A **CFFO** White Paper November 2018

Digital Transformation **Challenges** in Large and Complex Organizations

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with the support of
IRC4HR™

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The author is grateful for the support of Steven Moran, Oliver Fischer, Ruggero Cesaria, Claudia Rautenberg, Thilo Bendler, Gianpaolo Barozzi, and Nandani Lynton, who helped to shape the agenda and were instrumental in providing access to the executives from the various corporations.

A special thank you goes to Roddy Millar, who participated in many of the interviews and provided editorial support.

INNOVATION RESOURCE CENTER for HUMAN RESOURCES

This paper and the qualitative study on which it is based on was generously supported by the Innovation Resource Center for Human Resources, a non-profit foundation dedicated to advance the knowledge and practice of human relationships in organizations.

Roland Deiser

Digital Transformation Challenges in Large and Complex Organizations

"Digital transformation - it's really about how do you go from an organizational structure that's based on performance or hierarchies to an area where it's based on collaboration and co-creation. Leading means helping the organization along that way to become open to different approaches."

Tim Holt, CEO Siemens Power Generation Services

Abstract

Over the last few years, Digital Transformation has moved to the top of the agenda of virtually every large corporation. The importance of the topic is undisputed, and massive efforts are under way to create strategic and organizational capabilities that enable companies to compete successfully in the digital ball game. The transformational agenda is fundamental and massive, and it touches multiple stakeholders inside and beyond the corporation.

To get a more differentiated understanding of the challenges large and complex organizations face in this context, we conducted more than 30 in-depth interviews with top executives from 6 major corporations, across a wide variety of functions and industries.

While it proved difficult to untangle the multifaceted issues related to digital transformation, we identified 9 major areas leaders must pay attention to, and which are outlined in this report:

1. **The Legacy Challenge**
   Deal with complex digital legacy issues and the burden of owning massive physical assets which slow down flexibility and responsiveness – a structural disadvantage of large incumbents

2. **The Resource Allocation Challenge**
   Strategically allocate resources to arenas of digital value creation that follow different rationales – internal process optimization, existing product enhancement, radical business model innovation

3. **The Agility Challenge**
   Create and sustain agile mindsets, structures, and strategies which are instrumental for engaging successfully in collaborative networks within and beyond the organization

4. **The Ambidexterity Challenge**
   Integrate/coordinate/orchestrate a portfolio of multiple conflicting operating models and micro-organizations - both inside and outside the corporation

5. **The Start-up Challenge**
   Harvest the innovative power of external entrepreneurial ventures without suffocating entrepreneurial spirit and the start-up culture of work

6. **The Connectivity Challenge**
   Create and nurture collaboration across functional, divisional, and interorganizational boundaries while leveraging tribal differences as a source of mutual learning and innovation

7. **The Governance Challenge**
   Create a strategic rationale and deploy mechanisms that mitigate stakeholder politics and orchestrate the plethora of transformational activity typically happening in large corporations

8. **The Functional Identity Challenge**
   Redefine the identity and reconfigure the collaborative interplay of traditional corporate functions which get themselves transformed in the process of digital transformation

9. **The People Challenge**
   Shift mindsets and reskill/upskill people towards digital literacy and maturity on a massive scale, within a short time frame. Attract and retain scarce digital talent

The 9 challenges are highly interdependent and feed on each other. While it is impossible to isolate and untangle them, the purpose of this paper is to structure the arena and provide some insights on key elements of the complex transformational journey towards digital maturity.

Introduction

A major European airline recently completed a large IT integration project related to passenger data collection: regardless of whether the booking was made directly online, through a third-party website or via an agent, they would now know not just passenger names, but also nationalities, ages and which travel documents they would use.

The new system revealed that a party of 50 Chinese passengers would be on a flight from Frankfurt to Johannesburg the following week. It would have been great to have some Chinese speaking flight attendants onboard for those passengers. However, due to the complexity of the global crew assignment system it was impossible to make such changes at short notice. Even changing the inflight safety recording needed too much lead time – due to the curse of bureaucracy that haunts virtually every organization once it reaches a certain size.

This small example highlights a fundamental digital transformation challenge that large organizations face today: It's not technology that creates the major headaches - it is the ability of organizational structures, processes, and cultures to take advantage of the opportunities that technology provides. Today, big data create a plethora of information about customers, allowing for micro-customization of offerings and innovative value propositions. Companies may quickly become sophisticated in big data analytics; however, the organizational capability to respond is lagging. As Christian Langer, Lufthansa's VP for Digital Strategy, summarized it nicely - *"we have the ability to predict, but not to react"*.

In a small company, the problem would not even arise; the lack of complexity would have made it easy to know about the Chinese passengers early on, and the ability to alter schedules or swap recordings would have involved only a few people who would have been empowered to make these decisions. In a mature and complex organization, where responsibilities and functions are clearly demarcated, and air stewards are regulated by Works Councils and unions, decision processes are cumbersome, and the flexibility to respond to change is limited.

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Welcome to the world of digital transformation challenges that large and complex organizations face. We have spoken about this topic with more than 30 top executives from six large global corporations[1] to learn about their views, experiences, and strategic/organizational responses related to a challenge that has now moved to the top of the agenda of virtually every company. To

[1] Companies that participated in the study were Bertelsmann, Daimler, Fiat-Chrysler Group, Lufthansa Group, Otto Group, and Siemens. Narrative in-depth interviews were conducted between December 2017 and April 2018. The author would like to thank all executives who were so kind to share their perspective and dedicated time and attention to this research.

get a broad and multifunctional perspective, we talked not only to CEOs and/or heads of digital transformation; we were also interested in the perspective of key stakeholders such as IT, Marketing, Strategy, Sales, Communication, HR, or Innovation, who naturally view issues through their respective functional lens.

To add to the variety of perspectives, we selected organizations across a broad range of industries, spanning media, automotive, airline, retail, and an engineering conglomerate. All of them are major players in their space, and they employ hundreds of thousands of people across the globe. They all act in turbulent, fast changing and disruptive environments, with each industry sector facing its specific dynamic. They all share a massive digital transformation challenge, but there is no common masterplan that outlines how to deal with it.

Organizations and their leaders must tackle digitalization issues in a multiplicity of ways, designed to suit different divisions, businesses and functions - with different cultural and political contexts, different market dynamics, different stakeholder profiles, and a different readiness to change. Even within one company, some divisions and business units are more advanced in their path to digital maturity, while others lag[2]. Yet, despite this high degree of variety, we found some common denominators among the multiple challenges our sample companies face, that can be generalized for any organization once it reaches a certain size and complexity.

