IIA Pittsburgh Chapter CPE Session

Data Governance

April 7th, 2014
**Session Objective**

- Learn about governance, risks, and compliance considerations that become particularly important in light of the explosion of data volume, variety, and velocity.
- Expand understanding of the need for governance to ensure enterprise information is accurate, consistent across systems, and valuable to the business.
- Hear about tools and techniques available to assist with enterprise information management.
- Learn the value of archiving/deleting data to improve system performance while also addressing legal and regulatory compliance considerations.
# Agenda – Data Governance Session

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<thead>
<tr>
<th>Topic</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Introduction</td>
<td>5 mins</td>
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<tr>
<td>1a Master Data Governance - The challenges to overcome</td>
<td>15 mins</td>
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<tr>
<td>1b Break-out 1 – Challenge/Response to Master Data Governance</td>
<td>10 mins</td>
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<tr>
<td>2 PwC Global study of Master Data Management</td>
<td>20 mins</td>
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<tr>
<td>3 Master Data Governance - The Way Forward</td>
<td>20 mins</td>
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<tr>
<td>Morning Break</td>
<td>5 mins</td>
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<tr>
<td>4a Break-out 2 - Case Study</td>
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<td>4b Case Study – Finance Master Data Assessment</td>
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<td>5 Big Data</td>
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<td>6 Lunch</td>
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<td>7 Data Analytics</td>
<td>15 mins</td>
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<tr>
<td>8 Risk Management</td>
<td>15 mins</td>
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<tr>
<td>9 Archiving &amp; Retention</td>
<td>15 mins</td>
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<tr>
<td>10 Closing</td>
<td>15 mins</td>
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Managing information is an increasingly difficult business need

Cost
- Unit cost of storage has decreased dramatically
- But, increasing volume – accompanied by a lack of data discipline - is driving overall storage cost higher
- Data and BI services costs continue to increase

Value
- Are organizations making better decisions with the information?
- Unleashing the dynamic – data to information to analytics to insight to action to value generation
- Operational excellence
Managing information is an increasingly difficult business need

Growth

• Huge amounts of information are growing out of control
• Electronic transaction data volumes are skyrocketing
• More information is being digitized

Risk

• Online fraud is growing
• Regulatory pressures for greater transparency are increasing
• Increased executive accountability is acute
Master Data Governance
The challenges to overcome
**The challenge we regularly see in the marketplace**

Despite large investments in standardized processes; the development of comprehensive reporting solutions; and the implementation of ERP and other large-scale IT applications, there are still inconsistencies in business processes and IT solutions generating expected benefits.

**Why?**

**Master data quality.** It has a decisive impact on the quality and efficiency of processes, systems and ultimately, business decisions.

**What’s been done?**

Our experience is that company’s take different approaches to design solutions to address the issue.

Yet one thing stands out - **Majority of master data initiatives have enjoyed only limited success.**
**Business Challenges**

- Business operations in numerous regions with multiple currencies and inconsistent regulations
- Diverse product/service offerings which are ever more personalized
- Multiple customer touch-points including the human sales force, web, e-mail, IVR, contact centers, direct mail and mobile devices
- Complex processes that span multiple departments, systems, business partners and countries
- Having the same customer defined in hundreds of different ways - hundreds of product definitions with thousands of ambiguous data attributes
- Organizational complexity results in the inability to share information, increasing costs and inhibiting growth
Common Theme: Inconsistent Data Quality & Access

• Too many sources of information – lack of ‘one version of the truth’
• Manually-intensive effort to get to information that spans regions or business units
• Quality of master, transactional, and calculated transactional data is suspect and lowers overall credibility of the numbers
• Lack of drill-down capability into the data
• Period-End manual reconciliation activities increase accounting process cost & create unpredictability in the timing and results of the process
Common Theme: Lack of standardization

- Lack of global standardized master data definitions
- Lack of standardized business processes across the various regions
- Lack of a standard system design
- Lack of standard data definitions & usages
- Master data is being maintained separately in too many systems
Common Theme: Multiplicity of tools

• Existing tools and databases are in place with little standard use across the enterprise

• Hard to get data organized into the desired structures & manner which leads to multiple tools

• Pull data from the same ERP system but may not be pulled in the same manner as another request

• Tools do not help influence results or provide insights; only serve to generate reports

• Database repositories are facilities which are used as database sources by which users download to local desktops to then manipulate the data further

Included in many processes is the prolific use of end user computing – Excel spreadsheets and MS Access databases.
Common Theme: IT optimization

- Lack of a clear mandate & ownership from senior leadership for common information
- Lack of Business Ownership of the master & transactional data through its life cycle
- Lack of a clear reporting strategy across the enterprise
- A need for leadership to push down the ‘global information’ message across the organization
- Lack of clearly defined business process owners
- A desire for IT to be focused on more strategic activities
Why doesn’t your current information management work? – What’s missing?

Master Data Management / Governance (SAP MDM / MDG)

Forklift the data out of the legacy applications & manage it in MDM / MDG where we can automate the rules & gain efficiencies.

Distribute the data from MDM to all the systems that need it.

