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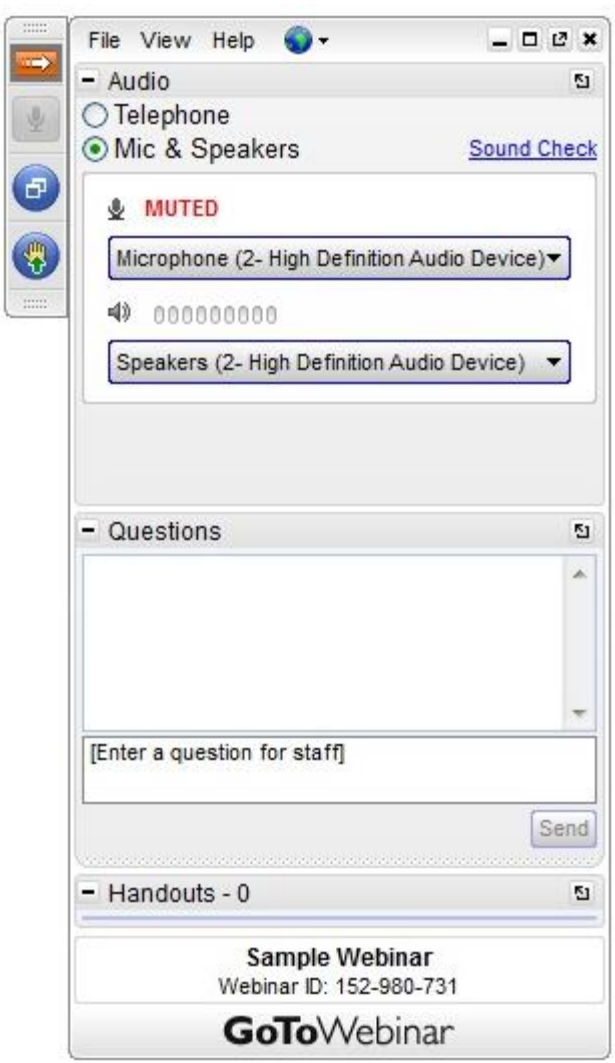
Rumors of data Warehouse Death....

29+ Real-life, Pragmatic Reasons Why You Still Need to Properly Stage Your Data

GoToWebinar Control Panel



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Submit questions here

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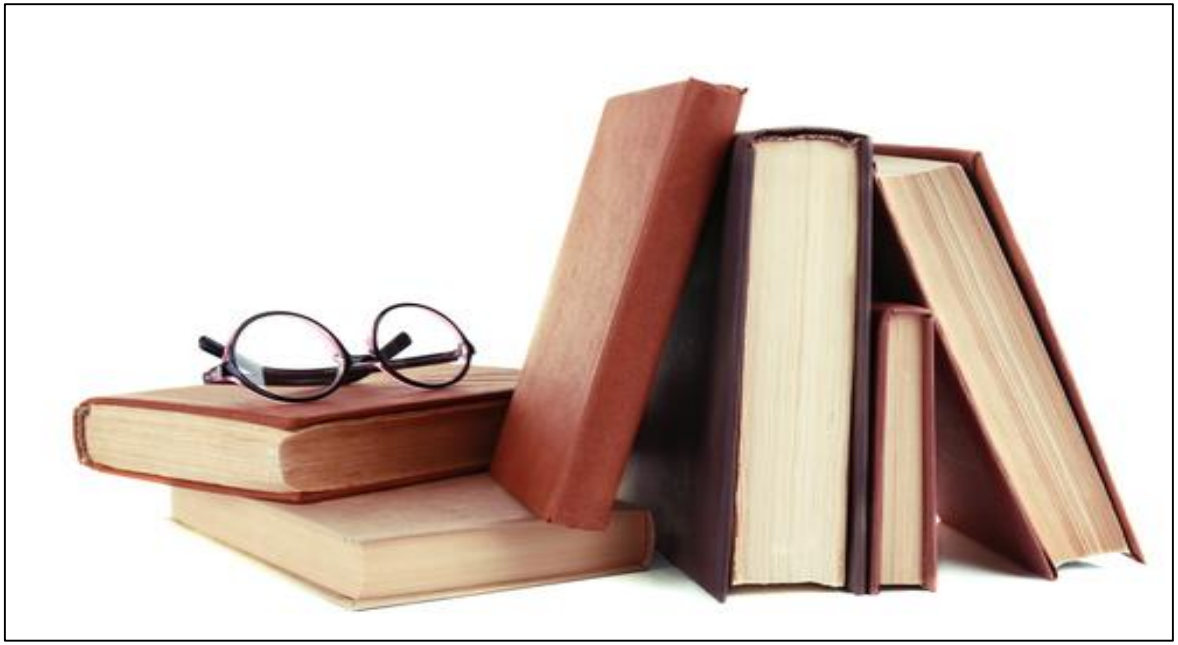
PRESENTATION SLIDE DECK ON WWW.SENTURUS.COM



RESOURCE LIBRARY

An extensive, free library of past webinars, demonstrations, whitepapers, presentations, helpful hints, and more.

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Agenda

- Introduction
- Senturus Overview
- Definitions, Goals & Basic Requirements
- What We Will NOT Cover Today
- 29+ Specific, Pragmatic Reasons
- Key Takeaways
- Benefits
- Additional Resources
- Q&A

Introduction: Today's Presenter

John Peterson

CEO and Co-Founder

Senturus, Inc.

