

American Manufacturing Summit

Scaling Innovation Across Manufacturing Operations

Lean-Led Industry 4.0 Transformation in
Global Manufacturing & Distribution

March 2026


Kelly DiPucchio, VP Operations Innovation



Global Operations and Supply Chain at Medtronic

42,000+ 
team members

60 
countries

60 
manufacturing sites

38k+ 
suppliers
3.7k materials
34k indirect

51 
distribution centers (all tiers)

173M 
products distributed per year
~ **135k SKU's**

200 
contract manufacturers

78M+
patients last year ... that's
two people every second
of
every hour of
every day

Our therapies and solutions span three portfolios to treat more than 70 conditions in the human body



Cardiovascular



Evolut™ FX system



Micra™ AV2 leadless pacemaker



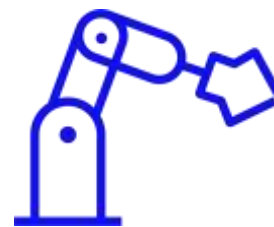
Resolute Onyx™ Drug-Eluting Stent



Sphere-9™ catheter



Symplicity Spyral™ renal denervation system



Medical Surgical



Bravo™ Reflux Testing System



Nellcor™ flexible reusable SpO₂ sensor



LigaSure™ XP Maryland jaw



V-Loc™ wound closure device



Neuroscience



Percept™ PC Neurostimulator



