Your Definitive Guide to AI in Corporate Learning

VALAMIS

Foreword

We live in the Information Age, an era in which knowledge is the most valuable resource for organizations and individuals. Buckminster Fuller introduced the Knowledge Doubling Curve in 1982, displaying the combined "knowledge" of humanity doubling in 500 years from the 14th century to the 19th century, and increasing by a factor of 16 by 2000. In 2017, it was estimated that all human knowledge doubles every 13 months. By 2020, it was expected double twice a day.[1]

The internet is now the most powerful tool on the planet, and there is little room to keep up with the pace of the world without it anymore. Most of today's knowledge can be found online, even though it was estimated that Google, with 30 - 50 billion indexed webpages, only encompasses a fraction of the 2 billion existing websites with numerous webpages each on the entire internet. That makes the actual quantity of existing knowledge even more impossible to grasp.[2]

From Millennials to Gen Alpha, the internet has always been a part of everyday life. They are used to keeping up with evolving technology because it feels normal. Nonetheless, they need to take the time to learn the newest developments just like older generations.

Technological change is occurring faster than ever, and organisations must keep up to remain competitive. New devices, more complex software, communication — everything is becoming faster and, therefore, more demanding. In order to be able to fulfill the duties of their jobs, employees need to continuously learn new skills during their careers.

In their Future of Jobs Report 2023, the World Economic Forum predicts that 44% of workers' skills will be disrupted in the next five years.

With AI and automation changing the job landscape, the required job skills are changing drastically within just a few years. With this comes a growing need for constant reskilling and upskilling.[3]

Although larger corporations are more likely to adopt AI technology like machine learning, natural language processing, or machine vision, the trend of utilizing automation in various areas of daily work and life is growing fast. According to the 2022 joint statement of the US-EU Trade and Technology Council, the US government started using AI in several places like healthcare and taxation services, keeping an eye on more possible use cases.[4]

Using technology for learning is becoming increasingly irreplaceable, given the pace and complexity of continuous learning in the workplace. The underlying reasons why it is necessary to adopt modern learning solutions and suggestions on how you can implement these solutions into your own processes are explained in this white paper.

Authors

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Jari has 20 years of work experience in the field of digital learning, and he has a deep understanding of both the challenges and advantages it brings. Due to his background as a Master of Education (M.Ed.), he has seen many sides of corporate learning—from training and helping teachers to understand how digitalization can be utilized as a part of learning processes and even renewing large private and public sector organizations' learning strategies and solutions. Jari is a co-founder of Valamis LXP (Learning Experience Platform) and has been closely involved in its product development since, which he is currently leading.

Kevin Groh

Kevin Groh is a German author and Marketing Specialist with a background in electrical engineering. As a trained industrial clerk, Kevin quickly moved into marketing while studying to be an industrial engineer. At the same time, he published his first two novels in the German market. He started at Valamis in 2018 and is responsible for marketing in the DACH region.

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Second Edition

Questions or feedback? Contact us:
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Reskilling & Upskilling in Response to Rapid Technological Change

Jobs are shifting, but it's not the end

As technology continues to advance, many routine tasks are becoming more efficiently done by machines, leading to the replacement of entire job roles. However, this doesn't necessarily mean a negative outcome for employment. In a CEPR report from 2023, experts predicted that "AI is likely to boost global growth to 4–6%. The World Economic Forum concluded in October 2020 that while AI would likely take away 85 million jobs globally by 2025, it would also generate 97 million new jobs in fields ranging from big data and machine learning to information security and digital marketing." [5, 6]

The World Economic Forum's Future of Jobs Report 2023 predicts that by 2027, about 42% of all business tasks will be automated, including 65% of all tasks surrounding information and data processing. However, the report also highlights the need for reskilling and upskilling to prepare the workforce for the changing job market, which is predicted to reach a churn rate of 23%. [3]

The IDC predicts that spending on AI systems will grow to $154 billion in 2023, which is an increase of almost 27% from 2022. Current estimates expect this trend to reach 300 billion by 2026. These numbers show a clear need for necessary reskilling to adapt to new technology adoption. As automation replaces routine tasks, new job opportunities will arise, demanding workers learn new skills and adapt to the changing work landscape. [7]

In a report from January 2021, McKinsey predicted that "Demand for workers to fill jobs that complement machines—social and emotional skills, creativity, high-level cognitive capabilities—is likely to grow. Our research suggests that, between now and 2030, demand for social and emotional skills will grow across all industries by 22 percent in Europe, 26 percent in the United States, and 24 percent in developing economies." [8]

Companies like Valamis offer a learning platform that utilizes AI to personalize learning and enable reskilling and upskilling. By tracking and analysing employee learning data, the platform can create customized learning paths to fill skill gaps and prepare workers for new job roles.

As the job market evolves, reskilling and upskilling will become crucial for employees to stay competitive and for organizations to thrive. Embracing AI-powered learning tools like the Valamis LXP can help companies better prepare their workforce for the future.

Demand for social and emotional skills will increase across all industries
by 2030, prediction [8]

26%
in the US

24%
on average

24%
in developing economies

22%
in Europe
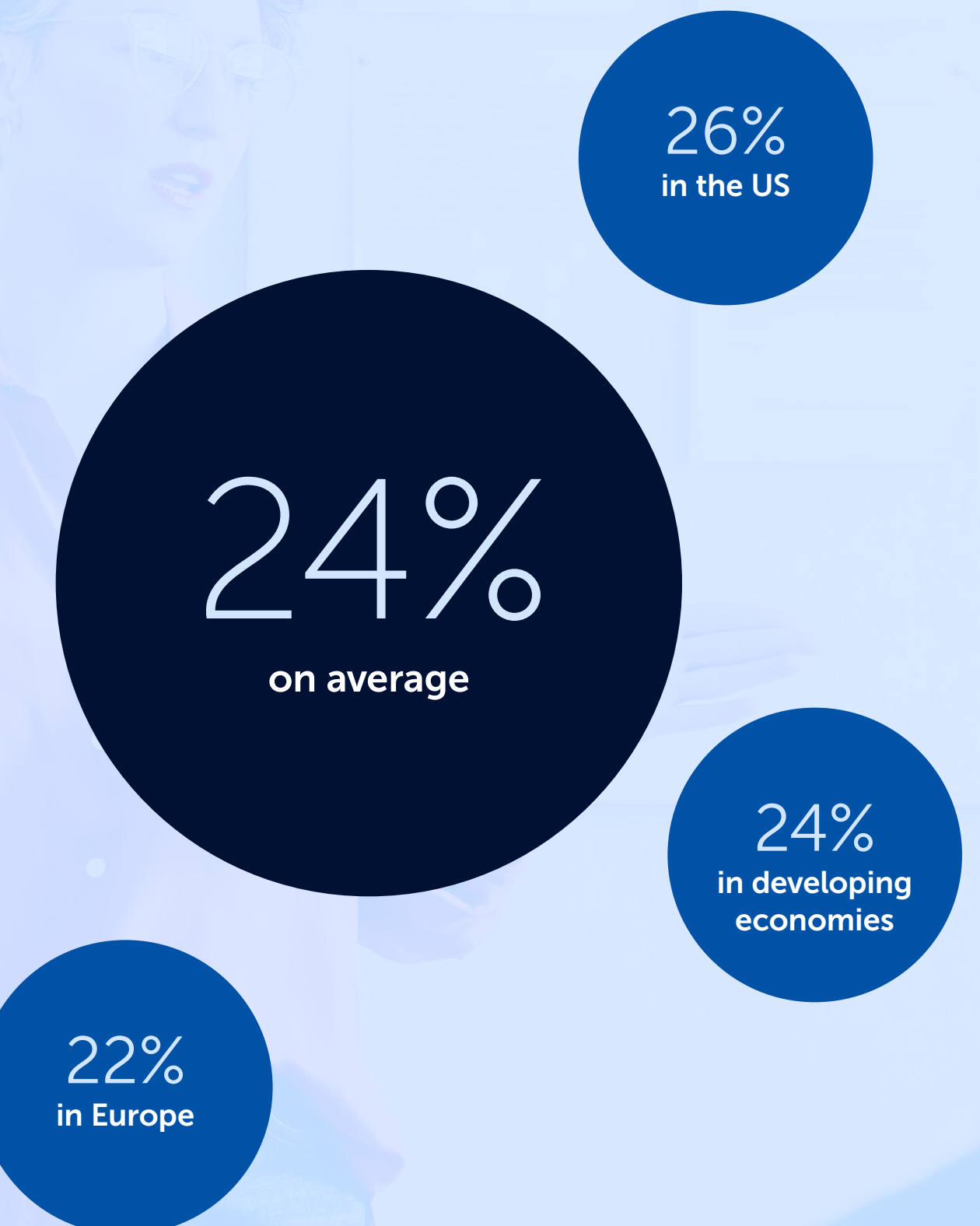
2

Utilizing the Power of Modern LMSs for Better Learning Engagement

Understanding how, where, and when individuals learn

Organizations have invested in corporate learning programs for a while, but many still struggle to engage employees. While modern learning management systems and experience platforms offer a range of sophisticated solutions to improve access to learning content, engagement remains a challenge.

