Leadership

Wise Leadership and AI

Why New Intelligence Will Need New Leadership.

By
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Wise Leadership and AI | Executive Summary

Intelligent behavior has long been considered a uniquely human attribute. But as computer science and IT networks progress exponentially, artificial intelligence (AI) is increasingly standing out as the transformational technology of our age. From industry 4.0 outwards, human and artificial intelligence may compete for jobs. But they will increasingly collaborate and complement each other. What kind of leadership will be needed to make that happen? Here is our summary.

1 | New intelligence requires new leadership

Any debate surrounding AI requires a re-assessment of leadership itself. Without a transformation here, AI will never fully deliver: the problems and dilemmas of business cannot be solved by algorithms alone. The answers lie elsewhere, in a transformation from smart, to wise leadership. For wise leaders do not only create and capture vital economic value, they also build more sustainable[i] – and legitimate - organizations. More than *reasonable*, they are *responsible*, honoring their fiduciary duty of *loyalty and care to the organization and its sustainable/long-term value*. Value that AI can enhance, erode, or destroy, depending on how wisely it is led.

In essence, wise decision-making is about broadening the contextual framework and providing a more holistic perspective. It means being able to understand and resolve contradictions, paradoxes, tensions. Wise leaders adopt a 'multifold perspective', and have the emotional maturity and generosity of soul to inspire and mobilize others. AI can help leaders to materialize an organization's vision, but without wisdom, it may endanger a more humane future.

2 | AI is creating wins across the board

AI (and machine learning) involve computers crunching vast quantities of data to find patterns and make predictions[ii]. *Deep learning* allows predictive modelling via an artificial 'neural network' – loosely modelling the way neurons connect in the brain. It supports 3 key business needs:

1. Automating business processes, using robotic technologies
2. Gaining insights through data analysis and enhanced, more precise and cost-effective prediction, based on algorithms that detect patterns in vast volumes of data and interpret their meaning
3. Engaging with customers and employees with natural language-processing chatbots, intelligent agents and machine learning.

3 | Leveraging AI's predictive power will take wise judgement

Any senior executive knows the importance of predicting the next market shift or great product, making sense of multiple factors. AI is already outperforming humans in rising above the noise, in capturing patterns and signals. Its precise predictive power is working with, and enhancing, human judgement. But leveraging AI means transforming key operational activities and collaborating beyond internal corporate

boundaries to form an ecosystem of common (digital) connections and practices. Predictions, moreover, must lead to strategically-valid actions, with data analytics embedded as a core organizational capability, used to detect pain points, design solutions and enable decisions. Business is about envisioning the unimaginable, innovating solutions, inspiring and mobilizing people. Shaping a future situation, rather than only predicting particular outcomes. Wise leaders will combine human and artificial intelligence, deploying AI as a very effective tool. Wise leaders use their creativity where they can make a difference, by establishing a new solution they can influence. AI is reaching far beyond industry 4.0 (where the popular imagination tends to place it). It has been transforming financial services for years, informing investment decisions. In healthcare, machine learning can analyze brain scans on hospital admission, filtering the most urgent cases, for example. Digital tech, and especially the predictive power of AI, can also help organizations to ease their pollution footprint. Philips is using it to capture more information on the product life cycle to reduce waste.

4 | AI is vulnerable to some very human flaws

If machine learning is designed to emulate the human brain, then it is also fallible - subject to bias. It tends to discount the possibility of significant change, operating within the world defined by the data used to calibrate it in the first place. For example, someone from a disadvantaged neighborhood applies for a mortgage. Her application is declined based on a system data bias. So AI, and particularly machine learning, must be de-cluttered, monitored and managed by wise, responsible leaders, with data integrity safeguarded, the right data inputs ("Garbage in-garbage out"), and verifiable, adaptable algorithms.

5 | AI is a black box, trust must be built

Mechanical systems learn from processing data. Each deep neural network layer progressively recognizes more complex features, which are captured in algorithms. Yet this accumulation of complexity obscures the decision process. In the 2017 PwC 'CEO Pulse' survey 76% of respondents cited a lack of transparency (and potential for biases) as impeding its adoption in their enterprise. 73% raised the need for governance and rules to control AI. Furthermore, the 'soul' of any AI or machine learning system remains the human mind that designed or manages it. AI needs explicit and appropriate goals: algorithms do as they're told. And if they can identify patterns too subtle for human detection, generate accurate insights and allow better, more informed decisions, they don't explain *why* they offer particular recommendations. Nor does prediction equal advice - this assumes a certain "socio-ethical value" dimension. So for the foreseeable future, AI may be smart, but still need humans to set the right goals and engage in creative interpretation. Human intelligence alone, and by association, artificial intelligence, do not equal wisdom.