SenSight™ Directional Lead



Atlantis Vision™ Elite anterior cervical plate



Axiom™ QC Coil



Altaviva™ System

Midas Rex™ MR8™ high-speed drill system

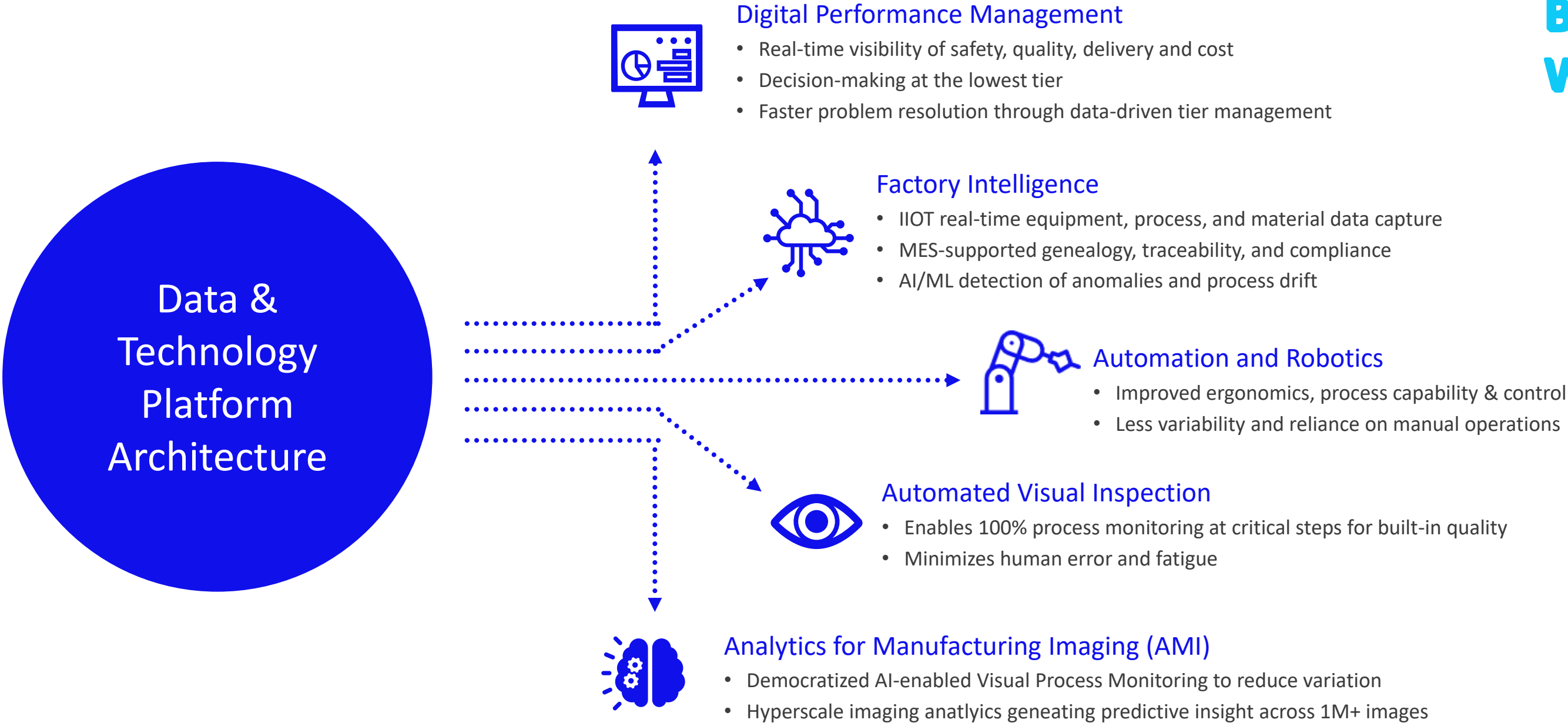


Precision Manufacturing Across Diverse Manufacturing Processes:
extrusion, injection molding, catheter assembly, battery, sewing, laser joining, ultrasonic welding...

Our Operations Innovation Priorities Drive our Roadmap

We can do anything...we can't do everything

One
Best
Way



Our Journey Along the Digital Maturity Curve



Computerization

- Fragmented processes
- Low automation
- Microscopes
- Paper .

Connectivity

- Data Collection
- Equipment Connections
- MES
- CMMS and EAM
- OEE
- LMD / Loftware
- SensorLink
- LiveLink

Visibility

- Digital dashboards
- Digital tier management
- Performance insights
- Action Tracker
- FabriQ
- Connected SPC
- FieldLink.

Predictability

- Advanced analytics
- AI – generative
- Automated inspection
- Image analytics
- Inspire to Gemba
- Eventstream.
- Ask LiLi.

Adaptability

- Closed loop optimization
- Predictive models
- AI – machine learning
- CLC / APC



