



Spectris plc

Strategy for Profitable Growth

- 12:30 - Welcome and introduction; Andrew Heath, *Chief Executive*
- 13:00 - Malvern Panalytical overview; Paolo Carmassi, *President*
- 13:40 - Product demonstrations 1
- 14.30 - Break
- 14.45 - Omega overview; Greg Wright, *President*
- 15.25 - Product demonstrations 2
- 16.15 - HBK overview; Joe Vorih, *President*
- 17.00 - Capital policy overview; Derek Harding, *Chief Financial Officer*
- 17.30 - Final Q&A and close; All

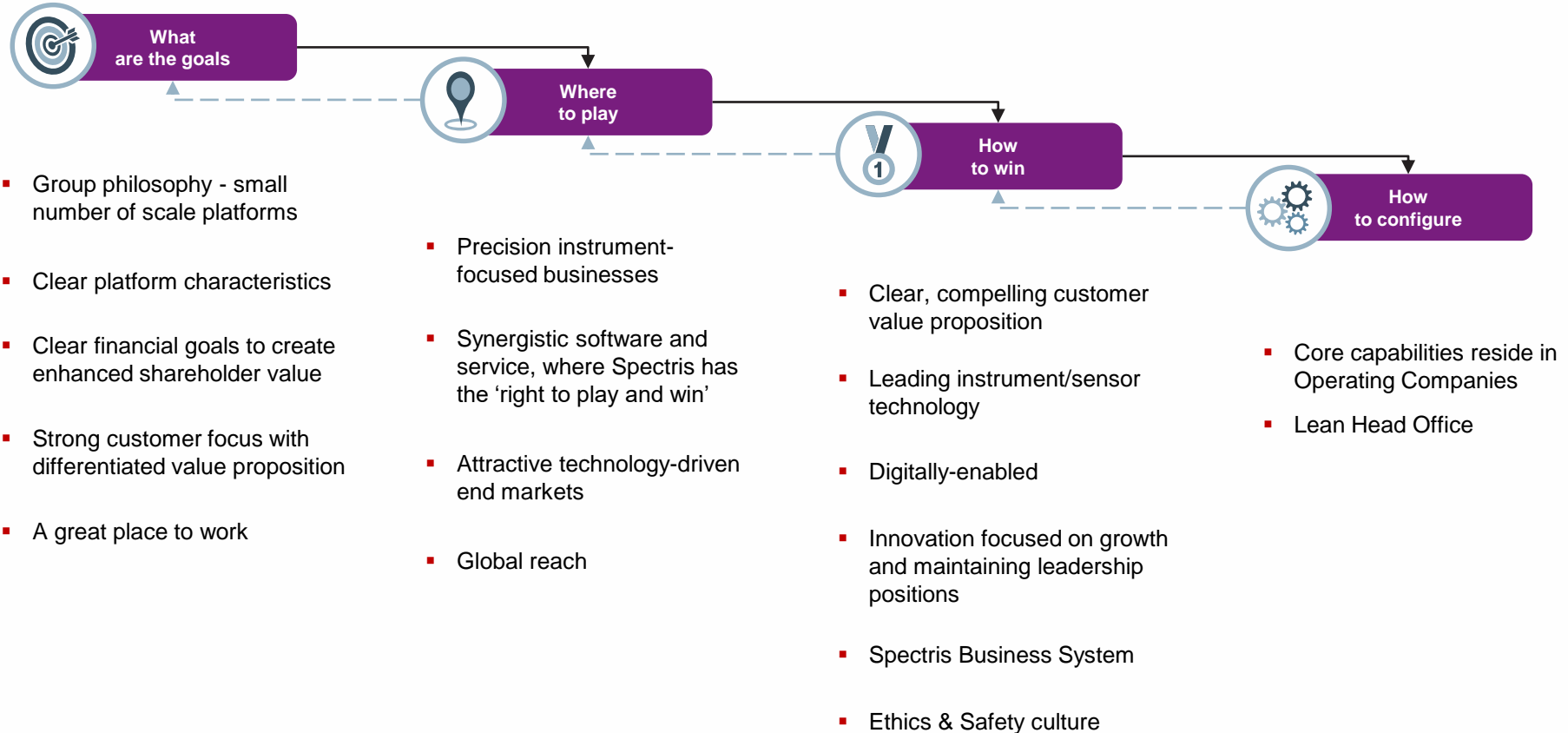
Strong fundamentals

- Talented people
- High-quality businesses and products
- Strongly-recognised brands & leading technologies
- Domain knowledge and application expertise
- Strong market positions
- Exposure to growing end markets
- Good customer relationships
- High gross margins
- Good cashflow generation
- Strong balance sheet

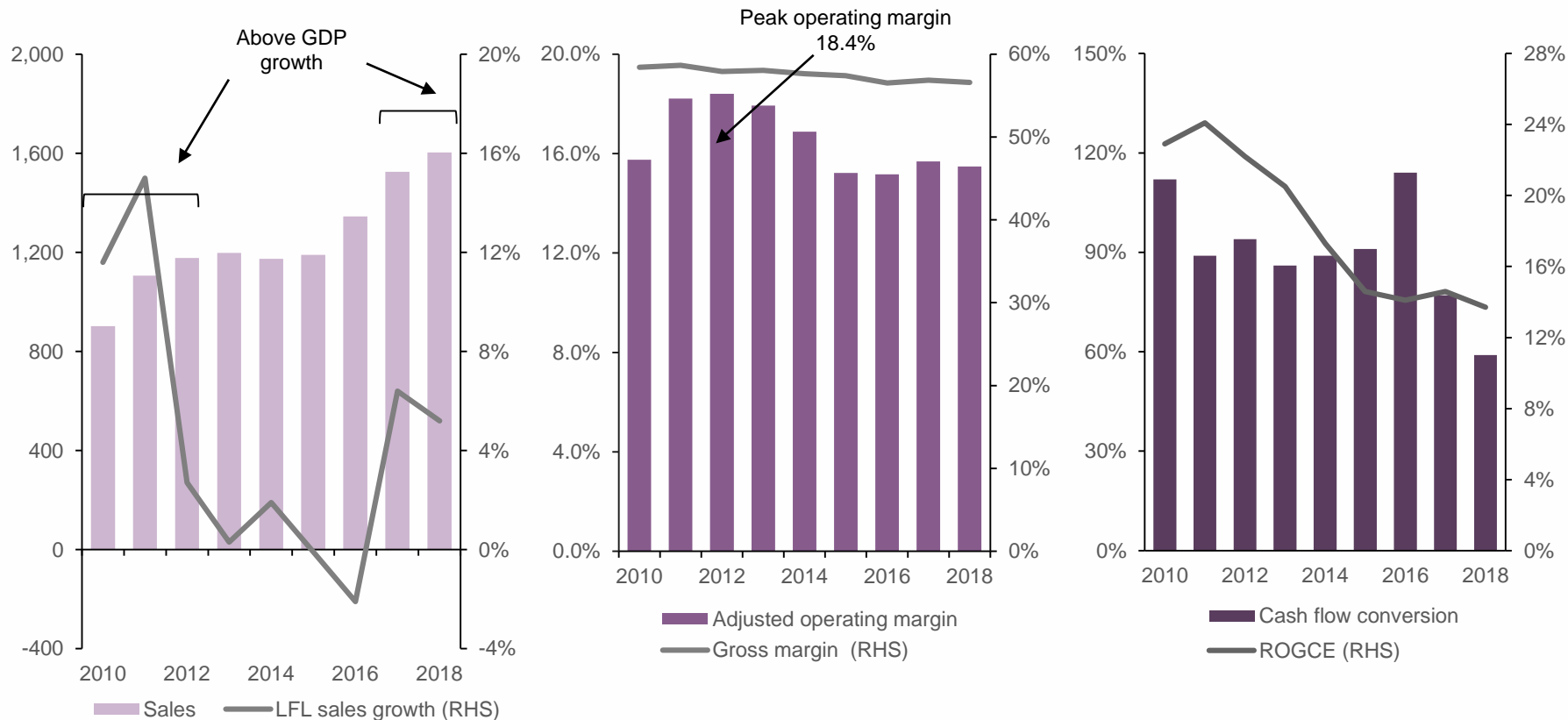
Areas for improvement

- Focus on attractive end markets where best placed to drive growth and profitability
- Enhance operational efficiency to drive margin expansion
- Strengthen Lean deployment
- Reduce complexity
- Asset optimisation supported by active portfolio management and synergistic acquisitions
- More rigorous capital allocation

Our strategy for profitable growth



Focus on improving financial performance



Market trend



Pharma

- Drug complexity
- Reducing development time and cost
- More stringent trials
- Advanced data analytics



Automotive

- Rate of new product launches
- Vehicle electrification - hybrid/EVs
- Connected & autonomous vehicles
- Rising use of simulation/software



Electronics and semiconductors

- Processing power, speed and cost
- Miniaturisation
- 5G



Metals, minerals, mining

- Energy efficiency
- Autonomous operations
- Predictive analytics
- Environmental and sustainability



Technology-led industrials

- IIoT
- Process automation
- Additive manufacturing

Opportunities for Spectris

Increasing focus on efficiency & time to market

Increasing spend on R&D

Increasing requirements for instruments & test equipment

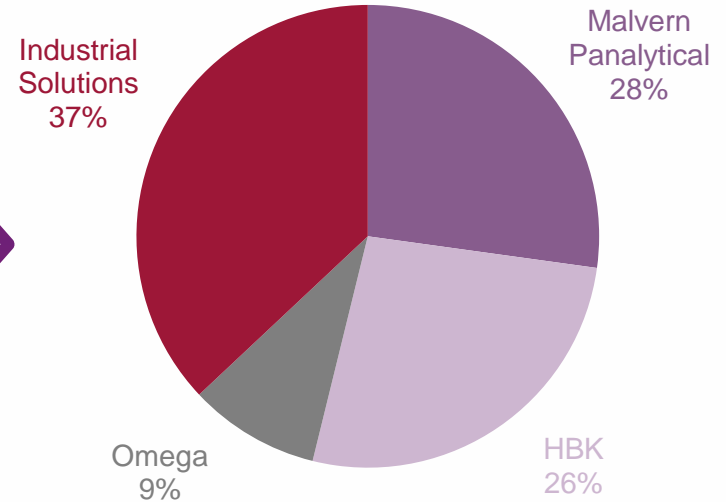
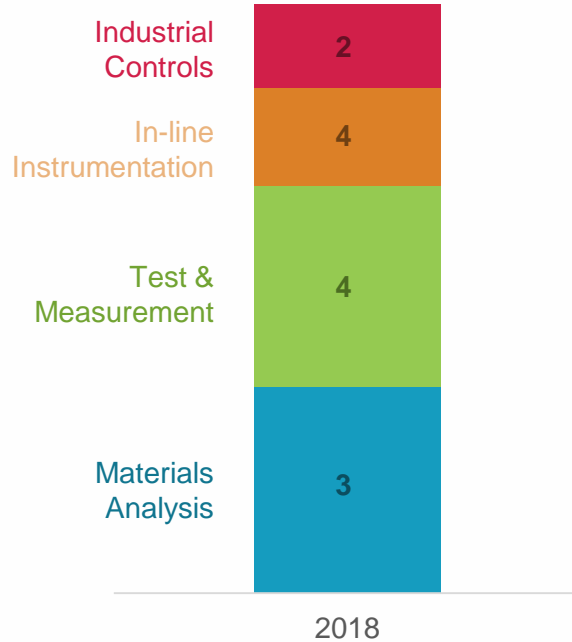
Increasing use of software

Customers seeking greater insights through software and advanced analytics

Digital experience focused on customer experience

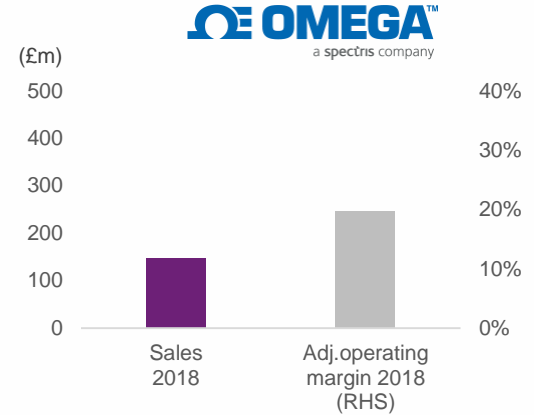
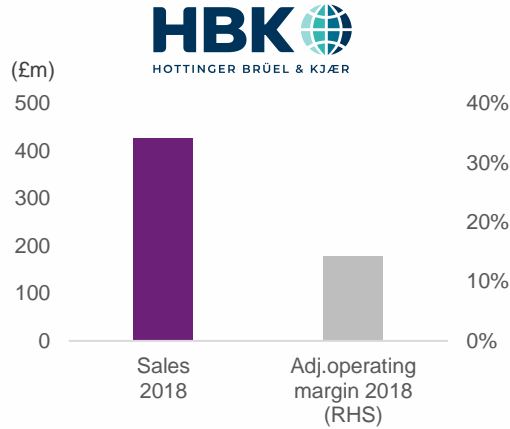
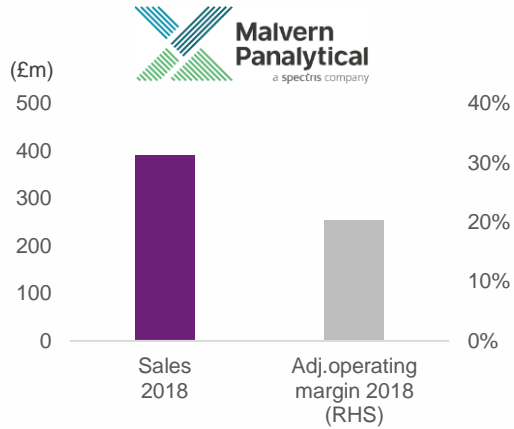
More focused portfolio and simplified Group structure

13 OpCos



% = 2018 sales

Platforms to provide value creation potential



- Leader in advanced measurement and characterisation of materials
- Best in class sensor technologies, insightful data science and extensive domain knowledge
- Creates superior solutions that accelerate innovation and deliver efficiency in research, development and manufacturing

c.£3.2bn / 4-5% pa

- Strongly differentiated and integrated physical sensing, testing, modelling and simulation solution
- Helps customers accelerate product development, create leading products and solve the data chaos challenge

c.£3.6bn / 4-6% pa

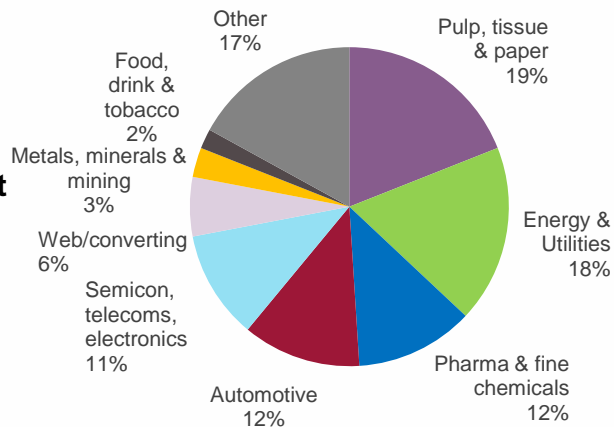
- Market-leading, specialist, digital-first, omni-channel sensor provider to process engineers
- Curated and differentiated product offering
- Strong application expertise and best in class e-commerce experience

c.£2.0bn / 4-5% pa

■ Addressable served market / market growth rates

Opportunity to accelerate growth via organic expansion and M&A

Sales by end-market



Sales by destination



- Industrial Solutions is an important division
- Portfolio of high-value, niche businesses that compete globally
- Under new leadership
- We will invest where we can make good returns
- Strategic direction determined:
 - Platform potential:
 - Attractive growth and profit potential
 - Targeted investments
 - Run for value:
 - Focus on performance enhancement
 - Manage for value while best owner
 - Potential divestment candidates (to be announced post transaction)



Core Value Drivers

- Financial
- Customers
- Employees

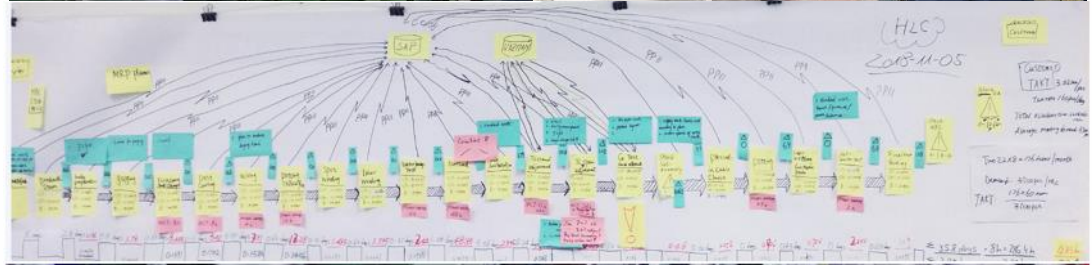


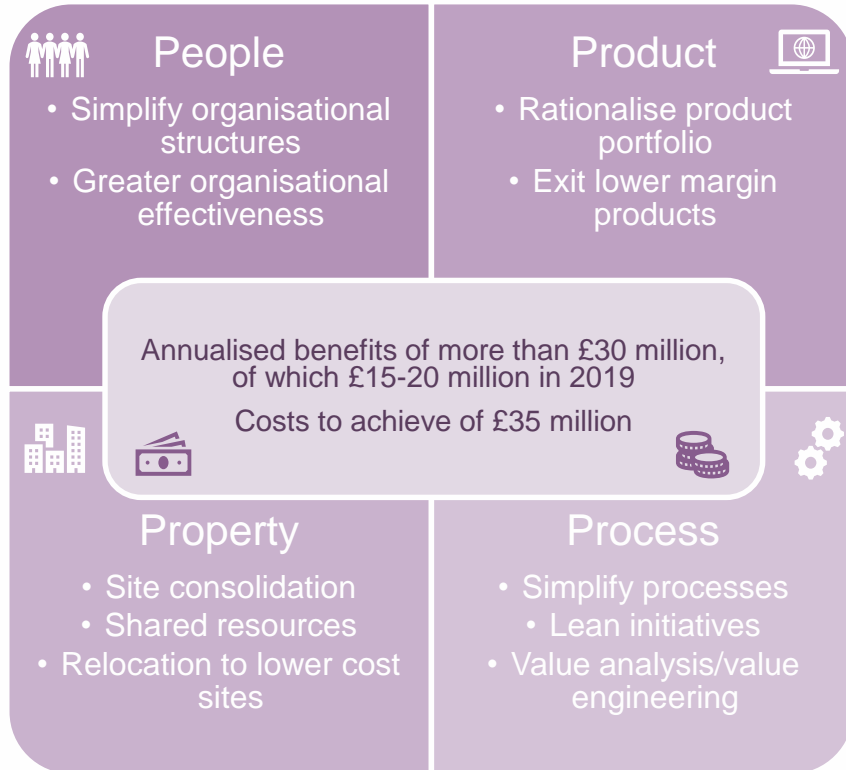
HBK Suzhou - Increasing OMX and AWC

\$1.4m inventory savings in one event
through implementation of SBS
material basics

