
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

BLC202

Hear from customers: Private blockchain success stories

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Agenda

1. Why private blockchains?
2. Customer Stories: Korean Air
3. Customer stories: Broadridge

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Why private blockchains?

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The origins of private blockchain

Businesses with regulatory compliance and mass-adoption workloads could not build directly on public blockchains because:



Controlled Access



Data Privacy



Scalability



Tokens

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Common use case for private blockchain

Supply chain management

Financial networks (such as interbank transfers, bank stablecoins, securities settlement, and tracking)

Governmental services (such as IDs, certifications, and CBDCs)

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Types of private blockchains



HYPERLEDGER FABRIC

Modular framework and flexible privacy

r3.

Financial system integration and performance (20k TPS)



HYPERLEDGER BESU

Permissioned and compatible with Ethereum







More …

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Challenges of private blockchain adoption

High technical barrier

Getting competitors to join

Reaching consensus among members

Long-term investment (18+ months)

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Why private blockchains are (still) needed

Enables co-opetive workflows between companies

Control over how blockchain technology will evolve

Safe “training ground” to evolve business and adopt technology

Compliant “staging blockchain” for Web3

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Maximizing success for private blockchain

Spend as much time analyzing organizational problems (social scalability) as you do the technical problems

Model your data thoughtfully: What is on-chain? How and when does data change? How will data be accessed?

Put in place proper permissions: Who is a network member? Who is a reader?

Crawl-walk-run applies to blockchain: Think big, but start with smaller steps

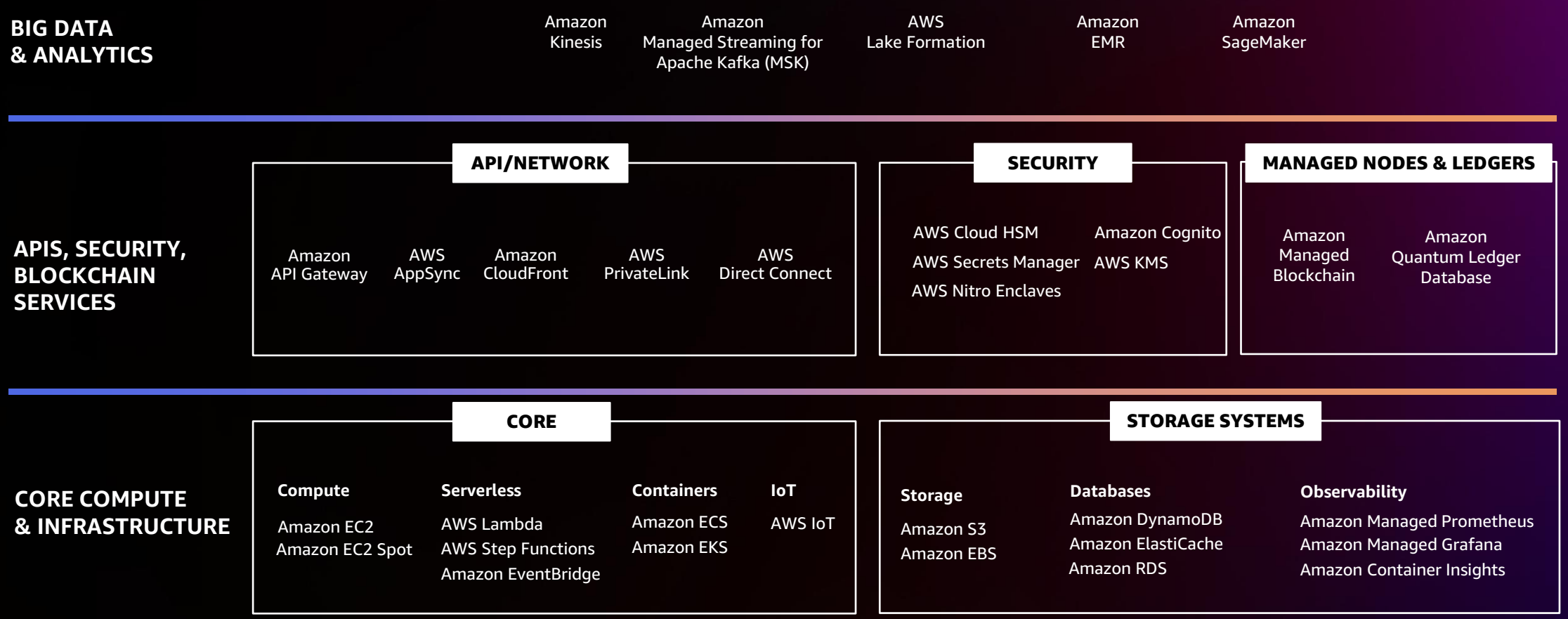
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How Amazon Managed Blockchain helps

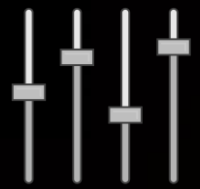
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AWS: The building blocks for blockchain/Web3

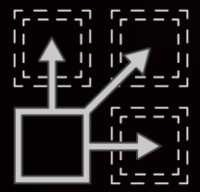


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Amazon Managed Blockchain solution



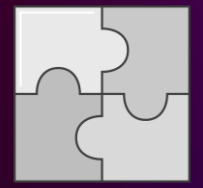
Fully managed



Reliable & scalable



Low cost



Integrated

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What’s new for 2022?

Hyperledger Fabric 2.2 – version upgrade

Hyperledger Fabric on GovCloud

Token Based Access for Ethereum (Public Preview)

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Customer story: Korean Air and vaccine cold chain

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KOREAN AIR

February 26, 2021

KOREAN AIR transports the first coronavirus vaccine to Korea

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Challenges of transporting vaccines

Must keep temperature controlled from production to inoculation

Information shared real time among forwarders, customs, and airlines

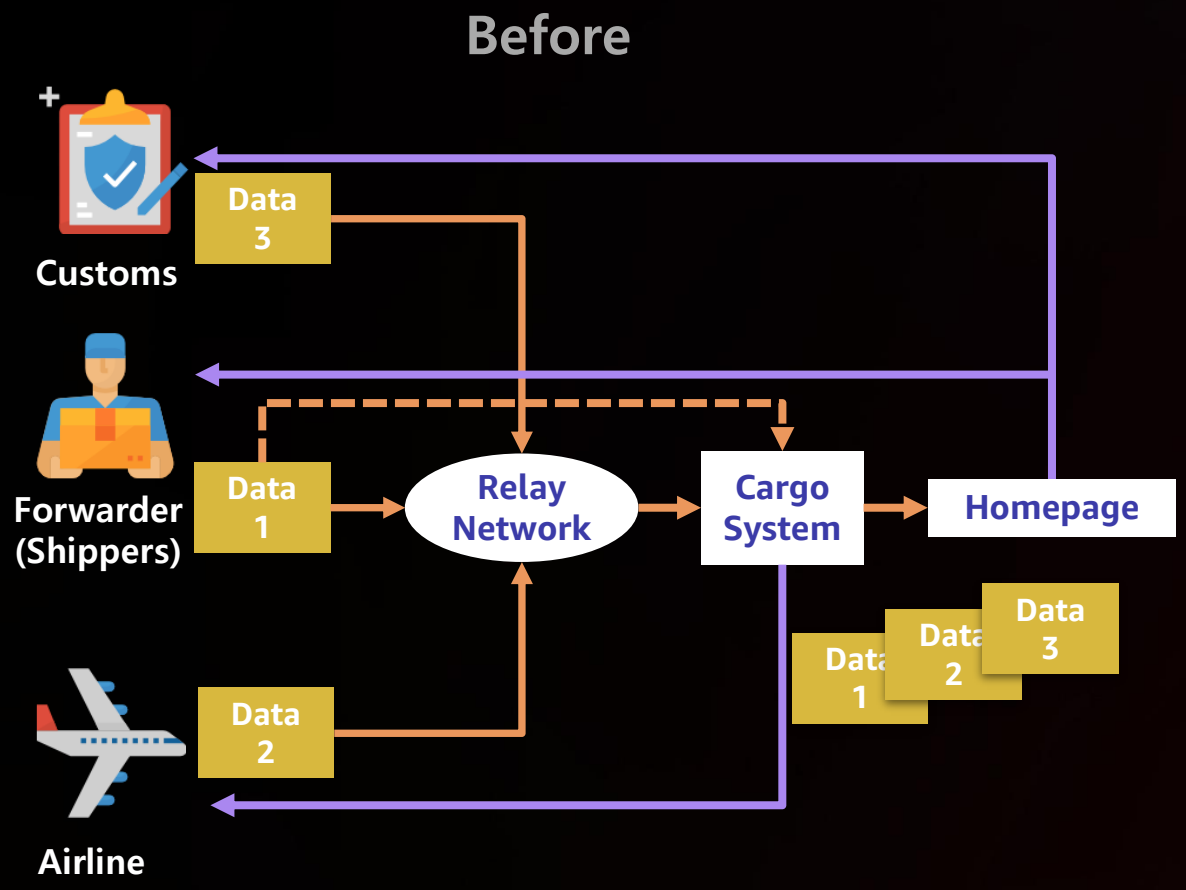
Must keep detailed and accurate documentation for audits

