# Industry Business

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Executive Vice President – Industry BU

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# Disclaimer

All forward-looking statements are Schneider Electric management's present expectations of future events and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. For a detailed description of these factors and uncertainties, please refer to the section "Risk Factors" in our Annual Registration Document (which is available on www.schneider-electric.com). Schneider Electric undertakes no obligation to publicly update or revise any of these forward-looking statements.

This presentation includes information pertaining to our markets and our competitive positions therein. Such information is based on market data and our actual revenues in those markets for the relevant periods. We obtained this market information from various third-party sources (industry publications, surveys, and forecasts) and our own internal estimates. We have not independently verified these third-party sources and cannot guarantee their accuracy or completeness and our internal surveys and estimates have not been verified by independent experts or other independent sources.

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**We are a global leader in automation**

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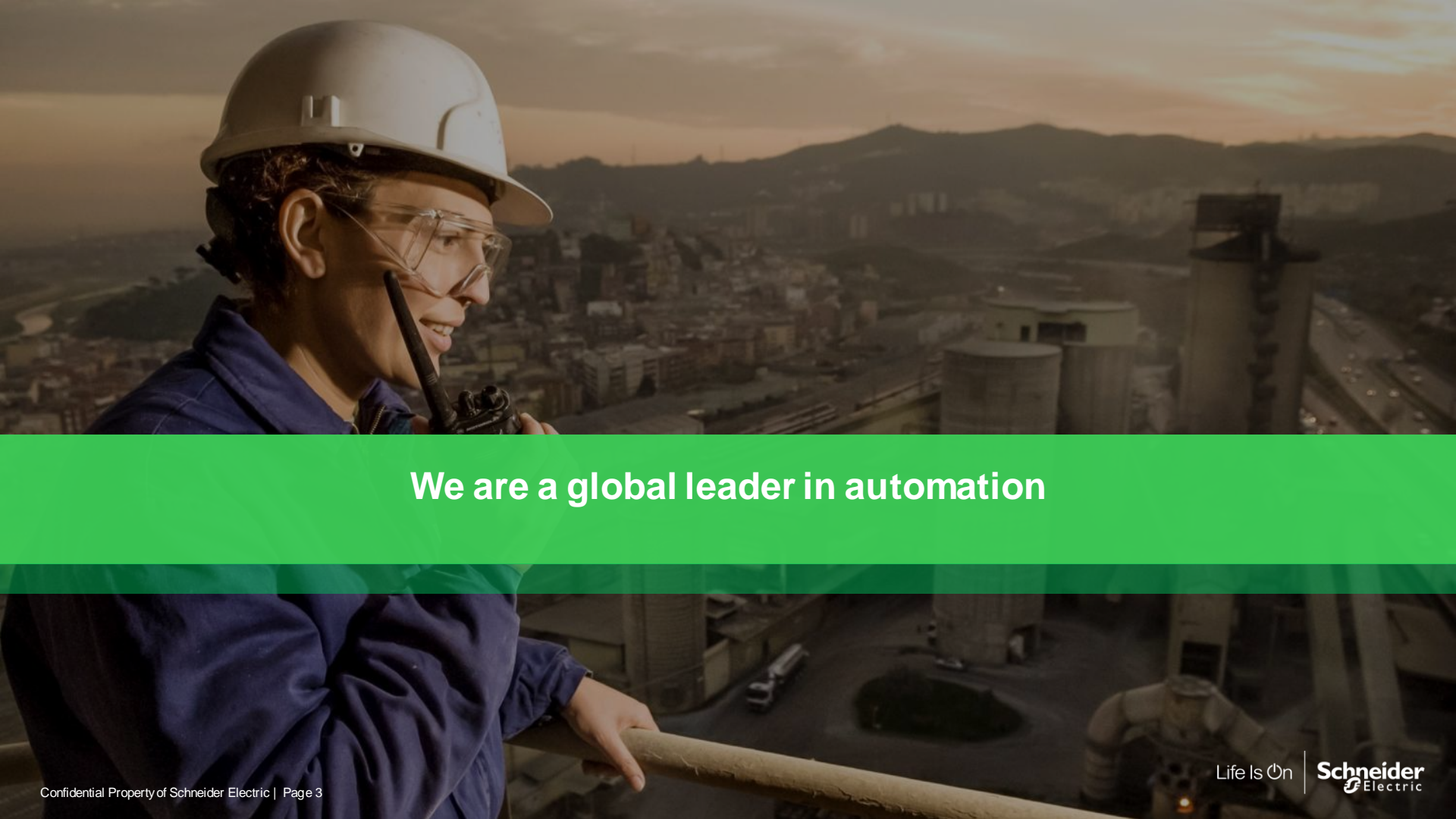
# We are a global leader in automation

