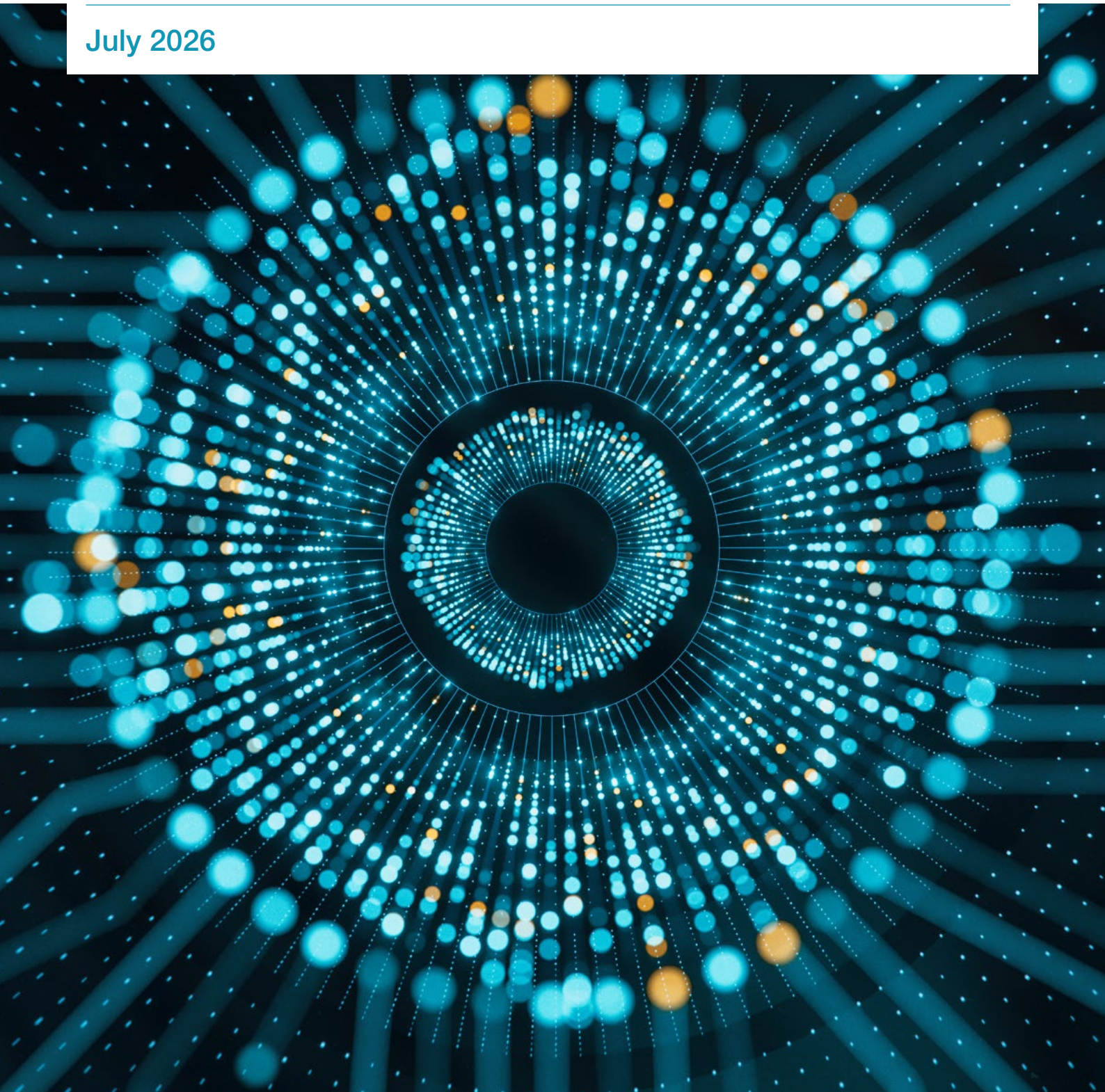
ICMA
International Capital Market Association

ICMA Primary Market Innovation Project (PMIP) – NextGen

Executing today, imagining the future

July 2026



Foreword

Primary debt markets are central to financing governments, businesses, and sustainable economic development. Their effectiveness rests on trust, liquidity, legal certainty, and well-established market practice. These foundations remain essential, but the architecture through which markets operate is changing rapidly, driven by advances in data, automation, artificial intelligence, distributed ledger technology, digital money and evolving regulatory and client expectations.

While innovation has progressed across many areas of financial markets, primary market processes have at times been left behind. Important parts of issuance remain document-led, manually coordinated and fragmented across participants and systems. At the same time markets are growing and becoming increasingly complex and stretched. Given ICMA's leading role in the international debt capital markets, we were keen to reignite discussion in this area and foster a more proactive, practical, and coordinated dialogue on how primary markets should evolve and leverage technology and innovation more consistently. It was for this reason that we initiated the work and engagement with our members on the Primary Market Innovation Project, and its associated output.

This comprehensive report, drawing on ICMA's full community of primary market practitioners, is an important step in that direction. It builds on ICMA's wider work across primary market practice, legal documentation, data standards, digitalisation, settlement, repo and collateral, and reflects the same underlying objective: to support well-functioning, resilient and internationally connected markets while helping them adapt to structural change.

Through three connected workstreams — Workflow, Model Change and Cross-Cutting Themes — the report considers how issuance can be improved today, what future operating models may enable, and which foundations must remain in place throughout the transition.

The approach is evolutionary rather than disruptive. Existing, hybrid and emerging digital infrastructures are likely to coexist for a considerable period. The task is therefore not to replace what works, but to address unnecessary friction, improve interoperability and ensure that new capabilities can develop without fragmenting liquidity, weakening resilience or obscuring accountability.

This is also a shared responsibility. Today's market leaders must provide sponsorship, remove barriers, and ensure that change is pursued safely. The next generation of practitioners must also be closely involved in defining the systems, standards, and operating models they will ultimately inherit and manage.

I would like to thank all of the many individuals who contributed their time, expertise and practical experience to this work. The report provides a strong foundation for continued industry dialogue and, importantly, for moving from shared understanding towards coordinated action, identifying specific initiatives that can be taken to advance primary market efficiency through innovation both now and looking to the future.

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1. Executive summary

Primary bond markets continue to demonstrate their depth, resilience, and central role in global capital formation, even against a backdrop of market volatility, geopolitical uncertainty, and shifting expectations around the future of finance. Year-to-date issuance across the US dollar and euro markets has remained strong, with European high-grade primary debt sales reaching record first-quarter levels in 2026. This is an important starting point for this report: primary bond markets are robust, trusted, and effective, supported by globally integrated and systemically important market infrastructures that ensure settlement finality, asset safety and cross-border scalability. The case for modernisation is therefore not that the market is broken, but under increasingly stretched conditions. Rising volumes, increasing data complexity, regulatory pressure and emerging digital infrastructure are exposing structural inefficiencies that limit the potential for scalability.

At the same time, the external environment around capital markets is changing rapidly. Regulatory and policy initiatives in Europe, the United States and the United Kingdom — including the Savings and Investments Union, the Market Integration and Supervision Package (MISP), new digital money frameworks and recent official-sector commentary on tokenisation — increasingly point in the same direction: greater efficiency, stronger resilience, improved competitiveness, clearer digital asset frameworks and more integrated market infrastructure. Together, these developments show that innovation in primary markets has moved from optional exploration to a practical obligation.

> The challenge facing market participants is therefore not whether primary markets should evolve, but how to do so safely, pragmatically and without fragmenting liquidity, undermining market confidence or unnecessarily reinventing the wheel.

The ICMA Primary Market Innovation Project (PMIP) NextGen report is driven by a clear hypothesis: the primary bond market is at a pivotal crossroads, facing mounting pressures from scale, complexity, and rising expectations. Modernisation and adaptation are essential for the market to remain robust, trusted, and central to global capital formation. Developed under the PMIP NextGen initiative (a follow on project group to the original PMIP group), this report draws on practitioner perspectives from banks, issuers, investors, intermediaries, market infrastructures, legal advisers, and technology providers to deliver a practitioner led transition guide - a practical roadmap for the evolution of primary bond markets.

Disruption or the prescription of a single technology or end state model is not advocated. Instead, the report demonstrates that incremental and cumulative progress towards industrialised, production-ready, and scalable market outcomes by strengthening current workflows and data foundations is fundamental. Modernising these elements serves as the foundation for future issuance models to emerge in a safe and interoperable manner. The content advances the case for shared responsibility and accountability, encouraging all market participants to address the requirements for a modernised capital market. Sustained functioning, scalability, and fulfilment of the market's vital economic role hinge on this transition, which is not optional, but necessary. The report sets out the evidence, practical steps, and incentives that underpin this imperative.

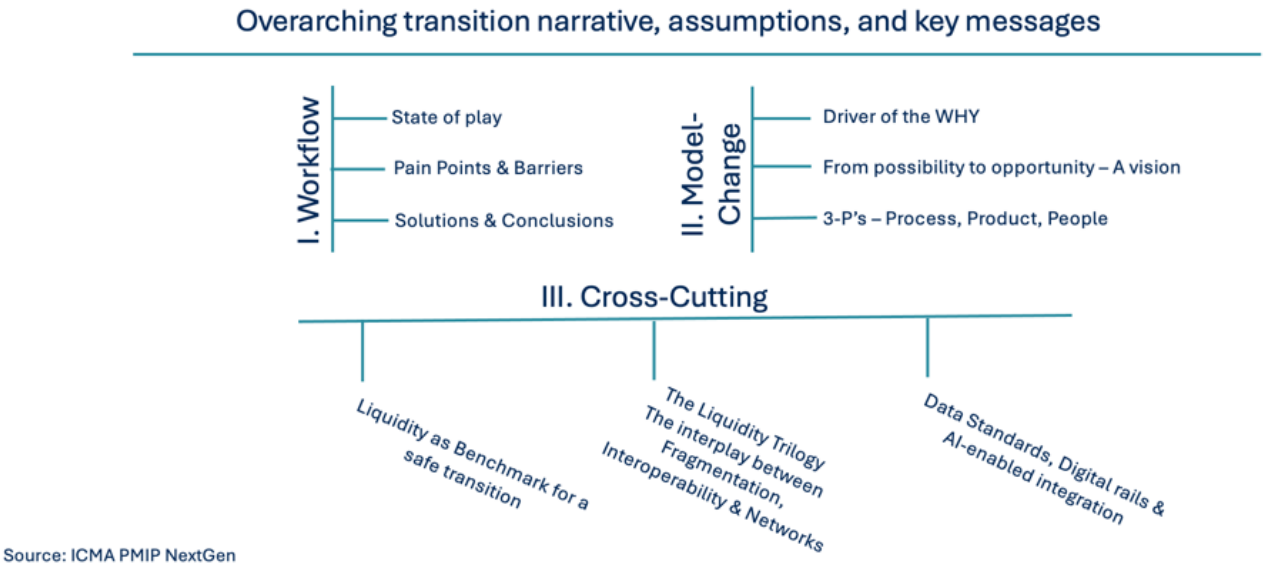
The report applies a consistent "3Ps" lens throughout: Process (the end-to-end workflow, including sequencing and controls), Product (the bond instrument and associated issuance information), and People (roles, accountability, skills, and adoption). This lens supports a clear articulation of where evolution requires standardisation of terms and data, improvements to workflow design and control, and/or changes to operating models and capabilities.

The structure of the report is organised around three interconnected workstreams. Whilst the workstreams form a cohesive narrative, each section is designed to serve as an independent reference. Industry participants may consult any workstream separately, focusing on the specific themes and practical guidance most relevant to their role or requirements.

This modular approach ensures that the report functions both as a comprehensive roadmap and as a targeted industry guide, enabling readers to engage with the content in a manner best suited to their professional needs.

- **Workflow** – identifying practical opportunities to improve and automate upstream and downstream issuance processes that exist today.
- **Model-Change** – outlining the opportunities and incentives of a modernised primary capital market, beyond individual technologies, and the prerequisites for any such change.
- **Cross-cutting Themes** – creating the understanding for the fundamental elements that carry a safe transition. It will highlight the role of networks & hubs and artificial intelligence (AI) as well as defines the benchmark for a safe transition that unlocks the stated opportunities of the model change.

Structural approach: One journey — Three working groups



Source: ICMA PMIP NextGen

Workstream I: Workflow focuses on the most practical near-term opportunity for primary bond markets: improving how issuance is executed today by reducing friction in the current operating model rather than redesigning the market from scratch. The core themes are clear: workflows remain overly document-led, manually coordinated and fragmented across participants, with recurring issues around inconsistent data quality, timing and availability, repeated re-keying, inconsistent standards, limited interoperability, and downstream settlement problems caused by upstream data fragmentation or timing gaps. The section's conclusion is that the market is not broken, but increasingly strained, and that the most effective response is to make the issuance & settlement process more data-led, standardised, interoperable and controlled—capturing trusted data at source, improving reuse across the lifecycle, and automating repeatable low-judgement tasks. In short, workflow modernisation is presented as the essential starting point for broader transformation: it can improve efficiency and resilience now, while creating the foundation for longer-term model change.

Workstream II: Model-Change explores what becomes possible once today's workflow is modernised and the market relies on cleaner data, stronger interoperability, better controls, and more flexible settlement arrangements. Its core theme is that the real opportunity is not just to make the current model more efficient, but to enable a more adaptable future market—one with greater settlement optionality, broader product design possibilities, more connected primary-to-secondary lifecycle flows, and a redistribution of influence toward those who control data, infrastructure, access and analytics. Across process, product and people, the section concludes that future model change should be judged not by novelty or technology adoption alone, but by whether it creates liquidity-safe optionality: more choice in how assets are issued, settled, distributed and serviced, without fragmenting liquidity, weakening trust or undermining human accountability. In short, model change is framed as the longer-term prize unlocked by today's workflow fixes - a more data-native, interoperable, and commercially flexible primary market, provided governance, standards, legal certainty, and control evolve in step.

Workstream III: Cross-Cutting Themes defines the foundational requirements for a safe transition from today's primary market model described in Workstream I towards the future opportunities described in Workstream II. Its core theme is that modernisation will only scale if the market preserves the basics that underpin confidence: liquidity, transparency, interoperability, trusted data, governance, and human accountability. The section positions liquidity as the benchmark for any safe transition and frames fragmentation, interoperability and networks as an operational trilogy: fragmentation is the risk to manage, interoperability is the discipline that preserves optionality, and networks and hubs are the coordination mechanisms that allow different models to coexist without creating disconnected pools of data, access or liquidity. It concludes that technology, AI, and new market rails are only useful if embedded within a governed architecture of standards, with structured data captured at source, clear controls, legal certainty, and user convenience. In short, the cross-cutting workstream is the reminder that the journey towards a modernised primary market must remain anchored in the foundations that make capital markets work today: trust, resilience, participation, and efficient capital formation.

> ***"This report represents a meaningful, practitioner-led contribution to the ongoing evolution of primary debt markets. Its focus on data as a foundation, interoperability and liquidity-safe innovation is well aligned with the thinking within NIB."***
>
> Alexander Ruf, Director Funding and Investor Relations, Nordic Investment Bank

Box: Practical benefits of digitalisation

Digitalisation is not an objective in itself. Its value lies in making primary markets more efficient, resilient, and scalable while preserving trust and liquidity. Across the three workstreams, the main benefits can be summarised as follows:

Benefit	Practical effect
Better data quality and standardisation	More consistent issuance data captured at source and reused across the lifecycle
Reduced manual processing and reconciliation	Less re-keying, fewer version mismatches, and lower operational risk
Greater automation and STP	More efficient processing of repeatable, rules-based, and low-judgement tasks
Improved interoperability	Better connectivity between issuers, banks, investors, platforms, and infrastructures
More transparent and auditable workflows	Stronger permissioned visibility, evidencing, control, and accountability
Faster and more synchronised settlement	Better alignment between securities, cash, settlement instructions, and lifecycle events
Stronger lifecycle management	Better support for servicing, reporting, secondary-market readiness, collateral, and repo use
Broader product optionality	More flexibility in issuance formats, settlement models, denominations, and investor access
More scalable market infrastructure	Greater resilience and capacity as volumes, complexity and stakeholder expectations increase

The report ultimately converges on three practical priorities. **Process** must become more data-led, interoperable and accountable; **Product** innovation must expand optionality and lifecycle functionality without fragmenting liquidity; and **People** must have clearer ownership, stronger capabilities and the space to adapt. These priorities can be progressed through focused workstreams, but they cannot be solved in isolation. ICMA and PMIP NextGen therefore intend to take the work forward with the industry through targeted working groups and practical deep dives, moving from shared understanding towards coordinated implementation while allowing traditional, hybrid and digital market models to coexist and evolve safely.

2. Introduction

2.1 Primary markets at the centre of capital formation

Primary bond markets represent both the birthplace of financial assets and where the capital markets meet the real economy. It is here where issuers access capital, investors allocate funds, and the foundations of secondary market liquidity are established. The effectiveness of these markets has long relied on trust, legal certainty, and well understood roles across issuers, intermediaries, and infrastructures.

Yet despite their systemic importance, many of the processes that support issuance today remain heavily document-centric, manually intensive and fragmented across participants and systems. Over time, this fragmentation has been managed through experience, human judgement, and compressed execution timelines, but the cumulative burden is becoming increasingly visible.

2.2 From innovation as vision to innovation as necessity

From across the PMIP related discussions (Original Group and NextGen) and research over the past 18 months, a consistent realisation has emerged. What has been functioning adequately is now approaching its structural limits. Issuance volumes have grown, products have diversified, regulatory obligations have expanded, and expectations around speed, transparency, and efficiency have intensified.

In this environment, innovation is no longer an abstract ambition. Efficiency, resilience, and competitiveness have become operational necessities. Importantly, this shift has not resulted in calls for wholesale disruption. Instead, market participants have voiced a clear preference for evolution over revolution, recognising that primary markets must change without compromising liquidity, trust, or market stability.

2.3 Purpose and scope of this report

This report reflects that mindset. It does not assume that distributed ledger technology (DLT), tokenisation, or AI are immediate or universal solutions. Nor does it prescribe a single future issuance model. Instead, it acknowledges that while DLT, tokenisation and AI will undoubtedly continue to gather pace on an upward trajectory, primary markets will also continue to operate in existing as well as hybrid environments for the foreseeable future, with legacy and emerging models coexisting and interacting.

For the avoidance of doubt, data standards and machine-readable outputs are treated in this report as complements to, not substitutes for, the legal documentation that forms the basis of an offering. Consistent with the approach reflected in the ICMA Primary Market Handbook Appendix C11 the ICMA Bond Data Taxonomy can support the consistent capture and exchange of key bond terms, but the relevant issuance documents remain the legally authoritative basis of the transaction and prevail where required.

The report is organised around three connected workstreams: Workflow, which focuses on improvements that can be made within today's market; Model Change, which explores the opportunities of a more modernised future market; and Cross-Cutting Themes, which define the foundational requirements for a safe and scalable transition.

In support of this approach, the report uses a simple organising framework (the "3Ps" lens) to distinguish the principal dimensions of change. Process refers to the end-to-end issuance and settlement workflow and its controls (including validation, approval and evidencing across firms and infrastructures). Product refers to the bond instrument and the issuance information that must be defined and communicated across the market (including key terms, documentation artefacts and the data elements exchanged between participants). People refer to the operating model required to

1 ICMA Primary Market Handbook

deliver issuance safely and at scale (including roles and responsibilities, governance and accountability, skills and change management). The lens is applied consistently across the three workstreams to ensure that discussions of workflow improvement, future operating models and cross-cutting enablers are considered in an integrated manner, and that progress in one dimension is not assumed to be sufficient without corresponding progress in the others.

Through the PMIP NextGen initiative, this report seeks to provide a practitioner-led transition guide that:

- maps the current reality of primary market workflows and operating models;
- identifies practical improvements that can be implemented today;
- articulates the opportunities future model change could unlock; and
- reflects issuer, investor, intermediary and infrastructure perspectives throughout the transition.

As part of the PMIP NextGen initiative, an industry questionnaire was developed and distributed across a broad range of primary market participants, including issuers, investors, banks, market infrastructures, and technology providers. The objective of the survey was to capture practitioner perspectives on key areas such as data availability and standardisation, operational efficiency, fragmentation across the issuance lifecycle, and readiness for future market models.

The survey findings are not presented as statistically representative of the market. Instead, they provide early directional insights and qualitative evidence, which are used throughout this report to complement practitioner discussions and to illustrate recurring themes and points of friction identified across the ecosystem.

2.4 An explicitly evolutionary approach

At the heart of the PMIP NextGen ambition is the recognition that successful transformation depends less on technological novelty and more on advancement of existing solutions for execution, as well as coordination and adoption. Data quality, workflow efficiency, governance, and interoperability are therefore treated as foundational considerations, not secondary ones.

By anchoring discussions in market practice and human decision making, this report aims to support a safe, orderly, and scalable evolution of primary bond markets — ensuring they evolve to remain fit for purpose in an increasingly complex global financial system.

> ***"The creation of PMIP NextGen was the natural continuation of the mandate set by the original PMIP group: to move from recognising the need for innovation to defining how the industry can act on it. I am deeply grateful to the members of the PMIP NextGen for the commitment, insight and openness they have brought to that task. Together, they have in many ways written the industry's next job description – to help primary markets modernise safely, pragmatically and collaboratively – and have provided ICMA members with an invaluable practitioner-led understanding of the transition towards more data-driven, interoperable and resilient markets that clients and regulators increasingly expect."***
>
> Armin Peter, ICMA Consultant, PMIP Lead and Co-Writer

2.5 Intended audience and how to use this report

This dual focus reflects the project's core insight: durable progress needs both bottom-up operational reality and top-down sponsorship to align incentives, remove barriers and avoid fragmentation. This paper is written by practitioners, for practitioners.

The first audience for this report is therefore the people who invest, execute, coordinate, approve, validate, document and settle bond issuance every day — across issuers and investors, lead managers and syndicate desks, dealer operations, issuer agents, legal advisers, market infrastructures and service providers. For these readers, the report is intended to make frictions explicit, clarify dependencies across the ecosystem and provide a practical guide to improving how issuance is delivered today while preparing for tomorrow's issuance models.

The second audience is decision makers and conveners — senior leaders across the buy side and sell side, market infrastructures, industry associations, and standard-setting bodies, as well as regulators and policy stakeholders. For these readers, the report aims to provide a clear, practitioner-grounded articulation of why primary markets are at the point of structural evolution, what a safe transition requires, and where coordinated action can unlock industry-wide efficiency and resilience.

