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**Information technology**  
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# **BUSINESS PLAN FOR JTC 1/SC 39, Sustainability for and by Information Technology**

## **PERIOD COVERED:**

7 November 2012 – 4 November 2013

## **SUBMITTED BY:**

JTC 1/SC 39 Chair, Mr. Jay Taylor (US)

JTC 1/SC 39 Secretary, Ms. Sally Seitz (US)

## **1.0 MANAGEMENT SUMMARY**

Established by Resolution 27 from the November 2011 JTC 1 Plenary Meeting in San Diego, California, USA. JTC 1/SC 39 has met twice, 12-14 June 2012 in Redwood Shores, California, USA and 23-24 May 2013 in Malahide, Ireland. At its last meeting, JTC 1/SC 39:

- Initiated the process for establishing a Category A Liaison relationship with the Green Grid
- Confirmed its scope
- Progressed ISO/IEC 30134-1 and ISO/IEC 30134-2 to committee draft stage
- Established internal liaison relationships with ISO/IEC JPC 2, Energy efficiency and renewable energy sources – Common terminology and ISO/IEC JTC 1/SC 36, Information technology for learning, education and training
- Re-established the JTC 1/SC 39 Study Group on Gap Analysis (SGGA)

The next Plenary of JTC 1/SC 39 will take place in Korea in May or June 2014. The exact dates and location are to be determined.

## **1.1 CHAIRMAN'S REMARKS**

The JTC1/SC39 Chairman continues to commend the participating national committees in SC39 and appreciates the additional national committees joining and participating this last year. Participation in quantity and quality continue to advance. We actively encouraged participation and continue to contact and engage liaisons pertinent to the topic, and have been challenged, received questions and contributions from these liaisons.

## 1.2 JTC 1/SC 39 STATEMENT OF SCOPE

Standardization related to the intersection of resource efficiency and IT which supports environmentally and economically viable development, application, operation and management aspects.

To avoid any duplication of work and to support innovation, SC 39 will engage in active liaison and collaboration with:

- Other JTC 1 entities;
- ISO TC 207, ISO TC 242, ISO TC 257;
- IEC TC 100, IEC TC 108, IEC TC 111, SMB SG 4, IEC PC 118, IEC TC 57/WG 21, IEC TC 8 and SMB SG 3;
- ITU-T SG 5; and
- Any other appropriate body including external organizations (e.g. consortia)

## 1.3 PROJECT REPORT

**ISO/IEC NP 30131**, Information technology - Data Centres – Taxonomy and Maturity Model

**Project Editor:** Mr. Andrew Robinson ([andrewro@allstream.net](mailto:andrewro@allstream.net)), Canada

**SCOPE:** Develop a taxonomy and maturity model for assessing resource efficiency, environmental and economic viability for IT services within data centres and including external dependencies such as network/grid operations, manufacturing, enterprise, emergency operations or control centres.

Economic and environmental design/operations tradeoffs will be described in terms of location, grade of service, workload and lifecycle contexts.

The multi-level taxonomy includes key linkages to these elements:

- Service Level
- Vocabularies
- Definition of Terms
- Application of Taxonomy
- Use Cases for Representative Facility (Data Centre) Types
- Facility Lifecycle Scenarios
- Any other required references

to assess facility resource efficiency. These elements and linkages support continuous improvement for the facility management/owner and other stakeholders such as users or clients of those facilities.

### LIMIT DATES:

CD Registration: 2013-07-10

DIS Registration: 2014-01-10

FDIS Registration: 2015-01-10

IS Publication: 2015-07-10

**ISO/IEC NP TR 30132**, Information technology – IT Sustainability – Guidance for the Development, Evaluation and Application of Energy Efficient Computing

**Project Editors:** Mr. Sangjin Jeon ([sjeong@etri.re.kr](mailto:sjeong@etri.re.kr)), Korea

Mr. Hongzhi Tao ([taohz@lenovo.com](mailto:taohz@lenovo.com)), China

**Scope:** This technical report:

- a) Provides guidance for evaluating energy efficiency of various computing models between client systems and servers
- b) Provides examples of current technologies that can improve energy efficiency in specific applications
- c) Provides overview and framework for evaluating the applicability and technology considerations of these computing solutions
- d) Considers holistic evaluation methods including the advantages, requirements and restriction to these evaluation options
- e) Solely considers the use stage of life cycle assessment for improving energy efficiency

