

Connected automation

How to make print production more
valuable, scalable and AI-ready

A FOUR PEES WHITE PAPER



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Introduction



Why this white paper?

This white paper starts from a simple observation. Whatever the country, printers are caught between the rising cost of raw materials and energy on one side, and constant downward pressure on prices on the other. The steady shift to buying print online has only sharpened the squeeze.

E-commerce has changed how print is bought.

Procurement has gone digital, especially in B2B. Buyers expect to order online, compare prices in seconds and source the cheapest supplier. The supply shocks earlier this decade eroded margins further, particularly for printers on long contracts who had not built rising paper, packaging and ink costs into their pricing.

And the next shift is already visible. Agentic commerce is coming, where AI agents, not people, do the searching, buying and reordering, transacting directly between systems. For a print manufacturer that raises the bar again: an operation that cannot take an order machine to machine, or answer a buying agent's questions in real time, will not make the shortlist. The businesses ready for it are the ones whose production is already connected and automated.

For a while, local suppliers and short distribution chains looked set to matter more. In practice, once conditions normalised, price returned as the leading factor in most buying decisions, and competition from abroad added to the pressure on domestic printers.

Many printers reached for web-to-print as a lifeline, often with public support behind them.

The trouble is that many rushed in without a strategy, bolting on a sales channel that sat in a

silo, cut off from the rest of the business.

Advised to focus on the visible part, the storefront, the design, the advertising, they neglected the parts that actually protect margin: automation, customer retention and error reduction. In too many cases that has proved costly.

The problem is not only commercial, it is structural.

After working with companies of every size across several countries, we keep meeting the same thing: fragmented software estates, a legacy of the monolithic architectures of the 1990s, with each function walled off from the next. The result is under-used customer data, operators re-keying the same information from one system into another, wasted time, and growth held back.

The skills gap is becoming critical. Like many industries, printers struggle to replace retiring staff and to attract the digital skills modern production and e-commerce demand, and that shortage can cap growth even when the opportunities are there.

On top of all this sits a new expectation. Customers are asking what artificial intelligence can do for them, and vendors are selling AI as the next thing that will save the print business. It is worth being clear-eyed. Recent industry research finds that close to nine in ten organisations now use AI in at least one part of the business, yet only a small fraction report a real, measurable impact on results. The pattern is familiar: adoption is easy, value is rare. The printers who chased web-to-print without the automation underneath are at risk of making the same mistake again, this time with AI.

There is a way forward that creates value, eases the recruitment squeeze, makes web-to-print profitable, drives growth, and turns AI from a slogan into results. That way forward is connected automation.

Restoring growth through scalability

In the language of startups, scalability is one of the keys to success: the ability to build a business that can generate and sustain strong growth over time. An industry like print can be made scalable too. It starts by looking at the whole customer, mapping their multi-channel and multi-modal buying behaviour, which is what reveals why your information system needs to open up and learn to exchange, communicate and interface with others.



Tom Peire
CEO, Four Pees

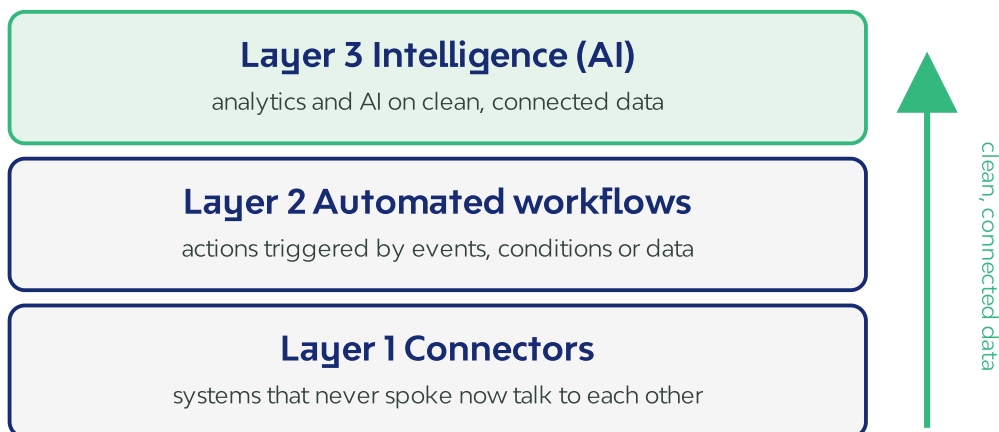
Drawing on concrete examples from years of hands-on work, we will show how to find opportunities to develop, and how to adapt your organisation intelligently so it can grow. In the end this is about regaining control, becoming competitive again, and moving from a reactive posture to a proactive, strategic one.

