Publishing 2030 Accelerator

The Potential of a Distributed Book Printing
Network to Improve the Sustainability of Books

Introduction to Publishing 2030 Accelerator

The fear that books would lose their value in the digital era has proved unfounded, with fresh evidence coming to light year on year to demonstrate consistent demand for the printed book.

One thing that is clear is that publishers must continuously adapt to changing circumstances and evolving buying behaviours. In the past 10 years alone, the industry has responded to the introduction of e-books and audiobooks, the migration of retail from physical stores to online, the emergence of niche communities, and changes in reading genres. The publishing sector is clearly adept at managing change.

However, like many other business sectors, book publishing is under scrutiny for the negative environmental impact of many of the outdated processes still in use across the industry. With sustainability an increasing priority for brands and consumers, there is an urgent need to relook at the printed book and consider how we can make it more sustainable.

The good news is that businesses across the publishing supply chain are expressing their interest and commitment to improving their own practices and making the industry more sustainable as a whole. We know that seismic shifts will not happen overnight. It takes research, testing and scaling before substantial changes can be implemented industry-wide. But, importantly, there is positive intent, growing collaboration and forward momentum.

With the aim of accelerating the industry's progress towards a more sustainable future, a group of industry stakeholders at Canon's Future Book Forum in 2022 formed the Publishing 2030 Accelerator strategic initiative. Our collective aim is to build awareness among book publishers and producers of the opportunity to optimise the existing book supply chain and, ultimately, drive positive systemic change.

The Publishing 2030 Accelerator initiative followed the COP 26 Joint Statement, which highlighted the prioritisation of climate action, and the International Publishers Association (IPA) Sustainability Summits, which called for an internationally coordinated approach to tackling the sector's climate impact.

> "What our industry must do to address our climate impact entails fundamental, and sometimes challenging, rethinking. This requires buy-in from all sectors, all jurisdictions, and all participants at every level and in every function. Ageing publishers need to embrace and encourage those changes which will make books and journals ever more sustainable for following generations."
>
> **Richard Charkin**
> **Publisher and former IPA President**

The Publishing 2030 Accelerator
Manifesto

All active participants in the Publishing 2030 Accelerator have committed to a five-point manifesto setting out our mission and principles:

1. Take responsibility for the world we create. The book has the power to educate, entertain, promote culture, and stimulate diversity and democracy. As an industry, we must work to reduce negative impact, specifically concerning the resources, energy, transportation and waste associated with the production and distribution of books.

2. Drive change by putting a sustainability-led purpose at the heart of our organisations and the 'smart' innovations we develop in the future. Let us join forces to empower the wider sector to act and challenge the established thinking and processes that often impede progress. Our passion is to transform ideas into reality, to help both our own organisations, and the wider sector, to be successful and make a positive impact for people and the planet.

3. Accelerate action because the time to talk is over. The technology needed to address sustainability concerns is already in reach. The United Nations has called for action on sustainability. Let's build a community of like-minded people to test ideas and assumptions, and reconsider what we refer to as 'standard' in our industry.

The Publishing 2030
Workstreams

PUBLISHING
2030 ACCELERATOR

The Publishing 2030 Accelerator is committed to climate action through three distinct workstreams.

Workstream one
The carbon footprint of a book
Lead: Rachel Martin, Global Director of Sustainability, Elsevier

Update text to: This workstream focuses on how to calculate and communicate the carbon impact of a printed book. The main objective was to test the publishing sector's ability to collect and calculate the necessarily data, agree on a methodology and better understand the role of carbon labels in communicating to both authors and readers on the sustainability of a book. The workstream has delivered two distinct outputs – an initial industry agreed methodology and a carbon label prototype to test consumer attitudes. Both will help empower and inform actions across the book value chain – including the readers themselves – to make sustainable choices.

Workstream two
Distributed Book Printing Network
Leads: Jörg Engelstädter, Tino Wägelein, Canon Europe

One contributor to the publishing industry's environmental impact is the carbon emissions from the global shipping of printed books. The second workstream is exploring how to build an international network of digital print-on-demand facilities whereby print files can be shared globally so that books can be produced locally to their point of sale to minimise transportation distance. The outcome vision for this workstream is an easily accessible global 'data highway' with a network of professional print-on-demand book printers, available for all publishers irrespective of size.

