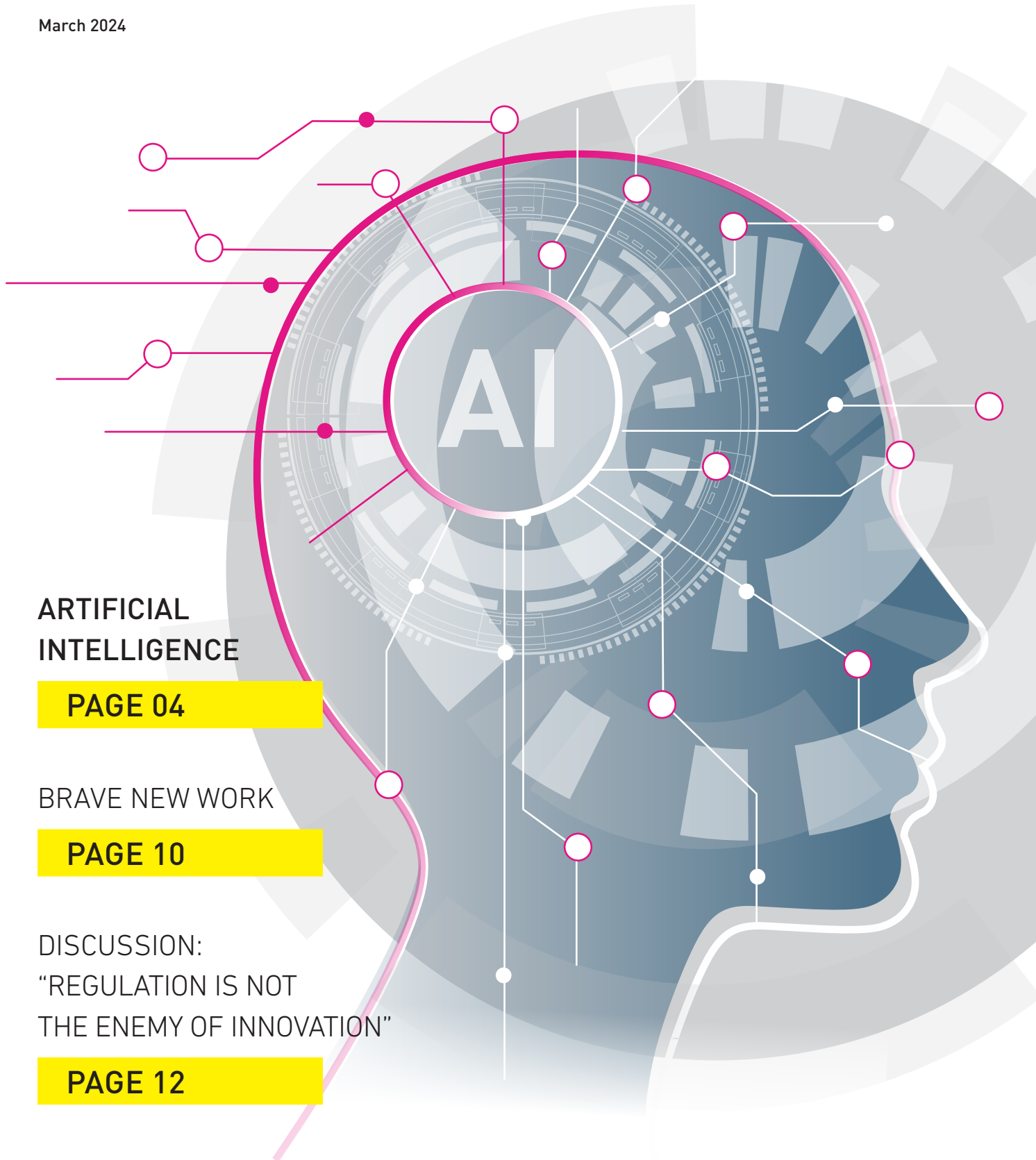


INVESTMENT ZUKUNFT

March 2024



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INTELLIGENCE

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PREFACE



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Dieter Aigner

Managing Director of Raiffeisen KAG,
responsible for fund management
and sustainability

Dear Readers,

As you probably noticed, we have given our magazine a new name: **INVESTMENT ZUKUNFT**. The new name reflects the programme we've pursued for many years now and underlines what we see as the essence of responsible investing: long-term perspectives and viability for the future. Old-school thinking will not allow our society to move forward. What we need are new master plans, which take into account the core aspects of today's social and economic transformation, such as energy, infrastructure, technology, materials, circular economy, e-mobility, and health care. As a responsible asset manager, we have been focusing strongly on these important topics for many years now. They are analysed by our teams and integrated into our investment process. **INVESTMENT ZUKUNFT** captures what we stand for as investors.

This issue of **INVESTMENT ZUKUNFT** focuses on Artificial Intelligence (AI). Some people envision AI as the beginning of the end of the world, while others tout the vast business opportunities and chances for humankind. Artificial Intelligence is a hot topic as well as the subject of heated debate. The benefits and drawbacks of this massive tech-

nological innovation are tightly intertwined. AI can be used with the best of intentions, but also for less noble causes. Warnings about the potential risks of AI systems cannot simply be ignored. Not by us as investors and certainly not by political decision-makers.

Bearing this in mind, the European Commission has rolled out a proposal for a regulation governing Artificial Intelligence, the AI Act. A political agreement was finally reached in December 2023 after tough negotiations. The new law is the world's first legislation governing AI to be adopted by a major regulatory authority. It is important that Europe led the way in this regard, as we can thus also set the standards for legislation at the global level as well.

For the investment industry, this topic is of great interest from a number of different perspectives. On the one hand, AI has become an important investment theme. It plays a key role for the big high-tech companies and is also of vital importance for other sectors, such as health care, infrastructure, and education. On the other hand, the investment industry itself is a field in which AI can be deployed. Speed is an important element on the stock markets.

Information, including misinformation, can trigger huge distortions in a matter of mere seconds. Indeed, we're already seeing the occasional "flash crash" here and there, cases in which AI triggers stop loss orders, leading to massive sales, and within second billions of worth of assets are wiped out. As a result, real companies have sometimes lost as much as 10 to 20% of their value over the short term. This is another area where regulation is needed.

By focusing on AI, we concentrate our attention on a crucial topic that is affecting our society with enormous speed and impact, and one which we must respond to and manage with clearly defined strategies. It is important to take a critical view of Artificial Intelligence, in particular for a responsible asset manager. At the same time, it is also vital to keep in mind the kinds of positive developments that Artificial Intelligence can promote. For instance, AI can make strong contributions to achieving SDGs 1, 3, 4, 6, 10, 13, and 14 (<https://www.bmeia.gv.at/ministerium/aktuelles/sustainable-development-goals-sdg>). Over the medium to long term and in conjunction with good regulation, AI may also be a positive trigger that facilitates the ESG transformation.

ARTIFICIAL INTELLIGENCE

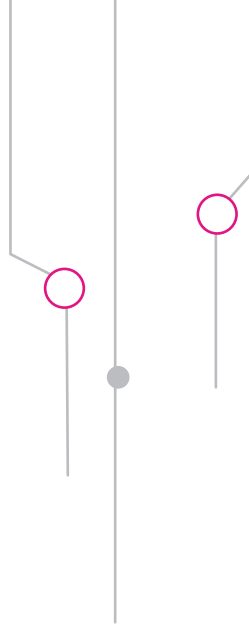
For a long time, Artificial Intelligence was a subject found almost exclusively in the realm of science fiction. With the widespread use of ChatGPT, however, we have all been shown what Artificial Intelligence can do and how quickly it is penetrating many parts of day-to-day life. Artificial Intelligence has the potential to change all of our lives. Of course, the debate rages on as to whether it will only have a beneficial impact or possibly an opposite effect as well.

