The Digital Transformation Journey: Key Technology Considerations

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Section 1:
The application economy: driving the need for digital transformation

The Internet of Things will include 26 billion units installed by 2020. IoT product and service suppliers will generate incremental revenue exceeding $300 billion, mostly in services, in 2020. It will result in $1.9 trillion in global economic value-add through sales into diverse end markets.


That’s a lot of money, and companies like MUFG Union Bank, Nordstrom and Swisscom are ensuring that software applications and services keep them at the forefront of this new reality. Reaching customers through these growing channels and keeping them satisfied with amazing experiences will become a default practice for any successful business.

This means that software development organizations will be under increased pressure to deliver a new generation of software apps—and the Application Programming Interfaces (APIs) required by external partners—to build an ecosystem of value around the connected product.

Figure 1.
The customer journey and the app

Find & Choose
- Compare vendors and prices
- Select product, search for local store, review product there, buy online or on premises

Purchase
- Pay by smartphone in store or online

Billing
- Receive printed invoice/receipt and/or soft copy

Pickup/Delivery
- Order online but collect in store

Returns & Customer Service
- Order online but returned to store

Feedback
- Buying and product experience shared with social network and vendor site
This has created the need for a digital transformation strategy, as an organization turns the way it uses technology from being a cost center and operational function to a genuine competitive differentiator.

Within this transformation sphere, a key focus area has become the development of “omnichannel” or “digitally connected multi-channel” capabilities. Their goal is to deliver a branded, consistent, integrated and holistic customer experience. The challenge comes in riding the tension between crafting this uniform experience while also developing a unique, customized flow for the individual customer.

New customer expectations include:
- An optimized user experience irrespective of device, platform or location
- To be treated as a unique individual with known personal preferences and purchase history
- Previous engagements in one channel (example: in person at a store) will be recognized when communicating via another channel (example: on a mobile device)

This new reality doesn’t just affect the most obvious sectors such as banking and retail, but every vertical—from telecoms to travel to manufacturing to fashion. The application economy is proof that every business is in the software business.

These changing dynamics have implications:
- Revenue shifts from conventional retail to online sales
- Digital channels become more significant than ever before
- Connectivity between supply chain, logistics, purchasing and fulfillment assumes a pivotal role

A new kind of customer
This new breed of customer is connected to devices all day long, and using them is second nature. They’re app-adept and aware of the information they’re sharing and receiving. All of this amounts to a demanding user with high expectations.

Figure 2.
The application economy customer

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Quality seen as a given = expectation levels based on market-leading apps UX
Promiscuous = little loyalty to a supplier

Branding engagement channel agnostic = demand same service regardless of channel
Empowered & information aware = “showrooming” commonplace

Social media heavy user = positive & negative experiences will be shared
Time restricted = little tolerance for slow responding apps
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What may appear to be “just an app” actually comprises multiple layers of applications, analytics and the importance of business logic that give it depth and breadth. Experts in omnichannel and digitally connected multi-channel strategies are learning:

- Timelines between identifying defects and resolving them (bug fixes)
- How rapidly customer-led enhancement requests can be enacted
- To capture and share customer activity to drive insight-led application management
- The differences between in-store customer behaviors and those via websites and mobile apps

**Figure 3.**

Time-to-market for an application takes on an even greater importance

When a significant proportion of a company’s revenue is expected to come from mobile devices, online sales or a connected retail experience, there is huge pressure to cut the time between concept and business value. The typical turnaround of an enterprise-scale application from ideation to launch can be 12 weeks or more depending on its complexity. This timeline is proving hard for businesses to accept and risks the emergence of “shadow IT” as alternative routes are sought to fast-track a product or service’s launch.
Listen to and act on customer feedback

Leading enterprises are using crowdsourcing vehicles such as Facebook and Twitter to receive both feedback on an app’s performance and requests for enhancements or new features. The ability of a company to turn these comments into action is key to demonstrating that the customer is king. A positive App Store rating with favorable comments greatly increases the chances of further downloads. Equally, a company that is seen to respond to negative feedback and remedy a poor online or mobile experience rapidly can be viewed as in touch with its customers. Also, an automated, repeatable release process is essential to ensure that changes get released to production with minimal delay.

Everything is connected

Customers expect a seamless experience across multiple vendors and environments. The process of checking an applicant’s credit rating with an external agency, for example, should not delay an application for a personal loan. Cross-offers involving various business partners (such as airline frequent-flyer programs or loyalty-card schemes) necessitate integration with third-party systems that have their own dependencies and make already complex applications more so. Each one of these API points represents a risk area that requires validation before an app goes live. However, third parties will have their own APIs that may have restricted access, and sometimes at a significant cost, during the development and test stages.

