Why is it so difficult to connect users to data?

Alan H Smith
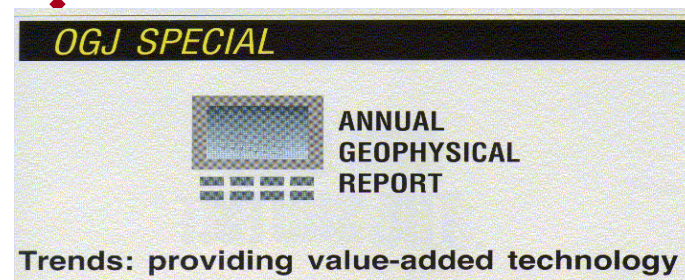
Luchelan Limited

Agenda

- Introduction

- Changing technology

- Example - MultiClient seismic data

- Enabling technology

- Where next?

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Status in 1991?

NPD

WEEK OF NOVEMBER 4, 1991
A PennWell Publication

OIL&GAS JOURNAL

International petroleum news and technology

OGJ SPECIAL

ANNUAL GEOPHYSICAL REPORT

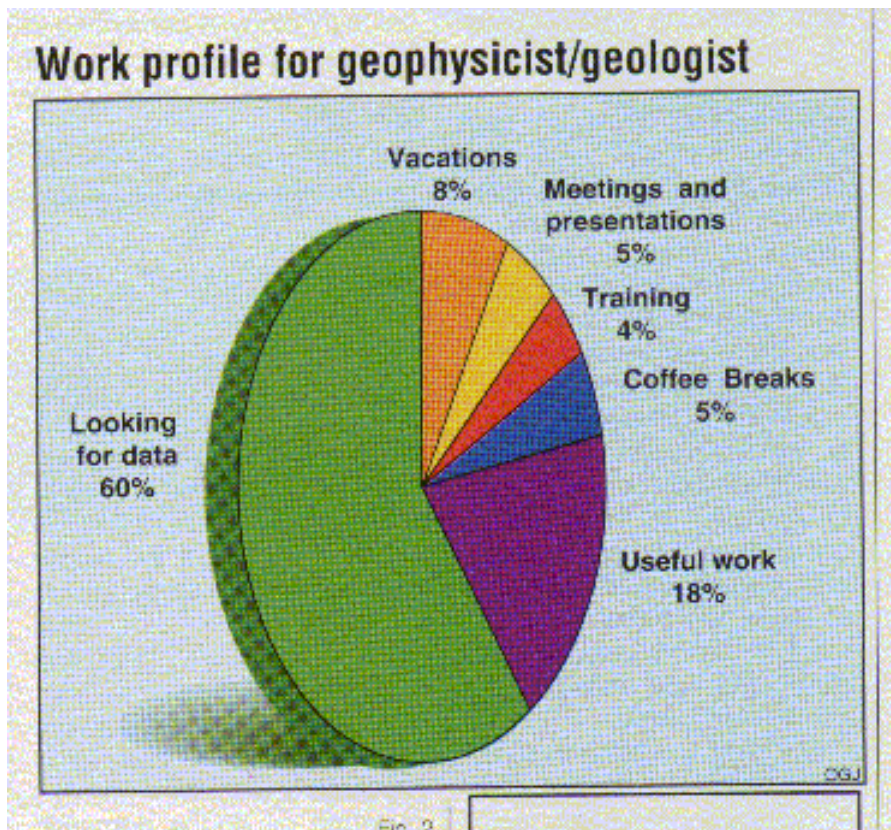**Trends: providing value-added technology**

The author...