The objective is not to restate what market participants already know, but to provide a more holistic understanding of the primary market ecosystem and translate shared experience into a usable transition guide.

The report can be used in four ways:

- As a reference guide to the current-state workflow, key pain points, and recurring points of failure (e.g. data quality, late changes, duplicated touchpoints), helping teams' to onboard colleagues, align terminology, and build a shared baseline.
- As a transition framework to prioritise near-term improvements that can be implemented incrementally (within existing issuance models), allowing to harness short-term benefits while preparing the prerequisites for longer term model change.
- As a tool for broader discussion across firms and functions as well as between market segments (issuer, intermediary, investor, infrastructure), by providing a neutral structure to the required core dependencies, by establishing minimum data and process expectations, and by highlighting where coordination is essential.
- As an input to governance and programme design, supporting internal business cases, change roadmaps, and industry collaboration by making roles, dependencies, and accountability clearer.

The paper is deliberately non-prescriptive on specific technologies and does not assume a single end state architecture. Instead, it offers a common language and a set of practical considerations that readers can apply to their own context - from immediate workflow enhancements, through hybrid operating models, to more digital issuance rails.

Some themes recur across the workstreams by design. Where workflow, model change and cross-cutting analysis arrive at similar conclusions from different perspectives, this should be read not as duplication, but as evidence of foundational industry alignment around the prerequisites for safe and scalable modernisation.

> Where the same themes recur across the report, this should be read not as duplication, but as evidence of market alignment around the foundations for a safe transition.

Used in this way, it is intended to help the industry move forward without "breaking what isn't broken", while still building the foundations required for scalable, interoperable innovation.

3. PMIP NextGen Workstreams

3.1 Workstream I: Workflow – Executing Today

The workflow workstream focuses on the most immediate and practical priority identified through the PMIP journey: improving how primary market issuance is executed today. Workflow modernisation is the area where the industry can act now. It is also the part of the project most directly connected to the original PMIP mandate (PMIP - Balancing Vision & Reality, August 2025[2]): to prioritise efficiency and data standardisation as the foundation for meaningful and scalable change.

The purpose of this section is not to restate every step of the issuance process. That work has already been undertaken by the market in earlier research, most notably by the ECB's Debt Issuance Market Contact Group (DIMCG)[3], which identified risks, costs and inefficiencies in European debt issuance and highlighted the benefits of greater harmonisation across the transaction chain. The DIMCG report found that, in syndicated issuance, key risks stem from documentation deficiencies that can cause errors, manual intervention, investor identification during bookbuilding, potential misallocation, the length of the allocation process, the use of multiple tools and the absence of straight-through processing. While the market functions effectively, efficiency gains remain available through greater standardisation and harmonisation, particularly in the pre-trade and trade-related stages, which remain less standardised than post-trade.

PMIP NextGen builds on the results/findings from DIMCG. Its contribution is to translate the workflow debate into a practitioner-led guide for execution: what needs fixing now, where the main pain points sit in today's operating model, and what can be improved without disrupting what already works. In that sense, this section is deliberately about executing today: reducing friction in the current workflow so the market can improve efficiency, lower cost, and release capacity where it is most needed.

A key distinction: upstream and downstream

This distinction matters because not all change is happening in the same part of the market, nor at the same time or speed. The distinction is important because downstream innovation does not automatically solve upstream fragmentation. A more efficient settlement rail is valuable, but it will not remove errors if the data entering the settlement process is incomplete, inconsistent, or late. Equally, upstream data standardisation is valuable, but its full benefit is only realised if the data can flow into downstream systems, market infrastructures and lifecycle processes without re-keying or reinterpretation. Workflow modernisation therefore needs to address both sides of the value chain, while recognising that the nature of the change required is different.

> A faster settlement rail will not fix poor upstream data; it will only move inconsistent information more quickly through the system.

Upstream workflow refers broadly to the stages before and during execution: mandate preparation, deal announcement, documentation preparation, ISIN and reference data creation, investor engagement, bookbuilding, order management, allocation, pricing, and confirmation. These steps are still highly dependent on human coordination, unstructured communication, email, spreadsheets, manual checks, and repeated interpretation of the same information. This is also where the primary market asset is effectively "born": where the terms, economics, legal structure, and execution details are first agreed.

Downstream workflow refers to the stages after pricing and allocation: final documentation, security set-up, settlement preparation, clearing, custody, asset servicing, reporting and post issuance data distribution. This part of the market has lately seen meaningful developments, particularly through market infrastructures, ICSDs and CSDs, digital settlement initiatives and the growing focus on interoperability between traditional and DLT-based infrastructures.

2 ICMA PMIP – Balancing Vision & Reality
3 ECB – DIMCG Report Dec'21

The practical objective should be clear: to move from a document-led and manually coordinated workflow to a data-led workflow, with automated, auditable controls and interoperability, while preserving the judgement, trust and execution quality that make primary markets work.

Current state: functioning, but increasingly strained

The current primary market workflow is robust because it is supported by experienced people, established relationships and well-understood market conventions. Transactions are executed successfully every day, often in compressed timeframes and across large numbers of participants. This is important to acknowledge. The case for workflow modernisation is not that the current process is broken.

The case is that the current process carries increasing operational inefficiencies and that friction shows up as re-keying, version mismatches and late fixes that consume capacity, increase operational and counterparty risk.

Primary issuance remains unevenly digitalised across the value chain. Some parts of the process, such as electronic bookbuilding, investor communication tools and certain documentation platforms, have been digitised and formalised, other stages still rely on manual processes. The same transaction data is entered multiple times by different parties. Terms may move from a term sheet into legal documentation, into a bookbuilding system, into paying agent instructions, into CSD or ICSD set-up, into investor systems and into post-trade reporting, often through separate processes and formats.

This creates operational risk and consumes capacity. The people involved in primary markets spend significant time reconciling, validating, copying, checking, and translating information between systems. That work is essential under the current model, but it is not where the market's highest value sits. The higher-value functions are judgement, advice, investor engagement, execution strategy, risk management, and accountability. Put differently, the workflow challenge is not only a process issue. It also has a product dimension, because operational inefficiencies limit the market's ability to handle volume and support execution efficiently, and a people dimension, because skilled market participants are forced to spend too much time on avoidable manual coordination.

This observation is consistent with earlier market work. The ECB-DIMCG report highlighted inefficiencies in data handling caused by email- and phone-based processes, manual entries, limited standardisation, and non-interoperable tools. It pointed in particular to term sheets and final terms, bookbuilding and allocation data, and standard issuance documentation as areas where efficient data management is critical. The report also underlined the need for common data dictionaries and messaging standards that build on established market standards, including ISO 20022 and FIX. For the same reason, the AMI-SeCo report of September 2025[4] urged relevant stakeholders across the value chain - including issuers, issuer agents, syndicate members, primary dealers, CSDs and custodians - to adopt existing market standards such as the ICMA Bond Data Taxonomy (BDT) as a common language.

The same observation is also consistent with the findings of the PMIP NextGen survey[5] and stakeholder discussions. Participants consistently identified data standards, workflow integration, interoperability, and allocation / confirmation as key areas where efficiency and control could be improved. The message is not that there is one single broken step. The problem is cumulative: fragmentation appears at multiple points, and its impact is felt across the entire lifecycle. That is why the immediate task is not to reinvent the market, but to remove the recurring sources of friction that slow execution today. Solving those issues is the precondition for broader improvement across the 3Ps: better process, stronger product capability in execution, and better use of people and judgement.

This current state is also the result of how technology has entered primary markets over time: improving specific workflow steps but not yet connecting the issuance process end-to-end.

4 AMI-SeCo Report 2025
5 Appendix A

The role of technology in primary markets: from workflow tools to controlled automation

Technology has always played a role in primary markets, but its function has evolved. Historically, technology was introduced mainly to support existing workflows: making established processes faster, more controlled, and easier to manage at scale. More recently, technology has begun to influence not only how issuance is executed, but also how instruments are created, represented, settled, serviced and governed.

This distinction is important. Primary market modernisation is not one single technology story. It is a progression from workflow tooling to structured data capture and document automation, to digital issuance rails and AI-supported integration.

The common thread is that technology creates market value only when it strengthens liquidity, transparency, interoperability, and accountability.

> Technology only strengthens primary markets when it connects into a trusted architecture: structured data, interoperable systems, governed automation, and human accountability.

Technology wave	Main role	Market impact	Remaining limitation
Workflow tooling and electronic bookbuilding	Organise issuance workflows; capture order and allocation processes.	Improved speed, structure, and record-keeping.	Broader workflow still relies on email, documents, and manual reconciliation.
Investor connectivity and regulatory record-keeping	Improve communication, auditability and compliance evidence.	Stronger governance and clearer records.	Often reinforces existing processes rather than redesigning them.
Document automation	Capture transaction terms earlier and generate consistent documentation.	Reduces re-keying; improves consistency and supports downstream data reuse.	Most effective where documentation and issuance formats are already standardised.
Digital rails and tokenisation	Represent, transfer and service assets through new infrastructure models.	Opens possibilities for new settlement, lifecycle, and collateral models.	Scale depends on legal certainty, interoperability, and cash-leg readiness.
AI-enabled integration	Extract, validate, reconcile, and route data across workflows.	Reduces manual burden and supports exception management.	Cannot substitute for trusted data, standards, and human accountability.

Workflow Tooling and Electronic Bookbuilding

Following the 1990's adoption of bookbuilt pot / fixed-price re-offer transactions (from pre-priced retention) and the move towards programme issuance with master documentation structures (from standalone issuance), the first major wave of technology in debt primary markets was process-led. In the early 2000s, platforms such as IssueNet emerged to support syndicate-to-syndicate communication in the fixed income primary new-issue market. IssueNet was launched in 2003 by Marketpipe (Software developer and winner of a IPMA tender for a cross-market bookbuilding system[6]), later acquired by Ipreo in 2006, with the backing of ICMA and a consortium of investment banks. This was followed by broader adoption of electronic bookbuilding and issue-management tools, including Ipreo's IssueBook, which helped centralise parts of the fixed income new issuance process from origination and marketing through bookbuilding, allocation and settlement preparation.

These tools represented an important step in the professionalisation and scaling of syndicated issuance. They did not fundamentally change the role of the syndicate desk, or the nature of the bond being issued. Rather, they helped organise a complex and time-sensitive process: capturing orders, managing updates, supporting allocations, and creating a more structured record of activity. This was a significant improvement, but it was still primarily a digitisation

6 Bonds without Borders by Chris O'Malley (ICMA/Wiley) – p171

of the existing process rather than a redesign of it. Much of the broader workflow around bookbuilding remained dependent on email, documents, spreadsheets, manual checks, and repeated transfer of information between participants and systems.

Investor Connectivity and Regulatory Record-keeping

A second step came through increased investor connectivity, particularly during the 2010s. Investor access tools like Investor Access or DirectBooks and communication channels (Symphony, Bloomberg Chat) helped improve the way issuers, syndicate banks and investors interact before and during transactions. They supported broader dissemination of information, more structured engagement, and better connectivity between market participants. Again, however, these developments largely strengthened the existing operating model rather than changing its underlying architecture.

Regulation also played a role in shaping technology adoption. MiFID II and MiFIR applied from 3 January 2018 and introduced new requirements[7] affecting, among other areas, transaction reporting, transparency, evidencing of best execution, and primary market processes. From a primary market perspective, the obligations around allocation justification recording, inducement, and costs-and-charges disclosures created additional administrative requirements[8]. In practice, this reinforced the need for better records, clearer rationale, stronger governance, and more structured processes. Technology became a way not only to improve efficiency, but also to evidence compliance and support accountability.

The experience of secondary markets provides a useful reference point for primary market modernisation. Electronification and workflow automation developed earlier and faster in many secondary market segments, partly because the competitive incentives were more immediate: faster execution, better client response, lower operational risk, and improved connectivity directly affected trading performance. Primary markets are different. They are episodic, judgement-heavy, and more dependent on system-wide coordination across issuers, syndicates, investors, counsel, agents, and infrastructures. This makes transformation harder, but the secondary market journey still offers important lessons.

The first lesson is that unstructured communication is not necessarily the problem; it is often the starting point. In secondary OTC markets, chat, email, and spreadsheets remain widely used where workflows are relationship-driven, instruments are less liquid or venue-based trading is not efficient. Rather than seeking to eliminate those channels immediately, automation has often succeeded by capturing and structuring the data that flows through them. The same logic applies to primary markets, where bookbuilding, IOIs, allocation discussions and execution updates still take place across multiple channels. The opportunity is not simply to replace those channels, but to govern them better: capturing relevant data, normalising it into structured formats and distributing it to downstream systems without disrupting the workflow participants already use.

The second lesson is that workflow adoption often precedes standards adoption. Market participants adopt structured data most readily when it is embedded into the channels and tools they already use, and when it saves effort at the point where decisions are being made. This is directly relevant to the ICMA Bond Data Taxonomy. The BDT aims to capture core bond data ideally created at source – by the issuer, or at the point of asset creation – so the asset can be 'born' with trusted, structured, and machine-readable data attached to it. Where this is not yet possible, the BDT can also serve as the common language into which unstructured or semi-structured data is translated, allowing existing workflow tools to convert fragmented information into a standardised output. In this sense, the BDT is both a source standard and a transition bridge: a language the market can speak from the outset, and a practical framework for workflows that are still evolving. A workflow-first approach may therefore accelerate adoption, provided the direction of travel remains clear: structured data should move as close as possible to the birth of the asset.

The third lesson is that structuring data is itself a workflow problem. Automation in financial markets stalls where participants cannot trust the data underpinning it. Some data can be processed straight through. Some requires AI-assisted extraction and standardisation, with human review before it becomes trusted. Some requires full human ownership because the source is ambiguous, incomplete, or linked to regulatory accountability. This "autonomy slider"

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is particularly important in primary markets, where pricing judgement, allocation decisions and issuer communications cannot simply be delegated to machines. It reinforces the wider conclusion of this section: automation can scale only where data, workflow and governance develop together.

These lessons are reflected in practitioner work from firms operating at the intersection of capital markets workflow, data, and automation. For example, Ipushpull's[8] "Four Pillars of the Agent Era"[9] frames the transition around four interdependent layers - chat, data, AI, and governance - and argues that automation only scales safely where data is structured, standardised and governed at the point of origination. The relevance for primary markets is clear: the opportunity is not to replace every existing communication channel, but to capture and govern the data that flows through those channels, convert it into trusted machine-readable formats, and allow it to support downstream workflow, controls and automation.

Document Automation and Asset Creation

A further step came in the late 2010s with the emergence of platforms aimed specifically at automating the production of debt issuance documentation. Several platforms like Origin for example were launched in this period with varying focus and operating models. Activity has grown particularly in the private placement space since completing its first transaction in 2019, with traction achieved to date concentrated in a specific but economically significant segment: frequent, investment-grade issuers (primarily SSA, FIG and frequent corporate borrowers) who issue off established EMTN, GMTN and Debt Issuance Programmes, in either private placement or benchmark format.

The reason this segment has proved fertile is itself a useful illustration of the broader argument of this section: standards enable automation. ICMA's work more than two decades ago to develop a standard "form of pricing supplement" for EMTN issuance created a documentation structure that was simple, reliable, and consistent enough across issuers and dealers to allow technology to be built on top of it. Document automation platforms have used that foundation to reduce the time and cost of preparing individual transactions, to lower operational risk by removing manual re-keying between dealers, issuers and counsel, and to support faster settlement by ensuring that the terms agreed in the negotiation are the same terms that flow into the final documentation.

In doing so, this wave of technology represents a meaningful shift from the earlier waves of bookbuilding and investor connectivity tools. While those earlier tools improved how a transaction was distributed; document automation begins to address how the asset itself is created. This distinction matters for what follows. By establishing best industry practices and standards on what data needs to be captured at the point of negotiation (discussions that have informed the evolution of data standards, including ICMA's Bond Data Taxonomy) and by establishing an interface through which issuers, dealers and counsel can agree and capture transaction terms at source, document automation creates the stepping stones to native digital issuance. The same system that today generates a final terms PDF could tomorrow feed a tokenisation engine, a smart contract or a DLT-based registry. Seen this way, document automation is not just another workflow tool; it is the bridge between the process-automation era described above and the product- and infrastructure-level changes discussed in the next section.

These developments show that technology adoption in primary markets has often been driven by a combination of scale, control, client service, and regulatory expectation. The market has not resisted technology; it has adopted it where the benefit was clear and where it could be integrated into existing roles and processes. The challenge is that many tools were implemented around specific parts of the workflow. They improved individual steps, but did not necessarily create a fully connected, end-to-end data model for issuance.

8 Ipushpull is a governed data and workflow automation platform for capital markets, operating across fixed income, FX, equities, derivatives, and commodities
9 https://ipushpull.com/report-download-the-four-pillars-of-the-agent-era

Case Study Document Automation Platforms and End-to-End Connectivity for Frequent Issuers

Frequent investment-grade issuers operating under EMTN, GMTN and Debt Issuance Programmes face a recurring operational challenge: they may price dozens or hundreds of transactions a year, often in private placement format. Each requires term sheets, final terms, swap confirmations and subscription agreements to be drafted, reviewed, signed, and distributed across a network of dealers, counsel, paying agents and clearing systems. While the underlying programme documentation is standardised, individual transaction documents have traditionally been produced manually, exchanged by email, and re-keyed by each counterparty into their own systems. This creates avoidable operational risk, slows execution, and produces inconsistent data downstream.

A growing number of supranational, sovereign and agency issuers such as BNG Bank, the European Bank of Reconstructing and Development (EBRD), the International Finance Corporation (IFC), and the Nordic Investment Bank (NIB) have adopted issuance platforms such as Origin to operationalise this workflow. Dealers are required to submit deal terms to the issuer via the platform, ensuring all documents adhere to a standardised structure, both in formatting and in underlying data fields. Once the issuer accepts the terms, the platform automatically generates the legal final terms from the same captured data, ensuring 100% consistency between what was negotiated and what is signed. The same structured dataset is also used to populate downstream documents (eg subscription agreements, swap confirmations, paying agent instructions) and is transmitted directly to connected market infrastructure, including CSDs, paying agents, exchanges, and ratings agencies. For example, Origin's platform connects to Clearstream's D7 Pre issuance API where an instant ISIN is provided. Clearstream's API enables entities to streamline the debt issuance process, from ISIN code requests to instrument data delivery for ISIN activation. This delivers the end-to-end straight-through processing the market has been seeking for some time and removes the manual re-keying that has historically been a significant source of settlement risk and reconciliation cost.

A point worth emphasising is where in the value chain the data is captured. By placing structured data capture at the negotiation stage, (the most upstream point in the issuance lifecycle), the platform produces two compounding benefits. First, the same captured data set is consumed by every downstream node in the workflow: legal documentation, swap confirmation, paying agent instruction, CSD set-up, exchange listing, and ratings notification. The effort of capturing the data once is amortised across the entire chain, rather than being repeated, partially or fully, at each handoff. Second, and just as important, the data is captured by the individuals who actually negotiated the trade. This produces a level of integrity that is structurally difficult to achieve in downstream extraction models, where an operations team is reconstructing the deal terms after the fact rather than recording them at source. Upstream capture by the trade participants themselves is the most reliable way to ensure that the data which flows through the rest of the lifecycle is the data that was actually agreed.

From an architectural perspective, this kind of platform plays two roles that matter for the broader modernisation discussion in this paper. First, it forces convergence on data standards: by requiring dealers to submit structured data at the point of negotiation, it has informed and accelerated industry discussions on a common machine-readable taxonomy for bond terms, of which ICMA's Bond Data Taxonomy is the latest expression. Second, it establishes a digital interface at the point of asset creation. Today that interface produces signed PDFs and structured data feeds to existing post-trade infrastructure; tomorrow, the same captured data could feed a tokenisation engine, a smart contract or a DLT-based registry without changing the negotiation workflow that issuers and dealers are already familiar with. In this sense, the adoption of document automation by frequent issuers is not only about delivering immediate operational benefits, but also about laying the practical foundations on which native digital issuance can be built.

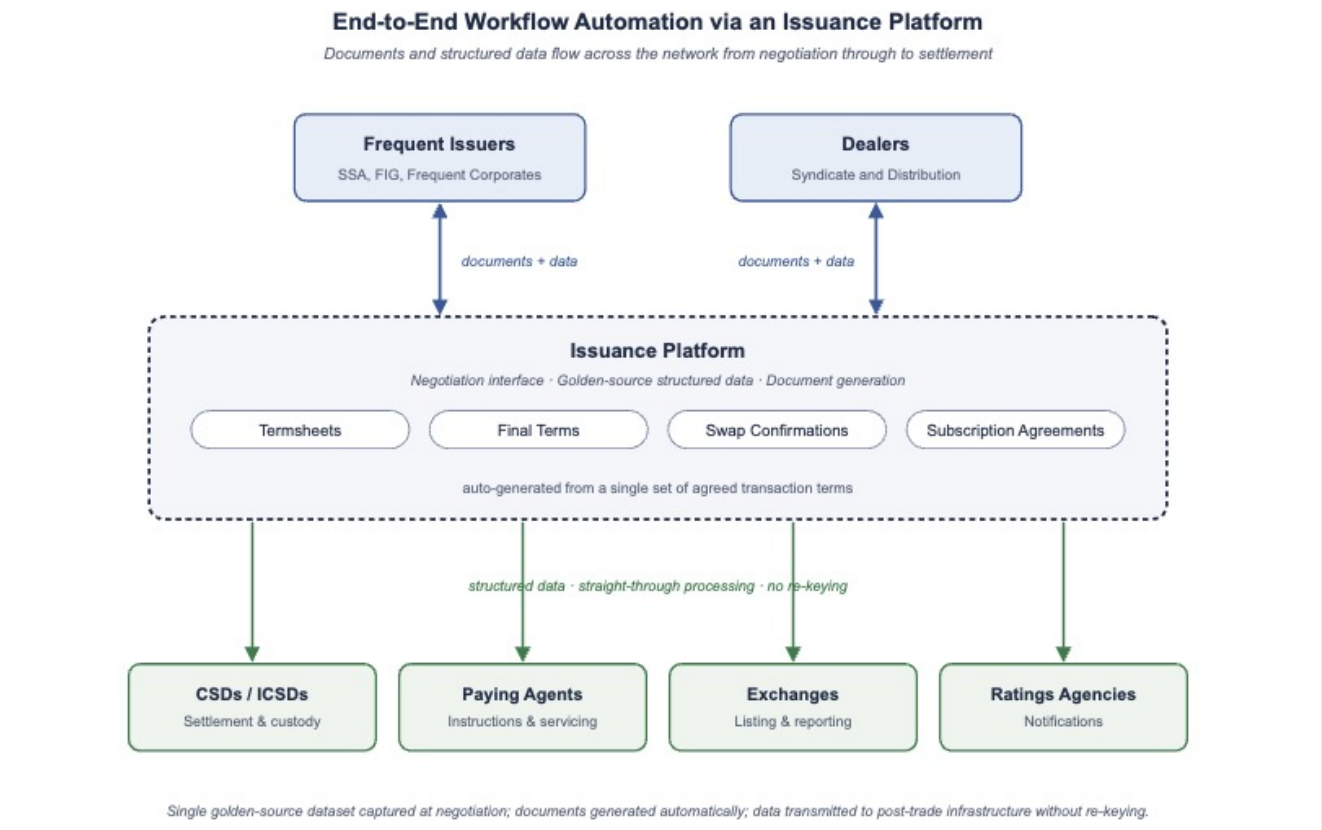


Figure: End-to-end document and data flow across the platform network.

