

## **Identification of ICT technical specifications**

### **Draft**

### **Evaluation Report of ECMAScript**

#### **Management summary**

This report contains the evaluation as well as proposed advice of the European Multi-Stakeholder Platform on ICT standardisation (“the Platform”) on the submission of two components of the ECMAScript “package” of technical specifications and other documents, namely the technical specification ECMA-402 (Edition 1) ECMAScript Internationalization API Specification (December 2012) and the technical report ECMA TR/104 ECMA-262 Test Suite (December 2011) to be identified in accordance with Article 13 and annex II of Regulation (EU) No. 1025-/2012. The report assesses compliance against the requirements for the identification of ICT technical specifications, set by Annex II of Regulation (EU) No. 1025/2012 and includes some questions for the Platform for further discussion. The report should allow the Platform to develop a "positive/negative" advice to the Commission of the submitted components mentioned above.

#### **1. Objective of the report**

##### **1.1 Background**

Economic growth and responsiveness to citizens’ expectations in a digital world requires interoperability between services, applications and products. Achieving interoperability requires standards and specifications. Public authorities should make use of the full range of standards and technical specifications when procuring hardware, software and information technology services; this will allow them to efficiently fulfil their tasks.

To help them achieve this, Regulation (EU) 1025/2012 in art 13 and 14 provides public authorities with the possibility to reference, in public procurement acts, ICT specifications which are not national, European or international standards, provided that these ICT specifications, proposed by the Commission or by Member States, comply with the requirements set by Annex II of the same Regulation. These requirements cover the coherence of the proposed ICT specification with the formal standardisation environment, the quality of the standardisation process implemented in the standards setting organisation that issued the proposed ICT specification and some aspects of the proposed specification itself. Compliance with these requirements provides public authorities with the insurance that the proposed ICT specification is in accordance with WTO principles. The "identified" ICT specifications resulting from the evaluation shall constitute "common technical specifications" referred to in Directives 2004/17/EC, 2004/18/EC and 2009/81/EC.

The objective of this report is to allow the Platform to evaluate compliance of submitted ICT specifications with the requirements set in Annex II of the Regulation and subsequently to provide its advice to the Commission on the potential identification of these specifications (recital 37 of Regulation 1025/2012)

The Platform is an expert group set up by Commission Decision (C/349/4) of 30 November 2011 and is composed of representatives of Member States, industry, societal stakeholder organisations, formal standards organisation and fora and consortia.

Further to the advice provided by the Platform, and where the advice is positive, the Commission services will, in accordance with the applicable procedures, prepare a Commission Decision on the identification of proposed ICT specifications. The reference of the Commission Decision will be published in the OJ as well as on the dedicated Commission website.

## 1.2 The process

On 13 September 2012 the European Commission has submitted the two ECMAScript components mentioned above issued by Ecma International to the Platform for evaluation, in view of their possible identification as ICT specifications eligible for direct referencing in public procurement. The secretariat of the Platform has carefully verified the information in the evaluation submission form and it has been completed with the help of Ecma International. The submission form has subsequently been forwarded to the Platform which noted the submission of the two ECMAScript components at its meeting of 7 February 2013; no comments were received from the Platform on this submission report. The Platform has established an ad-hoc evaluation group to analyse the data provided in the submission form, to seek, where necessary, further information from the Commission and Ecma International and to consolidate the information in this evaluation report addressed to Platform.

The secretariat of the evaluation group was provided by the Commission services and the group was composed of representatives from following Platform members:

- 1) ECMA
- 2) DIGITALEUROPE
- 3) CENELEC
- 4) Open Mobile Alliance
- 5) Switzerland

The evaluation group has performed its tasks by electronic means and with one physical meeting on 23 May 2013. It delivered its report to the Platform secretariat on (27 May 2013). The report includes a draft advice for the Commission concerning the proposed identifications of the two ECMAScript components.

- The Platform will discuss the draft advice at its meeting of 13 June 2013. The Platform secretariat will subsequently update the draft advice in accordance with the outcome of the discussion.
- The final draft advice will be submitted for broad consultation to all interested stakeholders through the Platform website; the open consultation will take eight weeks.
- The Platform secretariat will consolidate the comments received during the open consultation and submit a revised version of the draft advice to the Platform.
- The Platform will, depending on the outcome of the consultation, agree on its draft advice to the Commission or on further discussion.
- Further to a positive advice of the Platform, the Commission will, in accordance with the internal procedures, prepare the Commission Decision on the identification of the ECMAScript components.