Lawyer

L. C. (Lee) Lawyer is chief geophysicist of Chevron Corp. A 1955 graduate of Oklahoma University, he joined Standard Oil Co. of Texas, forerunner of Chevron, as a client representative on a seismic crew. He has been division geophysicist for the Midcontinent and Alaskan divisions, chief geophysicist of Chevron Overseas, and vice-president of Chevron Geosciences Co.
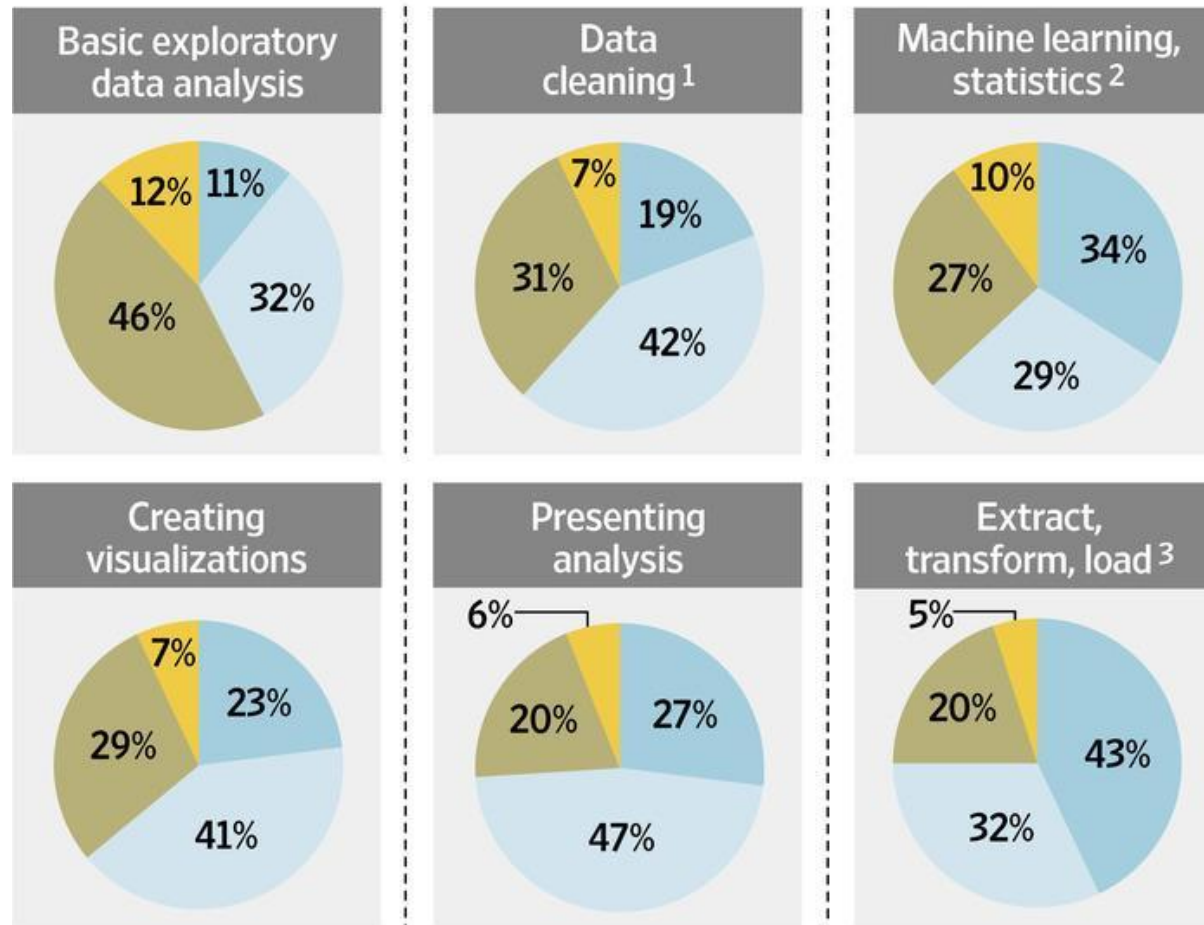
Work profile for geophysicist/geologist

- Vacations 8%
- Meetings and presentations 5%
- Training 4%
- Coffee Breaks 5%
- Useful work 18%
- Looking for data 60%

After Tonstad, 2002

Where Does the Time Go?

The amount of time spent on various tasks by surveyed nonmanagers in data-science positions

- Less than 1 hour a week
- 1 to 4 hours a week
- 1 to 3 hours a day
- 4 or more hours a day

Basic exploratory data analysis

12% | 11% | 32% | 46%

Data cleaning [1]

7% | 19% | 42% | 31%

Machine learning, statistics [2]

10% | 34% | 29% | 27%

Creating visualizations

7% | 23% | 41% | 29%

Presenting analysis

6% | 27% | 47% | 20%

Extract, transform, load [3]

5% | 43% | 32% | 20%

[1] Correcting or removing faulty data   [2] Creating computer models
[3] Also known as ETL — moving information to a data warehouse

THE WALL STREET JOURNAL.

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Technology in the 90s

Data delivery in 1990's

Technology about 2005

Data delivery in 2000's
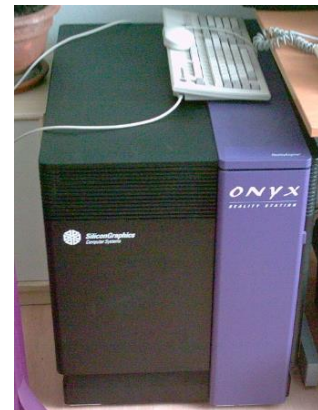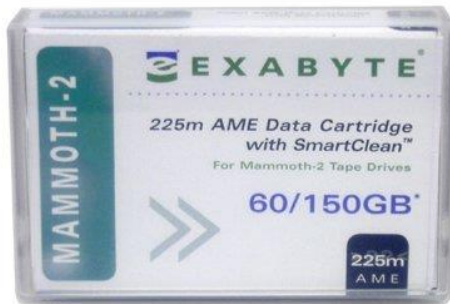
Technology from ~2015

Modern Data Delivery

Agenda

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The statistics – PGS MultiClient

