ISO/IEC JTC 1 **N 14913**

ISO/IEC JTC 1 "Information technology"
Secretariat: **ANSI**
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SC 39 Business Plan 2020

Document type	Related content	Document date	Expected action
General document / Other		2020-09-11	**COMMENT/REPLY** by 2020-11-02

Description

This document is circulated for review and consideration at the November 2020 virtual JTC 1 Plenary

ISO/IEC JTC 1/SC 39 "Sustainability, IT & Data Centres"
Secretariat: **ANSI**
Committee Manager: **Ash Bill Mr**

2020 SC39 Business Plan

Document type	Related content	Document date	Expected action
General document / Other		2020-09-11	**INFO**

Description

For information.

BUSINESS PLAN FOR JTC 1/SC 39

Sustainability for and by Information Technology

PERIOD COVERED: November 2019 – October 2020

1.0 Executive Summary

SC 39 continues to develop standards for the sustainability of Data Centres and IT. A new scope was developed for SC39 in 2018, and a new title was developed for SC39 in 2019. The committee meets annually, and its working groups meet twice a year in person and hold monthly teleconferences to progress their work. JTC 1/SC 39 will continue to develop key performance indicators and best practices for data centres.

2.0 CHAIRMAN'S REMARKS

2.1 Market Requirements, Innovation

Sustainability remains a key aspect and focus of our approach to meeting the needs of our data centre customers. Gaining increased performance through data centre metrics and measurements, and best practices for learning from the broader wisdom of colleagues in CENELEC TC 215 for implementation in data centres. Our standards development efforts are focused on the delivery of efficient data centre services and operations; designed to measure the best-in-class performances of data centre facilities. Cloud computing, smart cities (smart grid), electronic medical records, smart transport, big data, and IoT (Internet of things) are driving IT in general and data centres specifically in directions that are unanticipated. At the same time governments, businesses and users of IT equipment demand ongoing incremental productivity improvement in the workplace year over year, coupled with a reduction in energy or resource consumption. It is questionable if sustainability could be measured and reported without the use of these efficient tools called a data centre. Sustainability defines business cases for data centre operations, upgrades, and improvements. The Intergovernmental Panel on Climate Change (IPCC) has targeted limiting global warming to 2°C rise and mitigating the worst projected impacts of climate change. Data centres measure their energy efficiency in electricity usage during operation, the embodied impact of production, transportation, and disposal of materials, components, and systems used in the data centre are currently not considered. A liaison of SC 39 The Green Grid data centre maturity model for the highest level (level 5) requires procurement “cradle to grave” lifecycle CO2 emissions, learned and control for all electrical and mechanical systems.

Businesses and governments have embraced the sustainability aspects IT technology delivered. The request was to determine whether we want the same output with lower energy consumption or more output with the same energy consumption, the answer has been a resounding continue more output with lower energy consumption improvements, as the primary sustainability path.

Environmental issues and IT’s role are receiving more attention than ever. Utilizing technology, and specifically, IT technology as a more sustainable methodology has different meanings whether you are a manufacturer, integrator, manager, government or user. We continue to question the space, and energy allocation of new equipment, cooling and power transmission, and distribution needs as well. Computer support infrastructure such as power distribution, cooling, infrastructure management, telecom, and others dominate the discussion barely second to system price for the concerns of the data centre manager. The questions are complicated and not easily resolved in a globally satisfactory manner to all.

Data centre sustainability may be reduced to a few short questions:

1) Do you take all opportunities to reduce data centre waste?
2) Do you track key data centre operating system metrics?
3) If you have, do you manage multisite data centre footprints?
4) Do you practice Continuous and Never-Ending Improvement (CANI)?
    a. How do you operate your data centres with these questions in mind?

Keeping pace with the digital world requires data centre providers to operate with the view that renewably powered and zero electrical waste data centres are achievable. Sustainable data centre strategy requires data centre providers to ensure resources are utilized efficiently to deliver applications, colocation and cloud services. If you review all tasks we perform online individually, and all tasks performed for us such as; finances, health care, purchasing, and home management, we have globally embraced an always-available digital lifestyle. This digital lifestyle provides the feature of our digital experience through data centres. It takes many factors to produce and operate a data centre. IT equipment, cooling, power distribution, cabling, are required to be managed and refreshed from time to time. So data centres should not only refuse to waste energy, but also deliver to the promise to reduce, reuse, or recycle components no longer utilized to produce the useful work of the data centre.

