Peter Terwiesch

Chief Technology Officer
ABB Automation
Technologies

Driving the road to greater productivity through automation

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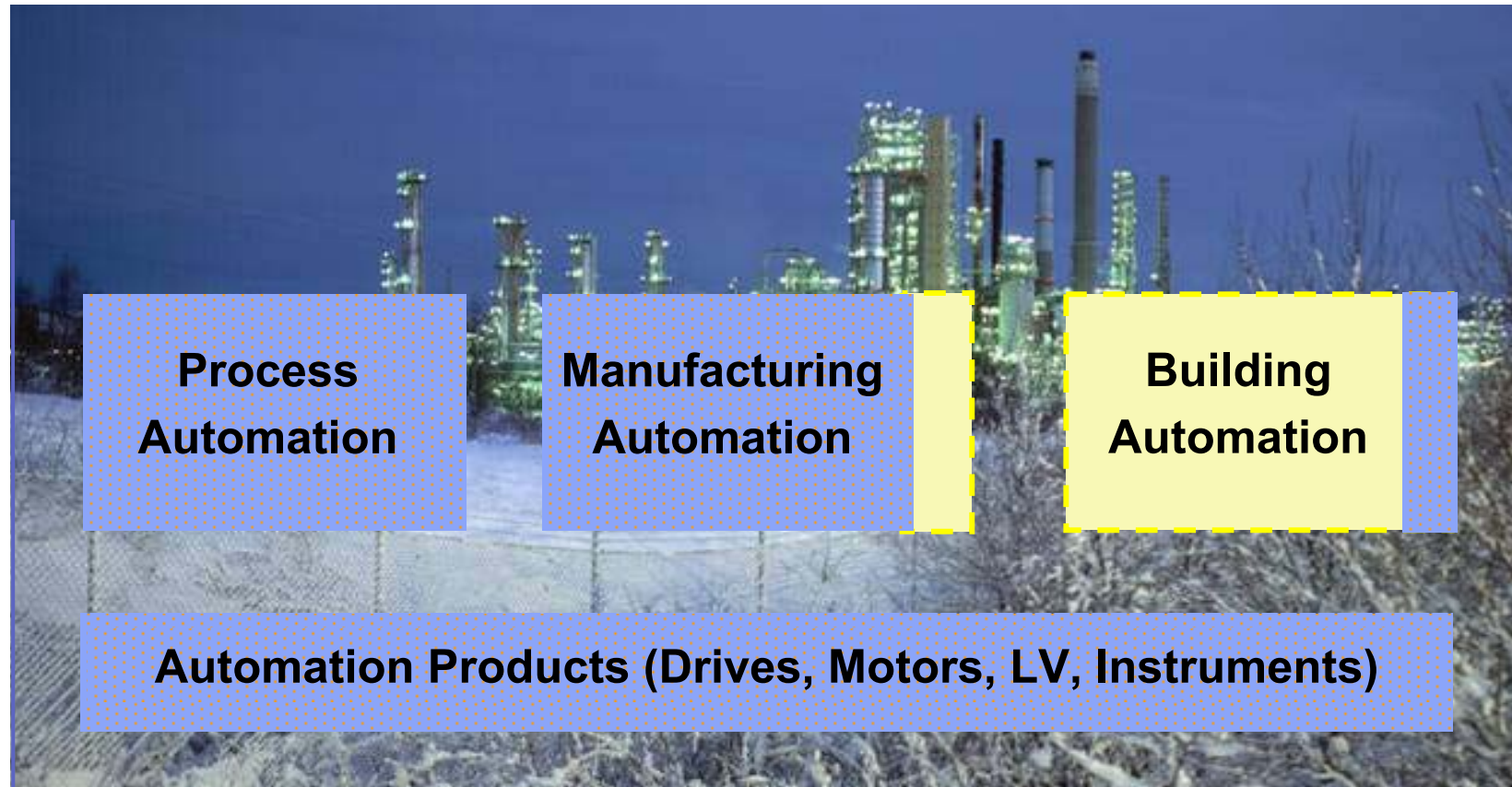# The ABB Automation Technologies landscape

Process Automation

Manufacturing Automation

Building Automation

Automation Products (Drives, Motors, LV, Instruments)

ABB served markets

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Main R&D drivers in automation

