BLOCKCHAIN STUDIO

COLD SUPPLY CHAIN MANAGEMENT

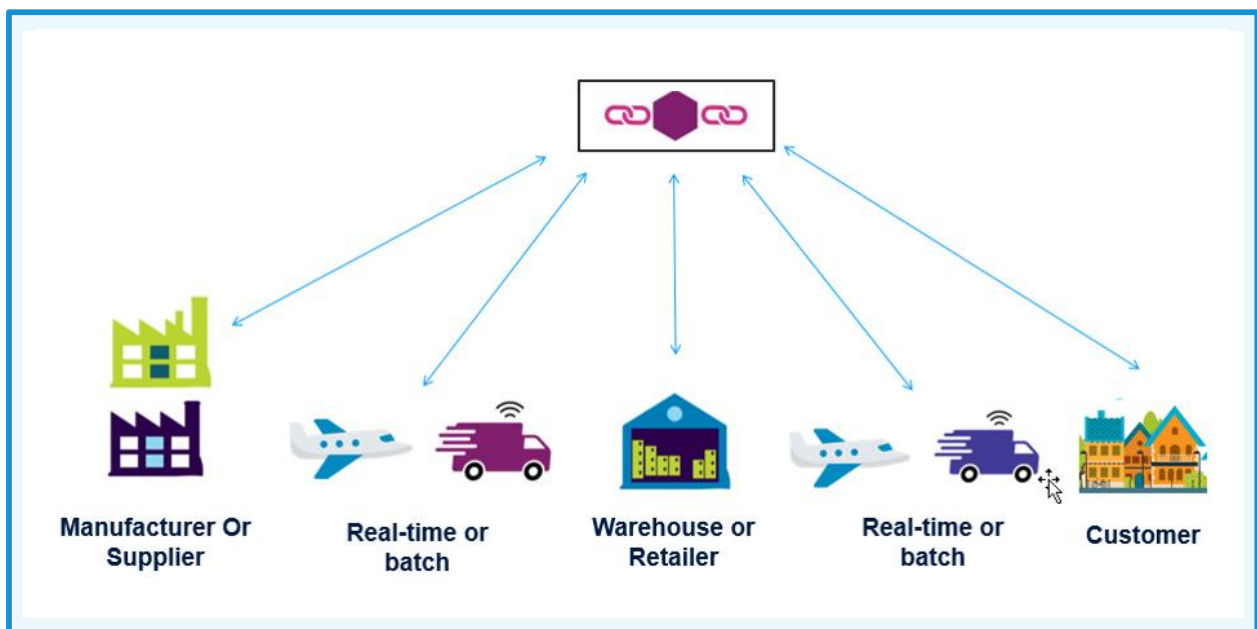Curate a quick and reliable digital transformation of your cold supply chain

Blockchain for Cold Supply Chain

Coforge with its proven prowess of bringing computers and people together unites the emerging technologies with the domain expertise to help clients transform at the intersect. Synthesizing blockchain and IoT sensor technologies, the cold supply chain solution provides real-time tracking of environmental conditions like temperature, humidity, vibrations, and tampering to ensure safety and quality of goods on delivery.

The parties usually involved in the cold chain are the Original Equipment Manufacturer (OEM), Distributor, the Third-party logistics (TPL), and the Retailer. All parties have the service level agreements implemented to measure and justify the services for the customers. In most cases, it has been seen that due to inadequate real-time information SLA's often get breached.

The revolutionary blockchain technology, with inbuilt business transforming features , brings to ease the challenges not only in the cold supply chain but to the entire supply chain industry.

| Manufacturer Or Supplier | Real-time or batch | Warehouse or Retailer | Real-time or batch | Customer |

The Transformative Power of Blockchain Enabled Cold Supply Chain

The blockchain-based solution that is provided by Coforge seeks to transform the cold supply chain business digitally. It creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the supply chain. The solution provides the same version of the database to each participating entity, thus eliminates the vices that the cold supply chain is affected with e.g, reconciliation challenges, and insurance claim disputes.

With the use of IoT sensors, there is no scope of products getting contaminated or drugs and vaccines becoming ineffective. It also removes the possibility of any entity getting blamed for the disqualified consignment and resultant regulatory claims. The time, effort, and money are drastically reduced enabling businesses to utilize their spare resources for business growth.

