AI

WHITE PAPER

SPIE, sharing a vision for the future

Contents

Preface

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SPIE's AI Shift: Unavoidable and Underway

SPIE has launched dozens of AI initiatives, ranging from proofs of concept to operational applications embedded in our daily operations. These initiatives span across our subsidiaries, reflecting our commitment to harnessing AI's transformative potential. As we look ahead, it is clear that AI—combined with other technologies—will be a driving force in reshaping industries and redefining our daily lives in this decade.

Recognising the profound impact AI can have on efficiency, productivity, personalisation, decision-making and service quality, SPIE's leadership team is deeply committed to understanding and leveraging this technology. We believe that AI's potential should not only be explored but embedded within our roadmap.

We are committed to empowering our teams to navigate and capitalise on the opportunities AI presents, ensuring that we remain agile, innovative, and competitive. Through this collective effort, SPIE will be positioned to meet the evolving demands of our clients and lead with confidence in the AI age.

"We believe that AI's potential should not only be explored but embedded within our roadmap."

Introduction

In a world where the pace of innovation is accelerating, we must share a common foundation of knowledge about Artificial Intelligence (AI) in its various facets. Diving together into the heart of the challenges related to this revolutionary technology is essential for us to collectively be able to clearly identify the opportunities for SPIE, assess how the company has, so far, approached these challenges, and chart our future course to fully harness the potential offered by AI, while rationally addressing the risks associated with it.

This white paper goes beyond a technological perspective; as we will see, the transformations related to AI also encompass managerial, regulatory, social, and ethical challenges and more. This white paper is a first attempt to gauge the impact of AI on these different aspects, thus highlighting the importance of preparing and acting holistically in the face of today's changes and those of tomorrow.

The transformations related to AI also encompass managerial, regulatory, social, and ethical challenges and more.

In summary, the SPIE AI White Paper is a call to our collective action to shape and realise the company's AI ambition. This requires an approach marked by humility, lucidity, and unwavering determination, enabling SPIE to navigate the constantly evolving landscape of AI successfully.

PART 1

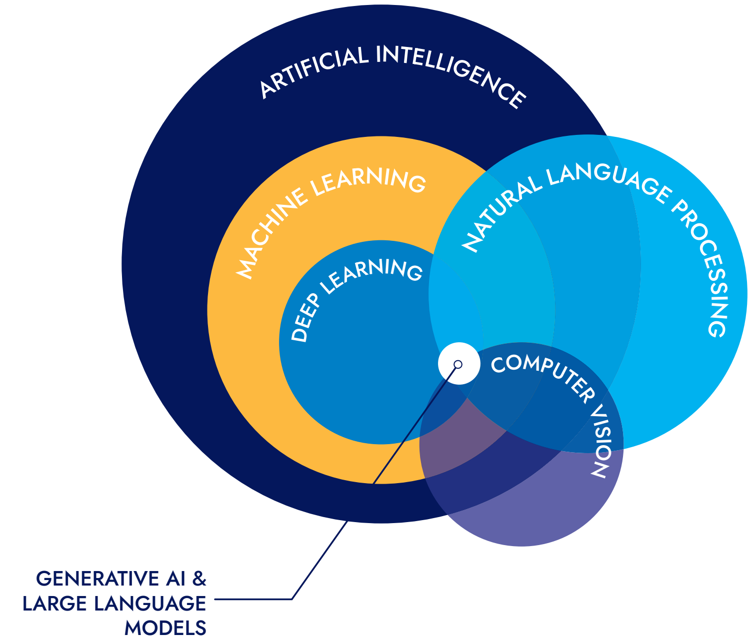
Artificial Intelligence: what are we talking about?

