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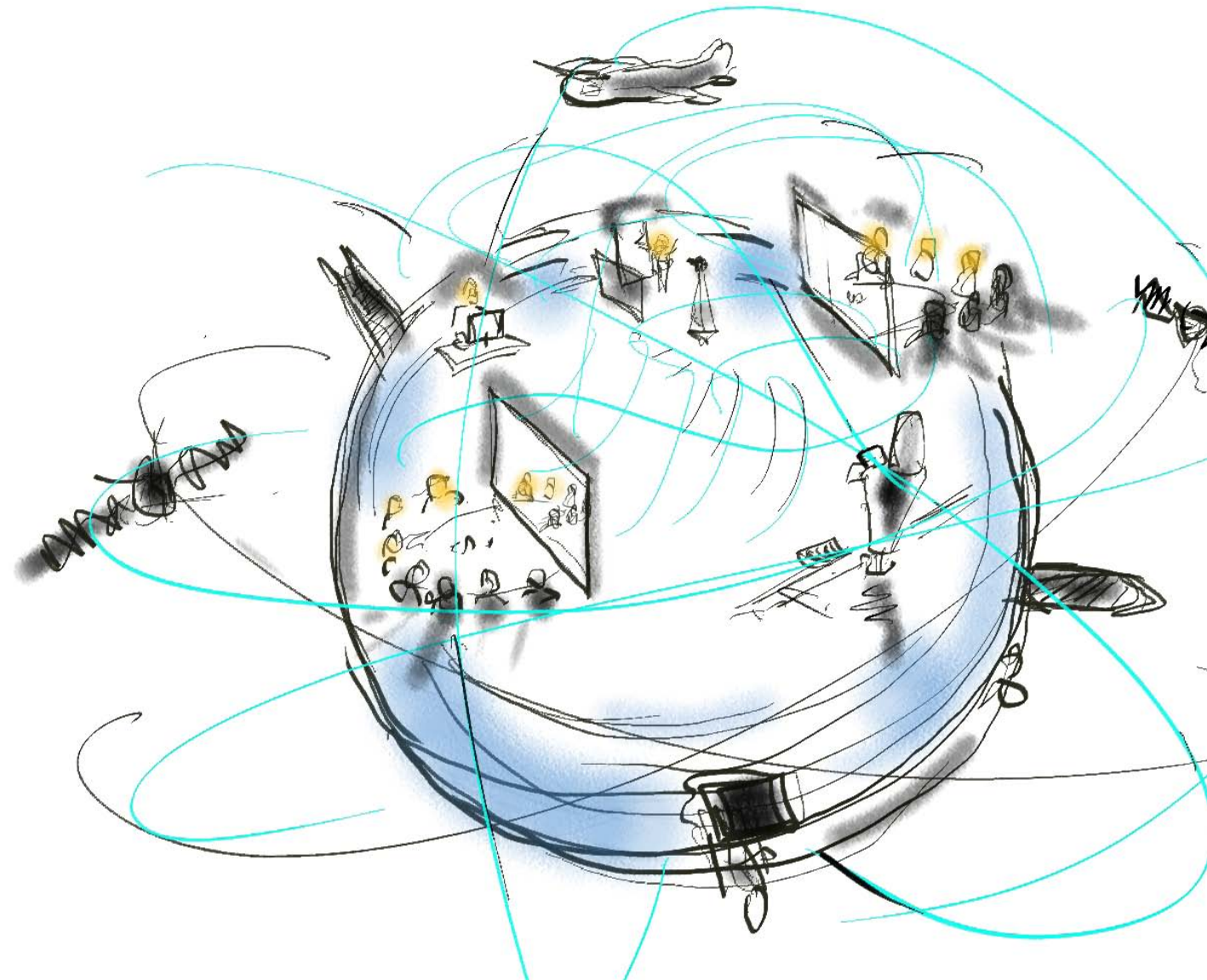# Collaboration 2020:
hype or competitive advantage?

Authors

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Contents

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1 Executive summary

How should companies position themselves towards 2020 to take advantage of current and future e-technologies and collaborative practices to boost productivity and innovation capabilities, and create sustainable competitive advantages in a networked, global economy?

Recent research on productivity and innovation performance suggest that companies that create new, powerful collaborative work concepts can leverage these concepts to outperform their competitors.

A key element in this exploration is the interface between technology and other workplace factors, and specifically how the interplay between technology and other factors can constitute a viable source of competitive advantage. What are the links between collaborative work patterns and business performance?

This report was built through a combination of an extensive online survey with more than 1700 experienced workers and a series of strategic interviews with 26 thought leaders across five business sectors (industrial, technology, finance, oil & gas, and life sciences). We have explored how companies could position themselves towards 2020 to take advantage of current and future e-technologies and collaborative practices. Finally, we have also explored how far professionals are willing to go in terms of adopting eccentric or extreme technologies that go far beyond what is currently available in the marketplace.

1 Executive summary

There is significant hype surrounding collaboration - this is because collaboration allows knowledge-intensive businesses to innovate and stay competitive. Collaboration is expected to grow further as we approach 2020.

The value of performance is strongly related to collaboration as a purposeful activity, and performance is linked to collaboration on both a strategic and an operational level. Collaboration is viewed as an important driver of creativity and innovation, but exactly how the workplace can offer systematic and effective stimulus and support for these complex processes is not fully understood. The understanding of the importance of collaboration is more pronounced than the understanding of how to support it at new levels, beyond doing "more of the same".

The report is aimed mainly at executives and middle management in charge of co-located teams.

Top 3 findings

1

The function or role of the office and the physical workplace is rapidly becoming one of supporting collaboration:

It appears from respondents that it is easier to achieve positive differentiation by positioning the office effectively as an arena for collaboration, than to optimize the office for individual work, where several good, low-cost alternatives exist.

1 Executive summary

Top 3 findings continued...

2

There is a gap between both current and projected needs of knowledge workers and workplace infrastructures:

This gap can only be filled through collaboration becoming fully integrated into the core, value-creating business processes of a company.

3

The use of video communication and real time collaboration tools will increase substantially:

When discussing complex matters, being able to see the rest of the team helps build trust and confidence, and breaks down communication and collaboration barriers that can be persistent when only addressed through asynchronous communication and collaboration channels.

Succeeding with collaboration at a level where it is a competitive advantage requires a broad approach. Although the majority of respondents expect a high use of high-performance project spaces in 2020, the design of these environments and the ability to shift effortlessly between them represent key success factors. Usability is a fundamental business requirement, and cost is still the only real driver of the vast majority of workplace-related change initiatives.

2 Objectives

The objective of this project is to better understand the links between collaborative work patterns and business performance. Specifically, the survey intends to capture how professionals are currently using different workplace technologies and solutions, and how they see themselves using these solutions in 2020.

This project aims to systematically explore productive collaboration practices of the future. A key element in this exploration is the interface between technology and other workplace factors, and specifically how the interplay between technology and other factors can constitute a viable source of competitive advantage.

Technology coupled with innovative work practices can be a source of competitive advantage for companies that understand the potential and seize the opportunity.

The report will identify key preconditions and characteristics of hybrid collaboration concepts – concepts that go beyond the simple application of technology, representing a strong manifestation of purposeful, strategically focused technology coupled with organizational, methodological and process-based improvements.

We also wanted to explore how far professionals are willing to go in terms of adopting eccentric or extreme technologies that go far beyond what is currently available in the marketplace:

- Improved understanding of key issues and emerging trends
- Improved understanding of likely development trajectories for positioning purposes
- Improved positioning for talent attraction and retention
- Increased awareness of future productivity and creativity enablers in the workplace
- Increased motivation for initiating bold, broad change initiatives
- Improved understanding of potential benefits of new ways of working
- Improved understanding of risk (both for change and no change options)

2 Objectives

Specific research questions:

- How will emerging and future communication and collaboration technologies improve the productivity and creativity of our knowledge workers in 2020 and beyond?

- What strategic, tactical and operational perspectives are needed to take full advantage of the potential offered by emerging technologies and collaboration paradigms?

- What will be the key characteristic of our workplace by 2020 given the required technological, strategic and tactical transformation of our working environments and our ways of working?

- What will the role and meaning of the extended office be in this context, and what capabilities must be developed to make sure that the extended office solutions provided match real requirements of 2020 and beyond?

3 Top 10 findings

- **Collaboration allows knowledge-intensive businesses to innovate and stay competitive.** The importance of collaboration is expected to grow further towards 2020.

- **There is significant hype surrounding collaboration.** The value of collaboration is strongly related to collaboration as a purposeful activity, and performance is linked to collaboration on both a strategic and an operational level. Furthermore, collaboration is viewed as an important driver of creativity and innovation, but exactly how the workplace can offer systematic and effective stimulus and support for these complex processes is not fully understood. This is further complicated by the current lack of well-known, industrial frameworks for A) evaluating the impact of and B) systematically improving collaboration.

- **The primary function or role of the office and the physical workplace is rapidly becoming one of supporting collaboration.** It appears from respondents that it is easier to achieve positive differentiation by positioning the office effectively as an arena for collaboration, than to optimize the office for individual work, where several good, low-cost alternatives exist. Respondents emphasise that collaboration is a key area where the office can add significant value, by supporting its users to achieve things that cannot easily be achieved in other settings. The office as a primary concentration and contemplation space is questioned by many of the respondents, although the desire for the office to support a variety of different work modes comes across as a strong finding.

- **There appears to be an inconsistency or a gap between both current and projected needs of knowledge workers and workplace infrastructures.** This inconsistency or gap must be reduced for collaboration to deliver on its promise. This can only happen through collaboration becoming fully integrated into the core, value-creating business processes of any company. This includes research and lab-based work. The particular characteristics of business processes taking place outside generic office environment should be taken into consideration.

- **Cost is still the only real driver of the vast majority of workplace-related change initiatives.** This singular perspective in many cases implies lost opportunities for improvements related to knowledge worker productivity and innovation.

- **Succeeding with collaboration at a level where it represents a competitive advantage requires a broad approach.** The specific role of the physical workplace in stimulating and supporting productive collaboration patterns is not yet properly understood. In particular, supporting collaboration requires more than technology; rather technology can be a change enabler and a multiplier of improvements supporting new processes, business culture development and new organizational models.

- **Video communication is used as a strategic enabler of project execution effectiveness and efficiency. The use of video communication and real time collaboration tools will increase substantially.** When discussing complex matters, being able to see the rest of the team helps building trust and confidence, and breaks down communication and collaboration barriers that can be persistent when only addressed through asynchronous communication and collaboration channels. Knowing when to use what tools becomes critical for maximizing productivity and the balance between availability for on-demand interactions and concentration work. In the survey, real time communication and collaboration tools were emphasized more than Enterprise 2.0-type tools like blogging, microblogging, wikis and idea management tools.

- **One-size-fits-all environments are less effective than environments that are built-for-purpose.** A majority of respondents expect a high use of high-performance project spaces in 2020. The design of these environments and the ability to shift effortlessly between them represent key success factors.

- **Usability is a fundamental business requirement, from the perspective of the average end user.** Too often there is a large discrepancy between usability as marketed by collaboration vendors and how the same systems are perceived by end users, when these systems are deployed in a real business environment.

- **Knowledge workers' perceptions of working alone vary considerably;** some knowledge workers mostly consider the physical context (social aspects), while some think more about the nature of the task(s) at hand (task dependencies).

Key findings:

- The function or role of the office and the physical workplace is rapidly becoming one of supporting collaboration

- Both current and projected needs of knowledge workers and workplace infrastructure are far apart

- The use of video communication and real time collaboration tools will increase substantially

3 Other significant issues to consider

Other findings include the rating of customer satisfaction as the most important performance dimension, the continued importance of e-mail, the strong value proposition of touch-based mobile technologies, the finding indicating that a majority of professionals do not like blogging and microblogging, the finding that advanced technologies not in current use have an interesting future value proposition, and finally – that working alone on isolated tasks will remain an important part of professionals' lives.

- **Speed is considered a key differentiator,** and it is becoming even more important as the pace of change is increasing and the half-life of knowledge is decreasing. Collaboration can be an effective vehicle of putting knowledge into action before it is outdated.

- **Collaboration is essential for task identification, problem solving and quality decision making.** As more and more business processes depend on rich input from others, reliable connectivity becomes essential.

- **Complex business challenges require direct involvement from all affected disciplines.** Collaboration is most effective when real engagement is allowed and encouraged, and interaction is not restricted by imposed, hierarchical structures.

- **Knowledge hoarding and is one the most important collaboration barriers;** it creates inefficiencies and it is very counterproductive. Knowledge is power when and only when the knowledge is put to productive use - and this usually now happens through some form of collaboration.

- **False assumptions about interoperability** in real, non-idealized business situations restrict the value of a number of potentially valuable collaboration and communication tools and collaboration patterns.

- **Generation Y issues:** Knowledge professionals, especially of a young age, often live borderless lives, and comfortably so. Work is a state of mind rather than a place one goes to in order to complete work-related tasks. Certain groups of professionals can use this increased flexibility to identify and exploit work styles and work schedules that fit their needs and desires, and hence spend a greater portion of their time working at peak performance. In addition, they more often than not expect access to the same kind of collaboration and communication tools they have been using before. Too many restrictions on approved tools can imply employee attraction and retention challenges.

4 Methodology

It is fundamental to gain both an understanding from users about their perception of the link between collaboration and performance, and a deep insight into the collective knowledge and intelligence of experts in the field and across the industry.

Our research question is:

How should companies position themselves towards 2020 to take advantage of current and future e-technologies and collaborative practices to boost productivity and innovation capabilities, and create sustainable competitive advantages in a networked, global economy?

