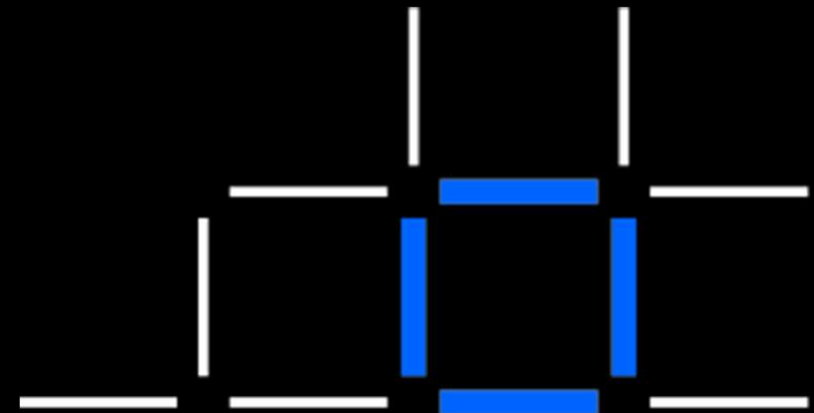









IBM Blockchain Platform Explained

An Introduction to IBM Blockchain Platform

Bob Blessing-Hartley
CTO, IBM Blockchain Platform



	Blockchain Explained
	IBM Blockchain Platform
	Blockchain Solutions
	Blockchain Composed
	Blockchain Architected
	Blockchain Explored
	Next Steps

V1.08, 3 April 2018

IBM Blockchain



Blockchain is creating extraordinary opportunities for businesses to come together in new ways.

IBM Blockchain

Create new value.

Exploit new business models and eliminate inefficiencies.

Optimize ecosystems.

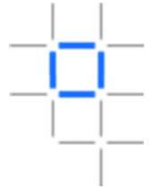
Streamline business processes and the exchange of value along your ecosystem.

Reduce risk.

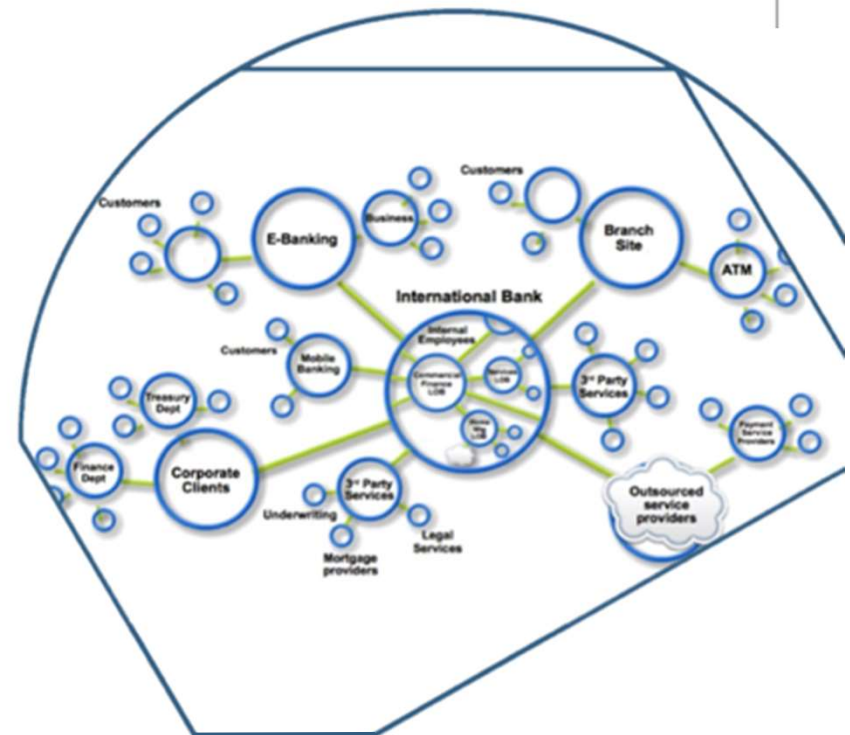
Replace uncertainty with transparency and a trusted, decentralized ledger.



Blockchain Basics



- **Blockchain** is a shared, replicated ledger
 - Permissioned blockchains bring trust to business networks through consensus, provenance, immutability and finality
- **Linux Foundation Hyperledger** is a collaborative effort created to advance cross-industry blockchain technologies for business
 - Hyperledger **Fabric** is a blockchain providing implementation of a ledger, smart contracts, privacy and consensus
 - Hyperledger **Composer** is a suite of tools that make it easy to develop blockchain applications



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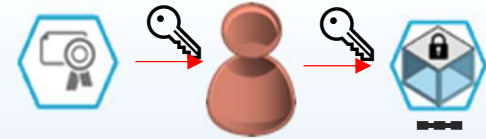
Blockchain Technical Concepts



Peers are the networked services that maintain ledger state and run smart contracts



Channels are defined subsets of the peer network that share a single ledger



Certificate authorities provide identity services to participants on the network



Smart contracts constitute the transaction logic whose output is agreed by the peer network