According to Fosway Group's 2022 Digital Learning Realities Research, 80% of L&D teams are only just starting to evaluate learning impact. Low results often come from outdated technology – and only 45% of L&D teams believe that their learning platforms are fit for the modern workforce. When asked about Learning engagement, 73% described their solution to be on basic or intermediate levels. This demonstrates a huge area of possible improvements.[9]

Modern learning solutions like Learning Management Systems (LMSs) and Learning Experience Platforms (LXPs) have made it possible to organize learning content and make it more accessible for learners. In addition, organizations must create a learning-supporting culture and communicate the importance of learning.

One key to increasing engagement is to provide employees with accessible learning content that meets their individual needs. This means offering learners space, permission, and a safe atmosphere to learn, as well as segmenting learners and recommending relevant content in the right context. The delivery of the content is also crucial and can be personalized using recommendation engines and push notifications.

David Wilson, CEO of the Fosway Group, emphasizes that too much focus is on delivery and too little focus on what really matters: the learner and what works best for them. Personalization of learning content is important, but it is not enough to build relationships and engagement that keep people coming back. Companies need to shift their mindset towards thinking of learning as an ongoing experience that engages and develops people over time.[10]

The 2020 research shows that less than 20% of L&D professionals believe they are effective at upskilling, reskilling, or onboarding. There is still considerable potential for improvement simply by understanding the right approach to reach employees.[9]

Less than 20% of L&D professionals believe they are effective at upskilling, reskilling, or onboarding. There is still considerable potential for improvement simply by understanding the right approach to reach employees.

The WEF also recognizes the lack of access to adequate training opportunities for about half of all workers today, even though six in ten workers are expected to reskill before 2027. Corporate upskilling strategies do not always reflect the skills that are reported to be increasing in importance the fastest.[3]

Organizations need to understand how, where, and when people are learning to provide relevant and timely learning content. Some individuals prefer to use their smartphones to find quick, targeted information, while others prefer a more comprehensive approach. To engage learners, the delivery of learning needs to match the way people consume personalized content in their everyday lives.

In the workplace, employees are internal customers who buy into the company mission and become advocates for the brand to attract more talent. Engaged employees are more likely to gain more skills that will make the company better. Personalization is the key to learner engagement, and companies need to provide tailored learning experiences that engage and develop people over time. AI can be a valuable tool in this regard, providing a way to offer personalized learning experiences that meet the unique needs of each individual.
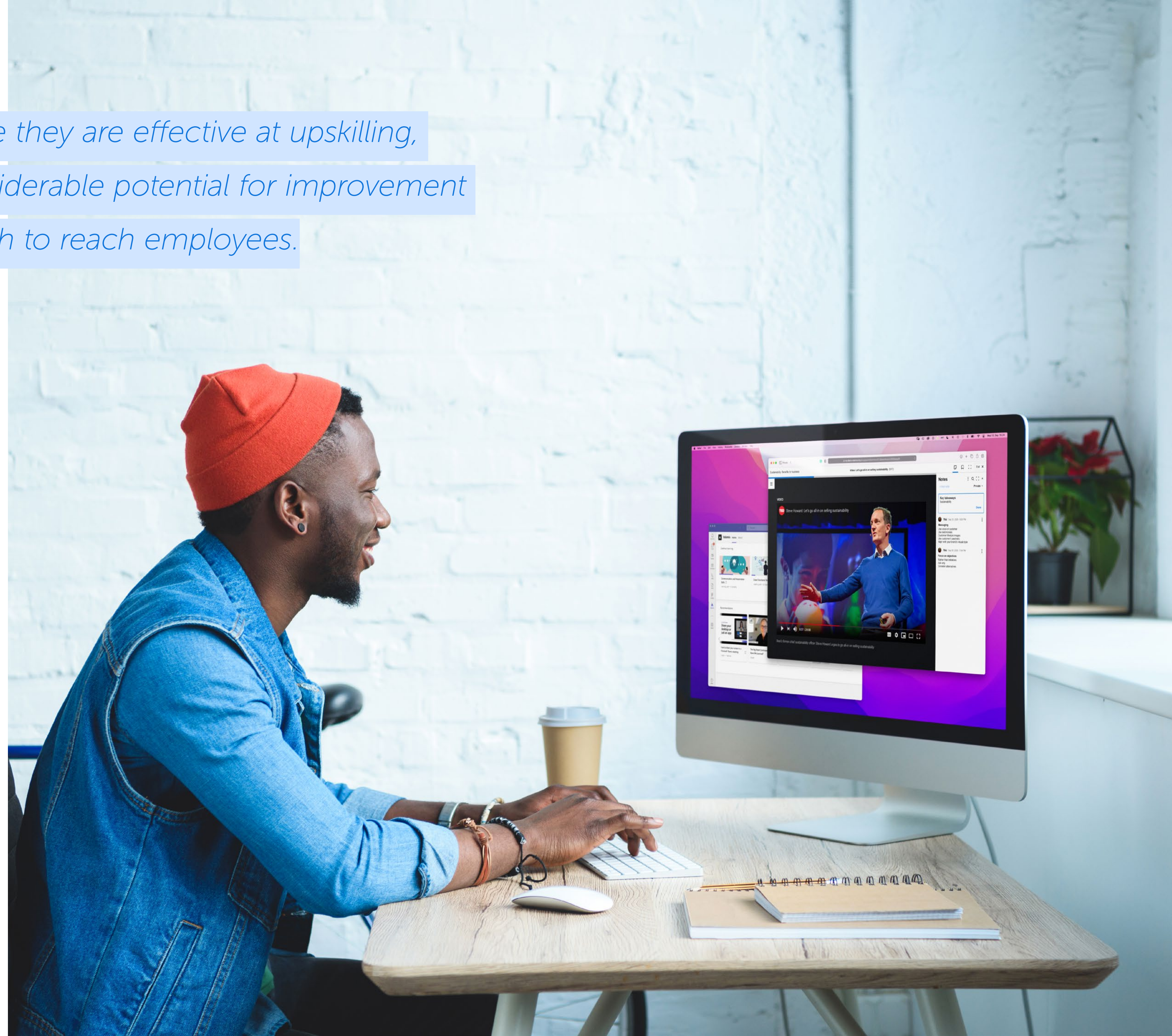
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What Does AI Actually Mean?

Aka machine learning

Nowadays, the term AI comes up in various contexts with increasing frequency. It is also a very useful tool in the corporate learning arena. Before diving deeper into how AI applies to learning, we should quickly define what AI means.

There are lots of definitions of AI to be found in various contexts. Here's one example: The English Oxford Living Dictionary defines Artificial Intelligence as "The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages."[11] Amazon Web Services also mentions learning, problem-solving and pattern recognition in their definition.[12]

In general, most definitions focus on four main areas: human thinking, rational thinking, human acting and rational acting. While those aspects appear to be completely separate at first, they are all part of the overall AI topic.

