



BABSON COLLEGE
Where Entrepreneurs Learn to Lead

Research Report



OUELLETTE & ASSOCIATES
Moving IT Up the Maturity Curve

CREATING A CULTURE OF DIGITAL INNOVATION

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Introduction

The purpose of this research is to examine the levers that enable an innovative digital culture. The shift to a more innovation-driven economy is clear, and one of the single largest differentiators for our economy today is the link between technology applications and business opportunity. Organizations as diverse as Apple, Amazon, MasterCard, and the American Cancer Society remind us that technology is radically transforming the business and operating models of the future. The turbulence, complexity and competitive nature of most organizational environments have made technologically-enabled innovations a core capability for increased profitability and growth.

Paradoxically, a group within many organizations which has substantial expertise in technology applications of all types, but has not been an active part of the innovation discussion, is the Information Technology (IT) function. There are several reasons for this. Recently, many IT capabilities have been outsourced and offshored to reduce costs, improve flexibility, and “focus on core” projects. Also, traditionally, many organizations have viewed the IT function as providing the communications and data processing infrastructure capability for business, with the biggest IT focus on maintaining, training and supporting users on existing legacy systems, rather than building new and innovative systems and business solutions.

More recent trends, however, are forcing executives to re-think the IT function. The emergence of *Big Data and business analytics* to improve decision-making requires the ability to acquire, analyze, and apply data in its many different forms (e.g., transactional, social, mobile). IT professionals appear to be the perfect candidate to act as the partner among the decision-makers across the business functions and technology systems and the data that reside everywhere. Another emerging trend is the *consumerization of technology* (i.e., *Bring Your Own Devices*), where end-users (often Millennials) bring their own computing devices and apps into the organization. Here, IT professionals need to be aware of emerging technologies that can benefit knowledge workers and act as an enabler, rather than just a gatekeeper, of innovative technologies. As a result, forward thinking executives are looking to their current IT professionals to play a different role in the organization from back-end service provider—to the role of an active problem solver and innovator.

- **130 Interviews**
- **65 Companies**
- **10 Industries**

Purpose of this Study

The purpose of this research is to study the levers that enable an innovative Digital culture. Specifically, we examined the role of business strategy, entrepreneurial processes and talent management to enabling an innovative Digital culture.

To accomplish this goal, we used fieldwork: We visited five sites and did in-depth interviews there to engage with IT professionals and see them working with their business partners as well as their IT colleagues in a team environment. We conducted 130 semi-structured interviews with senior IT leaders (as well as CIO's and COO's) from over 65 companies across several industries, from healthcare, automotive, financial services, government, technology products, energy, education, and retail. We also conducted a quantitative survey to examine the different traits of innovative IT professionals. The three approaches, fieldwork, semi-structured interviews and surveys, gave us

deeper insight into the important levers of innovative digital cultures. In this report, we discuss the results from the field work and semi-structured interviews.

The results suggest three major levers to develop an Innovative Digital Culture, including Business Strategy, Entrepreneurial Processes and Talent Management. The outcomes of a more innovative Digital culture are measured by various Business Metrics. The levers, company strategies, tactics, and processes, are not meant to be exhaustive, as changes in technology, business strategy and consumer behavior are far too complex to capture in a single study. Instead, we are documenting and validating the levers that are present today in organizations that are leaders in this area. We hope to continue to follow these companies as well as others over the next two years to examine new approaches as they emerge. (See figure 1 for our research framework).

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“Our first measure is how happy we are as a team because that makes us more productive.”

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The “Innovative Digital Culture” framework was created after conducting in-depth interviews with 130 senior level IT professionals from 65 companies across several industries: healthcare, automotive, financial services, government, technology products, energy, professional services as well as retail. The interviews were tape-recorded and three raters analyzed the data for the patterns and insights presented in this report. We also conducted in-depth field sight visits to five organizations.