6 | Too few companies are realizing the current potential of AI

Early movers can realize significant benefits from AI – also in one of the most critical business areas in this data-driven age - security. Government (detecting potential cyberattacks, in traffic control systems, military drones), banks (detecting suspicious behavior) or retail (theft detection) will all benefit. And big data analytics correlated with core digital technologies are all powerful AI techniques: virtual agents, natural-language generation and processing, image recognition, decision-making, robotic process automation, robotics, and speech recognition.

Yet AI is following a slow-moving S-curve. Only 10% of companies have tried to diffuse it throughout their organizations.

7 | Machines are unlikely to replace humans any time soon

For the foreseeable future, AI and machine learning may radically alter how work gets done, complementing and augmenting human capabilities. Cognitive systems can perform specific tasks, becoming more intelligent by the minute via feedback loops. But entire jobs remain beyond their scope. If automation and outsourcing will change the labor landscape, 'upgraded', AI-enabled humans will still be in charge. Mercedes-Benz is one example: 'cobot' arms (smart, context-aware robots), guided by human workers, manipulate heavy parts in an extension of the worker's body. In this sense, AI may spark a need for new roles and talent, enabling a beneficial collaboration with smart machines. Productivity can grow thanks to digitization processes that encompass data analytics, AI, robotics and automation. Human creativity still surpasses computer power, especially because abstract symbolic reasoning cannot (yet) produce meaning on its own. Maybe neuromorphic computers (mimicking important aspects of biological brains by being energy efficient, resilient and able to learn, in the words of the European Commission) may perform such a feat in the distant future. But leaders need to make decisions today that will affect the immediate, more global environment –and hopefully provide ROI. Wise leadership will acknowledge the enormous opportunities and prowess of computer learning, enlightened by insights from neuroscience, whilst emphasizing human creativity. Not attempting to compete with computers, but developing our human qualities – creativity, discernment, fairness of judgment, social collaboration, and a holistic vision of the future.

8 | Human weakness is our ultimate strength

The biased, emotional decision-making of the human brain has led to an upside - the installation of moral and ethical principles that transcend calculating, utilitarian thinking. We can only hope that managerial wisdom will be able to address current challenges and create a more "conscious"- and purpose-driven future, something machines cannot and should not do by themselves. A meaningful future requires that corporate leadership takes responsibility - a socio-economic phenomenon that only a conscious mind can perform. One that is not located in the brain, but is a social contract between humans aiming to progress in a commercially effective manner whilst holding a clear, broader, inspiring (social) purpose in mind.

Conclusion: New intelligence – new leadership

The future 'cognitive company' will look very different from anything we know today. Yet data essentially remain numbers – meaningless without context. The new breed of wise(r) leaders will:

1. **Embrace and cultivate the collaboration between human and artificial intelligence:** transforming operations, markets, industries - and the workforce - with new skills.
2. **Envision a more meaningful future:** show organizational stakeholders what it can look like, and guide and enable their organization to pursue that goal
3. **As a result, instill profitable progress whilst making society a better place to live:** upholding their fiduciary duty to the organization, its share- and stakeholders, and the community at large.

Foreword | By Dr. Peter Verhezen

In this latest piece in our series exploring wise decision-making, we'll unpack the way in which AI is transforming organizations. We'll examine its unique strengths and (surprisingly human) flaws, and discover why organizations will need a new kind of leadership to take advantage of AI. One that is not just smart, and reasonable, but wise, and responsible. Decision-making must optimize long term profitability, whilst respecting ethical and socio-ecological norms, stakeholders, and the community.

AI systems loosely model the way neurons connect and interact in the brain.

Computational models have been studied since the 1940s. They have gained prominence with the increase of computer processing power and the use of large training datasets that allow machines to successfully analyze input data (such as image, video, and speech). This is referred to as 'deep learning', via layers of interconnected, simulated neurons that constitute artificial neural networks. They are able to resolve problems, find patterns that allow organizations to make predictions faster and cheaper, and make the future a little less uncertain.

It is important to understand and map the advantages and disadvantages of AI techniques to specific problem types.

A focus on practical, collaborative human-AI applications is preferable to the contemplation of the longer-term possibility of an "artificial general intelligence". As Jack Ma – the co-founder of Alibaba – recently told the World Economic Forum: "I think AI should support human beings. Technology should always do something that enables people, not disable people." He signaled: "The computer will always be smarter than you are; they never forget, they never get angry. But computers can never be as wise a man. AI and robots are going to kill a lot of jobs, because in the future it'll be done by machines. Service industries offer hope - but they must be done uniquely."

Can computers ever think out of their box?

Humans will never compete with computer speed and calculating powers. And machine learning may well be a form of intelligence. It solves problems with limited resources (one being time). But don't expect a machine learning device to make mindful or conscious decisions. Machines could become less biased, more reasonable and rational, but they cannot take a *responsible* contextual decision, building a new future.

