Future-Proof Intelligent Accounts Payable Automation

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Over the last couple of years Artificial Intelligence and Machine Learning have evolved the Accounts Payables (AP) process and herewith the whole finance department. This article explains the trends in the AP Process and what important decisions can be made when optimizing the AP-process. It will also explain how these different decisions have been implemented at several clients which all had different requests.

THE EVOLUTION OF ACCOUNTS PAYABLE

Handling invoices in an intelligent manner is high on the agenda for the majority of CFOs. On average, an organization spends between eight to twelve euros to process a single invoice manually. If all done by hand, one can imagine that invoice processing can become a significant part of operational expenses. Over the last couple of years though, Accounts Payable (AP) is a field in finance which has seen the evolution of numerous intelligent solutions. Where the classic AP process consisted of reading invoices and entering the invoice data into an ERP system by hand, many new technologies now offer intelligent solutions automating these repetitive tasks. Machine Learning (ML) and Artificial Intelligence (AI) are able to predict how to best handle an invoice. The standard AP route may include a variety of inefficiencies. For example: the bottleneck in one organization could be their wide variety of vendors whereas the bottleneck in another organization could be the complexity of booking non-PO invoices. With such a complex and changing environment, it can be a challenge to select the most suitable AP automation solution to tackle and improve the specific inefficiency in your company's AP process. This article describes (i) the classic (old) and intelligently automated (new) route for invoice processing, (ii) our vision on AP automation, and (iii) previous use cases. As such, it elaborates on challenges and supports decision-making on AP function improvements.

AP AUTOMATION AND P2P AUTOMATION

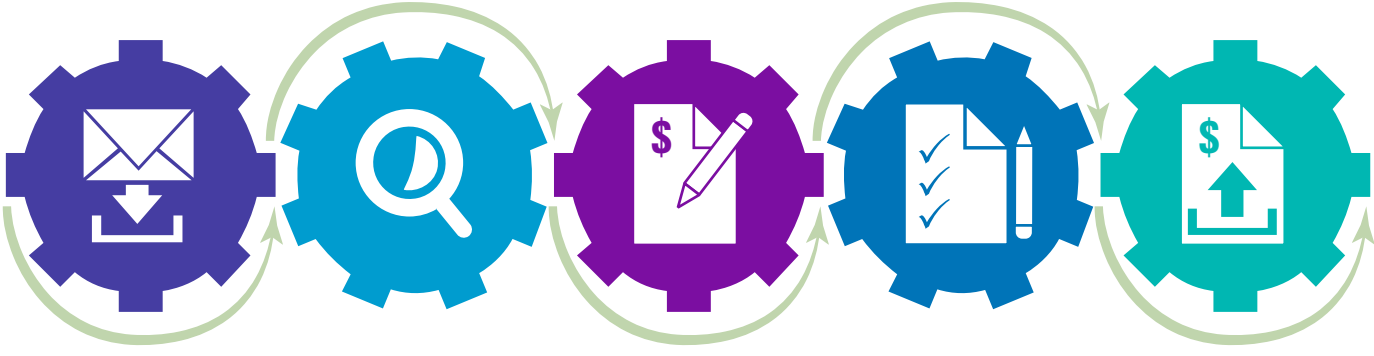
Where to start when optimizing the AP process is a well-known question within the finance domain. There are two possible solutions to this question, optimizing the Procure to Pay (P2P) and the Accounts Payable (AP) process. The P2P optimization focusses on optimizing the procurement process. This means optimizing the contracts, invoicing via terms written in these contracts and automatically generating purchase orders (PO). This will lead to PO matching once the invoice is received. The AP optimization focusses on optimizing the handling and processing of incoming invoices. The decision on what to optimize is usually related to the current strategy and focus of the organization, keeping the previously mentioned bottlenecks in mind.

When optimizing an AP-process, it is important to know the basics. Generally, the classic AP process consists of the following five steps:

1. receiving and sorting invoices;
2. extracting data from the invoice into structured information;
3. booking invoices by adding relevant accounting information into the ERP/Financial system including managing exceptions;
4. approving invoices based on the procuration scheme (workflow);
5. posting the invoices into the general ledger which results in management information and payment file.

Where these steps are typically performed by employees, you already find many technologies that can improve these steps. Eventually, this requires less human action and potentially reduces the processing time. ML and AI have already significantly changed the standard AP process and will continue to do so in the (near) future. The following paragraphs describe the optimization possibilities per phase.

Figure 1. The Accounts Payable process.