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Analytics Critical Success Factors

Chapters in the
Business Analytics Demystified Series

- Architectures & Data Transformation
  - Data Marts & Data Warehouses
- BI Tools
- Methodologies & Techniques
- People & Processes

Who We Are

Business Analytics Consultants

Bridging the Gap Between Data & Decision Making

Business Analytics Architects

- Dashboards, Reporting & Visualizations
- Data Preparation & Modern Data Warehousing
- Self-Service Business Analytics
- Big Data & Advanced Analytics
- Planning & Forecasting Systems

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950+ Clients, 2000+ Projects, 16+ Years

Polls

Do you believe that a Data Warehouse is still needed?

Do you believe that classic ETL is still needed?

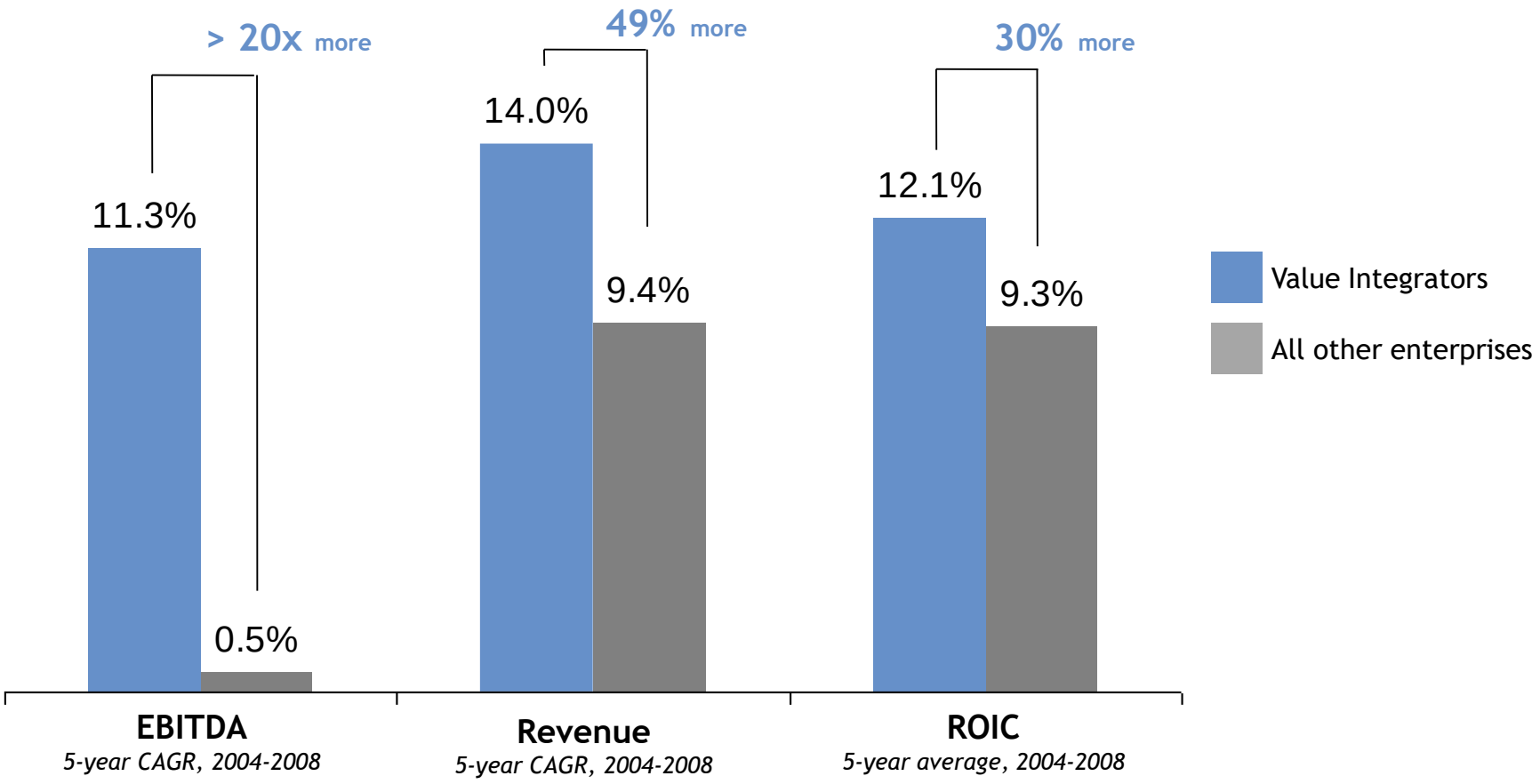
What is a Data Warehouse

Definitions, Goals & Basic Requirements

Goal of Business Analytics

- To help monitor, analyze, plan and predict
- To support and **improve decision-making** throughout the organization
- *And ultimately*,
- To drive **competitive advantage**

Business Intelligence drives Competitive Advantage



Source: IBM Institute for Business Value, The Global CFO Study 2010

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A Few Universal BI System Requirements

- Deliver a **stable & user-friendly** data structure
  - Reports will not break if source system files change
  - Foundation for true "self-service" reporting and analytics
- Provide fast **performance**
  - Especially for ad hoc reporting and interactive dashboards
- Handle **multiple** sources of data
  - Cross-functional facts (metrics) and dimensions
- Deliver high quality, **validated** data
- Maintain **historical** data in a common format
  - Even if source systems change or grow
  - Also, maintain historical context of data (SCD's)
  - Allows for trending and "as-of" analysis

A Few Universal BI Requirements (cont.)