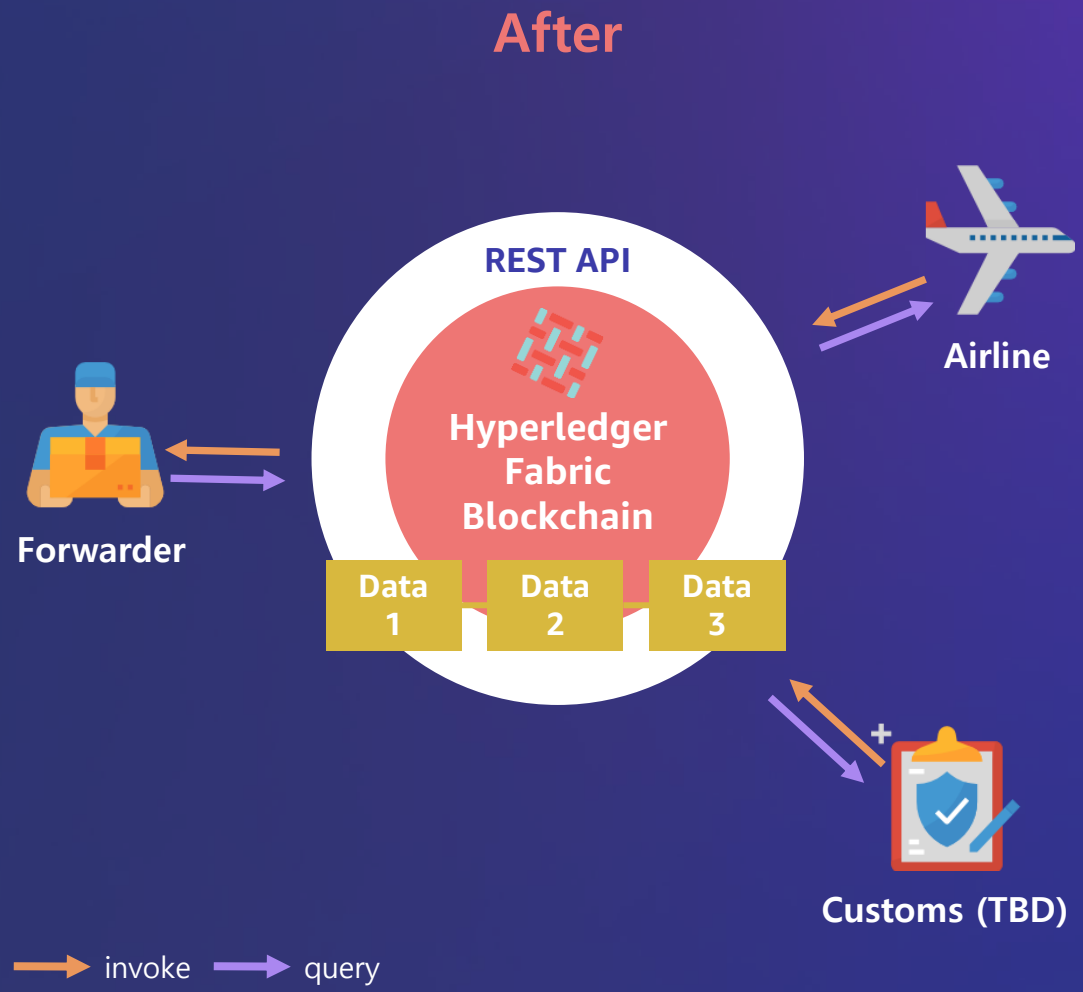


Unit Load Device for transporting vaccines maintain temperature

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Why blockchain?





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Blockchain considerations

Data



- Information that must be valuable and reliable
- Information you need to share with multiple entities

Member



- Select members to join the network

Block



- Classify information to be stored in block
- Block key selection
- Considerations for data history configuration

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Block data design and construction

AWB (Air Way Bill)
AWB Number
Origin Airport
Destination Airport
Piece
Weight

Temperature Info.
AWB Number
Handling Airport
Execution Date
Status
Outer Temp
Inner Temp
Battery Percent
Battery Voltage
ULD Number

Goods Acceptance Info.	
	AWB Number
	All Parts Received
Loose Acceptance	Piece
	Weight
	CBM
ULD Acceptance	Piece
	Weight
	CBM
	ULD Number
Dimensions	Dimension Sequence
	Length
	Width
	Height
	Piece
	Volume Weight
	Screening Status
	Security Data Reviewed

The Point of Block Structure

Key

AWB Number

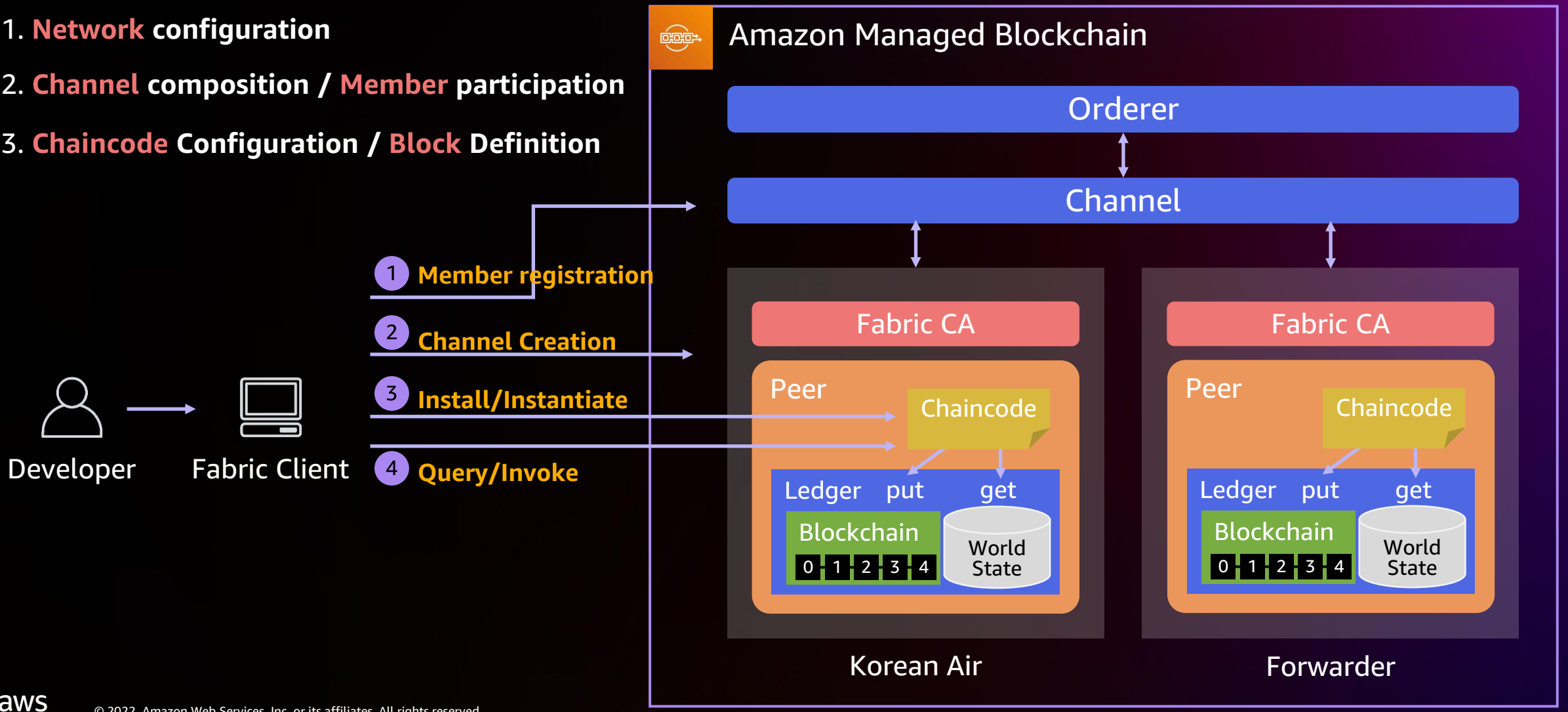
History

Create blocks with key-value pairs
Add updated details by key as an array

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Deploying the private blockchain