What is connected automation?

Definition and objectives

Connected automation is both a strategic approach and a technological process for optimising business workflows and information

systems. It is as much a mindset, a constant search for efficiency, as it is a set of tools. It rests on three layers that build on one another.



Connected automation, three layers. The intelligence layer only works because of the two beneath it.

Connectors, like USB ports, let different software applications talk to each other, even when they were never designed to. **Automated workflows** are structured sequences of actions triggered by events, conditions or data, that run without manual intervention. **Intelligence** is the layer that becomes possible once the first two are in place: analytics and AI applied to data that is finally clean, connected and complete.

The order matters. Connect the systems and automate the flow between them, and you produce something most print operations do not have today: clean, connected, trustworthy data. That data is the fuel intelligence runs on. Connected automation is designed to let information circulate across silos, in order to avoid tedious re-entry, reduce information loss, consolidate data from different sources, open the print shop's system to customers, suppliers and partners, and create the data foundation that analytics and AI depend on.

Not limited to prepress

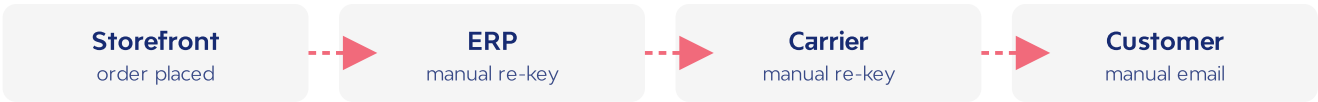
Some vendors, through loose use of language, suggest connected automation means file-processing workflows inside a print shop. That is incorrect. It is a concept and a method that touches every function and every piece of software in a company, and it is universal in its technical approach.

How does it work?

Take a simple example: receiving a parcel-tracking link after placing an order online. In a siloed setup an operator manually copies the order from the storefront into the ERP, prints labels, and later re-enters the tracking number in both the ERP and the website. With connected

automation, connectors link the storefront, the ERP and the carrier into one continuous chain, and the tracking link reaches the customer automatically, in seconds, with no manual intervention.

WITHOUT connected automation



WITH connected automation



The same order, without and with connected automation.

Connected automation for 360 degree customer vision

While a printer sells through a single channel, information stays central. Add an e-commerce storefront alongside the sales team, and siloed systems fragment the picture: a rep sees only part of a customer's history, and the customer ends up with two accounts for the same supplier.

Connected automation links the modules and keeps the data in sync, so both sides get a complete, unified view across every channel. In an increasingly complex distribution landscape, that 360 degree view is fast becoming essential.

(Re)Creating value



Caught between rising raw-material costs and relentless price competition, printers are doing everything they can to protect margin. There are ways to rebuild value while staying competitive:

free up existing staff by removing repetitive tasks, cut errors at every stage of production, and offer customers extra services that differentiate you. Let us look at each.

Adopt a comprehensive approach to the customer journey

Map customer and order processes

The first step is to map the whole flow from start to finish, for both the customer and the order, because they are not the same thing. Workflow is not just about prepress files: it means the

entire customer experience, from first contact to invoicing, across every way an order can be placed. Detailed flow diagrams expose the repetitive tasks that have become habit, the friction points, and the sources of error that hit final quality.



connected automation carries the customer across every stage

The customer journey, simplified to four stages.



green arrows: automated handoff, no manual re-keying

The order flow as one clean lane, front office to back end.

