CENELEC/TC 65X/R

BUSINESS PLAN

CENELEC/TC or SC	Secretariat	Date
TC 65X	Germany	2019-03-04

Please ensure this form is annexed to the TC Report to the CENELEC Technical Board if it has been prepared during a meeting, or sent to CCMC promptly after its contents have been agreed by the Committee by correspondence.

TC or SC title: Industrial-process measurement, control and automation

A Background

CLC/TC 65X is the successor of CLC/TC65CX which was founded in 1993. When starting work in 1993 TC 65CX generated a policy statement as basis for its work.

The policy statement read:

Policy Statement of TC 65CX

1. *To take into account and to recognize all work in fieldbus standardization in IEC, to apply the IEC/CENELEC cooperation agreement.*

2. *To integrate the IEC standard when available (IEC 1158, part 1, 2, ...) according to a time schedule depending on proven technical capabilities.*

3. *To integrate exisiting standards originated in Europe and fulfilling the scope of IEC SC65C WG6.*

Focus of the initial work was to establish European Standards for Industrial Fieldbus communication based on R&D work in Europe. First result of TC 65CX activities were EN 50170 and EN 50254. With increasing activities on IEC level (IEC SC 65C) for Industrial Fieldbus communication standardization work was moved to IEC-level. TC 65CX acted as the European mirror committee to IEC SC65C.

Following the restructuring of IEC TC65 which included moving several working groups from SC65C to SC65E and TC65, it was necessary to adapt the scope accordingly.

Since 2011 the scope of TC 65CX was extended and the name was changed into TC 65X.

Work of TC65X is now focusing on the activities of IEC TC65 including its subcommittees IEC SC65A, SC65B, SC65C and SC65E. Other activities related to IEC TC65 will be examined upon specific request from a National Committee or TC65CX officers and after validation by TC65CX.

The adapted policy statement now reads:

1 *To take into account and to recognize all work in international standardization for systems and elements used for industrial process measurement, control and automation and to apply the IEC/CENELEC cooperation agreements.*

2 *To integrate IEC standards, when available, according to a time schedule based on proven technical capabilities.*

3 To integrate existing standards which originated in Europe and fulfil the scope of IEC TC65.

4 The main activities should focus on:

4.1 Survey existing de-facto standards in Europe in relation to the IEC plan.

4.2 Propose the progressive integration of IEC work, when available, on CENELEC level. To propose the time schedules for such integrations.

4.3 Advise CENELEC BT regarding dual logo standards as adopted by IEC and brought to CENELEC via Parallel Voting Procedure.

4.4 Support and coordinate standardization work from other European Standardization Institutions which is related to or affecting the work of CLC/TC65CX (e.g. safety, frequency bands, application-specific directives, etc.).

While mirroring the activities of IEC TC 65, CLC/TC 65X is monitoring all parallel voting procedures and is responsible to reflect European regulations, directives, etc. when such standards will become an EN IEC.

B Business Environment

The business environment for IEC/ TC 65 and CLC/TC 65X is identical. As mentioned above, CLC/TC 65X is mirroring the IEC activities. Hence CLC/TC 65X is following the goals of IEC/TC 65.

Due to the emerging importance of wireless communication it is intended to continue a close co-operation with ETSI and other European institutions dealing with radio-spectrum issues.

Based on the establishment of IEC SyC Smart Manufacturing (SM) and due to the work in IEC TC65 regarding Smart Manufacturing it is intended to establish a Working Group at the European Level and to ensure close cooperation with the upcoming CEN-CENELEC-ETSI Coordination group regarding SM.

Due to the increased focus on Cybersecurity it is intended to establish a close cooperation and coordination with CEN/CLC JTC 13 by Liaison.

B.1 General

According to a study by the ARC Advisory Group the total worldwide market for automation services had expanded to close to $17.3 billion at the end of 2008, despite adverse conditions in the automation marketplace, and will increase by a compound annual growth rate of 7% over the coming years. Major companies in the area of automation are ABB, Emerson Process Management, Honeywell, Rockwell Automation, Phoenix-Contact, Schneider Electric and Siemens but also SMEs like Endress+Hauser, Samson, Krohne, and others. There are about a thousand vendor companies in the market worldwide. Most of the companies and many customers are organized in important consortia such as:

- FieldComm Group
- ODVA
- PROFIBUS, PROFINET international
- Others.

