BUSINESS INTELLIGENCE STRATEGY AT CANADIAN TIRE

"The Retail group has just sent me another 'quick win' request," stated Michael Eubanks, director of marketing information technology (IT), as he walked into his meeting with Andy Wnek, chief information officer (CIO) of Canadian Tire Corporation (CTC). "That's the second one this week, and I have heard whispers about more. Dealing with these quick wins is going to make it difficult to redevelop the business intelligence (BI) infrastructure. That's where the real return on investment (ROI) is."

Over the last year, the IT group at CTC had promoted a strategic initiative to deliver real business value from business intelligence (BI) over the next three years. A massive change effort involving infrastructure, organizational structure and business processes across most of the business would be required. Nevertheless, "the plane was still in flight" and current needs could not be completely ignored. As the door swung closed on their meeting, Wnek and Eubanks sat down to discuss how they might keep the plane in the air while rebuilding the engines.

CANADIAN TIRE CORPORATION

In 1922, John and Alfred Billes, two brothers, opened a garage and auto parts store in Toronto, Canada. By 2003, their enterprise had grown into CTC, a network of businesses including retail, financial services and petroleum operations. More than

45,000 individuals worked at CTC operations across Canada in more than 1,000 stores and gas bars. CTC businesses were divided into five main groups:

1. Canadian Tire Retail (CTR) was one of the best-known Canadian retailers, with 390 associate dealers owning and operating 430 stores.[1] Each store was effectively three specialty stores under one roof: automotive, sports and leisure, and home products. An associate dealer was the owner/managers of a CTR store. As a group, they were important within CTR as it was through their investment and community involvement that CTR had grown throughout its history. This structure also made CTR an unconventional 'retailer' in the retail industry since the associate dealers were CTR's main customers.
2. Canadian Tire Financial Services (CTFS) was the financial services arm of CTC and was primarily responsible for managing the Canadian Tire Options MasterCard program with over two million cardholders. Additionally, CTFS managed the auto club, offered a variety of insurance and warranty products to more than six million customers and provided integrated support to CTC stores, automotive service centres and online and telephone shopping businesses. Located in Welland, Ontario and Burlington, Ontario, CTFS employed more than 1,300 people.
3. Canadian Tire Petroleum (CTP) consisted of more than 200 gas bars, 20 Simonize car washes and 14 Pit Stop locations. Considered an important, integrated component of the overall strategy, CTP partnered with CTR to give customers discounts on store merchandise through the popular Canadian Tire Money loyalty program.
4. PartSource was a 30-store chain of specialized automotive parts that catered to avid home mechanics and professionals.
5. Mark's Work Wearhouse was acquired in early 2002 and was a large retailer of casual and work wear for men and women at over 300 locations across Canada (known as L'Equipier in Quebec).

Corporately, CTC had completed a strategic plan in late 2002 that stated a clear corporate goal "to become a top quartile performer in our market sector as measured by total return to shareholders." This strategic goal was to be accomplished through four strategic imperatives:

1. Strengthen and accelerate growth and performance in CTR and the associate dealer network (ADN).
2. Pursue unexploited growth and profit opportunities in existing business.
3. Explore new business growth opportunities.
4. Enhance financial flexibility through capital and cost productivity.

This new CTC strategic plan guided the development of a CTC IT strategy in February 2003, an effort led by senior vice-president and CIO Wnek, to complete

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[1]*http://www2.canadiantire.ca/CTenglish/h_ourstory.html, accessed: August 22, 2003.*

the first IT strategy document in several years. As CIO, Wnek was responsible for overseeing the information systems (IS) of the entire enterprise, but not within the associate dealers' stores. The BI initiative, while important to the organization overall, was primarily associated with CTR, and it represented one of many IS initiatives competing for CTC support and funding based on the new 2003 IT Strategy 2003. Exhibit 1 provides an organizational chart of the senior management of CTC and CTR.

INFORMATION SYSTEMS AT CTC AND THE NEW IT STRATEGY FOR 2003 TO 2005

The Web of businesses comprising CTC was accompanied by a highly complex technical architecture (see Exhibit 2 for an overview of their organization). A recent enterprise technology review revealed a multitude of hardware, software, operating systems, network services, development tools and applications being utilized across the business.

For example, CTR ran IBM AS/400 systems at the store level with point-of-sale (POS) systems and servers that networked to IBM mainframe systems at the CTR data centre. These systems were funded 50 per cent by CTR and were supported by the retail systems group at CTC. The systems at Mark's Work Wearhouse still remained entirely separate from the rest of the CTC infrastructure. CTFS in Welland operated on IBM RS6000 with Intel-based workstations. PartSource and CTP relayed transactions directly into the corporate network from their POS systems. In fact, the CTC IT group supported, operated and managed over 100 different mainframe, server and desktop development and integration tools, 10 different hardware platforms, 14 operating systems, seven database management systems and over 450 different production applications and desktop-based applications and tools.   Substantial proportions of the hardware, operating systems, network services, data services and development and integration tools were identified as "niche" (exceptions to current standards) and "sunset" (to be retired) technologies that needed to be addressed in order to meet the objective of bringing IT spending as a percentage of sales under industry benchmarks of about two per cent. Currently, CTC's IT spending, when measured by accounting for all IT expenditures (including assets and resources expended on IT in other areas), was around this benchmark.

