Ptak / Noel

Leveraging CA IDMS™ for Innovation

Summary:
Business and IT executives acquire and use technology innovation to drive future growth. They also wish to avoid disrupting current operations as they leverage technology. CA Technologies has a track record in product innovation that embraces and extends their existing products to take advantage of advances and emerging technologies, e.g. Cloud, zIIP processors and automated processes. They have proven success at increasing both competitive performance and availability by extending CA IDMS™ to capitalize on advances in software architectures and development practices. This paper discusses how CA's on-going investments enhance and modernize CA IDMS; how enterprises leverage CA IDMS' performance and availability advantages in innovative software projects; and the benefits of innovative reuse of existing CA IDMS environments.

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Enterprise Innovation, Embracing Existing Infrastructure

The application of technology to achieve business goals is a direct contributor to increasing competitiveness by improving the efficiency of IT and business operations. On-going advances in software architectures, rapid development techniques, and hardware infrastructure are attractive because of their ability to help initiate, implement and drive business innovation. But adopting these comes with its own challenges due to potential conflicts or inabilities to work with in-place products, such as CA IDMS, critical to existing revenue streams. This creates tension between innovation and sustaining current operations.

Global competitive pressures fuel the need to enter new markets, introduce new business models and alter the competitive landscape through service innovation. Innovative special purpose processors, such as zIIP (IBM System z Integrated Information Processor) permit workload off-loading to free up more expensive mainframe computing capacity and deliver more power and throughput without expensive mainframe upgrades or add-ons. The newest CA IDMS version can increase zIIP usage by up to 50% over the previous version. The result is to significantly lower mainframe TCO (total cost of ownership) and improve operational efficiency. But, such advances must be accessible and useable by existing assets and resources to fully realize their benefits. The alternative 'rip 'n replace' strategy frequently requires significant migration expense with no sure guarantee that beneficial results will be realized.

Database and application conversions are challenging at best. While the value of an existing CA IDMS-based solution is clear (e.g. a financial house can process billions of dollars' worth of transactions), even the best pre-migration analysis can miss a costly conversion or fail to anticipate an expensive drop in operational efficiency. While the costs of such conversion have been trending down, such risks remain as the size and complexity of database-application environmental variables and interactions increase. These risks with their associated penalties and costs argue in favor of utilizing and leveraging existing infrastructure.

Today's operations and IT infrastructure utilization are marked as 'hothouses' of dynamic change and adaptation. The infrastructure is expected to adapt to fit the changing needs of a dynamic set of services. Such adaptability results from a combination of modern application APIs (Application Programming Interfaces) and architectures (such as Cloud, JDBC 4.0, .Net, SOA, and Web Services) that will allow 'legacy systems' to be 'reusable assets.'

These architectures provide a cleaner separation of software-based service delivery because of component applications, workflows that connect those components and middleware which provides physical integration. This separation simplifies innovation because code conversions, data migrations, and technology replacements are not required to link existing data and applications with new business applications and processes. Thus, innovation no longer requires abandoning existing technology investments as they continue to perform competitively against alternative platforms and leverage new solution techniques.

Perceptive vendors recognize the need to extend existing products to leverage such new technologies, products and architectures. CA Technologies is following that path as part of their Next-Generation Mainframe Management strategy with such products as CA Mainframe Software Manager (CA MSM) which streamlines software acquisition, installation, deployment, configuration and maintenance in a modern web interface. Thus, customers see and benefit from the practical results as realized in product evolution and enhancements that help to maximize value, simplify management and introduce practical innovation that extend the life and enhance the application of such products as CA IDMS.

A CA development partner who provides complementary technology for major global enterprises using CA IDMS says: "Our customers depend on CA IDMS for some of the industry's largest data and transaction environments, and leverage our service to drive their relational data warehouse, data mart and query initiatives," John Abell, president of International Software Products continues, "CA MSM helps address security risks, facilitates access to IDMS, and can more easily and quickly keep all our CA software up-to-date, ultimately contributing to a more cost-effective solution for our customers' data management and business intelligence needs."[1]

CA IDMS – Increasing the Competitive Edge

CA's continued investment in mainframe technologies, such as CA IDMS, is driven not only from long-term commitment from CA's executive management, but also from a solid business model. CA IDMS is relied on by hundreds of customers using it in thousands of applications in all industries and government agencies at federal, state, and local levels worldwide. When asked about CA's commitment to the platform, one customer from a state government agency responded, "I don't even think about it. CA IDMS environments are too large and too important to core operations."