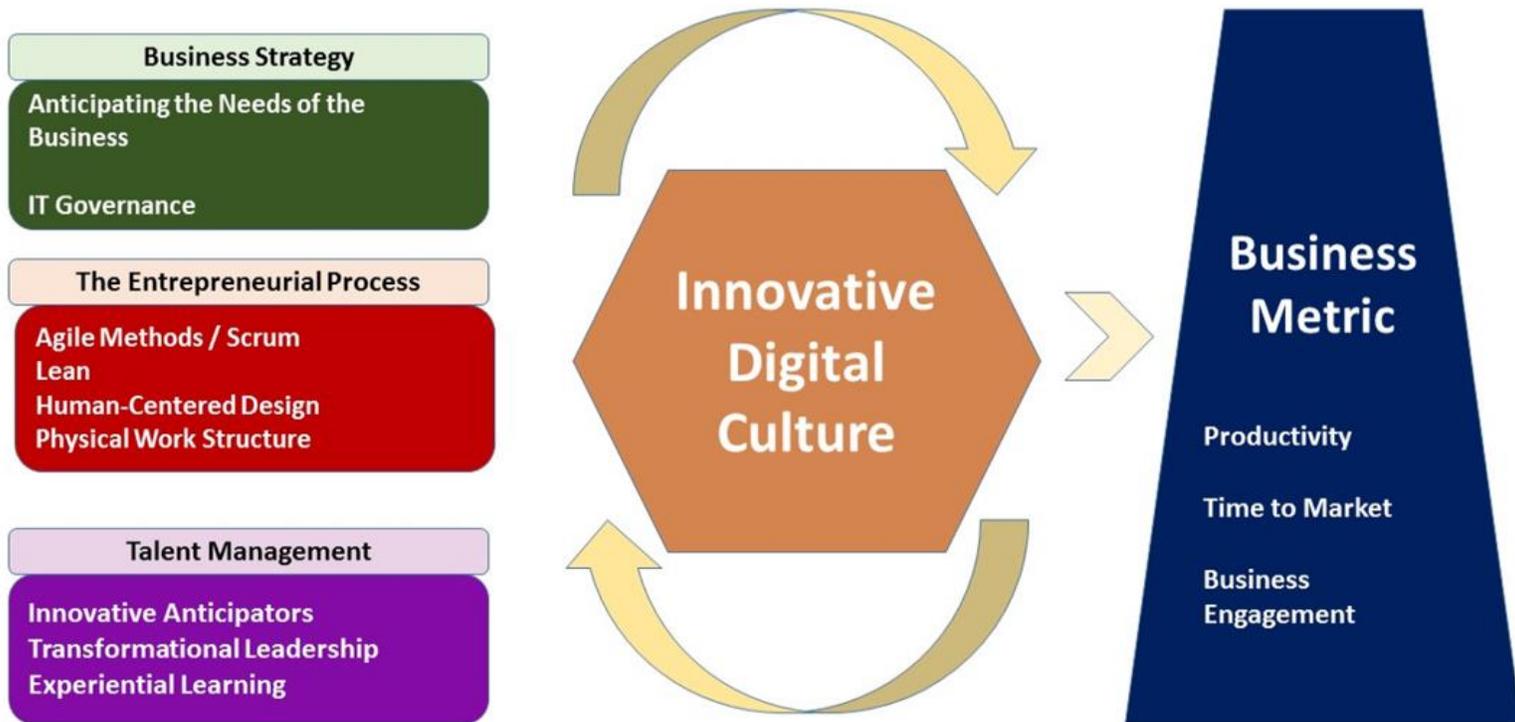


Figure 1

Innovative Digital Culture

Methodology:

In this report, all data has been kept confidential. To provide an un-biased and detailed report, direct responses from the interviews are included as well as brief descriptions of the industry and whenever possible, the size of the company. The interviews lasted between 45 to 60 minutes. Each interview was tape recorded and the content was analyzed for recurring themes.

Culture Trumps Process

Culture is referred to as the values, norms, behaviors, and beliefs that employees share about a particular organization. Innovative cultures promote a healthy degree of risk-taking, encourage self-management, reward differentiation, and retain highly motivated individuals who exhibit passion and drive for their work products. Culture is exhibited in the way the business treats its employees and its customers. The fit between the organizational culture and business expectations is considered one of the most important determinants of business success. Benefits that come from an innovative culture include: more highly motivated employees, cohesive teams that share best practice, laser like focus which enables individuals to think strategically as well as the generation of new ideas that encourage people to build on the ideas of others as opposed to promoting their own world views.

IT cultures have typically been defined by the processes in which the IT professional engages. Traditional IT cultures have rewarded technical skills such as the ability to code and manage and deliver on complex IT projects within a pre-defined time and meeting budget requirements. These skills are still critical for success but not sufficient capabilities today. The types of organizational demands that are being placed on the technical professional require a broad set of behaviors which include technical aptitude, effective interpersonal skills, deep domain knowledge as well as the ability to innovate.

The focus of this study is on the levers that are required to enable the norms, behaviors and beliefs important for a culture that supports and promotes digital innovation. We define digital innovation as using technology, people, and processes in new ways to create business impact. The tools and techniques required for IT professionals to be innovative are readily available. Cloud solutions have brought the costs down dramatically, giving employees the opportunity to experiment, take-risks, learn from mistakes and create new solutions (MVP, Minimal Viable Products) – the hallmarks of truly innovative cultures.

The significance of this research is important to reiterate. We cannot assume that the levers that enable innovation in other parts of the organization translate directly to the IT organization because IT has not been in the position to be an innovation engine, until recently. Unlike an R&D group which has been in the position to lead in innovation, IT groups have been rewarded from following the business' lead. Given the magnitude of change in technology today, additional skills and behaviors, which enable innovative thoughts and actions, are required to implement technology-driven solutions. **Who better than the IT professional who has domain knowledge as well as the technical aptitude to bring new ideas to the business?**

Business Strategy

Anticipating the Needs of the Business

For many years, researchers as well as practitioners have recognized the importance of agreement between what the business needs and what technology has to offer. Now, the demands on the business have changed and the IT professional needs to anticipate and define the opportunities for growth for the business. Anticipating the needs of the business and then presenting alternative points of view to inform business strategy is not typical. In fact as “order takers”, IT professionals have rarely been in the position to anticipate need and help guide strategy. Becoming an anticipator also takes time and dedication to thinking and acting differently. It has taken Amazon and Jeff Bezos several years to develop AWS, and Apple’s iPhone went through several iterations before the company was able to create a platform for the products that are revered around the globe.

Our data set includes examples that emphasize the need to anticipate the needs of the business as opposed to reacting to business requirements. As one large pharmaceutical CIO stated “We are constantly looking for ways to do things differently and differentiate our skills in comparison to the outsourcing options.” And our new projects “need to be recognized in many levels” of the organization. Another large conglomerate stated, “IT had to take a new approach to stay relevant in today’s world. With the proliferation of the cloud, we have to innovate to show the CEO what we can do.” And, as one CIO stated, “As our solutions become more digital, we must become more innovative. The two go hand in hand.”

“We are constantly looking for ways to do things differently and differentiate our skills in comparison to the outsourcing options.”

For a nationally recognized, large non-profit organization, anticipating needs was achieved when the business strategy and digital innovations became one and the same. As the CIO explained, “We’ve determined a few simple tenets for our IT transformation, everything is simplified, standardized, secured, but the key is the ownership by the people doing the work. We encourage them to be creative and innovate in their solutions and we reward them for taking risks. Thinking and acting innovatively is a critical part of our business strategy going forward.”

