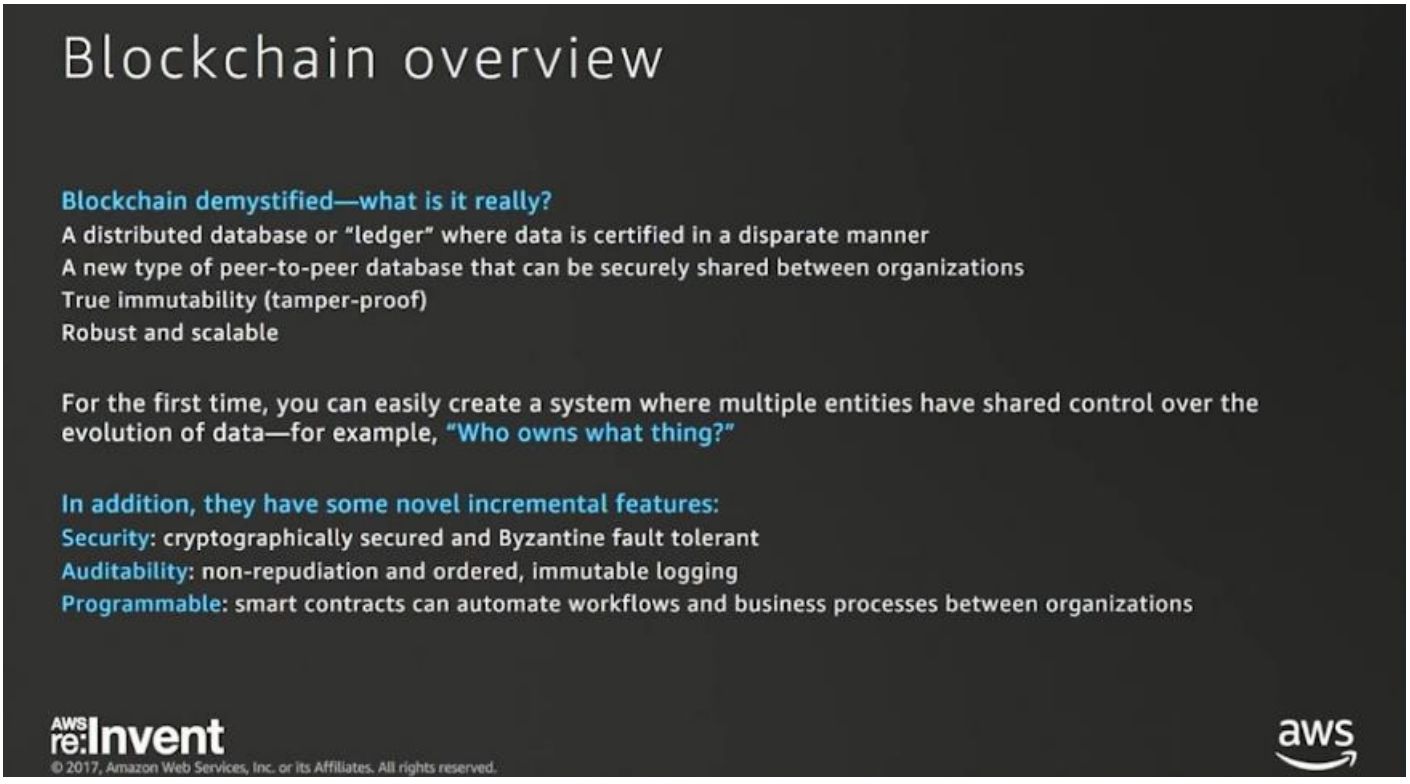
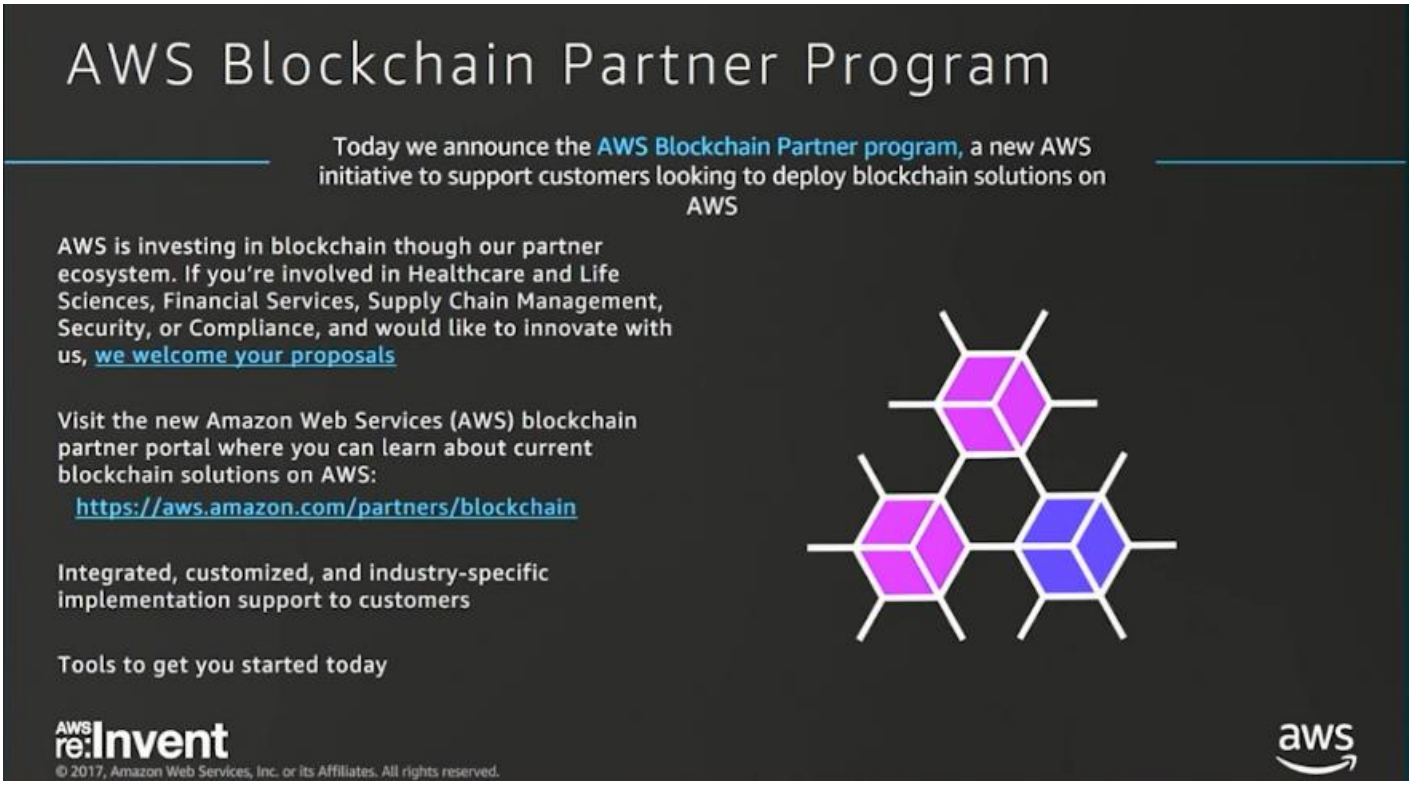
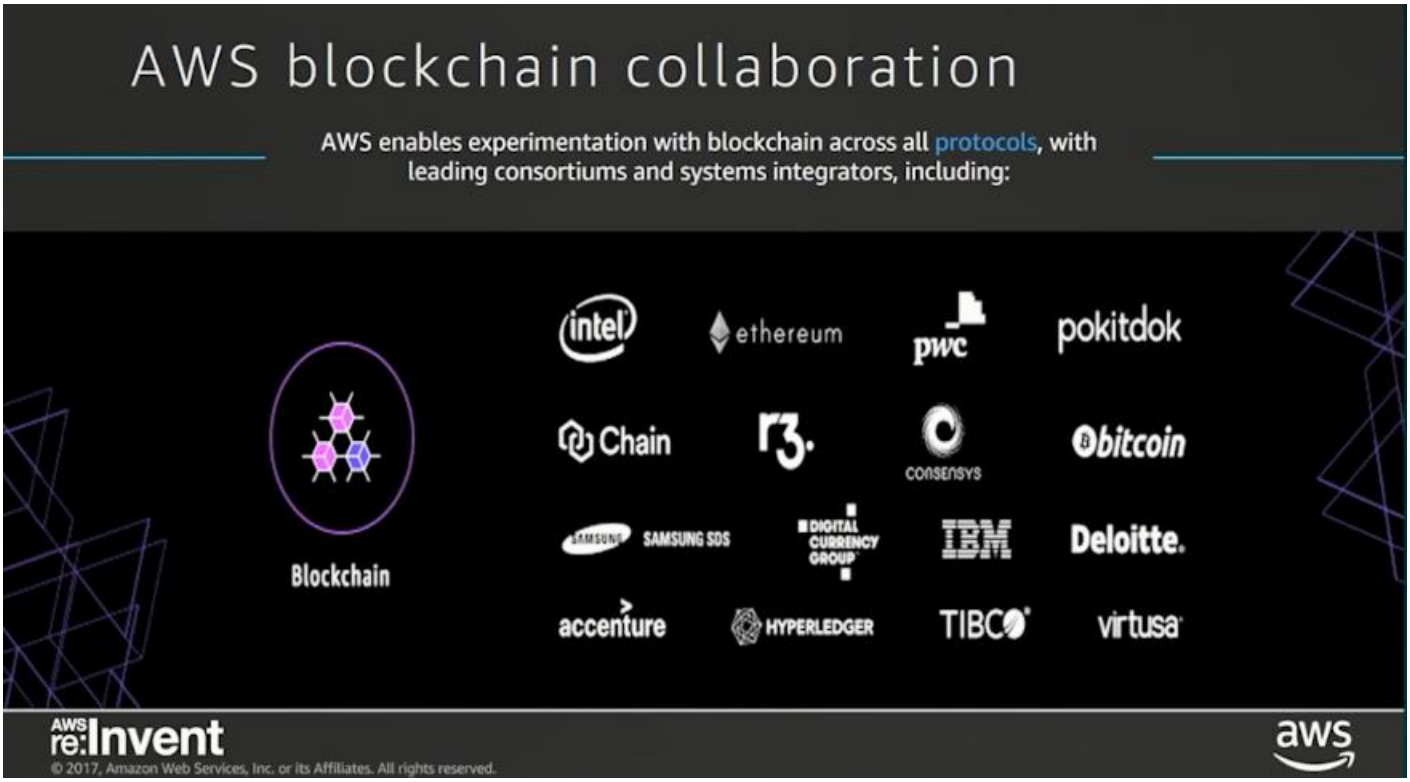
For many, Blockchain has been a black box with little standardization on how to use the technology. The need to understand a multitude of protocols, consortiums, and services, along with their strengths and weaknesses, makes it difficult to select the best option for individual use cases. The lack of technical maturity leads to an uneasiness within the community that can negatively affect adoption. With our new partnerships, along with Intel, this panel discusses technology drivers that are pushing standards forward and accelerating the adoption of Blockchain in the AWS enterprise space. Come join us for a closer look at what Blockchain is doing for several industries and their use cases.



