



The Entrepreneurial Organization at Scale

Report of the SD Learning Consortium

November 9, 2016

FULL REPORT

www.sdlearningconsortium.org

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THE ENTREPRENEURIAL ORGANIZATION AT SCALE

Can large organizations—even big old firms—act entrepreneurially and innovate systematically at scale?

In 2011, **Ericsson** (a 140-year old Swedish firm with around 100,000 employees) embraced Agile for its business in managing networks for the world's telecommunications companies. Competition in the sector is fierce: of seven global firms, only three, including Ericsson, remain. Before 2011, Ericsson would build its systems on a five-year cycle, with a unit housing several thousand employees. When the system was finally built, it would be shipped to the telecoms and there would be an extended period of adjustment as the system was adapted to fit their needs. Now with Agile, Ericsson has over hundred small teams working with its customers' needs in three-week cycles and involving customers in testing different aspects of the system. The result is faster development that is more relevant to the specific needs of the customers. Moreover, the interaction has enabled Ericsson to focus on the customers' very highest priorities. The client gets to see the next iteration of the system every three weeks, instead of waiting five years for one "big bang" delivery. In one case, Ericsson's client had said, "For us to deploy this in our entire network, we would need 120 improvements." It turned out the client decided to go ahead with only 60 of the improvements. "If we had been working as we were in the past," the client said, "we would never have done that at this stage. But because of the cooperation that we have, now we are ready to go ahead." The result? The client gets value sooner. Ericsson has less work in progress. And Ericsson is deploying one to two years earlier than it otherwise would, so that its revenue comes in one to two years earlier. The client is much happier and there is a financial benefit for Ericsson.

In 2015, a small team at **Spotify** (a rapidly growing, 8-year old Swedish music streaming company with more than 2,500 staff and more than 100 million active users globally) had an idea to solve a long-standing problem: how could users find the music they would really love in a library of millions of songs? What if, they asked, we could completely remove the friction for users by algorithmically matching users' tastes with the several billion playlists created by other users and deliver a fresh playlist to each user weekly? Within a couple of weeks, the tiny cross-functional team had pulled together a quick prototype and tested it on Spotify's own staff—all active Spotify users—who loved it. The team did another quick experiment on one percent of the active Spotify users—close to a million people. Again, the response was strongly positive. Scaling up the Discover Weekly algorithms from 1 million users to 75 million users in 21 languages in multiple time zones took just a couple of months. When Discover Weekly was deployed to all Spotify users in July 2015, it was a wild success—becoming not just a new feature but a global brand resulting in an influx of millions of new users. The Discover Weekly team is just one of more than 100 small teams at Spotify, which has deployed Agile approaches to its work since its inception in 2008. Spotify realizes that it will need to continue to innovate if it has any chance of succeeding against wealthy competitors like Apple and Amazon.

Barclays is a 326-year-old transatlantic bank with around 130,000 employees). In 2015, Barclays announced that embracing Agile was a key strategic initiative and encouraged

hundreds of teams to become champions of an Agile transformation. At the time of writing there are more than 13,000 people, and increasing, that are part of more than 800 teams in an organization-wide Agile transformation that is aimed at enabling Barclays to deliver instant, frictionless, intimate value at scale.

In 2014, **Microsoft's** Windows group (some 20,000 staff within the 41-year old firm, which employs around 130,000) set out to radically accelerate its innovation processes. It realized that its two- to three-year cycles of Windows software releases weren't meeting the demands of its customers—now more than 400 million world-wide on Windows 10, and a global Windows user base between 1.5 billion and 2 billion users. The technical challenge was massive, since the Windows program is huge—some tens of million lines of code in multiple languages—and the potential combinations of users' hardware and software exceed the numbers of atoms in the universe. The Windows group set about systematically “grinding down” its review processes so that the full creative talents of its developers could be unleashed. With drastically leaner review processes and continuous integration, the Windows group is now able to provide releases at least weekly—and sometimes faster—to a volunteer user group of more than 7 million participants who provide direct feedback on proposed improvements. Windows also releases weekly updates for security and bug fixes for all users. Now, individual engineers can see the fruits of their labors for users within days, rather than years—a huge boost for morale and a key element in Microsoft's actions to attract talent. The Windows group at Microsoft is now just one of several large units, including the Developer Division and Skype, that are embracing Agile and Lean.

The four examples just cited were identified in the 2016 site visits of the SD Learning Consortium (SDLC)—a non-profit corporation comprising eight firms in the US and Europe that are sharing their experiences in operating entrepreneurially at scale. The examples are not isolated experiments in those firms. In each case, they are part of large-scale implementations of an entrepreneurial approach to running the organization with continuous innovation.

The SDLC, which was formed in January 2016, is dedicated to discovering together what progress has been made by large companies in acting entrepreneurially with continuous innovation and then disseminating globally what has been learned. The approach involved the SDLC members going and seeing for themselves what is actually happening on the ground. During eight site visits, they explored the hypothesis that some large companies are making progress in developing and implementing goals, principles and values that exemplify the entrepreneurial spirit and continuous innovation—these are sometimes referred to under the umbrella term “Agile:” (See definitions in Appendix 1 and detailed descriptions of the Agile mindset in Appendix 2.)

The SDLC member firms range in age from 8 years to 326 years. The firms operate globally and have been on their various Agile journeys for periods ranging from 15 months to 15 years. Some of the firms were “born Agile” while others are engaged in a transformation from top-down bureaucracy.

The entrepreneurial behavior observed in these firms took off in software development in 2001 with the Manifesto for Agile Software Development. As managing software has become central to the success of every business, Agile is becoming a key to the management of almost everything. Agile and is now being embraced by all parts, and all kinds, of organizations,

including for operations that are complex or requiring high reliability, as noted in the *Harvard Business Review* article in April 2016, “Embracing Agile:”

“Now agile methodologies—which involve new values, principles, practices, and benefits and are a radical alternative to command-and-control-style management—are spreading across a broad range of industries and functions and even into the C-suite.”¹

There are now hundreds of thousands of Agile practitioners around the world and tens of thousands of organizations embracing Agile. The movement is driven both by the passion of those who love working this way and by managers who recognize that survival in an unpredictable and rapidly shifting marketplace requires a capacity to adapt equally rapidly.

Overall, the SDLC site visits suggest a cautiously positive answer to the question posed by the Drucker Forum, 2016: ‘Can large organizations instill an entrepreneurial spirit and overcome the inertia of hierarchy, bureaucracy and internal politics?’² In effect, when organizations consistently embody four main themes of an entrepreneurial mindset, they can act entrepreneurially.

THE FOUR MAIN THEMES OF AGILE

Although the SDLC site visits revealed many variations in managerial practices and different labels being applied to what was being done (including Agile, Scrum, Lean and Kanban), the site visits revealed a striking convergence around four themes of the entrepreneurial mindset.

- **Delighting customers:** An obsession with continuously adding value for customers and users, as well as a recognition of the current need to generate instant, intimate, frictionless value at scale, anywhere, anytime, on any device. As a result of globalization, deregulation, knowledge work and new technology, power in the marketplace has shifted from seller to buyer: the customer has now become the boss. This is more than an increased attention to customers: it is a fundamental shift in the goal of the organization—a veritable Copernican revolution in management.
- **Decaling work:** A presumption that in a volatile, complex, uncertain and ambiguous world, big difficult problems need to be disaggregated into small batches and performed by small cross-functional autonomous teams, working iteratively in short cycles in a state of flow, with fast feedback from customers and end-users.
- **Enterprise-wide Agility:** A recognition that, to be fully entrepreneurial, the whole organization needs to embrace the entrepreneurial mindset: the entire firm functions as an interactive network, not a top-down bureaucracy with just a few teams implementing Agile tools and processes. In effect, Agility is not just for IT: it is a change in the way that the whole organization thinks, is led and managed.
- **Nurturing culture:** A never-ending commitment to actively nurture, and systematically strengthen, entrepreneurial mindsets and behavior throughout the organization. This includes everything from leadership, strategy and values to onboarding, training, communications and personnel management.

A universal feature of all the site visits was a recognition that entrepreneurial behaviors are dependent on the presence of an entrepreneurial mindset pervading the organization. Where the management tools and processes of Agile, Lean or Kanban are implemented without the requisite mindset, few, if any, benefits were observed.

Pursuit of all four themes is key to getting better business outcomes. Individually, none of the observed management practices are new. What is new and different is the way that the management goals, practices and values constitute a coherent and integrated approach to continuous innovation, driven by and lubricated with a pervasive entrepreneurial mindset.

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The SDLC member firms range in age from 8 years to 326 years. The firms operate globally and at least six have been implementing Agile for at least five years. Some of the firms were “born Agile” while others are engaged in transformation from top-down bureaucracy. The 2016 visits of the SDLC included:

Barclays	London, U.K.
Cerner	Kansas City, U.S.A.
C.H.Robinson	Chicago, U.S.A.
Ericsson	Stockholm, Sweden,
Microsoft	Seattle, U.S.A
Riot Games	Los Angeles, U.S.A.
Spotify	New York, U.S.A..

Each of the site visits included more than ten people learning what each company has done and then exploring in greater depth the issues that were uncovered. After the visits, the member firms got together for several days to review what had been learned and identify common themes. Each firm is sharing what is learned within its own organization in order to spur enhanced implementation of entrepreneurial goals, principles and practices on a continuous journey of discovery.

The findings of the site visits to these global firms relate mainly to the units visited, although efforts were made to assess the extent to which what was observed during the site visits was reflected in other units and throughout the organization as a whole, drawing as well as on publicly available information. In some cases (C.H.Robinson, Ericsson, Microsoft and Riot Games), the 2016 site visit was supplemented with findings from site visits to those firms in 2015.⁴

Although the SDLC site visits revealed many variations in managerial practices with different labels being applied to what was being done (including Agile, Scrum, Lean and Kanban), the site visits revealed a striking convergence around four aspects or themes of the entrepreneurial mindset.

- **Delighting customers:**
- **Descaling work**
- **Enterprise-wide Agility**
- **Nurturing culture:**

A. DELIGHTING THE CUSTOMER

A key theme of the site visits was a pervasive focus on continuously adding value for customers and end-users. It has ten important aspects:

1. **Customer delight:** The site visits observed units with a mission explicitly and singularly focused on continuously adding value to customers. The overriding reason for the sharp focus on adding value to customers is clear: as a result of globalization, deregulation, knowledge work and new technology, power in the marketplace has shifted from seller to buyer: the customer has now become the boss.

2. **Higher performance requirements:** As power has shifted from seller to buyer, firms increasingly recognize the current business need to deliver enhanced performance for customers, including instant, intimate, frictionless value at scale, anytime, anywhere, on any device. There is also a recognition of the need to align internal processes to reflect the primacy of customer-focus.

There was a universal recognition in the site visits that delighting customers implies continuous innovation: innovation is everyone's job, along with a sense that good ideas can come from anywhere.

As the HBR article of April 2016, "Embracing Agile" points out, Agile is a response to particular conditions in the marketplace.

"Agile ... is most effective and easiest to implement under conditions commonly found in software innovation: The problem to be solved is complex; solutions are initially unknown, and product requirements will most likely change; the work can be modularized; close collaboration with end users (and rapid feedback from them) is feasible; and creative teams will typically outperform command-and-control groups.

"In our experience, these conditions exist for many product development functions, marketing projects, strategic-planning activities, supply-chain challenges, and resource allocation decisions. They are less common in routine operations such as plant maintenance, purchasing, sales calls, and accounting."⁵

The site visits suggest that the areas where Agile is inappropriate are shrinking for several reasons. First, in a world that is volatile, uncertain complex and ambiguous, with increased automation, there is steadily less human work that is truly "routine." Second, as "software eats the world," and becomes ubiquitous in almost every product and service, management methods that have emerged for software development become increasingly relevant to running the whole organization. Third, as software operations themselves become steadily more Agile, the constraints posed by slow-moving bureaucratic operations in back-office functions become a serious operational problem—an issue that some SDLC members are actively addressing. Finally, bureaucracy is costly. Analysts, Gary Hamel and Michele Zanini estimate the annual cost of bureaucracy in the USA at some \$3 trillion.⁶ The financial case for eliminating bureaucracy is strong.

3. **Top management alignment:** As shown in Appendix 4, the public mission statements of the SDLC members reflect in various degrees the primacy of customer delight. In the units visited, the primary focus of the senior management on customer delight was palpable. It is obviously helpful in achieving alignment if the overall mission of the organization is both inherently inspiring and explicitly customer focused. For instance:

- The mission at Riot Games to be the most player-focused firm in the world is a strong source of motivation to the staff who are almost all themselves players.
- The aspiration at Barclays to help customers realize their ambitions by generating instant, frictionless, intimate banking at scale is notable.⁷

4. **Organization-wide alignment:** The site visits revealed a commitment to a customer-focused mission throughout the units visited and in some cases, throughout the entire organization. This phenomenon was most striking at Riot Games, where the obsession with enhancing the player experience is passionate and pervasive. (See Appendix 6)

5. **Clear line of sight to the customer:** The units visited perceive significant value in providing everyone in the organization a clear line of sight to the customer so that all can see how their work contributes to adding value for the customer. This is more difficult to accomplish in B-to-B businesses (such as Ericsson's ENM group which provides network management systems to the world's telecom firms) than in B-to-C businesses (like Riot Games, Spotify and parts of Barclays⁸), but even there, it is seen as important.

In some cases, progress towards becoming more entrepreneurial depends on clarifying who really is the ultimate customer. For instance, one organization had been viewing its operation as a B-to-B business, with the intermediaries being seen as its customer, while giving lower priority to the ultimate end-user. In order to become more entrepreneurial, the organization had to start seeing its business as a B-to-C operation, with the ultimate end-user as its real customer and to focus efforts on adding continuous value for them.

6. **Customer propinquity:** All units visited are trying to accomplish greater physical and psychological propinquity to the customer so as to enhance understanding of, and the capacity to meet, customer needs. This includes recruitment, embedding staff in the customers' work space, and bringing customers into the organization.

Examples included:

- Riot Games recruits gamers and Spotify recruits music lovers.
- Barclays has moved more developers onto the trading floor so that they can better understand traders' needs.
- Cerner has taken a number of steps, including
 - bringing in doctors, pharmacists and nurses as part of the team with software developers;
 - systematically carrying out Usability Studies and

- mobilizing Interaction Designers and Human Factors Researcher teams to help design the best possible applications.
- Windows10 has established a user group of more than 7 million people.
- Spotify has made pervasive use of A/B testing across millions of users.

7. From outputs to outcomes: Once the firm adopts delighting the customer as the goal of the firm, the purpose of work shifts from *outputs* (the delivery of things—products, services or money) to *outcomes* (the human experiences of customers). Since customer experiences can only be captured in stories, the shift has profound implications both for the planning of future work (which tends to take the form of user stories) and for evaluating the completion of work (work is not fully “done” until the team has verified the story of the customer’s experience).

Outcomes at C.H.Robinson

One firm (C.H. Robinson) invests in research aimed at getting to know their customer – who they are, what they do and why they do it – to achieve a positive outcome. C.H.Robinson’s approach to designing and building better software puts customer experience front and center. Sharing customer stories drives their teams to deliver intuitive, user-focused software that positively impacts the lives and families of the small businesses they service.

Take for example the case of a busy dispatcher and mom of two young soccer players who dispatches for her husband and two other drivers for their small trucking company. By listening to and incorporating her needs with the overall business strategy and goals, C.H.Robinson was able to provide a mobile app with features that allow her to leave the office to cheer for her kids’ soccer teams and check in on her drivers between periods. In addition, her drivers now submit their own invoice and delivery documents through the app, freeing up both her and her husband to focus on continuing to build their business.

User experience design doesn’t replace the business strategy and goals: it supports them and allows the team to create a better product.

8. Space for innovation and collaboration: Explicit efforts to create time and space to enable innovation and entrepreneurship were striking.

