This IDC Technology Spotlight examines the use of crowdsourcing and explores the role that the hybrid crowd can play in aiding organizations with modernizing mainframe applications.

Using the Hybrid Crowd to Modernize Mainframe Applications

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Introduction

The COVID-19 pandemic exposed how unprepared most organizations were to adapt to business change quickly and effectively. Many struggled with meeting client and customer expectations and were unable to effectively respond to the dynamic business climate that COVID-19 imposed. Supply chain inefficiencies and product shortages ran rampant, and by the time businesses processed data and received insights from the mainframe applications, the insights often came too late to optimize activity spend. Mainframe application investments, while suited to support

AT A GLANCE

KEY TAKEAWAY

IDC believes application modernization will continue to grow in importance over the next several years as organizations seek to drive higher levels of business value and business agility.

pre-pandemic business and operational needs, often came up short in empowering organizations to pivot quickly. As a result, modernizing mainframe applications to the cloud has become a top tactic to achieve business resiliency. However, mainframe labor is at a premium because of the shortage of talent, and many organizations lack the necessary resources and know-how to tackle and expedite such initiatives. This paper examines the use of crowdsourcing and explores the role that the hybrid crowd can play in aiding organizations with modernizing mainframe applications.

## *Trends: Modernization as a Vehicle to the Future Enterprise*

As enterprises seek to avoid the business performance perils caused by the pandemic, they are looking at their internal processes and the applications that support those processes as a stepping-stone to becoming more agile and better equipped to respond to economic and business priority changes. Lack of real-time data and data processing capabilities, coupled with fragile supply chain operations, prevented many organizations from managing cash flow effectively. Businesses are now looking to application modernization as a means to bolster cash flow while increasing organizational flexibility, agility, and resiliency. IDC has found that:

» **Application modernization priority has elevated significantly.** Organizations are dedicating more of their application development and management budgets to modernization. Nearly seven years ago, cost savings and efficiency gains were the drivers for cloud migration and application modernization. Drivers have evolved to increasing speed, agility, innovation, and performance, especially after the pandemic negatively affected many businesses. In fact, IDC data shows that 71% of organizations view application modernization as a very high or top priority today, with nearly 84% rating modernization as a very high or top priority within the next three years (see Figure 1).

» **Mainframe modernization is a top tactic.** As the priority for modernization has evolved over the past several years, so too have modernization tactics. Application modernization used to center on packaged application upgrades and migrating custom applications to packaged applications. However, recent IDC data shows that infrastructure migration to cloud and mainframe modernization now rate as top modernization tactics. Even though mainframe applications may utilize older coding technologies, they are still seen as being critical to support business operations. In fact, organizations estimate that roughly 16% of their portfolios are mainframe applications today, and they expect mainframe applications will constitute nearly the same percentage in five years.

» **Modernization has moved from being a one-time initiative to something more.** Organizations also face a new dilemma regarding long-term, strategic choices regarding application modernization. IDC has found that nearly 40% of the applications in a portfolio require modernization today, with approximately 50% requiring modernization in the future, thereby paving the way for organizations to embed continuous application modernization into their ongoing application operations versus approaching modernization as an initiative undertaken every few years.