MultiClient Revenues
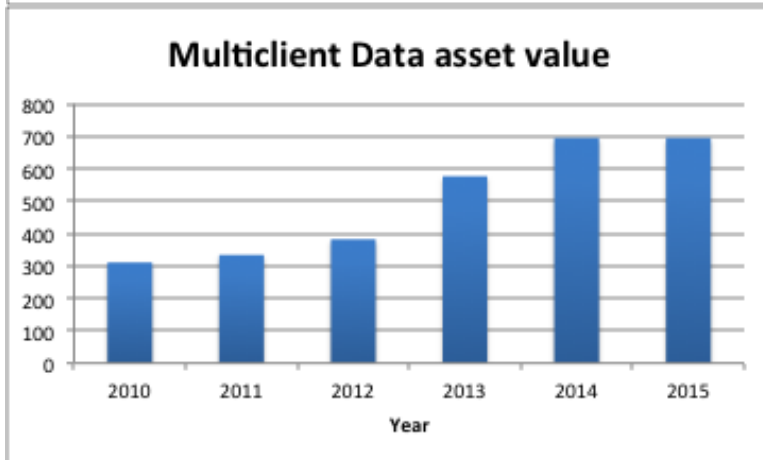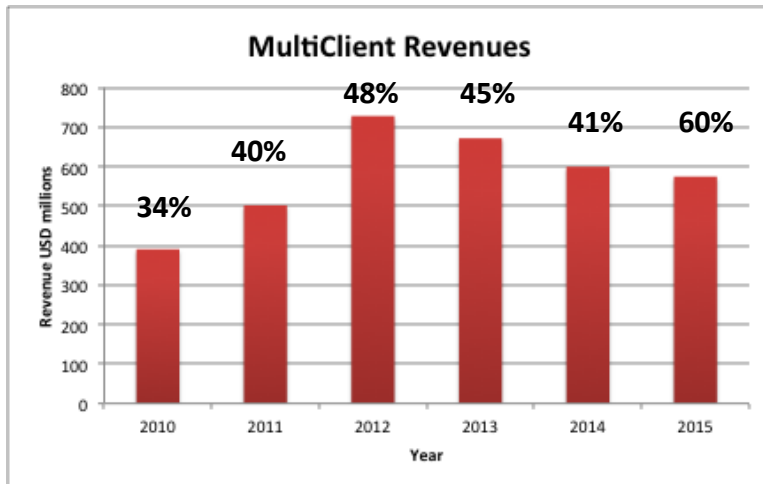
- Important Balance Sheet item
- Significant proportion of vessel time
- Significant revenues
- Huge data volumes acquired
- Long shelf life
- Shelf life "reset" with reprocessing etc
- Pre- and Post-Stack and Ancillary products all equally important for exploration purposes

