# Why Should I Be Interested in Analytics and Big Data?

Mark Rittman, CTO, Rittman Mead

October 2014

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

**rittmanmead**
INTEGRATED ANALYTICS

# Who Am I?

- Mark Rittman, CTO, Rittman Mead
- Oracle ACE Director (BI and Analytics)
- Regular Columnist for Oracle Magazine
- Blogger (http://www.rittmanmead.com)
- Author of the Oracle Press book on OBIEE 11g
- Tottenham Hotspurs Fan
  (…and Brighton & Hove Albion)
- Speaker at OOW, UKOUG, OUGN, ODTUG
  and other regional OUG events
- Part-time DJ

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com
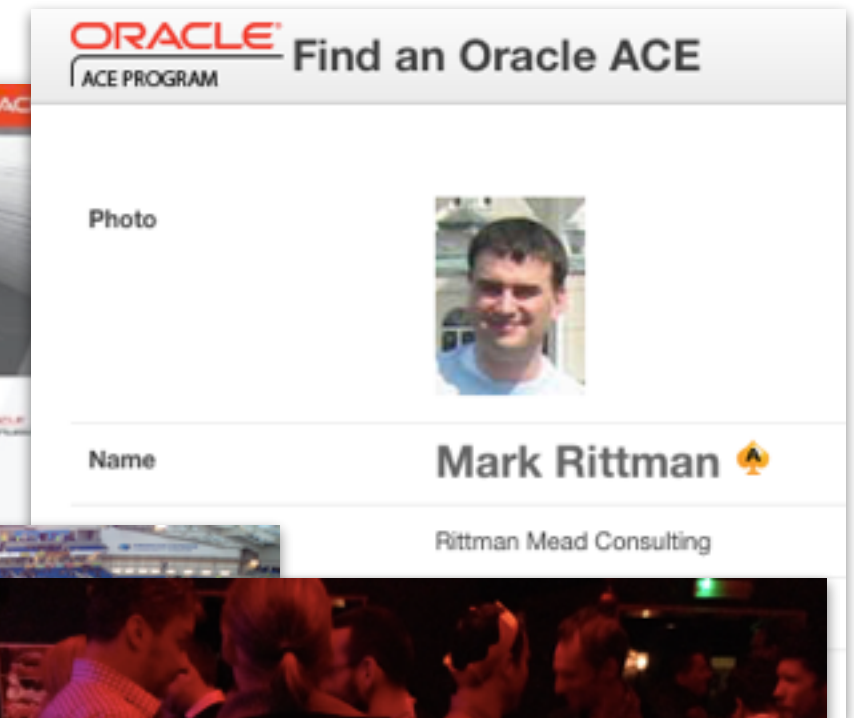
# 15+ Years in Oracle BI and Data Warehousing

- Started back in 1997 on a bank Oracle DW project
- Our tools were Oracle 7.3.4, SQL*Plus, PL/SQL and shell scripts
- Went on to use Oracle Developer/2000 and Designer/2000
- Our initial users queried the DW using SQL*Plus
- And later on, we rolled-out Discoverer/2000 to everyone else
- And life was fun…



**WORK IN PROGRESS** BY TOM HAUNERT

## Write It Down

Mark Rittman talks about working with Oracle technology and the benefits of writing about work.

**M**ark Rittman is a consultant, Oracle Business Intelligence expert, blogger, author, Oracle ACE Director, and frequent contributor to *Oracle Magazine*. Rittman recently sat down with *Oracle Magazine* Editor in Chief Tom Haunert to talk about how he got his start with Oracle technology, the benefits of blogging, and the evolution of business intelligence in the era of big data and cloud computing. The following is an excerpt from that interview. Listen to the full podcast at oracle.com/magcasts.

**Oracle Magazine:** How did you get started with Oracle technology?

**Rittman:** Many years ago, back in the late '90s, I used to work for a bank in the UK that was putting together a marketing project. My role at that point was to bring together lots of customer data and to analyze it, and pretty soon I reached the limits of what I could do on a PC with a spreadsheet.

Then I heard about a new project going on at the bank—an Oracle data warehousing project. It combined the worlds of marketing and analytics. Oracle was an impressive company even in those days, so I knew I had to get mys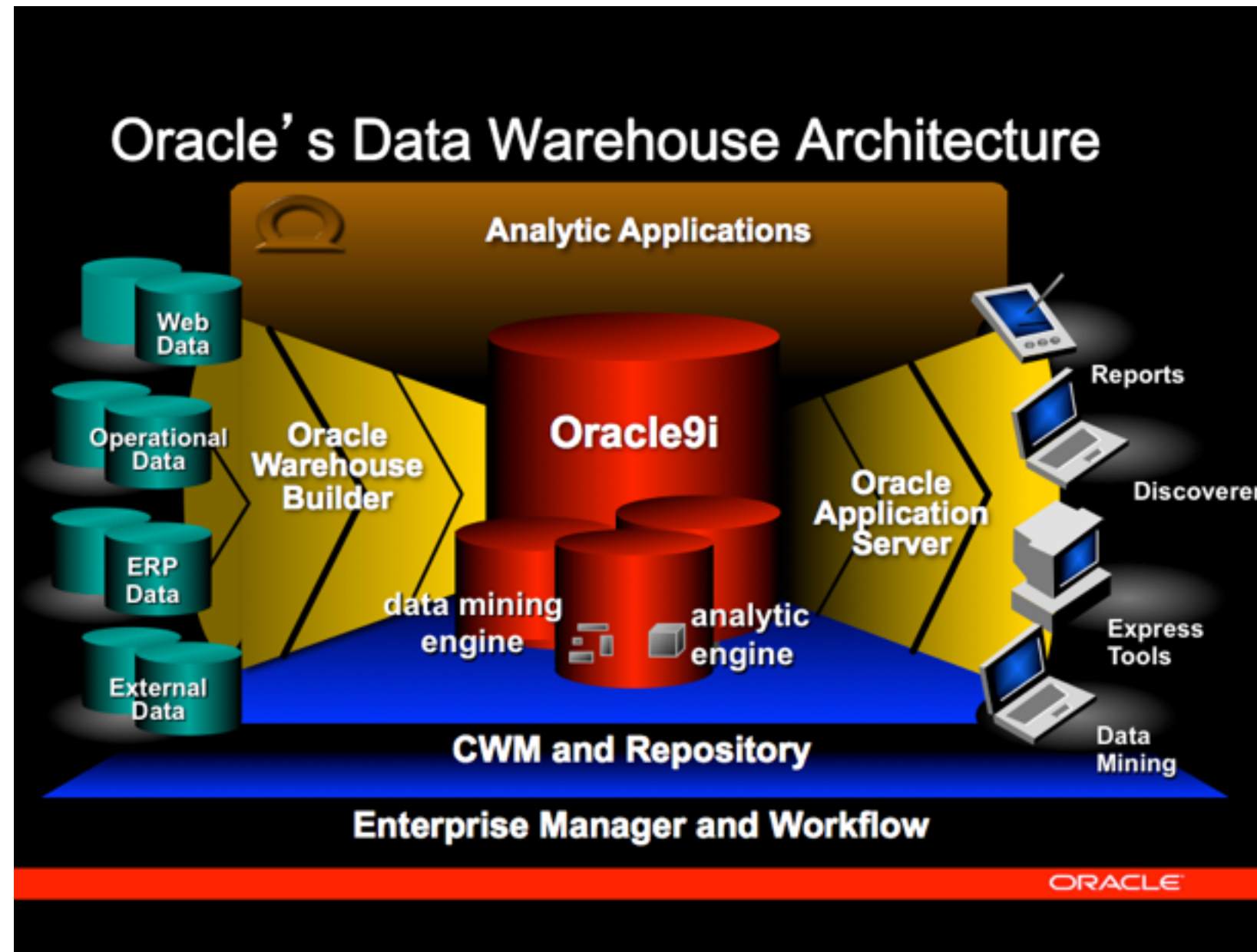elf on that project as a business analyst. Over the next couple of years, I worked my way into doing SQL queries, data warehousing, and reporting. I started off working with Oracle Database and then got more into data warehousing, ETL [extract, transform, and load], developer tools, and so on. I ended up leaving there after a few years and working for an automotive company on its data warehouse project. And after that I got into consultancy.

