

## **IEC 61850 Standard**

**→ generic Implementation in HANA/SAP**

**→ one of the speedily Big Data Platform**

•A Cooperation between AMA-SYSTEMS and Fichtner IT

# AMA-SYSTEMS GMBH

- **AMA-SYSTEMS founded 1976 in Germany as an Engineering Company and is Focused upon the Automation – Information – Communication Area**
- **AMA-SYSTEMS offers high quality standard HW and SW Products and also Engineering for the Optimization of ENERGY & UTILITY in Europe**
- **AMA is called “The Standard Based Integration Specialist” for IEC 61850 and IEC 60870-6 => ICCP/TASE.2**
- **AMA is the Value added Reseller of SISCO Inc. in USA for**
- **Europe and also the Partner of**
- **OSIsoft, IBM and SAP**



# AMA-SYSTEMS Products

- Gateways : **AMA-ICCP-TCP-GW-1L**
- Server-Simulator for IEC 61850 : **AMA-61850-ServerSim-G**
- Test Cases for Certification : **AMA-61850-Test-KIT**

Trainings / Workshops and

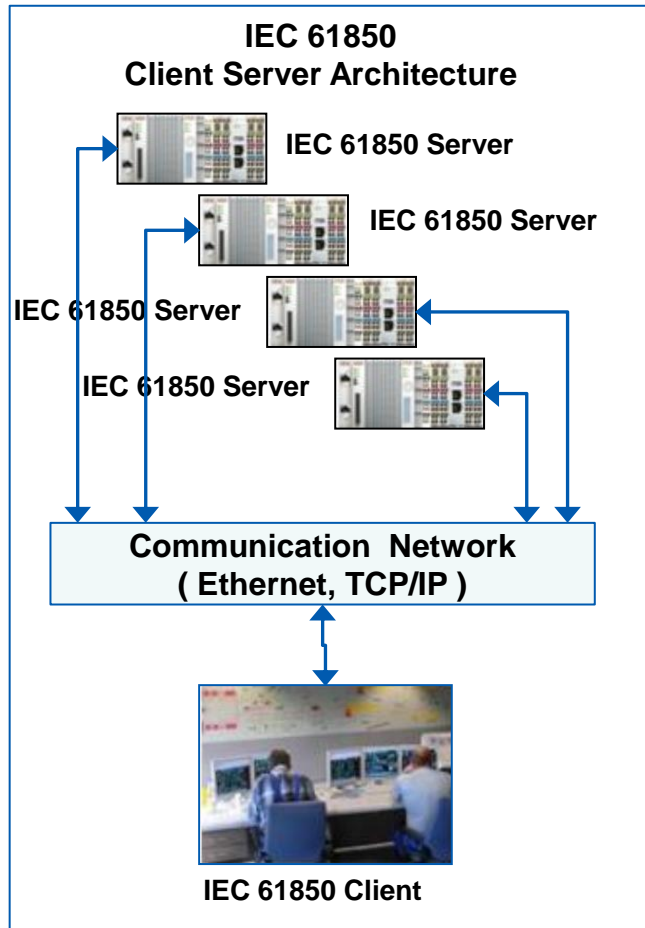
High qualified Technical Support for **IEC 61850** and