AI: A FEW DEFINITIONS

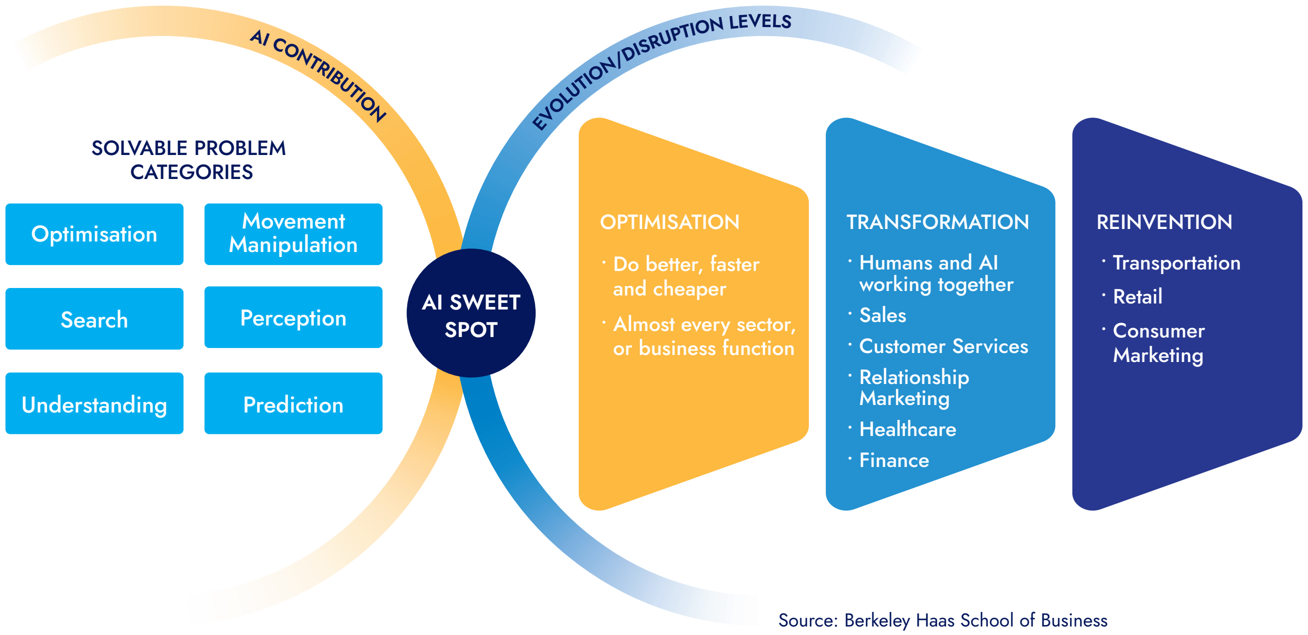
There are many definitions of Artificial Intelligence (AI), but for simplicity and clarity purposes, let's refer to the definition provided by the European Commission, which defines AI as "the ability of a machine to display human-like capabilities such as reasoning, learning, planning, and creativity." AI systems can "perceive their environment, deal with what they perceive, solve problems, and act to achieve a specific goal. The machine receives data, processes it, and responds." Artificial Intelligence (AI) is, therefore, presented as the ability of a machine to perform cognitive functions that we typically associate with the human mind.

Cognitive functions refer to the mental processes that enable us to perform any task; they allow the subject to play an active role in receiving, selecting, transforming, storing, developing, and retrieving information, which enables them to interact with the surrounding world.

AI techniques notably use **Machine Learning** and **Deep Learning**, which allow computers to learn from data, improve over time, and adapt to new information.
These different concepts can be represented in a 'Russian doll' logic: note that Generative AI is a subset of Deep Learning, which in turn is a subset of Machine Learning:



WHAT ARE THE APPLICATION DOMAINS FOR AI?



Source: Berkeley Haas School of Business

Berkeley Haas School of Business uses an analytical framework identifying three possible levels of applications:

Optimisation: In essence, AI enables us to do better, faster, and for less cost. These goals of operational efficiency and cost control can thus apply to the reality of all industries and functions.

Transformation: AI allows for the transformation of processes and practices, mainly through augmented intelligence, where a 'partnership' is established between AI and humans to deliver an optimised service, product or result (in terms of accuracy, costs, volumes processed, speed of execution, etc.). This can be applied in diverse areas, such as healthcare (aid in diagnosis, assistance in creating treatments), customer service (via chatbots or virtual assistants), legal (predictive analyses of litigation outcomes), energy (via AI-based predictive maintenance), and more.

Reinvention: In this final and ultimate level of disruption, AI enables the creation of a new value proposition for customers, invents new products and services, and completely changes the business model. As illustrations, consider the transportation sector (autonomous vehicles), retail (visual recognition, cashierless purchasing), and even artistic creation (Generative AI)...

With the 'democratisation' of AI, some experts assert that the realm of possibilities becomes almost limitless, promising profound upheavals in business processes and models. **Berkeley Haas School of Business** thus defines an 'AI Sweet Spot' (diagram above), the meeting point between emerging problems and challenges within organisations and the realm of possibilities AI opens.

AI AND AUGMENTED INTELLIGENCE: TOWARDS A NEW HUMAN-MACHINE DIVERSITY?

Augmented Intelligence is a human-centered partnership model in which humans and artificial intelligence (AI) **work together** to enhance cognitive performance, including learning, decision-making, and experiencing new possibilities.

In other words, when AI assists humans, for instance, in decision-making, speeding up tasks, or focusing on complex tasks, it is not just about artificial intelligence; it is about augmented intelligence. In classic AI, the machine's intelligence is artificial; in augmented intelligence, it is primarily human intelligence that is enhanced through the combination and collaboration of human capabilities and those of artificial intelligence (AI).

Concretely, this 'augmentation' can take several forms: that of **complementarity** (the synergy between humans and machines, where each part brings its unique strengths), that of **assistance** (AI supports individuals in their daily tasks, for example by automating specific processes, providing valuable information and in-depth analysis for decision making), that of **capacity extension** (providing tools to perform tasks that would otherwise be unattainable), that of **collaboration** (where AI, in a bidirectional interaction logic, adapts and continually learns from human inputs and feedback), and that of **enhancing the human experience**, allowing humans to explore new possibilities, new modes of creativity and learning.

This 'augmentation' of human intelligence is made possible by Artificial Intelligence technologies, such as **LLM** (Large Language Models), **NLP** (Natural Language Processing), and **Computer Vision**.