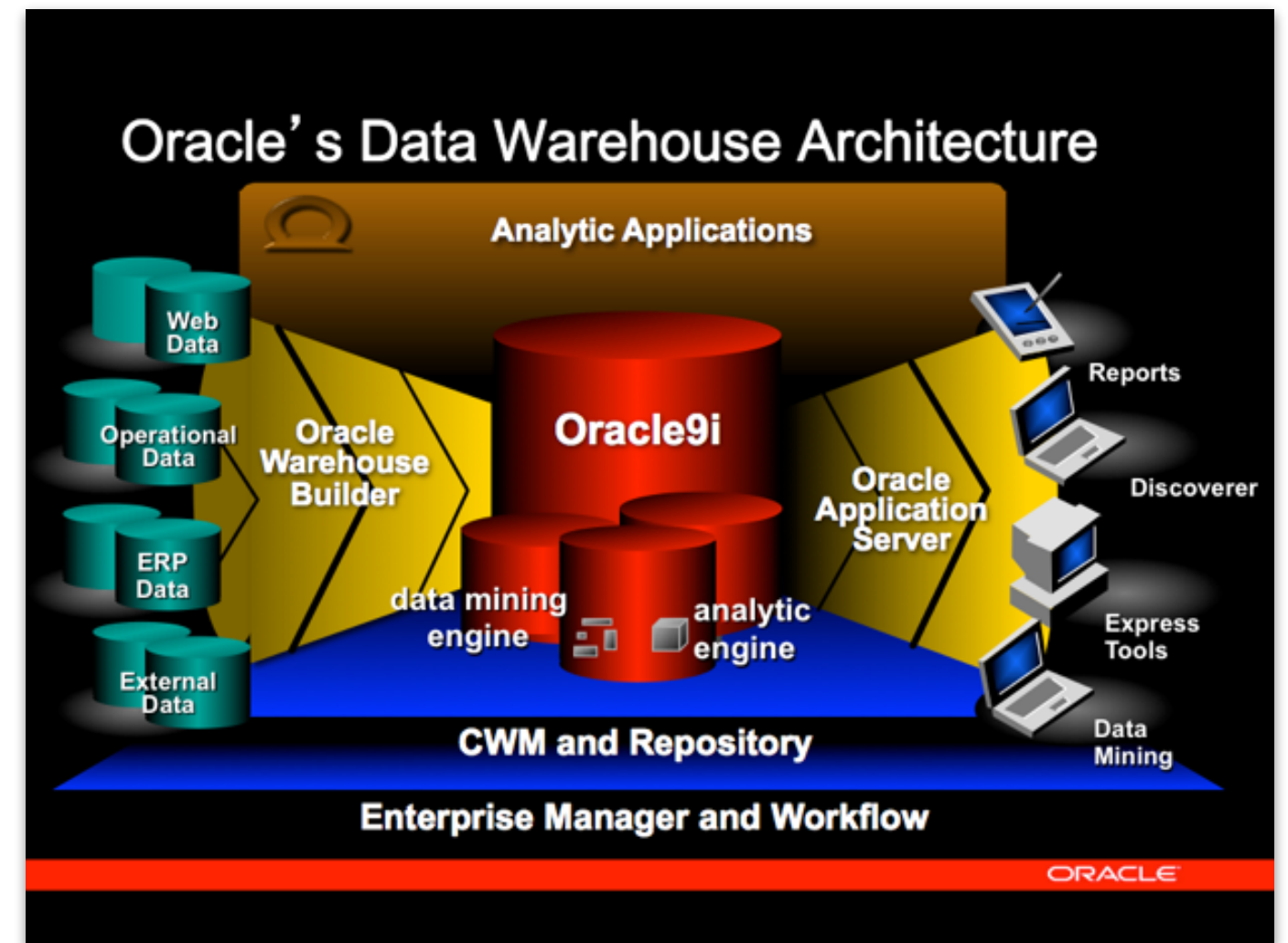I suppose that for about the last 15

Oracle Business Intelligence expert, consultant, author, and Oracle ACE Director Mark Rittman reviews writings on Oracle technology.

**rittmanmead**
INTEGRATED ANALYTICS

# The Oracle-Centric DW Architecture c. 2004



Oracle's Data Warehouse Architecture

T : +44 (0) 1273 911 268 (UK) or (888) 631-1410 (USA) or
+61 3 9596 7186 (Australia & New Zealand) or +91 997 256 7970 (India)

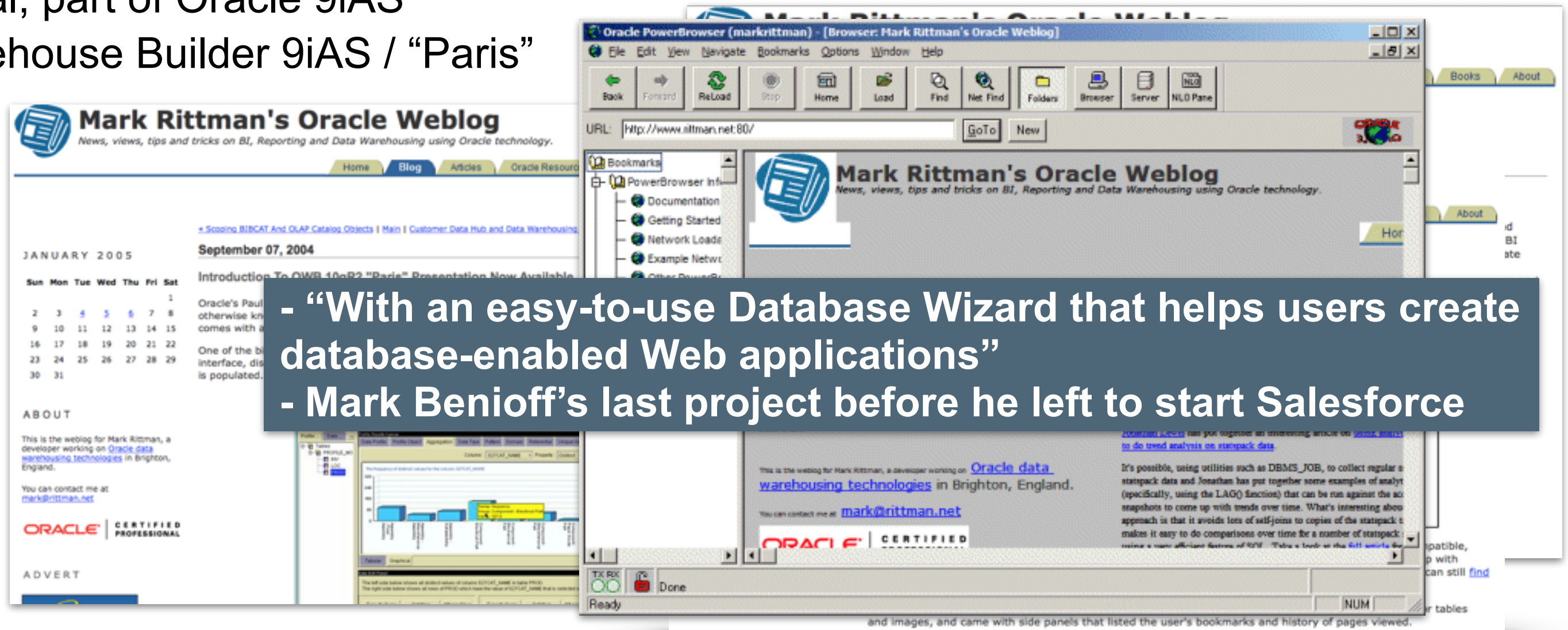E : info@rittmanmead.com
W : www.rittmanmead.com

# The Oracle-Centric DW Architecture

- Over time, this data warehouse architecture developed
- Added Oracle Warehouse Builder to automate and model the DW build
- Oracle 9i Application Server (yay!) to deliver reports and web portals
- Data Mining and OLAP in the database
- Oracle 9i for in-database ETL (and RAC)
- Data was typically loaded from Oracle RBDMS and EBS
- It was ~~turtles~~ Oracle all the way down…

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittman**mead**
INTEGRATED ANALYTICS

# The State of the Art for BI & DW Was This..

- Oracle Discoverer "Drake" - Combining Relational and OLAP Analysis for Oracle RDBMS
- Oracle Portal, part of Oracle 9iAS
- Oracle Warehouse Builder 9iAS / "Paris"



- "With an easy-to-use Database Wizard that helps users create database-enabled Web applications"
- Mark Benioff's last project before he left to start Salesforce

# But then … this happened

# After 18-Month Battle, Oracle Finally Wins Over PeopleSoft

Ellison Rewrites Software Rules With $10.3 Billion Pact, Vows More Deals to Come

**✉ Email**    **🖶 Print**

£1 A WEE

Ora
$5.

By DA

Updated

Larr

The
bett

## COMPUTERWORLD

**Popular Now:** ▼
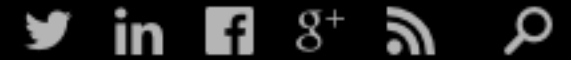
Home

FEAT

By Dawn

Staff Write

Last modi

Th
ap

Related

Who says Orac
finished?

July 25, 2005

Siebel announces
first-ever stock

• "I think at one point Craig (Conway) thought I was going to shoot his dog. I love animals. If Craig and the dog were standing next to each other, trust me--I have one bullet--it wouldn't be for the dog."

*Ellison on Conway's reaction to Oracle's offer.*

July 10, 2003

Larry Ellison, CEO,
Oracle

OM

r Retek

THIS

in
ons, the

"major beachhead" ag
world's largest business-applications seller.

Who says Oracle's

database giant said Tuesday.

**rittmanmead**
INTEGRATED ANALYTICS

# Oracle Went on the Acquisition Trail

- Peoplesoft, Siebel, Retek, JD Edwards, Siebel, I-Flex and other ERP vendors
- BEA, Hyperion and other middleware tool vendors
- Many of their customers used databases other than Oracle
- And Oracle were looking to replace their mid-tier tools with the ones they'd just bought
- Clearly, a DW architecture that assumed Oracle-only wasn't going to work any more…

