

# Cutter Business Technology JOURNAL

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Management, Innovation, Transformation

“Because the environment in which your organization operates evolves over time, and your competitors and partners also evolve, business agility proves to be a moving target in practice.”

– Scott Ambler  
and Mark Lines,  
Guest Editors

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# Opening Statement



by Scott Ambler and Mark Lines, Guest Editors

Business agility is something that emerges over time through a lot of hard work. Excelling at it requires true agility across all of IT, not just software development, as well as a disciplined organization that can leverage the IT capability. And, because the environment in which your organization operates evolves over time, and your competitors and partners also evolve, business agility proves to be a moving target in practice.

Why business agility? We believe there are three fundamental forces in the marketplace today:

1. **Every business is a software business.** We used to say that software is eating the world, but the fact is that, for most companies, software *is* the world. Tesla's competitive value isn't electric cars, it's its ability to upgrade and enhance those cars through software. Starbucks now competes on software; people pay — and even order — via their smartphones, and they're being motivated to buy more to earn loyalty stars. Gone are the days when IT could be treated like a utility that could be outsourced in the belief that you needed to focus on your core competencies — and IT didn't make it onto that list. These days, being competent at IT is mere table stakes at best; you need to excel at IT if you hope to become an industry leader.
2. **Every industry is being disrupted.** When we start working with a new customer, one of the first questions we ask is, "What keeps you up at night?" Interestingly, it's been over two years since anyone told us they were afraid of their traditional competitors. Everyone tells us they're afraid of disruptors — new competitors entering their market space using technologies in new ways. Financial firms fear disruption by new fintechs. Retailers are being disrupted by online shopping, and healthcare is being disrupted by artificial intelligence and 3D printing. Clearly, your organization needs to make a difficult decision very soon: do you want to be the disruptor or the disrupted?

3. **Agile firms dominate.** Becoming an agile business — an adaptive, responsive, and learning organization — is your true goal. There isn't a single industry today that either isn't dominated by agile businesses or isn't under the threat of disruption by new agile competitors. Not one.

Organizations require a continual focus on discipline to remain agile in today's rapidly changing environment. But what does it mean to be disciplined? Well, to be disciplined is to do the things that you know are good for you, things that usually require hard work and perseverance. It requires discipline to regularly delight your customers. It takes discipline for teams to become awesome. It requires discipline for leaders to ensure that their people have a safe environment to work in. It takes discipline to recognize that you need to tailor your approach for the context that you face and to evolve that approach as the situation evolves. It takes discipline to recognize that you are part of a larger organization; that you should do what's best for the enterprise and not just what's convenient for you. It requires discipline to evolve and optimize your overall workflow, and, finally, it requires discipline to realize that you have many choices regarding how you work and organize yourselves. So choose carefully.

Sound hard? It is. But luckily, others have successfully transformed their organizations to become agile businesses. To do so they have overcome cultural challenges, they have invested in their people, they have experimented with new ways of working, and, most important, they have recognized that they have only just begun. In this issue of *Cutter Business Technology Journal*, we present seven articles that share some hard-earned lessons from the trenches.

## Got Discipline?

The Disciplined Agile (DA) process decision framework<sup>1</sup> provides lightweight guidance to help organizations

streamline their processes in a context-sensitive manner, providing a solid foundation for business agility. It does this by showing how various activities such as solution delivery, IT operations, enterprise architecture, portfolio management, finance, procurement, and many others work together. The framework also outlines what these activities should address, provides a range of options for doing so, and describes the tradeoffs associated with each option. In short, it provides a holistic roadmap of how an Agile business operates.

The DA framework is based on seven principles crucial to business agility:

1. **Delight customers.** We delight our customers when our products and services not only fulfill their needs and expectations but surpass them.
2. **Be awesome.** Awesome teams are built around motivated individuals who are given the environment and support required to fulfill their objectives.
3. **Pragmatism.** Let's be as effective as we can be, and that may mean we go beyond just "being Agile."
4. **Context counts.** Every person, team, and organization is unique. Let's find and evolve an effective strategy given the situation we actually face.
5. **Choice is good.** Different contexts require different strategies. Teams need to be able to own their own process and to experiment and discover what works in practice for them given the situation they face. Having process options to choose from, and understanding the tradeoffs of those options, enables you to home in on better options sooner.
6. **Optimize flow.** Your organization is a complex adaptive system of interacting teams and groups

that individually evolve continuously and affect each other as they do. To succeed, you must ensure that these teams are well aligned, remain well aligned, and, better yet, improve their alignment over time.

7. **Enterprise awareness.** When people are enterprise aware, they are motivated to consider the overall needs of their organization; that is, to ensure that what they're doing contributes positively to the goals of the organization and not just to the suboptimal goals of their team.

## In This Issue

We've organized this issue by principle. First up is John Hogan with some insights on delighting customers. He argues for a customer-focused organizational structure, with Agile teams supported by Agile leadership. Hogan describes the importance of goal setting to focus on delighting customers, supported by incremental planning and delivery to do so. He works through the implications for:

1. **People who face the customer.** These people need to understand what customers need and then fulfill that need.
2. **People who face each other.** They need to identify their internal customers, collaborate with them, and bring business value to them at the lowest possible cost.
3. **People who face suppliers.** These people are effectively customers to that supplier and must collaborate with them as transparently as possible and should expect to be delighted.
4. **People who are managers and leaders.** They must be customer-focused and empower your teams.

Next, Gene Callahan has some great advice for building awesome people. Beginning with the idea of the division of labor, Callahan walks us through the history of how traditional organizations find themselves as a collection of specialists who struggle to be responsive to the changing marketplace. He then examines the need for people who are generalizing specialists (people who can collaborate effectively and learn from one another).

Then Matthew Ganis and Michael Ackerbauer describe how to build awesome teams. You want to be Agile (of course!) and adopt Agile practices. Awesome teams have the skills and resources to fulfill their mission and



### Upcoming Topics

**Is a Blockchain Revolution on the Horizon?**  
*Philip O'Reilly*

**Transforming the Customer Experience**  
*Jeanne Bliss*

**The Intelligent Edge of IoT**  
*Ron Zahavi*

include the right mix of personalities. The authors argue that the organization is really a “team of teams” that needs a shared purpose and way of working to make the abstract concrete. According to them, awesome teams build on a common foundation based on the concept of Breakthrough Thinking/diversity of thought.

In his discussion of the five levels of a digital business ecosystem (DBE), Jaco Viljoen explores the idea that “choice is good because context counts.” The five levels, each with its own set of capabilities that build one on top of another, are: waterfall/traditional, hybrid Agile (a combination of waterfall and Agile), regular delivery, continuous delivery, and continuous exploration. The five DBEs provide insight into which process-building blocks to apply. Viljoen also discusses using a framework to achieve business agility at scale.

Next, Gill Kent and Robin Harwood provide a case study about linking Business Process Model and Notation (BPMN) workflows and user stories. They focus on the importance of initial modeling during what they call the Discovery phase of a digital transformation project. In their example, they followed a pragmatic, Agile approach to modeling the business and their host systems to gain important insight into the enterprise transformation scope and a vision of the required system change for their endeavor. This enabled them to establish a business/stakeholder vision that captured a clear scope for the following phases. With an initial technical strategy/architecture identified, the team was able to name a backlog of architecturally relevant stories, mitigating the risk of late identification of system integration requirements and the potential for significant rework. In short, a pragmatic investment in initial modeling and planning paid off in huge dividends for their Agile team.

The principle of enterprise awareness appears in several of the articles, and Jutta Eckstein and John Buck walk us through an enterprise-aware approach that helps optimize the process flow of value streams. The authors show how to apply “Open Space” and “Sociocracy” to support enterprise Agile transformation. Open Space is a technique where everyone is invited to put forward ideas that they’re passionate about; if there is enough interest in the idea people will get behind it and make it happen. Sociocracy is a form of democracy for use in organizations, building feedback mechanisms into the organizational structure itself that ensure every voice is heard. Both strategies promote enterprise awareness, increasing collaboration between people in what would normally be disparate parts of the organization and helping optimize flow as the situation evolves.

Finally, Srinivas Garapati explores important philosophies and the mindset behind Agile and Lean. He starts with the thinking patterns required to be successful. He then considers the nature of an Agile organization and finishes with strategies for organizational design.

## Our Parting Advice

As you read this issue, we’d like you to keep the following observations in mind:

1. Business agility is a journey, not a destination.
2. Every journey is unique; no definitive roadmap works for all.
3. Your organization requires a long-term Agile transformation, not a short-term Agile transition.
4. Your goal isn’t to be Agile, it’s to serve your customers better.
5. Business agility requires new, and evolving, behavior from everyone. This includes you.
6. You can’t push change on people, they have to pull it in themselves.
7. Your improvement efforts need to address people/culture, process, and technology issues in parallel.
8. Others have done this, and you can, too.

## Endnote

<sup>1</sup>The Disciplined Agile (DA) Framework (<http://www.disciplinedagiledelivery.com/>).

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# Itamae, the Agile Organization, and You

by John Hogan

*Itamae* (pronounced “it-ta-ma yeh”) is the Japanese word for sushi chef. If you return to the restaurant of a master sushi chef, the chef will show respect by placing a dish in front of you before you even look at the menu. When you ask, “How did you know I would like this?” the chef will reply, “Of course I knew you would like it — you are my customer.” Under the concept of itamae, a *customer* is someone whose delights you can anticipate, while a *buyer* is someone you hope will see economic value in what you have already built. The future versus the past. External versus internal. Does your organization have customers or buyers? If you have customers, you’re focused on their future delight. Since the future is uncertain, agility is required.

In this article, we explore the concept of itamae and how an Agile organization can delight its customers and protect its future. We address goal setting, the basic organizational structure, what brings about agility — and what inhibits it — and the role of leadership on the road to agility.

*The Agile organization is humble regarding its knowledge of the customer, and thus its future is based on learning what life in the customer community is like and how it can be improved.*

## Goal Setting

Organizations are composed of individuals and teams. In a healthy organization, these players have a vision of the future. Specific individual and team goals are based on this vision, which can be articulated in terms of what will be built — “deliverables” in the parlance of the Project Management Institute (PMI) — or who will be helped — “delighted” in the parlance of itamae. This difference is at the heart of agility. When an organization bases its goals on providing deliverables, it can only be on sound footing if it knows how to build the deliverables. Therefore, the organization relies heavily

on corporate knowledge to realize a successful future. This internal confidence leads to waterfall planning implemented via command and control. We denote this organization as *traditional*.

The Agile organization takes a different tack (see Figure 1). Goals are stated in terms of what will delight the customer. The Agile organization is humble regarding its knowledge of the customer, and thus its future is based on learning what life in the customer community is like and how it can be improved. This internal humility leads to incremental planning and delivery managed with user input.

As an example, consider the IT team that supports the salesforce of a small company. Wearing a traditional hat, the team plans updates to Windows 10 for company laptops, purchases and delivers new smartphones, and buys the latest visualization software — all deliverables. Wearing an Agile hat, the team commits to ensuring that each salesperson is no more than four clicks or 30 seconds away from any product spec sheet supported by the company. And this is just a starting point. Curiosity about what might delight a sales team will lead to goals that deliver business value — as seen from the eyes of the customer.

## Organizational Structure

We can make the discussion of traditional and Agile approaches more specific by relating these concepts to an abstracted view of the organization. Let’s briefly review this abstraction (see Figure 2). The right side of the figure distinguishes between customers and users while acknowledging their overlap. Customers are those who pay for the organization’s products and services while users are, obviously, the hands-on users of those products and services. Sometimes they are one and the same. Someone with a Spotify account is both a customer and a user of Spotify’s products and services. In contrast, when SAP sells an HR system to Ford, Ford is the customer, while the users are Ford employees who will use the new system to access job postings, accrued vacation time, 401K balance, and so on. Money

flows from the customers back to the organization where it covers the cost of operations and generates margin (profit), which in turn flows to the owners or back to the business as an investment. Within the organization are people who face the customer, people who face the suppliers, people who face each other, along with managers and leaders. As a first step in understanding how your organization (and your professional life) can increase agility, draw a picture of your organizational sphere of influence with you as the customer-facing employee. Identify your customers. Identify the users of what you provide. With this picture of the organization, and you in it, we can more easily identify what can make it Agile.

## Agility and the Organization

Now let's break down what it means and agility mean for each group shown in Figure 2.

### People Who Face the Customer

The first question for this group is: do we have customers or buyers? When the organization claims to have customers, it must back up this claim with an understanding of the needs of both the customer and user as well as a willingness to collaborate to deepen this understanding. This deepened understanding allows

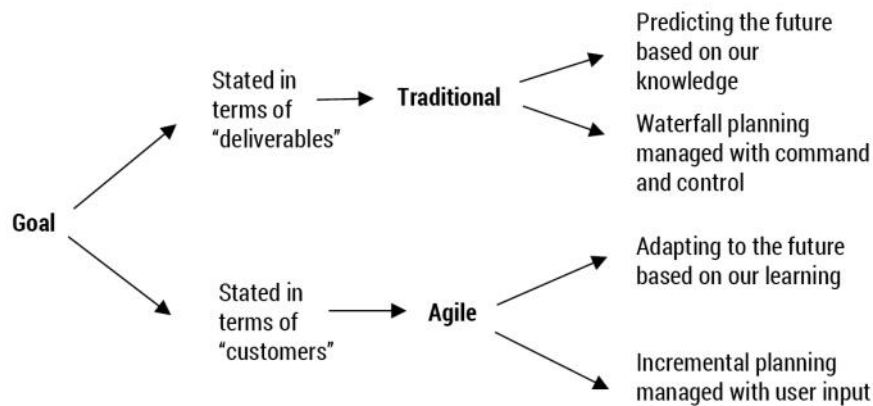


Figure 1 – Traditional vs. Agile approaches: do you know which path you're on?

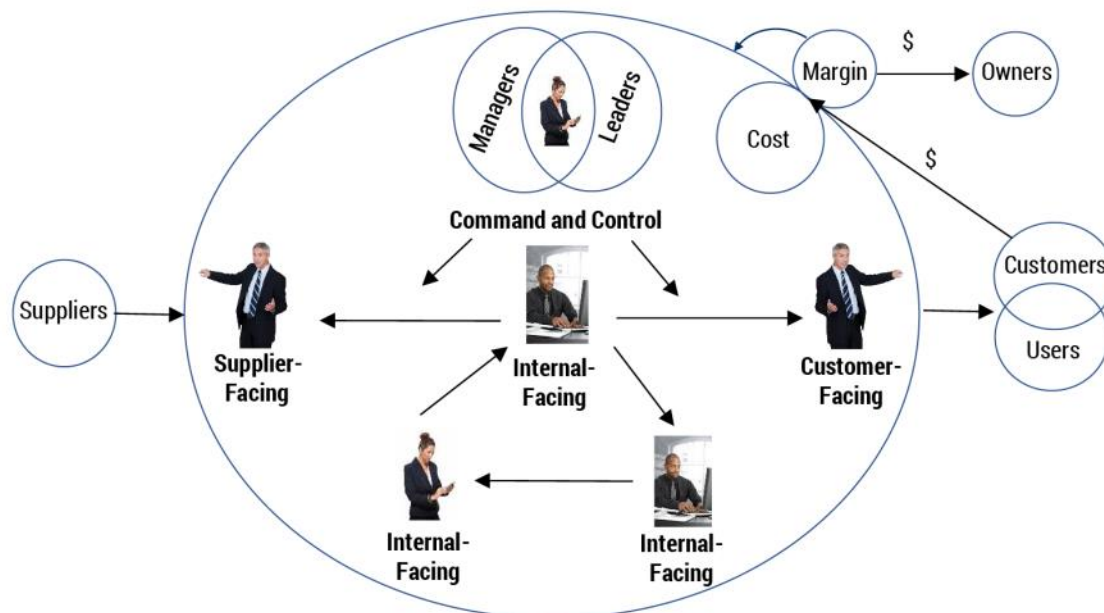


Figure 2 – An abstracted view of the organization.

the organization to provide new products and new product features in response to what delights customers. If the organization has buyers, the emphasis is on convincing those buyers to appreciate the economic value of what has been produced. An organization with buyers better have a very good product.

*Internal processes must be assessed on whether we can identify specific customers, whether we are collaborating with these customers, and whether we are bringing business value to these customers at the lowest cost possible.*

Consider two products at these extremes. The GE jet turbine is an engineering marvel — a product with unbelievable manufacturing tolerances and performance parameters that only a select group of engineering specialists can understand and achieve. The cost of entry for additional competitors is prohibitive. GE has buyers for this product and therefore its investment must be concentrated on the product itself. At the right price buyers will come. On the other hand, consider IKEA furniture and the IKEA store. Here, customer delight rules, and other suppliers can easily enter the market. Thus, IKEA's investment must be tailored to the needs of its users. While IKEA designers are adding food kiosks to allow young families, with kids in tow, to make the most of their Saturday afternoon outing, GE jet engine designers are increasing the pressure ratio behind a set of fan blades rotating at 30,000 rpm. Successful businesses balance their efforts across this spectrum. Unfortunately, many businesses think they sell "jet engines" (and focus their efforts accordingly) when they really sell "furniture." They make this error at their peril.

Think of the *Encyclopedia Britannica* and the knowledge contained in paper, Sears and the novelty of the mall, Kodak and the wonders of Kodachrome ... the list goes on. If you think you're selling "jet engines," you might be right for a period of time, but history tells us that in the long run you are probably wrong. In short, Agile organizations have customer-facing teams that understand the makeup of the customer/user community they serve and are actively collaborating with this community (especially the users) to provide business value.

*A final note on IKEA:* A business journalist had arranged to meet Ingvar Kamprad, the founder and owner of IKEA, at his Stockholm store. The journalist showed up on time, but Ingvar was not in his office. The IKEA staff told the journalist to look in the usual place the boss could be found — the customer checkout line. That's a lasting image of curiosity about what delights the customer.

## **People Who Face Each Other**

Do people who face each other have internal customers or buyers? Answer: they only have customers. There are no internal "jet engines"; internal activities are cost centers. If an internal-facing group thinks they have buyers of their wonderful process, they are a stove-pipe consuming cost rather than generating benefit. For example, consider a traditional project management office (PMO) that now has oversight of recently initiated Agile projects. Should the PMO require the same status-reporting template and earned value management cost reports for all projects? Standardization has its place and in command-and-control organizations it is generally embraced. However, does standardization make the jobs of the company's project managers (especially Agile project managers) easier or harder? In an Agile world, we start with what makes a successful project manager, what would delight an overworked project manager, and how we can provide more time for interaction with the customer. After we understand the project manager's world, we begin the process of improving it.

Consider the HR-driven annual performance review process in which a bell curve is applied to all employees: 10% must be told to improve, 10% must be told they are outstanding, and the rest are told they are average. Countless hours are spent by management and employees preparing for this, often dreaded, annual meeting. But where is the delighted customer in this process? Many organizations are thankfully leaving this annual "jet engine" behind and encouraging managers to provide continuous motivation and feedback to employees.

Internal processes must be assessed on whether we can identify specific customers, whether we are collaborating with these customers, and whether we are bringing business value to these customers at the lowest cost possible. If the customer is an entrenched silo protecting its domain irrespective of business value, we are on the wrong track.



## People Who Face Suppliers

People who face suppliers should consider themselves customers of the suppliers' product rather than buyers of the product. This requires an open relationship that allows a common understanding of the issues facing the organization — no hidden agendas aimed only at achieving the lowest price. Collaboration rather than contracts should rule. This collaboration should result in a chain of supply capable of responding to changing needs in a manner that expedites delivery of ordered goods and services to customers. The recent trend to cloud computing provides an excellent opportunity for organizations and cloud suppliers to practice itamae. People who face cloud suppliers should be transparent about the organization's needs, kill any "not invented here" mindsets, and expect to be delighted.

## People Who Are Managers and Leaders

The overlap of managers and leaders shown in Figure 2 deserves some comment. Managers have subordinates and ensure tasks are completed through the application of processes and procedures. Leaders have followers and influence people to excel through the articulation of a future state in which all benefit. Managers can be leaders, but leaders need not be managers and can exist at any level within the organization.

The first impediment to agility for managers, especially C-suite managers, is when they articulate their goals in terms of the deliverable that "makes the world go 'round" — that is, cash. Concentration on short-term financial benefits without recognition that the cash comes from customers (who must be delighted, or they will not become, or remain, customers) is not a strategy for organizational success. If this sounds naive, consider Amazon CEO Jeff Bezos. He became the richest person in the known universe in 21 short years by concentrating on customer delight rather than company margin and dividends. Indeed, by keeping margins razor-thin and paying no dividend, Amazon put itself in the best competitive position possible, discouraging would-be entrants to the industry and building up long-term market share.