## A solid business

One of the broadest software and hardware offers covering discrete and continuous process industries, with a formidable installed base

## Our value proposition

We are driving the convergence of energy and automation, with deep domain expertise and standards-based solutions

## Future ready

IIoT-ready with smart connected products, edge control, cloud-enabled software and analytics

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## BUSINESS FACTS

# €5.7bn
**21%** of Group 2015 revenues

# 17.1%
Adj. EBITA margin

# #2
**Worldwide**
Discrete automation

# #4
**Worldwide**
Process and discrete automation

# #1
**Worldwide**
Safety systems

(% OF REVENUE)

## BUSINESS MODELS

| 58% | 25% | 17% |
|-----|-----|-----|

■ Products  ■ Systems  ■ Software & Services

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## KEY SEGMENTS

OEMs

Oil & Gas

Water & Wastewater

Mining, Minerals, Metals

Power generation

Petrochemical

Food & Beverage

## GEOGRAPHIES  (% OF REVENUES)

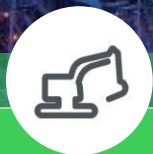| 58% | 42% |
|-----|-----|

- ■ Mature
- ■ New economies
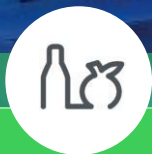
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# Schneider Electric's industrial innovation is everywhere

**20** of the largest **Oil & Gas** companies

**9** of the 10 largest **Mining, Metals & Minerals** companies

**11** of the top brands within **Food & Beverage**

**100+** **Water & Wastewater** plants

**10** of the world's top electric **utilities**

**8** of the top 10 **packaging machine** builders

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# We have fundamental strengths

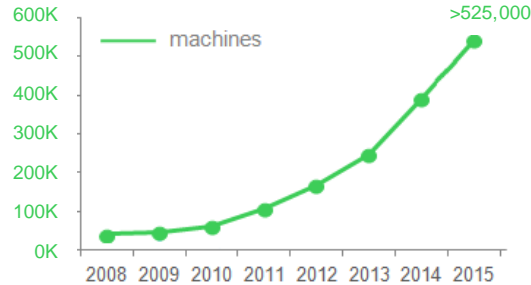in products, OEM solutions, and process automation

## Products

**#1** in drives & motor control

**#2** in HMI operator panels

**#1** in control & signaling

## Machines

Growing **4x** faster than the market*
in the MachineStruxure business



(*) Machine CAGR = 4.1% (source IHS)