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittman**mead**
INTEGRATED ANALYTICS
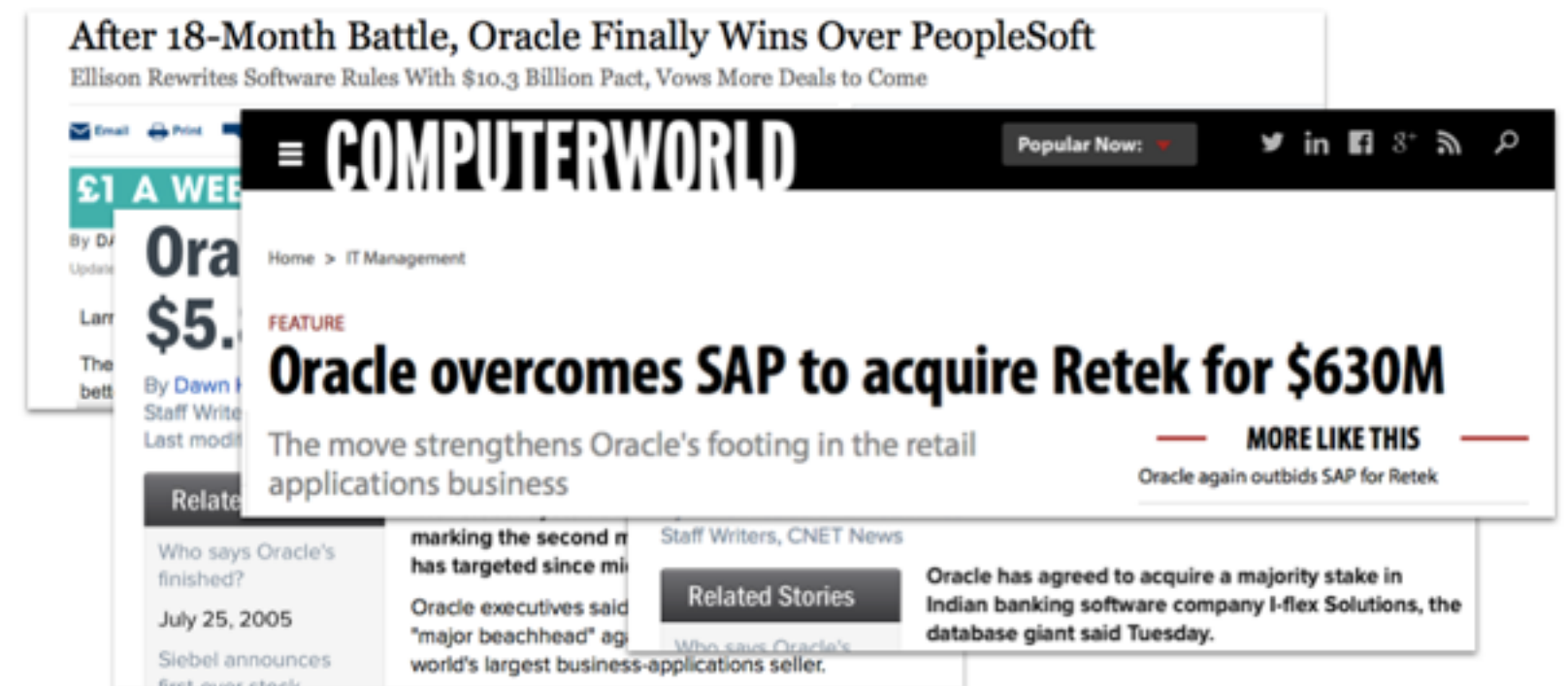
# And Completely Replaced Their BI Toolset

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittman**mead**
INTEGRATED ANALYTICS

# The Oracle BI & DW World Changed

- Siebel Analytics replaced Oracle DIscoverer
- Oracle Data Integrator replaced Oracle Warehouse Builder
- Hyperion Essbase Replaced Oracle OLAP
- You were as likely to be loading from SQL Server as from Oracle
- They made us do things we didn't like to do …

  ‣ Add a mid-tier virtual DW engine on top of the database

  ‣ Export data out of Oracle into an OLAP server

  ‣ Improve query performance using tools outside of the Oracle data warehouse

  ‣ It was all a bit scary…

  ‣ … Not to mention that WebLogic stuff

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

**rittmanmead**
INTEGRATED ANALYTICS

# But It Seemed to Work for Oracle

- OBIEE saw Oracle gain BI marketshare and mindshare
- Hyperion was far more popular with the Finance department than Oracle OLAP
- WebLogic, compared to 9iAS, actually worked
- We now had nice looking dashboards
- The customers seemed to like it …
- … but the architecture wasn't too clear, mistakes were being made, and the BI cart was leading the DW horse
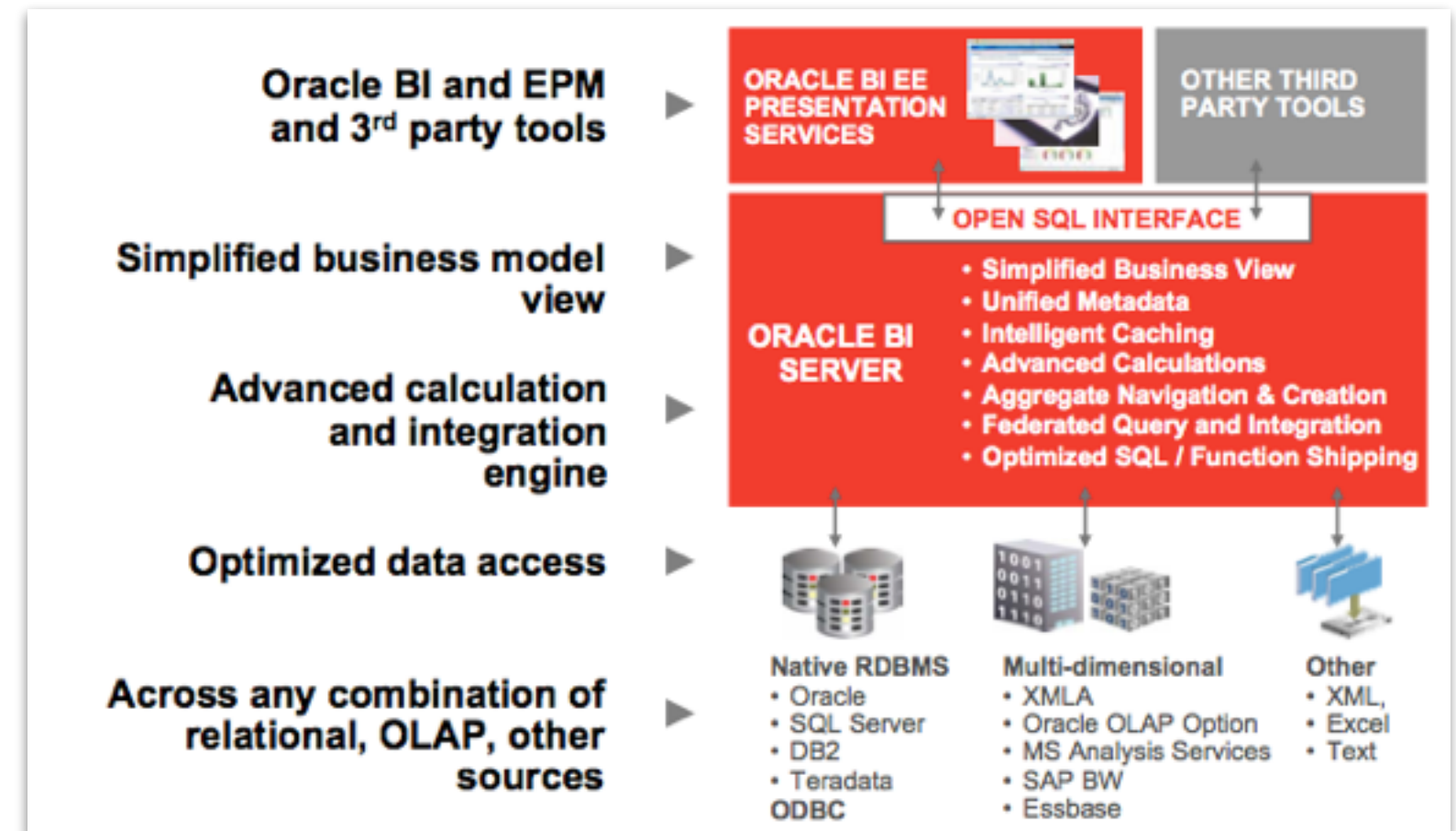
# Introducing - The Oracle Reference DW Architecture

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

**rittmanmead**
INTEGRATED ANALYTICS
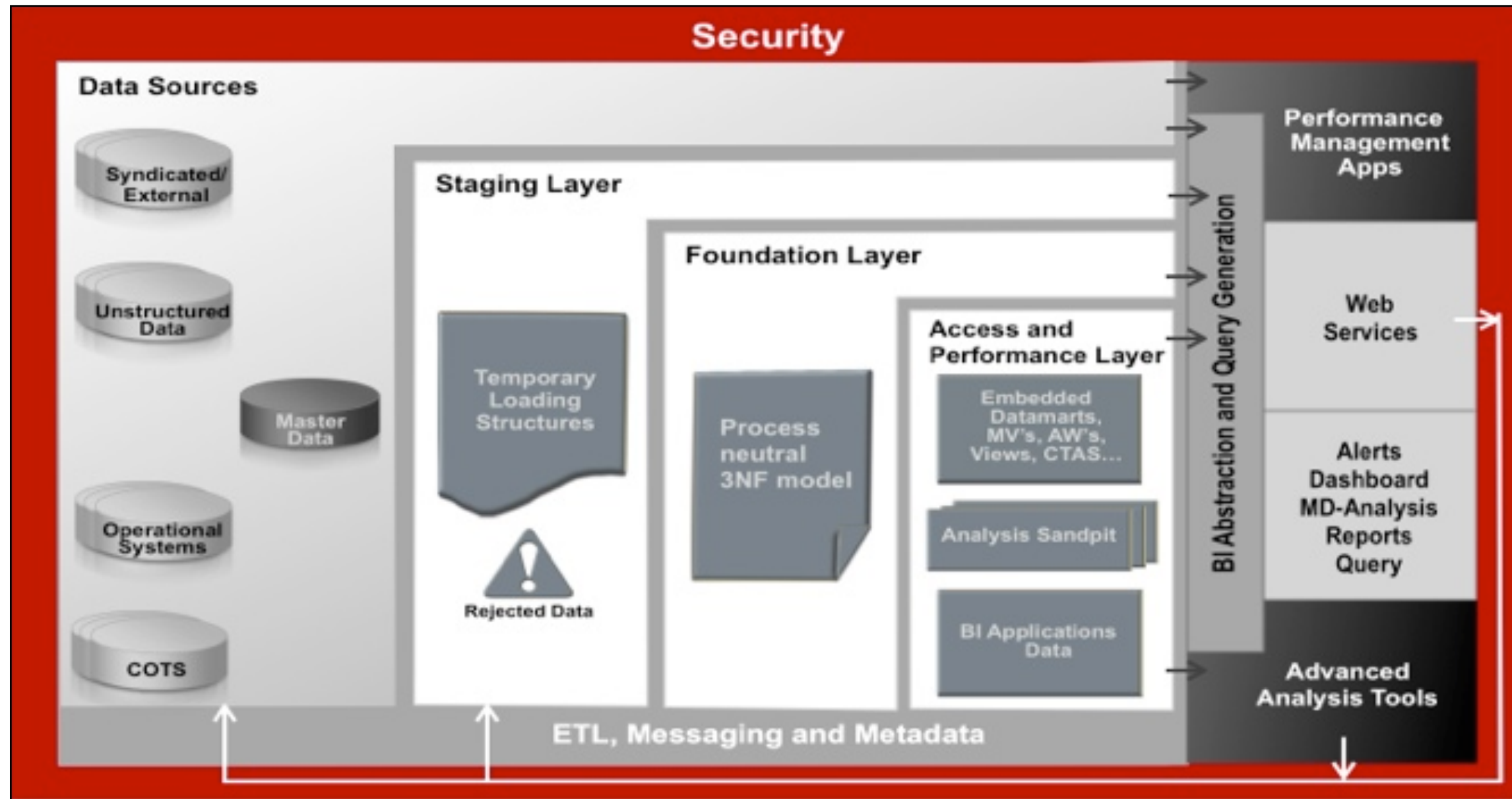
# Introducing - The Oracle Reference DW Architecture