Blockchain is the application of a technology that is all about a list of records or blocks are sequentially linked together via timestamps and some other key attributes which defines the underlying protocol.





Intel + AWS
Accelerating deployment

Supply chain Track and Trace

Live now—one-click deploy

Create or join a blockchain network

Track ownership and provenance of assets

Integration with IOT devices to record an immutable record of telemetry, such as temperature, humidity, and shock/vibration

Digital assets

Available in January—one-click deploy

Issue, transfer, exchange, and redeem digital assets

GUI that shows balance of assets in wallet

Applicable to many use cases with "tokenized" digital assets, cryptocurrency, loyalty points, financial instruments, and so on

Digital identity and authentication

Available in February

Track digital identities and associated credentials/permissions

Adapters that inspect blockchain "record of truth" before providing access to digital content

Can be used to provide access grants to content such as website access, streaming content, or sensitive data, such as medical records

AWS re:Invent

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GPS: Blockchain and the Road to Innovation - GPSTEC303

Intel Sawtooth

Kelly Olson
Director of Blockchain-Intel

AWS re:Invent

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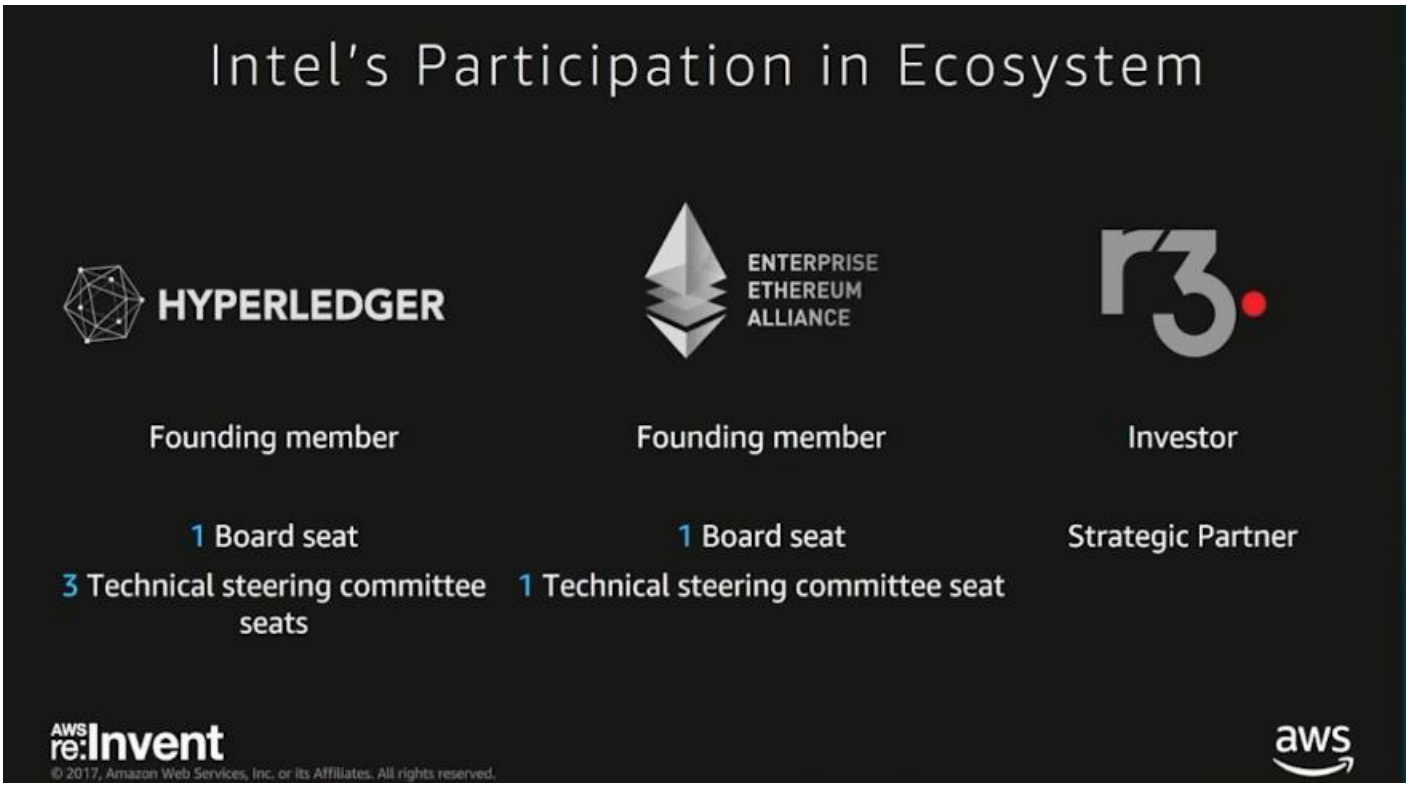
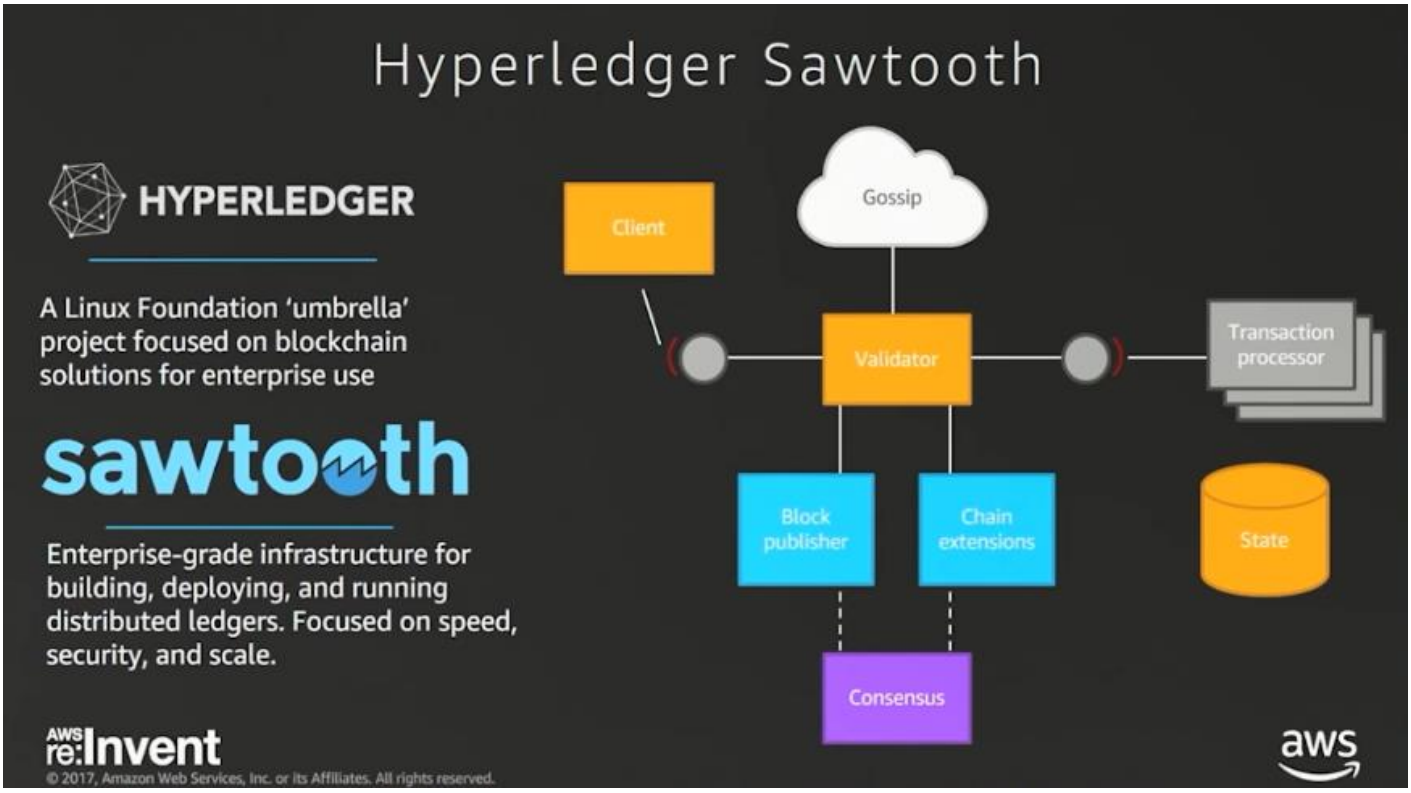
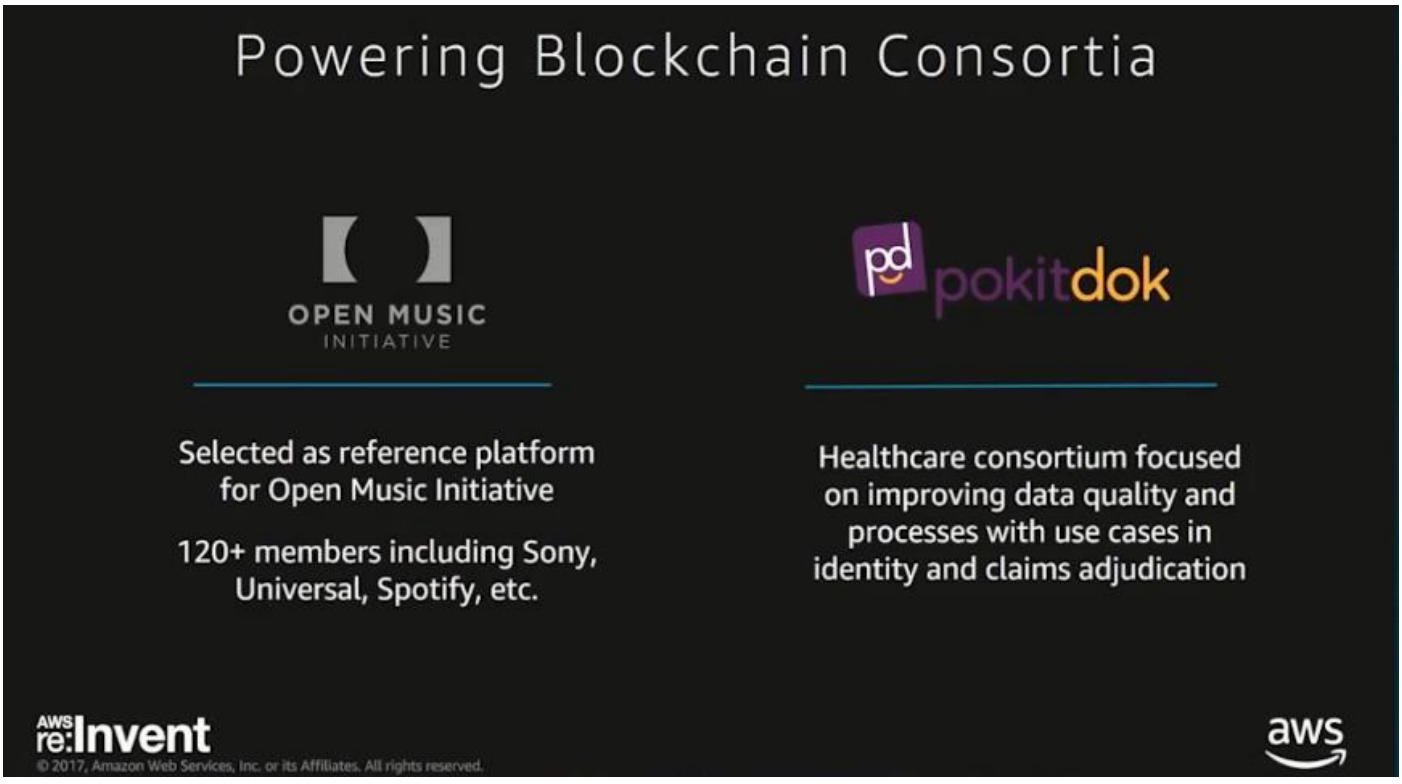