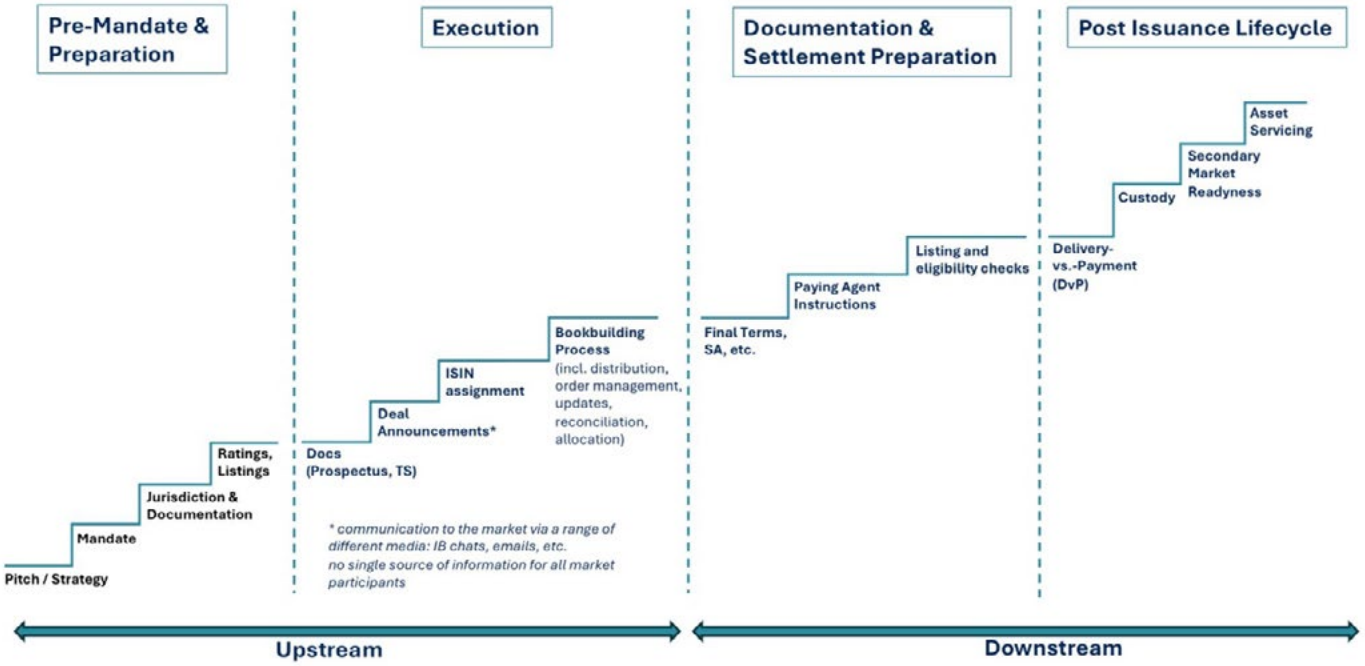
The practical implication is that technology should now be assessed against the workflow it needs to improve. The question is not simply which tools exist, but where they reduce friction, where they still leave manual hand-offs, and where common data, standards and accountability are needed to connect the process end-to-end. The next section therefore maps the archetypical issuance workflow before identifying the pain points and solution levers that follow from it.

The archetypical issuance workflow

For the purposes of this paper, the primary market workflow should be understood as a sequence of connected stages. Although in practice transaction workflows vary by issuer type, product, jurisdiction, distribution model, and settlement infrastructure. The archetypal syndicated bond issuance process can be described in four broad phases.

The workflow examples in this section use terminology commonly associated with programme issuance, such as final terms, reflecting its significance in recurring primary market activity. The analysis is intended to apply equally to non-programme or standalone issuance, with such references read as including equivalent transaction, disclosure and closing documents where relevant.

Infographics: Archetypical Issuance Workflow



1. **Pre-mandate and preparation**. This includes funding strategy, market assessment, issuer readiness check, investor feedback, jurisdiction, and documentation considerations, selection of banks, internal approvals, ratings, listing considerations and KYC / onboarding activity. This is where the issuance decision begins to form, but much of the information remains fragmented across internal issuer systems, bank systems, legal documentation, investor feedback channels, and market data sources.
2. **Execution**. This includes deal announcement, investor communication, bookbuilding, order management, price guidance, book updates, allocation, pricing and initial confirmations. This stage is time-sensitive and judgement-heavy. It requires rapid coordination across issuers, syndicate banks, investors, and service providers. Electronic bookbuilding has improved this part of the process, but platforms in use by market participants are still not communicating efficiently with each other. Furthermore, upstream and downstream supporting workflows still rely heavily on unstructured communication and manual reconciliation.
3. **Documentation and settlement preparation**. This includes final terms, subscription agreements, paying agent instructions, security set-up, ISIN and reference data processes, listing, eligibility checks, and settlement instructions. Although many elements are finalised here, crucial preliminary work, such as initial discussions on security setup and identification (e.g., ISIN), often commences much earlier within the pre-mandate and preparation phase. The foundational data for these processes is typically gathered and structured during that initial stage, laying the groundwork for the subsequent detailed documentation. This is the point where any upstream data inconsistency becomes operationally relevant. Late changes, inconsistent identifiers, incomplete investor or settlement details, or discrepancies between the agreed commercial terms as reflected in legal documentation and data subsequently distributed can create downstream risks such as settlement failures, misallocations, regulatory breaches, and increased remediation costs.
4. **Post-issuance lifecycle**. This includes delivery-versus-payment, custody, lifecycle events, reporting, secondary market readiness and data distribution to vendors and investors, and asset servicing. This phase has historically been more standardised than earlier phases, but significant barriers remain, particularly across borders. AMI-SeCo's work on remaining post-trade barriers highlights, among other issues, the continued impact of proprietary message formats, coexistence of ISO 15022 and ISO 20022, inconsistent ISO 20022 implementation, and the need for more standardised reporting based on common data dictionaries.

The workflow challenge is not simply that individual stages could be improved. It is that each stage depends on the quality and consistency of the stage before it. Upstream fragmentation becomes downstream reconciliation, while downstream constraints feed back into upstream execution timelines. The workflow must therefore be approached as a lifecycle rather than as a series of disconnected hand-offs.

Pain points: where the current workflow creates friction

The following pain points have been identified collectively by the workstream members, reflecting input from a broad representation of stakeholders involved in primary market issuance, including issuers, banks, investors, infrastructures, and service providers.

> ***"The feedback from market participants made it clear that everyone is confronted with the same pain points in the issuance process. A joint, evolutionary adaptation allows us, while maintaining full operational capacity, to make the market even more efficient, prepare for growth by size and format while modernising processes for the benefit of all."***
>
> Nico Braun, DZ BANK, Workflow Pilot

Pain point	How it appears in practice	Why it matters
1. Data quality and data timing	Core transaction data is often incomplete, inconsistent or received too late to be reliably reused. Key information such as economic terms, issuer identifiers and settlement details is fragmented across emails, term sheets, spreadsheets and vendor feeds, and is re-entered manually by multiple participants.	Late or inconsistent data can lead to incorrect or missing data at ISIN creation, delays in opening securities, inconsistencies between documentation and systems, and gaps in data needed for pre-trade checks or settlement preparation. The underlying issue is not only data quality, but the absence of structured and standardised data capture at the point where terms are agreed. “Data at source” should not imply a single originator for every field; it means clear ownership, status, timestamping, version control and traceability to the legally authoritative documents and approvals.
2. Manual and fragmented process coordination	Email, chat, spreadsheets and bilateral messages remain heavily used. They are flexible and familiar, but they also create issues around version control, auditability, data lineage and accountability.	New issue announcements, book updates, order capture, allocation drafting, and post-trade feedback often rely on manual, multi-channel communication. As volumes rise and product structures become more complex, this increases the risk of inconsistency, duplication and operational burden.
3. Lack of standardisation	Data fields, documentation structures, identifiers, investor classifications, allocation records, settlement instructions and lifecycle information are not represented consistently across participants and systems.	Standardisation does not mean eliminating commercial flexibility. It means ensuring common information is consistent enough to be reused. Without common taxonomies and data dictionaries, the same information must be translated, reformatted and validated repeatedly, increasing operational risk and limiting interoperability.
4. Bookbuilding, order management and permissioned allocation transparency	Bookbuilding requires judgement and there is no single “correct” allocation outcome. However, allocation decisions are often supported by fragmented or incomplete data, limited visibility on order status or allocation probability, and inconsistent investor or settlement information.	This can increase the risk of misallocation and reduce auditability. The objective is not unrestricted transparency, but permissioned transparency: ensuring the right information is available to the right parties, at the right time, in a form that supports execution, control, auditability and regulatory confidence without undermining confidentiality, competition or market integrity.
5. Security set-up and settlement readiness	Security creation, ISIN allocation, reference data distribution, paying agent instructions, settlement instruction matching, and investor custody details all depend on clean and timely data.	If upstream information is not captured consistently and on time, downstream participants must resolve issues under time pressure, increasing operational and settlement risk. Structural or legal constraints, such as paper-based issuance requirements in some jurisdictions, may further limit workflow efficiency.

Pain point	How it appears in practice	Why it matters
6. Asymmetry between the securities leg and the cash leg	In traditional issuance, settlement relies on established commercial bank and central bank money arrangements. In DLT-based or tokenised issuance, the securities leg may be digitalised before the cash leg is equally ready.	This creates dependency on the availability and interoperability of suitable settlement assets. Without cash-leg readiness, the benefits of more automated and synchronised delivery-versus-payment models cannot be fully realised.
7. Ownership of change	Many workflow problems sit between firms rather than inside one firm. Individual participants can improve their own systems, but full benefits require coordination across issuers, banks, investors, infrastructures, agents, vendors and regulators.	Workflow modernisation is not only a technology issue; it is a coordination and governance issue. Fragmentation across actors makes isolated improvements insufficient without aligned and coordinated action.

Taken together, these pain points imply a small number of structural priorities:

- improve data consistency, timing, and availability at source
- reducing manual process fragmentation, and
- increasing standardisation and interoperability across the workflow and ensure settlement-asset readiness and
- establish clear collective ownership and governance for cross-market change

These priorities provide a practical basis for workflow modernisation, focusing on a limited number of high-impact areas where coordinated action can deliver immediate efficiency gains. Many of these issues have been identified in previous work such as DIMCG; however, gaps remain around ESG data capture, market data integration, post-issuance analytics, Identity Management and cash-leg readiness for digital securities and emerging models.

> ***"This report really reflects the practical mindset of the market today – focused on improving what we have, rather than replacing it. From my perspective at ICMA, the priority is to help translate that into action through common standards, better data, and stronger coordination across the ecosystem."***
>
> Georgina Jarratt, ICMA, Head of FinTech & Digitalisation

Upstream versus downstream: two different change agendas

The pain points described above highlight that workflow friction arises at different stages of the issuance lifecycle and cannot be solved through one-sided improvements. To make workflow modernisation actionable, the industry should distinguish explicitly between upstream and downstream changes.

This distinction is not only descriptive: it provides a practical framework for action—helping prioritise what can be improved first within today's market structure, while recognising that other changes will require parallel work on downstream infrastructure.

The upstream agenda is primarily about capturing, validating and sharing the right information earlier and in a standardised way. The aim is to reduce manual re-keying and ensure that the data used in settlement and lifecycle processes is the same data that was agreed during execution.

Upstream change can be advanced today within existing issuance structures. The ICMA Bond Data Taxonomy (BDT) is central in this respect because it provides a common, machine-readable language for key bond terms. Primary market data is created at the birth of a financial asset; if that data is incomplete, inconsistent, or unstructured at source, every subsequent process becomes harder. The PMIP workflow workstream therefore treats the BDT adoption not as an abstract future-state concept, but as a practical workflow tool already available for integration. In practical terms, upstream improvements should follow a simple principle: capture once, reuse many times. Establishing a minimum common dataset as a single source of information, for example through adoption of the BDT, will reduce media breaks between term setting, documentation and bookbuilding, and strengthen data controls so that agreed terms flow into downstream steps without reinterpretation.

To learn more about ICMA's BDT

The downstream agenda is more closely linked to infrastructure, settlement, custody, asset servicing, and interoperability. Here, significant change is already visible in the market. Digital issuance platforms, DLT-based settlement models, hybrid infrastructures, and interoperability frameworks are testing how securities and cash can move across traditional and digital rails, including through initiatives such as MAS Project Guardian[10], joint ICSD/DTCC interoperability work[11] and Euroclear's D-FMI. Similarly, D7, Clearstream's digital security platform, provides a fully digital alternative to conventional physical issuance and processing of securities. The platform has already processed over €80 billion in digital securities and fully tokenised debt issuance, mobilised as collateral. These examples are important because they show that parts of the future operating model are already being tested or implemented within today's market architecture.

However, the pain points identified above highlight why downstream innovation alone cannot solve primary market workflow friction. A more efficient settlement rail will not, by itself, resolve incomplete terms, inconsistent investor records, unclear settlement instructions, or fragmented lifecycle data. A DLT-based note still requires accurate terms, clear investor records, legal documentation, settlement instructions, custody arrangements, and lifecycle data. If those inputs are inconsistent, a new rail may simply process inconsistent or incomplete data faster.

The practical downstream takeaway is therefore focused on settlement readiness and lifecycle processing: improving security set-up quality, instruction matching, reference data distribution, cash-leg readiness, and interoperability across infrastructures. Upstream and downstream modernisation must be linked but not confused. Upstream work should focus on data capture, standardisation, and workflow control; downstream work should focus on settlement readiness, infrastructure interoperability, and lifecycle automation. The bridge between the two is the consistent flow and reliable availability of structured data.

10 Project Guardian: https://www.mas.gov.sg/publications/monographs-or-information-paper/2024/guardian-fixed-income-framework
11 Building the Path Towards Digital Asset Securities Interoperability

> ***"This report reflects a clear, shared view across the market: modernisation of primary markets should build on proven foundations. By harnessing improved data, greater interoperability, and common standards, the market can enhance efficiency, support innovation, and achieve scalable growth – while preserving liquidity and stability. We should all remain committed to working with industry participants to advance a data-driven, interoperable, and future-ready issuance model."***
>
> Geraldine Butcher, Head of Primary Market Relations Eurobonds, Clearstream

This upstream/downstream framing directly informs the solution levers below: data at source, automation and STP, connected standards, identity and participant mapping, settlement and cash-leg readiness, and AI-enabled workflow support.

Gap analysis: what existing work already covers, and what remains underdeveloped

Over the past few years, a series of industry reviews have widely recognised the primary debt issuance pain points highlighted in the preceding section. The ECB's Debt Issuance Market Contact Group (DIMCG) report (Dec 2021) established a baseline, showing that Europe's primary market processes are operationally effective, but burdened by data fragmentation, manual interventions, and inconsistent standards. Similar conclusions were reached by AMI-SeCo (ECB's Advisory Group on Market Infrastructures, in its Sept 2025 post-trade report), which urged broad adoption of common data standards such as ICMA's Bond Data Taxonomy (BDT) to improve end-to-end connectivity.

Meanwhile, the Monetary Authority of Singapore's "Project Guardian" (Nov 2024) and the Digital Asset Securities Control Principles white paper for interoperability in a DLT environment (Feb 2026) provided crucial insight into downstream innovations – for example, integrating DLT-based platforms with existing infrastructures and addressing the absence of on-ledger cash for efficient Delivery-versus-Payment. In summary, data standardisation, increased automation (Straight-Through Processing, STP), interoperability between systems, and more transparent bookbuilding and allocation flows are already well documented priorities in this body of work. There is strong consensus on what needs fixing in principle.

Where these analyses diverge, however, is in identifying what still needs to be done and who should carry it out. The preceding efforts have largely focused on describing what to improve (data standards, messaging protocols, new platform capabilities) but have not fully answered how to implement these improvements across diverse industry stakeholders. In particular, the practical ownership and execution model for workflow change remains underdeveloped. Nearly all major reports call for better standards and coordination, yet none clarify "who does what" in practice.

For instance, key questions remain unanswered:

- Who should maintain and govern the common data definitions so that term sheet fields, legal documentation, and allocation records align?
- Who ensures that bookbuilding outputs flow seamlessly into investor allocation and confirmation systems?
- Who coordinates between issuers, dealers, and infrastructures to align security set-up data for settlement readiness?

Even cutting-edge innovations like AI text extraction warrant clarity on when to rely on automation versus structured data at the source. Without clear assignment of these roles and accountabilities, the risk is that the well-known recommendations in reports remain on paper – a concern explicitly flagged by PMIP NextGen participants in recent discussions.

Moreover, the PMIP NextGen contributors have identified specific gaps that earlier initiatives touched lightly or left unresolved:

- ESG and sustainability-related data – a growing portion of bond issuance information – are often buried in documents without effective structured capture, hindering downstream use (a gap not explicitly addressed by DIMCG or AMI-SeCo).
- Market data vendors and data distribution channels remain largely siloed from primary-market workflows, so investors and Banks cannot dependably consume Deal Information in a single, consistent feed.

- Post-issuance analytics and feedback loops remain underdeveloped: the rich data produced at issuance are not routinely repurposed for investor insights, regulatory reporting, or issuer Performance monitoring.
- The "cash leg" for digital securities (e.g., the absence of on-chain central bank money or seamless linkages to RTGS systems) lacks readiness – acknowledged by Project Guardian and the interoperability white paper as a critical enabler for the future model, but unresolved in practice (as of now).
- Identity management – from investor identification (e.g. LEIs) and SSI standardisation in today's process, to wallet and account mapping in DLT-based models – is another domain where existing efforts have flagged the issue but have not fully delivered concrete solutions.

In short, there is no need to reinvent the wheel – we need to integrate existing solutions and make them work together operationally. The fundamental pain points are widely recognised, and many technical solutions already exist on paper, but converting these blueprints into an operational reality requires tackling the remaining gaps.

The PMIP NextGen Workflow stream's unique contribution is precisely to address those gaps. By focusing on practical execution, clear governance and bridging the pre- and post-issuance improvements, PMIP NextGen aims to ensure that well-known workflow recommendations are actually translated into cohesive market practice – something previous reports have advocated but not yet achieved.

The NextGen workflow vision

The NextGen workflow vision should be evolutionary, not disruptive. It should not assume that the entire primary market will move to one new platform, one issuance model or one infrastructure. Instead, it should define the principles of a better workflow that can operate across traditional, hybrid and future digital models.

The target workflow should have five characteristics.

1. **It should be data-led**. Core issuance data should be captured as early as possible, ideally at the point of agreement, in a structured and reusable form. Human-readable documents will remain important, but they should not be the only source from which operational data is extracted.
2. **It should be standardised where standardisation adds value**. The market does not need to standardise commercial judgement or execution strategy. It does need to standardise core data, identifiers, message purpose, roles, process milestones, and lifecycle information. The interoperability paper's emphasis on data, process and role harmonisation is directly relevant here. This should be treated as an "architecture of standards" (further covered in section 3.3 – cross-cutting themes): connecting data standards, identifiers, and messaging so that systems can interoperate rather than creating new digital silos. Furthermore, increasingly automated workflows e.g. by implementing smart contracts in the issuance process, require clear protocol standards to ensure interoperability and scalability in the market.
3. **It should be interoperable by design**. Workflow improvements should not create new closed silos. Platforms, vendors, infrastructures, and banks may compete on service, user experience, and analytics, but core data and process interfaces should allow information to move across the ecosystem.
4. **It should be automated where the process is repeatable and controlled**. Automation should focus first on repetitive, rules-based, and high-volume tasks: data validation, document population, consistency checks, settlement instruction matching, status updates and exception detection. It should not replace judgement in areas such as pricing, allocation strategy, investor quality assessment, or issuer advice. This also implies avoiding over-engineering: automation should reduce operational burden and complexity; not add new layers faster than firms can absorb.
5. **It should be accountable**. A more automated workflow must make roles and responsibilities clearer, not less clear. Every workflow step should identify who provides data, who validates it, who approves it, who can amend it, and who is accountable if it is wrong, particularly for the critical fields that drive security set-up, settlement readiness and downstream processing.

Key solution levers

1. **Data at source and minimum common dataset**. The first solution lever is to define the minimum common dataset required for issuance, execution, settlement, and lifecycle processing. The objective is to ensure that data created at issuance can be captured once, validated once and reused throughout the lifecycle. This dataset should be aligned with ICMA's Bond Data Taxonomy (BDT) where relevant, so that key bond terms are represented in a consistent, machine-readable form and can support documentation, bookbuilding, allocation, security set-up, settlement and post-issuance processing without repeated re-keying or reinterpretation.

   The BDT is increasingly moving from standard-setting into practical market use. The HKSAR Government first adopted it for its multi-currency digital green bond in February 2024[12] and expanded its use in a subsequent issuance in November 2025. Adoption has since broadened across issuers, workflows and platforms. In March 2026, DZ BANK and KfW used the BDT as the central digital data object in a legally binding Smart Bond Contract pilot[13], with structured issuance terms serving as the single source of information across documentation, on-chain ISIN assignment, token creation, settlement and lifecycle processing. Covalent Capital's LIMO solution[14] also uses the BDT in digital-issuance workflows, while Origin has added native support for BDT 2.0[15]. Taken together, these examples show a growing market push to embed common data standards into the channels through which bonds are created, distributed, settled and serviced.

