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Advancing Digital Trade: Insights from the UAE TradeTech Regulatory Sandbox

WHITE PAPER

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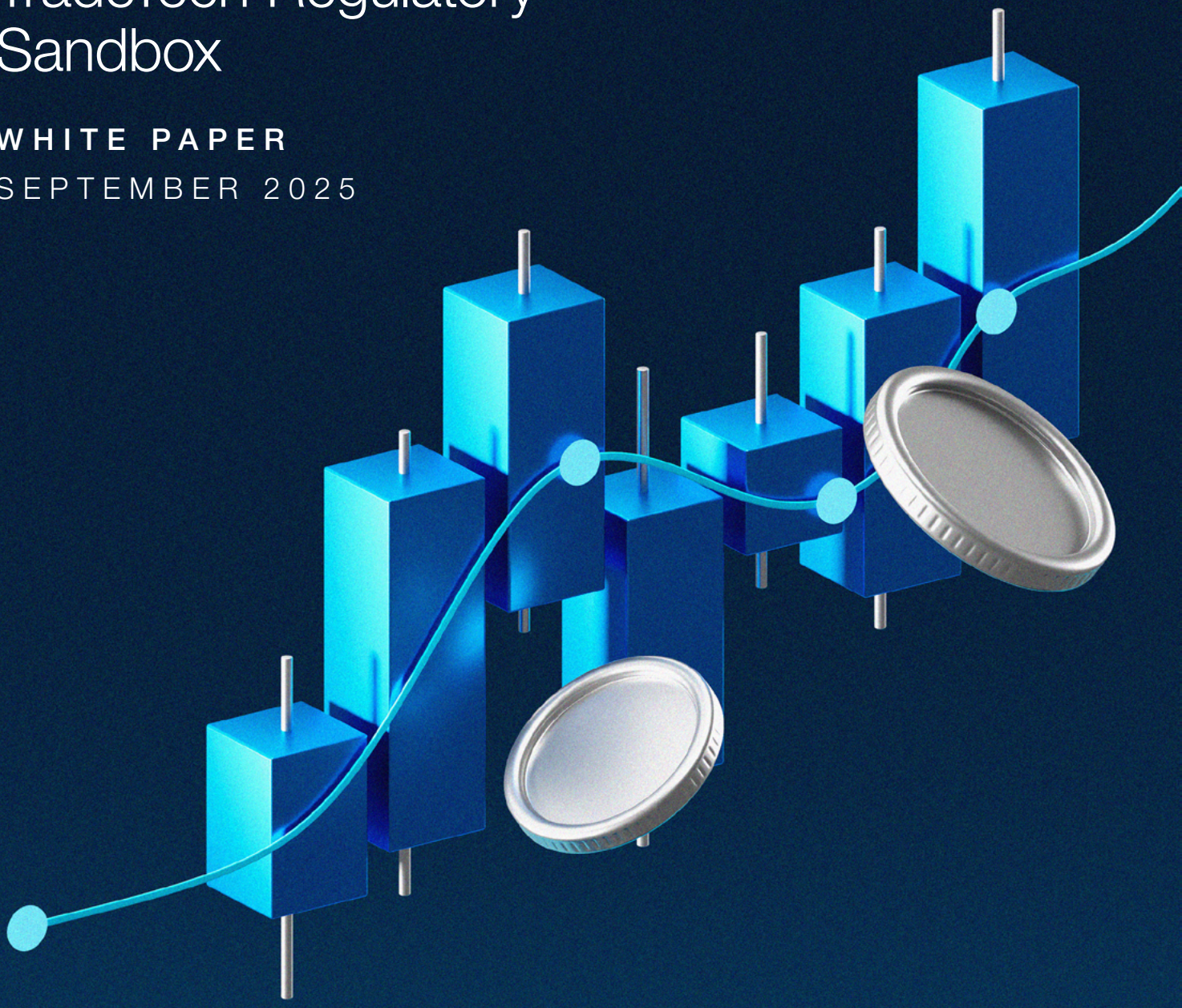

Images: Midjourney, Getty Images

Contents

Foreword

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Global trade stands at the threshold of a new era. Emerging technologies are rapidly reshaping the movement of goods, services and capital across borders, unlocking opportunities to make trade more inclusive, efficient and resilient. Yet the full promise of digital trade will be realized only when bold innovation is matched by agile, forward-thinking regulation.

The TradeTech Regulatory Sandbox marks a pioneering step on this journey. Jointly led by the United Arab Emirates Ministry of Foreign Trade, the Abu Dhabi Department of Economic Development (ADDED) and the World Economic Forum, this initiative convened start-ups, regulators and partners from the public and private sectors to test breakthrough technologies – including AI, blockchain, tokenized finance and stablecoins – in a real-world trade environment.

The UAE – well-known for its proactive approach and frameworks that strike the right balance between fostering innovation and maintaining robust regulatory oversight to ensure stability, protection of stakeholders' interests and mitigation of systemic risks – was chosen as the dynamic hub for this endeavour.

Over the course of several months, eight innovative companies collaborated closely with four UAE regulators to address long-standing frictions in global trade. The results demonstrated that when innovation is met with regulatory openness, remarkable efficiency gains can be achieved – from faster documentation and real-time settlements to expanded access to trade finance for small and medium-sized enterprises. At the same time, the initiative highlighted critical areas where regulatory clarity, legal harmonization and robust risk-sharing mechanisms should be considered essential to unlocking broader impact.

This white paper distils the key lessons and policy recommendations emerging from the sandbox experience. It is designed to inform regulators, innovators and global trade leaders navigating similar challenges around the world. More broadly, it illustrates how public–private collaboration can drive not only the adoption of new technologies but also the evolution of smarter, more adaptive regulation.

We extend our sincere gratitude to all participating companies, regulators and partners who made this initiative possible. The path to digital trade is complex, but with collaboration, transparency and a shared commitment to modernization, a more dynamic and inclusive global trading system is within reach.

Executive summary

The success of the TradeTech sandbox shows that innovation and regulation can work side by side, streamlining international trade.

Global trade is undergoing historic changes. While digital technologies have transformed virtually every sector of the economy, international trade remains anchored in practices designed for an analogue world: paper-heavy documentation; weeks-long financing approvals; and settlement processes that can take days to complete. Small and medium-sized enterprises (SMEs), particularly those in developing economies, often face the steepest barriers, including higher borrowing costs, limited credit history and complex documentation requirements.

To address these challenges, the Ministry of Foreign Trade, United Arab Emirates, the Abu Dhabi Department of Economic Development and the World Economic Forum launched the TradeTech Regulatory Sandbox. This pioneering initiative created a controlled environment in which eight technology companies from around the world could test next-generation trade solutions alongside four UAE regulators over a six-month period. The results revealed both the transformative potential of technology and the regulatory alignments needed to unlock that potential at scale.

The sandbox demonstrated that mature technological solutions can deliver improvements in nearly every domain of trade finance. Companies testing innovative documentation technologies reduced processing times from between five and 10 days to mere hours. AI-powered credit assessment tools compressed financing decisions from four weeks to a matter of minutes, whereas stablecoin-based settlement eliminated the three-to-five-day delays inherent in correspondent banking while generating continuous yield during transaction windows.

Beyond technical performance, the sandbox underscored the importance of regulatory readiness. Unlocking the full benefits of these innovations requires not only technological maturity but also policy alignment and enabling legal frameworks. To that end, the report presents concrete, forward-looking policy recommendations: broader adoption of the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Transferable Records (MLETR), formal recognition of decentralized identity and verifiable credentials and the development of regulatory pathways for tokenized trade assets, digital bank guarantees and stablecoin-based settlement tools.

In convening and facilitating this initiative, the UAE's leadership provides a blueprint for how governments can proactively shape the future of trade. By aligning public- and private-sector actors through structured experimentation, the sandbox has demonstrated that innovation and regulation can advance together, enhancing efficiency, inclusivity and trust in global trade systems.

The path ahead requires sustained commitment to this collaborative model. With appropriate policy foundations in place, the digital trade solutions tested in the sandbox can scale from promising pilots to core infrastructure, thereby ensuring that the benefits of technological advances reach businesses of all sizes across the global economy.

Introduction

Regulators and innovators are collaborating in the TradeTech sandbox to explore the potential of emerging technologies in digitalizing global trade.

Global trade stands at a pivotal moment: emerging technologies could improve many of the practices fundamental to international commerce, from automating cumbersome paperwork requirements to improving access to financing. Yet the pace of technological transformation remains constrained due to fragmented regulatory frameworks and compliance protocols that emerged to address analogue, rather than digital, contexts. As some regions modernize quickly and adopt digital solutions, others lag behind, which creates a growing divide. In this evolving landscape, digital readiness is no longer a competitive edge – it is a prerequisite. Those without it risk exclusion from the benefits of global trade.

Against this backdrop, the TradeTech Global initiative emerged as a strategic collaboration between the Ministry of Foreign Trade, United Arab Emirates, the Abu Dhabi Department of Economic Development and the World Economic Forum to accelerate the digital transformation of international trade. The initiative seeks to harness emerging technologies to address long-standing inefficiencies that have hampered global commerce and limited participation in global trade. By promoting sustained public–private engagement, the TradeTech initiative – a multiyear project among the partners – provides a unique platform for collaboration among policy-makers, regulators, financial institutions and technology innovators to reimagine trade systems.

