

# Innovative Programs for Developers Are Crucial to CEM Success

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## Highlights

- 2 Executive Summary
- 4 The CEM Failure Rate Is Shockingly High
- 5 Vendor Programs for Building CEM Skills Are Nonexistent to Outstanding
- 8 Case Study: IBM's Innovative Developer Initiative
- 13 Vendors and Buyers Seek Innovative Approaches
- 15 Conclusion: Focus on the Ecosystem

# Executive Summary

As many companies have already learned the hard way, training programs that grow, enhance, and rebuild their developers' skills are crucial for long-term success in customer experience management (CEM) initiatives. This is particularly true because of:

- **Retirements.** The upswing in baby boomer retirements puts pressure on business technology groups to hire or retrain developer replacements quickly.<sup>1</sup> Many young developers in new positions or, conversely, older developers reassigned to projects involving new and emerging technologies lack the ideal level of experience needed to fill the shoes of seasoned, departing senior staff. Retraining and skills-building are often needed to bridge the knowledge and experience gap.
- **Emerging technologies.** Many new CEM initiatives involve a combination of recent technologies that few developers (younger or older) are skilled in, like cognitive computing, big data, or integrating social networking and mobile apps into business processes. Some more ambitious projects may also include virtual, wearable, drone, and robotics technologies. Plus, the internet of things (IoT) is spawning a plethora of new technologies relying on smart products that – in aggregate – produce massive volumes of information requiring integration with real-time transaction and cognitive systems.
- **Emerging platforms.** At the same time, businesses and government agencies worldwide expect developers to understand how to deploy business applications safely and securely on hybrid platforms or in the cloud, as well as to use unfamiliar development tools like low-code software and BPM suites. This expectation increases the demand for newly (re)skilled developers.
- **Marketing.** CEM initiatives are sometimes driven by marketing executives and staffed by technical resources residing in the marketing department. Often, these technologists lack the skills and experience to deploy high-risk, complex processes spanning all the customer touchpoints, plus the front office, the back office, and the organization's network of business partners. To support CEM initiatives, these marketers are hard-pressed to build or rebuild and reskill their business technology resources, particularly when the technology resources report into marketing.

Enterprises can address these issues by implementing innovative programs that train inexperienced developers and reskill more seasoned developers in the deployment of new CEM technologies. A few companies create innovative in-house programs. For example, Accenture uses advanced training techniques like rapid learning and contextual, just-in-time learning modules to help its clients build better in-house training programs. And software buyers like AT&T, Coca-Cola, and GE are filling

voids in the talent pool, and keeping existing staff well trained, by using similar techniques in-house. Some new approaches include: 1) training executives to embrace risk-taking and learn to fail fast; 2) using incubators to bring diverse teams together to innovate and build solutions for company-wide problems; and 3) using innovation accelerators that leverage agile approaches to shorten the innovation lifecycle, from concept and innovation to product launch.

While in-house programs are effective, most enterprises lack the resources to deploy these programs internally and instead turn to their IT partners – software vendors, systems integrators, design agencies, management consultants and other service providers – to help them skill/reskill their technical resources. This is a smart approach. But therein also lies the problem – some fast-growth vendors or vendors in the process of reinventing themselves are equally overwhelmed by the need for trained technical resources. These vendors find it taxing to support their customers' requests, although they would never admit such a thing.

When buying CEM software, it's vitally important to look at the vendor's ecosystem for delivering technical training in innovative ways. Without a strong ecosystem, CEM initiatives may stall out or be starved for oxygen while the organization struggles to create developers and other technical talent who are sufficiently experienced, qualified, and trained on emerging CEM technologies and evolving platforms (like cloud and mobility). Ultimately, buying software products involves a lot more than acquiring code – the vendor's ecosystem for supporting the buyer's service providers and its own technical resources are equally, if not more, important.

While some vendors put little emphasis on building their customers' and partners' technical skills, only to rue those oversights later (e.g., Microsoft and the initial SharePoint rollout), other vendors have doubled down on creating a strong technical network capable of supporting their ecosystems. For example, Oracle made significant advances when it inherited a culture of promoting developer training via Java with its Sun Microsystems acquisition. Since then, the software giant has done a good job of embracing and expanding its developer training programs delivered through the Oracle Technology Network, the vendor's worldwide community for developers, DBAs, architects, and other technical professionals using Oracle and open source products. Like Oracle, IBM has an exemplary technical support ecosystem for its customers. This report showcases IBM's comprehensive program for developers as an example of what to look for when examining your vendors' programs for developers.