Qualitative approach 26 strategic interviews

1. Literature review:
- Capture relevant academic references
- Challenge conventional and accepted definitions of collaboration and performance
- Synthesise learning and intelligence around the subject

2. Strategic interviews:
- Engage leading experts in the field
- Collect and record intelligence through structured strategic discussions
- Synthesise the collective learning through visual illustrations and minutes
- Identify thought leadership

Foundations of the concept of collaboration in the industry and across the vertical markets

Quantitative approach 1700+ participants

1. First questionnaire analysis:
- Capture a wide sample of global responses on the subject matter
- Identify relevant quantitative results and key findings
- Synthesise the preliminary results in summary report

2. Second questionnaire analysis:
- Filter the quantitative sample per target groups, categories and attributes
- Synthesise the results

In-depth insight across a global sample of respondents

4 Methodology

Our objectives are to:

- Gain an understanding from a global sample via a questionnaire

- Collect high level insight from practitioners, experts in the field and industry experts

- Combine the learning from the strategic interviews in meaningful combinations

- Compare and contrast the quantitative results (from the questionnaire survey) against and with the qualitative results (from the strategic interviews)

- Summarise the learning in a research report
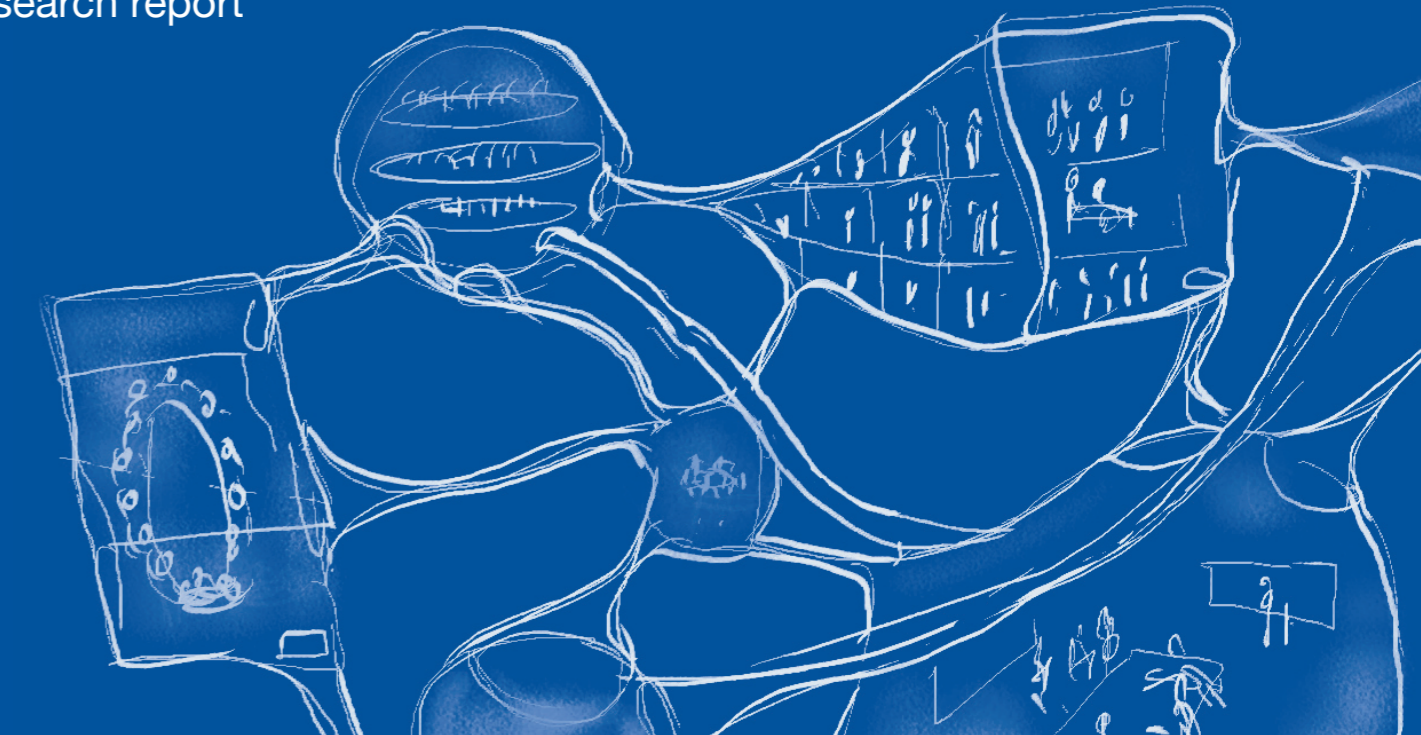
5 Our view of collaboration

Collaboration is a complex phenomenon, and many have tried to define what it is and what it is not. Many of the existing definitions are either quite limited in their scope, or too focused on technology.

Technology can enable new forms of collaboration in distributed teams, but technology alone does not lead to collaboration, and it certainly does not guarantee that the collaboration leads to successful outcomes, e.g. solving business problems.

The authors' definition of collaboration is the result of more than twenty years of combined experience working with collaboration and workplace performance.

Collaboration can be defined as value-adding interactions that enable employees, customers, suppliers and partners to achieve business objectives, make good decisions, resolve issues and share knowledge effectively and efficiently.

5 Our view of collaboration

Collaboration – A definition broken down into understandable chunks:

Value-adding: The focus here is on the value aspect. Collaboration is of little value, if it does not add value.

Business objectives: This is strongly linked with the value-adding aspect described above. Collaboration is not an objective in itself; it is a means to an end.

Decisions: Decision making is a crucial part of any business, and the importance of decision making skills grows with increasing knowledge intensity.

Issues: Problems, inconsistencies, disagreements, or any other matter that requires attention. Collaboration can assist you in your efforts navigating these issues, including sense making, perspective brokering and consensus building.

Knowledge: Knowledge only has value when it is put into action - and, given today's complex, multidisciplinary issues, this to an increasing extent happens through sharing.

Effectiveness: Described as the alignment between objective(s) and activity or process outputs.

Efficiently: Efficiency improvement initiatives should be ramped up only after effectiveness has reached a satisfactory level. When your process produces outputs that are aligned with objectives, performance can be tweaked by focusing on how to produce those outputs efficiently.
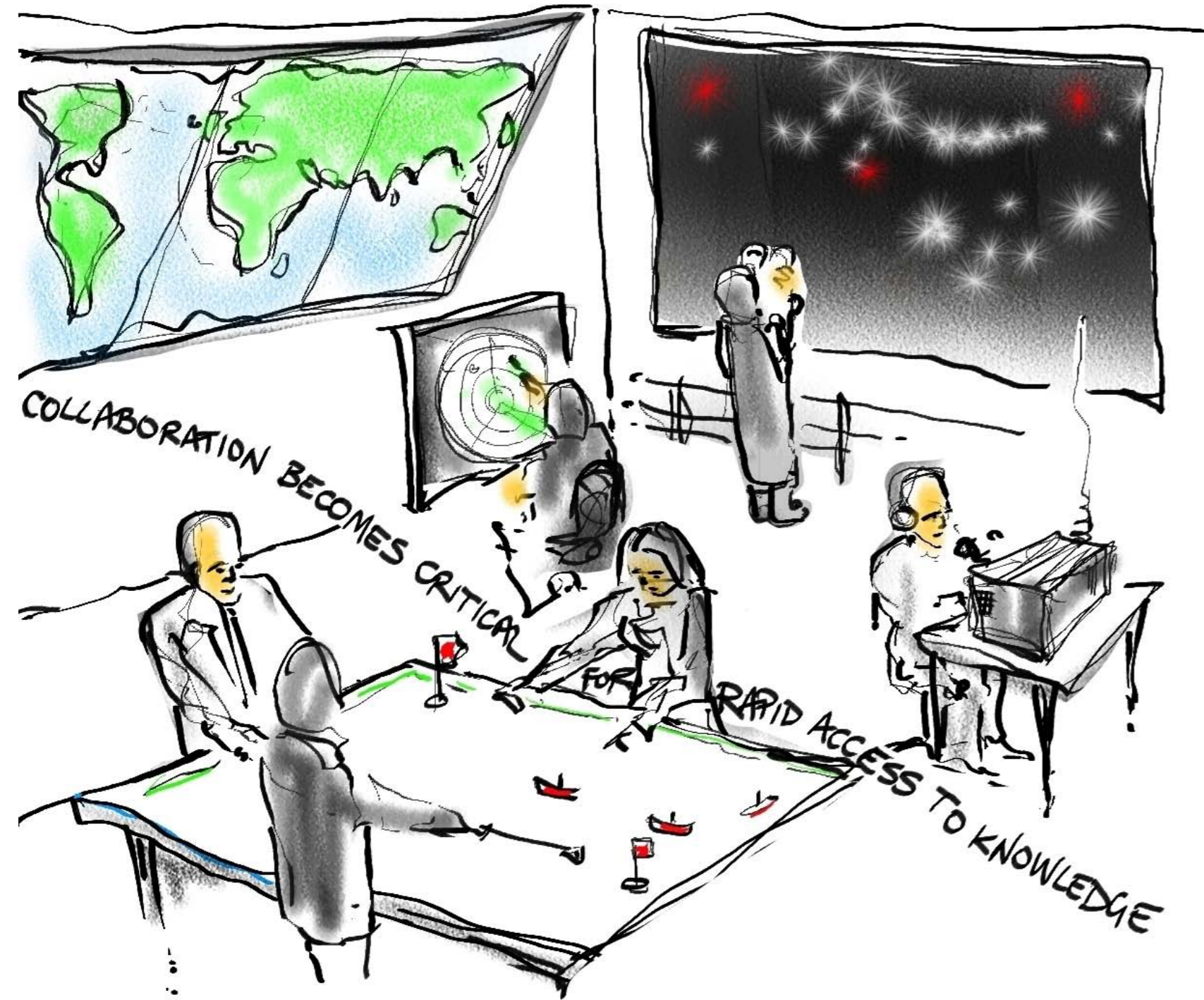
6 The business case for collaboration

By Dr. Kjetil Kristensen
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Companies are often reluctant to invest sufficiently in collaboration improvement initiatives because they don't know how to justify it. This chapter will provide a simple ROI justification targeted specifically at sceptics.

Collaboration is rapidly becoming a catchphrase - but it is much more than that. As an important dimension of work, collaboration seems to be getting more attention both from industrial practitioners and researchers. However, collaboration has not yet fully understood, neither in terms of workplace dependencies, technologies, patterns, practices, interactions, or business implications of new collaborative strategies and approaches. What's all this buzz about? Why this interest in collaboration? In the words of Morten T. Hansen and Nitin Nohria:

"Firms come into being in order to enable human beings to achieve collaboratively what they could not achieve alone. If one accepts this as the true purpose of any organization, then the main focus of executives' attention should be on how to foster collaboration within their companies".

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Key issues to consider:

• **In essence, most of the great achievements of humankind are the result of collaborative efforts.** Even great scientists applauded for their genius often did not perform their work in isolation, but rather through a constant exchange of ideas and results at seminars, conferences and the like. So, what's new? If we have been collaborating for so many years – in fact, even since ancient times, one could easily believe that we would have perfected the art of collaboration by now. Think again.

• **Collaboration is not a singular concept – in business, it exists on several levels.** One can discuss collaboration between two persons, a small team (typically a task force), a larger team (typically a project team), a business unit such as a department, company-wide collaboration involving a range of business units, or collaboration at a network level, between two or more companies.

6   The business case for collaboration

Increasing project complexity and business dynamics leave companies little choice but to collaborate more, and collaborate better. The question is no longer "if" – but rather "how". This shift towards more collaboration is based on the assumption that few if any companies have all the necessary knowledge, capabilities and resources in-house to successfully innovate today – on the contrary, successful innovation typically occurs at intersections between different knowledge domains rather than in isolation. Innovation is emerging as a network phenomenon, where different disciplines, competencies and organizations meet, merge and adapt while ideas are challenged, developed, tested and reengineered–as a collaborative effort.

For corporate executives or subject matter experts to really engage in multiple meetings on several continents in a single day, without ever leaving their office or even home office, certainly represents a giant leap in the possibility to exercise global leadership compared to just a few years back.

Some of the collaboration patterns that can be observed today certainly represent recent developments, and a few companies are getting it right. Some very distinctive examples exist, where collaboration is used productively for the right things, to achieve quite remarkable performance improvements.

"The new work paradigm - sharing, rather than protecting - is quickly emerging as the way forward. The era of the information silo is over. As the world is getting smaller – and its problems (from global warming to virus hunting) are getting more complex - it's increasingly apparent that we'll need coordinated teams to get things done."

Foroohar, 2005

A global oil & gas survey called *The Future of Collaboration* (Kristensen et. al., 2008) documents productive work practices in the oil and gas industry. Some of the principles used in these companies are based on some ground-breaking work at NASA's Jet Propulsion Laboratory and the Concurrent Design Facility of the European Space Agency, others are developed in-house.

The European Space Agency (ESA) has developed its own collaborative facility, the Concurrent Design Facility (CDF). The Concurrent Design Facility is a state-of-the-art collaborative environment equipped with advanced visualization capabilities and a network of computers, multimedia devices and software tools. The CDF allows a team of experts from several disciplines to apply the concurrent engineering method to the design of future space missions.

Collaboration is neither "new" nor "static", it evolves. Whereas the purpose of engaging in collaboration is reasonably stable on a high level, collaboration throughout history of mankind has taken different forms; the means of collaboration has changed significantly, as have the patterns and the time scales involved.

6 The business case for collaboration

The inherent multidisciplinarity of today's complex products, services, projects and processes implies that collaboration is a cornerstone of knowledge work.

Collaborative environments come in many forms. They have in common that they have been designed to enable advanced forms of collaborative work. Traditional meeting rooms or conference rooms typically support basic visualization and light forms of interaction, where few people participate actively in the knowledge production other than providing basic input.

Well-designed collaborative environments, on the other hand, allow more people to contribute actively in the decision making process and the production of knowledge outputs, hence improving knowledge worker effectiveness and efficiency. Significant performance gains can be realized by approaching collaboration in a structured, systematic manner, but achieving success is not straightforward. The success of collaborative concepts to a large extent depends on how well all the different pieces fit together – how people can be empowered to interact and run their desired processes in the data, enabled by an environment that combines and orchestrates both physical workplace aspects, virtual tools and advanced visualization capabilities.

In order to avoid poor decisions and quality problems that must be revisited, the most knowledge-intensive processes require all stakeholders with the power to veto a solution are directly involved in the design process. **The immersive experience made possible with today's hybrid work environments does exactly this; they systematically remove filters that get between the people working together and the task at hand.** They reach a level of shared understanding where they can devote their full attention to what they are doing right now. Many different sectors could benefit from this way of thinking about collaboration.

WAR ROOM COLLABORATION – WHITEBOARD WALLS

BENCHES FOR WORKING TOGETHER

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6 Call for action

4 reasons for making collaboration a top priority

4 reasons for making collaboration a top priority continued…

1 **When entering the workforce, we are basically unprepared for the perspective brokering and how-to-make-it-all-fit-together kind of discussions that inevitably awaits us when we start working.** And by that time, it is wrongly assumed that we know how to do it, so it gets no additional attention. We therefore basically learn by observing and adopting the collaborative practices of others, and these are often counterproductive.

2 **There appears to be a clear correlation between how knowledge intensive a job is, and the relative amount of time spent of collaborative activities.** At an individual level, interactions peak at nearly 80% for interpersonal knowledge workers, subject matter experts, executives, managers, and supervisors, typically a company's highest paid workers. Considering the large portion of activities that are collaborative for these knowledge workers, even a modest productivity increase is likely to have a substantial impact on business performance.

3 **There is a clear link between performance variation and collaboration.** McKinsey research shows that the performance gap between top and bottom companies in collaboration-intense sectors is nine times that of production- or transaction-intense sectors (Manyika et. al, 2009). W**orking collaboratively can be a powerful enabler of improved business performance,** but successful collaboration rarely emerges out of the blue, and should not be taken for granted.

4 **Collaboration is complex.** Improving collaboration requires some knowledge about people, roles, technology, workplaces, processes, communication, interactions, negotiations, processes, shared understanding, operating principles, plus a whole range of other factors, and it is a process in its own right. Collaborative infrastructure and workplace design is often a battle for perspectives where the stakeholders act as if this was a zero sum game. This way of looking at collaboration is fundamentally flawed, and very counterproductive.

Succeeding with collaboration at a level where it represents a competitive advantage requires a broad approach.

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7 **1700+ viewpoints on collaboration**

The objective of this survey was to better understand the links between collaborative work patterns and business performance.