**LIMIT DATES:**

DTR Registered: 2014-01-10

TR Published: 2015-07-10

**ISO/IEC NP TR 30133**, Information technology – Data centres – Guidelines for resource efficient data centres

**Project Editor:** Mr. Soochan Hwang ([sch183@gmail.com](mailto:sch183@gmail.com)), Korea

**Scope:** This work item specifies best practices aimed at developing green data centres. A green data centre can be defined as a repository for the storage, management and dissemination of data in which the mechanical, lighting, electrical and computer systems are designed for maximum energy efficiency and minimum environmental impact.; The construction and operation of a green data centre includes advanced technologies and strategies. The work item provides a set of rules and guidelines to be referred to when undertaking improvement of existing data centres or when planning, designing or constructing new ones. The best practices cover:

- Data centre utilization, management and planning
- ICT equipment and services
- Cooling
- Data centre power equipment
- Data centre building
- Monitoring

**LIMIT DATES:**

DTR Registered: 2014-01-10

TR Published: 2015-07-10

**ISO/IEC NP 30134-1**, Information technology – Data Centres – Key Performance Indicators – Part 1: Overview and general requirements

**Project Editor:** Mr. Henry Wong ([henry.l.wong@intel.com](mailto:henry.l.wong@intel.com)), United States

Mr. Taka Shiino ([t-shiino@nri.co.jp](mailto:t-shiino@nri.co.jp)), Japan

Mr. Yong-Woon Kim ([gkim@etri.re.kr](mailto:gkim@etri.re.kr)), Korea

**Scope:** This International Standard

- a) Provides definitions of terms used in data centre KPIs
- b) Defines the need and scope of KPIs for resource efficiency in data centres
- c) Defines the areas of KPIs and application
- d) Defines the guidelines and applicability in establishing a data centre KPI
- e) Provides a structure of document in the series of KPIs
- f) Describes a holistic view of resource efficiency

**LIMIT DATES:**

CD Registration: 2014-01-17

DIS Registration: 2014-07-17

FDIS Registration: 2015-07-17

IS Publication: 2016-01-17

**ISO/IEC 30134-2**, Information technology – Data Centres – Key Performance Indicators – Part 2: Power Usage Effectiveness (PUE)

**Project Editor:** Mr. Henry Wong ([henry.l.wong@intel.com](mailto:henry.l.wong@intel.com)), United States

Mr. Taka Shiino ([t-shiino@nri.co.jp](mailto:t-shiino@nri.co.jp)), Japan

Mr. Yong-Woon Kim ([gkim@etri.re.kr](mailto:gkim@etri.re.kr)), Korea

**Scope;** This International Standard

- a) Defines the Power Usage Effectiveness (PUE) of a data centre
- b) Introduces PUE measurement categories
- c) Describes the relationship of this KPI to a data centre's:
  - i. Infrastructure;
  - ii. IT equipment,
  - iii. IT operations
- d) Defines the measurement, the calculation and the reporting of the KPI,

Provides information on the correct interpretation of the KPI

- 1. The following topics are outside the scope of this International Standard:
  - Other data centre resource focused KPIs such as water or carbon
- 2. IT KPIs
- 3. IT Operations KPIs

**LIMIT DATES:**

CD Registration: 2014-01-17

DIS Registration: 2014-07-17

FDIS Registration: 2015-07-17

IS Publication: 2016-01-17

## 1.4 CO-OPERATION AND COMPETITION

JTC 1/SC 39 has established the following liaisons:

### Internal:

ISO/IEC JPC 2, Energy efficiency and renewable energy sources – Common terminology  
ISO/IEC JTC 1/SC 36, Information technology for education, learning and training  
ISO/IEC JTC 1/SC 39, Distributed application platforms and services (DAPS)  
ISO/TC 207, Environmental Management  
ISO/TC 171, Document management applications  
IEC/TC 100, Audio, video and multimedia equipment and systems  
IEC/TC 111, Environmental standardization for electrical and electronic products and systems

### External:

ITU-T Study Group 5, Environment and climate changes  
Ecma International  
CENELEC TC 215, Electrotechnical aspects of telecommunications equipment  
The Green Grid

