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BUSINESS PLAN FOR JTC 1/SC 7
Software and Systems Engineering

PERIOD COVERED: June 2016 – May 2017

1 Executive Summary

JTC 1/SC7 is continuing to deliver standards in the area of software and systems engineering that meet market and professional requirements.

A succinct view of the strategic directions of JTC 1/SC7 can be found in annex to this document. For JTC 1/SC7 current performance and highlight please refer to the dashboard also in annex.

2 Chairman's Remarks

2.1 Market Requirements, Innovation

Systems engineering, whose origin is traceable to industrial engineering, is defined as an interdisciplinary approach governing the total technical and managerial effort required to transform a set of customer needs, expectations, and constraints into a solution and to support that solution throughout its life (ISO/IEC 24765, Systems and Software Engineering Vocabulary).

JTC 1/SC7, whose scope is Software and Systems Engineering, can thus be described as a horizontal committee who produce generic standards that are technology agnostics and independent of the application domain. These standards are principally focused on process models and good practices (Methods and techniques).

A succinct view of the strategic directions of JTC 1/SC7 is in annex to this document.

In 2016, JTC 1/SC7 initiated formal Committee innovations proposals with ISO. The status of these proposals as of 2017-03-28 is in Table 1.

<table>
<thead>
<tr>
<th>Proposer</th>
<th>Name of request</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO/IEC JTC 1/SC 7/WG 7 Software and systems engineering</td>
<td>Test of the on-line Comments Disposition System (CDS)</td>
<td>This item is covered under ISO IT Strategy 2017-2020 Strategic Objectives D - Comments and Feedback. ISO is looking at providing its community better commenting collation toolset and enriched online commenting for standards development purposes (including management of comments). This work item is planned for 2019/2020.</td>
</tr>
<tr>
<td>ISO/IEC JTC 1/SC 7 Software and System Engineering</td>
<td>Standard profile template (specifically for the service industry)</td>
<td>This item is somehow covered under ISO IT Strategy 2017-2020 Strategic Objectives C - XML capabilities improvement and E - Relevant and related search results. ISO will identify how XML-based standards can help ISO and its members provide innovative products and services and study semantic search across ISO standards and publications in the course of 2019.</td>
</tr>
</tbody>
</table>

Table 1 JTC 1/SC7 ISO innovations proposals status, 2017-03-28
2.2 Accomplishments

An overview of the existing JTC 1/SC7 collection of standards as of 2017-05-18 can be found in figure 1.

**Overview of the SC 7 Standards Collection**

![Figure 1 Overview of the JTC 1/SC7 Standards Collection](image)

2.3 Resources

JTC 1/SC7 has sufficient resources for its present program of work, even if this will always remain a continuous challenge.

The subcommittee is actually going through a generational change were not only it is changing Secretariat and Chair in 2017, but were also many experts are retiring. Up to now, this situation has not had any impact on the program of work.

2.4 Competition and Cooperation

The full JTC 1/SC7 Membership (38 Participating Members and 20 Observing Members, see Fig. 2) list can be found at [SC7 Member Listing](#). SC7 has made a conscious effort to increase co-operation with other standards groups by establishing an extensive network of liaisons both internal and external to JTC 1. A list of liaisons can be found at [JTC 1/SC 7 Liaisons](#).
Noteworthy are:

- The Joint Working Group (JWG28) with ISO/TC54 on CIF Usability
- The very productive liaisons with the IEEE Computer Society (IEEE-CS) and the International Council of Systems Engineers (INCOSE)

One of the objectives of the IEEE-CS liaison was to integrate the standards collection of both organisations. As illustrated in Table 2, this has been a success.