## 1.3 Presentation of the proposed ECMAScript components

The European Commission has proposed two components, ECMA-402 and ECMA TR/104, out of the ECMAScript” package” of technical specifications and other documents for identification. ECMAScript specifications and standards are very commonly included in national lists of interoperability standards and specifications for public procurement purposes, such that the ability for public procurement authorities to directly reference these components seems useful.

ECMAScript is not a single specification, but a “suite” composed of several specifications and other documents which may be described as “basic internet- and web-standards”. ECMAScript is the formal (normative) specification for Javascript. It is a general multipurpose programming language which is also one of the main programming languages for the WWW. Therefore the range of ECMAScript usage is very broad, covering web-client based applications like web-browsers, or server-based applications like electronic banking, email servers or even computer games (more details e.g. on [Wikipedia.org/wiki/Java.Script](http://Wikipedia.org/wiki/Java.Script)).

The core standard within the ECMAScript suite is **ECMA-262**; the latest version is ECMAScript Language Specification, 5.1 edition (June 2011). All editions of the core ECMA-262 have been submitted for "fast track" to ISO/IEC JTC1 over several years, where they have been approved and published as formal International Standard **ISO/IEC 16262**. This core ECMAScript standard is **not** subject of this evaluation procedure. Both ECMA-262 and ISO/IEC 16262 have always been maintained in synchronization between Ecma International and ISO/IEC JTC1. In the following, references to ECMA-262 or ISO/IEC 16262 shall always mean both documents.

The two components of the ECMAScript suite that are subject of this evaluation are:

1. **ECMA-402** (Edition 1) ECMAScript Internationalization Application Programming Interface Specification (December 2012)
2. **ECMA TR/104** ECMA-262 Test Suite (December 2011)

These components are complementary specifications needed to extend ECMA-262 for the following reasons:

- ECMA-402 offers "internationalization" capabilities to the ECMA-262 by ensuring an automatic adaptation to different language environments;
- ECMA TR/104 ensures the effective and testable implementation of ECMA-262.

The TS and the TR were developed by the ECMA International Technical Committee TC 39.

**Both specifications are unique and no alternative exists.**

**ECMA-402** defines the application programming interface for ECMAScript objects that support programs needed to adapt to the linguistic and cultural conventions used by different human languages and countries.

Internationalization of software means designing it such that it supports, or can be easily adapted to support, the needs of users speaking different languages and having different cultural expectations; thus it enables worldwide communication between them. Localization then is the actual adaptation to a specific language and culture. Globalization of software is commonly understood to be **the combination of internationalization and localization**. Globalization starts at the lowest level by using a text representation that supports all languages in the world, and using standard identifiers to identify languages, countries, time zones, and other relevant parameters. It continues with using a user interface language and data presentation that the user understands, and finally often requires product-specific adaptations to the user's language, culture, and environment. Of course "internationalization" is a general problem in other software standards / products too, but within the Javascript (ECMAScript) language it is a unique solution.

ECMA-262 lays the foundation by using Unicode for text representation and by providing a few language-sensitive functions, but gives applications little control over the behaviour of these functions. ECMA- 402 builds on this by providing a set of customizable language-sensitive functionality and is useful even for applications that themselves are not internationalized, targeting only one language or one region. Furthermore, ECMA- 402 also enables applications that support multiple languages and regions.

An example that shows how an ECMAScript program (that itself is agnostic to the language of the web page) performs better with ECMA-402 (Internationalization) in an international setting:

Date without 402 (Chrome, French locale):	Wednesday, October 03, 2012
Date with 402 (Chrome, French locale):	mercredi 12 décembre 2012
Currency with 402 (Chrome, Serbian locale):	12.345,12 US\$, 12.345,12 USD or 12.345,12 америчких долара

Ecma International has declared that ECMA-402 Edition 1 is **not** going to be "fast tracked" to ISO/IEC JTC1 or to any other international standardization body. Work on Edition 2 (adding new "international" features to the features of Edition 1) of the standard has just started and is not expected to be approved before 2015. No decision on whether that second (or any later) edition will be submitted for transposition

into a formal standard will be taken before that time<sup>1</sup>. This means that ECMA-402 will not be available for direct referencing in public procurement until at least 2015, unless identified as an ICT Technical Specification in the sense of Regulation 1025/2012.

