European Commission

COMMON ASSESSMENT METHOD FOR STANDARDS AND SPECIFICATIONS (CAMSS)

Study on Adoption Methods for Standards (Final report)

A study prepared for the European Commission DG Informatics

Deliverable D1.1
Framework Contract: DI-066691-00
Specific Contract: N° 82 - ISA/2013/VP1
May 2014

This study was carried out for the European Commission by

Authors:

Sebastiaan Van Der Peijl

Anna Rogala

Thomas De Jaeger

DISCLAIMER

By the European Commission, DG Informatics, Interoperability Solutions for European Public Administrations.

The information and views set out in this publication are those of the author(s) and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

Executive summary

The purpose of this study is to evaluate the effectiveness of the standards and technical specifications' adoption processes within a selected sample of Member States. The analysed adoption process is composed of the following steps:

- Gathering of business needs and proposals for standards and technical specifications;
- Assessment of standards and technical specifications;
- Adoption of standards and technical specifications;
- Implementation of standards and technical specifications.

These steps are identified on the basis of the experience with CAMSS, the interaction with the Member States and the Multi-stakeholder Platform. The analysis of the adoption process of each Member State is mapped against the above steps and described in details.

The sample of analysed Member States and their adoption processes includes Denmark, Germany, Malta, Netherlands, Spain and the United Kingdom. The Member States are selected in function of the existence of an adoption process and/or a list of standards and technical specifications. The information about the Member States' adoption processes is gathered by means of a desk research and a set of structured interviews conducted with the Member States' representatives in charge of the adoption process.

On one hand the analysis of the adoption processes within the sample of Member States reveals a few trends:

- The need for adaptation to raise awareness among and collaborate more with stakeholders (whereas in some Member States these processes are already in place); three of the analysed Member States have noticed a need to change their method that was less effective, resulting in a low level of interest from stakeholders, a lack of collaboration and low level of take-up of standards and technical specifications.
- A firm regulatory basis to provide a framework for uptake at the implementation phase; two Member States have a formal adoption method since the methods are described in the national legislation and they have a process to keep their lists up to date on a yearly basis. The formal approach to the assessment method provides transparency and thus builds trust among the stakeholders.
- A solid transparent and collaborative approach to standardisation and adoption of standards and specifications to increase stakeholder involvement;
- Involvement of stakeholders from the national and local administrative levels; this approach makes sure that all types of stakeholders have a say in the standardization process.

On the other hand the analysis of the adoption processes provides a set of factors necessary for the adoption process to be effective. These factors are the relevance and context in which the standard or specification is to be used, transparency of the adoption process, collaboration, compliance and monitoring, and training. An efficient assessment method and process should be needs-based (i.e.

relevant within a given context), transparent and collaborative in nature, and should contain mechanisms to ensure implementation of the results. These are the prerequisites for building awareness and trust among the stakeholders and ensuring that the standards and specifications are relevant to the delivery of public services. In order to ensure efficient implementation and the take-up of the mandatory standards, the method should also foresee training/awareness-raising for stakeholders both ex ante and ex post, creating knowledge and a common understanding, as well as ongoing monitoring of the uptake of and compliance with standards. The results of the monitoring should trigger corrective actions in the assessment method and process itself.

To conclude the study recommends that for the adoption of standards and specifications the factors of relevance, transparency, collaboration, compliance and monitoring as well as training should be taken into account. Implementing these elements throughout the process contributes to the effectiveness of the adoption process as well as the take-up of the standards and specifications by public administrations at large.

Table of Contents

Table of Figures

Table of Tables

1. Introduction

1.1 Content and purpose of this document

In the context of the Common Assessment Method for Standards and Specifications (CAMSS)[1], the primary purpose of this document is to analyse the overarching process of adoption of standards and specifications[2] in a selection of Member States, in order to evaluate the different experiences and their effectiveness, i.e. the process of adopting standards starting from the gathering of needs and proposals, the assessment, the adoption and the implementation of standards and specifications. The secondary purpose of this document is to evaluate the interest and participation of relevant stakeholders in the process as an important element of the effectiveness of the adoption of standards and specifications.

There are differences in the approach to the adoption process across the Member States. The steps and activities are not the same everywhere. The extent to which stakeholders are involved and to which the adoption process is formal also varies.

This study takes place in a wider context of interoperability initiatives at EU and Member State level described in Chapter 2.

1.2 Research methodology

A sample of eight Member States was selected for the analysis. The sample covers six Member States which had been contacted in the previous phase of CAMSS[3], where the assessment method of the Member States was analysed and compared with CAMSS. These are Denmark, Germany, Malta, Netherlands, Spain and UK. Two other Member States were included in this phase: Greece and the Slovak Republic. The criterion for identifying the sample of the Member States for the analysis was the existence of an adoption process and/or of a list of standards and specifications.

The methodology used to analyse the Member States adoption methods consisted of:

- Preliminary desk research for the eight Member States in the sample;
- Phone interviews conducted in accordance with the interview guide (see Annex)[4]; and
- Analysis of the information gathered for each Member State.

[1] CAMSS: http://ec.europa.eu/isa/actions/02-interoperability-architecture/2-2action_en.htm

[2] Standards as mentioned here refer to standards established by national or European standardisation bodies. Technical specifications Technical specifications not adopted by European standardisation organisations do not hold an equivalent status to European standards. Some ICT technical specifications are not developed in accordance with the founding principles. Therefore, the Regulation on Europeans standardisation lays down a procedure for the identification of ICT technical specifications that could be referenced in public procurement, involving a broad consultation of a large spectrum of stakeholders, including the European standardisation organisations, enterprises and public authorities. (REGULATION (EU) No 1025/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 on European standardisation, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF)

[3] The objective of the previous phase of CAMSS was further development of the CAMSS method which has been revised in 2011-2012 and the preparation of the CAMSS tools for deployment on the Joinup platform. This was done by analysing different assessment methods within a selected sample of Member States. See integrated report for deliverable D3.1, D4.1 and D4.2 under Work Package 4 for CAMSS Specific Contract N° 65.

[4] Details of the interviewees are in Annex 6.1

The input gathered through desk research and interviews was analysed in accordance with a theoretical framework for adoption of standards and specifications. This was developed after taking into account the EU and national context and is discussed in Chapter 2.3.

The framework contains a sequence of generic steps. These were identified on the basis of the experience with CAMSS, the interaction with the Member States in the context of the previous CAMSS project as well with the Multi-Stakeholder Platform at EU level.

The input for each Member State analysed was then mapped and described in terms of the steps of the framework (Chapter 3). Each step in a Member State adoption process is elaborated on in terms of the participation of stakeholders, the methods and tools used during the adoption process and the result of each step. A description follows of each Member State's experience with the adoption process.

Chapter 4 contains an overall analysis and conclusions on the effectiveness of the different approaches based on the analysis of the adoption process and experience in the Member States.

This report concludes with specific recommendations on the adoption of standards and specifications (Chapter 5).

In annex, the recently introduced process of adoption of specifications at EU level is also described and analysed in the context of CAMSS with the purpose of supporting the setup of this process and defining a method for assessment of specifications based on CAMSS at EU level in particular.

2. Context

The Information and Communication Technologies (ICT) needs of public administrations in the EU are considerable. The estimated value of public procurement of ICT in the EU in 2010 was EUR 78 billion[5]. Public procurement of ICT accounted for 20% of total ICT investment in 2005 according to the European Information Technology Observatory[6].

Public administrations make use of ICT to deliver digital public services to citizens (G2C), businesses (G2B) and other public administrations (G2G). However, the lack of interoperability is a major stumbling block preventing the EU from reaping the full benefits of the use of ICT. The specific ICT solutions implemented by public administrations are not always interoperable and often operate in isolation. If European public administrations are to achieve efficient and effective electronic collaboration across borders, then issues such as lock-in effects and the lack of interoperability of legacy systems have to be addressed.

The Digital Agenda for Europe[7] and the European Interoperability Framework[8] both point out the need to agree on standards and specifications for public administrations to use in implementing ICT solutions. In recognition of this, a specific Action (Action 2.2. Achieving a modern ICT standardisation policy) was initiated under the Interoperability Solutions for European Public Administrations (ISA) Programme[9] with the aim of promoting "collaboration between EU Member States in defining a Common Assessment Method for Standards and Specifications (CAMSS)"[10] to expand interoperability in the area of eGovernment "through the sharing of information and knowledge, the alignment of national processes and by reusing best practices" concerning the assessment, adoption and use of ICT standards and specifications for public services.

This chapter provides further background on the policy context. It also provides an introduction to the practices that the EU and Member States have implemented in terms of the adoption of standards and specifications which will enhance interoperability of public services and thus lead to greater collaboration between public administrations.

Based on the experiences in ISA Action 2.2 and the review of adoption and assessment methods in the Member States, a theoretical model for the adoption of standards and specifications is then put forward as a framework for comparison of the different approaches across the eight Member States presented in this report.

2.1 EU Policy context

The European Commission's Interoperability Solutions for European Public Administrations (ISA) Programme run by the Directorate-General for Informatics (DG DIGIT) is designed to

[5] Against lock-in: building open ICT systems by making better use of standards in public procurement, European Commission (COM(2013) 455 final)
[6] *'European Information Technology Observatory 2005'*, EITO, 2005
[7] http://ec.europa.eu/digital-agenda/
[8] http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf
[9] http://ec.europa.eu/isa
[10] ISA Programme – Action 2.2. See: http://ec.europa.eu/isa/actions/02-interoperability-architecture/2-2action_en.htm

facilitate “efficient and effective cross-border electronic collaboration between European public administrations”.[11] The ISA Programme takes an integrated approach to enhancing interoperability through more than 40 targeted actions designed to make “electronic collaboration between public administrations [...] quicker, simpler and cheaper for all parties concerned, in particular when transactions need to be done cross-border and/or cross-sector”.[12] One of the key initiatives under ISA and predecessor Programmes was the introduction and development of the European Interoperability Framework (EIF). Member States agreed to implement this at national level under Action 26 of the Digital Agenda for Europe (DAE)[13].

The EIF provides a set of recommendations for European public administrations on achieving the interoperability of public services. This includes the principle of ‘openness’ when “developing custom-made software systems”. This principle also encompasses the use of standards/specifications for such systems. The EIF makes the following recommendations on the use of standards and specifications:

- “Public administrations should agree on the formalised specifications to ensure technical interoperability when establishing European public services”;
- “Public administrations, when establishing European public services, should base interoperability agreements on existing formalised specifications, or, if they do not exist, cooperate with communities working in the same areas”;
- “Public administrations should lead or actively participate in standardisation work relevant to their needs.”[14]

Establishing interoperability agreements based on formalised standards and specifications is crucial to enhancing technical interoperability between public services. The EIF further says that in so doing, “when establishing European public services, public administrations should prefer open specifications, taking due account of the coverage of functional needs, maturity and market support”. As the Digital Agenda for Europe (DAE) Action 23 points out, “public authorities should select standards which can be implemented by all interested suppliers, allowing for more competition and reducing the risk of lock-in”[15].

As part of coming to an agreement on which standards and specifications public administrations should use, it is important to establish a method for Europe’s public administrations to assess them when selecting standards and technical specifications for their ICT systems. Indeed, as the EIF also recommends: “public administrations should use a structured, transparent and objective approach to assessing and selecting formalised specifications.” This was the rationale for establishing the Common Assessment Method for Standards and Specifications (CAMSS) under Action 2.2 of the ISA Programme. This proposes such an assessment method based on best practices in the Member States.

[11] See: http://ec.europa.eu/isa/
[12] ISA Programme, see: http://ec.europa.eu/isa/index_en.htm
[13] Digital Agenda for Europe, Action 26 – Member States to implement European Interoperability Framework. See: http://ec.europa.eu/digital-agenda/en/pillar-ii-interoperability-standards/action-26-ms-implement-european-interoperability-framework. The extent to which Member States have adopted these recommendations is monitored through the National Interoperability Framework Observatory (NIFO) action of the ISA Programme.
[14] European Interoperability Framework (EIF) for European public services (EC, COM (2010) 744 final). See: http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf
[15] http://ec.europa.eu/digital-agenda/en/pillar-ii-interoperability-standards/action-23-provide-guidance-ict-standardisation-and-public

CAMSS is a standardised method for assessing ICT standards and specifications, and a platform for sharing these assessments across Member States in order to create synergies and economies of scale. It is thus a key enabler in fostering collaboration between European public administrations.

The use of ICT standards and specifications is crucial in procuring and implementing regional, national or cross-border ICT services. One of the major problems identified in the public procurement of ICT, as mentioned in the proposal for a Regulation on European Standardisation[16], is that it is "only possible in exceptional circumstances" to make reference to ICT standards or technical specifications created by organisations other than the traditional standard-setting organisations while "a major part of the global ICT standardisation work is done outside the formal European or International standardisation system". As numerous standards are adopted by industry consortia[17] rather than by formal standards organisations, the pool of standards or technical specifications to which European public administrations can make reference is considerably reduced. This increases the risk of lock-in and lack of interoperability.

In order to provide European public administrations with 'more standards faster', the European Commission will, with the adoption of the Regulation on European Standardisation[18], "identify ICT technical specifications that are not national, European or international standards, but meet the requirements [of the Regulation], which may be referenced, primarily to enable interoperability, in public procurement."

The multi-stakeholder platform on ICT standardisation[19] (MSP) was thus established to "be used as a forum for consultation of European and national stakeholders, European standardisation organisations and Member States in order to ensure legitimacy of the process". The European Commission's Directorates-General for Enterprise and Industry (DG ENTR) and Communications Networks, Content and Technology (DG CONNECT) work together to manage and support the MSP.

The Regulation on European Standardisation specifies criteria that are to be used by the MSP for the 'identification' of technical specifications in the area of ICT as a basis for assessing the specifications for adoption. The current version 0_4 of CAMSS has been aligned with these criteria during the previous CAMSS project. Currently DG DIGIT, DG ENTR and DG CONNECT are collaborating on a further alignment with the aim of establishing an MSP profile of CAMSS that can be used by the MSP to identify technical specifications at EU level (See Annex 6.3).

[16] Proposal for a Regulation on European Standardisation (COM(2011) 315 final). http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0315:FIN:EN:PDF

[17] For a comprehensive list of Consortia, see http://www.cen.eu/cen/Sectors/Sectors/ISSS/Consortia/Pages/default.aspx

[18] Regulation on European Standardisation (EU No 1025/2012).http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF

[19] For more information see: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2758

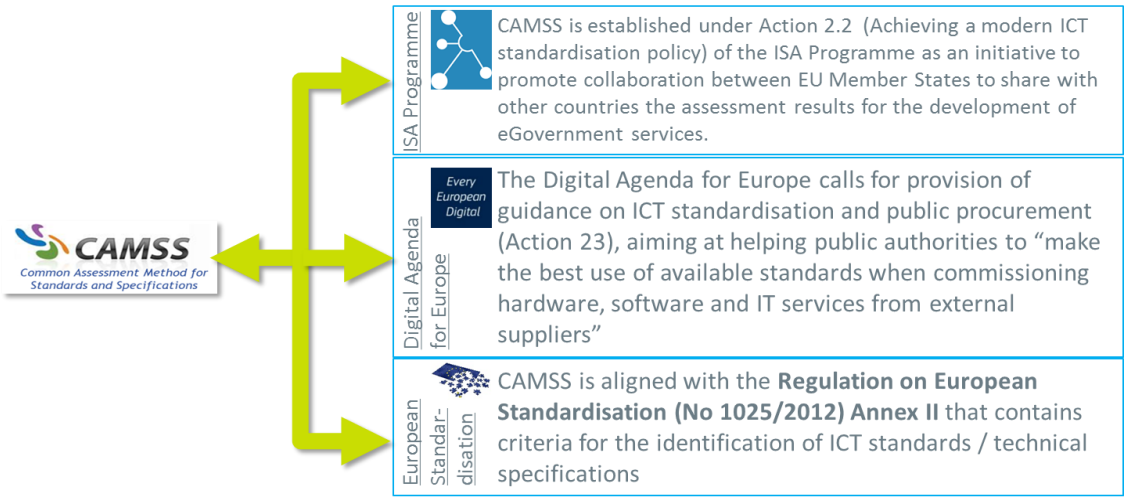


Figure 1 – CAMSS in the EU context

CAMSS is intended to be used by Member States as part of the adoption of ICT standards and specifications. This is also reflected in the practices in the Member States as further elaborated on in the next section.

2.2 Overview of initiatives in different Member States

The previous report[20] on experiences in the Member States clearly showed that there are a number of Member States that have an adoption process and assessment methods in place. That report mapped the assessment methods in place in Denmark, Germany, Malta, the Netherlands, Spain and the UK. The extent to which these are similar to the CAMSS method varies.

In addition, lists of published standards and specifications were identified in Austria, Belgium, Denmark, Estonia, Finland, Germany, Malta, the Netherlands, the Slovak Republic and Spain. As part of the activities under the previous CAMSS project, additional lists of standards were identified in four more countries, bringing the total to 13 (adding France, Italy, Portugal and Switzerland).

Based on an analysis[21] of these lists and the lists available from CNECT and ISA of published standards and specifications, it is clear that:

- **415 standards and specifications** are mandatory or recommended **in 13 Member States;**
- **118 of these standards and specifications** are mandatory or recommended **in at least two Member States**

An overview of this analysis is shown in Figure 2. What this shows it that there is a considerable overlap in terms of the specific standards/specifications adopted across countries. Some have

[20] See integrated report for deliverable D3.1, D4.1 and D4.2 under Work Package 4 for CAMSS Specific Contract N° 65.
[21] The analysis and full list is also available on the CAMSS Joinup Community: https://joinup.ec.europa.eu/community/camss/og_page/list-standards

been adopted, for example, by between five and twelve countries. The bulk, however, have been adopted in between two and four countries.

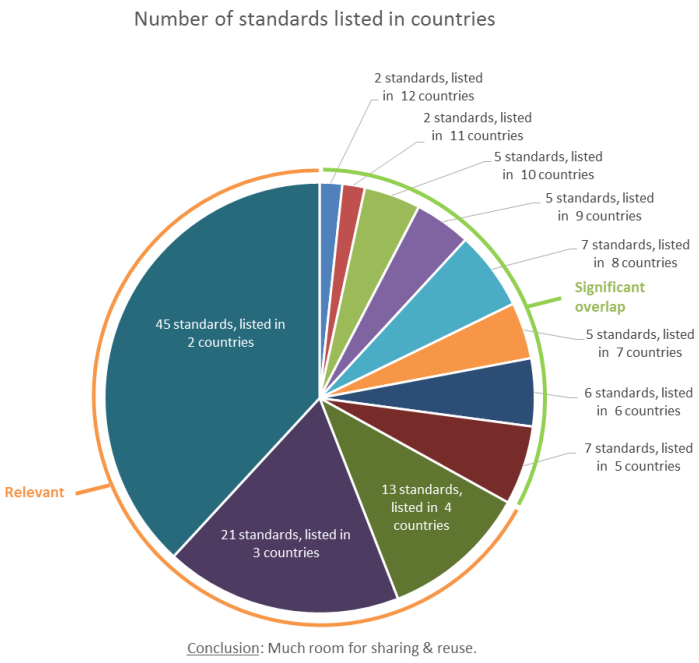


Figure 2 –Standards and specifications adopted in Member States

This overlap shows the scope for sharing and reuse across Member States of existing assessments of standards and specifications. As needs for standards-based solutions across public administrations in Europe tend to be similar, there is much scope for collaboration. If countries were to use CAMSS, as the UK already does, or methods similar to CAMSS, as many countries already do, the assessment could be shared and reused, and money saved.

