

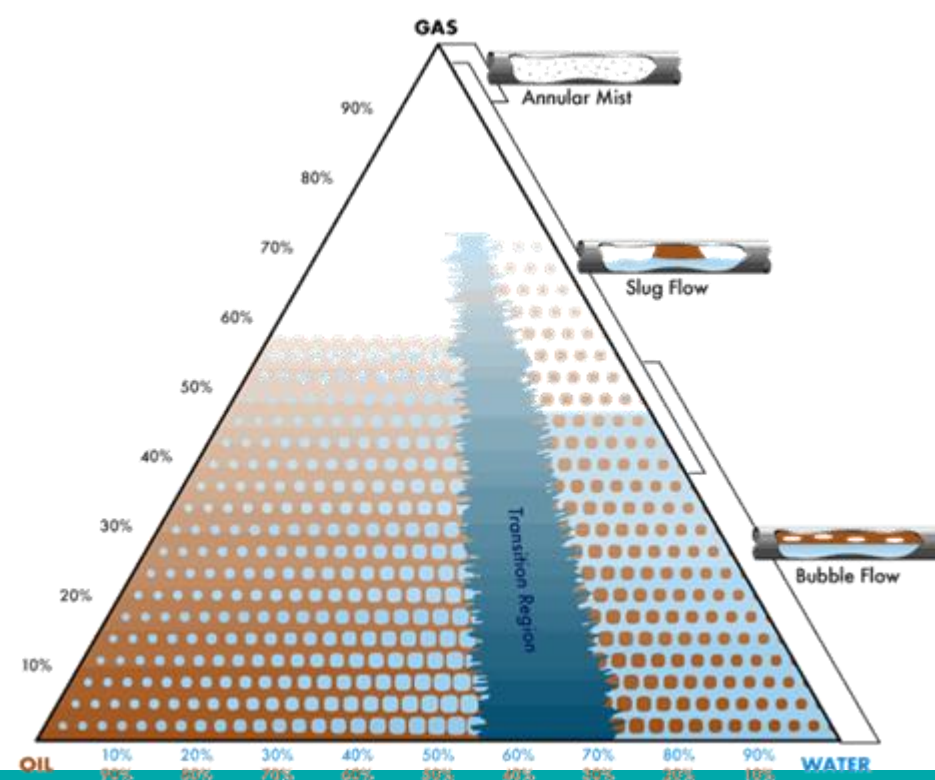


THE BEAUTY OF SMART CONTROL

Digitalization in the Upstream

Contents

- What data is required?
- Evolution of Telemetry
- What is Digitalization?
- Who are we?
- System examples
- Summary



What data is required?

Multiphase flow characteristics

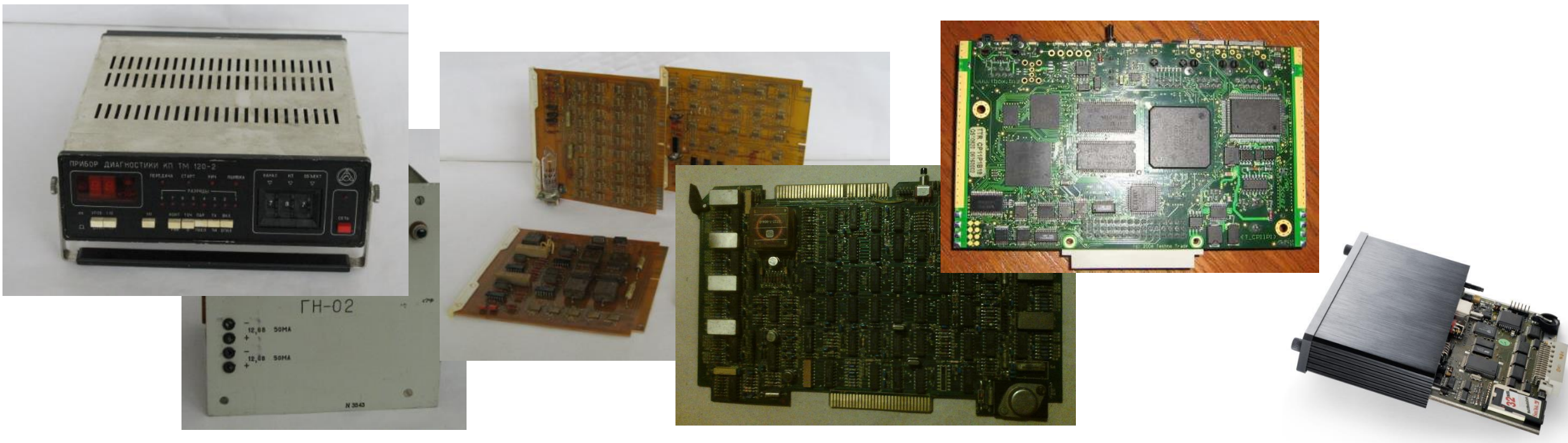
Multiphase flow characteristics

- Pressure: 25...250 bar
- Temperature: 50...150°C
- Level: 0...4000mm
- Mass flow:t/day
- Volume flow: ... m³/day
- Density: 0,4...1,2 t/m³
- Water Volume Fraction - WVF %
- Gas Oil Rate – GOR
- Gas Liquid Rate – GLR
- Gas Volume Fraction – GVF %