The survey captured how professionals are currently using different workplace technologies and solutions today, and how they see themselves using these solutions in 2020.

An overview of the top findings of an online survey on Collaboration in 2020 gathering 1700+ respondents across Europe, Asia-Pacific and the US and provides clearly messages and directions on the link between collaboration and performance. The study gathered the opinion of:

- **1700+ white collar workers**
- **At least 5 years of experience**
- **51.6% are female and 48.4% are male respondents**
- **40.1% are team members, 13% are at en Executive level, 31% are at a Senior or Middle management level, 15.9% at an Administrative level**

Our objective was to understand what companies should do between now and 2020. We wanted to discover how organizations can take advantage of current and future e-technologies and collaborative practises to boost productivity and the ability to innovate.

7 **1700+ viewpoints on collaboration**

Overview of our top findings:

- CUSTOMER SATISFACTION is rated as the most important performance dimension.
- Performance is linked to collaboration on both a STRATEGIC and an OPERATIONAL level.
- Collaboration is an important driver of CREATIVITY and INNOVATION.
- A majority of respondents expect high use of HIGH-PERFORMANCE PROJECT SPACES in 2020.
- E-MAIL still going strong, and TOUCH-BASED MOBILE TECHNOLOGIES have a strong value proposition.
- The use of VIDEO COMMUNICATION and REAL TIME COLLABORATION tools will increase substantially.
- The majority of professionals do not like BLOGGING and MICROBLOGGING.
- Supporting COLLABORATION requires more than TECHNOLOGY.
- ADVANCED TECHNOLOGIES NOT IN CURRENT USE have an interesting future value proposition.

A detailed analysis of the results is presented in a separate document:

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7 **1700+ viewpoints on collaboration**

Top 5 issues to support collaborative efforts of teams members and support staff:

1. **Training**
2. **Knowledge sharing tools**
3. **IT systems**
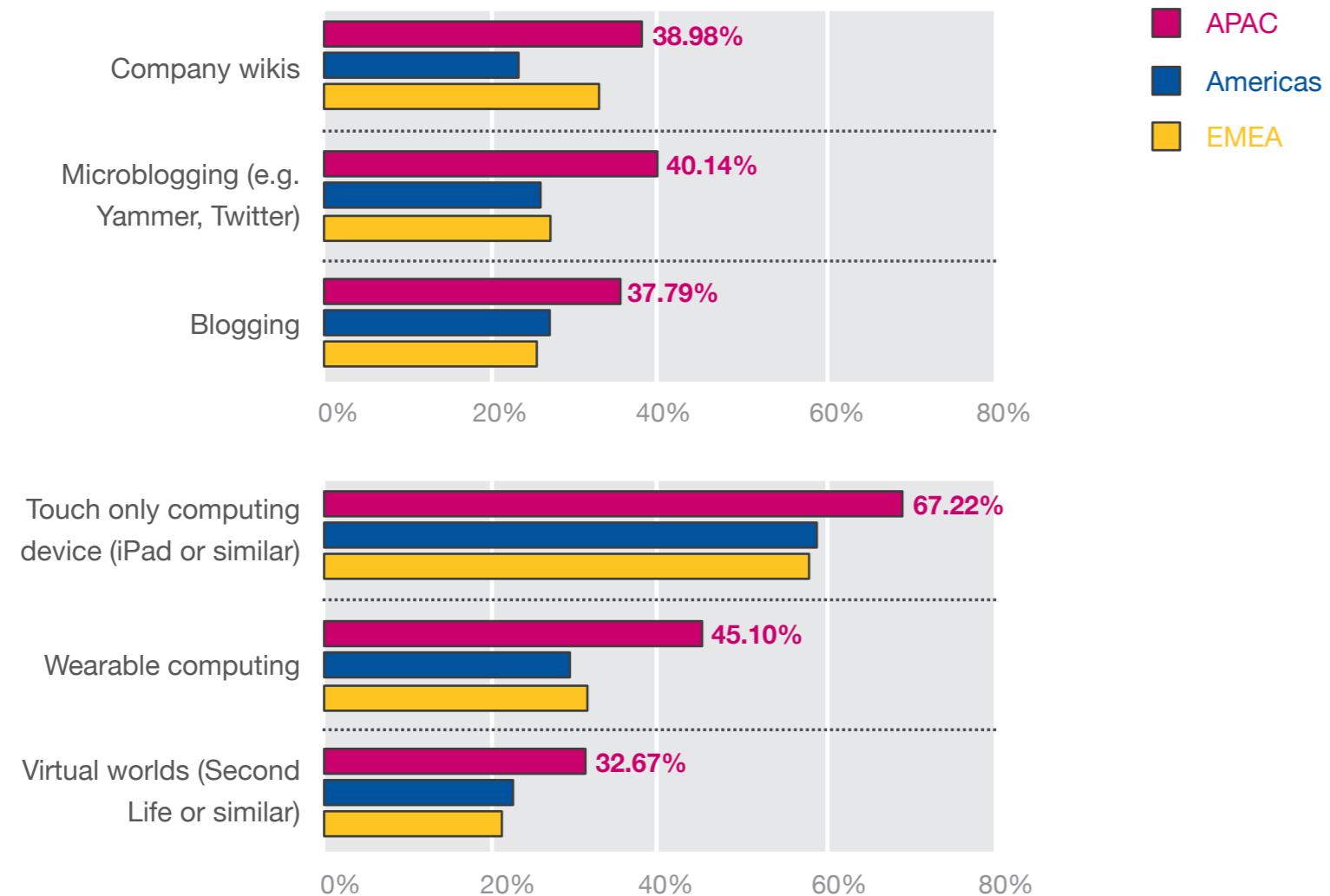4. **Workplace design**
5. **Management and leadership principles**

• The interface between technology and other workplace factors, and specifically the interplay between technology and other factors can constitute a viable source of competitive advantage:

• American respondents emphasize management and leadership principles (46.6% agree, 14.9% strongly agree) more than respondents from any other region.

• Executive and senior management to a greater extent strongly agree that a number of issues support their collaborative efforts, e.g. management and leadership issues (18.7%), IT systems (22.0%), HR practices and policies (13.5%), web 2.0 applications (10.9%), workplace design (13.5%), and space management solutions (14.2%).

• Middle management are strong believers in FM systems and services (33.9% agree, 5.9% strongly agree), in workplace design (48.5% agree, 11.5% disagree) and also space management solutions (45.4% agree, 12.0% strongly agree). Middle managers are also strong advocates of training and knowledge sharing tools.
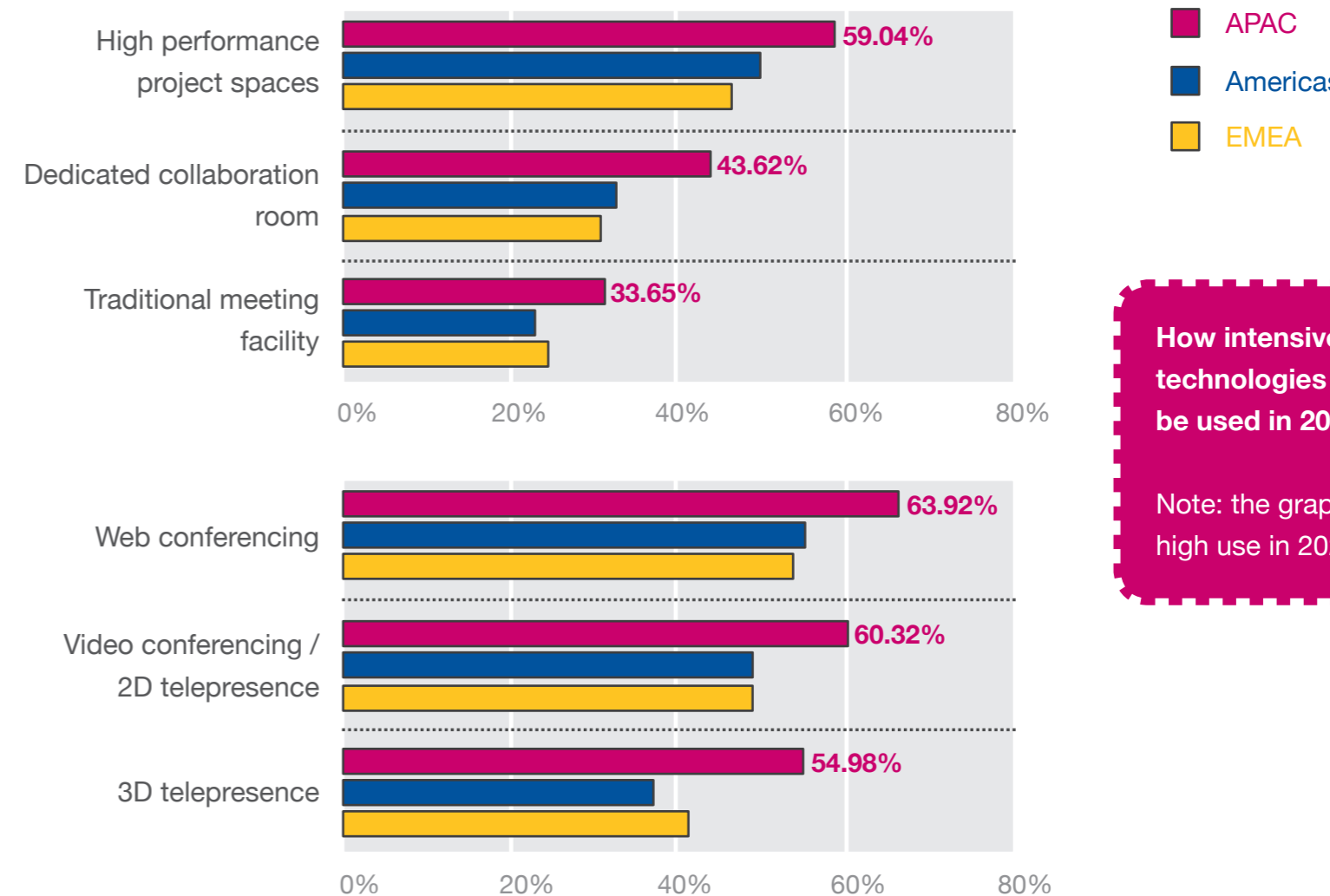
• Mass Collaboration is seen as having a significant impact on the market presence of organizations (56% agree to strongly agree), with America being the most aggressive before APAC and EMEA. Middle Managers and Executives are stronger believers in the power of mass collaboration on their organization than team members (60.5% against 53.6%).

• There appears to be a pronounced tendency for male respondents to like new, visible technologies that include hardware such as technology-rich, high performance project spaces (42.9% vs. 39.8% for females), 3D telepresence (33.7% vs. 27.7% for females), wearable computing (32.8% vs. 20.5% for females) and convertible tablet PC (48.2% vs. 41.3% for females).

• Female respondents, on the other hand, seem to like technologies that does not necessarily provide a bold statement, but that rather have a proven value, or works well to develop social ties – such as informal breakout spaces (57.4% vs. 51.8% for males), instant messaging (59.0% vs. 53.9% for males) and traditional meeting facilities (59.3% vs. 55.4% for males).

7 Key statistics - expected high use of technologies and solutions in 2020

Legend:
- APAC
- Americas
- EMEA

Company wikis: 38.98%
Microblogging (e.g. Yammer, Twitter): 40.14%
Blogging: 37.79%
Touch only computing device (iPad or similar): 67.22%
Wearable computing: 45.10%
Virtual worlds (Second Life or similar): 32.67%

High performance project spaces: 59.04%
Dedicated collaboration room: 43.62%
Traditional meeting facility: 33.65%
Web conferencing: 63.92%
Video conferencing / 2D telepresence: 60.32%
3D telepresence: 54.98%

How intensively will these technologies and solutions be used in 2020?

Note: the graphs only report high use in 2020

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7 **Key stats - expected high use in 2020**

Snapshots of statistical results:

- 95.2% report that they like e-mail, despite its shortcomings, making e-mail the most popular collaboration technology.

- 69.8% of respondents report high e-mail use in 2010, and 72.0% in 2020.

- The use of high-performance project spaces will grow substantially, and a majority of respondents (51.8%) expect high use of this workplace solution in 2020, more than any other type of facility.

- A majority of respondents report high expected use of conferencing solutions in 2020.

- More than 40% report high expected use of 3D telepresence, a workplace solution where no standard-based commercial offerings currently exist.

- 59.4% of respondents report that they don't like blogging.

- 66.8% of respondents report that they don't like microblogging services.

- 51.6% of respondents are comfortable with working alone today (12.7% don't like it, while 38.9% report that they like it).

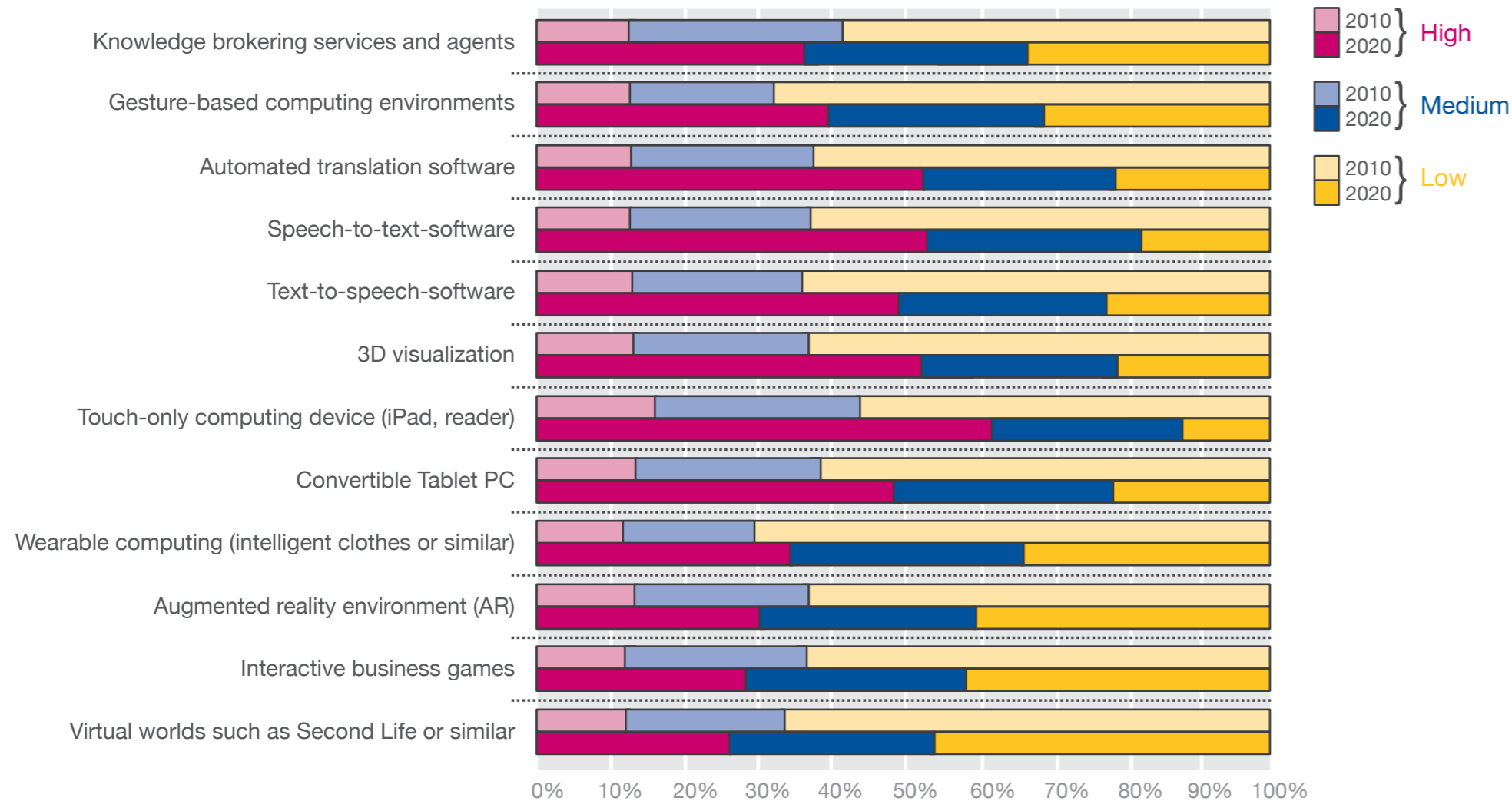- 32.7% report a high occurrence of working alone in 2010 against 48.2% in 2020.