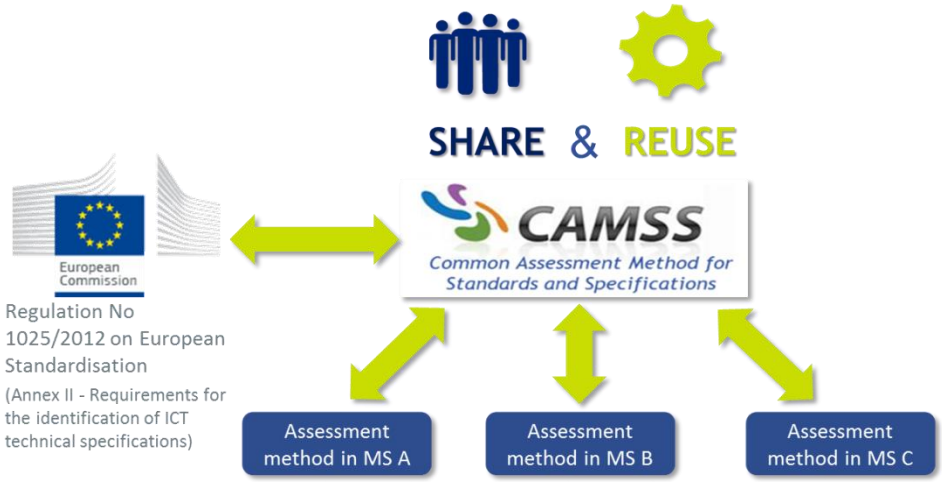


Figure 3 – CAMSS as an enabler of sharing and reuse

Not only has the UK adopted CAMSS and not only do a number of countries (including Denmark and the Slovak Republic) mention the CAMSS method as a point of reference, but the Multi-Stakeholder Platform managed by the European Commission is currently looking into CAMSS as the method to use for assessment at EU level (see annex).

Beyond the assessment method as such, it is important to look at the bigger picture: the assessment of standards and specifications takes place within the framework of interoperability initiatives and the establishment of interoperability agreements. This report therefore aims to provide a broader look at the entire adoption process for standards and specifications and in particular the effectiveness of the adoption of ICT standards and specifications with a view to implementation of ICT for public services.

In order to analyse the adoption methods in place in different countries the next section first presents a theoretical model of the adoption process. This model is based on the experience with CAMSS, interactions with the Member States (during the previous CAMSS project), the Multi-Stakeholder Platform, and DG ENTR and DG CONNECT.

2.3 Theoretical model of adoption of standards and specifications

The assessment of standards and specifications should be seen as part of a more all-encompassing process of adopting standards and specifications. Figure 5 provides a theoretical overall step-wise model for the process of adoption of standards and specifications. It is based on the experience with CAMSS and interactions with the Member States as well as the Multi-Stakeholder Platform, and DG ENTR and DG CONNECT.

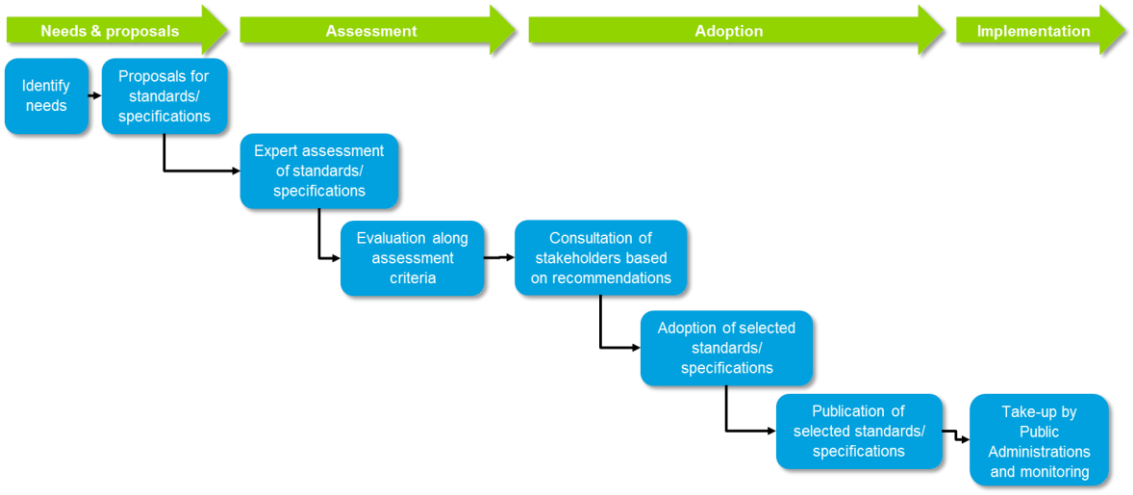


Figure 4 – Theoretical Framework of Adoption of Standards and Specifications

The overall process of adoption consists of four phases:

- **Needs and Proposals**: the starting point for the adoption of standards and specifications should be the elicitation of public administrations' needs for the implementation of ICT solutions for public services. Based on this, different stakeholders might propose specific standards and specifications that could address these needs. The activities in this phase are designed to identify those needs and gather relevant proposals;
- **Assessment**: Once relevant proposals have been collected based on needs, an assessment will have to be carried out in order to evaluate the eligibility of different standards and specifications based on an established set of criteria in line with the EIF principle that "public administrations should use a structured, transparent and objective

approach to assessing and selecting formalised specifications". The activities in this phase involve the establishment of an expert group to assess the standards/specifications proposed and to evaluate these in accordance with the established set of criteria;

- **Adoption**: after the assessments have been carried out and recommendations have been made by those responsible, the standard or specification can be officially adopted. Before official adoption, a (public) consultation can be launched on the recommendations to gain feedback from stakeholders. Following this, and taking due account of the input from different stakeholders, adoption is made official by the relevant body. Finally the standards/specifications are published as part of a list of recommended/mandatory standards to be used by public administrations;
- **Implementation**: After adoption and publication, public administrations are expected to take up the recommended/mandatory standards in their implementation of ICT-based solutions for public services. This mainly occurs through public procurement of ICT solutions and generally also applies to solutions built in-house. As part of the overall adoption process different types of monitoring could be put in place so that the body responsible monitors the extent to which public administrations actually take up these standards/specifications. The extent of the monitoring is generally determined by whether the listed standards and specifications are enforceable (e.g. based on specific legislation), and the mandate of the body responsible. In addition, more pragmatic monitoring methods may be in place whereby the body responsible is involved in either funding or design of ICT-based solutions for public services and can make recommendations or give them official approval.

This adoption process is generic and includes many steps that may or may not be in place across countries. The next chapter investigates how individual countries implement their adoption process and looks at how the different kinds of processes in place have an impact on the effectiveness of the adoption of standards and specifications in a national context. The aim is to identify similarities and differences, and to identify those elements that are important to the successful take-up of standards and specifications.

3. Processes and Experiences in the Member States

This chapter analyses the experiences in the selected sample of Member States by looking at their processes for adoption of standards and specifications in ICT-based public procurement. The sample covers Denmark, Germany, Greece, Malta, the Netherlands, the Slovak Republic, Spain and the United Kingdom. The structure of the analysis is the same for each Member State:

- Description of the context in which the Member State adoption process is owned and used;
- Description of the Member State's process of adoption of standards and specifications, containing a description of each of the relevant steps;
- Analysis of experience with the adoption process;
- Assessment of the effectiveness of the process.

3.1 Denmark

3.1.1 Context

The Danish **eGovernment Digital Strategy 2011-2015**[22] sets out the overarching framework for catalysing the adoption of digital solutions by the public sector. Denmark's Agency for Digitisation set up in 2011 under the Ministry of Finance works on ICT standards and specifications relevant to the public sector. A **Steering Committee for Joint Public Cooperation** (STS)[23] was established to ensure coordination and take decisions on the **OIO (Public Information Online) architecture framework**[24], which is the common enterprise architecture framework for public sector IT solutions.

The OIO Committee for Architecture and Standards ('OIO Committee')[25] has been the central governing body for Denmark's standardisation effort in this domain. The OIO Committee has worked towards the coordination of public initiatives in standardisation and IT Architecture with representation from most ministries, municipalities and regions. The OIO project is linked to the Danish National Interoperability Framework[26] and the CAMSS project as they aim "to re-use technical explanations on standards from other countries".[27]

The OIO Architecture Guidelines note that there are "mature, formalised standards and specifications under development". A list of standards has been published, but "the list is not

[22] See: http://www.digst.dk/Digitaliseringsstrategi/~/media/Digitaliseringsstrategi/Tilgaengelig_engelsk_strategi.ashx
[23] See: http://www.digst.dk/Loesninger-og-infrastruktur/NemLogin/Brugerstyringsprojektet/Baggrund.aspx
[24] See: http://www.digst.dk/Servicemenu/English/IT-Architecture-and-Standards/OIO-architecture-framework and http://arkitekturguiden.digitaliser.dk/introduction-national-enterprise-architecture-denmark. The OIO Framework is under continuous development, and is closely linked with the EIF as well as a similar structure to the European Interoperability Reference Architecture (EIRA), see: http://arkitekturguiden.digitaliser.dk/interoperabilitet
[25] See: http://www.digst.dk/Servicemenu/English/IT-Architecture-and-Standards/Standardisation/Governance
[26] NIFO: http://ec.europa.eu/isa/actions/04-accompanying-measures/4-2-3action_en.htm
[27] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Tekniske-standarder/OIOkataloget

exhaustive, for example, individual ministries, national solutions that require the use of standards that are not covered" [28]. In the solution guides under the architecture framework[29] a number of standards are mentioned in the respective context.

The Danish Agency for Digitisation has worked on ICT standards and specifications through different strands: (i). Open Standards: a set of "seven mandatory open standards" has been published;[30] (ii) service-oriented architecture[31] and data standards[32]; (iii) technical standards and specifications: the OIO Committee[33] has been in charge of the adoption process and an OIO Catalogue[34] of technical standards has been published on the online platform 'digitaliser.dk'.[35] The Expert Committee on Open Standards[36] assists this Committee in their work of assessing the open standards. The Expert Committee for Open Standards[37] is involved in relation to the seven sets of open standards, conducts assessments and presents these as recommendations to the OIO Committee. The Expert Committee for Open Standards[38] forwards its recommendations to the Minister of Science, Technology and Innovation and submits its assessment after consulting with the joint public OIO Committee.

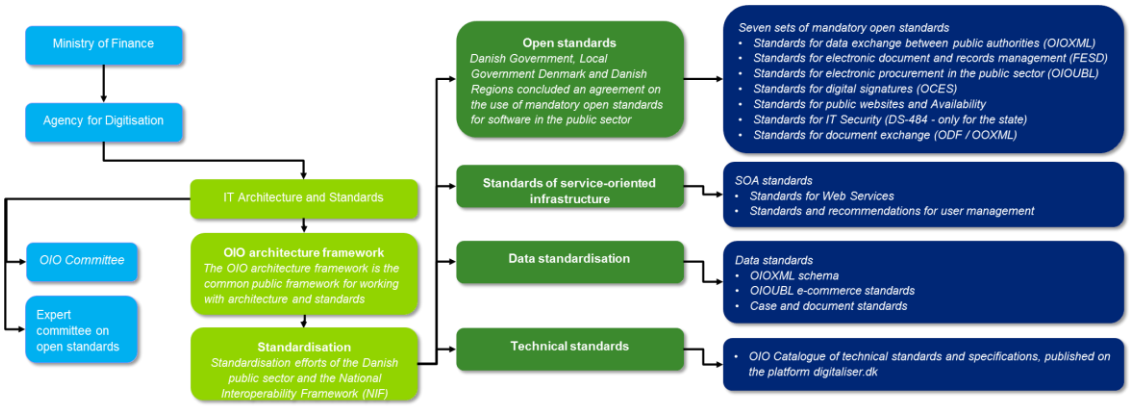


Figure 5 – Activities of the Danish Agency for Digitisation in the area of ICT standards and specifications[39]

The OIO Committee and the OIO Catalogue have been at the centre of the activities for the adoption of technical standards and specifications. The terms of reference for the OIO

[28] See: http://arkitekturguiden.digitaliser.dk/standarder
[29] See: http://arkitekturguiden.digitaliser.dk/losningsguider
[30] Denmark refers explicitly to 'open standards', see: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/AAbne-standarder--vejledning/De-syv-saet-af-obligatoriske-aabne-standarder
[31] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Standarder-for-serviceorienteret-infrastruktur
[32] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Datastandardisering
[33] See: http://www.digst.dk/Arkitektur-og-standarder/Fora/OIO-komiteen
[34] See: http://www.digst.dk/Servicemenu/English/IT-Architecture-and-Standards/Standardisation/Open-specifications/The-OIO-Catalogue
[35] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Tekniske-standarder/OIOkataloget and http://digitaliser.dk/
[36] http://www.digst.dk/Arkitektur-og-standarder/Standardisering/AAbne-standarder-politisk-baggrund/Konklusionspapir/Common-understanding-on-the-use-of-open-standards-for-software-in-the-public-sector.aspx
[37] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Ekspertudvalget-om-aabne-standarder
[38] The members of the Expert Committee are: Mads Bryde Andersen (Chairman, Professor, Doctor of Laws, University of Copenhagen), Mogens Kuhn Pedersen (Professor, dr.merc. Copenhagen Business School), Kim Normann Andersen (Professor, Ph.D. Copenhagen Business School), Jens Hørlück (Business Consultant, Master Economics, University of Aarhus), and Jørgen Kristensen (Centre Manager, IT and Digitisation of the Egedal Commune).
[39] Own elaboration

Committee adopted in 2007 describe the mandate and role of the committee as “developing and maintaining a common framework for the methodology and procedures for working with architecture, standards and infrastructure - such as the OIO EA [Enterprise Architecture] framework and OIO working model of standardisation” and “providing recommendations on the development and use of architecture, standards and infrastructure, including providing recommendation for mandatory requirements, principles and choices”.[40]

The next sections provide further detail on the adoption process, the different steps in the process, and the current status of and experience with the adoption of standards and specifications in Denmark. They conclude with an assessment of the effectiveness of the process.

It should be borne in mind, however, that the process of adoption of technical standards is currently on hold. The last meeting of the OIO Committee was in September 2011[41]. The Agency for Digitisation is currently investigating how to continue the work on technical standards and specifications in the context of the Danish architectural framework. The main reason for this is on the one hand that many of the relevant standards and specifications were already processed and currently the aim is to align the method for selecting standards and specifications with the continuous development of the Danish OIO architectural framework.

3.1.2 Adoption Process

The analysis of the assessment of standards is focused on the assessment of technical standards. The analysis does not cover the Danish open standards, standards of service-oriented infrastructure or data standards, as depicted on figure 6, since these standards were developed by the Agency for Digitisation for the specific national needs.

In Denmark, “anyone may propose the inclusion of a technical standard in the OIO catalogue of technical standards in digitalisér.dk, the final decision on adoption and degree (e.g. recommended, mandatory) is taken by the OIO Committee after a public consultation”.[42] Similarly anyone can submit a proposal for change via the platform. The assessment method is closely related to CAMSS, the existing Danish method was one of the starting points for development of CAMSS.

Figure 7 depicts the overall adoption process followed in Denmark. The following sections elaborate on each of the steps of this process.

[40] See: http://www.digst.dk/Arkitektur-og-standarder/Fora/OIO-komiteen/Kommissorium
[41] See: http://digitaliser.dk/resource/1866252
[42] Translated from: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Tekniske-standarder/OIOkataloget

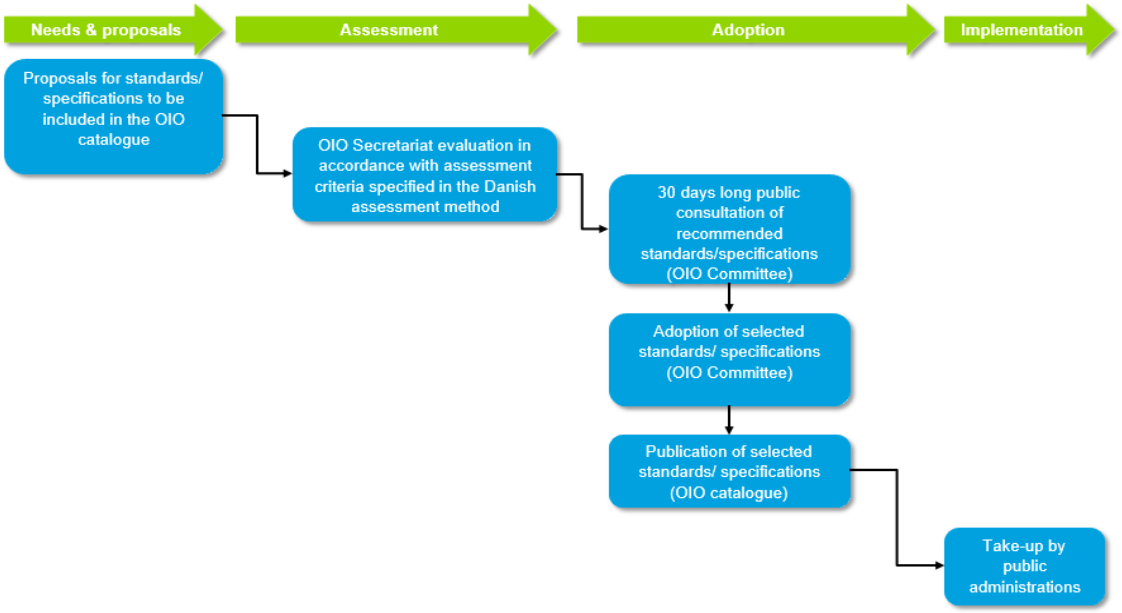


Figure 6 – Adoption process: Denmark

Needs and proposal phase

Proposals are in principle based on the specific needs of the individual proposing a standard or specification. In practice, as the Agency website notes, the need for standards usually occurs within a group of actors in a particular area who recognise the need for common guidelines or rules. If these players can agree and reach consensus on a common 'way of doing things', a standard is defined as an 'agreement' between the actors.[43] There is, however; no explicit elicitation of needs. The OIO Catalogue is an online platform where any user can make suggestions for consideration of ICT standards and specifications.

Stakeholders: any stakeholder, e.g. public administration, industry can submit a proposal for an ICT standard or specification to be included in the OIO catalogue, and any stakeholder can comment. For example, the most recent suggestion was made in 2012 by an industry representative for the adoption of the Matroska (MKV) standard regarding a video format.[44] The Agency for Digitisation facilitates the platform and is in charge of investigating the proposed standards and specifications.

Methods & Tools: the online platform (digitaliser.dk) is the main tool for the interaction between stakeholders. The suggestion for specific standards and specifications is made through the platform. A template is available on the platform for submission by e-mail to the OIO Secretariat[45].

Results: a proposed standard or specification is either taken up by the OIO Committee for assessment or the decision is taken not to take the standard/specification further.

[43] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Tekniske-standarder and http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Tekniske-standarder/Standarder-og-standardisering
[44] See: http://digitaliser.dk/resource/4189#comment_2170509
[45] See: http://digitaliser.dk/resource/549339

Assessment phase

Once a proposed standard/specification has been selected for assessment, the OIO Secretariat (the OIO Committee) carries out an evaluation[46] based on the criteria set out in the Danish assessment method described under methods and tools below.

It is up to the OIO Committee – on the basis of recommendations from the public administration authorities on the suggestion to include standards/specifications in the list – to organise the process so that the list can be adapted.

Stakeholders: The OIO Secretariat makes an evaluation of the standards/specification based on an established assessment method.

Methods & Tools: the OIO Secretariat uses an established **assessment method** for the assessment of standards/specifications[47]. The method is very concise and is built on categories, sub-categories and single-word criteria to explain with which criteria the standard has to comply. In summary, they are: openness (publicly available, complete, open IPR, open application, open interface, open meeting, consensus, open change, open maintenance), Market Conditions (prevalence, maturity), and Business Relevance (suitability, potential). Assessment results are not available online.

Results: Input for a public consultation as part of the adoption phase.

Adoption phase

The proposal and assessment are submitted for a public review for 30 days. After this public consultation, the OIO Committee adopts the standards/specifications with due regard to the comments received. Seven categories are used for technical standards: mandatory, recommended, available/applicable, under observation, to be phased out, not recommended, de facto standard. After adoption the standard/specification is listed on the platform.

Stakeholders: External stakeholders can comment during the public consultation. The OIO Committee adopts the standards and specifications and assigns the status of mandatory, recommended, etc.

Methods and tools: The OIO Catalogue[48] containing the technical standards is publicly available on the digitaliser.dk platform[49].

Results: a list of standards/specifications on the Digitaliser platform as part of the OIO Catalogue. At the time of writing the numbers by category were:

- Mandatory: 22;
- Recommended: 26;
- Available/applicable: 56;
- Under observation: 27;
- De facto: 36;

[46] See: http://www.digst.dk/Arkitektur-og-standarder/Standardisering/Tekniske-standarder/OIOkataloget
[47] See: http://digitaliser.dk/resource/549339/artefact/OIO-indstillings-skema-skabelon.odt
[48] See: http://digitaliser.dk/katalog/2
[49] See: http://digitaliser.dk/resource/375897

- To be phased out: 14;
- Not recommended: 13.