Adapted from acatech Industrie 4.0 Maturity Index

LiveLink MPS Analytics Hub

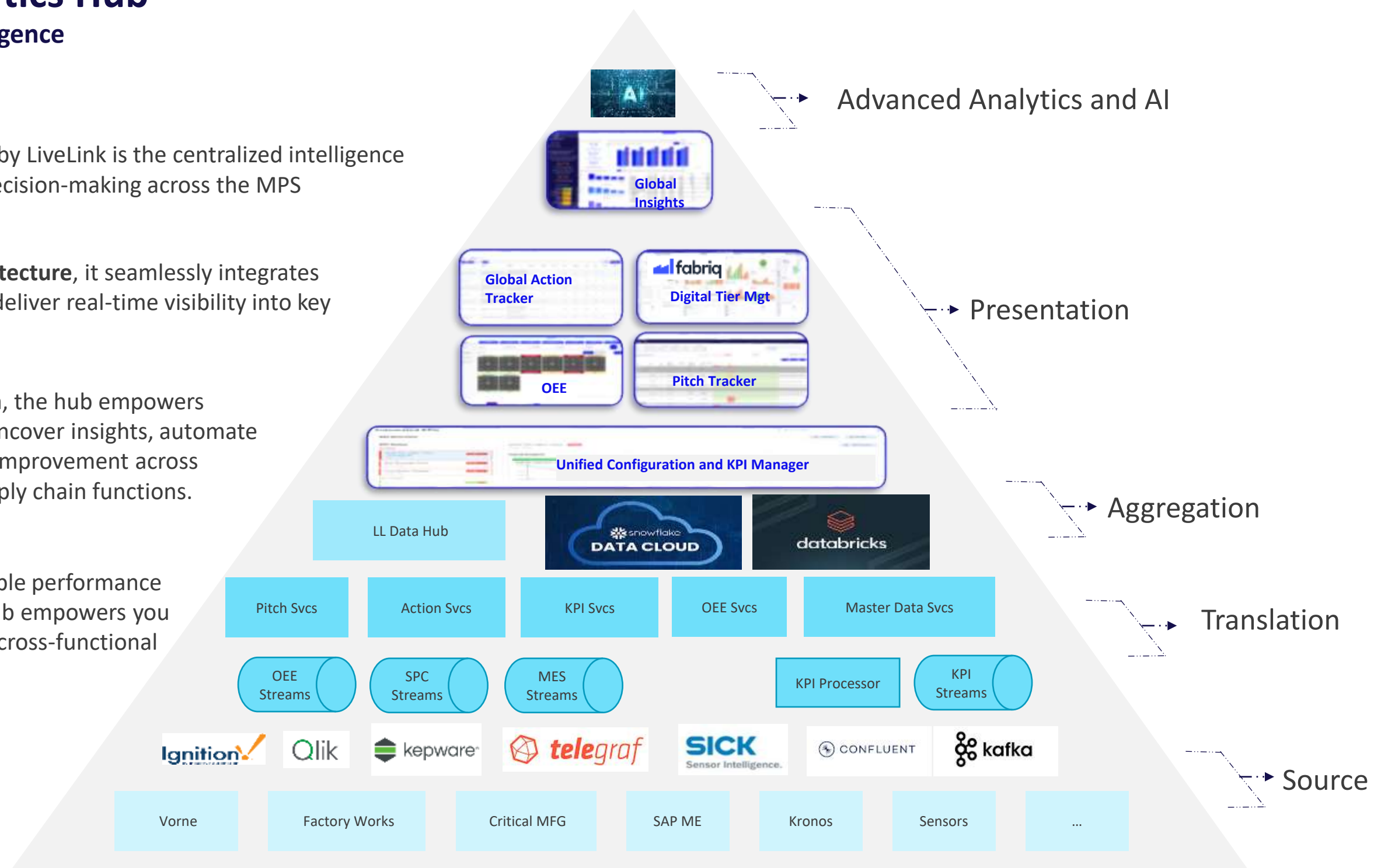
Real-Time Performance Intelligence

The **MPS Analytics Hub** powered by LiveLink is the centralized intelligence database powering data-driven decision-making across the MPS ecosystem.

Built on scalable lake house architecture, it seamlessly integrates operational and strategic data to deliver real-time visibility into key performance indicators (KPIs).

Designed for agility and precision, the hub empowers stakeholders to monitor trends, uncover insights, automate tier boards and drive continuous improvement across manufacturing, planning, and supply chain functions.

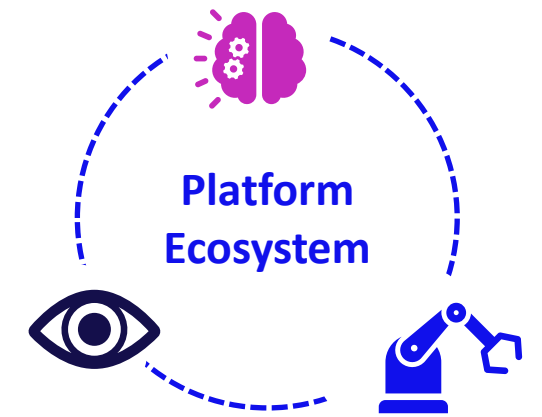
Single source of truth for actionable performance intelligence, the MPS Analytics Hub empowers you to optimize throughput and align cross-functional goals seamlessly.