Regardless of whether it was the computer HAL 9000 from A Space Odyssey or the T-800 in Terminator, AI has always been impressive (and linked to dubious intentions), but it has also been a distant reality. By the 1990s, however, technological development in this field began to accelerate. AI pioneers such as Yann LeCun, Geoffrey Hinton, and Yoshua Bengio laid down a number of scientific foundations, and starting from the 2010s these were gradually implemented in larger and larger AI training models, as the necessary computing power had become available by then. This led to some remarkable breakthroughs such as the AI-trained image recognition system AlexNet, which won the image recognition competition ImageNet in 2012, and the resounding victory of AlphaGo against the best human Go player, Lee Sedol, in 2016. Nevertheless, the broad-

er public was generally unaware of this rapid development, mainly because AI was only really able to shine in certain niche areas. The release of ChatGPT 3.5 in November 2022 changed all of this in an instant. ChatGPT and comparable large language models (LLM) are not only intuitive and useable without (almost) any previous knowledge, they deliver remarkable results. So remarkable indeed that they raise important questions, which we address in the following.

HOW PRECISE IS ARTIFICIAL INTELLIGENCE?

The world is a complex place. Just a few years back it was inconceivable that AI software would be able to interpret images correctly, understand language, and properly assess the context of words and texts. But trained AI software is able to do much more in the field of language »»



Leopold Quell
Fund Manager
at Raiffeisen KAG

than just generate poems and jokes and imitate styles.

AI training is based on mathematics. The key to understanding AI is neural networks (NN) and thus ultimately mathematical functions.

Let's go back to our schooldays for a second: Functions can be used to describe (almost) anything, as long as the relationship between two elements (numbers) is known. For example, the sound waves which reach our ears and are interpreted as voices and words by our eardrums, or light rays that reach our eyes and are transformed into images by our optic nerve. Or how one recognises the (well hidden) head of a lioness in a digital image. This kind of function is complex, but it is manageable for a neural network, insofar as enough data are available that can be used for testing.

Neural networks are universal function locators, or to be more precise, function approximators. This is valuable, because for example in contrast to describing a triangle, for which known sinus functions can be used, there are no pre-set functions available for most of the connections in the world (image recognition, language recog- »



What do you see in this picture?

ChatGPT

The picture shows the head of a lion, obscured by high, dry grass. The lion's eyes are focused and trained directly on the observer, imparting a feeling of attention and possibly threat as well. The camouflage in the grass shows how well lions can blend into their natural surroundings, which is a key factor for their hunting technique.

AI, like ChatGPT 4.0 in this case, is not programmed to immediately recognise what a hidden lioness looks like. That would hardly be effective or practically possible, because "the whole world" is too complex to be packed into a piece of software, regardless of how big the programme might be. Instead, AI creates the connections (functions) itself using a large number of runs (trial, error & feedback) in a neural network.

Image source: www.istockphoto.com/de/foto/lion-verstecken-im-gras-gm518101341-49014490



SCI-FI
MEETS
REALITY



“The prospect that AI may continue to develop at a similar pace as we are used to seeing with semi-conductors and micro-processors is unsettling.”

tion, etc.). These must be learned by the NN in a process that is intensive (in terms of computing power as well), in order to produce the necessary connections.

Even experts were surprised how good NNs are at producing connections and contextual links by training. Because not all connections which AI models produce and which lead to correct results are logical for us. In other words, there are reasons to believe that AI will be able to help us solve (data-intensive) problems in the fields of science of research, because it recognises connections that have previously remained hidden to us. Speaking about this, Jeff Bezos recently said that AI is not only to be seen as an invention, but rather as a discovery as well, to a certain degree. A discovery, whose potential has not been fully recognised and researched.

WHY ARE PEOPLE ALSO AFRAID OF AI?

We use computers and mobile telephones as tools. It has become completely normal that technological progress results in the continuous development and improvement of the hardware and software for these tools. This trend does not scare us. But this is different to some degree when it comes to AI. The prospect

that AI, which has already achieved significant results, may continue to develop at a similar pace in the coming years and decades, as we are used to seeing with semi-conductors and micro-processors, is unsettling to some people.

This feeling has deep roots: Books and films which address these fears, such as *Brave New World* and *Metropolis*, were already being made well before the first computers were even invented. They portend topics which are on people's minds today as well when extreme, negative AI scenarios are being discussed: Are we on the verge of a new age, in which humans will be dominated by machines? Why should I, as a human, even bother to live up to my potentials and to expand my horizons at the expense of considerable time and effort, if AI is faster, more intelligent, and more creative than I could ever be.

That said, one need not even go to this philosophical level in order to understand that a revolutionary technology like AI must necessarily also have a darker side. On the one hand, because undesired consequences could occur, which are unforeseeable at the present time. On the other hand, because AI opens up new opportunities that can be exploited for criminal or otherwise harmful purposes. »

One could say that as a society we were similarly unprepared for the advent of social media 10 to 15 years ago. In conjunction with the spread of smartphones, social media has led to significant changes in our world. Many of these are good, but obviously there also have been and continue to be negative consequences which either stem directly from this latest major innovation or have been amplified by it. The potential impact and change from AI is at least as significant as that of social media, if not greater. And thus the challenges are massive as well.

WHAT CAN AI DO AND WHERE ARE WE HEADING?

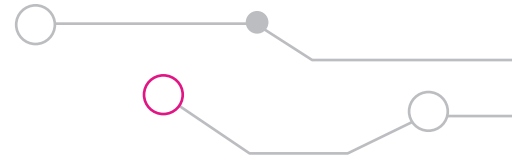
In response to critics, many people point out that one of humankind's key strengths is the ability to adapt. Transition periods triggered by technological leaps are often unsettled times, as they result in major changes. Over the long term, however, in the past we have learned to manage comparable disruptions, to adjust to the new opportunities and risks, and to set limits on the negative aspects. Positive aspects of AI are already reality or approaching maturity. We can see examples for this in a wide range of areas.

- AI-supported robots are being used more and more for recycling waste materials. The task of recognising and dif-

ferentiating various kinds of waste on a conveyor belt is a perfect job for image-recognising AI.

- A market for AI-supported robots is now developing in agriculture. Image-recognition systems can distinguish between weeds and crops, so that only the weeds are sprayed by the robot. There are a number of start-ups in the so-called precision agriculture field, which are concentrating on planting, weeding, watering, and applying fertilisers in a targeted manner. Manufacturers of these systems say that CO₂ emissions can be reduced by precision spraying, because up to 95% less herbicide is used compared to traditional, undifferentiated spraying.

- Schools are another possible area for AI. Accommodating the learning needs of an average of 25 children with different strengths and weaknesses is a great challenge for teachers, and can only be met by making compromises. This often means that some students are overwhelmed, while others are bored and cannot progress as quickly as they could if they had more individualised learning conditions. AI-supported teaching programmes can quickly adjust to the performance level of a student. An increasing shift towards having AI systems teach content would result in a significant improvement in educational outcomes and also free up teachers, »»



so that they could concentrate more on imparting and solidifying students' social skills. Even grading can be supported by AI, which might help to improve fairness. Because in contrast to human teachers, AI only assesses the performance, free of any prejudice or stereotyping.

In summary, Artificial Intelligence is one of the most significant development topics for the immediate to long-term future. A wide range of economic sectors are impacted by this topic, especially in the fields of education, marketing and sales, commercial activities, and industrial production.

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ESG ASSESSMENT

E (environment):

From an environmental point of view, AI opens up new possibilities in the analysis of networked databanks, as a result of which measures for environmental protection can be developed. On the other hand, the very large amounts of energy required, in particular for the (advanced) development of AI models, is an extremely negative factor.

