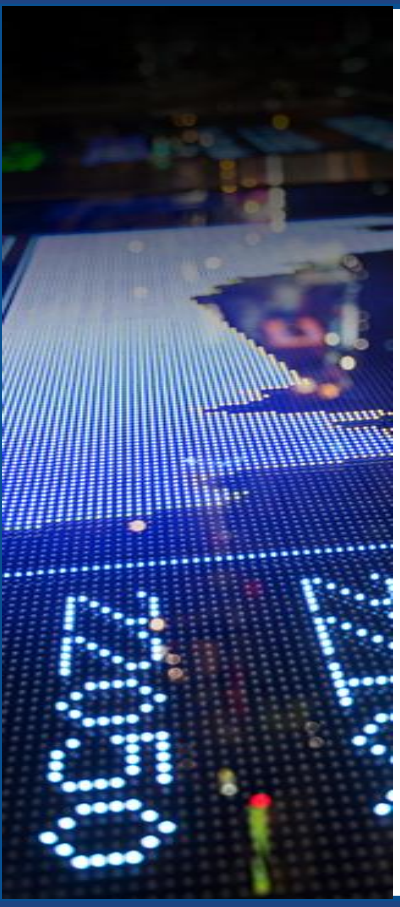

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Improving Decision making with Subsurface Data

Implementing Intelligent Data Management

Tony Klapcia
Gareth Neville

IBM Business Partner

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Intelligent Data Management

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- Coherent Data Management platform
- Active Archive
- Flexible Work Flow
- Compliancy
- Access – Wherever, Whenever, However
- Availability

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Eurotech Intro

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Founded by Upstream Oil & Gas people for Upstream Oil & Gas people

For over 20 years we have provided:

- Information/Data management Services
- Upstream Resources & Expertise
- IT Solutions & Services to Oil & Gas

To:

- Major Operators to Small Exploration companies
- Services companies & Industry ISVs
- Processing companies

*Understand how to apply **IT** to Data/Info Management*

Coherent Data Management? Issues

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- Multiple data sources
- Poor or no tracking or management of data
- Often stored at multiple locations
- No security
- Unreliable storage mediums
- Different data types
- No compliance with regulatory controls
- No internal compliancy
- Visibility limited to small number
- No integration with other business areas