Application knowledge for greater
conversion of machines from packaging
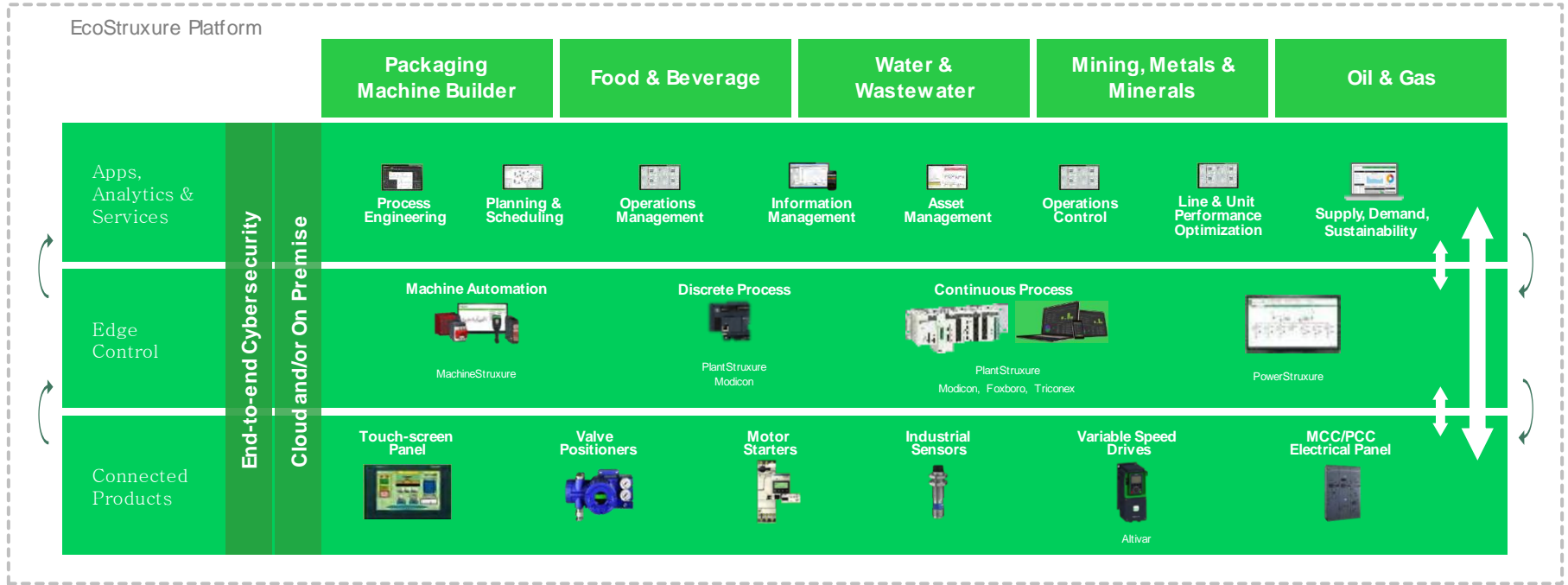to hoisting to HVAC

## Plant automation

The Invensys acquisition reinforced our
position in Operations Technology (OT)
software and continuous process control
**#1** in Safety Instrumented Systems
**#1** in SCADA/HMI software

A successful acquisition for Schneider
- Cost synergies achieved
- Revenue synergies on target in year 3
  of the business plan

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# EcoStruxure™ Industry
## Innovation At Every Level

**EcoStruxure Platform**

| | Packaging Machine Builder | Food & Beverage | Water & Wastewater | Mining, Metals & Minerals | Oil & Gas |
|---|---|---|---|---|---|

**Apps, Analytics & Services**
- Process Engineering
- Planning & Scheduling
- Operations Management
- Information Management
- Asset Management
- Operations Control
- Line & Unit Performance Optimization
- Supply, Demand, Sustainability

**End-to-end Cybersecurity**

**Cloud and/or On Premise**

**Edge Control**
- Machine Automation — MachineStruxure
- Discrete Process — PlantStruxure, Modicon
- Continuous Process — PlantStruxure, Modicon, Foxboro, Triconex
- PowerStruxure

**Connected Products**
- Touch-screen Panel
- Valve Positioners
- Motor Starters
- Industrial Sensors
- Variable Speed Drives — Altivar
- MCC/PCC Electrical Panel

# Invensys integration strengthened our portfolio's combination of energy, automation, software, and analytics

SOFTWARE & ANALYTICS

AUTOMATION

ENERGY

**Foxboro Evo**
distributed control system

**Altivar Process**
variable speed drives

**Okken/Blokset**
intelligent power and motor control center

By combining **Foxboro Evo**, **Altivar,** and **Okken**, Schneider Electric provides fully integrated solutions, saving both development time and energy costs by up to **15%**

