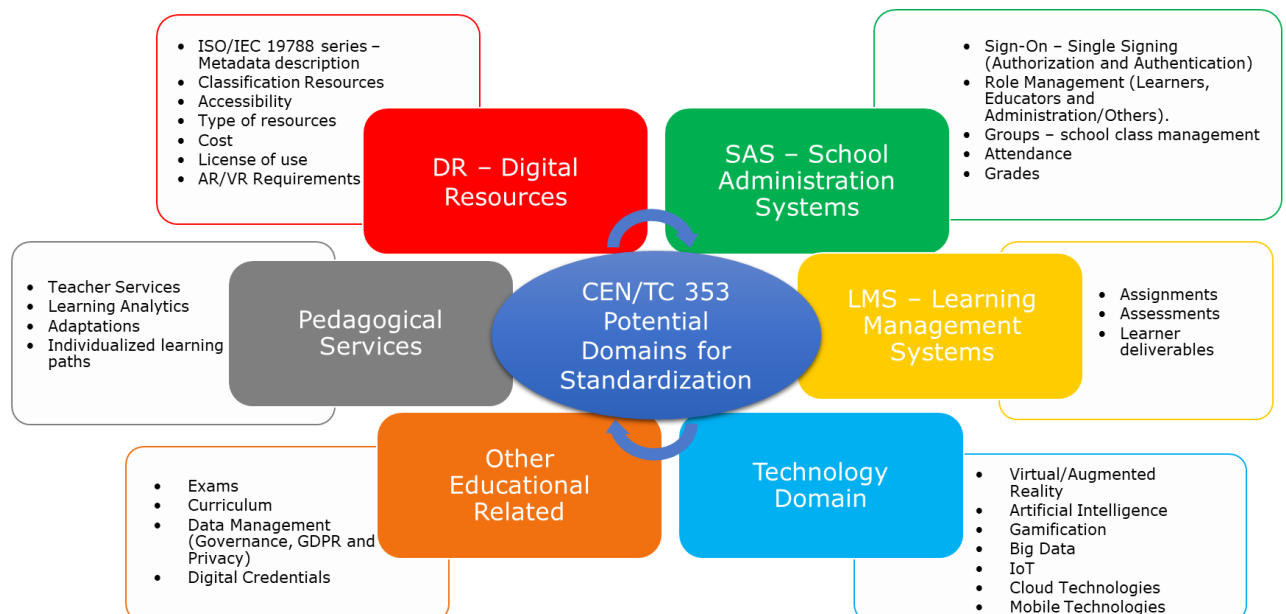

Figure 2: Potential domains for European EdTech standardisation

An existing standard can be assessed on the basis of three principal dimensions:

o **Support Technology**: this dimension allows to understand if a standard is effective compared to the existing technologies as well as in line with the trends of evolution of the contingent technological context. For example, it may happen that at a functional level the standard meets the needs for which it was created but at the same time it requires non-economically sustainable technological specifications;

- o **Business Model**: allows to understand the market value offered by a standard and how it meets the needs of their users;
- o Content Approach: this dimension allows understanding if the contents are designed to be usable on the different types of devices and whether or not they require interaction with the most modern ICT technologies that enable classroom simulation, coaching, virtual reality and gamification.

In Europe, there is the need:

- to map the EdTech offers of European universities and training institutions according to: the technical characteristics; methods of delivery and use; accessibility; targets of the offer; business models used.
- to define and use, in a community widespread way, a standard that, at a high level, joins the technical and technological specifications of all the EdTech initiatives undertaken both in public, and in a private European context. This high level standard must be useful to homogenise the interaction between learning objects, learning management system and modern or future learning technologies (such as augmented/virtual reality, gamification, simulation, etc.).

c. Sustainability Aspects

Despite originally understood in a more restricted environmental sense, the concept of Sustainability has evolved to consider other critical non-environmental issues, such as economic crises, poverty and social disparities. It now encompasses three interdependent and mutually reinforcing dimensions: Economic, Environmental and Social – and refers to a holistic system in which the needs of the present are met without compromising the ability of future generations to meet their own needs.