1. **Network** configuration
2. **Channel** composition / **Member** participation
3. **Chaincode** Configuration / **Block** Definition

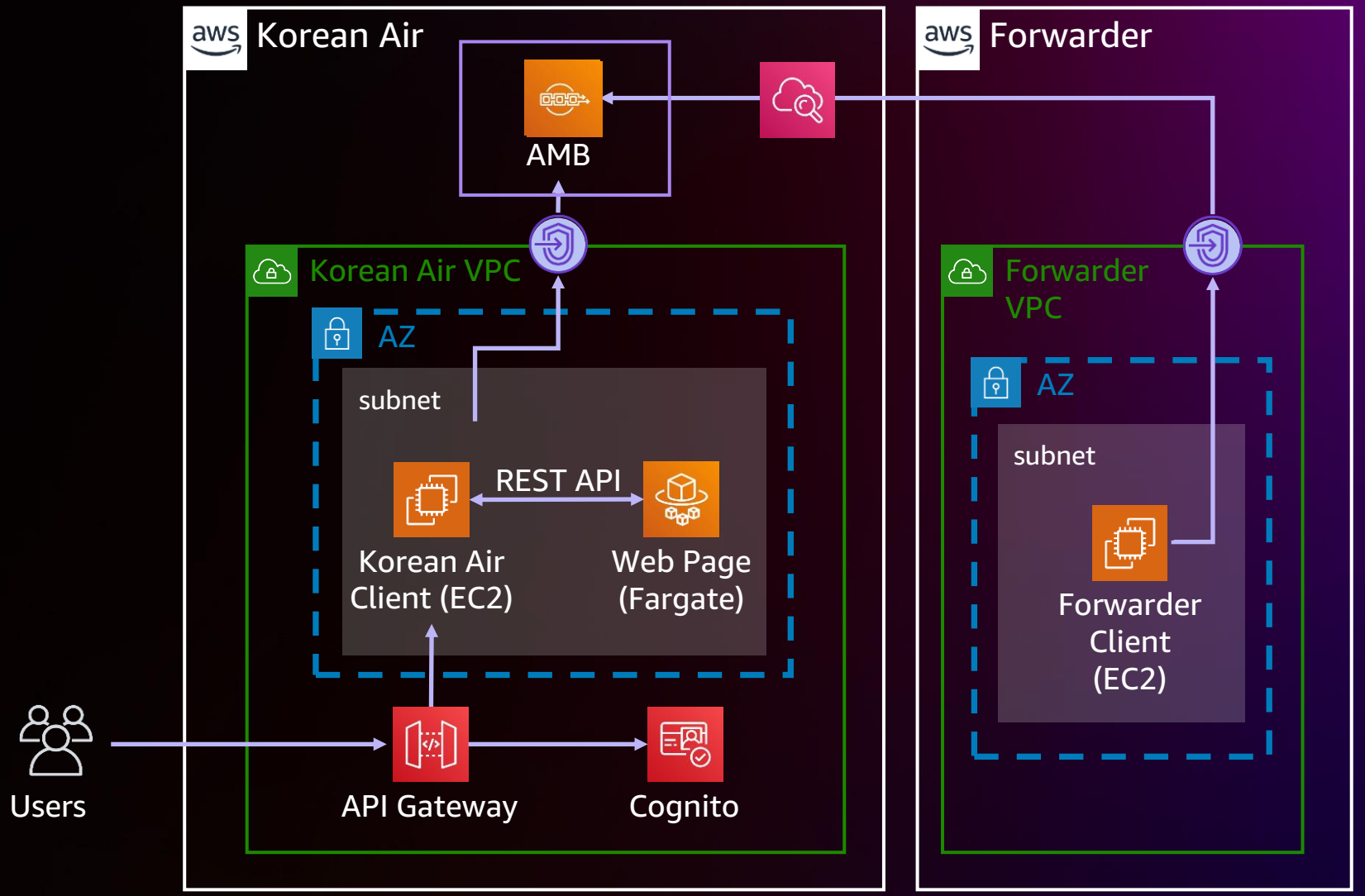


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Deploying the private blockchain

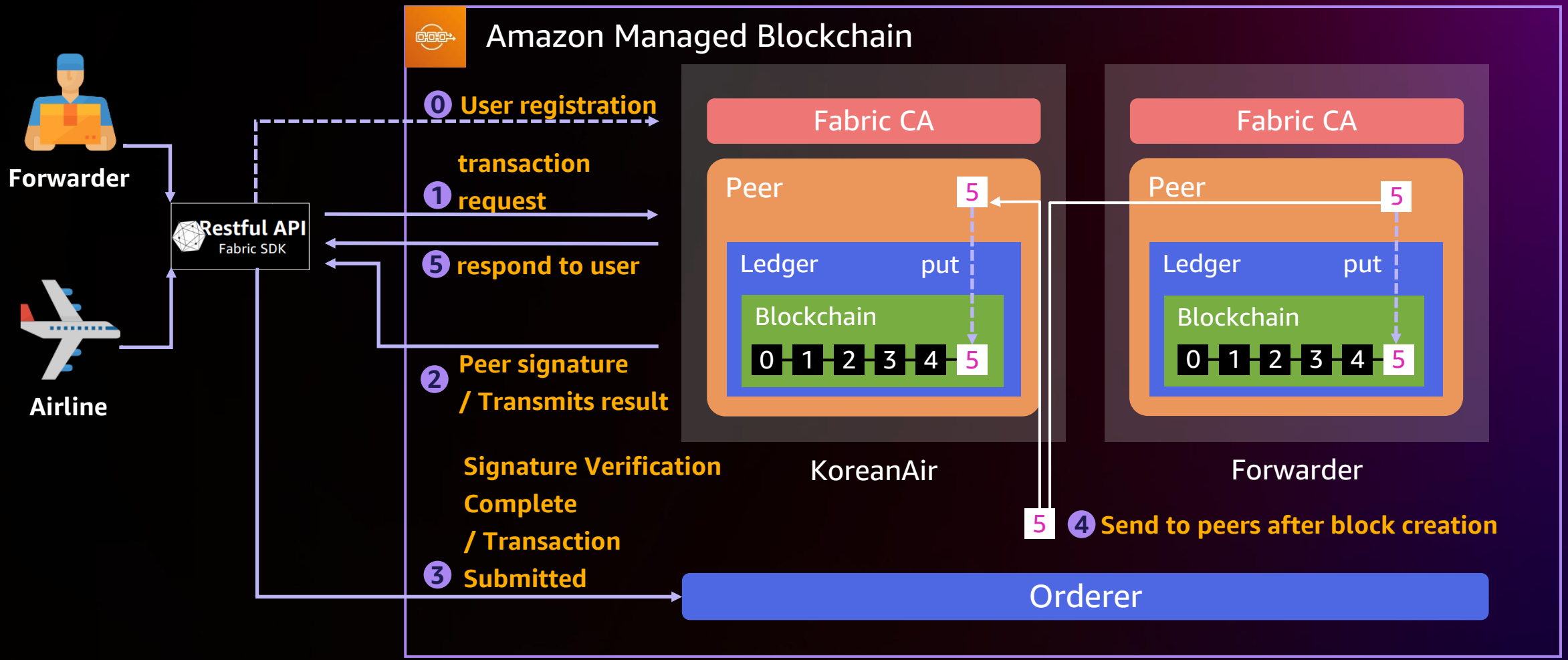
4. REST **API** / **Web** Page
   (EC2 & Fargate)