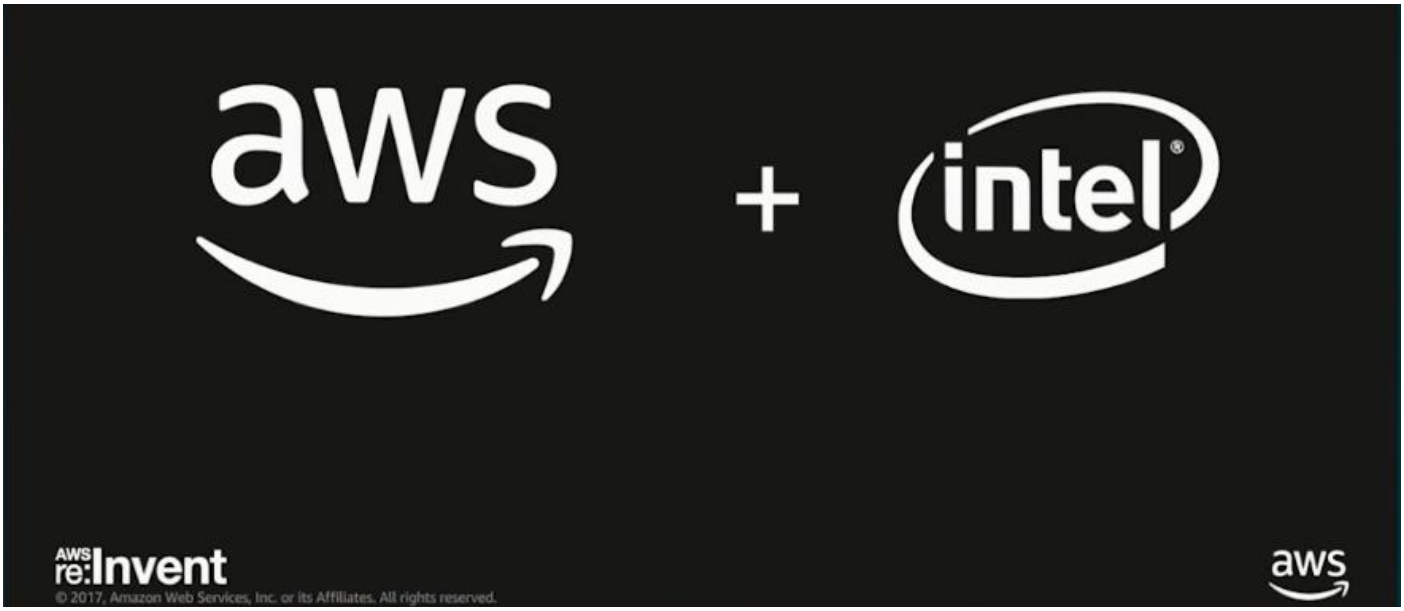
Hyperledger Sawtooth is Intel's blockchain protocol that they are focusing on.

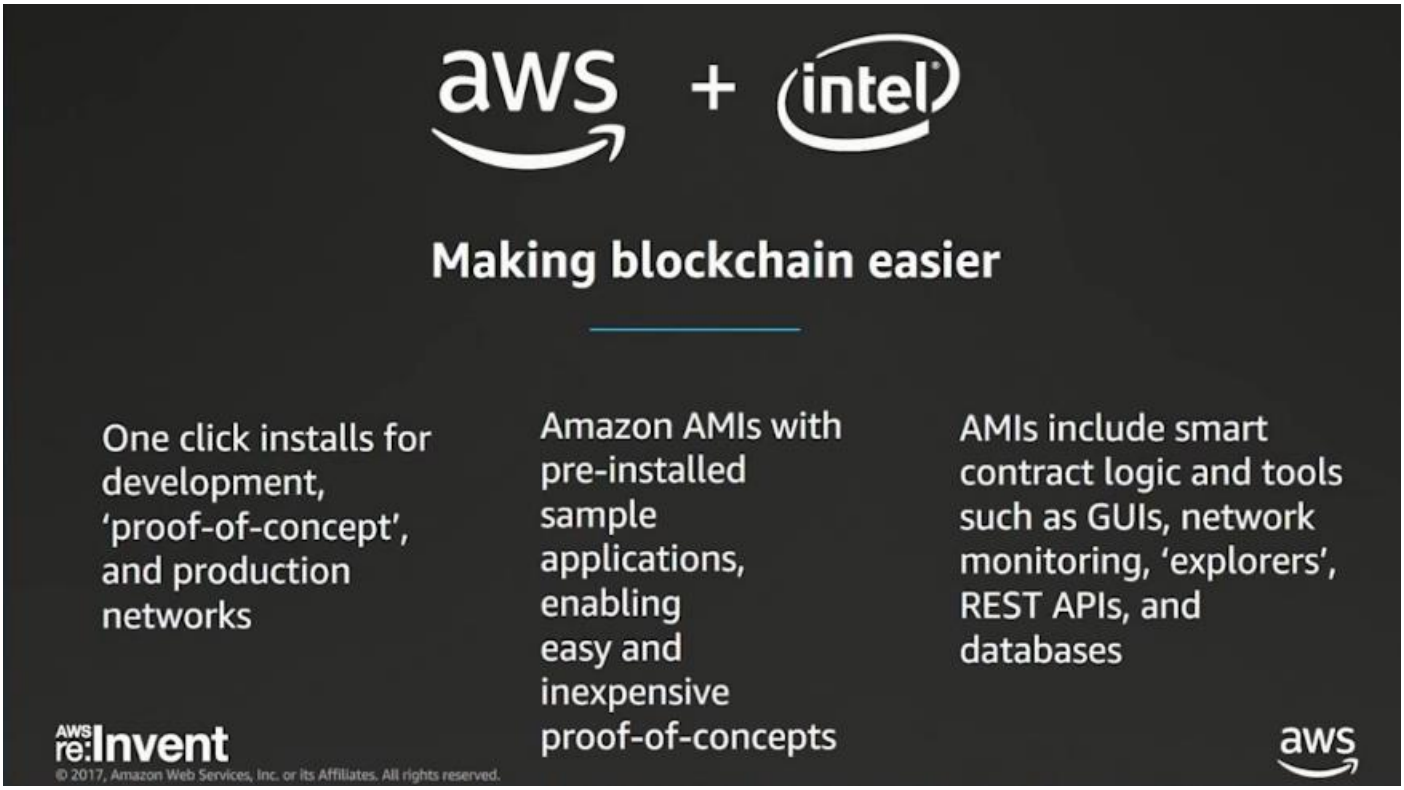


Hyperledger is a collection of different blockchain implementations like Hyperledger Sawtooth, Hyperledger India, etc. each of these blockchains have different xtics that make it suitable for different environments and use cases. Sawtooth is focused on the enterprise and not as focused on public blockchains or cryptocurrencies as we see out in the market today, it is focused on facilitating B2B transactions between enterprises and focuses on speed, security, and scale

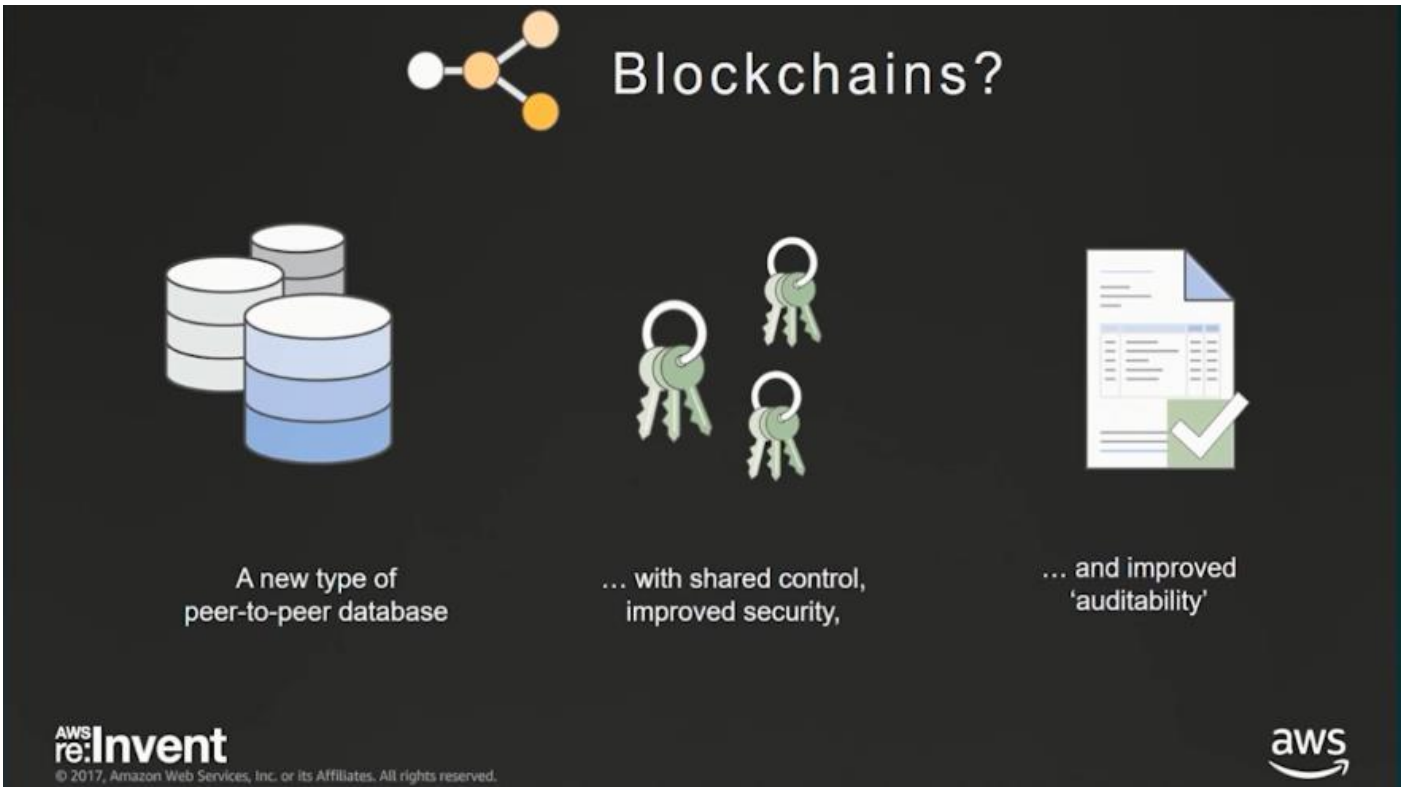
Sawtooth enables programmers to program how they want and not have to learn new scripting and programming languages, Sawtooth also enables you to write functions in a secure way. Sawtooth also supports a modular consensus interface that enables it to be deployed in both public, open networks, as well as private consortium-style blockchains.

