The Digital Business Continuum

Enabling organizations to thrive amidst disruption

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Executive Summary

Businesses are now operating amidst widespread disruption, which stems from changes in society and regulations, coupled with the threats and opportunities presented by the exponential advancement of technology.

Against this backdrop, it is no longer viable to plan a single "one shot" Digital Transformation. Rather, organizations must be able to constantly adapt at pace: seizing opportunities and neutralizing threats as they arise. They must also innovate extensively, not just to revolutionize the products and services they offer, but also to highly optimize their internal operations. The Digital Business Continuum is an approach to running an organization which enables this combination of rapid adaptation and extensive innovation.

In this paper we define a framework for the Digital Business Continuum, and explain in detail what is needed in terms of purpose, resource allocation, leadership, governance, organization structure, and culture. We also explore how a company can ensure that it is outward facing: constantly sensing and searching for opportunities and threats.

We recognize that the exact approach that any business takes to becoming more digital will necessarily vary between different organizations: every company is unique and will have a different starting point. However, we believe that the Digital Business Continuum approach can be successfully applied to any organization operating in any sector.

Based on the Digital Business Continuum framework, we have developed an assessment tool that can help organizations assess current ways of working against the Digital Business Continuum, and enable them to identify what concrete actions they need to take in order to thrive amidst disruption.

About the Atos Scientific Community

Publically launched by Thierry Breton, Chairman and CEO of Atos, and sponsored by Hubert Tardieu, the Scientific Community has 135 members from all geographies where Atos operates, representing a rich mix of skills and backgrounds. Its aim is to help Atos anticipate and craft its vision of upcoming technology disruptions and the future business challenges that will be faced by the markets it serves. By making this vision available to its clients, and by investing in areas related to the findings, Atos intends to help its clients make informed decisions regarding the future of their Business Technology solutions.

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Atos Thought Leadership White Paper

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The Age of Uncertainty
What are the implications of increasing disruption?

The Disruption Trinity

Few would deny that technology is advancing rapidly, as noted by Erik Brynjolfsson and Andrew McAfee[1]:

"Technologies continue to improve at a remarkably rapid exponential pace, replicating their power with digital perfection and creating even more opportunities for combinatorial innovation"

This progress enables companies to envision and execute previously unthinkable strategies that were not possible five years ago. However, it also introduces new challenges. For example, the amount of data collected is expected to grow exponentially (reaching 44 zettabytes by 2020[2]). Businesses will need the ability to handle and evaluate these high volumes of data "as standard". And the cyber security aspects will have to be taken into account as we also see a relentless increase in cybercrime and cyber terror threats[3].

Alongside this technological advancement, society is also changing. Access to technology has become a reality for a wider range of people. We are even seeing a "leapfrogging" effect where some countries (like those in Africa) have the potential to adopt new technologies faster because they are not so constrained by legacy infrastructure[4]. Furthermore, people are starting to expect "everything-on-demand". In many sectors the way that people consume a multitude of products is changing: how people wish to select, purchase and receive goods has transformed beyond recognition in the last 15 years.

Regulatory changes are also reacting to and shaping the disruption we see. One example within the European Union is the General Data Protection Regulation (GDPR) which is mandating increased rigor in organizations' management of personal data. Another example is rapid demonetization in India which has impacted almost its entire population in the way that goods and services are being bought and sold.
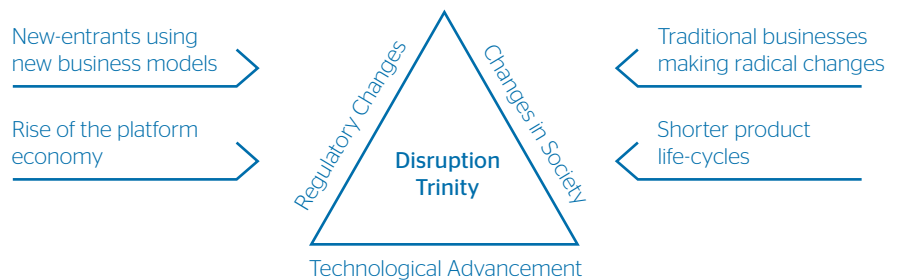
So we see a combination of three key factors:

1. Rapid technological advancement introducing opportunities and challenges
2. A general increase in levels of access to technology and a change in how people wish to consume goods and services
3. Regulatory changes enforcing and driving shifts in how organizations operate

This trinity means that all organizations now operate in a context that is more dynamic and uncertain than ever before.

Game-changing digital native businesses (like Amazon in retail, Uber in transportation and Airbnb in accommodation) have been able to capitalize on these disruptive forces. In many cases, their business models are not bound to physical assets, yet they are still generating huge revenues (measured in billions of dollars). We have seen the "rise of the platform economy", with many of these new business models deriving value by brokering and orchestrating people, services and data.

To respond to this new level of competition, many traditional companies are making an effort to examine their business from a different point of view. Many are taking drastic measures to change their strategy and are seeking new ground by investing in innovation. As old business models die, many have ventured to totally new domains that somehow still complement their core business. For example, supermarkets moving into banking[5] and railway companies offering meeting room space[6].

New-entrants using new business models

Rise of the platform economy

Regulatory Changes

Changes in Society

Disruption Trinity

Technological Advancement

Traditional businesses making radical changes

Shorter product life-cycles

1. The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies, Erik Brynjolfsson and Andrew McAfee, 2014
2. https://www.emc.com/leadership/digital-universe/2014iview/executive-summary.htm
3. https://revisionlegal.com/data-breach/2017-security-breaches/
4. https://hbr.org/2012/02/africas-leapfrogging-opportuni
5. http://www.telegraph.co.uk/finance/personalfinance/borrowing/creditcards/9387158/Asdas-move-into-banking-how-do-the-supermarket-banks-compare.html
6. http://www.fsb.org.uk/media-centre/press-releases/network-rail-launches-the-station-office-network-

All businesses are finding that, to keep up with the competition, they need to be able to shorten product lifecycles. In retail we have seen the advent of "fast-fashion", meaning that a new clothing collection can go from design to being in-store in just four weeks[7]. In software we have seen DevOps enable organizations to release new software versions multiple times per day (as opposed to months or years in decades gone by)[8].

In the context of this disruption, most companies are looking to undertake a Digital Transformation. in 2016, 53% had already started, and many of those who hadn't yet begun recognized an urgent need to do so[9]. However, this widespread desire to transform digitally was set against a backdrop of failure, with 84% of companies not managing to achieve the expected benefits[10].

The end of one-shot transformations

It is our belief that part of the reason for this perceived failure is that many businesses have treated Digital Transformation as a single program of work: moving themselves from an "as is" state to a "to be" state. However, this approach is fundamentally flawed: amidst the high levels of disruption and uncertainty that we are seeing, as soon as a business reaches the "to be" state, it will need to reinvent itself again. Rather than thinking in terms of a "one-shot" Digital Transformation, we believe that companies need to operate in a state of constant flux, innovation and reinvention. In fact, we would go so far as to say that a rigid long-term plan is simply no longer an option[11]:

"The truth is that the five-year strategic plan is itself an obsolete instrument. In fact, rather than offering a competitive advantage, it is often a drag on operations"

In this new reality, it has become essential for businesses to replace these rigid long-term plans with an ability to respond rapidly to changing circumstances. In this white paper we will present an approach to running an organization which can achieve this goal of being both adaptive and innovative: the Digital Business Continuum.

Disruption
Businesses operate in an increasingly uncertain environment

Unpredictability
As a result, it is no longer possible to predict outcomes with certainty

Adaptability and Innovation
Therefore a rigid long-term plan is not viable, adaptability and innovation are key

The Digital Business Continuum
An approach to running an organization to ensure it is adaptable and innovative

7. http://kwhs.wharton.upenn.edu/2016/02/zaras-fast-fashion-business-model/
8. https://atos.net/wp-content/uploads/2017/01/DevOps_Building_a_Service_Oriented_Organization-White-Paper-web-FINAL-281116.pdf
9. Progress Global Survey - https://www.progress.com/papers/state-of-digital-business-2016-report
10. https://www.forbes.com/sites/brucerogers/2016/01/07/why-84-of-companies-fail-at-digital-transformation/
11. Exponential Organizations: Why new organizations are ten times better, faster, and cheaper than yours (and what to do about it), Salim Ismail, Michael S. Malone, Yuri van Geest, 2014

The Digital Business Continuum
A state of ongoing adaptation and innovation

As we have seen in the previous section, businesses now operate in highly uncertain and disrupted environments. The Cynefin framework[12] (which is based on complexity science) helps us understand that adaptability is key in this complex context. It explains that what is needed is an approach of probe-sense-respond: making a change, assessing whether the results are desirable or not, and then amplifying or dampening the change accordingly. Other forms of the same concept have also been published, for example by Donald Sull (in "Closing the Gap Between Strategy and Execution") who described it as a strategy loop consisting of making sense, making choices, making things happen and making revisions[13].