# The Failure Rate for CEM Projects Is Shockingly High

The need for better technical skills within businesses, government agencies, and other organizations cannot be overstated. Consistently, market research around the globe over a prolonged time period corroborates that too many CEM and other IT projects fail. For example:

- **In a global survey of 1,200+ organizations, 81% of respondents said their CEM initiatives failed over the past three years.** This failure rate could and should discourage the most stalwart CEM proponents. Fortunately, the survey also found a strong correlation between an effective CEM program and increased profits. Eighty-one percent of the organizations with a significant increase in profits had a CEM program in place, compared to 46% with static profits and 35% with a decrease in profits.<sup>2</sup>
- **In Forrester’s “2015 CX Index” only 1% of US firms, and no firms in Germany, France, or the UK, achieved an “excellent rating.”**<sup>3</sup> In fact, 84% of the brands in the United States and Germany, 87% in the UK, and an astonishing 100% in France were rated mediocre or worse (i.e., OK, poor, or very poor). In the six months between the Q1 and Q3 2015 surveys in the U.S., only 2.3% of the brands improved their ratings, while more than a quarter (28.5%) worsened.<sup>4</sup> Despite these dismal statistics, there’s good news buried in the failure

rates because success requires a culture of experimentation. The problem is that the failure rates are not declining over time; CEM practitioners are not making any progress in achieving more project successes.<sup>5</sup>

- **In mid-2015, Digital Clarity Group uncovered many failures when interviewing more than forty firms about their content management systems (CMS) for CEM initiatives.** Almost 40% of those CMS selection and implementation projects failed, often because stakeholders disagreed with the project team’s requirements criteria because they were too technical and not sufficiently strategic. Inexperienced teams often fell into a pattern of looking at the minutiae of features and functions rather than the big picture.<sup>6</sup>
- **The Standish Group’s annual survey consistently shows that around 70% of organizations fail or fall short of expectations from all IT initiatives – not just CEM.** *That is an astounding number – one which would never be acceptable in, say, bridge construction or heart surgery or most any other high-risk yet routine discipline in the modern world.*<sup>7</sup>

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# Vendor Programs for Building CEM Skills Are Nonexistent to Outstanding

Let's be realistic: many CEM vendors, especially those selling cloud-based software, are particularly guilty of overselling the technology. Their sales message amounts to "it's so simple – just sign up and you are up and running in days." As a result, many buyers seriously underestimate the amount of technical work required, like development, configuration, security, integration, and migration. That technical work is all too often dismissed as a commodity, when in reality the work is not commodity-based, the technologists are not commodity assets, and good technical resources are likely in short supply. And that doesn't account for CEM projects that are pushing the boundaries of IT organizations' current skills. For example, as e-commerce becomes a bigger business strategy driver, this technology will push ever more complex CEM projects that integrate with back-office applications such as fulfillment, logistics, finance, and service.

All too often, CEM service providers are hanging in the balance: essential for successful project completions but left dangling by their vendors when it comes to skills development. Throughout 2015 and 2016, in the several hundred interviews Digital Clarity Group has conducted, many service providers have complained about vendors overpromising and setting them up for failure. And if the service providers are left to struggle on their

own, it's the buyers who suffer the consequences. Interestingly, it's often the software vendors with the hottest products and market cachet that oversimplify the training and skills development needed to succeed with their products; they tend to be dismissive and marginalize older, more proven products with a stronger base of technical resources as being "legacy" and of diminishing relevance. In reality, development work and technical skills are not a commodity and never will be. Particularly in a world of big data, containerization, blockchain, wearables, drones, virtual reality, robotics, and IoT, there is an ever-increasing need for strong, well-skilled, in-house technical resources.