### Table 2 Evolution of the consistency between the JTC 1/SC7 and IEEE-CS standards collections

<table>
<thead>
<tr>
<th>Inconsistencies in the two collections, circa 1995</th>
<th>Consistencies in the two collections today</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Status</strong></td>
</tr>
<tr>
<td>Technology &amp; Concepts</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Quality management</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Testing</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Architecture description</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Product quality</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Life-cycle processes</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Software process</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Risk-management</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Project management</td>
<td>Inconsistencies</td>
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<tr>
<td>Configuration management</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Software process</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Data and model</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>User documentation</td>
<td>Inconsistencies</td>
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<tr>
<td>Software</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Notation</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Methodology &amp; Governance</td>
<td>Inconsistencies</td>
</tr>
<tr>
<td>Security</td>
<td>Inconsistencies</td>
</tr>
</tbody>
</table>

#### 3 Work Program

#### 3.1 Structure

JTC 1/SC7 Work Program is done in twelve working groups, as illustrated in Figure 3. These working groups operate under a governance structure that is centred on an Advisory Group (AG) and includes the following Special Working Groups:

- SWG1 Business Planning
- SWG5 Standards Management
- SWG6 Operations Management
- SWG22 Vocabulary Management Group

![Figure 3 SC7 Structure](image-url)
3.2 SWG5 – Standards Management

At the 2017 plenary meeting, SWG5 performed the following activities:

- Discussed blockchain and electronic distributed ledger technologies (ISO/TC 307) - recommend liaison with ISO/TC 307
- Discussed WG10 standard inconsistencies with other standards. WG10 has established an internal group to assess and recommend a path forward
- Updated the standards diagram – under review
- Updated the SC7 Your Guide – in process
- Standards list – in process
- Drafted four resolutions
  - SC7 Architecture Review and Recommendation Study Group
  - SC7 Naming Convention for Standards
  - ISO/TC 307 Liaison
  - SC7 Standards Management Group - Special Working Group 5

SW5 deliverables are found at:
http://isotc.iso.org/livelink/livelink?func=ll&objid=9371172&objaction=ndocslist

3.3 WG2 – Systems, Software and IT Services Documentation

WG2 has three active projects (26511, 26513 and 26515), all jointly developed with IEEE. The latest version of the WG2 business plan is available at
http://isotc.iso.org/livelink/livelink?func=ll&objId=12544188&objAction=Open&viewType=1

3.4 WG4 – Tools and Methods

WG4 has five active projects (26552, 26553, 26554, 26556, 26560) and ten NPs in preparation for combined NWIP & CD ballot. The WG4 business plan and business planning documents are available at
http://isotc.iso.org/livelink/livelink?func=ll&objId=8915230&objAction=browse&viewType=1

3.5 WG6 – Software Product Quality and Evaluation

WG6 has three active projects and is responsible for the management (for JTC 1/SC7) of three PAS potential PAS submissions from NESMA, IFPUG and the OMG. The WG6 work program and future plans are illustrated in figure 4.

Figure 4: WG6 Work Program
3.6 **WG7 – Life Cycle Management**

WG7 has currently twelve active projects and nine other projects and seven potential projects are under consideration, including an internal fast-track of three IEEE standards. Noteworthy are three new projects in the area of System of Systems Engineering (SoSE).

The latest version of the WG7 business plan is available at [http://isotc.iso.org/livelink/livelink?func=ll&objId=15487138&objAction=browse&viewType=1](http://isotc.iso.org/livelink/livelink?func=ll&objId=15487138&objAction=browse&viewType=1)

3.7 **WG10 – Process Assessment**

WG10 has eight active projects, mostly related to the elaboration of the ISO/IEC 330xx family of standards on process assessment. The structure of this family is illustrated in figure 5.

![Figure 5 Structure of ISO/IEC 330xx](image)

The latest version of the WG10 business plan is available at [http://isotc.iso.org/livelink/livelink?func=ll&objId=16828410&objAction=Open&viewType=1](http://isotc.iso.org/livelink/livelink?func=ll&objId=16828410&objAction=Open&viewType=1)

3.8 **WG19 – Techniques for specifying IT Systems**

WG19 has completed its collaborative program of work (with ITU-T and OMG) in the area of ODP (Open Distributed Processing). It is currently processing a revision and an addition to the Petri-net standards. No new projects have been proposed by participating NBs in the last few years, but a certain number of standards in its area of work (Modeling frameworks and languages) have been processes as PAS.

3.9 **WG20 – Software and Systems Body of Knowledge and Professionalization**

WG20 has four active projects (revisions of parts 1 to 4 of 24773). It is championing an approved SC7 Study Group on Competency frameworks and models for software and systems engineering professionals.

