



Proposal for a “CAMSS”

Common Assessment Method for Standards and Specifications

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¹ Trasys sa is a member of the Strateqo Consortium

² A separate document: “CAMSS Project Report” details the CAMSS Project.

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1. INTRODUCTION

1.1 The aim of the CAMSS

The 'CAMSS', an initiative of the European Commission's IDABC programme and of Member States, aims to initiate, support and coordinate the collaboration between volunteer Member States in defining a "Common Assessment Method for Standards and Specifications" and to share the assessment study results for the development of eGovernment services.

Member States are currently organising the assessment of standards and specifications, e.g. within the context of their National Interoperability Frameworks.

The CAMSS aims to improve interoperability through the sharing of expertise and best practices in the use of standards and specifications for software in eGovernment, contributing to the efficiency of European government organisations thanks to the re-use of established assessments.

The use of the CAMSS by any EU administration allows for transparency in the choice of eGovernment solutions and standard. The CAMSS can be useful for example as:

- a *guide for assessing* and selecting standards and specifications for an eGovernment project,
- a *reference* when building an architecture,
- a reference for *explaining* choices of standards and specifications in terms of needs and requirements.

The CAMSS has been elaborated by collecting and analysing existing methods in some Member States, developed in the scope of their Interoperability Framework; this CAMSS can therefore be used by other Member States in order to complete their Interoperability Framework with a method for evaluating standards and specifications.

The CAMSS, in its first phase, defines a **method** for assessing standards and specifications. The CAMSS does not provide a general policy, and does not make recommendations at a European level. It provides a tool enabling structure and exchange of information on standards and specifications for software in the field of eGovernment. This tool is intended to be used within a decision process in a given context - at any level of a public administration (national, regional, ...). Its use will not provide an answer on whether to adopt a specific standard or specification or not. The CAMSS brings added value as a structured mechanism for public administrations enabling a comprehensive description of standards or specifications, as well as the retrieval of information and exchange of knowledge.

The second phase will provide a methodology for collaboration and exchange of assessment results among Member States, set up proposals for assessment studies to be carried out and subsequently shared, disseminate the assessment study results and conduct specific studies, if needed. The anticipated outcome is an **IDABC registry**, containing methods and aspects used as a reference by Member States and the Commission, either in whole or in part, with the

goal of creating re-usable and comparable interoperability ICT investigations, with **improved** quality and reduced time and resources.

1.2 First steps

When using the CAMSS, the first step is to identify the context and the scope of the use of the standard or specification. It is necessary to precisely define **needs and requirements** as well as the scope of **impact** linked to the choice of a standard/ specification.

1.3 Criteria

The choice of criteria used to assess a standard or specification depends on the standard or specification itself, as well as the specific context of use. In defining criteria, the CAMSS promotes the idea of "**the more the better**": each Member State defines the significance and prioritisation of each of the criteria according to its own needs and the context of use of the standard or specification.

The CAMSS is based on **four criteria** (Suitability, Potential, Openness, Market Conditions). The "Suitability" of a standard or specification can be defined as the extent to which the standard or specification responds to the identified need and promotes interoperability. The "Potential" criterion aims at identifying the indirect consequences linked to the choice of the standard or specification, whether it is in terms of assessing the impact of that choice, or evaluating the possible evolution of the standard or specification, i.e.: its scalability, extensibility, stability and maintenance. Assessing the "Openness" of a standard or specification and of standardisation includes assessing openness of deliverables (documentation, IPR, access, ...) and of process (consensus, open change...). The criterion "Market Conditions" assesses the standard or specification in the scope of its market environment. It implies identifying to which extent the standard or specification benefits from market support and wide adoption, its level of maturity and its capacity of reusability.

The **criteria** figure as a list of qualitative aspects of a standard or specification (from the eGovernment perspective) to be taken into account, rather than a quantitative evaluation. They do not provide an exhaustive "check-list". Each criterion is described in the sections below with a series of questions and suggestions on how to implement the assessment. These elements will have to be adapted/ interpreted according to the identified context and scope of the assessment.