The CTC IT strategy document concluded that IS at CTC had evolved into a highly complex and costly environment that offered substantial opportunities for consolidation, simplification, integration and cost-cutting. The results of several IT reviews carried about by consulting firms over the last seven years supported this conclusion. The results highlighted several themes faced by the IT group:

1. The staff were good, hard-working people who did not necessarily have the right skill set for future programs.

2. IT costs were higher than industry standard and growing.
3. Business users were not assigned responsibility for their IT costs.
4. Project priority was not set using business value in relation to costs. Poor co-ordination had resulted in redundancies and lack of standards.
5. A complex legacy environment existed as a result of modifying existing systems and adding new systems with consideration of global costs.
6. IT reacted to short-term needs as there had been no long-term business strategy.
7. "Shadow IT" groups within the business units had developed and represented substantial IT resources that were neither being managed nor considered in the high costs under scrutiny within the IT function.

In spite of these challenges, IT had delivered several key initiatives in the past few years, including the development of a demand forecasting and replenishment system, Y2K upgrades, the development of www.canadiantire.ca and CustomerLink — a supply chain management system.

To build on their strengths and the recently developed business strategy, IT Strategy 2003 laid out a strategic vision to be *"an agile IT team, aligned to business priorities, operating a simpler technical environment with the appropriate standardized processes."* Consistent with this vision, three strategic IT imperatives were identified:

1. Better alignment to the business to support strategic and operational priorities, timely project delivery and adaptability to changing business priorities.
2. Cost control through simplifying the technical architecture, improving productivity and controlling expenses.
3. Implementing governance of IT resources including standardization, risk management and the development and implementation sustainable processes.

These three imperatives were laid out to guide action and prioritizing within the IT group and the CTC network of business as a whole.

Four programs were developed to enact the IT vision for the period of 2003 to 2005. The first program was to implement a CIO governance council that would meet quarterly and assume responsibility for developing enterprise standards, monitoring IT spending, undertaking annual IT planning, monitoring the IT strategy and providing opportunities for sharing and collaborating across the enterprise to realize synergies.

The second program, organizational and people capabilities, specified key capabilities and services the IT group would need to be able to offer to the organization. Business consulting, solutions integration, end-user services and support, platform operations and management, and enterprise IT planning and

architecture were just some of the capabilities outlined in the IT strategy document.

The third program, process improvements, included co-ordinating an annual IT strategy planning process based on the corporate strategic planning cycle, the development of an opportunity management process that would standardize and regulate the identification, analysis and approval of IT project requests and a monthly IT scorecard reporting on key performance indicators including IT spend as a percentage of sales.

The final program was entitled technological direction, and it laid the foundation for re-architecting the organization. To support the IT imperatives outlined above, this program identified five areas for attention: business intelligence and data management, application deployment, integration and messaging, standardization and simplification, and security deployment. Business intelligence and data management activities were identified as high priorities. Consequently, BI quick win projects were prioritized first with development and implementation of a BI strategy and structure to follow over the life of the IT strategic plan.

BUSINESS INTELLIGENCE AND THE RETAIL ENVIRONMENT

Historically, retail organizations have invested significantly less in information technology than other industries (two per cent of revenue compared with about eight per cent of revenue across other industries). This spending has focused mainly on POS and supply chain management systems. One of the important exceptions to this rule is Wal-Mart. However, due to increasing competition, retailers have turned to BI to improve sales and better serve customers. A recent Forrester Research report indicated that IT executives at 286 North American companies with over $1 billion in sales intended to make business intelligence analytics their second largest IT investment after their Web portal investments.[2]

BI is the consolidation and analysis of internal data (e.g., transactional POS data) and/or external data (e.g., purchased consumer demographics) for the purpose of effective decision-making. Assembling and merging data from various sources is a complex task, and analysis requires the use of highly sophisticated skills. At the core of all BI initiatives is a data warehouse to hold the data and analytics software. The data warehouse stores data from operational systems in the organization (e.g., inventory, POS, accounting, marketing, etc.) and restructures it to enable queries and models to extract decision support reports. With no clear dominant players in the business intelligence market place, many niche players have been emerged to serve data warehouse and BI analytics markets — an industry that is expected to grow from US$30 billion to US$75 billion by 2005 in

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[2]*Business intelligence becomes a hot commodity, especially for retailers. Source: http//boston.bizjournals.com/boston/stories/2003/01/06/focus5.htm, accessed August 24, 2003.*

North America alone.[3] Exhibit 3 provides partial information on players in this marketplace.

