# Trådløs forbindelse

Juni 2011

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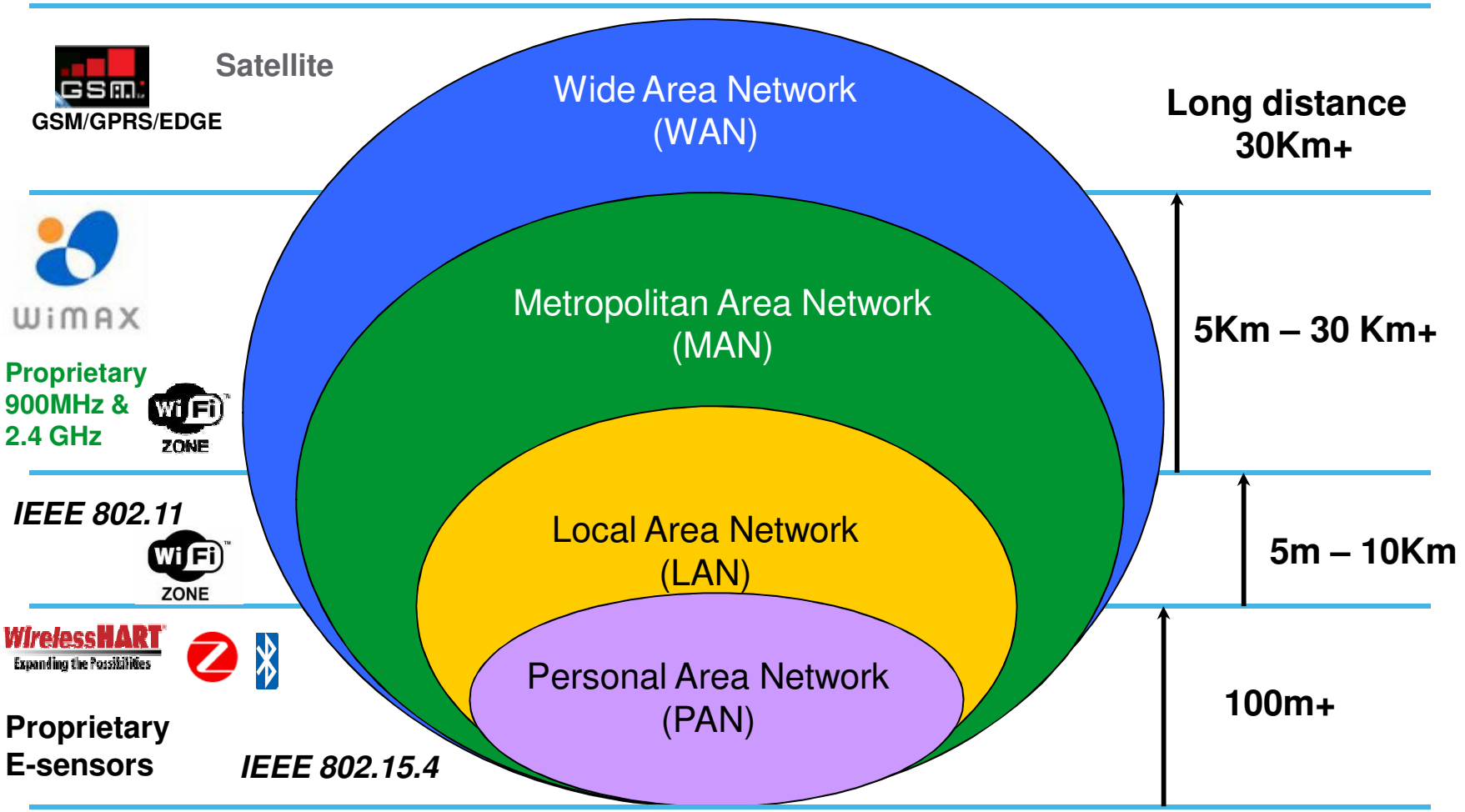
Automation

Schneider Electric

# Trådløs kommunikation

- **> Definition af netværk**
- **Trådløse produkter fra Schneider Electric**
- **RTU moduler**
- **Trådløse Løsninger**
- **Spørgsmål**

# Hvilken trådløse teknologier findes ?



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# Løsninger fra Schneider Electric

| Personal Area Network<br>PAN | Local Area Network<br>LAN | Metropolitan Area Network<br>MAN | Wide Area Network<br>WAN |
|---|---|---|---|

# Seneste opkøb af trådløse firmaer

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# FactoryCast Gateway
# ETG 3000 Offer