The next impediment to agility for managers is the reliance on command and control, which implies a hierarchical approach to advancing business interests. Those in control (at the top of the hierarchy) command those below them. However, under the concept of itamae, the delight of customers is best advanced by those closest

to the customer. Empowering the people who face the customer to drive business decisions is a hallmark of the Agile organization. Agile leadership, explored in the next section, replaces command and control in the Agile organization.

## Agile Leadership

Leadership models can be characterized by four attributes: (1) what the leader believes about the world, (2) the leader's model for how to effect change within this world, (3) the leader's values, and (4) the leader's behaviors. Table 1 shows that these attributes effectively capture the essence of contemporary leadership models.

*The Agile leader recognizes that the organization must change as the uncertain, complex, competitive future unfolds.*

### What the Agile Leader Believes About the World

Agile leaders, in general, believe that their world is uncertain, competitive, complex, and subject to technological change. They can articulate the specific drivers of uncertainty in their business domain. Agile leaders understand the nature of complex systems and can identify the interacting components that affect the business's future — those that are under their control and those that are not. They are well read on the competition and relevant emerging technologies.

### The Agile Leader's Model of How to Effect Change

The Agile leader recognizes that the organization must change as the uncertain, complex, competitive future unfolds. The litmus test for all business decisions in this changing world must be the addition of value to users and customers — delighting customers under the concept of itamae. The Agile leader communicates a vision of a future state in which the resources of the organization are marshalled to optimize the delivery of benefit to the customer. Deliveries are incremental and allow for learning about true customer needs.

Model	My Beliefs About the World	My Model for Affecting Change in this World	My Values	My Behaviors
<b>Theory X</b>	A pessimistic view of human nature	Most people must be coerced, controlled, directed, or threatened to ensure objectives are met	Obedience	Autocratic
<b>Theory Y</b>	An optimistic view of human nature	Average humans will accept and seek responsibility and exercise self-direction to achieve goals to which they are committed	Responsibility	Trust
<b>Situational Leadership</b>	Talent and commitment not uniform on team	Direct, coach, motivate, or empower based on each person's talent/commitment	Honesty	Versatility
<b>Transformational Leadership</b>	My world is in desperate need of transformation	Focus on strategy, long-term goals; build on people's need for meaning in their lives	Transcendence of goals over followers' self-interests	Intellectual stimulation; promote creativity and innovation
<b>Servant Leadership</b>	Organizations don't have self-correcting mechanisms to foster individual or team success	Organizational obstacles are identified through active listening and empathy and must be removed if teams are to thrive	Humility	Determination

Table 1 – Leadership models.

### The Agile Leader's Values

The Agile leader's values are captured in the Agile Manifesto: the Agile leader values people over process, working artifacts over documentation, collaboration over contracts, and change over planning.<sup>1</sup>

### The Agile Leader's Behaviors

The Agile leader's behaviors encompass curiosity: curiosity about what delights the customer, curiosity about team dynamics, and curiosity about entrenched organizational processes. This curiosity is expressed by active listening and acted upon with relentless determination.

### Agile Leadership in Scrum

An important process model for realizing agility is Scrum; in fact, two of Disciplined Agile Delivery's (DAD) five lifecycles<sup>2</sup> from the Disciplined Agile Framework are based on Scrum. The Scrum Alliance has been formalizing the applicability of Scrum to development teams, especially software teams, since

2002. While formality is important in establishing a new process, the embrace of Scrum must be driven by the organization's commitment to delighting the user rather than acquiring the latest industry certifications. In this section, we align the Agile leadership framework to the key players in the Scrum process. Figure 3 shows the basic elements of the process.

In Figure 3, organizational elements are shown in red and the process is shown in blue. The process is composed of sequential sprints that incrementally build prioritized business value for the user. This value is confirmed by a demonstration of functionality to the user at the end of each sprint. This functionality can be directly released to the user or released to a production library for further testing. Now to the organizational roles.

The *organizational leaders* believe that focusing on delighting the customer is essential for future success and that the development process must incorporate user needs through collaboration rather than through documentation. The model they use to accomplish this is built on exploratory dives into their own organizations and the user community. They let their followers know there is a new organizational approach for developing product features and only paying lip service

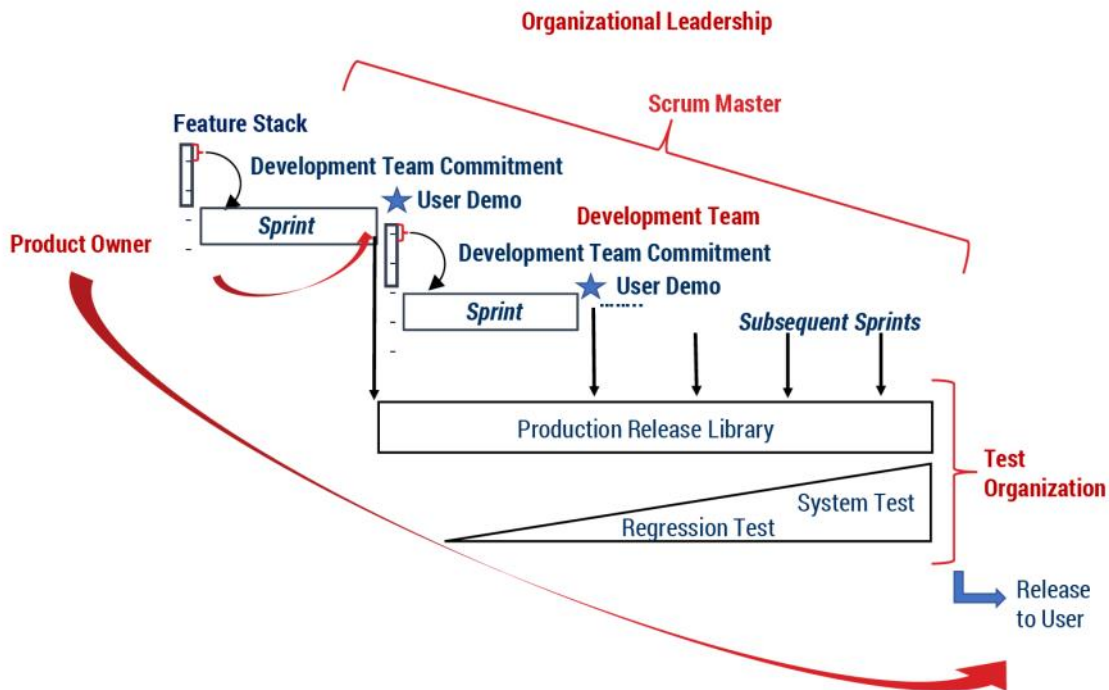


Figure 3 – The Scrum process.

to it will not be tolerated. These leaders value a culture of disciplined experimentation, both with the process and with the functionality delivered to the user. Their behavior stimulates creativity and innovation.

The *product owners* believe that delighting customers is their number one priority. The model to accomplish this is a learning journey to understand the needs of the customer. They value open and transparent relationships with specific individuals in the customer community. Their key behavior is curiosity about what will delight the customer. The product owner prioritizes the functionality to be considered for each sprint and orchestrates the user demo conducted at the end of each sprint.

*Development teams* believe in themselves and their technical abilities to deliver on their commitments. They must be empowered to determine the amount of prioritized functionality that can be delivered within each sprint and determine how this functionality is best developed. The model for building new functionality is the Scrum process itself. Development teams value teamwork and their behavior puts the team before the individual.

The *test organization* cannot be a “bolt-on” to the Scrum process. This group believes that testing is essential to product quality. The model for achieving product quality is engagement with Agile process stakeholders to identify where and how functionality will be verified.

When multiple sprints are added to a production library before final release, the test organization must determine the approach for regression testing. Test organizations value discipline and their behavior is contrarian: what can go wrong most likely will and must be found before the product ships.

The *scrum master*, DAD’s team lead, believes that the Achilles’ heel of any new process is confusion and lack of clarity. The model to overcome these pitfalls is to define and communicate to all stakeholders the details of the Scrum process and the detailed responsibilities of each organizational element. This definition must be along the lines of Figure 3 but tailored to the specific organizational Scrum approach. The definition will require considerable consensus building on the part of the scrum master, but it is essential to ensure all that efforts are complementary, and that rework is avoided. As an example, the scrum master must foster a common view of what is formally verified in the user demo (the human-machine interface perhaps) and what is verified in the production release library. Scrum masters are also servant leaders. Scrum masters believe that organizations do not contain all the self-correcting mechanisms required to ensure individual or team success. Their model to address this is to identify and remove any obstacles prohibiting the development team from meeting the commitments made to the product owner at the beginning of the sprint. Their behavior is relentless determination.

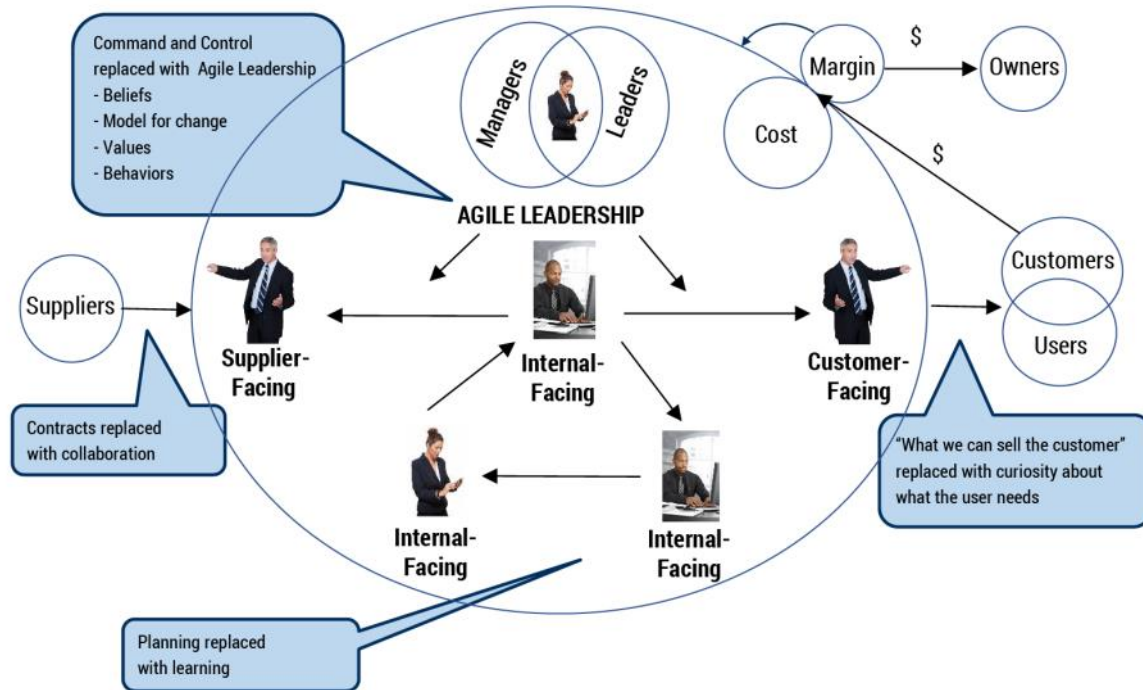


Figure 4 – The Agile organization.

## Summing Up: The Agile Organization

In an Agile organization (see Figure 4), the Agile leadership framework replaces command and control. The organization's leaders believe that the future is uncertain due to the impacts of technology, competitors, and complexity. This uncertain future is best addressed by empowering the workforce to understand and collaborate with the customer. In the Agile organization, supplier-facing personnel value collaboration over contracts, and internal-facing personnel value learning over implementing last year's strategic plans. Most important, customer-facing personnel replace building sales forecasts with curiosity about what will delight the customer.

## Endnotes

<sup>1</sup>"Manifesto for Agile Software Development" (<http://agilemanifesto.org>).

<sup>2</sup>"Full Agile Delivery Lifecycles" (<http://www.disciplinedagiledelivery.com/lifecycle>).

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YOU "NEED A FARMER, A BUILDER, AND A WEAVER ..."

# The Agile Enterprise and the Division of Labor

by Gene Callahan

Libertarian missionary Leonard E. Read began his famous essay "I, Pencil" by noting:

I, Pencil, simple though I appear to be, merit your wonder and awe, a claim I shall attempt to prove... Simple? Yet, not a single person on the face of this earth knows how to make me. This sounds fantastic, doesn't it? Especially when it is realized that there are about one and one-half billion of my kind produced in the USA each year.<sup>1</sup>

Read goes on to list just a few of the many, many people who contribute to the making of a "simple" pencil: loggers, miners, makers of chain saws, hemp growers, the manufacturers of railroads and railroad cars, millworkers, producers of precision assembly line machines, the harvesters of canola seed, farmers growing castor beans, and so on.

## Enter the Age of Specialists

What Read praises in his essay are the benefits of the division of labor, the economic process through which a human community, by dividing up tasks and "assigning" various members to specialize in each task, can greatly increase its output. (I put "assigning" in scare quotes because, in a market economy, for the most part people are not literally *assigned* to tasks, but instead choose their roles in the division of labor based upon their talents and the prevailing compensation for each possible role they could fill.) The benefits of the division of labor were, of course, recognized at least as far back as Plato and Xenophon. As Plato put it in *The Republic*, "Well then, how will our state supply these (physical) needs? It will need a farmer, a builder, and a weaver, and also, I think, a shoemaker and one or two others to provide for our bodily needs. So that the minimum state would consist of four or five men."<sup>2</sup> Adam Smith famously expounded upon those benefits in *The Wealth of Nations*, writing "The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labour."<sup>3</sup>

Smith goes on to describe the production of pins, a task at which a single person, not specialized at the task, "could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty." But when 10 workers took on specialized tasks, with the help of specialized machinery, Smith asserted that although "they were very poor, and therefore but indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day," with the result that each worker produced several thousand times the number of pins per day as would have been possible without the division of labor.

In the early 20th century, this method of increasing productivity was pushed to its limits. Tasks were broken down to the extent that workers with minimal skills could be assigned simple, highly repetitive actions and perform them with almost no knowledge of what anyone else on the assembly line was up to. Although this led to higher output of standardized products, the disadvantages of extending the division of labor to this extent were not overlooked. Karl Marx noted that the extensive division of labor alienated the worker from the product being produced: people who spend all day tightening a particular lug nut may be little able to associate what they do with "making a car." But even Smith, who, as we have seen, praised the effects of the division of labor, commented in *The Wealth of Nations*:

In the progress of the division of labour, the employment of the far greater part of those who live by labour, that is, of the great body of people, comes to be confined to a few very simple operations, frequently to one or two. But the understandings of the greater part of men are necessarily formed by their ordinary employments. The man whose whole life is spent in performing a few simple operations, of which the effects are perhaps always the same, or very nearly the same, has no occasion to exert his understanding or to exercise his invention in finding out expedients for removing difficulties which never occur. He naturally loses, therefore, the habit of such exertion, and generally becomes as stupid and ignorant as it is possible for a human creature to become.

Smith is pointing out a *general* problem with the extensive division of labor, but there is a more *particular*

problem, which only came to prominence in the recent days of increasing automation and increasing demand for innovative and customized products: the sort of mindless production line division of tasks common in mid-20th-century factories created a workforce downright discouraged from thinking about how their work fit into the production process as a whole, or how alterations in parts they did not make themselves might affect their own task. Such a holistic view was only supposed to be required of the engineers who designed new products or who designed the factory processes that would produce those new products. As in a planned socialist economy, all knowledge about the product and the production process would be concentrated at the top of a pyramid of work, and those below the peak were merely to follow the orders of those knowledge commissars.

*No knowledge worker producing an even moderately complex product can do his work properly without an understanding of his part in the production process.*

## But Specialists Aren't Sufficient Anymore

A major problem with this approach is that as products become more complicated and the pace of innovation increases, no single mind, or even a small group of minds, is capable of grasping all the interconnections between the different parts of those complex products, and thus cannot foresee how an innovation supposedly concerning only one part will actually have ripple effects on many other, apparently separate, production tasks. This fact was realized quite early at Toyota and led to the invention of the Toyota Production System,<sup>4</sup> the forerunner of Lean software development. As Mary and Tom Poppendieck note in their book *Implementing Lean Software Development*:

Toyota's real innovation is its ability to harness the intellect of "ordinary" employees. Successful lean initiatives must be based first and foremost on a deep respect for every person in the company, especially the "ordinary" people who make the product or pound out the code.<sup>5</sup>

As important as these ideas were in factory production, their importance is even greater in the world of software development, where production is *always* the production of a novel product; otherwise, one would simply buy or rent an existing software product, which is almost always a lower cost venture than "rolling your own."

In such an environment, it is simply not possible to assign the "workers" (programmers) a simple, repetitive task and expect them to achieve decent results without at least some understanding of the overall product design, as well as an understanding of how their particular "part" integrates with the other parts of the product as a whole. In such a situation, worker obedience no longer "works." A manager cannot tell a software engineer working on a product of even moderate complexity to just follow the manager's orders; the programmer can bring production to a halt simply by asking, "OK, what line of code should I write next?"

## We Must Be Enterprise-Aware

But further: no knowledge worker producing an even moderately complex product can do his work properly without an understanding of his part in the production process via continuous interaction with the evolving understanding of all the other knowledge workers producing the product. One such worker gaining a better understanding of the nature of her component simply must convey that understanding to all other workers upon whom the changes in her component have an impact, and that set of workers typically encompasses almost everyone working on the product. As the Disciplined Agile framework states:

Enterprise awareness is one of the key principles behind the Disciplined Agile (DA) framework. The observation is that DA teams work within your organization's enterprise ecosystem, as do all other teams. There are often existing systems currently in production and minimally your solution shouldn't impact them. Better yet your solution will hopefully leverage existing functionality and data available in production. You will often have other teams working in parallel to your team, and you may wish to take advantage of a portion of what they're doing and vice versa. Your organization may be working towards business or technical visions which your team should contribute to. A governance strategy exists which hopefully enhances what your team is doing.<sup>6</sup>

The various aspects of Agile/Lean/DevOps production follow from recognizing the real situation of knowledge workers cooperating to create innovative products. Programmers cannot do their jobs in isolation; thus, we need the practice of *continuous integration*, which quickly exposes mutual misunderstandings of how one person's work impacts that of others. Testers cannot test successfully without introducing large delays in deployment, unless they are part of the production process from day one; thus, we must employ *continuous testing*, guaranteeing that product flaws are exposed and fixed at the earliest moment possible. Operations cannot successfully deploy constantly evolving products unless deployment itself becomes a software product capable of evolving as fast as the products of the developers: thus, we must view *software as infrastructure*. The "business" stakeholders in the product cannot ensure the product is really meeting business needs unless they are continually engaged in the development process: thus, we must engage in *continual interaction* between the engineers and the "business people." How new versions of a piece of software impact the end users cannot be determined without continual feedback from those users: thus, we need *incremental development*, where developers work on small batches and can easily change course; *continuous deployment*, where end users can comment on the work done in those small batches; and *continuous monitoring*, so that any problems using the product become known almost as soon as they occur.

## We Also Need a Wider Range of Skills

Given the above realities, a rigid division of labor hinders businesses from responding agilely to changing market conditions with new programs or new features added to existing programs. If workers are confined to narrow silos based on their job title, the interaction between the many components of a complex piece of software must be defined from the top down, and this restriction will result in a very limited capacity to deviate from an initially defined pattern of interaction. The DA framework notes that:

IT departments are complex adaptive organizations. What we mean by that is that the actions of one team will affect the actions of another team, and so on and so on. For example, the way that your Agile delivery team works will have an effect on, and be affected by, any other team that you interact with. If you're working with your operations teams, perhaps as part of your overall DevOps strategy, then each of those teams will need to adapt the way they work to collaborate effectively with one

another. Each team will hopefully learn from the other and improve the way that they work.<sup>7</sup>

Let's consider a realistic change that might hit a project midstream, and just a few areas it might impact.

I was once developing an option trading package for a team of traders. At first, we were only getting quotes for options from a single exchange. The traders realized that they wanted instead to see the best bid and ask from every exchange, which meant we needed to receive quotes from four exchanges, not one. This might seem to be a specification change with a narrow scope: just add three more price feeds to the application. Who would this concern beyond the programmer who would be adding the feature?

*The various aspects of Agile/Lean/DevOps production follow from recognizing the real situation of knowledge workers cooperating to create innovative products.*

Well, for one, it would concern the team supporting the price server: this was going to quadruple the load this application would place on it. It was also going to impact the order server: that server had to be prepared to send orders out to the proper exchanges. Oh, and the testing team had better be prepared to simulate quotes coming in from four sources, not one. Moreover, the monitoring team would have to detect if there was a lag on quotes arriving from any of those four sources.