Implementation phase

There is no official monitoring of take-up by public administrations, however, the standards are assessed in the context of the OIO Architectural Framework. In this way Agency for Digitisation is directly involved in take-up and implementation of standards. .

3.1.3 Analysis of Experience

Our understanding from an interview with the Danish Agency for Digitisation is that the work on the list of technical standards/specifications is currently on hold. The OIO Committee has not convened since 2011.

A key reason given to us is a lack of interest among the different key stakeholders (e.g. public administrations and industry) because it is not enough just to provide a list of standards adopted and specifications for the different actors to take these up when implementing ICT solutions. As noted in the EIF, the adoption of standards and specifications needs to be considered in the framework of drawing up interoperability agreements. In the absence of this context, actors are likely to lack motivation to adopt the standards and specifications.

Nevertheless, since there is interest from industry and public administrations in the architectural framework, the Agency for Digitisation is working on finding a way of integrating the work on standards and specifications in this context.

The aim is to make the standards and specifications more relevant to public administrations by placing these in the context that is relevant for them. For example, the use of specific formats, such as XBRL, to exchange business-related information has direct applicability within its context and is considered relevant.

There is no plan, however, to make recommendations on standards/specifications that are already widely used, such as HTML, even if they are relevant to stakeholders. That is not to say that it is not felt than an official recommendation might be useful, but there would be no real impact since stakeholders are already making use of these standards/specifications de facto.

3.1.4 Assessment of Effectiveness

The Danish approach enables public consultation during the initial phase of the adoption process. In particular, anyone can propose a standard and submit a proposal online. Thus, Denmark promotes collaboration with stakeholders in the early stage of the adoption process. What is more, Denmark strives for an assessment and selection of standards relevant for a given context, by leveraging the OIO Architecture Framework, which provides a common enterprise framework for the IT solutions.

The effectiveness of use of method appears therefore to have been limited, but without specific monitoring of the take-up by public administrations, it is not possible to formulate a conclusive judgement.

3.2 Germany

3.2.1 Context

In Germany, there are two main mechanisms for improving technical interoperability: SAGA (previously known as 'Standards and Architectures for eGovernment Applications') and the IT Planning Council.

SAGA[50] has been in use for the past 10 years. SAGA describes uniform IT standards, procedures and methods as well as recommendations for their use in public administrations. SAGA 5.0 is a Federal document. Some modules are reused (and sometimes modified) in several Lands (Bundesländer), but this reuse is not regulated.

The **IT Planning Council**[51] set up in 2010 is a shared responsibility and cooperation mechanism at Federal, Land and local level (11 000 municipalities). The first two have voting rights on the Council; the representatives of the municipalities do not.

Decisions of the IT Planning Council are implemented by the respective Lands, while the IT Planning Council is responsible for standards that are not "domain-specific" (e.g. unique character sets, data transport, applications data etc.). The relevant federal ministries are responsible for domain-specific standards (finance, health etc.).

3.2.2 Adoption Process

The IT Planning Council has overall responsibility for the adoption process through the Standardisation Agenda and with the support of the IT-Standards Coordination Office (KoSIT). Each Land is then responsible for seeing that an agreed standard is implemented by the relevant organs of that Land.

The German adoption process is carried out in four phases[52]; the suggestion, planning, processing and decision phase. Different milestones are described in the processing of a need for standardisation.

The starting point in the suggestion phase is the expression of a need by a public administration or representative of the private sector to the IT Planning Council (M1). A Needs Stakeholder (Bedarfsvertreter) then prepares a needs assessment. This may be a stakeholder, such as a Ministry, or it may be KoSIT (M2). The final decision on whether the need has been established is taken by the IT Planning Council and its members (M3). In the planning phase, the proposal to include the need in the Standardisation Agenda is published for public consultation (M4) and finally scheduled onto the Standardisation Agenda once comments are processed in a transparent and accountable manner (M5). During the processing phase, possible solutions are presented (M6), the analysis of the proposed solutions is performed (M7) and a report on the

[50] SAGA: http://www.cio.bund.de/Web/DE/Architekturen-und-Standards/SAGA/saga_node.html
[51] IT Planning Council: http://www.it-planungsrat.de/DE/Home/home_node.html
[52] Description of German phases: http://www.xoev.de/sixcms/detail.php?gsid=bremen83.c.5043.de

analysis is published for public consultation (M8). Finally, during the decision phase, a resolution is proposed (M9) and the final decision is taken (M10)

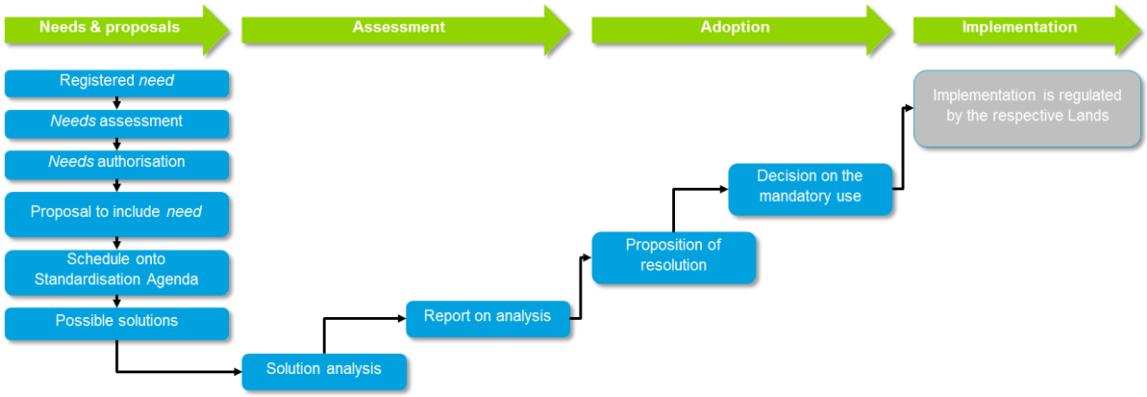


Figure 7 – Adoption process Germany

Needs and proposals phase

Public administrations and representatives of the private sector can report their needs to the IT Planning Council. KoSIT then examines the case for the standard or specification together with the needs stakeholder in the needs assessment. It looks at application scenarios and system needs – in broad terms, and at who the stakeholders are. After discussing the needs and requirements with its Advisory Board, KoSIT then reports to the IT Planning Council on whether the need justifies inclusion in the standardisation agenda. The proposal to include a need in the list for the Standardisation Agenda is subjected to public consultation. Once the comments are processed in a transparent and accountable manner, the list with proposed new needs is put to the IT Planning Council once a year. When the list with needs is published, it is possible to present possible solutions (standards or specifications) for the specific needs.

Stakeholders: Public administrations and the private sector (including associations) can report needs to the IT Planning Council. KoSIT carries out a needs assessment together with the needs stakeholder before advising the IT Planning Council with a detailed report on requirements. KoSIT consults its Advisory Board. This is made up of standardisation experts from federal, Land and local government, and federal and Land experts in data protection. A public consultation is held before the list is send to the IT Planning Council.

Method & Tools: There is no formal method for making a proposal or format for the needs assessment. The KoSIT website invites interested parties to get in touch with them[53] and outlines what should be covered in general terms.

Result: The IT Planning Council receives agrees to inclusion on the standardisation agenda.

Assessment phase

The assessment by the IT Planning Council of a standard or specification on the Standardisation Agenda is based on an ad-hoc approach. There is no standardised approach.

[53] http://www.xoev.de/sixcms/detail.php?gsid=bremen83.c.5038.de

The different solutions emerging are evaluated with the expert body and the results of this assessment are published for a second round of public consultation.

Stakeholders: The expert group plays a key role in weighing different solutions, the IT Planning Council takes the final decision. The interest of stakeholders is, as mentioned by the contact persona, rather poor; apparently not everyone is involved with the IT Planning Council.

Method & Tools: The stakeholder responsible (Needs Stakeholder) and the stakeholder/expert body (Fachgremium) play a key role in analysing solutions. All stakeholders can comment during public consultation phases.

Result: KoSIT, after consulting its Advisory Board, makes a proposal to the IT Planning Council for adoption of a standard after taking into account the input from consultation.

Adoption phase

The proposed resolution is created and matched with the need that was provided by the needs stakeholder and KoSIT. Finally, the IT Planning Council takes the decision on the mandatory use of the identified solution to meet the need for standardisation.

Stakeholders: As the IT Planning Council is the owner of the Standardisation Agenda method, it is their responsibility to define the maintenance process for the (adopted) standards list.

Method & Tools: The proposed resolution is created by KoSIT while the final decision is taken by the IT Planning Council.

Result: The standard or specification has been promulgated and is ready for implementation.

Implementation phase

As the Standardisation Agenda is an initiative of the IT Planning Council, which is an overarching institution including the federal level and Land level, the Lands are responsible for the implementation within the Lands of the decisions taken by the IT Planning Council, even where those decisions are binding. As a result, it is likely that the implementation will vary.

Stakeholders: The standards and technical standards that are assessed and adopted by the IT Planning Council are mandatory for the Federal government, Land and local governments have a different catalogue of standards and can thus implement standards or technical specifications.

Method & Tools: The method and tools are decided upon by the individual Lands and may differ from those used at Federal level.

Result: The result is uptake by Public Administrations, leading to improved reusability and interoperability.

3.2.3 Analysis of Experience

Germany is currently implementing its Standardisation Agenda via the IT Planning Council, which is a collaborative platform between the federal and Land level designed to overcome interoperability issues in a methodical way. However; experience is limited because only one

standard has been decided on, and that only in March 2014, so that implementation has only just begun.

3.2.4 Assessment of Effectiveness

The German method is in its early stages. Interviewees point out that new areas need to be defined, more final decisions taken and more work is needed on the governance process. It is consequently premature to assess the method's effectiveness.

3.3 Greece

3.3.1 Context

The Greek e-Government Interoperability Framework[54] is taken as the basis of the analysis of the adoption process in this section because one of the key points in the framework is the design of metadata standards and XML formats required for the development of all Electronic Trade Administration services. This Framework, which comes under the Information Society department under the Ministry of Administrative Reform and e-Government, also introduced the white, grey and black lists for standards and specifications. These lists apply respectively to mandatory, recommended or forbidden standards.

In practice, no proposals for updates of the white and grey lists have been received since 2009. This has resulted in the implementation of a more ad hoc adoption process, which is more guided by the procurement process initiated by public administrations rather than by the list of (white and grey) standards and specifications. Under this process, when a new procurement process is initiated, academics, the industry and public administrations can provide comments on the procurement documents and the standards and specifications mentioned in the procurement document.

The following sections detail the adoption process currently followed in Greece. The process is very different from the standardised process for adoption of standards and specifications observed in other Member States in the sample.

3.3.2 Adoption Process

A graphical overview of the Greek adoption process is provided in the figure below. The needs and proposals phase is covered by the possibility of commenting on procurement documents for stakeholders. The assessment phase is covered by the article in the Interoperability Framework and by the assessment of the comments by the issuing public administration. The adoption phase is covered ad hoc by the implementation of standards and specifications in procurement documents following the assessment.

[54] http://www.e-gif.gov.gr/portal/page/portal/egif/history/object

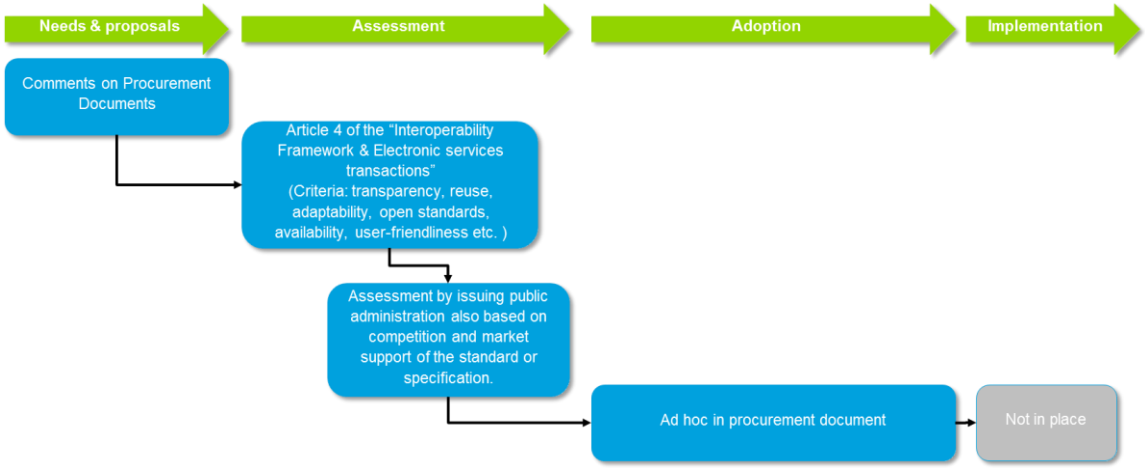


Figure 8 – Adoption process in Greece

Needs and proposals phase

Needs for standardisation are raised ad hoc in the draft procurement documents published by public administrations. These procurement documents are publicly available and are obliged to follow the requirements set by the e-Government Interoperability Framework[55]. Academics, the industry and public administrations can provide comments on these procurement documents which can then be altered by the issuing public administration based on the comments received from the different stakeholders. Currently, around 20 comments and reactions are received per procurement process.

Stakeholders: industry, academics and public administrations can provide comments on publicly available procurement documents. This is an ad hoc process; there is no legal framework supporting the possibility for stakeholders to provide comments on procurement documents.

Method & Tools: stakeholders provide comments in writing. The public administration uses its discretion on the approach to and decision on altering the procurement documents

Result: procurement requirements which reflect market realities, leading to higher quality procurement.

Assessment phase

Article 4 of the "Interoperability Framework & Electronic services transactions"[56] establishes the principles with which services to citizens have to comply. These include principles concerning transparency, reuse, adaptability, open standards, availability and user-friendliness. This de facto establishes criteria for assessment.

The assessment of the comments by the stakeholders is carried out by the issuing public administration of the procurement. This assessment is also based on the standard's or specification's competition and support in the market.

[55] http://www.e-gif.gov.gr/portal/page/portal/egif/history/object
[56] http://www.e-gif.gov.gr/portal/pls/portal/docs/211041.PDF

Stakeholders: the Information Society, Ministry of Administrative Reform and e-Government, is responsible for compliance with article 4 of the "Interoperability Framework & Electronic services transactions". The issuing public administration assesses the comments and reactions.

Method & Tools: Article 4 of the "Interoperability Framework & Electronic services transactions" established the principles (as outlined above, i.e. transparency, reuse, adaptability, open standards, availability and user-friendliness) to which the standards and technical specifications have to comply and is the baseline for assessing comments from stakeholders.

Result: A revised document is published reflecting the assessment of the standards or technical specifications originally proposed.

Adoption phase

As the white, grey and black list of mandatory, recommended and forbidden standards has not been updated since 2009 – though the grey and white list are still on line[57], the adoption process has become ad hoc, and is official when the new public procurement requirements are published.

Implementation phase

According to the Greek interviewee, public administrations are aware of the Interoperability Framework and want to comply with it. They are also aware of the procurement process and the possibility for the stakeholders to provide comments.

3.3.3 Analysis of Experience

Greece encountered difficulties with its assessment method from the start. Since the establishment of the white, grey and black lists in 2009, no further proposals for updates of the lists have been received because the update procedure was not perceived user-friendly. Greece thus found the result of the assessment method more important that the method itself. Therefore the adoption process evolved to a new, more ad hoc approach to the standards and specifications adoption process. This has resulted in a method that is very different from the methods analysed for other Member States in the sample.

3.3.4 Assessment of Effectiveness

Greece's ad hoc approach lacks transparency because it is very difficult to see which standards had been previously assessed in other procurement processes. This is likely to limit effectiveness by inhibiting re-usability and stakeholder involvement.

3.4 Malta

3.4.1 Context

[57] http://www.e-gif.gov.gr/portal/page/portal/egif/files/deliveryfiles

The Malta Information Technology Agency (MITA)[58] is responsible for the governance of the GMICT Policy framework[59] (Government of Malta ICT Policies, Directives and Standards). The GMICT is built up from different documents including an ICT Governance Framework, an Enterprise Architecture Policy and an Interoperability Solutions Policy. The GMICT framework and MITA are the starting point for the analysis of the adoption process.

3.4.2 Adoption Process

Malta has a clear **adoption method**[60] which is also described in more detail as a process in swim lanes and is available online[61]. The different steps are:

1. Definition of the technical requirements according to the business need;
2. Evaluation of candidate standards or specifications;
3. Nominate a standard or formal specification for adoption;
4. Evaluation of the standard or specification;
5. Standard or formal specification added as adopted specification;
6. Contracting authority refers to list of standards and specifications.

The figure below provides a graphical overview of the different steps in the Maltese adoption process. The needs and proposals phase is covered by the definition of the technical requirements according to the business need and the evaluation of candidate standards or specifications in order to arrive at a single proposal for a candidate standard or specification. The assessment phase is covered by the consultation and endorsement of the candidate standard or specification. The adoption phase is covered by the publication as a standard or formal specification for adoption. The implementation phase is covered by contracting authorities referring to the list of standards and specifications.

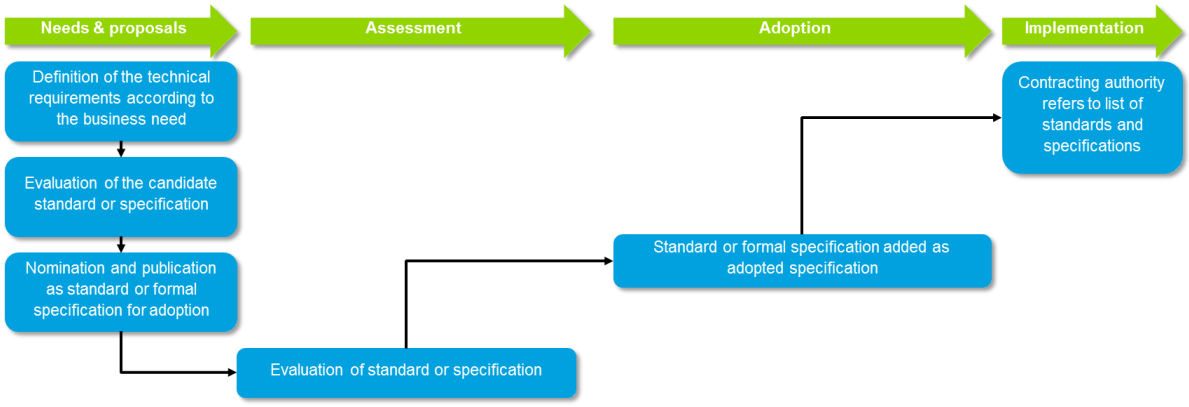


Figure 9 – Adoption process in Malta

Figure 11 below provides an overview of the Maltese adoption method.