Other technological features

- Machinery status
- Energy consumption
- Status of auxiliary systems
- Safety signals





Evolution of Telemetry

Up-to-date RTU technology

- Compact size
- 32 / 64 bit processor
- Unlimited number of COM ports
- High processing speed
- High resolution (AI 14bits)
- Multimedia card support
- 10/100 Base T Ethernet
- Advanced power supplies

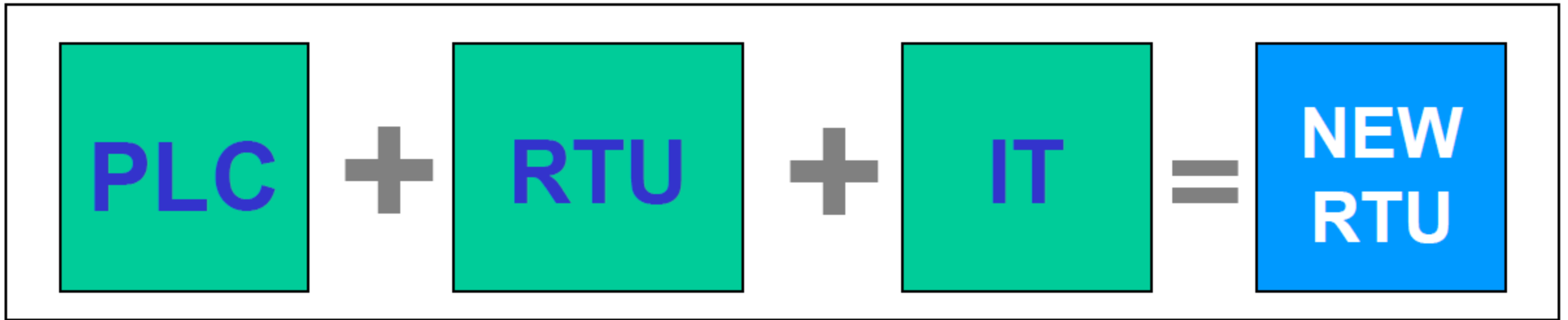


Up-to-date RTU technology

- Full redundancy
(on CPU, comm ports, power supplies)
- Hot-swappable modules
- Latest electronic component generation
- Rugged temperature range: - 40°C...+80°C
- Extended warranty
- Total production traceability
- 2 days burning test
- MTBF >300.000 hours



How to create a new generation RTU?



Features of a new generation RTU

- **Datalogging**
- **Alarming**
- **Multi-communication protocols**
- **Converting protocol**



Datalogging

- Intelligent Datalogging
- Sequence of Events support (SoE)
- Digital and analog chronologies
- Time-based sampling tables (Min, Max, Average, Instantaneous,...)
- Triggered logging
- Database export support in ASCII: compatible with most standard software packages
- Millisecond timestamping (msec)
- High memory capacity (Multimedia card expansion)



Alarming

- Alarm messages to mobiles by SMS
- Read/write SMS support
- Remote calls depending on scheduled working people (internal calendar)
- Safe retries and sophisticated alert chaining
- Embedded calendar
- Up to 128 different destinations
- Filters “chattering” behaviors around alarm limits...
- Alarms are generated on exception and filtered



Multi communication protocols

- All Communication ports working independently
- Protocol switching on the same port
- MULTI- Communication / Protocols / Baudrates

Converting protocol

Communication ports handle various types of protocols, standard ModBus/JBus, or even your specific protocol: a standard "C" library permits to develop your own communication driver with heterogeneous devices

- Various SCADA software:
 - Video matrix
 - Serial flowmeters
 - External regulators
 - Non ModBus PLCs (Siemens, Dupline, Omron,...)
 - External Data Acquisition boards
 - Fire central CPU's (Cerberus, Zettler, TTG,...)
 - Other SCADA (IEC870-5, DPT/DPT+, TG8000,...)