Two years ago, CA's mainframe business unit introduced a new initiative to more effectively meet solution requirements unique to the mainframe market. In response, CA's IDMS team developed five strategic themes to achieve the Best-in-Class rating from customers in terms of Quality, Support and Customer Experience. The five themes include:

1. Enhancing CA IDMS usability and performance,
2. More effectively leveraging emerging, new hardware and software platforms,
3. Increasing product interoperability and technology integration,
4. Making changes needed to provide continuous availability, and
5. Modernizing CA IDMS-related application development and open access capabilities.

Let's look at how these are realized for the CA IDMS solutions environment.

[1] **Quotes from Customers, Partners and Analysts - CA Technologies Mainframe 2.0 Solutions**
http://www.ca.com/us/collateral/Quotes/na/CA-Mainframe-Technologies-Customer-Quotes.aspx

Improving and Enhancing Usability and Performance

CA IDMS 18.0 for z/OS

One area of investment mentioned earlier are the enhancements made to CA IDMS to keep pace with IBM's advances in System z™ hardware and software. For example, CA IDMS exploits the IBM zIIP (IBM System z Integrated Information Processor) specialty engine. CA IDMS Version 18.0 directs a broader set of workload functions off the mainframe and onto the zIIP processor. This includes portions of all typical CA IDMS production workloads, whether generated by online transaction systems, batch processing jobs or distributed processing. It includes nearly all CA IDMS Central Version (CV) workloads. CA IDMS operates without restrictions in the types of CA IDMS service requests processed. This means all CA IDMS data and system requests will work including those from on-line, batch and distributed applications. As a result, customers have seen up to a 50% increase in zIIP exploitation compared to the previous release. Of course, the actual increase a customer experiences will depend on the workload mix. This zIIP support comes as part of the standard release of CA IDMS Version 18.0 for z/OS.

In addition, CA IDMS Version 18.0 includes multiple features aimed at increasing productivity and improving availability as the need to work in heterogeneous (distributed and mainframe) environments becomes more common. Some of the innovative features included in the release are:

1. Automatic tuning to optimize performance based on usage history – initially focused on sys gen parameters, this will include additional parameters over time.
2. Productivity enhancements – e.g. improved tracing capabilities, additional statistics fields, etc.
3. Availability of CA IDMS Visual DBA Version 18.0 at the same time as CA IDMS 18.0 to improve management usability on an ongoing basis and while upgrading to the new release.

As part of the CA's mainframe strategy, this release includes support for CA Mainframe Software Manager. Through a number of specialized services (Software Acquisition, Software Installation, Software Deployment, Software Configuration), CA MSM automates and simplifies the implementation of database management functions associated with deployment and maintenance, while also reducing SMP/E complexities. CA MSM Consolidated Software Inventory (CSI) has been updated so that CA MSM more effectively utilizes CPU and system memory and has more flexibility in processing CSIs.

Charlie Mathers, CA IDMS team leader for Norfolk Southern Corp. comments on zIIP support in CA IDMS: "The biggest benefit of CA IDMS Version 18 at Norfolk Southern is the increased use of zIIP specialty engines. Moving significant portions of the CA IDMS workload to zIIP helps us lower our overall costs. And using CA Mainframe Software Manager for electronic delivery and CA IDMS installations is saving us time and money by eliminating the need for manual FTP, tape creation, and SMP/E. We look forward to using CA MSM's Software Configuration Service with CA IDMS installations as that will be of considerable value to Norfolk Southern and its rising crop

of DBAs who are new to CA IDMS." The full list of CA IDMS Version 18.0 features and functions can be found here[2].

CA IDMS Server 17.0

Another aspect of CA's continuous investment is the introduction of CA IDMS Server 17.0, which provides secure, open access to CA IDMS mainframe data and applications from the Web, Web Services, PC, as well as a variety of other distributed platforms. Using JDBC and ODBC database drivers that support industry-standard APIs, it provides a high-performing architecture that serves as a foundation for projects including modernization, Web access, and integration into Service Oriented Architecture (SOA) solutions. It supports an HTML-based help function. Applications can be deployed on the full range of industry standard J2EE and .NET environments, including, but not exclusive to Apache Tomcat, JBoss Application server, IBM WebSphere, Oracle WebLogic, etc. The result is seamless integration of mainframe database assets into the latest applications and services. The total list of features and functions can be found here[3]. It is clearly the goal of CA IDMS Server 17.0 to provide easy access to CA IDMS assets for modern architectures, tools and solutions. It also helps to avoid the high costs and risks of conversion.

