

WHITE PAPER: MAXIMIZE YOUR APPLICATION DEVELOPMENT ROI

The ROI of Developing Applications with CA Gen

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CA GEN PRODUCT TEAM

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Executive Summary

Challenge

IT organizations are under constant pressure to do more with less, prove their return on investment (ROI) and link IT investments to business strategies. Measuring ROI enables organizations to quantify their IT activities and provides the following benefits:

- Enables them to represent IT results in terms of business value
- Moves IT to a similar measurements orientation as other business functions (finance, sales, manufacturing, etc.)
- Promotes development of higher quality software and more efficient support of existing software
- Increases understanding of development processes and improves results
- Adds objectivity in sizing and evaluating software projects and tools

Opportunity

The principle objective of IT organizations is to provide the highest level of Information Services per dollar of expenditure. Model-driven code generation accomplishes this goal and has proven to deliver many tangible and intangible benefits, such as increased developer productivity, quicker time to market and improved software quality. CA Gen has delivered these benefits to organizations around the world since its introduction in 1987. The purpose of this document is to assist you in measuring and quantifying the superior return on investment in using CA Gen, based on the results of other organizations over the last two decades. This data is based on our industry knowledge, customer experiences and feedback, and our general understanding of the needs and directions of IT organizations today.

Benefits

CA Gen empowers IT organizations to deliver the right mission critical applications faster, with better quality and continues to deliver significant measurable financial returns to customers around the world. This ROI can be broken down as follows:

- **DEVELOPER PRODUCTIVITY** During application delivery and maintenance
- **SPEED TIME TO MARKET** Technology transformation, platform transition and software reuse
- **IMPROVED APPLICATION QUALITY** Performance, scalability, compliance and consistency

Developer Productivity

The CA Gen model-driven development environment is integrated by an underlying framework that streamlines the entire application development life cycle. This integrated modeling environment provides significant increases in both development and maintenance productivity because it enables teams of developers to quickly model the data, interfaces, logic, business rules and interactions of application components and then easily transform these models into executing business applications. Companies achieve competitive advantage by delivering agile applications that keep pace with the business, while dramatically reducing their total cost of ownership (TCO).

Function Points

The most widely accepted metric for the measurement of software development productivity are function points (FPs). Function point analysis is a means of measuring the functional size of an application or project. It reflects the specific countable functionality provided to the end user of an application and is often measured by function points per month (FPM).

CA Gen calculates function points (FPs) according to the standards established by the International Function Point Users Group (IFPUG- visit www.ifpug.org for more information about function points). CA Gen provides a Function Point Calculation Report that calculates the function points for each business system in a model. Within each business system, the files/entity types and elementary processes/action blocks are used to calculate the number of function points. In addition to productivity measurement, this tool can be useful for estimating the size of a system and thus application development time. More information on the CA Gen Function Point Calculation Report can be found in the CA Gen Host Encyclopedia Guide.

Productivity During Application Delivery

The underlying model-driven architecture within CA Gen enables IT organizations to model their business processes, making it is easier to see what has been missed, what has been misunderstood and what has been needlessly included. When model-based development is combined with 100% automated code generation, as with CA Gen, developers are able to focus on analyzing and improving the business, instead of worrying about tedious program-ming issues such as syntax checking, referential integrity, middleware interfaces, error trapping, HTML formatting, and the list could go on and on. The use of models also improves communication between IT and the business. Modeling diagrams that are drawn using a clearly defined set of rules and syntax ensure that those who read the diagrams communicate effectively and precisely.

100% Automated Code Generation

The consistent modeling syntax used in a model-driven environment enables code generators to create the application code. 100% automated code generation is not a myth, nor is it new. CA Gen has been generating 100% application code for its customers for two decades. This means your entire modernized solution is automatically generated, from the application logic and communications infrastructure to the web servers and browser interfaces. No manual coding is required. This enables organizations to speed time-to-market for competitive opportunities, react more quickly to change and reduce overall maintenance costs.