## > GPRS Features

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# ETG 3000 Range Offer

**TSX ETG 3000**

RAS/Gateway/HMI functions

+ External modem

**TSX ETG 3010**

RAS/Gateway/HMI functions

**Buit-in PSTN modem**

& integrated I/Os

**TSX ETG 3021 / 3022**

RAS /Gateway /HMI functions

**Buit-in GSM / GPRS modem**

& integrated I/Os

*ETG 3021 = GSM 900/1800 MHz band , ETG 3022 = GSM 850/1900 MHz band.*

# FactoryCast Gateway ETG 3000 Architectures

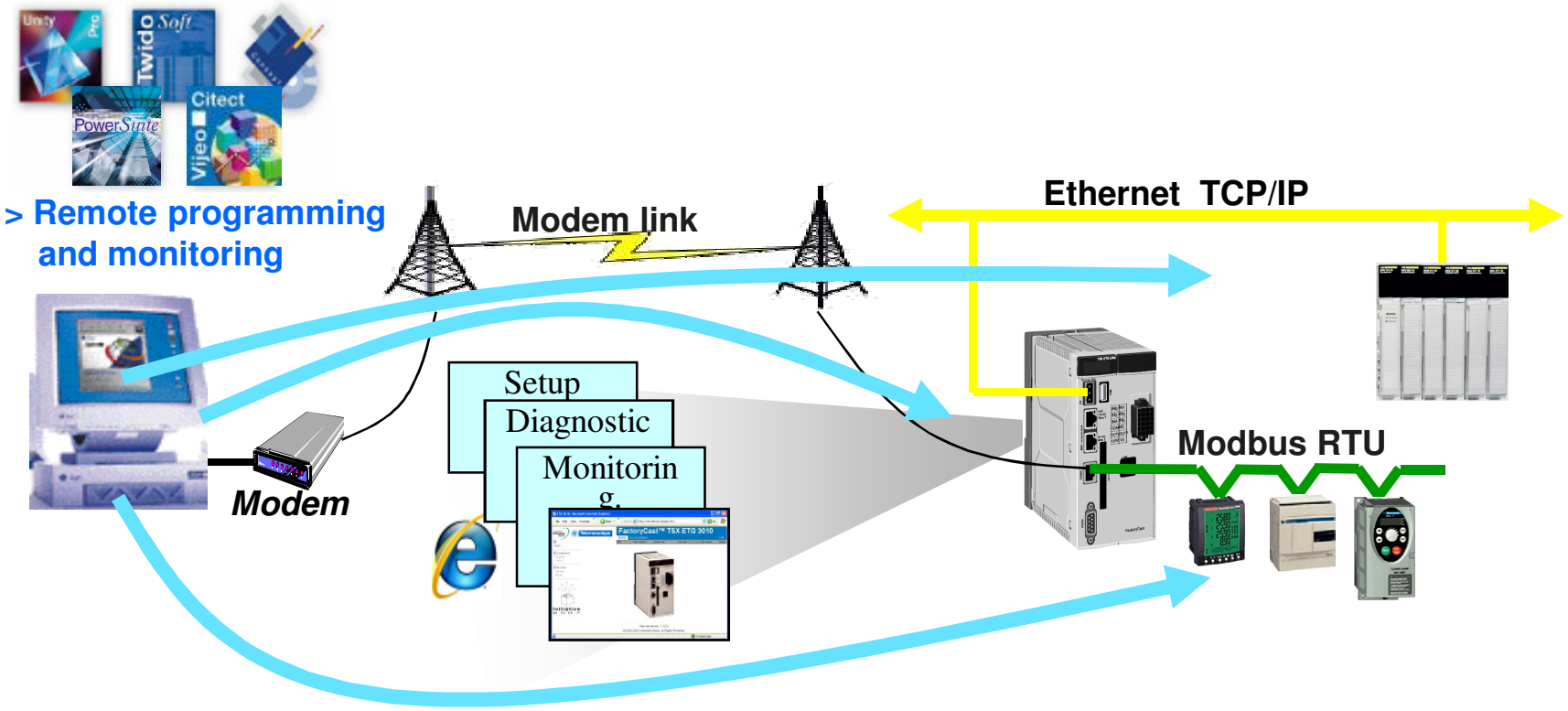
*Remote Maintenance of Machines &*
*Remote Access to RTU Applications*

Schneider Electric

# ETG 3000 Range - Remote Access (RAS) Architectures
# Modem connection to RTU Devices (Serial or Ethernet)

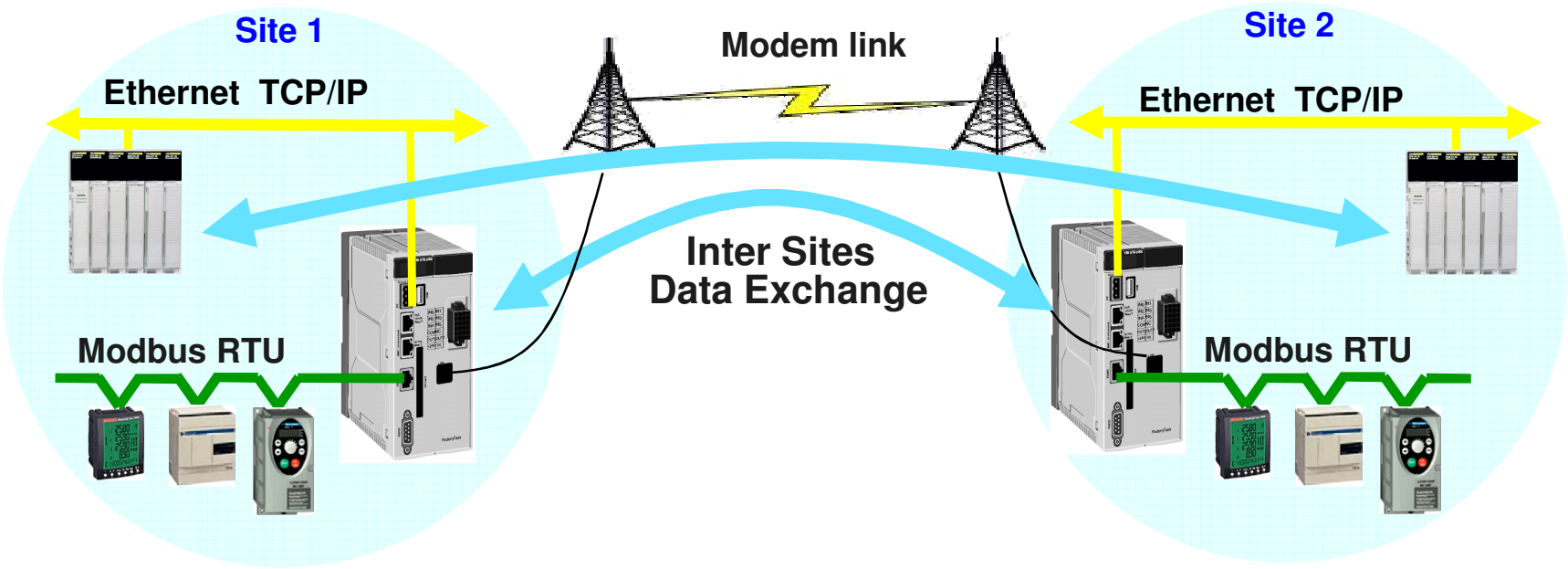
## Connection through embedded modem (PSTN/ GSM /GPRS/ 3G )

- Embedded RAS / modem in TSX ETG 3010/3021/3022 module
  - Provides Remote programming & control of RTU devices (manages incoming / outgoing calls and Call back)
  - Transparent routing to Modbus and Ethernet devices (NAT routing tables)
  - Secure remote access: VPN tunnel security,
- Embedded Web server provides: Remote Diagnostics, monitoring and control of RTU devices via predefined or custom Web pages



# ETG 3000 Range –
# Inter-site Communication Architectures

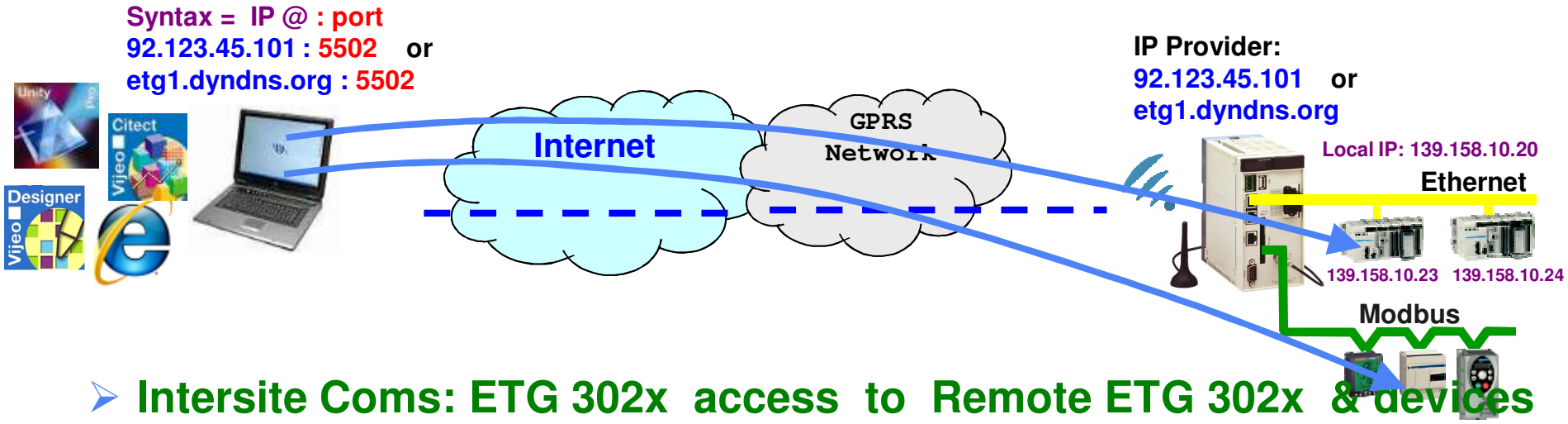
- **Connection between Remote ETG30xx modules via modem**
  - Provide Inter-sites communications via Modem / PPP connection
  - Client/server data exchange between remote installations and networks .