5. Web service authentication
   (API Gateway & Cognito)



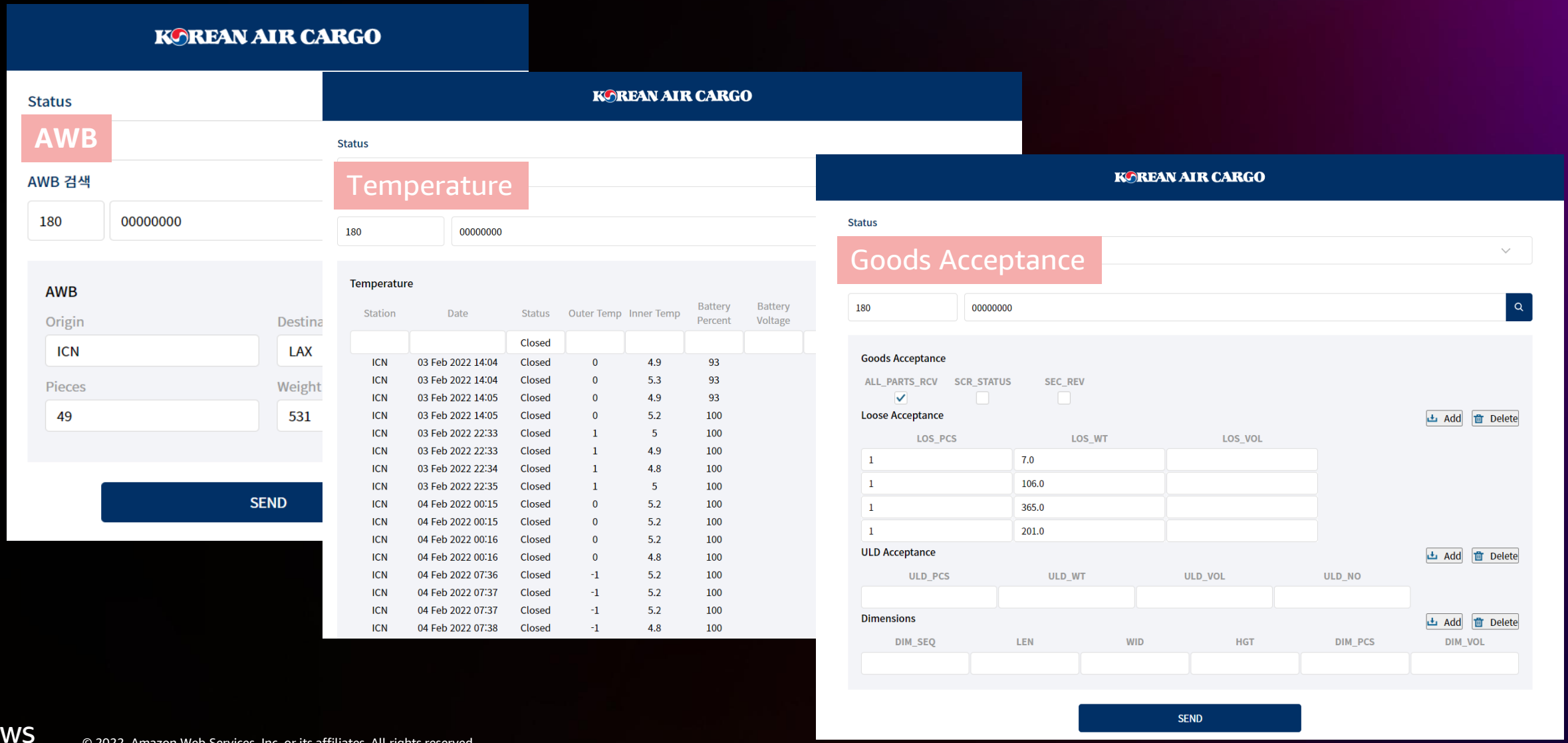
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Blockchain service flow



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Service UI



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Customer story: Broadridge

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Agenda

Blockchain at Broadridge

Use cases

Architecture

Learnings

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Broadridge [NYSE:BR] at a glance

Broadridge, a global Fintech leader with more than $5 billion in revenues, provides the critical infrastructure that powers investing, corporate governance, and communications to enable better financial lives. We deliver technology-driven solutions that drive digital transformation for our clients and help them get ahead of today's challenges to capitalize on what's next.

- *Broadridge delivers **7+ billion** communications annually across print and 12+ digital channels*
- *Firms trust Broadridge to process, on average, **$9+ trillion (USD)** in fixed income and equity trades every day*
- *Broadridge enables customers' multi-asset post-trade processing in over **100 countries** and delivers communications in 90 countries*

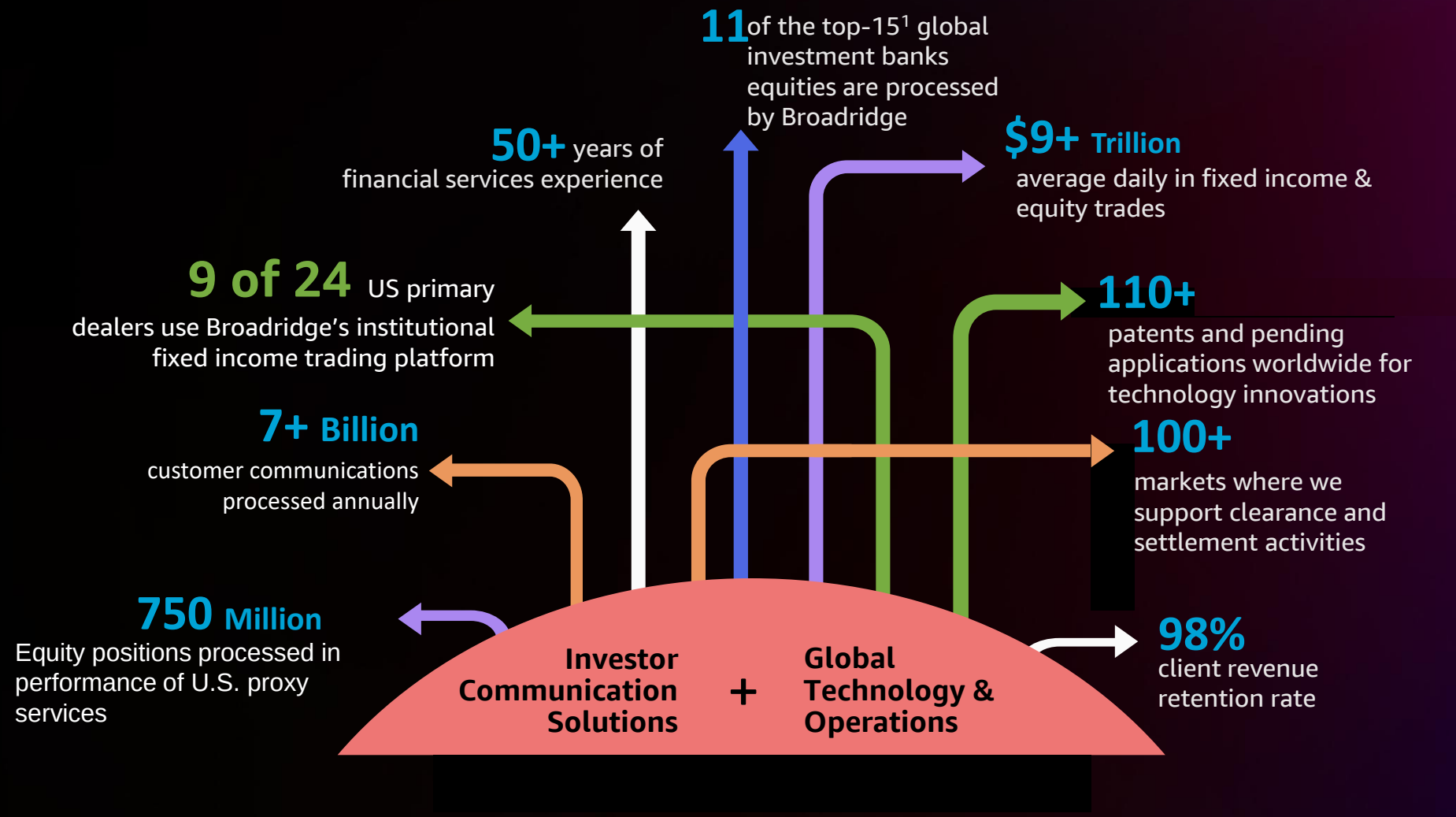


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Broadridge expertise

Our solutions range from hosted service bureau to customized managed services supporting full outsourcing.