Before we dive deeper into these challenges, however, let's first briefly see if *digital* transformation is different from the strategic change and transformation conundrums which are well known and have been amply discussed in management literature of the last 30 years[3].

Is Digital Transformation Really So Special?

There are multiple dimensions through which we can view the challenges of digital transformation (DT). Although the concept and its implications have been discussed for quite a few years now, there is still confusion on a very basic level. Which issues are genuinely related to DT, and which are just ordinary adaptations leveraging technological advancements (which are mainly digital these days)? Is DT just plain old change dressed up in new and fancy terminology? Or do organizations face a genuinely new quality of change which requires radical new approaches? Is it just another management fad like Total Quality, Six Sigma, Process Re-engineering, Organizational Learning, and countless more which created short-lived mantras to feed the ever-hungry armies of consultants? Or is it a fundamental challenge that will stay with us for the foreseeable future?

[2] A great example is Bertelsmann, whose eight major divisions reach from digitally mature innovators, such as the Education Group or the Bertelsmann Music Group (BMG) to businesses that still have quite a journey ahead of them, like the magazine business Gruner & Jahr, the service group Arvato, or the flagship TV business RTL. https://www.bertelsmann.com/divisions/

[3] For one of the early seminal contributions in the field see Nadler, D. A., Tushman, M: Organizational Frame Bending: Principles for Managing Reorientation. Academy of Management Executive 1989, Vol. III. pp. 194-2O4.

The answer is yes and no. The consulting industry and management scholars embrace the topic as the new El Dorado of service offerings and scholarly brand-building. Virtually every change or OD consultant is now an expert on digital transformation, and much of the advice is old wine in a new bottle. On the other hand, there are some features that make the digital transformation challenge unique and suggest it won't go away any time soon:

- **It's universal.** It is virtually impossible to escape the digital context that shapes the business realities of the early 21st century. Companies must deal with it or they will perish. Strategic innovation is not a matter of choice any more. It has become a *sine qua non* and does not automatically guarantee competitive advantage or even just survival.

- **It's really big.** In its significance and scale, the ubiquitous digitalization is comparable to the most disruptive innovations in the history of mankind, such as the discovery of fire, the invention of the wheel, the invention of mechanical tools, the steam engine, or electricity.

- **It's fast and gets faster.** The development of digital technology is inherently exponential, convincingly illustrated by Moore's law or the principle of Machine Learning. Organizations – especially if they are large and complex - face an almost impossible task of keeping pace with opening opportunity spaces that are exploited by new entrants that don't have to carry legacy baggage.

- **It's rewriting the laws of competition.** Digital technologies enable novel business models and ways of value creation that defy traditional competitive dynamics. The logic of platforms, marketplaces, or agents – to name a few - favors a winner-takes-it-all paradigm which rewards few and resists conventional regulation. This creates a widening gap between the few owners of the digital space and the many who must give in to less powerful business models. A great example is the automotive industry where car manufacturers may soon be forced into the role of mere hardware providers, while the owners of digital networks, platforms and data houses may capture the bulk of the value.

- **It's reshaping society.** The nature of technologies such as blockchain, social media, AI, cloud computing, big data analytics, etc. require a new kind of institutional infrastructure that can deal with the – often unintended and not fully understood – consequences of digitalization. The discussion about privacy, cyber security, the future of humanity or the future of work are an indication of the kind of societal challenges we need to address. It will take time to create an institutional context for the digital economy, and it is likely to uproot our political and economic system which, after all, is a heritage of the industrial age.

Combined, these features of digital transformation challenge organizations and their leaders to the core. Its ubiquitous character and its exponential dynamic make it virtually impossible to define its scope, to clearly identify threats and opportunities, to create traditional strategic responses – in short: to get a solid grasp on the phenomenon.

Many companies respond to this challenge by a whirlwind of innovation and change initiatives. Design thinking workshops, hackathons, shark-tank formats (where entrepreneurial ideas are pitched to an in-house panel of potential sponsors), executive think tanks, innovation awards, start-up lunches, learning expeditions, tech hubs, incubators and accelerators, alliances with external company-builders, traditional VC work – the list goes on and on.

The impact of many of these initiatives is far-reaching in terms of the numbers of people that they touch, but the depth and sustainability of impact is more difficult to assess. The various interventions produce different outcomes – some are designed to foster broad and generic changes to people's mindset and/or organizational agility which remains an awkward metric to measure; others are more targeted on (digital) company-building and driving innovative projects across businesses, which are more tangible and whose effectiveness is easier to measure and to account for.

The Legacy Challenge

Much of the debate about digital transformation deals with the disruptive space, where new business models have the potential to create massive upheavals for entire industries. Anticipating a radically different digital future, most of the executives we talked to were adamant that digital transformation was an indispensable process necessary for the survival of their corporation.

However, many digitalization projects within large corporations are related to leveraging digital technology for incremental change – relentless IT integration work, streamlining internal processes, improving the customer experience, building new digital features into existing products and services, and so on. Just getting the basics right remains a major obstacle for most companies we investigated – a fact that start-ups and emerging companies do not have to deal with. As Bertelsmann's chief information officer Tom Linckens noted on the company-wide introduction of Office 365: *"this is not digitization, but the stuff we had to get out of our way first"*.

Many have spent years and millions of dollars to optimize processes again and again, only to end-up in a patchwork of legacy infrastructure that today may have become a deeply engraved barrier for change. That legacy systems slow down large organizations and create structural disadvantages is a well-known problem that remains a significant and costly barrier to progress. One CIO, with a touch of exasperation, described how an app they were building to use across the organization needed to integrate with over fifty other IT systems and that "*if any of those are old, it impacts the functionality of the new app*". Inevitably many of those systems will be old.

Getting the basics in place first remains an unavoidable priority. This imperative to try and catch-up with the present, let alone, move forward to a newer, more innovative future is a real impediment to progress, and allows the nimbler small players to continue to set the pace in innovation.

The Resource Allocation Challenge

Projects dedicated to upgrading the legacy systems and make them compatible with new digital technologies require significant resources, both in terms of manpower and budget. It comes as no surprise, that in large organizations they constitute the bulk of their digitalization efforts - although they are not transformative in the sense of new product development or business model innovation. This makes them no less important, after all they directly impact the bottom line, and they provide the basis on which more innovative, frame-breaking ventures can build on. They are a must if companies do not want to fall hopelessly behind.

