Converged solution

The Need

Industrial

Why now?

- Industrial Automation and Control systems infrastructure parallel that of IT infrastructure and nearly the same bandwidth needs, but with time-sensitive and latency-sensitive traffic.
- Industrial Automation markets are served by about dozen different proprietary protocols, some of which leverages parts of Ethernet standards.
- It is the desire of the Industrial Automation industry to adopt mainstream 802.3 Ethernet and 802.1 bridging standard to serve its time-sensitive network requirements over converged network.

Industrial Automation

Ethernet captures more and more Industrial Applications

Traditional Markets

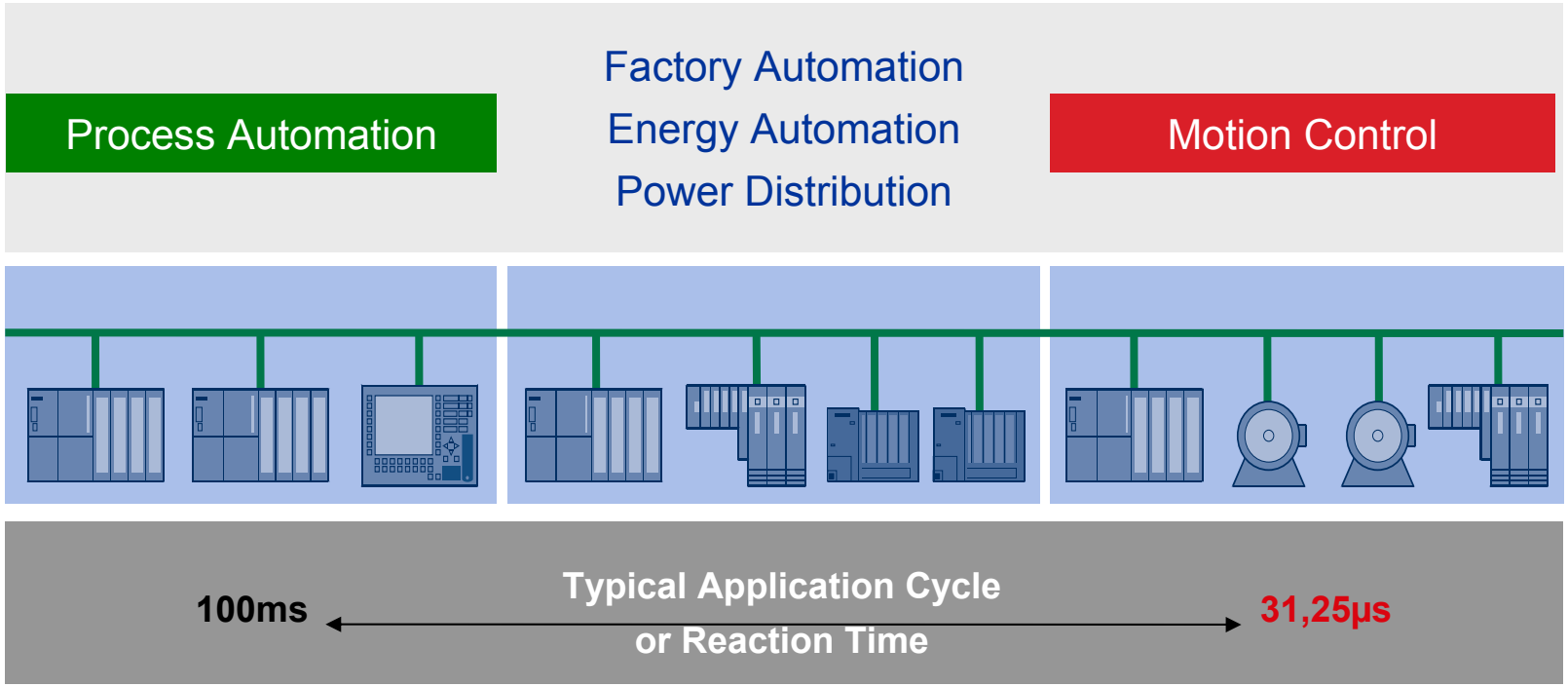
- Industrial Automation
  - Factory Automation
    - e.g. PLC, Motion Control, Robots
  - Process Automation
    - e.g. Oil, Gas, Chemical / Petrochemical, Food & Beverage
- Energy Automation
  - Power Generation
    - e.g. Fossil Power Plants, Wind Turbines
  - Power Transmission and Distribution
- Building Automation
  - Climate Control
  - Fire Safety

New Markets

- Avionics
  - Fly-by-Wire
- Railway Systems
  - Train Control
  - Railway Traffic Management Systems
- Medical

Industrial Automation

Wide Range of Industrial Performance Requirements to be met

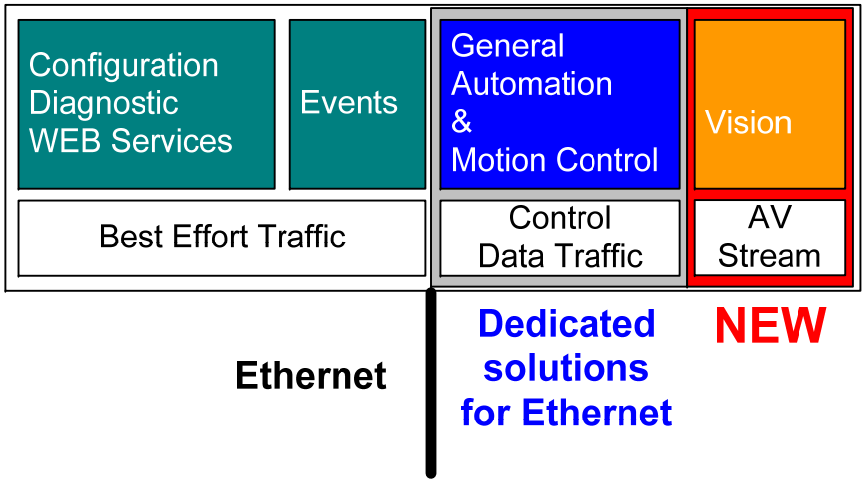


Industrial Automation

Industrial Communications Services

Services:

- **Best Effort Traffic**
  - Configuration
  - Diagnostic
  - Web Services
  - Events
  - …
- **AV Streams**
  - Real Time Diagnostic
    e.g. inspection, identification, tracking, counting and measurement
  - Vision Systems
- **Control Data Traffic**
  - General Automation to exchange typical analog an digital values
    e.g. manufacturing and process industry
  - Motion Control to exchange typical analog and digital values
    from actuators and sensors based on synchronized processes



	Today		Future
• **Best Effort Traffic:**	**No guaranteed bandwidth**	→	**Guaranteed amount of bandwidth**
• **AV Streams:**	**Separate network**	→	**Guaranteed QoS for AV Streams in one network**
• **Control Data Traffic:**	**Dedicated solutions to guarantee min latency, resources and bandwidth**	→	**Standardized solution to guarantee min latency, resources and bandwidth**

- Questions?