- Provide additional ways to "**roll-up**" data
  - Hierarchies, attributes, defined metrics
- Provide field, table & measure names that **make sense** to business users
- Enable **pre-calculations** for commonly used measures
  - E.g Gross margin, ratios, special quantities (pounds, gallons, etc)
- Provide user & role based **security**
  - Often different than authentication within OLTP environment

Technical Solution

So what do we need to do…

So what do we need to do (Technically)

- **Separate intensive query** and reporting tasks from servers & disks used by transaction processing (OLTP) systems
- Create **data models and technologies** optimized for query and reporting that are NOT appropriate for transaction processing.
  - E.g. bit-mapped indexes, denormalized tables…
- Transform data and **embed "knowledge," roll-ups and business logic** into the data structures so that non-IT users can perform "self-service BI"
- Create a **single location** where information from **multiple source systems** can be accessed and combined for reporting purposes.

So what do we need to do… (cont.)

- Provide a **validated repository** of data that has been cleaned of inaccurate or spurious data quality issues.
- Maintain a repository of **historical data** gathered from prior and legacy sources, as well as data that would otherwise be purged from the current transaction processing system(s).
- Allow for **secured access** to data for analytics without opening up access to systems where data might inadvertently be modified, or transaction processing performance hindered.
- Provide a **stable platform** upon which end-users can build customized reports, dashboards and analytics
  - Regardless of source system gyrations over time

The Complete Solution

1. Properly staged data
   - ✓ Extracted
   - ✓ Transformed
   - ✓ Enhanced & Combined
   - ✓ Validated
   - ✓ Delivered

2. Good tools to “consume” and use the information
   - ✓ Report
   - ✓ Monitor
   - ✓ Analyze

IN OTHER WORDS...

Create a

Data Warehouse*

** Properly architected, that is.* *Check out our other webinars.*

Classic Definition: Data Warehouse

"A data warehouse is a subject oriented, integrated, nonvolatile, time variant collection of data in support of management's decisions"

Bill Inmon
Building the Data Warehouse
John Wiley & Sons, Inc., 1992

BUT, BUT, BUT…

"That's hard to do !!"

"Do we really need one?"

What we will NOT cover

Three Quick Qualifiers

A. No Focus on Technology Per Se

- Data Warehouses and Business Analytics systems can be built with a **dizzying array** of **technologies and tools**
- … And they are **changing daily**
- Furthermore, the **variety** of technical options has **exploded** (as value of data increases)
- Today's discussion **will NOT focus** on those items

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B. Nor Will we Hover at the Gartner-esque level

- ✓ No fancy new paradigms to shift
- ✓ No logical, physical, virtual mumbo-jumbo

- ✓ **Just tried and true methods that we have implemented on literally thousands of projects**

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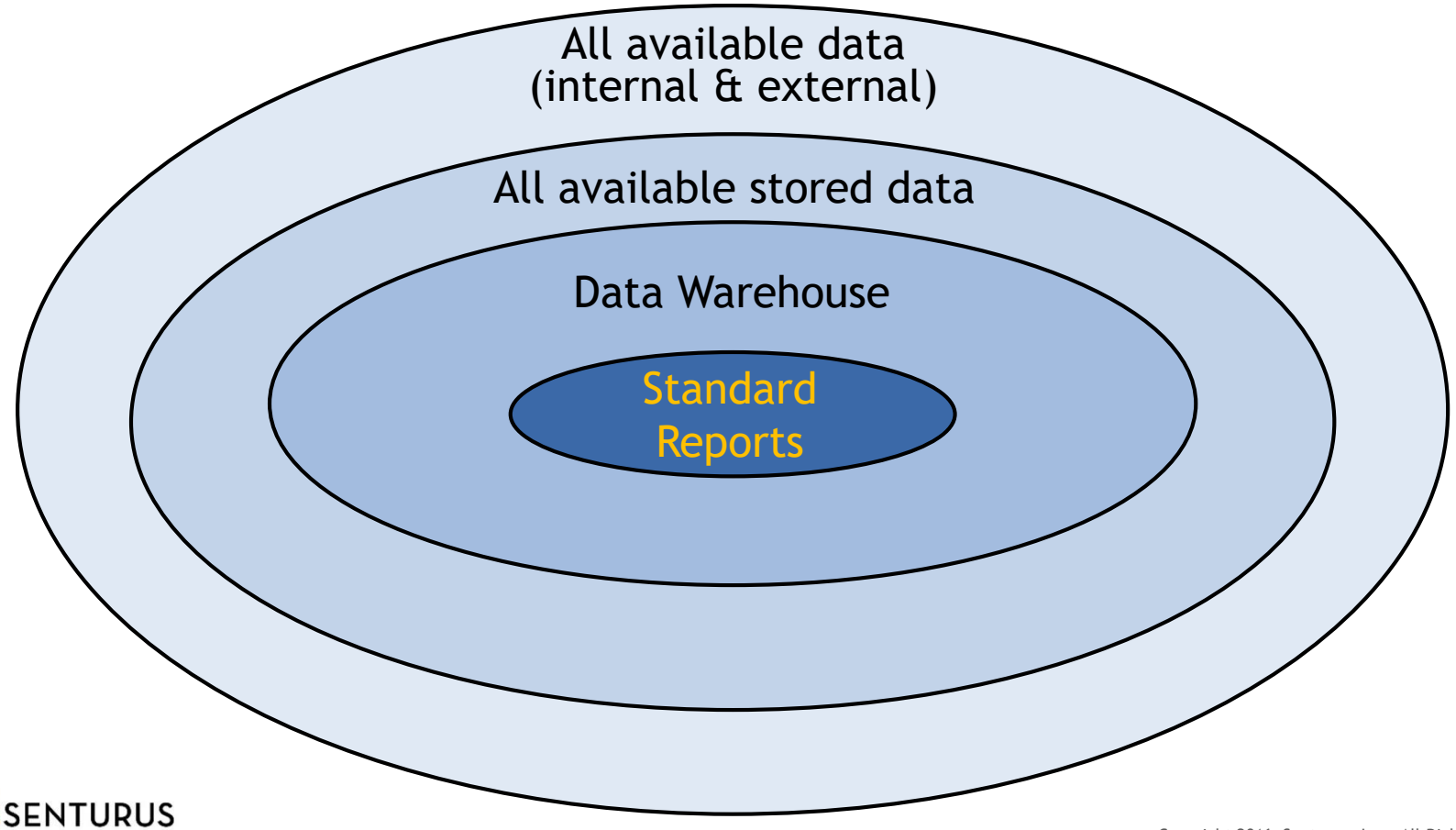
C. Data warehouses are not universal panaceas

