Establishing a Unified Standard for Asset Servicing With the Chainlink Platform, Blockchains, and AI

Chainlink and 24 of the world's largest financial institutions and market infrastructures, including Swift, DTCC, Euroclear, and UBS, are transforming the validation and delivery of corporate actions data with unified golden records.

Chainlink

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Executive Summary

Corporate actions remain one of the most fragmented and error-prone areas of post-trade infrastructure. According to the Depository Trust & Clearing Corporation (DTCC), the global cost of corporate actions processing now exceeds $58 billion annually, driven largely by unstructured disclosures, duplicative validation steps, and inconsistent data flows across intermediaries and systems.

Chainlink, together with 24 of the world's largest financial market infrastructures and institutions, including Swift, DTCC, and Euroclear, is establishing a new, unified infrastructure for streamlining corporate actions processing. This is accomplished by leveraging the Chainlink oracle platform, blockchains, and artificial intelligence (AI) to extract, validate, and deliver corporate actions data in a standardized format across both blockchain networks and traditional financial systems. Our work represents a transformative approach to how a cross-market standard for corporate actions processing can be implemented across the global financial system.

The full list of participants in this industry initiative includes financial market infrastructures Swift, DTCC, Euroclear, SIX, TMX, CEVALDOM, Grupo BMV, ADDX, Orbix Technology, Marketnode, and Wamid, as well as leading asset managers and banks UBS, DBS Bank, BNP Paribas' Securities Services business, ANZ, Wellington Management, Schroders, Zürcher Kantonalbank, Vontobel, CTBC Bank, Causeway Capital Management, Sygnum Bank, AMINA Bank, and Zand Bank.

This implementation builds on Phase 1 of our work, where Chainlink, Swift, Euroclear, and six financial institutions demonstrated that large language models (LLMs) could extract structured data from unstructured corporate action announcements and publish it onchain as a unified golden record—a single source of truth that all participants can easily access, verify, and build upon. While Phase 1 proved the technical viability of this approach and demonstrated that corporate actions processing could be reduced drastically, Phase 2 advances it into a production-grade solution that satisfies the requirements of today's leading financial institutions.

New Business Outcomes

Phase 2 introduced substantial improvements to the speed, reach, and accessibility of corporate actions data. The approach directly demonstrated the ability for institutions to receive structured, validated records with 100% data accuracy, integrate them directly into existing enterprise systems without workflow disruption, and process disclosures written in multiple languages, including Spanish and Chinese, to extend coverage across global markets.

Key Milestones

- **Faster access to actionable data:** Standardized corporate action records significantly accelerate downstream processing and reduce manual review cycles.
- **Direct integration with existing systems:** Support for ISO 20022-compliant messages enables direct delivery through the Swift network to downstream financial institutions.
- **Multi-market reach:** Successfully processing corporate action disclosures in non-English languages allows for deployment across multi-jurisdictional environments.

Technical Advancements

Significant technical progress was made in Phase 2 to support a production-grade deployment. New workflows featuring data attestor and data contributor roles allowed trusted financial institutions to cryptographically certify data accuracy and populate missing data fields, creating a verifiable chain of custody across the lifecycle of each corporate action. The Chainlink Runtime Environment (CRE) was leveraged to orchestrate and validate multiple AI model outputs and transform those structured outputs into an ISO 20022 message format, while Chainlink Cross-Chain Interoperability Protocol (CCIP) distributed the confirmed records in real-time to DTCC's blockchain ecosystem and additional public and private blockchains. Chainlink CRE and CCIP serve as the execution and interoperability layers of the Chainlink platform, powering the processing, validation, and cross-system distribution of corporate actions data throughout this solution.

Key Milestones

- **100% Data Accuracy**: New roles for data attestors and contributors ensured 100% data accuracy on AI-extracted corporate actions record outputs.
- **Institution-ready data pipelines:** CRE orchestrated consensus across multiple AI models and transformed the extracted outputs into ISO 20022-compliant messages.
- **Unified golden records:** CCIP distributed the corporate actions data to a more extensive set of public and private blockchain environments than demonstrated in Phase 1, including DTCC's blockchain ecosystem.

Overview

Phase 2 integrates CRE workflows, DTCC's blockchain infrastructure, and role-based smart contract governance to create a comprehensive system for validating, attesting, and distributing corporate actions data across multiple blockchain networks using Chainlink CCIP.

Goals

Evaluate the effectiveness of data attestor and contributor roles to address data verifiability concerns when using AI models for automated corporate action data extraction. Also, distribute unified golden records for corporate action records across blockchains and traditional financial systems.

Conducted by

Chainlink

Financial and Market Infrastructures

Swift

DTCC

euroclear

SIX

TMX

CEVALDOM

Grupo BMV

ADDX

orbix TECHNOLOGY

MARKETNODE

وامض WAMID

Asset Managers and Banks

UBS

DBS

BNP PARIBAS

ANZ

WELLINGTON MANAGEMENT®

Schroders

Zürcher Kantonalbank

We Care Family CTBC BANK

Causeway

SYGNUM

AMINA

زاند Zand

Business Context

Solving the $58B+ Annual Corporate Actions Processing Problem

Corporate actions processing costs the global financial industry an estimated $58 billion annually, with that number set to grow substantially year over year. Citi's 2025 report underscores the scale of the issue, revealing that the average cost of handling a single event now totals $34 million across more than 110,000 firm interactions, with annual processing costs increasing by 10%. Despite these massive costs, automation rates for corporate action events have dropped below 40%, even as processing volumes are projected to rise by 35% this year. Meanwhile, 75% of market participants still rely on manual data revalidation, highlighting the scale of inefficiencies that the initiative seeks to address.

Phase 1 of our initiative validated that LLMs could extract structured data from unstructured announcements and publish it onchain as a unified golden record. Now with Phase 2, we are advancing the project to prove that the Chainlink oracle platform, combined with blockchains and AI, meets the institutional standards for accuracy, accountability, and downstream interoperability needed for real-world adoption at scale.