“When compared with hand-writing COBOL, CA Gen takes 40 percent of the time to develop any application. And when compared with Java IDE’s, CA Gen J2EE development takes just 60 percent of the time. Compared to IBM/Rational development tools, CA Gen is more robust, reliable and reduces overall project costs.”

Mr. Pipalwa
COO, Stringray Technologies

“CA Gen helped us cut our development time in half... The ease-of-use of CA Gen also enabled the IRB to successfully develop, deploy and maintain their new self-assessment tax system with just 40 percent of the manpower that would have been required otherwise.”

Mohd.Azmi bin Wan Ab. Rahman
IT Director, Inland Revenue Board of Malaysia

"CA Gen has enabled AXA Financial to maintain, modify and extend 11 major, ever-changing, CICS systems with only a 10-person development staff. Without CA Gen, AXA Financial would have needed a staff of at least 20+ developers to achieve the same results."

Tom Quinn
Director, Contribution and Distribution Services, AXA Financial

"CA continues to add value to our investment in CA Gen with new extensions for generating additional technology interfaces. Using CA Gen, we wireless-enabled our Customer Loyalty System in only weeks, significantly shortening our time to market."

Bernie Leapaldt
Project Manager, Unisys

This frees developers to focus on new application development that serves the business. Hundreds of customers have experienced significant productivity gains using CA Gen, delivering as many as 55 FPM – this is compared to an average of 5-10 functions delivered from hand-coding COBOL and an average of 10-20 FPM delivered when coding Java.1

Productivity During Application Maintenance

CA Gen stores models and components in a central repository (or encyclopedia), where they can be shared by the entire team throughout the development life cycle. Robust security protects the integrity of the models objects, enabling parallel team development and reuse. When changes to the application need to be made, instead of sifting through and modifying a bunch of application code, changes are made directly in the model, significantly reducing maintenance cycle time and cost. And because it's an integrated modeling environment, this means when an object is changed, it is reflected throughout the entire model and the generated application.

SECTION 2

Speed Time to Market

IT organizations balance numerous challenges and priorities – first and foremost is faster delivery of both new applications and enhancements to current applications to enable bottom-line improvements in business operations. CA Gen enables organizations to keep information resources almost instantly in line with business needs, which can translate into tens of millions of dollars of revenue and cost benefits to an organization. Sol Melia, a world leading hotel management company, used CA Gen to modernize their legacy systems and quickly implement a streamlined marketing and sales system. This web-based system accelerated their international expansion by extending system access to users and customers via the Internet, resulting in a 200% increase in sales the first year alone (see Appendix for more information).

Technology Transformation Costs and ROI

There are inevitable costs associated with transforming existing systems to new technologies. CA Gen has a proven track record in protecting the investment IT organizations have made in existing hardware and software, and has helped customers ride the waves of technology change over the last two decades. As technology continues to change at a faster and faster rate, the value of a model-based development environment that is fully integrated with 100% code generation becomes very significant. This combination provides an abstraction from technology, which means organizations are able to adopt new technologies without having resources skilled in these technologies. Organizations are able to isolate business concerns from their technology concerns, and transition to new technologies (i.e. Web, J2EE, .NET, services, SOA, etc.) without rewriting code. Customers who originally used CA Gen to implement 3270 mainframe applications, simply regenerated those same models as a distributed applications, and then a few years later they regenerated them as Java and .NET web and wireless applications. CA Gen customers will be positioned to get this same technology transition benefit as they move toward the next technology waves.

“CA Gen brought industrial strength stability and performance to our Web applications. Our programmers were able to deliver Java-based Web applications within days.”

Rita Moore

Director Electronic Commerce, Fedex

“CA Gen’s technology insulation enables us to implement technologies such as J2EE without having to learn all of it’s complexities, significantly increasing speed of delivery and reducing training and implementation costs”.

