

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
AppHub project	all		General	In general, AppHub disagrees on the impression conveyed by the report that OSS projects concentrate on code only. While code is certainly in the centre of OSS project, complementary artefacts such as code documentation, user's manuals, requirements specifications, summary defect reports, implementation roadmaps, etc. are of paramount importance. In addition, a well-managed OSS project provides a description of its own processes, explaining the way how contributions are taken into account, decisions are made, etc. The following comments try to introduce these aspects into the report.	See proposed changes below
OFE	Keywords	1	Gen	Open Standard is omitted	Include, for rationale see below
OR1 OR=Orange	Introduction	102	Editorial	Sentence talks about "initial CSC work". To be more precise, the sentence should refer to "CSC Phase 1" and its final report.	Change to "This topic was already identified but not addressed in ETSI CSC phase 1 [Reference to the ETSI Phase 1 report]."
OR2	Introduction	103	Editorial	Preferable not to use "&" in	Replace "&" by "and"
OFE	Intro	104	Gen	Open Source is not exclusive, so all devt approaches need to be considered equally. Key point is OSS changes the status quo.	Clarify
OR3	1	111	Editorial	Same as comment OR1	Change to "after CSC Phase 1 was completed..."
OR4	1	117	Editorial	Sentence should: - avoid the use of "initial" since it implies that additional results will come. - specify that the report is for the specific context of "cloud computing".	Change to "The present report presents the results of CSC phase 2 regarding the analysis of the relationship between Standards and Open Source in the context of cloud computing"
OR5	2.2	135	Editorial	The provided hyperlink is not working.	Update the hyperlink with the correct one if available.
OFE	2.2	152	Gen	Notably, missing is the leading analysis on the issue of open	Suggest include :

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				standards requirements and support of open source, conducted by the UKG	<a href="https://www.gov.uk/government/publications/open-standards-principles">https://www.gov.uk/government/publications/open-standards-principles</a>
OFE	2.2	152	Gen	Also missing is the definitive legal analysis on compatibility of all open source licenses with FRAND	Suggest include: <a href="http://www.ifosslr.org/ifosslr/article/view/57">http://www.ifosslr.org/ifosslr/article/view/57</a>
OR6	3.1		Editorial	Align the style of the definitions using the ETSI drafting rules	The form of a definition should be such that it can replace the term in context. Any additional information shall be given only in the form of examples or notes. If there are several notes or examples for the same definition, the notes shall be numbered. Otherwise it is not necessary. • The term shall be in bold, and shall start with a lower case letter (unless it is always rendered with a leading capital) followed by a colon, one space, and the definition starting with a lower case letter and no ending full-stop.
SAP	3.1	156	Technical	In dealing with associated or reference implementations suitable for standards work the distinction between open source subcategories of copyleft and permissive is vital	Add definitions of permissive open source and copy left open source to the definition list. These can be drawn for OSI sources: <a href="http://opensource.org/faq#permissive">http://opensource.org/faq#permissive</a> and <a href="http://opensource.org/faq#copyleft">http://opensource.org/faq#copyleft</a>
OR7	3.1	<b>167-177</b> + other lines in relevant clauses	General	<b>Considering the content of the document, there is no need for distinguishing between SSO and SDO. The proposal is to only use "Standards Organization" (see line 167) as used also in CSC Phase 1 report.</b> It is proposed to add a definition of "standards organization"	<b>Remove the definitions of SSO and SDO in clause 3.1.</b> <b>Change the definition for "standards organization" to "organization that has as a principal function, by virtue of its statutes, the preparation, approval or adoption of standards"</b> <b>Ensure that SSO/SDO is no longer used throughout the report and is replaced by "standards organizations".</b>

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OR8	3.1	178-179	Technical	Modify the definition of the term "standard" to the text provided in clause 5 (definition from ISO/IEC Guide 2 and also adopted in the ETSI drafting rules as part of its glossary)	<b>standard:</b> a document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context
OR9	3.1	180	Editorial	Given the report is about standard and given the definition of "standard" proposed in the previous Orange comment, it is proposed to only use "standard" in the report and avoid the use of the word "specification"	Remove the definition of specification
OFE	3.2	214	Gen	Open Standard omitted	
SAP	4.1	246	General	Considering only the interaction between standards and open source conceals higher level context of the relation between a standard and any implementation and the relationship between the text of a standard and any coding. It would be inappropriate to exhort closer links without ensuring the higher level issues are compatible.	Add before line 247  'Before considering in detail the relationship between Standards and specifically open source implementations there is a need to look at the varying relationship between SSOs and implementations. Some have no formal link (for example JTC1) where as others have strong links and require multiple implementations before approval (for example OASIS 'statement of use'). Significant experience relevant to working with OSS can be drawn from existing practices.  Similarly experience and maturity of working in areas where text and code may interchange between the standards and implementations vary between SSOs, examples being schema; data descriptors and documented API calls. Significant information can be drawn from

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					existing SSO practice including JTC1's policy statement, ECMA's use of permissive licencing (BSD) for code included in standards that may be required by implementors and ETSI's requirements (section 9.2.1) on code submitted for use in standards work. Issues include both reusability by all development processes, not just OSS, and allowing derived works , essential for incremental development.'
AppHub project	4.	249	Editorial	OSS means <i>open source software</i> and thus is not appropriate as acronym for open source project.	Either introduce a new abbreviation <i>open source project (OSP)</i> and add the new acronym to 3.2 (preferred), or use the term <i>open source software project</i> .
OR10	4.1	249	Editorial	Consistent use of CSC Phase 1	Change to "CSC Phase 1 report".
OR11	4.1	259 + other lines in relevant clauses	General	<b>OSS is an acronym for "Open Source Software" and not for "Open Source"</b> . Make use of "Open Source communities".	<b>In line 259, Change the end of the sentence to "interaction of Standards Organizations and Open Source communities"</b> . <b>Ensure that "Open Source communities" is used consistently throughout the document (e.g. instead of Open Source organizations or projects"</b> ). Be careful with the use of OSS acronym which is not equivalent to Open Source
Korea Association of Cloud Industry(KACI) Cloud Computing Standard Forum(CCF)	4.2	261	General	Objective and Scope might be clear.	Open source is a business related part which is considered by vendor. Objective and scope might be clear because associating open source and standard are considered as restriction.
OR12	4.2	262-264	Editorial	It is proposed to move this paragraph in clause 4.3 since	Move to 4.3