Our observation is that in almost all organizations, there will not be a single feedback loop like this at any one time, but rather there will be multiple loops in progress at the same time, each with differing goals, benefits and risks, but all aligned with an overarching purpose (see Figure 1). The timescales for these feedback cycles will vary, both within an organization and also between organizations (especially those in different sectors). Whilst retailers may have iterations measured in months, utilities may have much slower cycles measured in years. Furthermore, digital technology is making it possible to gather high volumes of data from a large number of sources and make it understandable in near real-time. This supports the sense making part of the feedback loop and is a key enabler of rapid adaptation (see also page 14 for more about measurement).

The criticality of this iterative approach for digital businesses in particular has also been noted by James McQuivey who observed that digital disruptors are better, faster or stronger than other organizations, not because of any profound differences, but because they consistently take small, focused steps that add up to rapid, massive disruption[14].

The Cynefin Framework

The Cynefin framework was developed by Dave Snowden. It has its roots in complexity science and defines four contexts for decision making: obvious, complicated, complex and chaotic. In the obvious and complicated domains it is possible to predict outcomes. Conversely the complex domain is characterized as being unpredictable: although it will be possible to understand why things have happened retrospect, it is not possible to know it in advance. The Cynefin framework describes the appropriate strategy to adopt in each context.

Complex Probe Sense Respond	Complicated Sense Analyze Respond
Chaotic Act Sense Respond	Obvious Sense Categorize Respond
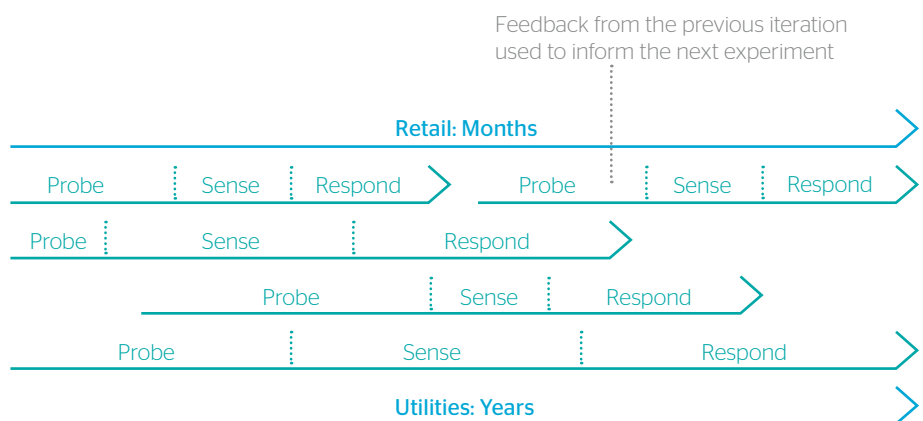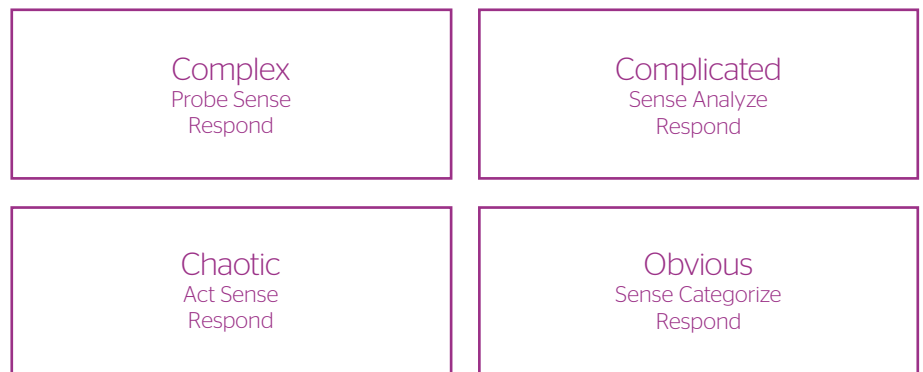
Figure 1: Multiple probe-sense-respond loops ongoing in parallel

12. https://hbr.org/2007/11/a-leaders-framework-for-decision-making
13. http://sloanreview.mit.edu/article/closing-the-gap-between-strategy-and-execution/
14. Digital Disruption: Unleashing the next wave of disruption, James McQuivey, 2013

Using the Digital Business Continuum approach means applying this at the business strategy level as well as at the operational level. It also means continually innovating, not only to optimize the internal operation of the business, but also to revolutionize the products and services offered to customers (see Figure 2).

An example of how critical it is to apply innovation across this spectrum can be seen in Chinese smart-phone manufacturer Xiaomi. Their initial innovation was providing a premium smart phone experience at a much lower price point than the Apple iPhone or Samsung Galaxy. They achieved this by highly optimizing their supply chain and component sourcing[15] as well as leveraging online user communities and social media. This enabled them to become China's top selling smartphone company in 2015. However, by focusing on innovations that optimized their operations (rather than product innovations), some have speculated that they will not be able to maintain their competitive edge[16]:

"Xiaomi's story demonstrates the speed, complexity, and dynamism of the Chinese context. The changing consumer landscape, hyper-intensive competition, and rapid technology development require companies to be alert at all times and to create sustainable competitive advantages."

To address this, Xiaomi now has an ambitious strategy to create a full range of IoT products, ranging from headphones to rice cookers[17].

Having discussed in this section why it is critical for organizations to adapt and innovate when faced with increasing disruption and uncertainty, in the following sections we will describe how organizations can achieve this by adopting the Digital Business Continuum approach.
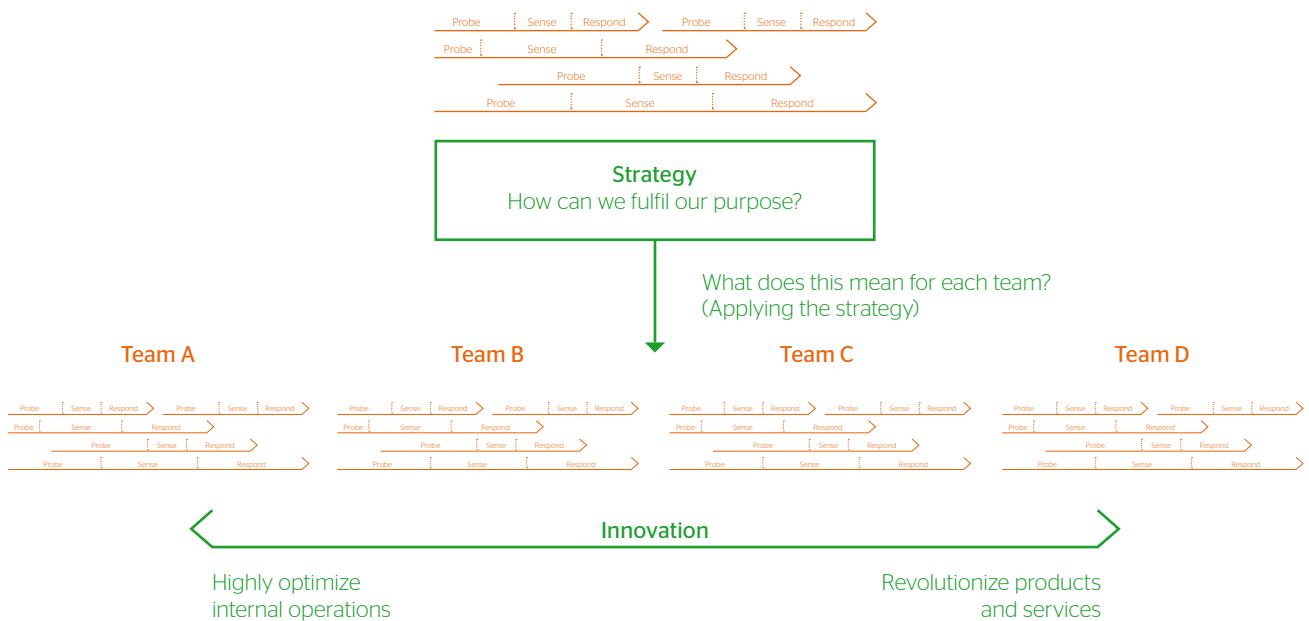

Figure 2: Using an iterative approach at all levels and innovating to revolutionize products and services and highly optimize operations

15. https://techcrunch.com/2015/01/19/xiaomi-secret-sauce/
16. https://www.techinasia.com/talk/happened-xiaomi
17. http://fortune.com/xiaomi-business-china/

The Framework
Assessing your readiness for the Digital Business Continuum

For an organization to be adaptable, and foster innovation across all aspects of its business, we have identified a set of characteristics that the organization must have in terms of leadership, governance and organizational structure. Each of these must link to and support a unifying purpose.

