CM M3

An Evolutionary Approach to Modernizing
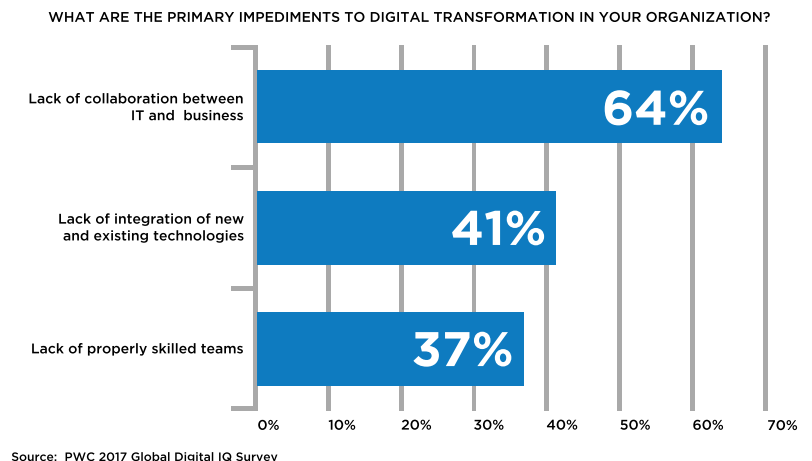CA 2E Applications

Despite all the hype around digital transformation, the plain truth is that much of the progress in IT is evolutionary.

In fact, the notion of technology disrupting everything is a misnomer. According to an article titled "Five Myths About Digital Transformation[1]" in the Spring 2017 issue of MIT Sloan Management Review:

> " Most transformational leverage comes from tried-and-true operational technology (for example, networking and databases) and strategic technology (such as enterprise resource planning or customer relationship management software). It rarely...comes from emerging technology (such as augmented reality) or disruptive technology (such as machine learning). "

This idea extends to your CA 2E applications, which are built upon tried-and-true business logic and rules but may have an out-of-date user experience and development environment. The options for modernizing these applications – code rewrites and off-the-shelf software – are often so costly, risky, and disruptive to business that many organizations choose to do nothing. They remain trapped by inflexible RPG and COBOL applications generated by CA 2E, which inhibit innovation, agility, and competitiveness.

Indeed, failure to bridge technology old and new to support current business needs often leads many digital transformation projects to stall. For its 2017 Global Digital IQ Survey[2], PwC asked 2,216 business and IT leaders from 53 countries what thwarts digital transformation. Their top reasons included lack of collaboration between IT and business (64%), lack of integration of new and existing technologies (41%), and lack of properly skilled teams (37%). See Figure 1.

Contents

WHAT ARE THE PRIMARY IMPEDIMENTS TO DIGITAL TRANSFORMATION IN YOUR ORGANIZATION?

Lack of collaboration between IT and business: **64%**

Lack of integration of new and existing technologies: **41%**

Lack of properly skilled teams: **37%**

0% 10% 20% 30% 40% 50% 60% 70%

Source: PWC 2017 Global Digital IQ Survey

Figure 1 – Impediments to Digital Transformation

The bottom line is that you need to modernize your CA 2E applications, but you cannot afford to throw out the foundation that anchors your business. What if you could take an evolutionary approach by leveraging the existing business rules and logic in your CA 2E applications and easily migrating them to a modern, maintainable application? There is a way, and it does not mandate that you reinvent the wheel.

Here are the reasons to modernize your CA 2E applications, drawbacks of the traditional modernization approaches, and the benefits of a refactoring process.

Why Modernize Your CA 2E Applications?

Migrating your CA 2E applications enables your organization to take advantage of modern features that have become essential to business, including:

- **Change of Platforms:** You may need to migrate RPG or COBOL generated applications to different hardware platforms on which CA 2E is not supported, such as commodity hardware or cloud hosting. Platform-independent provisioning enables you to capture the benefits of continuing advances in computing capabilities.
- **Enhanced User Experience:** Your CA 2E green screens are limited and out of date. You need modernized application interfaces that are responsive, intuitive, and user-friendly.
- **Talent Match:** It is difficult to find people with CA 2E and/or RPG skills. You need modern code that is easy to understand, modify, and maintain via programming languages such as Java and C#/.NET.
- **Mobile Environment:** Your applications need to be accessed via mobile devices.
- **Integration:** You need APIs that enable you to easily integrate with other enterprise systems such as SAP and Oracle.
- **Databases:** You need to migrate to databases such as DB2 for LUW, SQL Server, Oracle, and MySQL, and integrate more closely with Big Data analytics platforms.
- **Competitiveness:** You need a way to accomplish system enhancements more quickly using modern tools.