- All firms visited are making systematic efforts to explicitly create the time for innovation, including hackathons (for one day, or several days, or even a whole week), organizing internal conferences, workshops, learning experiences, and the encouragement of blogs by all staff. For examples at Cerner, see Appendix 5.
- All firms have taken remarkable steps to provide physical space that encourages collaboration both within teams and between teams.

9. Measurement: Given the decentralized approach to work, systematic measurement of the customer experience throughout the organization is given particular importance.

- One organization is systematically measuring team maturity, quality, lead-time and team happiness and is developing further measures to establish the business value of Agile practices.
- Another firm holds teams accountable for 35 performance dimensions, with a particular, even obsessive, concern for the customer experience.
- Another firm systematically tracks the customer experience across more than 100 million users.
- Another firm gets weekly feedback from a user group of millions of users about the improvement and upgrades in its service.

10. Reconciliation of Agile with efficiency and financial goals: Efficiency and enhanced shareholder value as reflected in the stock price are generally seen within the units visited as consequences of the tight focus on the customer-focused mission, rather than an independent goals in themselves.

These ten elements of delighting the customer are in stark contrast to the bureaucratic practices that are still prevalent in large organizations. (See Appendix 2)

Getting beyond clichés about customer focus

The primacy of customer focus in Agile is more than an increased attention to customers: it is a fundamental shift in the goal of the organization. The site visits to all the SDLC members revealed an awareness of this shift, as well as systematic efforts to incorporate the shift in the way the organization is run.

Grasping the primacy of the customer is at once the most obvious and the most difficult aspect of the entrepreneurial organization. In one sense, the primacy of the customer is obvious, since as Peter Drucker pointed out in 1954, “There is only one valid purpose for a firm, to create a customer.” Without customers, a firm cannot exist.

Yet the primacy of the customer can be difficult to understand for managers who have learned to recite phrases like “the customer is number one,” while continuing to be driven by their internal systems and processes, such as multi-year release cycles of products and elaborate slow-moving control processes. It isn’t that these firms are deliberately ignoring their customers. They do what they can for the customer—but only within the limits and constraints of their own internal systems and processes. In such firms, “the customer is number one” is often no more than a slogan: internal systems, processes and goals take precedence. The customer is almost an after-thought.

What we saw in the most advanced Agile implementations is that “customer focus” means something very different. In these firms, there is a recognition that, as a result of globalization, deregulation and new technology, power in the marketplace has shifted decisively from the seller to the buyer. Now the customer is the center of the firm’s universe—a Copernican revolution in management, akin to the Copernican revolution in astronomy.⁹

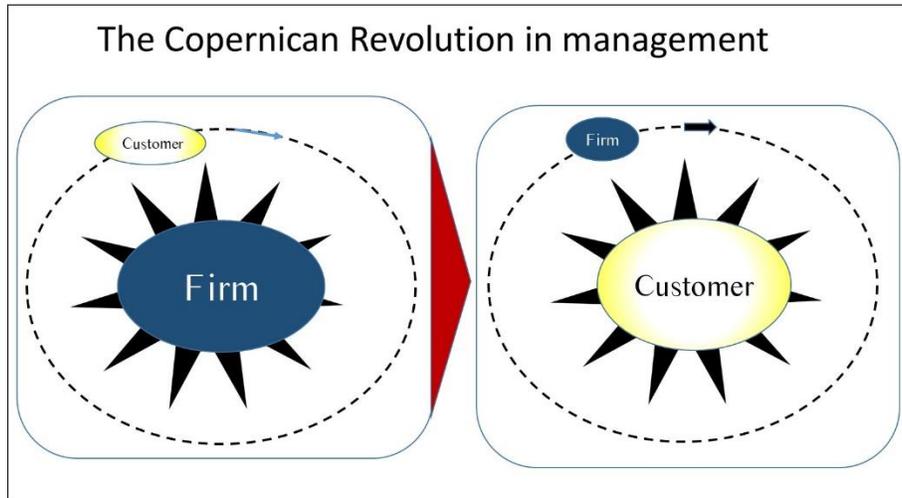


Figure 1: The Copernican Revolution in management

Unlike the conventional picture of an organization as an internal pyramid of boxes, the Agile organizations that we visited have an interactive relationship with customers, who are conceptually very much part of the organization.

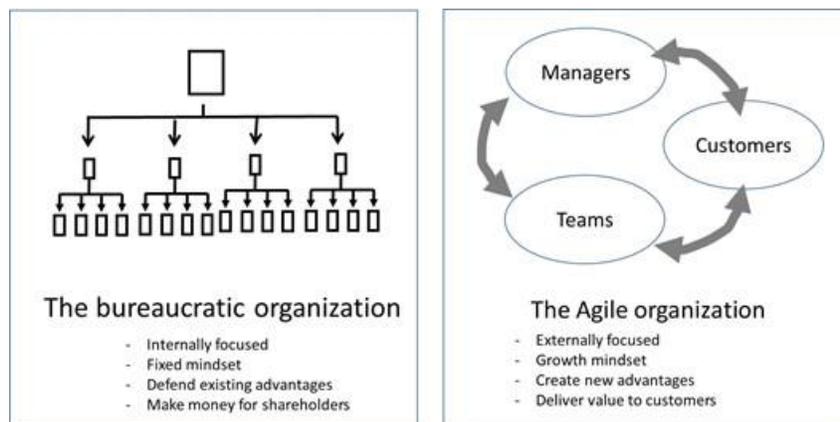


Figure 2 Customer focus

B. DESCALING WORK

A major theme of all the site visits was a pre-occupation with descaling work. The managers we met assume that in a world that is volatile, complex, uncertain and ambiguous, big difficult problems should to the extent possible be disaggregated into small batches and performed by small cross-functional autonomous teams, working iteratively in short cycles in a state of flow, with fast feedback from customers and end-users.

The work environments observed in the site visits were strikingly different from traditionally-managed organizations, which, as analyst Gary Hamel has pointed out, typically embrace an

operating system of bureaucracy. “Strategy gets set at the top. Power trickles down. Big leaders appoint little leaders. Individuals compete for promotion. Compensation correlates with rank. Tasks are assigned. Managers assess performance. Rules tightly circumscribe discretion.” Bureaucracy “constitutes the operating system for virtually every large-scale organization on the planet.”¹⁰

The mindsets observed in the work processes of the firms visited were impressively entrepreneurial and non-bureaucratic.

1. **Small autonomous cross-functional teams:** Work is typically being done by small, autonomous, cross functional team. The size of the teams varies somewhat. In some firms, the teams are generally ten to twelve people. In other cases, the teams are smaller. Sometimes the teams have different names, like “pods” or “squads”, and the word “team” is applied to the larger project that the small groups are working on.

The main preoccupation is to “scale down” big complex problems involving even a thousand developers into multiple features, each of which can be handled by a single team, rather than to “scale up” the organization into a big complex structure. By keeping teams small and cross-functional, each team is able to work on, and complete, an aspect of the work that is meaningful both for the customer and for the team.¹¹

2. **Work is disaggregated into short cycles:** To cope with complexity and unpredictability, work is broken down and disaggregated into batches in which something potentially of value to a customer can be completed in a short cycle. By having small teams working in short cycles, it is easy to see, even in large complex projects, whether progress is being made—or not. Short cycles significantly reduce the risk of delivery failure, by front-loading delivery risk. In some cases, the firm prescribes a common cadence, usually two or three weeks, while in other cases, each team is free to select the appropriate periodicity.

These firms have seen big complex plans fail because there were too many unknowns and change was happening too quickly for adjustments to be made. The response has been is to think differently: small teams, small batches of work, short cycles and quick feedback—in effect, “small everything.”

In one instance, where a firm has more than a thousand engineers to work on a single huge system, it has proved better to break the work up into smaller batches. Micro services are decoupled via specified interfaces. Cross functional teams from all aspects of the product deliver unique customer needs. Teams are made largely independent of other teams through an advanced use of the practices of continuous integration and automated testing.

3. **Limited work in process:** Teams focus on an amount of work that can be brought to completion in each short cycle. By limiting the amount of work in process at any one time, the risk of work waiting in queues is reduced. There is also less context switching, which is arguably the most expensive cognitive function. Good investment management practices that ensure strong alignment to organizational goals also help limit the number of projects in progress at any

one time. There is still work to be done: one of the problems in the back-office functions of some firms is the slow throughput caused by the large amount of work in process.

4. **Autonomous teams:** Once it is decided at the beginning of each short cycle *what* to do, teams themselves decide *how* to get work done. In each case, the firm decides some “basic rules of the road,” but after that, allows the team autonomy on how to proceed. The “rules of the road” vary from firm to firm. Some firms implement arrangements akin to Scrum in sprints with a common cadence. In other firms, those choices are left to the team. In all firms, there are provisions as to how the team is led and the accountabilities of the team. But how the work is actually done is in each case up to the team. The result is stronger staff engagement.

5. **Teams work without interruption:** Within each short cycle, teams pursue their work without interruption. Once it is established at the start of the short cycle what is high priority, the presumption is that managers and the team stick with that decision for the duration of the cycle.

6. **Daily standups:** Daily standups were observed as a universal ritual of the site visits, whatever the particular coordination methodology in use. In the daily standup, teams hold brief daily meetings to share progress and identify impediments for removal. The communications are intended for the team members themselves, not for managers to inspect and control the progress of the team.

7. **Radical transparency:** The use of “paper-based information radiators” was striking during the site visits. In effect, anyone can walk into a team space and see at a glance what the status of the work is and where any problems may lie.

8. **Customer feedback each cycle:** Teams receive feedback from the customer (or customer proxy) at the end of each short cycle. In collaboration with managers, teams evaluate their own performance in the light of feedback from customers at the end of each cycle.

9. **Retrospective reviews:** Retrospective reviews of what has been learned occur at the end of each short cycle and provide a basis for planning the next cycle of work. As in the daily standups, the conversation is intended for the team members themselves, not for managers to inspect and control the progress of the team.

10. **Flow:** The result of organizing work in this manner is that work is frequently being implemented in a psychological state of “flow,” as identified by Mihály Csíkszentmihályi, i.e. those doing the work are fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity. When those doing the work can see the meaning of what they do for those for whom they are doing it, they “bring their brain to work.” This phenomenon accounts for the high motivation observed in teams encountered during the site visits. It is also important to recognize that Agile teams optimize the flow of value *through* the process, rather than merely optimize use of resources *within* a process.

Staff engagement at Microsoft Windows

In Microsoft's Windows division for example, managers noted the major motivational benefit the flowed from engineers being able see their work take effect within days, rather than years. This way of working is seen as a promising antidote to the modern crisis in the workplace: in most large firms, workers are increasingly disengaged. Studies show that only one in five is fully engaged in his or her work. By creating workplaces where an experience of flow is common-place, this way of working becomes an important weapon in the battle to attract and retain talent: these are workplaces where people *want* to work.

Agile work processes also make significant contributions to the five key dynamics of outstanding teams identified in Google's Aristotle project, which showed that *who* is on a team matters less than *how* the team members interact, structure their work, and view their contributions. Five key dynamics set successful teams apart from other teams:¹²

- *Psychological safety*: Can we take risks on this team without feeling insecure or embarrassed? In one firm visited, the official adoption of "failure boards" to recognize and accept and celebrate the learning that comes from failure was remarkable.
- *Dependability*: Can we count on each other to do high quality work on time? Daily standups make a major contribution.
- *Structure and clarity*: Are goals, roles, and execution plans on our team clear? Breaking work into small batches to be completed in short cycles is particularly helpful in this regard.
- *Meaning of work*: Are we working on something that is personally meaningful for each of us? Focusing work on adding value to customers enables teams to see meaning in their work.
- *Impact of work*: Do we fundamentally believe that the work we're doing matters? An inspiring mission related to customer value enables people to see that their work matters.

What's new in Agile teams

Although teams were much talked about in management literature throughout the 20th Century, most organizations remained stubbornly bureaucratic. Teams were usually deployed to deal with specific issues or challenges, not as a permanent way of getting all work done. It was felt that teams couldn't deliver disciplined efficient performance at scale. For normal work in a big organization, the conventional wisdom was that bureaucracy was better.

One reason for this view is that most teams in bureaucratic organizations are teams in name only. Most of them aren't real teams at all. The team leader acts like any other boss in a bureaucracy

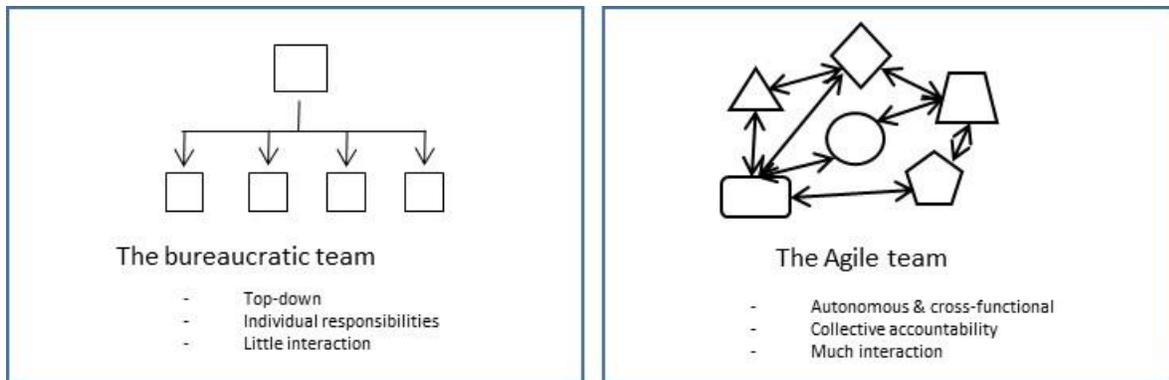


Figure 3: The Agile team

Another reason why firms came to different conclusions in traditionally managed firms was that the firms failed to put in place the entire set of arrangements for making teams fully effective. As a result, in traditionally managed organizations, truly self-organizing high-performance teams working in a state of flow were a rarity, because the prevailing bureaucratic mindsets systematically prevented them from emerging. By contrast, when the work is approached with an entrepreneurial mindset, high-performing teams tend to become the norm, not the exception. (See Appendix 2)

The firms visited are hierarchical

Another key to the success of these firms in becoming entrepreneurial at scale is the recognition that while the firms visited are strikingly non-bureaucratic, they are also hierarchical.

A common misunderstanding is that Agile organizations are necessarily flat and non-hierarchical. In these organizations, the top management still sets direction for the organization. People are still let go when they don't get the job done. These are not "boss-less offices." If anything, the drive for higher performance in an Agile organization is even more relentless than in a bureaucracy. Because of radical transparency, everyone knows everything. Pressure to perform often comes from the team itself. The focus of managers is on enablement, rather than control: this fosters high levels of trust among the teams. Transparency is used to identify problems early and to help generate solutions, rather than allowing problems to fester and then pointing fingers and finding fault. The result is a workplace with an atmosphere of collaboration and accomplishment rather than fear and distrust.

Another common misunderstanding is that managers somehow "lose control" in Agile management. In reality, the "control" offered by a bureaucracy is often merely a semblance of control, with reports going up and down the hierarchy, while real problems, such as technical debt, fester for long periods unmentioned in reports and hence unaddressed, until the problems explode, sometimes with devastating consequences, such as entire system outages without warning. By contrast, in Agile, managers achieve real control as a result of the radical transparency that is fostered.

The hierarchy in an Agile organization is thus a hierarchy of competence, not a hierarchy of authority. The performance question is not whether you have pleased your boss: the question is

whether you have added value to your customer. The organization operates with an interactive communication dynamic, both horizontally and vertically. Anyone can talk to anyone. Ideas can come from anywhere, including customers. The Agile “style” of management typically takes the form of servant leadership, although the hierarchical dimension of the power structure is never totally absent.

In fact, considerable effort is being expended by all the firms on clarifying accountabilities and reconciling this with the extensive autonomy given to individual teams.

A first step: Scrum

In the most commonly adopted Agile methodology—Scrum—the team is supported by a coach (a Scrum Master) and a proxy for the customer (a Product Owner). These roles led to considerable progress as the Scrum Master helps resolve team dynamics and the Product Owner helps make the voice of the customer a reality in the work of the team.