SECURITY

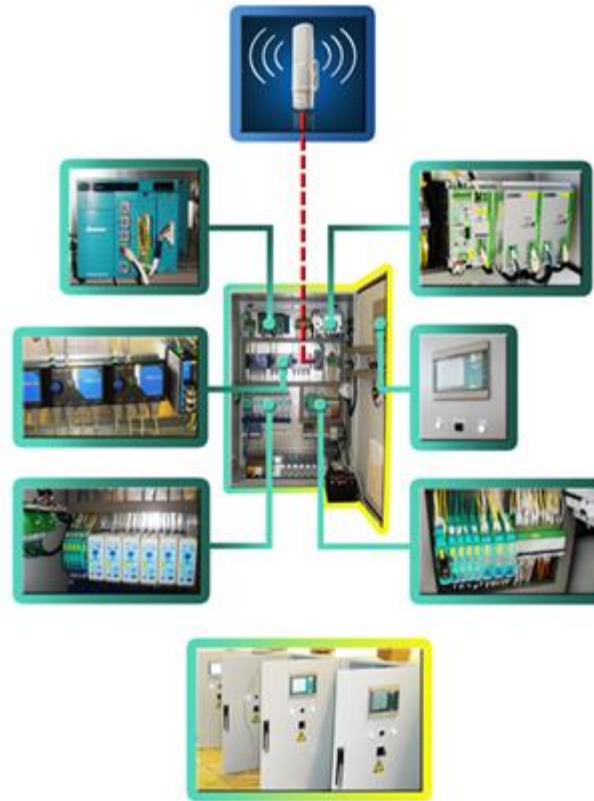
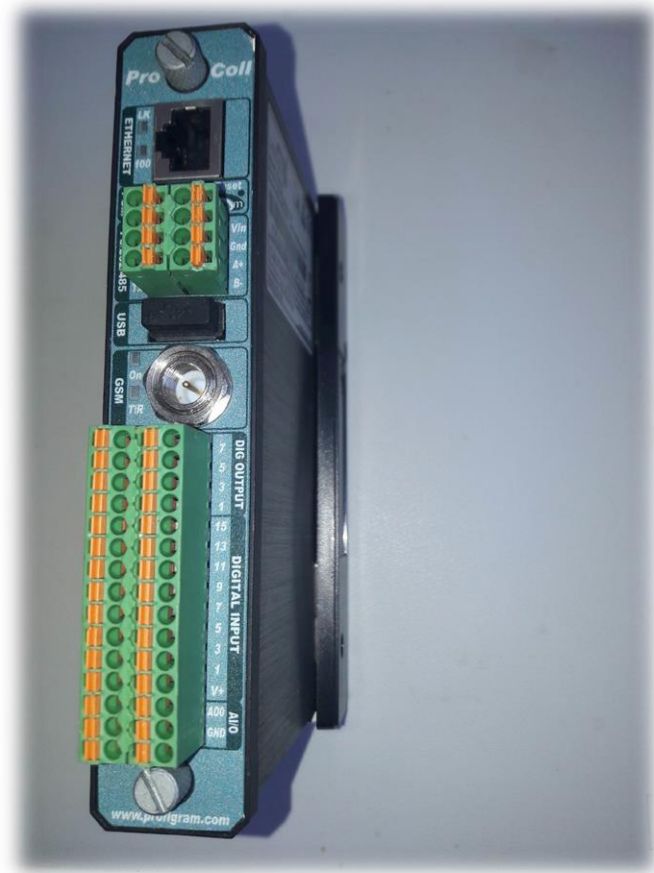
- **A new RTU should have more levels of authority**
- **Protocol switching on the same port**
- **Reduced possibilities of hacking**
- **Each comm port can be separately secured**