# GPRS Architectures - Routing with NAT *(Network Address Translation)*

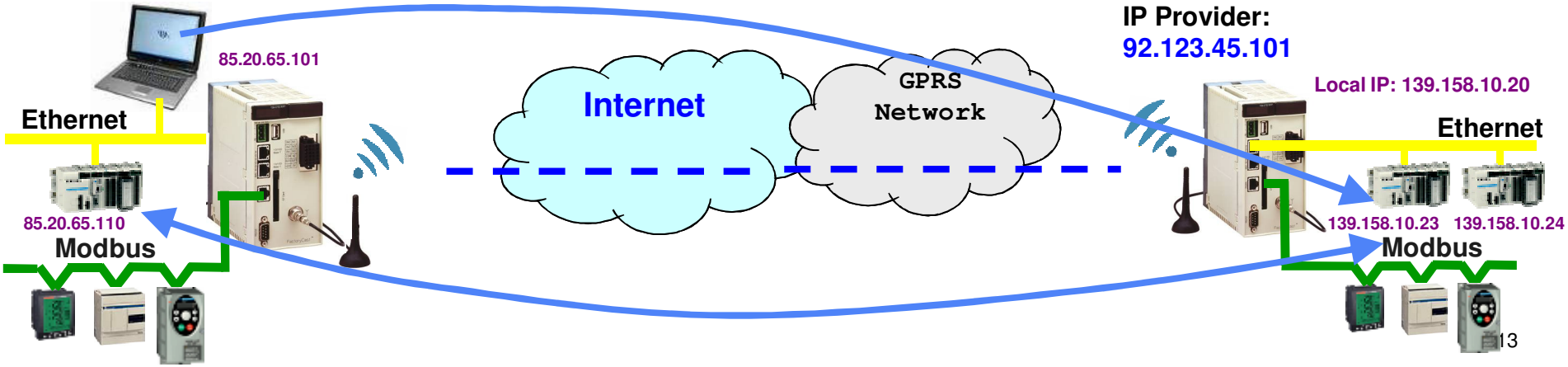
## > PC (Internet connected) access to Remote ETG 302x and devices

- *Transparent routing using NAT routing tables*




## ➢ Intersite Coms: ETG 302x access to Remote ETG 302x & devices

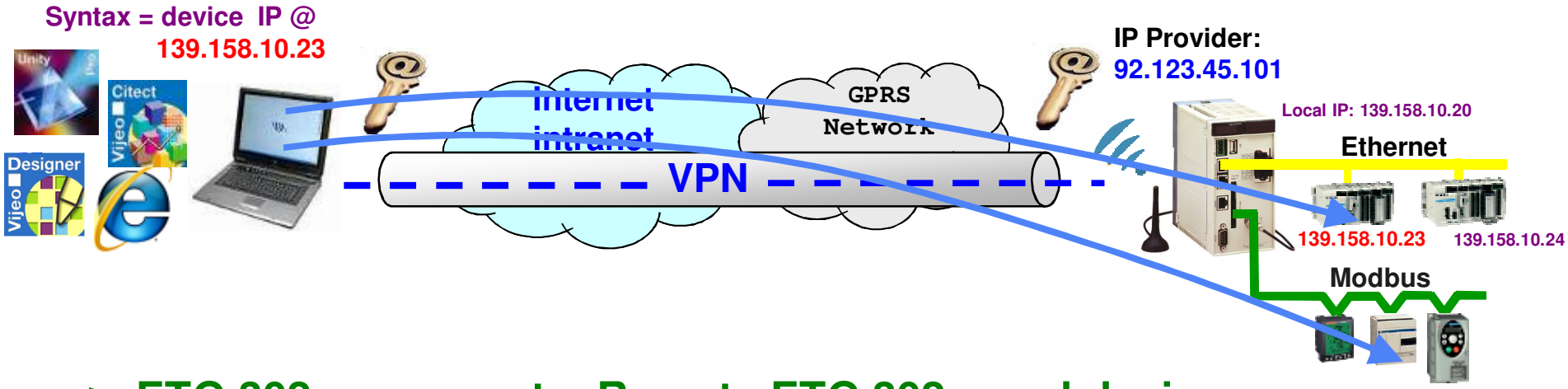
- *Transparent routing using NAT routing tables*



# GPRS / VPN Architectures- Security with VPN Tunnels

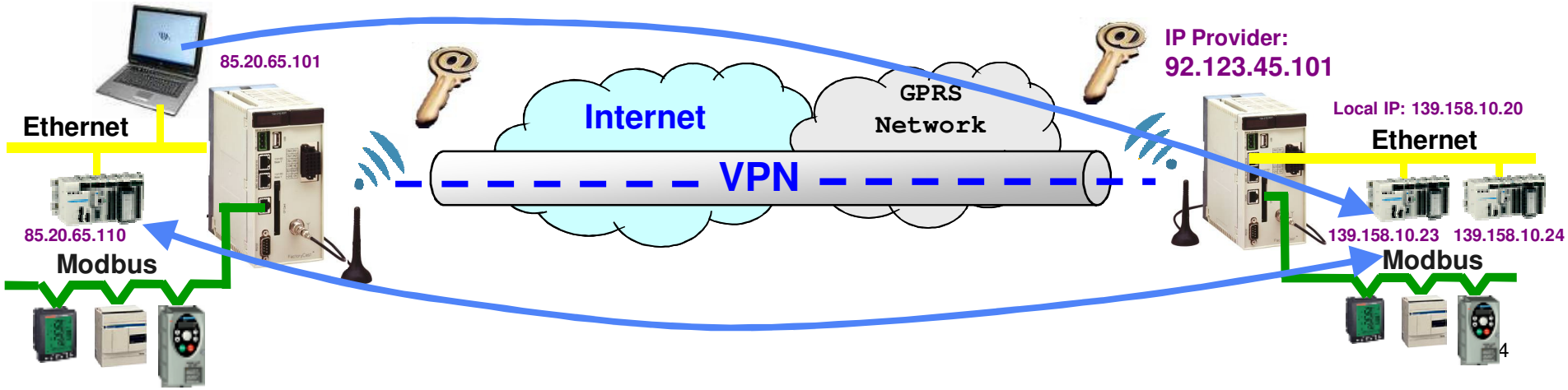
## > PC (Internet connected) access to Remote ETG 302x and devices