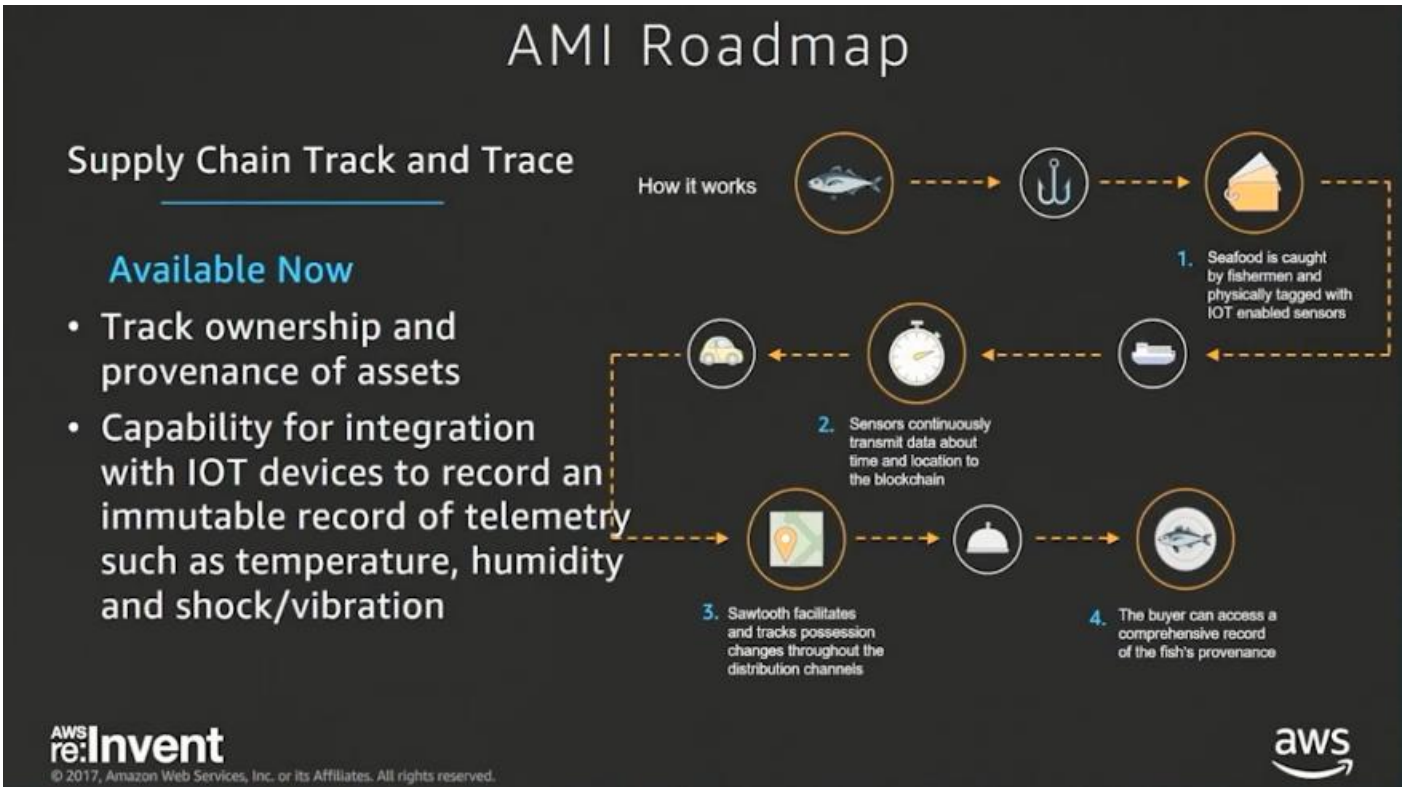




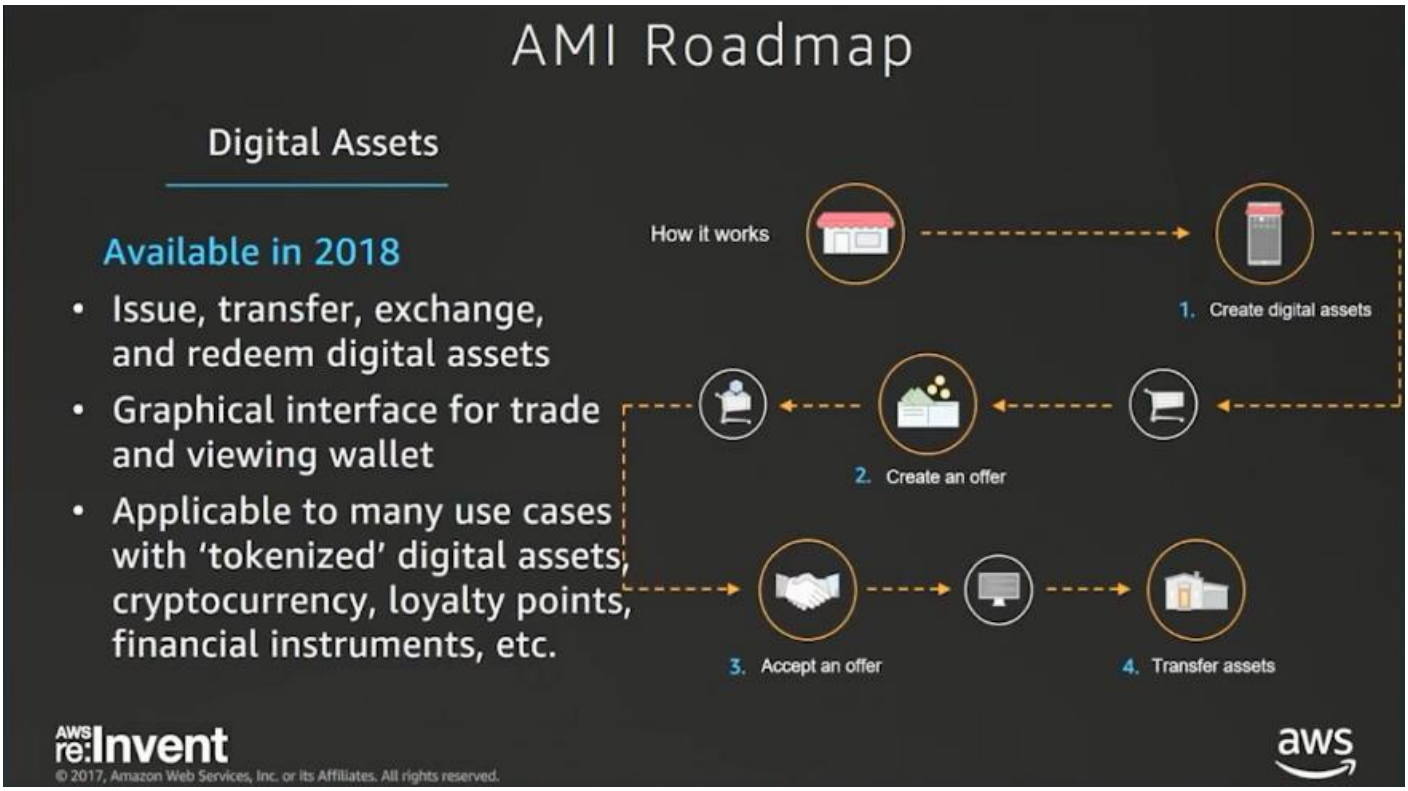


There are currently 2 AMIs available in AWS that you can install for Dev, Test, and Production networks. The AMIs allow you to experiment by quickly setting up your blockchain networks to test the technology. The AMIs are also pre-installed with sample applications that will enable you to do PoCs quickly and inexpensively. Finally, a successful blockchain deployment relies on more than blocks, you need GUIs, network monitoring tools, REST APIs, etc. these are available in the AMIs.