Products

- Scalable platforms

- Functional integration, fewer parts

- Easy to engineer, install, operate, maintain

- Safe and environmentally friendly
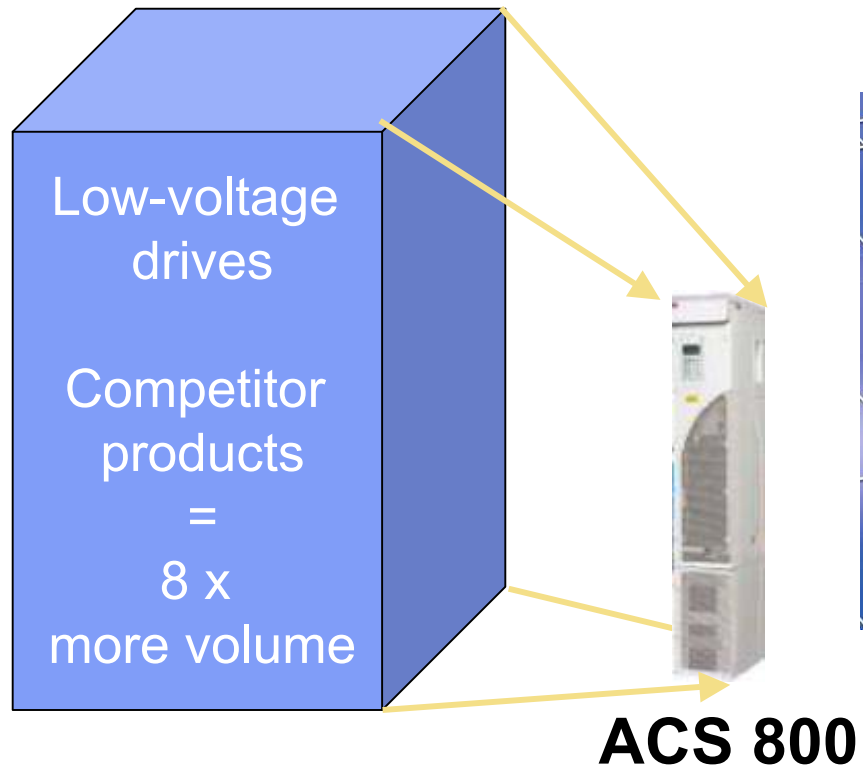
- Reliable and robust (e.g. EMC)

Systems

- Optimize customer processes
  - Yield, quality, availability, cost
  - Throughput, flexibility, inventories

- Easy to engineer, install, operate, maintain
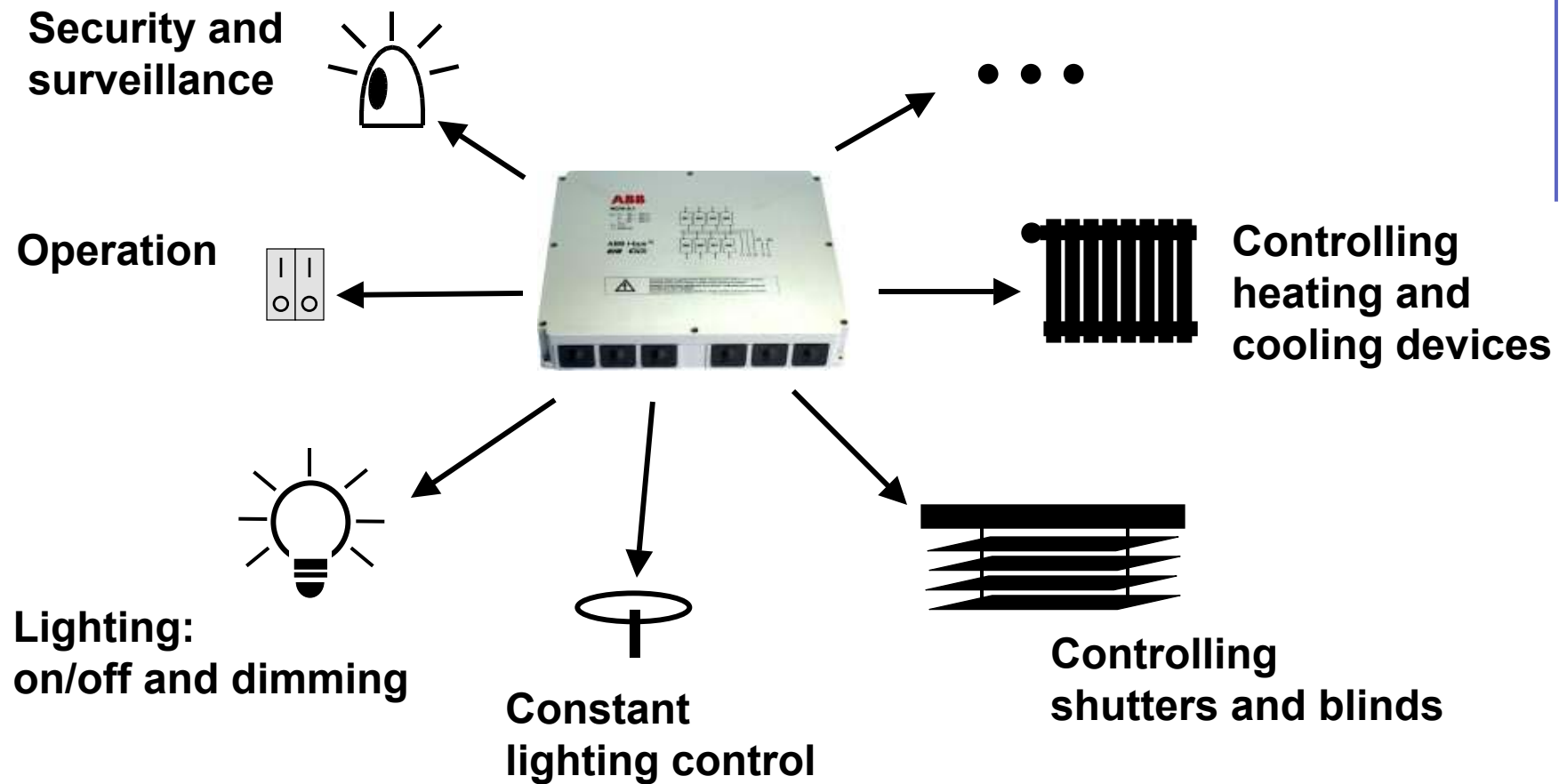
- Maximize asset utilization