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Corporate leadership, on the other hand, can and should take responsibility for stake- and shareholders. It will continue to outmaneuver computers in terms of creativity, unexpectedness and innovation, and the (crucial) ability to empathize with other humans.

Organizations and society need both: intelligent devices, supporting and complementing human intelligence.

This has the potential to create a more enlightened, inspiring, possibly more sustainable future. But it will take need wise leaders to create an environment where human creativity and AI collaborate successfully, people who understand how to make decisions that are not just reasonable but responsible. Leadership boils down to being a "plumber" on one hand, (a competent and reasonable manager who resolves operational challenges), and being a "poet" on the other, (an inspiring leader who steers his or her associates towards a thrilling purpose in an ethical and sustainable way).

Wise Decision-Making and AI | In summary

1 | New intelligence requires new leadership 	2 | AI is creating wins across the board 	3 | Leveraging AI's predictive power will take wise judgement 	4 | AI is vulnerable to very human flaws 
5 | AI is a black box, trust must be built 	6 | Too few companies are realizing the current potential of AI 	7 | Machines are unlikely to replace humans any time soon 	8 | Human weakness is our ultimate strength 

Read on for more, as well as a profile for the Leader For What's Next in the AI context.

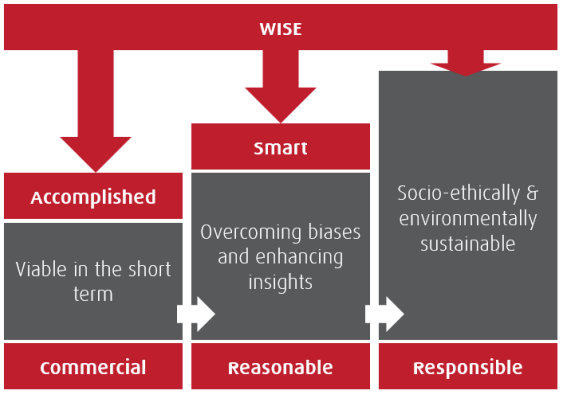
1

Wise Leadership must be the guiding platform for AI

Before we plunge into AI, let's take a step back. Corporate scandals resulting from reckless, unethical and unsustainable behavior have placed leaders' trustworthiness and legitimacy under close scrutiny. And it's unlikely that the thorny problems and dilemmas of business can be solved by algorithms alone. The answers lie elsewhere[iii].

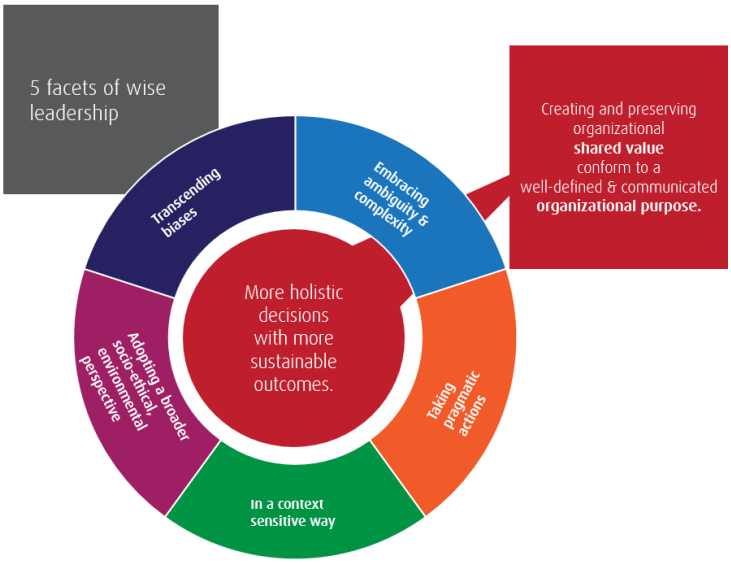
Commercial or smart are no longer enough

More than ever, we need not just *accomplished* leaders who understand their industry and operations, but *smart* leaders. People who are aware of the thinking biases that undermine supposed rational thinking. And yet, whilst this awareness can drastically improve decision-making, *smart (and reasonable)* leaders need to inspire teams to become more insightful and innovative[iv]. And even this is not enough. *Wise* decision-making, (explored in a global Amrop survey in 2018[v],) brings an additional set of critical variables into the leadership equation. Smart leaders become wise when they address the dilemmas of business in a holistic way - broaden the firm's perspective from 'profitability' to 'purpose'.



Not only do wise leaders create and capture vital economic value, they also build more sustainable – and legitimate - organizations. They are not only *reasonable,* they are *responsible*.