Some elements of the criteria assess the standard or specification within its specific context of use (i.e.: Suitability) while other elements are context-independent (i.e.: Openness). The sharing or re-use of assessments is favoured for the more context-independent criteria. Assessment criteria address elements related to the process of elaborating the standard or specification, as well as the content of the standard or specification.

It is left to the convenience of the **Member States** or any EU public administration to decide on how to use the criteria, and how to proceed with their own interpretations/ recommendations/regulations in using the assessment study results. Each Member State defines the weight and prioritisation of each of the criteria - and therefore the results of the assessment - according to its needs and the context of use of the standard or specification. A further adaptation of the criteria list to a specific domain is to be subsequently considered, should the need emerge. Such adaptations are to be implemented during the second phase of the project.

1.4 The CAMSS criteria and the stakeholders

The aim of the CAMSS is to assess standards and specifications in the scope of eGovernment. However, the criteria used are not limited to the specific criteria for addressing the needs of an eGovernment project (i.e.: "Suitability") or providing potential for possible future needs (i.e.: "Potential").

The need for interoperability also entails taking into account also the "Openness" criterion and the "Market Condition" criterion, which both address private sector stakeholders' values as well.

The CAMSS therefore takes into consideration values held by a large group of stakeholders.

2. SUITABILITY

This criterion can only be assessed once the context and the scope of use of the standard or specification are known. One cannot evaluate the quality of a tool if its use has not been identified. A precise definition of the need and of the related mandatory/optional requirements is therefore a prerequisite to this assessment.

The suitability of a standard or specification can be defined as the extent to which the standard or specification responds to the identified need and promotes interoperability.

Suitability therefore needs to be assessed in terms of **applicability**, **relevance** and **conformance** with regard to how the standard answers the identified need in the specific scope of use.

The applicability of a standard or specification first identifies if it is clear who should use the standard or specification and for what applications. Assessing the applicability of a standard may also require identifying what was done to investigate alternative standards and specifications and why they were rejected, this amounts for example to a description of the context in which the standard or specification was selected.

Relevance of a standard or specification refers to the degree to which the use of the standard/specification helps to solve the identified problem in the identified scope.

Conformance refers to how the standard/specification covers the key features necessary to support the identified eGovernment functional area. It is a measure of completeness, functionality-wise.

The suitability criterion also takes into account the degree to which the choice of this standard or specification allows or enhances interoperability. To this end, further investigations may be done in the scope of the market conditions criteria assessment, such as identifying existing or planned mechanisms to assess the interoperability of different implementations of the same standard or specification.

In order to assess the conformance and relevance of a standard and specification an expert committee can be set up, whether at national or European level, domain-wise or for a specific project. This categorisation will be needed for the phase 2 of CAMSS when the sharing of the assessment workload will be organised.

The ideas in the Suitability criterion can also be expressed with the following questions:

Is it clear who should use the standard or specification and for what applications?

What was done to investigate alternative standards and specifications? i.e.: describe the context in which the standard or specification was chosen to be assessed?

To which degree does the use of the standard/ specification help solving the identified problem in the identified scope?

Does the standard/specification cover the key features necessary to support the identified eGovernment functional area?

What is its completeness functionality-wise?

What are the existing or planned mechanisms to assess the interoperability of different implementations to the standard?

3. POTENTIAL

The "**Potential**" criterion aims at identifying the indirect consequences linked to the choice of the standard or specification, whether it is in terms of assessing the impact of that choice, or evaluating the possible evolution of the standard or specification, i.e.: its scalability, extensibility, stability and maintenance.

Assessing the **impact** is done by identifying the risks and opportunities linked to the choice of the standard or specification within the identified scope of the project and its stakeholders. This identification is in a first stage an evaluation at a global level, and it may be refined in a second stage with an estimation linked to the implementations of the standard or specification. Impact assessment areas vary depending on the standard or specification, but they usually cover Financial (cost and benefit), Organisational (continuity of process, change management...) and Strategic (regional, national or global approach...) aspects. Other relevant aspects can include, depending on the scope of the project, Migration (existence of migration tools ...), Security, Privacy, Interoperability (with other processes or other organisations), Compatibility with other stakeholders, or Administrative burden.