Receiving and sorting invoices
In the current manual AP process, an employee has to check mailboxes for new invoices. With the use of ML, an organization can automatically extract attachments and process them into the designated folder for further processing. ML can read the data on an attachment and determine whether it is an invoice, a credit memo, a bank statement or an advertisement brochure. This implies that it can distinguish an invoice from a non-invoice, and sort it automatically. When attachments are added to the invoice, the robot can identify the beginning and end of an invoice and automatically split the invoice from attachments, the same applies for multiple invoices in one email. The robot can automatically split these invoices and process them as separate invoices.

Extracting data from the invoice into structured text
Optical Character Recognition (OCR), a technique used to extract data from semi-structured files (e.g. a range of invoice formats), has already partly replaced the manual function. Nowadays the classical OC -technique, which is error-prone and leads to additional work, has been improved by AI, where automatically correcting the mistakes made by the OCR-engine is made possible. The accuracy of the OCR engine typically depends on the quality of the scan or pdf. For example, common errors made by OCR engines are zeros recognized as 'O's, 'I's recognized as ones and vice versa. AI has made it possible to correct these misinterpretations automatically. Practical examples can be as follows.

1. Supplier recognition
With an OCR solution, supplier information on the invoice can be directly matched with the vendor master data available in the ERP system. However, it is possible that vendors can have equal data points as identifier(s) (e.g. different entities with the same VAT number, names or registration numbers). AI makes it possible to calculate the correlation between multiple variables on the invoice and match it with available data (either internal vendor master data or data from third party sources).

2. Automatic correction of invoice numbers
For example, when a KPMG invoice number is recognized by the OCR tool as "KBMG2019O520" and historical data shows that the invoice numbers of KPMG are constructed via a fixed format, AI can automatically correct the invoice number to this format, in this case probably "KPMG20190520".

Booking invoices by adding relevant accounting information into the ERP/financial system including managing exceptions
Most of the AP departments have a 'Most Valuable' AP specialist who knows everything about the bookkeeping logic applicable to their administration. This is usually an employee who has worked within the AP department for decades and therefore has the knowledge about every supplier and possible bookkeeping combination. This is especially important when there is a significant share of non-PO invoices, since the booking of these invoices is linked to logic and historically made decisions, unknown to new employees. ML can learn from patterns used in the past and apply this logic to new incoming invoices. With the use of ML, a predefined proposal booking can be created on any non-PO invoice, based on historical data. The AP's biggest headache is most likely to book a non-PO invoice on line-item level. For example: a large invoice, consisting of many pages, can take minutes or possibly hours to process. If the invoice contains a specific word in the payments description, for example "flowers", the ML component searches its database for a comparable situation and predicts the correct booking based on that. Thereafter, the AP specialist only needs to confirm that the proposed booking is correct. A system can be trained to automatically post invoices once the specific type of invoice hasn't been touched for a certain amount of times.

Handling invoices in an intelligent manner is high on the agenda for most CFOs

Approving invoices based on the procuration scheme (workflow)
The best procuration scheme can be created based on the information on the invoice and the accounting logic afterwards. The intelligent approval flow is created based on the procuration scheme and automatically splits the invoice into multiple approver flows after which it sends these separate invoice lines with bookings to the multiple required approvers. By doing this, the time needed for approval can be reduced significantly. In the old way, a multi-line invoice needed approximately six days for approval. The new intelligent method is likely to reduce this by 50% to just three days. Naturally, the more booking lines per invoice, the higher the time-saving potential.