- *Transparent routing thanks to VPN tunnel (use of local device IP addresses)*



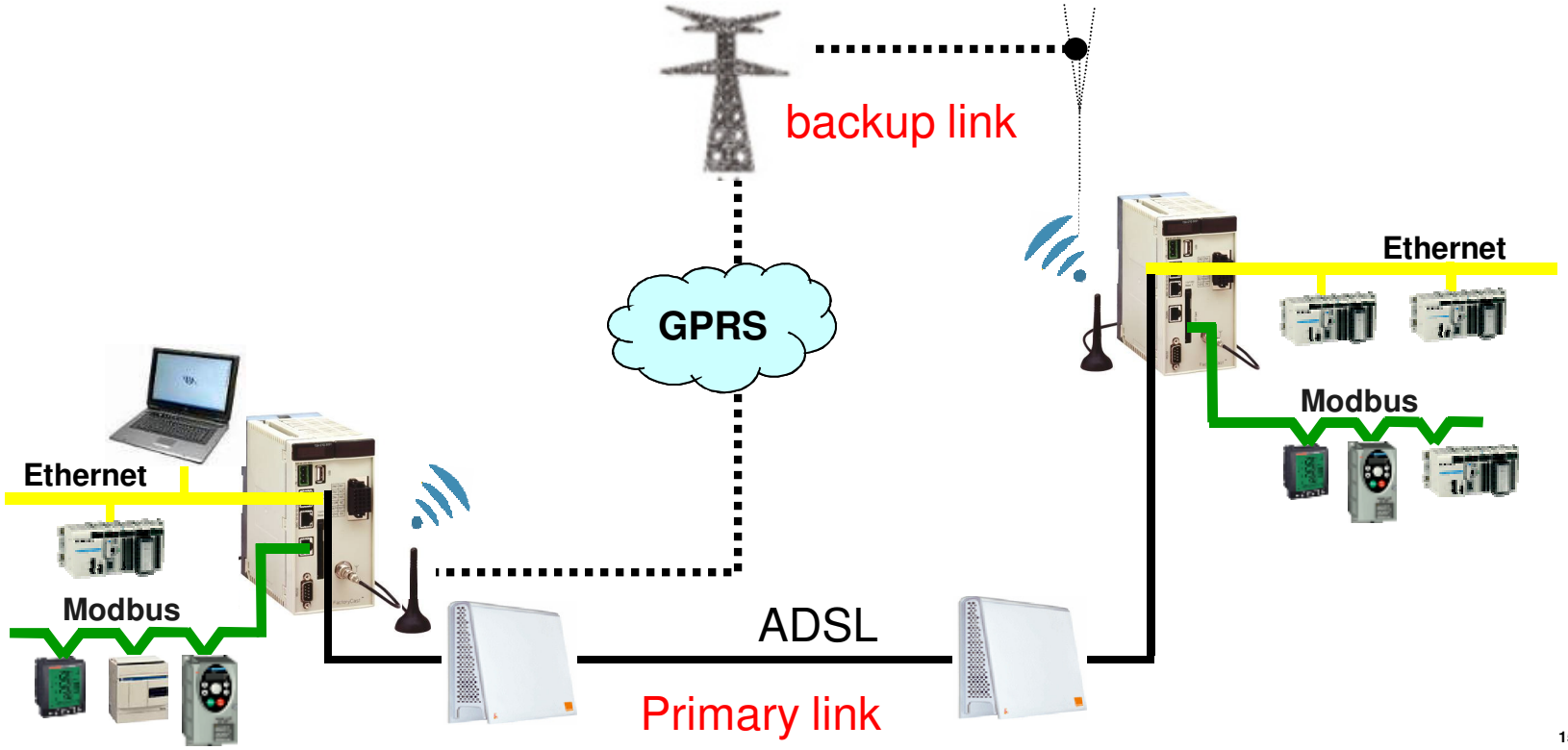

## > ETG 302x access to Remote ETG 302x and devices

- *Transparent routing thanks to VPN tunnel (use of local device IP addresses)*



# Modem standby Availability
# Automatic primary/backup link changeover

- ADSL as primary link and GPRS as backup link
  - Périodic monitoring of the primary link ADSL)
    - With automatic changeover to backup link (eg GPRS) on primary link loss
  - When primary link is operational again  automatic switch back to primary



# Reminder - ETG 3000 features overview

## > Remote Access functions

- Remote access via modem / Intranet / WAN
- Built-in modem (PSTN or GSM) & External modem support

## > Transparent Gateway functions

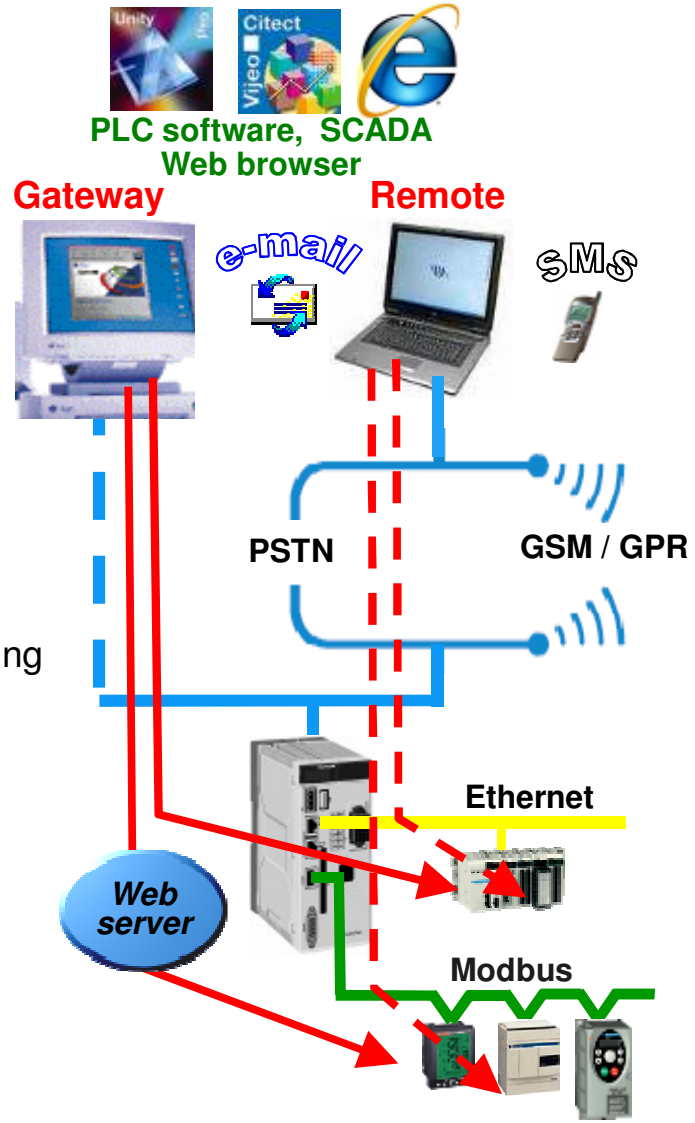
- Ethernet to Modbus serial
- PPP TCP/IP to TCP/IP or Modbus devices

