

# Automation: A Job Market Killer or Booster?

An Analysis from 1970 Until Today

# Executive Summary

## Why Automation?

Automation is a key to more efficient business processes - not just since ChatGPT. For decades, business processes have been **gradually automated and technologized** - and for just as long, they have been **suspected of destroying jobs**.

In this whitepaper, we analyze the **development of automation** from the 1970s to the present. We illustrate what has changed over time (the types of employment) and which aspects have essentially remained the same (the overall demand for personnel). The challenge is thus to align the workforce with the changing digital work environment and to emphasize **collaboration between 'human and machine'** to enhance efficiency and productivity.

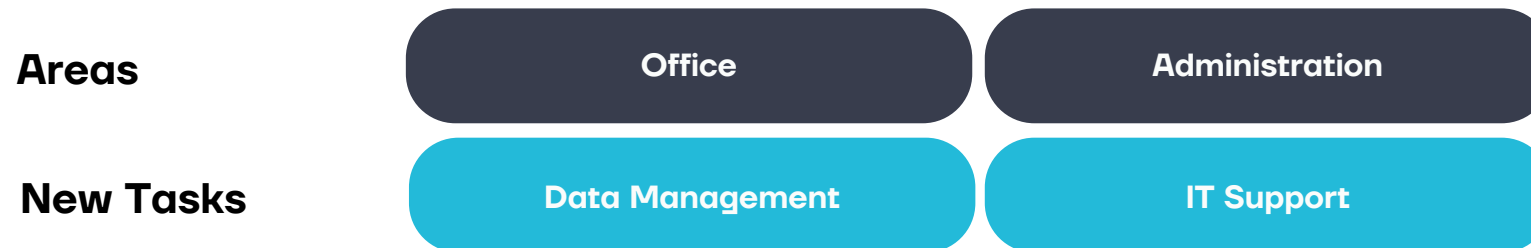
# 1970s

## Pioneering Work



### First Computer Systems in Companies

The first steps towards the automation of business processes took place in the 1970s, when companies began to introduce computer systems for accounting or record-keeping. This immediately raised concerns about job losses, especially among office and administrative staff. However, these fears were countered by new tasks in data entry, system maintenance, and software development. Automation allowed companies to process larger amounts of data more efficiently and created opportunities in data management and IT support.



# 1980s

## Skill Enhancement



### Performance Improvement Instead of Job Cuts

In the 1980s, the automation of business processes became more refined. Concerns about job losses had not changed much. At the same time, companies increasingly recognized that automation could improve the performance of existing employees rather than replacing them entirely. By acquiring digital skills and IT capabilities, employees remained indispensable. For example, the introduction of Customer Relationship Management (CRM) systems optimized sales processes but also created a demand for CRM specialists and analysts.

#### Areas

Customer Service

#### New Tasks

CRM Specialists

CRM Analysts

# 1990s

## E-Commerce and Automated Customer Service



### Automated Transactions in E-Commerce

In the E-Commerce decade of the 90s, companies utilized automation for processing online transactions and handling simpler customer service inquiries - think Self-Service. Now, concerns about job losses shifted towards retail and customer service. New jobs emerged in areas such as web design, digital marketing, and E-Commerce management. Some traditional retail jobs (and companies) struggled, while others flourished in their new digital roles.



# 2000s

## Automated Business Processes



### RPA & Outsourcing

After the turn of the millennium, the digital revolution continued to reshape business processes. Companies increasingly sought ways to outsource routine tasks, often to "cheaper" overseas locations. Simultaneously, the integration of automation technologies (and Germany's role in their development), such as Robotic Process Automation (RPA), led to new jobs in process design and RPA implementation. These roles required a combination of technical and business process expertise.

#### Areas

Routine Tasks

#### New Tasks

Process Design

RPA Implementation

# 2010s

## Enter Artificial Intelligence



## Intelligent Automation

In the 2010s, artificial intelligence (AI) found its way into the business world. Concerns grew that AI could replace office jobs, especially in finance and lower-tier customer service. However, AI systems mainly complemented human work rather than replacing it. For instance, chatbots and virtual assistants handled routine inquiries in customer service, while human agents remained indispensable for complex tasks and emotionally intelligent activities such as negotiations and customer relationship management.