The initiative focused on solving four long-standing challenges in corporate actions processing:

1. **Timing delays:** Confirmed corporate action data often takes 24 to 48 hours from the initial announcement to reach asset managers through custodians. While some preliminary information may be available quickly from data vendors, that data typically comes without complete assurances.

2. **Loss of data integrity:** As corporate action data flows through multiple intermediaries, each party may apply different processing logic. This can distort the original announcement details and degrade the integrity of the data by the time it reaches investors.

3. **Data fragmentation:** The same corporate action may be published in many different formats and channels, forcing institutions to manually reassemble the information and determine which version is accurate.

4. **Communication breakdowns:** Use of incompatible formats and systems creates processing bottlenecks and leads to inconsistent treatment of the same corporate action across different markets and participants. When event details change, those updates often can't be communicated consistently throughout the entire data chain.

"By leveraging DLT, we can bring increased levels of transparency, connectivity and accuracy to the ecosystem. We welcomed the opportunity to bring this use case to life and demonstrate how innovative technology can transform processes and deliver new capabilities and value to the industry."

> **Dan Doney**
> Managing Director & Chief Technology Officer, DTCC Digital Assets

Human Readable

1 Corporate Action

Golden Record

NEW YORK, NY - April 15, 2025

Company XYZ (NYSE: XYZ) today announced that its Board of Directors has approved a four-for-one split of the Company's common stock. The share split will be implemented through a stock dividend, with shareholders receiving three additional shares for every share held at the close of business on the record date of May 5, 2025.

PR & Newswires

2 Data Vendors

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2 Aggregators

3

Company XYZ
Share Split: 4 for 1
Record Date: 5/5/25

Company XYZ
Share Split: 4 for 1
Record Date: 5/5/25

Company XYZ
Share Split: 4 for 1
Record Date: 5/5/25

4

5 Asset Manager

Company XYZ
Share Split: 4 for 1
Record Date: 5/5/25

Company XYZ
Share Split: 4 for 1
Record Date: 5/5/25

Company XYZ
Share Split: 4 for 1
Record Date: 5/5/25

Delay for Confirmed Data: 24 - 48 Hours

Machine Readable

Figure 1: Current corporate actions data flow, showing delays and inconsistencies across vendors, aggregators, and custodians before reaching asset managers.

Our Approach

An Evolving Architecture for Institutional Deployment

Building on the architectural foundations established in Phase 1, the primary goal in this stage of development was to evolve the solution toward production readiness while meeting institutional requirements for data completeness, trust, and interoperability.

Scope of Phase 2

Phase 2 introduced a series of upgrades to ensure the system could be integrated into live post-trade environments, including:

- Introducing a new data attestor role to allow regulated institutions, such as CSDs and transfer agents, to review and confirm the accuracy of corporate action data extracted using LLMs—including OpenAI's GPT series, Google's Gemini series, and Anthropic's Claude series—directly addressing data authenticity concerns raised by market participants in the previous phase of work.

- Enabling data contributors, such as exchanges or issuer agents, to provide missing information often excluded from initial disclosures, including security identifiers.

- Supporting integration with traditional financial infrastructure by generating ISO 20022-compliant messages for seamless data delivery.

- Expanding the reach of unified golden records by enabling the distribution of validated corporate actions data across multiple blockchain environments.

What is a **Unified Golden Record**?

A unified golden record is a verifiable, persistent, updatable, and interoperable container for data, typically financial data, which is successfully synchronized across blockchains. It serves as a single source of truth that can be simultaneously referenced by all market participants, including issuers, banks, FMIs, asset managers, and investors.

While blockchains provide a secure, tamper-resistant environment to store a golden record, the Chainlink oracle platform is what enables that record to stay updated, synchronized with offchain systems, and interoperable across public and private chains. Together, the Chainlink oracle platform and blockchains give institutions the infrastructure needed to maintain a trusted, machine-readable source of truth, reducing duplication, increasing transparency, and unlocking automation across the corporate actions lifecycle.

Solution Design

Phase 2 introduces a comprehensive, enterprise-oriented architecture that transforms unstructured corporate action announcements into validated, attested, and distributed unified golden records across multiple blockchain networks and traditional systems.

Step 1: Document Ingestion and Validation

- Retrieval and authentication of source document: When a corporate action is announced, the system ingests the source document (typically a PDF) and begins pre-processing. This includes generating a hash to verify document integrity, detecting the relevant jurisdiction, and assigning a correlation ID to ensure traceability throughout the workflow.

Step 2: End-to-End Processing

- Data extraction: CRE powers the modular workflow designed to consume corporate action PDF documents in an event-driven fashion. Once a document is ingested, CRE invokes multiple LLMs to extract the relevant information. These models are guided by carefully engineered prompts that enforce strict processing rules, ensuring the extracted output conforms to the ISO 20022 corporate action notification schema.

Consensus validation and record generation: To ensure reliability, CRE applies a novel consensus methodology across the model outputs. This process helps ensure that results from the LLMs are deterministic and mitigates the risk of data hallucinations. For example, confirming that key details such as the corporate action type, ISIN, or important dates are consistent.