In many cases there is no clear terminology that distinguishes this digital enhancement of current processes and operations from strategic innovation efforts that redefine the rules of the game. There is a major difference between integrating incompatible IT systems and making them ready for a new generation of software architectures and creating entirely new value propositions that make traditional products and services obsolete.

To provide a simple framework to structure different types of activities, it is helpful to use a strategic segmentation to identify digitization opportunities. Siemens Power Services, for example, allocates its digital transformation efforts to three distinctive arenas they call "buckets":

1. ***Save Money*** – use digital technology to optimize existing processes, with the goal to save costs and improve overall efficiency and effectiveness.
2. ***Make More Money*** – use digital technology to enhance the existing product/service portfolio with the goal to enhance its value for customers
3. ***Make New Money*** – use digital technology to create entirely new revenue opportunities and market spaces, based on novel value propositions which often come with new business models, such as platform strategies.

According to Siemens PS CEO Tim Holt, the $10bn+ division he leads allocates about 60% of its transformation budget to "Saving Money", 30% to "Making More Money", and 10% to "Making New Money". Holt's goal is to reduce the share of the less transformational activities in favour of the other two buckets, and he is aware of the different innovation strategy that each domain requires. The buckets help to structure activities and make it easier to communicate the rationale of change to employees and other stakeholders. They also help to make the fuzzy and all-encompassing challenge of "digital transformation" more tangible and digestible.

Process optimization efforts with the goal to ***Save Money*** are comparatively easy to identify and to implement. They require only limited strategic creativity and courage, and they yield measurable results – both in terms of operational efficiency and improved customer interface. But as already mentioned, they do not change the rules of the game – they just improve competitiveness within the existing paradigm.

Creating businesses that ***Make More Money*** challenges the current set-up of the organization; it requires a more flexible mindset to imagine new possibilities for existing products and services, which many companies try to foster through exercises in scrum, design-thinking, hackathons, and other formats. It also requires *organizational* innovation: to unleash creativity and increase the speed to market, many companies establish cross-functional teams that own the development process from beginning to the end, transcending functional silos and linear processes. These "agile teams" combine technological acumen and business acumen, i.e. they connect a deep appreciation of customer needs and evolving market conditions with a thorough understanding of what emerging technologies can do, and what is needed to apply them in the current business.

The third bucket – ***Making New Money*** - is an entirely different challenge: Creating disruptive, industry-transforming business models requires not only extraordinary imagination, creativity, and guts – it shatters the established structure of the business ecosystem and unleashes a reconfiguration dynamic which threatens the existence of current revenue streams and the overall operating model of the business. This puts incumbents by default at a disadvantage as their long-nurtured strengths that were the basis of their competitive success suddenly turn into liabilities. Other than new entrants that do not come with the baggage of a hereto successful business model, they [incumbents] must deal with an existing swamp of legacy factors.

Figure 1 provides a summary of the differences between the three strategic arenas of digital transformation.

Role of Digital Technology	Business Impact	Type of Change	Impact on Operating Model
Improve Processes	Cost Convenience	Incremental Mainly organization related	low
Enhance Products and Services	Growth within Current Paradigm	Incremental Mainly market related	medium
Create New Markets	Disruptive Business Models	Radical Market and organization related	high

Figure 1: Digital Transformation Arenas

While *Saving Money* belongs to a large part to the traditional domain of the IT department, the more frame-bending or even frame-breaking initiatives are primarily driven by the market and require novel collaborative network architectures that enable open innovation and co-creation with stakeholders across internal and external boundaries. The traditional organization with its linear processes and vertically structured functions is too slow and cumbersome for this task.

To achieve agility and speed people from different departments and functions are forming temporary cross-functional units where they jointly address a defined business challenge. The concept of 'agility' has become a mantra, so it is worth a closer look.

The Agility Challenge

Virtually all the executives we spoke to agree on the importance of overcoming the pervasive silo culture and inward orientation that most large organizations are suffering from. Working across boundaries – no matter if it is boundaries of mind, function, or organization – is a key ingredient of transformational learning. Leveraging the power of difference that constitutes boundaries and embracing the unavoidable friction as an opportunity to learn and create something new is a key success factor not only for developing ideas and engage in new ways of work; it is also essential for reshaping the very essence of the structural and cultural set-up of an organization.

In this context, it is important to understand the various dimensions of agility.

- ***Agile mindsets*** – which relates to fostering courage, curiosity, and a collaborative spirit as key elements of individual capabilities. People who have no guts, no curiosity, and who have a hard time to collaborate won't function well in agile teams, and they will be a barrier to any team's success. Companies address this domain usually by offering workshops in agile methods, such as design-thinking, scrum, hackathons, and more.
- ***Agile teams*** – which relates to aggregating people from various functions in a dedicated team and providing them with a high degree of autonomy, thus circumventing the traditional organizational structure. Through their cross-functional composition and their freedom from corporate constraints, they bring all ingredients to the table that are needed for creative new solutions. The agile team design also short-cuts the path to implementation in contrast to the more traditional linear process which is slow and often runs into 'not invented here' resistance when a proposal moves from one functional department to the next. Agile teams are typically temporary and dissolve after they have successfully completed their mission.
- ***Agile organization*** – which relates to the way a company structures its collaboration with stakeholders of the business ecosystem of an organization (customers, suppliers, regulators, competitors, strategic alliances, industry associations, start-ups, etc.). This dimension includes engaging in co-creation efforts, designing open innovation architectures, participating in multi-stakeholder platforms, etc.

Together, these three dimensions form a self-reinforcing agile architecture which is instrumental for digital transformation to succeed. Limiting agility efforts to only one dimension won't work. People with agile mindsets that remain trapped in traditional structures, without the opportunity to apply their creativity and collaborative spirit in agile teams, will either fall back into old routines or leave the company to work in more accommodating environments. Agile teams that are composed of people without an agile mindset won't be very effective. And if agility does not become *organizational* in terms of reconfiguring a company's collaboration patterns with the relevant environment, organizations will remain introverted, missing out on the critical inputs from the marketplace, and they won't have much strategic impact on the changing industry. After all, the ability to drive and orchestrate an inter-organizational network has become a critical success factor in the digital world.

