



# Accomplishing Innovation in Asset Teams & Operations

*- with highly capable enabling technology now on the market,  
how do we ensure success through information management?*

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&

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@

**ECIM Conference**

Haugesund, Norway  
Sept 10-12, 2007



**Schlumberger**



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# Agenda



- As Usual...
  - The Problem
  - The Solution
- Today's Added Pressures
- The Usual Essential Elements...
  - Technology
  - People
  - Process
- The Key to Success
  - Implementation Approach
- Some Testimonials
- Conclusion & Discussion



# The Problem



Partners



Production Engineers



Geoscientists



Field Operations



Management

• **Effort**

• **Loss**

• **Confidence**



Seismic

Schlumberger



Drilling



Data Aquisition Site

Wireline Logging



Completion & Workover



Well Testing



Production

Schlumberger Private

# The Solution



Partners



Production Engineers



Geoscientists



Field Operations



Management

• **Deliver**

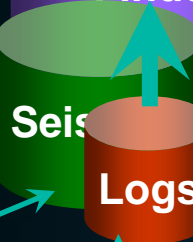
• **Integrate**

• **Preserve**

**"Decision Support Tools"**

Master DB

Finder



**"Single-Source Data"**

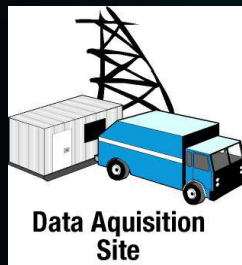


Seismic

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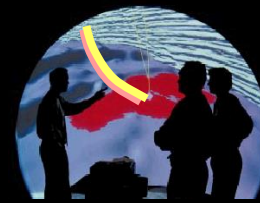
Production

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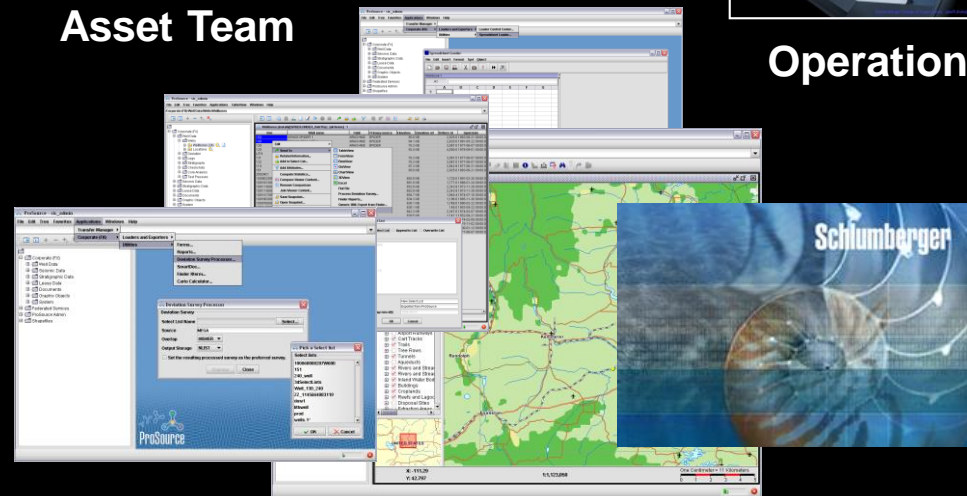
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**Asset Team**



**Operations**



**Innovation**



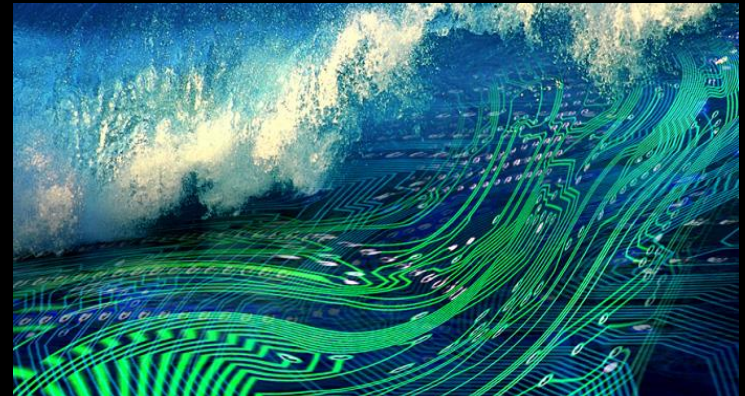
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# Today's Added Pressures



- Changing O&G World Map
  - **Countries** seeking Investment (NDCs)
  - **O&G Co's** seeking New Areas (rapid access to & set-up in)
- Resource Demand + Increasing Shortage (& Exodus) of Expertise
  - **Productivity** (do more with less)
  - Capture Knowledge (**Experience**) online
  - Preserve Interpretation **Results**, Context
- Accelerated Pace of Technology Change
  - **Volume** of Data (exploding)
  - Multiple **Platforms** (HW & SW)
  - New Applications (**niche** / disruptive)
- Regulatory **Compliance**
  - Process Quality Assurance ... good business sense



