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# Offene Objektmodelle, Kommunikation und Konfiguration gemäß der Norm IEC 61850

Präsentation  
SPS/IPC/Drives  
"Architekturen für  
innovatives Steuern"  
am 26.11.2003 in Nürnberg

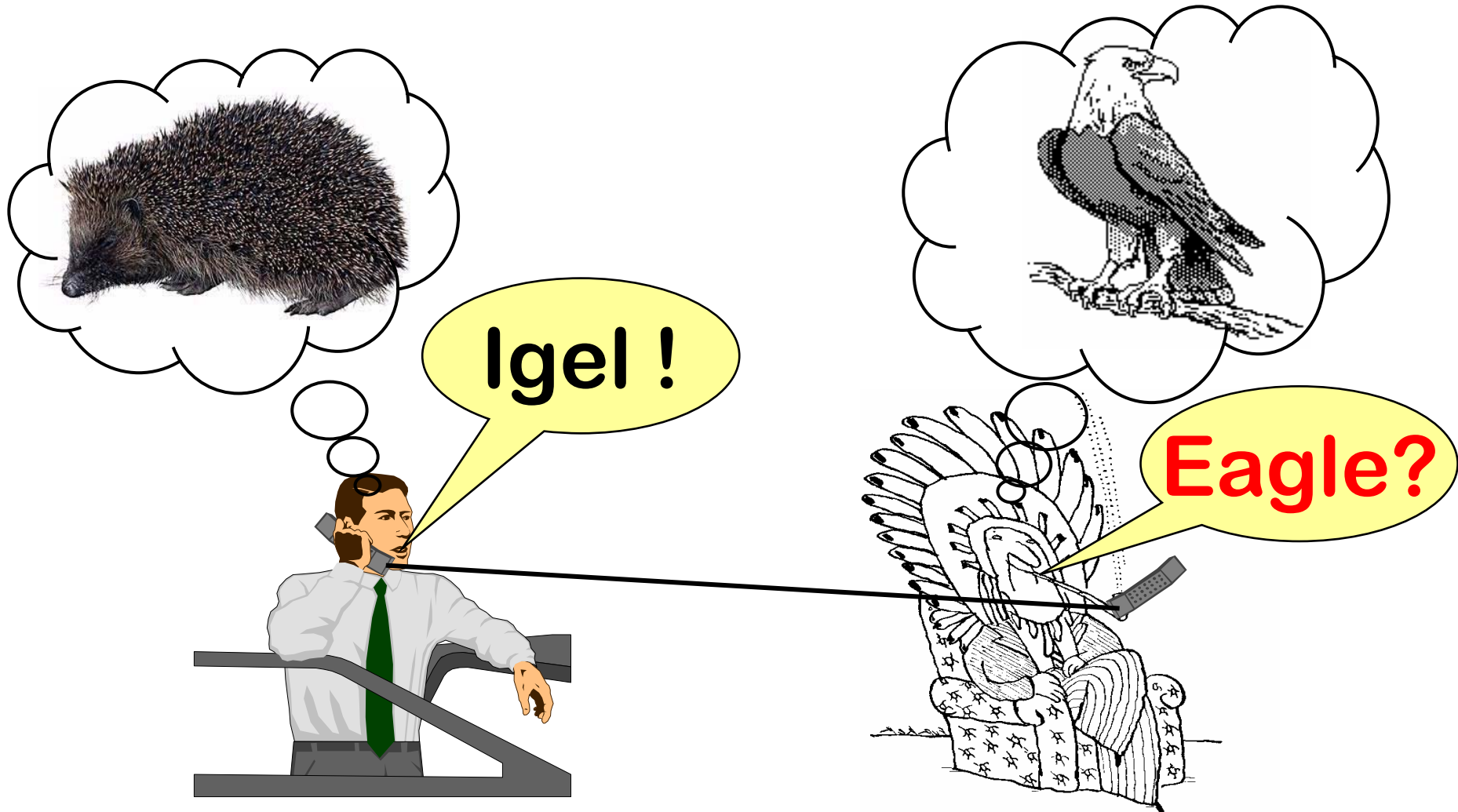
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# Verbindung ist nicht Kommunikation

