DATA IS POTENTIAL

Moving Decisions to the Edge with Guided Analytics at Seagate

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About Seagate

You May Know Seagate as a Hard Drive Manufacturer...

- #1 OEM storage
- 1st to build and ship a collective zettabyte to the world
- Stores more than 40% of the world’s data
Background & Presentation Overview

● 4 years into the guided analytics journey:
  ○ 2016: Evaluate different guided analytics software
  ○ 2017: Awareness: workshop, training across Seagate
  ○ 2018: Desktop version: development and deployment
  ○ 2019: Server version: development and deployment. Explore edge analytics use cases.

● Presentation Overview
  ○ Moving decisions to the edge
  ○ Guided analytics
  ○ Demo
  ○ KNIME Server deployment highlights
Data is shifting to the Edge

What Is IT 4.0?
Let’s take a look at how the data industry got here—and at the business opportunities IT 4.0 enables.

Image: Seagate Technology
Data is shifting to the Edge

- According to Gartner, 91% of today’s data is created and processed inside centralized data centers.
- By 2022, ~75% of all data will need analysis and action at the edge.
- Technology drivers enabling the massive shift of data to the edge:
  - Artificial Intelligence
  - IoT devices
  - 5G
  - Innovations in edge data centers
- Driving demand for edge processing, edge computing and moving decisions to the edge.

*Source: State of the Edge. Data at the Edge*
High-Tech Manufacturing: From Wafers to HDD

Each 200 mm wafer contains 10,000’s of sliders.

A slider is also called a recording transducer

We make 1 Billion transducers per year

Operations in Normandale, Springtown, and in Korat, Wuxi, Singapore
Centralized or Edge Decision?

- **Centralized IT**: routinized or scheduled processing.
- **Edge computing**: What if a quick decision is needed on the factory floor? The power of immediacy.

- *Ad hoc* fast decision.
- Routine batch automation. Push ML/AI decision to RDBMS.
- ML model active learning and improvement.
KNIME Server in Edge Analytics Infrastructure

Address Factory Daily ML/AI Problems
Moving Decisions to the Edge with Guided Analytics

Interactive Edge UI

- PoC KNIME dashboard for Seagate smart factory AI
- Automated defect identification with optical inspection image data from Seagate factory IT 4.0 system
- Potential excursion detection ~4 days earlier with better detection sensitivity
Problem: Long manufacturing time for Recording Heads. Feedback on product performance can take months.

Benefit: ARIMA modelling highlights single anomalous data points before the actual physical product arrives at the point of measurement.

Saving: Cost and resource saving from highlighting under performing products earlier.
KNIME Server in Product Performance Engineering

Operations Scheduling

Problem: Integration with a variety of data sources for input and output required to generate weekly reports. Data updated daily.

Benefits: Workflow easily deployed and scheduled on KNIME Server. Integration with range of data formats.

Saving: Many Engineering hours saved each week in generation of reports. Automated solution easily setup to run frequently on KNIME Server.
Embedding KNIME in a High-Tech Manufacturing & Engineering

Cross Pollination and Synergy between groups

Data Analytics

Failure Analysis

Quality

Manufacturing

R & D

Industrial Eng

Process Eng
Embedding KNIME in a High-Tech Manufacturing & Engineering

- Waves of Hands On Training ~110 People
- Implement Functional ROI Use Cases Across Groups
- Workshops to get Ideas and Traction for New Projects
- Shared Area to Assist and Enhance Learning
- Google + Community – Communication and Engagement
- Early Adopter Use Case Session

Pathway of KNIME for Data Analytics and Task Automation in Seagate Springtown
Summary

● Increasing Demand for Edge Processing & Edge Computing
  ○ Moving decisions to the edge

● Implementation: High-Tech Manufacturing & Engineering Environment
  ○ Smarter
  ○ More agile
  ○ Cost saving

● Enterprise Level Guided Analytics & Integration Platform
  ○ KNIME Server
    ■ Intuitive development environment
    ■ Enhance collaboration
    ■ Powerful integration platform
    ■ Easy deployment

● Embedding KNIME
  ○ Strategic approach
  ○ From organic growth to rapid multiplication
  ○ Enable: repeatable processes & excellence