Measure, find the leaks, fix them

Measure real indicators in the field: the time a task takes, the number of back-and-forth exchanges, the clicks an operator must make. With the journey mapped and measured, the

places where value leaks out become clear, like a plumbing system with leaks. Once found, they can be sealed: connected automation is the treatment that seals them through higher productivity and fewer errors.

A concrete illustration: a material supply disruption

When a supplier withdrew a material, a traditional shop left the purchasing manager to email the whole sales team, pull the product and warn every affected customer by hand, with the errors that invites. With connected automation, the moment a supplier withdraws a material, sales staff are updated in near real time, the product is disabled in the ERP and on the website, and every affected customer is alerted while their account manager is handed a follow-up task automatically.

Building key differentiators

Used well, connected automation gives you new ways to stand out. Look for friction points, the places where the customer experience falls short, and smooth them.

Simplifying file submission. Sending files can be complicated for print customers. For one print shop we built a single drop zone: through one web page, customers upload from their computer, connect cloud storage such as Dropbox or OneDrive, or paste a WeTransfer

link, with automation handling retrieval. Simpler for the customer, and an excellent way to build loyalty.

Streamlining reorders. Seasonal work is reordered year after year, and customers lose their files or forget which version was printed. By storing files securely and offering a web interface for reordering, a printer delivers a premium service that makes switching to a cheaper competitor far less tempting.

Refocusing teams on high-value tasks

From DTP checking to a graphics studio. One printer's DTP department mostly checked and corrected customer files, work that had become hard to charge for. With connected automation we set up flows to receive, check and correct files automatically by job type, and even manage press proofs. That freed the designers, and the director repositioned them into an in-house creative studio, broadening the offer and adding value.

This is where the third layer earns its keep. With files, orders and production data connected, AI-assisted tools take on more of the routine, supporting preflight decisions, running automated quality checks and guiding scheduling and dispatch, so people spend more time on the higher-value work customers pay for.



What connected automation adds up to.

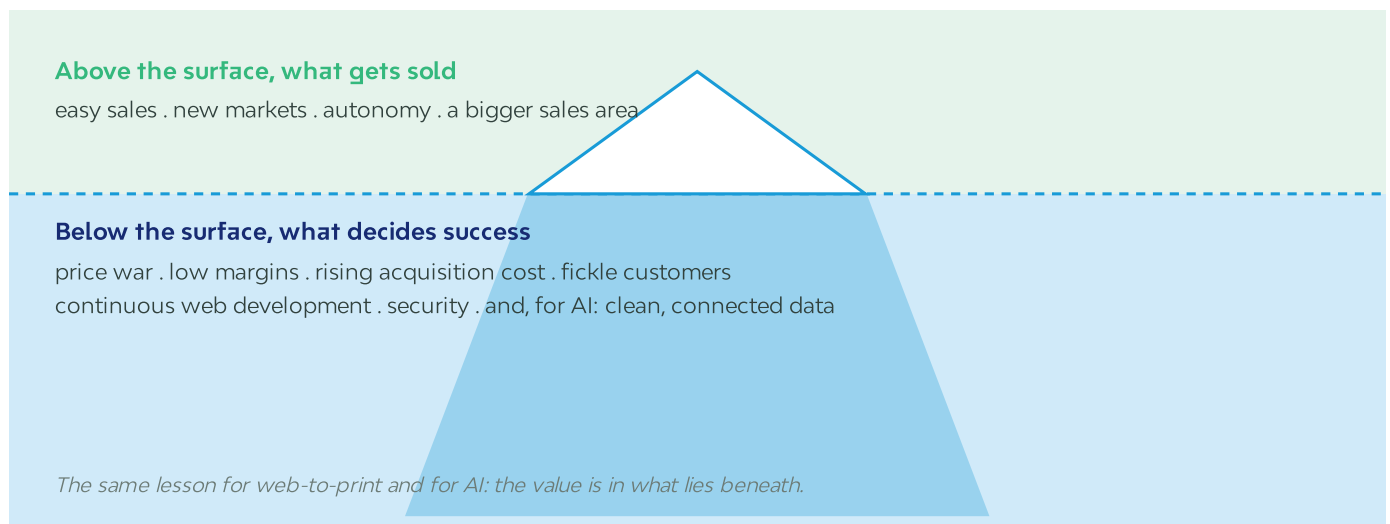
Connected automation, the foundation for AI-ready print



Every printer is now being told that AI will transform their business. Some of that is true. Most of the pitches skip the part that decides whether it is true for you.