Scaling Manufacturing Innovation Through Cyber-Physical Platforms

Platforms enable scalable deployment and value

- Build **reusable modules** for common requirements and standards
- Improve **quality, cost, and delivery** performance
- **Democratize** advanced capabilities across manufacturing sites



Integration compounds value



Automation



Scalable subsystems



Imaging & Inspection



Scalable inspection



AMI – Analytics for Manufacturing Imaging

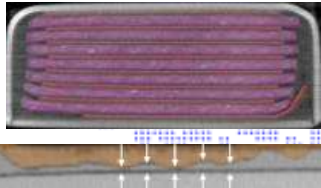


Scalable AI / ML

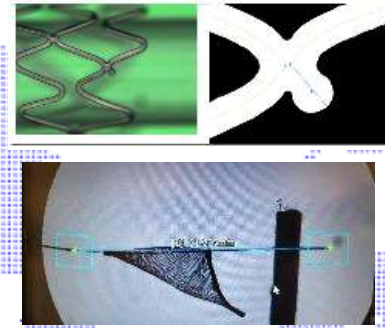
Building capability and scaling innovation with platform ecosystems that span diverse products and processes

Small Sample of Medtronic Manufacturing Imaging Opportunity

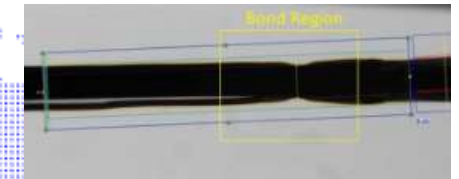
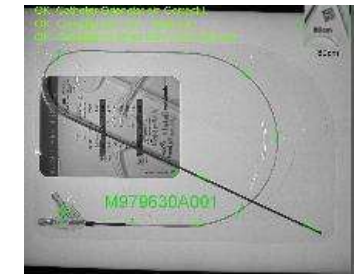
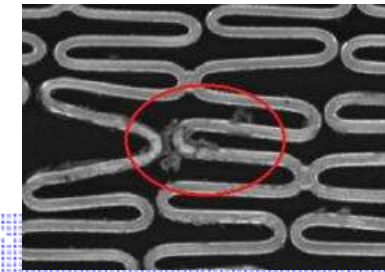
Batteries, seals



Stents, embolism, balloons



Stents, Balloons, Packaging



Labels



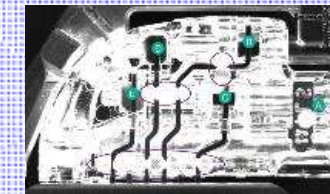
Stitches, Leads



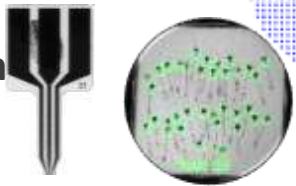
Leads, Catheters



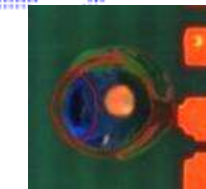
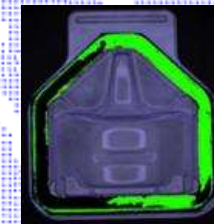
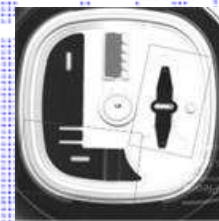
Connectors



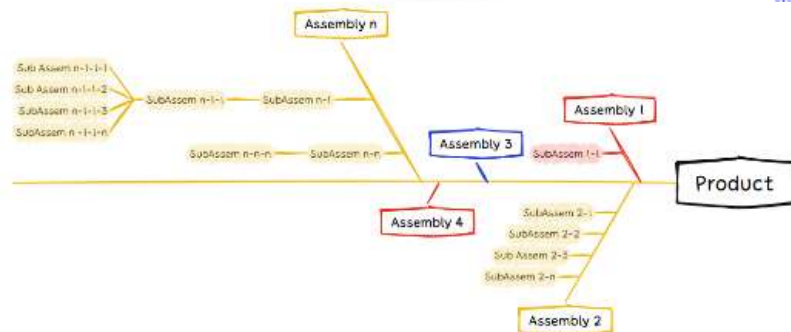
Diabetes Sensor, stent



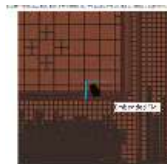
Assemblies, Sterile Seal



Solder, Seals



PCBs, hybrid, wafer



Opportunities:
 Improved quality
 Improved labor efficiency
 Improved processes

Challenges:
 10s of global customers
 100s of applications
 1000s of models
 Millions of decisions

