Innovation in Norway beyond oil and gas

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The ten largest oil producers and Norway’s position in 2016

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>OPEC</th>
<th>Non-OPEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USA</td>
<td>5.6</td>
<td>11.7</td>
</tr>
<tr>
<td>2</td>
<td>Saudi Arabia</td>
<td>5.1</td>
<td>11.1</td>
</tr>
<tr>
<td>3</td>
<td>Russia</td>
<td>4.2</td>
<td>8.6</td>
</tr>
<tr>
<td>4</td>
<td>Canada</td>
<td>3.7</td>
<td>7.4</td>
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<tr>
<td>5</td>
<td>China</td>
<td>3.5</td>
<td>6.8</td>
</tr>
<tr>
<td>6</td>
<td>Iraq</td>
<td>3.1</td>
<td>5.1</td>
</tr>
<tr>
<td>7</td>
<td>Iran</td>
<td>2.7</td>
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<tr>
<td>8</td>
<td>UAE</td>
<td>2.4</td>
<td>4.7</td>
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<tr>
<td>9</td>
<td>Kuwait</td>
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<tr>
<td>10</td>
<td>Venezuela</td>
<td>1.4</td>
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</tr>
<tr>
<td>14</td>
<td>Norway</td>
<td>1.2</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Source: BP Statistical Review of World Energy 2016 and Norwegian Petroleum
Are resources a blessing or a curse?

Source: Torvik (2009)
Oil and gas – an engine for growth in Norway
(I) Government Pension Fund Global (GPFG) and the spending rule

- Invest in 9,000 companies in 78 different countries
- Spending rule (3-4% of GPFG)

Source: Norges Bank
(II) Spillovers from oil and gas – aggregate effects

Effects after 1 pct. increase in petroleum activities

Source: Bjørnlund and Thorsrud (2016)
(III) Spillovers from oil and gas – Disaggregate effects
Effects after 1 pct. increase in petroleum activities

Source: Bjørnland and Thorsrud (2016)
Then the sign turned!
Economist 2013: Rich cousin in the North

Economist 2015: Norwegian Blues
Unemployment - Accumulated change (pp.) since December 2014 (Oil downturn) compared to July 2008 (Financial crisis)

Source: Bjørnland and Torvik (2018)
A sizeable minority of the population are on disability benefit

A. As a percentage of working-age population (15-64) - highest 10 OECD countries¹

Source: OECD (2014)
Made in Norway

After the oil downturn…. What do we have left that is unique? What is our ‘Made in Norway´?
Made in Italy
Made in Norway
Made in Norway…!

• We have knowledge and technology!

• We have discovered and extracted raw materials that demand technical competence at a very high level

• Knowledge transfer to other parts of the society

• Innovation in Norway beyond oil and gas: Sea windmills, offshore fish farming, health equipment, simulators, consultancies etc.…
Technology spillovers!
Is Norway ready for a technology-rich world?

Share of students majoring in science

Source: OECD
The future is knowledge and technology

- Routine and repetitive jobs will be automated … (manufacturing, accounting, health)

- Do workers today have the skills they need for the transition?

- Will they be able to find good jobs in the age of digitalization and robotization (second machine age)

- Need to learn coding skills and work with large amounts of data.
Executive at a new crossroad

• Digital society - Teaching and memorizing facts is irrelevant today

• Being able to learn, analyze, think critically and make an argument is what matters

• Working in teams and with other people, across disciplines is an important skill.

• Management of knowledge and technology
No time to rest - Change is the new normal!
Thank you!
Designing the digital organization

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Abstract
Increasingly, organizations are assessing their opportunities, developing and delivering products and services, and interacting with customers and other stakeholders digitally. Mobile computing, social media, and big data are the drivers of the future workplace, and these and other digitally based technologies are having large economic and social impacts, including increased competition and collaboration, the disruption of many industries, and pressure being put on organizations to develop new capabilities and transform their cultures. In this article, we provide a conceptual framework for the design of effective digital organizations. Our framework is predicated on the current state of digitization across diverse sectors of the global economy. In the digital world, all activities and transactions leave digital marks, and all actors, things, and places can be reached and affected digitally. As a result, we can design for self-organization rather than using hierarchical mechanisms for control and coordination. Such designs require the strategic and cultural alignment of digital technologies within the organization and externally with stakeholders. We propose that “actor-oriented” principles are at the heart of designing digital organizations and that, if properly applied, can result in a workplace where organization members are highly engaged and productive.

Keywords: Digital technology, Digital organization, Digital disruption, New organizational forms, Organizational architecture, Workplace of the future, Collaboration tools

Digital technologies are transforming the global economy. In his pioneering book Being Digital (1995), technology futurist Nicholas Negroponte (1995), described how the old industrial economy would be eaten away by a new digital economy. Moreover, digital technology makes it possible for members of an organization to self-organize and thereby avoid the delays, distortions, and other damaging effects of hierarchically organized systems (Benkler, 2002). Established companies recognize that digital technologies can help them operate their businesses with greater speed and lower costs and, in many cases, offer their customers opportunities to co-design and co-produce products and services (Sambamurthy et al. 2003). Many start-up companies use digital technologies to develop new products and business models that disrupt the present way of doing business and take customers away from firms that cannot change and adapt.

Software tools and applications, robots, and a host of other digital technologies “… are doing for mental power – the ability to use our brains to understand and shape our environments – what the steam engine and its descendants did for muscle power” (Brynjolfsson & McAfee, 2014: 7–8). Properly harnessed, digital technology can enable individuals, firms, cities, and governments to become smarter – to expand their
capabilities and to adapt to new and changing conditions. As an agile organizational form (Alberts, 2007), the digital organization will be populated with individuals and teams who are facile with technology and who can collaborate both inside and outside the organization to make process improvements and develop new solutions.

In our article, we offer organizational designers, change agents, and managers a conceptual framework for the design of a digital organization — identifying its major components and showing how they should be put together. A fully digital enterprise is a powerful combination of people, technology, and organizing ability that is well suited to today’s economic and social environment. In the first section, we discuss how digital technologies are used by organizations to increase their efficiency and effectiveness. Digital technologies augment and support work activities and decision-making, connect members of the organization, and aid in managing relationships with customers, suppliers, and other stakeholders. In the second section, we describe the organizational architecture that is appropriate for a knowledge-intensive, highly collaborative digital organization. This architecture is “actor” oriented — that is, it places a premium on the ability of organization members to self-organize while performing their work tasks. Actor-oriented organizations mostly rely on protocols, commons, and infrastructures to maintain control and coordination instead of hierarchical mechanisms. In the final section, we discuss how to apply the actor-oriented architecture for those organizations wanting to develop their digitally based capabilities. Here we address the skills and motivation of actors, the creation of commons that support their work activities, and the protocols and infrastructures that connect actors and facilitate their interactions.

Digital technology

Technology is a way of getting work done (Perrow, 1967). New technologies are seldom “invented” but rather are developed by combining technologies that already exist. Unlike older technologies, which mostly produce fixed physical outputs, digital technologies are generative (Zittrain, 2006) — they can be combined and recombined endlessly for fresh purposes (Arthur, 2009). In many cases, digital technologies also can enable replication and distribution of products and services at close to zero marginal cost (Shapiro and Varian, 1999; Varian, 2000). The domain of digital technology includes computer hardware, software, transmission networks, protocols, programming languages, very large-scale integrated circuits, algorithms, and all the components and practices that belong to these various technologies. Digital technology enables immense amounts of information to be easily compressed, preserved, and transmitted. In recent years, digital technology has disrupted one industry after another (Christensen, 1997), and it is rapidly transforming how people communicate, learn, and work. Many products and services are fully or partially digital, such as news and entertainment, and increasingly work is being done digitally.

The essence of the digital revolution has been concisely described by Brynjolfsson and McAfee (2014). They explain that technological progress in the digital era is due to three characteristics of technology: it is exponential, digital, and combinatorial (p. 37). The exponential aspect of technology means that its power and usefulness are getting better and better all the time and that “… what’s come before is no longer a particularly reliable guide to what will happen next” (p. 55). Digitization turns various kinds of data and information into bits — the ones and zeroes that are the language of computers.
Advances in digitization have resulted in “... new ways of acquiring knowledge...and higher rates of innovation” (p. 62). Lastly, digital innovation is combinatorial: “Each development becomes a building block for future innovations” (p. 81). Coupled with human ingenuity, these three characteristics allow digital technologies to be developed and applied at a rapid rate.

**Adaptation and disruption**

Organizations adapt to the needs of the market; to the technologies available for the design, production, and delivery of products and services; and in their means of organizing (Miles and Snow, 1978). The digitization of society is affecting customer needs, product and service properties and delivery mechanisms, and organization design (Langer, 2017). Changes across these areas are coalescing. For example, music has changed from a product to a service industry wherein consumer demand has evolved from purchasing packaged CDs to accessing customized, streamed playlists which are organized by aggregators such as iTunes, Tidal, Spotify, and Pandora, with distribution driven by artists instead of studios. “Products as services” is a business model that is growing in many arenas (Porter and Hempelmann, 2014).