Data Warehouses are part of a broader, prioritized system, and are NOT applicable in all places for all uses



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But do we *Really* Need a DW?

29+ Specific, Pragmatic Reasons Why

Guiding Light

If it could save a person's life, could you find a way to **save ten seconds off** the boot time?

If there were five million people using the Mac, and it took ten seconds extra to turn it on every day, that added up to three hundred million or so hours per year people would save, which was the equivalent of at least **one hundred lifetimes saved per year**.

Steve Jobs

CONSOLIDATES MULTIPLE SOURCES OF DATA

Benefit:

- ✓ Able to evaluate cross-functional metrics and ratios

Cause of challenge:

- ✓ Each source system thinks it is an island

Key issues:

- ✓ Mapping unique keys
- ✓ Created shared rollups

Examples:

- ✓ Budget vs. Actuals
- ✓ Sales vs. Forecast
- ✓ Productivity metrics of all types

Client example: Senturus, procurement @ Energy Co.

RETAINS HISTORY WHEN CHANGING/UPGRADING SYSTEMS

Benefit:

- ✓ Able to track, compare and trend performance over time

Cause of challenge:

- ✓ Changing or migrating operational systems over time

Key issues:

- ✓ Consolidating historical data and new data
- ✓ Source systems never have identical structures

Examples:

- ✓ 5-year sales trend (or CY vs. LY)
- ✓ Historical product performance

Client example: Consumer Packaged Goods Co.

Captures Snapshots & Realigns Data

Benefit:

- ✓ Able to track important changes over time

Cause of challenge:

- ✓ Many sources show only current balances

Key issues:

- ✓ How to save historical states

Examples:

- ✓ Salesforce changes and trends
- ✓ Backlog & inventory
- ✓ RFM & customer behavior analysis
- ✓ Staging for predictive analytics (fraud detection)

Client example: High Tech Manufacturing Co., Casinos, Healthcare

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Consolidates Data from Cloud and On-Prem

Benefits:

- ✓ Consolidated and enriched reporting of multiple data sources regardless of their location and type

Cause of challenge:

- ✓ Most companies now have a combination of on-premise and SaaS-based operational systems, which complicates cross-functional/blended reporting

Key issues:

- ✓ Complications of tying onsite and offsite systems together
- ✓ Operational system reporting is typically insufficient

Examples:

- ✓ Combined Salesforce.com & customer invoice reporting
- ✓ Marketing analytics (campaign performance)

Client examples: Senturus, Specialty Retailer

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Provides Persistent Storage of Critical Data

Benefit:

- ✓ Persistent, yet accessible, storage of critical business data

Cause of challenge:

- ✓ Most source systems purge both transaction and dimension data over time. Especially, the more recent SaaS systems

Key issues:

- ✓ Without data, no analysis can be done
- ✓ Increasingly, data retention is required by law

Examples:

- ✓ Salesforce and marketing analytics data
- ✓ Patient care data
- ✓ Lot tracking of medical devices

Client example: Healthcare Provider, Medical Device Manufacturer

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Increases Efficiency by Storing Data Only Once

Benefits:

- ✓ Efficiency and reduced costs by storing high volume data in only one place

Cause of challenge:

- ✓ Certain data sets are extremely large and are typically not cost-effective to be stored all over the place

Key issues:

- ✓ Storage and bandwidth costs, plus granular data usability
- ✓ Very large data volumes also typically need high performance manipulation and reporting tools

Examples:

- ✓ Web logs, marketing & 3rd party, social data
- ✓ Customer 360 behavior data

Client examples: Internet Retailer, Omni-Channel Retailer

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Cleanses Data

Benefit:

- ✓ Accurate, consistent metrics and rollups

Cause of challenge:

- ✓ All source systems tolerate incomplete, inaccurate, unnecessary data (some much more than others)

Key issues:

- ✓ Bad data leads to poor decisions
- ✓ Need to incorrect data when source cannot be modified

Examples:

- ✓ POS & ERP system input errors
- ✓ Log file cleanup

Client example: Food & Beverage Retailer

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Handles & Fixes NULL Values

Benefits:

- ✓ Able to report accurately despite NULL values in data
- ✓ Able to quickly flag where additional data is needed

Cause of challenge:

- ✓ NULL data is often tolerated by source systems (no forced fields)

Key issues:

- ✓ How to handle missing fact and dimension data

Examples:

- ✓ Vendor rollups
- ✓ Unassigned attributes

Client example: Commercial Product Co.

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Applies Universal, One Time Filters

Benefit:

- ✓ Able to eliminate persistent, unnecessary data

Cause of challenge:

- ✓ All sources store more data than is used for analysis

Key issues:

- ✓ Unnecessary data clogs reports, creates errors

Examples:

- ✓ Samples and test data
- ✓ Old, unused departments, products, etc.
- ✓ Log files

Client example: Medical Device Manufacturer, CPG Co.

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Improves Performance (end-user reports, etc.)