The TradeTech initiative recently launched its Regulatory Sandbox to address one of the most critical barriers to innovation in trade: regulatory uncertainty. It tested solutions across several core areas within trade finance:

- Trade documentation
- Identity and trust systems for small and medium-sized enterprise (SME) trade finance
- Credit assessment and SME inclusion
- Digital guarantees and payment settlement

This report highlights the main findings, identifies issues that require greater consideration and recommends actions for promoting TradeTech innovation.

Objectives

The TradeTech Regulatory Sandbox was designed to generate practical insights into how digital trade technologies interact with existing regulatory frameworks. While technological solutions have proliferated in recent years, their adoption at scale has been limited by questions about legality, compliance and security. By allowing start-ups and regulators to experiment together in a safe, structured environment, the sandbox created opportunities to:

- Test the real-world applicability of innovative trade technologies in a live but controlled environment
- Explore how existing regulations interact with digital tools such as blockchain, tokenized identity and stablecoins
- Identify regulatory gaps or areas needing reform to support the adoption of a digital trade infrastructure
- Enable regulators to better understand new technologies, thereby reducing the risk of over- or under-regulation
- Build trust between innovators and regulators to promote long-term policy innovation and harmonization

With regulatory clarity and certainty, innovation at scale can occur. Sandboxes are an important element to help regulators feel safe and provide the clarity the market requires.

This sandbox specifically focused on trade finance, as it represents a critical bottleneck in global commerce. With paper-heavy processes, complex compliance requirements and fragmented stakeholder landscape, trade finance offered a fertile testing ground for digital innovations that could deliver significant efficiency gains while ensuring appropriate safeguards.

Methodology

The sandbox used a structured model that simulated real-world trade scenarios in a controlled, collaborative environment. The project attracted strong international interest: **eight technology companies** were chosen from a competitive pool of 47 applications from 21 countries. Participants were chosen based on their potential contributions to innovation, regulatory developments, scalability and thematic alignment.

Participating firms worked alongside regulators and subject-matter experts to test solutions using synthetic data and simulated flows of trade transactions. Participating firms were paired with one or more regulators including the **Central Bank of the UAE**, the **Financial Services Regulatory Authority (FSRA)** in the Abu Dhabi Global Market (ADGM), the Dubai Financial Services Authority (DFSA) in the **Dubai International Financial Centre (DIFC)** and the Regulations Lab (RegLab) from the Ministry of Cabinet Affairs (see **Box 2: Participating firms and regulators**).

The NayaOne sandbox-as-a-service platform provided the technical environment for testing and enabled firms to integrate application programming interfaces (APIs) and model workflows and evaluate performance metrics without connecting to live systems (see **Box 1: NayaOne explainer**).

Over a six-month testing period, participants explored innovative solutions in four thematic areas:

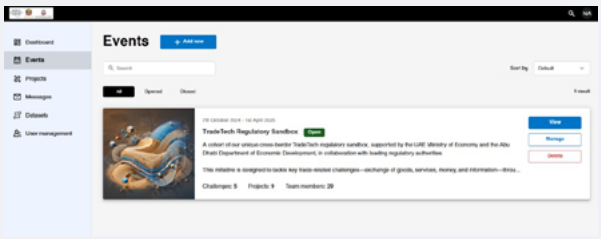
- **Trade documentation**, which explored digital alternatives to paper-based trade documents, including MLETR-compliant electronic bills of lading and digital product passports (the Model Law on Electronic Transferable Records [MLETR] is a legal framework developed by the United Nations to give electronic trade documents the same legal validity as paper ones)
- **Identity and trust systems for SME trade finance**, which included blockchain-based identity verification mechanisms and trust infrastructures to comply with regulatory needs
- **Credit assessment and SME inclusion**, which used AI-powered credit decisioning tools and alternative financing models to address the trade finance gap
- **Digital guarantees and payment settlement**, which focused on stablecoin-based payment solutions and blockchain-enabled digital guarantees to reduce settlement times and costs

Through continuous feedback loops and structured check-ins with regulators, the sandbox facilitated open dialogue and learning between innovators and policy-makers. The outcomes, detailed in Section 4 of this report, offer a unique perspective on regulatory considerations and the technical feasibility and potential scalability of next-generation trade finance solutions.

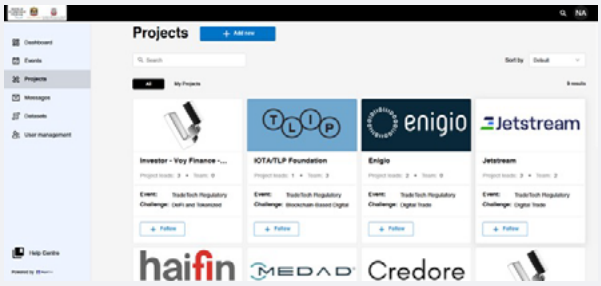
BOX 1 | **NayaOne explainer**

To enable simulation and data-driven experimentation, all participants used the NayaOne, a virtual sandbox platform that allowed testing in a realistic digital environment. The platform enabled companies to integrate datasets, simulate use cases and test regulatory frameworks in real time, without creating risks for live markets.

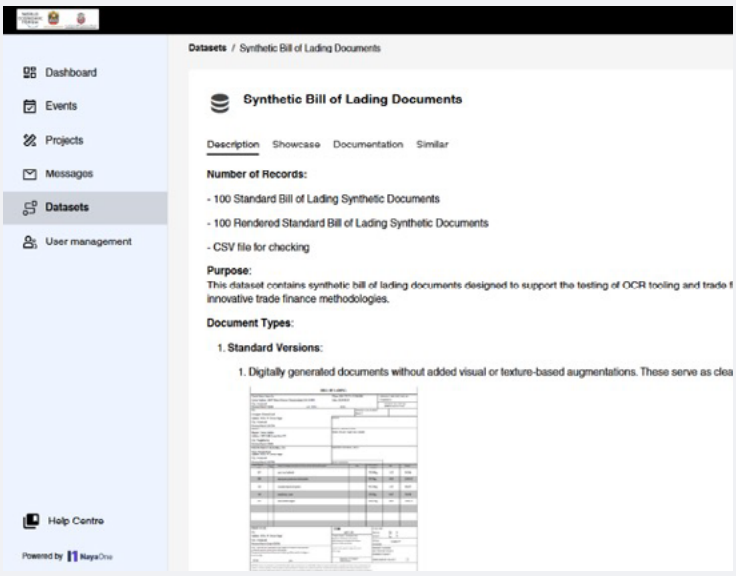
The following screenshots from NayaOne testing demonstrate its functionality.



↑ **Caption:** Participants shared a common landing page for tracking progress and evaluating the impacts of technology tools.



↑ **Caption:** Participating firms could manage independent projects within NayaOne's platform and respond to specific challenge conditions.



↑ **Caption:** The platform's "Datasets" function enabled sandbox participants to use synthetic datasets such as bills of lading and invoices to simulate real-world trade finance transactions in some cases.

Source: NayaOne

Participating firms

Credore (India)

Empeiria (UAE)

Enigio (Sweden)

Haifin (UAE)

IOTA Trade Worldwide Information Network (TWIN) (Germany)

Jetstream Africa (Ghana)

Medad Holdings (UAE)

Voy Finance (Estonia)

Regulators

Central Bank of the United Arab Emirates (CBUAE): As the UAE's central monetary authority, the CBUAE plays an important role in safeguarding the nation's financial and monetary stability. Within the sandbox, the CBUAE explored innovative trade finance solutions and digital bank guarantees, with a focus on ensuring monetary compliance, reducing fraud and improving efficiency in regulated financial environments.

Financial Services Regulatory Authority (FSRA): The ADGM's Financial Services Regulatory Authority was established to advocate a progressive financial services environment and uphold the integrity of the whole international financial centre by managing any potential risk exposure and limiting undesirable impacts. FSRA provided a flexible yet robust environment for companies working on digital identity, decentralized finance (DeFi) and blockchain-based trade finance innovations.

Dubai Financial Services Authority (DFSA): DFSA is the independent financial regulator of the Dubai International Financial Centre (DIFC). In the sandbox, DFSA supported testing of MLETR-compliant trade documentation tools, exploring the legal enforceability and integration of electronic transferable records in cross-border transactions.

Regulations Lab (RegLab): RegLab, the UAE's dedicated innovation initiative for regulatory experimentation established by the Ministry of Cabinet Affairs, focuses on creating a collaborative ecosystem for start-ups and regulators. During this initiative, RegLab provided early-stage support for innovative credit scoring and financial inclusion models, particularly targeting underserved trade corridors such as UAE–Africa.

1 Trade documentation

Sandbox participants experimented with effective, regulation-compliant ways to use digital and electronic trade documents in place of paper.

Global trade remains highly dependent on paper-based documentation, which undercuts efficiency, increases costs and limits access to capital, especially for SMEs. Documentation-related challenges include:

- **Processing inefficiency:** According to the World Trade Organization, a cross-border transaction typically requires the exchange of 36 documents and 240 per single transaction.[1] Processing paper documents alone can constitute up to one-fifth of overall shipping costs, and delays of five to 10 days per document occur regularly. The cross-border movement of documents is time-consuming and can delay transactions, especially when amendments are needed.
- **Societal costs:** Delays in document processing can stall financing, which particularly disadvantages SMEs in developing economies.
- **Legal and operational barriers:** Many jurisdictions lack clear legal frameworks recognizing electronic transferable records. Within the UAE, only the ADGM has adopted the UN framework on electronic documentation – the UNCITRAL MLETR. The unevenness of adoption creates legal fragmentation that requires many companies to maintain dual systems, both paper and digital, which further increases costs, rather than reducing them.