Need Scalable Solutions

~135,000 SKUs

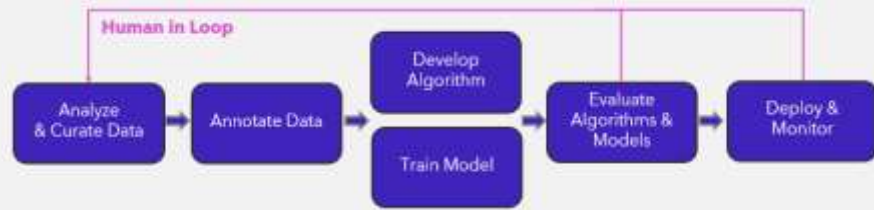
“

Every image,
every analytic,
everywhere,
everybody in Manufacturing

AMI – Analytics for Manufacturing Imaging

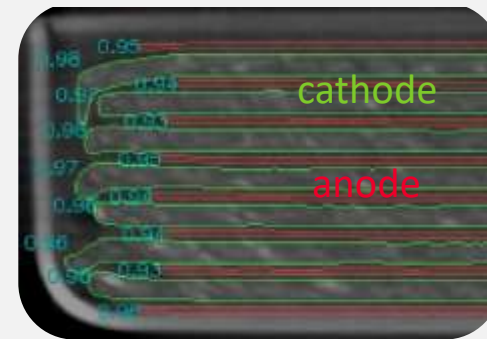
Build and buy computer-vision ecosystem platform

- **Every image** – sensor agnostic (2D, 3D, Xray)
- **Every analytics** – AI, rules, generative AI
- **Everywhere** – one system across cloud, factory data center, and edge
- **Everybody** – democratize capability for everyone



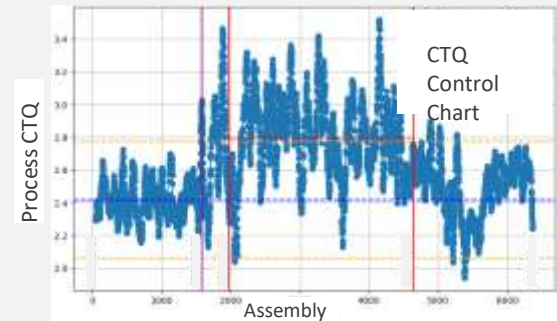
Full computer-vision lifecycle

- Data curation & annotation
- Model development & deployment
- Continuous monitor
- Image sensor & model agnostic
- Hyperscale infrastructure
- Democratized development



Implantable Battery CT

- 13 AI & rules models
- **267,000 images per day**
- Segmentation of electrodes
- Reveals previously unmeasured **process variation**



