Digital Oilfields and Decision Support Applications at Chevron SJV

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Summary

- Chevron’s UWT Mobility is providing real-time dashboards embedded into their business processes and workflows.
- Human workflow is exposed for SMEs to provide real-time analysis and share recommendations with Decision Makers.
- Using OSIsoft’s PI System and Microsoft technology, this analysis is converted into Engineering Algorithms and fed into the Applications BI process.
- SharePoint is leveraged to provide real-time insight to decision makers.
- Real-time information is also provided to mobile operators using handhelds via dashboards, and trends.
- This innovative approach keeps feeding intelligence back into the system for ever-improving value.
- M2M enables wireless based real-time sync-up of the data.
UWT Mobility

Addresses Upstream Field Data Capture Needs for

- Reliability
- Asset Integrity
- Health and Equipment Safety

Following are the Priorities:

- Elimination of Paper based data capture and redundancy
- Promote Condition based Data Capture and Automation
- Attain Real-time Data Monitoring at Decision Support Centers
- Provide Real-time Data Accessibility in Fields for Performance tuning
- Promote M2M Communication
Upstream

- Thousands of wells and other assets scattered across wide area
- Need to capture data from remote locations using:
Challenge

Upstream asset surveillance and remote field data gathering needs

- Thousands of wells and other assets scattered across wide area
- Need to capture data from remote locations using:
  - Paper based routes
    - Cumbersome
    - Not Real-time
    - Hard to track information
  - Home Grown Excel and Access based Apps
    - Data Redundancy
    - Hard to find Required Information
    - Hard to maintain across the team
    - Hard to maintain Security Features
  - Other Point Solutions
    - Need for 3rd party access privileges
    - Maintain Role Based Security Features
    - Role Based Security
    - Hard to meet Report Requirements
    - Real-time Dashboards and Data Integration for the same
    - No single source to capture the BI
Solution (MDSA Framework)

Chevron MDSA framework using SharePoint Application with OSIsoft PI System

**LEGACY**

- Paper based routes
  - Cumbersome
  - Not Real-time
  - Hard to track information
- Excel and Access based Apps
  - Data Redundancy
  - Hard to find Required Information
  - Hard to share across the team
  - Hard to maintain Security Features
- Other Point Solutions
  - Need for 3rd party access and enabling such security access privileges
  - Hard to Maintain Role Based Security Features
  - Hard to meet Report Requirements
  - Real-time Dashboards and Data Integration for the same
  - No single solution to capture BI

**CURRENT**

- SharePoint Forms
  - Condition Based (InfoPath)
  - Real-time Data Capture stored in MS SQL
  - Track Online using WebParts
- SharePoint Excel and Access Services & SQL
  - 360 Degree view of Data
  - One Search feature of SharePoint
  - SharePoint C&C
  - Role Based Security and Federation
- SharePoint Custom Applications
  - Federation using Claims based Authentication
  - Role Based Security Features using SharePoint Groups and AD
  - Performance Point and SSRS
  - OSIsoft PI WebParts, Microsoft SQL SSAS and SSRS
  - Microsoft SharePoint and OSIsoft PI System tools like PI AF and PI ACE
Handheld devices provide real time data and two-way communications between field technicians and operations.
MDSA Framework Approach

Decision Makers

Business Logic

Information Systems

DSC

Research & Development

Quality Assurance

Legal Department

Distribution

Marketing

Site

Information Systems

M2M

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MDSA User Interface

Time Period

Region
Americas > SJV

From
Date: 01
Month: MAY
Time: 14:30

To
Date: 01
Month: JUN
Time: 14:30

Submit

Home
Usage Screen
Chemical Cost
Monitoring
Process
Train
Logs

Context Sensitive Tabs

Levels of Expertise in Monitoring

Chemical and Corrosion
HMBP
V&V
Rotating Equipment
ORD
Fleet Management
Scorecard
Emissions

Monitoring Context

Tree Maps providing option to drill down and see Diagrams, Maps etc

List of Menus visible are based on User Profile

Joe Doe

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What is M2M?

- Sprint
- Private Carrier
- Verizon

Leveraging Cellular Network Topologies

Chevron UWT M2M Solutions / September 2012
M2M Systems Approach

Distributed Intelligence

Remote Devices → Multi-Carrier Wireless Transport → SCADA → Human Analysis & Action

Integrated M2M Solutions Framework
Connected Worker

- Rugged Laptop
- Truck = Wireless Hotspot
- Handheld Computer
- NetMotion
  - Mobile VPN
  - Session Persistence
- CIRA X Mobile Gateway
Remote engineers can operate from connected office environment inside Mobile Command Trailers.

Easy to deploy system supports wireless voice & data utilizing multiple carriers for failover and redundancy.
Wireless IP video systems provide extreme flexibility for field security and monitoring remote assets.
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