Wise leadership is a fiduciary duty



Not only can the 'return on responsible behavior' be quite significant in financial terms, wise, responsible behavior is an obligation. 'Fiduciary duty' is often misinterpreted as 'shareholder primacy' (putting shareholders first and assuring short-term profitability)[vi]. In fact, executives have a fiduciary duty of *loyalty and care to the organization and its sustainable/long-term value*. Value that AI has the potential to enhance, undermine, or even destroy, depending on how it is led.

2 AI is creating wins across the board

AI, once the preserve of the tech sector, is poised to affect most industries[vii]. AI (and machine learning) involve computers crunching vast quantities of data to find patterns and make predictions - without being programmed to do so.

The outcomes may resemble what statisticians, engineers and economists might have come up with, given unlimited time and resources. But AI performs tasks radically more quickly, efficiently and effectively. Its applications can improve a range of core processes such as inventory management and demand forecasting, freeing up cash and storage space.

AI can be defined as the science and engineering of automated problem-solving: *"The object is to generate solutions by using computers to mimic the cognitive functions associated with deliberative thought, including perception, reasoning and learning*[viii]*."*

Machine Learning, (part of AI), refers specifically to the ability of computers to detect patterns in large datasets by applying algorithms. *Deep Learning* is the calculators into a complex, artificial "*neural network*" that processes information using various architectures compromised of layers and nodes. To a certain extent this is akin to the way some of our own brain areas function.

Intelligent technologies such as robotic process automation, machine learning, and natural language processing systems offer companies new opportunities to improve performance and realize significant cost savings[ix].

AI is transformative. It supports 3 key business needs:

1. **Automating business processes**, using robotic process automation technologies
2. **Gaining insights** through data analysis and enhanced, more precise and cost effective prediction, based on algorithms that detect patterns in vast volumes of data and interpret their meaning,
3. **Engaging with customers and employees,** with natural language-processing chatbots, intelligent agents and machine learning playing a crucial role[x].

AI can be defined as the science and engineering of problem-solving.

"The object is to generate solutions by using computers to mimic the cognitive functions associated with deliberative thought, including perception, reasoning and learning."

3

AI has precious predictive power. But knowing how to use it takes wise judgement

Humans are not very good at making predictions. Machines can help.

We humans are noisy thinkers, undermined by a host of cognitive biases (mental shortcuts), and information overload.

Yet any senior executive knows the importance of rising above the din to clear-sightedly predict the next change in his or her industry, the next great product. These shifts are influenced by multiple factors, from consumer tastes, to regulatory change. It's almost a truism to suggest that organizations that embrace AI will be better prepared. Since AI is outperforming humans at making predictions, the value of its complementary elements, such as data, will go up as well: "*data is the new oil*"[xi].

Leveraging AI demands that leaders should be willing and able to transform key operational activities. This in turn takes a deep understanding of collaboration.

Leaders must transcend corporate boundaries, both internal, and external, (embracing other companies that share the same, or compatible, platforms and technology). It is just like any ecosystem - a cluster of vital industrial activities tied together through common digital connections and practices. Inevitably, some organizations will excel in an Industry 4.0 context, others will lag behind[xii]. And as digitized assets gain value through increased connectivity, organizations too will gain from more connectivity to a higher level eco-system, a higher form of sustainability[xiii].

As in all things, benefiting from AI requires a deeply collaborative mindset.

Predictions are only valuable when they lead to action that makes sense in the strategic context.

This means that they are cost-effective, precise, and included in business processes in a way that creates value. And the real value comes from embedding data analytics as a core capability in the organization and using it to detect pain points, design solutions and enable decision-making.

Leaders must be able to determine how to leverage predictions in ways that add meaning and value to their context.

Business is about connecting the small and bigger picture, envisioning the unimaginable.

It is about creating innovative solutions, inspiring and mobilizing people towards often demanding goals, shaping a future situation, rather than just predicting particular outcomes. Wise leaders will combine human and artificial intelligence, deploying AI as a very effective tool[xiv] where big data needs to be churned with predictable (but difficult) outcomes. Wise leaders use their creativity where they can to make a difference, by establishing a new solution they can influence[xv]. Applying AI to this mass of complexity allows CEOs and executives to draw lessons from original and unexpected ideas[xvi]. It may even lead to more collaboration between different departments or silos who use AI's predictions and analytics as trustworthy outcomes and the basis for a new dialogue. Netflix for example captures rapid feedback to learn what programs have the greatest appeal, using the insights obtained through algorithms to adjust its offerings. And models can be updated through instant feedback, enhancing their predictive power.

Using AI selectively can give leaders a clear edge – and support the much-needed collaboration.

AI is an efficiency-enhancing tool that can give a company a lift – possibly a 1% to 10% increase in EBITDA or some other measure of productivity[xvii].