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# Our open-architecture-based offers bring highly differentiated and flexible solutions to our customers

## Open architecture



Tested, Validated, and Documented Architectures (TVDA)

## Wide collaborative partner network

Partnership Program with 40+ hardware and software technology partners



Open architecture provides greater interoperability with specialized third-party hardware and software, a competitive advantage in a fast-moving IIoT environment

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# Success stories

### ENI PETROBEL ZOHR PROJECT IN EGYPT
New gas treatment platform

**Solution integrating power and control**

- Foxboro DCS and Triconex safety systems
- LV/MV power, UPS, and security systems
- Industry software

Customer benefits:

- Integrated power and control, solutions and experience
- Faster project design, startup, and commissioning
- Reduced project risk, running costs, and downtime

### ENTRADE, GERMANY
Decentralized electricity, heating and cooling from biomass & waste products

**Smart Machine Solution leveraging the IIoT to maximize asset performance**

- Full design and manufacturing of the automation cabinet
- Cloud solution using MachineStruxure with our Resource Advisor online sustainability and energy management software

Customer benefits:

- Easy remote monitoring
- Optimal performance against energy and sustainability goals

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**We adjust to short-term market headwinds and see favorable long-term opportunities in the Industrial Internet of Things (IIoT)**

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# In a difficult short-term environment we are focused on selective growth and cost optimization

## SHORT-TERM HEADWINDS

**Lower commodity prices affecting Oil & Gas and Mining**

Oil & Gas

Mining, Minerals, Metals

**Market weakness in some new economies**

## COUNTERED BY EXECUTING OPERATIONAL PRIORITIES

**Expanding footprint in growing segments**

Water & Wastewater

Food & Beverage

Petrochemical

**Continuous innovation on new products**

Easy-line product range developed and produced in China for China and other developing countries

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# We are focused on levers for margin improvement

- **<u>Transactional business</u>**:
  - Drive volume initiatives through robust Distribution Policy execution and ramp-up of our Hero Offers (M580 and Altivar Process)
  - Medium offer for reduced product costs in highly competitive markets
  - Leverage digital go-to-market (PRM)
  - Continued efforts on pricing up

- **<u>Project/Solutions business</u>**:
  - Continued focus on project execution to drive margin improvement
  - Leverage System Integrator channel to optimize growth and margin execution

- **<u>Across the business</u>**:
  - Leverage low-cost engineering centers for both project execution and R&D rebalancing
  - Strong focus on continued SFC reduction through simplification and allocation of resources

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# Customer imperatives driving long-term growth

Faster, better, cheaper, real-time

Evolving and more digital workforce

Quick adaptation to volatile markets

Cost reduction, productivity

Increased variants and shorter life cycles

Cybersecurity

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# IIoT has unleashed huge potential for industrial customers



Unprecedented
operational efficiency

Transformative
business models

New levels of
safety and cybersecurity

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# We apply Industrial IoT initiatives to each business model to drive the performance of our portfolio

IIoT initiatives from connected products to edge control to software and services

**Products**
Driving connected products business

**Machine solutions**
Growing machine solutions through smart machines

**End-user systems**
Providing safe and secure end-user systems

**Services**
Monetizing new services through digital services offer

**Software**
Expanding reach of software platforms and closed-loop applications

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Altivar Process drives reduce downtime and save energy



Our wireless and battery-free switches save installation costs

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# Growing machine solutions through smart machines

**IIoT innovations for augmented operators bring productivity**

Customers avoid costly downtime by looking inside the machine without opening the cabinet door

Customers reduce time spent on searching by accessing digital specs, user manuals, and troubleshooting guidelines

Vijeo 360 helps new-generation operators to operate and diagnose complex machinery easily and safely

**LIVE DEMO** in market place

Drive Status: Stopped

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# Providing safe and secure end-user systems

From connected products to advanced services for data management and cybersecurity

