

Data Warehouse Maturity Assessment Service

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Data Warehouse Maturity Assessment Service

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Executive Summary

This white paper describes the data warehouse maturity assessment service provided by Teradata Corporation. The paper includes information about two unnamed Teradata customers: a top-tier financial institution and a major healthcare provider who have used this service. These examples describe the customers' use of their data warehouses, the data warehouse maturity assessment process undertaken, and the recommendations that resulted from the assessment by Teradata.

What is a Data Warehouse Maturity Assessment?

The Teradata® Data Warehouse Maturity Assessment is used to define and measure the characteristics of the overall maturity of your data warehousing environment. Teradata has taken years of accumulated experience, in-depth industry expertise, and insight from award-winning Teradata customers to develop a best practices portfolio for aligning the maturity of your data warehouse to the sophistication of your business goals. We've distilled this experience down to a series of dimensions and maturity stages that allows you to harvest maximum value from your data warehouse.

The assessment's mission is clear:

- > Determine the required level of data warehouse maturity to meet your business needs.
- > Assess the current maturity of critical data warehousing characteristics.
- > Standardize your data warehousing processes to align with business goals.

Teradata can coordinate technology and processes that benefit your entire enterprise. The maturity assessment process can be conducted once but provides maximum value if undertaken on a recurring basis.

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Taking the First Step

A data warehouse maturity assessment from Teradata can help you take the initial steps toward aligning your analytical infrastructure with your organization’s business goals and objectives. Using our patent-pending Data Warehouse Maturity Methodology, we’ll show you how to use best-practice data warehouse and BI processes to better align your organization – all with a goal of providing better alignment for more consistent decision-making capabilities among business and technology users.

There’s more. Data warehouse maturity consulting services from Teradata help address the key issues that may be limiting the value of your data warehouse investment. So we can show you new and better ways to achieve economies of scale that can help you strengthen the return from your Business Intelligence (BI) portfolio.

Maturity Assessment and Overview

The data warehouse maturity assessment is conducted by experienced Teradata consultants who analyze multiple dimensions of data warehouse environments across different categories. These dimensions can support or prevent the evolution of a data warehouse – from a single-function or departmental data warehouse to an active, enterprise data warehouse (EDW). Both the business and IT functions drive, support, and are affected by these major dimensions. The maturity level for each dimension is evaluated and scored based on its ability to support the

Business Alignment <ul style="list-style-type: none"> > Analytic Vision/Executive Sponsorship > Measurement of ROI > Priorization/Funding of Initiatives > Data Governance/Stewardship > Service Level Agreements 	<ul style="list-style-type: none"> > Human Resource Management > Risk Management (+11 dimensions)
Architecture Practices <ul style="list-style-type: none"> > Architecture Governance > Data Mart Implementation > ODS Implementation > EAI Implementation 	Data Management <ul style="list-style-type: none"> > Metadata Management > Master Data Management > Data Quality (+12 dimensions) > Logical Data Modeling > Semantic Data Modeling > Physical Data Modeling > Security/Privacy
Performance/Systems Management <ul style="list-style-type: none"> > Workload Profile > Workload Management > Capacity Planning > Systems Management 	Data Acquisition/Integration <ul style="list-style-type: none"> > Integration Techniques > Integration Technology > Data Currency
BI/Decision Support (+16 dimensions) <ul style="list-style-type: none"> > Data Accessibility > Data Coverage > Analytic Capability 	Business Continuity (+9 dimensions) <ul style="list-style-type: none"> > Availability > Recoverability > Data Protection
Business Analytics <ul style="list-style-type: none"> > Customer Management (+26 dimensions) > Finance/Performance Management (+92 dimensions) > Supply Chain Management 	Communication/Training <ul style="list-style-type: none"> > Internal Marketing > Training > Support
	Program/Project Management <ul style="list-style-type: none"> > Project Management > Methodology > DW Agility > Organization

Figure 1. Assessment categories and related dimensions.

informational and analytical needs of your business strategy or the business focus of your organization.

As businesses like yours grow and evolve, their analytical needs drive more complex, sophisticated capabilities in data warehousing and BI. As the market, competition, and regulatory conditions change, companies evolve through a series of phases.

Various business units within an enterprise can evolve to different stages in business maturity at the same time. Business and technical subject matter experts can drive business units through the phases more quickly and efficiently. Business intelligence and data warehouses should be leveraged to support this evolution by aligning technology, processes, and resources to enable smarter, faster business decisions.