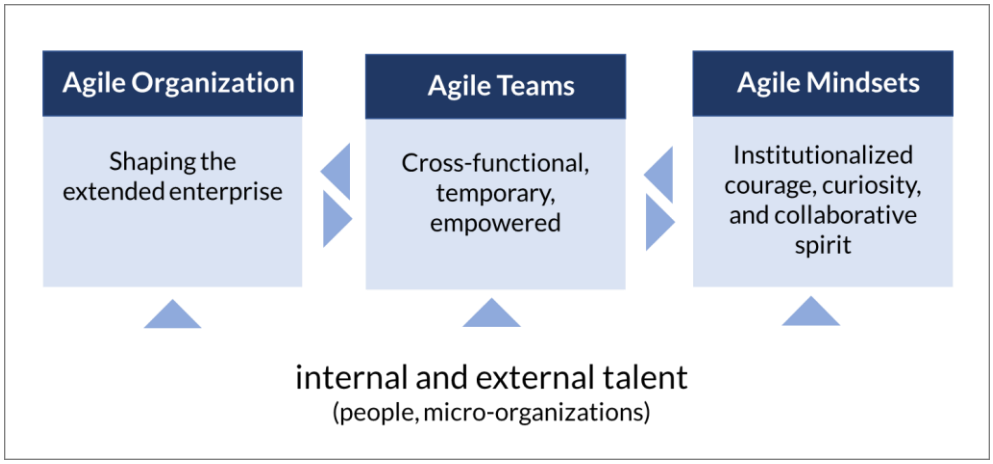

Figure 2: Key elements of an agile architecture

Due to its dual role as a vehicle to create new solutions to business challenges, and as a vehicle for structural and cultural change, agility has become one of the key buzzwords related to digital transformation. Activities to develop agility proliferate in organizations striving for digital maturity – especially in the domains of agile mindset and agile team efforts; however, the question remains which function in the organization is driving and orchestrating an *integrated* agility architecture that addresses all three domains and assures their productive interplay.

Agility in Practice - the Swarm Organization at Daimler

At Daimler, agile teams - which they call "swarms" - are a key element of the *Leadership 2020* initiative which has been launched to make the company fit for the future. As Daimler CEO Dieter Zetsche proclaimed in the 2017 annual shareholder meeting, *"...20 percent of our employees will be* working in swarm organizations in the foreseeable future"4. At Daimler, a swarm has the budget and decision power to operate, so whatever is necessary can be done in real time.

This new way of working also comes with its challenges:

- **Freedom vs. control.** People who are now enthusiastically engaged in their mission sometimes tend to lose their objectiveness, e.g. by forgetting about the commercial side. To make this freedom to operate work, one executive emphasized that "you need to be distinctive, you need control points, milestones, where people still need to report, and still they need to show their results – like a start-up must report to its investors from time to time - it's absolutely necessary."
- **Corporate vs entrepreneurial mindset.** Many people in swarm cells are people who have been working for years within the traditional organizational context; they have internalized cultural imperatives which are difficult to shed. Even those who come from outside have consciously joined a large global corporation – not a start-up. Agile teams are urged to be entrepreneurs, break the rules, disrupt - but their members have a corporate mindset, and their output needs to be coordinated or even integrated with the mainstream organization. Finding the right balance between the entrepreneurial mindset and the corporate setting is a major challenge.
- **Funding dynamics.** Some teams that would not get financed that easily as a start-up in the outside world still get significant funding – which means that also weaker ideas can survive a long time. On the other hand, projects that are about to take-off are in danger of being underfunded, as - should they become successful - the standard Daimler financial governance kicks in. Case in point: "Take car2go, our car-sharing solution. I would say, now they are underfunded. You see how aggressively Uber or Lyft expands in the ride sharing and ride pooling business, and you look at what we do at car2go".
- Friction. Deploying swarms on a larger scale causes structural friction with the mainstream organization. People that work for swarm projects leave a potential void in the linear organizational process and working in swarms runs counter to many - especially older – employees' experiences and routines. To improve the odds for success, swarms require a supporting infrastructure that fosters individual and organizational learning, such as "swarm coaches", facilitators, a mentoring system, and an overall commitment of the very top of the organization. Such a learning architecture must not only be designed to support individuals and teams; it must also be able to connect the swarm's innovation energy with the mainstream organization in a constructive way.

[4] Zetsche, Dieter: Daimler 2017: Daimler and the Transformation of the Automotive Industry. Speech at the 2017 annual shareholder meeting of Daimler AG, Berlin.

The Ambidexterity Challenge

Businesses such as airlines or power plants, for example, require risk minimization. Their very existence is based on a zero-tolerance for failure; procedures and products must be designed for 100% safety. Lufthansa is proud to be continuously ranked among the world's safest and most reliable airlines, and customers would not like to have it any other way. Achieving such a record requires a super risk-averse mindset in areas such as flight operations, logistics, and maintenance, which is deeply engrained in the company's DNA.

Digital innovation, on the other hand, means embracing risk - especially if it is not incremental but strives to change the rules of the game. It requires the willingness to accept failure and to learn, as experimentation and iteration are at the core of dealing with unchartered waters. The DNA of innovators is based on a courageous, daring mindset that defies convention. Or, to say it with the famous motto of the *Starship Enterprise*: "To boldly go where no man has gone before". This holds true not only for industry-shattering ideas such as urban self-flying taxi networks promoted by *Air Uber*[5] or the European *Pop-Up* project[6] that both boldly encroach the domain of air travel and mobility at large; a risk-embracing mindset is also necessary when it comes to abandoning encrusted organizational systems and processes, truly empowering employees, and experimenting with new ways of collaboration and customer interaction.

The clash between these two paradigms is unavoidable and lies at the heart of the ambidexterity challenge – an issue which all established organizations face. There is meanwhile ample literature on this subject[7]. It remains key to deal productively with the different rationales of "exploiting" and "exploring" and to combines the emerging businesses with the existing mainstream organization. To do so, requires structural agility; folding innovative hopefuls into the Procrustean bed of existing rules and regulations will quickly destroy their transformative potential, keeping them totally separate and on their own makes it impossible to leverage their change energy.

This conundrum cannot be solved with the binary logic of either-or; managing ambidexterity requires accepting and supporting a portfolio of multiple operating models and many different types of micro-organizations both inside and outside the corporation.