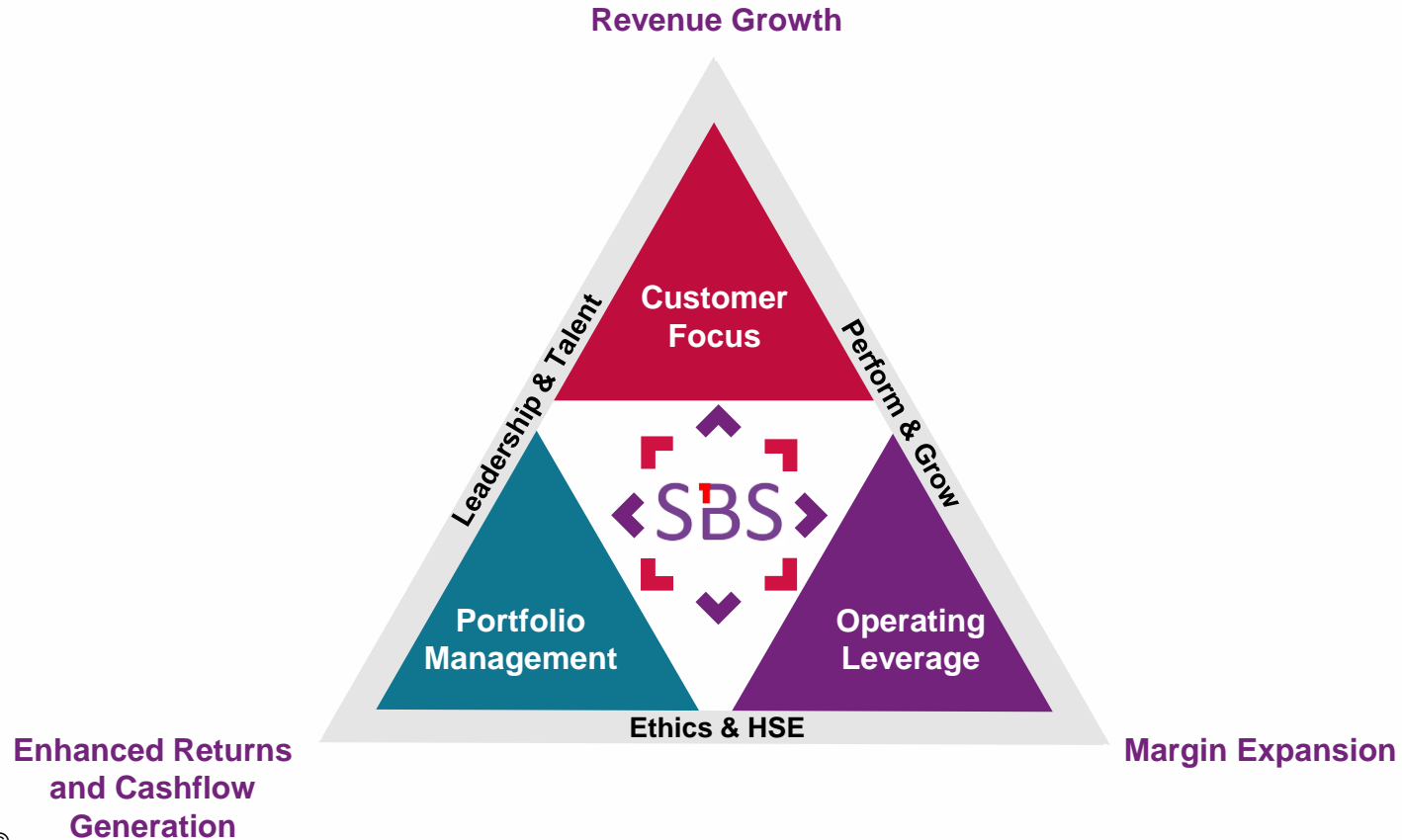
On-time delivery from 70% to 90%+

Employee satisfaction improved
through collaborative problem-solving





- Initiatives underway and being implemented across all OpCos
- Focused on improving product profitability and organisational efficiency
- On track to deliver benefits £15-20 million in 2019
- Exit run rate benefit of £30 million reached by end 2019
- Spectris Business System to foster a continuous improvement culture
- To further improve margins

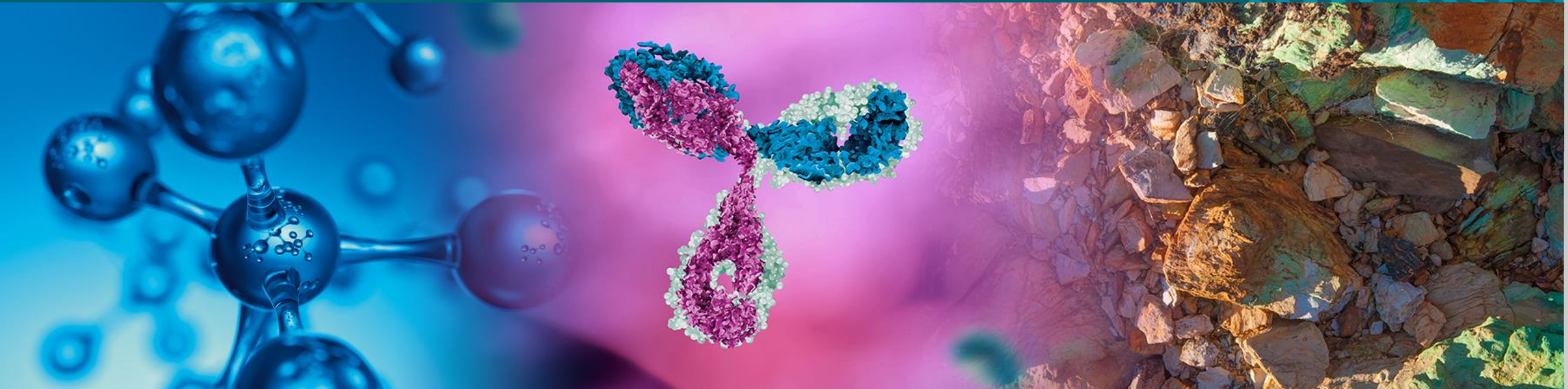




**Malvern
Panalytical**
a spectris company

Malvern Panalytical

Spectris Capital Markets Day, London, June 6th 2019



Paolo Carmassi – President, Malvern Panalytical

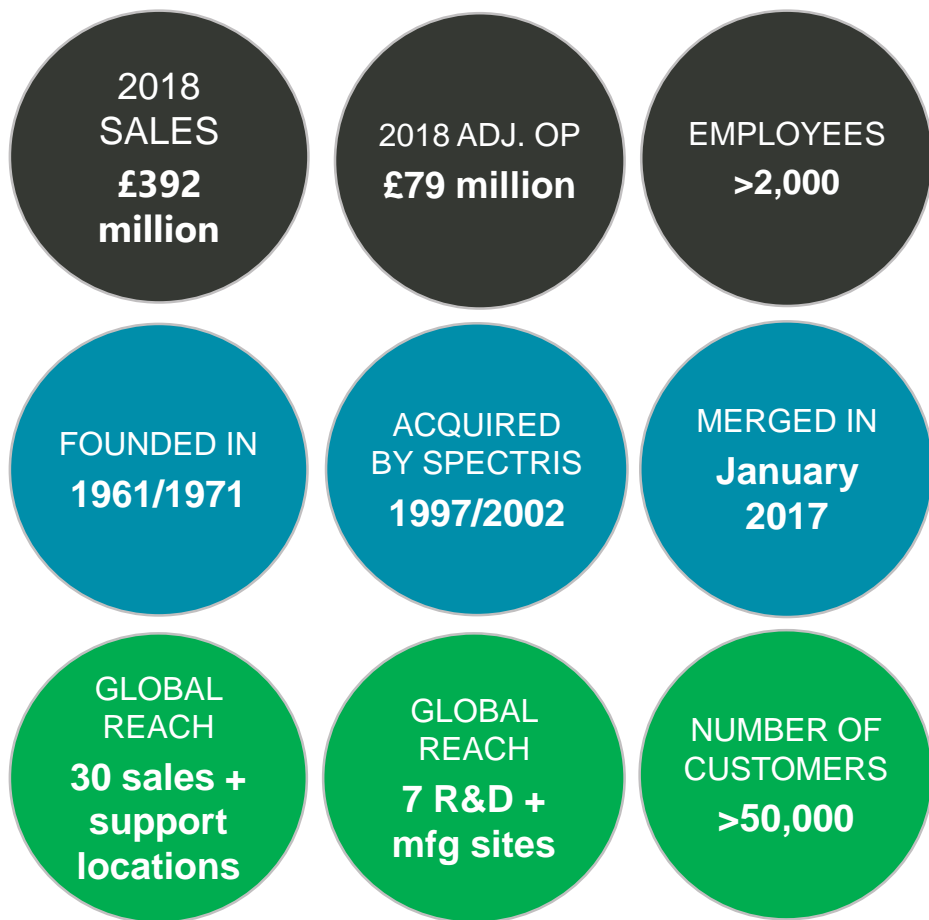


- Joined Spectris in 2016 to drive the merger between Malvern Instruments and PANalytical
- Over the course of 25 years at **Honeywell**, lived and operated in six countries and three continents, covering numerous strategic and operational leadership roles in the **Aerospace** and **Automotive** industries
- More recent experience in private equity, developing **Artificial Intelligence** solutions for application in cancer treatment
- **Aeronautical Engineering** degree, Politecnico di Milano (Italy)



CSTS HEALTH CARE

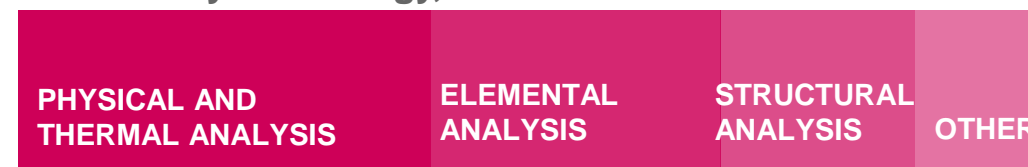
Malvern Panalytical at a glance



Revenue by geography, 2018



Revenue by technology, 2018



Revenue by sales type, 2018



Unmatched solutions for our customers

What customers want

- Precise, accurate & reliable measurements
- Application solutions for specific pain points
- Instrument configurability & ease-of-use
- Expertise & bespoke analytics
- Maximum yield & instrument uptime
- Portfolio breadth

Insight

Knowledge

Facts

Data

Noise



Prescriptive
“How do I make it happen?”

Predictive
“What is likely to happen?”

Diagnostic
“Why did it happen?”

Descriptive
“What happened?”

What we deliver

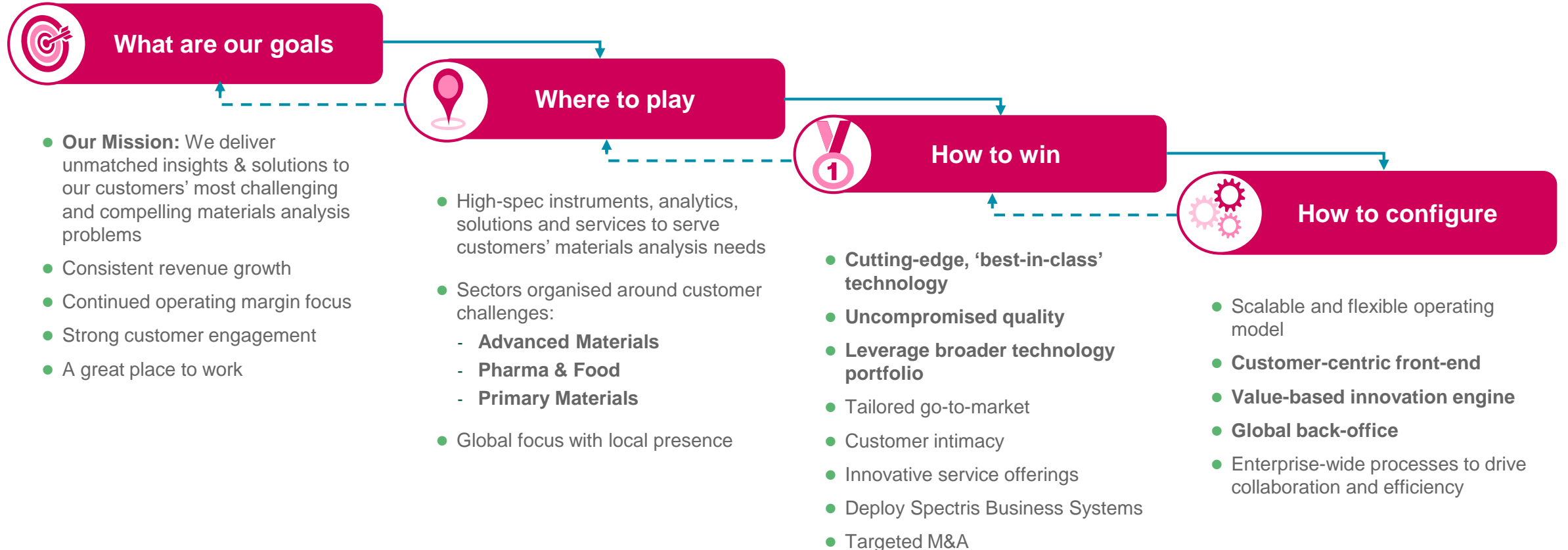
- ‘Best-in-class’ solutions - cutting-edge technology with uncompromising quality
- Expertise in our customers’ business to solve their most challenging problems
- Predictive maintenance, remote diagnostics & analytics
- Automation & in-line/at-line monitoring
- A dynamic, evolving portfolio



We accelerate, innovate and connect around knowledge challenges to make a positive material difference to life and the environment



Strategy for profitable growth



'Where we play' builds on areas of strength and growth

Advanced Materials

Cutting-edge applications which demand precision, accuracy and advanced functionality

- Long-term growth potential in **semiconductor & air testing**
- Nascent, high-growth markets: **batteries & additive manufacturing**

Pharma and Food

Highly-regulated industries which require adherence to compliance standards

- Both traditional **pharma & biopharma**; both simple & complex products
- Identify similarities & adapt for **food & personal care**

Primary Materials

Demand for automated & in-line analysis creates opportunity for differentiation & predictive solutions

- Grow share across the **metals & mining** value chain
- Build on strategic **petrochemicals & polymers** and **building materials** accounts

Aftersales

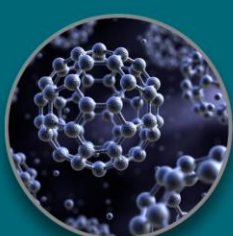
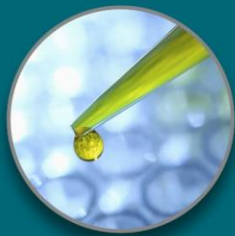
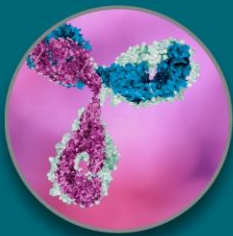
- Increase aftersales to installed base
- Develop innovative aftersales offerings
- Introduce flexible service and expertise agreements
- Develop self-service offering



Expertise

- Develop predictive/prescriptive solutions
- Capitalise on application-specific solutions
- Monetise analytical process support & training





‘Best-in-class’ solution portfolio

Technology	Measurement
Laser diffraction	Particle size
X-ray diffraction	Structural information: chemical composition; crystal structure
X-ray fluorescence	Elemental composition
Dynamic light scattering	Nanoparticle size, charge & concentration
Microcalorimetry	Thermal stability, binding affinity, reaction stoichiometry
Nanoparticle tracking analysis	Nanoparticle size and concentration
Morphological imaging	Particle size, shape & concentration; chemical identification
Near-infrared spectroscopy	Remote sensing of chemical composition
Rheometry	Viscoelastic & flow properties; yield stress

Case Study:

Accelerating time to market for generic drugs

“FDA is very happy to have approved an application that included this innovative technology.”

Dr. Bing Li, Acting Director,
Office of Generic Drugs, FDA

Challenge	Solution	Opportunity
<ul style="list-style-type: none">• Drug developers race competitors to file their new generic product• Regulators demand proof of equivalence with the innovator product• Traditionally requires costly & time-consuming (6 months) clinical studies• Delay risks First-to-File status	<ul style="list-style-type: none">• FDA’s first approval of a generic drug application based on our Morphologi 4-ID laboratory approach <i>in lieu</i> of a clinical endpoint study, saving 6 months: Apotex’s generic version of Merck’s Nasonex nasal spray	<ul style="list-style-type: none">• Generic pharma market is growing at 10% CAGR• Top 15 generics companies have c.800 manufacturing/R&D centers globally• The Morphologi 4-ID solution can save c.£370K/project for the customer, and also unlock a potential £90M in exclusive sales for them (associated with First-to-File)



Case Study:

Cutting metal powder costs for additive manufacturing

“Advancing AM powder understanding will enhance our products, enabling us to deliver the highest quality.”

