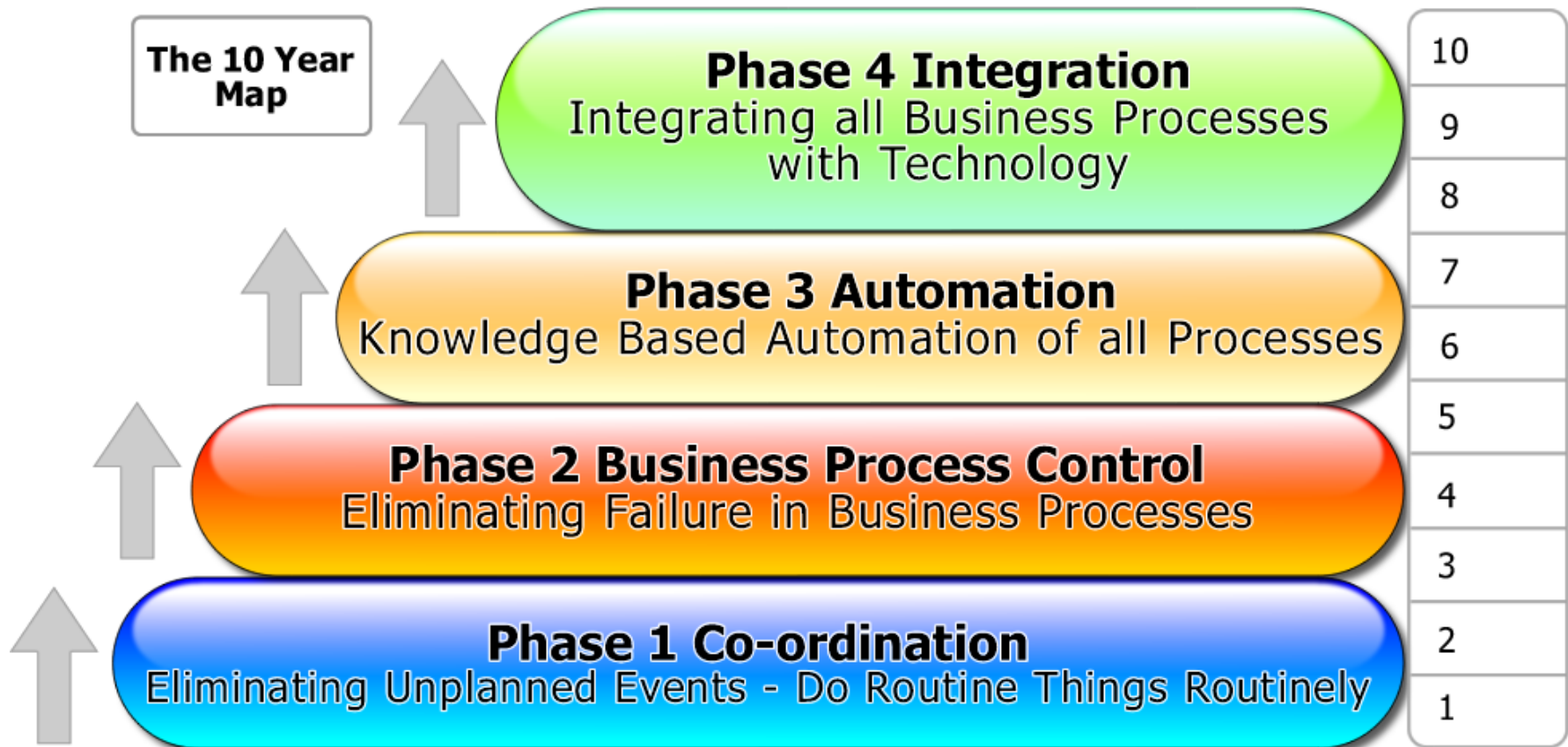


Driving a Culture of Operational Quality Excellence

Adrian Furey

FDA Public Meeting, October 10, 2017

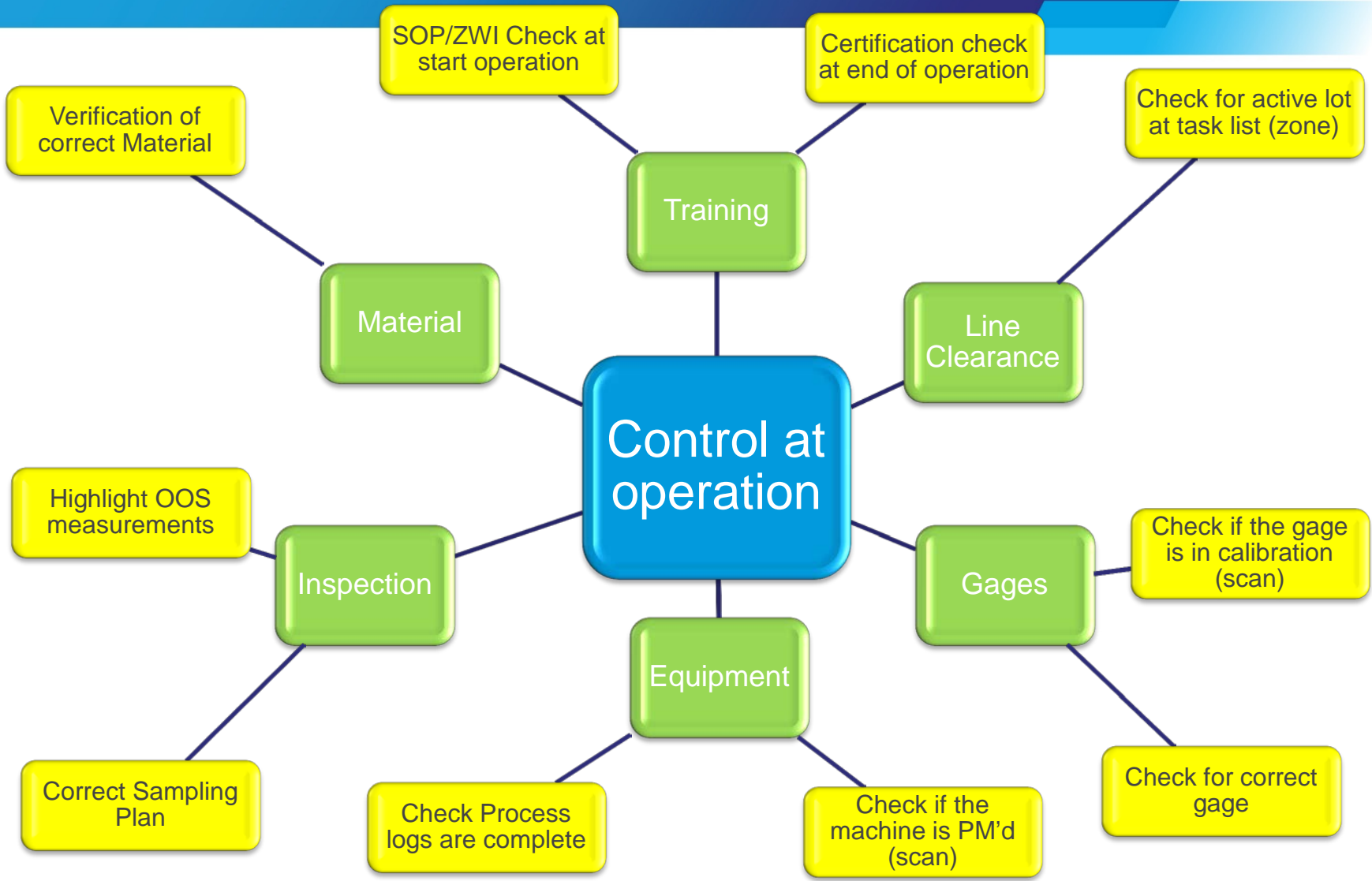
Integrating the Business - Maturity



Why Manufacturing Execution Systems (MES)?

- Promotes and sustains global harmonized processes
- Ensures standardization of supporting business processes across the Global Manufacturing Network
- Reduces risk of product transfer "Hiccups " once sites are on MES (ZOML example)
- **Agility** – MES Configuration lies within Manufacturing/Operations/Quality SMEs vs IT
- **Control** – Error proofing and continuous improvement via Poka yoke to the shop floor
- **Speed** – Quicker containment and resolution of shop floor challenges
- **Visibility** – Enables greater focus on RC analysis and CAPA as intelligence is readily available from structured data, updated real-time with shop floor visualization of hourly output (Scrap Reduction example)

Risk Points – Controls at an operation



Culture Reinforcing

- Enforced compliance at source
- Integrated into key quality systems (calibration, training etc.)
- Automated capture of inspection data
- Greater ability to control product through approved and validated routings
- In-line control of non-conforming material
- Electronic line clearance and guided manufacturing
- Electronic access to relevant procedures at point of use
- Yield analysis and Defect reporting and trending
- Better material traceability
- Transformational improvements in LHR errors, NCR rates, and yield and resulting in improved product quality to the end customer