While the potential benefits of digitalization are clear to many trade participants, challenges relating to coordination, interoperability and legal compliance have impeded the adoption of efficiency-enhancing technologies. In the field of documentation, for example, many digitalization solutions require parties to agree on a single platform or protocols, and this requirement creates coordination challenges that can impede technological adaptation.

1.1 **Credore:** United Nations-compliant trade documentation

Credore participated in the sandbox initiative to demonstrate the feasibility, legal soundness and economic benefits of replacing paper-based trade documents with digital alternatives. Credore's technology generated UN-compliant documentation, as stipulated by the UNCITRAL MLETR. Credore collaborated with the FSRA in the ADGM to explore regulatory partnerships in adopting UN-compliant documentation more widely throughout the UAE.

The collaboration used the NayaOne digital sandbox platform to simulate cross-border trade transactions involving electronic bills of lading (eBL) and promissory notes. Credore created, issued and transferred these documents through a blockchain-based platform with full traceability and legal integrity. The testing used synthetic trade data that modelled UAE–India trade flows and tested how well the documents fare across diverse users – from banks to shipping lines – that relied on different technological infrastructures.

As part of this programme, live transactions were executed, including export factoring backed by MLETR-compliant electronic bills of lading and pre-shipment financing using electronic promissory notes. Additionally, a proof of concept demonstrated multiple endorsements on instruments such as letters of credit and collections, important use cases relevant to the bank.

The testing used real-time trade flows and incorporated inputs for a range of global partners (e.g. the Abu Dhabi Commercial Bank, TradeTrust and the XDC Trade Network). Its assessment evaluated how digital documentation systems fared in terms of security, cost savings and speed.

Main findings

The testing demonstrated significant operational gains from digital documentation:

- **Processing time reduction:** The testing reduced the existing five-to-10-day documentation timelines to a few hours, which improved traders' access to financing.
- **Cost reduction:** The project demonstrated the potential of cutting of documentation costs from $50–100 per document to almost nothing – savings that could benefit SMEs in particular.
- **Enhanced liquidity:** The pilot reduced the time to realize cash flow from one month to three days and increased importers' and exporters' access to working capital.
- **Robust compliance:** Credore validated that the digital documents were legally sound under MLETR and interoperable across jurisdictions.
- **Operational readiness:** The project demonstrated compatibility with legacy financial and shipping systems, easing potential adoption.

Regulatory takeaways

The project revealed that the technical infrastructure for MLETR-compliant documentation is mature and ready for deployment. However, uncertainty related to regulatory frameworks beyond the ADGM remains a limiting factor in expanding access to the project's gains. While the ADGM has taken a leadership role in MLETR adoption, broader UAE-wide and international recognition is needed to realize the full benefits of digital trade documentation.

Credore has proposed a live pilot programme for MLETR-compliant digital documentation in the UAE–India trade corridor, and the project would involve coordination with additional regulatory agencies, financial institutions, exporters, importers and shippers.

BOX 3 **Credore**

Company background: Based in India, Credore digitalizes trade documentation and streamlines access to trade finance by creating MLETR-compliant electronic transferable records. Its platform enables secure, tamper-proof digital documents that reduce the time and cost associated with paper-based trade.

Main technology features:

- Blockchain-based documentation with full traceability
- Secure digital documents to ensure authenticity, possession, endorsement and revocation
- Integration with global partners
- Real-time trade finance workflows linked to logistics milestones

Testing focus: In the sandbox, Credore collaborated with the FSRA to test MLETR-compliant digital bills of lading and promissory notes, validating time and cost savings while enabling faster financing through real-time digital trade infrastructure.

1.2 **Enigio:** Legally recognized digital originals

Enigio entered the sandbox to demonstrate its technological tool, trace:original, which enables any party to create and manage verifiable MLETR-compliant[2] digital original documents in an open network for trade, i.e. without requiring participants to join a proprietary platform. Its technology addresses a critical limitation in trade-related innovations, by enabling partners to communicate without agreeing on a single closed technological system, yet allowing complete interoperability via structured data embedded into their tool.

The company conducted its testing in collaboration with the DFSA and a network of stakeholders including the Abu Dhabi Customs Authority, several financial institutions – such as First Abu Dhabi Bank, the National Bank of Fujairah, National Bank Bahrain, HSBC Middle East – and logistics providers. Throughout its participation in the sandbox, Enigio explored four use cases that represent critical pain points in trade documentation: digital bills of exchange, digital bills of lading, digital bank guarantees and a "digital envelope" that functions as a secure digital courier for all types of trade documents.

Enigio focused on validating these document types according to three core capabilities:

- **Creation:** First, the team tested whether trace:original could generate and transfer digital documents embedded with structured data to enable system-to-system interoperability.
- **Authentication and verification:** Next, they validated the ability to manage the full document life cycle – ensuring that digital trade documents could be instantly authenticated and verified by recipients without requiring them to subscribe to any platform or service.
- **Automation:** By embedding and capturing structured data within the documents, the solution demonstrated how trade documents could actively support automation – allowing for the creation and consumption of data that complements or replaces traditional manual processes.

Finally, the team evaluated how the solution aligns with the most important international trade rules – such as those used for documentary credits (eUCP 600), collections (eURC 522) and demand guarantees (eURDG) – to ensure it can be easily adopted within existing global trade practices.

Main findings

Enigio successfully issued, transferred and enabled recipients to obtain documents without subscribing to the company's document-centric solution. The technology used structured data directly within documents, allowing for both automation and interoperability with existing systems.

Its one-sided adoption capabilities proved particularly valuable, as the tool significantly lowers barriers for counterparties that use different technological systems. The testing demonstrated that documents could be amended, sealed or signed throughout their life cycle, and this capability provided traders with the flexibility they needed to adapt to complex trade transactions.

Regulatory takeaways

While the testing confirmed that Enigio's technology will meet the trade industry's needs and requirements, it also revealed the limitations of operating within a fragmented legal landscape. The legal enforceability of MLETR-compliant documents remains limited to the ADGM's jurisdiction, and regulations for cross-jurisdictional transactions are less clear. The sandbox highlighted the need for greater UAE-wide adoption and awareness to ensure legal certainty and consistency across the UAE's diverse economic zones.

The testing underscored the importance of public–private collaboration in scaling the legal and operational adoption of digital documentation. Coordination among UAE ministries and trade-related agencies emerged as a critical prerequisite for developing consistent implementation guidelines that can bridge the gap between technical capability and regulatory acceptance between financial free-zone regulators such as the DFSA and mainland authorities within the UAE.

BOX 4 **Enigio**

Company background: Based in Sweden, Enigio developed its trace:original document-centric solution to facilitate any type of legally verifiable, digitally native documents such as bills of lading and letters of credit. Built to comply with MLETR and other global standards, the company provides scalable solutions for secure document exchange in international trade.

Main technology features:

- Creation of digital documentation that does not require recipients to use Enigio's platform
- Ability to embed structured data directly into documents
- Support for the full document life cycle (amendments, transfers, etc.)
- Integration with existing global International Chamber of Commerce (ICC) frameworks (eUCP 600, eURC 522, eURDG)

Testing participants: Throughout the sandbox, Enigio worked with the DFSA, the Abu Dhabi Customs Authority, multiple UAE banks (First Abu Dhabi Bank, the National Bank of Fujairah, HSBC Middle East and the National Bank of Bahrain) and logistics providers.

2 Identity and trust systems for SME trade finance

The sandbox trialled digital ways of proving identity in supply chains and trade deals.

Global trade relies heavily on trust between participants, but generating such trust has traditionally required extensive verification and identity-authentication processes. These processes – which play an essential role in regulatory compliance, fraud prevention and financial stability – can also pose operational challenges in cross-border commerce. Identity and trust challenges include:

- **KYC/AML compliance measures:** Financial institutions must implement robust know-your-customer (KYC) and anti-money-laundering (AML) verification processes to prevent financial crimes and ensure system integrity. While these safeguards serve crucial regulatory purposes, they require the collection, verification and storage of vast amounts of trade-related documentation. Trade finance approvals can be delayed by weeks or months, and financial institutions often perform redundant checks on the same entities to fulfil similar requirements in different jurisdictions.
- **Identity silos and inefficient verification:** Traders must repeatedly submit similar documentation to different institutions across jurisdictions. Despite the accumulation of vast repositories of trade-related data, regulators and financial institutions lack trusted mechanisms to share verified identity attributes. This fragmentation increases costs, extends timelines and can pose security risks at multiple junctures in trade transactions.
- **Limited trust infrastructure between new counterparties:** Without standardized ways to verify the legitimacy of unfamiliar trading partners, companies often restrict business to established relationships or require trusted intermediaries to vouch for unknown entities. This limitation particularly affects SMEs attempting to enter new markets or establish relationships with larger buyers.