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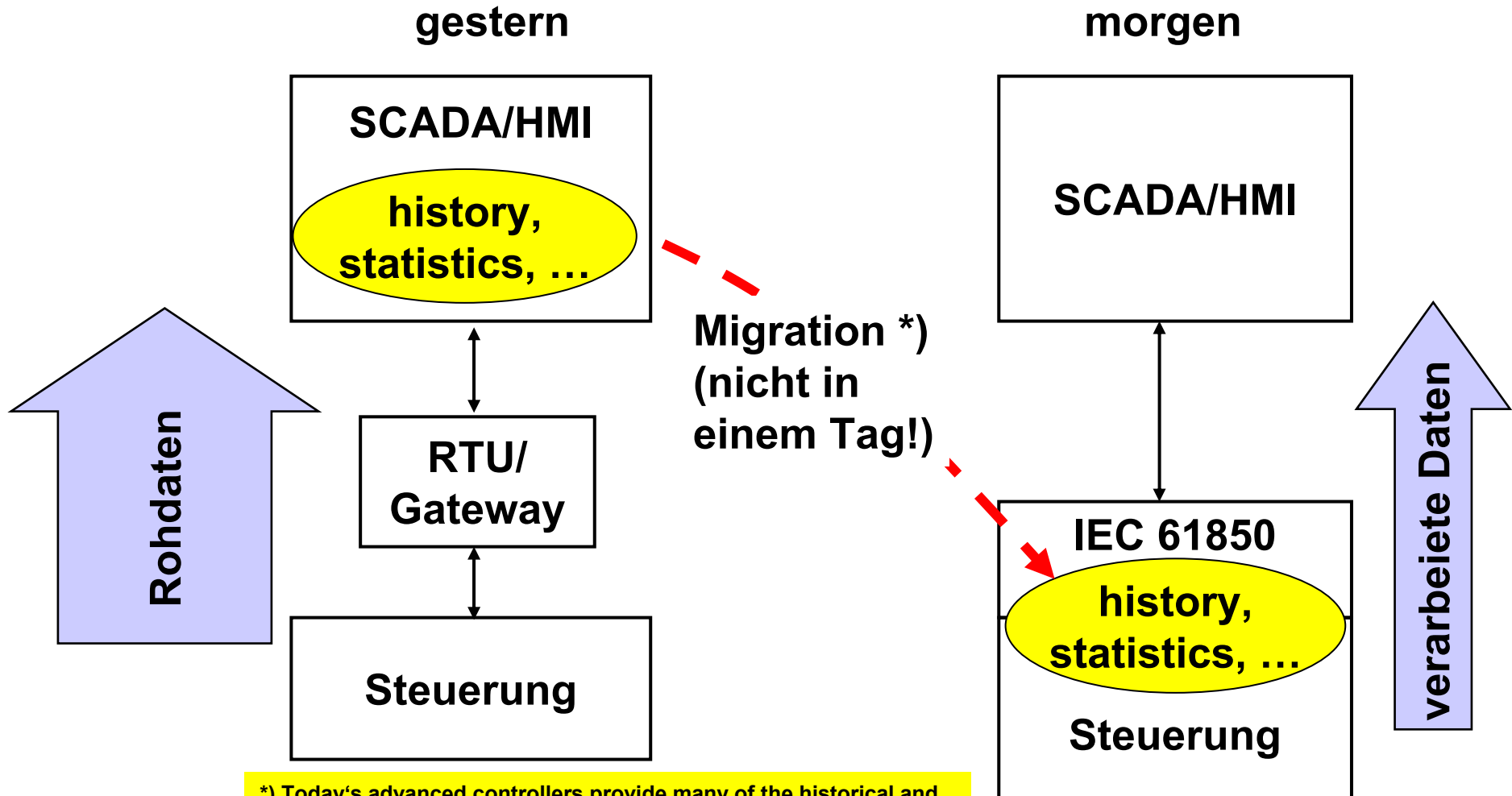


# Ziel der Normung von IEC 61850

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- **Vereinfachung** des Engineerings von Geräten und Systemen in **Schaltanlagen** durch:
  - **Verschmelzen** von Steuern, Regeln, Fernwirken und SCADA-Funktionen in den intelligenten „Feldgeräten“ (IED – intelligent electronic devices),
  - **Definition und Wiederverwendung** von (Basis-) Objektmodellen,
  - **Selbstbeschreibung** von Geräten,
  - **Einsatz von Standards** wie XML, TCP/IP, Ethernet, ...
  - ...

# Migration (prinzipiell)



\*) Today's advanced controllers provide many of the historical and statistical information. In this regard the standards IEC 61850 and IEC 61400-25 follow the market - not vice versa.

