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Perspectives on Petroleum Data Management

Situation: Increased Competition for E&P Investment

- Forecast excess oil supplies with weak and volatile oil prices
- More countries promoting investments to exploit hydrocarbon potential
- Decreasing number of international oil companies (IOC's)
- IOC's more selective with E&P investments
 - Concern about business risks
 - Poor economic returns for high risk business

Data: Important Factor to Attract E&P Investment

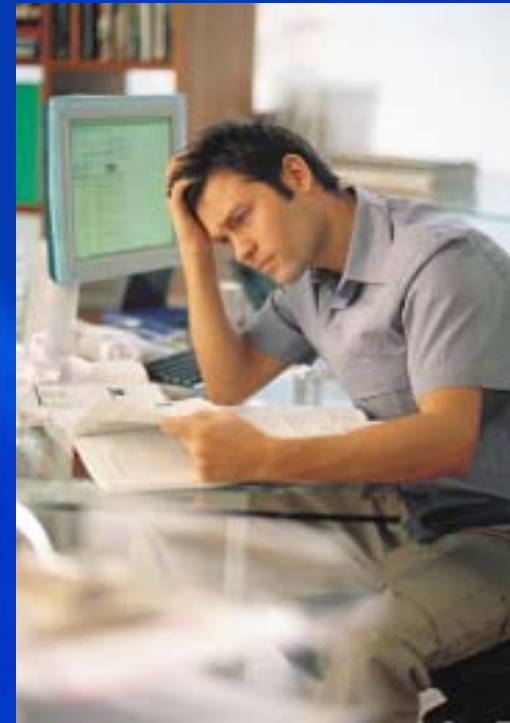
- AAPG 2003 International Forum:
Company comments:
 - Need complete data in standard formats
 - Digital catalog to access complete physical records
 - Access to electronic - scanned and digital data
 - Time to analyze data prior to bid rounds
 - Desire copies to analyze at company sites
 - Restricted data access by policy or poor data management practices deters investment
 - Data increasingly available for reproduction costs

Industry Data Management Trends

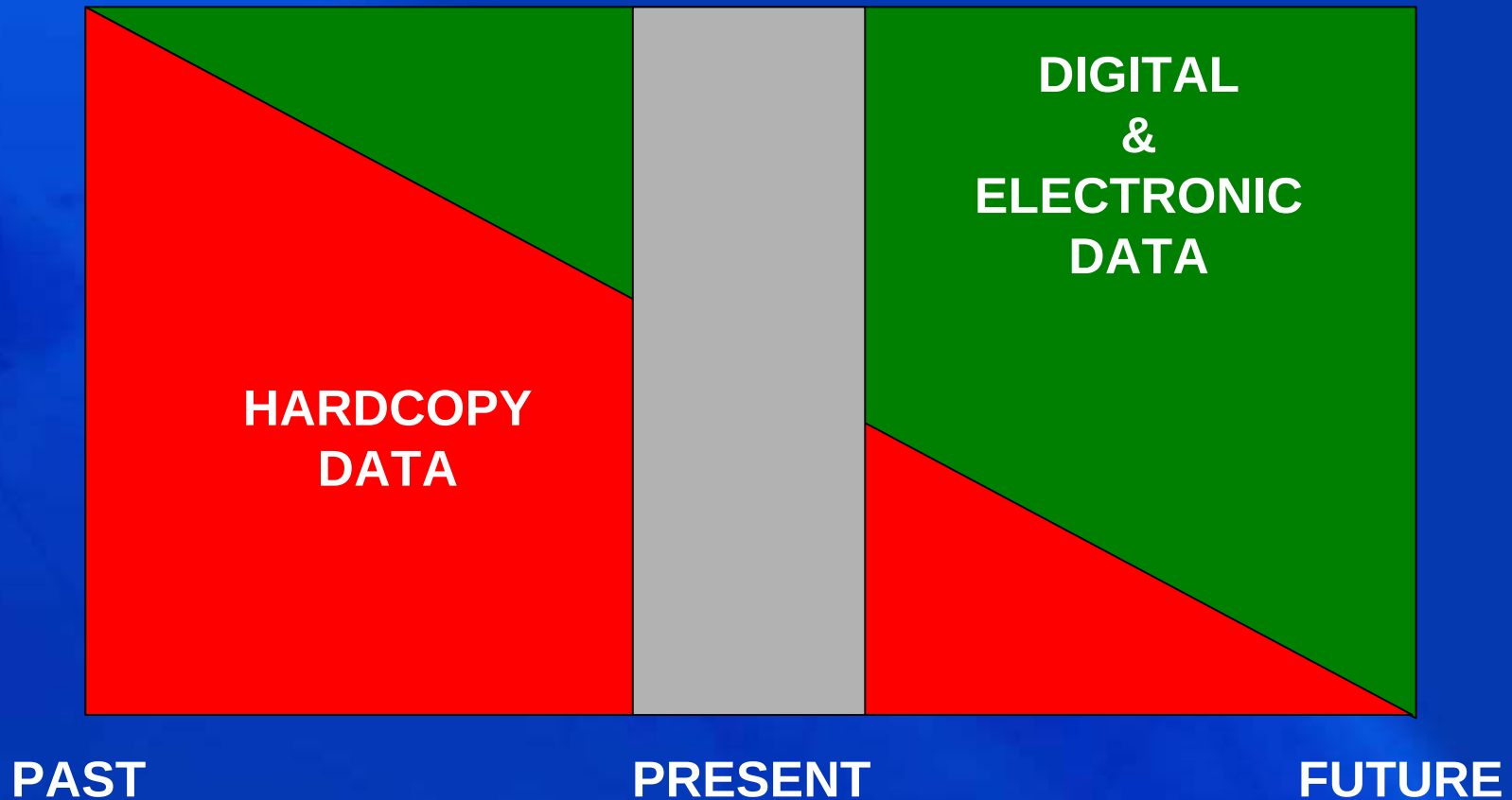
- Industry shared repositories – 1990's
 - Norway – Diskos/petroBank
 - Digital well logs & seismic
 - UK – CDA (QC Data/IHS Energy)
 - Scanned and digital well logs & seismic navigation
- Commercial digital data centers & hubs
 - GeoQuest
 - Canada data hub – IHS Energy
- Country (NOC & Government) data repositories
 - Varied data access policies
 - Australia, NZ, Algeria, Brazil, PeruPetro, Ecopetrol, PDVSA, UAE, Bolivia etc., etc., - - -