For a computer to think and act like a human means enabling it to be perceived as human-like in any situation. This includes the ability of the computer to understand and use language, memorize what it hears and learns, use this information to draw new conclusions and find answers, and adapt to changing circumstances. More sophisticated models of AI would even have robotic bodies that are able to detect objects and manipulate them. All of those capabilities help to make the machine appear more human.
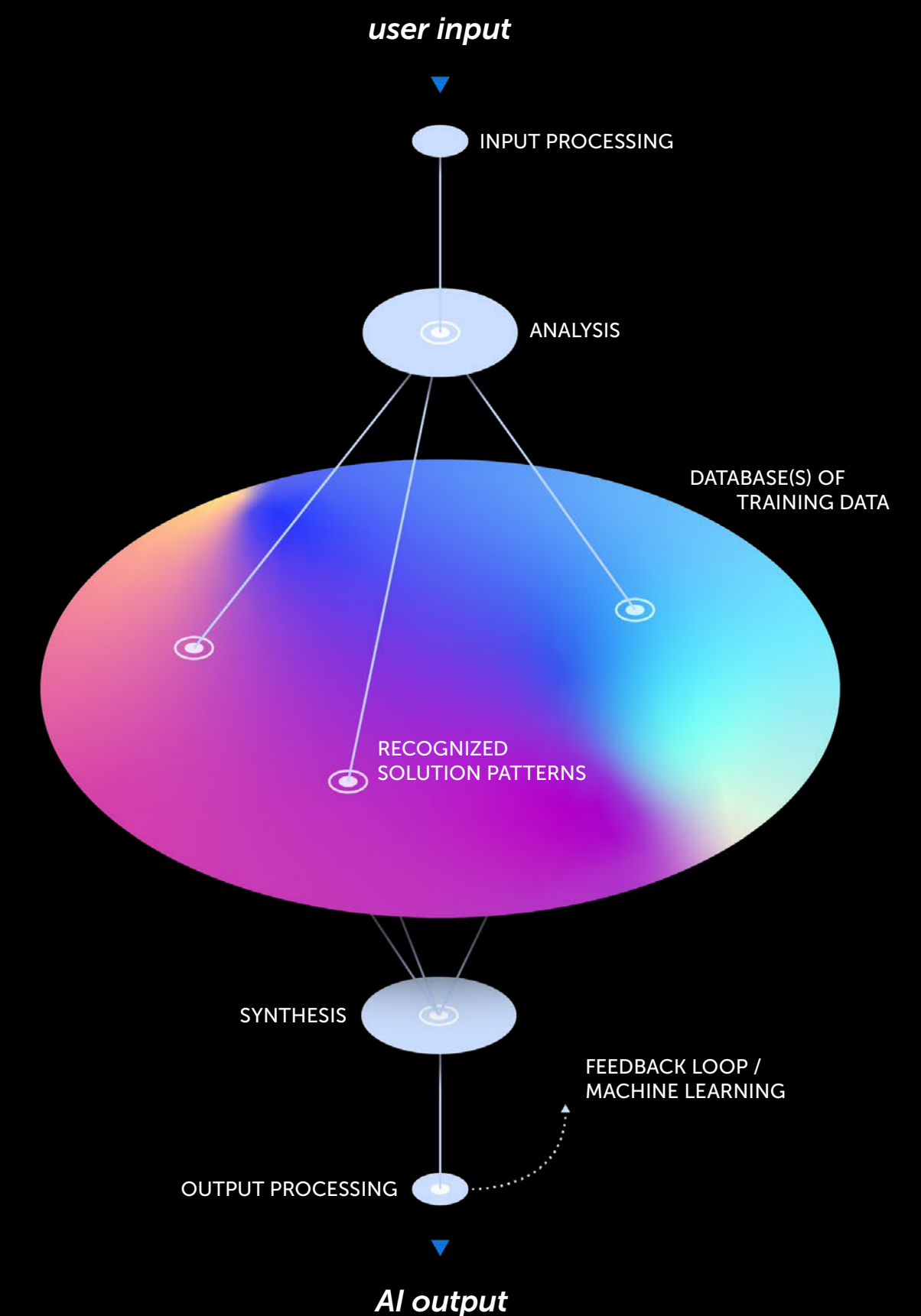
Thinking like a human would require mapping and translating the human brain processes into a computer program. The focus here is not on how effectively AI solves a task but rather on what steps the reasoning problem went through and how similar they are to a human approach. At this point, we need to move from computer science to cognitive science.

The underlying purpose of a machine, however, is to go beyond human levels of intelligence and skills. This is where the rationality factor comes in. Aside from being lifelike, AI should be able to solve highly complex problems and perform with machine-like precision. Rational thinking differs from human thinking since it is solely meant to find the optimal result for any problem, free of emotions, preferences or morals. Rationality is based only on logic.

Rational behavior sometimes requires more than just logic. As soon as physical aspects like a robotic body are involved, thinking about something may take too long to act rationally. Quick reactions must be taken without them being an inference to prior thinking, like evading a thrown object to avoid being hit by it.

If we want to define AI, we must take all of those four areas into account and say that AI is an intelligent computer system that uses

Example: Modern AI relies on massive datasets to calculate solutions and mimic human creativity

user input

INPUT PROCESSING

ANALYSIS

DATABASE(S) OF TRAINING DATA

RECOGNIZED SOLUTION PATTERNS

SYNTHESIS

FEEDBACK LOOP / MACHINE LEARNING

OUTPUT PROCESSING

AI output

human thinking to find rational solutions, and then it acts on those rational solutions with human behavior. In the end, there is no fixed definition though, since the perception of AI is different for everyone and depends on the desired outcome.

Lauri Järvilehto, founder of the Finnish Academy of Philosophy and co-founder of the learning game studio Lightneer, warns us to be cautious of misinterpreting AI:

"The biggest challenge by far is the overinflated hype. We shouldn't even talk about Artificial Intelligence — no such thing exists. Machine learning, or algorithm-driven statistical big data analyses, are far less developed in reality than all the hype suggests. To this end, it is especially critical to educate the leadership in companies to understand what machine learning really is."

Järvilehto continues: "Having said that, machine learning and complex algorithmics will be a more prominent part of running business and market analyses in any companies moving forward. Such tools can help business leaders conveniently manage large data sets and provide new and more salient insight."[13]

The biggest challenge by far is the overinflated hype.

Lauri Järvilehto, Lightneer co-founder

4

AI and Personalization

Tailored information

In the past, machine learning has been primarily used for personalization purposes. We are already surrounded by personalized content recommendations in our daily lives, attempting to encourage us to consume content on our personal devices. Popular examples include Google search, Netflix recommendations, Amazon offers, and devices such as Google Assistant, Amazon Alexa, and Siri that leverage AI to improve the quality of information they provide to users.

All these services offer suggestions based on our preferences, past experiences, and the behavior of similar groups of people. This approach increases efficiency and time by providing the necessary information while removing irrelevant data.[14]

Typical commercial applications' recommendation algorithms rely on classification, ranking, and user ratings. They function effectively only if the content has been rated, allowing the machine to comprehend the value of the content for specific audiences.

The success of AI in the commercial sector exemplifies the power of personalization. Personalization increases engagement because individuals want to be treated as individuals. When something is customized to an individual, they feel special, increasing their engagement and the likelihood of them finding it beneficial[15]. Using this concept in other areas is the next logical step. If personalization works exceptionally well in the business world with customers, it is reasonable to assume it will function well within organizations.

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How To Build AI for Learning

Tracking the learning

The objective is to obtain aggregated data …
AI can then identify patterns and correlations.

Basic concept

In essence, AI is an advanced method of processing data that performs calculations, predictions, and actions to achieve specific goals. However, it requires information to function properly.

The accuracy of AI's results is directly proportional to the quality of data it receives. Tech giants like Amazon and Google collect a wide range of information, also known as Big Data, from millions of users, including behavior, preferences, activity, education, purchases, and website visits. They gather such data from web browsers, apps, and other sources. This provides them with insights into their own businesses

and how personalization affects desired behavioral outcomes, as well as the way people behave.

A similar approach can be taken for organizational learning activities by utilizing Experience API (xAPI). It can track various types of learning activities and store the information in the Learning Record Store (LRS). xAPI can also gather data from other internal digital environments, such as a corporate intranet. Additionally, resumes, CVs, and surveys can offer information about existing knowledge, skills, and certifications.

The objective is to obtain aggregated data about the learners that can be used for various purposes. AI can then identify patterns and correlations in learning behavior, trends related to specific industries, job roles, countries, regions, backgrounds, and so on. Such findings can lead to eliminating potential skill gaps, process optimization, and other benefits that can improve businesses.