[58] https://www.mita.gov.mt/en/Pages/MITAHome.aspx
[59] https://mita.gov.mt/en/GMICT/Pages/GMICT-Policies.aspx
[60] https://mita.gov.mt/en/GMICT/GMICT%20Policies/GMICT_G_0113_Formalised_Specification_Adoption_v2.0.pdf
[61] https://mita.gov.mt/en/GMICT/GMICT%20Policies/GMICT_R_0113_Formalised_Specification_Adoption_v2.0.pdf

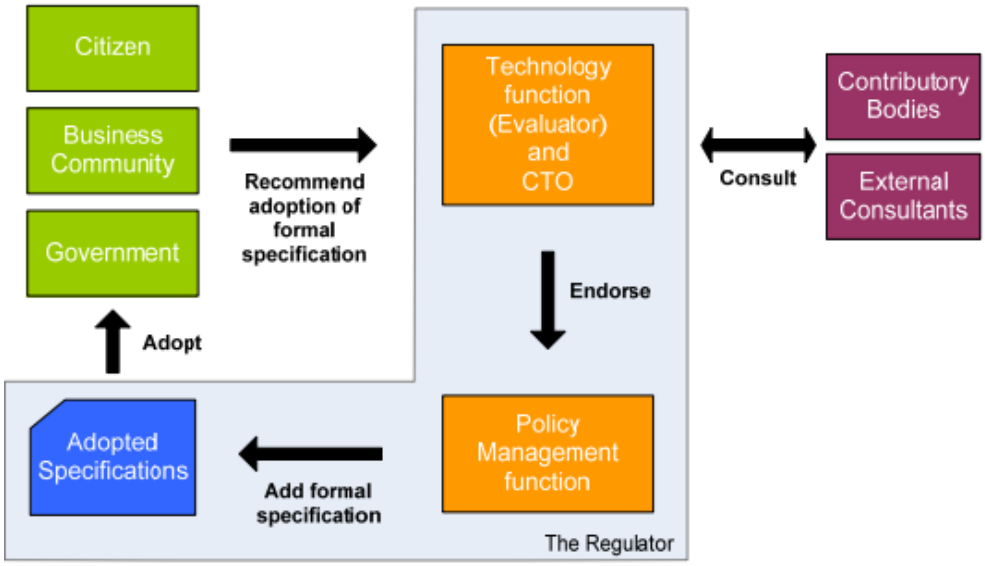


Figure 10 – Maltese adoption method

Needs and proposals phase

In terms of the **elicitation** of the need for standards and technical specifications, the stakeholder requesting the standard (the Requestor) identifies the needs for a standard or formalised specification and checks if it has already been adopted. If not, the requestor prepares a formalised specification analysis and recommendation.

In most cases, the requestor is a Public Administration but industry can also propose a standard or specification.

To make a **proposal** for a standard or technical specification, anyone (the requestor) can fill in the Formalised Specification Adoption Request form[62]. The requestor can send the request plus additional information via e-mail. It is then up to MITA to evaluate the proposal file. The method is based on CAMSS and best practices from other Member States, such as the Netherlands and Denmark. Furthermore, the Maltese method is aligned with ISA terminology.

The request form covers requestor details, specification details, and also assessment details such as relevance, openness, market, impact. The requestor (potentially aided or validated by other public officers or market players) is required to map the business need to specific technical qualities. Depending on the context, these qualities can then be weighted and classified in a series of mandatory tones ("yes/no") and ranked criteria.

Stakeholders: Anyone can be a “requestor”, i.e. can prepare the proposal for a standard or specification.

Method & Tools: The “Formalised Specification Adoption Request” form is the main tool to propose a new standard or technical specification.

Result: A “proposed” standard or technical specification.

[62] https://mita.gov.mt/en/GMICT/GMICT%20Policies/GMICT_F_0113_Formalised_Specification_Adoption_v2.0.doc

Assessment phase

The Maltese assessment method, which was based on CAMSS v0.1, is a result of national ICT policies and agreements with the representatives of different ICT sectors. The assessment of a range solutions by the requestor at the previous stage results in a proposal for one candidate specification. The regulator in its technology function verifies the information provided in the assessment.

Stakeholders: The assessment is actually the responsibility of the Requestor at the needs and proposal stage. The technology function of MITA acting as evaluator then verifies the candidate specification and approves or disapproves of the addition of the standard or technical specification. The regulator (policy management function) offers the recommendation to the CTO of MITA, which then entitles the public sector to use the standard. There is no public hearing. The evaluation is carried out beyond closed doors. The regulator has the option of seeking external advice, but there is no obligation to do so.

Method & Tools: The completed "Formalised Specification Adoption Request Form" by the requestor serves as input for the evaluation by MITA of the candidate specification. The criteria in the form for the assessment are Openness (Policy objectives, openness, terms & conditions), Relevance (Area of application, scope, function, features, alternatives, GMICT Policy), Market Penetration (Maturity, interoperability, open source), Impact Assessment (opportunities, risks, dependencies). The evaluator then forms a view of whether the criteria are actually met by considering conformity with 'open' characteristics, relevance to the business context, quality of implementation commercially or otherwise, and potential benefits and risks to government.

Result: The assessments are stored internally and are not published.

Adoption phase

In terms of the **adoption** of standards and technical specifications, it is the Regulator's Technology function who has the facility to endorse (or otherwise) the recommendation for adoption of a formal specification. If it does so, the GMICT Policy function is advised to include the formalised specification within the Adopted Specifications (GMICT X0071). The solution providers may then make use of the newly adopted formalised specification in their architecture design for Government ICT systems and procurers may refer to it in their technical requirements.

In terms of the **publication** of standards and technical specifications, a list of adopted standards is available online[63].

Stakeholders: The Regulator's Chief Technology Officer of MITA endorses the recommendation; the GMICT Policy function includes the formalised specification within the Adopted Specifications; solution providers and procurers may use the specification.

Method & Tools: The list of adopted standards is available online[64]. The list itself does not make distinction between mandatory or recommended standards. It is the context of the standard (ICT

[63] https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_X_0071_Adopted_Specifications_v8.0.pdf
[64] https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_X_0071_Adopted_Specifications_v8.0.pdf

solutions or Interoperability and open specifications policy) that matters. The goal of the standards list is for Public Administrations ideally to take up the standards on it based on the "Comply or Explain" principle. The list is updated ad hoc.

Different regulatory frameworks support the adoption:

- Digital Malta[65], the National ICT strategy for the years 2014 – 2020;
- Government of Malta ICT Policies[66], Directives, Procedures and Standards for the adoption and use of technology within Government;
- The interoperability and Open specifications policy[67];
- The ICT Solutions policy[68].

Result: The final list of adopted standards and technical specifications is available online and may be used by solution providers and procurers.

The implementation is initiated by the availability of the final list of adopted standards and specifications.

Implementation phase

No direct metrics are available on the **uptake** by Public Administrations. However, according to the information collected as part of the research for this study, the contracting authorities do reference the standards list for procurement and do use it in the spirit of "comply or explain". Furthermore, MITA's architecture assessment provides a touchstone for monitoring the use of adopted standards.

Stakeholders: MITA is able to monitor the use of the adopted standards through the architecture assessment in Public Administrations.

Method & Tools: Although there is no qualitative tool to monitor the uptake by public administrations, the list of standards provides the Public Administrations with a tool for referring to standards and technical specifications in procurement situations, while the MITA architecture assessment offers an informal touchstone for the uptake of the standards and technical specifications. The process of keeping the list of standards and technical specifications up to date is ad hoc.

Result: Solution providers, contracting authorities and public administrations can make use of the list of standards and technical specifications.

3.4.3 Analysis of Experience

Several views on the Public Administration are possible. The holistic (horizontal) view with requirements for Public Administration as a whole and the vertical, department view with requirements for all the different departments and agencies with their silo-view. Here context is very important. It is difficult to map standards that fit both views. The new architecture assessment at MITA provides with two roles; a policy function and the assessment function,

[65] https://www.mita.gov.mt/en/Pages/Digital%20Malta/Digital-Malta.aspx
[66] https://www.mita.gov.mt/en/GMICT/Pages/GMICT-Policies.aspx
[67] https://mita.gov.mt/en/GMICT/GMICT%20Policies/GMICT_P_0115_Interoperability_v1.0.pdf
[68] https://www.mita.gov.mt/en/GMICT/GMICT%20Policies/GMICT_P_0117_ICTSolutions_v1.0.pdf

considering the architecture for the design and implementation in order to promote the reusability of standards as part of the enterprise architecture. In addition, there are the voluntary interoperability agreements that go beyond the list of standards.

The Maltese adoption process enables citizens, businesses and public administrations to make recommendations for the adoption of formal specifications (see Figure 11). To date, however, only the public administrations and MITA have been involved as stakeholders in the adoption process. Malta has found that the interest level and response rate from stakeholders is quite low (with no recent requests). The possible reasons cited are the marketing of the method, the method itself or a lack of a relationship with the users of the method.

Beyond recommending formal specifications for adoption, further public consultation is not part of the adoption process. Public consultation is seen as being of particular value in cases where the formal specifications are not necessarily widely adopted or alternatives may exist. In the case of formal specifications and standards that already have a wide market take-up and are de facto standards (e.g. XML, HTML) a public consultation may be less valuable.

As the role of MITA also includes architecture assessment, MITA also promotes the reusability of standards as part of the enterprise architecture. MITA has learned from this that there are two views on the architecture for Public Administrations. First there is the broad, horizontal and holistic view on the whole of the Public Administration. Secondly, there is the vertical and silo view into the requirements of every individual department. It is important to keep both views in mind when developing architectures, and creating and assessing standards to meet these requirements.

Since MITA has not received many requests for new standards, it has been realised that they need a more collaborative approach in order to improve the relationship and the interactions with the public administrations and the industry to involve the relevant stakeholders from the start.

3.4.4 Assessment of Effectiveness

The adoption process in Malta is supported by a formal process including the standardised submission form which guides the needs and proposals phase, supporting the business case for the context of the need and its relevance. The architecture assessment performed by MITA provides an indirect monitoring method, to follow-up on the implementation of the adopted standards and specifications.

3.5 The Netherlands

3.5.1 Context

The Dutch assessment method is owned by the Standardisation Forum[69] and the Standardisation Board, and was partially used to create the CAMSS method. Both the Forum and the Board were established by a decree of the Ministry of Economic Affairs in March 2006[70].

[69] http://www.forumstandaardisatie.nl/organisatie/
[70] http://www.forumstandaardisatie.nl/fileadmin/os/documenten/Instellingsbeschikking_Forum_en_College.pdf

This was renewed in 2012[71] by the Ministry of Economic Affairs and the Ministry of the Interior. The Standardisation Forum is composed of delegates from academia, private sector and the government, while the Standardisation Board is composed of government officials.

The Standardisation Forum supports the Dutch Government in the use, development and establishment of open standards[72] for electronic data exchange, and in particular to support and advise the Standardisation Board. In this way, it promotes interoperability, not only within the Dutch government system itself, but also within governmental agencies, as well as by citizens and businesses.

3.5.2 Adoption Process

The Dutch standards adoption process is supported by the Standardisation Forum. It is displayed in the figure below. The generic needs and proposal phase is covered by the elicitation of needs and proposal of standards. The assessment phase is covered by an assessment based on openness, added value, support and inclusion, and promotes adoption. The generic adoption phase is covered by the "Comply or Explain" list of standards. The generic implementation phase is covered by the implementation of standards and the monitoring of their take-up.

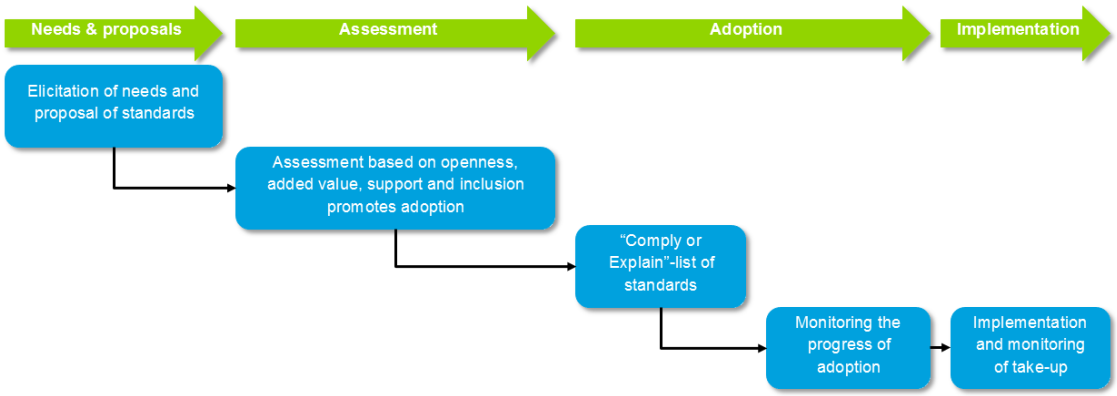


Figure 11 – Adoption process in the Netherlands

Needs and proposals phase

The Standardisation Forum keeps two main lists of standards: the 'comply or explain' list of standards[73] and a list of 'generally used standards'[74]. Any stakeholder can notify the Forum Standardisation of a standard to be included in either list, to be moved from one list to the other, to notify a new version of a standard already on one of these lists or to remove a standard from

[71] https://zoek.officielebekendmakingen.nl/stcrt-2011-23581.html
[72] The Forum Standardisation defines open standards as standards for which the standardisation process is in line with the assessment criteria (see: http://www.forumstandaardisatie.nl/open-standaarden/aanmelden-en-toetsing/toetsingscriteria/) with a focus on easy access to documentation, no patent royalties, ability for stakeholders to provide input and independence and sustainabilitty of the organisation. See: http://www.forumstandaardisatie.nl/open-standaarden/over-open-standaarden/
[73] See: https://lijsten.forumstandaardisatie.nl/lijsten/open-standaarden?lijst=Pas%20toe%20of%20leg%20uit&status%5B%5D=Opgenomen&pagetitle=pastoeof
[74] See: https://lijsten.forumstandaardisatie.nl/lijsten/open-standaarden?terms=&lijst=Gangbaar&status%5B%5D=Opgenomen&pagetitle=gangbaar/

a list (e.g. obsolete standards). The inclusion or modification of standards and technical specifications in these lists can be proposed by the use of registration forms[75]. The registration form serves as a basis for the application of a new standard or for the submission of a request to remove or modify a standard[76].

Stakeholders: Any person, public or private organisation may apply for the addition of a standard.

Method & Tools: The registration form serves as basis for the application of a new standard.

Result: The result of this phase consists of an application form as fully completed as possible.

Assessment phase

Before adoption, a standard has to go through an **assessment** involving answering questions in different steps: basic information, consideration criteria and substantive criteria. The substantive criteria are: an open standardisation process; added value; support and inclusion promotes adoption.

Stakeholders: Standards are assessed by the Standardisation Forum and the Standardisation Board. The Board advised by the Forum takes the final decision on the assessment of a standard.

Method & Tools: The Dutch assessment method[77] consists of six steps: application, intake, expert research, public consultation, advice from the Forum and adoption by the Board. A consultation among relevant experts, chosen depending on the domain of a standard, takes place during the assessment phase.

Result: After assessing the standards, the Forum provides its opinion, which serves as an input to the Board, which takes the final decision.

Adoption phase

For the **adoption** of standards, the Netherlands apply the "Comply or Explain"-principle[78]. This means public administrations are de facto obliged to choose the relevant standards on the "Comply or Explain" list when procuring ICT products. They can only deviate from this list if they can provide sounds reasons of the non-compliance. The Forum monitors[79] the progress of the take-up of open standards and the first report was published in 2012.

The list with "Comply or Explain" standards is **publicly** available online[80]. This list provides the version, status and functional domain of every standard. Per standard, there is also information about the relationship with other standards, information on the implementation, and documentation about the assessment and adoption procedure.

[75] http://www.forumstandaardisatie.nl/open-standaarden/voor-aanmelders/hoe-aanmelden/
[76] http://www.forumstandaardisatie.nl/open-standaarden/aanmelden-en-toetsing/hoe-aanmelden/
[77] http://www.forumstandaardisatie.nl/open-standaarden/voor-aanmelders/toetsingsprocedure/
[78] http://www.forumstandaardisatie.nl/open-standaarden/voor-overheden/pas-toe-of-leg-uit-regime/
[79] http://www.forumstandaardisatie.nl/fileadmin/os/documenten/Monitor_Open_standaardenbeleid_in_2011_v1_3_2_def.pdf
[80] https://lijsten.forumstandaardisatie.nl/lijsten/open-standaarden?lijst=Pas%20toe%20of%20leg%20uit&status%5B%5D=Opgenomen&pagetitle=pastoeof

Stakeholders: The Standardisation Board takes the final decision based on the advice from the Standardisation Forum. The Board may send the advice back to the Forum for additional investigation.

Method & Tools: In taking its final decision, the Board on the advice of the Forum places the standard on the "Comply or Explain"-list. The "Comply or Explain" list provides the necessary tool for the implementation of the adopted standards. The decree of the Ministry of Economic Affairs establishing the Board and the Forum[81] provides the necessary legal basis.

Result: A formal decision by the Board and publication of the standard on the website of the Standardisation Forum as well as on the respective list. The assessed standards can be assigned the following status:

- Comply or explain (assessed standards);
- Commonly used standards: pragmatic assessment of obvious (internet) standard.

Implementation phase

The public administrations are aware of the Comply/Explain and Open Standards lists, and the progress of the uptake of open standards is verified annually by the Standardisation Forum [82]. Both lists are reviewed following a defined review process.

There are two approaches to monitoring implementation: a research-based statistical analysis of procurement documentation in which standards are mentioned, and a mini-survey of public administrations.

3.5.3 Analysis of Experience

The Dutch assessment process is relatively more formal than the assessment processes observed in other Member States. It starts with the submission of the needs and standards proposal using a formal registration form. The assessment phase consists of an analysis by two bodies: the Standardisation Forum, made up of stakeholders, and the Standardisation Board, made up of the government officials. The adoption phase follows the "comply or explain" principle, which needs to be followed by every public administration. Finally, the progress of the standards uptake is monitored by a researcher and by an on-line survey and the results are published.

3.5.4 Assessment of Effectiveness

The Dutch assessment method is publicly available, thus illustrating certain degree of transparency of the assessment of standards and technical specifications. The take-up of standards and specifications has been monitored since 2012[83] and the resulting report is available publicly. The report notes that the standards included in the list of 'generally used standards' are widely applied in the public administrations and that the government assumes

[81] http://www.forumstandaardisatie.nl/fileadmin/os/documenten/Instellingsbeschikking_Forum_en_College.pdf
[82] http://www.forumstandaardisatie.nl/fileadmin/os/Vergaderstukken/Monitor_Het_OSb_in_2012_DEF_versie_19_dec_-_JKBFS.pdf
[83] Monitor for Open Standards Policy, lastly updated in 19 December 2013, see: http://www.forumstandaardisatie.nl/fileadmin/os/documenten/Monitor_Open_Standaarden_2012.pdf

that public administrations will themselves apply these standards relevant to their needs. The actual application of these standards is not further investigated in the monitoring report. For the list of 'comply or explain standards' the monitoring report notes that an extra stimulus is warranted for those standards that particularly enhance interoperability and vendor independence but that are currently not broadly implemented. The aim is to create a broad support for these standards among public administrations.

The final goal of the open standards policy is the broad adoption of the (twelve) open standards of the 'comply or explain'-list. The monitoring of the use of these standards is performed through a webtool (for DKIM, DNSSEC and IPv6), search with google on ODF and PDF documents, checking public registers, and asking user-data from government agencies. The results show that every relevant government uses the SIKB (soil) standard, while the connections to *Digikoppeling* remain rising (22%). For the web guidelines, only some dozens of websites comply with version 1 while the first version 2 certificates are awarded. In the document format area, it is clear that most documents are PDFs, while the number of *.doc* documents is still larger than the number of *.odt*-documents.

Another monitoring method is the *self-reporting* with a mini-survey consisting of 5 questions. The answering response in 2012 was 34%. The number of governmental organisations that uses the comply-or-explain principle has risen from 54% to 59%. Only communities (34%, mainly smaller ones) and water boards (21%) have not integrated the use of open standards in their organisation. The comply-or-explain principle is also part of the public procurement concerning ICT-procurements of more than € 50.000. For the 64 procurement cases, 19 standards were relevant, mostly IPv6/IPv4 (53%) followed by PDF/A and PDF1.7 (33%) and ODF (28%).

The monitoring report also mentions the importance of providing training to users and transparency concerning the publication of the monitoring results as contributing factors to take-up by public administrations.

3.6 The Slovak Republic

3.6.1 Context

The overall **adoption process** of standards and technical specifications in the Slovak Republic is owned by the Committee for Standardisation of Information Systems of Public Administration, which is the advisory board of the Ministry of Finance. The Committee advises the Ministry regarding the definition of IT standards for the public administrations. Whenever necessary, the Committee can establish thematic Working Groups in specific standardisation domains such as:

- Data
- Spatial identification
- Accessibility of webpages
- New technologies
- Terminology in standardisation for information society
- Security
- Optimisation of existing standards and processes.

3.6.2 Adoption Process

The Slovak **adoption process** is composed of the following phases:

1. Proposal for a standard by any interested stakeholder
2. Preliminary assessment of a standard by the Committee for Standardisation of Information Systems of Public Administration and its relevant Working Groups
3. Evaluation process of a standard by the Committee for Standardisation of Information Systems of Public Administration and its relevant Working Groups
4. Publication of standards in the Official Journal
5. Implementation and monitoring of uptake.

