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AI for finance teams

Using artificial intelligence in financial processes

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February 2025

Future-proofing your financial processes

Artificial intelligence (AI) has taken the world by storm — and for good reason. Businesses in all industries are exploring innovative ways AI can transform internal processes. What's clear: AI has the potential to go far beyond previous technological revolutions we've seen in the past decades.

We're currently in the era of generative AI — a breakthrough marked by diffusion algorithms rather than the earlier deterministic algorithms. Today, AI systems can evaluate a massive amount of data, learn from it, and carry out specialized tasks with high accuracy.

The next paradigm is expected to be general AI (AGI), and the entire field of AI research is racing towards it. Some experts say AGI is right around the corner, while others predict it's decades away.

Regardless of when AGI emerges, one fact stands out: those with the right setup and data to feed into new AI systems will be the first to benefit. This fact will also be true for upcoming incremental AI releases before we reach the next milestone.

Companies that prioritize data management by emphasizing standardized collection, cleaning, and storage can benefit from current AI tools and will be primed for future advanced systems.

What is AI?

AI is a branch of computer science focused on creating systems capable of performing tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, understanding natural language, and perceiving visual inputs. AI technologies aim to automate manual tasks and enhance decision-making processes across various industries.

Getting AI-ready

AI algorithms are only helpful because of the data they're trained on, so organizations with readily available data will be ready to train the latest and greatest algorithms. Data will become many businesses' most valuable assets, and data management is how you ensure that value is fully realized.

In this guide, we'll explore why future-proofed data management is the secret to benefiting from current and future IT systems. Getting excited about the future of AI is easy, but what really matters is implementing the right processes now so you're ready to face those future systems head-on. In other words, getting AI-ready.

Generative AI and language models

Large Language Models (LLMs) are advanced AI systems trained on vast text datasets to understand and generate human-like language. They form the backbone of generative AI apps, enabling tasks like content creation, automated conversations, coding assistance, and data analysis. By leveraging billions of parameters, LLMs can mimic context, nuance, and creativity, revolutionizing industries and enhancing productivity across various domains.

The evolution of AI

How did we get from the early days of computing to an era where AI can handle a wide range of tasks in finance and beyond? While it can be tempting to view AI as a recent innovation, we're actually seeing the evolution of decades of research and development.

Let's look at how we got here and why AI perfectly fits finance operations.

Historical perspective

Even though AI seems brand new, the field of study began after World War II. Scientists and visionaries such as Alan Turing and John McCarthy saw the potential of using machines to automate tasks, analyze data, and make informed predictions.

The interest and excitement in AI were partially responsible for the early advances in computing. Although AI proved more challenging than initially thought, incremental advances have shown computer scientists and businesses what's possible.

Stages of financial transformation

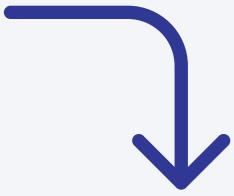
Every era of AI is marked by an evolution in how machines learn, remember, and compute data.

In finance, the evolution has focused on handling structured data to train the algorithm to carry out its specific tasks. Financial processes perpetually produce this data type, making them a perfect pair for valuable use cases.

Each stage have impacted finance teams' operations, especially transactional processes which are ideal for AI implementation.

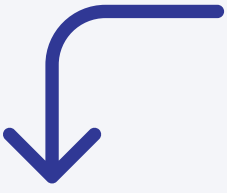
Stage 1: From analog to digital

In business transactions, migrating from paper invoices to digitized invoices quickly led to automated, data-driven processes that demonstrated the early efficiency gains and error reductions in the order-to-cash cycle possible when leveraging AI and automation.



Stage 2: Big data and machine learning

Businesses quickly realized the benefits of advanced automation, and innovation followed, leading to the era of big data and machine learning. Analyzing vast amounts of data allowed AI tools to optimize cash flow management, personalize interactions, and enable data-driven decisions.



Stage 3: Generative AI era

The current era is powered by deep learning and advanced algorithms that allow AI tools to complex data sets. Generative AI can leverage data to identify nuanced patterns and similarities, allowing for significant predictions, insights, and advanced automation.

Emerging technologies and their use in finance

AI models and techniques increasingly impact the financial sector, offering sophisticated tools for analyzing transactional data, master data, accounting records, and much more.

Here are common technologies used in processes and analysis in finance.