**IEC 60870-6 => ICCP/TASE.2**

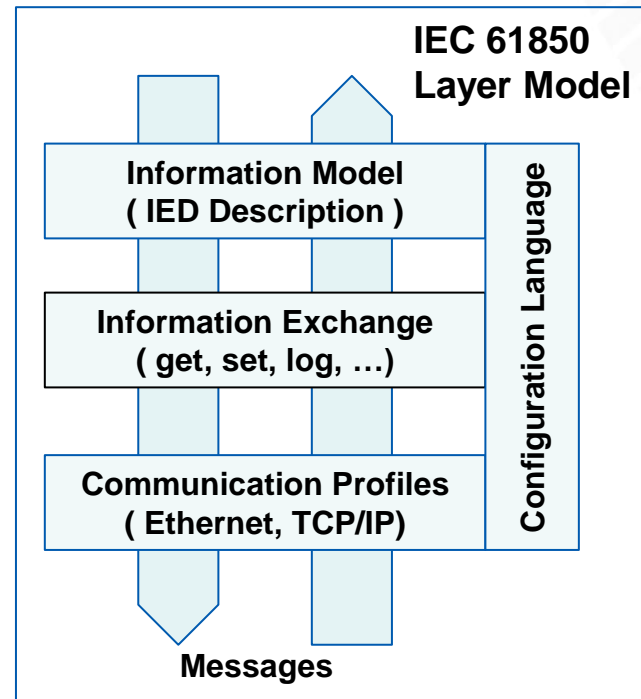
# SISCO Products

- **AMA-SYSTEMS is the VAR for SISCO in Europe**
- **SISCO is the world leader for standards for ENERGY & UTILITY with**
- **80 - 85% Market Share**
- **Products are:**
  - **AX-S4 61850**
  - **AX-S4 ICCP / Security Extensions**
  - **MMS-EASE Lite**
  - **ICCP-TASE.2-Extensions for MMS-EASE Lite / ICCP-Lite Plus+**
  - **CIM based Virtual Data Warehouse**
  - **Comtrade Utility for OSIsoft PI**
  - **UIB Adapter for the OSIsoft PI System**
  - **UIB ICCP-TASE.2 Interface for the Utility Integration Bus**

# The Standard IEC 61850



- IEC 61850 is an interoperability Standard for Communication between IEDs and Software Systems: Hardware independent, bidirectional, Ethernet TCP/IP based



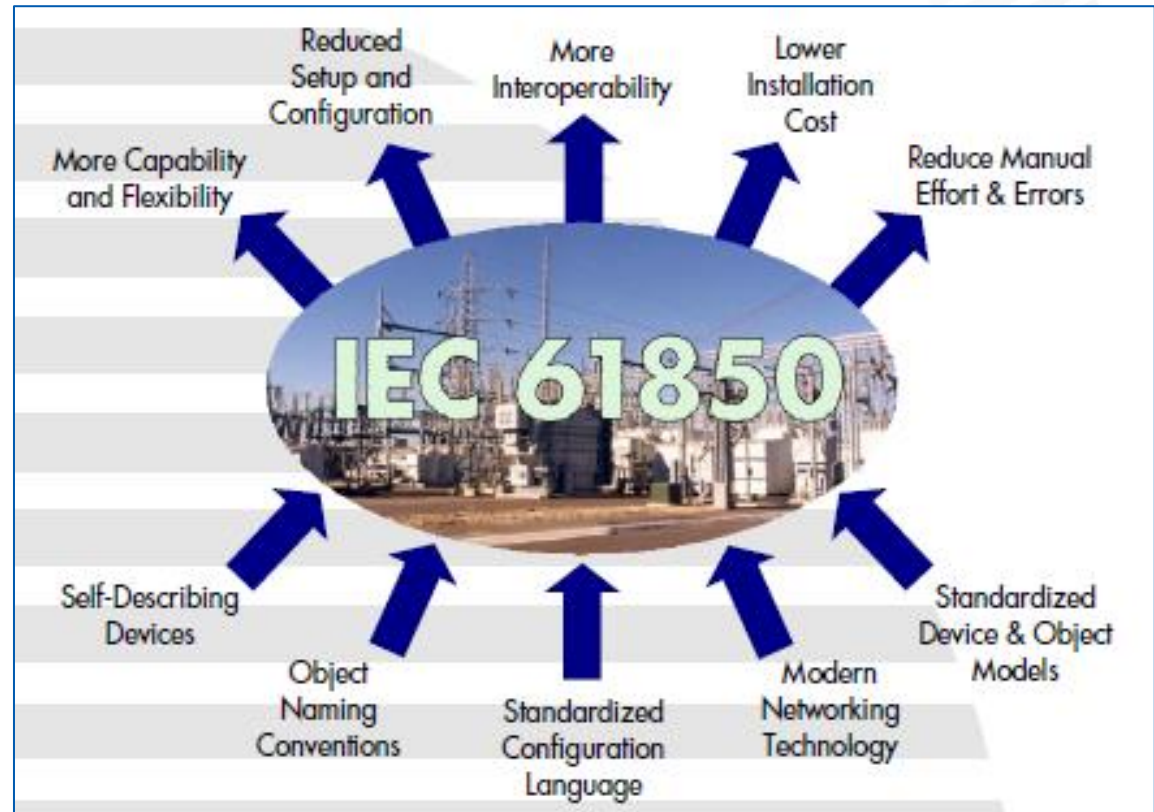
Source: Fichtner; AMA-SYSTEMS

# Benefits in Substations and Bays

- Using IEC 61850 standard in System Control creates a very significant benefits, above all reduced TCO