The use of technologies now and in the future:

7 Key stats - expected high use in 2020

The use of technologies now and in the future continued...

Technology	2010/2020
Knowledge brokering services and agents	
Gesture-based computing environments	
Automated translation software	
Speech-to-text-software	
Text-to-speech-software	
3D visualization	
Touch-only computing device (iPad, reader)	
Convertible Tablet PC	
Wearable computing (intelligent clothes or similar)	
Augmented reality environment (AR)	
Interactive business games	
Virtual worlds such as Second Life or similar	

Legend:
- 2010/2020 } High
- 2010/2020 } Medium
- 2010/2020 } Low

Axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

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8 The **expert** view

8 The expert view

A range of experts, prominent academics, senior researchers and thought leaders shared their views on collaboration. We gathered a unique insight in the inherent complexity of collaboration; what it is, what the key opportunities and challenges are, and how to improve it.

WHY - The purpose of collaboration

Collaboration should be a purposeful activity; it should have a clearly defined purpose.

Collaboration constitutes a complex, multifaceted category of activities, and there are many opinions on the topic. One of the strongest findings was related to the purpose of collaboration. Collaboration should be a purposeful activity; it should have a clearly defined purpose. Collaboration is an activity in which topics of mutual interest are shared and discussed, and the purpose defines the direction and the framework for these discussions to yield specific outcomes. The issue of team synergies also came across; how collaboration was about creating an outcome where the whole greater than sum of parts.

Moreover, smart collaboration can improve the chances of tackling tough, multidisciplinary challenges. The era of the universal genius is gone, and the collective thought power of teams is more impactful than individual thought; the team is in essence greater than the individual when faced with complex issues. The shifting between collaborative or cooperative work is necessary to achieve both proper task identification and actual progress in producing deliverables or other process output.

HOW - The purpose of collaboration

Drivers of extrinsic motivation include specific and ongoing goals, and organizational efforts to create value through collaboration; how the organization manages collaboration and exercises collaborative leadership. The process of stimulating and enabling productive collaboration patterns of people working closely together is rapidly gaining attention, although few companies have implemented comprehensive support frameworks for managing this process. Collaboration can also be an unmanaged phenomenon, happening spontaneously. This often happens in trusted, connected networks, consisting of people willing to share information openly, sometimes empowered by social networking.

Collaboration is considered one of the key drivers of innovation, more specifically as one of the main drivers of creativity, co-creation and specific methods such as brainstorming. The concept of power productive ideation was mentioned as a strong point.

Collaboration in the productive, constructive atmosphere can stimulate what one interviewee called "collision of new ideas", where new, potentially valuable outcomes can be created. Therefore the process of collaborative innovation should be managed to a greater extent than today; or rather the preconditions of productive interactions supporting collaborative innovation in multidisciplinary teams should be managed.

Collaboration also represents the vehicle for "running ideas past other people", a framework for test ideas and concepts, and through this validate your own thinking and how it affects other units or disciplines, in order to arrive at a good, overall solution. This is considered a key to breakthroughs and solutions.

Motivation is an important component of collaboration, whether extrinsic (imposed) or intrinsic. Companies interested in leveraging the power of collaboration should make sure that motivational barriers to collaboration are removed or minimized.

8 The expert view

A fundamental issue in all collaborative situations is to determine who needs to be involved.

Social networking could enable new and productive interactions on all of these levels, but the network effect makes the potential benefits even more pronounced in larger networks, since the chances of reaching someone that could help, or observing positive serendipity effects increase with increasing size of the connected network.

WHO - The stakeholders of collaboration, the people

The following collaboration archetypes came up in the discussions.
- Small team (one on one, or interpersonal collaboration)
- Large team / dept. (interpersonal collaboration)
- Interteam collaboration (two or more teams engaged in collaboration)
- Company-wide or cross-department coordination and collaboration
- Larger collaborative network of customers and suppliers, sometimes with fuzzy boundaries, up to society level

The important thing is to know what type of collaboration that could be beneficial for the particular issue in question, and how to best support it. Excessive diversity can lead to limited understanding and communication breakdown and inefficiencies. The important thing is to ensure that everyone are equal at the table; that those who have something valuable to contribute, is actually given the chance to deliver their contribution.

Successful collaboration requires the simultaneous orchestration of multiple dimensions. Besides the human, culture, process, and organization-related aspects, the dimensions technology and workplace were highlighted as important ones.

8 The expert view

WHO - The stakeholders of collaboration, the people

Common themes for the technology dimension:
- Access to a solid, reliable virtual platform
- Access to social networking functionalities
- Current technologies need (but should not need) a user manual for realizing the potential benefits

Common themes for the workplace dimension:
- Sufficient common space to collaborate as an aid. Sufficient, in this context, refers to both the capabilities (functionalities) and the capacity (access whenever you need it) of the collaborative infrastructure
- Physical location. The key characteristics of the physical workplace; efficiency, effectiveness, and expression.

Since collaboration constitutes such a broad set of business activities, one could easily make the conclusion that improving collaboration to a large extent is the same as improving work or improving business. This is to some extent true – however, if an organization embarks on a mission to improve collaboration, this journey is more likely to be successful if collaboration is the prevailing perspective. Because collaboration is an enabler and not an objective in itself, collaboration is often a prerequisite for, and precedes the practical results and outcomes businesses are interested in. Also, choosing a different perspective can imply additional risk, as e.g. Tayloristic productivity perspectives fail to acknowledge the complexity and multidisciplinarity of today's dynamic business processes.

Performance is not a singular concept or construct, it is highly contextual. When discussing high-performance work practices, the issue of balancing collaborative work with individual concentration work is a recurring theme. Whereas most knowledge professionals appear to acknowledge the need for both work modes, opinions regarding how to manage the balance vary considerably.

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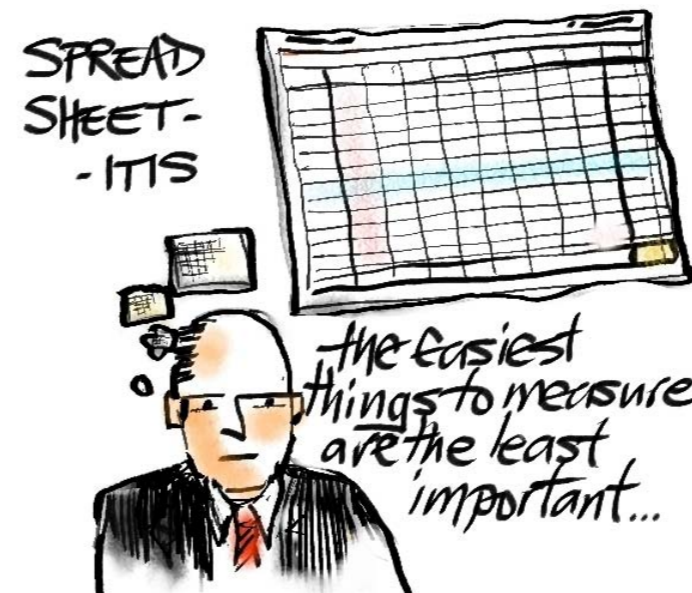Johnson Controls

8 The expert view

Information overload is a frequently observed problem in many, if not most, knowledge-intensive organizations. In addition to significant growth per channel, the number of channels with overlapping content is also growing. This increases communication overhead, and it can have a negative effect on performance, particularly if left unmanaged.

Usability is a fundamental business requirement, from the perspective of the average end user. Too often there is a large discrepancy between usability as marketed by collaboration vendors and how the same systems are perceived by end users, when these systems are deployed in a real business environment.

Complex business challenges requires direct involvement from all affected disciplines. Collaboration is most effective when real engagement is allowed and encouraged, and interaction is not restricted by imposed, hierarchical structures.

8 The expert view

Knowledge hoarding is one of the most important collaboration barriers; it creates inefficiencies and it is very counterproductive. Knowledge is power when and only when the knowledge is put to productive use, and this usually now happens through some form of collaboration.
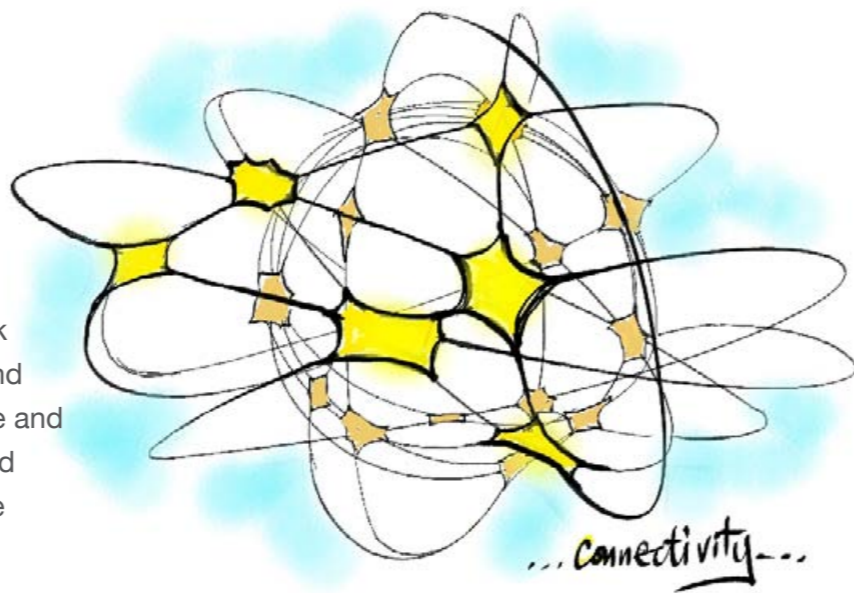
The practice of managing organizations is to an increasing extent driven by analytics and KPIs. While suitable for managing and optimizing a range of different aspects, current assessment methods often fail to capture key drivers of knowledge worker productivity, and over-reliance of measurability in a traditional sense may therefore lead to poor decisions and missed opportunities.

Unassigned desks is **'one more thing to think about'**, and the results from moving from assigned to unassigned desks vary from success to user dissatisfaction. End user involvement and the process of managing this shift is crucial for good results.

8 | The expert view

Collaboration is essential for task identification, problem solving and quality decision making. As more and more business processes depend on rich input from others, reliable connectivity becomes essential.
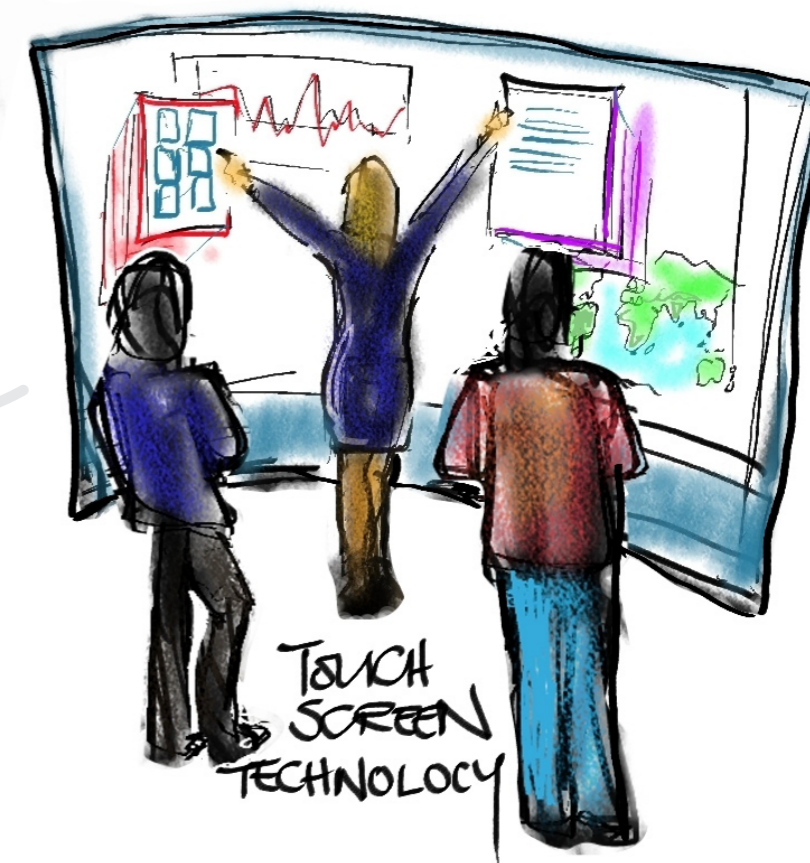
...connectivity...

Cost is still the only real driver of the vast majority of workplace-related change initiatives. This singular perspective in many cases implies lost opportunities for improvements related to knowledge worker productivity and innovation.

COST is the DRIVER
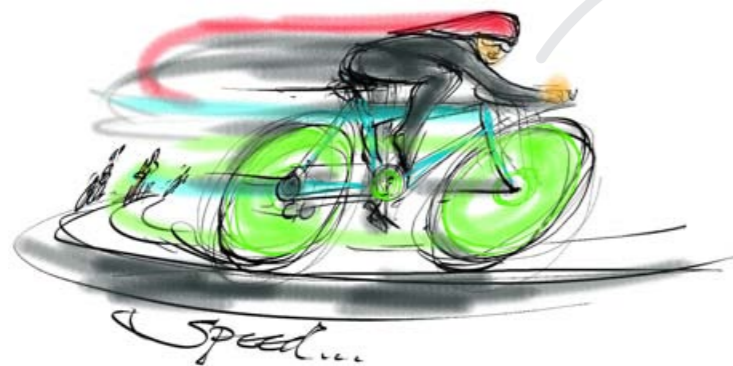
Speed is both an external requirement and internal driver for improved project execution and customer satisfaction. Improved speed of business requires deep involvement, and this change can, when facilitated well, improve process quality and help reducing communication and collaboration costs.

Speed...

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8 | The expert view

Large, interactive touch screen displays have an interesting value proposition through improving flow by removing barriers and interaction inefficiencies between knowledge workers and the information they are working on.