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## Meeting the demand for technical and business skills is daunting but not impossible

The CEM skills most organizations need range from 1) business management, such as incorporating IT strategy into the business strategic planning process, organizational change management, requirements planning, and project management, to 2) technical skills like building innovative systems on emerging technologies, transforming and integrating digital processes outside and inside the organization, and leveraging and integrating new technologies with existing technologies. Yet, building the technical skills needed to meet the growing cross-industry, worldwide demand for CEM is not an easy task, for these reasons:

- **Acquiring new talent is not just an issue for buyers; vendors and service providers face the same shortages as their customers, for the same reasons.** In fact, the pressure is greater on software vendors and their channel partners because buyers rely heavily on their partners to fill the gaps in their own in-house technology groups. (And they should continue to do so because engaging a services organization significantly increases the

likelihood of success.) This means that vendors and service providers are usually the first groups to be called upon for building strong project teams that provide strategic assistance and support for customer experience (CX) leaders, so they have to be quick to adopt and master the intricacies of new technologies.

- **Training programs must address the full spectrum of CEM technologies, disciplines, and methods.** Meeting this growing need for CEM knowledge is not easy because it takes time, resources, budget, and skilled in-house trainers – to name a few – to fill the ever-expanding demand for technical talent and experience. Traditional training programs are often insufficient because they take too long, and old-school approaches may be utterly frustrating to young hires with today’s technology mindset. For example, younger employees need a high level of interactivity delivered through technologies like gamification, virtual reality, and social media, while mature employees often benefit from embedded, just-in-time learning that replaces traditional online learning.

Despite the fact that new CX technologies are coming at developers at a furious pace that is

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likely to accelerate with IoT, 3-D printing, cognitive computing, and many others, most organizations and their vendors lack sufficient training programs, much less highly innovative ones that hold the attention of millennial developers. For example, a 2016 survey of more than 50,000 developers by Stack Overflow shows a remarkable dearth of innovation in training approaches for developers, with the overwhelming response being that developers are self-taught. (See Figure 1.)

In addition, the same survey shows the importance of creating programs that appeal to millennials, given that more than 50% of the approximately 55,000 developers responding to the Slack Overflow survey are under 30 years old. (See Figure 2.)

Figure 1  
**Most Developer Skills Are Self-taught.**  
 40,183 responses from non-student developers.

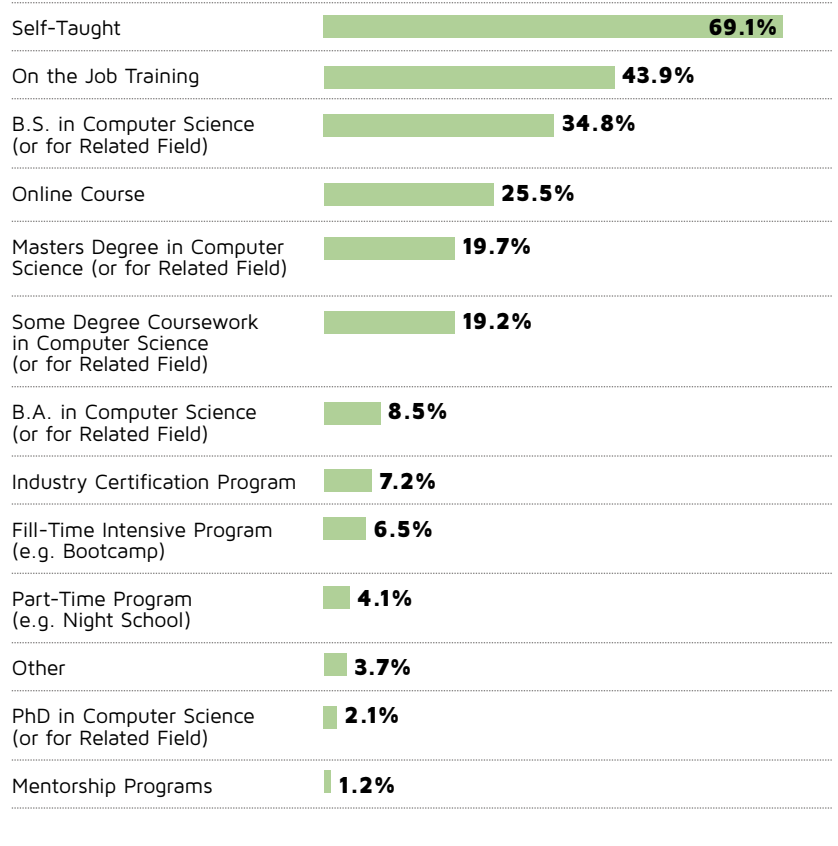
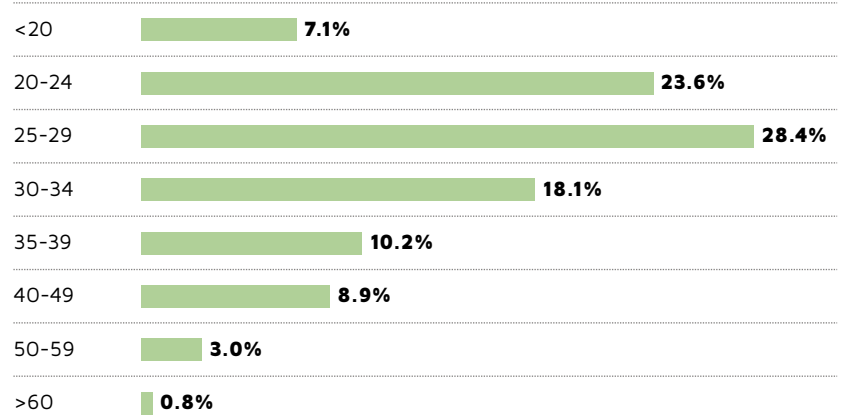


