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## **Modernization and the aging workforce**

Application modernization and a workforce transition plan can help keep your legacy systems up and running

Potential risks associated with an aging workforce are multiplying daily as more legacy coders log off for the last time.



The simultaneous ascent of Millennials and retirement of Baby Boomers can create unforeseen workforce-management challenges, particularly for organizations that use legacy applications for core business functions.

Today, Millennials are the largest generation in the US labor force, representing 35 percent of all workers, according to the Pew Research Center.<sup>1</sup> At the other end of the spectrum are Baby Boomers, the once-dominant age cohort born between 1946 and 1964. They now represent 25 percent of the workforce, and their numbers continue to dwindle.<sup>2</sup> It's estimated that 10,000 Boomers turn 65 years old every day.<sup>3</sup>

Among this generation are the coders who developed and now maintain legacy applications and mainframes. When these workers retire, they often take with them years—sometimes decades—of knowledge about how applications work and the languages in which they are written. Millennials and other younger

workers, on the other hand, typically have little to no knowledge of legacy coding languages. And they often have no desire to learn these legacy languages, which they see as irrelevant and obsolete.

The escalating retirement of legacy coders can pose serious risks to and have workforce-management implications for large organizations that rely on outdated applications. Loss of people with expertise in the languages that run your core systems could result in operational inefficiencies and downtime, not to mention potential damage to revenue, reputation, and brand value should your systems fail.

These potential risks are multiplying daily as more legacy coders log off for the last time. And that underscores the pressing need to chart a plan to help retain workers with the experience and skills to keep your core applications up and running.

### Paths toward modernization

One effective way to help manage the risks of an aging workforce is application modernization. This process eliminates outdated applications, which removes the need for workers to maintain antiquated code and mainframes.

There are several paths to modernization, and no one method will address the unique priorities, resources, and goals of every organization. Many businesses opt to replace legacy systems with a customized system built from the ground up. Others custom-configure a new commercial off-the-shelf software (COTS) solution. Another technique is automated refactoring, which uses software to convert legacy code to modern platforms and then migrates the updated code to an open-systems environment. From here, organizations can begin to fully integrate technologies like cloud, mobility, and data analytics.

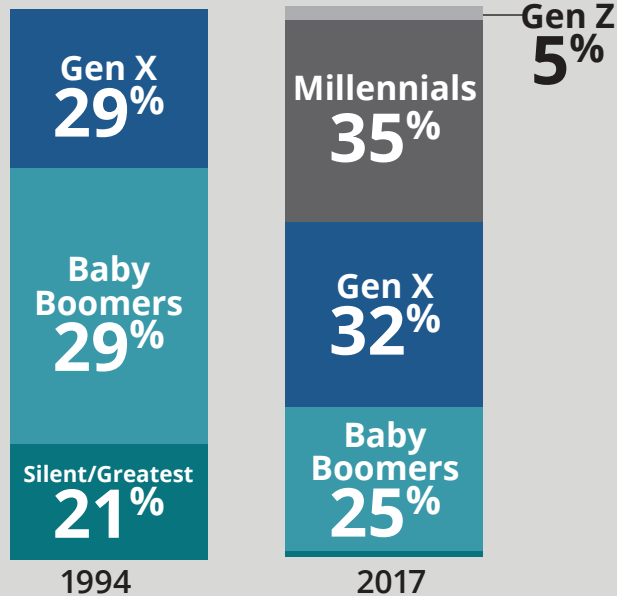
<sup>1</sup>Richard Fry, "Millennials are the largest generation in the U.S. labor force," Pew Research Center, April 11, 2018

<sup>2</sup>Ibid.

<sup>3</sup>Russell Heimlich, "Baby Boomers Retire," Pew Research Center, December 29, 2010

# Evolving workforce generations: 1994 to 2017

Today, more than one-third of employees are Millennials<sup>1</sup>



Each method has its merits and drawbacks. Wholesale replacement, if accurately and thoroughly done, will yield a modern codebase that can operate on open platforms, usually with improved business processes. But a typical “rip and replace” project can easily stretch to five years or longer, which can create implementation fatigue among workers. This lengthy timeframe, along with the complexity of the modernization initiative, can increase the risk of failure. And that’s a very real cause for concern, since 28 percent of all strategic IT initiatives are deemed failures, according to the Project Management Institute.<sup>4</sup>

A COTS implementation can yield similar, but not identical, application functionality on a modern platform. The project can often be completed faster than reengineering, but costs tend to be high due to data conversion and integration efforts. And the need to train users and developers on the new application can be frustrating for the workforce.