Service

- Performance-based

- Remote monitoring, diagnosis, and support

- Life-time extension and smooth technology migration

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Scalable product platforms

Low-voltage
drives

Competitor
products
=
8 x
more volume

ACS 800

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Functional integration

The "one device per room" principle

Security and surveillance

Operation

Lighting:
on/off and dimming

Constant
lighting control

Controlling heating and cooling devices

Controlling shutters and blinds

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Industry-specific products and solutions

Paper machine
valves and actuators

Azipod marine
propulsion

Paper quality control
systems

Metallurgical analyzers

Turbochargers

Force measurement

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Building on platforms: Azipod propulsion example

Cargo ships

- Ocean-going cargo ships
- Top speed operation vessels
- Less maneuvering in operation

Passenger and other vessels

- Passenger ferries and cruise vessels
- Ice-going vessels
- Low speed operation vessels, DP vessels

Offshore and lower power vessels

- Offshore vessels
- Low propulsion power
- Low speed operation vessels, DP vessels

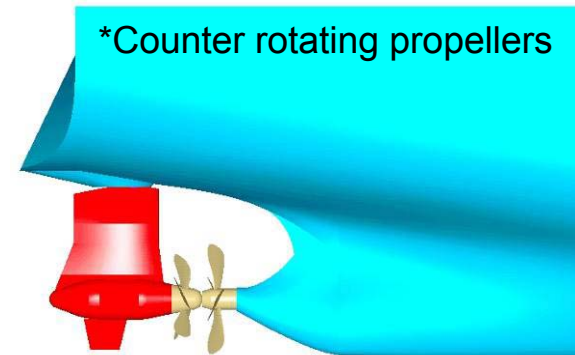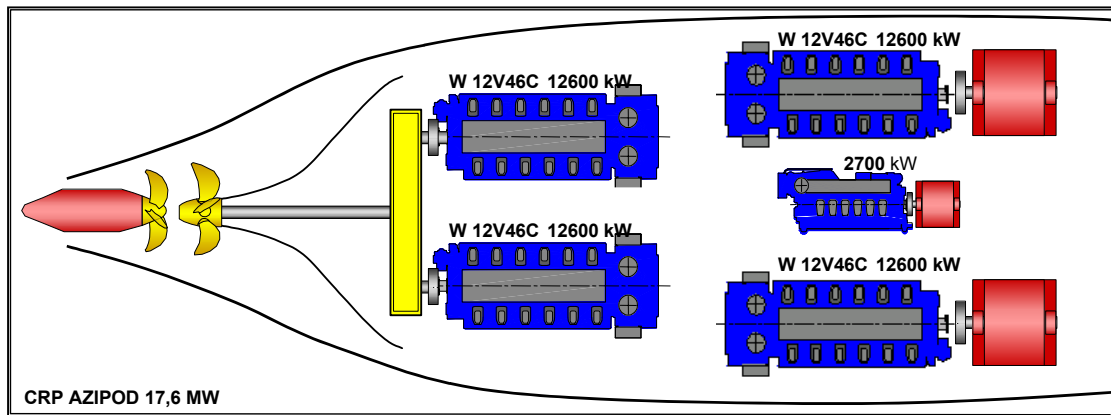Counter-rotating propeller Azipod 'Power Rudder'

Azipod

Compact Azipod

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World's first vessels with CRP* Azipod propulsion

- **Owner: Shin-Nihonkai Yard: MHI, Japan**

- **17,000 GRT RoRo passenger vessels**

- **Length: 224.5 meters**

- **Max. speed: 31.5 knots**

W 12V46C 12600 kW

W 12V46C 12600 kW

2700 kW

W 12V46C 12600 kW

W 12V46C 12600 kW

CRP AZIPOD 17,6 MW

*Counter rotating propellers

20 percent lower fuel consumption
than comparable ferries w/o Azipod

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Leveraging IT trends for automation

- **Communication**

- **User and code mobility**

- **Components**

- **Web technologies**

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Easy to engineer, install, operate, maintain

使您更加容易

Einfacher für Sie

Easier for You

Lättare för Er

Virtual

Real

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Wireless for industrial applications

- Wireless communication **reduces investment and operational costs**

  - engineering cost

  - installation cost

  - cabling cost

  - maintenance cost

- Wireless communication enables **new value adding services and increased productivity**

  - mobile operator terminals

  - flexibility and mobility

  - wireless human machine interface (HMI)