Unifying purpose

It is widely recognized that to motivate a large number of people to act in a coordinated way towards a particular goal, it is important that they understand not just what the goal is, but also why it matters[18]. This is especially true when an organization is operating in an unpredictable and rapidly changing environment. In this context, decision making will be too slow if every action needs to be pre-agreed with senior management (or, even worse, ratified by a committee). A unifying purpose (together with having the learn-fast culture described on page 18) enables individuals to make day-to-day decisions quickly, and in a way that is always fully aligned with the company's business strategy.

How is a unifying purpose different from a typical mission statement? Firstly, it is essential that a unifying purpose goes beyond simply stating what the organization is trying to achieve, but explains why it matters in a way that will give meaning to the work needed to fulfil this ambition. For example, Elon Musk is very clear that the mission of Tesla is not just to build desirable electric cars, but to save the planet by "accelerating the advent of sustainable transport". Similarly, for Google it was not to build a profitable advertising platform, but to "organize the world's information and make it universally accessible and useful".

Secondly, a unifying purpose enables decision making. When faced with a difficult trade-off, any employee should be able to refer to the unifying purpose in order to make a decision that aligns with the overall business goal.

Thirdly, whilst a unifying purpose may be expressed in words and written down, this in itself is insufficient. Leaders must always act in ways consistent with it, governance must always be aligned with it, and the organization's structure and culture must support it.

Resource allocation

One of the most powerful levers an organization has to shape its destiny is the act of deciding how to apply the resources it has (including people, money and physical assets). Whether the organization is a single-person startup or a multi-national organization with many thousands of staff, they have to constantly decide how to allocate the limited resources they have to the business opportunities they seek to pursue.

The practical reality in many large organizations is that resources are allocated in a way that is relatively static (typically a few percentage points of deviation from the previous year per department) and is managed via some kind of cascade (a budget is allocated to a division, which then allocates a share of that budget to sub-divisions, and so on). This approach is, of course, perfectly reasonable when the business environment in which the company operates is stable. However, it is not a reasonable approach when faced with the reality of increasing disruption and uncertainty that we described earlier. Donald N. Sull and Dominic Houlder have concluded the following[19]:

"According to conventional wisdom, companies resemble organisms destined to pass ineluctably through the predetermined stages of startup, scaling, maturity and decline. In reality, things are not so simple. Business opportunities, and not firms, pass through these stages, and most organizations consist of multiple opportunities arrayed across the different stages of the life cycle. Executives who understand this crucial distinction can view their company or business unit as a portfolio of opportunities that requires constant rejiggering to maintain vibrancy and to balance the demands of the present with the promise of the future."

Organizations must understand the profile of the portfolio of business opportunities they have as well as their own existing capabilities. They must then allocate resources, not based on what worked in the last year (or the last decade), but based on what will be needed in the future. In some cases optimization may suffice, but in other cases a more radical change may be required. Donald N. Sull and Dominic Houlder have proposed a framework to support this activity. Other similar frameworks also exist, including the well-established growth-share matrix developed by Boston Consulting Group in 1970[20]. We would observe that more important than which specific framework you use, is how you use it. The "question marks" (also known as "problem children") in a growth-share matrix may assume far more relevance in highly disrupted markets. Conversely the "cash cows" and even the "stars" may turn out to have a much shorter shelf life than they would have done in decades gone by.

It is important to note that this resource allocation does not just apply to the direct assets of the company but also assets that can be leveraged from other sources (for example partnerships, community, crowd-sourcing or adhoc contracts in the gig economy, all of which we will cover in more detail later on page 16).

18. Start With Why: How Great Leaders Inspire Everyone To Take Action, Simon Sinek, 2011
19. http://sloanreview.mit.edu/article/how-companies-can-avoid-a-midlife-crisis/
20. https://en.wikipedia.org/wiki/Growth%E2%80%93share_matrix

The symbiosis with culture

There is a symbiosis between the unifying purpose, resource allocation, leadership, governance and organization structure, with the organizational culture. Not only do they influence each other, but they enable each other.

What is also needed is a mechanism to ensure that the organization as a whole is outward looking and constantly assessing and evaluating future new technologies, potential partnerships, competitors and disruptive business models. We describe this as the searchlight and the radar. Figure 3 gives an overview of the framework that we have created and, in the following sections, we will provide more details about each aspect and how they relate to each other.

Based on this framework we have also created an assessment tool which enables an organization to understand how its current mode of operation compares to the Digital Business Continuum. Using the output from this assessment tool enables organizations to understand their current state and identify what tangible steps they need to take to become more innovative and agile.

Implementing the Digital Business Continuum

There is a complex interplay between all the different aspects described by the Digital Business Continuum framework. For example, successfully using Rapid Feedback Loops depends on:

- A unifying purpose to guide interpretation of the feedback
- A culture that supports a learn-fast approach (including a no-blame attitude so that people are unafraid to experiment)
- A systems-thinking approach to management
- Having the right measures and incentivization in place
- People having sufficient autonomy to innovate and try out new ideas

Because of these complex interdependencies between different parts of the framework, the exact path needed to adopt the Digital Business Continuum approach will vary between different organizations, as they will all have different starting points. Our assessment tool not only identifies an organization's strengths and weaknesses against this framework, but it also recommends the sequence in which each area should be tackled (taking the interdependencies between each aspect into account).

Searchlight

Radar

Unifying Purpose
Explains why the organization exists. Creates alignment and enables autonomy.

Resource Allocation
Allocate organizational resources based on market potential

Leadership	**Governance**	**Organization Structure**
From command-and-control to success enabler	Fostering rather than stifling innovation at pace	Increasing autonomy and flexibility
Servant Leadership Helping others be successful and find autonomy and meaning	**Measure What Matters** Measure the right things, update in near real-time and share widely	**Autonomy** Cross-functional and autonomous business focussed teams
Systems Thinking Evolve the organization using safe-to-fail experiments	**Rapid Feedback Loops** Avoid trending to risk-aversity and confirmation bias	**Incubators and spin-off** Engaging and creating separate companies
Team = Product Build alignment and lead by example	**Risk Management** Risk management rather than risk avoidance. Applying real options and risk based scheduling	**Outside the organization** Community, crowd and the gig-economy