Wish List

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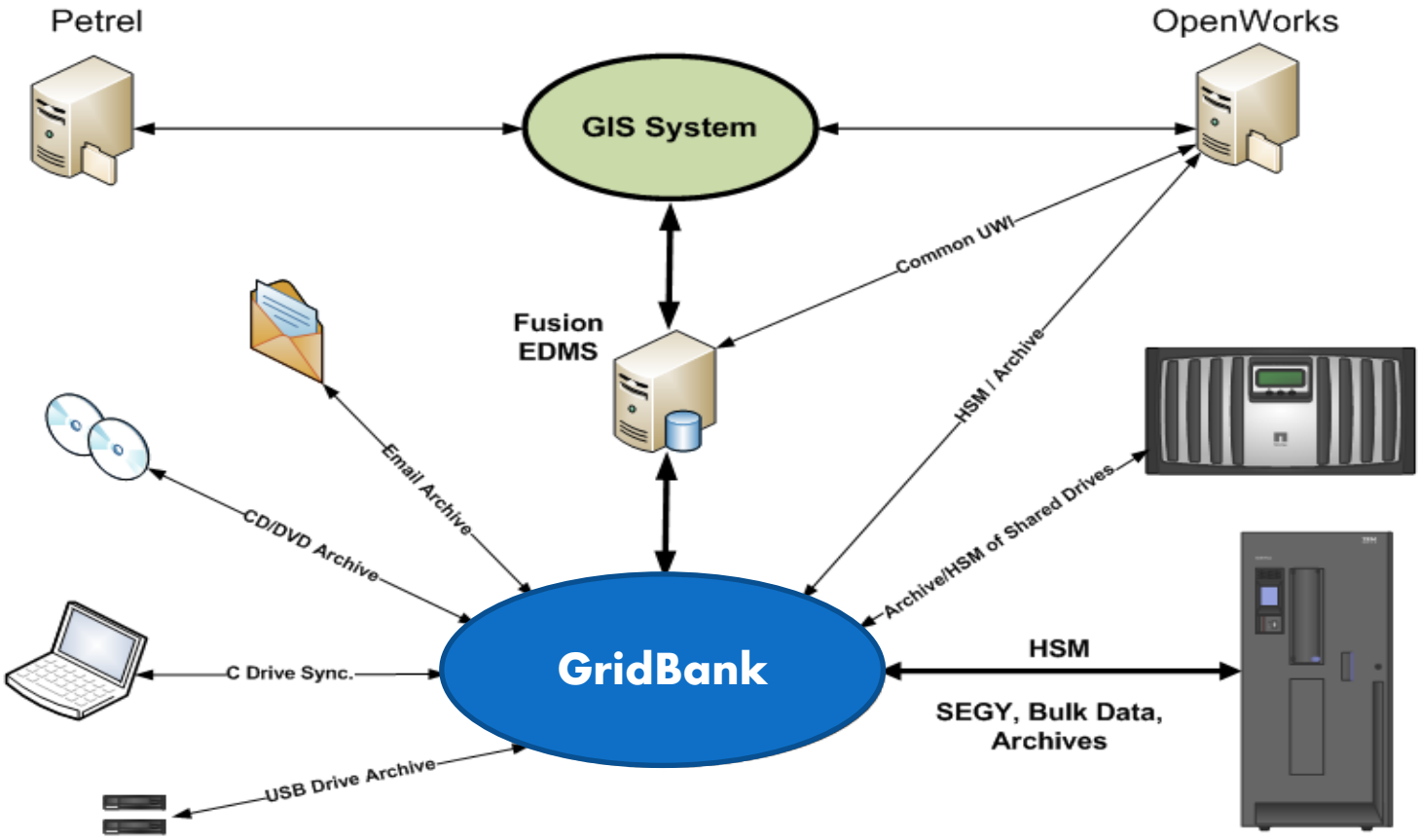
- Automatic ingestion of data - Policy driven
- Remove duplicate data
- Automatic movement of data – ILM
- Long term archiving
  - To disk, To Tape, To Cloud
- Global multi-site coverage
- Compliancy
- Secure environment
- Automatic deletion
- Easy retrieval – by file, by project, by identifier

Solution?


Petrel
OpenWorks
GIS System
Common UWI
Fusion
EDMS
HSM / Archive
Email Archive
CD/DVD Archive
Archive/HSM of Shared Drives
C Drive Sync.
GridBank
HSM
SEGY, Bulk Data,
Archives
USB Drive Archive

Coherent Data Management Platform

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- Policy driven
- Ingestion of semi-structured, unstructured data
- Next generation HSM
- Information Lifecycle Management for G&G
  - Archival
  - Retention & controlled shredding of data
  - Encryption
  - E-search
  - Audit
- Secure
- Flexible Performance
- Low TCO

Active Archive

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- Migrate, manage & share data in a secure repository
- Instant access to archived data
- Flexible, automated policies
- Provide:
  - Data Integrity
  - Media Monitoring
  - Self-healing
  - Versioning
  - Automatic ILM

Flexible Work Flow

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- Transparent Data Access
- Centralised access to distributed data
- GIS interaction
- Removal of physical management layers
- Easy internal & external data distribution
- Create Corporate Data Store or Databank
  - Pre-stack, post-stack
  - Original field data
  - Seismic survey & Geometry data
  - Well data
  - Documents & Images, License data/info
  - Production data
  - SEGD, SEGY, LIS, LAS, DLIS, etc

Compliancy & Security

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- Forbids unauthorised access
- Full audit trails
- Tracks all changes and versions
- Variable retention policies and periods
- No accidental deletion
- Full shredding (*DoD standard*) upon deletion
  - Maintain License obligations
  - Legal & Industry obligations met
  - Adhere to Corporate policy
- Encryption *(standard algorithms: AES, 256, Blowfish, 448)*
- WORM option

Access

- Anywhere Access
  - LAN, WAN
  - Laptop
  - Mobile
- Secure role based access
- Open interface
  - Protocols include: CIFS, NFS, WebDAV, HTTP
- Google like e-search of archive
- Search on normal strings within metadata
- Cloud enabled architecture