For example, in order to improve profit and customer service, Hudson's Bay Company (HBC), a major Canadian department store chain, is currently in the process of a multi-year effort to upgrade its IS. Two major data warehouses (one for department store operations and one for discount store operations) have been merged into a single data warehouse enabling executives, store managers and business analysts to access and interpret data about store sales, category sales, financial performance and suppliers. Ace Hardware (an American hardware retailer similar to CTR in that stores are dealer-owned) launched a BI initiative with its 5,000 stores whereby store owners and Ace executives could view and analyse information to aid in category management and promotion decisions. With over 65,000 products from 3,000 vendors, these activities would be impossible for a single store to undertake. A price-setting model has been particularly effective in allowing Ace Hardware store owners to see the implications of setting prices above or below those recommended by head office. While the current application focuses mainly on analysing historical trends, Ace is also developing an application to use and view real-time POS data in real time to see the status of pricing, product and promotion decisions. Numerous other examples of the effective application of BI in the retail industry have also been observed.[4]

Despite the benefits from BI and data warehousing investments, implementation of these projects consumed huge organizational resources and was difficult. An IDC report revealed many challenges associated with the iterative nature of over 400 BI implementations reported by over 1,300 respondents.[5] Importantly, the study findings indicated that 35 per cent of all BI implementations were unsuccessful, 35 per cent were adequate and 30 per cent were described as successful: the larger the organization and the more complex the BI implementation, then the lower the likelihood of launching BI successfully, including being on time and on budget. These organizations also prioritized the 10 biggest challenges to achieving success in implementing business intelligence, in descending order: budget constraints, data quality, understanding and managing user expectations, culture change, time required to implement, data integration, education and training, ROI justification, business rules analysis, and management sponsorship. However, two groups of respondents reported different priorities for these challenges. IT managers more frequently mentioned data quality and cultural change as their biggest hurdles. Business managers placed higher priority on education and training for end-users. The study concluded that BI initiatives were iterative projects whereby user

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[3]*Ibid.*

[4]*Business intelligence buy-in.*
Source: http://www.informationweek.com/story/showArticle.jhtml?articleID=9700006, accessed August 24, 2003.
[5]*Business Analytics Implementation Challenges: Top 10 Considerations for 2003 and Beyond, January 2003, IDC Report #28728.*

expectations and training needs expanded as they gained access to and experience with analysing data. Additionally, variation in the viewpoints of IT and business managers could be pressure points for implementation. Given that most organizations expect their data warehouses and BI investments to continue to grow, these variations in opinions, especially with respect to data quality and end-user training and education, pointed to important areas of BI project management.

BUSINESS INTELLIGENCE AND DATA WAREHOUSING AT CANADIAN TIRE

BI analytics started at CTC in 1994 with the development of the information warehouse (IW), which was implemented by the CTC IT group at the request and funding of CTR. Around that time, the CTC chief executive officer (CEO) began trying to change CTR's image and role from that of a wholesaler to that of a retailer. This led to the realization that more data was required in order to begin analysing data like a retailer — going beyond the store level to examine product, store and margin trends. To facilitate this new logic, the IT group built the IW into which they extracted, transformed and loaded data from a variety of sources, including POS data downloaded from the stores.

At that time, Wnek was chief financial officer (CFO) for CTR. His efforts to provide better information for business decision-making lead to the creation of retail analytics in the CTR finance group. This ultimately led to a separate department — the Finance Retail Analytics Group (FRAG) — that performed the bulk of the analysis and prepared reports for the various marketing departments at CTR. Between 1994 and 1998, the IW grew dramatically as more educated end-users in CTR Marketing and analysts within FRAG demanded more data and CPU time to conduct analysis to support business decisions.

During this time period, BI efforts fragmented — a situation that persisted and then accelerated from 1998 onwards. The IT group gradually took on a more technical focus for the IW, focusing on loading data and transforming it into more and more summary tables to balance the need for CPU time for user queries against capacity constraints. The goal of summary tables was to cut down on the duplication of queries. During this period, due to a lack of resources (which were being used for other projects), the IW was evolving on old infrastructure and a poorly defined data model. Further, a lack of standard data definitions meant that several versions of the truth could be extracted from the IW; depending on the way you defined it, you could end up with six different numbers for inventory levels. Also, some data was just simply not available — a marketing analyst in the sports segment for instance, could not evaluate the results of a weekly promotional effort on golf clubs nor evaluate the performance of various brands against each other, e.g., how Titleist performed against Nike products. In its current state, the data model in the IW did not reflect the data requirements of the business.