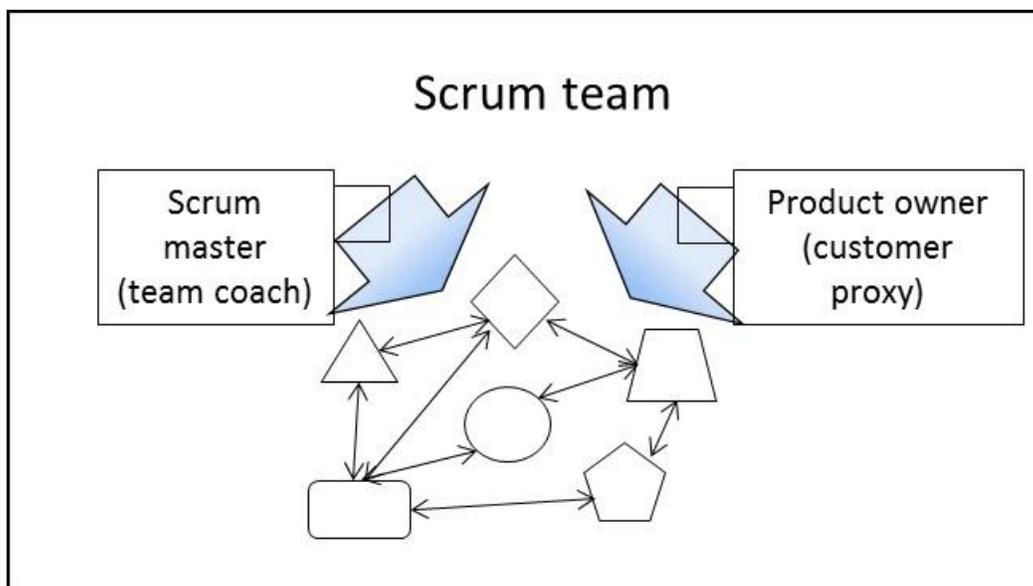


Figure 4 Scrum team

Although the thinking and terminology of Scrum was frequently observed in the site visits, the firms visited are also steadily innovating team processes to enhance the structure and clarity of the goals, roles and accountabilities of teams.

Clarifying the external accountability of the team

Some firms are comfortable with the substance of the standard arrangements of Scrum, but also change the names of the roles, as the firm may implement Scrum but use different terms for the standard Scrum roles of Product Owner and Scrum-Master.

Other firms have further elaborated on the arrangements for various reasons:

- Team accountability in the standard Scrum framework is unclear. Joint responsibility of the team for performance is fine, but what happens when things go amiss?

- Not all contexts fit the dual Scrum Master/Product Owner model of Scrum.
- The skill sets of individuals named to the roles do not necessarily fit the standard Scrum Master/Product-Owner model.

Thus, Riot Games currently has the following approach. Every developer is part of a Discipline (e.g. Engineering, Art, Talent) and a Product, and typically working in a cross-functional Agile product team.

Riot Games believes in collective responsibility, but individual accountability. All teams at all levels (Agile Team, Project, Product and Initiative) have four roles (not titles, one person can theoretically fulfill all):

- Team Captain (TC). Leading the overall effort, lead of leads.
- Product Lead (PL). Leading product strategies and resonance with audience.
- Delivery Lead (DL). Leading delivery and execution.
- Craft Lead(s) (CL). Design, Art, Talent, Engineering or Publishing.

All teams are seen as having 35 responsibilities, including ten that are attached to the TC, PL, and DL roles; the rest are up to the team to assign. Riot has created a team kit with hats in different colors and printed cards with the different responsibilities to facilitate these decisions. A new team is often started by someone (or a group of people) becoming a TC and he/she then wears all the hats until they are assigned to others.

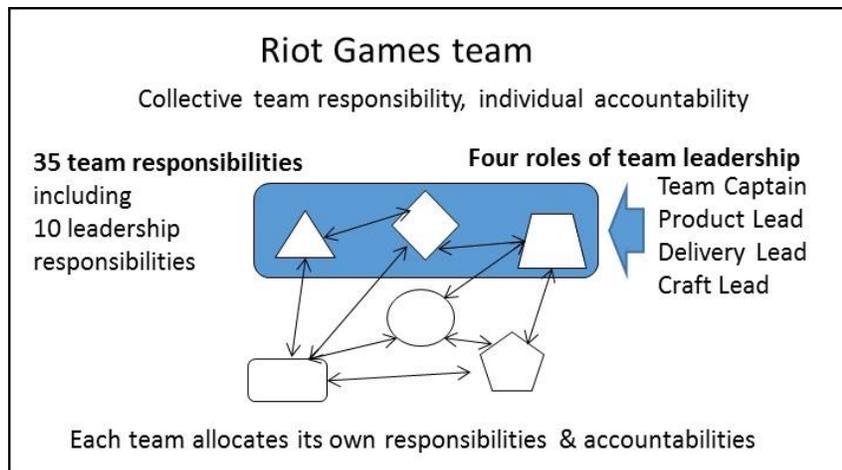


Figure 5 Riot Games team

None of this is applied rigidly. In some cases, some of the accountabilities aren't relevant. In other cases, new ones are created that are more relevant. Teams can also create new roles as needed. The approach is a tool to help the team get work done, not a management tool to control the work of the team.

The TC is usually a Product Manager or a Development Manager (similar to an Agile Coach), sometimes someone from Art or Design, but it can be anyone.

A common pattern is to groom junior people for roles by assigning accountabilities, e.g., add a “Junior Product Lead” role and assign some responsibilities to that person previously held by the PL.

Implementing a large project at Riot Games

To implement a large project, a program to build an extensible client framework and deliver a dramatically improved usability for all players, Riot is experimenting with another way to enable collaboration at scale. The whole program is executed by a “team” of several hundred people who plan together and identify dependencies between smaller work “pods”. Some fifty pod leaders meet at a daily standup to load balance so that pods with excess capacity help others who are falling behind.

All pods are of similar size and composition (2-3 JavaScript, 1 C++, 1 Visual Designer, 1 Quality Assurance), which enables load balancing. They are called pods because Riot wants people to identify the project as their team: that’s where most rituals live (e.g., shared planning for synchronized two week sprints), as well as working agreements and culture, and the definition of “done.” All project team members share common goals. Retrospectives are run in pods.

There are about 7-8 formal leaders of the project as a whole who spend most of their time on the ground, moving around between pods, helping where needed, clarifying goals, and providing technical direction.

This way of working has been well received, as engineers understand the value and accept what could have been perceived as unnecessary bureaucracy (big planning, heavy coordination mechanisms). The team health survey that Riot runs every six months shows that staff are very positive with the setup.

Another interesting practice at Riot Games related to collaboration is that if you know how to fix an issue that occurs, you are expected to find someone who doesn’t and teach them. As a “thank you” the person you taught writes up documentation for it.

Spotify model: leadership trio

At Spotify, there is also a pattern of “leadership trios”, comprising product, technical and design. “Product” represents the customer viewpoint. “Technical” represents the engineering viewpoint and “design” represents a holistic view.

Spotify uses an elaborate set of horizontal groupings vividly described in a set of YouTube videos put together by Agile coach, Henrik Kniberg.¹³

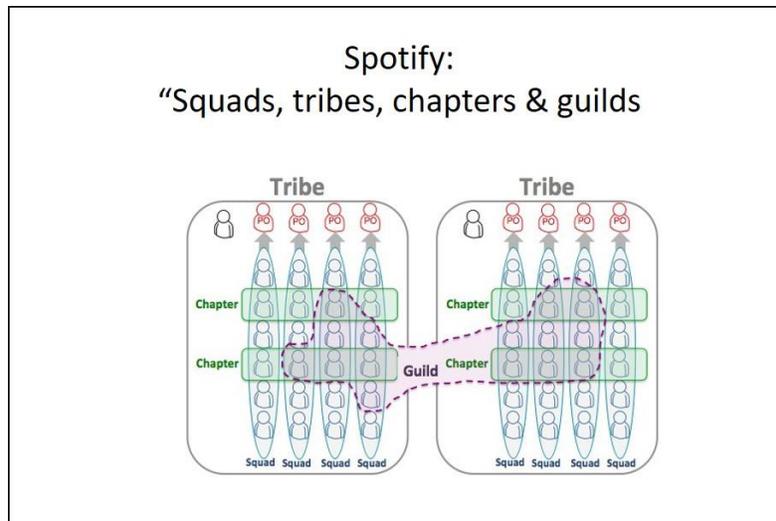


Figure 6 Spotify teams

The Barclays approach

Barclays has currently adopted the Disciplined Agile set of roles, namely Agile Team Lead, Product Owner, Architecture Owner and Team Member, along with Secondary Specialist Roles.¹⁴

The exact arrangements for teams thus vary from one firm to another. There is no “one size fits all.” Firms are continuously learning and adapting their approach to meet current needs. Nevertheless, the preoccupation with descaling work with small teams, small batches and short cycles is universal.

C. Enterprise-wide Agility

The third main theme of the site visits was **Enterprise-wide Agility**. Ideally, an Agile organization comprises Agile practitioners who view the organization as a fluid and transparent network of players that are collaborating towards a common goal of delighting customers.

In the early years of the Agile movement, it was generally assumed that if the firm could get high-performance Agile teams going, then the organization as a whole would be functioning in an agile manner. It turned out not to be the case. It wasn't enough to have Agile teams totally focused on delivering more value to the customer if the rest of the organization was being run as a top-down bureaucracy focused principally on cutting costs and increasing the current stock price. There was continuous friction between the modus operandi of the bureaucracy and modus operandi of the Agile teams. The top-down bureaucracy systematically undermined, and if continued, eventually killed, Agile teams.

The problem is widespread, even in organizations that are actively embracing Agile at the team level. In surveys of Agile teams that were conducted at Scrum Alliance in 2015 and 2016, some 80-90% of Agile teams perceive tension between the way the Agile team is run and the way the whole organization is run. In about half of those cases, the tension is seen as "serious."

Enterprise-wide Agility is thus the next frontier of the Agile movement—how to make the whole organization Agile.

In the case of the members of the SDLC, all enjoy support from the top management. Nevertheless, there are issues.

For one thing, Agile represents a radically different concept of an organization. At the heart of traditional management thinking is the notion of a corporation as an efficient steady-state machine aimed at exploiting its existing business model and making money for its shareholders. The stock market rewards firms that are reliable money-making machines and often punishes performance that differs from expectations, particularly in firms that have no clear long-term growth path. This is a fundamental difference in philosophy from an Agile approach, in which change is acknowledged to be constant and making money for shareholders is the long-term result, not the short-term goal of work. In organizations that are making a transition from bureaucracy to Agile, there are many historical remnants of bureaucracy, both mental and organizational, as well as external expectations, that may take years to entirely remove.

Even in organizations that are “born Agile”, there are continuing challenges to maintain a commitment to Agile and not lapse back into bureaucracy through inattention or by accident, given that these organizations operate in a world in which the corporate norm is assumed to be top-down bureaucracy operating in a steady state. At higher levels, it is also difficult to find senior managers in some functions (such as talent management, legal, procurement and finance) with significant experience in Agile.

Some issues from the site visits

The site visits revealed strong support for Agile but also a variety of issues:

- In some cases, the top level managers of large units are passionate believers in, and active advocates for, Agile as a way of managing the organization, even though from time to time, odd decisions or appointments may be made that seem to be at odds with the spirit of Agile.
- In one firm, there have been spurts of energy, followed by lulls. Early in the Agile transformation there were very passionate champions in some areas, though not enterprise-wide. In the last six months, the level of energy has picked up again, as a result of enterprise-wide deployments of Continuous Delivery and DevOps. Teams operating in the Cloud were already operating this way and had champions in executive leadership that helped move things forward. Continuous interaction with the executive tier has helped to keep the message fresh and is seen as key to keeping a sustained embrace of the Agile mindset.
- In some cases, the top level managers have an array of views about Agile, with some strongly supporting Agile and others adopting a wait-and-see attitude.
- Some large organizations are partially Agile. Some large units are operating with a strong commitment to Agile while other large operational groups in the organization are still being run in a more traditional fashion.

- In some organizations, there is an active effort under way to develop back-office functions that are more consistent with an Agile approach.

Clarifying what Enterprise-wide Agility *should* look like

As noted above, most general management literature assumes that the organization functions as a static top-down hierarchical bureaucracy. “Traditional, MBA-style thinking,” as Google executives, Eric Schmidt and Jonathan Rosenberg, write in their book, *How Google Works*, “dictates that you build up a sustainable competitive advantage over rivals and then close the fortress and defend it with boiling oil and flaming arrows.”

The fortress is run from the top, with an assumption that the top knows best. The fortress is “built to minimize risk and keep people in their boxes and silos,” as business school professor John Kotter writes. People “are working with a system that is designed to get today’s job done—a system that asks most people, usually benignly, to be quiet, take orders, and do their jobs in a repetitive way.”¹⁵ Exploitation of the existing business model takes precedence over the exploration of new possibilities.

Over many decades, multiple fixes were explored to alleviate the static nature of the organization, including task forces, special project groups, strategy departments, tiger teams, skunk works, R&D, dual operating systems, knowledge funnels, design thinking and so on.¹⁶ But these were still fixes to the same concept of the corporation as a static machine with a vertical reporting dynamic. Big bosses continued to appoint little bosses, and so on down the line. The organization continued to operate like a giant warship—big and disciplined but slow and hard to maneuver.

By contrast, when the whole organization embraces Agile, the organization functions less like a giant warship, and more like a flotilla of tiny speedboats. Instead of a steady-state machine, the organization is an organic living network of high-performance teams. In such organizations, managers recognize that competence resides throughout the organization and that innovation can come from anywhere. The whole organization, including the top, is obsessed with delivering more value to customers. Agile teams take initiatives on their own and interact with other Agile teams to solve common problems. In effect, the whole organization shares a common mindset in which organization is viewed and operated as a network of high-performance teams.

Agile organizations are hierarchical

At the same time, as noted above, the Agile organizations we visited haven’t abolished hierarchy. In the Agile organization, it is worth recalling from “In Praise of Hierarchy,” by Elliott Jaques (HBR, January–February 1990) that in Agile organizations, a manager is accountable for

- ensuring that the work of subordinates gets done
- adding value to their work.
- sustaining a team of subordinates capable of doing this work.

- setting overall direction and inspiring subordinates to follow enthusiastically.

A manager in an Agile organization also has the power to:

- veto any applicant who falls below the minimum standards of ability;
- ensure that work is assigned;
- ensure performance appraisals and, within the limits of company policy, to make decisions about raises and merit rewards;
- initiate removal of anyone who seems incapable of doing the work.

However in an Agile organization, a principal role of a manager is also to design and ensure environments for teams that generate value for their customers. The manager acts as a servant leader vis-à-vis the team and often shares responsibility with the team for getting these things done. But at the end of the day, the manager is accountable for these things actually getting done.

Agile organizations are becoming more like networks

In effect, the Agile organization tends to operate increasingly as a network, rather than a top-down bureaucracy. The organization becomes a growing, learning, adapting living organism that is in constant flux to exploit new opportunities and add new value for customers. Agile thus tends to dissolve the distinction between exploitation and exploration. All parts of the organization are continuously exploring how to add more value to customers.

While formal accountabilities remain largely vertical, the actual conduct of work and responsibilities are increasingly horizontal and network-like. No single model has emerged, but the direction of change is clear.

To enable the organization to function effectively as a network, the site visits revealed a tendency to strengthen goals, accountabilities and measurements and reduce dependencies.

- A drive to articulate and share a crystal clear mission and direction with passion and energy.
- Efforts to clarify accountabilities, particularly tensions between group responsibilities and individual accountability.
- Steps to ensure that measurements are aligned with the mission.
- Efforts to reduce or eliminate dependencies among teams, rather than manage dependencies.