Workstream three
Re-evaluating costs and emissions
**Lead: Richard Charkin,
Publisher and former IPA President**

There is a perception that the traditional approach to book production, where large quantities of books are printed and stored centrally and then shipped to their point of purchase, minimises the unit cost of the book. However, this does not consider the financial or environmental impact of shipping books worldwide, warehousing, and discarding unsold stock, nor the unseen but material overhead costs of managing these transactions. The final workstream focuses on shifting cost analysis away from cost per unit to take full consideration of the book's overarching lifecycle cost.

This white paper focuses on the second workstream – the **Distributed Book Printing Network**. Our aim is to provide an update on the outcomes of the workstream to date, and to highlight the anticipated next steps of the initiative.

While these findings are still incomplete, they will form the basis for further industry discussions, testing of new approaches that will challenge traditional models, and action that will drive the positive evolution of the book publishing industry. It is also important to highlight that, as signatories of the Publishing 2030 Accelerator, we have worked independently and, in this white paper, we have documented our findings to the best of our ability.

4. Share experiences as members of the Publishing 2030 Accelerator. We recognise that we must use our knowledge, passion and resources to help the whole sector, experiment and try new approaches, and deliver simple solutions that will leave our planet and society in good hands for future generations.

5. Hold one another accountable for putting the ideas generated from the Publishing 2030 Accelerator initiative into practice, acknowledging that the stakes are high because the future depends on connections and these new approaches to the printed book.

The Distributed Printing Network Concept

The Approach

As the working members of the second workstream, we hosted several online meetings to discuss and share experiences and insights. After identifying the important points to cover, several sub working groups were formed which explored various topics and documented their results via a virtual online tool. Two face-to-face workshops hosted during the London Book Fair and Frankfurt Book Fair 2023 were then used to discuss the findings and agree on key statements for this white paper.

The goals of this white paper are:

- To deliver a clear description of the Distributed Book Printing Network
- To present the opportunities that Distributed Book Printing opens up for publishing
- To highlight the challenges faced by publishers that could be addressed by a Distributed Book Printing Network
- To share what considerations need to be in place to implement a successful collaboration within a network
- To document potential next steps

As previously highlighted, this white paper reflects the current status of our discussions, findings and observations. It does not claim to be a final report. Rather, the white paper is intended to lead to further discussions within the workstream – and with wider stakeholders – to initiate next steps to carry out tests, and to share the results with the market.
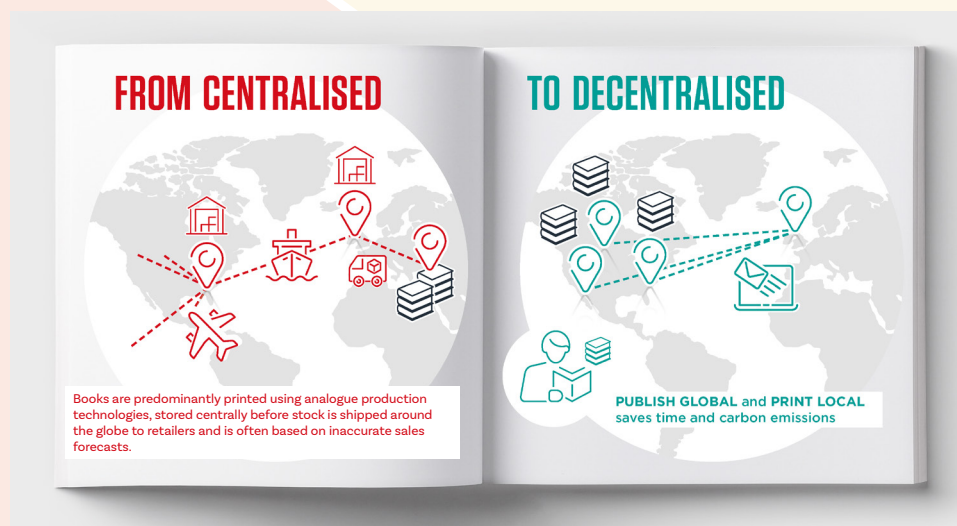
Why Distributed Print Production?