## > Web Portal: Embedded Web server

- for setup, device & application diagnostics and monitoring
- 32 MB memory for user Web site + compact flash card
- IP filtering + password protection

## > HMI Front-End: Built-in SCADA functions

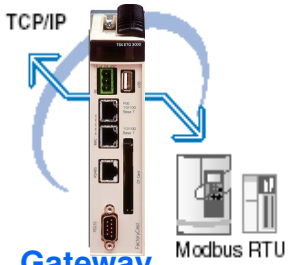
- Standalone Data acquisition and local data processing
- Graphic monitoring and user Web pages
- Local data logging & remote database connectivity
- Alarming and Reporting via email/SMS



# ETG 3000 Range - Communication Services

## Transparent Gateway/routing services

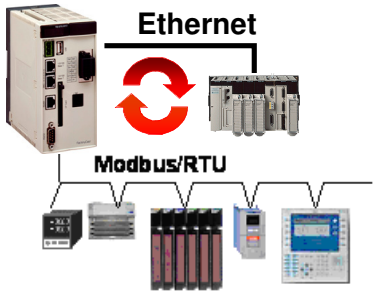
- Ethernet TCP/IP to Modbus RTU gateway: Routing Modbus messaging
- Routing Modem to Modbus and Modem to Ethernet TCP/IP
- Routing of I/O scanning service
- “Mini firewall” on board with IP filtering and password protection




**Gateway Remote Access**

## Device polling

- ETG 3000 acquires device data by polling remote devices
- Polling rate of 500 ms minimum
- ETG 3000 module can poll up to 37 devices (up to 1000 variables) on Modbus serial link plus on Ethernet




## Ethernet TCP/IP communication services

- BootP/DHCP/DNS client: automatic assignment of IP address
- FTP and HTTP servers with password protection
- NTP client: clock synchronization of computer system
- SNMP agent: administration of the device by an SNMP manager

## Open communication

- SOAP XML communication server for direct connection to IT applications

# ETG 3000 Range - Web Server Functions

## > ETG 3000 Web server can be used either as

- a Monitoring / Supervision Front-end Portal
- a Diagnostic / Maintenance information Server

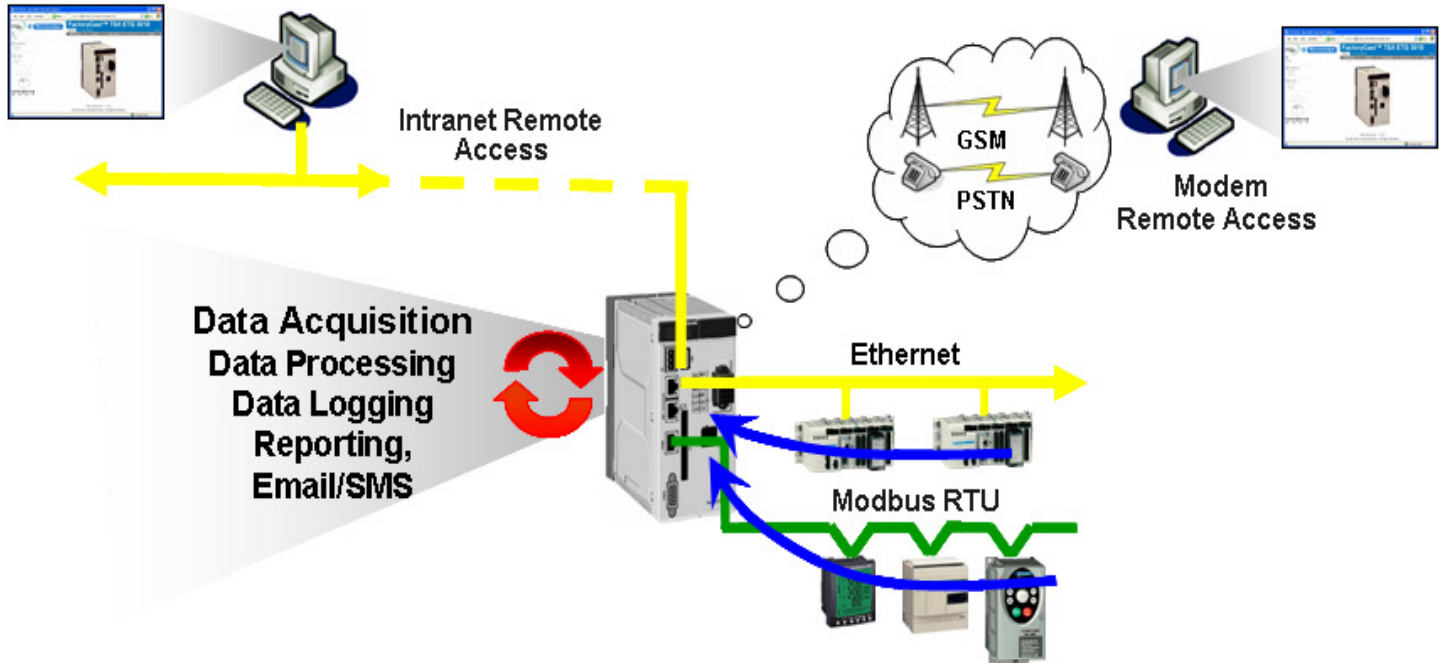
- **Predefined Web pages**
  - Module setup: security, IP configuration, modem, etc.
  - Module and application diagnostics: Device explorer, Ethernet statistics, Modbus statistics, etc.
  - Data monitoring: read & write Modbus registers and variables

- **Fully Configurable Web Services**
  - Graphic monitoring: graphic editor and viewer
  - Hosting of user defined Web pages
  - Hosting of user documents (doc, pdf, etc.)
  - ***32 MB of flash memory + extension up to 1 Gb compact flash /USB key memory***

