Master Data in the E&P world:

A clash of cultures?

Steve Hawtin

Schlumberger

Mandatory Attribution Slide

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Introduction

- What is "Master Data"?

- Information flow in E&P in current practice
  - Value of data
  - A community of experts
  - The treachery of data types
  - 10 years of "Information Landscapes"

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Data Management International

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The DMBoK Functions (2009)

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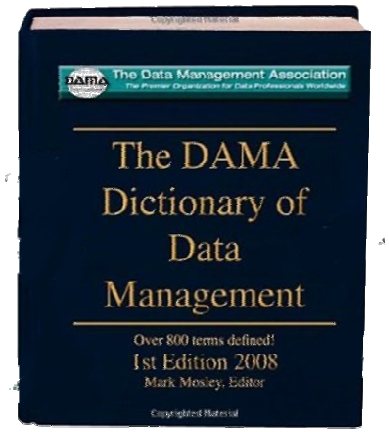
What is Master Data?



master data: Synonymous with **reference data**. The data that provides the context for **transaction data**. It includes the details (definitions and identifiers) of internal and external objects involved in business transactions. Includes data about customers, products, employees, vendors, and controlled domains (code values).

reference data: Any data used to categorize other data, or for relating data to information beyond the boundaries of the enterprise. See **master data**.

WIKIPEDIA
The Free Encyclopedia

Master data is information that is key to the operation of a business… Master Data is that persistent, non-transactional data that defines a business entity for which there is, or should be, an agreed-upon view across the organization.

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Key topics in E&P data handling?

PNEC5 2001	PNEC12 2008	PNEC16 2012	PNEC17 2013
GIS	Data Integration	Data Integration	Best Practices
XML	Data Security	Data Quality	Real Time Data
Data Security	Company Strategies	Governance	Integration

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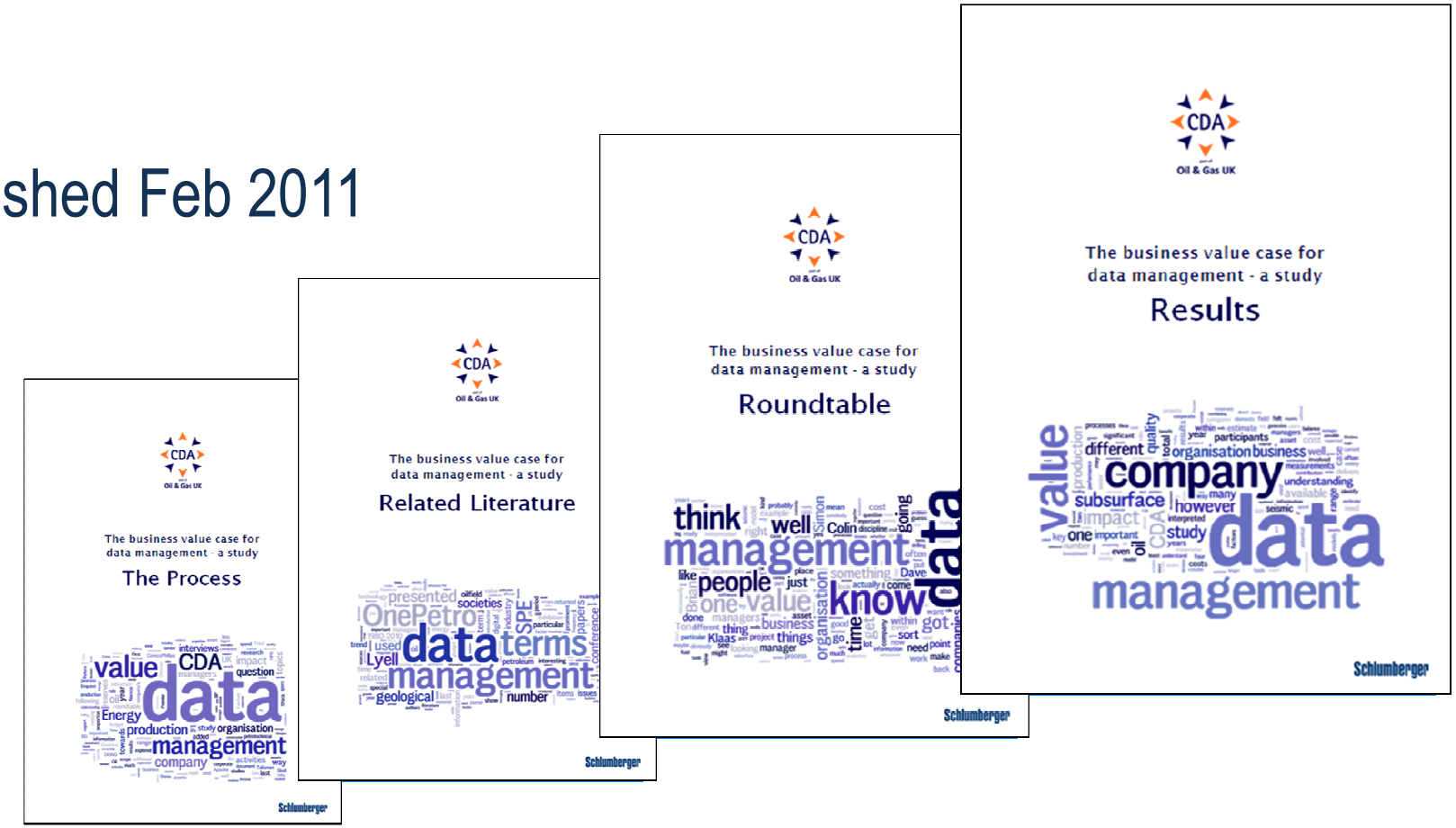
CDA Study: Business Value of E&P Data

Published Feb 2011



http://www.oilandgasuk.co.uk/datamanagementvaluestudy/

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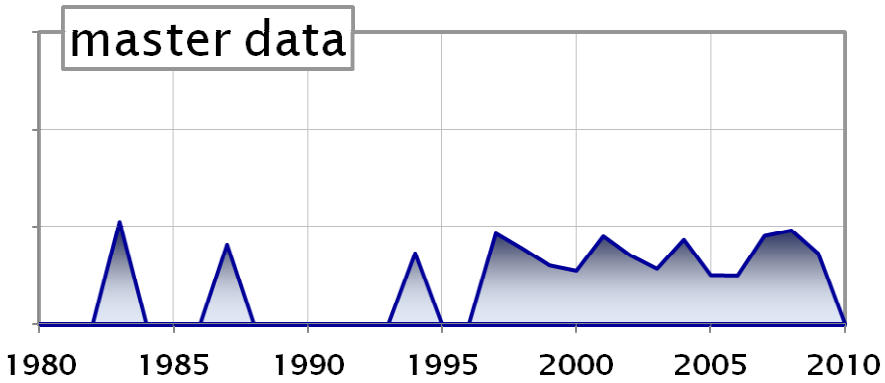
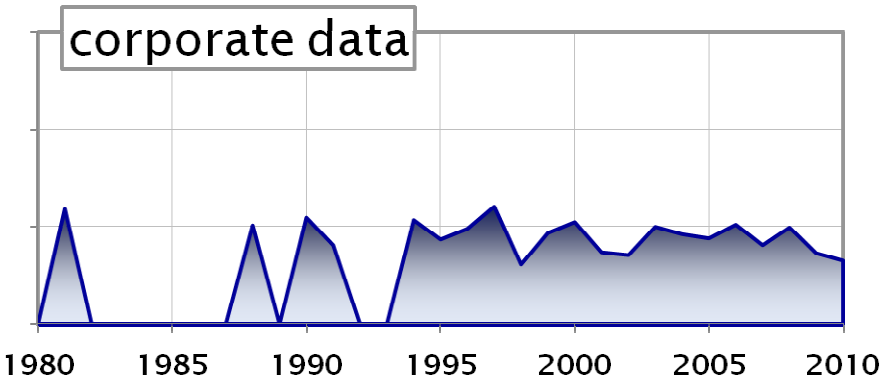
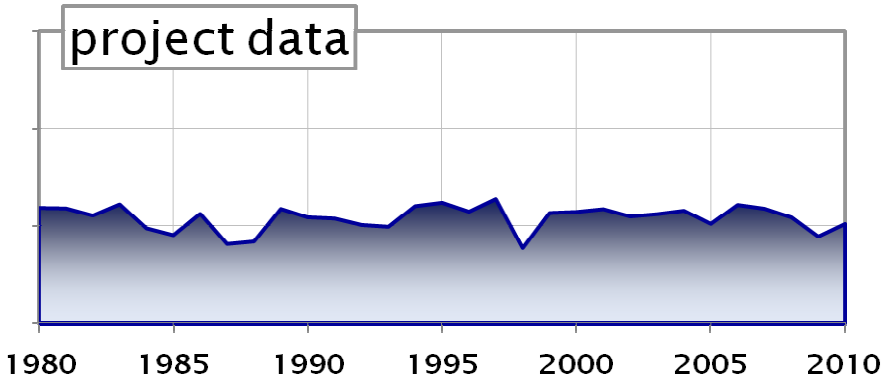
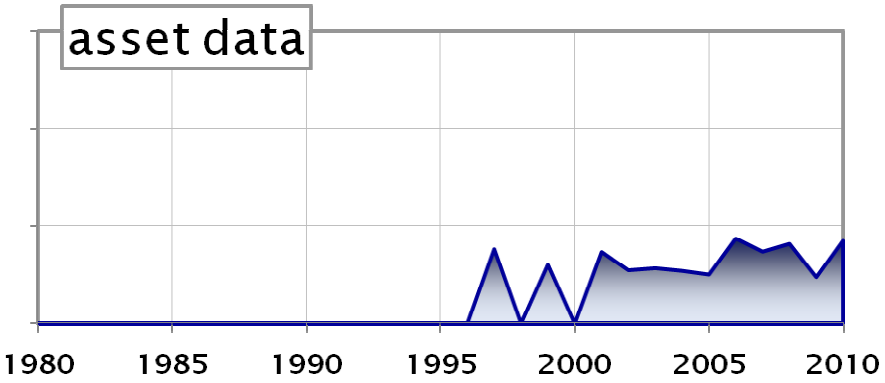
Topics in papers published by SPE, AAPG, etc