Technological innovations can be incremental or disruptive. Incremental innovations are characterized by small improvements to existing products, services, and processes. Disruptive innovations, on the other hand, may create new markets and business models, and often may displace market leaders (Christensen, 1997; Christensen and Bower, 1996). In past decades, organizational responses to technological changes were mostly incremental and, in part, enabled by IT improvements that allowed greater scope and dimensionality of organizational control and coordination. Most of those adaptive responses were made within existing hierarchical forms of organizing (Altman et al. 2015). Digital technologies, however, often disrupt established ways of organizing and require adaptation through collaboration as well as self-organization around situation awareness (Endsley, 2000) and knowledge commons (Hess and Ostrom, 2006; Ostrom, 1990, 2010). Self-organization and collaboration, as an adaptive response, is faster and more effective than a hierarchical response.

The technological manifestations of disruption in organization design are clearly visible, as are workplace changes and changes in inter-organizational relationships. What is less visible are changes in the associated design paradigm, which enable organizations to obtain efficiency and effectiveness improvements by investing in digital technology. The new organization design principles are similar to those used in designing digital technologies themselves. Their roots are found in object-oriented systems design (Dahl and Nygaard, 1966) and in the architecture of the Internet (Krol, 1993). In organizational terms, these principles are embodied in actor-oriented architectures (Fjeldstad et al. 2012).

**Working and organizing digitally**

Digital technologies play a role in all aspects of operating, controlling, and coordinating the activities of organizations (Setia et al. 2013). Broadly speaking, they are used for automating and augmenting tasks, communicating internally among organization members and externally with customers and partners, and in collaborative decision-
making among digital and human agents (Davenport and Kirby, 2015; Engelbart 1962; Huber, 1990; Licklider, 1960; Simon, 1973). At Tesla’s manufacturing facility in Fremont, California, technicians work alongside 185 robots made by the German firm Kuka Robotics to assemble the electric cars. By using artificial intelligence “reinforcement learning algorithms,” the robots are able to switch tools and perform certain tasks far better and faster than their human co-workers (Gershgorn, 2016). Surgeons at the Mayo Clinic use robots to augment a variety of surgical procedures in heart, head, and neck operations. The surgeons perform those operations by controlling surgical micro-instruments attached to robotic arms (Mayo Clinic, 2016).

Both intra- and inter-organizational transactions and communications have been performed digitally for a long time (Fedorowicz and Konsynski, 1992). Walmart exemplifies a highly digitized supply chain connecting its stores, distribution centers, and suppliers (Mata et al. 1995). Currently, social media such as Facebook and Twitter are used by companies to communicate with their customers and other stakeholders, and digital platforms such as Facebook at Work and Microsoft’s SharePoint allow for internal communication and for collaboration with partners.

Digital technologies are also used for learning, decision-making, and design. E-commerce companies such as Amazon, Google, Airbnb, and Uber study the data trails of consumer behavior to design markets for greater efficiency and build new markets (Lohr, 2016). Intelligent digital design tools are used in engineering and creative industries. Those tools typically offer 3D representation of the objects under design, and they allow designers to simulate the operations and performance of alternative design choices (Fujitsu, 2016). In semiconductor manufacturing, the designs are digitally transmitted to equipment that manufactures the product. With continuing development and wider adoption of 3D printing technologies, the design-to-manufacturing process will become fully digital across many more industries (Sasson and Johnson, 2016). MTR Corporation, which owns and operates the Hong Kong subway system, uses artificial intelligence to schedule maintenance tasks. In a typical week, more than 10,000 people carry out 2,600 work orders. The system was “trained” by using expertise extracted from human experts and then transformed into work rules. The main difference between normal software and MTR’s artificial intelligence is that it contains human knowledge that takes years to acquire through experience (Hodson, 2014). Some companies employ digital design tools in collaborating with their customers and partners. Lego provides toolkits on its website that enable entrepreneurs and customers to submit product ideas and start new Lego brick-based businesses (Heinerth et al. 2014). (See Table 1 for a summary of digital applications and leading digital firms and organizations.)

An organization is a goal-directed, boundary-maintaining activity system (Aldrich and Ruef, 2006). In traditional organizations, technological artifacts such as manufacturing equipment and computers are controlled by human operators. With the declining costs of global communication and information processing, hierarchy is being replaced by radically different ways of organizing (Fjeldstad et al., 2012), the digital elements of which include cloud computing, big data analytics, cognitive computing, and collaboration platforms. Artificial intelligence embedded in machinery and tools, as exemplified above, plays an ever-larger role in emerging digital organizations (for a survey see Kolbjørnsrud et al. 2016). As a result, employees collaborate with, rather than merely control, the technology in use, and organizational designs have to encompass both human and digital
agents. Organizing digitally means collaboration with more entities and less reliance on hierarchy for control and coordination. It also entails empowering employees, partners, and customers who use digital tools for the co-creation and co-production of products and services as well as providing digital platforms for self-organized collaboration (Boudreau et al. 2011).

**Actor-oriented organizational architecture**

Digital technology is not only changing how organizations operate but also the way we think about organizing. Organizations increasingly include digital and human agents who share means of communication, control, and coordination. A traditional organization is arranged hierarchically – that is, control and coordination are achieved through an authority (reporting) structure in which superiors plan and coordinate the activities of subordinates, allocate resources, and resolve problems and conflicts (Simon, 1962). A hierarchical organization can be effective in stable and predictable environments because the organization does not have to regularly innovate or adapt to change. Many of today’s environments, however, are not stable and predictable; they are volatile, uncertain, complex, and even ambiguous (Johansen, 2007; Suhayl & Joshi, 2015). Such environments are characteristic of knowledge-intensive industries like biotechnology, computers, healthcare, professional services, and national defense. Organizations operating in these types of environments rely heavily on the agency of their members. A hierarchical organization inevitably instills a hierarchical mindset among its members. Members understand that they are being paid to do a particular job, and they look to their managers to set goals, develop plans, and approve the quality of their work. As a result, organization members become psychologically as well as economically dependent on the hierarchy. In addition to the friction created by “relay managers” (Drucker, 1988) who merely pass along information,

<table>
<thead>
<tr>
<th>Target area</th>
<th>Goal</th>
<th>Leading digital firms and their industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer experiences</td>
<td>Customer co-creation of products and services</td>
<td>Burberry (clothing)</td>
</tr>
<tr>
<td></td>
<td>Customer engagement and loyalty</td>
<td>Starbucks (specialty retailing)</td>
</tr>
<tr>
<td></td>
<td>Customized offerings</td>
<td>Caesars (gambling and entertainment)</td>
</tr>
<tr>
<td>Internal operations</td>
<td>Increased efficiency</td>
<td>Asian Paints (paint and adhesives)</td>
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<td></td>
<td>Lower costs</td>
<td>Codelco (mining)</td>
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<td></td>
<td>Greater speed</td>
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<td></td>
<td>Higher quality</td>
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<tr>
<td>Business models</td>
<td>Reinventing industries</td>
<td>Airbnb (private lodging)</td>
</tr>
<tr>
<td></td>
<td>Substituting products or services</td>
<td>Uber (taxi services)</td>
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<tr>
<td></td>
<td>Creating new digital businesses</td>
<td>Amazon (online retailing)</td>
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<tr>
<td></td>
<td>Reconfiguring value delivery models</td>
<td>UPS (logistics services)</td>
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<tr>
<td></td>
<td>Rethinking value propositions</td>
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<tr>
<td></td>
<td>Market design</td>
<td></td>
</tr>
<tr>
<td>Product design and development</td>
<td>Intelligent product design</td>
<td>Fujitsu (electronics)</td>
</tr>
<tr>
<td></td>
<td>User-driven innovation</td>
<td>Nike (athletic shoes and apparel)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lego (toys)</td>
</tr>
<tr>
<td>Organizing</td>
<td>Agile organizations</td>
<td>IBM (technology and consulting)</td>
</tr>
<tr>
<td></td>
<td>Collaborative processes</td>
<td>Accenture (professional services)</td>
</tr>
<tr>
<td></td>
<td>Non-hierarchical means of control and coordination</td>
<td>NATO military forces (national defense)</td>
</tr>
</tbody>
</table>

Source: Adapted from Westerman et al. (2014)
hierarchical management styles tend to reduce intrinsic employee motivation to take initiative.

Prior research has proposed an actor-oriented organizational architecture that is appropriate for knowledge-intensive sectors where organizations must continuously learn and adapt (Fjeldstad et al. 2012). Actor-oriented organizations rely on self-organizing, with only minimal use of hierarchical mechanisms to achieve control and coordination. Such organizations are particularly useful for large-scale, multi-party collaboration – a required capability in knowledge-intensive industries (Benkler, 2002; Powell et al. 1996). Collaboration has been shown to reduce risk, speed products to market, decrease the costs of solution development and process improvement, and enable access to new knowledge, technologies, and markets (Eisenhardt and Schoonhoven, 1996; Hagedorn, 1993; Kogut, 1988; Wheelwright and Clark, 1992).