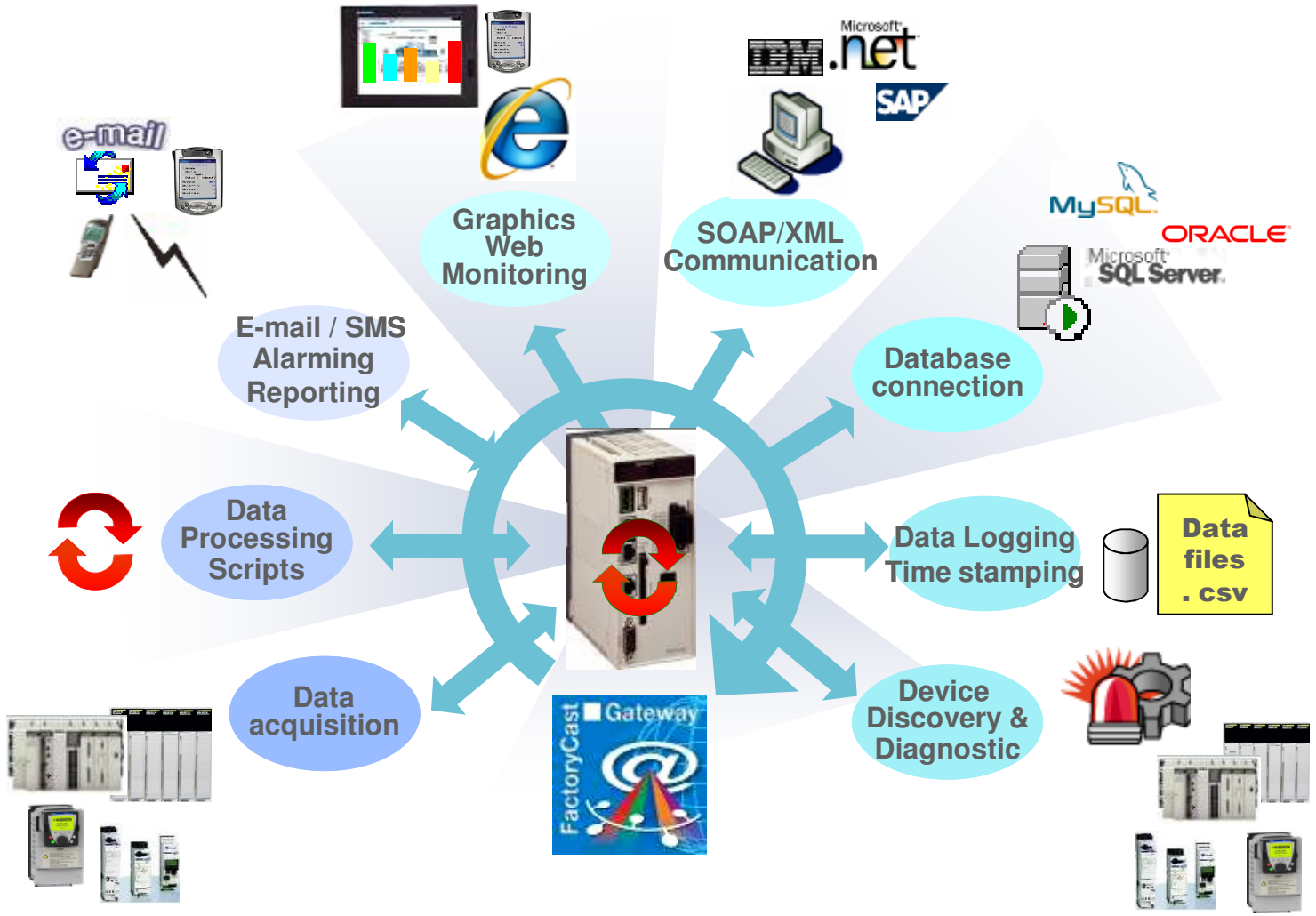
# ETG 3000 range – Data Acquisition Front-end with built-in “Scada like” processing

➢ **In addition to the Remote Control functions, ETG 30•• modules can act as standalone Data Acquisition Front-end performing internal ‘Supervisor like’ processing.**

- This features are useful for providing
  - **A cost effective and robust** small or medium size **Supervision** solution where a traditional PC based SCADA is not required or suitable because of its reliability
  - or when there is **no permanent maintenance team on the remote site.**