- Recognizing the difference between long-term storage of DW data (the "foundation" layer)
- And organizing the data for queries and easy navigation (the "access + performance layer")
- Also recognising where OBIEE had been game-changing - federated queries
- … Things are good again
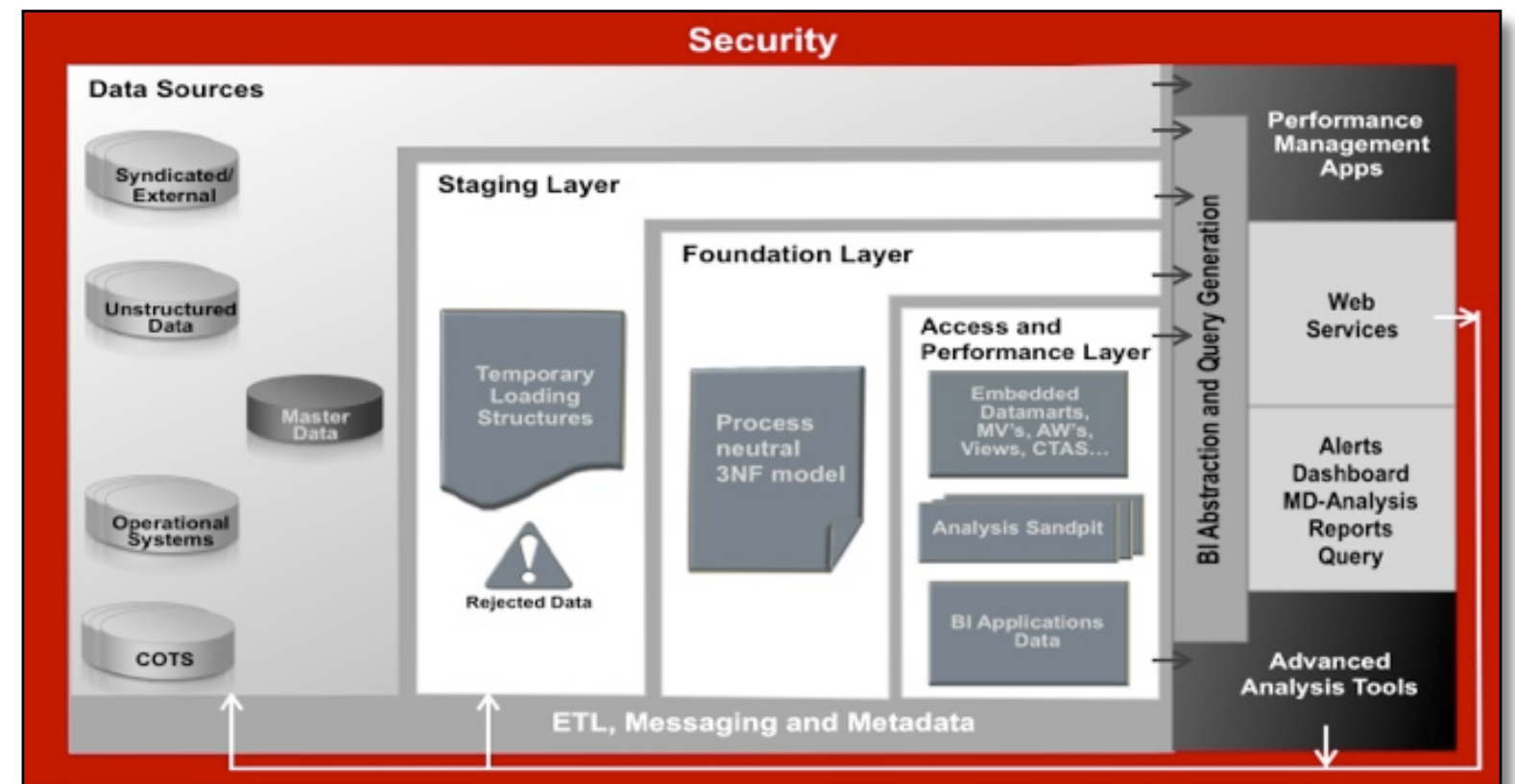
**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittmanmead
INTEGRATED ANALYTICS

# But now …**this** happened

# Everything Went Digital…

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittmanmead
INTEGRATED ANALYTICS

# Everything Was Recorded and Instrumented

# … someone will be pleased.

## THE TOM KYTE BLOG

THURSDAY, JUNE 30, 2005

### Instrumentation

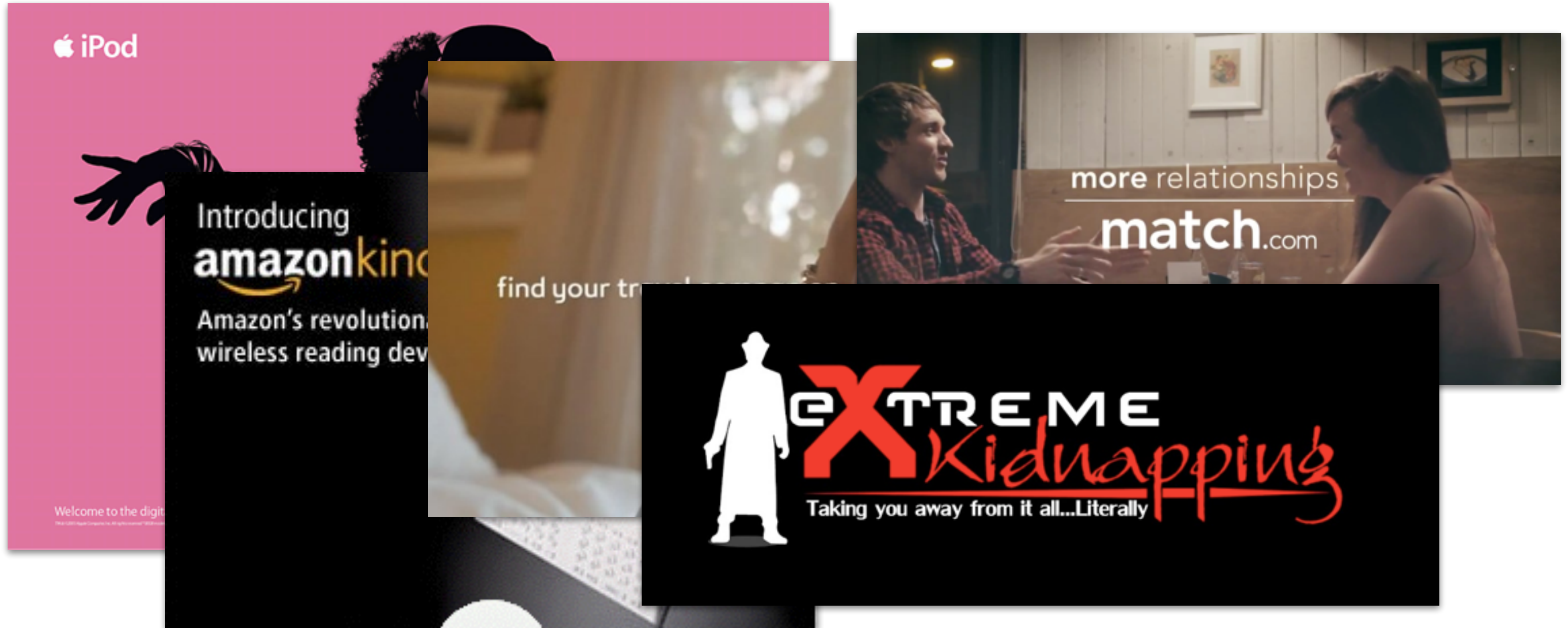Talking about instrumentation of code and introducing two more blogs I've been reading on a regular basis. One of them describes a really nice utopia today.

Code instrumentation, what is it? To me, it is the fine art of making approximately every other line of your developed code "debug" of some sort. Trace information. With timestamps. And meaningful information.

Code instrumentation, why is it? Because poor performance is not always a "database problem". It is many times an application issue and when the application is spread over 14 tiers of complexity, tracking down the bottleneck is grievously hard. If you just whip together an application and throw it out there without any thought to monitoring it over time, be prepared to have poor performance and no clue as to why or where.

Commonly requested information – Tom, can you tell me what my average transaction response time is? Answer: nope, no clue, not a single clue. The only thing I can tell you from the database is on average how long individual bits of SQL might have taken. I don't know what a transaction is to you and besides, I would tell you only about the database component – no network, no application time, just the database.