S (social):

From a social perspective, AI has positive potentials in the fields of medicine and pharmaceuticals, while the possible loss of jobs due to AI is a negative factor.

G (governance):

The governance aspects are extremely varied. Artificial Intelligence can lead to better security due to improved solutions in relation to criminal acts or cyber threats, but the risk of data misuse and various forms of manipulation is very high.

ADDITIONAL SOURCES:

Watching Neural Networks Learn → youtu.be/TkwXa7Cvfr8?si=BNVPTBGESS3BUmfH

A Hacker's Guide to Language Models → youtu.be/jkrNMKz9pWU?si=erc3hNDD1JR7vP4p

chatbot-arena-leaderboard → huggingface.co/spaces/lmsys/chatbot-arena-leaderboard

Intro to Large Language Models → youtu.be/zjkBMFhNj_g?si=moTkGcYjz7pY5nx

But what is a neural network? → youtu.be/aircAruvnKk?si=O0e7OsgDy-yWRnz6

How the Enlightenment Ends Henry A. Kissinger →

www.theatlantic.com/magazine/archive/2018/06/henry-kissinger-ai-could-mean-the-end-of-human-history/559124/

Noam Chomsky on Artificial Intelligence, ChatGPT → youtu.be/_04Eus6sjV4?si=_kmx2FS04em-Svx

BRAVE NEW WORK

The imminent, widespread use of Artificial Intelligence, in particular in the form of so-called large language models (LLM) such as ChatGPT, in the labour market leads to many questions:

- Will it be possible to free up workers from doing repetitive administrative tasks, allowing them to turn to more complex responsibilities?
- Will so many jobs be automated that there will be mass unemployment?
- What does this development mean for the inequality between the developed world and the rest of the world? And what does it mean for gender equality?

The International Labour Organization (ILO) addressed these issues in detail in a recently released study.* To do this, about 7,500 different professional profiles and tasks were defined, which were then assessed in terms of their potential for automation. For instance, taking a simplified approach, the occupation of primary school teachers was broken down into lesson preparation, dissemination of knowledge, creating a suitable learning environment, conducting parent meetings, etc. While some of these tasks clearly have less potential for augmentation or execution by LLM, some, such as preparing daily and longer-term lesson plans for example, can be supported and thus made more efficient.

JOBS WITH POTENTIAL FOR AUTOMATION

Occupations which can be strongly automated according to this classification include administrative and communication tasks, as

well as client services such as making appointments, correspondence, translations, processing client inquiries, and data-based tasks such as accounting activities ranging from the preparation of invoices to monitoring payments.

By assessing the individual tasks it was possible to identify a large number of occupations in which these responsibilities are present to a limited degree as well as such which exhibit a high level of them. It is anticipated that these latter occupations will have significant potential for augmentation by LLMs. These include, for example, teaching, the medical, technical, and legal professions, and software development and analysis.

WOMEN MORE EFFECTED

In another step, the ILO experts analysed the global share of these occupations according to various income groups and their

distribution between women and men. The share of employment that is defined as being potentially completely subject to automation is seen as being very moderate, but there are significant differences between men and women. In particular in the higher income ranges, women will be impacted disproportionately strongly by automation and thus by the possibility of job losses. This is due to the relatively high share of employment among women in occupations with accounting and secretarial responsibilities.

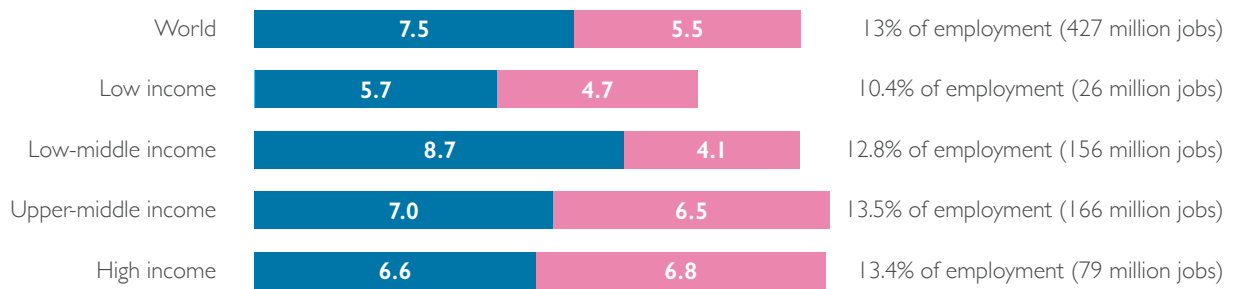
REGIONAL DIFFERENCES

From a regional perspective, the possibility of deploying LLMs in the developed countries is significantly higher than in the rest of the world, due to the required energy consumption and access to the Internet. Individual countries, such as India or the Philippines, may be very strongly impacted by the disappearance of call centres. »



Sabine Macha
Head of Product Management
at Raiffeisen KAG and member of
Fondsfrauen

Chart 1: Augmentation potential (% of employment)



Source: Gmyrek, P. et al 2023. ILO Working Paper 96

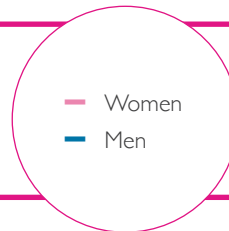


Chart 2: Automation potential (% of employment)



Source: Gmyrek, P. et al 2023. ILO Working Paper 96

So, it is not likely that we will run out of work. The potential for automation is never fully exploited and it is also impossible to foresee the development of new occupations, as it was for example in the field of web marketing. That said, ChatGPT and

other LLMs are here to stay and they will have disruptive impacts in some occupations. Accordingly, as a society, it is important for us to react to the changing technological conditions, limit negative impacts, and seize the opportunities.



Moderated by:
Dieter Aigner,
Managing Director of
Raiffeisen KAG



Günther Schmitt
Fund Manager and Head of Developed
Markets Equities at Raiffeisen KAG, Vienna



Sandra Wachter
Professor of Technology and Regulation,
Oxford University



Michael Wiesmüller
Head of the Department for Digital and
Key Technologies for Industrial Innovation,
Federal Ministry of Climate Action,
Environment, Energy, Mobility, Innovation
and Technology, Vienna



Bernd Zimmermann
Go-To-Market Lead for Modern Work &
Surface for Austria, Microsoft, Vienna

Round table discussion on the need to regulate Artificial Intelligence

After tough negotiations, a new law on Artificial Intelligence, the AI Act, was finally agreed upon at the EU level last December. Ms Wachter, you were actively involved in this legislation. How satisfied are you with the outcome? Could you explain briefly what the Act basically achieves?

Sandra Wachter: I am really happy that we have this law at all. Even though there is some justified criticism, the AI Act in its current form is a thousand times better than having no law. It is very, very important that we now have regulation that we can work with. Another clearly positive point is that the law not only regulates predictive Artificial Intelligence, i.e. the use of machine learning to recognise patterns in past events and make predictions about future events, but also generative AI, which can learn human speech, art, and other complex topics, in order to be able to accomplish new tasks.

What would you criticise?

Sandra Wachter: My critique applies mainly to the design. With generative AI, a two-level approach was defined, and developers of so-called generative AI models have to stick to this. If the model has systemic risks, then the requirements are even stricter. Fundamentally speaking, there is no problem with this two-level approach. The problem is just classifica-

tion. Because the stricter requirements only apply when you're at a high FLOPS level. FLOPS are floating-point operations per second, a measurement of the performance of computers or processors. This involves how much energy, how much resources are used during training, and thus it only applies to very high performance models, probably just to GPT 4 or maybe Gemini. This means that the stricter rules only apply for these systems. From my perspective, this is not a suitable metric for measuring risk, because one is actually measuring more the environmental load. The things that we need to worry about – such as bias, discrimination, misinformation, lack of transparency, and data abuse – cannot be pinned down this way and also occur in models with lower performance levels. However, it is possible that this design can be corrected with a delegated act. Turning to predictive AI, I would have supported a complete ban on certain applications in emotion recognition and face recognition (for example in the criminal justice system) and predictive policing.