TOUCH SCREEN TECHNOLOGY

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Johnson Controls

9 The oil & gas industry

WE NEED SIGNIFICANT BANDWIDTH

New user interfaces based on user experience frameworks from leading consumer brands (Apple, others) will remove key technology adoption barriers and empower larger groups of non-expert users to improve organizational performance on an enterprise level rather than group or functional level.

The oil & gas industry enjoys particularly strong revenue streams, and significant bandwidth is a more pronounced business requirement than e.g. cost savings through cloud computing.

Bandwidth is a key enabler of rich, high-trust interaction forms such as telepresence, high definition video conferencing and sharing of complex, content-rich real time data. This improves risk management and dramatically reduces the probability expensive downtime etc.

Technology is becoming idiot-proof
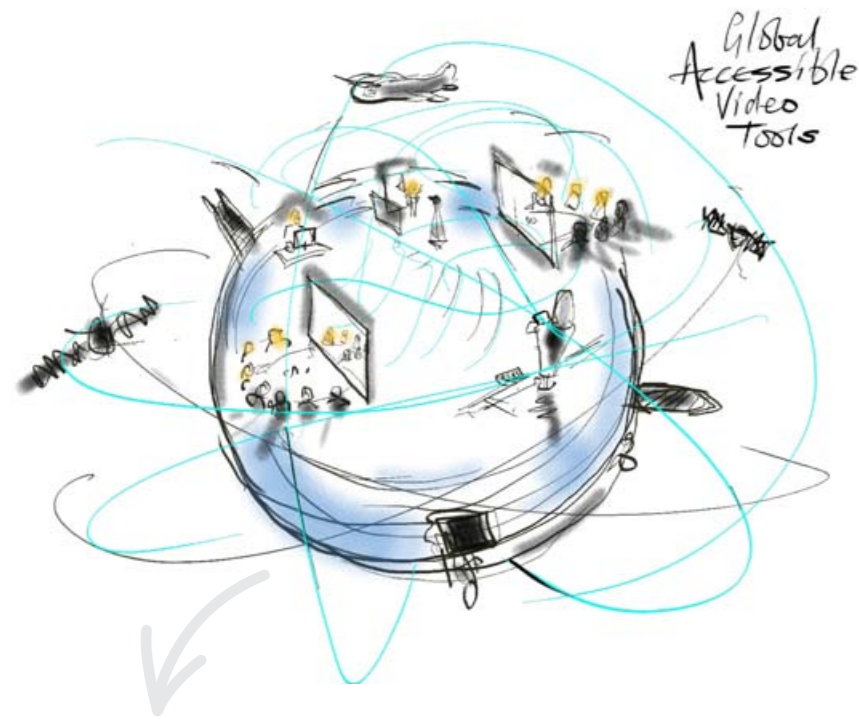
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Johnson Controls

9 The oil & gas industry

Video communication is used as a strategic enabler of project execution effectiveness and efficiency. When discussing complex matters, being able to see the rest of the team helps building trust and confidence, and breaks down communication and collaboration barriers that can be persistent when only addressed through asynchronous communication and collaboration channels.

Knowing when to use what tools becomes critical for maximizing productivity and the balance between availability for on-demand interactions and concentration work.

A large number of business critical processes in the oil & gas industry requires direct, hands-on involvement of multiple disciplines. Access to global knowledge and expertise is fundamental for quality project execution.

This type of nimble, on-demand collaboration often involves a combination of geographically distributed colleagues and from external contributors such as customers, suppliers and partners.
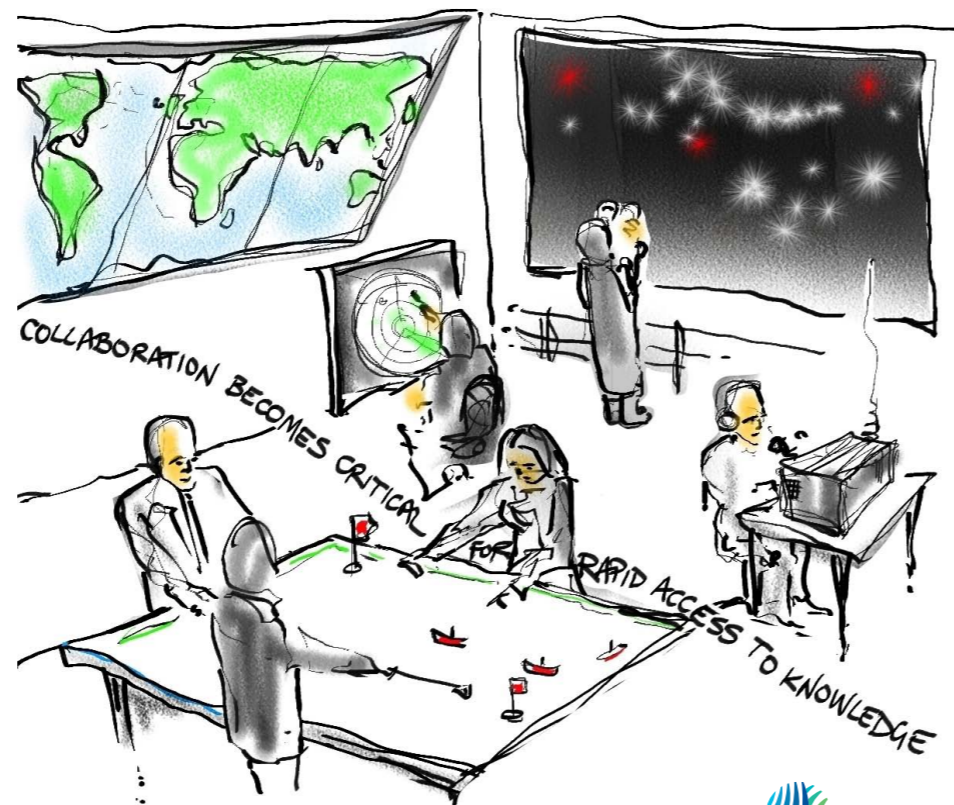
9 The oil & gas industry

The rate of change is accelerating rapidly. The resulting change of pace is noticeable in the oil & gas industry in areas such as geopolitical factors, technology, talent attraction & retention and general consumer perceptions of the industry.

Many oil & gas companies are also facing a pronounced knowledge and experience gap due to the retirement of baby-boomers, who possesses business critical knowledge that is neither easily codifiable nor transferable to less experienced staff. Collaborative environments and new ways of working can help transferring and sustaining a global knowledge base and help attract new, talented engineers and other professionals.

10

The
industrial
sector
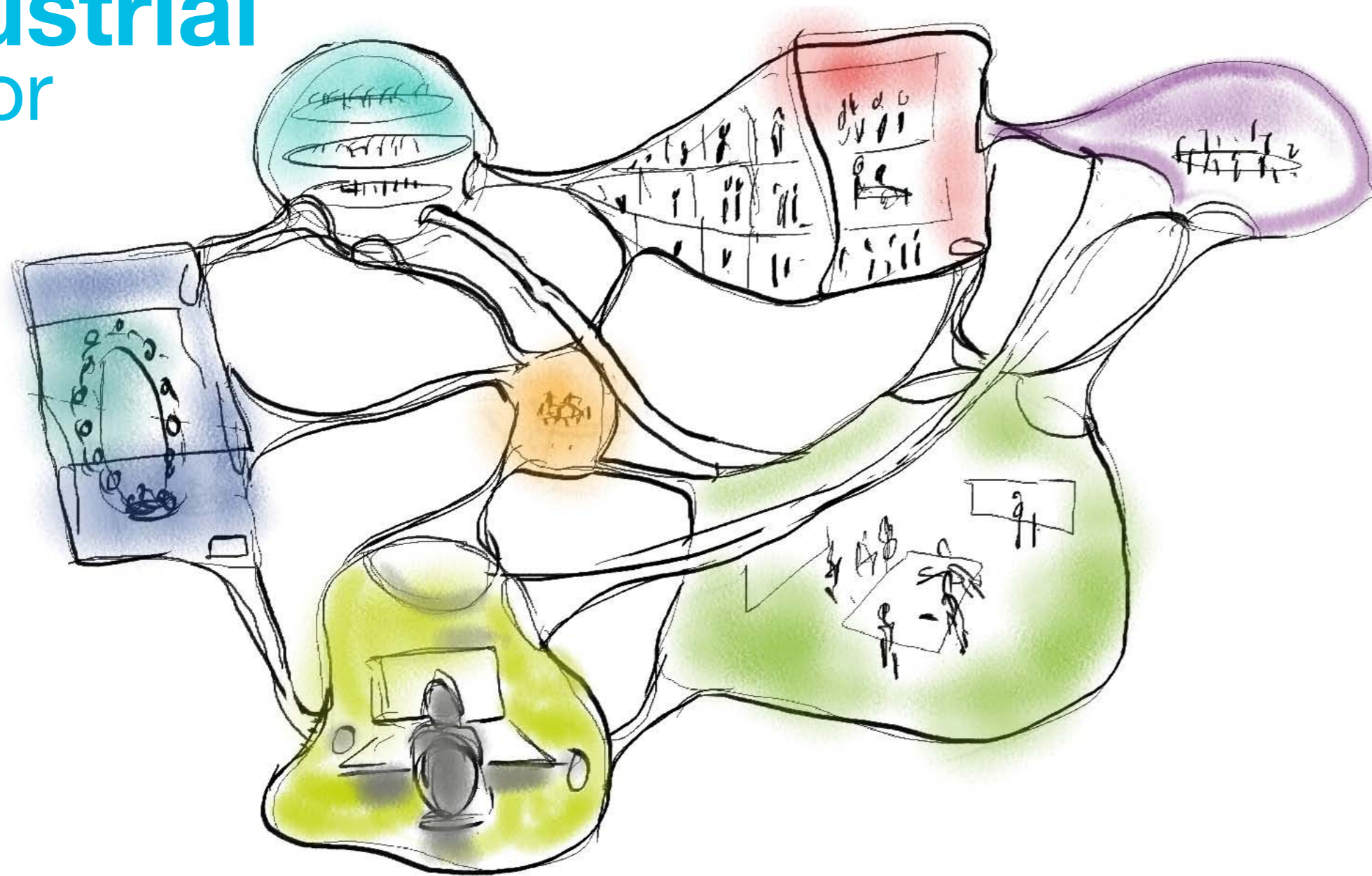
10 **The industrial sector**

Interaction and flexibility are emerging as a fundamental requirement. Collaboration now exists in more different forms than ever, and the number of overlapping collaboration options is ever-increasing.

Managing this complexity for business benefits will become crucial - experts expect a transition to multi-modal, ubiquitous information services.

Traditionalist thinking and failure to align workplace strategies with current and emerging trends may lead to reduced performance and long-term competitiveness.
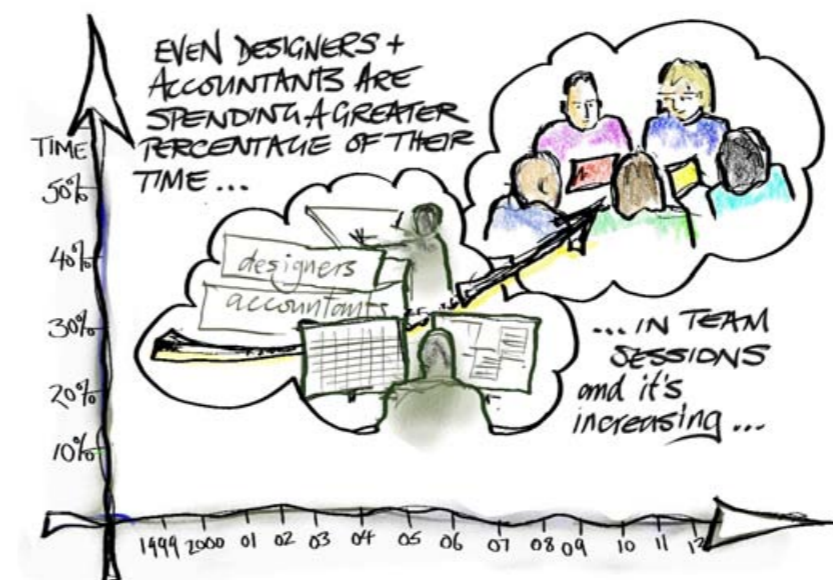
Knowledge workers spend more and more time collaboratively, in teams. How to manage this time effectively will represent a key differentiator in knowledge-intensive organizations.

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10 The industrial sector

10 The industrial sector

'The cat is out of the bag' in terms of cost being the primary, or in many cases, the only real driver of any workplace change initiative. Many employees see this **'sailing under false flag'** as what it is, and it can be detrimental for motivation for change.
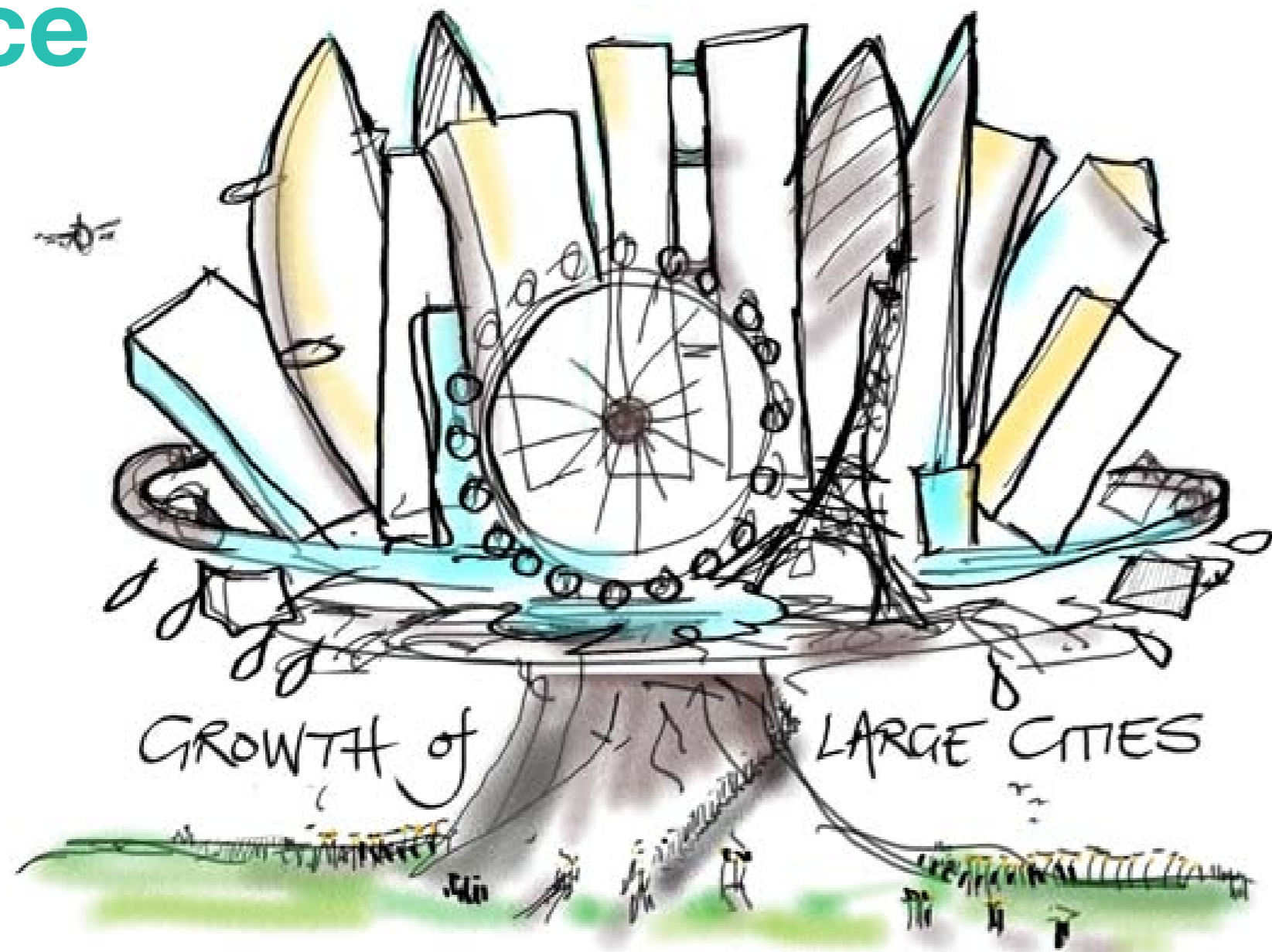
Interoperability through connected environments that fulfil local needs is a basic requirement. Demand-driven approaches will enable users to interact with collaborators and information in an unrestricted manner, on their own terms.

