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THE FUTURE OF NORWAY:
A COMMODITY-BASED LAGGARD
OR A DIGITAL PIONEER?

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*The future of Norway:
A commodity-based laggard or a digital pioneer?*

0. INTRODUCTION

Ladies and Gentlemen, esteemed Leaders, present and future,

It is with honor, humility and great pleasure that I accept and thank you all for the invitation to hold this year's Lehmkuhl lecture here at the Norwegian School of Economics.

We live in a time of great change – for the world in general, and for Norway in particular. We are faced with a global technology shift that lacks any historical precedent. We are faced with serious global challenges. We are faced with a particularly challenging set of circumstances here in Norway in shifting from a natural resource based economy to a knowledge intensive economy. And we are faced with change at warp speed.

Simply put, there has never been a greater need for competent, capable, and visionary leadership. There has never been a greater need for an institution like NHH that prepares tomorrow's leaders.

Which is why there is no better place for me to share my perspectives around the challenges – and splendid opportunities! – that the current developments pose for Norway's private and public sector, and for us all.

In the coming 45 minutes, I will focus on 3 things.

- **WHAT the current digital technology shift is all about** – de-mystify the buzzwords, show how the many trends relate to one another, and explain what this shift means in general, why it's a really big deal;
- **WHY this shift poses particularly significant challenges and threats for Norway;** and most important
- **WHAT we can do** – shed light on the many exciting opportunities this shift presents us with here in Norway; offer practical advice and reflections based on my career spent around disruptive technology, and what each individual leader can do to successfully face these digital technology changes.

1. CONTEXT

Let me start our digital journey by talking about 3 companies.

I have spent my career since the turn of the millennium at the intersection of digital technology, business and society. I started working as a venture capitalist in the US in the middle of the dot-com bubble in 2000. During this time, I both created and invested in technology startups.

Tripadvisor – utilizing the limitless potential of digitalization

The first summer we incubated a small travel company that tried to exploit the digitization of the travel industry. And in the 17 years since its founding, Tripadvisor has become the world's leading digital travel platform. Today it has enormous power over nations and industries, affecting national economies around the world. Its recommendations influence where tourists decide to leave their money. And with this power comes profit margins that the actual physical asset owners, the hotel chains, can only dream of.

Celera Genomics – using advanced computing to map the human genome

At the same time as Trip was started, the results of another company co-founded by my venture capital colleague on the biotech side, Noubar Afeyan, were published worldwide. The company – Celera Genomics – had used a novel, advanced digital computer to map the human gene code in record time. The results became the start for the e-health and bioinformatics revolution which now 15+ years later is turning medicine and healthcare upside down.

As these 2 companies show, digitization creates unprecedented opportunities for innovation-driven change, growth and prosperity – and as a venture capitalist and later as an entrepreneur and startup CEO in Boston, I vigorously pursued those opportunities via up-and-coming startups trying to change the world. However, it also introduces challenges for both society and established business, something I have seen later in my career - as a management consultant and most recently as a senior executive in a global corporation - Schibsted.

Facebook – the world's news publisher

Which brings me to the third company, vastly more familiar to all of you. Facebook. From its humble beginnings in a Harvard dorm room in 2004, Facebook is today not only the world's largest social network, but also the chief source of information, news and opinion on the web – in other words, the world's dominant publisher. In little more than 10 years, Facebook has become so powerful that its censorship guidelines and decisions – of editors such as Aftenposten's Espen Egil Hansen or even our Prime Minister Erna Solberg – de facto sets the standard for freedom of speech in Norway, regardless of what our Constitution, Supreme Court, Parliament or Prime Minister were to say about the matter.

Powered by data and IT, pursuing big opportunities at breakneck speed

What do these companies have in common?

First of all, they are powered by digital technology - IT and data. Their impact is felt within the public sector and within asset and capital-intensive industries. Second of all, they illustrate the enormous tempo of technology shifts – they all went from inception to world dominance in less than a decade. Third, they speak of big opportunities. Everything big has a modest beginning - small teams can change and conquer the world. And lastly, they present big challenges for established businesses and even nation-states.

Change is ushered in by people from the outside – outside an industry, far away geographically – unaffected by historical barriers such as geography, language or local regulation – threatening to shift political and economic power away from nation states, and concentrate it into the hands of a few global platform players.

2. WHAT'S GOING ON?

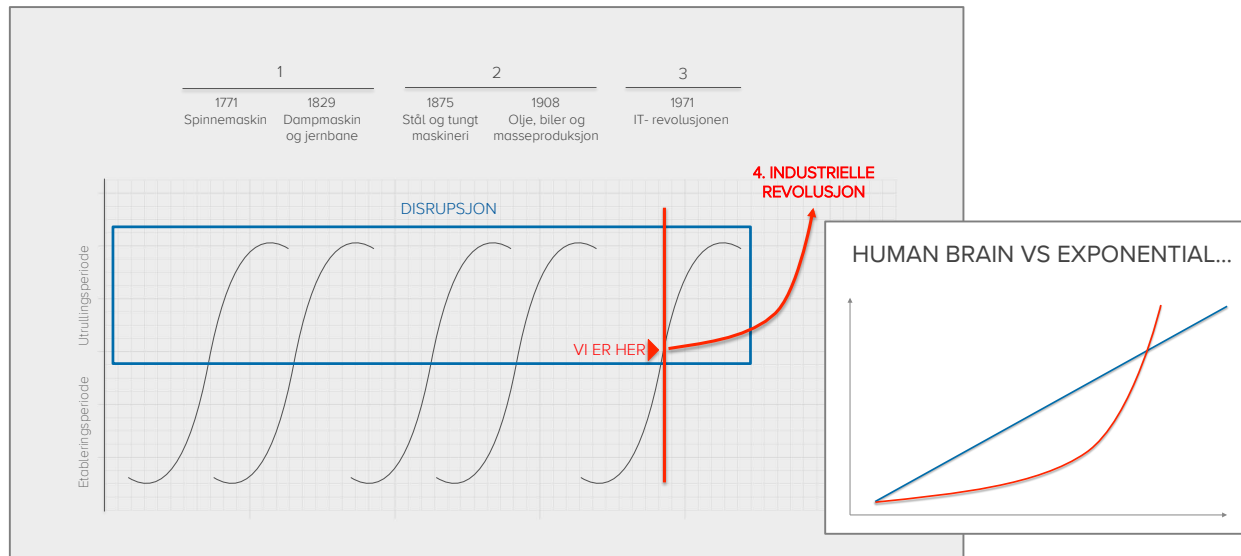
If we look throughout history at the various technology shifts, we can cluster them into 3 industrial revolutions.

Industrial revolutions

The first industrial revolution was driven by the cotton spinning machine and railroads; the second industrial revolution by steel and mass production; and the third industrial revolution – the so-called IT revolution – has been driven by the transistor, by silicon.

Each of these revolutions were characterized by two periods. First an establishment period where the technology was being improved, from initial breakthrough to the point where it was advanced enough, and reliable enough, to be useful at scale. Then followed by an installment period, where the technology shift spreads to all sectors of society and business, changing the nature of everyday life. It is this phase that we often call disruptive. Value chains are turned upside down, titans of years past go under, and new locomotives are born again.

Right now, we are just at the beginning of the installment phase of the third industrial revolution. This is why these past couple of years have seen the talk of digital transformation reach a crescendo. IT is now becoming an essential part of business. Gone are the days where one could rely on “IT specialists” to solve the problem, before being tucked back into the closet, so that lawyers, economists and business-trained leaders could carry on with running the show. Today, the understanding of technology needs to be part of every leader’s core competence, both tactically and strategically. Tactically to optimally incorporate and use it in daily work as individuals and as organization. Strategically to understand and anticipate how technology will evolve, in order to be proactive.



The 4th industrial revolution

Half way into the third industrial revolution, we see an additional development – another shift – taking place right now, that Klaus Schwab of the World Economic Forum has termed the Fourth Industrial Revolution.