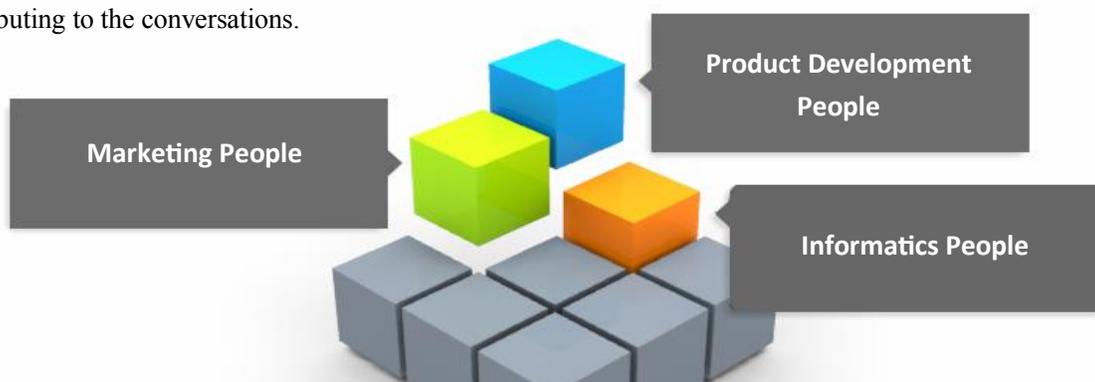
Several organizations talked about the increased ability to see the connection between data and business strategy. For example, a participant from a large oil and gas company explained, “We are taking the lead because with mobile payment we can gather data on customer habits and get the people from the pumps into the store.” And, “The new analytics give us the ability to create new marketing strategies that will re-energize our business.”

The Vice-president and CIO of an energy company explained the way he anticipated needs: “We are a direct service to our customers. The solutions we offer now must offer better connectivity to solve mining’s toughest challenges. The data analytics the company provides enables the customer to respond to machine outages within 10 seconds. We make a strong global partner and with the expertise of the IT leadership with the CEO, we will hopefully enable new opportunities in different markets, with significantly larger margins for our organization.”



Restructuring the IT organization is another approach many organizations are pursuing. For example, a large pharmaceutical company is currently underway with rethinking how work is done with the intent of providing a single platform on which people can then innovate around. With a more holistic IT center, the company believes it will be easier to provide research capabilities and innovation in the form of quick prototypes and experimentation, which will help IT professionals anticipate business needs and future opportunities.

An insurance provider suggested that they had to re-structure their governance approach for innovation-type projects to have a better chance of anticipating need: “We combined marketing people, product development as well as informatics together. We called this the incubator of ideas.” Because of this new structure, members of the team were on a level playing field and all were contributing to the conversations.



“We combined marketing people, product development as well as informatics colleagues together. We called this the incubator of ideas”

Finally, we heard from a few of the companies that their governance structure now includes a corporate venture group along with the more classic IT portfolio approach. Institutional venture groups look for and evaluate the ways organizations create, promote and institutionalize innovative products and services. The processes and criteria that they pursue to accept and/or reject ideas are much different than the processes an IT steering group might use to prioritize projects. For example, external venture groups who invest in innovation start-ups have longer time horizons (often 7-10 years) and do not lose interest as is what often times happens when corporate venture groups have to manage to shareholder performance. Different criteria and “staying power” has to be ingrained in the corporate venture group to create a digital culture of innovation.

A large retail company set up a corporate venture team inside their organization to vet new ideas to focus on technology-

induced innovations. The group was comprised of the CEO, general counsel, EVP of marketing as well as the CIO. A few companies were using a portfolio approach to strategically fund innovative projects. The money saved from standardizing and effectively redesigning business processes was/is now being used for more innovative projects. One large, global storage organization kept their ERP implementation completely vanilla, dramatically reducing design and implementation costs. The business agreed to have a significant piece of the savings sent back to the newly-named Digital Group for the funding of innovative projects. This type of portfolio approach is becoming more popular, even for the companies who have not had innovation at the heart of their strategic planning efforts, because the business can minimize risk while promoting a piece of innovation that they may not have had the time or opportunity to pursue.

Digital Governance

Digital Governance models include a number of different ways to ensure projects are done on-time, with-in budget and meet user needs. Innovation driven projects require the organization to think more broadly about the best approach to governance, and, in doing so, anticipate need. Organizations in our sample had different approaches to governance mechanisms and organization structures which included separate divisions for innovation, typically referred to as innovation hubs or centers of excellence, as well as imbedding innovation type activities throughout the business.

The innovation hub, or centers of excellence models are placed strategically around the globe, depending upon the structure of the organization. Solutions are then localized for emerging markets. Other organizations created ad hoc cross-functional teams which report into matrix structures to work on an innovation project and then disband once the project is complete. Other companies used the Horizon approach. Horizon Three project metrics are different than the business cases required for Horizon One and Two type projects. This does not mean that these projects are not vetted and evaluated for impact on a regular basis, it does suggest that the criteria for impact are different. For example one health care organization explained, “We know these projects will have many starts and stops, will fail and then be reinvented, and this is the purpose for the Horizon three mentality. We need to invest in these type projects and give our people the opportunity to work outside of the box. This can not be the exception for only a few chosen creative employees. It has to be the norm.” Many interviewees talked about the need for senior management to see the value of balancing innovation-type projects and processes with the more classic execution type projects and processes to ensure the portfolio is balanced and ready for future disruptive business needs and changes.

“A company must have a well-defined partnership with a supplier to move large operations and entrust them to a service.”