The JTC 1/SC 39 Secretary is working with the following committees and organizations to establish liaisons as per the scope of JTC 1/SC 39:

- ISO/TC 242, Energy management
- ISO/TC 257, General technical rules for determination of energy savings in renovation projects, industrial enterprises and regions
- IEC/TC 8, Systems aspects for electrical energy supply
- IEC/TC 57/WG 21, Interfaces and protocol profiles relevant to systems connected to the electrical grid
- IEC/PC 118, Smart grid user interface
- Storage Network Industry Association (SNIA)
- Distributed Management Task Force (DMTF)
- GIPC – Green IT Promotion Council
- Internet Engineering Task Force (IETF)
- The Green Grid (TGG)

Other Liaisons that may become necessary are ASHRAE, Open Data Center Alliance, and GreenTouch.

Several fora and consortia organizations are or have developed metrics and measurements for data centre resource efficiency. Most are components of the whole, developing standards for the components of the data centre, such as power distribution, cooling, storage, and networking. In

addition several standards organizations most identified as liaisons also have components or parts of this topic in development or released. This effort moves forward with cooperation and communication with all subject matter experts and will allow for all ideas to be considered and vetted by the respective and participating national bodies.

## **2.0 PERIOD REVIEW**

### **2.1 MARKET REQUIREMENTS**

IT equipment facilitated productivity improvement in the workplace like no other tool. As businesses and governments adopted IT and Client-Server technology the data centre became a productivity tool, the first level of productivity gains occurred. SmartGrid, eHealth Smart Transport, Cloud Computing and other IT related government policy initiatives move forward for broader adoption. The growth of data centres, in number and size, is inevitable. Recently data centre consolidation has become a topic of thought. Consolidation also allows reduction of energy consumed and optimization of equipment utilization. Articles and press continue to indicate a need for optimizing efficiency of data centres and a steady reduction of energy consumption of IT equipment. To set effective local, jurisdictional or national efficiency requirements governments will need standards to frame the topic, limits and requirements. Few standards exist today on this topic mainly from consortia and for a, and, few or none of which are international standards.

IT Equipment still represents and facilitates productivity like no other tool in the industrial age. We have received interest and input from national bodies and liaisons, gaining traction on the topic and diving forward with FDIS proposals for data centre standards in 2013. Recent press still identifies the pertinence and efficacy of this approach as we continue to define and categorize the resource efficiency. Governments continue to acquire data on efficiency and energy consumption through voluntary programs and mandatory efforts of some national and local programs, however, that has changed from previous years as legislation is passed and regulations develop. KPI's and Taxonomy become essential in these efforts.

### **2.2 ACHIEVEMENTS**

JTC 1/SC 39 has established two Working Groups, one Study Group and two Task Forces under one of its working groups:

#### **JTC 1/SC 39 Working Group 1 – Resource Efficient Data Centres**

**Convener: Mr. Henry Wong, US**

##### **Terms of Reference:**

- Development of a data centre resource efficiency taxonomy, vocabulary and maturity model;
- Development of a holistic suite of metrics and Key Performance Indicators (KPI) for data centres;
- Development of guidance for resource efficient data centres; and
- Development of an energy management system standard specifically tailored for data centres.

WG 1 is responsible for the development of:

- ISO/IEC 30131, Information technology – Data Centres – Taxonomy and Maturity Model
- ISO/IEC 30133, Best Practices for Green Data Centres
- ISO/IEC 30134-1, Information technology – Data Centres – Key Performance Indicators – Part 1: Overview and general requirements

- ISO/IEC 30134-2, Information technology – Data Centres – Key Performance Indicators – Part 2: Power Usage Effectiveness (PUE)

**Meetings:** 28-30 August 2012 in Frankfurt, Germany

14-17 January 2013 in California, USA

20-22 May 2013 in Malahide, Ireland

28-31 October 2013 in Paris, France

The group also meets frequently via WebEx to progress its work.

#### **JTC 1/SC 39/WG 1 Ad Hoc 1 – Data Centre KPIs**

**Convener:** Mr. Tomoo Misaki, Japan

##### **Terms of Reference:**

To identify the initial group of KPIs associated with the Data Centre Resource Efficiency, including and not limited to 1) ITEE, 2) ITEU, 3) GEC, 4) CUE and 5) WUE.