Figure 2  
**The Average Age of Developers is 29.6 Years Old.** 55,338 respondents.



Source for both Figures: Stack Overflow and freeCodeCamp, <https://medium.freecodecamp.com/>

# Case Study:

## IBM's Innovative Developer Initiative

IBM is one of the vendors providing a comprehensive, innovative program for CEM developers at both customers and partners, with a focus on newer technologies like mobile, cloud, cognitive, and social. IBM's strategy for increasing global demand for cognitive computing and cloud computing products, for example, includes training large numbers of developers, business analysts, and technical staff on development tools for these new technologies.<sup>8</sup> The training spans new products as well as traditional on-premises solutions that use IBM platforms, and it is delivered through a spectrum of initiatives including hackathons, meet-ups, innovation centers (in partnership with local governments in major cities), events targeting entrepreneurial start-up firms, and other ecosystem constituencies.<sup>9</sup>

Buyers of any CX software can learn a lot by examining how the IBM ecosystem supports customers and partners. For customers that are not IBM shops, it may be worthwhile to push their other vendors or service providers to offer similar types of innovative programs, even if the scope and scale are more limited than IBM's. Also, IBM's approach may have elements that buyers want to implement in-house. Organizations that may benefit from examining IBM's program include

the following:

- **Service providers could find IBM's developer program beneficial in two ways.** First, service providers have a huge need to train their own workforce in rapidly emerging technologies like cloud, hybrid cloud, cognitive apps, open source, and mobile apps, and may be able to capitalize on IBM's program. Second, service providers routinely work with clients who need to increase their skill sets beyond what the service providers have the bandwidth to offer. Enter IBM – or at least that's what the vendor hopes.
- **IT executives may find that these offerings provide innovative ways to help their developers build new skills or reinvigorate their careers.** IBM's training/collaboration initiatives are relevant for all developers but are particularly attractive to developers at opposite ends of the spectrum: experienced, often senior, developers who are looking to renew their technology skills on emerging products and platforms, and new college graduates who seek to expand their knowledge base and skills beyond what they learned in school.