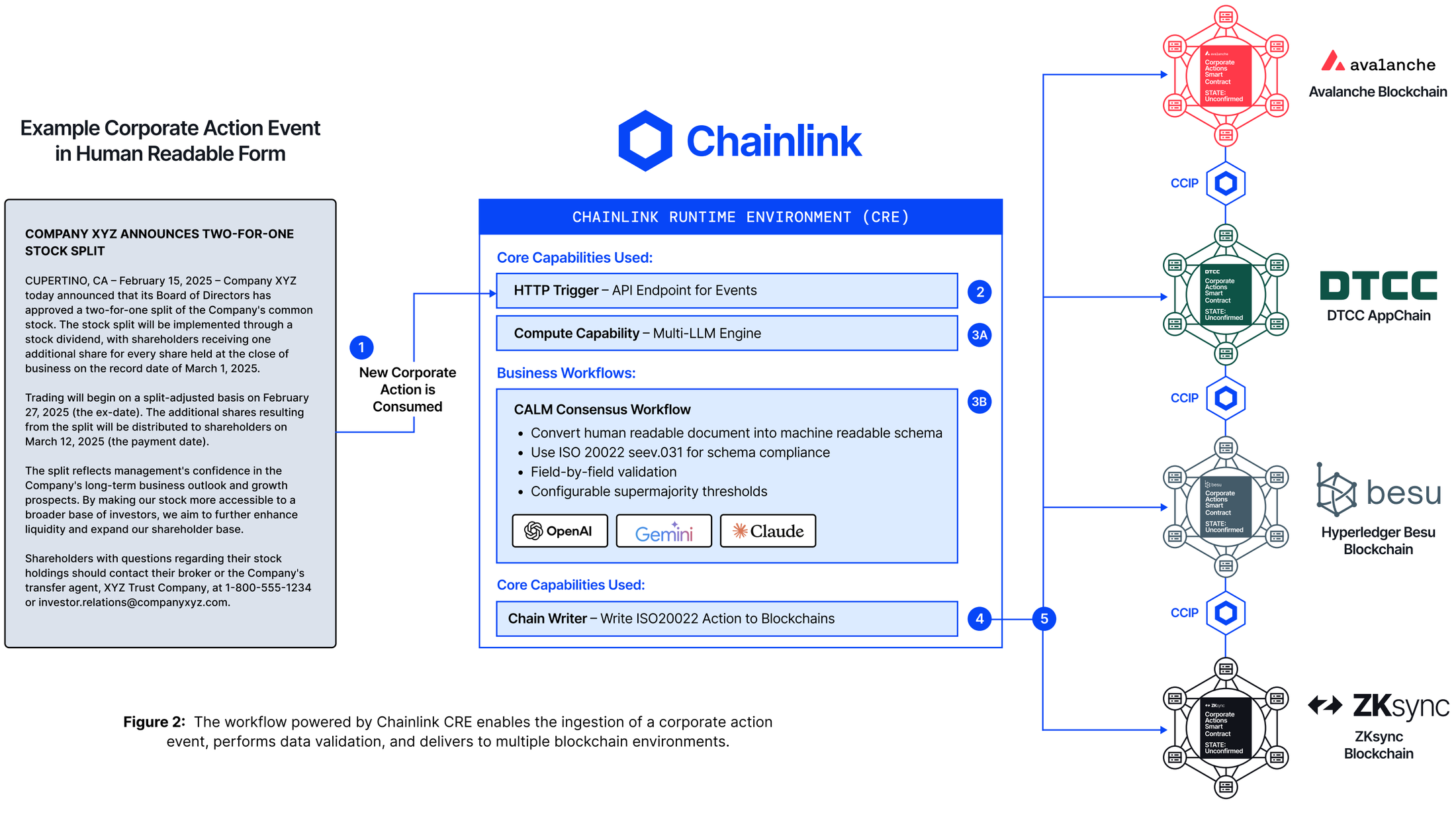

Figure 2: The workflow powered by Chainlink CRE enables the ingestion of a corporate action event, performs data validation, and delivers to multiple blockchain environments.

Step 3: Role-Based Data Attestations and Contributions

- **Data attestor workflow:** The system implements cryptographically-secured attestation workflows so predefined market participants, such as transfer agents and CSDs, can digitally validate the corporate action data that was extracted using AI. Attestors review unconfirmed records through a web UI, inspect critical fields with full provenance tracking, and apply digital signatures that instantly transition records from "unconfirmed" to "confirmed" status via smart contract state changes. The additional review process serves as an added layer of assurance, allowing designated attestors to confirm data accuracy without reintroducing the delays and inconsistencies found in today's manual workflows.

- **Data contributor integration:** Market participants, such as issuing agents, can also contribute missing critical fields (e.g., ISINs and record dates) through role-based smart contract permissions.