Data Management Situation: Even with advent of digital data centers ...

- Geoscientists find it difficult to know what E&P data is available
- They can not get data when they need it
- They waste valuable time looking for data – only to never find it
- They never realize the full business value from data resources



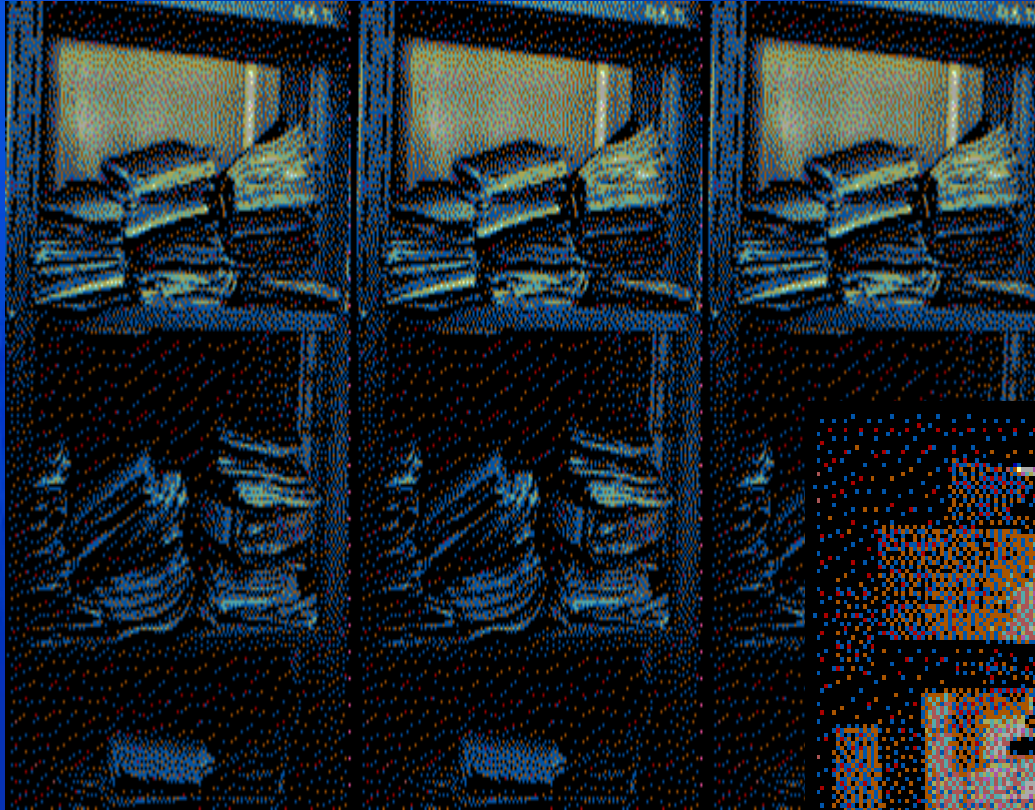
Current Data Realities



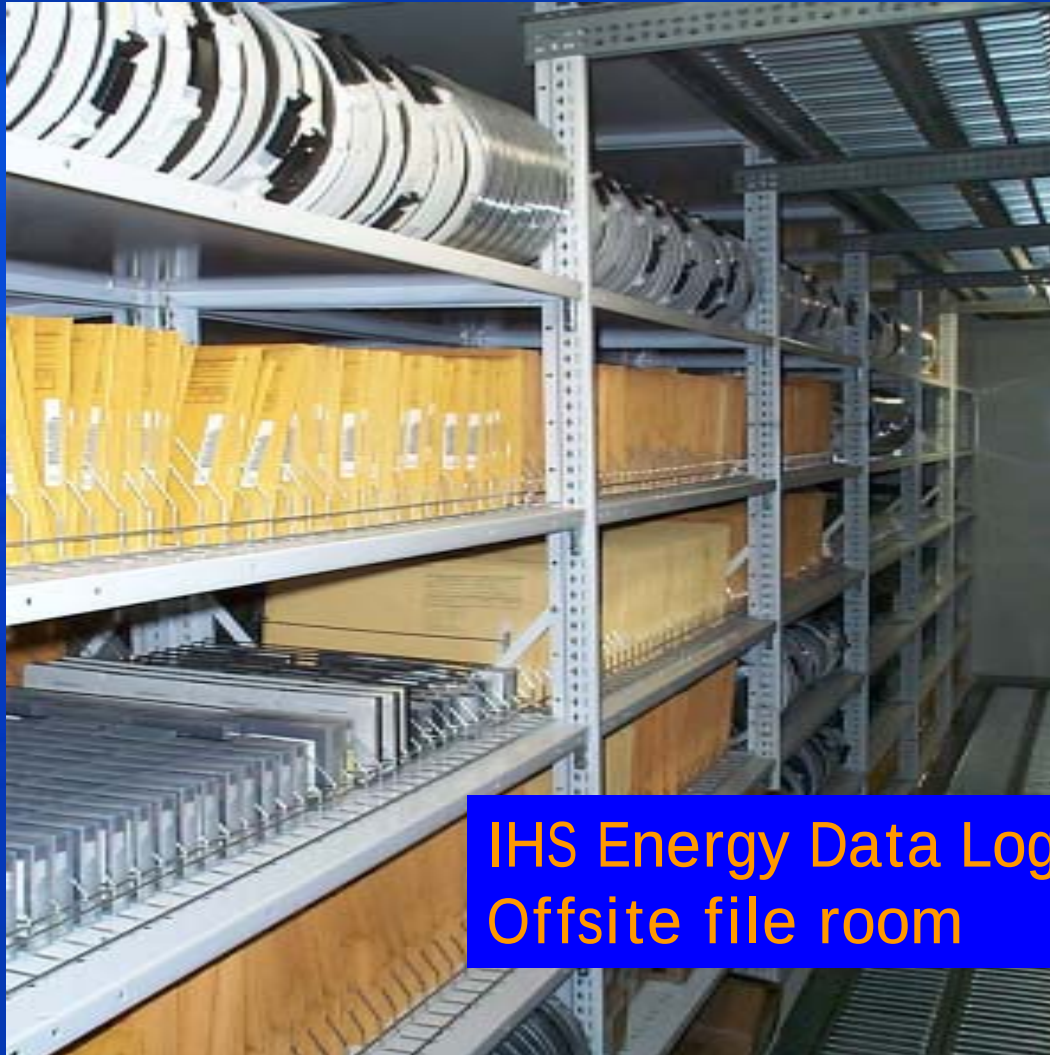
Data Realities: Go From This



And even this



To This!