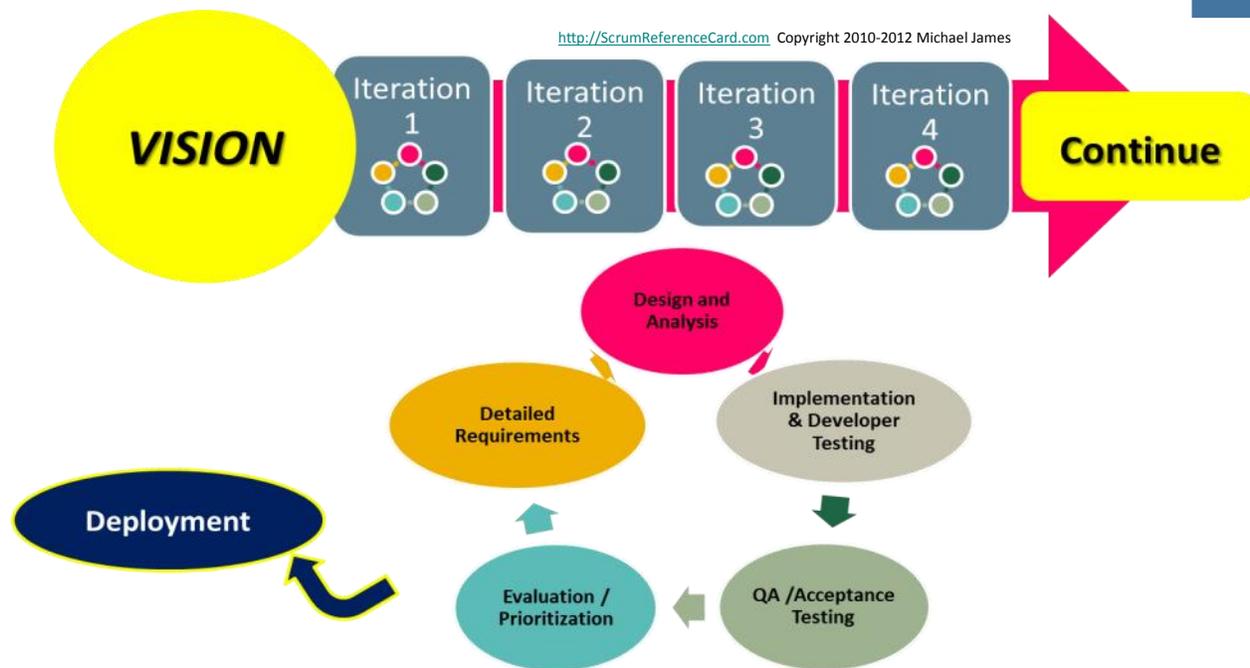


The Entrepreneurial Process

“Entrepreneurial thinking is not just for the start-up - it is for every organization who wants to think and act differently, to become more innovative in their approaches to work, and to be more customer-focused.”

So much of what we need to know today about digital innovation, rapid iteration, experimentation, learn from mistakes, comes from methods that entrepreneurs have been using for years because they do not have the resources to build out full solutions, and do not know future customer needs even if they have the vision and the passion for new ideas. IT organizations have not been known for their entrepreneurial approaches, instead they are often regarded as process oriented, rigid problem solvers, and unwilling to take risks. With the costs of IT infrastructure going down, new competitors with cloud solutions increasing, and user demands growing more sophisticated, it is imperative that IT professionals become more entrepreneurial. Entrepreneurial thinking is not just for the start-up; it is for every organization who wants to think and act differently, to become more innovative in their approaches to work, and to be more customer-focused. According to one technology company, “We’ve moved from a services company to a software company and we now have a lot of flexibility in the platform we provide and that’s where the innovation is coming from.”

The most dramatic example we heard about entrepreneurial thinking came from a vice-president and CIO in the entertainment industry. “One of the things we are doing to help, innovation is the change initiative we call F12. It’s our twelve steps to focused, fearless failure.” The organization incentivized IT professionals to take risks and talk about their mistakes, reinforcing a culture where people learn from each other’s failures. After Action Reviews, have often times been a part of IT implementation processes but many times, people are not honest in their evaluations because the culture does not support candor but promotes a blaming mentality. The F12 initiative encouraged the entire IT organization to share their “failures”, beginning with senior management’s. The entire process was gamified. People earned points and badges for sharing their stories. The 12 steps are now part of their performance reviews.



Agile Method

So, how do IT groups become more entrepreneurial? One way is the approach they take in designing and delivering projects. Altering the classic way in which most IT projects have been delivered over the years, from a waterfall methodology to an Agile based design, is clearly not easy but was a critical piece of the innovation efforts of over 90% of the companies with which we interviewed. Companies diverged in regards to whether or not they were following a complete Agile methodology (using the Agile credo), but over 90% were experimenting with and moving in the direction of some form of Agile for a significant part of their work products.

When we probed on how companies in general believed that Agile methods made them more innovative, answers included easier experimentation and prototyping as well as increased ownership. The use of user personas, sprints, and prototyping led to rapid experimentation techniques that can take costs out of the upfront design. From a health care provider, “In Agile you are working on small increments of work. The innovation occurs when you can break things into smaller bits of work, show people the prototype, gather their opinions and gain their approval and then move forward.” This is the classic definition of experimentation in innovation. We create experiments and/or prototypes that are less costly, see the results, learn from mistakes and then move forward based on the knowledge we have gleaned from the first iteration.

The role of the Agile product owner increased the overall ownership by the business. As one portfolio owner from a large consumer electronics company discussed, “We have

the most connections with IT as well as the business partners because we are from the business but have exposure to IT. It gives us the broad knowledge to move things forward because we have an awareness of the entire organization, and that is what it takes to create innovative solutions - the big picture.” From a consumer product company, the jump to Agile to run the entire business enterprise began in IT and is now part of the processes of other functions. “Once we started using Agile methods in IT, we started to see the life-long problems of communication, transparency between our silos, all of the things our IT partners were dealing with all along. Now we had the motivation to fix things. We use the Agile process in other parts of the organization to solve business problems.”



