Standards + Innovation

- **Guidance for considering standardization in European R&I Framework Programmes, calls, topics and projects**

Introduction

This guide helps reaching a more complete, comparable, homogeneous and successful contribution from European Standardization to the objectives of the R&I Framework Programmes (FP).

This guide intends to support persons involved in:

Writing work programmes for R&I Framework Programmes (Programme Committee Members, Project and Policy Officers, etc.)

Evaluating R&I project proposals (Evaluators, Project Officers, etc.)

Controlling R&I projects as well as assessing their results (Project Officers, Project Technical Advisors, External Project Reviewers, etc.)

The concepts explained are supported by specific recommendations.

This guide is also useful to project proposers when understanding and identifying what they should be able to perform, and to National Contact Points when providing advice and information.

Basics on standardization

- Standardization is based on voluntary consensus on technical specifications among interested stakeholders, including open public consultation.
- Standards Organizations follow working rules and work transparently and in an open manner on relevant new topics. They drive the engagement of stakeholders and ensure a level playing field, but do not develop the contents of the standards.
- Standards are common market rules for industry, trade, design, services, etc. Public authorities can use harmonized standards for presuming conformity with legal requirements or for public procurement.
- The standardization system is organized in 3 fully interconnected levels: national, European and international. European standardization organizations (ESOs) are CEN, CENELEC and ETSI and international standards organizations are ISO, IEC and ITU. Their national members are the national standards bodies (NSBs), available in every European country.

For deeper information on standardization:

» EU Regulation 1025/2012
» CEN-CENELEC – European Standardization (www.cencenelec.eu/standards/Pages/default.aspx)
» Standards+Innovation: www.standardsplusinnovation.eu

Standardization in past Framework Programmes (FP)

- Standardization aspects have been considered since FP4, but with more interest in the last years of FP7 and especially in Horizon 2020, where its role as exploitation enhancer was recognized.
- There is no full information on the total consideration of standardization in projects, but recent studies have extracted the following facts:
  - » Less than 25% of call topics include a reference to standardization.
  - » Until 2018, only 120 out of 7000 projects had included specific contribution of a national standards body (as a partner or subcontractor).
  - » 70% of those 120 projects managed to get specific standardization results such as contributions to drafting of new or revised standards or publication of new ones (e.g. CWA, CEN-CENELEC Workshop Agreement, a fast-track European standard).
  - » Interviewees from independent evaluators and EC project and policy officers remarked that they received no training about standardization within FPs, which may impact their ability to evaluate and monitor the standardization components of the proposals and projects, and would therefore be interested in receiving training and getting adequate tools to help them evaluating and monitoring standardization activities in the projects.
- Some room for improvement:
  - » Existing references to standardization are not homogeneous in number: from 60% of topics in nanotechnologies or 45% in ICT to 10% in transport or 5% in society fields, so it is important to make all the sectors aware to profit from standardization benefits.
  - » Existing references are not always clear: up to 40% do not ask for a specific standardization approach, so it is important to set clear guidance to obtain optimal results.
  - » 80% of projects including standardization refer to a requirement in the topic as one of the main initial motivations, so it is important to include it in more calls to raise their awareness.

Benefits of standardization for R&I projects

- Standards provide access to the state of the art of technology and save efforts (no need to re-invent the wheel).
- Standardization increases the impact of projects into industry and society, because:
  - » Standards generate trust, based on their recognition as best solutions agreed by the interested parties.
  - » Standards ensure comparability, compatibility and interoperability of an innovation with what is already on the market, ensuring compliance with existing best practices and regulations, and give a basis for future development, facilitating a more effective contribution to the Sustainability Development Goals (SDGs).
  - » Standards foster the marketability of R&I results.
  - » Standardization ensures knowledge transfer and interdisciplinarity, connects sectors and supports networking between different communities, using peer groups in already well defined standardization committees, beyond the limits of the consortium and of the project duration.

DEFINITION OF CALLS:
When makes sense to ask for standardization in a call?

- When future engagement of industry is intended (medium-low TRLs) or knowledge transfer to industry and societal stakeholders is needed (medium-high TRLs).
- Sectors in which there are relevant standardization activities in place, to grant integration, and sectors in which standardization is still not started, to seed future growth.
- In strategic actions (big initiatives, missions, etc.) standardization should be considered or envisaged from the beginning, to avoid unproductive diversification and contribute to strategy setting or new standardization activities.