  - wireless Internet

  - Safety, e.g., light barriers and presence detection

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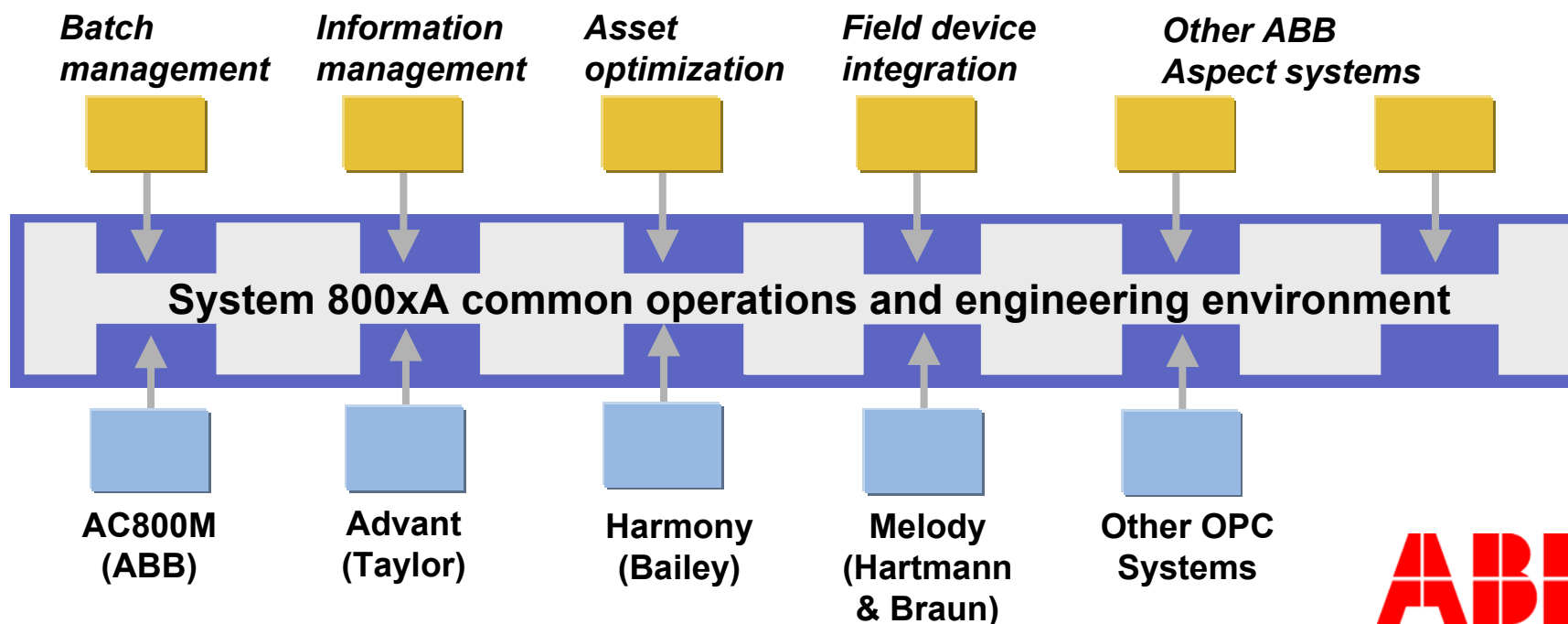# Wireless user interface for low-voltage breakers

- Operator PC or PDA has wireless link to breaker based on Bluetooth

- User-friendly software hides complexities of communication

- Configuration of protection threshold functions, access to data logs and breaker status

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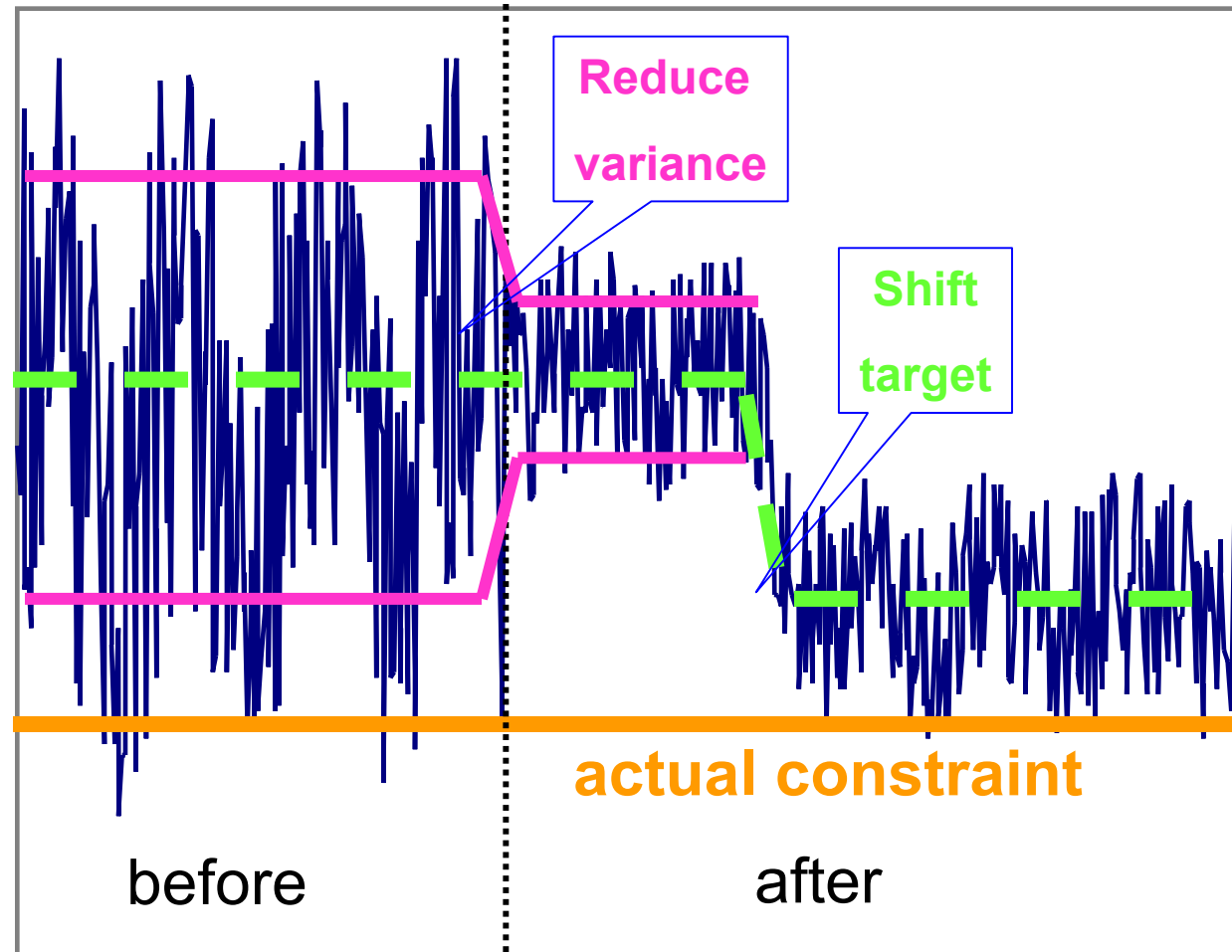# System 800xA: Powerful *extended* automation