Traditionally, books have predominantly been printed in long runs using analogue production technologies such as offset lithographic printing. Finished books are typically stored centrally before stock is shipped around the globe to retailers. While this has been the known and accepted industry standard approach for a long time, production is often based on inaccurate sales forecasts, resulting in overproduction, returns and a large number of books being pulped. The latest report from RISE Bookselling, a project led by the European and International Booksellers Federation (EIBF) found that, for example, in The Netherlands, while the return rate was between 5-6%, around 2 million books per year were pulped. In Spain, 60% of new books published hardly sell any copies and the average return rate is 30 - 35%[1]. This leads to wasted books which must be disposed of if they cannot be sold, and unnecessary environmental impact.

By reducing or eliminating medium- to long-distance shipping, we have the potential to minimise carbon emissions. At the same time, publishers can reduce time-to-market, increase market reach and create a more agile and resilient supply chain.

This is where the concept of a Distributed Book Printing Network was born to support the industry's efforts in becoming more sustainable. And this concept has been implemented in the market previously.

However, based on studies such as the RISE Bookselling report highlighted above, and from our experience and market knowledge as the Publishing 2030 Accelerator group members, it is clear that the potential of decentralised production is far from being fully exploited.

FROM CENTRALISED

Books are predominantly printed using analogue production technologies, stored centrally before stock is shipped around the globe to retailers and is often based on inaccurate sales forecasts.

TO DECENTRALISED

PUBLISH GLOBAL and **PRINT LOCAL** saves time and carbon emissions

[1]https://risebookselling.eu/wp-content/uploads/2023/05/RISE-Bookselling-Industry-Insights_Returns.pdf

For the purpose of this workstream, the group did not examine in detail the reasons why book publishers do not fully use the various distributed printing network options and services in the market, but they are certainly varied. Regardless of the reasons why decentralised print production has not been utilised to a greater extent to date, we are convinced that using the idea of a Distributed Book Printing Network is essential to a more sustainable future for the industry.

As a result, we have reached the conclusion that an offering of this kind should be primarily aimed at professional book publishers and professional self-publishers, and that the network should be served by dedicated book printing services to ensure a clear focus on books (as opposed to other printed products). Access to a network of independent but validated book printers, good worldwide coverage, fair and transparent pricing, and the ability to order books in a target region using print-on-demand are key differentiating features from the current options offering distributed printing on the market today.

Additional starting points for developing a Distributed Book Printing Network are:

- Using existing middleware solutions, such as cloudprinter.com for example, as an integration platform. Such solutions would help to master the complexity of connecting network partners, systems and applications quickly, easily and securely.
- Working with an advisory board of independent, global stakeholders with expertise in responsible and sustainable business, to ensure that the network complies with baseline requirements such as B-corp standards, for example.
- Operating the network in close cooperation with industry authorities, such as the International Publishers Association, to ensure that agreed standards are maintained and the network is and remains open for all participants.

How does Distributed Printing work?

A 'Distributed Printing Network' would enable book publishers to distribute digital book print files efficiently and securely to geographically dispersed locations where local print service providers would produce the books on demand.

With the Distributed Book Printing Network, we envision books being printed near their point of purchase and delivered to retailers and/or direct to consumers locally.

The concept of distributed printing incorporates a change from central production and warehousing to decentralised manufacturing. This means a change from 'print-to-stock' to 'print-to-order' in most cases. 'Print-to-order' implies the production of short, ultra-short and single copy print runs and is implemented using digital on-demand printing technologies.

One of the key challenges of a distributed printing concept is to connect the network partners around the globe – users (book publishers) and service providers (print-on-demand service providers) – efficiently, safely and in a financially viable way. Middleware can act as a bridge between users and service providers and integrate diverse technologies, tools, and databases to provide a unified service to all network partners. The financing of such middleware could be managed via transaction, subscription or license fees for individual users. The provision and use of open interfaces and standards for the use of such middleware are particularly important in a global network open to all market participants.