Or consider the patterns and tales from Michael Nygard's book *Release It!*<sup>8</sup> Continually, in Nygard's stories, solving a problem in a sophisticated Web operation involves a wide range of both technical and business knowledge. For instance, in terms of designing "circuit breakers" that limit the impact of the failure of one component, Nygard notes that deciding what to do when a circuit breaker trips is not merely a technical decision but rather involves a deep understanding of business processes: "Should a retail system accept an order if it can't confirm availability of the customer's items? What about if it can't verify the customer's credit card or shipping address?" Later in the book, Nygard discusses the example of a retail system that went down entirely on Black Friday, costing his client about a million dollars an hour in sales. Fixing the problem involved understanding the functioning of the front

end of the online store, the order management system, and the scheduling system, along with the interactions of all three.

*The best bet to successfully respond to this changed business requirement is for the people working in each specialization to have a vision of the overall system, an understanding of how other specialized areas function, along with robust communication channels.*

## Enter the Age of Generalizing Specialists

A software engineer who thinks of his job narrowly, as just being responsible for writing the code to do the task he is told the code should do, is not going to be thinking of the multiple other areas any change in his task would affect. And a higher-level designer is unlikely to know enough of the details of all these areas to fully understand the impact of such a change. The best bet to successfully respond to this changed business requirement is for the people working in each specialization to have a vision of the overall system, an understanding of how other specialized areas function, along with robust communication channels open between the various specialties; in other words, to break down the silo walls produced by a rigid division of labor and embrace Agile development principles. Or, as Cutter Senior Consultant and this issue's Guest Editor Scott Ambler — who calls people able to understand multiple aspects of the system being built “generalizing specialists” — puts it:

A generalizing specialist is someone with a good grasp of how everything fits together. As a result they will typically have a greater understanding and appreciation of what their teammates are working on. They are willing to listen to and work with their teammates because they know that they'll likely learn something new. Specialists, on the other hand, often don't have the background to appreciate what other specialists are doing, often look down on that other work, and often aren't as willing to cooperate. Specialists, by their very nature, can become a barrier to communication within your team. Another

challenge with specialists is that they have difficulty working together effectively with others because they don't have the background to understand the issues that the others are trying to deal with.<sup>9</sup>

An organization seeking to become Agile should therefore look to have a preponderance of generalizing specialists on their teams. There is, of course, room for some pure specialists, but too often businesses seek to hire a Python or Linux or Docker guru, when what they really need is someone “good enough” at one of those specialties but who also has broader technological and business understandings. Certainly, hiring a generalizing specialist may have some short-term downside in terms of cranking out the next couple of specialized projects, but most often that cost will be repaid several times over because it will create more cohesive and Agile teams in the long run.

## Endnotes

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<sup>2</sup>Plato. *The Republic*. The Internet Classic Archives (<http://classics.mit.edu/Plato/republic.html>).

<sup>3</sup>Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations*. Compiled by Edwin Cannon. Methuen & Co., Ltd., 1904 (<http://www.econlib.org/library/Smith/smWNCover.html>).

<sup>4</sup>“Toyota Production System” ([https://en.wikipedia.org/wiki/Toyota\\_Production\\_System](https://en.wikipedia.org/wiki/Toyota_Production_System)).

<sup>5</sup>Poppendieck, Mary, and Tom Poppendieck. *Implementing Lean Software Development: From Concept to Cash*. Addison-Wesley Professional, 2006.

<sup>6</sup>“Principle: Enterprise Awareness” (<http://www.disciplinedagiledelivery.com/enterpriseawareness/>).

<sup>7</sup>“Principle: Enterprise Awareness” (see 6).

<sup>8</sup>Nygaard, Michael T. *Release It! Design and Deploy Production-Ready Software*. 2nd edition. Pragmatic Bookshelf, 2018.

<sup>9</sup>Ambler, Scott W. “Generalizing Specialists: Improving Your IT Career Skills.” *Agile Modeling* (<http://www.agilemodeling.com/essays/generalizingSpecialists.html>).

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# The Necessities for Successful Enterprise Agile Transformation

by Matthew Ganis and Michael Ackerbauer

We know Agile team development by itself is insufficient for enterprise transformation. We also know of the many horror stories of enterprise leaders who leave teams to self-organize without providing the organizational underpinnings that support self-direction. While teams (and entire organizations) may profess to adopting Agile practices, it is equally crucial for enterprise leaders to internalize a mindset that deliberately cultivates an Agile culture.

So how does that happen?

Leaders must first recognize their own innovation capabilities and blind spots. Only then can they begin to understand how team structure can support or undermine their transformation goals. Many enterprise leaders we have encountered fail to recognize the creative strengths and limitations of their teams, as well as their personal innovation assets and liabilities. In this article, we use the term “team” as a representation of any group of individuals tasked with working together to achieve specific outcomes. This term can refer to a team of enterprise executives, as well as whole domains, business units, or any other self-directed unit.

Without an organizational self-awareness as to how well teams are suited to sustained innovation, leaders can overlook many of their best problem solvers. We have identified three key factors in helping enterprises shine in their efforts to instill a disciplined Agile culture that will garner breakthrough results:

1. Creating a shared understanding of the team/organizational mission and how the team/organization will achieve its goals
2. Building a deliberate, sustainable approach to innovation
3. Recognizing the collaborative energies of team members

Today, we see many teams formed by simply checking off skills needed for a team, without regard to how well

those individuals can or will work together. Every team comprises individuals; each person has a different personality and way of working that, when properly applied to the same challenge, increases the potential to yield breakthrough results. We believe for Agile teams to be truly successful, leaders need to ensure that the personalities and traits of all team members support each other in a way that complements and enhances the whole. By helping individual members understand how they approach a problem in contrast to their fellow team members, leaders empower teams to more readily leverage each other’s strengths while compensating for each other’s collaborative blind spots — enabling teams to “be awesome.”

*For Agile teams to be truly successful, leaders need to ensure that the personalities and traits of all team members support each other in a way that complements and enhances the whole.*

In our experience, teams that regularly achieve breakthroughs for their stakeholders and delight their customers are those that intentionally embrace diversity of thought and apply their collaborative energies to solve the same problem. When enterprise leaders embody this mindset, applying it across all teams, Agile adoption throughout the organization becomes far more organic — and successful.

## Agile Methods

Agile methods have existed in the software development community for roughly 20 years. While Agile is not a panacea, if followed correctly, Agile techniques can help foster an environment where teams can iteratively create high-quality (i.e., bug-free) products

that meet the ever-changing needs of the customer. Agile methods prescribe a set of “best practices” that can lead to a higher-functioning team. Moreover, many of the practices tend to be synergistic, implying that there is more value delivered when other related practices are followed and strictly adhered to. While the rote following of a set of practices can indeed provide value, we believe there is a deeper aspect to practices that focus on teamwork, whose value far exceeds that of any policy or procedure. We will explore the concept of *team synergy* in greater detail later in this article.

*The mere understanding of how various teams prefer to work will allow for an increase in productivity. This is true within not only a team, but among various teams working together across the enterprise.*

As outlined in the original Agile Manifesto,<sup>1</sup> all Agile methods are predicated on the importance of human interactions over the following of rigid processes. Collaboration, both with customers and teammates, is viewed as having a higher priority than predefined agreements. Agile teams, very much like individuals, have their own personality and preferred method for working. They may work within the confines of specific practices; however, where they prefer to focus or emphasize their work may vary. For example, some teams may prefer to analyze a problem before writing code; others may wish to immediately jump into “solution” mode and start experimentally developing, seeing various options firsthand as opposed to employing a deeper dive into alternate solutions. Neither method is right or wrong; they are simply different expressions of collaborative preference. We propose that the mere understanding of how various teams prefer to work will allow for an increase in productivity. This is true within not only a team, but among various teams working together across the enterprise.

## Agile Practices

There are several Agile methodologies described in the literature,<sup>2</sup> each proposing a varying framework for the effective delivery of a project. Many of these Agile methods rely on a set of best practices or patterns that,

when implemented, help a team achieve efficiencies. These patterns are often referred to as “Agile practices” and are fundamental to the operation of an Agile team.

Of the variety of practices, some help to promote a disciplined project management environment that encourages frequent inspection and adaptation to change, including a leadership philosophy that encourages teamwork, self-organization, and accountability. Others, such as Extreme Programming (XP) and Lean, include a set of principles for achieving quality, speed, and customer alignment. Lean, in particular, looks to eliminate work that isn’t adding value, focusing instead on what a team absolutely needs to be doing at a specific moment in time. Examples of common Agile practices include:

- Test-driven development
- Regular refactoring
- Continuous integration
- Simple design
- Pair/mob programming
- Use of a common code repository
- Use of standard coding practices that all team members must adhere to
- A common work area (one that includes sticky notes, kanban boards, and/or big visual charts)

Many of the practices are, by their nature, synergistic. This simply means that the use of two or more practices, when done well, produces a combined effect greater than the sum of their separate outcomes. For example, if we choose to use a common code repository within our development team, our programmers will undoubtedly become more productive, as everything needed would be located in a single place. Add to that the effects of pair programming, where two members work on a problem together, often side by side, often pairing with a variety of teammates over time. The use of a common code repository makes the pairing perform smoother than if developers used different code repositories, resulting in a “waste” in time at each pairing with a new individual. Enhancing the value of each practice, either by incorporating other related practices or focusing on the natural synergy of a team, is crucial to a successful Agile transformation.

## Agile Focuses on the “Whole Team”

Traditionally, teams in an organization were organized around functional boundaries, meaning a separation of function; for example, separating database administrators from programmers, testers, and even traditional business roles such as accounting and finance. As new projects emerged, resources from each department would be selected and assigned the task of participating in the project. None of these functional roles were dedicated to a single project; instead, they were assigned to new work items. As a result, issues such as accountability, time management conflicts with other priorities, and, worse, a lack of clear understanding of project outcomes due to separation of team members would surface.

Various Agile thought leaders have come to realize the need to form teams *wholly* dedicated to and responsible for a given project. The idea behind the “whole team” practice is that a team would include the full scope of skills needed to take an idea from inception to testing and then into production — without the need to involve others outside the “team.” While a single autonomous team works well for a single project, issues and complications can arise when teams need to interact across organizational boundaries.

While it has been shown that more “complete” or more “whole” teams tend to perform better than “non-whole teams,”<sup>3</sup> an important question remains: how can leaders increase the effectiveness of Agile whole teams as they look to scale Agile across the organization? In the following sections, we look at some of the ways enterprises can achieve this mission.

### Teams and Personality

Successfully adopting Agile practices shouldn’t be taken at face value. Leaders need to look deeper into the issue being addressed and consider other, often nonobvious, issues (e.g., conflicting personalities among team members or different approaches to problem solving) that could arise. The creation of a “whole team,” formed by merely gathering together all the individual skill sets onto a single team, needs to be done with care. Since Agile teams are highly communicative, leaders must ensure that individual team members, at the very least, are compatible. But more than that, more than choosing the “right” mix of people, leaders need to ensure that all team members understand how each of their peers work or perceive

the work in front of them. A shared awareness of how team members work (and think) is critically important in helping to maintain team cohesiveness.

### Teams of Teams

Most Agile teams we encounter tend to be “whole” at their functional level; that is, they consist of individuals with development-oriented code and test skills and possibly a designer to ensure a consistent user experience. This may make sense for an organization, as the teams are singularly focused on developing software at high levels of efficiency. And, in our experience, highly specialized development and/or delivery teams of seven to nine members are much more likely to be efficient than general-purpose teams. The challenges come when two or more independent teams produce components of a larger offering: often, those teams are unaware of the scope of the larger offering, so the process of weaving together the individual threads can be cumbersome.

We see disciplined Agile as greater than the sum of the individual teams; at an enterprise level, it is a coordination of efficient components that must form a greater whole to produce real value for customers. So what happens when we look to scale Agile across an organization, beyond a single team or tribe boundary? How might a team with a focus on providing high-impact technical solutions also include members of the business end of a software offering (e.g., marketing, sales, support, finance)?

*The challenges come when two or more independent teams produce components of a larger offering: often, those teams are unaware of the scope of the larger offering, so the process of weaving together the individual threads can be cumbersome.*

It is fair to suggest that such an end-to-end team construct at a functional level may only be feasible within startups. Nevertheless, we believe the most effective teams are loosely coupled and tightly aligned to a common goal and therefore must be coordinated through the design, development, and delivery process to produce effective and, ideally, impactful outcomes. As such, a “whole” team within a large organization

finds its effectiveness in the degree to which a series of teams adopts and adheres to a common set of principles among themselves.

### *Make the Abstract Concrete*

Within every team lies a specific purpose, process, and dynamic. These are the three organizational variables over which teams have ultimate influence. Although in Agile we would say the iteration practices constitute process, even the most rigorous and effective process must be driven by a shared understanding of purpose or mission. So, without a cohesive understanding of why a team exists, its dynamic will have a negative impact on the team's Agile rituals and ceremonies. The more a team has a shared understanding of its purpose, the more potential it will have for effective self-direction and a work product that makes the team proud of its efforts.

Every self-directed team needs to come to a shared understanding of its reason for existing. Another way of framing this principle is for a team to establish clarity around outcome: what is the goal or mission for which it was conceived? In our experience, the larger the organization, the more focused the set of outcomes for any given team. The importance of a team understanding its purpose, coupled with team dynamics, is that these factors will drive the team's creative process, fueling enhanced customer value (see Figure 1).

Once a team understands its goal or mission, it must also come to an understanding of how team members will work together to achieve that goal or mission. This includes a well-defined, transparent social contract

that tangibly lays out a team's agreed-upon method of effective collaboration. Because truly great teams are about personalities and not just skills, it is essential teams codify the following principles:

- What role each member has within the team
- How individuals will interact with the rest of the team
- How everyone's values (core beliefs) align with the team's

Because shared understanding is foundational to psychological safety, leaders should strongly encourage teams to visually represent their thoughts and plans. Where there is ambiguity, illustrate ideas and concepts or areas lacking clarity. Encourage team members to ask the "dumb" questions that everyone else wants answered but may not feel comfortable voicing.

Leaders who model these behaviors are most likely to see them replicated in their teams. For colocated teams, we recommend posting charts that can be seen by the entire team. For distributed teams, it is crucial to maintain a virtual "wall of work" that is accessible to all.

### *Build on a Common Foundation*

Agile teams rely on their practices and rituals as a framework for executing tasks and managing their backlog. And the best teams we have worked with know their strength is not the Agile framework alone, but how the team sources ideas and plans and delivers its backlog. Strong team process requires strong team



Figure 1 – Team purpose and dynamics fuel the creative process and lead to enhanced customer value.

empathy that allows teams to embrace creative tension to uncover novel ways of producing value.

Deconstructing the building blocks of applied innovation, and based on 60 years of research in the field of creativity,<sup>4</sup> we consider the Breakthrough Thinking model of creative problem solving (CPS)<sup>5</sup> as an effective framework for building intentional innovation into every Agile team's set of practices. The dynamic nature of the Breakthrough Thinking process is comprised of four steps; we recommend a continual (fifth) step of assessment at each phase (see Figure 2):

1. **Clarify a problem, challenge, or opportunity.** Sift through the relevant data and context of a problem to define the right challenge to address. This is the point at which a team will place as many of the assumptions on the table as they can identify. "A problem well defined is half solved" is a good rule of thumb for clarification. One effective means of understanding a problem, challenge, or opportunity is to perform a gap analysis, which answers the following questions:

- Where do we want to be?
- Where are we now?
- What are all the things standing between our current reality and our desired future state?
- What is our best/most desirable outcome right now?

2. **Ideate.** Consider all the possible ideas related to answering the challenge. Brainstorming and "brainwriting" (silent brainstorming) are the techniques most often used. The best way to have a good idea is to have lots of ideas, so deferring judgment is key. That simply means that teams need to get all their ideas out and determine the value later.

3. **Develop solutions.** Select and strengthen the best ideas and develop them into a workable solution by:

- *Filtering.* Which ideas stand out? Which ones look like a compelling approach?
- *Evaluating.* What do you like about the ideas you selected? What could you improve?

- *Prioritizing.* Which ideas are closer to actionable? Which need a little more refinement? What do you see yourself doing now?

4. **Implement.** Plan for action. Begin laying out the concrete tasks that speak to your solution's goals and determine the key stakeholders who must be on board. Contingency planning is key: What could go wrong? What should we do if something does go wrong? Whose support do we need? How do we get it? Then execute on those tasks. Learn from your mistakes but keep the ball in play. Test fast, fail fast, adjust fast.

5. **Assess.** Iterate, execute, and adapt your plan. Revisit previous steps along the way to assess whether they are on the path to breakthrough and where to focus next. Applied innovation is not linear. Every step of the process can and should repeat, especially where there needs to be clarity and recalibration.

Breakthrough Thinking is as much a science as any engineering field, so the key is discipline. The process is only as intuitive as the practitioner, and the continued application of these techniques raises the practice to an art form.



Figure 2 – The Breakthrough Thinking model and assessment.

## Embrace Diversity of Thought

Further research in the field of CPS shows team members are creative in different ways.<sup>6</sup> Accordingly, addressing team uniqueness is different for every team. The expression of creativity manifests as a certain set of behaviors that may excite a team or foster conflict. These behaviors represent creative preferences that influence team culture and therefore its ability to innovate. Figure 3 shows the assessment of various team members with shaded boxes indicating a preference for four particular behaviors: clarifier, ideator, developer, or implementer (the identical process steps discussed in the previous section).

Clarification as a preference means a team member's energy will most likely gravitate toward order, facts, asking questions, and access to information. Team members with a preference for ideation tend to seek variety and change, room to be playful, constant stimulation, and a big-picture view of the team's work. The developer preference needs time: to consider options, to flesh out raw ideas, and to evaluate next steps. The implementation preference is all about movement and control; this team member's energy likes to see things happen and tends to seek timely responses to ideas.

In the example from Figure 3, we see that four out of eight team members tend to favor clarification above all else, while at least two members favor development or implementation. As a result, most of the team's

energy will likely gravitate toward a methodical examination of details above the other process steps. To the extent it allows for novel ideas to surface, the team will also potentially find itself focusing on crafting and evaluating detailed solutions. Both of these preferences will likely find themselves in tension with the two team members pressing for movement because the implementer preference favors time in motion, rather than the clarifier and developer's use of time to analyze and plan. Clarification tends to be well received (and necessary) during iteration planning and discovery, and development is most applicable to backlog refinement, while implementation (experimentation and adaptation) is the hallmark of every iteration and retrospective.

Preferred behaviors can be helpful or hurtful based on which stage in the collaborative process or Agile iteration teams find themselves. Should the team recognize where it prefers to spend its members' energy, the iteration manager will have great insight in how to maximize the team's energy during every step of the iteration. If the team is unaware of its preferences, it may not recognize the energy gaps as creative friction and will potentially fall into conflict when filling and prioritizing the team's backlog. Put another way, a team's profile represents the current level of diversity of thinking and where the team will (and will not) most likely spend its collaborative energy during the course of an iteration or planning session.

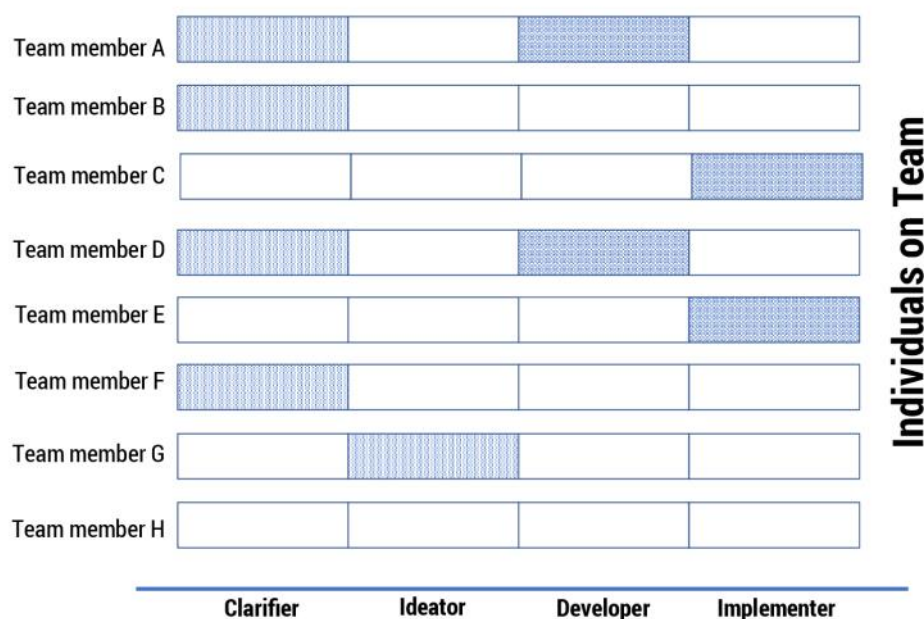


Figure 3 – Determining a team's preferred behavioral pattern.