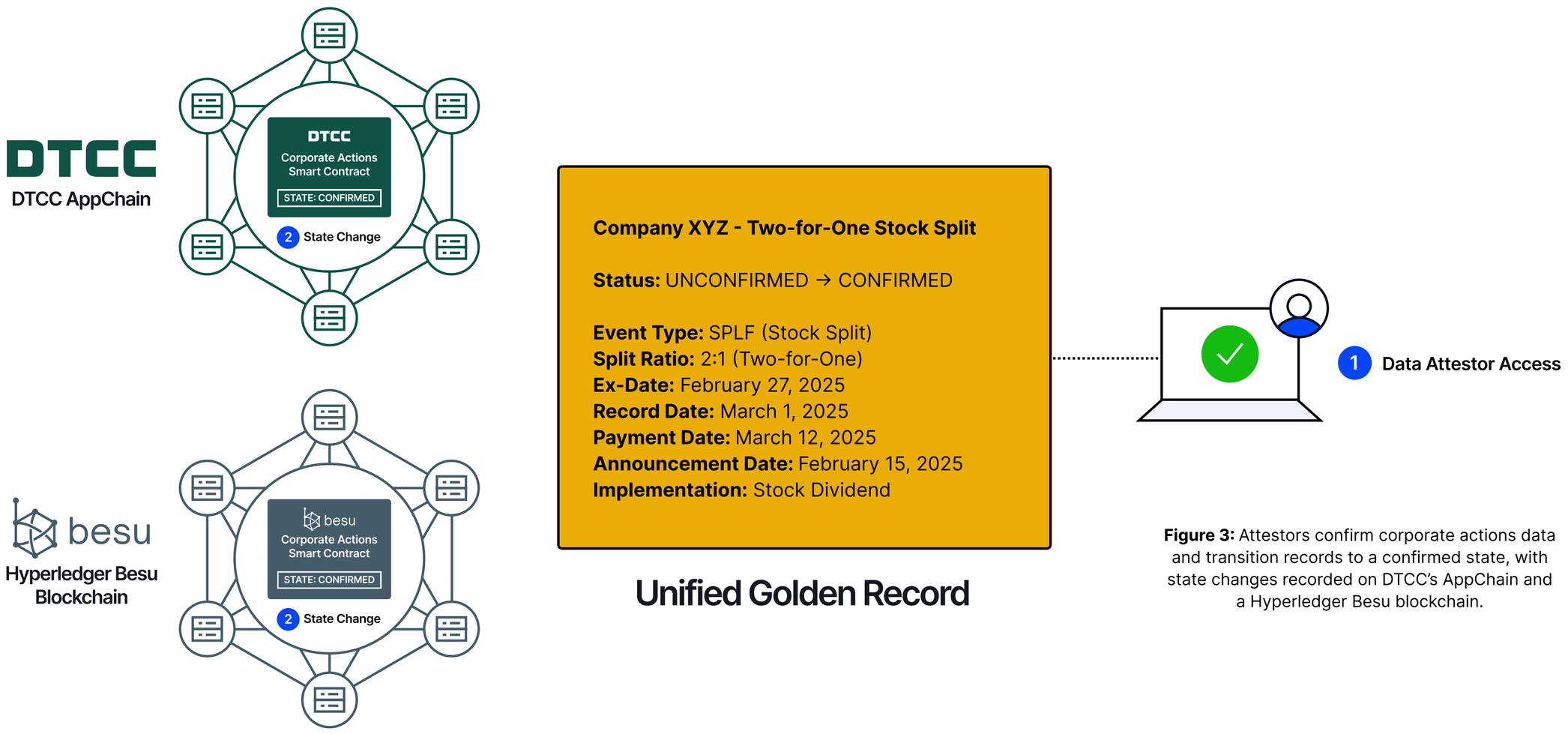

Figure 3: Attestors confirm corporate actions data and transition records to a confirmed state, with state changes recorded on DTCC's AppChain and a Hyperledger Besu blockchain.

Step 4: Cross-Chain Distribution via Chainlink CCIP

- **Interoperable unified golden records**: Upon confirmation, corporate actions data is distributed across multiple blockchain networks via Chainlink CCIP. The system maps confirmed data to each destination chain's schema requirements and CCIP routers handle secure message packaging with metadata and authentication signatures, ensuring tamper-proof delivery.

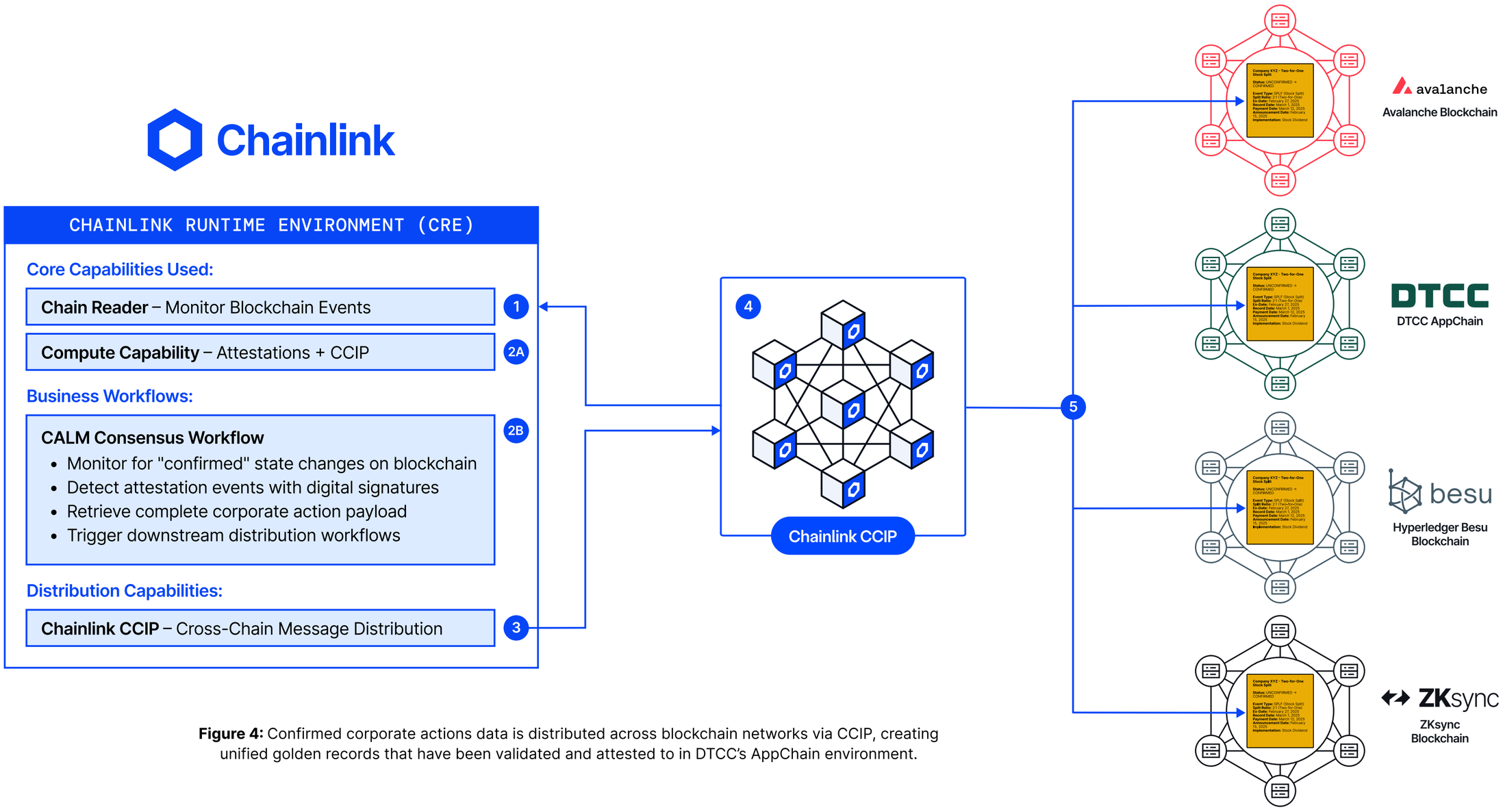

Figure 4: Confirmed corporate actions data is distributed across blockchain networks via CCIP, creating unified golden records that have been validated and attested to in DTCC's AppChain environment.