   As a practical call to action, market participants should consider making core issuance datasets available in standardised, machine-readable form, where appropriate and subject to relevant confidentiality, legal and commercial constraints. This could include issuers publishing a BDT-aligned data file alongside existing issuance documents, or banks, agents, data providers, and platforms creating, distributing, or consuming BDT-aligned data through their own API channels. A low-threshold, voluntary approach based on "publish once, consume many times" could create positive momentum, encourage broader adoption and support wider process automation without putting existing issuance workflows at risk.

2. **Process automation and STP**. Automation should be prioritised first in the areas where process fragmentation, manual intervention and data inconsistency create the highest operational friction. In practice, this includes term sheet data capture and structuring, document generation and consistency checks, order capture and bookbuilding workflows, allocation records, and confirmation processes, as well as security set-up, SSI validation and settlement instruction matching. These processes combine high operational repetition with low judgement content and are therefore the most immediate candidates for automation.

3. **Connected standards and taxonomy**. The BDT, CDM, ISO 20022, ISIN, LEI, vLEI, DTI, UTI and other identifiers and messaging standards as part of one connected architecture. BDT helps define key bond terms at issuance; CDM can support a standardised representation of transaction processes and lifecycle events; identifiers and messaging standards help that information move across systems, participants, and infrastructures. Emerging digital identifiers such as vLEI and DTI also illustrate that building blocks for more digitalised and potentially DLT-enabled market operations are already developing. The point is not that one standard solves everything, but that standards must connect so that data captured at source can support automation, interoperability, settlement readiness, and lifecycle processing.

4. **Identity and participant mapping**. Investor identification remains a recurring workflow issue. The DIMCG invited issuers, agents, deal managers, and investors to agree on a common and open scheme building on LEI to identify investors in primary market transactions. In future digital workflows, this issue becomes broader: account structures, omnibus models, wallets, UBO traceability, KYC and role-based permissions must all be considered. The interoperability paper (by the ICSD's – Building the path towards digital assets securities interoperability from February 2026) notes that inconsistent approaches to account and wallet management could create risks around transaction authorisation, role assignment, auditability, and client asset protection.

12 ICMA and HKMA, Digital Green Bond Issuance and the Bond Data Taxonomy, webinar, 26 June 2024
13 DZBank – KFW Smart Bond Contract Pilot Report
14 https://www.covacap.com/products/
15 https://insights.originmarkets.com/origin-adds-support-for-bdt-2-0/

5. **Settlement and cash-leg readiness**. For traditional issuance, workflow improvements should reduce avoidable settlement breaks by improving data quality, matching, and instruction processes. For digital issuance, the market must also solve the synchronisation of securities and cash across traditional and digital rails. The interoperability paper notes that DLT still needs to connect to fiat cash rails, RTGS / ACH systems, CSDs, ICSDs and custodians, and that the likely operating model is a network-of-networks rather than one ledger replacing all others.
6. **AI-enabled workflow support**. AI can assist with document review, data extraction, comparison, exception management, reconciliation, and routing. However, AI should not become a workaround for insufficiently standardised data practices. It should be used to support transition, improve control, and reduce manual burden, while the market continues to improve direct structured data capture at source.

> Workflow modernisation is not separate from model change; it is the execution layer that makes future model change credible.

From workflow levers to future model change

The solution levers above are not only near-term workflow improvements. They are also the foundations for longer-term technology evolution. DLT-based issuance, tokenised settlement models, smart contracts, and AI-enabled workflow tools can only scale safely if the underlying issuance process is already supported by trusted data, common standards, clear roles, interoperable systems, and reliable settlement readiness. Otherwise, new technology risks reproducing existing fragmentation on faster rails.

The practical lesson is that workflow modernisation should come first. By capturing data at source, reducing manual hand-offs, and strengthening interoperability, the market creates the conditions for future issuance models to develop safely. In this sense, the Workflow workstream is not separate from Model Change; it is the execution layer that makes future model change operationally credible.

> ***"This report moves the conversation forward by not only improving today's workflows, but by showing how future issuance models can be built on them. It provides a concrete link between operational reality and next-generation market innovation."***
>
> Sebastien van Campenhoudt, Euroclear, Workflow Pilot

Characteristic	Primary mapped lever	Why it matters	Also supported by
1. Data-led — core issuance data captured early, structured and reusable	Data layer	Defines the trusted reference dataset, capture rules, provenance, and APIs so data is created once and reused.	Standards, taxonomy, and identity for semantic and ID constraints; intelligent automation for extraction and validation.
2. Standardised where it adds value — common semantics, identifiers, and message purpose	Standards, taxonomy, and identity	Establishes taxonomies, field definitions, message profiles, and participant IDs so semantics are consistent.	Data layer to implement the standard; intelligent automation to apply patterns.
3. Interoperable by design— information moves across platforms without creating new silos	Standards, taxonomy, and identity	Provides the protocol and identifier architecture that enables cross-platform exchange and semantic compatibility.	Settlement and cash-leg readiness for rail interoperability; data layer for authoritative payloads.
4. Automated where repeatable and controlled— straight-through processing for suitable tasks	Intelligent automation	Implements deterministic workflows and AI-assisted extraction, validation and exception handling so repeatable tasks can run end-to-end.	Data layer for structured inputs; standards, taxonomy, and identity for consistent interfaces.
5. Accountable — clear owners, validators and audit trails for each step or field	Standards, taxonomy, and identity	Embeds identity, roles, and message purpose into the architecture so responsibility is unambiguous.	Data layer for provenance and owner metadata; settlement and cash-leg readiness for financial ownership at settlement.

Conclusion

Workflow modernisation is the most practical entry point for PMIP NextGen because it addresses the part of the market that must deliver every day. The central message of this section is straightforward: the current workflow is not broken, but it is under increasing strain. It continues to function because experienced market participants compensate for fragmented data, manual hand-offs, and inconsistent standards. That is precisely why the immediate priority is to remove avoidable friction from today's process rather than rely on workarounds to sustain efficiency.

The issues that need solving are clear: inconsistent data quality, timing and availability, fragmented manual coordination, limited interoperability, controlled but uneven transparency across bookbuilding and allocation, and downstream dependencies created by upstream inconsistency. The response should be equally clear. The market should capture trusted data at source, agree a minimum common issuance dataset, improve interoperability between the main workflow steps, strengthen investor and allocation data quality, and treat settlement readiness as a downstream consequence of upstream discipline.

This is where the 3Ps come together. Better process reduces friction and operational risk; stronger product data and execution capability improve the market's ability to execute efficiently and handle volume; and better use of people releases capacity for judgement, execution, and client value. Executing today is therefore not separate from transformation; it is the practical starting point for it.

3.2 Workstream II: Model Change (Future models and its longer-term opportunities)

From workflow modernisation to model change: imagining tomorrow

Workstream I focused on the practical improvements that can be made within today's issuance model. This section starts where that discussion ends. If those foundational changes are progressively put in place, what becomes possible next? What future operating models, products and stakeholder roles become viable once the market can rely on trusted data at source, stronger interoperability, more flexible settlement options, and better-controlled automation?

The purpose of this section is not simply to argue that model change will happen. It is to identify the practical opportunities that emerge once those foundations create the conditions for safer, more scalable market evolution. Across Process, Product and People, the question is straightforward: what new forms of capital formation, market access, settlement optionality, role allocation, and product design become achievable?

While this report remains technology-agnostic, DLT should be recognised as one of the more significant opportunities for market participants to help define future issuance, settlement, and servicing infrastructure around their own requirements for liquidity, interoperability, governance, resilience, and control. In that sense, digitalisation is not only a transition to which the market must adapt; it is also an opportunity for practitioners to shape future processes natively around the needs of capital formation.

> ***"The PMIP NextGen Report marks another important milestone delivered by ICMA, in close collaboration with public and private sector stakeholders. As the digital transformation of fixed income markets is one of ICMA's key priorities, the report provides also a practitioner's perspective on tokenisation - which is shaping the future of financial market infrastructure and financial products."***
>
> Christoph Hock, Union Investment, Head of Tokenisation and Digital Assets, Member of the ICMA Board

For transaction-level considerations relating specifically to DLT-based debt securities, market participants should also refer to ICMA's DLT Bonds Reference Guide16, which provides practical questions across the lifecycle of a DLT-based debt security.

The sandbox and implementation phases have gradually diverged into an era where legislative mandates and economic clarity on the benefits of technologies are changing the capital markets model. Stakeholders have continued to prove in numerous first-off transactions that a modernised infrastructures isn't a technical issue. The simultaneous removal of legal, economic, and technological barriers detailed below, supports the key thesis of this chapter, the capital markets model change will change while preserving the continuity of existing financial market infrastructure as the backbone of market confidence!

Barriers are being removed

Legal: In Europe, momentum is being reinforced by the Savings and Investments Union, the Market Integration and Supervision Package (MISP), the EU DLT Pilot Regime, and national frameworks such as the German Electronic Securities Act. These initiatives support the broader objective of reducing fragmentation and providing greater legal clarity for digitally represented securities and related infrastructures.

A key example of such a market-led initiative is the proposed "28th Regime" for dematerialised debt securities[17]. As described by its proponents, the initiative addresses how the European single market's full potential is currently hindered by legal fragmentation, which creates high costs and uncertainty. The approach proposed by Clearstream and Euroclear represents a vital, highly focused first step towards European market unity: offering a market-led, optional framework to simplify and harmonise the issuance of dematerialised debt securities by replacing 27 fragmented national regimes with a single, unified set of rules dedicated to issuance.

16 ICMA, DLT Bonds Reference Guide, December 2024
17 Details of the "28th Regime" - https://www.clearstream.com/clearstream-en/28th-regime-initiative-for-dematerialised-debt-securities-5052912

However, the regulatory driver of model change is now global. The enactment of the US GENIUS Act in 2025, establishing a federal framework for payment stablecoins, helped crystallise a broader global race to define the legal foundations for digital money, tokenised settlement assets and the convergence of traditional finance and digital finance.

Singapore's Project Guardian has created a policy-supported environment for tokenisation trials across asset classes, including fixed income, while Hong Kong's Project Ensemble has moved from sandbox activity into real-value tokenised deposit and digital asset transactions, with a path towards 24/7 tokenised central bank money settlement. In the United Kingdom, Sarah Breeden[18], Deputy Governor for Financial Stability at the Bank of England, recently framed the responsible adoption of tokenisation as a way to enhance financial stability and support sustainable growth, including in financial markets. The direction is therefore broader than any single jurisdiction: legal and supervisory frameworks are increasingly moving from experimentation towards controlled implementation. Over the past 12–18 months, this has materially accelerated the convergence of TradFi and digital finance, creating a more credible legal foundation for future issuance models while reinforcing the need for standards, interoperability, and governance across jurisdictions.

Policy convergence does not remove transaction-level legal and regulatory complexity. Multi-jurisdictional issuance, listing, clearing, distribution, and settlement arrangements will continue to require careful analysis of applicable law, regulatory perimeter, documentation, enforceability, and risk allocation. The point of model change is therefore not to eliminate legal expertise, but to make the operating model clearer, more data-led and easier to evidence within those requirements.

Economic: The economic case for model change is no longer limited to cost-saving, it increasingly combines efficiency, risk reduction, competitive positioning, and new market access opportunities. In the short term, the current reliance on manual execution processes and legacy settlement systems creates capacity drag, operational inefficiencies and counterparty risk. Market participants that implement more advanced technology can therefore gain a clear competitive advantage through faster execution, lower operational burden, and better control.

In the longer term, the economic incentive shifts toward optionality and the ability to respond to broader market forces. The ongoing demographic wealth transfer and the rise of digital-native investors point to demand for models that supports fractionalisation[19], transparency, and 24/7 accessibility. Furthermore, the evolution of fiduciary duty suggests that as more efficient, lower-risk technologies become available, fiduciaries are increasingly expected legally or ethically to consider their use to protect investor interests (Arslanian, 2023). Missing these opportunities may therefore represents strategic risk that outweighs the initial costs of transition, particularly as implementation costs continue to decline.

Operational: Today a significant "first-mover disadvantage" still exists in capital markets. The network effects that support today's level of global liquidity mean that a single bank, issuer, or investor cannot move in isolation without facing higher costs, reduced counterparty risk or the need to maintain parallel processes. While firms' internal technical capabilities are improving, the real operational challenges are external: counterparties, infrastructure, vendors, and Service providers must be able to connect through interoperable standards shared interfaces and consistent operating models. A harmonised and jointly communicated approach can reduce first-mover disadvantage, avoid new digital silos, and turn individual readiness into market-wide change.

The removal of these barriers reduces the "first mover disadvantage". With clearer guidance on the direction of the model change (legal), lower cost of entry (economic), and increasing interoperability (operational) competition is accelerating at a pace not seen in years.

The path towards a new infrastructure model

Adoption will be driven by a combination of push and pull factors. Today's issuance processes remain document-heavy, manual, fragmented and expensive to operate, while regulatory expectations, reporting obligations and product complexity continue to rise. At the same time, the removal of legal, economic, and operational barriers is making a different model more credible: one built on better data, lower friction, faster execution, stronger resilience and improved

18 https://www.bankofengland.co.uk/speech/2026/may/sarah-breeden-speech-at-city-week-the-future-of-money-in-a-digital-world
19 https://www.icmagroup.org/assets/documents/Regulatory/Primary-Markets/FCA-DP25-3-ICMA-fractionalisation-comments-060326.pdf

access to capital and investors. The new model will be adopted not because it is novel, but because it becomes more useful than the status quo.

> ***"The PMIP comes at a time where staying on the side-line is not a viable strategy anymore. More crucially it lays out a joint path for capital markets participants, paving the way to finally remove the 'first mover disadvantage' and drive actionable change."***
>
> Alexander Malitsky, TD Securities – Model Change Pilot

> The market will not move because a new model is available; it will move when the new Model solved problems the current model can no longer absorb efficiently.

From an issuer perspective, the appeal of a more modernised primary market lies in faster execution, lower operational burden, greater visibility, and improved access to a broader investor base. For banks and intermediaries, the incentive is not replacement but relevance: a chance to reduce manual effort, improve straight-through processing, strengthen client service, and remain central to a market that is becoming more data-driven and operationally demanding. For investors, the pull lies in greater permissioned transparency, clean & timely data, more consistent documentation, and the prospect of a more efficient allocation and settlement experience. For infrastructures and market platforms, the opportunity is to support connectivity, interoperability, and scale while preserving market integrity.

Data is foundational. Without common definitions, structured formats, and consistent governance, neither workflow improvement nor model evolution can scale safely. With them, the market gains the conditions needed for automation, interoperability, resilience, and more efficient capital formation. Data should therefore be understood not as a technical afterthought, but as a core component of market infrastructure.

For the first time, the tools exist to automate tasks that have long required significant manual intervention — not to remove judgement, but to direct it where it matters most. AI is embedded in the emerging model, shaping Process, Product and People alike. Its broader implications, however, extend beyond any single dimension and require a more integrated discussion of standards, governance, trust, and control.

The pace of change — accelerated by AI-enabled automation, regulatory pressure, and rising client expectations — means that the balance is shifting from optionality (should we adapt) to competition (we must adapt now). Market participants that delay risk being left behind, risk higher costs, greater friction, and diminished relevance in an issuance landscape that is being redrawn around data and digital workflows. In other words, it now becomes clear that market participants delaying the model change will face diminishing relevance.

Market participants and leadership are therefore invited to engage not as passive recipients of change, but as active stewards of the transition — shaping the future of primary bond markets in a way that preserves their resilience, integrity, and central economic role.

Process - From fragmented issuance rails to interoperable capital formation

Within Model Change, Process should be understood as the dimension that explores how primary-market activity could evolve as legal, economic, and operational barriers fall, and as better data, interoperable infrastructure, new settlement assets and shifting stakeholder roles become part of the market model. It is distinct from the previously discussed workflow optimisation, which addresses today's pain points and incremental improvements. Process model change asks a broader question: if issuance data becomes more structured, infrastructures become more interoperable, settlement cycles become more flexible, digital money matures, and AI-supported tools are embedded into controlled market processes, how would archetypical issuance workflow change?

In this sense, Process is the "How" of Model Change. It describes how a more data-native and interoperable market could alter the way assets are created, distributed, settled, traded, financed, and serviced. The value of such change should not be measured only by speed or technology adoption, but by whether it strengthens liquidity, reduces operational friction, supports investor readiness and allows innovation to scale without undermining trust.

The objective is not to prescribe a single platform, ledger, settlement model, or technology architecture. Nor is it to suggest that all markets will move at the same speed or in the same direction. Rather, the purpose is to identify the process changes that may become possible under a more modernised primary-market model: greater standardisation of core data, more interoperable market connections, flexible T+0 to T+2 settlement, lower transaction cost, improved transparency, faster asset movement and stronger links between primary issuance, secondary trading and collateral use.

This creates a central design tension. Full standardisation would make collaboration, automation, and AI-enabled validation easier, but may be difficult to implement across diverse issuers, jurisdictions, currencies, products, and investor bases. Full interoperability may be more practical, allowing different platforms and infrastructures to coexist, but could increase fragmentation if core data, controls and lifecycle events are not interpreted consistently.

> The practical process challenge is therefore to enable optionality without fragmentation: allowing different issuance models, settlement cycles, digital-money arrangements, and investor-access channels to coexist, while preserving liquidity, settlement certainty, transparency, and human accountability.

Today	Transition mechanism	Future process effect
Fragmented platforms	Common process language	Interoperable market connections
Re-keyed data	Structured data at source	Lower duplication and reconciliation
Fixed settlement assumptions	Settlement optionality	T+0 / T+1 / T+2 based on readiness
Isolated primary process	Lifecycle connectivity	Primary, secondary, repo and servicing connected
Manual interpretation	AI-supported controls	Better transparency and exception management
Separate cash/securities rails	Digital-money-enabled DvP	Safer and more flexible settlement optionality

The design spectrum; full standardisation versus full interoperability

A central process question in the future primary-market model is where the industry should sit on the spectrum between standardisation and interoperability. Full standardisation would offer the cleanest route to collaboration: common data fields, common issuance templates, common APIs, common settlement logic and common lifecycle-event definitions would make automation, AI-enabled validation, straight-through processing, and regulatory oversight easier to scale. However, it is also the hardest model to implement in practice, because primary markets differ materially by issuer type, jurisdiction, currency, documentation format, product structure, investor base, settlement infrastructure, and distribution channel.

Full interoperability, by contrast, may be easier to execute because it allows banks, platforms, custodians, infrastructures, and investors to retain their own systems while connecting through shared standards. Yet interoperability without common definitions can become another form of fragmentation, with different platforms interpreting the same transaction, eligibility rule, settlement status or lifecycle event differently. The practical direction is therefore likely to be selective standardisation: standardising the core data, controls, permissions, and lifecycle events that matter most, while allowing different platforms and operating models to interoperate safely. For example, investor eligibility could be standardised at the level of key data and control logic, including investor classification, jurisdictional restrictions, selling restrictions, and settlement eligibility, without forcing every market participant onto the same platform.

This points to a practical synthesis of the DIMCG's work: the future process should be built around a common process language — harmonising the data, standards and process elements that must be consistent, while allowing different platforms, infrastructures and operating models to remain interoperable where flexibility and market choice are required.

Liquidity Safe Optionality

The most important benchmark for process model change should be liquidity-safe optionality. A future process is not better simply because it is faster, more digital, or more automated. It is better only if it strengthens the market's ability to originate, price, allocate and settle new issuance efficiently and reliably, while giving issuers, investors, intermediaries and infrastructures confidence that capital can flow, settlement finality can be achieved, and the asset can function beyond the point of issuance. In this sense, liquidity should be treated as the practical test for any future process design. If a new process increases speed but reduces participation, fragments order books, weakens secondary-market confidence or creates uncertainty around settlement, it may undermine the very market quality it is intended to improve.

> Optionality matters only if it remains liquidity-safe

The future process should not force every transaction into one issuance model, one platform, one settlement cycle or one distribution channel. Different instruments, issuers, and investor bases will require different process choices. Some highly standardised or digitally native transactions may be suitable for T+0 or near-instant settlement, particularly where the securities leg, cash leg, legal finality, and operational readiness are aligned. Other transactions may be better suited to T+1 or T+2 because of funding arrangements, FX timing, cross-border custody, investor operational processes, or the need for broader market coordination. Faster settlement should not be treated as automatically superior. The more important objective is to make different settlement speeds available without reducing trust, control, liquidity, or settlement certainty.

Liquidity-safe optionality also requires a more connected view of the market. Primary issuance cannot be treated as an isolated event that ends at settlement. For investors to participate with confidence, they need to understand not only how an asset is issued, but also how it can be settled, held, traded, financed, reported on and serviced over time. This is particularly important in a more digital or multi-rail environment, where new issuance models may fail to scale if secondary-market visibility, repo eligibility, collateral mobilisation, or lifecycle servicing are not sufficiently developed. A modernised process should therefore connect primary issuance more deliberately with secondary-market readiness and repo or collateral use. The asset created in the primary market should be capable of functioning across its economic life, not simply being issued efficiently on day one.

In DLT-enabled environments, on-chain data may also become a new form of capital markets data. Where assets, cash legs or lifecycle events are processed on a ledger, the resulting ledger-native record can provide timestamped and auditable evidence of activity, subject to appropriate governance, privacy, and legal treatment. This does not remove the need for trusted source data, legal documentation, or off-chain controls, but it can strengthen auditability, reconciliation, and lifecycle visibility where the relevant market processes are designed to rely on it.

The solution levers above are not only near-term workflow improvements. They are also the foundations for longer-term technology evolution. DLT-based issuance, tokenised settlement models, smart contracts, and AI-enabled workflow tools can only scale safely if the underlying issuance process is already supported by trusted data, common standards, clear roles, interoperable systems, and reliable settlement readiness. Standards such as BDT and CDM are relevant in this context because future automation requires both consistent issuance data and common representations of transaction processes and lifecycle events. Otherwise, new technology risks reproducing existing fragmentation on faster rails.

> A successful future process should allow the market to choose between different settlement cycles, issuance channels, investor-access models, and infrastructure arrangements, while relying on common data, controls, and lifecycle logic where consistency is essential.

This is what makes optionality liquidity-safe: participants gain more choice, but not at the expense of market confidence. Done well, such a process could reduce friction across primary, secondary and repo markets, lower transaction costs through reduced duplication and reconciliation, improve settlement certainty and support broader participation without undermining the trust-based foundations of capital formation.