Every time Amazon's recommendation engine becomes more accurate by a couple of points, the company will increase its bottom line. And the more Amazon benefits from analytics by "delivering the right insight of AI to the right people at the right time in a way that informs their decision making to drive better outcomes"[xviii], the more powerful Amazon will become.

When the predictive power of its AI reaches a critical level of cost effectiveness and efficiency, a switch to a "shipping-then-shopping" approach may generate more sales than the current "shopping-then-shipping" framework. However, this is some way off. Due to the high costs of returning items, the ROI for "shopping-then-shipping" is still higher than the AI-savvy aspiration: "shipping-then-shopping"[xix]. Amazon is just one example.

Overleaf we take a snapshot of two industries, Financial Services and Healthcare.

Financial Services

AI has been transforming financial services for a number of years, particularly in terms of informing investment decisions. BlackRock is a case in point. Here, computer scientists, physicists, mathematicians and engineers (quantitative analysts or 'quants') have developed algorithms that have allowed the fund to outperform the market (they claim in 93% of cases) by more than 1% over the last 5 years[xx].

Healthcare

Even clinicians can be prone to bias! Machine learning will be able to remove the bugs from patient screening. By analyzing brain scans made on hospital admission, machine learning will distinguish who needs urgent attention from those who can safely wait, especially in the case of imminent strokes. Another promising field is oncology. Here, AI systems have been found to be slightly superior to oncology experts and computers, with lower misdiagnosis rates of skin lesions (benign or malignant[xxi]). Meanwhile, DeepMind, a London-based subsidiary of Alphabet, Google's parent company, has an AI that screens retinal scans for conditions such as glaucoma, diabetic retinopathy and age-related macular degeneration. And the list goes on. What medical AI will not do is make human experts redundant in the fields it penetrates. Machine-learning systems work on a narrow range of tasks and will need close supervision and input for the coming years. Medical experts will increasingly collaborate with AI whilst exercising their clinical judgement, improving the quality of diagnosis and decision-making.

AI is finding fertile terrain in multiple industries.

AI is environmentally-friendly

The combination of climate change, environmental degradation and geopolitical instability demands a new approach: prioritizing resource conservation and environmental governance. Bringing digital prowess and sustainable practices together should be at the forefront of any strategic thinking as a way to differentiate and gain long-term viability among customers, regulators, and communities. Digital tech, and especially the predictive power of AI, can help organizations manage waste more effectively and ease their pollution footprint.

Philips is using digital technology to capture more information on the product life cycle to reduce waste. The company's analysis of the secondary market for components revealed that its customers had opportunities to re-use certain parts, extending the life of existing equipment such as X-ray machines. Moreover, Philips could develop an closer, ongoing relationship with its customers[xxii]. Other companies are engaging in optimized energy system forecasting, demand-response transportation infrastructure, analytics and automation for smart urban planning, "hyperlocal" weather forecasting for crop management, or supply chain monitoring and transparency.

4

AI is vulnerable to some very human flaws

Leaders have many capabilities. But their decisions are prone to be given undue weight by personal experience. This so-called 'anchoring bias' can affect business. Via AI and machine learning algorithms, decisions are taken faster and often at a fraction of the cost. Moreover, machine learning also promises to improve the *quality* of decisions. But how reliable is that promise?

Without historical data, AI gets (dangerously) lost

In Financial Services, quant-driven funds got a serious beating during the global financial crisis of 2007-2008. This was a volatile time of the unexpected. So the historical data needed to find patterns was missing in action. Then, as now, quant-based decisions were short-termist, taking advantage of the slightest fluctuation. To this day, these decisions rely on algorithms and assumptions, and these are often complex, ambiguous, and poorly understood. So it is impossible to verify or falsify them until it is too late. The quants that delivered dazzling short-term profits within seconds of trading were actually one of the destabilizers of the global financial system, one burdened by huge, uncapitalized derivatives that were swiftly reduced to toxic assets[xxiii]. And the risk is still with us.

If machine learning is designed to emulate the mechanisms of the human brain (such as deep learning via artificial neural networks and relying on historical criteria to predict outcomes) then it, too, is fallible.

Machine learning, like human learning, can be subject to bias, or reinforcing past biases.