The figure below is a graphical representation of the Slovak adoption process and its mapping against the generic adoption process. The generic needs and proposals phase is covered by the phase of a proposal of a standard. The generic assessment phase is addressed by the preliminary assessment and the evaluation phases. The generic adoption phase is covered by a phase consisting of the decision to modify the status of a standard or specification, and it is finalised by the publication of a standard or specification in the Official Journal. The generic implementation phase is covered by the implementation and the monitoring of the uptake of a standard.

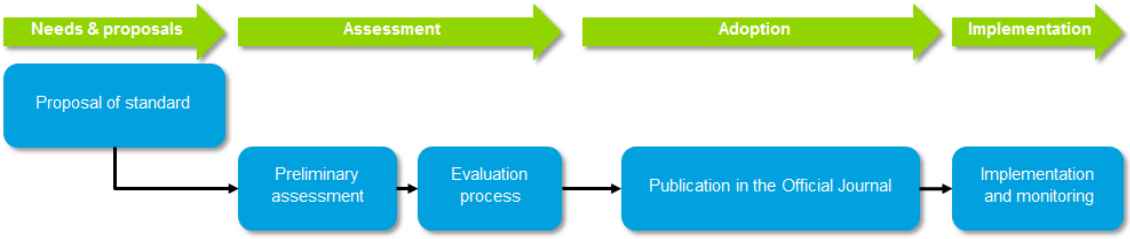


Figure 12 – Adoption process in the Slovak Republic

Needs and proposals phase

The generic phase of **needs and proposals** corresponds to the phase involving a proposal for a standard or technical specification.

Stakeholders: any legal or natural person representing private or public sector can:

- propose a new standard specification that could be introduced;
- propose the abolition of the existing standard ;
- propose a change in a standard's status.

Method & Tools: The Committee for Standardisation of Information Systems of Public Administration check the proposals for a new standard, abolition of a standard or to change the status of a standard for compliance with the relevant EU legislation. There is no formal process for collecting proposals. However, any stakeholder wanting to propose a standard, abolition or a change needs to present a sound business case to the relevant domain-specific Working Group.

Result: A list of proposed standards, be it new or abolished standards or standards where a proposal to modify the status was put forward.

Assessment phase

The Slovak **assessment process** is used to assess standards for government public services. It covers the criteria of applicability, relevance, adaptability, potential, expandability, stability and openness, among others. The main steps in the assessment process are:

- The chairman of the Committee for Standardisation of Information Systems of Public Administration prepares the relevant basis for making the preliminary assessment;
- The Committee for Standardisation of Information Systems of Public Administration and the relevant Working Group perform a preliminary assessment together with a relevant Working Group. Working Group can be attended by government experts, private companies or academia;
- Evaluation process takes place.

The assessed standard is assigned a specific status:[84]

- **required** (by law), i.e. to be used in public administration information systems. Otherwise, the Ministry of Finance is entitled to impose a fine under the Act of Public Administration Information Systems (PAIS)[85];
- **recommended**, i.e. designed to fulfil a specific objective, but not mandatory. Recommended standards can be mentioned in the law or in the methodical instruction[86];
- **cancelled:** i.e. invalid since they are replaced by another standard or are no longer suitable for a given information system;
- standards, which are **under assessment** and are published in a separate list[87].

Stakeholders: The chairman of the Committee for Standardisation of Information Systems of Public Administration , which prepares a relevant proposal as a basis for the preliminary assessment of a standard; the Committee for Standardisation of Information Systems of Public Administration and the relevant Working Group, which evaluate the proposal, and may reject or accept it taking into account any further evidence collected, and the expert opinions of the individual members of the Committee for Standardisation of Information Systems of Public Administration and the Working Group.

Method & Tools: The Slovak Republic has a documented **assessment method**[88] to assess standards and specifications.

Result: A list of assessed standards and thus input to the adoption phase.

Adoption phase

The generic adoption phase consists in the publication of a list of adopted standards under the Slovak legal framework.

[84] http://www.informatizacia.sk/ext_dok-metodicky_pokyn_k_vynosu_312-2010/12608c
[85] Act of PAIS: http://www.informatizacia.sk/search
[86] Methodical instruction: http://www.informatizacia.sk/ext_dok-metodicky_pokyn_k_vynosu_312-2010/12608c
[87] http://www.informatizacia.sk
[88] http://www.informatizacia.sk/ext_dok-metodicky_pokyn_k_vynosu_312-2010/12608c

Stakeholders: The stakeholders are the Committee for Standardisation of Information Systems of Public Administration, which decides on the modification date of a standard and whoever formally promulgates the decision.

Method & Tools: The adopted standards are supported by the legal framework – Edict No.55. 2014[89] and the methodological instruction.

Result: The list of standards published in the Official Journal becomes mandatory.

Implementation phase

The **take-up** of standards or technical specifications is monitored[90] by verification of their use in the areas of accessibility of websites, the use of files, forms, e-mails and domain names.

Each standardisation domain has its own monitoring methodology. For instance, monitoring may be a remote audit exercise for a website, or it can be an on-site audit to verify compliance with security standards.

In addition to the monitoring, training is provided to create awareness about how to interpret the legislation and how to implement standards.

3.6.3 Analysis of Experience

The Slovak adoption process includes gathering the input on standards and specifications from any stakeholder, provided he/she presents a sound business case to the Committee for Standardisation of Information Systems of Public Administration.

In addition to the Committee for Standardisation of Information Systems of Public Administration, each standardisation domain has a dedicated Working Group composed of the domain experts. The two bodies, the Committee for Standardisation of Information Systems of Public Administration and the Working Groups run the assessment of standards and specifications. The analysis of standards and specifications results in the assignment of one of the four statuses: required, recommended, cancelled and under assessment.

The standards required by law (Edict 55/2014) are mandatory for use and a fine for non-compliance can be imposed by the Ministry of Finance. The fines are not a preferred approach and in order to ensure compliance with the law a series of training courses on the interpretation of the law and the implementation of standards is provided.

Finally, in order to verify the uptake of the adopted standards, the Ministry of Finance carries out continuous monitoring of compliance with the Standards for Information Systems[91] in different domains. The monitoring is specifically aimed at the domains of website accessibility[92], the use of files[93], e-mail addresses and domain names[94], content and functionality of websites[95], and

[89] http://www.informatizacia.sk/aktuality-novy-vynos-c-55-2014-z-z-o-standardoch-pre-informacne-systemy-verejnej-spravy/17066c
[90] http://www.informatizacia.sk/monitorovanie/5585s
[91] See: http://www.informatizacia.sk/monitorovanie/5585s
[92] See: http://www.informatizacia.sk/monitorovanie-pristupnosti-webov/2824s
[93] See: http://www.informatizacia.sk/monitorovanie-pouzivania-suborov/4938s
[94] See: http://www.informatizacia.sk/monitorovania-e-mailov-a-domenovych-mien/6447s
[95] See: http://www.informatizacia.sk/monitorovanie-obsahu-a-funkcionality-webov/5589s

safety standards[96]. The standardisation documents[97] provide an insight in the monitoring methodology, while the monitoring method as referenced above also provides reports on the actual monitoring per standardisation domain. With regards to the monitoring of standards for content and functionality of public websites, three sets of standards were assessed: standards for content of websites, for components and functionality of websites and for visual layout of websites. The most recent report[98] shows that the compliance of different public administrations (e.g. at central level (state government), local government, cities and municipalities, etc.) that the compliance of state government is generally highest (ranging from 79,2% to 84,17% across different sets of standards) and lower for municipalities and cities (ranging from 51% to 84,62% across different sets of standards). As compared to previous monitoring, the compliance has increased for most types of public administrations.

3.6.4 Assessment of Effectiveness

The Slovak adoption process is published in the national law thus illustrating a **transparent** approach. The adoption process is **collaborative** since any stakeholder can submit a proposal for a standard provided he/she presents a sound business case in front of a relevant Working Group. The uptake of standards is **monitored** following domain specific methodologies and non-compliance can result in the imposition of a financial fine. However, in order to avoid the imposition of a fine, which is not a preferred approach, a **training** is provided to all stakeholder that need to interpret the standardization law to implement the mandatory standards.

3.7 Spain

3.7.1 Context

The interoperability of Spanish government services is established by the Resolution of the Secretary of State for Public Administration of 3 October 2012 regarding the Catalogue of Standards[99]. In particular, the Resolution establishes the National Interoperability Framework (NIF)[100], under the responsibility of the Ministry of Presidency, whereas Law 11/2007 of 22 June[101] aims to create the basic elements of technical, semantic and organisational interoperability in the public administration in relation to e-access to public services. The law is

[96] See: http://www.informatizacia.sk/monitorovanie-bezpecnosti/5614s
[97] Standardisation documents : http://www.informatizacia.sk/standardizacne-dokumenty/4495s
[98] See: http://www.informatizacia.sk/ext_dok-priebezna_sprava_obsah_a_funkcie_2013_i_web/16045c
[99] Catalogue of Standards:
https://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fadministracionelectronica.gob.es%2Fpae_Home%2Fdms%2Fpae_Home%2Fdocumentos%2FEstrategias%2Fpae_Interoperabilidad_Inicio%2FLEGISLACION_2012_BOE-A-2012-13501_Catalogue_of_standards_ENI_publicacion_oficial_2012%2FCatalogue%2520of%2520Standards%2520NIF%2520Spain.pdf&ei=CaxoU4jaIIG7PeXdgfgN&usg=AFQjCNEvV67avpbZtbBIyKfVsoJz6JRVyw&sig2=t5sLUmMyS2mqnLXR4LV4eA
[100] National Interoperability Framework
https://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fadministracionelectronica.gob.es%2Fpae_Home%2Fdms%2Fpae_Home%2Fdocumentos%2FEstrategias%2Fpae_Interoperabilidad_Inicio%2FLEGISLACION_2012_BOE-A-2012-13501_Catalogue_of_standards_ENI_publicacion_oficial_2012%2FCatalogue%2520of%2520Standards%2520NIF%2520Spain.pdf&ei=CaxoU4jaIIG7PeXdgfgN&usg=AFQjCNEvV67avpbZtbBIyKfVsoJz6JRVyw&sig2=t5sLUmMyS2mqnLXR4LV4eA
[101] Law 11/2007 of 22 June:
http://www.seap.minhap.gob.es/dms/es/publicaciones/centro_de_publicaciones_de_la_sgt/Otras_Publicaciones/parrafo/0118/text_es_files/Law-11-2007-access-public-services.pdf

complemented by the Royal Decree 4/2010 of 8 January[102] introducing Additional Provision 1 on the development of the series of Technical Interoperability Standards, which should be used by the public administrations. Article 11 of the NIF[103] is an article on standards applicable to all public administrations. The article includes a paragraph on the criteria that are important for the selection of standards. They link to the procurement framework of the EU and to the EIF (European Interoperability Framework) together with additional criteria based on CAMSS v0.1 such as suitability, potential, openness or market conditions. The NIF provides the national adoption process for standards and specifications.

3.7.2 Adoption Process

The Spanish **adoption process** is mainly documented in the Spanish NIF. The generic needs and proposals phase is covered by the phase of proposal of a standard, be it a new standard or a modification of the existing standard. The assessment phase is covered by article 11 of the NIF, while the adoption phase is addressed by the publication of the standards in the Interoperability Framework. The generic implementation phase is covered by the uptake of standards. The figure below provides a graphical representation of the mapping between the generic and the Spanish phases of the adoption process.

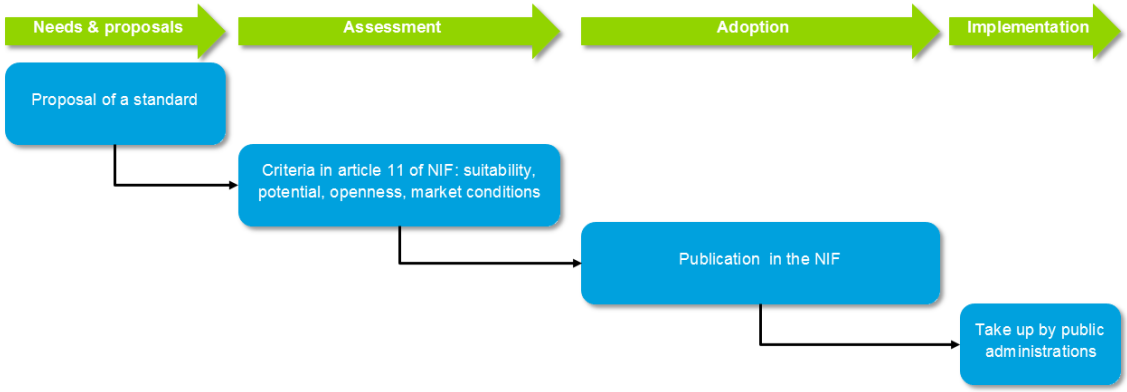


Figure 13 – Adoption process in Spain

Needs and proposals phase

There is an annual review of standards takes place, which covers:

- Identification of new standards to be included in the catalogue of standards;
- Assessment of new needs or functions that cannot be classified under the established terms and, if necessary, change in categories and update of the catalogue of standards accordingly.

[102] Royal Decree 4/2010 of January 8:
https://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fadministracionelectronica.gob.es%2Fctt%2Fresources%2Fc5df845d-a98c-4854-90c1-4973408b500f%3FidIniciativa%3D145%26idElemento%3D71&ei=n65oU6m0NoarO9KdgIAC&usg=AFQjCNFc3wPvB-2-N3r19eyLN04vKezuJg&sig2=Kl7xUAYnVUWeK9Zr-u48lQ

[103] National Interoperability Framework, Article 11
http://administracionelectronica.gob.es/pae_Home/dms/pae_Home/documentos/Estrategias/pae_Interoperabilidad_Inicio/pae_Esquema_Nacional_de_Interoperabilidad/ENI_INTEROPERABILITY_ENGLISH_3.pdf

The requests for updates need to be formally submitted for consideration to the Executive Secretary of the E-Government Sector Committee. The requests must include:

- Indication of the type of request: standard inclusion, standard deletion, change in existing standards;
- Specification of information to be updated;
- Reasons for the update.

Stakeholders: Stakeholders in this phase are public administrations, the public sector and academia, who can propose new standards or propose changes to the existing standards.

Methods & Tools: A formal request submission procedure is in place to propose new standards or changes to existing standards.

Result: A list of proposed new standards or changes to existing standards. The list is not published.

Assessment phase

The **assessment phase** covers the assessment of standards and specifications against a set of criteria defined within the Spanish NIF. It results in the catalogue of recommended standards meeting the NIF criteria.

Stakeholders: The main stakeholder during the assessment of standards is the General Directorate for Administrative Modernization, Procedures and Promotion of Electronic Administration, which belongs to the Ministry of Finance and Public Administration. This General Directorate acts as a facilitator of the provision of input by promoting the sharing of needs and interests among different eGovernment stakeholders.

Method & Tools: In order to assess the standards for government services a set of criteria laid down in the article 11 of the NIF is used. The criteria include considerations referring to "the adaptation of the standard to the necessities and required functionality; the conditions related to the development, use or implementation, available and complete documentation, publication, and governing of the standard; the conditions related to the maturity, support and adoption by the market, to its potential of reuse, to the multiplatform and multichannel applicability and to its implementation under diverse models of applications development."[104]

Result: The result of the assessment phase is a catalogue of recommended standards (a list of standards with currently with around 100 entries). The catalogue contains the rules for updating and reviewing the catalogue, and rules for new entries of standards.

Adoption phase

[104] See: Article 11, http://administracionelectronica.gob.es/pae_Home/dms/pae_Home/documentos/Estrategias/pae_Interoperabilidad_Inicio/pae_Esquema_Nacional_de_Interoperabilidad/ENI_INTEROPERABILITY_ENGLISH_3.pdf

Within the **adoption phase** the status of the adopted standards is labelled as "accepted" upon the assessment by the Directorate General and the final decision of the Secretary of State for Public Administration. The list of adopted standards is publicly available online[105].

Stakeholders: The stakeholders in this phase are the General Directorate coordinating the assessment of standards and the Secretary of State taking the final decision regarding the introduction of a standard in the Catalogue of Standards:

"*In accordance with the provisions in Section 2 of Additional Provision 1 of Royal Decree 4/2010, of 8 January, the Secretary of State decides:*

To approve the Technical Interoperability Standard for the Catalogue of Standards;

That the Technical Interoperability Standard for the Catalogue of Standards that is being approved by virtue of this document shall come into force on the day following its publication in the Official State Gazette, irrespective of the clauses in Transitory Provision 1 of Royal Decree 4/2010, of 8 January, regulating the National Interoperability Framework for E-Government"[106].

Method & Tools: The legal framework for the adopted standards available to all public administrations is defined by article 11 of the NIF[107].

Result: A list of adopted standards labelled as "accepted".

Implementation phase

The uptake of standards and technical specifications is monitored as part of the general interoperability monitor performed by the Ministry of Finance and Public Administration[108] This short monitoring report does not provide much detail as to the actual take-up of standards and specifications but does provide a high level conclusion on the General State Administration (AGE). The AGE has made significant progress in technical interoperability in particular in relation to common infrastructures and services as well as electronic signatures while there is less progress on adoption of electronic documents (mainly due to the multidisciplinary character of eDocuments).

3.7.3 Analysis of Experience

In contrast to other analysed Member States, the Spanish adoption process is clearly embedded in the national legislation (Law 11/2007 of 22 June, Royal decree 4/2010 of 8 January), which established the NIF. The list of standards is provided in the catalogue of standards, which also includes the rules of adding and updating the standards. The catalogue is subject to the annual review, which aim is to check the relevance and the suitability of the

[105] http://administracionelectronica.gob.es/pae_Home/dms/pae_Home/documentos/Estrategias/pae_Interoperabilidad_Inicio/LEGISLACION_2012_BOE-A-2012-13501_Catalogue_of_standards_ENI_publicacion_oficial_2012/Catalogue%20of%20Standards%20NIF%20Spain.pdf

[106] Official State Gazette. 31.10.2012

[107] Article 11, http://administracionelectronica.gob.es/pae_Home/dms/pae_Home/documentos/Estrategias/pae_Interoperabilidad_Inicio/pae_Esquema_Nacional_de_Interoperabilidad/ENI_INTEROPERABILITY_ENGLISH_3.pdf

[108] http://administracionelectronica.gob.es/pae_Home/dms/pae_Home/documentos/Estrategias/pae_Interoperabilidad_Inicio/pae_Esquema_Nacional_de_Interoperabilidad/Informe-progreso-adecuacion-eni-2013/Informe_progreso_adecuacion_eni_2013.pdf

standards vis-à-vis the current information systems used in the public administrations. The outcome of this review is an updated list of standards and specifications as published in the official gazette.[109]

3.7.4 Assessment of Effectiveness

The Spanish standards' adoption process is publicly available and published within the NIF. What is more, the list of accepted standards to be used by public administrations is available in the catalogue of standards embedded also in the NIF. Therefore, one can say the Spanish adoption process and its results are **transparent** to their stakeholders. What is more, the adoption process foresees the participation of the stakeholders within the "needs and proposal" phase, where public administrations, public sector and academia representatives can propose new standards or changes to the existing standards. This illustrates the **collaborative** aspect of the standard selection. Finally, the Spanish adoption process envisages the monitoring of the uptake of standards by creating an online report providing the standards' use statistics.

3.8 United Kingdom

3.8.1 Context

In the United Kingdom, the national framework used to improve government service delivery and to reduce their costs is owned by the Cabinet Office (a government department supporting the Prime Minister and the Cabinet of the state). The framework provides an adoption process to prioritise and select open standards and specifications for the government IT. In particular, the Standards Hub created by the Cabinet provides a public virtual space where anyone interested in standardisation in government IT can contribute to the selection of open standards[110] for the government IT. The **adoption process** of standards and specifications starts with public services delivery challenges agreed upon by the government technology officials, who represent different standards panels. It is then followed by a five-phase approach leading to the implementation of the standards by the government technology officials.