Smart Cities, Smart Manufacturing (A.K.A) Industry 4.0), eHealth, Smart Transport, Cloud Computing, Edge, and IoT and IT-related global government policy initiatives continue to move forward and gain broader adoption. The growth of data centres, in number and size, still occurs and is inevitable since the amount of data entered, developed and produced is also rising. Small and medium business is migrating to the cloud and has caused data centre consolidation to move beyond the concept into accelerating reality. The transition to a cloud architecture has transformed into a restructuring and optimization of data services across data centres and other IT sites. Although core services and data centres continue to consolidate into a hybrid-cloud (private, public and multiple cloud configurations), regional and localized edge technology is emerging to meet the specific localized data access, services, and security needs. These localized computing sites and integration to the data services architecture are expected to be key components to the evolution of smart cities, smart buildings, smart healthcare, and other IT optimized industrial, commercial, and consumer activities. The proliferation of IT facilities moving closer to consumers will rely more heavily on IT standards to ensure effective and efficient use of IT and natural resources. Integration and interoperability between distributed facilities and owners will rely on common standards and protocols to become effective and efficient. Consolidation allows reduction of consumed energy, infrastructure, and local premise equipment installation. To set effective local, jurisdictional or national efficiency requirements governments will need resource efficiency standards to frame the topic, limits and requirements. Many standards now exist on this topic, which are international standards. Future considerations include the integration of rapidly emerging edge and communications technologies. Though hybrid-cloud and edge-computing have been considered due to its impact on SC39 standards there are IT technologies that may offer significant improvements in the efficacy and efficiency of the overall computing architecture.

New technology has made data centres and IT facilities more significant in global economies. Hybrid cloud, edge computing, IoT aggregation sites, Artificial Intelligence, NVM, NFV, and 5G will impact ICT facilities and drive reliance on industry standards to ensure improved resource sustainability, efficiency, and effectiveness methods remain key components to IT growth and transformation.

We continue to receive interest and input from national bodies and liaisons, gaining traction on the topic and driving forward with ballots for data centre and IT facility standards in 2019. Industry and governments develop and acquire information on efficiency and energy consumption through voluntary programs and mandatory efforts of some national and local programs. However, that is still evolving from previous years as lessons learned impacts legislation and regulations in development. Global KPI's, Taxonomy, and best-known practices are necessary for these efforts

to not only to improve efficiency but also provide standardized methods of continuous improvement in conjunction with a rapidly advancing technology landscape.

2.2 Accomplishments

2.3 Resources

The Plenary of JTC 1/SC 39 and the meetings of its working groups continue to be well attended. The last plenary was hosted in online

2.4 Competition and Cooperation

The full JTC 1/SC 39 National Body membership list can be found here.

JTC 1/SC 39 also works other ISO, IEC and JTC 1 committees as liaisons as well as other external organizations. A full list of liaisons is available here.

3.0 Working Groups

3.1 WG 1 – Resource Efficient Data Centres

JTC 1/SC 39/WG 1 manages the development of key performance indicators for resource-efficient data centres. JTC 1/SC 39/WG1 program of work can be found at (*SC Program of Work*.).

3.1.1 WG 1 Accomplishments

WG 1 completed work on the following:

WG1 Developed the following Committee Draft Specifications on:

- IS 30134-7, Cooling Effectiveness Ratio (CER)

This document is to be finalized and submitted for ballot as a **Committee Draft** by November of 2020

WG1 Finalized & Dispositioned the following Committee Draft Specifications on

- IS 30134-8, Carbon Usage Effectiveness (CUE)
- IS 30134-9, Water Usage Effectiveness (WUE)

Each is to be updated and submitted for **DIS** consideration as international standards by the October 2020.

WG 1 Finalized & Dispositioned Draft International Standards (DIS) on:

- IS 23544, Application Energy Effectiveness (APEE)

This document is to be updated and submitted for **FDIS** consideration as international standards by January 2021.

WG 1 Finalized & Dispositioned Final Draft International Standards (FDIS) on:

- IS 21836, Server Energy Efficiency Metric (SEEM)

This document has been submitted for **Publication**.

WG 1 has investigated and is pursuing the following work items for 2021-2022, which includes:

- Technical Specification, IT Provisioning and forecasting of the data centre

- Technical Report, Applications and Usage of IS30134-8, CUE
- Technical Report, Applications and Usage of IS30134-9, WUE

3.1.2 WG 1 Deliverables

WG 1 2020 completed deliverables include:

- Committee drafts, DIS, and FDIS proposals on:
  - IS 21836, Server Energy Efficiency Metric (SEEM)
  - IS 23544, Application Energy Effectiveness (APEE)
  - IS 30134-8, Carbon Usage Effectiveness (CUE)
  - IS 30134-9, Water Usage Effectiveness (WUE)
  - IS 30134-7, Cooling Effectiveness Ratio (CER)
- Program and/or NWIP recommendations on:
  - TS xxxxx, IT Provisioning and forecasting of the data centre
  - TR xxxxx, Applications and Usage of IS30134-8, CUE
  - **TR xxxxx,** Applications and Usage of IS30134-9, WUE

WG 1 2021 Planned deliverables include:

- Committee drafts, DIS, and FDIS proposals on:
  - IS 30134-8, Carbon Usage Effectiveness (CUE)
  - IS 30134-9, Water Usage Effectiveness (WUE)
  - IS 30134-7, Cooling Effectiveness Ratio (CER)
  - TS xxxxx, IT Provisioning and forecasting of the data centre
  - TR xxxxx, Applications and Usage of IS30134-8, CUE
  - TR xxxxx, Applications and Usage of IS30134-9, WUE

- Disposition additional NWIP candidates (i.e. hold, drop, or NWIP). Note that based on contributions some may be issued as NWIPs, though many remain on hold until resources are available.:
  - IS/TR Security and Privacy – data center/IT resource impact vs. security level
  - TR Application of 30134-x series
  - IS Resiliency Class or Type of Data Centre
  - IS Data Centre Cost eXpense (DCCX)
  - IS Data Centre Cost Effectiveness (DCCE)
  - IS Data Centre Utilization (DCU)
  - IS IT Equipment Effectiveness Networking (ITEEnetw) [liaisons, use by DC IT Provisioning]
  - IS IT Equipment Utilization Networking (ITEUnetw)
  - IS IT Equipment Effectiveness Storage (ITEEstor)
  - IS IT Equipment Utilization Storage (ITEUstor)
  - IS Coefficient of Performance (COP)
  - TR Economic Output
  - TR Resiliency Risk Impact
  - TR Data Centre Life Cycle Impact
  - TR Boundaries of Software Defined Data Centre
  - TR Boundaries of Software Defined Subsystems

- TR DC Integration for Smart Cities
- TR DC and IoT integration
- TR Waste Impact to Local Area

3.1.3 WG 1 Risks, Opportunities and Issues

WG 1 issues/challenges:

- Conflicting and competing standards (e.g. ITU-T, ETSI, ENERGY STAR, Eco-Design directive, etc…)
- Additional regional resources (Singapore, Malaysia, Australia/NZ, Brazil, Argentina, etc…)
- Integration and updates due to new technologies (e.g., Hybrid Cloud, Edge Computing, SDN, 5G, NVM)
- Integration of specifications and technology related to data centres but driven by other groups (e.g., Software-Defined DC, Smart Cities, IoT, Hybrid cloud, Open Compute)

WG 1 continues to work these issues and challenges through our liaisons.

3.2 WG 2 – Green ICT

JTC 1/SC 39/WG 2 manages the development of green ICT standards. JTC 1/SC 39/WG2 program of work can be found at (*SC Program of Work.*). WG2 is currently suspended.

3.3 WG 3 – Sustainable facilities and infrastructure

JTC 1/SC 39/WG 3 was established at the May 2017 JTC 1/SC 39 Plenary and managed the development of Sustainable facilities and infrastructure. JTC 1/SC 39/WG3 program of work can be found at (*SC Program of Work.*).

3.3.1 WG 3 Accomplishments

WG 3 has adopted and published the following document

ISO/IEC TS 22237-1, Information technology -- Data centre facilities and infrastructures -- Part 1: General concepts

ISO/IEC TS 22237-2, Information technology -- Data centre facilities and infrastructures -- Part 2: Building construction

ISO/IEC TS 22237-3, Information technology -- Data centre facilities and infrastructures -- Part 3: Power distribution

ISO/IEC TS 22237-4, Information technology -- Data centre facilities and infrastructures -- Part 4: Environmental control

ISO/IEC TS 22237-5, Information technology -- Data centre facilities and infrastructures -- Part 5: Telecommunications cabling infrastructure

ISO/IEC TS 22237-6, Information technology -- Data centre facilities and infrastructures -- Part 5: Security systems

ISO/IEC TS 22237-7, Information technology -- Data centre facilities and infrastructures -- Part 7: Management and operational information

3.3.2 WG 3 Deliverables

WG 3 has started the development of 3 International Standards and 1 Technical Specification in the ISO/IEC 22237 series:

- ISO/IEC 22237-1, Data centre facilities and infrastructures - Part 1: General concepts

- ISO/IEC 22237-3, Data centre facilities and infrastructures - Part 3: Power distribution

- ISO/IEC 22237-4, Data centre facilities and infrastructures - Part 4: Environmental control
- ISO/IEC DTS 22237-30, Data centre facilities and infrastructures - Part 30: Earthquake risk and impact analysis

3.3.3 WG 3 Risks, Opportunities and Issues

At its 1st meeting, WG 3 agreed a project plan for the development of series IS 22237 with experienced project leaders. Work on three IS plus one TR has been started since, with active experts from currently 6 National Bodies.

As the IS projects are based on the sound basis of published TS, there is an opportunity to deliver DIS texts within 12 to 18 months. This pace will attract additional experts, in particular from Asian P-members, to contribute to the development of IS, which satisfy the needs of data centre stakeholders on a global scale.

There is also the opportunity to technically align ISO/IEC 22237 documents with pertinent regional or national standards (such as EN 50600 series in Europe).