The latest version of the WG20 business plan is available at [http://isotc.iso.org/livelink/livelink?func=ll&objId=16426345&objAction=Open&viewType=1](http://isotc.iso.org/livelink/livelink?func=ll&objId=16426345&objAction=Open&viewType=1)
3.10 **WG21 – Information Technology Asset Management**

WG21 has completed two projects in 2017 (19770 parts one and 4) and is will initiate a NWIP on for ITAM systems audit guidelines.

Its major challenges going forward are related to the changes to how software assets are delivered and utilized:

- New endpoint types (e.g. IoT), some continuously-updated
- Hybrid of cloud-enabled & thin client services

WG21 has refreshed its business plan with a new five year tactical view. It is available at:

http://standards.iso.org/iso/19770/StratPlan

3.11 **WG24 – SLC Profiles and Guidelines for VSE**

WG24 mandate is to elaborate profiles for Very Small Enterprises from SC7 ‘base process standards’. These are the ISO/IEC 29110 series of standards.

It is noteworthy to note that ISO/IEC 29110 has been implemented in than 20 countries in the industrial, educational and governmental sectors:

- More than 300 companies/organizations from those countries adopted ISO/IEC 29110
- More than 26 universities from 17 countries teaching ISO/IEC 29110

WG24 has currently nine active projects, four of them moving to DIS stage.

The WG24 business planning documents are available at

http://isotc.iso.org/livelink/livelink?func=ll&objId=17833272&objAction=browse&viewType=1

3.12 **WG26 – Software Testing**

WG26 has seven active projects. Its status as of the end of the 2017 Plenary is illustrated in the following figure 6:

![Figure 6 WG26 Status and plans](image)

The latest version of the WG26 business plan is available at

http://isotc.iso.org/livelink/livelink?func=ll&objId=15367595&objAction=Open&viewType=1

3.13 **WG28 – CIF Usability**

The joint JTC 1/SC7 ISO/TC54 WG 28 on Common Industry Formats (CIF) for usability reports continue to work on projects identified in ISO/IEC 25060. They appear in the lower right corner of Figure 3.
3.14 **WG42 – Architecture**

WG42 is currently working on three projects in the 420xx suite of standards: Architecture description, process and evaluation.

3.15 **SWG22 – Vocabulary**

SWG22 is responsible for the maintenance of ISO/IEC/IEEE 24765 Systems and Software Engineering and also of its electronic version that is hosted by the IEEE Computer Society and is continuously updated. The vocabulary, as of the last SC7 plenary, had 4636 terms and 5794 definitions. The electronic version is at: [https://pascal.computer.org/sev_display/index.action](https://pascal.computer.org/sev_display/index.action)
### Production

![Production Chart]

### Meetings Attendance

![Meetings Attendance Chart]

### Selected NWIs

- Systems engineering - Systems of systems considerations in engineering of systems
- Systems engineering -- Guidance for the utilisation of ISO/IEC 15288 in the context of Systems of systems engineering
- Systems engineering - Taxonomy of systems of systems
- Systems and software engineering -- Requirements for testers and reviewers of information for users
- Systems and software engineering -- Systems and software Quality Requirements and Evaluation (SQuaRE)

### Study groups

- DevOps and Agile Practices
- Investigation of issues and opportunities to the evolution of Standards for VSEs.
- SC7 Architecture Review
- Autonomous Systems and Ambient Intelligence Environment Engineering
**MISSION**

Standardization of processes, supporting tools and supporting technologies for the engineering of software products and systems.

**VISION**

A unified set of software and systems engineering standards widely accepted by the intended class of users.

**CORE VALUES**

- Consensus
- Market relevance
- Commitment to quality

**STRATEGIC THEMES**

- Software Engineering
- Systems Engineering
- Emerging areas
- SC Governance

**MAJORS INITIATIVES**

- Life cycle processes
- Process assessment
- Software engineering body of knowledge
- Measurement
- Software assurance
- Very Small Entities (VSE) support
- Usability
- Complex systems
- Systems of Systems
- Autonomous systems
- Standards management
- Business planning
- Future watch

**OBJECTIVES**

A coherent and universal set of software and systems engineering standards define the body of knowledge in these areas. Standards in software and systems engineering are fully integrated and compatible. SC7 standards are scalable to large complex systems as well as to large and very small organizations. SC7 standards are keep relevant to emerging areas such as Systems of Systems and autonomous systems.