

ISO/IEC JTC 1 "Information technology"

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SC 7 Business Plan 2021

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Description

This document is circulated for review and consideration at the November 2021 JTC 1 Plenary.

BUSINESS PLAN FOR ISO/IEC JTC 1 SC 7

Software and Systems Engineering

PERIOD COVERED: May 2020 – May 2023

1 Executive Summary

ISO/IEC JTC1/SC7 is required to prepare and publish a new business plan for the period 2020 to 2023. In the previous plan emphasis was placed on the trends of digital transformation and agility. The need to produce standards faster and be more responsive was recognized. The committee geared up to institutionally anticipating trends, being responsive to its constituency and popularising its work.

The COVID-19 pandemic is a watershed in human history. All of us will be confronted by the reality of maintaining some form of social distancing in all of our professional and personal activities for quite a while in the foreseeable future. Every organization and individual was forced to respond rapidly. In many cases our underlying systems were simply not resilient enough. The need for a systems engineering approach to resilience of processes, systems and indeed systems of systems has been highlighted. Our systems must be engineered for resilience.

SC7 intends to strongly pursue the following themes

- System Resilience
- Uniform architectural concepts to be understood in common formats.
- Digital Engineering
- Newer Ways to produce standard emphasised and produce Machine readable standards.

The work of SC7 already contribute to the following UN SDGs

- Goal 4 – Quality Education
- Goal 9 – Industry, Innovation and Infrastructure
- Goal 10 – Reduced Inequality
- Goal 11 – Sustainable Cities and Communities

With an emphasis on system resilience we intend to contribute towards the SDGs as well

- Goal 3 – Good Health and Well Being
- Goal 8 – Decent Work and Economic Growth

2 Chairman's Remarks

2.1 Macro Trends

The COVID-19 pandemic is a watershed in human history. All of us will be confronted by the reality of maintaining some form of social distancing in all of our professional and personal activities for quite a while in the foreseeable future. The pandemic has had different impacts on different parts of the global ecosystem.

For commercial organizations there are those that have seen a sharp decrease in demand for their goods/services - for example Airlines and Hotels. Others have been unable continue operations since their operations required people to operate from specific offices or factories - for example Manufacturing. On the other hand some organizations that have seen a sharp increase in demand for their goods and services for example - Telecommunications, logistics services (especially for essential goods) and Healthcare.

The Government sector must continue to perform its duties and deliver citizen services as well as carry out all its activity without compromising safety, security and effectiveness.

The Healthcare sector both private and public has to cope with a sudden surge in demand and continue to operate in the face of heightened risk to healthcare workers themselves.

The past years were witness to a trend of being more “agile” to responding to a rapidly changing business environment. There was and continues to be a focus on being able to leverage emerging technologies and ecosystems. This trend of pursuing a goal of “agility” continues unabated.

The COVID-19 pandemic forced every organization and every individual to respond rapidly. In many cases our underlying systems were simply not resilient enough.

2.2 Implications

The reality of today, brought out all too clearly in the current COVID-19 pandemic, is that all organizations operate in an interconnected ecosystem. These systems are interdependent and impacts to some of them can easily cascade to large parts of the whole ecosystem. The need for a systems engineering approach to resilience of processes, systems and indeed systems of systems has been highlighted. Our systems must be engineered for resilience.

The need for digital transformation is already well recognized. This is aimed at becoming agile enough to quickly benefit from the possibilities that new technologies offer. An important aspect is the ability to leverage ecosystems of which cloud providers of all kinds are a good example. COVID-19 has brought into focus the need to be resilient as well. We have seen a need to rapidly move from centralized ways of working to a huge amount of distributed and remote working. The major implications are

- **The need for agility continues as strongly as before** – processes and techniques appropriate to incremental and iterative system development are needed.

- **The trend towards leveraging ecosystems in preference to creating captive systems continues as strongly as before** – System of System techniques are increasingly relevant in designing and understanding the interactions in these ecosystems
- **COVID-19 pandemic has underscored**
 - **the need for systems to continue to deliver acceptable outputs in the face of adversity – i.e. have an acceptable level of resilience.**
 - **the need for remote forms of working even in areas where systems were largely physical** – There is likely to be a significant increase in deployments of Cyberphysical systems.

2.3 UN Sustainable Development Goals

The standards produced by ISO/IEC JTC1/SC7 already contribute to the following Sustainable Development Goals

Goal 4 – Quality Education

Goal 9 – Industry, Innovation and Infrastructure

Goal 10 – Reduced Inequality

Goal 11 – Sustainable Cities and Communities

The current COVID-19 pandemic has threatened livelihoods and accentuated the inequality between those that were able to work from their homes and those that were not. The healthcare sector has been put under severe stress. This community can rise to the challenge and develop system resilience standards which contribute towards systems being able to operate in severe adversity and thereby contribute towards the following UN SDGs as well

Goal 3 – Good Health and Well Being

Goal 8 – Decent Work and Economic Growth

2.4 Market Requirements

The priority areas for standardization for SC7 are

- Modifications of existing standards to incorporate Agile and DevOps in software and systems engineering processes
- Re-packaging of our product line and products to reach a wider audience
- New or revised standards in the acquisition, development, evolution, asset management and sustainment of support of software and systems, including systems of systems and product lines
- Standards for Interoperability and Interfaces between systems
- Standards that are usable by organizations of various sizes
- Standards for engineering of autonomous systems
- Standards for the use of Artificial Intelligence (AI) in Testing and the testing of AI systems
- Standards in the area of Cyber Physical Systems
- Standards in the area of System Resilience

The market requires these standards to be developed on a much shorter time scale than before.