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				identifying something which is not addressed in the report, i.e. respective merits of each approach.	
OR13	4.2	266-269	Technical	It is unclear why this paragraph is helpful for understanding the objectives of the report. Furthermore the rationale for the report is already explained in clause 4.1 ("Analyzing the relationship of Standards and Open source" part)	Remove this paragraph
OFE	4.2	271	Gen	Sentence conveys impression that Standards dev organisations and OSS dev organisations have common or similar objectives – they clearly don't. Nobody would be suggesting that software development is similar to an SSO?	Explain
OR14	4.2	271-272	Editorial	The report rather elaborates on the differences between Standardization which leads to the production of standards and Open Source software development.	Change to "differences and overlaps between standardization and OSS development".
OR15	4.2	276-277	Editorial	<b>Interactions scenarios cannot be between standards organizations and OSS (different types of things, one is an organization and the other is a software).</b> The text "(not specific to cloud computing)" does not appear to be well-positioned. It is proposed to include it in a new separate sentence.	Change to "...identification of a number of interaction scenarios involving Standard Organizations and Open Source Communities. These scenarios are not specific to Cloud Computing. Some of them already visible and some only emerging."
Kyung Hee University	4.2	277	General	The title of this standard might be changed because of phrase, "(not specific to Cloud Computing)"	Relationship standard and open source considering Cloud Computing
OR16	4.2	284	Editorial	"initial" is not necessary.	Remove the word "initial".
OFE	4.3	292	Gen	The reticence is understandable but without an understanding of the OSS community's views on 'open' and the culture surrounding this then the report has a key issue outstanding	Suggest new section?
OFE	4.3	294	Gen	The reticence is understandable but without <u>recognition</u> of BOTH the cultural AND legal issues surrounding the OSS IPR licences then progress/acceptance will be difficult	
OR17	4.4	308-309	Editorial	As clause 7 is a description of some specific cases and	<b>Transform Clause 7 into an annex.</b>

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				provides technical details, it is proposed to move this part in an Annex. Furthermore it is proposed to add the case of DMTF specifications and their relation to open source (OpenStack), see proposed text in Annex 1. This provides another cloud computing specific case that can be connected to interaction scenarios in clause 6.	Add the content of Annex 1 in the report.
OR18	4.4	312	Editorial	End of the sentence is awkward	Change to: "Section 8 outlines some trends and open questions regarding the evolution of ..."
OR 19	4.4	314	Editorial	"preliminary" is not necessary.	Remove the word "preliminary".
OR20	5	333	Editorial	Title should reflect the content of clause 5. Clause 5.3 is about interaction challenges, topic which is not captured in the title.	Change the title to "Standards and Open Source: purpose and interaction challenges"
Massimo Banzi Telecom Italia Spa	5.1.1		Technical	definition of Standards: cannot see a distinction between Open and Formal standards. It would be better to introduce it given the relevance in their use in OSS projects	Standards can be "Open" according to the "European Interoperability Framework for pan-European eGovernment Services" (Version 1.0, 2004, page 9) "The following are the minimal characteristics that a specification and its attendant documents must have in order to be considered an open standard: The standard is adopted and will be maintained by a not-for-profit organization, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision etc.). The standard has been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee.

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					The intellectual property - i.e. patents possibly present - of (parts of) the standard is made irrevocably available on a royalty-free basis." OPEN STANDARDS are a subset of (Formal) Standards
Massimo Banzi Telecom Italia Spa	5.1.1			I' would add a section " Open Issues for SDO" underlining the existence of Open vs Formal standard and the usual approach of FRAND licensing when developing standards, since this can create problems when implementing std in OSS projects. I would also talk about the issue regarding the legitimate need (mostly of SMEs) of gaining some revenue from participating SDOs refer doc 2002 EU (Report of 22nd Nov 2012 on "Implementing FRAND standards in Open Source: Business as usual or mission impossible? " )	Open Issue Use of Open Standards is fully compatible with whatever OSS licensing, but introducing FRAND condition can create constraints. Some of the licenses are fully incompatible with such conditions, while for other it is necessary to check from time to time.  (it could also be better explained in case)
OFE	5.1.1	339	Gen	This section needs to recognise the difference between legislatively recognised terms e.g 'standard' and 'specification' and what is actually used in the market, i.e. open standard. Without this and the recognition of the underlying aspects that underpin its generic use then the language barriers will prevent any progress.	Reflect language and thinking in for example member state work e.g. UK in their Open Standards Principles.
OR21	5.1.1	359-371	Technical	Text has to be redrafted given the Orange comment removing the need for distinguishing between SDO and SSO.	
OFE	5.1.1	360	Gen	Misses other aspects seen as key in an open standard, e.g. independence	Cover varying member state (inc) UKG definitions
XLAB		373	General	Suggest to add Problems section, describing the usual problems with standards (long time to stabilize, different interpretation, de-facto standards used for vendor-lock-in, etc.). For a company to survive in the business, this aspect of standards is very important.	
SAP	5.1.1	375	Technical	Whilst by definition these benefits apply to mature and	Add caveat 'whilst success and adoption of

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				successful standards it would be hard to justify the general supposition presented	individual standards may vary, in general the known benefits that come from...'
Massimo Banzi Telecom Italia Spa	5.1.1 On last dot of Benefits of Standards	385		i'd add ", either open or formal, " since in many EU countries there is formal reference to the promotion of Open standards in the National Policies (UK, Sweden, ) deleted to several activities.	Regulatory/Governmental Policies/Legal aspects. Standards, either open or formal, are often used a support for regulation (in most cases, such standards are developed by the SDOs).
Massimo Banzi Telecom Italia Spa	On last dot of Benefits of Standards	385		i'd add ", either open or formal, " since in many EU countries there is formal reference to the promotion of Open Standards in the National Policies (UK, Sweden, ).	Regulatory/Governmental Policies/Legal aspects. Standards, either open or formal, are often used a support for regulation (in most cases, such standards are developed by the SDOs).
OFE	5.1.1	387	Gen	Availability, avoidance of lock-in, .....??	
OR22	5.1.2	388-419	Technical	<b>Line 412:Open source enables the “sharing of development resources” rather than necessarily being “low cost”.</b> <b>Line 416: “small” is “subjective”, e.g. when you consider an open source project like OpenStack. “</b> <b>Line 417: this seems an explanation of “modularity”.</b> Line 419: unclear what is meant here by “mix and match”. Isn't this covered by designing “modular” implementation?	<b>Line 412: replace “low cost” by “shared co-development resources”</b> <b>Line 416: replace “small” by “modular”</b> <b>Line 417: given the addition of “modularity” in Line 416, remove the sentence starting by “creating ...”</b> Line 419: Remove the sentence “As a consequence....”
Massimo Banzi Telecom Italia Spa	5.1.2			definition of Open Source: i'd add the definition of OSS according to OSI, in case not "annotated	As from : A formal definition of Open Source Software has been given by OSI and sounds like: "as from: <a href="http://opensource.org/osd-annotated">http://opensource.org/osd-annotated</a> "
Massimo Banzi Telecom Italia Spa	5.1.2			Add also disadvantages section ok add a section “benefits” but recall that using OSS has many caveats to be considered	Disadvantages Apart from all the listed advantages, it is necessary to consider that in adopting an Open Source component it is mandatory to consider some potential issues.