Throughout CTC, user groups gradually undertook more responsibility for IW data management activities so they could perform their own analytic tasks. User groups developed applications and hired business analysts who extracted data from the IW, then cleaned it, integrated additional data and transformed it into their own reports. While this division of labor and IT resources enabled better business decisions because it facilitated better analysis of the available data, it also distributed BI and IS responsibilities and resources across the organization. For example, as many as 100 people were being employed in end-user communities in CTR finance and supply chain in positions that were largely IT responsibilities (technology acquisition and management, application development, database management, technical support, etc.) but who worked outside of governance of the IT function. These shadow IT groups provided an alternative source of IT resources to the user groups but at unknown cost and security risk to the CTC IT infrastructure. By 2003, CTC IT was largely seen as a hardware provider and manager but not as a strategic business partner. CTR marketing maintained its own analysts, developers and end-user support for BI efforts, and CTR FRAG provided most of the retail analytics needed by marketing.

Exhibit 4 provides a depiction of the current architecture of the IW. The major challenges were the multiple independent data sources not included in the IW, lack of standard data definitions and consequent inaccuracies in the data, the strained resources associated with storage and querying the IW, and the increasing delays and denial of access to information required by the end-users.

When Wnek assumed the role of CTC CIO, he understood the barriers to BI success. His work in the mid-90s had lead to the initial development of the IW and FRAG. This gave him a good perspective as to what was needed to realize the value of BI. To get the ball rolling, four major activities were undertaken:

1. The restructuring of the IT function to include a specific focus on retail IT (see Exhibit 1). Michael Eubanks was hired as director of marketing IT early in 2002, with a responsibility to understand the needs and partner more effectively with CTR. Eubanks previously worked for Best Buy in the United States and Canada, as well as for other retailers.
2. The development of an IT vision and IT strategy that would guide the transformation of the function in terms of its technology, organization and processes.
3. The engagement of Cap Gemini Ernst & Young (Cap Gemini) to assist in the assessment of CTR's BI efforts.
4. The assignment of a lead business consultant to the BI project in early 2003. Bridget Mertens, reporting to Eubanks, had over 11 years of experience at CTC and was assigned to the responsibility of business intelligence program manager. She was working closely with Cap Gemini and with the business to co-ordinate the BI program as it unfolded.

BUSINESS INTELLIGENCE ENVIRONMENTAL ASSESSMENT AND QUICK WINS

In their assessment, the consultants from Cap Gemini found BI to be a crucial element to the long-term success of CTR — hence its placement as a major IT program in the IT strategy.

The vision established for BI at CTC was to provide "the right information for the right decisions at the right time, enabling proactive, accurate business decisions."

The BI program goals were to:

1. Develop an enterprise philosophy that embraced the true value of an optimized BI environment.
2. Foster a culture that valued high data quality.
3. Support and enable the CTR business strategy and the IT strategy.
4. Improve BI efficiency through cross-functional synergies within business intelligence and data management.
5. Define and incrementally implement the technology changes required to enable and sustain the business BI goals and objectives.
6. Define and incrementally implement the organizational changes — processes, roles, responsibilities — required to enable and sustain the business BI goals and objectives.

Four guiding principles were established to support these goals: to be business driven, to support the IT strategy (including making technical changes in line with the technology plan), keep the learning in-house (even if external expertise was used), and make changes sustainable. Effective execution of the BI strategy over the next three years would result in a new BI environment (see Exhibit 5).

In this new world, data would be sourced and consistently managed and integrated from across the company, historical data would be organized according to standard data formats and housed in the central data warehouse, and there would be simple and easy to update access to meta-data[6] (data about the data). This would result in various data views or data marts.[7] Decisions about implementing physical data marts versus special views of the data for different areas had not yet been made. As an example, the financial data mart (or view) would provide consistent access to standard financial data that would be the basis for enterprise performance management. Similarly other areas would have their own data marts/views to assist in their own decisions while masking the complexities associated with access to the full corporate data structure. BI specialists would assist in organizing the data marts/views, retail analytic specialists would have access to BI tools and the data warehouse to perform sophisticated analysis and predictive modeling, and

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[6]Meta-data is data about data. Source: http://www.techweb.com/encyclopedia/defineterm?term=meta-data, accessed August 22, 2003.
[7]A data mart is a subset of a data warehouse for a single department or function. Source: http://www.techweb.com/encyclopedia/defineterm?term=data+mart, accessed August 22, 2003.

end-users would have instant access to information they needed to make relevant business decisions.

Given the current state of BI at Canadian Tire, several steps were planned for the short term – namely dedicating resources to implementing quick win projects and finalizing a detailed BI strategy-and-planning document to serve as a guide for prioritizing actions over the next three years.

Quick win opportunity assessments happened in early 2003. These projects consisted of short-term actions that IT could take to improve BI capabilities and to provide users with new information. These included opportunities such as providing access to daily promotional sales data; market basket analysis capabilities; forecasting and model simulation of incremental sales; pricing optimization reports by region; price competitiveness analytics and brand analysis such as comparisons by brand, brand manager, margin, shipments, cannibalization, etc. Quick win projects were selected based on offering the highest potential value at the lowest cost to IT resources.