Let's pause for a moment to consider what these technologies are, and especially the paths they open:

- **Large Language Models (LLM)** are machine-learning computer models trained to understand and generate text in natural language. They are designed to «understand» syntax, semantics, and other aspects of language and can perform tasks such as text translation, content generation, answering questions, etc.
- **Natural Language Processing (NLP)** enables intuitive communication between humans and systems, mainly through conversational robots (rule-based chatbots). Advanced virtual assistants go far beyond simple conversation, with the ability to observe behaviors, discern positive or negative emotions, develop and manage data models, predict and recommend actions to assist individuals, and automate tasks that previously could only be done by humans... and even incorporate humor in their dialogue when appropriate!
- **Computer Vision** is a process that involves capturing, processing, and analysing images and videos from the real world to enable machines to extract meaningful and contextual information from the physical world. Increasingly accurately identifying organic objects underpins the development of applications such as autonomous vehicles, drones, and automated stock controls in retail.

These technologies, alone or combined, are extremely powerful as they surpass human analytical capabilities, optimise cognitive capacities, and focus them on their true added value, all while being tireless and available 24/7... While the vastness of the field may legitimately be dizzying and raise questions about the risks of these technologies, the business potential that opens is also apparent.

Later in this note, we will see how this 'augmentation of collaborators' translates and how AI positions itself as a lever to address the various challenges all companies face, SPIE being no exception.

AI models: how do they learn?

As mentioned in the preface, access to large data volumes was one trigger of October 2022's AI revolution. Here's an example:

When you teach a 4-year-old child how to recognise a cat in a picture, you need to show them a handful of pictures of cats. After that, they will recognise a cat in any pictures or drawings in any situation. Done.

To train an AI (with a quality rate of 95%) to identify a cat in a picture, you must ingest 1 million cat pictures.

You may have been surprised when you read about the investments in AI ("Microsoft adds 10 billion dollars on OPEN AI for ChatGPT"). Those amounts are mandatory to train the models with relevant datasets.

For instance, to train a model with 1 billion words from Wikipedia, you will need one million dollars of machine computing and a few months.

Then, you understand why data quality is so important. If the dataset is incorrect, you will have spent one million dollars and lost months, and your model will face what we call "data noise", which may lead you to make the wrong decision.

WHY IS AI KEY FOR OUR CUSTOMERS/MARKETS, AND HOW IS AI OPENING UP NEW HORIZONS FOR OUR BUSINESS?

For SPIE and its competitors, AI is mainly a tool for incremental improvement—it is not yet a transformative force redefining our industry. However, mastery of AI will soon be a key differentiator, separating market leaders from the rest.

At SPIE, we are already in the race with a portfolio of several dozen AI-driven initiatives within a local context, whether geographically or functionally. Our ability to capitalise on successive waves of AI advancements is a testament to our forward-thinking approach and commitment to seizing the opportunities presented by this technology:

- **Machine Learning / Computer Vision:** We have consolidated the portfolio to provide a comprehensive overview. The key focus areas are primarily on process improvement, such as visual inspections and various types of alert triggers. Predictive maintenance is also gaining significant importance, mainly due to the complexity of the subject, as AI is specifically designed to address inherently complex issues.
- **Generative AI:** With the rapid rise of Generative AI, we are now exploring increasingly sophisticated chatbots capable of interacting, responding, and advising our employees and, in the future, our customers, as well as tools for content generation, analysis, and translation.

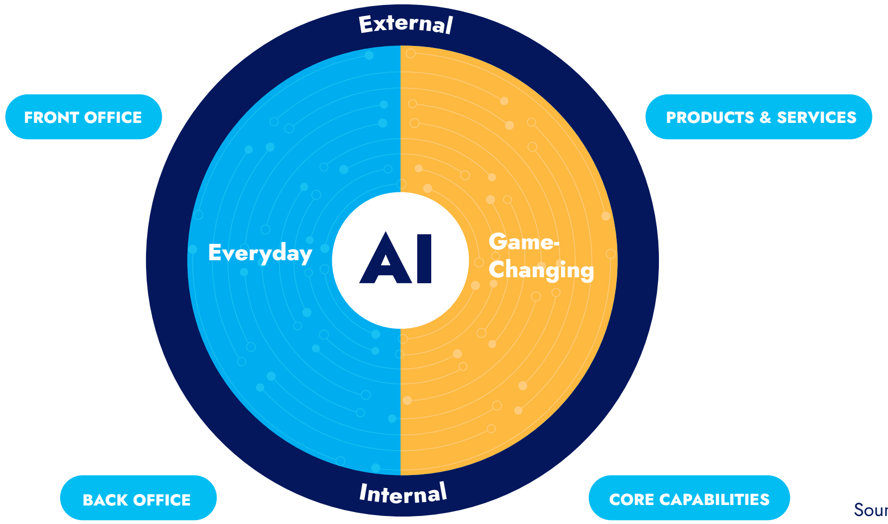
Initially, our AI applications centered on operational efficiency and cost reduction. However, we are gradually completing this positioning by elevating service quality, boosting customer satisfaction, and enabling data-driven decision-making. The potential for AI to generate new services and drive revenue growth is essential.

The next chapter will explore AI's expansive opportunities across strategic, tactical, and operational levels, setting the stage for our business's future.

PART 2

How is AI deployed within organisations?

