MOVE

THE BEAUTY OF TRANS FOR MATION

TRANS — FORMATION <u>GLOSSARY</u>

They are used in everyday conversation and sometimes overused; here are our top nine words relating to transformation with explanations taken from <u>Merriam-Webster.com</u> Dictionary.



DEAR <u>READERS</u>,

Things are moving quickly. We are in the middle of a fast, global transformation. Some are calling it the second Industrial Revolution, in other words a significant period in human history. At PALFINGER, we are convinced that transformation is not a force of nature, but something that can be shaped. It opens up new, unforeseen perspectives and opportunities that we hadn't previously considered. Take, for example, the cover of this magazine. Turn it, flip it, and you'll see what I mean. The image changes depending on the angle from which you look at it.

We are convinced that changes bring opportunities. But, it is important to recognize them and use them proactively. That is why in this issue of our magazine, we focus on transformation in three chapters. In the first, we look at the question of what triggers and drives transformation. In the second part, we focus on how PALFINGER is meeting the challenges of transformation. In the third chapter, we look ahead at visions, resources, and jobs of the future.

We know what we're talking about. **PALFINGER's** success is itself the result of a transformation: from a workshop in Austria to a globally leading industrial company. This process was mainly driven by the courage to leave familiar paths and the ambition to actively shape the business environment and thus our own future.

The transformation we are facing today is strongly driven by external factors. Geopolitical disruption, digitalization, sustainability, and social change, combined with the impacts of pandemics, create discomfort and uncertainty for many. With this magazine on The Beauty of Transformation, we counter this. It opens up opportunities to us - we just have to use them.

I hope you enjoy reading!



Andreas Klauser CEO palfinger ag





CONTENTS

/ 2025 THE **BEAUTY** OF TRANS FOR MATION

IMPRESSUM

Media owner and publisher: PALFINGER AG Lamprechtshausener Bundesstraße 8, A-5101 Bergheim

Responsible for content: PALFINGER Corporate Marketing & Communications Editor-in-Chief: Martina Lettner Editorial Support: Bettina Schweighofer Concept and copyediting: Grayling Austria GmbH Design and layout: Strichpunkt GmbH



explore!

TRANSFORMATION DRIVERS





The Cogwheel of Transformation — SMALL CAUSE, BIG EFFECT



Everything is Possible — **HOW TRANSFORMATION WORKS**

+ PALFINGER CEO Andreas Klauser on opportunities and risks

14

A Changing World — MILESTONES OF CHANGE

TRANSFORMATION IDEAS

THE BEAUTY OF

TRANSFORMATION

/ 16 Brainwaves that Change the World — THE PRINCIPLES **OF PROGRESS**



Reaching High — THE EVOLUTION OF THE LOADER CRANE

24

Expanding horizons — HOW CUSTOMERS DRIVE INNOVATION

+ PALFINGER COO Alexander Susanek on customers as a yardstick for success

30

In the Network of Opportunities — SMART NETWORKS SECURE THE FUTURE

+ PALFINGER CFO Felix Strohbichler on planning with foresight



People are Still at the Center — A CROSS-GENERATIONAL VIEW OF WORKING ENVIRONMENTS

+ PALFINGER CHRO Maria Koller on success factors and corporate culture

Photos: PictureLux/The Hollywood Archive/picture alliance Vintage Space/Alamy: Stefan Fürtbauer/picturedesk.com/picture alliance Camille Brodard/unsplash.con

inspire!

TRANSFORMATION CHALLENGES



The Power of Vision — NEW SPACES OF THE POSSIBLE



The Mineralogical Century — **BDI EXPERT ANNE LAUENROTH ON THE RESOURCES OF THE FUTURE**

50

From Code to Transformation — AI PUSHES THE ENVELOPE OF WHAT IS FEASIBLE

54

The Magic Formula — WOLF LOTTER ON ON THE POWER OF KNOWLEDGE



Jobs That Grow Into the Future — **APPRENTICESHIPS IN TRANSITION**

61 At a glance — PALFINGER **FACTS & FIGURES**

Major upheavals have their driving forces. They are often as small and inconspicuous as a cogwheel. Indeed, it was the humble cogwheel that triggered a global transformation — aka the Industrial Revolution. Introducing: Small changes with big effects.

ADVANCEMENT UNDER STEAM / James Watt

he principle of using heated water vapor for mechanical processes was already known in ancient times. In Egypt, temple gates were opened as if by magic. From the 17th century onwards, water fountains were operated at palaces in Europe. These systems were not only used for pleasure: they also pumped groundwater out of mines. These machines were loud and complicated, consumed enormous amounts of energy and were prone to faults. Extremely prone to faults. It was just such a machine that ended up in the workshop of Glasgow University mechanic James Watt. He was supposed to repair it. He did — and more. He recognized the potential for improving the design and fit a condenser to increase output. Watt had an eye for detail and identified a central weak point: the cogwheel.

— Under load, it wore out quickly, broke and brought work to a standstill. Watt took the cogwheel and changed the angles of its teeth so that they not only withstood the forces acting on them, but also transmitted them more efficiently and more reliably than ever before. The efficiency of the machine increased significantly. The condenser and the new gearwheel were the core elements of Watt's patent for the steam engine in 1781. From then on, nothing was ever the same.

— Watt stated: "With this machine in our factories, mills and other workshops, it can replace water, wind and horse power; now the factory no longer needs to be located close to a power source, but can be located wherever is most convenient for the company owner." How right he was: The first high-pressure steam engines entered the market in around 1800. In 1807, the first steamship was launched in the USA. In 1825, the first 14.4-kilometer-long railway line in England went into operation with George Stephenson's locomotive. In 1885, the global rail network covered almost 450,000 kilometers, and factory after factory was built in the cities. Power went to the factory, as Watt said, and drove the Industrial Revolution forward.

— The cogwheel is not the only catalyst of transformation. In the course of human history, there have been many small causes of major upheavals — we present the driving forces behind the most important transformations.

Photo: PictureLux/The Hollywood Archive/picture allian





TRANSFORMATION DRIVERS

THE NEOLITHIC REVOLUTION / when people settled down

hat caused people to settle down around 10,000 years ago is not certain. What is certain is that this laid the foundation for our modern life. It was the only way that agriculture, and consequently a society based on the division of labor and increasing specialization, could develop. But it was a revolution that took place at a snail's pace: 6000 years elapsed from the introduction of storage and the first ceramics to the first political organizations and the formation of a cultured agrarian society. And yet the exponential growth of the population is still rooted in this development today.





THE PRINTING PRESS / the first media revolution

ine has been made in the region around Mainz in the Palatinate, Germany, since ancient times. A press has also been involved in this process since time immemorial. An ideal carrier medium for Johannes Gutenberg's groundbreaking invention of movable type, which made it quick and easy to set texts and could be reused: Around 1450. Gutenberg built the first printing press with movable type. By doing so, he significantly increased access to information. Books, pamphlets, leaflets, poems, novels, scientific papers, everything could be reproduced and distributed quickly and easily. In theory, printing made knowledge available to everyone, catapulting Europe into the modern era.

THE WHEEL / the birth of transport

ake the wheel away from us - and little will be left. Everything disappears. From spinning wheels to woolen mills, from lathes to rolling mills," said physicist Ernst Mach in 1883. In fact, the wheel is one of the keys to technical development, although it doesn't even exist in the natural world. It is thought that humans first developed the potter's wheel and, following on from it, the wheel, in around 3500 BC. This opened up previously unimaginable transportation options for them, gave agriculture additional impetus and — as a "by-product" of enormous significance — made the cogwheel possible.







GENETICS / the letters of life

umans have been dabbling in genetics since they started breeding plants and animals. Gregor Mendel described the rules of heredity in 1866. But it wasn't until in 1953 that Rosalind Franklin, James Watson and Francis Crick opened the door to deciphering the genome. Franklin proved the double helix structure of DNA, while Watson and Crick deciphered its structure, winning the Nobel Prize. Rosalind Franklin's achieve-

ments have gone unrecognized. Since 2021, the human genome, with its 19,969 genes, has been considered completely deciphered to provide insights into the evolutionary history of humans as well as new therapies.

WWW / the World Wide Web

989 saw the fall of the Iron Curtain. In the same year, physicist Tim Berners-Lee created a new information network for the European nuclear research center CERN. Since 1957, huge particle accelerators near the border between France and Switzerland have been used to research the structure of matter. However, the researchers in the two countries communicated using different network structures. To standardize and facilitate communication, Tim Berners-Lee designed a new network, which subsequently incorporated the first web server and the first browser. The standard he established is now known as the World Wide Web. The rest is transformation.



explore!

explore!

Photos:Frank, VisualVault, BillionPhotos.com laroslav The Water Meloon Projec/Adobe Stock Zoonar/Cigdem Simsek/picture alliance; Digital Image Library/Alamy

ELECTRICITY / the world goes live

he image is a famous one. In 1752, Benjamin Franklin went out with a kite to look for lightning. A metal wire was attached to the top of the kite and a key was tied onto the string. The experiment was successful, and its principle lives on today in the lightning conductor. His work represents the increasingly intensive study of the phenomenon of electricity from the 18th century onward. Alessandro Volta invented the first battery around 1800. Soon after, interest turned to electromagnetism, the basis for converting kinetic energy into electricity using a generator and dynamo. Thomas Alva Edison finally developed the light bulb. Today, electricity generated from sustainable sources is expected to drive the energy transformation worldwide



DOLLY / the clone in sheep's clothing

olly, a Finn-Dorset sheep, was born on July 5, 1996. One of millions of sheep worldwide. And yet she was unique. That is because Dolly is a genetic copy created from an adult somatic cell. That Dolly would see the light of day was not guaranteed. The researchers at the Roslin Institute at the University of Edinburgh grew a total of 29 embryos from 277 clone cells. One survived — Dolly, who then only lived for six years. The sensation was not so much the process of cloning, but the fact that it was possible with an adult, differentiated cell. This created the possibility of stem cell therapies for Parkinson's disease and multiple sclerosis, for example, which led to completely new healing strategies.





NOTHING HAPPENS UNTIL SOMETHING MOVES.

- ALBERT EINSTEIN physicist

EVERY-THING IS POSSIBLE!

Change is a constant. But if it changes everything from the ground up, then it is a transformation. <u>Matthias Horx, Amy Webb</u> and <u>Steven Pinker</u>, among others, explain how it works

explore!

WE ARE MUCH FURTHER ALONG IN THE POST-FOSSIL REVOLUTION THAN WE THINK.

TRANSFORMATION DRIVERS

CHANGE CORRECTS THE PAST. TRANSFORMATION CREATES THE FUTURE.

very major transformation starts with a small group of people who are ready to think differently." That's what Peter Thiel says. Investor, entrepreneur, author and one of the increasingly dominant voices from Silicon Valley, where people actually think radically differently and where technologies are being developed that are currently driving and accelerating fundamental transformation all over the world.

— However, it is not only tech companies from California that are driving the change. In conjunction with climate change and demographic development, they complete the trinity of transformation. Together, they are developing momentum. Albert Einstein once stated: "Nothing happens until something moves."

---- There's a lot on the move right now.

— There is so much in motion that the term transformation is justified. What is important is that this is about much more than just change. It is, as the dictionary describes it, "reshaping, reorganizing, revolutionizing." That much is clear. US economic researcher Judi Neal summarizes it more scientifically: "Transformation is a particular type of change that generally takes place when the limits of the previous frame of reference have been reached." And the head of R&D at the Baswa Indian group of companies, Tanmay Vora, says simply: "Change corrects the past. Transformation creates the future."

— "Have you seen the future anywhere?" asks German trend researcher Matthias Horx, "I mean the right future. Not just forest fires, extinction of species, wars, cultural war and digital super intelligence, which either kills us or redeems us from all ills. But a future as an impression of a better tomorrow."

— There is nobody else in the German-speaking world who stands more for the concept of megatrends. Matthias Horx always has an analysis and an answer ready: "Megatrends have the advantage of reducing the complexity of the world to a clear linear concept. They hint at a credible STRAIGHT AHEAD. While this takes the pressure off our cognitive system, it also leads to distortions of perception and reality.

— Take GLOBALIZATION, the massive leading economic trend of the last 30 years. We expect things to continue like this in terms of global markets. We assume that the rapid convergence of the global economy into a single economic sphere, a super world market of ever-increasing prosperity, is irrevocable. And that economic dependability on each other prevents conflicts and wars. But today, we actually tend to see more of the opposite. New fractures are emerging, wars and turbulences are proliferating, pandemics are changing the rules of the game, and we are witnessing a fragmentation of global value creation and value appreciation chains. Cultural formations and age-old conflicts suddenly override economic laws seemingly set in stone."

A BETTER WORLD IS POSSIBLE, WE HAVE THE TOOLS TO IMPROVE IT.

1202

— For Horx, the solution lies in the transformation of the entire world order as a result of changing perspective. Instead of looking at the problem, at the challenge and seeing it as an insurmountable obstacle, he suggests looking at things another way. From the point of view of climate change, for example. Horx: "What if we start by looking at it from the perspective of the solution, i.e. from a post-fossil reality? Then we can solve the course future takes from the other side. Everything suddenly appears POSSIBLE and completely normal. The technologies and systems, which are rapidly developing today in terms of decarbonization, are (and were) perfectly capable of making it possible to do without oil, coal and gas. This becomes visible when you look at it from the other end of the development. We are much further along in the post-fossil revolution than we think," says Matthias Horx, a transformation optimist.



— Amy Webb is also optimistic. As founder and CEO of the "Future Today Institute," she is Horx's colleague, so to speak, and a major trend researcher in the USA. Where Horx is still looking at the big picture, she does take a closer look and notices that: "The average person doesn't like to change, that is the personal level that we have to deal with." Otherwise, a transformation process threatens to run into emptiness. "And there needs to be change management. It's not enough to say here is AI, it's going to change the world and we're all going to do great things. Only strong leadership plus the right organizational framework plus targeted incentives can lead to the goal. It is important to create an atmosphere where change is fun. I think that's the point everyone misunderstands: Change is a holistic approach," she says in an interview with the German business magazine brand eins. THE <u>BEAUTY</u> OF TRANSFORMATION



<u>Klaus von Moltke</u> Managing Director **BMW GROUP** Plant Steyr and Head of Drive Machines **BMW GROUP**



Karl-Heinz Strauss CEO porr



<u>Karl Johnny Hersvik</u> СЕО акег вр

"At the BMW Group plant in Steyr, we have learned that real change requires hard work, perseverance and the will to question old ways of thinking. For us, this means systematically gearing our processes and structures towards efficient flexibility, sustainability and employee orientation: Digitalization offers enormous potential for greater efficiency and productivity. It is equally important to see environmental protection and social responsibility as an integral part of our actions. The key to successful transformation ultimately lies with our employees. Only with their training in relevant topics, their motivation and their involvement can we meet future challenges and guarantee our competitiveness."

