



STRATEGIC BUSINESS PLAN (SBP)

IEC/TC or SC PC 118	Secretariat China	Date 2012-06
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PC 118
Smart Grid User Interface

A. Background

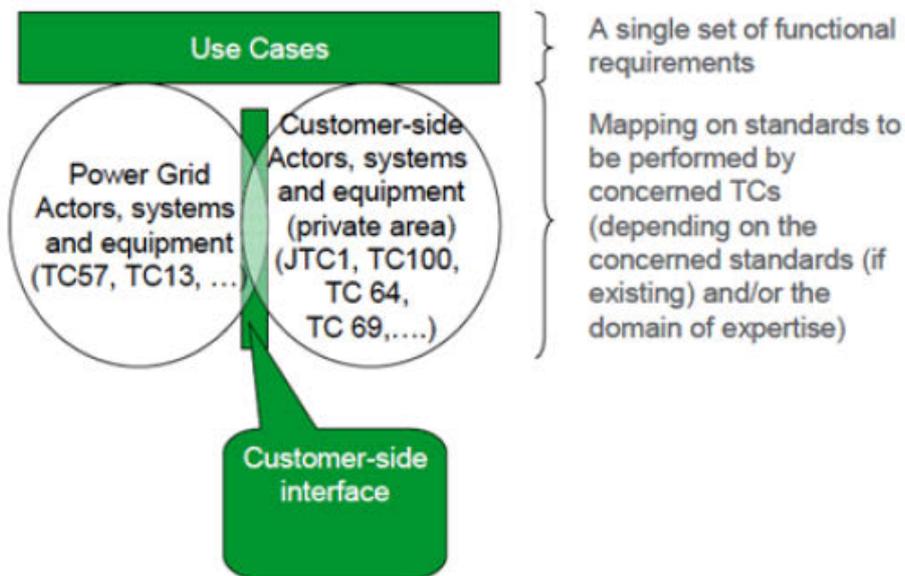
On the user side of smart grid, smart home/ smart community/ smart building/ smart industrial park, Demand Response (DR), distributed energy resources (DER), and electric vehicles (EV) are all undergoing a fast development. Considering the relevance and common demand while connecting various demand side objects with the power grid, PC 118 was established in September 2011 from the perspective of ensuring secure, effective, and economical operation of power grid from a User viewpoint as well as enhancing energy efficiency of demand side system and equipment.

Over the years, several ecosystems (Multimedia, Telecommunication, Home Automation) have been growing in coexistence separately in the User’s environment. Now the perspective of energy applications is triggering a lot of effervescence with a new perspective of global value proposition. This explains the high degree of cross cutting discussions that have been needed for 18 months between many groups within the IEC. Due to the very nature of the topic, it has been decided to use the Project Committee vehicle which is temporary but more formal than traditional Joint Working Groups that would not have been efficient enough. As Joint Working Groups, PC 118 is expecting the active involvement and contributions from experts representing many different IEC TCs and organizations under liaison. This is why PC 118 will have a special emphasis on collaboration and liaisons, and will seek close coordination and cooperation with the IEC Smart Grid Strategic Group (SG3).

Scope of PC 118:

Standardization in the field of information exchange for demand response and in connecting demand side equipment and/or systems into the smart grid.

The following diagram shows that from a common IEC set of Use Cases there is a “Power Grid domain” on the left and many “Power Grid Users domains” on the right. Both are considering the Customer or User interface from their respective viewpoint to deliver relevant standards.



PC 118 is set up to develop a harmonized and consistent suite of standards for the Users (right circle).

- In order to ensure the maximum IEC added value to the industry, and from a standard point of view, PC 118 will focus on demand side smart systems and/or energy monitoring equipments, control and management targeting at high efficiency interactions with the power grid from a User side viewpoint, while TC 57/WG21 [Interfaces and protocol profiles relevant to systems connected to the power grid] focuses on information exchange from a power grid viewpoint. More generally TC 57 (in collaboration with TC 13, TC 69, TC 8, etc...) is dealing with information exchange for the grid considering many other interfaces than User Interfaces, typically : heavy industry, bulk storage, EV charging stations connected to the distribution grid, distributed energy plants, bulk generation, ...)
- Smart grid user interface related standards prepared by other technical committees of the IEC (including IEC/ISO JTC1) shall be used where applicable. PC 118 shall apply analytical approach and Use Cases developed by IEC TC 8 for smart grid requirements. PC 118 shall use IEC CIM and IEC 61850, and will develop new information models in view of demand side needs and characteristics. PC 118 shall consider IEC TC 57, TC 13, TC 59, TC 69, TC 72, TC 100, IEC/ISO JTC1 SC25, TC 56, TC 65, etc... related architectures and standards.
- PC 118 should also consider smart grid user interface related standards prepared by other organizations such as ISO and ITU.