# Agenda

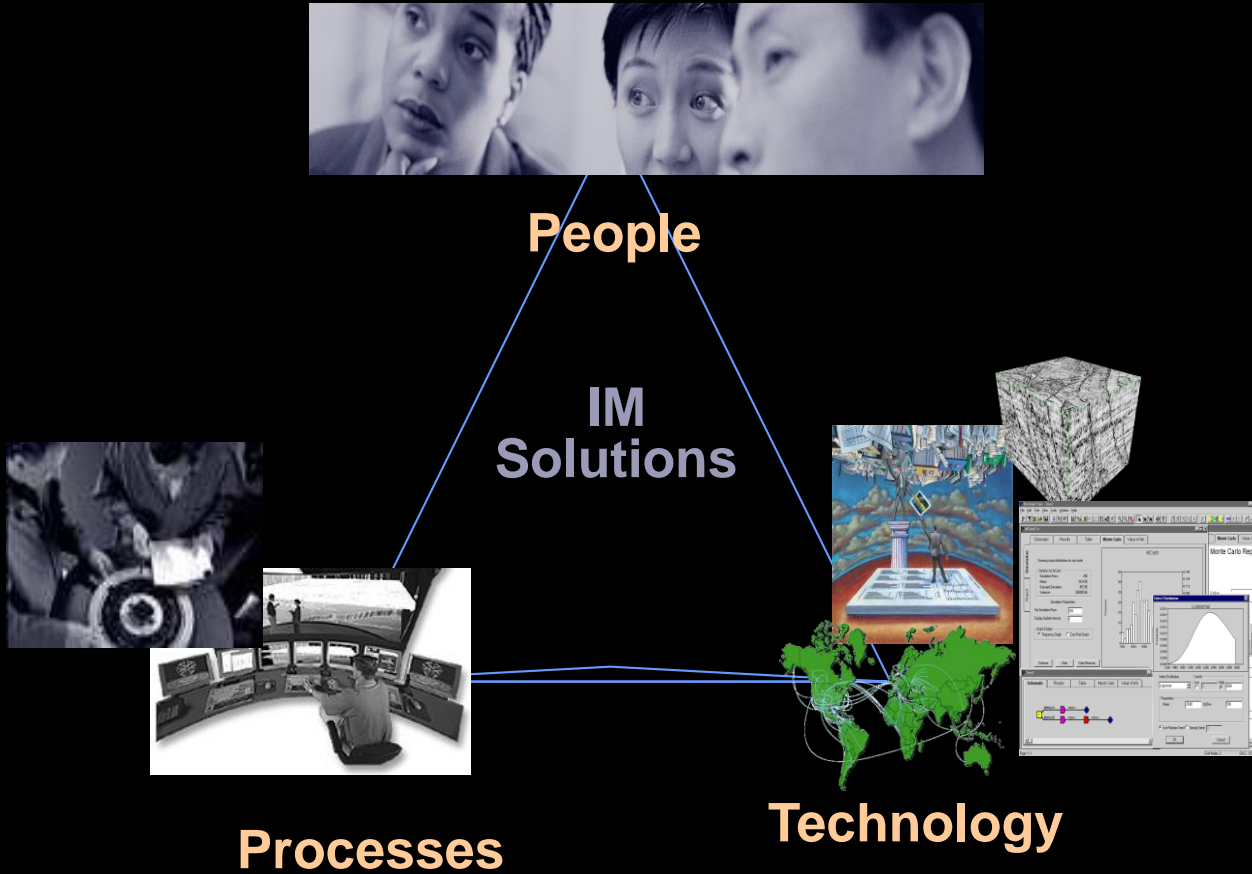


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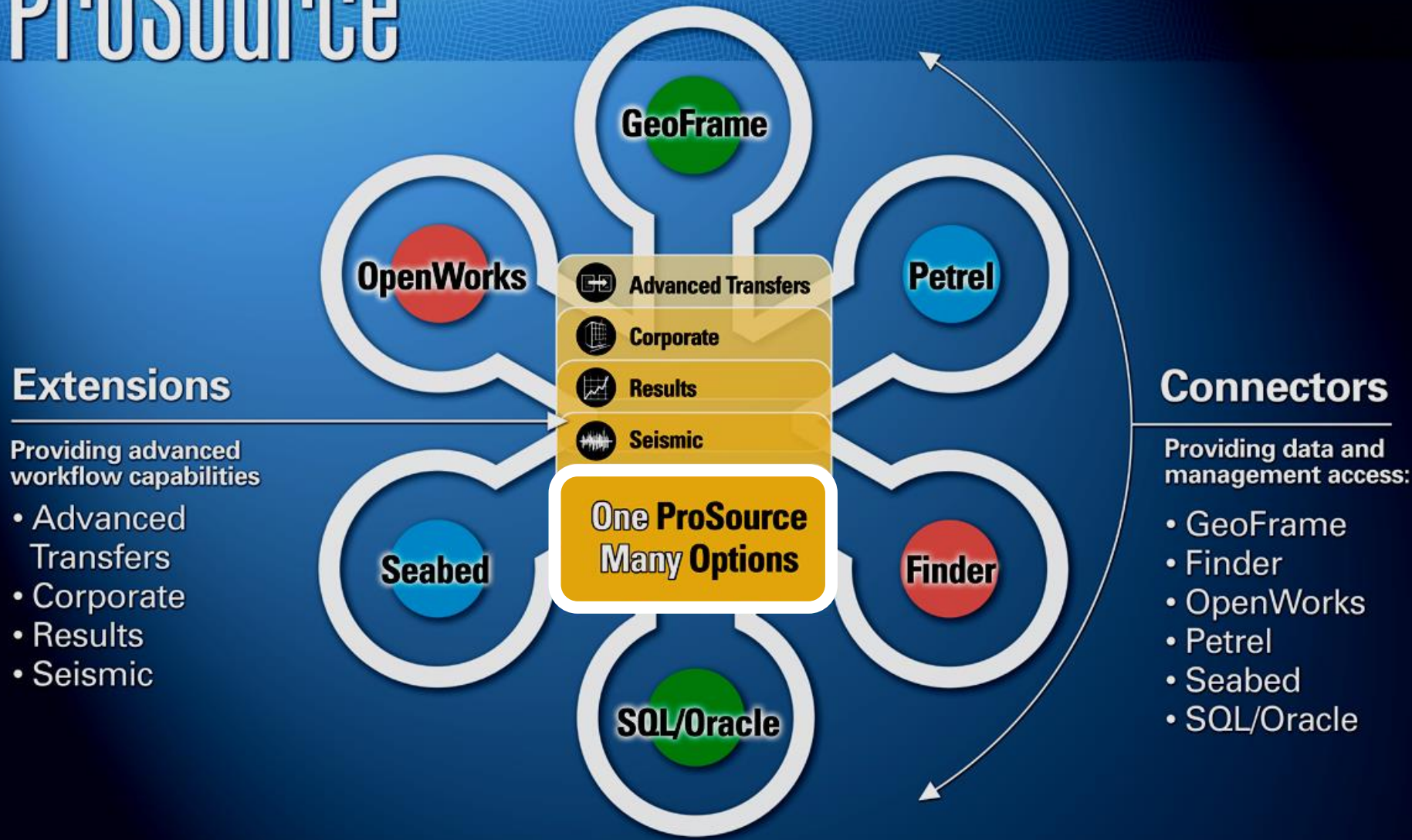
# The Usual Essential Elements



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# ProSource\*



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The **One** Professional Information Management System

# ProSource Overview



## ProSource

- Single application canvas that provides an...
  - integrated view into
  - integrated administration of...heterogeneous, distributed, multi-vendor application & data-store environments

...packaged as...

- A platform-neutral web-start application *with modular work-flow extensions* (seismic, results, corporate, Petrel, Finder...)

...providing...

- Quality assurance of underlying data in-situ ... detect & fix, plus automation
- Increased usability, reduced KT/user-training demands ... ONE tool
- Reduced TCO ... OS-independent, centralized deployment
- Flexibility ... simple yet comprehensive offering; modular & scalable



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*Delivering  
E&P  
workflows  
online...*

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# DecisionPoint Enterprise Solutions



*Customer names obscured  
(examples not officially released)*

		T E C H N O L O G I E S				
Portal - Collaboration	Plumtree, SAP, SharePoint	SharePoint	SharePoint	Plumtree	Plumtree	Plumtree
Electronic Document Management Systems	Documentum, LiveLink	LiveLink, (SharePoint)	Documentum LiveLink, (SharePoint)	Documentum	Plumtree	
Physical Assets	eSearch , AssetDB		eSearch	eSearch	eSearch	Trango
Advance Search	Google, Metacarta, Oracle	OneSearch (Oracle)				OneSearch (Oracle)
Geographic Information Systems	ESRI	ESRI -ArcIMS	ESRI -ArcIMS (no WebMap)	ESRI -ArcIMS	ESRI -ArcIMS	ESRI
Business Process Management Systems	AgilePoint, Gevenue	AgilePoint	Gevenue			Unify
Business Intelligence	Business Objects, Spotfire					Brio
Reporting	Crystal Reports		Crystal Reports			
Access to E&P data	SIE-Coral, OpenSpirit	SIE-Coral, OpenSpirit	SIE - Coral	SIE - Coral	SIE - Coral	SIE-Coral, USL Folio Components Well/Asset Life-Cycle Management
Access to E&P apps	LiveQuest, OpenSpirit	LiveQuest				
Web-Enable Viewers for E&P	INT viewers		Log and Seismic	Log		Log
Others		Lotus Notes Integration, Yahoo	MS Project Integration, Real time production monitoring		Lotus Notes Integration, Yahoo, External Web Sites, Custom-built apps	

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Features a Business Process and Decision Management solution for continuous optimization of [redacted] assets



Improves the user experience and minimizes navigational challenges with an integrated framework for disparate databases



Provides a standard and integrated information management solution to all [redacted] affiliates - worldwide.



Furnishes the Ministry of Energy a solution for managing relationships with operators. It features data capture, processing and approval.



Provides a single point of access to E&P data coupled with efficiency gains through seamless workflow integration.



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# DecisionPoint Overview



## DecisionPoint

- Custom 'Solution-offering' ...
  - leveraging a **technology framework** or 'tool-box'
  - **integrating 3<sup>rd</sup> party** technologies as required (open)
  - encompassing **expert services** ... consulting (design) → SI (build)

...to deliver **E&P workflows online** (web)

*...providing...*

- end-user engagement → empowerment
- workflow standardization, across workforce; continuous improvement
  - modular / scalable web workflows, with or without a portal



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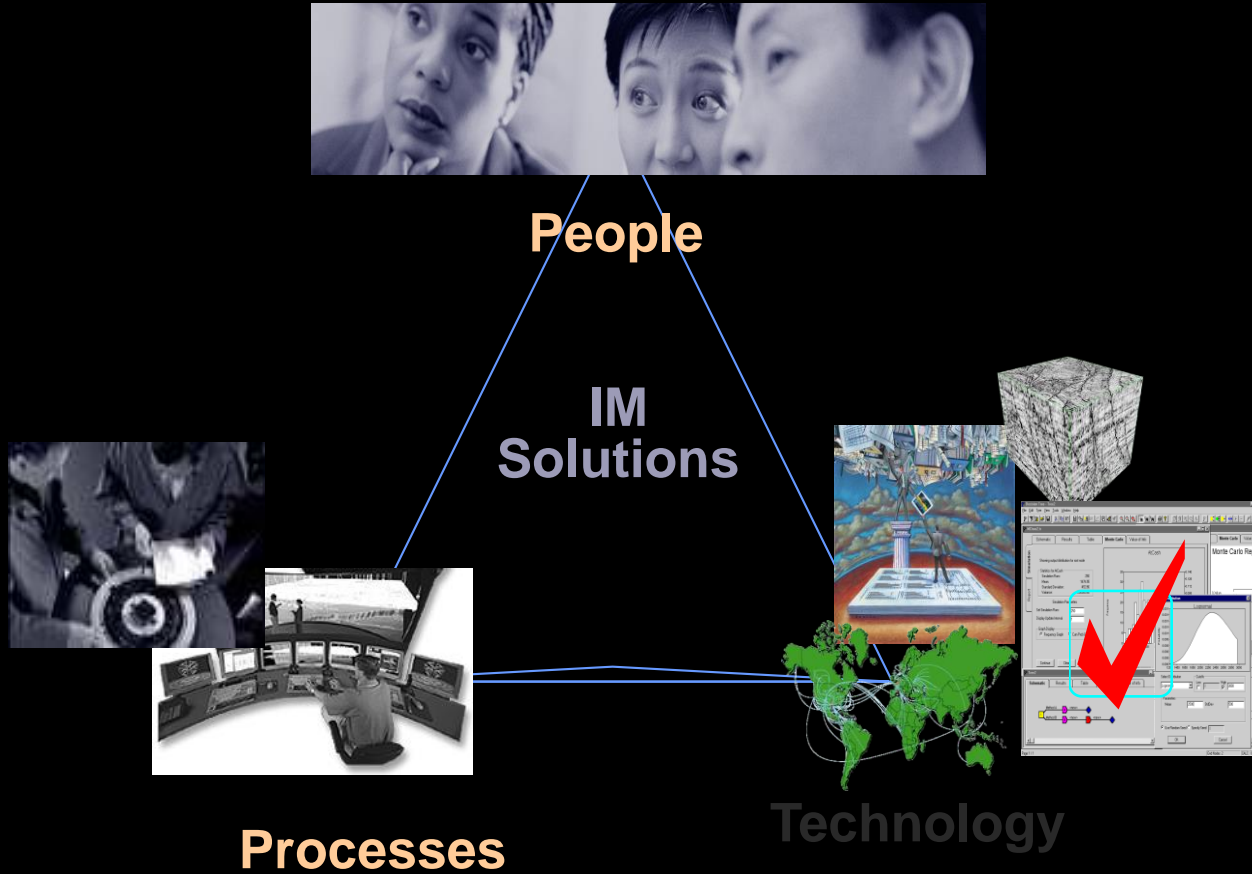
# DecisionPoint Worldwide (Jul 06)