Example: Upskilling
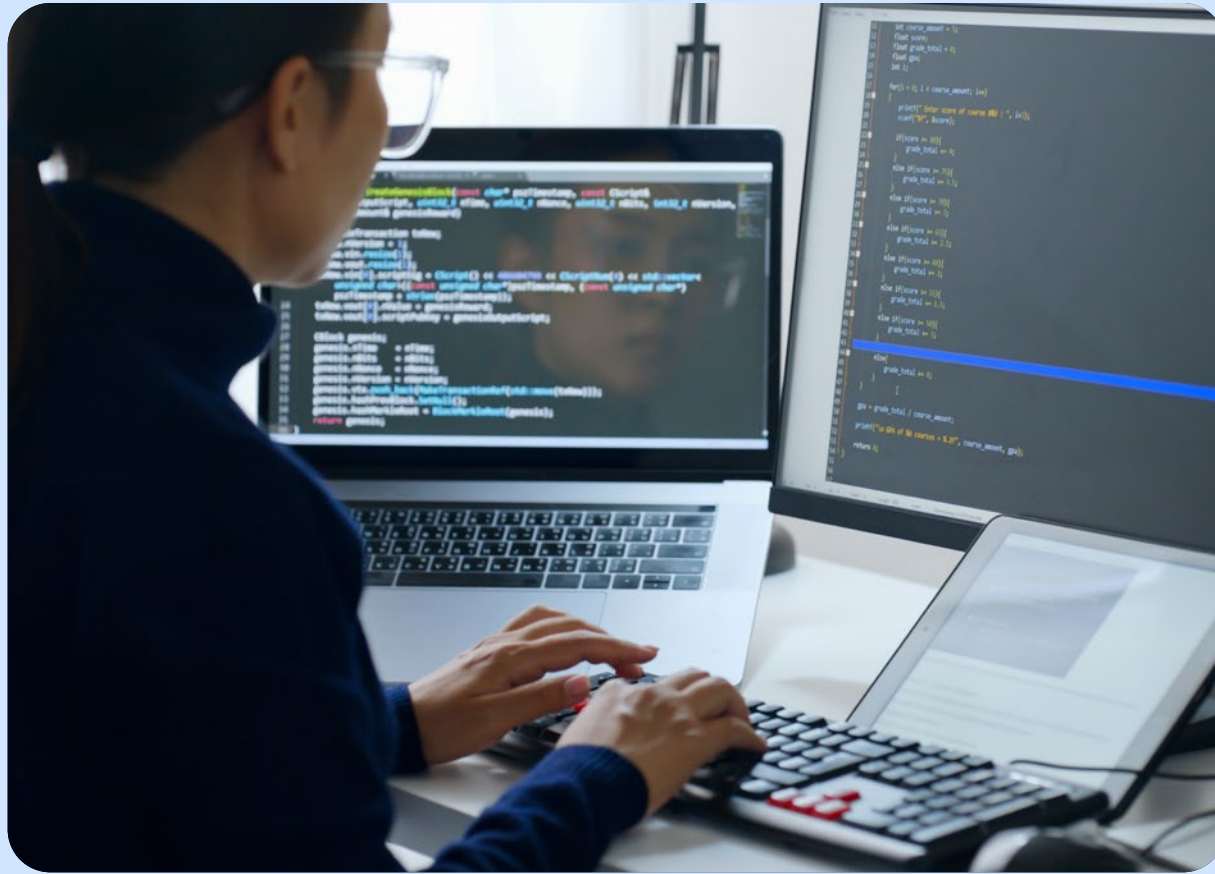
Several employees in the development department work in highly versatile areas that evolve and change continuously. It is very hard for them to keep track of all the changes and apply them to their daily work while making progress on their projects simultaneously. Luckily, you have a learning solution with external content provider integrations that contain all the relevant information they need. Using the data from their skills mapping and how they interact and learn with the platform, you can recommend the most useful next learning opportunities like courses, micro modules, or other types of content. For their current tasks, considering their preferred learning styles, and share this also with their colleagues. Microlearning, mobile apps, and chatbots can help you to further personalize the learning experience and reduce the time-to-competence, and thus accelerate productivity within.

How to get started

1
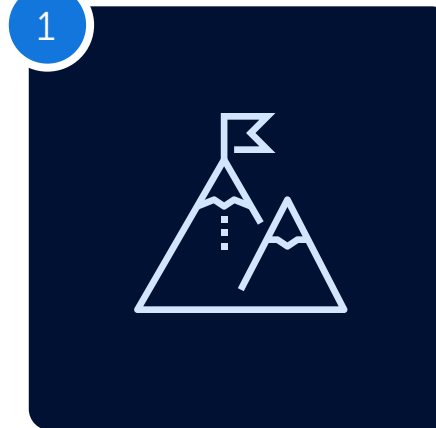
Know what success looks like

The first step you can't skip is to think about the exact goals you want to achieve because they influence everything you do, including how the data is prepared. It needs to be clear what you are trying to achieve as an outcome. When you define your goals, your outcomes can be measured and made visible. Is AI the solution you need to achieve your goals?
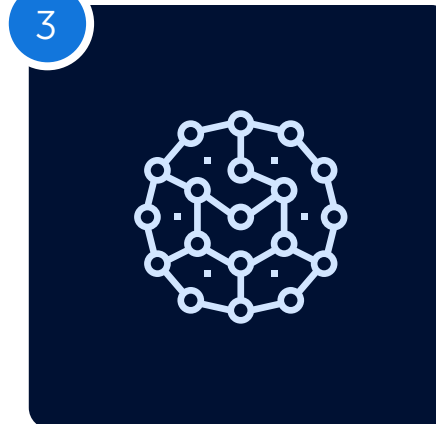
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Collect good-quality data

Once you have set the goals, the second step should be to implement data engineering, to collect quality data as groundwork for any AI.[16] Then, it needs to be put in a usable form. For example, the easiest commonly agreed-upon source format for learning purposes is using xAPI.

3

Leverage data science

The third step is to use data science. This means utilizing feature engineering, analyzing data, and creating models and visualizations based on the collected data.

With data science, you can create models based on your data. If the models are not good enough, you need to take a step back, collect better data, and fine-tune them. Only if the models are of high quality can you start with the last step: building the AI applications where the data is processed, and AI will learn how to react. This is where the models are put into use and can be adapted and improved.

Two essential things to keep in mind

1. Efficient machine learning takes time

Due to the continuous hype around AI, many people think that machine learning is a modular feature you just need to turn on and have valuable insights instantly. Any learning provider promising this either doesn't provide real AI or won't tell you the whole truth. No matter how experienced you are, you can't jump from zero to fully functioning AI within a couple of minutes. There may be providers that are offering you shortcuts, but there is no easy and quick way to perfecting AI.

Every organization is individual, and each one has to set custom goals for AI. Any out-of-the-box solution will struggle to deliver the specific results your organization needs. Machine learning, as the name implies, is not a feature but a process. The machine requires time to process the data and learn over time what conclusions to draw from them and what kind of information you expect from it. Depending on the complexity of your needs and the data quality, it can take months or even years to get truly valuable data.

This is why Valamis recommends starting data collection and defining goals from the start and training the AI already during the early phases of implementation so that you can benefit from it sooner.

2. AI is no magic potion

It is important to note that many organizations believe that AI will change the world and it could make them immediately more successful, but they don't always realize the amount of work it takes to prepare the data and create the models.

The two essential statements this paper intends to highlight in particular are concerning this point:

> *There are no shortcuts, and you must carefully define the right goals.*

The best way to start is to choose an area of the business where it is cheap to ramp up the data quality and do small-scale experiments. Working this way, you can provide evidence, create a sense of effort and value within the company, and get practical experience.

6

Modern Learning Solutions Must Go Beyond Mere Personalization

Setting sights on relevant engagement and intelligent insights

Many learning software providers proclaim the use of AI to utilize the existing hype around the topic. For most of them, this means providing the same personalized content recommendations all the other vendors offer as well. The concept of machine learning can be used for far more applications than just that, though. The main goal for the personalization of content is the hope to increase learner engagement and, therefore, justify the investment by achieving a measurable learning impact on the business.

Valamis has gained much experience with machine learning in the past, working on projects like an AI-based chatbot to act as a personalized learning assistant and the concept of Intelligent Knowledge Discovery. We are now utilizing the power of this experience to use machine learning to draw intelligent insights from the data the Valamis Learning Solution collects out of the box to develop more intelligent features.

The number one goal for most learning solutions is to increase and maintain ongoing learner engagement. This means a frequent motivated use of the platform and consumption of learning content – ideally on a daily basis. Engagement alone is not sustainable, though, because personalizing content often doesn't suffice to keep learners engaged for more extended periods of time. What we need to aim for is what we call relevant engagement by using intelligent prompts.

There is a similar phenomenon on the administration side of L&D. Most solutions focus on providing many different reports for the responsible people to work with. This can quickly lead to information overload and cause confusion rather than valuable insights. Therefore, what AI can help us do is create intelligent insights.

What is Relevant Engagement?

Well-known recommendation systems like Spotify and Netflix are built to keep people consuming more content. Based on our experience, many companies think having more content will solve engagement issues, but this is not necessarily true. Even though you want your employees

to learn, you may not want your employees to spend more time learning. More likely, you want to ensure that they learn efficiently and keep working on their tasks.

What is really needed is a way to include a contextual component of your organization to create value for the learner by clarifying how this content is relevant to them specifically. People will be much more engaged if they understand why they need to learn something.

Achieve high performance through Intelligent Prompts

With the relevant engagement of the learners, we mean that every interaction with the learning platform provides value for the learners. Value is provided by providing appropriate content recommendations and meaningful prompts for the learners to connect to other relevant learners, upgrade their skills or continue mandatory compliance training or booking time for them.

The idea behind those smart messages is to avoid unnecessary workflow interruptions or learning interruptions by the platform itself. Filtering out communications that don't bring value for the user or the organization increases engagement and helps improve efficiency.

Within Valamis, the prompts of suggested relevant interactions are available for the user from the platform dashboard in the "what's next" interface, from the mobile app, email and from the Valamis app for Microsoft Teams. Intelligent technologies highly personalize these prompts, which are activity recommendations rather than just pushing suitable content. This provides learners with a personalized experience whenever they enter the platform or access other interfaces like Microsoft Teams.

See it live

Click here to book a free 30-minute demo with us

7

How To Use Machine Learning To Gain Insights From the Data

Pattern recognition

Data is the key and a logical starting point when using AI solutions. When it comes to learning, you can collect data, for example, about the amount of time spent learning, the materials used, and the completion rates. You can track learning activities, performance metrics and organizational data to create a solid basis.