# IEC TC 57 → IEC 61850 - Communication networks and systems in substations

## System Aspects

- 1 Introduction and Overview [Technical Report]
- 2 Glossary [IS]
- 3 General Requirements [IS]
- 4 System and Project Management [IS]
- 5 Communication Requirements for Functions and Device Models [IS]

## Configuration

- 6 Configuration Language for electrical Substation IEDs (SCL) [FDIS]

## Modelling Introduction

- 7-1 Principles and Models [IS]

## Information Models

- 7-4 Compatible Logical Node Classes and Data Classes [IS]
- 7-3 Common Data Classes [IS]

## Information Exchange Methods

- 7-2 Abstract Communication Services [IS]

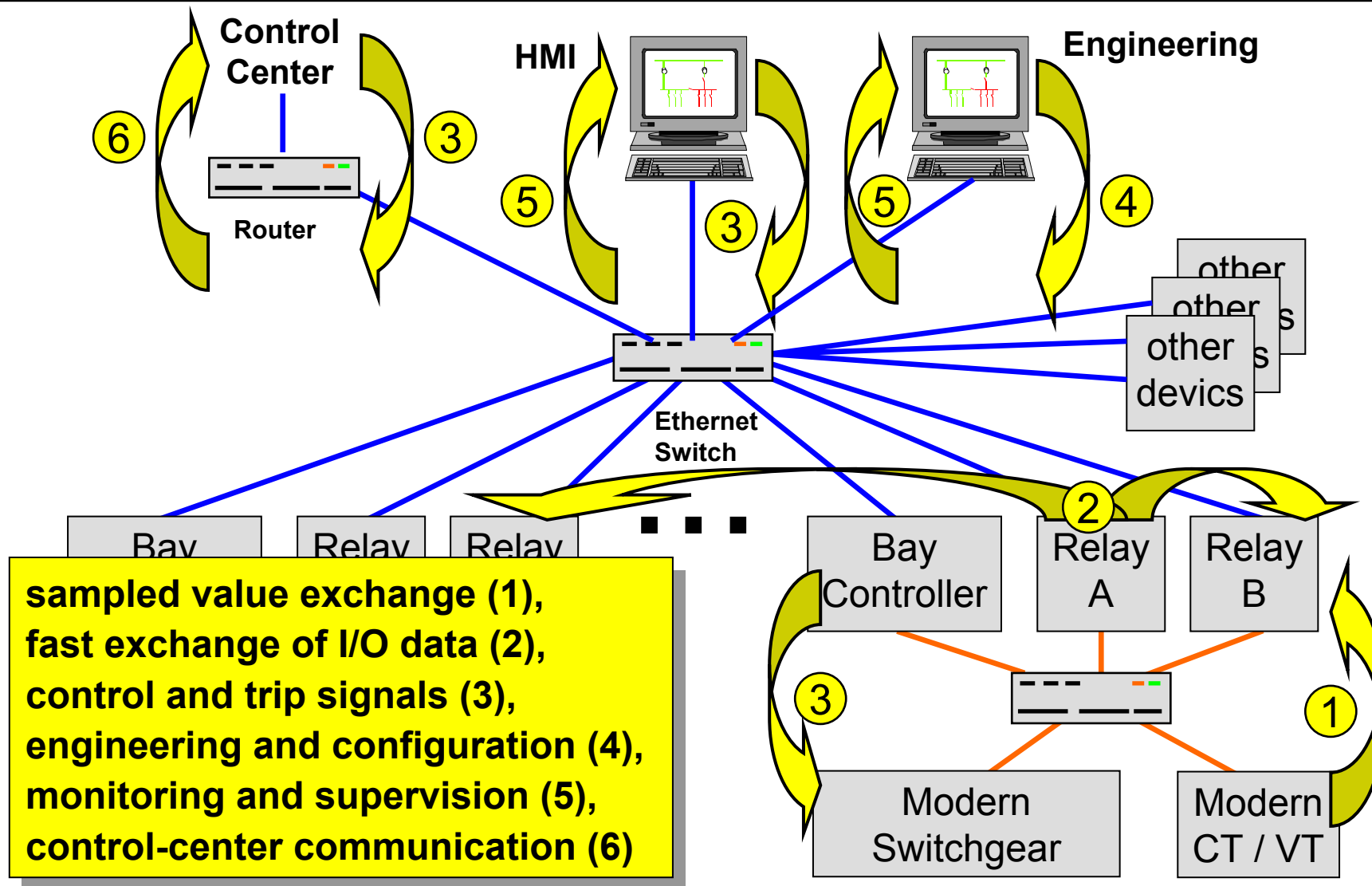
## Mapping to real Comm. Networks (SCSM)

- 8-1 Mappings to MMS (ISO/IEC 9506-1/-2) and to ISO/IEC 8802-3 [FDIS]
- 9-1 Sampled values over serial unidir. multidrop point to point link [IS]
- 9-2 Sampled values over ISO/IEC 8802-3 [FDIS]