Christian Foidl

Senior Developer, AMSBG

“Over the years, CA Gen has enabled us to migrate to new technologies without rewriting our systems. The new .NET support in CA Gen r7, with C# code generation, has extended this ‘future-proof’ strategy beyond our expectations.”

Pieter Moors

Technologies & Standards Manager,
Mittal-Arcelor Systems

The bottom line ROI benefits to this are:

- Significant reduction in costs of technology transition and accelerated time to market since applications do not have to be completely recoded
- Reduced training costs and increased productivity since developers are insulated from the complexity of the new technologies

Web Enablement ROI

There are several cost savings associated with transforming existing blockmode or client/server applications to web solutions. The cost and time associated with client deployment cost as well as client maintenance are significantly reduced. CA Gen further reduces these costs by enabling organizations to deliver robust, transaction based web applications in just a matter of days. The web browser, web server and communication code is automatically generated from the same design model, enabling organizations to deliver web solutions without having to learn the details of the underlying technology. The ROI is further increased by enabling organizations to leverage their investment by reusing existing server transactions.

J2EE /.NET Development ROI

The primary concern for most organizations when developing J2EE or .NET applications is productivity, training costs, as well as the availability of skilled resources (J2EE/EJB and C# developers, not just Java or VB programmers). Code-centric development is time consuming and the underlying frameworks for the J2EE and .NET architectures are inherently complex. Since CA Gen generates 100% of the code for both the J2EE or .NET architecture (including Java, HTML, JSPs, EJBs, as well as C# and ASP.NET web clients) this complexity is significantly reduced. Automation of deployment as well as other mundane activities associated with these platforms further reduces this complexity, enabling organizations to use their existing development resources, who understand their business, to deliver their J2EE and/or .NET applications.

Analyst reports indicate that the costs (primarily human capital costs) associated with code-centric development will continue to rise during the next three-to-five years. It will therefore become extremely hard for companies to maintain their current pace of development activities, let alone increase that pace, unless they turn to more efficient forms of development. In order to maintain or increase development efficiency, analysts recommend that companies evaluate, plan and begin migrating their development staff away from code-centric development and over to a model-driven development and component assembly approach.

CA Gen has enabled customers to use model-based development and components to increase productivity and reduce technology complexity throughout the last two decades. These capabilities help customers reduce the complexity of the J2EE and .NET platforms to deliver applications more cost effectively. Organizations are able to implement pieces of the J2EE or .NET architecture as they are ready. This reduces the technology learning curve, speeding application delivery and lowering training costs. In addition, it reduces the risks of this technology transition.

Queensland Transport in Australia delivered 35% more functionality using CA Gen versus coding Java.

“CA Gen’s ability to generate systems as well as components for both mainframe and .NET from a single model enables us to deliver flexible solutions that maximize platform performance and meet user requirements.”

Bernt Svensson
Alecta

“It is relatively easy to copy code, but when porting between platforms, debug-ging takes time. CA Gen makes this process relatively simple and we have saved hundreds of man-days of effort.”

Mahesh Shah
Senior Vice President, Kale’s Cargo Solutions

Platform Transition Costs and ROI

The use of many technology environments and managing the interoperations between them is both costly and time consuming. For example, the typical enterprise organization has numerous operating systems, databases, middleware solutions, application servers, user interfaces, etc.

Not only do these vary across their production environment, but also across their development and test environments. Through its model-driven, 100% code generation environment, CA Gen brings significant ROI to these enterprise organizations. Since CA Gen can deploy applications to multiple platforms, hardware flexibility is increased dramatically. Many organizations have experienced lowered operations costs through timely use of hardware strategies such as downsizing, cooperative and distributed processing and web enablement. CA has proven that migration of an CA Gen application from one hardware platform to another is a simple matter of regenerating the code for the new environment.