Availability

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- Simplified data migration
- Application awareness
- Data De-duplication
- Thin provisioning
- Grid architecture for no SPOF
- Built-in real time replication to remote site
  - Disaster recovery
  - Business Continuity

GridBank Architecture

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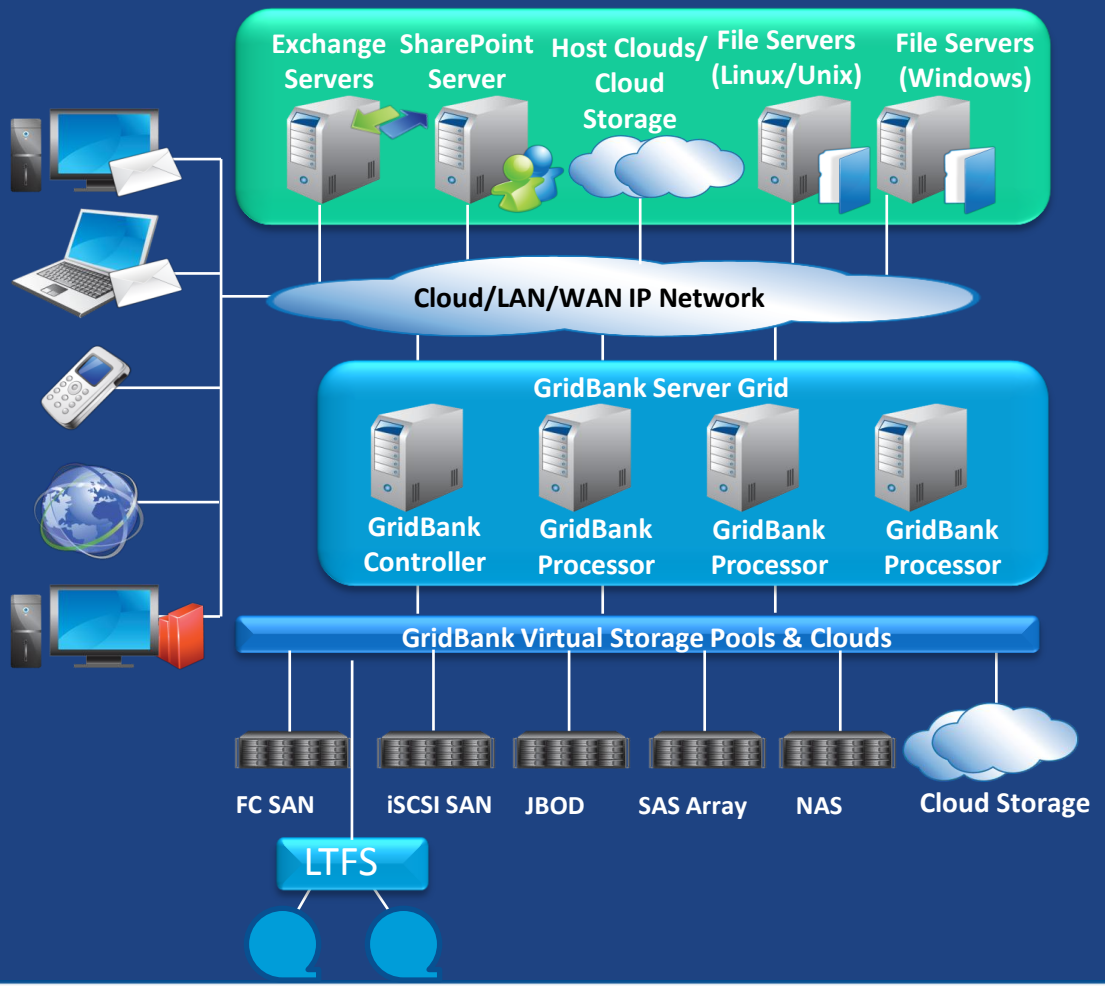