“One version of the truth” enables “One place, one number”
Hierarchies in MDM manage the structure & organization of master and transactional data

Implies a significant migration towards “One Place, One Number”:

**External**
- Group
- Segment
- Sector
- Customer
- Profit Center

**Internal**
- Division
- Segment
- Sector
- Customer
- Profit Center

**True Customer**
- Parent
- Customer
- Profit Center

**True Plant**
- Region
- Management Plant
- Company Code
- Plant Code
- Cost Center

**Tax/Legal Entity**
- Enterprise
- Tax Consolidation
- Legal Entity
- Company Code
- Plant Code
- Cost Center

**True Supplier**
- Parent
- Vendor
Why?

Our current data structures and processes:

- Limit our ability to make real-time quality decisions
- Cannot be leveraged with growth
- Increase frustration with the processes
- Distract our time and resources from value add
- Cost too much

Lack of the right data structures and automation results in Corporate being highly dependent on the Operations for information, requiring manual intervention and creating inefficiencies and report integrity issues.
What makes Data Governance difficult to implement?

People/Culture issues

• An organization’s information culture dictates the drivers of its information management strategy. And what we spend.

• There are many stakeholders but often no clear owner of IM strategy.

• The key information is inaccessible, lacking common definitions, structure and governance.

Systems/Methods issues

• Our systems are more complex than ever before.

• Traditional methods do not focus on information management as a competency and everyone has “their” way.

• Data governance issues are inherently difficult to address as they are hidden, persistent and fit-for-purpose.

• Technology innovation provides an opportunity and a threat.
# Master Data Management – Benefits

<table>
<thead>
<tr>
<th>Company</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Technology Company</td>
<td>• 2/3 Reduction in IT Development Staff for Software Division&lt;br&gt;• Meet other strategic initiative timelines for implementation of SFDC &amp; Order-to-Cash</td>
</tr>
<tr>
<td>Global Electronics Manufacturing Servicer</td>
<td>• $22M - $42M Reduction in operating costs&lt;br&gt;• Elimination of Customer Credit exposure write-offs&lt;br&gt;• Centralization of Master Data Management relieving the plant operations of operating cost</td>
</tr>
<tr>
<td>Global Chemical Company</td>
<td>• $22M Reduction in operating costs&lt;br&gt;• Streamline processes for getting product from R&amp;D to Market reducing time by 45%&lt;br&gt;• 30% reduction in the number of data fields being managed</td>
</tr>
<tr>
<td>U.S. Grocery Distributor</td>
<td>• $13M Reduction in operating costs&lt;br&gt;• 35% Reduction in the number of data fields being managed&lt;br&gt;• Increase process efficiency in product management and sourcing</td>
</tr>
<tr>
<td>Global Fast Food Chain</td>
<td>• Elimination of hundreds of lawsuits by Franchisees on Profit &amp; Loss reporting at the store level&lt;br&gt;• Financial Planning &amp; Analytics enterprise wide governance program</td>
</tr>
<tr>
<td>U.S. Power Utility</td>
<td>• $40M Reduction in inventory of assets and MRO parts across 5 nuclear plants in one year</td>
</tr>
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Transitioning sustainment funding to innovation that enables the business
Break Out 1 – Challenges and Responses to Master Data Governance

In your groups:

What are the Top 3 challenges for IA around data governance?

What is the major action / activity that you have implemented to overcome one or more of these challenges?
PwC Global study of Master Data Management

Excerpts from the survey published November 11 2011
Surveyed representatives of 49 companies spanning 12 countries and 8 different industries on the MDM practices in their organizations. The interviews focused on five main areas of master data management:

- Data quality
- Data governance
- Processes
- Information Technology
- Current status and outlook

The survey supported the hypothesis that the use of IT only partially solved data management issues, if at all. Just 27% of the respondents considered the implementation of a state-of-the-art MDM solution to be a success factor.
Success factors for Master Data Management

- State-of-the-art IT: 27%
- Revised Governance: 71%
- Good management: 69%
- Optimised processes: 60%
- Time: 49%
- Budget: 33%
- Other: 10%
**Success factors for Master Data Management**

**Structured and goal-orientated governance**

- Structure in place that reflects the objectives, needs and business model.
  - Data stewards, data councils etc.
  - Governance guidelines and rules
  - Data quality KPI’s and monitoring solutions

**Process Optimization with explicitly defined responsibilities**

- **Centralized** - MDM can only be managed efficiently when a company's core processes, manufacturing, distribution and accounting are conducted efficiently with a sufficient level of quality.
- **Lifecycle** - MDM processes (cradle to grave) need to be optimized so the data can be efficiently processed with traceability and all changes accordingly documented.
Success factors for Master Data Management

Management Commitment to the project

• MDM Initiative must be established and be actively supported by a company’s top management.
  • Understand how quality of data impacts quality and efficiency of processes and observance of compliance guidelines.
  • Convey the importance of master data quality and efficient data retrieval to employees and how it can impact company success.

Time and Budget

• MDM initiatives rarely provide short-term benefits.
• Companies must not under-estimate the time required to analyze and optimize data quality.
Data Quality and Governance

![Bar chart showing data quality ratings for different types of data.]

- **Customer data**: 1.8 (good)
- **Supplier data**: 1.9 (good)
- **Financial data**: 1.3 (good)
- **Employee data**: 1.6 (good)
- **Material and product data**: 1.8 (good)

Colors and labels:
- **Red**: Data quality with a central platform and central governance
- **Light red**: Data quality with multiple platforms and decentralised governance
Main problems affecting data quality

- Correctness: 58.0%
- Completeness: 78.0%
- Data currency: 83.0%
- Consistency: 56.0%
- Validity: 36.0%
Data Quality Standards for Financial Master Data

• Usually managed by its own department, is rarely the focus of traditional MDM projects, and is interpreted differently by company’s.