ABOUT ME
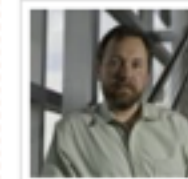
THOMAS KYTE
ROUND HILL,
VIRGINIA

The views expressed are my own and not necessarily those of Oracle and its affiliates. The views and opinions expressed by visitors to this blog are theirs and do not necessarily reflect mine. I've been using Oracle since 1988. I've been working at Oracle since 1993 (version 7.0). I spend way too much time working on asktom.oracle.com...

VIEW MY COMPLETE PROFILE

PREVIOUS POSTS

**rittmanmead**
INTEGRATED ANALYTICS

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

**rittmanmead**
INTEGRATED ANALYTICS

# The Digitization and Datafication of Society

- Digital is the new norm
- Companies are creating unique data-driven value in a unique way
  ‣ Datifying more activities
  ‣ Creating proprietary data assets
  ‣ Using data to make more data
  ‣ Achieving network effects to monetise their work

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittmanmead
INTEGRATED ANALYTICS

# Businesses Built-off of Derived Data - uber.com

- Uber.com - disrupting the taxi business
- Combining public information - maps, demographics, travel data - with their mobile apps, and usage data collected over time

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittman**mead**
INTEGRATED ANALYTICS

# Today's Oracle Information Management Architecture



Actionable Events

Actionable Insights

Actionable Information

Input Events

Event Engine

Data Reservoir

Data Factory

Enterprise Information Store

Reporting

Structured Enterprise Data

Other Data

Execution

Innovation

Events & Data

Discovery Lab

Discovery Output
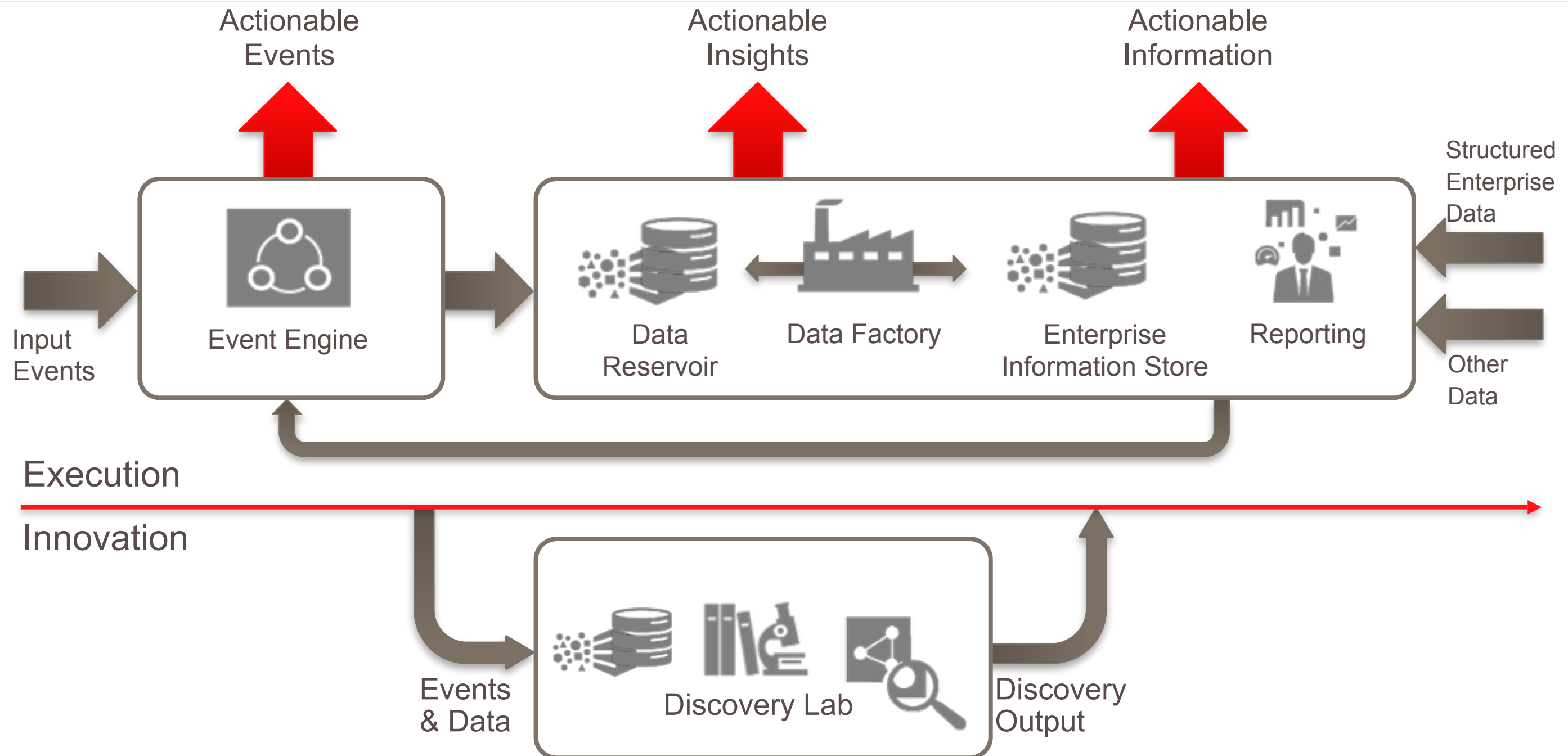
# Today's Layered Data Warehouse Architecture

## Data Sources

**Data Engines & Poly-structured sources**

**Structured Data Sources**
- Operational Data
- COTS Data
- Master & Ref. Data
- Streaming & BAM

**Content**

Docs          Web & Social Media

## Data Ingestion

### Access & Performance Layer
Past, current and future interpretation of enterprise data. Structured to support agile access & navigation

### Foundation Data Layer
Immutable modelled data. Business Process Neutral form. Abstracted from business process changes

### Raw Data Reservoir
Immutable raw data reservoir Raw data at rest is not interpreted

Information Interpretation

### Discovery Lab Sandboxes
Project based data stores to support specific discovery objectives

### Rapid Development Sandboxes
Project based data stored to facilitate rapid content / presentation delivery

## Virtualization & Query Federation

- Enterprise Performance Management
- Pre-built & Ad-hoc BI Assets
- Information Services
- Data Science

# The Data Reservoir

- A reservoir is a lake than also can process and refine (your data)
- Wide-ranging source of low-density, lower-value data to complement the DW

Also known as: "Data Lake" – "Data Pool" – "Enterprise Data Hub" and "Data Swamp" (!)

T : +44 (0) 1273 911 268 (UK) or (888) 631-1410 (USA) or
+61 3 9596 7186 (Australia & New Zealand) or +91 997 256 7970 (India)

E : info@rittmanmead.com
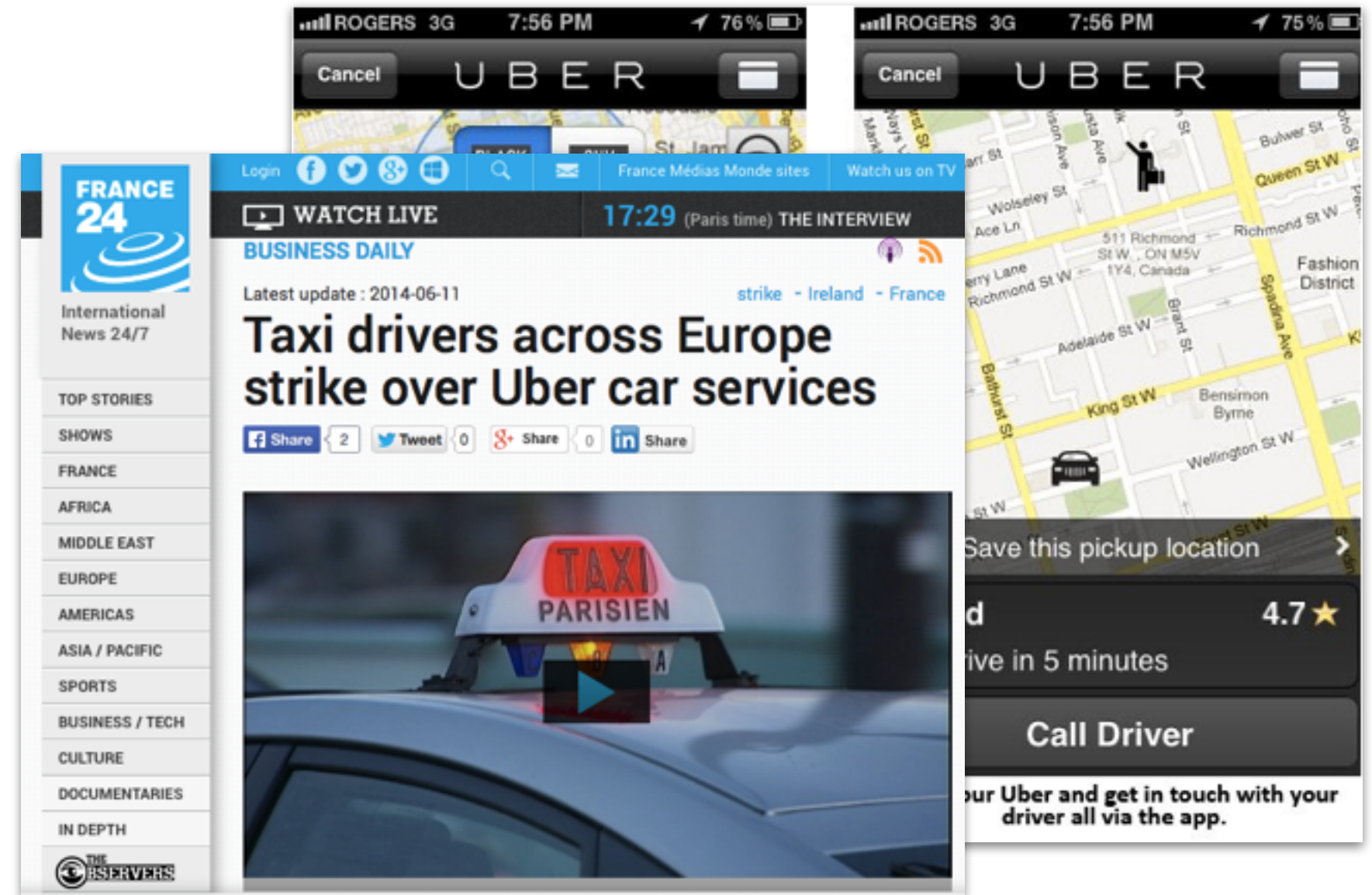W : www.rittmanmead.com

