



Achieving Business Agility through Infosys SAP Enterprise Data Management

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About Infosys

Infosys Technologies Ltd. (NASDAQ: INFY) defines, designs and delivers IT-enabled business solutions that help Global 2000 companies win in a flat world. These solutions focus on providing strategic differentiation and operational superiority to clients. Infosys creates these solutions for its clients by leveraging its domain and business expertise along with a complete range of services.

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Executive Summary

Enterprises today are faced with challenges of doing business in volatile environments. To survive in such a scenario, they need to be flexible to adapt to rapid changes. Adaptability to changes can be achieved if technology platforms provide **timely, adequate and accurate information to take quick decisions & precision execution.**

The good quality of information can only be provided by effective management of the Enterprise Data (master, transactional, analytic and unstructured data) – being referred to by various operational & analytic applications and processes running across the enterprise. In addition to enhancing enterprise agility, a well managed Enterprise Data reduces cost and contributes to revenue growth.

How does effective Enterprise Data Management (EDM) enhance business agility?

EDM is an integrative discipline for structuring, describing and governing information assets regardless of organizational and technological boundaries to improve operational efficiency, promote transparency and enable business insight.

Top 3 business outcomes delivered from Infosys EDM Framework:

1. Reduce Cost of Goods Sold through effective Spend Management
2. Reduce Sales & Marketing expenses via Customer Data Integration
3. Reduce time to market with respect to New Product Introduction

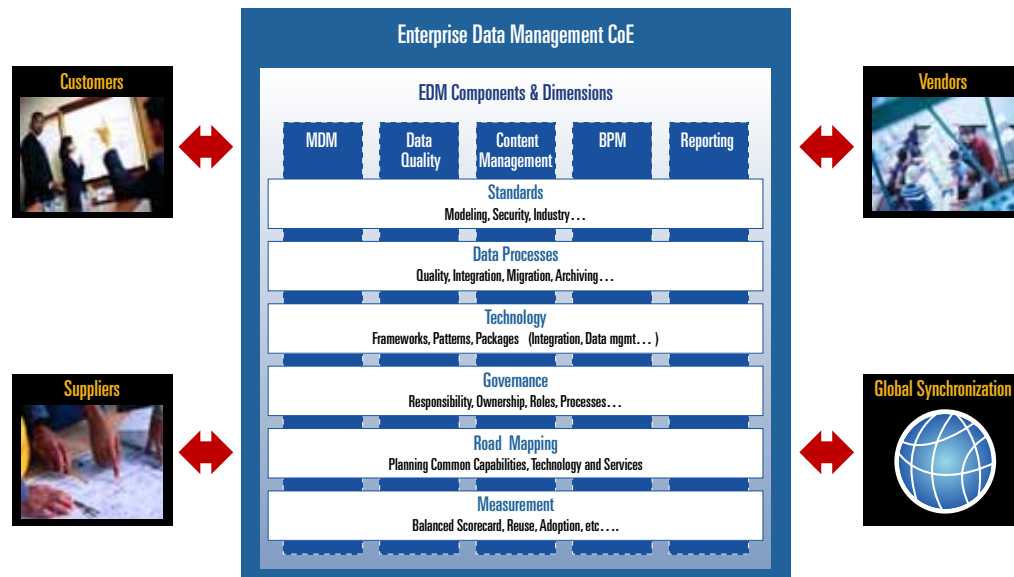
Large organizations invariably have heterogeneous systems built over a period of time. Enterprise Data discrepancies increase exponentially in such scenarios, as there are multiple entry points and integration across systems cause data inconsistencies multi-fold. These discrepancies are major bottleneck to business agility; for example – inconsistent information hindering innovation and growth, huge costs involved in periodic data cleansing & enrichment, longer lead time to cater to market needs, lack of a “single version of truth” across enterprise – to name a few. Streamlining of Enterprise Data helps in integrating business processes across the extended value chain. With accurate and consistent data using EDM, enterprises can become more customer-centric and can focus on higher-value activities – such as improving operational performance, pro-actively responding to the ever changing market requirements through product/process innovation, optimizing spend management, ensuring compliance etc.

