

Information Management and Analytics for better outcomes

Steve Hawtin

Schlumberger

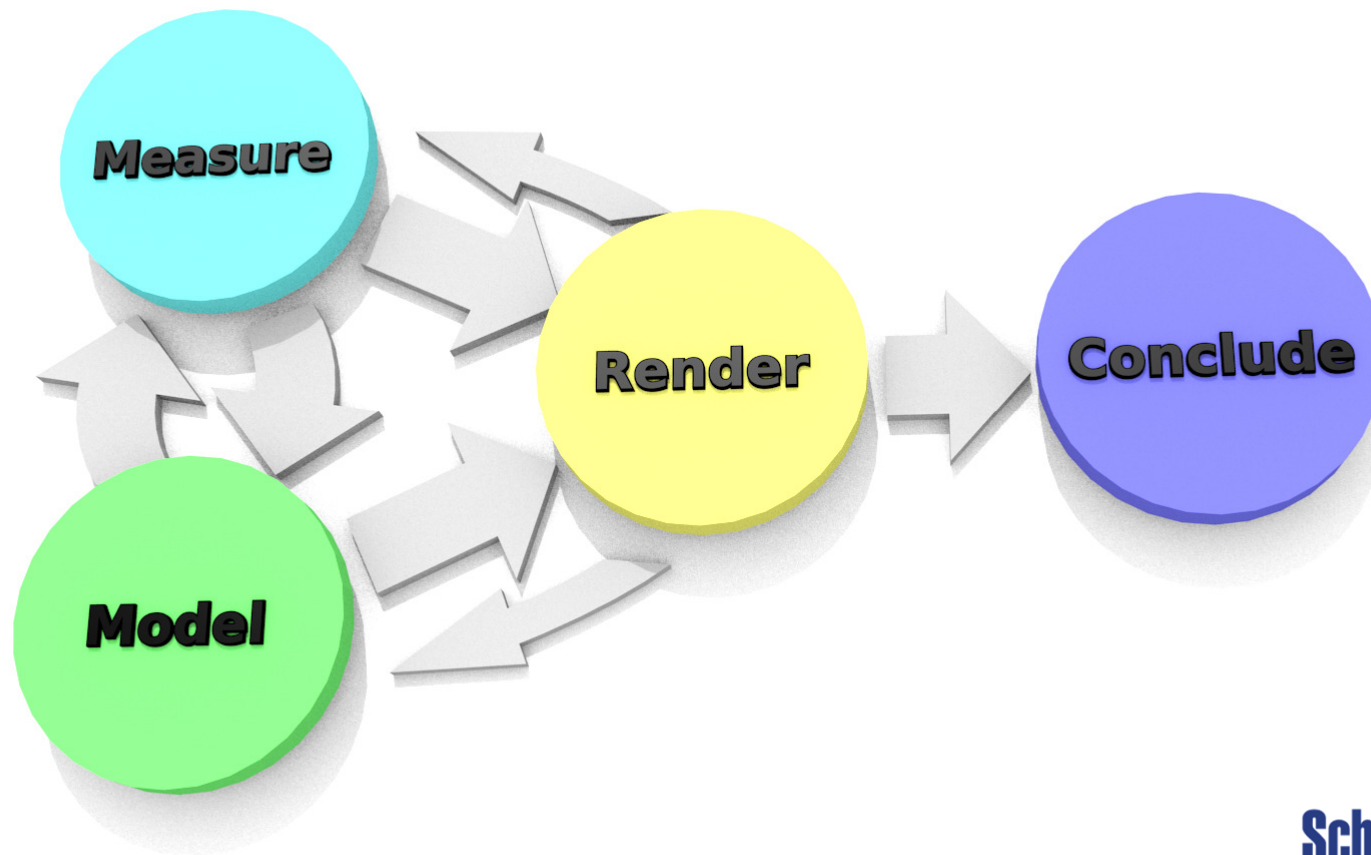
Mandatory Attribution Slide

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Analytics?

- the discovery and communication of meaningful patterns



Applying Analysis to Information Handling

- Estimating data's value
 - The business case
- The Information Landscape
 - Identify strategies and tactics
- Programme Portfolio
 - Balance the projects

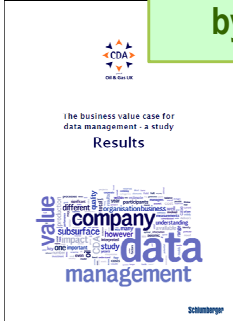
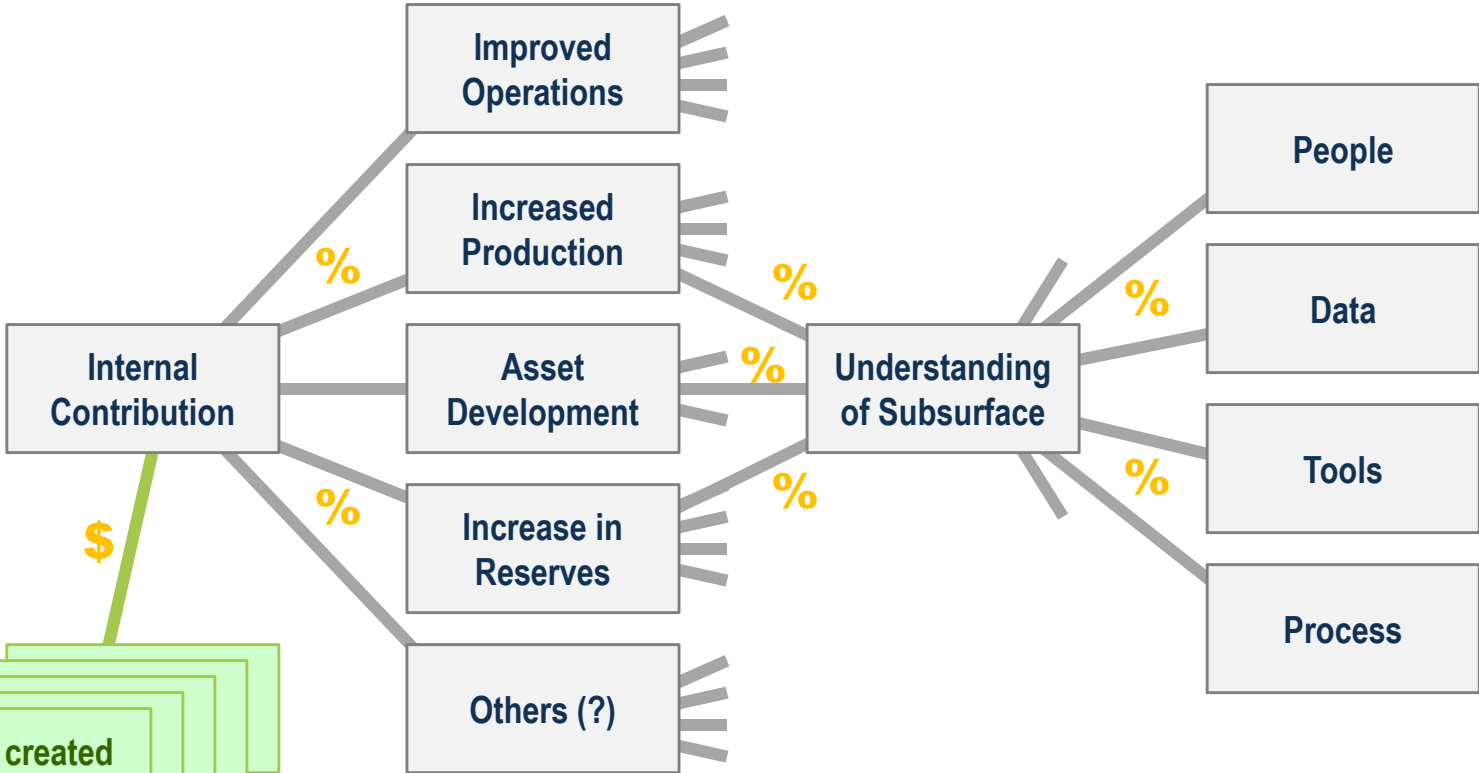
Estimating Data's Value

■ Anecdotes

■ Formal Techniques - Examples

- *"The business value case for data management" CDA (2011)*
- *"From Overload to Impact: An Industry Scorecard on Big Data Business Challenges" Oracle Report (2012)*
- *"Quantitative value of data & data management" Paul Haines & Mark Weisman – PNEC15 (2011)*
- *"Burlington: Improving technology investment planning with metering" Dan Shearer & Debbie Garcia - PNEC10 (2006)*