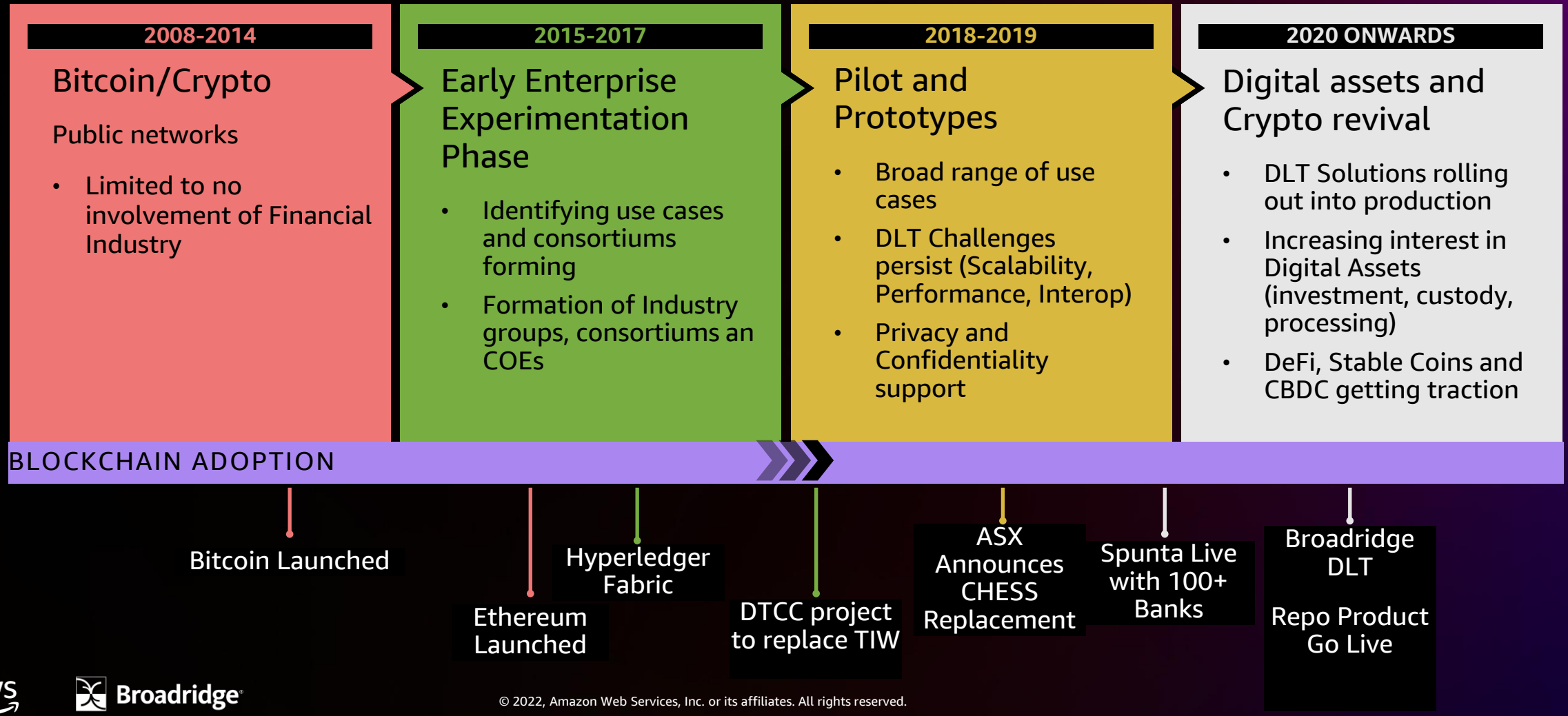


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Evolving use of blockchain/DLT

Growing acceptance and use cases in multiple industries



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Broadridge DLT strategy overview



Selective Investment

- ***Established a Blockchain Center of Excellence***
- Actively participate and lead industry and regulatory initiatives
- Executed early Proofs of Concept in Global Proxy and Bi-lateral Repo
- Invested in platforms and partnerships (Digital Asset, Symbiont)
- Obtained US Patent in 2018 directed to usage of DLT for Proxy and Repo processing



From Pilots to Production

- ***Our focus has been on solutions that solve immediate problems for our customers, while creating foundations for long term transformation***
- Two of our initiatives, Shareholder Hub (addressing SRD II requirements in EU) and Private Market Hub, which addresses PE Fund Administration are in production
- Our Distributed Ledger Repo solution is live and processing close to $70B daily



Continue the Innovation Journey

- ***Expand current initiatives to unlock Broadridge's network value***
- Explore new use cases (digital asset issuance, private company securities, stable coins)
- Monitor the markets for signals that could trigger faster adoption of DLT in financial markets

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Public and permissioned blockchains are converging

- Banks moving on to Public Blockchains
- Trends in Public and Private blockchains
- Layer 2 Protocols are gaining traction

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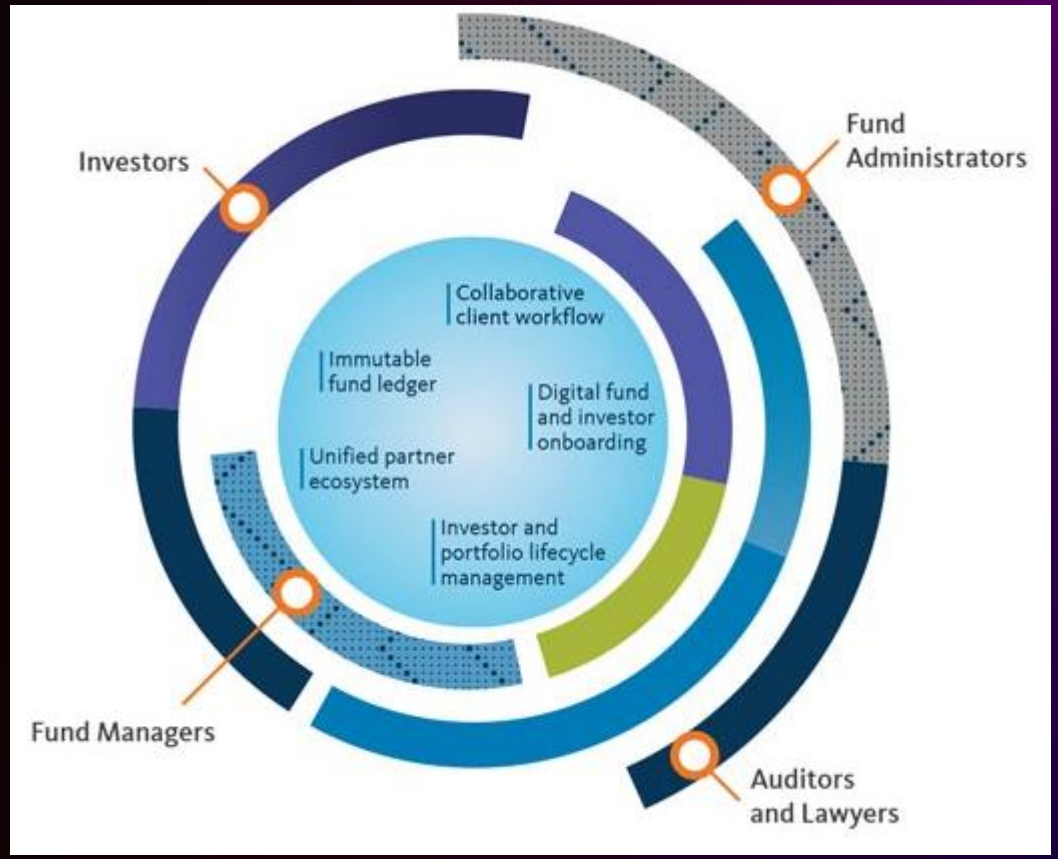
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What problems are we solving?