A shorter time of

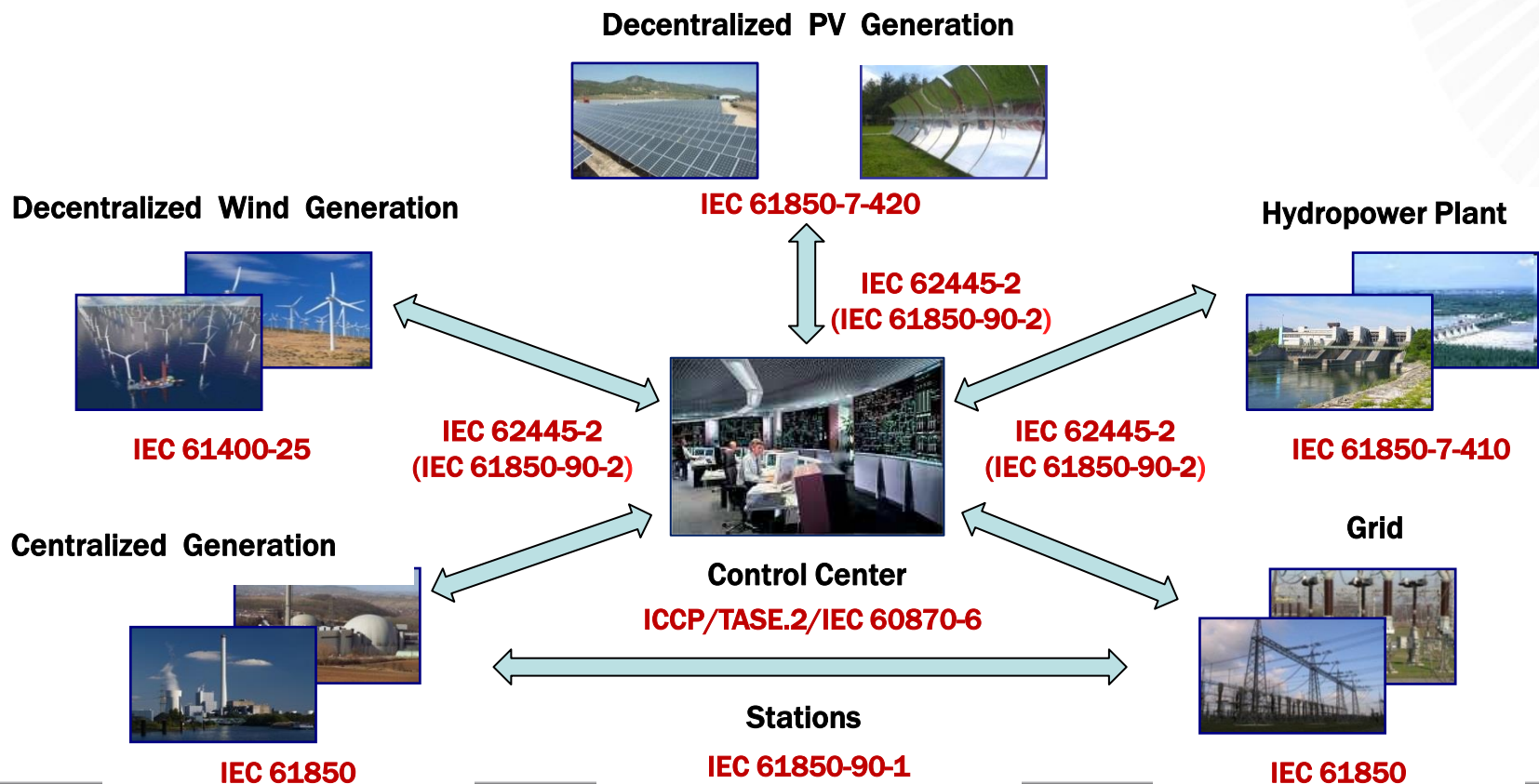
- Implementation,
- Independence from
- Hardware and
- Software Suppliers