CA Gen Enables Software Reuse

To fully maximize application development productivity and responsiveness, organizations need to focus on improving levels of reuse. CA Gen provides the ability to create reusable services and components as well as the mechanisms to understand and share them. Many organizations understand the benefit of, and are trying to implement, a reuse strategy. This requires a significant organizational shift, and using a model-driven approach to can help ease this transition to a reuse culture.

PATTERN-BASED DEVELOPMENT CA Gen enables Pattern-Based Development which is the process of assembling an application using proven repeatable designs that specify data structures, server architecture and user interface. These patterns contain data and process definitions that represent all of the commonly used information relationships. Using these patterns, developers can create a fully functional CA Gen model that has been developed in minutes and is ready for testing or further logic extension. Further ROI benefits can be achieved using this pattern-based approach including:

- **Increased Productivity** Produce production ready applications within minutes
- **Reduced Training Costs** Developers learn by example
- **Reduced Maintenance Costs** Standardized quality code facilitates more productive maintenance cycles
- **Improved Performance** Patterns are designed around the latest best practices and with attention to network traffic issues
- **Faster End User Acceptance** Robust UI features, stability and overall quality

COMPONENT-BASED DEVELOPMENT Component-based development (CBD) applies standard methods to the process of designing and developing reusable software components. Specifications define the data that is processed and the services provided by the software component. These specifications are encapsulated within the component and a standardized interface to the component is published so it can be reused across development projects in multiple application solutions. CA Gen provides an optimal CBD environment that delivers many ROI benefits including:

- Increased developer productivity
- Better project manageability

- Improved application quality
- Enhanced software reuse

*“In response to the need for greater business and application agility, we have seen the exponential growth of service-oriented architectures (SOAs) that enable business process management initiatives to assemble new reusable services. At the core of this agility and reuse is the need to design and implement shared, reusable software and data. Most IT organizations have shifted to object-oriented analysis and design (OOA&D) methods to create the reusable pieces of software. However, many find that they are getting solutions that are too granular for meaningful reuse. As a result, they are incorporating component-based development (CBD) methods to get a more pragmatic fit for reuse”.**

*Source: Gartner, “Determining Whether OOA&D or CBD Best Supports Reusable Software and Services” Michael Blechar, David Norton, August, 2006

A Foundation for Service Oriented Architecture (SOA)

Implementing a Service Oriented Architecture and reuse strategy can deliver significant application development ROI, although it is not something that can happen overnight. Some of the biggest efforts when transitioning to an SOA are not related to technology issues, but rather organizational ones. So, evolving to a more agile Service Oriented Architecture is best handled in phases. For example, many organizations will implement focused reuse strategies within project teams or development groups, providing short term process improvement and value to the business. At the same time, longer term strategic plans can be put in place to transition to a full agile SOA. These plans need to address numerous facets such as organization change, system change, process change and more. Model-driven development provides the foundation for the critical first steps in the creation of an SOA — and for those customers who have implemented component base development methods, this transition can be even further accelerated. The CA Gen model-driven environment significantly increases the speed at which you can assemble and reuse existing processes to deliver services. The CA Gen Web Services Wizard also simplifies and accelerates the delivery of reusable services. These web services can be integrated into workflow engines and further improve business processes. By providing short term business benefits, while at the same time implementing long-term strategic value, this phased approach to architecture evolution has proved much more realistic and successful than the “big bang” approach, and has also proven to deliver significant ROI.

Sharing of Business Data

The CA Gen Encyclopedia Environment enables the sharing of information across an organization. A single model approach enables all aspects of your business to work from the same business specifications. This allows common access to the same information even if departments are geographically dispersed. The extensive team development and multi-project support further enhances developer productivity, optimizes software reuse and increases application quality and consistency, through enhanced project control.

Legacy Reuse and Application Integration

Most organizations today have a significant portfolio of applications, which are in use and providing necessary services to the business. Some of these systems are new, perhaps developed in-house or purchased, and provide excellent business value. However, some are older, out-dated, and should be replaced. Organizations must leverage their investment in these applications through reuse, because the cost of rebuilding entire systems can be prohibitive. Plus these legacy applications often provide mission-critical functions supporting day-to-day operation of the business.