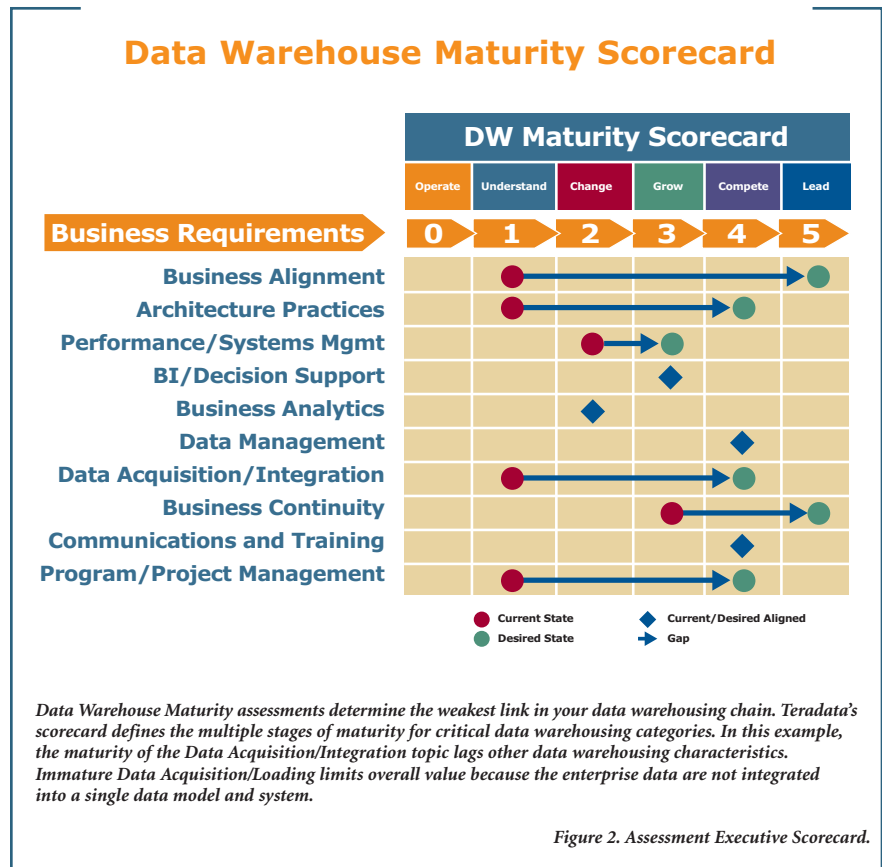
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Data Warehouse Maturity Areas of Analysis

Teradata consultants begin the data warehouse maturity assessment by conducting a series of facilitated discovery interviews with subject matter experts. The interviews use a framework consisting of categories and dimensions to guide the discussion and gather the information needed to perform the assessment. The various dimensions are prioritized (high, medium, low) to help your enterprise focus on the areas of largest payoff. See Figure 1 for a list of the data warehouse maturity assessment categories and related dimensions.

Each dimension is evaluated based on the analysis of data that are captured during a facilitated interview process with subject matter experts. The dimension is ranked on a scale of zero through five, with zero being the least mature, and five being the most mature. Based on the interviews, the consultants determine a current ranking and a desired ranking along each of the categories/dimensions. If a gap exists between the current and desired level of maturity, it represents an opportunity for the data warehouse to be more fully utilized and leveraged.

It is very important to note that while each dimension is evaluated independently, all dimensions must be considered as inter-related in ensuring the maximum benefits for data warehouse environments. One should not assume that a composite average across rating values is the way to



interpret the overall result. By focusing on the opportunities of high priority dimensions, other dimensions will be brought to a higher level of conformance based on this interdependence. For example, additional data subject areas may drive new privacy and security requirements, and the intended applications for such data might require more frequent data loading. Such a request will impact metadata requirements, and may require improved data quality monitoring.

Executive Scorecard Benefits

Consider the number of disparate reporting systems and data marts across your enterprise. The sophistication of these systems evolves as business requirements change; but the processes surrounding non-integrated systems mature at varying rates, causing tremendous disparity in the analytical sophistication of various organizations. For example, a finance department may update its data weekly, while marketing conducts monthly

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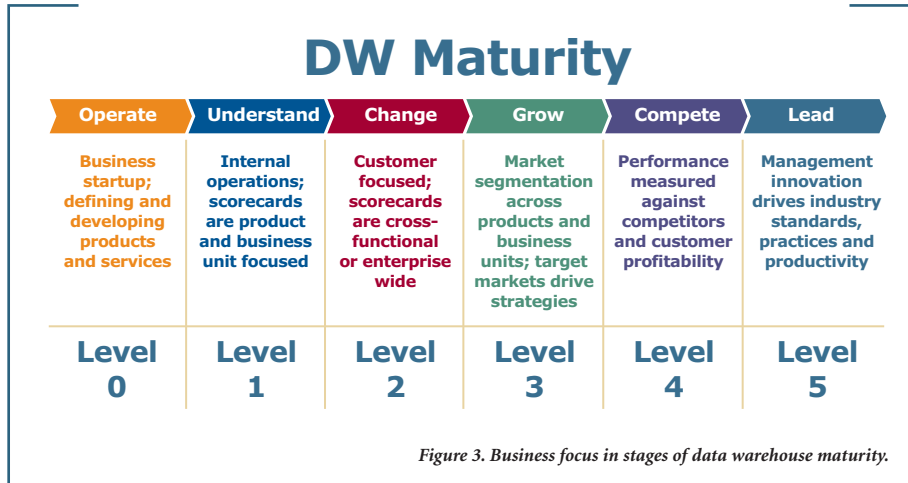


Figure 3. Business focus in stages of data warehouse maturity.

updates. The billing department may have stringent data quality processes, while inventory data are untrustworthy. It is difficult and costly to coordinate cross-departmental data generated by systems with inconsistent data quality, metadata, and data freshness; and it may lead to questionable results. Teradata consultants prepare an executive scorecard for each assessment to help cut through the clutter of multiple reports. Figure 2 shows a stylized version of the scorecard.