For each KPI, Designation, Title and Scope shall be defined and agreed by the Task Force group prior to the submission to WG 1 for the subsequent preparation of the NWIPs to be added to the series ISO/IEC 30134.

The Task Force is not responsible for the development of the draft text and will terminate when the aforementioned KPI titles and scopes are completed.

#### **JTC 1/SC 39/WG 1 Ad Hoc 2 – Methodology of Inter-relationships of KPIs**

**Convener:** Mr. Tomoo Misaki, Japan

##### **Terms of Reference:**

Investigate methods of integrating KPIs, determining its value and identify considerations in combining KPIs. Conduct initial SWOT Analysis.

#### **JTC 1/SC 39 Working Group 2 – Green ICT**

**Convener:** Mr. Yong-Woon Kim, Korea

##### **Terms of Reference:**

Prepare guidance for the development of energy efficient ICT excluding the scope of JTC 1/SC 39/WG 1, Resource Efficient Data Centres

WG 2 is responsible for the development of:

- ISO/IEC 30132, Information technology – IT Sustainability –Guidance for the Development of Energy Efficient ICT Products

**Meetings:** 1-2 November 2012 in Jeju, Republic of Korea

18 January 2013 in California, USA

22 May 2013 in Malahide, Ireland

31 October 2013 in Paris, France

#### **JTC 1/SC 39 Study Group on Gap Analysis**

**Conveners:** Mr. Yong-Woon Kim, Korea and Mr. Linpeng Gao, China



**Terms of Reference:**

- Gap analysis on:
  - Assessment methodology for how to quantify green effects of ICT functions for education, learning and training; and
  - Guidelines for making other industry sectors green by using IT (e.g. building, transportation/logistics, etc.)

**Meetings:** 31 October 2012 in JeJu, Republic of Korea

18 January 21013 in California, USA

22 May 2013 in Malahide, Ireland

31 October 2013 in Paris, France

## 2.3 RESOURCES

JTC 1/SC 39 has the following membership:

**17 P-Members**

Belgium

Canada

Finland

France

Germany

Italy

Japan

Kenya

Republic of Korea

Netherlands

Norway

Russian Federation

Singapore

South Africa

United Kingdom

United States

**5 O-Members**

Australia

Czech Republic

Ireland

Poland

Spain

## **3.0 FOCUS NEXT WORK PERIOD**

### **3.1 DELIVERABLES**

JTC 1/SC 39 will continue to work on the projects on its Program of Work and focus on increasing its membership.

### **3.2 STRATEGIES**

We have agreement with the development of a Category A liaison with The Green Grid, that JTC1/SC39 will pick up and continue development of Power Usage Effectiveness (PUE), Water Usage Effectiveness (WUE) and Carbon Usage Effectiveness (CUE). JTC 1/SC 39 leveraged the work product of The Green Grid, Global Harmonization of Metrics taskforce for the initial development effort for PUE and Data Centre Infrastructure Effectiveness (DCiE), CUE and WUE. As the Global Harmonization Task Force sunsets, the JTC1/SC39 will move this effort forward. Additional liaisons will be engaged and leveraged as well as other fora and consortia for additional definitions, taxonomy and KPI's.

JTC 1/SC 39 continues to leverage the work efforts promoted by The National Body of South Korea for developing standards for IT equipment such as rack mounted workstations, and continues to seek collaboration from other national bodies and consortia for this effort..

#### **3.2.1 RISKS**

The principle risk and opportunity facing JTC 1/SC 39 remains differing opinions from National Bodies on the approach to developing JTC 1/SC 39 KPI standards. This disagreement could cause delay in the development of some JTC 1/SC 39 projects, but the Chair and Secretary remain committed to facilitating frank and open discussion to remedy these differing opinions, and find common ground.

JTC 1/SC 39 faces competition from national legislation, regulations, voluntary programs, and national standards.

#### **3.2.2 OPPORTUNITIES**

Peter Drucker is credited with saying what gets measured gets done. These metrics, taxonomy and definition provide the foundation for data centre management and defining resource efficiency provides the common language for measurement. This foundational work provides methods and metrics for a common global practise, along with definitions, vocabulary and terms, the context of the industry and practice used for continuous improvement.

### **3.3 WORK PROGRAMME PRIORITIES**

JTC 1/SC 39 has placed a high priority on the development of all the projects currently listed on its Programme of Work.