CA Gen provides techniques and tools for maximizing reuse and investment in an organization's enterprise legacy applications.

CA GEN SERVER INTEGRATION CA Gen servers are accessible to other applications or consumers via Proxy technology (COM, .NET, C and Java).

CA GEN SERVERS ACCESSING LEGACY DATABASES CA Gen applications have the ability to access legacy databases via native SQL access or various industry database integration standards such as JDBC, ODBC and ADO.NET. CA Gen is able to re-use VSAM and DL/1 legacy data using the transparency options. This can significantly reduce the time, cost and risk associated with data modernization.

CA GEN SERVERS ACCESSING LEGACY APPLICATIONS/CODE CA Gen applications may call modules written in various programming languages using External Action Block technology.

LEGACY RENEWAL SOLUTION Automated extraction and the CA Gen model-driven development environment can be used to successfully transform hand-written legacy COBOL and Natural code to new solutions that implement modern technologies and architectures such as J2EE, .Net, SOA and Web services.

SECTION 3

Improved Application Quality

Another ROI benefit of using CA Gen is higher quality of the applications, thereby improving end user productivity and increasing overall organizational effectiveness and efficiency.

Project failure can be one of the most expensive IT costs. Failure can mean 1) the project is cancelled 2) it is successful, but too late for the market 3) key functionality is missing 4) the application fails under the volume of transactions or traffic coming over the internet. Preventing project failure means cost savings to the bottom line. Developing applications using CA Gen helps prevent project failure in numerous ways.

CA Gen simplifies design decision by enabling organizations to reuse and build upon existing, valid business rules. The model-driven approach isolates business decisions from technology decisions. Design decisions are isolated into components, which accelerates the delivery cycle into smaller steps. This makes it easier to make the right decisions up front as well as easier to recover from wrong decisions.

“CA Gen delivered a structured development environment in which we could manage the entire software development process with consistent, high-quality results.”

Bernie Leapaldt
Project Manager, Unisys

The CA Gen easy-to-use diagrams get the users involved early in the application development life cycle, as well as promote continued involvement throughout the life cycle. By specifying business rules up front, they can begin to discover better ways to do business and lay the foundation for the most effective business applications. Keeping them involved throughout the application life cycle keeps the application specifications in sync with changing business requirements and ensures that the end application solution will meet the needs of the end user.

Proven Performance and Scalability

Organizations rely on their mission critical solutions to run their business and CA Gen has ensured the performance and scalability of these solutions over the last twenty years. The proven code generators in CA Gen create applications that are “native” to the platform they run on, optimizing system performance. Over time, the transaction throughput or number of system users often increases and the application needs to scale to accommodate this growth. In addition, CA Gen has proven the ability to regenerate systems quickly and easily, from Windows to UNIX to Mainframe to Web — the application can scale without worry.

Compliance

Business processes are an organization’s mechanism for creating and delivering value to its stakeholders. The CA Gen model-driven environment provides the ability to document as well as track changes made to these business processes. This assists organizations in meeting process compliancy and governance requirements associated with legislated standards such as Sarbanes Oxley and HIPAA in the U.S and BASEL II in Europe.

Consistency

The embedded knowledge and consistency checks within CA Gen ensure the development of error-free application code. Wizard-like dialogs prompt the developer for valid options, no time is wasted locating the cause of syntax or application errors, and no time is needed to resolve inconsistencies between diagrams and code. Embedded development processes provide automated development standards.

The quality of CA Gen generated code is outstanding. There have been no production failures due to erroneous generated code reported in the twenty years since CA Gen has been delivering mission critical applications, and customers around the world have millions of lines of code in production today. In addition to no costly application failures, the application documentation is always in sync with the executing application, because the CA Gen diagrams are your application documentation.