Step 5: Integration with Core Financial Market Infrastructure

- **Swift messaging connectivity:** When a corporate action is confirmed onchain, CRE transforms it into an ISO 20022-compliant message, which is then transmitted through the Swift network, via a custom Swift adapter, to downstream financial institutions.

- **DTCC's blockchain ecosystem integration:** Confirmed corporate actions automatically trigger CCIP-based message and data transfers from DTCC's blockchain ecosystem, allowing institutions to access standardized and validated corporate actions data from a highly trusted market infrastructure provider.

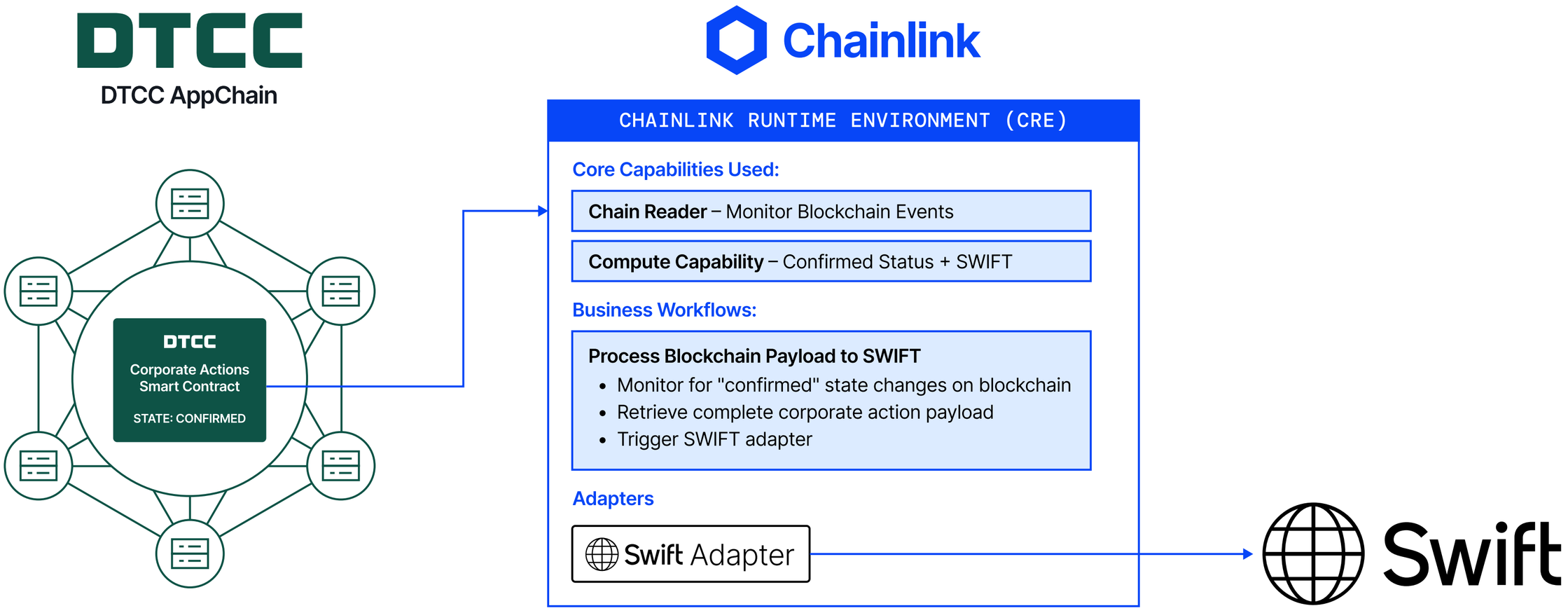

Figure 5: Confirmed corporate action records are transformed into ISO 20022 messages by the Chainlink CRE and transmitted to the Swift network using a custom adapter.

Key Outcomes

By enabling a seamless workflow that leverages the Chainlink oracle platform, blockchains, and AI, the industry initiative introduced a more secure, accurate, and efficient way to process and distribute corporate actions data, laying the foundation for real-world deployment across blockchains and traditional environments.

In our analysis of numerous different corporate actions across equity and fixed-income securities, we observed consensus in 100% of corporate action events, translating into several meaningful advancements across data accuracy, interoperability, and infrastructure readiness.

1. A Trusted Framework for Enriching and Validating Corporate Actions Data

Our work built on Phase 1 by introducing a comprehensive framework for extracting, enriching, and validating corporate actions data with institutional-grade integrity.

To address early data validity concerns raised by market participants, Phase 2 introduced a data attestor role that allows designated market participants to digitally sign and confirm the authenticity of the data record, which is extracted through the AI model consensus and enriched by authorized data contributors.

A new contributor workflow was introduced to allow authorized parties—such as issuing agents—to supply missing data elements, including ISIN codes, record dates, and market deadlines. These updates are submitted through role-based access controls, timestamped, and recorded with full provenance, ensuring traceability and data integrity across contributors.

A major technical advancement came in handling missing data fields that are frequently absent from issuer communications. Using an enhanced multi-LLM consensus mechanism, the system was able to infer and populate critical identifiers such as ISINs, even when they were not explicitly stated in source documents. In all test cases, the AI models reached an accurate consensus output, demonstrating reliability in reconstructing essential information from partial inputs.

The enriched data was then validated through an upgraded consensus and validation framework. This included configurable supermajority thresholds and decentralized execution across Chainlink decentralized oracle networks, where each node independently processed and verified LLM outputs before reaching consensus.

2. Bridging Traditional Systems and Blockchain Networks With Unified Data Delivery

Phase 2 also showed how validated corporate actions data can move frictionlessly between traditional financial systems and blockchain networks, supporting both legacy integration and tokenized infrastructure.

“For asset managers, the ability to receive accurate corporate actions data quickly and consistently in a standardized format is essential. Chainlink’s platform helps enable this by supporting timely, reliable data delivery, which reduces operational overhead, lowers risk, and improves our ability to respond to time-sensitive events across global portfolios.”

Mark Garabedian
Director of Digital Assets & Tokenization,
Wellington Management

Once a corporate action record is confirmed, it is distributed to multiple environments using Chainlink CCIP. CCIP enables secure delivery of structured data to public and private blockchains, including DTCC's blockchain ecosystem, Avalanche, Hyperledger Besu, and ZKsync. This allows smart contracts to access and act upon unified golden records for standardized corporate actions data.

