

## Bridging Transformation Enterprise - Wide



CITIE  
Cambridge Technology Enterprises

## Unlocking Enterprise Data

**Although most companies maintain vast databases of customer, supplier and internal information, very little of this information is ever utilized. Revenue and market position can be greatly improved by unlocking enterprise data.**

Enterprises often find it difficult to develop and deploy strategic solutions that improve bottom line results. With Cambridge Technology Enterprises as a partner, Fortune 1000 companies are devising solutions that align business strategies and advanced technologies with corporate goals and market opportunities.

Information is power, and in the economics of the marketplace, power translates directly into increased profits. When data is unlocked and converted to information, this potential profit growth can be made into a reality.

Indeed, a major locomotive company that pursued this endeavor succeeded in lowering downtime due to repairs, saving \$4000 per hour. Similarly, a large value-added reseller succeeded in turning widely varying and often negative margins into consistent profits at contract-mandated levels.

### **Business Innovation Services,**

Cambridge Technology Enterprises

## Unlocking Enterprise Data

**Data vs Information**

Despite common misconceptions, data is not information. Companies routinely collect vast quantities of data—times of orders, customer addresses and quantity ordered, shipment times and carriers, sourcing information, etc.—yet this data is often inaccessibly locked away in an outdated or disorganized enterprise system.

Typically, corporate data and databases suffer from three major flaws—lack of standardization, lack of a central data repository, and insufficient technical knowledge of data access. Over time, these problems are greatly exacerbated.

**Lack of Standardization**

Databases are an evolving technology. First introduced<sup>1</sup> in the 1960s on mainframe computers, their ranks have grown considerably in the past forty years, complicating data sharing and hindering interoperability.

In most of today's organizations, the actual data model utilized by various managers and executives differ greatly. As companies are dynamic structures, constantly changing with time and circumstances, individuals within them will often create their own databases to serve as short-term solutions awaiting IT intervention for a longer-term implementation. As such, they are rarely standardized with respect to data fields and codes, preventing any future combination or cross-utilization by other departments.

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**No Central Data Repository**

IT investments are often very costly; consequently most corporations tend to possess several database and DBMS types, purchased or "homegrown" piecemeal over many years. Adding to the maze of data, many managers keep their own databases for various technical and expeditious reasons both within and without their control.

As inter-database communication is often impossible, the unfortunate sight of employees racing back and forth between mainframe and PC, and between PCs to generate executive-level reports is all too common in far too many organizations.

**Insufficient Knowledge**

Since non-standardization of database technologies cause many organizations to add multiple DBMS and databases over time, reports are often generated from databases of an unknown location. This leads to extensive problems when data needs to be updated or corrected, as countless person-hours can be wasted in a possibly futile attempt to locate the data. Indeed, in one instance involving a large utility company, the calculations that form the basis of a billing program developed over thirty years was lost, leading to complete confusion on the part of IT and business managers when updates were required.

**Best Practices of Data Access**

Despite these problems, unlocking enterprise data is still an achievable goal for any company that desires it. Common meta languages exist that can unify all of these diverse sources. Once made accessible, they can be utilized by various applications and technologies.

**What is a Meta-Language?**

Meta languages are often also called mark up languages. They are used to literally "mark-up," or describe the data that they are referencing. The first of these languages was SGML, developed in the 1980s, though perhaps the best known is HTML, or hypertext mark-up language, a subset of SGML, which is widely used in web pages.

**XML**

Extensible Mark-up Language, or XML, is the most recent and most robust of these languages. It is formatted similarly to the other mark-up languages, though it is much more flexible than any of them. Without becoming too enmeshed in the technicality of the issue, suffice it to say that whereas HTML is very rigidly structured, XML is capable of interacting with a wide range of data formats, which makes it ideal for unlocking enterprise data.

**Problems Solved**

While many enterprise systems suffer from a lack of data standardization, it is possible through the use of XML to let them "talk" to one another through the same language.

With this technology, the old legacy database and the modern relational one can be queried for data through the same end-user application.

Indeed, the ability to transfer data between varying databases and the user with the same language solves the second challenge faced by many corporations—the lack of a central data repository. While data is still physically separated on different machines, the end-user of the extracted information receives a unified view of the data. This gives more than just a clean image, though—occasions do exist when it is undesirable to allow the user to know the technology behind the data they are accessing (such as with an online customer, for example). The use of XML prevents this.

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**Limitations**

To be fair, however, XML cannot solve all of the enterprise data problems. The third aforementioned shortfall, insufficient technical knowledge of the database structure and location, is a much more challenging problem. While information can be exchanged between the databases and the users, physically locating and updating or migrating data to more current systems must still be done manually, requiring a commitment on the part of management and IT. However, the rewards from this endeavor are great, most notably in their preventative qualities to avoid data and systemic health degradation, and it should be undertaken to fully unlock enterprise data.