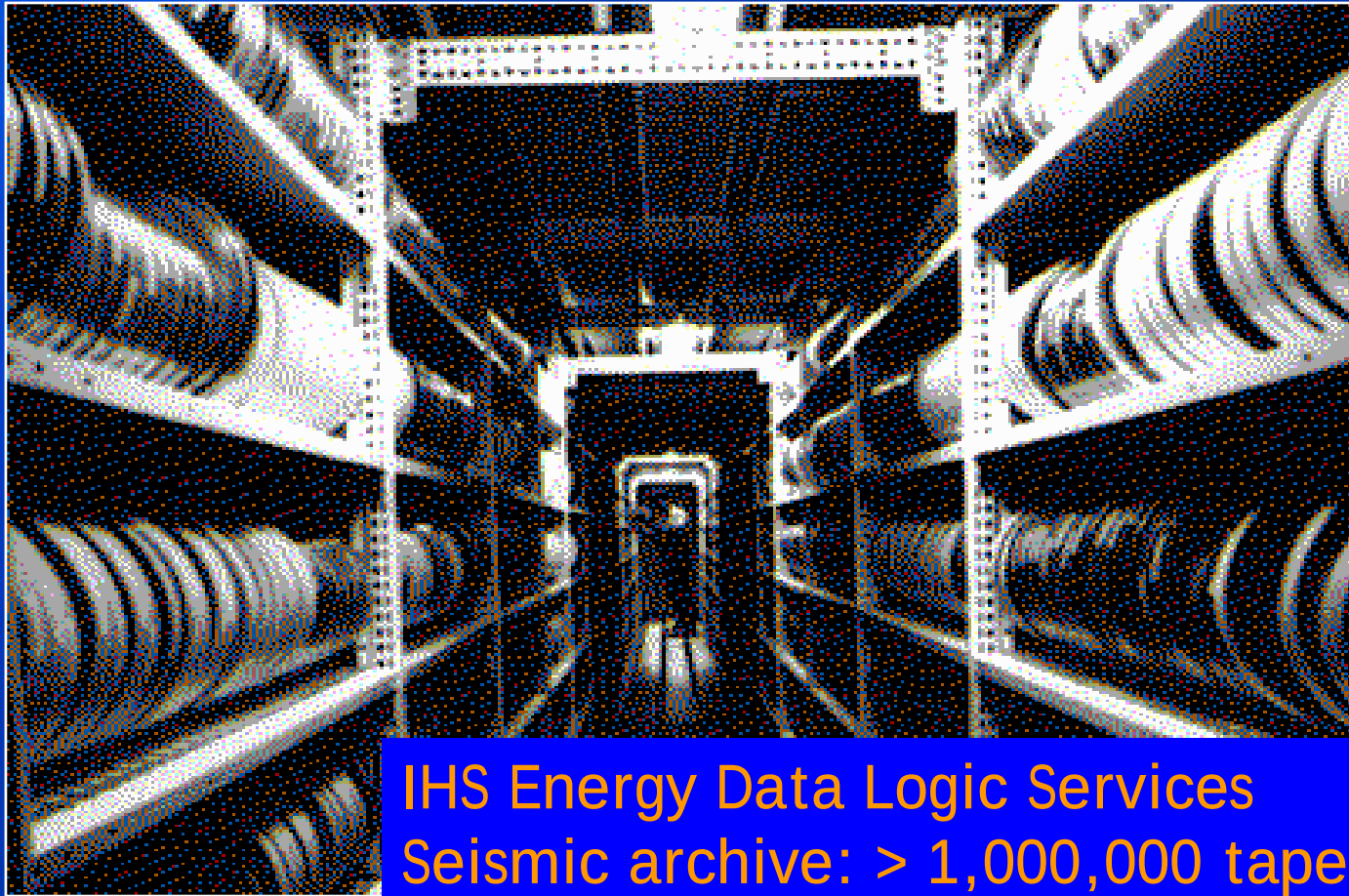
IHS Energy Data Logic Services
Offsite file room

And This!



IHS Energy Data Logic Services
Climate controlled petroleum data archive

And This!



IHS Energy Data Logic Services
Seismic archive: > 1,000,000 tapes

And This!



Core & sample repository managed by IHS Energy
2 warehouses - 30,000 sq. ft. - 200,000 core & sample boxes

And This –Via Internet!