Business Drivers for EDM

Business Needs	Challenges
Focused and targeted marketing in order to increase revenues by cross selling and up selling	Enterprise data today resides in multiple applications, resulting in inefficient decision making. For example: Customer master residing and managed in CRM, ERP and legacy systems
Pro-actively responding to the ever changing market requirements through product/process innovation - Reduction in time to "Go to Market" for new products	Delay in launch of new products due to inaccurate product information (No single view of product information)
Quicker adaptability to Globalization of Processes - as the enterprises plan organic & inorganic expansions	Enterprise Data discrepancies across heterogeneous IT systems - Discrepancies inflate as the systems are integrated with multiple entry points
Adherence to compliance, effective governance & control	No overarching governing body to manage enterprise data due to unclear & undefined roles and responsibilities
Optimizing IT related Expenditure and operational costs with reduced TCO	Manual reconciliations resulting in involvement of huge costs in periodic data cleansing & enrichment
Enabling Business decisions to be taken, along with their better execution across the organization	Inconsistent and inaccurate information required for Business Decisions
Ensuring Transparency across applications & processes for detailed and in-depth business insights	Multiple instances of Enterprise Data across applications & processes

Infosys EDM Framework for Business Agility

To meet the top 3 business outcomes, Infosys EDM Framework consists of **6 Dimensions** and **5 Components**



EDM Components

The 5 components that address EDM are Master Data Management, Meta Data & Data Quality, Content Management, Business Process Management and Reporting.

1. Master Data Management

Master Data is the core data of an enterprise that exists independently of specific business transactions and is referenced in business transactions. Maintaining master data is a challenge for large companies having IT systems that are used by diverse business functions and span across multiple countries. Organizations consistently face problem pertaining to quality, consistency classification, identification and reconciliation of master data. This results in incorrect answers in business intelligence, undermines customer relationship management efforts, and makes it impossible to consolidate spending across suppliers. These complications slow the launch of new products and expose the company to significant regulatory and government compliance risk.

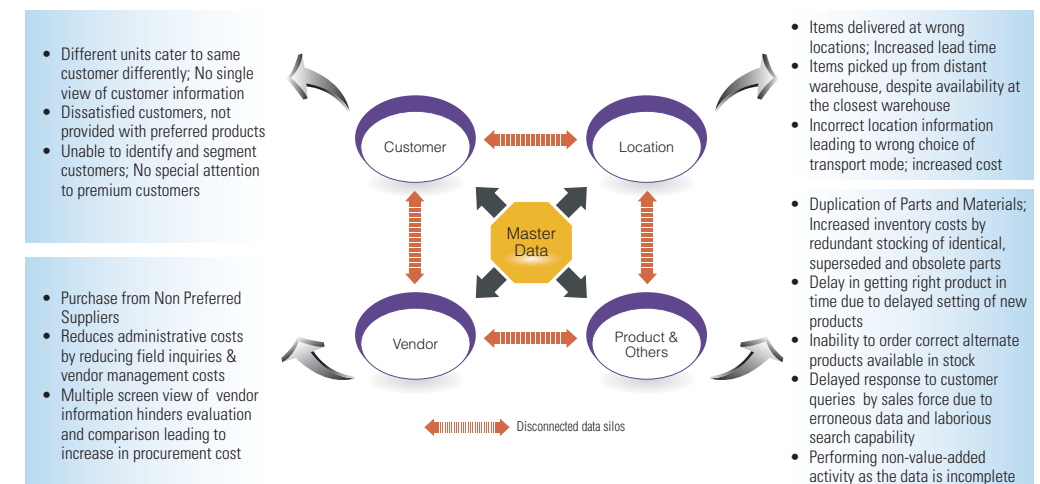
2. Data Quality

Data Quality is a key metric in EDM, it involves aspects of completeness, consistency and

duplicity of data. EDM framework builds a robust strategy involving technology, processes and governance to constantly improve data quality. Data quality is directly responsible for meeting the business outcomes. On periodic basis, many organizations spend a lot of money and time on data cleansing projects without addressing the source or root cause of poor data quality. The root to a lot of data Quality issues in the enterprise stems from a poor master data.

Infosys EDM framework is built on SAP Enrichment Adapter Framework by which you can enrich or cleanse data with external sources such as Dun & Bradstreet, Infosys BPO, PartsRiver, Trillium, Silver Creek etc. The EDM framework would ensure that data entered is authentic and cross checked with external validation systems such as Dun & Bradstreet in case of retailers or UNSPC or in case of Logistics Service Providers with VMRS etc. The framework is flexible to enable ideal state of single truth between your systems and your customers, vendors and suppliers. This provides an ideal platform for business agility through collaboration, by which your customers and your suppliers can refer to the single version of truth.