Estimating Value: CDA Model



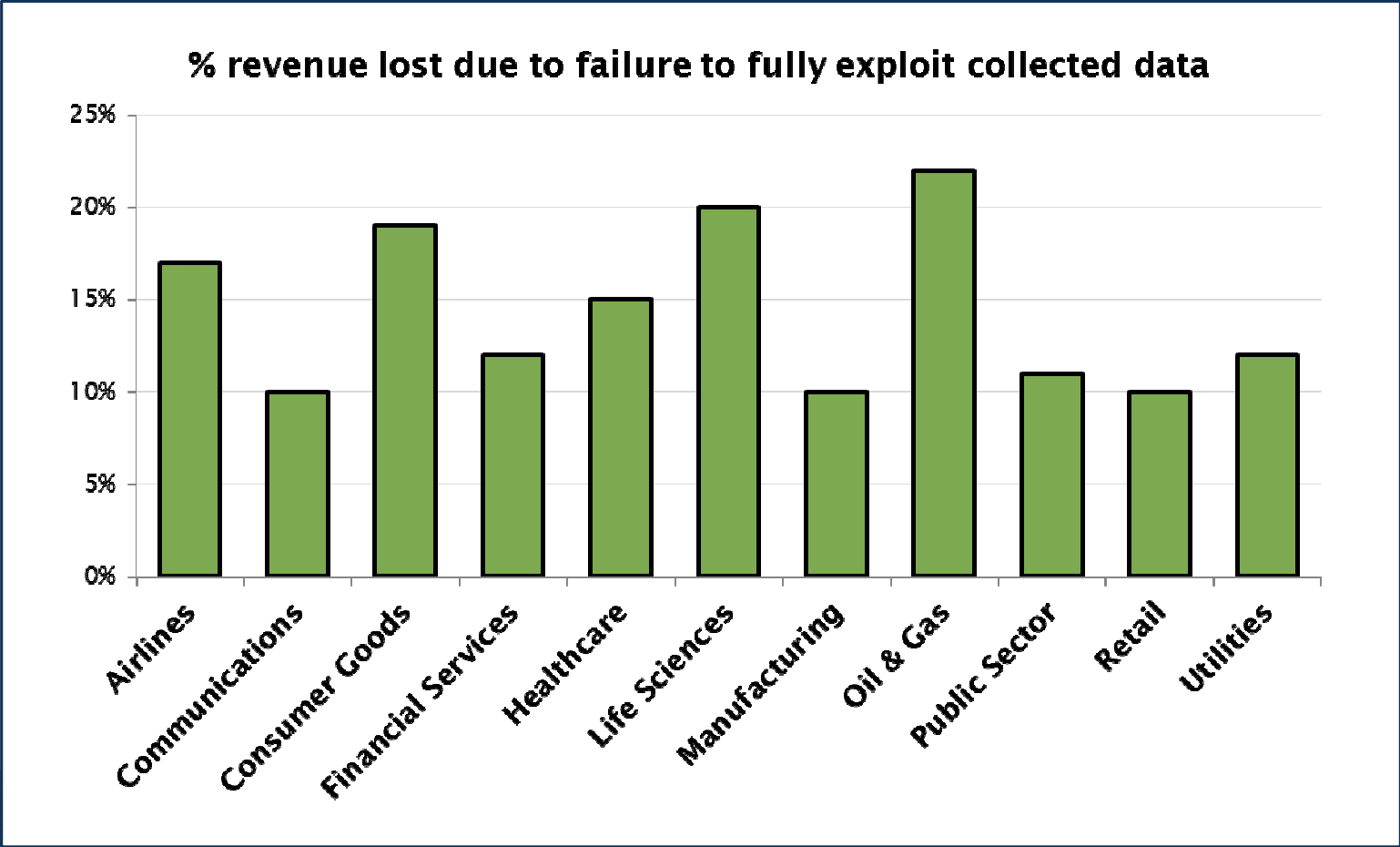
<http://www.oilandgasuk.co.uk/datamanagementvaluestudy/>



Estimating Value: CDA Model - worked example

				\$M
Value generated in projects each year (\$M)				\$100.0
	Increase Reserves	Develop Asset	Enhance Production	
Proportion	50%	10%	40%	
Value from activity	\$50.0	\$10.0	\$40.0	
from Subsurface data component	83%	73% 38%	62%	
Value from data	\$15.77	\$2.77	\$9.42	
Total value derived from data each year (\$M)				\$28.0

Industry Scorecard: Oracle Report



ORACLE
From Overload to Impact:
An Industry Scorecard on Big Data Business Challenges
July 17, 2012



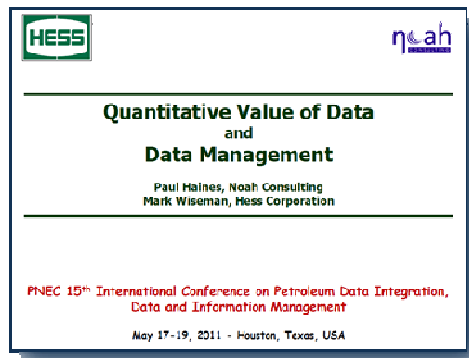
www.oracle.com/us/industries/industry-scorecard-1683398.html

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<http://www.noah-consulting.com/>



<http://dm4ep.com/>

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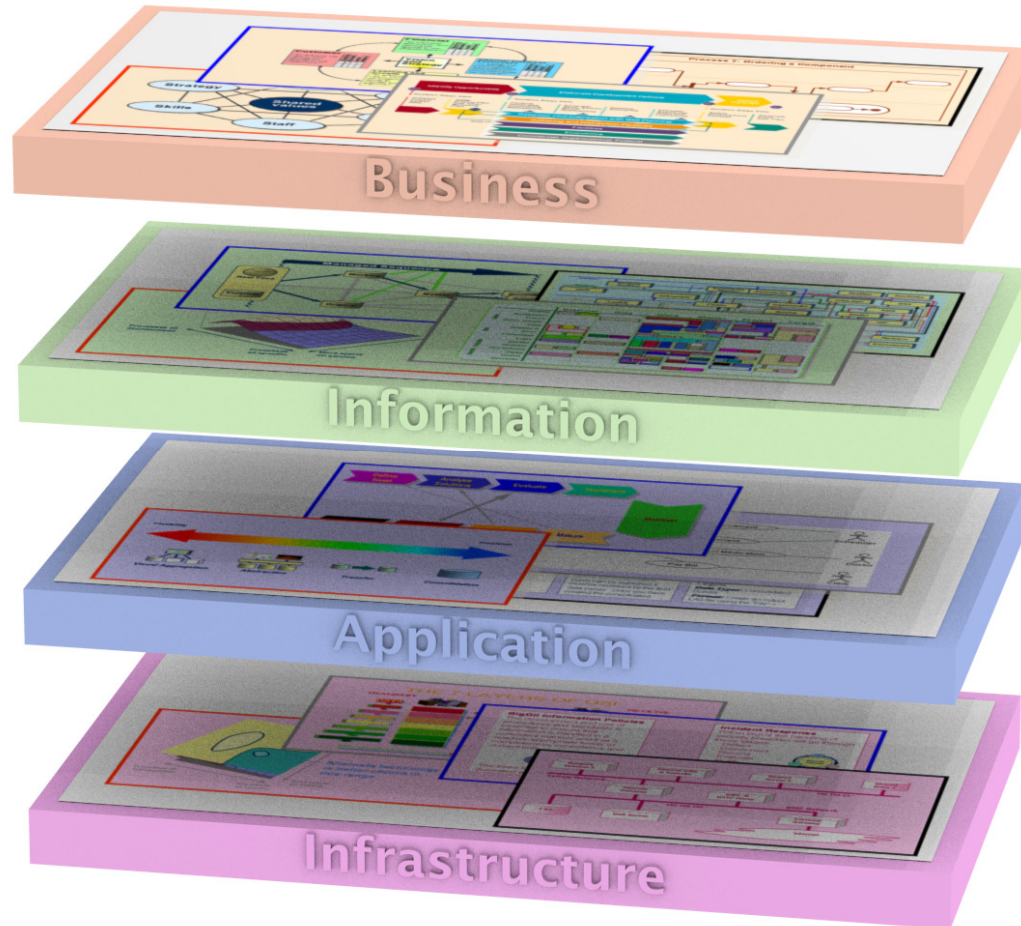
Applying Analysis to Information Handling

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The Information Landscape

- A comprehensive picture of all technical data handling, information flows and associated services:
 - The data categories
 - Data flow, how information moves
 - Which categories of information are held where
 - How business activities interact with the data
 - How information handling varies within the organisation
 - Relationships between the organisational groups