Machine learning (ML) models

These include supervised learning models like regression analysis (linear and logistic regression) for predicting future trends based on past data, and unsupervised learning models like clustering (K-means, hierarchical clustering) for segmenting data into meaningful groups.

Deep learning models

Neural networks, especially deep neural networks (DNNs), convolutional neural networks (CNNs), and recurrent neural networks (RNNs), are powerful for complex pattern recognition in data, making them suitable for fraud detection, customer behavior analysis, and predictive analytics.

Natural language processing (NLP)

Used for analyzing financial documents, reports, and news to extract valuable insights, sentiment analysis, or to automate customer service and advisory services.

Decision trees and random forests

These models are useful for classification and regression tasks, such as credit scoring, risk assessment, and customer segmentation.

Time series analysis models

Models like ARIMA (Autoregressive Integrated Moving Average) are used for forecasting financial metrics and analyzing temporal patterns in financial markets.

Reinforcement learning

Applied in algorithmic trading to develop strategies that maximize rewards based on historical data.

Anomaly detection models

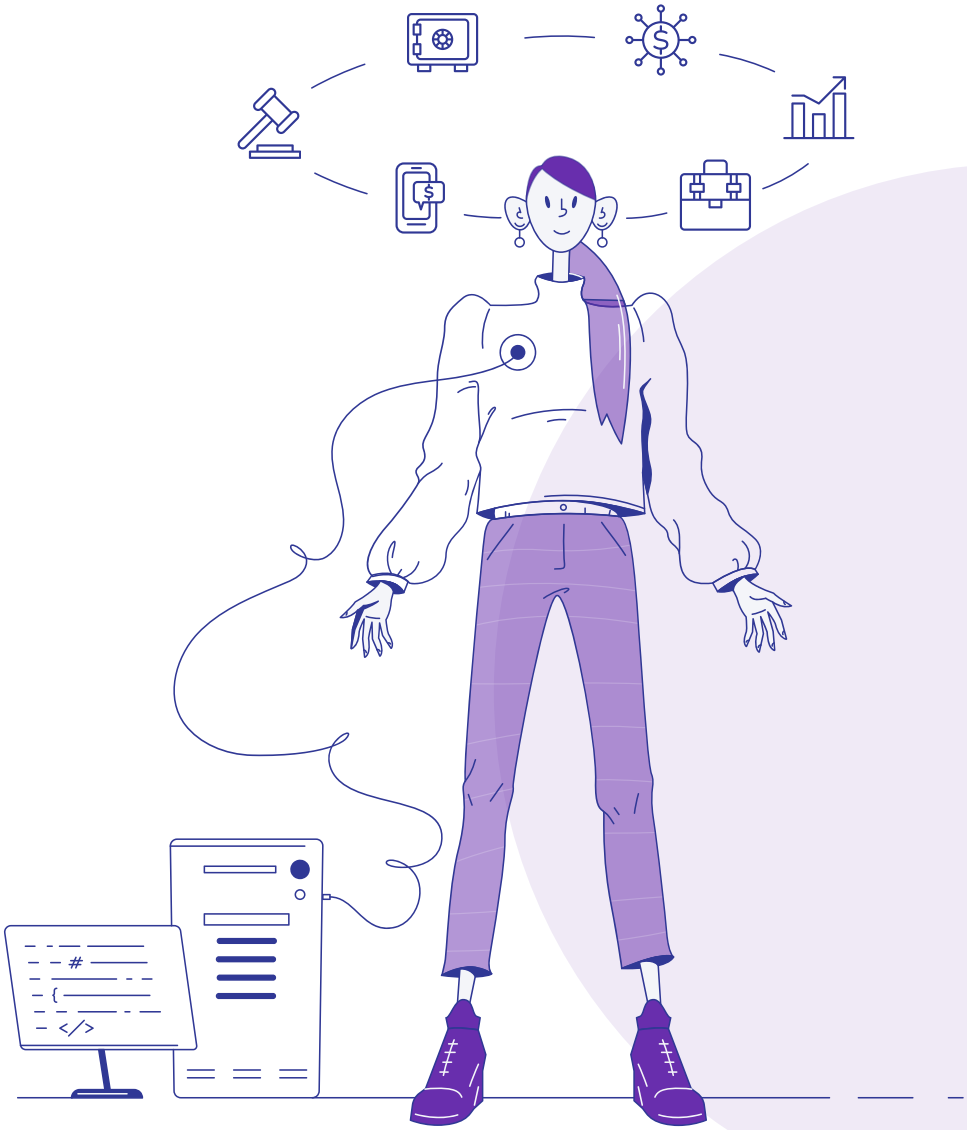
Utilized to identify outliers or unusual patterns in financial transactions that could indicate data fraud or errors.