Overcoming our cognitive limitations

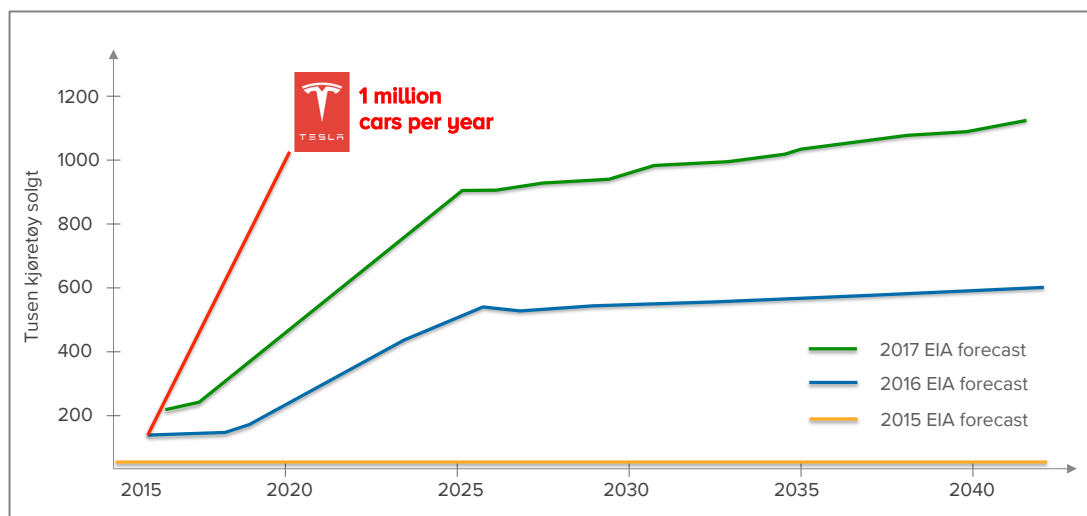
This revolution is completely different from the previous shifts: Whereas the first three revolutions were focused on overcoming our human *physical* limitations – producing physical objects, lifting and moving things, transporting goods – the fourth industrial revolution is all about overcoming our human *cognitive* limitations. It is characterized by exponential change – in other words, it hits hard and fast, and it has a completely different dynamic and a set of rules of play. This means that yesterday's success recipe – theoretical frameworks, mental models, proven methods and experience – has limited value and relevance to ensure transformation, adaptation and success in the future. More specifically, it means a different Type of Change, Pace of Change, and when combining the two, a different Force of Change.

Exponential Type of Change

The challenge with a Type of Change that is exponential is that the human mind is oriented towards linear thinking. It is how we are brought up, how we are taught in school, be it business or science, we use previous results to predict future development.

We have a much harder time coping with exponential change: Just look at an exponential curve. In the beginning its development is far slower, and it is tempting and easy to either ignore it and write it off as a hype; “AI is overhyped”, “self-driving cars is never going to happen”. Then, when something reaches an inflection point and the exponential growth explodes, things go so fast that it is not only hard for the human mind to keep up, but it is usually too late for a business, for an organization, to respond.

A good illustration of the fallacy of linear thinking applied to exponential change of the fourth industrial revolution can be found at the US Energy Department, in their projection of electric vehicle sales¹. Their projections in January 2015 were negligible, at 5-10 thousand vehicles sold per year in all foreseeable future. A year later, in January 2016, the forecast was much more aggressive, projecting a linear growth towards 2025, plateauing out at half a million vehicles. The reason was that the costs of producing an electric car had gone down far faster than one linearly had anticipated. Then in January this year (2017), the analysts at the Energy Department had once again underestimated the rapid cost decrease of the vehicle's components, such as batteries. And yet, even though this forecast nearly doubled its estimates in the span of a year, even this number looks quite off base considering that Tesla and Elon Musk has gone on record and stated that they will produce (and sell!) this number of vehicles by 2020!

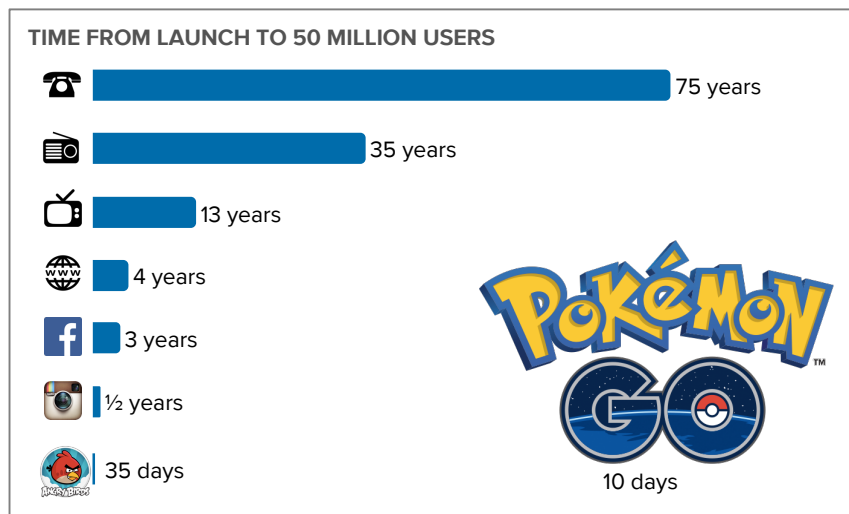


Now, I am not trying to imply that the very smart, competent, conscientious mathematicians, statisticians and economists of the Energy Department are idiots. Far from it. I am merely trying to illustrate how incredibly hard it is for us humans to predict exponential change. In this case, the result of such linear thinking in an exponential age is that one ends up being precisely wrong because the underlying models and assumptions remain linear!

Rapid Pace of Change – S-curves and non-linear cost curves

Let's start with the revenue side of an income statement, pertaining to market changes, user adoption and resulting top line growth. Exponential dynamic means that changes in customer demand and user adoption in the form of S-curves, are taking place at an accelerating pace. While it took the telephone 75 years to reach 50 million users, it took Television 13 years, Facebook 3 years, Instagram 1.5 years...and Angry Birds 35 days in 2009. And it just continues, as Pokemon Go! needed only 10 days to get the same number of users.

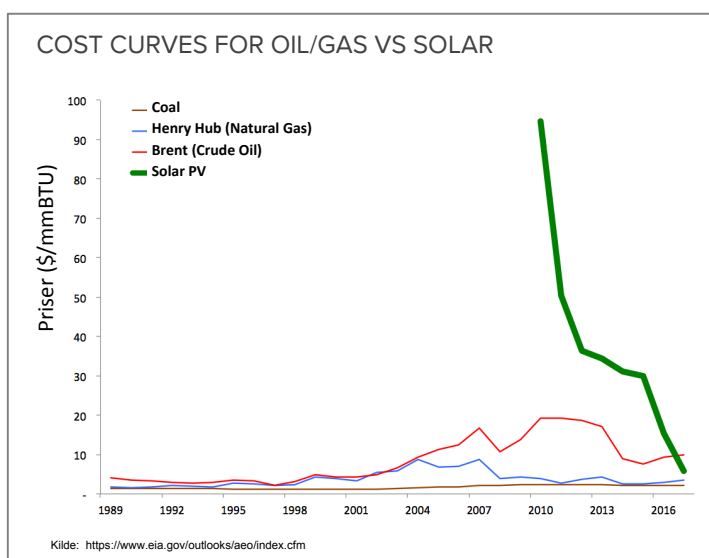
¹ Kilde: <https://www.eia.gov/outlooks/aeo/index.cfm>



To translate: if it takes 50 million people just 10 days to fundamentally change their brand loyalty and user habits, then how are you and your organization going to be able to react, change and adapt in time? Current strategy, budget and resource allocation processes are not set up to deal with the current technology driven Pace of Change.

And the same goes for costs, where a combination of iteration speed and technology driven innovation results in learning curves and cost reductions far faster than historical norms. Let me illustrate this in one of the most asset and capital-intensive industries in the world, the energy business.

5 years ago, unconventional gas was still considered somewhat expensive and uncompetitive. When it costs 10x less to drill a new well in Texas vs a in the North Sea, you end up with 10-100x the number of wells drilled, and a completely different iteration pace. No surprise, the number of innovations, and the rapid learning curve, results in far faster and steeper cost reductions. This is even truer for renewable energy forms such as solar and wind power, as well as battery technology. With much of the cost and performance driven by silicon, data and information technology, costs have dropped far faster than linear forecasts predicted – 78% for solar, 58% for wind.



Resulting Forces of Change are unprecedented

When you combine the Type of Change and Pace of Change, the resulting Force of exponential change is staggering. In the past decade, 52% of all Fortune 500 companies have been replaced. The average life span of a company on the S&P 500 index – a good indication of how long a company is on top and enjoys large market shares and high profit margin – is down to less than 15 years. That development really sums up how powerful the forces of disruption is. No industry or society sector is protected. And the formulas and experiences of the past are not very relevant or applicable. Thinking “we have always been very adaptable and successfully made it through earlier shifts, so we’ll be fine this time, too” is a perilous approach to this exponential shift.