The actor-oriented architecture is composed of three elements: (1) actors who have the capabilities and values to self-organize; (2) commons where the actors accumulate and share resources; and (3) protocols, processes, and infrastructures that enable multi-actor collaboration (see Table 2). In actor-oriented organizations, control and coordination are based on direct exchanges among the actors themselves rather than on hierarchical planning, delegation, and integration. Although hierarchy is present in actor-oriented organizations, these designs mainly rely on lateral, reciprocal relationships among actors for control and coordination. As an illustration of how an actor-oriented organization works in an easy-to-grasp context, see Table 3, which describes the organization of ants foraging for food.

**Actors**
Actors – whether they are individuals, teams, or firms – must possess the capabilities and values to self-organize. They engage in self-management rather than wait to respond to directions received from the hierarchy. They also act with integrity, developing a reputation for consistent, competent behavior – social capital that can be used at other times and in other arenas to develop new relationships and business opportunities. The trust that is built up between actors saves the costs of designing and using elaborate control mechanisms that monitor and ensure proper actor behavior. In an actor-oriented organization, actors understand the overall structure and processes of the organization, and their decisions and actions are taken in pursuit of the organization’s common good.

**Table 2** Elements of an actor-oriented organization

<table>
<thead>
<tr>
<th>Element</th>
<th>Function</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors</td>
<td>Perform work activities by self-organizing</td>
<td>Individuals or teams in an organization</td>
</tr>
<tr>
<td></td>
<td>and collaborating</td>
<td>Firms in a collaborative community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Citizens, firms, and municipal agencies in a smart city</td>
</tr>
<tr>
<td>Commons</td>
<td>Shared resources made available to actors</td>
<td>Shared knowledge</td>
</tr>
<tr>
<td></td>
<td>to support their work</td>
<td>Shared databases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared situation awareness</td>
</tr>
<tr>
<td>Protocols, processes,</td>
<td>Infrastructures connect actors with one another</td>
<td>Software apps that announce projects as well as the availability and</td>
</tr>
<tr>
<td>and infrastructures</td>
<td>Protocols guide actor behavior</td>
<td>expertise of actors</td>
</tr>
<tr>
<td></td>
<td>Processes that combine to create an agile</td>
<td>Shared norms and values concerning how actors should behave</td>
</tr>
<tr>
<td></td>
<td>organization</td>
<td>Intra- and inter-organizational collaboration</td>
</tr>
</tbody>
</table>
By focusing on the common good, actors can take advantage of shared values, norms of reciprocity, and trust in the self-governance process (Hess and Ostrom, 2006; Ostrom, 1990, 2010).

Commons

Commons refers to resources that are collectively owned and available to actors (members of the organization). One type of commons is a knowledge commons, a repository of knowledge that organization members can both contribute to and use. For example, Blade.org, a collaborative community of more than 70 firms in the computer server industry, posted all of the solutions developed by member firms on the organization’s website. Any Blade.org member firm could access the website and examine the solutions for ideas that might apply to its particular market or customer base (Snow et al. 2011). Smart Aarhus, the smart-city initiative of Aarhus, Denmark, has a database called Open Data Aarhus whose purpose is to make relevant data and information accessible to Aarhus citizens and organizations. These datasets can be used to develop new products, services, and digital applications. Any firm or individual citizen can access the more than 75 datasets in Open Data Aarhus and use the data for collective purposes (Snow et al. 2016).

Shared situation awareness is a commons that facilitates self-organization. Situation awareness refers to knowing what is going on in the organization (Endsley, 2000). Digitally shared situation awareness provides an up-to-date portrait of problems and opportunities in the organization’s environment as well as the current availability of resources to address those problems and opportunities. Through digitally shared situation awareness, valuable information is widely available to organization members in their decision-making. Originally developed as an operational tool for fighter pilots in World War I, situation awareness is used today in air traffic control, power plants, and advanced manufacturing systems (Endsley, 2000), and its use is growing in healthcare and other sectors. When actors share an up-to-date awareness of the organization’s situation, everybody in the organization can make the right decision or take the correct action without seeking direction or authorization from the hierarchy.
Infrastructures, processes, and protocols

Infrastructures connect actors and allow access to the same information, knowledge, and other resources. Actors who have the knowledge, information, tools, and values needed to set goals, and who can assess the consequences of potential actions for the achievement of those goals, can self-organize. Self-organizing actors use protocols to guide their collaborative interactions. Protocols are “codes of conduct” used by organizational actors in their exchanges and collaboration activities. An important category of protocols deals with the division of labor, the mobilization and linking of actors for a particular project or task. Examples are protocols by which actors advertise problems or opportunities as well as their own capabilities and availability, and protocols by which actors search for potential collaborators.

In summary, actor-oriented organizational architecture is focused on the organization’s actors: the work that they do, and the principles and processes by which they relate to one another. Competent actors working for the common good of the organization can self-organize and self-manage with only minimal need for hierarchical control and coordination. Commons, infrastructures, and protocols are used to guide and support actor behavior, connecting organization members with one another and facilitating their work activities.

Applying the actor-oriented scheme to the design of the digital organization

Traditional organization design is centered on structural relationships – the boxes on the organization chart and the reporting lines that connect them. Actor-oriented design, by contrast, is centered on shared access to information and other resources as well as the protocols and infrastructures by which actors connect and collaborate. Born-digital companies can apply an actor-oriented design at their inception. Established firms, however, typically must be redesigned. Redesign involves changing a predominantly hierarchical system supported by legacy technologies to an actor-oriented system (Langer, 2017). Having targeted a particular area for redesign, designers and decision-makers need to address each of the components of the actor-oriented scheme.

Collaborating, self-organizing actors

A competent actor is one who possesses the knowledge, skills, and values suited to an actor-oriented system. In building a digital organization, the effective composition and mobilization of a set of competent actors may require a combination of selection, training, mentoring, and replacement of personnel. An actor-oriented digital organization is especially conducive to use by millennials (people born after 1980) who have acquired knowledge and expertise from their Internet activities (Langer, 2017: Ch. 10), and it may be difficult to use by employees who lack social media skills and who have been ingrained with hierarchical approaches to organizing and managing (Espinoza and Ukleja, 2016; Saxena and Jain, 2012).

In 2015, millennials became the largest generation in the U.S. workforce, and by 2025 they will constitute 75% of that workforce (Meister and Willyerd, 2010). A forecasted skill set for the digital-age workforce is shown in Table 4. As shown, the digital organization will require its members to have a demanding set of both hard and soft skills. Hard skills include computational thinking and trans-disciplinarity. Soft skills
include social intelligence, cross-cultural competency, and the ability to collaborate. To capitalize on these skills, the digital organization must provide flexible workspaces and policies that motivate millennials and enable them to be productive. Such workspaces will include appropriate collaboration tools and be designed according to sound psychological theories and principles. It is well established that people are extrinsically motivated by reward systems, evaluations, and the opinions others have of them (Herzberg, 1966). Self-determination theory (Ryan and Deci, 2017) holds that just as frequently people are motivated from within – by their interests, curiosity, concern for others, and abiding values. Following self-determination theory, jobs must be designed so that they meet the core psychological needs of competence, relatedness, and autonomy. Such designs foster the most volitional and high-quality forms of motivation and positive work outcomes, including enhanced performance, persistence, and creativity. Conversely, the degree to which any of these basic psychological needs is unsupported or thwarted in an organizational context will have a detrimental impact on people’s well-being and performance in that setting.

The individual capabilities of actors must be turned into collective capabilities in order for the organization to operate at its desired scale and speed. The development of organizational capabilities occurs through a managed learning process in which individuals, technology, and organizational culture evolve together (Langer, 2017). At Valve Corporation, a digital distribution platform that operates with few hierarchical mechanisms, organizational capabilities are developed along actor-oriented lines (Felin and Powell, 2016). First, Valve recruits individuals who, in their estimation, have the capacity to create value in a marketplace of ideas. Second, those actors are allowed to

<table>
<thead>
<tr>
<th>Table 4 Work skills required by an actor-oriented digital organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense-making</td>
</tr>
<tr>
<td>Social Intelligence</td>
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<tr>
<td>Cross-cultural Competency</td>
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<tr>
<td>Computational Thinking</td>
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<tr>
<td>Media Literacy</td>
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<tr>
<td>Trans-disciplinarity</td>
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<tr>
<td>Design Mindset</td>
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<tr>
<td>Cognitive Load Management</td>
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<tr>
<td>Virtual Collaboration</td>
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</table>

Source: https://www.sfu.ca/career/WCID/ift_futureworkskills.html
self-select the projects on which they want to work. Third, a new project can be started if at least three peers agree that it is worthwhile (the “rule of three”). Fourth, project teams are empowered to sense, shape, and seize their own market opportunities. It is expected that teams will engage with external stakeholders via open innovation methods such as crowdsourcing, user communities, innovation contests, and so on.

Historically, organizations have been populated by humans using tools and equipment to accomplish their tasks. Increasingly, human actors work collaboratively with digital agents such as robots, adding a digital actor to the organization. Newer robots with abilities in social interaction are able to learn from their human counterparts through cooperation and tutelage (Green et al. 2008). Effective collaboration requires human and digital agents to share goals and situation awareness as well as the capability to communicate directly with one another.

