

Alexandru Moga, ABB Corporate Research Switzerland | IEEE SmartGridComm'15, 2015-11-4

Towards an integrated industry

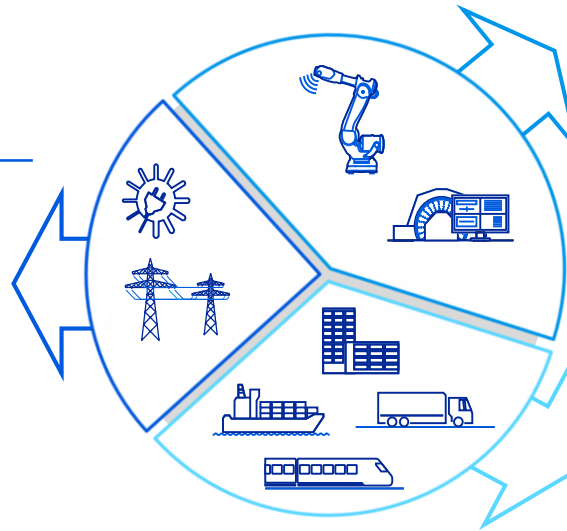
The Internet of Things, Services and People

ABB

Power & Automation: today and tomorrow

Utilities

- Renewables
- Grid automation
- Smart upgrades
- Emerging markets
- New consumption points