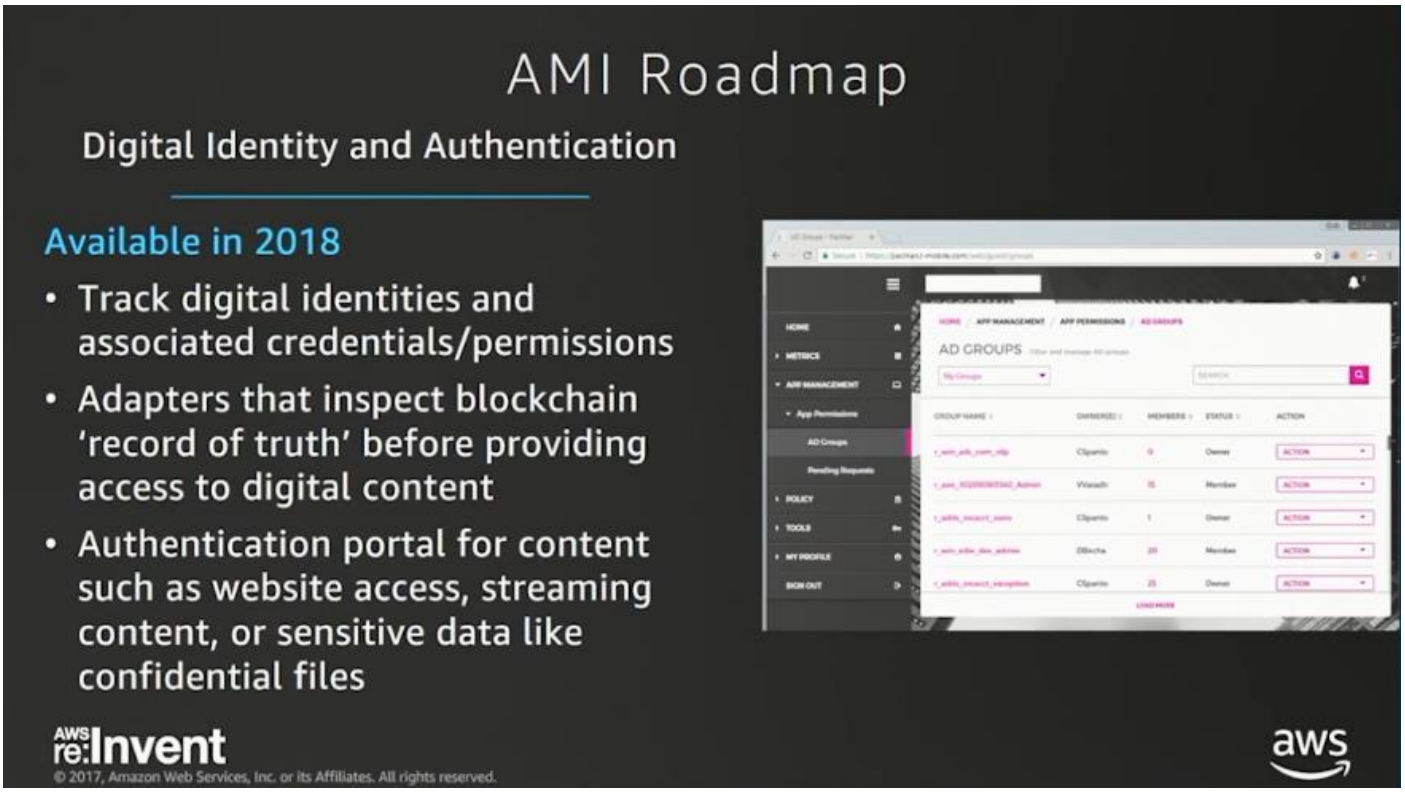




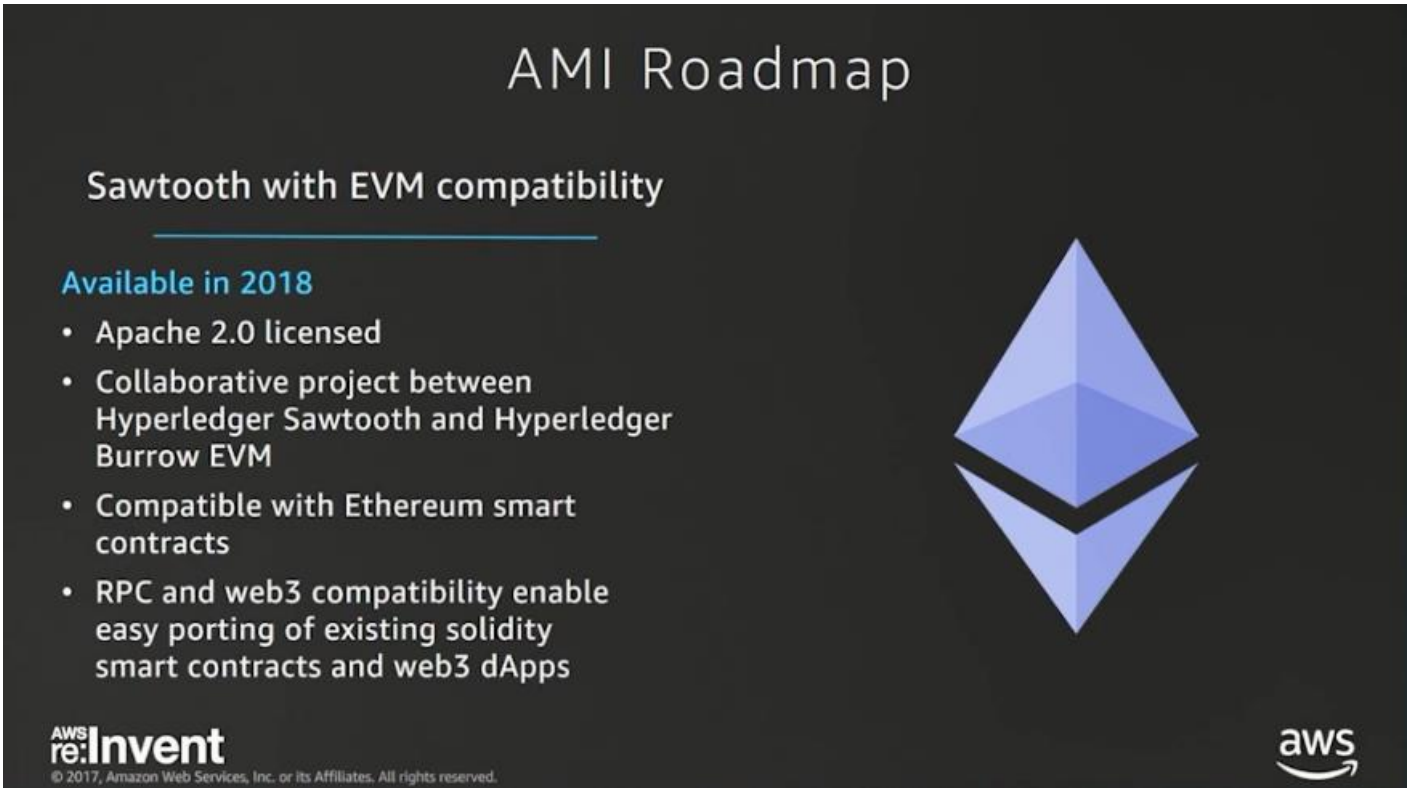
The first AMI released today is a Supply Chain Track and Trace use case, it allows you to create representations of physical assets on a blockchain and track their ownership and custodianship as it moves through multiple party's hands. We have also exposed a REST API that allows IOT devices to submit telemetry data about those assets into the blockchain to create an immutable record of how that package was actually handled.



The 2nd use case is around digital assets, with this platform you will be able to issue, transfer, exchange digital assets from a GUI.



The 3rd AMI is around a digital identity and authentication use case, this is a role-based access control RBAC system that is built on a blockchain that can operate within a company or can be shared among companies.



Hyper Directory is a POC for a universal source of truth directory service, it allows integration of web apps, IAM solutions and traditional LDAP based directories.

Cloud Center of Excellence

T··Mobile·

People

Community

Commitment to FOSS

Cloud Center of Excellence

Digital Identity and Authentication

T··Mobile·

The distributed and immutable nature of the blockchain provides a unique audit stance

Blockchain as a source of truth for IAM

RESTful APIs allow publication and subscription to the blockchain state

T-Mobile RBAC 2.0 dynamically applies permissions

LDAP integration for traditional directories

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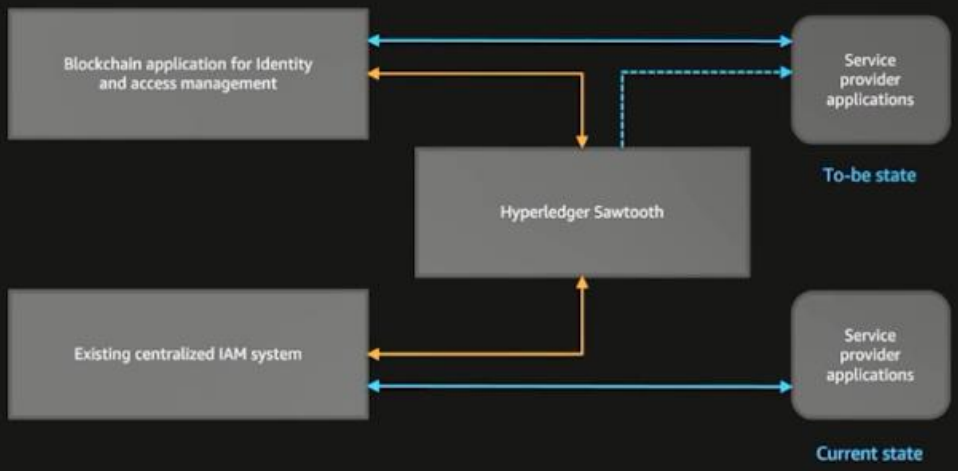
Hyper Directory

T··Mobile· + HYPERLEDGER



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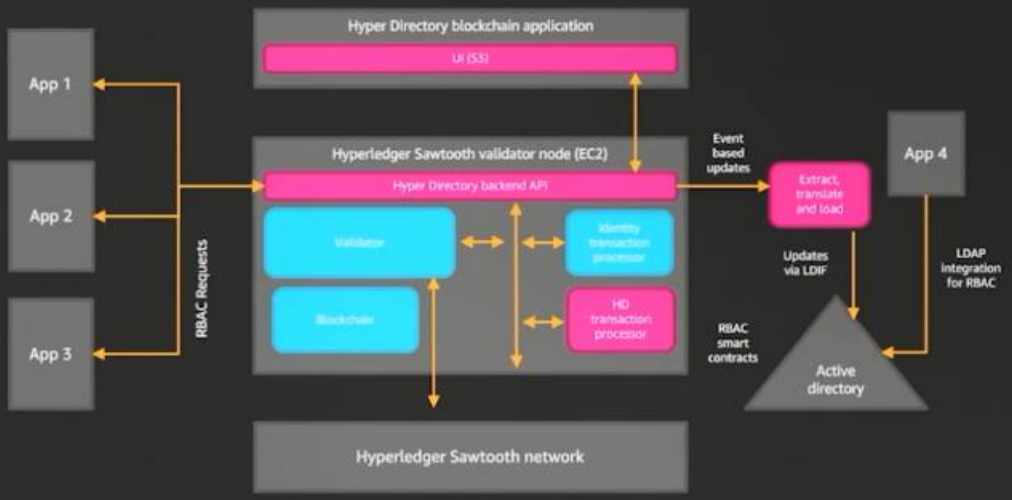
Hyper Directory