What is on-demand printing?

Although print-on-demand (POD) is an established terminology in the print market, definitions vary. Generally speaking, with POD, books are printed and shipped to customers as sales orders come in, rather than having to print a large amount of stock.

Hence, POD is not only a printing and manufacturing process based on digital printing technology, but also an order and supply chain process. While classic print supply chains are tied to large quantities, long lead times and warehousing, the POD process enables the manufacturing and ordering of small runs and individual copies for just-in-time delivery.

By adopting a print-on-demand supply chain approach, publishers can benefit from:

Availability
With a 'sell first, then print' business model, 'out of print' becomes a thing of the past. POD is especially useful in the case of slow-moving titles; for niche titles where it is difficult to predict sales volumes; for reprints during the lifecycle of a book, minimising the risk of over- and under-production; and for self-published titles, where the lifecycle often starts without any physical stock.

Flexibility
Digital print offers the flexibility to produce a wide range of print runs, at affordable prices. The latest digital inkjet presses have bridged the gap between electrophotographic presses and offset lithographic print. Quality is now equal, a large selection of paper types can be printed on and, thanks to modern book finishing solutions, the full range of binding methods are also possible.

Sustainability
POD has sustainability benefits too. Compared to conventional analogue printing production, digital book production can save paper waste and does not require the use of printing plates or chemicals. A POD process is based on actual demand which helps to avoid overproduction and unnecessary use of resources. And, in conjunction with a distributed print concept, it also minimises emissions through shortened transport routes.

Speed
POD enables faster ordering, print manufacturing and distribution. Digitised order processing workflows, combined with automated prepress steps and streamlined digital printing and finishing, only takes a few hours or even minutes. As a result, delivery times can be reduced from weeks to days, or even hours

Improved costs
POD offers a reduction in costs in various stages of the supply chain process. Thanks to the digitisation and automation of order management, prepress, print and post press, many manual steps and resources can be saved. POD eliminates the need to hold expensive inventory upfront and publishers no longer need to discard unsold titles by moving to intelligent book life cycle management. In addition, efficient sales of slow-moving titles can also be viewed as cost savings.

"Adopting print-on-demand more widely may require a shift in attitude and a re-evaluation of established business practices, but the opportunity it presents in a Distributed Book Printing Network is vast."

Tino Wägelein
Canon Europe

Distributed Printing: the opportunities for publishing

Lower emissions

Challenge: Shipping books from central warehouses to book retailers and then to readers is a significant source of emissions.

How this is addressed: Through a Distributed Book Printing Network, books can be printed locally by print service providers close to the point of book sale. Therefore, the book only needs to be delivered to retailers in that country or region, rather than shipped internationally from one central location, substantially reducing emissions.

On-demand book production also minimises carbon emissions in the manufacturing process, by reducing energy and raw materials.

Reduced inventory

Challenge: Inventory is one of the largest items on book publishers' balance sheets besides the manufacturing cost. Consumer demand and sales volumes are unpredictable and unstable. Managing and financing stock, processing returns and destroying unsold books is cost- and resource-intensive, and intensely wasteful.

How this is addressed: The technical capabilities of print service providers using digital print technologies are extensive, making it possible to print short and ultra-short runs on demand. As a result, publishers can direct production based on dynamic regional demand, rather than unreliable sales forecasts.
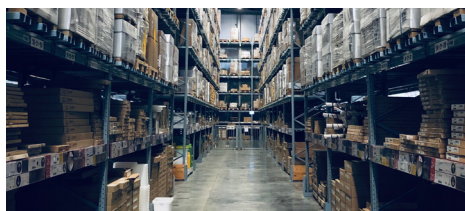
Better global availability

Challenge: The global book supply chain faces multiple challenges, accelerated in some cases by the effects of the COVID-19 pandemic. Publishers are dealing with the impact of rising energy and materials costs; the closure of paper mills; labour shortages and a lack of skilled resources; distributor consolidation; and the exponentially rising cost of transportation. As a result, global supply chains have become more complex and fragile. Together, these issues can make it difficult to guarantee supply of product internationally and to service regions where demand is low. Consequently, publishers are missing out on sales opportunities.