Data from PGS Annual reports

PGS MultiClient Data delivery

- Heritage system developed in 1990s
  - Outsourced service provision
  - Slow & restricted functionality by current standards
  - Only really handled post stack
  - Barrier to exit very high
- New system
  - Still outsourced
  - Trace handling, not processing *(sensu stricto)*
  - Handles pre and post stack data efficiently
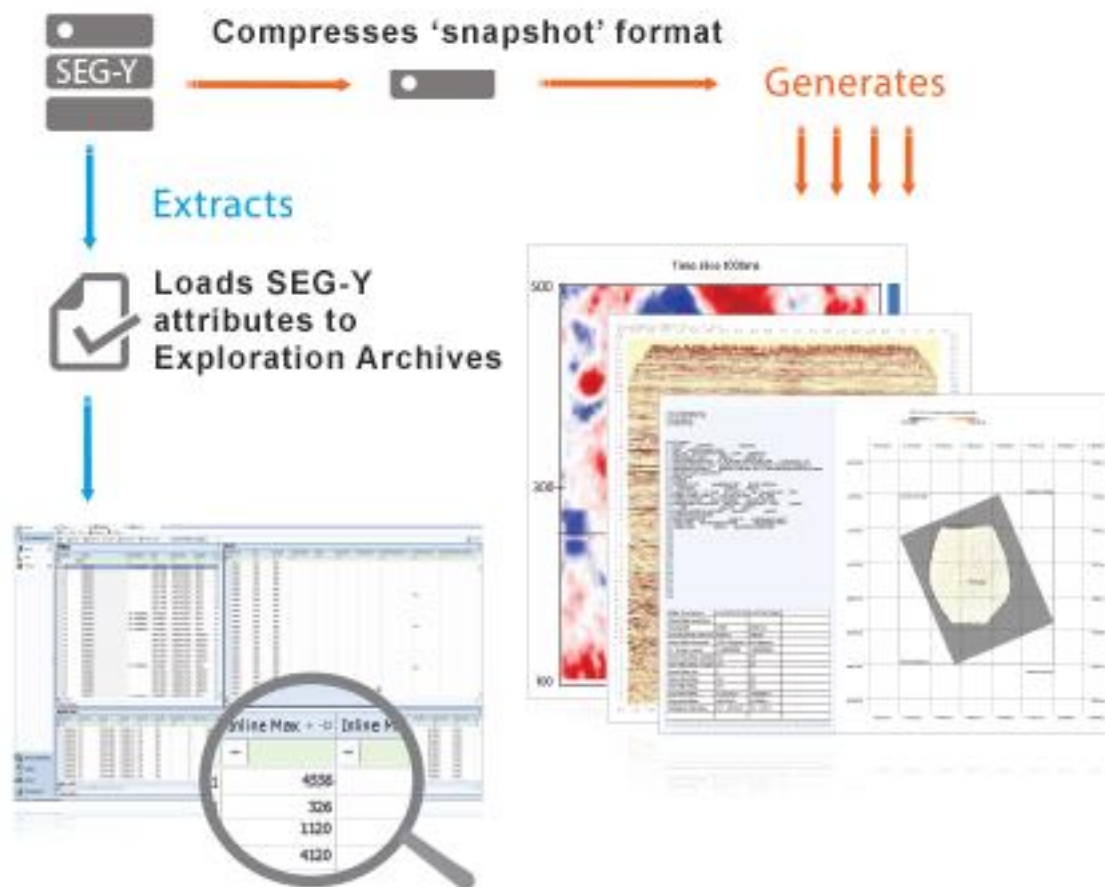 - Modern database integrated with IT infrastructure and other enterprise software systems
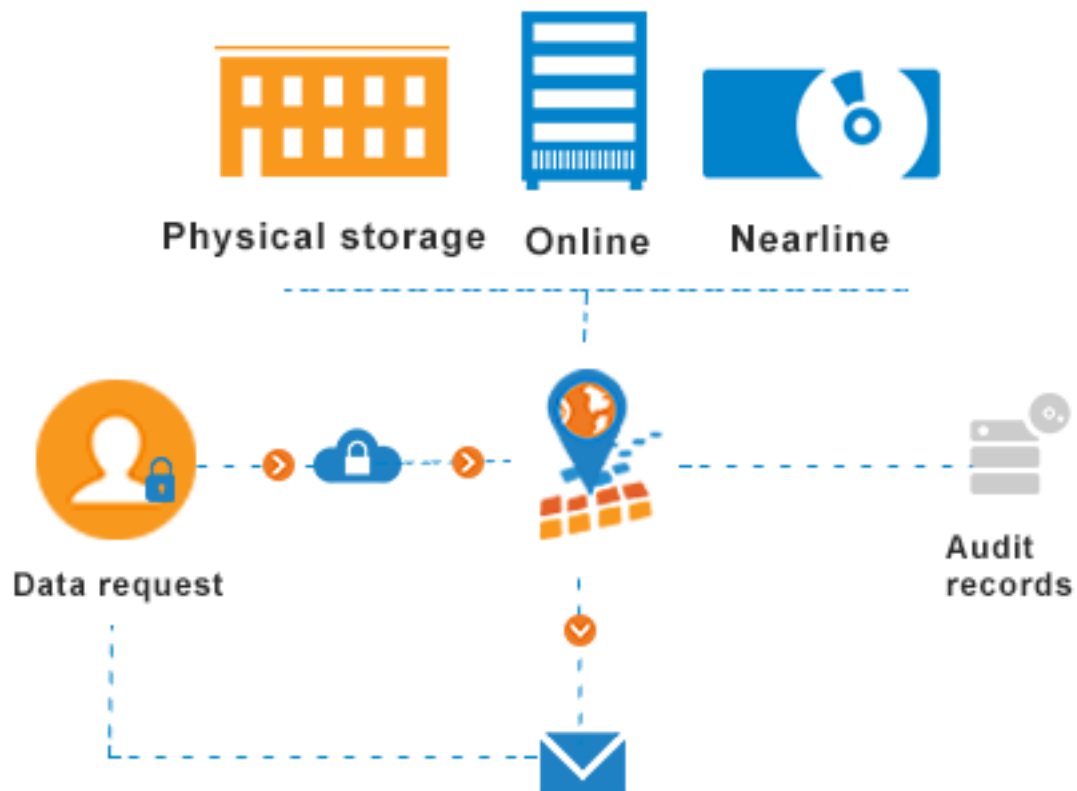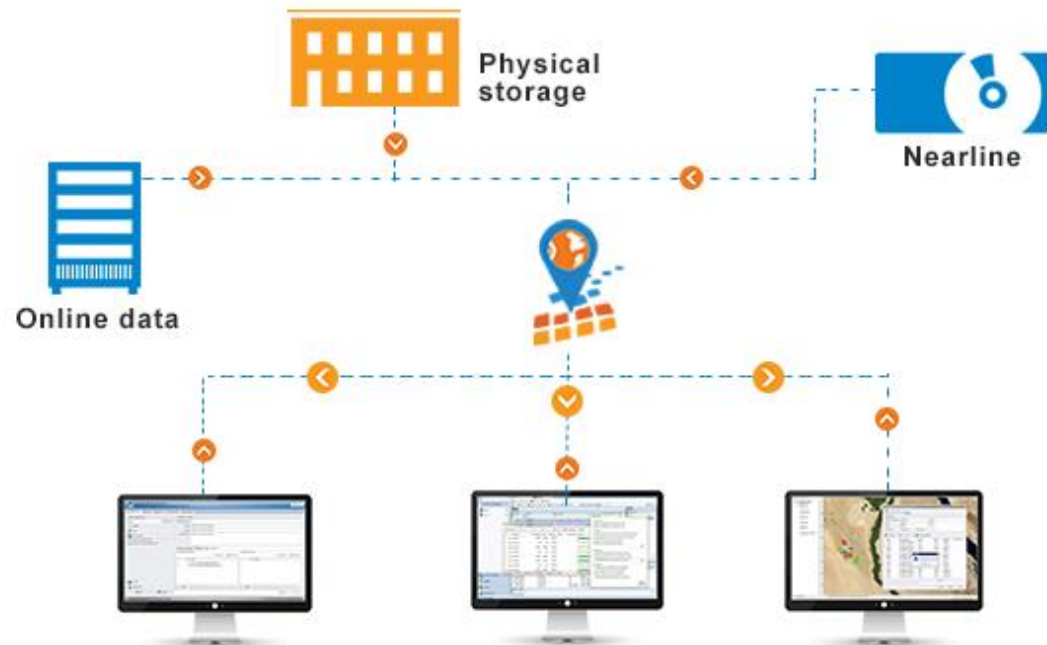
Multi client seismic management