T··Mobile· + HYPERLEDGER



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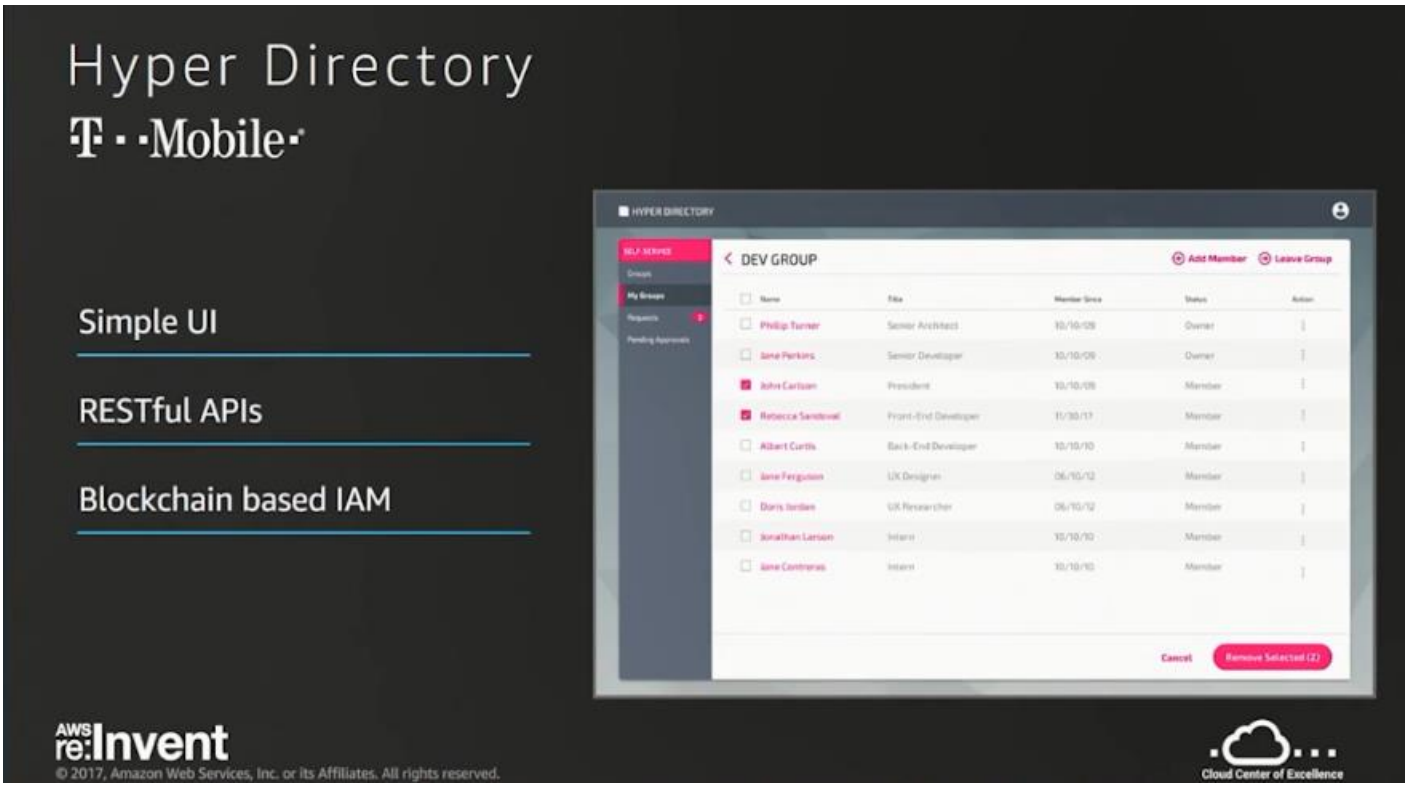


In the end, we built a single page UI hosted out of S3 as a serverless, self-service app that also provides RESTful APIs.

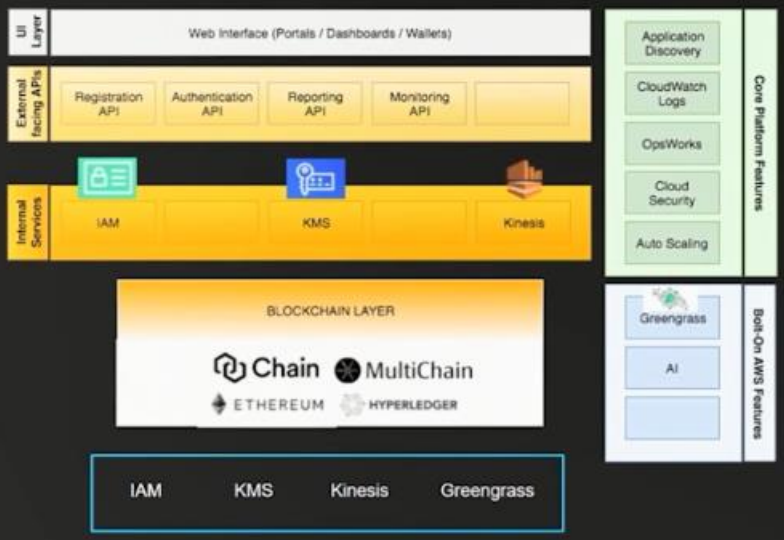
PwC and AWS framework

Decided to build a repeatable framework on AWS, using the insurance use case as the test bed

Collaborative working between PwC and AWS to define a framework for building blockchain platforms utilizing AWS tools and services

"Generic" framework which could be applied to any blockchain asset-based use case

Addition of some key integrated services can bring such solutions closer to production-grade



This is a framework to accelerate the development of blockchain applications

PwC and Guidewire

GUIDEWIRE

Guidewire exploration into blockchain and its potential use in insurance claims

They wanted to improve the efficiency of the error-prone, time consuming, and cumbersome bordereau process

PwC had already built a PoC on the bordereau process

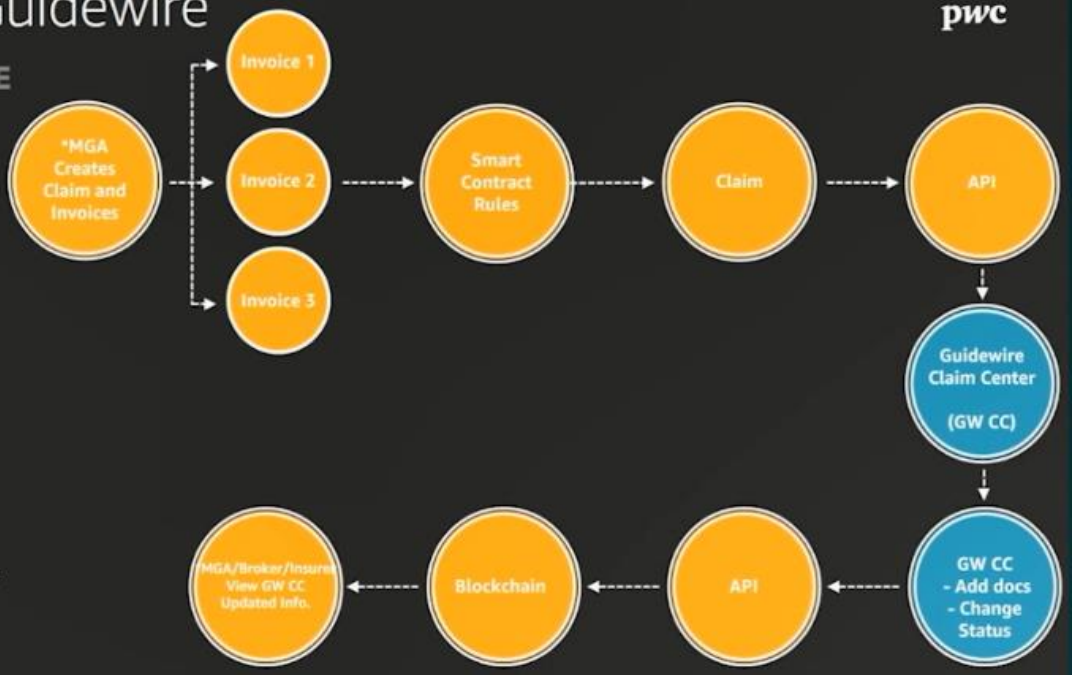
Guidewire integrated their ClaimCenter with the PwC PoC to demonstrate claims on a blockchain being actioned

This was successfully demonstrated at Guidewire's Connect conference in Las Vegas on 15 November

PwC and Guidewire

GUIDEWIRE

pwc



PwC

Guidewire

*MGA: Managing General Agent

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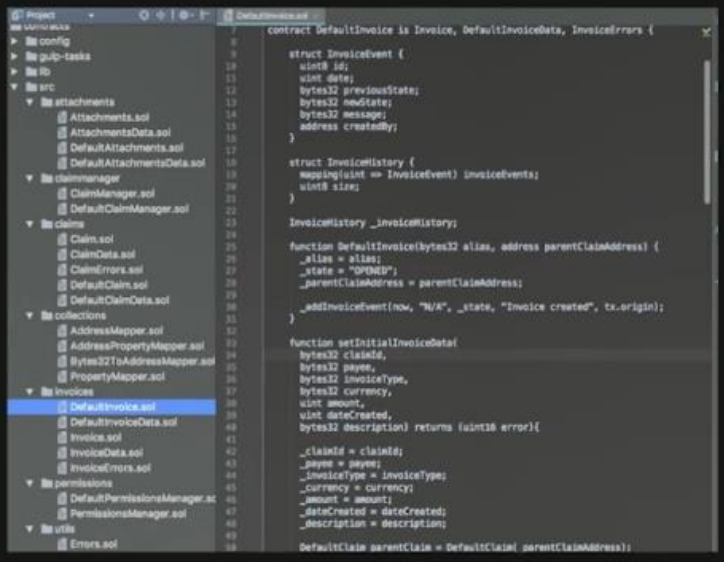
PwC and Guidewire

GUIDEWIRE

Smart contracts implemented in solidity



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PwC and Guidewire

Outcome

GUIDEWIRE

An integration with Guidewire ClaimCenter to demonstrate claims on a blockchain being actioned

Proof that blockchain can interact with existing software and applications and improve their process

Use of smart contracts to auto-approve claims and trigger payments removing the need for manual intervention

A solution that gives Guidewire a marketable, advantageous product

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Framework technology stack

Ethereum blockchain (multinode)
Ethstats visual dashboard
Node-based APIs
React JS (front-end)
Kubernetes (container orchestration)
IAM integration
AWS KMS integration
Amazon Route 53
Elastic Load Balancing