### Areas

Finance

Customer Service

### New Tasks

Increased Capacity for More Complex and Emotionally Intelligent Tasks

# 2020s

## Humanity and Automation



### Interaction Between Humans and Machines

Since the beginning of the 2020s, workers increasingly need to engage with the topic of reskilling. Additionally, the shortage of qualified workers for tasks such as data analysis, machine learning, and cybersecurity is driving the need for automation. Companies rely on automation to handle repetitive tasks, but they simultaneously require skilled employees to manage, monitor, and improve these automated processes. Reskilling and training initiatives are crucial to bridge the gap between the workforce and automation technologies.

#### Areas

Repetitive Tasks

#### New Tasks

Management

Monitoring

Improvement of  
Automated Processes



# Growth & Change

## Automation and Unemployment Rate Do Not Go Hand in Hand

Macroeconomically, over the same period, the population in Germany has grown by approximately 16%. The unemployment rate increased from around 1% in 1970 to a peak around 1990-2000 of almost 12%.

Since then, it has been steadily decreasing, **reaching about 5-6% today**. Despite the fact that our analysis surely does not cover all influencing factors, it is worth noting that automation and job loss do not necessarily go hand in hand. Instead, it becomes clear that Germany, like other industrialized nations, has long been operating a knowledge- and education-oriented economy. In contrast to many others, Germany also **actively pursues a policy of continuous education**, encouraging companies to invest in the development of their employees.

# Automation: New Opportunities

## Shaping Human Roles and Cultivating New Skills

Looking at the automation of business processes over an extended period, it becomes clear that concerns about jobs persist, but they often haven't materialized as feared. Instead, the automation of business processes, much like in other domains, has **reshaped and complemented human roles**, leading to a **continuous demand for new skills**.

Looking at the past decades also shows that changing requirements for employee skills often **arise abruptly from technological leaps**. There is always a gap until corresponding training is offered, and it is precisely this **gap that is the cause for concerns about job security**. The new jobs are usually not a direct replacement for the "displaced" individuals, who often come from more administrative areas and are now suddenly expected to manage or develop software. This is also not easily compensated in the short term, even with training.