Today, Private Equity Fund Administrators must cope with …

Complex, often manual, time-consuming processing, including fund & investor onboarding and document creation, driving cost and negatively impacting customer service levels

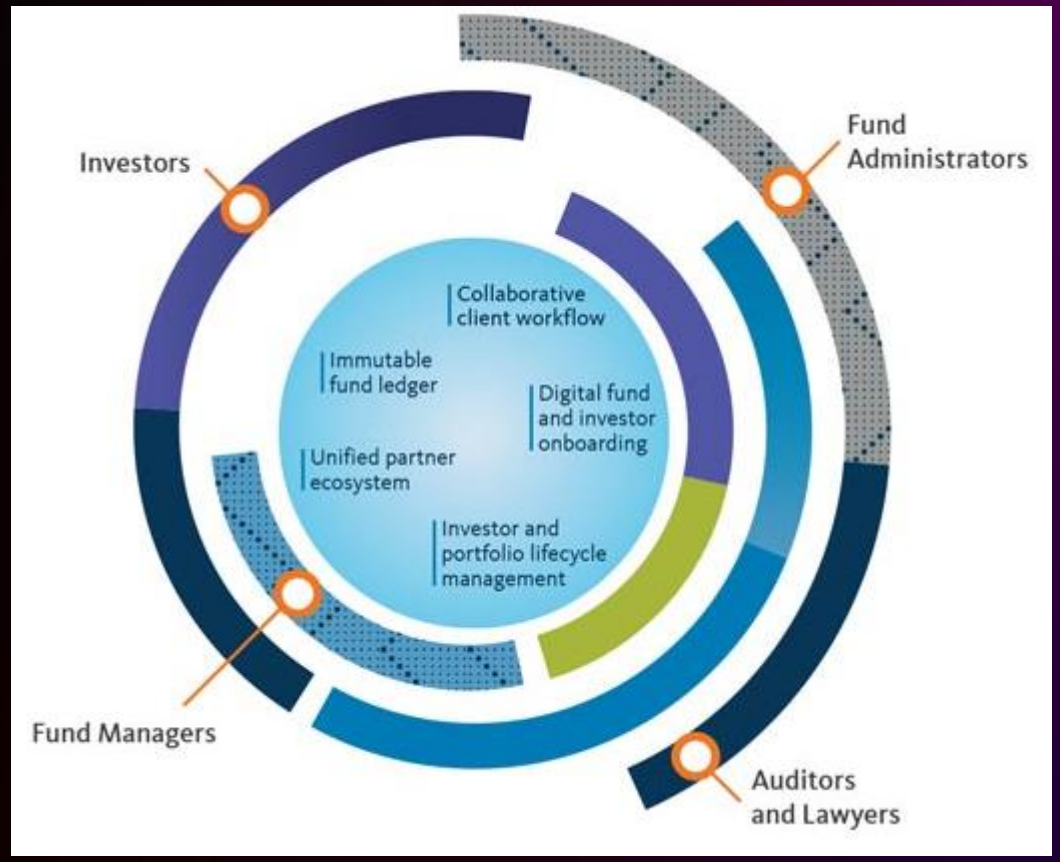
Multiple, ***fragmented processes and disconnected systems***, often a result of mergers, acquisitions and integrations



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Benefits for fund administrators

- ***Improve efficiency*** and reduce costs by automating production of investor correspondence
- ***Increase transparency and accuracy*** of data by engaging clients directly in their business transactions
- ***Reduce processing cycles from days to hours*** *with integrated data and multiple systems*