SOLUTION BENEFITS
Decentralized and Distributed System

The Coforge cold supply chain solution offers a decentralized and distributed system where all parties share the same instance of ledger and all are connected through Blockchain. The blockchain technology brings in the concept of immutability, safeguards the interests of all the parties while keeping the data integrity intact. This results in building trust & transparency in the ecosystem.

Creates Efficient Processes

Blockchain solution helps in earmarking faulty consignments and enforcement of contractual obligations. This allows business processes to become more efficient and curbs the rate of products getting damaged.

Ensures High Returns

With a decrease in losses on damaged goods, businesses achieve higher returns and fewer resources to manage the supply chain ensuring high ROI for the customer.

Helps Achieve Compliances

Helps businesses accomplish their mandatory compliances in a stress-free manner. Real-time tracking using tamper-proof sensors to detect temperatures, humidity levels for assured deliveries.

Keeps Counterfeit Products in Check

With the alerts constantly sending location and custody data, the blockchain technology ensures 0% risk on the entry of counterfeit products, and increase in brand-loyalty.

Recognition & market advantage for certifiable, ethical sourcing practices

Increased assurance of the safety and quality of goods

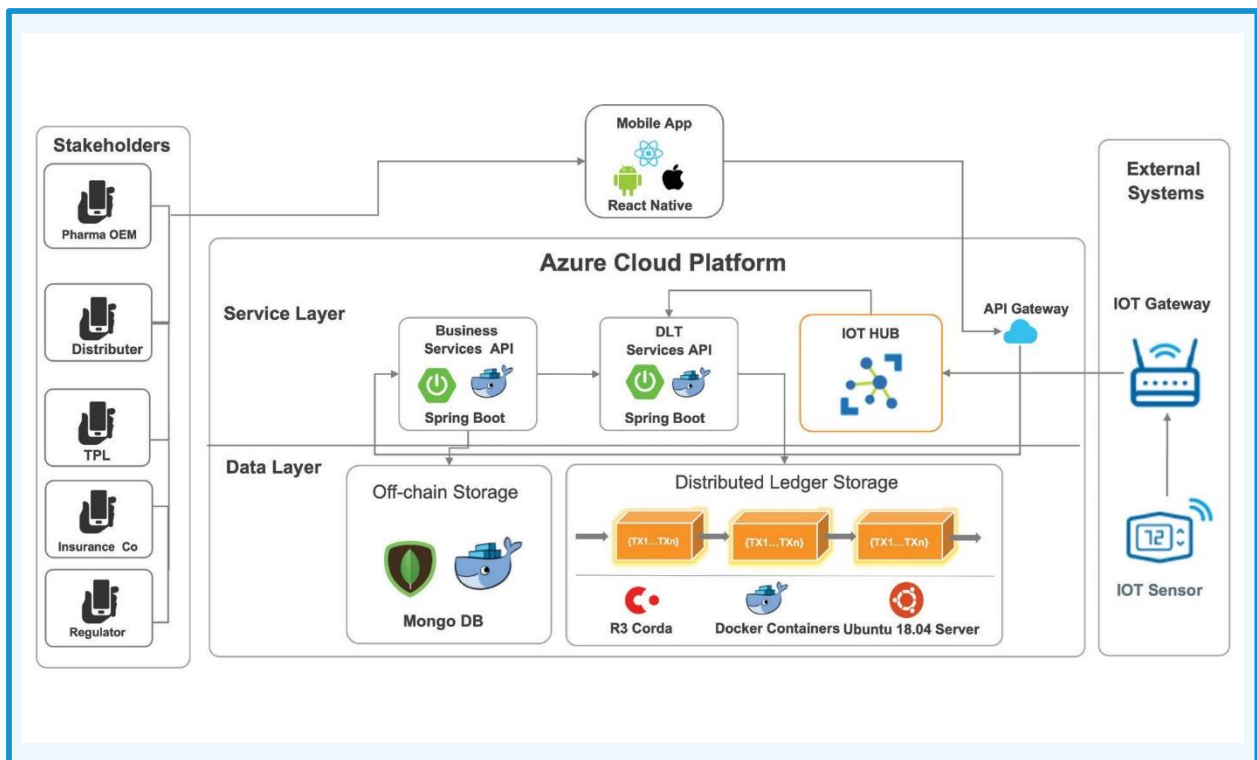Efficient dispute resolution when conditions are not met

Lower frequency of out-of-stock goods

TECHNICAL DETAILS

Blockchain & IoT-powered cold supply chain solution helps in tracking and tracing products which require specific humidity and temperature control.