"Transformation is the key to unlocking new opportunities. Only through continual transformation do we remain at the forefront of our industry. Two areas are decisive here: digitalization and sustainability. Aspects of this include new BIM applications (Building Information Modelling) as well as robot-assisted construction, lean construction, CO₂-reduced building materials, recycling options and resource-saving construction site processes. PORR is playing a central role in transforming the industry."

tion thro alliances to radica quality, i net zero are curre investme A key pa strategio in a perf model. E teams a data, we remotely the lifeti

"Aker BP aims to be the exploration and production company of the future. We are driving transformation through digitalization, strategic alliances and new ways of working to radically enhance efficiency and quality, reduce costs, and achieve net zero emissions by 2030. We are currently delivering on a major investment portfolio offshore Norway. A key part is to work together with strategic partners, like **PALFINGER**, in a performance-based cooperation model. By working in integrated teams and sharing operational data, we will optimise operations of remotely operated cranes through the lifetime of the equipment."



IT IS IMPORTANT TO CREATE AN ATMOSPHERE WHERE CHANGE IS FUN. CHANGE IS A HOLISTIC APPROACH.

— An atmosphere where change is fun. At the moment, this is not a discipline in which Europe is convincing. Amy Webb — in view of all the transformation — sees too little movement: "Things are not moving enough. The strange thing for me is that when you look at artificial intelligence and the industries that are most closely connected to it — mechanical engineering, automotive, logistics, pharmaceuticals — these are all German core industries. The backbone of the German economy. And yet I don't see much transformation happening. At least not as much as I'd expect. Given the country's starting conditions, Germany should be a world leader. But I think there is something in German companies that is slowing things down. In Germany, it's more about iteration (repetition) than innovation." According to Webb, you need a crystal-clear idea of what you want. Then transformation will work too.



— Steven Pinker is a cognitive scientist and an advocate of the "progress narrative." With the help of figures and statistics, he proves that the world is not doing so badly, that progress is taking place, and that technology, science and social reforms are enabling transformative improvement. "There is no utopia," he says, "but there is progress."

— In light of the current transformation, Pinker says, "We know that a better world is possible. We have the tools to improve it." Pinker admits that it takes more than just the tools. In order to make positive use of the fundamental, radical process of change, a comprehensive optimistic attitude is needed. Pinker adds "Optimism is not the naive conviction that everything will be okay, but the conviction that we can solve the world's problems if we make an effort."



<u>Gerrit Marx</u> CEO с<mark>N</mark>н



Michael Strugl CEO verbund

"CNH must constantly evolve to meet the changing demands of agriculture and construction. When I rejoined the company as CEO last year, I marked this new chapter by underlining the core values that underpin successful teams: people as a company's most valuable asset: upholding integrity and truth above all; and taking the hands-on approach. With these values embedded into our framework, together we will achieve our mission to ensure CNH, its brands and people reach our greatest potential. We have exciting developments underway that will positively transform our global trajectory."

"The green transformation — the

transformation into a sustainable

energy system — is a path everyone

a strategy for a climate-neutral elec-

tricity supply, the Austrian energy

industry has shown how this trans-

increased use of renewables is not

rity of supply, reduces dependency

on fossil imports and is an economic

energy sector plans investments of up

fore one of the biggest investors in the

to €100 billion by 2040 and is there-

stimulus program: The Austrian

business location'

formation can succeed. Because the

only important in the fight against the climate crisis. it also improves secu-

must take. With Stromstrategie 2040,

— Not thinking in terms of problems, but in terms of solutions; creating an atmosphere where change is fun; using the tools that are available to us — that already sounds like a concept for shaping transformation. One element is still missing, says Eric Markowitz, Director of Research at Nightview Capital. We are missing the ability to ask the right questions.

— "In 1905, Albert Einstein was working as a patent officer in Switzerland when he asked one of the most fundamental questions in the history of physics: "What happens if I drive next to a ray of light?" The question was simple but illogical at the time. Looking back, it was a decisive moment in science. While physicists at the time were busy refining Newtonian mechanics and dealing with the nature of ether, Einstein's question challenged the fundamental assumptions of the time. Focusing on this question led Einstein to develop the special theory of relativity, which fundamentally changed humanity's understanding of time, space and energy," writes Markowitz in an essay for the "Big Think" platform.

— It wasn't the complexity of his equations that made Einstein a revolutionary thinker, argues the research director of Nightview Capital, "It was his ability to ask the right question." Anyone who focuses on finding quick answers runs the risk of overlooking the big picture, he says, and "One of the simplest yet most effective questions in business and investment is: Why? Take Elon Musk for example [...] He asked the question: "Why aren't electric cars already better than conventional cars?" This "Why?" opened up a different approach. Instead of trying to compete directly with internal combustion engines, Musk focused on building a car that was better because it was faster, more desirable, and more fun to drive. He wasn't asking how he could compete in a crowded market, he was asking why the market hadn't already changed. That question changed everything."

— The rest is transformation. And knowing that it can be created. —



"The transformation of our industry is happening already. Digitalization and Artificial Intelligence are increasing the agility and efficiency of our organizations. To fully exploit their potential, we need to integrate them into our daily operations, streamline processes and increase productivity. They are not just tools, they offer us important opportunities to innovate and lead in our sector."

Dahx Zapler Director General, ZAPLER

ONE OF THE EASIEST QUESTIONS IS: WHY?



»IT'S ALL ABOUT MANAGING COMPLEXITY«

PALFINGER CEO <u>Andreas Klauser</u> on successfully dealing with the opportunities and risks of transformation. And why complexity is a competitive advantage in this context. An interview.

The world is changing. What changes is PALFINGER experiencing? And where is the company heading?

— Andreas Klauser: We are currently experiencing a really interesting and major change: A few years ago, **PALFINGER** generated 70 percent of its revenue in EMEA. Today, it is 57 percent, with North America already contributing 27 percent. This shows how right and important it was for us to focus specifically on growth markets. But that's not the only change. The workshop has not only become a global company but also one whose complex product portfolio significantly contributes to its market position. In 2024, we generated 65 percent of our revenue outside the construction sector from forestry to offshore and cruise ships. Only 35 percent came from products related to construction. This means we have successfully reduced dependencies. So, if you ask me where the journey is heading, it is certainly towards even more resilience in volatile times.

You mentioned growth markets ...

— Andreas Klauser: ...growth markets like North America, where we opened our headquarters in Schaumburg in 2023. A first step and an investment that is now proving to be worthwhile in multiple ways. For example, a German company approached us with the idea of using our set-up locally and acting as a provider in cooperation with us. This shows the great value of our principle "in the region for



the region" and that we are able to compensate for downturns in other regions to a high degree.

What you are describing here is actively shaping transformation and identifying its opportunities and risks at an early stage. That is one thing, but how do you implement it in your everyday work?

— Andreas Klauser: It's about maintaining a balance. Being flexible and managing a complexity that you can rely on. Balancing the small-scale activities, adjusting the many small screws, while not losing sight of the big picture and strategy. We have managed this very well. Of course, we have to make sure that the basics are right, that we don't lose sight of the dayto-day business and the requirements of our customers. And ultimately it is always a question of leadership, clear guidelines, trust and transparent decisions.

In light of this transformation, do you count yourself among the optimists or skeptics?

—Andreas Klauser: I see myself as more of an optimist. Economically, I see many opportunities for PALFINGER to grow organically and dynamically. We are globally and structurally well-positioned. We can react quickly to new circumstances and market opportunities in the regions and can play to our strengths. It is essential to have an environment that is as transparent as possible and to ensure the flexibility to deal with volatility successfully and efficiently. At **PALFINGER**, unlike other companies, we have been able to adapt early to changes to realize what we have planned. This means we have never neglected profit, cash flow, and other key figures, but we have also not lost sight of strategic priorities such as our European production network and have invested selectively. That we were able to maintain this balance is also thanks to the good cooperation of the Supervisory Board which has always supported this.

Where is the path leading that PALFINGER is taking?

— Andreas Klauser: As an innovative premium provider of complete solutions, we must stay ahead. This requires us once again to find a balance between standardized products and customized solutions. That means we need to deal with complexity even better. We must not only identify new markets, but also new opportunities at an early stage, for example in digitalization or in establishing a production network in Europe that is even more closely coordinated.

In one final sentence: Transformation is ...

— Andreas Klauser: ...an opportunity for PALFINGER to remain successful and become even more successful and profitable.

Thank you very much!

TRANSFORMATION DRIVERS

2025

A CHANGING WORLD

SCIENCE

01 BIRTH CONTROL 1960: The contraceptive pill is approved in the USA

02 SURGERY 1967: The first successful heart transplant is performed.

03 IN VITRO 1978: Birth of Louise Brown, the first "test tube baby."

04 AIDS 1983: The **HIV-1 virus** was isolated from a patient for the first time.

05 GENETIC RESEARCH 1990: Start of the Human Genome Project it provided the human blueprint until 2003: the first sequenced human genome.

06 CLONING 1996: Dolly the sheep, the first cloned mammal, is born, sparking worldwide ethical debates on genetic engineering.

ARTIFICIAL INSEMINATION 2010: Around **4 million people** were born through artificial insemination.

GENETIC MANIPULATION 2018: He Jiankui creates the first genetically modified babies in China and sparks ethical debates worldwide.

ONLINE VERSION

There is more on the subject of Changing World in the online version of this article www.palfinger.com/changingworld **CLIMATE & ENVIRONMENT** 07 ATOMIC ENERGY

1986: Nuclear disaster in Chernobyl.

CLIMATE COUNCIL 1988: Establishment of the Intergovernmental Panel on Climate Change (IPCC).

08 MELTING ICE CAPS 2007: The sea ice area in the Arctic is the smallest it has been since satellite measurements began.

09 EMISSIONS TARGET 2015: The **Paris Agreement** is adopted — the goal is to keep global warming below 1.5 °C.

10 CLIMATE STRIKE 2018: Greta Thunberg starts the Fridays for Future movement.

ECONOMY

history.

12 WTO

is founded.

global economy.

14 PANDEMIC

15 BREXIT

to global lockdowns.

STOCK MARKET CRASH

13 ECONOMIC CRISIS

RECORD TEMPERATURES 2024: The hottest summer since records began — global warming exceeds 1.5 °C for the first time.

1987: "Black Monday" — The Dow Jones

suffers the largest drop by percentage in its

<u>1995</u>: The World Trade Organization (WTO)

2008: The worldwide financial crisis rocks the

2020: The COVID-19 pandemic leads

MUSIC

22 MUSIC FESTIVAL 1969: The first Woodstock festival.

23 EUROVISION 1974: ABBA wins the Eurovision Song Contest with "Waterloo".

1975: Queen releases "Bohemian Rhapsody", one of the most famous songs in rock history.

apartment in New York City.

<u>1985</u>: The world's biggest **charity concert** takes place.

25 SALES RECORDS 2000: Britney Spears breaks sales records with her debut album ... Baby One More Time.

2020: The United Kingdom leaves the European Union after 47 years.

16 BLOCKAGE 2021: The container ship Ever Given blocks the Suez Canal for six days.

17 RECESSION 2024: Germany is in recession for the second year in a row.

SPACE TRAVEL

18 LUNAR MISSION 1969: Apollo 11: Neil Armstrong and Buzz Aldrin are the first humans to set foot on the moon.

19 COMMERCIAL SPACE TRAVEL 2008: The launch of SpaceX's **Falcon 1** marks the beginning of commercial space travel.

RECORD JUMP 2012: Felix Baumgartner is the first person to jump out of the stratosphere with a parachute.

21 TESLA 2018: Elon Musk sends a Tesla Roadster into space with SpaceX

BOCK HIT

TRAGEDY <u>1980</u>: John Lennon is shot dead in front of his

24 LIVE AID

26 KING OF POP 2009: Michael Jackson dies.

27 PSY 2012: The video for the song "Gangnam Style" becomes the first YouTube video to achieve over 1 billion views.

28 TOUR 2024: Taylor Swift's "Eras Tour" generates all-time high earnings for a concert tour of US\$ 2.1 billion. That is more than San Marino's GDP in 2023.

THE BEAUTY OF TRANSFORMATION

From the moon landing and "The Simpsons" to the founding of a workshop and Woodstock: Recent decades tell a story of groundbreaking inventions, cultural revolutions and social turning points. A colorful busy picture brings the milestones in this period of global change to life.

SPORTS

29 PIONEERING ACHIEVEMENT 1967: Kathrine Switzer becomes the first woman to take part in a marathon. The race manager tries to shove her off the course.

30 MOTORSPORT 1977: Niki Lauda becomes Formula 1 World Drivers' Champion for the 2nd time - only one year after his near-fatal accident.

SPORTING PREMIERE 1984: New Olympic discipline: solo synchronized swimming. It is included for the last time in 1992.

31 HAND OF GOD 1986: **Diego Maradona** scores the infamous "Hand of God" goal.

32 GOLDEN SLAM 1988: Steffi Graf wins all four Grand Slams and Olympic gold in the same year.

33 WORLD RECORD 2009: Usain Bolt sets a new 100m world record of 9.58 seconds at the World Championships in Berlin.

34 SCANDAL 2012: The anti-doping agency bans cycling superstar Lance Armstrong for life.

SPORTS ICON 2019: Formula 1 legend Niki Lauda dies at the age of 70.

TENNIS 2023: Novak Djokovic wins his 24th Grand Slam title, setting a new record.

GAMING

35 POP CULTURE 1980: "Pac-Man" is released.

36 HYPE 1996: The hype surrounding Tamagotchis leads to worldwide bans in schools.

37 AUGMENTED REALITY 2016: Pokémon GO connects the real world with digital adventures for billions of players.

PLEASE OPEN IT!

explore!

55 9/11 56 FEMINISM

54 EURO

14

TECHNOLOGY/INTERNET

York City.

POLITICS

38 MATH MIRACLE 1967: The first pocket calculator ushers in the era of miniaturization

39 MICROPROCESSOR 1971: Introduction of the first Intel 4004 microprocessor.

40 MOBILE TELEPHONY 1973: The first cell phone call is made in New

1991: Tim Berners-Lee releases the

World Wide Web. 1998: The Google search engine is founded.

43 SOCIAL MEDIA 2004: Facebook is founded. 20 years later, over 3 billion people are using it.

44 SMARTPHONE 2007: The first **Apple**-iPhone comes onto the market

2018: OpenAI releases the first GPT model.

INTERNET USAGE 2021: The WWW has over 5.4 billion users.

51 CIVIL RIGHTS

<u>1963</u>: Martin Luther King Jr. gives his famous "I Have a Dream" speech.

52 ASSASSINATION 1963: John F. Kennedy is shot dead.

53 FALL OF THE WALL 1989: The fall of the Berlin Wall heralds the reunification of Germany.

END OF APARTHEID 1994: Nelson Mandela becomes President of South Africa.

1999: The **euro** is introduced as the currency in eleven EU countries.

2001: More than 2,500 people die in the attack on the World Trade Center.

2017: Start of the #MeToo movement.

PALFINGER

45 FOUNDATION 1932: PALFINGER is founded as a workshop.

46 FACTORY CONSTRUCTION 1974: A new assembly plant is built in Kasern. **GLOBAL OPERATION**

<u>1989</u>: PALFINGER operates in over 70 countries. The export ratio exceeds the 90 percent mark.