Source: SISCO

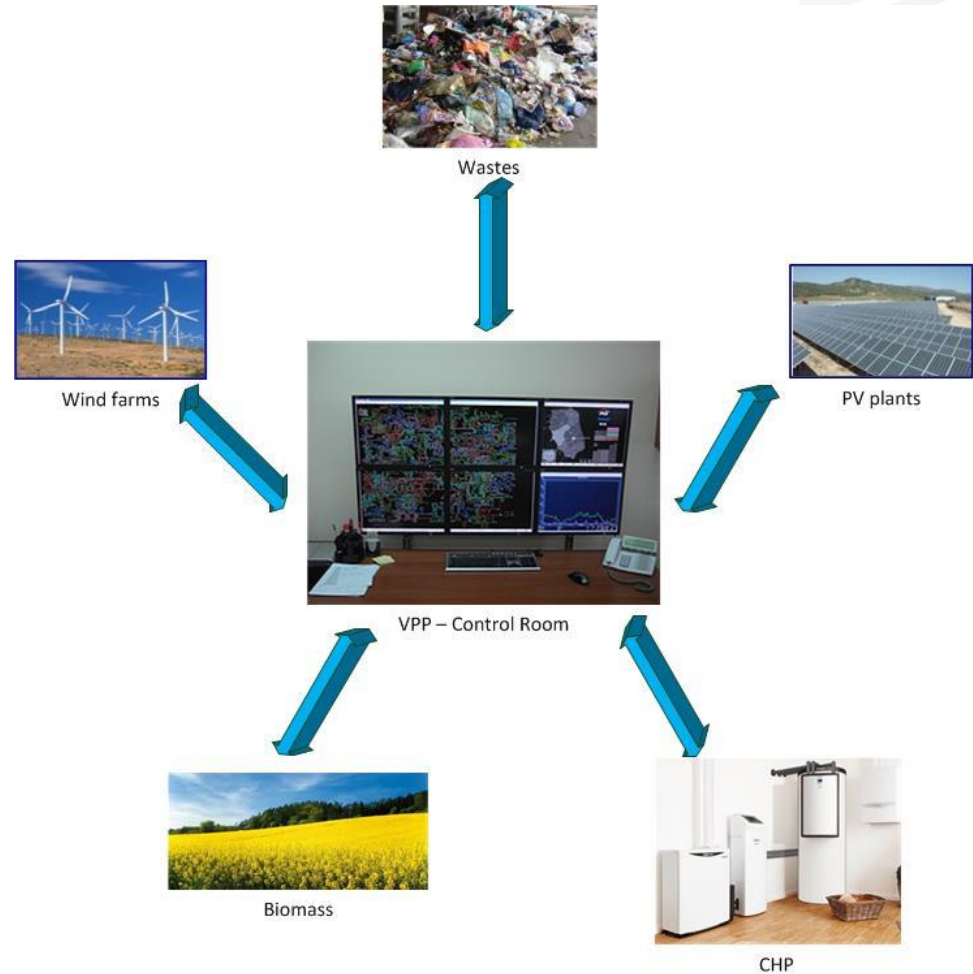
# IEC 61850 based Integration

IEC 61850 based Integration will also play a major role in the future for decentralized Energy Systems such as Smart Grid Environments or Smart Meters



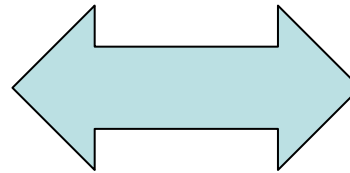
# Virtual Power Plant (VPP)

- A VPP is the **aggregation of distributed resources** that can be utilized in the same manner as conventional generation
- VPPs represent an **“Internet of Energy”**, tapping existing grid networks to tailor electricity supply and demand services for a customer