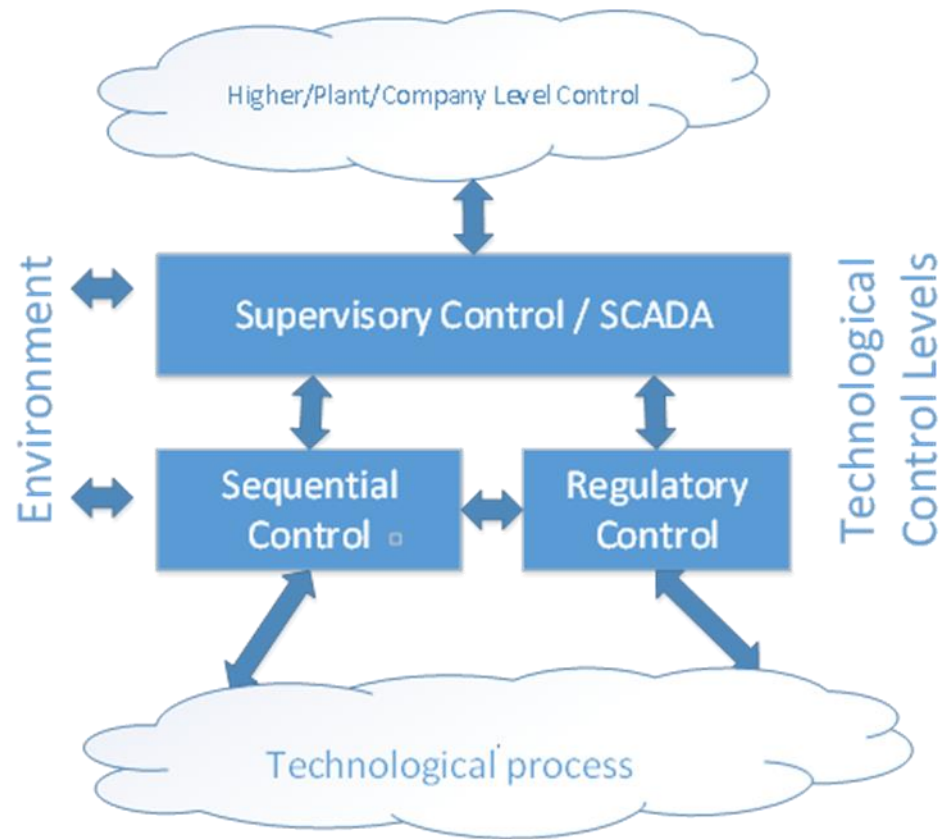
New RTU Concept Summary

- **RTU with powerful PLC**
- **Embedded Internet: Free mini-SCADA inside!**
- **PUSH technology (email/FTP,...)**
- **Strong communication features**
- **High end RTU features (SoE, Hot stand-by, msec logs,...)**
- **Ease of use and of programming**
- **Secured access**

100



How to put a system together...



When multi-vendor supplier for site automation



**SYSTEM INTEGRATION
is a must!**

A large offshore oil rig is positioned in the middle of the ocean under a cloudy sky. The rig features a tall derrick and various structural components. In the background, several wind turbines are visible on the horizon. The text "What is Digitalization?" is overlaid in large white letters across the middle of the image.

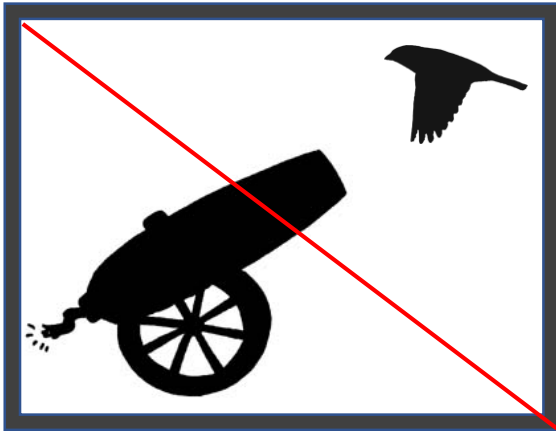
What is Digitalization?

„An inevitable evolution, driven by customer needs and technological development“

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What is digitalization...



DATA \neq INFORMATION

What is digitalization...

- The upstream technological process is a stochastic, non-linear, time-variant
- Up-to-date telemetry can gather excessive amount of process data
- Which are the important/useful data?
- More data does not mean always more information!
- HAZOP imply consequences in automation design: alarming, logging
- Smart control means clever use of available IT devices and solutions