Modernizing IDMS – Application Development, Usability, Performance

Continuously adding new features and capabilities that leverage trends in technology allows CA IDMS data stores and applications to interact with the innovative technologies and techniques adopted by enterprise customers. Figure 1 (on the next page) illustrates how CA IDMS support for innovations in IT has been enhanced and extended over time. Such support removes obstacles to application development, interaction and integration as they extend application longevity and increase the utility of CA IDMS. They also facilitate the use of emerging tools that reduce skills-related issues that otherwise would frustrate and slow the development of new applications and services.

[2] http://www.ca.com/~/media/Files/ProductBriefs/idms-db-ps2.pdf
[3] http://www.ca.com/~/media/Files/ProductBriefs/idms-server-ps-158726.pdf

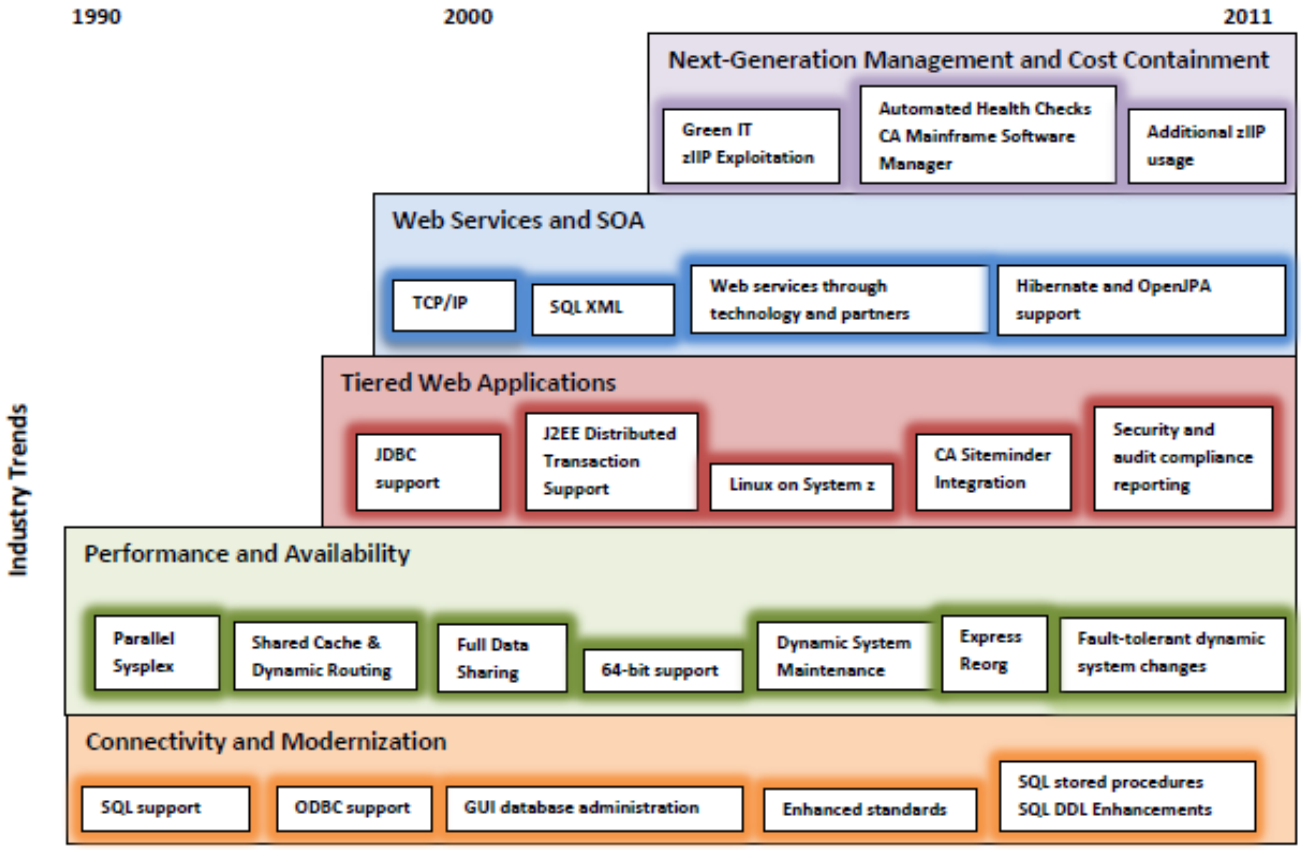

Figure 1Timeline of CA IDMS support for major computing trends

Open Access

Open access facilitates bi-directional links for Web-based and multi-platform applications that complement or extend existing mainframe applications. It allows programmers with SQL, Java, and .NET skills easy access to CA IDMS and mainframe-based services. CA's integration of native SQL into the database engine along with TCP/IP support allows access to CA IDMS services from distributed environments and Web services. Standards-based Windows and Java APIs and interoperability-focused SQL enhancements increase code portability - e.g. porting applications written for other platforms to CA IDMS. This means developers and applications programmers don't need specialized mainframe knowledge; they can take advantage of their modern skills to access CA IDMS data and business logic.

SQL relational processing support in CA IDMS means that programming tools implementing the Java Persistence API (JPA), such as Hibernate and OpenJPA, can be used with CA IDMS.

As one database administrator put it: "SQL is here to stay, so anyone with a non-relational database should, at minimum, provide an interface to allow SQL applications to access their data. CA has done a good job of that since the early nineties; we just need to get better at letting our SQL programmers know about it, so they can exploit it."

Extending Web Services and Connectivity

Web services and other cross-platform connectivity are a critical part of modern applications allowing new business services to work with existing systems and data assets. The beauty of tiered Web applications and architectures is that they enable developers to use standard tools and techniques to leverage different kinds of data and business logic, regardless of the hardware platform.

Through CA IDMS capabilities, CA technology partners, in-house development efforts or some combination, customers can connect CA IDMS with Web services to create new business services. . The primary methods include:

- Building Web services that reuse CA IDMS business logic in by wrapping it in CA IDMS SQL stored procedures that are called from Java (JDBC) or Windows (ODBC) platforms. This approach is best for leveraging CA IDMS' unique high-performance constructs in new applications or services with little additional effort. CA's modernization efforts allow customers to leverage CA IDMS' high-performance navigation in new applications using familiar SQL stored procedures. Stored procedures also enable reuse of the existing CA ADS, CA IDMS/DC COBOL, and CA IDMS/DC PL/1 business logic already in place. This is particularly useful for robust applications that perform well and require little maintenance, yet must expand into Web-based user interfaces.

- Leveraging existing CA IDMS screen-based applications by using 3rd party tools that build Web services by invoking the presentation interface of online CA IDMS applications. This approach is useful in situations where the functionality of an existing 3270 screen must be exactly duplicated within an application or automated business process.

- Exposing CA IDMS business logic as Web services using the CA IDMS TCP/IP facility and standard XML for messaging. This option allows customers to connect to data and applications from different platforms.

- Developing TCP/IP-based programs or using 3rd party tools that enable CA IDMS applications to invoke Web services.

These options allow customers to quickly connect to data and applications from different platforms.

Integration and audit across multi-tiered applications

Many enterprises require an end-to-end audit trail of external user identities that update critical financial data to comply with regulatory requirements. However, Web-based financial transactions traverse a wide range of distributed and mainframe technologies and a variety of identity and access management systems. To provide a holistic solution, CA IDMS includes integration with CA SiteMinder® to support auditing of database updates initiated from Web and distributed applications. Ptak, Noel & Associates expects CA to continue these efforts with similar integration

initiatives to address other end-to-end management issues, such as managing application performance and service quality.

Benefits of CA IDMS

Enterprises are most agile when they can draw on their core operational strengths to target new opportunities. As a direct result of the described enhancements, enterprise developers can leverage existing CA IDMS assets in new ways without significant recoding or depending on automated code conversion. One database administrator saw a significant increase in the rate SQL programmers were adding new application queries against existing CA IDMS data. Even though the additional activity increased the variability of transaction volumes, performance levels remained satisfactorily high.

Cost containment provides considerable additional benefits. CA IDMS modernization costs are typically significantly lower than migration projects both in terms of cost to implement and in terms of disruption to the business. Customers also mention that CA IDMS environments require fewer support staff than their other relational database systems.

