



RESEARCH & INNOVATION EU KNOWLEDGE VALORISATION



European Standardization Organizations

Practical implementation of Code of practice on standardization in the ERA

Philip MAURER, CEN & CENELEC Innovation Project Manager

Introduction to European Standardisation System

Making standards for Europe



International

Various business sectors



Electrotechnology



Electronic Communications



Regional (European)



National



European Standardization System

European Standard (EN)

1x



=

34x

National standards (XX EN)



Standards supporting free circulation of goods in the EU and beyond (600 million consumers)



What do we mean by Standard?

EUROPEAN STANDARD

EN 397:2012+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2012

ICS 13.340.20

Supersedes EN 397:2012

English Version

Industrial safety helmets

Casques de protection pour l'industrie

Industrieschutzhelme

This European Standard was approved by CEN on 17 December 2011 and includes Amendment 1 approved by CEN on 19 July 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

technical specification

for *voluntary* application

adopted by a *recognised standardisation body*

used as a *rule, guideline* or *definition*

for a *repeatable* way of doing something

How are standards made?

Voluntary stakeholders (**experts**) agree by consensus on the need for new standards and their contents.



- Companies
- SMEs
- RTOs
- Universities
- Public Authorities
- Associations, NGOs, etc.

SDOs provide a common framework and conditions for the transparency and reliability of this agreement.



Benefits of standards

Shaped by those who contribute

Open and transparent process

Market driven

Recognized by Public Authorities and regulations: Supporting legislation



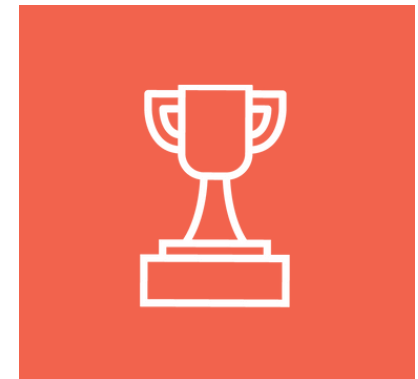
Why do researchers need standards?

Impact and market access: applying existing standards and contributing to new ones increases the impact and market access of R&I activities. It generates user trust and makes results more accessible to industry and societal actors.



Network: participating in standardization enlarges the R&I network with relevant stakeholders sharing the standardization works

Recognition: standardization helps the R&I community gain recognition for their work by acknowledging the participation in standardization works or including references to relevant scientific publications in standards.





National Standardization Infrastructure

Standardization, Research & Innovation at a national level

Dr. Fragoulis D. Krokos
Head of Standardization UNIT, ELOT
NQIS

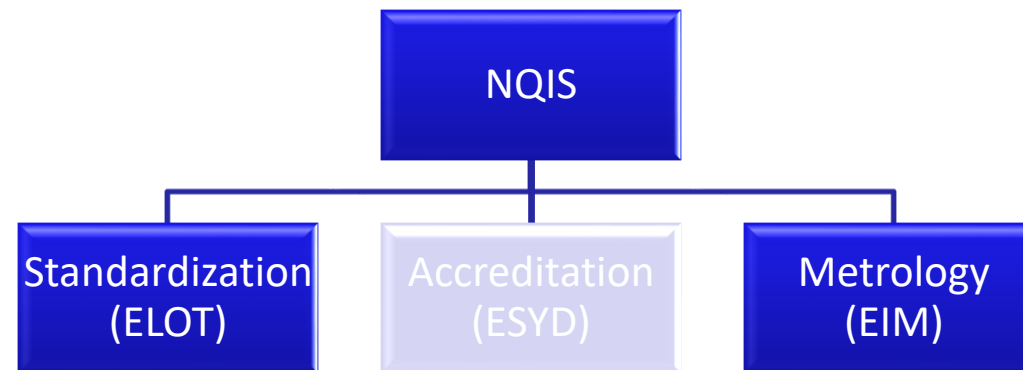


NQIS/ELOT – National Standardization Body

Evolution – Current Status

- ▶ Law 372/1976 – Establishment of ELOT – Hellenic Organization for Standardization (Legal Entity of Private Law)
- ▶ PD 155/1997 - ELOT S.A.
- ▶ Law 4109/2013 – Establishment of ESYP – National Quality Infrastructure System - NQIS (Legal Entity of Private Law)

National Quality Infrastructure System (Law 4109/2013)