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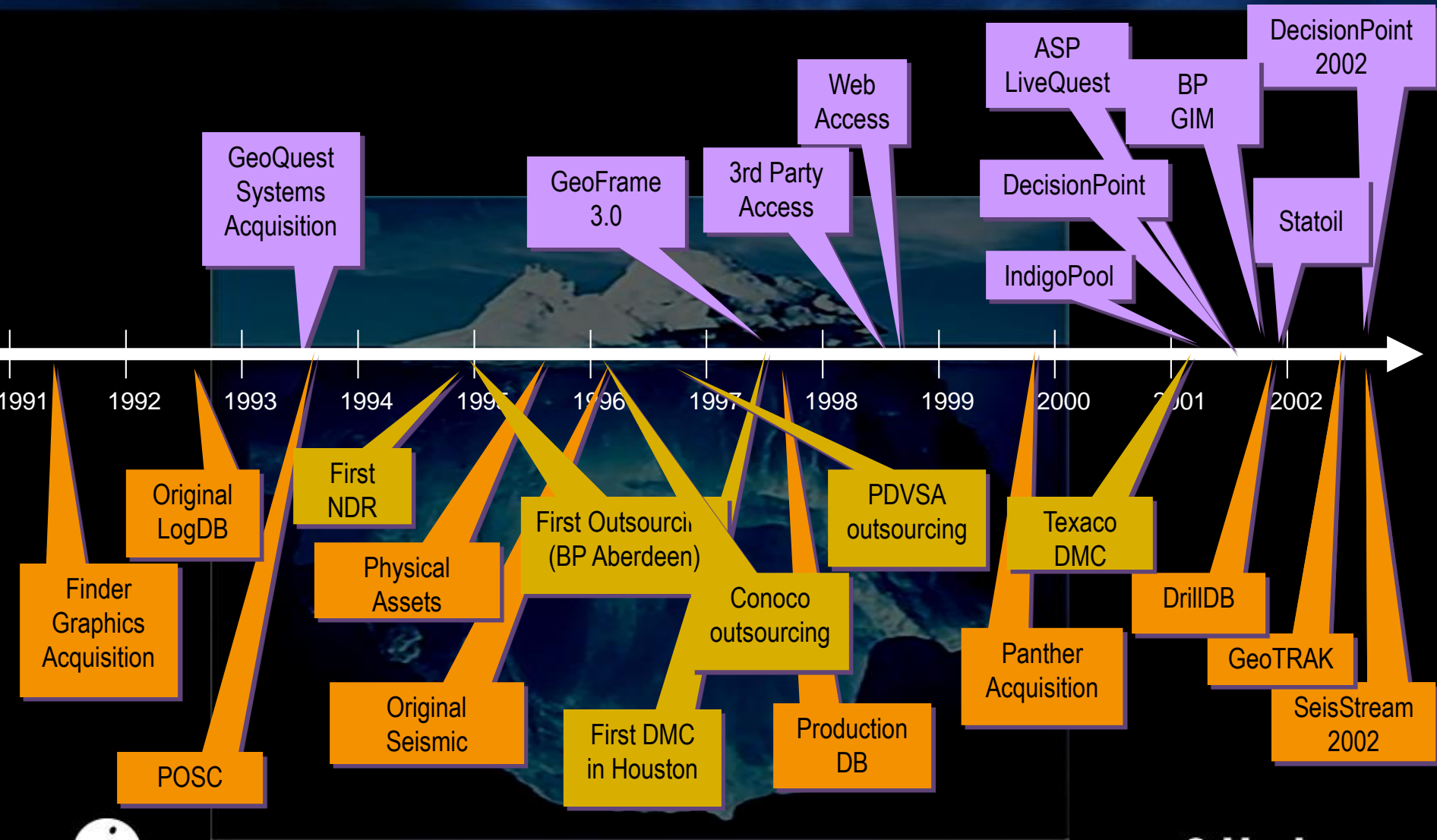


# The Usual Essential Elements





# Evolution of SIS IM Business

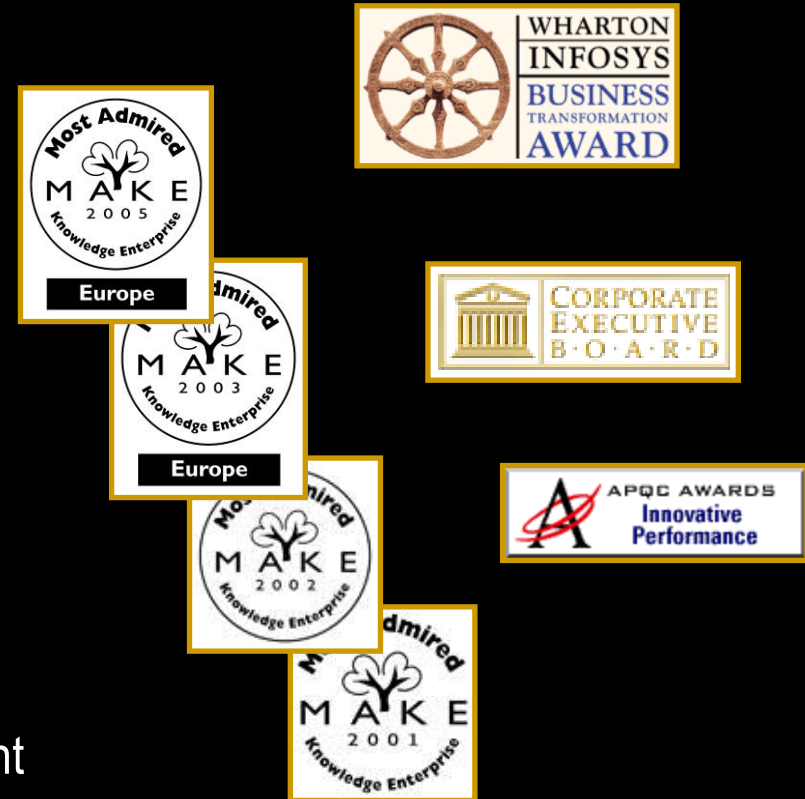


# SIS Information Management People



## SIS-IM People

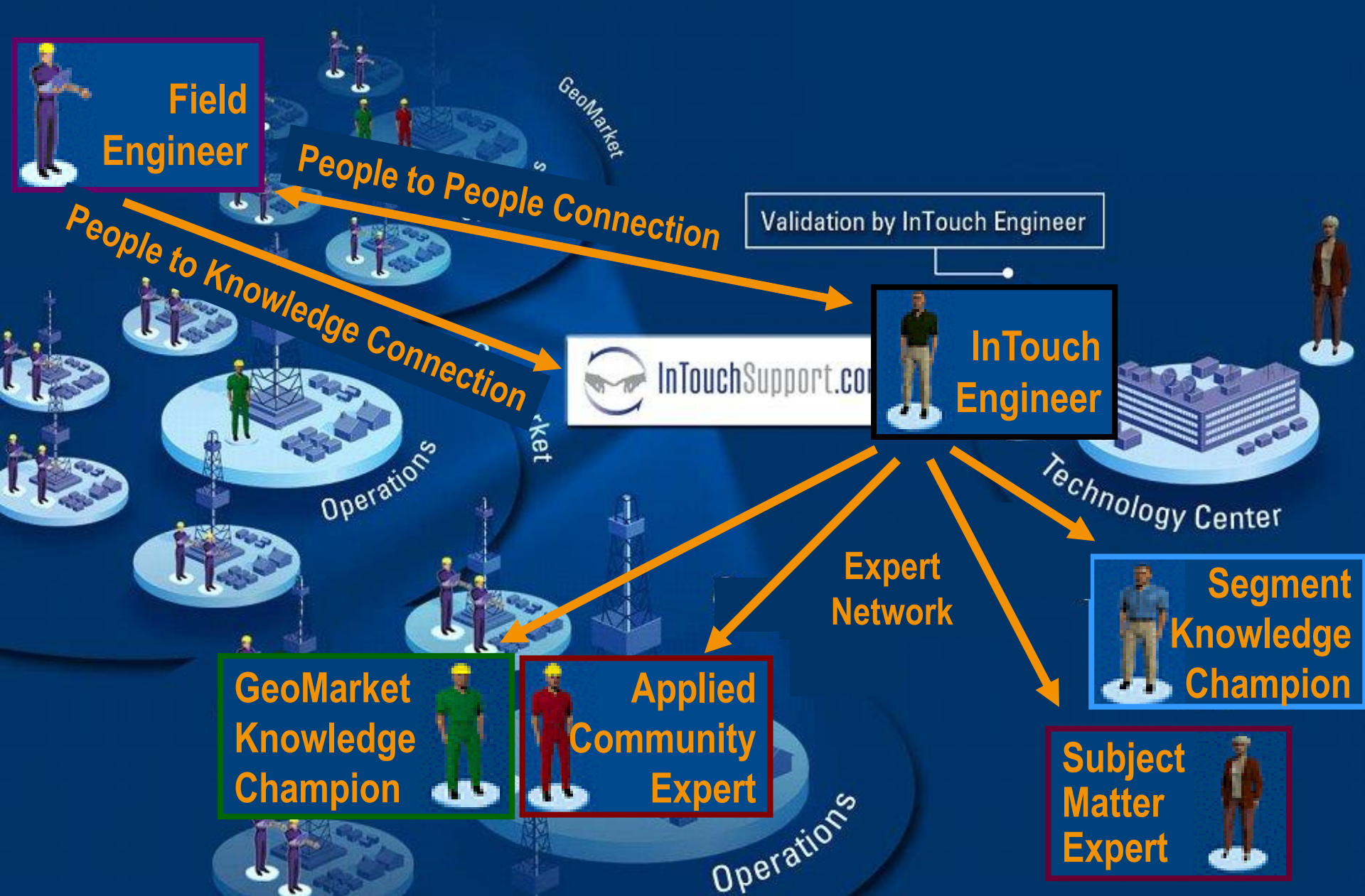
- 1000 IM Experts
  - Across 5 Regions
  - Made up of 26(?) GeoMarkets
  - Covering >??? Countries
- Headquarter Support
  - Focused on 4 Market Segments
    - NDC – National Data Centres
    - CDM – Corporate Data Management
    - IM4A – Information Management for the Asset
    - IM4O – Information Management for Operations



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# Apply Everywhere What We Learn Anywhere