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					<p>Consideration like:  complexity in the coding (not done for everyone)  possible lack of documentation  potential issues associated to the incompatibility of licenses  need of care in the use of OSS in a Business context due to issues associated to viral licensing.  need of a careful selection on the OSS component, not just analyzing quality of the code (potential security issues as well as problems in integrating several components together) but also the quality of the community (vitality, size, availability of support, reaction time to inquires, .... ) have to be considered and addressed adopting a process in the selection of the OpenSource component to be aware of the performed selection.</p>
OFE	5.1.2	393	Gen	This is not correct. Most OSS applications have been developed on multi platforms although inevitably an individual developer may have a preference for an open source environment. A key aspect of main OSS developments is platform independence, hence the widespread use of plugfests.	
OFE	5.12	402	Gen	What does this point mean? 'Special terms'? Certainly open source licences are different to traditional licensing.	It might be useful to include an explanation of the rationale behind the use/need for open source licences inc the concept of copyleft.
SAP	5.1.2	411	Technical	Whilst by definition these benefits apply to mature and successful Open Source projects it would be hard to justify the general supposition presented	Add caveat 'whilst success and adoption of individual open source project may vary, in general the known benefits that come from...'

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SAP	5.1.2	412	Technical	This entry would seem to suggest lower overall total development cost relative to other methods – this should either be change to lower cost for individual collaborators or referenced. Total man hours for a given project seem unlikely to change simply owing to licencing	change to 'Enabling collaboration and reducing development cost to each participant as a result'
Massimo Banzi Telecom Italia Spa	5.1.2 Benefits	416		I would add further benefits (before the last one indeed)	improved flexibility for customization reduced likelihood of vendor lock-in.
OFE	5.1.2	419	Gen	Add re-use and avoidance of lock-in which are missing	
OR23	5.2	421-449	Editorial	Line 421: Not sure we should talk here of "emergence and rapid take-off". Open source is a reality since already many years and is not "new".	<b>Line 421: remove the first sentence "There are many reasons..."</b> Line 421: Change the second sentence to "The Open Source approach is useful..."
OFE	5.1.2	429	Gen	The statement misses the point that the 'open innovation' based model prevalent as a result of open source is creating value on top of the core 'product' rather than within it, e.g through a services approach	
Massimo Banzi Telecom Italia Spa	5.2	434		I do not fully agree with what written here; what is the rationale? the approach described for OSS is the former one: the approach of destructured communities where the focus is the personal need of the community (small) of developers. Now, new communities developing software for business purposes, seem to rely on different needs (Apache.org, Linux Foundation, OW2, ..) OSS is an enabling factor for business: due to always faster technology evolution, management systems and tools need to be aligned at the same speed; services need to be "thought and implemented", improved on the fly or, in case, cancelled if no more suitable.	

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				<p>All this requires synergies in the development: no more a single sw vendor, but a consortium; clear and unambiguous requirements, maybe coming from structured organizations (SDOs ?); everything based on real needs and this can be ensured by a direct participation of customers in the development.</p> <p>All this, contributes to risk reduction in investing in such huge projects.</p> <p>From here comes the participations to major OS communities (in OpenStack we have AT&amp;T, HP, Oracle, IBM, NEC, Huawei, Cisco, EMC2, ..; in Hadoop : Hortonworks, and Microsoft, Intel, Vmware, Facebook, Cloudera, Twitter...; in Osnfv: Huawei, AT&amp;T, Cisco, IBM, China Mobile, Telecomitalia, Ericsson, Docomo, .. .</p> <p>All major stakeholders collaborate in a common task and defer competition on services built over the commonly agreed and developed infrastructure.</p> <p>The role of standard organization can also be that of defining some criteria for assess OS Software to enable its use in a business contest: small OS components developed for immediate purposes could be embedded in more structured communities in case the quality of the sw and of the related community is suitable, but how to recognize all this? Through some sort of assurance of OSS.</p> <p>Metrics are needed on the quality of the software and the community: standardized metrics so that the evaluation is objective; and using these metrics, assess the OSS package, according to the specific needs.</p> <p>These assessment metrics will be used by OSS community to propose their solutions for business, directly or through brokers who provide services over OSS.</p>	
Massimo	5.2	second bullet on		Be careful: in sec 5.2 when talking of OSS second bullet on	

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Banzi Telecom Italia Spa		page 13 on top 439		page 13 on top, (l. 439) it is claimed " OSS is not concerned with interoperability", than in sec 5.3 (line 484) , same page on the bottom, it is claimed that "interoperability is high in the agenda for both standards and Open Source" choose!	
XLAB		439	General	OSS is concerned with interoperability, if it is useful and needed (and when, obviously). Suggest to change the statement to reflect this fact.	
OFE	5.2	440	Gen	A misleading if not incorrect statement. The whole concept of OSS supports portability and interoperability so the statement is only likely to be true if the software application is entirely standalone.	
OFE	5.2	450	Gen	Would be useful to differentiate here between the approaches of SDOs and fora/consortia in how they respond to market need.	
OR24	5.3	452-456	Technical	Line 452- the "cultural differences" is due to the fact that producing a standard is different task than developing code. The example given "specification versus code" is in fact addressed in clause 5.3.1. Note also that a standard can also include "source code" (see e.g. ETSI drafting rules clause 7.2), so "paper versus code" is not so relevant.	<b>Lines 452-454: Simplify the introduction by removing the first two sentences.</b> Line 454-456: Merge the two sentences into a single one : "This clause identifies challenges which need to be addressed and resolved to allow for an efficient interaction between Standards and Open Source."
AppHub project	5.3		Technical	Section 5.3 does not address all relevant challenges. Missing are: <ul style="list-style-type: none"> <li>• Documentation, in particular</li> <li>• Roadmap</li> <li>• Governance (stakeholder management, management of contributions)</li> <li>• Testing</li> <li>• Maintainability</li> </ul>	See proposed changes below

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				<ul style="list-style-type: none"> <li>Use of document management tools</li> </ul>	
AppHub project	5.3.1		Technical	Subsection on "Architecture and increments" addressed configuration management issues, but mixes them up with issues regarding system/software architecture.	We propose to add a subsection to 5.3.1: <b>Incremental releases versus updates</b> Open Source products are largely evolving incrementally: new features are prototyped, tested and adapted very rapidly. The stability of the code is a major issue open source projects have to address by implementing proper measures for release management and versioning. Standards on the other hand are developed once, and then updated (more or less) regularly, until they become obsolete.
OR25	5.3.1	467-480		<p><b>Line 467 – "Paper versus code": a standard can include "code" and "open source" can also produce on-line documentation that can be viewed as close to a "paper". In addition the border line between a standard providing a "protocol /API description" (in REST JSON, XML...) and "code" can be viewed as thin.</b></p> <p>Line 474: what is meant by "Open Source product"? Is it OSS as per the definition in clause 3? or is it larger (e.g. including associated documentation)?</p>	<p><b>Change text in lines 467-480 as follows:</b></p> <p><b>Standard document and source code</b> Standards Organizations and Open Source Communities produce and distribute artifacts that are different in nature:</p> <ul style="list-style-type: none"> <li>Standards Organizations produce standards which are commonly manifested in documents that specify requirements, architecture and protocols/APIs of a system or a part of a system. The evolution of a standard is based on change requests that are examined during periodic reviews and possibly implemented via a change request in the standard. The coherent development of the standard is supported by tool environments that are essentially managing document versions associated to a list of</li> </ul>