First, the lesson of web-to-print. Printers in difficulty often saw web-to-print as their salvation, never more so than during the pandemic years. Badly advised, many got lost in

it. What they did not see, until too late, were the hidden depths: an intense price war, ever-rising acquisition costs, fickle customers, average order values far below traditional channels, and heavy, continuous investment in performance and skills. Web-to-print rewarded the printers who had automated the work underneath, and punished the ones who had not.



The web-to-print iceberg, and the AI iceberg: the value is in what lies beneath the surface.

AI is the same story, arriving again. It is being sold as a magic button. It is not. Almost everyone is adopting AI and almost no one is getting real value from it, and the reason is nearly always the same: there is no clean, connected data underneath. A model is only as

good as the information you feed it. Point AI at a fragmented, siloed estate and it produces confident nonsense. Point it at a connected, automated operation and it starts removing real work. Connected automation is not a rival to AI, it is the precondition for it.

Where AI pays off in a print operation

At Four Pees, AI is how we work and part of what we deliver: we use it every day in our own business, so when we help a customer apply it, we are sharing capability we rely on ourselves. On the customer side, AI shows up in three practical places, and each only works because the systems beneath it are connected.

Getting the operation agent-ready. The first, and most valuable, use of AI is on the plumbing itself: helping set up and configure the connected stack, mapping data between systems, and generating and validating the workflow scripts that link them. A connected, well-configured operation is what makes agentic commerce possible, where a customer's system

places, changes and tracks orders with the printer's system directly, machine to machine, with no one re-keying in the middle.

Agentic production guidance and interrogation.

Once production data is connected, the shop floor can be interrogated in plain language: where is this job, why did it stall, what should run next, which orders are at risk of missing their deadline. AI agents weigh scheduling, dispatch

and exception handling against live MIS, ERP and production data, and surface the decisions a person needs to make.

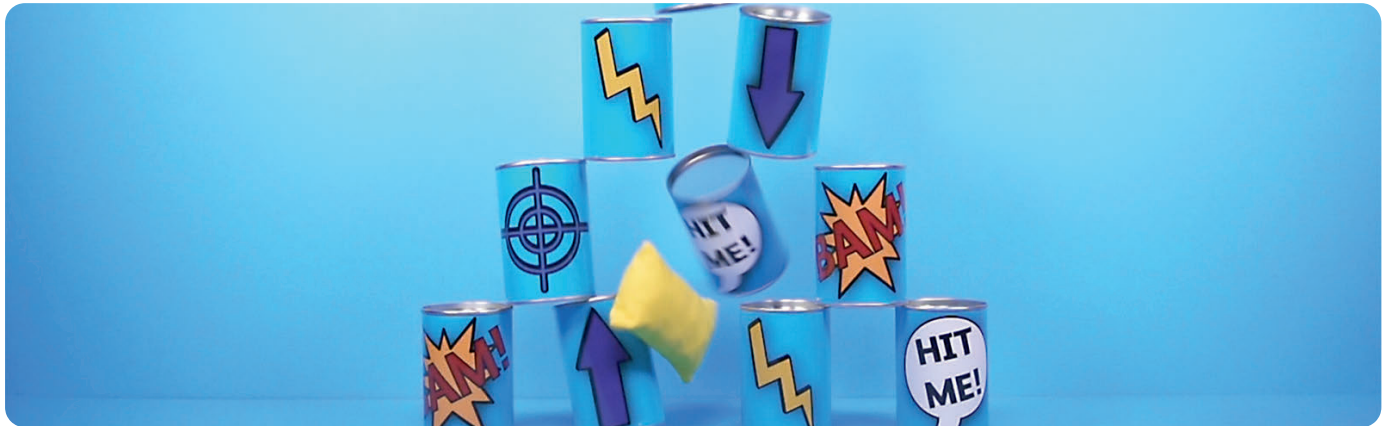
Manufacturing intelligence. The same connected data supports the use cases every modern factory is adopting: predictive maintenance from press and finishing telemetry, demand forecasting and capacity planning, automated visual quality inspection, and smarter nesting and scheduling that cut waste and setup time.