The development of the BI strategy document had also commenced with a series of user meetings, surveys, benchmarking studies and workshops.

GOING FORWARD: CREATING A BI MINDSET AND REALIZING VALUE

As Eubanks and Wnek's meeting progressed, they reflected on the difficulties faced in the next several months. First, they had to determine what to do about new quick win requests while they finalized the BI strategy and implemented the program. On one hand, what was the point of the BI strategy and program plan if they kept reacting to new quick win requests, rather than using the plan to prioritize them? However, on the other hand, they had to think about the business implications of not delivering new quick win requests that could provide real value to the business today. They wondered whether rejecting new requests would diminish the end-users' enthusiasm for the BI initiative and whether the work would be picked up by the shadow IT groups.

Second, several elements of the BI strategy still needed to be finalized, and programs, with their ensuing priority and timeline, needed to be developed. Eubanks and Wnek wondered what technological, organizational and people implementation plans would need to be included on the timeline in order to successfully deliver on the BI strategy over the next 2.5 years, given that the organization was expecting the program to be completed by the end of 2005.

Exhibit 1

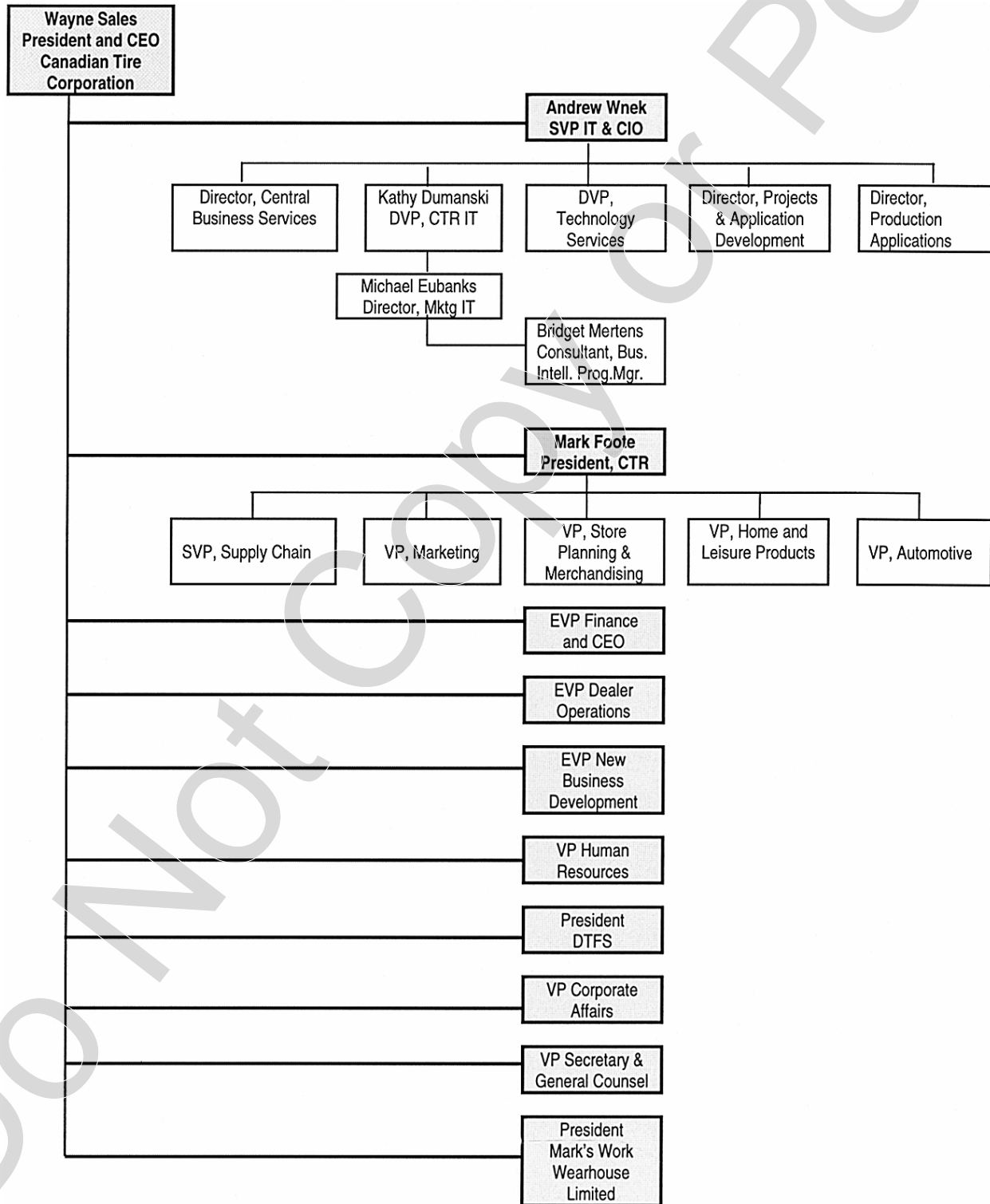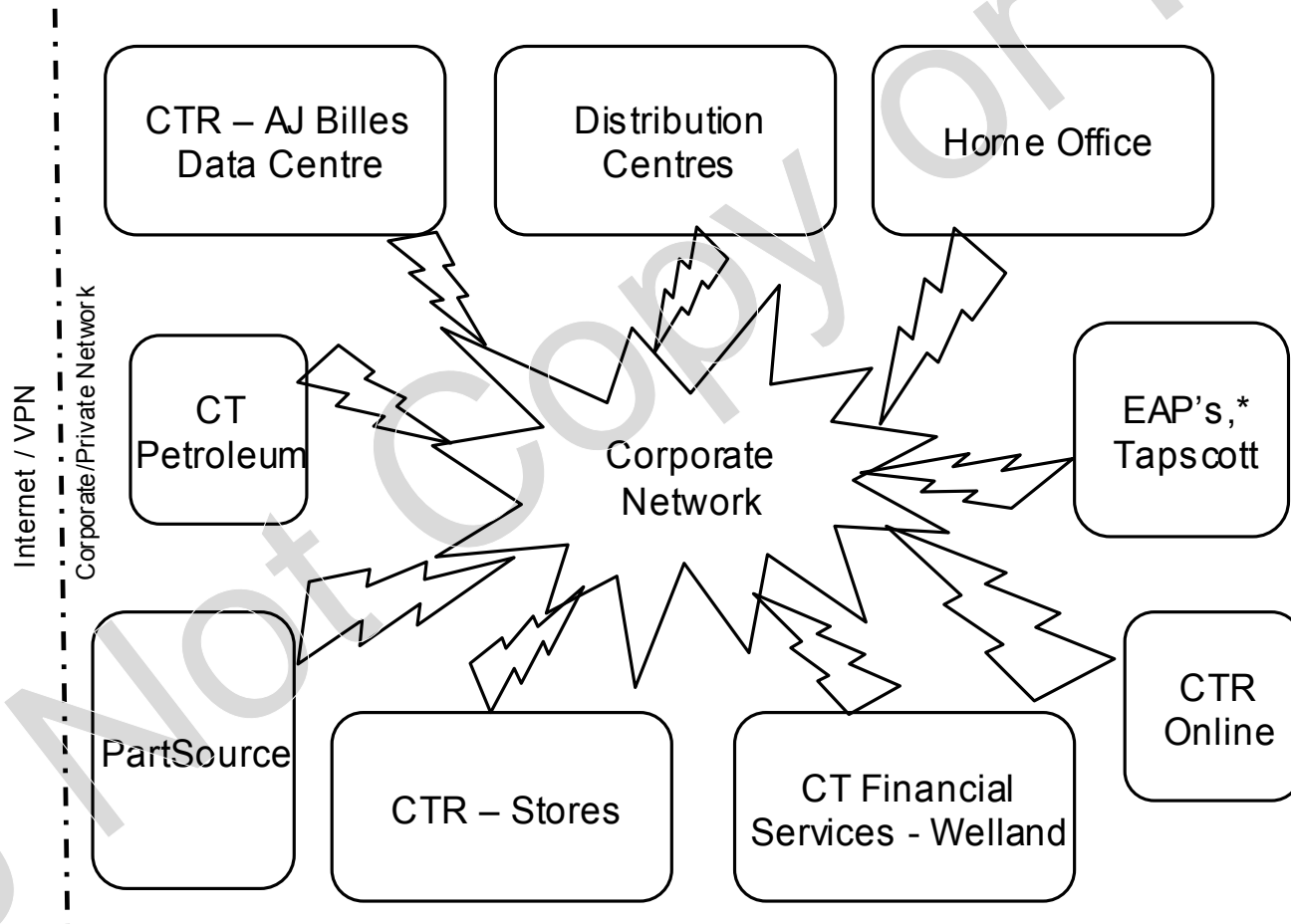**ORGANIZATIONAL CHART OF CANADIAN TIRE CORPORATION AND CANADIAN TIRE RETAIL**

Exhibit 2

CANADIAN TIRE CORPORATION ENTERPRISE TECHNOLOGY OVERVIEW

Source: Company files.

Exhibit 3

BUSINESS INTELLIGENCE ANALYTICS SUPPLIERS

The supply side of the BI marketplace has been characterized by a proliferation of specialty suppliers rather than dominated by a few major players. It has grown through the evolution of various software products and tools offered as standalone products or as part of other product offerings such as ERP systems and data warehouses. The result is that any given organization using BI may be managing and maintaining a half dozen (or more) BI packages, depending on the needs of the end-user groups.[1] However, industry watchdogs are predicting consolidation in the BI marketplace around a few high-profile players offering end-to-end BI solutions in the four dominant tool areas: enterprise reporting, ad hoc query and analysis, online analytical processing (OLAP) servers, and analytic dashboards.[2] The recent acquisitions of Crystal Decisions by Business Objects for US$820 million and of Brio Software by Hyperion for US$142 million. (during the summer of 2003) provide some evidence of this, although, currently, it is difficult for end-to-end providers to compete with the functionality and capability of discrete specialty providers. This naturally makes it challenging for organizations selecting BI products and tools.

