



Learnings from Practical Use Cases in Proactive Asset Performance Management

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Brief Introduction to MESA



Global community for improving Operations Management with IT

Best practices & guidance to drive productivity & profitability

Global Education Program raising competency for production IT success

Facilitate innovation for real-time Plant to Enterprise (P2E) integration

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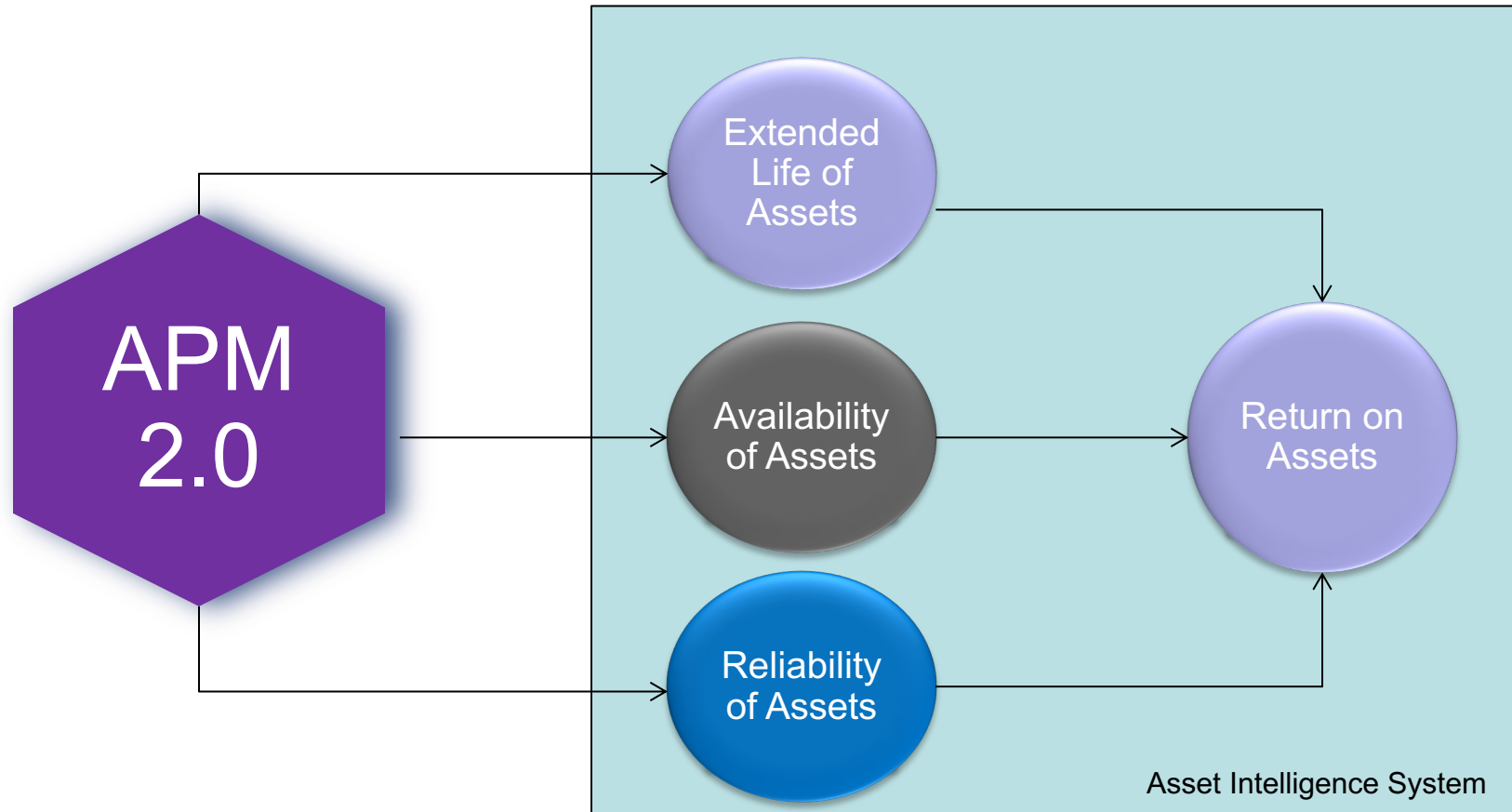
MESA Resources