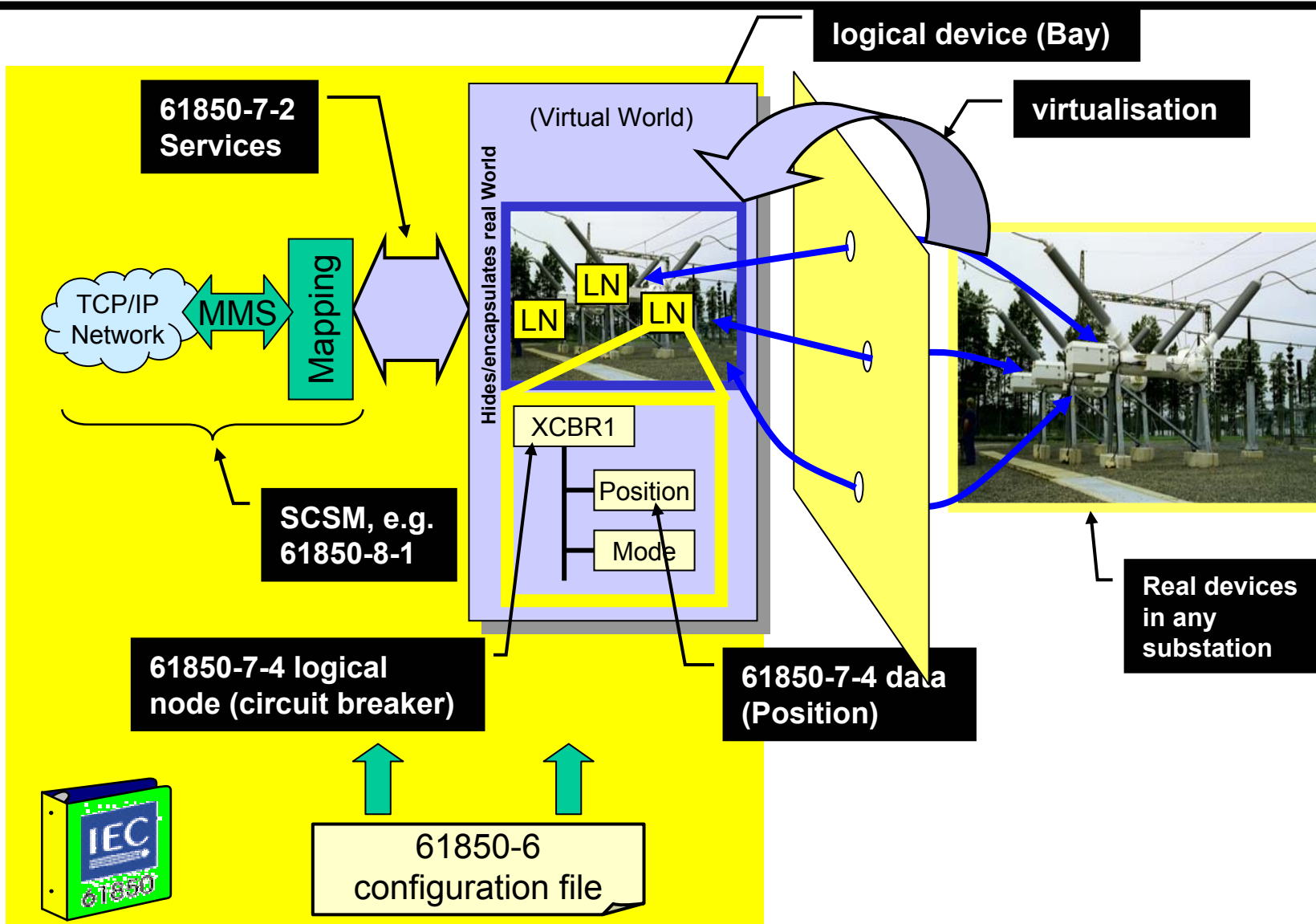
## Testing

- 10 Conformance Testing [CDV]