BI software is provided by a range of organizations:[3]

- Insightful — specializes in predictive modeling and data mining in the financial services, pharmaceutical and government markets (www.insightful.com).
- Brio Software — is an established player whose Performance Suite helps organizations spot trends and manage to performance goals through its query and reporting analytical tools (www.brio.com).
- IBM — provides a range of tools to manage both the data warehouse and applications that assist in mining the data including OLAP tools and data mining (www.ibm.com).
- Cognos — another established player, Cognos furnishes analytical software that provides a 360-degree view of the business including sales, accounts receivable, payable, inventory and supplier information (www.cognos.com).
- MicroStrategy — their suite of products is used by Best Buy, Ace Hardware and Hudson's Bay Company, to name a few. Recent product development efforts here have focused on predictive modeling based on historical trends (www.microstrategy.com).
- Business Objects — specializing in analytical tools, this company's BI products help track performance using established metrics and use predictive modeling to forecast customer behavior.

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[1]*Wild profusion of BI tools. Source: http://www.dw-institute.com/research/display.asp?id=6642&t=y, accessed August 24, 2003.*
[2]*Analysis of recent BI marketplace changes.*
Source: http://businessintelligence.ittoolbox.com/documents/document.asp?i=2316, accessed August 24, 2003.
[3]*A data mining directory. Source: http://www.pcmag.com/article2/0,4149,1162415,00.asp Accessed August 24, 2003.*
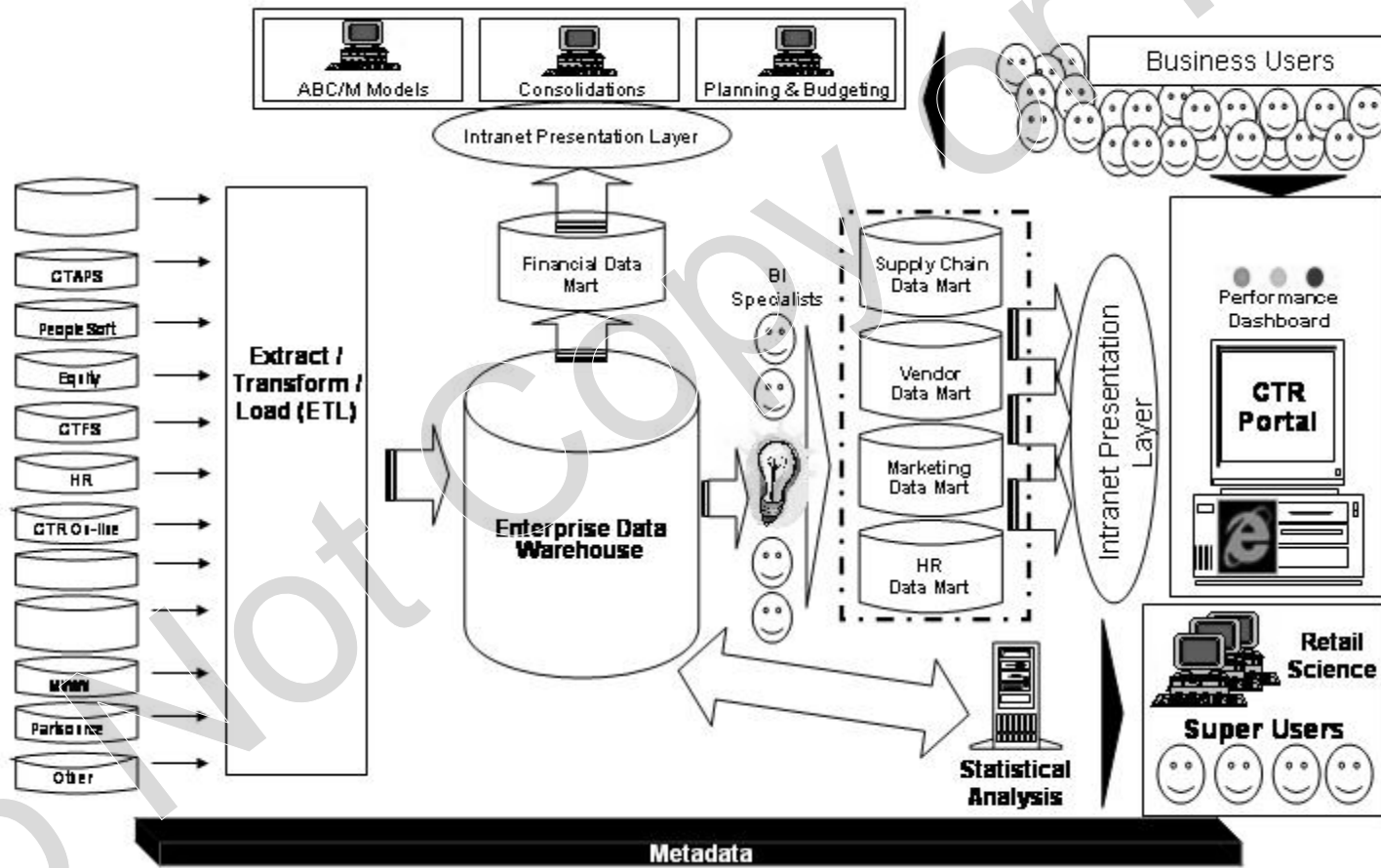
Exhibit 4