How this is addressed: A Distributed Book Printing Network offers the potential for publishers to regionalise their supply chains and achieve efficiency gains by accessing a broader network of qualified suppliers, reducing reliance on a few centralised producers, and balancing risk. In addition to building a more agile and resilient supply chain, distributed production using local print service providers creates opportunities for publishers to improve global availability of printed books even in minor and developing markets, enabling them to expand globally, diversify their portfolio, increase their market reach, and enhance competitiveness.

The global network also opens up the opportunity for greater geographical diversification, reducing the risk associated with excessive concentration in any one market and enabling publishers to invest in new markets and develop a presence in countries that offer growth potential.

Improved time-to-market

Challenge: Time-to-market is a critical success factor. A late book launch or delay in shipping can affect sales windows and negatively impact revenue. Getting the right titles to the right place at the right time improves customer experience and potentially enhances competitive advantage.

With continuous shifts in customer preferences and demands, it is also essential for publishers to respond quickly and efficiently to market trends. Rapid recognition, decision-making and execution all determine publishers' ability to capitalise on new trends, events and talking points, converting them into valuable commercial opportunities.

How this is addressed: Access to a broad global network of trusted and flexible production partners would enable publishers to run a demand-driven business, reducing time-to-market, and enabling a more dynamic, less risky response to fluctuating customer demand and emerging trends.

Challenges faced by publishers that could be addressed by a Distributed Book Printing Network

In this section, we set out our assessment of the business-critical needs of publishers where book production is concerned, and how these would need to be addressed by a Distributed Book Printing Network.

Consideration:
Selecting a reliable print partner

When identifying and selecting print service providers (PSP), publishers need to take several considerations into account. The technical capabilities of a book printer are of utmost importance and publishers need to look at the full suite of services offered by any prospective supplier.

This includes understanding the printing equipment and binding capabilities, the workflow options for job submission, expected turnaround times, quality control, reporting and invoicing processes, as well as the approach to problem resolution. Reliability is critical across the complete production process, so publishers also need to be confident that their book printers are working with dependable suppliers.

Consequently, identifying and evaluating new PSPs is resource-intensive for book publishers.

How this is addressed:

An important service of the Distributed Book Printing Network would be the pre-selection of participating PSPs based on a transparent validation and evaluation process, enabling publishers to access reliable print services in all regions. The pre-selection criteria would include, for example, a review of print-on-demand capabilities, delivery times and the printing and bookbinding services that the PSP could offer. In the next chapter, we elaborate on the details of PSP requirements for the network.

In addition to pre-selection, continuous evaluation of service performance through monitoring would be necessary.

Publishers should also be able to conduct individual tests with the help of a simple, quick and cost-effective sample ordering option.

Consideration:
Manufacturing costs

The manufacturing price for a book depends on various criteria – print run length, page count, colours, type of paper, paper weight, binding requirements, quality of print and binding, delivery speed, frequency and visibility of orders, and the total book print volume. For small to medium-sized publishers with lower purchasing power, some of these factors can negatively impact the book price.

Pricing structures in certain regions may be less than transparent. Material and labour costs differ greatly from country to country, and the quality of production between regions is not always comparable, making like-for-like price comparison extremely challenging.

How this is addressed:

An effective global Distributed Book Printing Network would require established regional benchmarks for fair pricing and clear guidance around import duties, insurance costs and taxes. The network would support secure cross-border payment, enable real-time currency conversion and allow for bulk invoicing.

Consideration:
High admin cost for production and distribution

Alongside actual production and distribution costs, publishers have to take into account additional expenditure, including initiation, processing, monitoring and billing of orders.

The end-to-end process is complex. Book publishers need to analyse and determine their specific needs, then create tenders and negotiate supplier contracts and service level agreements. With these in place, they must define order workflows, compile and send production data, monitor deadlines and delivery statuses, while also controlling supply quality, processing invoices and managing complaints. These additional admin costs are particularly high when dealing with suppliers where there is no established relationship.

