

Apps for the Connected World Supercharge Customer Data with Code Halōs

By making meaning from the data that swirls around every digital interaction, companies can gain unprecedented insight into what customers and prospects want and value, essentially what makes them "tick."



Cognizant



Digits over Widgets: The Next Age of Business and Technology

We find ourselves in a unique period in the history of commerce, more significant than any we have experienced before.

Look around, and you can see that business is changing radically in all corners of the globe. Many mature industries are undergoing, at best, existential shocks and, at worst, complete tailspins. Old business models, based on aging skill sets, are being crushed under the weight of economics that no longer make sense.

While traditional methods of production have stagnated, ones based on “digitization” are growing exponentially. Buyouts worth \$19 billion of 5-year-old companies may be an outlier of the current zeitgeist, but in the less visible median, huge new wealth opportunities are being created from business approaches that represent the future. W. Brian Arthur of the Santa Fe Institute and the Palo Alto Research Center (PARC) suggests that a vast, unseen digital economy is quickly emerging. This “second economy” – launched in 1995 with the commercialization of the Internet – will, he argues, surpass the world’s “first economy” (the industrial economy) in scale and scope by 2025.¹ The virtual, digital economy will soon exceed the industrial economy – the cumulative output of mankind’s development of a physical economy over several millennia – in terms of transactions, revenues and value creation, *in a mere 30 years from its inception*.

This is the opportunity in front of you today.

Seizing this opportunity requires a deft understanding of the new rules of the game – the new “Code Rules.”² The key premise: By making meaning out of the data that swirls around us based on our every digital interaction – or “Code Halo™” – businesses gain unprecedented insight into what customers and prospects want and value, into what makes them “tick.” They can then capitalize on these insights and the increasingly digital ways of doing business to create disruptive new business models that can catapult them to the top of their markets.

Juggernaut technologies – social, mobile, analytics and cloud (the SMAC Stack™) – are the foundation of the second economy and the raw materials of this new digital age. This is the new master IT architecture, and it is spreading throughout enterprises, large and small, at an unprecedented pace.

More than
50 billion
‘things’ will be
connected
to the
Internet
by 2020.

Source: “The Internet of Things,” Cisco Internet Business Solutions Group, <http://share.cisco.com/internet-of-things.html>.

One reason this new wave of technology is being adopted so quickly and having such disruptive impact is that unlike previous waves – which were all born, raised and (slowly) matured internally within enterprises – SMAC grew up in consumer markets and had to survive (and thrive) under consumer market business cycle pressures. As a result, much of the new architecture is already in place, stress-tested, battle-hardened and ready for all sorts of business.

Another reason is that SMAC technologies – which developed initially as powerful but disconnected tools – have combined into an integrated stack and are producing higher orders of business benefits for enterprises than previously unintegrated technologies. Just think about your smartphone without its apps, disconnected from the Web, the cloud and your personal networks. On its own, it would be a very expensive pocket watch. Its incredible power and value is possible because SMAC technologies work in harmony. Many enterprises are seeing market-moving performance resulting from social information derived, delivered and decoded to and from mobile devices powered by low-cost cloud platforms.

The insights generated from this information help companies get to know their customers in entirely new ways. Furthermore, with new advances in cloud platforms, organizations are more agile and able to innovate, as IT departments rapidly build applications at lower cost that serve the needs of the business in days or months instead of years.

Now, in the latest game-changing development, the SMAC Stack is being further enhanced by the rise of the Internet of Things (IoT); sensors and processors embedded into fridges, turbines, toothbrushes, glasses, watches, doors, cars and a million other previously inanimate objects. These devices, when connected to the Internet, are creating a huge new platform of personal and business value; an Internet of every “thing” as a service (IoTaaS) is emerging.

Though you may feel like you’ve seen lots of hype around cloud computing and social media, the impact of this new technology stack (let alone the IoT) on the corporation is currently being underhyped. SMAC Stack technologies are not simply being “glued onto” the traditional corporate model; in many cases, they are creating an entirely new model. This is an important dis-

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Just as steam power, steel and electricity provided the platform for the industrial corporate model, the SMAC Stack is providing the foundation for the knowledge corporate model.

distinction between the SMAC Stack and the client/server model. At their most fundamental, the client/server systems of the 1990s made industrial businesses more efficient and effective. These enterprise applications allowed for better management of products or people. As such, IT leaders during this time didn't need to engage in true business model innovation; instead, they needed to apply new computing models to established ways of doing business.