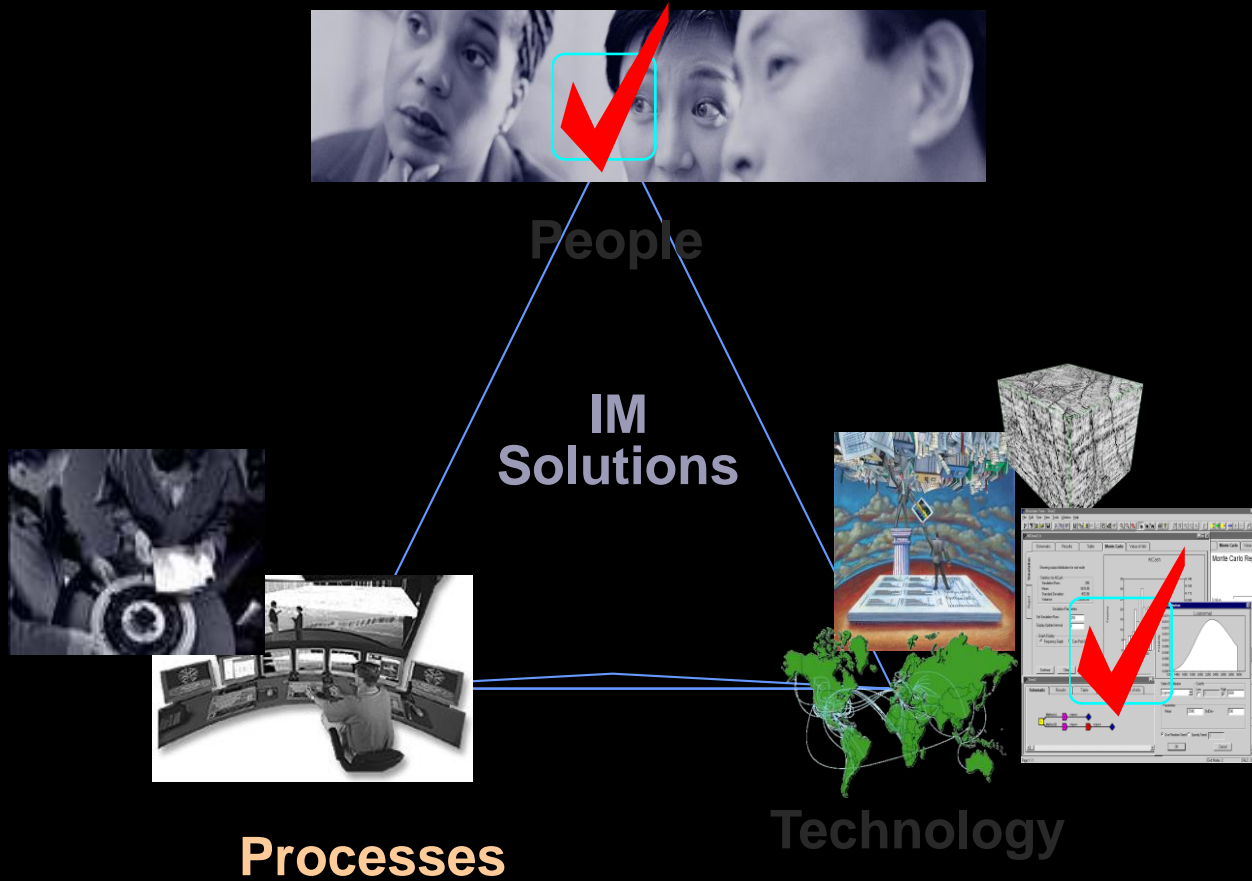
# Knowledge Sharing



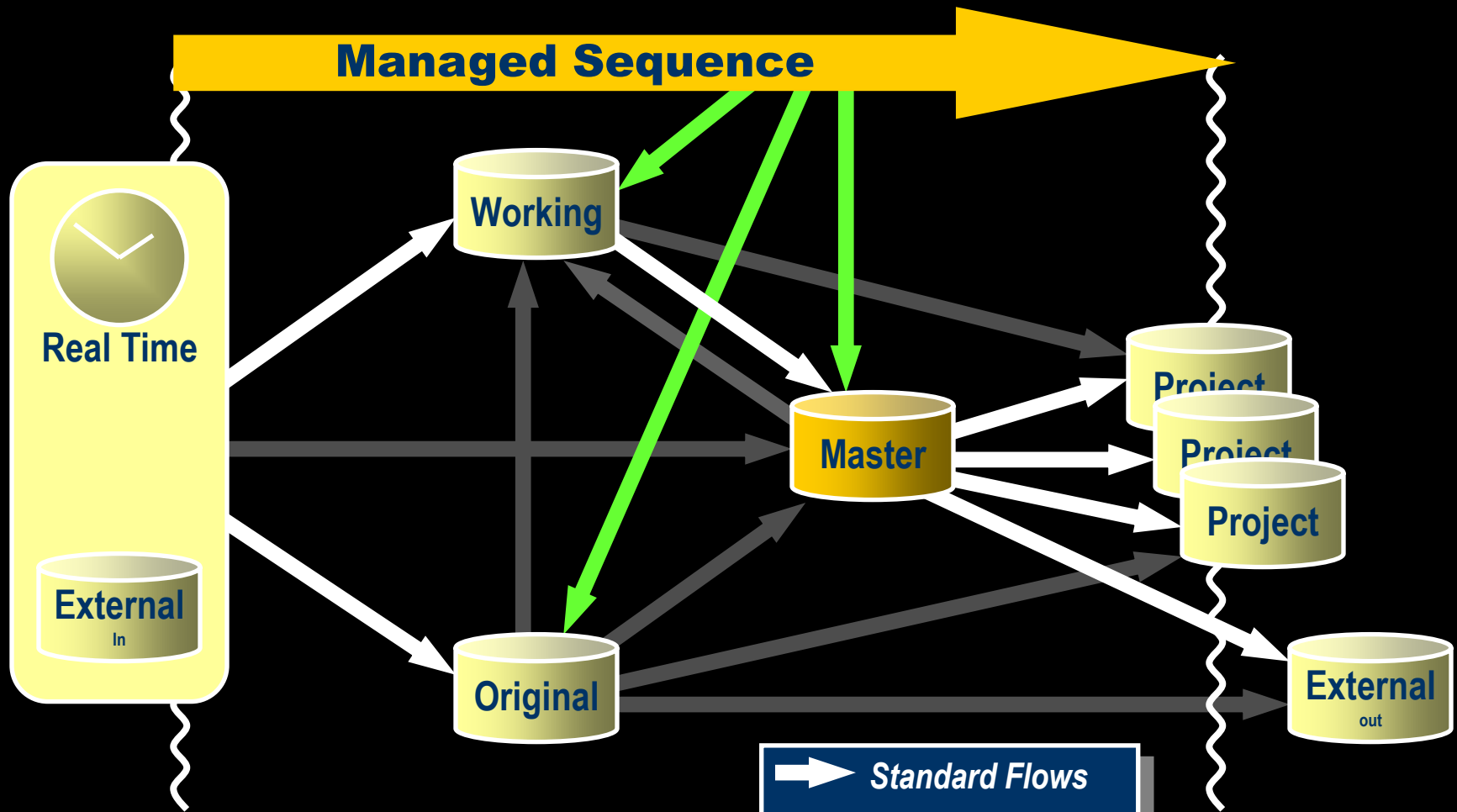
- Global sharing of validated Practices, Lessons & Solutions
- Also supporting roll-out *and* evolution of technology



# The Usual Essential Elements



# IM Landscape - General Data Lifecycle



# Data Lifecycle Stages



The processes required to support the propagation of data across the data lifecycle are illuminated by **breaking the data lifecycle into stages**. The stages provide a more detailed framework or structure within which **to describe the tasks** to be performed, **assign roles and responsibilities** for performing these tasks, and thus **define detailed work instructions** for the various parties involved in the comprehensive service provision

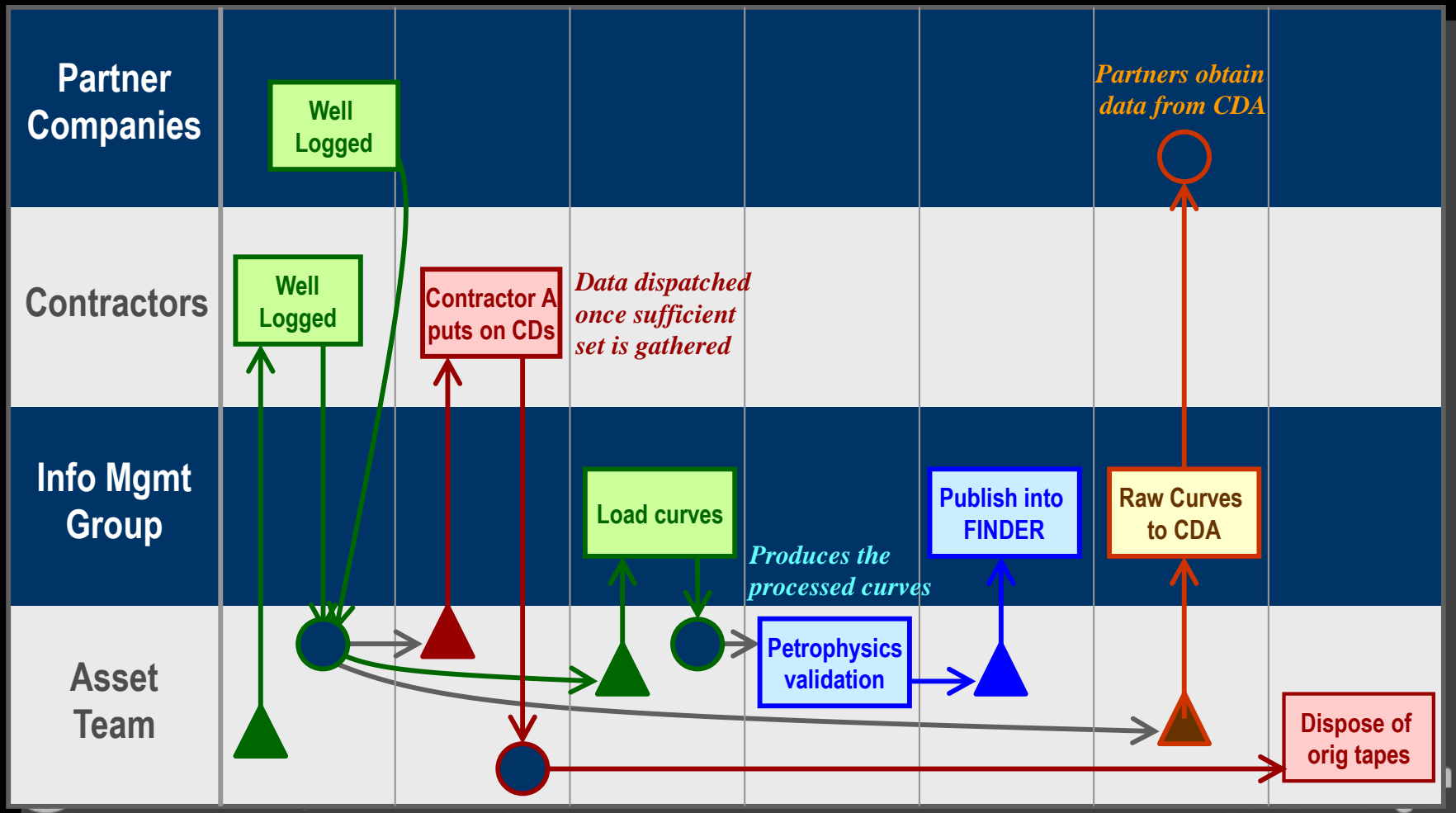
P  
R  
O  
C  
E  
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S