EVALUATION OF PROPOSALS:
When is standardization an added value to a proposal?

- When standardization is required in the call.
- If it is not required, when it is justified how it will increase the impact of the project.
- In CSAs, if it can consider additional aspects or provide additional outcomes that can be strategically relevant or beneficial for a sector or technology.

CONTROL AND EVALUATION OF PROJECTS:
What should be the aims of standardization activities in a project?

- Help consortium to be aware and take advantage of existing standards, saving efforts and enhancing compatibility.
- Promote the results of the project (or some of them) to be included in or covered by new or revised standards, providing dissemination and supporting exploitation.
- In CSAs, to add strategic vision to new sectors or technologies.

How to include standardization in projects and calls 1/2

- In Innovation Actions (IA) and Research and Innovation Actions (RIA): Use of existing standards but, most of all, potential contribution to new standards. In CSAs, other possibilities may be necessary like for example: mapping, planning, networking, training.
- Internal agreement work of a consortium is not 'real' standardization (it can be harmonization, modularization, classification etc.). Standardization increasing the impact requires a wider agreement, not looking for internal standards but to 'universal' standards. Therefore: be careful with expressions such as "we will produce a standard(ized) method". Will this 'standard' be recognized outside or only used by the consortium?
- **Possible standardization activities in projects:**

TRL	Activity	Minimum recommended standardization activities	Possible contributions to new standards
TRL1 **TRL2** **TRL3**	Basic or basic-applied research	• Identification of related standards, published or under development. • Identification of standardization gaps.	• Terminology • Metrology
TRL4 **TRL5** **TRL6**	Applied research, demonstration	• Collaboration with existing technical committees (project liaisons, participation via national committees, information exchanges). • Technical contributions to new or revised standards.	• Characterization • Test methods
TRL7 **TRL8** **TRL9**	Innovation, commercialization	• Proposal and development of new or revised standards.	• Good practices • Products, services or processes specifications

- A good location of 'contribution to standardization' activities is usually in the working packages aimed at improving the impact of the results (e.g. Exploitation).
- **Most usual types of references to standardization:**
  - » Specific (IA, RIA or CSA): Requires contributions to a specific standardization field.
  - » Strategic (CSA): Focused on standardization needs in a sector or technology related to R&I.
  - » Generic (IA or RIA): Standardization used as a tool to maximize the impact of the projects. Reference to "contribution to standardization" in 'scope' or 'expected impact', or in call intro.

How to include standardization in projects and calls 2/2

DEFINITION OF CALLS:

How to reference to standardization in a call?

- When it is helpful for all topics, it can be included in the intro, but it can also be included in each topic.
- Most open way of referencing is the “Generic” one, being bottom-up as it relies on the consortium initiative to define the best way to use standardization to enhance the impact of their results (driving to new fields and topics, gaps closing and contributions to ongoing standardization works).
- In general, standardization should not be an impact itself, but a tool to improve project impact.

What should be expected from resulting projects?

- Standardization depends on consensus with all stakeholders, so very specific standardization outcomes (e.g. a EN standard) should not be requested. A better approach can be “contribution to ongoing or new standardization activities”.

EVALUATION OF PROPOSALS:

How to evaluate standardization activities in proposals of a given call? Are proposed standardization activities adequate to the proposal?

- Check if the expected activities comply with the call requirements or if they will support expected impacts or project objectives, even if there is not a reference to standardization in the call.
- Specific standardization tasks implying standardization outside the consortium should be in place; vague references to standardization without specific tasks should not be valuable; talking about ‘standardized’ results without envisaging some standardization process can show misunderstanding of what standardization means; just including a standards organization in an AB is not a guaranty in general, since they are not stakeholders.
- Proposed activities are logical regarding the TRL.
- At proposal stage, a very detailed description of expected outcomes and topics to be standardized is usually not possible, as this will largely depend on external factors that can vary substantially from the moment of the proposal to the midterm of the project (ongoing standardization, results of the project, consensus of external stakeholders, etc.). So a description of the different available possibilities for action that can be selected and undertaken depending on the environment is more realistic and suitable.