- White papers
- Smart Manufacturing/Industrie 4.0 focused studies
- Developing a Maturity Model for Smart Manufacturing
- MESA “Metrics that Matter” Research Studies
- Guidebooks
- B2MML and BatchML XML instantiations of ISA-95
- Other presentations or webcasts
- GEP modules



*100's of materials available to Premium members
at no additional charge*

Asset Performance Management Working Group



APM 2.0 - Proactive Asset Life/Health Maintenance Using Asset Intelligence

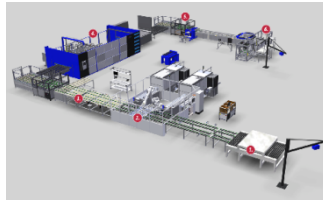
Asset Intelligence System Rules Based Asset Health Monitoring and Orchestration of actions

Asset Availability/ Operational KPIs/
Maintenance Status Updates

Key Metrics'
Updates



Senior
Management



Real time & Historical
Asset conditions



Asset Lifecycle and
Maintenance
information

Work orders/
Schedules/
Root Cause Updates



EAM/CMMS

Plant Supervisor

Plant Floor

Proactive
Asset Life/Health
Maintenance



Maintenance Personnel

Emerging failure conditions,
Opportunistic Predictive
Maintenance,
Opportunistic PMs,
Operational Metrics,
job plans/dispatch info,
Maintenance reports



Maintenance Supervisor

Proactive Work
Orders waiting
for approval



Mobile or
Web
based
approval
of
Work
Order

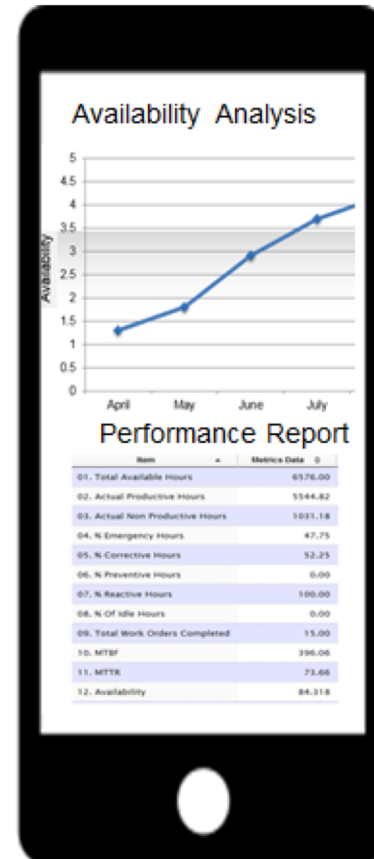
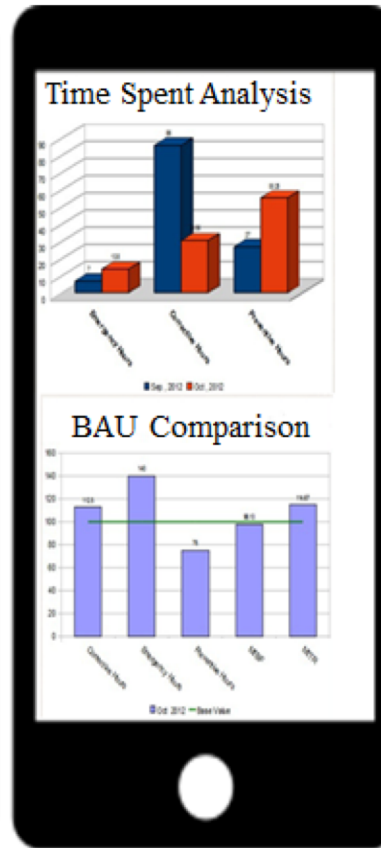
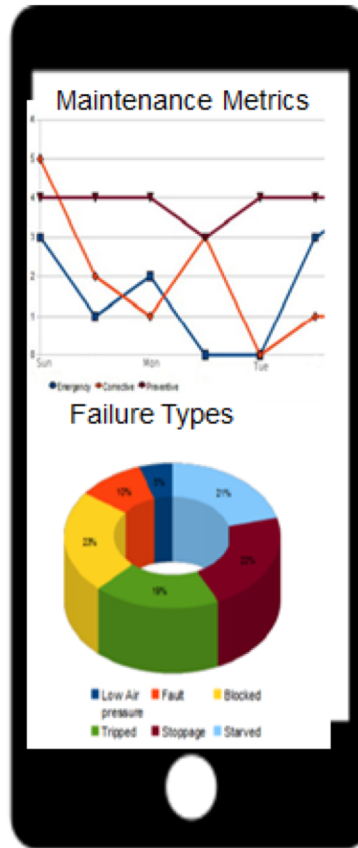
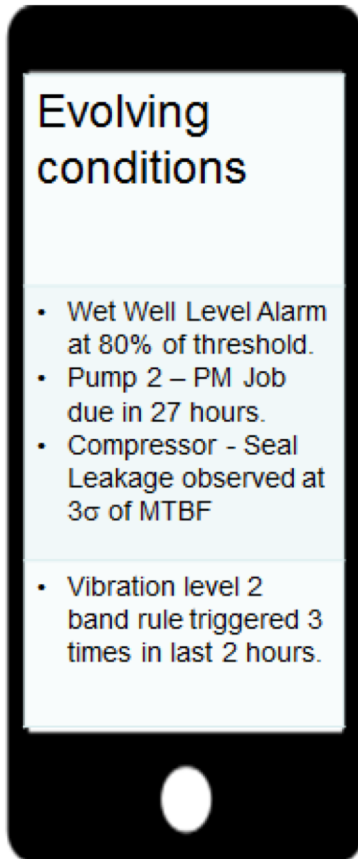
Work Order Closure

