INDUSTRY 4.0 IN ACTION TO TRANSFORM AND SUSTAIN YOUR MANUFACTURING IN COVID-19 PANDEMIC ERA

Speaker: Pimluck Klinmalee

Position: Cognitive Systems Technical Specialist

We want to be a disruptor
not be disrupted.

The age of
of digital disruption

"It's not the strongest of the species that survives...it is the one most adaptable to change."

— Charles Darwin

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Creating your Smart Factory

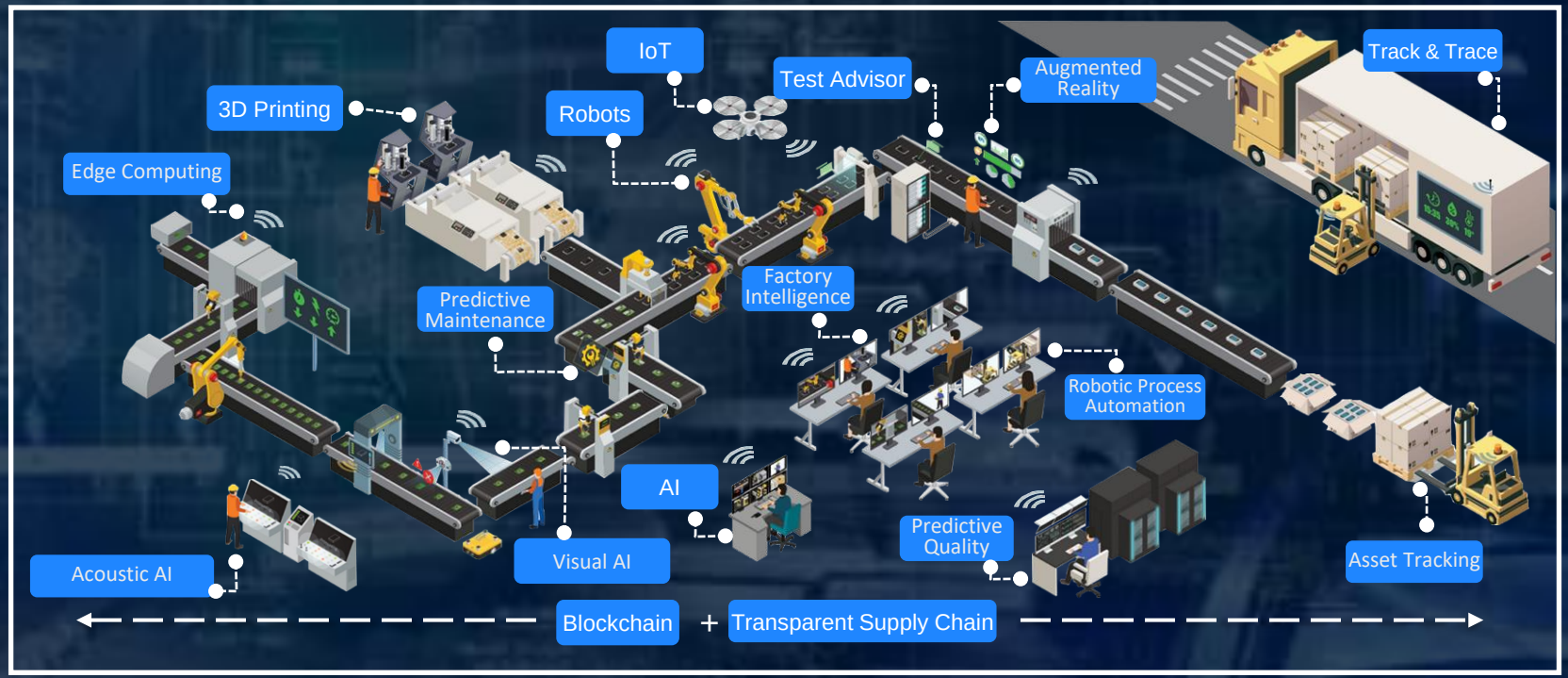
Industry

4.0

Transformation

IBM

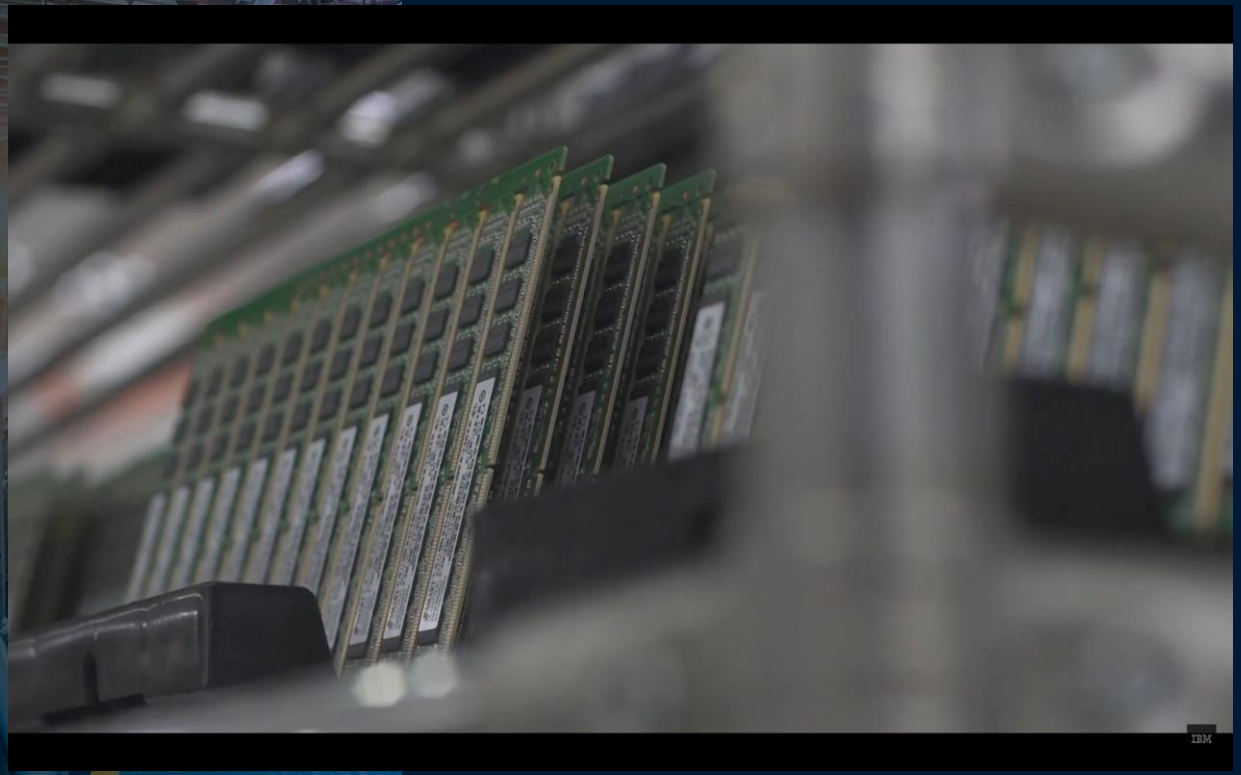
Transform your Business With IBM Smart Manufacturing

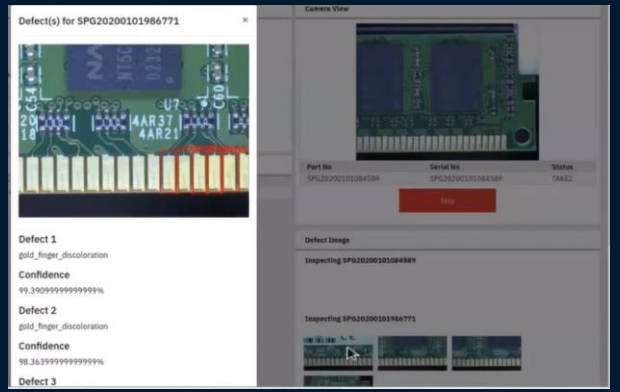


Visual AI Solutions

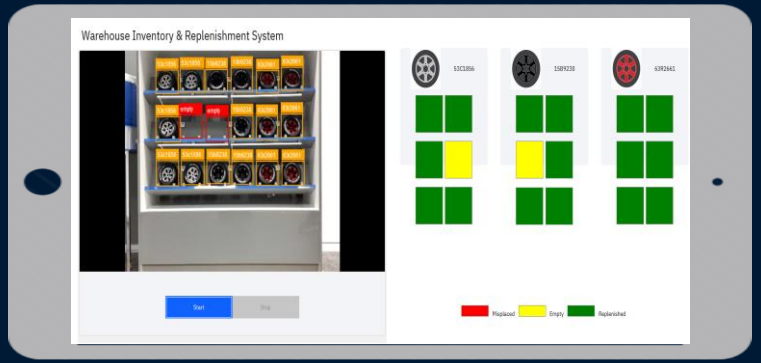
SUCCESS CASE: SMART MODULAR TECHNOLOGIES