rittmanmead
INTEGRATED ANALYTICS

# The Oracle Data Warehousing Platform - 2014



**DATA RESERVOIR** + **DATA WAREHOUSE**

## Data Reservoir

Cloudera Hadoop

Oracle Big Data SQL

Oracle NoSQL

Oracle R Advanced Analytics for Hadoop

Oracle R Distribution

Big Data Appliance

| Oracle Event Processing | Apache Flume | Oracle GoldenGate |

## Oracle Big Data Connectors

## Oracle Data Integrator

## Data Warehouse

Oracle Database

In-Memory, Multi-tenant

Oracle Industry Models

Oracle Advanced Analytics

Oracle Spatial & Graph

Exadata

| Oracle Data Integrator | Oracle GoldenGate | Oracle Event Processing |

SOURCES

# But ... this is actually great news

# Customers Are Now Taking Data Seriously

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
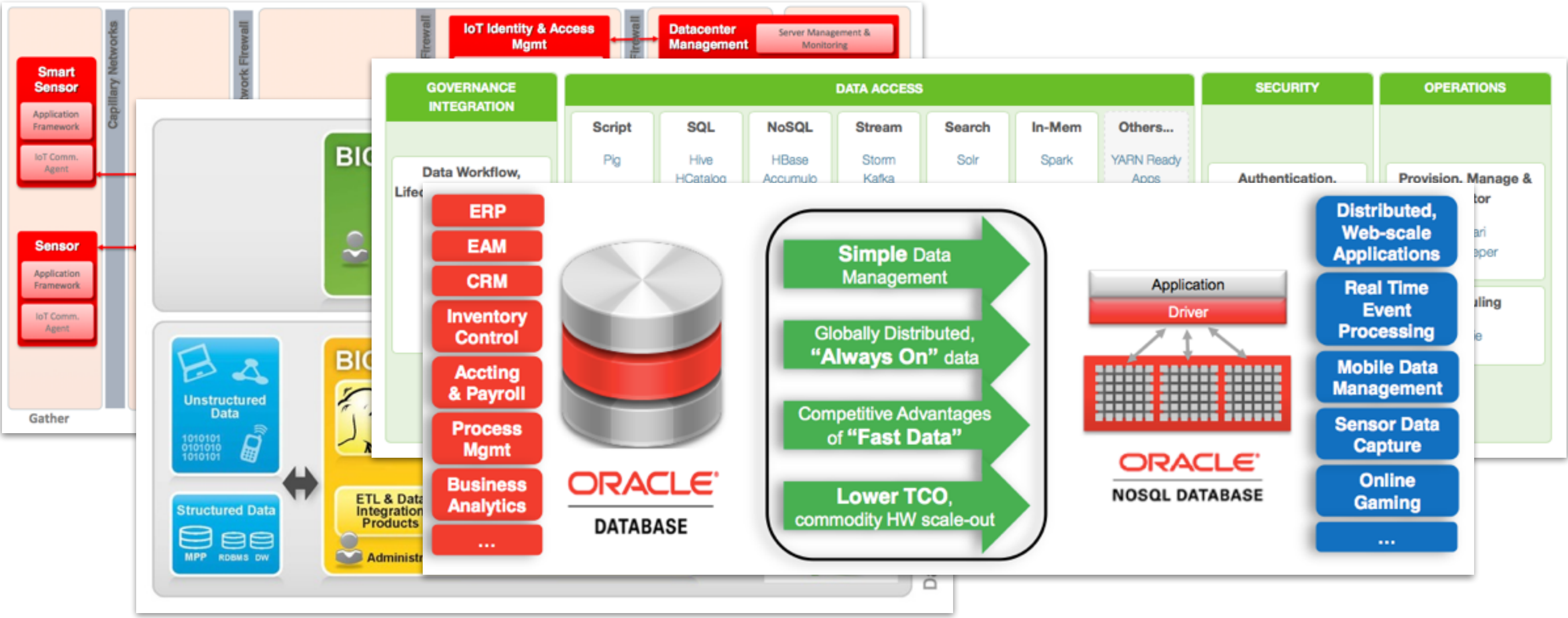+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittman**mead**
INTEGRATED ANALYTICS

# Data Architecture is Now a Hot Topic

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

**rittmanmead**
INTEGRATED ANALYTICS

# People Now Understand Why DBMSs Are Important

- Referential integrity
- Information Lifecycle Management
- Why data warehouses are very useful for long-term storage of important data
- Why there's value in schema-on-write, as well as schema-on-read
- Data often outlives the application, and may even be useful later when we don't know what to do with it now

**Hadoop**

- Change the Business
  - Disrupt competitors
  - Disintermediate supply chains
  - Leverage new paradigms
  - Exploit new analyses

**NoSQL**

- Scale the Business
  - Meet mobile challenges
  - Accelerate developer agility
  - Scale-out economically
  - Serve data faster

**Relational**

- Run the Business
  - Integrate existing systems
  - Support mission-critical tasks
  - Protect existing expenditures
  - Insure skills relevance

# And This Hadoop Stuff is Very Interesting

- New capabilities in terms of horizontal scalability, distributed computing
- Some very smart people are putting their minds to next-generation DW, BI + computing
- The world is now interested in analytics, data-driven decisions and what we do

# Oracle's Product Strategy

**Simplify access to all data**

**Discover and predict, fast**

**Govern and secure all data**

**rittmanmead**
INTEGRATED ANALYTICS

# Productising the Next-Generation IM Architecture
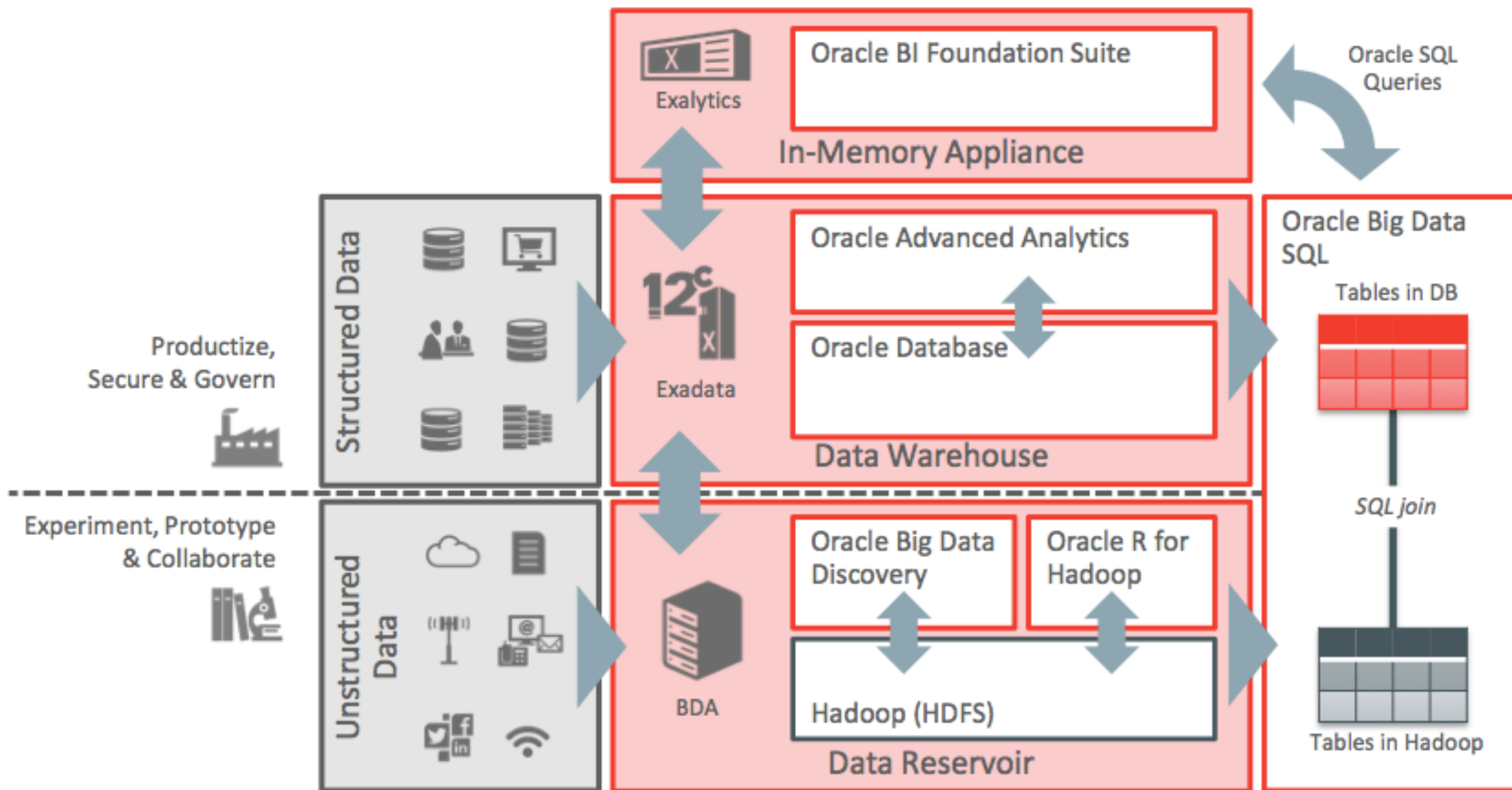


- **Experiment, Prototype, Collaborate**
  - Quickly find, explore, transform, discover and share in BDD
  - Publish results to HDFS
  - Use to build predictive models with Oracle R for Hadoop