FIGURE 1: *Application Modernization Priority*

Q *Using the following scale, please rate how much of a strategic priority application modernization is at your company, both today and in the next 24–36 months.*
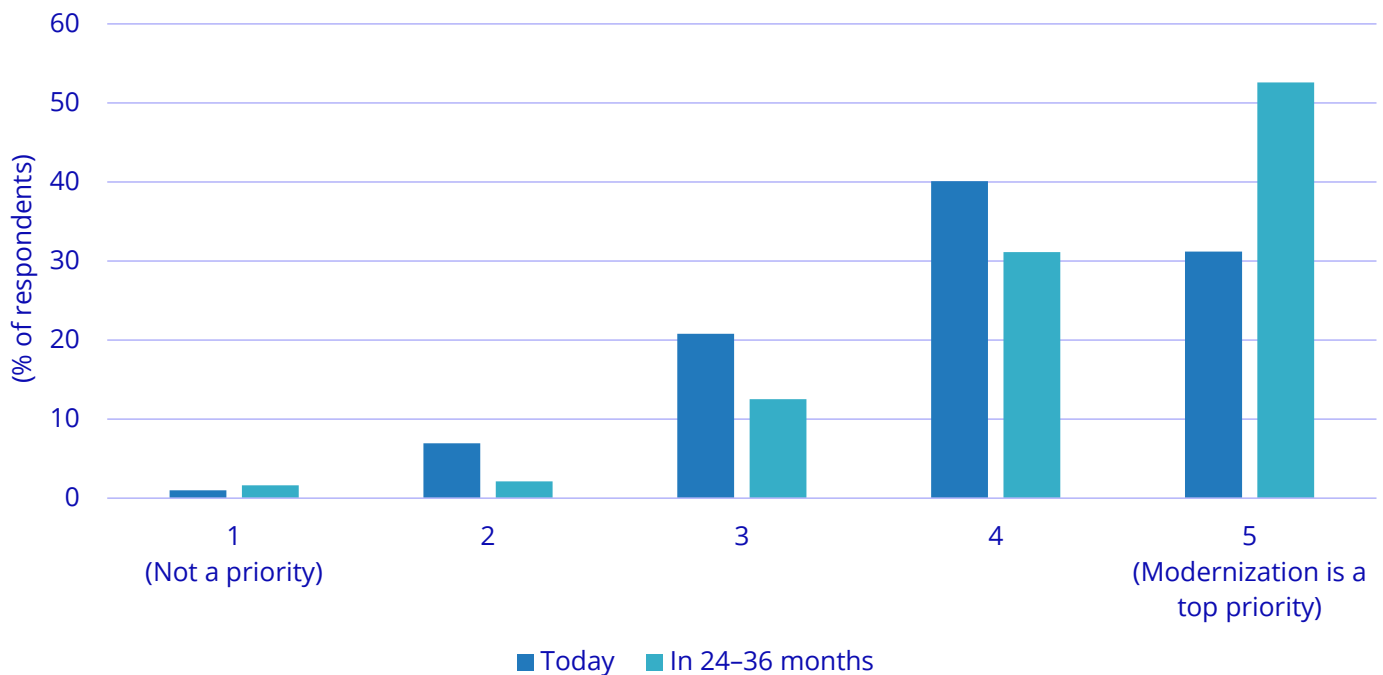
n = 713 (all respondents)

Note: Data is weighted by GDP.

Source: IDC's Worldwide Application Services Survey, 4Q20

Modernization Imperatives Come with Challenges

While mainframe modernization priorities appear to be booming, not all organizations have found it easy to achieve their modernization goals and objectives. The primary modernization challenges have stemmed from strategy, people, and process areas rather than technology deployment. IDC interviews with more than two dozen organizations undertaking application modernization journeys found that primary modernization challenges revolve around:

» **Lack of a long-term application strategy.** In the past, many organizations tackled application modernization as a project initiative with both a start date and an end date. This has been especially true with approaches for mainframe application enhancements. Organizations tended to not enhance the functionality of their applications when new releases were available. Instead, they would make major enhancements to their applications every several years to minimize the downside risk of application outages due to enhancements that impacted existing custom code. Additionally, an issue with project approaches to application modernization was that enhancements often missed aligning with business timing and needs for functionality. When new enhancement releases did happen, user needs often changed amid new and evolving business demands. In these cases, organizations struggled to establish a long-term application strategy for managing applications as products that enable business processes and neglected to approach application modernization as an operational concern versus a project initiative.

» **Failure to thwart scope creep and higher modernization costs.** According to IDC data, 80% of organizations estimate they have up to 1,000 applications in their portfolio today, and 83% of organizations estimate they will have up to 1,000 applications in their portfolio in five years. The growth in portfolio size often comes with increased integration across applications and a higher probability for greater scope when application modernization initiatives unfold. With larger application portfolios and higher levels of integration across applications, increased complexity among interconnected and disparate applications can surface. Modernizing an application or a set of applications can compromise existing application integration. Applications that have been modernized may stop working; other applications that have not been modernized may also cease to work. Overlooking the depth of dependencies between applications can undermine application modernization objectives and cause business disruption.