SECTION 4

Conclusions

Applications that support business processes must be delivered on time and must meet the needs of the business. These applications must be easily adaptable and maintainable as requests for system changes will occur. In addition, compliance and regulatory requirements, such as Sarbanes-Oxley, demand that IT provides a complete audit trail of these changes. IT development organizations are challenged to meet these requirements without compromising the quality and performance of these systems, while at the same time reducing the costs of developing software and meeting implementation deadlines. CA Gen has been helping organizations meet these business and IT requirements for over twenty years. The appendix of this paper provide customer examples of how CA Gen has enabled enterprise organizations to reduce IT costs, deliver systems faster, and react more quickly to business and technology change.

By automating and integrating application development processes, CA Gen has enabled IT organizations to raise their level of service while reducing cost of software delivery. Numerous CA Gen ca smart™ partner solutions are also available to provide even greater developer productivity and application quality (visit www.ca.com/casmart for more information about these proven partner solutions).

CA is committed to continued investment in CA Gen which will further optimize your ROI and minimize your total cost of software ownership (see CA Gen Vision and Strategy paper for additional information about CA's plans for CA Gen).

SECTION 5

Appendix — Customers Achieve Significant ROI from CA Gen

Stingray Technologies Saves Significant Time and Money Using CA Gen

Stingray, the offshore development center of Globalcase Technologies, Inc. offers comprehensive software solutions to worldwide fortune 500 companies.

Immediately after the 9/11 terrorist attacks, the airlines industry faced numerous challenges, and with a sudden drastic drop in air-travel, these companies suffered major losses of revenue. "To tackle this problem, one of the largest airlines in the US decided to launch an attractive 'frequent flyer' program. The company wanted this product to come out as fast as it could so that it could make up for the losses," says Mr. Sunil Pipalwa, COO, Stingray Technologies. The airline was unable to modify their current system within the budget and time available to them. They were frantically searching for a tool which could reduce the development cost, take less time and effort and also ensure quality, stability and instant availability. This airline, like many others was then working with its back against the wall and facing liquidation.

Stingray was given a very tight deadline to deliver the frequent flyer system, which was to be used by a consortium of airlines. "It was a tough task, given that we also had to integrate with existing systems, work against time and deliver the system right the first time," tells Mr. Pipalwa.

“Having burnt their hands with different technologies, the US airline needed a tool which could develop a quality, robust application very quickly”, says Mr. Pipalwa. “The application was to be web enabled and launched worldwide on the Internet.” The only solution in the market that provided the comprehensive development environment to meet their requirements was CA Gen from CA. Globalcase Technologies (Stingray) had the required expertise in CA Gen and the software developers knew the proven capabilities of this product. “We knew that this kind of development in quick time would not be possible without using CA Gen” says Pipalwa.

CA Gen delivers business process and data models more quickly and efficiently. It provides flexibility to deploy the application in variety of supported environments such as Windows, Mainframe, UNIX, J2EE, .NET, etc. Explains Mr. Pipalwa, “With CA Gen we were able to generate the database and code for various databases and languages. It also helped us in reusing functionality of existing, proven applications to rapidly develop new business systems. In addition, CA Gen also enabled the linking of separate applications to work cooperatively as part of a larger system.”

CA Gen provides comprehensive system design capabilities and handles database calls very efficiently. CA Gen has a built-in mechanism to check and control any inconsistency, making it a tool of choice for developers. If there is some inconsistency in any of the business rules, it won't allow you to proceed further without correcting it. Mr. Pipalwa explains that if developing an application using a J2EE IDE takes 100 hours it will take less than 60 hours if you use CA Gen. “One can easily imagine the time saving it gives to us. The other thing is you don't have to use tools for extensive testing while using CA Gen. Using the CA Gen Java Proxy, we implemented the world class web application in record time and it has been running efficiently since February 2002, says Mr. Pipalwa. The company still maintains this site from India.