# Benefits from Interoperability

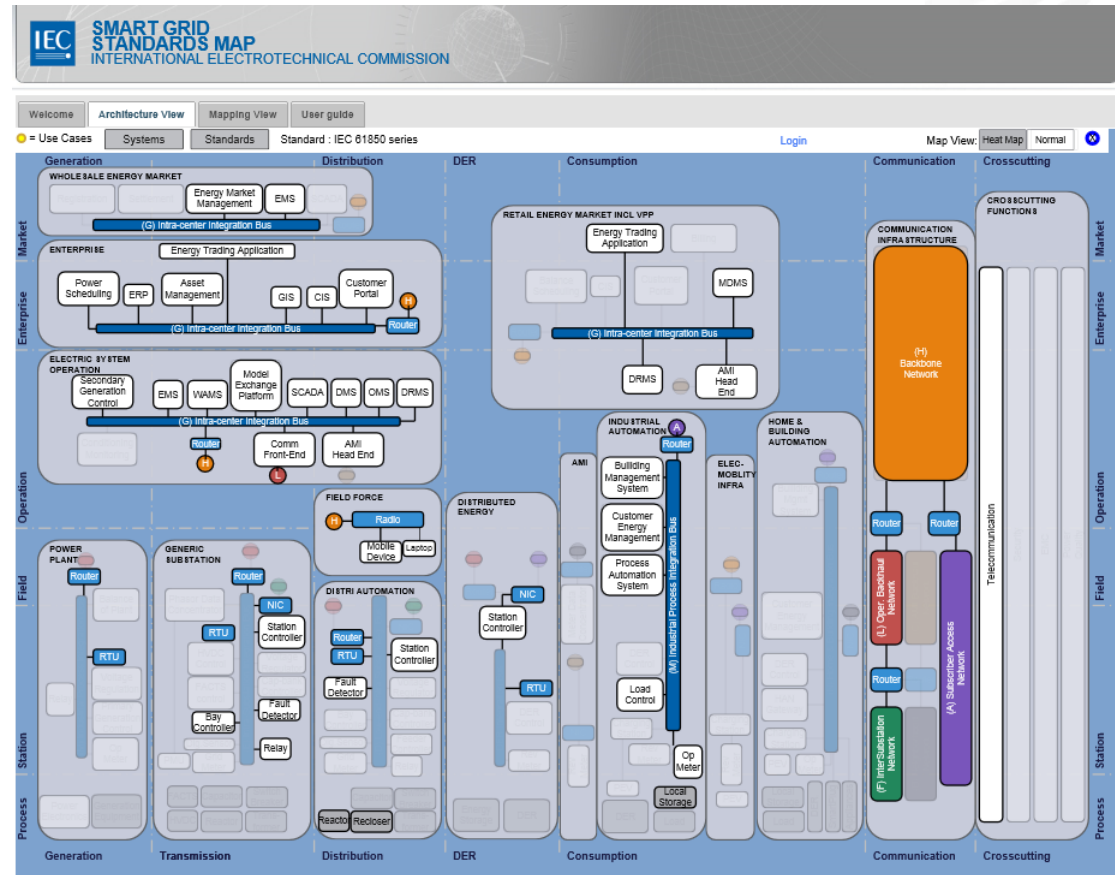


- Fewer outages, due to **better system monitoring, analysis, and management**
- **Faster service restoration** following an outage
- **Better information flow** leads to higher system resistance against attacks
- **Better resource adequacy** because interoperability enables better integration of diverse supply

# IEC 61850 and Smart Grid Applications

➤ Architecture View:

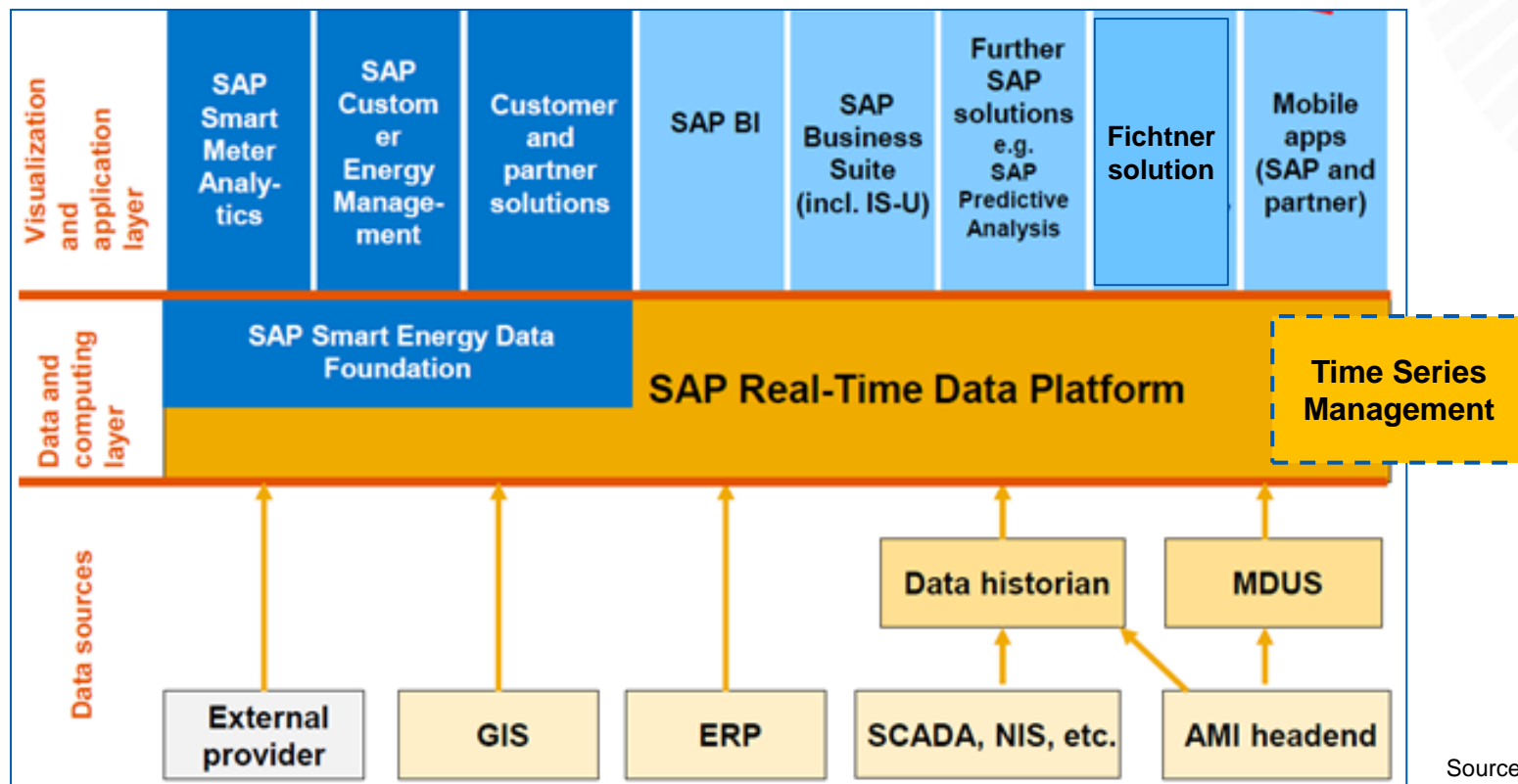
IEC 61850 Series Standards in many Roles within the Smart Grid