47 FINANCIAL MARKET 1999: PALFINGER goes public, and the 100.000th crane is delivered.

48 SUSTAINABILITY 2015: PALFINGER adopts the Group **Environmental Protection Directive.**

49 GLOBALIZATION 2019: Implementation of the GLOBAL PALFINGER ORGANIZATION (GPO).

50 RECORD REVENUE 2023: Third successive record year with revenue of EUR 2.45 billion and opening of NAM headquarters in Schaumburg.

MARKET LAUNCHES 2025: More than 20 Key product launches are planned.

57 UKRAINE WAR 2022: Start of the invasion of Russian troops in Ukraine.

58 INAUGURATION 2025: Donald Trump is sworn in as President of the United States for the second time. On his first day in office, the USA withdraws from the Paris Agreement.

MOVIES & LITERATURE

59 SCIENCE FICTION 1977: The first Star Wars film by George Lucas is released.

60 ANIMATED SERIES

1989: The Simpsons goes on air for the first time. In episode 243 in 2000. Donald Trump appears as US President.

61 HOGWARTS 1997: The first Harry Potter book is published.

62 HIT SERIES 2019: The final episode of "Game of Thrones" is seen by over 19 million viewers, a record number.



> It is often bright ideas and "out of the box" inspiration that enable previously unimagined developments. Because they pave the way for new technologies, such as <u>Hedy Lamarr's</u> frequency-hopping spread spectrum, or because they, like Nicolaus Copernicus, placed the sun at the center of the universe. We present people whose ideas have sparked transformations.

FREQUENCY HOPPING AND A QUANTUM LEAP / Hedy Lamarr

his telescope is unique: Located in the center of Vienna, it receives information in the form of light particles and is an essential part of international quantum physics experiments in space. Eleven years ago, it was given the name "Hedy Lamarr Quantum Communication Telescope". And for good reason: In 1940, Vienna-born actress Hedy Lamarr (1914–2000) and composer George Antheil (1900–1959) developed a radio-controlled guidance system for torpedoes. The radio control would have been difficult to jam because it automatically hopped frequencies. As a result, torpedoes would be able to hit their targets with little risk of interception. Despite receiving a US patent in 1942, the so-called frequency-hopping method was not actively deployed in World War II. — However, Hedy Lamarr's flash of inspiration later came to play a key role in mobile communications: it is frequency hopping that enables Bluetooth connections. That alone is an important application, but Hedy Lamarr's idea is now used in intercontinental quantum communication as well. "This is based on the exchange of light particles that generate absolutely secure cryptographic keys," explains Anton Zeilinger, winner of the Nobel Prize in Physics. The use of the Quantum Key Relay protocol guarantees the secure exchange of keys via satellite between two stations on Earth, no matter how far apart they are. That too is essentially Hedy Lamarr's idea – and links her name to another transformation in communication technology: quantum communication.

6

2025



TRANSFORMATION IDEAS

THE END OF THE GEOCENTRIC WORLD VIEW / Giordano Bruno, Galileo Galilei and Nicolaus Copernicus

nce Nicolaus Copernicus (1473-1543) had positioned the Sun at the center of the universe instead of the Earth, the former Dominican monk Giordano Bruno (1548-1600) formulated the idea of an infinite cosmos without a center (and without God). He was burned at the stake at the Inquisition in Rome. Galileo Galilei (1564-1642)

defined the Milky Way as a collection of countless stars and stated that the Earth revolves around the Sun. Under the threat of torture, Galileo rejected the Copernican doctrine. In his *Discourses*, written while under house arrest, he succeeded in publishing a pioneering demonstration of the mathematical describability of nature.



/ 2025



THE MACHINE WITHIN US / Norbert Wiener

here is no question that man and machine will merge. The only question is when. That was the forecast made by mathematician and philosopher Norbert Wiener (1894-1964). As the founder of cybernetics, Norbert Wiener defined the world as a network of feedback systems in which information flows like blood through veins. It was in this context that he saw and described the machine not as a tool, but as a thinking partner who would drive human evolution forward. But he also warned that without ethics, we could become puppets of our own creations.

THE ARCHITECT OF THE ELECTRIC ERA / Nikola Tesla

or most people, electricity is simply a source of energy and therefore a means to an end. But not for Nikola Tesla (1856-1943): he saw it as the key to a society living in peace and prosperity. Using his pioneering inventions such as alternating current and wireless energy transmission, he laid the foundation for our modern world. He dreamed of a global energy grid that would make electricity available to everyone wirelessly and free of charge. Many of his ideas were so far ahead of their time that they were dismissed as fantasies.





DESIGNING A SUSTAINABLE FUTURE / Richard Buckminster Fuller

arth is a spaceship on which all humanity travels together — with limited resources and the responsibility to use them wisely. For architect Richard Buckminster Fuller
 (1895-1983), efficiency was not

18

an engineering goal but a moral imperative. His geodesic domes, lightweight but strong, were symbols of a sustainable future where technology and design serve people, instead of destroying them. His principle of ephemeralization is defined as "doing more with less".



ROCKET MAN / Konstantin Ziolkowski

he Earth is the cradle of humanity, but no one stays in the cradle for the rest of their lives." At a time when the idea of space travel was science fiction, Konstantin Ziolkowski (1857-1935) calculated the mathematical principles for rockets with multi-stage propulsion and drafted the famous rocket equation that paved the way for the conquest of space. He was convinced that the future of humanity lay in the stars — a vision that inspired not only Russian space travel but the entire cosmic age.



A PROGRAM FOR A MACHINE OF THE FUTURE / Ada Lovelace

nspired by the computing machine invented by her close friend Charles Babbage, Ada Lovelace (1815-1853) was the first to recognize that machines could calculate more than just numbers.
 At a time when most people could only see cogwheels and mechanical devices, Lovelace understood the machine's potential to compose music and create art. Based on the

calculation of Bernoulli numbers (a sequence of rational numbers which occur frequently in analysis), she wrote a specific program for the "analytical machine." This makes her the world's first programmer. The Ada programming language and the British Computer Society's Lovelace Medal commemorate her pioneering work.



THE INVISIBLE HAND OF THE MARKET / Adam Smith

 n a period characterized by feudalism and state control, the Scottish philosopher Adam Smith (1723-1790) formulated a radical idea: Economics works best when you have freedom. He recognized that people's natural self-interest and free competition act like an invisible hand that could increase the prosperity of an entire nation. The rest is history.

TRANSPLANTS / Jurij Woronyj

he idea is enticingly simple: A donor's healthy organ replaces a recipient's diseased one. In fact, transplantation dates back around 2,500 years, when Indian doctors transplanted skin. In the late 16th century, surgeon Gaspare Tagliacozzi offered nasal reconstructions. In 1902, Emerich Ullman successfully transplanted a dog's kidney for the first time. In 1933, the Ukrainian doctor Jurij Woronyj was the first surgeon to successfully perform the same operation on humans. From the 1960s onward, transplants were increasingly successful, transforming medical healing options and saving countless lives.



RANSFORMATION

THE <u>BEAUTY</u> OF TRANSFORMATION

— THE BEGINNING:

Simple, practical - and revolutionary: PALFINGER's hydraulic loader crane.





REACHING HIGH: THE EVOLUTION OF **THE LOADER CRANE**

Crane and lifting solutions have recently reached the next stage of development. The industry has transformed significantly as a result of new technologies and fresh ideas. PALFINGER was an important driver of this change — as a pioneer, impulse maker and innovator. Today, the company holds an internationally leading position. The loader crane was at the very beginning of an evolution that is far from over.



t the beginning, it wasn't about cranes: When Richard Palfinger founded a workshop in 1932, he had agricultural trailers, dumper trucks and vehicle bodies in mind. The first **PALFINGER** loader crane,

which led the company to global excellence, was not presented until 1959, 27 years later- and since then it has been reinvented over and over.

1960s:

HYDRAULICS AS STANDARD

Hubert Palfinger completely revised his father's loader crane with its rigid arm system: In 1964, he added hydraulics to the Stiff-boom-crane, improving control and precision during handling as well as increasing operating speed and efficiency. Small-scale production began in 1968 and the first exports were to France and Switzerland. The many benefits of the new system quickly attracted international attention.

1970s:

MULTIFUNCTIONAL WORKHORSE

In the 70s, things moved fast. New patents were added every year: one important innovation was the hydraulic lifting moment regulation, which prevents overloading and increases the stability of the crane as a result. The **mast** planting grab came onto the market, making it possible to safely grip heavy components and place them precisely. And the hinged main boom solved an old problem by ensuring that even cranes with a large outreach can be folded up to save space.

----- Even back then, **PALFINGER** referred to the crane as a "multifunctional work machine" and focused on making customers' daily tasks easier: "We don't see innovation as an end in itself," explains Michael Völker, Head of Product Management Loader Cranes PALFINGER

EMEA, who has known the company for many decades, "for us, innovation is the answer to the complex challenges our customers face."

1980s:

DOUBLE SUCCESS

Anyone who designs something new is consciously taking a risk. In the 1980s, PALFINGER introduced the **1 POWER-LINK-SYSTEM**, a double lever arm system on the main and knuckle boom. This was a highly daring step, "It was more expensive and complex than a crane without double lever arms because you need additional joints, pins and bearings," Michael Völker remembers. However, taking that risk paid off: "In the 1980s, this was our unique selling point. We were one of the first companies to use this technology. Today, it is impossible to imagine loader cranes without the double lever arm system." That is because the innovative geometry not only increases the lifting capacity of the crane, but also the precision of the movements.



The evolution: The PALFINGER loader crane is becoming a multifunctional work machine thanks to some key innovations.

TRANSFORMATION IDEAS

/ 2025

— <u>PK 1350 TE</u> The latest generation of PALFINGET loader cranes unites hardware an ware from a single source to form all-round intelligent product solut

Our goal is to provide integrated, comprehensive solutions that overcometomorrow's challenges in a connected and smart way.

> Michael Völker Head of Product Management Loader Cranes at PALFINGER EMEA

1990s: ELECTRONICS ON THE RISE

In the 90s, **PALFINGER's** development department was under high tension. In 1992, the company began to integrate electronic systems such as the **PALTRONIC 100** into the crane control system. For the first time, this innovation enabled overload protection and precise control of the crane. **PALFINGER** also introduced **2 ACTIVE OSCILLATION SUPPRESSION** (AOS) in 1998, a system that reduced the natural vibrations of the loading crane and significantly improved



<u>AOS</u>: Dampens natural vibration and improves control.

precision control. This was a real game changer at a time when electronics were viewed skeptically as a possible source of error. "This helped to stop the crane from swinging due to rapid deceleration or changes in load, and it significantly increased safety for operators, loads and buildings. It positively changed the acceptance of electronics by our customers over the long term," says Völker.

2000s: GREEN THINKING HAS PRIORITY

With the turn of the millennium, there was also an increased focus on sustainability: **PALFINGER** relied on **new materials and coatings** to increase the service life of its cranes. **Cathodic dip painting (CDP)**, introduced in 2002, not only protects cranes from corrosion, but also keeps them looking good — a decisive factor when it comes to high resale values.



<u>CIP</u>: Reduces corrosion, preserves appearance, and increases resale value.

— There was also a strong trend towards electronic control systems: The development of the **PALTRONIC 50** and **PALTRONIC 150** at the beginning of the 2000s continues to make crane operation easier, more efficient and safer. These systems help protect the crane from overloading and monitor stability depending on the position of the boom and the outriggers.

2010s: THE TRIUMPH OF ELECTRONICS CONTINUES

PALFINGER becomes even better established in the market following the launch of **③** HIGH PERFORMANCE STABILITY CONTROL (HPSC) in 2011. The intelligent stability monitoring system analyses each outrigger support scenario realistically and in real time and increases safety for users. Suddenly, it was possible to work with precision in tight spaces, such as between stacked containers or in flowing traffic. This is because even if outriggers can only be extended part of the way, or not at all, the system calculates the safe working area and the specific lifting power of the crane.



HPSC: Ensures maximum stability and enhances safety.

20205: NETWORKED SYSTEMS

Since the 2020s, **PALFINGER** has been taking the digitalization of the company to a new level. The focus is on connecting digital systems more closely, improving data exchange between existing platforms and combining the multitude of individual solutions into a seamless user experience.

— "CONNECTED" gives users an individually adaptable dashboard displaying their entire PALFINGER fleet as well as detailed information on individual devices anytime at any location. The "CONNECTED" IOT platform combines the FLEET MONITOR, OPERATOR MONITOR, and SERVICE COCKPIT apps to provide the technological basis for comprehensive digitalization in fleet management. The result: maximum machine availability with minimum administrative effort. The platform increases efficiency, improves planning, and ensures more profitable deployment.

— However, this is not the end of the list of developments. Following the launch of **④** SMART CONTROL in 2021, PALFINGER has significantly simplified crane control. Operators can now move the crane tip with precision horizontally, vertically or even diagonally with a single lever movement. Moving the crane tip around corners is also easier to do, and thanks to the **memory-position-function**, operators can save crane positions and easily recall them.



<u>Smart Control</u>: Intuitively controls the crane tip horizontally, vertically and diagonally.

— At the same time, **PALFINGER** is driving forward with the electrification of its products. Since 2022, its **"Vision & Strategy 2030"** has been geared towards using emission-free and low-noise systems. Another important step towards smart innovations that focus on users is **P6**. Launched in 2024, it is the smallest and lightest radio remote control with color display on the market.

THE FUTURE: EVEN HIGHER SAFETY AND EFFICIENCY

Safety remains the top priority in the development of the latest loader cranes. At the same time, the focus is still on operator friendliness. **Driver assistance systems** such as **⑤** P-FOLD, which automatically disassemble and fold the crane, minimize sources of error and make work easier. "Finding qualified crane operators is becoming increasingly difficult. That is why it is so important to minimize operator fatigue while ensuring enhanced safety," says Völker.



<u>P-Fold</u>: Unfold the loader crane quickly and safely - and fold it back together again.

— PALFINGER has undergone remarkable development in recent decades. From the first hydraulic cranes in the 1960s to connected loT-solutions and modern control systems in the 2020s — ongoing adaptations and improvement are at the heart of the company's history. PALFINGER always places special importance on sustainability, efficiency and user-friendliness. These principles remain pivotal as PALFINGER continues to develop innovative solutions for the challenges of the modern working world.

— Michael Völker sums it up as follows: "Our goal is to provide integrated, comprehensive solutions that overcome tomorrow's challenges in a connected and smart way."



ONLINE VERSION

There is more on the subject of <u>loader cranes</u> in the online version of this article. www.palfinger.com/loadercrane



EXPANDING HORIZONS

Unconditional customer focus. This is the standard PALFINGER measures itself against. During the development of the new generation of aerial work platforms, we find out exactly what customers need and expect. <u>Guido Harucksteiner</u> visits customers in Europe and the USA, ensures that their requirements are understood, and that innovation takes place with clear goals in mind.

24

— In addition to providing more space for the feet, the new aerial workplace also needs to take a demographic aspect into account. "As has often been mentioned, there are more and more older workers whose needs play an increasingly important role. They can no longer hop into the bucket in a single bound like they did when they were 25. They want easy and convenient access," says the frequent flyer with an inside knowledge of customers.

