Digital Oil Field
Infosys Point of View

Finding Petroleum
December 2012
THE INDUSTRY RECOGNIZES THE VALUE OF DIGITAL OIL FIELD INITIATIVES....
Despite initial successes, the overall value is yet to be realized...

Initiatives display consistent themes:

- Successes are isolated
- Success are not easily repeatable
- Difficulties to get users buy-in
- Difficulties to achieve the business case
- ...

Common Sources of Success and/or Failure
... AND PROGRAMS HAVE STARTED TO ADDRESS SOURCES OF FAILURE...

**ROADMAP**
- Inadequate consideration of Local versus Global
- Lack of value based initiative prioritization
- Lack of vision

**APPROACH**
- Focuses on technology rather on workflows and people
- Misalignment of delivery approach and phases

**SOLUTION**
- Lack of well defined architecture
- Lack of key capabilities
  - Data Management, Visualization, workflow...
- Lack of standards
- Solution too complex

**BUY-IN**
- Inadequate users’ involvement
- Lack of support and change management activities
- Inadequate management of stakeholder expectations
... BUT CHALLENGES ARE YET TO BE ADDRESSED

- **EVENT BASED FRAMEWORK**
  - E&P Value Chain
    Value chain & Operations
  - Processes / working environment
    RT workflows embedded into end to end activities
  - IT Landscape

- **IT FRAMEWORK**
  - Rather than solution

- **DECISION MAKING**

- **INTEGRATION**

- **LOCALISATION**

- **Just in time**
- **Just enough**
- **Just for me**

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Lack of Expertise

Decision
Integration
Local

Unproductive workload

Building Tomorrow's Enterprise
**Event Based Framework to Enable Decision Making**

**The Event Matrix**
(Links Events - Business Processes – Value)
To Accelerate the value based roadmap definition
THE INFOSYS “INTEGRATED SMART FIELD” RELIES ON THREE PILLARS...

1. A VALUE BASED ROADMAP

   • Goal A
   • Goal B
   • Goal C
   • Goal D
   • Goal E

2. AN INTEGRATED PLATFORM (FRAMEWORK)

   - Automation
   - Orchestration
   - Integration
   - Event Driven

   Visualization, information sharing, decision loops, collaboration, knowledge management

   CORE FRAMEWORK
   (Common technical and functional features:: Data cleansing, Asset modeling, Analytics, automation, orchestration...)

   FOUNDATIONS
   (Existing Landscape: Historian, Simulators, ERPs, DB, ...)

3. A SMART OPERATING MODEL

   - People, Skills & Organisation
   - Processes
   - Collaboration Capabilities

Align vision, value, objectives, existing capabilities, and approaches

• Reduce Unproductive Workload (from 80% to 20%)
• Increase information accuracy & reliability
• Automate Deviations / Shortfalls Detection

Enable collaboration, decision making and ultimately value realization
**HYDROCARBON MANAGEMENT CASE STUDY**
**EMBED REAL TIME FRAMEWORK INTO A END TO END BUSINESS SCENARIO**

<table>
<thead>
<tr>
<th>CAPTURE</th>
<th>MONITOR</th>
<th>MANAGE</th>
<th>MONETIZE</th>
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<tbody>
<tr>
<td>Tickets &amp; Gauges</td>
<td>Well Downtime</td>
<td>Production Allocation</td>
<td>Ownership</td>
</tr>
<tr>
<td>Lab Data</td>
<td>Production Loss</td>
<td>Product Dispositions</td>
<td>Contracts &amp; Pricing</td>
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<tr>
<td>Pipeline Statements</td>
<td>Meter Exceptions</td>
<td>Production Forecast</td>
<td>Contractual Allocation</td>
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<tr>
<td>Meter Calibration</td>
<td>Meter Balancing</td>
<td>Well Testing</td>
<td>Product Control</td>
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<tr>
<td>Terminal Balance</td>
<td>Gas Quality</td>
<td>Measurement Performance</td>
<td>Tariff Calculation</td>
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<td></td>
<td>Monitor Inventory</td>
<td>Emissions Calculations</td>
<td>Oil Accounting</td>
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</tbody>
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**Capture, Monitor, Manage, Monetize**

- **DOF**
- Rely on DOF
- HCM

**Breaking down Hydrocarbon Management**
- Planning / Forecasting
- Field Data Capture
- Production Volume
- Production Allocation
- Transportation
- Revenue Allocation
- Production Reporting

**HCM Activities**
- Offshore Operations
- Onshore Operations
- Unconventional
- Gas

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Appendices

INTEGRATED SMART FIELD
Overview
THE Infosys Integrated Smart Field™ DOES ADDRESS ALL DOF SUCCESS FACTORS

Smart / Innovation
- Consistent Roadmap
- Value realization
- Alignment between objectives, capabilities and context
- Event driven approach
- Smart Workplace
- Smart collaboration
- Decision making (rather unproductive activities)
- Best use of available expertise
- Consistent management of change

Value Realization through ISF®

Integration
- of E&P value chain
- of Processes
- Within Existing Operations
- of Functions & Disciplines
- of data
- of applications
- within Current landscape
- Local – Global
- Of the approach (People, processes and Solution)

Field
- Primary target: Operations
- Adequate arbitration
- Consistent management of stakeholders and expectations
- Adequate governance
IT RELIES ON THREE KEY PILLARS

THE INTEGRATED SMART FIELD (ISF™) FRAMEWORK

THE ISF PILLARS

A ROADMAP DEFINITION
INTEGRATED PLATFORM
OPERATING MODEL
THE INTEGRATED SMART FIELD TOOLKIT... TO ACCELERATE PROJECTS DELIVERY

POV

DELIVERABLES LIBRARY

METHODS AND APPROACHES

CREDENTIALS

EXPERTS

TOOLS (Diagnostic, VRM, Business Case)
**The Integrated Smart Field, Part of the Infosys Framework for Upstream**

<table>
<thead>
<tr>
<th>Strategy and Planning</th>
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<tr>
<td>Hydrocarbon Portfolio Planning and Management</td>
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</tbody>
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**Exploration**
- Integrated Development Planning
- Asset Development Toolkit
- Development Services
- Asset Transfer Mgmt.

**Asset Development Lifecycle**
- Real Time Drilling Data Acquisition
- Integrity Management
- Drilling Services support

**Integrated Operations**
- Reservoir (Production) Optimization
- Production Value Realization
- Maintenance & Reliability Optimization

**Integrated Smart Fields**

**Integrating Data & Information Management**
- Data Governance
- Engineering data management
- Subsurface Data Management
- Operations data Management
- Production Data Management
- Big Data for Upstream

**Engineering**
- Product Life cycle Management
- Mechanical Services
- Knowledge based engineering
- Automation & Control
- Manufacturing Execution Systems

**Health, Safety & Environment**
- Emission & waste management
- Safety Management (People, Assets and Processes)
- Performance Management
- Governance and Culture

**Enabling Services**
- Strategy & Transformation
- Supply Chain mgmt
- Procurement & Contract mgmt
- Financial management
- Talent mgt, collaboration and learning services
- IT Services
- Mobility & Cloud
- Outsourcing
- Sustainability
- Value-enabled Program Delivery

ISF™ relies on core capabilities provided by the Integrated Operations, HSE Engineering, Data and offerings to enable a uniq value proposition for our clients.
Anis Chaghal
Integrated Smart Field Lead
Anis_chaghal@infosys.com
+33 646626923
Thank You