The **scalability** of a standard or specification identifies to which extent the application using it can adapt to the size of the problem, i.e.: its ability to support increasing numbers of implementations and interactions among those implementations - given a specific context and functionality. **Extensibility** refers to the degree to which the standard can adapt to other areas. The potential of extensibility to another field of a standard or specification is enhanced if there is also a methodology (i.e.: Taxonomy for semantic standards) which allows this. Extensibility may also refer to the possibility of localisation, i.e.: the adaptation to different user environments and addition of locale-specific components.

The notion of **stability** of a standard or specification is linked to broad acceptance and non-obsolence. This means identifying how long the given standard or specification has been in use, how long it and its later modifications can be used while maintaining quality, how often new versions are to be released and with what type of change, if that change was predictable and controlled, if there are "backward compatibility" issues linked to major revisions in progress and if there were any "backward compatibility" problems reported/documented for previous versions of the standard, and finally which effort is needed for an organisation using the standard or specification to upgrade to a new version.

The stability of a standard or specification is strongly linked to the quality, i.e.: stability, openness, and community support, of the **maintenance** process. Maintenance addresses the ease with which a standard or specification can be modified; some questions should come to mind such as: is there any entity in charge of regularly assessing the standard or specification against the evolution of needs and available technologies? How are new versions communicated to organisations using the standard or specification? A crucial question is: is there a stable maintenance process for the standard or specification?

The ideas in the Potential criterion can also be expressed with the following questions:

What is the scope/ area to take into account for the impact assessment?

What is the impact of choosing this standard? I.e., what are the risks and opportunities identified within the scope and linked to the choice of the standard?

What is the financial impact? Which are the costs incurred? Which are the benefits?

What is the Organisational impact? Is there a continuity of process? Are there business processes to be changed? What is the scope of Change Management to be foreseen (i.e.: training, ...)?

What is the Strategic impact of the choice? For example: is the choice in line with a national / regional / European strategy?

What is the impact on the Migration? I.e.: are there migration tools?

What are the Security aspects? i.e. consequences of the choice and further actions to assure security?

What are the Privacy aspects? i.e. consequences of the choice and further actions to assure privacy?

What is the impact on interoperability with other processes, other organisations?

What is the compatibility of the standard with other stakeholders?

What is the impact on administrative burden?

To which degree or with which ease is the standard extensible to another area?

Are there possibilities of localisation, i.e.: adaptation to different user environments and adding locale-specific components?

How long has this standard or specification been used?

How long can it and its later modifications be used and still maintain its quality?

How often are new versions released and with what type of change?

Was that change predictable? Was that change controlled?

Are there any "backward compatibility" issues linked to major revisions in progress?

Are there any "backward compatibility" problems reported/documentated for previous version of the standard?

Which effort is needed for an organisation using the standard or specification to upgrade to a new version?

Is the maintenance process of the standard stable?

Does the standard benefit from a strong community support?

Is there any entity in charge of regularly assessing the standard or specification against the evolution of needs and available technologies?

How are new versions communicated to organisations using the standard or specification?

4. OPENNESS

The openness of a standard or specification and of standardisation includes “open Deliverables” and “open Process”.

Openness of deliverables includes the following points:

Open documentation: the standard or specification is fully documented and accessible by the public.

Open Intellectual Property Right: the standard or specification should be free to implement without economical, political or legal restrictions - now as well as in the future.

Open Access: describes the importance of equal and safe accessibility by the users of standard's or specification's implementations.

Open Interoperation is defined as how interoperation is identified and maintained between interoperable standards or specifications so that stakeholders have the opportunity to select the most appropriate interoperation.

Openness of Process addresses the fact that the standard or specification is managed and maintained in an open forum through an open process. This can be assessed according to the following points:

Open Meeting implies that the process of defining a standard must be open for the standard to be considered an open standard. This requires the ability to become a member of the involved organisation (i.e.: committees, ...), and the ability for non-members to have an influence on the process.

Use of Consensus is required for approving an open standard or specification. Due Process implies the respect of each member of the organization with regard to his rights.