ALWAYS IN TOUCH WITH CUSTOMERS

It would be easy to bring radically innovative product solutions to market. The technological knowledge is available, and there's often no lack of ambition either: Harucksteiner remembers a real competition to achieve new height records. This race was fueled by competitors who did everything they could to stay ahead of everyone else in terms of altitude range. "Until our sensors revealed to us that it wasn't really that important to customers. Quite the opposite, in fact. When they borrow a work platform that goes up to a height of 30 meters, 85 percent of them do not go higher than 17 or 18 meters. For customers, appropriate lateral outreach and a sturdy bucket are more important: these are clear requirements that arise from the work they actually do on a daily basis. It was at that point that we said we were not going to be part of the high-altitude race, but would focus on the advantages our customers wanted in practice. On the benefits for the customer. On making sure the bucket is safe and stable, has enough space and maximum lateral outreach."

— PALFINGER is connected to customers via an extensive network of information channels. In times of digitalization, this creates a whole universe that brings together data and information that were previously untapped. However, these channels do not replace customer surveys.

---- "We ranked our questions in clusters," explains Harucksteiner. First, there is the basic feedback, the customer's opinion of **PALFINGER**, its distribution, service and position compared to the competition. The questions then move on to the criteria for deciding to buy, the total cost of ownership, and the duration of the platforms' service life. Harucksteiner and his team also want to know what customers notice and how they feel about changes, adjustments and innovative ideas (remember, every investment is also driven by a certain degree of emotion). And last Ou but not least: How do customers perceive the product? Where

create!

November day in Flachgau, Salzburg. The fog outside makes the surroundings of the Köstendorf Technology Center a barely discernible blur. Inside, a group from Austria and the USA gazes intently at multicolored charts and columns of figures to gain a clearer picture of customer requirements. The aerial work platforms should be robust. Robust and reliable. "That sounds like what Henry Ford is supposed to have said about people wanting faster horses," says Guido Harucksteiner. "But even that is vital for us to know," he remarks.

— Harucksteiner works in the Global Inbound Product Management AwP team. The abbreviation AwP stands for aerial work platforms. Unlike the loader cranes, this product line was not originally created in-house. It only entered the portfolio through acquisitions in both the USA and Europe. Now its strengths are to be fully exploited in both regions to open up additional market opportunities for PALFINGER. "The next generation is the first to be based 100 percent on PALFINGER's expertise," says Harucksteiner.

— "The task for engineers from Europe and the USA is to develop a shared platform. We define this as being like Lego bricks which are developed in Köstendorf and then produced in manufacturing plants according to local requirements," says Harucksteiner, explaining the basic approach. For the developers, coming up with a design so universal that everything can be used worldwide is a real challenge.

THE CUSTOMERS' WORLD IN A MATRIX

This is where the customers enter the picture. Focusing on them, knowing their working environments and challenges is a goal that **PALFINGER** confidently commits to. Their feedback, their criticisms and their experiences have been contributing to the continual development of product solutions for decades. "Despite that, the level of customer involvement we have arranged for this project is a novel approach," says Harucksteiner. It is structured and standardized, which is how it provides a reliable pool of information. For the first time, the customers' world is being surveyed using a predefined matrix of questions. "What do they do? And what helps them do it more efficiently, more effectively, faster and more economically? Aside from technical innovations, such as modified work processes that require higher lifting capacities and more sensitive bucket movements, what influences their working world? And how does the interaction of all these elements work?"

---- The Development department has no shortage of ideas. Quite the opposite, in fact. Synergies can be found and used following experience gained with other product lines. With profile geometries, for example. The loader crane profile is more tear-shaped and ideally absorbs the forces, while that of the aerial work platforms has so far been rectangular. "The point is," says Harucksteiner, "that the customer doesn't really care what the telescope looks like. But I need to be able to argue for a new type of telescope, clearly cite its benefits, a longer outreach, a lighter machine." The same applies to the electronic controls. "The new control electronics will be equipped with a similar technological basis as the cranes." explains the expert. The benefits are obvious, in terms of both development and the product life cycle as well as the available spare parts and reduced training costs for service and workshop personnel.

— Those are the basics. The optional extras require input from the customers and their expertise. Which is why Product Management employees — such as Harucksteiner — come to the customers, in person, to establish a genuine relationship and to gain insights into the local scenarios. For example, into the bucket on bucket trucks, which are often used in North America.

— In America, he explains, the bucket is more conical, like an upside-down teardrop. In other words, it is narrower at the bottom, wide at the top. That has always been the case,

THE FACT THAT **WE OBTAIN INPUT** DIRECTLY FROM OUR CUSTOMERS. THAT WE TALK TO THEM AND GET **TO KNOW THEIR** WORLD PROVIDES VALUABLE **INSIGHTS FOR** ALL OF US. THAT'S WHAT COUNTS WHEN IT COMES TO DEVELOPING PERFECT PRODUCTS.

> <u>Guido Harucksteiner</u> Global Inbound Productmanagement AWP at PALFINGER

even though workers complain that their toes are always squeezed when they have to work bent forward. "That's when we said: Now's our chance. Let's change the shape of the bucket so their toes have more room. Because we have to remember one thing: operators are in this bucket all day long. This is their workstation, the aerial workplace, and they want to be comfortable. Our job is to offer them the best solution here," explains Harucksteiner.

— Nevertheless, the bucket must not look radically different. It must not break with the usual 'look and feel.' That could deter security-conscious customers in particular, who are not always open to innovations: Change yes, but not too blatant. do they see problems? Where do components seem unstable and under which circumstances? And what equipment do customers install themselves, which innovations do they implement on their own initiative? A question of particular interest to Product Development.

— So, when Harucksteiner sets off on his travels, he asks Distribution to name customers for initial contact. A few young guys who are really tech-savvy and innovative. And then a few who are older and experienced. "I think," he remembers, "the most innovative customer I've ever seen has just celebrated his 70th birthday. If I had thought of only half his ideas, I would have been proud." Age, he sums up, is no barrier to a spirit of innovation. Rather, it is everyday culture.

INNOVATION IS WHAT YOU DON'T SEE

American customers, for example, are always amazed that someone is willing to travel all the way from Europe to the USA to visit them and see what they are doing with their equipment. "What we have as a work platform in Europe is seen by the Americans as something rather 'fancy'. They can see all the things you can do with it and how great it is, but they regard their bucket trucks as simple, reliable tools.

CUSTOMER-DRIVEN INNOVATIONS

- Example based on the European Aerial Work Platform



A longer outreach is becoming increasingly important for customers in addition to working height. Function is everything," says Harucksteiner, summing up his experiences. That there are work platforms in Europe with a height of 30 meters on vehicles with a total weight of three and a half tons sounds unbelievable to Americans. Their trucks, whose platforms are at a height of twelve or 13 meters, are impressively robust with cover plates several millimeters thick. Tested, and proven to be good.

THE INNOVATION THEREFORE TAKES PLACE ON THE INSIDE IN THE DETAILS

These then include planned comfort features such as hazard recognition, which ensures an increased level of safety in the bucket, with corresponding sensors and detectors that pick up dangerous voltages on overhead lines. The ability to optimally swivel the bucket on the telescopic arm — without getting tangled up in cables. And, of course, the materials used - glass fiber, steel, and carbon to enable the ideal combination of weight, stability, and outreach — are also a consideration. From this

point of view, every customer visit is a reality check, says Harucksteiner: "Are we heading in the right direction? For example, do customers want cranes that can rotate endlessly? This is of course technically more challenging because it requires a rotary distributor. Is this actually relevant for customers and, ultimately, are they willing to pay a higher price for it?"

— When Harucksteiner and his colleagues return to Köstendorf from their trips to customers and present developers with the findings they have obtained "from the horse's mouth". as it were, they are sometimes seen almost as party poopers. Because what is innovative from a user's point of view does not always tally with the possibilities seen and favored by engineers. One task that Product Management has is to ensure the necessary grounding: "What is important is to implement those innovations that promise the highest customer benefit." says Harucksteiner: "The fact that we obtain input directly from our customers, that we talk

to them and get to know their world provides valuable insights for all of us. That's what counts when it comes to developing perfect products."

— When the workshop with colleagues from Development is over and the findings are incorporated into the work, the Product Management team prepares for the next interviews. For Harucksteiner, it's probably back to the USA. On the road for weeks on end, always with a catalog of questions and ready to broaden the horizons of development work.

EVERY CUSTOMER VISIT IS A REALITY CHECK: ARE WE



»IT'S ALL ABOUT **KEEPING A CLEAR PERSPECTIVE**«

PALFINGER COO Alexander Susanek considers that transformation is not a goal in itself. Transformation needs to be evaluated on how much it contributes to the business success of our customers. The rate of change does not affect this specification.

Mr. Susanek, what role do customers play in times of transformation? Are they the drivers, the brakes, or the adjusters?

—Alexander Susanek: They are our benchmark. Our success is measured by them. Our customers need to earn money with our products. That is why it is essential for us to know what they are doing. We call this the "job to be done." To understand it, we have to listen very carefully. In many respects, our customers know exactly what they need — and they formulate this as an expectation. When it comes to new technological opportunities that they have not seen vet, especially in areas where customers don't even think of us as a supplier, it is our job to show them the new perspectives — to help them become more productive, work more efficiently and make their business more successful.

How does that work in practice?

—Alexander Susanek: First of all, we need to understand for ourselves how we can use new technological opportunities to create added value for customers. We need to be able to get our argument across from their standpoint. Then it is a matter of demonstrating the practical implementation. Take connectivity, for example. Digitalization solutions that enable customers to upload data from their work platforms or loader cranes and integrate it into their own processes. We need to show the added value that is generated when the solution helps them make their processes more efficient. After all, experiencing a thing is very important: The opportunity to try something out or to look into the future with studies or prototypes — and to directly contribute your own expertise.

Our **connected** digital services are one example of this. Since 2025, we have even delivered a wide range of our equipment from the factory

create!



ALEXANDER SUSANEK COO PALFINGER AG

- with a telematics module and the option to transfer data as standard — '**CONNECTED** as a standard'. This allows our customers to take advantage of our digital services directly.
- How do you integrate new technologies that are not directly related to the PALFINGER product portfolio? Do you employ trend scouts or are customers involved in development?
- Alexander Susanek: We do both. The formats of our dialogue with customers are important, because they are also trend scouts. if you will. They know best how their business is developing, what they experience and expect there. On the other hand, we are systematically addressing changes outside our own industry, for example in our corporate incubator P21st. What is happening in the construction industry? What new technologies are there? What does modularization mean for us, for example?

How much must transformation challenge the familiar and produce things that are radically new?

— Alexander Susanek: It's all about keeping a clear perspective. First, you have to explore all the new opportunities with a completely open mind in order to recognize what is happening and what can be developed from them. Then it is important to evaluate with an equally keen eye what really helps us move forward and what is perhaps just trendy and attractive, but ultimately not very useful. The question of whether something achieves the intended effect or creates added value for the customer is far more important than whether it is new. If we can answer this question with ves, change should happen quickly. At the same time, it is also legitimate on occasion to have the courage to stick to old values and say, ok, there are new opportunities, there are new technologies, but the advantages are not as great as they might appear at first glance.

Speaking of product development, how is transformation reflected here?

— Alexander Susanek: If we look back 20 or 30 years, our product was a mechanical product. Essentially it was a steel construction combined with hydraulics. Today, electronics play an increasingly important role and we are at a point where much is often regulated, controlled and made possible by software. This not only applies to the software that runs on the product, but also involves networking our products into various systems at our customers' or here at **PALFINGER**. This, along with the electrification of all our products, will play a significantly larger role. We must take these changes into account in our development processes and organizational set-up.

The optimal use of transformation and transformation processes is a highly complex undertaking...

—Alexander Susanek: ...absolutely. It asks a lot from all of us. But there has always been change. This is not something that's completely new now. The speed with which we have to deal with it today is different. We have proven in the past that we can deal with change, that we are among the proactive companies in our industry. That makes me confident that we will continue to do this well in the future.

How do you make the company fit for change?

— Alexander Susanek: It is important to explain again and again what this means in practice. Why are we doing something? Why are we changing something? Regardless of whether we're making organizational changes or changing the use of resources. What are the reasons for this and how does it help our economic development? This is an extremely important point. The second point is, of course, to make the right decisions within an organizational framework, to address the right topics and to use our resources for the right issues. We have all the opportunities — we'll take them together.



IN THE NETWORK OF OPPOR TUNITIES

Strong and yet flexible at the same time — that is what distinguishes good networks. Especially when they are strategically built, and everyone is on an equal footing. Used correctly, they make companies more resilient and more innovative. PALFINGER goes one step further and integrates a wide variety of partners into a well-thought-out ecosystem. / 2025

t doesn't always have to be a ship in the Suez Canal. Or a global pandemic," says Simon Davis, who is driving supply chain transformation for PALFINGER. The causes that block supply chains and shut down
 production are manifold. Above all they are constantly increasing. The supply chain management team at PALFINGER counters volatile conditions and is responsible for building a resilient value chain. The team has been driving forward strategic supply chain management for almost three years focusing on supply chain transformation as a first step.

— In our connected world, everything depends on functioning networks. If a connection does go down — especially in a supply chain — everything comes to a standstill. That is why **PALFINGER** relies on a tailor-made network. A dedicated ecosystem of suppliers, research institutions, technology companies and industrial partners, component manufacturers and companies facing similar challenges. An ecosystem that relies on strong, long-term alliances that remain stable despite constant changes in the economic and geopolitical framework.

— "As companies grow, they often become slow. A region grows and has local knowledge, but decisions are made at headquarters. In addition, all locations are highly interdependent as part of an integrated value chain," says Global Transportation Logistics Manager Julia Gebetsberger, describing a common challenge faced by international companies: "At PALFINGER, we must, can and want to react quickly. Our supply chain management needs to do the same."

GPO AS A BASIS, CORONA AS A CATALYST

That is why supply chain management is based on the Global **PALFINGER** Organization (GPO). The globally oriented matrix structure combines efficiency, flexibility and market focus and promotes international cooperation using uniform processes and standards. Local teams react flexibly to customer needs, using global expertise and resources. This network enables rapid reactions to market changes, drives innovations and creates solutions that can be applied all over the globe.

CUSTOMER-FOCUSED, RESILIENT AND ADAPTABLE

Gerhard Innerlohninger, Head of Global Supply Chain Planning & Performance, describes the optimum basis for a mature supply chain: "Above all, it must be customer-driven — it focuses on what our customers and the market need. It must also be robust and adaptive, in other words, flexible. With everything we do this is what we want to achieve." 16 initiatives, which are staggered into different phases, create sustainable changes at organizational, process and system levels. They include tasks and activities that take place across all areas of the company — from purchasing and sales to production, and from logistics to financial management. "This transformation is the key to remaining successful over the long term," explains Transformation Program Manager Simon Davis.