**ECMA TR/104** is a project of Ecma International's TC 39 that has a goal to make a test suite widely available that can be used by ECMAScript implementers to test and thus improve their adherence to the ECMA-262 specification. As a “Technical Report”, this document and program code is only of an “informative” character, but it is a very useful tool for developers and users. The test suite consists of many small individual software tests (more than 12000 at present) that have been contributed by Ecma TC39 members. The test262 test suite is publicly available and is designed to be executable by any modern web browser, simply by loading the web page at <http://test262.ecmascript.org>. As such it is mainly a software code-based document.

Ecma International has declared that ECMA TR/104 is **not** going to be “fast tracked” to ISO/IEC JTC1 or to any other international standardization body. One of the reasons is that in TR/104 – which is basically a collection of “running software” modules - Software Copyright policy and software license plays an important role, and several classical SDOs do not have such policies yet. It is a new area in SDOs’ standards policies. Ecma International has applied an “experimental” software copyright policy for this technical report. “Experimental” means that Ecma (as an organisation) does not yet have an Ecma-wide Software Copyright policy but has been pioneering application of such a policy in the Technical Committee that has developed ECMA TR/104. Application of this policy is hence a specific trait of the development process underlying TR/104.

ECMAScript specifications and standards are very commonly included in national lists of interoperability standards and specifications for public procurement purposes. An identification of ECMA-402 would provide public administrations with the possibility to complement those lists with enabling internationalization features, as frequently used/needed for the purpose of customization to the linguistic needs of member states, with a simple direct reference. Without identification of ECMA-402, use of those internationalization features by public administrations would either not be easily possible or would require an exception.

Providing public administrations with the possibility to directly reference ECMA TR/104 would enable them to complement those lists and individual procurement tenders with a direct reference to a tool set that can be used to test and demonstrate interoperability of implementations. This could be used to enhance confidence in interoperability when using ECMAScript specifications.

## 2. Evaluation of compliance with the general conditions

### 2.1 Market acceptance

Ecma International has declared that during the development of the technical specification ECMA-402 Google, Mozilla (Lindenberg Software) and Microsoft have independently implemented and tested the standard before it was offered for approval by TC39 and the Ecma International General Assembly. Through this testing, these three implementations were confirmed to represent compliant and interoperable implementations from different vendors.

Ecma International has also declared that according to their knowledge the ECMA-402 specification has already been implemented in commercial Internet Browsers such as Google Chrome. Mozilla has declared that they are working on a new Firefox version with ECMA-402 included. This is scheduled for August 2013. Opera is going to have implementations of ECMA-402 in their browsers soon by already adopting the Google Chrome technology. In the beta version of Opera 14 on Android it is already included. It is expected that by the end of the year all major browsers will have included ECMA-402. It is expected that by the end of the year all major browsers will have included ECMA-402.]. In reference to recent market data on browsers (see e.g. <http://www.sitepoint.com/browser-trends-april-2013-is-chrome-unstoppable/> or [http://www.w3schools.com/browsers/browsers\\_stats.asp](http://www.w3schools.com/browsers/browsers_stats.asp), this means that already now, close to 40% of the commercial browser market supports ECMA-402. The Firefox announcement alone will bring this figure up to at least 60% of the overall market by August.

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<sup>1</sup> Generally, “fast-tracking” of Ecma standards is not automatic, “fast-tracking” also means that considerable (and always scarce) resources have to be devoted by Ecma International to this process. In case of ECMA-402 the decision of the technical experts was to progress the development of the 2<sup>nd</sup> Edition before thinking about possible “fast-tracking”.

Ecma International has noted that although the standard is rather young, the download figures for ECMA-402 from the Ecma International website are rather high (311 downloads just in the first 3 months of 2013). The standard is thus among the 10 most popular Ecma International standards already.

Based on the above it is believed that both additional ECMA-262 components provide important contributions for public procurement in an EU environment. The internationalization of web applications in a region of 27 countries with many different languages and writings is an important aspect, and also the use of the Test262 suite increases the interoperability among components (servers, clients) of the net.

As to TR/104, the publicly available test262 suite is: <http://test262.ecmascript.org/#>. Here, any user can test to what degree the ECMA-262 implementation is satisfying the ECMA-262 standard. Major software developer organizations testing ECMA-262 have their in-house implementations of TR/104. TR/104 thus de facto significantly contributes to an increased interoperability between applications/ services and products using Javascript.