It was also observed that leaders in the networked organization are in line with the findings of General Stanley McChrystal in *Team of Teams* (2015): the model of a leader is more like a gardener and influencer, not a fierce warrior who barks out commands to subordinates who obey without question. The good leader is someone who attracts good people to his/her group and gives purpose to people's activities

Learning between teams

Among the reasons for the move towards networked organizations is the recognition that making individual teams Agile is not enough; in today's complex workplace, the teams have to collaborate with each other and subordinate team goals to the overall organizational goal. Thus even Agile teams can fall into the trap of focusing on their own team's mission, and sub-optimize for the whole organization. There is also a need to create a culture of continuous learning and improvement and to remove any notion that a team's learning journey ends at a certain point.

Some of the units visited noted the existence of competition between teams. It can become an issue of prestige. A team doesn't want admit that it has learned from a competing team. It is sometimes easier to admit that the team learned from an outsider.

As noted in *Team of Teams*, the practice of embedding a member of one team in an "opposing" team can help break down this culture of competition. The practice of embedding can also help spread innovative practices from one team to another and help balance workloads. Embedding teams in the workspace of the customer can also help horizontal collaboration

Comparative performance ratings of teams can also have the unintended effect of exacerbating competition and undermining collaboration. Managers have to avoid creating an impression that if one unit learns from another unit, it means that it is a worse performing team. Instead, attention needs to be given to the team's rate of improvement.

Similarly, firms have to take steps to avoid the phenomenon of coaching being viewed a stigma, if coaches are assigned only to poorly performing teams. In reality, the greatest value of coaching may come from the really good teams becoming extraordinary. Unlike routine work, the gains from improvement in intellectual work can be exponential.

The Agility Council at Barclays

One federated arrangement that Barclays has found useful is its Agility Council. This is a forum where "accelerators" (formerly "working groups") come together on a regular basis to share insights and accelerate solutions. There is a Kanban board to help keep track of the Work in Progress. The advantage of a large organization is that there are plenty of people who can pile in. Each accelerator has a chair and contributors, who are volunteers. There is a transparent "show and tell" every two weeks. People are dialing in from around the world on web-based video. The focus is on finishing things, not starting things. The Council is seen as a useful way of getting parallelism going in the organization. The participants come from across the entire organization. People in the investment bank are talking to people in the retail bank and so on. Participants take the learnings back into their units. The back office functions are also there, including HR, and Audit.

Clarifying the concept of the Agile organization

A much-discussed question is whether an Agile organization is a hierarchy or a network. In reality, it is both. Traditionally, organization-charts have emphasized exclusively the hierarchical aspects of an organization, but in practice there is no such thing as a purely hierarchical organization, even in steeply hierarchical bureaucracies. There is always a certain degree of non-hierarchical or collaborative behavior among different parts of the hierarchy.

In formal terms, a network is a heterarchy i.e. “a system of organization where the elements of the organization are unranked (non-hierarchical) or where they possess the potential to be ranked a number of different ways. In a heterarchy, each element shares the same ‘horizontal’ position of power and authority, each playing a theoretically equal role, depending on the circumstances.”¹⁷

The widespread view among traditional managers that only a hierarchy can produce orderly performance at scale has been shaken by the discovery that the human brain, while reasonably orderly, is organized as a heterarchy, not a hierarchy. This understanding has revolutionized the neural study of the brain and made major contributions to the fields of artificial intelligence and computer design.

In theoretical terms, “a heterarchy may be parallel to a hierarchy, subsumed to a hierarchy, or it may contain hierarchies; the two kinds of structure are not mutually exclusive. In fact, each level in a hierarchical system is composed of a potentially heterarchical group which contains its constituent elements.”¹⁸

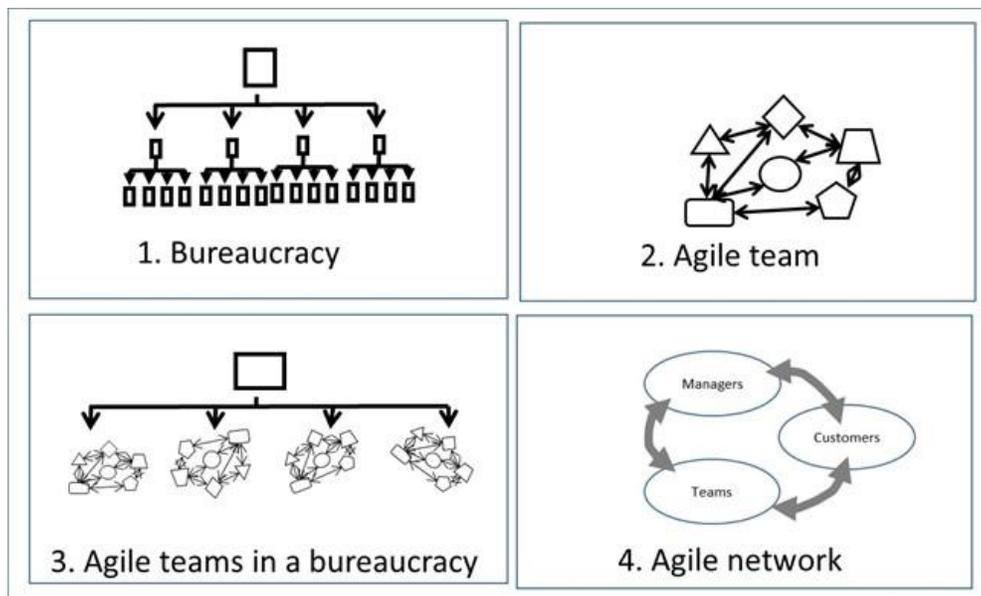


Figure 9 Towards Agile organizations

In the Agile organization, with communications moving interactively, horizontally and vertically, up and down, the networked or heterarchical aspects of the organization are emphasized. So far, we have found no clear and simple way to represent visually the complex reality of the combined hierarchical and heterarchical aspects of the Agile organization, just as there is no

easy way to represent in a simple visual image the orderly non-hierarchical function of the human brain. In Agile, this is still “work in progress.”

Durability of Agile arrangements

Overall, the site visits revealed organizations that are operating in a strikingly more entrepreneurial fashion than top-down bureaucracies. In most cases, the units have been operating in this way for five years or more.

How durable is Agile? Clearly, if management abandons the Agile mindset when there is a problem, the organization will regress quite rapidly back to bureaucracy. In one case, a successful Lean implementation effectively came to an end when a newly appointed manager reverted to a bureaucratic approach: happily in that case, when that manager himself was replaced, the unit was able to transition back to its Lean mode of operating.

It was noted that in firms outside the SDLC there have been frequent examples over the last fifteen years in which an Agile implementation has been proceeding well until the firm has hit some kind of financial bump in the road, and then Agile practices have been abruptly abandoned.

“In a crisis,” says former director of Agile at Intel, Ray Arell, “managers often throw Agile away and fall back into all the old habits. That’s when you know that Agile hasn’t been fully internalized. It means that the organization is not yet Agile. A colleague in the military once told me: ‘Why don’t you practice more? In the military, we are always practicing for warfare, so that when the battle comes, we are ready to respond in the right way and do the right things.’ In business, when a crisis comes, we fall back into these bizarre traditional patterns.”¹⁹

“The question is,” says Henrik Esser at Ericsson, “who is inventing these practices under fire? Is it the teams that have learned the practices? Or is it managers who never learned the practices?”²⁰

By contrast, in some SDLC member firms, Agile is actually being used to deal with the difficult financial situation facing those firms.

D. NURTURING CULTURE

The fourth major theme of the site visits concerns systematic efforts to nurture and reinforce an Agile culture. There is a general recognition that culture requires constant effort and energy and attention devoted to maintain and strengthen it. Culture is viewed as a constant creation, not a static state.

Nurturing an Agile culture has several different dimensions.

1. **Inspirational mission:** It is obviously helpful in achieving alignment with the top management if the overall mission of the organization is both inspiring and explicitly customer-

focused.

2. **Championing of Agile:** Explicit, active, enthusiastic championing from all levels, particularly the top, as opposed to passive tolerance, is key. Where top management is actively championing Agile, there is an elaborate array of ceremonies, rituals, badges, media, posters and games to support the Agile culture.

Where managers don't share a passion for Agile, what can be done? On the one hand, a lack of performance statistics showing progress generated by Agile can be a show-stopper. But on the other hand, the availability of performance statistics or the provision of reasons for transitioning to Agile is unlikely to be sufficient to generate Agile mindsets or create passionate Agile leadership. Stories and site visits to respected organizations and peer pressure have tended to have a more positive effect. But change takes time: new mindsets aren't generated overnight.

In some firms, efforts are under way to show top management how Agile can help deal with pressing problems that the organization is facing, including:

- The need to be more customer-focused
- Coping with a marketplace that is rapidly changing.
- Dealing with rapidly changing technology to deliver new kinds of value.
- Enabling collaboration across silos.
- Winning the battle for talent

Here again, reasons only go so far. Passion and mindsets take time to acquire, particularly among those with long experience and self-perceived success in implementing bureaucracy. The transition from bureaucracy to Agile in a large unit organization is the work of years, not months.

3. **Behavioral alignment:** Alignment of the behaviors, particularly of the top managers, with the words of Agile is important. This is an ongoing effort in all SDLC members, involving celebration of good alignment and identification of any mis-alignment.

4. **Systems alignment:** Alignment of mission, goals, systems, processes, practices, performance evaluation, incentives with Agile. This work is ongoing in all SDLC members.

- In some cases, there are observed tensions between the approach of the unit visited and the goals of the firm as a whole, which is more concerned with short-term efficiency and cost savings.
- In some cases, there is an ongoing conversation as to how to achieve "a greater urgency" in team performance.

- In some cases, back-office functions of the firm (such as Legal, Finance, Talent and Procurement) are seen at times to be operating at cross purposes with the primacy of customer-focus.

5. **Authenticity:** SDLC members have all made explicit efforts to make Agile feel authentic and home-grown by adjusting the language and approach to fit the firm's own context. In one instance, the top management has embraced an Agile declaration developed by several thousand internal Agilists. In some organizations, there is more emphasis on "our culture" than on "Agile culture."

Language is seen as a particular challenge, both in terms of opportunities and risks. Terms that might appeal to and energize young staff can repel senior managers. The counter-culture aspects of terms like "tribes" "squads", "pods" and "alliances" may appeal to rebellious young developers but horrify more traditional managers.

The SDLC is not recommending any particular vocabulary but rather suggests that firms think carefully about the language in use in their own organizations. For instance, the oxymoron "human resources", has implicit and sometimes unintended overtones of bureaucracy and demeaning implications that employees are things, not human beings. Continuing efforts are needed to find better, fresher and less misleading ways of communicating.

6. **Onboarding and training:** All members are making efforts to ensure that new recruits are selected in terms of their suitability for Agile and trained in Agile approaches. Not everyone is a natural fit with the Agile mindset. It can be extremely costly to bring such people into the organization and then face a long and costly effort to disengage. The program introduced at Cerner shows how this set of issues can be addressed systematically: see Appendix 5..

7. **Leadership development:** Several firms have leadership programs. In general the experience is that Agile leadership can't be taught or trained in any linear fashion. Instead, firms are identifying people with potential, guiding them through how they should start thinking about the company and the work it is doing, and exposing them to other perspectives. Ultimately it's up to their own leadership potential. Once they have those perspectives, they are given the opportunity to demonstrate that they can make that kind of leadership work. (See the approach adopted at Cerner in Appendix 5.

8. **Internal learning:** Member firms are moving away from seeing learning as just classes, and instead viewing it as a multi-faceted set of actions that encourage learning across the workforce, including actions by senior leadership, conferences, workshops, and ubiquitous blogs. See for example the description of Cerner's approach in Appendix.5.

9. **External learning:** Participation in external conferences, colloquia and consortia helps open the firm up to learning from outside the organization, as well reinforcing good practices within each member's own organization. Sometimes firms are reluctant to recognize good practice within their own organization until they see it being implemented elsewhere.

External learning is also helpful in counteracting the “halo effect,” in which firms with strong public reputations are perceived to be doing better than they actually are. In some cases, the site visits have helped participants see our own activities with a better perspective.

10. Open source: Participation in open source software development helps foster innovation and industry leadership. It not only saves money by drawing on innovation that is already available, rather than “reinventing the wheel.” Sharing innovations with competitors can also be cost-effective by influencing the direction in which the industry as a whole will move and save costly rework that occurs when the whole industry moves in a different direction. By being a leader in open source innovation, an organization can help define where the industry should go for that specific technology. See the approach of Cerner in Appendix 5.

E. Using this report

This report seeks to describe how the member organizations are learning how to act entrepreneurially in a marketplace that is increasingly volatile, uncertain, complex and ambiguous. It reports on what the SDLC members saw being done, explaining both the why and the how. It seeks to shed light on the process by which new ideas are stimulated and flow from conception to implementation and everything in between, including the costs, risks, problems and benefits. It is not a series of success stories, but rather an account of what is working and what needs further work.

The report covers the four “main themes” of Agile, as well as “tips, tricks and pitfalls” of implementing Agile, which include the lessons learned and the new approaches being explored by the SDLC members.

Four main themes

The four main themes of the report are big-picture issues. These four themes are what the SDLC members believe are the essence of the global Agile movement. The members are making a strong positive recommendation about the main themes. They believe that if an organization wants to embrace Agile, it should be pursuing these four main themes.

They see pursuit of all four themes as key to getting better business outcomes. Individually, none of the observed management practices are new. What is new and different is the way that the management goals, practices and values constitute a coherent and integrated approach to continuous innovation, driven by and lubricated with a pervasive entrepreneurial mindset. The report seeks to show why firms are focused on the full spectrum of the Agile mindset.

Specific practices

The report also draws attention to many specific practices which constitute “tips, tricks and pitfalls” of Agile implementations. They are presented as thought-sparkers for other firms engaged on an Agile journey to consider.

None of the specific practices that we saw in the site visits can be applied into any other organization without adaptation into the particular context of that other organization. Each organization must evolve the practices for itself. Some practices will fit some contexts but will be less good for others.

Three different audiences

The report is intended for three different audiences: Agile practitioners, Agile novices and Agile skeptics.

The report concludes that even the most advanced Agile implementations are still “work in progress” on some aspects of the main themes. Even firms that are internationally known as Agile models continue to seek ways to improve consistent performance on some basic issues. Our conclusion is that Agile isn’t easy. It’s a permanent journey: no firm has “arrived.” Continuing attention to the main themes of the Agile mindset is necessary.

For Agile novices, the four “main themes” may serve as an introductory guide to the world of Agile—a new, different and exciting world of work, which is better for those doing the work, better for those for whom the work is done and better for the organization.

For Agile skeptics, the world of Agile described here may seem like visiting a strange foreign country, where everything is the opposite of what they expect in a “well-run organization.” Firms make more money by not focusing on making money. Dealing with big complex issues requires small teams, small batches, short work cycles—in effect, “small everything.” Control is enhanced by letting go of control. Managers can’t tell people what to do. Leaders are less like heroic conquering warriors and more like curators or gardeners. The report seeks to show why these ways of running an organization are an appropriate response to a world that is increasingly volatile, uncertain, complex and ambiguous.

How robust are the report’s findings?

How robust are the findings and generalizations in this report? Here is a brief note on the ontological status of the findings.

Let’s start with some limitations. The SDLC members are a self-selected set of firms who are interested in the new management practices of Agile and Lean. They are obviously not typical or representative of the entire economy. They constitute a subset of firms who perceive themselves on a common leadership and management journey.

Yet the site visits were not eight isolated experiments of a new idea dreamed up last week. They are firms that have made progress in deploying a body of knowledge to manage complex operations being implemented over a sustained period of time in a consistent and coherent way. They are illustrative of a global movement that includes hundreds of thousands of Agile practitioners around the world and tens of thousands of organizations embracing Agile.

In the eight companies visited, the entrepreneurial practices were most visible in software development, but the firms themselves are involved in a variety of sectors such as

manufacturing, transportation, health care, logistics, telecommunications and entertainment. Economic sectors that were not represented included agriculture, energy and retail.

The findings of the SDLC depend in part on presentations that were made by the management, but they were corroborated by informal interactions in unscripted private conversations with those doing the work and supplemented by publicly available information.