A STRONG, INTERNATIONAL NETWORK OF STRATEGIC PARTNERS

This transformation is also reflected in a change in strategy: Instead of buying in services, they are developed together with partners. These supply alliances, or strategic partnerships, go far beyond traditional supplier relationships. It



TRUST IN THE RELIABILITY AND STABILITY OF A PARTNER AND MUTUAL RESPECT MUST ALSO BE CONVEYED THROUGH A STRONG BRAND AND PERSONALIZED COMMUNICATION.

Armin Schlamp Vice President Corporate Marketing & Communications at PALEINGER is about developing together, and about growing together — in a shared ecosystem.

— "This partnership-based approach benefits both sides. However, in the initial phase, it often requires intensive effort to ensure that both parties are equally committed to investing in the collaboration," says Gerhard Mühlbacher, Head of Supply Partner Development. With this approach, **PALFINGER** is increasingly collaborating with larger, globally active partners. 'In the future, we will establish more international partnerships — with companies that, together with us, operate across at least two continents,' says Mühlbacher.

— But the network extends much further, beyond the supply chain. To retailers and sales partners, to research partners and to companies that are faced with solving challenges similar to PALFINGER's. The shared goal: Creating added value together. "A strong network reduces risks. For everyone," says PALFINGER CFO Felix Strohbichler (read more about this in the interview on page 35. Being able to trust in the reliability and strength of a partner, and having mutual respect, play a special role in this. "It is also important to convey this by having a strong brand and purpose-specific communication. Especially in challenging times," says Armin Schlamp, Vice President Corporate Marketing & Communications at **PALFINGER**.

TRANSPARENT AND INTEGRATED

PALFINGER and its partners contribute a great deal to these alliances and cooperations. In technical integration, for example. Together, requirements are openly shared and compliance with process standards is deeply ingrained in the structures of companies. If a partner makes investments, costs are calculated together. Shared challenges are identified with industry partners in order to develop cross-sector solutions.

DEVELOPMENT NETWORKS: WORKING TOGETHER FOR THE FUTURE

The counterpart to the supplier network is the field of research and development. This ecosystem — which includes the Technical Universities of Vienna and Graz, the Austrian Institute of Technology (AIT), the Fraunhofer Institute and the University of Applied Sciences Upper Austria — is working on innovations in the fields of autonomy, connectivity and eco-efficiency.

---- "According to the front-runner principle one of our product lines always takes on



WE INVOLVE CUSTOMERS THROUGHOUT THE ENTIRE DEVELOPMENT PROCESS. THE RESULT IS A CLEAR WIN-WIN SITUATION.

Sebastian Wimmer Aces Program Leader at PALFINGER

the leading role. It is supported by central development resources and supplemented by the know-how of external partners," says Sebastian Wimmer, head of the ACES program at PALFINGER which focuses on precisely these autonomous, connected and eco-efficient solutions. Together with partners such as the AIT, technologies are being developed that revolutionize lifting processes and become the foundation for applications in many PALFINGER divisions.

AUTONOMOUS SOLUTIONS OF THE FUTURE

Building new solutions always starts with complex issues. For example, how timber cranes accurately recognize tree trunks, how their position can be precisely determined and how they should be gripped and removed efficiently. **PALFINGER** Epsilon and the company's own Köstendorf Technology Center are working on finding answers to these issues together with AIT. The "Go Autonomous" project goes beyond environment recognition and

create!

32

Photo: PALFINGER

automatic loading. Reaching autonomy level 4 could enable the operator to take care of other tasks simultaneously.

— "The development of automated machines is a central part of our long-term research strategy," says Manfred Gruber, Head of Competence Unit Assistive & Autonomous Systems at AIT. Especially when transporting outdoors, bottlenecks often occur because a lack of infrastructure or personnel prevents fast loading of goods. Automated machines can help here. "They bridge infrastructure and personnel gaps by mastering so-called unorganized situations such as tasks in open areas where there are neither defined routes nor markings and, particularly, tasks in hazardous areas," says Gruber.

SAFE FUNCTIONS AND TESTING IN REAL CONDITIONS

It takes more, however, than simply detecting tree trunks. Systems need to function safely. To this end, PALFINGER is working together with Digitrans on a consortium project. At the Digitrans Test Center for Automated Driving in St. Valentin, a wide variety of weather conditions are simulated to test environment recognition under realistic and challenging conditions. "We test how rain, strong solar radiation or other weather influences affect the sensors," Wimmer explains. "We analyze how the solutions would work in different situations and climate regions around the world."

— But it is not only research partners that are involved in project development. Often it is the customers as it is their challenges that **PALFINGER** wants to address. The forestry industry is struggling with the severe shortage of well-trained crane operators for timber harvesting – regardless of whether they are small companies in Austria or large groups of forest owners in Sweden. Consequently, they are enormously interested in autonomous systems. "We are working closely with customers such as the Franz Mayr-Melnhof-Saurau Forest Company. What we develop is directly trialed and tested during live operation, which makes for very valuable feedback. That's why we involve customers throughout the entire development process. The result is a clear win-win situation;" savs Sebastian Wimmer.

— AIT researcher Gruber underlines the long-term impact of cooperation between industry and science: "It boosts the competitiveness of industry partners and adds to the fields of application for the technologies developed at AIT. This promotes technology transfer and the practical implementation of innovative solutions to the benefit of the industrial location."

CONNECTING COMMON CHALLENGES

Common challenges provide an excellent basis for a valuable network. For example, **PALFINGER** has teamed up with Ammann, Prinoth, Rosenbauer and TTControl in the Autonomous Operation Cluster (AOC). Together, the companies are developing key technologies for the assisted and autonomous operation of machines and off-highway vehicles. Whether it's a construction machine, crane, fire department equipment or snow groomer — assistance functions that relieve operators while simultaneously increasing productivity, efficiency and safety are central considerations for all partners.

— "We all recognize the trend towards assisted and autonomous operation," explains Sebastian Wimmer. "In our consortium, we look at these issues together. The question of how a computing unit must be designed so that it can process large amounts of data while offering sufficient performance is just as relevant for a crane arm as it is for a snow groomer."



A COLLECTIVE APPROACH CREATES SOLUTIONS THAT ARE MORE THAN THE SUM OF THEIR PARTS.

Camilla B. Nylund Managing Director, **OPTILIFT**

THE BEAUTY OF TRANSFORMATION

REMOTE OPERATIONS AT SEA

"We have an ambitious remote operating strategy, where cranes are an essential enabler," says Julie Jansen Birkeland, who is a project manager for performance-based contracts at the Norwegian oil and gas company Aker BP.

— When a project transitions into series production. PALFINGER works closely with established industry and production partners. One example is the long-term collaboration in offshore cranes with Aker BP and Optilift, a company specializing in digital solutions for on- and offshore cargo handling.



COOPERATION BETWEEN **INDUSTRY AND** SCIENCE DRIVES TECHNOLOGY **TRANSFER AND** THE PRACTICAL IMPLEMENTATION **OF INNOVATIVE** SOLUTIONS. THIS STRENGTHENS **THE INDUSTRIAL** LOCATION.

Manfred Gruber Head of Competence Unit Assistive & Autonomous Systems Center for Vision, Automation & Control, Austrian Institute of Technology

- At sea, cranes face unique challenges: extreme weather conditions, high waves, limited visibility, and the complex handling of heavy loads require the utmost precision. Autonomous solutions are revolutionizing this sector by using sensor technologies and artificial intelligence to take over critical tasks. They automatically compensate for wind and wave influences, detect potential hazards well in advance, and operate with consistent efficiency. This relieves operators, enhances safety, and ensures reliable, precise operation even under extreme conditions.

- Together with its partners, **PALFINGER** is developing new remotely operated offshore cranes. A total of seven cranes will be delivered to Aker BP, five of which can be fully controlled from a remote operations center onshore in Stavanger, Norway. "In our collaboration model, key technical resources from all partners are involved at an early stage. This lays the foundation for a robust all-electric standardized design and technical development for remote operation," says Birkeland. She highlights the economic significance of this long-term partnership: "Deep mutual understanding and shared expertise lead to a product with superior performance and, in the long run, lower operational costs."

- Camilla B. Nylund, Managing Director at Optilift, also sees real value in collaborative partnerships: "A collective approach creates solutions that are greater than the sum of their parts. In today's fast-changing world, this is essential: being involved in the full lifecycle - from joint development to end-product deployment - provides invaluable insights, ensuring our solutions deliver unmatched value."

AND WHAT DOES THIS MEAN FOR THE FUTURE?

"The entire area of human-machine interaction plays a central role in our R&D activities," explains Sebastian Wimmer. "Our cooperation with Aker BP and Optilift is one example of this. We are intensively exploring questions such as how the control of our cranes will look in the future, which systems can support or even partially replace the operator."

---- In addition to developing smart technologies, PALFINGER is focusing increasingly on strategic planning. "I can predict quite accurately what I will sell in three months," says supply chain planner Gerhard Innerlohninger, "But how will the market develop in the long term?



DEEP MUTUAL UNDERSTANDING AND KNOWLEDGE **ENABLE A BETTER-**PERFORMING **PRODUCT AND REDUCE OPERATING COSTS IN** THE LONG TERM.

Julie Hansen Birkeland Project Manager Performance-based Contracts. AKER BP

Where are new growth markets emerging? Where do I need to adjust production capacities or expand my network?"

- To find answers to such questions, PALFINGER is currently working on an Al-based forecasting model. This heuristic system draws on a large amount of information and data to better forecast, coordinate and plan future projects, customer requirements and necessary sales and partner networks - with unprecedented precision. Another step toward making PALFINGER's networks ever smarter and more resilient. For the benefit of all parties involved.

ONLINE VERSION There is more on the subject of networks in the online version of this article.



HOW DO YOU MINIMIZE **RISKS IN TIMES OF CHANGE?**

The economic and political environment has changed drastically in recent years. And so has PALFINGER. CFO Felix Strohbichler explains how the company recognizes and handles risks while seizing opportunities.

he risk map has changed significantly," says Felix Strohbichler, who, as CFO, is responsible for risk management at PALFINGER, too: "A key issue right now is geopolitical developments and trade barriers, which concern us in the short term, but even more so over the long-term. Macroeconomic developments in each economic region are

— The limited visibility and the current relatively high level of finance debt limit PALFINGER's appetite for risk. "We are much more cautious today than in the years of strong growth prior to 2020 or during the recovery phase 2021/22 after Corona," notes Strohbichler. This makes structured risk management even more important. "Identifying risks is not enough — it is more about handling them correctly and taking

appropriate actions to mitigate them."

DIVERSIFICATION

closely linked to this."

— Historically, **PALFINGER** has focused heavily on Europe. "Everything we sold beyond Europe was nice add-on business, but not significant for the company's profitability," says Strohbichler. Today, the company is globally positioned, regionally diversified and successful with a broad and profitable product portfolio.

---- "Our marine business is doing very well. and we now generate 27 percent of our total

revenue in the USA — our goal is to increase this share to a third," explains Strohbichler. India is also coming into focus as the next growth market.

LONG-TERM STRATEGIES. **EAST REACTIONS**

The "in the region for the region" strategy strengthens PALFINGER's independence from currency fluctuations, trade barriers and supply chain problems. "This also helps us with unforeseeable developments that can occur suddenly," Strohbichler points out. PALFINGER is actively tackling the challenge of using synergies in the global organization and the opportunities offered by the regional set-up — using the Global PALFINGER Organization (GPO), a special form of matrix organization.

---- "The diversification and globalization of our sales markets is long-term," says Strohbichler. "At the same time, we rely on task forces to respond quickly and efficiently to crisis events such as the war being waged on Ukraine, the corona pandemic, and even cybersecurity issues."

PARTNERSHIPS AS A SAFETY FACTOR

Complexity is the new normal and **PALFINGER** also relies on partnerships to handle complexity, "We work with partners who have skills that we do not. We don't have to cover everything



— FELIX STROHBICHLER CFO PALFINGER AG

in-house," explains Strohbichler, "A strong network reduces risks. For everyone."

— The choice of partners is now based on significantly more criteria than in the past. "Quality and costs are of course still central, but financial stability, resilience and ESG criteria are also essential elements," says Strohbichler. This creates long-term security.

----- When using new technologies such as artificial intelligence, PALFINGER is very focused. "We're not front-runners, PALFINGER isn't big enough for that. Instead, we are carefully analyzing which technologies can take us forward," says Strohbichler. "We closely monitor developments and use them where they prove to be useful." Basically, we implement best practices and "don't blindly jump on the bandwagon because you can burn a lot of money while gaining little added value."

THE BRAND AS A SAFETY NET

The **PALFINGER** brand is also a key component in risk management, "Our brand is both our safety net and our springboard. Protecting the brand is a top priority," Strohbichler says. It is important to minimize risks associated with ESG and the products and use the opportunities offered by the **PALFINGER** brand. "With a strong brand, it is much easier to impress our customers," says the **PALFINGER** CFO.

— "All quality aspects — relating to our products and processes — are becoming even more important. In a highly competitive market, we maintain our advantage with professionalism, speed and the highest standards." Expectations are constantly increasing, and this is how PALFINGER stands its ground against competitors, "The world is evolving — and we're evolving with it," concludes Strohbichler.





/ 2025



create!

SPEED AND COMPLEXITY HAVE INCREASED — THE FOCUS REMAINS <u>ON PEOPLE</u>

What makes a workplace more than just somewhere to work, a place you feel a connection with? That you're really committed to? Is it the technology, the opportunity to grow, or is it the people, the togetherness, the stories that are shared over decades?

Daughter and father know that the working world has fundamentally changed. But what has remained is that people of all ages can work well together.

The international perspective makes work attractive, say daughter and father. And knowing that the focus is always on people.

11

fter talking to the two father-daughter duos Karin and Peter Anabith as well as Nina Ludorff and Harald Hauser, the answer is clear: At PALFINGER, it is the combination of all these things. Klaus Prettner, Professor of Macroeconomics and Digitalization at the Vienna University of Economics and Business (WU), explains why learning and adaptability are essential.

Mr. Anabith, you have now retired after working at PALFINGER for 33 years. What motivated you to start working for the company back then?

---- Peter Anabith: Contacts with former colleagues who already worked at **PALFINGER**. They were enthused about the working conditions and the appreciation shown to them in the company. That impressed me right away. I was Paint Shop Foreman, and one of my biggest challenges at **PALFINGER** was switching from solvent-based paints to more environmentally friendly water-based paints. It was a long process with lots of tests, but it was an important step toward environmental protection and employee safety. You know, my family and I have worked at PALFINGER for a total of 178 years. That shows the close connection we feel with the company.

How did your work evolve during your time at the company?

— Peter Anabith: There were many changes. Initially, the work processes were pretty 'rustic', but we refined them together as we went along, and everyone was always treated with respect. It was particularly important to us that the changes benefited all employees. For example, **PALFINGER** focused on health and safety early on. When I started, we still wore simple dust masks. Later, we switched to positive pressure helmets for better protection of employee health. That was a step forward that had great benefits for all of us. These developments were also an indication of how important the safety and well-being of employees are.

Ms. Anabith, tell us about how you started work.