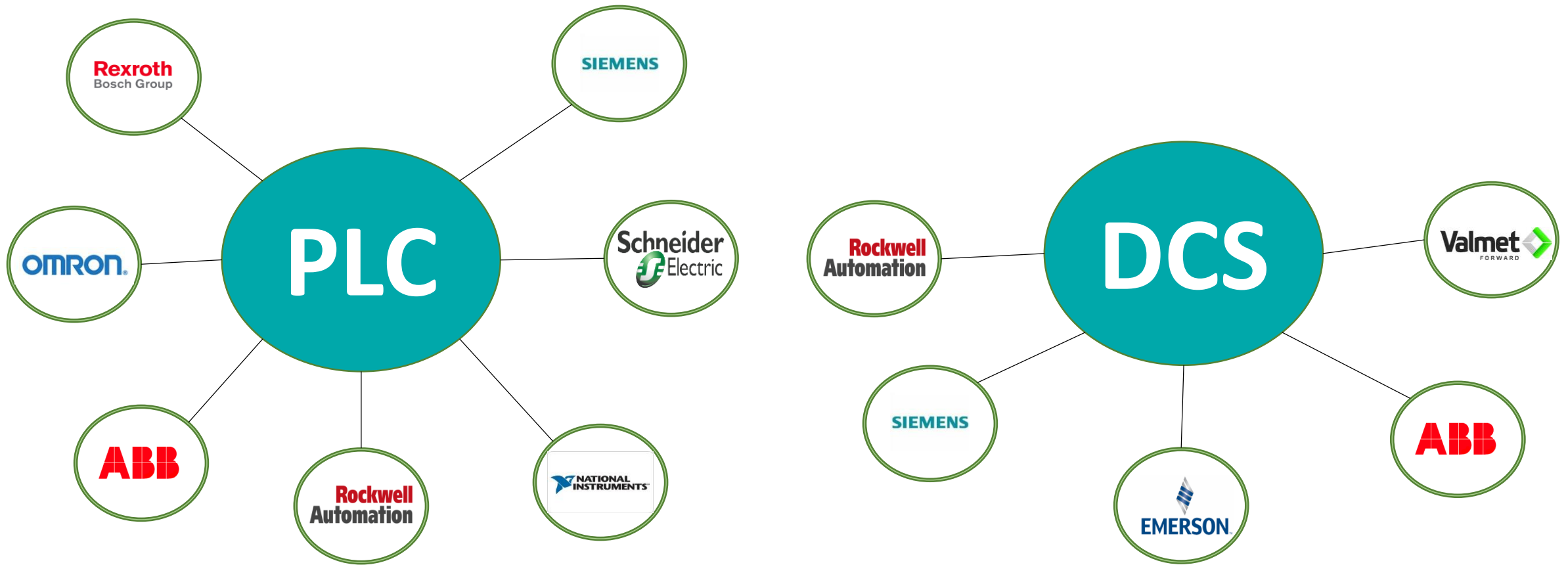


Who we are? - PROFIGRAM

PROFIGRAM IN NUMBERS:

- More than 300+ projects worldwide
- 60+ certified field proven engineers
- 10+ platform capabilities
- 35+ years of experience
- 25+ countries
- 4 locations

Versatility – Multi platform capabilities



Experience

- Oil & gas industry – 30+ years of experience
- 60+ qualified engineers
- Language skills

Operational areas

Austria
Belgium
Czechia
Cyprus
Dubai
United Kingdom
Finland
France
Kazakhstan
Lithuania
Germany
Romania
Spain
Serbia
Slovakia
Slovenia
Ukraine

Russia
Uzbekistan
Turkey
Turkmenistan
Vietnam



References

Our customers:

Oil industry



Power generation



Pharmaceutical industry



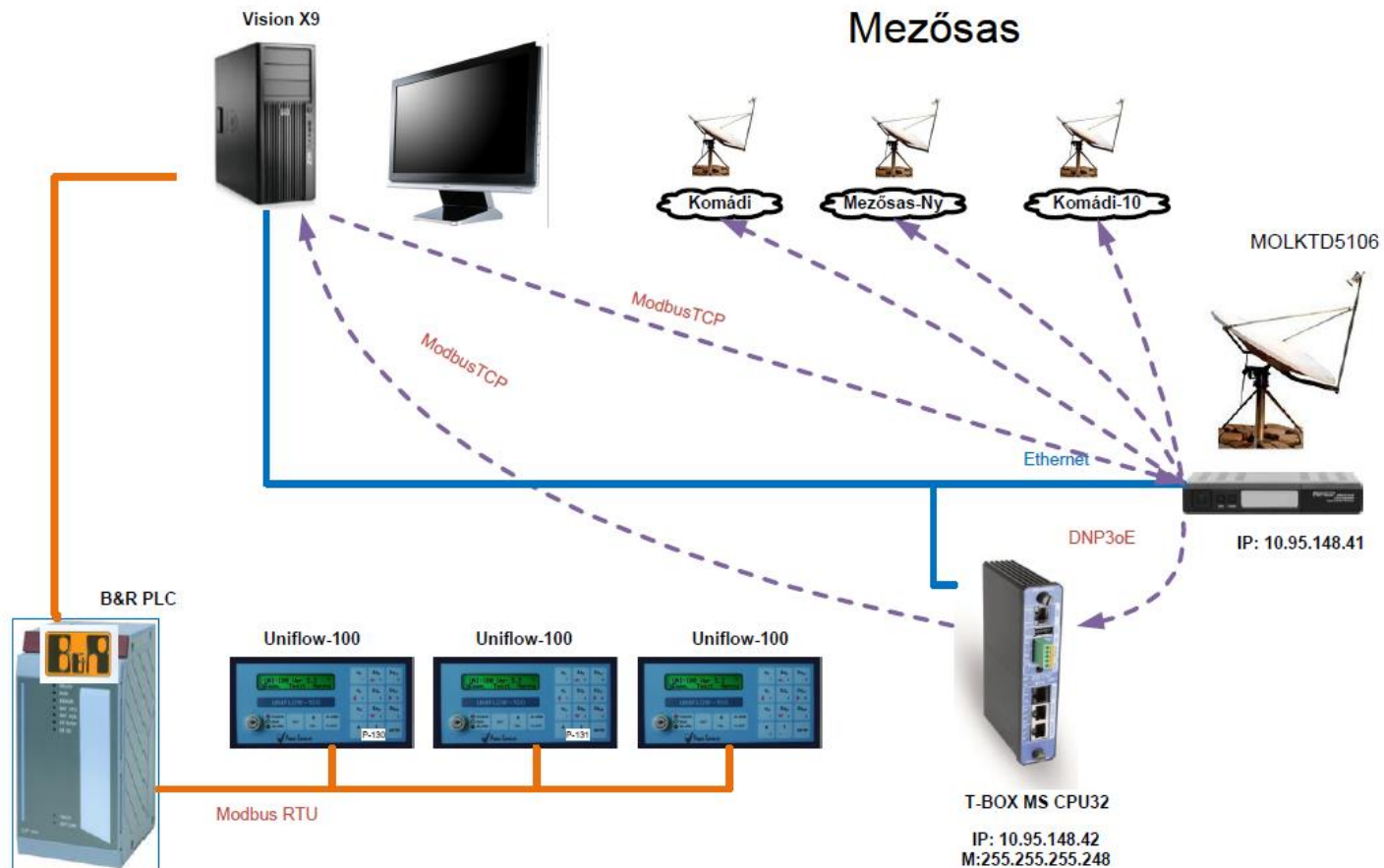


System examples