**Commons that support collaboration**

Designing commons for a digital organization will be specific to each organization and its needs, but two commons in particular deserve attention: situation awareness and knowledge. To be effective, actors need a shared awareness of the resources and activities in their environment. For example, in the self-dialysis clinic at the Ryhov Hospital in Sweden, all dialysis patients share a common electronic calendar that allows them to schedule their own treatment sessions. In addition, the equipment of the center is designed in a way that allows patients to perform their own treatment. The roles of the actors in this example are different from those of a hierarchically organized treatment center. Here patients self-organize their treatment while doctors and nurses use shared information about the patient’s condition to intervene only if necessary (IHI Annual Report, 2012). Functionality that supports shared situation awareness is emerging across a wide variety of software platforms. Such platforms are extensively used by military organizations and advanced technology firms for collaborative problem solving and decision-making (Kolfschoten and Briggs, 2015; Nunamaker et al. 2009). Several recent software platforms support project management, and office productivity tools increasingly support real-time collaboration around documents and spreadsheets. Galbraith (2010) provides an account of how Procter & Gamble uses a collaborative spreadsheet program to speed up the reconciliation of corporate plans and budgets.

A knowledge commons is information and data that is shared by the actors who make up the organization. It is typical to distinguish between declarative and procedural knowledge (Kogut and Zander, 1992). Declarative knowledge is factual whereas procedural knowledge is know-how. For example, the Open Source Drug Discovery community maintains declarative knowledge in a repository of all scientific discoveries made by its members (Kolbjørnsrud, 2017). This allows all contributors to have a real-time awareness of the problem state (Newell and Simon, 1972) – how far the members of the community have come toward a solution and the knowledge gaps that still need to be closed. Many consulting firms, such as Accenture, maintain procedural knowledge of the best practices used by their consultant teams (Langer and Yorks, 2013). The overall purpose of a procedural commons is to provide a set of shared resources that helps an organization learn and adapt.
In a given digital organization, all actors may not use the entire commons. Some software platforms allow the commons to be subdivided such that actors can collaborate around selected subsets. Subdivision of the commons permits actors to use only those resources relevant to their task and situation.

**Protocols, processes, and infrastructures that connect and guide actors**

Guiding interactions among actors and accessing commons require protocols that reduce ambiguity and increase the effectiveness and efficiency of interaction. There are self-organizing processes associated with each protocol that actors follow in order to achieve control and coordination. In a digital organization, actors use their collaborative tools to signal both the tasks to be done and the availability of resources to perform them. Although protocols are specific to the type of collaboration, there are commonalities. Military and emergency response platforms, for example, have protocols and processes for publishing updates to the situation awareness database and subscribing to particular types of information, such as new events occurring in a geographic area (DeMarco, 2016; Liang and Gao, 2010). Similarly, platforms for collaborative project management (Chen et al. 2003) have protocols for inviting collaborators, sharing information about the whole project or particular tasks, and alerting collaborators to changes affecting their portion of the project (c.f. www.smartsheet.com). The infrastructure that allows the actors to connect with one another consists of communication networks and computer servers.

**Conclusion**

Digital organizations are increasing in both numbers and sophistication. We have described how digital technologies can be integrated into organizations and have shown how actor-oriented principles and designs can be used to organize and perform activities. Actor-oriented digital organizations are collaborative, agile, and minimally hierarchical. In many industries, they are populated by human and digital agents who work together collaboratively. Digital organizations need technologically aware and adept leaders who can set the digital agenda and create the context for the digitization of every relevant aspect of their organizations. Digitization is occurring at an accelerating pace; successful leaders need to synchronize their organizations to digital clock speed.

**Endnote**

1This section draws extensively on an article that introduced the actor-oriented framework (Fjeldstad et al. 2012).

**Acknowledgements**

The authors thank John Colman for helpful comments to the "Ants Foraging for Food" example.

**Authors’ contributions**

ODD and CCS developed the actor-oriented framework discussed in the article. AML has written books and articles on digital technologies and how to incorporate them into companies and other types of organizations. All three authors read and approved the final manuscript.

**Competing interests**

The authors declare that they have no competing interests.

**Publisher’s Note**

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Banking in the 21st century

Solveig Hellebust, Group EVP People & Operations
DNB in brief
– Norway’s largest financial services group with a clear global footprint

- 2,000,000 personal customers in Norway
- 210,000 corporate customers in Norway
- 17 international locations
- 57 branches in Norway
- 9,300 employees
- 20,000,000 monthly online bank visits
- 28.5bn NOK in operating profit 2017

A full-service bank and market leader in Norway

<table>
<thead>
<tr>
<th>Market Share</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Management</td>
<td>30%</td>
</tr>
<tr>
<td>Deposits</td>
<td>41%</td>
</tr>
<tr>
<td>Total Assets</td>
<td>52%</td>
</tr>
<tr>
<td>Corporate Loans</td>
<td>31%</td>
</tr>
<tr>
<td>Retail Loans</td>
<td>29%</td>
</tr>
<tr>
<td>Real Estate Brokerage</td>
<td>20%</td>
</tr>
</tbody>
</table>

Global leader within selected industries

- Among the world’s leading seafood banks
- Global leader within several energy segments
- Leading shipping and offshore bank globally
Norway has one of the world’s most digital infrastructures — Both the public and the private sector are digital frontrunners

- 6% of Norwegians use cash daily
- 90% of Norwegians use online banking services
- 1st in the world with a fully digital end-to-end mortgage process
- 5th most ICT-ready country in the world
Dramatic change in customer behaviour and distribution

**Number of traditional branches**

**Digital customer interactions, millions**

- **# branches**
  - 2010: 57
  - 2011: 73
  - 2012: 83
  - 2013: 85
  - 2014: 86
  - 2015: 83
  - 2016: 92
  - 2017: 80

- **Mobile**
  - 2010: 1
  - 2011: 2
  - 2012: 9
  - 2013: 49
  - 2014: 113
  - 2015: 156
  - 2016: 200
  - 2017: 244

- **Desktop**
  - 2010: 73
  - 2011: 83
  - 2012: 83
  - 2013: 86
  - 2014: 83
  - 2015: 92
  - 2016: 83
  - 2017: 80
The disruption of the financial industry affects DNB

- Changes in customer behaviour
- Digital disruption
- New competitors
- Increased regulation

Who should work here?
How should we be organised?
How should we work together?
Skills Enhancement is one of four pillars in our new strategy

4 THE FUTURE

Deliver the best customer experiences and deliver on the financial targets

Innovative Power  Customer Insight  Skills Enhancement  Corporate Responsibility

Curious  Bold  Responsible

We are here. So you can stay ahead.
What does skills enhancement mean in DNB?

Skills enhancement requires both a lift and a shift in competence.
Up:Skill - Skills enhancement in current role
Up:Skill

CHANGE

Why
Maintain and develop top executives’ understanding of innovation and business

Who
Top tier executive education for employees in higher management positions and aspiring managers

What
Two modules at IMD over 3 months, combined with working on real life strategic projects in DNB, presented to group management.
Re:Skill
Architect GREEN HOUSE

Why
Meeting our future need for critical technological and architectural competencies in DNB

Who
Recruit and develop students with technical background and programming skills, to be mentored and trained by our best in-house architects

What
3-year graduate programme combining projects and on-the-job training with seminars provided by educational institutions and partners
Re:Skill DATA SCIENTIST

Why
Data scientists, considered a critical resource for DNB, are a scarce resource in Norway. We need to take actions to ensure that we meet our future needs.

Who
Identify, recruit and develop in-house employees with programming background

What
4-months online training provided by an international supplier, in-person training session, combined with data scientists boot camps and on-the-job training in DNB
Skills enhancement is our main priority.

Traditional executive education is becoming a smaller part of it.
Shaping future of executive education

Professor Knut Haanaes, IMD
Business Schools Have Never Been Better at ExEd

- Great faculty
- Digital expertise
- Real impact
- Global reach
- Certifications
- Blended models
- Content innovation
Trends Drive Growth in Executive Education

- Business transformation
- Demand for expertise
- Client capability gaps
- Digital, analytics and Big data
- War for talent

Overall strong demand
Clients Want Specialised Knowledge and Expertise

**Wanted: specialisation**

*Priorities when selecting external service providers, % of respondents*

- Specialised knowledge or experience: 58%
- Cost effectiveness: 47%
- Industry reputation: 38%
- Personal attention: 26%
- Quick turnaround time: 24%
- Integrated service offerings: 20%
- Foreign presence: 18%
- Diversity of team: 17%
- Approval by procurement: 12%
- Corporate culture: 8%

Note: respondents selected up to three answers.

Source: Globality. Rethinking professional services in an age of disruption, EIU 2018
Clients demand global delivery

“The demand for professional services firms with a global profile rises.”

