ORACLE®

Convergence and Collaboration: Transforming Business Process and Workflows

Steven Hagan, Vice President, Server Technologies

Convergence & Collaboration: Transform Processes, Workflow: WHY

- Mandated:
  - Corporate Acquisitions + Mergers
  - Government Department Mergers
  - Policy – “Place Matters”

- Voluntary - Leverage, Value Increase
  - Enterprise Partners Collaborating Together
  - Private Enterprise & Government & Academia Working Together
  - Collaboration due to Many and New Sources, Types of Data

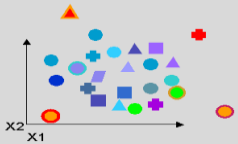
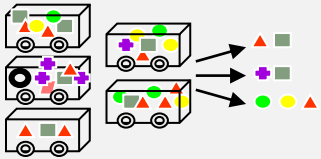
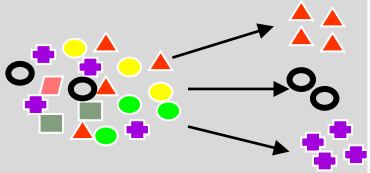
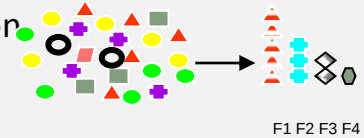
Convergence & Collaboration: Drivers: What

- BIG Data – Terabytes, Petabytes, Exabytes, Zettabytes, Yottabytes
  - Sensors, RFID, VIDEO, LIDAR, Raster, 3D, Terrain and City Models
  - Internet of Things, Social Media, Tagged Data, History/Archive/Version Data
  - SDIs, INSPIRE, Linked Open Data –- Persistent Relationships, Semantics, Ontologies
- BIG Hardware:
  - CLOUD Platforms – Public and Private
  - Cheaper, more powerful – Clusters of Commodity Servers, Virtualization: = Greener
  - Massively parallel database machines – Software Enablement – e.g. Hadoop
- BIG Software –
  - Real Time Analytics –Biggest value from fastest response – Streams and Events –- Internet of Things; Spatially Aware – no separate GIS
  - Location Enable All Applications: ERP, CRM, Business Intelligence, Public Sectors
  - CyberSecurity
  - Support Standards – W3C, OGC, ISO, Wide Range
  - Engineered Systems – Fully installed and tested (Labor Cost is now Dominant Factor)