- ▶ ELOT, ESYP, EIM - decentralized autonomous operative units
- ▶ NQIS - supervised by the Minister of Economy, Development and Competitiveness



NQIS/ELOT – National Standardization Body

Scope

- ▶ The development, promotion and implementation of Standardization in Greece and activities that are related and derive from it

Activities

- ▶ elaboration and dissemination of standards and specifications
- ▶ provision of all forms of information services and education that fall within its scope and responsibilities
- ▶ realization of research activities and projects that fall within its scope and responsibilities
- ▶ establishment of conformity marks
- ▶ operation of notification procedures for draft Standards and Technical Regulations according to Directive 2015/1535/EU & WTO/TBT



ELOT – National Standardization Body

NQIS/ELOT – Membership



International Organization for Standardization (ISO)



International Electrotechnical Commission (IEC)



European Committee for Standardization (CEN)



European Committee for Electrotechnical Standardization (CENELEC)



European Telecommunications Standards Institute (ETSI)

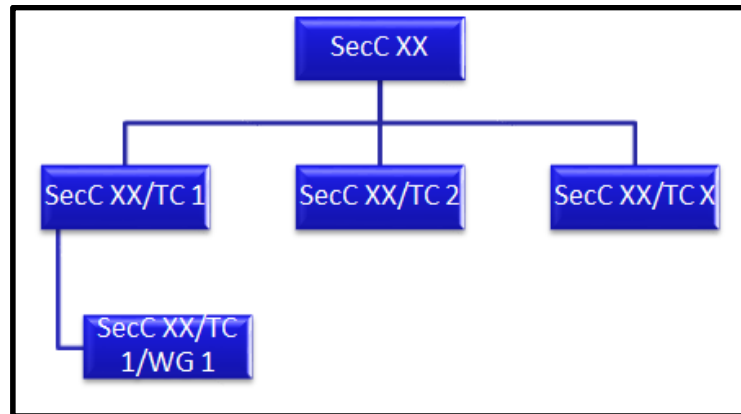
NQIS/ELOT – National Standardization Body

NQIS/ELOT – National Standardization System

Standardization Bodies

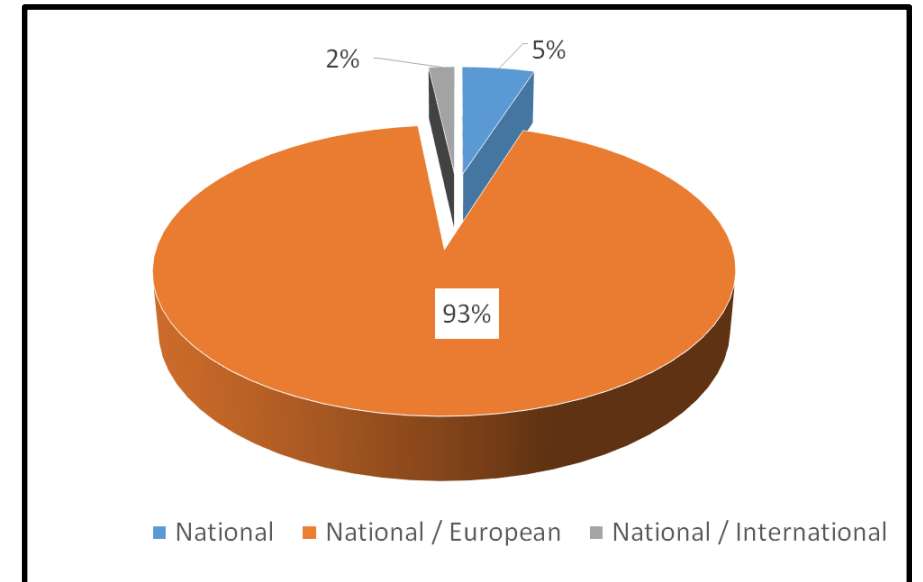
17 Sector Committees

More than 100 Technical Committees and Working Groups



Standardization Deliverables

- ▶ ca. 30.000 Standardization Documents
- ▶ ca. 95% of them are adoptions of International / European documents