Enterprise Architecture

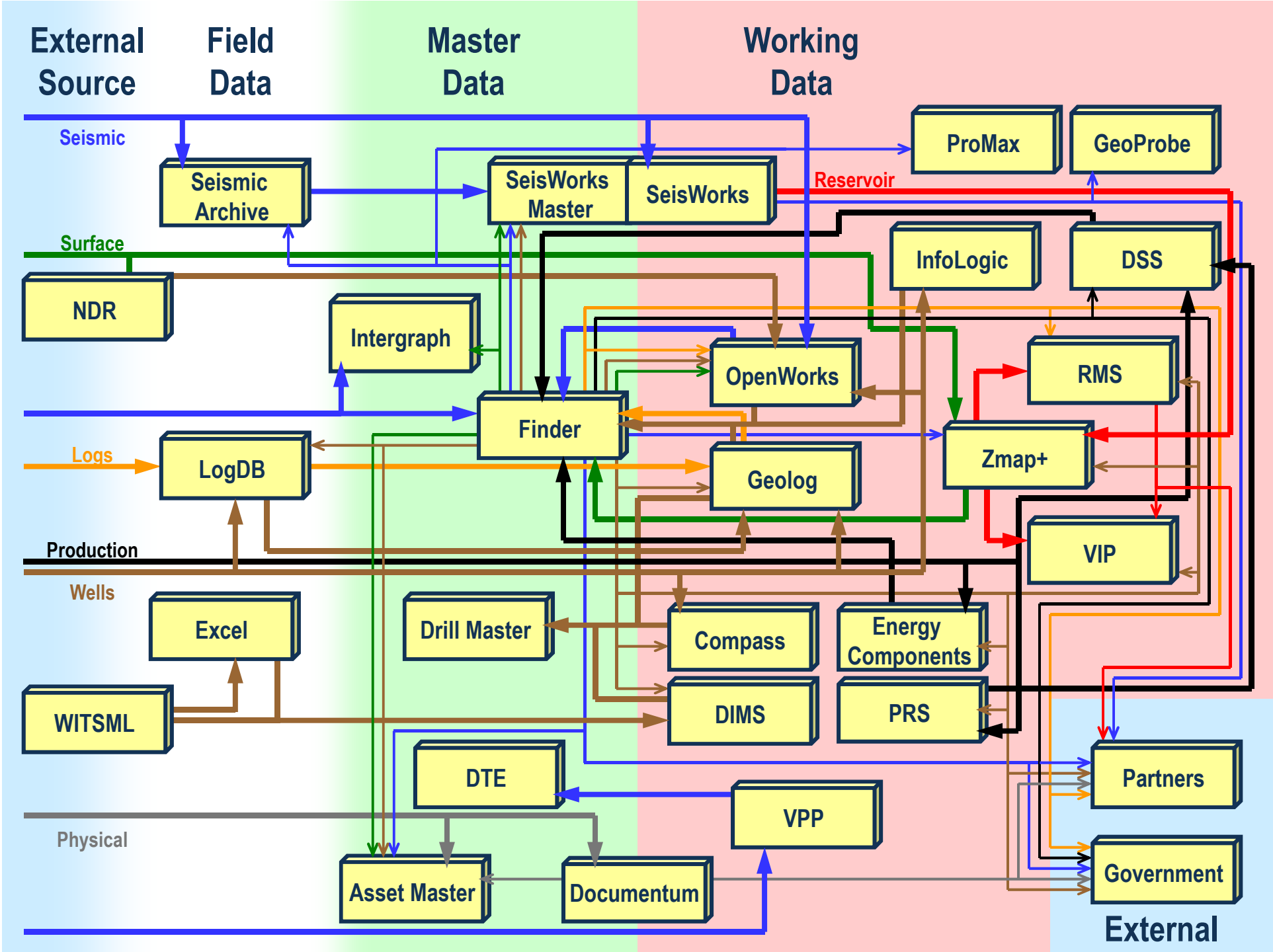


Business
Organization, Strategy,
Business Process

Information
Master Data, Information Flow
Data Relationships

Applications
Applications Portfolio,
Functionality

Infrastructure
Physical Components,
Network, Support Utilities



E&P Technical Data Categories

Spatial

Culture
Bathymetry/ Topography
Surface Images
Gravity & Magnetics

Seismic

Navigation
Trace
Acquisition Parameters
Processing Parameters
Velocities

Well

Headers
Directional
Planning
Drilling
Completion
Events
Core Description
Surface Picks
Pressures
Raw Curves
Final Curves
Zoned Properties
Synthetic Seismograms

Identity

Drilling

Formation

Logs

Production

External Network
Network
Surface
Sub-Surface
Measured Volumes
Operational
Allocated Volumes
Planned Events
Unplanned Events
Samples
Well Tests

Configuration

Regular

Occasional

Indexes

Physical Assets
Scanned Documents
Electronic Documents

Reservoir

Reserves
Prospects
Seismic Interpretation
Horizon Grids
Geologic Models
Simulation Models

Facilities

Document Control
Build Data
Project Control
Maintenance

User Data Footprints

		Data Type	Edit	
Spatial	Spatial	Culture		
		Licenses / Leases		
		License History		
		Bathymetry		
		Surface Images		
		Grav & Magnetics		
		Coordinates		
		Stratigraphy		
		2D Navigation		
		3D Navigation		
Seismic	Other	3D Outlines		
		2D Seismic Trace		
		3D Seismic Trace		
		Acquisition Param		
		Processing Param		
		Velocities		
		Headers		
		Directional		
		Planning		
		Drilling		
Wells	Well	Completion		
		Events		
		Drill/ WO Treatmt		
		Core Description		
		Geochemistry		
		Surface Picks		
		Intervals		
		Pressures		
		Curves - Raw		
		Curves - CPI		
Wells	Frommain	Final Composite		
		Pphysical Param		
		Zoned Properties		
		Checkshots		
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		Network		
		Surface		
		Sub-Surface		
Wells	Core	Measured Vols		
		Pump Data		
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		Operational		
		Allocated Vols		
		Planned Events		
		Unplanned Events		
		Samples		
		Well Tests		
		Reserves		
Reservoir	Field	Seis Interpretation		
		Previous Studies		
		Horizon Time Grid		
		Horizon Depth Grid		
		Geologic Models		
		Simulation Models		
		Physical Assets		
		Scanned Docs		
		Electronic Docs		

Data Edited

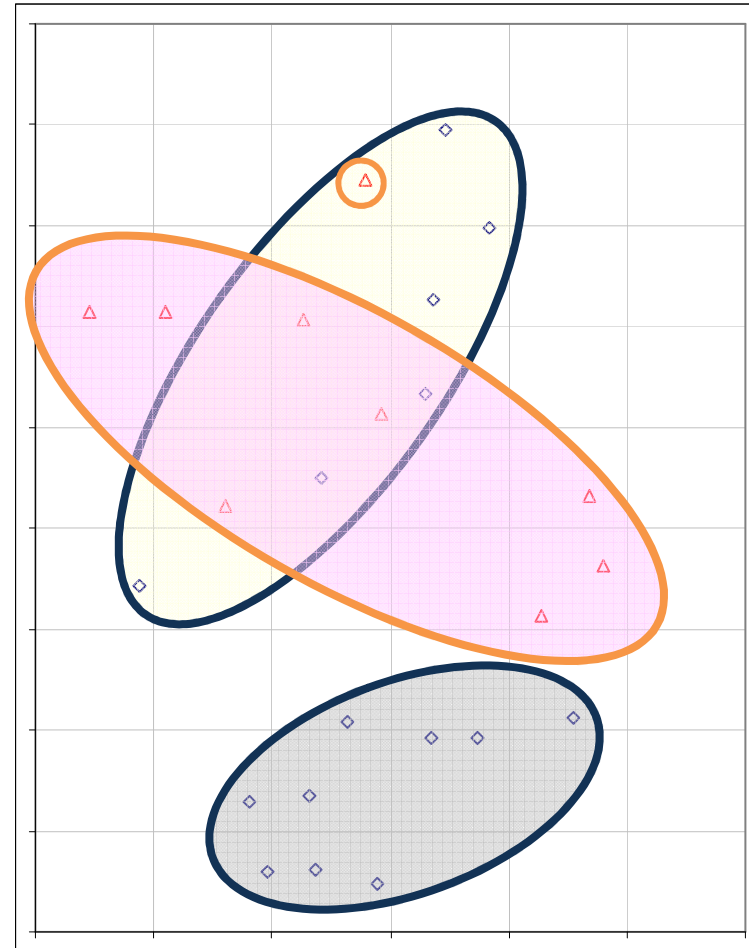
Records Reservoir Production Logs Drilling Seismic Spatial

		Data Type	Use	
Spatial	Spatial	Culture		
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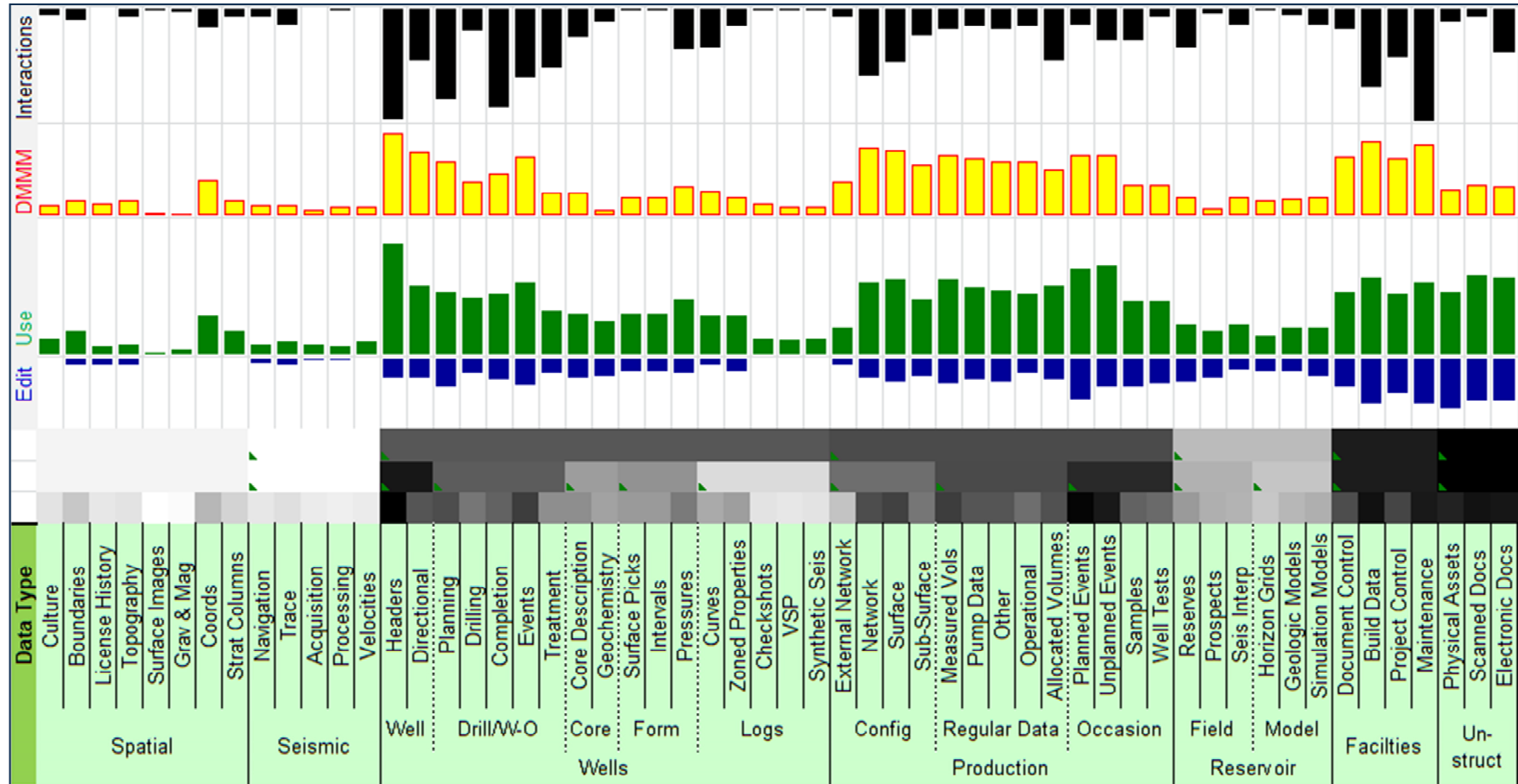
Data Used