The company feels that CA Gen, when compared with hand-writing COBOL, takes 40 percent of the time to develop any application. And when compared with Java IDE's, CA Gen J2EE development takes just 60 percent of the time. “Compared to IBM/Rational development tools, CA Gen is more robust, reliable and reduces overall project costs,” says Mr. Pipalwa.

IRB Cuts Development Time in Half With CA Gen

The Inland Revenue Board of Malaysia (IRB) or Lembaga Hasil Dalam Negeri is one of the main revenue collecting agencies of the Ministry of Finance. IRB was given the mandate to implement a nationwide self-assessment tax system by 2004. Given the timeframe and magnitude of the project, IRB needed a development environment that was powerful and robust, as well as easy to use. Most importantly, it was critical for the solution to minimize the development and implementation time needed to cut-over to the new system.

A team of 60 developers at the IRB was tasked with the challenge of designing and developing the self-assessment application. The system developed had to be implemented throughout over 40 nationwide IRB branches and used by its 9,000 employees. The system also had to support 2 million individual taxpayers as well as 500,000 corporate payers. Given its proven stability, reliability and support, CA Gen was selected for developing the new taxpayer self-assessment system.

Architecture-based environment and code generation capabilities found in CA Gen freed the development team from having to write the code manually. 100 percent of the solution was generated directly from enterprise data model diagrams.

This exceptional ease-of-use and its ability to consistently generate error-free code, dramatically enhanced the teams' productivity and cut the development time for delivering the solution in half.

IRB was able to implement system changes rapidly as developers could build reusable components, web-enabled applications, as well as integrate existing software with new systems. Where changes were required, modifications could be made to the model and not to the actual code. This also significantly reduced the overall effort required for maintenance by 80 percent.

The development team at IRB also benefited from the fully automated code generators within CA Gen. This means that their applications could easily be generated for different platforms, ranging from mainframes to UNIX and Intel-based servers, as well as the Internet; using the same set of business logic captured within the tool. All the developers had to do was to change the platform in the generator in order to duplicate the application in a different platform, without having to rewrite the entire application.

IRB is enjoying dramatically improved employee efficiency as well as productivity.

Having all income tax processes automated, discrepancies were automatically detected and alerts triggered. This allowed the IRB to redeploy resources, which were previously bogged down with menial data entry tasks, more effectively, as auditors.

The ease-of-use of CA Gen also enabled the IRB to successfully develop, deploy and maintain their new self-assessment tax system with just 40 percent of the manpower that would have been required otherwise.

IRB is very happy with the self-assessment system that was developed in the CA Gen environment, which enables a smooth transition to the new system.

"It is now much easier for IRB to track the status of the individual accounts. With the help of CA Gen, Malaysians in general can now benefit from an easier and faster tax payment and refund process," concluded En Mohd Azmi.

INEEL Saves Thousands of Developer Hours With CA Gen

The 5000 scientists and engineers of the Idaho National Environment and Engineering Laboratory (INEEL) are at the frontier of scientific research and engineering. Established in 1949, INEEL remains an international center of scientific excellence, dedicated to meeting the nation's energy, nuclear technology, national security and environmental needs.

INEEL's mission means that its employees have to work with toxic substances and radioactive materials. In order to maintain the safety of their staff, INEEL requires applications that monitor employee's health and track exposure to dangerous materials. Paperless recording systems provide up-to-date staff medical records, and also a real-time tracking system to record staff movements and assess exposure risks. These are mission-critical applications — lives depend on them. The systems give health professionals immediate online access to detailed data on worker's health, medical history and their exposure risks. INEEL requires reports on area, facility and agents to provide critical information on the effectiveness of staff protective gear. Health analysts would use these reports to identify patterns of medical problems among staff.

Tight budgets required the maximum productivity from a three person development staff. They knew they couldn't afford to re-implement their solution if technology changed. INEEL chose to design and implement these applications with CA Gen, from CA. CA Gen offered the power of a model-driven architecture, which gave their developers a clear, consistent model of the entire application and allowed them to automatically generate code. CA Gen also allowed INEEL developers to hedge their bets on technology trends, because it offered a key benefit that is still of great value today: true platform independence. The result was a complete success. The applications went on to win two prestigious software awards: The ComputerWorld Software Excellence Award for heroic achievement in Information Technology, and the Management Quality Award for the automation of medical processes.