Use Case 1: Proactive Reports

Field Personnel

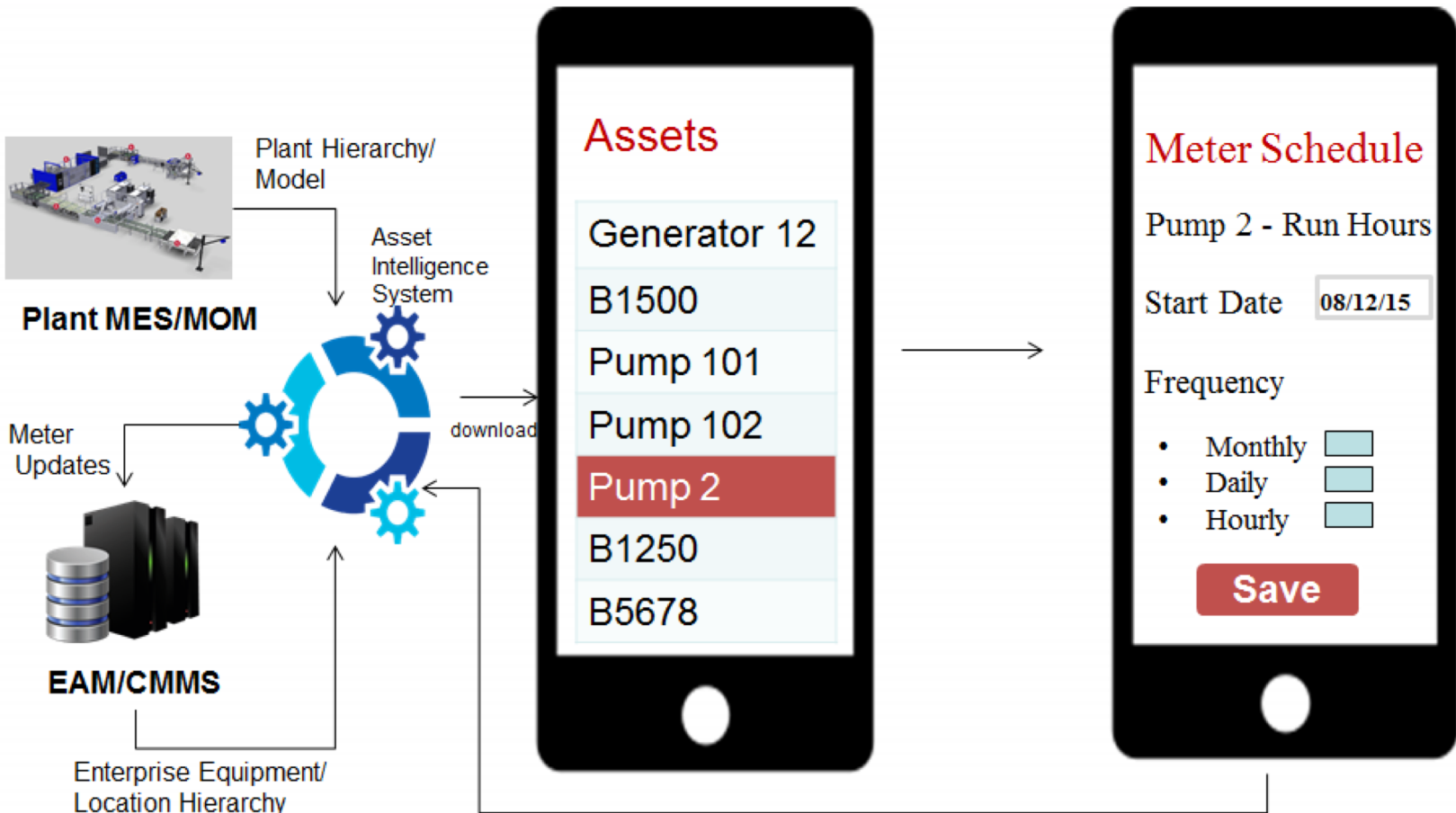
Line Supervisor

Senior Management/CxOs



Learning 1 : Real time and unified visibility of asset health helps in proactive decision making .

Use Case 2: Schedule Proactive Asset Health Maintenance



Learning 2: Cultural change required to move from date based to usage based PMs

Use Case 3: Download Work Order Details, Perform Work Order, Close & Notify



Learning 3: Knowledge of the problem and corresponding job plans at the time of dispatch reduces MTTR .

Use Case 4: Create/Open Opportunistic Work Orders to Correct or Prevent Potential Failures

Today's Plan

Lift Station 02
Pump 101 – Oil Change – SR00345
Lift Station 03
Generator – Oil Change – SR00456
Wet Well – Rag Removal –
Inspection
Last Updated 2 minutes ago

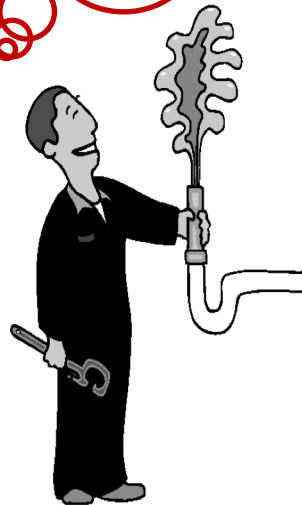
Reach Location



Start Day

Perform Job Plan

Suggestion to check
another problem in a
different asset –