Source: IEC: <http://smartgridstandardsmap.com/>

# HANA/SAP - a Big Data Realtime Data Platform

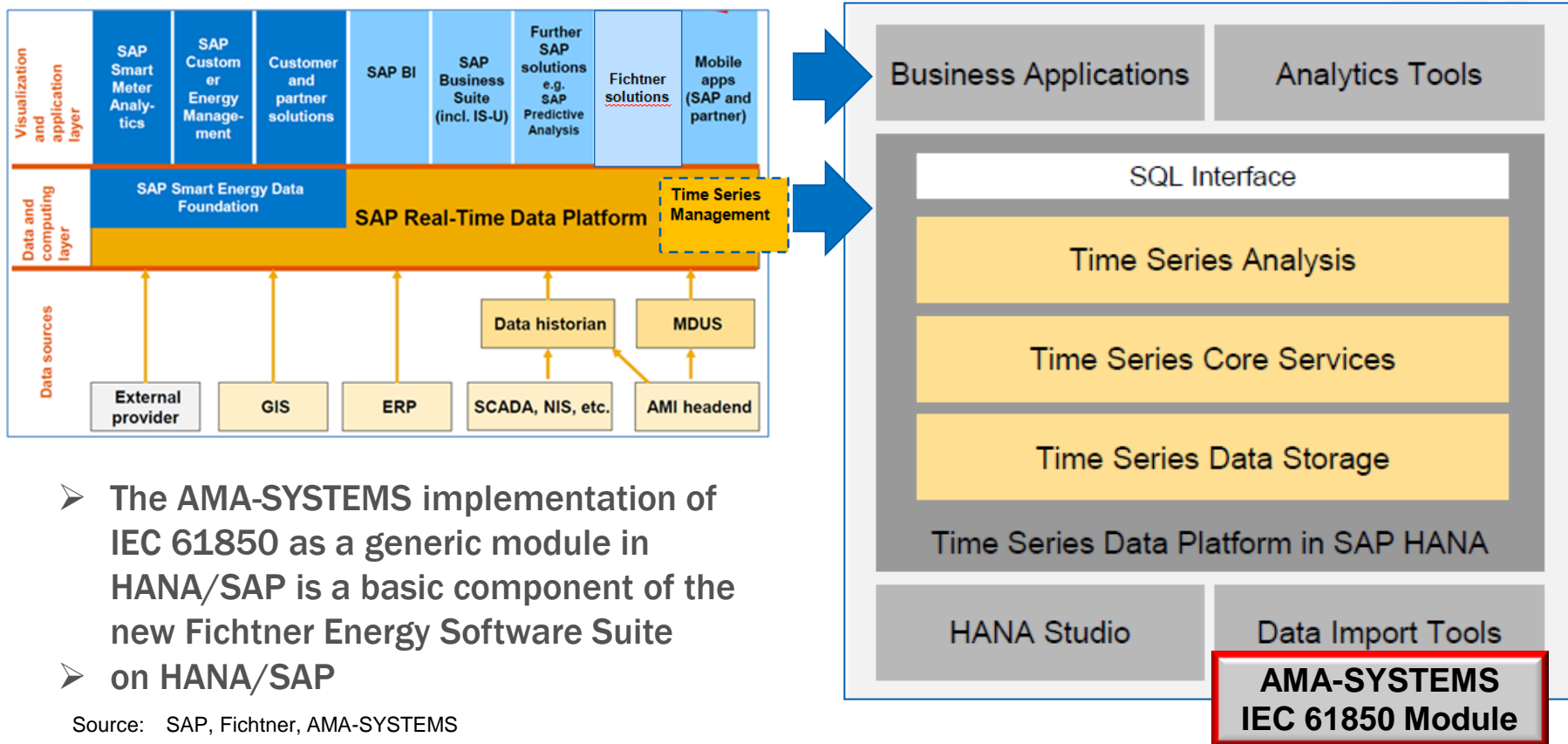
The AMA-SYSTEM implementation of IEC 61850 as a generic module in HANA/SAP is a basic component of the new Fichtner Energy Software Suite on HANA



Source: SAP, Fichtner

# IEC 61850 Standard for Big Data

## IEC 61850 Module as Third Party Component of HANA/SAP Time Series

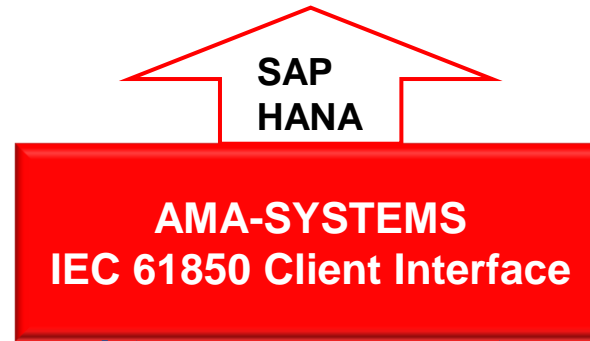


- The AMA-SYSTEMS implementation of IEC 61850 as a generic module in HANA/SAP is a basic component of the new Fichtner Energy Software Suite
- on HANA/SAP

Source: SAP, Fichtner, AMA-SYSTEMS

# IEC 61850 Interface

- Provides direct access to data of
- IEC 61850 Server devices (IEDs) without the need for an additional Gateway protocol like OPC



- Direct access to
- IEC 61850 avoids the disadvantages of such Gateway Protocols as additional Mapping effort / risk of Mapping Errors, Communication Bottle-Neck ...

Read request

Read response

Reports data change, periodic

Ethernet, TCP/IP



other  
IEC 61850  
devices

# Big Data Analytics of IEC 61850 Standard

The AMA-SYSTEMS IEC 61850 Module in HANA/SAP will enable very fast Sensor Data input into the Time Series and RDP Platform and the subsequent use in value added Applications.