What is causing the current technology shift?

Many futurists and “thought leaders” tend to talk about trends, using lots of buzzwords and convoluted explanations that more often spread confusion rather than clarity. But it really isn’t that complicated when you strip away the jargon and look at the trends, not in isolation, but in combination.

Sensors, computing power and networks combines to give us Artificial Intelligence

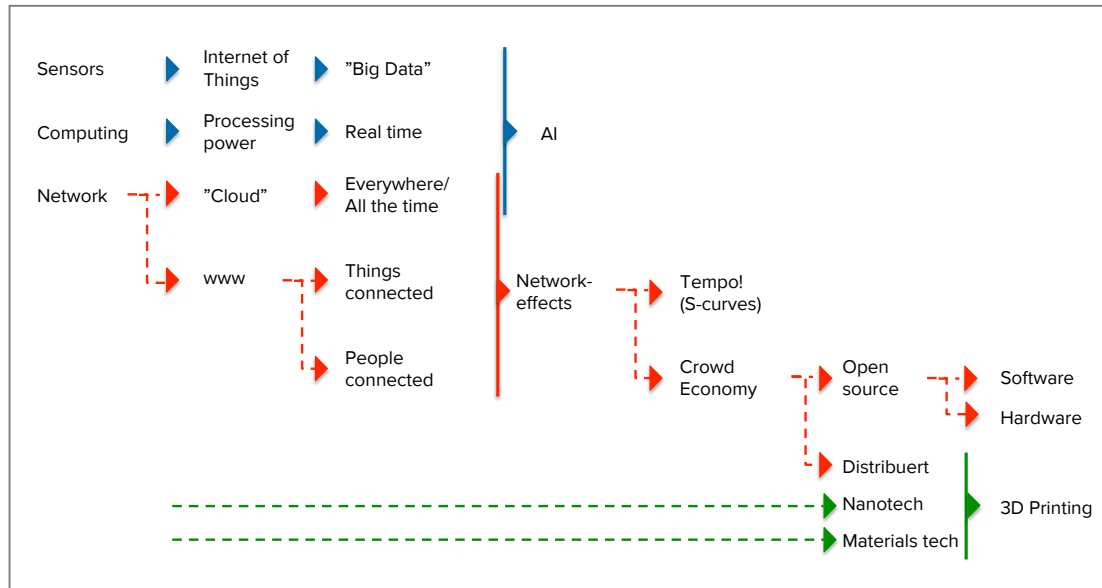
First of all, an explosion in **sensors** has led to the marketing term “Internet of Things”, which in turn is causing an explosion in data about things and people, so-called “Big Data”. And the continued exponential development (Moore’s Law) of **computing** power has now given us the microprocessors capable of analyzing this data in real-time. This changes the value of data from after-the-fact reporting and compliance, to a strategic asset used for real-time decision making and intelligent automation. And thirdly, when the development of the world’s data communications **network** into a pervasive “cloud”, it means that this data and analysis is available to anyone, anywhere, all the time. It is the sum of these three developments that has caused **Artificial Intelligence (AI)** to seemingly explode in the past 3-5 years. The underlying mathematical approach of simulating the brain and its neuron-based way of learning and developing intelligence, was pioneered at Bell Labs more than 20 years ago. However, just like a small child needs experiences to learn, develop and mature – to get “smart” – a neural network based AI system also needs enormous amounts of data – experiences and outcomes – in order to become something intelligent. And the fact that we can apply such AI systems real-time, anywhere in the world, is what truly is making AI useful. Think self-driving cars. Think financial systems. And because AI systems builds on and can incorporate all prior AI developments and results, its development is exponential.

Networks effects makes innovation fast and cheap

Data communications has not only given us “the cloud”, but also rise to **network effects**. Which means enormous TEMPO, enormous pace of change as new developments and trends spread at lightning pace due to the combinatorial nature (think Metcalf’s Law) of networks. Think S-curves of consumer adoption and Pokemon Go. But equally much, think financial crisis. Without the connectedness of the world, the financial crisis would have developed far slower and with far less risk to the world’s financial system.

Network effects also enable the crowd economy, not just social media or ride sharing, but rather **open source**. Open source means that everyone – any entrepreneur and startup – can take advantage of the

aggregate wisdom, work and intellectual property of millions of people. Translation – open source makes it CHEAP to start a new business and develop a new product and service. Instead of 50 million US dollars to build an eCommerce site back in 2000, you and I can do the same using open source tools and Amazon Web Services – in an hour, for less than 50 US dollars!



3D printing, meaning decentralized production, makes it faster and cheaper to innovate.

While most people think of 3D printing as meaning the printing of small plastic objects, that's not what 3D printing is all about. Rather, with recent advances in nanotech and materials technology, 3D printing means large scale, decentralized industrial production. Take the robot MX3D, for example, which earlier this year printed a bridge over a canal in Amsterdam. Such decentralized production makes it much FASTER and CHEAPER to prototype and iterate and improve: Instead of sending a production order to China and get the result back a few weeks later, you can go to the room next door and pick up the produced result within minutes. And at scale, the impact this will have on the world's logistics, transportation and shipping industries cannot be overstated.

It is the sum of these three meta-trends – Artificial Intelligence, Network Effects and Open Source, and Decentralized Production – that has given rise to the current exponential 4th industrial revolution. It has never been easier and cheaper to kill established business. And it has never gone faster!

MACRO PERSPECTIVE – WHAT DOES THIS TECHNOLOGY SHIFT MEAN?

Technology is eating the world

Technology and the sophisticated use of advanced data analytics, including Artificial Intelligence is becoming more important than domain knowledge. The 4th Industrial Revolution puts digital technology

in the driver's seat, increasingly providing companies with sophisticated technological skills and competence with a competitive advantage over those companies with deep industry knowledge.

Everybody is using Tesla as an example, but this is not a story of electric vs gasoline vehicles. The real story is that a person (admittedly, well above average intelligent and driven!) from PayPal one day decided to make a car, in the process reinventing the automotive business. Think about it. He knew absolutely nothing about the car industry or its immensely complex supply chain. But he quickly learned. And now Tesla is rewriting the rules for designing, developing, selling and producing a car, making software and data competence more important than traditional hardware design or manufacturing know-how. And so far, Elon Musk is winning. And this is not an isolated incident. He has gone on to do the same in space, with SpaceX. And more broadly, this is the mindset that surrounded me when I was a venture capitalist and entrepreneur in the US. Smart people need 6 months to learn a new industry before they are ready to use top notch software and data skills to disrupt it.

Take AirBnB and Uber. At heart, they are quite identical: Silicon Valley based, venture capital funded startups whose core competence is software and data, and who just happened to pick two different industries to apply their competence in. They could just as well have switched roles. Or if we move closer to Scandinavia, just look at Spotify or Klarna. These, too, are technology companies that decided to enter, learn, and then disrupt an industry from the outside. We can similarly zoom out and see the same happening within energy, logistics, banking or healthcare. It is silicone, digital technology, and big data that drive development, and it is the players who master these areas best that lead the way, not the established companies and industry leaders who are weak in IT and data, but strong on vertical knowledge.

AI is eating the world

Another consequence of this data driven technology revolution is the emergence of Artificial Intelligence. It will completely change products and even more so, services. And it will completely change the job market. A detailed, year-long McKinsey study concluded that 60% of today's tasks will be taken over by Artificial Intelligence, just based on where AI technology is today. And we are not just talking about unskilled jobs, but also about middle-class professions like doctors, lawyers... and yes, finance, audit, economics analysts and other professionals. AI robots are far better at going through enormous amounts of information and data, and instantly detecting patterns and irregularities than the smartest, most educated person in the world.

As a side comment for NHH students: Lest you leave this lecture thinking you have no future(!), rest assured, there will still be a job for you. However, the tasks and content of your role, will change. Just like doctors will spend less time and effort on diagnosis, instead relying on an AI machine with instant access to and memory of all the world's disease records and all research literature. You too will spend less time on the purely mechanical aspects of finance, auditing or financial management. Instead you will focus on tasks like proper framing of issues, asking the right questions, ensuring the right inputs before processing by AI. And post-AI, you will ensure holistic interpretation and assessment of analyzed results, putting AI based findings into a broader human, organizational contexts, and societal context. Given this,

my advice to all of you students here at NHH is to: First, invest in securing a strong understanding of how AI works and its underlying possibilities and limitations, and second, gain competence and knowledge in subjects that help apply your specialization here at NHH into a more holistic context, such as strategy, organization and leadership, and/or social and behavioral psychology.