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					<p>revisions. Note that some Standards Organizations guidelines include the need of having source code implementations of the standard (e.g. W3C).</p> <ul style="list-style-type: none"> <li>Open Source communities produce source code, a collection of computer instructions written using some human-readable computer language, usually as text. This source code evolution is guided by a permanent flow of change requests that are constantly examined by reviewers and implemented on-the-fly if deemed accurate. Note that Open Source communities often produce documentation associated with the open source code (e.g. architecture, API textual description).</li> </ul>
OR26	5.3.1	484	Editorial	<p><b>“high on the agenda” is not proper for a Report.</b> A reference to the current work of ISO/IEC JTC1 SC38 on “cloud computing interoperability/portability” could be added for the standard part.</p>	<p><b>Change to “Interoperability is an important topic to consider for standards and open source.”</b> Add a reference to “ISO/IEC SC38 draft standard on interoperability/portability” as an example.</p>
OR27	5.3.1	500	Editorial	“elsewhere in this section” but “where exactly”?	
AppHub project	5.3.1	507 - 522	Technical	<p>Subsection on “Tools and framework” raised the impression that a “forge” is the only tool used by OSS projects. In addition, the statement on user perception with regard to the lack of optimization on paper handling is misleading.</p>	<p>Change bullet 2 (513 – 516) as follows:</p> <ul style="list-style-type: none"> <li>An Open Source product is essentially developed around source code version management tools embedded in larger frameworks offering peer review, collaboration, etc. (such as Git and GitHub). These tools are</li> </ul>

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					optimized for the management of source code, less for handling paper (which is not perceived in general as a drawback by the users). Therefore, open source projects rely in addition on document management systems for product and project documentations. Moreover, tools for quality assurance (e.g., overnight testing), automated licence compatibility checking, project maturity validation, software metrics, etc., are used by many open source projects.
AppHub project	5.3.1	518 - 522	Technical	The paragraph is too general as the services SSOs offer are related to the standards they produce. Also, the report should not make assumptions on the efficiency of OSS organisations.	Replace the paragraph by the following text: In some cases (e.g. interoperability testing with regard to certain standards), the ability and effectiveness of OSS organizations may be under par compared to Standards Organizations that have often developed very effective tools, frameworks and processes for the standards they maintain. OSS organizations may benefit from using the test or Quality Assurance services of SSOs to ensure standards compliance, provided that these services have been adapted to the requirements of Open Source, e.g. by OS repositories, OS--based test development or conformance testing.
AppHub project	5.3.1		Technical	5.3.1 does not take the issue of product documentation, requirements documentation, and roadmap into account. In addition, project documentation is not considered.	Add the following two subsections to 5.3.1 <b>Product documentation versus standard texts</b> While "code" is the main output of Open Source Projects, a solid product documentation including code documentations, architecture and functional specifications based on

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					<p>requirements collections or standards, and user's and installation guides, is crucial for a successful OSS development. Standards therefore can be understood as part of the documentation of an open source product that implements these standards (e.g., as functional or architecture specification), but need to be complemented by other types of documentation. On the other hand, standards are not "documented": They usually provide no extensive rationale for the selection and presentation of their contents, nor supplementary information on how to apply them.</p> <p><b>Project documentation versus SSO documentation</b></p> <p>SSO provide usually detailed information on how to perform standards development, membership responsibilities, voting mechanisms, etc. Due to the consensus driven nature of standardization processes, a precise set of regulations and processes is required to produce standard documents accepted by all contributing stakeholders. Open source projects also have to provide information on processes such as dealing with contributions and bug reports, requirements collection and presentation, voting rules to decide on the implementation of new features, etc., but these processes are usually less strictly defined.</p>
AppHub project	5.3.1	458 - 465	Technical	Subsection on "Architecture and increments" addressed configuration management issues, but mixes them up with	We propose to replace the section by the following



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				issues regarding system/software architecture.	<b>Architecture</b> With the development of more and more complex systems, standards no longer rely only on the definition of protocol to support interoperability. They are also more and more relying on reference architectures, functional decompositions and reference points that are slowly evolving over time. For open source products, the situation is comparable: To distribute the work load between various contributing programmers or code producing organisations, a proper architectural and functional decomposition of the software under development is mandatory for OSS development (see [i.8]).
Massimo Banzi Telecom Italia Spa	5.3.1	482		Interoperability: see note on previous chapter: does Open Source foster interoperability? L. 439	
OFE	5.3.1	484	Gen	Correct but disagrees with earlier statements (see line 439).	
Massimo Banzi Telecom Italia Spa	5.3.1	487		Claiming that achieving interoperability is only important within the specific technological constraint (e.g. does not look out the specific scope of the sw component) means that there is no accurate design for the component. The reason is that maybe it is not necessary: the strength of OSS is that it answers to specific immediate needs of the developers' community and they do not look far beyond. Within an OSS community developers are interested in the specific implemented functionalities and for the reason they	

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				<p>pay great care in fulfilling timing, quality, and all what is necessary for their purposes; thus they work to build a community of developers sharing their needs. If there is the need for a extended scope looking also at cross technological interoperability, it will come.</p> <p>Again : NEED FOR A SORT OF ASSURANCE ASSESSMENT of the OS project and community. Not to force an approach (it won't come) to communities, but to be able to select the right community and the right software</p>	
Massimo Banzi Telecom Italia Spa	5.3.1	507		<p>in Tool and frameworks chapter last paragraph : fully agree that SSO can help in formalizing test procedures or quality assurance services . This is to claim the need of a sort of defined (standardized) assurance model for OSS certification.</p> <p>Moreover, the fact that word documents are not easily managed by versioning tools maybe managing concurrent development, this is another issue. it can be overcome by, for instance, adoption of different approach in developing documents. EG collaboratively with suitable wikis or other tools able to embed text in predefined templates and than to export in pdf for final publication.</p> <p>(Why not share consensus among SDO and SSO for implementing –maybe in OS - this approach ? )</p>	
INTEL	5.3.1	512	General	There is the potential for some standards to be defined programmatically	There is the potential for aspects of certain standards – e.g. programming interfaces, data models or ontologies, to be described in a machine readable fashion that can be automatically processed. E.g. into a specific library written in a specific programming language.
OFE	5.3.1	518	Gen	Correct but is the governance of OSS developments any	Recommendations need to be more specific

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
				different to what is found in the proprietary world?	and focussed.
OR28	5.3.2	528-529	Technical ?	What is the link between "rules of procedures" and "multiple versus unique implementations" (title of this part, line 524)?	
AppHub project	5.3.2	555 - 571	Technical	Subsection of "Governance" describes OSS project decision making structures only, which is a very restricted view.	Add the following paragraph between lines 567 and 569: Another difference between SSO and OSS governance is its focus: While SSO governance is directed towards achieving consensus on technical issues and addresses a comparable closed set of stakeholders, OSS governance addresses a much larger collection of stakeholders. Therefore, additional requirements on the transparency of decision making processes addressing a community with fluid borders (both in terms of contributing persons and of relevant opinions) have to be taken into account.
OFE	5.3.2	525	Gen	As already commented, this is flawed for the reasons given earlier.	
INTEL	5.3.2	526	Editorial	Possibly incomplete sentence - word missing?	...targets one implementation.
INTEL	5.3.2	532	General	Stage 3? – what are the other stages - reference required?	Reference to the stages...or remove?
OFE	5.3.2	536	Gen	The wide use of plugfests supports the need and might be identified as one way in which SSOs can support	
Massimo Banzi Telecom Italia Spa	5.3.2	536		Even in discussing about the need of "Procedural and Technical solutions " for interoperability, the definitive solution is not the charging of a SSO/SDO of the responsibility of assuring it . It can be useful to have some sort of ASSESSMENT PROCESS that certifies certain characteristics of OSS software (e.g. interoperability, but	