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Why MDM lacks credibility amongst users

- Previous attempts to implement "master data"
  - Mercury, Epicentre, GeoShare, OpenSpirit
- Start from current reality rather than theory
  - Corporate size
  - Information flows
  - Repository roles

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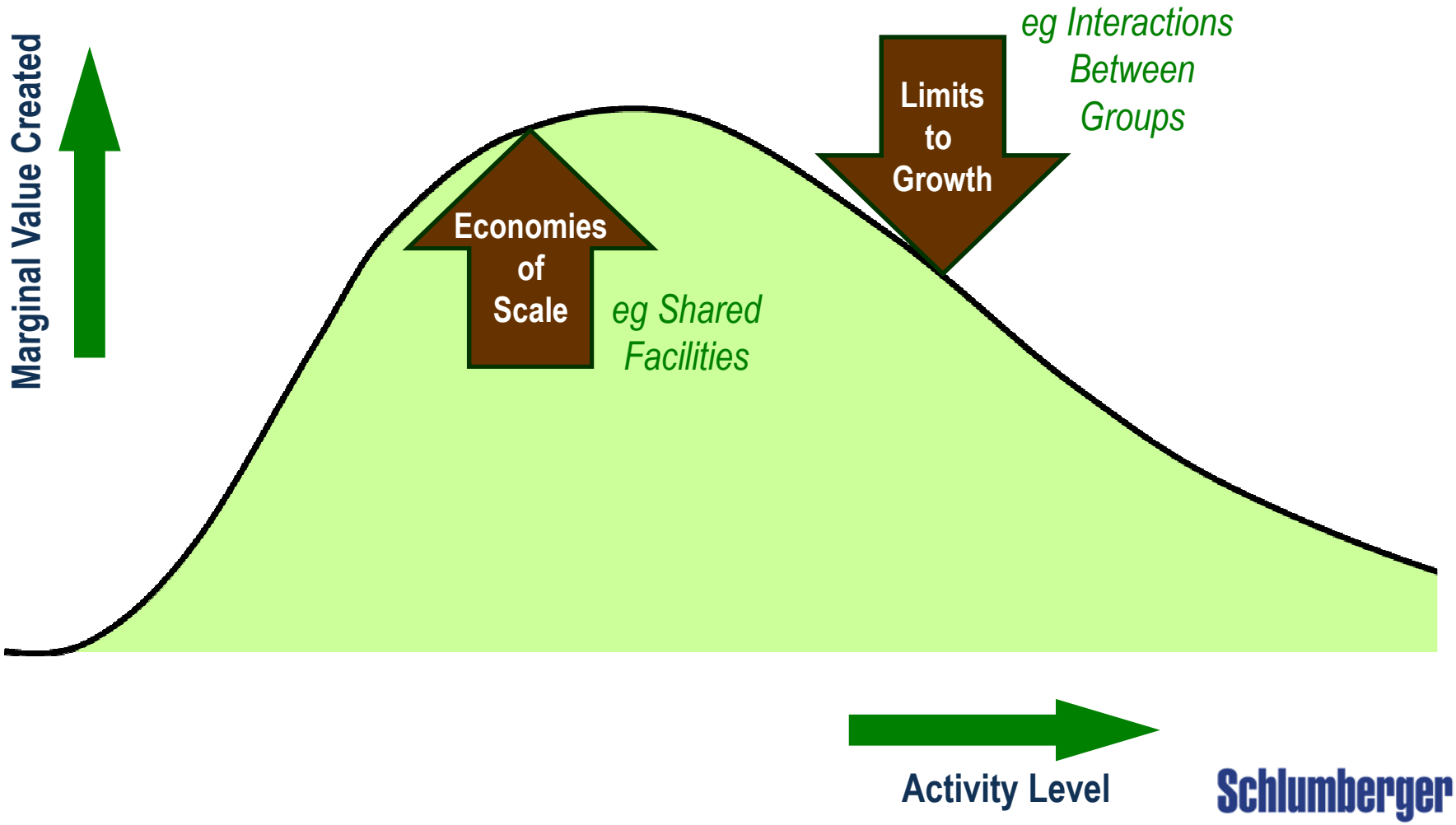
An single approach has an “optimal size”



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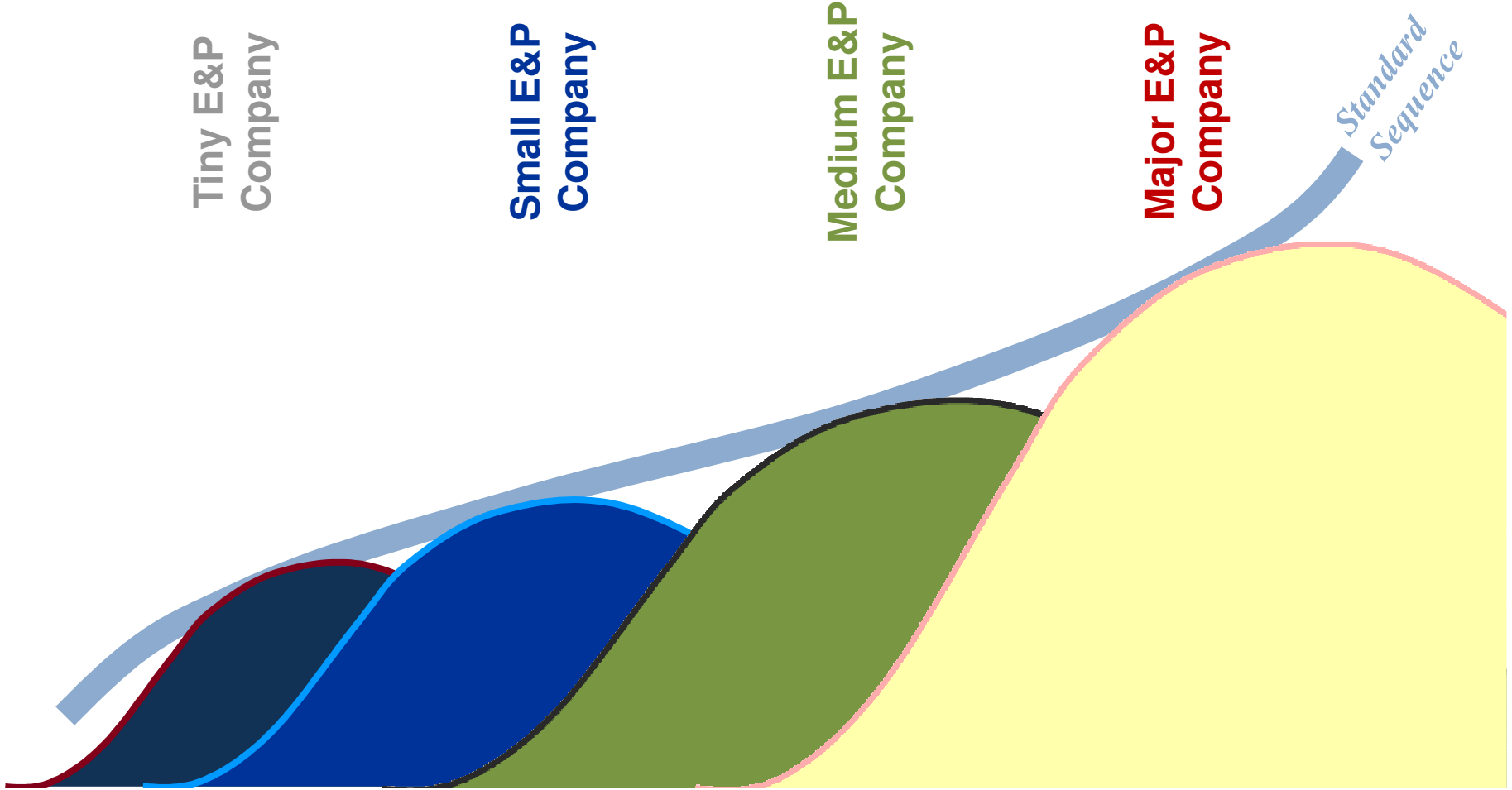
Different approaches have distinct profiles



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What do these terms mean?