Continuing expansion of the global market for industrial automation equipment demands further

international harmonization of safety and security aspects as well as interoperability and easier systems/device integration in multi-vendor environments. Interfaces and generic models are becoming the most important subjects for standardization in conjunction with the increased adoption of widely-used IT solutions and de-facto standards within automation applications. A shift from proprietary to open automation interfaces has the world-wide support of both large and small vendors. On one hand industrial automation users and suppliers are faced with extremely rapid innovation and high market competition. On the other hand standardization must guarantee solutions which take into account the long lifetime expected for automation equipment requiring also compatibility of several generations of equipment.

The overall harmonization process based on consensus is considered not fast enough. As a result standardization procedures have been accelerated in recent years. But some problems cannot be eliminated because of the complexity of the technical work and the need to find appropriate solutions acceptable to most people in a working group and later to national committees.

B.2 Market demand

General
IEC standards parallel voted on European level and monitored by CLC/TC 65X are widely used by:

- Manufacturers of automation devices and systems,
- Designers, integrators and builders of automation installations,
- Users and operators (e.g. producers of goods), and
- Regulators and auditors who ensure compliance to requirements

Most standardization work is done by manufacturers on IEC level. It is often difficult to attract end-users for active participation in standardization work. IEC Standards dealing with wireless communication need to be evaluated to fulfill regulations on European level.

Competing standards
CLC/TC 65X is making continuous efforts to avoid other TCs or organizations drafting competing standards.

Customers of publications

The table below indicates customers of TC65 publications by each Technical Committee:	**Publication Example**	**Customers**
TC65	IEC 60050-351 (IEV vocabulary)	All: Manufacturers, Designers, Users and Regulators
	IEC 61010 (Safety requirements for equipment)	Manufacturers and Regulators
	IEC 62443 (Cybersecurity)	All
	IEC 62708 (Documentation requirements)	All
SC65A	IEC 61326 (EMC)	Manufacturers and Users
	IEC 61508 Series (Functional Safety)	Manufacturers and Users
	IEC 61511 (Functional Safety process industry sector)	Manufacturers and Users
	IEC 61512 (Batch Control)	Manufacturers and Users
SC65B	IEC 61131 (PLC)	Manufacturers and Users
	IEC 61499 (Function Block)	Manufacturers and Users
	IEC 60534 (Industrial-process control valves)	Manufacturers and Users
	IEC 61207 (Expression of performance of gas analyzers)	Manufacturers and Users

SC65C	IEC 61158 Series (Fieldbus)	Manufacturers
IEC 61588 (Precision clock synchronization)		Manufacturers, Designers and Users
IEC 61784 (Industrial communication networks – Profiles)		Manufacturers, Designers, and Users
IEC 61918 (Cabling)		Manufacturers, Designers, and Users
IEC 62439 (High availability automation networks)		Manufacturers, Designers and Users
IEC 62591, IEC 62601, IEC 62734 (Wireless)		Manufacturers and Users
IEC 62657 (Wireless coexistence)		Manufacturers, Designers, Users and Regulators
SC65E		
IEC 61804 Series (Function Block EDDL)		Manufacturers, Designers, and Users
IEC 62541 Series (OPC unified architecture)		Manufacturers, Designers, and Users
IEC 62769 Series (Field Device Integration FDI)		Manufacturers, Designers, and Users
IEC 62714 (Automation-ML)		Manufacturers, Designers, and Users
IEC 62543 (FDT)		Manufacturers, Designers, and Users
IEC 62337 (Commissioning)		Manufacturers, Designers, and Users
IEC 62381 (FAT,SAT, and SIT)		Manufacturers, Designers, and Users
IEC 62264 (Enterprise-control system integration)		Manufacturers, Designers, and Users
IEC 61987 (Electronic catalogues)		Manufacturers, Designers, and Users

B.3 Trends in technology

The tremendous impact of information technology and communications (ITC) at all levels, increased complexity of equipment (e.g. replacement of hardware by software functions). Migration towards common equipment and solutions for a variety of industry sectors, the shift from centralized to distributed functionality, and the dominance of system and integration aspects has significant impact on the future work of CLC/TC 65X. There are also some indications that functions which have been decentralized in the past will be centralized again in so called “Clouds”.