Performance insight matters more than ever

Launching a new product or service is often a step in the dark. If an app has never been offered before, there is no production data to estimate its usage volumes, peak consumption periods or impact on the enterprise’s infrastructure. Performance and resilience testing becomes more essential than ever. The unfavorable impression left by a poor experience will be shared virally and has a potentially damaging impact on the brand—and the anticipated take-up of the app itself may be limited.

Then there’s the platform issue. An increasing number of users are consuming apps on their smartphones and tablets and will expect a vendor’s app to respond just as well whether they’re at home, in a coffee shop with Wi-Fi or in the countryside using data roaming. Equally, users of different platforms—whether Android, iOS or BlackBerry—will all expect a responsive, immediate app experience.

An optimized customer experience is a given

Companies such as Facebook, Amazon, Google and Twitter have delivered a high-quality user experience to today’s consumer. Quality becomes paramount in an era when a customer of several years can be lost overnight if an app crashes or there is no continuity between the physical and online store.

25% of users will stop using a web application given a delay of three seconds or more.

Aberdeen Group, Reaching the Top of Web Performance Mountain, March 2013
Deployment represents the completion of a stage, not an end in itself
When a new app finally goes into production, it’s the start of a new chapter, not the end of the project. Insight is needed regarding consumption volumes, patterns, delays and outages. Application Performance Management (APM) solutions can underscore a “closed loop” practice for continuous development and constantly improving an app experience.

Why a DevOps strategy can support a Digital Transformation journey
The shifting focus toward an application-centric world radically changes the traditional environment large enterprises have known for so long. The velocity of change has accelerated exponentially over the past five years or so, and this necessitates a different approach to delivering applications.

“This is not your father’s IT with a release every three years.”
Forrester Research Inc., Software Must Enrich Your Brand, January 2014

The theme of DevOps has taken on great momentum over the last few years. Now an industry-wide trend, it will soon become a default practice for anyone who wants faster application delivery with high quality. Research has revealed that “Leaders” embrace DevOps to accelerate delivery of proven, high-quality applications. Almost half (49%) of the leaders have adopted DevOps versus only 6% of the Laggards. Moreover, they are far more likely to use external metrics (such as revenue and customer experience) to measure DevOps success—58% of the Leaders versus only 26% of the Laggards.²

“We need to become more agile and flexible within IT, and DevOps is one way to accomplish that.”
Senior Vice President, IT Solutions Delivery at DIRECTV
Watch the video.

At CA Technologies, we believe that a combination of DevOps practices and enabling technologies provides a sound foundation to meet the demands of the application economy. Our approach has adopted these core principles to create a mature, DevOps-aligned “closed loop” application delivery process to support an organization’s wider digital transformation vision.

CA’s enterprise DevOps solutions can help you deliver technology faster. We consider DevOps to be greater than just Development-to-Operations handoffs. Rather, the integration between strategy, planning, the software build process and production groups are all parts of a more complete scope of DevOps success.

Each of these teams’ success in planning, building and maintaining software impacts the other teams, so they should all be part of an integrated, collaborative process. For example, maybe you’ve succeeded in achieving successful handoffs of production-ready software from the build process to

² “How to Survive and Thrive in the Application Economy,” September 2014, Vanson Bourne study commissioned by CA Technologies
operations throughout a project. Then a new priority for investment starts through the build process, which affects resources that helped to ensure the initial project’s success. Suddenly, you develop a bottleneck as a result of new priorities. Without some integration between the investment strategy and planning processes, development and operations teams are not able to work around the bottlenecks in time. Clearly, integrating planning into the build and operations process is critical.

Next, CA enables build teams to focus on their discrete processes in parallel, without typical impediments associated with the old way of building software. Each developer and tester is able to work at their ideal speed using virtualized services that mimic components of software that are either not ready or not always available when the developer or tester is ready to test the application. Security and governance are always considered throughout the build and test process, while automated release and deployment processes allow for constant deployments to development, test and production environments. Access to APIs and the decision to promote a build into production are strictly controlled, and full audit trails are available. In short, parallel processing of the work enables greater speed and quality.

Lastly, our focus includes integrations to the production or operations world, which is where detailed customer feedback is captured and fed back into planning. Change requests often come in that disrupt planned work. This continuous loop process applies to both small and large releases to ensure applications are delivered with both velocity and quality—and with the capabilities your customers expect.
Recommendations

However advanced your organization is on the digital transformation journey, we have highlighted several key questions to establish how ready it is to meet the demands of the application economy and deliver a true omnichannel or digitally connected multi-channel user experience.

Where do the constraints in your software delivery lifecycle (SDLC) currently exist?
Constraints can be due to access to mainframe or ERP test environments, test data management, access to third-party systems or budget limitations. Often, this issue is caused by too many parallel development teams seeking access to the same environments.

CA Service Virtualization can address these constraints by simulating unavailable systems and enabling each development team to have its own virtual service environment. By doing so, teams can test early and frequently, avoiding late-in-the-day integration testing, shortcuts with performance testing and poor test coverage.