**Note:** The evaluation team did not reach agreement on whether there is sufficient evidence for regarding the market acceptance criterion of Annex II of the Regulation as satisfied. Whilst there is no problem whatever for the attributes under Annex II to be met by the ECMA processes, ECMA-402 is a fairly recent specification. Some members of the evaluation team felt that there was sufficient evidence demonstrated, others noted that as of May 23, 2013 only one browser vendor is offering in its current commercial product, and that identification should be delayed. Those members argue that only one browser vendor is offering it in its current commercial product. Of course, this situation could change rapidly, as plans clearly exist for other browser vendors to provide implementations.

## **2.2 Coherence with the formal European standardisation environment and links with other ICT**

The specifications cover a domain where the adoption of a new European standard or standardisation deliverable is not foreseen within a reasonable period. There are no existing European standards or standardisation deliverables covering the same domain out of date, obsolete or which did not gain market acceptance. Furthermore, a transposition of the proposed specifications into a European standard or standardisation deliverable is not foreseen.

At present, ISO/IEC 16262 has not been adopted as a European Standard. CEN-CENELEC Technical Board Working Group 06 on ICT Standardization Policy is currently reviewing the overall applicability of the Vienna Agreement in respect of standards from ISO/IEC JTC1 and the policy may (or may not) change in the future for this standard. Meanwhile, individual CEN and CENELEC members may publish ISO/IEC 16262 as a national standard. There are no plans to adopt ECMA-402 or ECMA-TR/104 as European deliverables.

## **3. Evaluation of compliance with the attributes (part II, §7 doc ICT/MSP(2013)14 rev)**

### **3.1 The organisation developing the specification**

The information on the organisation has been broadly provided by Ecma International. After review by the evaluation group, it has agreed that it represents an accurate picture.

The organisation which developed the specifications is Ecma International, Rue du Rhône 114, CH-1204 Geneva, Switzerland: <http://www.ecma-international.org/default.htm>. Ecma International is one of the oldest standardization organization in the area of ICT and consumer electronics. Its scope is broad, covering areas ranging from software languages to optical storage media, and also “horizontal” standardization aspects such as safety, noise emission of IT devices, etc. Ecma International is an Association registered in Switzerland, similar to ISO and IEC. As a Not for Profit Organisation, Ecma International is not allowed to make profits and has no revenues from products such as sales of standards; Ecma International standards are publicly available free of any cost. The entire financing is based on yearly membership fees; its sum is determined each year by the Ecma International General Assembly. Any possible surplus from the membership fees is always kept as “reserve” for the following fiscal year because the income depends on the number and size of the paying members (these are in numbers at present about 30). Ecma International has at present also about 30 not-for-profit organization members, who do not pay any membership fees. The yearly Ecma International budget is presently about 1,5 Million

CHF. The draft budget for the following year is always prepared in October and it is presented for approval by the December Ecma International General Assembly. Based on that, the General Assembly also approves the membership fee level for the following year. In practice, the membership fee level of Ecma International has been kept constant since 2000.

Members are organizations (such as companies – both manufacturers, service providers and users, but also universities, research organizations, some governmental agencies). There is no individual membership. Every organization with interest in Ecma topics can apply, after filling in the application and temporarily accepting by the Secretary General they can immediately start working in Ecma International (except for voting). Then the next Ecma International General Assembly meeting decides on the formal acceptance of the application. De facto, this is always the case; probably not a single application for membership has ever been rejected by the General Assembly. Different types of membership apply, depending on the size of the member organization and decision of the member whether they want to participate only in the technical work or also at the political, managerial level.

External communication is very important for Ecma. Since Ecma International is a relatively small organization, co-operation with other SDOs is vital for its ongoing success. Successful “fast-track” (i.e. transposition of Ecma standards into formal international standards) requires that the receiving SDO gets involved early on in the process. Ecma International has been running a dedicated “openness” and “visibility” programs for several years now. Ecma International regularly publishes News and Press Releases on major events, such as approval of an important new standard.

The Ecma International procedures are based on a set of **By-laws, Rules** and a **Code of Conduct in Patent Matters** and the associated Patent Statement and Licencing Declaration Form (<http://www.ecma-international.org/memento/codeofconduct.htm>). On June 17, 2010 the Ecma General Assembly approved an **experimental software copyright policy**. This policy is being applied by Ecma TC39 only (see above our explanation on the “experimental software copyright policy”). Major links to the policies: <http://www.ecma-international.org/memento/index.html>.