	Size (people)	How to Succeed?	Company Approach	DM Approach
Tiny E&P Company	*2-50*	*Property*	*All together now*	*None*
Small E&P Company	*20-400*	*People*	*"Heroes"*	*Who to ask*
Medium E&P Company	*100-2000*	*Portfolio*	*Silos*	*Asset Team Stores*
Major E&P Company	*1000+*	*Process*	*The "company way"*	*Corporate Processes*

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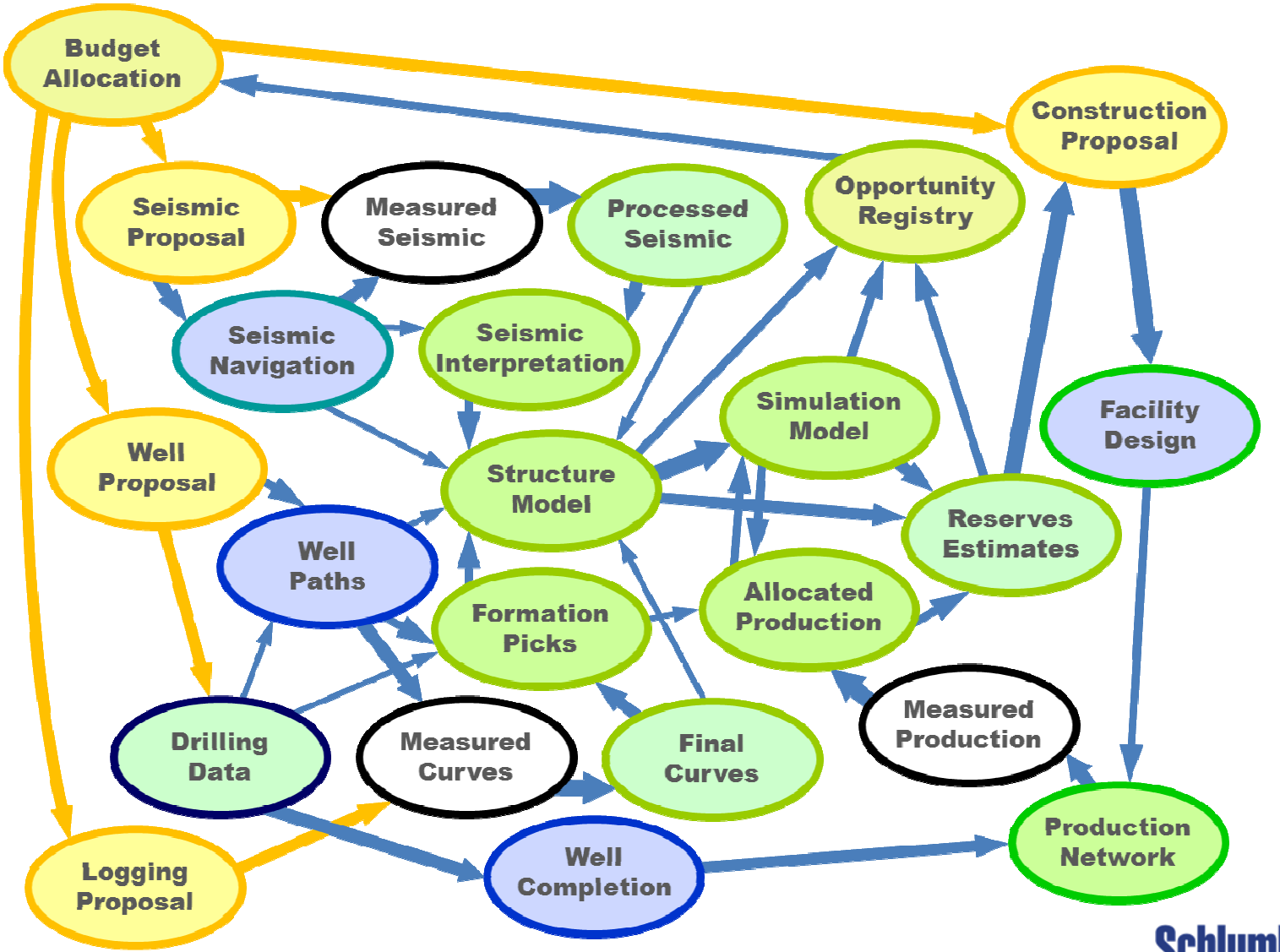
Typical Subsurface Data Flows *(simplified)*



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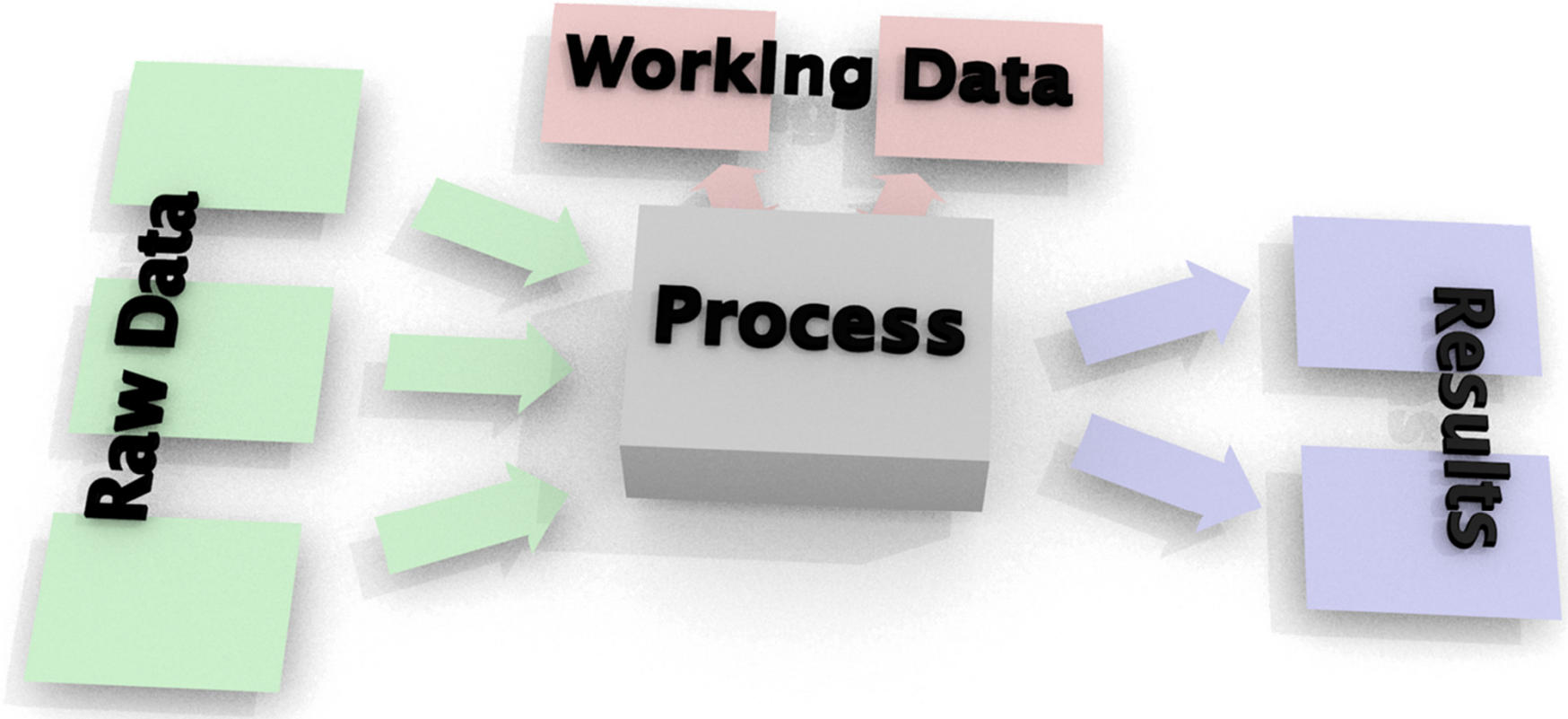
Naïve View