ORACLE

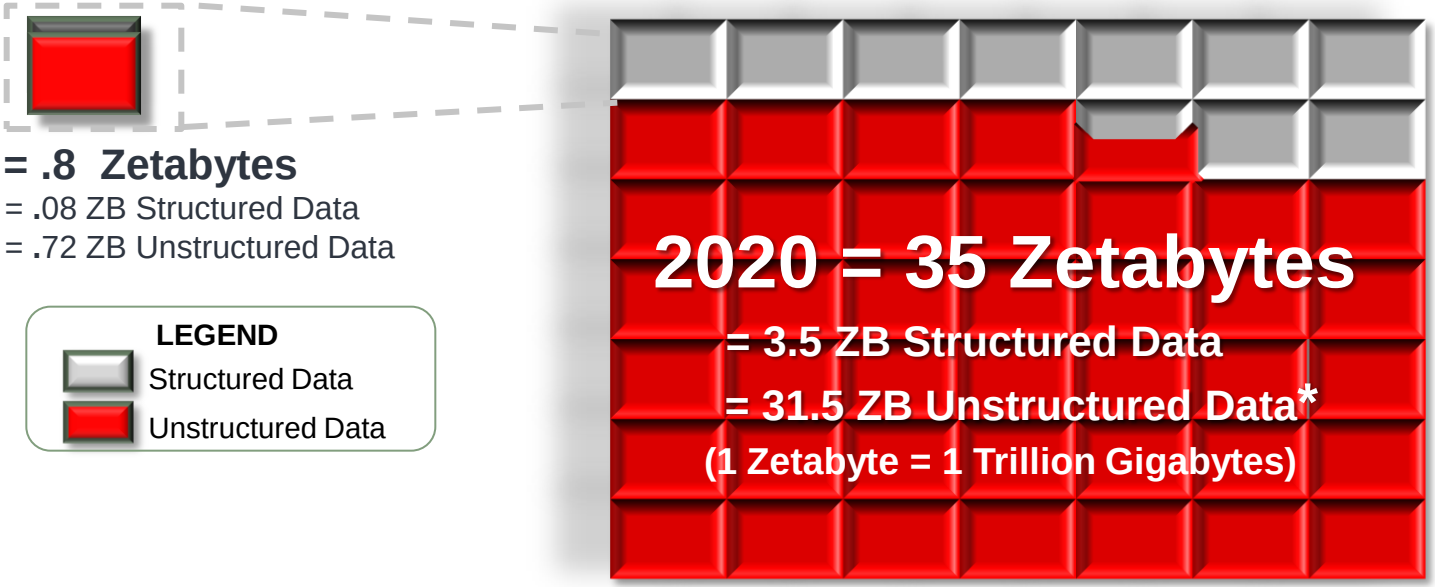

IN 60 SECONDS...
1 NEW DEFINITION IS ADDED ON urban
1,600+ READS ON Scribd
13,000+ HOURS MUSIC STREAMING ON PANDORA
12,000+ NEW ADS POSTED ON craigslist
370,000+ MINUTES VOICE CALLS ON skype
98,000+ TWEETS
20,000+ NEW POSTS ON tumblr.
THE LARGEST SOCIAL READING PUBLISHING COMPANY
New Craigslist Ads
320+ NEW twitter ACCOUNTS
100+ NEW LinkedIn ACCOUNTS
13,000+ iPhone APPLICATIONS DOWNLOADED
1 associatedcontent NEW ARTICLE IS PUBLISHED
THE WORLD'S LARGEST COMMUNITY CREATED CONTENT!!
QUESTIONS ASKED ON THE INTERNET...
100+ Answers.com
40+ YAHOO! ANSWERS
6,600+ NEW PICTURES ARE UPLOADED ON flickr
600+ NEW VIDEOS
50+ WORDPRESS DOWNLOADS
25+ HOURS TOTAL DURATION
70+ DOMAINS REGISTERED
60+ NEW BLOGS
168 MILLION EMAILS ARE SENT
694,445 SEARCH QUERIES
1,700+ Firefox DOWNLOADS
695,000+ facebook STATUS UPDATES
125+ PLUGIN DOWNLOADS
1,500+ BLOG POSTS
79,364 WALL POSTS
510,040 COMMENTS
Google
Google Search
GO-Globe.com

Collaborations: Tools – Understand Data Quickly Discovery & Predictive Analysis

Problem Classification	Sample Problem
Anomaly Detection 	Given demographic data about a set of customers, identify customer purchasing behavior that is significantly different from the norm (Fraud?) . For Sensors, Events – problem? Good News?
Association Rules 	Find the items that tend to be purchased together and specify their relationship – market basket analysis
Clustering 	Segment demographic data into clusters and rank the probability that an individual will belong to a given cluster. For customers / govt constituents, what do they want to know about?
Feature Extraction 	Given demographic data about a set of customers, group the attributes into general characteristics of the customers

Global Digital Data Growth: Exceeds Storage Mfg

Growing leaps and bounds by 40+% YoY!