----- Karin Anabith: I had already made my decision at school. My father and brother had a lot of positive things to say about PALFINGER — good pay, a family-oriented working environment. I began my apprenticeship in purchasing in 1988. Back then, many things were still done by hand — placing files in folders, communicating by fax or even pneumatic tube. I still remember picking up the mail in person from Josefine Palfinger. Nowadays everything is digitized and automated. Despite that, personal contact and respect remain important within the company, something I still appreciate today.



MY FAMILY AND I HAVE WORKED AT PALFINGER FOR A TOTAL **OF 178 YEARS.**

Peter Anabith Paint Shop Foreman, 33 years at PALFINGER, now retired

LIFELONG LEARNING AS A SUCCESS FACTOR

— This exchange between the generations and the requisite soft skills are key factors for success in the future: "Lifelong learning is becoming indispensable," says the economist Klaus Prettner. This is not limited to technical knowledge: "Flexibility, the ability to work in a team and interpersonal skills are just as important. In hybrid teams consisting of people and machines, employees must find new ways of working together."

— According to the World Economic Forum's Future of Jobs Report 2023, employers expect that over 40% of employees' skills will have to change fundamentally over the next five years. In particular, cognitive skills such as creative and analytical thinking are becoming increasingly important, as are technological skills.

 Companies play a central role as providers of knowledge and skills. "They must offer job-related training that is structured," says Prettner. "This includes in-company training or cooperation with educational institutions. In particular, opportunities arise when different generations exchange ideas."



Klaus Prettner – his studies analyze the effects of automation and digitalization on economic growth, inequality and quality of life. He has published in leading journals in his field of research and wrote the textbook Automation and Its Macroeconomic Consequences: Theory, Evidence, and Social Impacts with David Bloom of Harvard University.

/ 2025

THE BEAUTY OF TRANSFORMATION

In your field, how are working relationships between the different generations?

the help that younger colleagues give me with digital tools. On the other hand, I can pass on my knowledge to them, for example of processes that I have been supervising for many years. That mix is what sets us apart.

---- Peter Anabith: I feel the same way as my daughter. Every generation brings its strengths to the table; that was true even in my day. Young employees grow up with technology; back then, we chiefly had manual skills. Yet we always worked together and learned from each other. Good cooperation was always important to us, both at work and during leisure activities such as group bowling evenings. That strengthened team spirit.

Mr. Hauser, in today's working environment, which is characterized by job hopping and change, it is rare to find someone who has spent over 40 years with the same company. What has changed the most in your field of work during your lifetime?

create!



— Harald Hauser: When I started, there were no computers — calculations were still done by hand with pocket calculators. The first PC had 1 MB of memory and was a revolution! Today. we work with numerous digital tools. Speed and complexity have increased enormously. What took weeks back then happens in seconds today. But it is important to the company that the human factor is not forgotten. Technology should support us, not replace us. And after 43 years at **PALFINGER**, I can say one thing: I was never bored. In our company, there are always exciting challenges and opportunities to learn new things — a culture that allows you to learn from your mistakes.

Which milestones have had a particular impact on you during your time at PALFINGER?

— Harald Hauser: I particularly remember the introduction of SAP. Back then, it was a gigantic project that affected every process in the company. Although it was challenging, it was also an opportunity to improve many things. One important topic was the shift to sustainable supply chains. This greatly affects my responsibilities in Procurement since we

I APPRECIATE YOUNGER **COLLEAGUES HELPING ME** WITH DIGITAL TOOLS.

Karin Anabith Treasury Operation Specialist, 27 years at PALFINGER work with over 7,000 suppliers worldwide. Identifying risks at an early stage and developing alternatives is crucial here. These projects have shown how important strategic thinking and collaboration are to remaining successful.

Ms. Ludorff. you have been with the company since 2010. Compared to your father, how do you see the transformation of the working world?

changed significantly over the years. Even then, my colleagues had better equipment than was usual before, but during my first days as a permanent employee in a small team, the atmosphere was still very family-like with a great deal of personal contact. We were a small team and worked closely together. In recent years, we have grown enormously and the way **PALFINGER's** HR department has developed is truly impressive. We have become more international, more digital and more connected.

AI IS BECOMING AN INNOVATION DRIVER

— Together with digitalization, AI is massively changing the working world in industry. Klaus Prettner explains: "It enables more efficient processes, more precise maintenance and personalized products. Think of prostheses or hearing aids, which are now manufactured using 3D printing. Technologies like this are revolutionizing manufacturing."

— The increasingly ageing population presents Europe with particular challenges such as a shortage of skilled workers. "However, automation and AI open up promising opportunities to close these gaps and strengthen the economy in the long term," adds Prettner.

— An OECD study from 2023 shows further positive effects of AI on the labor market: AI not only reorganizes existing activities, it can also make jobs safer and more attractive. Monotonous or dangerous tasks are automated, giving employees more time for more challenging tasks. Although adaptations are needed here and there, employment levels remain largely stable. At the same time, new occupations in the field of Al development and maintenance are emerging.

What is it like for both of you to work in a globally active company?

reflected in the work I do. For example, when an employee is posted from a **PALFINGER** site in Austria to a Chinese or American site, we take care of all aspects of contract, tax and social security law. It is important to have standardized processes and packages that are tailored to different countries.

and interesting topic, of course. Procurement this international perspective.

ence PAI FINGER?

How do you see the future of the working

world and how will this development influ-

— Harald Hauser: PALFINGER will continue to

focus on the principle of "in the region, for the

region" as well as on quality and innovation. We

are successful around the world because we

never lose sight of our roots and values. I am

optimistic that it will stay that way.

/ 2025

takes me all over the world, and it isn't always -----Nina Ludorff: I think work will become even more global, more digital and faster. It is important easy to understand and accept other cultures. to always be willing to try new things - in par-But that's precisely the key. We are no longer just a machine manufacturer from Salzburg. ticular new technologies that make our everyday but a globally operating company. This is also work easier — and to always stay up to date. But I reflected in the language. Even when we are am certain that **PALFINGER** will remain an attractive sitting together as German-speakers, we often employer. The focus is on people here. For me. speak English, Minutes, meetings, everything is that's the best thing: Our company really cares multilingual. But that also makes us attractive about its employees and so creates a working envias an employer because we offer employees ronment based on appreciation and innovation. THE WORLD OF WORK

IS CHANGING. BUT PEOPLE REMAIN AT THE HEART OF IT

---- Klaus Prettner. Professor of Macroeconomics, also underlines the importance of employees: "We are laying the basis for the future today. Technology is a tool. The focus remains on people. Companies must find a balance between efficiency and the needs of their employees."

---- Studies such as Gallup's "State of the Global Workplace Report" have been emphasizing the connection between employee satisfaction, commitment, and long-term economic success for years.

— Overall. Prettner sees clear opportunities in a changing world of work: "Those who adopt new technologies remain competitive. At the same time, new perspectives are emerging for employees. What is vital is that we constantly adapt and learn together. Otherwise, we'll grind to halt."

---- Technology is a tool. People remain indispensable. This idea is a recurring theme in all the stories and careers. This appreciation of employees and a shared vision of the future make **PALFINGER** a place where people enjoy working. That is something all those interviewed agree on. -

AFTER WE HAVE **43 YEARS AT** PALFINGER, I CAN SAY I WAS NEVER BORED.

Harald Hauser Senior Vice President Supplier Management, 43 years at PALFINGER

BECOME MORE INTERNATIONAL, ONE THING: MORE DIGITAL, **AND MORE** NETWORKED.

Nina Ludorff Global International Mobility Specialist, 15 years at PALFINGER



40

» EVERYTHING HAPPENS AT THE SAME **TIME**«

If change is the only constant — what does that mean for employers? Maria Koller, Chief Human Resources Officer at **PALFINGER**, talks about the change in the industrial working world, the success factors and the central role of corporate culture.

Maria Koller, what concerns you most as **CHRO** right now?

— Maria Koller: The simultaneity of things and the simultaneity of many opposites. We save and yet we also invest. We are hiring new people and yet part ways with others. While one company location is growing rapidly, another is undergoing a recession. Ten years ago, such developments happened more one after the other. Today, everything seems to be happening at the same time.

Does this mean that a lot of communication work is required?

— Maria Koller: Yes, absolutely, Coming to terms with these contrasts and making apparent contradictions understandable to employees is a major challenge. Changes and contradictions make you tired and are exhausting. There is a strong desire for stability, quiet and order. That is why it is even more important that the executive board and the management team communicate that we know what we are doing — even though many things seem contradictory at first glance.

How do you handle these contrasts?

— Maria Koller: In a company, everything revolves around strategic focus, organization, processes and people. Our job is to make sure that these areas are properly balanced. We invest a lot in ensuring we have the best strategy for us at the moment and are constantly evaluating the balance between local and international organizational structures. Our local organizational units should be able to work independently, but at the same time benefit

create!

— MARIA KOLLER CHRO PALEINGER AG

- from global networking in today's complex world, a purely local approach would no longer be competitive.
- Processes create orientation and stability by providing clear structures and standards. Defining processes so they do not have to be constantly redeveloped also saves time and money — which in turn opens up new space to develop.
- When it comes to people, we focus heavily on personal and professional development, and qualifications. What competencies and skills do our employees, especially managers, need to continue to operate successfully in times of constant change?

It's surprising that you didn't mention the labor shortage as one of the biggest challenges...

— Maria Koller: We are also experiencing contrasts when it comes to the availability of skilled workers. On the one hand, there is a shortage, on the other hand, an abundance. In some areas, it is very difficult for us to find suitable colleagues, while we have no additional need in other areas. Technology can be helpful in this context because AI can take on certain tasks, for example. However, the shortage of skilled workers in highly specialized positions remains a major challenge.

One topic that is very important to you is corporate culture. How do you define corporate culture and why is it so important?

---- Maria Koller: Corporate culture is what you do when no one is looking. It results from

behavior and a variety of individual measures, which together form a whole. Our organization consists of many gears that have to interlock with each other for the machine to work. The corporate culture is the oil that greases the gears. If it gets too thin, it gets stuck, and that's why it's so important to keep readjusting it over and over again.

You have also mentioned performance culture. What does that mean?

— Maria Koller: It's about taking responsibility — with the aim of becoming a bit better every day. And in the end, it's about creating something that everyone enjoys.

Performance culture means working together to achieve the goal that we have set ourselves as a company. This only works if we do it together. That includes talking openly and honestly about things that don't work — both on a professional and personal level.

You said earlier that there is a shortage of skilled workers in highly specialized positions. These require technical knowledge, but it's also a lot about soft skills.

— Maria Koller: The willingness to work together is the most important thing for me. And then there is level of insight, the ability to reflect on your own capabilities. This is only possible if you ask questions, get feedback and are interested in what others think. And then there's the curiosity about how you can get better — also by looking outside PALFINGER.

If you want to hear other opinions, that also requires diversity.

— Maria Koller: Absolutely! Change requires looking at things from a different angle, and that requires teams that are composed accordingly. This means that the people come from different cultures, different circles of experience, different ages, all genders. If you look at successful teams, the people in each team are all a bit different. This may be more challenging at first, but the success you achieve is more sustainable.

- CHAPTER 3 / inspire! THE POWER OF VISION

Some people see the possibility of another world. They then do everything they can to transform their vision into reality. Against all the odds. Whether or not they will all be successful remains to be seen. They are vitally important because they cross boundaries, open up the scope of what is possible, and set impulses. They are the visionaries of our time.

HUMAN 2.0 / David Pearce, Natasha Vita-More & Rana el Kaliouby

mproving the human body is a longsought-after dream. Modern prostheses, biotechnology and brain-computer interfaces now offer the opportunity to actually fundamentally "improve" people. This is the core of "transhumanism," an ideology that is particularly popular in Anglo-American countries.

— David Pearce and Natasha Vita-More (formerly Nancie Clark) are the most radical in this way of thinking. Pearce demands nothing less than an end to suffering: His hedonistic imperative makes biotechnology a moral duty and therapy to eradicate pain, suffering and illness. All forms of unpleasant experiences should be eliminated from human and non-human life. In his vision, suffering and pain are replaced by gradients of varying degrees of happiness. Natasha Vita-More, on the other hand, designs the body of the future: Her transhuman body is cybernetic, aesthetic, immortal and makes people designers of their own existence. Together, they embody the radical idea that humans as we know them are just the start, evolution is only just beginning.

— While Pearce and Vita-More still think of humans, Rana el Kaliouby is more focused on the machine. His work on emotional artificial intelligence is fundamentally changing the relationship between humans and machines. By recognizing facial expressions, speech patterns and emotions, machines not only become tools, but partners — able to react, understand and empathize. This opens up completely new opportunities for interaction; a vision that is very well received in Silicon Valley and beyond.

inspire!



TRANSFORMATION CHALLENGES

/ 2025

A MAMMOTH TASK / George Church

iodiversity is under extreme pressure. In addition to protected habitats, genetics can help preserve plant and animal diversity. The US molecular biologist George Church goes beyond conservation — he wants the resurrection of extinct species, specifically the return of the wooly mammoth. But

for what reason? Simply because it is possible. And, as the molecular biologist points out, the animal could counteract the effects of climate change. By compacting snow, the "mammophant" could prevent permafrost from thawing and prevent the greenhouse gas methane from escaping into the atmosphere. So says Church, who likes to think in big contexts.

44

IMMORTAL / Martine Rothblatt

he was a man, is a transhumanism activist and CEO of United Therapeutics — a company that uses cloned and genetically modified pigs to provide artificial organs for humans. Martine Rothblatt is a billionaire and is now also striving for eternal life. Her project "Terasem" aims to digitize people's consciousness and allow memories, thoughts and identities to live on in a virtual existence. As a pioneer of digital immortality, Martine Rothblatt sees technology as the key to expanding humanity towards an existence that is no longer bound to body and time.



hat if technology delivers on its promise and actually solves all problems? What do people do with their lives then? Nick Bostrom has radical thoughts on how that question pans out. He is not thinking about what is likely, but what technology is capable of at its maximum. Thanks to its completely superior intelligence, it will dominate everything — from bringing up children, to art and culture, to work. This means that people no longer have to work. What remains for them to do is to develop a culture of leisure. "We must come to terms with the discovery that the place of maximum freedom is a void," says Bostrom in his vision of a questionable future.





A SECOND SKIN, **ONLY BETTER** / Zhenan Bao

y developing flexible, stretchy and self-repairing materials, Zhenan Bao breaks down the boundaries between technology and biology. Her "electronic skin" can not only sense touch, but also transmit signals and adapt to its environment. This vision goes far beyond robotics: From prostheses that can feel again to wearable electronics that integrate with the human body, Bao is shaping the future in which technology becomes a sensory part of our lives.



inspire!

inspire!

CURRENCY FROM NOWHERE / Satoshi Nakamoto

hen Satoshi Nakamoto created Bitcoin, it wasn't just a currency, but a revolution. He did this using blockchain technology in which new data blocks are created chronologically from an original block in a database. This is the cornerstone for a decentralized future where trust is replaced by math-

/ 2025

ematics. Blockchain technology is changing financial systems, supply chains, contracts, and control mechanisms worldwide. Bitcoin — just as all the other cryptocurrencies — turns the central banking system upside down and radically questions it.