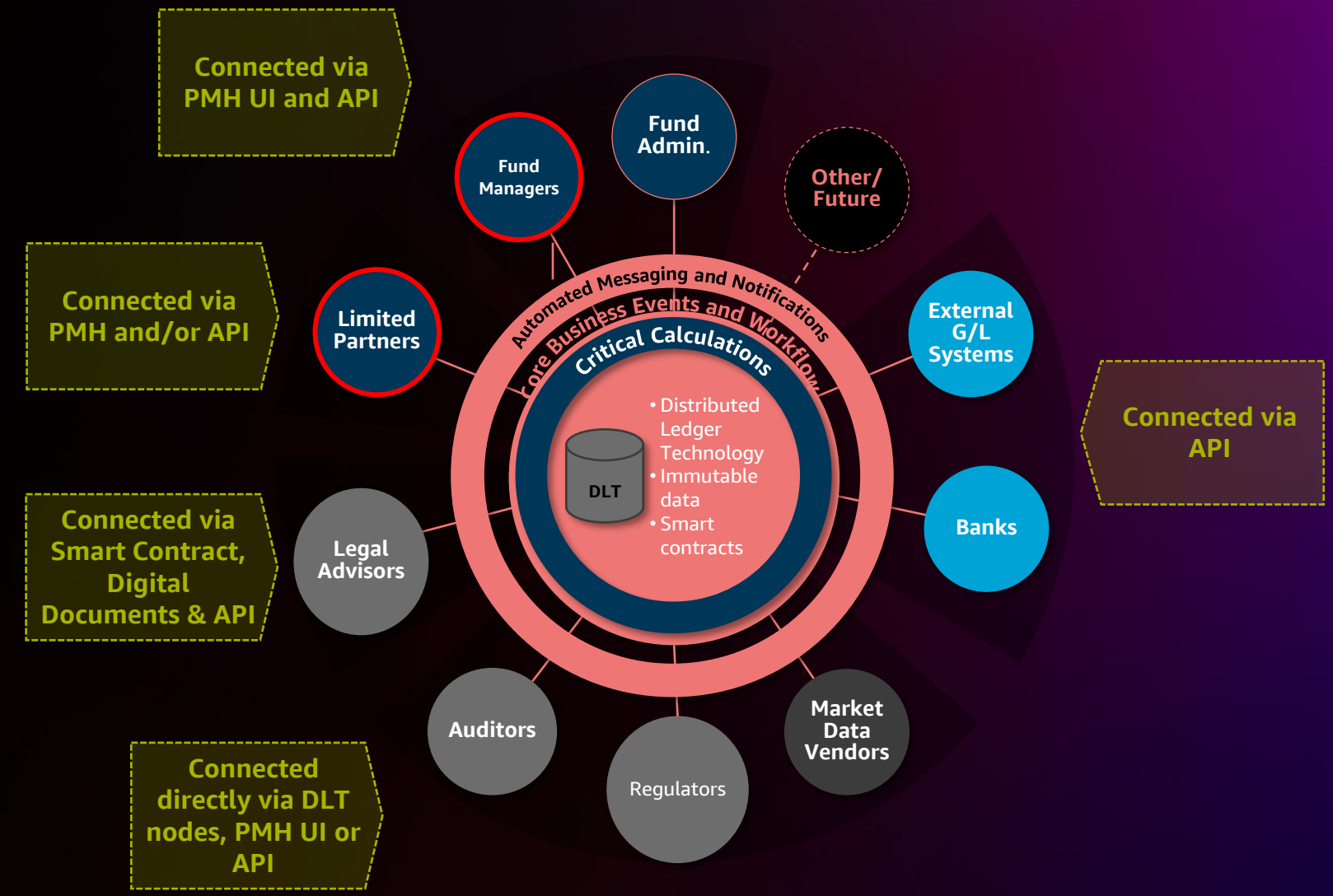


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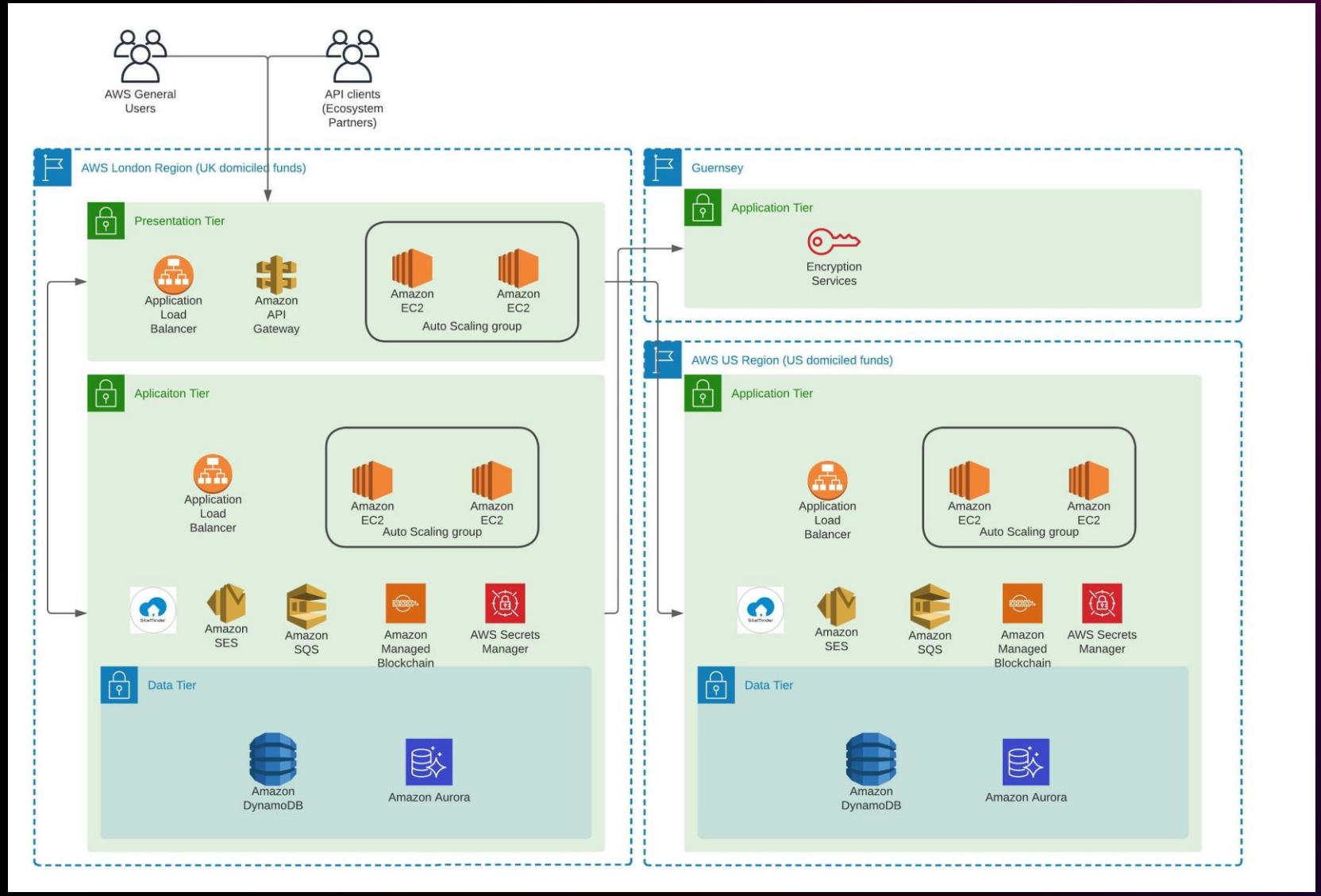
Building the private equity ecosystem

- Broadridge is building an ecosystem of clients, service providers and technology partners to provide an **end-to-end, lifecycle management system** for the Private Equity industry
- We will **partner with compelling offerings in the market** and capitalize on their functionality and/or client communities



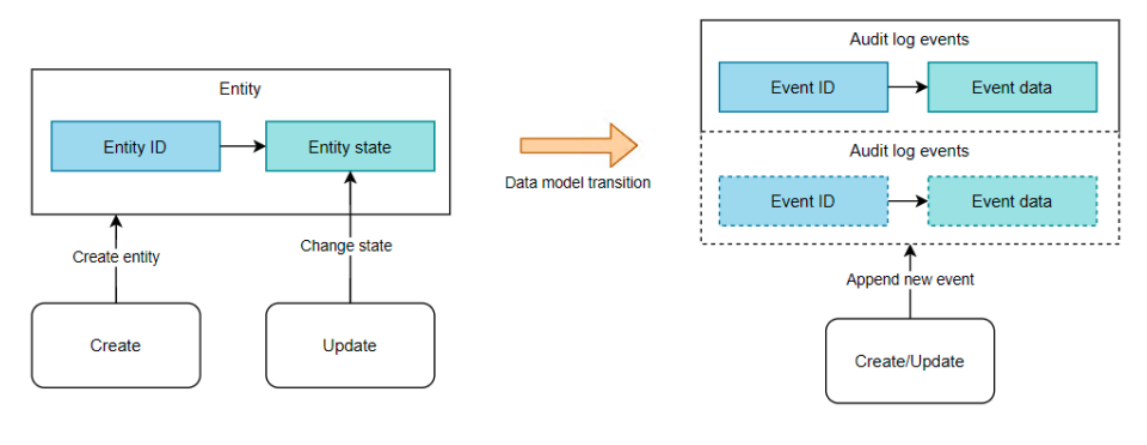
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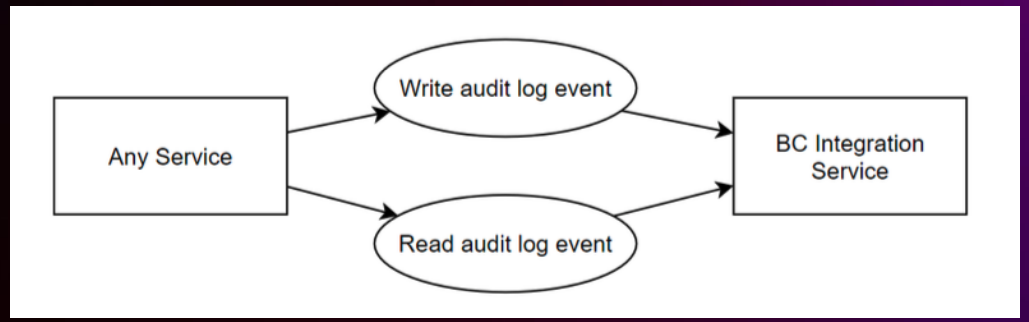
Private market hub architecture

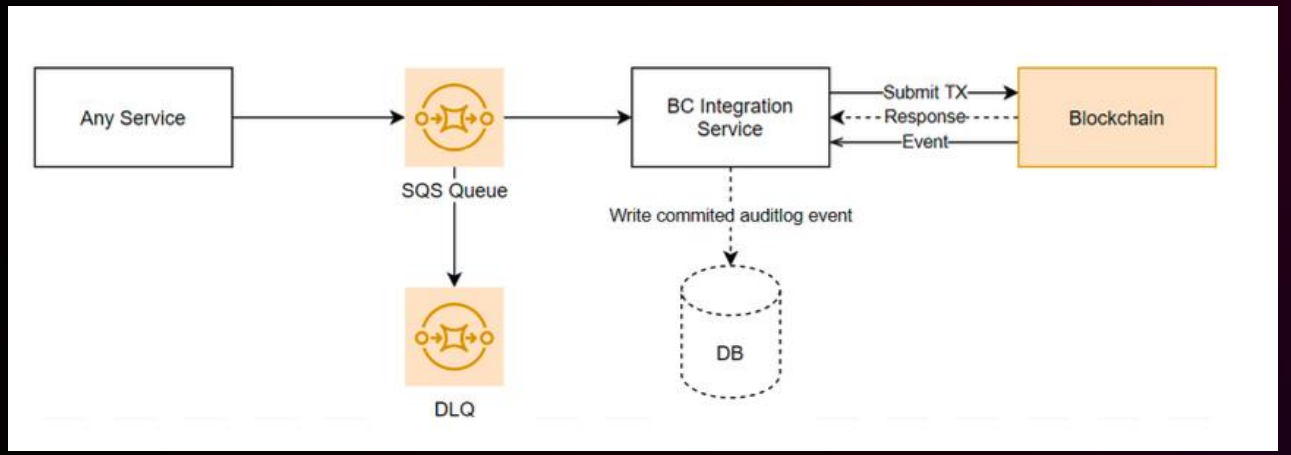


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Audit requirements & learnings