Culture
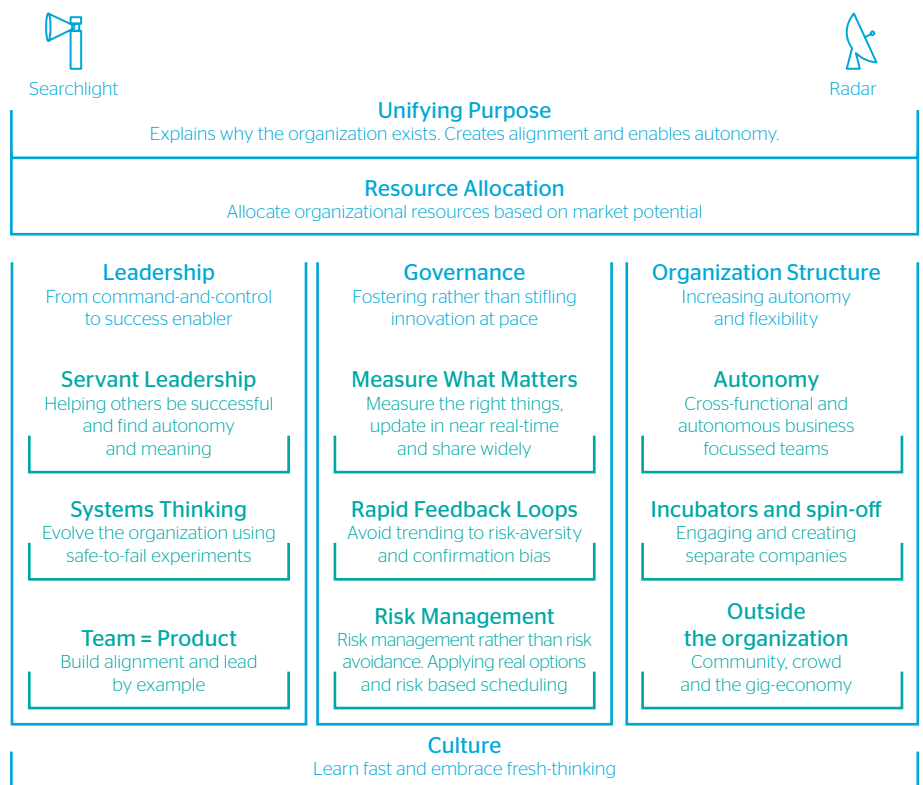Learn fast and embrace fresh-thinking

Figure 3: Digital Business Continuum framework developed by Atos Scientific Community

Leadership
From command-and-control to success enabler

As already discussed, one reason for having a unifying purpose is to enable people within a business to make decisions quickly without having to refer upwards through a chain of command. Later (on pages 14 and 16) we will also see how applying the Digital Business Continuum approach requires governance which provides greater freedom to employees and an organizational structure that promotes autonomy. Many managers and leaders may feel threatened by this shift: what is the role of a leader if they are no longer needed to make decisions about what people work on or direct them in how they complete tasks? Just what does it mean to be a manager in an organization when even activities like performance management and incentivization can be decentralized? (See, for example, the stack ranking approach used by Valve[21].)

As it happens, we see that the role of leadership has never been more crucial and, perhaps surprisingly, the style of leadership needed has already been understood for a long time.

Servant Leadership

In 1977 Robert K. Greenleaf published his book about Servant Leadership[22] in which he proposed a model where leadership focuses on helping others to be successful, helping others to find autonomy and meaning, and helping develop servant leadership in others[23].

More recently lean-agile transformation expert Mike Burrows has clarified that servant leadership is more than just "serving the team, removing impediments and being a facilitator"[24]. He has suggested that servant leaders play an essential role in ensuring that the organization has the skills needed to be competitive, is always striving to understand and meet customer needs, enables teams to "get on with it" by removing impediments, continuously improves, ensures that people are aligned with each other and the company's goals, and creates an environment where everyone shares a sense of purpose (being able to easily answer the question "what do you deliver, to whom, and why does it matter?").

Systems Thinking

Leadership that supports the Digital Business Continuum approach uses a systems-thinking approach to management[25]. In simple terms, systems-thinking is a branch of science which suggests that whilst it is possible to break down a complex system into component parts and understand each component separately, you cannot predict the impact that changing one of the components will have on the entire system. This has some important implications for how an organization should be managed.

Firstly, it suggests that, although it may be tempting to divide an organization up into business units and then try to optimize each one, in practice this may not produce a result that is optimal for the organization as a whole (and will almost certainly stifle innovation).

Secondly, it means that you cannot "design" the perfect organization; rather you have to "evolve it". This means managers must have a clear idea of what the true objectives of the company are, and a way of measuring how well these objectives are being met. They can then use a scientific approach to optimization: forming a hypothesis, performing an experiment, observing the impact (positive or negative), and then adapting based on this feedback.

Finally, because both of these observations lead us to the conclusion that you cannot predict with certainty the outcome of any organizational change, managers have to find ways to make these changes "safe-to-fail". They will also have to recognize and reward their staff not based on the "success" or "failure" of an initiative, but rather on how the uncertainty was managed and the depth of the lessons learned. Related topics that we discuss later in this paper are ensuring that you measure the right things (on page 14) and that your culture supports a learn-fast approach (on page 18).

21. http://www.bbc.co.uk/news/technology-24205497
22. Servant Leadership: A Journey Into the Nature of Legitimate Power and Greatness, Robert K. Greenleaf, 1977
23. https://www.slideshare.net/asplake/servant-leadership-unneutered (slide 10)
24. https://blog.agendashift.com/2016/06/06/its-time-to-reclaim-servant-leadership/
25. Field Guide to Consulting and Organizational Development: A Collaborative and Systems Approach to Performance, Change and Learning, Carter McNamara, 2006
26. Software for Your Head, Jim McCarthy and Michele McCarthy, 2001
27. https://outofthetriangle.wordpress.com/2008/06/15/pm-interviews-jim-mccarthy/

Team = Product

Jim and Michele McCarthy led large teams at Microsoft in the 1990s and have subsequently spent decades researching how to create high-performing teams[26].

One of their most striking observations is their rule that "Team = Product: All the virtues and vices of the team express in the product and vice-versa"[27]. So if a software product is slow, over-complicated and buggy, their observation is that these characteristics are somehow present in how the team itself operates. Change how the team works and the product will improve. Furthermore, this also applies to senior management teams (the product of a company's top management being the organization itself). Flaws in how the organization is operating are manifestations of flaws in how the top management team is operating: adjusting the latter will change the former.

This also re-emphasizes the importance of alignment, and that this alignment is a two-way street: yes the people of the organization must support the organization in fulfilling its purpose, but the organization must also support its people in achieving their own personal goals. Similarly, people within the organization must be aligned with each other: with personal goals shared and mutual support provided towards reaching them. As Michele McCarthy put it[28]:

"Leadership is about invitation...not telling people what to do. We find that wholly ineffective even though that seems to be what most executives or people with power think that their job is."

To summarize then, the right leadership is vital when adopting the Digital Business Continuum approach, however the kind of leadership needed may be very different to what has worked in the past. Leaders must serve the people of the organization rather than seeking to control them. They will take an experimental approach to evolving the company, making organizational change safe-to-fail (rather than just avoiding risk).

And they will recognize that before expecting change in others, they must first model the change themselves.

28. http://devopschat.net/2017/07/13/team-product/

Governance
Fostering rather than stifling innovation at pace

Measure what matters

Well known management guru Tom Peters has said that the soundest management advice he ever heard was "What gets measured gets done"[29]. This is of course a double edged sword: on the one hand if you measure the right things then you can be assured that people will focus on them; on the other hand (and rather more dangerously), measure the wrong things and you can equally be assured that people will just as readily focus on those.

We have already seen (on page 12) that in order for leaders to take a systems-thinking approach they must have a way to measure how well the organization is achieving (or moving towards) its true objectives. Furthermore, in order to be able to evolve the organization rapidly by conducting frequent safe-to-fail experiments, these measurements must be frequently updated. Additionally, as we have already touched on (on page 12), to enable people to act with a high degree of autonomy, these measurements must be widely available (ideally visible to everyone in the company). So the measures that support the Digital Business Continuum approach must have three characteristics: they must measure things that really matter, they must be updated in (near) real-time, and they must be published for everyone in the business to see.

As observed by Stephen Bungay[30]:

"Advances in technology over the last 15 years have allowed the collection and dissemination of ever more measures… metrics become an end in themselves, and get separated from what they were intended to measure in the first place."

Take, for example, the commonly used metric of staff utilization. On first inspection this might be a reasonable measure on the basis that higher utilization implies greater efficiency, which, in turn, should support higher profit margins. However, in practice, it is a measure that encourages people to "appear to be busy", rather than making sure they are "busy doing the right things". In this case, if profitability is the real end goal, then it is far better to measure this directly. To be successful with the Digital Business Continuum approach, measures must be selected carefully and used sparingly. They should not track the efficiency of specific departments (siloes) but rather track real end-to-end value being delivered (which is not necessarily only financial in nature).