Cluster Analysis of User Data

- Cluster analysis on user's stated data needs
- Two groups utilize different data

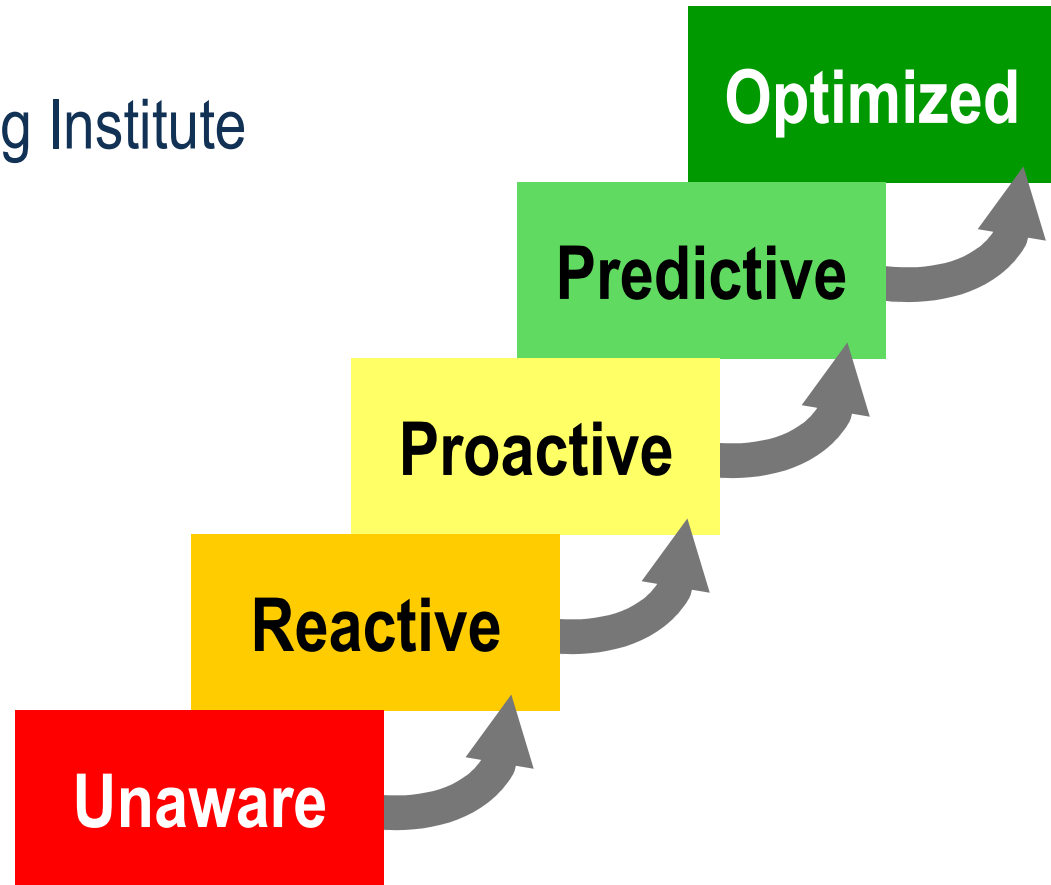


Identifying the key data categories

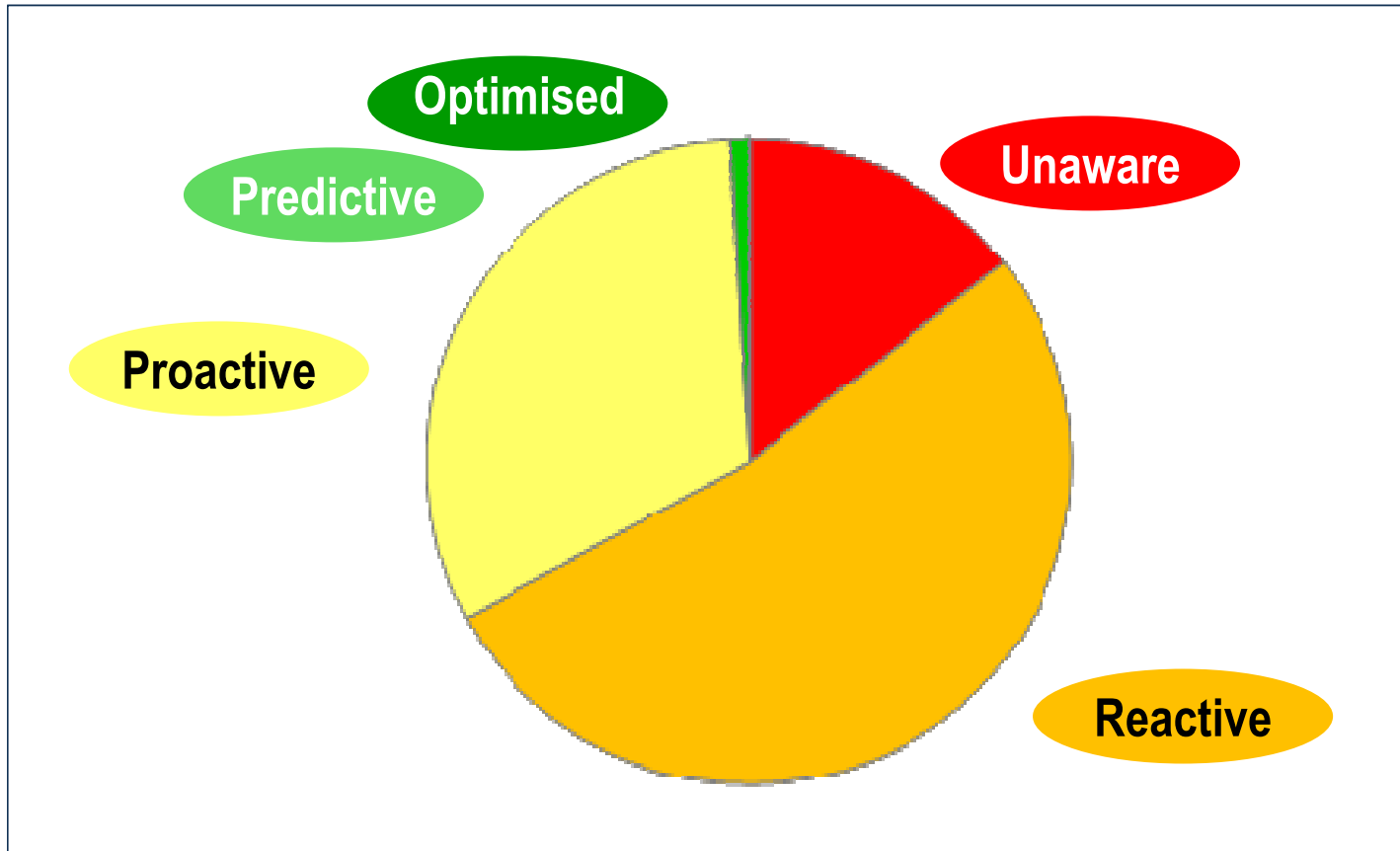


Data Management Maturity Metric

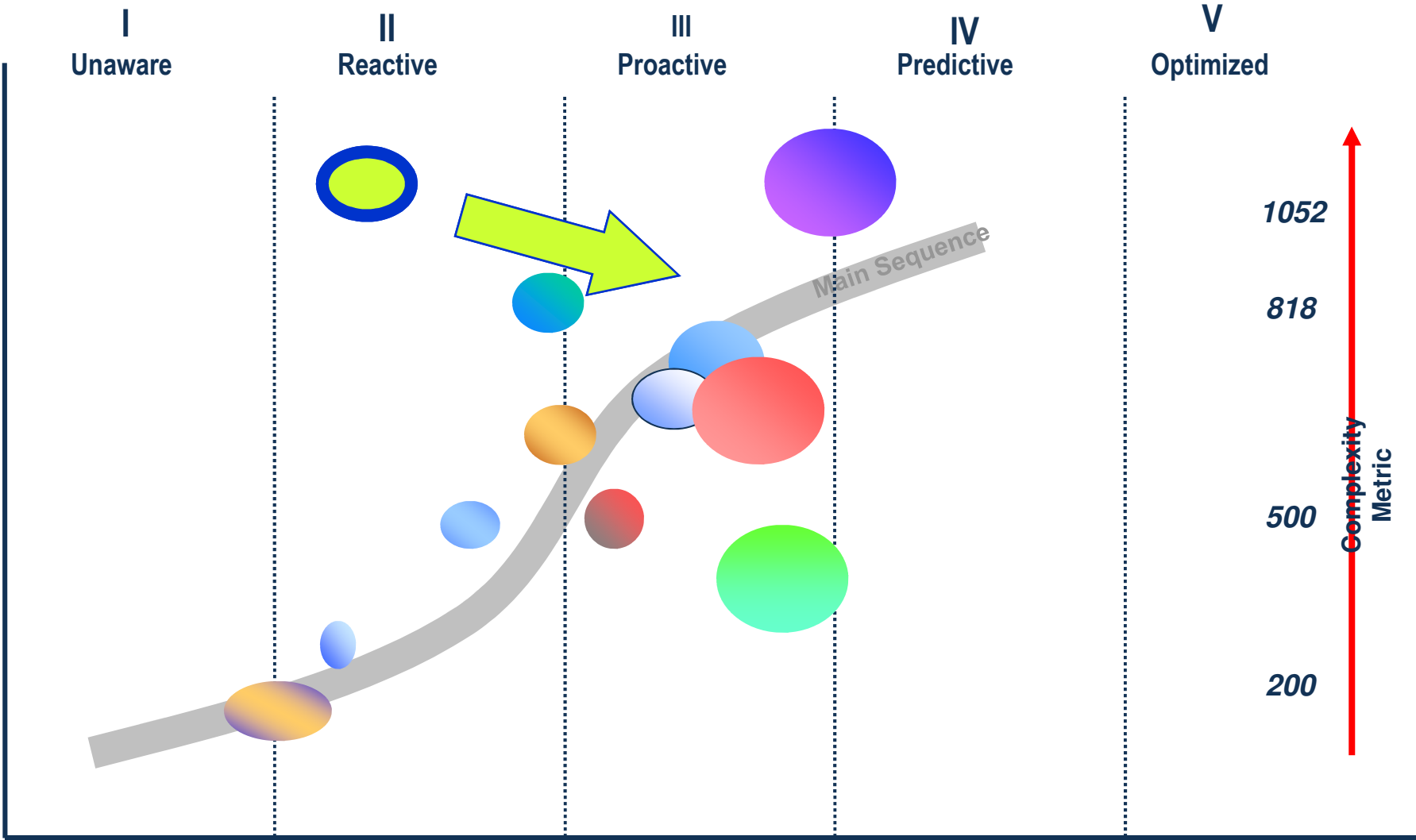
- 1980s
 - Software Engineering Institute
- 1990s
 - Schlumberger +
- 2000s
 - most E&P IM consultancies