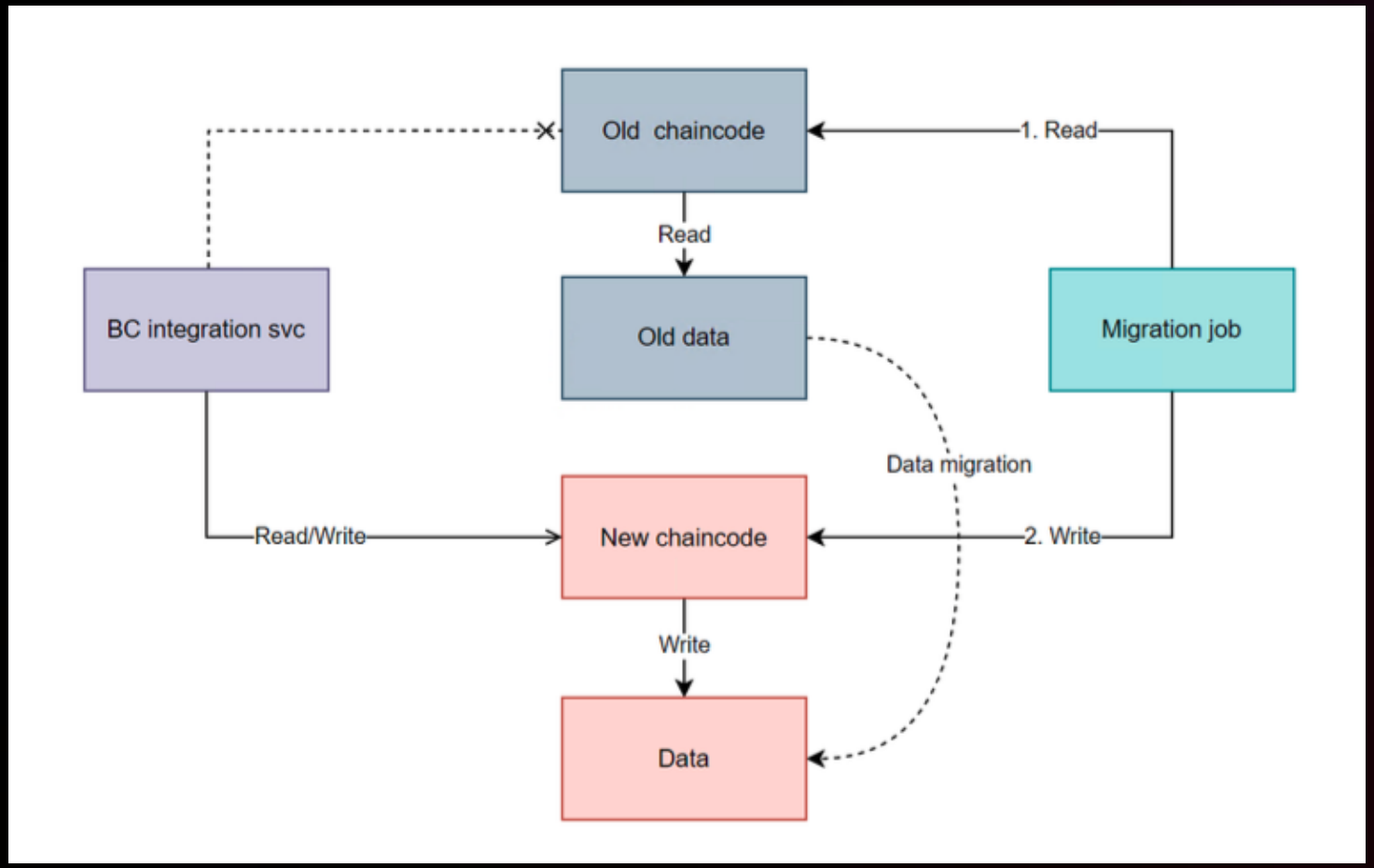






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DR, migration, backup

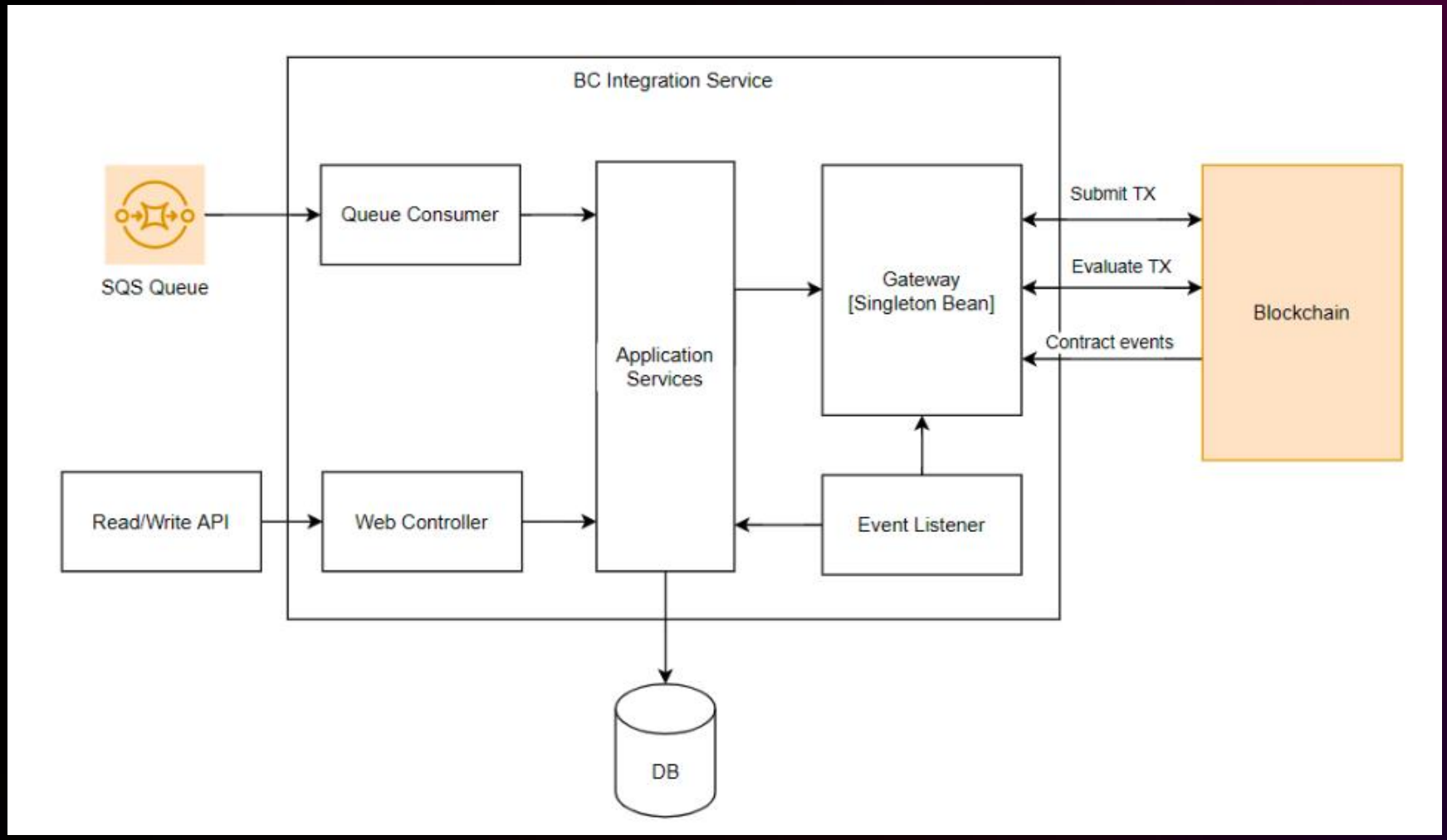


Pros
- Zero downtime deployment
- Separation of jobs and code

Cons
- Manual migration of jobs
- Lag in data synchronization

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API first



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Recap of learnings

- Consider data locality early and look at single pane of glass using geo-location of users
- Backup and restore with cross-region failover needs to be planned
- Synchronization of nodes
- API first
- Blockchain Center of Excellence

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Thank you!

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