These real-value metrics tend to be lagging indicators (although technology and the increasingly fast pace of business is reducing that lag). The need for leading indicators can be a justification for introducing a measure that doesn't directly measure end-to-end value (for example lead-times vs customer satisfaction or, as above, utilization vs profitability). Whilst we understand the desire for fast feedback, we would still advise caution. The danger remains that the leading indicators become end-goals in themselves and people become more motivated to achieve them and lose sight of the overall purpose of the enterprise.

When we look at the requirement for these measures to be updated in (near) real-time and published for everyone in the business to see, the result is what many would call a "dashboard". A typical dashboard will show figures for a very recent time-slice (e.g. the last 24 hours) as well as a rolling average over one or more longer time-frames (e.g. the last week, month and quarter). It may also use predictive analytics to extrapolate a range of likely future outcomes. It will be accessible to everyone and often displayed prominently in office locations. This enables a learn-fast approach with rapid feedback cycles, and is also highly transparent. This transparency feeds greater alignment and motivation because everyone is constantly reminded of what the key drivers for the business are and, in some cases, it can even lead to a kind of "gamification" because staff can quickly see the impact of their actions.

Rapid feedback loops

On page 8 we explained that adopting the Digital Business Continuum approach means that an organization will constantly adapt and evolve, using multiple feedback loops across the organization and at all levels. Already we have explained some of the key enablers for this approach: having a unifying purpose, taking a systems-thinking approach, and implementing end-to-end real-value performance measures. Let's now consider what else is needed in addition to these.

Many organizations implement some kind of "lessons learned" process. This type of process is important as it enables the organization as a whole to benefit from combined past experiences. However, there can be a tendency to focus on what went wrong and invent ways to avoid these problems in the future. If this tendency is left unchecked, then the result will naturally tend towards increasingly bureaucratic processes and an aversion for taking any risk. Our two key recommendations are to learn from success, and to always aim to improve rather than avoid.

We believe that as much should be learned from successes as from failures. Specifically, for any organizational weakness highlighted by a failure scenario, look at how an existing organizational strength could be used to address it.

29. http://tompeters.com/columns/what-gets-measured-gets-done/
30. The Art of Action: How Leaders Close the Gaps Between Plans, Actions and Results, Stephen Bungay, 2010

We also believe that, when learning from failure, the attitude should be one of "how can we do this better next time?" rather than one of "how can we avoid doing this in future?"

For feedback loops to be effective, deliberate steps should be taken to minimize positive confirmation bias. To achieve this we recommend setting success criteria for each "experiment" at the outset and then, wherever possible, using objective measurable data to assess the outcome. Equally important is creating diverse teams who will have a range of viewpoints, and bringing in people from outside of the core team at key stages (because they will naturally be able to offer a more objective opinion).

Risk management, not risk avoidance

Mark Zuckerberg has observed that "in a world that's changing so quickly, the biggest risk you can take is not taking any risk"[31]. It is therefore an unfortunate fact that in many organizations "risk management" has become a synonym for "risk avoidance". We recognize that amidst the uncertainty that disruption brings (whether you are the disruptor or the disrupted) having a strong capability to manage the associated increase in risk is essential. Specifically we see two important additions to the risk management tool-kit: Real Options and risk based scheduling.

Real Options thinking is based on financial options and recognizes that options have value, will expire at some point, and that you should never commit early without understanding why[32]. For example, imagine that an organization predicts a potential threat from a competitor, however it is not certain whether or not this threat will materialize. They have the option of transforming their business model to neutralize this threat. At some point this option may expire (when the competitor gains sufficient traction in the market). The trick then is to decide if it is an option that is worth keeping open (has value) and, if it is, taking enough action early enough to keep the option open. Real Options thinking is especially useful in contexts that are very fluid and unpredictable.

A related concept is risk based scheduling. This is the practice of prioritizing and sequencing tasks based on the likely impact on the business over time. Donald Reinertson introduced this concept as "cost of delay"[33]. Rather than just performing cost/benefit analysis he proposed that what should be considered with the greatest priority is the negative impact (lost revenue, reduced profits) of delaying the start of working on something. He found that there were a few standard "cost of delay curves" (see Figure 4). For example, in some cases the cost of delay is linear (lost revenue is proportionate to the delay). In other cases it is an s-curve (i.e. being late to market will have a significant impact

on revenue). Sometimes there is no benefit for delivering early, but a significant penalty for delivering late (for example a regulatory fine). It is worth noting that, despite the name, the "cost" may not be merely financial (for example it could be reputational or environmental damage).

In his book Critical Chain[34] Eliyahu M. Goldratt explained an approach to planning that placed a far greater emphasis on how risk (and specifically risk contingency) should be handled. It recommends that tasks should be planned to start as late as possible and that time contingency should not be incorporated into individual tasks, but rather should be included as buffers located at the end of the plan and around key dependencies.

It is worth noting that many people already apply these principles. They intuitively know the value of keeping options open, instinctively use risk to prioritize work, and know that an aggressive plan with a safety buffer at the end can be a good way to create a sense of urgency and enthusiasm. However the value of making these approaches an explicit part of an organization's governance is that they support (rather than block) these "intuitions" and ensure that "risk avoidance" is replaced with the true "risk management" that is needed to handle increasing uncertainty.
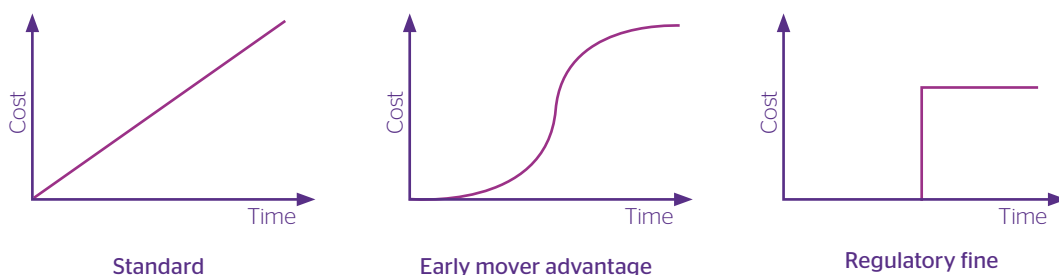

Figure 4: Some standard cost-of-delay curves

31. http://www.businessinsider.fr/uk/facebook-ceo-mark-zuckerberg-on-taking-risks-2016-8/
32. Commitment: Novel about Managing Project Risk, Olav Maassen, Chris Matts & Chris Geary, 2013
33. Managing the Design Factory: A Product Developers Tool Kit, Donald Reinertsen, 1998
34. Critical Chain, Eliyahu M. Goldratt, 1997

Organization Structure
Increasing autonomy and flexibility

Autonomy

We have already seen how approaches to leadership and governance that align with the Digital Business Continuum encourage people and teams within a larger organization to behave in a highly autonomous manner.

In recent times, organizations like Lunar Logic, Haier and Buffer have experimented with completely eliminating management hierarchy (sometimes called "extreme self-organization"). Lunar Logic (a software development company) reported that their "financial results sky-rocketed"[35] when they adopted this approach, something that they largely attributed to the increase in employee motivation that resulted from the increased autonomy.

Chinese appliance manufacturer Haier removed middle management and reorganized its 80,000 workers into 2000 self-managed teams (known as zi zhu jing ying ti or ZZJYTs). One example of this autonomy in action is their approach to launching new products and services[36]:

"If ambitious employees spot an opportunity, they are free to propose an idea for a new product or service. A vote, which can include not just employees but suppliers and customers, decides which project goes ahead. The winner also becomes the project's leader. They form their team by recruiting from across the company; employees are free to join or leave ZZJYTs.

Since introducing this level of autonomy Haier has been judged the eighth most innovative firm worldwide. It has also seen a fourfold increase in revenue over 10 years and a sixfold increase in profits.

Buffer, who provide social media management tools, also achieved strong results, but have subsequently re-assessed their approach, concluding that "The key realization was that people by nature have a unique place within Buffer that isn't created equal."[37]

It is recognized that if you remove a formal management hierarchy, then inevitably something else will fill the vacuum left behind[38]:

"Without a formal structure, informal alliances will form, and soon enough you'll have replaced the formal structure with an implicit, hidden one that's much harder to change"

Thus organizations considering this radical approach must take care to carefully define how the new approach will work. Example approaches include Holocracy[39] and those described in Valve's employee handbook[40].