The SMAC Stack, by contrast, is a new technology model creating new business models. In the same manner that steam power, steel and electricity provided the platform for the industrial corporate model, this new technology stack is providing the foundation for the knowledge corporate model.

We can all see the result: What enterprises do, and how they do it, is changing. How we work is changing. We are only too conscious that we are now in a 24x7, always-on, device-laden, global and diverse world, in which the best skills are anywhere and everywhere, and the "9-to-5" workday could just as well be 9:00 PM to 5:00 AM as 5:00 AM to 9:00 PM. Our new tools are shrinking time and space, giving us new connections to customers anytime, anywhere, on any device, as long as we can "see" and "understand" them and react more quickly and meaningfully than our competitors.

In this new digital era, expectations are rising; as consumers, we want every interaction to be as great as the one we have with Apple. As employees, we want to make filing an expense report as simple as interacting with Amazon. As managers, we want to manage (and be managed) with good data (big or small) rather than as (or by) HIPPOs (highest paid person's opinion). Increasingly, because of the SMAC Stack (and the IoT), enterprises will have the opportunity to meet these expectations and, in doing so, avoid the "extinction events" that befall those that remain stuck in the past – and empower those that prize digits over widgets to win "the new code rush."

By 2022,
social technology will enable
four out of five
customer transactions.



Source: "'Liking' Isn't Leading," IBM, 2013, http://www.ibm.com/social-business/us/en/assets/IBM_Social_Business_Liking_Leading_PDF.pdf.



Seize the Opportunity: Connect with Customers in New Ways

Let's take a step back. SMAC and the IoT are incredibly disruptive technologies. It is easy to get lost in the enormity of their potential. But they feed a simple premise: that behind all of this technology – every device, every app, every wearable – is a person: a consumer. And connecting with that individual – understanding and serving her better at every stage of her journey, anticipating her needs and offering her what she wants (sometimes even before she asks for it) – is the key to earning her trust and, ultimately, her business.

And therein lies the opportunity that companies are seeking to grasp and trade on. In this digital world filled with infinite connections, heightened consumer expectations and transformative SMAC technologies, companies are mobilizing their organization around capturing all the information that surrounds their customers and, in the form of a Code Halo (see sidebar, page 8), using it to transform the way they do business.

Now, organizations can engage with and support customers across the entire customer journey in a cohesive way – the left hand, the right hand and both feet are working as a unit, with a common view of the customer that reaches into every connection point. Companies that prioritize the job of capturing this information and turning it into meaning are better served to provide customers with an exceptional experience. And if they don't do this, businesses realize, someone else will.

So everything from fridges to wearables, and from toothbrushes to apps, provide companies with the opportunity to monitor product performance, understand usage patterns, directly engage with and serve customers, obtain real-time product feedback to inform future product development or develop tailored offers and targeted campaigns.

A 5% decrease
in customer attrition can
boost profits
by up to 95%.



Source: Frederick F. Reichheld and W. Earl Sasser, Jr., "Zero Defections: Quality Comes to Service," *Harvard Business Review*, September 1990, <http://hbr.org/1990/09/zero-defections-quality-comes-to-services/ar/1>.

34% of CIOs see themselves primarily as a business strategist right now. That figure is expected to rise to 67% in 3.5 years.



Source: "State of the CIO Survey: Business Strategist CIOs Assume the Role of Digital Pathfinders," CIO Executive Council, <https://enterpriseproject.com/article/2014-state-cio-survey>.