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Flexibility v Precision

- Technical experts dislike artificial constraints
  - Especially from those outside their domain
- Preference for flexible tools that impose no restrictions
- Consistency with other domains is - "*Someone Else's Problem*"

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No Single Data Structure (The Treachery Of Images)

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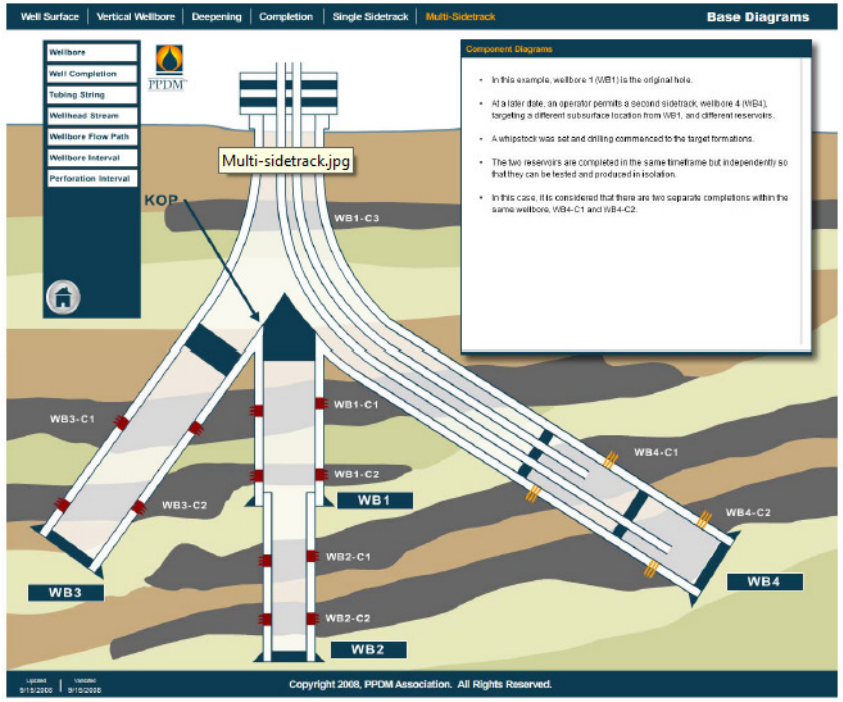
Result

- Lack of agreement about the shape of even the most widely used entities
- For example the long discussion that resulted in the "What is a well" PPDM definition in 2012

What is a well?



https://ppdm.org/ppdm-standards/what-is-a-well-definitions

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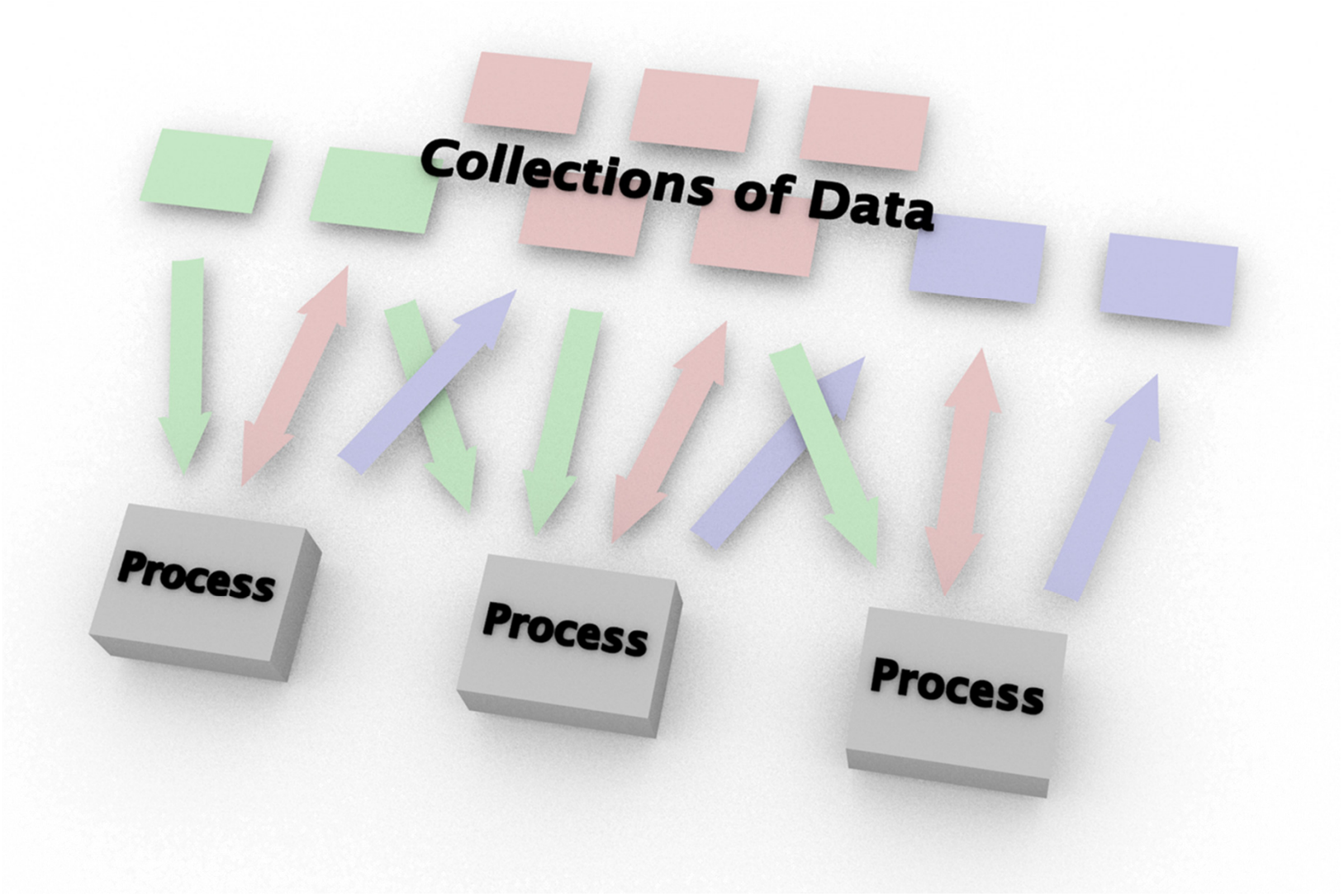
How processes actually interact



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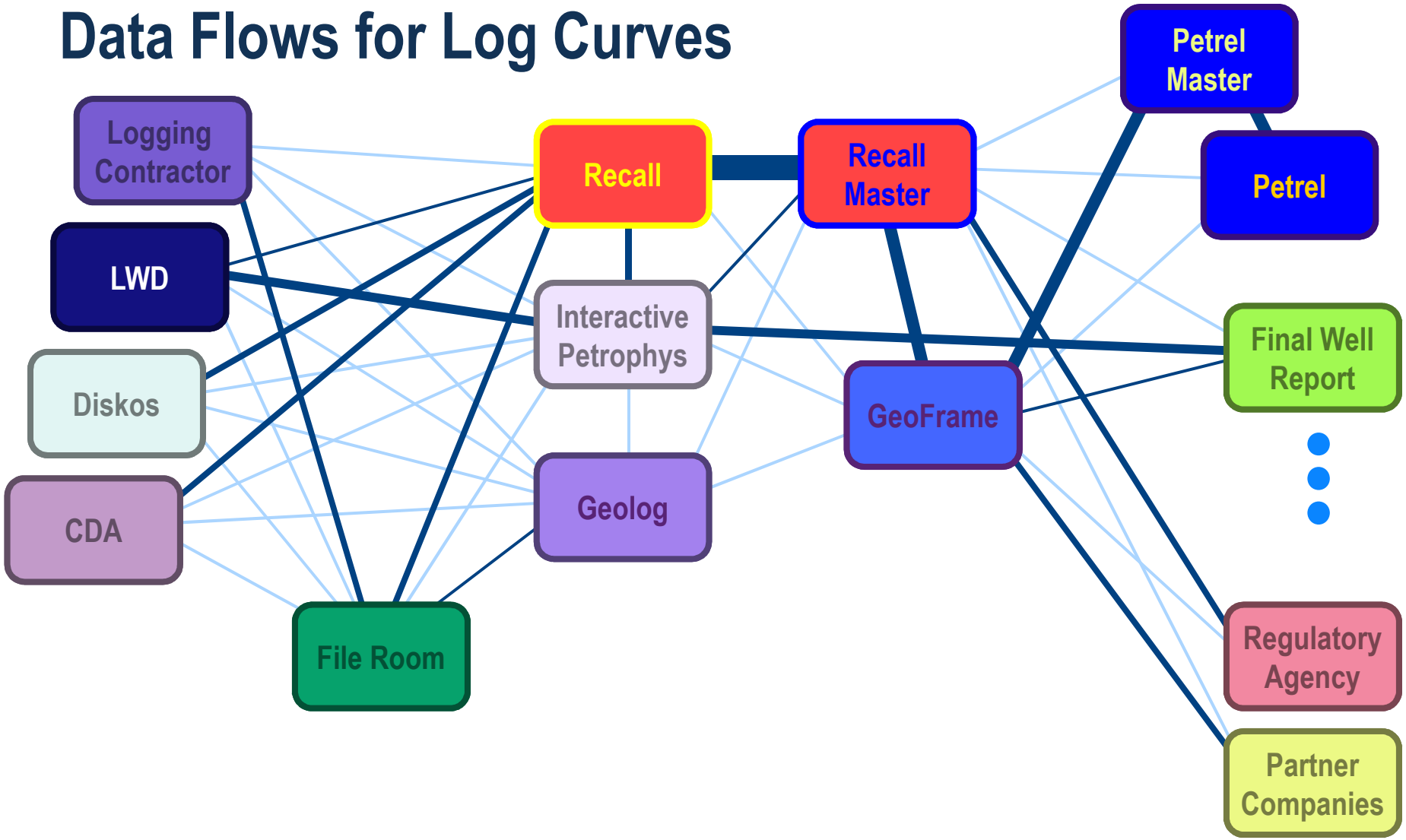
Data Flows for Log Curves