Once the data is collected, the exploration, visualization and reviewing can begin. The idea is to find patterns and correlations within your data that have not been obvious before. You can enrich the data with additional details and information to possibly uncover more connections. For this, unsupervised machine learning algorithms are used.
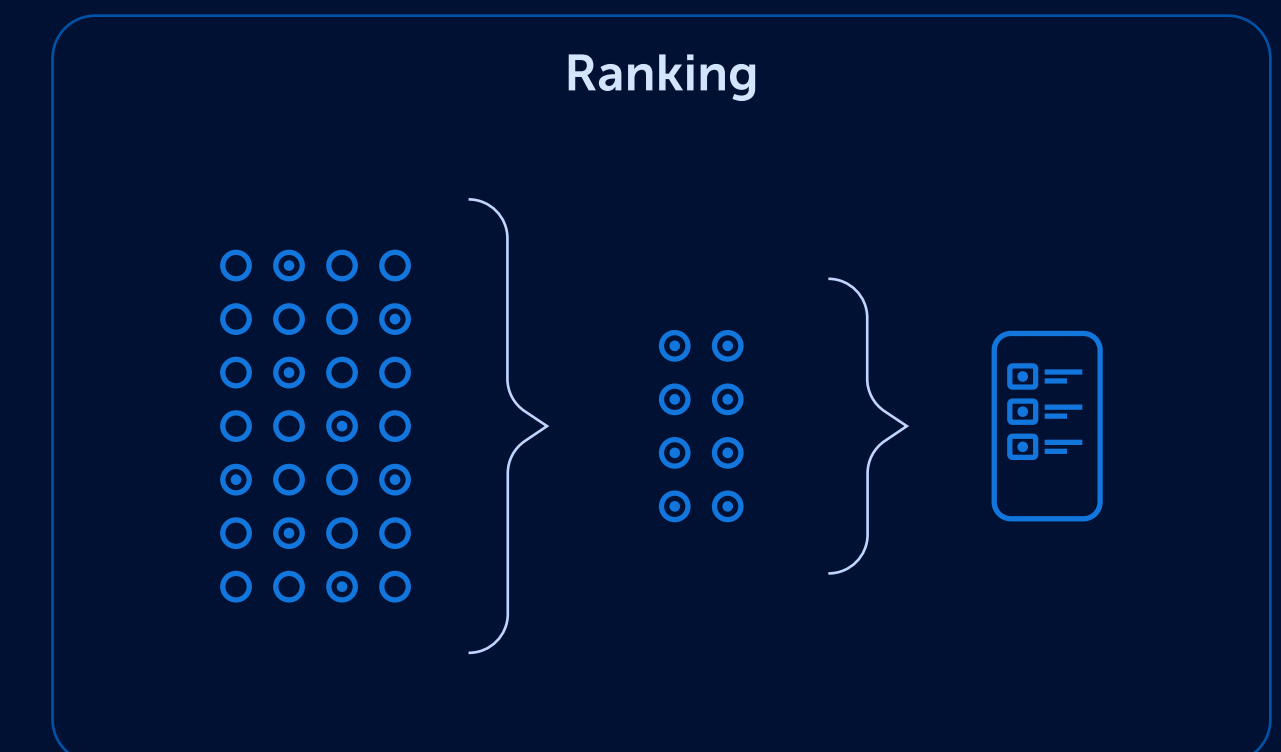
Based on the collected data, you can come up with a hypothesis. For example, "Learning has an effect on the likelihood of getting a promotion."

Based on this hypothesis, you can build a supervised machine-learning model. There are three main types of models available that use the data input to calculate certain outcomes:

- **Classification algorithm**, which results in a probability, for example, if a learner has a degree.
- **Regression algorithm**, which produces a specified number, like a prediction of the required learning hours to pass the exam.
- **Ranking algorithm**, which will define a ranked list, such as the best options for further learning materials.

These are the base models, and an organization needs to create a complex mix of them to reach its goals. Understanding the organization-specific corporate learning goals and challenges is the starting point for analytics model development — focusing on the correct issues will speed up insight generation.

The three base models for learning insights illustrated in a simplified form. Typically, a mix of algorithms is applied to reach desired outcomes.

Classification

Regression

Ranking
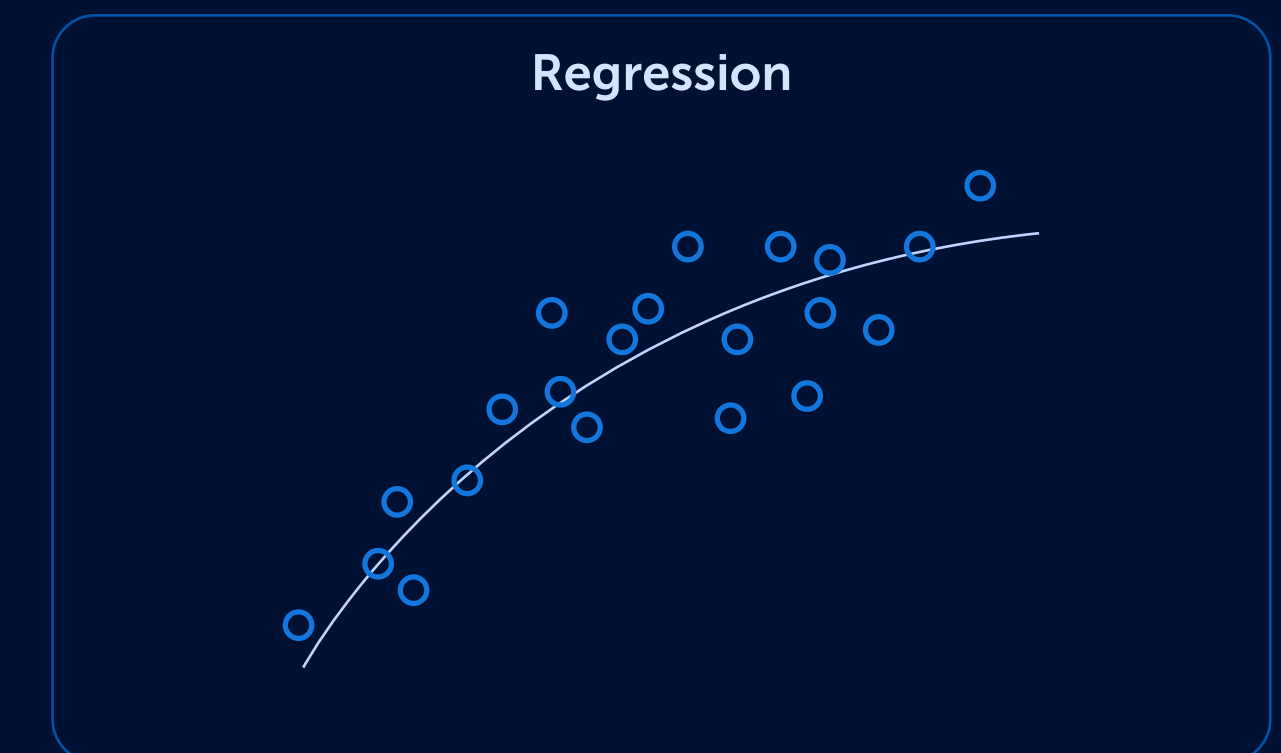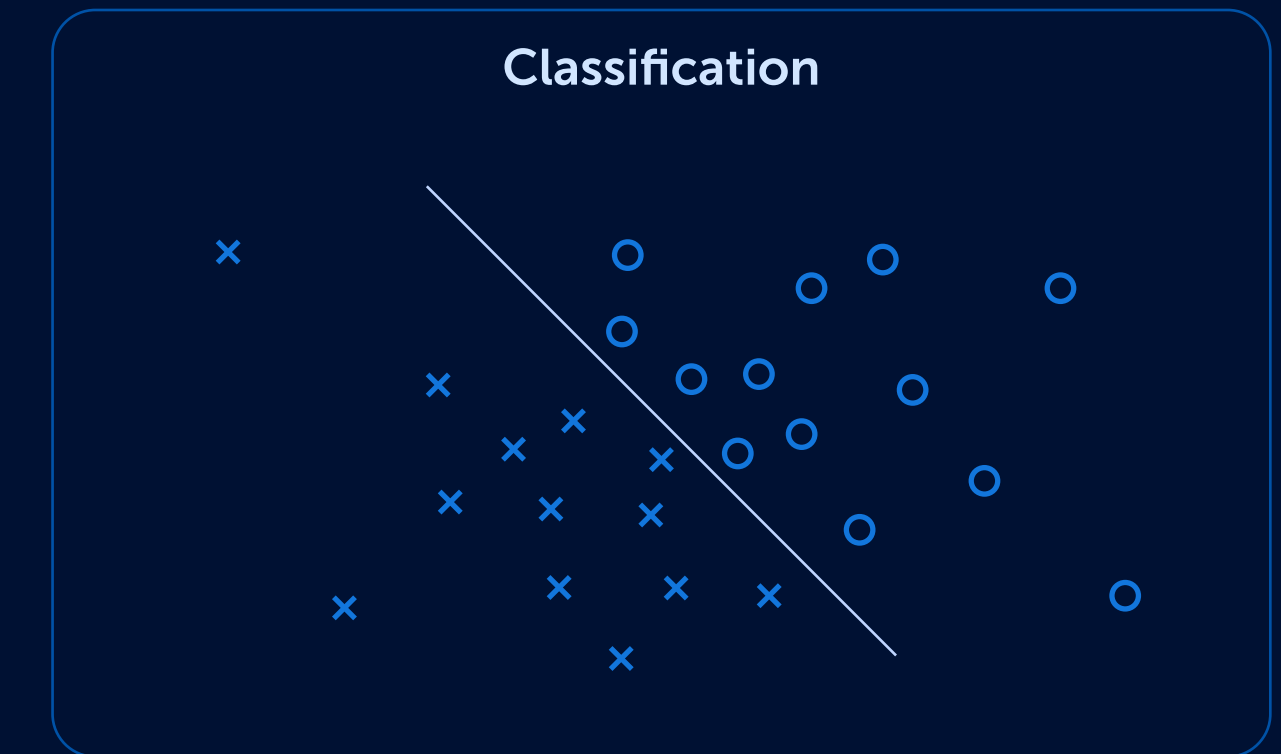
8