» **Availability of skilled talent.** When it comes to mainframe modernization, many organizations lack the skilled resources in-house to upgrade their mainframe applications. COBOL and Assembler skills have long been associated with a workforce demographic aligned with baby boomers, who are largely exiting the workforce for retirement. The shortage of talent and the aging of skilled mainframe application employees create steep challenges for companies seeking to modernize their mainframe applications using internal personnel.

Alternative Sourcing Approaches, Such as the Hybrid Crowd, Curtail Modernization Challenges

To help circumvent and overcome challenges with modernizing mainframe applications, organizations can exploit alternative staffing models offered by application services providers. Crowdsourcing has become more popular for application development initiatives in recent years. Providers have been harnessing developer communities (i.e., crowds) and leveraging them for their services engagements in times of resource capacity needs or for tapping into unique talent and skills to help execute development tasks in more efficient and innovative ways. The premise of crowdsourcing is that organizations put up for contest microtasks or activities and offer developer hobbyists and professionals rewards and compensation for their successful completion. Crowd members can compete for the work once it is put out for contest, and the organization that puts up the task can set rules and parameters around compensation. The hybrid crowd is based on the same fundamental premise of crowdsourcing but takes into account both public and private crowds to execute work.

Common questions around the process include:

» **What is the hybrid crowd?** The hybrid crowd consists of both a public community of certified subject matter experts (SMEs) and a private community of SMEs dedicated to qualified organizations.

» **How does the hybrid crowd work?** Using the hybrid crowd involves creating an environment for crowd access, developing a contest or challenge with rewards and compensation, and having code reviews and approvals for crowd-developed code woven back into the production environment.

» **When is it appropriate to use the hybrid crowd?** Hybrid crowds are useful when organizations need to focus internal IT and development talent on highly strategic initiatives and not task execution. Hybrid crowds often address simpler tasks that require significant energies and time so that internal resources can be positioned to address more complex and higher-value initiatives.

Benefits

The benefits of hybrid crowd include:

» **Resource elasticity.** The hybrid crowd enables organizations to scale resources up or down to tackle backlogs of development work. Having resource elasticity enables a business to better handle workload spikes (or troughs) and create (or reduce) capacity for development tasks quickly.

» **Centralized management.** The hybrid crowd serves as a centralized pool of talent that can be tapped into when development needs surface. Crowds typically are managed and maintained by a third party for ensuring skills and capabilities.

» **Cost savings.** The hybrid crowd can offer savings on the cost of talent as expenses for technical resources that are incurred only when development challenges and contests are completed. This relieves organizations from having to carry costs for internal development talent on an ongoing basis.

Considering Wipro Hybrid Crowd

Wipro's Hybrid Crowd is an extension of the firm's crowdsourcing platform, Topcoder. The Hybrid Crowd consists of a community of more than a million members spread across three subcommunities:

» **Public.** Topcoder's global community includes specialist segments focused on quality assurance, Internet of Things (IoT), cognitive, and blockchain technologies.

» **Certified.** Members of the public community are vetted for a customer's specific requirements, through methods such as signing an NDA, completing a background check, or completing certifications.

» **Private.** An enterprise's employees, contractors, or vendors earn compensation or awards by completing work that necessitates physical access, specific skills or knowledge, or other requirements.

Wipro Hybrid Crowd protects intellectual property by ensuring challenges and contests are available only to individuals who meet all security and certification requirements. The Hybrid Crowd platform is the integration of Wipro's Topcoder platform with Wipro's internal crowdsourcing platform, Top Gear, which was built to enable Wipro project managers to utilize the company's employees outside of their project teams to complete work. More than 30,000 Wipro employees have joined Top Gear, which is housed on the Topcoder Hybrid Crowd platform as a private community.