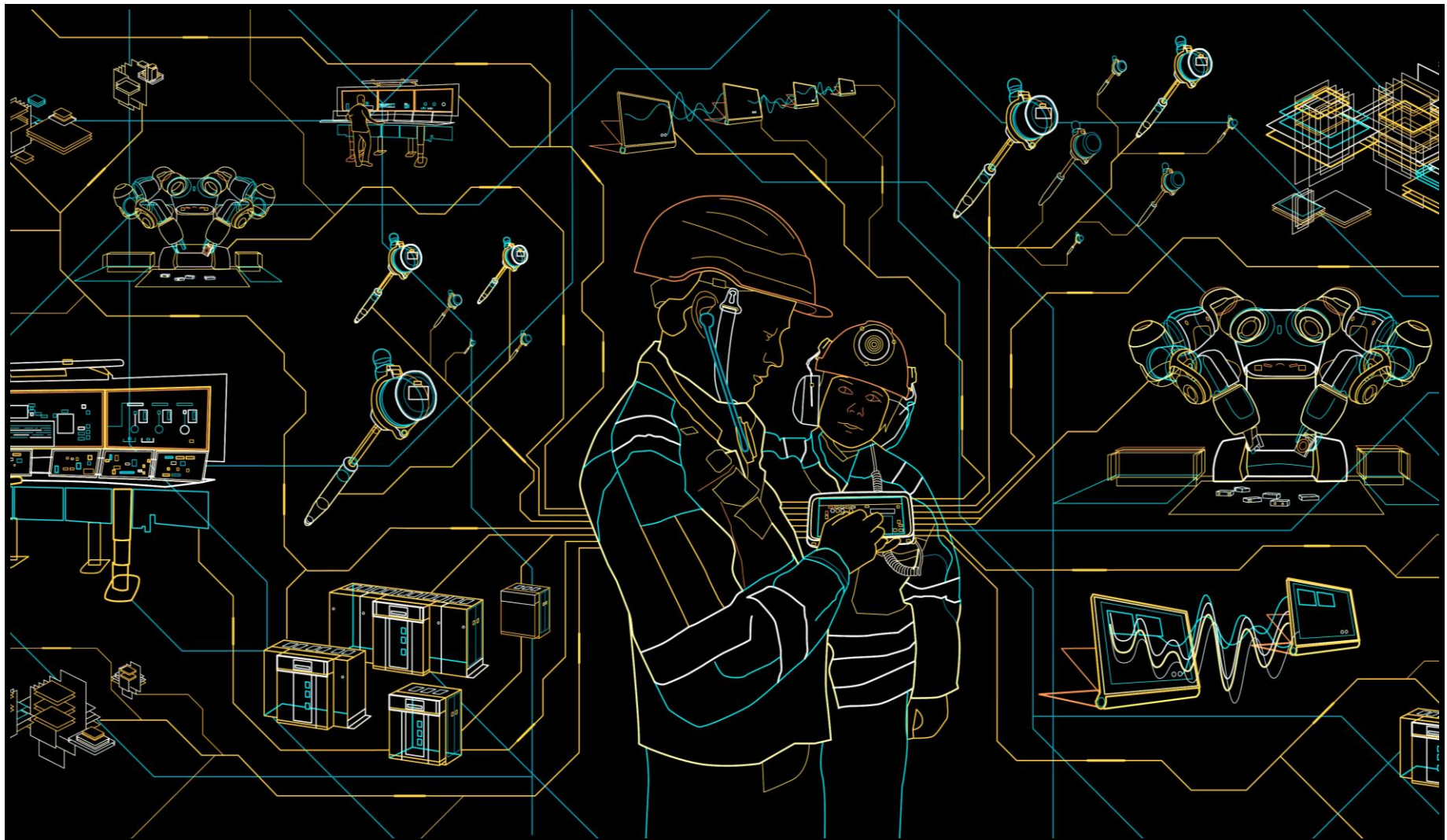


Industry

- Productivity
- Energy efficiency
- Automation penetration
- Power quality and reliability
- Emerging markets
- US re-industrialization

Transport & Infrastructure

- Urbanization
- Energy efficiency
- Electric transport
- Power quality and reliability