Advanced collaboration spaces are already in intensive use in progressive organizations. Utilization rates are high and growing as new, high-performance collaboration patterns are gaining foothold in a growing number of business units.

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11

The **finance** sector

GROWTH of LARGE CITIES

11 ## The finance sector

NIGHT PEOPLE

Knowledge professionals, especially young ones, often live borderless lives, and comfortably so. Work is a state of mind rather than a place one goes to in order to complete work-related tasks. Certain groups of professionals can use this increased flexibility to identify and exploit work styles and work schedules that fit their needs and desires, and hence spend a greater portion of their time working at peak performance.

Mobility and work portability and increased average age of entering into marriage and starting families is further contributing to flexible work schedules, and demand- and technology-driven global reach implies interaction opportunities with people in different time zones. Ensuring long-term attractiveness for young professionals represents a challenge for the conservative financial sector.

Computerization in general and the relative growth of computer-mediated communication and collaboration in particular (and the resulting physical isolation that may follow from this), can have potential negative effects on social skills and valuable social exchanges. The effect of these new interaction forms in the shaping of opinions, attitudes and behaviors is yet to be identified.

ISOLATION

loss of social skills?

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11   The finance sector

The immense growth of large cities implies an unprecedented concentration of talent and serendipitous exchanges in the interface between different knowledge areas. This helps driving new, profitable business ideas and concepts.

The financial market is in many ways very conservative, partly due to legislation, traceability and security concerns. As it was expressed in one strategic interview, **'antiquated mindsets'** could represent a long-term challenge in terms of **'silo thinking'** and limited room for informal, spontaneous knowledge exchange.

ANTIQUATED MINDSETS

GROWTH of LARGE CITIES

The financial sector is very risk-averse; risk management is a recurring theme. However, actions representing proper risk management in the short term may imply even greater risks in the long term. As a result, short-term risk management must be balanced with perspectives ensuring long-term relevance.

11   The finance sector

ISLANDS of DATA

Closed, proprietary (often legacy) systems and lack of interoperability causes inefficiencies. The resulting lack of flexibility in handling and managing disparate data sources for the end user ties up resources that could be spent more wisely and productively on other tasks. Security restrictions also limit the use of real time collaboration tools used for discussing the data with colleagues and customers.

12

The
life sciences
sector

12 **The life sciences sector**

The social dimension of collaboration is very important and represents a key success factor for team-based value creation.
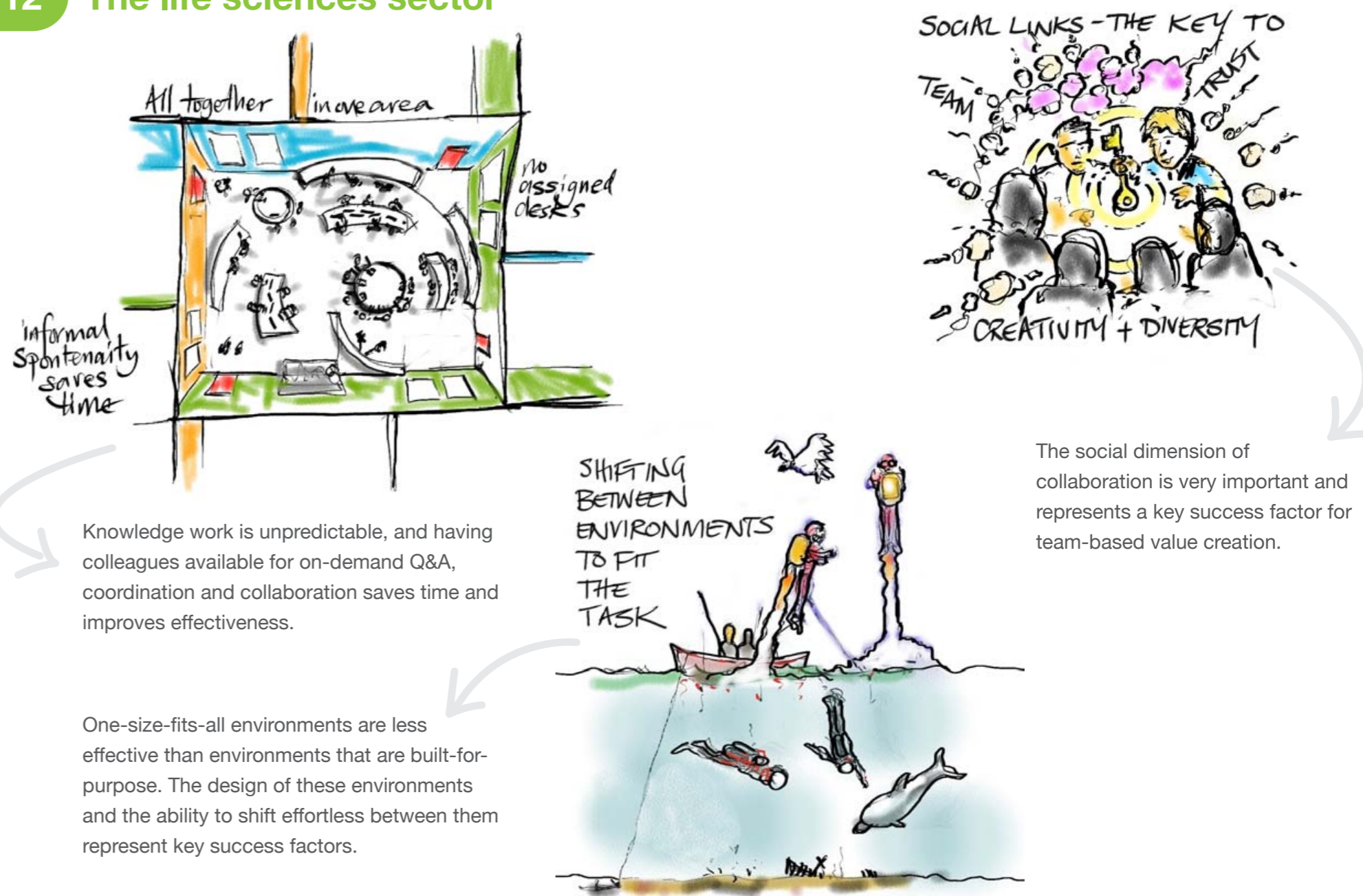
Knowledge work is unpredictable, and having colleagues available for on-demand Q&A, coordination and collaboration saves time and improves effectiveness.

One-size-fits-all environments are less effective than environments that are built-for-purpose. The design of these environments and the ability to shift effortless between them represent key success factors.

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12 The life sciences sector
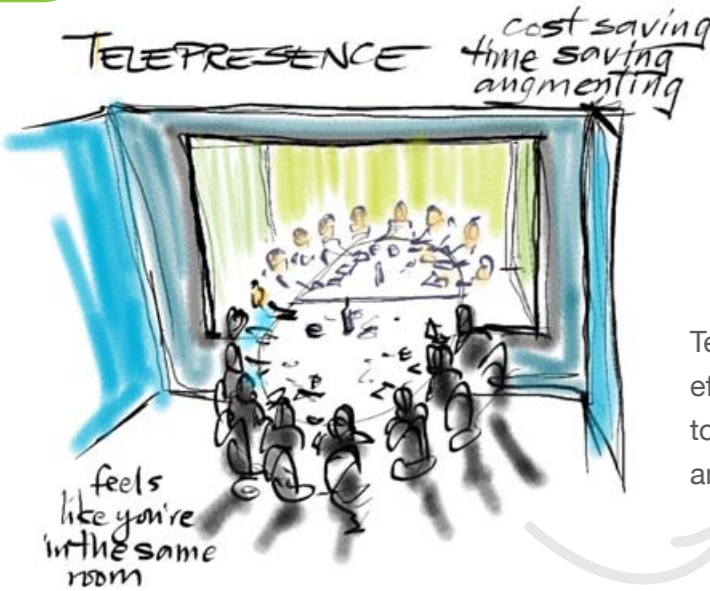
Collaboration can only deliver on its promise by becoming fully integrated into the core, value-creating business processes of any company. This includes research and lab-based work.

Telepresence is now considered an effective substitute for many types of face to face interactions, enabling new, flexible and global collaboration patterns.
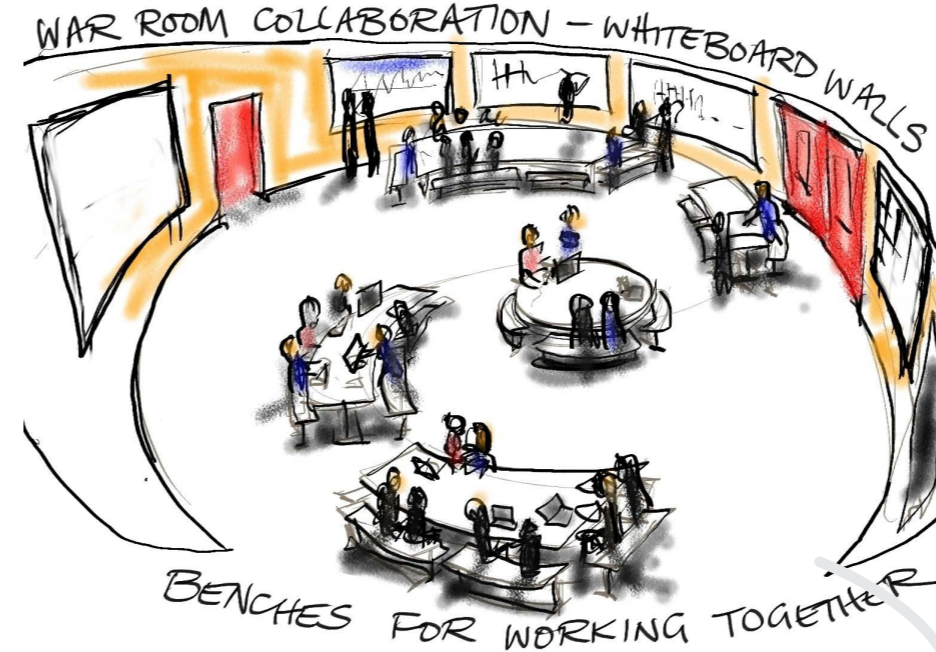
Collaboration is taking place on multiple levels, and boundaries between companies are becoming fuzzy as value networks become more integrated.

Mobile technologies make advanced collaboration functionalities ubiquitous. No longer limited by what is possible, the focus will be on useful interactions that create value.
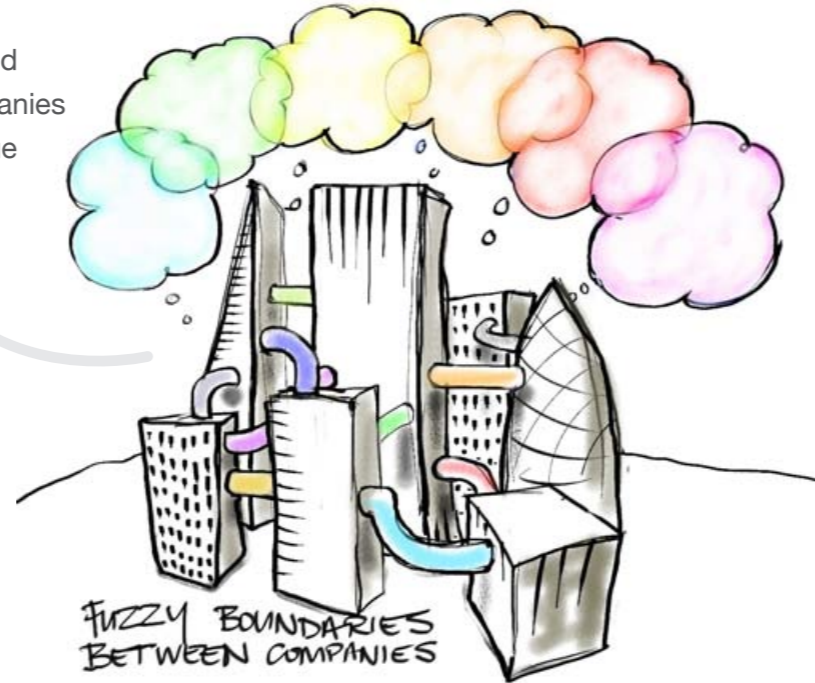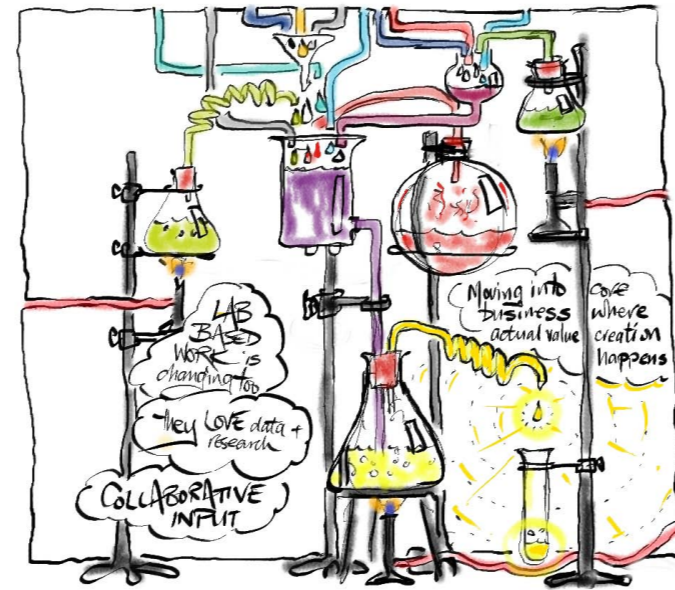
12 The life sciences sector

Collaboration can be an effective way of driving creativity and innovation through **'piggy-backing'**, leading to qualitatively different (better) outcomes.