• Classic Financial master data – information from accounting, the Group’s COA and COA’s for the group’s individual operative company’s, debtors, creditors, and facilities.

• Also includes controlling elements like cost centers, profit centers, projects and internal orders.

The Challenge

• How does data quality impact legal and global reporting requirements?

The Resolution

• Standard Chart of Accounts (SCOA)
Data governance efficiency increases where staff have specific responsibilities for it

Data Owners – First Step – Applying responsibility that once were informal agreements

Data Stewards / MDM Departments – Moving towards independent, cross-process and cross-functional data governance boards
Processes

MDM initiatives aim to increase efficiency in core processes and decrease risks

- Increasing efficiency in business processes – beyond MDM
- Risk management and growing compliance requirements.
Reasons for implementing MDM and DQM software

Extent to which goals were achieved after tool implementation
What they have Achieved

• Higher level of maturity for Master Data Management within company’s.

• The company’s did not consider state-of-the-art IT solutions to be a critical success factor for MDM.

• High value placed on ‘soft’ factors such as modified governance, the support of an experienced management team and also timing.
And they want To Do More

• Expansion of Master Data Governance to include additional master data domain areas.

• Vertical expansion through standardization of data governance structures, processes and taxonomies.

• Definition of data quality indicators and reporting structures to continuously improves measurement of MDM performance.

• Automation of MDM processes through the implementation of appropriate IT solutions.
Master Data Governance
The Way Forward
Getting Started in Data Quality

1. Identify a Business Data Issue
2. Execute Data Profiling & Analysis
3. Perform a Root Cause Analysis
4. Recommend Data Cleansing and Process Improvement Actions
5. Monitor and Follow Up
**Journey to Master Data Governance**

1. Enterprise-wide standardization of global data and the processes that manage the data by domain
2. Through the standardization process, development of functional requirements for managing the data through its entire lifecycle
   - Develop source system strategy to identify which system will source the core master data
   - Identify hierarchies for information views
   - Identify Business relationships between the data and the rules
   - Start change management activities
   - Perform data quality profiling using the new data standards
3. Technology fit/gap analysis to determine what tools and technologies will be needed for data management and its processes
4. Develop the technology and data architecture
   - Develop implementation projects roadmap
   - Develop functional requirements specs
   - Develop business case
5. Evaluate data management tools
   - Make the tool decisions
   - Procure tools and hardware platform
   - Install data management tools
6. Start blueprint/design for the first data management project
   - Develop the data governance organizational model, policy roles & responsibilities, and framework
   - Develop physical data scheme by domain
   - Develop technical design spaces
7. Configure new data management tools
   - Construct physical database(s)
   - Develop custom functionality where needed
   - Unit test
8. Conduct system integration testing
   - Conduct UAT testing
   - Train testing resources
   - Conduct end user training
9. Implement data governance program
   - Implement data management tools
   - Develop performance metrics
10. Conduct governance process
    - Manage data quality metrics and issue
MDM Strategy & Governance Framework

We help our clients ask the right questions and use a consistent approach to manage their data and consistently govern the processes.

**Data Management Survey:**
- Current issues with quality, accuracy, & completeness
- Stakeholder Interviews
- Vision for Data & Information Management

**Develop Data Standards:**
- Data Standardization Workshops
- Logical Data Models by domain
- Functional Requirement Specifications
- Data Quality Profiling

**Process Design:**
- Business Process Maps
- Data Management Processes
- Reconciled Business Process to Data Processes
- Source System Strategy

**Data Management Technology Architecture**
- Fit/GAP Analysis
- Software Re-Use
- Future State Technology Architecture
- Data Flow

**Data Governance**
- Governance Organization Model
- Roles & Accountability
- Policy
- Framework of Processes & Procedures

**Strategy**
- Data Management Strategy
- Deployment Scenarios
- Implementation Sequencing
- Business Case

**Linear Progression To Managing Data:**
“One Place, One Number”

**Governance Organization Model**

**Data Standards**

**Governance Framework**

**Implementation Sequence**

**Data Quality Profiling Results**

**Business & Data Process Design**

**Data Management Technology Architecture**

**Data Governance**

**Strategy & Roadmap**
Sample approach & timeline to develop a master data strategy

Key work area

<table>
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<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
<th>Week 9</th>
<th>Week 10</th>
<th>Week 11</th>
<th>Week 12</th>
<th>Week 13</th>
<th>Week 14</th>
<th>Week 15</th>
<th>Week 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder Interviews &amp; Visioning</td>
<td>Project Charter</td>
<td>Final Scope</td>
<td>Vendor / Customer Master</td>
<td>Data Workshops Scheduled</td>
<td>Vendor / Customer Data Standards</td>
<td>Vendor / Customer Data Architecture</td>
<td>Customer Master</td>
<td>Material / Product Master</td>
<td>Material / Product Data Standards</td>
<td>Material / Product Data Architecture</td>
<td>Finance Data Standards</td>
<td>Finance Data Architecture</td>
<td>Finance Process Design</td>
<td>Material / Product Master</td>
<td>Master Data Workshop</td>
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Legend

- **Activity**
- **Milestone**
- **Critical Activity**
- **Deliverable**

*** Interviews & Workshops will be aligned across work streams
**Data Governance – The Required Outcome**

**Governance Structure/Organization**

- **Program & Project Management**: these teams govern and manage project requests, funding and delivery
- **Data Stewardship**: these teams and committees govern and manage the business use and definition of data
- **Enterprise Architecture**: these teams govern and manage the technology and architecture necessary to deliver data excellence
- **Data Management**: these teams govern and manage day-to-day operations of the data environments as well as project delivery