→ **Integrated industry vision**

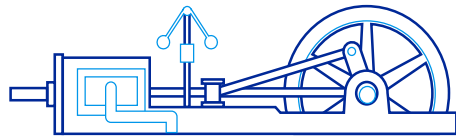
→ **Challenges & opportunities**

Changes of Paradigms

4th Industrial Revolution

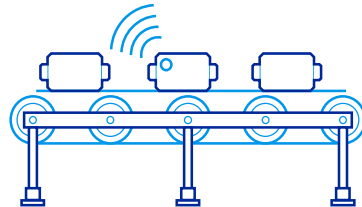
Industry 1.0 – 1712

First Steam Engine



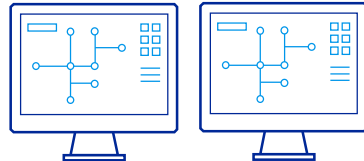
Industry 2.0 – 1870

First Assembly Line

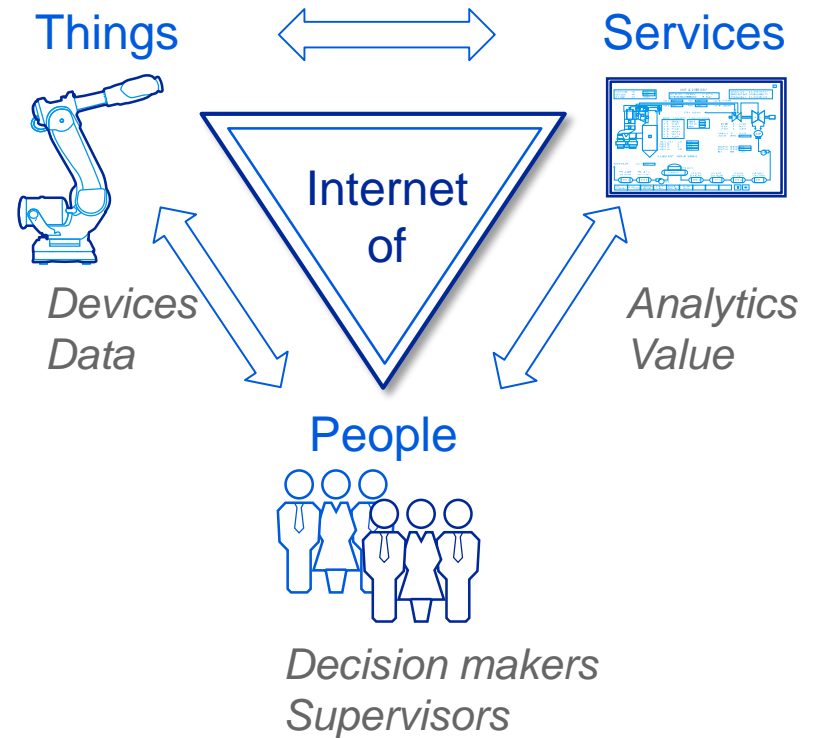


Industry 3.0 – 1969

Electronics- /
Software-based Control

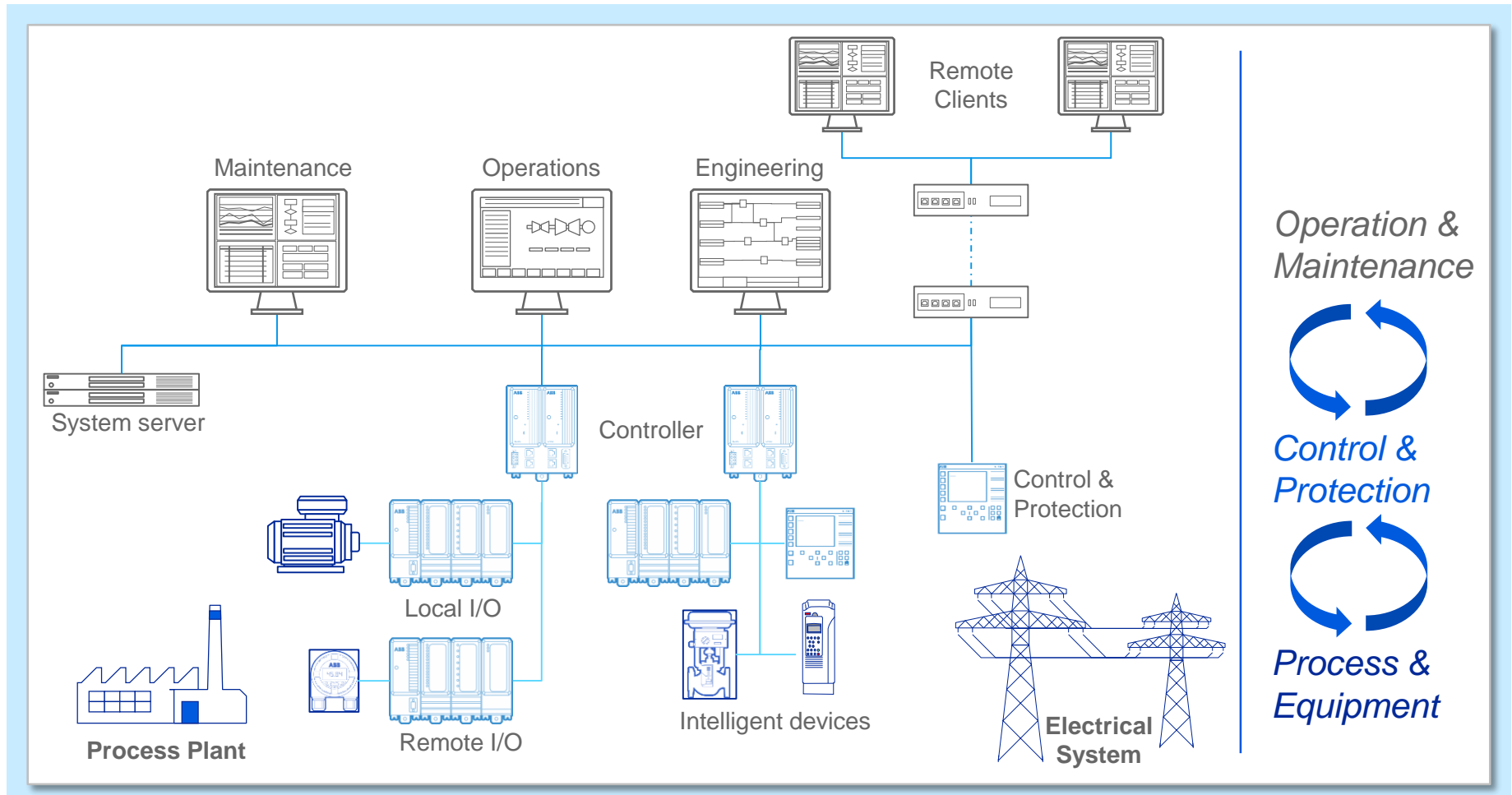


Data as game changer



Automation Systems

The Intranet of Things in the power & automation domain



Internet of Things

Shifting focus: Industrial Internet / Industrie 4.0

Infrastructure + Data + Cloud

Instrumentation of infrastructure:

- Use existing or new data & sensors?