Argentina San Jorge Basin

The screenshot displays the EDIN-GIS 1.3.5 web application interface. On the left, a sidebar contains a 'Query' section with a table listing various geological and geographical features. The main area shows a map of the San Jorge Basin in Argentina, with a pink-shaded region labeled 'Anticlinal Aguada Bandera'. A 'Query/Selection Results' window is open, displaying a table of wells.

Rec	WELL SUMMARY REPORT	GENERAL_CLASS	REGION_NAME	COUNTRY_NAME	WELL_NAME	ALTERNATE_WELL_NAME	WELL_CLASS	GENE
1	Anticlinal Aguada Bandera 03	Explorative	Latin America	Argentina	Anticlinal Aguada Bandera 03	SC AAB-03	New Field well (not)	Compl
2	Aguada Bandera 05	Development/Service	Latin America	Argentina	Aguada Bandera 05	SC AB-a-05	Development	Compl
3	Aguada Bandera 12	Development/Service	Latin America	Argentina	Aguada Bandera 12	SC AB-a-12	Development	Compl
4	Aguada Bandera 19	Development/Service	Latin America	Argentina	Aguada Bandera 19	SC AB-a-19	Development	P&AS
5	Aguada Bandera 15	Development/Service	Latin America	Argentina	Aguada Bandera 15	SC AB-a-15	Development	P&AS
6	Aguada Bandera 11	Development/Service	Latin America	Argentina	Aguada Bandera 11	SC AB-a-11	Development	Compl

Block

IHS Energy Capabilities: Inventory, Cataloging and Data Entry

- Database cataloging – bar codes
- Data capture
- Experienced staff knowledgeable in E&P data
- Familiarity with industry standard cataloging software
 - AssetDB
 - OpenRSO
 - Guardian
 - MSAccess



IHS Energy Capabilities: Data Conversion and Reformatting

- Scanning services
- Tape copy and reformatting
- Tape remediation
- Integrated images