Coforge has developed a cold supply chain solution to track and trace the products (organic, pharma, perishable consumables) which require specific temperature and humidity regulations. The solution is built on the R3 Corda platform integrated with IoT sensors.

Coforge solution offers a blend of Cloud, Blockchain platform, and IoT-enabled technologies to reform the cold supply chain business digitally.
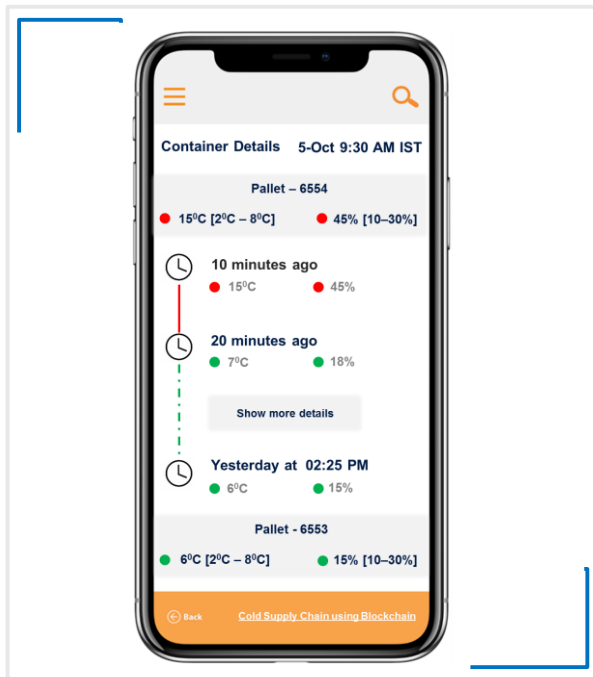

The solution can be deployed on Azure, AWS, or any other cloud platform. It is built keeping in view future scalability in terms of partners, usage of the applications, and products. The solution establishes trust and transparency in the ecosystem by securely sharing data across organizations. The blockchain layer provides the distributed ledger functionality. The middle layer writes the custom blockchain smart contracts and business logic. The business logic is exposed in the forms of services. API Gateway provides a secure mechanism to consume these services from new or existing applications. The solution provides an easy way to extend the functionalities of the current supply chain solutions and take advantage of blockchain advanced features like immutability and trust.

FEATURES

Strengthened security, immutability, and high visibility

The blockchain solution provides a host of features that aid in building trust and transparency for all the entities involved. Cryptographic features of our blockchain solution make the data sharing across entities more secure. Its immutability feature stores the data in a read-only mode, where even the owner can't change the data.
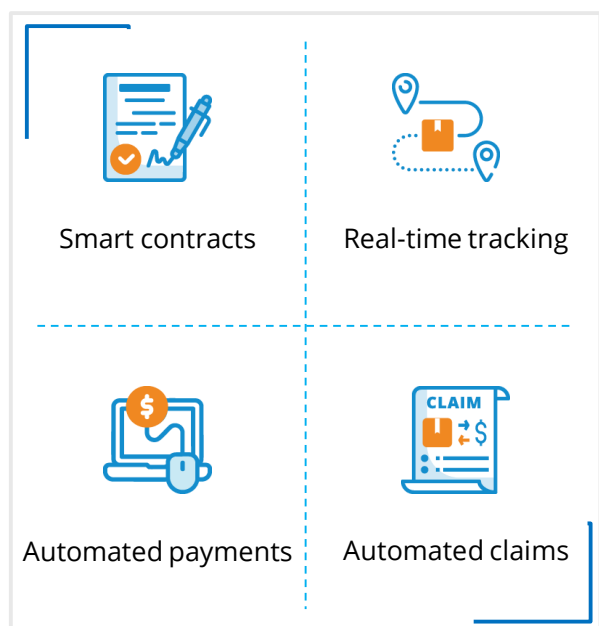