Bad news for incumbents - all future growth will come from disruptive technologies

McKinsey's global report on examining the sources of economic growth the coming 10 years, estimates that the world economy will grow from about 70 trillion US dollars in 2015 to about 100 trillion dollars in 2025. 99% of all this growth will come from disruptive technology innovation – radical, game changing innovation that completely redefines product categories and value chains – greatly helped by the technology revolution's dizzying number of simultaneous technology changes and breakthroughs.

"Creative destruction" without precedent – and established businesses will struggle to transform

While all this change represents exciting developments for us as individuals, for established business this is pretty bad news. Why? Because if there's one thing history has shown, it's that established companies are really bad at disruptive innovation and radical transformation.

I was a research assistant for Professor Clay Christensen – who came up with the phrase "disruptive innovation" – at Harvard Business School, so I have first-hand knowledge of the historical-empirical evidence: It is exceptionally rare that established businesses manage to get through such major shifts such as the one we are currently faced with.

And I am not just talking from academic theory, but from direct operational executive experience: Recently, between 2013 and 2016, I led the digital transformation of Schibsted - Europe's largest internet company with its 250 million users - from a holding company of 100+ brands to a digital, technology-driven integrated company. I therefore know firsthand how enormously demanding it is for established organizations and cultures to succeed in such radical transformation, how hard it is for established management teams to change their success recipe and mental models of organization and leadership. You are attacked from two fronts. Both from platform companies like Google and Facebook, but also from heavily capitalized, globally ambitious start-ups. And no matter how fast you may think that you are carrying out change, no matter how proactive and timely you may think that you are in your transformation, you will nevertheless struggle to change as fast as the external market and competitive situation requires you to do. So, I can honestly say that if it is demanding for such a digitally mature company as Schibsted, with so many smart and capable people, then there is little doubt that most established businesses (including the public sector) will find the task of going through a successful digital transformation to be extremely demanding.

Huge concentration of money and power into the hands of a few technology titans

The 4th industrial revolution and its accompanying knowledge economy is also creating a new dynamic whereby value creation, value capture, and the resulting wealth and power increasingly accrues to a few, privileged, private entities. There are three primary reasons for this.

1. “Winner takes it all” dynamic in a digital economy

Fragmentation forces are nullified online: There is a much higher concentration of market shares and profits in a digital economy with technology-scalable business models and virtual value chains. Physical proximity doesn't matter when you order online, nor are language or local regulation much of a barrier. What instead matters is friction free convenience – a superb customer experience with individually tailored functionality, low prices AND great selection (both are possible online), effortless user friendliness and attentive customer service. Therefore, in online markets, we often see one or two dominant product or service providers for the vast majority of a population.

A good illustration of this is the retail grocery business. The larger an online site is, the larger its grocery selection can be, the lower its prices, and the faster its delivery. That's why, for example, it is a very risky calculus by the Norwegian grocery giants to assume that the dominant online grocery site, Kolonial.no, will remain a niche site as the grocery market shifts online. That would go against all history and logic of a digital marketplace. Rather, it is more likely that Kolonial, once it reaches critical mass, will be nearly impossible to catch and instead will continue to take almost all market share of a growing online grocery market.

A digital world yields an addressable market that cover the entire planet. The world is flat. The best companies can offer their great digital products and services cheaply from across the entire world. They can reach users and customers with minimal sales and marketing costs. Which means that the winners in one market are likely to be winners in most markets. Example of this include AirBnB vs local travel agents and hotels, Über vs local taxi business, Spotify vs labels, Netflix vs local movie distributors, Facebook vs local newspapers, Amazon vs brick 'n mortar stores, and Google vs local advertising networks.

2. Scale and skill advantages in a digital economy

Second of all, there are definite scale advantages and more important, skill advantages, in a technology driven business.

However, far more important are the scale advantages with regards to volumes of data and the skill advantages of being able to attract the brightest minds in the world. Great data and bright people is what allows a company to develop supremely good products and services, better than the competition.

Remember, Facebook and Google built their empire from prototype to IPO with less than 500 software engineers each. Compared to most large company's workforces, that is a very small number. Google and

Facebook still don't have that many engineers, but those that they attract are top notch – and when coupled with scale advantages of both data volumes and low-cost, massive IT infrastructure, their market dominance becomes almost unassailable.

3. Widening productivity gap in a knowledge economy

Lastly, in a knowledge economy, the fact that the productivity gap and value creation difference between the very best and the average is not 2-to-1, but 100s-to-1, makes it easier for a few organizations with relatively few people to account for and capture most of the value creation in a value chain or industry.

Illustration of “winner takes it all” – most valuable companies today and Big 3 of Silicon Valley

Just look at the most valuable companies in the world. In 2006, the 5 most valuable companies in the world were two oil companies, an industrial group, a bank and a technology company. Fast forward 10 years, and the 5 most valuable companies in the world are all tech companies. Apple, Alphabet (Google), Microsoft, Amazon and Facebook. Not only does it mean that these companies enjoy large market shares in the sectors they operate, they also take most of the profits of any value chain they are in.

Or let's look at the “Big 3” of Detroit in 1990 and compare with the “Big 3” of Silicon Valley in 2017. They have about the same turnover, \$250 billion vs \$336 billion. However, their aggregate market cap spoke a different story, \$26 billion vs \$1,500 billion. In other words, the enterprise value (and hence also the profit margins) of the Silicon Valley “Big 3” was nearly 60 times higher! What better illustration of how much power and wealth is increasingly concentrated into the hands of those mastering digital technologies the best.

And lastly, worth noting is the fact that while Detroit needed 1.2 million workers to create this amount of revenues and profits, Silicon Valley only needed 200,000 – and this number is only so high because of Apple's retail store staff around the world. In other words, not only is Silicon Valley taking 60 times more profit per unit of revenue, but they do this with only 1/6 of the workforce of Detroit – meaning each Silicon Valley worker represents almost 350 times the value creation of a Detroit worker.

Leaders will be challenged – leadership needs to be strong and competent

This development requires very strong political and business leadership, both to counter the transfer of wealth and power from nation states to a few global corporations, and to ensure that the wealth created and captured is sufficiently distributed so as to ensure stable societies. If not, the result is loss of control and power for nation states, and unsustainably great differences between those who have a lot and the many who have less. The result is not only reduced standard of living for the many, but most likely a flawed, socially unstable society.

MACRO PERSPECTIVE – WHAT DOES THIS MEAN FOR NORWAY WRT CHALLENGES?

So, the 4th industrial revolution and its technology and data primacy will challenge the world at large. And it will challenge Norway in unique and particular ways – private sector, public sector, and the overall Norwegian economy.

We need renewal and growth in Norway's private sector

In Norway's private sector, the best illustration of this impending challenge can be found in the public statements from the Chief Executives of our 3 most valuable companies on the Oslo Stock Exchange. Sigve Brekke of Telenor is openly wondering if Telenor will have a business in 10 years (and he is right to), Eldar Sætre of Statoil is openly admitting the energy shift and its profound consequences for Statoil (and Norway). And Rune Bjerke of DNB is openly signaling the technology revolution's impact – AI and automation – on DNB's current jobs.

Telenor-sjef Sigve Brekke: – Telenor kan være borte om ti år
Telenor-sjef Sigve Brekke sier han nettopp har begynt på en maraton for Telenor. Han sier de skal vinne, men hvis de ikke lykkes, kan de være borte om ti år.

Statoil-sjefen tror elbilen utløser oljebransjens fall
Allerede i løpet av 2020-tallet kan oljebransjen ha passert toppen og ha startet fallet mot bunnen, tror Statoil-sjef Eldar Sætre. Årsaken er den kraftige veksten i elbilismen.

DNB-sjef tror antallet ansatte må halveres
DNB-sjef Rune Bjerke varsler omfattende jobbkuvert i bankkonsernet. Prosjektet tar 3 måneder å ferdig.