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
				also quality, security, stability of the community - to ensure continuity and maintenance -, well defined governance ) Here, SDO can have a role: in defining standardized rules for assessing . A potential critique to all this, is that it is not possible to adopt a unique selection criteria for OSS quality in all circumstances (eg for some purposes highly secure code is a must for others it is not so mandatory ) but the metrics to be adopted can be objectively standardized (whilst now they are not)	
INTEL	4.3.2	567	Editorial	Typo: were > where	were > where
OR29	5.3.3	lines 573 to 604	Technical	Changes proposed to improve the current text.	<p>1. line 575: Replace “(not yet) fully conclusive debates.” by “highly controversial.”</p> <p>2. line 577: Replace “rise” by “raise”</p> <p>3. line 578: add “or issues” at the end of the sentence “patent licensing questions.”</p> <p>4. line 578 to 580: replace the sentence by “some aspects are very significant to OSS organizations that want to ensure that the use of their OSS product is not impacted by patent claims holders in particular the absence of a license or unreasonable licensing terms and conditions.”</p> <p>5. line 586: replace “Open Source Licenses” by “Licenses”</p> <p>6. line 588: add at the end of the sentence “if propose for inclusion in a Standard or as an implementation of a Standard.”</p> <p>7. line 589: add title as follows “Patent and copyright policies”</p> <p>8. line 590: replace “for instance” by “First”</p> <p>9. line 591 to 592: replace “e.g. restrictions upon the distribution of commercial products and services, or restrictions that come in conflict” by “(e.g. restrictions upon the distribution of commercial products and services) come in conflict”</p>

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
					<p>10. line 595: delete "IPR and copyright policies"</p> <p>11. line 596: add "Second" at the beginning of the sentence</p> <p>12. line 596: add "Rights" after "Intellectual Property"</p> <p>13. line 597: replace "tough" by "though"</p> <p>14. line 598: replace "FRAND standards" by "Standards available under a FRAND license"</p> <p>15. line 599: replace "two examples of different approaches can be noticed" by "Here are two different approaches to address that problem:"</p> <p>16. line 602: replace "policy" by "license"</p> <p>17. line 604: replace "conforming implementations in OSS" by "implementations in OSS conforming to the Standard"</p>
SAP	5.3.3	593	Technical	This is a significant issue and key elements are not addressed	Add to the end of 593 'In this case the distinction between permissive open source code and copyleft source code is highly relevant. Copyleft inherently only allows copyleft downstream development. This is not a complete barrier to use but does mean that dual or multiple licensing from the originating copyright holder would likely need to be sought. In the case of using OSS as reference or implementation case study similar issues apply or one could use dual or multiple licensing strategies from the outset or by negotiation in order to maintain compatibility with standardisation objectives.
OFE	5.3.3	595	Gen	The section on IPR is misleading and superficial. The conference referred to provided definitive legal opinion but these comments have been omitted. Equally the independent analysis provided to the UK Government has been omitted.	Add a third point linking to the independent analysis. For SSOs and OSS organisations to work together there would have to have been a

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
					detailed discussion on choice of licence compatible to the working of that community. Remember GPL type licences will be the norm.
SAP	5.3.3	595	Technical	Copyright is an IPR	Change to either 'IPR policies' or Copyright and Patent Policies'
Massimo Banzi Telecom Italia Spa	5.3.3	595		In the discussion of IPR and copyright policies, I'd add some conclusion, not just the assessment of the problem. Is it not possible to take a position on the issue? There is a strong position in favour of Open Standards in the claims of European Interoperability Framework ( <a href="http://ec.europa.eu/idabc/en/document/3473/5585.html#final EIF">http://ec.europa.eu/idabc/en/document/3473/5585.html#final EIF</a> ) If we consider Interoperability mandatory, I think we need to take some sort of position See also "Open Standards and Open Source: Enabling Interoperability" F. Almeida, J. Oliveira, J. Crux ( <a href="http://airccse.org/journal/ijsea/papers/0111ijsea01.pdf">http://airccse.org/journal/ijsea/papers/0111ijsea01.pdf</a> ) <To be discussed>	
OR30	6	Lines 606 to 745	General	<b>Looking at the six interaction scenarios, there is confusion where these are meant to be about:</b> - "interaction between Standards organizations" and "Open Source communities" - or whether the scenarios are about how "standardization" can benefit from the "open source" (interacting with "open source communities" or handling "open source" themselves).  <b>Given that the ETSI CSC is about "cloud standardization coordination", the scope of this deliverable is to position existing cloud computing open source communities with respect to cloud computing standard activities (identified in Snapshot), i.e. how cloud computing "standardization" and "open source" can be coordinated.</b> <b>We propose therefore to review the number of scenarios (Sx) to the following ones:</b>	See Annex 2.

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
				<ul style="list-style-type: none"> <li>- <b>S1: An Open source community implements a standard(s) (emerging or existing/mature standard)</b></li> <li>- <b>S2: A Standard Organization develops an Open Source implementation</b></li> <li>- <b>S3: A Standard Organization develops standards based on results of an Open Source community</b></li> </ul> <p>S4: A collaboration ("joint project") is established between a Standard Organization and an Open Source community. This scenario is identified in the Recommendations (clause 9) but there is no "scenario" for this in clause 6</p> <p><b>The mapping of clause 6 scenarios to these 4 scenarios would be as follows:</b></p> <ul style="list-style-type: none"> <li>- 6.2.1 and 6.2.2 → S1a and S1b</li> <li>- 6.2.3 → S2</li> <li>- 6.2.4 → Absorbed by S2. The primary role of a standards organization is to produce standards so it would seem that the Open Source product resulting from scenario 6.2.4 should lead to a standard of that standard organization. Otherwise if only an Open Source implementation is produced without any link to standard work of that standard organization then this seems to change the nature of the standard organization to behave like an open source community.</li> <li>- 6.2.5 → Modified to be absorbed by S3. The 6.2.5 scenario does not involve any interaction with a standard organization. Why should the CSC consider such scenario? To be useful, Scenario 6.2.5 should be enhanced to cover the case where results of the Open Source community are specified in a standard or set of standards of a standard organization.</li> <li>- 6.2.6 → Deleted. What is the linkage with the preparation of a standard by a standard organization? Scenario 6.2.6 is changing the nature of the "standard organization" to provide "open source" facilities?</li> </ul> <p>Annex 2 provides changes to section 6.</p>	
OR31	6		Technical	Remove the notion of "who has the lead" which is not	See Annex 2.

