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Blockchain-as-a-Service (BaaS) :: providers & trust

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Overview & intuitions

Nature of BaaS

Architectural & trust considerations

Advances and directions

[DEPENDS]

BaaS & cloud

BaaS: the supporting infrastructure

A 'cloud' offering

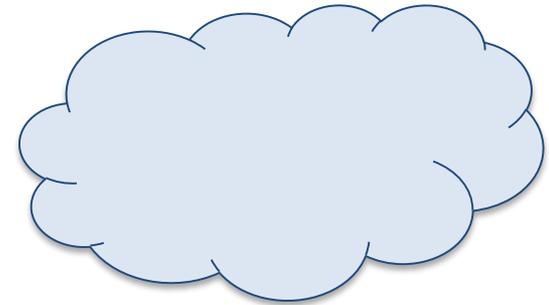
Economies of scale

Elasticity

Expertise and experimentation

Main providers:

- IBM (Hyperledger)
- Microsoft (Coco Framework)



Revolutionise business



Financial

Trade Finance
 Cross currency payments
 Mortgages

Public Sector

Asset Registration
 Citizen Identity
 Medical records
 Medicine supply chain

Retail

Supply chain
 Loyalty programs
 Information sharing (supplier – retailer)

Insurance

Claims processing
 Risk provenance
 Asset usage history
 Claims file

Manufacturing

Supply chain
 Product parts
 Maintenance tracking

Focus: Established businesses & **business networks**

Modes of uptake

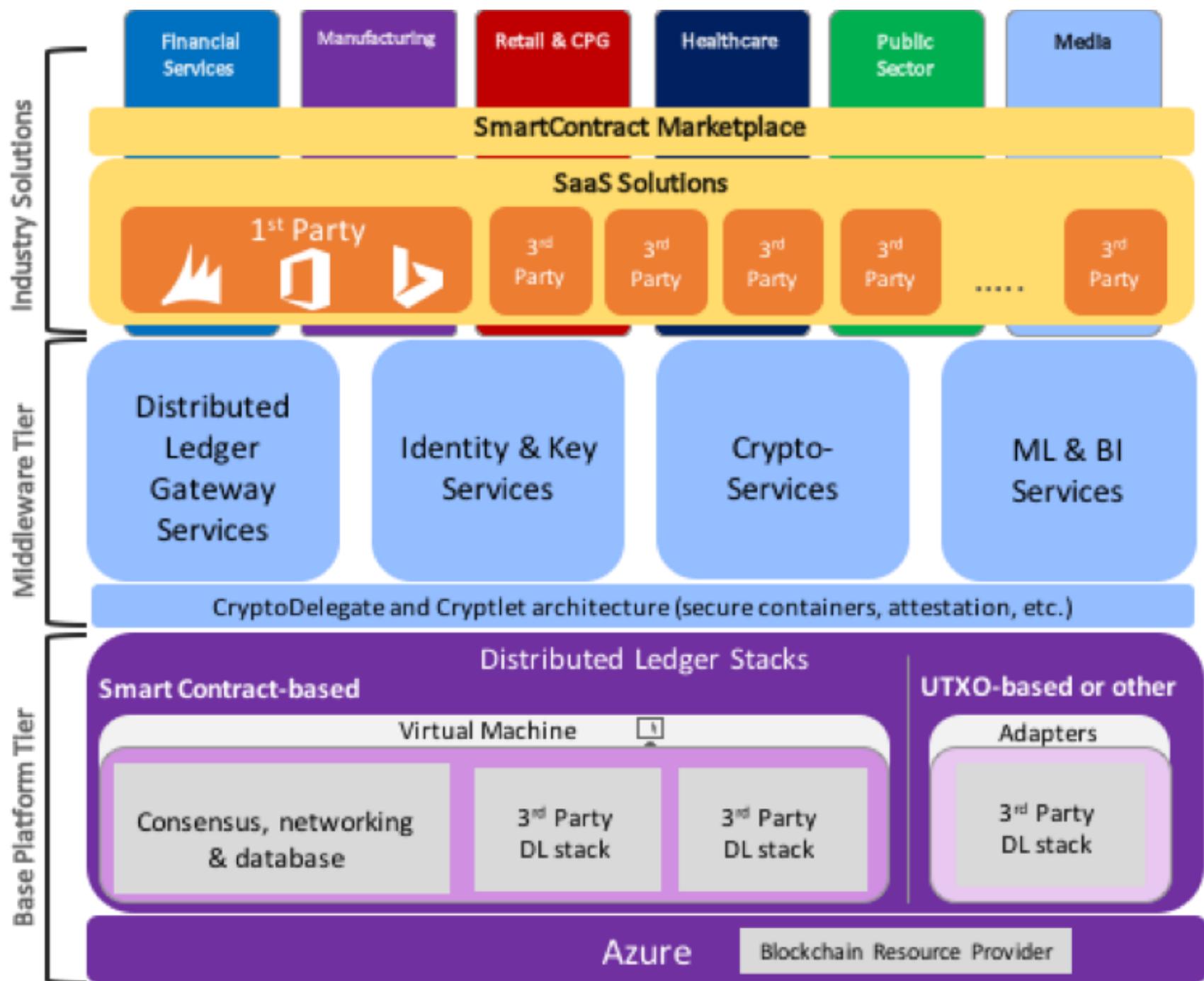
Applications

- Solution oriented
- “Software-as-a-Service”