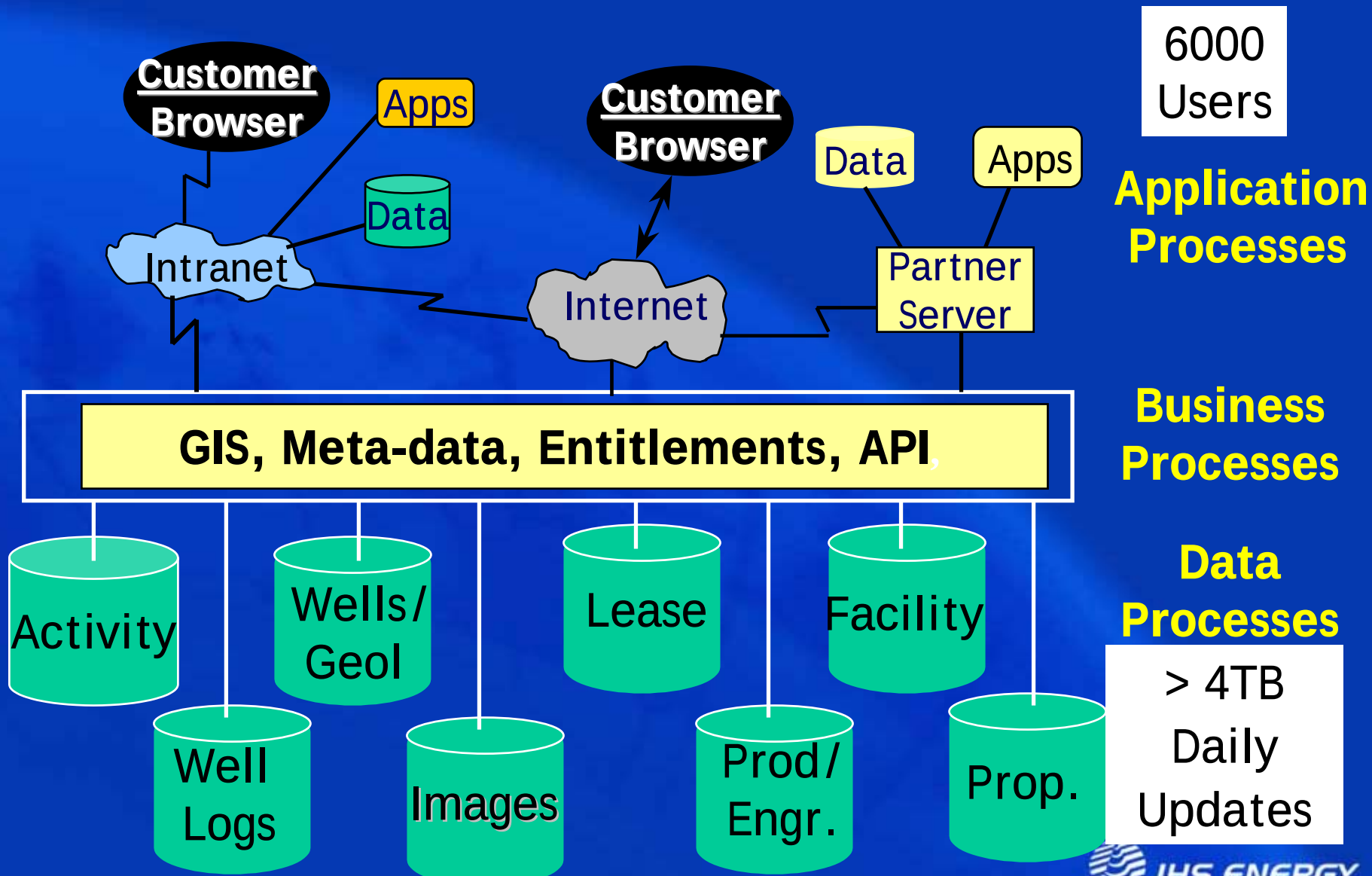


IHS Energy Capabilities: Database Management & Integration

- Build links between physical and digital objects: seismic tapes & field notes, well headers & logs etc.
- Convert legacy databases to current industry standard platforms & systems.
- Global databases and data integration experience
 - IRIS21 & P2000
 - ESRI GIS solutions
 - Data quality management tools & processes