Emerging technologies can help balance the need for regulatory oversight with traders' demands for more efficient systems to verify identity and build trust. Traditional solutions are largely centralized, and such structures require participants to place significant trust in a single authority. Centralization is increasingly ill-suited to the distributed, global nature of modern trade networks wherein participants span multiple jurisdictions and operate under diverse regulatory frameworks.

2.1 **Empeiria:** Verifiable data and digital product passports

Empeiria participated in the sandbox to address a fundamental trust challenge in trade finance: how can lenders verify that goods actually exist and meet stated specifications without conducting expensive physical inspections? Before providing access to capital, lenders need verification processes to lower the risks of trade finance, especially when working with newly established businesses, cross-border entities or unfamiliar SMEs.

The core problem Empeiria addressed was the absence of portable, tamper-resistant verification systems that could accompany trade goods through complex supply chains. Empeiria's tools used blockchain-based verified credentials to provide lenders with trusted information about products and inspections. Such credentialling could transform how banks assess collateral and make financing decisions.

Empeiria collaborated with the FSRA to align its decentralized identity infrastructure with UAE trade and regulatory frameworks. The testing evaluated whether decentralized identifiers (DIDs) and verifiable credentials (VCs) could be legally recognized in trade-related workflows.

Over six months, Empeiria deployed its technology to create and verify "intelligent digital product passports" – digital documents backed by inspection records that could serve as reliable collateral. The main components of the system included:

- Digital identities for producers and inspectors that do not depend on centralized authorities
- Digital credentials linked to inspection results that can be independently verified
- Secure storage and sharing of these credentials, which can be verified by any authorized party
- A verification portal allowing financial institutions to check the authenticity of product records

The system was tested for performance, security and scalability in simulated trade environments.

Main findings

The testing demonstrated that Empeiria's technology could provide near-instantaneous verification of product credentials with minimal computational requirements. The system successfully issued and validated thousands of digital product passports per second, making it viable for large-scale trade operations.

From an operational perspective, the testing confirmed that inspection-based digital credentials could effectively replace traditional paper documentation while providing greater reliability. Participants noted, however, that widespread adoption would require the standardizing of how inspection data is formatted and shared across platforms.

The regulatory assessment revealed an important gap: while the technology works effectively, a comprehensive framework for recognizing blockchain-based credentials is currently lacking in official contexts in several jurisdictions. Though such credentials have occasionally been accepted in legal proceedings, no formal recognition exists across jurisdictions. Adopting frameworks similar to those for electronic transferable records would accelerate adoption.

BOX 5 **Empeiria**

Company background: Based in the UAE, Empeiria develops blockchain-based trust infrastructure that enables entities to issue, verify and share digital credentials about products and transactions. Its technology helps lenders and buyers confirm the authenticity of goods and inspection results without relying on paper documentation or centralized authorities.

Main technology features:

- Digital product passports linked to verified inspection data
- Decentralized verification that does not require all parties to use the same platform
- High-performance credential validation suitable for large-scale trade operations
- Privacy-preserving verification that protects sensitive commercial information

Testing focus: In the sandbox, Empeiria worked with the FSRA to demonstrate how digital product credentials could serve as trusted collateral for trade finance, potentially transforming how lenders assess and finance inventory-backed transactions.

2.2 **IOTA:** Tokenizing trade data and digital identity for trade finance

IOTA participated in the sandbox to demonstrate (via its TWIN platform) how decentralized identity and tokenized trade data could transform financing for small exporters. The project specifically targeted the challenge of trust in international trade relationships where parties lack established relationships or banking connections.

Access to financing remains a critical barrier for many SMEs, particularly in developing markets. In Kenya, for example, flower exporters that maintain efficient supply chains sometimes struggle to find financing due to their reliance on paper documentation, manual verification processes and complex letters of credit that often involve multiple banks in different jurisdictions.

IOTA collaborated with the FSRA in the UAE TradeTech sandbox and worked alongside institutions including the Kenya Revenue Authority, TradeMark Africa, TradeFlow and the Global Legal Entity Identifier Foundation (GLIEF). This diverse group of participants helped test how trusted identity and documentation could flow across borders in a real-world trading relationship.

The company tested a seven-step process simulating trade between a Kenyan flower exporter and an international buyer:

1. Create digital identity credentials for all participants that could be verified independently
2. Establish digital wallets linked to these verified identities
3. Access government-validated trade documents through Kenya's national trade platform
4. Convert commercial invoices into digital assets with clear ownership records
5. Assess financing risk based on verified trade and identity data
6. Distribute capital through programmable contracts tied to verified identities
7. Automate payment and settlement when goods reached their destination

Main findings

The testing showed that IOTA's approach could effectively connect identity verification across jurisdictions. The automated processes could reduce paperwork for exporters and accelerated access to capital. Importantly, the system could function without centralized coordination. Each participant could retain control of their own connections.

However, financial institutions and regulators expressed concerns about responsibility for data accuracy, compliance with AML requirements and how automated contracts would interact with existing regulatory frameworks. These questions highlighted broader structural gaps.

The regulatory assessment identified a specific challenge: the absence of a clear, nationwide framework for digital trade data or automated financial contracts tied to physical trade. Questions remain about whether digital identities and credentials from international systems would satisfy regulatory requirements for customer verification.

BOX 6 **IOTA Trade Worldwide Information Network (TWIN)**

Company background: Based in Germany, IOTA develops digital infrastructure for secure, decentralized information exchange. Its TWIN platform – a cutting-edge digital infrastructure that connects stakeholders in the trade system throughout global supply chains – enables trade participants to establish trusted digital relationships across borders without relying on intermediaries or centralized verification systems.

Main technology features:

– Self-sovereign digital identity with integration to government verification systems
– Digital documentation that maintains connections to official sources
– Programmable financial agreements linked to verified trade events
– Digital payment infrastructure for cross-border settlement

Testing participants: IOTA collaborated with the FSRA, the Kenya Revenue Authority, TradeMark Africa, the GLIEF TradeFlow and trade finance providers to simulate how digital identity and verified trade data could support financing between a Kenyan flower exporter and an international buyer.

3 Credit assessment and SME inclusion

The sandbox's investigation into digital methods to check and prove creditworthiness is of particular benefit to SMEs seeking financing.

SMEs face persistent barriers in accessing trade finance, contributing significantly to the estimated $2.5 trillion trade finance gap.[3] These challenges are particularly acute for SMEs in emerging markets, where traditional financial institutions often lack the tools, information or incentives to extend credit. The main barriers include:

- **Traditional credit assessment limitations:** Banks typically base lending decisions on historical financial performance, collateral availability and established banking relationships. This approach disadvantages SMEs with limited credit history or those operating in new markets. Credit approvals can take up to four weeks, delaying access to working capital and impeding the flow of cross-border goods.
- **Documentation and collateral constraints:** SMEs often struggle to produce the extensive documentation required by traditional lenders. Their limited assets suitable for collateralization further restrict access to financing. Current risk assessment models frequently fail to recognize the value of operational data, such as shipping records and invoice history, as indicators of creditworthiness.
- **Risk perception issues in emerging markets:** Perceived risks in emerging markets often lead to conservative lending practices. Without mechanisms to validate cross-border transactions or assess counterparty reliability, financial institutions apply stringent requirements or avoid lending altogether. The average rejection rate for trade finance applications can reach as much as seven times higher for women-owned companies and SMEs compared to large, multinational firms, according to the World Trade Organization.[4]
- **Lack of tokenization frameworks and risk mitigation infrastructure:** The absence of comprehensive regulatory frameworks for using tokenized real-world assets (RWAs) as collateral, coupled with limited government-backed credit risk tools, deters financial institutions from lending to SMEs – particularly in high-friction trade corridors.

Technology-enabled solutions can address these challenges by creating new methods of assessing creditworthiness, streamlining application processes and establishing more transparent risk profiles. By using operational data, digital documentation and alternative credit models, innovative approaches can unlock capital for previously underserved businesses.

3.1 **Jetstream Africa:** Credit decisions for SMEs

Jetstream Africa entered the sandbox to demonstrate how its AI-enabled trade finance technology could streamline the credit decision process for SMEs trading between Africa and the UAE. The company's main objective was to accelerate trade finance qualification and approval times while ensuring compliance with UAE banking and regulatory requirements.

Jetstream conducted its testing within the **Regulations Lab (RegLab)** framework and engaged with the **Central Bank of the UAE (CBUAE)** to align its platform with UAE trade finance regulations. Over a four-month period, Jetstream tested its platform on the NayaOne sandbox environment, focusing on three important capabilities:

- Optical character recognition (OCR)-based document scanning that automatically extracts and processes trade documentation
- AI-driven credit analysis that incorporates operational data such as shipping records
- A digital lead qualification matrix that streamlines the evaluation of financing applications

The testing simulated real trade finance transactions using synthetic data reflective of GCC–West Africa trade routes, with a bank-accessible API created to support UAE compliance requirements.

Main findings

The testing demonstrated significant operational improvements. Trade finance approval times were reduced from four weeks to under 10 minutes, showcasing the viability of automated credit evaluation in high-friction trade environments. Jetstream's solution improved documentation accuracy and streamlined compliance, enhancing SME liquidity and bank responsiveness. The platform successfully incorporated operational data points that traditional credit models often overlook, creating more nuanced risk profiles for SME borrowers.