It is undeniable that our failure to address Sustainability effectively, has led to the deterioration of our environmental, social and economic wellbeing. The balance between the environmental, social and economic systems is therefore considered essential for achieving Sustainability, which is now recognized as the most fundamental requirement in every human endeavour and activity.

In 2015, at the United Nations, more than 150 international leaders have approved the 2030 Agenda for sustainable development, the essential elements of which are the 17 Sustainable Development Goals (SDGs / SDGs) and 169 sub-goals, which aim to end poverty, to fight against inequality and for social and economic development, to tackl climate change and to build peaceful societies.

The contribution from CEN/TC 353 mainly will support the achievement of Sustainable Development Goal 4 (SDG 4), that aim to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

SDG 4, by 2030, aim to achieve ten sub-goals:

1. ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.
2. ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.
3. ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
4. substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
5. eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
6. ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
7. ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
8. build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
9. substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
10. substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

Better education, training and learning, would drive a more competent population to make better decision, and act more responsive and wisely. TC-353 will help consolidate and increase the crucial role played by the educational perspective and educational technologies in sustainable global growth, from every point of view (economic, social, environmental, etc.).

Therefore, TC353 will indirectly contributes to all the other SDG's. For example:

- **Health and well-being (SDG 3)**.: a better education allows to have a higher quality of the health service (doctors, nurses, etc. more prepared and trained to face the different situations) and a greater understanding by patients of the scientific-technical aspects of the treatment path. Today, in fact, advanced educational technologies are more and more used (ex.

augmented and virtual reality, AI, etc.) in order to train medical personnel.,

- **Gender equality (SDG 5) and Decent work and sustainable growth (SDG 8)**: educational technologies make quality educational content accessible and suitable for all. This affects the quality and dynamism of the workforce, the ability to build innovative businesses anywhere in the world and the cultural change necessary to concretely guarantee gender equality in the near future. However, greater coordination is needed at the global level so that educational technologies can be used wisely and bring maximum benefits to the community.

- **Responsible consumption & production (SDG 12)**: a better education means that consumers are better prepared to understand product information, to promotes responsible consumption and to make greater attention to waste. Better education entail more awareness for sustainable development and lifestyles in harmony with nature.

- **Climate change mitigation (SDG 13)**: improve education means more awareness and human capacity on climate change mitigation, adaptation, impact reduction, and early warning.

3. Benefits expected from the work of the CEN/ TC 353

Sharing of data, content, tools and services for learning, education and training can only be achieved when clear technical agreements are made between all parties concerned. The more global this agreement is, the greater the benefit. On the other hand, different communities have their own identity, language, and vocabularies, which are important to express exactly what is meant. For instance, the educational system in North America is differently structured than in Europe and it uses different terminology. Likewise, in Europe there is a great difference among different sectors. For example, a thesaurus applicable for vocational education is different from the one for schools. These naturally grown differences make the application of standards more complex and often less effective. In addition, vocabularies are created repeatedly sometimes with differences that are not essential but that inhibit interoperability.

Considering all the aspects mentioned above, CEN/TC 353 purposes are:

- create consensus among National Bodies in order to provides a consolidated European perspective. This can be supported, for example, by forwarding European specifications and standards to ISO/IEC JTC1 SC36 for international standardization or by undertaking parallel development;
- increased interoperability across member states between digital learning content, learner related information, management systems to deliver learning and other information technology tools;
- increased interoperability of European education technologies with international systems so reducing developments costs and opening potential markets but localised for European stakeholders. This will also have the benefit of increased inclusion;
- increased quality of European education technologies;
- create common multicultural and multilingual exchange formats, for example a European well defined data model capable of expressing competency information and associated metrics in a standardized way;

- create a common understanding of terms and concepts through the development of vocabularies and frameworks around which software vendors, tool producers and content authors may work in order to provide a greater level of interoperability and application of tools;
- increased understanding and use of international standards – for example by providing multilingual guidelines or application profiles of common specifications and standards from ISO/IEC JTC1 SC36 or IEEE LTSC;
- create a wider range of national bodies and experts will participate and the audience for any outputs will increase;
- increase outputs from CEN WS-LT and other CEN workshops have a place where they can be considered for standardization;
- contribute to sustainable development.