National Standardization System

- ▶ The National Standardization System (NSS) promotes the public interest, enhances the competitiveness of national industry and contributes to a liberalized global trading system
- ▶ NSS comprises the forum for developing national positions, setting national (standardization) priorities and for providing stakeholders with strategic information related to the sector concerned
- ▶ The National Standards System is a **knowledge-based system**
- ▶ Standards are developed by technical experts, embody “best practices,” and are themselves vehicles for information exchange and technological diffusion
- ▶ The standards-development process relies upon information and knowledge to perpetuate itself and to advance the goals and objectives of those who participate in it
- ▶ The National Standardization Body (NSB) has the unique role as the leading national organization to coordinate and promote voluntary consensus standards in the territory and to represent the nation in non-treaty international and regional standards-setting activities

NQIS/ELOT – National Standardization Body



Raise awareness at national level
for the role and importance of
standardization and standards

NQIS/ELOT – National Standardization Body

NQIS/ELOT – The challenges and the vision

- ▶ Better regulation through standardization - Promotion of standardization in regulatory framework, technical regulations, policy makers
- ▶ Increased participation from Stakeholders (Industry, Public Authorities, Academia & Research) for information and exploitation of the standards
- ▶ Utilization of standardization in research & innovation activities and projects, at a national level
- ▶ Raising awareness about standardization - Education about Standardization / Training

NQIS/ELOT – National Standardization Body

NQIS/ELOT – The challenges and the vision

- ▶ **Enhancing awareness and understanding of standards**
 - ▶ There is a need to increase stakeholders' awareness and understanding of the existence of standards (both in general and in terms of specific standards) and the benefits of their implementation and use
- ▶ **Enhancing stakeholders' uptake of the standards**
 - ▶ Stakeholders should be able to identify, acquire and effectively use any relevant standard applicable to their field of activity. In addition, support may be required to understand and apply these standards
- ▶ **Enhancing stakeholders' participation in standardization activities**
 - ▶ Active participation of interested parties in standardization processes should be encouraged

NQIS/ELOT – Raising awareness

NQIS/ELOT – Actions

Stakeholders' involvement at Strategic Level

(Re)Establishment of the National Standardization Council (NSC)

- ▶ Broad and balanced representation of Stakeholders
 - ▶▶ Industry and commerce
 - ▶▶ Government
 - ▶▶ Consumers
 - ▶▶ Academia and Research
 - ▶▶ Standards application organizations
 - ▶▶ Non-governmental organization (NGO)
- ▶ National Standardization Strategy
 - ▶▶ Needs and priorities
 - ▶▶ Dissemination & communication activities
 - ▶▶ ...



Άρθρο 85 Ανασύσταση Εθνικού Συμβουλίου Τυποποίησης του Εθνικού Συστήματος Υποδομών Ποιότητας - Τροποποίηση άρθρου 9 ν. 372/1976

Στο άρθρο 9 του ν. 372/1976 (Α' 166), περί Εθνικού Συμβουλίου Τυποποίησης: α) η παρ. 1 επικαιροποιείται ως προς την επωνυμία του νομικού προσώπου στο οποίο συστήνεται το Εθνικό Συμβούλιο Τυποποίησης, β) η παρ. 2 αντικαθίσταται, γ) από την απόφαση συγκρότησης της παρ. 5 αφαιρείται η ειδική πρόβλεψη για τον Πρόεδρο και τον Αντιπρόεδρο, δ) η αναφορά στην «ΕΛΟΤ Α.Ε.» της παρ. 7 αντικαθίσταται από αναφορά στην «Αυτοτελή Λειτουργική Μονάδα Τυποποίησης», ε) η παρ. 8 αντικαθίσταται, και το άρθρο 9 διαμορφώνεται ως εξής:

«Άρθρο 9 Εθνικό Συμβούλιο Τυποποίησης

1. Στο Εθνικό Σύστημα Υποδομών Ποιότητας (Ε.Σ.Υ.Π.) συνιστάται συμβούλιο με την ονομασία Εθνικό Συμβού-