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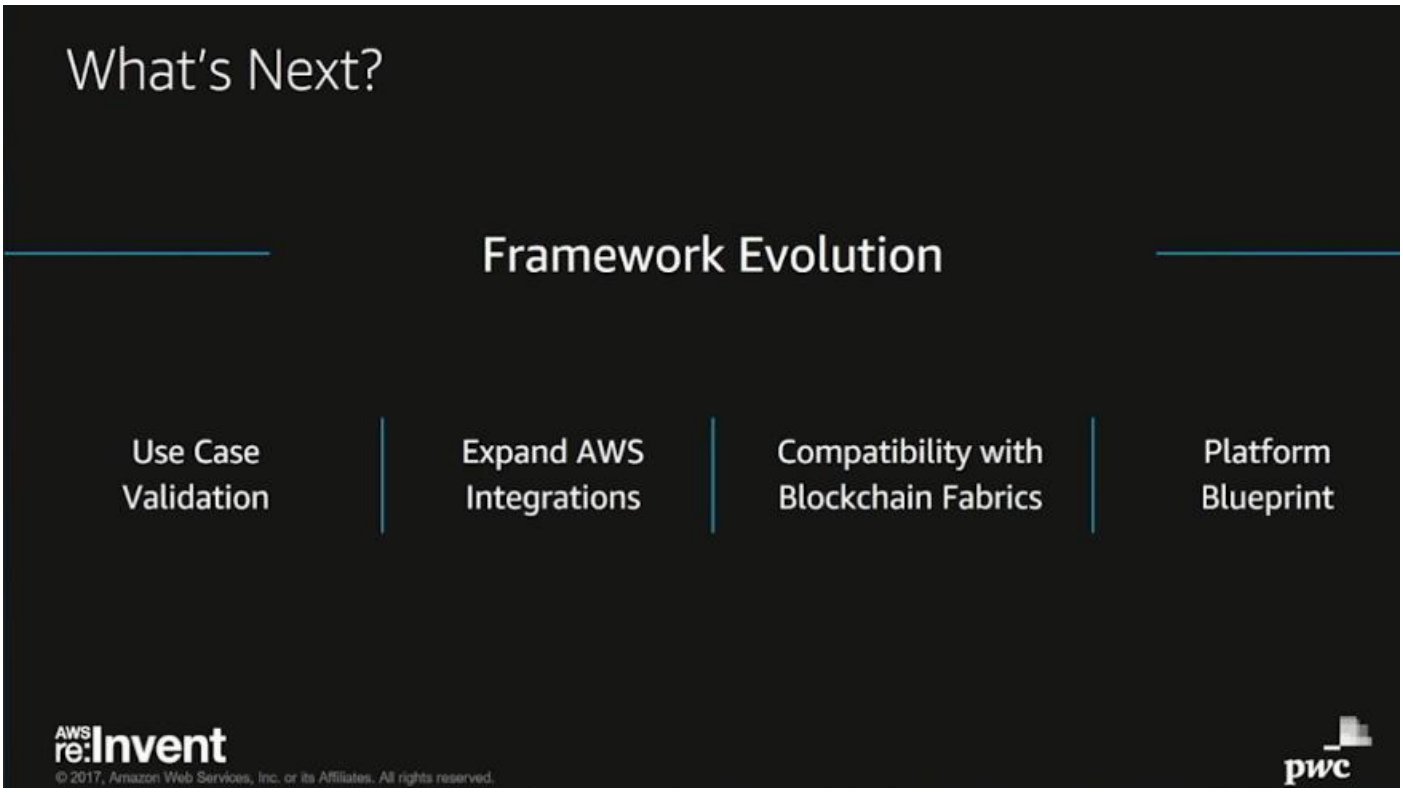
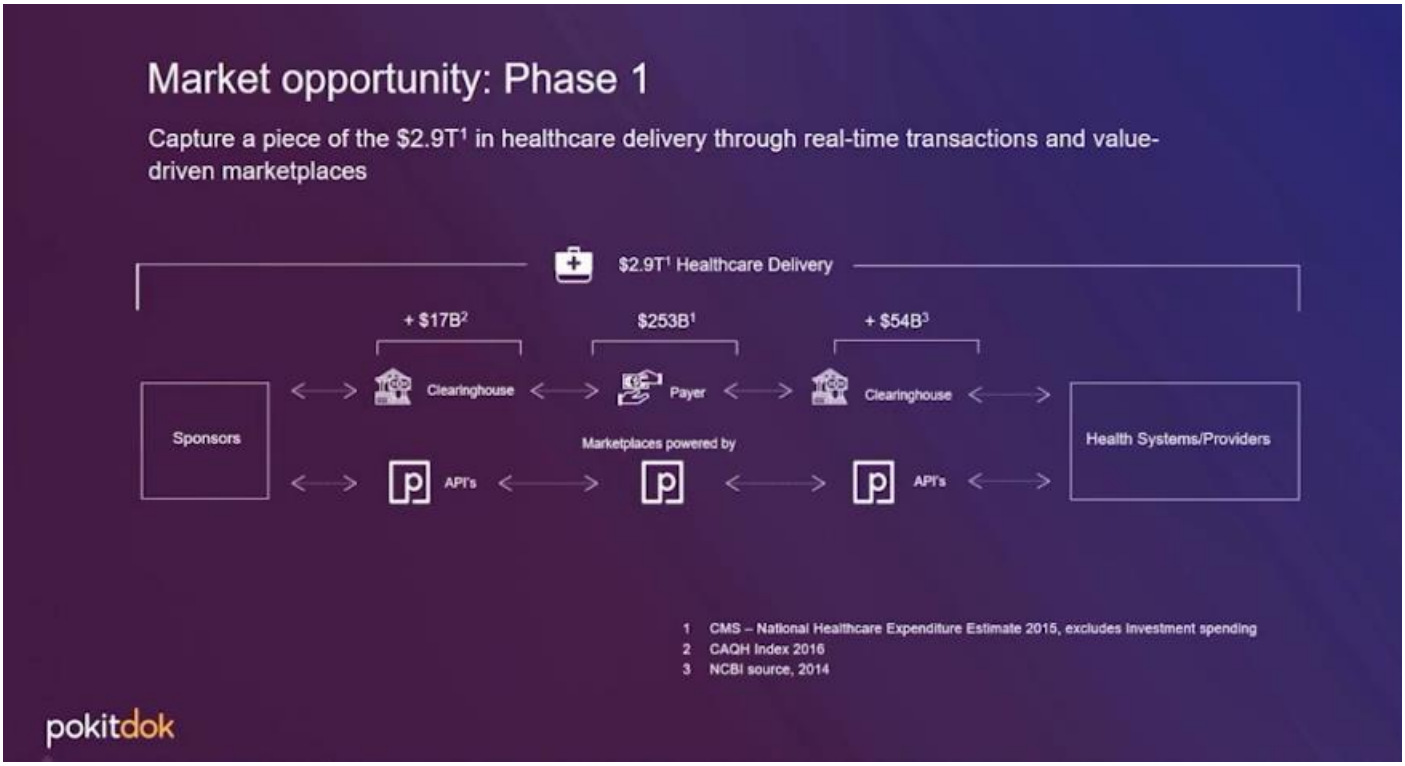
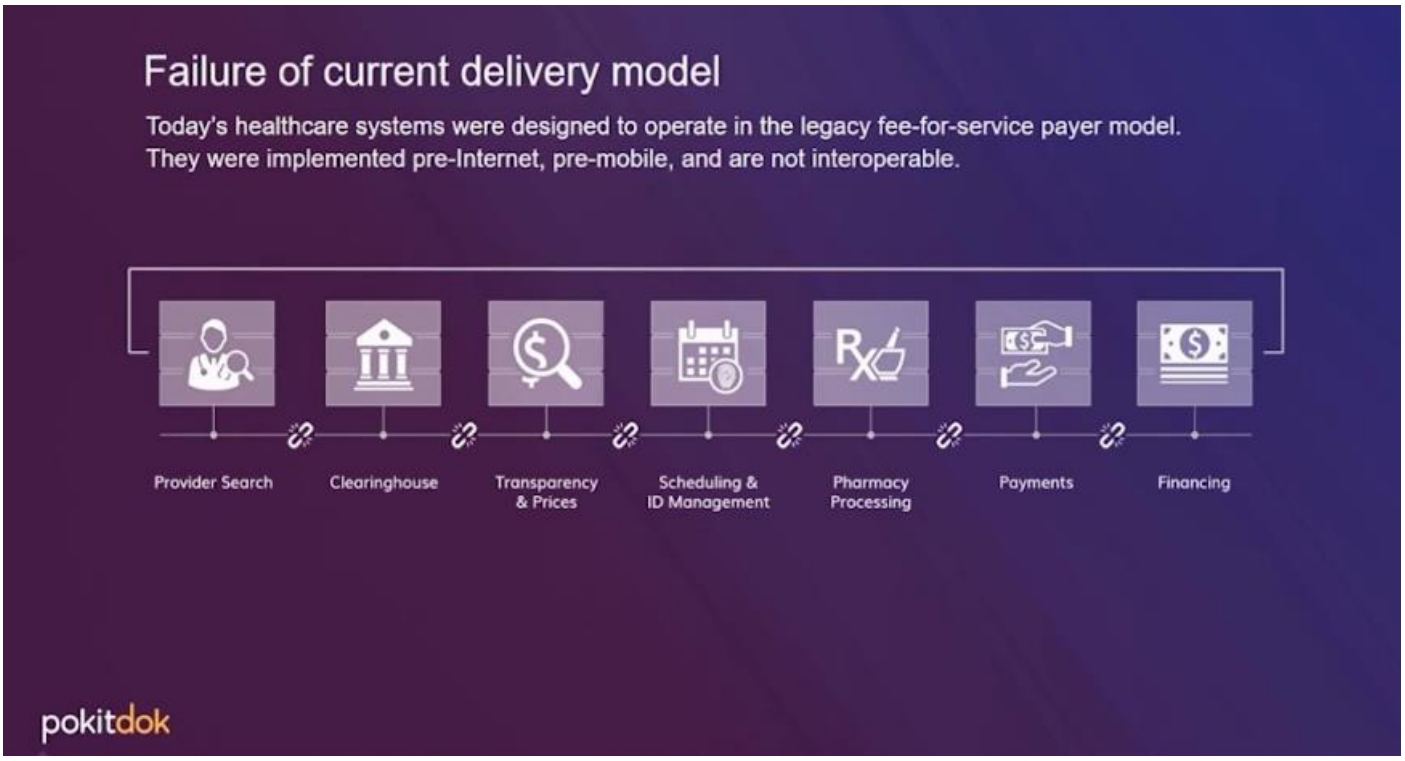


A doctor in your pocket, it is an operating system for the business of health.

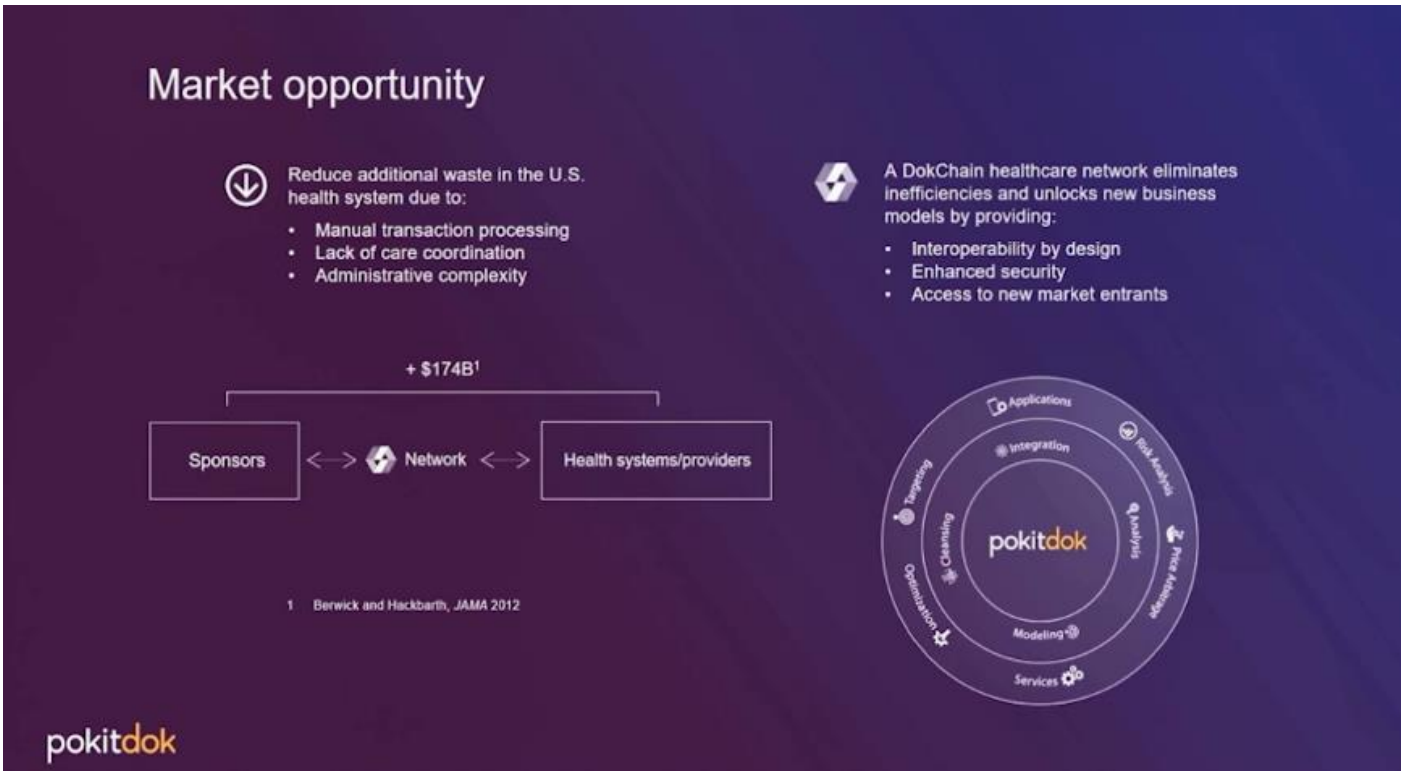


Pokitdok has over 1,000 applications running on top of the platform, with connections to about 1,300 insurance companies and have 95% live coverage in the U.S.