At the same time, the system maintains full compatibility with existing financial infrastructure. Using CRE, the same ISO 20022-compliant corporate actions messages are transmitted through the Swift network. This allows financial institutions to receive the same validated corporate actions data using the systems they already rely on.

By enabling delivery across both traditional and blockchain systems from a single workflow, the collaboration provides a foundation capable of supporting the needs of today's institutions while also providing them direct access to onchain finance.

> *"Delivering scalable digital market infrastructure means aligning new solutions with the systems institutions already trust. Industry-wide coordination around standards and interoperability, as demonstrated in this initiative with Chainlink and major financial institutions, is key to achieving that at scale."*
>
> **Stéphanie Lheureux**
> Director, Digital Assets Competence Center,
> Euroclear

3. Enabling Multi-Market Reach and Global Tokenization Adoption

Phase 2 expanded the system's ability to operate across global markets by increasing both language coverage and infrastructure compatibility to support a wide range of jurisdictions and asset types.

A key advancement was the successful processing of corporate action disclosures written in non-English languages including Spanish and Chinese. This confirmed that the system can accurately interpret and structure data across different legal, regulatory, and linguistic environments, which is essential for servicing international capital markets at scale.

Phase 2 also laid critical groundwork for the growth of tokenized asset markets. By producing a unified and verifiable source of truth that can be accessed across both public and private blockchains, the system allows tokenized equities and other onchain financial instruments to reference the same confirmed records.

What Comes Next

The next phase will expand the system's role by extending the current processing workflow to support more complex equity corporate actions onchain. This includes enabling events such as stock splits to be recorded and attested to across market participants using permissioned smart contract logic and verified data inputs.

Looking ahead, this solution lays the foundation for automated corporate actions processing across major asset classes and jurisdictions. With standardized data, trusted workflows, and cross-system interoperability in place, the initiative is well-positioned to support a more integrated and efficient post-trade ecosystem.

Goals of Current Phase

- → Validate, enrich, and deliver structured corporate actions data through attestation workflows, data contributor roles, and cross-system messaging.
- → Build a production-grade architecture that enables corporate actions data to flow securely across public blockchains and traditional systems.

Goals of Next Phase

- → Enable more complex corporate action event types to be processed by the existing architectural approach.
- → Evolve the attestation model to support expanded role-based permissions and privacy controls across jurisdictions and event types.

Future Considerations

The extensive participant feedback gathered through five intensive workshop sessions has provided a clear roadmap for Phase 3 development and identified critical success factors for industry-wide adoption.

The following priorities emerged from these sessions as core considerations for the next phase of development:

- **Complex event handling:** Phase 3 will extend support to more sophisticated corporate action events, such as stock splits. These events require more interpretive logic from LLMs and flexible consensus thresholds that adapt to varying event complexity.
- **Jurisdictional and currency coordination:** Global deployments will require coordinated attestation strategies across jurisdictions, including support for dual-listed securities, FX-linked events, and role assignment frameworks that reflect regulatory boundaries.
- **Role participation responsibilities:** Expanded participation models that encourage further involvement from data contributors and attestors. This includes evaluating role separation, liability assignment, and the consolidation of adjacent responsibilities across custodians, exchanges, and issuer agents.
- **Field-level privacy and access control:** Participants expressed the need for selective visibility and permissioned attestations. For example, a custodian should be able to submit client-specific elections or attest to position data without revealing that information publicly.
- **Deployment readiness and integration strategy:** As the architecture matures, future work will prioritize seamless integration with additional existing systems, APIs, and operational tooling. This includes continued support for ISO 20022 messaging standards and downstream reconciliation platforms.

Get Involved

If your organization is interested in participating in future phases of this industry-wide initiative or leveraging Chainlink for other financial use cases, reach out today.

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Appendix

Chainlink Platform Overview

Chainlink is the industry-standard oracle platform bringing the capital markets onchain and powering the majority of decentralized finance. As institutions adopt blockchain technology to support tokenized assets and advanced financial applications, Chainlink provides a unified platform for bringing external data onchain, connecting blockchains with existing systems, defining and enforcing compliance policies, preserving privacy, and automating complex workflows across onchain and offchain environments.

The Chainlink platform is built on four core technology standards: data, interoperability, compliance, and privacy. With CRE, institutions can build and run workflows that leverage these standards to support use cases spanning multiple blockchains, enterprise systems, jurisdictions, and asset types.