Data communication:

- Federation vs. uniform data models/interfaces
- Vendor-specific vs. cross-vendor
- Cyber security

Data storage (cloud):

- Granularity, scalability, reliability
- Data privacy: our cloud vs. your cloud?

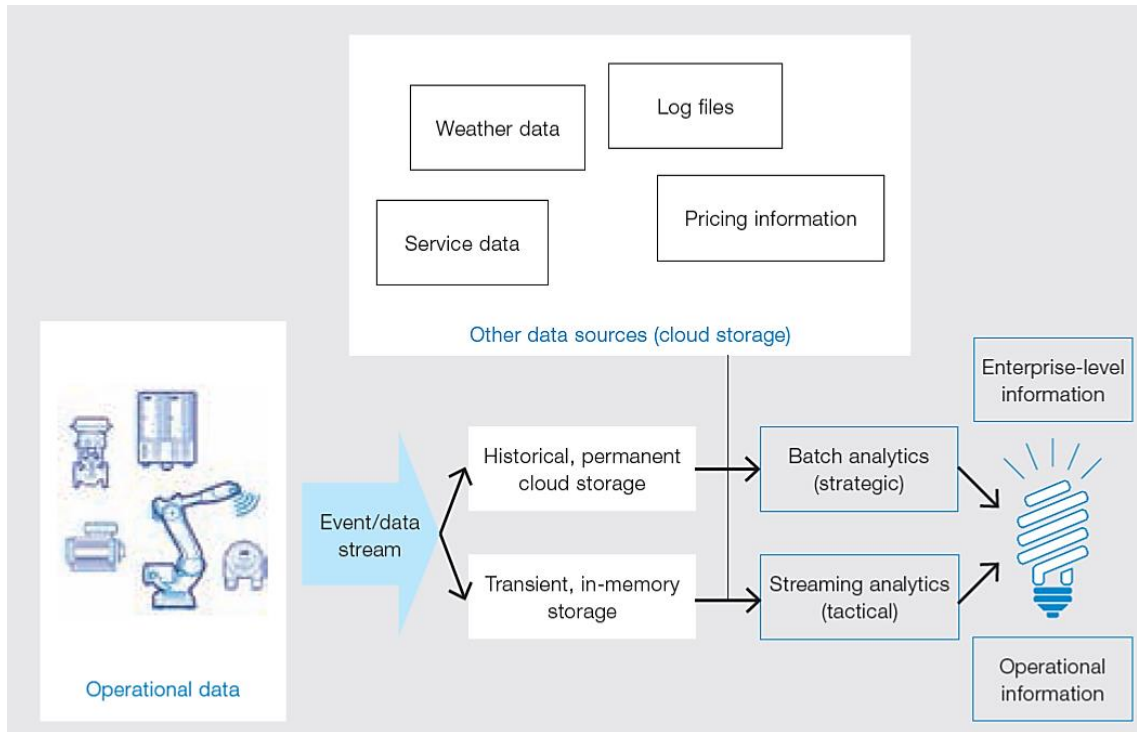
Operation insights → Business value



Internet of Things and Services

Value proposition, differentiation

Optimized operations and maintenance



Source: Information exploitation - New data techniques to improve plant service. C. Ganz et al, ABB review 1|15

Data fusion

- Multiple sites
- Heterogeneous data
- Time and event alignment

Exploration

- Access to data and analytics
- Monitoring and diagnostics
- Early problem detection

Analytics

- Enablers not drivers
- E.g., fleet analytics, predictive maintenance

Power and productivity
for a better world™