Business Focus and Data Warehouse Maturity

Figure 3 characterizes the business focus across the six major phases of corporate maturity. In Teradata’s maturity model, businesses evolve through six stages of data warehouse/BI maturity that correlate to the six stages of business evolution. As shown in Figure 3, these six stages (Operate, Understand, Change, Grow, Compete, Lead) are focused on different issues within the enterprise as shown in

the top set of boxes. The upper boxes in Figure 3 are an example of one customer’s evolution through the stages. Teradata consultants adapt the diagram and stages to each customer’s unique strategy and stages of evolution. The bottom set of boxes contains over-arching questions that parallel the stages. In its final form, the data warehouse maturity assessment determines where an enterprise resides along this spectrum – and it does so along many dimensions that constitute a framework for the service. The framework of topics is based on Teradata’s history of working with world-class companies to identify and improve data warehouse practices.

Through facilitated interviews with subject matter experts, Teradata provides an external view of the EDW across a broad range of capabilities that is critical to ensuring data warehousing success. The facilitated interviews typically involve from 20 to 40 people from management and staff – a key to success is cross-

functional participation from all levels. Senior management sponsorship of the assessment is needed to ensure appropriate levels of involvement.

Multiple Benefits from a Data Warehouse Maturity Assessment

Customers benefit from a data warehouse maturity assessment in a number of ways. The assessment:

- > Gauges overall data warehouse and BI management and technical practices.
- > Determines alignment of infrastructure and practices with the business strategy and key initiatives.
- > Provides an executive summary and roadmap to align data warehouse dimensions with business requirements.
- > Summarizes data warehouse areas that are barriers to value and the value obtained by removing the barriers.
- > Documents a detailed plan of the recommended next steps to close gaps between current and desired levels.
- > Recommends sequence of execution that will produce the greatest results in the shortest timeframe.
- > Helps the IT organization justify staffing and improves business/IT relationships.
- > Compares your data warehouse maturity to other customers within your industry or across all customers.

And these are just some of the benefits from a data warehouse maturity assessment.

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Data Warehouse Maturity Customer Success Stories

Major Healthcare Provider

Teradata worked with a major healthcare provider – a non-investor-owned mutual insurance company. The company operates through its divisions in multiple states and several subsidiaries to offer a variety of health and life insurance products and related services to employers and individuals.

The company's products include PPO, HMO, POS, traditional indemnity, and Medicare Supplemental health plans. The company also offers, through some employer-sponsored health plans, vision, dental, managed mental health, and prescription drug coverage. In addition, through subsidiaries, it offers life insurance products and an array of fixed annuities.

The company's vision is to provide health insurance and services to, and create access for, as many customers in their chosen markets as is practically possible. To create a financially sustainable and efficient, competitively scaled brand management business that consolidates national accounts' negotiating power, has a foundation in competitive information technology and superior operations, and maximizes local influence with suppliers and providers.

The mission of the organization is to promote accessible, cost-effective, and

quality healthcare for its customers. This is achieved by:

- > Increasing revenue through membership growth.
- > Optimizing medical costs.
- > Improving competitiveness of administrative costs.

The Opportunity

The use of the data warehouse to support analytic communities that build and leverage external data marts is a common, albeit inefficient, practice in many large organizations. Often the data warehouse provides the only centralized location where a cross-subject-oriented model exists with detailed history but lacks the ability

to deliver business information in a standard, consistent, usable form to meet the diverse needs of the user community. Data management plays a significant role in this because the data should be validated, cleansed, and transformed before being loaded into the EDW. This is not the case in many data warehouse environments where data are often scattered across multiple, and often redundant, file systems.

Over the course of our interview process, many users articulated that they didn't understand the value of the EDW and that there was no forum to capture success stories, communicate new capabilities, and share learning and best practices. And, although the majority of users believed BI tool training was adequate, they indicated a huge training gap on the data model.

The data warehouse maturity assessment recommendation for this major healthcare provider addressed two major EDW improvement opportunities:

- > A new architecture approach that provides a strategic application layer
- > An improved EDW governance and data management strategy

In addition to these two major opportunities, Teradata's analysis pointed out that users had little understanding of what data are in the EDW and how to locate, access, and analyze them. Communications were lacking across many of the EDW processes. More than any other technology solution, enterprise data warehousing demands that business and IT work together to achieve corporate objectives and ensure the right projects are done at the right time to drive optimum business value from the data warehouse investment.

The Enterprise Data Warehouse

The customer's EDW had evolved appreciably and had successfully achieved many of the key objectives set forth in its strategic design and goal state. Several years ago, the customer embarked on a strategy to evolve the EDW to a single data model consisting of three healthcare plans. Fourteen legacy data repositories had been integrated into the EDW foundation and two more legacy data warehouses were to be fully integrated in the near future. Although consistent naming conventions, definitions, and formats for entities and

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columns exist across the plans: the data are stored in three distinct instances. There are two types of columns in the model: certified columns and non-certified columns. Certified columns are reviewed and approved by the EDW organization to contain the same definitions and contain the appropriate data from plan to plan. Non-certified columns are neither reviewed nor approved by the EDW organization and may contain different information from plan to plan. There were no structures that provided for a consolidated enterprise view of the data. The EDW provided a rich source of detailed historical data across a broad range of subject areas. Even though there were three distinct sets of tables, one for each of the plans, the EDW provided a place where data from all three plans could be consolidated to support an enterprise reporting environment.