For suppliers outside the publisher's home region, there may be additional resource-intensive steps to negotiate contracts and clarify legal aspects, as well as high operating costs for handling taxes and custom duties.

How this is addressed:

The action taken to address this as part of the Distributed Book Printing Network is still under review and therefore, the following points are theoretical. However, the following list outlines the necessary processes and functions offered in the network to reduce the administrative efforts for production and distribution.

- Easy and safe ordering process and easy-to-use integration.

- Standardised 'one-click' application programming interfaces (API) for installation in e-commerce and business tools.

- Intuitive dashboard to manage accounts, orders, invoicing in real-time, automated file checking and optional file modification.

- A 24/7 cloud service delivered on demand online which is designed for easy, affordable access to applications and resources. Key benefits include flexibility, no need for on-site hardware infrastructure, consistently up-to-date software and 24/7 access.

- Secure file transfer and servers

Considerations for creating a global print service provider network

Defining the requirements and specifications for a print service provider (PSP) is a natural next step for this workstream, as well as agreeing on fundamental industry concepts to ensure consistency.

Below, we have outlined the key service attributes that would be mandatory for a PSP to be a service partner within the network:

- **Professional book printing skills**, including the printing of text pages in mono and colour; covers and dust covers with lamination on various paper types; professional finishing and book binding capabilities for paperback and hardback books, sewn book blocks, reading ribbons etc; as well as meeting book industry standard quality requirements for printing and binding. The PSPs within the network should ideally work according to pre-defined and documented quality levels and standards for printing and book binding. The network's own standards are intended to provide a means of communication between book publishers and print providers.

- **Print-on-demand fulfilment capabilities** including onboarding print jobs; creating print-ready files; cost-effective and reliable printing, finishing and binding books of single or small quantities within short timeframes.

- **Packaging and logistics** including the packaging of books; instant and secure delivery to final destination; delivery notes; bills and tracking.

Besides product, services and quality, PSPs within the network would have to meet other important criteria that need to be specified more precisely. These include:

- **Environmental performance** such as reducing emissions; improving waste management; minimising resource consumption (including energy and water).

- **Social responsibility** such as rejecting forced labour and exploitative child labour; complying with legal provisions for wages and working hours; implementing workplace safety and health measures; complying with general principles of non-discrimination.

- **Business ethics** such as counteracting corruption; recognising companies' owner rights; promoting fair competition; upholding integrity.

An online ordering platform is one of the most important factors in ensuring that users and service providers of a Distributed Book Printing Network have a smooth experience when submitting and receiving jobs online.

The global use of the network is particularly noteworthy in this context because people from different countries, with different languages and cultures, need to communicate with each other. Therefore, special attention must be paid to an intuitive user experience in the user interface.

However, there are many key elements which need to be considered when creating a smooth user experience such as reliability, availability, convenience, simplicity, accountability, responsiveness, transparency, efficiency and security.

With this in mind, we focused primarily on identifying the most important features and services that the network must offer in order to make distributed printing possible for publishers and to deliver a smooth user experience. The following features are therefore particularly important, but do not yet take into account the actual implementation in a corresponding user interface.

Invoicing and taxing
All invoices processed have to be fully digital, automated and standardised across the printing network. This ensures that invoicing is cost-efficient, financially accurate, and in line with international legal requirements.

Invoice documents need to include a combined set of fields to state all information that is relevant according to international legal and customer requirements, including information on the issuer and the recipient (correct company name, address and – if applicable – tax numbers); bank accounts; net and gross prices; applicable taxes; order references; and anything else that is relevant.

smooth user experience

Field formats and the order of fields must be flexible to cater for different conventions in different countries (e.g. to capture numeric or alpha-numeric data for postal codes).

The system has to apply correct taxes for the country of origin or destination which means it must access a large matrix of tax levels per country. Correct prices (retail or net prices) and retailer discounts also need to be applied and displayed. Likewise, the system needs to handle various currencies.

Since drop shipments will play a role in the network, the differentiation between invoice and delivery address, and a user-friendly way to enter alternative delivery addresses at any point in the order process, are particularly important. In addition, both the invoice and the delivery address need to appear on the invoice paperwork for tax reasons.