In addition to leveraging the talent available within Wipro's private Top Gear community, Wipro teams can accelerate design, coding, testing, and data science projects by crowdsourcing work from Topcoder's public community — all through an integrated platform.

What differentiates Wipro's Hybrid Crowd from other solutions is that its crowd community is dedicated to mainframe applications. The hybrid crowd contains professionals who are deeply skilled in COBOL, PL1, and Assembler, and its benefits center on providing niche skills, delivering work as sprints, and completing work at any time of the day. The pool of resources spans more than 150 unique mainframe skill areas.

Clients can tap into the hybrid crowd in two different ways. The first way is to have a Wipro crowd architect carve out tasks and microtasks and submit them as challenges to the crowd. From there, community members can apply and vie for the work. The second approach offers a more structured staffing model. Clients can have more control and tap into a private crowd for mainframe application technology skills in a "talent as a service" fashion.

To curtail data security issues, Wipro helps clients establish development and testing environments using IBM Z tools. Wipro's hybrid crowd solution serves as an emulator to enable crowd members to develop, post, and test mainframe solutions while enabling customer organizations the data security parameters of keeping mainframe environments secure and insulated from direct third-party developer accessibility.

Challenges

Constant and swift changes in business and technology environments are imposing greater pressures on services providers to ensure exceptional service delivery. Moreover, client expectation levels on application services performance have elevated. IDC research has found that application environments for development, testing, and production are becoming more complex, and highly federated infrastructure environments — which are extending from on premises to host based to hybrid clouds and edge computing — have created new sets of challenges for services providers.

Wipro not only must ensure application functionality and performance amid varied hosting and infrastructure environments but also must be prepared to support evolving and complex needs for security to help clients protect against cyberthreats and security threats as well as address security weaknesses that more complex infrastructure and hosting environments may pose. Application services providers such as Wipro that continually invest in their solution offerings to span a wide range of application development and management disciplines stand to build and gain competitive advantages against their rivals.

Conclusion

Mainframe application modernization helps enterprises unlock and expand agility capabilities. IDC studies have found that organizations expect to hold on to their mainframe applications in the future as the data within the applications generates value and the applications support business processes. Through modernizing mainframe applications, a company can be better positioned to achieve business imperatives and enhance competitiveness. IDC believes application modernization will continue to grow in importance over the next several years as organizations seek to drive higher levels of business value and business agility. Lessons learned from modernization initiatives indicate that organizations should:

> *Mainframe application modernization helps enterprises unlock and expand agility capabilities.*

» **Spend more time addressing management areas such as process, strategy, and people.** In more than two dozen buyer interviews, IDC found that application modernization success doesn't rely largely on technology deployment and replacement. Rather, successful organizations had to develop comprehensive modernization initiatives that linked technology upgrades to business value as well as process, change management, and cultural transformation. Interview feedback indicated that technology change was the easy part. Devising long-term application strategies, ensuring modernized applications generated business value, evolving IT and business culture, and implementing communication plans and effective change management were where organizations placed more time and attention for management.

» **Perform regular modernization postmortems.** Reviewing the strengths and weaknesses of each modernization effort surfaces key lessons that could be applied to future modernization initiatives and to enhance management techniques.

» **Leverage change management best practices to backstop application modernization initiatives.** Change management is extremely important to navigate modernization risks and ensure smooth transitions with modernization programs. Organizations should consider establishing formal change management programs, led by project management offices (PMOs) and supported by C-level executives, to drive modernization programs and projects and provide accountability for program delivery.

About the Analyst

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Pete Marston is Research Director for IDC, responsible for the Worldwide Intelligent Application Services practice. He develops research focused on modern application delivery and the life cycle of application services markets, which include Custom Application Development (CAD), Testing, Application Management (AM), also referred to as Application Development and Maintenance (ADM), and Hosted Application Management (HAM). Peter's research investigates the impact that DevOps and agile application delivery services have on enterprises, as well as how service providers help enterprises transform their business through application modernization and migration services.

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