During the course of the Teradata assessment, we observed that many business units were extracting large amounts of data from the EDW into departmental data marts and application-specific repositories. The continued proliferation of data marts was primarily driven by the lack of currency, want of data control by the business, performance, and data quality issues not addressed in the processing of data from the many disparate source systems. Business users and analysts must create separate data structures to further cleanse, manipulate, reconcile, and aggregate the data to meet their specific business requirements. They had spent

significant effort in validating the data versus analysis and reporting, which resulted in a significant loss in productivity. And, because the users were often the first to detect data quality errors, there continued to be a loss of credibility and confidence in the EDW.

Beyond the loss of productivity and lack of confidence, data quality issues in the EDW were adversely impacting the ability to meet both the internal service levels for delivery of monthly data on the tenth day and external service levels for extracts to third-party partners and providers by the fifteenth work day of each month. Lack of discipline in process and procedures around data loading, cleansing and transformation, and data validation further exacerbated the problem. Examples include such things as changes made to source systems, which weren't communicated or carried through to the EDW, and prior data quality fixes, which weren't put into production causing users to develop monthly workarounds to validate and correct data in their downstream data marts and extract processes.

While the EDW was positioned as an analytic data warehouse, the exact location of where analytics occur had been moving away from the data warehouse to external environments. This was confirmed across many of the interviews that were conducted. In this way, the EDW was predominantly being used as a data or file server. This workload profile meant that data continued to be extracted from the

data warehouse to external data integration points and analysis environments. This resulted in significant redundancy in data storage and computing cycles. The continued trend toward this type of workload made it difficult to understand the value that the data warehouse was generating. Moving data to other platforms for analysis also raised a concern about the accuracy and timeliness of the information delivered to the business decision makers. With different business areas using diverse definitions of corporate metrics and measures, the decisions made were not consistent across the enterprise.

Finally, the single, most important deficiency cited by interviewees during our assessment was the lack of a business information access layer, which provided appropriate presentation for different business areas and plans. This structure in the architecture would have provided the foundation to implement business rules and metrics into a user access layer, which would be transparent, easily accessible from common BI tools and applications, and customized to meet their specific data standards, definitions, calculations, and format.

A New Architecture Approach

We observed that the EDW was an under-utilized asset. This is not to say that the EDW had idle processing cycles and disk capacity, but that our engagement with the client showed the EDW could be used differently to deliver more value. The true opportunity for the EDW was to better

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leverage the data foundation that had been established to drive an entirely new set of applications and analytics either within the data warehouse environment or directly dependent on the data warehouse environment – without having the need to export large volumes of data elsewhere. This is a primary goal of enterprise data warehousing. It should provide the ability to load data once, and then continue to reuse these data over and over again to support multiple applications. This layered application approach will also generate new sources of derived data that enrich the underlying data model and can be used in very innovative and creative ways for business benefit.

Our recommended approach advised the customer to store a subject area once in the EDW so that it can be leveraged across many applications. Once this happens, each new application becomes easier and easier to implement because much of the required data already exists. This continued reuse of data creates a network effect with different combinations of the same foundational data continuing to drive new insight. There are many benefits to be realized from implementing an architecture using this approach including that it:

- > Provides immediate relief for users who are burdened with transforming, validating, and aggregating data.
- > Improves resource efficiency and improves business user productivity.

- > Reduces architecture complexity, which adversely impacts both ITG support and users.
- > Reduces data movement.
- > Reduces data replication and improves data consistency and quality.
- > Requires fewer support staff and systems.
- > Enables integration across the Plans, BUs, and departments.
- > Improves users' ability to traverse the data model.
- > Enhances support of easy access via common BI tools and applications.
- > Expands business questions that can be answered by the EDW.
- > Provides source for consistent enterprise measures and metrics.
- > Provides appropriate information to appropriate people in the most usable format.
- > Increases usage of EDW and restores user confidence in the EDW.

A New Data Governance Strategy

A comprehensive data governance strategy needed to be developed to address the business and technology objectives of the EDW. More than any other technology solution, enterprise data warehousing demands that business users and IT work together to achieve corporate objectives, ensuring the right projects are done at the right time to drive optimum business value from the data warehouse investment. This particular customer recognized the

need for a formalized data governance strategy. While these were very positive steps in the evolution of institutionalizing data governance, a much more comprehensive strategy was needed to address the lack of governance standards, process, and principles surrounding data management.

Data governance can be defined as the process by which decisions are made around data investments in an enterprise and the management of those data as strategic corporate assets for competitive advantage. A good data governance framework typically answers questions about how decisions are made, who makes the decisions, who is held accountable, and how the results of decisions are measured and monitored. In organizations where the data governance process is ad hoc and informal, with a lack of consistency of data across the enterprise, accountability is weak, and there are no formal mechanisms to measure and monitor the outcomes of the decisions.

Data governance responsibilities form part of a broad framework of enterprise IT and enterprise governance and should be addressed like any other strategic agenda. For critically dependent data assets, governance should be effective, accountable, and driven by executive management. Executives' responsibilities generally relate to data asset alignment and use within all activities of the enterprise, the management of technology-related business risks, and the verification of the value delivered by the use of data assets across the enterprise.