According to Gartner, a global research and advisory firm in the technology field, it is necessary to distinguish between **two types of AI that serve different ambitions within organisations.** Gartner represents these through an 'Opportunity Quadrant', where **Everyday AI** is distinguished from **Game-changing AI**:



Source: Gartner

The 'Everyday-AI' focuses on productivity; essentially, the machine becomes the human partner to do better, faster, and use fewer resources. The primary objective here is productivity enhancement through augmenting humans in various ways. These AI systems will increasingly become part of everyone's daily life. They will be deployed across all organisations, meaning they won't be a source of a competitive advantage unless we lag behind. The cost level remains manageable, but particular attention must be paid to change management, as people's everyday lives will change naturally...

This 'Everyday-AI' does not reinvent – it transforms and improves but does not open new play fields. For SPIE, it is imperative to seize this 'Everyday-AI' at a pace equal to that of its competitors, clients, and partners.

In contrast, 'Game-changing AI' opens new horizons regarding products, services, and business models... It unlocks the door to creativity and reshuffles the cards of the 'known' to create new spaces. This AI paves the way for unprecedented and sustainable competitive advantages.

THE 'GAME-CHANGING AI' – AI IN CORE BUSINESS AREAS

In 'Game-Changing AI', AI enables gaining a competitive edge in the market and serves strategic differentiation. By nature, this type of AI is not found or bought 'off the shelf'; it is developed through close collaboration between business actors and technical teams and based on models, algorithms, data, and expertise that constitute the capital of the company and its potential partners. Investing in this AI (whether through partnership, acquisition, or purely internal development) is a strategic choice and requires unwavering top-management support, acceptance of a high level of risk, and significant investments. These ingredients are the entry tickets to the 'Game-Changing AI' arena.

Let's take an example! A game-changing innovation in the autonomous car industry is the rise of Robotaxis—fully autonomous vehicles for ride-hailing services.

Companies like Waymo, Tesla, and Motional have made significant advancements in 2023 and 2024.

Robotaxis are transforming transportation with AI-driven autonomy, electric mobility, and shared services. Operating in cities like San Francisco and Las Vegas, they cut emissions, optimise traffic, and enhance safety by minimising human error.

By reducing car dependency, improving accessibility, and driving the shift toward "mobility as a service" (MaaS), they are reshaping urban life and redefining the future of mobility.

THE 'EVERYDAY AI', OR HOW A 'NEW NORMAL' IS ESTABLISHED IN ORGANISATIONS?

How can we utilise AI's potential to address organisations' challenges to do better, faster, in a logic of resource optimisation?

At SPIE, we already have initiatives in the following areas:

- Process improvement - Predictive maintenance
- Assistant/Chatbot - Knowledge management
- Content Generation, analysis and/or translation, search...
- Video/Image recognition and/or Inspections

To gain a broader perspective, we will explore **seven key themes**, illustrated hereinafter, and provide concrete examples to demonstrate how Everyday AI can fundamentally transform jobs by fostering new 'human-machine' partnerships.
Indeed, Everyday AI is increasingly shaping a "**human augmentation**" paradigm, where **AI enhances rather than replaces human capabilities**. This augmentation happens through **AI Assistants** and, more recently, through the emerging concept of **AI Agents**, a breakthrough innovation in 2025 that takes automation and interaction to the next level:

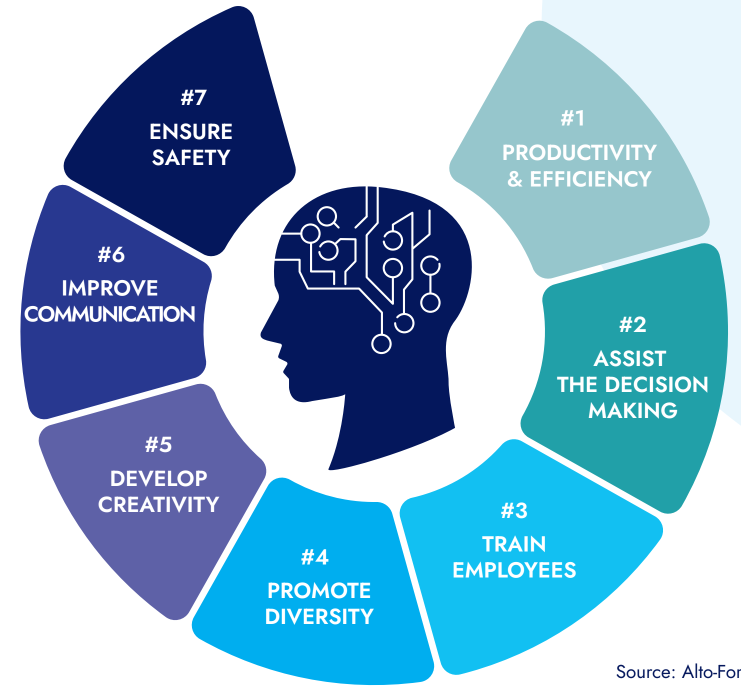
AI Assistants: These are task-oriented systems designed to support users by automating repetitive and time-consuming processes. Examples include voice assistants, chatbot-based customer support, and workplace productivity tools (Copilot, ChatGPT). They function primarily as reactive tools, responding to user queries or commands within predefined scopes.