Old

Final products

Field & Interim products
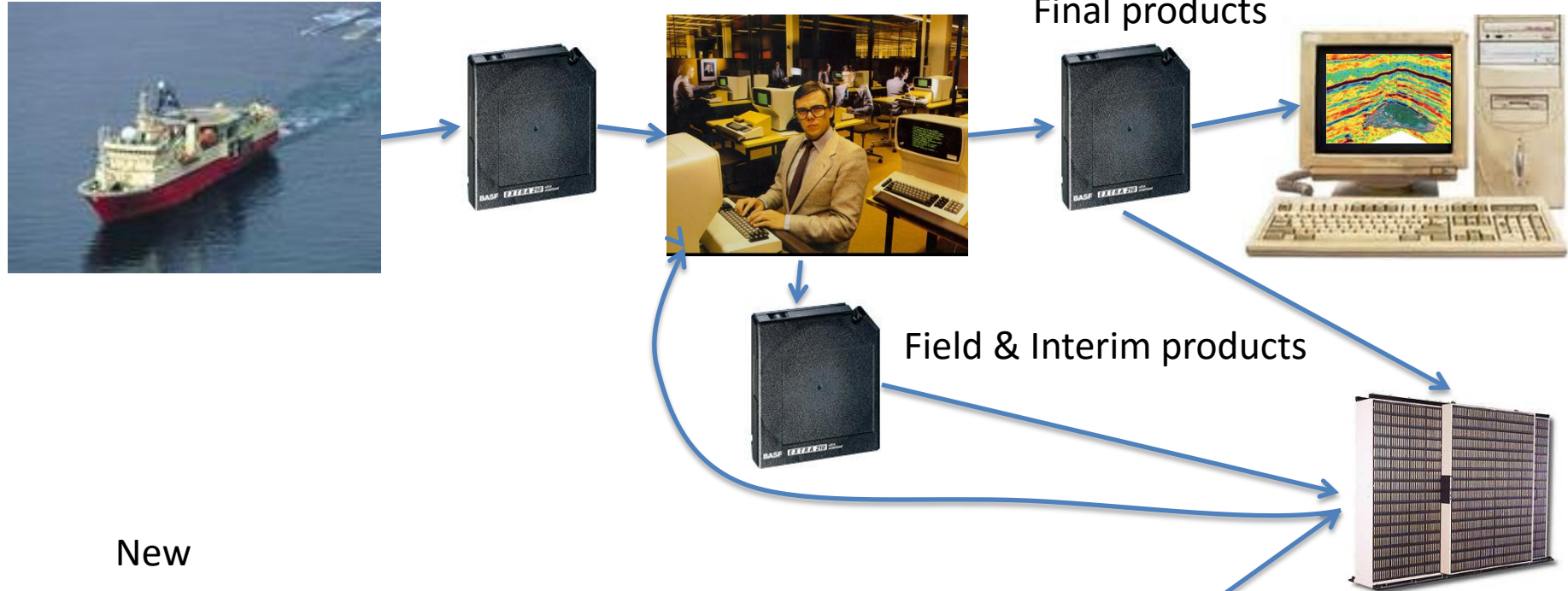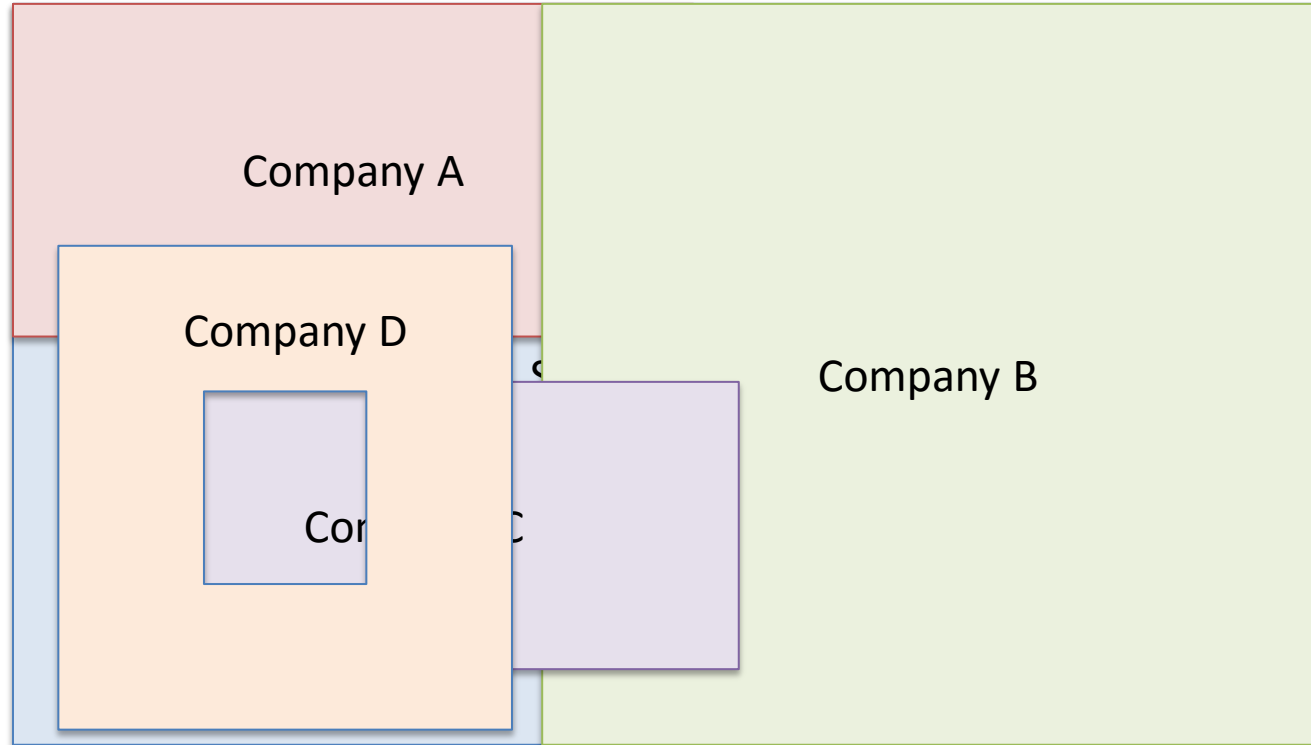
New
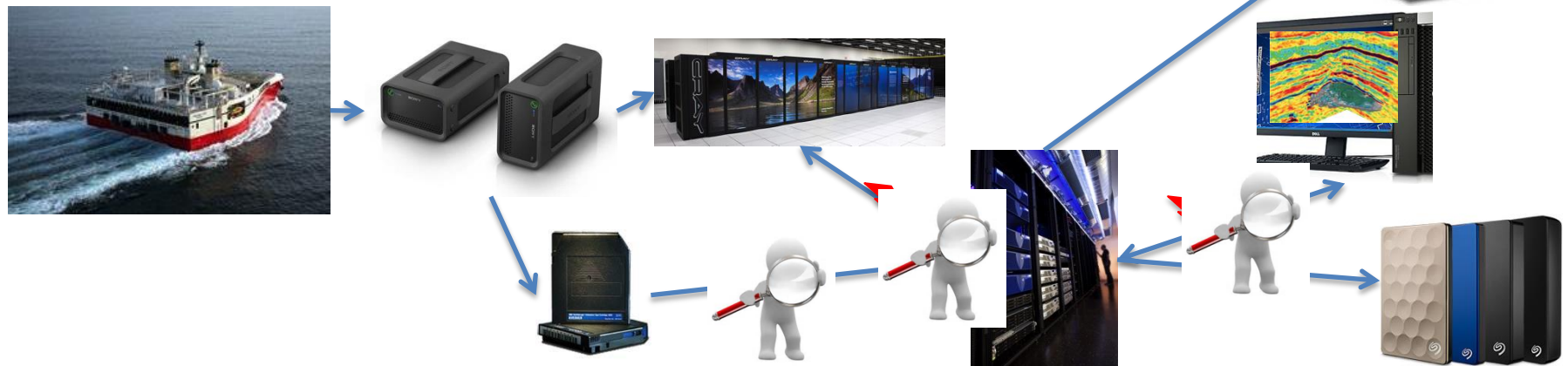
Loading & QC

Ordering

Delivery

Multiclient complications

PGS

What are they getting?

- Prestack (options)
- Stack
- Migration
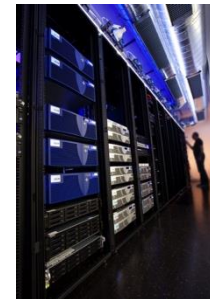- Velocities
- …

All need cutting to correct coordinates

Company A

Company D

Company B

Company C

Historic
Manual handling
Manual intervention

Now
Automatic
Parallel processing

Luchelan

PGS

The impact

Then

OOPS!