Research and Development Manager,
leading metal powder manufacturer

Challenge	Solution	Opportunity
<ul style="list-style-type: none">• Metal powder costs represent 1/3 of the manufactured product cost• Powder quality is critical to the manufacturing process and finished high-value component quality• Quality assessment is required both in the lab and on-line	<ul style="list-style-type: none">• Mastersizer 3000, Epsilon 1 & Morphologi 4-ID enable fast, efficient powder characterisation with powder performance traceability• Ability to increase the use of recycled metal powders significantly reduces manufacturing costs with no loss of quality: part consistency is ensured	<ul style="list-style-type: none">• Metal additive manufacturing is increasing at 35% YoY; sales of metal AM printers grew by 80% 2016-17• MP solutions increase re-use of metal powders from 10% to 40%, potentially saving £270K/yr/machine for the customer



Case Study:

Minimising oil-rig downtime and hazards



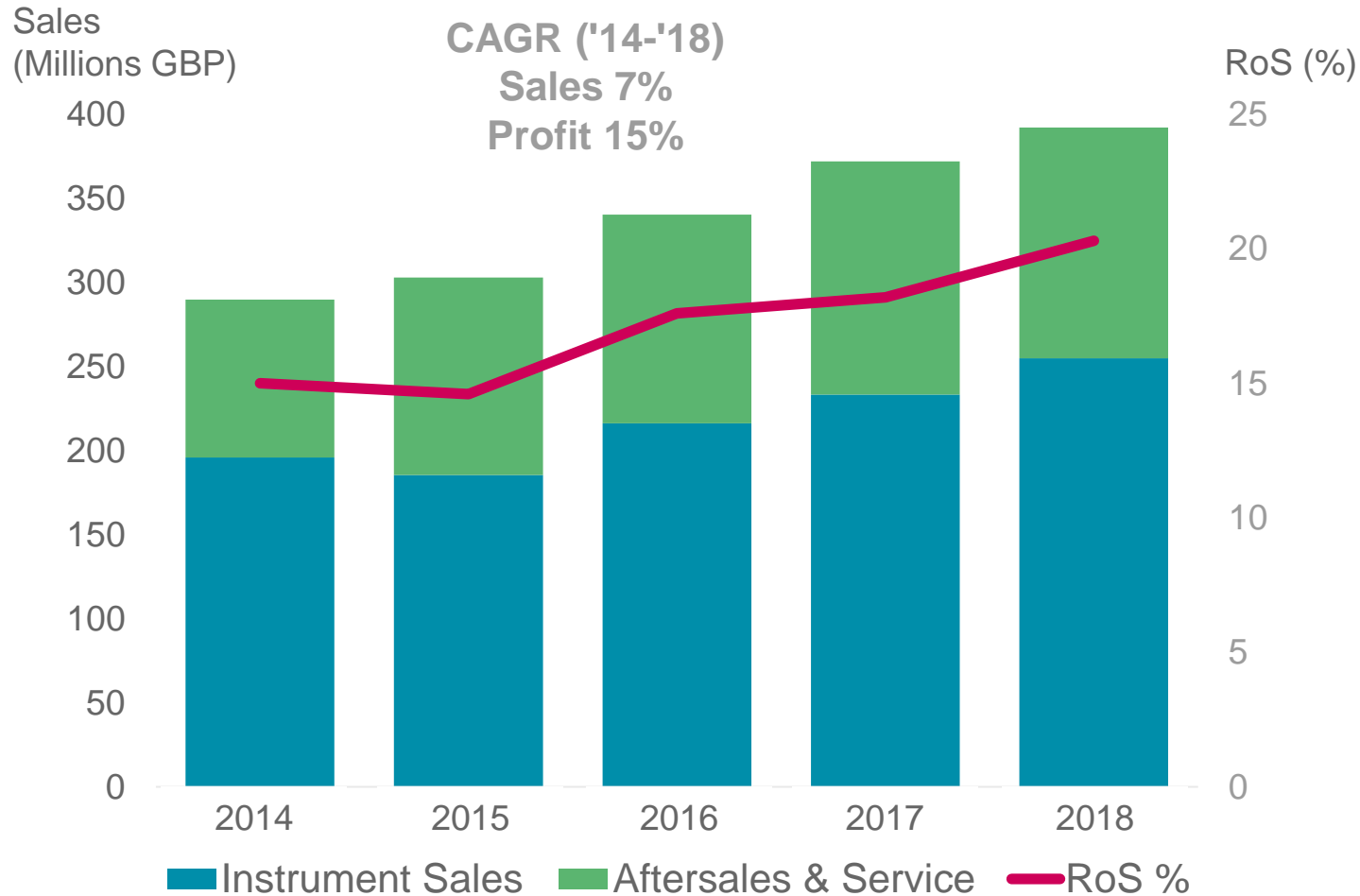
Challenge	Solution	Opportunity
<ul style="list-style-type: none">• Offshore drill rig operations are affected by the composition of drillings, including oil and rock• Samples are flown by helicopter to labs onshore for costly analysis, delaying results delivery by a week• Rig deferment may be necessary if adverse results are recorded	<ul style="list-style-type: none">• Epsilon 1 and Mastersizer 3000 <i>in situ</i> on rigs enable results delivery in 30 minutes• Incorporated AI and data-sharing cloud connection predicts elemental breakthrough and mitigates corrosion issues	<ul style="list-style-type: none">• Rapid prevention of adverse situations, potentially saving the customer c.£1M/day in rig deferment• Mitigation of onshore analysis costs for the customer: c.£0.7M/yr



Strong financial performance



Malvern Panalytical sales & margin (2014-18)



Merger impact (organic expansion)

- Talent and leadership upgrade
- Value-based and cross-selling
- Organisational efficiency
- Lean processes

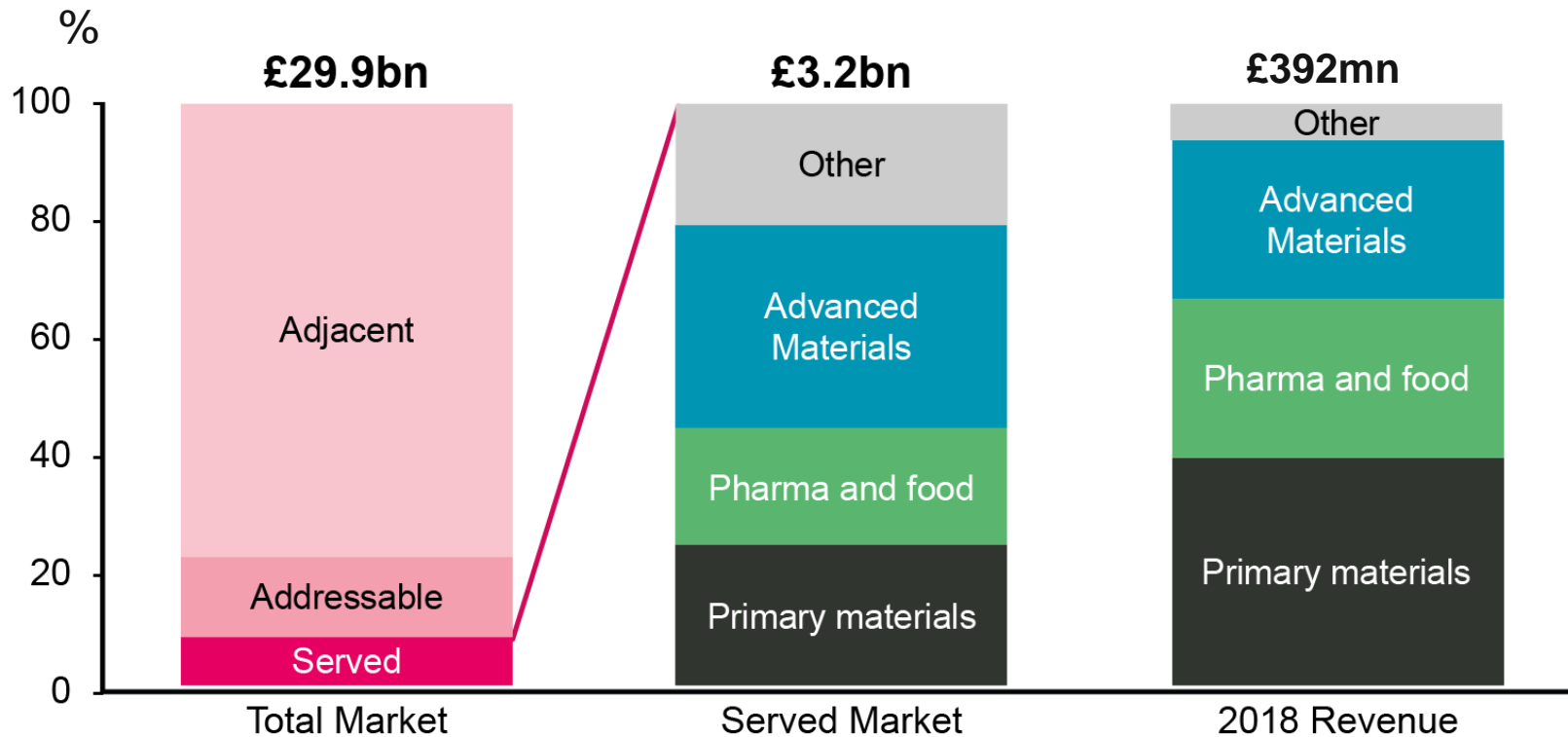
Further potential

- Solutions selling
- Account management
- Product rationalisation
- Acquisitions
- Spectris Business Systems

Organised around our customers in high-growth markets



Served analytical instrument market & Malvern Panalytical revenue by sector (2018)



Source: SDi Laboratory Analytical and Life Science Instrumentation Industry Report 2018; Management financials

Advanced materials

- Growth at **5-8%**
- Focused in Asia
- Includes high-growth nascent markets (e.g., batteries, additive manufacturing)

Pharma & Food

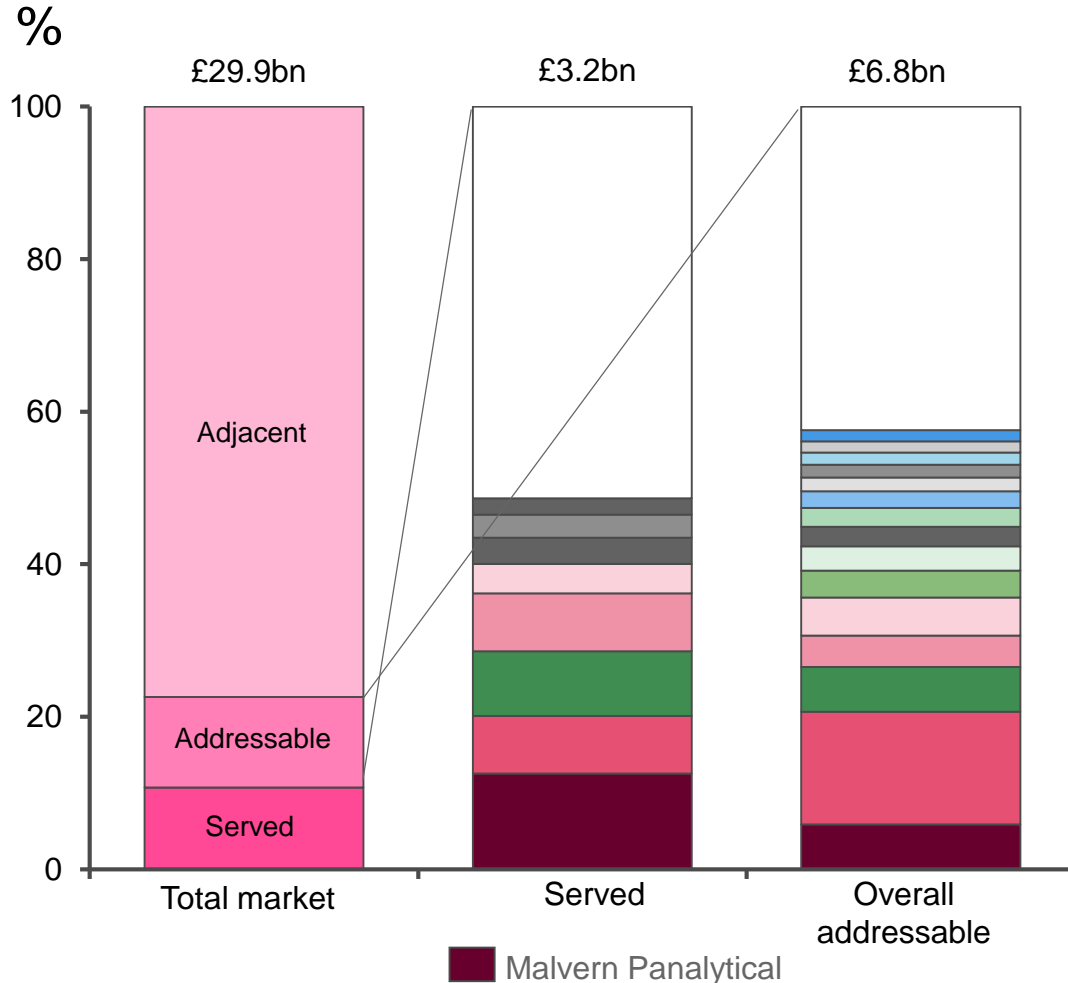
- Pharma growth at **5-6%**
- Food is focused on pockets of strong growth, including agrochemicals (4-6%), coffee (c.5%) and chocolate (c.8%)

Primary materials

- Growth at **4-5%**
- Strong growth in oil & gas and polymers in Asia
- Mining focused on N. America, Asia and LatAm

Fragmented market provides opportunities for organic growth and M&A

Analytical instrumentation market (2018)



Leading position in served market



Addressable market more fragmented, providing potential for market share gain

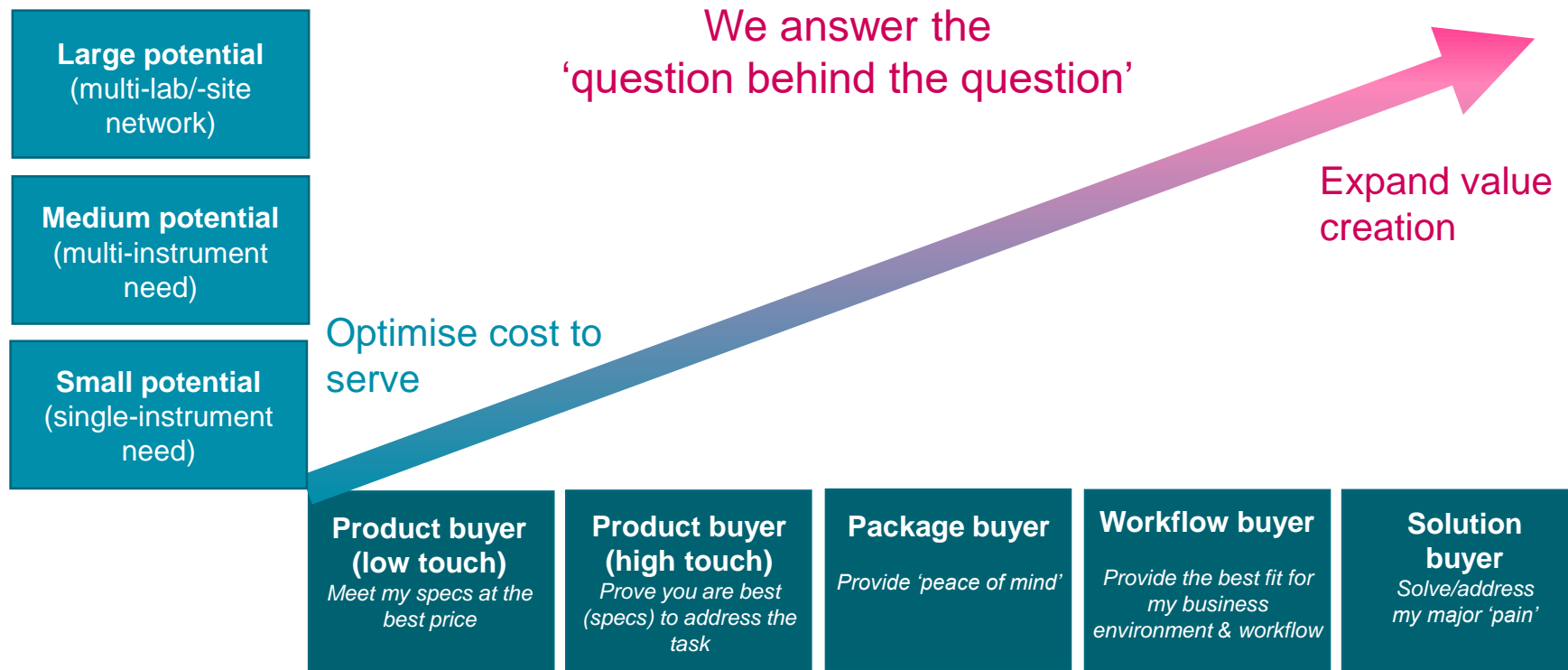


Building further technology capabilities



Potential M&A opportunities to further drive growth

Diversified customer needs met by our high touch model



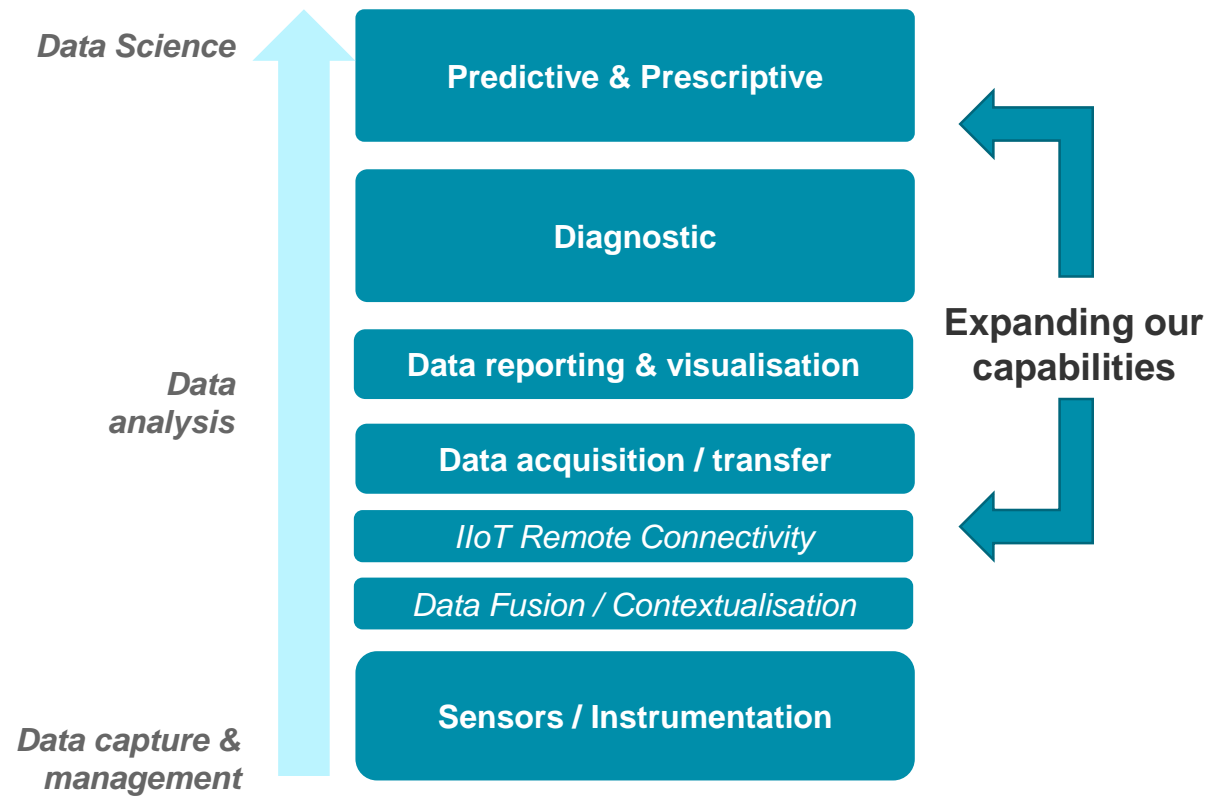
- Diverse customer base with differing buying needs
- Our tailored go-to-market approach meets their requirements
- 'One size does not fit all'