Instant Online Monitoring

Online user-friendly dashboards in our solution provide the product status, location, temperature, and humidity levels all in a single view and instantly. All the parties have a clear and quick view of the vitals of the cold storage products whether it is temperature-sensitive costly medicines, humidity levels of food items, or other perishables. Participants also have a sight on where the product is and if the product has been tampered during transit. The solution has the flexibility to add additional sensors like the vibration sensors for goods which are sensitive to excessive movements and need extra care during transportation.
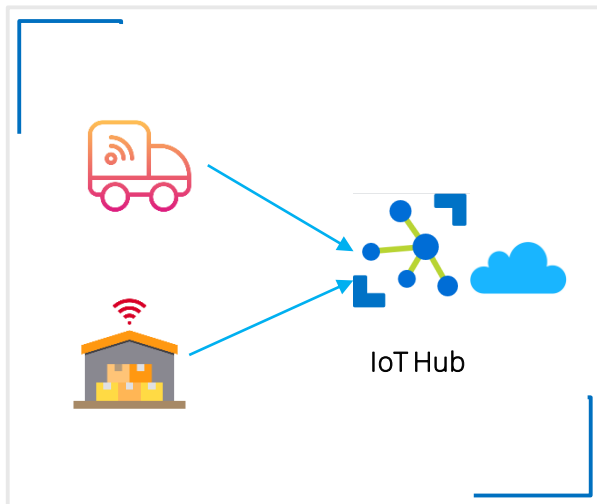
Inbuilt Smart Contracts

Smart Contracts are inherent to the blockchain platform, and safeguard the interests of affected parties by enforcing contractual obligations, ensuring ease of payments, and resolution of disputes. The solution ensures that payment is automatically released to the seller when goods are delivered on time and within the defined temperature and humidity levels. Smart contracts built in the solution also help auto-generate the claims against the erring party in the event of change in humidity and temperature thus saving time and effort around reconciliations

Smart contracts   Real-time tracking

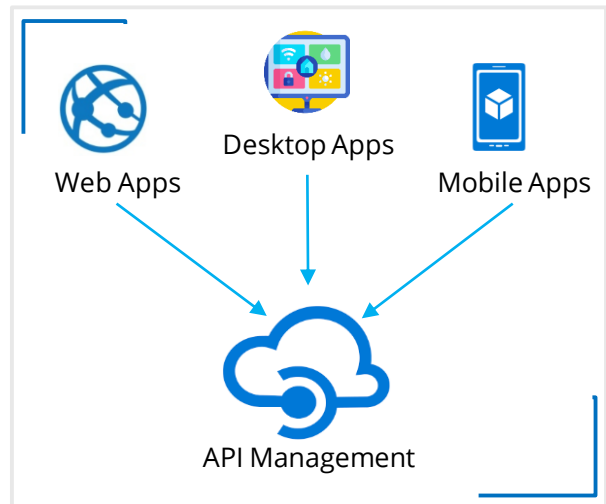Automated payments   Automated claims

Cloud Ready

Blockchain solution hosted on the Azure Cloud gives stakeholders an advantage of having to invest less and scale up easily as the number of transactions goes up.

IoT Hub

API-Enabled

Securely created APIs can utilize the user interface of the existing ERP systems and integrate it with the database and services to gives a seamless user experience.

Web Apps
Desktop Apps
Mobile Apps

API Management

Workflows

Automate complex supply chain tracking workflows

The solution provides the flexibility to write custom smart contracts and business processes using workflows. It can be written in your favorite software language or the cloud-based logic apps to implement complex workflows.

Quick Error Identification

Get reliable event delivery at massive scale

Accurate identification of lapses in delivery is possible. The solution accurately and quickly identifies errors at each stage and immediate notification is sent to all the parties in the blockchain network.