4. Achieved results of the CEN/TC 353

CEN TC 353 has developed, approved and published the following European Standards (EN):

- EN ISO/IEC 19796-1:2009 (RFDQ) "Information Technology- Learning, Education and Training – Quality Management, Assurance and Metrics- Part 1: General Approach".
- EN 15981:2011 "European Learner Mobility - Achievement Information (EuroLMAI)".
- EN 15943:2011 "Curriculum Exchange Format (CEF)". EN ISO/IEC 19788-1:2012 "Metadata for Learning Resources (MLR) – Part 1: Framework".
- EN ISO/IEC 19788-2:2012 "Metadata for Learning Resources (MLR) – Part 2: Dublin Core Elements".
- EN ISO/IEC 19788-3:2013 "Metadata for Learning Resources (MLR) – Part 3: Basic Application Profile".
- EN ISO/IEC 19788-5:2014 "Metadata for Learning Resources (MLR) – Part 5: Educational Elements".
- EN 16425:2014 "Simple Publishing Interface (SPI)"

The current list of EN published is available ate the [CEN/TC 353 website](.).

5. Structure of the CEN/TC 353

CEN/CT 353 current Chair is: Angelo Corallo (Italy) and the current Secretary is Helen Carnevale (UNINFO Italy).

Currently the national standardization bodies whom participate as national members of CEN TC 353 are from the following countries:

1) Austria
2) Belgium
3) Bulgaria
4) Croatia
5) Cyprus
6) Denmark
7) Estonia
8) Finland
9) France
10) Germany

11) Greece
12) Hungary
13) Italy
14) Latvia
15) Lithuania
16) Luxembourg
17) Malta
18) Netherlands
19) Norway
20) Poland
21) Portugal
22) Romania
23) Slovakia
24) Slovenia
25) Spain
26) Sweden
27) Turkey
28) UK

In order to establish a valid work plan and to disseminate the work in progress in the TC, WG are necessary. The detailed proposed structure of WGs is describe in the document called "CEN/TC 353 WG structure".

6. Participation in the CEN/TC 353

All the CEN national members are entitled to nominate delegates to CEN/TC 353 and experts to Working Groups. Participation as observers of recognized European or international organizations is also possible by establishing a liaison with the TC.

Technical Committees collaborates among them and with different organization on Horizontal aspects through Liaisons. Liaisons are mutually approved and will be maintained to provide additional indirect participation and collaboration.

More liaisons will be established in the future as EdTech intersects a range of different domains.

7. Objectives of the CEN/TC 353 and strategies for their achievement

A. Defined objectives of the CEN TC 353

The new technological devices and ICT technology are enabling new forms to transfer of knowledge and new ways to providing training.

There is the need to use, in a widespread way, a standard that at a high level join the technical and technological specifications of all the learning initiatives undertaken both in public than in private context.

The growing availability of technologies and new methods of teaching delivery pushes towards the need to define a framework that support the analysis, classification and information storage of EdTech offers and related teaching/learning methodologies.

Starting from the EU market needs identified and described in the Rolling Plan (Action 6) and based on the issues above described, CEN/CT 353 aim to mapping of all EdTech offers by European universities and training institutions according to:

- the technical characteristics;
- method of delivery and use;
- accessibility;
- targets of the offer;
- business models used.

In particular, CEN/CT 353 aims to:

1) Support EdTech industry to become more competitive, and to enhance the market of the EdTech industry through use of ICT standards.
2) Develop a classification method of EdTech offer based on:
    o method of delivery and use;
    o accessibility;
    o targets of the offer;
    o business models used.
3) Analyse the EdTech technical characteristics; method of delivery and use; accessibility; targets of the offer; business models used.

The outputs of the mapping activities could be used to develop a meta-models that unified the acquisition and storage of information.

CEN/CT 353 wishes to create a clear picture of how news technology could be used. This approach will support the emerging of new ways of training and proposes a state of the art assessment not only related to the EdTech experience of European Universities and training institutions but studies the really training potential of modern ICT and emerging technology such as virtual and augmented reality, gamification, simulation, etc. as well.