The EU is ahead of the pack with this AI regulation. How important is that?

Sandra Wachter: Very important. It's really great that we were able to put results on the table first! Now we are turning to the global level. »

“REGULATION IS NOT THE ENEMY OF INNOVATION”

You don't see any disadvantages for Europe as a business location?

Sandra Wachter: If one perceives regulation as an enemy of innovation, then yes, you can see it that way. But if you look at the AI Act, you see the opposite of this. The regulation is there to protect fundamental and human rights, to make AI transparent, to prevent sexism and racism as much as possible, and to bolster cybersecurity. I don't think we end up in a worse position because of this. And regardless of these aspects, I think it is important to keep in mind where the power is. The power is not where the development takes place, the power is where the purchasing takes place. Europe is the largest market in the world. It's a good thing that we are making progress here and setting the tone.

Mr Wiesmüller, what do you think? Is regulation the enemy of innovation?

Michael Wiesmüller: I can't say often enough: We simply have to stop creating an opposition between innovation and regulation. It's extremely detrimental to the conversation. Innovation and regulation have to be seen in relation to each other. Bearing this in mind, for our team at the Ministry, Chapter 5 in particular is very important, which is called "Measures in Support of Innovation", i.e. measures that allow regulation to be conducive to innovation.

This Chapter is an attempt to do away with this dangerous juxtaposition of innovation and regulation. We can create processes in which innovators learn something from the regulators, and vice-versa. We can design processes, in order to regulate better and to create innovation processes that better meet human needs. That was one of the most important chapters for us and in general this section came out very good. Of course, you can always do it better, and this is not the bible for the next 100 years. Maybe the Act will have to be amended, but it is very important as a starting point and adequately good in my opinion.

Does technology need regulation in general?

Michael Wiesmüller: I think what we are seeing with AI regulation is a principle that has always been around, in the sense that not everything that is technically possible is economically a good idea or socially correct. Technological developments must be viewed through a critical lens. The categories that we are discussing here, such as

discrimination and impacts on democracy, sound abstract. Back in the 1950s, we had a wonderful material here in Europe, a material with fantastic properties. It was lighter and easier to produce. It could be widely used and was: in air filters, toothbrushes, in buildings, in automobiles. It was called asbestos. It took us a long time to see what kind of toxicological effects this material had on human health. It wasn't until the 1980s and 1990s that we then started to regulate its use. Now, of course, I don't want to draw a direct parallel between AI and asbestos, but we have to understand that technologies can have toxic effect on us, on our children, our society, and our democracies, and that we have the ability to actively shape technologies. I also agree with Ms Wachter that imperfect regulation is much better than no regulation at all. The economic power that Europe has can be harnessed as regulatory power, and in turn we also need this power at the geopolitical level, when it comes to fashioning global governance of AI. »



“Europe is the largest market in the world. It's a good thing that we are making progress here and setting the tone.”



“It’s important that companies’ management teams define a clear strategy for how AI should be handled.”

Microsoft is one of the biggest users of Artificial Intelligence and started with this well before a broad public discussion of the topic even emerged. It would probably be too much to list off all the various areas in which AI is deployed, but could you just give us a few good examples of how you are harnessing Artificial Intelligence?

Bernd Zimmermann: Responsibility and trust are our top priorities. Proper framework conditions are necessary for trust to develop. As for examples, there are some fantastic applications in the field of medicine. I myself am always surprised by the new opportunities that AI opens up for us every time. For instance, medical practitioners can exchange diagnoses via Teams Meetings and access expert knowledge in real time. It’s possible to feed X-ray images into models and get diagnoses much faster and easier. Additionally, AI can be used to classify tumours as benign or malignant much faster and easier as well. Another example is education. Although the Ministry of Education wants to proceed slowly with the use of AI, students are already working with it to some degree. And as a father of two children, one of whom has dyslexia, I know that AI can make great contributions in education. For children who are learning to read and write, AI is able to analyse the weaknesses much faster, for example a child’s pronunciation

when reading, mixing up syllables, and the like. Using this quick input, teachers can focus much more quickly on these individual shortcomings and use their time in a more targeted manner. AI has the potential to radically change education, both at the basic and advanced levels. And last but not least, Artificial Intelligence can also be used for programming in the field of IT, where there’s currently a huge shortage of skilled workers. In the automotive industry, for instance, there are several steps that AI can take on, and the remaining 20–30% can then be finalised by people. Provided that there is a suitable legal framework in place and there’s trust in the technology.

Is it even possible to protect against abuse, discrimination, and crime?

Sandra Wachter: If you have a system that is based on historical data, then it is technically impossible for it to have no bias. A dog that’s been biting the mail carrier for years is not going to stop doing that because it realises itself that that’s not OK. And AI is also not able to think critically about whether there was maybe a mistake in the past. It executes what it has been taught. When you’re talking about high-risk areas, such as the job market, education, extending loans, criminal justice, etc., where existential decisions are made for

people, then it is important to assume that there is this bias and to do something to counter it, for example by adjusting the algorithm so that the discrimination does not occur anymore. By not ignoring this aspect, it is possible to transform a mistake into an opportunity and to make much better, fairer, and more transparent decisions going forward, compared to what was possible in the past.

Bernd Zimmermann: It was a milestone for us that we quickly found a legal framework for Artificial Intelligence. There’s still work to be done in the field of social media, and we are now starting to see what effects it is having on society. It’s important to be aware that these kinds of technologies can be rolled out very quickly. And with this in mind, it’s also important that companies’ management teams define a clear strategy for how AI should be handled and what responsibility one has for society. Furthermore, it is necessary to define how AI can be used sensibly and where it should be consciously avoided.

What role does AI play for investors?

Günther Schmitt: AI has advanced to become a key topic in the investment world. If one takes a look at prices on the stock markets, it’s clear that the companies that have recently done well are those that are »

Discussion with Günther Schmitt, Sandra Wachter, Michael Wiesmüller, and Bernd Zimmermann



strongly active in AI and are investing a lot in it. Right now, the reporting season for US companies is under way and just recently reports were released by the three most important companies: Meta, Amazon, and Apple. All of them talked about extremely high growth rates and also said that they were investing a lot of money in AI. However, these companies are also struggling with the misuse of data. And thus, from a sustainability point of view, it is problematic to invest in these companies. We have standards in this regard that we maintain and accordingly we are not interested in investing in some of the companies. That said, we are in contact with these companies and, together with other European investors, we are trying to get them to resolve these problems.

And aside from the companies you mentioned?

Günther Schmitt: We see lots of opportunities for using AI and are fundamentally very positive about AI. Mr Zimmermann already mentioned several aspects. Medi-

cine is such an example. If you look at the pharmaceuticals industry, AI can make the development of drugs much cheaper and faster, whereas it took many years and decades in the past. Along with what has already been said, one of the criticisms of AI is the high energy consumption. But I think it will be possible to resolve this with the use of renewable energy in the future. As for the question about jobs, I don't take such a negative view of this. While some jobs will be lost, other occupations will emerge in turn. The biggest problem really is the misuse of data. And we do need to have a much more intensive discussion with companies on this subject. And the more one does that, the harder they will work to resolve this problem.

What are your thoughts on this, Mr Wiesmüller? Will AI make jobs disappear?

Michael Wiesmüller: This is an incredibly exciting question that we have been interested in for the last ten years now. Back in the day, the topic was automa- >>

“The biggest problem really is the misuse of data. And we do need to have a much more intensive discussion with companies on this subject.”