[5] https://www.uber.com/elevate.pdf

[6] https://www.italdesign.it/project/popup/

[7] For a good recent overview of the current discussion including perspectives for addressing the conundrum see: O'Reilly III, Charles A.; Tushman, Michael L. (2016). *Lead and disrupt: How to solve the innovator's dilemma*. Stanford, Calif: Stanford University Press

The Challenge of Working with Start-ups

It's nothing new that large organizations strategically invest in start-ups as one element of their innovation strategy. The challenges of digital transformation have turbo-charged this approach; connecting with the start-up ecosystem has become a mantra for many as they hope to find an antidote for their slow and cumbersome operating models. Traditional corporate venturing is now enriched through innovation hubs, accelerators, shark-tank formats, and more. And it's not only about getting early access to innovative products and solutions; companies equally hope that some elements of the much-revered start-up culture are rubbing off and cross over to infect the corporate mainstream culture, for instance the spirit of entrepreneurship, and the agility that the "old" organizations crave.

Examples from our sample of companies include:

- Lufthansa's award-winning ***Innovation Hub*** in Berlin[8] which works at the interface between the corporation and the Travel and Mobility Tech scene with the goal to identify and analyse opportunities quickly and convert them into new business for the company. They test, for instance, partnerships with other mobility providers like Daimler's *mytaxi.com*; develop technologies that allow travellers to automate the check-in process for any airline; and they make Lufthansa data available to pioneers in the digital market via the Lufthansa Open API.

- Siemens' ***Next47***, which has been named after the year Werner von Siemens founded the company. The unit, which is generously funded, serves as a coordinating platform for all corporate VC activities of the global conglomerate. The idea is to combine the speed and agility of an independent investor with the breadth of Siemens' business and technology, connecting entrepreneurs to domain knowledge and a global customer ecosystem. This way, Siemens strives to foster a mutual strategic and organizational learning and development process[9].

- Daimler's ***Lab 1886*** (named after the year Gottlieb Daimler invented the car) that serves the nucleus of a global innovation ecosystem where new business models are conceived, tested and made fit for the market. Successful examples of the Lab's output are for instance *car2go*, a flexible free-floating carsharing service, or *moovel*, an app comparing mobility offers of different providers for the optimum route from A to B [10].

[8] https://lh-innovationhub.de/

[9] https://next47.com/

[10] https://www.daimler.com/innovation/venture/lab1886-en.html

What all these initiatives have in common – and the many more that happen in most large corporations[11] - is that they may be hotbeds of new ideas and new ways of work, but their impact on the mainstream organization remains limited and is riddled by structural conflicts as the ambidexterity challenge raises its ugly head. Things work fine, as long as new ventures stay outside the parent organization; the moment corporations try to fold [new ventures] them into the rules and regulations of traditional corporate governance, mutual immune systems kick in – and the antibodies of the established mainstream organization tend to be much stronger than the virus of the new.

This makes it a challenge for large organizations to fully harvest the innovative power of external entrepreneurial ventures. Efforts to integrate new businesses often result in the destruction of what the initiative originally was valued for, as the alignment with corporate standards and rules suffocates entrepreneurial spirit and the start-up culture of work.

The Connectivity Challenge – Dealing with Boundaries

Large organizations always face the issue of balancing integration and differentiation. The rationale of functional differentiation is to assure deep expertise in the various functional verticals; the rationale of regional and divisional differentiation is to maximize the adaptation of an organization to specific regional or market contexts by giving a high degree of autonomy to decentralized units.

Differentiation creates silos as well as centrifugal forces that are in structural conflict with an organization's need to orchestrate and govern the overarching whole in the interest of creating synergies and economies of scale. In traditional organizations, integration happens through hierarchical structures and linear process prescriptions that exert the necessary degree of command and control to hold the organization together. The price of integration through vertical accountability is, however, an abundance of micropolitics, the reinforcement of divisional and functional silos, and the development of bureaucratic processes – all factors that work against flexibility and strategic responsiveness.

The digital context with its need for speed, flexibility and customer centricity asks for a stronger role of stakeholders that are at the periphery without the cumbersome processes that traditional corporate governance is known for. Platform business models[12], for example, require new collaborative architectures that reach not only across functional and divisional silos but also

[11] The research firm CB Insights recently provided a useful overview about some of the world's most prominent labs: *From AT&T to Xerox: 73 Corporate Innovation Labs.* CB Insights Research Brief, July 24, 2018. https://www.cbinsights.com/research/corporate-innovation-labs/

[12] Parker, G.G., Van Alstyne, M.W., Choudary, S.P.: Platform Revolution. How Networked Markets are Transforming the Economy and How to Make Them Work for You. W.W. Norton, 2016

connect the stakeholders of the external business ecosystem as a value creating network, shaking up traditional functional roles and established market and stakeholder relationships.

Instead of vertical hierarchical command and control, organizations need to create mechanisms that foster integration through responsible self-governance of peripheral units, guided by overarching principles, and supported by institutionalized tools for horizontal collaboration and exchange. Such tools can be digital platforms, strategic dialogue architectures, dedicated units that serve as brokers between stakeholders, or other interventions that assure connectivity.

Daimler's swarm organization is a typical example of an initiative that is designed to foster cross-functional collaboration and self-organization, with impressive results. A very different, but equally successful approach to foster connectivity is Otto Group's dedicated knowledge management unit that encourages and enhances the sharing of knowledge and practices across the 100+ businesses of the group, using a sophisticated mix of technical tools and socio-cultural interventions to create and nurture an ongoing culture of networking and collaboration.

When we talk about the challenge of creating new forms of connectivity across traditionally separated silos, we tend to think primarily about emphasizing horizontal collaboration across functional and divisional boundaries, and about engaging in novel networked ways with customers and other external value partners. As important these two dimensions are, it is equally important to rethink vertical processes, that connect the top with the bottom (or, perhaps more fitting, the center with the periphery) of the organization. Top-down (or inside-out) processes are instrumental for creating the overall strategic and organizational context that enables effective ways to engage in and co-shape the business ecosystem. And bottom-up (or outside-in) processes are indispensable for understanding and leveraging customer and other market insights. Designing horizontal connectivity won't be effective if it is not accompanied by new mechanisms of mutual vertical alignment that transcends the traditional command and control paradigm.