Automated refactoring, on the other hand, offers the benefits of speed and accuracy. This technique can accelerate modernization because it typically requires no gathering of system requirements and entails minimal end-

user training. Automated refactoring also produces like-for-like code that both legacy and modern developers can work with. This capability can create a transition path for legacy specialists that allows organizations to engage and retain them throughout the modernization journey. And refactoring typically requires nominal end-user training, which appeals to busy workers.

### Addressing risks as workers retire

All modernization methods carry a certain degree of workforce risk. You may embark on a modernization journey with an all-star legacy team, only to watch key employees retire along the way. Until the code is updated and the mainframe is retired (or maintained), a full staff of legacy specialists is pivotal to keeping core systems up and running.

As noted, workers with experience in vintage code are retiring, and replacing them can be challenging. One reason is that younger workers are typically inexperienced with old languages because most schools no longer teach them.<sup>5</sup> These system developers not only understand the language, but they also have hands-on knowledge of how system functionality has evolved over the years to meet changing business needs.

And so finding workers skilled in both legacy languages and business processes becomes a greater challenge. In fact, over the past five years businesses have lost an average 23 percent of their mainframe workforce; of those, 63 percent of positions remain unfilled.<sup>6</sup> This talent gap is particularly broad in the public sector, where employees tend to remain on the job more than twice as many years as their private-sector counterparts.<sup>7</sup>

And even if you can find qualified replacements, the transition can be choppy. According to Forrester, almost one-quarter of companies report difficulty onboarding new developers and addressing employees’ lack of mainframe knowledge.<sup>8</sup>

All of this underscores the need to prioritize a modernization initiative that is aligned with updated human-resources strategies. Retooling a core application is a laborious initiative that can stretch to five years or beyond. Over the course of the project, it seems inevitable that legacy specialists will retire. That’s why organizations that rely on legacy software should consider automated refactoring to update code as well as prepare for workforce changes.

<sup>4</sup>“Success Rates Rise: Transforming the high cost of low performance,” Project Management Institute, February 2017

<sup>5</sup>Sam Shead, “Universities won’t teach ‘uncool’ Cobol anymore - but should they?” ZDNet, March 7, 2013

<sup>6</sup>“Modern Mainframe KPIs Are Key to a Successful Digital Strategy,” Forrester Consulting, March 2018

<sup>7</sup>“Employee Tenure in 2016,” Bureau of Labor Statistics, September 22, 2016

<sup>8</sup>“Modern Mainframe KPIs Are Key to a Successful Digital Strategy,” Forrester Consulting, March 2018

### Planning for workforce transition

Every modernization journey will ultimately entail decisions on staff transitions. A workforce transition plan is essential to strategically reassigning legacy developers and better managing an orderly, strategic transformation. What's more, a careful rethinking of workforce strategies across generations can help you understand the current talent pool, develop a long-term workforce vision, and better align human capital with business strategy.

The workforce transition plan should address the full employee lifecycle, of course, and not just the mature phase. It should span recruitment to separation, and should be an enterprise-wide initiative that taps leaders from HR, IT, business strategy, and lines of business. A key first step in preparing for an aging workforce is a talent diagnostic. A thorough assessment should involve:

- Determining recruiting needs by identifying the technical skills required, as well as existing gaps in your workforce
- Understanding which employees are likely to leave, and when
- Identifying future job skills and determining who has these abilities or is interested in developing them
- Creating learning plans to help employees continually develop current and future skills



### Leveraging the capabilities of older workers

An effective workforce transition plan will help prepare you for a future in which people work beyond traditional retirement age. In particular, it's important to design a strategy to help retain and engage employees as they near retirement and possibly afterward.

This strategy should leverage legacy staff as a source of deep institutional knowledge, as well as a valuable resource for training and mentoring. Pairing legacy developers with their modern-language counterparts can enable organizations to more efficiently tackle the modernization initiative. What's more, their understanding of legacy code structure is crucial to maintaining and enhancing the application after refactoring.

