SPOTFIRE AT HESS CORPORATION
Leveraging the Power of Data to Drive Agile, Efficient, and Smart Business

*Disclaimer: This presentation should not be taken as an endorsement of any specific product or service.*
WHO IS HESS
1933
Founded by Leon Hess

Purchased a 1926 second-hand 615-gallon oil delivery truck and begins residential delivery seven days a week.

Balanced
Portfolio Distribution

Hess Corporation is a leading global independent energy company engaged in the exploration and production. Our portfolio is about evenly split between unconventional and conventional; U.S. and international; and onshore and offshore.

1998
Early Adopter of Emerging Technology

Hess was the first energy company to discover an oil field using reflection seismic and among the first energy companies to leverage parallel processing for large data.

Lean
Embraces Lean Manufacturing Techniques

Hess improves Well Performance and Reliability through continuous improvement and streamlines identification and resolution of issues to reduce waste and increase efficiencies.
Hess is a leading global independent energy company engaged in the exploration and production of crude oil and natural gas.

- Operations in **10** countries with **24** offshore fields; Shale Oil and Gas in the Bakken (ND) and Utica (Ohio)
- Ongoing exploration ventures in the Gulf of Mexico, Europe, Africa, and offshore Australia.
- **350,000** boe / day production forecasted for 2016
- **3,000** employees / contractors
Spotfire Dashboards in Production at Hess
Tree Map size by Popularity
User Adoption Rate

Usage has doubled over the last year to 575 unique users per month. This does not include add-on users.

SPOTFIRE AT HESS

WIDESPREAD

Diversified User Groups

Spotfire is used today by Engineering, Geoscience, Drilling & Completions, Operations, Supply chain, Finance, Environmental Health & Safety, Audit, IT, and the demand is growing…
The most accessed reports of 1,400 Total Reports in the Spotfire Library
Tools like Spotfire help to analyze vast amounts of data from a variety of sources in an intuitive, visual environment to spot trends, outliers, anomalies, threats, and opportunities.

- Mash-ups of data from operations and financials
- Cross plots, GIS Maps, Graphs, and Bubble Charts
- Aggregates, Detail Drill Downs, and Trending
- Data embedded workflows
- Graphical reporting and data visualizations for Line of Sight
- Corporate Metrics / Dashboards / KPIs
- Multivariate Analysis
USE CASE

Report Total Recordable Injury Rate (TRIR) and High Potential Incidents (HiPos) and identify correlations.

Reported by Asset, equipment, location, personnel, severity, function, time, weather, number of hours worked, etc.

Data Blended: Incident Tracking, Contractor Work Hours

VALUE

Identify correlations to implement preventative and mitigating barriers to reduce occurrences.

Reduce emergency incidents, unplanned down time, and impact to human health and the environment.
USE CASE

Making Production Operations Lean:
Production Reliability and Availability

Production and Injection Reliability & Availability, Integrated
Capacity, Opportunity Management, Surveillance Forecast Accuracy,
Safety Observation Rate, Critical Maintenance Compliance,
Maintenance Schedule Compliance, Preventive Maintenance
Compliance, LOPC by Month, % Work Order Utilization, % Orders
Overspent

Data Blended: SAP PM / financials, Field,
Production, Operations, Safety
- Relational + Data Lake

VALUE

Continuous improvements to increase
reliability and availability through cross-
assets comparisons
USE CASE
Reduce Non Productive Time (NPT)
Reduce Non Productive Time (NPT) by analyzing a variety of data to determine root causes of equipment failures, crew delays, or well bore issues, and take corrective action to reduce cost and time overruns.

Data Blended: WellView, EH&S, Quality - Data Lake

VALUE
Presentations / discussions using data driven information from source systems real-time
USE CASE

Generates operational exceptions after thresholds exceeded and creates workflows

- Tracks work status, KPIs of Workflow
- Exceptions by location and priority
- Identifies vehicles in the area

Data / App: Web (HTML/JS) Mashup from various apps: workflow, GIS, ...