Source: The 2017 State of the Services Economy Report, Mavenlink+Gigaom
Still most of growth may not go to traditional ExEd players

Tailored solutions to executives

Learning products

Recurring executive education platforms

Connecting faculty, customers, programs and locations

Source: BCG; IMD
Some «entrants» have advantages (example consultants)

- **Existing customer relationships**
- **Deep expertise in «action»**
- **Presence «everywhere»**
- **Digital capabilities**

Source: BCG; IMD

Client impact measurement and follow up
Business schools must play on strengths

Management consultants
- Practical
- Impact-oriented
- Relationship model
- Fast paced
- Expertise
- Global reach

Business schools
- Capability building skills
- Academic competence
- Client network effects
- Integrity and relevance
- Seniority model (“professors”)
- Deep insight
But also need to shape the future of ExEd

"Unpredictable"

But also need to shape the industry.

We Need to Make Bolder Moves - examples

- New customer interfaces and contracts
- More open business models
- Engage new entrants and fast growth companies
- Solve bigger problems in ecosystems
- Partnerships for global reach
Leading the Digital Enterprise

Unicon Director’s Conference
BI Norwegian Business School, Oslo Norway
April 26, 2018
Leading the Digital Enterprise

• How Artificial Intelligence will redefine management
  Vegard Kolbjørnsrud, Assistant Professor, BI Norwegian Business School Senior Research Fellow, Accenture

• Break

• Building a culture for trial and error at FINN.no
  Anders Skoe, CEO Finn.no

• Strategy as disciplined experimentation
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Entering the age of intelligent machines

- The rise of Artificial Intelligence (AI) and robotics is predicted to drive the biggest technology disruption in the workplace since the Industrial Revolution
  - 33-50+ % of jobs estimated to be computerized
- Prior waves of new technology in the workplace have mainly impacted workers, rather than managers
- This is different. Artificial intelligence will radically change knowledge work incl. core management tasks

Source: Brynjolfsson and McAfee (2014), Frey and Osborne (2013), Kirby and Davenport (2016)
Artificial intelligence combines multiple technologies into applications that can sense, comprehend, act, and learn

Artificial Intelligence defined

<table>
<thead>
<tr>
<th>Sense</th>
<th>Description</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>▪ Applications that can observe and register their environment, people, and data</td>
<td>▪ Computer vision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Audio processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Sensor processing</td>
</tr>
<tr>
<td>Comprehend</td>
<td>▪ Applications that can discern context, detect patterns, and make inferences</td>
<td>▪ NLP: Natural Language Processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Knowledge representation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Affective computing</td>
</tr>
<tr>
<td>Act</td>
<td>▪ Applications that can signal decision situations, make recommendations, express themselves, and potentially act autonomously</td>
<td>▪ Inference engines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Expert systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ NLG: Natural Language Generation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Predictive analytics</td>
</tr>
<tr>
<td>Learn</td>
<td>▪ Applications that can adapt based on accumulated knowledge and experience</td>
<td>▪ Machine learning/pattern recognition</td>
</tr>
</tbody>
</table>

Are you ready for a machine on your leadership team?

• In 2014 the Hong Kong VC firm appointed the intelligent algorithm VITAL* to its board and gave it voting rights in investment decisions
• Has voted on a number of investments

• How will artificial intelligence impact managers' work?
• What are the actions managers and employers must take to fully integrate the power of artificial intelligence into their organizations?

Source: fastcompany.com
Managers spend most of their time on tasks that intelligent machines will do in the future

Time spent on categories of management tasks

- Coordinate & control: 53%
- Solve problems & collaborate: 30%
- People & community: 7%
- Strategy & innovation: 10%

What's special about this financial news article?

Strong ad sales boost Google parent Alphabet's 1Q earnings

MOUNTAIN VIEW, Calif. (AP) — Google parent Alphabet on Monday reported a jump in first-quarter net income on the back of strong digital ad sales and an accounting adjustment.

The Mountain View, California-based company's net income surged 73 percent to $9.4 billion, or $13.93 per share. Earnings, adjusted for non-recurring gains including those from the accounting change, were $9.93 per share.

The results beat Wall Street expectations. The average estimate of 13 analysts surveyed by Zacks Investment Research was for earnings of $9.21 per share.

The internet search leader posted revenue of $31.15 billion in the period. After subtracting Alphabet's advertising commissions, revenue was $24.86 billion, also beating Street forecasts. Eleven analysts surveyed by Zacks expected $24.2 billion.

Still, Google's sunny quarter comes amid the backdrop of looming privacy regulations in the U.S. and Europe.

Elements of this story were generated by Automated Insights (http://automatedinsights.com/ap) using data from Zacks Investment Research. Access a Zacks stock report on GOOGL at https://www.zacks.com/ap/GOOGL

It is written by an intelligent reporting engine...would you like it to draft your next management report?
AI helping you write your management report is closer than you think…

Example: Tableau and Narrative Science partnering to provide narratives for data charts
The greater the presence of machines, the greater the need for human judgement

People power

- Some decisions and practices require insight beyond what information can tell
- This is the sweet spot for human judgment

Managers recognize need for digital, creative, and analytical skills – ignoring people skills?

New skills needed to succeed*

<table>
<thead>
<tr>
<th>Skill Area</th>
<th>Global</th>
<th>Nordic Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital/technology</td>
<td>42%</td>
<td>#4 30%</td>
</tr>
<tr>
<td>Creative thinking and experimentation</td>
<td>33%</td>
<td>#1 32%</td>
</tr>
<tr>
<td>Data analysis and interpretation</td>
<td>31%</td>
<td>#1 23%</td>
</tr>
<tr>
<td>Strategy development</td>
<td>30%</td>
<td>#5 28%</td>
</tr>
<tr>
<td>Planning and administration</td>
<td>23%</td>
<td>18%</td>
</tr>
<tr>
<td>Social networking</td>
<td>21%</td>
<td>#2 31%</td>
</tr>
<tr>
<td>People development and coaching</td>
<td>21%</td>
<td>#2 31%</td>
</tr>
<tr>
<td>Collaboration</td>
<td>20%</td>
<td>#7 25%</td>
</tr>
<tr>
<td>Quality management and standards</td>
<td>20%</td>
<td>14%</td>
</tr>
<tr>
<td>Sharpen skills within my current domain of expertise</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td>Performance management and reporting</td>
<td>17%</td>
<td>#6 26%</td>
</tr>
</tbody>
</table>

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* Which new skills will someone need to learn in order to succeed in your role in five years' time? Please select up to 3 skill areas.
AI stirs both excitement and fear

**Opportunity**

"Will make my work more effective and interesting"*

84%

*Somewhat agree 45 %

*Strongly agree 39 %

**Threat**

"I fear that intelligent systems will threaten my job."**

36%

Somewhat agree 23 %

Strongly agree 13 %

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* Intelligent systems will help me to become more effective in my work and focus more on interesting and impactful tasks.

** I fear that intelligent systems will threaten my job.
Lower level managers are much more skeptical about taking advice from machines than their bosses

Trust in and comfort with…

"Trust system advice in business decisions"**

<table>
<thead>
<tr>
<th>Manager Level</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top managers</td>
<td>46%</td>
</tr>
<tr>
<td>Middle managers</td>
<td>24%</td>
</tr>
<tr>
<td>First-line managers</td>
<td>14%</td>
</tr>
</tbody>
</table>

"Comfortable with intelligent system monitoring and evaluating my work"**

<table>
<thead>
<tr>
<th>Manager Level</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top managers</td>
<td>42%</td>
</tr>
<tr>
<td>Middle managers</td>
<td>26%</td>
</tr>
<tr>
<td>First-line managers</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Kolbjaernsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* I would trust the advice of intelligent systems in making business decisions in the future (e.g. an investment decision or deciding whom to hire or promote).

** I am comfortable with an intelligent system monitoring and evaluating my work.
Are managers in developed countries so skeptical that they will be leapfrogged by emerging economies?

Trust in Advice from AI*

<table>
<thead>
<tr>
<th>Region</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordics</td>
<td>8%</td>
</tr>
<tr>
<td>Americas</td>
<td>30%</td>
</tr>
<tr>
<td>Europe</td>
<td>18%</td>
</tr>
<tr>
<td>APAC</td>
<td>42%</td>
</tr>
</tbody>
</table>

Comfortable with System Monitoring and Evaluating My Work**

<table>
<thead>
<tr>
<th>Region</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordics</td>
<td>14%</td>
</tr>
<tr>
<td>Americas</td>
<td>28%</td>
</tr>
<tr>
<td>Europe</td>
<td>19%</td>
</tr>
<tr>
<td>APAC</td>
<td>42%</td>
</tr>
</tbody>
</table>

Max/Min Observations

- Finland: 6%
- India: 56%
- China: 61%
- Sweden: 8%

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* I would trust the advice of intelligent systems in making business decisions in the future (e.g. an investment decision or deciding whom to hire or promote).