**Governance Oversight**

**Governance Committee (Business & Technology) Responsibilities**

- Approve funding for strategic information projects; establish annual discretionary spend allocation for information projects
- Adjudicate intractable issues that are escalated
- Back-up tough decisions from Data Council
- Recommended meeting frequency: quarterly

**Data Council Responsibilities**

- Influence, adjudicate and support decisions & recommendations
- Communicate and enforce Data Governance principles within their respective organizations
- Prioritize and approve funding for information projects and process changes
- Recommended meeting frequency: monthly
Data Governance and Quality

Common IT Governance Processes & Standards

- **Demand Management**: processes for governing project requests and funding
- **Enterprise Architecture**: standards and guidelines for ensuring effective use and management of technology
- **Security & Compliance**: processes and guidelines for ensuring security

Core Data Governance Processes & Standards

- **Reference Data Management**: processes and standards for ensuring effective management and quality of Reference Data
- **Metadata Management**: processes and guidelines for defining, managing and using metadata
- **Data Quality Management**: processes and guidelines for ensuring data quality and integrity

Data Governance has its own processes and procedures, however, it must also be integrated into IT Governance to be effective
5 Levels of Data Management Function Governance Maturity

Data Governance

- Data Architecture Management
- Data Quality Management
- Database Operations Management
- Data Development
- Data Security Management
- Data Warehousing & Business Intelligence Management
- Reference & Master Data Management
- Meta Data Management
- Document & Content Management

Data management maturity model:

- Initial: Data and information generally unmanaged or does not warrant management as a key data asset.
- Repeatable: Data and information managed at minimum level required for maintaining reliability. Data assets produce limited business benefits.
- Defined: Data and information actively managed under a moderate level of control. Data assets deliver above-average benefits.
- Managed: Data and information actively managed with a strong level of control. Most potential benefits realized.
- Optimized: Data and information actively managed using best-in-class control. Full business potential of information assets realized.

Source: PricewaterhouseCoopers Global Best Practices
Emerging trends - Collaborative data governance

Data Governance portals are quickly becoming a de-facto standard in large, federated organizations

- Publish policies and data standards
- Collaborate on enterprise data definitions and conventions
- Announce council directives and actions
- Track DQ improvement initiatives
Enterprise Information Management

- Driving architecture, organization, and alignment of information assets to deliver value, better decisions, and manage risk
- Organizing, integrating, and retrieve information assets to reduce cost and complexity, increase trust and integrity, and improve operational effectiveness
- Turning unstructured and semi-structured content into meaningful and usable information
- Addressing the technical, process, and business dimensions of transforming data into actionable information.
SAP view - Questions from the Finance LOB / CFO

- How can I ensure compliance to IFRS, SOX etc. across my organization?

- How can I ensure consistency of financial master data across our entire organization, including local financial systems, to achieve accurate and timely reconciliation, group close and reporting to my stakeholders?

- How can I reduce manual work when updating financial master data? How can I efficiently and safely execute and track required changes? How can I get transparency on who has changed what, when and why?

- How can I increase the quality of my financial master data?

- How can I establish a single source of truth for financial master data in my multi-system environment?

- And … while accomplishing all that … how can I best leverage my investment in SAP?
Objectives:

- You have been asked to assess what Finance Master Data (FMD) related standards exist and how they align to current business practices with a view to updating those standards that defines the latest taxonomy and usage rules and provides guidance on the control processes required to maintain these standards and the operational usage going forward.

- This assessment is not intended to be a comprehensive redesign of the FMD processes, rather, it is intended to provide insight into the current state of FMD and provide recommendations for short and medium changes that will deliver business benefit along with long term solutions for consideration to provide further benefits in addressing the current FMD challenges.
**Break Out 2**

**Considerations for Internal Audit:**

- Data quality
- Data sources
- Business processes
- Recent successful & unsuccessful initiatives
- Executive buy-in
- Accurate information on a timely basis

**Groups to discuss:**

- What would be your approach to doing the assessment?
- Areas and potential recommendations resulting from the assessment
Case Study –
Finance Master Data Assessment
Case Study: Finance Master Data Assessment

Objectives:

• Improve the visibility and transparency of the financial, statutory and management consolidation process

• Shorten closing and reporting cycles

• Simplify inter-company reconciliations

• Manage multiple accounting standards

• Support regulatory change
# Finance Master Data Assessment

## Approach & Timeline

<table>
<thead>
<tr>
<th>Governance</th>
<th>People</th>
<th>Process</th>
<th>Technology</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3 Weeks</td>
<td>4-5 Weeks</td>
<td>2 Weeks</td>
<td>2 Weeks</td>
<td>10 - 12 Weeks</td>
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</table>

### Key Activities

<table>
<thead>
<tr>
<th>2-3 Weeks</th>
<th>4-5 Weeks</th>
<th>2 Weeks</th>
<th>10 - 12 Weeks</th>
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<tbody>
<tr>
<td><strong>Governance</strong></td>
<td><strong>People</strong></td>
<td><strong>Process</strong></td>
<td><strong>Technology</strong></td>
</tr>
<tr>
<td><strong>Metrics</strong></td>
<td><strong>Assess Current State</strong></td>
<td><strong>Develop Future State Data Governance Model</strong></td>
<td><strong>Create Business Case</strong></td>
</tr>
</tbody>
</table>