Typical Maturity breakdown



Maturity v Complexity

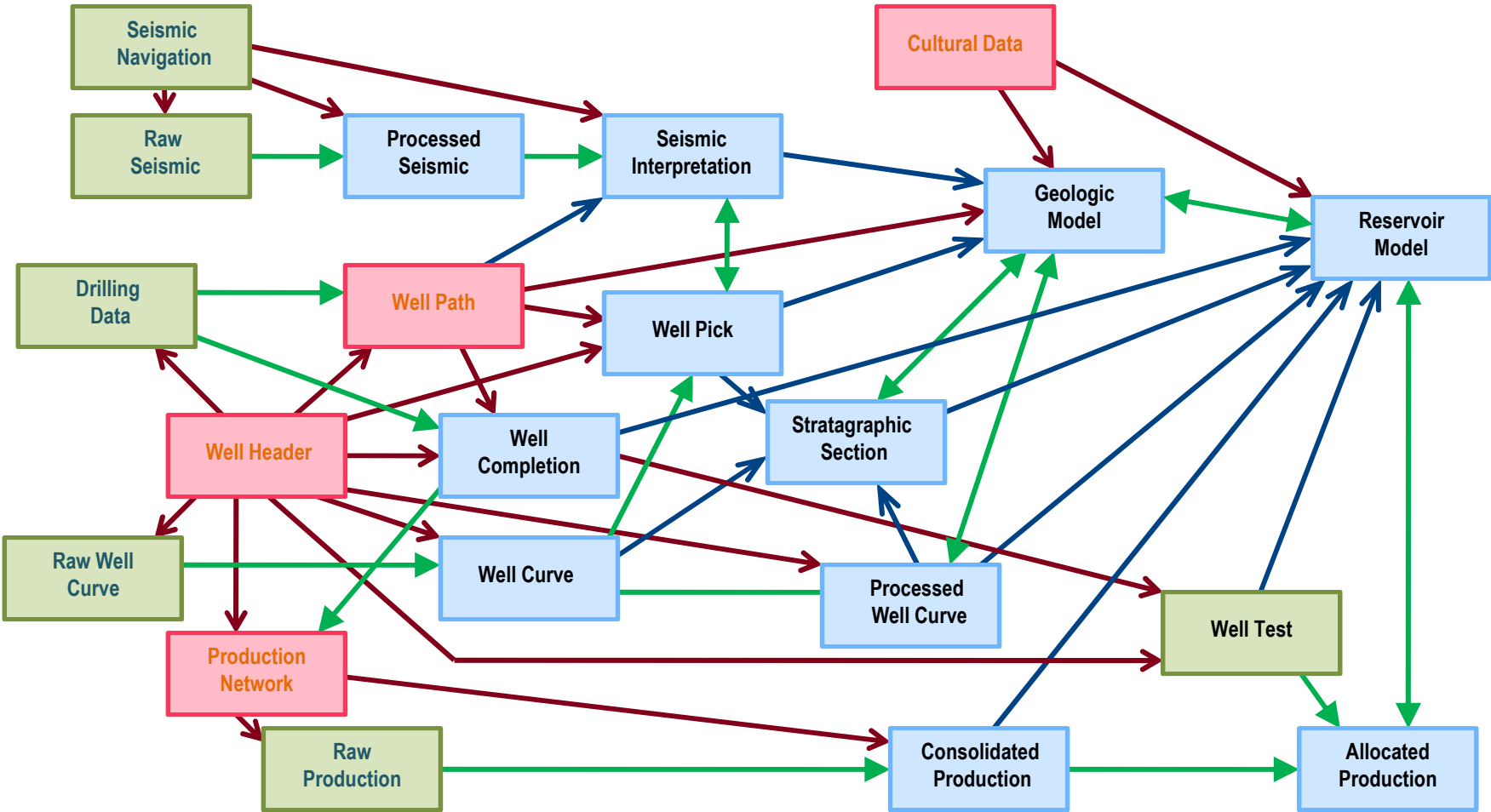


Based on Jess Kozman & Steve Hawtin "The Main Sequence" (2008) - PNEC12

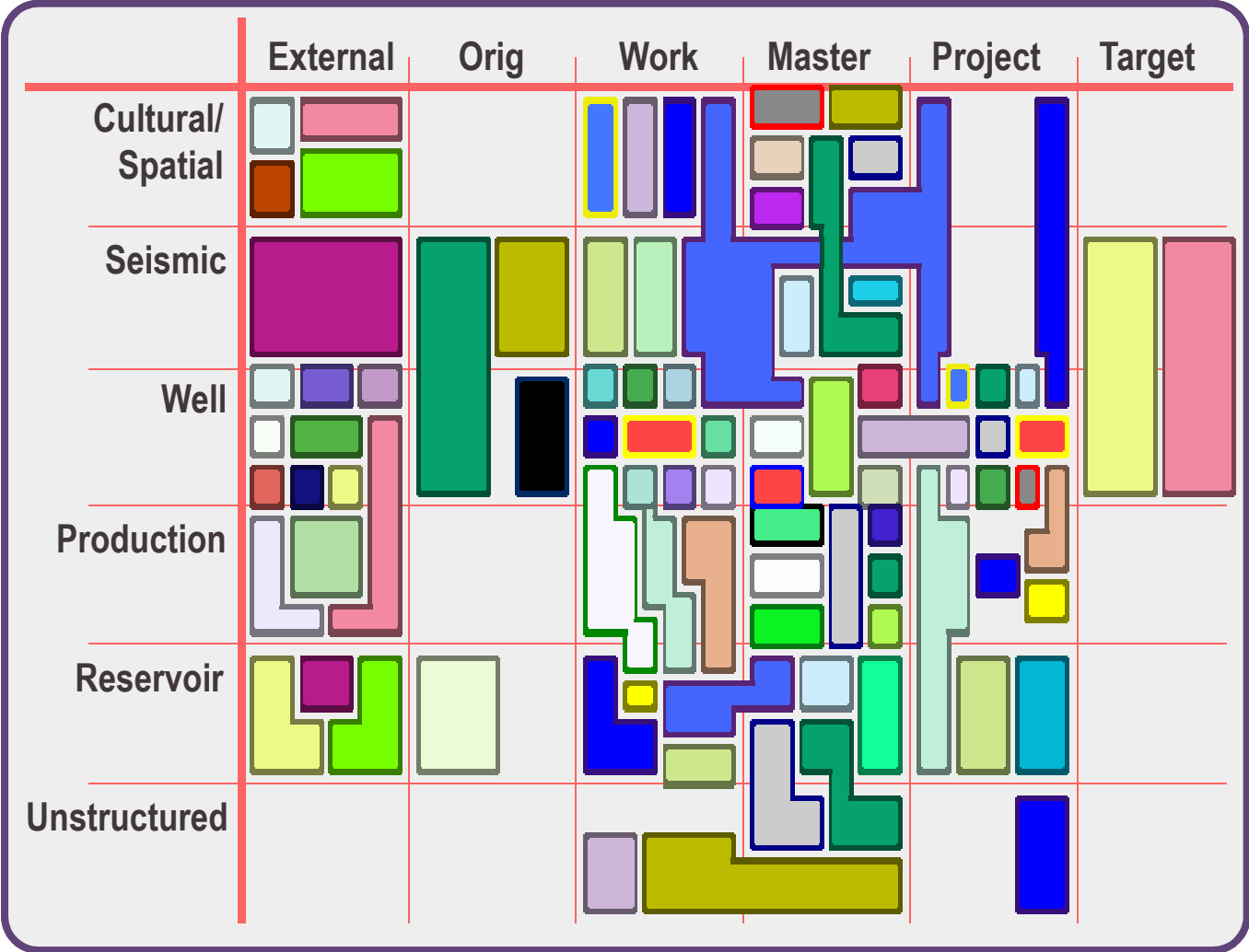
<http://dm4ep.com/>

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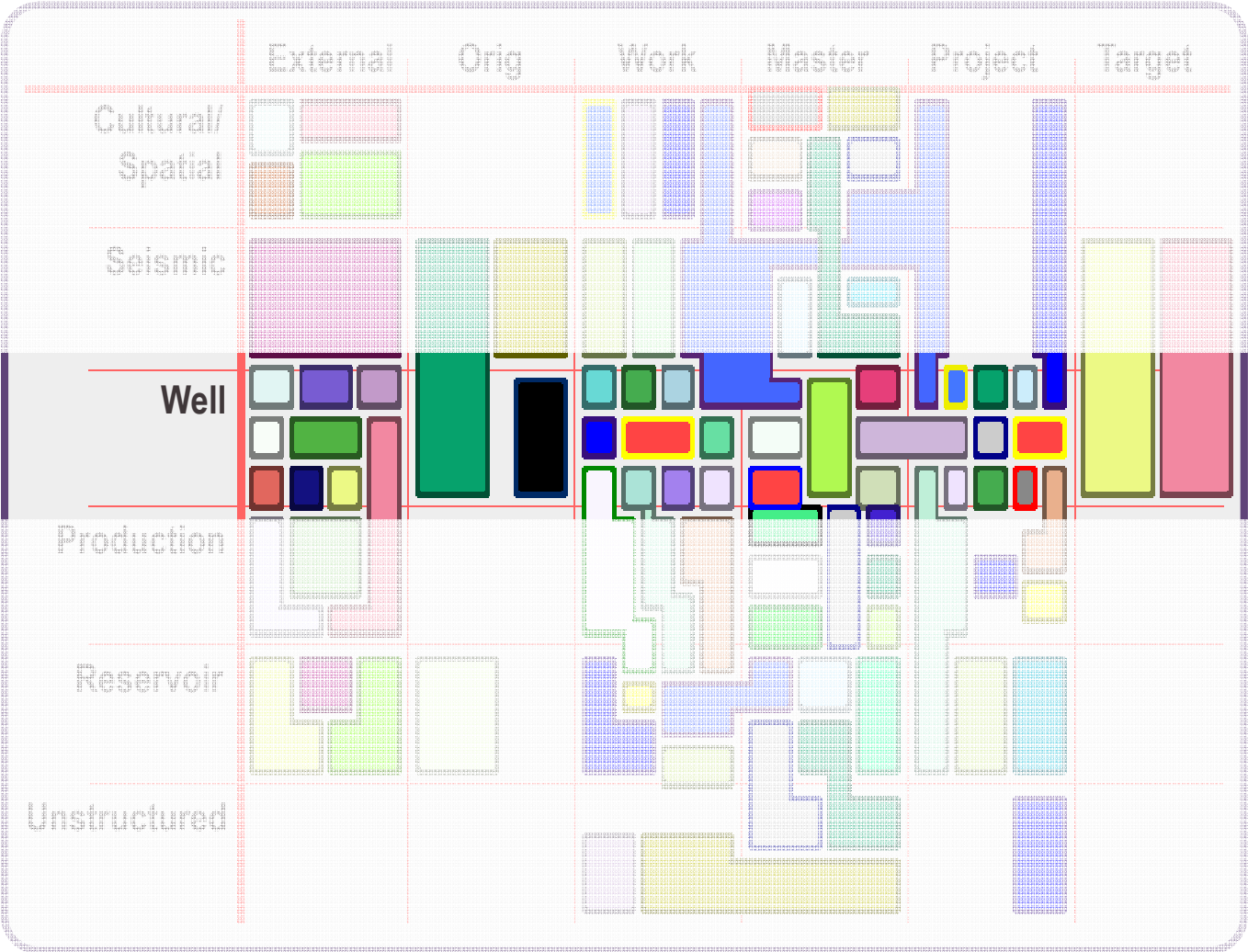
Typical Flows between Data Categories (simplified)