3.8.2 Adoption Process

The United Kingdom has an **adoption process**[111] for open standards and specifications composed of five phases:

- Suggestion phase;
- Challenge phase;
- Propose phase;

[109] See: http://administracionelectronica.gob.es/pae_Home/dms/pae_Home/documentos/Estrategias/pae_Interoperabilidad_Inicio/LEGISLACION_2012_BOE-A-2012-13501_Catalogue_of_standards_ENI_publicacion_oficial_2012/Catalogue%20of%20Standards%20NIF%20Spain.pdf

[110] The definition of open standards for the UK Open Standards Board includes criteria such as: collaboration, transparency, due process, fair access, market support and rights, see: https://www.gov.uk/government/publications/open-standards-principles/open-standards-principles#open-standard---definition

[111] http://standards.data.gov.uk/phases-selection-approach

- Assess phase; and
- Implementation phase.

These phases include different sub-phases.

The adoption process in the UK is supported by an online platform, the Standards Hub[112], which stimulates the involvement in the process of standardisation.

The figure below provides a graphical representation of the adoption process in the United Kingdom. The needs and proposals generic phase is covered by the suggestion, challenge and propose phases, whereas the assessment and adoption phase is addressed by the assess phase. Finally, the generic adoption phase is covered by the UK implementation phase.

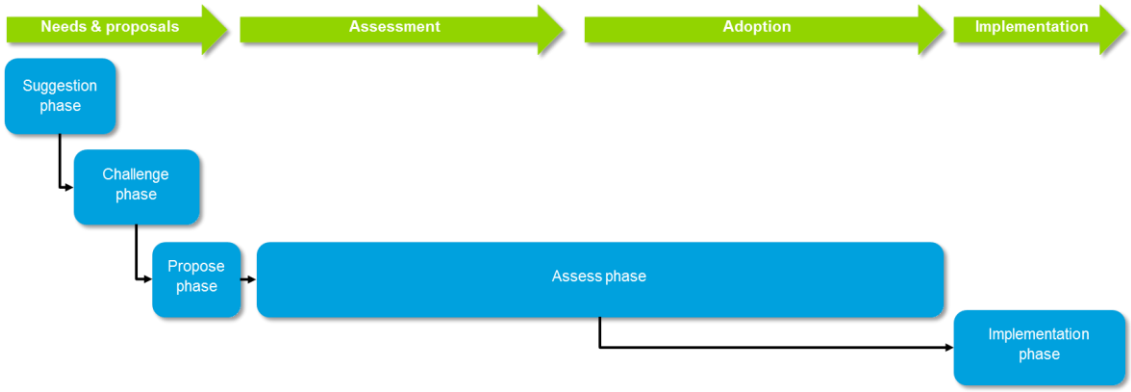


Figure 14 – Adoption process in UK

Needs and proposals phase

In the context of the UK adoption process, the elicitation of needs and proposals for the standards and specifications takes place by means of selection and publication of challenges to the delivery of public services by the government technology officials. In the UK adoption process, this phase is covered by the suggestion, challenge and propose phases.

Suggestion phase:

The suggestion phase is designed to find out what problems users of government services face that open standards can help to fix. The first stage is to ask for suggestions on what these problems are. Just a few sentences about what the problem is, what the needs are and what the benefits might be is enough to get this started. In 2013, 30 cases were suggested that first went through a "triage" session that decides upon the possible positive impact on the usability for end-users.

The goal of the suggestion phase is to find out what problems users are confronted with and what the need of the user is. A standard or specification is selected is to fulfil the need of the user, not to select a "good" standard or specification.

Stakeholders: The stakeholders involved in the suggestion phase are the users of government services, government technology officials (developers, architects, Chief Technology Officers),

[112] http://standards.data.gov.uk/

academics and industry (technology development and building specialists), who suggest the challenges related to the delivery of government services. If a given challenge is selected, the government officials work with the Office of the Chief Technology Officer to identify and appoint a relevant expert to take ownership of the challenge identified.

Method & Tools: A group of technology officials in government will consider the suggestions and look at the benefits that these might deliver. They may decide to take up the suggestion and if they do, they will work with the Office of the Chief Technology Officer to identify and appoint someone to take it forward – a challenge owner. The needs gathered are documented on the Standards hub[113].

Result: A list of candidate challenges is documented on the Standards Hub.

Challenge phase:

When a challenge owner has agreed to take up a challenge, it will be published on the Standards Hub[114]. The current challenges can be reviewed and a response can be made.

Stakeholders: Any potential user can review the challenges and propose a response.

Methods & Tools: The challenge phase involves publication of the selected challenges in Standards Hub. They cover different areas

Result: A published list of challenges to be investigated by the challenge owners and the services stakeholders.

Propose phase

The challenge owners publish a list of criteria used to select a proposal, which are agreed with the standards panel of the Open Standards Board.

Stakeholders: The propose phase involves users, challenge owner, standards panel and the Open Standards Board. The users of the services can still comment as input to the selection of the proposals. The interest and response from the stakeholders varies depending on the topic. However it is to be noted that in most cases, communities that are involved with the topic tend to provide reactions "as one". Therefore, it is possible that a challenge receives 10 responses while another one receives 500.

Methods & Tools: In this phase, the proposals for addressing a given challenge are gathered on the Standards Hub and the challenge owner is in charge of selecting the relevant responses from users and considering which options will work best in order to put forward one or more proposals.

The challenge owners also publish the criteria they will be using to assess the standards that are referred to in the proposal(s). The criteria will be agreed with the standards panel or the Open Standards Board. The challenge owner may decide to set up workshops or other events to help investigate the proposal and to inform the next phase of work –- the assessment stage. At this stage they will be identifying and inviting experts and users to get involved.

[113] http://standards.data.gov.uk/challenges/suggested
[114] http://standards.data.gov.uk/challenges/suggested

Result: A set of proposals of challenges and a set of selection criteria agreed together with the Open Standards Board.

Assessment and adoption phase

The UK **assess phase** covers both the generic assessment and adoption phases. In this phase, which is not public, the challenge owners analyse the proposals for standards by means of workshops or events with the relevant panel of experts (a standards panel). Anyone can apply to sit on an expert panel. The outcome of this phase is a proposal for a standard to address the challenges.

Stakeholders: The challenge owner works with the panel of experts to assess the proposals in order to submit one to the Open Standards Board. In this phase, the Open Standards Board makes a decision whether a given standard should be compulsory. The final decision is taken by the chair of the Open Standards Board, the Government's Chief Technology Officer.

Methods & Tools The challenge owner works with a panel of experts (a standards panel) to evaluate the approach against the needs set out in the challenge. The challenge owner, with the agreement of a standards panel, selects a proposal to submit to the Open Standards Board as a draft standards profile, including references to the relevant open standards. The Board will make the final decision on whether to recommend compulsory use of a standards profile. The final decision rests with the chair of the Open Standards Board, the Government's Chief Technology Officer. The assessment method is based on CAMSS.

Result: Recommendations for standards profiles with the references to the open standards that address the challenges of the public services delivery. These are published online[115].

Implementation phase

In the UK implementation phase, the objective is promotion of the implementation of the agreed standards and specifications. There is no legal framework enforcing this, but there is budget control on implementation project plans set up by other public administrations. It is also possible to report when compulsory standards profiles are not being used or when there are issues with any of the adopted profiles.

Stakeholders: The challenge owners promote the implementation of the agreed standards profiles[116] to chief technology officers responsible for the implementation. Public administrations adhere to the standards based on comply and explain principles, and budget control.

Methods & Tools: The budget control, and comply and explain mind-set ensure that no legal framework is necessary. Standards that are completed will also be blogged and published as press releases through the gov.uk portal site.

Results: Take-up by public administrations.[117]

[115] http://standards.data.gov.uk/relation/2
[116] http://standards.data.gov.uk/challenges/completed

[117] http://standards.data.gov.uk/challenges/completed

3.8.3 Analysis of Experience

The UK has taken an innovative approach in the set-up of its adoption process by choosing to implement public consultation from a very early stage through the possibility of submitting challenges and responses to them on the standards hub platform before real assessments are made. In other Member States, public consultation comes after the assessment of a proposed standard or specification.

Although the UK uses a method that is based on CAMSS, there are some doubts about it as an assessment method. While some questions are felt to be valuable, others are felt to be too detailed. The greatest difficulties are felt to arise with questions where a judgment is needed (e.g. A is “better” than B) and evidence is needed. In addition, the number of questions is considered to be very high. Therefore the UK is reviewing whether is possible to find patterns in order to reduce the number of questions. The questions of coherence are also felt to be difficult to understand.

Lastly, the UK is trying to reuse information as much as possible, for example for questions relating to the standardisation organisations, while they have also already used information from the shared assessments on the Joinup platform.

The approach taken by the UK has resulted in 19 challenges in the first year, a number that is likely still to grow as the platform receives more publicity over time.

3.8.4 Assessment of Effectiveness

The adoption process is very clearly explained on the Standards Hub. On this platform, all challenges and comments are published, according to the status of the challenge. This transparency ensures collaboration among stakeholders from the moment a new challenge is entered to the platform. The method in the UK also clearly mentions that the context in which a standard or specification is selected to fulfil the need of the users is more important than selecting a “good standard”.

3.9 Summary

Phases ► ▼ Countries	Needs and proposal phase	Assessment phase	Adoption phase	Implementation phase
Denmark	• Proposals for standards/specifications to be included in the OIO catalogue	• OIO Secretariat evaluation in accordance with the assessment criteria specified in the Danish assessment method	• 30 days long public consultation of recommended standards / specifications (OIO Committee) • Adoption of selected standards / specifications (OIO Committee) • Publication of selected standards / specifications (OIO Catalogue)	• Take-up by public administrations
Germany	• Registered need • Needs assessment • Needs authorisation • Proposal to include need • Schedule onto Standardisation Agenda • Possible Solutions	• Solution Analysis by the expert group • Report on Analysis • Public consultation • Final decision by IT Planning Council	• Proposition of resolution • Decision on the mandatory use	• Implementation by respective Land
Greece	• Comments on Procurement Documents	• Assessment based on Article 4 of the Interoperability Framework • Assessment by public administration based on comments and competition and market support	• Ad hoc adoption in procurement document	• Public Administrations comply to Interoperability Framework and are aware of the procurement "comment" process
Malta	• Definition of technical requirements based on business need • Evaluation of candidate standard or specification • Nomination and publication as standard or formal specification for adoption	• Evaluation of standard or specification by the requestor. • Final decision by the CTO of MITA	• Standard or formal specification added as adopted specification	• Contracting authority refers to list of standard and specifications
Netherlands	• Elicitation of needs and proposals of standards	• Assessment done by the Standardisation Forum and based on openness, added value, support and inclusion promotes adoption • Public consultation	• "Comply or explain" –list of standards • Monitoring the progress of adoption	• Implementation • Monitoring of take-up
Slovak Republic	• Proposal of standards	• Preliminary assessment • Evaluation process done by the Standards Committee and relevant Working Groups	• Publication in the Official Journal	• Implementation • Monitoring
Spain	• Proposal of a standard	• Criteria in article 11 of NIF: suitability, potential, openness, market conditions by DG Administrative Modernisation	• Publication in the NIF	• Take-up by public administrations • Monitoring
United Kingdom	• Suggestion of a need • Challenge of a need • Proposal of a standard/specification	• Assessment of the proposed standard/specification (with a panel of experts) • Adoption by Open Standards Board • Publication on the Standards Hub		• Promotion of the implementation of the agreed standards and specifications

Table 1 – Summary of the Member States' adoption process.

All analysed Member States follow the four generic steps in their adoption process that is the needs and proposal phase, the assessment phase, the adoption and finally the implementation phase. One can observe a number of similarities and differences when comparing the respective phases in more details.

The needs and proposal phase covers elicitation of stakeholders' needs and identification of proposals of standards to address them. In the sample of analysed Member States the needs and proposals for standards can be submitted by stakeholders either being public administration, private sector, an academia representative or a combination of all. A formal elicitation of needs is practiced in the Netherlands and Malta where a standard submission form is used. Spain performs a formal annual review of the relevance of standards and requests input from public administrations. The United Kingdom follows a three-step process to gather the needs with regards to the delivery of public services. This is the most collaborative and transparent approach in the sample of the Member States, since all the steps of the process can be followed on the online Standards Hub. Denmark similarly has an online platform where needs can be expressed and proposals for standards and specifications can be submitted, however the platform is no longer actively in use. In Greece, the needs are expressed during the public procurement process through the publication of draft specifications for any stakeholder to comment on, in accordance with the Greek eGovernment Interoperability Framework. In Germany and the Slovak Republic, needs can be reported to the responsible bodies. An important element to mention is that some Member States such as the United Kingdom and Germany focus on the standards' proposal in function of the real business needs of the public services in contrast to choosing context neutral standards. Malta and Denmark are considering how to follow a business needs based approach in the future which places focus on the relevance of the standards and specifications in a specific context.

The assessment phase takes place after the collection of needs and proposals for standards and specifications. All Member States in the sample, with the exception of Germany, have published their assessment method online, composed of a set of criteria to which standards and specifications need to comply in order to be adopted. The United Kingdom's assessment method is nearly equivalent to CAMSS v0.4, while the Danish and the Dutch methods served as the basis for CAMSS v 0.1. The assessment reports are not published by all Member States, this is only done in the Netherlands, Malta and the United Kingdom. In Denmark, Germany, the Netherlands and the UK a public consultation is held before the adoption of a standard or specification.

During the adoption phase, all Member States in the sample, with the exception of Greece, publish the list of adopted standards or specifications. Note that in the UK, the Standards Hub assessment phase covers both the generic assessment and adoption phases. In the Slovak Republic and Spain, the list is formally published as part of the Official Journal and the NIF respectively. Denmark, Germany, Malta, the Netherlands and the United Kingdom publish the lists on their dedicated websites. For the implementation phase, all Member States in the sample, with the exception of Greece, state that public administrations adhere to their published list of adopted standards and specifications. Greece mentions that public administrations comply with the Interoperability Framework and that they are aware of the public procurement process, including public comments on the procurement documents regarding standards and specifications. The Netherlands, the Slovak Republic and Spain monitor the take-up of the list of

adopted standards and specifications. The Netherlands monitor the implementation through the analysis of procurement documents and a survey of public administrations. The Slovak Republic performs remote and on-site audits. Spain publishes the monitoring report online. It should be noted that in the Slovak Republic and Spain the publication of adopted standards and specifications within an existing legal framework means that take-up is enforced. In the Slovak Republic sanctions can be imposed when a public administration does not comply. Other countries focus more on other methods such as comply or explain regime (as in the Netherlands) or promotion and awareness raising (e.g. United Kingdom).

The next chapter covers different approaches followed to distil elements that affect the effectiveness of the adoption process.

4. Conclusion and Analysis of the Effectiveness of the Adoption Process

The discussion in the previous chapter makes it possible to discern some emerging trends and some commonalities in the way these Member States create, use and implement their standards and technical specifications assessment methods.

- The need for adaptation to raise awareness among and collaborate more with stakeholders (whereas in some Member States these processes are already in place); three of the analysed Member States have noticed a need to change their method that was less effective, resulting in a low level of interest from stakeholders, a lack of collaboration and low level of take-up of standards and technical specifications. They see a need to take a more context embedded approach. Denmark, Greece and Malta have indicated that their adoption processes are currently either no longer in use, have changed or are undergoing changes. The reasons for this are a number of underlying factors that created the need for a more effective method.
  - **Denmark** pursued a collaborative approach through an online platform but noticed a lack of interest among the key stakeholders. They have found they need to embed the agreements on the adoption of standards and technical specification in the respective context. Denmark no longer performs assessments but is working on the establishment of a closer link with their approach to architecture and the adoption of standards and specifications.
  - **Malta** has experienced a lack of collaboration and senses the need to focus on the context of the assessment. Malta does no longer assesses standards and technical specifications but monitors the use of standards and technical specifications through the assessment of the architecture.
  - **Greece** has published the White and the Grey lists of standards and technical specifications and but has never updated it due to lack of the take-up and the effort related to the maintenance of the list. Instead, they have opted for a more ad hoc approach directly linked to public procurement.
  - Overall, it can be concluded that Denmark, Malta and Greece have opted to no longer use a formal adoption process and assessment method for formal standards and specifications, mainly due to perceived lack of collaboration, take-up and efforts to keep the list up-to-date.
- A firm regulatory basis to provide a framework for uptake at the implementation phase; the Slovak Republic and Spain have the most formal methods in the sample of the analysed Member States since the methods are described in the national legislation and they have a process to keep their lists up to date on a yearly basis. The formal approach to the assessment method provides transparency and thus builds trust among the stakeholders.

- In particular, the Slovak list of published standards and technical specifications has a domain based approach and is supported by the legislation, including sanctions for non-compliance and the provision of training. In addition, the **Slovak Republic** has two appointed bodies to run the assessment process, the Committee of Standards and dedicated Working Groups formed in each standardisation domain.
- In **Spain,** the adoption process is regulated by a Resolution of the Secretary of State for Public Administrations and the National Interoperability Framework and the catalogue of standards and the monitoring actions are in place.
- In both Member States, the formalised approach enforces the maintenance of the standards list, provides a framework for the enforcement of the take-up of standards and contributes to compliance to and effectiveness of the respective methods.

- A solid transparent and collaborative approach to standardisation and adoption of standards and specifications to increase stakeholder involvement; The Netherlands and the United Kingdom have the most transparent and collaborative assessment methods in the sample of the analysed Member States, generating interest from all stakeholders, contrary to Greece, Denmark and Malta.

  - Both the **Netherlands** and the United **Kingdom** publish the results of each of the assessment phases online. Furthermore, the British platform allows users to comment on the different documents published on the Standards Hub.
  - The usage of the assessment methods in both Member States stimulates transparency and collaboration resulting in higher involvement of stakeholders from the start of the process.

Germany has just set up the Standardisation Agenda as part of the IT Planning Council as a federated institution overarching both the federal and the state levels. This includes the involvement of different stakeholders with different views on standardisation from the national and more local levels. All stakeholders are represented in the IT Planning Council with equal voting rights, while the "Länder" (states) are responsible for the execution of the decisions in their respective "Land". Because of the early state of the IT Planning Council institution, it is yet too early to conclude on and assess the efficiency and the effectiveness of the assessment method.

We conclude that the key factors affecting the effectiveness of the adoption process include the level of transparency and collaboration, the extent to which a context embedded approach is followed (relevance), compliance and monitoring and training. The effectiveness, and as a consequence the sustainability, of a process to assess, adopt and implement standards and technical specifications depends on a number of factors. These factors have been identified based on the analysis of the Member States' assessment methods:

- **Relevance**, meaning the inclusion of the context in the assessment process, in particular an assessment of the needs introduced by stakeholders and selection of standards and technical specifications;
- **Transparency** of the assessment method, the assessment process and the outcomes vis-a-vis all stakeholders;

- **Collaboration** of all stakeholders, including the private sector and citizens, throughout the assessment process;
- **Compliance and Monitoring** of the uptake of standards and technical specifications as a measure of the effectiveness of an assessment method;
- **Training** provided to all stakeholders involved in the assessment, selection and implementation of standards and technical specifications to ensure that public administrations (and other stakeholders) comply with all mandatory standards and technical specifications.

The next sections elaborate on the factors listed above in more detail with references to the Member States in the sample.

4.1 Relevance

An effective list of standards and technical specifications should be based on needs expressed by the relevant stakeholders and should be created in a specific context and domain. A number of Member States analysed start their assessment process by the gathering of needs for standards and specifications in particular domains. For instance, in Denmark, the Netherlands and the United Kingdom, needs are collected via an online platform, where anyone can submit their needs and propose standards and technical specifications to address them. Some Member States, such as the Netherlands and Malta, have a formal process to gather the needs, which involves a standardised needs submission form.

A pragmatic list of standards and specifications means it should be created in the specific context, which ensures that the selected standards and technical specifications are relevant. This approach is followed, for instance, in Germany where nine standardisation areas are defined by the IT Planning Council (Exchange of files, metadata structure etc.) and provide a good contextual framework for standards and technical specifications.

The United Kingdom clearly mentions in the proposal phase (referred to as submission of suggestions) that "*the context in which a standard is selected is to fulfil the need of the user, not to select a "good" standard*", which indicates the importance of the context in the selection of a standard. Denmark, Malta and the Netherlands, in turn, are in the process of reorganisation of their assessment method in order to provide context and thus relevance of the selected standards and technical specifications.

In the Netherlands, the principle of "comply or explain" provides a possibility to choose a standard outside the official list of standards and technical specifications if a specific implementation context calls for a "fit for purpose" standard.