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
				necessary for describing the scenarios. This notion of "lead" could even be misleading and misinterpreted and the source of confusions. The objective of WP2 is to describe how "open source" and "standard" can work together to achieve fruitful interactions and results. For some scenarios saying "who has the lead" is not possible .	
OR32	6		General	<p><b>If OR30 comment is adopted, then examples of the application of these scenarios to the "cloud computing" case should be highlighted:</b></p> <p><b>S1: Examples are:</b>  - OPNFV implementing the Stage 2 specifications produced by ETSI NFV  - OpenStack implementing the DMTF CADF specification</p> <p><b>S2: Examples include DMTF preparing an Open Source implementation of CIMI based on OpenStack.</b></p> <p><b>S3: Examples could include ETSI NFV adopting results of OPNFV / OpenStack as stage 3 specifications. DMTF has also produced an OpenStack profile specification related to CADF.</b></p> <p>S4: This scenario would lead to the establishment of "collaborative teams" similar to what already exist between standard organizations (e.g. ETSI Partnership projects such as 3GPP and OneM2M, ISO/IEC JTC1 and ITU-T collaborative teams such as the ones on cloud computing). At this stage no example exists.</p>	See Annex 2.
Massimo Banzi Telecom Italia Spa	7	generic		No reference to respective IPR claims maybe it would be important to underline the need of checking respective IPRs for all considered communities. It has already been underlined in sec 5.3.3 ... here the issue should be addressed in each specific case also showing how to compare respective constraints (of the OSS community and of the SDO) <To be discussed>	
OR33	7	Lines 746-888	General	Rather than making these case studies as part of the main	



Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
				body, it is rather proposed to include them in an Annex. Scenarios developed in clause 6 could directly point to the Annex for examples of applicability.	
Massimo Banzi Telecom Italia Spa	8.3 solutions:	936		analysis of IPR policies is to be considered carefully! To understand the potential conflicts between SSO IPRs and OSS license/patent is mandatory: to be stressed	
Massimo Banzi Telecom Italia Spa	8.3 solutions:	940		prior of providing services for OSS projects SSO it should be understood what are the pre-condition for a OSS project to be supported: Is it enough that it claims to implement some standards in its code? Or maybe it is important before to understand if the project have suitable level of assurance to be supported? But this implies the definition of some objective criteria to select OSS projects. And these criteria must be set before!	
OR34	9			line 954: add "discovery" since Open Source can also help to discover new concepts and not only validate them.	line 954: modify to " allowing for the discovery and validation of concepts or..."
Massimo Banzi Telecom Italia Spa	9	First paragraph 954		in first paragraph: to talk about "development of high quality software " as a target of OSS is an ambition of the OSS Project that has to be certified. An OSS aims at addressing a specific need as soon as possible. The level of quality is not an issue. E.g. Code Quality addresses issues such as: Maintainability, Documented, Secure (fulfilling specific rules preventing backdoors, or lack of security), Usable (you do not need to be an engineer to use it) ... Addressing all these issues might not be a priority for OSS developers, whilst it is if the code is to be used for business purposes.	
Massimo	9	Recommandation		in the Recommendations:	Check the license of OSS solutions to be

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
Banzi Telecom Italia Spa		s 974		everything is ok, BUT ... in the organization maybe, it is necessary to issue the problem of the SSO/SDO IPR and OSS licenses potential conflicts: according to the chosen SSO IPRs, it is necessary to select the OSS licenses that can be used and at which conditions, and address OSS projects to use those licenses. Otherwise modify SDO IPR terms to fit existing critical projects. It is also necessary to address the issue of the Quality of the code and of the Community selected.	compatible with IPRs declared in SSO and eventually update IPRs to be compliant Promote the adoption of assurance criteria for OSS projects/communities to ensure more safe use in a business cloud context
OFE	9	989	Gen	Chicken or egg. If the market need was there for the standard it would already be in the frame. Rather than a standard looking for a solution.	Expand on the turning of an API into a Standard
OFE	9	1001	Gen	How about greater joint participation?	
OR35	10	1003-1020	Technical	Although line 1004 indicates that this section should disappear from the final report, the proposal is to keep it to highlight areas requiring further study.	<b>Line 1003: change the title to “Areas for further study”</b> <b>Line 1011: add “operational working procedures, methods and tools” after “content, completeness”</b> Line 1014: add a new bullet item “FRAND and OSS licenses compatibility”
SAP	Annex A	1065	Editorial	ISO and IEC are separate , presumably the reference should be ISO/IEC JTC1 to represent the collaboration. We note IEC has a separate entry	
Massimo Banzi Telecom Italia Spa	Annex A			When developed in CsC phase 1, there was no need to distinguish between “Open” and “ Formal” standards e.g. covered by a sort of FRAND type license. When dealing with Open Source Project it is relevant to distinguish I suggest to introduce this analysis on the various standards listed in A.1 e.g. by adding a column “ type with selection between Open and Formal (FRAND)	
OR36	Annex A			<b>Is Annex A really needed since covered in fact Annex A</b>	

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
				<b>of Snapshot 2 in the WP4 report? Annex A is in fact more accurate than Annex A of the WP2 report, e.g.: ISO/IEC 17788, 17789, 27018 are published standards; DMTF, ITU-T lists of standards are not complete OASIS CAMP is also a published standard....</b>	
Massimo Banzi Telecom Italia Spa	Annex B	Generic		Standards developed or set by the various organization are Open? or are Formal ones? Different impact on use of OSS	
Massimo Banzi Telecom Italia Spa	Annex B	P 31 – row OMA		add on column “strategy, position, initiatives with Open Source” entry regarding OMA	OMA, as other fora, has been addressing the question on how SDOs/SSOs can adapt/evolve such that they better enable the application developer to take advantage of the standard specifications they produce. Some OMA efforts in the area of OSS are on going such as adoption of specific tools for specifications, the usage of github repository, etc.
Massimo Banzi Telecom Italia Spa	Annex C			I'd suggest to add a column containing the license type of the specific OS product: License can be a discriminant factor in the selection the OSS, according to the specific business	
SAP	Annex C		General	SAP would recommend seeking an inclusion from the Cloud Foundry project	
AppHub project	C.1		Technical	OW2 (ow2.org) is the most influential European open source community. It is missing from the table.	Add a row for OW2 please : - OW2 - The OW2 community is engaged in several cloud computing projects such as CompatibleOne cloud broker, OpenCloudware multi-aaS PaaS, XLCloud HPC cloud platform, and OCCIware, a formal framework for the management of any digital resource in the

Organization	Section	Line Number	Comment Type General, Technical, Editorial	Comments	Proposed change
					cloud. - OW2 facilitates the development of OSS with a strong focus on infrastructure software and cloud computing. OW2 is not a standard organization but encourages its members to take part in standard workgroups. OW2 encourages its projects to support open standards and is starting to have some experience with OCCl.
INTEL	Annex C.1	1106	Technical	OpenStack does not natively support many of these standards: support is via third party (open-source) add-on projects	OpenStack supports a number of Cloud Computing standards including OVF, CDMI, OCCl, but this support is mostly via independent open-source add-on projects. The core OpenStack community has clarified that if there was sufficient community desire, further standards support could be incorporated into the core OpenStack projects. Given limited development resources, it is essentially a matter of community priority.