Some of Master Data Challenges across Master Data elements



3. Content Management

A lot of unstructured data lies in the system landscape which leads to people not finding the right information, related information not being connected, failure in collaboration and information exchange between people, and improper service to internal as well as external customers. There is an inconsistency in architecture, products, standards and support levels. The security of such an environment becomes a huge concern, and various issues related to administration and governance crop up.

In a heterogeneous landscape there is need for a unified and secure user experience which provides:

- Users to customize and personalize their content
- Access control to content
- Support the enrichment of structured content and process-oriented information flow
- Common space where teams/ consumers can collaborate to share knowledge and exchange ideas
- Rich user friendly experience accessible through Internet, intranet & mobiles.
- Interaction with your customers, vendors and suppliers seamlessly. They should be able to self register on the portal.

Content Management addresses all aspects of data such as images, product images, product catalogue etc. Collaborative Platform on E-Commerce provides:

- Customers with a unified and guided selling experience across your sales channels with a seamless selling experience integrating the value-add of the reseller network.
- Collaboration with channel asset involving customer will allow active participation of all stakeholders in all aspects of your customer's sales and marketing experience, from shopping and product configuration to order fulfillment and feedback

4. Business Process Management

Data is the output of the different activities carried out as the part of a business process. The data output of one process forms input for the next process.

BPM has two main aspects, namely:

- Management Practice
- Technology

BPM provides:

- Complete value chain automation for the business process and seamless flow of data from one process to another
- Integration of business rule management for data flow and automated decision making process
- Effective handling of people centric processes as well automated processes
- Monitoring of audit trail of each step and manual or automatic triggering of control mechanisms
- Support for achieving the objective of process centric management
- Process modeling for quick adaption of changes to business process
- Reuse of the application building blocks to reduce effort for technical deployment of a system based on the BPM, SOA fundamentals
- Cost advantage over a longer run

5. Reporting

Business Intelligence (BI) reporting provides an information delivery platform for managing, communicating and measuring the operational, tactical and strategic performance of the organization. Business users can get 360-degree view of information on the enterprise data.

Following are some of the capabilities of a business Intelligence solution:

- Query and reporting
- Online analytical processing (OLAP)
- Statistical analysis
- Data mining
- Forecasting
- Corporate Performance Management solutions

At the strategic level, BI provides performance metrics to the top management in the form of Key Performance Indicators (KPIs). These KPIs help the top management to assess the performance of the organization with

respect to the overall corporate goals and objectives. Business Intelligence platform provides scorecards that represent the Key Performance Indicators in a visual form.

At the tactical level, BI provides reports that analyze and compare business trends of a specific metric over a time period. Historical data available in the EDM platform would be analyzed by online analytical processing. Business users can use ad hoc reports for getting an insight into the trends. At the operational level, Business intelligence reports provide an insight into the day-to-day operations of an organization.

Following are 6 dimensions of EDMs

- 1. Standards** are aimed to ensure that the data first entered is good quality data. Involves identifying hierarchy and attribute standards, Data Modeling, Nomenclature, Mandatory fields, etc. Standards result in putting the ownership of data in the hands of creator or requester. Standards for Master and Transactional Data have to be mapped for accurate Reporting.
- 2. Data Processes** involves standard processes and procedures with respect to creation, update or deletion of data. Framework provides insight into processes across various business entities and locations and its monitoring. Data processes also involve Migration and Archiving of data across the IT landscape. Process includes mechanism to manage better quality of data across the organizations with strategy and roadmap.
- 3. Technology** is built using the standards, processes, business rules adhering to the governance for approval management and KPIs to track the quality of data.

EDM CoE should have technology or packages that are scalable and flexible to changing business environment. EDM CoE should have processes and governance enabled through IT Solution. Some of the capabilities and services expected are record mapping for integration, Data validations as per standards, maintaining repositories with huge data volumes, Workflow ensuring governance, Lookup for metadata ensuring speed & flexibility, good data

quality, Authoring of data and workflow for compliance etc.