Enterprises also avoid a significant amount of risk and cost by preserving high performance databases and applications that have run reliably on the mainframe for years without any unscheduled disruptions. This is particularly important in situations where functionality and processing performance are not easily duplicated in relational databases. With so many organizations getting charged by MIPS usage and other measures, processing performance becomes a key factor in controlling fixed operational costs for the business. For example, the company that documented a 200% MIPS utilization increase for a particular BOM (Bill of Materials) application during their migration attempt would see a significant, and probably permanent, increase in its annual processing costs. These risks and costs are typically higher with larger and more complex CA IDMS environments, which in turn increases the financial benefit gained by enterprise innovation that embraces and extends the currently operating, high performance infrastructure.

Customer Support

CA recognizes the challenges of Mainframe Continuity affecting mainframe customers worldwide. They understand customer concerns about the availability of long-term support and continuing investment in the mainframe and its ecosystem. CA addresses the problem with multiple programs, including the investment in product development and improvements mentioned earlier. They address support and continuity concerns directly by recruiting and educating a new generation of software engineers in the US and Europe. This program is designed to attract and train software engineers to enhance the skilled CA mainframe workforce, even as existing staff reach retirement. This assures CA has skilled staff to provide high quality support to customers, while it also serves to expand the available base of mainframe technical expertise.

This program was initiated in Prague in 2005 and expanded to the US in 2009. CA recruits graduates from top Computer Science and related disciplines into a structured program to build mainframe

skills by working directly with mainframe product teams. In the US, these recruits spend their first two months on an intensive Mainframe Training program in Plano, Texas. There they establish a firm foundation in System z, including z/OS, the developer's user interface, the embedded UNIX-oriented operating system, Assembler programming, and REXX scripting language. They are also schooled in the benefits that CA customers realize from the mainframe, as well as the supporting infrastructure of transaction servers, file structures, databases, etc.

Once training is complete, the graduates are assigned to one of six US development sites to do work in mainframe product teams. Graduates from the US and Prague programs have contributed to the CA IDMS product lines (one of the first to so benefit). These new engineers played significant roles in development and testing of CA IDMS and CA Visual DBA Versions 17.0 and 18.0. Graduates from the Mainframe Development program from both Prague and the US are the newest members of the CA IDMS technical staff, teaming with senior engineers on development, sustaining engineer and quality assurance projects.

Final Word

Any vendor can declare a commitment to a technology or product, but talk is cheap. The true proof of commitment is shown in the support and functionality delivered to customers. Ptak/Noel believes this can be judged in terms of the following:

- Implementing enhancements that preserve and expand competitive advantages,
- Implementing enhancements that enable integration with innovative solutions,
- Investment in supportive customer programs, and
- Incremental value realized by existing customers.

Ptak/Noel believes that the functionality, enhancements and investments associated with CA IDMS as described above, provide a satisfactory and convincingly positive rating against these metrics.

CA's continuous modernization efforts include adding several techniques for incorporating CA IDMS data and logic into existing application development projects. This allows business developers to use modern development tools to leverage CA IDMS and integrate into new applications. Thus, innovation is not slowed or delayed by migration and replacement projects.

CA IDMS modernization is advanced by CA's commitment to enhancing Next-Generation Mainframe Management. Today, CA Mainframe Software Manager is the prime example. Future plans call for continued integration that will allow users to leverage the full range of CA Technologies' product portfolio and their rich set of features and functionality.

In the end, the strongest argument comes directly from CA's customers. Those that have embraced CA IDMS and the scalability, performance, and power efficiency benefits of the System z platform have reaped significant benefits in terms of cost avoidance and business agility. As Del Bartlett,

Database Manager at the State of New Hampshire's Department of Motor Vehicles describes it, "CA's SQL implementation has reached such a high point in terms of ease of use and performance that I believe it gives CA IDMS unprecedented new life. As CA IDMS managers, we are now in an excellent position to support many new business applications with access to existing data."

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About Ptak, Noel & Associates LLC

We help IT organizations become 'solution initiators' in using IT management technology to business problems. We do that by translating vendor strategy & deliverables into a business context that is communicable and actionable by the IT manager, and by helping our clients understand how other IT organizations are effectively implementing solutions with their business counterparts. Our customers recognize the meaningful breadth and objectively of our research in IT management technology and process.

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Rich has over 30 years' experience in systems product management working closely with Fortune 50 companies in developing product direction and strategies at a global level. Previously Ptak held positions as senior vice president at Hurwitz Group and D.H. Brown Associates. Earlier in his career he held engineering and marketing management positions with Western Electric's Electronic Switch Manufacturing Division and Digital Equipment Corporation. He is frequently quoted in major business and trade press. Ptak holds a master's in business administration from the University of Chicago and a master of science in engineering from Kansas State University