2.5 Adhoc Groups

The Study Groups have been reconstituted as Adhoc Groups. The study groups of 2018 which completed their work were closed and the following Adhoc Groups are working to provide direction to the SC in light of the identified implications and market needs.

- Adhoc group on DevOps and Agile Practices.
- Adhoc Group for SC7 Standards Architecture Review

Further, SC7 has taken upon itself

- To create a project for the development of standards for defining a generic framework and terminology for Autonomous Systems.
- Creation of two Technical Reports for defining a) Agile and DevOps Principles and Practices and b) Agile Readiness and Success Criteria

2.6 Accomplishments

An overview of the existing JTC 1/SC7 collection of standards as of 2020-05-18 can be found in figure 1.

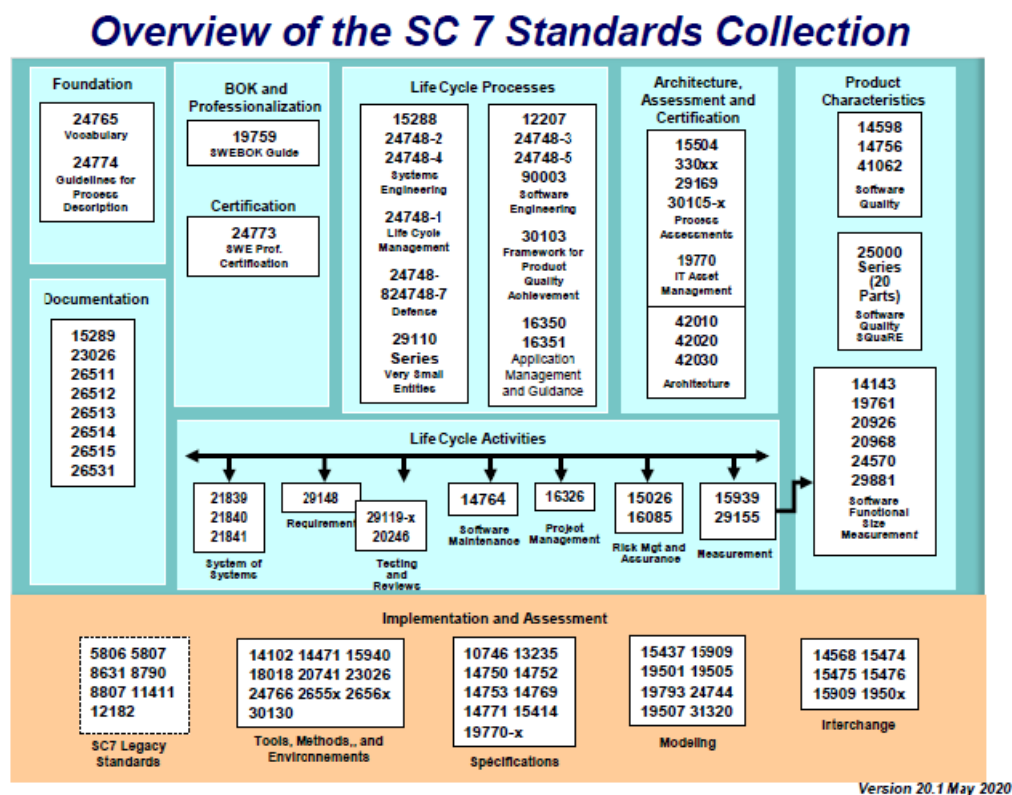


Figure 1A Overview of the JTC 1/SC7 Standards Collection

2.7 Resources

A significant portion of the current work is the maintenance of existing standards base. A lot of the available effort is taken up by this activity. If the sub-committee is to be responsive to the current market situation as it exists currently a focussed effort is required to enlist the right experts.

2.8 Competition and Cooperation

The full JTC 1/SC7 Membership (34 Participating Members and 25 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](#).

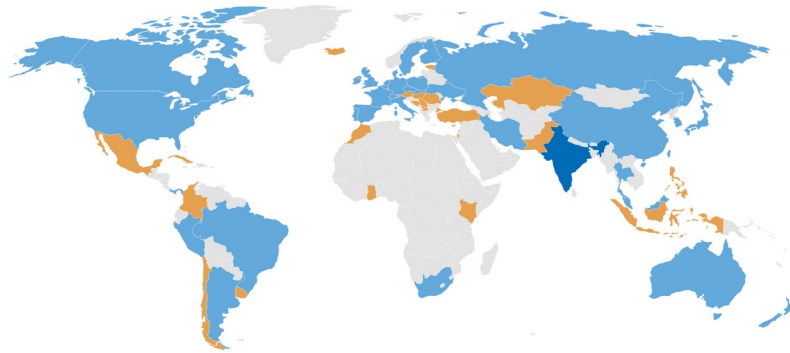


Figure 2 JTC 1/SC7 Membership

Traditionally, JTC1 /SC7 has effective liaison with IEEE Computer Society (IEEE-CS) and the International Council of Systems Engineers (INCOSE). Some new liaisons have been established with JTC1/ WG11 – Smart Cities, TC 307 (Block chain), TC 279 (Innovation Management) and JTC1/SC42 (Artificial Intelligence). New external liaisons are being created with ITAM.Org, ITAMORG, TagVault and Object Management Group (OMG) to facilitate the programs of working groups.

2.9 Communication & Outreach

The requirement to engage continuously with different stakeholder groups and national bodies is important so that SC7 Work is widely known and used, Increase Participation & More collaboration. For this, Advisory Group on Communications & Outreach (AG3) has been created to Enable NBs with their NMCs, Communicate internally & externally & Increase Participation of New Experts and Motivation for existing Experts. The group will reach out to other SDOs, Other JTC1 Committees, manage all public facing materials like, brochures, Wikipedia, Twitter, LinkedIn etc.