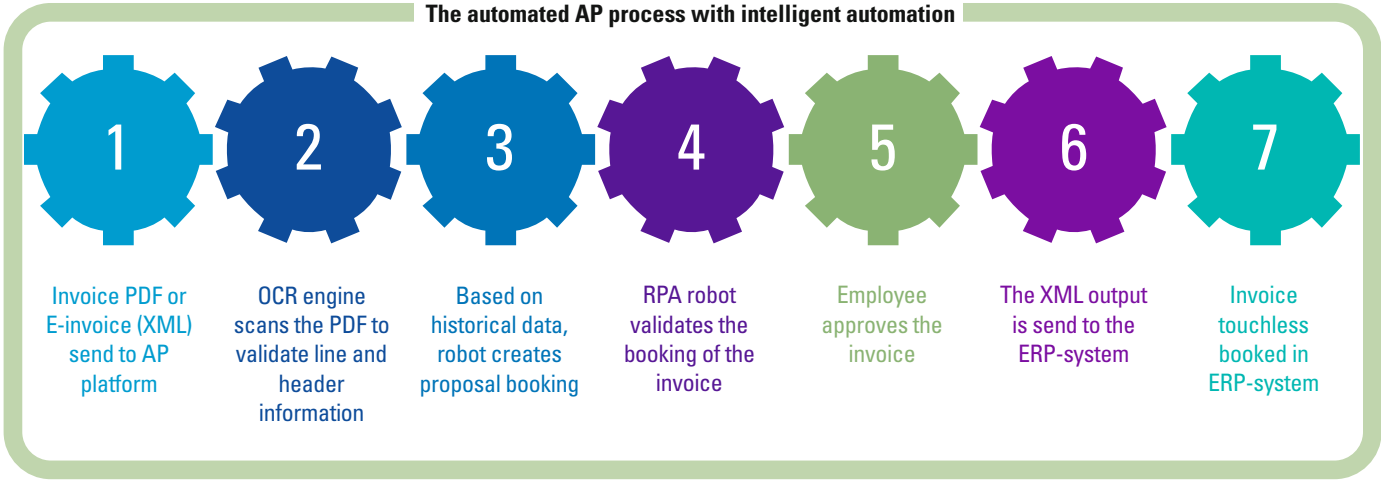


Figure 2. The automated process with intelligent automation.

Posting the invoices into the general ledger which results in management information and payment file

It goes without saying that the automated AP process will decrease the average posting time per invoice. This will not only improve customer satisfaction as the invoice is likely to be paid sooner, but will also improve the control, analysis and visibility of the total process. As a result, the CFO and finance department in general is able to perform a more in-depth analysis. Furthermore, the actual posting of the invoices can be improved by using visualization dashboards to create information directly to the responsible managers. When the previous steps are performed in an intelligent way, the insights that can be created are unlimited.

The financial market tends to evolve towards more structured invoicing

OUR VISION AND MARKET TRENDS ON AP AUTOMATION

Our market experience has led to our vision and analysis of market trends, elaborated upon in the following section, where we particularly analyze techniques, regulation and organizational factors.

Focus of AP-solution vendors

Our expectation is that the number of AP-solution vendors within the market will continue to increase and that a three-way split will happen separating vendors that:

1. have one platform automating the full AP-flow;
2. focus on the full procure-to-pay cycle and don't have accounts payable as their core focus;
3. initiate a platform strategy where the best tools available in the market will be connected to each other.

For example, a combination of Intelligent Business Process Management Software (iBPMS), Robotic Process Automation (RPA) and Machine Learning (ML).

B2G & E-Invoicing Platforms

The financial market tends to evolve towards more structured invoicing, with E-invoicing as enabler. Especially in South America and Southern Europe the role of the government has influenced the adoption of E-invoicing tremendously. In these countries, the government operates as the party in the middle, distributing all invoices after analyzing them for tax purposes. In Europe we see this movement grow progressively, enabled by the PEPPOL network. The PEPPOL invoicing method enables invoicing directly to the supplier. However, in South American countries this isn't possible anymore, as everything is channeled through the government. Our expectations are that this way of B2G2B invoicing will gradually become the standard way of invoicing, demanding the ability of organizations to send and receive E-invoices.

People and Governance
Typically, the best performing AP employee was the person who had the most experience in booking invoices and therefore could book invoices without having to look at previously processed invoices or the accounting policies. This position will be gradually taken over by robots, emphasizing the increasing importance of an in-house data scientist. The data scientist is the expert in analyzing historical data to identify the booking patterns. With the use of the historical data, it is possible to automate the booking process of non-PO invoices. The importance of managing people changed into managing robots (automations) and IT. As a result, the governance of the AP-department with intelligent automations has become much more complex. Therefore, clear roles and responsibilities and working procedures are essential.

The potential of improving the time-allocation and quality of the AP-department by intelligent automation is huge. One must do so in a controlled and future-proof manner, by analyzing relevant trends, selecting the best suitable solution and implementation partner to put the desired process, governance and controls in place.

EXPERIENCES WITH AP AUTOMATION IMPLEMENTATIONS

To show you how we put our vision, process and tool-knowledge in practice, we have summarized three different types of recent implementations in organizations that were striving for efficient and improved performance of their AP department. Over the last few years, we have implemented different AP automation solutions at a wide variety of clients. In the following section, multiple client cases with different offered solutions are discussed briefly. The implementations are split into three types of use cases:

1. the combination of RPA in combination with OCR, where we focused on the first three steps of the AP-Process (receiving & sorting invoices, extracting data from the invoice into structured data and booking invoices);
2. the use-case with an accounting robot that generates proposal bookings based on historical data for non-PO invoices, combined with an RPA robot that validates the booking;
3. a cloud solution that automates the end-to-end AP process with an integrated OCR engine.