Pump 201 seal
imminent failure!



Pump 201

Discover another problem
during maintenance.

Work Order

Asset: Pump 201
Location: Lift Station 02
Description: Pump seal
replacement
Priority: HIGH
Type: Predictive

Create

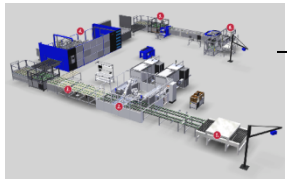


Create a new Work Order

Learning 4: Opportunistic, proactive asset health care can eliminate future costs.

Use Case 5: Update Root Cause

MES/MOM



Alert on emerging failure condition

Asset Intelligence System



Cluster Analysis
Machine Intelligence
Remnant Life Analysis



Job plan download

EAM/CMMS/
Cloud Big Data
Infrastructure

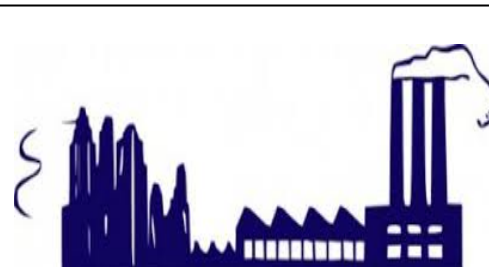
Update Root Cause



Work Order: WO67541

Asset: Pump 103
Location: Lift Station 42
Description: broken pump
Type: Corrective
Cause: impeller wear ring damage
Action: replaced wear ring

Update Root Cause



Perform Corrective
Maintenance @ site

Learning 5: Ease of updating root cause allows for subsequent useful strategic analysis.