Greece follows a hybrid approach combining the needs- and context-driven approach. The Greek approach consists in the assessment and selection of standards as a function of each procurement tender.

4.2 Transparency

Transparency of the assessment method establishes trust and thus a collaborative environment for all stakeholders involved in or impacted by the assessment and selection of standards and technical specifications. Transparency means open communication of the results of the

assessments of standards and specifications at all stages of the assessment process as well as a clear explanation of the assessment method.

For instance, in Denmark, a public hearing is organised when the assessments are completed and in Germany the content of the annual progress reports of the Standardisation Agenda are available on the relevant website. The results of the assessment of the standards and technical specifications are published online, for example, in the Netherlands and in Spain.

An exemplary transparent assessment method and process is identified in the United Kingdom, where the assessment process is clearly explained online on the Standardisation Hub platform which is publicly available. The Standardisation Hub enables the submission of needs related to challenges within the delivery of public services. It also offers a clear view on the status of different proposed standards, which address the challenges as well as providing the possibility of commenting on the proposed standards. Moreover, the Standards Hub clearly explains each step of the assessment process and method. These are good illustrations of a transparent approach in the assessment of standards and technical specifications.

4.3 Collaboration

Involvement of all relevant stakeholders, who are given the chance to express their needs and provide input on the assessment of standards and specifications, is an important success factor contributing to the efficiency of the assessment method. Collaboration among the stakeholders should, however, be structured and formalised into an agreed process. The collaboration should start at the beginning of the assessment process, where the needs for standards and specifications are expressed.

In the sample of Member States analysed, in most Member States the needs for standards and technical specifications can be submitted online by any interested party[118]. This step is formalised by the requirement to use a standardised submission form, as is the case in the Netherlands and Malta. This step can also be formalised by the requirement to present a solid business case before an appointed body, (e.g. Slovak Republic and Germany). That body then decides if a given need should be taken into consideration or not.

In the assessment phase collaboration among the stakeholders can take the form of a public consultation on the assessed standards and technical specifications as it is the case in Denmark and the United Kingdom.

In the sample of Member States analysed, the United Kingdom has the most collaborative assessment process. First of all, there is a publicly accessible online platform, the Standards Hub, which provides the possibility of eliciting the needs for standards by any interested stakeholder. All interested stakeholders can comment and observe the status of the needs, which undergo the selection process in function of the biggest challenges faced within the delivery of public services. What is more, the assessed standards, which are published online, are not enforced by rigid legal mechanisms, but by a collaborative approach based on budgetary control and “comply or explain” principles.

4.4 Compliance and Monitoring

[118] Any interested actor means public administration, private sector, academia or an individual

The scope and the extent of the monitoring should be agreed as part of the legal or other enforcement of the listed standards and technical specifications, i.e. as part of the adoption process. The monitoring of the uptake provides information on the effectiveness of the assessment method and its outcomes, i.e. a list of standards and technical specifications.

The monitoring of the uptake can be supported by different methods. An indirect monitoring method is available in Malta, where the extent to which the standards and technical specification are implemented is monitored via the assessment of public administrations' architectures.

Direct, transparent monitoring accompanied by an online report is present in the Netherlands, the Slovak Republic and Spain. In the Netherlands, the monitoring has a two-fold approach. On one hand, a sample of the procurement documentation is analysed by an appointed researcher, who provides statistics on the standards and technical specifications actually used. On the other hand, an online survey is carried out with public administrations.

In the Slovak Republic, the monitoring methodology depends on the domains of standardisation. For instance, a remote audit is performed to verify a website compliance with online standards and an on-site audit is done to verify the compliance with security standards. Moreover, non-compliers in the Slovak Republic can, in theory, be fined by the Ministry of Finance. The fines are not the preferred approach and therefore, a series of trainings on the interpretation of the law and the implementation of standards and specifications is provided.

4.5 Training

Training provided to all stakeholders involved in the assessment process to ensure a common understanding, interpretation and therefore compliance with the list of mandatory standards and technical specifications. The training takes on even more importance where the implementation of standards involves the interpretation of legislation, such as in Spain or the Slovak Republic. An example of such training exists in the Slovak Republic, where explanation is provided on the ways to implement standards and technical specifications in the context of national legislation.

5. Conclusions and Recommendations

Through the analysis of the Member States, a set of factors, impacting the effectiveness of a method, have been identified. These factors are the relevance and context in which the standard or specification is to be used, transparency of the adoption process, collaboration, compliance and monitoring, and training. Some Member States have reconsidered or are reconsidering their approach to take into account one or more of these factors.

An efficient assessment method and process should be needs-based (i.e. relevant within a given context), transparent and collaborative in nature, and should contain mechanisms to ensure implementation of the results. These are prerequisites for building awareness and trust among the stakeholders and ensuring that the standards and specifications are relevant to the delivery of public services.

In order to ensure efficient implementation and the take-up of the mandatory standards, the method should also foresee training/awareness-raising for stakeholders both ex ante and ex post, creating knowledge and a common understanding, as well as ongoing monitoring of the uptake of and compliance with standards. The results of the monitoring should trigger corrective actions in the assessment method and process itself.

In the sample of Member States analysed, the Netherlands and the United Kingdom have significantly higher stakeholder interest and participation in their adoption process, thanks to a very transparent and collaborative approach. In addition, both Member States pay close attention to relevance, compliance and monitoring, and training.

Some of the factors identified within the adoption processes at a Member States level are related to the CAMSS method. CAMSS itself is a tool that can be used as part of the adoption process, this is currently also being considered for the Multi-stakeholder platform for which a profile of the CAMSS method has been prepared (CAMSS – MSP profile, see section 6.3 in annex). CAMSS can be considered as a transparent and a collaborative assessment method since it is publicly available, described in detail, can be used by any stakeholder and is intended for sharing and reuse of assessment results. The CAMSS method is explained in detail through the wiki on the JoinUp community, this provides transparent information for any interested party to consult. The sharing and reuse are facilitated on the CAMSS Community on JoinUp where currently the available CAMSS assessments are published. In addition, functional specifications have been drawn up to support this process through more advanced features for sharing and reuse on the community. CAMSS is setup as a generic assessment method that can be reused across different domains. However, CAMSS is a flexible method and can be extended to include criteria that address the relevant context in which a standard or specification is assessed.

It is recommended that for the adoption of standards and specifications the factors of relevance, transparency, collaboration, compliance and monitoring as well as training should be taken into account. Implementing these elements throughout the process contributes to the effectiveness

of the adoption process as well as the take-up of the standards and specifications by public administrations at large.

6. Annex

6.1 Interviewees

Table 2 – Contact details of interviewees in Member States analysed

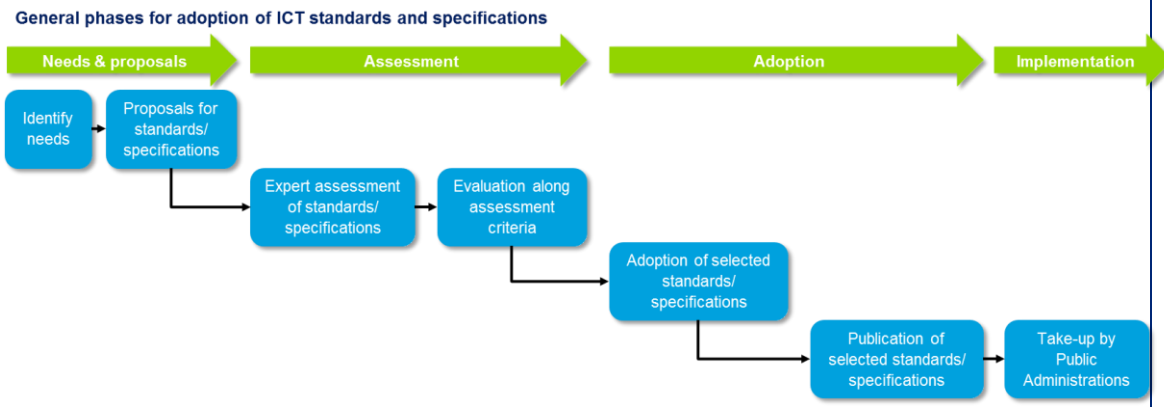
Country	Primary Contact	Organisation	E-mail address
Denmark	Adam Arndt	Danish Agency for Digitisation	arndt@digst.dk
Germany	Frank Steimke, Lutz Rabe	Koordinierungsstelle für IT-Standards (KoSIT).	frank.steimke@finanzen.bremen.de lutz.rabe@finanzen.bremen.de
Greece	Antonios Stasis	Hellenic Ministry of Administration Reform and eGovernance	a.stasis@ydmed.gov.gr
Malta	Noel Cuschieri	Malta Information Technology Agency (MITA)	noel.cuschieri@gov.mt
the Netherlands	Schoo Michiel	Ministry of the Interior, Standardisation Forum	michiel.schoo@minbzk.nl
the Slovak Republic	Peter Biro	Ministry of Finance, Department of Legislation, standards and information systems security	peter.biro@mfsr.sk
Spain	Miguel A. Amutio Gómez	Ministry of Finance and Public Administrations, DG for Administrative Modernization, Procedures and Promotion of eGovernment	miguel.amutio@seap.minhap.es
United Kingdom	Linda Humphries	Cabinet Office, Government Digital Service	linda.humphries@digital.cabinet-office.gov.uk

6.2 Interview guide for Member States

Interview Guide – Member States Assessment Method			
General information			
Interviewer:	[First Name and Last Name]	**Date:**	[dd.mm.yyy]
Interviewee Information			
Salutation:	☐ Prof / ☐ Dr / ☐ Ms / ☐ Mr	**Country:**	
First Name:		**Organisation:**	
Last Name:		**Department:**	
Phone number:	[E.g. +32…]	**Position/Title:**	
Mobile number:	[E.g. +32…]	**Other:**	
Email:			
Comments:			

Interview structure

The interview folows the main phases of an adoption method for standards and specification at Member State level depicted below:



Ref.	Question	Answer
1. General: adoption method.		
1.1	Do you have a documented adoption method for standards	

Ref.	Question	Answer
	and technical specifications?	
1.2	If yes, what is the process to follow in your method?	
2. Elicitation of the needs for standards and technical specifications.		
2.1	How do you identify a need for a standard or technical specification? Do you have an agreed process to gather the needs? If yes, what are the steps of the process?	
2.2	Do you document the gathered needs?	
2.3	Who are the stakeholders that provide the input? Is this publicly available?	
2.4	What is the interest and the response rate of the stakeholders?	
3. Gathering of proposed standards and technical specifications addressing the needs.		
3.1	Do you have a documented process to gather proposed standards and technical specifications? If yes, what are the steps in the process?	
3.2	Who are the stakeholders that provide the input? Is the input provided publicly available?	
3.3	What is the interest and the response rate of the stakeholders?	
3.4	Where do you store the proposed standards and technical specifications?	
4. Assessment and evaluation of standards and technical specifications.		

Ref.	Question	Answer
4.1	Do you have a documented process to assess proposed standards and technical specifications? If yes, what are the steps of the process?	
4.2	Do you use an assessment method? Is this standardised for all assessment based on evaluation criteria? If yes, what are the assessment criteria you use?	
4.3	Who are the stakeholders that provide the input? Is the input provided publicly available?	
4.4	What is the interest and the response rate of the stakeholders?	
4.5	Do you store the assessments of standards and technical specifications? Are these publicly available?	
5. Adoption of standards and technical specifications.		
5.1	Do you have a documented process to adopt assessed standards and technical specifications?	
5.2	What is the status of the adopted standard and technical specifications? (e.g. recommended or mandatory, comply or explain)	
5.3	Is there a legal framework for these adopted standards and	

Ref.	Question	Answer
	specifications?	
6. Publication of standards and technical specifications.		
6.1	Do you publish the adopted standards and technical specifications? If yes, is the list of assessed standards publicly available?	
6.2	Are the assessed standards and technical specifications grouped according to their status? (i.e. recommended, mandatory, obsolete)	
6.3	Are public administrations aware of this list? Do they regularly consult this list when implementing new ICT-based services or systems?	
6.4	Is there a process to keep the list of standards and technical specifications up to date?	
7. Take-up of the standards and technical specifications by public administrations.		
7.1	Are the standards and technical specifications used by the public administrations when implementing new ICT-based services or systems? (e.g. through in public procurement)	
7.2	Are the standards and technical specifications used in existing systems?	
7.3	Is there a monitoring of the use of the adopted standards and technical specifications?	
7.4	Is the use of the adopted	

Ref.	Question	Answer
	standards and technical specifications by public administrations legally enforced?	

6.3 Identification of ICT Technical Specifications by the Multi-Stakeholder Platform

Chapter 1 mentions that the multi-stakeholder platform on ICT standardisation[119] (MSP) was established, based on the Regulation on European Standardisation[120], in order to "be used as a forum for consultation of European and national stakeholders, European standardisation organisations and Member States in order to ensure legitimacy of the process". The European Commission's Directorates General for Enterprise and Industry (DG ENTR) and Communications Networks, Content and Technology (DG CONNECT) work together to manage and support the MSP. The aim of the MSP is to 'identify' technical specifications in the area of ICT for which the Annex II to the Regulation on European Standardisation specifies criteria that are to be used by the MSP as a basis to assess the specifications for adoption.

In order to support DG ENTR and DG CONNECT in establishing their adoption process and assessment methods for technical specifications, a series of meetings has been held with the aim of establishing a subset of CAMSS that aligns with the Annex II criteria ("requirements for the identification of ICT technical specifications") as well as comparing the adoption process of the MSP with the CAMSS process. The MSP Task Force on Identification and Alignment was also involved in these discussions.

6.3.1 MSP adoption process

The MSP adoption process as defined at the time of writing this report is provided in section 6.4, the Task Force of the MSP is working on finalizing this so it may be subject to minor changes. Overall, the process[121] consists of 10 main steps:

1. Submission of ICT technical specifications to be considered for 'identification'.
2. Validation of information sheet by the MSP secretariat
3. Submission to the MSP
4. 1st MSP discussion and establishment of evaluation working groups
5. Conduct evaluation and produce evaluation report.
6. 2nd MSP meeting on formal advice on identification
7. Draft Commission Decision
8. Broad consultation of stakeholders
9. Commission Decision on identification of proposed ICT technical specifications

[119] For more information see: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2758

[120] Regulation on European Standardisation (EU No 1025/2012).http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF

[121] Multi-Stakeholder Platform on ICT standardisation: http://ec.europa.eu/digital-agenda/en/european-multi-stakeholder-platform-ict-standardisation

10. Adoption of Commission Decision and publication of the Decision in the OJEU.

Different parties are involved in this process as is shown in Figure 15.

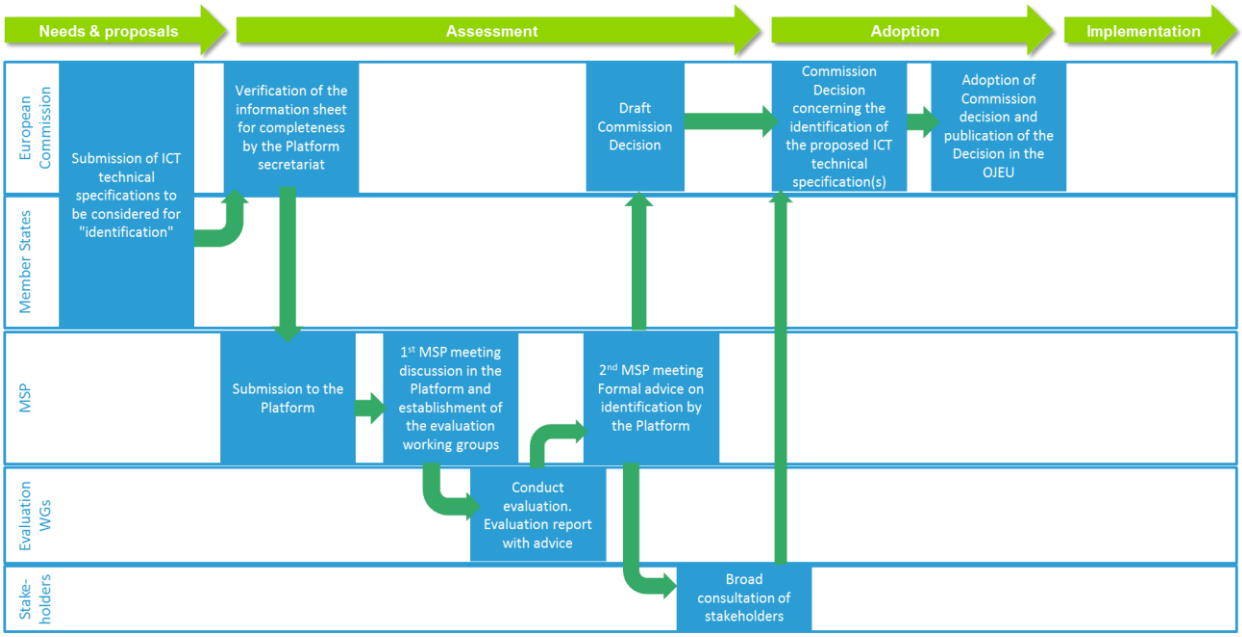


Figure 15 – MSP Identification Process

A mapping was made of this process with the CAMSS process. Figure 16 shows that the MSP process maps well with the CAMSS process. The coloured stars show how each of the steps in CAMSS aligns with the steps in the MSP process.

The CAMSS process indeed covers the different phases of the adoption process from 'Needs & Proposals' to the 'Adoption' of technical specifications and standards. These phases are commonly shared among Member States as show in Chapter 3 of this report (although implemented in different ways) and are equally valid for the MSP.

Beyond the mapping of the process, the CAMSS v0_4 was aligned with the criteria for identification of technical specifications by the MSP as set out in the Annex II of the European Regulation on Standardisation. Therefore, CAMSS is a good candidate as an underlying assessment method that can be used by the MSP to support the submission of proposed technical specifications and assessment by evaluation working groups in a structured, transparent and objective way.

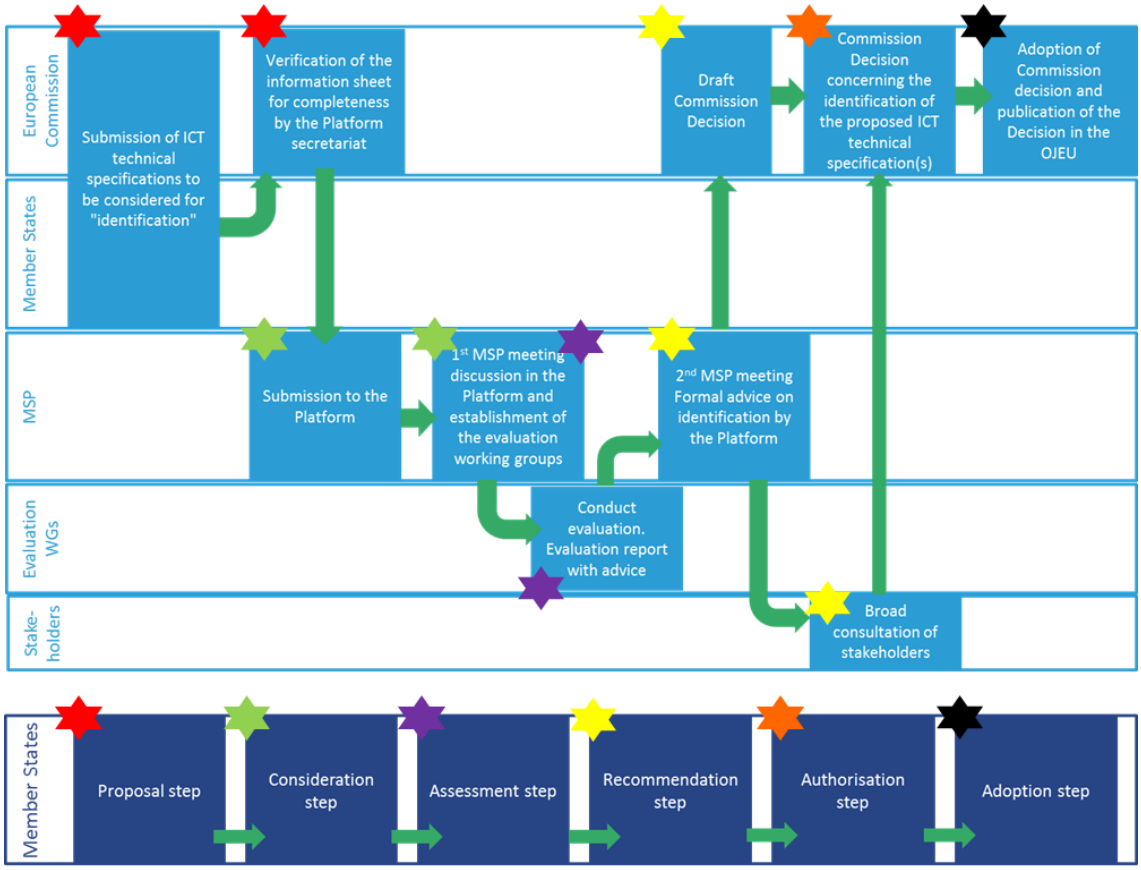


Figure 16 – Mapping CAMSS and MSP Identification process

Therefore, the CAMSS v0_4 was investigated in more detail in line with the discussions that have taken place in the MSP Task Force on establishing an assessment method to support the identification process. The next section provides an overview of the resulting suggested adaptations to the criteria contained in CAMSS in order to provide an MSP profile of CAMSS that can be used by the MSP in their adoption process.