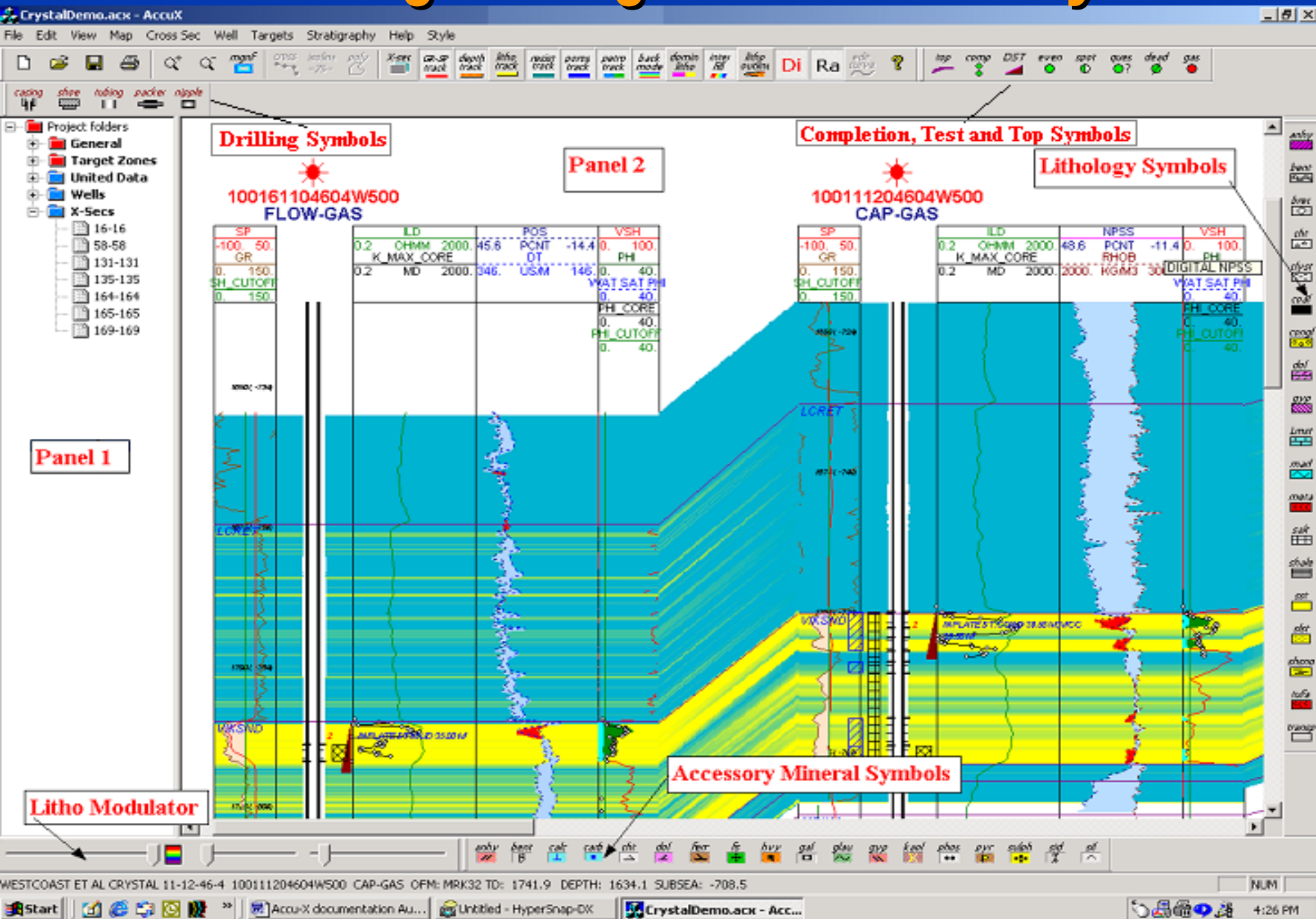
IHSE Canada Data Hub



IHSE Well Log Projects

- Gulf of Mexico digital well log quality management
 - Digital well logs - Minerals Management Service
 - Build basic digital log master – header, curves
 - Edit and correct curves
 - Manage public & confidential data
- U.S. Commercial Well Logs
 - Digital well log catalog & database – 126,029 wells
 - Scanned well log images – 116,000 wells
 - Add 5,000 per month
 - Depth register

Accu-X Log Management & Analysis



IHSE Global Databases

- Industry activity
 - Wells
 - Fields
 - Production/reserves
 - Basins
 - Licenses/contracts
 - Geophysical surveys
 - Cartographic layers
 - Economic data
 - Standard codes & reference values *
- (*Key to data integration)

IHSE Argentina Databases

- Industry activity
- Wells 32,000
- Fields 900
- Production/reserves 900
- Basins 45
- Licenses/contracts 458
- Geophysical surveys 1,480
- Facilities – pipes, plants, refineries
- Cartographic layers ~ 100
- Economic data
- **Standard codes & reference values ****
(** Key to data integration)

Spatial Access to Integrated E&P Data

SDE Attribute Data Model

Argentina standard codes & reference values **

LAYERS	
ID	TABLE
1	wells
2	fields
3	seismic
4	lease
5	pipes

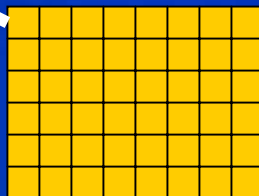
WELLS

GID	WELL_ID	spudDATE	TD	Operator	..	..	..	..	..	a20
67	100345									
68	102333									
69	204442									

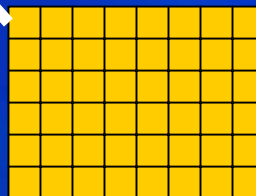
- each layer has intelligent set of attributes.
- no dependencies to other schemas.
- can have a life on its own.

F1

S1



(feature
table)



(spatial
index)

Spatial Access to Integrated E&P Data

Common Attribute Format to Link Multiple Data Sources

Argentina standard codes & reference values **

WELLS:

IHS ENERGY



GID	WELL_ID	spudDATE	TD	Operator	..	..	..	..	a20
67	100345								
68	102333								
69	204442								

WELLS:

Proprietary

GID	WELL_ID	spudDATE	TD	Operator	..	..	..	..	a20
123	100345								
124	102333								
125	204442								