- Data flow processes are described via Stages
- Stages may contain more detailed Tasks
- Stages & Tasks are assigned to Parties/Individuals
- Individuals follow documented Work Instructions

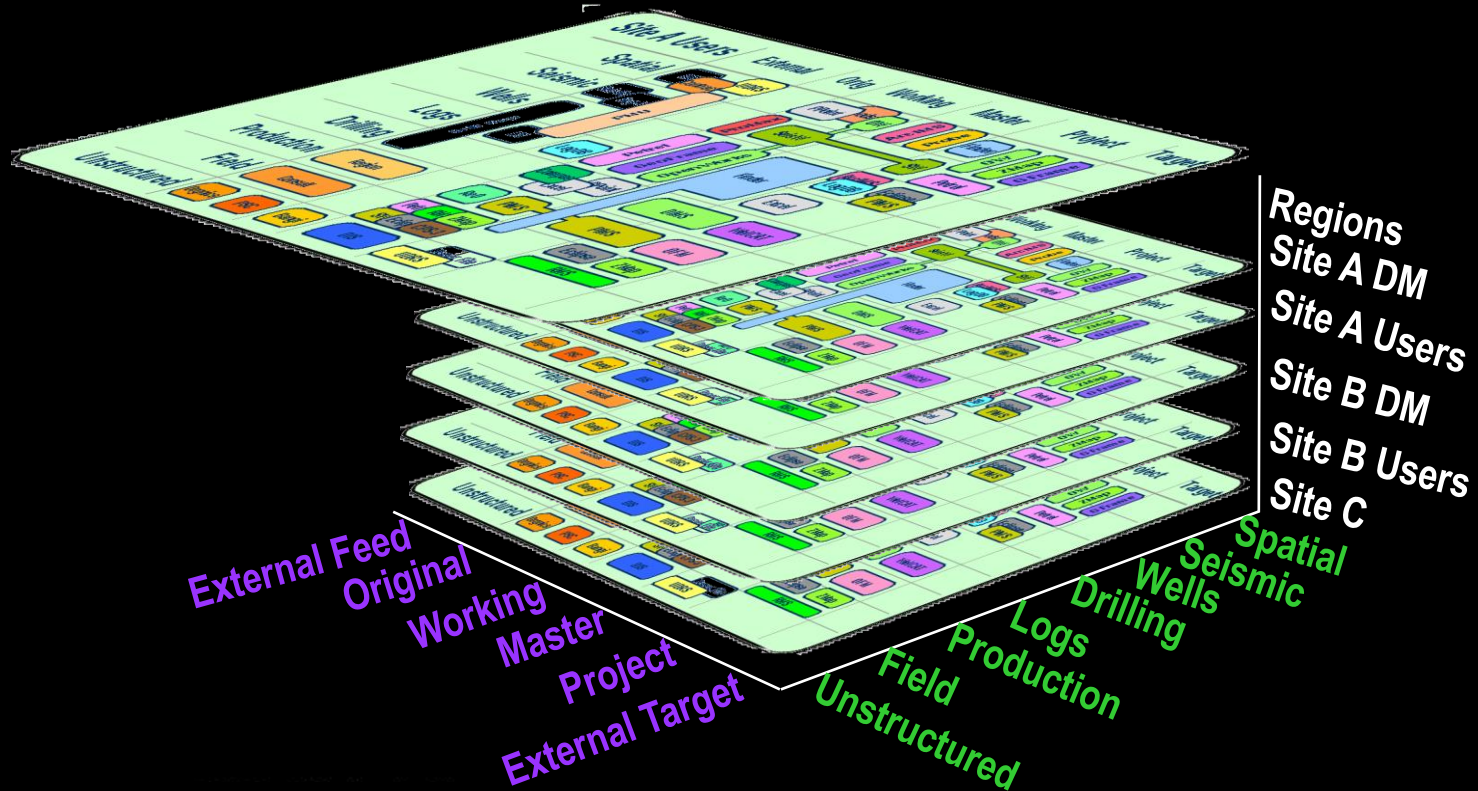


# Involving Multiple Parties





# And Multiple Data Types, & Sites, User Groups...



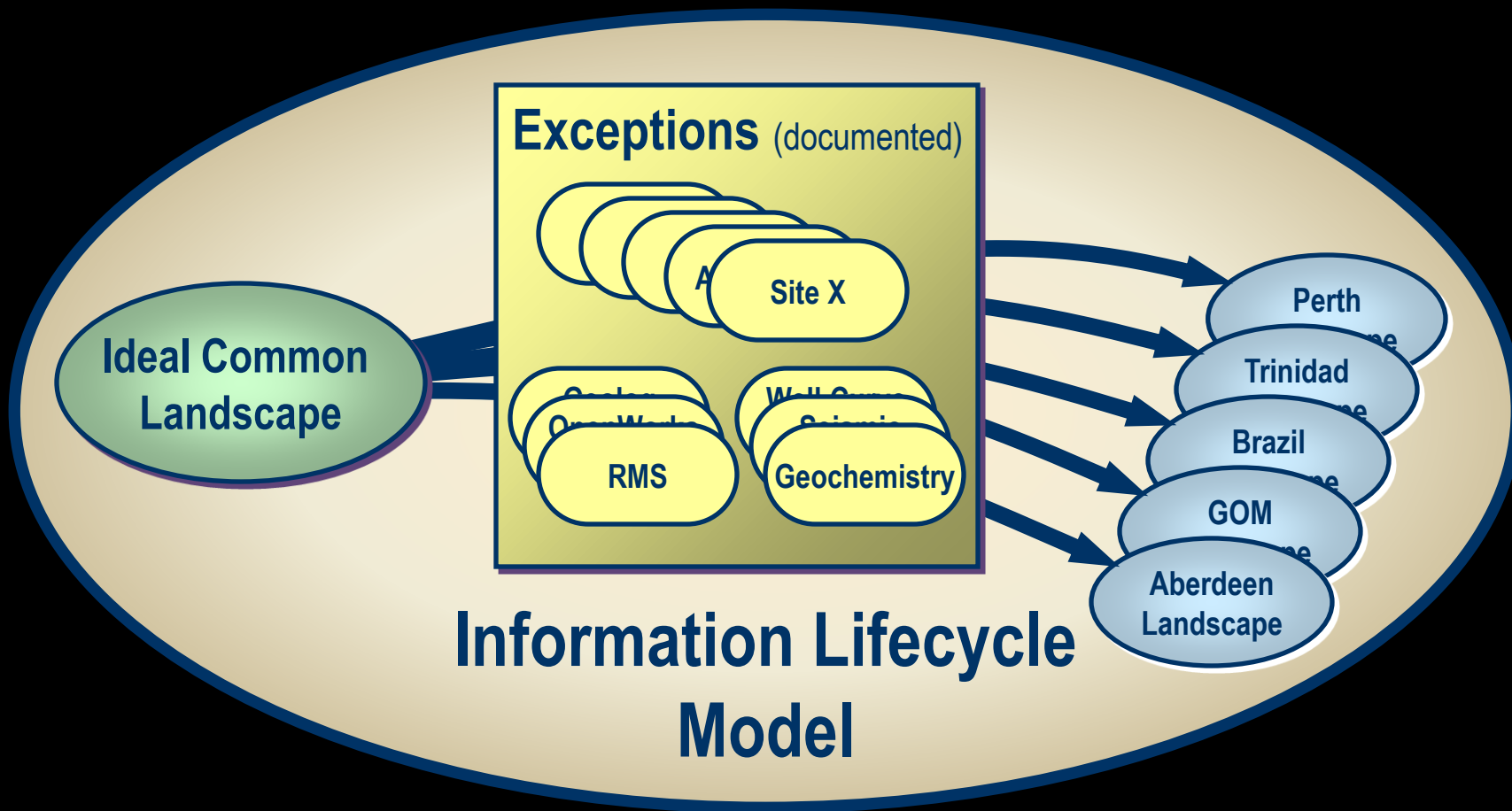


## Common Language is required to Define, Share and Mature Processes

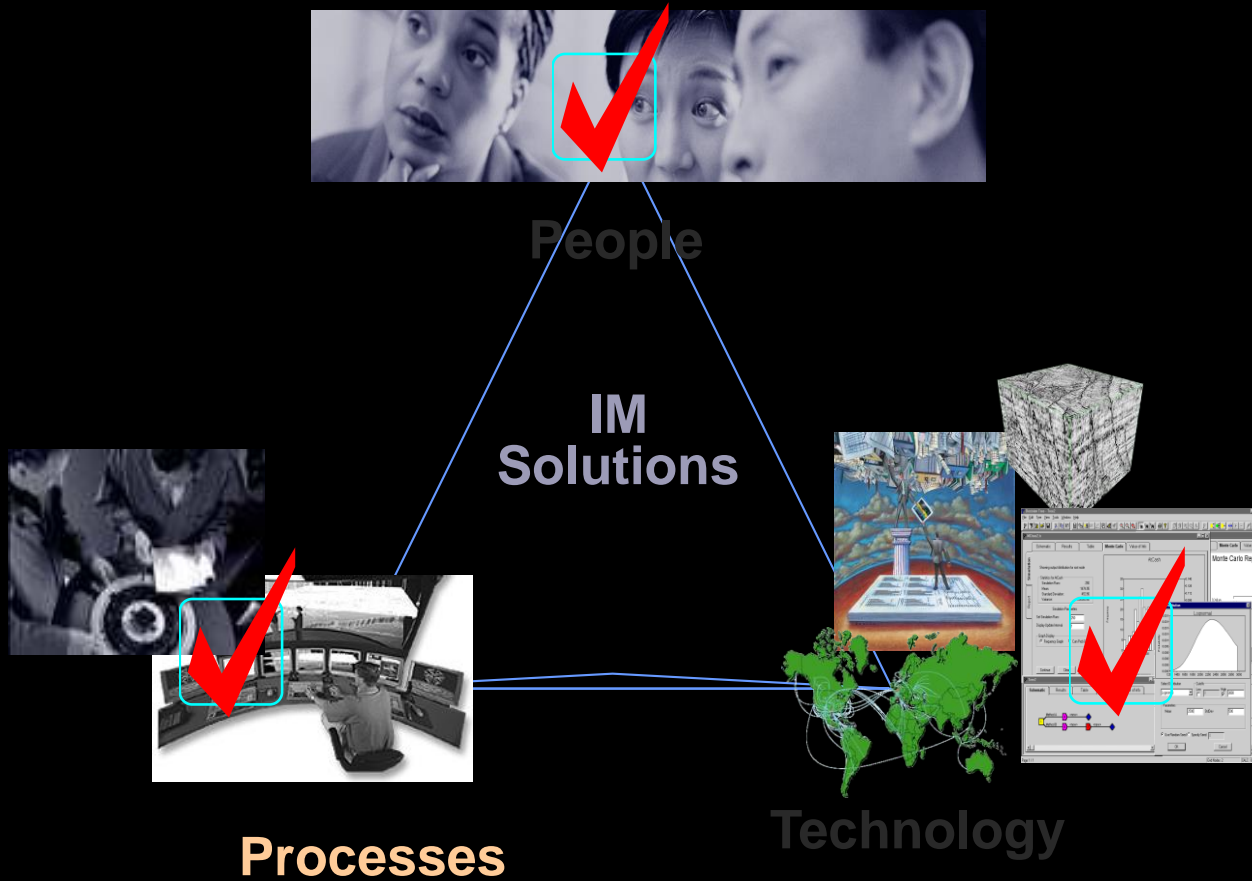
- Facilitating common understanding...
  - across functions (DM & G&G)
  - across domains (e.g. RE & PA)
  - across sites, and teams (assets)
- Enabling expression of differences between teams/sites
  - and the reasons for ... business justification?; case for change?
- Enabling exchange of experience
  - adding structure for the dialogue, management and adoption of best practices



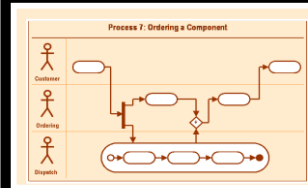
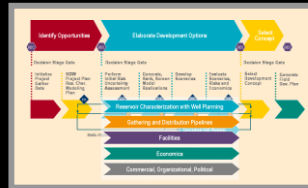
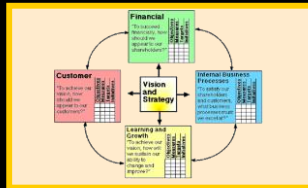
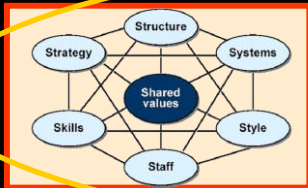
# The “Common Landscape” – ideal & actuals



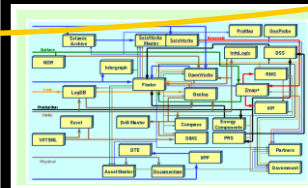
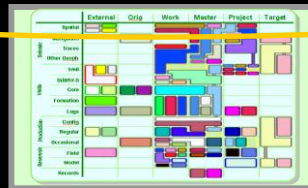
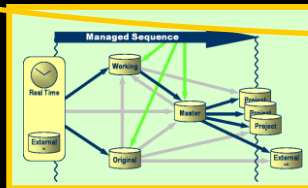
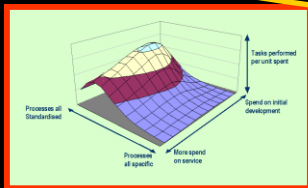
# The Usual Essential Elements



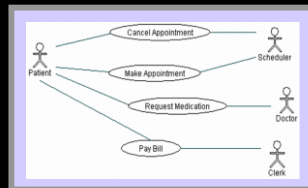
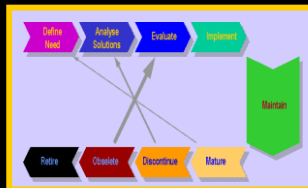
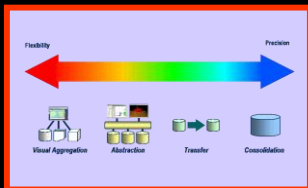
# Complete Enterprise Architecture



Business Processes

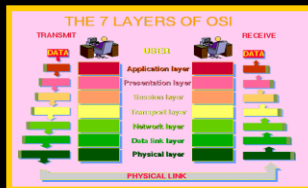
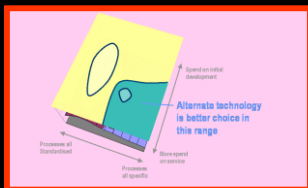


