"Gamechanger AI - How artificial intelligence is changing our world"

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Today's changes have a new driver, which a few years ago still played a subordinate role: artificial intelligence. The question of how this will influence the future world can be summed up in a single sentence:

Machines will have a consciousness of their own.

This technological change will change and influence our entire world. And I would like to summarize this in five theses:

1. the age of the digital universe is only just beginning: each of us and everything will be intelligently networked.

2. there are no restrictions: Intelligent AI systems will invade all areas of the world. The age of machines with their own consciousness begins.

3. under these conditions a new type of human being with a completely new understanding of relationships between humans and to machines will emerge. The age of the global-regional Homo Zappiens begins.

4. this new type of interaction of digital shadows and intelligent agents to humans and machines is the beginning of the age of hybrid intelligence.

5) In order to master and shape this dimension of digital transformation, turbulence-capable design principles are required. Agility, (emotional) awareness and trust are required.

A historical comparison

Johannes Gutenberg began to work on the subject of letterpress printing in 1450. It took him only 10 years to go from a so-called reliquary mirror to mass letterpress printing and another 10 years later the whole of Europe was littered with printing houses. At the time of 1450 there was nothing. Neither paper printing nor the rotary printing press existed. The movable letter was

not yet known. And only 10 years of development must have been a real innovation shock for that time.

What were Gutenberg's success factors? He was a man who lived against the spirit of the times. He was really stubborn and he put an incredible amount of capital into his hands to achieve his goals. He also risked a lot in the process: for example, he pawned almost all of his own life insurance policies. The idea was more important to him than his own profit. And finally, Gutenberg was in love with scales. He was a real production engineer. He also knew how to invent the basic innovation - the reproducible letter - and make it usable for his own purposes, mass book printing. The tragic - and this should be a warning to us: His own hometown of Mainz was destroyed 20 years later by a war, in which mass printed leaflets were used for the first time.

The age of the digital universe

Today we are facing a similarly fundamental disruptive innovation: everything and anything is networked with each other. Development in this direction has been underway for some time, but with the advent of human-independent intelligence in these networked systems, we are entering a new dimension. The objects and objects of daily life, but also vehicles and buildings are becoming conscious on the basis of huge so-called "Big Data Lakes". A new dimension is that we are surrounded by digital agents, digital twins and digital shadows. This starts with the future smartphones, which will become intelligent "personal agents".

But also around us many agents will emerge, which are closely connected to our personal life. We are, for example, on the verge of the interactive media center in our own home, which takes care of the refrigerator, controls the entire energy supply and reminds us of breakfast. - The thinking bumper of the car, on the other hand, is a little further away. But it is also foreseeable that we can incorporate intelligence into polymer materials, which could, for example, cause the bumper to notice when a pedestrian is nearby and assume soft material properties. Implanted cardiovascular pumps are also no longer dreams of the future. And likewise, clothing in which computers are integrated will become normal. Perhaps we will even have a regulation that requires our children to wear intelligent clothing on their way to school. There could also be cooperative building structures in which people communicate intensively with each other: virtually open structures between rental apartments. To this end, Chemnitz Technical University is currently experimenting with 200 elderly

people in a large so-called prefabricated building in Leipzig with the aim, among other things, of developing a kind of 4.0 driving licence that would enable them to deal appropriately with the "4.0 environment" that surrounds us.

The age of machines with their own consciousness

Artificial intelligence has no limits and will conquer all areas of the world. The age of machines with their own consciousness begins now. But first of all: What is the core of artificial intelligence? Why does this today lead to the fact that really all areas are influenced by it? And why is so-called "deep learning" - which is nothing other than feedback neural networks - the decisive breakthrough instrument for artificial intelligence, even though the theory behind it was invented over 30 years ago?

The decisive reason is the availability of data due to extreme networking and digital infrastructures, which are the prerequisite for feedback neural networks to develop effectively. The combination of speed in handling vast amounts of data, a relatively simple learning algorithm and very few necessary "a priori" skills describes the core of the performance capability of modern artificial intelligence.

To this end, I would like to present an example of the "intelligent shoe", which is given an identity at the time of its order. He knows who he is and he also knows who his customer is. He knows what the customer wants from him, whether he should monitor the customer's parameters, for example. And he also knows what his condition and his path will be: He will have to work his way through the production facilities where there is no longer a classic central control system. The production and transport units are, of course, in turn in symbiosis with their intelligent agents who negotiate with the intelligent shoes. All this could be done "democratically" according to the political principle of the separation and interlocking of powers, a method for which there is already a first application for textile weaving machines.

Once the intelligent shoe is completed in this way, an automatic transport container will take over in the near future. Such fully automatic trucks are nothing new - we have already driven more than 5,000 km fully automatically in flowing traffic on German motorways in 2009 with a consortium of the RWTH Aachen University and industrial partners as part of the KONVOI project.

Let us note: Products will act as super agents in the future. They will plan their production and transport themselves. They have requirements for other agents, for example for a production facility, and they negotiate resources with other agents - on the road or in production.

Age of the global-regional Homo Zappien

All these developments have already led in recent decades to a new type of man, which the Dutch scientist Win Veen calls Homo Zappiens. A new type of human being is emerging with a completely new understanding of relationships between humans and with machines. Win Veen presented these thoughts for the first time in 2006 - at that time it still seemed somewhat visionary, but they struck me "like lightning".