Human-Centered Design

**“A discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity”
(Brown, 2008)**



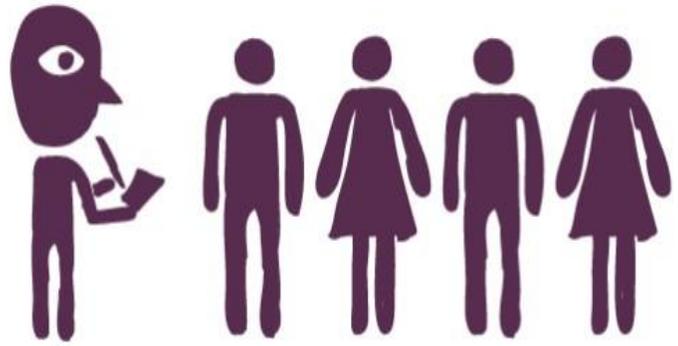
To enable entrepreneurial thinking, many organizations employed Human-Centered Design techniques. Heavily used in R&D and the New Product Design domain, these approaches have been used by design firms for years to create innovative products, services and even work cultures. Human-Centered Design – also referred to as Design Thinking – is “a discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity” (Brown, 2008). It is now time for IT professionals to learn and use these types of techniques. IT professionals were never taught these types of techniques because ideation and creation were not a critical skill set in the past. In fact, many of the classic IT methods that have served IT very well for increased efficiency and process controls, such as freezing requirements and testing solutions towards the end of the waterfall process, fly in the face of Human-Centered Design processes, which encourage changing requirements and iterative testing.

Today, a Human-Centered Design approach is a necessary component of organization-wide innovation efforts because the processes offer a proven way to accelerate innovative thought and action that is easily translatable to IT projects in general and make digitization much easier. With these techniques, the customer is at the center of the solution, and the focus is placed on the implementation of new executable solutions with a clear business impact. In the IT domain, this is a deliberate switch from what technologists are often criticized for – a technologically-driven solution that focuses just on technology. The Human-Centered Design approach begins by modeling and understanding human needs, then imagining new needs via extreme user personas, to brainstorming solutions, and finally prototyping mock-ups and low-cost experiments for customer review.

A health care company employed a number of these techniques while working with their business partners on a new mobile application for a specific disease state. The techniques included observation, user profiling, as well as prototyping and rapid experiments. The team used observation techniques, a “day in the life of extreme users” and then created user personas. They observed extreme users in their natural work environment as opposed to the classic interview strategy for requirements generation. They then developed user personas that drove their insights and interpretations for the application. After a number of ideation sessions, a quick prototype using Balsamiq software demonstrated the capabilities of a mobile app. This type of rapid prototyping enabled a quick proof of concept for immediate user feedback. Now the team is going for external funding from institutional venture capital groups to determine the business potential of the mobile app as an additional service offering for the company.

Another example of implementing Human-Centered Design techniques came from an international health care company who created a two day proof of concept experiment to determine the viability of using Google Glass for certain surgical procedures. Working in a lab type environment, IT professionals, a pathologist and a surgeon worked collaboratively through ideation sessions. The team used an ethnographic approach to data collection. They observed a live surgery and experienced the conditions necessary for effective use of Google Glass. A second lab was used to compare Google Glass capabilities to the standard approach. User insights were then generated and will be used for feedback into the next iteration. The lessons learned were easily captured real-time and the cross-functional team was open about the strengths and weaknesses of the experiment. Any mistakes were converted into valuable lessons for the entire team for future experimentation efforts.

Finally, a large international non-profit organization conducted brainstorming techniques with cross-functional membership to generate new technology-induced ideas. Stakeholders from all over the organization brainstormed solutions with the IT function. Management levels were deliberately varied as well as functional representation. A nominal group technique was used to give equal representation to ideas and individuals were rewarded, in some way, for the initiatives that were piloted. The rewards were not financially significant but were highly valued by the employees because individuals were visibly recognized for their accomplishments.



Physical Work Structure

We heard consistently from the interviews that physical workspace is a critical component of IT teams working effectively on innovative projects. This was particularly true for teams using an Agile methodology approach. Co-location and open workspaces allowed for different members of the team, including developers, analysts, subject-matter experts, clients, and IT team leaders, to collaborate more effectively. While open workspace is critical, companies also indicated that semi-private shared workspaces, such as conference and meeting rooms, as well as individual cubicles for personal use, were important as well. Groups also mentioned dedicated meeting rooms where planning and receiving prototype feedback from the client were commonplace. In a financial services company, they have a fully dedicated lab which connects executives and customers with the most innovative solutions.

Some companies named their workspaces to give strong meaning. For example, one pharmaceutical company named their developer war room “The Garage” to stress this was the area where developers turned ideas into prototypes. A few companies also mentioned that the workspace should be visible to clients, managers, and employees as they walked by the area. Again, this could be done through glass walls or open doors. Couches and ergonomically-designed chairs were also part of the furniture in these work settings. Ultimately, these workspaces should motivate employees to collaborate and work in an effective and fun manner.

Several technologies were mentioned as critical for the workspace. War rooms, where developers are physically in the

same room, often have dual displays for paired programmers, and white boards everywhere, including on walls. For feedback, having a deliverables Board (e.g., Scrum Board) visible to everyone is critical. The display could be on a whiteboard, wall, or projected from a project management software tool. IT teams also used both desktop and large display videoconferencing to include stakeholders such as business clients and remote IT members in meetings. Many groups told us they used digital cameras and 3-D printers to digitize and share product prototypes. One government-funded, non-profit think tank used advance digital capture and sharing techniques. A few of their whiteboards digitally captured what was written on these boards, which could then be sent to anyone via email. This company also used surface table technology, where the table surface itself was digitized. Designs could be viewed, created, edited, captured, and shared by teams of people working on the table.



Talent Management

Innovative Anticipators

We use the term “Innovative Anticipators” to describe the traits of IT professionals necessary for the future. (See figure 2 for maturity curve). They have the cognitive ambidexterity – a way of thinking and acting with a prediction approach to problem solving (deep analytical skills) as well as creation logic (deep creative skills) and can switch back and forth depending upon the situation. In our data set, some organizations tried to hire for these types of people, while other organizations created teams that were made up of people who complemented each other with these types of skills. Other companies engaged in education programs to develop these skills in their current work force for the IT professionals who are most interested and able to work in more innovative IT environments.