Evolving our portfolio to meet the rising demand for solutions

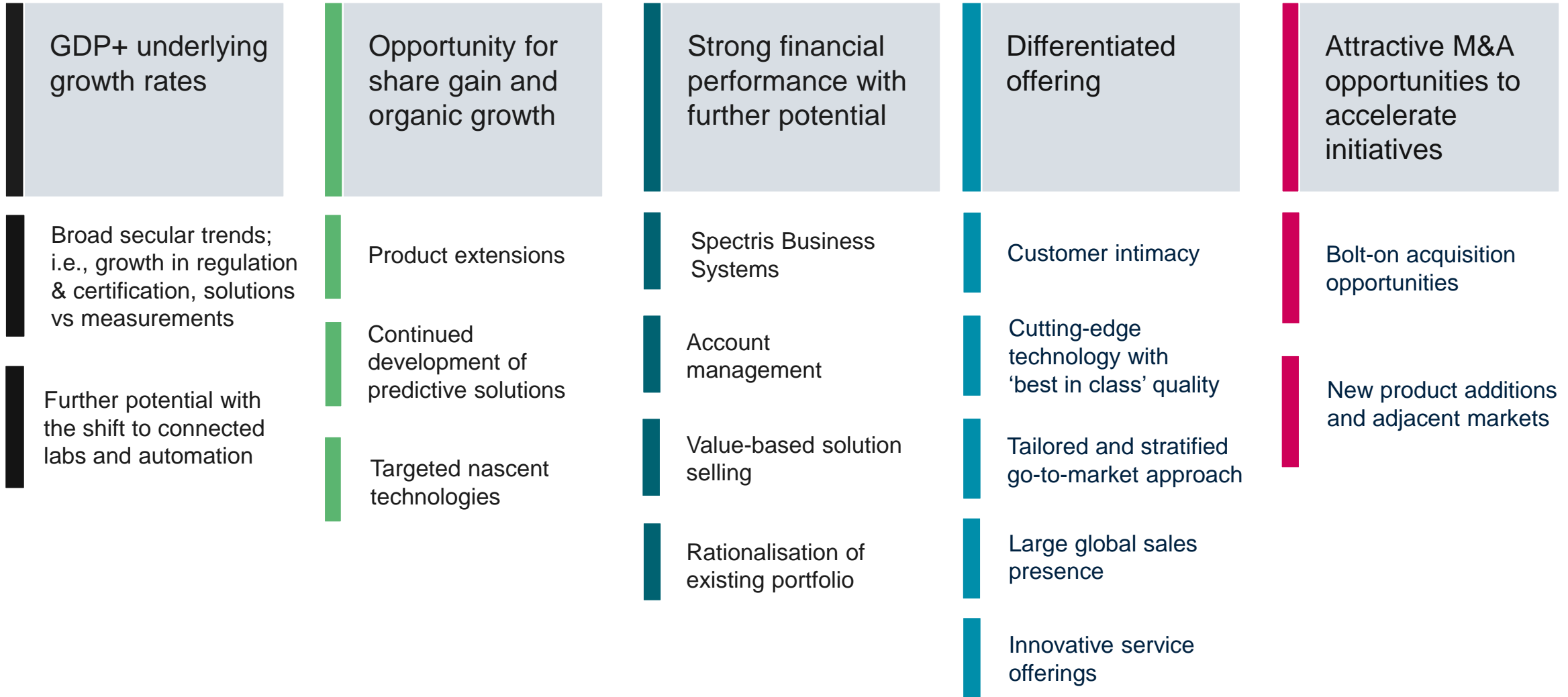


Malvern Panalytical technology stack positioning

- Obtain greater value by answering the 'question behind the question'
- Build on 'best-in-class' sensor capabilities, in which we excel today
- Connectivity for self-monitoring as well as 'bringing lab analysis to the process' and enabling workflow automation
- Expand capabilities in data science and the application of AI to turn Diagnostic into Predictive and Prescriptive solutions



A scalable model with high growth potential



Summary

Built around customers:
from Diagnostic to Predictive & Prescriptive solutions

Cutting-edge technologies with uncompromising quality

Strong financial performance with further potential

Opportunities for expansion in nascent industries and addressable market

Thank you for your attention

www.malvernpanalytical.com



Ω OMEGA™
a spectris company

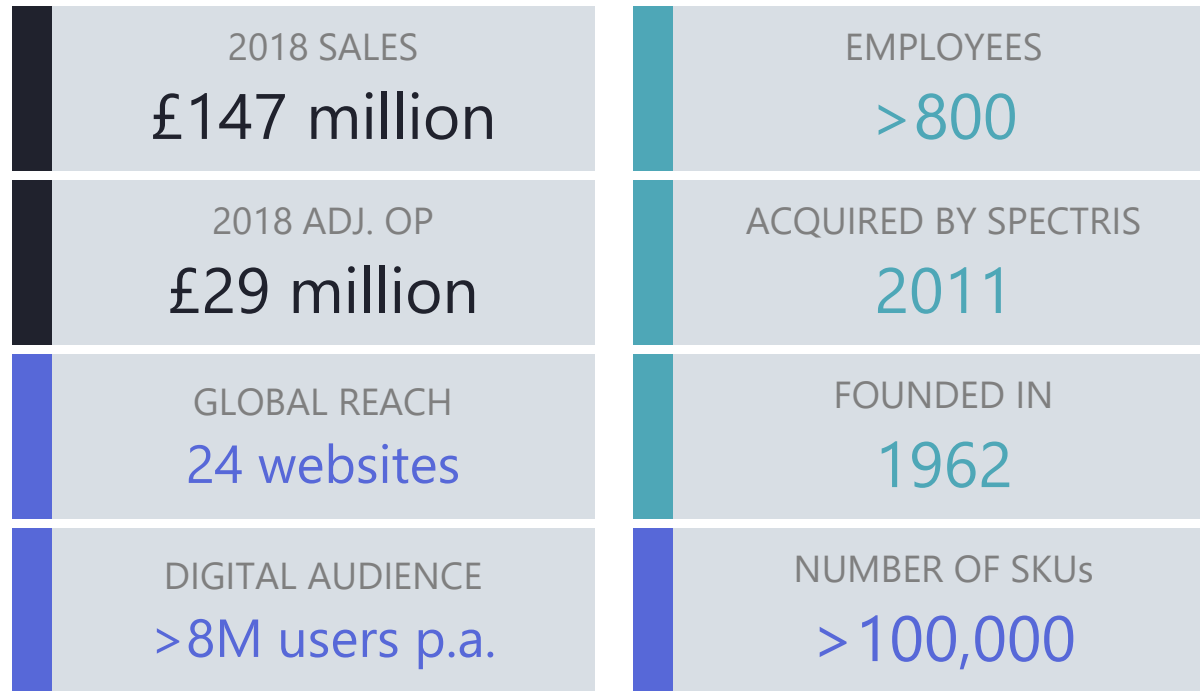
Greg Wright – President, Omega Engineering



- Joined OMEGA in 2016 as Chief Marketing Officer and Global VP of Sales and became President in April 2019
- Previously, held numerous senior commercial roles in the electrical and electronic manufacturing industry including Arrow Electronics and Grainger, and spent over seven years at Valin Corporation, most recently as executive vice president leading the commercial, digital and supplier relationship strategies
- Holds a master's degree in industrial distribution and industrial engineering and has extensive experience in aligning organisations to customer expectations



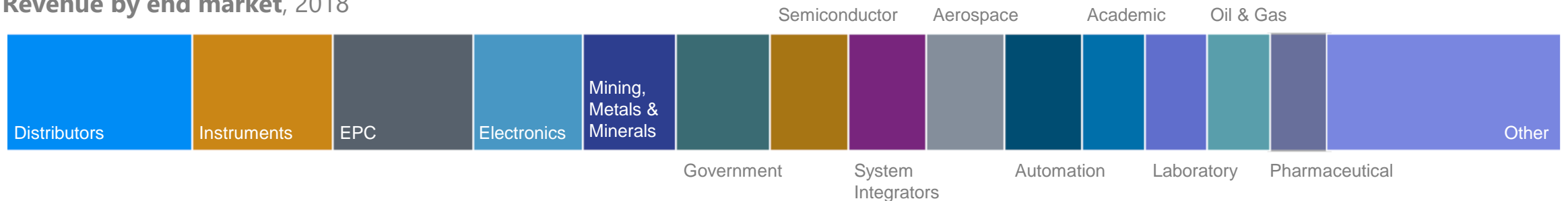
Omega at a glance



Revenue by geography, 2018



Revenue by end market, 2018



Strategy for profitable growth



Market-leading omni-channel provider to process engineers

What customers want

Efficiency

Pressure for efficiency, speed and profitability

Convenience

B2C experiences informing B2B behaviour and needs

Outcome-driven

Confidence in finding the right solution



What Omega delivers

Application knowledge

Supports customers to find the best solution for their needs

Delivered digitally

Online platform focused on customer experience

Full range of products

High margin proprietary built to specs, or third-party to meet market demands

Who we serve

Process / R&D engineers

Repeat business

What we are

Specialist omni-channel distributor

Best in class e-commerce experience

Curated and differentiated product offering

Scalable platform

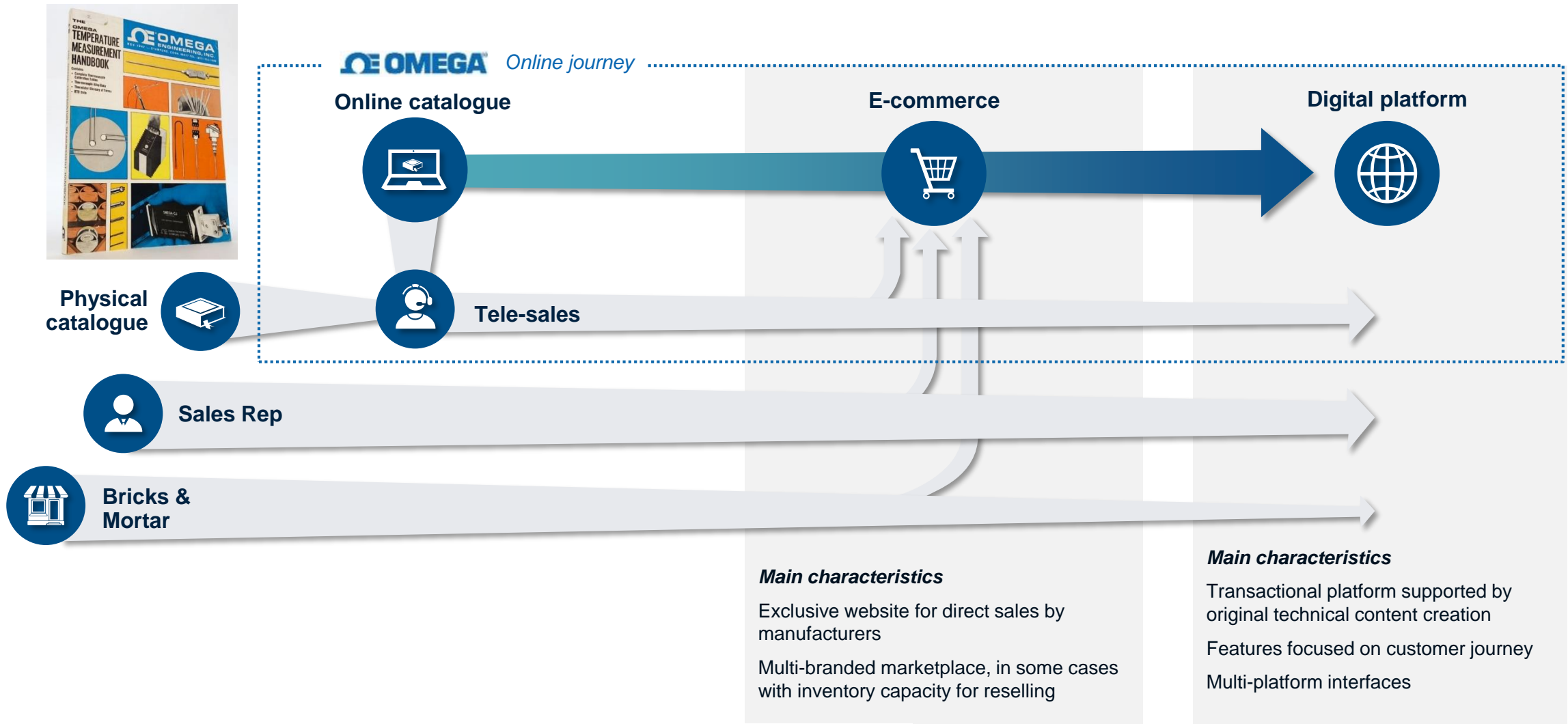
Market-leading sensor e-commerce platform

Core process sensing segments account for c.80% of sales

Temperature	Pressure	Flow	Level	Electronics & Data Acquisition	Other
Thermocouple Resistance Temperature Detector Thermistor	Capacitance Strain Gauge Pressure Gauge	Variable Area Ultrasonic Vortex	Ultrasonic Float Radar	Signal Conditioner Data Logger Panel Meter	Environmental Monitoring Liquid testing pH testing
52% of sales	17% of sales	7% of sales	6% of sales	14% of sales	4% of sales
\$100 – 500 Average Selling Price	\$200 – 800 Average Selling Price	\$500 – 5,000 Average Selling Price	\$500 – 5,000 Average Selling Price	\$100 – 500 Average Selling Price	\$50 – 200 Average Selling Price
<ul style="list-style-type: none"> Regulation of process temperature Safety monitoring of environmental temperature 	<ul style="list-style-type: none"> In-line measurement of pipeline pressure Process pressure regulation 	<ul style="list-style-type: none"> Measurement of liquid / gas flowrate in process pipelines Flow control (eg, pumps & valves) 	<ul style="list-style-type: none"> Point level measurement in containers to prevent overflow Continuous level measurement for process control 	<ul style="list-style-type: none"> Conditioning of signals for input into controllers Real-time display of process parameters 	<ul style="list-style-type: none"> Environmental monitoring & testing eg, humidity/pH

Specialist omni-channel distributor

Convergence of distribution channels



CUSTOMER NEED

Remote temperature monitoring for food safety applications

Deploy best practises in food safety for start-up businesses

Add sensing capability to existing food production equipment

Enable automated temperature monitoring including controls and remote access and alerts

What did Omega provide?


Temperature sensing – Wireless sensor/transmitter - ZW-ED

Temperature control – PID Controllers - CNPT

Temperature monitoring – Omega Enterprise Gateway

What were the benefits?

Saved +500k USD in predictive maintenance systems



"Temperature is a huge part of food safety. You have to be able to monitor it 24/7"

Stephen Baughman
Senior Maintenance Engineer
Rutgers Food Innovation



“We need very precise sensors. Accuracy is critical for our weight targets”

Martin Faubert
R&D Engineer
Argon18

CASE STUDY **ARGON 18**

CUSTOMER NEED

Customised precision sensors for developing new bikes

Ensure rigorous, finely tuned testing during bike development

Enable highly precise, repeatable testing and data analysis

Extend the capabilities of the bike and enhance its performance

What did Omega provide?