Benefit:

- ✓ Fast reports and speed-of-thought analytics

Cause of challenge:

- ✓ Source systems always optimized for fast entry, not fast reporting

Key issues:

- ✓ Slow reports, often impacting source systems
- ✓ Raw source data typically requires intense queries to provide usable information

Examples:

- ✓ High-level consolidated reports
- ✓ Marketing analytics

Client example: Virtually all clients…, Financial Services Co.

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ELIMINATES "EXPENSIVE" & INCORRECT JOINS

Benefit:

- ✓ Able to dramatically increase performance without dropping data
- ✓ Eliminates invalid results due to dropped data

Cause of challenge:

- ✓ Adding multiple sources to self-service tools necessitates suboptimal joins and table scans

Key issues:

- ✓ How to not drop valuable data when missing matches

Examples:

- ✓ Combining customer activity with CRM data
- ✓ Analyzing items across business process areas (w/o ERP)

Client example: Health insurance co.

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TRANSFORMS COMPLEX SOURCE DATA INTO USABLE FACTS

Benefits:

- ✓ Able to “reorient” data to make it usable for analytics

Cause of challenge:

- ✓ Source data is simple time-stamped transactions, etc.

Key issues:

- ✓ How to calculate metrics across billions of raw records

Examples:

- ✓ Credit card processing times and accuracy metrics
- ✓ Asset lifetime value reporting
- ✓ Juvenile recidivism rate improvement

Client example: Credit Card Processor, Heavy Equipment Sales and Rental Co., Juvenile Court & Treatment Org

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CAN CAPTURE STRATEGIC BUSINESS-CENTRIC METRICS

Benefits:

- ✓ Derived strategic metrics (KPI's) can be created even if not directly available in operational systems

Cause of challenge:

- ✓ Operational systems typically don't focus on specific performance metrics

Key issues:

- ✓ Often need to derive metrics across records from multiple different systems

Examples:

- ✓ Retailer Speed-of-Service
- ✓ Insurance claim processing productivity
- ✓ Equipment failure analysis & warning

Client examples: Retailer, Insurance Co., Medical Equipment Co.

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Consolidates & Simplifies Disparate Attribute Data

Benefits:

- ✓ Analytics users can go to one spot to lookup all aspects of key dimensions: dates, products, customers, territories, etc

Cause of challenge:

- ✓ Dimensional attributes, hierarchies & rollups often require very cryptic code lookups across multiple sources

Key issues:

- ✓ How to calculate metrics across billions of raw records

Examples:

- ✓ Unwinding the JD Edwards F0005 table
- ✓ Complex customer attributes

Client example: Networking equipment supplier, omni-channel retailer

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Adds Mandatory Business "Dimensional Richness"

Benefits:

- ✓ Summarized metrics are almost always more valuable to business users, managers and execs

Cause of challenge:

- ✓ OLTP systems NEVER have all hierarchies, rollups, etc.

Key issues:

- ✓ Users always need these, the question is simply where to "force them" to maintain them
- ✓ How to support & maintain multiple hierarchies

Examples:

- ✓ Product DCL, brand rollups and attributes
- ✓ Unassigned attributes

Client example: Outdoor equipment manufacturer/retailer

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Simplifies Complex Data Relationships

Benefits:

- ✓ Can enable analysis of complex data structures

Cause of challenge:

- ✓ Certain business processes rely on “many-to-many” data relationships

Key issues:

- ✓ Users can often obtain highly inaccurate results if relying only on raw source tables

Examples:

- ✓ Contract to PO to vendor procurement info
- ✓ Information security

Client examples: Energy co., nationwide bank

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CAN APPLY LOGIC TO COMPLETE AND ALIGN DATA

Benefits:

- ✓ Complete data sets allow analysis across subject areas and can provide asset & customer lifetime visibility

Cause of challenge:

- ✓ Source systems often do not provide complete and well aligned data

Key issues:

- ✓ How to accurately enrich “downstream” data

Examples:

- ✓ Log file data
- ✓ Customer activity and product location data

Client example: Medical device manufacturer

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FACILITATES ALLOCATION AND ATTRIBUTION

Benefits:

- ✓ Allows central repository of fully allocated costs and revenue attributions, providing a more complete profitability picture

Cause of challenge:

- ✓ Certain data sets are extremely large and are typically not cost-effective to be stored all over the place

Key issues:

- ✓ Often too onerous to calc live due to performance issues and lack of available driver metrics.
- ✓ Granular data enables more accurate results
- ✓ End-user calcs often lead to vehement disagreement (& disuse)

Examples:

- ✓ Net margin (by product, by customer, by region)
- ✓ Product line profitability

Client examples: Household product distributor, Pharmaceutical Co.

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Provides "insulating layer" from Source Systems

Benefits:

- ✓ Business centric data structures & nomenclature need not change if operational systems are changed

Cause of challenge:

- ✓ OLTP systems ALWAYS need to be upgraded or changed over time. Acquisitions also drive changes.

Key issues:

- ✓ Reporting that is tied directly to OLTP system structures (even replicated ones) break if source is changed

Examples:

- ✓ Manufacturer shifts to SAP
- ✓ Regional bank: banking platform upgrade

Client example: Clothing manufacturer, Regional bank

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ELIMINATES COMPLEX LOGIC NEEDED IN BA LAYER(S)

Benefits:

- ✓ Lower maintenance, better performance, single-truth

Cause of challenge:

- ✓ Just because it can be done, doesn't mean it should be

Key issues:

- ✓ Complex logic built into distributed metadata layers and reports leads to: poor performance, high maintenance, unmatched results/confusion

Examples:

- ✓ Date calculations (MTD, QTD, YTD, etc.)
- ✓ Case statements

Client example: Financial services co.