The Modicon M580 is the first programmable logic controller designed from the ground up to be cybersecure

Providing services to address an organization's safety and cybersecurity challenges

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# Monetizing new services through digital services offer

Eurotherm simplifies regulatory compliance through online accreditation and data recording management
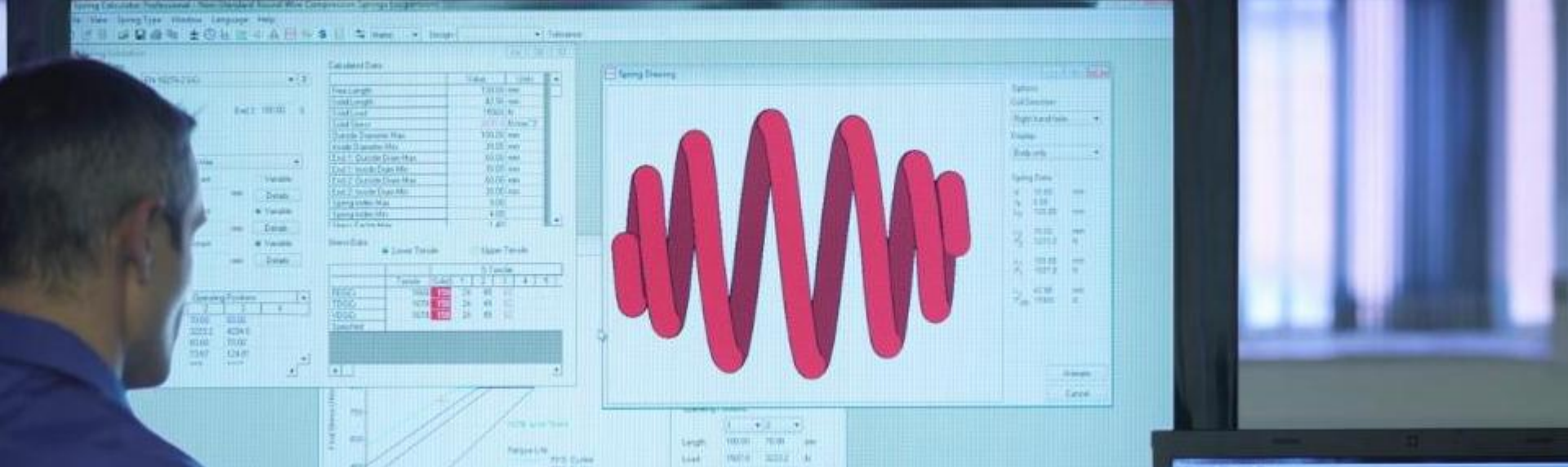
Eurotherm EOS Advisor is a unique online solution for managing calibration and accreditation information

Eurotherm EOS Director secures storage of process data and easy access to historical process information