Case-based research

The findings of the SDLC constitute case-based research. In his article, “The Price of Actionability”, Roger Martin, argues for a combination of case-based research and rigorous research along a time continuum.²¹

“The greatest utility for case-based research is not to produce rigorous answers but rather to raise interesting questions. The greatest utility for [rigorous] research would be to take those interesting and action-oriented questions and perform scientifically rigorous research on them.”

The findings of the SDLC should be interpreted in this spirit. They are case-based findings, put forward as hypotheses that warrant further research.

SDLC invites academic researchers to carry out such research. Any researchers who are interested should contact Steve Denning at steve@stevedenning.com.

Next steps

This report was produced by Steve Denning (principal author), and staff of SDLC members including Vanessa Adams, Matt Anderson, Lindsay Bennett, Michelle Brush, Paul Madden, Justin Marks, Mårten Perhson, Jonathan Smart, Joakim Sundén, Magnus Thornberg and Shahzad Zafar,

The work of the SDLC will continue in 2017 and beyond. The SDLC is a non-profit corporation registered in Virginia, USA. The SDLC’s plans for 2017 are being discussed and include:

- The successful pattern of site visits in 2016 will be continued with some modifications so that the visits will go “wider and deeper.”
- The site visits will be organized so as enhance understanding on specific issues of interest, with in-depth discussion of topics of particular interest to members.
- There will be workshops on specific topics of interest, such as DevOps.
- The SDLC is open to the participation of additional members. The focus will be on companies that offer particular opportunities for learning and themselves want to learn.

For more information about the SDLC, including how to join, go to its website, www.sdlearningconsortium.org or contact Steve Denning at steve@stevedenning.com.

Appendix 1: Definitions

Agile is a movement that is often seen as beginning in 2001 as a set of values and principles articulated by the Manifesto for Agile Software Development of 2001, although the movement had many prior antecedents.²² The Manifesto is now associated with many different methodologies including Scrum, DevOps, Lean and Kanban.²³ Over time, it has evolved into a movement of people with a specific mindset. The mindset focuses on delivering continuous value to customers as the primary goal of work. It embraces iterative, incremental approaches to working in small teams. Agile has also evolved into a movement aimed at enterprise-wide agility by operating an organization as a network of teams. For more detailed description of the elements of the Agile mindset, in comparison to a bureaucratic mindset, see Appendix 2.

Scrum is the most widely used Agile methodology. It uses a cross-functional team-based approach for delivering value to organizations and customers. The team respects individual contribution and builds on the strengths of accountability, deep interpersonal relationships, collaboration and teamwork. Managers are no longer bosses, but coaches who remove impediments and clear the way for teams to provide value to their customers by remaining focused and creative. The voice of the customer is reflected in the role of the Product Owner.

DevOps (a clipped compound word that combines development and operations) is a culture, movement and practice that emphasizes the collaboration and communication of both software developers and other information-technology professionals while automating the process of software delivery and infrastructure changes, with very rapid deployment of changes.

Kanban is a scheduling system for software development, lean manufacturing and just-in-time manufacturing. Kanban can also serve as an inventory-control system to control the supply chain. One of the main benefits of Kanban is to establish an upper limit to the work in process inventory, avoiding overloading of the system. In Kanban, teams “pull in” work from the backlog up to the Work-In-Process limit. Unlike Scrum, there are no fixed iterations and there are separate cadences for releasing, grooming the backlog and celebrating success.

Lean is a systematic methodology for the elimination of waste within an ecological system. Essentially, Lean is centered on making obvious what adds value by reducing everything else.

Continuous delivery is a software engineering approach in which teams produce software in short cycles, ensuring that the software can be reliably released at any time. It aims at building, testing, and releasing software faster and more frequently. The approach helps reduce the cost, time, and risk of delivering changes by allowing for more incremental updates to applications in production. A straightforward and repeatable deployment process is important for continuous delivery.²⁴

- Continuous delivery and DevOps are similar in their meanings and are often conflated, but they are two different concepts.
- DevOps has a broader scope and centers around the cultural change, specifically the collaboration of the various teams involved in software delivery (developers, operations,

quality assurance, management, etc.), as well as automating the processes in software delivery.

Continuous delivery is an approach to automate the delivery aspect, and focuses on bringing together different processes and executing them more quickly and more frequently. Thus, DevOps is the result of Continuous delivery.

Continuous delivery is sometimes confused with **continuous deployment**. Continuous deployment means that every change is automatically deployed to production. Continuous delivery means that the team ensures every change can be deployed to production but may choose not to do it, usually due to business reasons. In order to do continuous deployment one must be doing continuous delivery.

Appendix 2: The Agile Mindset

The following tables compares the mindset associated with delighting the customer vs the bureaucratic mindset.

Delighting the customer: comparison with bureaucracy		
	Traditional management: bureaucracy	SDLC site visits
1	The mission is typically focused on a variety of goals, including internal goals, such as maximizing shareholder value as reflected in the stock price	A mission explicitly and singularly focused on continuously adding value to customers.
2	There is a general assumption that customers will accept what the firm delivers	There is an increasing recognition of the current business need to generate instant, intimate, frictionless value at scale, anytime, anywhere, on any device.
3	Top management focuses on customer-value to the extent that is compatible with internal processes.	Top management focuses on aligning its words and actions and the firm's internal processes with a customer-focused mission
4	Staff commitment to customer-focus or customer value happens only sporadically	Commitment to the customer-focused mission is pervasive at all levels throughout the organization.
5	A clear line of sight to the customer typically happens only for staff on the front-lines.	A clear line of site to the customer is seen as important for everyone in the organization so that all can see how their work contributes to adding value for the customer.
6	Those doing the work often have little contact with the customer.	The firms seek ways to create physical and mental propinquity to the customer so as to enhance understanding of, and the capacity meet, customer needs.
7	Work goals focus on outputs (products, services, revenue) ahead of customer outcomes (customer experiences)	Work goals focus on customer outcomes (customer experiences), not just outputs (products, services, revenue).
8	Specific efforts are made to create time and space to enable innovation and entrepreneurship are rare.	Explicit efforts are made to create time and space to enable innovation and entrepreneurship, such as hackathons, workshops and conferences.
9	Efforts to measure customer experience are sporadic and findings are not systematically incorporated into the work.	Customer experience is systematically measured throughout the organization and the findings are systematically incorporated into the work.
10	Improved efficiency and shareholder value as reflected in the stock price are principal goals of the organization.	Improved efficiency and enhanced shareholder value as reflected in the stock price are seen as consequences of the tight focus on the customer-focused mission, rather than an independent goals in themselves.

Descaling work vs bureaucratic approaches

This Agile mindset involved in descaling work is in sharp contrast to bureaucratic mindsets:

A comparison with bureaucratic mindsets		
	The mindset of bureaucracy	Mindsets observed in the site visits
1	In a world that is assumed to be generally stable and predictable, work is typically done by individuals reporting to managers.	In a world that is acknowledged to be volatile, complex, uncertain and ambiguous, work is typically done by small, autonomous, cross functional teams
2	Given stability and predictability, work is carried out sequentially in accordance with a plan.	To cope with complexity and unpredictability, work is disaggregated into short cycles, in which something potentially of value to a customer is completed in each cycle, within the overall framework of a longer-term strategic plan.
3	At any time, a large amount of work is frequently “in process.”	Teams focus on a limited amount of work that can be brought to completion in each cycle
4	Managers tell workers what to do and how to do it.	Once it is decided at the beginning of each short cycle what to do, teams themselves decide how to get work done
5	Managers can interrupt the work at any time	Within each short cycle, teams pursue their work without interruption
6	Communications among those doing the work take place as needed on an ad hoc basis	Teams hold brief daily standups to share progress and identify impediments.
7.	Information is shared on a need-to-know basis	The work is radically transparent. Paper-based “information radiators” are pervasive.
8	Work is generally delivered to customers when the entire plan is complete. Managers monitor implementation by comparing collaboration implementation with the plan.	Teams receive feedback from the customer (or customer proxy) at the end of each short cycle. Together with managers, teams evaluate their own performance in the light of feedback from customers at the end of each cycle,
9	Retrospective reviews to take stock of what has been learned tend to occur, if at all, at the mid-point or upon completion of the plan and learnings are not always incorporated in future work.	Retrospective reviews to take stock of what has been learned tend to occur at the end of each short cycle and learnings are systematically incorporated in the design of future work.
10	Workers are typically disengaged in their work. Implementation of work in a psychological state of “flow” is rare	Work implemented in a psychological state of “flow” is common: i.e. those doing the work are fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity.

The Agile mindset embodies assumptions about work and organizations that are fundamentally different from a bureaucratic mindset.

Basic assumptions about work and organizations.		
	The mindset of bureaucracy	Mindsets observed in the site visits
1	The purpose of work is decided by the governing body and implemented by plans and directives of the managers	The mission of the organization needs to be communicated strongly and inspiringly and widely shared throughout the organization so as to inspire workers to innovate and to guide the direction of innovation.
2	The world is assumed to be generally stable and predictable	The world is acknowledged to be volatile, uncertain, complex and ambiguous
3	Change is assumed to be episodic and finite, so that work can generally be standardized;	Since change is rapid and continuous, standardization is the exception, not the rule.
4	Since bosses know best, action is normally taken on the basis of a plan developed from above	Competence exists throughout the organization; Action may be initiated from anywhere in the organization; ideas can come from anywhere. Anyone can comment on anything. Those doing the work often know best about what is involved.
5	The plan is carried out sequentially from start to finish, resulting in a lot of work in process at any one time.	Teams take on work based on what is needed to be done in each cycle, resulting in a limited amount of work in process at any one time.
6	The object is to complete the plan efficiently by working hard	The object is to deliver more value from less work by working smart, through focusing on high priority items first and systematically reducing or eliminating effort spent on low priority items
7	The principal function of managers is control, i.e. to monitor the performance of workers in accordance with the plan, and discipline workers using “carrots and sticks.”	The principal function of managers is to enable, i.e. to <i>enable</i> teams to get their work done and remove impediments while achieving greater real control through radical transparency.
8	The principal values are efficiency, predictability, standardization and economies of scale	The principal values are continuous improvement and adding value to customers in the least cost fashion.
9	There is a clear boundary between operations and innovation, i.e. between exploitation and exploration.	Operations also represent opportunities for continuous improvement. The boundary between exploitation and exploration tends to dissolve.
10	Communications are principally top-down	Communications are multi-directional: top-down, bottom-up and horizontal.

Appendix 3: Profiles of member companies

Barclays

Barclays is a British multinational banking and financial services company headquartered in London. It is a universal bank with operations in retail, wholesale and investment banking, as well as wealth management, mortgage lending and credit cards. It has operations in over 50 countries and territories and has around 48 million customers. It has a staff of around 130,000.

Barclays is organized into four core business: Personal & Corporate (Personal Banking, Corporate Banking, Wealth & Investment Management), Barclaycard, Investment Banking and Africa.

Barclays traces its origins to a goldsmith banking business established in the City of London in 1690. James Barclay became a partner in the business in 1736. In 1896 several banks in London and the English provinces, including Backhouse's Bank and Gurney's Bank, united as a joint-stock bank under the name Barclays and Co. Over the following decades Barclays expanded to become a nationwide bank. In 1967, Barclays deployed the world's first cash dispenser. Barclays has made numerous corporate acquisitions, including of London, Provincial and South Western Bank in 1918, British Linen Bank in 1919, Mercantile Credit in 1975, the Woolwich in 2000 and the North American operations of Lehman Brothers in 2008.

In 2014, Barclays recognized that it needed to adapt its way of working, management practices and systems. To keep pace with what new competitors were offering, the bank saw that it would only succeed if it was able to offer easy, quick, convenient, personalized responsiveness at scale. In short, Barclays' had to become Agile. In March 2015, Barclays operations and technology team announced that becoming Agile was a key strategic initiative. The many islands of Agile were invited to come out from the shadows and become the champions of Barclays' Agile transformation.

Fifteen months later, by June 2016, Barclays had made remarkable progress. After a massive program of Agile training and coaching, more than 800 self-organizing Agile teams had been identified or formed, covering every aspect of its business—commercial bank, investment bank, accounts, audits, compliance, you name it—all focused on delivering more value sooner to customers. While some of the teams were still in the early stages of mastering Agile management practices, a sizable proportion were already mature and were making significant inroads on improving Barclays' performance.

Cerner

Cerner Corporation is a supplier of health information technology solutions, services, devices and hardware. As of April 2015, its solutions were in use in approximately 18,000 facilities around the world and the company had about 22,000 employees globally.

Cerner is headquartered in Kansas City, Missouri. Cerner's world headquarters campus is across the street from North Kansas City Hospital, Cerner's second hospital client. It acquired

additional space in North Kansas City, Missouri in 2005 and in 2006 it acquired another location in Kansas City. In 2013, Cerner announced plans to redevelop 236-acres in south Kansas City, Missouri into an office park. The site was previously occupied by Bannister Mall, which was demolished in 2009. Cerner broke ground on the new campus in November 2014. The \$4.45 billion project intends to employ 16,000 new Cerner workers within the decade.

At Cerner, we use the latest methods and technologies to transform healthcare. We focus on making people healthy and happy. We embrace polyglot programming, distributed systems, open source, DevOps and Lean and Agile mindset. Continuous Improvement is embedded in our culture and we know it's important for developers to try new things, which is why we host hackathons, meetups, tech talks, and an internal conference in addition to attending, sponsoring, and speaking at industry conferences.

C.H. Robinson

C.H.Robinson is a transportation logistics company founded in 1905 to move produce from California to eastern destinations. In 1980, when the American trucking industry was deregulated, C.H.Robinson expanded into many facets of transportation. C.H. Robinson is now a global company that provides freight transportation and logistics, outsource solutions, produce sourcing, and information services to 110,000 customers through a network of offices in North America, South America, Europe, and Asia. Revenues for 2015 were \$13.5 billion.

C.H.Robinson now operates in 281 offices in 38 countries with 13,000 employees. About 12,000 employees are in branch offices, 700 are in back office operations, and 600 are in IT. At any given moment, there are about 6,000 people making decisions and negotiating agreements about moving freight.

C.H.Robinson owns no transportation assets. Their revenues come from negotiating transportation logistics between customers who having something to ship, and carriers who have space to carry. At the heart of their business is the IT platform "Navisphere" that allows their people to have the best and most timely information on rates and availability of carriers. Through that information, the people negotiate profitable transportation alternatives. Some of the rates are pre-set as tariffs. Many of the rates vary. Navisphere also gives visibility to customers of the status of their shipments, a decided plus from the customer point of view.

The Navisphere platform is a proprietary, integrated worldwide platform that offers "global visibility, comprehensive optimization, actionable intelligence, broad connectivity, and trusted performance."

C.H.Robinson is in the challenging position of "building the plane while they are flying it. So the IT team at C.H. Robinson expanding and improving their integrated platform by giving the user a seamless experience across all of their services globally while maintaining service to internal users, as well as external customers and suppliers, even during deployments of new functionality.

The journey to agility started over six years ago and was initially focused on implementing Kanban for visibility to planning and involving the business. A year later a rogue manager had

her team begin practicing scrum. Scrum started to spread through the development teams. Two years ago, there was a new leader brought into IT. At that time approximately half of the development teams were “doing Agile”, mainly Scrum. The new leader insisted that all IT teams apply Agile principles. Each team was empowered to apply those principles in whatever way worked best for them. The teams have continued to inspect and adapt their way of doing work.

Through the journey connections have been made with people at other companies and especially through the SDLC that have continued to shape and evolve agility at CH. The journey is continuing as C.H. Robinson moves from doing Agile to being agile and the team will never stop adapting.

Ericsson

Ericsson is a world leader in the rapidly changing environment of communications technology – providing equipment, software and services to enable transformation through mobility. Some 40 percent of global mobile traffic runs through the networks they have supplied. More than 1 billion subscribers around the world rely every day on networks that it manages. With more than 37,000 granted patents, they have one of the industry’s strongest intellectual property rights portfolios.