Regulatory takeaways

While the testing aligned with current UAE regulations, it highlighted the absence of a formal comprehensive framework for invoice factoring, limiting the solution's scalability. The sandbox revealed a need for centralized invoice registration systems that could prevent fraud and support transparency in digital trade finance. Banks expressed interest in the technology but noted that without government-backed risk mitigation tools their willingness to extend credit to previously underserved SMEs would remain limited. The sandbox demonstrated that fintech solutions such as Jetstream could address operational barriers to SME financing, but regulatory restrictions could impact widespread adoption.

BOX 7 **Jetstream Africa**

Company background: Based in Ghana, Jetstream enhances SME access to trade finance by using operational data such as bills of lading and financial records. Its AI-enabled platform streamlines credit assessment for African exporters trading with the UAE, addressing the main challenges in documentation processing and risk evaluation.

Main technology features:

- Digital lead qualification matrix powered by proprietary AI-based OCR tools
- Bank-accessible API supporting UAE compliance requirements
- Automated credit decision-making for trade finance transactions

Testing participants: In the sandbox, Jetstream collaborated with RegLab to demonstrate how its technology could reduce trade finance approval times from four weeks to under 10 minutes while maintaining regulatory compliance and risk management standards.

3.2 **Voy Finance:** DeFi-based lending for SME trade finance

Voy Finance participated in the sandbox to test a decentralized finance (DeFi) approach to SME trade financing. The company sought to address the fragmented, paper-intensive nature of traditional trade finance by combining AI-powered document processing with tokenized trade assets to create a paperless, automated trade finance workflow.

The testing was supported by the FSRA and private-sector stakeholders, including SME development funds and financial institutions. Over six months, Voy Finance tested three integrated components of its platform:

- A proprietary AI engine, Paiperless, that digitalizes and validates trade documentation
- A tokenization system that converts trade assets into digital representations for use as collateral
- The YildX deal desk module that enables institutional trade finance execution

The system simulated end-to-end trade transactions with SME exporters/importers and regional banks, testing both technical performance and user experience.

Main findings

The AI engine reduced document processing time by more than 70%, significantly improving compliance checks and operational throughput. Tokenized trade assets proved effective as collateral in simulated lending environments, with high verifiability and minimal system latency. From the user perspective, SMEs reported faster onboarding and greater transparency compared to traditional bank-led processes, though the absence of real-world risk protection limited actual financing readiness.

Regulatory takeaways

The testing revealed substantial regulatory challenges for tokenized trade finance in the UAE. Regulatory uncertainty around AI in compliance, credit scoring and onboarding creates implementation barriers. Perhaps most significantly, the absence of state-supported credit insurance or guarantees for SME trade finance emerged as a critical limitation, suggesting that technological solutions alone cannot fully address the trade finance gap without complementary policy interventions. The country could benefit from developing a comprehensive legal framework for digital assets representing real-world assets (RWAs). Future regulations should distinguish tokenized trade assets from cryptocurrencies and create clear pathways for their use as regulated collateral.

BOX 8 **Voy Finance**

Company background: Based in Estonia, Voy Finance connects DeFi liquidity with regulated trade finance use cases. Its platform enables tokenized, digital lending for SMEs, aiming to bridge the financing gap through programmable, transparent capital flows.

Main technology features:

- Incorporated AI-powered document-processing with tokenized trade finance
- Improved automation of trade finance functions

Testing participants: Throughout the sandbox, Voy Finance engaged with the FSRA and private-sector stakeholders, including SME development funds, HSBC, LME Trade House and other financial institutions to validate its approach to digital, tokenized trade finance.

4 Digital guarantees and payment settlement

Sandbox experiments using blockchain-based documentation and stablecoins to save time and cut costs in payments showed promise.

Traditional cross-border payment and settlement systems remain among the most persistent bottlenecks in international trade. Despite advances in technology, these systems continue to be characterized by high costs, long processing times and limited transparency.

The main challenges include:

- **Cross-border payment frictions:** International payments typically involve multiple intermediaries, resulting in settlement times of three to five days and transaction fees ranging from 2% to 5% of the total value. These inefficiencies disproportionately impact SMEs and businesses in emerging markets, where banking relationships are less established and correspondent banking networks are contracting.
- **Capital inefficiency:** During the settlement window, capital remains idle, generating no returns and creating liquidity bottlenecks throughout the supply chain. This prolonged parking of working capital particularly affects businesses with tight margins and limited access to additional financing.
- **Bank guarantee complexity:** The UAE alone holds approximately AED 463 billion ($126 billion)[5] in outstanding bank guarantees as of 2024, the majority of which are still managed through manual, paper-based processes. The current system could expose parties to significant risks including fraud, document loss and unnecessary administrative costs while locking up capital that could otherwise be deployed productively.

Emerging technologies, including stablecoins and blockchain-based documentation, offer promising alternatives to traditional banking infrastructure. These solutions can potentially cut settlement times from days to minutes, dramatically reduce transaction costs and introduce new levels of transparency and programmability to trade finance.

4.1 **Medad Holdings:** Stablecoin-based trade settlement

Medad Holdings entered the sandbox to test the viability of its Overlay (OvUSD) solution – a yield-bearing, programmable stablecoin issued on Ethereum and Stellar – as a tool for modernizing cross-border trade transactions. The company aimed to demonstrate whether a regulated digital asset could effectively address the significant pain points in traditional trade settlement while generating continuous yield for users.

Testing was conducted in collaboration with the FSRA in the ADGM and a network of institutional partners. Over a three-month period, Medad piloted OvUSD in four distinct trade finance use cases:

- **Invoice payments via SAP digital currency hub:** Medad integrated OvUSD with SAP's enterprise financial system to enable automated settlement of commercial invoices between buyers and sellers. Upon payment initiation, OvUSD was instantly transferred, eliminating delays and reliance on correspondent banking channels. This demonstrated how programmable stablecoins can be embedded within enterprise resource planning (ERP) systems to modernize treasury operations and reduce settlement times from days to minutes.
- **Foreign exchange (FX) conversion via GMO-Z.com:** In partnership with GMO-Z.com, Medad showcased the use of OvUSD for on-chain FX conversion. The pilot enabled seamless currency exchange and cross-border payments using blockchain rails – bypassing

traditional FX intermediaries. It highlighted the potential of tokenized assets to support faster, more transparent and cost-effective foreign exchange for global traders.

– **Supply chain financing via GSBN:** Collaborating with the Global Shipping Business Network (GSBN), Medad tested how OvUSD could provide working capital financing against electronic bills of lading (eBLs). By tokenizing and verifying logistics documents, OvUSD enabled lenders to offer real-time, programmable funding tied to verified supply chain events. The result enhanced liquidity without increasing credit risk.

– **Smart escrow via XTRAA:** In partnership with XTRAA, Medad deployed programmable escrow contracts backed by NFT-based digital trade documents. These contracts ensured conditional, automated release of funds based on predefined trade milestones, such as cargo delivery confirmation. This use case illustrated how smart contracts can enhance trust and efficiency in international trade by reducing disputes and manual intervention.

Each use case was designed to test different aspects of stablecoin functionality in trade, from integration with enterprise systems to real-time settlement and programmable trade logic.

Main findings

The testing demonstrated that OvUSD could be successfully issued on both Ethereum and Stellar blockchains and integrated with institutional systems. An important feature of the solution was its ability to generate yield during transaction windows, due to its integration with Franklin Templeton's tokenized Money Market Fund (BENJI), which manages deposited capital and distributes daily yield. Franklin Templeton played a dual role in the testing: not only as the asset manager responsible for generating returns on underlying deposits but also as a technology partner within the joint venture. The firm provided the infrastructure for stablecoin issuance across blockchains, as well as the main operational modules including customer onboarding, on- and off-ramping and risk management controls. The solution successfully reduced settlement times from days to minutes and eliminated many of the correspondent banking fees traditionally associated with cross-border payments.

However, the testing also revealed challenges. Integration complexity increased significantly with the number of ecosystem participants involved. Interoperability gaps emerged with partner blockchains such as Hyperledger Fabric. Most institutional participants strongly preferred custodial wallet solutions over self-custody options, indicating the continued importance of trusted third parties in regulated environments.

Regulatory takeaways

The sandbox revealed a need for institutional-grade regulatory frameworks for stablecoins supporting trade, treasury and capital repatriation. Medad's approach to transparency (proof of reserves) was seen as a necessary foundation for regulatory acceptance, but additional clarity is needed around the cross-border treatment of stablecoins in trade settlement.

ADGM emerged as a preferred jurisdiction for digital asset oversight, but broader adoption would require alignment across UAE regulations and with international frameworks. As part of its future roadmap, Medad Holdings proposed using comprehensive economic partnership agreements (CEPAs) to support mutual recognition of stablecoin regimes.

BOX 9 **Medad Holdings**

Company background: Based in the UAE, Medad is developing a trade-focused stablecoin solution for cross-border payments, particularly targeting regions facing currency volatility and limited access to US dollar liquidity. Its solution seeks to enhance payment efficiency and mitigate FX risks in global trade settlements.

Main technology features:

– Yield-bearing, programmable stablecoin (OvUSD) issued on Ethereum and Stellar

– Integration with enterprise financial systems such as SAP

– Support for on-chain FX conversion and smart escrow contracts

– Transparent proof of reserves and institutional-grade compliance

Testing focus: In the sandbox, Medad collaborated with the FSRA to demonstrate how stablecoins could modernize cross-border trade settlement, reduce transaction costs and enable programmable trade logic while maintaining regulatory compliance.