Towards Smarter Transformation & Industry 4.0 Roadmap with IBM Design Thinking Workshop for Smart Manufacturing





Intelligent Warehouse Inventory Monitoring & Replenishment using IBM Visual AI integrating with AGVs or COBOTs



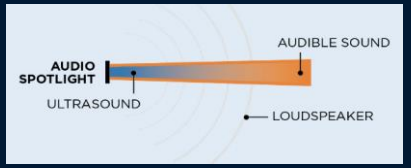
Shelf Management and Replenishment

Integrated with AGV and COBOT

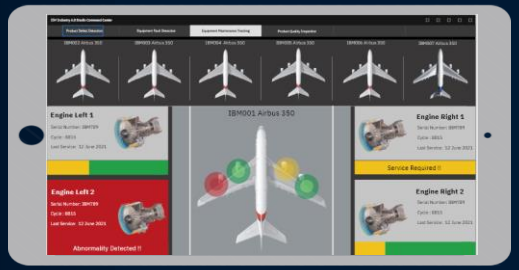
Acoustic AI Solutions

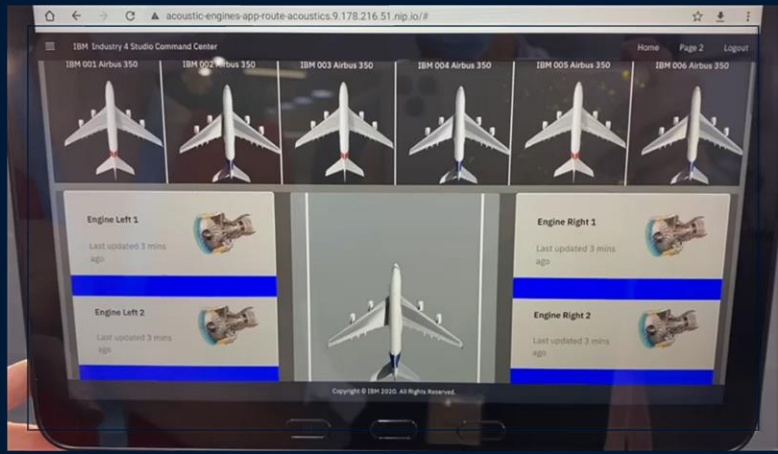
BENEFITS

- ✓ Detect the problems that could not be observed by human being
- ✓ Standardization with high accuracy
- ✓ Automation for high efficiency
- ✓ Lower cost



- ❑ Realtime density inspection
- ❑ Using Robot arm to create data (sound)
- ❑ Marking of inspection
- ❑ Concrete Strength in construction





- ❑ Expand profile to aviation industry to detect
  - ▪ abnormality among multiple engines via
  - ▪ unsupervised learning
- ❑ Apply to pump, compressor for usage tracking, etc.

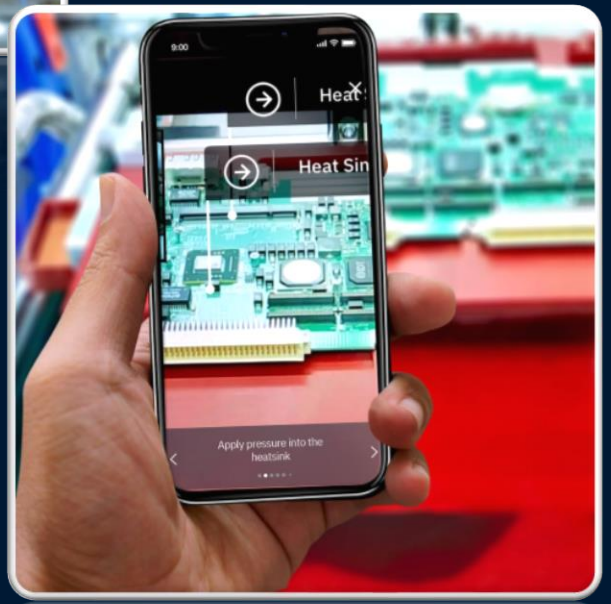
Augmented Reality Solutions

BENEFITS

- ✓ Self training for new staffs
- ✓ No Skill/Knowledge leakage
- ✓ Quick problem solving with remote assistance
- ✓ Reduce cost