Ericsson at Athlone boasts the biggest Java development site in Ireland, with leading edge Agile software development methods. And, as they say on their website, the team approach means “you are never on your own in a pickle.” The Althlone site has had a \$12 million renovation to increase mobility and encourage teamwork where development teams work in pods, with team meeting areas that include stand-up small meeting tables and, ‘information radiator’ screens and/or manual boards. At the Athlone site, there are 80 agile teams working on the next generation product.

The teams are encouraged to be autonomous and self-managed. Autonomy happens by leadership specifying the constraints on teams (about 7 people, cross-functional) and then letting the engineers organize themselves according to those constraints.

Ericsson strives for persistent agile teams, saying “we found that high performing teams may take 1-2 years to develop.” Over time, the following practices have evolved:

- One Scrum Master per team
- One Product Owner for two teams
- One Line Manager for four teams, attends every sprint-end demo
- Sprints are three weeks
- The Scrum Master’s “primary role is to hold a mirror up to the team” and remove impediments, but not so aggressively that the team becomes dependent on the Scrum Master
- Scrum Masters are selected/elected after the team is self-formed and by the team itself

Ericsson is a leader in scaling Scrum to large enterprise projects.

Microsoft

Founded in 1975, software company Microsoft is best known for its Windows operating system, Office productivity suite and Xbox gaming had 2014 revenues of around \$86 billion and 128,000 employees. The Learning Consortium visited the Developer Division (“DevDiv”) which has about 4300 employees and is responsible for making Visual Studio and related applications, which software developers worldwide use themselves in their daily work. Within that group the LC spent time with the group responsible for Visual Studio Cloud services which consists of 467 people and 35 teams each organized around a common set of software features.

Until five years ago, software development cycles took a conventional “waterfall” approach and new releases were typically every two years. Economic conditions have changed as software being delivered immediately over the internet. This has pressured Microsoft to make changes to their practices to realize benefits with faster delivery cycles. DevDiv took the initiative and began experimenting in a few teams in their group with new Agile development methods such as Scrum. Success with a few prototype teams led to a larger change across the entire division. There followed several years of learning how to operate a product development unit across many teams, a process Aaron Bjork, Principal Group Program Manager within the Developer Division, describes as a journey that is anything but a straight path from A to B. Now all 4300 in the division are operating in an Agile team manner.

The transformation to Agile development at DevDiv has impacted every aspect of the work environment. Changes include completely remodeling several office buildings and transforming them from individual offices, to collaborative team rooms. DevDiv experimented with different physical layouts. The first iteration was pure “open space” with large areas and very few walls. This configuration however did not lead to the open communication they desired, instead it created “the library effect”, where people felt the need to be quiet instead of actively collaborating. So another remodel was done to create separate team rooms, each equipped with reconfigurable rolling desks, team space meeting areas of various sizes and each group space has outside windows. This model was then rolled out to a couple of other DevDiv buildings and is believed to be a model for Microsoft as it considers remodeling around a hundred other buildings.

The challenges of transforming the physical space are not viewed as the most difficult. Aaron describes the transformation being as much like an art as a science and that it must include a shift in mindsets for all involved. Aaron draws inspiration from Daniel Pink’s book *Drive*: “Let us give our teams three things ... Autonomy, Mastery and Purpose.” For that to occur, an entire new balance of power between management and team-level work must be found and carefully maintained. This balance Aaron describes as that between the directives prescribed by the wider organization which he sees contained in the concept of “alignment” balanced with the capacity to self-organize and execute as best discovered by the teams which he sees as “autonomy.” The elements that make up alignment include “organization, roles, teams, cadence and taxonomy.” (Taxonomy referring to clarity on the shared meaning of their internal language

used to describe how they work together.) In the domain of autonomy rests aspects of the work such as the plan and the discrete practices teams derive and apply.

The impact upon their organization design has not simply been at the team level but includes broad structural changes that were found to better enhance their new structure. For example in the past they organized around three work flows, program management, development and test. In the new organization development and testing have been integrated together under “engineering.” Additionally, what were once separate functions for user experience (UX) and user interface (UI) these are now integrated with program management. On the back-end, service delivery has been integrated into engineering.

In this new organization, teams have the autonomy to be the masters of the features they deliver and a virtuous cycle can be seen where a more effective and engaged workforce operates faster, with better quality. They are more readily able to connect with and understand customer’s needs and respond faster, so that customers are regularly delighted. In the past, boxed product were released so slowly that by the time the customers received them, there was already a large list of improvements known to be needed. Yet customers would have to wait another couple of years to get what they were wanted. Now this cycle has been radically transformed into three week delivery cycles. DevDiv also maintains on-line a list of new requested features that customers and developers together can carry on a conversation about and even vote on so the product evolves with continuous social inputs from their daily users. With cloud-based software, it is also easy to measure the adoption and use of features to keep development in line with customer needs.

When taken together in their entirety, these elements represent a radical cultural change that impacts all aspects of behavior and mindsets. Even so Aaron reports that in a company as vast as Microsoft, this new management paradigm is still potentially fragile.

During the tour we randomly spoke with one developer, an engineer team-member who has been around for the entire Agile journey, with many years operating in the old ways and now four years with these new way. We asked him: “How has this transformation gone for you?” He answered candidly like engineers are prone to do, “It has not always been easy.” We followed up, “Would you go back to the way it was before?” His replied with a smile: “No way!”

Riot Games

Riot Games is a privately held online gaming company. The company was formed in 2006, and the co-founders are still involved in leadership roles in the company. The first release of their *League of Legends* was in 2009. Growth, in terms of users, has been explosive. More than 67 million users play the game each month. In 2010, the first “world championship” of League of Legends was held in an auditorium in Stockholm with 300 people paying to watch the competition. In 2014, 68,000 people paid to watch the world championship finals at the Staples Arena in Los Angeles. An additional 32 million viewer watched online—making the audience for the *League of Legends* world championship larger than that of the World Cup final, plus the NCAA Final Four final, combined!

The company is a “DNA culture” company—that is, the culture of the company, which puts them squarely in the Creative Economy, was conscious, intentional, and baked in right from the start. The company manifesto consists of 5 simple principles:

- 1) Player experience first
- 2) Challenge convention
- 3) Focus on talent and team
- 4) Take play seriously
- 5) Stay humble, stay hungry

These principles are manifested in the way Rioters work. Virtually all Rioters are themselves serious gamers. As enthusiasts, if they build something they like, there is a good chance their community will like it as well. At the same time, Rioters are constantly seeking and responding to online feedback and input they get from gamers at the many different events they sponsor.

There is constant innovation at Riot Games. Some of it is incremental improvement in the game. Some of it allows Riot Games to move into adjacent market spaces. Some of it may very well prove to be disruptive to how “training” and “learning” takes place in organizations and even in educational systems.

Appendix 4: Mission statements of firms visited

Barclays: “Our common purpose is to help people achieve their ambitions – in the right way. This sits at the core of our business and underpins everything that we do. We believe that only a business driven by strong values can deliver strong, sustainable returns.”²⁵

Cerner: “Together with our clients, we are creating a future where the health care system works to improve the well-being of individuals and communities. ... Our mission remains to contribute to the systemic improvement of health care delivery and the health of communities.”²⁶

C.H.Robinson: “Our people, processes, and technology improve the world’s transportation and supply chains, delivering exceptional value to our customers and suppliers.”²⁷

Ericsson: “Over the past 140 years, Ericsson has been at the forefront of communications technology. Today, we are committed to maximizing customer value by continuously evolving our business portfolio and leading the ICT industry.”²⁸

Microsoft: At Microsoft our mission and values are to help people and businesses throughout the world realize their full potential.”²⁹

Riot Games: “We aspire to be the most player-focused game company in the world.
The Riot Manifesto:

- Player Experience First
- Challenge Convention
- Focus on Talent and Team
- Take Play Seriously
- Stay Hungry, Stay Humble”³⁰

Spotify: “Spotify's mission is simple: give people access to all the music they want all the time - in a completely legal and accessible way.”³¹

Appendix 5: Nurturing Culture at Cerner

Presentation by Michelle Brush, Director, Population Health at Cerner Corporation³²

July 2016

Michelle Brush is an executive within the Population Health line of business at Cerner Corporation. Her primary duties include developing solutions that perform functions like identifying those that are at risk for high-cost, low-quality-of-life blood conditions like diabetes or heart failure. Identification then leads to recommendation of interventions to be taken before patients get to the point that they need something really serious like a foot amputation for diabetics. The goal is to catch problems through analytics and intelligence before it gets too late. This results in improved health of the individual and significant reduced cost to the healthcare system.

Michelle has an additional passion: improving the engineering Agile culture and nurturing it from the day an engineer first learns of Cerner. Under this umbrella, she has been responsible for the redesign of the engineering training and on-going education programs at Cerner.

The situation as it was

Like other regulated companies, Cerner has extensive role-based training. Prior to adopting an Agile development model, the engineering training focused solely on Cerner-specific issues, such APIs, technologies, health care and how Cerner interprets the health care domain.

It was a one-size-fits-all four-week program. The participants were given a test project that they had to enhance and then they would be given feedback. There were some assessments, including written tests followed by feedback, such as on their Java programming skills. Some of it was a kind of stress test, where they would be given an assignment with insufficient time (four hours) to see how they would respond under pressure. They would be graded and given feedback.

It was discovered through this process that Cerner was not seeing the behaviors that it wanted, once the participants left the training program. It was decided to redesign the program with an Agile cultural mindset. Michelle took this as her personal challenge to solve.

Philosophy and culture

When people talk about culture at Cerner they mean any shared set of behaviors, artifacts and beliefs. Cerner has a strong corporate culture that everyone lives and breathes. It is pervasive even in their language choice: “associates” over “employees”, “solutions” over “products”.

But software engineering is also a subset of the company and it has its own definition of culture. That culture is very much founded on grass-roots. It’s not top down. They say, “Our leadership champions us. They promote our ideas. They support us. But all of the ideas come from the bottom.”

These days, Brush talks as an executive. She grew up through the ranks. Most of the associates who are involved in culture at the executive level now have that same story. They got involved at the very bottom, as individual contributors and started proposing ideas. They got support from leadership to drive those ideas and then through making changes in Cerner’s work

environment, they have been rewarded and recognized. Now they have become the executive champions. The team is always seeking out the next layer of associates who can come up and drive things.

Revamping the training program

In revamping the training program, Brush found that Cerner was hiring associates who didn't really know how to program. That may sound surprising since there was an elaborate interview process. And yet there were associates in the training program who would be given a four-hour technical assignment and they wouldn't even know how to start. They wouldn't know how to open up a Java program. They would go to the Internet and cut-and-paste some code, and when that didn't work, they would go and get some more code. This represented a small but significant percentage of new hires.

It was very expensive to bring those associates into the training program, have them go through four weeks of training, put them on a team, and have the team work with them for six months, and then have the team come back and say, "We're sorry but it's not working. We can't train them anymore. We can't coach them through this. There's not going to be a fit with Cerner."

Realizing that, Brush started to rethink the training program. She met with 60 managers across Cerner, making sure to get the full diversity of opinions, experience and roles. She asked what were their principal challenges with candidates coming out of college. She built a list of all their concerns and the common patterns.

What they kept running into was that none of the managers cared about the Cerner-specific knowledge that the training course focused on. The training program was built around teaching the Cerner way of doing things, the Cerner domain, the health care problems and all that knowledge. None of the managers actually cared about that in respect of these recruits.

What the managers cared about was more practical. These candidates didn't know how to trouble-shoot. They didn't know how to do effective testing. They didn't know how to talk to solution designers and ask the right questions to clarify requirements as to how the system should behave. They didn't understand Agile development. Either they thought you write the code and just throw it over the wall or they thought you have to fully document everything even before you even start the project.

From knowledge to behaviors

Through the process of interviewing managers, Brush realized that it was the behaviors that were missing. Cerner had to rethink what was meant by learning. The training program had been based on transferring knowledge. Instead Cerner had to think about behaviors. Knowledge was just a means to get the wanted behavior.

All the behaviors Cerner wanted, like being able to trouble-shoot things quickly and accurately, being able to produce quality code, and being able to use automated testing, these behaviors weren't happening. The training program had addressed none of that. It shouldn't have been surprising that the trainees weren't doing those things when the training program wasn't doing it either. Most colleges didn't teach those things. Some do, and those are great. In the Midwest, in Kansas City, Cerner is not generally able to recruit heavily from those colleges. Although Cerner loves Kansas City, a lot of candidates want to go to San Francisco or New York. Cerner

therefore tends to recruit from Midwest colleges, which may focus more on theory, rather than on practical software development.

Cerner developed an inventory of the core behaviors that candidates weren't exhibiting and that were needed. They went through the data and they threw out almost all the old program.

They took an Agile approach to developing the new program. They would roll out one new thing a week and get feedback. They would either keep it, tweak it or throw it away. They did that over the course of six months until they finally had the kind of training program that they wanted. That became known as the Dev Academy.

Dev Academy

It begins with what is called **Dev Essentials**: this is a fixed two-week program that introduces the wanted behaviors. This includes DevOps, unit testing, Agile development, and some basic general technical skills that everyone should have. Thus everyone should know about how to interact with the data store, and what web development should look like, because there's hardly anything these days that doesn't involve some interaction with the Web or data structure.

Then the trainees receive a hands-on assessment on everything. They are told: these are the areas that you need to work on that are essential to being an engineer at Cerner. It is very much like a classroom or college environment. They are teaching new associates things that they might not have covered in college. The nice thing is that the data that they receive creates the basis for the next stage, which is the **Dev Center**.

The Dev Center

The Dev Center aligns under Engineering. Brush was passionate that it needed to be an engineering group, not a Learning Group under HR. (By contrast, another program called Dev Electives fits under HR.)

After associates have completed Dev Essentials, they are brought into the Dev Center and asked to pick a project. They receive a list of some 40 real projects that are available at the time. They rank their preferences. There is a matching algorithm which helps put them into tiny teams of two or three.

The projects are real projects that Cerner needs to do anyway, although they are low-priority low-risk projects. Cerner doesn't want them touching the clinical software. The clinical software is high-risk: Cerner doesn't put that in production with brand-new associates.

It may sound harsh but frankly, at that stage, those associates are incompetent to put code into production. Cerner doesn't want incompetent associates touching the core clinical software. So they are given projects that are on the backlog, including tools that Cerner wants to build, such as tools to facilitate troubleshooting or testing. All of the projects have business value, but they are very low risk.

Each team is given a mentor by Cerner. The mentors are given stickers that they put on their laptops so that other associates know that they are mentors in the Dev Academy. It's discussed in their review cycle that they are mentors and that they stood up for the Dev Academy. They get recognition within Cerner for having done so.

The mentors help with the design decisions and with code. They give feedback and talk to the trainees about communication skills and what is expected from them in terms of quality. They spend about four hours a week being a mentor or about an hour each day.

To supplement that mentorship, there are a handful of full-time staff at the Dev Center. These are typically up-and-coming leaders in the company. These are people that Cerner is thinking of moving to become a team lead or a leadership tech position. They help run the Dev Center for an 18-24 month rotation. The result is that they come out of the Dev Center with a leadership position and essentially get to pick where they want to go.

Within the Dev Center, the trainees pick their project. They work on it. They get feedback. The mentors are required to say every week how they are doing. The mentors fill out a very lightweight survey. The mentors are asked to look at fixed key performance areas. They are given guidelines as to how to score in each area. Care is taken not to give them grades like A, B or C, since people just out of school tend to freak out about grades. If a trainee receives a C, they are devastated. But if they receive a minus, they feel, 'Oh, I just need to improve a bit.' There is a need to get their thinking about grades out of their system.

The ratings are done by the staff running the Dev Center in partnership with HR. All the mentors are from Engineering. They talk through the performance and come to an evaluation.

Trainees get this feedback from the mentors weekly. They are told: "These are the areas for improvement." It might be more attention to quality or to unit test coverage. The mentors monitor things weekly and hope to see the minuses turn into pluses or plus-pluses. It is entirely performance-based. So when all of their ratings are pluses, they are assigned to a team—not before, and not longer.