Understand

- Search & Discovery
- Big Data Analytics

Control

- Information Governance
- Multi-Site Replication

Store

- Storage Optimisation
- Object Scalability

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GridBank and IBM

- IBM have tested and validated in their labs:
  - All x86 servers, P series servers
  - All variants of disk storage
- Part of Global ISV catalogue
- Addition of LTFS (developed by IBM)
- Working in partnership with Eurotech in Oil & Gas
- Deliver as an appliance:
  - Fully integrated, black box option
  - No management overheads
  - Self-contained but scalable capacity
  - Reduced dependence on IT

Summary

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- Information Lifecycle Management that fits G&G
- Manage *all* data – seismic and general unstructured
- Reduce storage and operational costs
- Secure, long term retention
- Active Archive environment
- Compliance guaranteed

An IM solution not an IT solution

But…

- This is a strategic solution for Data Retention, Active Archive and assisting in Decision Making
- However, we realise that sometimes it has to be step by step
- IM wants it but IT wants to buy more storage!
- Also, Tape remains important to the Industry

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Technical Solutions

- HPC
- Disk Storage
- Tape Storage
- WAN, VSAT, Remote Processing
- Thin Client 3D

Geoscience Services

- Data Management
  - Data loading, Audit, Recovery
- Information Management
- Project Management
- Transcription
- Staffing
  - Global coverage
  - Short, mid, long term contracts
  - All experience levels

Services

- Cloud
  - Collaboration
  - Archive as a Service
  - Software as a Service
  - Online Storage, Backup & DR
- Managed Services
- IT Consultancy
- Project Management
- Tape Repair

Enterprise Solutions

- Servers & Storage
- Virtualisation
- Networking
- Security
- Digital Asset Management

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Use a Phased Approach

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- Implement simple archive to tape as easy to deploy solution
  - LTFS (Linear Tape File System)
- Then, implement GridBank and scale up
- Use disk but integrate LTFS as back end large scale storage medium

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LTFS Demo

Simple and Effective Backup and Archiving

Tony Klapcia
Gareth Neville

IBM Business Partner

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Description of LTFS

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LTFS - Linear Tape File System

- An easy to format and easy to access file system on tape

LTFS SDE – Single Drive Edition

- Access to all of the data in a cartridge loaded on a single drive as if it were on disk

LTFS LE – Library Edition

- The Library Edition adds support for multiple cartridges in a tape library and automatically loads the cartridge per file access

Supported Tape Generations:

LTO-5 – 1.5TB Native Capacity, Native throughput = 140MB/s

LTO-6 – 2.5TB Native Capacity, Native throughput = 160MB/s

TS1140 - 4TB (JC/JY media), Native throughput = 250MB/s

LTFS Demo

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A quick review of the pain points from previous tape technologies