- 4. Governance:** The EDM CoE should have a Cross-functional governance board with dedicated resources. The Governance board should be well trained and skilled on managing Enterprise Data Management. The Governance mechanism will have each stakeholder with clear roles, responsibilities and accountability.

In EDM organization structure, there are two main roles Business & Technical that play operational roles.

The responsibilities for Business Roles involve Data Quality / Metrics, Data Standards, Data Attributes, Definitions, Data SLAs, Data Risk Management / Compliance.

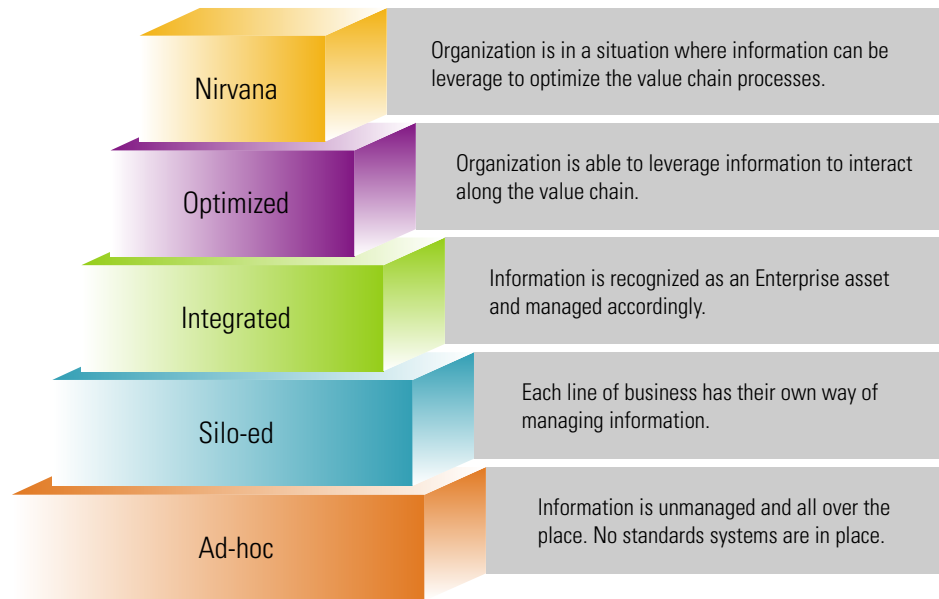
The responsibilities for Technical Roles revolve around Data and Content Lifecycle Mgmt, Data Modeling & Implementation, Information Services Design and Maintenance, etc.

The strategic and tactical role is played by the Governance Council which gives periodic inputs to EDM CoE; these inputs translate into objectives and evolution of the CoE.

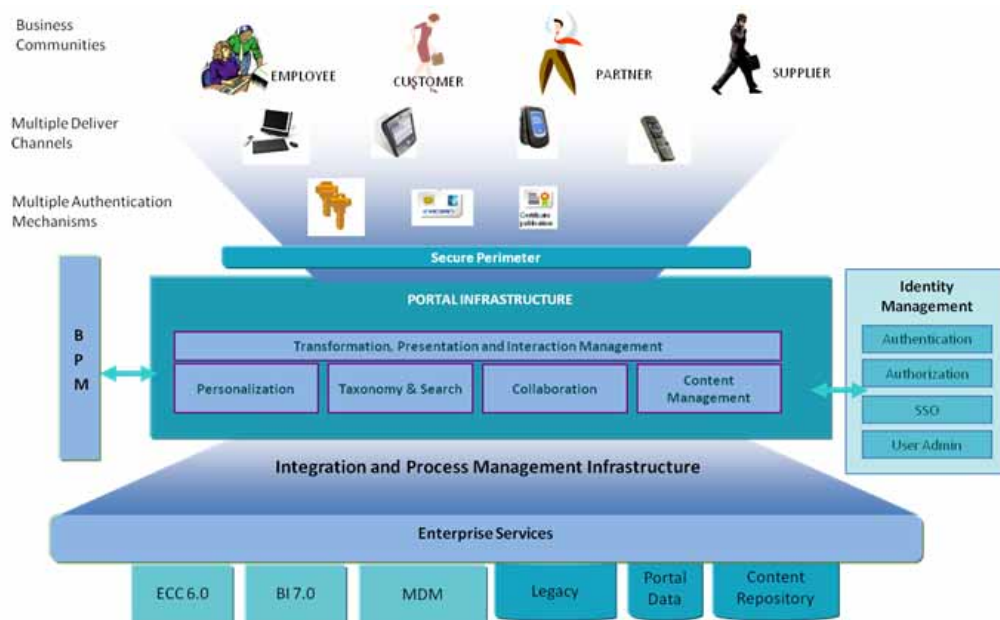
The Governance Council ensures control of EDM CoE and takes inputs with IT Strategic Planning, Heads of Line Businesses, Business Enabling Functions, etc on monitoring benefits, risks and building future roadmap.