ROUND- TABLE- DISCUSSION

tion and robotics. I think one has to make the distinction between jobs and tasks. There is a big difference. Certain sets of tasks will disappear as a result of AI. However, many occupations consist of a bundle of different tasks. Some of these will be taken over by AI, while others may undergo significant changes, and new ones may appear. Speed will be a factor. Normally, throughout the entire history of the 20th century, the labour markets have been able to absorb the waves of automation. While some career groups have grown smaller, other new ones have emerged again and again. The main argument of some people, let's call them 'techno-pessimists', is based on the idea that this development is proceeding so quickly that the labour market will not be able to absorb it. In my view, tasks that can be automated sensibly, should be automated. It does not appear to make much sense to me to forbid AI

systems from certain areas, in order to preserve jobs. There have to be better reasons. I don't think that AI will be a machine that results in the loss of a lot of jobs. It will disrupt the labour market, restructure it, and require new profiles. But I don't think it will lead to masses of unemployed people.

Can AI actually replace people? There's also the question of soft skills, such as empathy, etc.

Bernd Zimmermann: Artificial Intelligence is nowhere near being able to replace all of the abilities and skills that real human beings have. AI is neither empathetic nor creative. Nor can it build networks, and skills of this kind are going to be increasingly important in the future. However, there are many areas where automation is simply the better solution and where AI will be able to free up capacities for creative, conceptual work or innovation. So, I see it in a very positive light. That said, education will always be important at the workplace in general. It's crucial for better opportunities on the labour market, more demanding jobs, better pay, and much more. »



“Artificial Intelligence is nowhere near being able to replace all of the abilities and skills that real human beings have.”

“One has to think about the worst-case scenario right now already, so that we end up with jobs that are desirable, secure, and well-paid.”

Sandra Wachter: In particular with regard to the labour market, regulation will be very important. For me personally, I'd like to see work that I wouldn't want to do myself simply be automated. But will I get the same salary then? Is my job and my income secure in this case? Because AI is generally used to reduce costs. Companies tend to specialise in cutting workplaces, not adding them, and this has been witnessed in the tech sector in particular. IBM, Amazon, Meta, and X (formerly Twitter) have slashed huge numbers of jobs to cut costs.

And then there's another question: Are the new jobs that will be created in the future really good ones, in the sense of being well-paid and good quality? Or do I have to sit around all day looking over the shoulder of an AI system to see if the algorithm is making a mistake? In this regard, innovation is really progressing more quickly than new jobs can develop. Every technology has rendered some jobs obsolete. However, right now jobs are simultaneously being replaced in a number of different areas, such as medicine, justice, journalism, and agriculture. That's something we've never seen

before. And the jobs that are being created, like influencers, prompt engineers, and platform workers, will probably have a shorter lifespan than traditional jobs, or at least offer a significantly lower level of labour protection compared to traditional employees. One has to think about the worst-case scenario right now already, so that we end up with jobs that are desirable, secure, and well-paid.

For decades now, major investment banks have been trying to implement quant models for actively managed funds, in order to achieve better performance. Have they been successful?

Günther Schmitt: No, it's been seen that this doesn't work. At the moment, some companies are making an effort again to create AI funds. But so far, these have also not been really successful, even though these models and supercomputers can process the data in the background a million times faster than us people can. Clearly, the mechanism of how stock exchanges function has not yet been figured out.

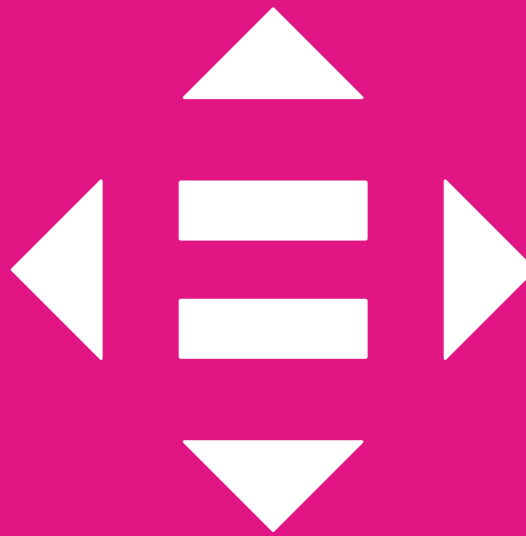
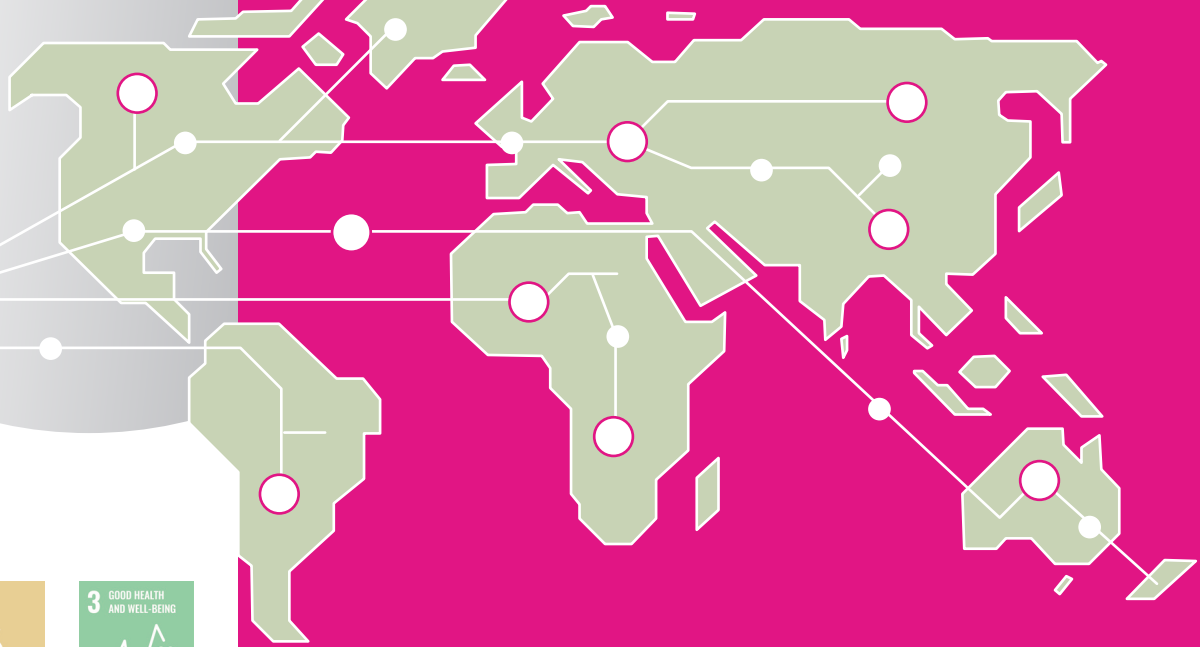
Speed is a big watchword on the stock markets. Information, including misinformation,

can trigger massive losses in a matter of seconds...

Günther Schmitt: Yes, it's 100 per cent true that there can be huge problems in this regard. We're already occasionally seeing a "flash crash" here and there, cases in which AI triggers stop loss orders, leading to massive sales and within second billions of worth of assets are wiped out. The companies impacted sometimes suffer price declines of 10 to 20 per cent. And there are a number of legal questions that still need to be clarified. There are some efforts to address this via regulation, but so far no adequate answers have been found.

This year features important elections, in particular in the USA. In the future, will AI determine who is going to be the President of the United States of America?

Bernd Zimmermann: I think that all of us are aware of this issue and still feel the effects from the last election. I can state confidently that the major technology companies are well prepared to prevent precisely this kind of outcome. But can one rule it out completely? No. But I think we have come one step closer to being able to.