*For customers that are not IBM shops, it may be worthwhile to push their other vendors or service providers to offer similar types of innovative programs, even if the scope and scale are more limited than IBM's.*



- **Firms working on business and digital transformation may find the training useful.** For project teams to succeed at implementing CEM and integrating CX solutions, developers need mastery of and technology fluency in a large range of technologies, including analytics, CRM, marketing automation, business process management (BPM) systems, content management systems (CMS), e-commerce, and personalization, as well as new technologies like facial recognition and smart virtual assistants. Plus, developers need deep skills in deploying these and other solutions in the cloud, integrating with different systems, and building on a strong data infrastructure. And finally, project teams need skills spanning both non-technical training (presentations, project management, collaboration skills), and adjacent capabilities (business analysis, development methodologies such as low-code, SCRUM, rapid application development, Agile, and DevOps).
- **Start-ups could gain significant leverage from developer training.** These firms are not only seeking newer technologies like wearable computing, virtual reality, IoT, and cognitive computing to build greater competitive advantage into their product offerings, but they also need to develop and hone technical skills around these products. Start-ups are also financially constrained, but IBM's pricing and packaging helps them out.<sup>10</sup>

# IBM's Approach Ranges from Traditional to Edgy

Possessing deep technical skills in established and emerging technologies is crucial for companies embarking on CEM initiatives. In fact, in Digital Clarity Group's view, technology fluency is one of the ten core competencies for CEM.<sup>11</sup> As noted in Digital Clarity Group's report on the CEM core competencies:

... experts with vendor certifications and deep expertise in fields like cloud computing, managed services or J2EE, who can implement and manage technologies such as content management systems (CMS) or e-commerce platforms, are just one piece of the technology fluency needed for CEM. The other is the ability to troubleshoot the specific quirks that are inevitably part of any vendor or open source product, and customize those products to suit the organization's specifications. Additionally, technology integration is a critical competency, as CEM often requires the use of numerous technologies to pass data or content from systems of record, like an ECM system, to systems of engagement, like a WCM [or CRM system], and vice versa.

IBM's developer initiative has a wide scope, encompassing the development and deployment of many types of systems across a range of industries, technologies, and programs, including CEM. Specifically, IBM's programs, products, and initiatives created for application development include the following:

- **Membership programs that help experienced developers ramp up on new technologies.**

IBM's flagship offering is developerWorks Premium, a membership program that helps developers get started with cognitive computing (Watson) in the cloud, IoT, big data and analytics, mobile, and cloud computing, as well as more traditional technologies like WebSphere development on hybrid cloud, and integrating Java applications with new cloud-based engagement apps. The program includes tools, training, support, and access to the larger developer community to help developers learn new skills, create and deploy applications, and connect with experts worldwide. IBM also incorporates offerings from partners like Safari, GitHub, and Box.

- **Training on new technologies for new and experienced developers.**

According to IBM, interest in cognitive development has been high and cognitive content is capturing 20% of all training visitors. IBM's cloud platform, Bluemix, and the Pluralsight Education Platform developed in partnership with WholeSchool are an example of how a vendor's ecosystem can be deployed to deliver greater value to developers seeking cognitive computing training.<sup>12</sup> Entrepreneurs – like new start-ups and service providers – can use the platform for a 30-day trial to teach both relatively inexperienced and seasoned programmers.<sup>13</sup>

- **Hackathons and bootcamps that target millennials.**

According to IBM, more than one million developers have accessed Bluemix training, typically before participating in

organized bootcamps or hackathons.<sup>14</sup> In an effort to reach millennials, IBM and its partners and customers have sponsored hackathons around the world to drive new applications in a broad range of industries, including, for example, a series on healthcare in Israel, London, and Boston.<sup>15</sup> Hackathons are proving to be an effective way to share code throughout a community. For example, because IoT includes so many devices, connecting them to the cloud is overwhelming for many developers. But because many of the steps are inherently the same, a community can take one cloud-connection recipe and reuse it for many different devices. IBM builds upon that possibility by providing sample code and recipes in an effort to accelerate developers' learning.

- **Innovative showcases for start-ups.** IBM wants to partner with start-ups in new or emerging technologies like wearable devices or cognitive customer profiling. To catalyze and deepen interest in these technologies, in November 2015 IBM gathered more than seven hundred founders, funders, and coders in the San Francisco area to attend the Startup Runway, built on cloud and using cognitive technologies. Two examples of start-up solutions featured at this event are an automated instant wardrobe stylist, built on cloud, that selects outfits using Watson, and couture jewelry that embeds IoT linked to the cloud and is made by combining laser cutting, 3-D printing, and embedded LEDs.<sup>16</sup> (See Figure 3.)