NQIS/ELOT – Raising awareness

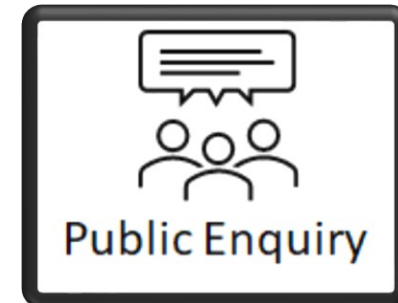
NQIS/ELOT – Actions

ICT Tools



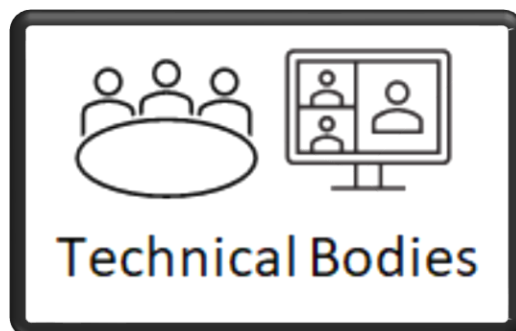
- ▶ Flexible ways to access information and standardization deliverables
 - ▶ online library (reading)
 - ▶ subscription for access to standards / collections of standards
 - ▶ tools for flexible search – European legislation, technical committee, sector, etc.
 - ▶ electronic payments
 - ▶ protection – DRM

- ▶ Improved platform for public enquiry
 - ▶ text of draft standard available for reading and commenting
 - ▶ online submission of comments and tools for comments collection
 - ▶ ...



NQIS/ELOT – Raising awareness

NQIS/ELOT – Actions

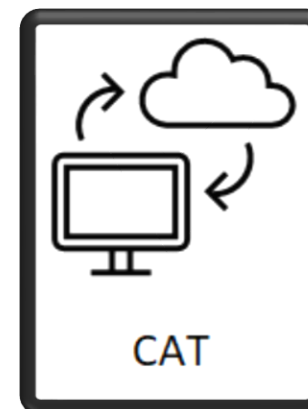


ICT Tools

- ▶ Improved tools for collaborative work (TCs, WGs)
 - ▶▶ Management system of committee members, experts, etc.
 - ▶▶ IT infrastructure of national Technical Bodies
 - ▶▶▶ document management
 - ▶▶▶ polling and voting tools
 - ▶▶▶ meeting management
 - ▶▶▶ management of national standardization projects

ICT Tools

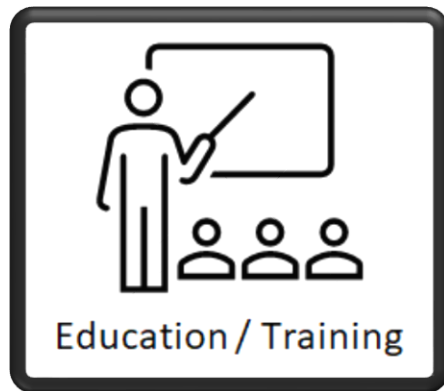
- ▶ Translating standards to national language
 - ▶▶ computer-assisted translation
 - ▶▶▶ translation memories
 - ▶▶▶ tools for terminology
 - ▶▶▶ ...



NQIS/ELOT – Raising awareness

NQIS/ELOT – Actions

Promoting education / training about standardization



- ▶ competence development of standards professionals
 - ▶ elearning training program for competence development and education for people performing a job or tasks related to standardization
 - ▶ Utilizing IWA 30-1 & IWA 30-1 for the Competence of standards professionals

NQIS/ELOT – Raising awareness

NQIS/ELOT – Actions

Bilateral collaboration – University of West Attica (UNIWA)

Memorandum of Understanding



- ▶ raise awareness of the academic community (researchers / teachers and students) for the value of standardization and the role of standards in the economy, public administration, society and research and innovation,
- ▶ participation of the academic and research community in standardization activities at national, European and international level
- ▶ strengthening participation in pre-normative research and standardization projects at the European level
- ▶ use of standards in educational programs and university studies
- ▶ training programs for standardization professionals



National Standardization Infrastructure



Thank you for your attention !!!

Recommendations for **Higher education institutions and R&I organizations**

Recommendations for Higher education institutions and R&I organizations

Develop a standardization policy

Consider standardization in the career development plans

Provide for education and training on standardization

Make Technology Transfer Offices fit for standardization

Develop an indicator and evaluation system



1. Develop a standardization policy

- ▶ Consider standardization along with other valorization tracks (e.g. patents, spin-offs, etc.).
- ▶ Possible collaboration options:
 - ▶ At **national level**, several CEN National Standardization Bodies (NSBs) and CENELEC National Committees (NCs) have in place agreements with R&I organizations and higher education institutions
 - ▶ At **European level**, EU-wide organizations having an interest in cooperation at overall corporate and technical level with CEN and/or CENELEC can become **Partner Organizations**