Payments
The payment process should be fully automated and all international payment standards and payment providers need to be implemented. Agreed terms need to be in place to manage fluctuating currency exchange rates across the network.

Reporting/dashboard
Financial reporting needs to be in near-real time and should, at the least, provide the below information into a dashboard which displays daily statistics:

- Order overview
- Print job tracking/status overview
- Sales/transaction data (sales quantities, turnover etc), categorised by print partner/country etc
- Author's fees, calculated based on sales data
- Carbon usage data for carbon-saving calculation

Security: fraud and data protection
To protect all partners from financial fraud, processes beyond standard payment checks and insurances, including automated payment reminders, need to be applied:

- Electronic checks of ordered print runs against actual print jobs to ensure correct invoicing of all transactions by all partners within the network
- Automated monitoring of all transactions to uncover any abnormalities in transaction patterns

Besides that, robust file protection against hacker attacks and data loss is needed (e.g. through data security systems). This is particularly important to gain publishers' and authors' trust in a Distributed Printing Network that potentially contains many layers within the distribution chain or directly connects publishers with new partners in remote areas of the world.

As a legal requirement, personal data for European customers (according to GDPR) needs to be stored on servers located in Europe. Finally, authors' content needs to be protected from plagiarism or illegal copying, e.g. through plagiarism scans and file protection measurements.

Processing speed and data storage in the chosen cloud technology
Within a cloud set-up, users can access superior processing speeds, compared with processing in house. And, instead of storing data at an onsite storage facility, stored data can be accessed from a remote location using the internet, which removes the risks of data loss on local hardware.

The cloud computing provider handles the management and security of the storage servers, infrastructure, and networks to guarantee access to data at any time with elastic capacity. Cloud-based data storage also offers faster data recovery, allowing users to resume productivity and normal operation sooner in all kinds of emergency scenarios. The cloud service needs to follow at least standard data security levels,

- e.g. security standards such as Amazon Web Services (AWS) and Microsoft Azure Cloud.

Complaints processing including reviewing, refunding and reprinting
Without a good complaints process in place, user experience can suffer. In general, complaints indicate a gap between user expectation and delivery. Regardless of whether a complaint is justified or not, an efficient process must be in place to manage the complaint and, ideally, even transform it into a positive customer experience.

Therefore, a simple yet effective complaint handling process must be in place and documented for all network users and service providers to access. The process should clearly set out what steps are taken when dealing with a complaint. This also includes a compensation guide that explains how quickly an error should be corrected through reprinting, or refunding, or how much compensation can be granted, what criteria apply and how the process works.

As already stated, our approach is to use existing technologies and already developed online middleware platforms rather than developing a user interface for the network. When selecting one of the existing solutions on the market, defining must-have features for a smooth customer experience is very important. The option for further development and cost-efficient implementation of new features and services for continuous improvement is also an essential prerequisite.

Setting, establishing and using industry standards

Consideration:

Thanks to the work of many non-profit organisations and working groups made up of voluntary market participants, a lot of progress has been made in the introduction and further development of various industry standards. Nevertheless, there are still many processes that have not yet been standardised, the standard is only slowly becoming established, or the standard has regionally limited application.

In a global network that has to exchange data and information across national borders and global regions, for sometimes complex and time-critical manufacturing processes, any lack of standardisation becomes particularly obvious. Therefore, we determined that setting, establishing and using standards would play a key role in the successful use of a global Distributed Book Printing Network.

How this is addressed:

We reached a consensus that the network should use existing industry standards, continuously support their further development and, in areas where no established industry standards exist, develop, define, transparently document and apply our own standards. From this perspective, a global network of users and service providers could play a key role in collaborating with associations, non-profit organisations, political institutions and other organisations in the printing and publishing industry in setting and establishing global standards for the book industry.

One available standard, for example, is the XML-based print-on-demand (POD) product metadata standard developed by EDItEUR.

EDItEUR is a London-based international not-for-profit organisation which develops, supports and promotes metadata and identification standards for the global book supply chains.