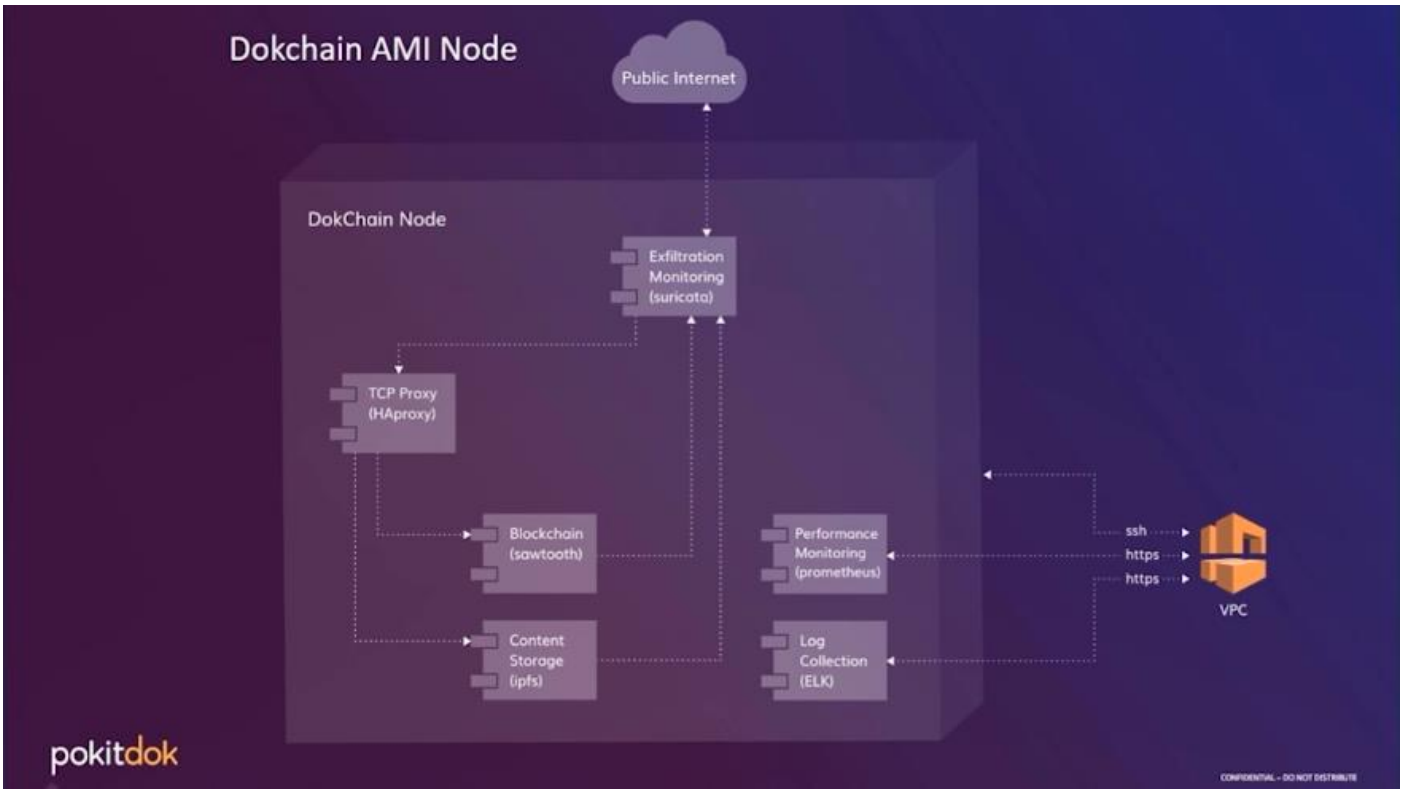


We have APIs on all the above and have also converted the APIs to smart contracts with an AMI on Sawtooth.

We have developed this as an Angular UI app that your company or hospital can skin, select them colors for and use easily, there are also widgets that you can use within your own apps that interact with the underlying APIs.



The smart contracts are now the assets since this is where the new functionalities go



DokChain AMI with Sawtooth

- Each node is provisioned in Amazon EC2 with the minimum specifications of 8 core, 32(GB) ram, and 3(TB) RAID5 managed disk
- The Node is delivered as an AMI which can be shared with DokChain Alliance members for provisioning within their own Amazon VPC.
- All software components are open source software components and are configured for operation in a HIPAA and PCI compliant manner. This includes the use of hard disk encryption.

pokitdok

DOKCHAIN
AUTOMATION

A global alliance unmatched in healthcare today

The DokChain Alliance was established in early 2016 with the intent of creating a fully interconnected health information economy, focused on the security, efficiency, veracity, and transparency of information transfer across the network. The Alliance has pulled together an unprecedented breadth of industry representatives, spanning not only the entire healthcare ecosystem, but also financial services, consumer electronics and software, hardware manufacturers, credit bureaus, third party data providers, and others.

Use Cases:

- Federated identity management
- Autonomous auto-adjudication
- Supply chain provenance
- Pre Authorization

Benefits: Secure, automated, auditable

pokitdok

DOKCHAIN
AUTOMATION

Contextually-Relevant Identity Management Protocol (CRIMP)

- The PokitDok Identity by Consensus implementation is a means to generate and manage a universal identity that maintains privacy and anonymity.
- Provides a very high level of identity validation confidence through integration of the world's most trusted identity providers.
- Applies a contextual spectrum to the person or archetypes of behaviors. Calculates the quality and rank of additional IDPs.

$$S_{\mathbf{qp}} = \frac{1}{N}\sum_{i=1}^{N} Pr(\mathbf{q} \mid p_i) \cdot \mathbf{w}^T$$

pokitdok

DOKCHAIN
AUTOMATION

The Complete Multi-Party Identity

Example Contextual Identities

A user identity is defined as the entirety of all information known about an person from many different sources. Subsets of identity information are combined together to match different contexts.

pokitdok

DOKCHAIN
AUTOMATION

Key Management – Dynamic Network Recovery

- The DokChain identity by consensus is created or recovered when an identity owner executes the DokChain SDK to interact with an identity provider.
- This interaction is audited and orchestrated through the DokChain. The result of this process is the generation of a public/private key pair.
- The private key is split - shards of the key are stored with (N) identity management entity types, the trusted identity key holders.
- The trusted key holders each only have access to a single shard of the key.
- The original can be recovered if the device(s) are destroyed via the network.

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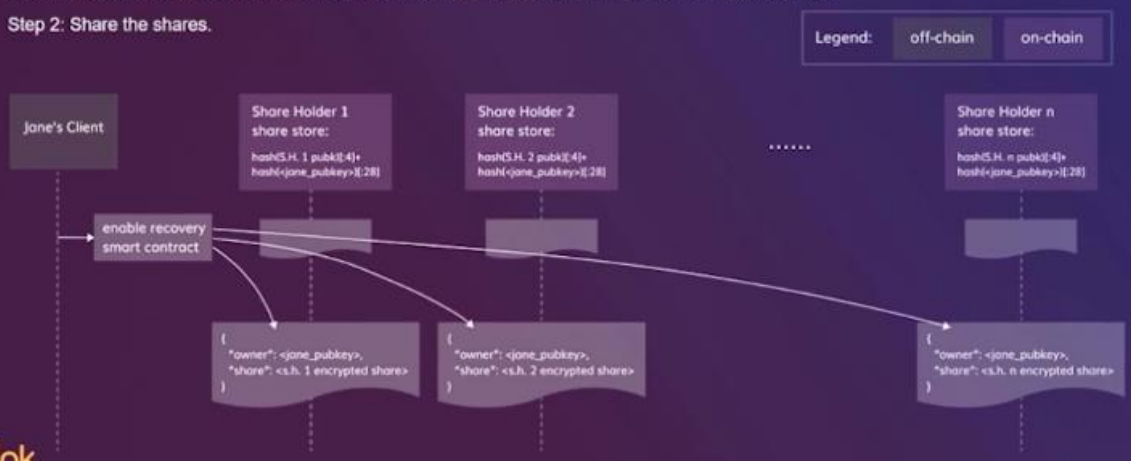
DOKCHAIN
AUTOMATION

Key Management – Dynamic Network Recovery

Jane enabling Private Key Recovery

Step 1: Create Shares.
Choose a number of share holders (N) and a threshold (K). Split the key using (N) and (K).
Obtain the public key of each share holder and encrypt each of the shares with one of these public keys.

Step 2: Share the shares.



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Pokitdok DokChain Deployments

AMI w/ Sawtooth

- Live now – one click deploy
- Rest Endpoint
- Uses IPFS for off chain storage
- All of our APIs are smart contracts
- Smart contract synchronizes IPFS and Sawtooth x-actions
- Available on IOS SWIFT native SDK

Contextual Relevant Identity with Key Management

- Available in Q1 – one click deploy
- Utilizes Consensus to calculate the Identity
- Applies a contextual spectrum to the person or archetypes of behaviors
- Calculates the quality and rank of additional IDPs
- W3C Verifiable Claim Compliant
- Shards Key from Secure Enclave and distributes to IDPs
- Able to recover original key sans device via network

CryptoAsset Framework

- Available in Q1 – one click deploy
- Allows HyperLedger Sawtooth to deploy cryptoassets
- ERC 20 compatible
- Pluggable Minting models
- Governance Transaction Family
- Can be used in conjunction with CRI

pokitdok

Value Added Services

Vendors recognizing the power of distributed technologies to optimize and unlock value

Use case:

Eligibility, Claims/ Autonomous Auto Adjudication via DokChain

Business model:

NRE + PaaS license fee + % of Marketplace Transactions (improved margins)

pokitdok

GPS: Blockchain and the Road to Innovation - GPSTEC303

AWS re:Invent

Thank you

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