Understanding each other's preferential behaviors relative to the process a team adopts helps team members understand how their teammates perceive their work objectives and how their collaborative energy may vary during an iteration. This is insightful for team members, iteration managers, product owners, and organizational leaders when assessing variations in team performance, inter- or intrateam conflict, and strategic planning. The team profile is ultimately an aggregate of all the collaboration strengths (and gaps) resident on a team. As such, understanding a team's collaborative strengths can serve as a predictor of innovation potential.

## Scaling the Team Dynamic

As the individuals on a team possess distinct collaborative tendencies, organizational leaders need to recognize those tendencies as "unconscious competencies."<sup>7</sup> Since unconscious competencies are by definition taken for granted, they can be left underscrutinized as part of continuous improvement. Where there are unconscious competencies, teams will undoubtedly possess blind spots. The role of the leader therefore is to encourage and promote the strengths of a given team, even while working with the members of that team to identify and minimize any collaboration gaps.

Accordingly, the team dynamic is a microcosm of the organizational culture. Organizational leaders therefore need to understand how to engage a specific team's collaborative dynamic to cultivate team efficiencies. But since we know singleton teams within an enterprise rarely produce value on their own, and that the sum of a breadth of teams typically comprises large projects, leaders must also recognize how to balance one team's unique dynamic with those of other self-directed teams. As a self-directed team grows stronger and more capable in relation to its members' ability to embrace diversity of thought, so the value of one team scales to multiple teams in producing an offering. Referring back to Figure 3, as teams begin to interact across organizational boundaries, knowledge of a peer team's preferred behaviors tends to enhance collaboration. Ultimately, individual team efficiencies help build a sustainable capability across a tribe or business domain.

At a macro level, leaders are called upon to cultivate teams that know why they exist (what they produce), how they will achieve their goals (process), and how they will work together to be successful (team

dynamic). The more aligned a team's purpose, process, and dynamic, the more efficient the team becomes. The more efficient, the greater its potential to be self-directed and capable of taking on a more disciplined approach to new work that adds value to the organization and its clients and customers alike.

Finally, by aligning self-directed teams to a larger goal, leaders can build an organizational effectiveness that not only does the work right, but consistently does the right work. The more attuned such a team of teams is to stakeholder needs, the more likely organizations will produce impactful value.

## Endnotes

<sup>1</sup>"Manifesto for Agile Software Development" (<http://agilemanifesto.org>).

<sup>2</sup>Alahyari, Hiva, Richard Berntsson Svensson, and Tony Gorschek. "A Study of Value in Agile Software Development Organizations." *Journal of Systems and Software*, Vol. 125, March 2017 (<https://www.sciencedirect.com/science/article/pii/S0164121216302539>).

<sup>3</sup>Ganis, Matthew Robert. "A Study of the Agile Whole Team and Its Effectiveness in the Software Development Process." PhD diss., Pace University, 2009 (<https://dl.acm.org/citation.cfm?id=2522039>).

<sup>4</sup>"A History of CEF" (<http://www.creativeeducationfoundation.org/about-cef/a-history-of-cef>).

<sup>5</sup>"The CPS Process" (<http://www.creativeeducationfoundation.org/creative-problem-solving/the-cps-process>).

<sup>6</sup>Puccio, Gerard J. "Creative Problem Solving Preferences: Their Identification and Implications." *Creativity and Innovation Management*, Vol. 8, No. 3, September 1999 (<https://onlinelibrary.wiley.com/doi/pdf/10.1111/1467-8691.00134>).

<sup>7</sup>"Four stages of competence" ([https://en.wikipedia.org/wiki/Four\\_stages\\_of\\_competence](https://en.wikipedia.org/wiki/Four_stages_of_competence)).

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# Business Agility: A Roadmap for the Digital Enterprise

by Jaco Viljoen

Business agility is the goal of nearly every enterprise today, but it is proving an exceedingly difficult one to achieve. The already complex undertaking is made more so by the plethora of choices in the diversity of frameworks and methodologies pushed by pundits, vendors, consultancies, and industry researchers. This complexity emphasizes that we must be able to define business agility before we try to achieve it. Knowing what it is helps provide the destination to which we can attach our point of departure and, ultimately, leads to a roadmap of how we can move from the current state to the desired state.

*In the context of many frameworks and even hands-on training available to Agile adoptees today, why do we even need a roadmap?*

## What Is Business Agility?

The desire to undertake the journey stems from the fact that business agility is a strategic or competitive advantage that results from adaptive, collaborative, value- or customer-focused, and learning organizations. But it goes beyond this general concept because it requires the entire business, not just IT, to act in an agile manner. Crucially, the business must leverage the Agile IT capability to get consistently better results for customers by continually innovating. But business agility goes a step further. It is also the destination for enterprise improvement. You must understand, however, that, even having achieved it, business agility remains a moving target because the environment in which your business operates evolves over time.

Any business undertaking a journey to Agile will ultimately experience a process of discovery during which it learns to become more agile. Agile is therefore perhaps less a state of nirvana organizations ultimately achieve than it is degrees of capability. The good news is that we have standards of measure to ascertain our

capability at each rung of the digital business ecosystem (DBE) ladder.

It is also essential to constantly know where we are in the process so that we do not prematurely try to achieve a higher capability by skipping steps. This is a common point of failure many organizations make in my native South Africa, and it is an easy one to make, considering the complexity of this field with its myriad choices. A roadmap delineating the essential and detailed elements necessary to successfully navigating each step of the DBE is an invaluable tool.

## Enterprise Improvement Challenge

In the context of many frameworks and even hands-on training available to Agile adoptees today, why do we even need a roadmap? First, there is the pressure to digitalize. Second, the goals of enterprise digitalization, such as end-to-end automation for customer engagement that eradicates islands of automation, are necessary. And the list goes on: tough competition, demanding customers, tight margins, slim budgets, increasingly dynamic markets, and blindsided entrepreneurial competitors that create a serious hazard.

There are also many ways to digitalize and become Agile, with a wealth of choices from communities that appear to be in conflict. I have experienced in a large enterprise in South Africa how many of these communities ultimately exist in silos; none communicating with the others, and many even competing, to the detriment of the overall, big-picture business. Some examples of typical communities are:

- Agile
- Lean
- DevOps
- Design thinking
- Product management



- User experience (UX)
- Lean Startup/Lean UX
- Complexity systems/theory

Which one are we supposed to follow? The choice is vast, and they all claim to be correct, particularly if you ask your internal champions. All vie to be the poster child proclaiming the future for the entire business. But is it really supposed to be, as they say in the movie *Highlander*, that “there can be only one”?

Asking consultants to offer a solution can further muddy the waters. They all push their own agenda. What makes it more difficult to differentiate the various sides and pick a winner is that these localized solutions often result in local improvements. There is rarely someone looking at the overall picture of what the business needs to satisfy its broader requirements. Even if there was, how can we contextualize the solutions to determine which one of the many choices best suits the requirement? Choice is great, but context is crucial.

Somewhere in all of this, businesses and the people they employ want an answer. There must be something, in all the choices, that suits their needs; that meets their requirements in the context of their organization, its business approach, and the markets it serves.

## 5 DBE Levels on the Road to Business Agility

The good news is that figuring out what choice to make from the potential minefield of complexity becomes easier when you have a standard by which to assess your current level of business agility based on specific indicators.

As shown in Figure 1, there are five DBE levels (each with its own set of capabilities that build one on top of another):

1. Waterfall/traditional (the lowest level of agility)
2. Hybrid Agile (a combination of waterfall and Agile)
3. Regular delivery
4. Continuous delivery
5. Continuous exploration (the highest level of agility, which hints at that moving goal mentioned earlier)

Each level progressively improves business capabilities, resulting in more business agility. The levels of capability collected into this roadmap are not necessarily entirely new. They are based on patterns from other models for improving organizations, such as those from

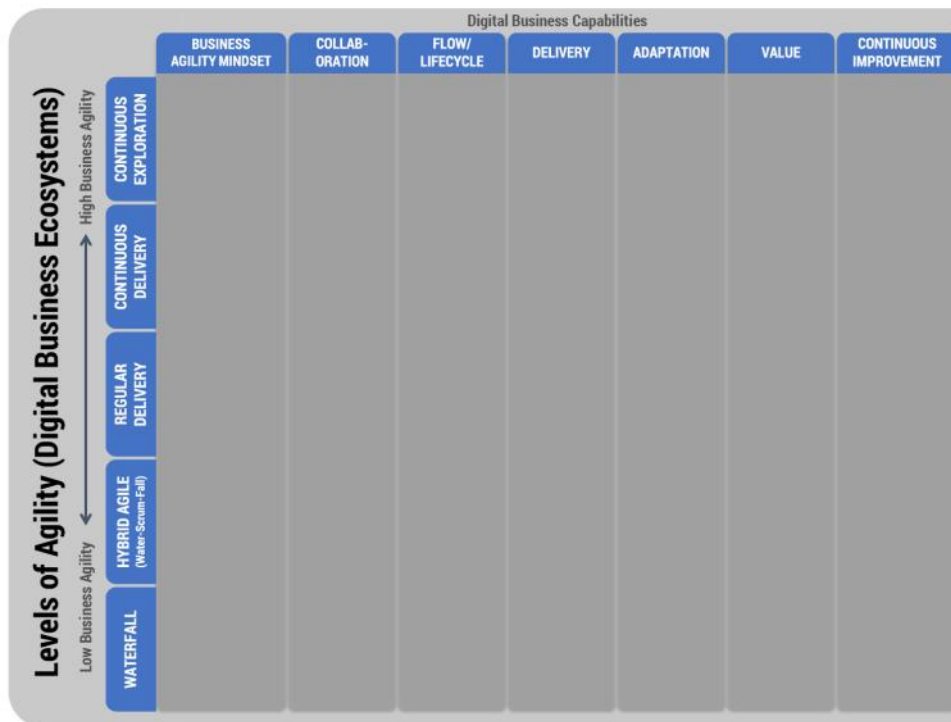


Figure 1 – Five levels of digital business ecosystems (DBEs) along with their business capabilities that lead to business agility.

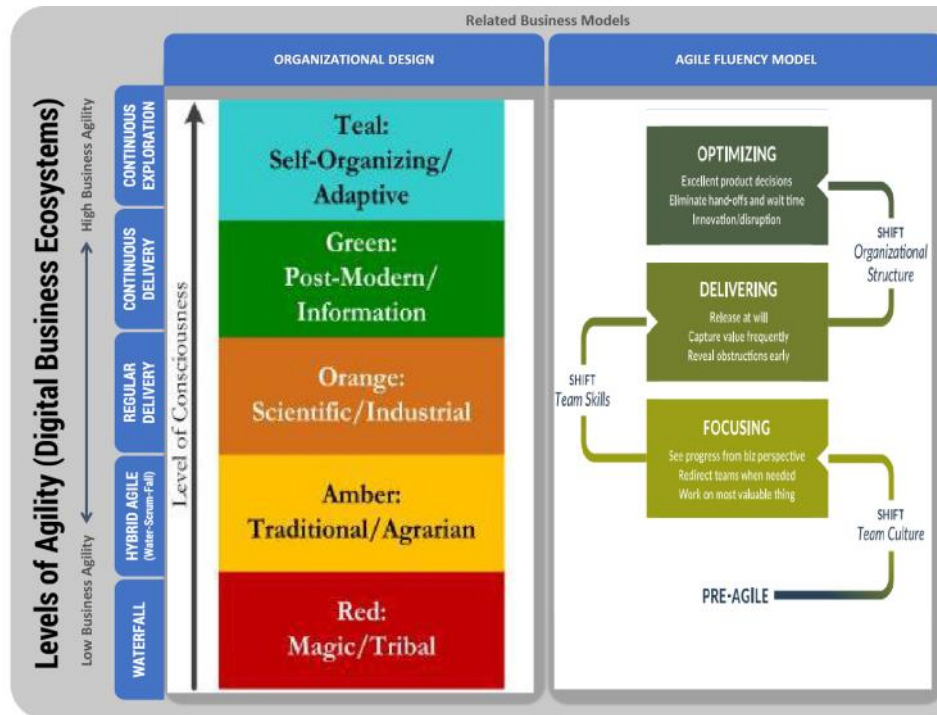


Figure 2 – Mapping DBEs to existing models.

Frederic Laloux in *Reinventing Organizations: A Guide to Creating Organizations Inspired by the Next Stage of Human Consciousness*<sup>1</sup> and Diana Larsen and James Shore’s Agile Fluency Model<sup>2</sup> (see Figure 2).

*You should progress from one level to the next in an ordered way, ensuring you get each right before moving to the next. It’s the only way to build the depth and breadth of competency.*

## Using the 5 Ecosystems to Guide Your Enterprise Improvement

And now to the meat of the matter: how do you use these five ecosystems to help improve business agility? First, you must know that each DBE has seven clusters of capabilities (refer to Figure 1):

1. Business agility mindset
2. Collaboration
3. Flow/lifecycle
4. Delivery

5. Adaptation (meaning responsiveness or sense and respond)
6. Value
7. Continuous improvement

Note that these clusters of capabilities cannot be effectively implemented independent of one another, since the entire ecosystem is more than the sum of its parts. You should also know that this list of clusters is not exhaustive. Further work should identify more.

I routinely see companies fail to progress from low agility to high agility because they try to skip steps in the DBE. You should progress from one level to the next in an ordered way, ensuring you get each right before moving to the next. It’s the only way to build the depth and breadth of competency required to successfully navigate the delicate complexities of each subsequent level.

There are some key dynamics to consider in each capability across the five business agility levels. For example, in the collaboration capability (see Figure 3), high-quality communication and collaboration is the primary goal between people and between teams in solution development progress (left to right) — from “concept” to “cash.”

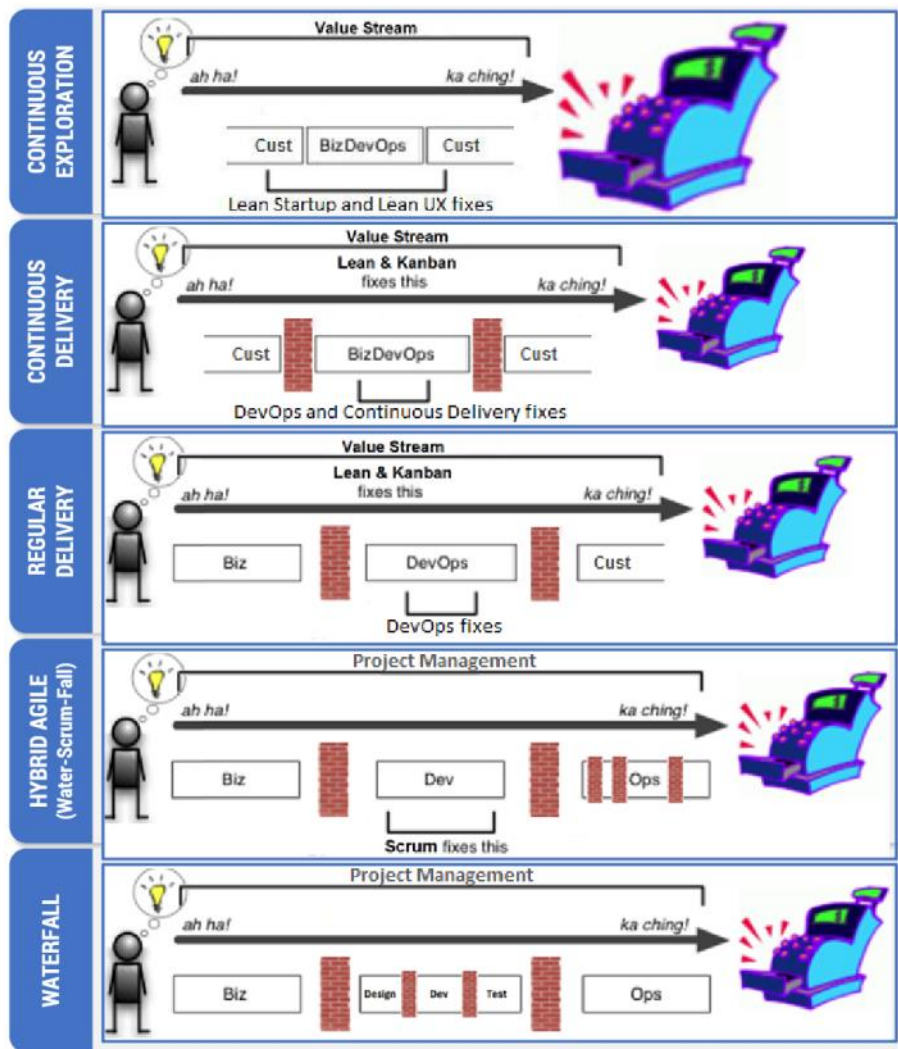


Figure 3 – Mapping DBEs to the collaboration business capability.

## Waterfall

The journey from concept to cash plays out in the waterfall level with three main elements (business, IT, operations), and the progression from concept to cash moves from the business having an idea (the concept), IT developing the application, and then rolling it out operationally (by which stage it starts generating cash). That process takes a long time in first-level agility because there are definite borders (illustrated as brick walls in Figure 3) between each element in the process. Progress is further hampered by subdivisions in the IT element (design, development, testing) — each, again, with its own borders between those sub-elements.

The borders are critical because they illustrate little to no collaboration between elements or sub-elements. They also suggest that each element must fully complete its role in the process of moving from concept to

cash before moving to the next element in the process. Trying to achieve some form of cohesion of the elements, project management sits on top and is the conduit through which they all communicate. And to think that we once thought this was the best method.

Today, this world is familiar to us. It's un-agile (clumsy, stiff, slow, and dull, according to the thesaurus). There is very little collaboration between the organization's departments and between teams or people who constitute the elements of the process to develop an application. Any communication is typically done by documents and messages filtered through project management. In fact, the entire method of developing and deploying applications is managed by project, which means it is given the green light, budgeted, and measured by project, too. Being assessed as a project is a key point, particularly as you become increasingly Agile, but it will become much clearer why this is

important later in the progression, as well as why and how you may want to change this path.

## Hybrid Agile

The second level improves the scenario. The first level had three broad groupings of elements (business, IT, operations), and the IT element had three sub-elements (design, develop, test). The hybrid Agile level breaks down the barriers between the sub-elements of IT to make that part of the process faster. That's typically where things like Scrum play a significant role. I call it Water-Scrum-fall.

Here's the catch: experience has taught us that achieving this next level only highlights the fact that, considering the original three main elements (business, IT, operations), when you eliminate the barriers between the IT sub-elements, you realize there are sub-elements in the operational element, too. You never noticed them before because the bottleneck of the IT sub-elements occurred earlier in the process; this brings the theory of constraints<sup>3</sup> into the model.

*With DevOps, we start to see work as a steady flow of value as opposed to the start-stop worldview of project management. This is done by breaking up the "book of work."*

The problem with the operations element is that it contains silos; each silo with its own barriers between other silos that cause problems with delivery, adaptation, and collaboration. That highlights the need for Agile operational sub-elements and represents potential for improvement, which takes us to the next level in the model. Overall, however, we have not reduced our time from concept to cash, so it doesn't really represent an improvement. In addition, the entire process is still project managed, making it subject to the rules of project management, with projects green-lit, budgeted, and measured by project.

## Regular Delivery

DevOps fixes the problem of operational silos and brings us to the third level: regular delivery. With

DevOps, our three main elements now become business, DevOps, and customers. The process from concept to cash is shortened, so that's a big benefit, but there are still significant barriers between business, DevOps, and customers. Plus, the main issue associated with all previous low levels of agility remains: business — rather than customers — creates the concepts of what to develop. Modest collaboration occurs at this level, where communication is tolerated.

The problem that the third level highlights is the idea of not connecting to our customers or being disconnected. We simply do not get feedback as to what they do or do not find valuable. But achieving the third level allows the business to gain visibility into the customer element, so that is a major benefit and a progressive step along the chain.

With DevOps, we start to see work as a steady flow of value as opposed to the start-stop worldview of project management. This is done by breaking up the "book of work" (list of projects) into small pieces of value that can be delivered independently. Lean and Kanban visualize and manage work in this model. However, the business still sees the book of work as projects, while IT sees work as a flow of value. This is a difference in perspective that leaves the gap between business and IT intact.

## Continuous Delivery

The fourth level, continuous delivery, shortens the concept-to-cash cycle even further, but once again changes the three primary elements — this time to customer, BizDevOps, customer. The "business" (represented as customer in this model) and customer elements still retain firm boundaries between one another, so that's a big problem, but it is a highlighted problem in this level that identifies the necessary improvement. Business and IT now both see work as a flow of value and both use the same tools, Lean and Kanban, to visualize and manage work.