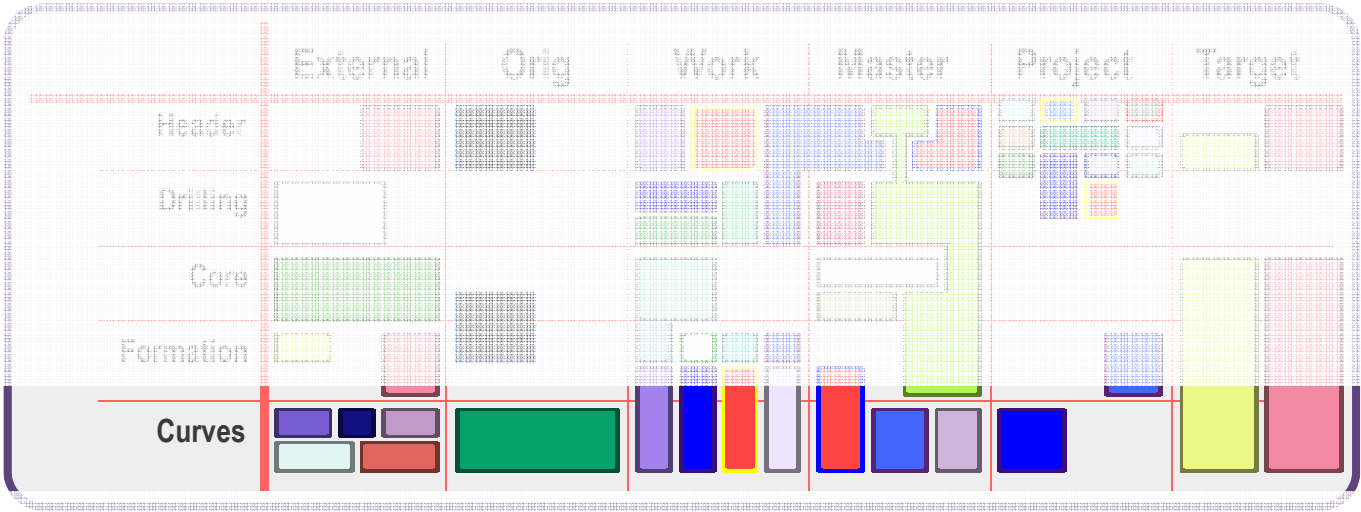
Repository roles



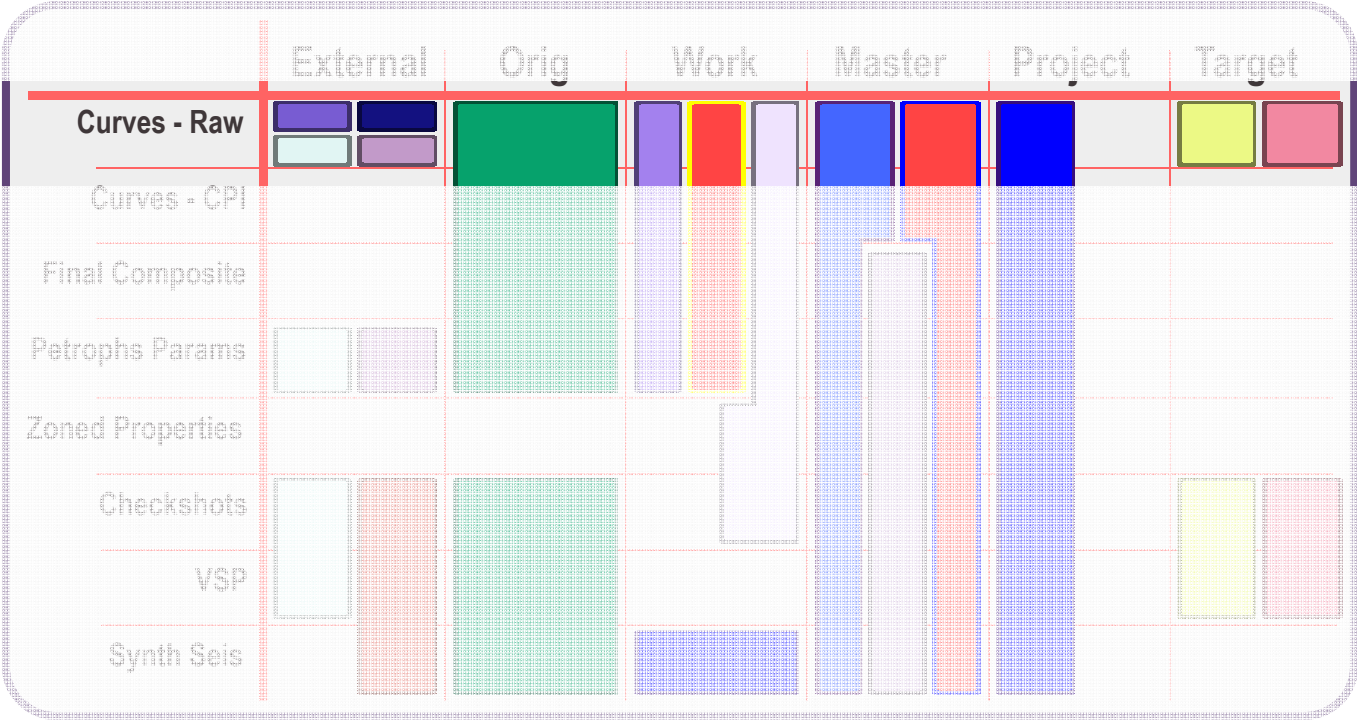
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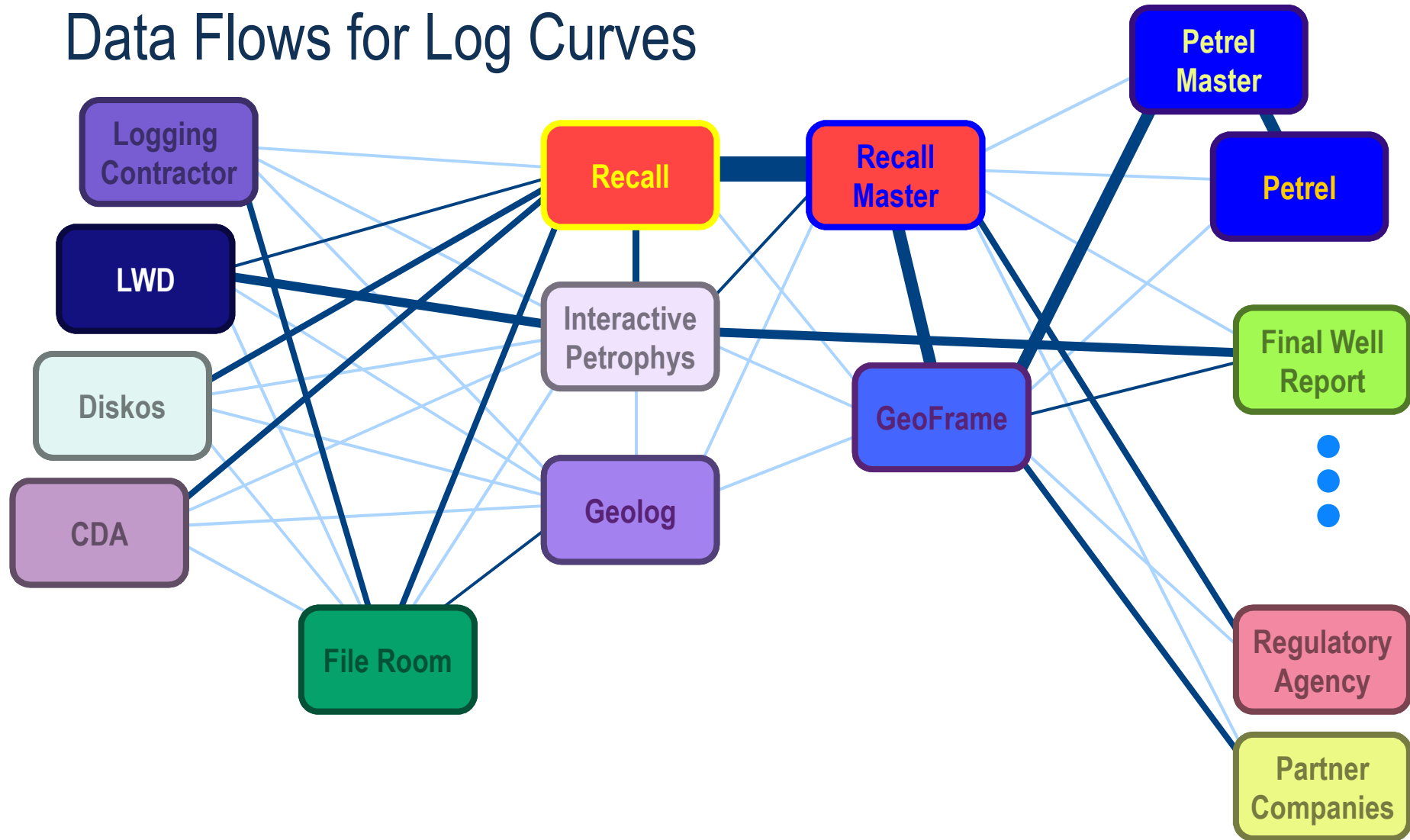
Repository roles - Well Data