Information Landscape



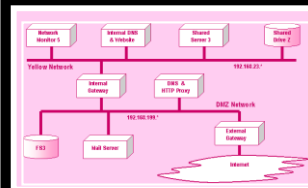
Inputs	Action	Results
<b>Finder</b> Rule Types: Wild Headers, Wild Path, Picks Format: Customised Link <b>LogDB</b> Rule Types: Raw Curves Format: LAS File	<b>Depth Match and Splice</b> The purpose of this task is to depth match all the raw curve sections and splice them together to create a single curve.  <b>Approval</b> Before the consolidated curve can be published it must be reviewed by the field data owner. Once you have created the consolidated	<b>Finder</b> Rule Types: Consolidated Curves Format: In the Customised Link select the 'Publish Curves' option and follow the on screen instructions  <b>LogDB</b> Rule Types: Consolidated Curves Format: Create an output LAS file using the 'File'

Application



**InfoIL Information Policies**  
 The development and use of procedures and standards is essential to ensure that information is handled in a consistent manner and that it reaches appropriate levels of completeness, consistency and correctness.

**Incident Response**  
 When a log file handling of security breaches will go through these stages:  
 Detect  
 Disconnect  
 Record  
 Evaluate  
 Notify  
 Restore  
 Document  
 The procedures to be followed for each stage will be documented within the specific system description page on the company.



Infrastructure

Principles

Patterns

Policies

Procedures



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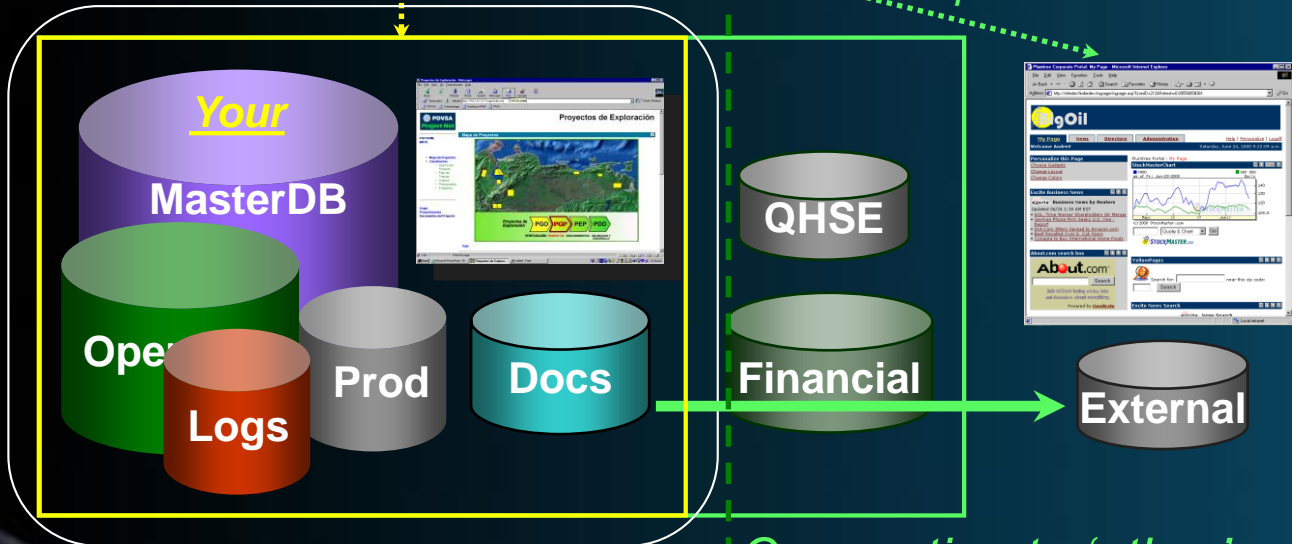
# Getting there, technically ...