This change has a big impact on other areas of the business, such as finance (how do you allocate budget?), HR (how do you allocate and bill resources?), and departments (how do you justify budgets and measure success?). And what is marketing's role in all of this? Traditionally, marketing would come up with a suggestion of what customers want using tools such as surveys (which are inherently flawed and often merely reveal general customer wish lists, far removed from

what customers really need or want from your business). The way that people in each of these departments or divisions work and the tools that they employ must change to be more Agile and more collaborative.

### Continuous Exploration

Continuous exploration is our ever-shifting state of nirvana. It breaks down the barriers between customers and the business to where we no longer ask customers what they want but rather give customers the smallest, most rapid iteration of what we think they need, and gauge their uptake to determine whether we will continue to develop. We then continue to develop (if that's the decision) additional features based on feedback and use patterns in symbiosis with customers. In fact, the customer determines what is value in the value stream and the Agile business adapts to the customer's whims and changing needs, even if it means that the value stream needs to transform to something new.

All of what I've mentioned above about using the five ecosystems to guide your enterprise improvement is only one part of a bigger picture. Referring again to Figure 1, you'll see seven columns under "Digital Business Capabilities." The discussion above addresses only one capability: collaboration. It stands to reason that you could have equally detailed discussions for each of the other columns.

## Framework to Enable Business Agility

Another major consideration in this world of complexity of choice is to figure out how to achieve business agility at scale. There are many frameworks. Well-known Scrum is good for a single, small team that works well together, but it's not suitable for scaling up and across the enterprise. In the large-scale world, the big names are Disciplined Agile (DA)/Disciplined Agile Delivery (DAD),<sup>4</sup> Scaled Agile Framework (SAFe),<sup>5</sup> and the much-discussed Spotify<sup>6</sup> engineering framework.

One issue I've encountered is that some frameworks are too prescriptive while others are too vague. SAFe is criticized by many as being too prescriptive, so organizations that think they are unique might be frustrated in their attempts to adopt it. But organizations that seek prescriptive structure (and they are out there) will want more guidance than what the Spotify method provides.

DA provides lightweight guidance to help organizations streamline their IT and business processes in a context-sensitive way. In effect, DA provides a foundation for business agility that consists of levels of Lego-like building blocks (see Figure 4). The challenge is choosing which building blocks to use if you do not have a vision of the end result.

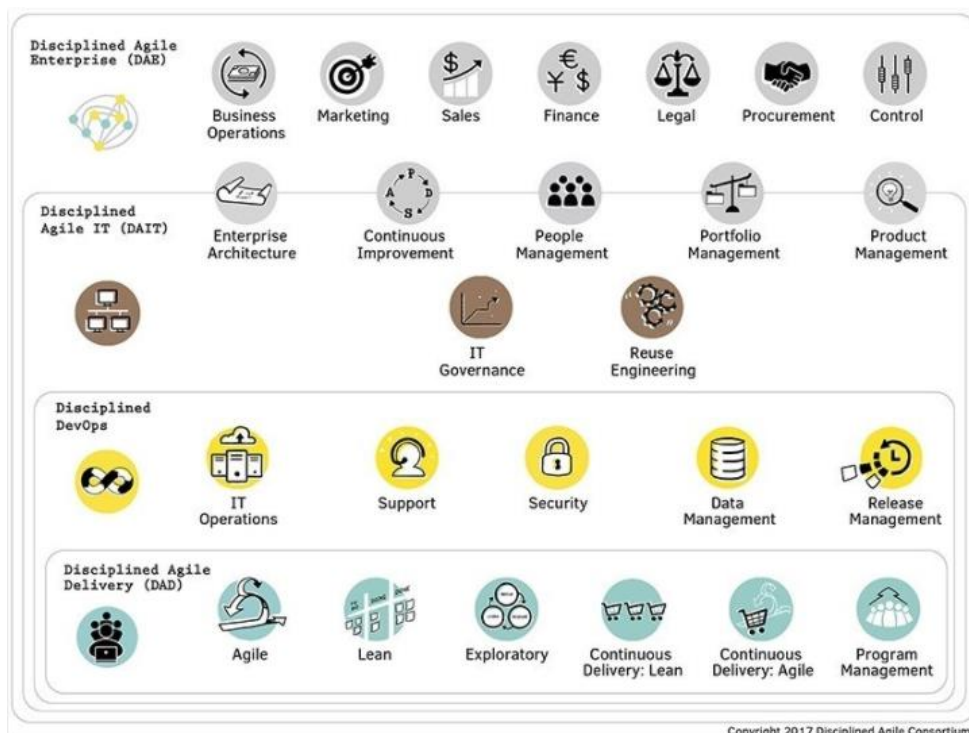


Figure 4 – The Disciplined Agile (DA) framework.

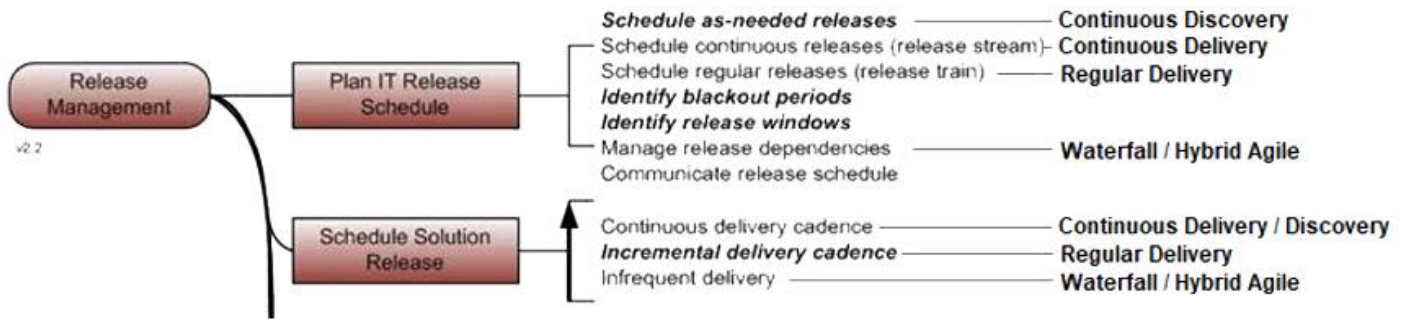


Figure 5 – Mapping DA release management to the DBEs.

The five DBEs can provide this vision and guidance on what building blocks to use. For example, DA provides some strategies to choose from in the context of release management. It becomes easier to choose a strategy once you know what specific DBE you are targeting, as depicted in Figure 5. It’s interesting to note that some DA decision points, such as Schedule Solution Release, are ordered. As you can see, the lower, less effective strategies map well to the lower levels of business agility. As you progress up the DA option list, it corresponds with progressing through maturity levels. The DA framework provides choices that can be applied within your current context and better choices for when your maturity increases.

*When you know where your business fits into the matrix of levels of agility, it becomes easier to rationalize the complexity of the drive to become Agile.*

You could map the three phases of DAD (inception, construction, and transition)<sup>7</sup> to the five DBEs as illustrated in Figure 6. Beyond the scope of this article, DAD supports solution delivery for all but the lowest level of business agility (waterfall), while providing consistent governance strategies across all levels. Once again, teams can choose the most appropriate approach for the context that they face — and can improve upon that choice as they learn and become more mature.

## Summary

When you know where your business fits into this matrix of levels of agility — as well as the elements of each level, their sub-elements, the apparent bottlenecks, and the role of various business divisions, departments, and teams — it becomes easier to rationalize the complexity of the drive to become Agile. Moreover, it becomes simpler to select the frameworks, methodologies, and approaches appropriate to the context of your organization’s level of agility and to determine how best to get the current level right before trying to move on to the next one.

Knowing where your business fits in terms of levels of agility also clearly defines the roadmap to achieve the ultimate state of being highly Agile as well as what pointers to “keep tabs on” to ensure you remain aligned in an environment that is dynamic and constantly changing. Chiefly, you should be better prepared to know how to digitalize your operation in lockstep with customer and market requirements to be nimble, thereby enabling you to be robustly competitive.

## Endnotes

<sup>1</sup>Laloux, Frederic. *Reinventing Organizations: A Guide to Creating Organizations Inspired by the Next Stage of Human Consciousness*. Nelson Parker, 2014.

<sup>2</sup>Larsen, Diana, and James Shore. “The Agile Fluency Model: A Brief Guide to Success with Agile.” MartinFowler.com, March 2018 (<https://martinfowler.com/articles/agileFluency.html>).

<sup>3</sup>The theory of constraints (TOC) is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints (or bottlenecks). It is when you eliminate an earlier constraint that you become aware of the next constraint.

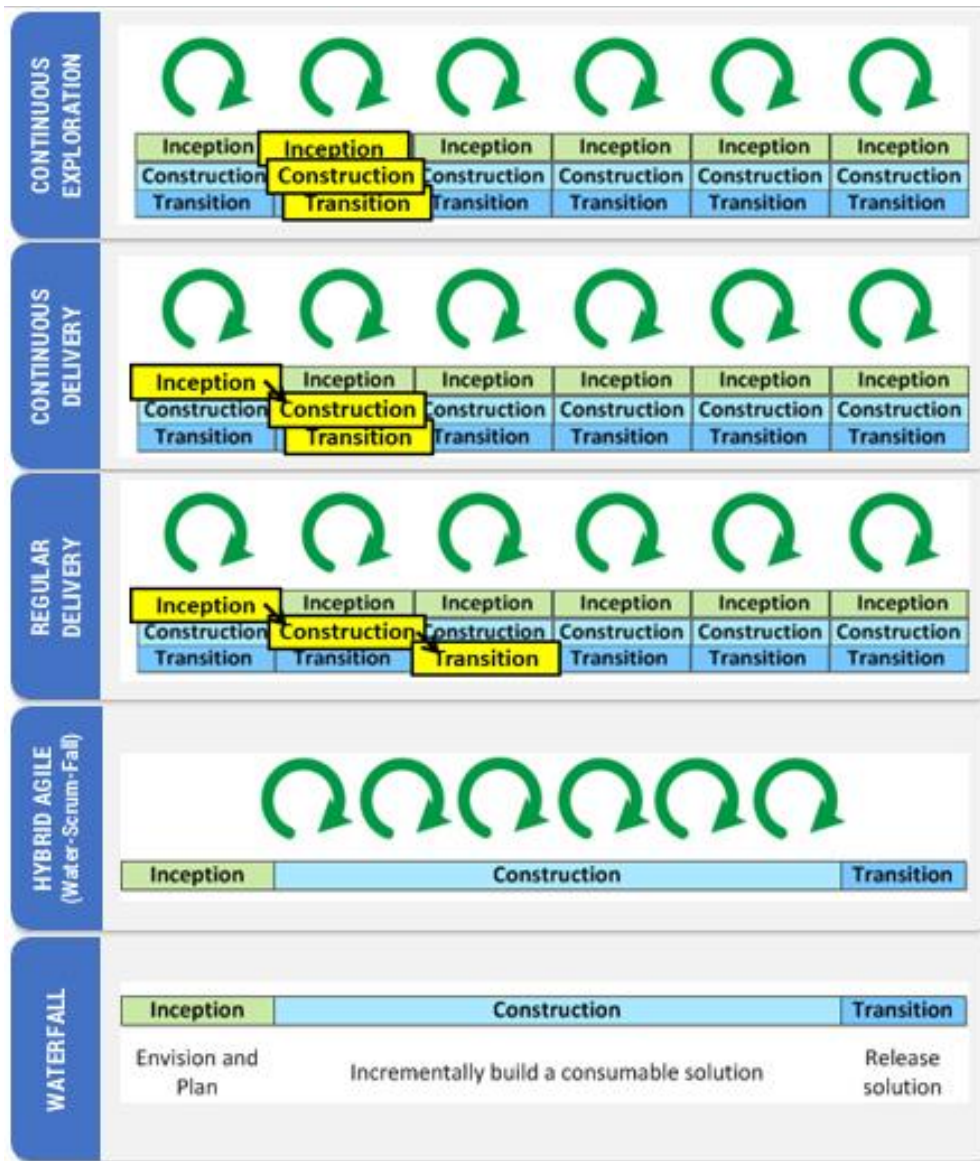


Figure 6 – The Discipline Agile Delivery lifecycle for each DBE.

<sup>4</sup>Ambler, Scott W., and Mark Lines. *An Executive's Guide to Disciplined Agile: Winning the Race to Business Agility*. Disciplined Agile Consortium, 2017.

<sup>5</sup>"SAFe® for Lean Enterprises" (<https://www.scaledagileframework.com>).

<sup>6</sup>Kniberg, Henrik. "Spotify Engineering Culture (Part 1)." *Spotify Labs*, 27 March 2014 (<https://labs.spotify.com/2014/03/27/spotify-engineering-culture-part-1>).

<sup>7</sup>"Full Agile Delivery Lifecycles" (<http://www.disciplinedagiledelivery.com/lifecycle/>).

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# Case Study: Linking Business Workflows and Agile User Stories in an SOA

by Gill Kent and Robin Harwood

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This article presents a case study where a set of proposed business services to be implemented over multiple systems were modeled as workflows with the workflows' component tasks specified using Agile user stories. The stories describe a nominal set of system requirements, allowing for the establishment of direct traceability between system requirements, business workflows, and system-hosted services. An added benefit came to fruition in the form of stories being reused across the different workflows, representing reusable system requirements for the different services. This case study is particularly useful for industry practitioners interested in examples of the approach taken along with the findings of a real project when combining Business Process Model and Notation (BPMN)<sup>1</sup> and Agile development techniques,<sup>2</sup> whether it's within or outside the scope of an SOA framework.<sup>3</sup>

The Agile approach requires systems to be developed incrementally in close collaboration with business users, providing early delivered value, risk mitigation, and improved customer confidence toward delivering working code. Agile development teams rely on the supply of a steady stream of requirements expressed as user stories,<sup>4</sup> which have a basic user-centric structure describing what a user wants from the system and why, in a wider business context, it is required.

For Agile development teams to work efficiently, they depend on a backlog<sup>5</sup> of user stories prioritized for planning. If the backlog runs out of user stories, the development activity will stop; thus, it is vital that a generous collection of user stories is available, from the time of project initiation, to set the development process running and to maintain development impetus beyond the initial increment. Herein lies the underlying approach of executing a disciplined Agile code delivery motivated by valid and relevant business analysis.

## Business Context

The UK Office for National Statistics (ONS)<sup>6</sup> has undertaken a project to migrate the activity of data

collection, as part of its Electronic Data Capture (EDC) program, to a Web-enabled multi-system SOA. This program is meant to replace the existing paper-based and electronic file-based collection methods with an electronic/Web-based survey form for data collection known as an e-questionnaire. Data collection will be more efficient by containing the lifecycle of designing, building, and running statistical surveys within the Web space, with no paper or e-file submission-based dependencies. This will allow the development of online surveys by ONS operational staff, without technical programming skills, who can implement e-questionnaires through automated design, build, and run services. The ONS can thus achieve its business objective of conducting statistical surveys via this new set of Web forms (e-questionnaires) for data collection from respondents.

Although the ONS already has a data collection Web interface, it has existed for the submission of prepopulated spreadsheet files containing data for a small number of specialist surveys. This interface does not scale effectively due to the differences between survey spreadsheet designs. With the advent of Web-driven services, the ONS recognized that a strategic change was needed to accommodate the new e-questionnaires. In addition, existing ONS downstream systems, as used for statistical analysis of collected data, were required to adapt to accommodate the proposed new data collection services.

The planned strategic replacement of these existing forms of data collection raised a business need for new ways of working with the envisaged new and transformed system services. This provided the motivation for the work described in this article. This work comprised an exploratory business and systems analysis, conducted over a two-month period during 2015 at the ONS by the authors, working as an Agile BA (business analysis) "buddy team." It permitted the scope of the planned e-questionnaire product to be understood prior to the project's official launch in late 2015. Throughout this time and following its official launch, the e-questionnaire project followed the UK



Government Digital Service (GDS) process,<sup>7</sup> a UK government-authorized form of Agile development. The exploratory analysis described herein formed part of the GDS Discovery phase.<sup>8</sup>

## The GDS Process

The GDS process was formulated for UK government IT projects to bring digital delivery into a more central focus and allow existing UK government services to respond to the new digital landscape. As an Agile process, it addresses the risks of project failure due to overspend and/or late delivery. In the GDS process, the option remains open to terminate a project a considerable way into its lifecycle, should it appear technically nonviable, too costly, or undeliverable within the available timescale. As with other Agile approaches (e.g., Scrum, XP, or Disciplined Agile [DA]), the GDS process facilitates the option to address a project’s risks by adapting short-term development iterations or sprints to explore technical, cost, or quality aspects. Indeed, these methods can be used directly, within the GDS process umbrella, to implement its required deliverables, depending in part on the existing knowledge and experience of the project staff.

The GDS process describes, at a high level, the phases through which an Agile project will progress, from Discovery through product deployment (“Live”), as shown in Figure 1.<sup>9</sup>

### Explore ... and Discover

The GDS Discovery phase was implemented in the form of an exploratory activity, allowing the scope of the project to be identified and analyzed. The approach taken follows the same goals as those recommended

for implementing the Disciplined Agile Delivery (DAD) Inception phase<sup>10</sup> of the DA framework.

The objective of the exploratory activity was two-fold: first, to identify the business services associated with use of the e-questionnaire; and second, to identify the requirements for the host systems (both new and legacy). During the Discovery phase, 10 such business services were identified and were used to form the context for specifying the underlying host systems’ requirements. By meeting these two objectives, the team was able to move forward in an “enterprise-aware”<sup>11</sup> manner.

Following the two-month exploratory activity, the remainder of the Discovery phase was relatively short, comprising one week, dedicated to allowing the newly recruited development team to set up its development environment. This team had a ready-made baseline from which to expedite its work because, due to the exploratory workflows and stories, an initial set of system requirements were specified within a high-level business context.

As development and delivery of working software progressed through the Alpha phase, the development team learned more about the system and thus specified more technically biased stories and refined the initial stories. Such an evolution is an expected part of Agile development, as customer collaboration refines the requirements, and knowledge of the technical challenges is expanded within the development team.

### Service Models, Epics, and Workflows

A range of existing legacy systems for Web-based data file submission and downstream statistical processing presented a set of constraints on how an e-questionnaire could be implemented to provide design, build, and run services for Web-based data collection.

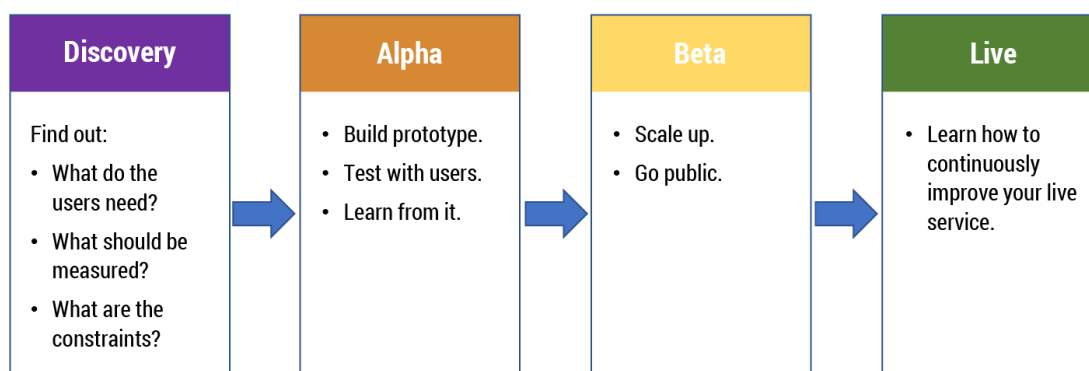


Figure 1 – The UK’s Government Digital Service lifecycle phases.

With the joint objectives of defining the business services to host the e-questionnaire and specifying the system requirements for those services, an approach was formulated to express the required services as a set of business workflows containing sequential functional tasks. These services were modeled as a set of BPMN Level 2 workflows,<sup>12</sup> which provided a suitable format. For all workflows, each individual BPMN task was elaborated as an Agile user story, and a direct link was therefore established between the system requirements, expressed as user stories, and their respective business services. A business services backlog for the launch of the e-questionnaire project was built by developing these workflows and user stories during the Discovery phase.