CURRENT BUSINESS INTELLIGENCE ENVIRONMENT
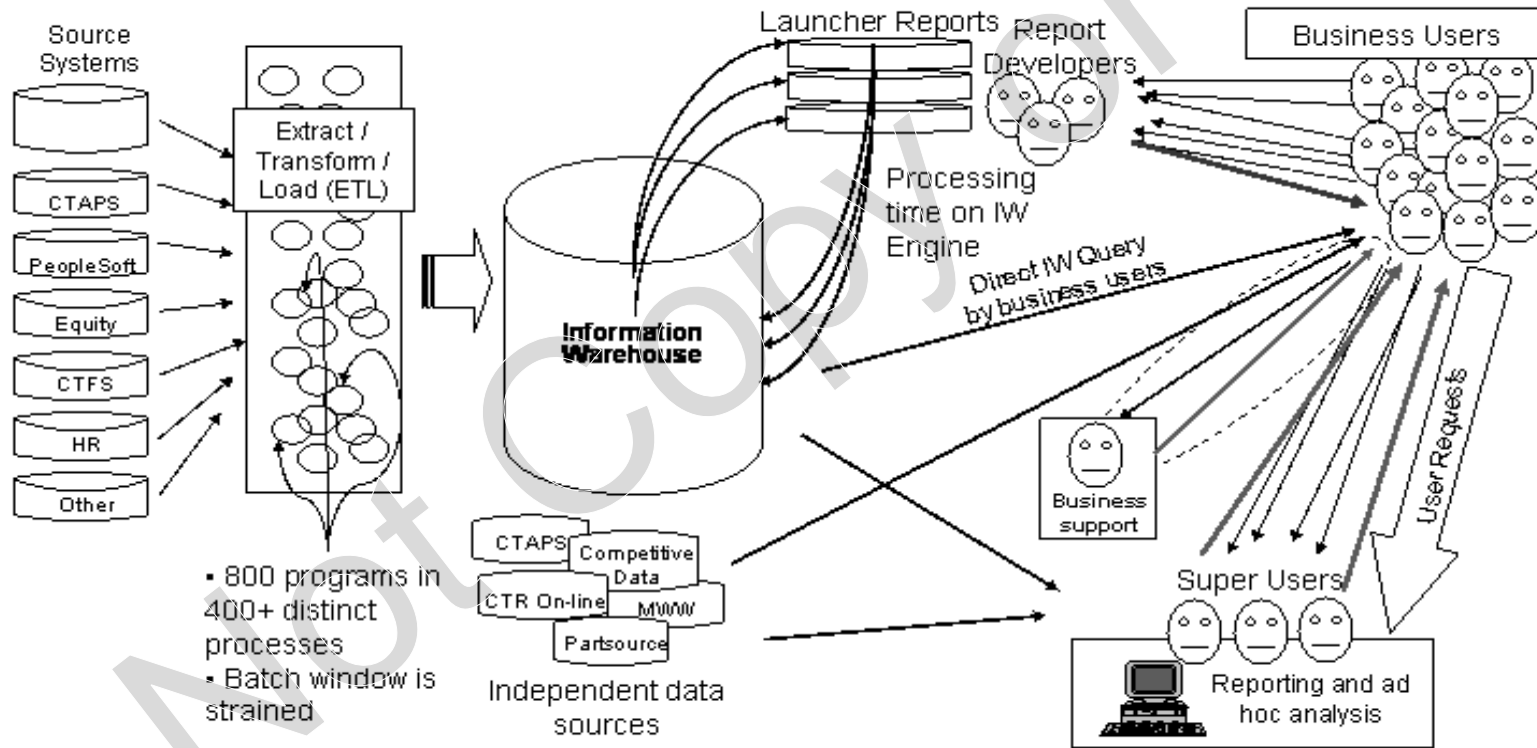
Source: Company files.

Exhibit 5

FUTURE BUSINESS INTELLIGENCE ENVIRONMENT

Source: Company files.