Traditional Options to Modernize

1. **Maintaining the Status Quo**

Relying on your legacy applications is fine, up to a point. Lack of innovation and flexibility will eventually catch up to your organization. The money you save will soon be eclipsed by lost opportunities. It's becoming more difficult to find people who are able and willing to work on your applications. Your ability to compete may be hampered.

2. **Rewriting the Software**

Starting from scratch enables you to build in all the bells and whistles you need from the beginning and

position your organization for the future. This is assuming you have the skills and institutional knowledge required to tackle a project of this magnitude. Rewriting software is often expensive, time consuming, and risky. Many of these projects fail to meet the requirements, often because IT and business cannot get on the same page.

In fact, The Standish Group reviewed 50,000 development projects and found that only two percent of those with more than $100 million in labor costs were successful, defined as on time and on budget. Over half were behind schedule, over budget or did not meet user expectations. The rest (47 percent) were considered complete failures. See Figure 2.

WHAT PERCENTAGE OF DEVELOPMENT PROJECTS ARE COMPLETED ON TIME, ON BUDGET AND MEET USER EXPECTATIONS?

2% – On time, on budget and met user expectations

51% – Behind schedule, over budget or failed to meet user expectations
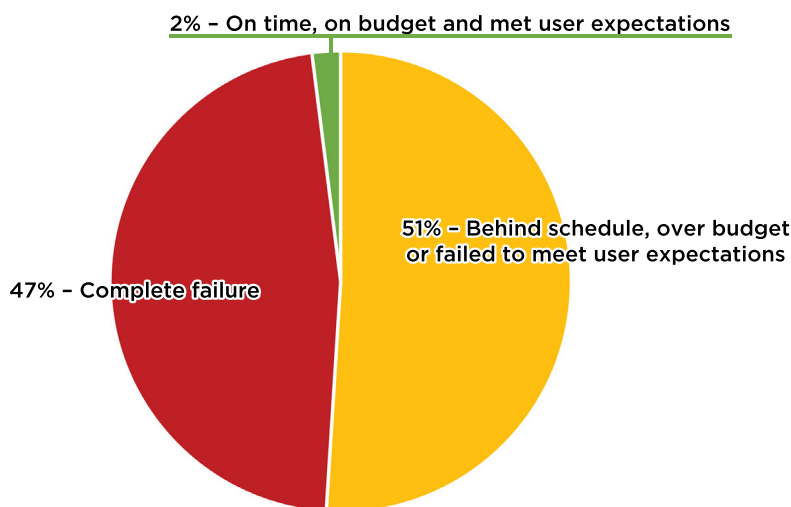
47% – Complete failure

Figure 2 – Outcomes of Large Development Projects

Examples of rewrite failures abound. The State of Pennsylvania is suing IBM over an unfinished, $110 million upgrade to its unemployment compensation system. When the project was terminated in 2013, it was nearly four years behind schedule and $60 million over budget. The state relies on its legacy systems to this day.

At the Texas state attorney general's office, a project led by Accenture to modernize the child support payments and investigations system has run into all sorts of issues, including lack of internal experts to manage the project with Accenture. When it goes live by the end of 2018, estimates are that it will be $200 million over budget and two years behind schedule.

3. Buying Off-the-Shelf Software

Purchasing a generic software package from a vendor to replace legacy applications can seem like a good approach. After all, the vendor is responsible for maintaining the software and deploying new functionality.

This may work if the task was as simple as plug-and-play. However, these packages cannot possibly match

the decades of business processes and rules built into your legacy systems. Rewriting and customizing the software can be an expensive, lengthy process.

Here are just a few examples of issues organizations have faced with off-the-shelf software:

- HP tried to centralize its disparate North American ERP systems onto one SAP system in 2004. The resulting order backlogs and lost revenue cost the company $160 million. This was five times the cost of the project.
- British telecom provider Vodafone had trouble migrating all its customer accounts when it consolidated its CRM systems onto a Siebel platform. When customers were not credited correctly for their payments, the British telecom regulator fined the company £4.6 million.
- Washington State's community colleges still don't have the PeopleSoft ERP system that was slated to go live in 2012. One reason is that the 34 campuses in the system all have different business processes, but standardization wasn't built into the initial plan and rollout.
- Failure to recognize business processes also plagued the rollout of SAP at Woolworth's Australia. The organization did not have proper documentation of the business processes built into their in-house system 30 years ago. As a result, trouble soon struck: The weekly P&L reports from individual stores could not be generated for a year and a half.
- Target thought it could avoid converting legacy data altogether when it launched in Canada in 2013. The company decided to put only new information into their SAP system, resulting in 70 percent of the data being incorrect. Consequently, their supply chain collapsed.