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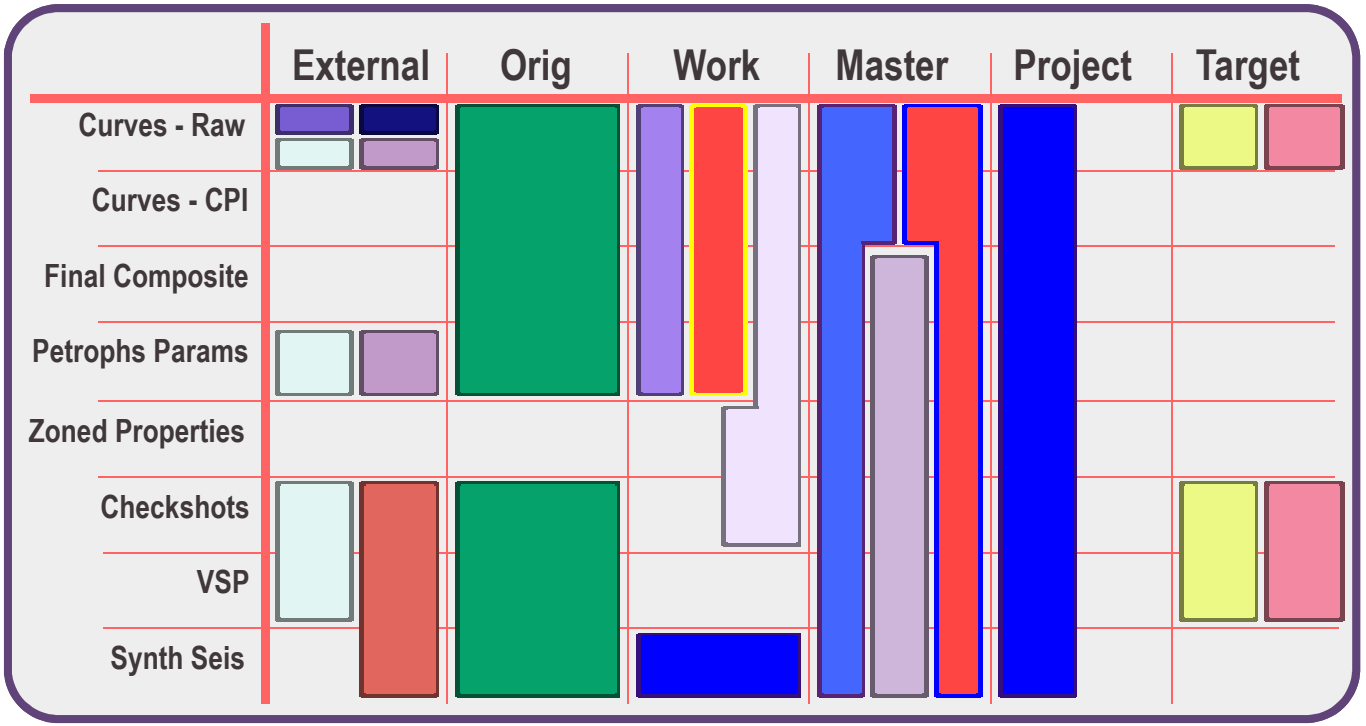
Repository roles - Curve Data



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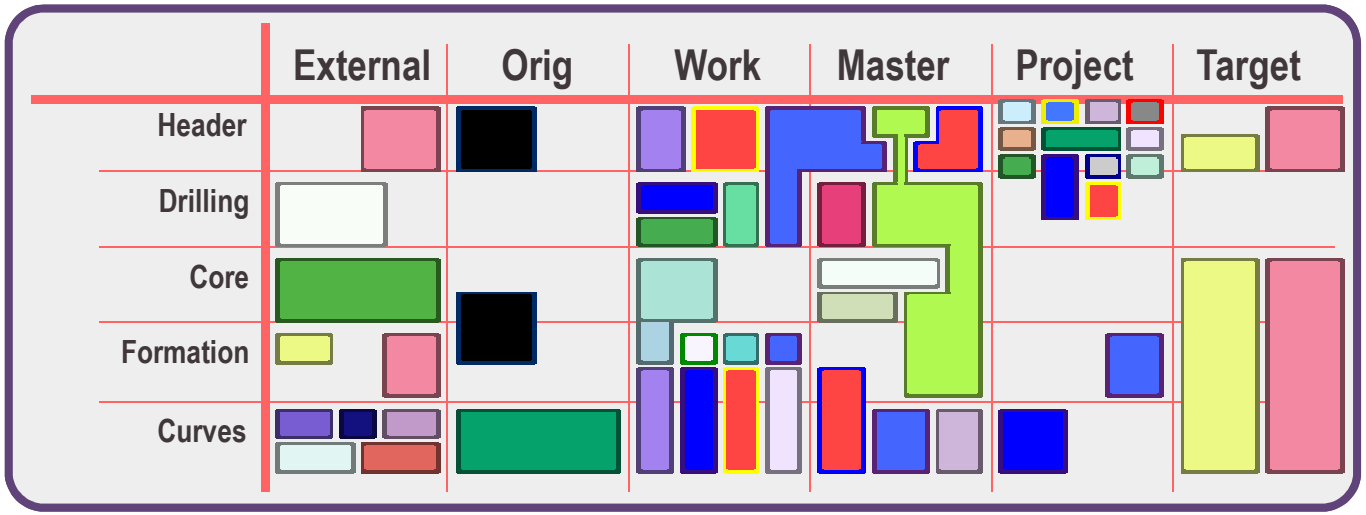
Repository roles - Well Data