Many companies are already organizing and transforming how they do business across functions, processes and levels to use Code Halo insights as a competitive advantage. And they are finding that it is no longer about extending or pushing incremental change; it's about disruptive and transformative change. And to embrace and leverage that change, businesses need to complete the following list of things to do:

- **Build around a customer platform.** The information about your customers should be central to everything you do – so treat it that way. By bringing your customer information into a common data model, you can give everyone in your company – from marketing to sales to service – the same view of the customer and facilitate the creation of applications and processes that use that customer data (see sidebar, page 8).
- **Develop a next-gen IT architecture.** SMAC technologies are becoming the new foundation of the next-gen IT architecture and changing how companies operate. Your IT architecture needs to be tuned for innovation, and that means freeing the IT team from the shackles of baseline infrastructure maintenance. Platform as a service (PaaS) provides packaged infrastructure, development and runtime environments in which security, scale, reporting and even social and mobile are inherent in the platform, which allows IT to focus on creating the apps themselves, not setting up and maintaining what they are built on.
- **Focus on rapid app development.** The days of monolithic IT app dev projects have passed. When development is slow and lacking end-user involvement, too often the outcome misses the mark and is delivered too late to be useful. Rapid app development environments on PaaS platforms with drag-and-drop tools for data models, app logic, workflow and integration allow teams to prototype and test apps very quickly, and get end users involved in the app cycle more directly.
- **Transform business processes.** The SMAC Stack is re-shaping enterprise work by re-forming how core processes are run. An app-centric mindset that connects employees, automates business processes



Quick Take

Code Halos Defined

A Code Halo is the field of digital information that surrounds any noun – any person, place or thing. Each one of us creates a “Code Halo” with every click or swipe of our phone, tablet, laptop, Glass, Nest, FuelBand®, dashboard or other smart device. Every transaction we make, every “like” we record, every preference we note creates a trail of information that leaves a digital fingerprint of who we are and what makes us tick. Code Halos allow switched-on companies to “know” us (their customers and prospects), to “read our minds” and to move beyond seeing us simply as a part of a socioeconomic demographic but rather as a “market of me.” More often than not, the digital life of people, “things” and organizations can provide more insight into – and thus generate more value from – the physical entity alone.



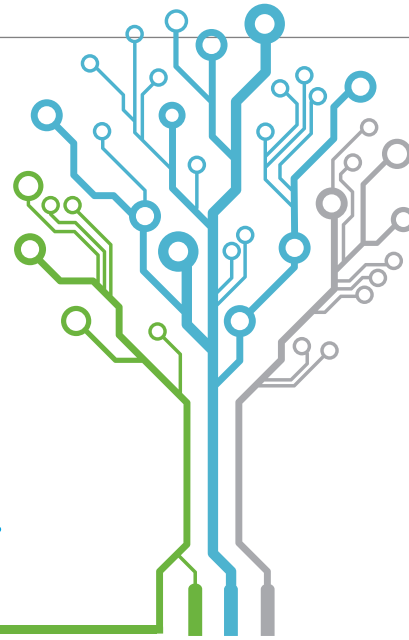
Quick Take

Customer Platforms Defined

Customer platforms take the best of customer relationship management (CRM) technology and apply it to custom applications throughout the business to meet the changing demands of today's hyper-connected world. These platforms bring together technology – managed cloud infrastructure, database models, APIs, integration services, rapid visual development, reporting and management services – to make it easy for everyone in the company to create apps that connect employees, partners and even products with customer data to create amazing customer experiences at lightning speed. Workflows and processes related to sales, service, marketing, operations, HR and beyond are supercharged with collaborative, mobile and social technologies around a single view of the customer. All of this redefines how a “platform” can enable IT to become a driver of innovation instead of just keeping the lights on.



Platform as a service is expected to grow 30% per year, reaching \$14 billion by 2017.



Source: "New IDC Worldwide Public Platform as a Service Forecast Shows Market Will Grow to Over \$14 Billion in 2017," IDC, Nov. 7, 2013, <http://www.idc.com/getdoc.jsp?containerId=prUS24435913>.

and leverages SMAC to unlock data from back-office systems promises to empower employees with better information to do their job and respond more nimbly to changing business conditions.