Graph-based models

Effective in detecting complex relationships and networks, such as uncovering fraudulent activities through analysis of transaction networks.

These AI techniques can be tailored to specific financial tasks, from automating accounting processes and optimizing investment strategies to enhancing fraud detection mechanisms and improving customer experiences.

The choice of model depends on the specific financial application, data availability, and the desired accuracy of the outcomes.



AI-ready data management

Financial service businesses are exploring how AI can add value to their operations. However, focusing on the latest and greatest algorithm will fall short if the data it's working with is low quality, unstructured, or inconsistent.

Algorithms are empty shells that require quality data to become useful.

The focus shouldn't be just on the latest technology but rather on how to prepare data and make it accessible for current and future applications. And make it work in collaboration with your business partners.

Data captured and processed in the correct way today can be used for almost any future need — which is also true with historical data. Let's explore three aspects of data management as the backbone of AI in finance:

1. Normalizing data
2. Ensuring data quality
3. Making data a strategic asset

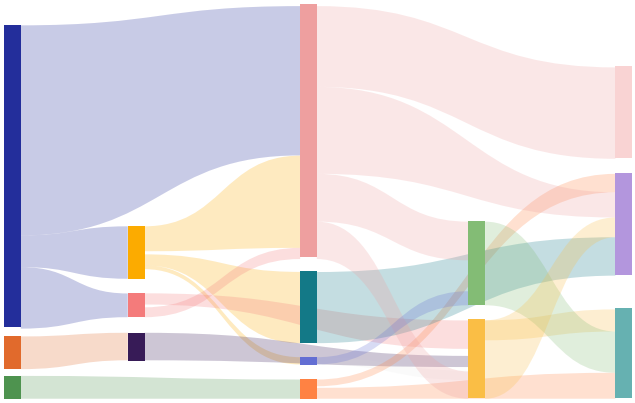
1 Normalizing data

Normalized data is the process of organizing and standardizing both structured data, like spreadsheets and databases, and unstructured data, such as emails and PDFs, into a consistent format that enhances usability and analysis.

Structured data is necessary for current and near-term AI algorithms, while unstructured data will be challenging to utilize until a hypothetical general AI can make sense of it.

Until then, transforming unstructured data into structured data is of the utmost importance for benefiting from AI tools or capturing structured data from the beginning.

Structured vs unstructured data



Unstructured data lacks clear, concise values and is challenging for automation or AI models to parse and utilize. It's also highly dependent on the format in which the data is stored. Insufficient formats such as PDFs and prints create considerable risks and challenges for errorless processing. Some common types of unstructured data found in finance are:

- Contracts or agreements
- Emails and text messages
- Written responses in customer surveys
- PDF and print invoices, orders
- Process documentation

This form of data has its uses without converting to structured data, but in the context of AI and automation of critical business processes, it's severely limited. Developing and maintaining a data refinement process is vital for extracting the valuable data from an unstructured format, converting it to structured data.

Structured data is a consistently formatted data set and is easily understood by machines, whether simple automation or advanced AI algorithms. You can think of structured data as anything that would make sense as a simple table or database. A few examples of structured data are:

- Line items on an invoice
- Supplier and customer master data
- Accounting dimensions
- References and POs
- Geolocation data
- Credit card numbers or payment accounts

2 Ensuring data quality

Even the best AI algorithm is nothing more than an empty shell without quality data behind it. You won't be able to train or fine-tune algorithms without having a significant amount of structured, quality data.

Processes always generate data, which needs to be structured and machine-readable. Current and future AI algorithms will learn from this wealth of data to accurately and efficiently carry out their specific utility.

All of the data your financial processes currently generate can form the foundation for training future AI models and having the results you expect. Having the right processes and tools within existing workflows is critical to building the foundation of your future success.

What is data quality?

In finance, data quality refers to the accuracy, completeness, structure, consistency, and reliability of financial data. High-quality financial data is critical for effective decision-making, regulatory compliance, and operational efficiency. It involves ensuring that financial records are error-free, up-to-date, and machine-readable.