Start where the data is ready, keep a human in the loop

Two principles keep AI honest. Apply it first where the underlying data already supports it, prove the gain, and extend from there. And keep a human in the loop: early on AI drafts and proposes while a person decides, and it earns more autonomy only as the data and the workflow prove trustworthy. Vendor-agnostic on the model, disciplined about the data, never a black box.

**AI is only as good as the data and the systems beneath it.
Connect and automate first, and AI stops being a slogan and
starts removing real work.**

Securing and scaling your business



Print shop managers want to keep the order book full while protecting margin, and to secure the business for the future. Connected

automation helps on several levels, from diversifying revenue to hardening security and keeping the operation flexible enough to scale.

Diversify your sales channels

Fragile printers lean too heavily on a few key customers or one segment; resilient ones widen their base and diversify channels, a shock absorber against a downturn. Over twenty-five years print has moved from a one-way model to

today's dense, decentralised landscape: consumer and B2B marketplaces, print-on-demand tied to Shopify, and APIs into enterprise ERP systems.

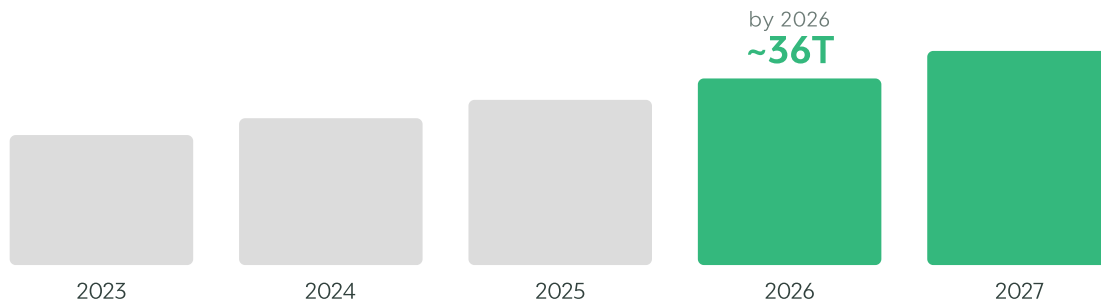
Building lasting customer relationships

Meeting the new demands of B2B buyers. B2B e-commerce keeps growing faster than the wider economy. Buyers now issue orders straight from their ERP and expect the printer to send back production status, invoicing and analytics in

real time. Many printers still cannot interface with their customers' ERP systems; with the right connectors and automation, they can, and that is a competitive edge.

Global B2B e-commerce keeps outpacing the wider economy

indicative scale, USD trillions, growth of about 14.5% a year



Global B2B e-commerce, indicative scale and growth. Source: trade.gov, 2026.

Strengthening retention in B2C markets.

Acquisition through paid ads is expensive, yet many web-to-print customers order only once. By linking the web platform to CRM and external data, printers can run highly personalised,

triggered marketing based on a birthday, last purchase or browsing behaviour, and variable-data printing makes those campaigns sharper still, exactly the kind of work AI improves once the data is connected.

Adapting, securing, and reducing dependence

Recent years have been anything but stable. A modular IT architecture, built on connected automation and cloud services, provides the

agility to scale up or down, swap modules and replace outdated systems fast.



Modular, cloud-based architecture gives a business real elasticity.

The same architecture hardens security. Monolithic software on a single site is a fortress on shaky foundations: one failure or attack can halt everything. Moving components to

maintained cloud services spreads the risk, keeps software current, and lets a failed part be swapped out.