6.3.2 CAMSS MSP Profile

The current CAMSS assessment tool, version 0_4[122], consists of 52 criteria that are both discussed and analysed in the light of Annex II of the Regulation on European standardisation[123]. The final CAMSS MSP profile (section 6.5) that results from this contains 47 CAMSS criteria. Of these some have been reformulated taking into account the CAMSS background (with a view on keeping backwards compatibility) to cover the context of the MSP to keep the criteria relevant for both areas. In addition, a number of new criteria were added. These are:

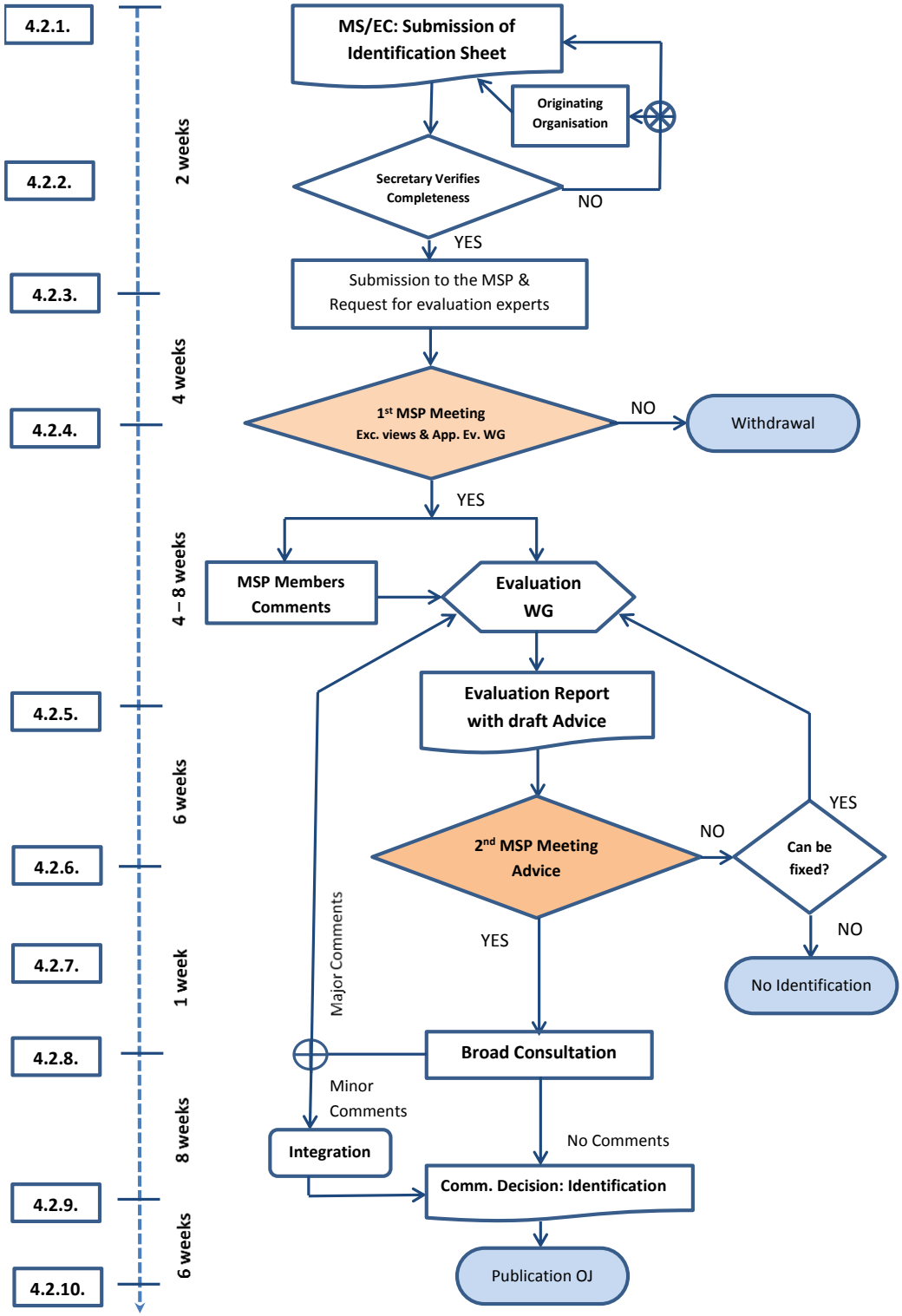
ANNEX II	New Criteria
3. the technical specifications were developed by a non-	Is the organisation developing the

[122] CAMSS Tools: https://joinup.ec.europa.eu/community/camss/og_page/camss-tools
[123] Regulation on European standardisation: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF

profit making organisation which is a professional society, industry or trade association or any other membership organisation that within its area of expertise develops standards in the field of information and communication technologies and which is not a European, national or international standardisation body, through processes which fulfil the following criteria:	specification (or standard) a non-profit making organisation?
3. (c) transparency: (ii) information on (new) standardisation activities was widely announced through suitable and accessible means.	Is relevant documentation of the development and approval process of the specification archived and identified?
3. (c) transparency (iii) participation of all interested categories of interested stakeholders was sought with a view to achieving balance.	Is information on (new) standardisation activities widely announced through suitable and accessible means?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;	Is there evidence that the adoption of the specification (or standard) positively impacts cross-border services, public policy objectives and societal needs?

6.4 MSP Identification Process

Flowchart – Identification process



6.5 CAMSS - MSP Profile

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
1. the specifications have market acceptance and their implementations do not hamper interoperability with the implementations of existing European or international standards.	1	Applicability	1.1	Area of application	A.1		Does the specification or standard address and facilitate interoperability between public administrations?
1. the specifications have market acceptance and their implementations do not hamper interoperability with the implementations of existing European or international standards.					A.2		Does the specification or standard address and facilitate the development of eGovernment?
1. Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors.	5	Market support	5.1	Implementations	A.28		Has the specification or standard been used for different implementations by different vendors/suppliers?
1. Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors.					A.29		Has the specification or standard been used in different industries, business sectors or functions?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
1. Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors.			5.2	Market demand	A.30		Do the products that implement the specification or standard have a significant market share of adoption?
1. Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors.			5.3	Users	A.31		Do the products that implement the specification or standard target a broad spectrum of end-users?
1. Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors.			5.4	Interest groups	A.32		Has the specification or standard a strong support from different interest groups?
1. Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors.			1.5	Compatibility	A.6		Is the specification or standard largely compatible with related (not alternative) specification or standards in the same area of application?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
2. The technical specifications are coherent as they do not conflict with European standards, that is to say they cover domains where the adoption of new European standards is not foreseen within a reasonable period, where existing standards have not gained market uptake or where these standards have become obsolete, and where the transposition of the technical specifications into European standardisation deliverables is not foreseen within a reasonable period.	7	Coherence	7.1	Area of existing international standard	A.46		Is the standard an international standard or does it comply with relevant international standards?
2. The technical specifications are coherent as they do not conflict with European standards, that is to say they cover domains where the adoption of new European standards is not foreseen within a reasonable period, where existing standards have not gained market uptake or where these standards have become obsolete, and where the transposition of the technical specifications into European standardisation deliverables is not foreseen within a reasonable period.			7.2	Area of existing European standard	A.47		Are there no existing European Standards with market uptake which cover the same areas as the specification or standard being assessed?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
2. The technical specifications are coherent as they do not conflict with European standards, that is to say they cover domains where the adoption of new European standards is not foreseen within a reasonable period, where existing standards have not gained market uptake or where these standards have become obsolete, and where the transposition of the technical specifications into European standardisation deliverables is not foreseen within a reasonable period.			7.3	Area of obsolete European standard	A.48		If yes, are the existing standards becoming obsolete? Does the technical specification (or standard) cover areas different from areas addressed by obsolete European standards? (i.e. an obsolete European standard is a standard, which is no longer relevant and not used on the ICT market as a newer IT solution exists). Are there no obsolete European Standards which cover the same areas as the technical specification (or standard) being assessed? (i.e. an obsolete European standard is a standard, which is no longer relevant and not used on the ICT market as a newer IT solution exists)
2. The technical specifications are coherent as they do not conflict with European standards, that is to say they cover domains where the adoption of new European standards is not foreseen within a reasonable period, where existing standards have not gained market uptake or where these standards have become obsolete, and where the transposition of the technical specifications into European standardisation deliverables is not			7.4	Area of specification under consideration	A.49		Does the specification or standard cover areas different from areas addressed by specifications being under consideration to become a European standard? (i.e. specifications provided by a non-formal standardisation organisation, that is other than CEN, CENELEC or ETSI can be under consideration to become a European standard or alternatively an identified specification)

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
foreseen within a reasonable period.							
2. The technical specifications are coherent as they do not conflict with European standards, that is to say they cover domains where the adoption of new European standards is not foreseen within a reasonable period, where existing standards have not gained market uptake or where these standards have become obsolete, and where the transposition of the technical specifications into European standardisation deliverables is not foreseen within a reasonable period.			7.5	Status in other Member States	A.50		Is the standard or specification listed as recommended in at least one Member State?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
3. the technical specifications were developed by a non-profit making organisation which is a professional society, industry or trade association or any other membership organisation that within its area of expertise develops standards in the field of information and communication technologies and which is not a European, national or international standardisation body, through processes which fulfil the following criteria:	3	Openness	3.1	Organisation	A.16	O	Is information on the terms and policies for the establishment and operation of the standardisation organisation publicly available?
3. the technical specifications were developed by a non-profit making organisation which is a professional society, industry or trade association or any other membership organisation that within its area of expertise develops standards in the field of information and communication technologies and which is not a European, national or international standardisation body, through processes which fulfil the following criteria:							Is the organisation developing the specification (or standard) a non-profit making organisation?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
3. (a) openness: the technical specifications were developed on the basis of open decision-making accessible to all interested operators in the market or markets affected by the standard.					A.17	O	Is participation in the creation process of the specification or standard open to all relevant stakeholders (e.g. organisations, companies or individuals)?
3. (a) openness: the technical specifications were developed on the basis of open decision-making accessible to all interested operators in the market or markets affected by the standard.					A.21	O	Are the specification or standards reviewed using a formal review process with all relevant external stakeholders (e.g. public consultation)?
3. (a) openness: the technical specifications were developed on the basis of open decision-making accessible to all interested operators in the market or markets affected by the standard.					A.22	O	All relevant stakeholders can formally appeal or raise objections to the development and approval of specification or standards?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
3. (b) consensus: the decision-making process was collaborative and consensus based and did not favour any particular stakeholder. Consensus means a general agreement, characterised by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments. Consensus does not imply unanimity.					A.20	O	Is the specification or standard approved in a decision making process which aims at reaching consensus?
3. (c) transparency: (i) all information concerning technical discussions and decision making was archived and identified.			3.2	Process	A.18	O	Is information on the standardisation process publicly available?
3. (c) transparency: (i) all information concerning technical discussions and decision making was archived and identified.					A.19	O	Information on the decision making process for approving specification or standards is publicly available?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
3. (c) transparency: (ii) information on (new) standardisation activities was widely announced through suitable and accessible means.			3.3	Documentation	A.23	O	Relevant documentation of the development and approval process of specification or standards is publicly available (e.g. preliminary results, committee meeting notes)?
3. (c) transparency: (ii) information on (new) standardisation activities was widely announced through suitable and accessible means.					A.24		Is the specification or standard publicly available for implementation and use for free or on reasonable terms?
3. (c) transparency: (ii) information on (new) standardisation activities was widely announced through suitable and accessible means.							Is relevant documentation of the development and approval process of the specification archived and identified? [
3. (c) transparency (iii) participation of all interested categories of interested stakeholders was sought with a view to achieving balance.							Is information on (new) standardisation activities widely announced through suitable and accessible means?
3. (c) transparency (iv) consideration and response were given to comments by interested parties.					A.22	O	All relevant stakeholders can formally appeal or raise objections to the development and approval of specification or standards?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (a) maintenance: Ongoing support and maintenance of published specifications are guaranteed over a long period.			6.4	Maintenance and future developments	A.42	O	Does the specification or standard have a defined maintenance organisation?
4. the technical specifications reflect the following requirements: (a) maintenance: Ongoing support and maintenance of published specifications are guaranteed over a long period.					A.43	O	Does the maintenance organisation for the specification or standard have sufficient finances and resources to be sure of freedom from short- to medium-term threats?
4. the technical specifications reflect the following requirements: (a) maintenance: Ongoing support and maintenance of published specifications are guaranteed over a long period.					A.44		Does the specification or standard have a defined maintenance and support process?
4. the technical specifications reflect the following requirements: (a) maintenance: Ongoing support and maintenance of published specifications are guaranteed over a long period.					A.45		Does the specification or standard have a defined policy for version management?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (b) availability: Specifications are publicly available for implementation and use on reasonable terms (including for a reasonable fee or free of charge).					A.24		Is the specification or standard publicly available for implementation and use for free or on reasonable terms?
4. the technical specifications reflect the following requirements: (c) intellectual property rights essential to the implementation of specifications are licensed to applicants on a (fair) reasonable and non-discriminatory basis ((F)RAND), which includes, at the discretion of the intellectual property rightholder, licensing essential intellectual property without compensation.	4	Intellectual property rights	4.1	IPR Documentation	A.25	O	Is the documentation of the IPR for specification or standard publicly available (is there a clear and complete set of licence terms)?
4. the technical specifications reflect the following requirements: (c) intellectual property rights essential to the implementation of specifications are licensed to applicants on a (fair) reasonable and non-discriminatory basis ((F)RAND), which includes, at the discretion of the intellectual property rightholder, licensing essential			4.2	Licences	A.26		Is the specification or standard licensed on a (F)RAND basis?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
intellectual property without compensation.							
4. the technical specifications reflect the following requirements: (c) intellectual property rights essential to the implementation of specifications are licensed to applicants on a (fair) reasonable and non-discriminatory basis ((F)RAND), which includes, at the discretion of the intellectual property rightholder, licensing essential intellectual property without compensation.					A.27		Is the specification or standard licensed on a royalty-free basis?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;	1	Applicability	1.1	Area of application	A.1		Does the specification or standard address and facilitate interoperability between public administrations?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;					A.2		Does the specification or standard address and facilitate the development of eGovernment?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;			1.2	Requirements	A.3		Are the functional and non-functional requirements for the use and implementation of the specification or standard clearly defined?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;	6	Potential	6.1	Impact	A.33		Is there evidence that the adoption of the specification or standard supports improving efficiency and effectiveness of organisational process?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;					A.34		Is there evidence that the adoption of the specification or standard makes it easier to migrate between different solutions from different providers?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;					A.35		Is there evidence that the adoption of the specification or standard positively impacts the environment?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;					A.39		Is there evidence that the adoption of the specification or standard positively impacts the administrative burden?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;					A.40		Is there evidence that the adoption of the specification or standard positively impacts the accessibility and inclusion?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;			1.5	Compatibility	A.6		Is the specification or standard largely compatible with related (not alternative) specification or standards in the same area of application?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;			1.6	Dependencies	A.7		Is the specification or standard largely independent from specific vendor products or products of single providers (either open source or proprietary)?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;					A.8		Is the specification or standard largely independent from specific platforms or technologies?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;							Is there evidence that the adoption of the specification (or standard) positively impacts cross-border services, public policy objectives and societal needs ?
4. the technical specifications reflect the following requirements: (e) neutrality and stability: (i) specifications whenever possible are performance oriented rather than based on design or descriptive characteristics; (ii) specifications do not distort the market or limit the possibilities for implementers to develop competition			2.2	Quality	A.10		Are there existing or planned mechanisms to assess conformity of the implementations of the specification or standard (e.g. conformity tests, certifications)?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
and innovation based upon them; (iii) specifications are based on advanced scientific and technological developments.							
4. the technical specifications reflect the following requirements: (e) neutrality and stability: (i) specifications whenever possible are performance oriented rather than based on design or descriptive characteristics; (ii) specifications do not distort the market or limit the possibilities for implementers to develop competition and innovation based upon them; (iii) specifications are based on advanced scientific and technological developments.					A.11		Has the specification or standard sufficient detail, consistency and completeness for the use and development of products and services?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (e) neutrality and stability: (i) specifications whenever possible are performance oriented rather than based on design or descriptive characteristics; (ii) specifications do not distort the market or limit the possibilities for implementers to develop competition and innovation based upon them; (iii) specifications are based on advanced scientific and technological developments.			1.6	Dependencies	A.7		Is the specification or standard largely independent from specific vendor products or products of single providers (either open source or proprietary)?
4. the technical specifications reflect the following requirements: (e) neutrality and stability: (i) specifications whenever possible are performance oriented rather than based on design or descriptive characteristics; (ii) specifications do not distort the market or limit the possibilities for implementers to develop competition and innovation based upon them; (iii) specifications are based on advanced scientific and technological					A.8		Is the specification or standard largely independent from specific platforms or technologies?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
developments.							
4. the technical specifications reflect the following requirements: (e) neutrality and stability: (i) specifications whenever possible are performance oriented rather than based on design or descriptive characteristics; (ii) specifications do not distort the market or limit the possibilities for implementers to develop competition and innovation based upon them; (iii) specifications are based on advanced scientific and technological developments.	2	Maturity	2.1	Development status	A.9		Has the specification or standard been sufficiently developed and in existence for a sufficient period to overcome most of its initial problems?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (f) quality: (i) the quality and level of detail are sufficient to permit the development of a variety of competing implementations of interoperable products and services;			2.3	Guidelines	A.12		Does the specification or standard provide available implementation guidelines and documentation for the implementation of products?
4. the technical specifications reflect the following requirements: (f) quality: (i) the quality and level of detail are sufficient to permit the development of a variety of competing implementations of interoperable products and services;					A.13		Does the specification or standard provide a reference (or open source) implementation?
4. the technical specifications reflect the following requirements: (f) quality: (ii) standardised interfaces are not hidden or controlled by anyone other than the organisations that adopted the technical specifications.			2.4	Stability	A.14		Does the specification or standard address backward compatibility with previous versions?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (f) quality: (ii) standardised interfaces are not hidden or controlled by anyone other than the organisations that adopted the technical specifications.					A.15		Have the underlying technologies for implementing the specification or standard been proven, stable and clearly defined?
4. the technical specifications reflect the following requirements: (f) quality: (ii) standardised interfaces are not hidden or controlled by anyone other than the organisations that adopted the technical specifications.			6.2	Risks	A.41		Are the risks related to the adoption of the specification or standard acceptable?
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;			1.3	Reusability	A.4		Is the specification or standard applicable and extensible for implementations in different domains?

ANNEX II	Nr.	Category	Nr.	Sub-Category	Nr.	Org.	Criteria
4. the technical specifications reflect the following requirements: (d) relevance: (i) the specifications are effective and relevant; (ii) specifications need to respond to market needs and regulatory requirements;			1.4	Alternatives	A.5		Does the specification or standard provide sufficient added value compared to alternative specification or standards in the same area of application?

European Commission

In-depth analysis of the State of Play of Interoperability Alignment in Europe

Luxembourg, Publications Office of the European Union

2014 – 85 pages