Role of Digital Money

The role of digital money is central to process model change because many of the expected benefits of modernised issuance depend not only on the securities leg, but also on the cash leg. A bond, fund interest or other capital market instrument can be digitised, tokenised, or represented through richer data, but settlement will remain constrained if payment continues to rely on disconnected, delayed or manual cash processes. The process question is therefore not simply whether instruments can be issued on new rails, but whether the movement of cash and securities can be coordinated in a way that is safe, legally certain, operationally scalable, and interoperable across market participants.

Different forms of digital money may support this in different ways. Tokenised commercial bank money, tokenised deposits, regulated stablecoin-like settlement assets, wholesale CBDC models, or enhanced traditional payment rails could each play a role depending on jurisdiction, transaction type and market readiness.

> The key issue is not which model wins universally, but which settlement asset provides the right combination of trust, liquidity, regulatory acceptance, and connectivity towards a multi-cash model, including sufficient clarity on settlement finality, irrevocability, governing law and cross-broader recognition for institutional adoption.

For primary markets, this matters because settlement speed is only useful if the cash leg is available, reliable, and legally final at the same time as the securities leg. Without this alignment, T+0 or near-instant settlement may create new funding, liquidity, and operational pressures rather than reducing risk.

Digital money also changes process design by introducing a more multi-rail environment. For some time, traditional cash settlement, tokenised settlement assets, and potentially central-bank-backed digital money models may coexist. This creates optionality, but also complexity. Issuers, investors, banks, custodians, and infrastructures will need processes that can identify which cash rail is being used, how settlement finality is achieved, how intraday liquidity is managed, how FX and cross-border payments are handled, and how exceptions or failed settlements are resolved. If these models are not interoperable, the market risks creating separate liquidity pools and fragmented settlement processes.

The practical ambition should therefore be to treat digital money as an enabler of settlement optionality, not as a standalone objective. Its value lies in supporting delivery-versus-payment, reducing reconciliation, improving cash forecasting, enabling more efficient intraday liquidity use and strengthening confidence that settlement will complete as intended. In this sense, the development of digital money is inseparable from process change: it determines how quickly, safely and efficiently capital can move through the future primary-market ecosystem.

The conclusion is that process model change should create optionality without fragmentation. Faster settlement, more transparent data, higher asset velocity, digital-money-enabled cash movement and 24/7 capability are only valuable if they strengthen liquidity, participation, and trust. One important outcome may be a change in investor behaviour: as investors gain cleaner information, clearer eligibility, stronger settlement confidence, and better lifecycle visibility, they may be willing to participate earlier, across more channels and with greater confidence the PMIP NextGen survey revealed. However, this behavioural shift will only scale if the market preserves common data standards, reliable controls, permissioned transparency and clear human accountability. Process innovation should therefore enable more choice in how assets are issued, settled, traded, financed, and serviced, without creating isolated rails or fragmented liquidity pools.

Product - Consequential Product Evolution in a Transformed Primary Market

This section assumes change will occur, illustrates the opportunities that follow once a modernised baseline is established, and separates technological potential from operational readiness. This reflects a core PMIP survey message:

> There is broad consensus on direction, but execution depends on coordination, standardisation, and incentives rather than on lack of ideas or technology.

The product opportunities described here only become tangible when process can support consistent execution and when the people dimension – skills, governance, and organisational accountability – can operate confidently in a more data-centric environment.

> Accordingly, the relevant question is not "what is technically feasible," but "what becomes operationally viable" once governance, data integrity and interoperability are in place and responsibilities are clearly owned across the ecosystem.

1. Coexistence: traditional and emerging issuance models are likely to run in parallel

A recurring theme is emerging as stakeholders favour incremental improvement and coexistence with current systems rather than radical redesign – reflecting the importance of stability and trust in primary markets. For product, this implies that new issuance formats (digital representations, enhanced data attributes, alternative settlement options) are most realistically introduced as wrappers and extensions around conventional instruments, rather than as wholly new asset types. In this respect, it is expected that primary markets will operate in hybrid environments for the foreseeable future, with legacy and emerging models coexisting and interacting.

With the capital markets model steers towards an extended future of coexisting legacy and 'new' products, possibly up until redemption of the outstanding debt.

2. From static labels to attribute driven products

Traditional separations (IG/HY, EM/DM) will remain important as these reflect real differences in credit risk, legal regimes, liquidity, and investor mandates. But such labels also act as proxies for information gaps and inconsistent interpretability across the ecosystem. A recent PMIP survey highlighted that workflows remain document centric and manually intensive, and that market fragmentation is perceived as a structural barrier rather than a temporary inefficiency.

In a modernised environment, richer and more structured information at issuance – captured closer to the source and governed consistently – allows instruments to be defined through a more portable set of attributes (risk factors, documentation features, disclosure expectations, eligibility constraints). This reduces the burden placed on broad categories to carry every nuance and can enable more precise differentiation and more consistent decision making in allocation and distribution.

> The future points to a more fluid, multi-asset – one in which instruments are increasingly understood by their attributes, not only by traditional labels.

3. Real time / data at source: product features become trackable at scale

Data available in real time is one of the most consequential implications for products. In this respect, more features become credible and monitorable without creating disproportionate downstream operational cost. PMIP's survey synthesis is explicit: workflow inefficiency remains the most immediate and tangible obstacle, and data standardisation is widely recognised as the key enabler for automation and future innovation.

As data becomes more structured and consistently governed, the market can shift from narrative heavy overlays towards clearer product attributes that are easier to interpret across stakeholders. This supports more consistent eligibility and suitability treatment across the distribution chain while keeping human judgement central.

4. Product and process interaction: suitability, distribution, and automation

A modernised process landscape can support more consistent suitability and distribution controls at issuance without turning primary markets into a fully automated environment.

The product level implication is not that automation replaces human decision making. Rather, where reliable data and common standards exist, eligibility checks, mandate constrains, and disclosure requirements can be applied more consistently and audited more effectively. In this sense, process quality becomes part of the product experience: an instrument that is easier to assess, onboard, allocate, settle and report on is also easier to distribute.

This is also where the multi asset view becomes more feasible. As processes become more interoperable and data definitions more standardised, market participants can apply more consistent evaluation, onboarding, and distribution practices across product families. This reduces operational friction without erasing meaningful asset class distinctions.

> In a modernised market, process quality becomes part of product quality: instruments are easier to distribute when their data, controls and eligibility criteria are structured, consistent and auditable.

5. Denominations and access: broadening participation without breaking liquidity

Denomination conventions are, in part, products of operational constraints. If issuance and post-trade workflows become less manually intensive and more data-driven, smaller denominations and broader distribution may become more feasible without proportionately increasing operational cost.

However, the constraint is not only technical. Issuers may be reluctant to issue in smaller denominations where this could imply broader retail access, additional regulatory obligations, greater conduct, and suitability considerations, or increased reputational risk. Any move towards broader participation therefore requires more than efficient workflow infrastructure. It also requires clear regulatory treatment, appropriate disclosure, robust distribution controls, and confidence that investor protection obligations can be met without undermining the institutional discipline of the primary market.

As these conditions develop, the same infrastructure improvements that support denomination flexibility could also widen feasible participation for SMEs, private-market issuance formats and selected investor segments. The discipline is important: broadened access should be framed as optionality, not automatic “retailisation”. It must remain governed by suitability controls, permissioned transparency and the preservation of liquidity and execution quality.

6. Blended finance: scaling sustainable investment

Blended finance should be considered an important product opportunity in a modernised market, particularly for sustainable finance, climate transition, and emerging market investment. The concept is not new: public, concessional, or philanthropic capital is used to mobilise private capital by improving the risk-return profile of investments that may otherwise be difficult to finance at scale.

What changes in a more data-driven market is the ability to make blended finance less bespoke and more scalable. If project, risk, impact and cashflow data are captured at source and supported by common standards, investors can assess and compare these structures more consistently.

Standardised legal frameworks and documentation could also help, blended finance move from bilateral, transaction-by-transaction structuring towards more repeatable capital markets formats. Tokenisation and digital wrappers may further support transferability, transparency, and access.

The opportunity is therefore to use data standards, legal repeatability, and digital representation to turn blended finance from a largely bespoke funding technique into a more scalable product architecture for mobilising private capital towards sustainable outcomes.

> Better data and repeatable structures could make blended finance scalable, not just bespoke.

7. Securitisation and asset-based finance: rebuilding scale with transparency

Securitisation should be recognised as part of the future product toolkit, particularly as markets seek to mobilise private capital, support asset-backed and asset-based finance that will broaden access to alternative pools of yield. In Europe, the Draghi report[20] highlights that banks cannot rely on securitisation to the same extent as US banks, limiting balance sheet flexibility and the ability to release capital for additional lending. It also notes that securitisation could help package loans from different Member States into standardised, tradeable assets for non-bank investors.

The lesson from the Global Financial Crisis should not be to avoid securitisation, but to rebuild it with greater transparency, simplicity, alignment of interest, governance, and better data. In a more modernised market, securitisation could support SME finance, infrastructure, private credit, real estate, consumer finance, and sustainable assets.

DLT, tokenisation and AI may further improve transparency into underlying asset pools, automate reporting and cashflow allocation, and make securitised exposures more operationally accessible. The opportunity is therefore not a return to pre-crisis complexity, but a governed, data-rich, and scalable mechanism for transforming pools of assets into investable capital market instruments.

8. Tokenisation and digital wrappers: new delivery channels for conventional assets

Well-established instruments and funds may increasingly be represented and transferred in digital form through tokenised “wrappers”. These wrappers can reduce settlement friction, enable new distribution channels, and improve collateral mobility, provided that governance, standards, and interoperability are treated as prerequisites.

From a capital markets model perspective, tokenisation should therefore be understood as a delivery mechanism rather than an end goal. Its value lies not in replacing the underlying economic or regulatory nature of an asset, but in improving how that asset is recorded, transferred, settled, distributed, and used across market workflows.

20 Draghi Report - https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en

Case study: tokenised money market funds

Tokenised money market funds illustrate how established cash management products can benefit from digitally native representation without changing their underlying economic or regulatory characteristics. BlackRock's USD Institutional Digital Liquidity Fund, BUIDL, launched with Securitise on the Ethereum network, provides qualified investors with access to short-term U.S. dollar instruments through a tokenised fund structure.

The underlying product remains familiar: a liquidity fund designed around high-quality, short-term assets. The innovation lies in the wrapper — blockchain-based record keeping, transferability and potential integration with digital settlement and collateral workflows — rather than in changing the fundamental nature of the money market fund itself. Similarly, Franklin Templeton, DBS and Ripple further demonstrate how tokenised fund interests can interact with regulated digital settlement environments. In this context, Ripple's infrastructure has been referenced as supporting interoperability between tokenised fund units and digital cash or settlement assets, enabling eligible participants to explore faster exchange, improved collateral mobility and flexible denomination while remaining anchored to existing fund structures and regulatory frameworks.

Collateral management provides a concrete example of why digital product design matters beyond issuance. A 2025 Global Digital Finance report on tokenised money market funds[21], produced with support from Ownera, EY and Hogan Lovells, cites industry estimates that DLT solutions could free up approximately USD 100 billion of trapped collateral and reduce industry costs by around USD 20 billion annually. It also notes that the market value of tokenised real-world assets had climbed to approximately USD 18 billion by early 2025, up around 80% year-on-year, with tokenised treasuries and money market funds among the fastest-growing segments. These figures underline that tokenisation is not only a question of issuance format, but of lifecycle utility: collateral mobility, liquidity management, settlement efficiency, and interoperability across market infrastructure.

Alongside tokenised funds and collateral use cases, tokenised deposits illustrate how bank money could support more synchronised settlement and cash-leg functionality in future market models.

Case study: tokenised deposits

Tokenised deposits represent a different but related opportunity: the development of regulated digital Cash Instruments that can support settlement in tokenised markets. Recent bank led pilots have explored how tokenised deposits could function as a regulated settlement asset, enabling atomic delivery-versus-payment between bank money and digitally represented securities while preserving bank-grade governance and interoperability with existing ledger systems, supporting the previously outlined multi-asset and multi-currency capital markets model.

In January 2026 Lloyds Banking Group, completed what it described as the UK's first public blockchain transaction using tokenised sterling deposits. The transaction involved the issuance of tokenised deposits on the Canton Network and their use to purchase a tokenised gilt from Archax.

In April 2026, HSBC followed, completing a simulated pilot of its Tokenised Deposit Service on the Canton Network, an external, regulated distributed-ledger environment, demonstrating the issuance, transfer, and atomic settlement of tokenised deposits alongside other digital assets.

These examples highlight the importance of interoperability between the cash leg and the security leg. Tokenised deposits should therefore be seen as potential settlement enablers, rather than standalone technology products. Their adoption will depend on legal certainty, Risk Management, regulatory acceptance, and the ability to interoperate with existing market infrastructures.

21 The case for collateral Mobility – TMMF Report

9. Practical implications: sell side and buy side product development

For issuers and syndicates, product evolution may mean greater flexibility to define instruments through clearer attributes at issuance including risk characteristics, disclosure requirements, sustainability features, eligibility criteria, and settlement options. If these attributes are capture in a structured and consistent way, they can be understood more reliably across banks, investors, infrastructures, and data providers, reducing downstream operation burden.

It may also create more optionality in distribution and settlement – particularly in hybrid environments where emerging rails and existing market infrastructure coexist. However, this flexibility should only be pursued where liquidity, governance, settlement certainty and investor confidence are preserved.

For investors, product evolution may mean more consistent interpretation, comparison, and monitoring of product characteristics as data becomes structured and governed earlier in the issuance process. It may also improve access to yield bearing, cash management and fixed income exposures through digitally represented wrappers, as illustrated by tokenised money market funds.

The key point is that the market's product set does not need to be reinvented. Existing products can acquire new capabilities as data standards, interoperability, and workflow discipline mature.

Primary market product evolution should not be framed as a technology story. It is the result of legal and regulatory progress, stronger data foundations, interoperable workflows, and governed transition. Together, these conditions can enable more precise product differentiation, scalable embedded features, denomination and access optionality, improved settlement, and collateral mobility where operational readiness permits. The objective is to expand product capability while preserving trust, unified liquidity, and human judgement at the centre of market functionality.

People – Changing roles, influence, and capabilities

As primary markets become more digital, interoperable, and data-driven, changes in process and product design will increasingly reshape roles, skills, capability requirements, and the stakeholder landscape of the primary bond market.

Process modernisation will increasingly favour participants that can combine trusted market access and client relationships with digital execution capability, data fluency and interoperability across systems and networks. Product evolution will also require deeper and broader product understanding. As markets move towards more data-rich instruments, tokenised wrappers, private market[22] access, asset-based finance, blended finance, securitisation and potentially more multi-asset structures, participants will need to understand not only the economic characteristics of products, but also how they are represented, distributed, settled, serviced and governed.

> ***"The PMIP report shows why model change is not optional: it will reshape both markets and careers, making it all the more important that the next generation of practitioners actively contribute to defining it."***
>
> Samira Lampe, NORD/LB, Model-Change Pilot

This does not mean that existing participants are displaced. Issuers, banks, investors, market infrastructures, custodians, legal advisers, and regulators remain central to the functioning of primary markets. The market continues to rely on trust, judgement, relationships, legal certainty, distribution strength, and operational resilience. However, the competitive environment around these roles is changing. Future advantage will depend less on controlling individual steps of the value chain and more on being able to operate effectively within a data-enabled, interoperable, and increasingly networked market.

22 Private Markets defined in it's wider sense incl. Private Credit, Non-Benchmark Club-Deals, MTN PP, etc.

The table below summarises the main stakeholder shifts before the following sections discuss their implications for distribution, market access, and workforce capability.

Stakeholder Category	Who they are	How their role changes	Implications for People & Capabilities
Core Incumbent Stakeholders	• Issuers • Investment banks • Institutional investors (AMs, insurers, pension funds) • Regulators • Market infrastructures (ICSDs, CSDs)	Continue to anchor the market, but shift from end-to-end control to operating within a more data-driven, interoperable ecosystem	• Need to combine traditional market expertise with digital execution capabilities • Greater importance of data fluency and cross-functional understanding (legal, tech, ops) • Roles evolve rather than disappear
Enabling Stakeholders (New Influence Layer)	• Digital infrastructure providers • Tokenisation platforms • Wallet & custody providers • Identity / permissioning providers • Data, analytics & AI providers • Interoperability / connectivity providers	Gain influence by controlling data, infrastructure and access layers that underpin how markets operate	• New capability domains (tokenisation, interoperability, digital workflows) • Increasing importance of technology and platform expertise • Shift of value creation toward infrastructure and execution layers
Area of Stakeholder Growth	• SME issuers • Retail investors • Digitally native / Web3 investors • New private capital pools	Enter the market as legal and process barriers decline and distribution expands, reshaping access and market depth over time	• Broader and more diverse market participation • Need for scalable onboarding, distribution, and client servicing models • New client coverage and product interaction capabilities required
Workforce / Talent Layer (Across all stakeholders)	• Employees across front office, syndication, operations, legal, IT • New specialist roles	Workforce shifts from traditional functional roles to hybrid profiles combining market + digital capabilities	• Stronger need for reskilling and continuous education • Demand for new talent (data, tokenisation, digital product design) • Competitive advantage increasingly tied to organisational capability, not only franchise strength

The overall direction is one of redistribution rather than replacement. Traditional institutions remain essential, but influence may increasingly shift towards those who control data, access, workflow orchestration, digital infrastructure, and decision-support capabilities. This is consistent with the broader direction of tokenised fixed income and digital market infrastructure work, which highlights the importance of standards, interoperability, and integration between traditional and digital markets for adoption at scale.

The report does not seek to predict employment outcomes. Its focus is on how roles, skills and accountability may evolve as workflows become more automated, data-driven and interconnected. Modernisation is likely to change the nature of work across primary markets. The objective should be to reduce avoidable manual burden and support market participants in developing the capabilities needed to operate in a more data-driven environment, while preserving judgement, accountability, and client-facing expertise.

This creates a clear call to action for institutions: learning, upskilling, and retooling should be treated as part of the market transition itself, not as a secondary HR topic.

Transformation of the traditional origination and distribution model

A more digital and data-enabled market may reshape the origination and distribution model. The traditional originate-and-distribute model has historically been dominated by sell-side banks because of their balance sheet capacity, investor relationships, execution expertise, and ability to coordinate complex transactions. These functions remain highly valuable. However, as private markets grow, alternative asset classes become more accessible, direct lending expands and digital distribution channels mature, new competitive dynamics may emerge.

Asset managers, private capital providers, digital platforms, data providers, and potentially large technology ecosystems may increasingly participate in parts of the origination, distribution, or access layer. In some cases, this may support new products and new client segments. In others, it may challenge existing economics or create new partnership models. The relevant question is therefore not whether the traditional model disappears, but how it adapts as access, data and distribution become more digital and more contestable.

This is particularly relevant where tokenisation and digital wrappers allow investment products, funds or private market exposures to be distributed more efficiently to new investor groups. The Guardian Fixed Income Framework notes that tokenisation can widen access, reduce minimum ticket sizes where legally permitted, support fractional participation, and improve transaction efficiency, while also requiring standards and governance to scale safely.

The growth opportunity - Market expansion and broader access

A more efficient and automated primary market could expand the range of participants that can be served economically. This includes SME issuers, retail-oriented channels, digitally native investors, private capital pools, and other investor groups that may currently sit outside the core institutional primary bond market.

The people implication is not simply that access becomes broader. It is that market participants will need new capabilities to serve a more diverse client and issuer base safely and efficiently. Broader participation requires scalable onboarding, clearer investor identification, stronger suitability and disclosure controls, more consistent data capture, and client servicing models that can operate across both institutional and more digitally enabled channels.

This will also affect coverage and advisory roles. Issuers and investors with different levels of sophistication may require different forms of education, product explanation, risk disclosure, and post-issuance support. Relationship managers, syndicate teams, platforms, advisers, and service providers will therefore need to combine traditional market judgement with more standardised, data-driven, and technology-enabled client interaction.

In this sense, broader access is not only a product opportunity; it is a people and capability challenge. Modernisation can support efficiency and inclusion, but only if the market develops the skills, controls and service models needed to bring new participants into primary markets without weakening suitability, transparency, or liquidity.

Impact on people and workforce

The people dimension is not only about external stakeholders. It is also about the workforce inside institutions.

As processes become more automated, data-driven and interconnected, roles across origination, syndication, documentation, legal, operations, compliance, technology, and post-trade will change. This should be approached with empathy. The report does not seek to predict employment outcomes. Its focus is on how roles, skills and accountability may evolve as workflows become more automated, data-driven and interconnected. Modernisation is likely to change the nature of work across primary markets. The objective should be to reduce avoidable manual burden and support market participants in developing the capabilities needed to operate in a more data-driven environment, while preserving judgement, accountability, client service, risk management, and product expertise.

However, this will require new skills. Market professionals will increasingly need to combine traditional capabilities — structuring, pricing judgement, issuer advice, investor understanding and regulatory awareness — with digital fluency, data interpretation, workflow design and a basic understanding of AI, tokenisation, interoperability, and digital market infrastructure. The Future Leaders essay submitted to ICMA, "Navigating the Future of Finance" (ICMA, 2025)[23], highlights the importance of a skills-based approach, internal mobility, career development and meaningful work in attracting and retaining younger talent in capital markets.

This creates a clear call to action for institutions. Learning, upskilling, and retooling cannot be treated as secondary HR topics. They are part of the market transition itself. Firms that align process transformation, product innovation and workforce development will be better positioned to remain central in the future model.

Strategic implication: relevance must be earned again

The people dimension therefore creates both opportunity and urgency. Established stakeholders have deep advantages: trust, client relationships, regulatory experience, infrastructure connectivity, and market judgement. But those advantages will not be sufficient on their own if the market's value creation shifts towards data, access, interoperability, and digital execution.

The strategic question is not whether traditional participants remain relevant. They will. The question is whether they adapt quickly enough to remain influential in the parts of the value chain where future value is created.