Open Change is needed, i.e.: all suggested changes to the standard or specification are done with the same openness as the standard or specification itself.

Support must be Open: the organization takes responsibility for the standard or specification throughout the life span of a standard or specification.

The following section provides detailed criteria for assessing Openness

1. The following criteria allow assessing Openness:

- Open Documentation
 - Open Intellectual Property Right
 - Open Access
 - Open Interoperability
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- Open Meeting
- Consensus
- Due Process
- Open Change
- Support Open

2. Open documentation evaluation criteria:

"Availability of documentation" is a function of (a) cost and (b) online availability.

For example: Access to all preliminary results documentation can be:

- a. Online for free for all
- b. Online for a fee for all
- c. Online for members only
- d. Offline for free for all
- e. Offline for a fee for all
- f. Offline for members only
- g. Not available

3. Open Intellectual Property Rights evaluation criteria:

The ability for implementers to use the standard in products without legal or financial implications is considered very important for open standards. The IPR policy of the standardisation organisation with regard to IPR is therefore evaluated.

3.1. The IPR or copyright policies of the organization are

- a. Available on-line,
- b. Available off-line,
- c. Not available

3.2. The organization has governance to disclose any IPR from any contributor

- a. Online for free for all,
 - b. Online for a fee for all,
 - c. Online for members only,
 - d. Offline for free for all,
 - e. Offline for a fee for all,
-

- f. Offline for members only,
- g. Not available

3.3. Level of IPR set mandatory by the organization

- a. No patent
- b. Patent and RAND with limited liability,
- c. Patent and classic RAND,
- d. Patent with explicit licensing,
- e. Patent with defensive licensing,
- f. None

3.4. Level of IPR recommended by the organization

- a. No Patent
- b. Patent and RAND with limited liability,
- c. Patent and classic RAND,
- d. Patent with explicit licensing,
- e. Patent with defensive licensing,
- f. None

4. Open Access evaluation criteria

Open access describes the importance of equal and safe accessibility by the users of standard implementations. This aspect can be related to:

- Safety (physical safety and conformance safety)
- Accessibility of physical impaired people (design for all)
- Environmental impact
- Consumer involvement in standardization process

In this work focus is done particularly on accessibility and conformance safety.

Conformance testing is testing to determine whether a system meets some specified standard. The result can be results from a test suite.

Conformance validation is when the conformance test uniquely qualifies a given implementation as conformant or not.

Conformance certification is a process that provides a public and easily visible "stamp of approval" that an implementation of a standard is validated as conformant.

4.1. Mechanism exists that ensures disability support by a standard (Y/N)

4.2. Conformance governance is always part of a standard (Y/N)

4.3. Conformance test is offered to implementers

4.4. Conformance validation available to implementers

4.5. Conformance certification available

5. Open interoperation evaluation criteria

Open interoperation is defined as how interoperation is identified and maintained between interoperable standards so that stakeholders have the opportunity to select the most appropriate interoperation.

5.1. The organization provides governance for open identification in standards

5.2. The organization provides governance for open negotiation in standards

5.3. The organization provides governance for open selection in standards.

6. Open Meeting evaluation criteria

The process of defining a standard must be open for the standard to be considered an open standard. As standards normally are defined by committees and these committees normally consist of members of the standard organization we emphasize the ability to become a member and the financial barriers existing for this. Emphasis is also given to the ability of non-members to have an influence on the process of defining a standard

6.1. The organization is open to all types of companies and organizations

6.2. The organization is open to individuals

6.3. The standardization process specifically allows participation of members with limited abilities

6.4. Meetings are open to all members/all can participate in the standards creation process

6.5. Non-members can participate in the standards creation process

7. Consensus evaluation criteria

Consensus is decision making primarily with regard to the approval of standards and review with interest groups (non-members).