Figure 3  
**Electrocouture: couture jewelry with an IOT twist**



Source: IBM and Electrocouture

Figure 4  
Shenova's Heartbeat Dress Lights Up Fashion



Source: IBM and Shenova.  
(<http://shenovafashion.com/blogs/blog/54675329-interactive-particle-physics-dress-with-leds-and-ibm-bluemix>)

One particularly “out there” start-up showcased the Heartbeat Dress, IoT clothing that uses LEDs and visually depicts the wearer’s heart rate and movements.<sup>17</sup> (See Figure 4.)

Another ecosystem initiative that supports start-ups is sponsoring the sharing of industry know-how. For example, IBM recently sponsored TechStartup.IN, which was India’s first digital ecosystem for sharing ideas. This event brought start-ups together with academia, accelerators, developers, investors, and incubators to help the start-ups accelerate their product launches.

- **Programs for students and universities.** IBM has long brought training and skills-building to universities. For example, several years ago the WebSphere team sponsored a competition among universities for the most innovative and high-value business process management (BPM) deployments. IBM has taken its considerable experience in this arena and brought it to young developers in high schools and universities, including disadvantaged high schools and students. In one example, IBM is working with Austin Public Schools to create a real version of Medical Minecraft. This student-developed “product” uses Watson, IoT, and Bluemix to fight disease based on constantly changing information.

# Both Vendors and Buyers Are Seeking Innovative Approaches

It's important to realize that IBM is not the only game in town; other companies – sellers and service providers, as well as buyers – are working on new approaches to accelerate technical and business technology skills, particularly as new CX technologies take hold in the marketplace. IBM is a case study in this report, but is certainly not the only vendor succeeding or trying to build a strong technology ecosystem that spans customers, start-ups, resellers, service providers, and universities. But, it's also important to know that not all vendors are equally committed to creating an innovative ecosystem; IBM and Oracle get high marks, whereas some of the other technology giants are not as strong. Some smaller and mid-sized technology vendors would be overtaxed and overcommitted to take on such programs, while others just don't give it high priority.

Accenture is one example of a technology services provider that is using innovative approaches to help clients build their technical skills and integrate technology developments into the business strategy:

- **The Accenture Academy is designed to help clients address the talent gap in their organizations.** This gap is exaggerated by employees' lengthy learning curves and compounded by often-high attrition rates,

shortcomings with internal custom-developed training programs, and the incompleteness of off-the-shelf training programs.

The Academy provides contextual learning experiences that are integrated with employees' daily work and aim to build agility and skills needed in fast-changing environments. These learning experiences are embedded in applications so that employees access just-in-time learning modules while at work in their regular jobs. By using contextual learning, Accenture moves learning out of the classroom and online courses and instead provides training within the context of the processes and business functions that employees perform.

Technology *buyers* are also launching internal initiatives to help them advance the developer learning curve. For example:

- **AT&T's** program, Foundry, uses agile approaches to shorten the internal innovation lifecycle from concept and innovation to product launch.<sup>18</sup> The objective is to shorten the average two-year lifecycle to less than six months by partnering with local start-ups in four locations to understand emerging cultures and technologies.

*... IBM is not the only game in town; ... Technology buyers are also launching internal initiatives to help them advance the developer learning curve.*

- **Coca-Cola** participates in an incubator, known as Start-up Weekends, that allows Coke employees and local start-ups to pitch ideas to innovate and build solutions for company-wide problems. Many of these solutions are based on uses of business technology.<sup>19</sup>
- **GE** has brought in a management consulting firm with five hundred coaches responsible for training executives to embrace risk-taking and learning to fail fast. Much of this involves the use of business technology.

AT&T, Coca-Cola, and GE are setting examples for how to change the nature of work and speed innovation by 1) creating internal start-ups within the confines of the organization, 2) focusing on agile learning, and 3) advocating rapid development of new, creative ideas. Hoping to spread a start-up mentality within each of these firms, the companies encourage employees to suggest and promote their ideas and to seek internal capital for experimenting and pursuing them. These firms, and others like them, don't just rely on internal talent; they also bring in IT consultants (like Accenture), local start-ups, management consulting firms, and other entrepreneurs. The benefits can be impressive,

especially for older, large companies often perceived as lumbering industrial-age giants. Even when large organizations need a massive infusion of new technical skill sets for building new technology-infused solutions, these elephants can, in fact, dance. How? By embracing business agility, creating a new culture built around speed and new ideas, being willing to take risks, and learning quickly from mistakes.<sup>20</sup>