## *Annex 1*

### *Changes proposed by Orange*

#### ***Distributed Management Task Force (DMTF)***

DMTF ([www.dmtf.org](http://www.dmtf.org)) develops standards that enable the management of diverse traditional and emerging technologies including cloud computing, virtualization, network and infrastructure. Regarding cloud computing, DMTF has produced several specifications including:

- DSP0243, Open Virtualization format (OVF). OVF is a common packaging format to package and securely distribute virtual appliances. This enables portability of virtual appliances across multiple virtualization platforms and products. OVF is a packaging standard and not a runtime standard. An OVF package contains one or more image files, an .ovf XML metadata file that contains information about the virtual machine, and possibly other files as well. OVF does not dictate any particular disk format (e.g. VHD, VMDK, VDI, QCOW2...) to be used. An OVF package can be distributed in different manners. For example, it can be distributed as a set of discrete files, or as a tar archive file with an .ova (open virtual appliance/application) extension.
- DSP0263, Cloud Infrastructure Management Interface (CIMI). CIMI is a self-service IaaS management interface, allowing cloud customers to dynamically provision, configure and administer their cloud usage using a high level interface that abstracts away much of the complexity of systems management. The interface uses the Hyper Text Transfer Protocol (HTTP) to send and receive messages that are formatted using either Java Script Object Notation (JSON) or the eXtensible Markup Language (XML).
- DSP0262, Cloud Audit Data Federation (CADF). The Cloud Audit Data Federation (CADF) specification defines a normative event data model along with a compatible set of interfaces for federating events, logs and reports between cloud providers and cloud customers. More than a format, the CADF standard defines a full event model anyone can use to fill in the essential data needed to certify, self-manage and self-audit application security in cloud environments.

OVF and CIMI are adopted as International Standards, respectively ISO/IEC 17203 and ISO/IEC 19831.

#### **DMTF standards and OpenStack**

The objective of this clause is to look at how the OVF, CIMI and CADF standards developed by DMTF have been adopted in major Open Source projects, i.e. OpenStack and CloudStack. Note that DMTF has recently entered into an Alliance Partner relationship with the OpenStack Foundation ([http://www.dmtf.org/sites/default/files/OpenStack-DMTF-WR-1\\_1.pdf](http://www.dmtf.org/sites/default/files/OpenStack-DMTF-WR-1_1.pdf)). Both DMTF and OpenStack are committed to cross-body collaboration, integrating existing standards to enhance interoperability for the good of the industry. This relationship initially focuses on standards critical to cloud security, improving cloud auditability to accelerate enterprise adoption.

**OVF:** The OpenStack Image Service provides discovery, registration and delivery services for disk and server images. When adding an image to OpenStack Glance, the virtual machine image's *disk format* and *container format* must be specified. The disk format of a virtual machine image is the format of the underlying disk image. The container format refers to whether the virtual machine image is in a file format that also contains metadata about the actual virtual machine. Both OVF and OVA can be specified as values for the `container_format`.

**CIMI:** OpenStack does not support the DMTF CIMI specification. CIMI on OpenStack Nova project in Github (<https://github.com/osaddon/cimi>) was started with the goal of adding the support of CIMI to OpenStack. However this has seen no activity since 2012 and would need to be updated to the latest version of OpenStack. Apart from OpenStack, CIMI has had several open source projects implementing parts of it such as DeltaCloud and OW2 Sirocco projects providing a proxy system with CIMI as the top API and support for multiple backend-clouds.

**CADF:** CADF is currently implemented in pyCADF (<https://github.com/openstack/pycadf>): A Python-based CADF Library, used by OpenStack. DMTF DSP2038 defines a CADF representation for use with the OpenStack Cloud Management Platform.

#### References

DMTF DSP0243: Open Virtualization Format Specification

DMTF DSP0262: Cloud Auditing Data Federation (CADF) - Data Format and Interface Definitions Specification

DMTF DSP0263: Cloud Infrastructure Management Interface (CIMI) Model and RESTful HTTP-based Protocol

DMTF DSP2038: Cloud Audit Data Federation - OpenStack Profile (CADF-OpenStack)

## Annex 2

### Proposed changes to clause 6:

#### 6.1 An overall view

The interaction between Standards Organizations and Open Source communities has its origin in a reciprocal need to benefit from each other's products (e.g. standards from a Standards Organization, or software from an Open Source community) and services (e.g. Quality Insurance or Interoperability Testing).

A few typical exemplary scenarios are used below to differentiate and classify some typical interactions. These scenarios are based in most cases on actual examples, sometimes with a long past experience that allows for relevant assessment. On the other hand, some are related to initial undertakings or perceived intentions of the actors but may not be yet entirely validated.

- The Code has the lead. In general, the scenario involves as a lead actor an OSS organization that wants to benefit from (without being bound by) an activity (e.g. the on-going development of specifications at any stage) or an OSS service from an SSO.

It is expected that, in case OSS organizations and SSOs want to engage a collaboration, they will have to discuss along the lines of one or more of these scenarios and address the issues that have been defined in the previous section.

#### 6.2 The scenarios

##### 6.2.1 An Open Source community implements standards

This interaction scenario (Scenario 1) includes two variants depending on whether the standards are already existing published (Scenario 1a) or are emerging standards (Scenario 1b)

##### 6.2.1.1 An Open Source community implements existing standards from a Standards Organization

In this scenario (Scenario 1a):

- A Standards Organization Technical Group has developed and published a set of standards - that will be maintained and may be further evolved. This set includes detailed protocol/API standards that can be used for implementation purposes.

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**Supprimé:** projects ...ommunities ha ... [1]

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**Mis en forme:** Normal

ONIL6504 23/9/y 10:12  
**Supprimé:** <#>An important aspect of these scenarios is "who has the lead", as discussed in **section 5.1:** .. ... [2]

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**Mis en forme** ... [3]

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**Mis en forme** ... [4]

ONIL6504 23/9/y 15:06  
**Mis en forme** ... [5]

ONIL6504 23/9/y 09:35  
**Supprimé:** S ... [6]

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**Mis en forme** ... [7]

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**Mis en forme:** Normal, Espace Après : 10 pt, Interligne : multiple 1,15 li, Avec puces + Niveau : 1 + Alignement : 0,63 cm + Tabulation après : 1,27 cm + Retrait : 1,27 cm

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**Supprimé:** n SSO ...Technical Grou ... [8]

- An Open Source community outside the Standards Organization wants to make a reference implementation of these standards – that will be further distributed (by the Open Source community itself or by specialized distributors) and integrated into commercial products under conditions defined by an Open Source License.
- The OSS implementation is set to be fully "compliant" with these standards or can lead to evolutions of the standards published and maintained by the Standards Organization.

Examples of such Open Source implementations can be found in the ETSI 2012 report [i.5]. For cloud computing, example of this scenario includes OpenStack implementation of DMTF CADF specification. See Annex xx for further information.