Scenario 1: Low-code AP-optimization | Robotic Process Automation & Intelligent OCR Case
The combination of an RPA tool (a low-code application that makes it possible for the user to create automations) and an OCR tool makes it possible to handle the majority of an AP process and a wider range of other (financial) processes. We have experience in automating the full AP process but also specific fields of other processes by combining these techniques.

> Different AP automation solutions have been implemented in a wide variety of sectors

The solution chosen to solve the manual entry of invoice data is a combination of the RPA tool Automation Anywhere with the OCR engine IQ Bot. The OCR engine is triggered by the RPA solution. The combination of the RPA robot together with the OCR engine is performing the same steps as the employee from the AP team. The OCR engine processes the invoices based on ML. The invoice is booked with the use of historical data, to identify and select the correct booking for each supplier.
The robot performs the following steps:

1. The RPA robot is continuously searching for new invoices in the mailbox. Once received, the invoices, in PDF format, are stored by the RPA robot on the local drive for further processing. Once the invoices are stored, the RPA robot triggers the OCR engine to process all the PDF invoices ([Dekk18]);
2. The OCR engine (IQ Bot) converts all the PDF invoices (that contain unstructured data) into structured CSV files. During this step, data quality and validation checks are performed;
3. The RPA tool books the invoices in the AP system and manages the exceptions (e.g. an email is sent to the supplier when the PO number is missing);
4. Once the invoice information is entered, they are ready for employee approval.

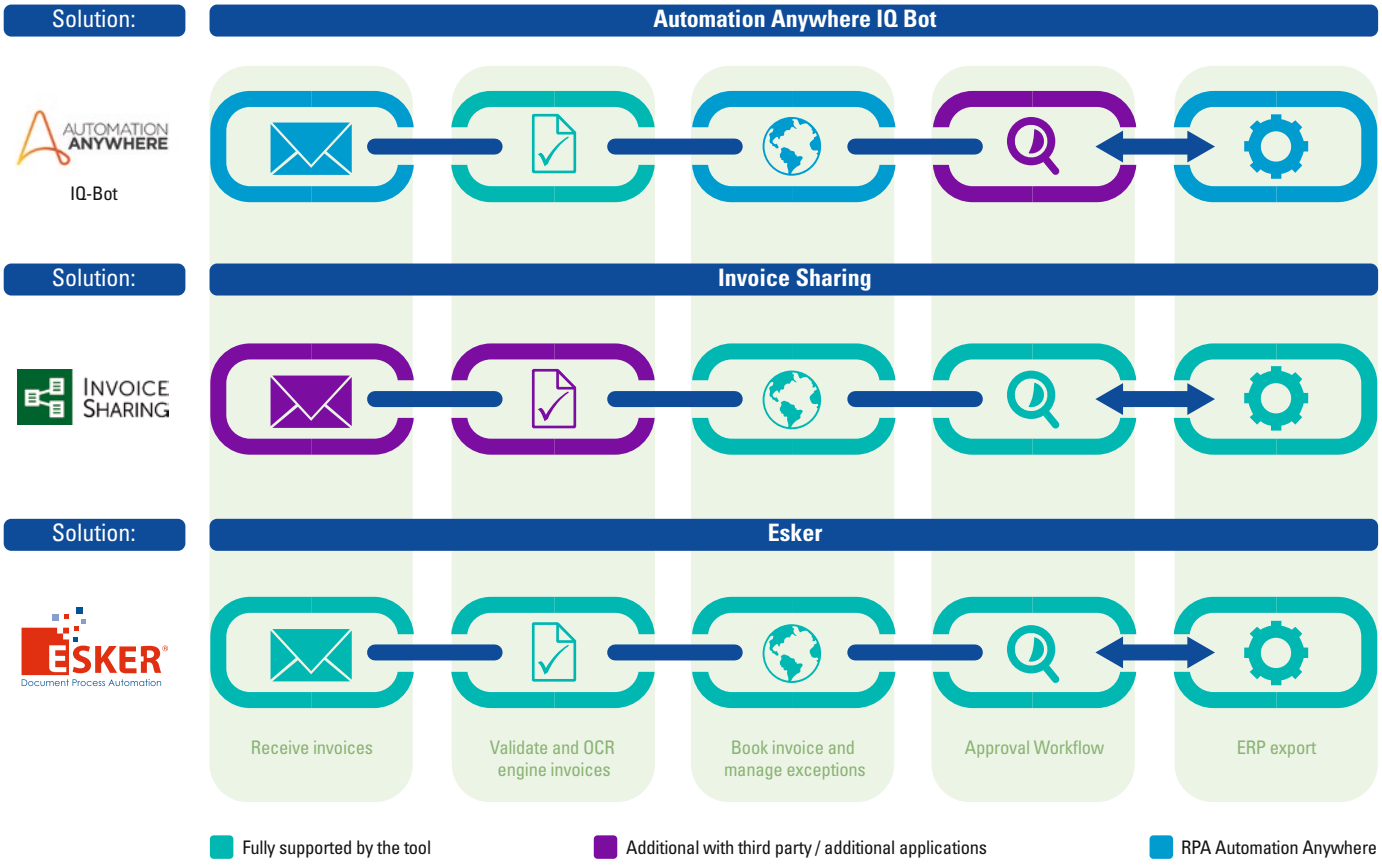
Scenario 2: Non-PO optimization | InvoiceSharing and UiPath Case
Probably the most time-consuming and complex steps in the AP-process is the validation, booking and/or matching of an (non-PO) invoice with the correct order. With a large list of active suppliers, containing both small and larger companies, the complexity of creating the correct booking increases. For this use case, the majority (98%) of the invoices processed were non-PO invoices. Once the