- New common platform for all process automation software and user interfaces

- Advanced software products plug into System 800xA base platform

- Legacy systems plug into common user environment

Batch management	Information management	Asset optimization	Field device integration	Other ABB Aspect systems	

System 800xA common operations and engineering environment

AC800M (ABB)	Advant (Taylor)	Harmony (Bailey)	Melody (Hartmann & Braun)	Other OPC Systems

Turning process knowledge into new algorithms

Reduce variance

Shift target

actual constraint

before

after

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Advanced solutions: pulp and paper online optimizer

- 620 000 t/yr pulp and paper

- Two recovery systems

- Three fiber lines

- Six paper machines

- Chemical savings

- Increased production
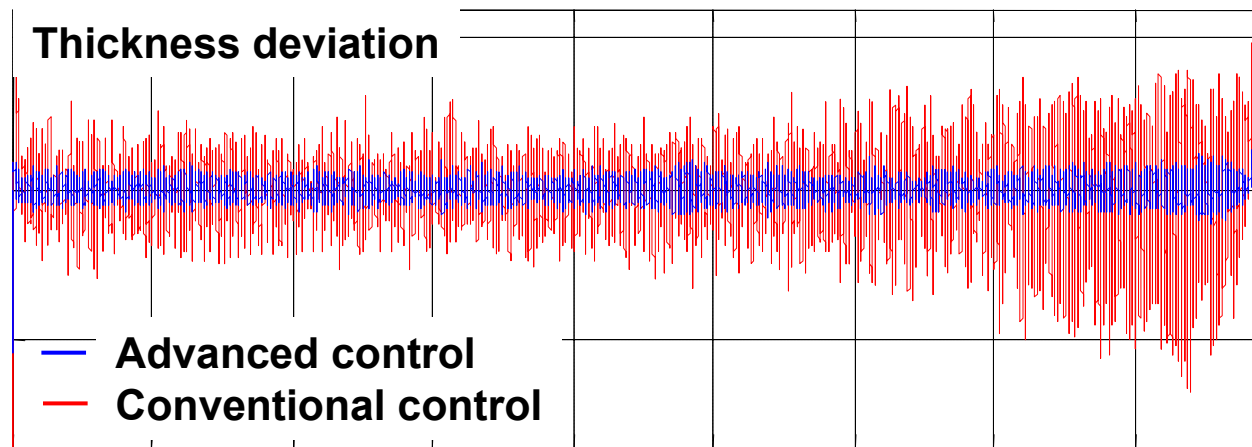
- Decision support