SUSTAINABLE DEVELOPMENT GOAL 10 (SDG 10):

Reduced inequalities

The goal of SDG 10 is to ensure that all people, regardless of their social or economic situation, have access to resources, education, and opportunities to achieve their full human potential. This development goal aims to fight discrimination on the basis of race, gender, age, disability or sexual orientation and to create conditions that allow for fair, inclusive economic growth.



This represents an important step towards achieving sustainable development and a more fair, stable global economic system. Because inequality can lead to wide-ranging social, economic, and political problems, in particular in the world's poorer regions. Consequently, SDG 10 is an important part of the international agenda for combating poverty and for improving the living conditions of people around the world.

Artificial Intelligence (AI) is causing massive disruptions in many areas of our day-to-day lives. Not all aspects of the long-term consequences of AI's penetration into everyday life are currently foreseeable. However, in many respects AI can contribute to overcoming discrimination and inequality and to easing access to resources and opportunities. For instance, AI can facilitate the analysis of data-based inequalities and discrimination. By analysing large datasets, patterns can be identified and corrected, which helps to reveal inequalities

and to take countermeasures. Furthermore, AI can also ease access to information, as AI tools such as chatbots can provide information cost-effectively, especially for people who live in geographically remote areas or have limited access to information from other sources. Other opportunities for AI in terms of improvement equal opportunities include customised needs analysis in the field of healthcare (via individualised medical decision-making processes) or in education and career counselling. Ultimately, if used properly, AI can contribute to reducing discrimination by making human decisions more objective and fair, for instance by way of unprejudiced data analysis. AI tools can help to identify and report unethical or discriminatory behavioural patterns at companies and organisations. That said, it is important that the conceptualisation and implementation of AI systems proceed in accordance with ethical guidelines, in order to prevent misuse and undesirable developments.

THE FOLLOWING BOX TEXT PROVIDES AN OVERVIEW OF THE KEY ASPECTS OF SDG 10. THE UN GOALS FOR REDUCING INEQUALITY WITHIN AND AMONG COUNTRIES, WHICH HAVE ALSO BEEN INCORPORATED INTO THE AUSTRIAN FEDERAL GOVERNMENT'S 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT, ARE PRESENTED IN ABRIDGED FORM BELOW:

- ✓ To progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.*
- ✓ To empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.*
- ✓ To ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies, and practices and promoting appropriate legislation, policies, and action in this regard.
- ✓ To ensure enhanced representation for developing countries in decision-making in global international economic and financial institutions.
- ✓ To facilitate orderly, safe, regular, and responsible migration and mobility of people.

* By 2030

Source: <https://www.bundeskanzleramt.gv.at/themen/nachhaltige-entwicklung-agenda-2030/entwicklungsziele-agenda-2030.html>



Mathias Zwiefelhofer
Fund Management –
Corporate Responsibility
at Raiffeisen KAG

ON THE TOPIC OF CORPORATE RESPONSIBILITY

ONE TOPIC THAT TRIGGERED INTENSE MOVEMENTS ON THE CAPITAL MARKETS LAST YEAR WAS THE HYPE ABOUT ARTIFICIAL INTELLIGENCE (AI).

The shareholder engagement activities of Raiffeisen Capital Management's fund management in relation to AI include dialogue with some of the leading companies and research firms in this

field. As part of these activities, roughly 45 companies around the world were asked about their activities with AI and the related social opportunities and risks.

The following questions were sent to these companies:

- 1 How are you integrating AI technologies into your business?
- 2 Are you currently using AI technologies in your business and in which fields do you see AI as being a game changer?
- 3 Can you tell us about your company's AI research and development efforts and where do you see the biggest potential for market growth?
- 4 With due regard to SDG 10, how does AI contribute to promoting fairness and equal opportunities at your company?
- 5 Will AI be replacing jobs at your company?
- 6 What risk management strategies are in place to handle potential technological, operations, and cybersecurity risks in relation to AI and quantum computing?



VOICES

ARTIFICIAL INTELLIGENCE

1 Salesforce

For cloud providers, one obvious use for AI is to integrate it into software, in order to make the applications more user friendly. Last year in particular, the media was abuzz with AI stories, but the cloud computing provider Salesforce already started investing in Artificial Intelligence ten years ago. With the chatbot "Einstein Copilot", Salesforce has now created an AI-supported solution for its products. This bot offers clients individual answers to acute problems when using the software, via live chats. Consequently, clients don't have to wait in long customer support queues, as they are supported personally by the genius physicist Albert Einstein.


2 Capgemini

The shortage of skilled workers is a never-ending story in the tech sector. The French tech and IT consulting firm Capgemini sees the biggest potential for using AI in its ability to provide support for its employees. Thanks to AI, support will become more efficient, productive, and

agile. Capgemini is training its employees specifically to use AI applications for a wide range of activities, including the production of documents and source code in the IT department and an AI-supported application process to secure the best talents for the company. In its own field and with regard to the company's operational activities, Capgemini does not see AI as a game changer, as clients' IT solutions have to be viewed individually.

3 Advantest

We clearly saw last year that semiconductor manufacturers profited from the AI boom, but the production of semiconductor testing equipment has also become more important. For Advantest, a Japanese manufacturer of semiconductor testing equipment, AI is thus more than just a tool to improve the efficiency of internal processes: It represents an opportunity to use AI as the basis for value-enhancing expansions of business activities. To achieve this goal, the company is actively hiring AI architects, who are participating in the broadest possible »



CORPORATE
VOICES ON THE
TOPIC OF
ARTIFICIAL
INTELLIGENCE
(AI)

range of operations at the company. Additionally, Advantest wants to use AI to better access the markets it can serve.

4 & 5 Dynatrace

Artificial Intelligence is often viewed critically when it comes to social aspects. We have discussed these risks, as well as the opportunities, in dialogue with global enterprises.

The US technology company Dynatrace, which was originally founded in Linz, believes that AI offers the possibility to promote fairness and equal treatment, but according to the company it is only just starting to implement AI-supported systems throughout the company.

One example for the integration of fairness in the sense of SDG 10 (UN Sustainable Development Goal) is the democratisation of information. Independently of their pre-existing knowledge, AI can help employees to access and also understand AI-supported insights. In terms of job security, Dynatrace does not see any risk for existing employees and instead believes that employees stand to benefit from the advantages of AI.

In general, most of the companies that Raiffeisen Capital Management spoke with see AI solutions as a support tool for existing jobs and not as a replacement.

6 Wix.com

EU guidelines are also relevant for companies which are not listed in the EU. The Israeli web design platform Wix.com is taking a close look at the regulator's guidelines for AI. In preparation for more EU legislation, Wix.com has started to develop an AI governance programme, which is to be implemented before any regulation comes into force.

6 Tencent

Integrated AI systems that have access to many kinds of data within a corporate group may represent an attractive target for cybercriminals. This issue is especially important for the Chinese tech giant Tencent. Tencent operates WeChat, one of the biggest messaging apps with about 1.3 billion monthly users.

Tencent has committed to the "Four Principles of AI" and is strengthening its data security measures, including an AI data security management guideline, which provides for data minimisation and a prohibition on illegal data trading. For Tencent, protecting sensitive data is a top priority, and the company is restrictive in providing access authorisations and performs regular security checks. Additionally, a risk assessment framework has been developed for new AI products, which establishes clearly defined responsibilities.

INTEL INSIDE

A FASCINATING TRIP FROM ARTIFICIAL INTELLIGENCE (AI)

The young generation of 1968 is often associated with the start of the peace movement, significant progress in equal opportunity for women, the hippy movement of free love and flower-power, and the Woodstock music festival. However, 1968 also marks the year that one of the most important companies in the technology sector got its start. A brand that every hardware and software user comes into contact with and that everyone knows: Intel.