Legacy coders also represent a ready-made workforce that is proven and committed—and can broaden workforce diversity. These workers tend to be dependable employees and are less likely than Millennials to job hop.<sup>11</sup>

Forward-thinking organizations recognize these merits, and are starting to see the value that can come with retaining older workers. They are taking steps to implement new practices and policies to support an extended work life, including new career models, expanded development paths, and creation of new roles.

Indeed, a rich set of opportunities exists for legacy employees in a post-mainframe IT environment. Some may become developers or testers in new Java applications. Others may be retrained in new IT disciplines or cyber security, where they can contribute to more strategic objectives. And those with expertise in the intricacies of legacy technologies can help maintain refactored applications.

These new roles demand an investment in programs to help seasoned workers acquire new technical skills. Counter to conventional stereotypes, older workers can be adept at picking up new technical skills. According to a recent study, workers well into their 50s and 60s continue to acquire and maintain high-level programming knowledge.<sup>12</sup>

Over the past five years,

businesses have lost an average 23 percent of their mainframe workforce; of those, 63 percent of positions remain unfilled<sup>10</sup>



<sup>9</sup>Russell Heimlich, "Baby Boomers Retire," Pew Research Center, December 29, 2010

<sup>10</sup>"Modern Mainframe KPIs Are Key to a Successful Digital Strategy," Forrester Consulting, March 2018

<sup>11</sup>Maury Backman, "Job hopping: Why Millennials resign nearly twice as often as older workers," USA Today, June 11, 2018

<sup>12</sup>Patrick Morrison and Emerson Murphy-Hill, "Is Programming Knowledge Related to Age?" 2013 10th Working Conference on Mining Software Repositories, May 2013 **3**

It's important to guide your HR department in how it communicates openings for legacy positions to younger workers. Too often, the word "old" crops up, creating negative connotations. Instead, HR should emphasize the criticality of legacy applications to the business. And if the position entails senior-level responsibilities, the compensation should reflect that.

Similarly, the IT function can implement new technologies to help make legacy positions more attractive—as well as improve operational efficiencies. One way to do so is bringing new open-source software and DevOps methodologies to the mainframe. This can enable younger workers to use modern tools to learn new skills.

Also keep in mind that increasingly more people prefer nonstandard work arrangements—and that many are opting to remain active and employed past traditional retirement ages. Organizations should consider programs that allow employees to take advantage of post-retirement freelance or "gig economy" positions. They could, for instance, be tapped as part-time workers to train new hires to use legacy applications and systems.

### Getting started on modernization and workforce planning

In the coming years, employees with experience in maintaining legacy applications and mainframes are expected to retire at an accelerated pace. Increasingly, this can jeopardize organizations that rely on aging systems to run mission-critical applications.

Application modernization, in combination with careful workforce planning, can help minimize the risks associated with a rapidly retiring workforce. Deloitte's Application Modernization powered by innoWake™ suite of products can help you quickly convert and migrate code, thereby limiting the risk of shortages in skilled workers.

In addition, it's critical to develop balanced workforce-management strategies that tap the talent and knowledge of seasoned employees. It's particularly critical to retain and engage these workers because their experience can provide continuity between legacy and modern systems, help ensure that core applications are available 24/7, and create a more diverse workplace. Deloitte's Human Capital services can help you update your workforce

strategies to support a staff that will help keep mission-critical legacy applications up and running.

Deloitte's Application Modernization solution provides end-to-end capabilities that are designed and implemented by a dedicated, multidisciplinary team of experienced professionals. We have helped dozens of organizations modernize legacy systems and formulate a strategy to help ensure a skilled staff during and after modernization.

In addition, we can leverage Deloitte's Human Capital services to help you develop a workforce transition strategy that balances the impact of application modernization with the need to engage older talent. This informed approach is critical to reaping the demonstrated advantages of modernization and effectively navigating your digital future.



A workforce strategy should position legacy workers as a source of deep institutional knowledge, as well as a valuable resource for training and maintaining applications after refactoring.

# Don't underestimate the value of legacy coders

The merits of long-serving workers include:



Institutional and historical knowledge of the mainframe application



Understanding of legacy code structure



Ability to train and mentor employees.



Proven commitment to the job



Less likely than younger workers to job hop

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Until the code is converted and the updated application goes live, a full staff of legacy specialists is pivotal to keeping core systems up and running.

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To learn more about Deloitte's Application Modernization solutions, visit:  
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