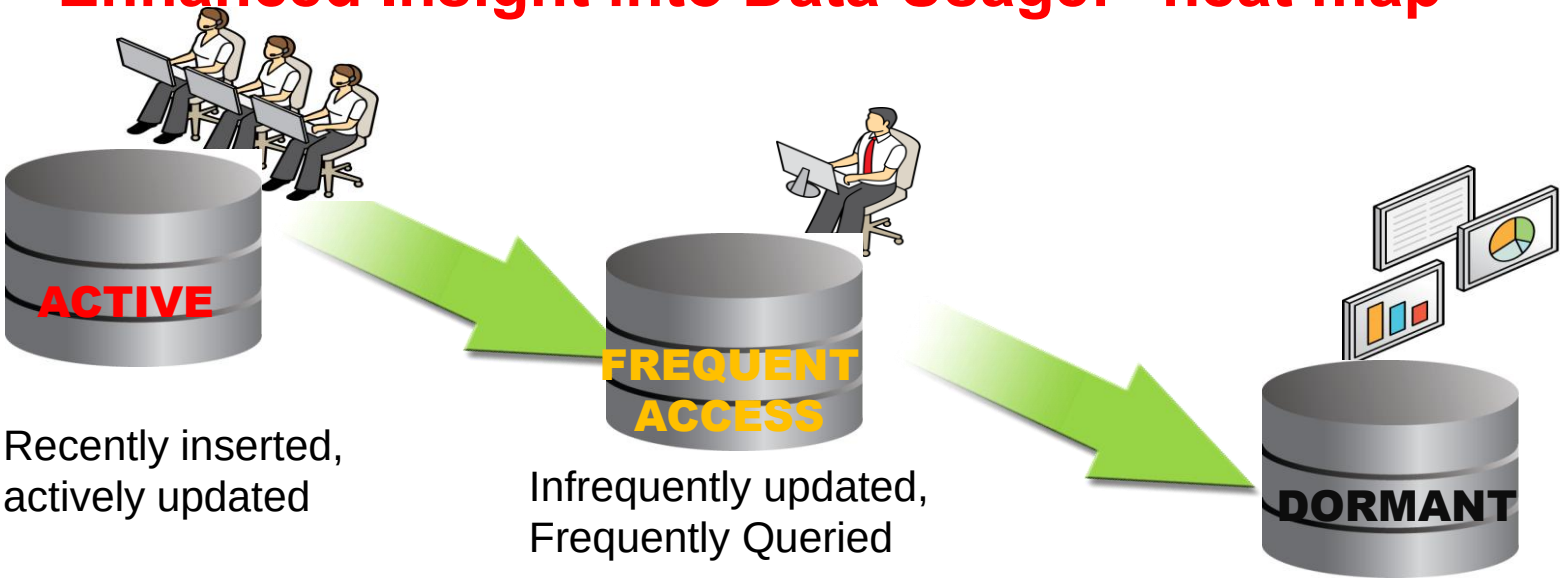


- Chart conservatively assumes a constant 9:1 ratio of unstructured data vs. structured data (based upon IDC's estimate that 90% of all digital data is unstructured).
- Chart does not reflect IDC's projection that unstructured data is currently growing twice as fast as structured data at the rate of 63.7% vs. 32.3% CAGR.

Source: IDC Digital Universe Study, A Digital Universe Decade – Are Your Ready?, 2010

ILM: Hot/Cold Data Classification – Auto Archiving

Enhanced Insight into Data Usage: “heat map”



Recently inserted, actively updated

Infrequently updated, Frequently Queried

Retained for long term analytics and compliance with corporate policies and regulations

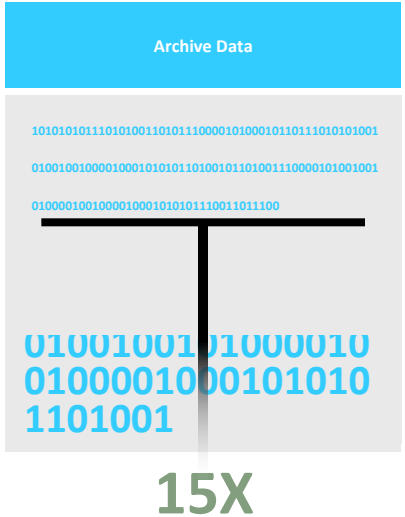
- Block and Segment level statistics on last Read and last Update

Data Compression / Archiving; Repurposing

Remember: Versioning, Disaster Recover Copies

Advanced Row Compression

Columnar Query Compression



Columnar Archive Compression

Collaboration: Geospatial Value Core

External Data Sources
Transactional &
Operational Systems
Contents Repository
Databases
Web resources
Blogs, Mails, news