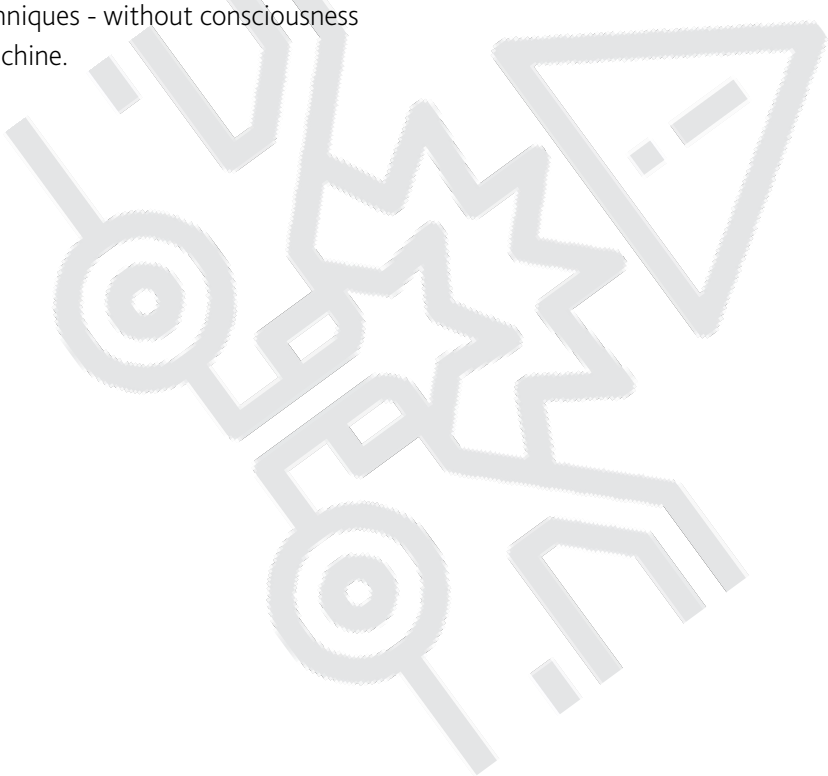
AI tends to discount the possibility of significant change[xxiv]. And every machine-learning algorithm operates within the world defined by the data that was used to calibrate it in the first place. This results in limitations. For example, a person from a disadvantaged neighborhood applies for a mortgage. The application is declined based on a system data bias. Machines might lack important contextual information, whilst human members of a loan application committee risk biased or lazy predictions. So this is another example of the benefits of human collaboration with self-learning, or intelligent, computers (AI).

The AI 'black box' must be understood, via the expert de-biasing of algorithms

Given its limitations, AI, and particularly machine learning, must be constantly monitored and addressed by wise leaders. Business leaders needing interpretability and consistent performance must protect data. Meanwhile, the developers and analysts responsible for engineering machine-learning models need to build and use algorithms that can be verified and adapted where necessary. And it's important to choose the right data inputs ("Garbage in-garbage out"). Because of the interpretability of data and learning machines, the system must be scoured for biased data or results, calibrated and designed, for example, when it targets a specific consumer group. Acting reasonably, at a minimum. Ideally, acting responsibly.

One example of de-biasing is improving performance in asset-management decisions.

We recall the role of 'quants' in the financial crisis. Fund managers that deploy machine learning, guided by hypothesis testing (about possible biases that negatively affect investment decisions) and continuous feedback looped back within the algorithm, have improved return on investment between 100 and 300 points[xxv]. The fund learned that sales often took place in an emotional environment, defined by pride and optimism, resulting in sub-optimal performance. So executives were able to de-bias their decisions via "emotion-neutral" algorithms and machine learning techniques - without consciousness or heart – just as you would expect from a machine.



5

If AI is a black box, then trust must be built

Machines learn by processing data, and each deep neural network layer learns to progressively recognize more complex features which then are captured in mathematical algorithms. This accumulation of complexity means that the decision process is far from transparent.

Implementing algorithms in management decision-making will require that AI can be "determined" and interpreted by managers and employees.

And there is a considerable way to go. In the 2017 PwC 'CEO Pulse' survey, 76% of respondents said that the lack of transparency (and potential for biases) were impeding AI adoption in their enterprise. 73% raised the need to ensure governance and rules to control AI[xxvi].

Any AI system performs to particular standards. Companies need to be able to justify these - and their outcomes.

The "soul" of any AI or machine learning system remains the human mind that designed or is managing, it. Explicit goals are needed when implementing AI; algorithms are extremely literal and do not necessarily allow for ambiguity. Algorithms do exactly as they are told – almost in a black and white fashion - and often ignore every other consideration. And whilst algorithms are essential tools for planning or executing certain (mathematical or decision-process) tasks, pattern-churning machines that are good at literal screening and processing huge volumes of data, they do *not* explain why they offer particular recommendations.

Algorithms are extremely powerful tools to identify patterns too subtle to be detected by human observation, and to generate accurate insights and allow better and more informed decisions. But prediction does not equal advice - this assumes a certain "socio-ethical value" dimension that is incorporated into the decision-process.

Answering the need for greater transparency often leads to a trade-off: performance versus interpretability

A simpler model may be more easily understood, but less able to process complex data or relationships.