To fulfil this purpose, the TC needs to:

- Identify and analyse the emerging technologies;
- Collect and study the existing initiatives of training using emerging technologies;
- Assess the training potential of each technology;
- Evaluate and Disseminate the results

The TC strategies will consider the following priorities (that are not exclusive and are in no particular order):

a. European Policies

- Development of European standards for the realization, dissemination, implementation and exploitation of European policies such as European Qualifications Framework (EQF) and the Europass documents.
- Development of European standards for the realization, dissemination, implementation and exploitation of European key strategies such as European mobility and lifelong learning expressed in EU2020 and other communications by the European Union.

b. Competences

- Development of a well-defined European data model and guidelines for expressing, referencing and capturing measurable characteristics of simple and complex competences.

- Identification of existing competence maps and taxonomies and development of guidelines on taxonomies and vocabularies. Including harmonization and mapping of vocabularies used to express European curricula and competences. Every organisation that is engaged in the fields of formal education, technical, vocational or corporate training or workforce development is creating its own competence definitions and structures. Many of them are involved in the design and implementation of digital repositories in order to support the storage, search, retrieval and management of these definitions, thus dealing with issues ranging from learning resource discovery to accreditation or skill gap analysis, depending on the context of the application. However, the use of different information models or assumptions makes the exchange, between such repositories and the referencing of competence and skills definitions by relevant systems, an impossible task.

c. Quality

- Develop frameworks, specifications and guidelines to improve the quality and transparency of organisations, processes, products and services.
- Develop guidelines for stakeholders to improve the transparency of educational processes (e.g., identifying and choosing education technology offers).
- Localizing international standards (e.g., ISO/IEC 19796-1).
- Providing guidance to stakeholders involved in quality development.
- To improve quality competencies for European stakeholders.

d. Interoperability and Frameworks

- Development of European learning, education and training vocabularies and frameworks around which software vendors, tool producers and content authors may work in order to provide a greater level of interoperability and application of tools.
- Provide interoperability specifications for the exchange a range of European curriculum information initially aimed at school systems, but also applicable in a wider inclusive lifelong learning context.
- Development of a practical approach towards interoperability between existing and future repositories for learning whose purpose is the safe storage or delivery, administration and configuration management for learning objects. This will consider the European needs for the interoperability of repositories for learning, systems to support the creation of a viable, sustained infrastructure for exchanging learning objects and the associated metadata. This will be based on the experiences of successful EC-funded projects and other European initiatives.
- Integration with systems e.g. knowledge management systems.
- The sharing of education related data, services, content and tools achieved through clearer technical agreements between all parties, without losing the value of expression typical of each European community's language and culture.

B. Contribution to European Policies

i.   Rolling plan for ICT Standardisation 2021

The Rolling Plan for ICT Standardisation provides a unique bridge between EU policies and standardisation activities in the field of information and communication technologies (ICT). This allows for increased convergence of standardisation makers' efforts towards achieving EU policy goals. This document is the result of an annual dialogue involving a wide-range of interested parties as represented by the European multi-stakeholder platform on ICT standardisation (MSP). The Rolling Plan focuses on actions that can support EU policies and does not claim to be as complete as the work programmes of the various standardisation bodies.

Standardisation actions identified in this document to support EU policies are complementary to other instruments, in particular the Annual Union Work Programme (AUWP). The Rolling Plan attempts to list all known areas where ICT standardisation could support EU policy objectives. It also details the requirements for ICT standardisation, translates them into actions and provides a follow-up mechanism for the actions.

The Rolling Plan 2021 identifies around 180 actions grouped into 37 technological or application domains under four thematic areas: key enablers and security, societal challenges, innovation for the single market and sustainable growth. Digital technologies and data play a paramount role in fighting the pandemic and are at the heart of the digital transformation that is needed to convert our economy to a low emission, circular one. Challenges with respect to cybersecurity, safety, privacy and transparency and integrity of digital processes arise at every step of digitalisation and policy makers need to be more aware that ICT standardisation is the tool to tackle them.

ii.   Compliance to the Rolling Plan for ICT Standardisation 2021

Standards play a critical role in supporting EU policies and legislation. The European standardisation system is governed by the Regulation on European standardisation and implemented through the public-private-partnership with the European Standardisation Organisations (ESOs) and their members. Its uniqueness lies in the use of harmonised European Standards.