A Better Way: CM M3

The task of modernizing legacy CA 2E applications no longer needs to hold your business back. CM First Group facilitates the evolutionary approach you need, enabling you to preserve your time-tested business logic and rules while taking advantage of modern features. The company has developed an approach called M3 (Model-Based Modernization Methodology), which is designed to help an organization move to a more up to date "low code" platform without an extensive learning curve.

Fueled by a flexible and scalable automated transformation engine, CM M3 delivers fast, cost-effective, robust, and future-ready CA 2E modernizations. The software preserves the CA 2E model design while deploying all business logic onto a modern, web-based Java architecture.

CM M3 is a turnkey service that accelerates the speed of your project while increasing its success. By eliminating the time, cost and errors of manual labor, you get the quickest possible payback on your modernization investment. See Figure 3.
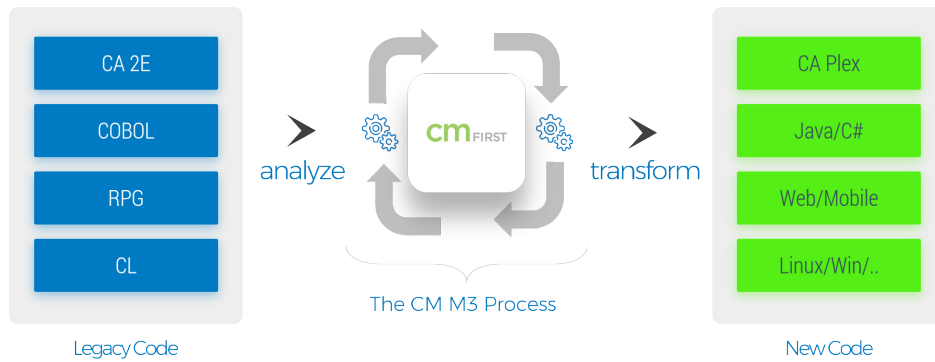
Figure 3 – The CM M3 Process for CA 2E Application Modernization

CM First Group's proven process begins with a no-cost automated analysis of your application design. Next, the company provides a fixed-cost bid for transforming your application. Then the company produces a CA Plex model, and programmers proceed quickly to QA and deployment. CM First Group experts are by your side as needed to provide expert guidance from initial assessment to acceptance testing and implementation.

Product Capabilities:

- CA 2E business logic and screen designs are automatically migrated and guaranteed to be functionally equivalent.
- Developers are more productive because they work in a modern low-code environment with inheritance, DevOps, Eclipse/Visual Studio, and more.
- Applications can be re-platformed to the cloud (AWS or Azure) or stay on the IBM i Power Platform, as required.
- Migration to new database platforms such as Oracle, SQL Server, or MySQL is included in the service.
- CM M3 is designed to work at scale across mission-critical CA 2E models.

Projects can be scheduled for durations of six to nine months and completed on time for a fixed budget. Your IT department can complete smaller modernization projects in a single budget cycle.

Summary:

Traditional approaches to modernizing CA 2E applications such as rewrites and off-the-shelf applications are costly, time-consuming, and risky. Doing nothing will eventually catch up to you in terms of lack of innovation, decreased flexibility, and missed opportunities.

With CM M3 enabling you to abstract your business rules from the restriction of legacy code, you're future-proofed and can deploy apps on the optimal platform. Your existing CA 2E development staff can maintain code in the new environment with minimal training.

CM M3 in Action

Dupouy SA: Modernizing an ERP System

Based in France, Dupouy SA is a specialty exporter of food and non-food products to the French West Indies, French Guyana, and West and Sub-Saharan Africa. The company faces increasing competition from major food distributors such as Carrefour and Auchan, which are expanding into their market. The company's CA 2E applications, including its ERP system, are critical to keeping its prices competitive and for meeting market demand.

Although the business requirements are complex, the current software globally corresponds to the business need, and Dupouy is happy with its IBM i5 platform. However, the company needs to improve the software regularly to meet market constraints, work with new business partners, and implement new legal requirements. This is difficult with its current CA 2E applications because:

- An IT partner that no longer exists developed the software more than 20 years ago with Synon/2E and RPG on the IBM i5 Platform.
- Dupouy does not own CA 2E, which left it struggling to keep up with maintenance activities.
- Dupouy does not have the skills for development: It is difficult to find people with CA 2E and/or RPG skills, making it a challenge to implement requested improvements.
- The green screens are very limited and out of date.
- Users have difficulty accessing the software outside the company's headquarters.