Our view is that in most large organizations, at least in the interim, people will actually continue to be organized into teams and therefore there will be a corresponding hierarchical structure. However, these teams will need to be cross-functional and business focused. This structure "promotes the autonomy and accountability of each team to deliver business value"[41]. And even then it will be expected that people will collaborate frequently and openly with people from other teams (and without the need for explicit line management approval). As Elon Musk put it: "Anyone at Tesla can and should email/talk to anyone else according to what they think is the fastest way to solve a problem for the benefit of the whole company."[42]

Incubators and spin-offs

In some cases, to provide the needed degree of autonomy (and accountability) it may be necessary to "spin-off" a completely independent company. We expect that this is an approach that will need to be used more often, especially where the benefits of speed and adaptability that come from the independence will far outweigh the (often only theoretical) economies of scale that come from being part of a larger organization. The reverse is also true: one way for larger organizations to bring disruption and innovation into their business is by working with smaller companies. This can be through incubators and engagement programs (like the Atos FinTech program[43]) and also through carefully selected mergers or acquisitions. In both cases, care must be taken to ensure that the fresh thinking that was so desirable in the smaller company is not quashed by the larger organization. In fact, we would even suggest that if the leadership, governance and culture of the larger organization is not sufficiently mature in the aspects that we are describing in this paper, then it will often be a mistake to try and integrate companies in this way. Acquisition is not a substitute for internal transformation.

Community, crowd and the gig-economy

Organizations applying the Digital Business Continuum approach will also make greater use of resources that are not directly employed by the company, using combinations of community, crowd-source and gig-economy models.

35. http://devopschat.net/2016/08/02/1st-september-2016-giving-damn/
36. https://www.economist.com/news/business/21587792-radical-boss-haier-wants-transform-worlds-biggest-appliance-maker-nimble
37. https://open.buffer.com/self-management-hierarchy/
38. https://blog.holacracy.org/holacracy-vs-hierarchy-vs-flat-orgs-d1545d5dffa7
39. https://www.holacracy.org/constitution
40. http://www.valvesoftware.com/company/Valve_Handbook_LowRes.pdf
41. https://ascent.atos.net/devops-silos-service-centric-teams/
42. https://www.inc.com/justin-bariso/this-email-from-elon-musk-to-tesla-employees-descr.html
43. https://atos.net/fintech/home

By building a strong community around their offerings it is possible to tap into a large pool of talent which has close to zero cost. This could be as simple as a pool of passionate end-users who are willing to test and provide feedback about alpha or beta versions of a product. Or it could mean open-sourcing part or all of a company's products (open source no longer being restricted to just software[44]) so that motivated enthusiasts can contribute directly to its evolution.

Crowd-sourcing (a term coined by Wired in 2006[45]) is a structured approach for harnessing the capabilities of large groups of people without employing them directly. One example of this is stock photo platforms like Shutterstock, iStock and Adobe Stock which enable those who need photographs to access the work of thousands of photographers. Another example is crowd-source contests where people or teams compete for a prize (for example to develop the fastest algorithm, or generate the most innovative idea). Crowd-sourcing can be applied to almost any activity, even including funding, as demonstrated by crowd-funding platforms like Kickstarter.

We are also seeing the increasing impact of the gig-economy, where people are employed for short-term one-off assignments (usually at a fixed price for a fixed scope). In itself this is not new (and has been commonplace in many industries, for example entertainment, for a long time). However, platforms like Uber have increased the scale of the gig-economy and also, arguably, made it possible to use the gig-economy for lower skilled (and lower paid) work. Whilst clearly many people may appreciate this way of working because of the flexibility it can give them, it is also undoubtedly true that concerns have been raised about worker's rights[46] and safety[47]. Businesses who plan to leverage the gig-economy must consider not just the potential upsides, but also legal and ethical aspects as well.

One characteristic shared by the community, crowd-sourcing and gig-economy models is that, in many cases, the geographical location of the people has become immaterial. This means businesses can access a worldwide talent pool rather than being constrained by the location of their offices. However this principle can be applied just as effectively to direct employees. In its first two years GitHub famously didn't have any physical offices[48] and even now that they do have an office, the majority of their employees are not required to be physically present at them: "They work where they want, when they want and how they want"[49]. Distributed teams are becoming the norm and are no longer considered to be a challenge to be worked around, but rather a positive asset enabling businesses to attract great talent and apply it to whatever tasks most need it: a pairing based on skill-fit rather than mere proximity.

Motivation

In his seminal book "Drive: The surprising truth about what motivates us", Daniel H. Pink observes that intrinsic motivation is needed for success in complex knowledge work. He describes the three sources of the intrinsic motivation as follows:

- Autonomy: having control over how you work and what you work on
- Mastery: having the opportunity to learn and develop yourself
- Purpose: finding meaning in your work that goes beyond monetary reward

The Digital Business Continuum supports each of these through its approach to leadership, organization structure, a cultural ethos that supports learning, and the unifying purpose.

44. https://www.arduino.cc/en/Main/FAQ#toc3
45. https://www.wired.com/2006/06/crowds/
46. http://www.telegraph.co.uk/technology/2016/10/28/uber-awaits-major-tribunal-decision-over-drivers-working-rights/
47. http://www.telegraph.co.uk/technology/2017/09/22/uber-denied-london-licence-huge-setback-app/
48. https://zachholman.com/posts/how-github-works-asynchronous/
49. https://techcrunch.com/2015/11/14/at-github-you-dont-need-no-stinkin-office-but-there-is-a-nice-one-if-you-do/

Culture
Learn-fast and embrace fresh thinking

As we have already discussed, whilst having the right leadership, governance and organizational structure is important for successful adoption of the Digital Business Continuum approach, having the right organizational culture is also key. In fact, the relationship is reciprocal: the needed company culture supports the right leadership, governance and structure, but it is also enabled by them.

Learn-fast

We believe perhaps the most important cultural enabler for applying the Digital Business Continuum approach is the development of a "learn-fast" culture. Such a culture values a willingness to discover and apply new ideas. It creates an environment where it is more acceptable to try something new and fail, than to never try anything new at all. And it rejects hierarchy and the notion that someone in a senior position will always know better than someone more junior.

The feedback loops, measurement of the right things, and autonomy are three enablers for learn-fast. However, they must be complemented by incentivization and performance management that embraces (rather than punishes) this behavior. We recognize that "where conventional organizations seek to apportion blame or tighten controls to prevent things going wrong for a second time, disruptors treat failure as useful feedback and use it to streamline and improve their products and services."[50].

In fact, in their employee handbook, Valve are very explicit about this[51]:

"Nobody has ever been fired at Valve for making a mistake. It wouldn't make sense for us to operate that way. Providing the freedom to fail is an important trait of the company...Even expensive mistakes, or ones which result in a very public failure, are genuinely looked at as opportunities to learn. We can always repair the mistake or make up for it."

Some businesses have even taken steps to celebrate individuals who have dared to try something and learned, even if they were not successful (for example Procter and Gamble's "heroic failure award" and Tata's "dare to try award"[52])

Of course, learn-fast is not only about being comfortable with trying out new ideas, it also applies to the more traditional development of the skills and capabilities that the organization will need. The culture must support its staff with ongoing professional development, encouraging individuals to learn new skills and techniques (as well as find out about new ideas) even when the immediate business benefit may not be clear.

It's not particularly new thinking that staff should spend a significant amount of their time on professional development. Back in 1994 Charles Handy suggested that 10% of an employee's time "might be a minimum standard for anyone in the years ahead" and noted that "five days a year, the norm for good employers, leaves a large gap to be filled"[53] It is important to note that professional development is frequently not about mere attendance at a training course but could include research activities, speaking at conferences, working on an experimental project, reading professional magazines and publications, mentoring and being mentored, and working towards a professional qualification.

Organizations have tried a number of different approaches to stimulating their staff to try out new ideas and develop themselves. Examples include the 24-hour ShipIt days pioneered by Atlassian, which they run every quarter and where employees work on a project entirely of their own choosing and deliver something within 24 hours[54]. Similarly Hackathons can create a "safe-to-fail, yet usefully pressurized environment where people can explore and try out different technologies and approaches"[55]. Some organizations (3M, Hewlett-Packard, Google) have also encouraged employees to spend a percentage of their work-time to work on their own projects, leading to some very well-known inventions (Post-It Notes, Gmail, Google Earth)[56]. In another example, to stimulate more disruptive innovation Adobe invented their Kickbox process[57] in which employees are given support and mentoring (together with a pre-paid credit card for $1000) to develop an idea and test it with customers. We believe that initiatives like these can be adapted to help any organization create a strong learn-fast ethos.