IEC TC 65 is structured as follows:
Common functionalities in a plant like functional safety (FS) but also the properties of automation devices in terms of electromagnetic compatibility (EMC) are subject of work in IEC SC65A. Most of the device related work is located in IEC SC65B. Communication related topics are dealt in IEC SC65C, including wireless (radio) communications. The support of the overall lifecycle of a plant will be currently improved with stress on the engineering phase of a plant. This is subject of standardization mainly in IEC SC65E. Also integration technologies are an important topic in SC65E.

Finally the mother committee IEC TC 65 deals with global issues like terms and definitions, overall Cybersecurity, Digital Factory, Smart Manufacturing and others.

B.4 Market trends

The standardization of systems, communications and devices will continue. In addition, the growing requirement to meet improved environmental stewardship, energy efficiency, and human accessibility demands will place increased demands on standardization and increase the likelihood that some standards will be referenced by regulation authorities.

The components of a plant will be designed in the future by picking up their electronic representation (electronic data sheet). Therefore some future IEC standards will be available as data bases in order to directly support the whole life cycle of a plant.

The trends on the customer side to define application processes have the impact that standard to be

used in processes have to fit together in terms of terminology and contents. Therefore some harmonization is needed not only in terminology but also in contents fitting better together. Some process oriented standards have already been created.

The overall aim is to support the so called “digital factory and SM” which is the virtual representation of a real plant in factory and process automation stored in a data repository including tools supporting relevant processes.

Energy efficiency and the minimization of a plant’s impact on the environment are common goals across the industry. While designers will tend to specify low power consumption devices and equipment, overall plant efficiency and environmental stewardship will dominate design decisions. Increased plant efficiency, safety and security may lead to the deployment of more, and more sophisticated, control equipment.

B.5 Ecological environment

Today's automation technology also takes into account such issues as protection of the environment and saving of energy and resources in addition to the original aims of controlling production processes in the most economical way with the highest regard to both safety and quality. Those requirements are fully addressed. Energy Efficiency in Automation dealing with automation technology as they are:

- IEC TC2
- IEC SC17B
- IEC SC22G
- IEC TC23
- IEC TC65
- ISO TC184

Environmental standards are increasingly relevant because they may contain some restrictions for product development.

B.6 Involvement of societal stakeholders

The area of Industrial-process measurement, control and automation is dominated by the producing industry both, manufacturing and process. Insofar societal stakeholders are not directly involved in the standardization work of this committee.

Nevertheless there is a growing indirect influence of societal stakeholders due to sharing resources. The most prominent current example is the growing use of wireless technologies. Automation Industry has to share the resources (frequency bands) with users from private and office area (consumers).

Conflicting requirements need to be resolved fulfilling the needs of all parties involved. This may lead to the involvement and cooperation with societal stakeholders in future work.

B.7 Involvement of SMEs

As mentioned above, Work of TC65X is mirroring the activities of IEC TC65 including its subcommittees on European level.

Hence the contribution of SMEs is defined by the composition of delegates in IEC TC65. Since such delegates are nominated by the National Committees of the member states, the involvement of SMEs is according the representation on national level.

The same aspect applies on European level for CLC/TC 65X.

C System approach aspects

CLC/TC 65X is a system and a product committee at the same time, according to IEC TC 65. IEC TC65 and its 4 SCs has been system oriented for a long time and system conformity of products is permanently in the scope of all TC 65 Committees.

Examples are:

- Functional Safety which can only be achieved if the components contain specific properties in order realize a certain safety integrity level;
- Cybersecurity for IACS (62443) is intended to become a cross sectoral standard series;
- Communications of devices through standardized protocols;
- Device integration using a common methodology to connect devices in a specific application.

In fact Functional Safety is a very good example of an advanced system approach. All components of functional safe application must fulfill all system requirements otherwise the specific safety integrity level (SIL) will not be achieved.