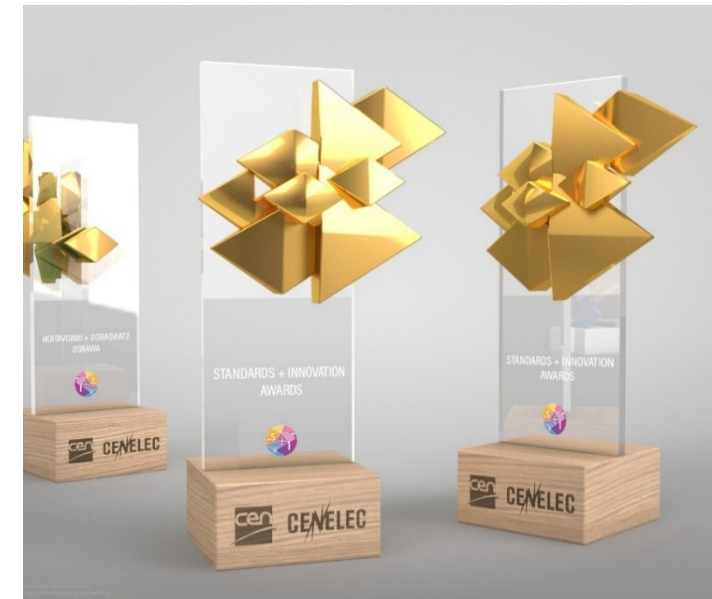


2. Consider standardization in the career development plans

- ▶ Researchers can be appointed as delegates into **technical committees** by their **national standardization body**
- ▶ EC-funded initiatives like [StandICT.eu](https://standict.eu) & [HSBooster.eu](https://hsbooster.eu) support researchers' participation into technical committees
- ▶ Recognition for researcher's contribution to standardization: Award schemes ([CEN-CENELEC Standards+Innovation Awards](#))

Best practice:

In Spain, contributions to standardization started to be considered in public research and academy careers, through a specific chapter of their evaluation and development scheme, devoted to 'Knowledge transfer'.



3. Provide for education and training on standardization



- ▶ First, **train key executive staff** to support policy development
- ▶ Then **trainings** should be offered to staff most likely to be related to the topics of standardization.
- ▶ **Teaching standardization** should be considered in appropriate business, innovation, entrepreneurship, innovation management, technology and science programmes

Best practices: MTECH Luxembourg

Master in Technopreneurship (MTECH) at the **University of Luxembourg** developed in partnership with **ILNAS** aims for the students to transfer ICT knowledge directly into technical innovation through standardization



PRESENTATION

- Degree: Master in Technopreneurship
- Durée: 2 year part-time programme / 4 semesters (60 ECTS)
- Langues: English

PARTNERS



SUPPORTING ORGANISATIONS



The Standards People



4. Make Technology Transfer Offices fit for standardization

- ▶ TTOs should **build capacity** – offer services in relation to standardization
- ▶ **CEN-CLC Guide 39** '*The role of standards in support of **Technology Transfer***' can support raising awareness on the benefits of standardization in supporting technology transfer process

5. Develop an indicator and evaluation system

- ▶ R&I organizations should **monitor their standardization activities** based on output, outcome and impact indicators
- ▶ **Possible indicators** to consider:
 - ▶ Participations in SDO work
 - ▶ Leaderships of standards development
 - ▶ Researchers trained on standardization
 - ▶ Scientific publications referenced in standards

Recommendations for **Project partners**

Recommendations for Project Partners

Analyze the existing standards landscape

Involve experienced partners to make standards a tangible part of the project & define a common consortium strategic position