Images to process intelligence

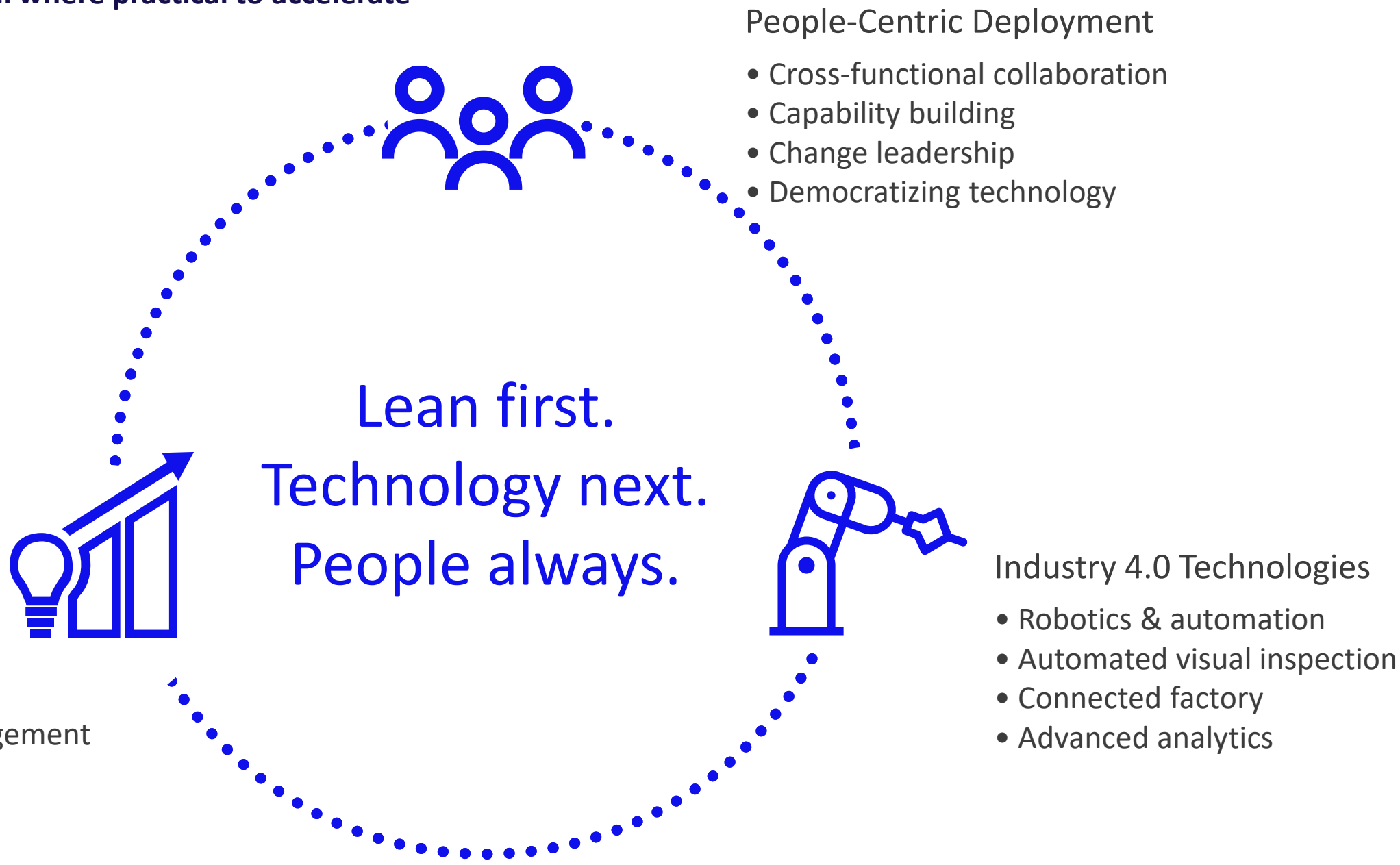
- **Quantified variation**
- Improved yield, quality & cost

Applicable across enterprise – 100,000+ SKUs

Transformation Strategy

In series where possible; in parallel where practical to accelerate

Platforms and System Thinking



Lessons in our Journey

- ✔ Select technology solution to enable MPS*; use MPS* to deploy it
- ✔ Platform portfolio and global standards are key to scaling innovation and adoption
- ✔ Convert the art of the possible into **value**
- ✔ Balanced portfolio of technologies
- ✔ Structured Innovation – POC, Lab, Pilot, Deploy
- ✔ Team sport – engagement and collaboration
- ✔ Fail fast and forward mindset





Thank You

Let's connect:

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