Intel's story began in July of 1968, when Robert Noyce, known as the "Mayor of Silicon Valley" and Gordon Moore, a pioneer in the semi-conductor industry, founded a company together. They didn't do it in a garage, like many other technology start-ups in that day and age, they started out in a more traditional setting, a laboratory. The pair's goal was to create innovative technologies that would revolutionise the way people interacted with computers. Noyce and Moore not only brought technical expertise, they fostered a corporate culture based on creativity and entrepreneurial spirit. Intel quickly entered the market for memory chips and rose to become an important player.

START OF A NEW ERA IN COMPUTER TECHNOLOGY

One key moment was the release of the world's first microprocessor in 1971, the

Intel 4004. This tiny chip marked the start of a new era in computer technology, as it integrated a central processing unit on a single chip. In the years thereafter, Intel's success continued with the introduction of numerous groundbreaking microprocessors. The Intel 8008, 8080, and finally the 8086 made huge contributions to boosting computer performance. The 8086 was particularly important, as it laid the foundations for the x86 architecture, which is still used in many PCs and servers to this very day.

THE PENTIUM BUG

The 1990s then saw massive problems with the so-called Pentium chip, which was hit by a processor bug that caused errors. Intel initially tried to play down the problem (saying that it occurred only seldomly and was even then just a minor issue), but its biggest custom- »

WOODSTOCK TO



Herbert Perus
Sustainability Office
at Raiffeisen KAG

er back then, IBM, thought differently and paused Pentium sales. However, the real scandal was that Intel had actually known about the bug for a long time, but elected not to publicise it. More than just a few “Pentium jokes” were made back then, for example “When Microsoft is playing football against Intel, it’s 11 Microsoft players versus 10.9999 Intel players.”

After this low point, the company then started to diversify into new business areas in the 2000s. One key decision was the 2015 takeover of Altera, a leading supplier of programmable logic chips (FPGAs). This acquisition enabled Intel to expand its product portfolio and advance into the field of computing centres and the Internet of Things (IoT).

In parallel with this, Intel invested heavily in R&D to press forward in semi-conductor technology. Even now, the company hires the best graduates in technical studies in the USA and houses them in Intel-owned living quarters.

The introduction of processors with smaller and smaller structure widths, such as 14 nm (nanometre) and 10 nm, paved the way for better performance, in

conjunction with lower energy consumption. This technological progress was decisive in meeting the rising requirements for computing power and energy efficiency.

INTEL IN THE VANGUARD

The rapid development of Artificial Intelligence has had a transformational effect on various industries in recent years. Intel has established itself as one of the key players in shaping and supporting AI technologies. The basis for every AI application is computing power, and Intel has always played a central role in supplying high-performance processors. Even in the early days of the AI revolution, Intel recognised the significance of processors which were optimised specifically for the needs of machine learning and neural networks.

Along with hardware, software also plays a major role in Intel’s AI activities. The company has invested heavily in supporting AI frameworks which enable developers to implement AI algorithms efficiently. It has cooperated closely with various AI frameworks such as TensorFlow and PyTorch, in order to ensure that its processors can be optimally utilised. »

COMPANY SPOTLIGHT

EDGE-COMPUTING FOR REAL-TIME APPLICATIONS

One important focal point for Intel in AI is edge computing. Edge computing refers to processing data directly on the device at the “edge” of the network, instead of having to send all information to a central cloud. This is of crucial importance, in particular for real-time applications such as autonomous driving, intelligent cameras, and IoT devices.

Another exciting business area of Intel is research in quantum computing. Intel has made significant advances in the development of quantum processors, which have the potential to substantially accelerate complex AI calculations.

FUNDAMENTALS

(as of 26 Jan 2024):

Market capitalisation:

USD 202.4 billion

Employees:

131,900

Turnover:

USD 54.23 billion

Net income:

USD 1.69 billion

Dividend yield:

1.02%

Price/earnings ratio:

54.2

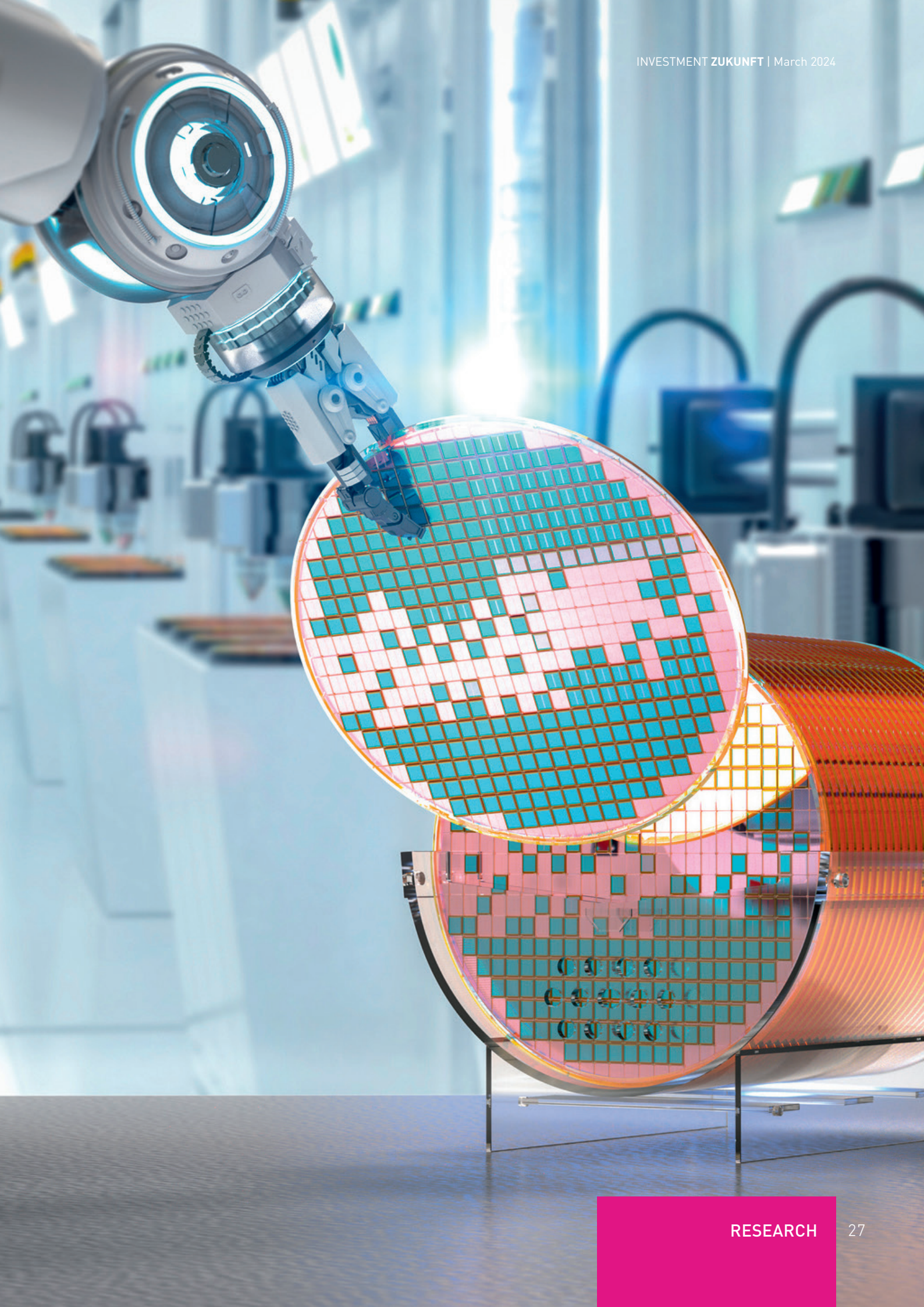
Free float:

99.94%

Despite Intel's impressive progress in Artificial Intelligence, the company also faces challenges. Competition in the industry is intense, and other firms are also investing massively in the development of AI technologies. The challenges range from optimising AI algorithms to finding the answers to ethical questions in relation to the use of AI in various different fields. In particular, keen competition from enterprises such as AMD and NVIDIA in the field of processors and the difficulties in transitioning to smaller structure widths have led to delays and production problems.