Invest in stakeholder engagement and define realistic outputs

Ensure sustainability beyond project duration



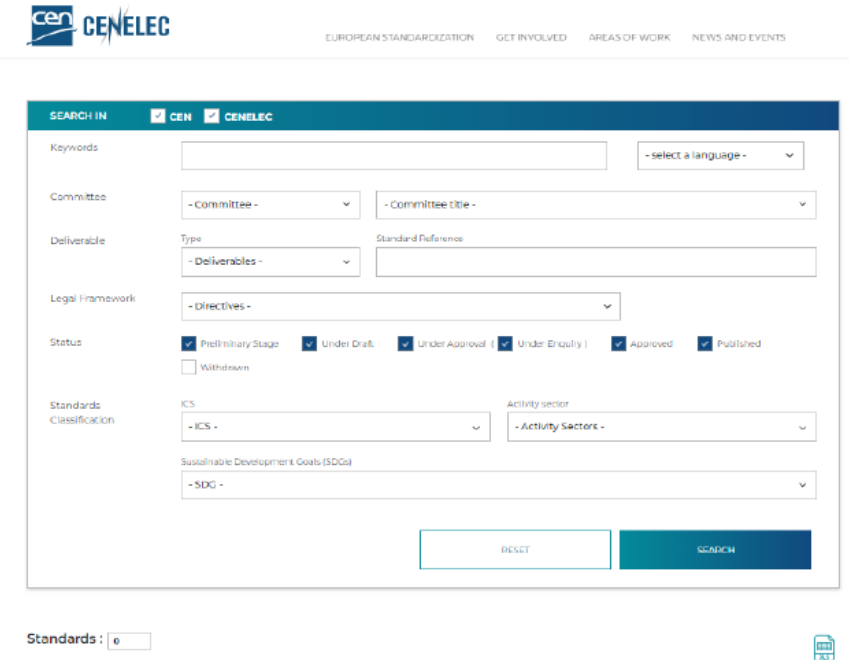
1. Analyze the existing standards landscape

- ▶ Understand the **state of the art** and assess if/how R&I results could be incorporated into new standards or revision of existing ones
- ▶ Standardization is usually a tool for valorization of project results, **not an objective in itself**
- ▶ The following indications should be considered:
 - ▶ the **call for proposals** mentions standardization explicitly
 - ▶ the research or technology field requires **interoperability consideration**
 - ▶ need to develop **common terminology, concepts, methodologies**; or to demonstrate compliance with technical/ regulatory requirements;
 - ▶ the technology is evolving and **new or amended standards** are needed



1. Analyze the existing standards landscape

- ▶ Looking for a standard:
 - ▶ [CEN and CENELEC standards search tool](#)
 - ▶ [ISO standards search tool](#)
 - ▶ [IEC standards search tool](#)
 - ▶ [ETSI standards search tool](#)
- ▶ Looking for a Technical Committees:
 - ▶ [CEN list of Technical Committees](#)
 - ▶ [CENELEC list of Technical Committees](#)
 - ▶ [ISO list of Technical Committees](#)
 - ▶ [IEC list of Technical Committees](#)
- ▶ Standards can be purchased from [National Standardization Bodies](#)
- ▶ [CWAs from R&I](#) are available for download under pre-paid conditions



The screenshot shows the search interface for CEN and CENELEC standards. At the top, it says 'SEARCH IN' with checkboxes for 'CEN' and 'CENELEC'. Below this are several search filters: 'Keywords' with a text input and a language dropdown; 'Committee' with a dropdown for '- Committee -' and a text input for '- Committee title -'; 'Deliverable' with a dropdown for '- Deliverables -' and a text input for 'Standard Reference'; 'Legal Framework' with a dropdown for '- Directives -'; 'Status' with checkboxes for 'Preliminary Stage', 'Under Draft', 'Under Approval', 'Under Enquiry', 'Approved', 'Published', and 'Withdrawn'; 'Standard Classification' with a dropdown for '- ICS -' and a dropdown for '- Activity Sector -'; and 'Sustainable Development Goals (SDGs)' with a dropdown for '- SDG -'. At the bottom right, there are 'RESET' and 'SEARCH' buttons. Below the search form, it shows 'Standards: 0' and a small icon.



2. Involve experienced partners to make standards a tangible part of the project & define a common strategic position



- ▶ NSBs can join a project as **partners** or can be subcontracted for specific activities (e.g. CWA development)
- ▶ CEN/CENELEC Workshop Agreement (CWA) is a **pre-standardization** deliverable designed to meet an immediate need (R&I results) that can be used as a fast-track to future standardization activities
- ▶ Consultation of available training resources are recommended (e.g. [CEN-CENELEC Guide 23 Research Consortium Bridge](#))
- ▶ Partners should have a common vision
- ▶ Plan standardization within specific project tasks, including objectives, budget and resources. Not solely as a “declaration of good intentions”



2. Make standards a tangible part of the project

Best practices: most usual activities in R&I projects

- ▶ Gap analysis of needs & roadmap development
- ▶ Liaison/communication with existing Technical Committees
- ▶ Proposal for new standards or for modification of existing standards
- ▶ Proposal and development of CEN/CENELEC Workshop Agreements (CWA)

Best practice: INTEGRADDE Project

During the implementation of the H2020 project INTEGRADDE, liaisons were established with 3 WGs of **ISO/TC 261 Additive manufacturing**. The project members are allowed to contribute to the WG meetings. **DIN** was involved in the project as an SDO to provide guidance, create a standards landscape, facilitate the link with TC 261, and provide standardization training for the project participants.

