MAXIMIZING DATA’S POTENTIAL

Data Analytics in Data Storage Device Development and Test

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Agenda

• About the Speaker

• Drive Design & Development Analytics Platform

• KNIME Applications & Working Cases
  • Integrated analytics platform
  • Parallel data query
  • Device failure mode recognition & prediction
KNIME Deployment with Device Test Analytics Platform

Data Source

- ASIA Op
  - Test Raw Data Format
  - Parsed Data Format

KNIME Analytics Platform

- Query Module
- Data Analysis Python Modules
- User Interface

US Op

- Structured Data Format
- Failure Mode Recognition
- Data Process
- Data Table Report
- Data Plot Report
- High Level Word/PowerPoint Report

Global IT

- SQL Database
- R based Web Portal
- Engineering Level 1
- Engineering Level 2
- Management
Intelligence Platform for Device Design and Test

- KNIME as a key enabler to drive the entire analytical streamline process.
KNIME: an integrated analytics platform that streamlines query, analytics, and reporting.

Cross platforms: Windows, Mac, Linux (cluster server capable).

Open source (cost reduction).

GUI: visually create data flows, pipelines.

Integration: Java, SQL, Python, Perl coding fragments, as well as R and ImageJ open source projects.
Work Case Scenario: Device Test Data Analysis
Work Case Scenario: Parallel Data Query

- KNIME enables powerful parallel query mechanisms to maximize data query efficiency.
Work Case Scenario: Device Failure Prediction

Drive Test and Failure Analysis Module

- Machine readable failure mode classifications.
- Human readable plots and summary tables to digest and understand failure symptoms.

FM Regression & Prediction

\[ f = f(x_1, x_2, a_1, a_2, a_3) \]

Data Visualization and Auto Report

- Python Snippet IF Switch
- Concatenate
- Python Snippet IF Switch
- Concatenate
- Python Snippet IF Switch
- Concatenate
- Python Snippet IF Switch
- CSV Writer

Input \((x_1, x_2)\)

Parameter \((a_1, a_2, a_3)\)

Matching Score xx.x\%