CONCLUSION

Intel has had an amazing journey in the field of Artificial Intelligence and more is likely to come, from the supply of high-performance hardware and the promotion of software frameworks to the research and development of quantum computing. AI technologies will undoubtedly continue to advance, and Intel appears well positioned to play a key role in the exciting future ahead.



CLOSING THE GENDER GAP ON THE CAPITAL MARKET

According to Raiffeisen KAG CEO Hannes Cizek, it was a very challenging job to convince women in favour of capital market investments. In fact, every year studies consistently arrived at the same, or at least very similar, results: Women avoid riskier investments, because they are generally significantly less interested in financial investments, do not consider themselves to be competent enough in financial matters, and also do not have enough liquidity to be able to risk losses when saving for the future. As a result however, said Cizek, women also miss out on opportunities, which men took advantage of. Raiffeisen KAG wanted to take active measures to change this, by specifically getting women involved in events and providing them with information.

STUDY SHOWS WOMEN ARE UNCERTAIN WHEN IT COMES TO MEASURING RISKS

A study by marketmind that was commissioned by Raiffeisen KAG shows that women rate their interest in financial investment at 2.8 on a scale of 1 to 5, while men reach an average of 2.4. A similar situation is seen in the field of financial competence: Women estimate their own knowledge on the topic of "Equities, bonds, and investment funds" at 3.7 on average, while men come in at 3.1. And when one tests financial knowledge, it is seen that women indeed have a lower level of knowledge. In particular with regard to

At a press conference in late 2023, Raiffeisen KAG addressed the issue of the gender gap on the capital market and also announced that it was partnering with Viki Schnaderbeck, entrepreneur and former captain of the Austrian national football team.

the assessing the risks of securities, there is a large gender gap in terms of knowledge. In answering the question as to whether an investment in the equities of an individual company was less risky than an investment in a fund with equities in similar companies, only 53.5% of women responded with "do not agree", while this figure was 73.2% for men.

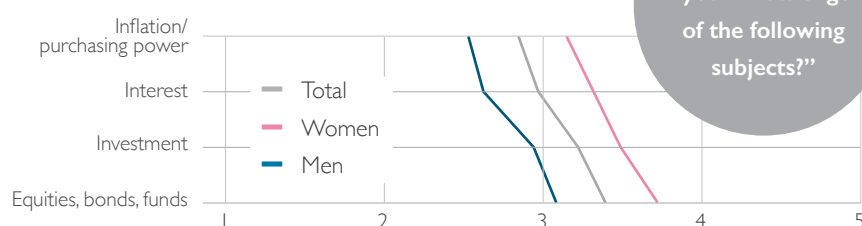
CAMPAIGN TO IMPROVE WOMEN'S FINANCIAL KNOWLEDGE

Last year, Raiffeisen KAG launched its

biggest campaign so far, specifically addressing women throughout Austria in relation to capital markets investments and informing them about the opportunities and risks on the capital markets. The company will continue the campaign this year with the help of Viki Schnaderbeck, who will be giving testimonials for Raiffeisen KAG. Schnaderbeck is a perfect match for the company as she personifies team spirit, leadership, and diversity. She also advises other female athletes on the subject of investing. »

Study results: Women consider themselves less competent in financial topics

Respondents considered themselves most competent on the subjects of inflation/purchasing power. They were less certain about equities, bonds, and funds on a scale of 1 (low) to 5 (high).



Source: Study "Frauen & Geldanlage", Raiffeisen KAG, 2023

"How do you rate your knowledge of the following subjects?"



Viktoria Schnaderbeck, former captain of the Austrian national football team, with CEO Hannes Cizek and Daniela Uhlak-Kliemstein from Raiffeisen KAG.

WOMEN APPRECIATE A FOCUSED APPROACH

Last year, Raiffeisen KAG reached a total of around 2,600 women at more than 20 events, including events for female customers of Raiffeisen banks, cooperation with women's networks and trade fairs. When one addresses the topic specifical-

ly with women, they are very open to it and subsequently also become active very quickly, according to Daniela Uhlak-Kliemstein, Head of Digital Media & Sales Management at Raiffeisen KAG. Women appreciate a comfortable atmosphere for talking within their own peer group. Many

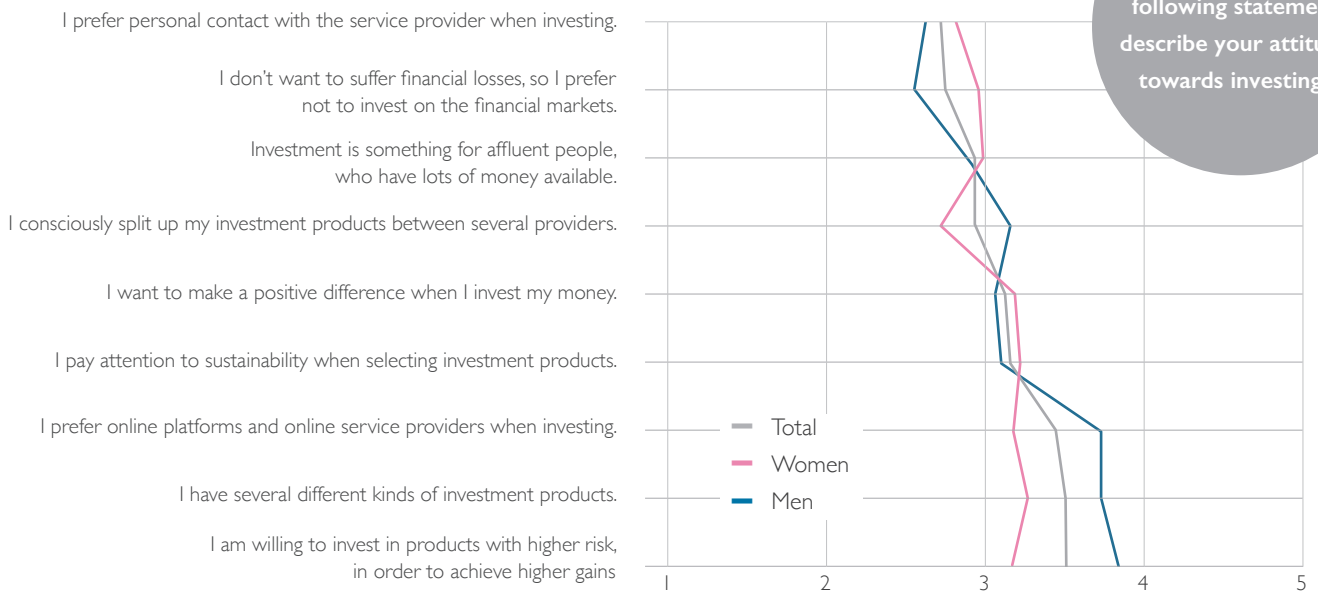
of them have already thought about investing on the capital markets in the past and are able to get answers and clarifications at such events, said Uhlak-Kliemstein.

www.rcm.at/frauen-und-finanzen

Study result: Women avoid risk more often

Online platforms and service providers are used much more frequently by men (1 = agree least, 5 = agree strongly)

“How well do the following statements describe your attitudes towards investing?”



Source: Study "Frauen & Geldanlage", Raiffeisen KAG, 2023

**Raiffeisen
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SUSTAINABLE FUTURE.**

PRESERVING VALUE. CREATING VALUE.

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