- Optimizing 54 hours ahead
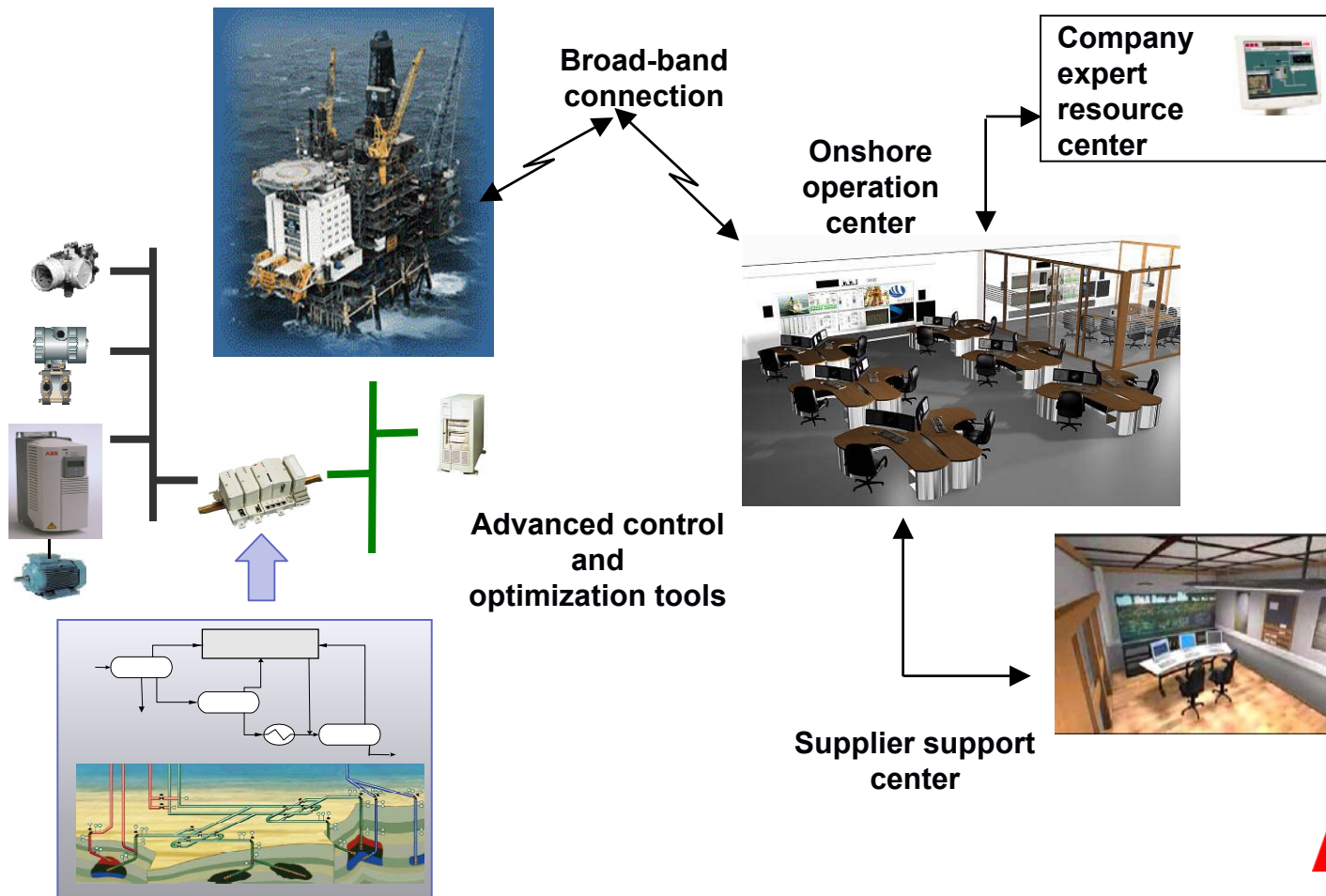

**Billerud AB, Gruvön Mill
pilot customer**

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Advanced solutions: cold rolling mills

■ New model based control and optimization

■ Pilot experience at two customer installations:

    ■ Mill throughput increased by > 40 percent

    ■ Thickness variance reduced by > 50 percent

Thickness deviation

— **Advanced control**
— **Conventional control**

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Smart operations: production and maintenance

- Increased production (3-5 percent)
- Reduced operation and maintenance costs (15-30 percent)
- Reduced production losses (20-40 percent)

Broad-band connection

Company expert resource center

Onshore operation center

Advanced control and optimization tools

Supplier support center

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Focus on *results* with ABB Industrial IT

- **Continuous productivity improvement** from ABB's integrated user environment

- **More efficient engineering** with ABB tools for installation, operation, and maintenance

- **Certified interoperability** of ABB products using international standard protocols.

- **Enhanced functions available** in certified, "plug and produce" ABB products

- **Extension of installed systems** capabilities through seamless ABB migration
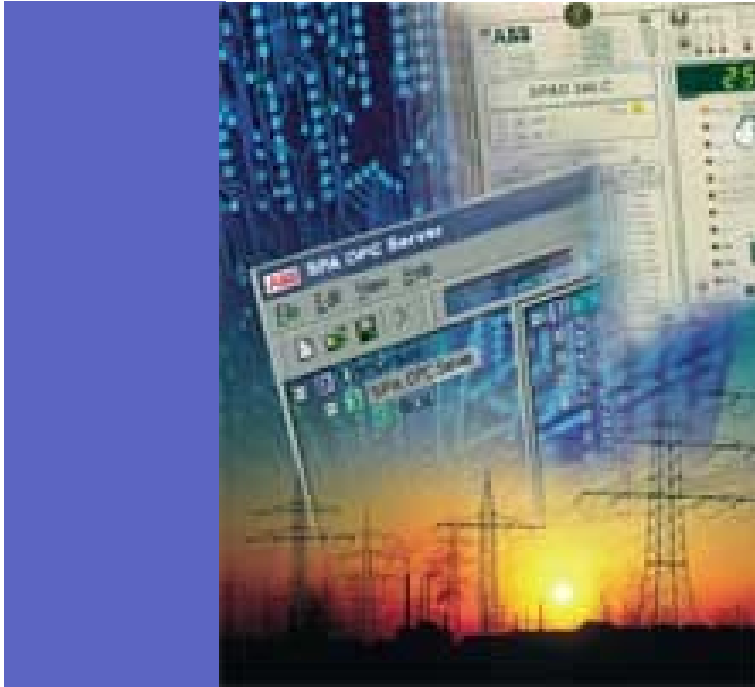

