Smart Contracts

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Things to Think About

- Identify participants in the [new] process
- Model the workflow for the process
- Model the activities within the process
- Identify the participants in the activity
- Identify who needs to participate in the activity (vs. get visibility of the state)
- Identify the rate or likelihood of change for both process and activities
- Understand the interdependencies between the activities

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Step 1 – Identify the Participants in the Process
For your scenario, identify all of the participants and their roles in the section below

_____	_____
Participant	Role

_____	_____
Participant	Role

_____	_____
Participant	Role

_____	_____
Participant	Role

_____	_____
Participant	Role

_____	_____
Participant	Role

Step 2 – Capture the Process Workflow

2a. For each of your participants, write their name at the top of a column below.

2b. Draw a sequence diagram that shows the use cases and the workflow for your scenario

Standard BoardRoom Contract Design

BoardRoom.sol

1. Proposal Storage
2. Vote Storage
3. Rule Checking
4. Execution

Rules.sol

1. Can Sender Vote
2. Can Sender Propose
3. Has the Proposal Won
4. Sender Voting Weight

Registry.sol

1. Registration of Members
2. Voting Weight of Members Registered
3. Access Restriction

OwnedProxy.sol (uPort Proxy)

1. Has Transferable Ownership
2. Transaction Bypass/Proxy

Token Defined
Membership & Voting Weight

StandardTokenFreezer.sol

1. Freeze Approved Tokens
2. Withdraw Tokens
3. Extend Freeze of Tokens
4. Check Account Freeze Time, Balance

Ethereum Ecosystem

StandardToken.sol

1. Transfer, TransferFrom
2. Approve Tokens
3. Check Account Token Balance

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Detailed Use Case – Supply Chain with IoT and blockchain

The terms of shipping are registered using a **smart contract** on the Blockchain

The Food product is sealed in an IoT enabled package for shipping

11ºC
66%

CARRIER 1

SMART CONTRACT

Retail Store

Food Processor

The package has to be maintained at :
Temperature < 10º C
Humidity < 65%

CARRIER 2

The conditions of the contract have been violated.

Carrier 2 is liable for penalty as the temperature of the package when it reached the retail store was above the prescribed limit

SMART CONTRACT UPDATED

PRODUCER

Warehouse

Milk producer supplies Milk to Food Processing Company

At various points in the journey, the IoT device from the package sends the Temperature & Humidity data which are recorded on the blockchain

SHARED LEDGER

IoT Enabled

| Origin | 8ºC 60% | Warehouse | 9ºC 64% | Carrier 2 | 9ºC 64% | Store | 11ºC 66% |

Platform Services

Security & Management

- Security Center
- Portal
- Azure Active Directory
- Azure AD B2C
- Multi-Factor Authentication
- Automation
- Scheduler
- Key Vault
- Store/ Marketplace
- VM Image Gallery & VM Depot

Media & CDN

- Media Services
- Media Analytics
- Content Delivery Network

Integration

- API Management
- BizTalk Services
- Logic Apps
- Service Bus

Compute Services

- Container Service
- VM Scale Sets
- Batch
- RemoteApp
- Dev/Test Lab

Application Platform

- Web Apps
- Mobile Apps
- API Apps
- Cloud Services
- Service Fabric
- Notification Hubs
- Functions

Developer Services

- Visual Studio
- Mobile Engagement
- VS Team Services
- Xamarin
- Application Insights
- HockeyApp

Data

- SQL Database
- SQL Data Warehouse
- DocumentDB
- SQL Server Stretch Database
- Redis Cache
- Storage Tables
- Azure Search

Intelligence

- Cognitive Services
- Bot Framework
- Cortana

Analytics & IoT

- HDInsight
- Machine Learning
- Stream Analytics
- Data Catalog
- Data Lake Analytics Service
- Data Lake Store
- IoT Hub
- Event Hubs
- Data Factory
- Power BI Embedded

Hybrid Cloud

- Azure AD Health Monitoring
- AD Privileged Identity Management
- Domain Services
- Backup
- Operational Analytics
- Import/Export
- Azure Site Recovery
- StorSimple