Quality, quantity, and diversity

It's worth repeating because it's a mission-critical concept: AI algorithms depend on the quality of the data they are trained on. Data must be cleaned, standardized, and diversified to train an accurate and valuable model and businesses will require a significant amount of training data.

However, it is not just any data; the quality, quantity, and diversity of data determine the effectiveness of AI in enhancing operations.

How do you capture and store quality and diverse data? Comprehensive data management practices emphasize ensuring that data is exchanged between business partners as electronic business messages.

When needed, cleaning or sanitizing data is necessary, as is converting unstructured data to structured data. Breaking down any siloed data that may exist can be crucial; you don't want to risk losing quality or data when moving data between systems and processes.

What are electronic business messages?

Business documents can be exchanged digitally as messages, using standardized electronic formats in networks like Peppol or VAN. For example:

- E-invoices
- E-orders
- E-catalogs
- Punchouts
- Response messages
- Etc

3 Making data a strategic asset

Data must be viewed as a strategic asset for financial services. Enacting processes that treat data as a valuable company asset, just like you do for human resources or equipment, will go far in creating a competitive advantage as AI continues to evolve.

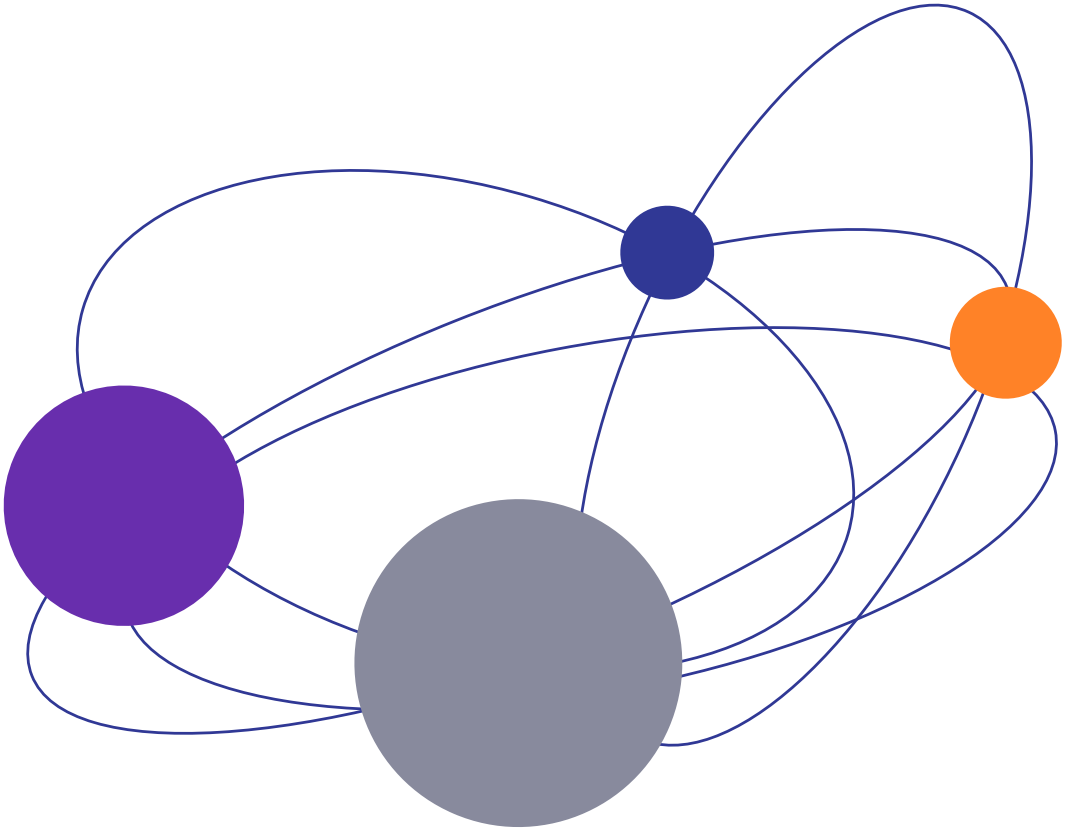
The strategic advantage isn't only training new algorithms; it's also enabling continuous training for increasingly accurate and valuable algorithms.

Assessing current processes to understand how data is managed will help ensure it supports continuous algorithm training.

Taking the time and resources now to streamline key data management processes so that captured data can be immediately fed back into an algorithm has tremendous potential for gaining an advantage over the competition.