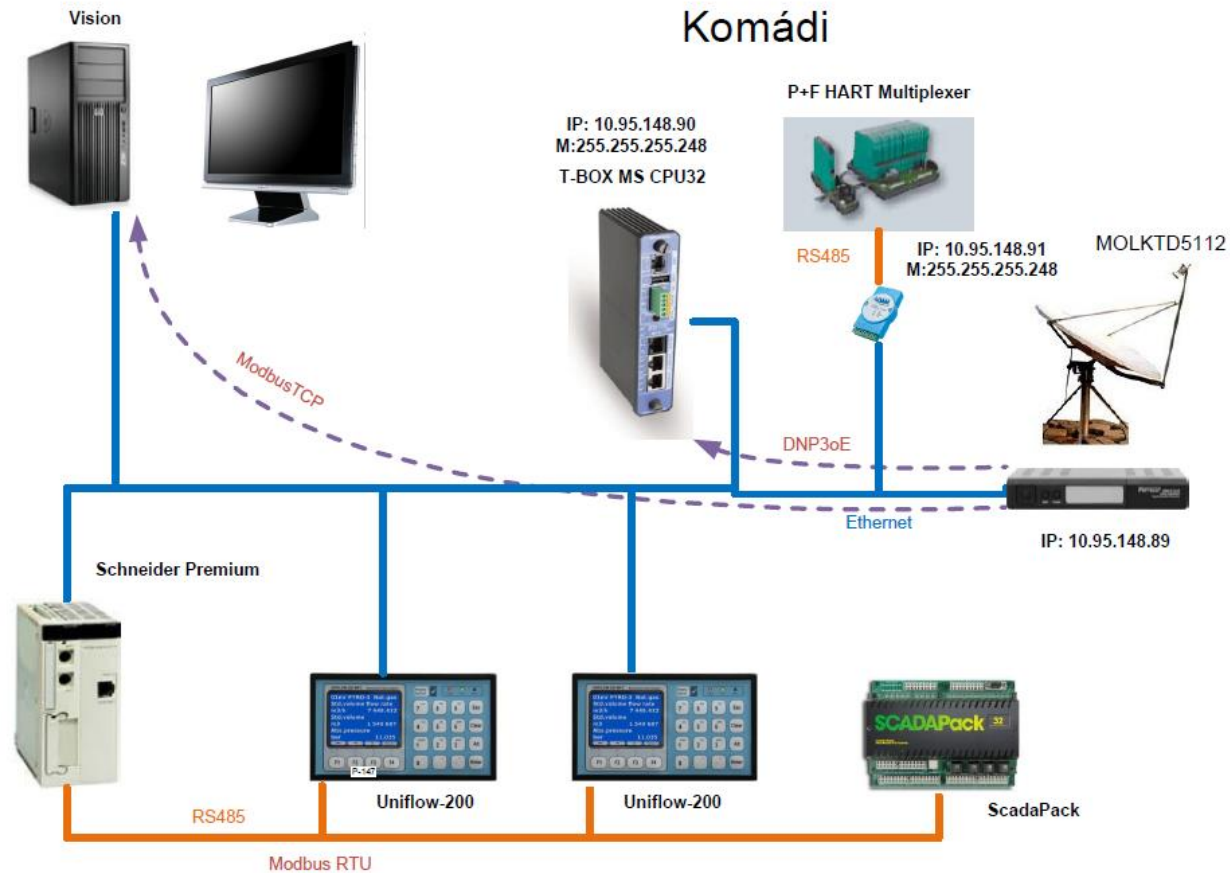


ProfiGram

From simple structure...

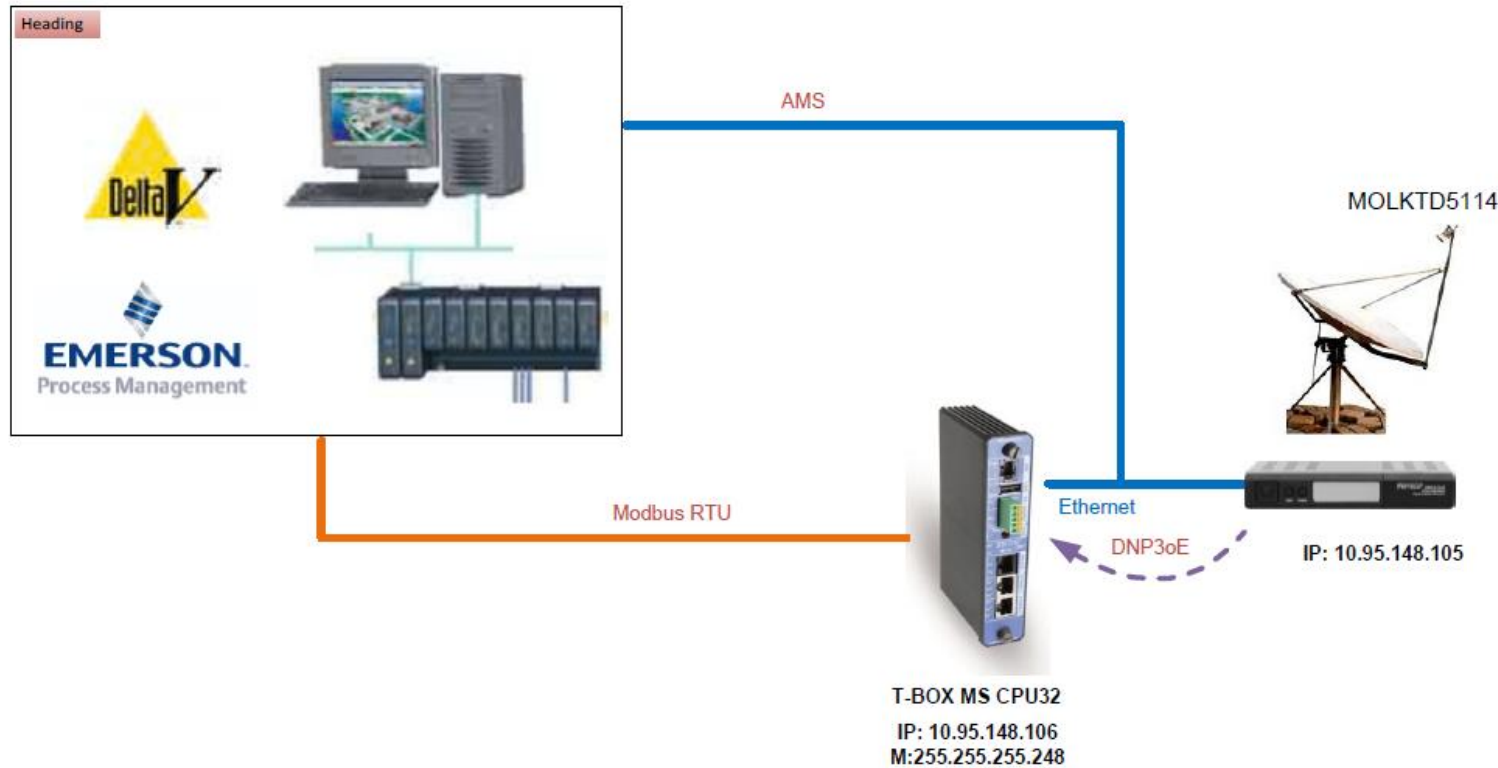


With multiple vendors....