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Allows for "Slow-changing dimensions"

Benefits:

- ✓ Richer & more accurate analysis of metrics over time

Cause of challenge:

- ✓ Most operational systems only store current attributes

Key issues:

- ✓ If past transactions are rolled up by current dimensional info, the results are wrong
- ✓ Past rollups are lost

Examples:

- ✓ Sales rep moves from West to East coast midyear
- ✓ Store changes size (sq. ft) over time

Client example: Medical device manufacturer, Retailer

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Captures "Slow-changing facts"

Benefits:

- ✓ Accurate analysis of metrics over time

Cause of challenge:

- ✓ Some operational systems store only current metrics

Key issues:

- ✓ If past transactions are rolled up by current dimensional info, the results are wrong
- ✓ Past rollups are lost

Examples:

- ✓ Product COGS change over time
- ✓ Local currency exchange rates change over time

Client examples: Specialty retailer, Pharmaceutical Co.

ELIMINATES LIVE CONNECTIONS TO SOURCE DATA

Benefits:

- ✓ More robust processing/updating of data
- ✓ Reduces load (and locks) on operational systems

Cause of challenge:

- ✓ Many source systems (esp. homegrown) are flaky and should be accessed only at certain times – often push is best

Key issues:

- ✓ Unreliable and incomplete analytic performance
- ✓ Adverse impact on operations

Examples:

- ✓ Insurance policy & claims financial dashboard
- ✓ Global compilation of independent divisions data

Client examples: Workers Comp Insurance, Nuclear Equipment Manufacturer

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Eliminates Spreadmarts and Local DB's

Benefits:

- ✓ Secure, backed-up, widely-available data sets
- ✓ Enables universal hierarchies and rollups (not Excel sheet specific vLookups)

Cause of challenge:

- ✓ Tons of transaction and dimension information is stored in individual spreadsheets and Access databases

Key issues:

- ✓ Where do I start? …..
- ✓ Excel should not be used as a database or complex ETL tool

Examples:

- ✓ Everywhere

Client examples: Everywhere

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Reduces Risk of Key Person(s) Leaving

Benefits:

- ✓ Centralized transformation logic and data storage substantially reduces the risk to the business

Cause of challenge:

- ✓ Home-grown spreadsheet repositories and calculations start small, but soon grow to mission-critical apps

Key issues:

- ✓ High risk of both knowledge and data loss upon employee turnover, and sometimes employees can't even take time off
- ✓ Often requires total reset, coupled with financial losses

Examples:

- ✓ Everywhere
- ✓ Central planning model of $multi-billion CPG company

Client examples: Everywhere, Automobile Reseller

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Eliminate Incorrect Calculations by End-Users

Benefits:

- ✓ Accurate, more detailed and “drill-able” metrics (by region, by product, by customer, etc)

Cause of challenge:

- ✓ Many calculations are accurate only on granular data, not in aggregate, yet most Excel users use summary data and assumptions due to data volume & time constraints

Key issues:

- ✓ Many calculated metrics based on summary data are wrong
- ✓ Drill-down (and validation) is not possible

Examples:

- ✓ Sales pricing and costing model

Client examples: Global industrial products Co.

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Provide Security and Controlled Access

Benefits:

- ✓ Secure, controlled and monitored access to sensitive data
- ✓ Filtered granular data can be distributed to more decision makers

Cause of challenge:

- ✓ When data and analytics is stored in desktop tools, it is unsecure - even if the original source is locked down.

Key issues:

- ✓ Since live connections to source data are not recommended, data must be pulled offline (somewhere)
- ✓ Using source system security is often costly & ineffective

Examples:

- ✓ General Ledger finance reports

Client examples: Very common

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Helps Reduce Software License Fees

Benefits:

- ✓ Typically reduced license fees from operational system vendors and BI system vendors

Cause of challenge:

- ✓ Live connections to source systems and BI systems typically require named-user licenses - even if no system functionality is required, just the data.

Key issues:

- ✓ Licensing costs and management

Examples:

- ✓ Bulk-delivered standard reports
- ✓ Data exchanged between systems

Client examples: Common issue, Household Product Distributor

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Enable Consolidated Dashboards & Aligned Metrics

Benefits:

- ✓ Single view of cross-functional metrics which tie with each other

Cause of challenge:

- ✓ Most end-user created analytics is department-specific, and when metrics & rollups cross the dept boundary they fail

Key issues:

- ✓ Different definitions of measures, different hierarchies
- ✓ No agreed-upon single source of truth or aligned rollups

Examples:

- ✓ CEO Dashboard (sales, financials, labor, inventory)

Client examples: Restaurant retailer

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Enables Better Dashboards thru Context

Benefits:

- ✓ Humans thrive on relative, not absolute, information. Adding context adds enormous value to analytics

Cause of challenge:

- ✓ Context requires additional data sources and carefully harmonization of that data (esp. rollups & granularity)

Key issues:

- ✓ Unconformed dimensions of independent sources
- ✓ Mismatched metrics due to timing issues (of data pulls)

Examples:

- ✓ Sales, forecast, inventory & orders Flash report
- ✓ Budget vs. Actuals

Client examples: Specialty product manufacturer/retailer, International transportation Co.

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So What?