This is different from the old program, which was very much fixed. It didn't matter how good or bad you were, you stayed exactly four weeks before you went to a team. Now a trainee can get out in two weeks or can be there for twelve weeks. It depends on what they need. It is run as a safe place. Associates aren't punished for taking twelve weeks. If they meet competency, they meet competency. They are going to do well at Cerner.

If the staff see signs that are concerning, for instance, that they are lacking aptitude, or if they have been working for twelve weeks on one thing and they just can't get it, or where there is an inability to take feedback, or an inability to learn, then something more is needed. That's why HR is there. These associates are let go and they never impact the team. These days, not many associates are let go. That speaks to improvements that have also been made in the interview process.

The Dev Academy program is heavily documented, heavily audited and heavily monitored. Everything is transparent and visible to everyone. Everyone can see who is in the Dev Center, what they are working on, who their mentors are, although the performance reviews themselves of course remain private.

From Dev Academy to a team

When a trainee meets competency at Dev Academy, they are moved into a team. Cerner hires into a pool. At Dev Academy, Cerner sees what the trainees are really good at and what their interests are. Based on that and based on skill sets identified in Dev Academy and skills sets in

open positions, HR will start reaching out to managers who have open positions. They arrange for managers to go meet with trainees.

The meeting is usually in the form of a demo of their work. The managers can ask questions and get a feel for their work. The managers have access to all of their code reviews. They can go through those and see how they progressed, in terms of learning and understanding the technical aspects of the work, in terms of the quality expected and how they responded to feedback. Then they make their decision about who they want. So the process facilitates the placement process.

Evaluating the Dev Academy

The Holy Grail in learning is to be able to establish a relationship between learning and a business result. That's really hard to do. So Cerner surveys management and gets their impression of this person, 30 days out, 60 days out, 90 days out. They take all that data and evaluate the program.

When that was done after the first year, there was an issue whether to make adjustments to the training program, (and some were made) or whether to make adjustments to hiring. They ended up making more adjustments to hiring than to training.

That's because when they looked at the data, they saw a clear correlation between how Cerner hired, and sometimes who the interviewer was, and how associates performed in the program. Based on the data, HR led an initiative, in collaboration with engineering, to evaluate the hiring practices against research findings in psychology.

This suggested once again a sharper focus on behaviors. It turned out that the interview process at the time was focused mainly on knowledge. There were trivia questions like: "What does it mean to normalize a table?" That's a good question, but what did it tell Cerner about the aptitude of the person to contribute at Cerner?

So it was decided to focus more on behavioral questions. What candidates have done was seen to be a better predictor of what they will do than what they say they will do. So Cerner refocused the questions on things like: "Tell me about projects you have worked on? Tell me about the most difficult bug you ever had to troubleshoot? How did you track it down? What was the problem? How did you fix it?"

The intent was to make it as much as possible an interesting conversation between the interviewer and the interviewee, rather than a quiz. It was like: "Let's talk about this! Let's go to the white board together and discuss! Let's draw this out."

The candidate would be given situational questions to complement the behavioral questions. They would be given problems that were like real Cerner problems. For example: "Hey, we've got people coming into hospital and we need to know who they are and where they live and what gender they are. Can you write me a data structure to gather that information?" They would critique them in the process and make suggestions, like: "Why don't you make that a double? Why don't you make that an integer? Why is that a string and not an object?" They are poking at their work as they are doing it. The purpose is to see how they respond to feedback. The interviewees don't necessarily know that: they tend to think the interviewer wants the answer to the specific questions about the design.

As the interview goes on, the interviewers make the problem increasingly challenging until they get to the point where interviewees are no longer able to respond to the problem. The interviewers don't hold the interviewees accountable for the point where they end. They are more interested in seeing how they respond to questions and how they are able to incorporate new information as they talk through a problem. "Are they able to rework their previous design to account for the new requirement that has just been introduced?" The interview is meant to feel like two people sitting in front of a white board, talking through ideas in a process of mutual discovery.

Cerner now has a standard interview packet with a pool of questions that the interviewer can pick. They don't have to ask all the questions. They ask them until they feel they have figured out the behaviors and the culture that they want. But they can't go outside the packet. Cerner feels strongly about that because of evidence that consistent rubrics beat personal opinions every time. That's because people have biases. When interviewers say "They are not a good fit", what they generally mean is, "They are not right for me." Given the under-represented groups in IT, there is a need to contend with unconscious bias. To deal with this, Cerner insists on consistent rubrics and consistent approaches to interviewing.

For each question, the behaviors that the interviewer has to gauge are indicated. "What's their attention to detail? How they handle and respond to feedback? How do they approach design?" And it is also indicated what a good candidate, or an intermediate candidate, should have demonstrated by the end of the discussion of that question. For each question, the interviewer circles the performance rating and this becomes the basis for discussion in the debriefing session.

Cerner is interested in engineering mobility. It is more important to be able to learn Java or Ruby, than whether candidates already know Java or Ruby. Technology changes so quickly, Cerner is constantly adapting. Cerner cares less about knowledge and more about ability to incorporate new ideas, new thoughts and new technology.

Cerner uses a pool of interviewers. They are not allowed to interview until they have gone through an interviewer training process. Cerner tells them at the beginning of the training: "This approach may not be for you. You may not be someone who can interview in this style. And if you can't, you are free to opt out as an interviewer."

The recruiting organization regularly evaluates the quality of its interviewers, including how many interviewees accept offers. Cerner is frequently removing interviewers from the pool, based on the results and the feedback received. Cerner sends a list of the pool of interviewers to every organization executive who can say which interviewers they want to do the interviewing for them in future.

For a time, Cerner tried getting away from the pool concept, but ended up going back to it. It is a matter of ensuring that there is have an adequate inflow of good candidates.

This process is for development engineers. There are similar programs for system engineers and business analysts, with different lengths and emphases, though all based on the Dev model.

The focus in Dev is initially on "culture fit." The question of "team fit" comes in when the manager meets the applicant at the end of the process. A manager might say: "No one here fits

my need.” That means that the manager is opting to wait two weeks, and get someone from the next batch. So the “culture fit” is the basis of the decision to hire candidates into the pool. “Team fit” doesn’t figure in the hiring decision. Cerner doesn’t emphasize keeping teams together, so “team fit” is less of a concern.

Dev U

The Dev learning process doesn’t end once an associate is placed on a team. There are several additional learning programs to help them advance their skills. An example is Dev U where if you want to learn a new technology, Cerner encourages associates to use online tools from groups like the Khan Academy. But sometimes there are special needs specific to Cerner and so something in-house is developed. Associates can enroll on a first-come first-served process.

Dev Arc

Cerner has won awards for the Dev Academy, as well as for its companion, the Dev Arc program, which is how Cerner grows engineering associates into leaders at Cerner. When they have been at Cerner from 3 to 5 years, and Cerner wants to move them into more of a technical leadership role, it puts them through a recognition program with business leaders doing different things and lets them grow and move into technical lead positions.

It’s a year-long program. Cerner feels that they can’t train technical leadership. All they can do is identify associates with potential, guide them through how they should start thinking about the company and the work it is doing, and by exposing them to other perspectives. Ultimately it’s up to their own leadership potential. Once they have those perspectives, they are given the opportunity to demonstrate that they can make that kind of leadership work.

At end of the program, there is a graduation ceremony and the graduates get a Dev Arc T-shirt. They get a book that their manager has picked out and has written an inscription. The most-often-given book is *Code Complete* by Steve McConnell.

This is not technical training. It’s leadership training that is customized to the way that engineers want to hear it.

Cerner has many other leadership programs based on where an associate is in their career. There is *Drive* for early career leaders. There is *Accelerate* for potential executives. There is *Navigate* for new executives. The challenge is that these programs don’t really fit the specific challenges that a technical leader faces. They talk about building networks and managing other people and approaching other people, but they don’t really get into issues like: “How should you reason about architecture?”

“Software architecture” is a vaguely defined subject: everyone is doing it but there are many different views on what it means. Cerner brings in associates from within the firm who are involved in architecture: they come together for a day and give their perspective on software architecture. It’s not telling them things like, “In Rails, this is how you should do things.” But rather: “This is how we make trade-offs. This is how we make compromises.”

There are discussions of Agile development. At this point in their career, these associates are going from participating in the planning process, to someone who is organizing this for

employees, and helping break down work into small tasks. They need to move to the level where they understand how Agile fits within the broader corporate planning process.

Agile at the level of participating in a team is different from Agile when it's part of the leadership process of orchestrating the product that you are building. The program aims at building understanding of those two different views. There is discussion of software estimation and how to gradually improve. There is discussion of DevOps and how to execute on DevOps as a leader, not just as a participant. So the discussion technology-oriented, but it's not technology-specific training. There is no discussion of coding or any specific technologies.

Hiring from industry

Dev Academy is great for candidates being hired directly from college. When Cerner hires from industry, they use some of the material that was eliminated from Dev Academy, namely, the Cerner-specific knowledge that they may not have. It is assumed that candidates have fifteen years of success in the industry, they know how to learn. They don't need to be spoon fed about the basics. But they do need to learn the specifics how Cerner thinks about these things. So they receive educational opportunities. Those are generally offered as "just in time" training, rather than a training program that covers everything all at once.

There is a learning management system. Associates can sign up for courses based on their interests. If they are about to take on a role with specific requirements, role-based training plans exist that describe what the associate needs to do in 30 days, 60 days and 90 days.

A broader approach to learning

Cerner is moving away from learning just as class-based learning, and seeing learning as a way of leading and inspiring a workforce. Brush works closely with the senior leadership to identify areas of opportunity and areas of concern.

For example, this year security is an area of concern for Cerner. There is a heightened effort around how to influence engineers to approach security differently. Some of that is creating training classes on security. But some of it is about consulting with leadership, and saying, "Hey, in your next organization-wide meeting, how about saying these things that will make associates realize that you value these things?" Or: "How about introducing a recognition program for this type of work?"

Cerner leverages the "Influencer" model in terms of how initiatives are approached from an organizational change management view, not just a training approach. There is an effort to get a broader awareness of how Cerner deals with and invests in security across the board.

The Development Culture Council

A more deliberate effort has been made to understand and influence the culture at Cerner. Cerner wanted to know what cultural problems it might have in engineering and how to tackle those problems.

The Development Culture Council identifies opportunities in addition to the regular work and then drives to an initiative to see the opportunity through. Membership in the Council is open. Every year there is a membership drive. Executive leadership doesn't say who should be on the Council. Associates are free to nominate themselves. Their applications are reviewed on the

basis of what the candidates care about and how they talk about the problems they want to solve. Then the Council itself brings them in on a twelve-month rotation.

One of the early things that emerged in this work was a recognition that Cerner needed an internal developer's conference. Cerner was spending a lot of money sending a small number of associates to external conferences. The expectation was that they would come back and share the information with their colleagues. Cerner wasn't getting enough benefit for the investment and it was seen to be more cost-effective to have an internal conference.

To solve the problem, a group went to senior leadership and proposed an internal conference to be called DevCon. It now happens every year. It has grown in size. This year's sixth annual conference had 3,400 associates attending, with 80 speakers and 300 talk submissions. External speakers are brought in from firms like HP, Red Hat and NASA. The conference is used to have a conversation with engineers about what Cerner cares about. For example, there was a talk on Open Source and increasing contributions to Open Source. There was a talk on innovation and the need to embrace failure.

Cerner runs two DevCon conferences in the US (Kansas City and Malvern, PA) and another in Bangalore.

Cerner also brings in outside speakers throughout the year, about once a quarter. Cerner uses these to get people thinking about "the next best thing." It happens in an auditorium. They are recorded and placed on YouTube. Some candidates learn about Cerner from these videos.

External conference attendance

Cerner sends associates to external conferences both as a recognition of performance and as a responsibility to bring something back to Cerner. This is managed from the team budgets, rather than a top-down centralized process. Staff just talk to their manager. But then they are asked: "How are you bringing this back to Cerner? Are you writing a blog post? Are you teaching a class? Are you giving a Tech Talk?" The center tracks what happens and reports on that to leadership and evaluates the usefulness of it.

Culture beyond Dev

The work on culture at Cerner is exploding in development. There are less established practices in other areas such as requirements and testing. Project management is getting better. The Council is looking for ways to bring them in.

Open Source

One of the things that came out of the Dev Culture Council was a decision to enhance understanding of Cerner's place in the Open Source community.

Cerner uses Open Source itself. It was consuming but it wasn't contributing, let alone creating. The Council recognized that Cerner needed to be a company that is creating code repositories and putting code out there all the time; a creator of Open Source code.

The Council decided to take steps to get associates to understand the importance of Open Source. An outside speaker was brought in to help associates to understand that contributing to Open Source is a competitive advantage for Cerner. By putting the code out there for other people, Cerner gets to define where the industry should go for that specific technology. For

instance Cerner is now working on how to do streaming in big data sets. It's something that the industry hasn't yet really solved. So the conversations have been about how to build something for Cerner that could solve the problem. Cerner wants to Open Source it, because it doesn't want to build something proprietary and then two years from now, discover that the industry has come up with a different solution in Open Source and find that Cerner is forced to shift all its work to the new Open Source solution, because it is now the industry standard and better than Cerner's.

If Cerner is going to build something, it wants it to become the industry standard. Or if there is something already out there in Open Source, Cerner wants to consume that and contribute to it. Cerner needs to throw its weight behind the solution that is going to be the winning approach in Open Source.

Now Cerner is pushing associates to contribute to Open Source as much as they can, either through bug fixes, or through drawing on Open Source in areas that are not Cerner's core competence. If they do contribute, they get a laptop sticker and are celebrated in town hall meetings and so on. Cerner has also become an Apache Software Foundation Sponsor as well as having their own organization on the public GitHub.²

Fostering innovation at Cerner

Another aspect of fostering innovation at Cerner involves using its understanding of the culture to promote innovation. Thus one of the things done in launching Agile at Cerner was in picking the first five pilot teams. Teams were deliberately chosen that were full of the "Mavens" and "Connectors" that Malcolm Gladwell describes in *The Tipping Point*, along with a couple of "Skeptics" who would challenge the management from Day One. That turned out to be one of the reasons Cerner was able to launch its Agile initiative so quickly.

The same thing was done with Cerner's Distinguished Engineer community. An effort was made to identify Mavens: these are the associates who, when they speak, the engineering community listens. It is specific to a particular area of expertise. These are the channels that associates will listen to for certain messages.

Appendix 6: Customer Obsession at Riot Games

By Joakim Sunden, Agile Coach, Spotify

May 2016

Riot Games aspires to be the most player focused game company in the world. They currently have one game in production, League of Legends, a team-oriented action and strategy game or MOBA (Multiplayer Online Battle Arena). League of Legends has dominated the online market since at least 2012 and is the biggest online PC game in the world with more than 67 million monthly active users, 27 million per day, and over 7.5 million concurrently during peak hours.

Riot was founded in 2006 and has 2,500 staff with 15 offices all over the world, from their biggest main office in Santa Monica in the West to Tokyo in the East. Riot Games is a popular employer (e.g. #13 on Fortune's list of 100 "Best Companies To Work For"), they were Agile from the start and have a trusting culture and decentralized way of operating.

The Riot culture

Culture is one of the most important factors why people work at Riot Games. One Rioter explained that Riot culture comes from the experience of being burned by a different culture where managers would say, "You just have to do this". "Here at Riot, you can't tell anyone here to do anything. That's not a joke!" Autonomy and trust seem strong at Riot Games.

One example is that they don't do budgeting, only forecasting exercises. If you need to hire people you just make a business case for that. If you've done your homework, and answer all questions, you're fine, even if you have "used" all your forecast headcount. Another example of this trust and autonomy is how the development manager coordinator we met had produced a video explaining the Development Manager role by internally recruiting people and procuring what she needed without having to seek approval.

Mission and player focus

Another important aspect of the Riot Games culture is the laser-sharp focus on their number one target user. "We are defined by our audience: core gamers." That is also expressed in the company mission statement, "To be the most player focused game company in the world". You can wake up any Rioter in their sleep and they can repeat it. People typically mention it 10-15 times a day in conversations. It's actually so important that it's a requirement when hiring for almost all roles to be a hardcore gamer, although exceptions are made for those with a particular expertise.