What concentrates cyber risk in a print shop.

Reducing IT vendor dependence. Printers depend heavily on core ERP or MIS software, and on its publisher's strategic decisions. Connected automation reduces that dependence by taking non-core services out of the central platform and replacing them with best-of-breed integrations, a cloud carrier

connector in place of built-in carrier management, for example, shrinking the core system.

Drawing on the cloud's elasticity, a connected business resizes and adapts in near real time, and that is exactly what makes it AI-ready.

Proof and how to get started

The concept is only as good as the results it produces. Three customers put connected automation to work.



Commercial and online print · Southend-on-Sea, UK

Challenge. As volumes grew, skilled press operators were tied up in repetitive work instead of higher-value tasks.

What we did. Over five years we connected and optimised the workflow end to end, automating file handling and correction, imposition and ganging with Enfocus Switch and Imp.

Results. Productivity up 76% since 2019, around 1,500 of 2,000 daily orders fully automated, on-time dispatch at 99.85%, and as little as ninety seconds from proof approval to press.

*"We've seen a 76% improvement in productivity since 2019." **Simon Cooper**, Managing Director*



Commercial and packaging print · Roosendaal, NL

Challenge. Get more from an existing Enfocus Switch investment, and meet a major customer's demand (the eye-care specialist Alcon) for automated marketing-order processing at high volume.

What we did. Optimised preflight through Switch and built the Alcon Marketing Tools platform, automating everything from file receipt to delivery notes, with integrated delivery platforms and inventory management.

Results. On Alcon Marketing Tools, active users doubled and orders rose by 50 to 60% after launch.

*"Our people have interesting jobs, with fewer repetitive tasks and less chance of mistakes." **Eddy Bouwens**, co-owner*



B2B flag production for resellers · Europe

Challenge. File submission was slow and manual: customers emailed files for checking and proofing, with delays of minutes or even hours.

What we did. Built a custom upload portal into Intervlag's website and order system, with automated preflight and correction, an instant proof that visualises finishing, and hands-off generation of the production file.

Results. Processing fell from hours to seconds, a proof in around twenty seconds, and the order-processing team went from a whole team to a handful of people.

*"Within 20 seconds they have a proof. That not only saves time, it frees them from our working hours." **Michael van den Bos**, Customer Relations*

Connected automation in practice

A catalogue of connections across the customer path. The final rows show where AI is now added on top of the connected foundation.

Phase	Connection type	What it delivers
Lead nurturing	CRM connected to an email-marketing platform	Import trade-show leads, trigger post-show campaigns, track conversion into orders.
Order flow	API connection to a customer's e-commerce platform	Automatic retrieval of order files, job ticket and JDF or XML, and automatic status updates back to the customer.
File checking	Automated file processing connected to production	Automatic reception, checking and correction by output profile, ganging by shared characteristics, cutting-tool prep.
Reordering	Website, secure file storage and prepress	Loyalty through a fast reprint service, and fewer calls to customer service to find old orders.
Customer care	Website connected to CRM and ERP	A single 360 degree view of the customer across every channel, on the desk and on the move.
Shipping	ERP connected to a hub-type shipping platform	Intelligent multi-carrier dispatch, zone exclusions, electric-vehicle options and carbon-footprint figures.
Loyalty and churn	CRM, website and marketing automation	Detect declining activity and trigger a personalised offer to win the customer back.
System configuration, with AI	AI-assisted mapping and configuration of connectors and workflows	A faster, more reliable setup, so the operation becomes agent-ready sooner.
Agentic commerce	Autonomous order exchange between the customer's ERP and the printer's system	Orders placed, changed and tracked machine to machine, with no re-keying in the middle.
Production interrogation, with AI	Natural-language queries over connected MIS, ERP and production data	Ask where a job is, why it stalled or what to run next; the agent surfaces the decision for a human.
Predictive maintenance, with AI	AI over press and finishing telemetry	Predict failures before they stop the line, and schedule maintenance around the order book.
File preparation, with AI	AI-assisted preflight and correction on connected file intake	Faster, more consistent fixes with fewer manual touches, leaving operators the exceptions.
Commercial insight, with AI	AI over consolidated CRM, order and production data	Churn prediction, demand patterns and capacity planning from one connected data set.