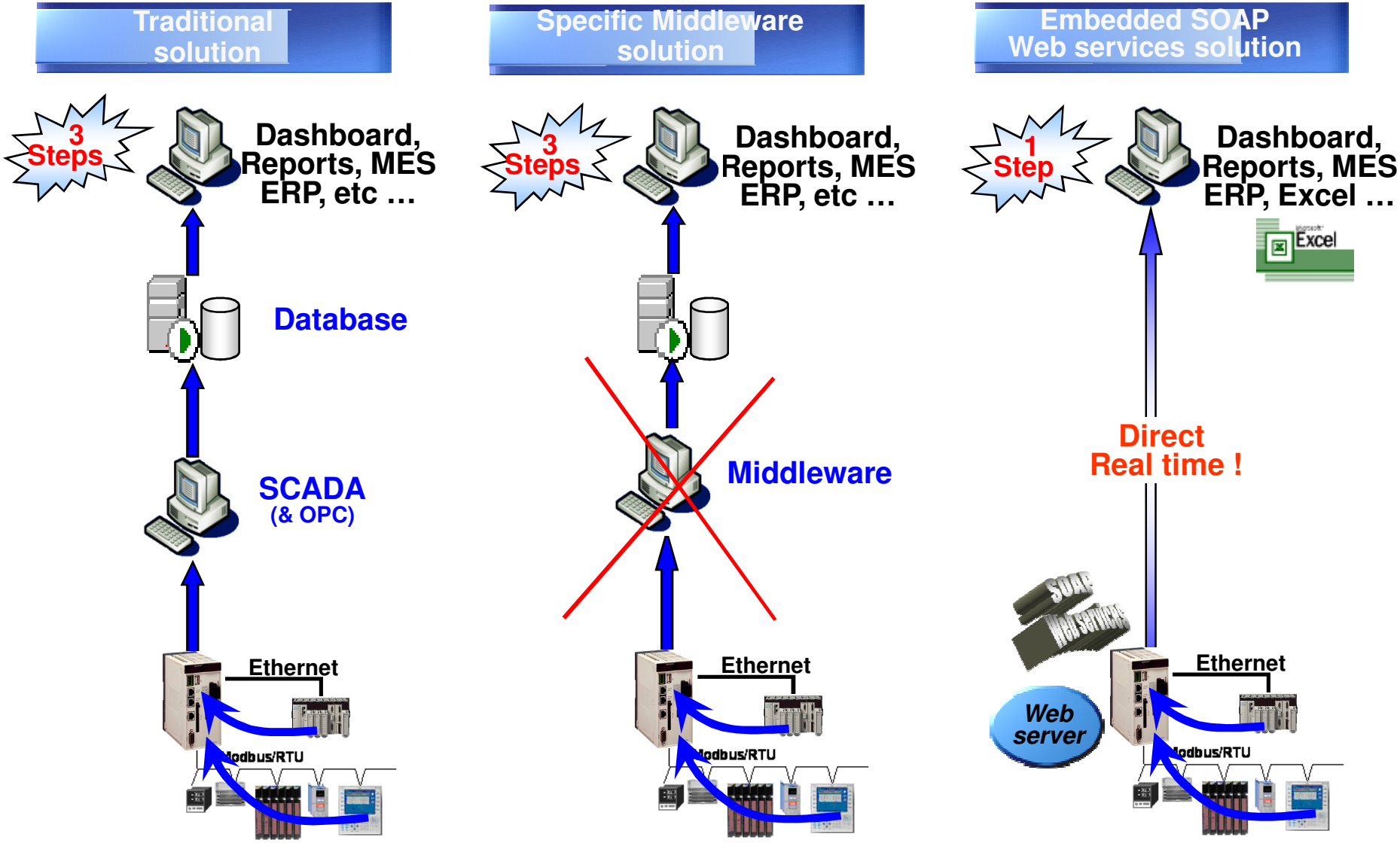


# ETG 3000 range  Data Acquisition Front-end with built-in “Scada like” processing



# From Plant Floor to Company Information Level

*Traditional* *Vs.* ***Cutting edge*** ***SOAP*** *Methods*

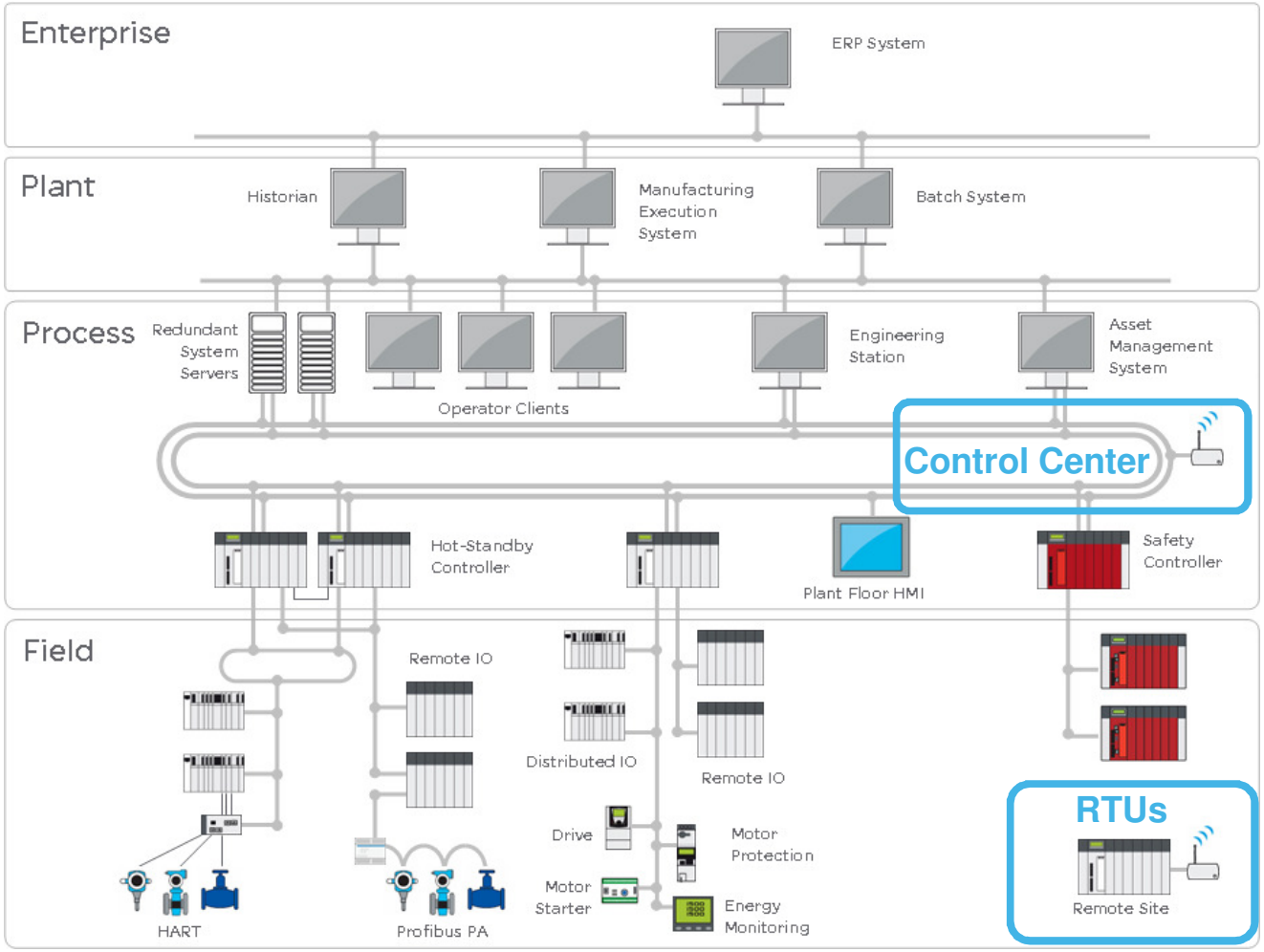


# Ny M340 RTU module

# **BMX NOR 0200 H**

# PlantStruxure™ - RTU related topic

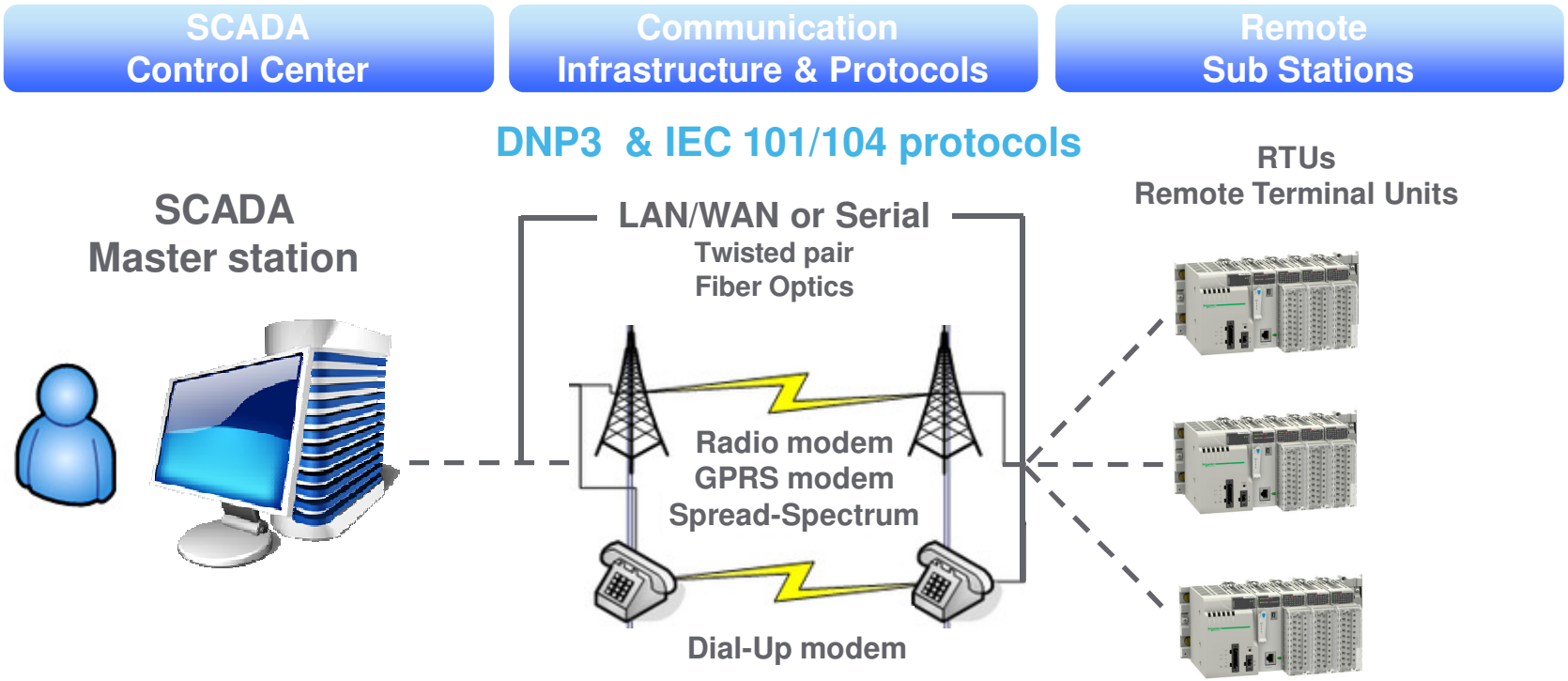
- Introduction
- Architecture & Networks
- Engineering Station
- Operating & Monitoring Station
- Controllers
- High Availability
- Safety Instrumented System
- Remote Terminal Units
- Historian
- Manufacturing Execution System
- Business System Connectivity
- Know more …




In line with Schneider Electric EcostruXure program, through the WP3 "non permanent communications" working group

# M340 PAC in RTU System

- RTU System with communications over LAN / WAN, Serial, Modem connections
  - Main targets are IP infrastructures *(LAN & IP Modem)*



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# Vores vision:

# Vi ser en verden,

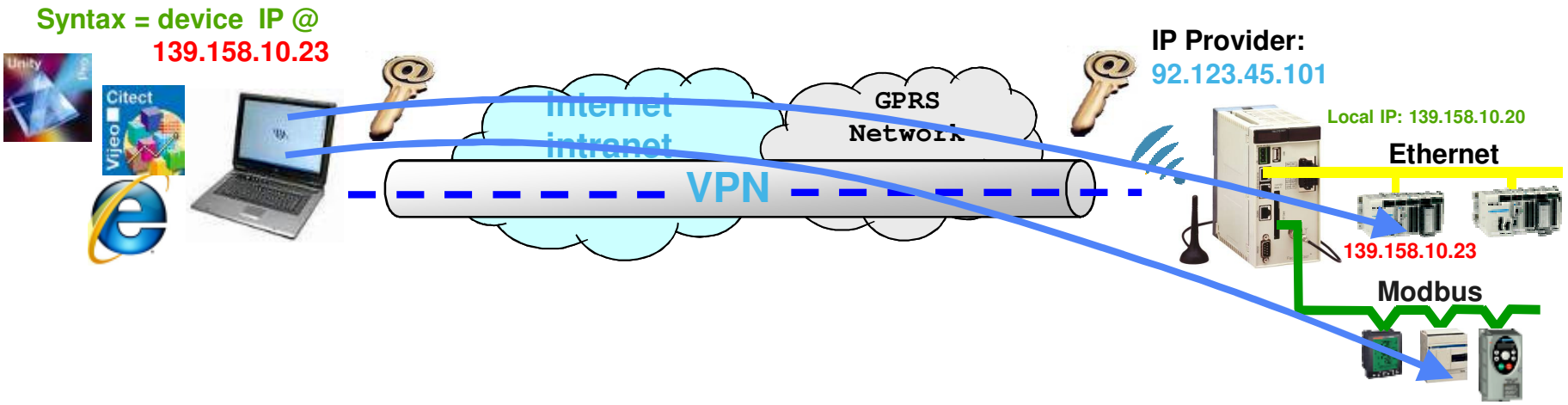
# hvor vi alle kan opnå mere - og bruge mindre energi

# Vores mission:

# Vi hjælper danskerne med at få mest muligt ud af deres energi

# Løsninger inden for OEM

## VPN opkobling via GPRS
## Mobil opkobling til Tankbil



# Løsninger inden for Vandforsyning

www.goedstrup.eu