What Are Smart Insights Provided by Valamis?

Call to action

L&D users, administrators, and persons responsible for the business impact of learning activities require valuable insights and metrics to understand the status and impact of the learning platform.

They also need this information to present to key stakeholders and management.

The maturity level of data utilization in business differs significantly among organizations. Some might have a team of data professionals to help leverage the business results by utilizing data. Other organizations have almost zero experience and understanding of how to use the data. Valamis strives to provide automated smart insights for L&D professionals to overcome this data utilization gap.

Instead of looking at the reports and dashboards in Valamis, the platform will automatically bring forth the insights from the data, like issues in learning paths, engagement rates, content utilization (content health analysis), and other prompts for improving the productivity of learning.

In some cases, insight might give ideas on how to streamline the learning activities to save learners and the organization valuable time. The main idea is to not let the valuable data insights slip by, as the platform will automatically remind the L&D professionals of missed opportunities, insights, and intervention points. Quality data won't help if people are not able to act based on the data insights.

Quality data won't help if people are not able to act based on the data insights.

Example: ChatGPT in Valamis Studio*

Topical input
The user starts the process by writing a title and a short content description.

AI-generated draft
AI uses the input to generate a draft. Valamis lays out the response into a learning module.

Manual polish
The user can validate and enrich the generated content with their knowledge and assets.

9

ChatGPT and Valamis

Transformative potential

The emergence of ChatGPT has already changed how people do their work. However, the continuous improvement of conversational AI will be a game-changer in many more areas. It has the potential to be the biggest change since the emergence of the internet itself.

Adding such intelligent capabilities to Valamis was largely unplanned, but the opportunities cannot be overlooked. In spring 2023, our R&D started integrating ChatGPT in the Valamis Learning Solution. The team is building intelligent content creation within the existing Valamis Studio utilizing ChatGPT. This will enable learners to produce content in the form of xAPI modules via ChatGPT directly on the platform.
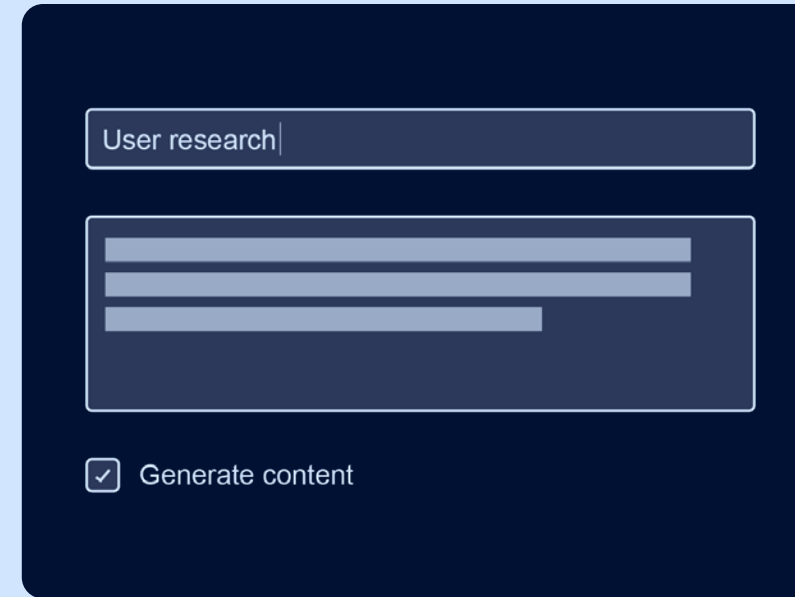
As content authoring is one essential capability of Valamis, this was a natural choice to start with. However, we see ChatGPT and conversational AI as an even more significant opportunity. There is a strong potential

to use ChatGPT to write personalized messages for learners to drive engagement, to name just one possible use case.

"Conversational AI is a game-changer in the world of learning, and at Valamis, we recognize its immense potential," says Valamis Chief Visionary Officer Jari Järvelä. "We believe that ChatGPT has the power to transform the way learners engage with educational content by providing personalized messages tailored to their needs. This personalized approach enhances learner engagement and creates a more immersive and effective learning experience."

Valamis also recognizes ChatGPT as an important tool to drive productivity within the company. Therefore, Valamis offers the opportunity for employees to have a paid subscription for ChatGPT and other AI-based productivity tools.
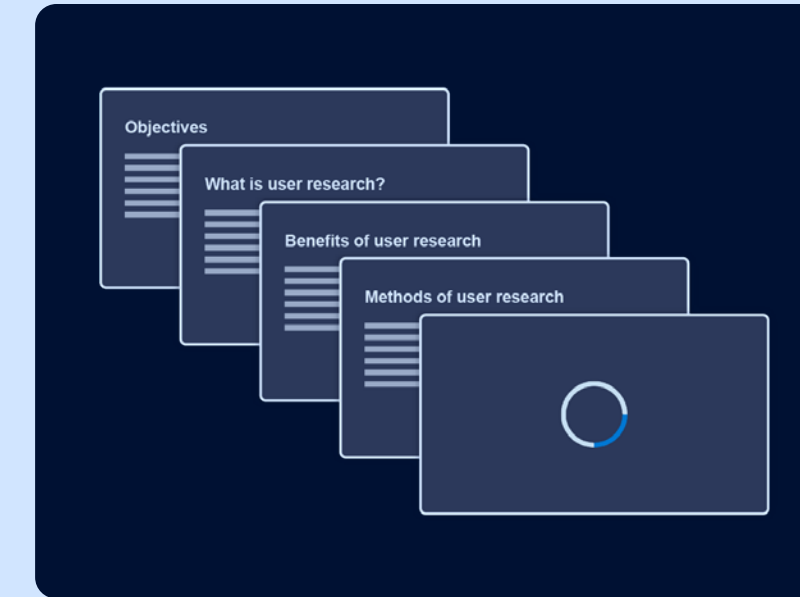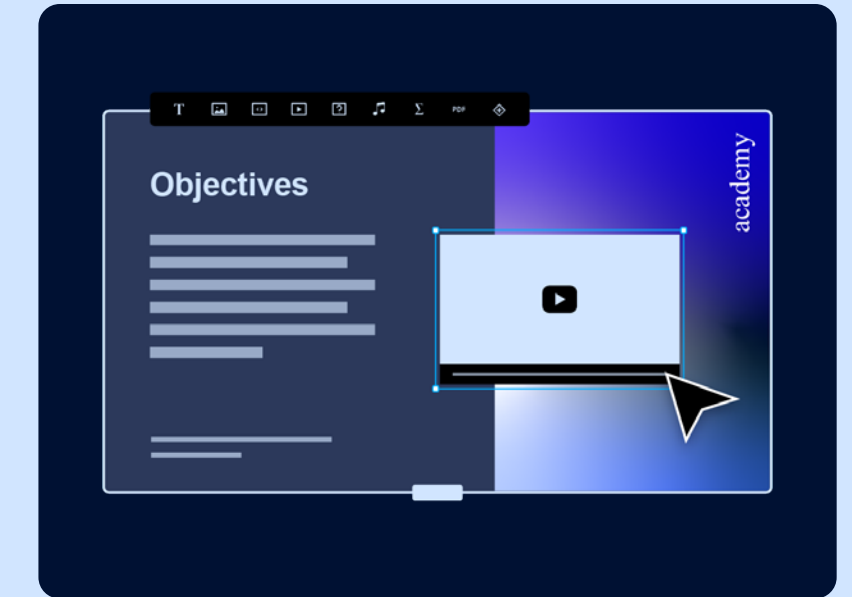
Bringing AI into a content authoring tool speeds up the creation process by giving the author a workable draft in a few seconds. Still, the author should review and polish the final result to ensure the best outcomes in the context of their organization.
*R&D demo, spring 2023

10

How AI Can Improve Business

Continuous development

Which teams at the company are doing the most impactful job? Why is it the most impactful? Once you have those answers, you can use AI and predictive analytics to discover the causes and probable effects of certain actions.