Load sensing – Stainless steel load cells | LC101

Displacement sensing – High accuracy | LVDT LDI-119

Strain sensing – Pre-wired strain gauge | KFH-6

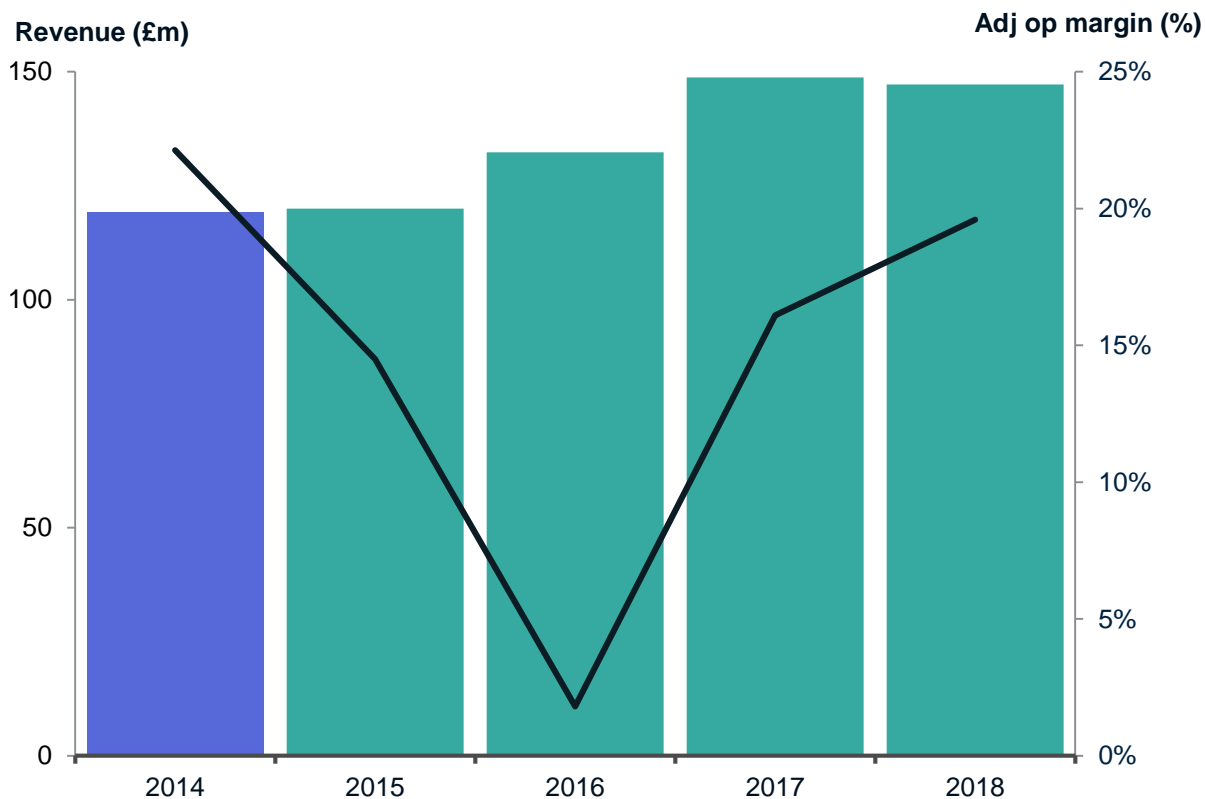
What were the benefits?

Ability to order a customised product online for quick delivery and still receive application support

Performance recovery sets new baseline for future potential



Omega revenue and margin
(2014 – 18)



Delivered a solid recovery

Driven >3% growth in core North American market

>5% growth in core temperature & pressure products sales

Significant growth in Asia of 17%, driven by China

Margin recovery driven by Lean initiatives

AWC as % of sales down from 30% to 10%

Significant improvement in on-time delivery

Further margin potential

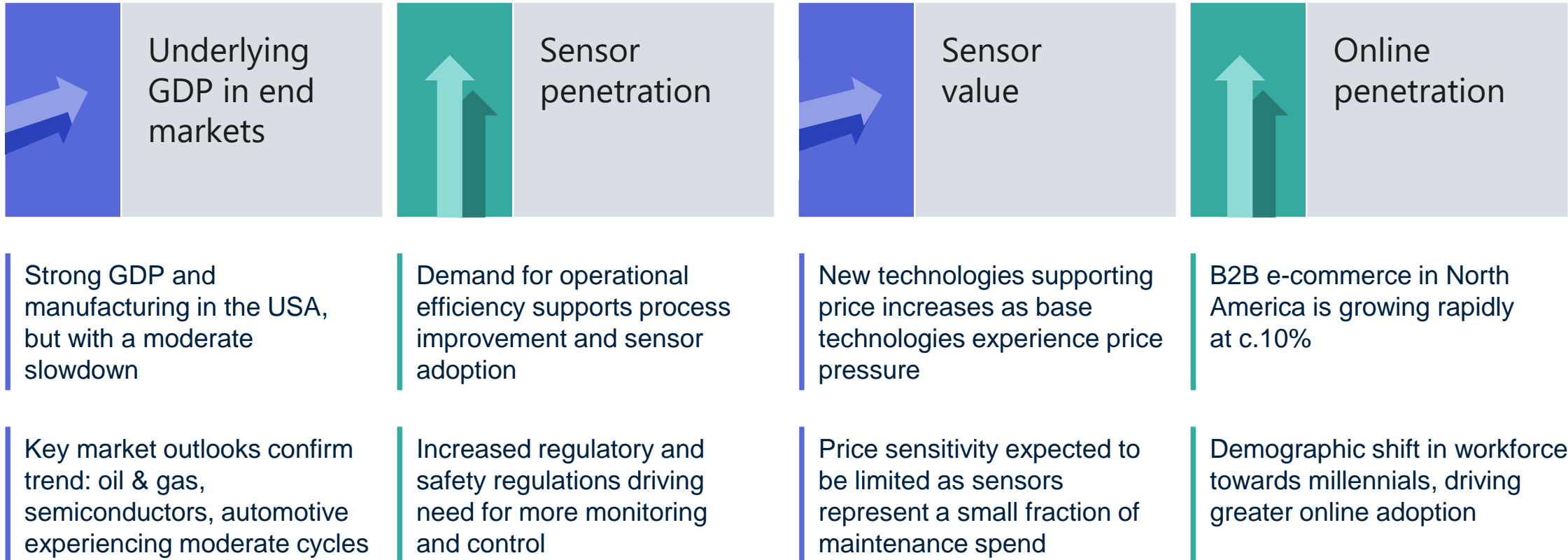
Product rationalisation

Manufacturing efficiency and IT systems

Organisational efficiency

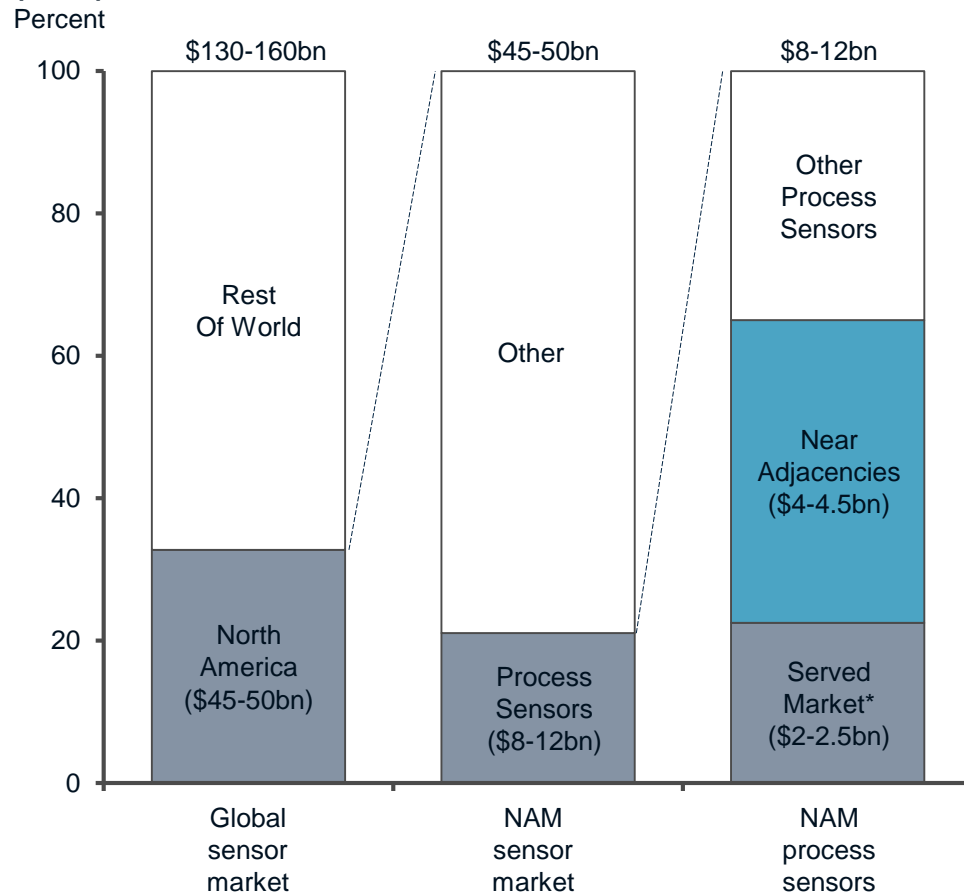
Price optimisation

Secular trends and shift to online purchasing drives growth



Significant home addressable market plus international opportunity

Global sensor market (2018)



Four key choices on where to play

- Drive growth in core North America market
- Product management targeting higher growth segments – own and third party products
- Expand product offering into near adjacencies – eg, factory automation sensors; environmental monitoring; heating; flow, valve & filtration
- Targeted international growth

Uniquely positioned in highly fragmented market

The market remains fragmented

Process sensor market is characterised by many small players

- Broad range distributors serve significant volumes and revenues but still hold very small market shares
- Other players also exist: specialists focusing on niche markets & regional distributors serving specific geographies

Omega's model has advantages over both generalist & specialist distributors

Distributors offer a broad range of products but lack the technical expertise and support
Product extensions and superior service should attract core customers away from specialists

- Specialist distributors rely on expertise in particular areas and offer sensing technologies as an add-on

Omega also has significant advantages over independent players

Omega digital transformation strategy to grow online capabilities is a competitive advantage

Manufacturing capabilities deliver on short-lead time requirements for highly specified parts

Regional distributors rely on regional contacts / customer relationships and local sales force

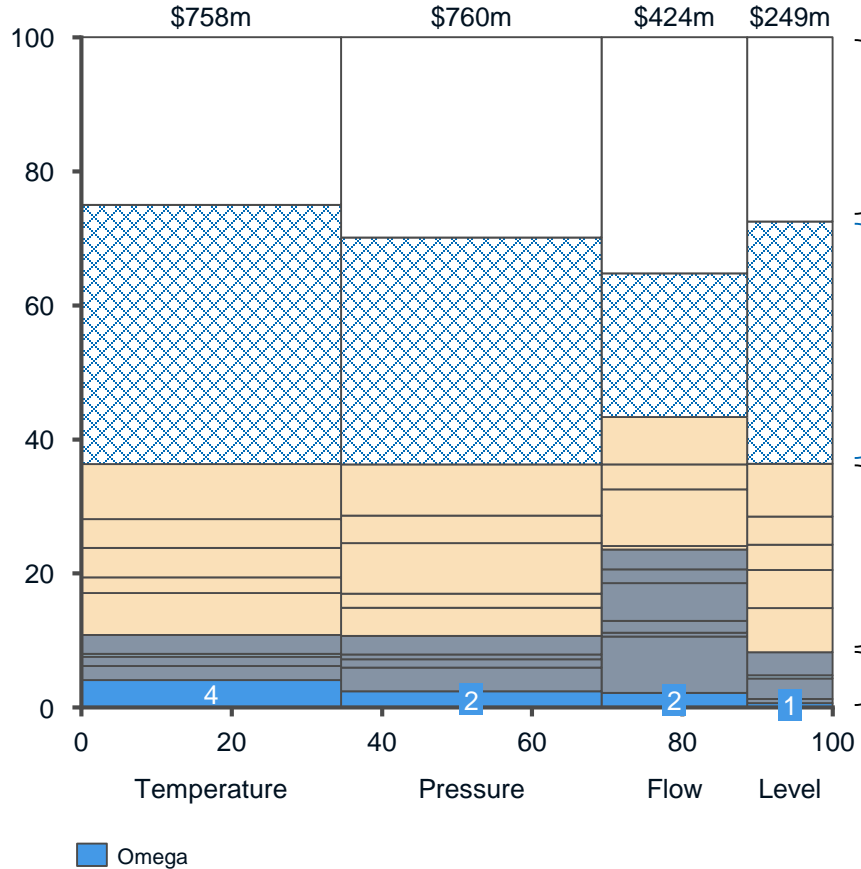
- Omega's online proposition and remote technical expertise provide a compelling advantage, offering a wider range of products and enhanced customer support

Leading position in specialist segment and share gain potential

North American competitive landscape

(2018E)

Percent



Direct from Manufacturers
25-30%

Large segment of the market is served by manufacturers through direct channels

Other distributors
30-40%

Largest segment of the industrial distributor landscape is largely made up of local players with limited revenue (c.\$10m)

Broad line distributors
25-35%

Significant position developed by large scale general industrial distributors, leveraging existing relationships with process customers

Specialists
10-20%

Distributors with application / process specific expertise

Gain market share here given highly fragmented nature of the market



Leading position in the specialist segment

Investing to maintain our market leading position

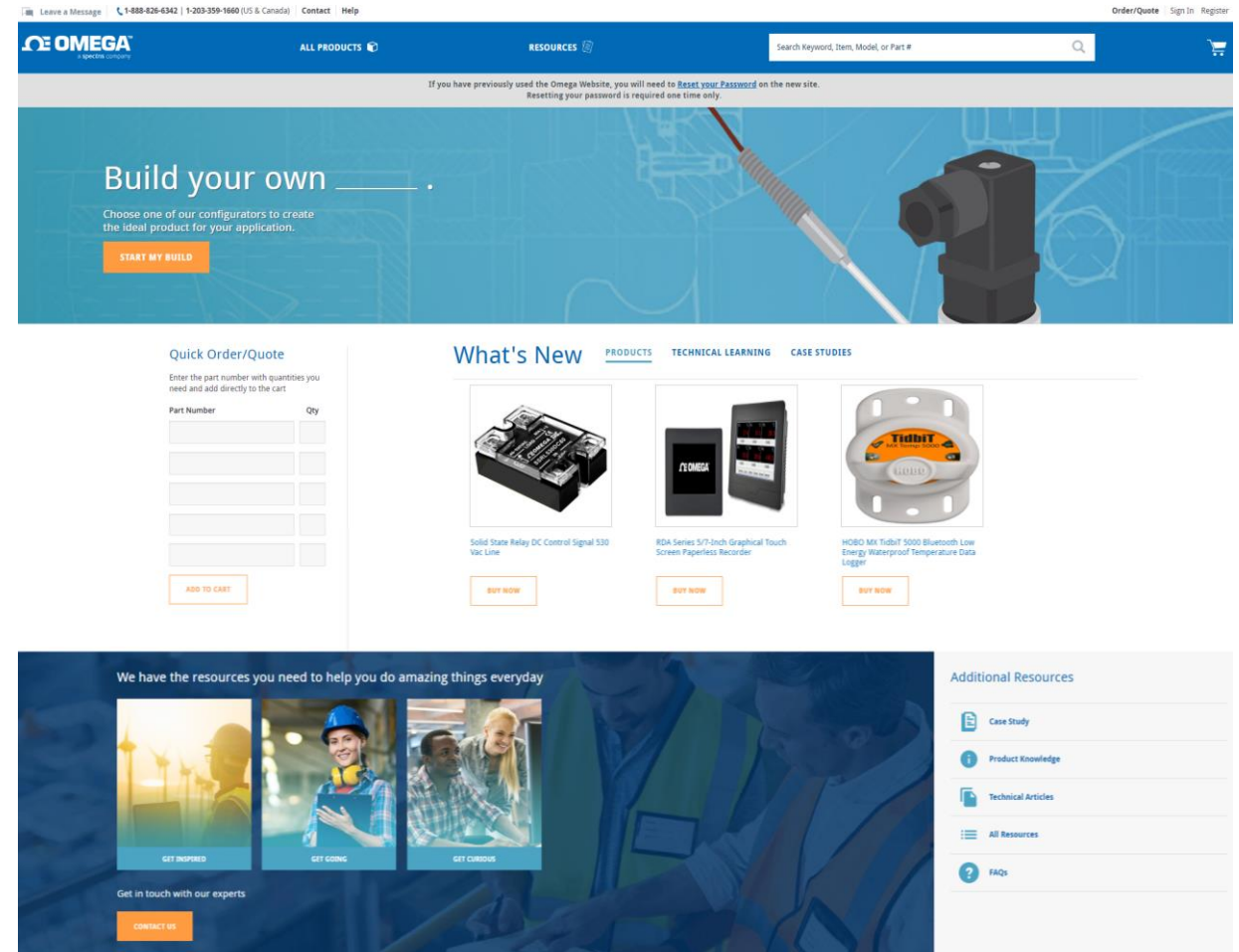
Differentiated / unique offering

Investing in a leading e-commerce platform

30+% sales p.a. currently online

Highly fragmented market

Smaller players unable to afford the investment




Shift in demographic accelerates adoption of digital in B2B




73%
OF **B2B MILLENNIAL BUYERS** ARE INVOLVED IN PURCHASING DECISIONS

 **42%**


use a **mobile** device during the B2B purchasing process

 **70%**

watch **videos** throughout their path to purchase

 **78%**

research half or more of their work purchases online

 **74%**

will purchase from the 1st vendor that **adds value to the process**

Build your own _____ .

Choose one of our configurators to create the ideal product for your application.