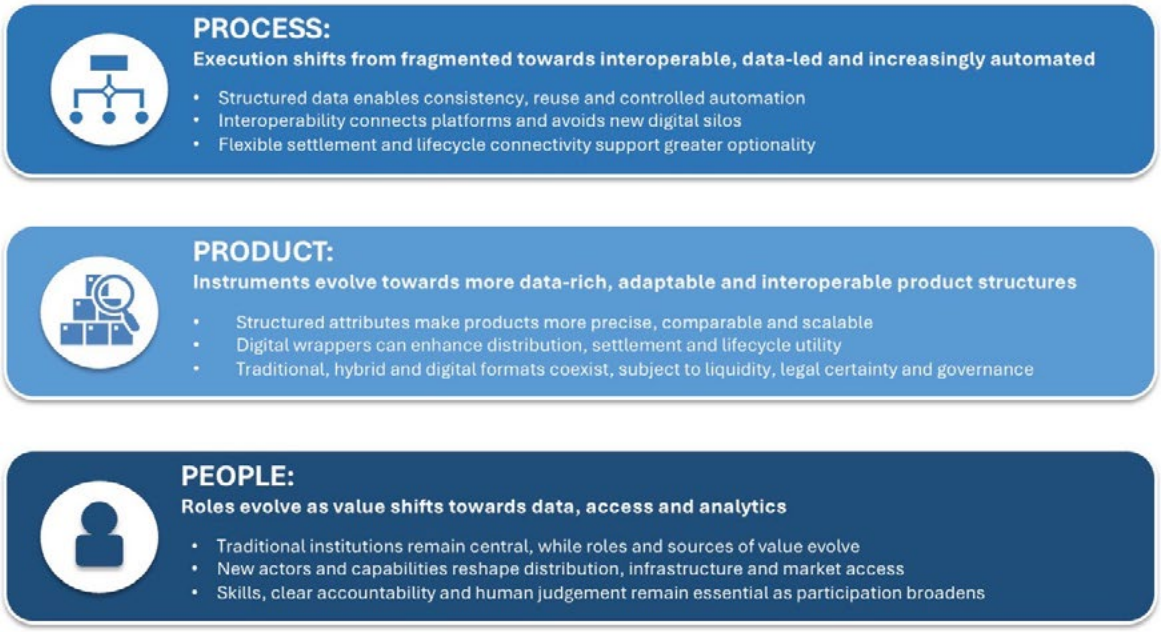
> The transition should therefore be understood as an invitation to lead, not a warning of displacement.

Market participants that invest in people, data capability, interoperable systems, and new operating models can shape the next generation of primary markets. Those that wait may still participate, but with less influence over how the market evolves.

23 https://www.icmagroup.org/ICMA%20Future%20Leaders%20Essay%20Competition%20-%20Natalia%20Lopez.pdf

Conclusion: Towards the market of tomorrow

Taken together, the analysis across Process, Product and People suggests that the most important consequence of these foundational changes is not simply greater efficiency within today's model. It is that the market gains the ability to operate differently tomorrow. Once trusted data can move more cleanly across the lifecycle, interoperability improves, and automation is embedded within controlled processes, the primary market is no longer limited to incremental optimisation. It can begin to support a broader range of operating models, products capabilities and participant roles than is practical today.



In process terms, that means a market with greater optionality: different settlement windows, including 24/7 capability where the economics, liquidity profile and operational readiness justify it; stronger links between primary issuance, secondary trading, collateral use and servicing; and lower operational friction across issuance channels because core data, controls and lifecycle events are interpreted more consistently.

In product terms, it means the ability to design and distribute instruments with greater precision, more flexible denomination, and access models, and lower cost-to-serve particular where tokenisation or digital wrappers remove avoidable operational burden rather than adding novelty for its own sake.

In people terms, the opportunity is equally significant. Some existing roles may become less defined by manual coordination and more focused on judgement, client advice, control, and orchestration. At the same time new stakeholder groups may gain strategic weight, particularly infrastructure orchestrators, data providers, AI-enabled service providers, and platform ecosystems that sit closer to the flow of information, access, and distribution.

This is the real "imagining tomorrow" question for the industry. What follows is not simply a faster version of the current market, but a more connected, more programmable, and more commercially flexible one. Issuers could reach different investor pools more efficiently. Investors could interact with cleaner data, clearer eligibility, and better lifecycle visibility. Banks and infrastructures could release capacity from repetitive tasks and refocus on higher-value activities. Tokenisation becomes economically meaningful where it reduces issuance, servicing, or collateral costs, supports new client channels or improves asset mobility. And 24/7 capability, while not appropriate for every product or transaction, becomes a credible option rather than a theoretical one.

The strategic point is straightforward: these changes matter not only because they improve today's process, but because they create the preconditions for future model change. The prize is a primary market that can form capital with less friction, support more product and settlement optionality, widen access where appropriate, and reallocate value toward those best able to provide data, governance, connectivity, and execution.

3.3 Workstream III: Cross-cutting themes – foundation and architecture layer for a safe transition

The first two workstreams of this report focused on improving today's primary market workflow and explored the opportunities that a modernised issuance models may hold. This third workstream connects those discussions. Its role is to identify the foundations required for primary market change to happen safely, usefully and at scale.

This matters because primary markets are not linear processes. They are ecosystems. A new issuance is not simply created by an issuer and bought by an investor; it is coordinated through a network of banks, legal advisers, data providers, infrastructures, platforms, custodians, paying agents, and regulators. Each performs a specific role, but the market only functions when those roles come together in a trusted and coherent way.

The challenge for modernisation is therefore not only to make individual steps more efficient, but to ensure that the system as a whole continues to support confidence, participation, and liquidity as workflows become more data-driven, automated, and interoperable.

This cross-cutting section therefore asks a simple question: what must be true for primary market change to be safe, useful, and widely adopted?

The answer emerging from the PMIP NextGen discussions, research, survey work, and issuer and investor feedback is consistent. Market participants are not calling for disruption for its own sake. They recognise that the current market works, and in many areas works well. But they also recognise that the burden of manual processes, fragmented data, duplicated effort, and inconsistent connectivity is increasing.

That burden may remain manageable today, particularly in public markets. However, it becomes more significant when viewed against rising issuance volumes, greater product complexity, evolving regulatory expectations (modernisation & efficiency[24,25,26]), the growth of private markets, and the gradual emergence of digital and AI-enabled operating models. Without stronger standards, interoperability, and governance, incremental inefficiencies risk becoming structural constraints.

The case for change is therefore not that the primary market is broken. It is that the market needs to become more scalable, more transparent, more interoperable, and more adaptable while preserving the trust and resilience that make it effective today.

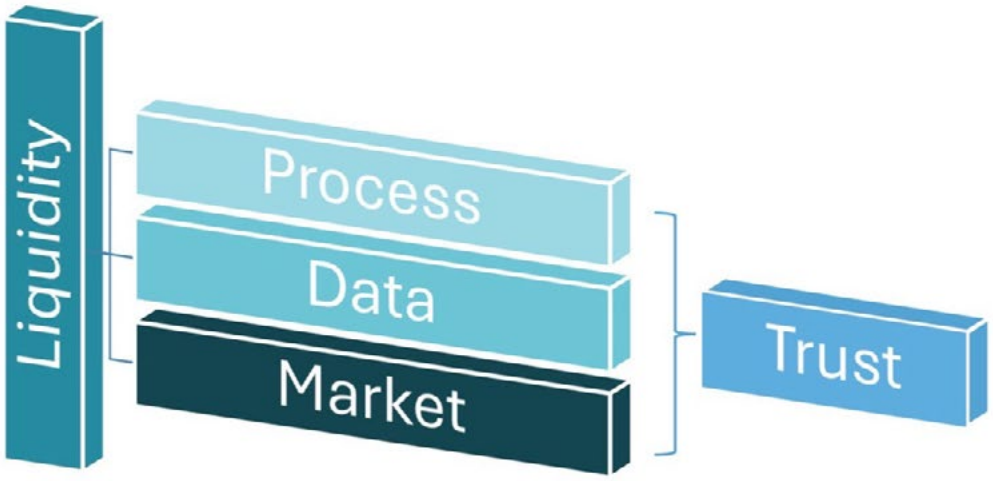
Liquidity as the benchmark for a safe transition

Any discussion about modernising primary markets should start with liquidity. Liquidity is the practical test of whether a market structure works. For primary markets, liquidity should not be understood only in the secondary market sense of turnover or bid-offer depth. It should be understood more broadly as the capacity of the market to originate, price, allocate, and settle new issuance efficiently and reliably across public and private channels, with confidence that capital will flow, settlement finality will be achieved, and secondary markets will function.

This definition matters because it places liquidity at the centre of the transition discussion and gives the market a benchmark for change. A more digital or automated issuance model is valuable only if it improves, or at least preserves, the ability of issuers to raise capital and investors to deploy capital with confidence. If a new process creates "digital islands", fragments order books, weakens investor participation, introduces legal uncertainty, creates unclear settlement outcomes, or produced instruments that are difficult to support after issuance, it has not strengthened the market - even if the underlying technology is innovative.

24 https://finance.ec.europa.eu/regulation-and-supervision/consultations-0/targeted-consultation-integration-eu-capital-markets-2025_en
25 https://finance.ec.europa.eu/publications/market-integration-and-supervision-package_en
26 https://www.ecb.europa.eu/press/intro/publications/pdf/ecb.amiseco202509_barriersmarketintegration.en.pdf

Requirements for Liquidity

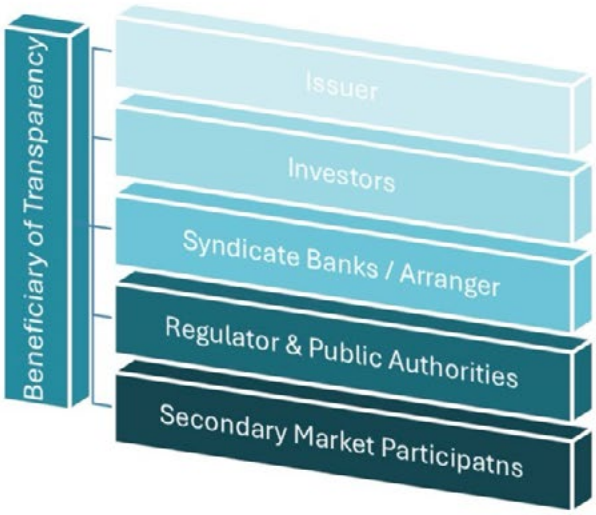


Source: ICMA PMIP NextGen

Liquidity in primary markets is built on trust. Investors commit capital because they can assess the risk, understand the terms, rely on the process, and have confidence in the post-issuance environment. Issuers come to market because they believe the process can deliver execution certainty, fair pricing, distribution depth, and settlement finality. Intermediaries and infrastructures support this confidence by coordinating demand, stabilising information flows, maintaining operational discipline and ensuring that obligations can be fulfilled.

Transparency is therefore not a “nice to have”. It is a system-level requirement and precondition for participation - and participation is a precondition for primary market liquidity. Transparency allows issuers to make informed decisions about timing, format, channel, and execution risk. It allows investors to evaluate risk, commit capital and understand post-issuance expectations. It allows banks and arrangers to coordinate order books and price transactions accurately. It allows infrastructures to support settlement and manage operational risk. It allows regulators to assess market integrity and systemic implications.

Beneficiary of Transparency



Source: ICMA PMIP NextGen

Transparency is therefore needed at several levels and is not only a reporting objective but rather a market design requirement.

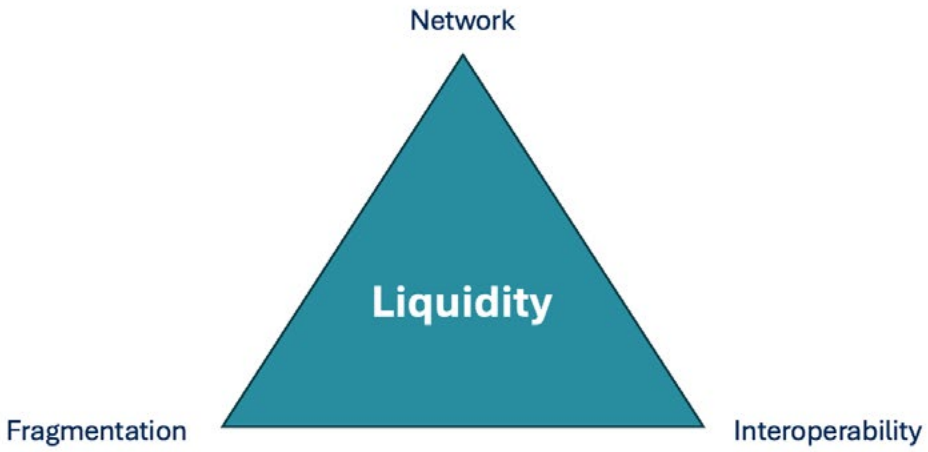
In a more digital or hybrid market, transparency becomes even more important. New rails, platforms, and data models can improve efficiency, but they can also create uncertainty if participants do not understand where data originates, how it is validated, how rights are represented, how settlement finality is achieved, or how different systems interact. A digital market that lacks transparency does not reduce risk; it simply moves it into new places.

> Seen this way, liquidity is not a by-product of technology. It is the outcome of trust, transparency, participation, and operational certainty.

The Trilogy of Operational Liquidity – Managing Fragmentation through Interoperability and Networks

Accepting liquidity as the transformation benchmark for a safe transition raises the question of how liquidity is operationalised in practice. In the context of primary market modernisation, this can be understood through a trilogy of operational liquidity: fragmentation, interoperability, and networks.

The Operational Liquid Trilogy
Mitigation of fragmentation through interoperable networks



Source: ICMA PMIP NextGen

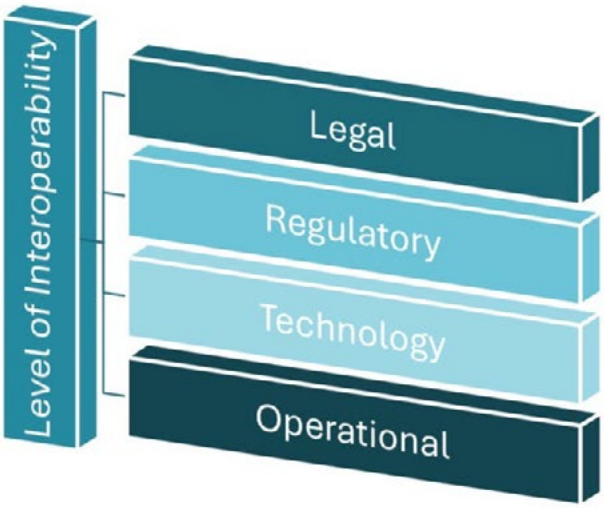
Fragmentation is the risk to be managed. Interoperability is the discipline that allows diversity without disconnection. Networks with regulated market infrastructures acting as trusted hubs are the mechanisms through which interoperability becomes operational in practice. Together, these three elements determine whether market evolution strengthens liquidity or weakens it.

If fragmentation is allowed to develop unchecked, liquidity divides across platforms, processes, data models or settlement channels. If interoperability is designed properly, optionality can be preserved without forcing the market into a single model. If networks and hubs are sufficiently open, standardised and governed, multiple issuance models can coexist while still supporting confidence, participation, and liquidity. This is where the distinction between fragmentation and optionality becomes central. Fragmentation is harmful where different systems, standards, processes, or platforms diverge in ways that increase cost, create reconciliation needs, trap liquidity, reduce access or weaken confidence. Optionality, by contrast, can be positive. Markets benefit from competition, different issuance channels, regional practices, and a degree of diversity in operating models. The objective should not be to force all activity into one platform or one model. The objective should be to create operational resilience and ensure that diversity does not become disconnection.

Interoperability is the mechanism that enables optionality without fragmentation. However, in primary markets interoperability cannot be reduced to a technical connection between systems. It must be understood more broadly:

- Legal interoperability is needed so that rights, obligations, and ownership records are recognised.
- Regulatory interoperability is needed so that activity can scale across jurisdictions without inconsistent treatment.
- Technical interoperability is needed so that systems can connect without creating new silos and “Digital Islands”.
- Data interoperability is needed so that economic and reference data can move consistently from issuance into settlement, custody, reporting, and secondary market use.
- Operational interoperability is needed so that roles, responsibilities, controls, and cut-offs are understood.

Level of Interoperability



Source: ICMA PMIP NextGen

Networks and hubs are what make this interoperability practical. They may take different forms: market infrastructures, data utilities, API layers, connectivity providers, identity or permissioning frameworks, or common industry standards. Their role is not necessarily to centralise all activity, but to provide trusted connection points through which different platforms, participants and infrastructures can exchange data, instructions, and confirmations in a consistent way.

> Fragmentation is the risk; interoperability is the requirement; networks and hubs are the coordination layer that make liquidity-safe optionality possible.

This broader view reflects the complexity of primary markets and aligns with the feedback received from market participants. Research and survey results[27] point to data standards and workflow integration as the areas likely to deliver the greatest impact on efficiency and modernisation. Participants valued interoperability more than platform dominance and identified coordination, incentives, and cost as greater blockers than technology itself. This is an important conclusion.

The industry is therefore not waiting for a single technological answer. It is asking for a better-connected market architecture: one in which fragmentation is controlled, interoperability is designed in from the start, and networks or hubs provide the coordination layer needed to preserve liquidity at scale.

Networks and hubs as the coordination mechanisms

Networks and hubs form the connective tissue of a modernised primary market architecture. Primary markets already today operate through networks: syndicate groups, investor connectivity tools, bookbuilding platforms, ICSDs and CSDs, custodian, paying agents, messaging systems, legal advisers and established bilateral relationships. These networks perform the practical work of coordination. They connect participants, structure information flows, support execution, and help the market operate at scale.

As market models evolve, this network & hub coordination role is likely to become more important, not less. Public markets, private markets, digital platforms, and tokenised environments may increasingly develop in parallel. Issuers may have more choice in how they access capital. Investors may expect better access to relevant information, clearer process visibility, easier participation, and better operational integration, while preserving appropriate confidentiality around sensitive primary market information. Technology providers and infrastructures are already offering new forms of connectivity. In that environment, the key question is whether these networks reinforce market liquidity or divide it.

27 ICMA PMIP survey and research documents as per Appendix A

Networks and hubs should therefore not be viewed only as technical infrastructure. They are also a market design choice. As traditional and emerging issuance environments coexist, the ability to move issuance data, instructions, and assets safely between platforms, registries, infrastructures, and ledgers becomes a precondition for a safe and scalable evolution of the market. Network-level interoperability, supported by common data standards, helps preserve optionality for issuers and investors while reducing the risk that liquidity becomes fragmented across isolated systems or "digital islands."

The purpose is to enable choice without creating disconnection: allowing different technologies, platforms, channels, and providers to coexist, while ensuring that market participants are not locked into a single model or route to market. A well-designed network architecture supports competition and innovation, but within a framework that preserves transparency, data consistency, settlement confidence, and operational resilience.

This requires more than basic connectivity. In practice, much of the market's information does not originate in a perfectly structured system. It originates in conversations, documents, spreadsheets, order books, data feeds, and bilateral workflows. A valuable network layer is therefore one that can capture information from where market participants already work, structure it into agreed formats, apply the required permissions and controls, and distribute it only where it is needed and appropriate. In that sense, the network function is not merely connectivity; it is governed orchestration of market data and workflow.

The value of a network should therefore be judged by practical market outcomes. Does it broaden participation? Does it improve transparency? Does it reduce manual effort? Does it preserve issuer and investor choice? Does it connect to existing infrastructure? Does it support legal certainty and settlement finality? Does it reduce fragmentation rather than create another closed environment?

This is particularly relevant when considering private markets. Investor feedback has rightly noted that while public primary market pain points are often manageable, private markets may face more acute challenges around access, documentation, data consistency, transferability, and transparency. If private debt markets continue to grow, the principles discussed in this section become even more important. The question is not only how to modernise the public syndicated bond market, but how to ensure that the broader debt capital market ecosystem develops coherently, with enough trust, transparency, and interoperability to support liquidity across both public and private channels.

Seen this way, networks and hubs sit at the intersection of liquidity, interoperability, and governance. They will help determine whether the next generation of primary markets develops as a connected and interoperable ecosystem, or fragments into separate pools of data, access, and liquidity. The objective should not be to create one network for all activity, but to ensure that the networks that do emerge are sufficiently open, standardised and governed to support the market's core purpose: efficient, trusted, and resilient capital formation.

The trilogy also explains why liquidity cannot be protected through technology alone. A new platform may be efficient in isolation, but if it fragments data, access, or settlement channels, it may weaken the market outcome. Equally, interoperability cannot remain an abstract principle; it must be implemented through networks, hubs and standards that allow participants to move information, instructions, and assets safely across the ecosystem. This is why the next layer of the architecture must focus on data: without trusted, structured and consistent data at source, neither interoperability nor network connectivity can function at scale.

Type	Today	Tomorrow	Purpose
1. Market coordination networks	Syndicate banks, arrangers, investors, issuers, legal advisers, and other participants coordinate issuance through established relationships, bookbuilding processes, roadshows, and bilateral communication.	More transparent and data-enabled coordination across issuers, investors, and intermediaries, with improved connectivity across public and private issuance channels.	Originate, price, and distribute new issuance; support demand formation, investor participation, and execution confidence.
2. Workflow and execution networks	Bookbuilding platforms, investor communication tools, email, spreadsheets, and internal systems support parts of the issuance process, but many steps remain manual or fragmented.	More integrated workflows connecting announcement, marketing, order taking, allocation, confirmation, settlement preparation, and post-issuance data distribution.	Reduce operational friction, duplication, and manual re-keying; improve control, speed, and execution quality.
3. Data and standards networks	Bond data is exchanged across documentation, vendors, platforms, and internal systems, often in inconsistent or unstructured formats.	Machine-readable data captured at source and distributed consistently across the lifecycle, supported by common standards such as the ICMA Bond Data Taxonomy and relevant messaging standards.	Create a common language for the market; enable automation, interoperability, straight-through processing, and better data quality.
4. Infrastructure and settlement networks	CSDs, ICSDs, custodians, paying agents, payment systems and settlement infrastructures provide trusted post-trade processing and settlement finality.	Traditional and digital infrastructures increasingly interoperate across dematerialised, tokenised, and conventional issuance models, potentially including tokenised cash or DLT-based rails.	Preserve legal certainty, custody integrity, settlement finality, asset servicing, and operational resilience.
5. Emerging network-of-networks architecture	Digital asset platforms, private-market networks, AI tools, and new technology providers often operate through specific use cases or limited ecosystems.	A more connected "network of networks" where digital platforms, private markets, AI-enabled tools, and traditional infrastructures interact through common data, governance, and interoperability standards.	Support future issuance models, broaden access, reduce fragmentation, and allow innovation without undermining liquidity or trust.

Data as the foundation of market infrastructure

Across the PMIP NextGen work, one conclusion is consistent: data is foundational with infrastructures acting as custodians of trusted lifecycle data. Survey feedback indicated that data standards and workflow integration are seen as among the most important drivers of efficiency and modernisation. This aligns with the broader industry direction, including the focus on data harmonisation in regulatory and infrastructure discussions.

