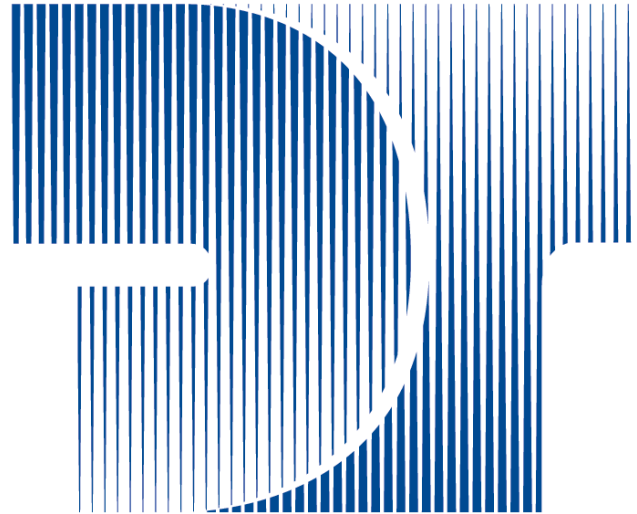


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DISTRIBUTECH



February 27 – March 1, 2002

Miami Beach Convention Center

Miami Beach, Florida

Status of the IEC 61850 Standard on Communication Networks and Systems for Substations - Introduction

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What does IEC stand for?

- **International Electrotechnical Commission**
- **Based in Geneva (Switzerland)**
- **Members: National Standardization Bodies (ANSI, DIN, ...)**

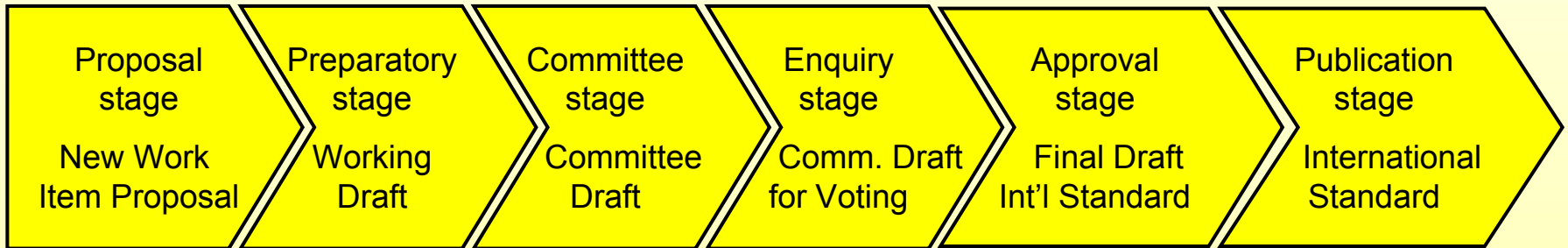
How do people work together?

- **Technical Committees (TC 57, ...)**
- **New Work has to be proposed & accepted**
- **Work is done in Working Groups & Projects**
- **National Committees nominate experts**
- **National Committees comment & vote**
- **Basic Principle: Get Consensus**

Standardization Process

**IEC 61850 :
1995**

**IEC 61850 :
2001 - 2003**



NWIP

WD

CD

CDV

FDIS

IS

The following IEC TCs are involved in power systems communication:

23 P (13 O)
Members

61850,
60870-5,
TASE.2, ...

- TC 57 **POWER SYSTEM CONTROL AND ASSOCIATED COMMUNICATIONS**
- **TC 82** **SOLAR PHOTOVOLTAIC ENERGY SYSTEMS**
- TC 88 **WIND TURBINE SYSTEMS**
- **TC 105** **FUEL CELL TECHNOLOGIES**
- **TC xxx**

61400-25

TC 57 Working Groups

- WG 02** Line traps
- WG 03** Telecontrol protocols
- WG 05** Teleprotection
- WG 07** Telecontrol protocols compatible with ISO standards and ITU-T recommendations
- WG 09** Distribution automation using distribution line carrier systems

WG 10 - 12 Comm. networks and systems in Substations

- WG 13** Energy management system application program interface (EMS-API)
- WG 14** System interfaces for distribution management (SIDM)
- WG 15** Data and communication security
- AHWG 5** Deregulated energy market communications