- **Improve employee engagement.** SMAC technologies have enabled systems and applications to be user-friendly and engaging. Employees now have easy-to-use and intuitive applications that enable them to be productive throughout the workday. Furthermore, through mobile and social technology, these employees can collaborate from anywhere. Many employees expect their intuitive and useful consumer-facing apps to make their way within the enterprise, and the SMAC Stack enables this.
- **Rethink product development.** Through crowdsourcing, iterative design, collaboration tools and customer feedback, product developers have the insights at their disposal to develop products and services that better meet and even anticipate the needs of their customers.

- **Reinvent the customer journey.** Providing great customer experiences across the entire customer journey is becoming table stakes. A great customer experience provides value to both the customer and company. Customers get a product or service that is useful and valuable, while companies get an opportunity to understand customer needs and behaviors and respond accordingly. When combined with a carefully managed workflow, SMAC technologies can enable companies to build great customer experiences through engaging applications across the entire customer journey. Companies are recognizing that they need to tailor experiences that meet these expectations or risk losing their customers to someone else who will.



Stumbling at Speed: Potholes in the Road

While this Code Halo-enabled era of customer centricity holds incredible promise, as the saying goes, “it’s as easy as executing perfectly.”

Disruptive transformation doesn’t happen overnight, and every pioneer bears the scars of experience, including:

- **You don’t have the right data.** Companies have been collecting large amounts of data for years. Just because you can track and collect data doesn’t mean it’s useful. If your sales teams have volumes of data that is outdated or irrelevant, no amount of data is going to close that sale.
- **You can’t integrate the data.** Data now comes in all shapes, sizes and forms. Just because you can collect it doesn’t mean it’s easy to analyze. Many companies struggle with integrating sources of both unstructured and structured data. Without being able to connect the two together, it can be difficult to draw insights and meaning.
- **You can’t access the data.** Some companies do have the right kinds of data, but it’s locked away in a siloed environment. As the volume of data grows, so does the variety. As such, different data types come into the organization in different places – the back office, customer portals, etc. If your company can’t organize the information in a way that is made accessible, your sales people can’t sell, and your service people can’t service. Yet, data without meaning is just noise, and analytics without business intent just creates static.
- **You don’t have the right technology.** There’s a reason large volumes of customer data have only started to emerge in recent years. SMAC technologies have only just become mainstream in our personal “consumer” lives. Developing an IT architecture that is enabled by the SMAC Stack is not an easy task, especially when innovation and improvements sometimes arrive at dizzying rates, and you have large technology investments in legacy systems that you still need to make work.
- **You don’t have the right skillsets.** We’ve seen this scenario time and time again. Someone gets an idea for a great business application that promises to add significant value. It gets added to the IT backlog and simply sits there because your people don’t have the time or skills to build it. The consumer technology available is providing companies with great ideas on innovation and the art of the possible. But as technology and innovation has evolved, the skillsets and capabilities of employees have not always kept pace, and the IT “debt gap” just grows.

While many opportunities exist, it can be hard to wrap your mind around positioning your organization to use Code Halos not only to capture customer data but also to drive business decisions and improve the customer journey.

CIOs report that their enterprises
realize only 43% of technology's
business potential.



Source: "Gartner Executive Program Survey of More than 2,000 CIOs Shows Digital Technologies Are Top Priorities in 2013," Gartner, Inc., Jan. 16, 2013, <http://www.gartner.com/newsroom/id/2304615>.



Starting Right: Picking Your Path

1 Start at the Process Level

The road is littered with failed initiatives that attempted to reboot an entire organization or business unit.

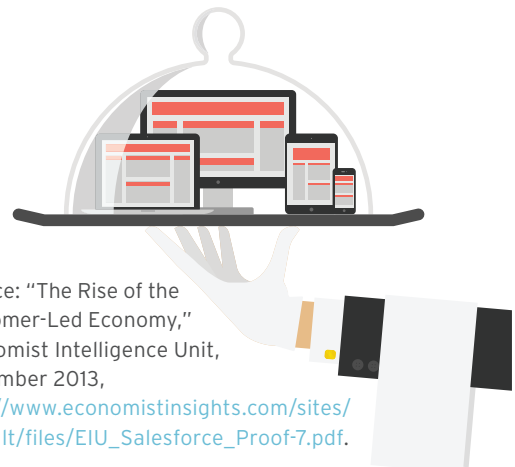
You know better. Take a hard look at your real business process anatomy (management, new product and service development, sales and customer relationship management, operations, etc.) and find the squeakiest wheels to focus on as your starting point. Look for processes that shape more than 20% of cost or revenue and then pick two where you can apply customer-centric Code Halo thinking. Target tangible process metrics meaningful to your industry – cost per claim, clinical trial yield, healthcare unit cost, fraud prevention rates, etc. Find the “spark” where “code meets code” and work to re-code moments of engagement with clients, internal workers and partners.