#### Key Activities

- **Governance**
  - Confirm scope, approach and objectives
  - Identify focus areas
  - Assess current Governance Model via interviews and workshops
  - Identify quick wins

- **People**
  - Share leading practices, identify value opportunities and risk/constraints
  - Evaluate alternatives & design future state data governance model
  - Prepare data governance framework and strategy

- **Process**
  - Summarize current and future operating costs
  - Identify qualitative and quantitative benefits
  - Build the business case

- **Technology**
  - Identify and prioritize target opportunities
  - Develop tactical “quickwins,” short and long term recommendations
  - Establish metrics to measure success criteria

- **Metrics**
  - Collect, inventory & assess potential quick win initiatives
  - Identify barriers to quick win implementation
  - Assess value of quick wins for the organization
  - Prioritize quick wins for self-funding
  - Document high value quick wins

### Deliverables

- **Governance**
  - Current State Assessment
  - Future State Governance Framework & Strategy
  - Business case
  - Data Governance Roadmap

### Quick Win Identification

- **Governance**
  - Collect, inventory & assess potential quick win initiatives
  - Identify barriers to quick win implementation
  - Assess value of quick wins for the organization
  - Prioritize quick wins for self-funding
  - Document high value quick wins
Our key considerations as we reviewed the options were:

- What is the path forward to improve month end financial consolidation and management reporting?
- What is the path forward for controlling areas and fiscal year variants?
- What options are available to address Global Costs within the existing Cost Center structures?
- What Profit Center structure options exists to support reporting for Region, Line of Business etc.?
- What alternate views of – BPC vs. ECC vs. BW can enable management reporting?
- What alternatives are available for managing the Chart of Accounts for the transactional system?
## Analytic: Data Stratification & Analysis

### GL Account

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Analytic Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Active Account / Company Code Combinations</td>
<td>20,216 25%</td>
</tr>
<tr>
<td>Inactive Account / Company Code Combinations</td>
<td>49,859 71%</td>
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<tr>
<td>Total Account / Company Code Combinations</td>
<td>70,075</td>
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<tr>
<td>Accounts extended to 1 controlling area</td>
<td>2,040</td>
</tr>
<tr>
<td>Accounts extended to 5 or less company codes</td>
<td>2,645</td>
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<tr>
<td>Accounts extended to 1 company code</td>
<td>1,532</td>
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<tr>
<td>Accounts inactive across all company codes</td>
<td>1,674</td>
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</tbody>
</table>

### Chart of Accounts

- **Chart of Accounts (96 company codes), BSEG, and BKPF (plus supplementary tables)**
- **8/31/2013 - 9/27/2013**

### GL Account

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Account Mapping</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>SALES</td>
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<tr>
<td>Active Account / Company Code Combinations</td>
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<tr>
<td>Inactive Account / Company Code Combinations</td>
<td>2,946</td>
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<tr>
<td>Total Account / Company Code Combinations</td>
<td>3,963</td>
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<td>Accounts extended to 1 controlling area</td>
<td>81</td>
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<tr>
<td>Accounts extended to 5 or less company codes</td>
<td>108</td>
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<tr>
<td>Accounts extended to 1 company code</td>
<td>48</td>
</tr>
<tr>
<td>Accounts inactive across all company codes</td>
<td>72</td>
</tr>
</tbody>
</table>

### Analysis

- **High % not used Across the Companies**
- **Why are they required?**
- **Fully extended – Not used**
# Analytic: Data Stratification & Analysis

## BSEG Account Profiles by Active Accounts

**Scope:** BSEG (All Countries)  
**Time Period:** 8/31/2013 - 9/27/2013

<table>
<thead>
<tr>
<th>GL Account</th>
<th>Co Code</th>
<th>P&amp;L</th>
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<th>Profit Center</th>
<th>Cost Center</th>
<th>Cost Element</th>
<th>Activity and/or</th>
<th>For Review</th>
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GL at CoCode level for review to assess usage when transacting.
# Recommendations – The Way Forward

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Time Frame</th>
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</thead>
<tbody>
<tr>
<td>1. Data Cleansing</td>
<td></td>
</tr>
<tr>
<td>Simplification</td>
<td>Short / Medium</td>
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<tr>
<td>FMD Usage</td>
<td>Short / Medium</td>
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<tr>
<td>2. Controlling Area Reduction</td>
<td></td>
</tr>
<tr>
<td>Align Fiscal Variants / Op Concerns</td>
<td>Medium / Long</td>
</tr>
<tr>
<td>Merge the Controlling Areas to 1</td>
<td>Long</td>
</tr>
<tr>
<td>3. Leveraging SAP Leading Practice</td>
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<tr>
<td>Alternative Hierarchies</td>
<td>Medium</td>
</tr>
<tr>
<td>Expansion in the use of BPC</td>
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</tr>
<tr>
<td>Expanded Functional Areas</td>
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<td>Internal Orders</td>
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</table>
## Recommendations – The Way Forward

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Time Frame</th>
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<tbody>
<tr>
<td>4. Master Data Governance</td>
<td></td>
</tr>
<tr>
<td>Empower the current Data Stewards</td>
<td>Short</td>
</tr>
<tr>
<td>Formalize a MDG Organization</td>
<td>Medium</td>
</tr>
<tr>
<td>Implement a MDG Portal</td>
<td>Medium</td>
</tr>
<tr>
<td>Implement a Data Quality Dashboard</td>
<td>Medium</td>
</tr>
<tr>
<td>5. Financial Reporting Vision</td>
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</table>