In order to standardize all necessary system related aspects there is a need for interaction and coordination between the different committees dealing with automation subjects. CLC/TC 65X understands its role as a turntable of information and a service for coordination.

D Objectives and strategies (3 to 5 years)

CLC/TC 65X is following the objectives and strategies of IEC/TC 65.

TC65

The following action plans are drawn up:

- To provide relevant definitions to IEV (Electropedia) and consolidate terms and definitions across the committee
- To provide and maintain the IEC 62443 series as a framework for security for industrial automation and control systems, promoting the applicability of the series to other domains and toward a horizontal standard; to support the CB scheme and work on Profiles
- To develop a plant documentation (P&ID) that includes all relevant process equipment, instrumentation and control connections
- To develop safety requirements for automation equipment, excluding functional safety
- To provide a framework for system interface between industrial facilities and the smart grid
- To develop Life-cycle management models for products and production systems
- To define the Digital Factory framework, specifying model elements and rules for creating and managing digital representations of production systems
- To develop guidance for Reliability of Industrial Automation Devices and Systems
- To develop guidance for a Framework to bridge the requirements for safety and security
- To develop guidelines for the design and operation of energy efficient systems in industrial automation from a system point of view
- To develop a Smart Manufacturing framework and system architecture based on use cases and provide guidance to standardization projects to enhance existing standards toward Smart Manufacturing
- To develop a reference meta-model and reference models for Smart Manufacturing.

SC65A The following action plans are drawn up:

- To specify the system environment as prerequisite for the interaction of devices
- To develop the electromagnetic compatibility (EMC) requirements specified in IEC 61326 series
- To act as functional safety resource to other TC's, SC's and WG's while maintaining IEC 61508 as the horizontal standard for functional safety. To develop Functional Safety guidance, procedures, models and requirements specified in IEC 61508 series
- To revise IEC 61511 Parts 1,2 and 3
- To develop IEC 62682 Management of Alarm Systems for the Process Industries
- To develop requirements for Batch Control Systems

SC65B The following action plans are drawn up:

- To develop concepts and requirements for sensor and actuators
- To specify testing and evaluation performance criteria
- To develop requirements for control devices and systems
- To provide standardization of languages and programming methods applicable to the range of programmable control systems
- To further develop the function block approach including distribution
- To specify interface with power sources for wireless communication devices, including battery and energy harvesting

SC65C The following action plans are drawn up:

- To maintain and support the fieldbus standards (IEC 61158 and IEC 61784), and the wireless industrial standards
- To develop approaches for the coexistence of wireless networks in industrial environments, including suitable interactions with wireless regulatory bodies
- To update the fieldbus standards as necessary to meet safety and emerging security requirements, including the security requirements identified in the TC 65 security framework.
- To produce a TSN Industrial Automation profile, collaborating with IEEE.

SC65E The following action plans are drawn up:

- To develop enterprise-control system integration and manufacturing operations management models in the IEC 62264 series
- To standardize an interface between applications, measurement and control devices, information models and communication protocol integration in the series IEC 62541 OPC UA
- To develop an engineering data exchange format for the engineering of data between different engineering tools
- To increase efficiency during the engineering phase (IEC 62714)

- To improve the device integration in harmonizing EDDL (IEC 61804), FDI (IEC 62769) and FDT (IEC 62453)
- To develop models for Commissioning phases, milestones, loop checks and system test (Factory acceptance test (FAT), site acceptance test (SAT), and site integration test (SIT))
- To develop procedures and requirements for an Intelligent Device Management.

E Action plan

The action plan is defined by the CLC/TC 65X work-program.

Further actions are:

- Continue the co-operation with ETSI
- Bring awareness of needs of Automation Industry in wireless communication to the European Commission and National Authorities
- Mirroring of IEC TC65 Smart Manufacturing activities at the European Level
- Development/revision of standards for listing under the RED/EMCD/LVD

F Useful links to CENELEC web site

For CLC/TC 65X:
http://www.cenelec.eu/dyn/www/f?p=104:7:1435235956084001::::FSP_ORG_ID,FSP_LANG_ID:1257871,25

For IEC TC65: http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:1250,25

Antonio Monaco
CLC/TC 65X Secretary