Knowledge workers' perceptions of working alone vary considerably; some knowledge workers mostly consider the physical context (social aspects), while some think more about the nature of the task(s) at hand (task dependencies)
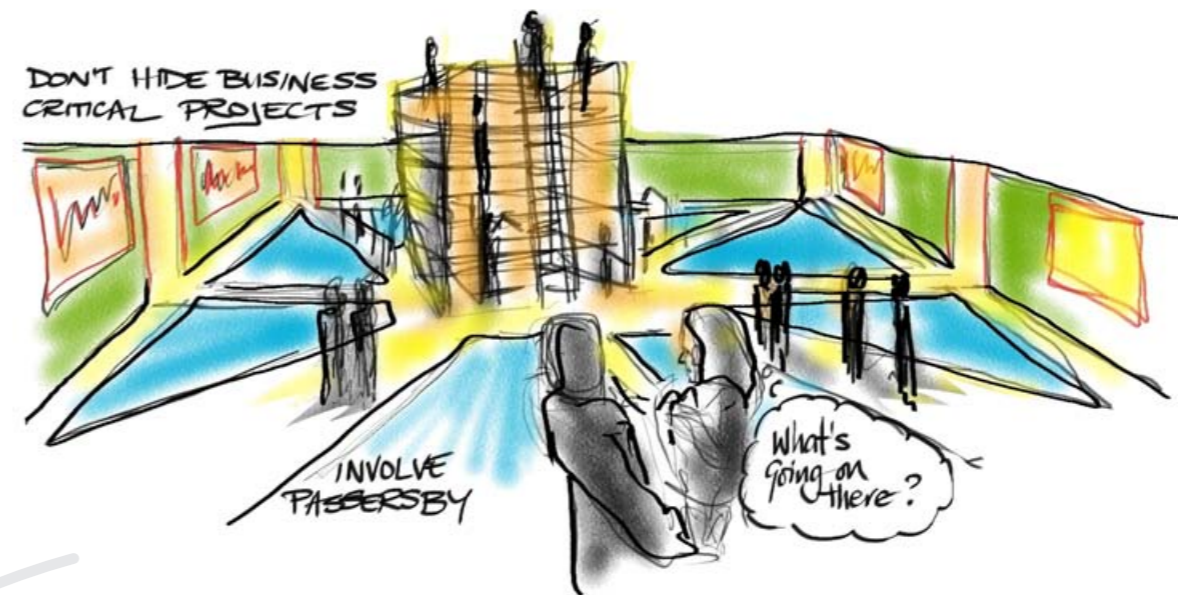
War room-style collaboration can bring many benefits by breaking down physical barriers to collaboration (the **Allen curve**) and by improving flow by making advanced collaborative functionalities available in an instantly accessible format.

13
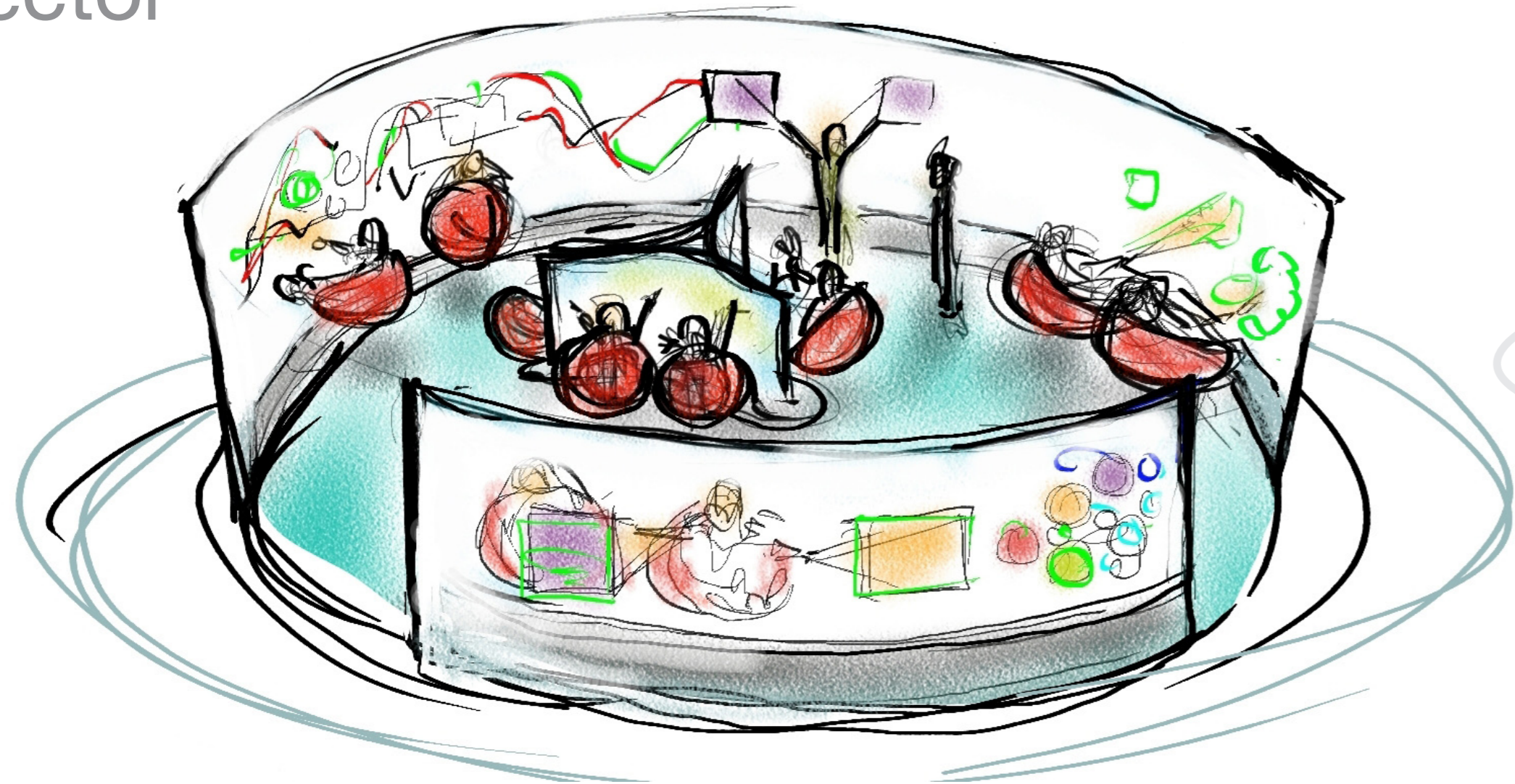
The **technology** sector

The shift to PCs and smartphones as the main work surface is not all positive. It has to a large extent has anonymized work; it's now often difficult to know what is going on. This can be addressed by bringing work, this time in a flexible, electronic format, back out in the open through hybrid, physual (combining physical, virtual and visual) work environments.

Not exercising leadership, but actually being leadship in the new space, is considered important; living it, breathing the new work styles, setting an example by demonstrating the new behaviors that can help the transition into new, productive interaction patterns.

In order to achieve breakthroughs (radically new outcomes), one must usually do some differently (new inputs, new processes or both). Collaboration can facilitate this through bringing different disciplines sufficiently close together to create **'creative friction'**.

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13 | The technology sector
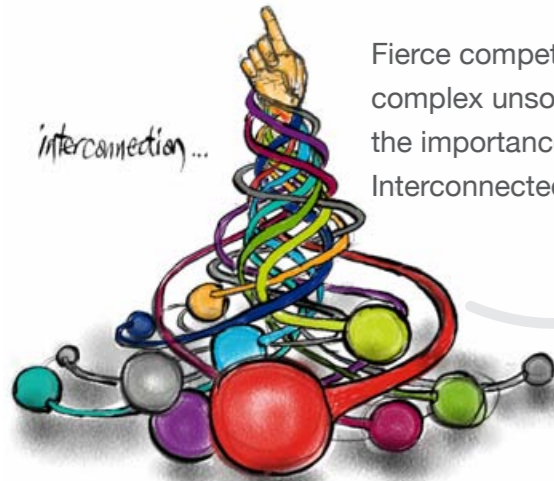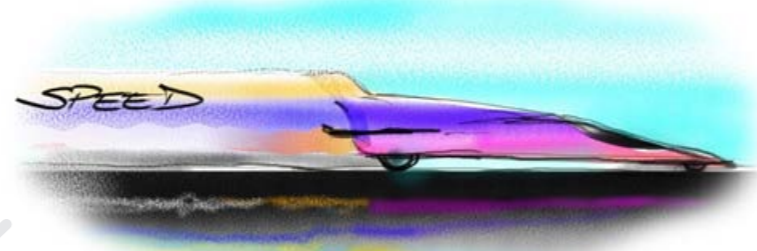
Fierce competition and increasingly complex unsolved problems redefine the importance of managing closely Interconnected disciplines.

Mobility and the analogy of **'musical chairs'** can improve knowledge transfer through serendipitous interactions.
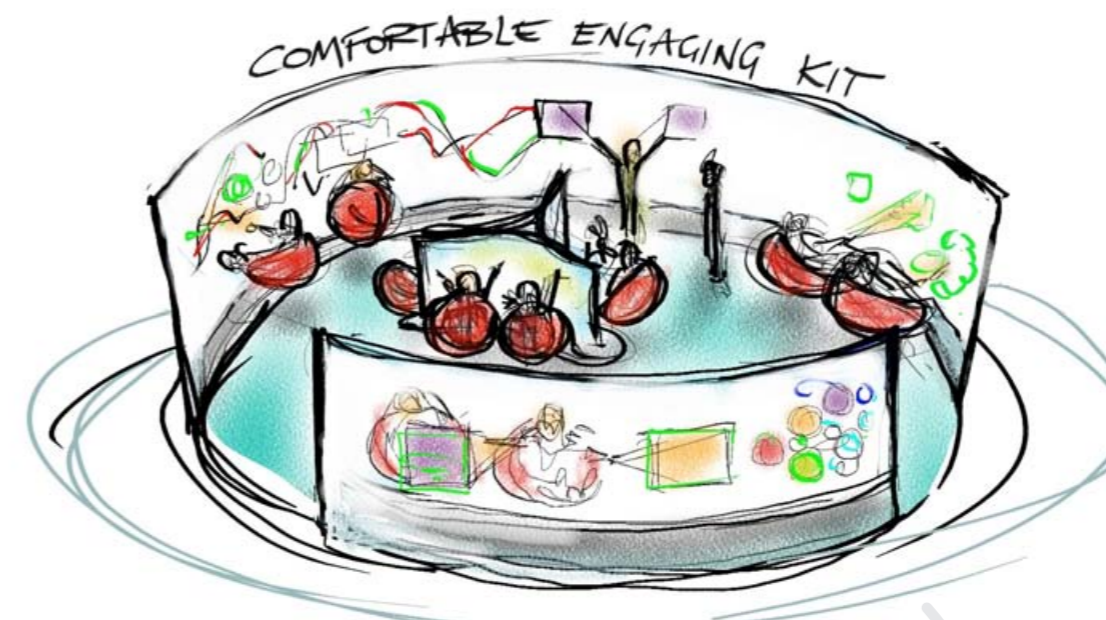
The number of platforms and formats is ever-increasing, and will represent freedom of choice for the user when systems are fully interoperable and support work portability and multimodal access & interactivity.

Speed is considered a key differentiator, and it is becoming even more important as the pace of change is increasing and the half-life of knowledge is decreasing. Collaboration can be an effective vehicle of putting knowledge into action before it is outdated.
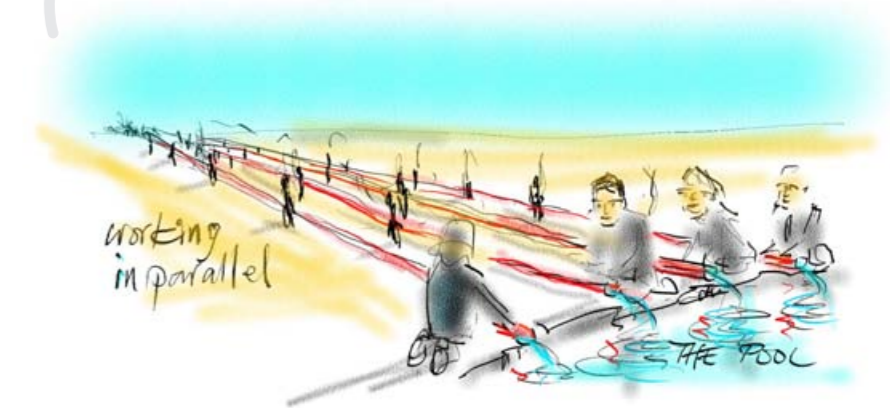
13 | The technology sector

Traditional working in series; **'hand-over'** often leads to late problem discovery because some perspectives are only brought into the process at a late stage.

Working in parallel, **'concurrent collaboration'** may imply a larger communication and collaboration overhead, but still leads to improved quality and early problem identification and resolution.

When dealing with complex knowledge, value is often created through real engagement. But in a dynamic, fast-paced context, the environment must be **'rigged'** to facilitate quick, **'low-treshold'** interactivity to allow for this engagement to happen comfortably, on-demand and on the participants' terms, as soon as the situation calls for it.

14 Quirky concepts

Would you consider:

Having a robot pet to keep you company when working long hours?

Having an office robot if it could manage your calendar and provide flawless PA services, etc?

Implanting a chip in your body if it could significantly improve your memory, your intelligence and your work performance?

Implanting bionic eyes if it was totally risk-free and would enable you to add an information overlay that could provide on-demand access to information such as people's names, calendar and reminders, etc?

Robot pet:
- 24.3% of respondents and 33.2% of senior and executive managers would consider having a robot pet to keep them company when working long hours.
- 54.1% would not consider having an office pet.

Office robot:
- 50.3% of senior and executive managers and 52% of collaboration enthusiasts would consider having an office robot if it could manage their calendar and provide flawless PA services, etc.
- 37.0% would not consider an office robot around them.

Implanted chip:
- 25.5% of respondents would consider implanting a chip in their body if it could significantly improve your memory, your intelligence and your work performance.
- 54.0% would not consider having a chip implanted in their body.

Bionic eyes:
- 29.3% of senior and executive managers and 31.1% of middle managers would consider implanting bionic eyes if it was totally risk-free and would enable them to add an information overlay.
- 54.0% would not consider having a Bionic Eyes implanted in their body.

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14 Quirky concepts

Other key results:

- Female respondents are far less likely to consider the listed technologies and solutions. An absolute majority would not consider implanting a performance-enhancing chip (58.9% vs. 48.5% for male respondents) or risk-free bionic eyes (63.1% vs. 49.1% for male respondents).

- The Americas region stands out as the most conservative in terms of their willingness to consider the radical solutions proposed in this question.

- 28% of our respondents consider a high use of interactive business games to boost collaboration at work by 2020.

- 65% of our respondents do not consider the use of virtual worlds such as second life or similar as a suitable solution to boost collaboration at work today and only 26% would consider a high use of it by 2020.

- 34% of our respondents consider the use of wearable computing (intelligent clothes or similar) as high in 2020.

- 62% of our respondents consider a high use of touch-only computing device (iPad...) in 2020 compared to only 16% in 2010.