# Digital Workplace

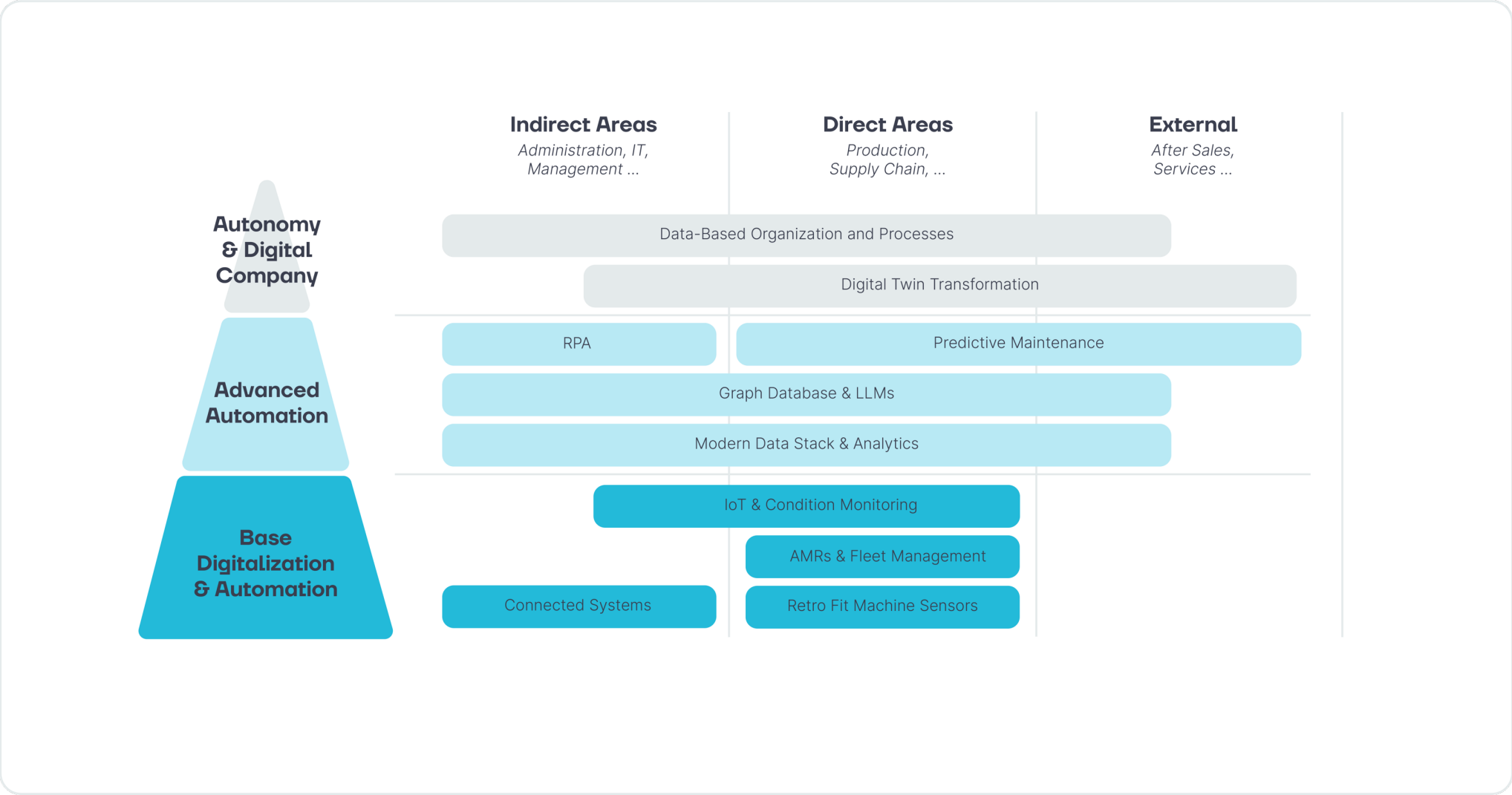
## A Sustainably Attractive Workplace

Profound technological leaps will be part of our future and are likely to occur more frequently. Companies and education need to think **more long-term and cross-functionally than before** (from admin to admin with AI support; from designer to animator and UX expert, etc.). In addition to appropriate training, entry-level positions must be created. Only in this way, employees can **build the necessary experience** required for such cross-functional activities.

The ongoing challenge is to prepare the workforce for this evolving digital work environment, **enabling humans and automation to collaborate** for increased efficiency and productivity. While greater efficiency isn't inherently better for employees, it can, but doesn't necessarily have to, lead to a more attractive workplace. But if your goal is to create a **sustainably attractive workplace** for scarce professionals or seeking support from unions for increased automation, (partly) **investing the gains from additional productivity into employee-friendly measures** (such as a shorter workweek) can be crucial. This approach will significantly enhance internal acceptance and expedite implementation.

Can automation **solve the shortage of skilled workers**? Although not intuitive, technological development sometimes leads to increased technology use and consumption, thereby requiring more resources (Jevons Paradox). In this regard, automation can enhance productivity even in the face of a shortage of skilled workers, but only if it outpaces the rate of increased consumption.

# How Could This Look Like?



# Specifically,

**you could for instance...**

**...automate your entire process and tool chains in engineering**, enabling new business models as costs decrease. Fundamental to this is, for example, technology in graphics. Often this extends even deeper into subsystems to link associated interfaces.

**...establish Future Factories.** There are various blueprints for this, each specific to the industry or business model. Yet, they all share one aspect: an intelligent integration of various technologies (see overview on the next page) through a smart IIoT architecture. This architecture must be long-term adaptive, allowing, for instance, changes in technologies. Consequently, it becomes an ecosystem of technologies and systems interconnected from the process level to the corporate level.

Various studies indicate that in such a scenario, only a fraction of today's employees is necessary to keep production and associated material flows running. What happens to the employees in such an automated context is difficult to predict. From a historical perspective, as we saw on the last pages, this does not necessarily have negative effects on job markets.

# How Could This Look Like?



# Ready to Automate?



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Lets Talk



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