Software professionals know that when you build a system, and it is greeted with enthusiasm, the work isn't over — it's just beginning. Successful, mission-critical systems need to stay online for many years, and as such they have to survive technology upheavals. A few years after the applications were deployed, cost constraints mandated that INEEL would have to phase out their IBM mainframes and shift to new, lower-cost Windows servers. INEEL needed to port these two complex client-server applications to new servers, and at the same time change the database technology from DB2 to Oracle. Their foresight in choosing CA Gen paid off, because both applications were moved in only six weeks, and most of this time was spent moving data and performing tests.

"Without CA Gen, it would have taken an average of four hours to manually migrate each procedure," says Dale. Instead the entire application port — all 1000 procedures together with hundreds of supporting database tables — took a single developer only 40 hours. "It went so smoothly, it was hard to convince management what a big deal it was." The entire platform migration took less than two months, and would have taken as much as two years without CA Gen.

With CA Gen INEEL has realized many years of return on their software investments. The CA Gen model-based architecture and platform independences have allowed the high-value INEEL systems to navigate several generations of technology change, from old block-mode, "green screen" applications to client-server and web architectures. At the same time they've lived within strict budgets.

Sol Meliá Delivers Significant ROI

Sol Meliá, one of the world's leading hotel companies, used CA Gen to deploy a streamlined web-based marketing and sales system designed to speed the company's international expansion. The new system encompasses customer reservations, loyalty and tour operator contracts. It has eased linkage with business partners' applications, provided a more intuitive graphical interface to agents and staff, and made it possible to extend access to users and customers via the Internet. As a result, sales increased 200% in the first year alone.

Using CA Gen, Sol Meliá developers integrated a wide range of existing applications into the new system. Those existing applications included both the company's core applications from SAP and Siebel and those of its business partners, such as Sabre, Amadeus, WorldSpan and Galileo.

“CA's CA Gen allowed us to develop a highly robust web-based system that fully leverages our existing systems and those of our partners,” said Josep Buades, architecture manager, Sol Meliá. “By shielding our developers from the underlying complexities of those systems, CA Gen enabled us to focus delivering functions with business value while reducing the time and cost to build the new system. This has resulted in a very important return on our investment in one year alone.”

More than 500 Sol Meliá employees use the new system to streamline their daily business tasks and effectively service the 23 million guests who visit the company's 350 hotels every year. The integration of multiple applications is enabling Sol Meliá to collect data from multiple internal and external sources, support a sophisticated customer loyalty program serving 420,000 participants, and better manage its contracting relationships on a multi-national basis.

“Sol Meliá's new suite of systems dramatically illustrate the tremendous positive impact information technology is having in the hospitality industry,” said Leo Bensadón, country manager of CA Spain. “We are gratified that they selected CA Gen to support this critical IT initiative.”

Sol Meliá is the leading hotel company in Spain, Latin America and the Caribbean, the third largest hotel company in Europe, and number ten in the world. Sol Meliá is also the largest resort hotel chain in the world. The company provides more than 350 hotels in 30 countries under its Meliá Hotels, TRYP Hotels, Sol Hotels and Paradisus Resorts brands. For more information, visit <http://www.solmelia.com>.

SECTION 6

References

International Function Point Users Group (IFPUG) www.ifpug.org

“Determining Whether OOA&D or CBD Best Supports Reusable Software and Services” Michael Blechar, David Norton, August, 2006

CA, one of the world's largest information technology (IT) management software companies, unifies and simplifies complex IT management across the enterprise for greater business results. With our Enterprise IT Management vision, solutions and expertise, we help customers effectively govern, manage and secure IT.

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