** I am comfortable with an intelligent system monitoring and evaluating my work.
Managers want machines to explain their logic before they will accept it

What it takes to trust artificial intelligence

**What would allow you to trust system advice?**

- I understand how the system works and generates advice: 61%
- The system has a proven track-record: 57%
- The system provides convincing explanations: 51%
- People I trust use such systems: 33%
- Advice is limited to simple rule-based decisions: 33%
- Nothing would allow me to trust advice generated by an intelligent system: 6%

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

*What would allow you to trust advice generated by an intelligent system? (Choose up to three)
Developing the capabilities of the intelligent organization

The SCALE framework

<table>
<thead>
<tr>
<th>Sense</th>
<th>Comprehend</th>
<th>Act</th>
<th>Learn</th>
<th>Explain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe</td>
<td>Register</td>
<td>Discern</td>
<td>Detect</td>
<td>Infer</td>
</tr>
</tbody>
</table>

Source: Andersen, Sannes, Johnson, Kolbjørnsrud (forthcoming) "The data-driven organization: intelligence at SCALE"
Steps to success

Leaders must be prepared for technology to take on more routine tasks

- Explore early, **experiment and engage** with new technology and pilots – together
- **Automate administration** and focus on **judgment work**
- Develop **training and recruitment strategies** for creativity, collaboration, empathy and judgment skills
- Start building **the intelligent enterprise**—combine AI and collective human intelligence for optimal outcomes

Source: Kolbjørnsrud, Thomas and Amico (2016) "The promise of artificial intelligence: Redefining management in the workforce of the future," Accenture Institute for High Performance
Leading the Digital Enterprise

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  Vegard Kolbjørnsrud, Assistant Professor, BI Norwegian Business School Senior Research Fellow, Accenture

• Break

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• Discussion
How do you develop and execute strategy when the environment is changing fast and unpredictably?
The strategist – planner or researcher?
Dynamic strategy development: Generate and test hypotheses

- **Generate**: Generate hypotheses
- **Test**: Test hypotheses
- **Explore**: Explore new questions
- **Experiment**: Learn from the results
# Strategizing under rapid change and uncertainty

<table>
<thead>
<tr>
<th>Description</th>
<th>Illustration</th>
<th>Applicable when…</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy as experimentation</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ▪ Hypothesis-testing approach  
  ▪ Launch series of high speed and low cost experiments; learn fast and reiterate  
  ▪ Inspired by lean startup (MVP), rapid prototyping, design thinking | ![Diagram of strategy as experimentation](image1) | ▪ …rapid change and high uncertainty |
| **Scenario planning** | ![Diagram of scenario planning](image2) | ▪ …high uncertainty and large, long-term investments |
| ▪ Strategize for alternative futures (scenarios)  
  ▪ Scenarios developed based on analysis of trends, driving forces, and key uncertainties |  |  |
Finn.no: Data-driven experimentation

“’The swirl’ – conceptualizing how we work to ensure user value, innovation and performance”

“Experiment to reduce risks”

A good experiment…

• A clear purpose of learning something that can yield better outcomes

• Specific, with observable (preferable measurable) outcomes

• Can be executed fast, with low costs

• Has a plan for how to learn from the experiment

• Share the lessons learned (also when the experiment did not give the desired result)

• Revise hypothesis, start next experiment
A challenge to your management team…

- Identify something you want to find out (issue/hypothesis) over the next 6 months
- Set up an experiment that can test the hypothesis
- Execute swiftly, and put as much effort into learning from the experiment as in conducting it
- Share insights widely and openly
- Execute change/scale (if successful experiment)
Leading the Digital Enterprise

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  Vegard Kolbjørnsrud, Assistant Professor, BI Norwegian Business School & Senior Research Fellow, Accenture

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  Anders Skoe, CEO Finn.no

• Strategy as disciplined experimentation
  Vegard Kolbjørnsrud

• Discussion
Which **skills** do leaders of the **digital** enterprise need to master?

Are our programs **training** executives adequately in these skills?
How can we redesign our programs to prepare candidates for digital leadership?

What’s the needed research, technology, pedagogical approaches, faculty profiles, etc. to do so?
How to lead a digital enterprise
(or: Building a culture for trial & error at FINN.no)

Anders Skoe, CEO FINN.no
Unicon Director’s Conference
It all started in 1996 when the owners of leading Norwegian newspapers established an alliance to meet the Internet challenge.
Vis@visen = «Show the newspaper»

12. januar 1998

Det ligger nå 6192 annonser inne i basen. De fleste annonsene er mindre enn 24 timer gamle.

Velkommen til Norges største elektroniske markedsplass

vis@visen er et samarbeid mellom Aftenposten, Adresseavisen, Bergens Tidende, Fædrelandsvennen, Stavanger Aftenblad og Scandinavia Online.

Gi oss gjerne en tilbakemelding på tjenesten her
FINN er Norges største markedsplats på
internett, med annonser fra Aftenposten,
Akershusen, Bergen Tidende,
Færderfjordbladet, Scandinavia Online og
Stavanger Aftenblad.

Velg marked eller prøv søkemotoren "FINN
søker for deg"!

9-6.98 kan du lese blant annen
annonser.

Let og Finn!

FINN søker for deg
FINN siste nytt
Bestil annonse

HJELP
Tilbakemelding

VIS@VISEN HAR
FÅTT NYTT NAVN
FINN
EIENDOM
FINN er Norges største markedspluss på Internett. Databasen oppdateres kontinuerlig med annonser, prospekt og salgsoppgaver fra våre partnere.
FINN.NO IS THE MARKET LEADER ACROSS ALL CLASSIFIEDS VERTICALS IN NORWAY...

**VERTICAL** | **POSITION** | **MARKET SHARE**
--- | --- | ---
REAL ESTATE | 1 | 100% of homes for sale ¹
CARS | 1 | 95% of used cars sold ²
JOBS | 1 | 85% of advertised positions ³
GENERAL MERCHANDISE | 1 | 85% of online gen merch buyers/sellers last 30 days ⁴

**VERTICAL** | **POSITION** | **MARKET SHARE**
--- | --- | ---
TRAVEL SERVICES / CRAFTSME ⁵ | 1 | 2% of total leisure expenditure

---

¹ For travel meta search. ² Source: 1) SSB/NEF, 2) Statens vegvesen, 3) vs. SSB, 4) TNS Interbuss 5) Statistics Norway Travel Survey/SSB 2015, 6) internal analysis; the Services vertical is branded «MittAnbud».
**Brand Awareness**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>96%</td>
<td>96%</td>
</tr>
</tbody>
</table>

**Internet Rank (pageviews)**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Visits/Capita**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>182</td>
<td>195</td>
</tr>
</tbody>
</table>

**Time spent/Capita**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26.8 hrs</td>
<td>28.4 hrs</td>
</tr>
</tbody>
</table>

**Revenue/Capita**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>294 NOK</td>
<td>332 NOK</td>
</tr>
</tbody>
</table>

**GMV**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>563 BNOK</td>
<td>672 BNOK</td>
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</tbody>
</table>

**Reputation**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Customer Satisfaction**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

---

WE ARE ON A GROWTH TRAJECTORY AND MAINTAINING HIGH MARGINS

Norwegian marketplace revenues, MNOK
EBITDA margin, %

*2017: Q4 2016 – Q3 2017
FINN’s values

HUNGER   PRECISION   TOLERANCE   SPIRIT
WHAT VALUE ARE WE CREATING?

HOW DO WE KNOW WE ARE CREATING VALUE?

CHECK RESULTS

IMPLEMENT

DEFINE ACTIONS

USER FIRST!

WORK ITERATELY

DRIVEN BY DATA

MANAGE BY OKRS
We continuously experiment with our organizational structure

**Objective**

*Deliver more value - faster*

**Key result**

*Reduce flow number by X% (Little’s Law)*

**Experiment**

*Dedicated, cross-functional teams*
Leadership Across Physical and Conceptual Barriers
(applications of the semantic theory of survey response)

Professor Jan Ketil Arnulf BI Norwegian Business School.
26.04.2018

What is the value of exploring your own leadership identity?
In a socialization perspective, identity is usually given, not discovered or created.

What are the identities you may discover?

Why me?
The new environment may still be far off due to (one or more) conceptual barriers that we do not see.

"...Language is not merely a reproducing instrument for voicing ideas but rather is itself the shaper of ideas, the program and guide for the individual's mental activity"

(Whorf, 1940, 1956, p. 212).
Development of tools to overcome barriers:

- **DISTANCES**
- **POWER**
- **PROBLEM SOLVING**

«Leadership» invented with the shareholding company in 1850.
The word «Leadership» is probably more of an American than a British English construction:

![Graph showing the usage of leadership in America and Britain](image)

(Source: Google Books)

...but the word travels the world. Leadership in Spanish (líder)

![Graph showing the usage of lider](image)
Leadership – Führung and Management – in German

The Chinese term for leadership is even newer: 领导力
Simple definitions of leadership:

• «Leadership is to create results through {the work of} others», i.e.,
• Leadership is to secure the return on investments in labor, i.e.,
• Leadership is the creation of social realities that drive value creation.
• CURIOUSLY: If there are no (or lousy) results, it was not leadership.