3. Invest in stakeholder engagement and define realistic outputs



- ▶ Related projects can join efforts to standardization (e.g. [CWA 17354 'Industrial symbiosis: Core elements and implementation approaches'](#)).
- ▶ CEN and CENELEC Patent Policy encourages the early disclosure and identification of patents that may relate to standards under development. See [CEN-CENELEC Guide 8 "Standardisation and intellectual property rights \(IPR\)"](#).

Best practice:

When preparing standardization outcomes in a project proposal, it is better to state: *"The project will contribute to standardization in x field through participation in TC NN."*, than: *"The project will deliver 10 contributions to standardization on x."* or: *"The project will publish 2 standards on x."*



4. Ensure sustainability beyond project duration

- ▶ Consider **long-term standardization involvement** beyond one single project.
- ▶ Promote the interest of **Technical Committees** in new pre-standard (CWA) so they can assume their maintenance/upgrade into new standards

Best practice: SPIDIA and SPIDIA4P

Through the projects, **16 new ISO Standards and CEN Technical Specifications** have been developed addressing the pre-analytical workflows applied to personalized medicine.

Best practice: D²EPC project

Leads **CEN/TC 371/WG 5**. This WG will be continued through H2020 project CHRONICLE, having common partners & scope.



Recommendations for **Policy & Stakeholders**

Recommendations for Policy & Stakeholders

Member States to promote standardization as means of knowledge valorization

Standards Development Organizations to develop their service portfolios for R&I actors

Member States to examine startups & SMEs needs

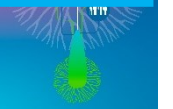


1. Promote standardization as means of knowledge valorization

- ▶ Liaise with SDOs, HEI associations, research organizations and associations of Technology Transfer Offices and professionals.
- ▶ Specific activities that could be tackled through this collaboration:
 - ▶ **training and awareness-raising** activities
 - ▶ developing specific **support services** to be provided by TTOs
 - ▶ Support **participation of researchers/innovators in standardization**
- ▶ Consider establishing a **national contact point for standardization**

Best practice: New Spanish Law on Science, Technology and Innovation

New law mentions standardization as a means of technology transfer on the same level as patenting, spin-off creations, etc.



2. Standardization bodies to develop their service portfolios for R&I



- ▶ Highlighting **researchers' contribution to standards**: researchers can demonstrate references to scientific publications and make use of this information in support of their careers.
- ▶ **Flexible (pre-)standardization deliverables** have been promoted as a specific approach for R&I results
- ▶ **Extending outreach to R&I actors**: Many NSBs develop agreements with R&I organizations to facilitate access to standards

Best practices:

LST has an agreement with the eLABa Consortium for access to electronic versions of standard texts.

UNI signed an agreement with their National Research Council to facilitate researchers' access of technical committees & standards



3. Member States to examine startups & SMEs needs



- ▶ Member States to examine the role of **startups and SMEs** in R&I projects and encourage them to share successful experiences in standardization activities
- ▶ Member States and SDOs to seek collaborations with leading **SME associations** and **startup incubators**

Best practice: ASI Start-up package

ASI has **agreements Start-Up Hubs** (Startup live, Austrian Startups & WeXelerate) and developed a **Start-up package** including discount offers for training and standards access

Best practice: Bitmovin

Bitmovin is a start-up that scaled-up thanks to standardization. Bitmovin's founders entered the standardization process of a new video technology very early and co-created the **MPEG-DASH standard**, adopted as **ISO/IEC 23009-1**.



Thank you

Useful resources

[Standards+Innovation eLearning](#)

CEN-CENELEC [CWA download area](#)

[ISO E-Learning](#)

[ETSI Education Resources](#)

[DS E-learning in collaboration with
Technical University of Denmark](#)

[NSAI training resources](#)

[HSBooster Training Academy](#)

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