None of this is particularly surprising, in light of the nature of the current technology shift. What is surprising and worrisome is how little attention these statements have gotten from both politicians and the media. Do they truly not understand these matters? Do they not realize what will happen? Or do they simply not care, either because it doesn't generate audience interest (media) or because it will not win elections the way that more populist issues will?

We need more private job creation

Perhaps the best indicator of our challenging situation is the lack of job creation in private sector. For 10 years, there has not been any net job creation in private sector, and especially not in export-oriented, competitive businesses. In 2007, before the financial crisis, there were 711,567 jobs in public sector and 1,772,433 in private sector. Almost 10 years later, in 2016, the same numbers are 814,020 and 1,773,684, respectively. In other words, public sector has added more than 100,000 jobs, and private sectors little more than a thousand. The net addition is not impressive, considering the population increase in the same period. Combine this with an ageing population, and an increasing share of the

potential workforce out of work and supported by the government, and we have an unsustainable development: Somebody's taxes and export currency has to pay for the government jobs, our retired elders, and those unable to work, namely private sector jobs. The challenge is just that these private sector jobs and businesses are under pressure because of the current technology shift.

Moreover, for Norway's private sector the situation is particularly demanding because of the age and structure of the current Norwegian industry.

We need renewal of private sector locomotives

Analyzing our 20 most valuable companies on the Oslo Stock Exchange shows that Norway's business and industry locomotives are rather geriatric: In an age where the average time on top is shrinking with every year, the *youngest* Norwegian company among the top 20 on the Oslo Stock Exchange - Marine Harvest (if you count Pan Fish as the origin) - is 25 years old.

In other words, Norway and its industrial policies have failed to bring forth even a single large enterprise the last 25 years. Contrast this age of the youngest Norwegian locomotive with the average life span of 15 years for the S&P500 companies, it is easy to see that we are particularly vulnerable to both destruction of value and loss of jobs. When our business engine is exclusively made up of such old business models and established organizations, then renewal and digital transformation becomes even more challenging.

It is future large enterprises, not the current locomotives, that will create new jobs

The rather old age of our business locomotives also means that they are well past the age of growth, which means that our locomotives also do not create new jobs. Looking at the same 20 largest companies on the Oslo Stock Exchange, they have lost thousands of Norwegian jobs since 2000. In fact, only 3 companies have had net job growth. The remaining 17 all employ fewer people today than they did in 2000 – lost due to declining market shares, or due to efficiency gains, task automation, and/or jobs outsourcing. Although the 20 largest companies all have thousands of employees today, we must do everything in our power to try and help these companies through the upcoming digital technology shift. To save as many of these jobs and as much of the values created over the past decades, as possible. But, we must acknowledge that future jobs will not come from these companies.

We have a particularly long way to go to build a knowledge-based economy

As the Productivity Commission's report "At a crossroads – from a resource economy to a knowledge economy" demonstrates, the Norwegian industry sector is not just old, it has been uniquely blessed with a plethora of natural resources, and it is these natural resources that have been the source of a privileged wealth and strong financial and economic position today! However, it does unfortunately also mean that Norway is starting from a particularly disadvantaged position as we try to shift the economy and private sector to a digitally transformed, knowledge based economy.

What this means is that most of Norway's business know-how is not entirely ready for international competition or business execution and company building based on knowledge, technology and business model innovation:

- Cost, not revenue focus: We are good at cost efficiency and innovation supporting cost reduction, such as process technology. In a commodity business, the price is set to be a cost-efficient steward of natural resources – water, lumber, aluminum, fish, oil and gas. But we have little experience with business model optimization or pricing execution in a knowledge economy where the basis of competition is on service innovation enabled by advanced digital technology.
- We are good at project finance and private equity, that is financing resource intensive businesses using either cash flow or debt-financing with natural resources, steel or concrete as collateral. But we have little experience or understanding of venture capital, the main tool for financing the build-up of knowledge-intensive businesses. Where growth happens ahead of cash flow and where there are little tangible assets (only intangible knowledge) to use as collateral.
- We are good at industrial organization and leadership – hierarchical, process focused, managed via reporting and compliance control. But we are far less good at knowledge economy organization and leadership – distributed and flat, aided by sophisticated virtual collaboration and information sharing, with real-time data-driven decision making.
- We are very methodical, linear and incremental industry stewards in approach and execution as leaders, rather than boundary pushing, exponential and game changing trailblazers.

Without new knowledge-intensive cornerstone enterprises developing and mastering the technologies of the current industrial revolution, dreams of fertile ecosystems and innovation cluster that are internationally competitive, ring hollow. Without these “anchor tenants” it is hard to achieve the critical mass of competence sufficient to sustain a world-leading cluster – R&D, innovation, new startups, and new jobs.

This is a burning platform and Norway is at a crossroads. Our private sector will either remain a commodity based provider in gradual decline, or see a collective conscious effort – a “dugnad”! – across business and politics to seed and then grow a new generation of technology-driven industry locomotives.

Public sector is subject to disruption

While Norway's private sector undoubtedly is going to be challenged, it is the technology shift's impact on public sector that will most challenge Norway and all other liberal-democratic nation states with a significant public sector and welfare state.

Both large platform players and nimble startups are increasingly able to deliver a new generation of superior products and services that cover your and my needs far better, faster, and cheaper than those of a digitally lagging public sector. The consequences are potentially very serious – loss of tax revenues to fund the welfare state, loss of general support for a public sector that fails to meet citizens' needs in competition with private alternatives, and loss of political domestic control over direction, priorities and features of key sectors of the welfare state, such as health care, education, energy, and transportation.

Loss of tax revenue to fund the welfare state

With profits and valuable jobs concentrated into the hands of new platform players, the implications are significant for those nations without these large technology and data savvy platform companies – meaning all of Europe when one looks at the first 25 years of the World Wide Web, which is the story of how US (and increasingly Chinese) companies have won and European companies have lost.

The challenge comes from the loss of business and individual tax revenues. Look at digital advertising – the business model of media – a market of more than 7 billion NOK. In a few years, Google and Facebook have taken more than two thirds of this market, on their way to an almost complete duopoly. Facebook, for examples, now generate close to 2 billion NOK from digital advertising revenues from Norwegian advertisers. And yet, Facebook pays less than 500,000 NOK in taxes to Norway – about 700 times less than estimates indicate that they should pay².

The same goes for individual income taxation. 2 billion of revenues have gone from Norwegian media companies to Facebook. Hundreds of Norwegian jobs – and associated tax revenues – lost to a company that has less than a dozen employees in Norway. This is a not a normal story of healthy competition and globalization. It is a manifestation where the value creating jobs and resulting profits accrue into the hands of a few software and data-savvy companies able to produce and deliver their value from afar. When this dynamic start impacting the biggest sectors making up Norway's GDP, then our public sector has a major financing problem.

Loss of relevance and value to citizens

Every day the gap between the user-friendly, personalized, friction-free digital services offered to us by global app providers increases versus those we get from the public sector. The gap is at times irritating, but we tolerate it as long as we don't have any alternatives. However, as alternatives to public sector services increasingly are made available with better quality and functionality at a fraction of the price of comparable public services, then our welfare state is in imminent danger of losing its relevance.

When people – at least those who can afford to – cover their needs through the consumption of such services from international players, then the collective support for paying taxes to fund such public sector services quickly erodes. After all, why pay for services that are not meeting the needs, when there are private sector alternatives using sophisticated technology, software and data to deliver to address my needs better and cheaper?

Loss of political power and control – traditional political approaches will not work

While a politician's instinctual response will be to reach into the traditional toolbox and apply tried and tested approaches to regulate away such unwanted developments, I am sorry to report that such approaches won't work. It's a bit like the media industry trying cost saving as the way to compete with

² <https://www.aftenposten.no/okonomi/i/jqOAA/Facebook-har-trolig-milliardoverskudd-i-Norge---betalte-under-500000-kroner-i-skatt>

Facebook's innovation-led news products – it simply won't work in a software and data led global world order – not regulatory moves, not competition stimulating moves, nor market shaping moves:

- **Regulation:** If Norwegian politicians try to regulate away innovation, the only thing one achieves is that the innovation takes place elsewhere. The technology is developed there, competence built there, the jobs and businesses are created there, and the resulting digital services can reliably and easily be delivered to Norway from there. Unless we want to censor the Internet, we can not prevent this from happening.
- **Competition stimulation:** In a world where vast amounts of data are needed to develop sophisticated AI, local government or businesses can not, for example, easily form an effective co-op to compete with Tesla, because a certain critical scale is required to compete with sufficient infrastructure, amounts of data, and access to the best heads, the best competence in the world.
- **Market shaping:** One can not break up, for example, Google into 10,000 pieces and get a self-driving vehicle - it's the AI brain itself and the ownership of it (and the critical mass of data that has created it) that's the count and it can not be broken up into many pieces, as it's a virtual entity that functions as one system.