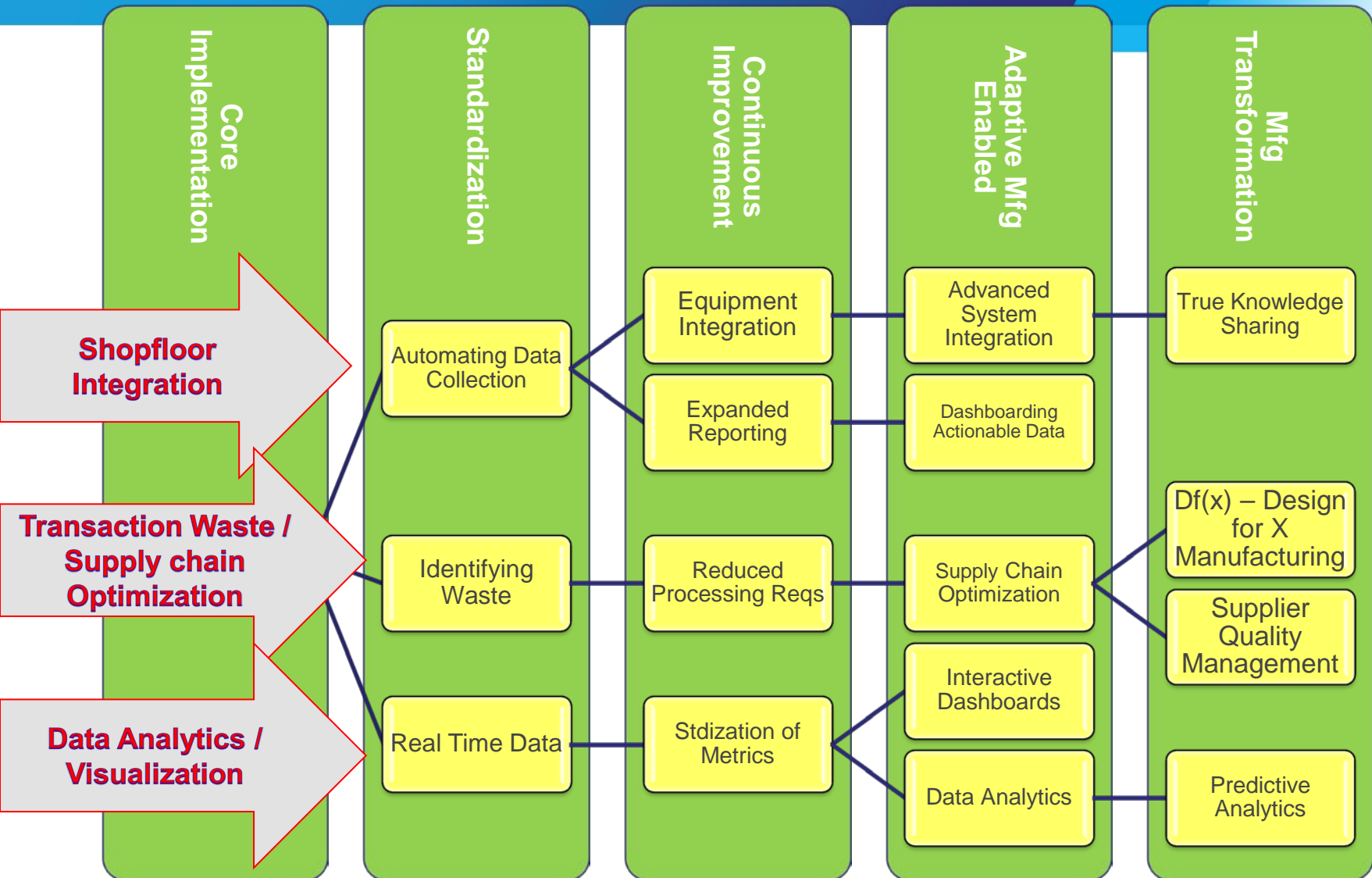
Deployed in 3 plants in Ireland and US, deploying across 5 more plants in next 4 years (US, China, Wales)

MES | Summary Benefits of Initial Deployment

Description	Pre MES (Dec 2014)	Post MES	Savings
DHR Inspection Time	35 mins	6 mins	\$420k per annum + \$~120k (~2FI'S) for CFG
QI Headcount	11	4	
DHR Error Rate	~16% (Hidden Factory)	0.5%	
NCR Disposition Rate	>24 hrs	~ 4-5 hrs (Reduced Leadtime & Increased inventory turns)	\$100k once off through inventory reduction
Leadtime	Persona PS - 4 days NG - 3 days	Persona PS - 2.5 days NG - 2.0 days	
Paper Archival	N/A	\$155K Saving	\$155k per annum
QE Metric Data Collection Ops Review	8 hrs per week	30 mins per week	
Daily Mgmt Report (WIP & leadtime Mgt, Customer service)	2 hrs per day (TL) Run once per day	Run 3x per day (5 mins)	

Extract: From Shannon. Similar Benefits in Galway and Parsippany, NJ

MES | Zimmer Biomet Maturity Mode – Transforming the shopfloor





ZIMMER BIOMET

Your progress. Our promise.™