"If you think compliance is expensive, try non-compliance"
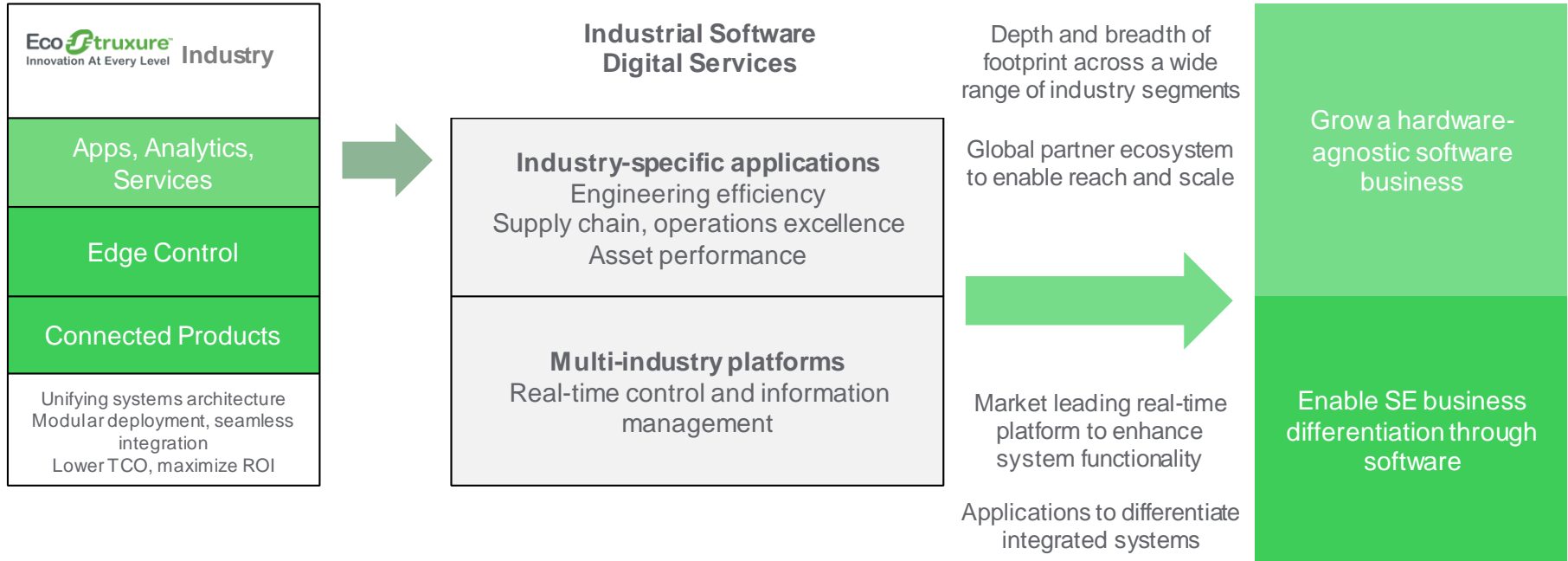Former Deputy U.S. Attorney General Paul McNulty

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# Software

Ravi Gopinath – Executive Vice President, Software Business

# The industrial software business addresses two complementary objectives

**Eco truxure** Industry
Innovation At Every Level

Apps, Analytics, Services

Edge Control

Connected Products

Unifying systems architecture
Modular deployment, seamless integration
Lower TCO, maximize ROI

**Industrial Software Digital Services**

**Industry-specific applications**
Engineering efficiency
Supply chain, operations excellence
Asset performance

**Multi-industry platforms**
Real-time control and information management

Depth and breadth of footprint across a wide range of industry segments

Global partner ecosystem to enable reach and scale

**Grow a hardware-agnostic software business**

Market leading real-time platform to enhance system functionality

Applications to differentiate integrated systems

**Enable SE business differentiation through software**

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# Our strength lies in our installed base, global reach, partner network, and the diversity of our customers

## Wide industry coverage

We work with
**19** of the top **20** petroleum companies
**22** of the top **40** chemical companies
**10** of the top **15** mining and minerals companies
**25** of the top **50** food and beverage companies

## Installed base strength

Over **100,000** sites
Over **2 million** licenses
Over **20 billion** operating parameters monitored
Over **12,000** terabytes of operating data processed annually



Calgary
Lake Forest
Carlsbad
Monterey
Houston
Burlington
Wyomissing
Mexico City
Cambridge
Baarn
Dusseldorf
Milan
Beijing
Seoul
Tokyo
Dubai
India
Bangalore
Chennai
Hyderabad
Singapore
Brisbane
Adelaide
Sydney