A corporation's processes aren't always linear. For example, the optimal process that can be statistically captured in patient safety in medical care varies. Any action or previous piece of knowledge can influence the whole process of patient care, and it can also influence the outcome. In this case, the goal is to reduce the number of possible variations by using data to save costs. This can be achieved by making sure everyone knows the most efficient procedures.

With teams, especially agile teams, e.g. in development and IT, the complexity is considerably higher. Predictive and prescriptive algorithms work well in those cases because there is a lot of data

available from the start, but the quality is not always given (versioning, working times, etc.).

How can we use AI to utilize all the existing data and use the insights we can gain from it to improve the efficiency of teams, thereby improving business performance as a whole?

Possible steps to take for introducing AI in teams and projects

There are multiple ways to introduce AI in an organization, and finding the best model depends on data availability, burning business questions that need insights, or resource availability, e.g., just having a data scientist available and getting them to work on a proof of concept. Data Science and Artificial Intelligence solutions usually require iterative development, and new ideas and use cases emerge as you progress on your model. The key is starting with something and getting the organization used to AI projects.

On the right, we highlight a few possible steps that can be taken.

step 1

Gather historical data (successful projects, failed projects, number of releases, customer satisfaction and so on). This data is used for Business Intelligence tools that predict future developments.

Example: A large bank starts using agile teams to generate innovation. They build a predictive system to help them improve projects while they continue to run operations instead of looking back on lessons learned. While doing this, they can apply learned insights from completed projects in other early-stage projects to increase their success rates from the start. This predictive system uses various metrics as a basis. For example, an app development team could use the following metrics: App downtime, number of bugs, bug removal efficiency, change frequency, etc.

step 2

Measure social patterns. Visualizing communication within a team compared to the learning paths of the team members can reveal correlations. Additional data allows you to recognize how learning influences actions and decisions in the team.

step 3

Use AI to influence results in set-based design and feature engineering. In feature engineering, test data is used to verify the accuracy of the trained module and find weaknesses. It starts with exploring hundreds of different metrics, matching them, highlighting problems, and detecting data shortages. Match correlations, develop one module from them, and adapt it, if necessary. Then you can either modify the training data or the module to avoid any mistakes in the future.

step 4

Use machine learning or deep learning to turn predictive analytics into prescriptive analytics. The difference is that humans or the system can do the feature extraction from the input.

Example: Connecting learning activities to performance data helps uncover the impact of learning and iterate the L&D program

performance

Allows AI to learn from their success and push their learning paths and learning patterns for similar teams to nudge up their performance.

Sally's team
PERFORMANCE: +++
ACTIVITY: +++
PEOPLE: 14

Ed's team
PERFORMANCE: ++
ACTIVITY: ++
PEOPLE: 9

Matt's team
PERFORMANCE: ++
ACTIVITY: ++
PEOPLE: 8

Monica's team
PERFORMANCE: ++
ACTIVITY: ++
PEOPLE: 27

Jo's team
PERFORMANCE: ++
ACTIVITY: ++
PEOPLE: 14

Rick's team
PERFORMANCE: +
ACTIVITY: +
PEOPLE: 19

learning activity

Executing these four steps successfully enables organizations to measure how teams work on projects and also allows them to understand the actions successful teams have taken. With this kind of information, it is possible to predict the success of a project and support less effective teams with the right type of training. The results can lead to a more efficient way of completing projects, better teamwork, and in the end, a better ROI.

AI-powered technologies reveal hidden connections between learning activities and employee performance. As a result, you gain transparency and insight into how this transforms business performance metrics to envision the learning impact. Over time, AI will understand more and more correlations in data and open up further connections to help organizations understand how learning can be leveraged to affect their business.

Understanding the learning impact will help companies calculate the ROI of L&D. It will also help to continuously improve the base goals you set for your AI.

"For analytics efforts to yield impact, we need to analyze our learning efforts in connection with performance metrics (the behaviors we are trying to initiate in our learners) and - ideally - with business metrics (how those behaviors affect the organization's bottom line)."
A.D.Detrick, S. Vipond[17]

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Conclusion

Benefits of AI in corporate learning

In the beginning, we highlighted the challenges faced by modern learners and how AI can help companies meet their needs. We delved into millennials' expectations and work's transition to continuous learning. Furthermore, we defined "AI" and its typical applications in organizations.

We discovered that collecting and preparing data is crucial, as it can provide valuable insights. The most important aspect is setting the right goals and developing algorithms with these objectives in mind.

Including conversational AI can address the significant challenge of increasing engagement in a traditional LMS, resulting in adaptive learning and personalized recommendations. Relevant engagement is more desirable than a high learning frequency, and AI can personalize learning by understanding the user's needs, habits, and forgetting curves. AI can even predict the best time to recommend learning content and segment users by behavior, attributes, previous knowledge, job roles, and so on.

Utilizing modern tools like ChatGPT, AI will become a crucial element for intelligent content creation and curation. This leads to significant time savings, which, in turn, allows for more high-quality content at the right time for every learner.

Leveraging AI with these features enables companies to understand what factors make users engaged and how they influence actual business outcomes. This information helps companies take necessary actions to improve their goals. By automating reports and analytics data into actionable insights, stakeholders can respond quickly and adjust according to current requirements.

While corporate learning has roots in education, AI can influence learning behaviors and engagement by integrating with organizational systems. It can also support cultural changes and other developments, leading to a better learning culture and results.

With technology's presence and the demand for learning and development, a digital workplace blending learning and technology requires a platform that integrates with all of the organization's systems. This approach leads to a better learning culture and results by providing improved data permanently.

AI can influence learning behaviors and engagement.

Digital learning will become increasingly important as time passes, and organizations need to start adapting their processes according to this trend. The ability to provide learning in the flow of work[18] will determine future success and ensure competitiveness in the upcoming years.

Always keep in mind: Your employees will start using AI solutions like ChatGPT no matter what. There is no way to avoid it. Instead, embrace it and while bots can take over the creation and curation of base content, L&D teams can shift their focus on softskills development, high fidelity content, and deep skills development.[19]

Key takeaways

1. Define your goals & start small

What do you want to achieve? Gather the challenges you see and the disadvantages you are experiencing in your current situation. Identify your "If I knew XYZ..." that would help you to reach your strategic goals or transform the way you work. Choose your most important goal and break it down into small steps that are necessary to get there.

Implementing complex processes like the process required for introducing AI into your environment is done best at a step-by-step pace. With growing experience, you can more easily add additional features later on.

2. Identify data requirements and collect the data

Take the necessary time and effort to organize your data. This will help in effectively implementing the early stages of AI. Make a list of all the data types you are collecting and in what form they are stored. Collect data from different areas of your business. The more data you can collect, the better AI can help you.

3. Get help

Consult a data scientist or an expert to see what kind of software or solution may help you to reach your goals. Choose an area of your business and start cleaning and organizing your data with data engineering. This can be any department you want. Doing experiments on your own may save costs initially, but fixing errors is more expensive the later you do it. Planning your project with an experienced strategic partner can save costs and time.

4. Start with a pilot model — iterate to improve

Building a model that works towards your set goals requires multiple iterations. Usually, you test several models with the set parameters, then fine-tune these parameters or even go back to modify the data preparation for your model of choice. Creating a satisfactory solution with one single model in one run is very rare.

Include a data scientist to build models, visualize the results and begin with feature engineering. Make absolutely sure that you have executed the preparations with as much accuracy as possible. The process of making sure that your AI algorithms are working towards your set goals is complex and takes a lot of effort.

5. Test your models

The quality of your AI depends on how well you teach it. Test your models, define your groups, and ensure the outcome meets your expectations. Reflect on the results of your initial business question, "If I knew..." Does the model answer this and help you to achieve your goals? If not, do it again. Rushing the early stages will result in suboptimal efficiency. When you are sure that your models work, you can continue optimizing them and start to build the first machine-learning features with them.

6. People are key

No matter what goal you are aiming for, it all comes down to your employees. Including them in the process as early as possible will help to ensure acceptance and engagement. It will also help you to get a feeling for the actual needs of your business.