*Each workflow diagram maps out an Agile epic and demonstrates how a collection of Agile user stories can be linked to deliver business value and simultaneously specify a set of system-level requirements apportioned, via swim lanes, to their respective systems.*

## The Business Vision

### Establishing the Scope

There were 10 BPMN Level 2 workflows identified as addressing the required business services of the e-questionnaire system. These were:

- E1: Basic Survey Collection
- E2: Survey Collection with Validation
- E3: Create and Publish a Questionnaire
- E4: Edit a Questionnaire
- E5: Pause/Resume Collection
- E6: Whole Response Re-Submit
- E7: Admin Console
- E8: View Previous Responses
- E9: Administrator Generates Reports
- E10: Override Mandatory Question

The use of the prefix “E” designates each workflow as an Agile epic. In Agile terms, an epic comprises a set of logically related stories. These combine to deliver a common business goal. For each of the above epics, its respective business goal is described by its title. The workflow “E1: Basic Survey Collection” is shown in Figure 2. This workflow represents the service as used for gathering statistical data from a data source or “respondent.”

In Figure 2, the BPMN tasks are represented by the round-cornered rectangle icons. These were elaborated textually using Agile user stories, which describe the functional requirements placed on the host systems. Each story title, as expressed within its task icon, provides a reference to its elaborated (detailed) textual form, which is held outside the graphical modeling tool. The host systems are shown as swim lanes; of these, the systems “Question Engine,” “Survey Editor,” and “Survey Library” represent new systems to be developed; while “Web (External)” represents an existing (legacy) system that requires adaptation. The swim lane entitled “Assisted Digital” represents a high-level set of business services required to support access to new and legacy systems. For the “Data Validation & Aggregation” swim lane, no tasks or information entities appear, so the swim lane is empty.

Figure 3 describes the system interactions that occur for the creation and publication of an e-questionnaire. As with E1, each host system is represented by a swim lane. Each BPMN task denotes an Agile user story, representing a direct requirement on its respective system. The workflow diagram for “E4: Edit a Questionnaire” is presented in Figure 4. (Due to space restrictions, we could not present all the workflow diagrams.) Note how, in Figure 4, the “Data Validation & Aggregation” swim lane contains a single information entity called “Routing and Branching Rules.” This is a collection of business rules that the task “Survey Routing and Branching,” as executed by the “Survey Editor” system, refers to, to verify whether the questionnaire has been designed correctly.

The principle described was applied to each workflow. Each workflow diagram maps out an Agile epic and demonstrates how a collection of Agile user stories, which elaborate the workflow tasks, can be linked to deliver business value as a service and simultaneously specify a set of system-level requirements apportioned, via swim lanes, to their respective systems.

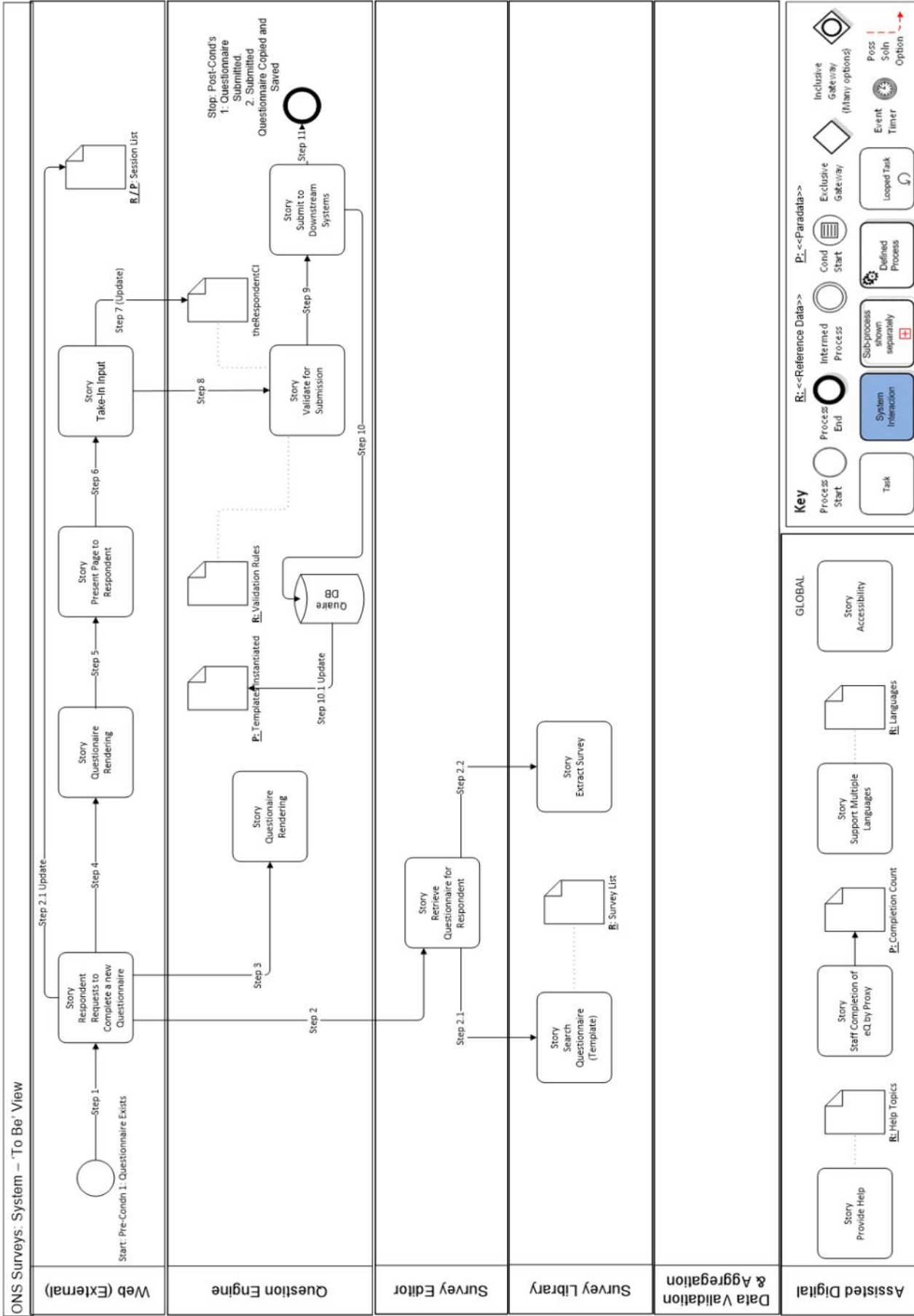


Figure 2 – E1: Basic Survey Collection workflow diagram.

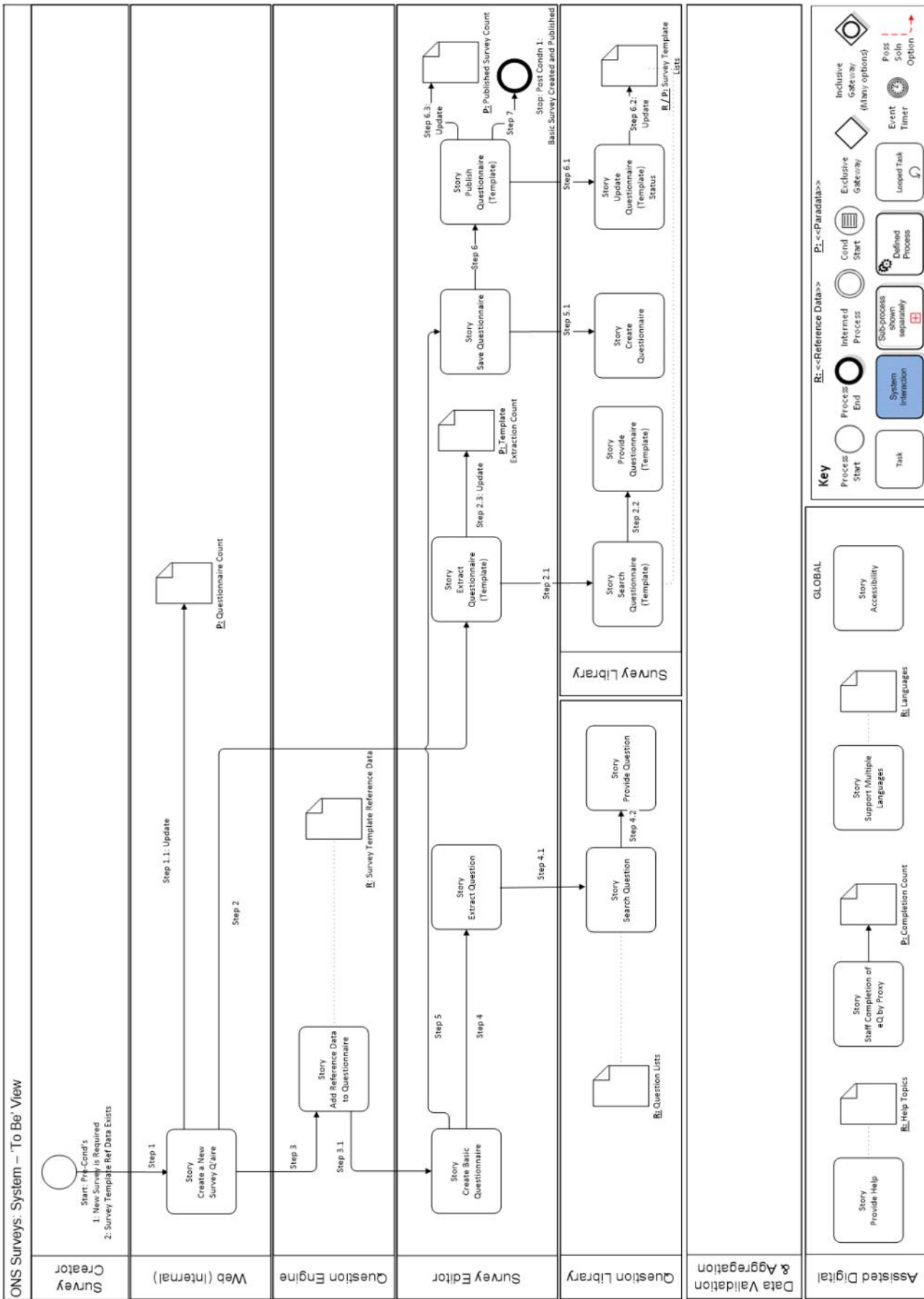


Figure 3 – E3: Create and Publish a Questionnaire workflow diagram.

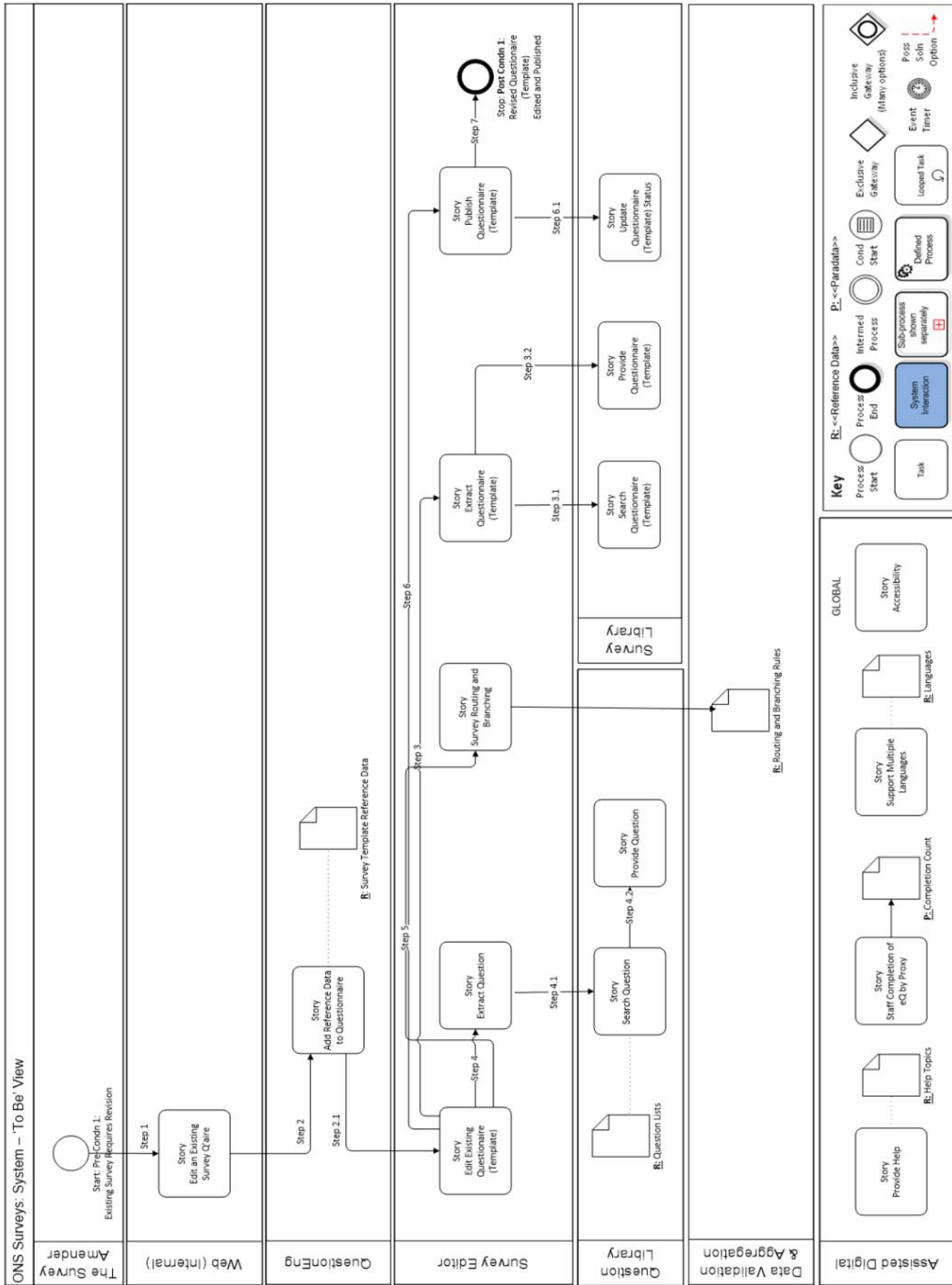


Figure 4 – E4: Edit a Questionnaire workflow diagram.

These workflow diagrams demonstrate that a BPMN Level 2 workflow, as a collection of tasks, aligns with an Agile epic as a collection of user stories. These separate modeling paradigms therefore exist at an equivalent level of abstraction. Within the context of an SOA, the epics and workflows provide two alternative views of a service delivering to business needs. An important aspect of this three-way relationship is the ability afforded to project management to scope each service and focus the associated development resource based on early business analysis and the resulting system requirements. This represents a disciplined approach to Agile development and traces successful systems delivery right back to the motivating business need. Independently, a more formal exposition of this type of approach is described in the Disciplined Agile (DA) framework.<sup>13</sup>

*Within the context of an SOA, the epics and workflows provide two alternative views of a service delivering to business needs.*

## Story Reuse

The 10 workflows (E1-E10) define the overall scope for use of e-questionnaires at a business level. To enable the new Question Engine, Survey Editor, and Survey Library systems and the existing legacy systems to host these processes, a total of 65 unique stories were identified. Overall, 149 stories made an appearance on the workflow diagrams, indicating a reuse of the unique set of 65 at a level of 129%.

## Agile Story Format

An Agile user story, in elaborating a workflow task, is specified textually in a format that captures the essence of what a user wishes to gain of value from the system under analysis. In the following example, if a user (in this case, an ONS Survey Editor) needs to revise an existing e-questionnaire prior to releasing it for data collection, then the functionality required of the system may be outlined as follows:

Story: Edit an Existing Survey Questionnaire

As a: Survey Editor;

I want to: edit an existing e-questionnaire;

So that: I can change an e-questionnaire to gather different statistical data and then save the revised version.

To validate the stories, during development they were each assigned conditions of satisfaction in the form of one or more acceptance criteria (AC).<sup>14</sup> Acceptance criteria clarify how a requirement is expected to manifest itself upon system implementation; they also provide guidance for system testers during development and for customer and user acceptance testing. For the above story, the following is an example of two of its ACs:

AC1: A question can be removed from the questionnaire.

AC2: A new question can be inserted into the questionnaire.

Another story example is that of setting up a questionnaire to make certain survey response values available for respondents to choose from:

Story: Add Reference Data to e-Questionnaire

As a: Survey Editor;

I want to: insert generic reference data for use in the e-questionnaire;

So that: the e-questionnaire provides a set of data for selection by respondents during a survey.

Reference data, as cited in the above story, may include a list of values — accessible, for example, via a drop-down menu — for respondents to select preset answers when filling in the e-questionnaire or as “guidance notes” to help respondents complete the survey. The story format described here is informal, representing a departure from more traditional requirements formats; however, the value it brings to systems development is that of speed in getting the development moving and maintaining development impetus.

## Nonfunctional Requirements Format

Nonfunctional requirements (e.g., for specifying performance, data definitions, or reliability), by their nature, do not depict functional behavior from a user point of view. Therefore, the format, as described previously for functional user stories (e.g., “As a <<User>> ...”), may be awkward and somewhat constraining to apply. Nonfunctional requirements for both the legacy and new systems were captured in a textual declarative form. For example:

NFR\_234: Allowable Time to Start New e-Questionnaire:

“The maximum delay for a respondent to wait to start the completion of their designated e-questionnaire, once requested, shall not exceed 30 secs.”

These were held along with the (functional) stories and linked, for traceability purposes, in a requirements management tool. From a development point of view, the role of nonfunctional requirements and how they trace to functional stories is considered an important factor in managing the development of the overall system architecture.<sup>15</sup>

Following completion of the Discovery phase and throughout the subsequent GDS Alpha phase, the stories initiated during Discovery were subject to revision and rework as more was learned about the system through prototyping and early delivery to users. Although the overall scope of the original vision did not change, further stories were introduced and existing stories reworked. This is an essential aspect of the Agile approach, allowing risks to be addressed early and clarity of business needs to be realized.

## Case Study Conclusions

Some conclusions we made from this case study include the following:

1. Agile modeling of business services and their host systems provides, respectively, an evaluation of the proposed enterprise transformation scope and a vision of the level of required system change.
2. The BPMN Level 2 workflow diagram format provided an effective representation of both legacy and proposed SOA services, demonstrating alignment to, and potential divergence from, the enterprise strategy of digital transformation.
3. Agile business epics, comprising sequences of system-level user stories, proved effective for the elaboration of the SOA services, as hosted by one or more systems.
4. Each task within a graphical business workflow, when elaborated via a user story, completed traceability between (SOA) business services, graphical business workflows, Agile epics, and system requirements (as portrayed by the user stories).
5. Establishing a business vision for use of the intended systems early in the Discovery phase provided a clear scope for the ensuing GDS phases.
6. By investing in Agile modeling of business change and system requirements early in the lifecycle, subsequent development focused on refinement

of detail around services, workflows, epics, and stories.

7. An unexpected benefit of this analysis was a higher-than-anticipated level of user story (system requirements) reuse across the different workflows/SOA services.
8. Once the initial technical strategy of digital transformation to the use of Web-based services had been identified, exploratory analysis at the business level necessarily broadened the scope of host systems to be considered. This led to a wide backlog of architecturally relevant stories, obviating the risk of late identification of relevant host systems and consequent rework.
9. Potential disadvantages of this approach are:
  - o Having project staff who are not experienced in Agile modeling and specification would make this approach difficult to follow, at least initially.
  - o Not having an experienced Agile project manager to keep the project on track from day one would expose the project to early risk of failure.
  - o Changing and refinement of requirements could affect customer confidence unless the developmental reasons for such change are clearly communicated.

## Case Study Recommendations

In this section, each numbered recommendation relates directly to its counterpart in the previous “Conclusions” section.

1. Use Agile modeling, at both business and system levels, to represent business transformational scope and a vision of proposed system change.
2. If modeling an SOA, consider representing the legacy and proposed enterprise services, as hosted by different systems, using BPMN Level 2 workflows. While not exclusive to SOA modeling, it is one way to illustrate convergence or otherwise with the enterprise direction (in this case, digital transformation).
3. If an SOA is to be implemented using an Agile development method, epics may be used to elaborate its services. Alternatively, other

behavioral techniques, such as scenario modeling or use cases, may be employed at this level if this is more consistent with available staff skill sets.

4. Elaborate workflow tasks textually with user stories, representing system requirements; thus, link system requirements, in a disciplined way, directly to business needs.
5. Develop the business stakeholder vision early in the lifecycle, then monitor the business scope of the new set of systems, as they are developed, to identify potential “scope creep” and address changing stakeholder needs.
6. Accept that, as the project progresses, the initial user stories will evolve and change. This is part of the Agile process, leading to an improved quality of the eventual solution.
7. Identify opportunities to reuse stories across different workflows, enabling direct reuse of requirements across an SOA. Consider this for project resource planning.
8. Conduct this type of combined business and systems analysis as part of the early lifecycle (e.g., the GDS Discovery phase or DAD Inception phase) to explore the business context and scope, develop a clear vision for the envisaged host systems, and test the viability of the initial technical strategy. This will facilitate a more efficient start and ongoing engagement for the code development team.
9. Prepare a core team with the necessary skills in the SOA, BPMN, and Agile approaches. Be sure to include an experienced Agile project manager and keep the customer engaged.