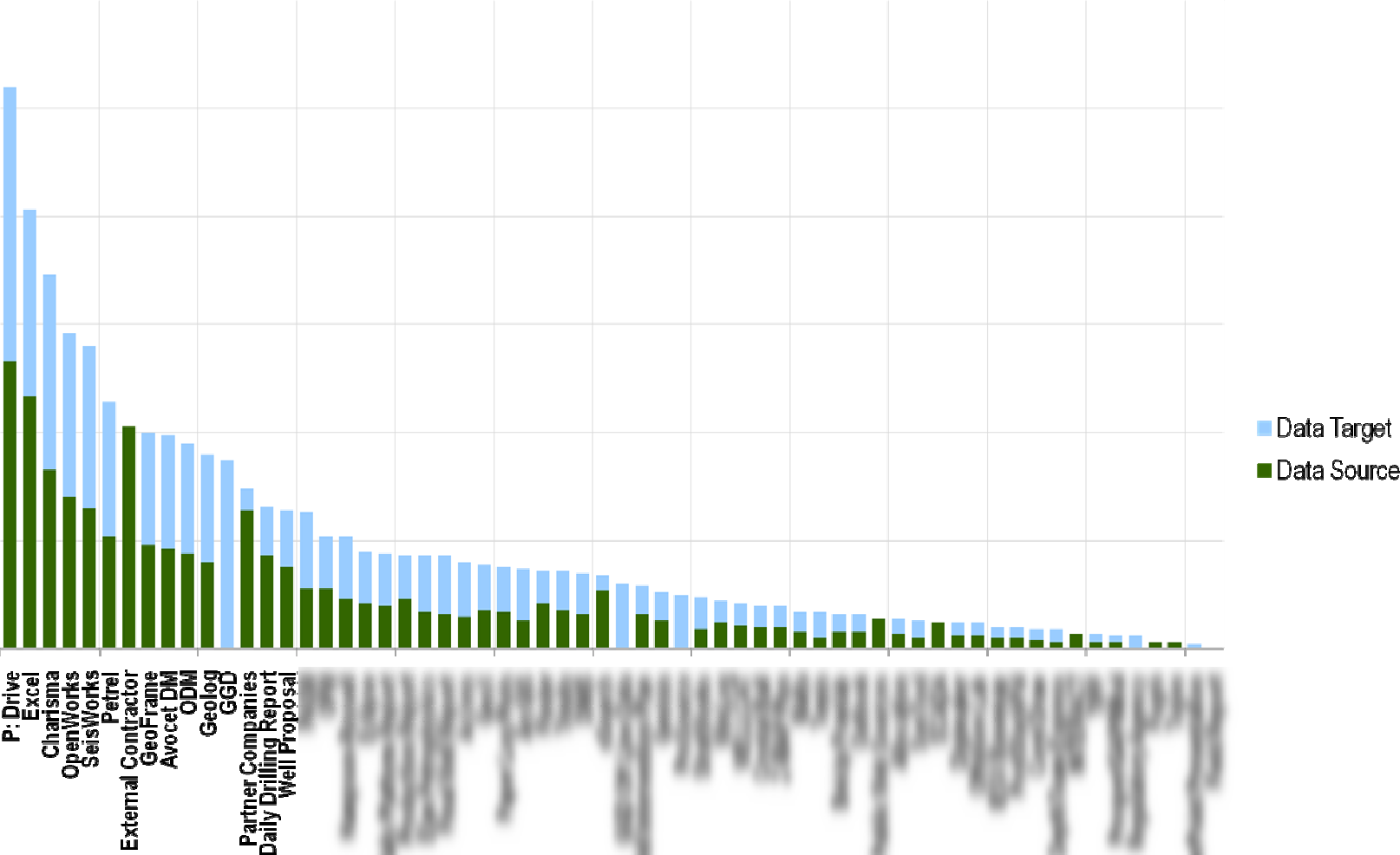
Repository roles - Curve Data



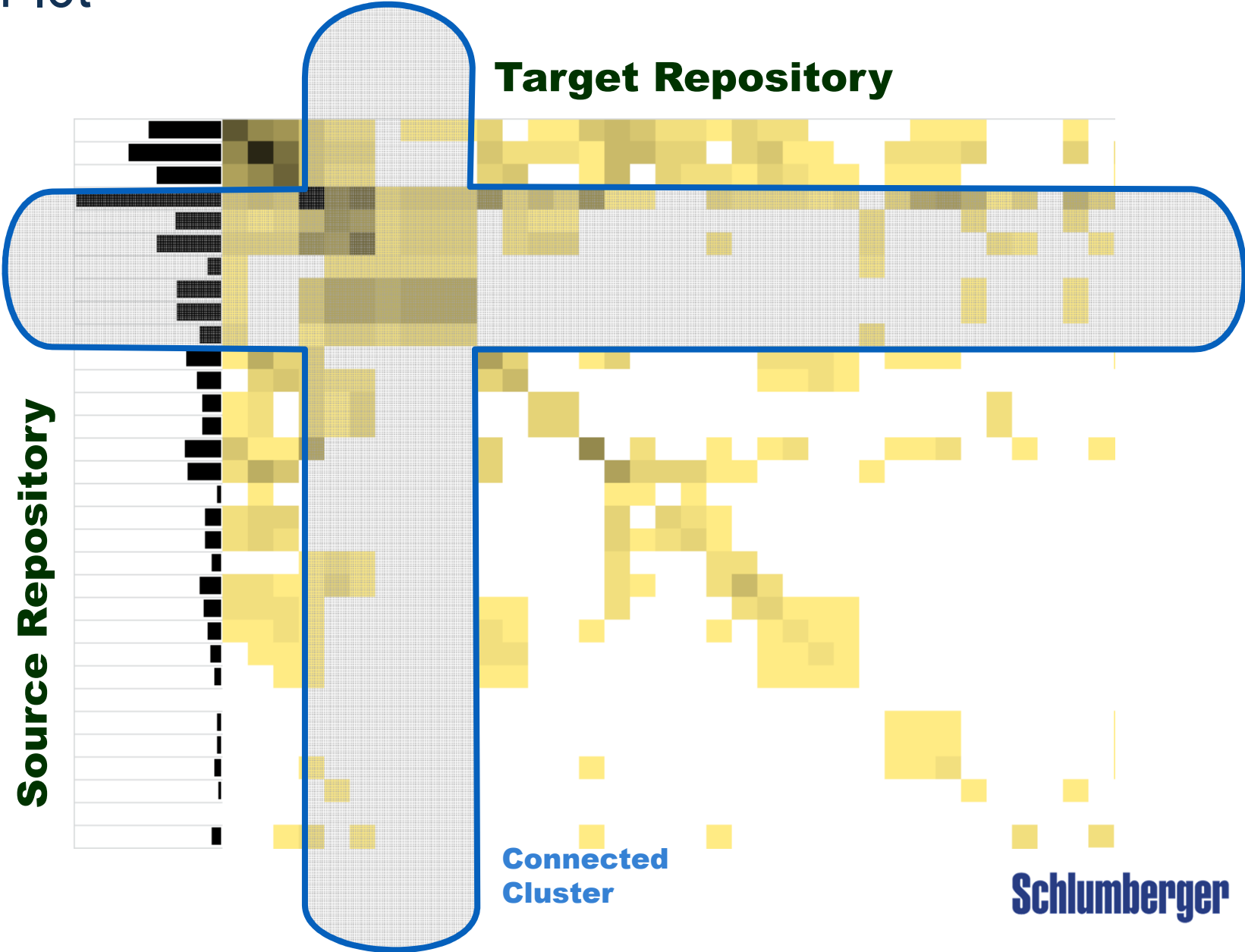
Data Flows for Log Curves



Repository Activity



N2 Plot

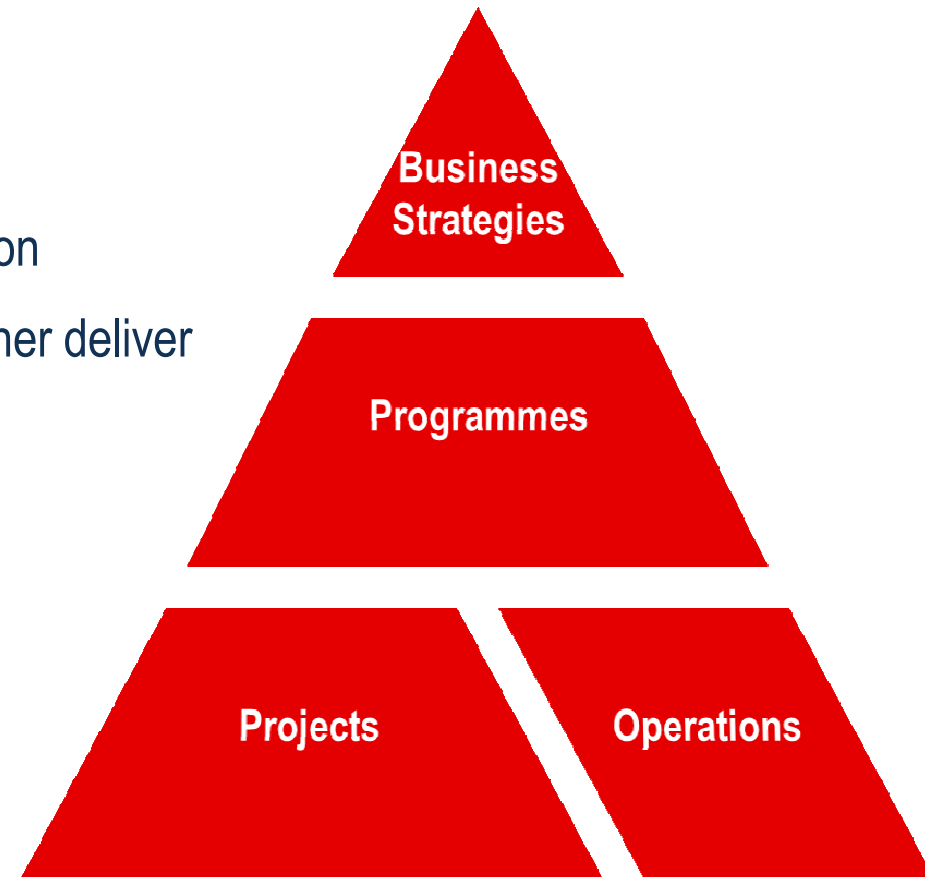
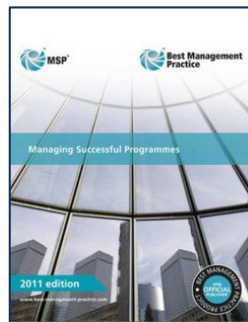


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Potential Projects: The Improvement Programme

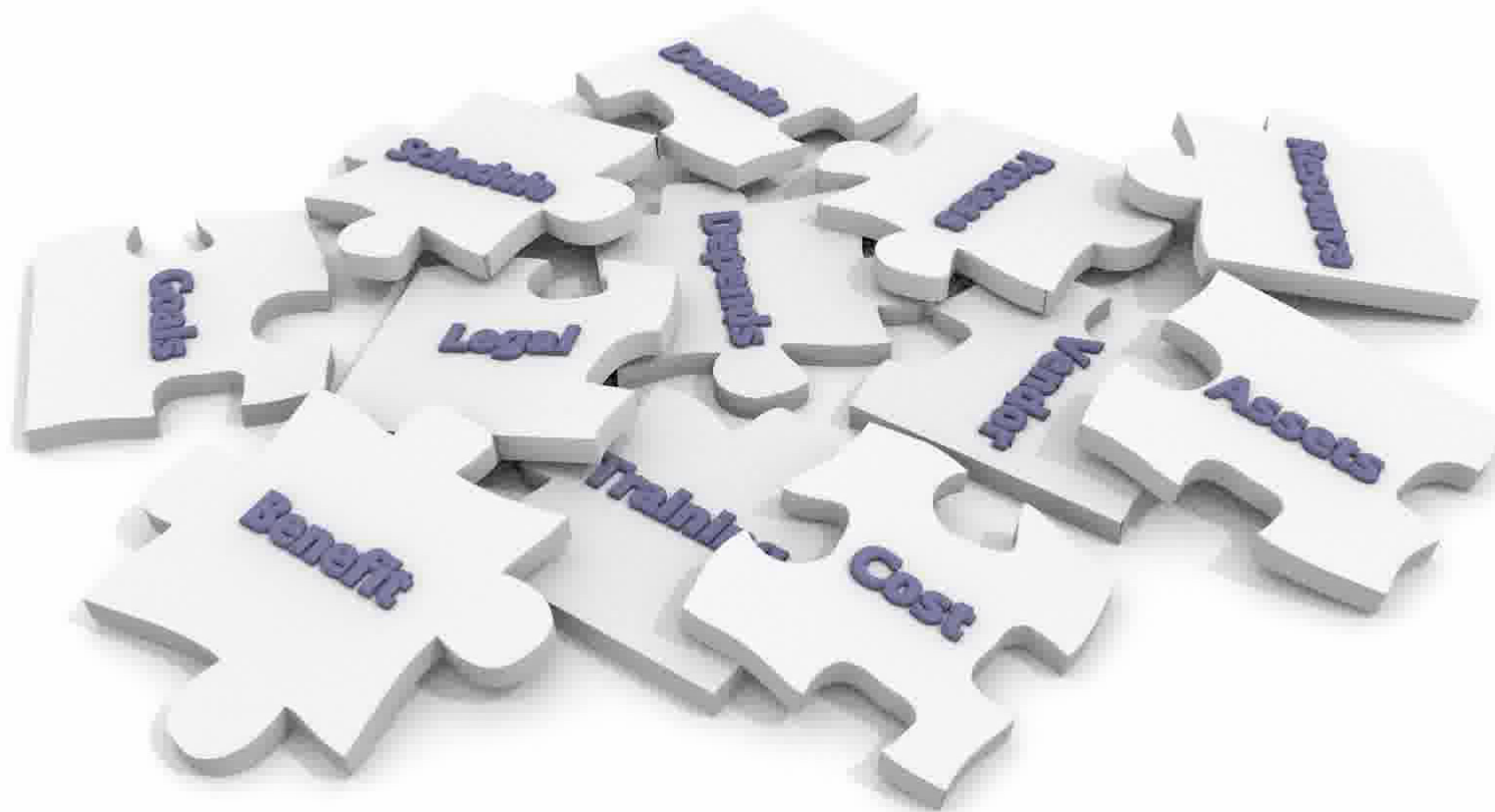
- meet a strategic need
 - require high level leadership and direction
 - involve a range of activities which together deliver the outcomes
-
- Driven by:
 - ‘**Vision**’
 - ‘**Compliance**’
 - ‘**Emerging**’ requirement for cohesion



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<http://www.best-management-practice.com/>

The Programme Puzzle



Programme Design: Benefit Fit

Project	<i>Benefit Type</i>					Total
	A	B	C	D	E	
1			20			20
2	5		5	10		20
3	5		5			10
4			20		20	40
5		10		5		15
6		5	5	5	5	20
7	10					10
8		20	20	10		50
Total	20	35	75	30	25	185

Key:

- A – customer satisfaction
- B – cycle time reduction
- C – data quality improvement
- D – process improvement
- E – decision quality improvement

Conclusion

- Normal analytics process:
 - Identify your framework
 - Gather rich data
 - Draw many pictures
 - Test sceptically
- There are many opportunities to apply analytics to improve technical data handling