The Key Takeaways

The Key Takeaways

- ✓ To make data truly usable and valuable, it needs to be **transformed and enriched**
- ✓ This Transformation needs to take place somewhere **between** the raw source and the final report/analysis
- ✓ It's just a question of **where and how you handle** that Transformation
- ✓ Not addressing this simply **forces business end-users** to tackle it themselves
- ✓ Which **leads to**:
  - **Excel Hell**
  - **Access** Aggravation
  - Complex, slow and inaccurate self-service dashboards & reports
  - **And……** **Steve Job's 100 lifetimes lost per year**

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The Final Takeaway

A properly architected
Data Warehouse
has its place… and can help

What do I get out of this hard Work?

Benefits

Benefits of Properly Staged Data

Just a few examples

- Better decisions
- Faster actions
- Unified strategic direction
  - What gets measured, gets managed
- Greater efficiency
  - Less time in Excel Hell
- Less redundancy and waste
- Fewer errors
  - Some can cost $millions
- Happier business users
- Greater user adoption
- Competitive advantage and higher ROIC

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Additional Resources

Upcoming Events

www.senturus.com/events

SENTURUS AT IBM WORLD OF WATSON 2016

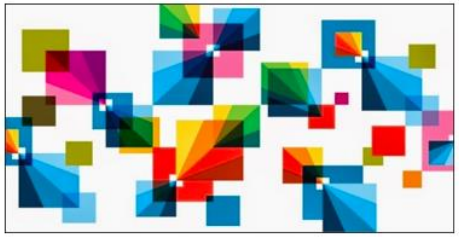
LEADING SESSION & HOSTING RECEPTION

Monday, October 24
Tuesday, October 25 - 7:30pm - 11pm

INTRODUCTION TO TABLEAU 10 TRAINING

HANDS-ON WORKSHOP IN PALO ALTO, CA

Wednesday, November 2, 2016 - 8:30 am - 1 pm PT - 4 hours 30 minutes



UPGRADING TO COGNOS ANALYTICS: WHAT YOU NEED TO KNOW

RELEASE 4: INSTALLATION, CONFIGURATION & ARCHITECTURAL CONSIDERATIONS

Thursday, November 3, 2016 - 10am PT/ 1pm ET - 60 minutes

SENTURUS AT TABLEAU 16

PRIVATE RECEPTION

Monday, November 7, 8 - 10pm
Tuesday, November 8, 6 - 8:30pm

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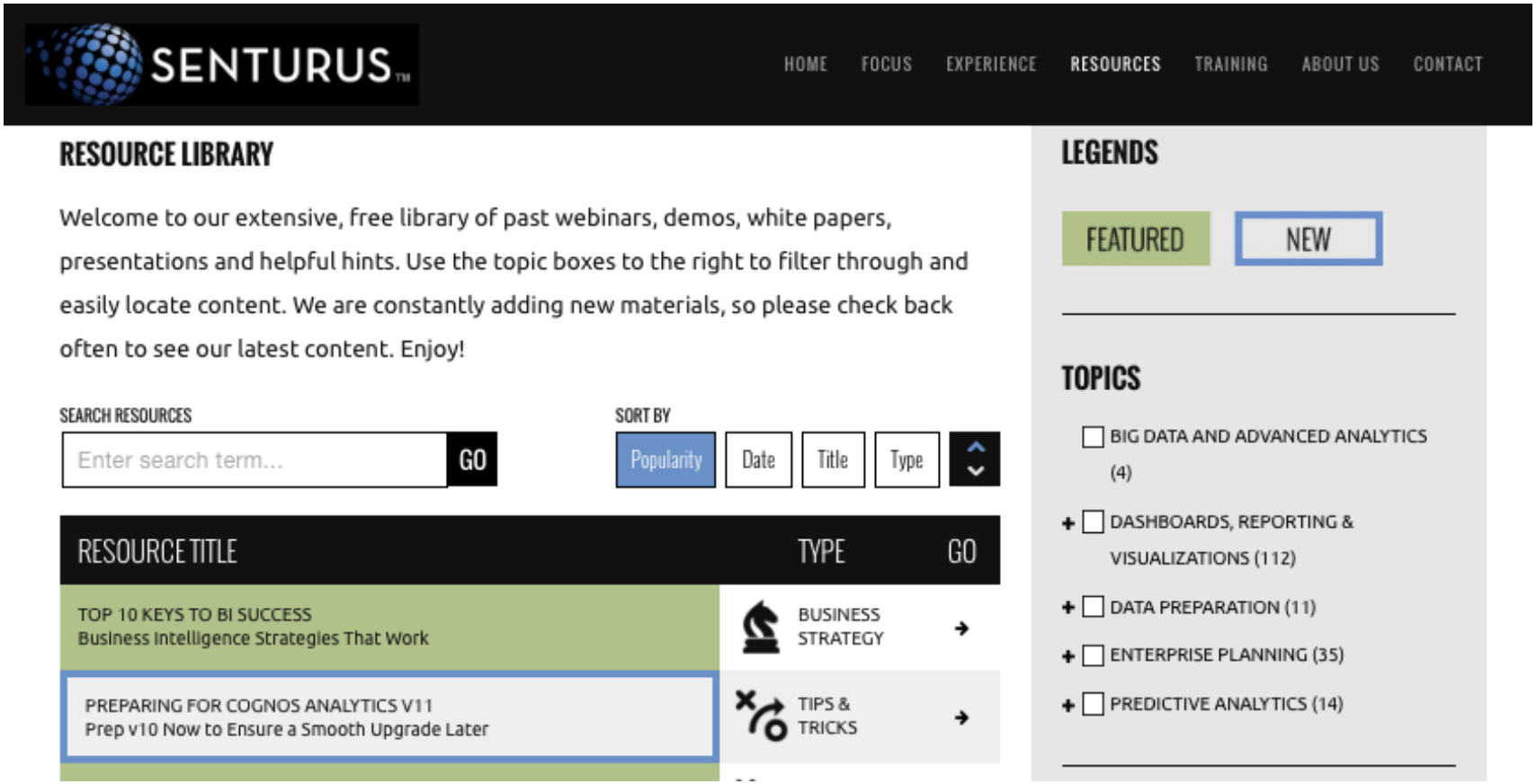
More Free Resources on www.senturus.com