Collaboration without boundaries

We have already seen that an organization applying the Digital Business Continuum approach must be structured into cross-functional teams that are focused on delivering business value. This is to facilitate the smooth collaboration of people from any discipline required to deliver value to customers. This could include (but is not limited to) sales, marketing, legal, design, software, infrastructure, hardware, maintenance and after-care.

However, as also identified earlier (on page 16), even with cross-functional teams, collaboration should not be restricted to only being between people who report to the same manager. In a collaboration-first culture people are expected to collaborate with whomever they need to in order to move forwards (in alignment with the unifying purpose). Managers can no longer expect that all communication with their team should come via themselves. No one in the organization should be able to say "I couldn't do that because team x wouldn't cooperate".

50. http://atos.net/en/blog/digital-disruption-old-news-whats-next
51. http://www.valvesoftware.com/company/Valve_Handbook_LowRes.pdf
52. https://www.forbes.com/sites/jacobmorgan/2015/03/30/why-failure-is-the-best-competitive-advantage
53. The Empty Raincoat, Charles Handy, 1994
54. https://www.atlassian.com/company/shipit
55. http://atos.net/en/blog/hackathons-dont-just-build-software
56. https://www.fastcodesign.com/1663137/how-3m-gave-everyone-days-off-and-created-an-innovation-dynamo
57. https://kickbox.adobe.com/what-is-kickbox

This removal of boundaries should also apply to how people within the organization collaborate with people outside of the organization, an approach that can significantly impact a company's capacity to innovate (and something that we described as Innovation Value Webs in Journey 2018[58]).

These positive behaviors must, of course, be modelled by leadership at all levels within the organization (following the logic of Team = Product). Furthermore they must be supported by tooling which enables frictionless collaboration between employees, no matter which department they "belong" to.

Fresh thinking

In his paper "Why Good Companies Go Bad" Donald Sull concludes from his study of dozens of businesses that:

"A fundamental dynamic links early success to subsequent failure. Clear commitments are required for initial success, but these commitments harden with time and ultimately constrain a firm's ability to adapt when its competitive environment shifts."

We believe that a key way of avoiding this stagnation is to pro-actively encourage fresh thinking: creating an environment where challenging existing views is the norm. One way to do this is to encourage people to move between different roles and departments, both internally and externally with partners and clients. This mobility also has additional benefits: a culture where people are comfortable moving between different teams makes it easier to re-allocate resources quickly to where they can add the most value (thus supporting the resource allocation approach we covered on page 10). Additionally, this internal mobility avoids the costs of external recruitment and reduces ramp-up time

because, although people may be new to the team, they will already be aligned with the company culture and understand how the organization operates.

But we believe that the most effective way to ensure there is always fresh thinking, healthy challenge of existing norms, and lively debate, is to ensure diversity across the organization, throughout all teams and disciplines, and at all levels. This diversity should cover gender, cultural background, disability, ethnicity, neurology, sexual orientation, and age and, as explained by Martin Fowler, has real benefits[59]:

"Lack of diversity is itself a problem. Different people think differently, and consequently come up with different ways to solve problems. If you have a bunch of people with the same background, they miss lots of ideas - leading to inefficiencies and lack of innovation."

Research evidence also backs up this view. Agile software development teams which included one or more female team members outperformed all-male teams[60] and research by the Credit Suisse Research Institute found that companies with all-male boards underperformed those of mixed-gender boards by 26 percent[61].

By bridging a generational divide, reverse mentoring can also help to ensure a wider range of viewpoints are taken into account[62]:

"Find the smartest 25 year olds in the organization and have them shadow leadership positions to help close generational and technological gaps, accelerate their learning curve in management and provide reverse mentorship."

And indeed, within Atos, we have found that this approach has resulted in "immediate changes in the way Atos Executives and their teams work."[63]

People with disabilities face unique challenges which also give them unique insights which can result in more innovative solutions. Often these innovative solutions add value for all people (not just those who have a specific impairment). For example, text-to-speech and voice recognition systems were significantly pioneered to improve accessibility, but have now found far broader application.

To support this diversity, the workplace environment must enable and celebrate differences, enabling employees to "be themselves" and adapting ways of working to suit individual needs and requirements. This can range from adapting working hours to support people with mental health issues[64] through to ensuring that facilities are physically accessible and emotionally safe[65].

Recruitment

A key component that reinforces these cultural aspects (learn-fast, collaboration, fresh thinking) is to make cultural fit a central tenant of recruitment. One extreme example of hiring for cultural fit is Zappos where all new staff undergo a 4-week training program which immerses them in the company's strategy, culture, and its obsession with its customers. They receive their full salary during this period. After a week or so, employees are offered $2000 to leave: "Zappos wants to learn if there's a bad fit between what makes the organization tick and what makes individual employees tick, and it's willing to pay to learn sooner rather than later."[66]

However, returning to our previous point about fresh thinking and, in particular, diversity, take care that striving for a "cultural fit" when hiring, doesn't reduce diversity (or turn away the future change agents that your organization needs). Many recognize that a specific effort is often needed to recruit in a way that will promote a more diverse workforce[67][68].

58. https://atos.net/wp-content/uploads/2016/06/atos-ascent-journey-2018-whitepaper.pdf
59. https://martinfowler.com/bliki/DiversityImbalance.html
60. http://devopschat.net/2017/06/13/agile-metrics/
61. https://www.bloomberg.com/news/articles/2012-07-31/women-as-directors-beat-men-only-boards-in-company-stock-return
62. Exponential Organizations: Why new organizations are ten times better, faster, and cheaper than yours (and what to do about it), Salim Ismail, Michael S. Malone, Yuri van Gets, 2014
63. https://www.mca.org.uk/news/updates/youth-and-gamification-are-the-keys-to-getting-digital
64. https://www.huffingtonpost.com/joseph-rauch/what-happened-when-i-told-my-boss-i-was-struggling-with-mental-illness_b_8710756.html
65. https://blog.codinghorror.com/what-can-men-do/
66. https://hbr.org/2008/05/why-zappos-pays-new-employees
67. https://martinfowler.com/bliki/DiversityMediocrityIllusion.html
68 https://continuousdelivery.com/2013/09/how-we-got-40-female-speakers-at-flowcon/

The Searchlight and the Radar

Facing outwards to identify threats and opportunities

In his book "Digital Disruption: Unleashing the next wave of disruption"[69], James McQuivey has observed that incremental innovation is often a task allocated to pragmatic and focused individuals, who will reject ideas for products or processes that won't connect to today's customers. They want proof that a thing can be done before they embark on the journey. And this thinking can prevent organizations from behaving like digital disruptors. Alternatively, organizations may use "blue sky thinkers". They are creative, innovative and fun to work with, but their vision for the future often lies too far from something that can be achieved quickly, incrementally and experimentally. In summary, he argues that traditional businesses innovate by seeking to do more of what they already do, while disruptors ask themselves "How can we give people something that they really want?"

So far we have explained how we believe an organization must operate internally in order apply the Digital Business Continuum approach. We have discussed the leadership, governance and organizational structure needed for a business to be able to constantly adapt and innovate. We have also examined how these interact with an organization's culture. There are two additional components that we think are vital for successful innovation: the searchlight and the radar.

We use the metaphor of the searchlight to highlight that a business must actively seek out external threats and opportunities. However, used in isolation, the danger is that a company will only discover what it already knows to look for and confirm its existing biases. Hence we combine it with the metaphor of the radar, to reinforce the notion that organizations must be constantly scanning for changes in their business context. In combination, both of these metaphors describe how an organization can ensure that it is externally focused: on its customers, competitors, partners and suppliers.

Actively seek opportunities

Most organizations already have potentially rich sources of ideas in the form of their existing customers, partners and suppliers. To benefit from these they need to have a structured approach to harvesting these ideas, sorting and filtering them, and then converting them into concrete actions. Traditional approaches which can work well include workshops and hackathons. Advanced organizations also use platforms which enable the generation of ideas and the ranking of them to be performed by a large number of people (both internal and external to the organization).