CONTROL AND EVALUATION OF PROJECTS:

What activities/outcomes can be expected in a project?

- Activities aimed to use existing standards and propose or contribute to generate new ones, modify existing ones (see examples above).
- In CSAs, other specific aims can be necessary.

How to evaluate the performance and outcomes?

- In standardization, performance is not directly proportional to outcomes, due to the need of external consensus.
- Performance can for example be evaluated based on: number and suitability of activities carried out, adaptability to unexpected opportunities, the network created including the amount and kind of external involvement in the activities.
- Outcomes can be evaluated depending on the standardization environment, the efforts made, the relevance for future exploitation, etc.

Differences Standardization-Regulation-Certification

- Regulation and certification can sometimes refer to standards, but they are three different activities performed by different actors and with different characteristics, and should not be mixed.
  - » Standardization is voluntary, made by consensus of interested stakeholders and facilitated by national standardization bodies.
  - » Technical Regulation is mandatory, developed by public authorities, and in some cases can make references to technical solutions/requirements stated in voluntary standards.
  - » Certification is an external verification of the compliance with technical requirements, which sometimes can be stated in standards; it can be voluntary or mandatory (by regulation request) and is performed by certification or conformity assessment companies.

DEFINITION OF CALLS:
How to reference Standardization-Regulation-Certification in a call?

- Think about the need for the different activities and what you really mean, reference specifically to one or another without mixing them. State specific requests for each one, if needed.
- If the call falls into a legal area covered by the New Legal Framework (mandate/standardization request from EC for elaborating EN standards) and the legal environment is part of the call, then it is logical to ask for considering also contribution to standardization.

EVALUATION OF PROPOSALS:
Are the Standardization-Regulation-Certification concepts and approaches clear in the proposal?

- Check if the concepts are sound, if there are separate considerations of the three with the relevant actors, objectives and activities.

CONTROL AND EVALUATION OF PROJECTS:
Are the Standardization-Regulation-Certification concepts and approaches clear in the project?

- Check if separate and adequate consideration is made of every concept, if there are specific results for each of them.

Role of NSBs and ESOs in projects

- ESOs do generally not participate in projects (internal policy). NSBs can participate as members of the ESOs.
- NSB can provide support and expertise to consortia in standardization procedures and processes.
- Participation of NSBs in general provides deeper standardization results (generation of new standards), easiness of timely engagement in standardization and post-project maintenance (from CEIS-EY Study, 2018).
- Technical contents are to be provided by other partners, NSBs do not influence technical contents and cannot validate how they are created or implemented.

DEFINITION OF CALLS:

Is it necessary to reference NSBs or ESOs in a call?

- In a CSA, when standardization is required, participation of NSBs or SDOs can be interesting, in some cases more than one to play different activities.
- In IA or RIA, collaboration with them could be specifically requested if the generation of new standardization is considered of high importance for the topic.
- The reference to NSBs or ESOs could be made as a general recommendation in call intros.
- Standardization organizations are not stakeholders, they are facilitators, so including more than one will not lead to different views or opinions, their contribution is mainly about standardization procedures and these are the same for all NSBs. Therefore, in principle, one organization should be enough.

EVALUATION OF PROPOSALS:

When is a NSB necessary or beneficial in a project?

- When it is expected or claimed to contribute to new standardization, the participation of a NSB can add value to the proposal, since new standardization procedures usually need the operational support of a NSB.
- This participation can be either possible as a partner or as a subcontractor.
- The sole participation of a NSB or SDO in an AB is usually not enough, as they are not stakeholders.

What can be expected from its participation?

- Clear standardization activities and different possibilities to be selected and undertaken during the project, clear vision of contribution to specific project objectives or impacts.
- Effort foreseen to contribute to generating new standardization.

CONTROL AND EVALUATION OF PROJECTS:

What shall be expected from NSBs participating in a project?

- Leadership on standards/ standardization related activities and tasks.
- Interaction with relevant standardization structures (Technical Committees).
- Advice, support and guidance on standardization options, procedures and processes.
- Efforts to initiate and progress contribution to new standardization development activities.

And from other partners?

- Technical collaboration and support in standardization activities.

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