*Implementation of  
Decision Support Tools  
(business process driven)*



*Define and  
implement your  
data capture &  
DM processes*

*Inclusion of  
data by type,  
prioritized (by you)*



Potentially Lower Priority →

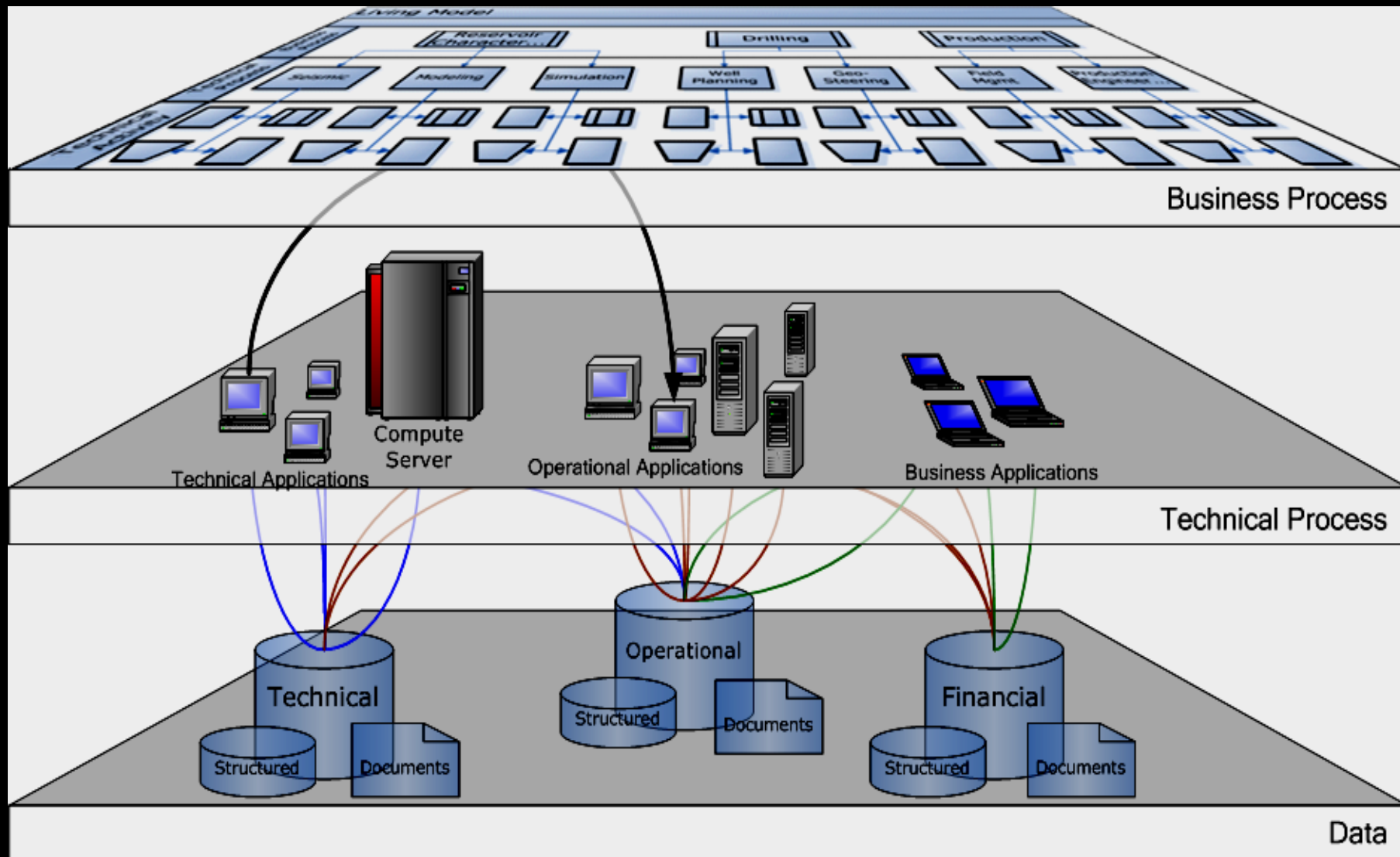
*Extension beyond  
your intranet*

- extranet access for MoE, & partners,
- public data sources

*Construction of your  
total Knowledge Space  
(structured data, documents  
& knowledge capture/sharing)*

*Connection to 'other'  
systems / data-types  
(non-petrotechnical)*

# The Starting Point





# Implementation Approach



Customer: Understand your business process

- Current situation
- Articulate the goal(s)

Customer and Consultants: Design

- Plan the whole solution (“Soup to Nuts”)

Consultants: Methodology to deliver your project

- Described
- Tested
- Relevant





## Eventual Goals

- Match the business process
- Document it!

## Cost constraints

- Match to expected benefits

## Steps along the way

- Limited projects
- Working system at all times

## Limits of the technology



# Ensuring Success / Realising the Value



- **Start with clear Business Objectives**

- What are you trying to achieve as a company?
- What are your specific challenges (& expectations)?
- Engage all stakeholders, continually

- **Employ a Benefits Realization Methodology**

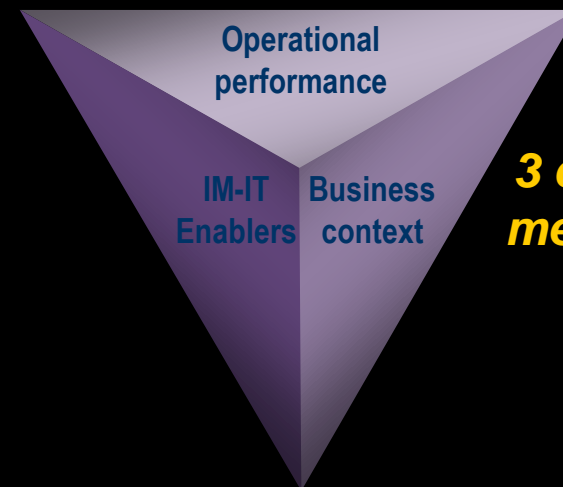
- Benefits-based vision
- Benefits measures
- Benefits dependencies

- **Do it with the Users**

- Joint ownership
- Prioritised delivery
- Just better!

- **Expect Changes**

- Regular Reviews
- Governance
- Assurance



***3 corner stones to meeting objectives & ensuring IM success***



# In Summary



- **Implementation Approach Needed**

- Business objectives
  - identified – communicated – adopted ... Alignment
- Management support
  - IT/IM + Business
- User involvement
  - shared ownership – prioritized delivery

*plus...*

- **Common Language**

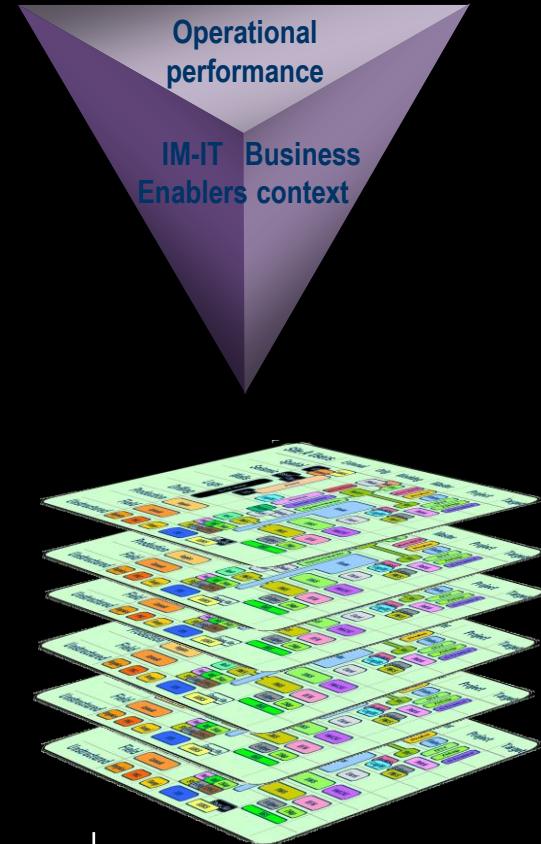
- essential for consistent process

- **Common End-user Tools**

- also essential for consistent process
- and brings common experience

- **Organization & Governance – energy for change** ↓

- **Leverage Case Studies and Peer Reviews (peer-to-peer)** ↑



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# Some Testimonials



**Vision** “Implement cost-effective data management and work-flow processes and systems to enable *delivery of **business objectives** at stretch target levels*”

**Result** “We have achieved **incredible objectives (doubling productivity)**, on a very aggressive time-scale, and all within budget.” *Subsurface Manager*

## Achievements (Metrics)

- Number of Infill & Workover Proposals generated per month - **up 50%**
- Time required for Infill & Workover Post-Activity Reporting - **down 50%**
- Time required for Reserves Calculation & Submission process - **down 50%**
- Over 90% of users rated project deliverables - **“Excellent” or “Very Good”**



# Success Delivered

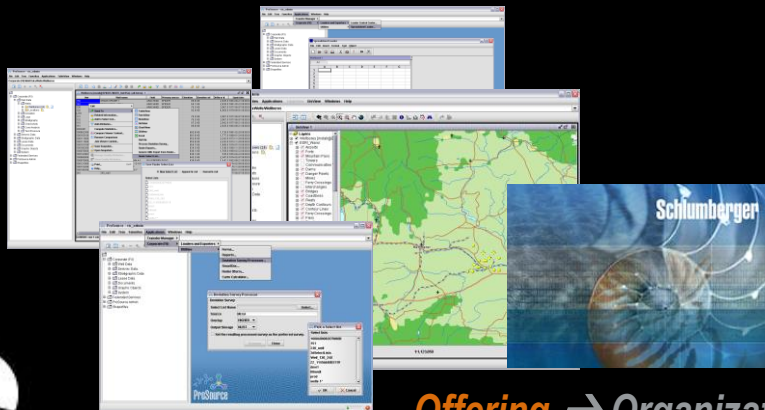


## Problem

- 1) Lack of visibility of Petrel projects & their contents. QA difficult / impossible.
- 2) Inability to effectively archive/preserve, for re-use, Petrel projects & results.

## Solution

- 1) ProSource w/Petrel Extension (includes Petrel IM plug-ins & Connector)
- 2) Addition of the Results Extension



## Result

- QA workflows that illuminate Petrel projects (location, owner, contents), and how they compare (table/GIS/3D views) to...
  - other live Petrel projects
  - archived Petrel projects
  - projects in other G&G applications
  - official data in Corporate systems
- Can all be fully automated, including alerts when issues found (i.e. report by exception)
- Enhanced Petrel results mgmt - archive & restore w/meta-data capture; selectively
- More efficient Petrel environment (less projects), with more robust data quality assured (better projects), **avoiding risk, ensuring quality, and preserving value**

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*Offering* → *Organization* → *Recent Successes*

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# Success Delivered



## Problem

- Need to improve production & ultimate recovery from offshore brown-field
  - Optimization of production & reservoir workflows needed
  - Operational inefficiencies and decision-making targeted

## Solution

- Avocet DM, OFM, DECIDE!, PIPESIM
- 3D Visualization Center
- Secure connectivity (onshore/offshore)
- DecisionPoint enterprise solutions

## Result

- 32 workflows identified and addressed (with KPIs, Charts, Production & Shortfall Analysis, Real-Time Monitoring & Surveillance, Smart Alarming, Collaborative Environments (platform & onshore)...)
- Early indicators very favorable wrt customer's targets
  - 7% increase in Production
  - 2% increase in Recovery Factor
- Second field just awarded (>7M\$)

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Offering → Organization → Recent Successes

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# Successes Delivered



Experience shows...