It's already commonplace that we have new forms of networking and that daily routines are organized over great distances, sometimes around the globe. It has also already become normal that we are in virtual work and living environments distributed around the world. But what will be new about Homo Zappiens? He can multitask and he can do so from the very beginning. He can think non-linearly. To put it a little exaggerated: the six-year-old child can do 20 things in parallel today, but not one thing five minutes. And that is not bad, but good, because this generation is already adapted to the new conditions of information overload. It already has selection criteria and it is already highly parallel.

What has to change is the educational process.

That is also what we as managers are radically confronted with. We are getting another generation of people into our companies. We have to offer something to this generation. They tick differently and they want to work differently because the old structures seem outdated to them. So it is inevitable that learning processes have to be designed completely differently. Learning through experience, through events, through pleasure will have to be the trend if the systems of universities and schools do not want to end in a dead end. Learning must continue to be fun. To this end, children and young people are moving intensively in social media of various kinds - in channels such as freekickerz, Gronkh, BibisBeautyPlace, LeFloid, Emrah, Mr Wissen2go or above all TheSimpleClub. From a student's point of view, the latter is better than any textbook.

Much more serious will be the change in the working world.

With the systems of artificial intelligence human work will be replaced or changed. This concerns white-collar jobs as well as highly qualified work. IBM-Watson AI computers can already take over certain areas of controlling today. Decentralized platforms will make massive inroads and take over tasks in administration as well. This development will have an enormous rationalization effect - not to mention the autonomous systems in the air and on the road.

But the fully automatic car will not simply "only" drive fully automatically. It will, for example, become the central digital twin for mobile nursing staff and, in swarm intelligence, will take over the entire scheduling, documentation, congestion monitoring, route optimization, etc. with its colleague vehicles. The nurse can then simply get into the vehicle and, using Skype, start a conversation with the next patient she visits. In this case, the vehicle then becomes part of our everyday life as a social robot.

The age of hybrid intelligence

In summary, it can be said that Human-Machine Interaction 4.0 creates a completely new dimension of cooperation between humans and intelligent objects. The age of hybrid intelligence between humans, machines and the respective digital shadows has begun.

The era of man's dominance over the objects he creates is coming to an end. Of course, human-to-human interaction will continue to be of fundamental importance in the future - perhaps even more so than today. There will be no way around it. For example, we are increasingly meeting far too late to talk to each other about the important things. And it is certainly one of the greatest "uncultures" of the last 20 years that people believe they can manage human-to-human interaction via e-mail. Instead, one should ban some e-mail traffic and force people to meet face to face - or at least via Skype - to resolve a dispute.

Human-machine interaction will also remain on different levels, whether on the screen or with the digital agent of the machine or the real machine doesn't matter. But there will have to be an increasing "partnership at eye level". The idea of the "supremacy" of humans in front of the machine no longer carries.

Machine-to-machine communication, which runs without humans, will increase rapidly, precisely because every machine is interspersed with its

digital agents. For example, the weaving machine mentioned above no longer contains about 200 software agents and no PLC controls. These agents even have the right to vote and choose "their" coordinators or speakers. This is where digital shadow formations are created, with which it is possible to interact, but which in themselves form something like a kind of "shadow economy" of machine-to-machine communication.

In the long term, all technical objects in the real world will become intelligent

The digital shadow, the "digital skin" will become a dominant part of technology and human identity, both in the communication between machines and machines, between people and people and between machines and people. A "dynamic of digital shadows" will emerge, which will run in parallel and can increasingly develop a high level of intelligence.

This is the real "lightning" that has struck: In the long term, all technical objects in the real world will become intelligent and develop self-confidence and self-perception. There will be a lifelong learning process of these objects, which learn among themselves with their technical partners, but also with people. Driving schools for technical objects will also become a matter of course. This omnipresent and unobtrusive interaction between the digital shadows of technology and people will dominate all aspects of communication.

This has enormous implications for the digital system landscape with the dimensions that intelligence is everywhere, that the physical and digital worlds are coupled and that we need new types of infrastructure.

Success factors of human action: agility, trust and (emotional) awareness

Let me make one final remark: What are the success factors for such a sustainable digital transformation that takes place under the dominant factor of artificial intelligence? According to our experiences of consulting with P3 OSTO, agility, trust and (emotional) awareness are the central success factors under these turbulent conditions. In my opinion, each factor on its own is absolutely necessary for the success of this transformation - they are "knock-out factors". If one of these three factors does not work, the whole thing fails.

Agility does not only mean the application of Scrum or a method of software development, but it means that the entire structure of a company, from product development to production, production changes, ramp-up processes to administrative structures, is carried out according to the principles of agility.

This is a huge construction site, in which the areas of product development are usually further along than the rest of the company. And the central areas of administration, finance and controlling usually have a harder time, although they would often need it more.

What is also needed is a culture of trust - vertically and horizontally between departments. If you don't have this in your organization, forget the whole transformation! It will not succeed.

And if you don't have emotional awareness - if you don't ask yourself: What is actually happening here? What is happening culturally? What kind of tensions do we have? If you do not perceive this in its breadth and diversity, then you will not succeed either. Mindfulness is the art of perceiving the whole complexity and dynamics (dynaxity) and not suppressing it. However, mindfulness is only an art when you have learned to endure these perceptions and not to immediately fall into reflexes.

Each of these three characteristics must be fulfilled with high quality for change to work. I take the liberty of recommending two books on this subject: "The Ego Trap - 7 Ways to Ruin Your Business" (Renate Henning) and "The Art of Small Solutions - How People and Companies Master Complexity" (Klaus Henning).

May we all succeed in actively shaping the new world of hybrid human intelligence and artificial intelligence in a value-oriented manner before others do so irresponsibly.