AI Agents: Introduced as a next-generation evolution in 2025, AI Agents go beyond simple assistance. They are almost autonomous, proactive, and decision-making entities that can execute complex tasks independently. Unlike AI Assistants, which rely on human-initiated prompts, AI Agents can anticipate needs, learn from past interactions, make decisions, and interact dynamically with multiple systems and data sources. Their role extends to strategic thinking, workflow optimisation, and even acting on behalf of users to complete multi-step objectives without continuous supervision.

In this evolving landscape, we are no longer just 'using AI'—we are collaborating with AI. Whether through AI Assistants that streamline our daily tasks or AI Agents that autonomously handle higher-order decision-making, individuals and organisations will increasingly delegate cognitive and operational tasks to these intelligent systems.

This shift redefines the nature of work and productivity, allowing people to focus on creativity, problem-solving, and strategic decision-making while AI handles the complexity of execution. Generative AI is playing a predominant role in this landscape. A landscape which is no longer quite that of the future, for today is already tomorrow...

THE SEVEN KEY THEMES OF HUMAN AUGMENTATION:



Source: Alto-Forte Consulting

#1 Enhancing Professional Productivity and Efficiency

Through automation, speed of execution, and optimisation, AI is a lever for improving productivity and operational efficiency. Indeed:

- AI can **automate** routine and mundane tasks, thus freeing up time for individuals to focus on more critical or creative aspects of their work.
- AI can process large volumes of data at a speed unmatchable by humans, with a huge level of accuracy, enabling faster decision-making and problem-solving.
- AI **optimises processes and resource allocation** across various fields, achieving better results while minimising resource consumption and waste.

There are hundreds of possible scenarios, but for example:

- Automating customer complaint processing to optimise related internal processes.
- Automating supplier tender processes.
- Assisting in contract management.

What about SPIE?

Let's share a SPIE GSA's[1] initiative: the Artificial Intelligence Service Desk action-based Chatbox.

The Artificial Intelligence Service Desk action-based Chatbox developed by GSA uses IT and SPIE knowledge to answer general questions about various software and applications (Word, Excel, Outlook..., etc.) or specific questions related to SPIE context (signature, password reset, Fiori URL..., etc.). It also ensures IT ticketing management (creating and checking the status of service desk tickets in Easyvista[2]).

In terms of value creation, this global Service Desk approach with a new user interface through the Chatbot provides the following benefits:

- Timesaving for the Service Desk
- Service Desk costs reduction (price per ticket)
- Improved user satisfaction thanks to 24/7 support and quicker assistance
- Improved ticket management

[1] SPIE GSA stands for SPIE Germany Switzerland Austria, a subsidiary of the SPIE group.

[2] EasyVista is an IT Service Management and IT Operations Management platform that helps organizations streamline and automate their IT support, asset management, and service delivery processes.

#2 Assisting Decision Making

By processing massive volumes of data, AI helps guide and illuminate the decision-making process. Indeed:

- Analysing large amounts of data enables the **identification of trends, anomalies, and insights.**
- Through **predictive analysis**, AI can forecast future trends, thus helping individuals and organisations prepare for various scenarios and risks.
- AI can **monitor systems and processes in real-time,** providing immediate feedback crucial in critical situations.

What about SPIE?

Let's share a SPIE Nederland's initiative: Pulse Core

Pulse Core is one platform to collect, organise, and process building and maintenance data – fully automated data processing and ERP agnostic, with various IoT connectors. Pulse Core monitors building performance 24/7, detects existing and predicts upcoming faults and deviations. Inside PULSE Core, AI detects existing faults, predicts upcoming faults, and optimises energy use.

More than 600 SPIE service employees use the PULSE Core to solve malfunctions or determine resolution strategies.

In terms of benefits, let's point out the following:

- Higher efficiency in the maintenance process, allowing to accomplish more work with the same amount of people.
- Higher equipment uptime (10 – 20%).
- Monitoring/management of 278,448 Tons of CO_2 emissions per year with an average energy saving of between 10-30%.

#3 Training/Developing Employee Skills

AI offers employees personalised and evolving training or learning experiences. Indeed:

- AI can **tailor learning experiences to individual needs,** enhancing engagement and retention.
- AI-driven adaptive learning systems can **evolve based on real-time learner performance and engagement**.
- AI facilitates **continuous learning** and skill development, adapting to individual progress and evolving professional roles.

Illustration:

Three researchers from **Stanford University and MIT** studied the customer service department of a major American Fortune 500 company for a year, tracking the performance of 5,000 customer support agents. They demonstrated that AI tools benefited the company's least skilled workers, enabling them to perform their tasks 35% faster. AI also proved especially useful for new workers, aiding their skill development: agents with two months of experience assisted by AI achieved good or better results than those with over six months of experience working without AI support.

#4 Promoting a More Inclusive Culture and Diversity

Through AI, technologies and new tools overcome physical limitations and disabilities, enabling affected individuals access to the digital world and more inclusive interactions in their daily lives. These tools serve two purposes: developing access and inclusion for people with disabilities within the company and integrating these technologies into offerings and services.

Illustration:

The image and video processing laboratory at the **University of Berkeley** developed an application that uses sensors and cameras from connected glasses to provide audio descriptions of the urban environment to visually impaired users. The research project combines augmented reality and artificial intelligence (text recognition).

#5 Encouraging and Developing Creativity

AI can support the creative process in several ways, including generating ideas, suggesting alternatives, and developing a test version.