Real-time Data Streams

Search, Presentation, Report, Visualization, Query

Enterprise Data Management Infrastructure

Secured

GeoSpatial

Historical Records, Archives

POIs
Demographics
Customer Data
Call Records

Documents

Automatic Responses and Publishing

SMS Console Alerts

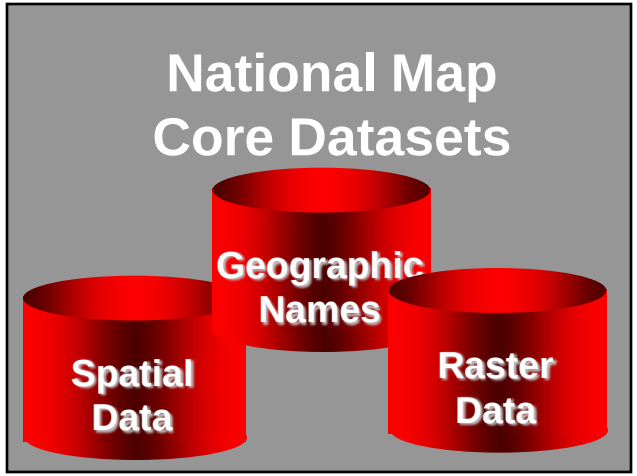
EV Grid Management

Workflow Initiation