Ecma International’s decision procedure is basically a two- step process: The first decision step takes place on the level of the Technical Committee (TC) level where consensus is the primary target. In case consensus cannot be achieved and voting is needed, a simple majority decides. Every member organization has the same rights – each member has one vote. A quorum of at least 50% of the TC members is required to achieve a valid TC vote. After the approval of a specification by the Technical Committee having developed that specification, the second step is approval at the Ecma International General Assembly where consensus is also the primary target (the quorum there is also 50%). Most votes are taken by simple majority, except if the By-laws define 2/3 majority – e.g. for the approval of new standards. In practice, votes in Ecma International are generally without conflicts and usually just serve to confirm a consensus decision.

## 3.2 The development process

### 1. Openness

As described in section 3.1, all interested parties can become members and participate in the work of TC 39 with an equal influence on decision processes. The Ecma International management is elected yearly by the Ecma International General Assembly. Only persons from Ecma International Ordinary Members can be nominated and elected.

### 2. Consensus

Decision processes within Ecma International are collaborative and consensus based by virtue of Ecma International’s procedural rules, as described in section 3.1. Those procedural rules were applied in the development of the two specifications under evaluation here. In case of ECMA-402 and TR/104, approval decisions for the final documents were unanimous, both at the Technical Committee and at the General Assembly level.

### 3. Transparency

Each Ecma International TC has its own electronic archive, where all documentation (contributions, draft standards, meeting minutes etc.) are archived for an unlimited period. On the public Ecma International website, the scope and work programme of all Ecma TCs (incl. TC39) are published. All Ecma International members are encouraged (but they are not obliged) to participate in the work of a TC. Ecma has also implemented a “visibility” program that allows non-Ecma members to follow the

work. As TC39 is concerned, the ECMAScript community operates Wikis and discussion lists where everybody (also non-Ecma members) can also participate.

### 3.3 The specification

#### 1. Maintenance

Ecma International has an obligation to maintain all of its standards in force. This is a practice that all SDOs must follow and is also included in the WTO criteria. Ecma is no exception, though it is not codified in the By-laws. In practice, Ecma International tries to maintain a standard for as long as it is still relevant in practice. Ecma International has a demonstrated track record of consistently maintaining and regularly updating its standards. If Ecma International members feel that a standard can be withdrawn, then the General Assembly withdraws it with a 2/3 vote. After withdrawal, the maintenance stops. However, even old, withdrawn standards can also be accessed and downloaded from the Ecma International website by anybody – also free of charge.

#### 2. Availability

All standards and Technical Reports (both in force and withdrawn) and are publicly available free of charge from the Ecma Website. This goes also for Ecma-402 and ECMA TR/104.

#### 3. Intellectual Property rules

Ecma International's Patent policy can be found at: <http://www.ecma-international.org/memento/codeofconduct.htm>

The Ecma patent policy is very similar to the ITU/ISO/IEC patent policy. It is a **RAND** policy, which allows (and facilitates) also RF patent statements.

All relevant patent information (if it exists) is published on the Ecma website:

<http://www.ecma-international.org/publications/files/ECMA-ST/Ecma%20PATENT/Ecma%20list%20of%20patent%20statements.htm>

The formal status of patents (if there are any) of ECMA-402 and TR/104 is **RAND**. ECMA TR/104 contains more than 12,000 short software modules. Their software license is BSD, free of charge.

#### 4. Relevance

The two components address recognized market needs. The internationalization features offered by ECMA-402 are a particularly relevant enhancement of ECMAScript for the multi-linguistic European environment. Availability and use of ECMA-402 provides the possibility to introduce those internationalization features in a harmonized, interoperable manner without the need for proprietary non-interoperable extensions. The test tools provided by ECMA TR/104 can be used to effectively increase confidence in the interoperability of ECMAScript implementations by different vendors and are actively employed by the market for this purpose. Both specifications solve the problems they address (i.e. “internationalization” of ECMAScript and testing ECMAScript implementations) in an effective manner, and there are practically no alternatives available for addressing those problems.

Public procurers can already benefit from the reference to ISO/IEC 16262; the enhancement of the two ECMAScript components would provide additional benefit for the implementation of the ECMAScript.

There are currently no regulations neither on European or national level which affect the use of the specifications or which the specifications would have an impact on.

#### 5. Neutrality and stability

The ECMA-402 specification is performance-oriented and not based on design or descriptive characteristics. The TR/104 – as a test suite – is of a different nature, it contains about 12,000 concrete, unique test cases. However, TR/104 is also free from any restrictions (like IPR) in its use. Both specifications effectively contribute to improved interoperability, and their implementation does not create any potential conflicts with the implementation of other technical specifications and especially with European Standards. The technology is up to date and the market acceptance of ECMAScript is very high.