道可道，非常道。名可名，非常名。
无，名天地之始；有，名万物之母。
故常无，欲以观其妙；常有，欲以观其徼。
此两者，同出而异名，同谓之玄。玄之又玄，众妙之门。

1. The Way
The Way that can be experienced is not true;
The world that can be constructed is not true.
The Way manifests all that happens and may happen;
The world represents all that exists and may exist.
To experience without intention is to sense the world;
To experience with intention is to anticipate the world.
These two experiences are indistinguishable;
Their construction differs but their effect is the same.
Beyond the gate of experience flows the Way;
Which is ever greater and more subtle than the world.
Dumdum, Lowe & Avolio’s meta-analysis of transformational leadership:

<table>
<thead>
<tr>
<th>Concept</th>
<th>No studies</th>
<th>N</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributed charisma</td>
<td>17</td>
<td>9538</td>
<td>.66</td>
</tr>
<tr>
<td>Idealized influence</td>
<td>16</td>
<td>8608</td>
<td>.66</td>
</tr>
<tr>
<td>Indispiring motivation</td>
<td>22</td>
<td>12009</td>
<td>.56</td>
</tr>
<tr>
<td>Intellectual stimulation</td>
<td>26</td>
<td>14290</td>
<td>.52</td>
</tr>
<tr>
<td>Individual consideration</td>
<td>27</td>
<td>14842</td>
<td>.55</td>
</tr>
<tr>
<td>Conditional reward</td>
<td>27</td>
<td>18682</td>
<td>.51</td>
</tr>
<tr>
<td>Leadership by exception (active)</td>
<td>20</td>
<td>13895</td>
<td>.05</td>
</tr>
<tr>
<td>Leadership by exception (passive)</td>
<td>17</td>
<td>12386</td>
<td>-.34</td>
</tr>
<tr>
<td>Laissez-faire leadership</td>
<td>21</td>
<td>11564</td>
<td>-.38</td>
</tr>
</tbody>
</table>

We can predict survey correlations through semantic algorithms:

<table>
<thead>
<tr>
<th>MLQ scales with outcome variables</th>
<th>Average surveyed correlations</th>
<th>GLM predicted correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idealised influence (attrib.) with outcome</td>
<td>.52</td>
<td>.52</td>
</tr>
<tr>
<td>Idealised influence (beh.) with outcome</td>
<td>.51</td>
<td>.51</td>
</tr>
<tr>
<td>Inspiring motivation with outcome</td>
<td>.52</td>
<td>.52</td>
</tr>
<tr>
<td>Intellectual stimulation with outcome</td>
<td>.50</td>
<td>.50</td>
</tr>
<tr>
<td>Individualised consideration with outcome</td>
<td>.54</td>
<td>.54</td>
</tr>
<tr>
<td>Conditional reward with outcome</td>
<td>.47</td>
<td>.47</td>
</tr>
<tr>
<td>Mgmt by exception active with outcome</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>Mgmt by exception passive with outcome</td>
<td>-.19</td>
<td>-.19</td>
</tr>
<tr>
<td>Laissez-faire with outcome</td>
<td>-.36</td>
<td>-.36</td>
</tr>
</tbody>
</table>

Similar results for LMX, 2-factor leadership, intrinsic motivation, OCB, turnover intention, exchange motivation, job satisfaction, but NOT for the Five-Factor inventory NEO-FFI.
Results

Direct and “mediated” semantic relationships between transformational leadership, intrinsic motivation and organizational outcomes (direct semantic relationships from transformational leadership to outcomes in brackets).
The algorithms, analyzing items in English, predict almost equally well across the globe:

<table>
<thead>
<tr>
<th>Respondent groups</th>
<th>Adjusted R2 in linear regression</th>
<th>Adjusted R2 in GLM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native English Speakers (N=137)</td>
<td>.85</td>
<td>.91</td>
</tr>
<tr>
<td>Chinese in English (N=195)</td>
<td>.71</td>
<td>.83</td>
</tr>
<tr>
<td>Chinese in Chinese (N=182)</td>
<td>.52</td>
<td>.60</td>
</tr>
<tr>
<td>Germans in German</td>
<td>.66</td>
<td>.81</td>
</tr>
<tr>
<td>Pakistanis in Urdu (N=111)</td>
<td>.11</td>
<td>.31</td>
</tr>
<tr>
<td>Pakistanis in English (N=108)</td>
<td>.66</td>
<td>.71</td>
</tr>
<tr>
<td>Indians nationals in English (N=40)</td>
<td>.61</td>
<td>.74</td>
</tr>
<tr>
<td>Norwegians in English (N=144)</td>
<td>.65</td>
<td>.89</td>
</tr>
<tr>
<td>Norwegians in Norwegian (N=1220)</td>
<td>.79</td>
<td>.91</td>
</tr>
<tr>
<td>East Asian non-Chinese in English (N=18)</td>
<td>.35</td>
<td>.53</td>
</tr>
<tr>
<td>Other Europeans in English (N=40)</td>
<td>.75</td>
<td>.94</td>
</tr>
</tbody>
</table>

The questions beg their own answers: In «Cross cultural research», we may only detect how well the instrument is translated (in this case the MLQ).

Respondent robotics:
Use semantics to reproduce and predict individual scores and factor structures
Relationships explored in Wordvis

The logical error of Likert-scale psychometrics, based on the views of Wittgenstein/Russel
An accurate picture of the FUTURE:
The core point explained by professor Ren Mingchuan:

«Many Managers assume that they will be able to create value. In reality, many of them fail.»

«Leadership» as the name of a problem or a solution?

Clausewitz on methods and theory I:

Method will … be the more generally used, become the more indispensable, the farther down the scale of rank the position of the active agent; and on the other hand, its use will diminish upwards, until in its highest position it quite disappears…

War in its highest aspects consists not of an infinite number of little events, the diversities in which compensate each other, and which therefore by a better or worse method are better or worse governed, but of separate great decisive events which must be dealt with separately.

…I any method by which definite plans for wars or campaigns are to be given out all ready made as if from a machine are absolutely worthless.

A VERY old piece of advice
(freely and irreverently translated by me):

• 失道而后德: The ground is more important than the map. Only use a map when you cannot see reality clearly.
• 失德而后仁: If you have no good map – or theory – try to link up connections to people (team spirit).
• 失仁而后义: If you cannot make people connect with you, try to impose rules.
• 失义而后礼: If all else fails, you can follow traditions. BUT:
• 夫礼者，忠信之簿而乱之首: Blind faith in traditions lets chaos in again through the back door.

老子
The Semantic Theory of Survey Response: publications by april. 2018

**STSR papers**

  doi:http://dx.doi.org/10.15714/scandpsychol.2.e3
  doi:10.1177/2158244018764033

**Related research:**

GOVERNMENT PENSION FUND GLOBAL

OLE CHRISTIAN BECH-MOEN

CHIEF INVESTMENT OFFICER, ALLOCATION STRATEGIES

OSLO, 27 APRIL 2018
$1,000,000,000,000,000
A fund owned by the Norwegian people
Governance model

- **Stortinget**
  - Government Pension Fund Act
  - Annual white paper. National budget and accounts

- **Ministry of Finance**
  - Management mandate and ethical guidelines
  - Quarterly and annual reports. Advice on investment strategy

- **Norwegian Parliament**

- **Norges Bank**
  - Investment management
From oil to financial wealth
A large portfolio shift

The graph shows smoothed proportion of the remaining value on the Norwegian continental shelf and the real value of the fund. Historical and estimated.

Source: Ministry of Finance and Norges Bank Investment Management

Source: The Norwegian Petroleum Directorate
The fund makes up 2/3 of petroleum wealth

All numbers NOK bn.
Source: Ministry of Finance, Norges Bank Investment Management
Market value of the fund in percent of GDP

Managing the oil wealth
A long term-investor

Our mission
Safeguard financial wealth for future generations
A global investor
72 countries and 49 currencies

36% EUROPE
41% NORTH AMERICA
20% ASIA AND OCEANIA
3 % REST OF THE WORLD

As at 31.12.2017
A large investor
Average ownership in respective regions of FTSE Global All Cap.

As at 31.12.2017

- Europe: 2.4
- America, Africa, Middle East: 1.0
- Asia and Oceania: 1.5

- 72 COUNTRIES
- 9,146 COMPANIES
- 1.4 % OF LISTED COMPANIES GLOBALLY
A responsible investor
Owner, lender and real estate investor
As at 31.12.2017

66.6%  
EQUITY INVESTMENTS

30.8%  
FIXED-INCOME INVESTMENTS

2.6%  
UNLISTED REAL ESTATE INVESTMENTS
A broad and global equity portfolio

Source: FTSE, Norges Bank Investment Management
Allocation to different bond markets

Source: Bloomberg, Norges Bank Investment Management. Shows government bond holdings in local currency only.
Real estate provides further diversification

Source: Norges Bank Investment Management
Excluding real estate investments in the logistics sector.
Stable internal management costs
Management costs. Basis points

Source: Norges Bank Investment Management
A global organisation

573 EMPLOYEES
34 NATIONALITIES

As at 31.12.17
A transparent investor
13.7 percent return in 2017
Annual return. Percent

Source: Norges Bank Investment Management
1,028 billion kroner return in 2017
Accumulated market value as at 31.12.2017. Billions of kroner

Source: Norges Bank Investment Management
THE FUND’S MARKET VALUE

8 099 958 116 002 NOK

We work to safeguard and build financial wealth for future generations.
The Norwegian Finance Initiative (NFI)
Established by the Executive Board in 2010

- NFI shall provide long-term incentives to promote excellence in financial economic research and education at academic institutions in Norway.