- 5. Road Mapping:** Framework ensures that building a roadmap towards EDM maturity model. This starts with Analysis of evaluating the current status in the EDM Maturity model.
- 6. Measurement:** There should to be periodic measurement to track the maturity towards highest level of EDM. Measurement involves identifying and using various metrics in form of Scorecards, Dashboards etc. The measurement has to be directly identified with impacts on business and return on investment seen by EDM initiative.

The EDM maturity model



Role of SAP Architecture in Infosys EDM Framework



Architecture diagram

1. SAP Enterprise Portal

The NetWeaver portal offers a single point of access to SAP and non-SAP information sources, enterprise applications, information repositories, databases and services both in and outside the organization—all integrated into a single user experience. It provides tools to manage and analyze this knowledge, and to share and collaborate on the basis of it. With its role-based content, and personalization features, the portal enables users—from employees and customers to partners and suppliers—to focus exclusively on data relevant to daily decision-making processes.

NetWeaver Portal offers the following features in Content Management:

- Easy and self-explaining content creation
- Distributed manageability allowing departments or different office locations to manage their own content areas
- Publishing into different channels
- Access control for content
- Content versioning
- Workflows publishing
- Time-based publishing and un-publishing
- Compliance with the corporate design standard(s)
- Enrichment of structured content and process-oriented information flow

2. SAP BPM

SAP NetWeaver BPM is a flexible framework for designing and running user-centric collaborative processes and reusable workflows. This new capability allows the user to model and build processes through design environment and then deploy and maintain the composite business through the runtime environment. The tools include a process composer, which consists of an Eclipse-based modeling environment that employs business process modeling notation (BPMN), a graphical way to sketch out business processes. Accompanying this is a business rules management composer. This allows the user to model, deploy, test and implement rules embedded in the processes

3. SAP MDM

The key capabilities of SAP MDM include:

- Master Data Consolidation – Provides cleansing, de-duplication and data normalization, has provision for key-mapping as well.

- Master Data Harmonization – Automated synchronization of globally relevant Master Data information with new interactive distribution capabilities
- Central Master Data Management – Ongoing Master Data Quality along with one-stop data maintenance and administration.
- Integration with other tools (such as BI) for reporting – Accelerated realization, business analytics and consolidated reporting

The various features through which MDM streamlines Master Data of an enterprise include:

- Security and user administration
- Various quality check measures (validations, assignments, matching / merging, record comparison)
- Predefined object models (customer, product, employee and supplier)
- Complex data modeling elements (tables, hierarchies, families etc.)
- Print catalog customization and search
- Easy installation and deployment
- Multidimensional search
- Import Manager and Syndicator
- Workflow management

4. SAP BI / Business Objects

SAP BI enables to analyze data from SAP R3 applications and other external data sources such as databases and legacy systems. SAP strategy management (SSM) will provide Score Card and Dashboard capabilities. SAP BI / BO provide:

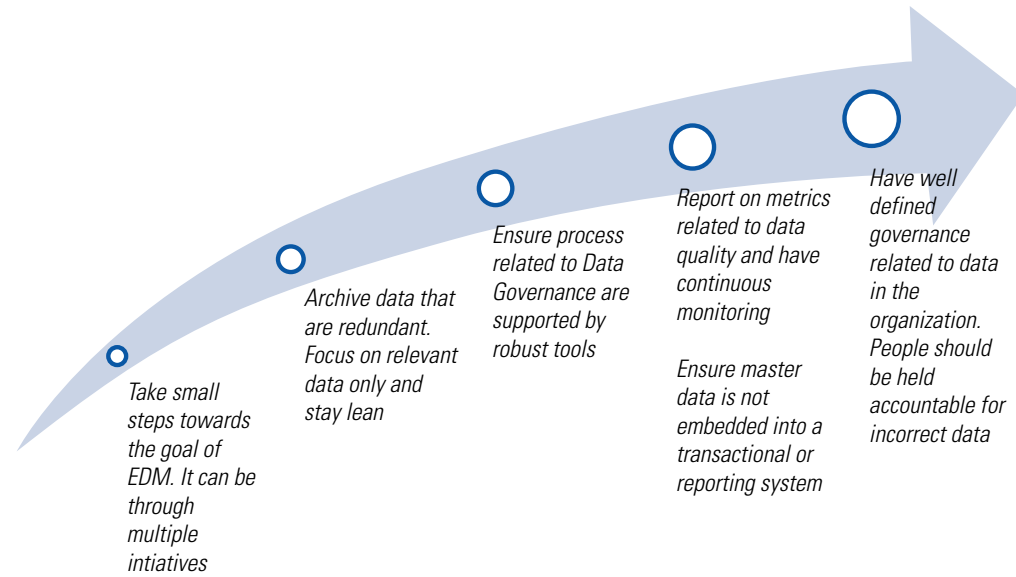
- Sharing reports over the Web, and SAP authentication
- Single Sign On between SAP system and Business Objects Enterprise.
- Enables on-demand report management , sharing & Real time Dash boarding
- SAP profiles can be imported into BO for enhanced personalization of reporting
- Ability of multilingual reporting

Key benefits

- Lower cost of ownership
- Quicker to implement
- Flexible integration with existing and new SAP environments
- Intuitive SAP end-user experience in Ad-hoc reporting and analysis

Best Practices

Based on our experiences, Infosys has collated some of the best practices Enterprises should follow to address EDM challenges:



Case Study 1

A global power and automation major has been using SAP for last 10 years. Recently they took up a big program to consolidate their SAP landscape to setup an identical and efficient SAP ecosystem with standardized and harmonized business processes; Data Migration was earmarked as one of the critical activity for the project success considering the wide range of active modules in existing SAP system and strict requirement to retain the change history for the active master data components.

Business Outcomes

Material master – Improved Quality of data by ~50% across business units; thus providing a consolidated reporting of production and procurement of materials.

In addition to improved quality of data, the ownership of the Material Master (being a shared Materials / Products across business units moved from different SAP system to single system) were implemented to control the creation / change of Master. It also helped to redefine and harmonize their internal / intercompany business processes of Sales / Production / procurement in a uniform and structured way.

Customer master – Improved Quality of data by ~38% across business units. This helped reduce errors in transactional processing. Example: reduction of incorrect invoices to customers. Harmonization also helped to have a common customer code across business units, reconciliation and easier handling of account receivables

Case Study 2

The client is a global leader in innovative automotive interiors, products and services that optimize energy usage. The client had underlying Enterprise Data Management concerns owing to large volume of unmanaged data. Their database comprised redundant, obsolete and duplicate records which added to data volume. Due to large volume of Enterprise Data, the business was not swift enough to respond to the ever increasing market requirements. The effect was visible in terms of longer response times, incorrect business reports/decisions, and unclear view of Customers, Vendors, Items and other business objects.

Through EDM initiatives cross-system data consistency was ensured across the interdependent data elements. The client can now manage their data more effectively – the redundant and duplicate data in the client legacy system was extracted, consolidated and harmonized across the extended value chain. The streamlining of data was ensured through various business logics, rules and strategies available in EDM.

Business Outcomes

EDM implementation resulted in an overall reduction of around 32% in the data volume. The reduced data volume has enabled them to have a clearer view of the Enterprise data, enhancing decisions making capabilities.

Reduction in data volume achieved per module/data elements is listed below:

Module/Data Elements	% Red. in Data Volume
Finance (Customer Credit Control, Bank Master, Commission Agent, Fixed Assets, etc.)	15%
Sales and Distribution (Customers, ship-to-party, bill-to-party, open sales orders, distribution Channels, etc.)	30%
Production Planning (work & cost center, routing, work scheduling, BOM, etc.)	43%
Material Management (Material Master, Vendor, storage locations, etc.)	12%
Project Systems (WBS Elements, etc.)	39%