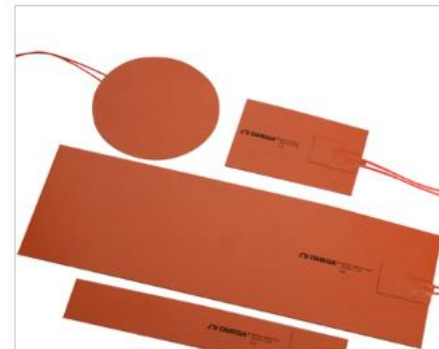
[START MY BUILD](#)

Quick Order/Quote

Enter the part number with quantities you need and add directly to the cart

Part Number	Qty
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

What's New

[PRODUCTS](#)[TECHNICAL LEARNING](#)[CASE STUDIES](#)

Omega's digital experience delivers B2C interface for B2B expectations

Product findability made easy aligned to key attributes for B2B

Remove
✕ Thermocouple Probes

Results
Products (14676)
Articles (0)
Manuals ()

Price

Wire Length

Wire Gauge

Wire Diameter

Thermocouple Type

B2C easiness **for product selection** through technical selection attributes

Accuracy
0.03% FS, 0.4°C (0.7°F), 1.0°C (1.8°F) 0.4°C (0.7°F)

Communication Protocols
Not Applicable

Control Output Type
2 Solid State Relay & 1 Analog Output

Display Type
LED

Form Factor
1/32 DIN

Input Type
Thermocouple, RTD, Thermistor, Process

Maximum Ambient Temperature
50°C (122°F)

Quantity Price Each [See All Options](#)

World-class **account management** for omni-channel experience

- My Account
- Address Book
- Order History
- Project List
- Saved Carts
- My Quotes
- Password
- Support Tickets

Multiple entry-points to order **quickly configurable products**

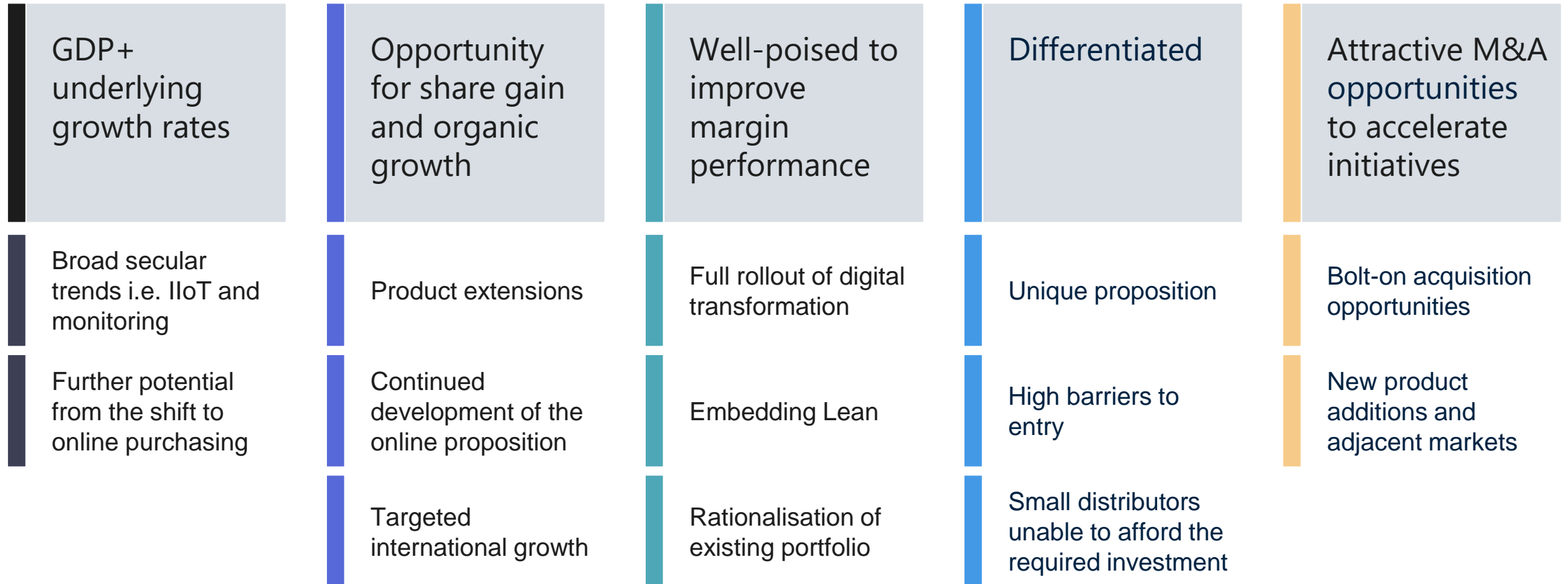
Show In Stock Only

Configurable

Quick Ship

START MY BUILD

A scalable model with high growth potential





Drive growth in **North America**, leveraging scalable **online specialist distribution model**

Accelerate **online channel**, plus a targeted approach to strategic account management

Rationalisation of product portfolio and make/buy decisions

Expand product offering into near adjacencies as well as offering into sensors for factory automation

Continue Lean operations initiatives to increase efficiencies

Targeted **international growth**



Ω OMEGA™
a spectris company



HOTTINGER BRÜEL & KJÆR

CAPITAL MARKETS DAY

JOE VORIH | PRESIDENT

JUNE 6th, 2019

Joe Vorih – President, HBK

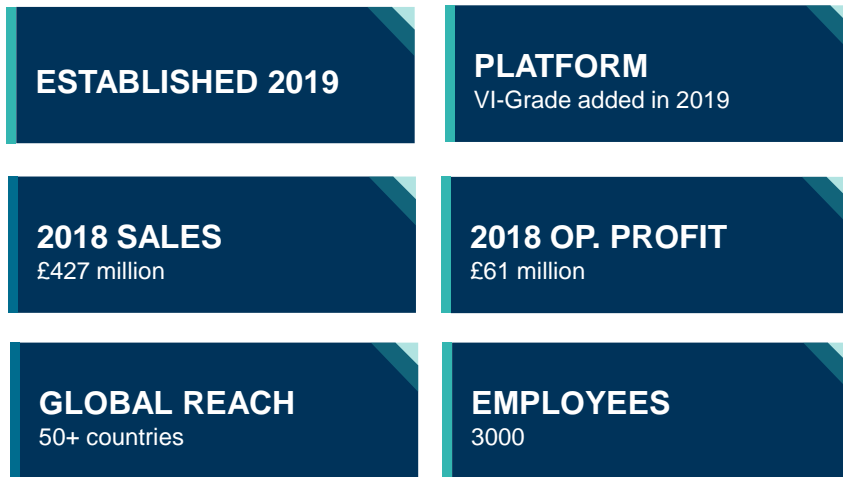


- Appointed President of HBK on January 1, 2019
- Joined Spectris in 2016 as President of Omega
- 16 years at Danaher in lean, engineering, operational and M&A roles
- 8 years executive leadership in private equity
- BS and MS in Mechanical Engineering from MIT
- MBA from Rensselaer Polytechnic Institute.

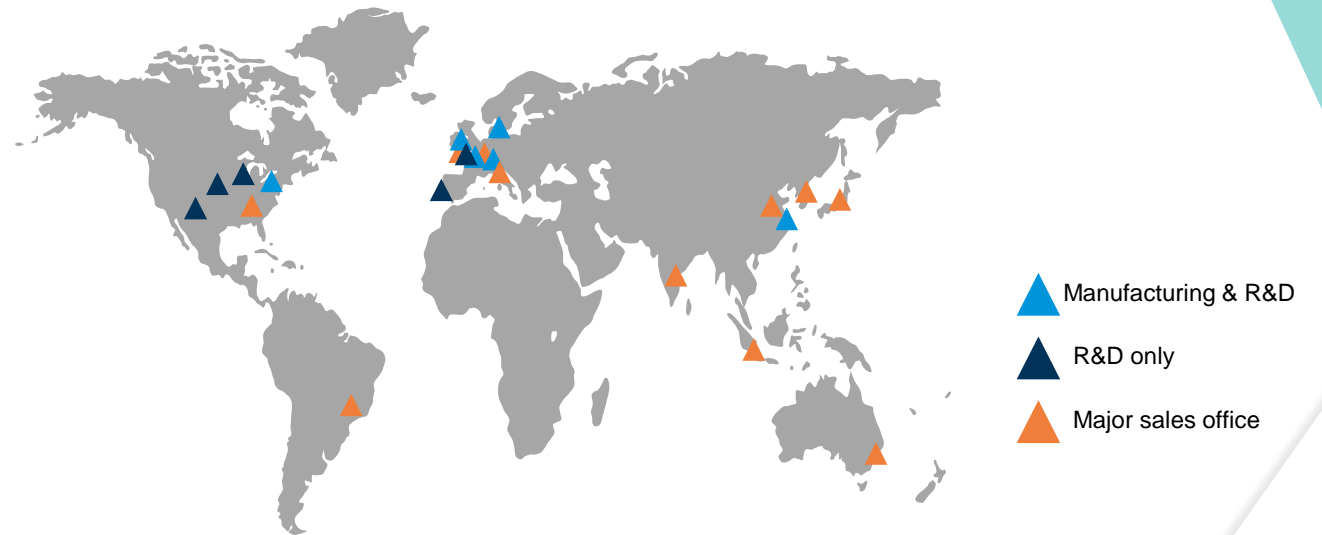


HBK at a glance

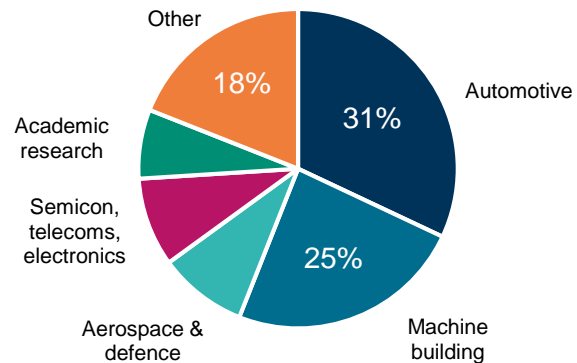
KEY FACTS AND FIGURES



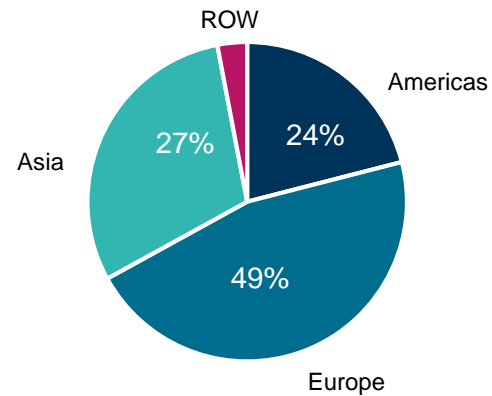
PRESENCE



REVENUE BY END MARKET (2018)



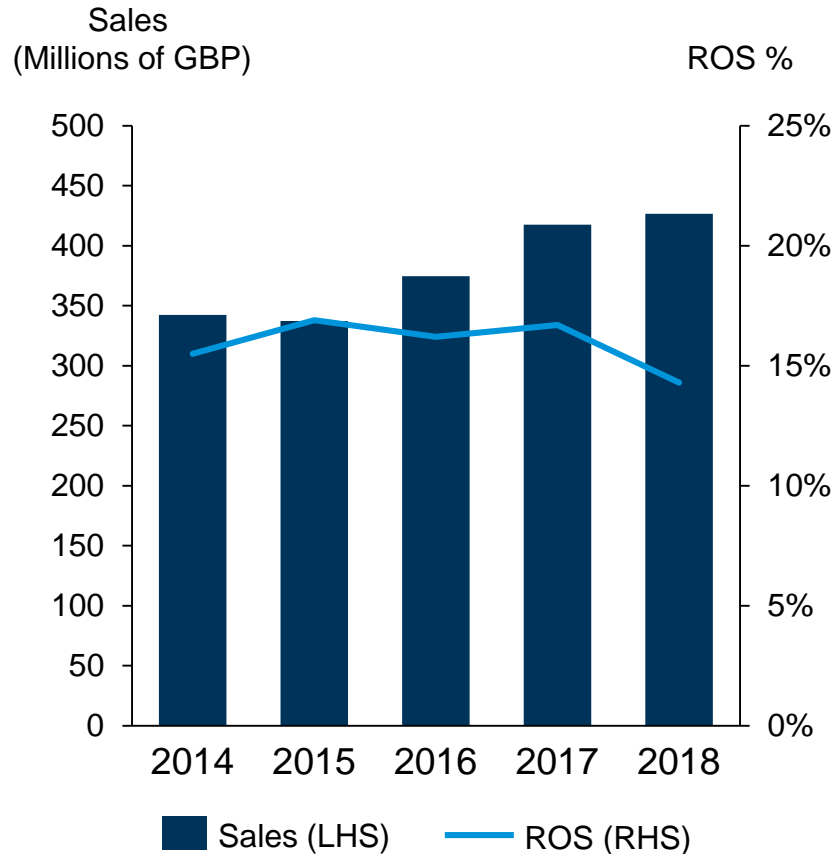
REVENUE BY GEOGRAPHY (2018)



Focused on integration and execution

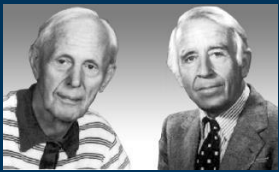
TO DELIVER UNREALISED PROFITABLE GROWTH

HBK Sales (2014-18)

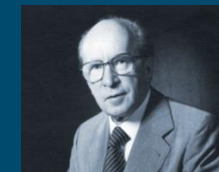


Note: vi-Grade included for partial year in 2018

- Building an experienced leadership team
- Fully integrating HBM and Brüel & Kjær
- Driving cost savings through synergy and improved efficiency
- Creating a single, more effective, lower cost sales force
- Accelerating new product releases
- Continuing to drive premium pricing
- Improving delivery and lean the global supply chain



PER V. BRÜEL AND VIGGO KJÆR



KARL HOTTINGER

HBK – merger of two great companies into one test and measurement powerhouse

The global leader in **sound and vibration** test and measurement with a 75 year history

Designs and sells the **entire measurement chain**

A premium brand, recognized for **quality, reliability and performance**



Technology and market leader in measuring, testing, and analysis with a focus on **durability, reliability, structural design, industrial control and weighing**

Global player offering the **complete measurement chain** from sensor to instruments to analysis SW and engineering services in our key disciplines

FOCUS BUSINESS AREAS

- Automotive, aerospace and telecom/audio
- Sound and vibration
- Noise

KEY FIGURES

- 1000+ employees – about half in Nærum (CPH)
- A global company with 1/3 of business coming from USA, EU and Asia respectively

OUR CULTURE

- Today, the engineering spirit prevails
- High focus on creating the best technology
- Informal and “family style” culture

FOCUS BUSINESS AREAS

- Automotive, Aerospace, Transportation
- Weighing, Industrial and Machine Building
- Durability Design and Validation

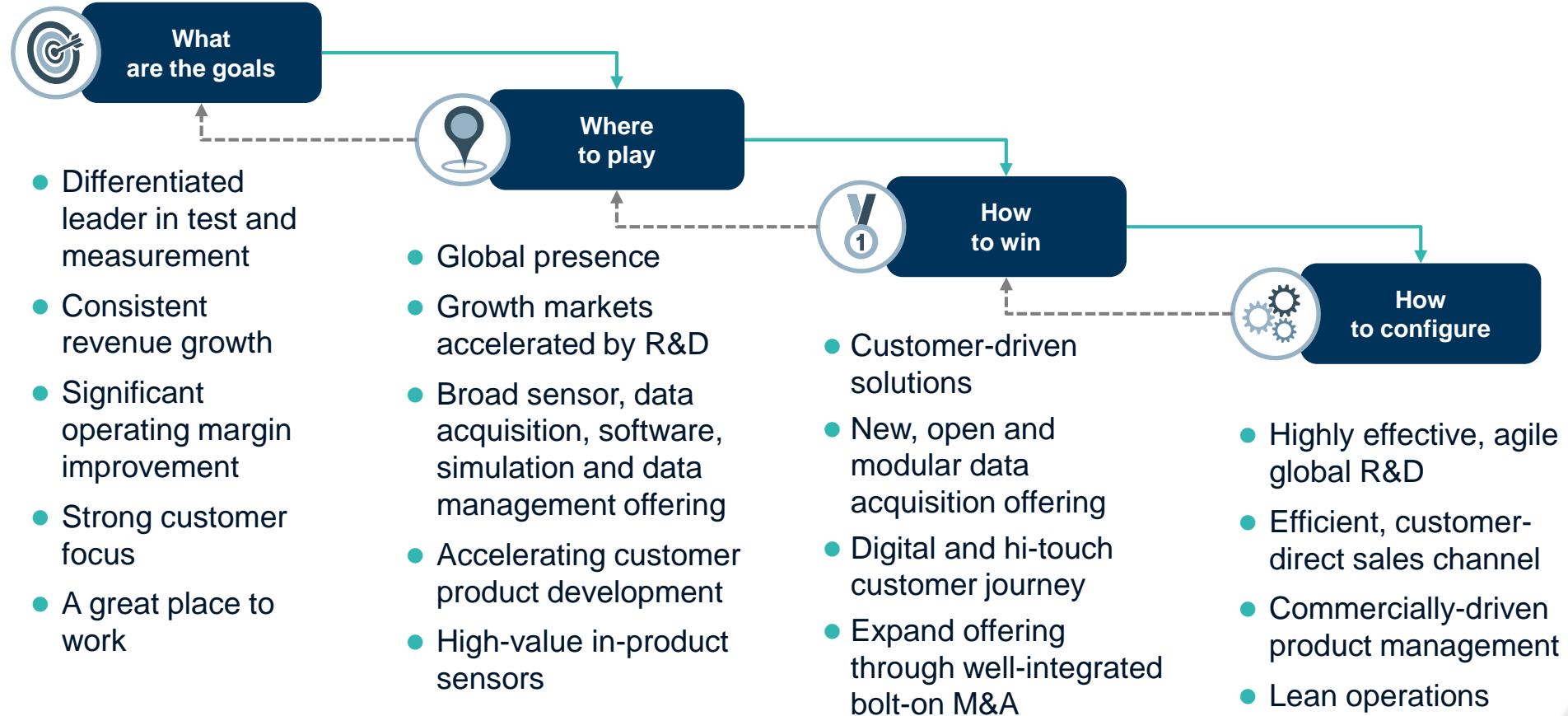
KEY FIGURES

- **1900 people**, most in Germany, China and US
- 29 subsidiaries and sales offices worldwide
- Balanced sales split between Germany, rest of EMEA, US and Asia

OUR CULTURE

- Reliability and accuracy
- Integrity and respect
- Results you can trust
- These values drive our behaviour as a company

Strategy for profitable growth



HBK helps customers accelerate product development and create leading products by improving and integrating physical testing and simulation

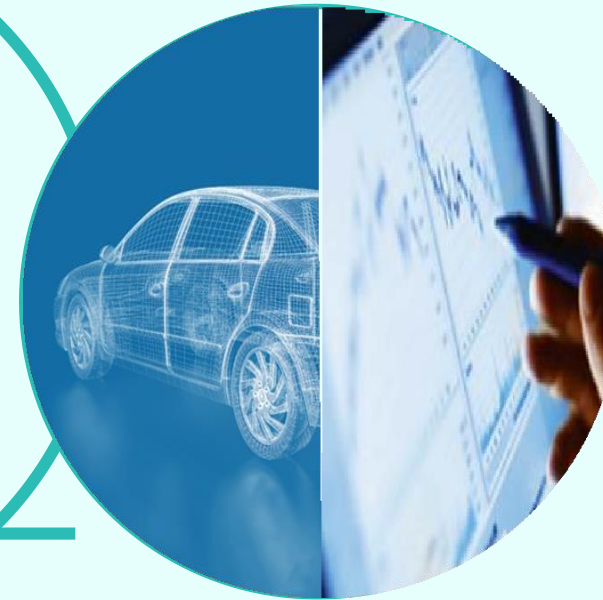
Test and Measurement

Precision instruments and sensors



Simulation, modelling, control and analysis

Software for data management, analysis and simulation



We drive quality data

Create clean, quality data from real-world physical test and measurement scenarios.