Data should therefore not be treated as a technical afterthought. In primary markets, data is created at the birth of a financial asset. The term sheet, pricing supplement/final terms and base or standalone prospectus define the economic, legal, and operational identity of the instrument. If that data is incomplete, inconsistent, or unstructured at source, every subsequent process becomes harder, including bookbuilding, allocation, settlement, custody, reporting, lifecycle events, and secondary-market activity.

> In primary markets, data is created at the birth of the asset. If it is not structured and trusted at source, every later process becomes harder to automate, govern and scale.

A useful analogy is that the term sheet acts like a birth certificate for the financial asset. It records the instrument's essential identity. The ICMA Bond Data Taxonomy can then be seen as a common language for describing that identity in a machine-readable and technology-neutral way.

This matters for workflow modernisation because structured data reduces re-keying, reconciliation, and manual interpretation. It matters for model change because future issuance models, whether platform-based, DLT-based or AI-enabled, require consistent data to operate safely. It matters for governance because auditability, accountability and controls depend on knowing which data was used, where it came from and how it moved through the process.

Regulatory and infrastructure work increasingly points in the same direction. The ECB AMI-SeCo focus on data harmonisation, and interoperability reinforces the view that consistent issuance data is not only a market efficiency issue, but a prerequisite for broader integration, resilience, and safe market evolution.

This is why data sits before technology in the cross-cutting architecture. Digital rails, tokenisation, DLT and AI can only scale safely if the asset they represent is supported by trusted, structured and legally traceable data from the outset. The next question is therefore how emerging issuance rails can build on that foundation without creating new silos, fragmented liquidity or disconnected operating models.

Digitalising issuance rails: DLT, tokenisation and digital market infrastructure

Building on that data foundation, the next wave of technological change in capital markets has progressively shifted focus from process optimisation to product innovation, to the transformation of market infrastructure itself. From the late 2010s onwards, distributed ledger technology, tokenisation and digital issuance expanded the discussion from how a bond is processed to how a bond may be represented, recorded, transferred, and serviced across its lifecycle. The World Bank's 2018 bond-i transaction is widely referenced as one of the first significant proof-of-concept blockchain bonds in capital markets.

Since then, the industry has moved through several phases: conceptual exploration, small pilots, digital bonds issued in controlled environments, regulated sandbox activity and increasingly production-oriented transactions involving established issuers, banks, infrastructures, and investors. More recently, the focus has begun to shift from isolated, bespoke platforms towards the digitalisation of major market infrastructures — a development that signals a meaningful transition from experimentation to systemic integration.

This roadmap is still developing, and the pace of adoption differs across jurisdictions and market segments. Some transactions have focused on digital representation of conventional securities, others on native digital issuance, settlement using tokenised cash or central bank money, and lifecycle automation through smart contracts. Each of these developments tests a different part of the future issuance model and collectively demonstrates the transparency and efficiency benefits that DLT can offer.

However, product and platform innovation alone is not enough. The challenges of market fragmentation and the absence of consistent data standardisation continue to constrain scale. A digital bond that does not connect to investor systems, custody arrangements, payment rails, applicable legal frameworks, liquidity channels, and reporting obligations remains difficult to scale.

> ***"Digital acceleration in primary markets is a data governance and interoperability story that demands ecosystem-wide alignment. By ensuring digital wrappers coexist seamlessly with legacy systems, the PMIP NextGen initiative delivers the exact foundational clarity needed to help drive true, market-wide adoption."***
>
> Razvan Daniel Dumitrescu, Emirates NBD Capital

The collateral use case also illustrates why digital rails must be judged by lifecycle utility, not issuance novelty alone: assets only become scalable if they can move across custody, settlement, collateral, and liquidity-management channels without creating new silos.

This reinforces the central cross-cutting point:

| Future rails only become useful when they connect to the wider market architecture.

Digital issuance should therefore not be judged only on whether it can technically be done, but on whether it delivers meaningful market outcomes: better access and liquidity across jurisdictions, faster access to trusted and standardised data, and integrated workflows that reduce friction and improve operational efficiency throughout the trade lifecycle.

AI-enabled Integration: Human-in-the-loop Governance, Data Standards and Workflow Harmonisation

From 2022 onwards, the rapid acceleration of generative AI alongside continued advances in cloud computing, has added a new layer to the technology discussion. AI is likely to influence primary markets from front to back: supporting documentation review, data extraction, reconciliation, exception management, investor analysis, allocation processes, market monitoring, compliance checks, and internal workflow routing. Over time, AI may become increasingly embedded in both the investment decision process and the issuance process, reinforcing the wider industry shift toward operating models that are more automated, data-led, standardised, open, and agile.

Human in the Loop

This does not mean that AI replaces the people who make the market. It means that people may increasingly operate with AI-supported tools that help them process more information, identify inconsistencies faster, and focus their judgement where it adds most value.

This is why the "human in the loop" remains important. Primary markets are not only operational processes; they are also judgement-based markets. Relationships, market context, execution strategy, investor quality, pricing tension, and issuer objectives all matter too much to assume that automation should simply replace human decision-making. A modernised market should not seek to remove people from areas where judgement adds value. It should reduce unnecessary manual burden so that people can focus on the decisions that matter most.

The better model is likely to be graduated. Some tasks may become fully automated because they are repetitive, rules-based, and low risk. Others may be AI-assisted, with human review and approval. More sensitive decisions, such as allocation strategy, pricing judgement, issuer advice, investor prioritisation or risk escalation, should remain clearly accountable to people, even if supported by better data and technology.

The implication is that the role of technology in primary markets should be understood through the lens of Process, Product and People. In process, technology has already improved bookbuilding, investor connectivity and regulatory record-keeping. In product, DLT and digital issuance are testing new rails, new representations of securities and new forms of lifecycle automation. In people, AI and automation are beginning to reshape how work is performed, how decisions are supported, and how accountability is evidenced.

Data Standards

This evolution also highlights why data standards and governance are so important. Bookbuilding tools, investor communication platforms, DLT networks and AI systems all depend on accurate, consistent, and well-governed data. Without common definitions and reliable data at source, technology risks creating faster fragmentation rather than better markets. With common standards, however, technology can become a bridge between today's workflow improvements and tomorrow's issuance models.

The practical lesson is therefore clear: technology should not be introduced into primary markets as a collection of disconnected tools. It should be integrated into a coherent architecture that supports market liquidity, preserves trust, improves transparency, and enables participants to adapt their roles over time. The future of primary markets will not be defined by one platform, one network or one technology. It will be defined by how well the industry connects process innovation, product innovation and people-led governance into a market structure that remains efficient, resilient, and fit for purpose.

Workflow Harmonisation: AI Bridging Structural Gaps, Reducing Fragmentation, Enhancing Interoperability

Recent advancements in AI provide opportunity to streamline fragmented workflows by digitising issuance data at its source, reducing reconciliation risks, manual interventions and enable networks to disseminate unified structured data for seamless consumption by issuers and investors.

Fragmentation in primary capital markets results in workflows that are siloed, riskier, slower, and costlier. Issuers and investors spend considerable time and resources on tasks that are repetitive, data intensive, and prone to errors. Manual data capture, unstructured non-standard communication channels, manual touchpoints across the whole value chain characterise the current capital market workflows. This typically happens because of communication gaps between systems resulting in process inefficiencies. Recent advancements in AI offer solutions that could integrate siloed processes without reengineering the whole workflow. Through careful and articulate use of AI, industry can help bridge the gaps and drive process inefficiencies making them faster, reliable, affordable, easier to regulate and scale.

a) In practical terms, AI can support three areas: Market Intelligence and Liquidity assessment: As discussed earlier, liquidity is the benchmark that should drive workflow and model change. Issuers and syndicate banks spend considerable time studying macroeconomic trends, investor mood, past and recent comparable transactions, pricing benchmarks, credit profiles and their implications on market liquidity, pricing landscape, and certainty of execution. This process is subjective, time intensive and heavily reliant on investor calls, chatrooms, investor outreach, and roadshows. AI can help bridge this gap by aggregating, synthesising, and flagging actionable macroeconomic information from research reports, investor calls, news releases. Large language models can analyse these data points and provide insights into issuance windows with high market receptiveness and liquidity. AI should not replace the banker's wisdom but facilitate the cumbersome assimilation of information leading to issuance of funding mandate. In more futuristic workflows, use of agentic AI would make it even easier to issue mandates and position syndicates as advisors rather than data interpreters.

b) Data Taxonomy Bridging: A structural gap remains when incoherent data standards are used by stakeholders across the primary issuance lifecycle. This inherently creates communication barriers and impedes interoperability between systems. AI enabled data extraction and transformation into a standardised machine-readable library of bond terms such as ICMA BDT can help bridge this standardisation gap. World Bank Group has embedded this automated extraction and transformation of trade data into BDT format in its AI powered SHASTRA tool.

   In addition, AI offers another useful bridge in cases where BDT adoption is still in infancy. NLP models trained on numerous term sheets, offering documents and bond final terms can learn mapping between non-standard terminology and standard BDT nomenclature making interoperability achievable. World Bank Group's ASTRA AI tool uses trained NLP models for security reconciliation in its asset management services.

c) Smart Matching and Settlement Bridge: Settlement in existing workflows is reliant on settlement instructions being passed from lead manager to investor, from investor to custodian, from custodian to ICSD and from ICSD back to the issuer's paying-agent. This information flow happens over multiple systems, different messaging formats, in likely different time zones. Settlement failures often occur due to mismatched instructions, different formats for those instructions and likely keyed in manually somewhere in the process. NLP and machine learning models can cross check settlement instructions across multiple reference sources flagging discrepancies for human resolution before submission thus avoiding costly settlement delays or failures.

The key principle is control. AI can reduce manual burden, improve consistency and accelerate workflow integration, but it must operate within a governed framework of data standards, explainability, auditability, and human accountability.

World Bank Group AI Use Case | SHASTRA[28]: Term sheet Digitalisation and Automated Workflow

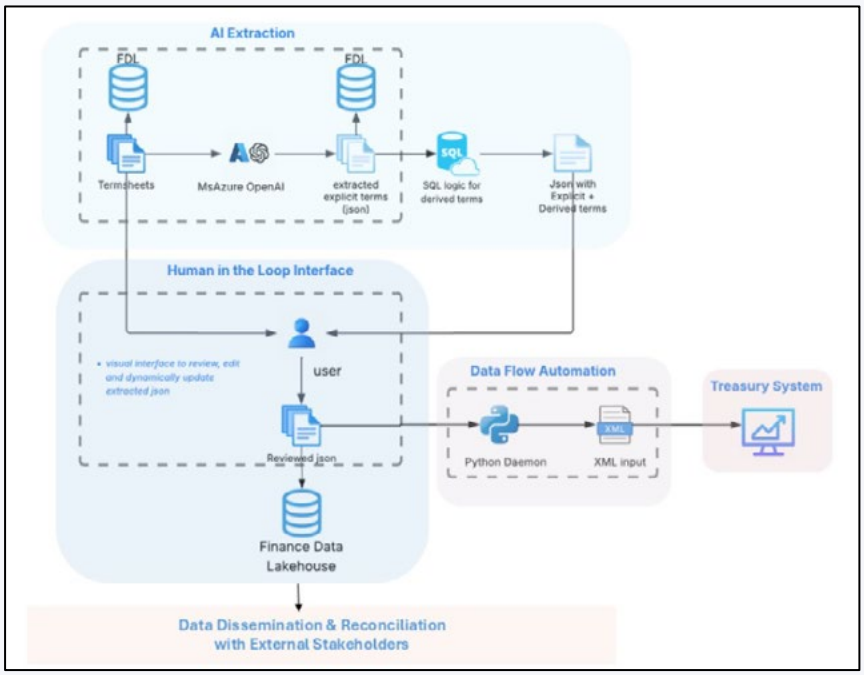
World Bank Group Treasury has an annual funding programme of $80-100 billion for its core development operations in client countries. Managing the end-to-end lifecycle of these transactions has largely been a manual process – requiring multiple data entries, reviews, and reconciliations across the World Bank Group and stakeholders including dealer banks, the custodian, World Bank Group's fiscal and paying agent, and clearing systems.

This fragmented approach increased the risk of errors and operational inefficiencies and consumed significant time and resources, making it increasingly unsustainable.

To enhance data accuracy, reduce downstream fragmentation, and promote greater consistency across the trade lifecycle, World Bank Group leveraged generative AI capabilities and implemented SHASTRA, a generative AI tool that extracts trade terms from the source dealer term sheets. SHASTRA digitises trade data creating a digital copy that can be leveraged overtime for all downstream processes. The data is formatted in accordance with the ICMA BDT, enabling the structured and consistent distribution of trade information to relevant market participants. This alignment with market data standards positions SHASTRA not only as an operational efficiency tool but also as a mechanism to improve data interoperability.

SHASTRA implements a Retrieved Augmented Generation (RAG) pipeline leveraging LLMs to interpret and extract key trade economics from term sheets with multiple formats, currencies, and trade structures. The outputs undergo thorough review and validation by humans before being used in downstream workflows.

SHASTRA is built on a combination of established enterprise-grade and open-source technologies to ensure ease of implementation, horizontal scalability, and cost efficiency. This approach enables the platform to be deployed and maintained without significant infrastructure overhead while remaining adaptable to evolving operational requirements.



28 https://thedocs.worldbank.org/en/doc/ed445659fbb8977584ff440488c1139a-0340012025/original/World-Bank-SHASTRA-Case-Study-2025.pdf

The practical lesson is clear: technology should not be introduced into primary markets as a collection of disconnected tools. Workflow platforms, document automation, DLT networks and AI systems should be connected through a coherent architecture based on trusted data, common standards, interoperability, and clear accountability. The future of primary markets will not be defined by one platform, one network or one technology. It will be defined by how well the industry connects process innovation, product innovation and people-led governance into a market structure that remains liquid, resilient and fit for purpose.

An architecture of standards as the enabler of scale and efficiency

The efficiency, trust and resilience of today's primary markets are the result of decades of coordination. Shared identifiers, legal agreements, regulatory frameworks, settlement discipline, and market practice have together created the operating system on which issuance relies. The opportunity now is not to reinvent this system, but to use today's technology to modernise it — making it more efficient, accessible, and scalable for future growth.

Tokenisation, DLT and smart contracts do not by themselves create a new asset class. A digital bond must remain a bond, carrying the same baseline data, legal rights, investor protections, regulatory standing, and operational predictability as its traditional equivalent. Innovation in market infrastructure is welcome; erosion of the rights attached to the asset is not.

This unevenness creates a practical problem. Issuers carry accountability for the rights and obligations attaching to a bond across its full lifecycle — from issuance, through servicing, to its use as collateral or in repo. As the market becomes more digital, that accountability does not move. What changes is the number of standards, rulebooks, and infrastructures the issuer, and the participants downstream, must navigate to remain compliant. Today, there is no shared map of where those standards sit. Participants are increasingly told to "connect to the new rails" without a clear view of which rulebook governs which step.

In this context, an architecture for standards becomes essential. Standards do not scale merely because they exist; they scale when they are embedded into the workflows, tools, and channels through which market participants already operate. Data taxonomies, legal documentation, regulatory requirements, operational conventions, identifiers, messaging standards, and technology specifications must be understood as connected parts of the same architecture.

Within such an architecture, different standards play different but complementary roles. The ICMA Bond Data Taxonomy supports structured bond terms at the birth of the asset. The Common Domain Model provides a standardised, machine-readable, and machine-executable model for products, transactions, and lifecycle events. Identifiers and messaging standards such as ISIN, LEI and ISO 20022 support recognition, routing, and exchange across systems. The objective is not to elevate one standard above the others, but to connect them so that data, rights, obligations, and lifecycle events can move consistently across traditional, hybrid and digital market environments.

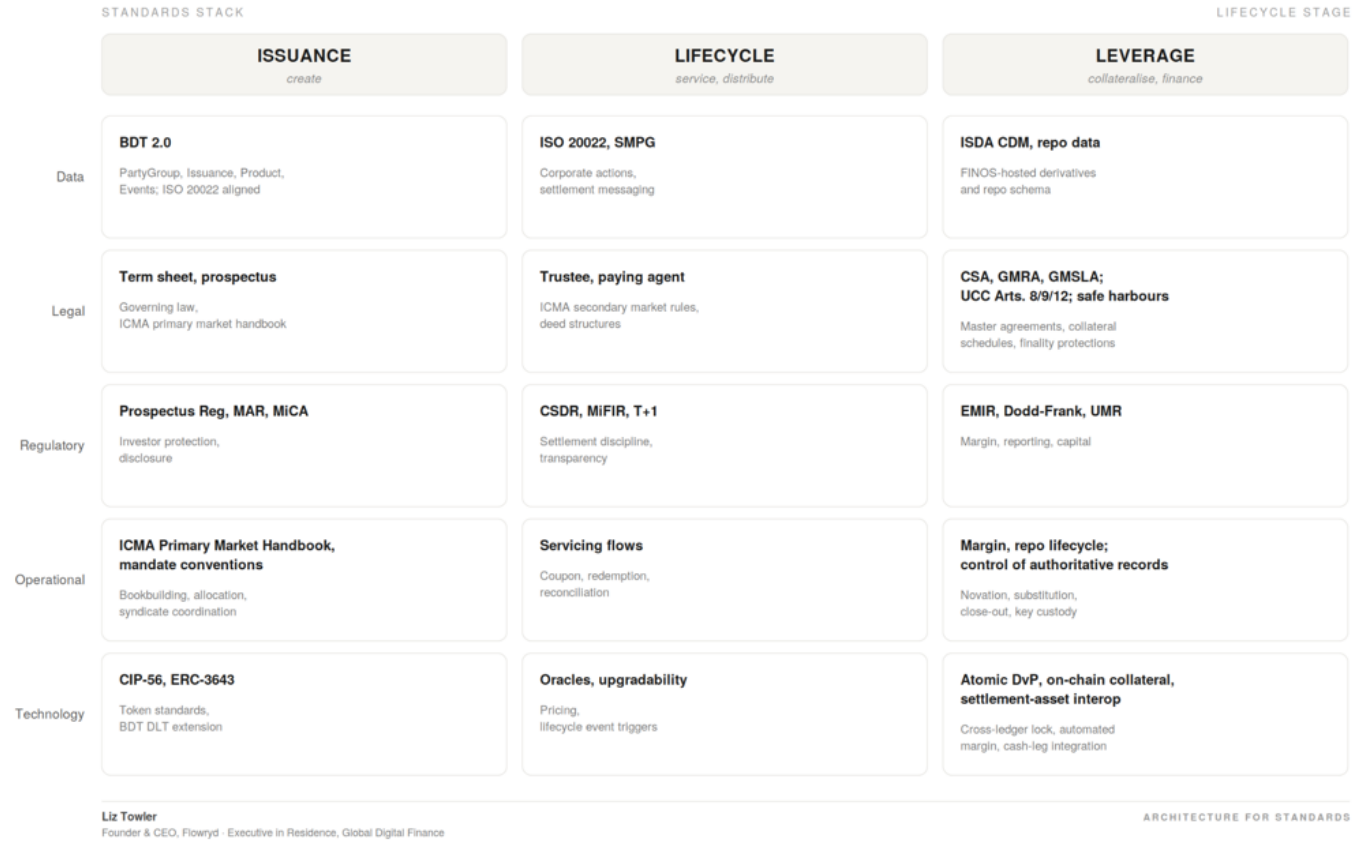
In digital or hybrid environments, on-chain data should also be considered within this architecture, as ledger-native records may become part of the evidence base for settlement, lifecycle events, auditability, and operational control.

The Issuance & Processing Taxonomy (IPT)29, co-developed by the ICSDs, provides another example of lifecycle data standardisation. Complementing initiatives such as the ICMA bond Data Taxonomy, ISO standards and established market-practice sources, the IPT seeks to support consistent data elements across security creation, acceptance, settlement, asset servicing and redemption. It illustrates how standards can help connect origination and downstream processing without creating new silos.

The recent publication of ICMA's Bond Data Taxonomy (BDT) version 2.0 should be understood in this broader context. It is not only an incremental update to a single taxonomy, but an early sign of the market's growing recognition that trusted, structured and machine-readable data at source is becoming essential for scale, interoperability, and automation. By supporting consistent capture of bond terms from the "birth" of a financial asset, the BDT provides an important foundation for workflow efficiency, lifecycle connectivity, and future AI-enabled processes. In an environment where AI will increasingly depend on reliable input data, ensuring that bond terms are captured consistently and correctly at issuance becomes even more critical.

29 For further details of the IPT: https://www.clearstream.com/clearstream-en/newsroom/250925-4693308

The matrix below offers a navigable map of how these standards interact across the asset lifecycle. It places the lifecycle on one axis — issuance, lifecycle servicing, leverage — and the standards stack on the other: data, legal, regulatory, operational and technology. Reading horizontally shows how standards interlock at each lifecycle stage. Reading vertically shows which communities are responsible for the standards a participant depends on. The Bond Data Taxonomy sits at the foundation as the data layer for issuance, against which downstream lifecycle and leverage activity is reconciled.



The matrix is illustrative rather than exhaustive. The standards landscape will continue to evolve as new taxonomies, conventions and technical specifications emerge, and as existing ones are extended into digital environments. Several cells also differ materially by jurisdiction — adoption of digital-asset frameworks, master agreement variations and state-level commercial codes all introduce further texture that participants must navigate when operating across borders. The architecture should therefore be understood as adaptive and community-led — developed openly across the bodies that maintain its constituent parts, including standards-setting associations, infrastructure operators, regulatory communities, open-source consortia, and technology providers. No single standard, jurisdiction or platform should define the whole, and the gaps between them are most effectively closed through co-design across the communities they affect.

The point is structural. Standards are not layered, they are situated. The matrix tells a participant where to look. In an environment where automation, agentic systems and AI-enabled validation are increasingly embedded in market processes, this matters more, not less. Tools such as AI that operate without a shared architecture risk reinforcing incomplete models, propagating gaps between systems, or generating outputs that look plausible but are not grounded in the obligations that still govern the asset. An explicit architecture for standards is therefore the precondition for safe automation, just as it is the precondition for human coordination across a hybrid market. The practical work of mapping and curating it must come from market participants who carry the obligations — anchored in operational reality and developed by the industry, before automated and agentic systems are deployed against it. Developing this architecture further should be a priority for the next phase of industry collaboration.

Governance as a prerequisite of adoption

Governance is not an obstacle to innovation. It is what makes adoption possible. Issuers and investors will not embrace new workflows or new models simply because they are technologically advanced. They will adopt them if they are understandable, reliable, secure, auditable, and convenient to use.