Use Case 6: Advance PMs to Optimize



Complete Corrective Maintenance



Check imminent PMs

Lift Station 57

- Wet Well Level Alarm at 80% of threshold.
- Pump 2 – PM Job due in 27 hours.
- Compressor - Seal Leakage observed at 3σ of MTBF



Select Action

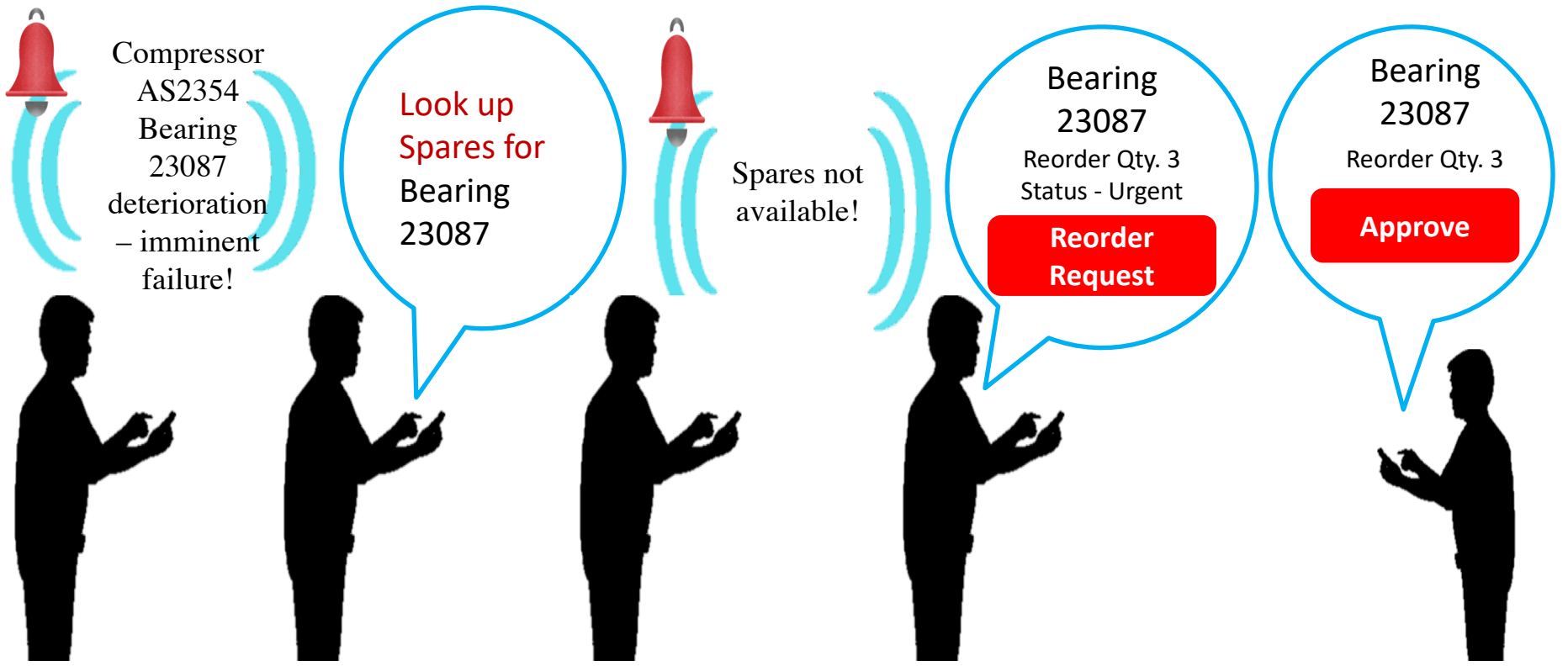
Wet Well - Open Service Request

Pump 2 – Advance PM

Compressor – Open PM work order

Learning 6: Dynamic decision making on PMs optimizes interventions/costs.