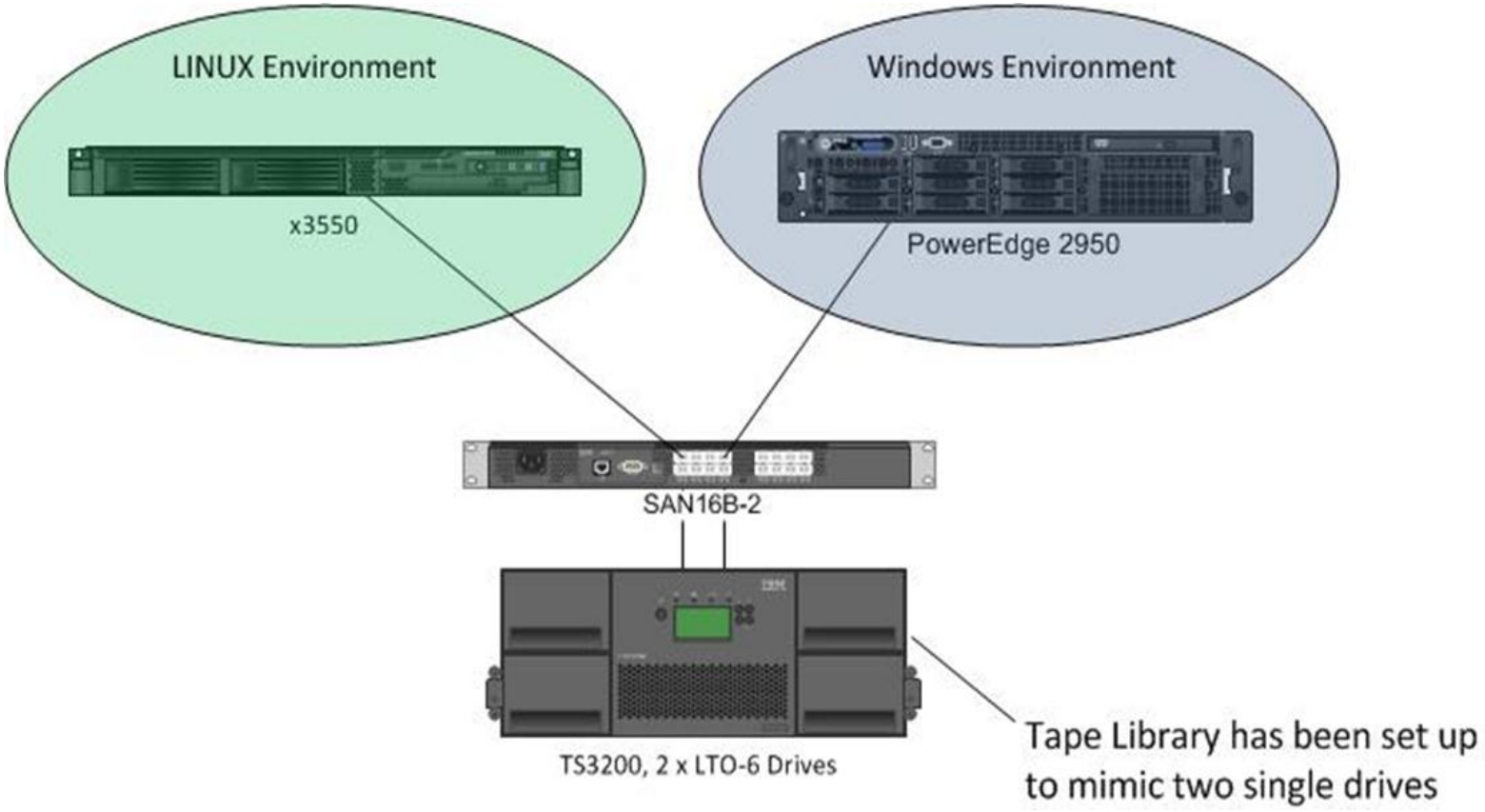
- Proprietary
- Tied in to costly licensing
- Not so easy to view and review data on tape
- Takes time to view/retrieve files archived on tape

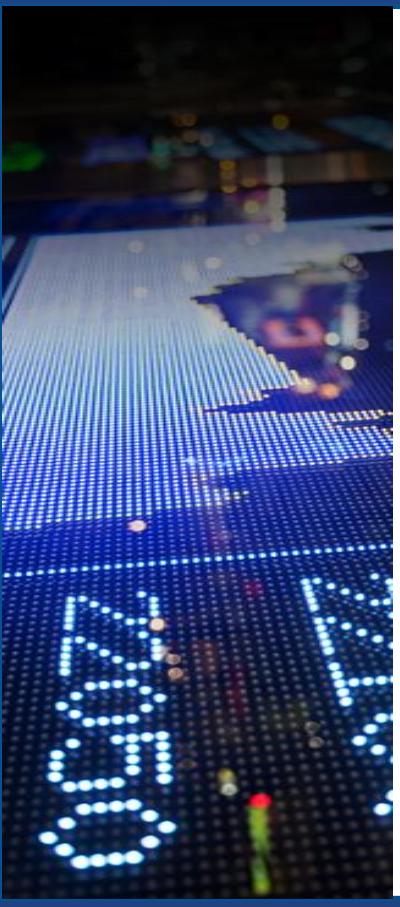
How do I think LTFS helps to combat some of the issues

- Driver to download and install, but no proprietary software to speak of
- LTFS SDE is a free download
- Simple drag and drop method to copy to and from tape
- Tape Loads like a USB drive and all folders and files can be seen straight away
- Easy to select files from tape without having to dump the whole image from the tape first

LTFS Demo

Practical Demo - Setup





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