- **Productize, Secure, Govern**
  - Connect published HDFS files to secure Oracle DB using Oracle Big Data SQL
  - No data movement required
  - Seamlessly extends existing DWH and BI investments with non-traditional data in Hadoop

- **Available as Engineered Systems**

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

**rittmanmead**
INTEGRATED ANALYTICS

# Oracle Big Data Discovery - Hadoop on Big Data / Spark

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

# Oracle Data Integrator for Hadoop-Native ETL

- Native processing using Hadoop framework, using Knowledge Module code templates
- ODI generates native code for each platform, taking a template for each step + adding table names, column names, join conditions etc
  - ‣ Easy to extend
  - ‣ Easy to read the code
  - ‣ Makes it possible for ODI to support Spark, Pig etc in future
  - ‣ Uses the power of the target platform for integration tasks
    - Hadoop-native ETL

**T :** +44 (0) 1273 911 268 (UK) **or** (888) 631-1410 (USA) **or**
+61 3 9596 7186 (Australia & New Zealand) **or** +91 997 256 7970 (India)

**E :** info@rittmanmead.com
**W :** www.rittmanmead.com

rittman**mead**
INTEGRATED ANALYTICS
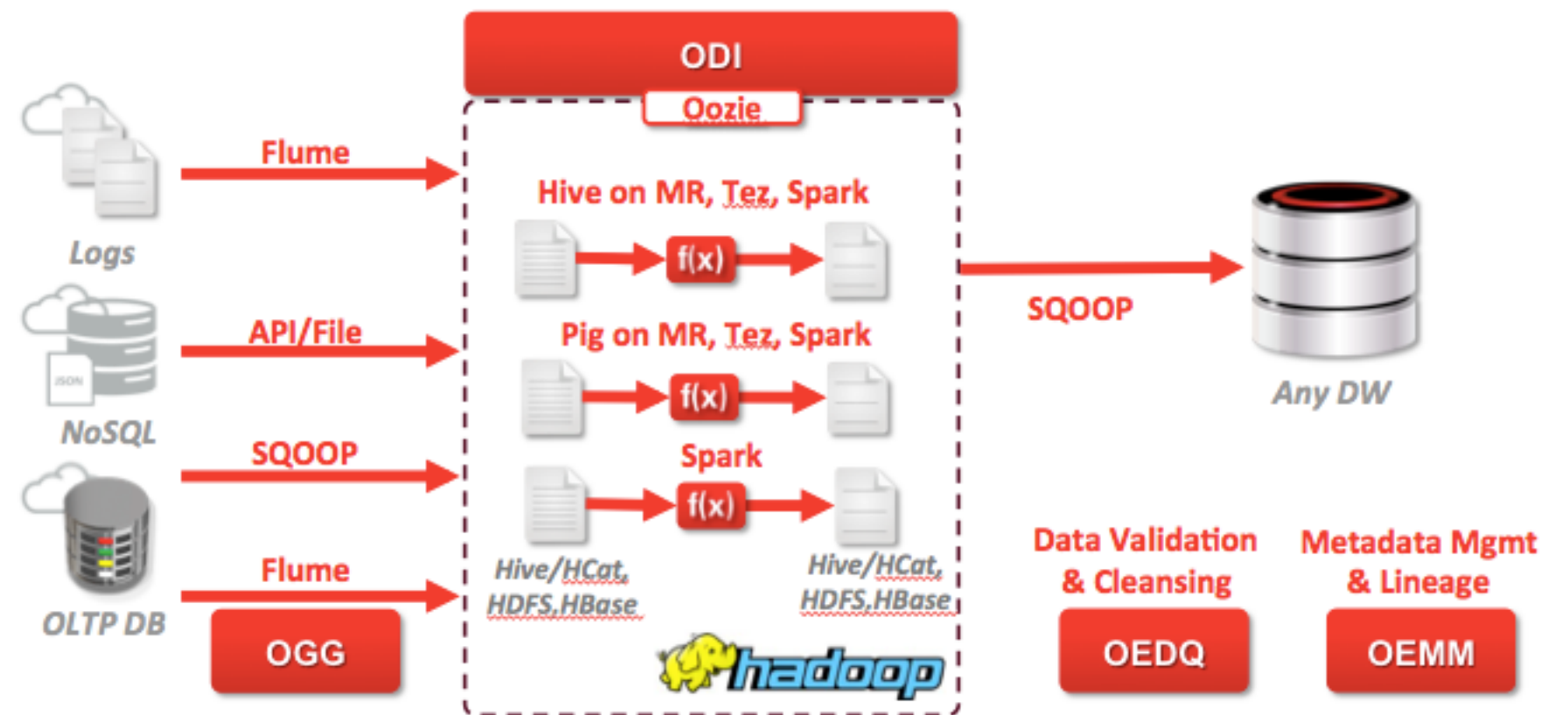
# Oracle Big Data SQL - Bringing Exadata SmartScan to Hadoop



Offload Query to
Data Nodes

SQL

data
subset

SQL

Small data subset
quickly returned

Offload Query to
Exadata Storage Servers

Hadoop & NoSQL

Oracle Database 12c
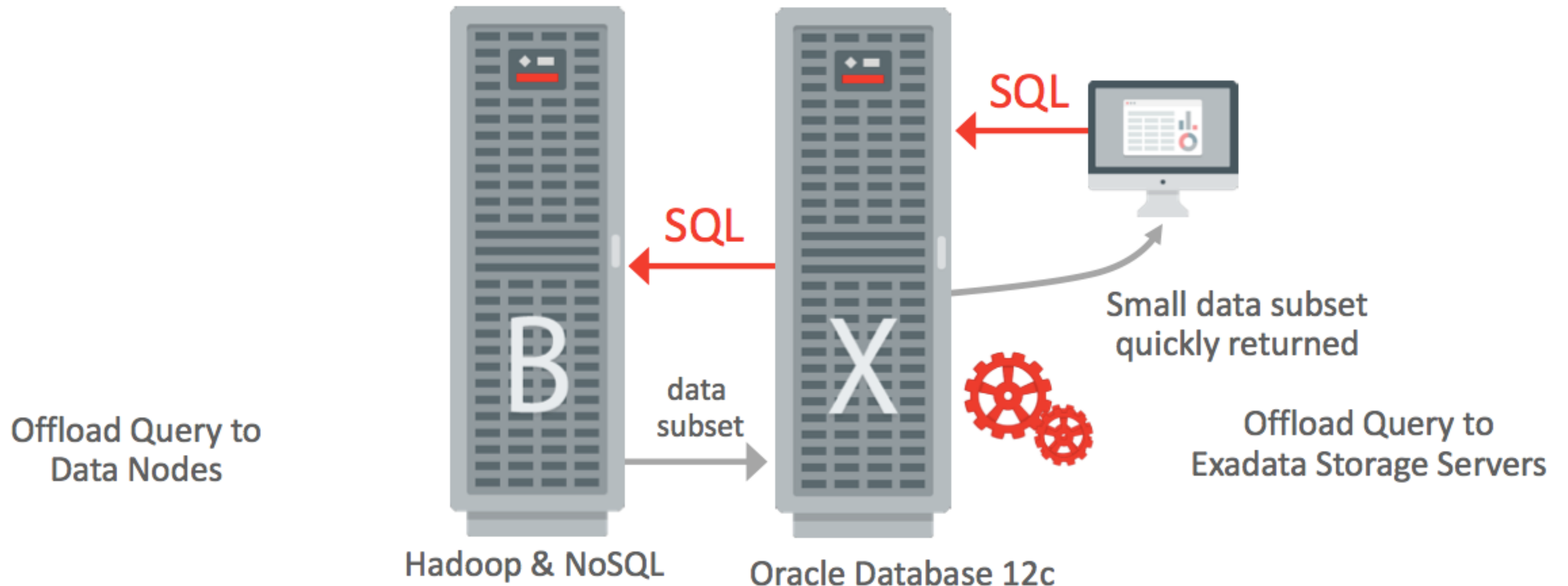
# Enhancing Oracle Database 12c for High-Value Analysis

**Oracle Database In-Memory**
  SIMD Vector Processing
  Column-Store Storage Indexes
  In-Memory Aggregation

**New SQL Capabilities**
  Attribute Clustering
  Zone Maps for Exadata
  JSON SQL Functions
  Approximate Count Distinct