Use Case 7: Spare Parts Opportunistic Reordering



Plant Supervisor receives alarm

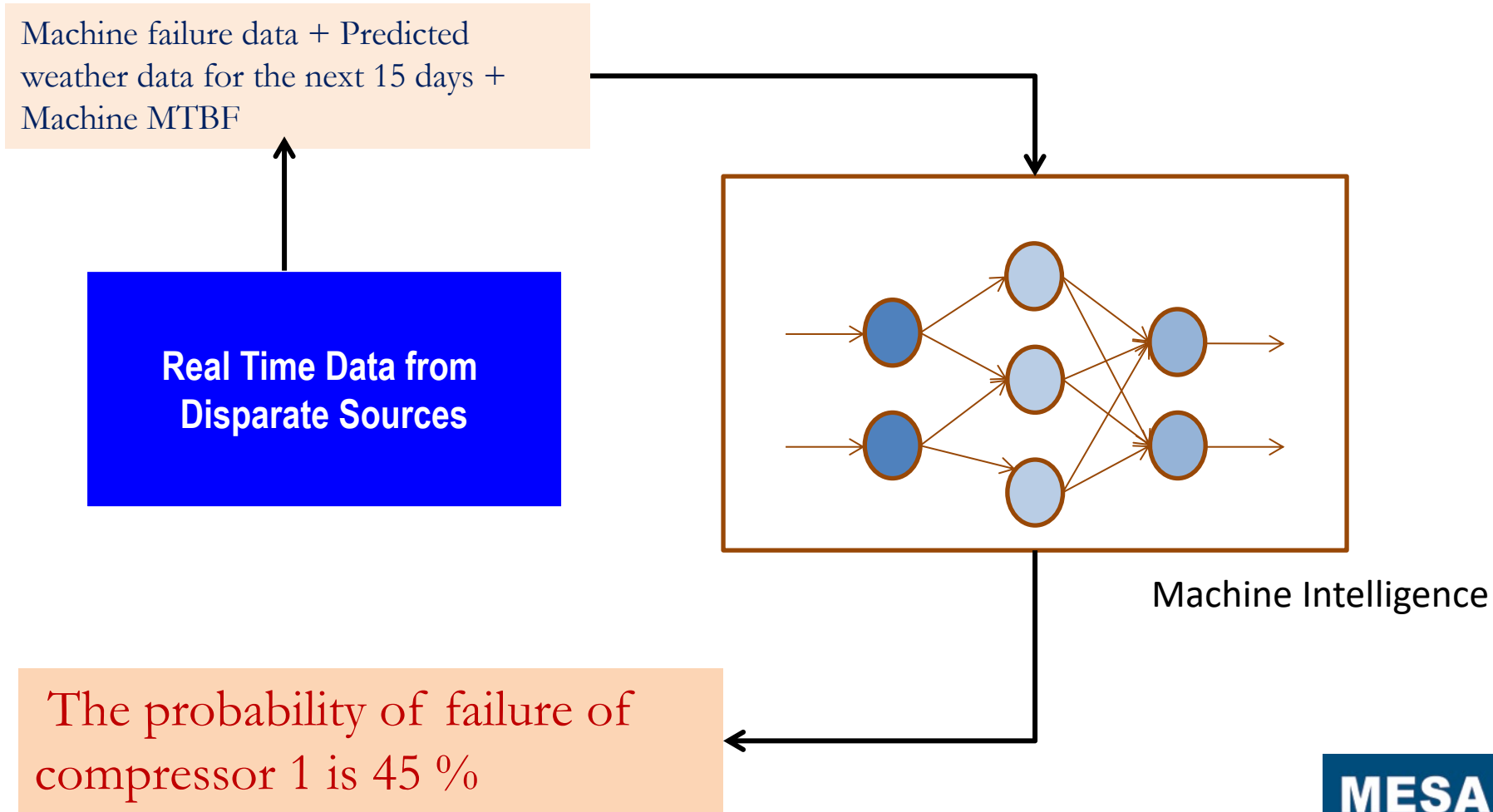
Reviews Spares

Requests Reorder choosing status option as "urgent"

Purchasing reviews and initiates reordering

Learning 7: Vertical integration improves efficiency.

Use Case 8: Machine Failure Prediction



Learning 8: Good process compliance leads to good quality data which in turn is key to useful prediction

Thank You