IndustrialIT
enabled™

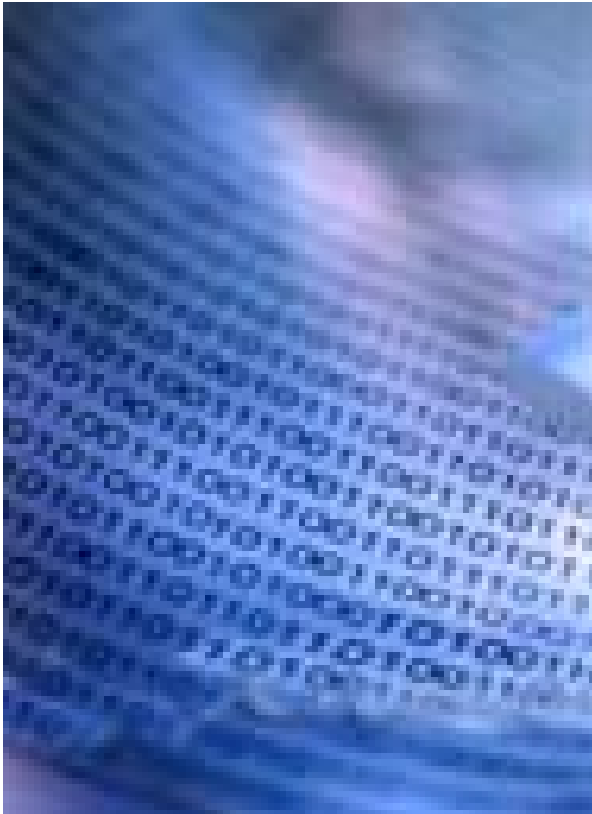|	
Product Identification	
Technical Manual	
Control Faceplate	
ABB Web Support	
Location Video	
Configuration	
Maintenance Record	
Engineering Drawing	
Fieldbus Status	
Loop Detail Display	
Loop FCM Display	
CAD Symbol	
Acknowledge	▶
Aspect Views	▶
Services Portal	▶
SAP Query	▶
Help	▶

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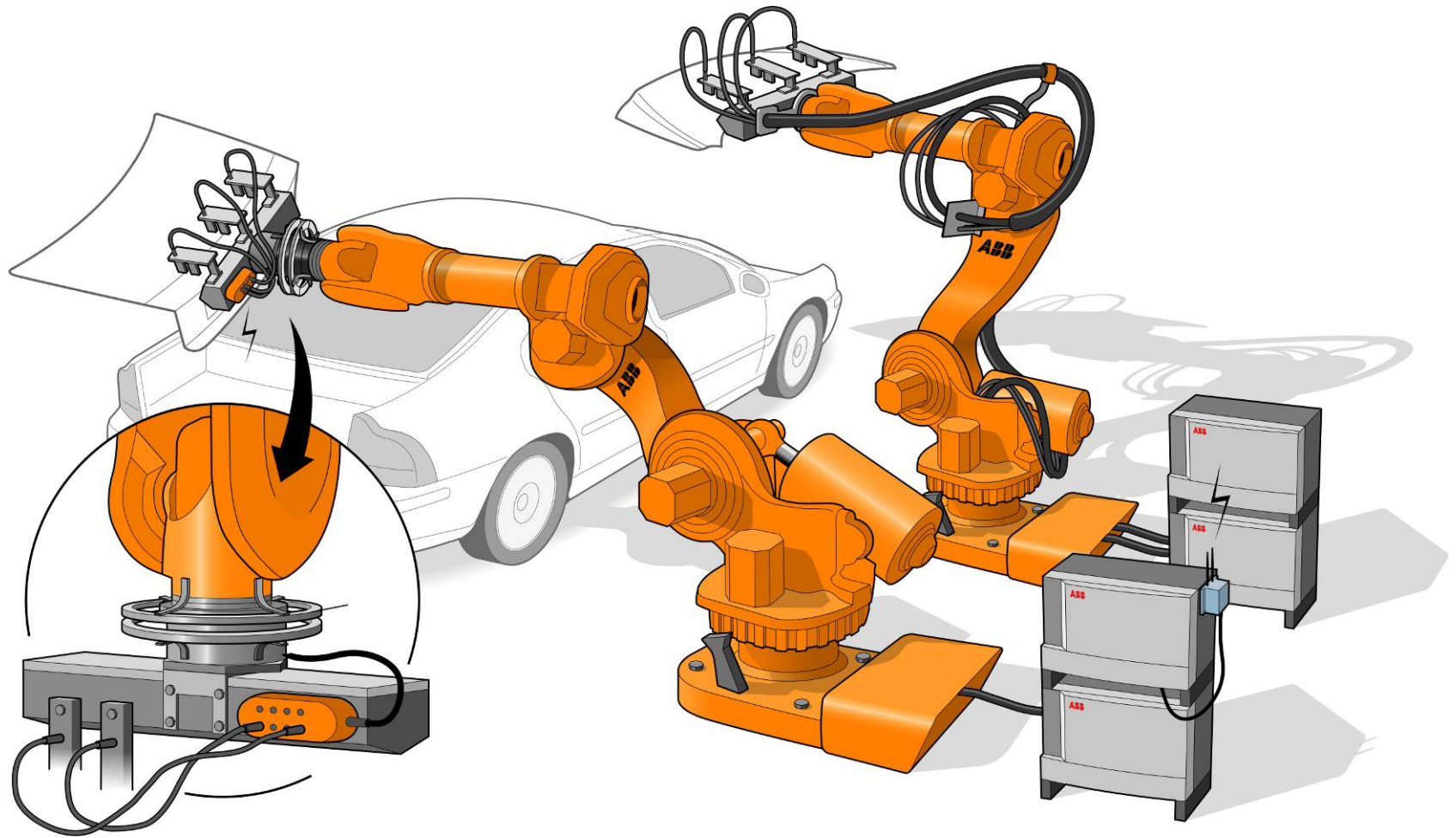# Continuing our agressive product innovation