In regards to hiring approaches, one health care company who recruited specifically for these types of people said that they used behavioral questions in their interviewing process to test for the tendency to do both. Often, these new hires were part of a formal co-op program in which they had the new hires as software engineers for a period of time before making a final offer: “We compete for the best and brightest software engineers, run them through rigorous interviews, and then pilot test them. Through our co-op programs, we put them on different types of projects to determine where they excel. We

try to determine how technical they are, how innovative in their problem solving they are and how quickly they can learn new domain knowledge. We also do a lot of reverse mentoring. More senior colleagues teach them the ropes and in turn the co-op students share their knowledge about the newest tools.”

One of the major findings of this research was an interesting discovery relative to the IT Maturity Curve. For years, CIOs and IT leaders have been focused on moving their culture and workforce from basic service provider and order takers to strategic partners (stage 3). At this stage of the value chain, IT is a trusted and influential player at the table of corporate decision making. They are in the first meeting of a new initiative given their reputation for delivering value as an integral member of the business decision making team.

After spending time with the leaders of high performing IT organizations, we discovered that a new stage of the maturity curve has been created, moving the bar higher. Through our research, we coined the term “Innovative Anticipators” to describe those who have achieved this level of success. Here, IT directly contributes to driving revenue generation, capturing market share, and enhancing the customer experience.



Figure 2

We all know that hiring the right people with the right skill sets is one of the most important ingredients for success in any industry, but hiring the right skill sets for technology today is not easy. When the traditional skill sets of project management and code development require additional skills in innovation, talent management becomes an even more important indicator of success. Formal talent management efforts such as training programs, job rotations as well as coaching and mentoring are often times the last things professionals in technology driven careers are encouraged to

Creating a cross-functional team whose skills complement each other is another viable approach to achieving cognitive ambidexterity - cultivating innovative anticipator skills in the organization. A mid-sized insurance company created user-experience teams made up of people with very different strengths and perspectives: “We have created a group of people with different backgrounds to work on the most innovative projects in our company. This team sees the user’s opportunities from different perspectives. There are soft- ware engineers on the team, as well as an artist which

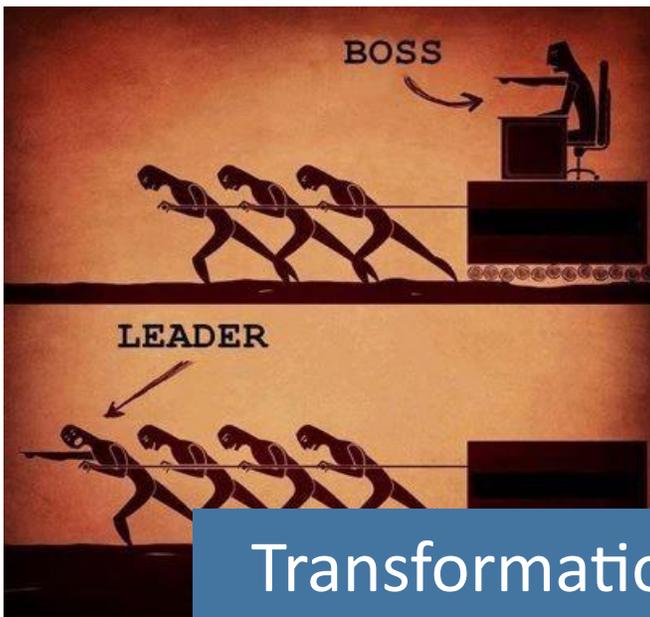
“Resourcefulness and passion are more important indicators of temperament than ever before. So for us it is about fit, energy and then technical talent.”

participate in. Because they are often times mission critical to the day to day operations of the business, managers may not be promoting talent enhancing opportunities for fear that their “technical talent” may find other opportunities in different parts of the organization or because they simply do not believe that the organization can afford to give these people the time off to learn due to looming deadlines. The IT leader has to have the ability to develop the capabilities of the IT professional to excel in any area of the business. The talent management lever for creating an innovative IT culture includes the ability to develop innovative anticipators as well as new leadership behaviors. The IT leader needs to exhibit new behaviors which promote self-management to enable individual growth and development.

Another company looks for hires that score well in terms of the “fit quotient with their digital culture”. They found that, “Resourcefulness and passion are more important indicators of temperament than ever before. So for us it is about fit, energy and then technical talent.”

is now trained as an engineer, as well as business domain experts.” The team is deliberately set up to question each other’s ideas, provide unique perspectives on problems, and balance the analytical skills of the software engineers with the creative skills of the artists to get the best innovative product for the client.

A final example of a formal process to encourage new ideas that a number of leaders mentioned was increasing the diversity of skills on the project teams. Companies stressed the different programs that they have invested in diversity initiatives. The different points of view that diversity encourages enable innovative thinking. The definition of diversity is very broad and includes gender differences, age differences, ethnic differences as well as different functional capabilities. Many companies specifically called out hiring as many millennials as possible because in his words, “They don’t care as much about money as they do about making a difference.”



As one co-op stated: **“What motivates me is the accountability they give me here. Management trusts me enough to be a part of the decisions that matter, he trusts me enough to represent him in meetings.”**

Transformational Leadership

When we think of senior leadership in the technology domain, we often hear about the importance of technical acumen as well as business knowledge and realize that the CIO, CDO, or any senior level IT professional must have the ability to talk technology as well as have the ability to build relationships with the business because of their industry and business domain expertise. Clearly to lead innovation initiatives, senior management demonstrated both technical as well as management capabilities. But, they also demonstrated additional capabilities – *transformational leadership* behaviors. Transformational leadership behaviors have been positively associated with organizational innovation initiatives in R&D organizations. The behaviors include: providing a vision, proactive engagement in problem-solving but heavily encouraging self-management, a willingness to take calculated risks and learn from mistakes, as well as the genuine ability to listen to and entertain new ideas. While all of the senior leaders in our sample did not exhibit all of these behaviors, many talked about several aspects of transformational leadership characteristics.