**Case Studies**

Every organization, no matter how modernized or how focused on traditional technologies, can benefit from unlocking their enterprise data. Examine, for instance, the case of a railroad company. Trains have been running effectively for well over a century, so surely little advantage can be found in tapping enterprise data. Similarly, a value-added reseller that is already one of the top three in its class would, of course, be hard pressed to find any worthiness in unlocking and unifying its data. Yet both of these organizations found extensive profit gains when they decided to pursue such a strategy with Cambridge Technology Enterprises, Inc.

**Problem: Non-networked onboard train systems lead to excessive maintenance costs**

The engine cockpit of a locomotive possesses quite possibly the most systemically complex computers of any land vehicle. These systems run diagnostics on the fuel supply, internal heat, engine efficiency, as well as a host of other functions.

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<sup>1</sup> Excluding magnetic tape and punch card databases from the 1950s

## Unlocking Enterprise Data

Currently, one of the largest railroad companies relies upon the train engineer to read these various systems and make spot decisions about refueling, maintenance, etc. Unfortunately, most of these individuals either do not have the requisite expertise to make well-informed and timely decisions about these processes, or are not fully invested in the maintenance and health of their engine. This leads to excessive repair downtime, calculated at a \$4000 loss for every hour.

### Remote diagnostics has the potential to save millions annually

Cambridge Technology Enterprises (CTE) set up a systems solution for this company that utilized CDPD technology, as well as other wireless connectors, to allow their trains' on-board computer systems to report directly in real-time to the central computer at the main control center. This functionality removes decision-making responsibility for maintenance and other actions from the engineers and places it into the control of the better-trained and equipped technical crews at the main base, thereby decreasing the amount of downtime for each locomotive due to the poor judgments of relatively unskilled workers.

One particular level of functionality that was developed involved the refueling process. The on-board monitoring system now reports levels back to the main control system, which in turn draws upon pricing data and funnels it into a real-time pricing engine to determine the most appropriate place to stop and refill. This engine calculates the daily cost of refueling at each stop along a line, taking into account the projected level of remaining fuel when the train reaches those stops, as well as the length of time that the train would be able to continue to run without stopping. This entire system is based upon the ability of the organization to utilize their unlocked enterprise data. What was previously maintained as local data on each engine has been transformed into networked information that is usable by the appropriate people at the proper times, thereby lowering costs and improving performance.

### Problem: Unreliable data for pricing and costing leads to negative margins

A certain company is one of the three leading IT resellers for the US Government (and many state and municipal ones). A nearly \$1 billion company, it has dealings with hundreds of suppliers/partners and even more customers.

These suppliers do not publish their price list data in one standardized format, some instead choosing to list it online, while others prefer to EDI the data, for example.

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This data would then become the sole property of the sales representative that gathered it, placed in a local database or file cabinet. Additionally, as a product provider for the government, it is under contract to resell goods at specific prices and margins. Without a centralized data repository on costs, it was forced to simply guess on the proper prices to quote to their customers on many occasions. When data did exist, nothing could guarantee that it was either accurate or current.

These factors combined to create extreme situations in which the profit margin on a given sell could range from negative 20% (which is a horrible loss) up to positive 88% (which is illegal as a government contractor).

### Pricing engine increases profits dramatically

CTE developed a system to address this problem that centralized the data on prices, which was then fed into a pricing engine that would accurately determine the proper prices at which to sell. When a sales rep receives a new cost from a manufacturer, he or she enters it into the centralized pricing engine, which then checks the data for currency and either updates the database or notifies the rep of the correct cost to use.

During a sale, the system compares costs across manufacturers and vendors, applying weights for reliability and other extra-monetary factors, to determine the appropriate vendor to select. The pricing engine then factors the appropriate margin into its calculations to determine the correct price to quote to the customer.

This level of functionality removes any uncertainty and guesswork from the pricing method, replacing it with systemic analysis from a centralized, accurate data source. As in the locomotive example, what was once disparately located data becomes combined and made available to the appropriate users at need.

### Conclusion

Information is power, and in the economics of the marketplace, power translates directly into increased profits. When data is unlocked and converted to information, this potential profit growth can be made into a reality.

The potential for unlocked data is nearly endless. In addition to those uses listed in the previous section, analyzing this data and utilizing the information gleaned from it can open up many new market segments and possibilities, limited only by the imagination of each company.

Yet, not all IT problems can be simultaneously resolved, as costs, chaos, and simple logistics are often too daunting. It is important for any company desiring to unlock their enterprise data or undertake any other technological endeavor to determine their greatest value-add areas and follow through on those first.

Once those technologies are implemented, further change should be directed not by leadership or managers, but rather by those end users who interact with the systems every day.