### Scale
**3,000** people
**10** R&D centers
**24** project centers

### Partner ecosystem
**4,000** SI partners
**160** technology partners

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# Our portfolio addresses key value chain issues across multiple industries

| | Portfolio areas | Offerings | Primary industries served | |
|---|---|---|---|---|
| How do I **design and commission** my assets at the lowest possible cost? | Process Engineering | • Process Design & Simulation<br>• Training Simulators | Oil & Gas<br>Power Generation<br>Metals & Minerals | Industry-specific applications |
| How can I **plan production** to maximize profit? | Operations Planning & Scheduling | • Trading, Feedstock Management<br>• Planning & Scheduling | Refining<br>Mining | |
| How can I **produce safely and profitably** and meet **regulatory norms**? | Operations Management | • Manufacturing Execution<br>• Real-time Optimization | Oil & Gas, Power<br>Metals & Minerals<br>F&B, CPG, Water | |
| How do I ensure availability and **reliability of assets**? | Asset Management | • Asset Performance Management<br>• Mobile Workforce Management | Oil & Gas, Power<br>Metals & Minerals<br>F&B, CPG, Water | |
| How can I **enable better decision making**? | Information Management | • Enterprise Historian<br>• Intelligence & Analytics | All manufacturing and infrastructure | Platforms |
| How can I **monitor and control operations** better? | Operations Control | • HMI<br>• Supervisory Control | All manufacturing and infrastructure | |

# Over the past 3 years we have created a fully integrated business that is set up for growth in a challenging market environment

2013

Invensys Software

+

Citect SCADA
ClearSCADA SW
Telvent O&G

- Headwinds in Oil & Gas and commodities markets
- Portfolio integration and platforming to leverage domain expertise and best-in-class IP

c. +4% organic CAGR

2015

Industry-specific applications

Multi-industry platforms

SCADA components for specific types of applications
Industry-specific domain expertise and applications

## Outlook

- New normal established in Oil & Gas and commodity markets
- Vertical market diversity is starting to offset drag effects
- Integration activities are complete and a growth strategy for the integrated business is defined
- Mid-to-high single-digit organic revenue growth across the economic cycle

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# Our growth strategy is focused on three key dimensions, based on a foundation of innovation

## Core Innovation Foundation

- Leading-edge NextGen programs in each of our 6 portfolio areas
- R&D spend focused on NextGen technology programs
- R&D capacity of over 1,000, spread globally
- Over 160 technology partners enrich portfolio

**Industry Specialization**

- **Integrated solutions** targeting industry-specific problems
- Implementation **templates** ensure consistent and rapid delivery
- Easier deployment, **faster time to value**

**IIOT Leadership**

- The world's **#1 real-time industrial control platform** provides an unmatched foundation to manage new connected points
- Integrated, advanced applications drive **'closed-loop' business value**
- **Global ecosystem** enriches portfolio, enables reach

**Cloud Strategy**

- Cloud-based applications enable enterprise collaboration, **lower TCO**
- Hybrid deployment enables **adjustment to usage needs**
- Subscription models for **flexible consumption**

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# We have delivered measurable value, addressing a wide range of industry imperatives through our comprehensive portfolio

**Real-time optimization of refinery units**
- Determine optimal operating targets
- Rigorous first principles models of units
- Interfaces to any control system

- Deployed in 80 refineries globally
- Avg. $4−6M annual benefit, < 6-month ROI

**Predictive diagnostics for power plant machinery**
- Predictive failure warning and fault diagnostics
- Centralized asset performance monitoring
- Predictive models, condition profiles

- Deployed in over 1000 sites
- Avg. $1M savings for each predicted failure

**Product quality management in food & beverage**
- Ensure compliance with process standards
- Prediction of quality issues using real-time data
- Optimize production yield and quality compliance

- Over 250,000 industrial assets managed
- Avg. 20% productivity, 30% quality improvement

**Unified supply chain management for refineries**
- Dynamic assessment of crude characteristics
- Dynamic adjustment of plans and schedules
- Integrated with operational scheduling

- Components deployed in 200 refineries globally
- Avg. $25−30M annual benefit

**Liquids management in oil pipelines**
- Dynamic models to simulate oil pipeline behavior
- Real-time, high-fidelity pipeline leak detection
- Enable regulatory compliance for pipeline operations

- Managing 210,000 miles of pipeline globally

**Loss management in water treatment plants**
- Dynamic simulation of water distribution network
- Real-time monitoring and control
- Network failure detection to minimize water loss