- NFI shall strengthen the scientific foundation of NBIM's management of the fund by emphasizing areas within financial economics of particular relevance to the fund’s management.
The Norwegian Finance Initiative (NFI)
Made up of 10 programmes

For Faculty
• Publication Bonus
• Co-Financing of Senior Professorships
• Co-Financing of Junior Professorships
• Visiting Scholar Programme

For Students
• Summer School
• Master`s Thesis Award
• PhD Scholarship

Other programmes
• Lecture Series
• Co-Financing of Conferences
• Research Programme
GOVERNMENT PENSION FUND GLOBAL
Sustainable Modernity – the Nordic Model and Beyond.
A Challenge to the business school agenda.

Professor Atle Midttun

Presentation at the UNICORN Conference
Oslo 27 April at BI Nydalen -
Prosocial Ground Rent Policy

• The ‘oil fund’ illustrates a combination of public mindedness, fair distribution and commercial agility that characterizes the Nordic model at its best.

• The organization of the petroleum sector builds on experiences from previous public appropriation of hydropower resources a century earlier where the public interest was safeguarded through concession laws.
EFFICIENCY AND EQUITY
THE NORDIC DUAL PREFERENCE FUNCTION

• Efficiency and Equity are both strongly rooted in Nordic cultural mindset
• Nordic societies have fairly consistently rigged themselves institutionally and commercially to live up to both expectations.
• They score reasonably well on indicators reflecting both dimensions

<table>
<thead>
<tr>
<th>EFFICIENCY</th>
<th>EQUITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>High</td>
<td>Continents</td>
</tr>
<tr>
<td>Low</td>
<td>Mediterraneans</td>
</tr>
</tbody>
</table>

26.04.2018
Distributive justice

Relative size of CEO wages compared to average employee wages – for listed companies at various stock exchanges
THE COLLABORATIVE HERITAGE (THE HISTORICAL EXPLANATION)

• The concern with balancing commercial agility and fair distribution builds on a strong normative heritage combined with structural preconditions
• Cultural Heritage
• Structural Preconditions
• Class Compromises
• Strong Retention of Social Democratic ambitions
THE COMPETITIVE ADVANTAGE OF COLLABORATION (THE FUNCTIONAL EXPLANATION)

• A key to the Nordic Models are their capacity to orchestrate a competitive advantage of collaboration
• This chimes with recent research in evolutionary biology, based on multilevel selection.
• Selection at a higher level picks the winners.
• Collaboration, at lower levels may increase chances to win
• But collaboration is challenged by defection – individual preferences that may undermine the team.
Two Models of Economy and Society

Neoliberal:
• Consistent competition all the way through

Collaborative
• Complex interplay between collaboration and competition
Nordic competitive advantage of collaboration has to be approached as an integrated and tightly orchestrated ecosystem – a complex interplay of cooperative and competitive strategies within and across several domains: normative-cultural, economic, socio-political, economic and redistributive
The Nordic Models, a third way?

- Countries with small wage differentials have managed best under global competition
- Collective bargaining and competition enhancing competitive and fairwages
- Collective welfare-arrangements allow dynamic transformation
The Traditional Nordic Model

**Intn. Arena**
- Competitive Intn. Markets
- Free Trade Exchange Of Products

**Domestic Arena**
- Competitive Domestic Markets
- Semi – Collaborative Negotiated work Life Agreements
Coverage Rates for Collective Bargaining Agreements
Female participation and welfare expences
NEW CHALLENGES AND SOLUTIONS?
Top Income Shares 1875-2011

(Source: Aaberge, Atkinson and Modalsli 2013)
Share of Workforce on Disability Support in Norge

Source: NAV - Statistics
Disabled as a Share of the Population by Age Groups

(Source Statistics Norway)
Challenges to the Nordic Model

**Intn. Arena**

Competitive Intn. Markets

Free Trade Exchange Of Products

**Domestic Arena**

Competitive Domestic Markets

Semi – Collaborative Negotiated work Life Agreements

Services with Posted workers

Inflow of cheap labour
The Laval Case: EU law puts a dent in Scandinavian labor organizing
Kravet om tariffavtale i Drammen havn
Holship Norge AS vs. Norsk Transportarbeiderforbund
Staffing and Asset Companies

Decoupling the classical Nordic Work-life model
Flexicurity

- Flexible labour market
- Low employment protection: Easy to hire and fire (external flexibility). High job mobility, rapid structural change
- Educational policy
- Employment security: active labour market policy, activation, right and duty, individual job plan

Income security (Unemployment benefits and cash benefits)
Finnish Citizen Wage Experiment

Government hopes two-year social experiment will cut red tape, reduce poverty and boost employment
Advanced’ functional flexibility and teamwork, by country

Source: Eurofund 2007
Ecological footprints in 2013 of selected industrial countries. The unit is Global Hectares.

Source: Global Footprint Network, 2017 National Footprint Accounts
Territorial emissions of CO2 (tonnes/capita) of four Nordic countries and the EU from 1990 to 2014.

Source: Global Carbon Budget (http://www.globalcarbonproject.org/carbonbudget) and World Bank Development indicators
## Norway's Financial Greening

### Table 1: Inngittte avtal om kjøp av klimaviver, forventet levering

<table>
<thead>
<tr>
<th>Avtale</th>
<th>Volum 2008-2012</th>
<th>Volum 2013 - 2020</th>
<th>Status</th>
<th>UNFCCC ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verdensbanken - ProtecType Carbon Fund²</td>
<td>1 346 013</td>
<td>100.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verdensbanken - Carbon Partnership Facility</td>
<td>4 700 000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nordisk miljøinvesteringsskab (NORFO) - NeCo²</td>
<td>3 053 473</td>
<td>450.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nordisk miljøinvesteringsskab (NORFO) - TGF</td>
<td>176 321</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norwegian Carbon Procomers Facility (NorCap)</td>
<td>17 000 000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIFO Høgskolen</td>
<td>1 700 000</td>
<td>1 000 000</td>
<td></td>
<td></td>
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<tr>
<td>Tata Steel Iron, Enhetsforvaltning</td>
<td>24 896</td>
<td></td>
<td>Koordinert av evaluert</td>
<td>374</td>
</tr>
<tr>
<td>Gansu Yanshan Diwope Fase II vindkraft, Kina</td>
<td>156 612</td>
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<tr>
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<td>4689</td>
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<tr>
<td>Shanshan Fase I vindkraft, Indre Mongolia, Kina</td>
<td>193 794</td>
<td></td>
<td>Koordinert av evaluert</td>
<td>3134</td>
</tr>
<tr>
<td>Shanshan Fase II vindkraft, Indre Mongolia, Kina</td>
<td>214 613</td>
<td></td>
<td>Koordinert av evaluert</td>
<td>3679</td>
</tr>
<tr>
<td>Hebei Shijiazhuang Fase II vindkraft, Kina</td>
<td>83 326</td>
<td></td>
<td>Koordinert av evaluert</td>
<td>3800</td>
</tr>
<tr>
<td>Xinjiang Xin jun Tianrun Windpower Co., Ltd. Fase I, Kina</td>
<td>183 995</td>
<td></td>
<td>Koordinert av evaluert</td>
<td>4394</td>
</tr>
<tr>
<td>Shenzhen Jinlinglong 49.5MW vindkraft, Indre Mongolia, Kina</td>
<td>193 920</td>
<td></td>
<td>Koordinert av evaluert</td>
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<td>Gansu Teonor Lianyuan Fase I 49.5MW vindkraft, Kina</td>
<td>105 640</td>
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<td>3919</td>
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</tr>
<tr>
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<td>Koordinert av evaluert</td>
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</tr>
<tr>
<td>Tianjin Damao 49.5MW Fase III vindkraft, Indre Mongolia</td>
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CLIMATE GOALS
50% CO2-reduction by 2020
95% CO2-reduction by 2030

TRAFFIC REDUCTION GOALS
20% traffic reduction by 2020
33% traffic reduction by 2030

(from Gjølberg 2012 and 2013)
Government strategies to increase compatibility between CSR and advanced welfare states’ policies
Implementing the Extractive Industries Transparency Initiative: Applying Early Lessons from the Field

Corruption Perceptions Index 2012: G20

The perceived levels of public sector corruption in the Group of Twenty countries.
The Welfare Paradox

- The Welfare state may be undermined by its success.
- Lacking productivity increase in (public) services make them relatively more expensive than private industrial products.
- Will the increased public service burden be accepted by an increasingly rich population?
CHALLENGES TO BUSINESS SCHOOL AGENDAS

- Challenge to methodological individualism
- Appreciation of multilevel selection and the competitive advantage of collaboration
- The need to consider the public interest and its manifestations
- Challenging the tyranny of static efficiency. Adding dynamic efficiency and the potential for change