REMOTE ASSISTANCE

AR-enabled interaction between an expert and field tech staff

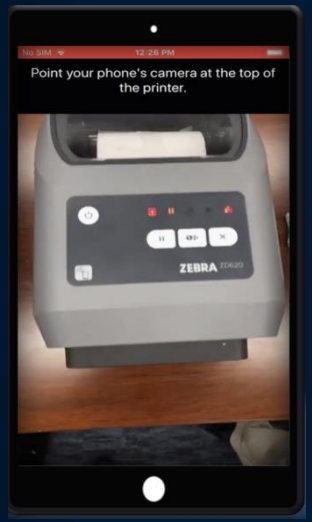


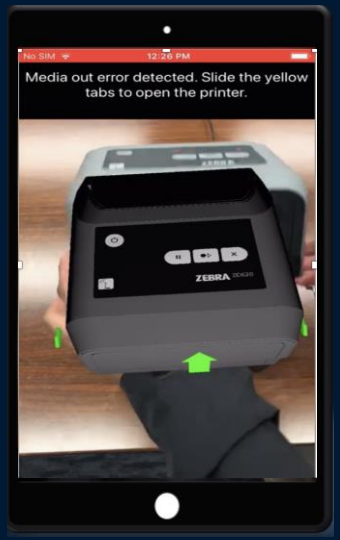
SELF-SERVICE GUIDANCE

Self-driven AR-enabled training, repairing and IoT augmentation

Visual AI & Augmented Reality Solutions

Visual AI, combined with Augmented Reality (AR) tracking, can enable Self-Assist experiences for hardware diagnostics.



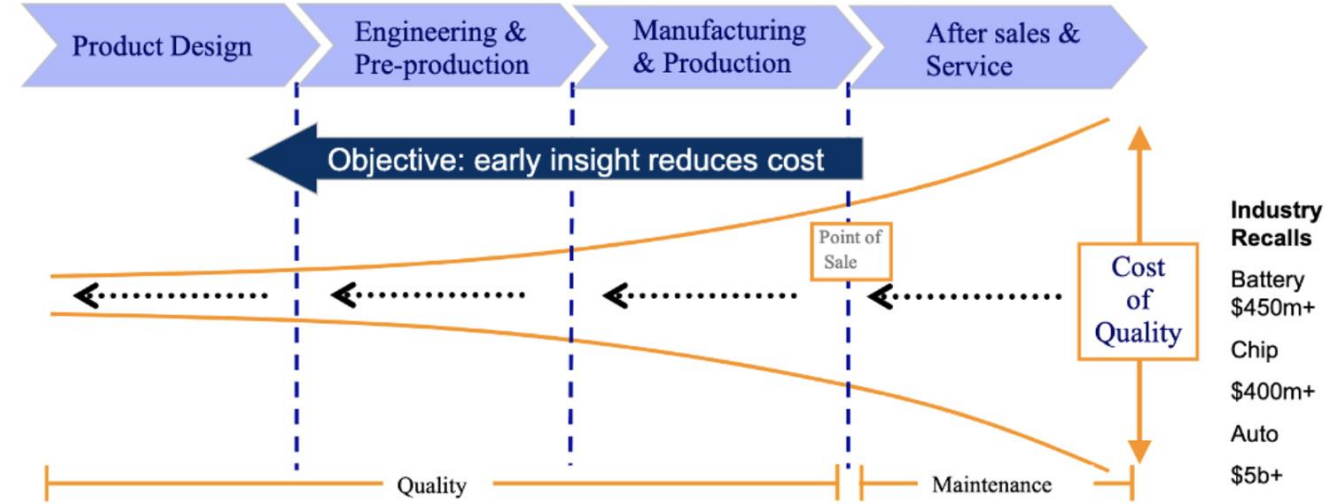


Quality Early Warning System

BENEFITS

- ✓ Reduce cost
- ✓ Reduce delay product shipments
- ✓ Improve customer satisfaction

For Quality Problems, Time is Money



Even a small delay in detecting problems can have big costs:

- reworked or scrapped product
- asset downtime/utilization
- recall of defective product
- higher costs in warranty claims
- loss of customer satisfaction
- delayed product shipments

Quality Early Warning System Example

A steel company applies advanced quality analytics to predict unplanned maintenance events prior to the actual failure event.