### Future Considerations

<table>
<thead>
<tr>
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<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 SAP Leading Practice (SKU)</td>
<td>Long</td>
</tr>
<tr>
<td>7 SAP MDG - FMD</td>
<td>Long</td>
</tr>
<tr>
<td>8 SAP New GL</td>
<td>Long</td>
</tr>
</tbody>
</table>
Recommended Financial Reporting Vision

**What does it look like?**

- Focus on analytical skills
- Centralize repetitive standard reporting
- Environment of continual learning
- Finance as a value add team

**People / Organization**

Knowledgeable analysts supported by an organization that allows focus on value add and leverages operational efficiencies

**Process**

Direct, immediate access to information that supports execution of aligned the processes

**Governance**

Cross function resources to champion maintaining the way to do business

**Data / Technology**

Global platform of actionable business information from flexible easy to use reporting tools

Finance users empowered to make action-based and forward looking decisions to the strategy

**What does it look like?**

- Globally aligned with only necessary local variances
- Facilitation through web based workflows
- Knowing where to go for your questions

- Owners of data, reports and processes to evaluate changes
- Processes and documentation to integrate acquisitions

- Centralized, trusted data stores
- Streamlined set of user friendly reporting tools
- Dynamic hierarchies
- Advanced forward looking analytics

- Focus on analytical skills
- Centralize repetitive standard reporting
Big Data
**Big Data**

- The term “Big Data” encompasses structured, semi-structured and unstructured information created inside a company or available for sale by commercial data aggregators and for free by governments—from demographic and psychographic information about consumers to product reviews and commentary; blogs; content on social media sites; and data streamed 24/7 from mobile devices, sensors and tech-enabled devices.

- Big Data is increasingly defined by its ability to provide insights that drive innovation, changes to strategy, enhanced customer relationships and operational efficiencies.
**Big Data attributes: The four V’s**

- **Volume** and **Velocity** refer to the sheer quantity of Big Data available – often hundreds of terabytes, or even petabytes of data – and the speed at which data must be stored and/or analyzed, which could reach tens of thousands of transactions per second in some cases.

- **Variety** refers to the huge variation in the types and sources of Big Data, from highly structured files to unstructured video and audio information.

- **Veracity** refers to the level of quality and trustworthiness that can be ascribed to a dataset.
Big Data Offers New Opportunities

VOLUME
Large volumes (petabyte is normal)

VARIETY
Multiple data formats

VELOCITY
Fast collection, processing and consumption

VALUE
Competitive differentiator for business

- 1 Terabyte = 1024 Gigabytes
- 1 Petabyte = 1024 Terabytes
- 1 Exabyte = 1024 Petabytes
- 1 Zettabyte = 1024 Exabytes
Big Data – And Hadoop

Hadoop - It's a way of storing enormous data sets across distributed clusters of servers and then running "distributed" analysis applications in each cluster.

**Scalable** – New nodes can be added without the need for change

**Cost effective** – Massively parallel computing to commodity servers.

**Flexible** – Schema-less, and can absorb any type of data, structured or not, from any number of sources.

**Fault tolerant** – When you lose a node, the system redirects work

Key Components
- Hadoop Distributed Filesystem for data storage - HDFS
- Data processing framework – MapReduce
Big Data: A PwC Perspective

Highlights

- Big Data is not a fad but defines a goal of transforming data into insights and intelligence that are delivered to those who need it, when and where it’s needed, to make and implement better strategic and operational decisions.
- Advances in analytical techniques, information technology and declining technology costs are driving the growing use of Big Data.
- Small pilots can quickly demonstrate the potential of Big Data and weed out lower priority ideas to enable companies to make intelligent decisions about where to focus additional investments.
- Leading companies have used Big Data to generate insights that lead to competitive advantage. Organizations that delay the journey risk being leapfrogged by more data-savvy competitors.

PwC’s 5th Annual Digital IQ Survey

- 62% of information technology and business executives surveyed by PwC believe that Big Data has significant potential to create business advantage.

3 Key Challenges

Survey respondents also acknowledged three key Big Data challenges:

- 58% indicated that transitioning from data to insight is a major challenge.
- 41% noted that their systems cannot process large volumes of data from different sources.
- 25% said they lacked the talent to undertake deep analysis of Big Data.

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2 PwC’s 6th Annual Digital IQ survey was conducted in September and October of 2012. 1,108 executives participated in the global survey.
Big Data : The Risks

- Reliance on third party data
- Storage and retention of large volumes of data
- Data ownership and quality
- Information security
- Reputational risks
- Regulatory requirements and privacy issues
- Social Media
Data Analytics
What is Internal Audit Data Analytics?

The use of data to gain deep insight into business processes to facilitate the audit process of an organization.
What are we hearing about Internal Audit Data Analytics?

2013 PwC State of the profession survey

- 81%: Data analytics are widely viewed as important.
- 85%: Data analytics are important to strengthening audit coverage.
- 74%: Data analytics are important to gaining a better understanding of risks.
- 31%: Yet few are using analytics regularly.
- 71%: And most intend to, yet lack a plan.