Project IEC 61850 - Communication networks and systems in Substations

IEC TC 57 WG 10, 11, 12

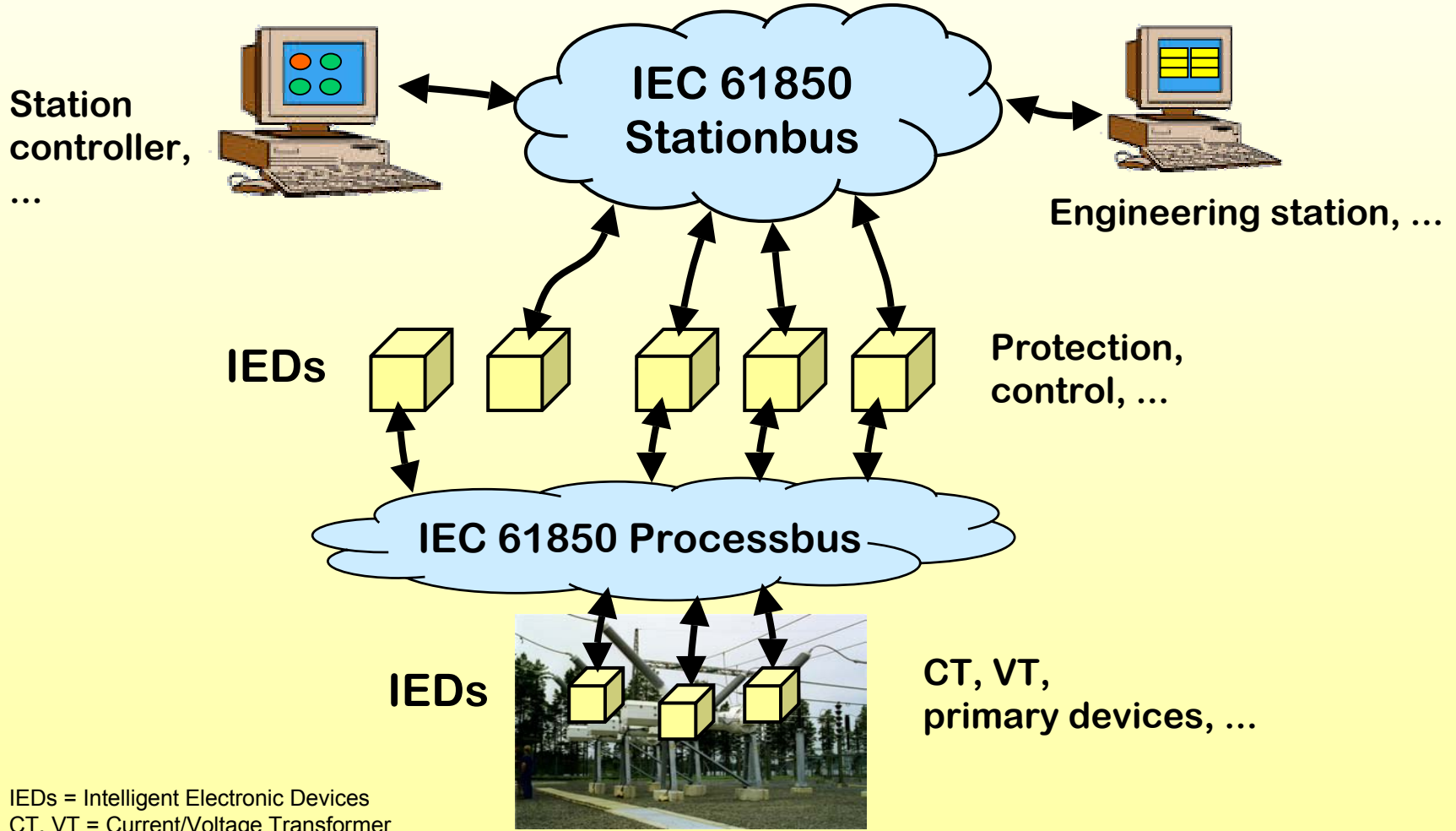
some 60 experts



WGs involved in IEC 61850

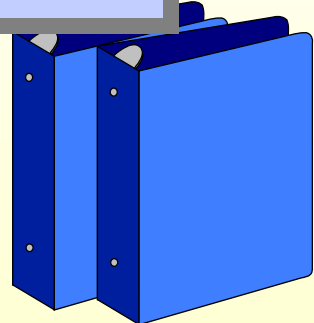
- **WG 10** Communication standards for substations - **Functional architecture and general requirements**
- **WG 11** - **Communications within and between unit and station levels.**
- **WG 12** - **Communication within and between process and unit levels**

Primary scope of IEC 61850

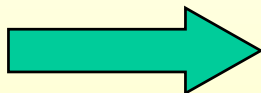


History

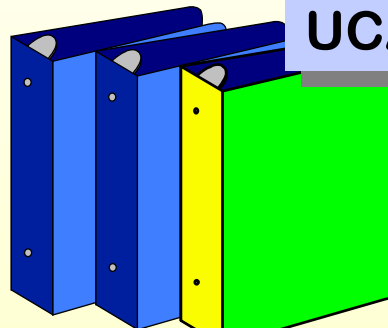
EPRI
UCA 1.0



- implementation
- experience
- new requirements
- ...



IEEE TR 1550
UCA 2.0



ICCP

1990

1996

1999

2001



IEC DIS 60870-6-503
IEC DIS 60870-6-802

Control Center
TASE.2

IEC 61850-x-y

Substation, ...



IEC WD 61400-25

Wind Power Plant

**Status: IEC 61850 -
Communication networks
and systems in Substations**

Draft TR
CDV
IS
IS
CDV

CD
2CDV

2CDV
2CDV
2CDV
2CD

CDV

CD
WD

- 1: Basic principles
- 2: Glossary
- 3: General requirements
- 4: System and project management
- 5: Communication requirements for functions and devices models
- 6: Substation automation system configuration language
- 7-1: Basic communication structure for substations and feeder equipment - Principles and models
- 7-2: - Abstract communication service interface (ACSI)
- 7-3: - Common data classes
- 7-4: - Compatible logical node classes and data classes
- 8-1: Specific communication service mapping (SCSM) - Mapping to MMS (ISO/IEC 9506 Part 1 and Part 2)
- 9-1: Specific communication system mappings (SCSM) - Serial unidirectional multidrop point to point link
- 9-2: - For process bus
- 10: Conformance testing

IS in 2002

IEC 61850 Layering

2000+ entities
(name tagged information)

Logical Nodes &
Data Classes

Compatible logical node classes and data classes (7-4 and 7-3)

publ./subscr., get, set, control, ... reporting, logging

Service
"Interface"

Abstract communication service interface (ACSI) (7-2)

Communication profiles

Mapping to e.g. MMS (8-1)
(CORBA under investigation in Spain)

Ethernet, TCP/IP, OSI

Data

Data

Summary

**There are draft IEC 61850
standards for electric utilities**

**approved for
substation automation and
re-usable in other application
domains**

Questions ?

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