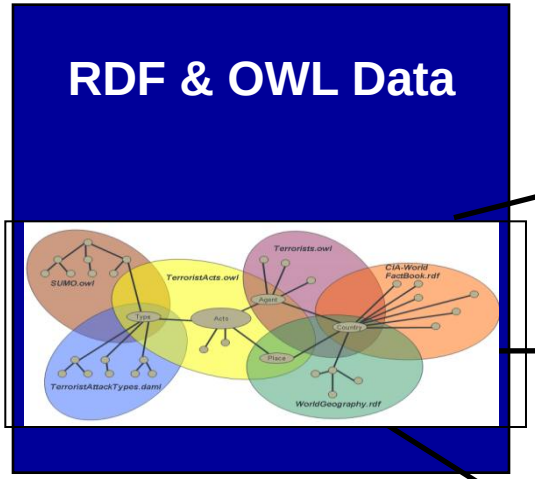
Real-time Dashboards

Ontology-driven Geospatial Applications - Actionable Knowledge

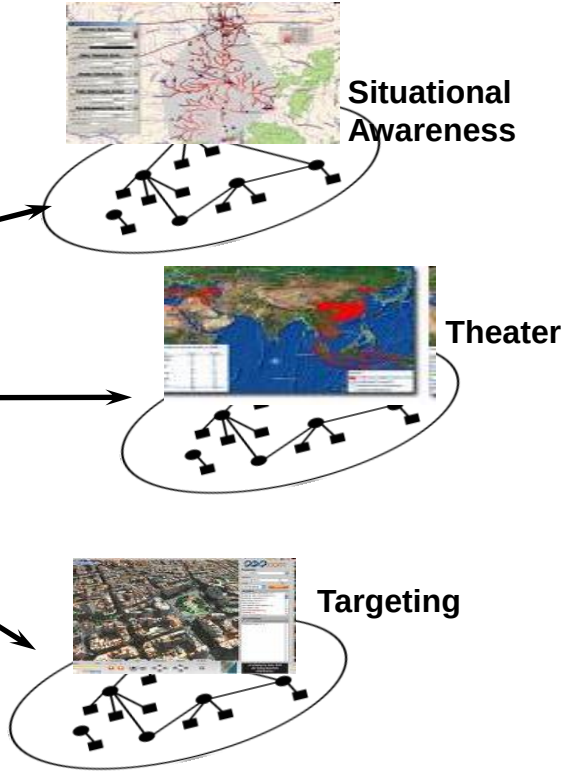
Application Ontologies



- Simple Features
- GeoRaster
- Topology
- Networks
- Gazetteers

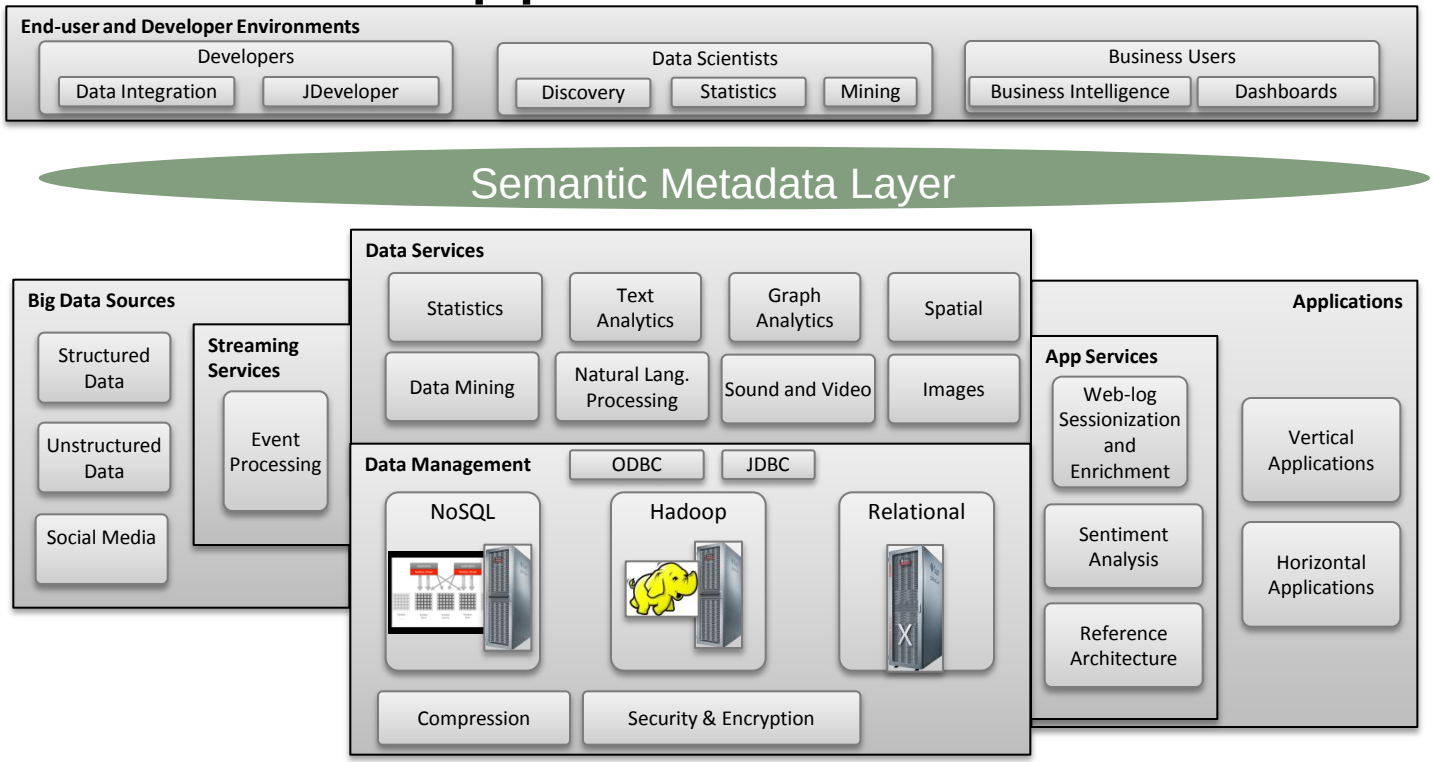


- Data Integration
- National Map schemas
- Geographic names
- Temporal
- Naïve Geography