15 Conclusion

Existing research as well as the aggregated research undertaken in the Collaboration 2020 project supports the observation that most companies tend to address collaboration as a broad category of different, but related activities in a fragmented, ad hoc manner.

In this project, online survey respondents and senior executive interviewees provide strong support for the total volume of all types of collaborative interactions in their organizations as well as the strong link between collaboration and performance, on both a strategic and an operational level. Many organizations view these dimensions as instrumental in the ability to compete.

This is somewhat of a surprise finding, given the emphasis on managing and governing most aspects of many other categories of activities that are more limited in scope and volume. It is a fact that many professionals today spend most of their time on collaborative activities, and through this report we have sought to highlight a number of trends and findings that, when combined, make a strong case for companies to start understanding what collaboration is and what it can do for them, and then starting to approach and facilitate collaboration more systematically.

Collaboration processes are by nature complex, contextualized, dynamic and unpredictable. Many companies have detailed descriptions of many types of processes, yet little is said explicitly about how knowledge professionals should collaborate to achieve business objectives. This is a paradox, if one examines the high (and increasing) portion of the total work that is collaborative by nature, and the potential value this represents. Typical knowledge workers can spend up to 80 percent of their time on different types of collaborative activities or interactions (Butler et. al., 1997), and for many knowledge-intensive businesses, more than 80 percent of the cost of doing business is attributable to labor (personnel) costs. If employees represent 80 percent of the cost of a knowledge-intensive organization and these employees spend 70-80 percent on different types of collaborative activities, this should be the focus of attention for business executives.

15 Conclusion

The findings in this survey are supported by a number of external studies indicating a clear correlation between the intensity and the quality of interactions, the business performance and the innovation capabilities (e.g. Gofus et. al, 2006; IBM, 2006). Also several studies demonstrate that a co-investment in technology and work practices is more effective and increases productivity significantly more than single dimension investments in technology or work practices alone (see e.g. Brynjolfsson and Lorin, 1998; Dorgan and Dowdy, 2004).

In essence, productivity improvement in knowledge work depends on several factors, where IT investment only represents a single dimension. This should be taken into account when launching collaboration improvement initiatives, as the way collaborative work is organized and facilitated affects the nature of interactions, and these interactions' ability to support fundamental business processes. Furthermore, research suggests that there are several examples of organizations that have found the magic formula: the innovative combination of enabling technologies and new work and management practices make some high-performing companies more productive, profitable and innovative than their competitors, and significantly so (Dorgan and Dowdy, 2004, Beardsley et. al., 2006). This strongly supports the position that collaboration requires management and leadership to flourish – or simply to enable collaboration to deliver on its (often hyped-up) promise.
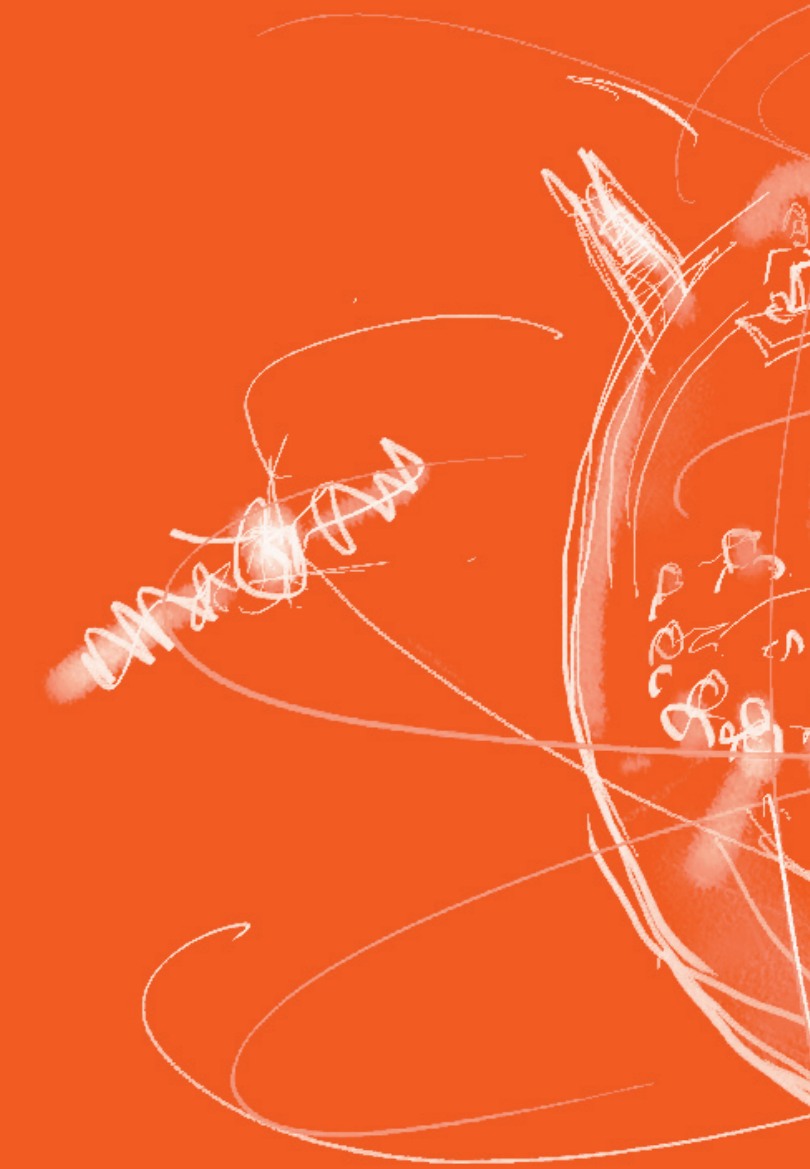
15 Conclusion

Managing collaboration is more about promoting and enabling the benefits of collaboration than it is about managing the costs. The benefits, if managed properly, can outweigh the costs of collaboration by an order of magnitude.

- Collaboration is about making people achieve together what they cannot achieve alone (Hansen and Nohria, 2004), and it is about making people more productive at what they do. As the cost of collaboration (awareness, training, technology, service) in most cases only represent a fraction of the personnel cost of a trained professional, even a modest productivity increase for these professionals would more than offset what cost-oriented IT and HR departments would consider a substantial investment.

- Collaboration management can hence be described as the facilitation of high-performance processes and productive interactions, through the ongoing management of the benefits of improved collaboration, combined with systematically addressing the foundations and preconditions of productive collaboration.

- Collaboration leadership, on the other hand, provides direction and guidance, is more process-oriented and is related to demonstrating the benefits of collaboration, motivating others to work in new, smart ways, and inspire collaborators and others to use collaboration as a pathway to improved team effectiveness and productivity. Collaboration leadership can be described as the attitude, mindset, values and behavior key personnel possesses that enable them to engage themselves and others in productive interactions and make collaboration work.

Succeeding with collaboration at a level where it represents a competitive advantage will require a broad approach. Although the majority of respondents expect a high use of high-performance project spaces in 2020, the design of these environments and the ability to shift effortlessly between them represent key success factors.

15 Conclusion

In order to make collaboration a success in knowledge intensive businesses, managers, team leaders and business owners should consider the following:

1 **Leadership:** Collaboration will demand strong leadership. Collaboration management and leadership will not be about micro-managing the processes and activities taking place, but instead on facilitating and fostering a constraint-free environment for productive interactions that help the collaborators achieve business and project objectives.

2 **Training:** Collaboration will require training to raise the level of engagement of users and overcome the often neglected and forgotten educational gaps. Leadership itself is not enough to guarantee the success of a collaborative task.

4 **Workplace:** Collaboration will rely on the provision of the right working environment. As the place to work becomes an interactive and exchange platform, the increase of collaborative tasks and activities towards 2020 will require a significant shift of our working environment toward the access to high performance spaces.

3 **Technologies:** Collaboration is dependent on the access to the right technological platform at the right time, to enhance engagement with peers and boost efficiency and effectiveness of communication. This collaboration engaging "kit" is a combination of advanced communication tools and systems, combined with a powerful IT framework to support high level and high resolution solutions. Advanced video conferencing solutions should be necessary and as accessible and affordable as is a mobile phone in 2011.

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15 Conclusion

5 **Knowledge:** Collaboration will be supported by a fast and easy access to a knowledge platform for storing and sharing an increasing amount of data. The Cloud will become essential by 2020 as a virtual and secure data centre. The intensity of knowledge exchange and sharing will intensify relationships and interactions.

6 **Immersive solutions:** Collaboration may be supported by Artificial Intelligence solutions and products to boost the performance of individuals and teams. From robotics to chips and bionic solutions, a fair proportion of users are considering the use of such products in their day-to-day life. Touch based and immersive technologies are more in favour and will become common and accepted solutions by 2020.

7 **Services:** Collaboration will be enhanced by smart facilities management services to support user's needs and expectations in the physical and virtual world of work. Facilities Management will evolve to include services that support collaboration, for example advanced meeting room booking systems.

There is significant hype surrounding collaboration - this is because collaboration allows knowledge-intensive businesses to innovate and stay competitive. Collaboration is expected to grow further as we approach 2020.

16 References

- Beardsley, S. C., Johnson, B. C., Manyika, J. M. (2006). Competitive advantage from better interactions.
  The McKinsey Quarterly (2).
- Brynjolfsson, E., & Hitt, L. (1998). Beyond the Productivity Paradox. Communications of the ACM , 41 (8), 49-55.
- Butler, P., Hall, T. W., Hanna, A. M., Mendonca, L., Auguste, B., Manyika, J., et al. (1997). A revolution in interaction.
  The McKinsey Quarterly (1).
- Dorgan, S. J., Dowdy J. J. (2004). When IT lifts productivity. The McKinsey Quarterly (4).
- Foroohar, R. (2005, December). Learning to share. Newsweek (Issues 2006: The Knowledge Revolution), pp. 40-42.
- Gofus, N., Conway, S., Kostner, J., & Cotton, B. (2006). Meetings around the world:
  The Impact of Collaboration on Business Performance. Frost & Sullivan.
- Hansen, M. T., & Nohria, N. (2004). How to Build Collaborative Advantage. MIT Sloan Management Review, 46 (1), 22-30.
- IBM Global Business Services. (2006). Expanding the Innovation Horizon. IBM.
- Kristensen, K. (2010). Collaborare non humanum est: Collaboration et environnements hybrids
  (French translation by Françoise et Loukhoum Bronner). Office et Culture Magazine, June 2010, pp. 32-39.
- Kristensen, K. (2009). KC Collaboration perspectives Blog:
  http://www.collaborationperspectives.com/2009/05/collaboration-defining-complex.html
- Kristensen, K., Lambersøy, G., Fanguy, D., Soufan, G. (2008). The Future of Collaboration: A Survey of Collaborative
  Work Environments in the Oil & Gas Industry. Cyviz Corporate Survey Report, Stavanger, Norway.
- Manyika, J., Sprague, K., Yee, L. (2009). Using technology to improve workforce collaboration. What Matters,
  McKinsey Digital. http://whatmatters.mckinseydigital.com/internet/using-technology-to-improve-workforce-collaboration
- The ESA Concurrent Design Facility (CDF) website: http://www.esa.int/esaMI/CDF/

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Kjetil has extensive experience from management consulting and research in the area of smart ways of working, collaboration barrier analysis and advanced diagnostics, collaborative strategies, new work & workplace concepts, productivity and innovation.

He holds graduate degrees in Mechanical Engineering (siv.ing.) and Collaborative Engineering Design (PhD) from the Norwegian University of Science and Technology (NTNU) and has been a Visiting Researcher at Stanford University. He frequently speaks and publishes internationally on a broad range of topics related to collaborative innovation, collaborative strategies and collaborative performance assessment. Kristensen is an Adjunct Associate Professor in Collaborative Engineering at NTNU.

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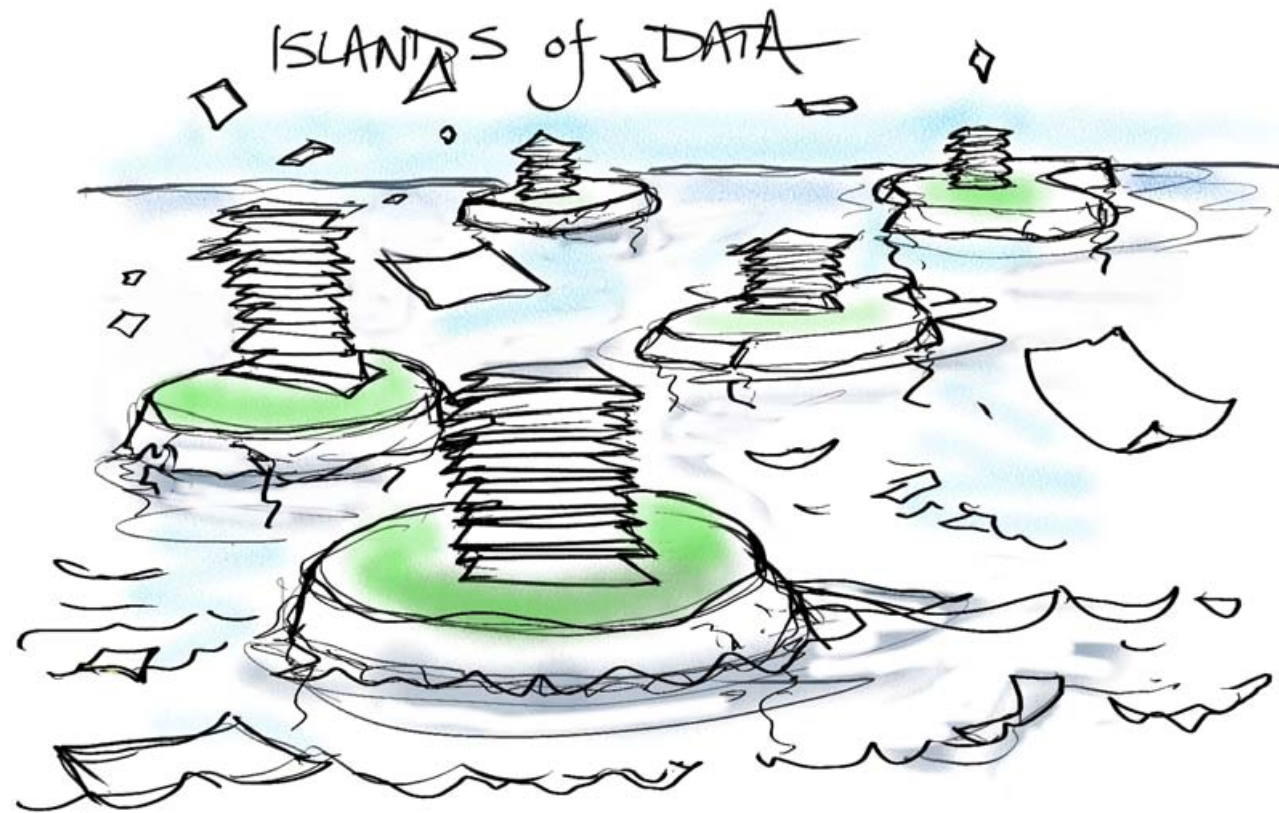
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