A study published in the ***Harvard Business Review*** identified factors explaining why Generative AI increases human creative capabilities. According to this study, Generative AI allows to:

- Embrace divergent ideas by associating different and ostensibly distant concepts: AI is thus used as a booster for 'out of the box' thinking.
- Overcome biases and prejudices.
- Assist in evaluating ideas, analysing advantages and disadvantages – and integrating adjustments.
- Facilitating collaboration and co-creation, for example, by giving a panel of users the ability to customise product proposals according to their preferences.

The authors thus conclude that while humans have limitless creativity, AI allows it to be deployed even further by enabling the emergence and translation into words/images of new concepts and using the group's strength to contribute to the creative work. It should be noted that their stance opens the door to fears of human obsolescence in the face of machine possibilities; recent strikes in Hollywood, the global center of film production, reflect these concerns.

#6 Improving Communication/Customer Loyalty

How can agents interact with customers to work smarter, faster, and more efficiently?

This promise is fulfilled by the plethora of conversational robots emerging for external customers and internal clients.

Illustration:

In the short-term future, let's imagine a Chatbot at SPIE that answers customer questions 24/7, for example, about offers, order execution, or claim handling. Internally, this could apply to any basic HR, IT, and other questions. The benefits are multiple: a satisfied customer who receives a fast, reliable response within the framework of a user-friendly dialogue, even if it's electronic; productivity for SPIE; and employees who can concentrate on higher value-added tasks.

These examples are just some illustrations of augmented intelligence in action...

#7 Ensuring Safety and Risk Prevention

AI can identify 'anomalies' and is thus widely used to identify non-compliant cases, situations, or elements. Its uses are limitless in various situations of prevention and risk management. AI has become an essential tool in fraud prevention and detection.

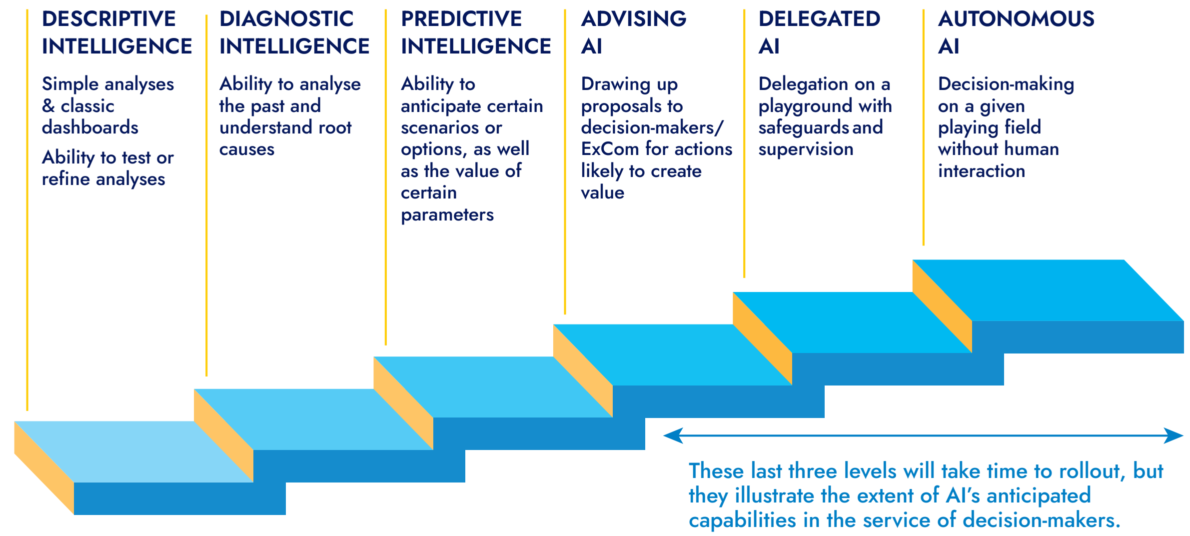
Illustration:

SPIE Germany Switzerland Austria's High Voltage department is using AI to detect and locate critical components along tranmission lines. Thousands of photos acquired by helicopter or drone were analysed to identify 'anomalies' like clamps, connecting two wires. If a clamp fails, the wire might fall and course a disaster. To prevent this, AI finds and locates critical components in 97% of cases and the human expert gives advice.

To conclude this journey into the world of 'Everyday AI', it is crystal clear that new ways of working will emerge—and beyond the 'Wow effect', it will be up to companies, and therefore us at SPIE, to define the framework for using these new tools and to accompany the changes induced by this 'augmentation' of collaborators.

AI AT THE HEART OF COMPANY MANAGEMENT/GOVERNANCE

As shown in the diagram below, six different levels of AI development can be identified in service of strategic decision-making and thus in service of decision-makers:



Source: McKinsey

The first three levels of AI (**Description, Diagnosis,** and **Prediction**) exist. It's crucial to understand how predictive models are constructed and the extrapolations made by AI from the data: this is the key to building decision-makers trust in AI. As a result, AI will 'learn' in response to the hypotheses it generates and tests.