Examples - health, education, transportation

Let me make these points more real through a few examples beyond last year's freedom of speech incident involving Facebook and Aftenposten and an iconic Vietnam war photo.

Healthcare: Let's just point to the contrast between a yet-to-be-built common Norwegian digital patient record (or the lack of such...) that anyway would contain very little valuable health information about us in comparison with the health information derived from mobile devices, bracelets, and watches. This data stream about our lifestyle, diet, and workouts is collected and streamed to a datacenter abroad belonging to one of the major internet platform companies (based in California or China) for advanced analysis (=AI). This emerging, digital advanced health infrastructure is capable of detecting and recognizing warning signals ahead of serious health incidents, able to diagnose the disease far quicker and more precisely when we are ill. Add to this the fact that you right now can order a full genetic mapping of yourself for 5,000 NOK (going below 1,000 by 2020), which will form the foundation for an increasing degree of highly gene specific, individual specific medical treatment, and you have the broad structure of a global healthcare system that for all most non-surgical areas, can deliver health services better, cheaper, simpler, and more relevant for you and me than Norway's public healthcare system³.

Education: A deep dive into the syllabus of online courses and eLearning tools of the most popular so-called MOOCs⁴ is quite insightful. Elite universities like Harvard, MIT and Stanford offer freely available online classes, and they will soon offer a better education (for a fraction of the cost) than almost all of

³ https://docs.google.com/document/d/1xxY4t07QhjhbtYJmBL_7c4iKID1OBBdL4PUa_Izjb8/edit?usp=sharing

⁴ MOOC = Massive Open Online Course.
The leading MOOC providers are Coursera, EdX, Udemy and Khan Academy

Norway's learning institutions from high school and up. Just like Wikipedia has become the channel for the world's encyclopedic information, so education will also be channeled through MOOCs, with syllabus, learning tools and resources, tutoring and instruction, exams, and certifications and degrees defined by people and private enterprises completely independent of the Royal Norwegian Ministry of Education. Today, language is a small barrier slowing down the spread of this disruptive development to Norway, but just as was the case with Wikipedia, this obstacle will be overcome in a few years.

Transportation: Über's impact on the taxi industry is a warning, a harbinger of what's coming. Transport solutions can and will be delivered independent of Norwegian authorities. Autonomous transport coupled with a sharing economy will not only change the entire automotive industry over the next 10 years, but will also result in the distinction between public transport, private transport, and co-op transport solutions being wiped out. Global players are using sophisticated software and advanced data analytics and AI to develop transport solutions at a large-scale city and country infrastructure level. Without competent and proactive public leadership towards these players and this development, we risk a future of "two worlds" in transport, a bit like the taxi industry vs. Über – one world that consists of highly efficient, cheap, transportation-as-a-service, and the other a publicly funded, inefficient system that few care about or use. And if it's one thing history has shown, it is that force created at the intersection of technology shifts and consumer needs, has explosive power. It neither can nor should be stopped.

Norway's overall economy is particularly challenged

As if the private and public sector challenges are not enough, the overall economy also has a few particular challenges that contribute to Norway's burning platform. This ranges from a need to compensate for the future loss of oil export revenues, to how weighted our state finances are in legacy business, to how Norway currently lacks the tools to create new technology-driven industry locomotives.

We must compensate for the loss of oil revenues

The most significant challenge in the Norwegian economy is the need for new growth, jobs and export revenues just to compensate for the structural energy shift away from oil and gas. This structural shift is still very underestimated in the Norwegian collective psyche, because its impact is not yet felt. Absolutely all calculations show that this shift is necessary for the world – and Norway – to reach the climate targets under the Paris Treaty.

However, it is not only necessary, it is inevitable because of the rapidly declining costs of alternative, renewable energy. As former global leader of technology in the energy sector for McKinsey, I have deep, first-hand experience and knowledge of how energy sources like sun and wind (in combination with battery and smart grid solutions), in a very short time has become cost-competitive with oil and gas. In a few years, hydrocarbon-based energy solutions will be uneconomical and unneeded in most application areas.

At the same time, it means that the oil and gas-dependent Norwegian economy faces an equally necessary shift. Loss of jobs and exports due to oil requires doubling of mainland exports. Analysis by Norway's Bureau of Statistics shows that even with an oil price stabilized between 60 and 94 dollars – not very likely to be the case, given current supply/demand developments, Norway is facing a massive fall in total exports. In order to compensate for this export deficit, the remaining export economic activities will have to more than doubled in order to compensate for the loss. This gap can only be covered if Norway's remaining exports increases its annual growth rate 2.5 percent to 3.5 percent every year between now and 2040.

Norway's state finances are over-allocated in tomorrow's losers

In an OECD context, the Norwegian capital structure is unique, both due to our sovereign wealth fund worth almost 7800 billion NOK, but also due to the uniquely high state and low institutional ownership share within Norway. In sum, it means that the public sector – the state – assets and savings dominates with total assets of 8500 billion vs. 800 billion NOK worth of private ownership on Oslo Stock Exchange. In and of itself nothing wrong with this.

However, almost 99% of these assets are allocated in publicly listed stock, debt obligations, and some real estate, and the rest in unlisted state enterprises such as the Norwegian Postal Service, Norsk Tipping, etc. This means that all of our savings allocated to company ownership – in Norway and abroad – are exclusively allocated in mature, established, old companies. In other words, unlike most other large fund managers around the world - private and government - we do not have any of our savings in future growth winners, either in Norway or abroad.

And when we double click on the list of listed companies that the Oil Fund owns shares in, it gets even worse: We are very heavily weighted towards yesterday's winners. For example:

- We own 2.33% of Shell, which is a larger ownership share than our 2.25% ownership in Vestas, the world's leading wind power producer
- We own 2.58% of BMW, which is more than 10x our ownership in Tesla (0.23%)
- We own 1.02% of the newspaper company Axel Springer, but only 0.57% of Facebook
- We own 5.51% of retailer Tesco, but only 0.72% of Amazon.

We lack the tools to fund and build new knowledge-based business locomotives

We have failed to build new technology-driven, knowledge-intensive industry locomotives the past 25 years, and one of the key reasons for this is that Norway's toolbox for this is underdeveloped when comparing with the country's most successful in renewing their industry base.

First of all, we are behind other countries according to most objective measurement criteria in terms of knowledge-intensive innovation, new venture creation and export-oriented businesses, as the Productivity Commission's report documented. This means that the sources of knowledge-based, globally competitive enterprises are weak to begin with.

Second, Norway almost completely lacks institutional venture capital, the main financing tool for funding and scaling technology-based ventures. If we are to succeed in creating new business locomotives, we have to correct this situation.

Data from the United States show why: In 1979 pension funds were allowed to invest in venture capital funds in the US, which led to a 50x increase in available venture capital funds. Of the 1330 US companies founded after that and that have gone public on the stock exchange, 43% were funded by venture capital. These companies represent 57% of the US stock exchange enterprise value and employ 38% of the workplaces. And very important in light of the shift to a knowledge economy, these companies account for 82% of R&D investments. And these numbers don't factor in the contribution of all the venture capital-backed companies that are not listed on the stock exchange, but instead were bought by established companies whose products and services contribute to value creation and jobs within these established companies.

Norway, in contrast, has for a long time had less available venture capital than the leading innovation countries (which are the ones we need to compare ourselves with). The amount of venture capital invested in Norway last year – 915 million NOK – is 2% of the amount invested in Israel, despite the fact that Israel only has 8 million people. Our investment level is 4 times smaller than the city of Austin, Texas – a city the size of Oslo. And in the US, \$58.3 billion of venture capital was invested in new ventures last year. With Norway's population of 5.1 million, and the US's 318.9 million, this amount corresponds to a Norwegian investment level of \$929 million, 7.25 billion NOK – almost 8 times the Norwegian per capital level. Both Schibsted and Telenor, two ICT driven companies, needed between 10 and 20 billion NOK to grow out of Norway to become one of the global giants in their respective online classified and telco services markets. To think then that we will be able to build new global giants based in Norway with less than 1 billion of annually available capital, is not realistic.