Boundary Management as Strategic Key Success factor

The digital revolution is driving a process of (inter)organizational reconfiguration that challenges the traditional setup of internal and external boundaries and requires dealing with them in new and creative ways. Creative boundary design and management has become an indispensable organizational capability. The logic of the digital economy rewards those who excel in engaging stakeholders across functional verticals, and who can break up traditional value chains by establishing and leveraging the economics of newly configured, networked business ecosystems.

When (re)designing boundaries, it is important to understand their very nature as major building blocks and enablers of any social system. Boundaries – both internal and external ones - play a critical role as providers of identity, security, comfort, and orientation. At the same time, they are also barriers that constrain us, as they inhibit collaboration and contribute to silo culture and an

inward orientation of organizations. This double-faced nature makes boundaries a frequent issue of contention, on a geopolitical (walls against migration), organizational (functional/divisional silos, stakeholder relations), or microsocial level (tensions between neighbors). A main reason for this contention is that, in their very essence, boundaries constitute difference, which threatens identity. At the same time, this difference (of culture, of language, of norms etc.) is the primary space where learning and innovation happens - on an individual, organizational, and strategic level. Only if we "play at the edge", "reach across the aisle", or "expose ourselves to the unknown", we can transcend existing paradigms, mindsets, and behavioral patterns; otherwise we remain in a tribal bubble.

Transcending this bubble is a difficult and delicate task, requiring courage, political skills, the willingness to give up dear habits, acquire a new mindset, new capabilities, and embark on a joint organizational learning journey with functional peers and the relevant external environment. To make this journey successful, it is important to identify and embrace the productive elements of friction that unavoidably happens at boundaries, and to recognize and fight unproductive friction by unmasking its often-irrational and/or political foundation.

Case in point: Daimler's Future Transportation@Vans Unit

Future Transportation@Vans (FT@V) is a good example of a digital transformation initiative which happens on the business unit level. Its goal is to transform the business from a traditional van manufacturer into an integrated mobility services provider by developing holistic solutions beyond the van. Kicked-off in 2015 with just two managers, FT@V has quickly grown into a division with 150 people - and it is still on a fast growth trajectory. The elements of its organizational design are quite typical for units that strive for agility and a certain level of independence from the core business:

- The unit reports directly to Head of Vans (not to Product Development or CIO, as innovation initiatives may have done in the past);
- It is kept deliberately separate from the core business, but closely linked to it through explicit collaboration mechanisms;
- The composition of talent is multifunctional, with software engineers, front-end and back-end developers, UX experts, mechanical and retail engineers, business developers, program managers etc.;
- Nearly 50% of the people were recruited from outside, which is atypical for the "other" Daimler. This decision is not only driven by skill gaps but also by the need for cultural innovation;
- To increase speed and agility, the hierarchy is flat, with a high degree of people empowerment, including budget decisions;
- The unit collaborates closely and extensively with external stakeholders (customers, start-ups, technology hint ventures).

Much of the organizational setup of FT@V is designed to address the ambidexterity challenge by fostering the interplay between old and new. It is based on the insight that getting from products to solutions requires completely different thinking and radically different business models – a chasm that is tough to cross.

The product world develops incrementally; it is typically driven by internal R&D, embedded in a comparatively narrow vertical supply chain, success is mainly measured by unit output, and the product is by far the main source of revenue and profit. The solution world, on the other hand, requires close collaboration with external stakeholders, horizontal partnerships and alliances, and success is measured in long-term customer engagement and loyalty.

In the world of mobility solutions, the unit "car" takes on the role of an element in a larger value creation system, where people may not buy the car but pay for its use, or the physical product is given away for free, while revenues and profits are generated from data streams and other indirect sources. Such business models which are already common in other industries are totally alien to car manufacturers, who often carry the proverbial "gasoline in the veins". Stefan Maurer, head of FT@V, and one of the digital pioneers at Daimler expresses clearly what virtually all of the executives who want to drive digital transformation feel: *"I still find it difficult, even within my organization, to really get people thinking in this new paradigm. And It's even more difficult to motivate people from other more traditional units to go there. It's a real challenge to change the mindsets…".*

The Governance Challenge

When it comes to organizing digital transformation efforts, we noticed a high degree of variety between the companies we investigated; not two of them looked the same. This is not surprising. Much of an organization's set-up will depend on their maturity stage in the transformation process, the degree of centralization/decentralization, the diversity of their business portfolio, their size and global reach, the industry context they are in, the perspective of the CEO and the top team on the issue, the micropolitical dynamics among key stakeholders, the influence of consultancies, and more. In addition, the transformation organization itself tends to be in constant change due to experiences and new intervening events.

Our sample of companies features highly diverse approaches in their governance of the overall transformation efforts:

- Bertelsmann, a traditionally highly decentralized organization with more than 100 businesses, does not have a formal head of Digital Transformation. Virtually all activities are left to the divisions, which are very diverse in their digital maturity.
- Daimler has launched a plethora of innovation initiatives on the divisional level, including a few promising new digital businesses. There is no Chief Digital Officer, but corporate initiatives such as the *Leadership 2020* program and the corporate *Digital Life* unit have been created to drive cultural change, and the focus on *CASE*, owned by the strategy department, provides overarching orientation.
- At Lufthansa, digital transformation activities are coordinated by the VP of digital strategy, who works with a digital executive board that provides an institutionalized connection to key functional stakeholders
- Otto Group is also highly decentralized, with more than 100 businesses. A Culture Change Team on the corporate level supports businesses in their transformational efforts
- At Siemens, we investigated a division consisting of three business units. Here, digital transformation efforts are coordinated by one of the three business unit CEOs, while specific responsibilities for various digital domains are distributed in a complex matrix involving both functions and businesses.