PwC
The Value of Data Analytics

Purpose: Deeper business understanding & Focus on risk

Benefits

• Analytics allows an auditor to link data to business processes
• Drives to a deeper understanding of the business and risk
• Additionally, focused sampling increases our comfort with coverage and likely-hood of identifying control gaps

Considerations

• Quantitative analytical techniques for risk based sampling and profiling
The Value of Data Analytics

Purpose: Deliver Business Value to Customers

Benefits
• Stakeholders can see control deficiencies in action vs. theoretically
• The audit naturally leaves behind intelligence and tangible material for business units to accelerate the implementation of new controls

Considerations
• Ability to re-perform audits more quickly
The Value of Data Analytics

Purpose: End to End Testing and View

Benefits
• Independent analytics can track data across federation functions and business units
• Allows a view and ability to capture issues missed by focused testing and business/compliance groups

Considerations
• Ability to re-perform audits more quickly
The Value of Data Analytics

Purpose: More population and control coverage

Benefits
• Analytics allows for 100% testing of transactions vs. sampling
• Additionally analytics allows an auditor to reverse engineer gaps in controls
• Allows for a broader design and operating effectiveness assessment

Considerations
• Scenario testing and 100% testing
The Value of Data Analytics

Purpose: Lower existing and future costs

Benefits

• Analytical audit techniques are more cost effective than traditional techniques

• A recent study from Rutgers University found that "Analytic procedures cost $0.01 compared to $4 for a standard audit of the same evidence”

Considerations

• Leave behind frameworks for potential future controls

• Tangible evidence for issues
# Data Analytics in the Audit Lifecycle

<table>
<thead>
<tr>
<th>Area</th>
<th>Type</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Analytics</strong></td>
<td>Profiling Data Mining</td>
<td>Statistically profiling the quantitative and qualitative parameters of a set of data to identify risk areas (anomalies, spikes, unusual patterns) within a business and/or process.</td>
<td>Using analytics to mine payments data to identify systems to focus on and identify patterns of money movements in high risk countries.</td>
</tr>
<tr>
<td>Analytics used to identify business risk, control weaknesses, and operational exposure and to recommend design enhancements</td>
<td>Stratified / attribute Sampling</td>
<td>Conduct risk based analysis of data and target portions of sampling on higher risk dimensions of business areas.</td>
<td>Using analytics to choose sample of surveillance exceptions based on volume and value of trades, high volatility trading days, traders with the highest level of exceptions.</td>
</tr>
<tr>
<td><strong>Logic Recreation/Recalculation</strong></td>
<td></td>
<td>Utilizing business requirements or independent sources of data to recreate selected portions of the logic of data based control processes (reports, business processes).</td>
<td>Using analytics to re-perform risk calculations performed by vendor systems which aggregate data from multiple sources.</td>
</tr>
<tr>
<td><strong>Data Governance Analytics</strong></td>
<td>Reconciliations</td>
<td>Comparing sets of data between hand off’s and/or independent sources to measure completeness and accuracy.</td>
<td>Using analytics to compare data sent to regulators in reports vs. source systems.</td>
</tr>
<tr>
<td>Analytics used to test IT controls within technology systems</td>
<td>Data Quality</td>
<td>Examining completeness, validity, consistency, timeliness and accuracy of enterprise data as it moves from source to reporting.</td>
<td>Using analytics to isolate data quality issues within source systems which may cause downstream report breaks.</td>
</tr>
</tbody>
</table>
Data Analytics in the Audit Lifecycle

Risk Assessment - Used to assist in designing and developing quantitative risk metrics localized to a business unit or process, or to cross-reference risk across the audit universe.

Audit Testing - Planning, assessment and delivery

Monitoring - Operationalize regular reporting of Key Risk Indicators (KRI’s) however other KPI’s and dashboards focused on controls and performance can be considered based on audit focus
Leading industry technology solutions

Major growth in the availability of technical solutions

Core Technological components and Key Vendors

Analytics
- ACL
- SAS
- Tableau
- R
- IDEA
- SAP

Visualization
- Q
- Oracle

Data Management
- Microsoft SQL Server
- Sybase
- Oracle
- MySQL
- Netezza

Monitoring
- ACL
- NICE ACTIMIZE
- Oversight Systems
- IDEA
Data Governance – Risk Management
**Dimensions of Data Governance**

**Data Governance Dimensions**

- **Data Quality**: Defines components of data quality and standards for implementing data quality at the front-end, monitoring data quality, and defining data quality metrics.
- **Data Definition**: Rules on distinct definitions for each data element, preference for industry definitions, and storage within a corporate meta data repository.
- **Data Lineage**: Data mapping throughout the entire data lifecycle from source systems to analytics.
- **Data Security**: Standards for data security and links to policies and standards.
- **Data Privacy**: Standards for data privacy and links to policies and standards.
- **Data Access**: Data must be acquired from an authoritative data source, utilized for the purpose for which source was certified, and access must be authorized by owner.
- **Data Messaging**: Defines standards for data communication both between applications as well as for data communication with outside parties.
- **Foundational Data**: Specifies guidelines about how key data such as codes, dates, age-related elements should be created based on industry and client standards.
- **Reference Data**: Rules on acquisition of third party data addressing redundancy and use of authorized vendors.
Data Security, Privacy & Cross Border

- How is access to the data / information restricted across the business?
- How do you classify data assets for access purposes?
- Is the information you are responsible for appropriately controlled (accessible to the right people at the right time)?
- Are metrics produced and reviewed that would identify potential breaches of security?
- Is your data managed in respect of Information Protection and are your processes for this consistent with the Security Standards as defined by the wider business?
**Data Security, Privacy & Cross Border**