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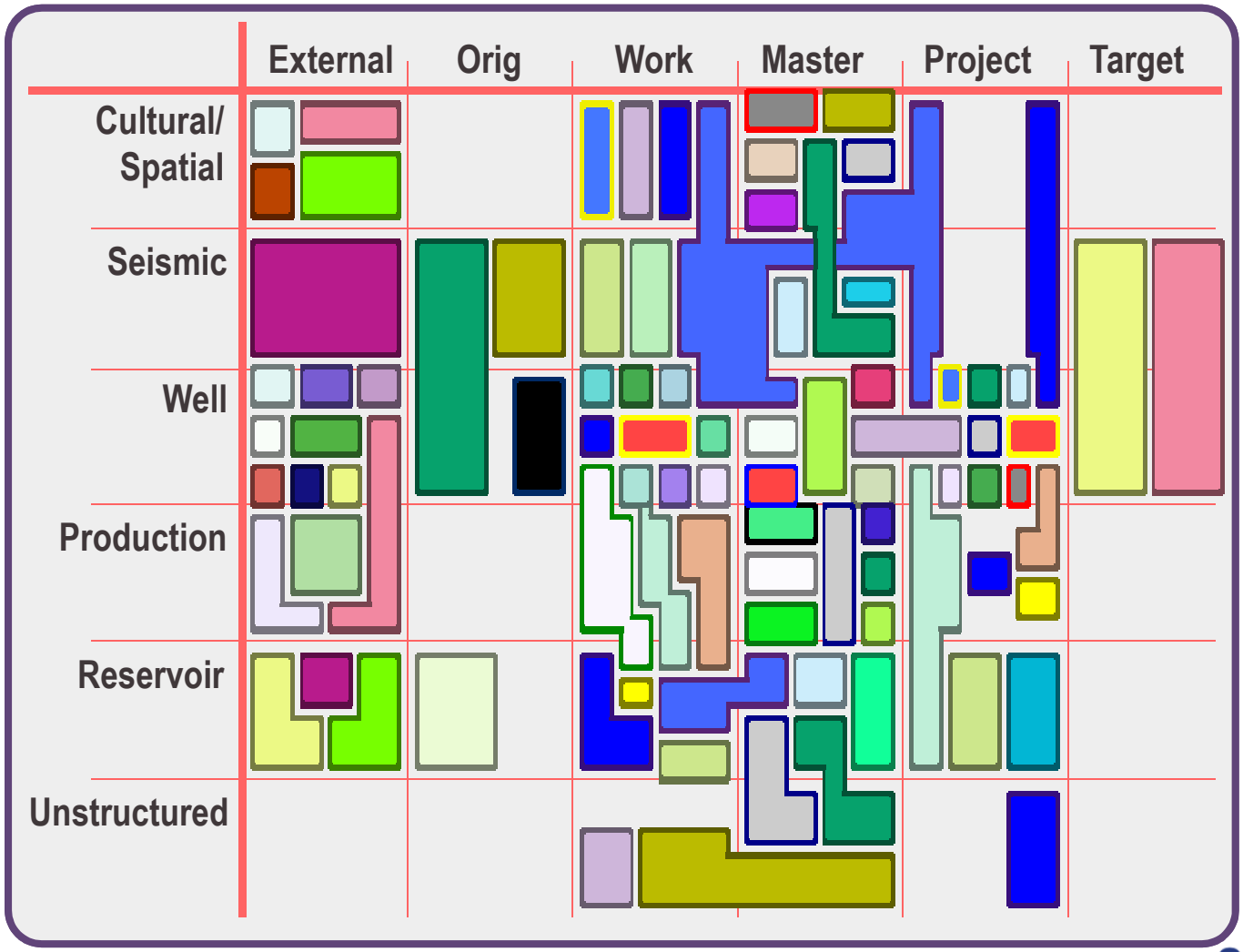
Repository roles



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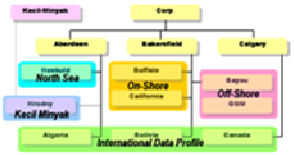
The “Information Landscape”

BigOil - Aberdeen Information Landscape

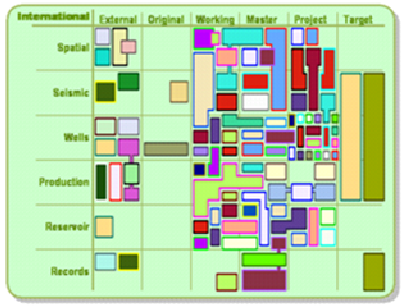
Organisation

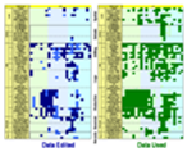
Within the Aberdeen location there are three different ways of handling data, here identified as “North Sea”, “Kecil Minyak” and “International”.



User Impression

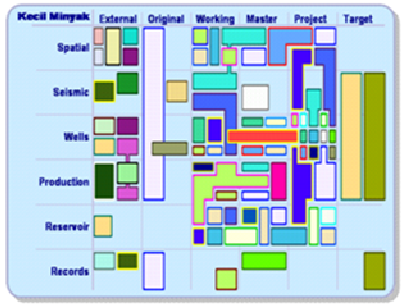
The users were asked to rate the quality of the tools, legacy data, people and processes for handling for each data grouping. This is the summary of the user’s responses.

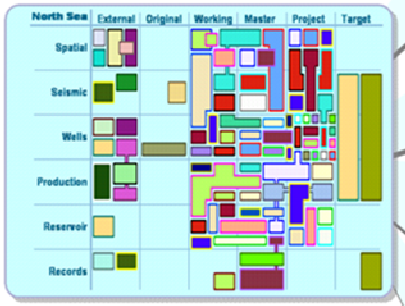


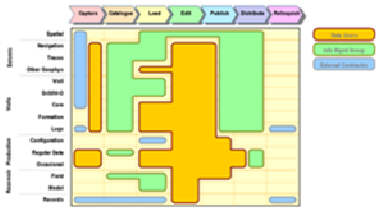


User Footprint

This diagrams show the way the users interviewed interact with data in BigOil’s Aberdeen office. The columns each represents the data categories that a single user either edits or uses.

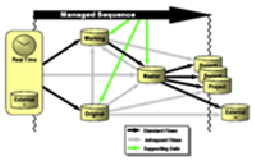






Responsibility

The responsibility for carrying out the tasks in the data life cycle depends on the data category. This diagram shows which tasks are carried out by users, the IM group or contractors.

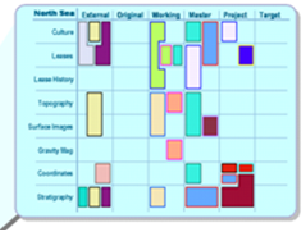


Repository Role Diagrams

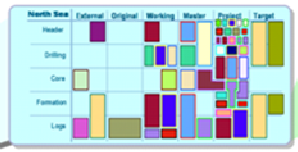
These images document the roles that repositories play in the management of Exploration and Production (E&P) data. The range of data handled has been divided into different categories. Each row documents the repositories that handle that data. The roles that the repositories play have been divided into:

- **External:** The external source for the data
- **Original:** A location where raw values are archived
- **Working:** Where data is edited and interpreted
- **Master:** Approved version of the data usually available for use more widely
- **Project:** Data consumers that use the data without modifying it
- **Target:** Locations outside the company to which data is dispatched

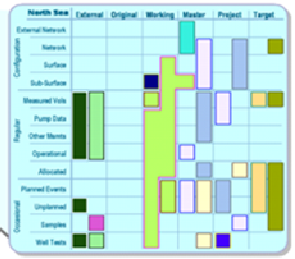
Spatial



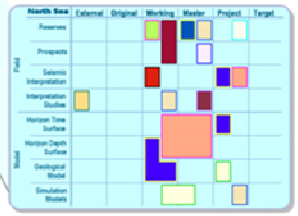
Wells



Production



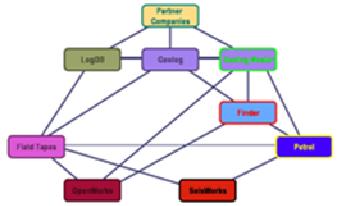
Reservoir

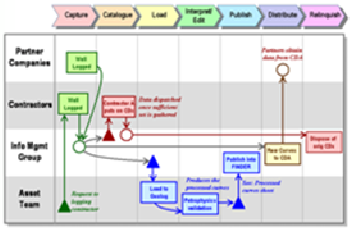


Data Flows – Log Curve Data

This depicts the main data flows for log curve data

Data Flows for Log Curves





Activity Diagram – Log Curve Data

The Information Management Group is responsible for collating new data and passing to CDA before data is sent to the asset team who load the data to Geolog.