Presently, PC 118 has established the following working groups:

- WG1: Exchange interface between demand-side smart equipment and the grid
- WG2: Power Demand Response

B. Business Environment

B.1 General

The large scale deployment and construction of smart meters, advanced metering systems, smart home and smart buildings, as well as the application of power efficiency technologies, provide important foundations for the development and implementation of demand response and demand side energy management systems. Monitoring equipment for EV charging/discharging and DER integration, smart thermostat, in-home display device, grid-friendly smart appliance, smart socket, load control switches, energy service gateway, user side energy management system, and demand response platform have all

been applied successively. Therefore, harmonized standards regarding these equipments and systems are needed.

B.2 Market demand

Users of standards developed by PC 118 include utilities, equipment manufacturers, system integrators, demand response application system suppliers, demand side energy management system suppliers, test and certification organizations, etc.

B.3 Trends in technology

Based on internet of things and cloud computing technologies, user side system/equipment power consumption information acquisition and comprehensive consumption services stand for the future trends of technology. PC 118 needs to carefully observe this development in order to early pick up possible solutions and to strive for short implementation times for the standards.

B.4 Market trends

Market asks for demand side systems/equipments being able to exchange information with grid efficiently and supporting demand response.

B.5 Ecological environment

The development and promotion of PC 118 standards is crucial to enhance the balance of supply and demand between power grid and users, improve efficiency of the energy supply chain, and lower carbon emission.

C System approach aspects

PC 118 will team in a balanced way with the related parties and actively promote the establishment of internal liaisons to related IEC TC.

PC 118 as supplier of standards	TC 17B	LV switchgear and control gear
	SC 23B	Plugs, socket-outlets and switches
	SC 23E	Circuit breakers and similar equipment for household use
	TC 59	Performance of household and similar electrical appliances
	TC 69	Electric road vehicles and electric industrial trucks
	TC 72	Automatic controls for household use
	TC 82	Solar Photovoltaic Systems
	TC 100	Audio, video and multimedia systems and equipment
	TC 8	Systems aspects for electrical energy supply
PC 118 as customer of standards	TC 57	Power systems management and associated information exchange
	TC 56	Dependability
	TC 64	Electrical installations and protection against electric shock
	TC 65	Industrial-process measurement, control and automation
	ISO/IEC JTC1 SC25	Interconnection of information technology equipment
	TC 13	Electrical energy measurement, tariff- and load control

Other Committees (committees that produce standards in neighbouring domains to be in liaison with for technical consistency)	TC 57	Power systems management and associated information exchange
	TC 69	Electric road vehicles and electric industrial trucks
	TC 100	Audio, video and multimedia systems and equipment

PC 118 will also establish external liaisons with ISO/TC205, ITU, UCAIug, Zigbee Alliance, Wi-Fi Alliance, ECHONET, KNX, ASHRAE, OASIS, CIGRE, IEEE, openADR Alliance and regional organizations in due time.

D Objectives and strategies (3 to 5 years)

The future objectives and strategies of PC 118 are based on the following business environment:

- Development of residential and commercial DER, residential and commercial EV, smart home, smart building, etc.
- Deployment of smart meters and AMI from a user viewpoint
- Energy efficiency management and demand response
- Application of emerging technologies, such as internet of things, cloud computing, etc.

D.1 Objectives

- Unify and standardize information model and communication protocol of large amount of systems/equipments at user side to make them interact with power grid effectively.
- Develop standards to:
 - Facilitate value added service provided for users by using grid side resources.
 - Ensure the availability of standardised “Interface for information exchange between power grid and user side smart equipment”.
 - Ensure the availability of standardised interface to support “Demand response” application.
 - Ensure the openness and interoperability of formulated standards.
 - Emphasise the safety of network and privacy of users.
 - Ensure the quality, consistency and testability of standards for effective certification.

D.2 Strategies

- Promote a single international vision and technology for supporting demand-response and smart equipment, versus regional and local solutions.
- Under the supervision of IEC SMB Smart Grid Strategic Group, closely cooperate with related IEC TCs and other standard organizations, and adopt those mature standards wherever available and applicable.
- Apply mature information and communication technologies.

E Action plan

0. Considering the complexity of work and wide range of technologies involved, a Chairman's Advisory Group (CAG) will be set up.
1. Collect requirements for demand-response and for the connection of smart equipment based on Use cases.
2. Assess the existing portfolio of standards and other potential eligible solutions
3. Produce a report summarizing the requirement and the assessment of solutions, the identified gaps and the pre-selected solutions
4. Develop standards to cover identified gaps.

F Useful links to IEC web site

[IEC/PC 118 dashboard](#) giving access to Membership, TC/SC Officers, Scope, Liaisons, WG/MT/PT structure, Publications issued along with their Stability Dates, Work Programme and similar information for SCs, if any.

Name or signature of the secretary

Like Wang (Secretary)