Thus, if we are to have any hope of navigating through the decline of oil and the disruptive technology shift ahead of us, then we need to make sure we are properly allocating the resources needed to create new jobs and build new technology ventures.

Norway's burning platform

A **technology shift** without precedent, which places unique power and control to those who master data and digital technologies.

A **private sector** that is uniquely resource oriented and old, and ill equipped to handle the disruptive forces of the 4th industrial revolution.

A **public sector** that risks being underfunded and ignored by its citizens.

An **overall economy** that urgently needs new growth and job creation, just to deal with the decline of oil.

In combination, this is a burning platform for Norway.

It is why Norway has to put digitalization and innovative new venture creation as its top priority. Ahead of unemployment, ahead of healthcare, ahead of climate, ahead of education. Because we as a nation will not be able to achieve the goals we have set within these political and industrial focus areas, if they fall outside a digital future. Politics - both welfare and industry - simply will not work.

NORWAY'S OPPORTUNITIES

By now, any reader is likely to be at best quite concerned, at worst right out depressed.

Have no fear. I have chosen to outline the challenges here not because I am negative about the future. Far from it. I don't choose to spend the majority of my career in and around startups and innovation, if I didn't fundamentally view the glass as half full rather than half empty, if I didn't believe the future holds boundless opportunities!

However, a bright future does not just happen. It requires hard work to turn opportunity into fabulous reality. And it requires a correct, fact-based understanding of the now-situation in order for the measures taken, the solutions developed, to work properly. Or put differently, there are few things more certain to lead to a bad outcome than to diagnose a treatable but very serious disease, as a simple flu!

The good news is that Norway is well positioned to tackle the big challenges and take advantage of the opportunities that this fourth industrial revolution brings with it.

While the threat is serious, there are also opportunities for digitally advanced societies, such as Norway, to lead the way and be a role model for others in creating new growth and new jobs.

Both BCG's pan-European report showing Norway's relative strength in relation to many other countries, as well as Innovation Norway's *Drømmeløftet* report, highlight Norway's advantageous mix of natural resources, high educational levels, and impressive engineering competence in Norway. We are also blessed with great financial wealth thanks to the oil, which means we can afford to make long-term investments in new infrastructure and capabilities. In total, it means we have knowledge, experience and resources needed to effect change and build a new foundation.

Add to this the unusually high degree of trust within the Norwegian society. For instance, the close proximity between subjects and decision makers and between decision makers across traditional silos such as industries, private and public sector. Or the different stakeholders in the labor market, and how it makes us better able than just about any other nation to pursue a set of unique opportunities. Imagine Norway as a prototype for the world's "problems worth solving", for solutions requiring industry wide collaboration, or as a test market for consumer services.

Prototype laboratory for the world's "problems worth solving"

Norway as a country is also a perfect testing laboratory for developing, testing and refining solutions to the world's most interesting challenges. In most of these areas – e.g. health, education, transportation and environment, the Norwegian state is strong and can play an invaluable role as a participant and facilitator to enable and ensure value creation. For example, the government is essential in terms of regulation and regulatory innovation needed to enable radically new technology-driven approaches. It can and must also play an active role to enable the safe and secure aggregation of and access to necessary data from a wide range of public and private sources. Such as health related data that can be used (subject to user consent) for the purposes of service innovation, new capability development, and tailored task automation. And last but not least, the government is the gatekeeper to – and great enabler! – for distribution to and adoption of new services by the Norwegian population at large.

For example: Norway has a great need for welfare services that through the innovative and advanced use of technology and data can cover the needs of an ageing population better and cheaper. Like every other developed nation with an ageing population, this need must be addressed to avoid ruining the state's finances. What better place than Norway to develop and test such on a digitally sophisticated consumer population with high degree of trust and faith in the government? And if products, services, and solutions are developed and proven in Norway, that provides a compelling case for scaling those services out to other countries, other markets, with populations and governments having similar needs. Norway has a competitive advantage because we have a small, homogenous and digitally competent population who has great confidence in the state and great willingness and ability to adopt new products and services. In aggregate, it means that we have every develop novel solution faster than other larger and more complex societies, and test them on a population whose digital maturity is far ahead of most other markets' digital maturity. For example, Norway's leadership in the development of mobile telephony in the 1980s and 90s greatly contributed to Telenor's travel: Telenor found out in Norway, which made Telenor very well positioned to grow internationally.

Test Market for Consumer Services

Norway is also the perfect test market for services and solutions that require critical mass and density of user adoption, for example due to the dynamics of marketplaces or social networking effects. This usually requires "critical mass" of users within a given market (such as a country), which is significantly easier to achieve in a country with 5 million people than in a country of 320 million people. Norway has a digitally advanced population, a wealthy society, advanced user patterns, and high trust in both society at large and in the business world. These traits make it easy, fast and cheap to develop and test new services, and observe their efficacy once they have reached so-called critical mass.

A good example of this is FINN.no, which "cracked the code" on digital classified ads in Norway 5-10 years before most other countries. This enabled Schibsted to export the solutions from Scandinavia into the world before anyone else, thereby becoming a global leader in the field.

To succeed and seize these opportunities, Norway must make digitization its top priority - and take forceful steps to ensure a future growth engine of sufficient speed, competent quality and impact.

We need to make a step change, forcefully embrace a nation-wide digital transformation and invest in disruptive technology innovation.

We are in the midst of a technological paradigm shift that presents Norway and its political leaders with an opportunity to take a global leadership position in the digital community by strongly embracing and enabling disruptive technology innovation and startups. This opportunity is at the same time our best defense to ensure future growth and new opportunities and jobs in areas where Norway has a particularly good starting point, and to secure the future funding and relevance of the Norwegian societal model and welfare state.

It requires leaders who can think in novel ways and act with courage and urgency. This is not about right or left ideology and policies - this cross and transcends politics, this is simply too important for politics. Everyone in Norway, regardless of political affiliation, is dependent on a strong business community, wants a good and fair welfare state, with rich and equal opportunities for all. And the government's absolutely vital role is also quite indisputable - it is not without reason that the arguably three most successful countries with regards to digital technology innovation - the United States, China and Israel – also have some of the most activist governments and industrial policies. In other words, the government is absolutely necessary in the real world, regardless of whether the prevailing ideology is capitalism, communism, or pragmatism.

For a growth engine to become reality, it is particularly important and relevant for Norwegian politicians need to strategically address three areas.

First of all, we need to enable the **government as an engine for growth and innovation**. Specifically, we need to explicitly use a much larger share of the government's significant procurement budgets – totaling 462 billion NOK – to actually support innovation and start-ups. By giving large procurement contracts to startups, not only is the government being a source of funds for startups, but it also gets help with executing ambitiously on a digital transformation. To radically upgrade and maximally digitize public services and as a competent partner accessing a much larger digital ecosystem (a la what Estonia has done through www.e-estonia.com).

Secondly, we must revise our **innovation and digitalization policies and regulations**, thereby making it as easy and attractive as possible to create and build new business. This ranges from tactically eliminating friction in the actual start-up phase, directly by making it easy for entrepreneurs to ensure strong, legitimate ownership for themselves and their employees through the use of options and tax incentives. This to attract the best minds globally and for companies to invest in R&D in Norway, and indirectly by making it attractive for investors to invest in technology startups instead, for example, in real estate or publicly listed companies.

And lastly, the government must put in place a new set of ambitious and timely measures to address the lack of **venture capital funds** by committing and smartly allocating the capital needed for Norwegian start-up companies to scale into globally competitive, successful business locomotives.

If we solve our common challenges at the macro level, then Norway and the Norwegian business community have every opportunity going forward to grow and prosper. But time is of the essence, the situation is truly urgent because by the time the effects of the exponential technology shift's disruptive force is felt, then it is too late.

For Norway to pro-act in time, we need competence in the political environment.

We need courageous, digitally competent and determined political leadership.

WHAT CAN EACH INDIVIDUAL BUSINESS DO?

So, what can we do, as established businesses and organizations, as leaders?

In the course of my career as an investor, management consultant, entrepreneur and corporate executive I have made a number of mistakes, tried and failed, in the defense against or active pursuit of disruptive technology innovation and digitalization. I have also witnessed many others – friends, colleagues, competitors, mentors and protégés, make their own batch mistakes. And occasionally I have done some things really really right.