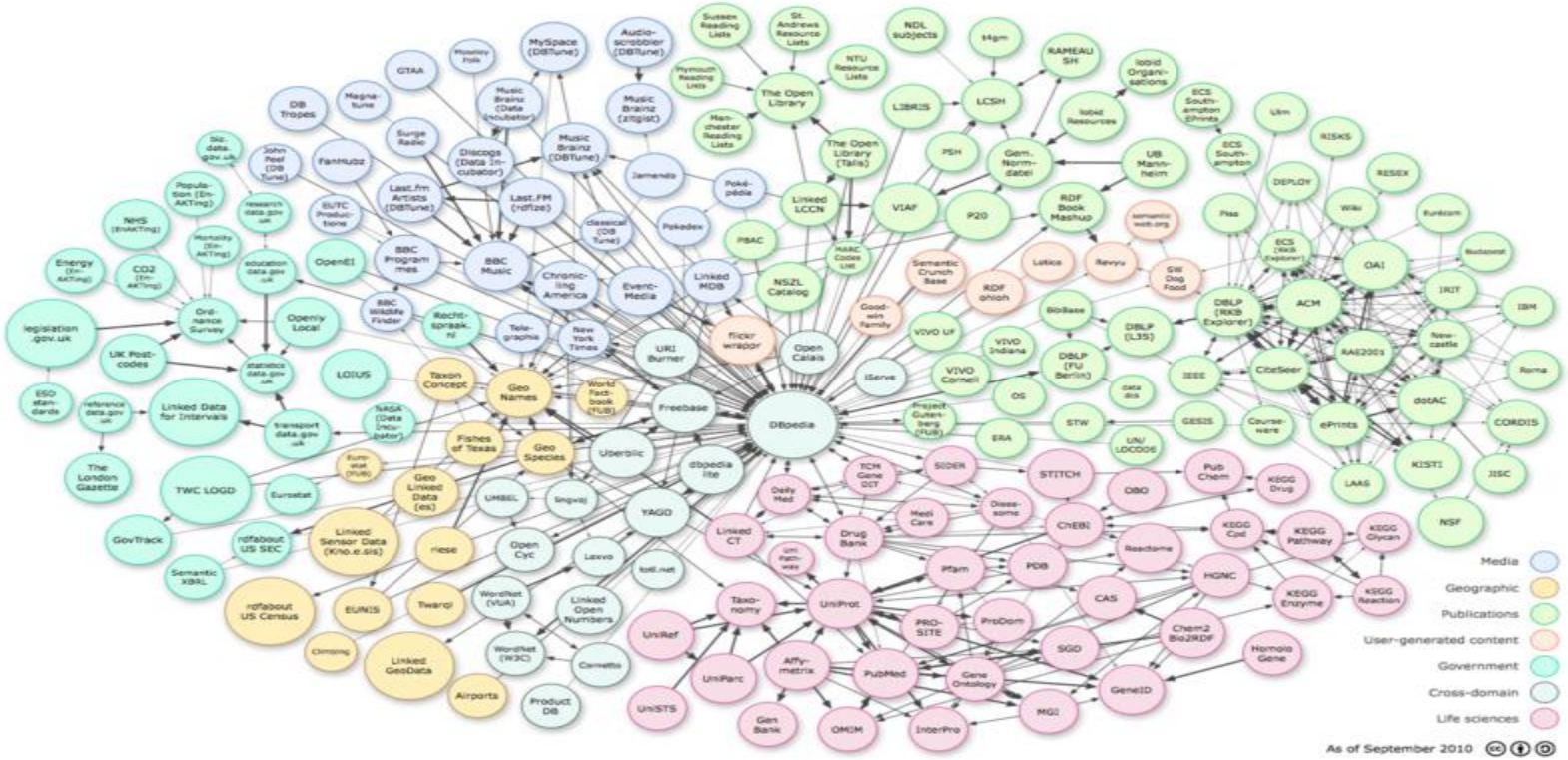


Convergence: Breadth of Enterprise Data

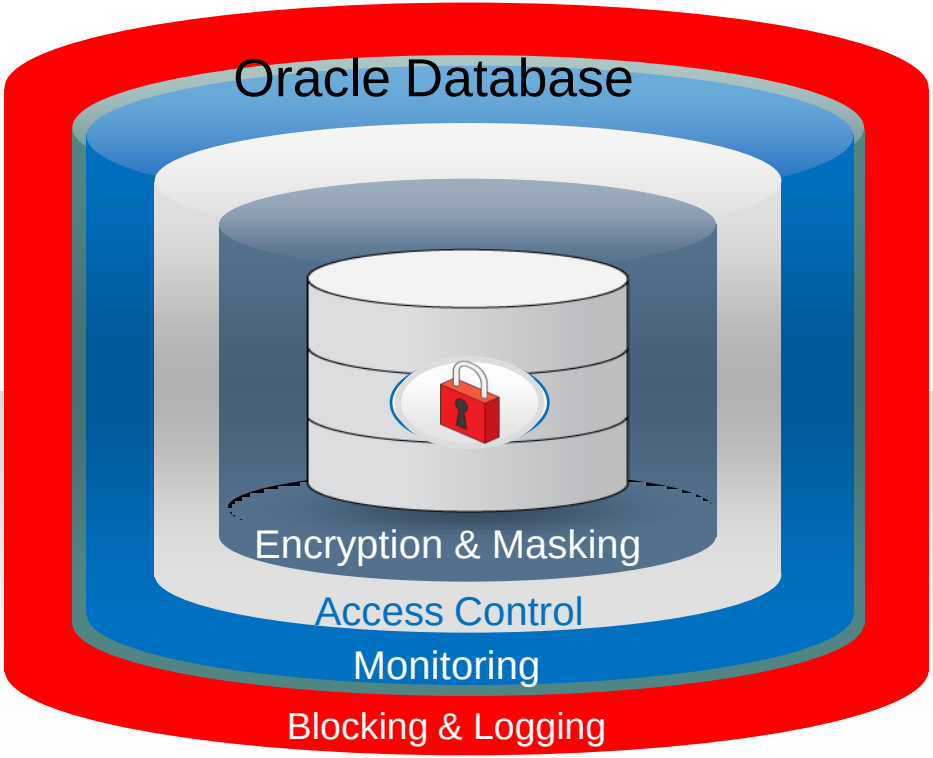
Above / Across Stovepipes



Linking Your Cloud with other Clouds



Convergence / Collaboration must Respect Information Security and Privacy



Monitoring

- Configuration Management
- Audit Vault
- Total Recall

Access Control

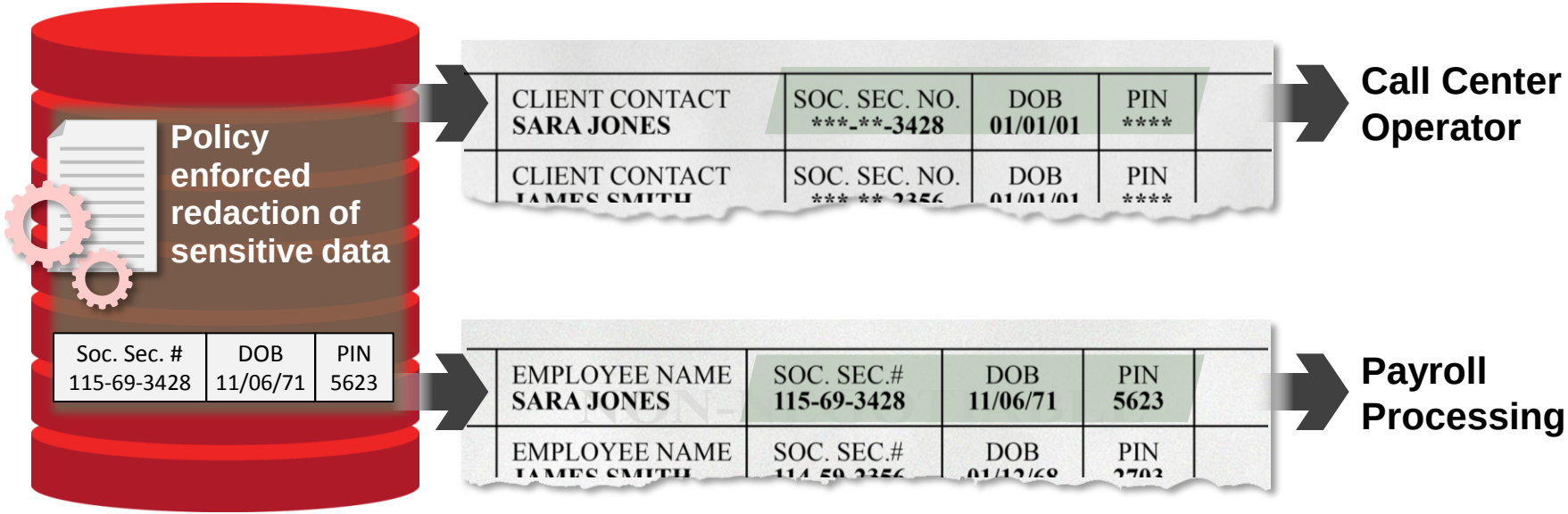
- Database Vault
- Label Security

Encryption & Masking

- Advanced Security
- Secure Backup
- Data Masking, Redaction

Privacy: Redacting Sensitive Data

Mask Application Data Dynamically – By Location, if Needed



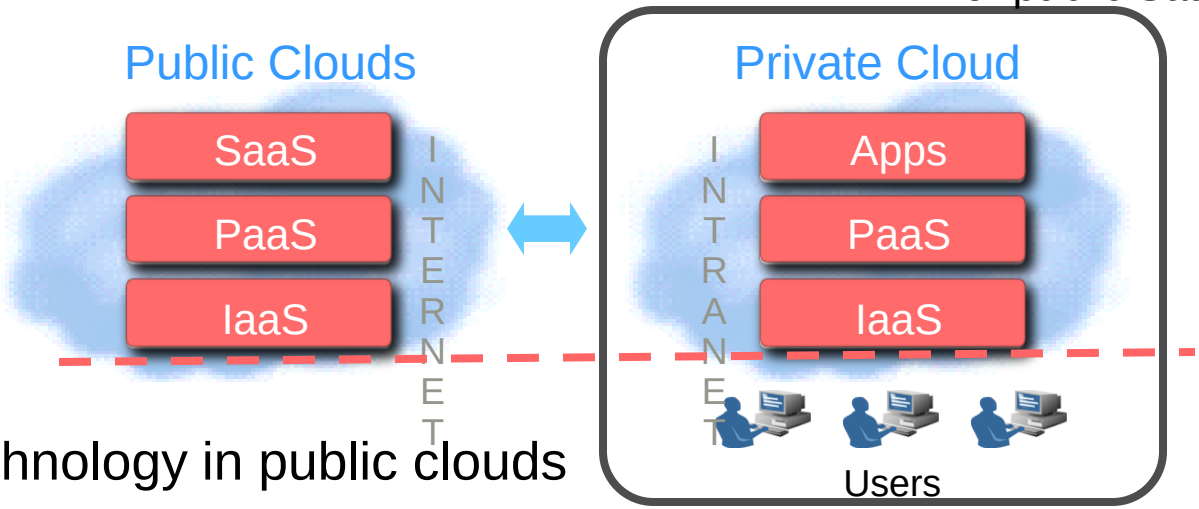
Cloud Choices from Oracle: Public, Private

ORACLE ON DEMAND

Cloud Services

ORACLE APPLICATIONS

Run on private shared platform or public SaaS model