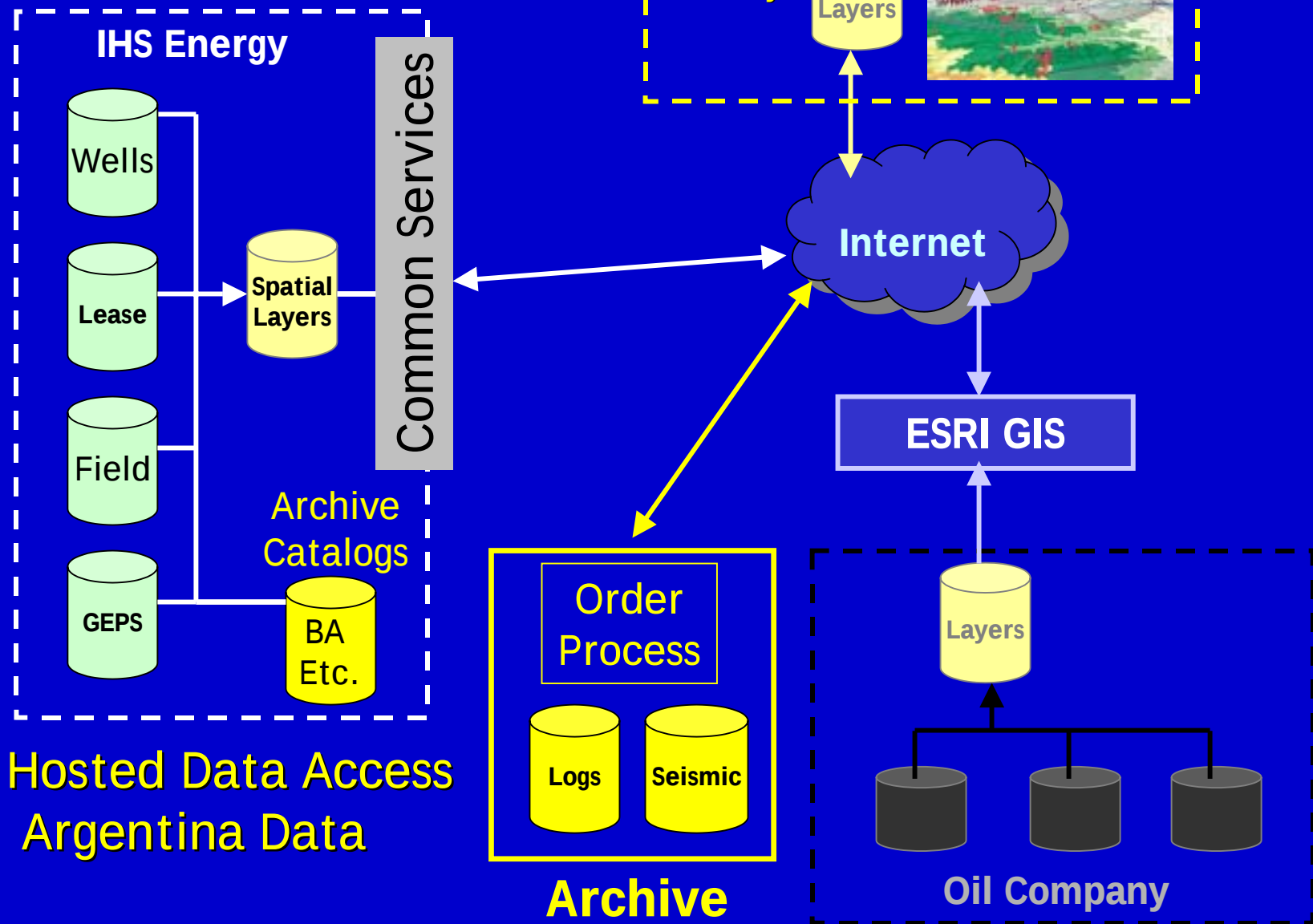
Secretaria - Avellaneda – Neuquen etc.

WELLS:

Data archive

GID	WELL_ID	spudDATE	TD	Operator	..	..	..	..	a20
276	100345								
277	102333								
278	204442								

Spatial Layers Data Integration Concept



Argentina's Petroleum Industry

- 2001:
 - Oil & gas revenue = 5% of GNP
 - Reserves added = 12% of production
- Since 1992:
 - Oil production + 46%
 - Gas production + 82%
 - Number of operating companies - 18%
 - Area licensed - 68%
 - Reserves per wildcat well - 72%

Conclusions

- Argentina desires to increase investments
- Availability of complete and reliable data attracts investments to the petroleum sector
- IHS Energy's data management capabilities span E&P data types and DM processes. IHSE already manages a substantial database and tracks related E&P activity for its Argentina customers.
- The DM capabilities and solutions described in this presentation can meet the needs of the Argentina's petroleum industry.



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