Major new product areas

- Automation system 800xA

- Wireless connectivity

- MV Drives ACS6000

- LV Drives ACS800, ACS550

- Heavy Duty Robot series

- Flexible manufacturing cells

- New multiple robot controller

- CRP Azipod

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Beyond today: a rich R&D pipeline
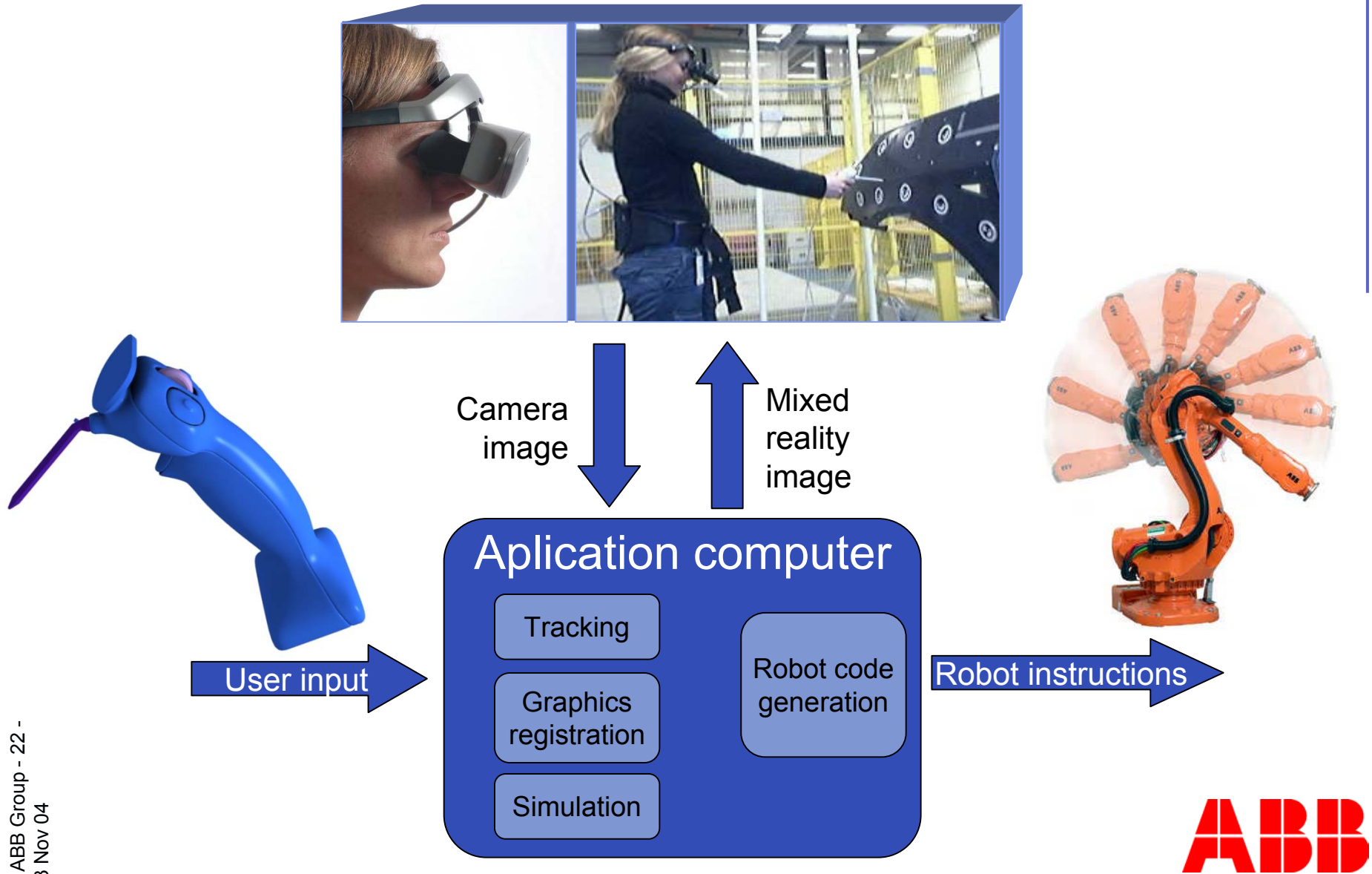

- **Sustaining our investment into new technologies continues to pay back for ABB and customers**

- **Partnering with**

  - Customers

  - Suppliers

  - Leading technology institutions

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Outlook: wireless power and communication

Outlook: augmented reality for easy programming

Camera image

Mixed reality image

User input

Aplication computer

Tracking

Graphics registration

Simulation

Robot code generation

Robot instructions

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