Situation Depicted

Date: Oct 2007
Location: BigOil Inc. Aberdeen Office
Data Source: BigOil staff interviews Sep-Oct 2007
Created By: Schlumberger Information Solutions

BigOil

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10 years of Information Landscape Assessments

- Start with what is currently working

  in order to identify improvements

- Specialised tools and data gathering techniques
  - Maturity Metrics
  - Technical user interviews
  - Data Categories
  - Enterprise Architecture
  - Repository Roles

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Repository Roles

- There is no "agreed-upon view across the organization" (and won't be for some time)
- Usually can't detach "information that is key to the operation of a business" from the associated working data
- Isolating key information into a single "Master Data" system would be self defeating

- The "Corporate" repository role

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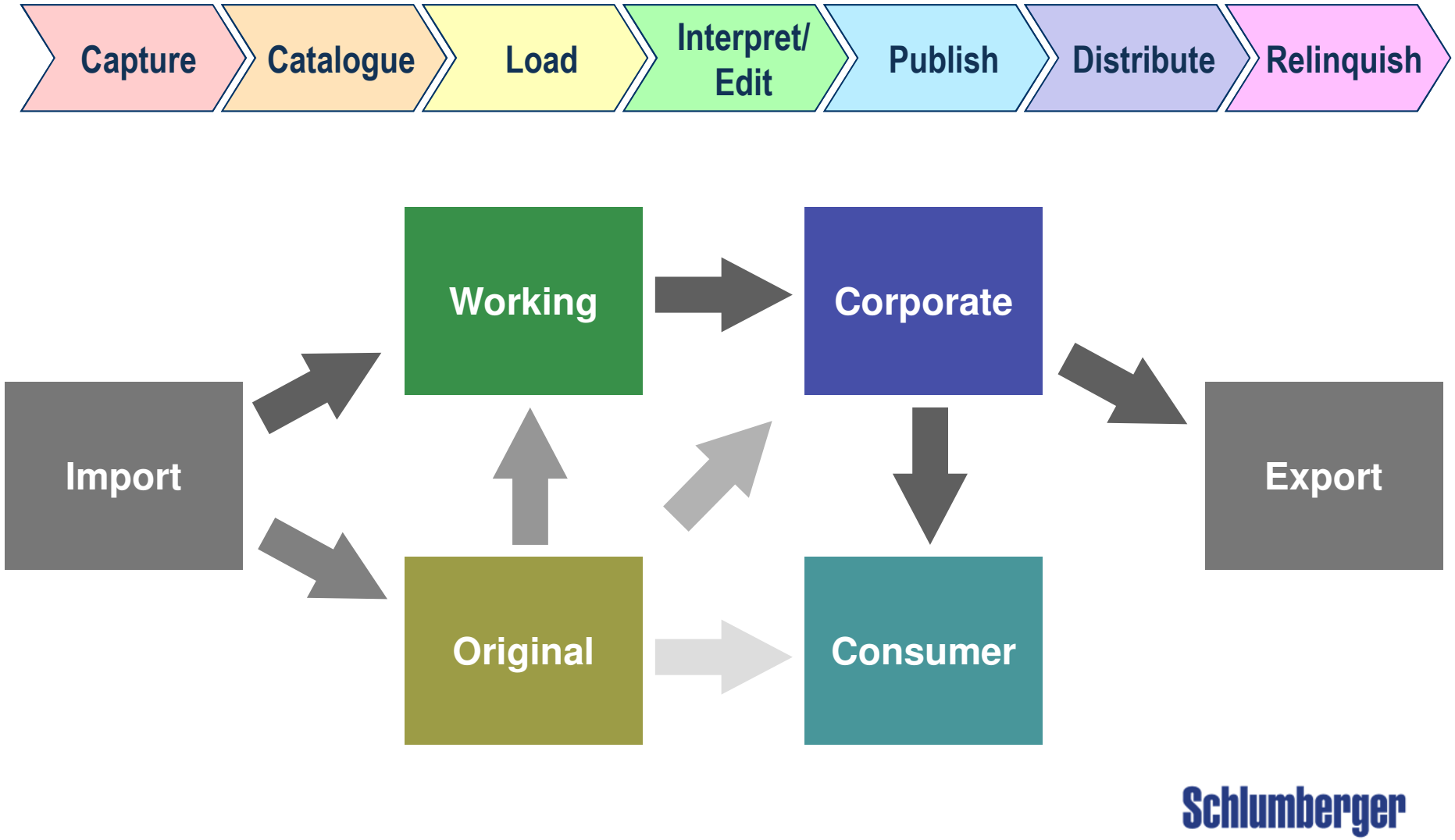
Data Lifecycle and Repository Roles



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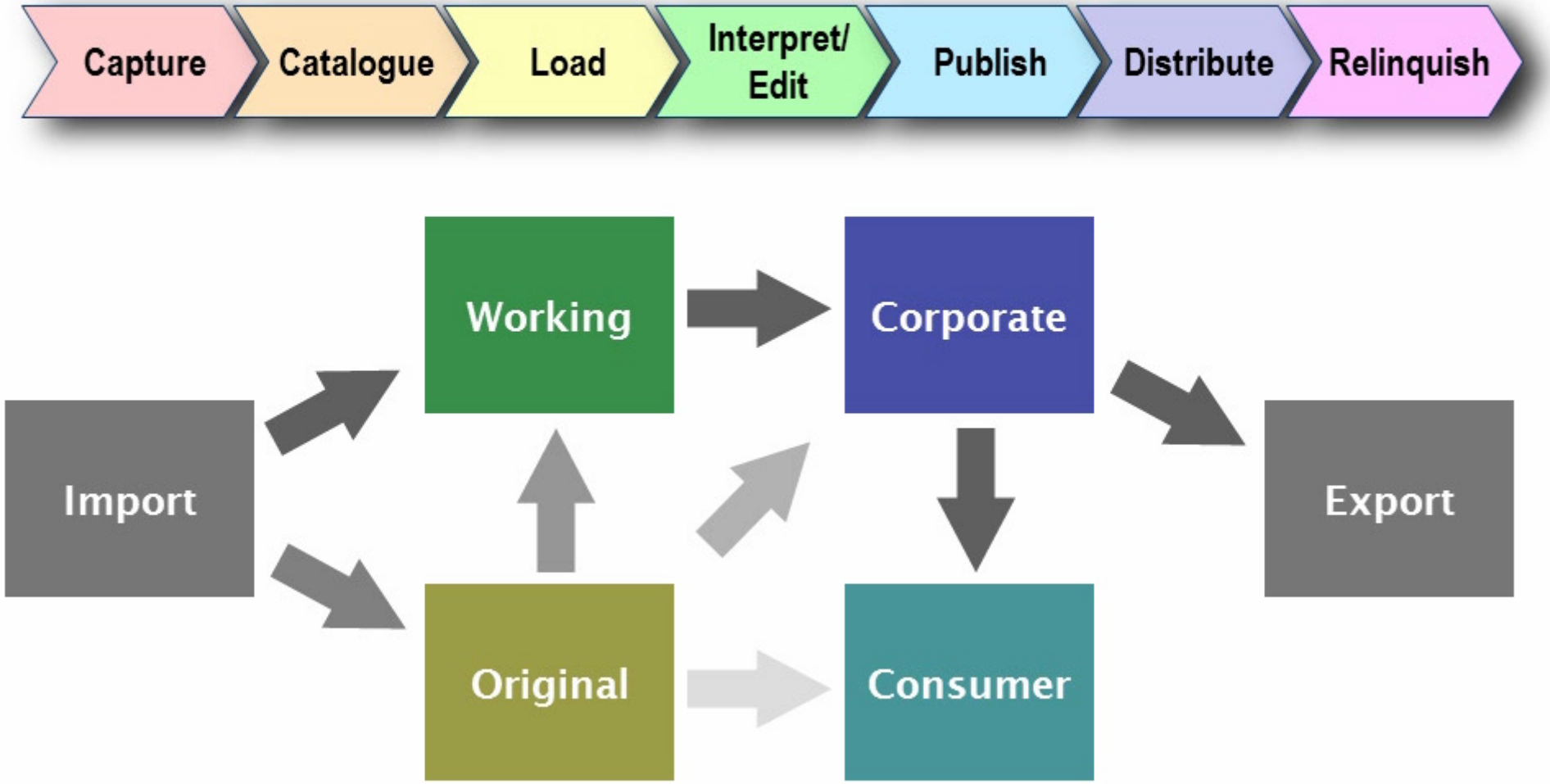
Data Lifecycle & Roles