Platform-oriented

- Select, customise, configure components
- “Platform-as-a-Service”

Interfaces, integrations, configurations



Private & permissioned

Private: dedicated chain

Permissioned: restricted participants

Current BaaS focus

- Established networks, data sensitivity
- Safe experimentation

Why not just an application/database?

- *# parties*, autonomy, competition
- Ease of deployment?

BaaS-cloud business

Opportunities regardless

BaaS for open chains?

- Comes with maturity...
- B2B >> B2C (or C2C) [“Sharing economy”]

Consumer BaaS opportunities

TRUST

**Blockchain: remove trust/reliance
on third parties**

BaaS...?

Tenancy: participant trust

Cloud *tenancy*

Provider ⇔ tenant contract

Tenants configure & control services; pays...

Blockchain – multi-party scenarios

Ledger mediates multiple parties

Tenancy in a BaaS context?

Depends: single org., consortium, federation

Govern the network with democratic management tools

Accelerate the initiation and activation of new blockchain networks

- Collectively manage rules and policies for network by preventing any one member exclusive control
- Grow elastically as new smart contracts, network members and transaction channels evolve
- Pre-built, native tools and policies enable faster onboarding, customization and activation

IBM Blockchain

Integrated tools to enforce change management of the network with customizable democratic policies

Policy Editor
Define flexible, democratic policies to govern changes to the network

Multi-party workflow tool
Leverage member activities panel, integrated notifications and secure signature collection for policy voting

The slide features a dark blue background with a glowing network of hexagonal nodes connected by lines. Various icons are scattered throughout, including a person with a magnifying glass, a cloud with a download arrow, an hourglass, a bar chart, a person with a dollar sign, and a bar chart with an upward arrow. The text is white and blue, providing a high-contrast look.

Provider trust

Trust those managing the infrastructure

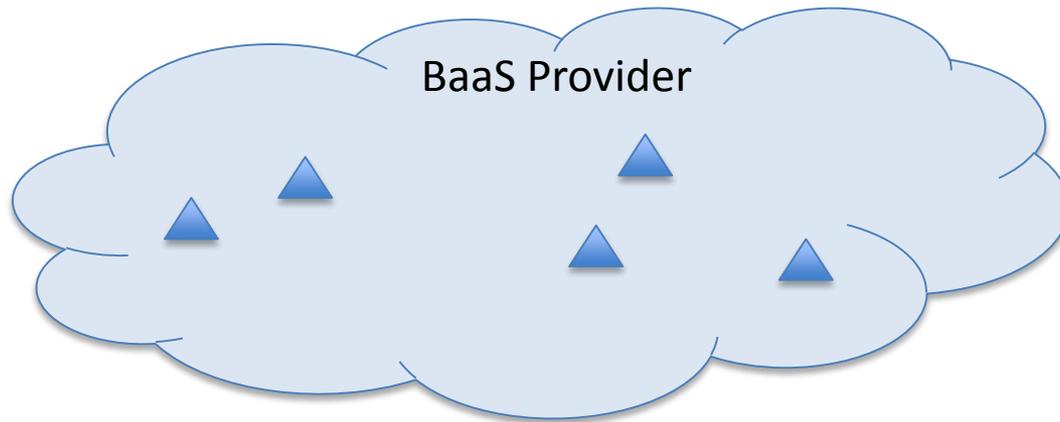
General, ongoing issue:

- Highly-regulated sectors; auditability

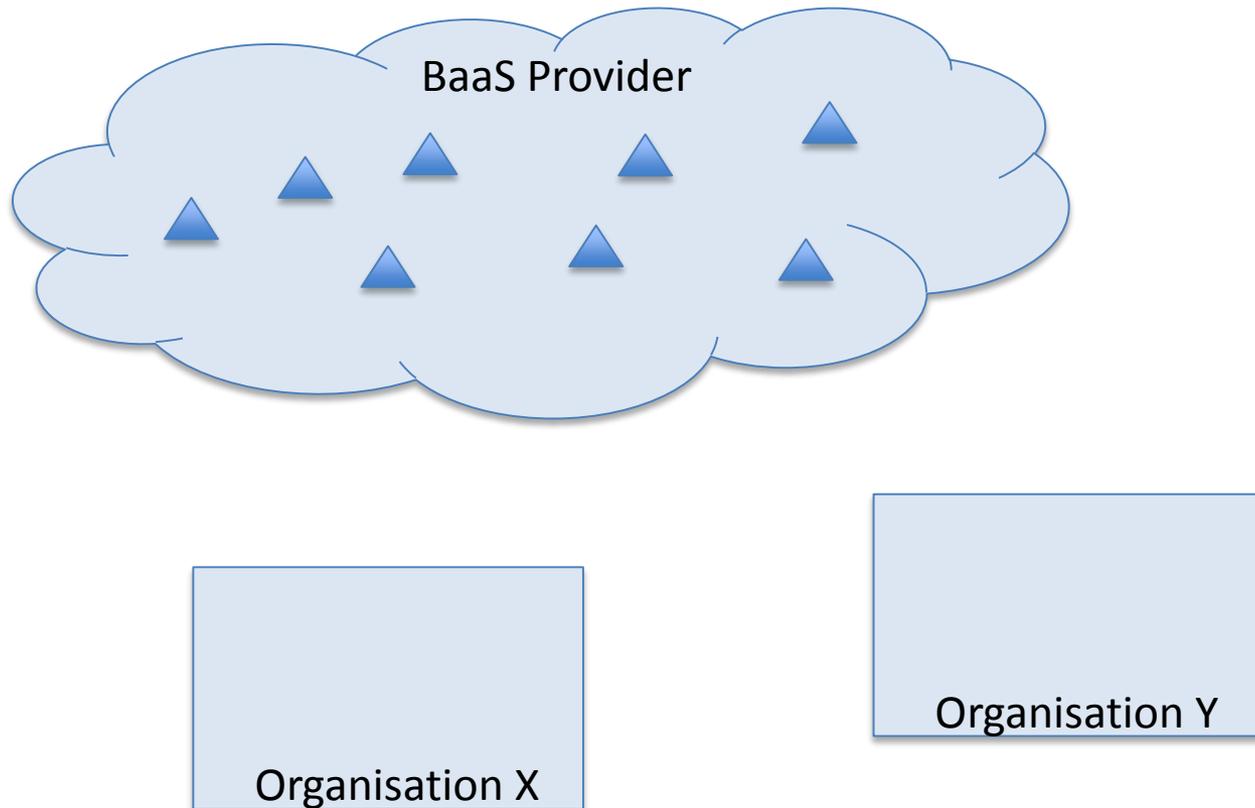
Depends:

- Risk profile
- Centralised v federated architecture
 - How much does a provider control?
 - How much can participants see?

Architectures



Architectures



[Myriad of possibilities ↔ trust]

Emerging: silicon-based trust

Enclaves

- Hardware-based, trusted execution environs.
- Security: encryption, code isolation, attestation

Much promise for DLT

- Keys, smart contracts
- Hyperledger Sawtooth Lake & Coco Framework

But also cloud in general...

Trusted cloud: Preclude need for BaaS?

Threats/risks? Trust the tech? Supply chain?

Trusting the outside

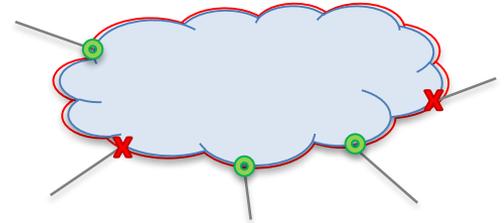
Interactions with BaaS

(1) Parties

- Access controls: identity, permissions
- Right tenant; right chain

(2) Data

- Oracles: event validity
 - Agreed; consensus; hardware-backed
 - Depends on application



DLT => new clouds?

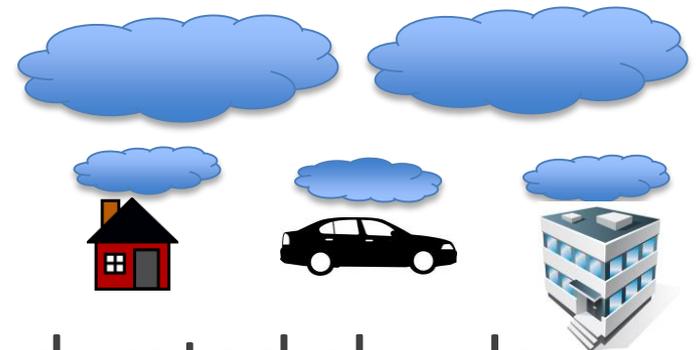
DLT: distributed compute platform

Possibility to displace traditional cloud

- Storage and compute services (“grid”)
- Enabled through tokens & smart contracts

Early days

- Much volatility (\$)
- Much potential... IoT => federated clouds



Summary

BaaS still emerging

Offers benefits, similar to cloud

Considerations:

- Specifics of the application and participants
- Risk/threat profile
- Nature of system architecture

Role in emerging systems... *we shall see!*