Key stages in a connected automation project

A recommended sequence. Note the step that becomes possible, and only then. has been added: once systems are connected and the data is clean, an intelligence layer

- 1 **Trace.** Draw the customer journey and the order flow.
- 2 **Identify.** Pinpoint the value-leak points, the pain points and the axes for improvement.
- 3 **Measure.** Time the tasks, calculate the costs, and count the error and after-sales rates.
- 4 **Prioritise.** Build an action plan with priority levels.
- 5 **Correct.** Define the best workflow, set up the connectors, automate with triggers, and deploy.
- 6 **Apply intelligence, where the data is ready.** With systems connected and data clean, layer AI onto use cases that are ready and reversible, human in the loop, and prove the gain before extending.
- 7 **Evaluate.** Measure the gain and calculate the return on investment.
- 8 **Optimise.** Debrief the change and fine-tune the workflow.

In conclusion



Connected automation is not a recipe or a magic tool. It is a state of mind and a way of working, built on constantly analysing and refining your customer and order workflows through smart integration and automation. It is behind the success of many printers, particularly in web-to-

print, but it is not only for online printers: any company, whatever its size, can find optimisations to suit it.

And it is now the thing that decides whether AI works for you or not. Connect and automate first, and the intelligence layer becomes real rather than a promise.

We connect everything, from order intake and prepress to production and delivery, into one automated flow, and we help you decide where intelligence belongs on top of it.

Whether you need to automate a single bottleneck or transform the whole operation, we bring the integration expertise, the project

discipline and nineteen years of print know-how to make it happen. Hundreds of print operations already feel the good flow.

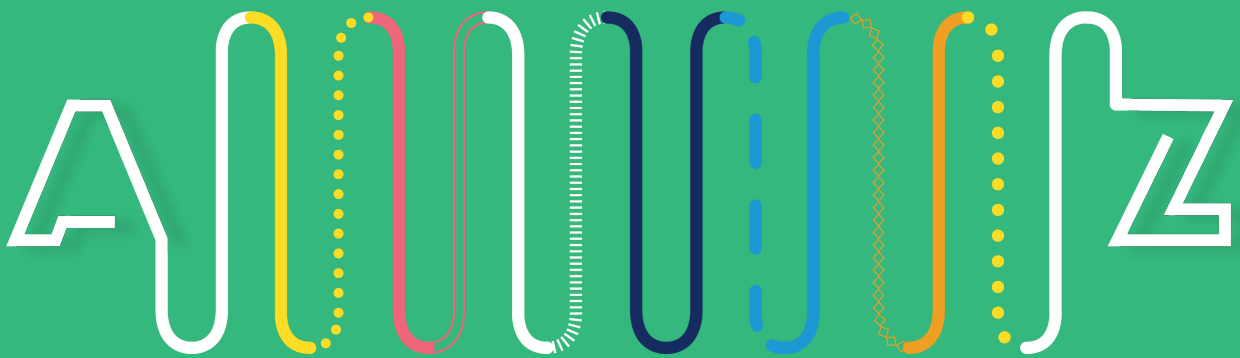
A good place to start

Find out how ready your operation is. Ask us about the Four Pees Automation Readiness Scorecard, a short assessment of where your systems and data stand today, and what it would take to make them automation-ready and AI-ready.

Sources: global B2B e-commerce scale and growth, U.S. International Trade Administration ([trade.gov](https://www.trade.gov)), 2026. AI adoption and value figures, McKinsey, The State of AI, 2025. Customer results as published in the Four Pees customer stories (fourpees.com).

We automate your print production from A to Z

Reimagine your print production. At Four Pees we help print operations succeed by implementing connected automation, from advice through to fully automated production. Whether with a recommendation, a software product or a seamlessly integrated solution, we make the systems you already run work together, and we help you decide where AI belongs on top.



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