So, let me finish this year's Lehmkuhl lecture by offering some personal reflections based on my own experiences, mistakes, failures, successes and achievements. What specifically can each and every one of us do to best navigate ourselves and our organization through a disruptive technology shift?

My starting point is this: Digital transformation is not complicated. Every major emerging trend of the past 20 years has been relatively easy to detect and predict the consequences of – both threats and opportunities. The business strategy a company should pursue – to defend current revenues, to grow new ones – is rarely difficult to identify and agree on. And the theory of what a company should do to execute on such a strategy is also quite simple – organize a cannibalizing effort separately, allocate dedicated funds, support from the top, bring in new competence, work in a different way.

However, in practice, digital transformation and disruptive change is incredibly difficult and hard to do. It has to do with culture and organization, it has to do with financial market pressures, and it has to do with individual leadership.

Culture and organization

Transformational change means you have to change your culture

If you have to change, you must also be prepared to change the culture – your values, the way you work, the way you prioritize, share information, make decisions. Otherwise it's not a change, it's not a transformation.

And yet, most companies consistently fail to do this. In fact, they rarely even seem to try. This is also why most companies trying to digitalize and digitally transform themselves, fail in holding on to new talent with the background, experience and competence a legacy organization needs. After all, telling new hires that they have to adapt to yesterday's culture will result in the new heads quickly resigning.

To renew culture more towards a digitally oriented company, I would recommend asking some control questions:

- Are you mission driven? Do you have high ambitions for the future? Do you incrementally calculate the future based on where you are now, or do you articulate the ambition and then try to understand what it will take to get there from here?
- Do you have a try and fail culture? If you say have, how do you encourage trial and error? How do you reward it?
- How transparent is your culture? Do you freely share information across the company? Do you have a bias towards secrecy or transparency? Do employees have direct bottom-to-top access to executive management, or does information “follow the line”?
- Do you make decisions based on data and analysis? Do you make decisions based on real-time operational data, or based on after-the-fact financial reports?
- Do you have the digital communications infrastructure to support active, cross-silo cooperation and information sharing? Do you use traditional enterprise IT (think Microsoft Sharepoint) or tools of the internet era (think Slack)?

Organizational renewal is essential in order to succeed with transformational change

I will make the following statement unequivocally: You cannot succeed with transformational change without replacing parts of the senior management teams.

This does not mean that smart, experienced, accomplished veterans of an existing paradigm don't have a vital role to play also in future. However, it does mean that nobody can transform into a future state without learning from others how the future operates, without knowing what great looks like. If you need to become digital and technology-literate, if you need to become entrepreneurial, how are you going to accomplish that if the senior management groups don't contain a sufficient number of people that have experience and competence from such environments. This is not to substitute an organization's existing competence, but to critically complement it, also among executives.

Leadership teams also need to change how they operate, from time spent reporting to a group, to time spent engaging in, discussing and understanding substance – strategy, content, technology. This requires a leadership group to become a team, rather than a collection of individuals each responsible for their own silo, who every week come together and “report” from their silo.

And as part of organizational renewal, people operations (“HR”) will be essential in recruiting and developing a new type of managers and leadership profiles more in line with those found at all-digital competitors.

Invest heavily in predictive capabilities

When change happens quickly, it is vital to recognize it and understand it, to buy yourself and your organization as much time as possible to adapt.

For that reason, some of the wisest investments one can make as an organization, is in predicting the future. Specifically, my advice would be to mimic the approach of the world’s leading venture capital firms:

- Invest heavily in trend analysis – gather information about trends, analyzing and internalizing trends, and having mental models – hypotheses and scenarios – for how the future is going to play out according to your understanding of all the trends.
- Build relationships towards innovation communities. Insight about cutting edge best practice will come from there, not from consulting firms,
- Dare to be the first to define the future based on your understanding of what is going on - opportunities, needs, threats - and assume that things will go significantly faster than today's forecasts indicate: it’s better to be too early than too late when faced with exponential change.
- Think nationally and preferably globally in your approach to trend analysis, to innovation networks – which will require scale in your efforts. If you don’t have such scale, maybe it’s worth considering teaming up with other companies for this effort?

Invest in disruptive innovation efforts and organize these outside your core business

You can not succeed with disruptive innovation inside the same organization that is tasked with incremental innovation. Therefore, organize this effort with separate budgets. If true entrepreneurial skillsets are lacking, seek external help and partners from the entrepreneurial community.

Any disruptive innovation – game changing, radical, and likely cannibalizing towards your existing core business – must be shielded and protected from internal politics. This can only happen from the very top of the organization.

And ensure that any ambitious innovation efforts are set up for success:

- Fund the effort for multiple years, to ensure the requisite corporate patience with fledgling new ventures.

- Plan for many, many pilots / prototypes ... and expect 95% failure
- Focus on the end user, also analytically. This will require you to invest in building a robust core tech platform to gather data about your users and customers and using advanced data analysis to understand user needs and behavior and deliver tailored solutions

Financial considerations in the face of market pressures

In order to digitalize, there will be activities that the financial markets may question and from a “current fiscal year” perspective, may deem to be wasteful and cost inefficient. It is really important for an organization to be long-term and firm in their approach to digitalization and innovation and make room for experimentation and failures.

Experimentation

Simply put, you cannot afford not to experiment. The reason is that innovation and new growth to a certain extent chaos theory and, to some extent, impossible to deterministically predict, no matter how strategically hypothesis and data driven, ambitious, and methodical an organization’s innovation efforts are.

Failure

Failure is part of innovation success. People in an organization have to dare to take chances, and the organization has to allow for mistakes to be made, for failure to occur. After all, failures represent some of the most knowledge-generating activities an organization one can pursue.

Perform but don’t milk

In theory, this is easy, but as anyone who has been part of the management of a publicly traded company knows, it is not easy in the face of near-term quarterly pressures.

Nevertheless, an organization can never let near-term goals undermine the resource allocation to the long-term game. If the money is not there to make the long-term investments, don’t automatically cut the investments that ensures the long-term future value creation. Instead, attempt to focus cost control on simplification and on identifying areas of the current business where the ambition level can be reduced to “good enough”, thereby reducing costs.

Also, be explicit about what is not a priority – and this way free time and resources without hurting a company’s core performance.

WHAT CAN EACH INDIVIDUAL LEADER DO?

There is much an organization can and must do. However, it all comes back to the individual leader. The good news – and the bad news – is that whether digital transformation will succeed or not, is entirely up to you as a leader and as a leadership team.

It requires ability and will, it requires proper understanding of the risks involved, and it requires the proper awareness and approach to the future.

Leadership: Ability and Will

Every leader has the ability to effect change. Their current abilities and mental models, that have given great success in the past and the present, will need to be changed. But every leader I have met has the ability to change.

But change is very hard. To ask a senior executive to scrap a success recipe that has yielded enormous individual and collective professional success, it near impossible. Not because of a lack of ability, but because of a lack of will.

It's not that people don't want to, or that they don't intellectually understand. It's that they don't have the energy, the will, to make a change because the effort required is considered too much. So have the Will – and all else follows, in my experience.

Proper risk assessment: The risk of doing too little, too late

In an exponential world, the risk - and the cost – of being too early, of acting too soon – is far less than the risk and cost of acting too late. If you act too early, you may have incurred some unnecessary costs; however, if you move too late, you may be out of business.

Most risk assessments done at the board level, in my view fail to assess the risk of doing nothing, which in these changing times is perhaps the greatest risk of any.

Vision: Understanding vs anticipating / shaping the future and what is happening

Lastly, there is a huge difference between understanding vs anticipating and shaping the future. And even though it's becoming more and more important to be ahead of developments, both approaches can work as long as one takes the consequence of them. If you and your organization prefer to understand, but not shape the future, your strategy of following requires you to be rigged or explosive change execution once exponential change starts happening. Few established organizations are!

And regardless of which posture you feel most comfortable with, my last and strongest advice is that you every day, every week, invest in increasing your digital knowledge – intellectually as well as viscerally. Become a “digital native” – buy gadgets, download apps, play around with services. Allocate time to read about and learn new trends. It will enable you to anticipate, to pro-act, to be a true leader and not just someone being caught off-guard and forced to react!

As I started this lecture stating, we live in a time of great change. We are faced with a global technology shift and serious challenges for the world, for Norway, for our businesses. That’s why there has never been a greater need for competent, capable, and visionary leadership. The world needs it.

The world needs you.