4.2 **Haifin:** Digitalizing bank guarantees

Haifin participated in the sandbox to test its blockchain-based solution for digitalizing bank guarantees – a critical but often overlooked component of trade finance. The company aimed to transform the traditionally paper-based guarantee system into a secure digital process that reduces fraud, increases transparency and improves operational efficiency.

Haifin collaborated with the Central Bank of the UAE (CBUAE) and leading UAE financial institutions, including First Abu Dhabi Bank and Sharjah Islamic Bank. The platform uses the UAE's 2021 Electronic Transactions and Trust Services Law (ETL), which provides legal backing for digital documents.

Over a four-month period, the sandbox simulated real-world guarantee transactions where banks issued digital guarantees. Beneficiaries received, verified and managed these guarantees through Haifin's beneficiary management system, with the full life cycle of guarantees – amendments, claims, extensions and releases – digitally recorded and processed. The platform used private data collections and Merkle root hashing (which is a result of hashing the transactions in a block, pairing those hashes and hashing them again until a single hash remains) to ensure security, transparency and privacy between participants, with each institution maintaining its own blockchain node.

Main findings

The testing demonstrated that all participants could seamlessly register and manage digital guarantees across the platform. The blockchain infrastructure successfully supported independent, secure nodes for each party, ensuring data privacy while maintaining auditability. The system effectively reduced the risk of fraud, document loss and delays common in paper-based systems.

Beneficiaries gained the ability to access and manage guarantees digitally through an end-to-end interface that supported all life-cycle functions. Importantly, the model proved capable of accommodating non-participating beneficiaries via a verification portal with hashed summary data, addressing the challenge of partial ecosystem adoption.

Regulatory takeaways

The testing confirmed that the UAE's 2021 Electronic Transactions law provides a valid legal foundation for electronic guarantee issuance. However, the sandbox revealed that clear regulatory messaging and endorsement from the CBUAE would be critical to enable adoption at scale.

Participants highlighted the need for guidelines on legacy conversion – transitioning existing paper guarantees to digital formats – and standardized compliance with international frameworks such as URDG 758, which reflects international standard practice in the use of demand guarantees for digital instruments. The fragmented regulatory environment across different economic zones in the UAE emerged as a potential obstacle to comprehensive adoption.

To accelerate implementation, the sandbox findings suggest that regulators should consider setting target dates for mandatory digital issuance and providing formal endorsement of platforms that meet security and compliance standards.

BOX 10 **Haifin**

Company background: Based in the UAE, Haifin digitalizes bank guarantees using blockchain and Merkle root hash technology. By converting traditionally paper-based guarantees into verifiable digital records, it reduces fraud, increases transparency and improves operational efficiency in trade transactions.

Main technology features:

- Private, permissioned blockchain for secure guarantee issuance and management
- Independent, secure nodes for each participating institution
- Digital life-cycle management for guarantees (issuance, amendment, claims, extensions)
- Verification portal for non-participating beneficiaries

Testing participants: Throughout the sandbox, Haifin worked with the Central Bank of the UAE, First Abu Dhabi Bank, Sharjah Islamic Bank and leading beneficiary organizations to demonstrate the feasibility of transitioning the UAE's AED 463 billion guarantee market to digital infrastructure.

5 Policy recommendations

The TradeTech Regulatory Sandbox demonstrated emerging technologies' potential and the regulatory considerations they raise.

Navigating the digital transformation of trade requires balancing innovation with appropriate oversight. The following recommendations offer a pathway to responsible progress based on the key themes identified during testing.

5.1 Trade documentation

Accelerate MLETR adoption across jurisdictions

Reliable, verifiable documentation is an essential part of the financial infrastructure for global trade. Without institutional alignment on standards such as MLETR, digital processes cannot scale. The sandbox demonstrated that while digital documentation technology is technically mature, its legal standing remains uncertain in many jurisdictions. Credore and Enigio both proved that MLETR-compliant documentation can reduce processing times from days to hours and cut costs dramatically, but these benefits cannot scale without broader legal recognition.

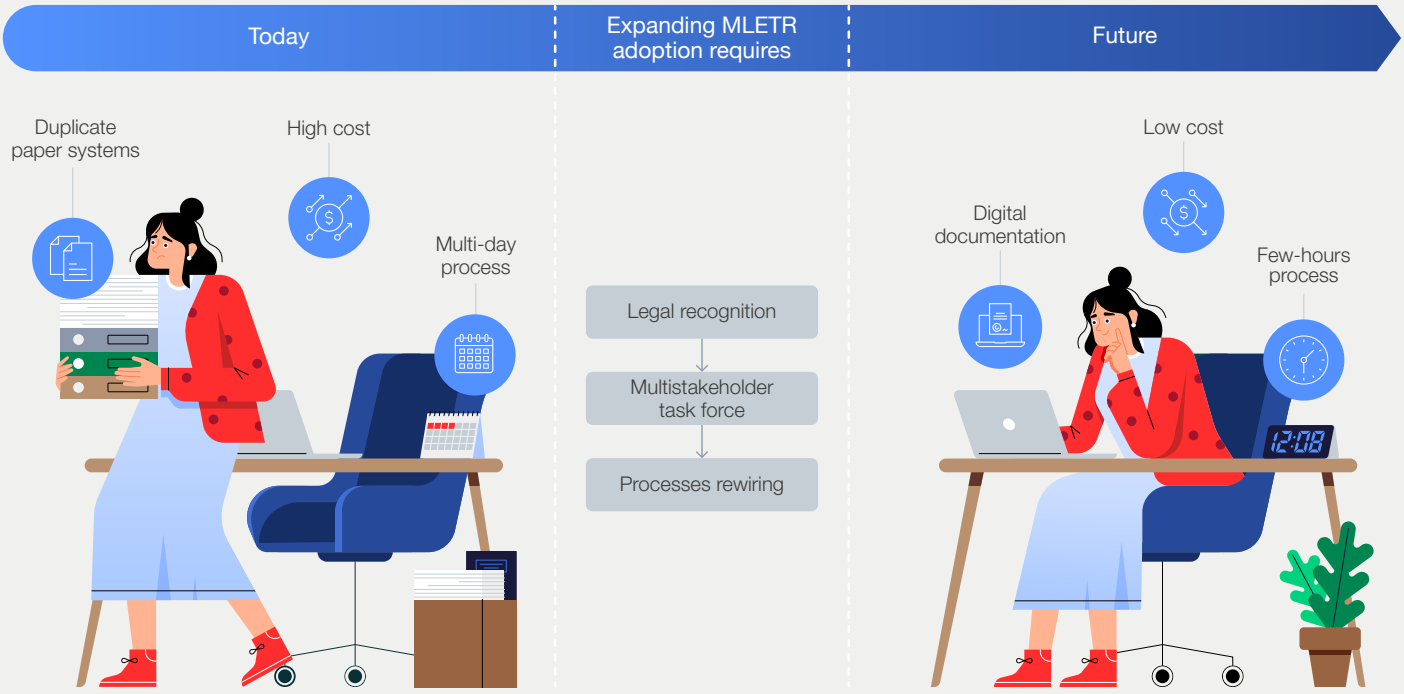
Expanding MLETR adoption requires more than passing new laws – it involves coordinated institutional uptake across courts, customs, banks and logistics providers. Moreover, trade-offs must be considered: transitioning to digital records demands the reconfiguration of compliance systems, risk frameworks and document validation processes.

Regulatory opportunities include:

- Extending legal recognition of electronic transferable records beyond ADGM to the entire UAE through federal legislation
- Establishing a UAE MLETR taskforce with representatives from banks, corporations, technology providers and legal experts to develop consistent implementation guidelines
- Creating clear procedures for courts, customs authorities and financial institutions to validate digital trade documents

Successful implementation would eliminate the need for duplicate paper systems, potentially reducing documentation costs while enabling faster financing based on digital records.

FIGURE 1 **Accelerate MLETR adoption across jurisdictions**



Source: World Economic Forum

5.2 Identity and trust systems

Establish recognition frameworks for digital identity

The testing by Empeiria and IOTA revealed that digital identity technologies can create trust in cross-border transactions but currently lack formal legal recognition. Empeiria demonstrated how verifiable product credentials could serve as collateral, while IOTA showed how government-validated trade data could streamline financing.