7. Remember, there are no shortcuts

There are no shortcuts to creating operational AI. If you want it to achieve your individual goals, an out-of-the-box solution will not be the perfect match for you. To see the numerical impact of learning on your business goals, there are many steps to take on the way. It requires time, effort and experts to reach that goal. Make a plan, consider challenges, and expect delays — the effort will pay off in the end.

8. Get started now

AI technologies are coming at an increasing pace. Soon there won't be a way around them anymore. The sooner you start, the easier it will be in the long run.

Next step / **Recommended reading**

WHITE PAPER
L&D Transformation Framework by Valamis
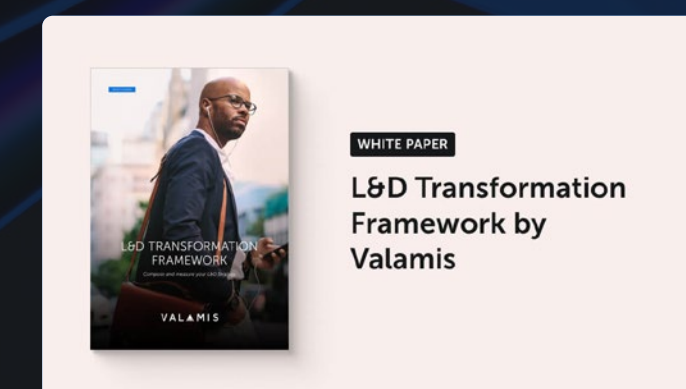
L&D Strategy Framework
White paper

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Glossary

Adaptive Learning

The scientific term for personalized learning. It describes the learning method that uses algorithms to interact with learners and resources to provide custom learning experiences.

Artificial Intelligence (AI)

A scientific field concerning the development of computer programs that can learn and eventually act without human interference; eventually, machines that mimic "cognitive" functions that humans associate with other human minds, such as "learning" and "problem-solving".

Behavior Segmentation

By analyzing learners and their daily actions, it is possible to cluster them into different behavioral groups that have individual requirements.

Cognitive Search

Powered by AI within the system that is searched. An intelligent search that understands the context and intent of the person, delivering the most relevant results for each situation.

Data Science

Covers multiple fields of science that use scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms. This can happen in either a structured or unstructured manner. The main focus of data science is knowing how to extract meaning from data and how to interpret data.

Deep Learning

Refers to the complexity of a mathematical model, and that the increased computing power of modern computers has allowed researchers to increase this complexity to reach levels that appear not only quantitatively but also qualitatively different from before. Computers learn complicated concepts by designing them out of simpler ones. When creating a graph of how those concepts are built on top of each other, it will be quite deep — therefore, deep learning.

Experience API/xAPI (TinCan API)

An e-learning software specification that records and tracks all types of learning experiences, also allowing learning systems to communicate with the learning content.

Feature Engineering

The process of using specialized knowledge to create features that allow machine-learning algorithms to work as intended. A feature is a specific characteristic or property of a phenomenon that is observed.

Forgetting Curve

German psychologist Hermann Ebbinghaus published a hypothesis in 1885 that resulted in the creation of the forgetting curve. This is a graphic depiction of the decline of human memory retention over time. Simply put: It displays how fast we forget things and how it changes with repetition.

IBM Watson Technology

Initially, a computer system developed for answering questions posed in natural language, the Watson technology by IBM is now the basis for many AI technologies combining various programs that can do more than just answer questions.

Learning Experience Platform (LXP/LEP)

A digital platform for personalizing existing learning content by utilizing known factors from a learning record store and providing individual content for each user, thereby increasing engagement and success.

Learning Impact

Describes the positive effect of learning in an organization. This includes employee know-how and skill improvement, overall better performance, and eventually better business outcomes. It also describes the learning retention or how well learners can understand and utilize new information.

Learning Management System (LMS)

Software for administration, documentation, tracking, reporting and delivery of educational content, courses and programs.

Learning Record Store (LRS)

A database where all the xAPI statements and previous information about all users is saved and stored. It is the database for all AI functionalities and personalization.

Lifelong Learning

Describes the ongoing pursuit of knowledge for either personal or professional purposes. The key here is that it is continuous, voluntary and self-motivated, not enforced by external factors.

Machine Learning

A subset of artificial intelligence. It is the scientific study of algorithms and statistical models computers use to perform specific tasks without the help of patterns, explicit instructions or external interference. There are vast amounts of tools with the purpose of understanding data. Those tools can be classified as either supervised learning or unsupervised learning. Machine Learning enables computers to tackle real-world, knowledge-intensive problems by providing answers that appear subjective.

Microlearning

Based on the idea that the attention span of people is short and their time for learning is very limited. To ensure maximum efficiency, the learning content is broken down into small pieces and delivered individually. This way, people can learn at the best time and only the topics they need in each specific moment, in the right context.

Multiclass Classification

Using algorithms that can recognize patterns and correlations in an unorganized mass of data and determine what factors lead to what outcomes and how to influence this process.

Natural Language Processing (NLP)

The scientific study of human-computer interactions based on languages. Includes speech recognition, NL-understanding and NL-generation for a computer to process large amounts of natural language data. An easy example: A person types "Can I play soccer today?" NLU will catch the meaning by analyzing grammar and context and turn it into an intent. NLP will convert the text into structured data. NLG will generate a text that is based on this structured data. In our case, the intent would be knowing if one can play soccer on a particular day, so the computer would check the weather and respond, "It is raining today, so it is not advised to play soccer outside."

Personalized Learning

Learning is a highly individual discipline where every person has their own unique way of doing it most effectively. To achieve maximized success, it is necessary to enable learners to get what they need, when they need it, and how they need it. The feeling of authenticity and value within the individual is the key to personalization.

Predictive Analytics

A type of analytics concerned with the future. It learns from past developments and predicts possible and likely future outcomes. This is supposed to enable preventive actions based on these insights.

Predictive Behavior Model

By analyzing user behavior over time and including other factors like results, habits and success rates, it is possible to create a predictive model capable of detecting early signs for future problems.

Prescriptive Analytics

Goes beyond predictive analytics. The goal of this type of analytics is to provide advice on possible solutions for the future. Companies can assess those solutions and their probable outcomes.

Reinforcement Learning

Systems that improve their performance in a given task with more and more experience or data. They will execute the task and adjust their behavior based on positive or negative feedback combined with a lot of repetition.

Rule-Based Decision Making

A technique providing set rules for a computer to base its decisions on. These can be precise rules or more general rules, depending on the tasks the computer is supposed to perform.

SCORM

The most commonly used standard for courses and learning content in organizations to date. However, it is neither trackable nor can it be measured in detail. For those and other reasons, it is now often replaced by the more modern xAPI standard.

Sequence-Aware Algorithms

Not every piece of content is meant to be consumed on its own. Many topics are only useful if they are consumed in a specific order. This order is not necessarily given by the designers, but by the common way people are using it. This algorithm analyzes the order in which users are looking at content to recommend often-viewed pieces automatically to users.

Set-Based Design

A development practice that keeps requirements and design options flexible for as long as possible. Instead of choosing a single-point solution upfront, it identifies and explores multiple options, eliminating poorer choices over time.

The Fourth Industrial Revolution

After the steam engine, electric power and digitalization, we are now entering the fourth revolution in industry: connectivity and technological breakthroughs. Also known as Industry 4.0, some of the most famous topics are AI, robotics and nanotechnology.

The Knowledge Doubling Curve

Created by Buckminster Fuller in 1982, depicting his observations and predictions concerning the multiplication of human knowledge over time and how this would accelerate in the future.

Time-Aware algorithms

This type of algorithm analyzes the time of day, the day of the week, and other time-based factors that may influence the consumption of content for each user. Over time it will learn patterns and know at what time of day on what days of the week a certain segment of users is the most active.

Time-to-Competence

This is the time period from the first contact of an employee with a new professional topic to the moment they can actively use this knowledge in a productive and competent manner.

Unsupervised Machine Learning

Using statistics to make sense of raw data without requiring human input. The most commonly used technique is the cluster analysis which groups the data that has not been labeled, classified or categorized. It creates groups based on commonalities in the data.

xAPI

xAPI, or Experience API, is a specification for tracking and reporting digital learning experiences, enabling the collection and sharing of data across various platforms to gain insights into learner behaviors and performance.

VALAMIS

Valamis is an international technology company specializing in cloud-based digital learning solutions that empower millions of learners, companies, and societies to solve their challenges with transformative learning experiences. Valamis' end-to-end learning solution includes Valamis' LXP, LMS, LRS, Content Authoring Lesson Studio, eCommerce, CareerBurst, and extensive integrations. Valamis creates long-term value for businesses and their people by being a strategic partner in learning and workforce development. Founded in 2003, Valamis is headquartered in Finland and maintains offices in countries around the world.