CUSTOMIZED GENETIC INFORMATION / Emmanuelle Charpentier, Jennifer Doudna & Feng Zhang

ince the beginning of the 21st century, researchers have been able to decipher the human genome. This opens up new opportunities to treat diseases or - if they are caused genetically — even rule them out in advance. In 2011, microbiologists Emmanuelle Charpentier and Jennifer Doudna were the first to prove that the CRISPR-Cas9 function can be used to precisely change genetic material like using scissors. Neuroscientist Feng Zhang succeeded in optimizing this method not just for bacteria, but for all cells. As a result, this lays the basis for gene therapies and genetic innovations such as George Church's mammophants.

THE MINERAL OGICAL CENTURY

Iridium, cerium and neodymium, copper, aluminum and lithium — transformation technologies need minerals.
However, they are in high demand and often have to be imported. <u>Anne Lauenroth</u>, an expert on raw materials and international cooperation from the Federation of German Industries (BDI), urges for rapid initiatives to be put in place to secure resources.

irst it was coal, then it was oil. Now, in the 21st century, other raw materials head the list: "The technologies of the future will be heavily influenced by mineral resources," says Anne Lauenroth, who is a raw materials expert at the Federation of German Industries (BDI) and has been analyzing developments for years. "These are raw materials such as lithium that we need for the batteries in electric vehicles (EVs) and for storing energy. They also include rare earths, which are needed for permanent magnets in wind turbines and for electric motors in EVs. And iridium, which is important for the hydrogen economy."



/ 2025



---- Anne Lauenroth catches her breath and continues: "This means that we need more of these mineral resources for the new transformed world." She also has some good news: these raw materials, even the rare earths, are actually available everywhere in the world.

THERE IS NO SHORTAGE OF RESOURCES

And for a good reason. Just because they are available does not mean that the raw materials are also extracted. Deposits of lithium, which is central to battery production, are as well known in Germany as they are in Austria; Norway only reported at the end of 2023 its large undersea deposits of zinc, copper, magnesium, cobalt and rare earths. Not a year goes by without a discovery of new deposits being announced. "And not all deposits that exist worldwide have been explored," says Lauenroth. "But to access the deposits that are well known, money is needed. A lot of money and a lot of time to quarry and mine these treasures."

- Europe as well as the USA have gradually shut down mining in recent decades. China, on the other hand, has a strategic position in the extraction and processing of raw materials. "It's one thing to extract minerals. It is quite another matter to refine them so that they can be incorporated into products or used in chemicals," explains Lauenroth. "China has invested heavily and strategically in this area." Europe has not. Quite the opposite, in fact. "Because mining involves high investment costs, is very energy-intensive and has an impact on the environment. As a consequence, we are very dependent on imports from China in this area, sometimes up to 100 percent. In an ideal world," says Lauenroth, "this is not such a problem. It is regulated by the market."

---- Lauenroth's emphasis is on the "ideal world"; it sounds like regret. "Our world is heavily influenced by geopolitical conflicts at the moment. We are in a competition of the systems, which is being intensified by the trade dispute between China and the USA. This means that Europe must try to build up more of its own capacities again. We have raw materials, we can extract them, we can refine them — we just need to create the appropriate framework conditions and take action," states Lauenroth. "If we don't, and there have already been examples of this from the recent past, we can no longer obtain certain raw materials, or only with difficulty and at a very high price."

REDUCE DEPENDENCIES. INCREASE COMPETITIVENESS

It is not just mining expertise that is lacking. Europe's framework conditions are — to say the least — not ideal. Should the lithium deposit in the Carinthian Koralpe in Austria ever be mined, the lithium will be refined in Saudi Arabia, where energy is cheap.

---- "It's a huge topic," says Lauenroth, picking up on the Carinthian story, "If we want to reduce our dependencies, we definitely need to become more competitive in terms of further processing and energy costs. This applies to the whole industry. We have a huge raw materials industry in Europe. This means that it is a strategic, political decision which industries we want to keep. We need to look at the value chain from end to end and make our location in Europe more competitive. In this respect, the issue of energy costs is of central importance."

---- The Rhine Rift Valley, between Frankfurt and Basel, contains one of the continent's largest sources of lithium. The geothermal plants that already exist there not only provide thermal energy, but also allow the mineral to be extracted from the deep waters. It's a win-win situation. In theory. But in order to really ramp up the lithium value chain, regulatory and financial security is needed. And this is where things get complicated. In 2021, there were discussions within the EU Commission about classifying the raw material as a "toxic" substance — with all the consequences for extraction and processing. The final decision is still pending.

 Lauenroth sees another opportunity to secure raw materials in raw material alliances such as the "Mineral Security Partnership," an alliance consisting of the EU together with 14 countries such as Australia,

Canada, the USA, Japan and South Korea. The aim of the cooperation is to promote investments in responsible supply chains for essential minerals worldwide.

FOSTER CIRCULARITY

Would circular economy be a solution? "Circular economies can actually play a central role in the supply of raw materials," says Lauenroth. The recovery of steel, copper and aluminum has already been tried and tested and is working. In Germany alone, the share of secondary raw materials, i.e. raw materials recovered through recycling, was 58 percent of aluminum in 2022. For steel, the recycled proportion was 46 percent and for copper 40 percent. The advantage of metallic raw materials is that, with the exception of a few special alloys, they can be recycled again and again — without loss of quality. In addition, recycling saves energy. The recycling processes of aluminum require 95 percent less energy than the original extraction process from ores.

— That sounds promising. But, Lauenroth says, "This is more difficult with high tech raw materials. such as recycling permanent magnets that contain rare earths. It is not just about the technologies that are required, it is also about having the equipment and the quantities to be able to recycle competitively in the first place. All of this is changing only now." Lauenroth continues: "Let's take an electric vehicle: Its batteries have been in the car for a relatively long time. Then they have a second life. This means that they can be used for other purposes before they are recycled." However, it is expected that it will take until 2035 before batteries are available for recycling in reasonable quantities. The prerequisite for this is something that we need to secure right now. "In order to be in a more confident position, we must invest now in all of these things — extraction and further processing of our own raw materials, raw material alliances, and recycling. This is what Germany is striving to achieve with its national commodity fund."

- Not just Germany. Since June 2024, with its Critical Raw Materials Act, the EU has been working out precise strategies and ways to secure its own supply of important raw materials. This includes plans for mining and processing within the member states as well as the diversification of import sources to avoid dependencies. "By summer last year, strategic projects had been submitted covering access to raw materials, extraction, recycling and cooperation," says Lauenroth. Those that should make Europe more independent when it comes to raw materials issues are now being selected from a total of 170 projects.

— "The prerequisites are in place," says Lauenroth. "In Europe, we have resources such as lithium and rare earths, as well as processing and recycling capacities. Coordinating these projects isn't the problem. The question is more, how quickly can we do it?" Transformation and global competitors are not going to wait.



— THIEMO FÄRBER Head of Sustainability at PALEINGER

»WITH THE CIRCULAR ECONOMY TO NEW BUSINESS MODELS«

For a technology and mechanical engineering company like **PALFINGER**, using resources efficiently plays a central role. Thiemo Färber, Head of Sustainability at PALFINGER. explains the many potentials of the circular economy and how they enable new business models

What opportunities does PALFINGER see with the circular economy?

— Thiemo Färber: Above all, we want to solve our customers' challenges. This involves using the potential of the circular economy to develop innovative business models. High uptime, easy servicing and a long service life of the products are particularly important. That is how we contribute even more to the efficient use of resources and can minimize negative environmental effects by reducing consumption of raw materials and our carbon footprint. This lowers costs over the life cycle of a product for **PALFINGER** and our customers.

How closely does PALFINGER work with customers and business partners on this?

— Thiemo Färber: Contact at local level is important for creating and testing the products we offer together. Service and spare parts, for example, have been an important topic for us for a long time. Even before the circular economy became a thing, we recognized it as a concept that was both environmentally friendly and made sense economically. And it still does. We design our products so that they can be repaired quickly and easily. Predictive and preventive services, i.e. planned and scheduled maintenance powered by **PALFINGER CONNECTED**, are the next step. Together with our business partners, we also offer rental models and provide support on the second-hand market. This tact with our customers through our sermakes for more efficient use of resources vice network.

and extends the service life of the product, reduces downtime and creates added value for our customers.

About the way resources are used, what role does the circular economy play in manufacturing?

— Thiemo Färber: The great potential of this circular model is to reduce our consumption of primary resources. Firstly by achieving a longer service life, and secondly by using recycled materials. For example, we are currently developing protective covers for our products made of high-quality recycled plastic. There are areas where we have created circular economies ourselves, like at our plant in Lengau where steel sheet scrap is collected, delivered to our steel supplier voestalpine in Linz, and fed into the blast furnace as recycled material.

That means, supply chains are part of the circular economy for PALFINGER?

— Thiemo Färber: The supply chains are important. In order to gain the full potential of the circular economy, we need to look at the entire value chain from end to end — from development, purchasing and supply chain, through to our sales and service network. Creating new business models also means leaving familiar paths. The most important thing, however, is that we think in terms of partnerships. This includes working together with our steel suppliers as well as staving in conThe data economy is undergoing

such as artificial intelligence (AI)

and in particular large language

models (LLMs) are pushing the

envelope of what is feasible and

considered a visionary concept

is now shaping our everyday lives

and driving fundamental changes

in the economy and in society as

a whole.

conceivable. What was once

profound change — step by

step. bit by bit. Technologies

C D

FROM CODE **TO TRANS** FORMATION

0000001110110100001010010101001010 00010110110110101011110101 00000011

00100//100010

110100

0000101001010101

00100//100010

10100001

0 1010111

A LONG WAY:

ern Al

- Al is also having a game-changing impact on the pharmaceutical and chemical industries. where huge volumes of data are processed for R&D that would hardly be manageable without machine learning. As Palmetshofer says, this is a factor that is revolutionizing the entire industry and driving innovations in data-intensive areas.

01101101011

inspire

910

inspire

FROM VISION TO REALITY

ince the legendary Dartmouth Conference in 1956, artificial intelligence has undergone a fascinating journey. Back then, visionaries discussed the still utopian question for the first time: Could machines one day think and learn like humans? The meeting in New Hampshire laid the foundation for mod-

---- "Phases of disappointment with expectations not being met, the so-called 'Al winters', repeatedly shaped development," explains Walter Palmetshofer from the Center for Artificial Intelligence and Machine Learning (CAIML) at Vienna University of Technology. But development could no longer be slowed down. The 1980s and 1990s saw fundamental advances in machine learning. But it was only in recent years, fueled by huge amounts of data and powerful processors, that AI underwent a decisive rise. Following this leap in development, artificial intelligence has found its way out of the research niche and into mainstream society. "The special thing about it is that it is now virtually everywhere in our everyday lives — we can communicate in different languages in real time, and that is no longer science fiction," explains Walter Palmetshofer.

INDUSTRIES IN TRANSITION

Its effects, however, are felt to varying degrees. Data-intensive and repetitive tasks gain the most benefit from automation and optimization. "Artificial Intelligence," Palmetshofer points out, "is another stage of so-called 'digitalization', in which tasks are increasingly being handed over to machines." In customer care, AI ensures increased efficiency by acting as an interface between companies and consumers in the form of chatbots, for example, a personalized customer approach based on Al-supported analyses. This allows inquiries to be processed around the clock, while the quality of answers is constantly improved by continuous learning processes.

— That being said, large data sets alone are no guarantee of success. The effective implementation of artificial intelligence is directly linked to the "AI maturity" of companies. "Many companies are not yet able to process their data in such a way that they get the full added value from AI technologies." explains Palmetshofer. The ability to acquire and use data effectively is - and will remain - one of the key competitive resources of the future.

THE FINE LINE BETWEEN INNOVATION AND CONTROL

Much depends on the way governments handle the data economy. According to Palmetshofer. every act of regulation is a balancing act in which innovation and control need to be carefully weighed up against each other. Just as an excess of regulations can hold back technological progress, so can a lack of control present significant social and economic risks. The different approaches of major players such as the EU, the USA and China are making this even more of a challenge. While the EU is going for clear regulation of AI systems with strict data protection requirements and its AI Act, the USA is pursuing a market-oriented approach aimed at economic and technological innovation. China, on the other hand, combines strict government control with targeted promotion of AI innovations. These very different approaches not only run the risk of unequal competition, they hold back the development of shared international standards.

- And that's not all. The size of some IT companies is in direct contrast with their sense of responsibility. All too often, security gaps in software and defective products remain without consequences far too long — a situation that would be unimaginable in other, traditional industries. Clear liability regulations, says Palmetshofer, increase security and can promote innovation. From his point of view, basic regulations for large IT companies ("the significant seven", competition, taxation, etc.) must first be created before too specific AI regulations are laid down for other industries. This is the only way to ensure that competition is fair and that technology is used responsibly in the long term.

---- That is why Palmetshofer calls for greater cooperation between policy makers, industry and research. Policy makers must create the foundations to enable innovation without losing sight of social values. But rapid progress is difficult if international disunity and economic interests — see above — are delaying the creation of global standards.

THE SOCIAL DIMENSION

While regulations have their place, they're not the be-all and end-all. Palmetshofer underlines that the social dimension of artificial

intelligence is at least as important. The interaction between humans and machines offers enormous potential, but also involves profound risks. Just as AI makes everyday life easier and enables personalized solutions, such as the creation of an individual training plan, it threatens to undermine basic human abilities such as critical thinking and personal responsibility.

— It becomes particularly problematic when the decisions made by machines are perceived as infallible. "It is difficult to disagree with something that supposedly has more authority - especially when it is a machine," explains Palmetshofer. This dynamic not only jeopardizes the ability to question decisions, but also increases social power imbalances. The development and control of AI is currently dominated by a few large technology companies. This creates ethical tension, because the values of these large companies significantly influence how technology is used worldwide, often without taking into consideration cultural or social differences.

---- With this in mind, he wants to see increased social engagement with AI: "In order to use this technology critically and constructively, we need holistic education and an open discussion culture. The next generation in particular must learn to critically guestion technology at an early stage, while at the same time using it to playfully explore this technology."

Will the implementation of AI promote competition in the long term? Or will a world emergein which a few dominant companies control the economic playing field?

Developments in AI are progressing rapidly: ChatGPT is only two years old and is already an integral part of the everyday (professional) life for many people. There are big differences between areas of application when it comes to AI. While image recognition and simple text creation work well, physical systems such as robots and autonomous vehicles still face major challenges. That is why I think it unlikely that the leading AI companies will expand rapidly into all sectors of the economy.

Stefan Neumann CAIML, VIENNA UNIVERSITY OF TECHNOLOGY

the progress and acceptance of AI technologies?

How does public opinion influence

completely unanswered.