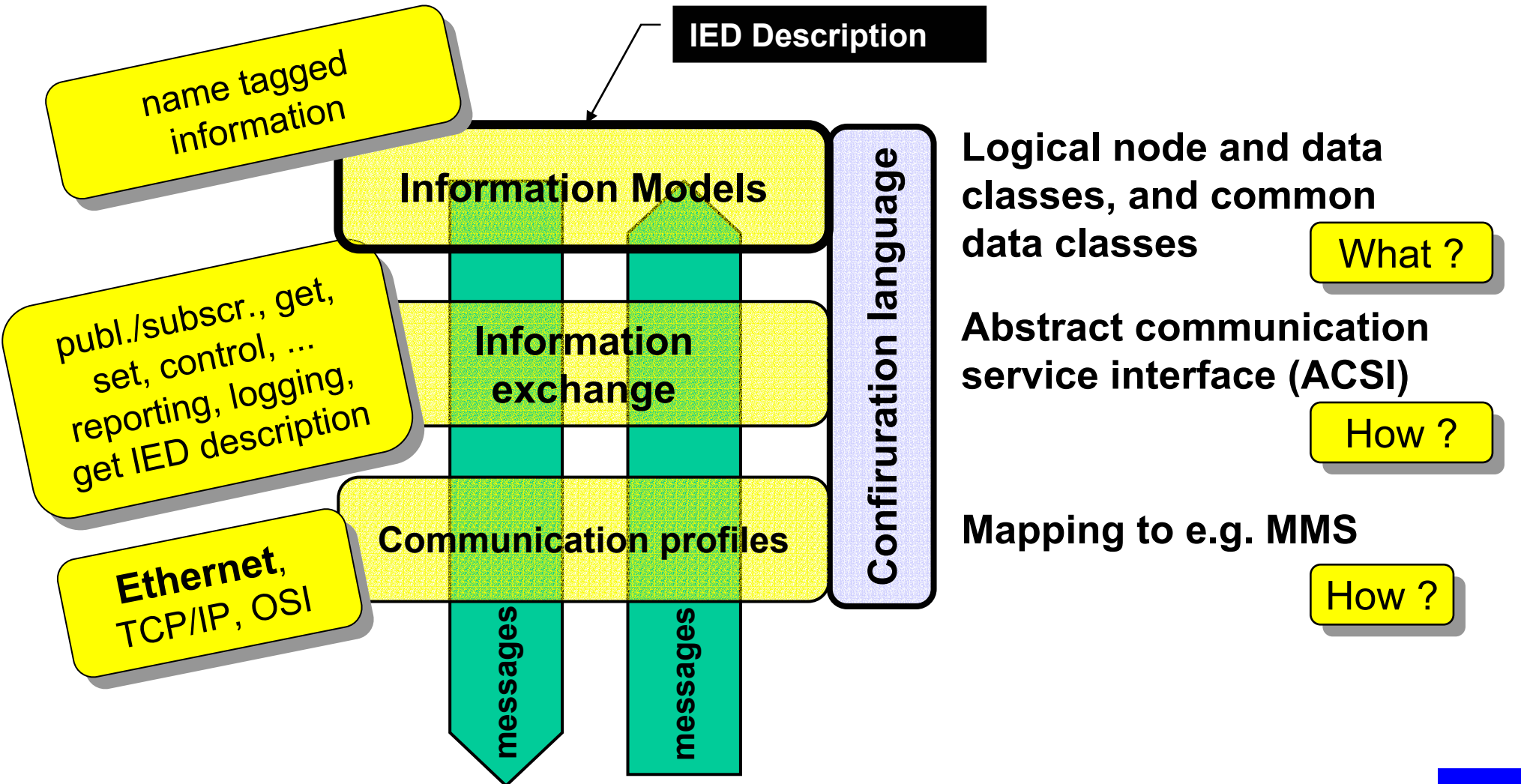
# Moderne Schaltanlage



# Vom Gerät zum Modell



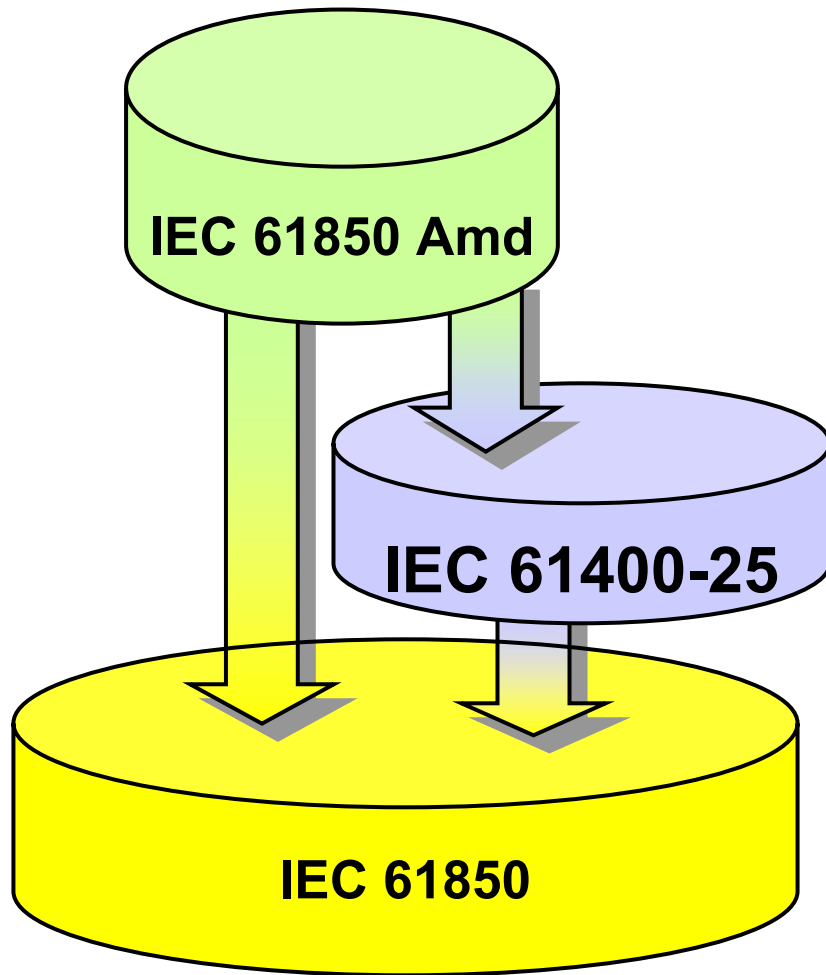
# Themen der IEC 61850





# Wiederverwendung

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Hydro Power Plants,  
Power Quality Measurements,  
Decentralized Energy Resources  
→ IEC 61850 Amendment

Wind Power Plants  
→ IEC 61400-25

Substations (HV, MV)  
→ IEC 61850

# IEC 61850 (61400-25) Models

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**90 (10+) Standard LN Models (PDIS, XCBR, ...)**

**500 (200+) Standard Data (Pos, ...)**

OPC: Item

OPC: Properties

**100 (100+) Standard Data Attributes (stVal, q, t, ...)**

**30 (10+) Standard Common Data Classes**

**10 (10) Standard Comm.-Service Models**

MV, WYE, ...

Auszug:

<http://www.nettedautomation.com/qanda/iec61850/information-service.html#>

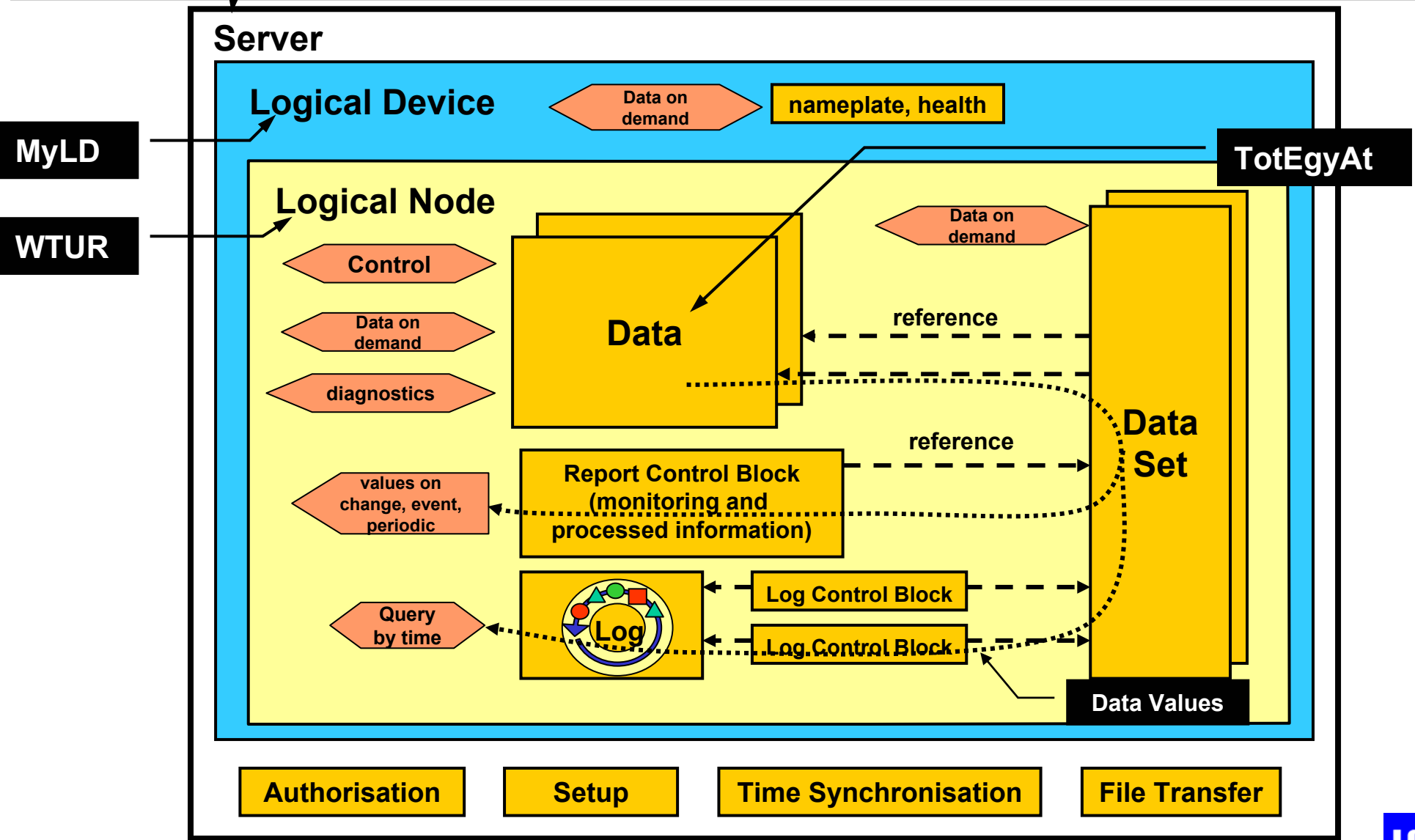
# Engineering nach IEC 61850-6

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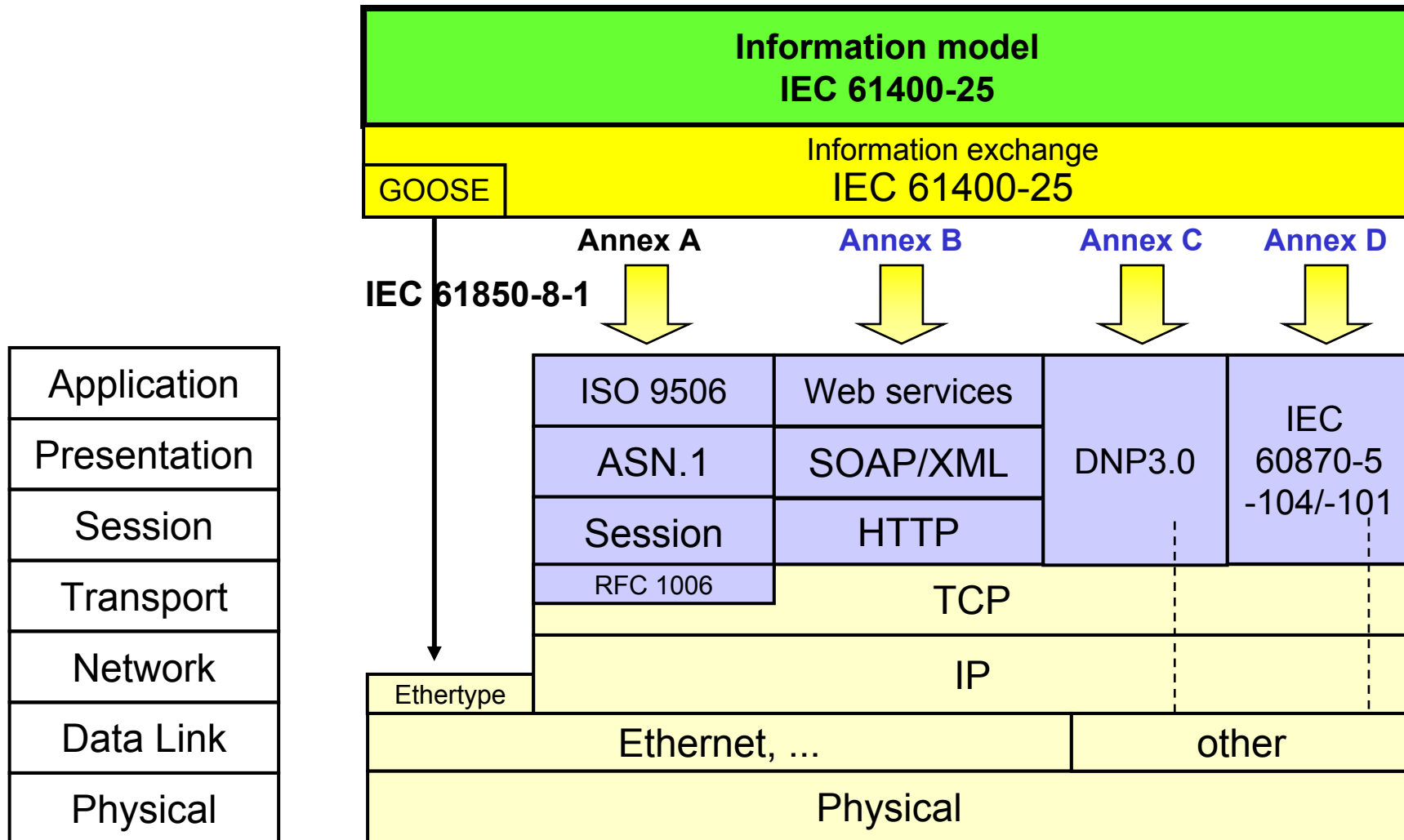
- Engineering nach IEC 61850-6 für die **Geräte- und der Systemkonfiguration** (XML basiert)
- **Systemspezifikation** (SSD - System Specification Description),
- **Gerätekonfiguration** (ICD - IED Capability Description)
- **Systemkonfiguration** (SCD - System Configuration Description)
- **Parameterdateien für Geräte** proprietär oder CID  
(Configured IED Description)