- Have you implemented all policies and standards DRMS (Digital Risk and Security)? Are all staff aware of their responsibilities with respect to Information Protection?
- Have you classified your information assets from an Information Protection perspective?
- Have you established a mechanism for dealing with breaches of Information Protection policies and standards?
- What mechanisms do you have in place to protect cross-border transfer of data and compliance to application data protection regulations (e.g. EU Data Protection Law / Safe Harbor)?
Archiving and Retention
Archiving and Retention
## Archiving & Retention – Information Lifecycle

| Reduce Discovery Risks & Costs | • **Financial, Legal Sanctions** for failure to produce, preserve information  
• **Growing expense** associated with the discovery of electronic information |
<table>
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<tbody>
<tr>
<td>Understand/Comply with Regulatory Requirements</td>
<td>• Mandates to capture, retain, monitor, and preserve information for <strong>regulatory, business</strong> needs</td>
</tr>
</tbody>
</table>
| Mitigate Reputational Risks | • Adverse **publicity** for the company  
• Loss of **credibility** with judges / regulators |
| Improve Access to Information | • Leverage information to support **knowledge management, collaboration**, and end-user **productivity** |
| Reduce Storage Costs | • **Manage IT spend** related to storage, management of growing volumes of information |
# Information Retention – The Reasons

## How to distinguish Company Records from Information

<table>
<thead>
<tr>
<th>“Company Records”</th>
<th>“Information”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are evidence of events, transactions and activities in the course of the company’s business</td>
<td>1. Records that are generated for convenience purposes and have <strong>no continuing business value</strong></td>
</tr>
<tr>
<td>2. Demonstrate accountability</td>
<td>2. Information with <strong>no requirement for retention</strong> unless required for a Legal or Tax Audit Hold</td>
</tr>
<tr>
<td>3. Are related to company business processes</td>
<td></td>
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<tr>
<td>4. Must be preserved based on laws and regulations</td>
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</tbody>
</table>

"Company Records" and "Information" are categorized based on their nature and purpose within the context of a company's business operations and legal requirements. Company Records are essential for demonstrating accountability and maintaining business processes, necessitating preservation due to legal and regulatory frameworks. On the other hand, Information serves convenience needs with no requirement for retention beyond legal or tax audit contexts.
Big Data – How its changing Archiving

• Moving from data retention to a business operation strategy.
• Maximizes efficiency by moving less active data off expensive primary HDD storage and onto more cost-effective nearline and offline tiers
• These combine long-term preservation of data with easy, fast access to data when needed.
• The result is higher primary storage performance, greater scalability and lower overall storage costs.
Big Data – And What we Archive / Retain
Closing
What we see at the executive level

- Change Agent to transform the business
- Ownership of the issue/opportunity and the underlying data is unclear
- Source of process inefficiencies and potential ineffectiveness that can go unmanaged for long periods of time
- Highly political issue that is easily deferred at the time of implementation
Current Projects - Foundational in Nature

- Master Data Governance
  - Finance – Reporting Concerns
  - Material / Vendor / Customer – Operational Concerns
- Data Governance Maturity Assessment
  - To support Big Data Systems Proposals
  - Understand what we do well and Reduce Risk
  - Privacy and Security focus
- Data Analytics
  - Understand Risk
  - Increase Audit Coverage
- Information Life Cycle
  - Risks around storing more data for longer
Evolving mission of Data

Business complexity, data quality issues, and increasing expectations have forced a shift in the role of Business Leaders & IT.

Support the business
In the past, we were focused on efficiency supporting the business with optimal operational performance.

Advance the business
Now we are also expected to advance the business – develop flexible capabilities, increase effectiveness, make data & information actionable to enable business growth.

Differentiate the business
There is an increasing expectation to drive innovation – adopting new capabilities to differentiate the business.

1. Risk Mitigation
   • Governance & Regulatory

2. Revenue Generation
   • Innovation & Differentiation

3. Cost Optimization/Reduction
   • Automation & Efficiency

4. Performance/Productivity Gains
   • “One Place, One Number”

Sustainability requires:
• Automating Governance
• Virtual vs. Physical Centralization of Data Management
Governing Big Data - Final Comment

• Big Data is a lasting business trend that will transform the way our clients think about data - and the way they do business.

• Big Data is increasingly defined by its ability to provide insights that drive innovation, changes to strategy, enhanced customer relationships and operational efficiencies.

• Ultimately, Big Data will drive new approaches to decision-making – and new ways of doing business.

• As a result, IA needs to adapt it’s risk management approach.
Thank you...

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Key Components

- Hadoop Distributed Filesystem for data storage - HDFS
- Data processing framework – MapReduce
Getting Started in Data Analytics

1. Identify a Big Data Champion
2. Find a Testing Ground
3. Formulate a Single Question to explore
4. Find the Answer
Getting Started in Data Quality

1. Identify a Business Data Issue
2. Execute Data Profiling & Analysis
3. Perform a Root Cause Analysis
4. Recommend Data Cleansing and Process Improvement Actions
5. Monitor and Follow Up
Getting Started in Data Governance

1. Create a Data Governance Framework
2. Build Questionnaire for an assessment of current maturity level
3. Perform the Maturity Assessment
4. Produce Maturity Assessment Scorecard
5. Provide a Roadmap for Improving Data Governance Maturity