Faster – Cheaper - Better

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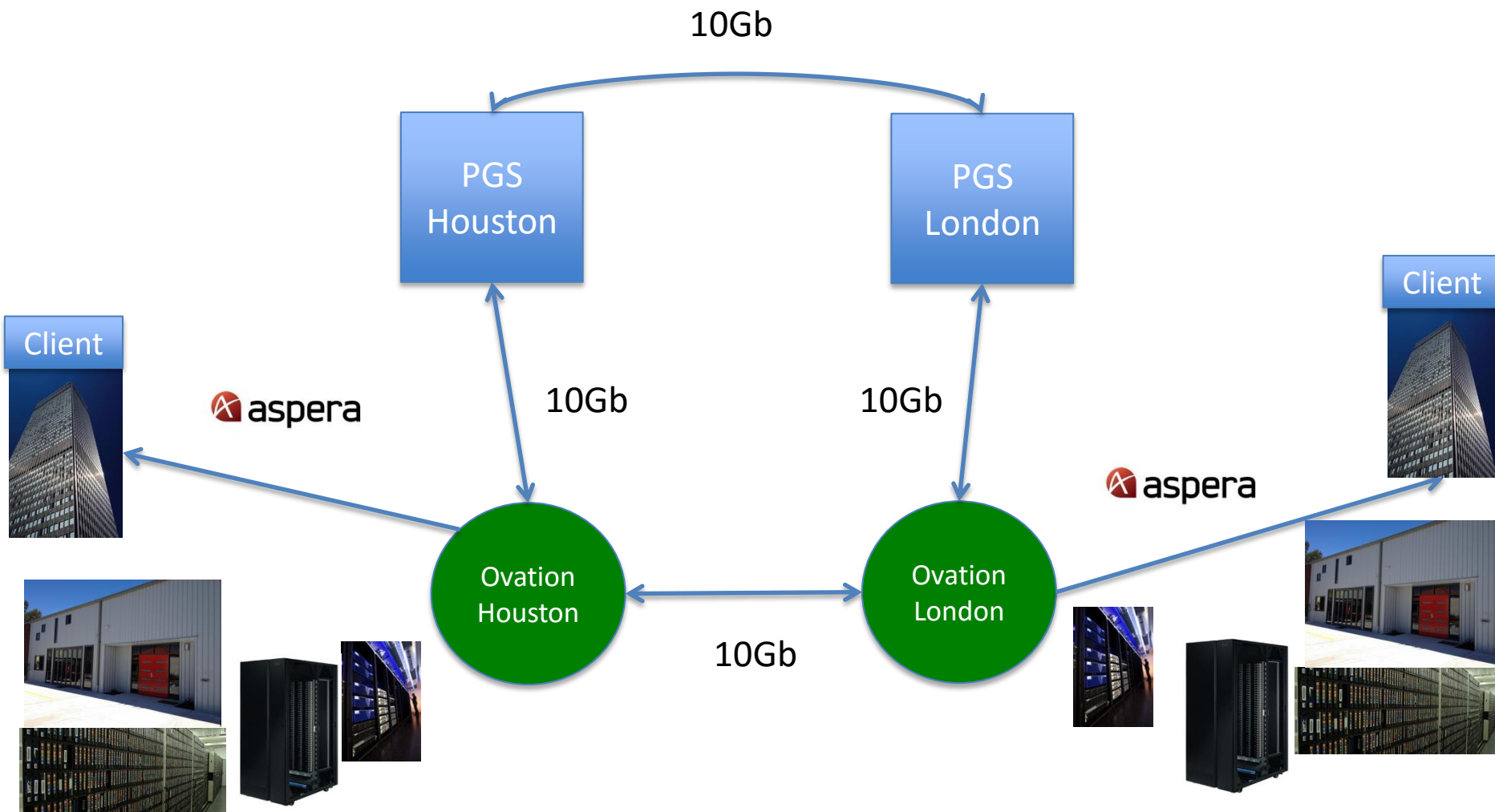- Enabling technology
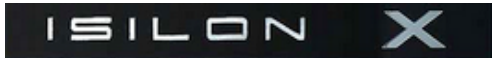- Where next?