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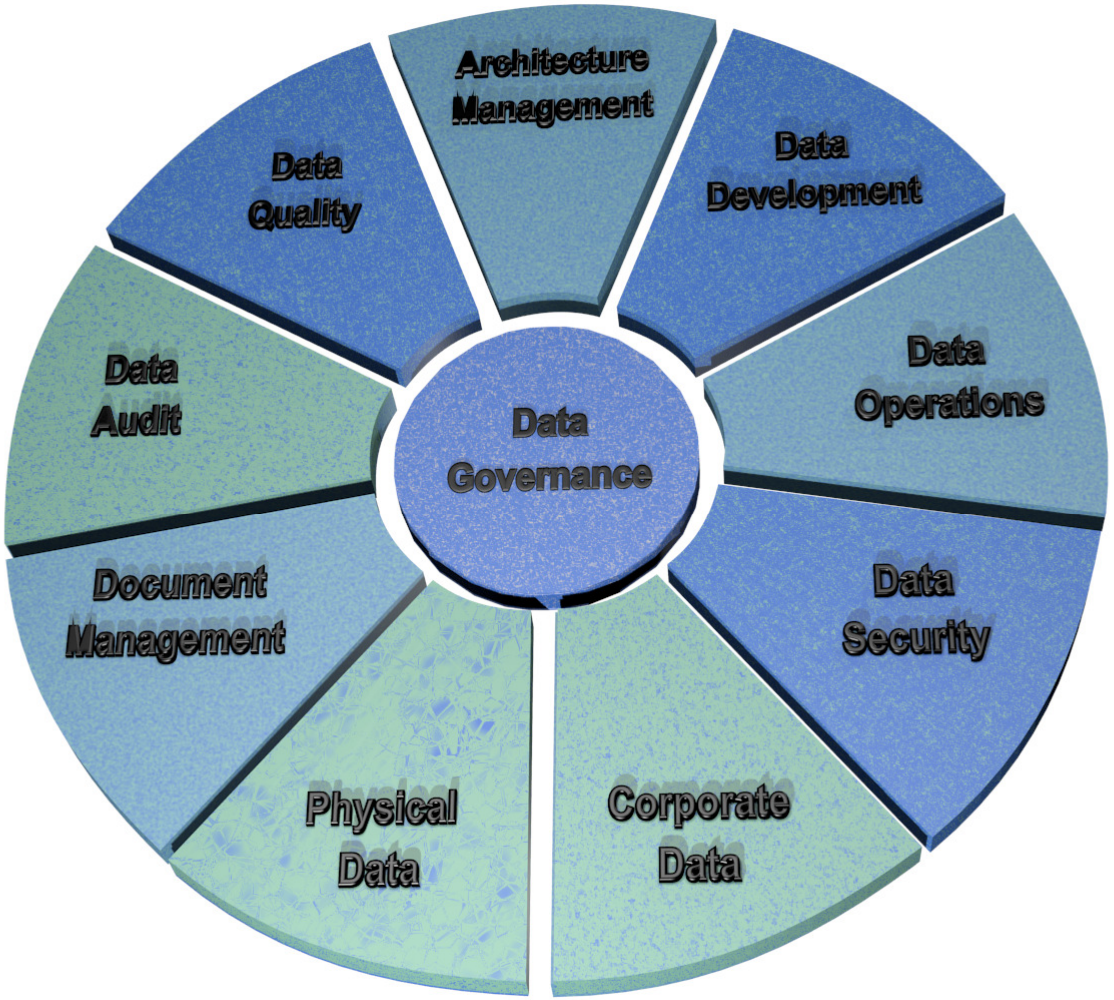
Data Handling in E&P



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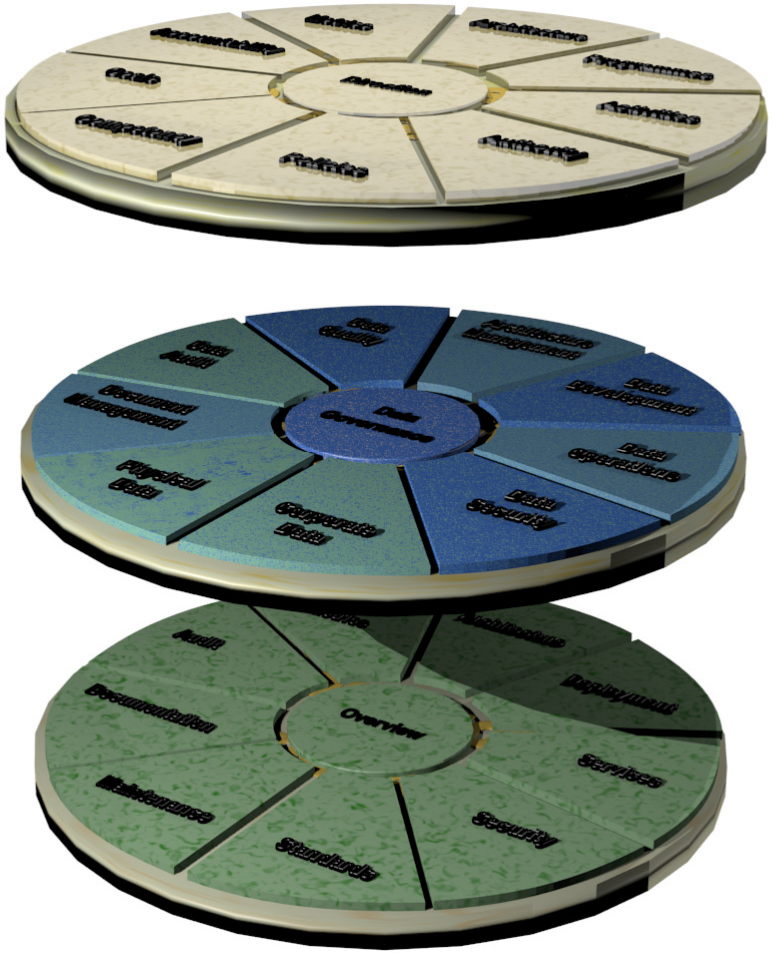
One Layer of the Enterprise



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Conclusions

- The concept of "master data" works well for many industries

  …but for E&P technical data it doesn't

- A collaboration of technical specialists
  - each with enough funding to have their own special tools
  - each with their own concepts

- Repository roles provide a way to deliver the intended benefit

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Questions, Comments or Discussion?

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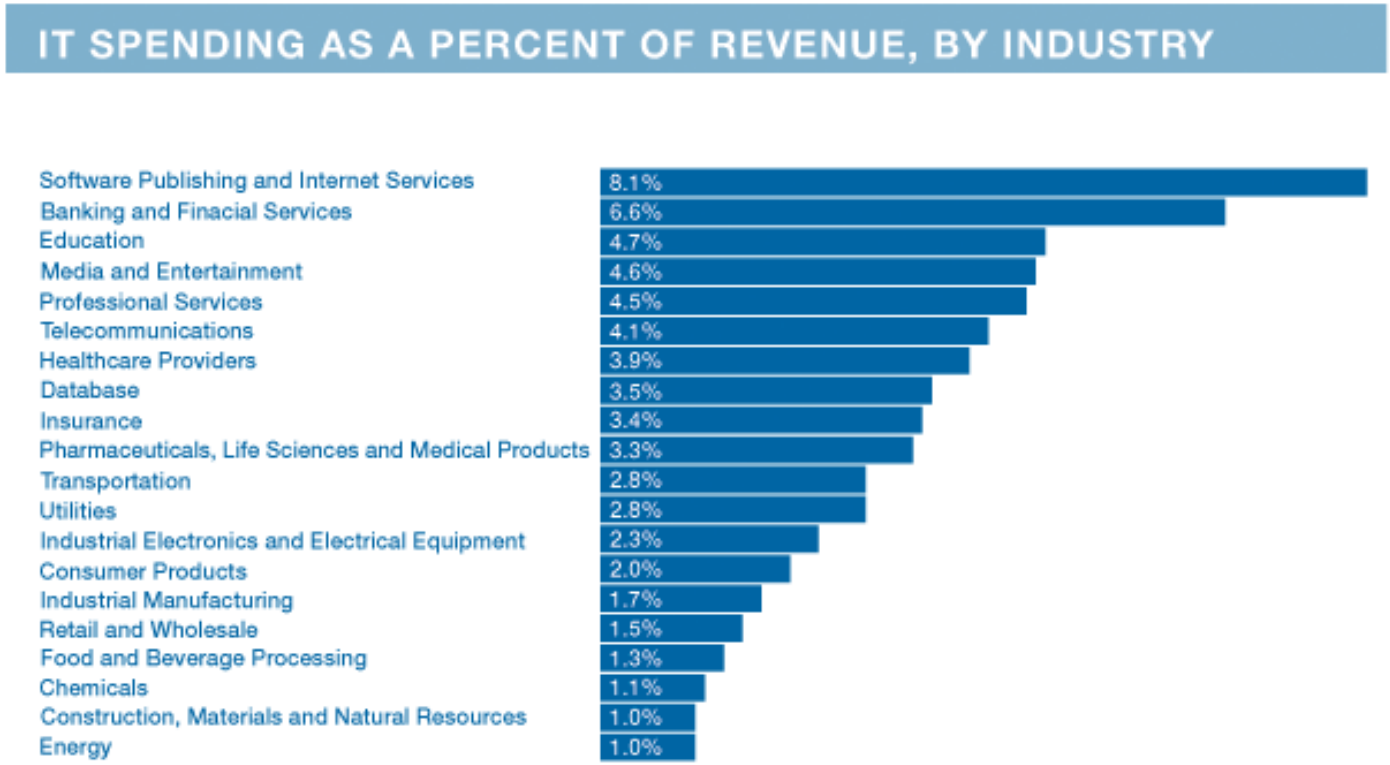
E&P Spend on Information Technology



Source: Gartner IT Key Metrics Data (December 2012)

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