7.1. Does the organization have a stated objective of reaching consensus when making decisions on standards?

7.2. If consensus is not reached, can the standard be approved?

a. Cannot be approved but referred back to working group/committee, b. Approved with 75% majority, c. Approved with 66% majority, d. Approved with 51% majority, e. Can be decided by a "director" or similar in the organization

7.3. Is there a formal process for external review of standard proposals by interest groups (non-members)?

8. Due Process evaluation criteria

In this context, the relevance of due process is the respect of each member of the organization with regard to its rights. More specifically, it must be assured that if a member believes an error has been made in the process of defining a standard, it must be possible to appeal this to an independent, higher instance.

8.1. Can a member formally appeal or raise objections to a procedure to an independent, higher instance?

8.2. Can a member formally appeal or raise objections to a technical specification to an independent, higher instance?

9. Open change evaluation criteria

The only way an open standard can remain "open" is if all suggested changes are presented, evaluated and approved in the same way as the standard was first defined.

9.1. All changes to a standard is subject to the criteria 2-8 above

10. Support Open evaluation criteria

It is critical to an open standard that the organization takes responsibility for the standard throughout the life span of a standard. This can be done in several ways such as regular periodic review of the standard.

10.1. The organization has stated commitment to support the standard throughout its life:

- a. Until removal of the published standard from public domain (Including this process)
- b. Making the standard available even when in non-maintenance mode
- c. Adding new features and keeping the standard up-to-date
- d. Rectifies problems identified in initial implementations
- e. Only creates the standard

5. MARKET CONDITIONS

The criterion "**Market Conditions**" assesses the standard or specification in the scope of its market environment. It implies identifying to which extent the standard or specification benefits from market support and wide adoption, its level of maturity and its capacity of reusability.

Assessing how a standard or specification benefits from strong **market support** is linked to analysing how many products implementing the standard or specification exist, what their market share is and who the end-users are. The quality and the completeness (if there is partitioning) of the implementation(s) of the standard or specification can also be analysed. Availability of existing or planned mechanisms to assess conformity of implementations to the standard or to the specification could also be identified. The existence of at least one reference implementation (i.e.: mentioning a recognized certification process) - and of which one is an open source implementation - can also be relevant to the assessment. Wide adoption can also be assessed across domains (i.e.: public and private sectors), in an open environment, and/or in a similar field (i.e.: best practices).

A standard or specification is **mature** if it has been in use and development for long enough that most of its initial problems have been overcome and its underlying technology is well understood and well defined. Maturity is also assessed by identifying if all aspects of the standard or specification are considered as validated by usage, (i.e.: if the standard is partitioned), and if the reported issues have been solved and documented.

Reusability of a standard or specification is enabled if it includes guidelines for its implementation in a given context. The identification of successful implementations of the standard or specification should focus on good practices in a similar field. Its incompatibility with related standards or specifications should also be taken into account.

The ideas in the Market Condition criterion can also be expressed in the form of the following questions:

Does the standard have strong support in the marketplace?

What products exist for this standard?

How many implementations of the standard are there?

Are there products from different suppliers in the market that implement this standard?

If the standard is proprietary, are there nevertheless many products readily available from a variety of suppliers?

What is the market share of the products implementing the standard or specification?

Who are the end-users of these products implementing the standard or specification?

Are there any existing or planned mechanisms to assess conformity of implementations of the standard?

Is there a reference implementation (i.e.: mentioning a recognized certification process)? Is there an open source implementation?

Does the standard show wide adoption?

- across different domains? (I.e.: public and private)
- in an open environment?
- in a similar field? (i.e.: can best practices be identified?)

Has the standard been in use and development long enough that most of its initial problems have been overcome?

Is the underlying technology of the standard well-understood (e.g., a reference model is well-defined, appropriate concepts of the technology are in widespread use, the technology may have been in use for many years, a formal mathematical model is defined, etc.)?

Is the standard based upon technology that has not been well-defined and may be relatively new?

Has the standard been revised? (Yes/No, Nof)

Is the standard under the auspices of an architectural board? (Yes/No)

Is the standard partitioned? (Yes/No)

To what extent does each partition participate to its overall functionality? (NN%)

To what extent is each partition implemented? (NN%) (cf market adoption)

Does the standard provide guidelines for its implementation in a given organisation?

Can other cases where similar systems implement the standard be considered as successful implementations and good practices?

Is its compatibility with related standards documented?