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Summary Findings

Figure 4 shows the summary findings for the data warehouse maturity assessment for this customer. The assessment model is

primarily focused on the existence of processes and the capability to support each dimension's rated value (How), and not what RDBMS, tools, or other applica-

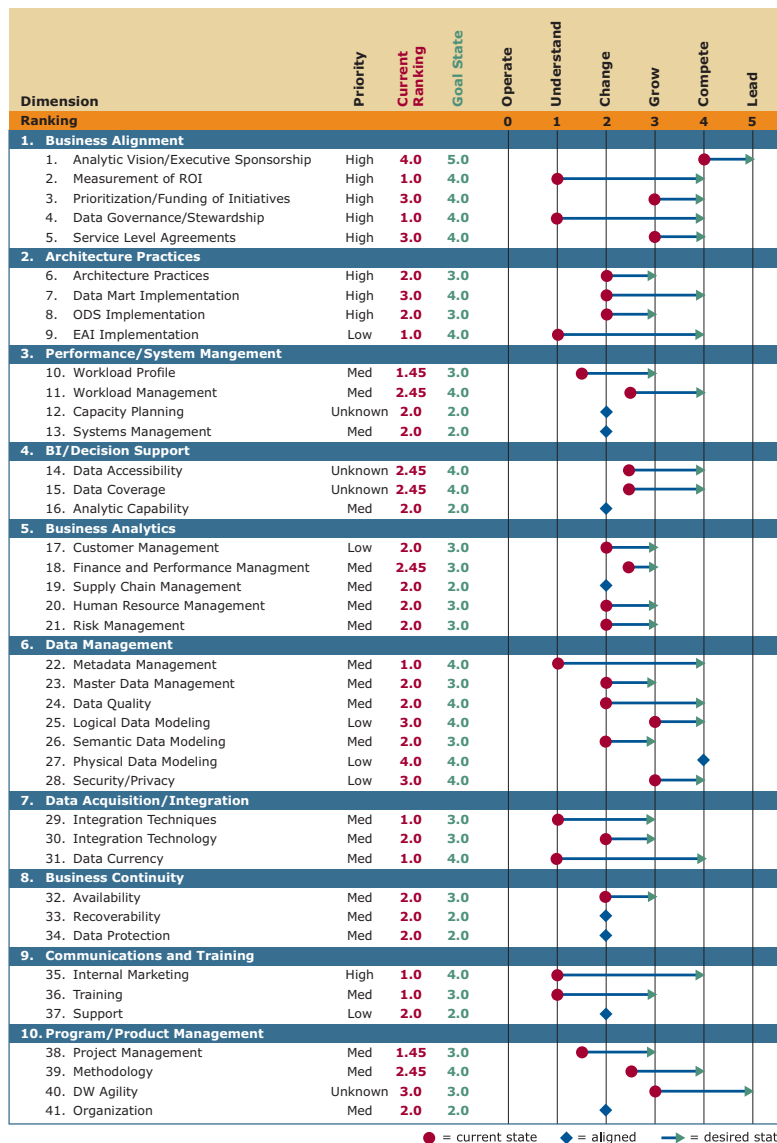
tions are being used (What). For example, Platform and Database Selection focuses on how such selections are made, not what the exact platform or BI tools are that are in production today.

Figure 4 shows the current ranking of each dimension as identified through the data warehouse maturity assessment process. The target rank for each dimension was identified as the level that the customer wanted to achieve and that Teradata felt could be reached within the next 12 to 18 months, assuming sufficient resources were focused on these areas.

High-Value Recommendations

Figure 5 describes some of the issues and recommendations that were unique to this client and that illustrated the value, scope, and depth of the Teradata services offer.

This particular EDW had evolved appreciably over the past six years achieving many of the key objectives set forth in its strategic design and goal state. The EDW is moving to consolidate and standardize disparate information to enable a solid foundation for reporting and decision support. The consolidation had combined 16 legacy data warehouses into a single data model that provides a rich source of detailed historical data across a broad range of subject areas. Because the data exist in a single location, all reporting and analytics are driven by the same data.



*These rankings reflect our findings based on our experience in assessing and optimizing data warehouse/BI environments. (Note that we do not compile an overall aggregate score across the categories in the rankings report.)

Figure 4. Summary of assessment finding for healthcare provider example.

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Even though the EDW had made progress in its evolution, it was not being leveraged effectively as a strategic asset to support the evolving needs of the business. The data warehouse maturity assessment uncovered those areas where the EDW was underperforming and highlighted the following:

Dimension Being Evaluated	Recommendations	
<p>EDW and BI Architecture Deficiencies</p>	<ul style="list-style-type: none"> > There is no enterprise view or single view of data – primary goals of any data warehouse environment. > The EDW is used as a data server versus an analytic environment of key business information driving discovery of new opportunities and innovative approaches. > The EDW doesn't deliver business information in a standard, consistent, usable form to meet the diverse reporting and analytic needs of the business. 	<ul style="list-style-type: none"> > Many business units are extracting large amounts of data from the EDW into departmental data marts and application-specific repositories. > This costly proliferation of data marts is driven by the lack of data availability and freshness, missing data, and data quality issues. > Significant expertise in SQL and knowledge of underlying data structures is required to navigate the base EDW model.
<p>Lack of Data Governance</p>	<ul style="list-style-type: none"> > There is a need for a comprehensive data governance strategy to address the gaps in business informational needs and technical capabilities. > There is a need for a Data Management Framework to address the processes, procedures, and technology to effectively manage data assets. > Data Quality issues are the #1 driver of data mart proliferation. > No formal service levels exist. > Business users are frequently the first to 	<ul style="list-style-type: none"> detect data errors resulting in continued loss of credibility in EDW. > Lack of discipline in monthly extract, transformation, and load processes results in data integrity issues, unavailability, and user corrective efforts. > Business users spend significant effort in cleansing, manipulating, and validating the data versus analyzing and reporting resulting in lost productivity. > Data quality issues are adversely impacting ability to meet SLAs.
<p>Lack of Communications on BI Availability and Usage</p>	<ul style="list-style-type: none"> > An EDW demands that business and IT work together to achieve corporate objectives and ensure the right projects are done at the right time to drive optimum business value from the data warehouse investment. > The EDW group is focused on implementation goals and not data usability. > There is no strategic communications plan or branding for EDW and BI. > Business users need more information and education vehicles to learn how to use the 	<ul style="list-style-type: none"> EDW effectively (tips and techniques, best practice examples). > Tool training is adequate, but there's lack of training on the data model – how to locate data, how to access it, and how to interpret it. > Users don't understand the EDW's value. > The EDW help desk communicates significant outages but little else. > Metadata is not complete and is stored in multiple places in multiple formats.

Figure 5. Findings and recommendations for healthcare provider example.

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Results

As a result of the data warehouse maturity assessment, the customer's architecture and data governance processes were analyzed, documented, and adjusted so that they would receive better value from their data warehouse.

Top-tier Financial Institution

Teradata Professional Services consultants conducted an assessment of the data warehouse for a top-tier financial institution. This customer had a highly diversified portfolio of financial products and was the market leader in innovation. Over the years, these strengths had been used to develop new and under-penetrated market segments.

The assessment was separated into two major areas:

- > Maturity Assessment – an analysis and rating of 29 dimensions across ten categories relevant to data warehousing
- > Technical Assessment – a technical assessment focused on the data warehouse technology

The Opportunity

The use of the data warehouse to support analytic communities that leverage BI and decision support tools is a common practice in many large organizations. Often, the data warehouse provides the only centralized location where a cross-subject-oriented model exists with deep data history. Data management plays a significant role in this as well because the

data are validated, cleansed, and transformed before being loaded into the warehouse. This is not the case in pure analytic environments where data are often scattered across multiple, and often redundant, file systems.

We observed that this customer's data warehouse was an underutilized asset. The true opportunity was to leverage the data foundation better that had been established to drive an entirely new set of applications and analytics either within the data warehouse environment or directly dependent on the data warehouse environment – without having the need to export large volumes of data elsewhere. This is a primary goal of data warehousing. It should provide the ability to load data once, and then enable reuse of these data to support multiple applications. This layered application approach will also generate new sources of derived data that enrich the underlying data model and can be used in very innovative and creative ways for business benefit.

Application opportunities must exist that can leverage existing data that reside in the data warehouse or support emerging applications that are being driven by regulations. Consider these examples:

- > Use drill-through capabilities in OLAP reporting tools to perform iterative analysis against the data warehouse to support the testing of ad-hoc marketing hypotheses. In this way, the system is being leveraged to perform

analytics from an easy-to-use graphical user interface.

- > Include database-specific applications that run on a regular basis to perform profitability scoring, segmentation analysis, and campaign response modeling. The results of such applications generate derived data that enrich the data content in the warehouse, as well as potentially providing insight and knowledge to operational systems and customer contact applications.
- > Introduce dashboard reporting applications that generate state of the business metrics and balanced scorecards. Both current and historical views can be delivered to support trending analysis across all relevant metrics.
- > Consider emerging compliance focused applications that are driven by regulation that are rooted in detailed data requirements (e.g., Basel II, Sarbanes-Oxley, and AML/U.S. Patriot Act).
- > Allow more power users to have CREATE TABLE authority so that they can bring their own data into the data warehouse and leverage performance to support their accelerated analysis activities.

In each case, the goal is to find innovative ways to leverage the current portfolio of data in the data warehouse, as well as additional subject areas to support business improvement opportunities. Along with this approach comes direct

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cost avoidance in that applications can be supported from the data warehouse, instead of building new infrastructure and duplicating high volumes of data across multiple system environments.

The Data Warehouse

This customer's data warehouse was not an enterprise-wide data warehouse. The data warehouse had traditionally been positioned as an analytic data warehouse. It provided a rich source of detailed historical data across a broad range of subject areas. The primary users of this resource were personnel in decision and risk management who provided cross-organizational analytic support across various lines of business. From a data management perspective, the collective portfolio of data stored in the data warehouse, along with the operational processes that maintain these data, provided a solid data foundation to support decision support requirements. Maturity levels related to the historical data available in the data warehouse and the ongoing rigor around managing these data should not be discounted.

Beyond data management, there was a significant amount of effort focused on processes across multiple organizations. In one organization, clear functions existed to support communication, training, compliance and entitlement review, user support, user consulting, and metadata content/management. Information about the data warehouse was available through

a number of channels, including internal web portals. Another organization supported a formal requirements process for initiating and tracking projects. Finally, there were formal change management programs in place for software change control and submission of jobs that require access to sensitive data.