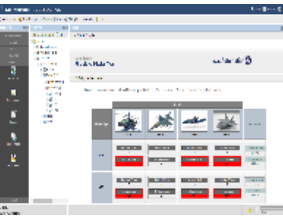
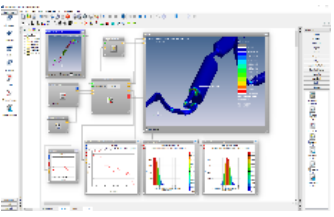

SOLVING THE DATA CHAOS

We validate output

Validate simulations and computer-aided engineering, align virtual models with physical tests and prepare data for control

HBK ARE THE PRODUCT PHYSICS EXPERTS

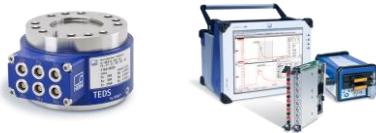
We provide a complete test and simulation offering

	Sensor hardware	Data acquisition (DAQ) hardware and software	Data management software	Analysis software	Simulation services and adjacent products*
					
Function	<ul style="list-style-type: none"> Measures and converts physical parameters into electrical signals 	<ul style="list-style-type: none"> Converts electrical analogue signals into digital values 	<ul style="list-style-type: none"> Stores, validates and retrieve measured data 	<ul style="list-style-type: none"> Test automation, analysis & visualisation of measured data 	<ul style="list-style-type: none"> Range of supporting hardware, software and services
Example applications	<ul style="list-style-type: none"> Torque sensors for drivetrain testing and acoustic transducers for phone audio testing 	<ul style="list-style-type: none"> Synchronised acquisition of electrical and mechanical signals in aircraft motor testing 	<ul style="list-style-type: none"> Storage and collation of data from multiple test stands to facilitate later stage analysis 	<ul style="list-style-type: none"> Digital signal processing and fatigue analysis of engine components 	<ul style="list-style-type: none"> Engineering services to calibrate sensors and hardware and software simulators to streamline Auto R&D
Key differentiating factors*	<ul style="list-style-type: none"> Accuracy Reliability Durability Physical size 	<ul style="list-style-type: none"> Accuracy Sampling rate Number of channels Signal type compatibility 	<ul style="list-style-type: none"> UI ease of use File format compatibility Search functionality Data security 	<ul style="list-style-type: none"> Range and sophistication of analytic capabilities UI ease of use Flexibility 	<ul style="list-style-type: none"> Various by product
Proportion of HBK revenue	55%	25%	10%	10%	

Across the test and measurement life cycle

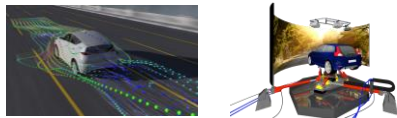
Research & Development

Physical testing



Highly sophisticated sensors, DAQ systems and analysis software

Simulation testing



Complex simulation software (and simulator hardware) requirements

Production

In-line measurement



Highly durable / reliable sensors and DAQ systems to maximise production uptime

End-of-line testing



Moderate/high accuracy & durability sensor / DAQ requirements for consistent quality testing

In-product

In-product measurement



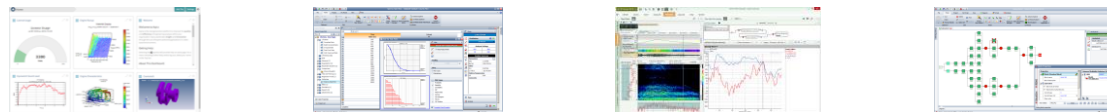
Unique, often highly customised sensors that elevate product performance

In-service monitoring



Lower-end sensor, DAQ and software requirements, sophisticated data analysis

Integrated data management, analysis and simulation



Deep understanding of data structure, validation and storing, sophisticated analysis software

Proportion of HBK revenue

55%

25%

20%

Case Study:

A FLEET OF DAQ SYSTEMS FOR ALL TESTING NEEDS

SIKORSKY
A LOCKHEED MARTIN COMPANY



! CHALLENGE

Sikorsky is currently developing nothing less than "the future of the vertical lift" with a complete new series of helicopters. The complex scope of helicopter testing demanded a highly flexible, yet reliable data acquisition platform.

💡 SOLUTION

By using HBM's QuantumX as data acquisition platform, Sikorsky was able to execute complex test campaigns of airframes, gearboxes, actuators, hydraulics and control systems (among others) with only one single, scalable system.

✓ RESULT

By using the powerful HBM solution for thousands of different measurement channels and different types of measurement data, Sikorsky was able to collect all test data in just one report. This helps the Sikorsky engineers to innovate at a faster rate.

Case Study:

HELPING MICROSOFT TO PERFECT SOUND QUALITY



! CHALLENGE

Develop technological devices with class-leading sound quality and human factors design, including effective voice recognition Technology.

💡 SOLUTION

Anechoic chambers for testing precise sound levels, equipped with a range of Brüel & Kjær microphones and preamplifiers, Head and Torso simulators, and mouth simulators.

✓ RESULT

World-leading product sound quality thanks to repeatable quantification of audio performance at a finer level of detail.

Case Study:

IMPROVING INDUSTRIAL ENGINE TESTING FOR GREENMOT



greenmot



❗ CHALLENGE

GreenMot started from scratch as a new company in the market for the testing of engines in 2010. This market has a large number of actors with well-established leaders and – at the time – had experienced several crises. GreenMot had to develop its complete client portfolio.

💡 SOLUTION

GreenMot focused on precision tests, and if the necessary sensor did not exist, developed a custom sensor for measuring the torque of the engine to be tested in order to adapt it to the structure to be tested, and not vice versa. HBK supplies the complete instrumentation chain for the most of the applications.

✅ RESULT

With a focus on precision and repeatability, GreenMot helps its customers to further improve the performance of their products. The benefits to be gained are sometimes marginal – but still essential in a very competitive environment. Thanks to this strategy, GreenMot has enjoyed rapid growth.

Case Study:

SHORTENING DEVELOPMENT TIME OF THE NEW ALFA ROMEO GIULIA



"The design has been changed after test drivers used the driving simulator to feel how the physical vehicle was going to behave"
Roberto Fedeli, CTO, Alfa Maserati



! CHALLENGE

Alfa Romeo spend a significant amount of time and effort on developing new cars.

💡 SOLUTION

Alfa Romeo developed the new Giulia not in the physical world, but using the VI-grade driving simulator.

✓ RESULT

The new Giulia was designed from scratch in just 2 years with VI-grade driving simulators.

Increasing demand for integrated R&D solutions



CUSTOMER NEEDS

- High **accuracy** and **reliability**
- **Ease of configuration**

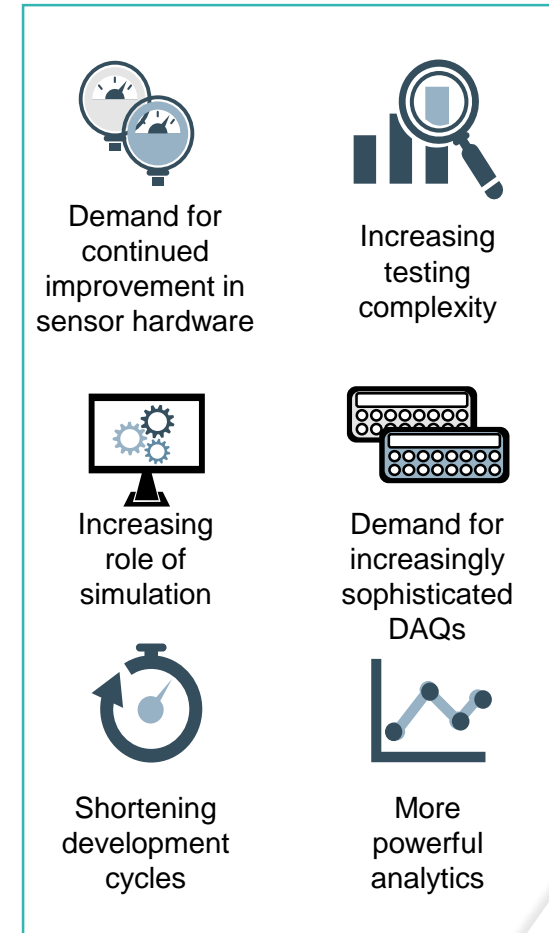
- **Flexible, reliable** and **accurate**
- High **speed** and **bandwidth**

- **Interoperability** for multiple data sets with rapid search functionality

- **Easy-to-use** with feature-rich analysis packages

- Flexibility to **accurately simulate** diverse scenarios

UNDERLYING TRENDS



Disruptive potential of small, connected sensors

Sensor hardware

DAQ system

Data management software

Analysis software

Simulation

CUSTOMER NEEDS

- More **cost-effective** measurements as more things are measured
- **Flexible** hardware or software / cloud-based approach
- **Growing volumes of data** from multiple sources and systems
- Ease of use, **less time to manage**
- **Easy-to-use** with feature-rich analysis packages
- Flexibility to **accurately simulate** diverse scenarios

UNDERLYING TRENDS



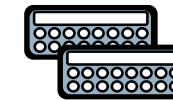
Physical sensors becoming smaller and chip-based



Software enhancing accuracy of measurement data



Increasing demand for smart sensors



DAQ hardware becoming more modular

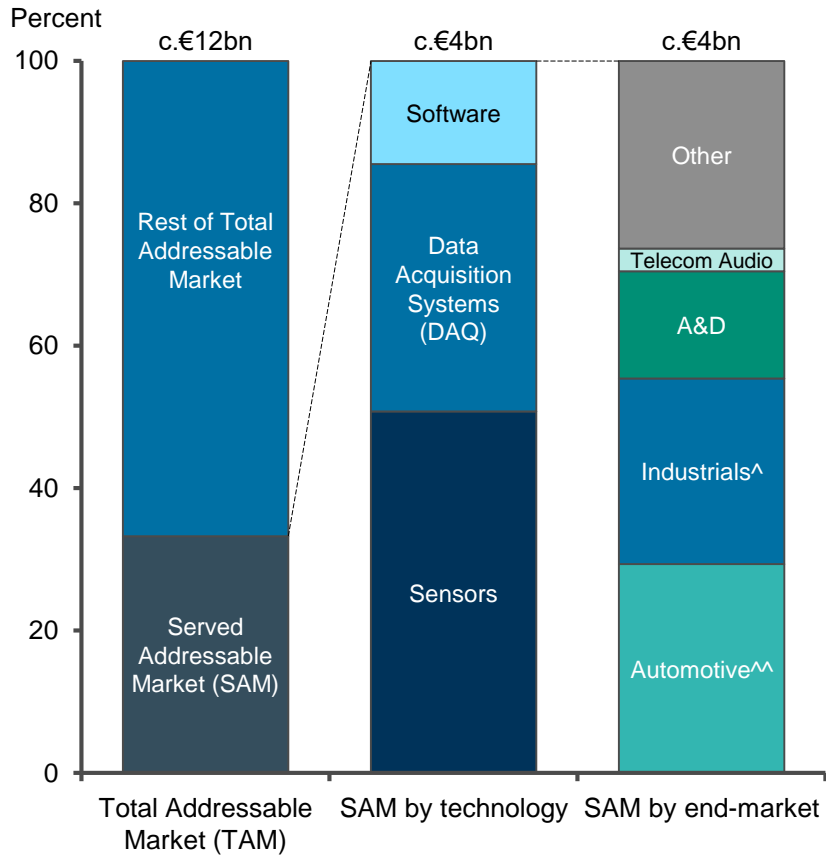


More powerful analytics and use of AI

HBK currently serves a large c.€4bn market

WITH ATTRACTIVE UNDERLYING MARKET GROWTH DRIVERS

HBK's Total / Served Addressable Market (est., 2018)



Note: [^] Industrials include machine manufacturing, energy & utilities, metals, minerals & mining, food & beverage, construction; ^{^^} Automotive includes automotive vehicles, marine and other transport, and rail
 Source: BCC Research; Frost & Sullivan; Marketsandmarkets; TechNavio; Competitor interviews; Management data

Underlying market growth*

Telecoms & audio

- Phone volume and value growth in **c.2-3%**

Growth in test and measurement segments*

- Sustained R&D to improve overall acoustic quality **c.4%**

Aerospace & Defence

- Growing passenger volumes and increased defence budgets **c.2-3%**

- Increasing demands of aircraft testing **c.5%**

Industrials

- Growth in broader industrials sector and the rise of e-commerce **c.2-3%**

- Demand for testing products to drive operational improvements **c.4%**

Automotive

- Global population / economic growth and increasing motorisation **c.2%**

- Increased testing requirements of new vehicle types and models **c.6%**

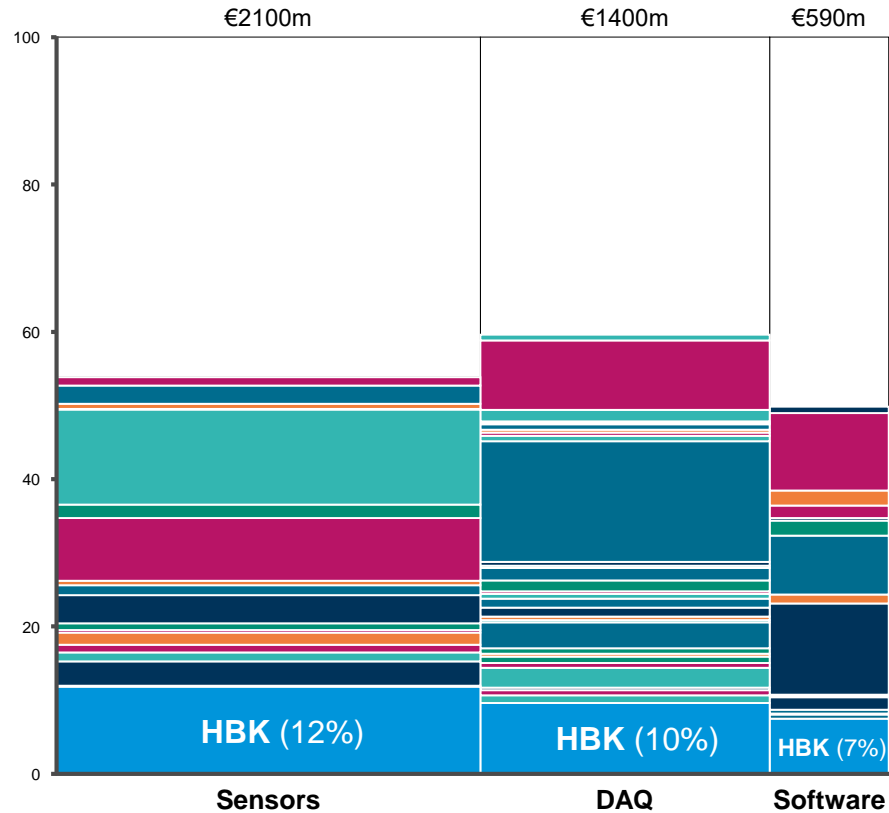
Note: * Estimated global growth over next 3-5 years
 Source: L.E.K. research, and analysis

And is well-positioned against fragmented competition

IN A SIGNIFICANT ADDRESSABLE MARKET

HBK competitive landscape in served addressable market by product type (2018)

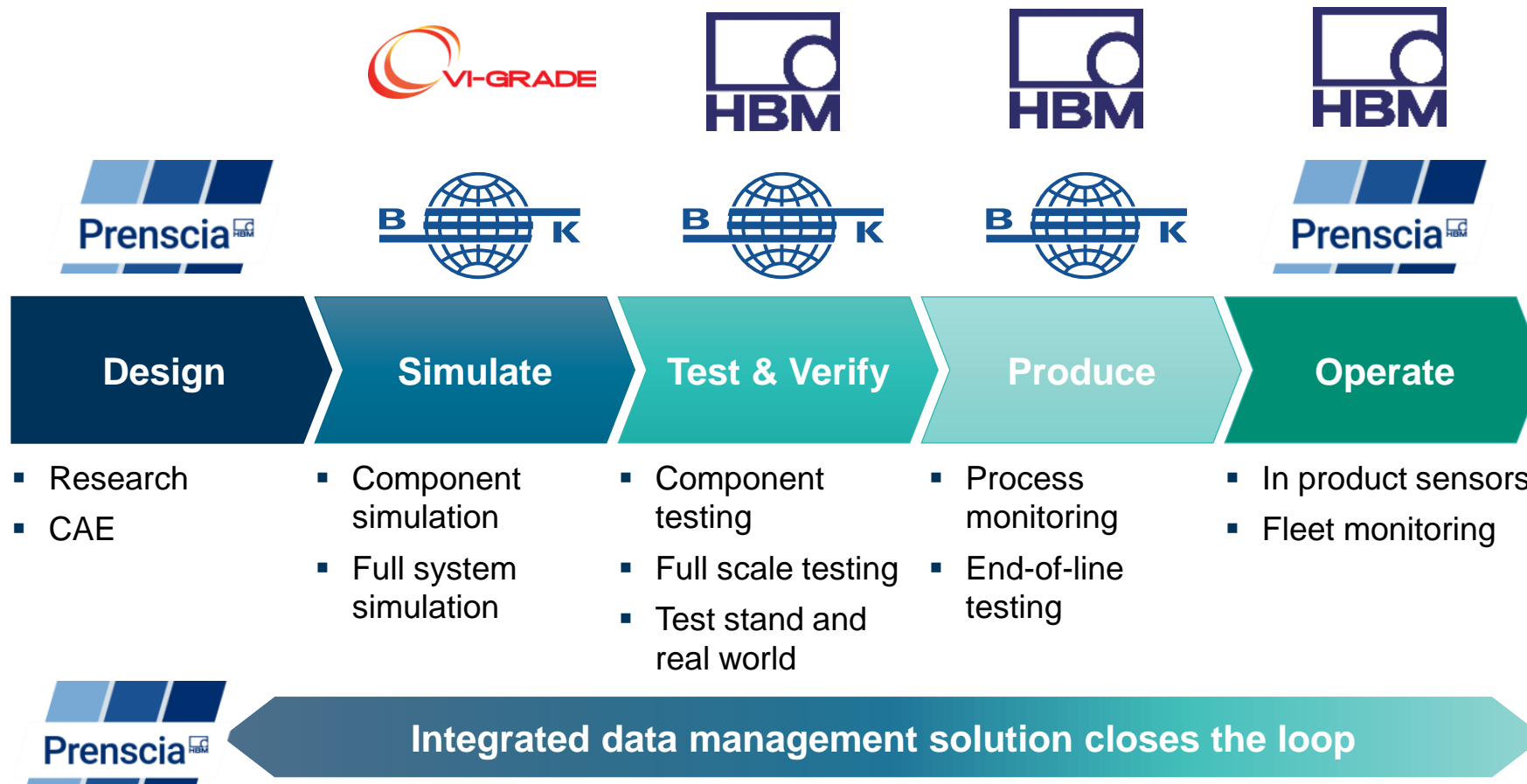
Percent



		HBK HOTTINGER BRÜEL & KJÆR	Comp. 1	Comp. 2	Comp. 3	Comp. 4
		Current	Current	Current	Current	Current
Strength of offering	Sensor Hardware	Strong	Strong	Medium	Medium	Weak
	DAQ systems	Medium	Medium	Medium	Weak	Medium
	Data mgmt. software	Medium	Medium	Weak	Weak	Medium
	Analysis software	Medium	Medium	Weak	Medium	Medium
	Specialist simulation	Medium	Weak	Weak	Medium	Weak