Oracle Technology in public clouds

- Enterprise deployment option
- Power 3rd party public clouds

Oracle Private Cloud Platform

Seeking Order through Standards

"We intend to complete development for a new suite of tools for developing the next generation of applications. And there are several interesting things with the next generation of tools, but perhaps the single most interesting thing about them is that for the first time a major application company is going to commit to an absolute standards-based development environment."
– Larry Ellison

- **ISO**
  - **TC 211**
  - **TC 204**
- **Open Geospatial Consortium**
  - **Simple Features**
  - **GML**
  - **Web Services**
- **De-facto Standards**
  - **SHP, MGE, DXF, KML**
- **Professional Standards**
  - **ISPRS, FIG, WMO**
- **Java, .NET, Flash**
- **TAGGED METADATA – agree on tags**

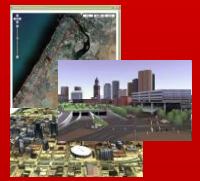
SQL3/MM Spatial

Convergence & Collaboration: Best Success Requires Complete Platforms

Big Data

Volunteered Geographic Information

Sensors Streaming Data



Geo-referenced Video, 3D, LiDAR

Simplified Spatial IT

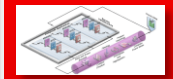
Support for Open Standards

Spatial Database, Application Server, BI, tools

Support by Leading Partner solutions

Spatially-enabled Engineered Systems

Deep Analytics



Real-time Spatial Event Processing

Dense Visualization

Spatial Analysis

On Premise, On Cloud, Shared Services

Shared GeoSpatial Services
Location Aware Everything

Cloud Computing

+

Oracle Engineered Systems