However, while the data warehouse was positioned as an analytic data warehouse, the exact location of where analytics occur had been moving away from the data warehouse to external environments. This was confirmed through many of the interviews that were conducted. In this way, the data warehouse was predominantly used as a data or file server. This workload profile meant that data continued to be extracted from the data warehouse to external data integration points and analysis environments. Observations as to the cause of this were:

- > User organizations were heavy users of SAS®, and often when people were hired into the decision management and risk management organizations, they were already trained or experienced in SAS. This created a cultural shift in how users interface with the data warehouse.
- > Performance issues, availability of the data warehouse, and job throughput limitations had influenced the behavior of how users interacted with the data warehouse. Instead of using the data warehouse platform to drive high performing analytics into the database,

it was easier to pull data out into a local environment where they had more control.

- > There were limited ways for users to interact with the data warehouse, with the predominant method being connecting through a UNIX® application node. Current use of OLAP tools was limited to a set of cubes, with no drill-through reporting being done against the core data warehouse. Also, relatively few users (estimated to be 10% of all users) actually had CREATE TABLE authority within the data warehouse production environment.
- > The data warehouse didn't have all of the data that analysts needed to support their modeling requirements. Therefore, the data warehouse provided just one source of data that was required, and access to other sources, including mainframe files, was often required.
- > The data perspective that the data warehouse had didn't meet the needs of all end users. For example, a month-end view of data did not exist, so this view had to be generated outside of the data warehouse.

The continued trend toward this type of workload would make it difficult to understand the value that the data warehouse is generating. Repeated decisions to fund analytic platforms and move large volumes of data from the data warehouse

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will keep the data warehouse from growing and evolving. As data are propagated to these platforms and combined with external data, key business information will not be leveraged by users across the enterprise. This is not to suggest that the data warehouse provides no value, it's the measurement of that value that becomes challenging. Once the data leave the centralized environment and are propagated elsewhere, additional costs associated with data redundancy, labor support, and decentralized decision environments increase. Finally, concerns about privacy and security of sensitive data escalate because of the fact that data are stored in many locations.

Summary Findings

Figure 6 shows the summary findings for the assessment of this top-tier financial institution. This chart shows the current ranking of each dimension as identified through the data warehouse maturity assessment process. The target rank for each dimension was identified as the level that Teradata felt that the bank could reach within the next 12 to 18 months, if sufficient resources were focused on these areas.

High-Value Recommendations

Figure 7 describes some of the issues and recommendations that were unique to the client and that illustrated the value, scope, and depth of Teradata's service offer.

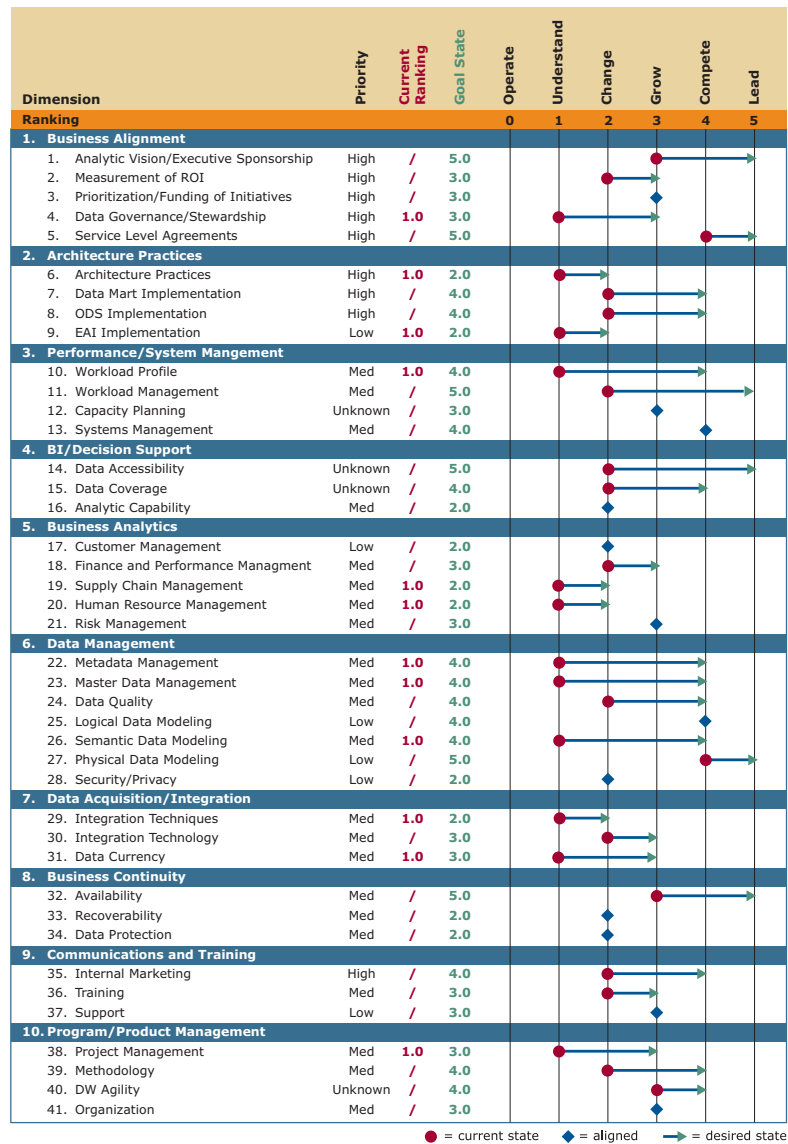


Figure 6. Summary of assessment finding for top-tier financial institution example.