Publiceredata til hjemmeside
Data log til my SQL
Fjern adgang til serielle enheder

# Løsninger inden for Spildevand

GPRS opkobling
MPLS netværk
Gateway
Lokal datalog
Batteri Backup

# Løsninger inden for Energi forsyning

GSM/GPRS opkobling
IEC 104 protokol
Lokal tidsstempling

Easergy T200I

# We will have a complete solution offering in the water segment

Schneider Electric

**Integrated architecture for Power, Control & Security**

Integration

EcoStruxure

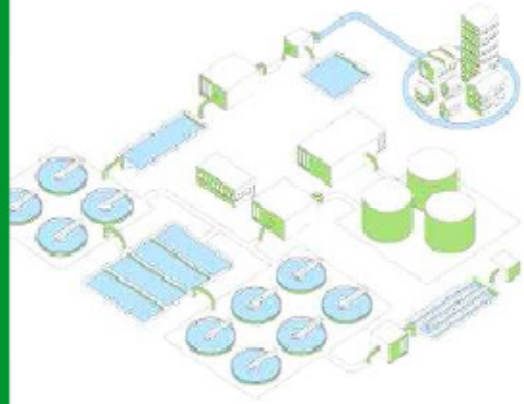
Telemetry & automation

SCADA & RTU

PAC, PLC, Controllers, HMI, Drives

Power management

Security management



**Efficiency & productivity**

- Network optimization
- Energy management
- Leak detection
- Water quality management

TELVENT

**Information management solution to monitor & optimise water networks**

Advanced applications
- Leak detection
- Quality monitoring

IT integration with enterprise systems
- ERP, GIS, CMMS…

Integration with supervisory systems (SCADA)

Weather intelligence

Strong project teams
Delivery units: US, Spain, Australia and Canada

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