> Governance is not the opposite of innovation; it is what makes innovation understandable, trusted, and adoptable at scale.

Investor feedback has warned against over-engineering solutions before core usability and interoperability issues are solved. This warning should be taken seriously. Technology that adds complexity faster than the market can absorb it may slow adoption rather than accelerate it.

The same applies to the role of banks and intermediaries. Issuer feedback highlighted the need to better understand incentives, costs, and the evolving role of banks in a more digital market. This is central to the transition debate. Banks perform important coordination, risk management, distribution, and advisory functions. These functions may evolve as data improves, workflows become more automated and networks become more connected, but they do not disappear simply because a new technology exists.

The question is not whether intermediaries remain relevant. They will. The question is how their value proposition changes in a more transparent, data-driven, and interoperable market.

This also points to the broader question of accountability. The industry is increasingly aligned on the direction of travel, but alignment is not the same as execution. Survey feedback[30] suggests a willingness to act, but also shows that the main blockers are coordination, incentives, and cost rather than lack of technology. Progress requires therefore shared responsibility. Issuers, investors, intermediaries, infrastructures, technology providers, and regulators all have a role in shaping the standards, workflows and governance arrangements that will allow the market to evolve safely.

Principles for the cross-cutting layer

The Cross-cutting workstream points to a set of practical principles that can guide both near-term workflow improvement and the transition towards a modernised future primary market model.

1. **Transparency is a prerequisite for trust**. Participants need to understand the process, the data, the risks, and the responsibilities attached to any issuance model.
2. **Trust is a prerequisite for liquidity**. Issuers and investors will only participate at scale where they have confidence in execution, settlement, legal certainty, and post-issuance functioning.
3. **Liquidity should be the benchmark of a safe transition**. A modernised market must support the ability to originate, price, allocate, and settle issuance efficiently across public and private channels.
4. **Fragmentation should be distinguished from optionality**. Optionality supports innovation and competition. Fragmentation increases cost, risk, and inefficiency.
5. **Interoperability is the foundation of a networked market**. It must be addressed across legal, regulatory, operational, data and technology layers, with networks and hubs acting as the coordination mechanism that preserve optionality while preventing fragmentation.
   Together, fragmentation, interoperability and networks form the operational trilogy through which liquidity can be preserved in a more digital, hybrid and multi-channel primary market.
6. **Data standards are core market infrastructure**. They enable workflow efficiency today and future model change tomorrow.
7. **AI and automation require governance by design**. The more powerful the technology, the more important transparency, auditability, human oversight, and clear accountability become.

30 ICMA PMIP survey – Appendix A

8. **User convenience matters**. Solutions that are technically elegant but operationally difficult will not scale.

Cross-cutting recommendations

Based on the above, the PMIP NextGen project has the following cross-cutting recommendations:

1. Issuer, intermediaries, and market infrastructure provider should treat **structured data at issuance** as a common foundation for modernisation. This includes continued support for common definitions, machine-readable formats, and standards such as the ICMA Bond Data Taxonomy.
2. Industry and market infrastructure provider should **prioritise interoperability** over platform dominance. The objective should be a connected ecosystem that allows different models to coexist while preserving liquidity and operational consistency. Developing an architecture of industry standards should therefore be a priority for the next phase of industry collaboration.
3. Future issuance models should be **assessed against a liquidity benchmark**. Any new model should demonstrate how it supports issuer access, investor participation, settlement certainty, secondary market functioning, and lifecycle servicing.
4. **Networks and hubs should be evaluated by market outcomes**, not technological novelty. Their value should be judged by whether they reduce fragmentation, broaden access, improve transparency, support settlement confidence, and connect effectively with existing market infrastructure.
5. **AI use cases should be developed around clear workflow needs and governed data**. The industry should prioritise practical applications that reduce friction, improve data quality, and support human decision-making.
6. **Governance should be embedded from the outset**. Legal certainty, operational controls, auditability, permissions, data lineage, and accountability should be part of the design of new processes, not added after implementation.
7. Finally, **regulators and industry stakeholders should maintain an evolutionary approach**. Primary markets should not seek disruption for its own sake. The opportunity is to modernise what works, remove unnecessary friction, and build the foundations for future models in a way that preserves the core purpose of the market: efficient, trusted, and resilient capital formation.

4. Conclusion — from common themes to practical action

A degree of thematic repetition across the workstreams is not a weakness of this report. It is one of its most important findings. Workflow, Model Change and Cross-Cutting Themes approach the market from different angles but repeatedly arrive at the same conclusions: data must be trusted at source, interoperability matters more than platform dominance, liquidity must remain the benchmark for change, and governance and human accountability must be embedded from the outset.

This convergence matters. It shows that the foundations for primary-market modernisation are not separate workstream findings, but shared market requirements. The same basic conditions are needed whether the industry is improving today's workflow, preparing for new issuance models, developing new products, or adapting stakeholder roles.

They are also necessary because modernisation will not take place through an immediate replacement of today's financial market infrastructure. Traditional, hybrid and digital models are likely to coexist for a considerable period. A safe transition must therefore allow new capabilities to develop alongside existing infrastructure, connecting the two without fragmenting liquidity, weakening resilience or disrupting processes that already work.

The practical conclusion is therefore not a call for one platform, technology, or future market design. It is a call for coordinated action across Process, Product and People.

Conclusion at a glance

Dimension	Core principle	Practical actions	Intended outcome
Process	Create a trusted and interoperable operating layer. Capture trusted data once, make it reusable across the lifecycle, and connect traditional, hybrid and digital infrastructures through standards, controls and clear accountability.	• Establish a minimum common issuance dataset and capture it as early as possible. • Provide core bond information in both machine-readable and human-readable form. • Prioritise interoperability and controlled coexistence over isolated platform optimisation. • Embed ownership, permissions, validation, auditability, and exception handling into workflows.	More efficient and resilient execution, less re-keying and reconciliation, clearer accountability, and a safe path for existing and emerging infrastructures to coexist.
Product	Enable liquidity-safe optionality and lifecycle utility. Product innovation should expand choice, access, and usefulness only where liquidity, legal certainty, investor confidence, and operational resilience are preserved.	• Assess new issuance formats, digital wrappers and settlement models against liquidity, resilience and coexistence benchmarks. • Use better data and processes to make established products more adaptable, comparable and scalable. • Support traditional, hybrid and digital formats in parallel. • Design products for mobility across distribution, settlement, custody, collateral, repo and servicing.	Broader product and distribution opportunities, improved lifecycle efficiency and market growth without fragmenting liquidity or weakening investor protection.
People	Define ownership, preserve judgement, and build capability. Modernisation should reduce avoidable friction while strengthening human accountability and equipping institutions to operate across a more diverse market structure.	• Clarify responsibilities for data, standards, controls, interoperability and settlement readiness. • Shift human effort away from repetitive coordination towards judgement, strategy, risk and client value. • Keep human accountability explicit in pricing, allocation, legal interpretation and risk decisions. • Treat learning, upskilling, and retooling as part of the transition itself.	Clearer ownership, stronger decision-making, better use of specialist expertise and institutions that remain relevant and influential as market roles evolve.

Overall conclusion: Modernisation should preserve what works, improve what is strained and connect what is emerging. The market should move through coordinated, incremental change, leading to industrial-scale adoption and production-ready solutions that allow traditional, hybrid and digital models to coexist and evolve safely.

Process — create the trusted and interoperable operating layer

Core principle: Capture trusted data once, make it reusable across the lifecycle and connect traditional, hybrid and digital market infrastructures through an architecture of standards, controls, and clear accountability.

1. **Capture and share trusted issuance data at source**.
   Market participants should prioritise a minimum common issuance dataset, captured as early as possible and aligned, where relevant, with established standards such as the ICMA Bond Data Taxonomy. Core bond information should be made available in both structured, machine-readable form and human-readable legal documentation, with clear ownership, status, timestamping, and traceability.
2. **Prioritise interoperability and controlled coexistence over isolated optimisation**.
   Platforms, infrastructures and service providers should remain free to compete on functionality, service, and user experience, but core data, identifiers, message purposes, and lifecycle events must move consistently across systems. Existing financial market infrastructure, hybrid models and emerging digital rails should be able to coexist and interact without creating parallel pools of data, access, or liquidity. Greater use of common standards and identifiers should support gradual migration and optionality without forcing the market prematurely towards a single infrastructure model.
3. **Embed governance, controls, and accountability by design**.
   Automated workflows and AI-supported processes should make clear who provides, validates, amends, approves and remains accountable for data and decisions. Governance should be built into workflows from the outset, particularly where information affects documentation, security set-up, allocation, settlement readiness, and investor-facing communication.

Product — enable liquidity-safe optionality and lifecycle utility

Core principle: Product innovation should expand choice, access, and utility only where liquidity, legal certainty, investor confidence, operational resilience, and compatibility with the wider market are preserved.

1. **Assess innovation against a liquidity, resilience, and coexistence benchmark**.
   New issuance formats, digital wrappers, settlement models, and distribution channels should be adopted where they improve execution, access, transferability or lifecycle efficiency without fragmenting liquidity or weakening secondary-market readiness, settlement certainty, or investor protection. Traditional and digital instruments, infrastructures, and settlement models will need to coexist during the transition. Innovation should therefore connect into the wider market rather than require established and resilient channels to be displaced before viable alternatives are ready.
2. **Use better data and processes to make established products more adaptable**.
   The immediate opportunity lies less in creating entirely new asset classes than in enhancing established instruments through structured data, clearer attributes, improved comparability, denomination flexibility, more efficient settlement, and more effective lifecycle servicing. Traditional, hybrid and digital formats should be capable of coexisting and serving different issuer and investor needs.
3. **Design products for mobility across distribution and the lifecycle**.
   Product value should not end at issuance. Modernised instruments should be capable of moving efficiently across distribution, settlement, custody, collateral, repo, and asset-servicing environments. This includes supporting growth in private markets, asset-based finance, and blended-finance structures where legal, governance, interoperability, and liquidity conditions are met.

People — define ownership, preserve judgement, and build capability

Core principle: Modernisation should reduce avoidable friction while making ownership clearer, strengthening human judgement and equipping institutions to operate across traditional, hybrid and digital market environments.

1. **Clarify who does what across the future market architecture**.
   Shared direction is not enough. The market needs defined responsibilities for data provision, validation, standards governance, interoperability, identity management, settlement readiness, and controls. Incumbents, new entrants, infrastructures, vendors, and regulators must collaborate with an attitude of shared accountability.
2. **Shift human effort from coordination towards judgement and client value**.
   Automation should reduce re-keying, reconciliation and avoidable manual hand-offs, allowing market professionals to focus on pricing, allocation, risk, product expertise, issuer advice, investor understanding, and accountability. Human responsibility should remain explicit wherever judgement determines market outcomes.
3. **Treat learning, upskilling, and retooling as part of the transition itself**.
   Institutions should provide the time, space, and incentives for people to combine traditional market expertise with data fluency, digital execution capability, AI awareness, product understanding, and interoperability skills. The competitive question is not simply whether existing stakeholders remain relevant, but whether they adapt quickly enough to remain influential across a more diverse market structure.

Final call to action

If successful, this transition will not replace today's primary market. It will strengthen it. The defining characteristic of the next generation market will not be a specific technology or platform, but the ability to combine trusted data, interoperable processes and human judgement into a system that can scale efficiently without fragmenting liquidity. This is the benchmark against which all change should be measured.

The market does not need to wait for a single breakthrough. Progress can begin through practical steps: publishing structured issuance data alongside legal documents, adopting existing identifiers and standards, connecting current workflows more effectively, testing innovation against liquidity and lifecycle utility, assigning clear ownership and investing in workforce capability.

The objective is not to break what is not broken. It is to preserve the resilience, liquidity and market confidence provided by today's infrastructure while building the standards, connections and capabilities that allow existing, hybrid and digital models to coexist and evolve safely.

Taken together, these actions provide a pragmatic path from improving execution today to enabling a more adaptable market tomorrow. The responsibility now sits with market participants, industry bodies, infrastructures, and policymakers to move from broad agreement to coordinated implementation.

> ***"After eighteen months of collective work across PMIP and PMIP NextGen, the report gives us both a shared direction and a practical structure for what comes next. The three workstreams lend themselves to a 'divide and conquer' approach, with targeted working groups and deep dives able to progress the specific recommendations on workflow, model change, and the foundations for a safe transition. At the same time, the central lesson of the report is that these areas belong together: process enables product, product depends on infrastructure and governance, and progress ultimately relies on people, skills, and accountability. As markets transition, ICMA and PMIP NextGen have an important role to play as guardians of process, product, and people — helping the industry move safely towards more modernised, resilient, and diversified markets."***
>
> Armin Peter, ICMA Consultant, PMIP Lead & Co-Writer

Appendix A: PMIP ICMA Survey

Directional practitioner evidence from 74 cleaned responses across banks, issuers, investors, platforms, and market infrastructure participants.

74%
describe fragmentation as manageable but inefficient

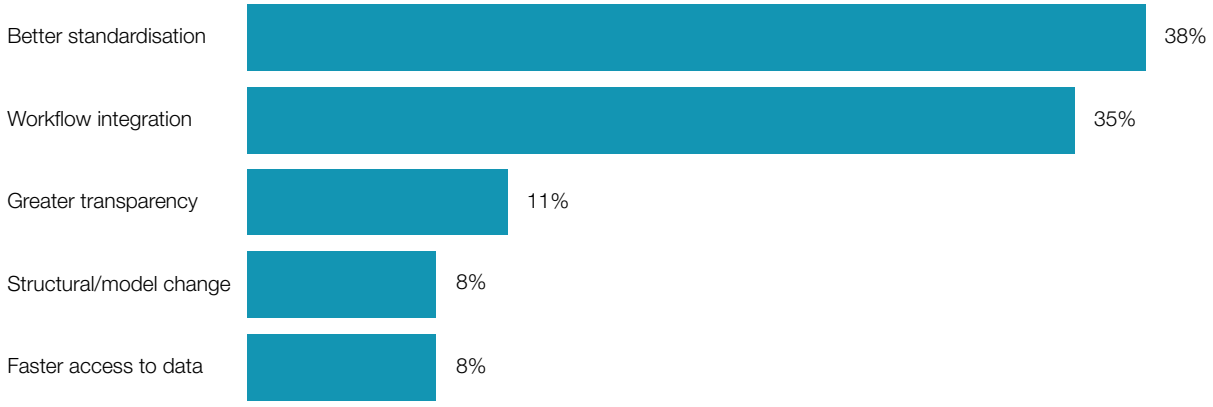
73%
choose standardisation or workflow integration as the highest-impact improvement

58%
are likely or very likely to adopt digital issuance/ assets within five years

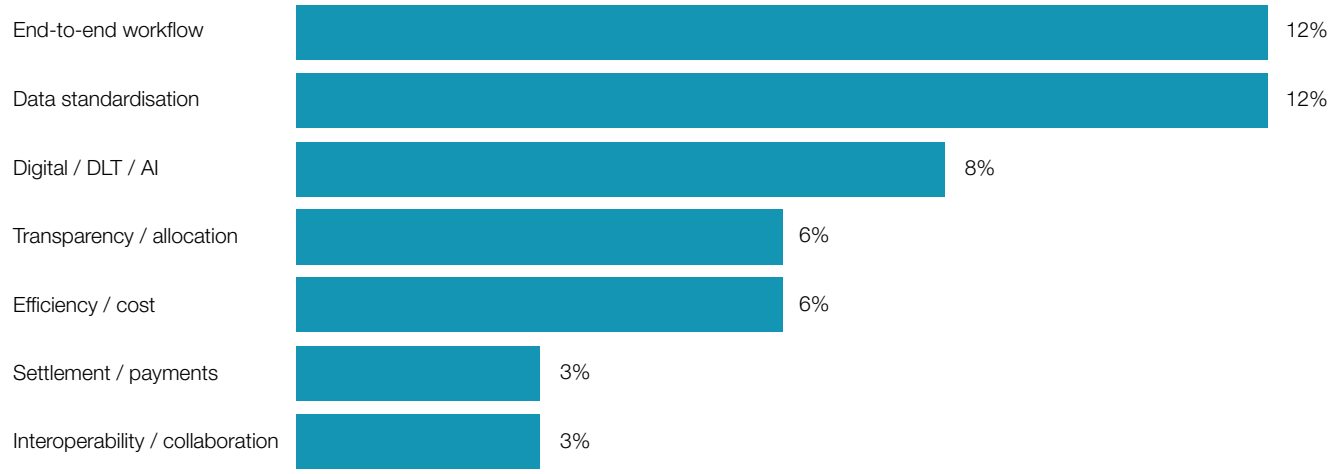
62%
currently use none of DLT, AI-enabled tools or automation in primary markets

What the survey says

Highest-impact improvement priorities



Most frequent themes in open-text responses



How the evidence supports the report's three conclusions

Process	**Trusted data and connected workflows** Standardisation and integration are the clearest improvement priorities; fragmented data creates friction across the lifecycle.
Product	**Liquidity-safe optionality** Adoption appetite is positive, but value depends on interoperability, market utility, and coexistence with established infrastructure.
People	**Ownership, capability, and accountability** The main barriers are cost, legacy integration, and skills/readiness—showing that transition is organisational as much as technological.

Survey conclusion: the market is not broken, but its current operating model is increasingly strained. Respondents favour evolutionary modernisation built on trusted data, interoperability, governed automation and coordinated action—not technology or platform change for its own sake.

Methodological note: Results are directional rather than statistically representative. Response bases vary by question; percentages shown use the relevant response base. Open-text themes reflect coded mentions and may include more than one theme per response.

Appendix B: References

Arslanian, H. (2023). The future of finance: The impact of FinTech, AI, and crypto on financial services (2nd ed.). Palgrave Macmillan. **- Report page: 34**

Bank of England. (2026, May). Sarah Breeden: Modernising money and markets. https://www.bankofengland.co.uk/speech/2026/may/sarah-breeden-speech-at-city-week-the-future-of-money-in-a-digital-world **- Report page: 33**

Clearstream, Euroclear (2025). Clearstream and Euroclear to Digitize Eurobond Market. [Including details of the Issuance and Processing Taxonomy (IPT)]. https://www.clearstream.com/clearstream-en/newsroom/250925-4693308 **- Report page: 66**

Clearstream, Euroclear. (2026, May). 28th Regime Initiative for Dematerialised Debt Securities: Supporting European Market Unity. https://www.clearstream.com/clearstream-en/28th-regime-initiative-for-dematerialised-debt-securities-5052912 **- Report page: 34**

DZ BANK and KfW. (2026, March). Smart Bond Contract: Disintermediating the life cycle of a tokenized security – pilot report. https://www.kfw.de/Presse-Newsroom/Aktuelles/News/SmartBondContract-Pilot-March2026-DZ-KfW.pdf **- Report page: 29**

Euroclear, Clearstream, DTCC (2026, February) - Building the Path Towards Digital Asset Securities Interoperability: https://clearstream.com/caas/v1/media/4972364/data/f8479edfc9253e19a48a4f2ad9b27698/wp-building-the-path-towards-digital-asset-securities-operability.pdf **- Report pages: 26,30**

European Central Bank (2021) - Advisory report on debt issuance and distribution in the European Union - https://www.ecb.europa.eu/pub/pdf/other/ecb.advisoryreportdebtissuancedistributionEU202112~3da04b818a.en.pdf **- Report pages: 13-14,25,27,30,37**

European Central Bank, Advisory Group on Market Infrastructures for Securities and Collateral. (2025, September). Barriers to market integration in the euro area. https://www.ecb.europa.eu/press/intro/publications/pdf/ecb.amiseco202509_barriersmarketintegration.en.pdf **- Report pages: 15, 23, 27, 59**

European Commission. (2024). The future of European competitiveness (Draghi report). https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en **- Report page: 43**

European Commission. (2026). Market integration and supervision package. https://finance.ec.europa.eu/publications/market-integration-and-supervision-package_en **- Report page: 5**

Global Digital Finance. (2025). The case for collateral mobility in tokenized money market funds in Europe (produced with Ownera, EY and Hogan Lovells). https://www.gdf.io/wp-content/uploads/2020/12/GDF_-UKEU_TMMF-_report.pdf **- Report page: 44**

International Capital Market Association. (2017). Aspects of MiFID II/R implementation in primary markets. https://www.icmagroup.org/assets/documents/Regulatory/MiFID-Review/P24-Aspects-of-MiFID-IIR-primary-market-implementation-130717.pdf **- Report page: 17**

International Capital Market Association. (2024, December). DLT Bonds Reference Guide. https://www.icmagroup.org/assets/documents/Regulatory/FinTech/ICMA-DLT-Bonds-Reference-Guide-December-2024-111224.pdf **- Report page: 33**

International Capital Market Association. (2025, August). Primary Market Innovation Project: Balancing vision & reality. https://www.icmagroup.org/assets/Primary-Market-Innovation-Project-Balancing-vision-reality-August-2025.pdf
- Report page: 13

International Capital Market Association. (2026). Response to FCA DP25/3: Fractionalisation. https://www.icmagroup.org/assets/documents/Regulatory/Primary-Markets/FCA-DP25-3-ICMA-fractionalisation-comments-060326.pdf
- Report page: 34

International Capital Market Association. (n.d.). Primary Market Handbook. https://www.icmagroup.org/market-practice-and-regulatory-policy/primary-markets/ipma-handbook-home/icma-primary-market-handbook-amendments-archive/ **- Report page: 10**

International Capital Market Association and Hong Kong Monetary Authority. (2024, 26 June). Digital green bond issuance and the Bond Data Taxonomy [webinar]. https://www.icmagroup.org/events/PastEvents/icma-webinar-digital-green-bond-issuance-and-the-bond-data-taxonomy/ **- Report page: 29**

Ipushpull. (n.d.). The four pillars of the agent era.
https://ipushpull.com/report-download-the-four-pillars-of-the-agent-era **- Report page: 18**

Lopez, N. (2025). Navigating the future of finance. ICMA Future Leaders Essay Competition. https://www.icmagroup.org/ICMA%20Future%20Leaders%20Essay%20Competition%20-%20Natalia%20Lopez.pdf **- Report page: 48**

Monetary Authority of Singapore. (2024). Project Guardian: Guardian Fixed Income Framework.
https://www.mas.gov.sg/publications/monographs-or-information-paper/2024/guardian-fixed-income-framework
- Report pages: 26–28, 33, 47

PMIP NextGen. (2026). ICMA PMIP survey and supporting research documents (see Appendix A).
- Report pages: 11, 15, 40-41, 55, 67

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