Interestingly, none of the companies we talked to has a dedicated "Chief Digital Officer" (CDO), a new C-level position which has gained popularity in recent years as organizations try to coordinate their digital transformation efforts under one roof. CDOs work across the entire company on all the elements of the digital strategy and organization. Naturally, this encompasses a wide range of responsibilities. Specific job profiles will vary from company to company due to specific structural, cultural, and political conditions at the time the role is installed, but they typically cover a wide array of objectives, as outlined in Figure 3 as a typical example:

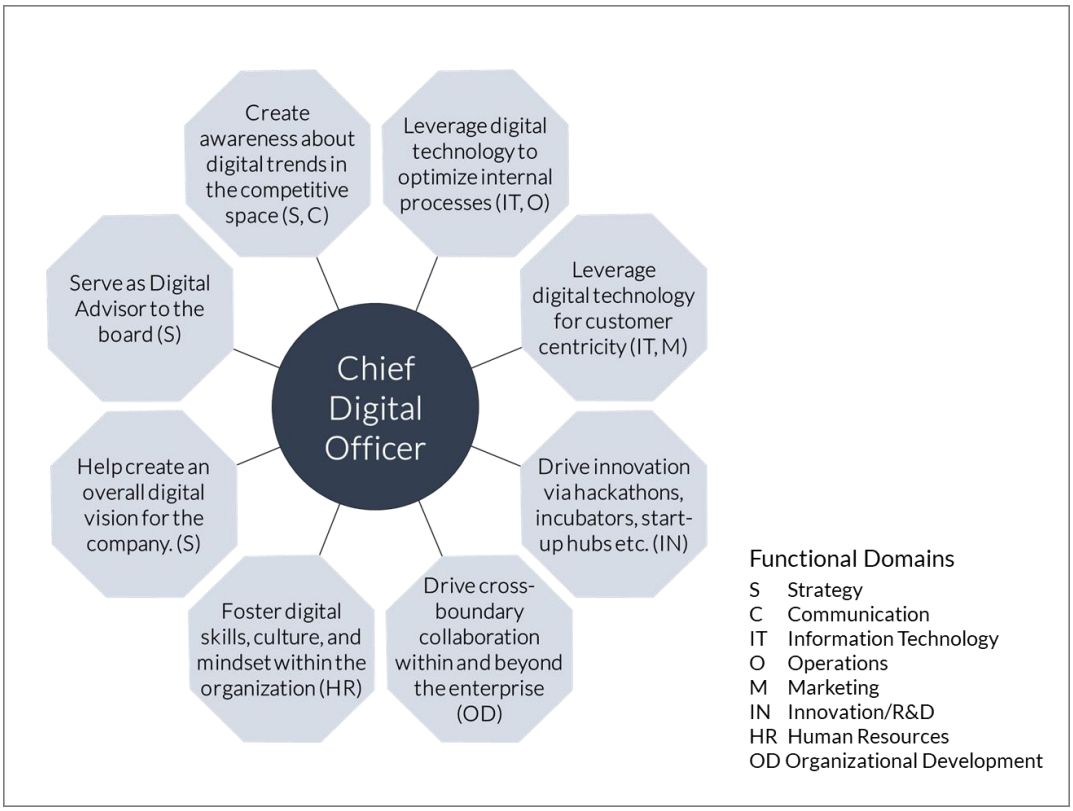

Figure 3: Typical Task Profile of a Chief Digital Officer Touching Traditional Functional Roles

The list of tasks is multifunctional and covers elements of strategy, communication, operations, IT, HR, innovation/R&D, OD, and marketing, and it adds an important stakeholder to the inner advisory circle of the CEO and the board. As such, the CDO role stretches not only the capabilities of any executive; it implies also *structural* conflicts with all those functions that traditionally carry the responsibility for the respective domain. Which leads us to a more fundamental issue organizations face – the erosion of traditional functional roles.

The Functional Identity Challenge

The role description of a typical CDO is a great testament to the genuinely multidisciplinary nature of the digital transformation challenge. In our conversations, we heard again and again that a monofunctional perspective is an impediment to change, and that functional boundaries need not only to become more permeable but also reframe their identity.

CIOs, for example, often lament that business executives lack digital acumen. One said, with a touch of desperation, that *"90% of our general management teams don't understand technology at all…. The average board member doesn't understand more about technology than anybody on the street"*. At the same time, the role of IT is dramatically expanding as it becomes key to value creation in the digital world. In addition to their traditional task of assuring an effective, efficient, and secure

hardware and software infrastructure for the organization, IT departments now become key stakeholders in the development of new digital or digitally enhanced products and services, which requires business acumen and engagement with customers. They require new collaboration and orchestration skills, and CIOs must assure the development of these new capabilities and drive the necessary cultural change in their domain.

The traditional strategy practice gets equally uprooted, as the routine of strategic planning with its annual cycles gets replaced by an ongoing strategic learning process that requires tireless curiosity, creativity, agility, and just-in-time responsiveness. Strategy must leave to a large part the secrecy of smoke-filled rooms where a few chosen ones hatch out a strategy; instead the practice must engage in on-going interaction and collaboration with stakeholders in the business ecosystem. Strategic thinking cannot anymore be limited to understanding industry dynamics and creating advantageous positions in the current competitive space; in the digital age, competitive arenas become increasingly fuzzy and fluid, so strategists must transcend their familiar domain and embrace radical business model innovation that may destroy the core of the old business[13].

HR, as another key function that traditionally has the responsibility to attract and retain the right talent, shape the culture of the organization, and develop the capabilities of leaders and employees, must put these domains into the new context of digital transformation. Assuring the best talent in the digital age means shifting HR's mindset from the narrow model of formal employer contracts to a variety of relationship alternatives, that assure that the company gets preferred attention and loyalty from free agents who may never join a large firm. Equally, cultural shaping activities and the design of learning architectures need to reach beyond the boundaries of the firm and foster learner accountability, the enabling of self-organization, and the support of the creation and maintenance of networks. As in most other functions, the *business ecosystem* becomes the frame of reference, which requires not only digital acumen, but also new capabilities related to strategy, organization, and business at large.

When organizing for transformation, it is important to recognize this increasing fuzziness of functional boundaries and assure an on-going mutual cross-functional learning process.

The People Challenge: Re-skilling, Talent Shortage, Mindset Issues

Digitalization means also a major shift in the structure of the work, as current jobs become obsolete, and new capabilities are required. Labour laws limit a company's flexibility to quickly shift the composition of its workforce through hiring and firing. They are forced to find strategies to quickly reconfigure the skill sets of tens of thousands of employees, many of them "digital immigrants" who are up to fifteen years away from retirement.

[13] The shifts in the automotive industry from regarding the car as a product to seeing it as part of a networked mobility system is a great example, as the case of Daimler's Future Transportation@Van shows.