The Chainlink Stack

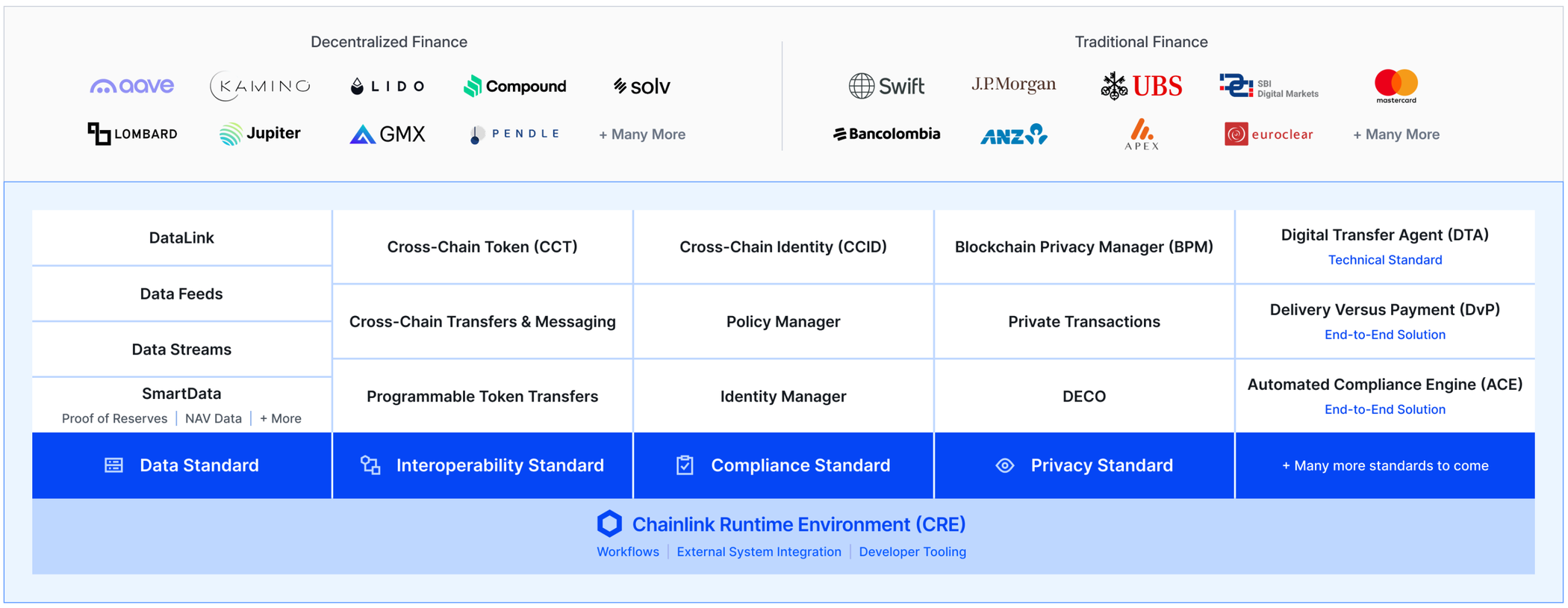

Figure 6: The Chainlink platform includes core oracle standards, services, and end-to-end solutions, as well as a secure, verifiable computation runtime underpinning it all.

Chainlink enables the full lifecycle of institutional blockchain applications to run through a single unified platform. Its services power key capabilities such as price feeds, net asset value reporting, proof of reserves, cross-chain messaging, identity verification, policy enforcement, and more. These capabilities are already being used by leading financial institutions to enable production-grade use cases across tokenization, delivery vs. payment settlement, and onchain data distribution.

Chainlink has enabled tens of trillions in transaction value, and delivered more than 18 billion verified data points onchain. Chainlink is also the industry's first data and interoperability oracle platform to achieve ISO 27001 and SOC 2 compliance, affirming the platform's ability to meet enterprise standards for security, availability, and confidentiality.

Chainlink Cross-Chain Interoperability Protocol (CCIP)

Chainlink CCIP serves as the industry standard for securely transferring data and value across private and public blockchain networks. Through a single integration point, CCIP enables institutions to interact with tokenized assets across 60+ blockchains, unlocking access to the digital asset economy. CCIP has already been used by leading financial institutions and market infrastructures to enable real-world applications such as cross-border payments, cross-chain settlement of tokenized assets, and fund lifecycle automation.

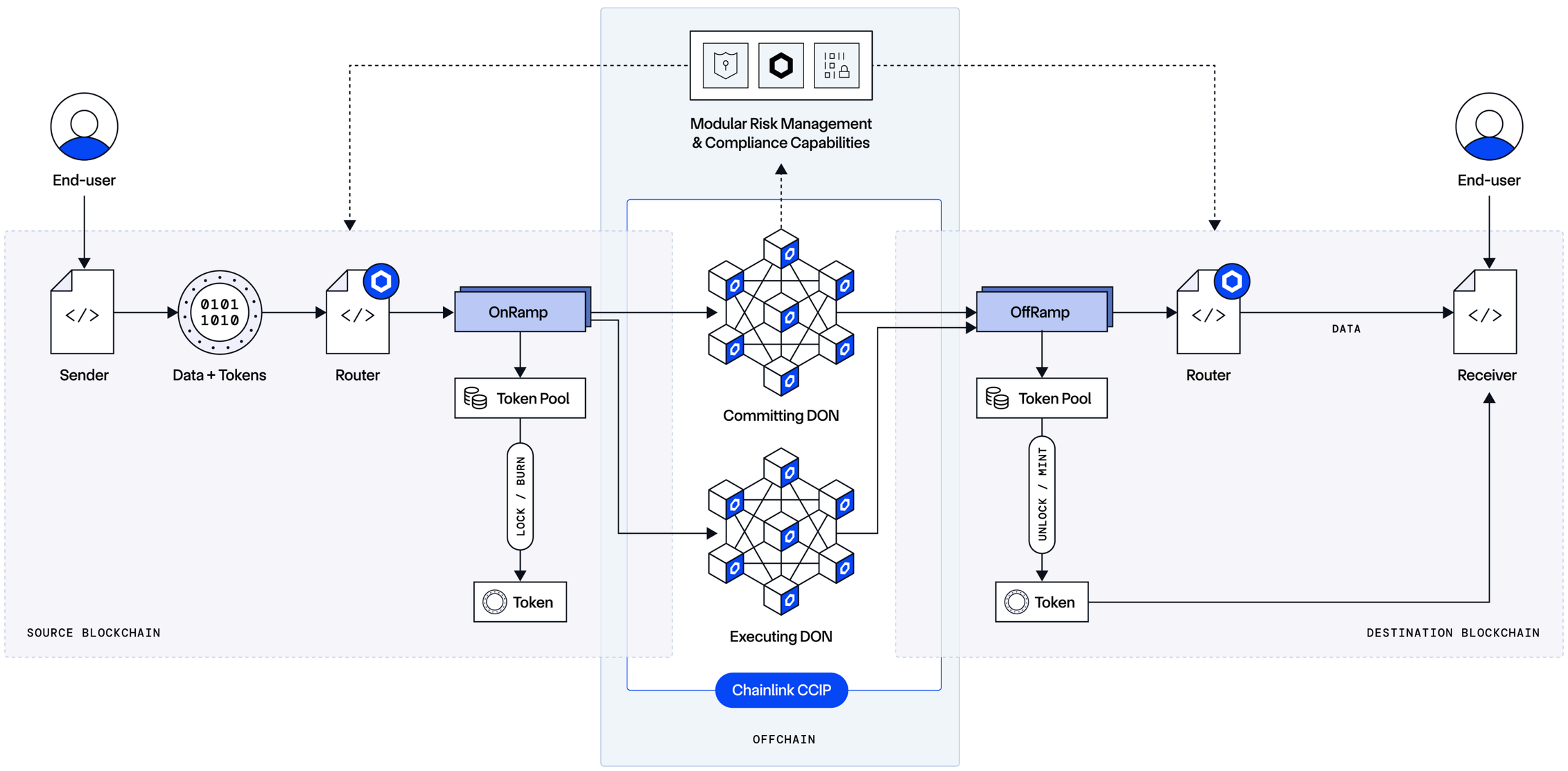

Figure 7: Chainlink CCIP enables secure interoperability between existing systems and blockchains.