The management software
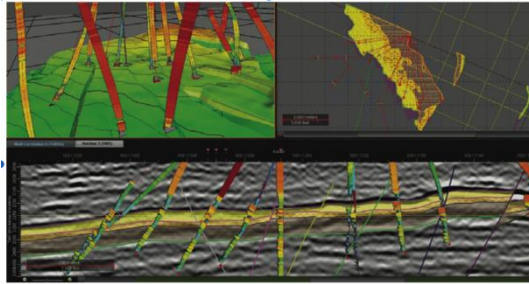
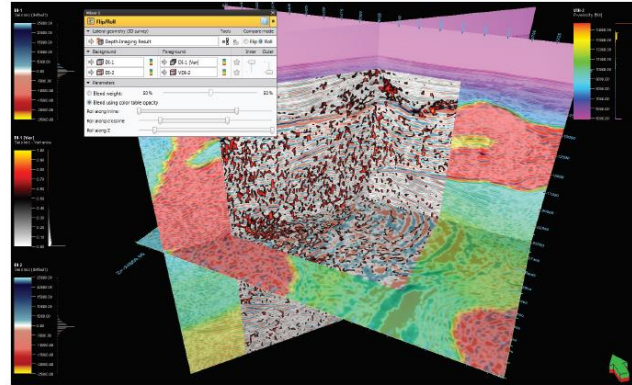# Changing technology
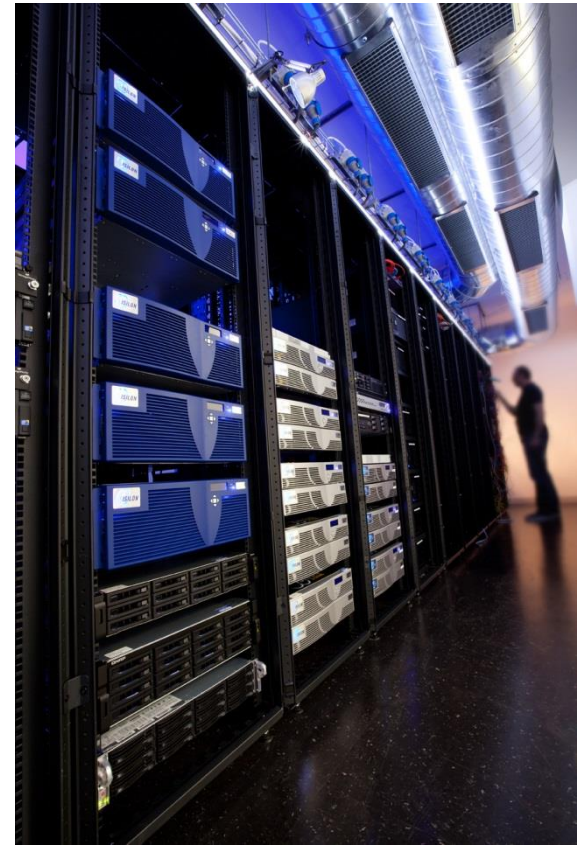
Ensuring availability

The technology

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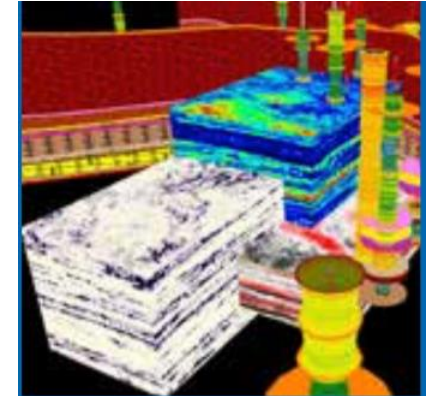- Enabling technology
- Where next?

Leave the data where it is

What about bandwidth?
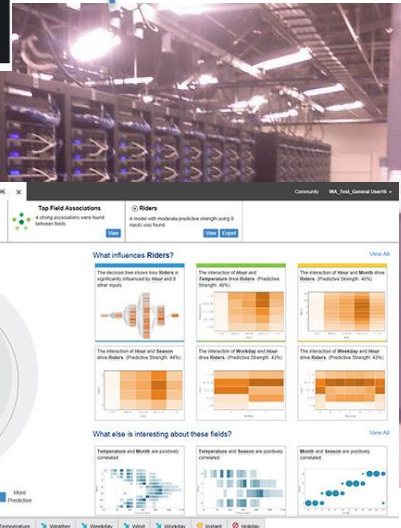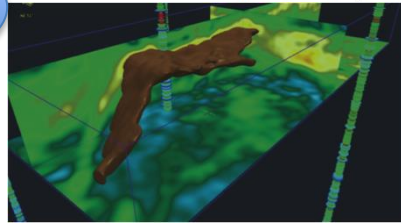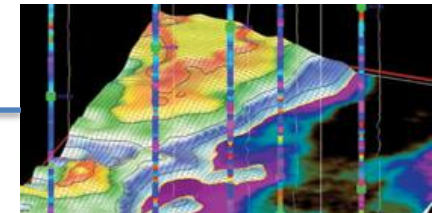
What about security?
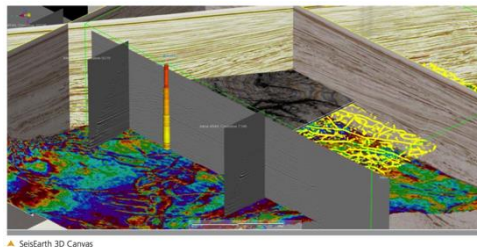
Format "A"

Format "B"

Format "C"

What about latency?

Conclusions

- Large volumes of data can be "live" on the internet

- Still issues to tackle if it is to become a reality

- Some interpretation will be automated (rules based)

- Analytics will play a bigger part in interpretation

- It will come!

Acknowledgements

Thanks for your attention

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