## Acknowledgments

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## Disclaimer

The opinions expressed herein are those of the authors only and do not represent policy on the part of the ONS or use of the GDS method.

## Endnotes

<sup>1</sup>Object Management Group Business Process Model and Notation ([www.bpmn.org](http://www.bpmn.org)).

<sup>2</sup>“Manifesto for Agile Software Development” (<http://agilemanifesto.org/>).

<sup>3</sup>Rosen, Michael, et al. *Applied SOA: Service-Oriented Architecture and Design Strategies*. Wiley, 2008.

<sup>4</sup>Rehkopf, Max. “Epics, Stories, Themes, and Initiatives.” Atlassian Agile Coach (<https://www.atlassian.com/agile/project-management/epics-stories-themes>).

<sup>5</sup>Rehkopf (see 4).

<sup>6</sup>Office for National Statistics ([www.ons.gov.uk](http://www.ons.gov.uk)).

<sup>7</sup>“Agile and Government Services: An Introduction” ([www.gov.uk/service-manual/agile](http://www.gov.uk/service-manual/agile)).

<sup>8</sup>“Agile Delivery” (<https://www.gov.uk/service-manual/agile-delivery>).

<sup>9</sup>“Agile Delivery” (see 8).

<sup>10</sup>“Inception Goals” ([www.disciplinedagiledelivery.com/inception-goals-3](http://www.disciplinedagiledelivery.com/inception-goals-3)).

<sup>11</sup>“Principle: Enterprise Awareness” (<http://www.disciplinedagiledelivery.com/enterpriseawareness/>).

<sup>12</sup>Object Management Group Business Process Model and Notation (see 1).

<sup>13</sup>The Disciplined Agile (DA) Framework (<http://www.disciplinedagiledelivery.com/>).

<sup>14</sup>Parker, John. “Acceptance Criteria for Business.” Enfocuss Solutions, 4 February 2013 (<http://enfocussolutions.com/acceptance-criteria-for-business>).

<sup>15</sup>The Disciplined Agile (DA) Framework (see 13).

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# The Wizard of OSS: Follow the Open Space and Sociocracy Road to Enterprise Agile Transformation

by Jutta Eckstein and John Buck

Due to the dramatic digitalization occurring across many industries today, entire enterprises must be able to transform and innovate continuously and respond rapidly to changing market conditions. A true Agile business transformation cannot result from simply “trying harder” to use known Agile methods, if only because Agile has no answer to questions surrounding legal organizational structure, strategy, creativity, or innovation.

For this reason, the key components necessary for a successful enterprise Agile transformation must be found outside of Agile, in other streams of development. These other streams can more readily guide us in developing:

- Continuous improvement strategies necessary to enable self-sufficiency and adaptation in every department — not just the software department
- Executive and board roles in driving organizational agility
- Processes, strategies, and structures that enable the current culture to self-organize for company-wide agility

We suggest the term “BOSSA nova” (B = Beyond Budgeting, OS = Open Space, S = Sociocracy, and A = Agile)<sup>1</sup> to describe a composite of four streams of development that, together, can lead organizations toward a broad enterprise Agile transformation. “Bossa nova,” the style of music, is a synthesis of samba and jazz. Similarly, BOSSA nova, the enterprise strategy, is a synthesis of different streams of development. Bossa nova is also an intricate dance, where dancers adapt their steps to the music, and their movements and their spirit in turn influence the musicians. In the same way, BOSSA nova helps your company adapt to its complex context and to influence that context. Finally, Bossa nova in Portuguese means “new trend or new wave” — which is how we envision a true enterprise Agile transformation.

Readers will be familiar with the A in BOSSA nova (Agile) and perhaps with the B (Beyond Budgeting — an alternative approach to budgeting). In this article, we will focus on the OSS (Open Space and Sociocracy) and how organizations can leverage these two perhaps less familiar streams of development for a successful enterprise Agile transformation. The OSS components focus on answering questions about the strategy for the legal organizational structure and the incorporation of innovation.

*A true Agile business transformation cannot result from simply “trying harder” to use known Agile methods.*

In brief, Open Space (originally just a facilitation technique) refers to the idea of inviting everybody to put forward ideas they’re passionate about. The passion must be bound by the responsibility defined by the overall theme. As an example, video game developer Valve Corporation invites every employee to suggest ideas about a new game or improvements to existing games. If there are enough employees interested in implementing an idea, the company will pursue it. If there is not enough interest for the idea, the company lets the idea die because the missing passion signals that it is probably not worth implementing. In this way, honoring passion allows a company to leverage the innovative power of each employee.

Sociocracy means rule by the “socios,” or people who know each other as partners. It is a subset of democracy, which is ruling by the “demos,” or a general mass of people with no social relationships.<sup>2</sup> Sociocracy is a form of democracy designed for use in organizations. It introduces feedback that can’t be ignored by building it into the organizational structure. Moreover, by ensuring

that every voice is heard, no perspective can be overlooked, which leads to continuous verification and improvement and therefore innovation.

If you are associated with a bank, insurance company, manufacturer, and so on, that relies more and more on digital technology (are you with an auto manufacturer or an IT company whose computers ride on the roads with people in them?), your company should be looking toward its IT department as the company's cultural leader. The IT department may talk about and use such concepts as Scrum and retrospectives, and, at the same time, must drag members of the board, or the top-level executive suite, along like dead weight.

Well, now is the time for those people to rise from "drag-ee" status to leadership. The IT department can take your company only so far toward flexibility and nimbleness. To deal with the VUCA (volatile, uncertain, complex, and ambiguous) world created by the explosive, exponential growth of new technologies, the whole enterprise must work toward agility. The concepts of the Agile Manifesto,<sup>3</sup> the core guideline for modern software developers, are focused on software production concerns. They potentially hold a lot of value for companies, but few have had much success in extending the Manifesto's principles to the rest of the company, especially the board. (We find something humorous in imagining the board having daily Scrum

stand-up meetings or organizing their work with a backlog and thinking that this makes the organization Agile.)

To support you in transforming your whole company toward enterprise-wide agility, we have generalized the four Agile Manifesto core statements to four values: (1) transparency, (2) self-organization, (3) constant customer focus, and (4) continuous learning (see Figure 1). The remainder of this article offers some hints about how the IT department can pass the torch of these four values over to the rest of the company.

## How Can Executives and the Board Drive Organizational Agility?

First, put aside logic. You can't reason your way to an answer. Because you are dealing with complexity, start probing to gain insights about what will work and what won't. Adopt a disciplined, experimental curiosity about possibilities for developing the company's strategies, structures, and processes. Establish a process of examining together how you can transform the company that has the capacity to handle the VUCA condition you're facing. By conducting a series of exploratory efforts — or probes — to guide experiments with transformative new strategies, structures,

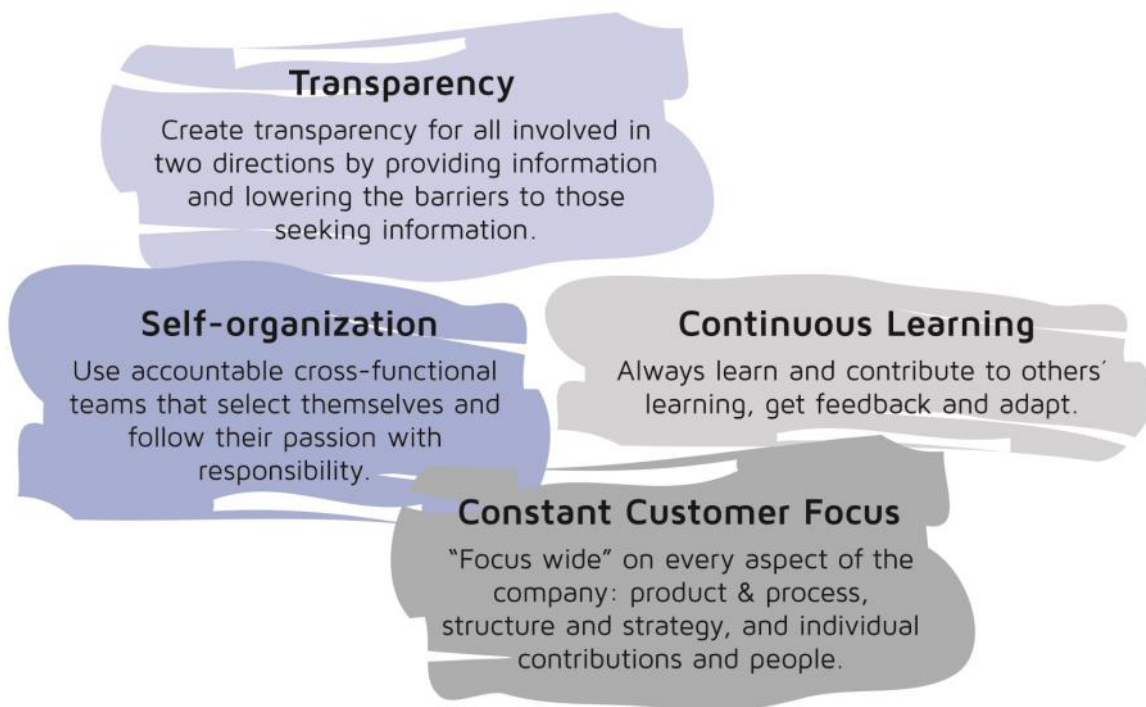


Figure 1 — The four values for enterprise Agile transformation.

and processes, you will discover how to learn from experiments.

You could even implement the probe, “Can we really learn from failure?” Although the belief in learning from failure is not new, per se, it is rare that the executives and the board live up to it. Driving organizational agility means that top managers talk openly about failures and learnings. An experiment arising from the probe could be for the board to run retrospectives regularly, where they discuss the things that worked and didn’t work so well. It is crucial that these learnings be *transparent* to emphasize that everyone in the company can fail and (even more important) learn from failures. Implementing such a probe will support executives and the board in implementing the enterprise Agile transformation values of transparency and continuous learning.

After reflection, it might occur to you to stress test the values and wonder, “What would happen if we took the values to their extreme?” For example (shifting to a different value, constant customer focus), you could decide to probe the question, “How can we include customer feedback in each board meeting?” The implication would be that every proposed board decision would need to consider the pertinent question, “How will this decision impact the customers?”

Your curiosity can be unlimited and fun: “Would the board think more creatively if we took away their big table?” An international bank experimented with this question and instead of “hiding” behind a table, the board members now sit or stand in a circle during their meetings and sometimes move around the room participating in different simultaneous discussions, very much in the format of Open Space. According to the experience at this bank, the simple act of removing the table has changed the discussions, making them more honest and creative. Turning the boardroom into a sandbox will ripple throughout the company (“If they can do it, so can we”). Greater creativity in dealing with VUCA is very likely to follow.

## How Can Organizational Structure Ensure Alignment and Equivalence?

If you are with a conventional company (probably one established before 2010), it’s very likely that you have a command-and-control structure with a board dominated by shareholder representatives and operationalized starting with the CEO. There may

be many levels of command, down to section- or unit-level supervisors. This structure is time-tested, beginning with the pharaohs of Egypt! It has the advantage of clearly delineating authorities, responsibilities, decision-making roles, and accountabilities. It has the disadvantage that it tends to be unresponsive to change and to repress the very creativity that you need for your company to keep up with today’s rapidly changing markets. For one thing, it tends to repress feedback.

*One of the most crucial modifications needed to the old Pharaoh command system is a hard-wired way for executives to receive feedback from staff that they can’t ignore.*

One example is Kodak, an industrial giant that toppled when the market suddenly shifted from silver halide film to digital. Kodak staff had registered several digital patents for the company, but the top executives, who traveled to their suite on the top floor of the headquarters via their own private elevator, were unable to appreciate the vision those patents represented; in effect, they were unable to hear the staff. You might argue that Kodak had a process problem only because there was poor communication. But it was a structural problem, since hierarchies as commonly implemented are made mainly for top-down, and not bottom-up, communication.

Learning from this example, one of the most crucial modifications needed to the old Pharaoh command system is a hard-wired way for executives to receive feedback from staff that they can’t ignore. You may have an open-door policy or listening sessions with your staff or a practice of managing by walking about, but none of those constitutes a proper feedback system. This observation suggests the probe, “Can our board of directors have the CEO and an elected representative on it without interfering with the work of the board?”

As articulated in Sociocracy, such a “double-linking system” is at every level of the enterprise to ensure *self-organization* and effective feedback: the manager and staff from each unit lower in the hierarchy together elect a representative(s) to sit with the higher-level managers in periodic retrospective sessions to establish policies (see Figure 2).

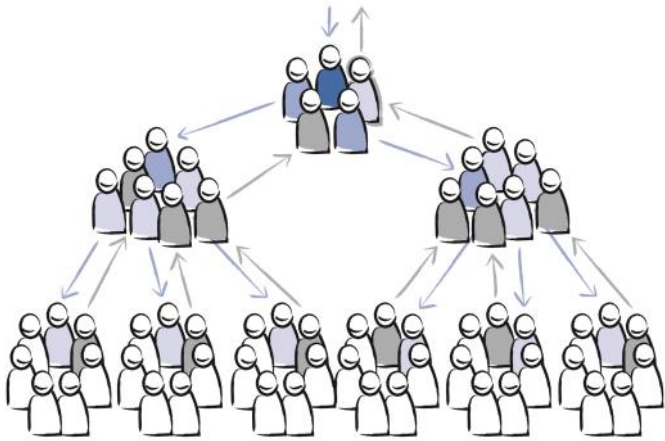


Figure 2 – Double-linking structure for hard-wired feedback.

To elect representatives and to make decisions on policy, Sociocracy calls for the use of consent procedures. Making a policy decision by consent means that nobody feels there is an unacceptable risk to adopting a proposed decision. Although consent sounds like consensus, it is quite different: consent seeks “good enough for now, safe enough to try” solutions and asks for acceptance rather than the agreement of consensus. If anyone has an objection, it is not a block but rather the beginning of a creative process to resolve the concern. This approach lets managers and staff make decisions effectively and efficiently together and ensures that feedback in the system is really heard.

***Does culture drive success, or is culture emerging from the implementation of carefully considered strategy, structure, and processes inside the organization?***

This double-linking structure, a way of hardwiring feedback into the fundamental corporate power structure, results in equivalence between executives and staff. (It’s possible that some talented staff members will be elected as representatives several levels above — even to the board.) At first, this equivalence, sitting with workers to make policy, may seem uncomfortable. However, experience shows that leadership can come from any place in the organization and that creativity comes from surprising places (otherwise, it wouldn’t be creative!). So always be prepared to be surprised, as one

of the Open Space principles suggests. You might even decide to experiment with completely dissolving the Pharaoh structure temporarily with a company-wide Open Space day (or three), in which everyone — workers, managers, even customers — is invited to gather and develop new policies and strategies. Amazing innovations can arise from a little injection of democracy into a company.

## How Does Culture Drive Organizational Agility Success?

Does culture drive success, or is culture emerging from the implementation of carefully considered strategy, structure, and processes inside the organization? Our view is the latter, and the good news is that culture is something that executives can affect. One kind of culture typically emerges from an old Pharaoh hierarchy. Another kind of culture emerges from a hierarchy of trust.

One of many possible areas to start guiding cultural change could be performance evaluations. The values the executives have defined for a company culture often sound as if they would support an Agile way of working (no matter what kind of organization it is). However, using performance evaluations as a litmus test typically shows whether these values are really honored. Thus, you need to probe to verify whether your performance evaluation guidelines support the stated company values. For example, if you are serious about an enterprise Agile transformation, your company must constantly *focus on the customer*. You may think “of course we do that,” but is it really true?

The probe illustrated in the sidebar (from our recent book *Company-wide Agility with Beyond Budgeting, Open Space & Sociocracy*)<sup>4</sup> could assess if this is really happening. A probe approach honors Open Space’s invitation to suggest ideas or improvements around a theme (in this example, it is a performance evaluation focusing on customer interests). In a non-OSS approach, a supervisor would define the evaluation criteria, which typically reduces the buy-in of the people involved. Humans don’t want to be controlled, but they do want to get better. This probe example illustrates the kind of action needed to really transform your culture. There are many more probes to try for a successful enterprise Agile transformation.

## Probe: Are Performance Evaluations Really Reflecting Customer Focus?

**Background.** Performance evaluations can become meaningless games, endured by staff and supervisors alike. They may include standardized corporate checklists that have little to do with the customers' actual needs. The team can work hard to develop outstanding skills and performance only to be told that the measuring must conform to a bell curve. So why try hard to develop? Or, there might be a measurement of "we will count the number of tests you write as a programmer and the more tests, the better." A savvy programmer may then write lots and lots of meaningless tests. (The authors are aware of a hospital that measures the productivity of its doctors by the number of surgeries performed! A customer-focused measure instead could be "number of patients made healthy.")

**Hypothesis.** If customer focus is the foundation for performance evaluation, customer satisfaction improves.

**Experiment.** Choose a small number of working units (four, for example). As a premeasure, identify customer satisfaction for each unit using your current method of determining customer satisfaction (surveys, interviews, repeat business, thumbs-up ratings, etc.).

**Set up an A/B test.** Designate two of the units as controls and the other two units as experimental. Ask each of the experimental units to write and implement their own performance evaluation criteria so that the criteria are related to their work and reflect customer interests. Have the control groups revisit their current performance evaluation factors.

After a defined timeframe (for example, a couple of months or many months, depending on the type of work), measure customer satisfaction again using the premeasurement methods. Did customer satisfaction improve for the experimental units compared to the control units? If so, there would be several possible next steps. For example, have the control units start setting their own performance evaluation criteria and confirm that customer satisfaction then improves. Also, keep monitoring customer satisfaction for the experimental units to see if it continues to improve. You could also validate the experiment by repeating it with another set of units, and then consider changing the performance evaluation methods for the whole company.

## What Are the Key Components of Continuous Learning?

The challenge of digitalization (which is the main disruptive force pushing enterprise Agile transformation) requires companies to acknowledge that the rate of learning is more important than the return on investment (ROI), as Salim Ismail and his colleagues assert in their book on exponential organizations.<sup>5</sup> So the ability to produce *continuous learning* is today's main currency.

Consider another probe: "Can we be more scientific?" If your company hires scientists in its technical areas of work, you are likely to encourage them to publish and attend scientific conferences. But only technical scientists get such encouragement. Innovations in the way you organize your group intelligence are likely to be considered a trade secret. As a result, companies all over the world are trying to learn the same lesson in isolation from each other — and, in fact, units of the same company are unlikely to be sharing the learnings from their experimentation. This situation is, needless to say, wasteful. And it likely inhibits your learning.

This line of thinking might lead you to establish a scientific approach in the company to ensure continuous, long-term learning and improvement. You might, for example, probe to ask, "What would happen if we instituted a journal of governance technology?" In the journal, you would publish the results of your board experiments and encourage others in the company to probe VUCA-related questions and publish the results in your peer-reviewed journal. Make the local university aware of your journal and invite other companies and organizations in town to contribute as well. The key measurement of this experiment would be: "Does the level of sophistication and innovation in the way we run the company rise in ways attributable to the journal?" Another measurement of the journal experiment would be: "Does the company keep publishing and keep experimenting, even when we are in crisis?" If so, give yourself an award for high "governance fluency"! (analogous to "Agile fluency,"<sup>6</sup> which can be used to diagnose how fluent you are with Agile in your IT department).

Another key component for establishing a long-term continuous improvement strategy is to implement an Open Space attitude: invite people to invest their time,

attention, and energy wherever they think the highest ROI will be for themselves, the company, and also for the customers. Let people follow their passion and decide which meeting or which idea is worth this investment and will yield the best return. This does not mean everyone can just do anything, however; the passion of the people is bound by their joint responsibility for the company's success.

## Conclusion

By incorporating the lessons of Open Space and Sociocracy, executives can bring forth their wizardry to powerfully improving progress toward achieving enterprise Agile transformation. OSS will challenge them to step outside their familiar frameworks to find new ways of looking at their companies. These new perspectives will give them fresh ideas for handling persistent and vexing challenges. OSS will enable executives to:

- **Adopt decision-making methods**, such as consent, that enfranchise the whole staff, so the enterprise achieves the kind of full buy-in required to implement change quickly.
- **Empower teams and individuals** to make an hierarchy agile with double-linking.
- **Elect** — and don't appoint — people for many kinds of roles to ensure new leaders can emerge quickly when the need for change demands different leadership skills.
- **Invite everyone to follow their passion** and suggest ideas for continuous innovation and improvement.
- **Be prepared to be surprised** all the time by anyone!