In regards to the ability to take risks and learn from mistakes, one senior member of an internal government think tank put it this way, in regards to risk-taking: “We were in a tough position to deliver quickly. I said to my entire team ‘you haven’t made enough mistakes so we are not learning enough. We need to take more risk.’ And we threw everything away we had done up to this point and started over.” Another senior leader in a global health care company set up his work teams so that they can fail within a six month period, see what they learned, and then prioritize the next steps. A CIO from a retail company put it this way, “If we are not failing, we are not fixing”.

A member of a health care company’s senior leadership team, in regards to the importance of self-management (an important characteristic of transformational leadership

strategies, reported, “I had to pull people out of the business, separate a small team into “creative labs”. We called them ninja teams. They decided on their own goals and deliverables. I do not interfere with their work processes but stated the vision for the project.” And the leader from a consumer products company stressed, “I deliberately do not tell the team what to do. They decide on deliverables and time-tables. Using the stand-ups from our Agile methodology approach, this works the best for our innovation.”

The ability to authentically listen and entertain new ideas is not a surprise to most of us in regards to enabling innovation, but it was revealing to hear senior IT leaders describe the importance of being open-minded when in the past IT was rewarded for following business direction. In a mid-sized insurance company, “As a leader I realized it was about approachability. I try to exhibit the demeanor that encourages people to share ideas. Micro-management is never a good thing, so I am trying to balance the need for autonomy but providing as much feedback as I can for some type of control. It doesn’t always come naturally to me because I have spent so much of my career making sure that our projects are execution focused.”

Another example of how to entertain new ideas is to formalize the process of sharing and mentoring but then naturally let it happen. Reverse mentoring is one way to do this. As one health care company mentioned, “We blend co-op entry level people with experienced engineers and they naturally cross-fertilize, teach each other.” From one of the co-ops we heard, “Now I am teaching a senior engineer, giving him information, now I’m teaching him.” The result is self-management and increased empowerment. As one co-op stated, “What motivates me is the accountability they give me here. Management trusts me enough to be a part of the decisions that matter, he trusts me enough to represent him.”

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Experiential Learning



SHARK TANK METHOD

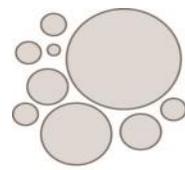
A number of organizations provided experiential learning opportunities for their teams. A few organizations used the “Shark Tank” approach very effectively. For example, in one company, a contest that was open to the entire IT organization, individual performers were asked to “pitch” new products and services for the organization. From these original ideas, a limited group of projects were chosen for “Shark Tank” review by experts from both inside and outside of the organization. Seed funding was given to the project that received the most support based on predefined criteria. The winning team is now building out the proposed solution. The team does the project in their own way and on top of the day to day work that they do for the organization.

Another global healthcare organization gave their top performing digital professionals the opportunity to “jump start their innovation abilities by experiencing a four-day intensive hands-on workshop. The teams came from all over

the globe to work on innovation challenges. The teams were taught innovation tools, techniques and strategies by day and worked on real innovation projects by night. A final presentation at the end of the week which included a new solution for a product, or process was pitched to IT senior management, as well as entrepreneurs familiar with the particular technology space.

The teams will continue to work on these challenges and those that are determined to be innovative, market focused and have the greatest ability to be “game changers” will be presented to the business for their review. From this, the intention is to create hybrid teams from consisting from people from the business as well as the IT department to move an idea forward into more formal prototypes so that either venture capital is secured or the organization funds the development of the product.

Business Metrics



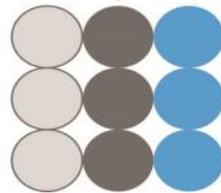
Productivity



Time to Market



Time and Business Engagement



Business Metric

Building the business case for information technology investment has always been an arduous task given the difficulty companies incur when trying to measure soft benefits such as “better information to make decisions” versus the tangible metrics of reduction in headcount or increased efficiency metrics that the business is much more comfortable with and therefore can support more easily. Measuring the business value of innovative products presents even more challenges to the organization because they can often take much more time to realize and require forward thinking metrics less geared towards quarterly performance. Companies are taking unique approaches to measuring innovation but more research will be needed to verify if certain approaches are better than others. Most likely, a number of approaches, both qualitative and quantitative, will ultimately measure the business value of creating innovative technology-induced products and processes. Clearly, many of these approaches are in the infancy stage but new examples of metrics are being introduced every day. Organizations are experimenting with metrics involving increased prototyping, promoting more Agile implementations, as well as measures which encourage team process changes using net promoter scores.

Productivity

Learning quickly via iterative prototyping is a metric that many companies mentioned and are actively pursuing. The approach includes creating the user mock-ups quickly and generating user feedback from as many user profiles as possible to rapidly introduce new iterations. The outcome is increased business buy-in as measured by satisfaction metrics as well as diversity of opinions as measured by new product introductions. Organizations can also measure the number of products generated in a shortened period of time as well as business acceptance and ultimately adoption rates.





Time to Market



Another metric that was most often mentioned when using some form of Agile methodologies was time to market. Decreasing the time it takes to work with the business to create a viable solution is certainly an important measurement for IT, but the reward structure has always demanded perfect solutions as opposed to a minimal viable product. In an experimentation world where rapid experimentation is encouraged, reduced time to market forces the trade-off between elegant solutions versus workable iterations. For teams using Agile methods, reduced time was something that was continually mentioned and measurable. Our data set was filled with use cases of decreased time to create prototypes as well as full working viable solutions: “What would have taken 12 months in a waterfall approach now takes 8 weeks.”, “What took weeks to accomplish in emails, got answered in Agile in 15 minutes.” And, “Our customer satisfaction measures went from 78% to 98%.”