Innovation and technology adoption provide critical support to the EU to face the challenges of a changing geo-political landscape, ageing society, digital transformation and climate change. EU policy making relies on standards and technical specifications to reap the benefits of broader, more interoperable markets and systems, and greater network effects. ICT technical specifications ensure the interoperability of digital technologies and form the cornerstone of an effective Digital Single Market.

Regarding the digital learning in particular, efficient, accessible, affordable and interoperable solutions are necessary to promote the development of a large digital learning and technology-enhanced learning market in Europe. It is vital to ensure everyone's right to access education and lifelong learning.

The forced closure of schools and campus buildings in spring 2020 due to the Covid-crisis has pushed educators and students into teaching and learning with technology at a scale never seen before. This shift to remote teaching and learning has shown major flaws and weaknesses regarding digital skills and competences levels in the population,

access to infrastructure and the availability and usability of quality digital resources and platforms. Many teachers are also lacking experience and training - technical and pedagogical – for teaching with digital technologies, including in remote settings. Students too faced new challenges learning at home, including being able to use digital tools and resources independently, efficiently and safely.

In this context, digital learning should be made understandable, pedagogically sound, usable and accessible for all learners, including those with additional needs. Digital learning also provides an opportunity to foster skills regarding accessibility using a design for all approach.

CEN-CT 353 action and scope match the Rolling Plan in these intentions, and specifically regarding the Actions 5 to 8 of the above-mentioned document:

Action 5: European digital learning standards to facilitate large scale adoption of best practices and solutions on a voluntary basis. The focus should be on specifications and guidelines for digital learning opportunities designed for all kinds of users, learning outcomes, credit points, assessment and e-portfolios.

Action 6: Standardisation potential around digital learning: SDO to investigate digital learning courses and resources, content repositories and exchange mechanisms with a focus on data privacy metadata, learning design and structure, technical and semantic interoperability supported by agreed protocols, exchange formats and vocabularies. Interoperability should include context-aware, adaptable and mobile/ambient e-learning systems and cross-domain aspects. This may include the learning trajectory or learning route including, e.g. the didactic approach, aimed learning & learner's profiles and the availability of additional tools that support digital learning. End users (learners and educators) should also be involved in the design, testing and development of digital learning solutions.

Action 7: Standardisation potential around interoperability and transfer of learners' data: SDO to investigate the possible standardisation of the exchange of learning & learners data, which may be generated in the different, learning spaces. By the use of a Caliper or xAPI-like framework, the exchange and therefore effective usage might be facilitated.

Action 8: European guidelines on ensuring accessible and inclusive digital learning. These guidelines should be based on a design for all approach to facilitate learning for diverse range of users, including learners with disabilities.

iii. DIRECTORATE-GENERAL Education, Youth, Sport and Culture (DG EAC)

DG EAC is the Commission department responsible for EU policy on education, culture, youth, languages and sport.

DG EAC develops and carries out the Commission's policies on:

- **Culture and media**
  The creative Europe programme helps audio-visual, cultural and creative professionals to reach new audiences and supports the development of cross-border cooperation and networks.
  Objectives:

- o help the cultural and creative sectors seize the opportunities of the digital age
  - o support the culture and media industries in contributing to sustainable growth, jobs and social cohesion in the EU
  - o give Europe's culture and media sectors access to new international opportunities, markets, and audiences
- **Sport**
- **Education and training**
  The EU strategy for education and training until 2020 focusses on lifelong learning and mobility, the quality and efficiency of education, equality, and innovation.
  Objectives:
  Through the strategic framework for education and training, EU countries have identified four common objectives to be addressed by 2020:
  - o make lifelong learning and mobility a reality
  - o improve the quality and efficiency of education and training
  - o promote equity, social cohesion, and active citizenship
  - o enhance creativity and innovation, including entrepreneurship, at all levels of education and training
  By 2020, the EU aims to ensure that:
  - o 95% of children should participate in early childhood education
  - o fewer than 15% of 15-year-olds should be under-skilled in reading, mathematics and science
  - o the rate of early leavers from education and training aged 18-24 should be below 10%
  - o 40% of people aged 30-34 should have completed some form of higher education
  - o 15% of adults should participate in lifelong learning
  - o 20% of higher education graduates and 6% of 18-34 year-olds with an initial vocational qualification should have spent some time studying or training abroad
  - o the share of recent graduates in employment should be at least 82%
- **Youth**

The department also supports these policies and priorities through a variety of projects and programmes, notably

- Creative Europe
- Erasmus+
- Marie Skłodowska-Curie Actions
- European Institute of Innovation & Technology (EIT)

Regarding the Education and Training section, the Commission focuses on:

Higher education

The Commission works to increase student mobility, build cooperation between universities internationally and ensure recognition of academic credentials.

Adult learning

The Commission encourages adults to develop skills and knowledge throughout their careers in order to reduce unemployment and promote active citizenship.

School policy

The Commission uses national surveys of progress and EU-wide competence goals to make sure all pupils across Europe receive a quality education.

Vocational education and training

The Commission strives to improve teaching quality in training, to encourage mobility and to ensure programmes reflect the needs of the labour market.

International cooperation on education and training

The Commission aims to advance the EU as a centre of education excellence and support EU-partner countries in improving their education training systems.

iv.   Compliance to the DG EAC Strategic Plan

According to the *2015 Joint Report of the Council and the Commission on the implementation of the strategic framework for European cooperation in education and training (ET 2020). New priorities for European cooperation in education and training[2],* relevant and high-quality learning requires a more active use of innovative pedagogies and tools for developing digital competences. Education and training — at all levels — can benefit from the introduction of well-tested innovative pedagogical practices and didactic materials that have demonstrated their capacity to contribute in a concrete manner to inclusive, engaged learning for diverse learners.

Regarding the DG EAC priorities 2016-2020, the priority 3 of the 2015 joint report on the implementation of and new priorities for European cooperation in education and training focused on the importance of an *Open and innovative education and training, including fully embracing the digital era*

Main issues for cooperation include:

- Further exploring the potential of innovative and active pedagogies such as inter-disciplinary teaching and collaborative methods, to enhance the development of relevant and high-level skills and competences, while fostering inclusive education, including for disadvantaged learners and learners with disabilities
- Fostering cooperation by stimulating the engagement of learners, teachers, trainers, school leaders and other members of educational staff, parents and the broader local community such as civil society groups, social partners and business
- Increasing synergies between education, research and innovation activities, with a sustainable growth perspective, building on developments in higher education, with a new focus on vocational education and training and schools
- Promoting the use of ICT with a view to increasing the quality and relevance of education at all levels
- Boosting availability and quality of open and digital educational resources and pedagogies at all education levels, in cooperation with European open source communities
- Addressing the development of digital competences at all levels of learning, including non-formal and informal, in response to the digital revolution

---

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015XG1215(02)&from=IT

Moreover, the priority 6 focuses on *Sustainable investment, quality and efficiency of education and training systems*

Main issues for cooperation include:

- Exploring the potential of the Investment Plan for Europe in the area of education and training, including by promoting funding models attracting private actors and capital
- Encouraging Member States to use evidence-based policy-making, including the evaluation and assessment of education and training systems, to monitor policies and design reforms that deliver quality education more efficiently
- Encouraging innovative ways to ensure sustainable investment in education and training, examining forms of performance-based funding and cost-sharing, where appropriate

Several Member States report initiatives to increase teachers' and learners' digital competences and one third have introduced national strategies for the digitalisation of education.