Early predictive detection

of developing production and quality problems

Reduces the cost

of lost production and rework or scrapped production due to unscheduled maintenance events

BUSINESS CHALLENGE: Processing of steel slabs through the roughing and finishing operations in a large steel mill was severely disrupted by periodic unscheduled maintenance events. These events resulted in lost production and out of spec product requiring rework, and in some cases scrap. Applying traditional statistical monitoring methods across the large numbers of senor (equipment) variables were inadequate to detect changes that led to these machine failures.

THE SMARTER SOLUTION: With predictive analytics in place, IBM demonstrated how to manage the vast amount of sensor data, derive the key variables that impact unscheduled maintenance events, and apply early detection algorithms for change detection to predict unplanned maintenance events up to 3 days earlier.

Point of interest

"These results are really impressive. Using predictive analytics, IBM was able to consistently detect unfavorable sensor changes well in advance of the unplanned maintenance events."

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Industry 4.0 Technology and Solutions

IBM

BENEFITS:

- ✓ Reduce Costs
- ✓ Increase productivity
- ✓ Standardization with high accuracy
- ✓ No Skill/Knowledge leakage

Visual AI Solutions / Image & VDO Recognition

Area of Technology
- Deep Learning for Object Detection Classification
- Edge Computing
- Video Analytics
- Integration with Mobile/IoT Streaming

Use Cases
- Products & parts inspection
- Model deployment on 5G network
- Defect detection
- Semiconductor & wafer inspection
- PCB board inspection
- Object tracking, and live scoring

AI Acoustic Insights for Preventive Maintenance

Area of Technology
- Sound detection & classification
- Real-time analytics
- Mobile & IoT processing and streaming

Use Cases
- Preventive & corrective maintenance
- Fan/motor/turbine speed detection
- Restricted area surveillance
- Bearing wear and tear
- Machine failure detection & maintenance
- Healthcare for diagnostic assistance

Augmented Reality for Guidance & Self-service

Area of Technology
- Machine Learning
- Predictive maintenance & Quality

Use Cases
- Monitoring via inline tests
- Monitoring via final product test
- Monitoring stability of process operations

Quality Early Warning System (QEWS)

Area of Technology
- Machine Learning
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A Journey to Smart Factory / Industry 4.0

IBM

Industry **4.0** Transformation

IBM

Transform your Business With Supply Chain Engineering Services

Process Foundation

Integrated Operation:
A 360 degree perspective

Companies can improve efficiency and business results through digitizing business processes.

Integrated Supply Chain:
Greater personalization, efficiency and transparency

Digitization of supply chain allows cost, inventory and operational decisions to be made from an E2E perspective rather than in isolation.

Integrated Product Life Cycle:
End to end visibility

PLM captures the entire product development lifecycle through greater integration and digitalization.

Technology Foundation

Automated Enterprise:
A game changer

Utilizes advanced technology to optimize processes without significant capital investment.

Interconnectedness:
A key word for I4.0

IT linking enterprise resources together to support manufacturing processes.

Intelligence:
The brain power

Capability of analyzing/processing data to optimize decision making in the fast changing world.

Organization Foundation

Leadership & Talent Readiness:
A key factor for success transformation

Ability of the workforce to drive and deliver Industry 4.0 objectives through leading edge skills.

Collaboration:
Empowering the workforce

Companies need to work together internally & externally effectively to adapt swiftly in this borderless world.

Structure and Management:
I4.0 is a change of structure and management

Strong leadership, well-crafted strategy & governance framework, are critical to successfully navigate this complex and highly networked world.

SMART FACTORY RAPID WORKSHOP FOR INDUSTRY 4.0

ท่านที่สนใจสามารถติดต่อ IBM และ Datapro Computer Systems เพื่อติดต่อและจองเวลา Workshop สำหรับองค์กรของท่านโดยเฉพาะ เพื่อช่วยปรับปรุงประสิทธิภาพการทำงานทางด้านโรงงานและสายการผลิต รวมไปถึงกระบวนการ Supply Chain ด้วย AI และโซลูชันอื่น ๆ ที่เหมาะสมได้แล้ววันนี้ที่ DCS-IBM Exhibition Booth

รายละเอียดของ Smart Factory Rapid Workshop

Methodology: Rapid Design Thinking for Industry 4.0

Interview : ~ 1 day

Result & Report : ~ 1 week

Executive Presentation : 1-2 hours

พิเศษ
เฉพาะงานนี้!

THANK YOU

”If you don’t adapt,
You get left behind.”

The age of
of digital disruption

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— Charles Darwin

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