Built on R3 Corda Platform

The cold supply chain solution is built on the Corda blockchain platform that can handle up to 600 transactions per second, process and store data on a ledger that is relevant to you and eliminate scalability issues. It has HSM integration that ensures protection for signing keys.
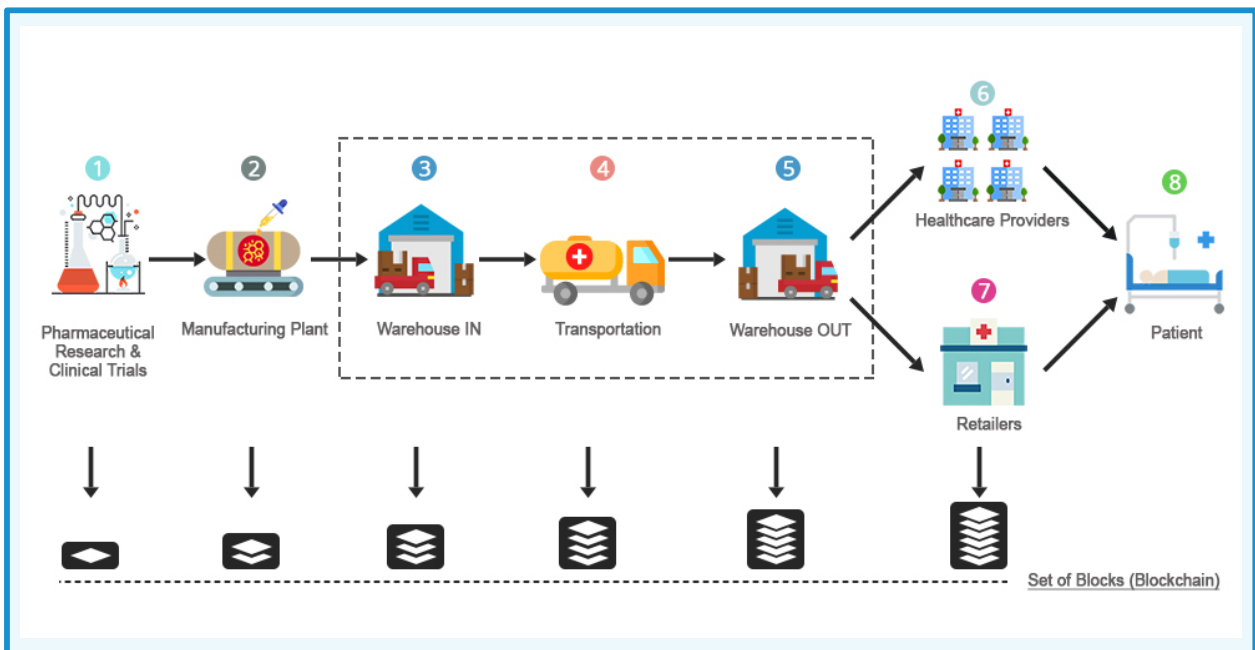
INDUSTRY APPLICATION

Pharma Industry

- WHO estimates ~$200 billion worth counterfeit pharmaceuticals enter the global market per year.

- 50% of fake drugs are bought online.

- In 2013, Drug Quality and Security Act (DSQA) was passed by the US Congress, which calls for pharma companies to trace and track prescription drugs throughout the entire chain by 2024.

- Increased regulatory pressure on pharma companies to develop a system to effectively trace and track and also report and share with FDA.

Medicine	How does blockchain supply chain solution transform the pharma industry?

Blockchain's smart contract functionality, along with the use of IoT devices, can deliver an effective, continuous drug tracking capability for pharmaceutical stakeholders where the full provenance of a unit, its conditions, authority rights, and checkpoint approvals could be accessed at any point in time, thereby enhancing the complete audit trail of each item in the chain.

The solution prevents counterfeiting and tampering since the drug can be tracked from the time they are produced till they reach patients.