## Endnotes

<sup>1</sup>Eckstein, Jutta, and John Buck. *Company-wide Agility with Beyond Budgeting, Open Space & Sociocracy: Survive & Thrive on Disruption*. CreateSpace, 2018.

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<sup>3</sup>"Manifesto for Agile Software Development" (<http://agilemanifesto.org>).

<sup>4</sup>Eckstein and Buck (see 1).

<sup>5</sup>Ismail, Salim, Michael S. Malone, and Yuri van Geest. *Exponential Organizations: Why New Organizations Are Ten Times Better, Faster, and Cheaper Than Yours (And What to Do About It)*. Diversion Publishing, 2014.

<sup>6</sup>Agile Fluency Project (<http://agilefluency.org/>).

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# Core Thinking Patterns for Lean/Agile Organizations

by Srinivas Garapati

[The] human mind is like a fire! The fire is a creator, maintainer, and destroyer.

— Vedic scriptures

This article explores the ideas and concepts to define (or redefine) and construct a Lean/Agile organization — an effective social organization that fulfills its core philosophy and mission. My intent is to bring you along on the innovative path to building such an organization — based on collective knowledge, experiences, and wisdom — by leaping forward to synthesize many of the ideas surrounding Lean/Agile in order to potentially redefine the core thinking patterns needed to build your own solid, scalable methodology for the effective implementation of Lean/Agile strategies.

## Challenges in Adopting Any Outside Practices: Lean, Agile, ... or Whatever

You must understand theory. It is the only thing that allows you to ask the right questions.

— W. Edwards Deming

In theory, there is no difference between theory and practice. In practice, there is.

— Yogi Berra

CEO John Krafcik first coined the term “Lean” in his 1988 article “Triumph of the Lean Production System.”<sup>1</sup> Lean pioneer James Womack and his team<sup>2</sup> used the term in the late 1980s to describe the business practices of Toyota. According to Womack’s Lean Enterprise Institute, “The core idea [of Lean] is to maximize customer value while minimizing waste.”<sup>3</sup> That is the meaning of Lean that is prevalent in our management thought process today.

The pioneering work of sharing the business practices of Toyota with the outside world helped bring about a paradigm shift in management thought processes in the latter part of the 20th century and into the 21st century. But fully understanding the concept of Lean is not yet complete. The belief that Lean is nothing but

eliminating waste in a process or in an organization is erroneous. One reason for this misconception and for the challenges in adopting Lean in all organizations is *not* thinking at a deeper level. We must make use of the thinking patterns that underlie the concept and practices of Lean; that is, the “*why*” — the philosophy behind the Lean practices.

When we attempt to copy the success of a person, team, or organization, we most likely fail to grasp the complete journey that had been undertaken to achieve that success, including the thinking process and the enormous challenges involved. We tend to repeat only the visible practices, yet any attempt to derive the same practices from the visible outcomes of a successful path in a certain environment without understanding the underlying thinking might not be applicable to our situation. As a result, emulating any visible practices from others will only put us on a journey that is unnatural to our own context, abilities, goals, and aspirations. Moreover, we will be undertaking a route with no strong core foundations; that is, missing the “*why*” for every step of the journey. At the same time, we are rejecting our own core values and potentially ourselves when we emulate some other person or some other entity. Consequently, we are rejecting our innate thinking abilities.

***Emulating any visible practices from others will only put us on a journey that is unnatural to our own context, abilities, goals, and aspirations.***

A successful outcome requires that we begin our organization’s journey by evolving and adjusting the core thinking process needed for the successful manifestation of ideas and concepts within the ecosystem of our organization.

## Thinking Patterns for a Lean/Agile Organization

To develop an exponentially growing Lean/Agile organization that will have the capabilities to meet uncertainty/unpredictability and adaptability/maneuverability on demand, we must develop the potential of its people with a primary emphasis on designing and developing the whole organizational system(s).

*The real “lean” in the Lean world (or the “agile” in the Agile world) will manifest only when an organization’s focus is on the development of the whole organizational system.*

But there are challenges. Mainstream Lean thinking of “the core idea is to maximize customer value while minimizing waste” is itself a big problem. That definition can be an outcome of a successful Lean organization, but such a “Lean organization” will lose all capabilities needed to adapt in an uncertain, unpredictable environment. When we dig deeper into the thinking process behind the manufacturing innovation of the Toyota Production System (TPS), we realize that the output of any manufacturing or production process could sink into uncertain market forces where unpredictability is very high due to socioeconomic and political factors. Future demand for the products or services may vary from 0%-100%; likewise, consumer tastes for product variety may require high variability in product configuration at the manufacturing stage for products such as cars.

How can your whole organizational system meet this unpredictability on demand and face the challenges of keeping the costs of the overall system at a competitive level? Efficacy and efficiency of a certain production process is just a local optimization; the entire organizational system resides in an uncertain and unpredictable environment. How can we handle such unpredictability? When we look at an entire organizational system through a prism of all potential market forces, we realize that any manufacturing innovation (e.g., TPS) is also working strenuously to maintain its stability in a highly unpredictable and uncertain environment.

The real “lean” in the Lean world (or the “agile” in the Agile world) will manifest only when an organization’s focus is on the development of the whole organizational system (i.e., developing the capabilities of all elements). This focus must be on the continuous development of the capabilities of throughput processes, organizational processes, functional domain expertise, the people, the thinking patterns, and the technology. All systems within the larger organizational system must be explicitly designed in a manner similar to the thinking behind designing a product, but the focus must be on the dynamic interactions and the thinking patterns of the human elements that help meet the primary goals of cost, quality, time to market, safety, morale, and predictability at all levels.

## The True Nature of an Organization: Philosophy, Purpose, and Relationship

Before going further, let’s define the true nature of an organization: its philosophy, purpose, and its relationship to the larger environment. This will help to discover the path to develop an appropriate organizational culture.

The true reality of a business organization is not a product or a service that the organization is trying to promote, but the net positive satisfaction of all human minds in the ecosystem (i.e., the customers, the employees, and the shareholders). Any imbalance in this ecosystem will create downward pressure in the organization and it will cease to exist. The ability to see an organization as a social system and to understand its elements will help identify and develop a set of routines in the daily work practices in the organizational culture, the operating system of an organization, which eventually helps the organization meet the needs of all stakeholders. The life of any service or product is very short; therefore, any organization can survive only when the needs of the people are met in that ecosystem.

It’s imperative to define the organization’s ideals, including its philosophy, purpose, and its relationship to the society in which it exists. The process of living through those ideals in the daily management of the organization should begin only at the highest level of the organization; otherwise, the organization will struggle to maintain alignment of its vision and the actual living of those ideals at all levels. It will also struggle to maintain its key primary goals of cost, quality, time to market, safety, and morale.



# How to Design Your Lean/Agile Organization

The following sections present a sample of core thinking — a set of practices needed to build a Lean/Agile organization — grouped under three different categories: (1) foundational thinking, (2) designing, and (3) redesigning.

## Foundational Thinking

First, know the boundaries of your social organization's systems, which can be a business unit, a program team, or an entire organization, while recognizing that boundaries are fuzzy and may change over time. Each of your social organization's systems may have multiple social systems at any given time, and all these social systems can be concentric and overlapping. A project or program team may be one of several social systems, for example. So the focus must be on identifying those social systems and then developing each one.

Second, be aware that every element/level in the organization is a frontline;<sup>4</sup> there is no dichotomy of centralization versus decentralization, and every thought process and element must be balanced and optimized in accordance with the whole context.

Third, be aware that the way you develop capabilities will be through a process of analysis and synthesis and an integration of all ideas and theories from all disciplines (e.g., management models, science, nature, psychology, neuroscience, mathematics, organizational behavior, technical practices of the domain area).

## Designing

Here are some tips to keep in mind when designing new business units or product developments:

- **Know that an appropriate design can be the torchbearer of your organization's philosophy; getting the organizational design right is key for continuous success.** However, organizational design does not merely mean a proper structure with roles, responsibilities, accountabilities, and so on, but rather the dynamic elements that come through values, interactions, policies, processes, and key thinking patterns in each of the human elements. For effective organizational design, the organizational structure plays a very minor role. The following example

provides some high-level pointers of what/how this design should be: Think like an artist. An artist visualizes a portrait and then creates a beautiful portrait; similarly, visualize what your organizational design should be in terms of ideals, values, policies, thinking patterns, technological and human capabilities, and so on. Design your organizational system while keeping in mind the following elements: inputs (required key technology and human capabilities), the market environment, and outputs (cross-functional delivery units and self-organizational units).<sup>5</sup> All these units will weave through the key elements of people, processes, technology, and core thinking patterns. The core thinking patterns are the primary drivers for an effective design that will facilitate your organization's metamorphosis. The effort required to design your organizational system should be no different than the effort that you put into designing your products or services. Focus on the capabilities to manage and influence the flow of value via throughput processes (throughput processes can be core development and/or operational processes), and cadence and discipline through organizational processes.

- **Develop entrepreneur leaders who are accountable and responsible for their whole units.** For example, at Toyota, the chief engineer is accountable and responsible for the success of the product. An entrepreneurial leader is one who decides at a conceptual level as to what must be accomplished to meet the primary goals of any organizational system in terms of cost, quality, time to market, morale, and safety. Entrepreneurial leaders, within their domains, can be compared to CEOs, and this type of leadership can and should be developed at all levels.
- **Keep learning.** According to authors Allen Ward and Durward Sobek, "Speed should refer to the rate at which we learn."<sup>6</sup> The ongoing primary focus is to generate information, accumulate knowledge, and learn as quickly as possible through a regular cadence of quick and fast controlled cycles. To accomplish this, you may use several tools, techniques, and methods, including divergent and convergent thinking, root-cause analysis, 5 Whys, prototypes, the value creation cycle of LAMDA (look, ask, model, discuss, act),<sup>7</sup> and others. This information and knowledge will be helpful in the thinking and planning for minimum viable products, minimum marketable features, and so on. Most of the information that your teams/organization generates

resides in people’s brains, so that is where the real “lean” or “agile” exists.

- **Use a set-based concurrent thinking model.** Plan and develop alternate solutions at every level of your thinking and at the last responsible moment. Choose the design that best fits the needs of the user/customer. Set-based concurrent thinking can be employed at all levels of organizational systems, from designing the vision and strategies to designing microscopic design elements. Using this thinking model will avoid rework/redesign, speed up time to market, improve quality, and lower the cost of development.
- **Maintain cadence.** How can you cope with the turbulent state of your environment where uncertainty and unpredictability are the norm? The only way forward is to maintain a regular, disciplined cadence, with flow and pull at every level and at every stage of development.
- **Develop the concept of what I call the “planning ball.”** The planning ball (aka “catch ball” in Lean terminology) consists of planning along four different dimensions: *top-bottom planning*, *bottom-top planning*, *forward planning* (planning from the current state to the future state, which may be fuzzy and foggy), and *backward planning* (planning from the end goal back to the current state). The planning ball

weaves all these different dimensions into one unified planning cycle where the evolving nature of the planning continues until you have achieved all goals (see Figure 1).

## Redesigning

Almost all businesses find themselves in an ever-ready mode to deal with uncertain and unpredictable events that may occur. This may mean that they will need to redesign a mature line of business so that it can sustain itself in any environment. A business unit is “mature” when it has reached a state where all its functional organizations have a higher level of understanding of the domains in their environment. This environment could be uncertain and unpredictable. The following are guidelines on tools, techniques, and adoption mechanisms needed in redesign efforts:

- **Define and understand a “navigational aid”** to help in the decision-making processes at any level, at any category of process/practices, and at any point in time. This navigational aid is the “true north” vision in each category of the organization’s operations/processes. A true north vision is a guiding star to an ideal state that can never be reachable, but the guiding star always provides direction in contentious discussions and helps teams arrive at a decision quickly. For example, Toyota has two true north

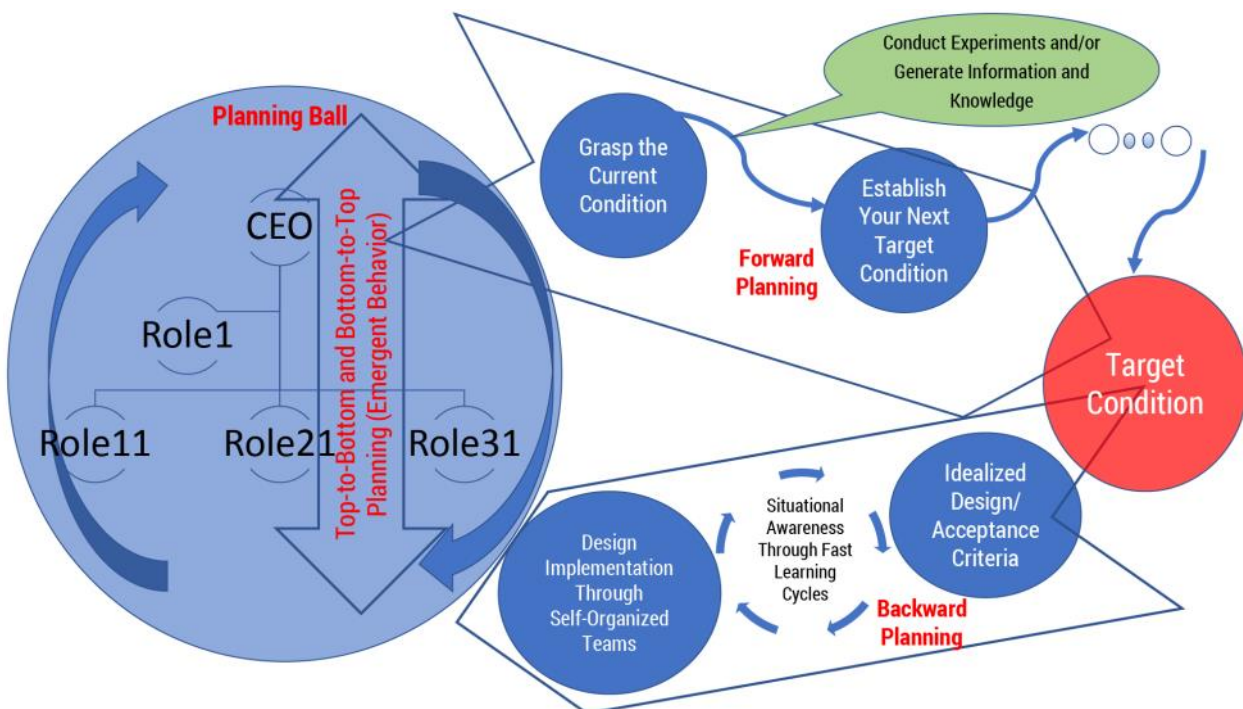


Figure 1 – Planning ball: a holistic approach to the planning activity.

visions: (1) continuous flow from pure, raw material to finished products in consumer hands and (2) 100% value add from one process to another.

- Although organizational behavior that exhibits characteristics of Lean/Agile can be described at different levels of the organization, **the core elements required at any process level** are as follows:

- *Know the purpose of processes* and whether that purpose is to deliver an outcome to a downstream process or to a final customer. Your organization's strategic game may change at every forward step and knowing the purpose of a process in order to align strategic changes is no different from strategic thinking at every step in a game of chess.

- *Know the processes to achieve the purpose.* If the processes are unknown (particularly in new developments), then use the true north as a guiding star and begin the journey of improvement in that direction while generating information through a process of quick, short cycles of prototyping, analysis, and brainstorming. One model that can be used to traverse the path toward the true north vision is Mike Rother's "staircase model"<sup>8</sup> — with a flashlight. Rother uses "flashlight" as a metaphor for finding the appropriate methodology to be applied as you move forward step-by-step on a continuous journey. The planning ball concept mentioned earlier is another option to consider.

- *Know the real assets of your organization.* A true Lean/Agile organization will manifest only when you understand design information, process know-how, and the power of the human brain.<sup>9</sup> Staff skills development can be a combination of the following:

- ◆ Technical and functional domain knowledge/subject matter expertise
- ◆ Problem-solving capabilities (e.g., PDCA [plan-do-check-act], OODA loop [observe, orient, decide, act], 5 Whys, LAMDA)
- ◆ Social skills in working together as a team. When it comes to developing people's social skills, it is important to note the limitation of the human mind. Although the human brain

has an infinite capability to achieve anything in any dimension, the same mind could become essentially blind over time because of entrenched filters that prevent the acceptance of new ideas/concepts or make it difficult to unlearn dated skills due to various environmental factors that have been introduced into the brain while it was developing in society. Just being aware of the filters in our brains is the first step to overcoming barriers to growth and to becoming a great team player.<sup>10</sup>

*A business unit is "mature" when it has reached a state where all its functional organizations have a higher level of understanding of the domains in their environment.*

The message is clear if you look at the definition and layout of the foundation of your Lean/Agile practice from a philosophical perspective. When we attempt to exert our will, we always meet resistance that impedes the effort being expended. If, on the other hand, we can learn, like Bruce Lee, to "be like water,"<sup>11</sup> we experience the following:

Only when the inner waters of your mind are completely calm, can you be truly natural. In sync with nature. Your own self. That is the true union of the self with the divine.

Nothing in the world

is as soft and yielding as water.

Yet for dissolving the hard and inflexible,  
nothing can surpass it.

The soft overcomes the hard;

the gentle overcomes the rigid.

Everyone knows this is true,

but few can put it into practice.

—Tao philosophy of water

Know the context, know where you are heading (true north, ideally), know the problem-solving tools, be like water within the context, and, once there, maintain true north.

## Conclusion

We can synthesize all organizational management knowledge into four simple words: philosophy, purpose, people, and process. (Thanks to Professor Jeffrey Liker for bringing out this idea of these four words.<sup>12</sup>) Continuously realigning ourselves toward the purpose, knowing the philosophy behind daily management, and striving to improve processes and people through small cycles using problem-solving tools will help design a truly Lean/Agile organization.

## Endnotes

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- <sup>10</sup>For more information on brain filters, see performance management consultant Ed Brimmer's LinkedIn posts: "How to Change Lenses, Parts I and II" (<https://www.linkedin.com/pulse/how-change-lenses-part-1-law-ed-brimmer>).

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"I have personally been able to leverage Cutter's services since 1999. Among the attributes that differentiate Cutter from other firms, two remain at the top of my list: **Thought Leadership and Real Value**. Thought Leadership is driven by Cutter's experts. Real Value, driven by 'Access to the experts,' pushes us beyond just understanding the options. We can develop relationships with the experts, and tailor the options they present so that they can be quickly and practically executed within our organization, enabling our Business Technology team to continually improve, engage, and contribute to business growth."

– Doug Mikaelian,  
VP Business Technology,  
Dairy Farmers of America

"The Information Technology revolution continues to change how businesses work and how people work in and with them. Today's demands on software to provide useful, usable, secure, and scalable services stress all aspects of systems development. These include architecture, technology selection, product development and lifecycle management. Cutter provides comprehensive coverage for these crucial topics – through research reports and customized virtual training delivered globally – helping us to understand needs and solutions that span traditional silos."

– Eric Schoen  
Director of Engineering, i2k Connect LLC;  
Former Chief Software Architect,  
Schlumberger

"Thanks to Cutter's experts, in a short time we have been able to:

- Improve our capabilities, using the contract scorecard for outsourcing.
- Gain key insights and practical strategies for responding to challenges we face in building trust and partnerships within the organization and outside our institutional borders.
- Improve our methods for working with people and anticipating the challenges of cultural transformation within our organization.
- Have immediate access to key 'experts' at critical times, who spend quality time with our teams, provide state-of-the-art orientation, and help us implement projects.
- Implement agile, effective, and articulated innovation around a common vision for achieving quality education in Mexico."

– Arturo Cervantes  
Director General of Information Systems  
for Evaluation Results, National Institute for  
Educational Evaluation, Mexico

# Cutter Business Technology JOURNAL

## About Cutter Consortium

Cutter Consortium is a unique, global business technology advisory firm dedicated to helping organizations leverage emerging technologies and the latest business management thinking to achieve competitive advantage and mission success. Through its research, training, executive education, and consulting, Cutter enables digital transformation.

Cutter helps clients address the spectrum of challenges technology change brings – from disruption of business models and the sustainable innovation, change management, and leadership a new order demands, to the creation, implementation, and optimization of software and systems that power newly holistic enterprise and business unit strategies.

Cutter pushes the thinking in the field by fostering debate and collaboration among its global community of thought leaders. Coupled with its famously objective “no ties to vendors” policy, Cutter’s *Access to the Experts* approach delivers cutting-edge, objective information and innovative solutions to its clients worldwide.

For more information, visit [www.cutter.com](http://www.cutter.com) or call us at +1 781 648 8700.