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Even though the EDW had made progress in its evolution, it was not being leveraged effectively as a strategic asset to support the evolving needs of business. The data warehouse maturity assessment uncovered the areas where the EDW is under-performing and highlighted the following:

Dimension Being Evaluated	Recommendations	
Service Level Agreements	<ul style="list-style-type: none"> > Service levels exist in various areas including data loads/ETL, continuity of business (COB), and planned system availability. > No service levels exist relative to query performance. 	<ul style="list-style-type: none"> > Monitoring of service levels does exist and requires cross-area support. > User community generally not aware of service levels that exist. > Unclear as to actions taken on service levels that are not met.
Data Availability	<ul style="list-style-type: none"> > Data are available to all users during normal system availability. > Recent system availability reported at 98% (not validated) during planned system uptime periods, negative impacts during recent upgrades. 	<ul style="list-style-type: none"> > Data availability is impacted by unplanned system downtime due to system failures, no high availability features have been implemented.
BI Architecture	<ul style="list-style-type: none"> > Physical model reported as de-normalized. > Workload profile is ad hoc in nature with steady shift towards data extract related 	<ul style="list-style-type: none"> jobs and analytics occurring outside of the data warehouse.
Communication about Availability and use of BI	<ul style="list-style-type: none"> > Internal web portals are used to communicate FAQs and news. > E-mail used to communicate directly to users. 	<ul style="list-style-type: none"> > Information about the data warehouse is pushed out to end users, with no formal methods for personal delivery of content.
Measurement of ROI	<ul style="list-style-type: none"> > Generally, no ROI measurement or framework exists to measure data warehouse benefits. 	<ul style="list-style-type: none"> > There have been attempts to measure ROI, but positive business case results were met with doubt.
Data Loading and Freshness	<ul style="list-style-type: none"> > Data are generally loaded daily, weekly, and monthly. > Daily loads occur during evening cycle, often impacted by other system workload including queue jobs, forces missed load objectives. 	<ul style="list-style-type: none"> > Weekly loads occur during scheduled weekend unavailability. Monthly loads on a scheduled basis. > No capability to apply system resource priority to data loading processes. > Data freshness directly dependent on frequency of source input.
Data Quality Monitoring and Resolution	<ul style="list-style-type: none"> > Post load customized process (Generic Analyzer) checks key words and associated metrics. > Audit data logged to database tables. > Users have developed own processes for monitoring data quality. 	<ul style="list-style-type: none"> > Quality issues logged into Remedy system, tracked weekly. > Data correction includes data resends and one-off correction processes.

Figure 7. Findings and recommendations for top-tier financial institution example.

Data Warehouse Maturity Assessment Service

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Results

As a result of the data warehouse maturity assessment, this customer's architecture and technology were analyzed, documented, and adjusted to deliver better value from their data warehouse.

Summary

In each of these two customer examples, we've seen the data warehouse maturity assessment process, technology, and skills employed in unique ways to deliver additional value on the customers' data warehouse investments. The assessments identified customer priorities and goals for their data warehouse and then assessed the overall conformance to the major dimensions to yield a gap analysis. The findings from each data warehouse maturity assessment included a prioritized list of recommended steps to take to close the gaps. These recommendations were prepared by skilled Teradata consultants who were familiar with the customer's needs and the trends in their industry.

Each of the recommendations had a business and economic impact that could be determined, altered, and measured.

By following the prioritized steps, the customers could improve value to their organizations by cutting costs, improving alignment, improving efficiencies, and more.

Teradata's highly skilled consultants were able to use their knowledge to conduct and deliver the assessments quickly – just a few weeks were needed to complete each assessment process. All of this meant quicker time-to-value and time-to-market scenarios for these customers.

Getting Started is Easy

A Data Warehouse Maturity Assessment from Teradata will clearly define and measure the characteristics that define the overall maturity of your data warehousing environment. You can use these maturity ratings to provide baseline assessments of your analytical capabilities, as well as to make specific recommendations for improving efficiencies.

You can also combine infrastructure analysis with the knowledge of process-oriented dimensions, such as funding prioritization or architectural governance, to achieve a specific plan of data warehousing improvement recommendations.

The Teradata Difference

Why choose Teradata Corporation? Teradata has a blend of technology and experience unavailable from any other source. We've been providing innovative, best-in-class business solutions and technologies for some of the world's most successful data warehouses for 30 years. And we have long supported integrated, centralized data warehouses in some of the most demanding environments.

Teradata also has the power to help you proactively manage your business and drive growth. Our solutions help provide analysis to expedite fast, accurate, and consistent decision making across your entire enterprise. Teradata, the leader in data warehousing and analytic technologies, provides powerful, affordable, and easy-to-deploy solutions for companies of all sizes. Through technology, innovation, and people, Teradata gives customers a smarter enterprise to compete in their markets. To find out more about how our Data Warehouse Maturity consulting services can help you align analytical capabilities across your organization, contact your local Teradata representative or visit Teradata.com.

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