Assess your data management practices

- Is your data captured in a ready-to-use format?
- Are there any siloed processes that keep valuable data out of reach?
- Do you have a data classification tool or workflow to ensure the integrity of all data fed into an AI algorithm?



Building partnerships for structured financial data

While your business data is valuable internally, it's also valuable externally — by your business partners.

The data exchanged between business partners is crucial for maintaining streams of structured high-quality data. We're seeing the emergence of new ecosystems focused on sharing and utilizing data between businesses and governments — an infrastructure for digital commerce.

Access to business networks for exchanging business information and transactional messages between partners is a fundamental requirement.

Traditionally, businesses have used so-called **VAN services** to send and receive business messages (EDI) such as e-invoices and e-orders. However, new technologies, built to ensure standardization and connectivity, have significantly simplified access and usage for companies.

The Peppol network — the infrastructure for AI enablement

Peppol (Pan European Public Procurement Online) is an initiative aimed at standardizing digital communication between companies and governments — and it's a significant opportunity for businesses to start gathering structured data for AI algorithms.

Peppol is an example of a business network, an infrastructure for structured data and transaction-related processes. Other networks and solutions, like point-to-point Electronic Data Interchange (EDI) and Value Added Networks (VAN) take a similar approach to securely sharing data between businesses and governments.

Adopting Peppol for invoicing and other document sharing grants access to a rich structured data source. Data generated from your Peppol-related processes will also have the same formatting and structure as other businesses and governments, aiding in creating a robust data chain to help drive AI algorithms, now and in the future.

Peppol facts

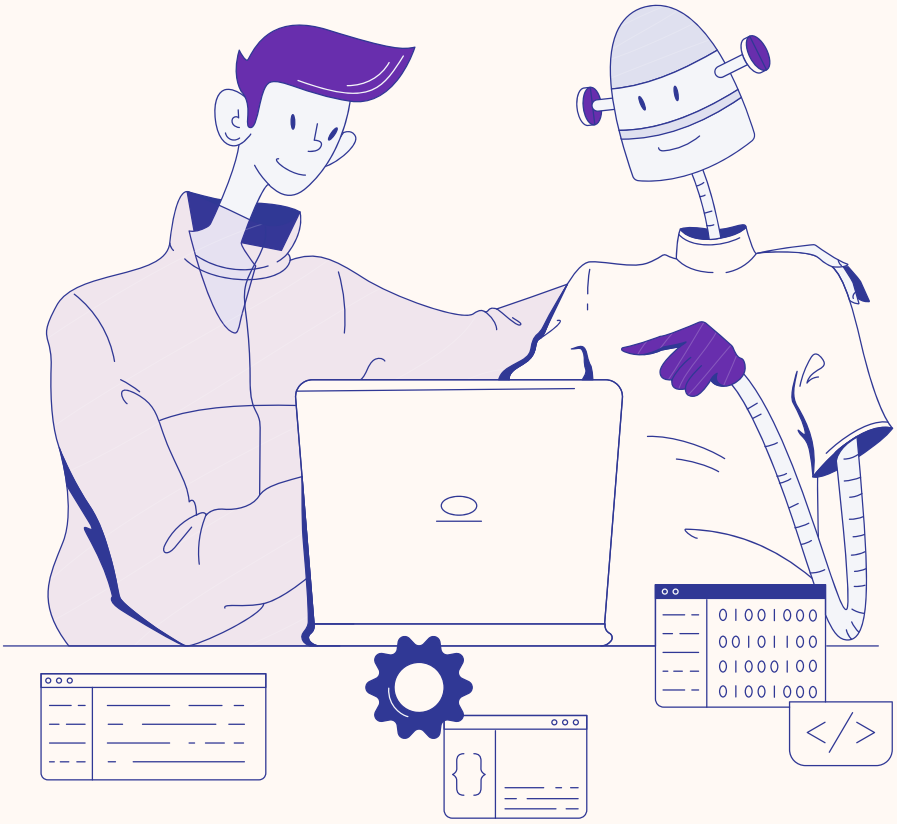
- Peppol is an open business network transforming business communications
- Standardized data formats across all different business messages
- Certified Access Points form a secure global network
- Peppol Authorities ensure Access Points meet official requirements
- Many of EDI's and VAN's flaws are solved by Peppol's accessibility, interoperability, and usability

Increasing external data demands

External demands for data from governments, suppliers, or customers are already a driving force behind data management.