Infrastructure Services

Compute

- Virtual Machines
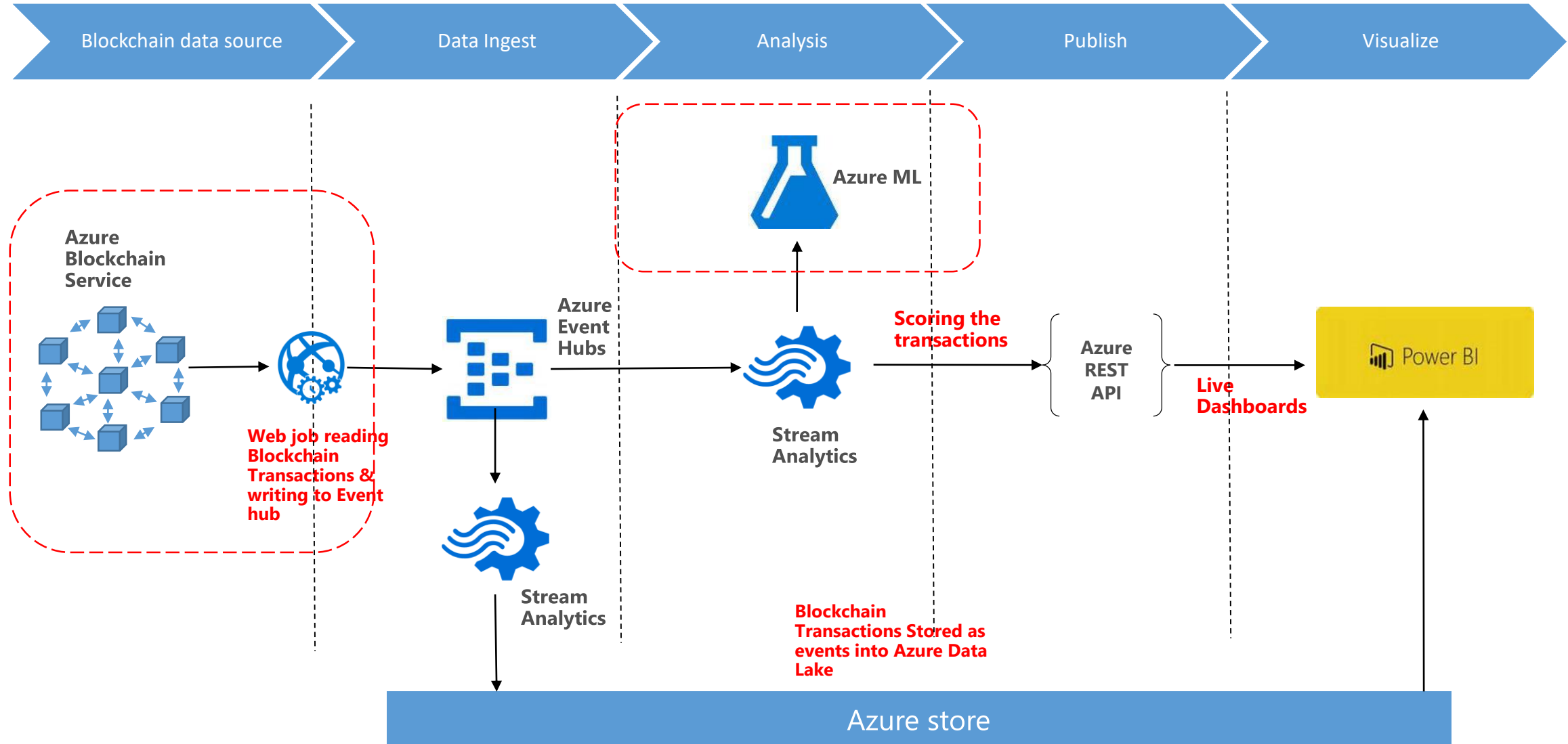- Containers

Storage

- Blob
- Queues
- Files
- Disks

Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
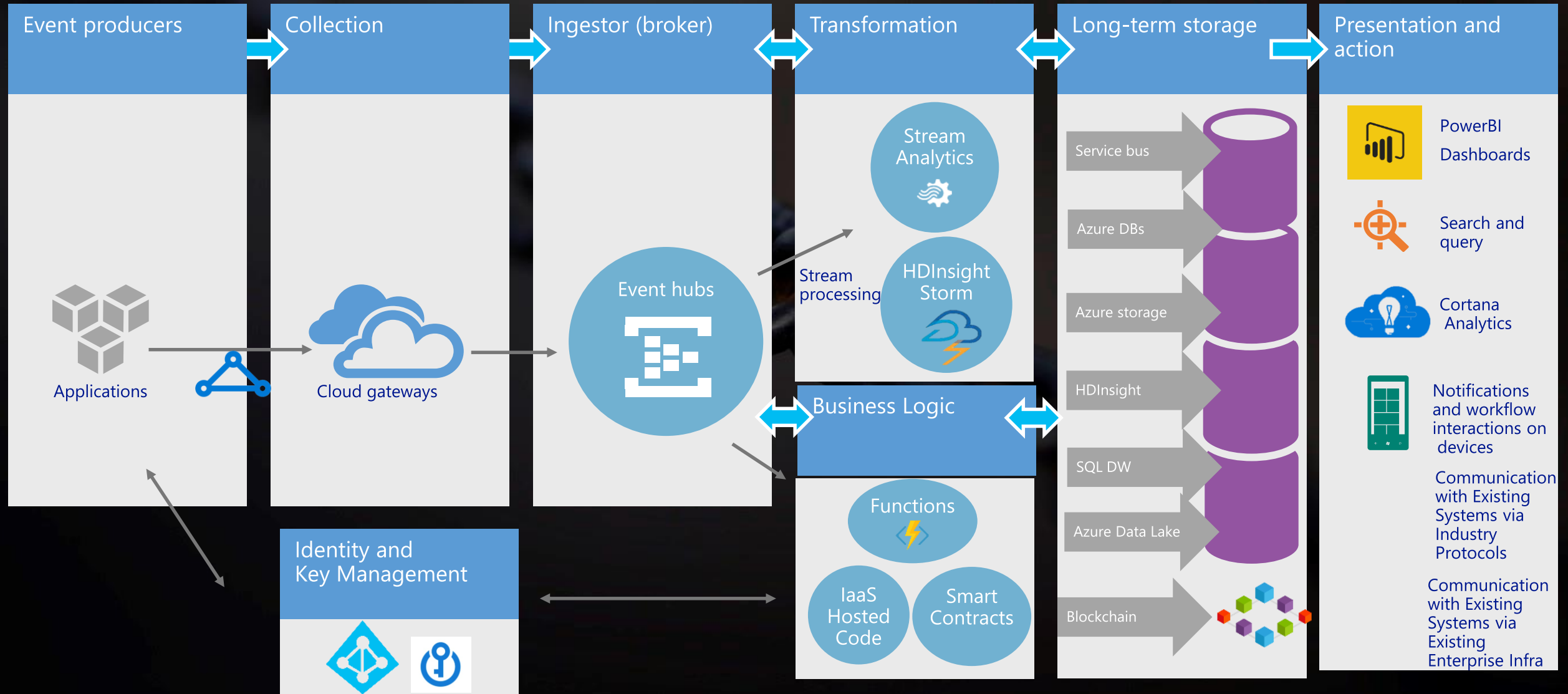- App Gateway

Datacenter Infrastructure (38 Regions)

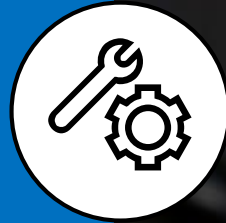# Blockchain Data Intelligence Architecture

Reference Architecture

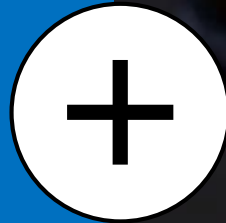# Why Microsoft Azure Blockchain as a Service
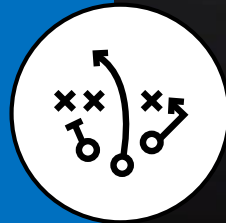
FAIL FAST & CHEAP
in a development test environment

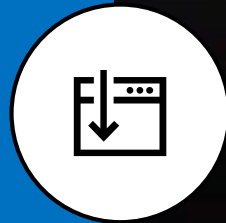**MIX & MATCH**
from the best available blockchain technologies

CREATE & INNOVATE
by building solutions on blockchain quickly

SHARE SOLUTIONS
through a worldwide distributed platform

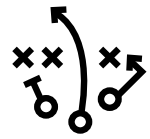**PROVISION**
with one-click to test & iterate

Get started

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https://azure.microsoft.com/

READ ABOUT BLOCKCHAIN ON AZURE
https://azure.microsoft.com/en-gb/solutions/blockchain/

TRY THE CONSORTIUM BLOCKCHAIN TEMPLATE
https://azure.microsoft.com/en-us/blog/project-bletchley-blockchain-infrastructure-made-easy/

FIND OUT MORE ABOUT PROJECT 'BLETCHLEY'
https://github.com/Azure/azure-blockchain-projects/tree/master/Bletchley/