### 6.2.1.2 An Open Source community implements emerging standards from a Standards Organization

In this scenario (Scenario 1b):

- A Standards Organization Technical Group is developing a set of standards that is not yet stable and published. This set includes standards at various stages of the standards development chain (e.g. standards on requirements, architecture, protocols/APIs)
- An Open Source community outside the Standards Organization wants to implement an implementation of this set of standards,
- The OSS implementation may be only "inspired by" the on-going work of the Standards Organization and can:
  - Significantly diverge from it if the progress of the OSS implementation is not fed back to the Standards Organization. In some case, the result of the Open Source community is a product implementing a subset of the standards under preparation in the Standard Organization,
  - Provide early feedback on the standards under elaboration in the Standards Organization by rapidly prototyping some aspects of it, in order to come more rapidly to a stable version of the relevant standards.

Scenario 1b is a variant of Scenario a, with potentially significant impacts on the on-going standards under preparation in the Standards Organization.

An example of Scenario 1b is the interaction between the Industry Specification Group "Network Function Virtualization" in ETSI (ISG NFV) and the Open Platform for NFV (OPNFV), see Annex xx for further information.

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**Supprimé:** <#>The Specification l ... [10]

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**Supprimé:** SS...organization ... [12]

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**Mis en forme** ... [13]

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**Mis en forme** ... [14]

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**Supprimé:** 2

ONIL6504 23/9/y 11:18  
**Mis en forme** ... [15]

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**Supprimé:** n...Standards Organiz ... [16]

ONIL6504 23/9/y 11:28  
**Supprimé:** project ...ommunity o ... [17]

ONIL6504 23/9/y 11:30  
**Supprimé:** specification

ONIL6504 25/9/y 11:18  
**Mis en forme** ... [18]

ONIL6504 23/9/y 11:31  
**Supprimé:** SO... In some case, ... [19]

ONIL6504 23/9/y 11:34  
**Supprimé:** SSO specification

ONIL6504 23/9/y 11:35  
**Supprimé:** <#>The Code has the ... [20]

ONIL6504 23/9/y 14:55  
**Supprimé:** 2...is the interaction bet ... [21]



### 6.2.2 A Standards Organization develops an Open Source reference implementation

In this scenario (Scenario 2):

- A Standards Organization Technical Group has developed and published a set of standards - that will be maintained and may be further evolved.
- To speed-up market adoption, the Technical Group decides to develop a reference Implementation of these standards or of a subset of it, using an Open Source methodology and environment (including for testing purposes).

The result of the Standards Organization is a bundle covering the "Standard" and "Reference Implementation" source code. The Reference Implementation

- Is one of many implementations in line with the published set (or subset) of standards.
- Can be used by an Open Source community for inclusion in its product and distribution or directly included in commercial products (e.g. some vendors/integrators) under conditions defined by an Open Source License.

To make this happens, the Standards Organization must have implemented internally an Open Source hosting framework.

Examples of this scenario include the Open Source implementation by OMA of the RCS specification, which is integrated into commercially available products. Similar initiatives are starting in oneM2M and 3GPP partnership projects. For cloud computing, one example is the DMTF Standards Organization which is developing an OpenStack implementation of the CIMI specification. See Annex xx for further information.

The result is a bundle "Open Source code" + "Open Source license". There is no standard attached.

Examples: non so far in SSOs, but this is part of the strategic thinking in some of them.

### 6.2.3 A Standards Organization develops standards based on results of an Open Source community

In this scenario (Scenario 3):

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Mis en forme ... [22]  
ONIL6504 23/9/y 11:49  
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Mis en forme ... [23]  
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Mis en forme ... [24]  
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Mis en forme ... [25]  
ONIL6504 23/9/y 11:50  
Mis en forme ... [26]  
ONIL6504 23/9/y 11:51  
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Supprimé: n SSO...Standards ... [27]  
ONIL6504 25/9/y 11:18  
Mis en forme ... [28]  
ONIL6504 23/9/y 11:54  
Supprimé: the...market adoptio ... [29]  
ONIL6504 23/9/y 11:56  
Supprimé: <#>The Specification l ... [30]  
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ONIL6504 25/9/y 11:18  
Mis en forme ... [32]  
ONIL6504 23/9/y 14:18  
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Unknown  
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ONIL6504 23/9/y 14:19  
Supprimé: organization.  
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Mis en forme ... [34]  
ONIL6504 23/9/y 14:20  
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... [36]  
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Mis en forme ... [37]  
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... [38]  
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Mis en forme

- An Open Source community is designing and developing a software implementation that fulfil the needs of a Standards Organization, e.g. providing an implementation covering the functional and architectural requirements expressed in standards published or under development by that Standards Organization.
  - The resulting Open Source implementation offers a set of APIs that is well documented in the results of the Open Source community.
  - The Standard Organization decides to endorse the results of the Open Source community and develops standards based on the documented APIs developed by the Open Source community.
    - Has opted for an Open Source license
- standards of "tried and tested" APIs acting as a reference in its industry segment.

An example in Cloud Computing is [DMTF specification on OpenStack profile for CAPE](#). See Annex xx for further information.

## 6.2.4 A collaboration ("joint project") is established between a Standard Organization and an Open Source community

In this scenario (Scenario 4):

- A joint collaboration ("joint project") between a Standards Organization Technical Group and an Open Source community is established with the objectives of developing together a set of standards and a Open Source implementation of these standards.
- The set of standards includes standards at various stages of the standards development chain (e.g. standards on requirements, architecture, protocols/APIs) while the Open Source implementation provides a reference implementation of these standards.
- This collaboration includes the establishment of a joint steering Technical Committee whose tasks is to coordinate the development of standards by the Standard Organization and the development of the Open Source implementation. This Technical Committee will drive the roadmap in terms of use cases, requirements and architecture that should be supported by the Open Source implementation.

Scenario 4 can be viewed as a combination of Scenario 1b and Scenario 3 with the addition of a formal "joint project" between a Standard Organization and an Open Source community to help fostering and coordinating efforts in a coherent and agile manner.

It has to be noted though that an equivalent scenario exist in the field of standardization where collaboration between Standard Organizations are possible, e.g. partnership projects between regional Standard Organizations such as 3GPP or OneM2M or collaborative teams between ISO/IEC JTC 1 sub-committees and ITU-T study groups.

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**Mis en forme** ... [44]

ONIL6504 23/9/y 14:31  
**Supprimé:** , and t...e resulting Op... [46]

ONIL6504 23/9/y 14:49  
**Supprimé:** <#>The Open Sourc... [47]

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**Supprimé:** <#>The Code has the lead. .

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**Mis en forme** ... [48]

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**Mis en forme** ... [49]

ONIL6504 23/9/y 14:52  
**Supprimé:** The result is a set of

Unknown  
**Supprimé:** It can have one or sever... [50]

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**Supprimé:** .

Unknown  
**Supprimé:** typical

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**Mis en forme** ... [51]

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**Mis en forme** ... [52]

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**Mis en forme** ... [53]

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**Mis en forme** ... [54]

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**Mis en forme** ... [55]

ONIL6504 25/9/y 11:18  
**Mis en forme** ... [56]

ONIL6504 23/9/y 15:02  
**Supprimé:** 6.2.6 . . An OSS ... [57]

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**Mis en forme** ... [58]

ONIL6504 23/9/y 15:02

**Supprimé:** The implementation of an OSS environment is still at the inception phase in SSOs. No example for this scenario has come to the attention of the authors of the present report. However, this is part of the strategic discussions in some SSOs. -