Referencing of the two components would improve the ability to request internationalization features, as needed for the particular environment in a specific member state, by referencing a specification that ensures interoperability of implementations by different vendors.

## **6. Quality**

For ECMA-402, the quality of the specification is such that competing implementations by different vendors are possible. This has been proven in practice by the demonstration of independent implementations of the specification (even prior to its approval in Ecma International). As a test suite, TR/104 not only permits, but explicitly facilitates and helps the development of a variety of competing implementations of interoperable products and services.

## **7. Summary and conclusions, including proposed evaluation outcome**

The evaluation report provides evidence that the evaluation group has compiled in view of the compatibility of ECMA- 402 and ECMA TR/104 with the requirements for identification laid out in Annex II of the Regulation. Members of the Platform are invited to consider and discuss this evidence in developing the Platform's recommendation to the European Commission

### **The Evaluation Task Force believes that:**

- The Platform should note the importance of applications being testable, and draws the attention of procurement authorities to the availability of ECMA-TR/104 for testing ECMA-262 and ISO/IEC 16262 implementations.
- The Platform should note the importance of the ECMAScript internationalization capabilities described in ECMA-402. These enhancements to ECMAScript are valuable and should be considered by procurement authorities seeking to build in internationalisation arrangements.
- The evidence documented in this report demonstrates compliance of ECMA-402 with most<sup>2</sup> requirements for identification laid out in Annex II of the Regulation.
- The evidence documented in this report demonstrates compliance of ECMA-TR/104 with the substance<sup>3</sup> of the requirements for identification laid out in Annex II of the Regulation.

### **The evaluation group invites further discussion within the Platform on the following points:**

- **“Status” of ECMA-TR/104**

The evaluation team did not reach agreement on whether TR/104 should be referenced. Apart from any other considerations, the document is a **Technical Report**. By definition, such a document is non-normative. It has to be questioned if such a document constitutes a technical specification within the meaning of the Regulation; the evaluation team could not reach a common view on this aspect.

ECMA-TR/104 is a Technical Report, intended to make a test suite, that implementers can use to test and improve their ECMAScript implementations, widely available. During discussion in the evaluation task force, it has been noted that ECMA-TR/104 is hence not a “standard-like” technical specification in the classical sense. The question has been raised whether that makes ECMA-TR/104 a useful target for identification in the first place (and irrespective of whether it meets the requirements of Annex II of the Regulation). It has been argued that it seems unlikely that public authorities would need to reference, as a Common Technical Specification, a document of the nature of ECMA-TR/104, so that identification may not be necessary and that the Platform should rather draw the attention of public authorities to the availability of ECMA-TR/104 for testing ECMA-262 and ISO/IEC 16262 implementations in a general form. Other contributions to the evaluation team discussions disagreed with that view, and held that effectively calling for public authorities' attention for the specification would require, or at least strongly be fostered by formal identification, and that the Platform ought to recommend such identification, based on the proposal by the EC and the compliance of ECMA-TR/104 with the requirements of Annex II of the Regulation.

- **Market acceptance of ECMA-402**

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<sup>2</sup> See the discussion on “Market acceptance of ECMA-402” below.

<sup>3</sup> See the discussion on „Status“ of ECMA-TR/104 below.



Annex II of the Regulation states that “Market acceptance can be demonstrated by operational examples of compliant implementations from different vendors”. The evaluation team felt that a conclusion on the extent to which ECMA-402 satisfies the market acceptance requirement ought to be taken on the basis of broader stakeholder discussion than the team could represent. As described in this report, three independent implementations of the specification were prepared for the approval of the standard, but for now, only one browser supplier has a fully commercial implementation available, while two others are in beta phase. During discussion within the team, it was noted that it might be too early to consider identification of ECMA-402, and that possible identification should therefore be revisited at a slightly later stage, when more commercial implementations are actually available. Other contributions to the evaluation team discussion disagreed with that view. They believed that sufficient evidence for eligibility for identification is already available and that postponing identification would counter the policy objective to make standards and interoperability specifications available to public procurers faster, and in a more compatible way with the short innovation cycles in ICT.

- **Guidance material**

Irrespective of the referencing of the two components as ICT technical specifications, the Platform should produce guidance material on the use and configuration of the ECMAScript “package” including ISO/IEC 16262 and the two ECMAScript components discussed in this report. This guidance might stress the advantages of internationalisation and proper testing, etc. and would be aimed at public procurers.