We've already seen that government mandates are increasing and won't likely slow down. Similarly, regions and enterprises are starting to demand data classification, such as **Continuous Transaction Controls (CTC)**.

Abiding by these requests requires streamlined and effective data capture, classification, and storage processes. Handing off data that follows established standards, such as Peppol, will make your company a valuable link in the emerging data chain.



The readiness roadmap: How to get started

A data-first perspective to building a resilient business is crucial to future-proofing data management. We can look at how Google has had long-term data strategies from early on, storing searches or map data that may not be immediately valuable because they knew it would be later.

Your current data management strategy should embody this same perspective — today's data can serve tomorrow's technological advancements.

1 Focus on real-time processes

Real-time data continuously fed to AI algorithms enables up-to-date insights and predictions. This approach requires a shift in how businesses view their processes to ensure they can support a continuous feedback loop for AI algorithms.

AI can make decisions in real time, which is where business transaction processes are moving. Real-time processes allow the business to manage and analyze transactions as they occur, helping to mitigate risks, make predictions, and implement changes ad hoc.

What is punchout?

Punchout business messages is a specialized e-commerce technology for B2B, that allows buyers to send e-orders based on generic or tailored catalog data from e.g. e-commerce websites, e-catalogs, and emails.

Let's explore this concept with an example punchout session to see how the digitization of commerce and standardized data transform the process:

- When the customer clicks the punchout link, the system begins analyzing behavior, payment history, and credit rating.
- Prices can be changed as necessary based on credit rating, market conditions, or any other factors you configure.
- As the customer moves to the checkout, an updated catalog with the correct prices is provided.
- The order can then move on to fulfillment, having already undergone validation and fraud detection.

The above example allows organizations to calculate risks in real time due to continuous training powered by data generated within the same session.

2 Implement data standardization processes

Data standardization is a series of processes and tools that enables your teams to capture and process data similarly across the organization.

The result: Data is consistent because the same conventions for labeling and formatting are followed.

At the core of data standardization are conventions and processes for converting or transforming generated data to meet established attributes and elements. This applies to new data generated and captured by internal processes and external data.

Simply put, standardization sets the groundwork for consistency. The standards you create, and how closely they're adhered to, will significantly affect the accuracy of future models trained on standardized data. Defined standards also inform metadata, the data behind the data that describes where it came from, when it was modified, and much more.

Formats and classes

Peppol BIS used within the **Peppol network** is a great example of data standardization, as consistent labeled and formatted data is a fundamental aspect that makes the entire system work. You can adopt the same data format or make modifications as necessary for your use cases.

Another example is The United Nations Standard Products and Services Code (UNSPSC), a widespread taxonomy for standardizing products and services data, offering a framework for categorizing. This standardization enhances operational efficiency and decision

Learn more about Peppol

Join Peppol Academy

3 Ensure strong data governance

A growing problem facing businesses is data sprawl — data scattered and siloed across private and public clouds, SaaS applications, and edge devices.

These data sources likely have different formatting, storage, and access levels. Data sprawl can significantly hinder leveraging data for any AI use case or even simple analytics.

Solving this problem requires comprehensive data governance processes and systems. Data governance is an overarching process of managing data accuracy, availability, and security across the organization.

A data governance program dictates how data should be managed throughout its lifecycle, including capture, storage, and usage. An effective data governance program helps current and future AI use cases by establishing organization-wide standards. When it's time to train a new algorithm, data will already be accurate and available, ready for usage.

4 Ensure strong data governance

Siloed processes might create siloed data, and both are hindrances to effective data management. Breaking down silos with a focus on data capture and sharing is vital for future-proofing your data management processes.

Integrating different IT systems and SaaS tools will help prevent data sprawl, instead allowing AI tools and employees to have visibility into the entire data estate, assuming they have the right access levels.

Similarly, cross-departmental collaboration can increase the quantity and quality of business data. Allowing different teams and the AI tools they use to collaborate seamlessly will go far in maturing data management processes.

However, collaboration and integration aren't just about your company — this also includes peers, partners, and customers. For example, the Peppol business network is creating an entirely new way for B2B sales and purchase transactions, communication, and documents. The data that emerges from these transactions will prepare your company to quickly benefit from the latest AI innovations.

5 Get the team together

Initiating an AI project in finance requires a cross-functional team to ensure the project aligns with business goals, is technically feasible, and addresses legal and compliance requirements.

The composition of your team is highly dependent on your particular business. Here are examples of key roles that can be crucial for initiating an AI project.