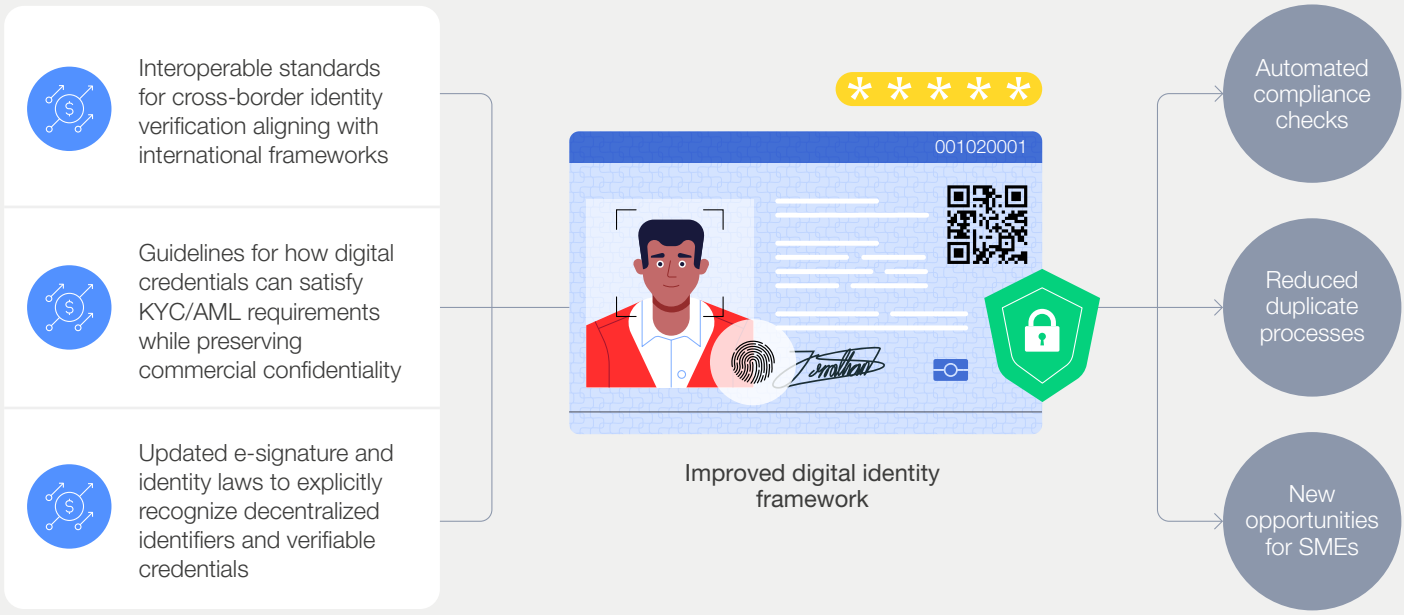
While technically feasible, implementation raises critical governance questions. The decentralized nature of identity solutions challenges traditional trust hierarchies. Regulators must determine who bears liability for credential issuance, how on-chain verification aligns with AML/KYC obligations and how to manage cross-border credential recognition without undermining national security or data protection laws.

Authorities can improve identity frameworks by:

- Updating e-signature and identity laws to explicitly recognize decentralized identifiers and verifiable credentials
- Creating interoperable standards for cross-border identity verification that align with international frameworks (e.g. GLIEF vLEI, W3C standards)
- Developing guidelines for how digital credentials can satisfy KYC/AML requirements while preserving commercial confidentiality

A robust digital identity framework would enable automated compliance checks, reduce duplicative verification processes and create new opportunities for SMEs to establish trusted relationships with international counterparties.

FIGURE 2 **Identity and trust systems**



Source: World Economic Forum

5.3 Credit assessment and SME inclusion

Enable data-driven financing models

Jetstream Africa demonstrated that AI-driven credit decision-making can reduce approval times from weeks to minutes, while Voy Finance showed how tokenized trade assets could serve as transparent collateral. However, both solutions face barriers in scaling due to the absence of enabling infrastructure.

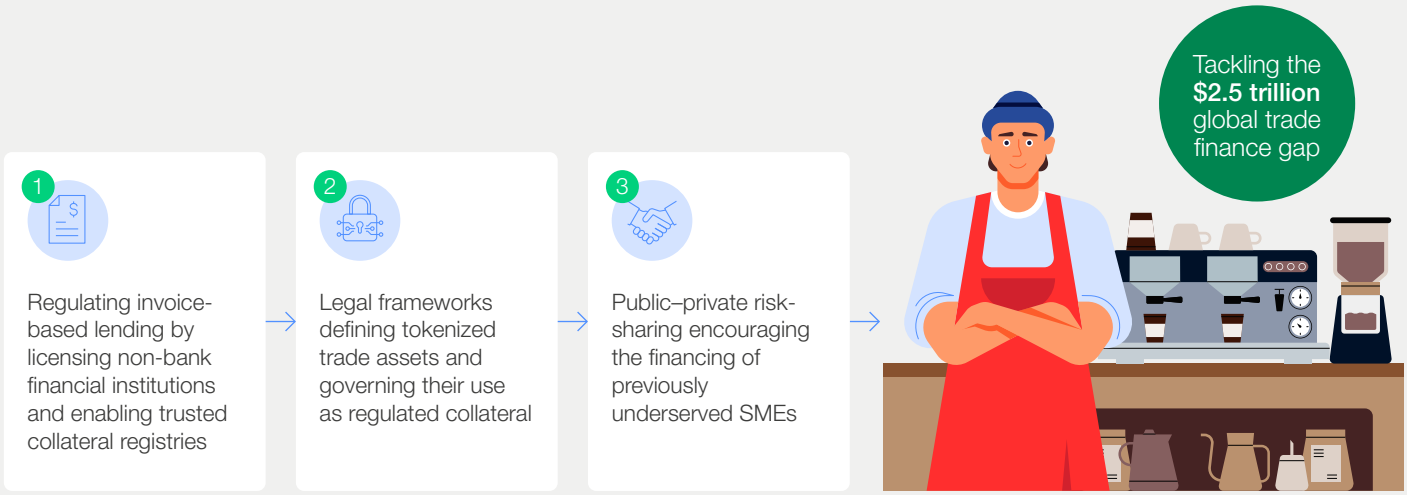
Scaling these models presents several governance and implementation challenges. Regulators must evaluate the fairness of AI algorithms, ensure audit trails for tokenized transactions and address the lack of standardized invoice formats or asset registries.

Unlocking these innovations requires:

- Regulating invoice-based lending by licensing non-bank financial institutions and enabling trusted collateral registries
- Establishing legal frameworks that clearly define tokenized trade assets and govern their use as regulated collateral
- Developing public–private risk-sharing schemes that encourage lenders to finance previously underserved SMEs

These changes would help address the global trade finance gap by creating more transparent, data-driven lending models that work for businesses of all sizes.

FIGURE 3 **Credit assessment and SME inclusion**



Source: World Economic Forum

5.4 Digital guarantees and payment settlement

Modernize payment and guarantee infrastructure

Medad Holdings demonstrated that regulated stablecoins can reduce settlement times from days to minutes while eliminating correspondent banking fees. While providing the stability of a fiat-backed token, this also highlights the wider usability of stablecoins for jurisdictions that might not have access to US dollars and other fiat alternatives. Haifin showed how blockchain can digitalize the UAE's AED 463 billion bank guarantee market, thereby reducing fraud and improving capital efficiency.

Yet these innovations pose new regulatory challenges. Stablecoins, while operationally efficient, can affect monetary sovereignty. They also require ongoing verification of reserves, cross-border recognition and robust audit frameworks. Meanwhile, the transition from paper-based guarantees to digital ones involves managing the interoperability of legacy systems, maintaining data privacy across nodes and ensuring the enforceability of digital contracts in courts.

Regulators can improve TradeTech innovation by:

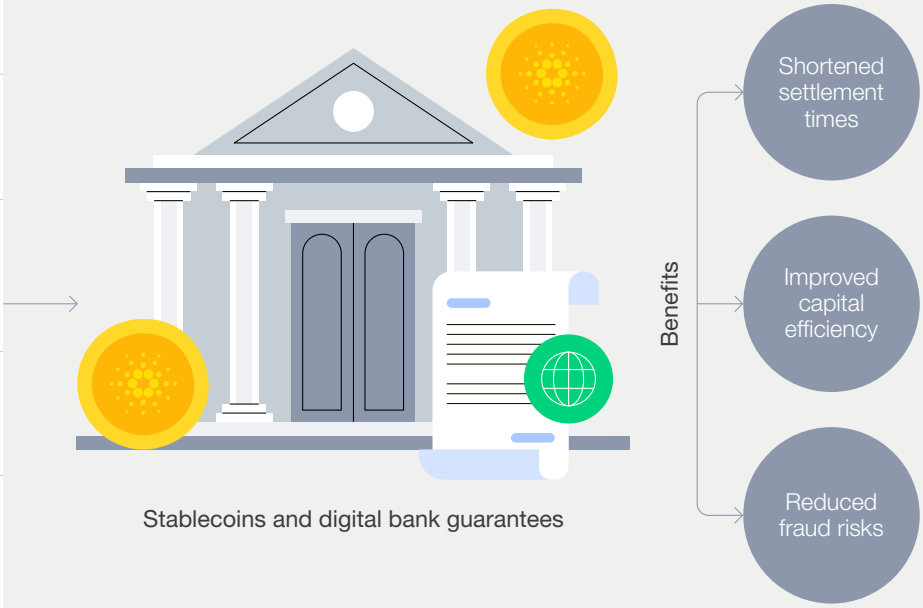
- Developing comprehensive frameworks for institutional-grade stablecoins in trade, including licensing, reserve requirements and cross-border recognition
- Using bilateral economic agreements such as CEPA to define mutual recognition standards for digital payments
- Setting clear adoption targets for digital bank guarantees with measurable milestones
- Publishing guidelines on standardization (such as URDG 758 compliance) and procedures for converting legacy paper guarantees to digital formats

Successfully transforming these infrastructure components would unlock substantial capital currently trapped in inefficient processes while reducing settlement risk and fraud exposure.