- Deployed in 450 water treatment plants
- Avg. $1.5M reduction in operational costs

**Mine planning and inventory management**
- Unified planning and scheduling environment
- Reconciliation of plant target performance and inventory with schedules
- Mine operational analytics for decision support

- Deployed in over 50 sites

**VR-based operator training**
- Enhance operational efficiency of new workforce
- Hi-fidelity immersive training system
- Powerful VR technology for effective training

- 14 deployments globally
- Avg. ROI within 12 months

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# Tata Power improves operational efficiencies and moves to proactive maintenance

A leading integrated power company in India, with an over **10,000 MW** generating capacity, driving technology-led improvements at its new 4000 MW Supercritical Ultra Mega Power Plant.

### Challenges
- Enable quick and trouble-free commissioning of the control system for plant startup
- Move from reactive to proactive maintenance in the operating unit
- Quickly analyze large amounts of asset data for accurate equipment condition assessments
- Provide the right information to the right people at the right time

### Solution
**SimSci Operator Training Simulator** integrated with the **Foxboro DCS** enabled rapid commissioning and startup. The **Avantis PRiSM** predictive analytics coupled with value-added services for model building and training enabled Tata Power to address their key operational challenges.
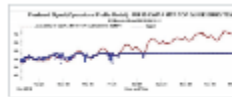
Source: TechValidate by SurveyMonkey

## 50%
reduction in commissioning time

Early warning and detection, months before failure

## $ 0.25M
savings per 'catch'

*Trend showing the CWP motor top guide bearing rising due to cooling lines blockage*

*Trend of the CWP motor top guide bearing temperature after maintenance to clear the cooling lines*

**Closing the loop** to help Tata Power:

- Safely eliminate the need for field programming and all the accompanying errors
- Cut system commissioning time in half
- Reduce training time from months to weeks, saving an average of four weeks
- Implement native diagnostics and monitoring capabilities for two generating units of their ultra mega power project
- Predictive failure notifications and closed-loop maintenance actions on critical power equipment

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# Anglian Water utilizes vast volumes of data to reduce leakage, energy bills, and streamline operations

**Anglian Water's** supply and water recycling utility services approximately **6 million customers** in England and Wales, over **10,000 square miles** from Humber to the Thames estuary in England.

**Challenges**
- Maintain position as leading innovator **in leakage control** and water resource protection
- Detect leaks quicker and improve **response times**
- Reduce **the cost of outsourced leak detection**
- Ensure **regulatory compliance**
- Reduce **Total Cost of Ownership**

**Solution**
**StruxureWare SCADA Expert ClearSCADA** was used for telemetry and monitoring and the **Water Management Suite** was deployed as the solution for integrated leakage and pressure management.

Improved decision-making from
## 639,090
connected telemetry data points

## 10%
planned reduction in leakage levels by 2020 vs. 2015 base

## 10%
operational efficiency increase due to built-in alarm pressure logic

**Closing the loop** to help Anglian Water:

- Optimize water loss management process and resources to achieve and maintain a **low non-revenue water level** over time

- Provide **real-time monitoring access**

- Make the most of **big data** from 25 years of operations

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# Conclusion

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# Unique positioning, consistent strategy, strong execution, poised for profitable growth

## GLOBAL LEADER – DISCRETE TO PROCESS INDUSTRIES

- Proven market leader in best-in-class products

- Consistent and above market growth in machine solutions

- Strong foundation in end-user business

- Software driving mindshare and pull-through

- Driving the convergence of power and automation

## FAVORABLE MARKET TRENDS DESPITE SHORT-TERM HEADWINDS

- Industrial Internet of Things

- Speed and volatility requirements of customers

- Increasing regulatory compliance and safety focus

## EXECUTION FOCUS FOR PROFITABLE GROWTH

- Continuing to innovate to deliver best-in-class products

- Expanding our footprint in growing segments

- Growing digital services

- Accelerating software growth

- Targeted mid-single-digit organic revenue growth across the cycle

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