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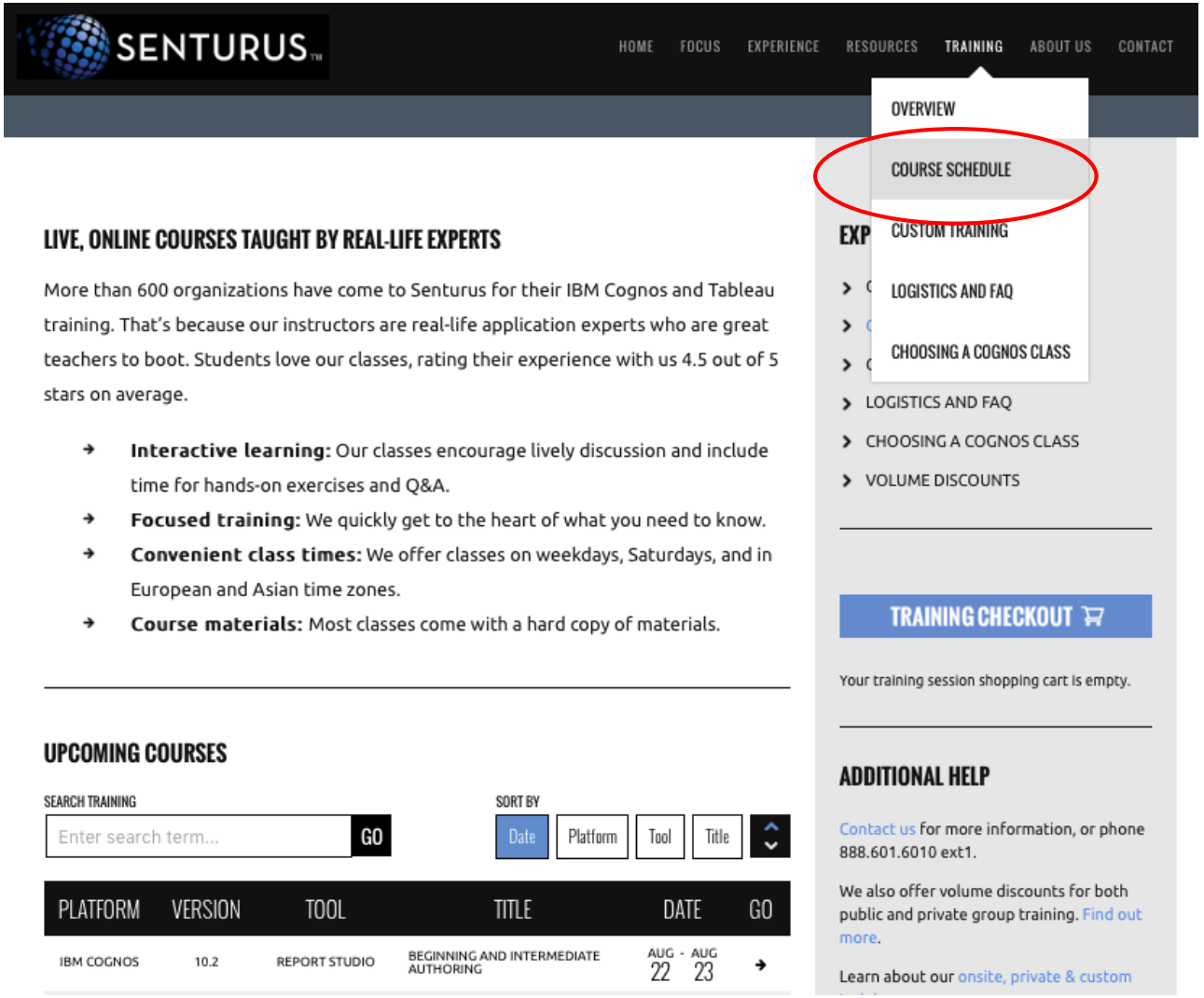
Cognos and Tableau Training Options



Custom, tailored training also available

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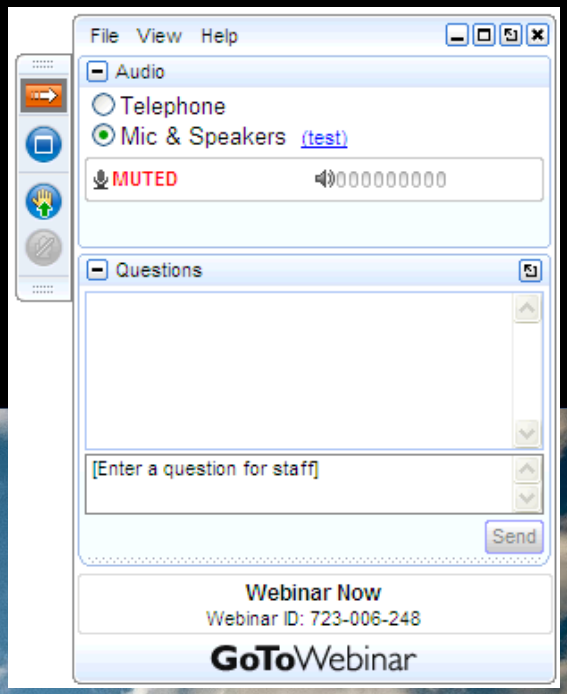
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Q & A

Thank You!

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