proposed booking has been created, it has to be validated and approved within the workflow of the organization. With the use of InvoiceSharing, the OCR engine of Kofax and UiPath as RPA vendor, non-PO invoices can now be booked touchless. The OCR tool structures the invoice data into an importable file, InvoiceSharing enables proposal booking based on historical data and UiPath makes it possible to further automate the AP process via the user interface.

This end-to-end automation consists of: (1) OCR data, (2) historic accounting data, (3) automatic generated booking rules, and (4) manual optimization. The InvoiceSharing robot creates a proposal booking based on historical data and the RPA robot assists in validating the proposed booking. Processing a PO invoice requires fewer steps in the automated AP route. With the use of up-to-date Vendor Master Data (VMD) integration, the InvoiceSharing accounting robot is able to complete 'perfect' matching with the PO number and invoice number without any human intervention. The combination of InvoiceSharing and RPA ensures a touchless AP process until the booking is ready for approval within the ERP-system.

Scenario 3: Full flow AP-Automation | Esker Case
For an organization aiming to optimize their full AP flow and managing the OCR process in-house, Esker was the best suitable solution. Esker automates the invoicing process from the moment the original invoice is received to the resulting creation of the accounting record into the ERP through XML file exchange. Throughout the process, with or without a purchase order, every action taken is documented and auditable. The AP-team has the ability to track and closely monitor each step of vendor invoice processing. Noteworthy, this also applies to supplier, as they are able to access a separate module of the platform in which they can follow the latest status of the invoice payment. The platform enables a completely automated invoice processing with monitoring and dashboard functionalities at hand. By means of predicted accounting and machine learning, the robot allows for a better utilization of tools and human capabilities. Esker has its own integrated OCR function, which is able to identify header and line level information, based on machine learning. Furthermore, the Esker solution also includes a mobile application for invoice approval available on both Android and iOS.

Figure 3. Overview of three solutions with integrated functionalities.



The best fit

Depending on the process needs within the organization, the best suitable solution is chosen. For an OCR in combination with a flexible automation layer on top, scenario 1 is the best fit. When an organization's key focus is on matching based on historical data and having an OCR tool in place, scenario 2 is the most suitable. If desired to control the whole process within one tool, scenario 3 is the ideal option.

CONCLUSION: WHAT TO FOCUS ON IN THE (NEAR) FUTURE?

Within the market, there is a clear demand and focus by the CFO on making the AP process more efficient. With an increasing amount of intelligent solutions available, the question arises which solution is the best fit to your organization. The environment of the AP process and the tasks of an AP employee have changed significantly over the last couple of years. The available solutions are getting smarter every day, which enables the team to focus on more value-adding activities. Moreover, governments are likely to implement stricter regulations on archiving and the distribution of invoices. This will increase the importance of selecting the best future-proof solution and implementing a governance framework, which oversees working with artificial intelligence on AP level. This article highlights several key challenges in the AP-process and elaborates on how intelligent tooling is able to solve the inefficiency problem(s). Implementing the solution that fits best within the organization depends not only on the challenges, but also on the invoice process end-structure and organizational governance of the company.

The available solutions are getting smarter every day

Reference

[Dekk18] M. D. Dekker et al., *Robotics Process Automation, Address functional and technical challenges during SAP implementation projects with RPA*, Compact 2018/2, https://www.compact.nl/articles/robotics-process-automation/.

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