So for the foreseeable future – AI may be smart to a certain point, but still need humans to determine the goals and engage in creative interpretation[xxvii]. Human intelligence alone, and by association, artificial intelligence, do not equal wisdom.

For managers and organizations to trust the algorithms (or conversely, avoid blind faith, such as in the run-up to the global financial crisis), the machine learning models on which the systems as based must be made as open and explainable as any scientific process, adding to the interpretabilty of AI and machine learning models.

6

Despite the benefits of AI, only a small minority of companies are realizing its full potential

So far, many sectors have benefited from AI to some extent. Early movers can realize significant benefits and returns compared to followers or laggards.

AI also has a significant role to play in security.

Government (detecting potential cyberattacks, in traffic control systems, in military drones), banks (detecting suspicious behavior such as money laundering) or retail (theft detection) will all benefit from its applications[xxviii].

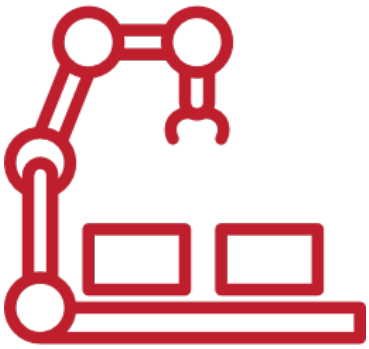
Yet, like many phenomena, AI is following a slow-moving S-curve.

The use of big data analytics is often correlated with the use of core digital technologies. Virtual agents, natural-language generation and processing, image recognition, decision-making, robotic process automation, robotics, and speech recognition are all powerful AI techniques. But they have been implemented by a only minority of companies. Only 10% have tried to diffuse AI across their enterprise, while a long tail of 65% have yet to adopt any AI technology[xxix]. In only 18% of the US economy and less than 12% of European companies has full digital potential been reached[xxx].

AI has a significant way to go before being fully part of the business landscape, let alone replacing human workers.

7

Machines are unlikely to replace humans any time soon



AI is getting good at performing many "human" tasks – diagnosing disease, translating languages, providing customer service. And it is improving fast. Will this trend towards "automation" replace human workers throughout the economy? This will not necessarily be so – it's even unlikely.

Automation that eliminates a human from a task does not necessarily eliminate them from a job.

For the foreseeable future, AI may radically alter how work gets done, complementing and augmenting human capabilities. But it will not replace the human. Cognitive systems such as AI and its derivative deep learning machines can perform specific tasks, as we have seen. And through feedback loops, they are becoming more intelligent by the minute. But entire jobs remain beyond their scope. So whilst automation and outsourcing will definitely change the labor landscape, "upgraded", AI-enabled humans will still be in charge.

Still the collaboration between human intelligence and AI is enabling companies to interact with employees and customers in novel ways.

At Mercedes-Benz for instance, 'cobot' arms (smart, context-aware robots) guided by human workers, pick up and place heavy parts, becoming an extension of the worker's body[xxxi]. In this sense, AI may spark a need for new roles and talent enabling a beneficial collaboration with smart machines. Productivity growth can be achieved through digitization processes that encompass data analytics, AI, robotics and automation.

Quite a number of researchers consider the evolution of a general-purpose language to have been a key factor in integrating the neural pathways that distinguish the modern brain.

Computer and AI scientists see the enormous possibilities of machine-learning based on a similar, mathematical, universal language based on neural networks. Developed in 1936, the Türing machine was seen as one of the first examples of AI, performing a mathematical computation equivalent to an algorithm (i.e. a series of logical steps that processed a statement and arrived at a conclusion). However, despite the strong arguments of AI researchers such as Kurzweil, Tegmark, Tononi, Dehaene, Chambers, Penrose and Bostrom, consciousness has not yet been coded in an algorithm.

Human consciousness and its unique, self-aware, creative intelligence, is still very distinguishable from the more deterministic power machine that AI and machine learning can be at this point in time.

Today, business leaders know that creativity of their business partners and subordinates far surpasses computer power, especially because abstract symbolic reasoning cannot (yet) produce meaning on its own. Maybe neuromorphic computers[xxxii] (able to mimic important aspects of biological brains by being energy efficient, resilient and able to learn, in the words of the European Commission) may succeed in performing such a feat in the distant future.

But leaders need to make decisions today that will affect the immediate, more global environment – decisions that will hopefully provide a return on investment.

Innovation and progress are disruptive forces. Wise leadership will acknowledge the enormous opportunities and prowess of computer learning abilities, enlightened by insights from the ever-evolving field of neuroscience as well as emphasizing the importance of creative innovation by humans. We should not attempt to compete with computers, as Jack Ma warned. Instead, we should focus on developing our human qualities – creativity, discernment, social collaboration and a holistic vision of the future.