Strength of offering: Strong Weak

Customers use our solutions throughout the product development life-cycle



We are focused on transforming to a seamless data acquisition solution offering and customer experience

The HBK of today is:



The world's number one provider of **precision measurement solutions** for test & measurement, processing, and control applications



Delivering reliability, durability, and signal processing assurance to the engineering community through **innovative software, service, and training solutions**

Going forward HBK will also become:



A united platform for comparison of simulation results and test data



An effective hub that will enable the creation of test-based models



An open ecosystem for the benefit of third party connections

All this will be based on:
A seamless, user-friendly experience

Developing a scalable and profitable platform

WITH STRONG GROWTH POTENTIAL

Restore growth in strong markets

- Attractive end market growth
- Single global sales force
- Enhanced customer focus
- Improved operational execution

Deliver on the merger promise

- Near-term operating margin expansion
- Improved pricing management
- Realise merger synergies

Build a profitable growth engine

- Spectris Business System
- Digital customer journey
- Agile R&D
- Highly scalable overhead model

Steady stream of new products

- Enabling new technologies (electric drive)
- Expanding virtual simulation
- Develop seamless, open data acquisition solutions

Enhance with strategic M&A

- Expand our already strong sensor and solution offering
- Integrate effectively
- Embed the Spectris Business System

Summary

**Deliver on merger
promise and drive
solid, profitable
business growth**



Lead with a strongly differentiated and integrated physical sensing, testing and simulation solution

Enable customers to accelerate product development, create leading products, and solve the data chaos challenge

Create a scalable and open data acquisition hardware, software and simulation ecosystem through focused innovation

Deliver consistent growth, expanding operating margins, and exceptional customer satisfaction



Capital Allocation

Derek Harding

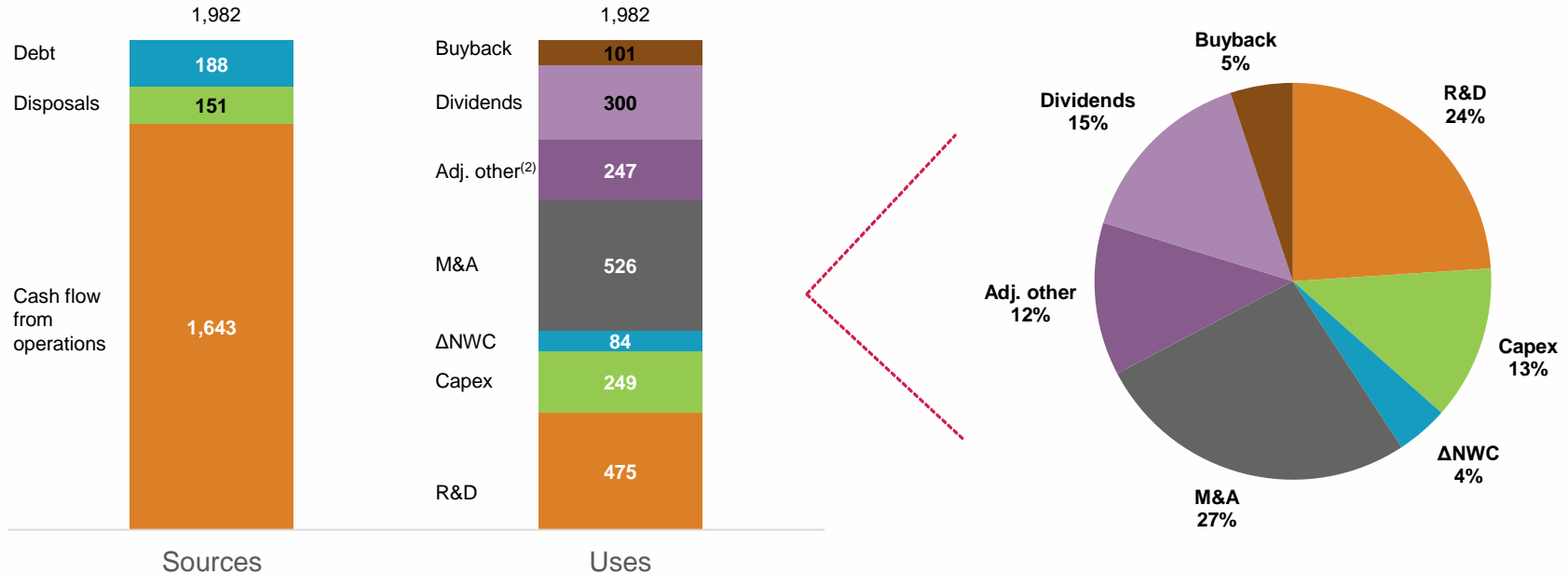
Chief Financial Officer



- Joined Spectris in March 2019
- Most recently Group Finance Director at Shop Direct
- Previously Group Finance Director at Senior plc from 2013 – 2017 and before that performed a number roles at Wolseley plc for 11 years including UK CFO, Group Financial Controller and Head of M&A
- Qualified Chartered Accountant (FCA) with 8 years at PwC, including 2 in the USA
- BSc(Hons) Banking & Finance - Loughborough University



Allocation of capital over last 5 years⁽¹⁾



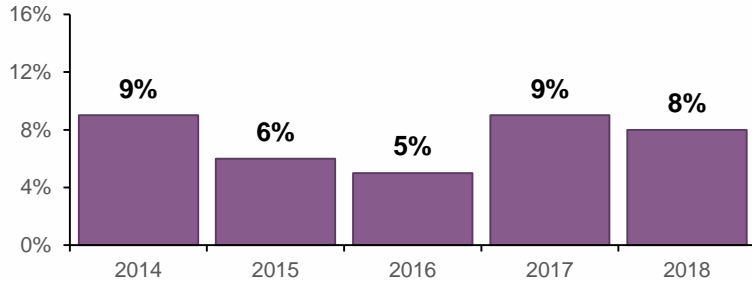
Note: NWC defined as inventories + trade and other receivables – trade and other payables

(1) Sources and uses from operating cash flow only from 2014-2018

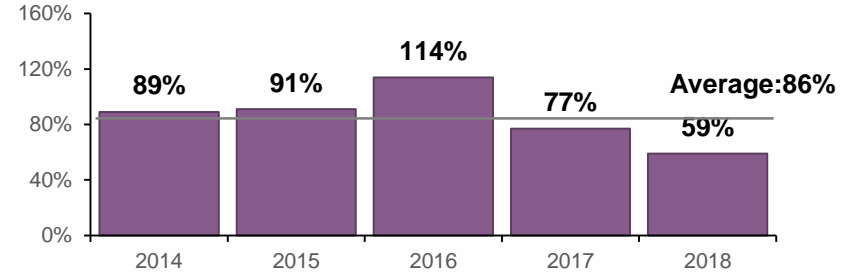
(2) Includes financing costs, tax and other items

Focus on driving financial performance

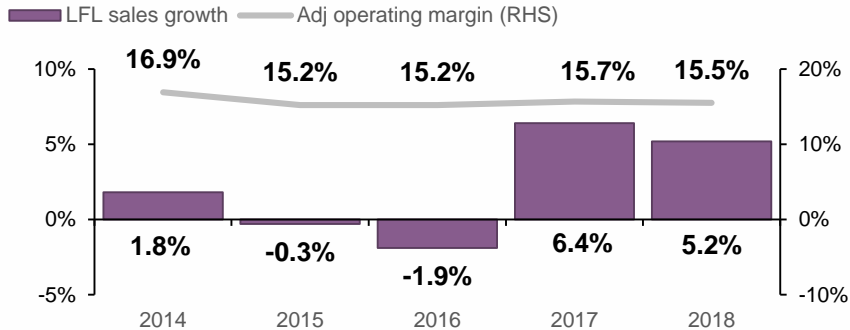
Dividend growth



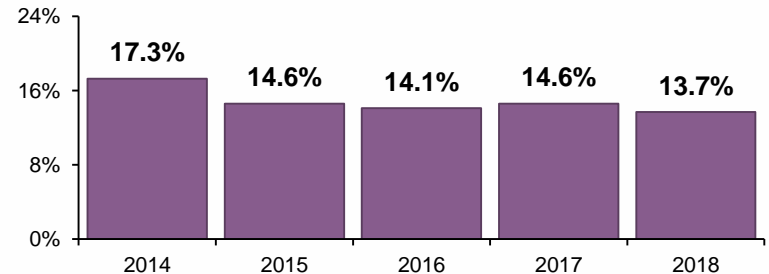
Cash conversion

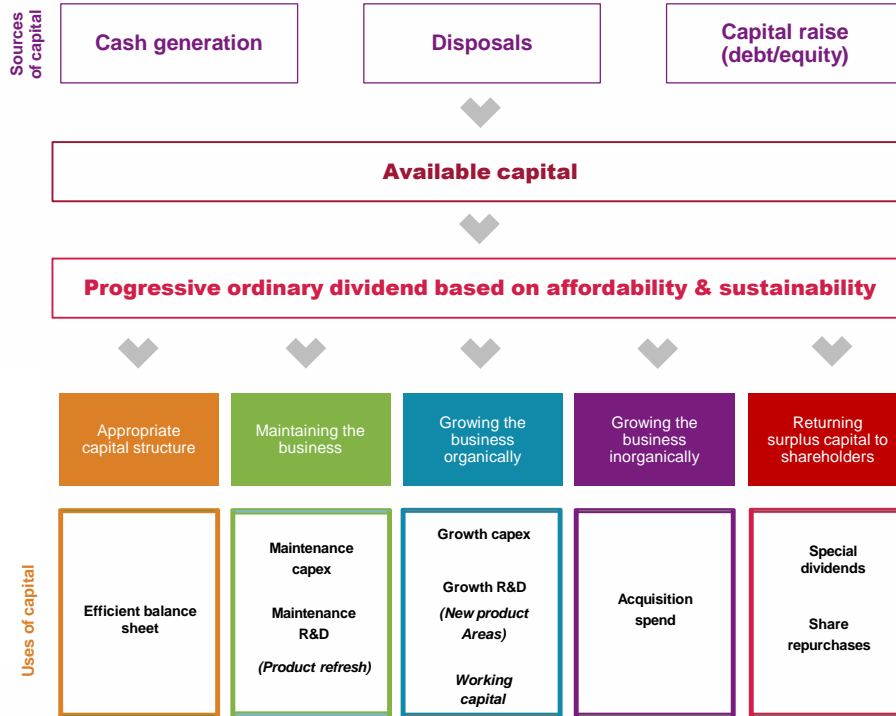


LFL sales growth and adj. operating margin



Return on gross capital employed





- **Ordinary dividend**
Policy of making progressive dividend payments based upon affordability and sustainability
- **Leverage**
Between 1.0 - 2.0x EBITDA
- **Maintenance capex**
In-line with depreciation
- **Growth capex**
Assessed using a combination of financial measures
- **R&D**
7% of sales, aiming to be more efficient
- **Working capital**
Average working capital between 11-15%
- **M&A**
To cover our cost of capital by at least the third year
- **Capital return**
Return surplus cash to shareholders as appropriate, using the most efficient mechanism at that time

Return on Gross Capital Employed

	<u>FY18</u>	
Adjusted Operating Profit	248.3	ROCE
<hr/>	<hr/>	= 17.8%
Avg. year-end shareholders equity, net debt	1,392.3	
+	+	
Accumulated amortisation and impairment of goodwill and acquired intangible amortisation	426.2	
<hr/>	<hr/>	ROGCE
Gross Capital Employed	1,818.5	= 13.7%

- Gross Capital Employed – pure measure of all capital deployed
- Aligned with shareholders
- Will be impacted, from time to time, by specific events such as acquisitions or disposals
- Improve over the medium term – direction of travel not a specific destination

To **grow highly cash generative operations** and deploy the cash in a structured and considered way

To maintain an **efficient balance sheet** over the medium term

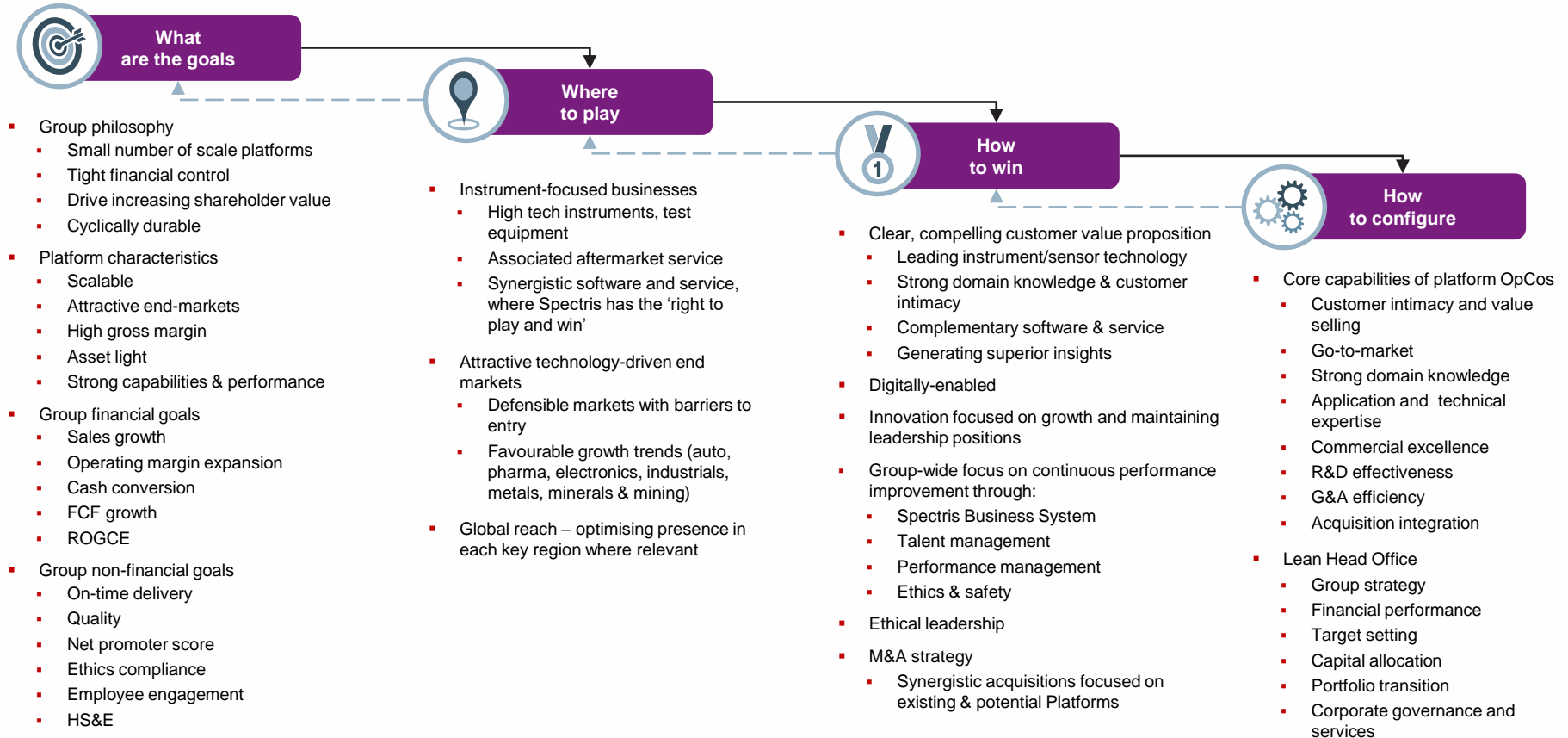
To provide an **increasing return** on all invested capital ahead of the cost of capital

- Group Strategy for Profitable Growth
- Platform overview and strategies
- Product demonstrations
- Capital allocation framework

Q&A

- Simplifying the portfolio to be an instrument-focused business in attractive technology-driven end markets
 - 3 platform businesses positioned in markets with attractive growth prospects and margin enhancement potential
 - High-value, niche businesses in Industrial Solutions portfolio operating under new leadership
- Profit improvement programme on track to deliver expected benefits, with implementation of SBS driving continuous performance improvement
- Taking a more disciplined approach to capital allocation and a greater focus on returns
- Clear strategic plan and framework to enhance shareholder value now firmly underway

Our Strategy for Profitable Growth



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