Dupouy decided to embark on a modernization project with the following requirements:

- Keep the existing business logic developed during the last 20 years
- Update the screens with additional data and more intuitive, user friendly features than the green screens
- Use the software outside the company headquarters, preferably in its customers' premises with no constraint between the software and the workstations, ideally using a Web browser
- Retain the i5 platform, which runs without any problems, and with no internal IT skills
- Minimize the impact on current business operations as much as possible during the rollout in terms of testing and training
- Train CA 2E staff quickly

" Our customer Dupouy, with highly complex business requirements, needed to modernize a global ERP system based on CA 2E. We are happy to report that the CM M3 transformation process was a non-event to the business, and gave us a browser-based platform to make necessary improvements to the application quickly and easily. "

— IBM i Integrator Belharra, France

Dupouy reviewed the options for modernizing its CA 2E applications and decided that a software rewrite carried significantly more cost, risk, and time. Also, no other ERP package would stick seamlessly to its business needs and would require expensive, time-consuming customizations.

Working with French IBM i integrator Belharra, Dupouy deployed CM First Group's CM M3 product. The solution migrated the business logic developed with CA 2E toward CA Plex, which is more efficient for Dupouy's business needs. The company can buy additional licenses of the development tool for a moderate budget and therefore have an available environment for development.

CM M3 transformed more than 10,000 Function Objects in CA 2E to CA Plex, Java, and Linux, with more than 95 percent of those function objects automated. Because the previous business logic was working fine, the testing workload was diminished dramatically. The rollout was done gradually, having the possibility to revert, if necessary, to the former software.

In addition, CM M3 integrates CM WebClient to generate a modern browser application and enable use on both desktops and tablet devices. The project added relevant information and features and removed useless data and functionalities. The Web-based screens are now more user friendly, providing users with all the requested data needed to work more efficiently.

In all, the migration process was a "non-event" for the customer, according to Belharra. CM M3 was able to migrate all the same level of functionalities as the former software. Once the new software was cleared of useless items and all parties were confident about the robustness of the new application, improvements have been developed on the base of the new, tested software. Dupouy suffered no business impacts during the rollout, and the training needs were very light and done internally.

Cargill: Migrating Data and Business Logic for Historical Reference

With 150,000 employees in 70 countries, Cargill provides food, agriculture, financial and industrial products and services to the world. The company's Australian operation needed to retire its IBM i system and save the expenses associated with maintaining it. The company had moved all business applications off the IBM i systems but had not converted historical data into the new system. This information is critical for reference when there are customer complaints or inquiries about data processed in the old IBM i system.

Cargill looked at a number of solutions to convert the IBM i DB2 data into Excel spreadsheets and MS SQL databases. The main flaw with these approaches was that they only converted the data, not the business logic that would interpret the data and present it in a user-friendly manner. In addition, the payback of these approaches was too lengthy.

Working with integrator HawkBridge, Cargill chose CM First Group's CM M3 option as the most cost-effective solution to move the data and business logic to a Java/MS SQL solution. Darryl Millington of HawkBridge explained:

" Almost all of the other migration suites convert the generated source - which ignores the business rules that are found in a CA 2E Data Model. The M3 migration suite converts directly from the business rules in the CA 2E data model into similar structured business rules in a CA Plex data model. This preserves the investment in business rule development and makes it easier for developers in CA 2E to quickly pick up and understand the business rules defined in CA Plex. "

Cargill provided the CA 2E model, and HawkBridge and CM First Group automatically converted it into a working Java/MS SQL solution via CA Plex. HawkBridge then installed the solution, and Cargill converted their data (using scripts provided by HawkBridge) from IBM i to MS SQL.

Cargill's application has now been successfully migrated, enabling them to retire the IBM i system and reduce costs. By preserving the legacy business rules, CM M3 enabled Cargill to have the data from their old system at their fingertips in their new system.

About CM First Offerings

CM First's powerful automation tools, augmented by professional services staff with many decades of software engineering and DevOps experience, ensure successful outcomes for even the most demanding modernization projects. Our products and expertise have helped over 400 customers in the public and private sectors reach their desired future state faster and more cost effectively than by using conventional approaches.

CM First software quickly analyzes, documents and re-platforms legacy code bases with minimal errors and rework, including those that are too large and complex for humans to tackle in any reasonable timeframe. The output is immediately usable by all team members, regardless of experience and knowledge of legacy software languages, accelerating application maintenance and modernization projects.

For more information, visit **cmfirstgroup.com**

Request a Demo Today

Contact us for more information or to schedule a demo. Call 888-866-6179 or email us: **info@cmfirstgroup.com**

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