8

Human weakness is our ultimate strength

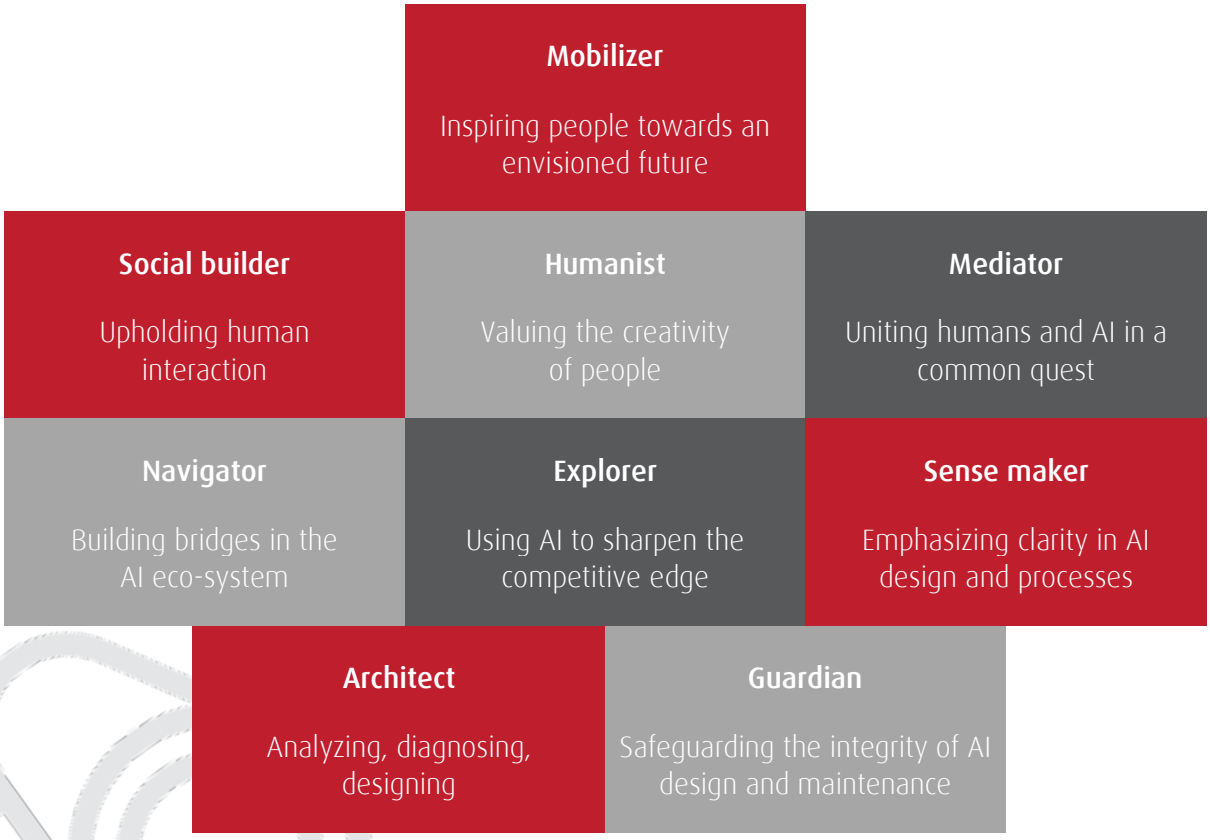
Finally, the biased, emotional decision-making of the human brain is also the very strength that leads to the design and implementation of moral and ethical principles that transcend calculating, utilitarian thinking.

We can hope that managerial wisdom will be able to address current challenges and create a more "conscious"- and purpose-driven future, something machines cannot and should not do by themselves. A meaningful future requires that corporate leadership takes responsibility - a dimension of life that only comes from social exchange, which by definition, requires more than one brain. Responsibility – a socio-economic phenomenon that only a conscious mind can perform - is not located in the brain, but is a social contract between humans, people who are aiming to progress in a commercially effective manner whilst holding a clear, broader, inspiring (social) purpose in mind.

Wise Leadership and AI | Conclusion

Profiling the new AI Leader

The future 'cognitive company' will look very different to anything we know today. Yet data are just a bunch of numbers that are meaningless without context. So AI-wise leaders should facilitate innovation, embracing collaboration between human and AI, transforming operations, markets, industries - and the workforce - with new skills.



AI-wise leaders – like wise leaders in general - can envision a more meaningful future, show organizational stakeholders what it can look like, and guide and enable their organization to pursue that goal. In this way they will instill profitable progress, making society a "better" place to live – all whilst conforming to the fiduciary duty to their organization, their stakeholders, and the community.

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[i] By *sustainability* we mean the way companies create an impact on the environment, climate, people and society with core products and processes and the way in which sustainable policies are integrated into corporate governance and strategy.

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