- An end to information loss
  - from 10%/yr common!; to 75% for interpretation!
- Dramatically cut interpretation repeats
  - “studies repeated 6 times on average”!
- 20% savings in end-user time (documented)
- 25-100% increases in productivity (documented)
- >6M\$/yr added to bottom line of single operating unit (documented)

**TOTALFINAELF**



**LASMO**



KOC



Pioneer

**ChevronTexaco**

etc...



# Example Business Impact Statements



- Missing well test data in North Field → wells remain shut in  
*Impact: 250bbbls x 10 wells x 2 months production => \$6.0M*
- 4 out of 5 Field Rework projects delayed for 3 months each while searching for data  
*Impact: 1500bbbls x 4projects x 45days x \$40 => \$10.8M*
- Investment of USD \$11M/ year reduced annual data loss 3%  
*Impact: 47,984 well logs, replacement cost => \$74M*



# Conclusion – Innovation to the Market



- **Front-office – End-user Engagement** – productivity, value
  - Search ... indexed, spatial
  - E&P Workflows ... online, user configurable
  - Results Management ... value-add preservation & re-use
- **Back-office – System Automation** – efficiency, reliability, confidence
  - Comparisons ... quality of data, exceptions
  - PS Transfers ... movement of data, QA
  - Data Feeds (eg. WITSML, Seismic, ...)
- **Architecturally** – simplicity, usability, longevity / ROI
  - Seabed ... deploying a common logical data model
  - ProSource ... common tools that manage diversity
  - Platform-neutral ... ROI



# Conclusion



- Start by identifying clear business objectives
  - All stakeholders (engaged throughout)
  - Clearly communicated, agreed, adopted
  - Align all delivery around achieving these, explicitly
- Employ intelligent cost management
- Do it all *with* your users
- Your business objectives are the Prize!



*... and we do eat our own dog-food!*





# Working together, success is a natural outcome





## *Thank-you & Discussion...*

Productivity & KM for end-users  
Efficiency & Automation in the back-office  
Longevity of architecture / ROI





# IM Market Solutions – Overview



	Target Audience	Needs & SIS Value Proposition	Primary Delivery Model
<b>NDC</b>	Government Agencies & Regulatory Bodies	<ul style="list-style-type: none"> <li>● Encourage investment</li> <li>● Preserve national natural resources, and the data assets that describe them</li> <li>● Regulate E&amp;P activity</li> <li>● Optimize operator reporting &amp; royalties</li> </ul>	<ul style="list-style-type: none"> <li>● Back-office</li> <li>● Rapidly progressing towards self-serve or 'eGov'</li> <li>● Supporting distributed user community</li> </ul>
<b>CDM</b>	Corporate IT/IM	<ul style="list-style-type: none"> <li>● Preservation of company assets</li> <li>● Corporate citizenship / responsibility</li> <li>● Support the business corporately</li> </ul>	<ul style="list-style-type: none"> <li>● Back-office</li> <li>● Definition and management of corporate data, data-stores, data standards, policies &amp; procedures</li> </ul>
<b>IM4A</b>	Asset Teams (target audience) &/or Corporate IT/IM as buyer	<ul style="list-style-type: none"> <li>● Productivity in asset team business processes (e.g. reserves addition, field development planning, well planning)</li> <li>● Preservation of value-add for re-use</li> <li>● Accountability and audit trail</li> </ul>	<ul style="list-style-type: none"> <li>● Self-serve - access, archive (building on back-office CDM)</li> <li>● Project data &amp; data environment, plus value-add interpret. artifacts</li> </ul>
<b>IM4O</b>	Operations (target audience) &/or Corporate IT/IM as buyer	<ul style="list-style-type: none"> <li>● Support planning, monitoring and execution of well &amp;/or field operations                             <ul style="list-style-type: none"> <li>– well construction, monitoring and intervention</li> <li>– well/field facilities monitoring &amp; maintenance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Self-serve – access, monitor (building on back-office CDM)</li> <li>● Online, 'process-relevant' to real-time</li> </ul>

Confidential



# Schlumberger IM Business Drivers



- Excellence in the delivery of all services *Professional*
- High and uniform quality of software support globally
- Entire organizational know-how of Schlumberger behind every Product & Service delivered *Learning*
- Rapid replication of Best Practices, Lessons Learned and Solutions
- Value constantly added to Products & Services *Innovating*
- Rapid inclusion of ideas and new technology into Products & Services





## Range of skills

- Business process consultancy
- Workflow analysis and documentation
- Solution implementation
- Data management

Locally available expertise

One source or many?





“Implement cost-effective data management and work-flow processes and systems to enable the delivery of *business objectives* at stretch target levels”

*..data management and work-flow, driven by business needs,  
at the heart of field development*



# 1 Asset - Initial Status - 16 mths post Takeover



- Drilling candidates take 50% longer to generate than to drill & complete. Backlog of previously generated locations to run out in 3 months
- Excessive time spent on mundane but essential permitting and post-activity reporting, generating growing backlog of reports due
- Evaluation & booking of additional reserves - neither efficient nor effective
- Production (20 kbpd) - below target, must double in 1 year, triple in 2

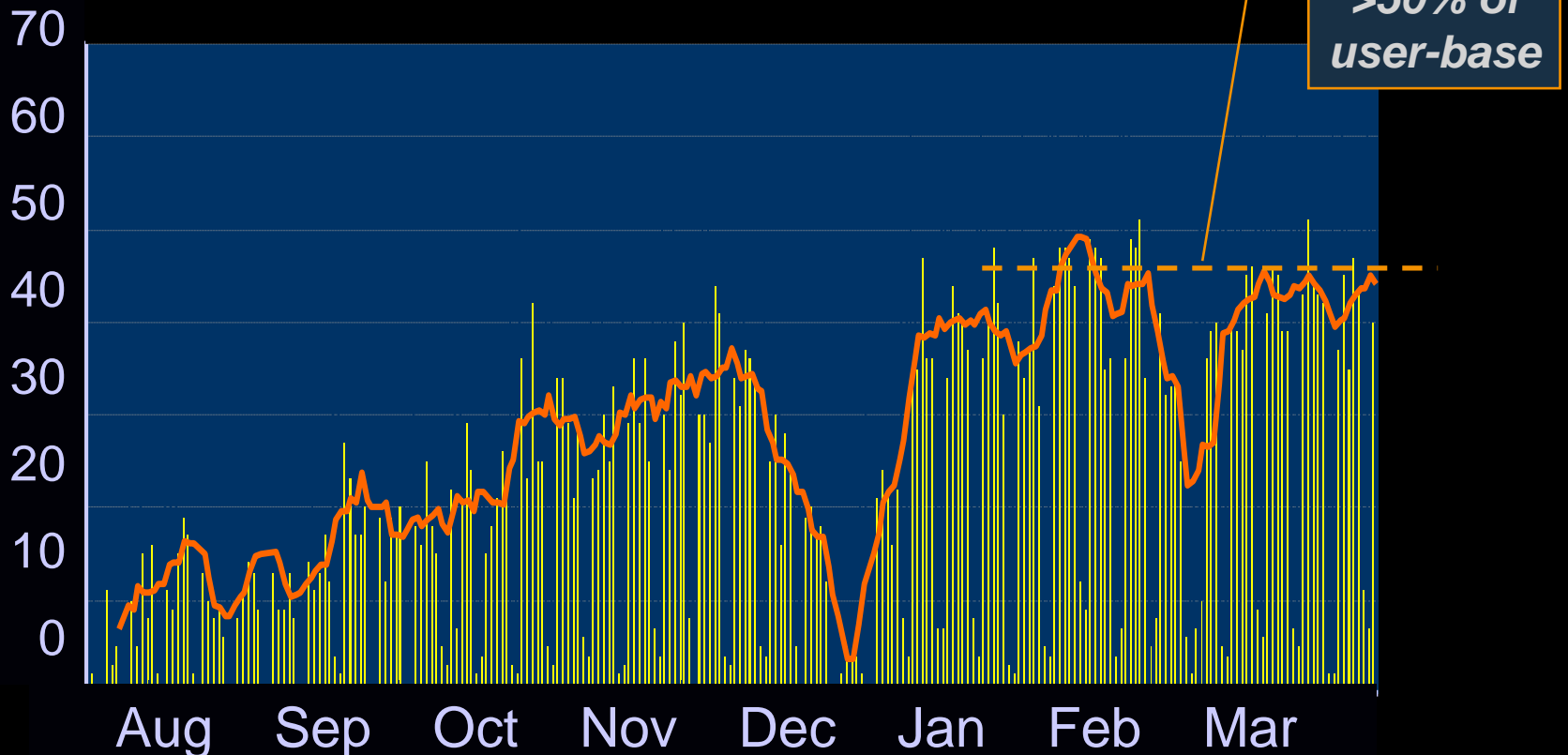
***Existing systems unable to deliver business needs for efficiency, data delivery & quality, impacting the bottom line***



# Implementation Project – Direct System Usage



Daily Users (& 7-day moving average)



*by Jun - 52 daily users (65%); 2000 hits daily*



# Results – some numbers 8 months later



- 85 - total # of users
- 65% - daily users of system
- 20% - average time savings (all)
- 25% - average productivity gain
- 4MM\$ - annual savings (customer's #s)
- 77% - “significant improvement in Q of work”
- >8MM\$ - annual profit of 10% improvement in Q
- 3 months - payback time (for Implementation) - f/cost
- 25% - per annum cost of SLA (vs. Implementation)