Let's pause to explore the following three levels to grasp the anticipated breadth of AI's capabilities in aiding strategic decision-making. We foresee the eventual emergence of an AI that acts as **an advisor**, offering decision-makers and executive committees action plans that could create value based on analyses and algorithms. This will be followed by a stage where certain decision-making powers will be **delegated to AI** under strict safeguards and oversight. Ultimately, **AI will become fully autonomous**, making decisions in a given field without human interaction.

To conclude on this topic, it's worth noting that the reluctance and concerns often expressed by managers and decision-makers about using AI in strategic decision-making are significant, especially regarding the question, «But what if AI is wrong?». It can be argued that humans make mistakes too — but AI, by bringing a perspective and data analysis to the table that would not be possible on a human scale, can open up fields and options that enrich debate and contradiction and the necessary challenging of scenarios... Isn't this what we expect from Augmented Intelligence? It is important to remember that whatever AI produces will be subject to the same controls as human output. Consider the example of computer code generated automatically by AI; this code will undergo the same quality and compliance tests as a developer's. That's why it's crucial to have laid the technological and methodological foundations through a solid discipline before embarking on AI use cases.

IMPACT ON JOBS … AND PEOPLE

According to a recent **McKinsey study**, AI, specifically Generative AI, is set to revolutionise the workforce, making 12 million people to change jobs and automating 30% of the hours worked in the American economy by 2030. The impact of generic AI alone could automate nearly 10% of tasks in the American economy. This affects all types of jobs, though low-wage jobs are 14 times more likely to be replaced than those in the higher-wage bracket. In all jobs, even the most skilled, the way of working will profoundly evolve. This underscores the challenge for companies and organisations to prepare for this transition through professional retraining or skill enhancement. Not to forget the broader ecosystem in which these changes may occur, including post-COVID job shifts and, more importantly, the ecological transition, which inherently creates new needs and, therefore, new jobs. The disappearance and creation of new jobs is not new; about 9 or 10% of jobs created each decade are new professions that didn't exist before. **Finally, the enormous potential of these new technologies lies in how they 'augment' professions, freeing up time for higher value-added activities.**

This anticipated 'augmentation' opens the debate on social and societal impacts: could the change in job composition exacerbate existing inequalities? Could increased productivity and new job creation be synonymous with improved living standards? Are we at the beginning of a new conception of work in our societies?

At this stage, there are many questions, much speculation, few answers, and emerging themes for reflection:

- While previous waves of automation primarily affected factory jobs, AI should mainly impact 'white-collar' jobs, including office activities, customer service, and sales... This naturally requires those in these jobs to adapt to automation or develop other skills.
- Like any new technology, AI may create jobs that no one could have predicted – and some believe that the reduction in jobs due to AI could be offset by job increases in specific sectors, like healthcare due to an aging population or the ecological transition... A real societal change, therefore, that challenges both governments and businesses.
- Some voices, more pessimistic about AI's ability to 'create' new jobs, worry about a human tide of the 'left behind' among less qualified populations. They suggest viewing AI as a real lever for reducing working hours (a 4-day week). They also question the distribution of productivity gains brought about by AI.
- The widening of inequalities is a recognised risk: some are concerned about making these technologies accessible and beneficial for all. In contrast, others highlight the need to protect the less qualified populations, who are more likely to be 'replaced' by AI. The issue of women and their access to employment depending on a country's level of development is a potential side effect of AI, as noted by a study from the **International Labour Organisation**. Published in August 2023, this study emphasises that the proportion of female employment potentially affected by AI is more than twice that of male employment. This disparity is attributed to the overrepresentation of women in office/administrative roles, particularly in countries with high and medium incomes; AI could result in specific office jobs never emerging in low-income countries, hindering women's access to financial and social independence.

PART 3

Being 'AI-ready': a challenge with multiple dimensions

DEVELOPING AND DISSEMINATING AN AI VISION/ AMBITION AND CLEAR PRINCIPLES

AI is poised to bring profound changes within organisations, and it falls upon the Top Management to define and communicate not only the company's vision and ambition but also to integrate it into its values, purpose, and related commitments, as well as to establish the rules and principles that will govern this new 'human-machine' diversity. These clarity and transparency are essential to address the questions, hesitations, and concerns related to introducing AI into the daily lives of employees, ensuring alignment with the organisation's core values. Moreover, they enable setting the tone and anticipating the risk of the emergence of **'Shadow AI'**, or the rogue use of Generative AI tools internally. In this regard, the role of technology, particularly the one of the Group IT Committee and Group Digital Committee, is crucial: not because the AI ambition is a technological decision (it transcends technology to encompass economic, social, ethical, and regulatory challenges...), but because these governance bodies must play a role of expertise, enlightenment, and guidance across SPIE.

To tackle the challenges and seize the opportunities of AI, SPIE launched an ambitious initiative in early 2024 to build a robust AI Governance framework. This effort is pivotal in aligning our AI practices with EU regulations and driving responsible, effective AI across all operations. Our goal is to establish a comprehensive "Responsible AI" framework that enhances operational efficiency, ensures full regulatory compliance, and strengthens SPIE's competitive edge in an AI-driven future. This framework will be shared and cascaded across SPIE.

Last but not least, one of our IT Services Division is developing a sovereign AI-driven approach, strengthening our overall strategy.

WHY IS DATA THE 'MUSCLE' OF AI?