Many of the best near-term process targets will be focused on the customer interface. (“You had me at ‘hello’” is becoming more like, “You had me at ‘01001000010001010011000100110001001111.’”)^{3, 4} Here are some starting points:

- Think of customers as essential not just because they are near-term sales prospects but because of what their data and metadata tell you about them and people like them.
- Supplement the transaction with the experience. It may seem counterintuitive, but Code Halos are making the virtual more intimate than the impersonal nature of the “real” world. With your customers, it is as much about the journey as the end destination. Knowing customers and serving their needs along the journey will provide that personal experience.

- Find the “main character” of the process. Once you and your team start focusing on a specific process, you must find its “main character” – the person or thing that anchors its “story.” Every business process that matters in your organization has a main character, the person or thing that is acted on from the beginning to the end of a work process. It connects all – or most – of the steps or elements of the work that your organization does.

65% of CIOs
have recently changed their
strategy to enhance the
customer experience.



Source: “The Rise of the Customer-Led Economy,” Economist Intelligence Unit, November 2013, http://www.economistsights.com/sites/default/files/EIU_Salesforce_Proof-7.pdf.

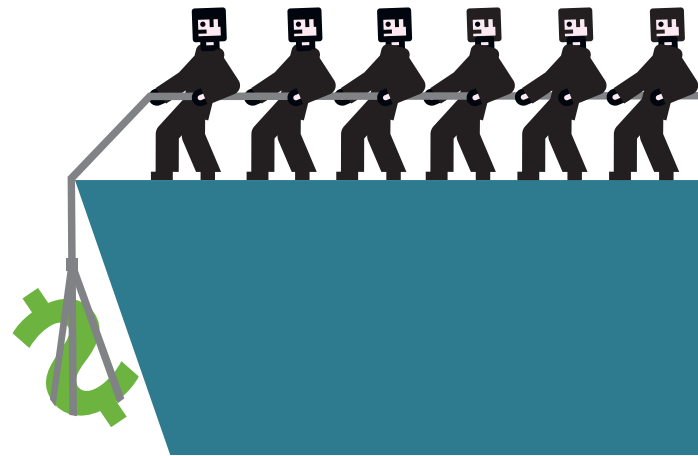
2 Pay Attention to SMAC

As SMAC adoption explodes, and with more products becoming IP-addressable and connected – from X to Y to Z wrapped in Code Halos – the amount of online data is nearing “brontobyte” proportions. Between 2008 and 2020, the amount of data managed by corporations will grow at least 44-fold.⁵

Every day, the world creates 2.5 quintillion bytes of data – so much that 90% of the data in existence today has been created in the last two years alone.⁶ Much of this data is now being created and consumed via mobile devices. There are approximately 8 billion mobile devices in use, and by 2020, this will grow to more than 50 billion.⁷ Much of this comes from people, companies and things creating and sharing Code Halos. As such, Code Halos are fueling the big data shift (not the other way around).

Yet, data without meaning is just noise, and analytics without business intent just creates static. For a Code Halo to have business impact, it has to hold its shape, like a mosaic that turns fragmented elements into a full picture. It has to mean something in business terms. Focusing on business meaning is the key to extracting the right information and applying it to a process with potential commercial implications (buying a car, brushing your teeth, maintaining an aircraft engine, going for a bike ride, renting a movie, processing an insurance claim or creating a new investment product or service). Doing this means not only having the right technologies in place but also finding, attracting and keeping the right people (data scientists, designers, etc.) who have the right aesthetic, commercial sensibility, emotional quotient and IT talents required by the transformation to the Second Economy.