Time and Business Engagement

A number of the approaches were less quantitative but are equally important. We characterize this as team process changes. Organizations that were deliberately interested in changing their cultures to promote innovative thinking focused on team process – which relates to increased productivity and satisfaction as measures for success. This approach translates into creating innovation cultures that promote autonomy and empowerment and encourage IT professionals to demand more satisfying jobs and roles that have a greater potential to impact the business. For example, organizations reported that Agile type methods increased the satisfaction of IT team members because of the freedom, empowerment and increased decision-rights. These teams then reported higher productivity, the human resource department reported less IT turnover, and ultimately there was much more sharing of solutions between the silos. This reduced the desire to reinvent solutions and encouraged the teams to build on previous platforms, reducing the overall cost of ownership. As one insurance provider reported, “Each sprint has a retrospective to see what worked and what did not work as well as a happiness factor from 1 to 4. We find that our happier teams are more productive.” From a large pharmaceutical company, “Our first measure is how happy we are as a team because that makes us more productive. Next we go to our milestones, unit tests and the more typical ways we measure business value.”

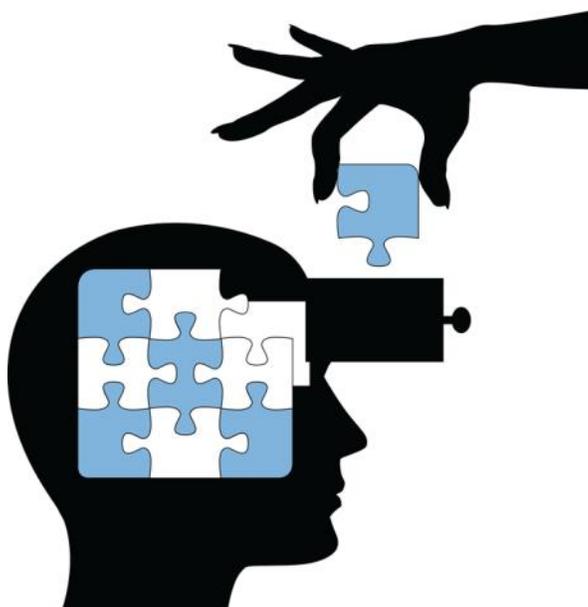


Conclusion

The Culture Imperative

There may never be a better time for IT leaders to make an impact. Companies are employing an increasingly diverse, multi-generational workforce as millennials become employees and start taking leadership positions, while baby boomers are retiring at later ages. Millennials have grown up with wearable technologies, mobile apps, and social data, while baby boomers are likely more familiar with traditional enterprise applications. At the same time, customers and consumers are demanding much more in terms of information access and transparency. Changing the culture of the IT organization to meet and anticipate these different stakeholders needs will not be an easy task but it will become a strategic imperative. Understanding how employees and customers value and use information and technology will be a critical capability for digital professionals in becoming more innovative.

Future technology-based solutions will involve a convergence of cloud computing, mobile applications, social media, data analytics, the Internet of Things (IoT) connected devices, and traditional enterprise applications. These solutions will drive digital business opportunities, and ultimately, will shape business models. All of these opportunities require an innovative approach to anticipating the needs of the business. There is no single formula for IT solutions in the future - only the passion, drive and will to make a difference. Enabling a culture of innovation in the IT organization will be an imperative, not just for the first-mover companies, but for all IT organizations. To enable this type of transformation requires a business strategy which demands anticipation, entrepreneurial processes which include the use of Agile methods, a human-centered design approach, as well as collaborative physical workspaces. The effective leader going forward will not just manage the talented technical professional, but will set the stage by providing a vision and then promoting problem-solving, self-management, calculated risk-taking, and perhaps most importantly, an open mind for the beauty of new ideas that may run counter to the current way of doing business.



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Dr. Guinan is an Associate Professor in the Technology, Operations and Information Management Division, and also teaches in the Management Division. She teaches multi-disciplinary courses in information technology, cross-functional teamwork, organization design, organization change, and management strategy.

She is the author of an international award-winning book entitled *Patterns of Excellence for IS Professionals: An Analysis of Communication Behavior*. Dr. Guinan received two awards for teaching excellence from Boston University, where she taught prior to joining Babson's faculty. Her executive education program teaching includes clients such as: IBM, USAA, Ernst and Young, Lucent Technologies, the Boeing Corporation, EMC, Met Life, Houghton Mifflin, State Street Bank, and Petróleos de Venezuela.



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Dr. Parise is an Associate Professor in the Technology, Operations, and Information Management Division at Babson College. He teaches multi-disciplinary courses in information technology as well as an elective course on social technologies at both the graduate and undergraduate levels. He also teaches executive education courses involving social technologies and knowledge management.

Salvatore has worked directly with managers and executives across a wide range of industries including consulting, technology, healthcare, government, consumer products, financial services, and petroleum. He also has several years of work experience as an electrical engineer and research manager at IBM. He received his Doctorate of Business Administration (DBA) from Boston University.



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Dan Roberts is a 30-year veteran of the IT industry and the CEO and President of Ouellette & Associates Consulting, Inc. (O&A). He is the co-author of the book *Confessions of a Successful CIO: How the Best CIO's Tackled Their Toughest Business Challenges* (Wiley, 2014) and contributing author of several books, including *Unleashing the Power of IT* (Wiley, 2013) and *Leading IT Transformation*.

Dan is a frequent keynote speaker at IT industry events and is often quoted in leading industry journals. Believing there has never been a better time to be in the IT profession, he is passionate about closing the IT skills gap and developing the next generation of IT leaders.

Since 1984, thousands of CIOs and IT executives have leveraged his firm's IT talent assessment tools, talent development services, and thought leadership resources to guide their IT culture change initiatives and people strategies.

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