Nevertheless, huge challenges remain. Societies are becoming increasingly digital, thus boosting demand for digital competences. Education and training must address this need, which requires investment in infrastructure, organisational change, digital devices and digital competences of teachers, trainers, school leaders and other members of educational staff, as well as the creation of digital (and open) educational resources and high-quality educational software. Education and training should reap the benefits of new ICT developments and adopt innovative and active pedagogies, based on participatory and project-based methods. Open learning environments — such as public libraries, open adult education centres and open universities — can help collaboration between educational sectors, including for disadvantaged learners.

v. Identified strategies to achieve the CEN TC's defined objectives

The TC will carefully examine and take into account the various effects on learning education and training technology standards due to the diversity of cultural background and languages that exists within Europe.

The TC encourages all National Bodies and Liaison Organizations (NBLOs) to submit and report on existing standards and well-recognised and proven practice.

The TC will maintain a liaison with the international committee ISO/IEC JTC1 SC36 to ensure that there is synergy and not duplication between the works done by the two committees and to ensure that European interests are considered in developing international standards.

The TC will publicize standardization activities to the liaison organizations, selected European projects, developers and end users.

The TC will focus on collaborating with selected partners in ensuring that their specifications they produce do not duplicate international or European standards activity, are appropriate for a broader audience and are suitable for European standardization.

The TC will facilitate and support ad Hoc Groups (Task Force) including collaboration with external stakeholders for specific topics. The ad Hoc Groups (Focus Groups) will be established as Working Groups and could explore or lead to future standardization projects.

The TC will proactively engage in the definition and implementation of collaborative pre standardization projects and in finding proper support both technical and financial.

The TC is fully aware of the importance of support actions to foster market awareness and diffusion of the specifications it develops. This support can not be restricted to the development of CEN/TRs, but encompasses a whole set of ad hoc actions which will be defined and carried out in parallel with the technical developments.

C. Workplan

This section of the Business Plan is rather volatile, and relatively frequent changes and additions can be expected throughout the TC lifespan, following the priorities set by the stakeholders.

A initial non exhaustive list of potential work items which outline possible European EdTech standardisation activities is as follows:

1. Data governance of learners data to better meet GDPR requirements
   a. Aspects of privacy and confidentiality
   b. Aspects of security, safety
2. Common information model and API's for grating consent to use of learners data for other purposes than it was collected for
3. Common data model and API for access to learner information, group, classes and subjects. This to support a common Single Sign On solution throughout Europe.
4. European application profile of xAPI
5. European application profile of MLR (ISO/IEC 19788 series of standards - and its revision)
6. Metadata to describe the cost of using a learning resource (and what constitutes measurement of usage?)
7. Metadata to describe the license that applies the usage of a resource
8. Metadata to describe the learning goal, and learning activities of a resource - to match a learners preferences
9. Metadata to describe aspects of the learner that are relevant for automatic adaptation
10. Metadata to describe parts of a learning resource that could be used in an adaptive way - across resource
11. Meta model and framework for describing a knowledge graph of national curricula and learning goals and learning outcomes in different subjects.
12. Work on Digital Learning Twin (Framework, Architecture)
13. Work on learning analytics, agree on some commonalities for «sustainable data packages».
14. Process for Big-Data anonymization/decoupling/randomization of learners activity data for the purpose of analyzing supporting federated learning of AI algorithms
15. Process for analyzing Small-Data with PII learning activity data. With algorithms trained on Big-Data
16. Blockchain in education (grades/badges/exams/diplomas) etc.

17. Common curricula data model.
18. Accessibility requirements to digital learning resources and digital learning tools (WCAG/ARIA/ATAG/AfA++).

These and other potential standardization projects should be submitted to European EdTech community, and other stakeholders.

D. Factors which may affect the completion and implementation of the CEN/TC work programme

Examples of factors that could negatively impact the completion or business community acceptance and use of the CEN committee's standards include:

- Expert resources may not be sufficiently available which could affect project development as well as the credibility of the resulting standard in the business community;
- Legal/regulatory issues such as uncertainties regarding a possible EC Directive, which in turn may necessitate modifications of the content and target dates for projects in the work program. This could include privacy legislation;
- Slow development of standards and lack of consensus;
- The market adopts proprietary specifications or standards produced by other organizations. The risks of these factors affecting the work of the TC are considered to be low.