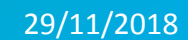


And full integration...

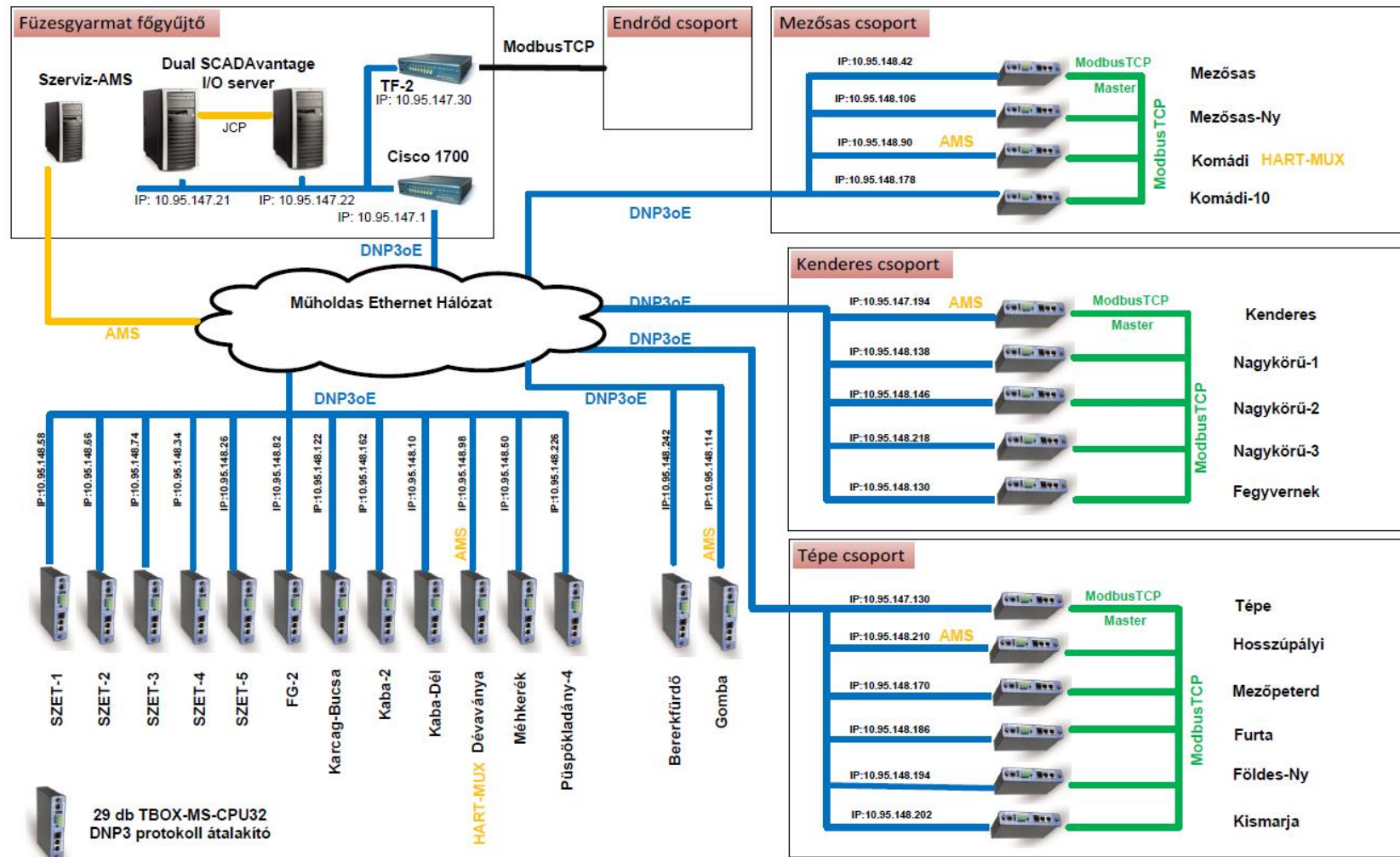
Mezősas-Ny



ProfiGram



And organized systems







Summary

Customer testimonial

Digitalization can contribute to the UPSTREAM BUSINESS SUMMARY REPORT, that a significant regional company could declare:

“The business is sustainable and can be self-financing even at 35USD/barrel Brent crude price”.

„ Achieved a 7.3 USD/boe direct production costs for 2015 implying that the vast majority of the portfolio has been profitable at low oil prices”

<http://annualreport2015.mol.hu/en/our-businesses/upstream/overview-of-2015>





www.profigram.com

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