People we met at Riot Games often referred to the mission and the players:

- "This is part of our player promise, so we need to..."
- "If you put something in front of players, you should..."
- "We got to get it into players' hands before pre-season!"

- “If it doesn’t have a consequence for the player we shouldn’t do it!”
- “How player focused is she?” (Asked in Performance review)

When Rioters are asked to do something, even follow new policies or guidelines, they will ask themselves if it’s going to help them deliver value to the player. If you can convince them that it is, they will probably do what you say, otherwise not so much.

Here is the way one Engineering Director puts this: “Your good idea must survive the crucible of socialization to become great. What this means in many cases is that we take a Product Management stance for organizational development: we must understand who is the arbiter of value and how to realize that value.”

To really get to know the players in one of their biggest markets, Riot has installed Korean style Internet cafés, complete with vending machines with Korean snacks, where they encourage everyone to play. Through this they discovered early on that some features they thought were important didn’t make sense, (e.g., online chat), or proved difficult to use in that environment, (e.g., because they’re using a shared computer.)

A Senior Development Manager emphasized the importance of a clearly outlined mission and vision on all levels of the organization: “If you have the same goal as the person sitting next to you, you level up three steps immediately.”

Teams are very KPI focused. Almost every team defines its own mission and vision and KPIs on all levels, which are reviewed monthly.

The Riot Games culture is also expressed through the Riot Manifesto:

1. Player Experience First
2. Challenge Convention
3. Focus on Talent and Team
4. Take Play Seriously
5. Stay Hungry, Stay Humble

Another cultural expression we often heard was that of having a “Founder’s Mentality”. Always wear your “Riot Hat” and think like a founder of the whole company: it’s always your responsibility, you’re here to solve the problem, even if it’s “not your role”.

At Riot Games they say they’re not scaling Agile, since they don’t worry about practices at all. They focus instead on culture and principles. The culture provides a system that will revolt if, for example, someone tries to introduce micro-management.

Overall, the mission clarity and customer focus at Riot is compelling. It gets people to rally around. The user empathy and customer focus is remarkable.

Team roles

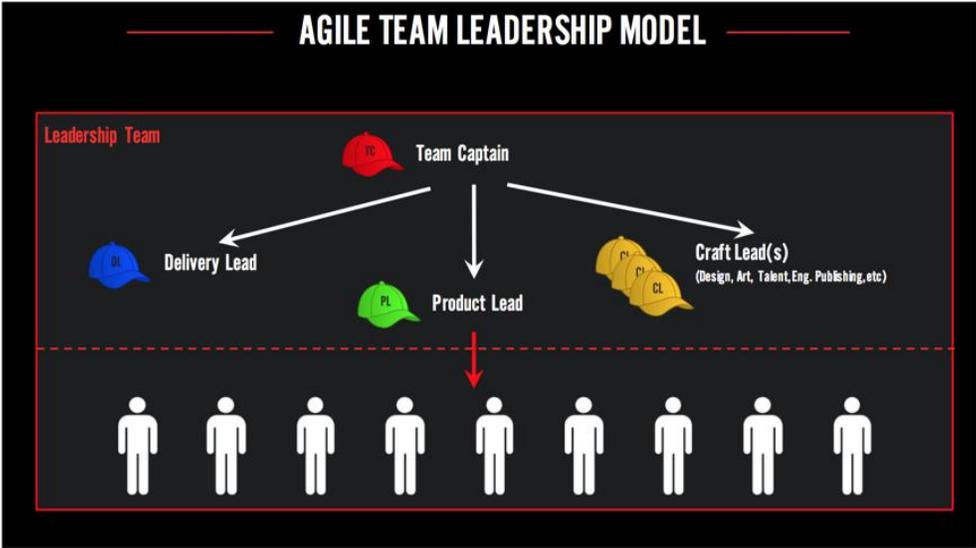
Every Rioter is part of a Discipline (e.g. Engineering, Art, Talent) and a Product (e.g., League of Legends, E-Sports), typically working in a cross-functional agile product team.

CROSS-FUNCTIONAL PRODUCT TEAMS

	A	B	C	D	E	F
Engineering		■	■	■	■	■
Product Management	■	■	■	■		■
Development Management	■	■	■	■	■	
Art	■	■	■		■	
Design	■		■	■	■	■
Talent	■	■		■		■
Publishing	■	■		■	■	■

Who is responsible for the result of the agile team? Who is leading the team? Riot believes in collective responsibility, but individual accountability. All teams at all levels (Agile Team, Project, Product, and Initiative) at Riot have four roles (not titles, one person can theoretically fulfill all):

- Team Captain (TC). Leading the overall effort, lead of leads.
- Product Lead (PL). Leading product strategies and resonance with audience.
- Delivery Lead (DL). Leading delivery and execution.
- Craft Lead(s) (CL). Can be Design, Art, Talent, Engineering, Publishing, etc. Leading on technical direction in a specific craft area.



Clarifying responsibilities

In response to a request for help from the teams themselves, Riot has developed an inventory of 35 responsibilities that a typical team might have. Ten of them are attached to the TC, PL, and DL roles, the rest are up to the team to assign. To support the approach, Riot have actual hats in different colors and printed cards with the different responsibilities the team can use to facilitate decisions. A new team is often started by someone (or a group of people) becoming a TC and he/she then wear all the hats until they are assigned to others.



The 35 responsibilities constitute a kit for the team to start with. In some cases, some don't apply; in other cases, new ones are created that are more relevant. Teams can also create new roles that apply as needed.

The TC is usually a Product Manager or a Development Manager (similar to Agile Coach) sometimes someone from Art or Design, but it can be anyone.

A common pattern is to groom junior people for roles by assigning responsibilities, e.g., add a “Junior Product Lead” role and assign some responsibilities to that person previously held by the PL.

A Development Manager at Riot Games is very similar to an Agile Coach and they often have a background as an Agile Coach, but it could also have been e.g., Producer, Project Manager, or Engineering Manager. The main difference from a Coach is that a Development Manager, typically fulfilling the Delivery Lead role, is accountable for the delivery and result of the team, while they perceive an Agile Coach to be more of a coach from the sidelines role with no skin in the game.

Managing a large program

With LCU (League Client Update), a large program to build an extensible client framework and deliver a dramatically improved client UX for all players, Riot Games is experimenting with a new way to achieve collaboration at scale. The program is executed by a team of several hundred people who plan together, identify dependencies between around fifty smaller work “pods” and then meet at a daily standup to load balance so that pods with excess capacity help others who are falling behind.

All pods are of similar size and composition (2-3 JavaScript, 1 C++, 1 Visual Designer, 1 QA), which enables load balancing. They are called pods because Riot wants people to identify LCU

as their team. That's where most rituals live (e.g., shared planning for synchronized 2 week sprints), as well as working agreements and culture, and the definition of "done." All LCU Team members share common goals. Retrospectives are run in pods.

There are about 7-8 formal leaders who spend most of their time on the ground, moving around between pods, help where needed, clarify goals, and help understand technical direction and what is good and bad.

This way of working has been well received, engineers understood the value and accepted what could have been perceived as unnecessary overhead in terms of planning and coordination. By organizing this way, the leaders didn't have to "pull teeth." The team health survey, which Riot runs every six months, showed that people are very positive about the setup.

Another interesting practice related to collaboration is that if you know how to fix an issue that occurs, find someone who doesn't and teach them. As a thank you the person you taught writes up documentation for it.

The "Request For Comment" process

Riot Games has a well-defined "Request For Comment" (RFC) process. Anyone can make a proposal for a change. It could be a technical/architectural change, but also an organizational/process change. An RFC is submitted to a central repository. There is an open comment period. Depending on the type of decision, it can either automatically pass, if there are no objections, or it will go to a small group of people who would make a final decision informed by the process. The decision is then communicated across all development teams.

The RFC process is a way to leverage wisdom of the crowd while at the same time socializing change and empowering all. The actual structure / governance depends on the type of interaction you desire and the mechanism for formalizing the decision. In a well crafted system, the best ideas will survive regardless of whose brain they emerged in. Yet, for org governance, there may be a small group that harvests these ideas for operations as final approvers.

All recently approved and ongoing RFCs are published in their Engineering Weekly newsletter. These newsletters were also put up in all bathroom stalls.

The socialization philosophy of change is pervasive throughout the organization.

Physical space

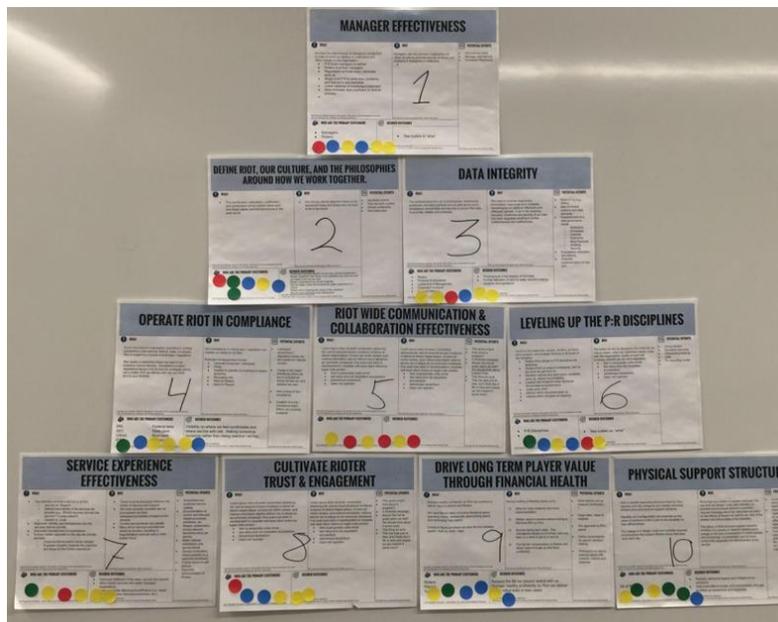
Riot Games takes collaborative and creative environments seriously and put a lot of thought into designing their new office, a campus they moved to in 2015.

Using an open floor layout with big spaces and everything on wheels, including many walls, allows them to constantly evaluate what's working and what's not, patching as needed. The height adjustable desks even have batteries so you can move your desk without interrupting the power supply. This made it possible for the LCU Team (see Scaling Collaboration above) to move together 100 people overnight when they kicked off the project.

A small detail that I really liked was the name tag on everyone's desk so you could easily see who's sitting where. Like several other companies I've visited lately they also had screens outside meeting rooms clearly indicating if the meeting room is free or not and what meetings it's booked for. Another nice touch was that the screens in the interviewing rooms had a big personalized welcome screen for candidates.

The prioritization pyramid

A tool commonly used at Riot Games is the "prioritization pyramid". The pyramid is used to quickly prioritize, making sure to agree on one top priority but deferring prioritizing between individual items of secondary, tertiary, and so on, importance; the two second row items (2,3) are considered equal importance for now, the three third row items (4,5,6) are equally important, and so on. They sometimes also use prioritization diamonds and prioritization Christmas trees.



Endnotes

¹ <https://hbr.org/2016/05/embracing-agile>

² <https://www.druckerforum.org/2015/the-event/conference-abstract/>

³ <https://www.druckerforum.org/2015/the-event/conference-abstract/>

⁴ See 2015 Learning Consortium Project Report: <http://sdlearningconsortium.org/index.php/home/what-we-have-learned/full-report-2015/>

⁵ <https://hbr.org/2016/05/embracing-agile>

⁶ <http://www.forbes.com/sites/stevedenning/2016/03/29/gary-hamels-3-trillion-prize-for-killing-bureaucracy/>

⁷ Michael Harte, YouTube video July 2015: <https://www.youtube.com/watch?v=d6mqxcevZj0>

⁸ Barclays is B2B as well as B2C: (Investment Banking, Corporate Banking, Business Banking/

⁹ <http://www.forbes.com/sites/stevedenning/2013/07/11/the-copernician-revolution-in-management/> As Thomas Kuhn writes in *The Copernican Revolution*: (1957): "To describe the innovation initiated by Copernicus as the simple interchange of the position of the earth and sun is to make a molehill out of a promontory in the development of human thought. If Copernicus' proposal had had no consequences outside astronomy, it would have been neither so long delayed nor so strenuously resisted." Similarly what makes the Copernican Revolution in management so significant is not its technical content, which appears to be merely a different methodology for guiding and measuring the effectiveness of organizations. Embedded in the new way of managing is a different worldview, which threatens the hegemony of all the big hierarchical bureaucracies that systematically dispirit those doing the work, frustrate those for whom the work is done, repeatedly disappoint society and yield increasingly meager returns for investors.

¹⁰ <http://www.forbes.com/sites/stevedenning/2014/11/07/why-bureaucracy-must-die/>

¹¹ One of the early sources for the importance of small teams was the 1986 HBR article by Nonaka and Takeuchi: "The New New Product Development Game."

¹² <http://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html>

¹³ Henrik Kniberg video Part 1: https://www.youtube.com/watch?v=Mpsn3WAl_4k, Part 2: <https://www.youtube.com/watch?v=X3rGdmoTjDc>

¹⁴ https://en.wikipedia.org/wiki/Disciplined_agile_delivery

¹⁵ Kotter, J. *Accelerate*, (HBR Press, 2014) p. 15

¹⁶ For dual operating systems, see Kotter, J. *Accelerate* (HBR Press, 2014). For knowledge funnels with design thinking: see Martin, R. *The Design of Business* (Harvard Business Press, 2009). Martin describes a knowledge funnel which organizations progressively figure out mysteries, which then turn into business heuristics that can be exploited with the addition of judgment, and eventually algorithms, which can be exploited precisely.

¹⁷ <https://en.wikipedia.org/wiki/Heterarchy>

¹⁸ <https://en.wikipedia.org/wiki/Heterarchy>

¹⁹ <http://www.forbes.com/sites/stevedenning/2016/06/07/the-key-missing-ingredient-in-the-agile-manifesto-mindset/>

²⁰ <http://www.forbes.com/sites/stevedenning/2016/06/07/the-key-missing-ingredient-in-the-agile-manifesto-mindset/>

²¹ Academy of Management Learning & Education, 2012, Vol. 11, No. 2, 293–299

²² Agile has many antecedents. Some see it has growing out of Lean manufacturing thinking. The outlines were already sketched the 1986 HBR article, “The New New Product Development Game” by Nonaka and Takeuchi. The Scrum methodology began to emerge in the early 1990s and was presented at the OOPLA conference in 1995. There was also much discussion among developers of lightweight development processes and better engineering practices such as XP.

²³ There is an ongoing discussion among Agilists as to whether or not Lean and Kanban should be seen as part of Agile.

²⁴ https://en.wikipedia.org/wiki/Continuous_delivery

²⁵ <https://www.home.barclays/about-barclays.html>: ‘I want Barclays to be a bank where our employees choose to work here because they believe in the institution, and its intrinsically valuable role in society. This is a mind-set I want to reinvigorate in everyone, from branch colleagues working on the high street in Manchester, to the M&A banker in New York.’ Jess Staley, Chief Executive”

²⁶ www.cerner.com/about_cerner/

²⁷ <https://www.chrobinson.com/en/us/About-Us/CHRobinson/>

²⁸ <https://www.ericsson.com/about-us>

²⁹ <https://www.microsoft.com/>

³⁰ <http://www.riotgames.com/riot-manifesto>

³¹ <https://www.spotify.com/us/about-us/contact/> ‘With Spotify, it’s easy to find the right music for every moment – on your phone, your computer, your tablet and more. There are millions of tracks on Spotify. So whether you’re working out, partying or relaxing, the right music is always at your fingertips. Choose what you want to listen to, or let Spotify surprise you. You can also browse through the music collections of friends, artists and celebrities, or create a radio station and just sit back. Soundtrack your life with Spotify. Subscribe or listen for free.’”

³² See also: <http://engineering.cerner.com/2013/08/devacademy/> August 2013

² See also: <https://github.com/cerner>