BI MegaTrends
and What They Mean To You

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Sponsor
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Agenda

• BI’s Most Prominent MegaTrends
  – Size
  – Speed
  – Unity
  – Innovation

• Other Trends in BI
  – Analytics, Agile BI, Visualization, Warehouse Architectures, etc.

• The Future BI MegaTrends

Please Tweet: @prussom, #TDWI
DEFINITION
BI MegaTrends

• Business Intelligence (BI)
  – TDWI’s definition of BI encompasses everything we all do, including tools, techniques, team structures and business methods for reporting, performance management, analytics, data warehousing, data management.

• Many trends are wending their way through BI
  – But most of these reduce to four MegaTrends
  – Speed, Scale, Unity, Innovation

• A BI MegaTrend is a trend that has strong influence over the technical implementations and business processes of BI across a wide range of user organizations.
BI MEGATRENDS

Speed

• Real-Time Operation for Real-Time Business Methods
  – Operational BI
  – On-Demand Mgt Dashboards
• The Right Time for Info Delivery
  – Depends on business requirements
  – Real time, near time, on demand
• Sometimes, more about increasing frequency than speed
  – Overnight refresh of data warehouse data is still the norm
  – But some users refresh some time-sensitive data multiple times a day
• Fast Queries
  – Speed enables queries to scale up to big data
• Streaming Big Data may be generated 24x7
  – From Web logs, sensors, transactions, surveillance
• Miscellaneous Real-Time Technologies
  – Microbatches, federation, replication, services, event processing, etc.
Growth in Real-Time Data Management

Based on TDWI surveys, users are aggressively adopting real-time data mgt

- Next Generation Data Integration Survey (2011):
  Hot Growth Projected for Real-Time DI
  - Real-Time Data Quality – 42% projected growth
    • Standardize, validate, enhance data before it hits database
  - Real-Time Data Integration – 40% projected growth
  - Complex Event Processing – 34% projected growth
    • 21% of users surveyed do some form of event proc today
  - Microbatch ETL – 15% projected growth

- Next Generation Master Data Mgt Survey (2012):
  - Publish reference data RT (36% growth); RT instantiation (33%)

- Next Generation Data Warehouse Survey (2009):
  - RT DW top priority for adoption (75% projected growth)
WHY CARE ABOUT
Real-Time Operations for BI?

• It’s a foundation for time-sensitive business practices:
  – Operational business intelligence
  – Just-in-time inventory
  – Facility monitoring
  – Self-service information portals
  – eCommerce recommendations
  – Price optimization
  – Production yield & workforce mgt in manufacturing

• Real-Time Analytics is coming
  – Reporting embraced RT. Just look at Operational BI.
  – Analytics, too, will soon take that trip. And with Big Data.
BI MEGATRENDS

Scale

• Data’s Growing Volumes are a Challenge
  – Large Data Warehouses
  – Numerous Data Sets
  – Detailed Source Data
  – Big Data

• Scale is also a Challenge to Basic BI Functions, like Reporting
  – Thousands of Concurrent BI Users
  – Thousands of Reports
  – Eventually, thousands of analytic users

• Scale to Increasing Complexity
  – More processing in data mgt for data transformations, integration, quality
  – Analytic workloads are trending toward greater complexity
  – Distributed architectures have more moving parts

• Scale despite Growing numbers of Concurrent Workloads
  – Reporting, Real Time, OLAP, Analytics, Data Loads, Ad hoc Queries…

• Scale Up: More data on a single box or instance
• Scale Out: Clouds, clusters, grids, racks, distributed architectures
Big Data Volume: TBs today, PBs soon

What’s the approximate total data volume that your organization manages ONLY for analytics, both today and in three years?

- Users conduct analytics with ever-larger datasets.
- Small analytic datasets will become less common, as they grow into large ones.
- A third of surveyed organizations (37%) have broken 10Tb barrier.
- Very large analytic datasets will become much more common.
- Soon we’ll measure big data in petabytes, not terabytes.

SOURCE: TDWI 2011 report Big Data Analytics
Big Data & Scalability

- **Big Data** used to be a scalability crisis.
  - *But today it’s not the problem it used to be.*

In your organization is big data considered mostly a problem or mostly an opportunity?

- **Opportunity** – because it yields detailed analytics for business advantage
- **Problem** – because it’s hard to manage from a technical viewpoint

Source TDWI. Survey of 325 respondents, June 2011

- Oddly enough, the challenge of Big Data today is to get business value out of it.
  - **Advanced Analytics** yields valuable business insights
  - As long as big data is managed well and treated to the right forms of analytics
Four Dimensions of High Performance
Most MegaTrends depend on High-Performance in BI, DW, DI, Analytics

CONCURRENCY
- Competing Workloads
  - Reporting, Real Time, OLAP, Adv. Analytics, etc.
- Intra-Day Data Loads
- Thousands of Users
- Ad hoc Queries

SCALE
- Big Data Volumes
- Detailed Source Data
- Thousands of Reports
- Scale Out Into:
  - Clouds, clusters, grids, distributed architectures

SPEED
- Streaming Big Data
- Event Processing
- Real-Time Operation
  - Operational BI
  - Near-Time Analytics
  - Dashboard Refresh
- Fast Queries

COMPLEXITY
- Big Data Variety
  - Unstructured Data
  - Machine/sensor Data
  - Web & Social Media
- Many Sources/Targets
- Complex Models & SQL
- High Availability