Almost two-thirds (62%) of CEOs want CIOs to concentrate on making, rather than saving, money for the company.



Source: “CIO Survey 2013,” Harvey Nash, http://www.harveynash.com/group/mediacentre/2013%20CIO_survey.pdf.



3

Put Customers at the Center of Every Process

While 86% of buyers will pay more for a better customer experience, only 1% of customers feel their expectations are consistently met.⁸

Putting the customer at the center of your organization's thinking will ensure that your company considers the customer in all new decisions, initiatives, processes and ideas. Regardless of their function, everyone in your organization should be thinking about how they impact the customer and his or her experience with your company. By putting the customer at the center and understanding their path along the journey, you can find opportunities to surprise and delight them.

The good news is that while customers' preferences and journeys will change, the technology and tools at our disposal can help us build solutions that put the customer first. Here are some starting points:

- **Tie into customer pain points.** Want to ensure you are putting customers first? Think about their pain points across their customer journey. Whether it's adding a new service channel, improving a process or creating a new interface, your organization demonstrates its commitment to putting the customer first when it identifies a pain point and finds a solution.

- **Compete on code.** Apps are a primary bridge to your customer, and building applications that plug your employees, partners and products into your customer data is the key to better customer experiences and a more empowered ecosystem. Supercharge your development for quick iteration with technologies like PaaS and rapid development tools to get to market faster, and then tune apps based on feedback and usage patterns gleaned from Code Halos.
- **Use every channel.** Customers are always on, and they expect you to be, as well. They want to connect with you at times and in ways that suit their schedule, and expect you to be there to meet them. Engaging your customers across multiple channels allows your organization to gain a holistic view of the customer. The Code Halos will provide critical information to help you understand customer behavior and reinforce your goal of putting the customer at the center.



4 Connect the Digital Dots with Code Halos

Code Halos are everybody's issue. Whether you're a product manager, head of a marketing department, running a small business, head of information technology, leading a government agency, or directing your company's business strategy, it's essential to understand how much the massive shift to competing on a code-driven experience pertains to you – and your organization.

In fact, the fundamental basis for value creation is changing before our collective eyes. People – both inside and outside your organization's boundaries – want to engage with you in ways that are dramatically different from ever before. Customers', employees' and partners' expectations for interacting, transacting, communicating and collaborating with you are shifting rapidly.

Once people have had a Code Halo-based experience – say, taking a Hailo taxi in London or New York, or paying for their coffee with Square Wallet – they begin to look at many moments in their day and think:

- “This stinks; why can't it work like Hailo?”
- Why do I have to sign in at the gym?”
- “Why do I have to give my name to the maître d'?”
- “Why do I have to put my credit card into a machine at the check-in counter for my flight?”
- “Why do I have to input my credit card details into the telephone three times when I'm trying to talk to someone about my credit card bill?”
- “Why do I have to line up at the hotel registration behind four other folks at 9:30 PM when they've only got one staff member on duty?”
- “Why do I need to get a ticket (and then put the ticket into a machine to pay) at the parking garage I go to every week?”
- “Why do I need to pick up a ticket at the movie theater that I go to most Friday evenings when I've already bought the ticket online?”

All of these moments – and many more – could work as well as Hailo does. If a phalanx of London cabbies (no disrespect guys!) can make something as fantastic as Hailo, then why can't a *big bank, big airline, big movie chain or big restaurant*?

That question aside (the answer to which is a mix of legacy, inertia, fear, not-invented-here syndrome,

arrogance, confusion and politics), the reality is that all areas of our lives are soon going to work like Hailo. As more and more people understand the power of Code Halos and see and experience them in their daily lives, we will see Hailo-like moments everywhere we look. Soon you will check into your hotel via your Code Halo.⁹ Soon you will be able to check in at the gym via your Code Halo.¹⁰ Soon, the gestalt will happen and a moment that isn't mediated – improved – by Code Halos will seem like a nasty relic from the past.”

More than 80%
of business leaders say that
connecting customers, employees,
partners and
products
would
enhance
the customer
experience.