Through Programmable Token Transfers, CCIP enables the transfer of value (via tokens) cross-chain alongside data instructions informing the receiving smart contract on what to do with those tokens once they arrive on the destination chain. Through this functionality, institutions can interact with smart contracts and tokenized assets on other blockchain networks without needing to integrate or directly interact with the destination blockchain. As a result, CCIP's Programmable Token Transfers can condense a complex set of actions involving multiple users, blockchains, and assets down to a single instruction.

Chainlink Runtime Environment (CRE)

CRE enables institutions to create secure, cross-chain and cross-system workflows and applications that connect offchain data sources, onchain logic, and enterprise infrastructure within a unified, verifiable framework. Built on a modular architecture, each CRE capability in a workflow is handled by a dedicated decentralized oracle network. These capabilities can include retrieving external data, performing computations, or writing results to blockchain environments. CRE coordinates these components to ensure each workflow executes securely across various environments.

Financial institutions can connect their internal systems with private and public blockchains, embed custom policies and compliance checks directly into workflows, and ensure that governance and regulatory requirements are satisfied before any onchain action is initiated.

By abstracting away technical complexity and providing reusable components, CRE dramatically reduces time-to-deployment and operational overhead. This enables institutions to accelerate innovation, lower integration risk, and bring new blockchain-enabled applications to market more efficiently.

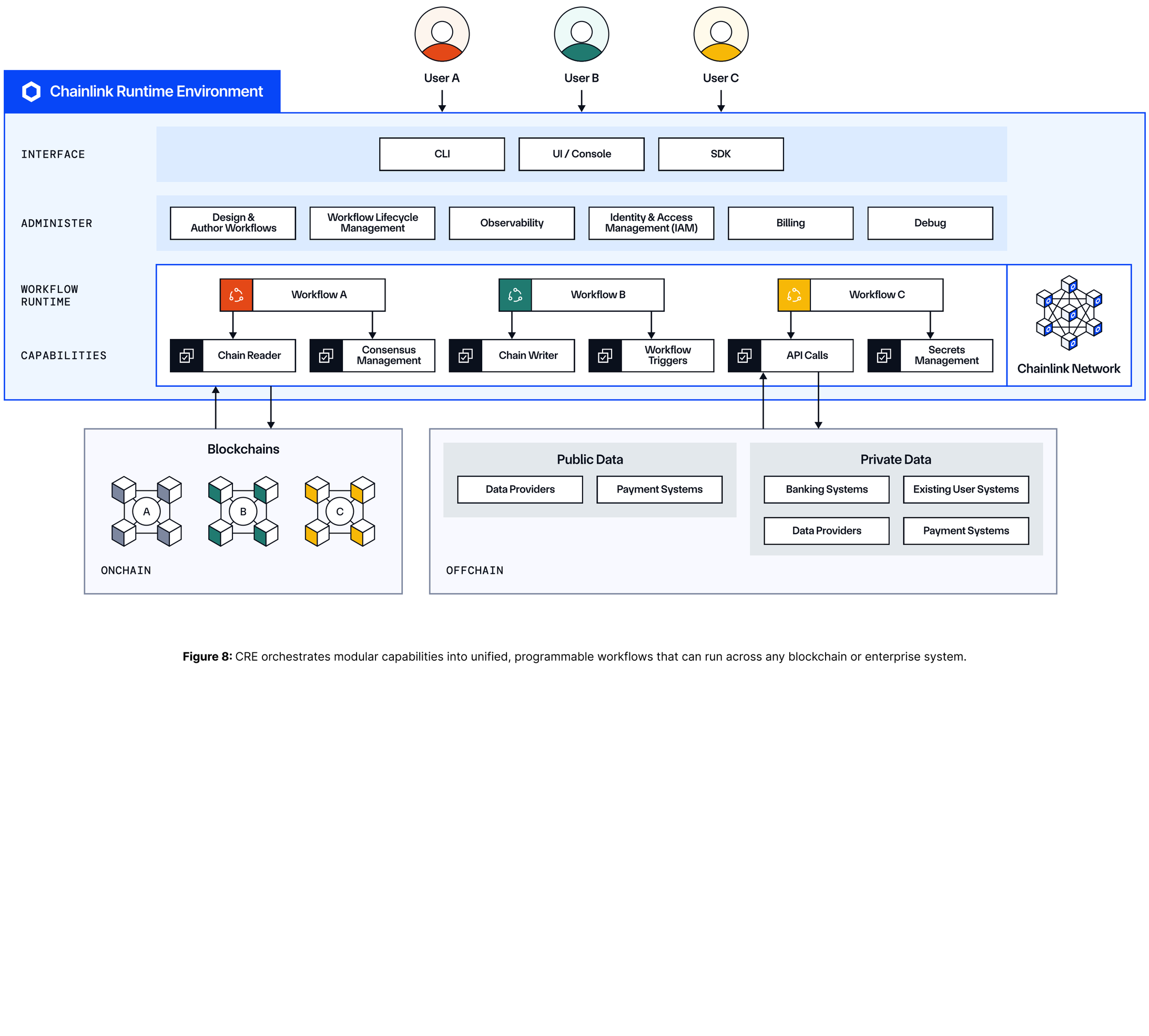

Figure 8: CRE orchestrates modular capabilities into unified, programmable workflows that can run across any blockchain or enterprise system.