SOURCE: TDWI 2012 report
High-Performance Data Warehousing
BI MEGATRENDS

Unity

• Unity (or Unification) take many forms:
  – Complete Views of Customers
  – Master Data Management
  – Enterprise Data Strategies
  – Enterprise Architectures
  – Interoperability among Tools & Platforms
  – Competency Centers or Centers of Excellence
  – Unified Data Management consolidates teams, tools, techniques
  – Collaborative BI
    • Cross-functional collaboration of people is the basis of BI
      – Both within functions & across them. Both IT & business.
  – Data Governance (or stewardship)
    • Enterprise-wide collaborative board that aligns data management work to business goals; unifies data standards; assures compliance relative to data
BI MEGATRENDS

Innovation

• Innovation is everywhere lately…
• But let’s focus on TDWI’s concept of **Emerging Technologies & Methods (ETMs)**
  – Many new and exciting technologies, vendor tools, team structures, and user techniques
• Many of these are so new that they truly are just emerging
  – Agile Methods, Clouds, SaaS, Complex Event Processing (CEP), Hadoop, MapReduce, Mash-Ups, Mobile BI, NoSQL, Social Media, Solid-State Drives, Streaming Data, Unstructured Data
• Others have been around for a few years, but are just now being adopted by appreciable numbers of user organizations
  – Appliances, Competency Centers, Collaboration, Columnar Databases, Data Federation, Open Source, In-Database analytics, In-Memory Databases, MDM, Real Time
Adoption Rates for Emerging Technologies & Methods (ETMs)

- **New BI techniques will see hottest adoption in 3 yrs**
  - Mobile BI (57% of survey respondents will use it in 3 yrs), Real-time BI (53%), Agile BI (47%), Advanced data visualization (43%)

- **Users aggressively moving into all things analytic**
  - Predictive analytics (46%), in-memory analytics (43%), text analytics (39%), in-database analytics (38%), big data analytics (38%)

- **Hottest ETMs will jump 20 or more percentage pts**
  - Clouds for BI/DW (9% today; 47% in three years), social media analytics (9%; 36%), complex event processing (16%; 35%)

- **Some ETMs are already well established**
  - Web services/SOA (54% of survey respondents use it today), self-service BI (47%), analytic DBMSs (42%), master data management (40%), data warehouse appliances (37%)

- **The newest ETMs need more time for adoption**
  - No-SQL DBMSs (82% have no plans to use it), Hadoop (72%), MapReduce (68%)

- **SOURCE: TDWI Technology Survey, Nov.2011**
  - Chart is sorted by “Not using today, but will in 3 yrs”
Trends in Data Visualization

As the user interfaces of reports, dashboards, scorecards, portals, and analyses become increasingly visual, data visualization becomes ever more important.

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<thead>
<tr>
<th>Mega Trends</th>
<th>Drivers</th>
<th>Trends</th>
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<tbody>
<tr>
<td><strong>Size</strong></td>
<td>More users demand dashboards.</td>
<td>Data visualization supports growing user communities.</td>
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<td>Big data is now the norm.</td>
<td>Visualizations must scale to data size</td>
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<td>Analytics is booming.</td>
<td>Analytic relations are best viz’d.</td>
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<td><strong>Speed</strong></td>
<td>Dashboards, scorecards, and portals need frequent refresh.</td>
<td>Visualization tools are optimized for fast queries, even when queries are distributed, multidimensional, ad hoc, and repetitive.</td>
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<td>Ad hoc queries need speed, especially for analytics.</td>
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<td><strong>Unity</strong></td>
<td>As report/analysis varies, users need to access new data easily.</td>
<td>Viz tools have optimized interfaces to go directly at source data.</td>
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<td>Need for in-line analytics to guide customer facing apps, etc.</td>
<td>Visualizations tend to be Web or service based; hence easy to embed.</td>
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<td><strong>Innovation</strong></td>
<td>Business users need new ways to see data for analytics, perf mgt.</td>
<td>Data viz is fundamental to emerging techs: dashboards, analytics, geo-spatial data, self-service, agility…</td>
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<td>BI professionals must develop reports and datasets faster.</td>
<td>Data viz enables innovation.</td>
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The Future of BI MegaTrends

- MegaTrends will continue to influence BI
- Speed and scale will influence
  - *Designs, architectures, tools*
  - *Performance tuning & choices*
- All of BI will move closer to real time
  - *Reporting, DW & DI doing it*
  - *Analytics will join in soon*
- Big data will force data scalability
- Big user counts will force report scalability
- Expect more unifying practices, like 360-degree views, MDM, ent data arch, integration
- Expect more collaborative practices, like governance, unified data mgt, competency ctrs
- Expect more Emerging Techs & Methods
  - *Mobile, RT, Agile, Clouds, Analytics, MDM, Viz*
Reminder for Tweeting: @prussom, @revenuemaven, #TDWI
Help people see and understand their data
The Problem: Diverse Data

Businesses and their people are struggling to unlock diverse data

- If we combine delivery routes, how will our supply chain change?
- What are the results of our offline advertisements?
- How do we incorporate social media feedback into our customer experience?
- Which high value customers are having a poor support experience?
- How can we reach 100% policy compliance while keeping costs low?
- What is the margin contribution of each product line by state?
Flexible
Transform all types of data into self-service analytics
Scalability

Tableau Public Traffic Trends

**Total statistics 4/19/2012 2:01:31 PM**

- **Distinct Users**: 20,307,031
- **Distinct Sessions**: 44,320,995
- **Distinct Impressions**: 48,246,741

**Weekly traffic since launch**: 3,218,422

**Per hour traffic last 21 days**: 20,797

**Record hour**: 94,690

**Definitions**
- **Distinct users**: based on a cookie set within the browser.
- **Distinct sessions**: a count of the number of unique views the user has seen, including page reloads.
- **Distinct impressions**: a count of the number of page view actions.
Better Visual Intelligence
“Author Once” Experience for Mobile
10-100x Faster and Easier
Customers
10,000 customers from every industry and geography
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