Executive sponsor
A senior executive, such as a CFO or CTO, who provides strategic direction, secures funding, and champions the project within the organization.

Data scientists
Specialists in AI and machine learning who design, develop, and implement the AI models tailored to the organization's financial data needs.

Financial analysts and accountants
Experts in financial data who provide insights into the specific requirements for the AI project, including identifying key data sources and defining the outcomes expected from the AI models.

IT and data engineering team
Responsible for the technical infrastructure needed to support the AI project, including data storage, computing resources, and data integration from various financial systems.

Data governance and compliance officers
Ensure the AI project complies with financial regulations, data privacy laws, and internal data governance policies.

Business analysts
Bridge the gap between the technical and business sides, helping to define business requirements, assess project feasibility, and evaluate the potential impact on financial processes.

Legal advisors
Provide legal guidance on the use of financial data, particularly in relation to data privacy laws and intellectual property rights.

Risk management officers
Assess and manage the risks associated with implementing AI in financial processes, including operational, reputational, and cyber risks.

Change management specialists
Facilitate the organizational changes required to adopt AI in financial processes, ensuring that staff are trained and that there is minimal disruption to existing operations.

Involving a diverse team from the start ensures that the AI project is well-rounded, addressing the technical challenges and the business, legal, and regulatory implications of applying AI to financial data.

Bringing AI into practice

Order-to-cash (O2C) and purchase-to-pay (P2P) are well-suited for AI implementation, as these processes involve multiple steps, cross-departmental collaboration, and often rely on manual tasks that hinder efficiency.

While automation has already reduced some repetitive work, AI holds immense potential to transform these workflows further. Envision a future where AI seamlessly manages sales and purchasing activities, driving greater precision, efficiency, and adaptability in business operations.

Use cases

AI accounting

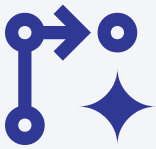
AI-driven accounting leverages vast datasets, including transaction records, regulatory updates, and spending patterns, to enhance accuracy and streamline financial processes. By automating error-prone tasks such as reconciliations, invoice processing, and tax calculations, AI reduces human oversight while continuously improving its capabilities through machine learning.

Decision support and analytics

AI-driven data categorization transforms raw financial data into actionable insights by intelligently classifying and organizing it from diverse sources, such as invoices, transactions, and account entries. By recognizing line-items, patterns and correlations, AI enables deeper analytics and identifies trends that would otherwise be missed.

Dynamic assessment

AI combines data from a range of sources, like market trends or payment history, to conduct a dynamic credit assessment. The self-learning abilities of AI will allow these assessments to become more accurate over time, allowing companies to reduce credit risks associated with receiving orders.



Learning workflows

Automation and AI vary by the ability to continuously learn from new data, allowing AI to recognize patterns and responses, then implement changes as necessary. This utility will unlock tremendous potential for communications with new customers and the lead generation process.

Continuous cash flow forecast

We already have cash flow forecasting, but AI's ability to integrate and evaluate a wide range of data points can create a continuously updated forecast. Everything from current interest rates to currency fluctuations can be evaluated rather than relying primarily on sales reports.

Behavioral credit management

Due to the ability to identify nuanced patterns in data, AI can analyze language to gain deeper insights into a new customer's emotions and behaviors — known as sentiment analysis. This data can inform credit approval, payment agreements, or debt consolidation approvals based on established criteria.

Fraud detection and prevention

Fraud in the O2C process can become extremely costly, as you may ship products only to later identify it as a fraudulent transaction when a chargeback occurs. AI can continuously analyze internal systems and external fraud data to identify anomalous patterns and flag the transaction.

What's next?

Nobody can accurately predict the future, but educated guesses can be made based on the present state and focus of AI innovation.

Moving towards general AI

AI innovation is rapidly moving towards general AI, which promises to provide a wide range of versatility and intelligence similar to human abilities. While some computer scientists are skeptical of this possibility, tremendous momentum drives the field forward, and the emergence of AGI seems inevitable.

A significant milestone towards more versatile and human-like AI capabilities is the so-called Multimodal AI. These models, showcased in technologies like GPT-4V and DALL-E, process and generate content across various data types, such as text, images, audio, and video.

They can unify different modalities into a shared representation, enabling cross-modality understanding and applications like text-to-image generation, video creation from descriptions, and integrating diverse datasets for advanced analytics.