The solution accelerator provides tools to build a complete end to end solution for the pharma industry that includes the creation of a de-centralized immutable ledger database and cryptographically verifiable record of transactions.
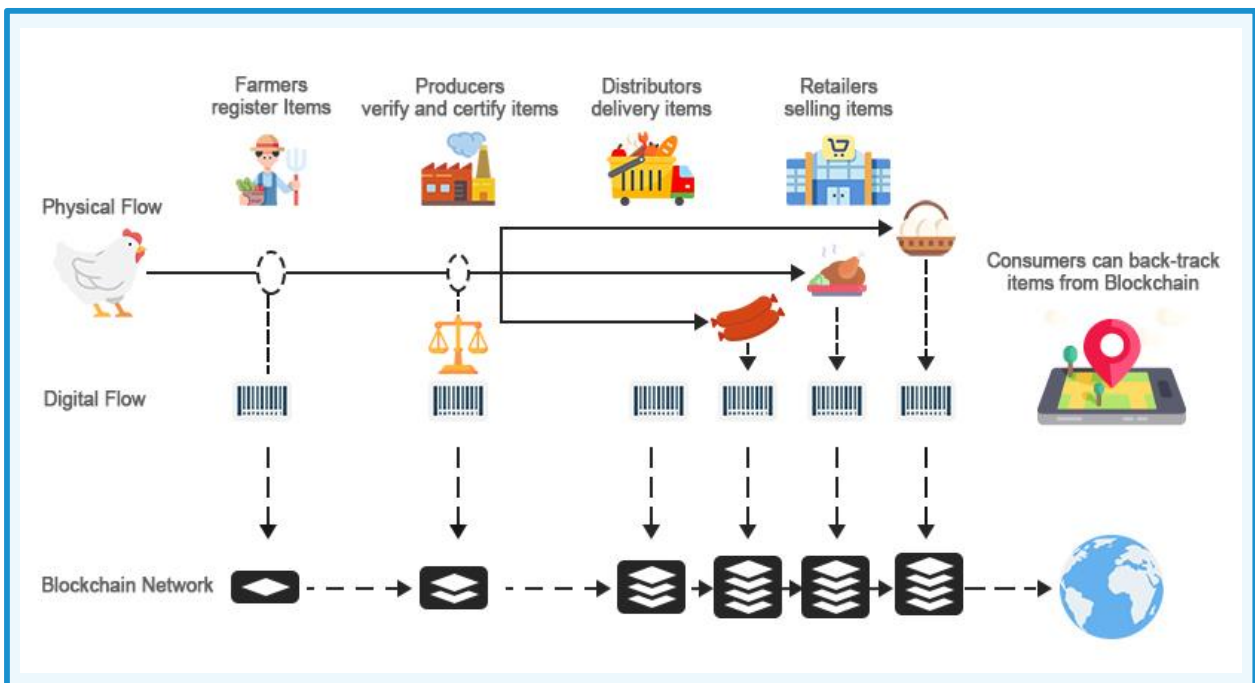
INDUSTRY APPLICATION

Food Industry

- US Food and Drug Administration (FDA) and Federal Trade Commission (FTC) have mandated the food industry to ensure food safety protocols and visibility of food management activities throughout its lifecycle.

- Food Safety Modernization Act (FSMA) enacted in 2011, ensures food supply is safe & entails that the food industry prevents food contamination.

- Customer's food preferences are now more informed and the market has increased competition. Complete transparency is expected in all the transactions so that the end consumer is assured of the quality of the food they are consuming.

Food	**How does blockchain supply chain solution transform the food industry?**

The food providers can use Coforge blockchain-based solution that has the ability to collect data from various sources and create a single view of the transaction. This plays an important role in the ability to track the food product back to its origin when a food safety issue arises. The solution provides complete transparency to the consumers.

Using the solution accelerator, customers can quickly create the foundation of blockchain application by deploying a blockchain network, ledger, setting up permissions, and write smart contracts to implement custom business use cases in the food industry.

Blockchain Studio
The new architecture of trust

Coforge's Blockchain studio provides resources needed to build Corda, Hyperledger & Ethereum platform-based applications quickly. The assets simplify the formation, management, and governance of blockchain networks. They support the distinct needs to create a decentralized ledger database and help build ledger applications easier & faster.

40%
reduction in effort in setting up the blockchain network on cloud

3X
faster using the jumpstart kit to start writing smart contracts & business logic

30%
increase in efficiency, trust and quality by using blockchain based solutions

How you can use cold supply chain solution accelerator?

The solution accelerator contains APIs, integration with IoT hub, and guidelines to create the right network and application architecture for ensuring high availability. It can easily integrate with back-end systems to build a complete end-to-end process for the supply chain management.

Our solution accelerator gives you a head start in building a custom supply chain use case on blockchain, tailored to your requirements.

Contact us and our digital advisory & blockchain team will work with you to customize the solution based upon your business priorities and help define a roadmap to include blockchain as the core technology to bring digital transformation and improve existing supply chain solutions.

Book a one-hour complimentary consulting session with our digital experts.

What is Digital Foundry?

Blockchain Studio is part of Coforge's Digital Foundry that enables you to rapidly build digital solutions using plug and play assets from our digital studios.

The digital assets can be integrated with existing apps to provide quick quality-engineered solutions to address business problems.

Continuously innovate, experiment, and incubate new ideas to stay ahead of the curve using our Digital Foundry. https://digitalfoundry.coforgetech.com