How can app quality be improved despite all the dependencies?
Today’s composite apps have multiple connectivity points, and each one presents a risk to the customer experience if it is slow to respond, or worse, does not respond at all. Integration testing must be done early in the SDLC, and frequently. A “fail fast and fail often” approach can be a positive if done when it is inexpensive to correct the bugs.

CA Service Virtualization enables organizations to “shift left” quality by enabling integration testing of all composite app dependencies at an early stage, which leads to identifying defects more quickly.
MUFG Union Bank

MUFG Union Bank executives designed the modernization strategy with the customer experience in mind by making the fast delivery of new products and services a priority. These include additional mobile apps for consumers who want to transfer funds, make cashless transactions or apply for a product without having to visit a branch or fire up a PC. “An increasingly younger and more mobile workforce—accustomed to utilizing a variety of social and mobile applications—is driving a growing expectation that business technology should function like personal technology,” Managing Director and CTO at MUFG Union Bank, Dana Edwards, says.

Social and omnichannel strategies: Customers expect everything to be readily available at their fingertips. MUFG Union Bank is redesigning its customer experience to be omnichannel. The company has aggressive presences in social media, as well as considerable investments in redesigned banking and bill payment systems. MUFG Union Bank is also investing in branch strategies for an integrated experience.

An ambitious schedule for rolling out products and services isn’t enough to ensure success in today’s banking industry. “It’s one thing to make the release date, but if we also release a superior product, under budget, with minimum defects and stress tested for maximum loads using the benefits of simulation—that’s even better,” Edwards says.

Read the full story.

Could the release process be automated or automated further?

Automated build, configuration management and versioning tools are already being adopted, but many still require extensive, time-consuming scripting, which is prone to human errors.

CA Release Automation enables reusable common application delivery processes to be established in each environment, along with appropriate reporting and tracking of application deployment processes and artifacts. Its multi-tier release automation defines and manages release activities and deployments across all the components of the application architecture.

Swisscom

Swisscom is using CA Release Automation at its TV subsidiaries to push forward complex digital TV service releases between test and production in hours, not days or weeks.
“This next-generation CA Technologies solution will have a transformative impact on Swisscom TV, allowing the organization to roll-out compelling new digital TV services more quickly, to a very high standard of quality and at lower cost. This is a reflection of today’s application economy driven by the consumer. By relying on CA Technologies to introduce these new services more quickly, we are giving our one million customers greater choice—turning them into their own program directors, with the flexibility to decide how, when and where they watch,” says Ahmad Alayan, Head of DevOps, Swisscom TV.

Watch the video.

How can app performance metrics be fed back and remedial action taken quickly?
Once a new app (or even a simple enhancement) goes live, how is it being consumed? Where are there delays, and how can these be quickly reported back to development and remedied?

CA Application Performance Management (APM) helps make every user interaction a loyalty-building experience. Designed to scale to your organization’s needs, this solution can manage billions of transactions from any device, automatically correlating multiple metrics to help you sort through the data and act decisively to protect the customer experience.

At National Australia Bank, the launch of UBank, a new mobile app, used CA APM in pre-production to increase transaction performance by 82% and login time by 2.3 seconds, greatly improving the customer experience once the app went live.

Watch the video.

How can the behavior of the application or the customer experience provide direction for better approaches to developing or testing the application the next time?
CA Continuous Application Insight learns online activity patterns, characteristics and behaviors, and creates recommendations as well as executable assets to optimize the building, delivery, validation and performance of applications. Designed to leverage information learned during development, testing or execution of the application, CA Continuous Application Insight will automatically generate the assets necessary to continuously improve subsequent releases of the application.

The end goal should be the establishment of transparent, repeatable, end-to-end application delivery processes, which integrate and orchestrate existing
application automation and lifecycle tools. This can enable continuous delivery from development to production, reducing delays in time-to-value to the customer.

Whether your organization is in one of the sectors facing the most intense digital competition (such as insurance, banking, telecommunications or retail), or a more traditional industry, how rapidly and successfully it embraces digital transformation will likely have a profound effect on long term viability. A DevOps approach, the choice of supporting technologies and how the software development lifecycle is revisited will all play a critical role in mastering a rapidly evolving digital environment.

About the Author

Justin Vaughan-Brown is a Senior DevOps Market Strategist within the CA Product Marketing group. Vaughan-Brown leverages his 17+ years in the software industry to evangelize DevOps to both enterprises themselves, and the consulting partners who can assist them in implementing this. Before joining CA Technologies in February 2012, Vaughan-Brown held various product marketing positions with major industry names such as Microsoft, Software AG, BusinessObjects and SAS. He has also held senior European marketing roles with data integration, document security and high performance database vendors. He is the author of the paper, “Refining the telco services production line” and has written over 10 research reports on the subject of application delivery.

For more information

For further information on this research report, as well as the latest insights and research on the application economy, visit rewrite.ca.com.

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