**Big Data SQL**

rittmanmead
INTEGRATED ANALYTICS

# OBIEE as the Unified Reporting Layer over the Reservoir



"360-Degree" view of the organisation

**Enterprise Semantic Model**

Hive, Impala

Oracle SQL

Information exchange via Data Factory

+

Data Reservoir

Enterprise Information Store
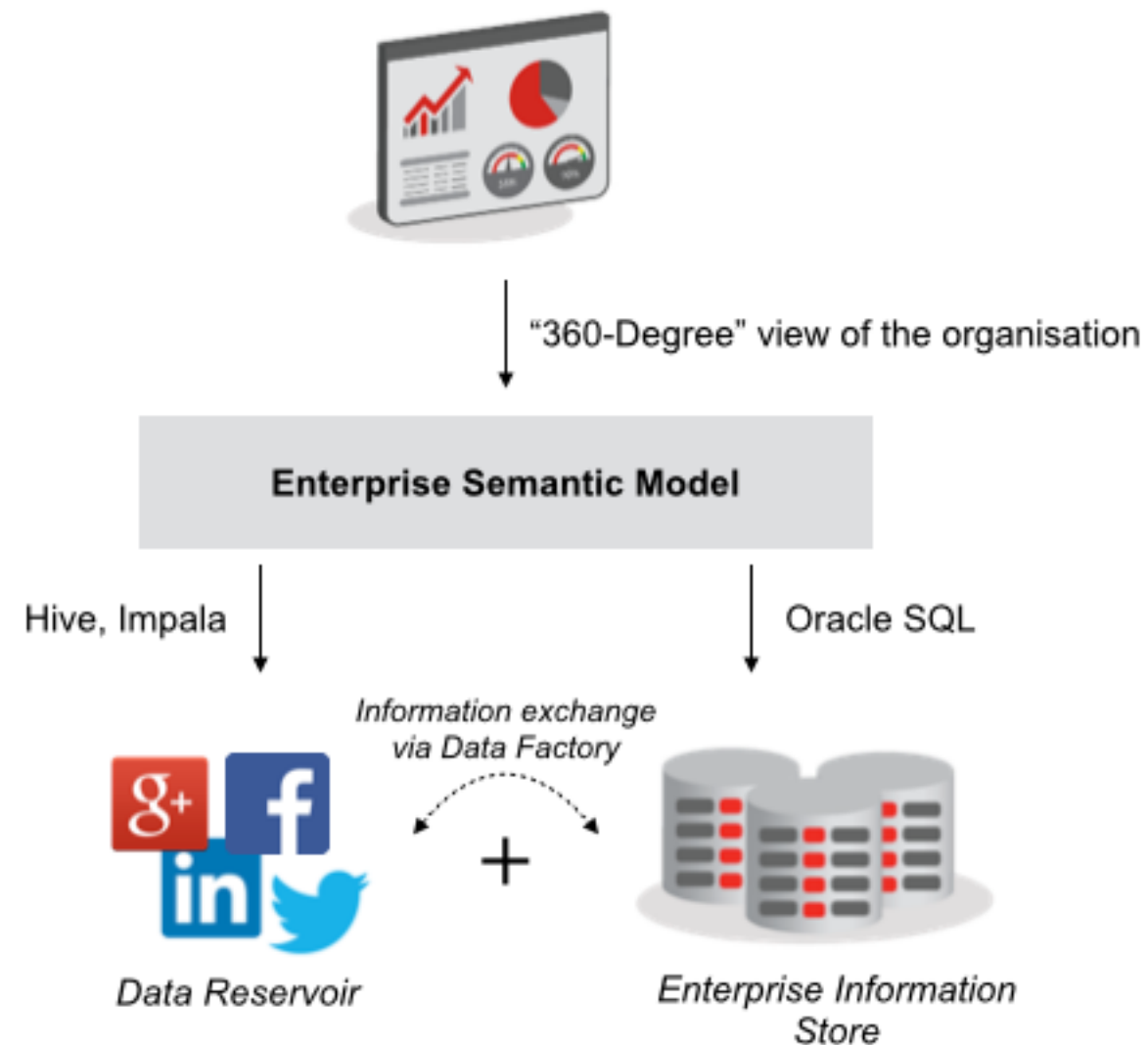
# And Coming Soon with OBIEE 12c …

**Visual Analyzer**

**BI Ask**

**Model** **Content** **Roles** **Other**

BI Application
Archive (BAR)
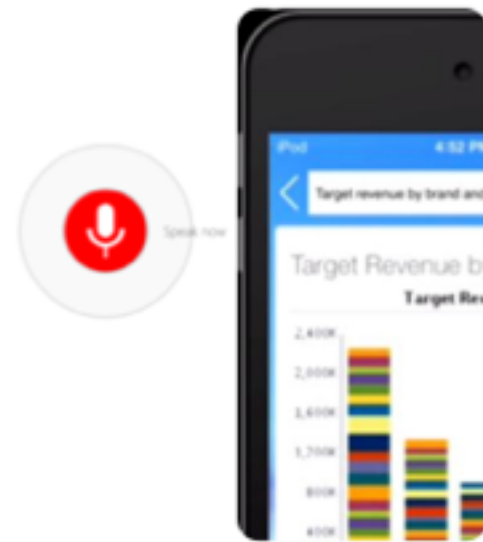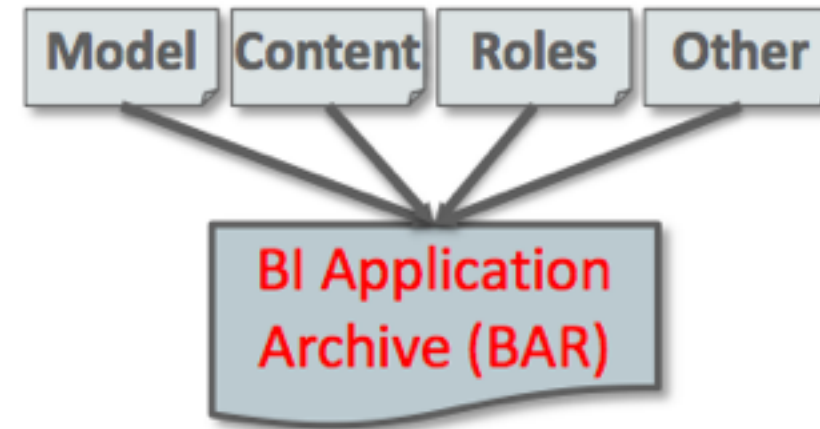
**Lifecycle Management**
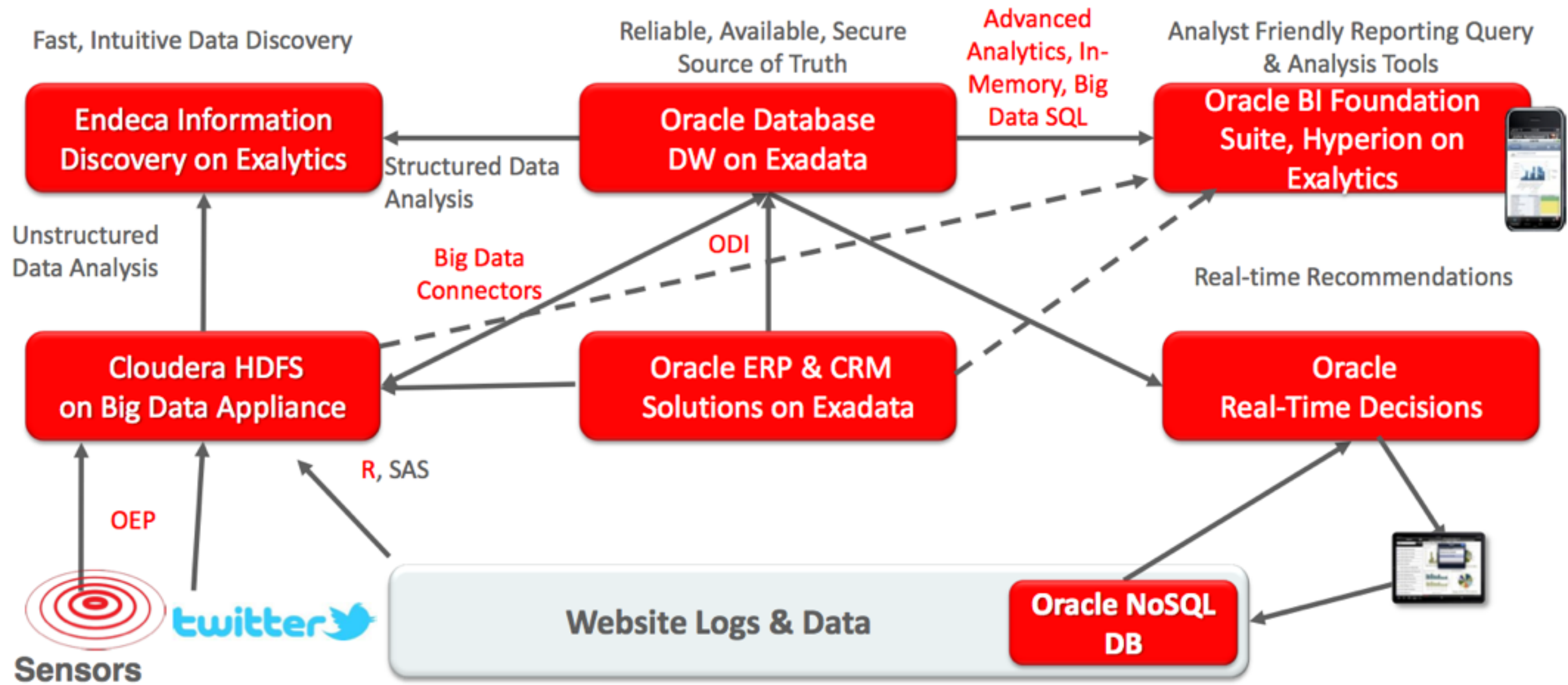
**One-click Advanced Analytics**

## Single 12c release stream, supporting
- On-Premise
- Engineered Systems
- Cloud Offerings
- Embedding in applications

**Pure In-memory Essbase**

# It's a Good Time to be a Developer With Oracle BI, DW + Big Data

Fast, Intuitive Data Discovery

Reliable, Available, Secure Source of Truth

**Advanced Analytics, In-Memory, Big Data SQL**

Analyst Friendly Reporting Query & Analysis Tools

**Endeca Information Discovery on Exalytics**

Structured Data Analysis

**Oracle Database DW on Exadata**

**Oracle BI Foundation Suite, Hyperion on Exalytics**

Unstructured Data Analysis

**Big Data Connectors**

**ODI**

**Cloudera HDFS on Big Data Appliance**

**Oracle ERP & CRM Solutions on Exadata**

Real-time Recommendations

**Oracle Real-Time Decisions**

**R, SAS**

**OEP**

**Sensors**

twitter

**Website Logs & Data**

**Oracle NoSQL DB**

**rittmanmead**
INTEGRATED ANALYTICS

# Come to my workshop next, to find out more.

# Why Should I Be Interested in Analytics and Big Data?

Mark Rittman, CTO, Rittman Mead

October 2014

rittmanmead
INTEGRATED ANALYTICS