Data is often described as the muscle of AI because it powers and strengthens AI systems, enabling them to function effectively. Just as muscles grow stronger through exercise, AI models improve their performance by learning from vast amounts of data. This data serves as the foundation for training machine learning and deep learning models, helping them identify patterns, relationships, and rules. Without high-quality data, AI systems cannot develop the predictive or decision-making capabilities they require. Moreover, data supports AI's functionality across diverse applications, from computer vision that relies on image and video data to natural language processing that depends on text and speech inputs. Additionally, data enables AI to adapt to new environments by learning from fresh inputs, ensuring these systems remain robust and relevant in dynamic situations. By continuously processing diverse and rich datasets, AI gains the strength and precision needed to perform increasingly complex tasks, much like muscles responding to consistent and targeted exercise. Data is an area where SPIE must and will make significant strides in the coming years!

ANTICIPATING RISKS – AND HOW TO ADDRESS SECURITY CHALLENGES?

The threats and risks posed by AI are receiving a great deal of attention at all levels: the **European Agency for Cybersecurity** has published several frameworks, methodologies, and reports dealing with AI security risks and the challenges companies must face; the **National Institute of Standards and Technology** in the United States has created a framework for managing AI-related security risks. From a regulatory standpoint, the European Union has made progress with the **Artificial Intelligence Act**.

Therefore, SPIE must be able to address two main types of threats:

- Those targeting systems around AI: data, models...
- Those maliciously using AI to launch cyber-attacks (e.g., Deepfake...) against internal software/tools, people...

These new applications will be integrated into SPIE's Cyber strategy.

LEADING CHANGE, A 'MUST-HAVE'

Integrating AI into the company and teams presents a significant challenge for leaders and managers. This challenge is essentially managing this 'New Diversity', which places humans and machines side by side. Augmented Intelligence acknowledges the increasing presence of teams comprising both humans and machines, potentially leading to distrust among human members. The role of managers will be to navigate and respond to these new dynamics, preventing and addressing potential negative beliefs and their impacts. Undoubtedly, they are the initial links in a chain of training/awareness to prepare them for this mission and the expression of new leadership.

Living and working with AI involves identifying and addressing various aspects:

- How to 'acculturate' all employees - not just the 'technical' experts - to AI, explaining its potential, clarifying usage strategy and governance within the company transparently, and setting principles and rules. Pedagogy and clear rules are imperative to defuse tensions and rejections.
- How to manage skills and transition to new activities – and the disappearance of some others? Beyond developing training on new needs (and new professions, which we must imagine/anticipate by involving stakeholders), we also understand the paradigm shift imposed by the pace of innovation: the concept of 'continuous training' takes on new meaning, and this inevitable acceleration of change and necessary 'agility' must be diffused in the values and behaviors within organisations. We all must 'learn to learn'... and learn quickly! The role of schools becomes crucial in preparing future citizens and employees to develop this agility and ability to navigate and coexist with AI while maintaining a critical mindset.
- How to manage the right balance between humanity and technological innovation, particularly regarding well-being and fulfilment at work? Augmented Intelligence must be synonymous with increased fulfillment and engagement, the key to accepting/perpetuating new working modes; beyond employees' mental/physical health issues, there is a wider company challenge.

All these questions extend beyond the corporate world, as this new human-machine diversity also challenges legislators/regulators: the **EU AI Act** exemplifies the regulatory response to this new human-machine dynamic, setting essential directives and safeguards to ensure responsible AI deployment. Such safeguards are essential to navigating the challenges of this 'new diversity,' providing a roadmap for harmonising human-machine collaboration while protecting individual and collective interests.

What about SPIE?
SPIE's Human-centric AI approach

At SPIE, the HR department plays a key role in ensuring that AI adoption is **both technologically effective and human-centric**, supporting employees throughout the transition. AI is seen as a tool for augmenting human capabilities, enabling employees to focus on higher-value, creative, and strategic tasks.

At SPIE, AI is not about replacing people—it's about empowering them. To drive this transformation, SPIE invests in continuous training and awareness, equipping every employee with the skills to work confidently alongside AI. As an example, SPIE is implementing a new HRIS system that includes AI, and gives employees new possibilities, including e-learning. Employees are not just adapting to AI—they are actively shaping its use, contributing ideas to drive innovation and inclusivity. SPIE also upholds a commitment to ethical AI, maintaining transparent dialogue with employee representatives and ensuring full compliance with local labour laws.

Conclusion

"The outcomes of the technological transition are not predetermined. It is humans who make the decision to incorporate these technologies, and it is humans who must guide the transition process."

International Labour Organisation, August 2023

The rapidity of changes induced by AI, and the significance of this 'wave', call for great humility; no one can fully grasp and measure all its impacts. These unknowns open the field to numerous fantasies and speculations. However, it falls to us, the managers of SPIE, to meet these challenges, leading our company and supporting our employees through this transformative and exciting journey. While keeping in mind that AI's impact is a complex and multifaceted issue that questions our societies at their core and identity. Scientists, economists, politicians, leaders, and philosophers are all vigorously tackling the subject to envision what will soon be our reality. The only certainty is that, in one way or another, we all must learn to live and work with AI. It is up to us to build this new reality for SPIE together!

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