VALUE

Integrate workflows and data from different sources into applications

Real-time GIS update
USE CASE

- Data Visualization center for Bakken well performance and asset value maximization planning
- Combines data from a number of sources to establish a view of the asset

Data Blending: Well Performance, Well mechanical vs. reservoir behaviors to focus efforts, Gross Oil Production by Area, Asset Production Forecast
- Data Lake + Model / db layer

VALUE

Holistic Asset view to maximize overall value

Embedded predictive model – forecasting and decision making
USE CASE

Visualize data before and after Analytics

Visualize data prior to the development of analytics and to view the results after development and implementation

Data Blended: Rigs, Drilling - Data Lake, cloud

VALUE

Facilitates the preparation and presentation of analytics results
Challenges
ISSUES EARLY ON

**Increased Incidents**
- Increased support tickets
- (3) major incidents in (6) months
- Record volumes in data migration – self-induced end-user issues

**Rapid Growth Rate**
- Increasing number of new reports, changes, mentoring / training requests

**Insufficient hardware & setup**
- Undersized hardware
- Single point of failure
- Discovery, collaborative, and operational reports running on the same production server

**Lack of guidelines & best practices**
- Lack of guidelines for report development
REMEDICATION PLAN

IMMEDIATE REMEDIATION (MONITORING)

- Enforce daily manual and automatic system monitoring

ENHANCE PRODUCTION ENVIRONMENTS

- Establish a separate, high performance Production Operation environment to better manage Service Levels
- Provide ongoing vetting, testing, and migration of Production-Ready work to “production” environment

ESTABLISH A SPOTFIRE CENTER OF EXCELLENCE (COE)

- Ensure adherence to “coding” standards
- Publish Service Level Agreement and usage metrics
- Administration and support
- Resource leveling for ongoing work

IMPROVE COMMUNICATION

- User group meetings
- Email Support
- Yammer / SharePoint
- Change Management
• Works closely with end-users to understand business value of requested report or dashboard

• Trains end-users to be knowledgeable and responsible data consumers and owners

• Ensures all artifacts adhere to best practices and Hess strategic initiatives

• Collects, classifies, and makes available reports in a “resource library” to ensure consistent usage and data sources

• Performs all technical application changes (e.g. database, security, patches)

• Establishes /maintains an operational environment with an SLA

• Creates metrics detailing report cycle time, incident counts by period, and incident resolution times
COE PROCESS

**Discover**
- Request Submitted
- User Installs Tools
- Prototype Developed on Local Machine
- Data Mining and Discovery
- Guidance/Mentoring and Stage Gate

**Collaborate**
- Collaborative Development
- Data Validation and Testing
- Dashboards or Cubes Created upon Request
- Query Optimization
- Application of Security and Best Practices

**Execute**
- Compliance Review
- Critical Report Migration
- Managed Deployments
- Incident Management
- Enhancement Backlog

**Takeaways**
- Self-Service
- Users have Full Control
- Proof of Value
- Iterative
- Best Practices
- Controlled Source
- SLA Driven/High Uptime
- Health and Administration
- Continuous Improvement

**OWNERSHIP**
ENTERPRISE

Enterprise value-bias priority placed on enterprise reporting vs. local issue resolution:
- Provides highest NPV / IRR, regulatory requirements, etc.
- Utilize Approval Process & RACI
- SLA-guaranteed production environment

SELF SERVICE

Encourage Self-Service:
- Publish / Encourage Best Practices
- Enable through Data Lake, Data Catalogue and standard data sources
- Support Exploratory “sandbox”
- Use KANBAN board to manage demand
WRAP-UP

Change in Customer Base

- Data Driven
- Outgrown Excel for Analysis and Metrics
- New Professionals / Engineers are IT-savvy

Managing Growth

- Governance
- Standardized data sources / information links
- Self-Service:
  - Discovery Tools with User Scoring / Commentary
  - Data / Definitions based on Well Lifecycle
THANK YOU