The traditional toolkit of human resource development – performance reviews combined with a classroom-based, instructor-led approach to learning – faces severe limitations here; it is too slow, too cumbersome, too expensive. The speed of change and the massive scope of transformation requires a paradigm shift of the learning and development practice, such as shifting the accountability for ongoing qualification to the learner, creating a learner-driven culture, the deployment of large-scale (digital) learning systems that enable self-organized just-in-time learning, reverse mentoring systems, and more.[14]

At the same time, competition for the scarce digital top talent on a tight labour market is already fierce and will get fiercer. All the organizations we spoke with, each of which has well-established and admired brands which would have at any time in previous decades had the pick of the employee-market, now struggle to attract top-notch technology-experienced talent. Experts in software development, data science, artificial intelligence, robotics, and so on are in short supply, and they tend to join rather start-ups or major digital employer brands such as Google, Amazon, or Facebook than the mega-corporations of the old economy. As Stefan Maurer, Daimler's Head of Future Transportation@Vans put it: "*Many people that are now working in swarm cells[15] have worked for Daimler for many years, and of course they have a corporate mindset. Now they are urged to be entrepreneurs and take decisions. It's tricky to find the right balance here*".

Stefan's comment perhaps illustrates the most severe people challenge – changing mindsets, which is widely regarded as the major issue in any company's digital transformation efforts. "The way things are done" is deeply engrained both in people's neural pathways and the tacit normative system that constitutes the culture of an organization.

Most senior executives of large organizations grew up in the pre-digital age; their cognitive maps and attitudes have been shaped by the paradigm of the 20th century organization - command and control, linear processes, silo mentality, stable business models, product orientation, clear industry boundaries, zero-sum game competition, etc. While this *modus operandi* may continue to be justified in certain segments, an increasing share of business activity requires quite the opposite: participative self-organization, non-linear processes, cross-boundary collaboration, ongoing business model innovation, customer centricity, fuzzy industry boundaries, coopetition, and more.

The normative power of the factual is tough to transcend, may it be the logic of hereto successful business models, may it be the letting go of established processes and routines – both internally and within the current value chain which in most cases gets disrupted, too. It's not easy to take on

[14] Palmer, K., Blake, D: The Expertise Economy: How the smartest companies use learning to engage, compete, and succeed. Nicholas Brealy, Boston 2018

[15] "Swarm Cells" are cross-functional agile teams that were introduced as one of eight "game changers" in Daimler's *Leadership 2020* initiative designed to kick-start and support cultural change within the corporation. The goal of the Swarm Organization project is to move 20 percent of the company's 280,000 employees into agile and flexible working structures by 2020. More at https://www.daimler.com/career/thats-us/leadership2020/ (retrieved 8/24/2018)

risk and decision power in a culture that punishes initiative, courage, and the unavoidable failure. And it is not easy to let go of supplier relationships which were the basis of past success but become obsolete in the new value creation system.

Organizations face a difficult conundrum as culture, structure, and mindset form a self-reinforcing vicious circle: Changing mindsets requires a different structural and cultural context, and changing the context requires leaders with a different mindset, who feel comfortable in agile environments. Experiments in holacracy, scrum, design-thinking, or learning journeys to the Silicon Valley won't help much if people return to or remain in their old organizational life. It is important to understand that addressing mindset issues is both a people AND organizational challenge.

Conclusion

Companies must deal with ever-new waves of disruptive technologies that impact every aspect of their organization as well as their business ecosystem. Cloud Computing, Social Media, Augmented Reality, Virtual Reality, Blockchain, Artificial Intelligence, Big Data, the Internet of Things – all of these and more have hit businesses over the last decade, and each of them requires a certain level of technical acumen, organizational capabilities, and skillsets to design and implement new solutions. The role of digital technology in the overall value creation of any business has become so prominent, that we witness a radical reshaping of traditional industry boundaries as virtually every business is becoming a technology company. No matter if it is food, travel, entertainment, construction, automotive, agriculture or any other sector – they all are more and more dominated by the digital paradigm.

When it comes to dealing with this exponentially mounting challenge, we intuitively look first to the domain of the CIO as the traditional home of technological know-how. However, while the new demands are significantly reshaping the role of the IT function, our conversations made it very clear that no function remains untouched. Digital transformation impacts the entire operating model of an organization. It redefines the roles and the identity of strategy, marketing, sales, HR, R&D, communication and more, and it reconfigures the established collaboration patterns among the key stakeholders of the internal and external enterprise system.

As such, digital transformation is in its very essence a multidisciplinary and multifunctional challenge that cannot be addressed from one angle alone. We briefly touched on the increasing fuzziness of functional boundaries, and the identity challenge that comes with the transformational imperatives the various functions face. Gaining a deeper understanding of the reconfiguration requirements of each functional role and the resulting dynamics of their interplay is an exciting avenue for further research. It seems to us equally important to gain more insights into the changing role of corporate governance in light of the ascent of value creation networks that transcend the traditional boundaries of an organization.

Our conversations also indicated that there is a good basic understanding of digital transformation challenges as discrete issues, naturally seen through the lens of the respective functions we have been talking to. However, trying to map them as an integrated whole creates astonishing complexity. Managing ambidexterity, creating agile strategies, structures, and mindsets, organizing for customer centricity and co-creation, leveraging big data, dealing with massive skill gaps and talent shortage, assuring ubiquitous digital acumen, innovating products and services, shortening strategic response times, upgrading legacy systems, staying on top of new developments, creating a culture that embraces change, empowering the periphery – the list of issues companies need to address concurrently is mind-boggling and overwhelming.

In their totality, these challenges constitute a system of highly interdependent variables that all feed on each other. Untangling them is a challenge in itself, and we hope that our analysis helps to structure the arena. Addressing them all at the same time might overstrain any company's ability to deal with change, but their interdependence also means that emphatic efforts to get one element right will have reverberations throughout the system.

When asked about the most important lever, there was consensus that the most promising avenue to cut through the digital knot is not a technical one; the sweet spot for transformation is a focus on issues of culture and mindset, driven and supported by a collaborative strategic dialogue across traditional functions and hierarchies. Addressing this sweet spot with courage and discipline will unleash a joint process of ongoing strategic and organizational learning - which in itself will quickly become a showcase of how to compete for the digital future.

About the author

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About the Center for the Future of Organization

The Center for the Future of Organization (CFFO) is an independent think tank at the Drucker School of Management at Claremont Graduate University. Its mission is to serve as a global hub for applied research and practical discourse on new paradigms of Leadership and Organization with special regards to the role of digital technologies as drivers of competitive advantage. In the tradition of Peter Drucker, the Center works across disciplines, combining conceptual depth with practical applicability and ethical responsibility.

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