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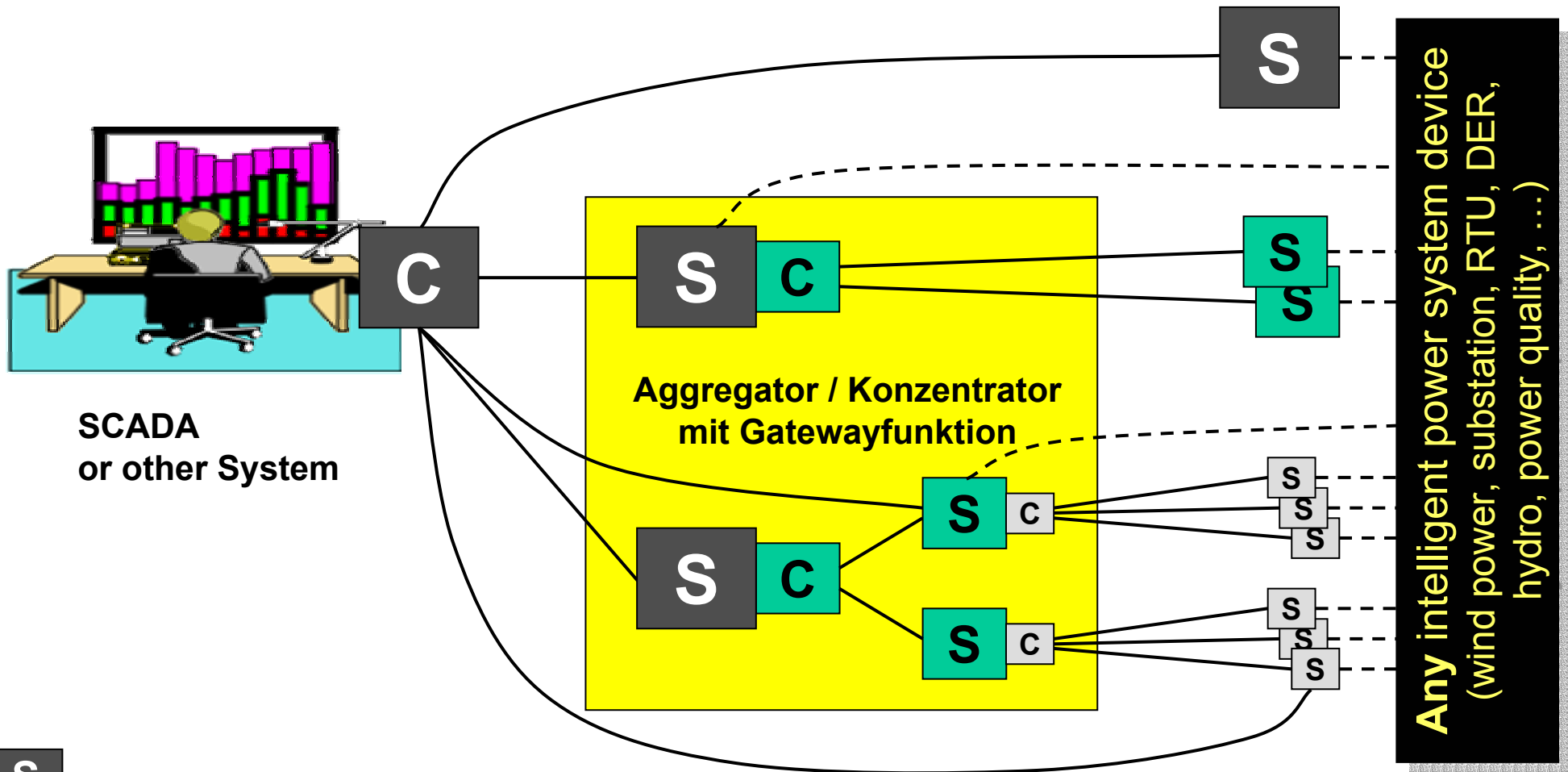
# Gerätemodell



# IEC 61850 (61400-25) Mappings



# Distributed Monitoring for Power Systems



**S** very comprehensive 61400-25/61850 information model / exchange; Client/Server

**S** more comprehensive information model / exchange

**S** Simple information model / exchange

———— IEC 61400-25/61850

- - - - non IEC 61400-25/61850



**Folienkopie:  
[www.nettedautomation.com/news](http://www.nettedautomation.com/news)**