— Moreover, the development of AI raises

profound questions. Technologies such as sim-

ulating communication with the deceased in

South Korea, and Al-based scams using false

identities, for example, highlight potential risks

and opportunities for misuse. And then there

are legal questions of responsibility when artifi-

cial intelligence causes damage; which remain

Artificial intelligence is more than ChatGPT. Its various methods offer tremendous opportunities --- personalized services, better and collaborative decision-making, and advances in medicine and science. On the other hand, AI enables new ways of intruding into our privacy, it can be used to monitor workers, and its misuse can threaten our fundamental rights. That is why it is important — in the spirit of digital humanism — to educate society about the technical possibilities of AI, as well as its opportunities and risks. Technological progress is not fate, but can be shaped by us.

Stefan Woltran CAIML, VIENNA UNIVERSITY OF TECHNOLOGY THE ECOLOGICAL PRICE OF ARTIFICIAL INTELLIGENCE

A central aspect that is often underestimated is the high energy consumption of AI systems. Large models require enormous computing capacities. "There are AI data centers being planned that will consume the same amount of electricity as all the private households in major cities such as Vienna or Hamburg," says

Is the energy consumption of AI a price we must pay to gain social and economic advantages, or are there realistic a Iternatives?

Powerful AI systems based on deep learning and large language models are today characterized by high energy consumption. Although it is unlikely that this energy consumption can be reduced in the near future, researchers are working intensively to reduce it without affecting the performance of AI systems. Promising strategies include neurosymbolic AI methods, innovative learning algorithms, and specialized AI chips.

Nvsret Musliu CAIML, VIENNA UNIVERSITY OF TECHNOLOGY

Palmetshofer. In everyday use, a ChatGPT prompt consumes around 10 times as much electricity as a Google search, according to the International Energy Agency (IEA).

- In order to meet this challenge, the energy consumption of AI systems could be more strongly regulated by pricing. "If energy-intensive models become more expensive for users, this would encourage them to think more carefully about the way they use AI," explains Palmetshofer. Yet the fundamental question remains: How can technological advances comply with global climate goals? "We must seriously ask ourselves what price we are prepared to pay — both economically and ecologically," says Palmetshofer.

---- New, more resource-efficient models. such as the recently released Chinese AI model DeepSeek-R1, could influence this discussion. The key question is whether AI will lead to a real reduction in consumption of energy and resources over the long term, or simply to higher efficiency? And then there is the risk of the rebound effect, that the increase in efficiency will simply lead to more rather than less use.

SHAPING THE FUTURE OF AI IS IN OUR HANDS

According to Palmetshofer, a first step is to regardless of which are currently in the lead. That is how you can develop a feeling for the current status and direction of the technology. Because working with AI is increasingly becoming a key skill in many professions, it is worth gaining experience early on and developing this skill. The good news is that because this technology is still young, the distance to the top is small, so it is still worth getting started even now.

---- The development of AI is one of the biggest technological transformations of our time. Its success depends on how we deal with its challenges. Clear regulations, conscious use of resources and a well-founded critical assessment of its social impact are the key to using AI as a tool for progress, and not as a threat. The future of AI is not predetermined, but is shaped by the decisions we make today.

ONLINE VERSION

There is more on the subject of artificial intelligence in the online version of this article www.palfinger.com/artificialintelligence



COMPETITION BETWEEN COMPANIES. **OR WILL IT FURTHER REINFORCE THE**

Walter Palmetshofer from the Center for Artificial Intelligence and Machine Learning (CAIML)

THE QUESTION IS. DOES AI ENCOURAGE DOMINANCE OF A FEW MAJOR PLAYERS.

at the VIENNA UNIVERSITY OF TECHNOLOGY





Head of Product Line "Digital Solutions" at PALFINGER

Hubert Wallner, Head of Product Line "Digital Solutions" at PALFINGER, talks about the use of artificial intelligence in the company, current challenges, and perspectives for the future.

In which areas at PALFINGER do you see Al adding the greatest value?

tral building block for the future, which is already being used in numerous areas at **PALFINGER** and is constantly increasing in too, we used AI from the beginning to importance. This ranges from the optimization of manufacturing and logistics processes to the development of new digital functions, through to interaction with our customers using new communication channels such as chatbots.

What are the prerequisites for using AI successfully?

— Hubert Wallner: Al strategies need a clear objective and need to be based on a comprehensive and up-to-date database. For this reason. **PALFINGER** is working intensively on connecting existing databases to create a uniform platform for training AI models. However, a good data foundation on its own is not enough it is integration into everyday working life that is important. That is why we have introduced Microsoft Copilot throughout gives each employee the opportunity to explore the technology and gain practical experience. Only then can we gain a **Do you think AI will help establish** deeper understanding of the possibilities of AI, enabling new and valuable fields of application to be discovered where they have the greatest advantage.

Which of PALFINGER's products are equipped with AI, and what benefits does this have for customers?

— Hubert Wallner: One example of how we reduce complexity, combine knowledge and information, and create added value for our customers, is **PALFINGER CONNECTED.** This system analyzes tele-itive advantages for the future. **PALFINGER** matics data in real time using AI to make has created the best conditions for this.

servicing more predictable and plannable, which minimizes downtime and reduces repair costs. Then, in software engineering, where AI increases productivity and minimizes errors. And at STRUCINSPECT, detect and classify damages and cracks in infrastructure more quickly.

Where do you see additional potential for using AI?

are only using a fraction of the possibilities. It is important to remember that AI is not a project with a fixed start and end point, but a dynamic field that is constantly evolving. We see great potential in product development, particularly in prototyping, because AI can accelerate design and engineering processes by using digital twins to enable automated testing, error analyses, and drive optimization processes. Al also opens up additional potential in automation. As a key technology for autonomous control systems — operating cranes, for examthe company as one of the first steps. This ple — it increases safety, efficiency and ease of use.

new products at PALFINGER in the long term?

— Hubert Wallner: Absolutely. Al will not only optimize existing products over the long term, but will also create the basis for new functions and services that offer decisive competitive advantages. In order to be able to harness this potential, it is important to create the technical and organizational conditions as soon as possible. Companies that are now taking this step are securing their decisive compet-



THE BEAUTY OF TRANSFORMATION

THE MAGIC FORMULA

WHAT'S NEXT?

markets by constantly being used to search for solutions to customer WHAT'S COMING UP? problems, and also changing as a result. This is absolutely decisive, WHAT IS GOING TO BE IMPORTANT? because in the same way that knowledge workers are not just recipients AND WHAT ARE WE OVERLOOKING? of ideas "from above," today's customers are not people who can simply be presented with something. As a co-creator, the customer contributes t first glance, these are difficult questions, but there is a very to what makes the final product. "Knowledge is the only resource that simple answer to them. Give us an oracle! But not just any oraincreases the more it is used," is how Swiss innovation researcher Gilbert cle, the original, which was founded a good 2,800 years ago in Probst cleverly put it in a nutshell. the temple of Apollo in Delphi, Greece. And no, we don't need This sums up the decisive success factor of knowledge compaa priestess or fortune teller, just clarity of vision to understand nies: Industrial society has supplied us with mass-produced goods so the most important thing about the oracle: The saving *Gnothi* successfully that we can now order tailor-made suits. Digitalization and Seauton in Greek, or in English: Know thyself. Good old "self-awareness is the still weak artificial intelligence of our time represent a key technolthe first step towards improvement." That is also the case, of course, with ogy, a new steam engine, so to speak. That is because the success of the question of successful transformation and the role that knowledge the division of labor always includes the principle that repetitive routine plays. When we translate "know yourself" into the world of business and work should be carried out by machines. That is the job of computers organization, this statement becomes an important question of our time: and algorithms. That is where Know yourself! needs to kick in: In the Do we know what we know? That is why the oracle instructs us to use same way that machines take on heavy or dull, repetitive tasks, people need to activate their most important asset: their heads, their curiospragmatic reason. Let's do a stock take first, an inventory. ity, their wealth of ideas. This is fundamentally chang-

WHAT IS TRANSFORMATION?

The term has long since become a container word that anyone can use as they please. At its core, however, transformation simply means change. Ecological transformation — often mentioned in the media — refers to energy from sustainable production instead of fossil sources. That is important, but there is much more to it than that.

— When it comes to companies, society, the economy, and culture, it is clear that the term refers to the transition from the old industrial society to a new knowledge society, which has been going on for some time and has often been subconscious, but is now very apparent.

- First of all, this is not about sudden upheavals and revolutions, but an evolutionary process that has been foreseeable for a long time. The formula for success behind the industrial society is not the steam engine or the car, but the division of labor, i.e. the specialization of work and the knowledge that is needed to do the work. In the past, workers were simply agents acting out the will of their masters, but the expertise workers need has continued to grow.

---- They become knowledge workers – people who, through education, cooperation skills, and personal know-how, embody the quality described by Peter Drucker, the Austrian-American pioneering thinker and author: "Knowledge workers know more about their work than their boss." Antiquity helps us again here, because the Latin word *caput*, from which the word capital stems, refers to the head. The Latin *industria*, on the

Knowledge is power. The transformation into a global knowledge economy requires the promotion of independent knowledge work

inspire!

other hand, means diligence. The industrial society therefore has its priorities in the diligent, hard-working expansion of mass-produced products. The knowledge society, by contrast, is shifting this priority towards focusing on solving specific problems. The transformation from an industrial society to a knowledge society is not abolishing production sites or mass production, but is shifting priorities in favor of innovative potential based on knowledge and know-how.

— We arrived there some time ago. Knowledge is our world's most important resource. Knowledge creates innovation, new products, new

inspire!

Knowledge has never been as powerful as it is today. If you want to use this power, you have to believe that things can always work better than they do now.

ing the world of work. To keep pace with this

transformation, you need to rely on the intellectual and creative resources of fellow knowledge workers and work together with customers as partners. Trust in the ability to work independently and to independently develop better solutions and ideas. This is not just for academics; it is a project that affects everyone. The fuel of knowledge is curiosity, not the complacency of being satisfied with the way things are.

— Not: How can I keep what is there for as long as possible, but: How can I always make it better than it is?

- What is needed is a collective push towards curiosity and selfconfidence, independent work and the joy of progress as a result – essentially, a type of Kaizen for all industries, levels and our work culture. By the way, the Japanese word Kaizen is synonymous with evolution, with transformation, and it describes pure

knowledge economy, as the Japanese master thinker Maasaki Imai put it, as a fundamental and never-ending intentional questioning of what we think we know. This requires a great deal of courage — because it always involves critically and constructively questioning the previously accepted

principles of success.

In everyday life, this means more

independence and personal respon-

sibility for everyone in the company

and the ability to share their knowledge and skills with others —

Kaizen for everything we do.

This leads to a new competition of improvement, of ideas, from which everyone will benefit.

- The cultural skill of knowledge itself has a magic formula: Not to be satisfied with the way things are, no matter how much you have already achieved. Make what is good even better. And be proud of exactly this ability. You do not need an oracle for that, but a bit of competitiveness when it comes to knowledge work: Who has the better idea that travels farther and flies higher? So, it is a bit more like personal Olympics rather than Delphi of the mind. That is when knowledge really takes off.

PRODUCTION METROLOGIST

/ Trained at PALFINGER since 2021, new training curriculum since July 2020

"For me, this is a niche apprenticeship with a lot of future potential," says <u>Gregor Blesing</u> (25), who is in his third year as a production metrologist. The automation of many processes also requires the very latest measuring equipment — from classic rulers to measuring arms and ultra-modern scanners. In order to better understand the properties of materials during processing or under the influence of heat, apprentices also learn metal-processing skills such as lathing, milling and various welding processes. Production metrologists follow the entire production process: They measure semi-finished products such as blanks and shafts, and also plan and optimize measurement processes before implementing them. In a nutshell, they are the measure for the highest quality.



JOBS THAT GROW INTO THE FUTURE

The industrial world is changing - and jobs are evolving with it. Digitalization and automation go without saying. Sustainability and resource-efficient manufacturing are moving into focus. The shortage of skilled workers requires flexible training models that teach technical skills and how to use digital tools, as well as promote teamwork, problem solving and global thinking. The content and focus of apprenticeships have shifted to meet these requirements. Sometimes they change their names, or completely new job profiles are created. PALFINGER and its apprentice training team have played a significant role in some of these new job profiles, such as production metrologist, for example, in the Austrian apprentice training scheme. All in all, PALFINGER is preparing young talent for a dynamic future in 18 different apprenticeships. Here, we take a closer look at five of these professions with a future.



- <u>MECHATRONICS</u> <u>TECHNICIAN</u>

/ Trained at **PALFINGER** since 2003, new training curriculum since June 2015

Having completed the first few months of their training, <u>Nina Fellinger</u> (16) and <u>Tobias Hüttenmeyer</u> (20) are convinced that they have chosen the right apprenticeship, and the ideal company in which to do it. Mechatronics combines mechanics, electronics and programming — skills that are growing in demand in an increasingly automated industry. Bernhard Eicher, training manager at **PALFINGER**, calls it a "really powerful job." Nina explains that, in addition to comprehensive professional know-how, social skills also play an important role in training. And Tobias adds: "You learn a great deal right from the start. A crane is an extremely complex machine, and we completely dismantled one ourselves during a two-week course."





100

PROCESS TECHNICIAN

/ 2025

/ Trained at PALFINGER since 2000, new training curriculum since June 2015

Not only are they on the same apprenticeship, but their last names are almost identical: Verena Rausch and <u>Tobias Rusch</u> (both 17) are in their second year of their process technician apprenticeship. This apprenticeship combines technical and manual skills — from metal processing to electronics — with commercial processes and programming. "The apprenticeship is very wide ranging. We learn how a circuit diagram works as well as how to wire a power outlet," says Tobias. And Verena adds: "You see a lot of different fields and get to experience many areas of the company." This broad training is essential because process technicians play a key role in ensuring the quality and efficiency of production in the future.



58

THE <u>BEAUTY</u> OF TRANSFORMATION



/ Trained at PALFINGER since 1994, new training curriculum since May 2020

Every Saturday, Lisa Neudecker makes her way to the PALFINGER Campus. The 17-year-old is taking advantage of the opportunity to combine her apprenticeship as an industrial clerk with her high school diploma – which means she even attends lessons on weekends. This opens up double opportunities: early entry into working life and, at the same time, future-oriented education and career opportunities. Lisa really appreciates the practical focus and versatility of her training. She gets to know numerous areas of the company - from purchasing and sales to logistics, accounting and human resources. Her apprenticeship is geared to the growing demands of industry: Digitalization, globalization and sustainable production processes need people who act flexibly, competently and with a focus on the future.

TRANSFORMATION CHALLENGES

- LOGISTICS CLERK

/ Trained at PALFINGER since 2010, new training curriculum since May 2020

There are 30,000 storage locations in PALFINGER'S automated small parts warehouse in Lengau. All the small parts that are needed for customer orders and during crane construction are picked here. One person who keeps track of everything is Tobias Mair. The 16-year-old is in his second year as a logistics clerk apprentice and ensures that production, service and warehouse work together smoothly, which is decisive for competitiveness and customer satisfaction. His work involves optimizing warehouse space, minimizing search times and supporting efficient production planning. The 16-year-old is certain that "Nothing will work without a warehouse in the future."

THE <u>BEAUTY</u> OF TRANSFORMATION

AT A **GLANCE**



OUR **PRODUCT PORTFOLIO CONSISTS OF:**





MARINE CRANES



inspire!



MORE