Source: “Highest Performing Companies Shift Strategies to Emphasize Customer Experience,” Economist Intelligence Unit, Dec. 4, 2013, <http://www.eiimedia.com/index.php/latest-press-releases/item/1283-highest-performing-companies-shift-strategies-to-emphasise-customer-experience-says-economist-intelligence-unit-report>.

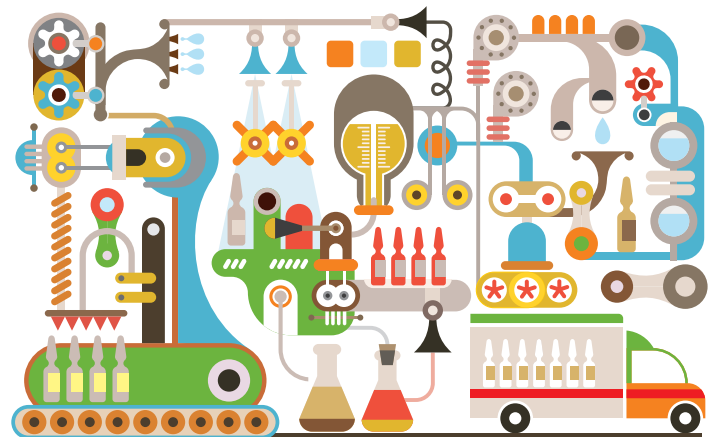
5 Connect your Employees to the Data

To set up your people for success, you also need to have the right technology and processes in place. When you do this, the possibilities are limitless. In a world where employees are connected to the data, they can learn new insights, provide better service, develop better products and build better relationships.

Getting the right data at the right time into the hands of your employees holds significant promise. Here's how you can start:

- **Unlock your back office.** There's a wealth of critical information in your back-office systems. Integrating back-office data to a SMAC-based rapid app development platform creates an agility layer to work with that data in new ways. Whether it's order status, inventory counts, billing or vendor data, by marrying that information with your front-office sales, service and marketing activities, your team is better equipped to deliver on its promises to its customers.
- **Build employee apps.** Once you have the right data, you can now build engaging employee applications that help your employees conduct business whenever and wherever they are. Every department across every business has an opportunity for an application that can help them run their business better. Don't do it alone – get your employees involved too. Each day, they are using countless apps that help them carry out tasks and make their lives easier. Ask them which apps provide the most value and utility. To boost adoption, involve them at every step of an accelerated development cycle to hit the mark on their needs.
- **Connect everyone and everything.** In our connected Code Halo world, the opportunities are endless. We can now connect with not only anyone, but also anything and everything. Using technology to connect “things” or products is what the Internet of Things is all about – and when we use technology to connect our products to internal systems, we can provide our employees with a whole new level of visibility into our customers, products, employees and partners. When you can connect everything, anything is possible.

94% of CIOs
believe a highly
mobile workforce
will increase productivity and
business value.



Source: “CIO Priorities in 2014,” Argyle Executive Forum, Nov. 12, 2013, <http://www.argylejournal.com/chief-information-officer/cio-priorities-in-2014-2/>.





Work in the Connected World

We are living in a special economic time. A generation from now, we will look back and see that the 2010s was the decade in which commerce changed.

We'll see that traditional factors of production and wealth creation – capital, labor and raw materials – were superseded by digital means of production: SMAC technologies, apps and the IoT, coupled with massive amounts of data. It will be clear that this was the decade in which the digital lives of people, things and organizations took shape – when the virtual took primacy over the physical. Code Halos are already beginning to create an entirely new economy, full of opportunities of unprecedented scale and possibility.

This transition has profound implications for individuals, businesses of all sizes and public sector organizations:

- **At a personal level, we will all need to rethink how we interact with all kinds of organizations (and each other).** We will reset our expectations about the freedoms and protections we will demand from our governments and regulatory agencies. We will work to strike a new balance between what we can gain in this new world – conveniences, enriched experiences, new insights – and what we might lose, such as personal privacy.
- **Large corporations will need to move quickly to meet new market expectations.** Customers and investors will increasingly place value on digital offerings and capabilities. In capturing the opportunity of wrapping people, products and processes with digits, many will have to re-architect portions of their operations and how they engage with customers. IT will need to re-think its delivery model to focus on sustainable, rapid innovation in the cloud. Leaders will have to learn new skills such as managing by empiricism, fully integrating technology into business processes, and generating mass personalization of products and services. In a world where speed is everything, winning companies will find the fastest way to use these new technologies to build applications, products and services that meet the needs of their customers.
- **To meet their objectives, governments and public sector organizations will similarly have to drive new levels of innovation, efficiency and transparency with Code Halo thinking.** Public sector leaders must also quickly strike a new balance in which trust is established with citizens and corporations; legal and tax systems adapt to facilitate, instead of quash; innovation can be unlocked and propelled; and protections remain in place to ensure virtual markets remain fair, safe and transparent.

Similar to previous transitions, this new economic model will develop in an unevenly distributed manner. There will be distinct winners and losers – at personal, corporate, industry and societal levels. The key to success is to first recognize the contours of the transition and then act in thoughtful, judicious but bold ways to ensure that the road ahead rises to meet you.

Footnotes

- ¹ W. Brian Arthur, "The Second Economy," McKinsey & Co., October 2011, http://www.mckinsey.com/insights/strategy/the_second_economy.
- ² Malcolm Frank, Paul Roehrig and Ben Pring, *Code Halos: How the "Digital Lives of People, Things and Organizations are Changing the Rules of Business*, John Wiley & Sons, April 2014.
- ³ That's "hello" for all you non-coders.
- ⁴ "Code Rules: A Playbook for Managing at the Crossroads," Cognizant Technology Solutions, June 2013, <http://www.cognizant.com/Futureofwork/Documents/code-rules.pdf>.
- ⁵ "The 2011 Digital Universe Study," IDC, <http://www.emc.com/collateral/demos/microsites/emc-digital-universe-2011/index.htm>.
- ⁶ See <http://www-01.ibm.com/software/data/bigdata/>.
- ⁷ According to multiple third-party estimates.
- ⁸ Christine Crandell, "Customer Experience: Is It the Chicken or Egg?" *Forbes*, Jan. 21, 2013, <http://www.forbes.com/sites/christinecrandell/2013/01/21/customer-experience-is-it-the-chicken-or-egg/>.
- ⁹ Nancy Trejos, "Smartphones Replace Room Keys at Select Starwood Hotels," *USA Today*, Jan. 29, 2014, <http://usat.ly/RrFZmp>.
- ¹⁰ "Gyms Experiment with Smartphone Apps," *Climbing Business Journal*, Oct. 21, 2013, <http://bit.ly/1jNonKP>.
- ¹¹ Matt Stopera, "Completely Surreal Photos of America's Abandoned Malls," BuzzFeed, April 2, 2014, <http://bzfd.it/1edof2B>.

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About the Authors

Ben Pring co-leads Cognizant's Center for the Future of Work. He joined Cognizant after spending 15 years with Gartner as a senior industry analyst, researching and advising in areas such as cloud computing and global sourcing. Prior to Gartner, Ben worked for a number of consulting companies, including Coopers & Lybrand. His expertise in helping clients see around corners, think the unthinkable and calculate the compound annual growth rate of unintended consequences has brought him to Cognizant, where his charter is to research and analyze how organizations can leverage the incredibly powerful new opportunities that are being created as new technologies make computing power more pervasive, more affordable and more important than ever before. Ben graduated with a degree in philosophy from Manchester University in the UK. He can be reached at Benjamin.Pring@cognizant.com.

Peter Gaylord is the Director of Platform Product Marketing at Salesforce, which he joined in 2011. In his 20-plus years of marketing and product management, Peter has focused on helping a wide range of companies turn disruptive technologies into a competitive advantage. Peter's expertise on the intersection of enterprise software and cloud computing brought him to the Salesforce Platform, which promises to re-define platform as a service by bringing unprecedented development speed and flexibility for connected custom apps, all on the same platform that powers the world's #1 CRM solution. Peter holds an undergraduate degree in mechanical engineering from the University of Waterloo in Canada, and received his MBA from the Haas School of Business at the University of California, Berkeley. He can be contacted at Pgaylord@salesforce.com.



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