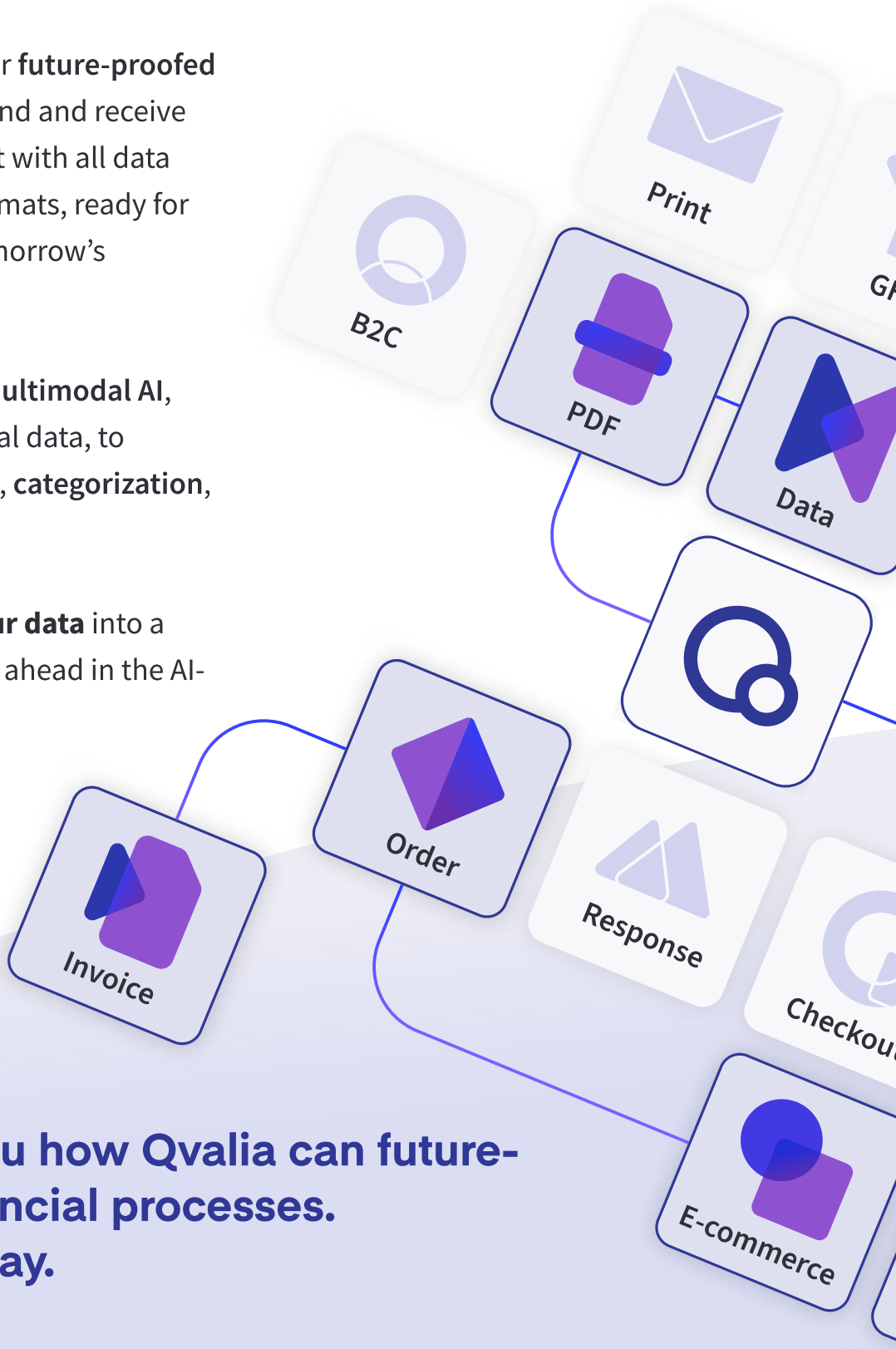
Future-proofed data management processes will ensure your company is ready to feed high-quality data into any upcoming AI model.

Get AI-ready

Qvalia is the solution for **future-proofed financial processes**. Send and receive any business document with all data stored in structured formats, ready for today's AI tools and tomorrow's innovations.

Leverage our **built-in multimodal AI**, tailored for transactional data, to automate **data capture**, **categorization**, and **accounting**.

Start **transforming your data** into a strategic asset and stay ahead in the AI-driven future.



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