*Hoping to spread a start-up mentality within each of these firms, the companies encourage employees to suggest and promote their ideas and to seek internal capital for experimenting and pursuing them.*

# Conclusion: Focus on the Ecosystem

It's virtually impossible to implement large-scale CEM solutions without external help. Whether that help comes from the software vendor, its service provider network, or your own strategic services partners, successful implementation takes a spectrum of technical and business skill sets, knowledge, strategic thinking, and creativity. Here are some prudent steps to take as your organization considers large-scale rollouts of emerging and new technologies:

- **Look closely at the software vendor's ecosystem.** Determine how many partners they have that are well trained in the products, and get a count of how many technical and business staff have been trained and over what time frame. Look skeptically at claims and instead dig into an evaluation of the vendor's ability to truly deliver on the ecosystem.
- **Look closely at the vendor's approach and tooling for training its partners and customers.** Ask questions such as these: Does the vendor have innovative, interactive training approaches that go well beyond classroom and online training? Does the vendor have embedded training to help developers and users? Does the vendor have approaches that appeal to millennials, like hackathons, meetups, competitions, etc.?
- **Be skeptical of new software vendors' ability to support your training/services needs.** Small start-up companies (less than one hundred employees) and larger, established companies that grew quickly are often – if not

usually – unable to meet the support demands and extensive ecosystem requirements of many firms. Perhaps counterintuitively, some of the largest IT companies in the world – like IBM and Oracle – have the most comprehensive support networks and innovative programs for developers.

- **Use your clout to influence software vendors' ecosystem programs.** If you are one of the vendor's larger customers and the vendor lacks a program that you want, make sure your input is heard. If you are on a customer advisory board, network with other members to determine their ecosystem needs and communicate back to the vendor.
- **Consider starting your own innovative programs that your staff deliver in-house.** If your organization is large enough and if there is executive support, consider using innovative techniques in-house, such as internal competitions, internal innovation funding, social tools for training and networking, etc. Don't depend exclusively on your formal training group to deliver all your training and reskilling needs – also look across the company to see if other groups (in addition to the training department) could have more impact and greater success helping with your training and reskilling needs, and don't be afraid to use them. (Remember the failure statistics at the beginning of this report; organizations have to approach IT rollouts differently to avoid becoming yet another statistic.)