FIGURE 4 **Digital guarantees and payment settlement**

Actions that regulators can take to improve trade payment settlements:

1. Develop comprehensive frameworks for institutional-grade stablecoins
2. Define mutual recognition standards for digital international payments using bilateral economic agreements
3. Set adoption targets for digital bank guarantees with measurable milestones
4. Publish guidelines on standardization and procedures for converting legacy paper guarantees to digital formats



Source: World Economic Forum

5.5 Cross-cutting initiatives

Promote continued experimentation and adoption

The sandbox itself demonstrated the value of structured regulator–innovator collaboration in identifying risks, practical solutions and policy gaps. This approach should be institutionalized to support ongoing digital trade transformation.

Scaling innovation across an entire economy demands more than a sandbox – it requires clear governance models, iterative rule-making processes and mechanisms to monitor outcomes. Without sustained oversight, innovations risk becoming isolated pilots rather than systemic solutions.

Authorities can:

- Establish permanent regulatory sandbox tracks for TradeTech with multi-agency oversight to ensure coordination across trade, finance and customs domains
- Create clear pathways from successful experimentation to market implementation, including provisional licensing and monitored deployment

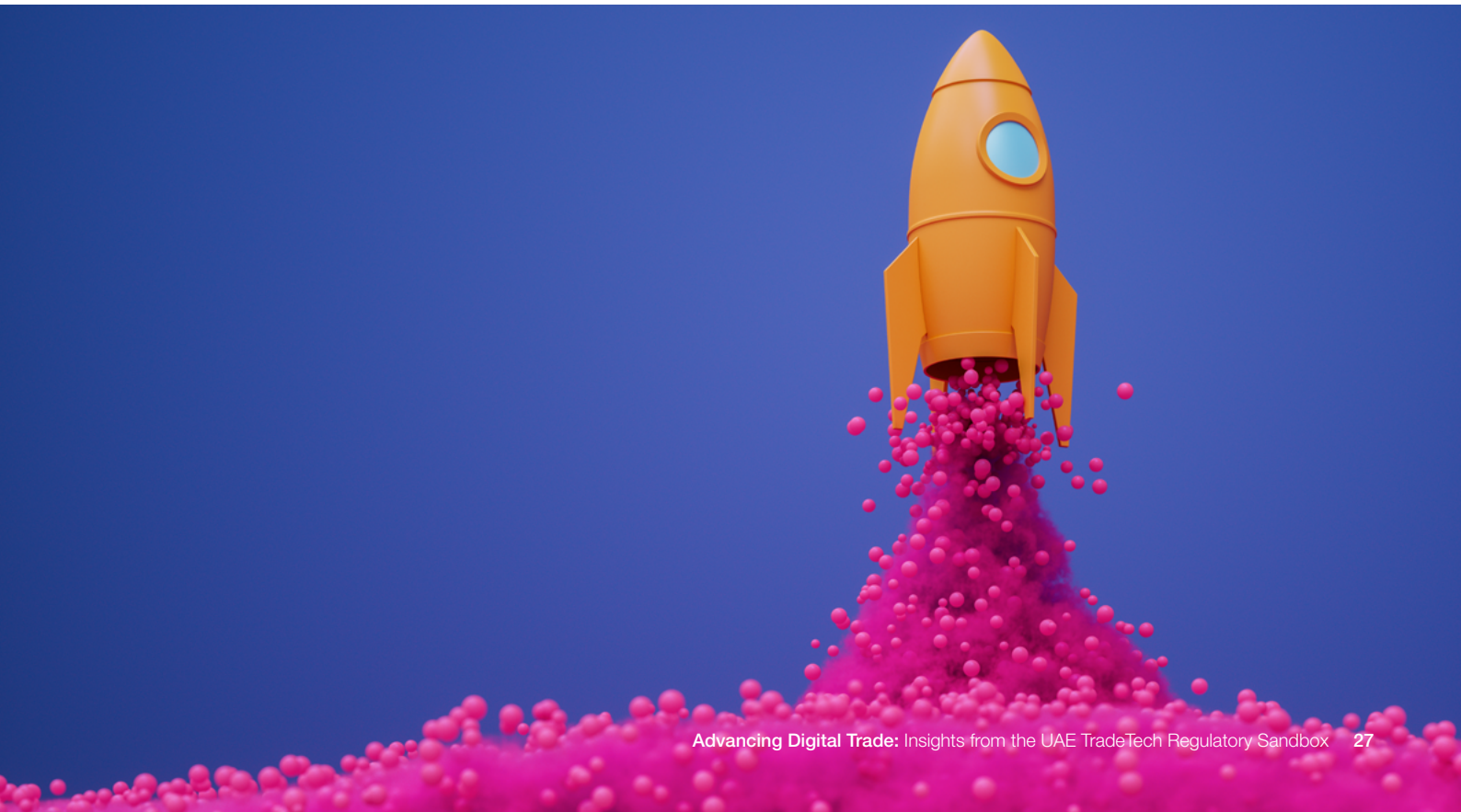
– Develop metrics to evaluate both economic impact and inclusion outcomes

This structured approach to innovation would help the UAE maintain and foster its leadership in trade facilitation while ensuring that digital transformation benefits all market participants.

These recommendations represent a balanced approach to enabling TradeTech innovation within appropriate regulatory guardrails. By addressing the legal, technical and operational barriers identified through the sandbox, the UAE can create an environment in which digital trade flourishes while maintaining the trust and security essential to international commerce.

FIGURE 5 **Cross-cutting initiatives**

Source: World Economic Forum



Conclusion

The TradeTech Regulatory Sandbox marks a major step towards building an agile, innovation-friendly regulatory environment that balances the pace of digital transformation with the need for sound governance.

Through real-world experimentation, this initiative brought together cutting-edge companies and regulatory authorities to address bottlenecks in cross-border trade, including fragmented documentation, limited access to finance, high settlement costs and the absence of digital trust infrastructure.

Over a period of six months, the sandbox tested solutions ranging from MLETR-compliant trade documents to tokenized real-world assets. These experiments not only validated the technical feasibility of the different solutions but also highlighted regulatory frictions that could constrain their scalability.

The testing demonstrated that significant efficiency gains – such as reducing document processing time by more than 70%, enabling real-time payment settlements and accelerating credit decisioning for SMEs – are possible when technological innovation is paired with nimble regulatory engagement. However, the results also highlighted the need for policy improvements in certain areas. These include:

- The lack of national legal recognition of digital records
- Regulatory uncertainty around decentralized identity and stablecoins
- Interoperability and fragmentation across regulatory jurisdictions
- The absence of risk-sharing mechanisms for SME finance

A recurring insight from across the sandbox was the need for governments and regulators to evolve from being observers to active participants in digital trade ecosystems. In a world of tokenized assets and AI-enhanced credit models, policy frameworks must not only be adaptive but also proactive – encouraging experimentation, establishing guardrails and facilitating cross-border alignment.

To that end, this policy paper offers a set of strategic recommendations, ranging from MLETR adoption to the creation of regulatory pathways for tokenized assets. Each recommendation emerged after real-time testing to ensure policy proposals are practical, actionable and responsive to market needs.

The sandbox has also demonstrated the power of a **multistakeholder collaboration model** – bringing together regulators, technologists, banks, trade authorities and SMEs. This ecosystem approach will be critical for expanding solutions beyond the sandbox and institutionalizing innovation through international corridor pilots. To scale national and regional innovations will require ongoing partnerships and collaborative testing models to ensure that regulatory models suitable for one jurisdiction also address societal needs in others.

Looking ahead, the challenge lies not in the readiness of technology, but rather in the ability of regulatory frameworks and institutional models to keep pace. Moreover, *interoperability* – aligning legal, technical and institutional contexts to support digital transformation – remains a central constraint on scaling innovation. The TradeTech Regulatory Sandbox offers a roadmap for doing just that: testing, regulating, iterating and scaling responsibly.

With continued commitment from all stakeholders, the UAE and the world can enter a new era of digitally inclusive, interoperable and resilient global trade.

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1. World Trade Organization. (2022, February). “Global legal recognition of electronic transactions and documents”. *The promise of TradeTech*, 28–39. https://doi.org/10.30875/9789287071026c005
2. Enigio. (2024, April 10). *Enigio’s trace:original becomes first verified solution under ICC DSI Digital Trade Reliability Assessment* [Press release]. https://enigio.com/post/enigios-traceoriginal-becomes-first-verified-solution-under-icc-dsi-digital-trade-reliability-assessment/
3. Asian Development Bank. (2023, September 5). *Global trader finance gap expands to $2.5 trillion in 2022* [Press release]. https://www.adb.org/news/global-trade-finance-gap-expands-25-trillion-2022#:~:text=MANILA%2C%20PHILIPPINES%20(5%20September%202023,financing%2C%20according%20to%20the%202023
4. World Trade Organization. (2024). *World trade report 2024: Trade and inclusiveness*. https://www.wto.org/english/res_e/publications_e/wtr24_e.htm; Basquill, J. (2024, September 10). Half of SME trade finance request rejected, WTO finds. *Global Trade Review*. https://www.gtreview.com/news/global/half-of-sme-trade-finance-requests-rejected-wto-finds/
5. Central Bank of the UAE. (2025, February). *Monthly statistical bulletin*. https://www.centralbank.ae/media/slcpkamg/statistical-bulletin-feburary-2025.pdf

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