We recommend keeping an especially watchful eye on emerging ecosystems. Many recently successful business models have been built around open (or at least semi-open) ecosystems. One example is the iPhone (whose success is linked to the app ecosystem). Clearly there are huge potential rewards for businesses that place themselves successfully at the heart of such an ecosystem (by creating the underlying platform). However, remember that even a foothold in the periphery of a growing ecosystem can still have significant value[70].

Be vigilant for threats

The obvious place to look when assessing potential threats will be towards your direct competitors. When doing this, we believe there are three common traps to be aware of: inaccurate segmentation, chasing commoditization, and focusing on volume share.

Firstly let's consider inaccurate segmentation. Always remember that businesses that are not a direct competitor today, could be a huge threat tomorrow. One obvious example is an online book store providing cloud IT services (Amazon). The key is to identify companies that are doing something internally which they could pivot to become an external product, or businesses that are innovating in areas that appear to be outside of their (current) core business.

69. Digital Disruption: Unleashing the next wave of disruption, James McQuivey, 2013
70. http://venturebeat.com/2012/02/03/how-cameras-john-casasanta-made-millions-off-a-1-app/

Secondly, be aware of signs that your current products/services are becoming commoditized. If this is the case you must consider whether you can innovate in order to de-commoditize the value you offer your customers, or whether you should innovate instead to drive down your own operational costs. These approaches are, of course, not mutually exclusive. And wise executives may well keep both options open. We see that a common third option (protectionism) is increasingly unsustainable and will, at best, delay the threat rather than neutralizing it.

Thirdly, when assessing the scale of any threat, it is sensible to consider the size of the threat in terms of value (revenue and margin) rather than only volumes. Few mobile phone manufacturers would have anticipated in 2007 that just 10 years later it would be possible to launch a phone at a $999 price point[71]. In many cases, protecting a high-volume-low-profit market share in an increasingly commoditized space will not be a successful strategy.

In all these considerations we believe it is important to avoid arrogance: do not believe that because you currently hold a dominant market position that you are not vulnerable. Do not believe that just because you have the best products, the most talented engineers or the biggest footprint, you are not susceptible to disruption. Increasingly we are seeing that "David beats Goliath" and "most fail to recognize the advantages an underdog brand has when it faces off against a competitor who has strength, size, and wealth."[72] One of the keys to avoiding this arrogance is to embrace fresh thinking (as we have described earlier on page 19).

Finally, we would make the observation that it is not necessary to be the pioneer. Indeed history has many examples of companies that were the first to invent, but who failed to capitalize on the opportunity (for example Kodak being the first to build a digital camera[73]). However, if you are not the pioneer, then you must be fast to react. Whether this reaction is internally focused, or through acquisition or partnerships, it must be quick. And we believe that the thinking outlined in this paper can enable the kind of fast-footed response that is needed.

Build an innovation community

To implement the searchlight and radar concept, and to avoid the pitfalls we have described, we believe that an organization must have an innovation community. It will not be a separate business unit, rather it will be made up of representatives from each business unit. These people will need to be naturally curious and excited by new ideas. Building a community like this enables a cross-pollination of ideas throughout the business.

This kind of community will also interact with others outside of the organization including customers, partners and suppliers, and also using models like community, crowd and the gig-economy.

The goal of this community is to search for and refine innovative thinking, apply it to the business context of the organization, and advise on what actions the business needs to take.

71. https://uk.reuters.com/article/uk-apple-iphone/apple-launches-999-iphone-x-in-bid-to-regain-innovation-lead-idUKKCN1BN0M5
72. http://www.inc.com/issie-lapowsky/malcolm-gladwell-david-and-goliath.html
73. http://uk.businessinsider.com/this-man-invented-the-digital-camera-in-1975-and-his-bosses-at-kodak-never-let-it-see-the-light-of-day-2015-8

Conclusion
Thriving in a digitally disrupted world

We began this paper by describing the "Disruption Trinity" which we believe means that businesses everywhere are now finding themselves in highly uncertain business contexts. Many companies may have been used to fierce competition in the past, but now this competition can come from an increasing number of sources, and technology is often changing the rules of the game.

We have explained why this means that a single "one-shot" Digital Transformation can no longer be the right response. Instead businesses need to adopt the Digital Business Continuum approach: constantly adapting to changing circumstances and relentlessly innovating to maintain a competitive edge.

Furthermore, we have described in considerable detail a framework which we believe is general enough to be relevant for any organization.

In fact, based on this work, we have developed a tool to assess an organization's existing capability against this framework, to use both internally and with our clients. The output from this assessment can be used to drive an organization's strategic thinking about how they can become more digital. It can be used to identify which areas need the most attention and in what order they should be tackled. And it also provides concrete practical steps that can be implemented to boost the digital maturity of your organization.

We have talked much in this paper about the urgent need to adopt this approach. This has been highlighted by examples of companies that have experienced difficulties, as well as the rapid success of businesses that have fully adopted this mode of operation. However, it would be wrong to think of the Digital Business Continuum as being merely a necessity for survival. We do believe that adopting the Digital Business Continuum approach will make an organization more competitive, more successful and more resilient. But we also believe that the Digital Business Continuum approach can make an organization more socially responsible as well as being a more engaging place to work. Indeed, one of our fundamental conclusions is that business success, social responsibility and workplace engagement are not mutually exclusive of each other: instead, it is the latter two that enable the former.

Charles Darwin famously said "it is not the strongest of the species that survives, nor the most intelligent; it is the one most adaptable to change"

We would say that the same sentiment has never been more true in business. But we would go even further: faced with uncertainty, businesses must change the very essence of how they operate. Their purpose, culture, leadership, governance and structure must all be re-evaluated and potentially transformed. And the rewards can be great: organizations who are successful will not just manage to survive, but will be able to thrive in a digitally disrupted world.

Key Take Aways

The Disruption Trinity	The combination of changes in society and regulations, together with the opportunities and dangers associated with the high pace of technological advancement, creates a Disruption Trinity. In combination, these factors mean that businesses now operate in a context that is more dynamic and uncertain than ever before.
Continual Transformation	The disruption we are seeing creates a complex context for decision making which means organizations must adopt an approach of probe-sense-respond. Multiple feedback loops will co-exist across the organization and this approach must be applied at both the strategic and operational level.
Innovation	Organizations must make extensive use of innovation, not just to revolutionize their products and services, but also to highly optimize their internal operations.
Unifying Purpose	A unifying purpose is an enabler for rapid decision making that is aligned with the company's business strategy. It also gives meaning to the work needed to enable the organization to achieve its goals.
Resource Allocation	Organizations must understand the profile of the portfolio of business opportunities that they wish to pursue. They must then allocate resources, not based on what worked in the last year (or the last decade), but on what will be needed in the future.
Leadership, Governance and Organization Structure	Many businesses will need to transform their approach to leadership, governance and organization structure in order to enable innovation at pace and create autonomy and flexibility.
Culture	Organizations must have a learn-fast, collaborative culture which embraces fresh thinking. Two enablers for this are the right incentivization and a high level of diversity.
The Searchlight and the Radar	Businesses must be outward facing: actively sensing and searching for threats and opportunities. One way to achieve this is to create an innovation community.
The Digital Business Continuum Framework	Our Digital Business Continuum framework provides a way to assess your organization's current capabilities. Our assessment tool can help to drive your strategic thinking and identify concrete next steps.

About Atos

Atos is a global leader in digital transformation with approximately 100,000 employees in 72 countries and annual revenue of around € 12 billion. European number one in Big Data, Cybersecurity, High Performance Computing and Digital Workplace, the Group provides Cloud services, Infrastructure & Data Management, Business & Platform solutions, as well as transactional services through Worldline, the European leader in the payment industry. With its cutting-edge technologies, digital expertise and industry knowledge, Atos supports the digital transformation of its clients across various business sectors: Defense, Financial Services, Health, Manufacturing, Media, Energy & Utilities, Public sector, Retail, Telecommunications and Transportation. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos Consulting, Atos Worldgrid, Bull, Canopy, Unify and Worldline. Atos SE (Societas Europaea) is listed on the CAC40 Paris stock index.

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