Among these is a family of standards known as ONIX, an XML-based standardised format for communicating information to facilitate discovery, sales, distribution, marketing, commercial and supply information for the whole book chain in a standard format.

ONIX provides a structured catalogue with all the information about an individual product, usually identified by an ISBN. That record can contain information about new titles or updates or information about existing titles, including, for example, price changes, new reviews, or updates to stock availability.

Each product record contains many fields carrying specific information, for example a book title or price, or where a code is included from lists of controlled vocabularies. These allow ONIX to include key terms and concepts represented by a code that is defined in English and can be translated into other languages for easy interpretation throughout the supply chain. These code lists can also be expanded as and when needed by the supply chain. Backward compatibility is maintained while allowing the standard to meet new business requirements in the supply chain.

The structure of the record for each product is made up of eight blocks including different aspects of information about a product:

Block 0: Identity and authority of the product and the record.

Block 1: Bibliographic information, including format, title, authorship, subject series etc.

Block 2: Marketing and other supporting material.

Block 3: Content detail – chapter or track level information.

Block 4: Publishing details – lifecycle dates, territorial sales rights, etc.

Block 5: Related products.

Block 6: Supply details – markets, suppliers, pricing models, etc.

Block 7: Promotion details – associated author tours, bookshop visits, etc.

Block 8: Production detail. This is intended to carry detail relating to intermediary services within the supply chain, for example, print to order, manufacturing on demand, e-book conversion services or distribution of digital audio.

In these cases, there are publishers and service providers who make use of ONIX to exchange bibliographic, marketing and commercial metadata, and they can use Block 8 to eliminate the use of additional 'sidecar' files that might otherwise need to be distributed by the publisher alongside the ONIX to communicate information about standard printing requirements.

A complete overview of the standard can be found here: https://www.editeur.org/83/Overview/

Considerations for successful collaboration within the network

The concept of a Distributed Book Printing Network is not a purely commercial concept between users or customers and service providers, but is rather a collaboration between the various market participants. The collaboration has a common goal: to achieve a more sustainable book distribution by saving emissions and shortening transport routes. Ideally, this also creates commercial benefits for all network partners.

Since all companies involved also pursue commercial goals, a win-win situation should be created for all network partners. The goal of which is mutually acceptable collaboration agreements that benefit all parties involved.

The following initial points that are important for successful collaboration between all stakeholders were discussed in the working group:

- **Enabling independent selection of paper brands by print service providers** based on the required paper type. This would increase flexibility and encourage the use of local products, improving cost-efficiency and sustainability, and avoiding unnecessary international paper shipments.

- **Ensuring fair pricing** to avoid price dumping within the network. For example by using data analysis of local pricing, regular exchange between network participants and determining up-to-date local benchmark pricing.

- **Logistics and distribution -** Network users (book publishers) must also be able to rely on each local print service provider for secure, reliable, fast and cost-efficient delivery. In a print-on-demand process, a functioning drop-shipping offering is particularly important. The requirements for logistics and distribution services within a network must therefore be examined and analysed in more detail in the next stages.

Next steps to develop the concept further

As previously highlighted, the results and findings of the work groups do not claim to be complete, but they form a solid basis for further discussion.

To develop the concept of the Distributed Book Printing Network further, the next logical step is to initiate tests to identify further areas for action and to measure the benefits, i.e. savings on emissions.

The following next steps for the test would be necessary:

- Identify existing and appropriate middleware technology providers to conduct tests.
- Determine the framework conditions, scope, use cases, participants and key performance indicators of the tests.

In addition, there are further sensible steps to further develop the concept:

- Develop and conduct a survey among various industry stakeholders on the needs, usage requirements and conditions of participation in a Distributed Book Printing Network.
- Further develop the white paper, in particular to complete open topics, such as logistics and distribution; to deepen understanding of other areas; and to define how to ensure the sustainable, non-profit status of the network.

The results will be compared with conventional ways of working, incorporated into the future development of the Publishing 2030 Accelerator, and shared with the whole publishing community.

The Signatories

The Publishing 2030 Accelerator participants represent leading book publishers, booksellers, book producers, industry bodies, technology developers and materials suppliers across Europe, North America and Asia.

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