# Endnotes

- 1 Seventy-eight percent of HR and IT executives at 75 mid-size to large US based companies say the threat of losing business critical expertise is greater now than it was five years ago. (Source: Critical Knowledge Transfer: Tools for Managing Your Company's Deep Smarts, Dorothy Leonard, Walter Swap and Gavin Barton, HBR Press, 2015 and <http://www.bloomberg.com/news/articles/2016-01-21/as-boomers-retire-companies-prepare-millennials-for-leadership-roles>). According to Stack Overflow's 2016 survey of more than 50,000 developers, the average age of a developer is 29.6 years old and the median age is 27. According to more than 55,000 respondents, only 8.9% were 40-49 years old and 3.0% were 50-59 years old. (Source: <https://medium.freecodecamp.com>)
- 2 The survey conducted globally across 13 countries by independent market research firm Dynamic Markets (on behalf of Avaya) included: the United States, Canada, Mexico, Brazil, United Kingdom, Germany, Netherlands, Russia, China, Singapore, Japan, India, and Australia. More than 1,500 employees at 1,268 businesses were interviewed; 54% of the respondents were at senior-management level or above. See <http://www.avaya.com/usa/about-avaya/newsroom/news-releases/2014/pr-140429>.
- 3 The research evaluated consumers' attitudes toward 299 brands in the United States and 203 brands in Europe.
- 4 See Forrester's 2015 CX Index for 502 brands in the US and Europe.
- 5 For a nuanced view on the need for experimentation and tolerance for perceived CEM project failures, see "The Need for Integrated Customer Experience Management," by Tim Walters (<http://www.digitalclaritygroup.com/the-need-for-integrated-customer-experience-management/>).
- 6 For a description of failed CMS projects, see "Five Crucial Lessons Learned in Content Management System Selections," by Connie Moore (<http://www.digitalclaritygroup.com/five-crucial-lessons-learned-in-content-management-system-selections/>).
- 7 See the Standish Group 2015 Chaos Report, Q&A with Jennifer Lynch, <https://www.infoq.com/articles/standish-chaos-2015>.
- 8 Although IBM has not divulged how much revenue it has earned from the training and tooling initiatives or how much net new product revenue it has leveraged through the developer training initiative, the behemoth has put tremendous effort into the program, making it appear, at least, that the program is succeeding from a revenue perspective.
- 9 This strategic program for developers, spearheaded by Sandy Carter (General Manager, IBM Ecosystems and Social Business Evangelism), capitalizes on IBM's earlier initiative in Smarter Planet (and Smarter Cities, which is part of Smarter Planet) that Ms. Carter also ran.
- 10 For example, IBM offers a 30-day free trial of WebSphere on Bluemix (pricing details at [www.ibm.com/websphereoncloud](http://www.ibm.com/websphereoncloud)) and developer training for cognitive solutions on cloud computing for \$399 (substantially reduced). For more pricing details, see <https://www.ibm.com/developerworks/premium/>.
- 11 For a comprehensive discussion of the ten core competencies for Customer Experience Management, see "Are You Ready for Customer Experience Management?" by Jill Finger Gibson (<http://www.digitalclaritygroup.com/are-you-ready-for-customer-experience-management/>).
- 12 Wholeschool Software, based in Northern Ireland, was started in 2010 to help schools make the transition to emerging technologies including websites, email, and social media. The company provides education products and services including curriculum mapping and school development planning software, and a platform-as-a-service that supports a range of integrated services for the education market.
- 13 For more information, see [www.pluralsight.com](http://www.pluralsight.com) and <https://whole.school>.



- 14 According to Techopedia, “a hackathon is a gathering where programmers collaboratively code in an extreme manner over a short period of time. Hackathons are at least a few days – or over a weekend – and generally no longer than a week. While working on a particular project, the idea is for each developer to have the ability and freedom to work on whatever he/she wants. A hackathon is also known as a hackfest or hack day.” <https://www.techopedia.com/definition/23193/hackathon>.
- 15 Start-up partners include: Amberoon, CleanHands, Colify, diabetizer, Genomic expression, kiwi, Luna Lights, Varsahealth, REX, zebra Medical Vision. For an image display, see <https://pixabay.com/en/anatomy-man-human-face-body-lips-254129/>.
- 16 For more information on the couture jewelry, see <http://elektrocouture.com/portfolio/elektronecklace/>.
- 17 <https://www.facebook.com/RobertScoble/videos/10153687759664655/>.
- 18 For more information about AT&T’s innovation pipeline and showcase, see <http://about.att.com/innovation/foundry>.
- 19 For more information on Coca-Cola’s innovation program, see “Calling All Entrepreneurs! What Is Startup Weekend and How Can You Participate?” <http://www.coca-colacompany.com/coca-cola-unbottled/calling-all-entrepreneurs-what-is-startup-weekend-and-how-can-you-participate/>.
- 20 IBM’s approach for developing at accelerated speed and enterprise scale is based on IBM Design Thinking, a framework for teaming and action. For more information, see <http://www.ibm.com/design/thinking/>.

# About Digital Clarity Group



Digital Clarity Group is a research-based advisory firm focused on the content, technologies, and practices that drive world-class customer experience. Global organizations depend on our insight, reports, and consulting services to help them turn digital disruption into digital advantage. As analysts, we cover the customer experience management (CEM) footprint - those organizational capabilities and competencies that impact the experience delivered to customers and prospects. In our view, the CEM footprint overlays content management, marketing automation, e-commerce, social media management, collaboration, customer relationship management, localization, and search. As consultants, we believe that education and advice leading to successful CEM is only possible by actively engaging with all participants in the CEM solutions ecosystem. In keeping with this philosophy, we work with enterprise adopters of CEM solutions, technology vendors that develop and market CEM systems and tools, and service providers who implement solutions, including systems integrators and digital agencies.

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