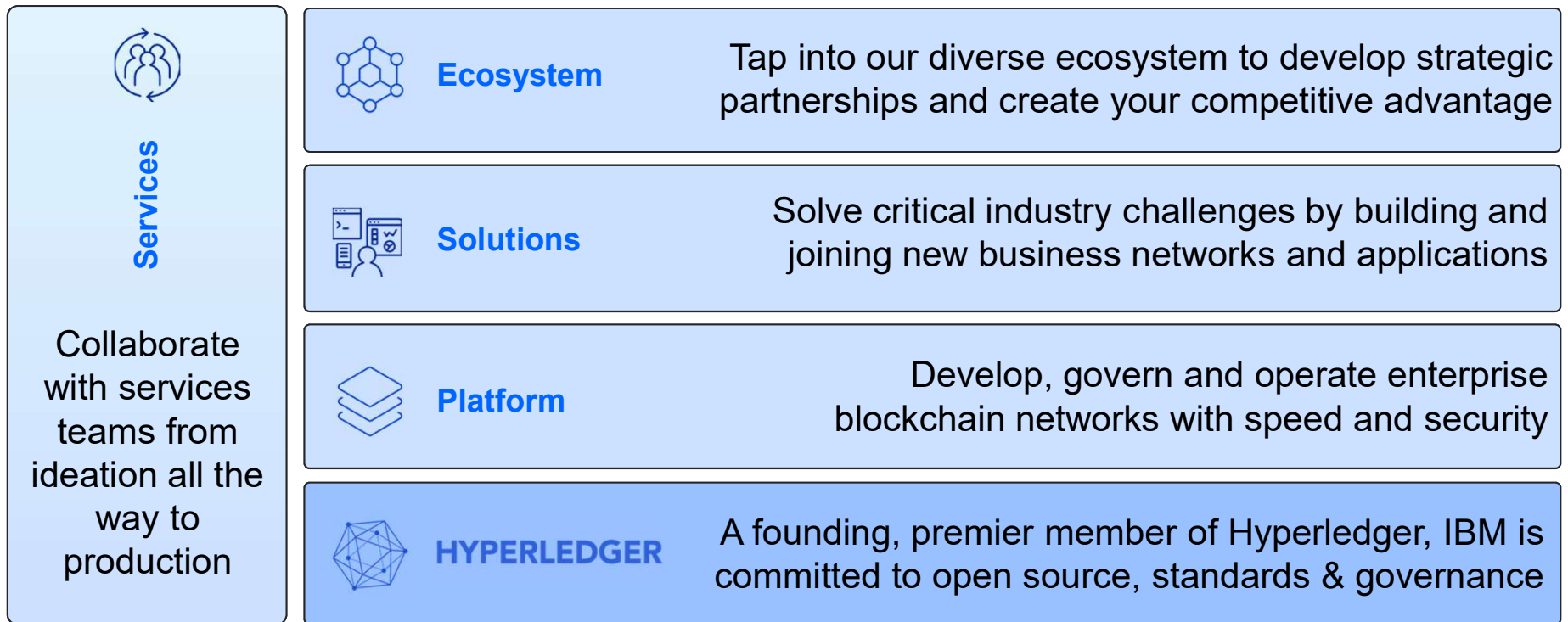
Consensus is the process by which agreement is obtained on the peer network



The **Ordering Service** agrees transaction sequence and distributes blocks to peers

IBM Blockchain Strategy

Drive the development of **applications** for specific business use-cases, to be deployed to active **blockchain networks**

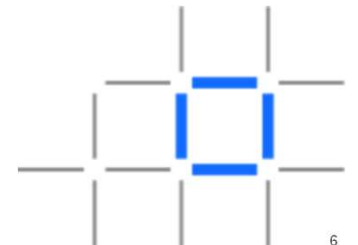
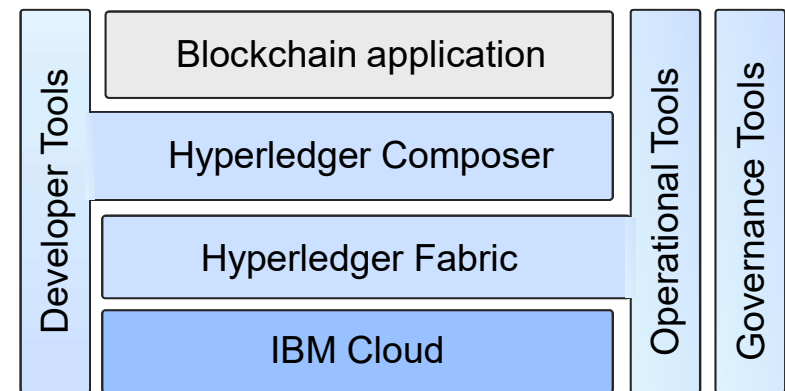


Introducing the IBM Blockchain Platform

http://ibm.biz/Platform_Demo

IBM Blockchain Platform is a fully integrated enterprise-ready blockchain platform designed to accelerate the development, governance, and operation of a multi-institution business network

- **Developer tools** that make use of Hyperledger Composer to quickly build your blockchain application
- Hyperledger Fabric provides the ledger, which is managed through a set of intuitive **operational tools**
- **Governance tools** for democratic management of the business network
- Flexible deployment options, including a highly secure and performant **IBM Cloud** environment



Why IBM Blockchain Platform?



Reduces risk

- Flexible pricing and support options for all sizes of deployments
- Democratic governance policies to help prevent unauthorized network changes



Saves time

- Implement blockchain projects more quickly
- Extensive toolset for development, governance and operation of blockchain networks



Enterprise ready

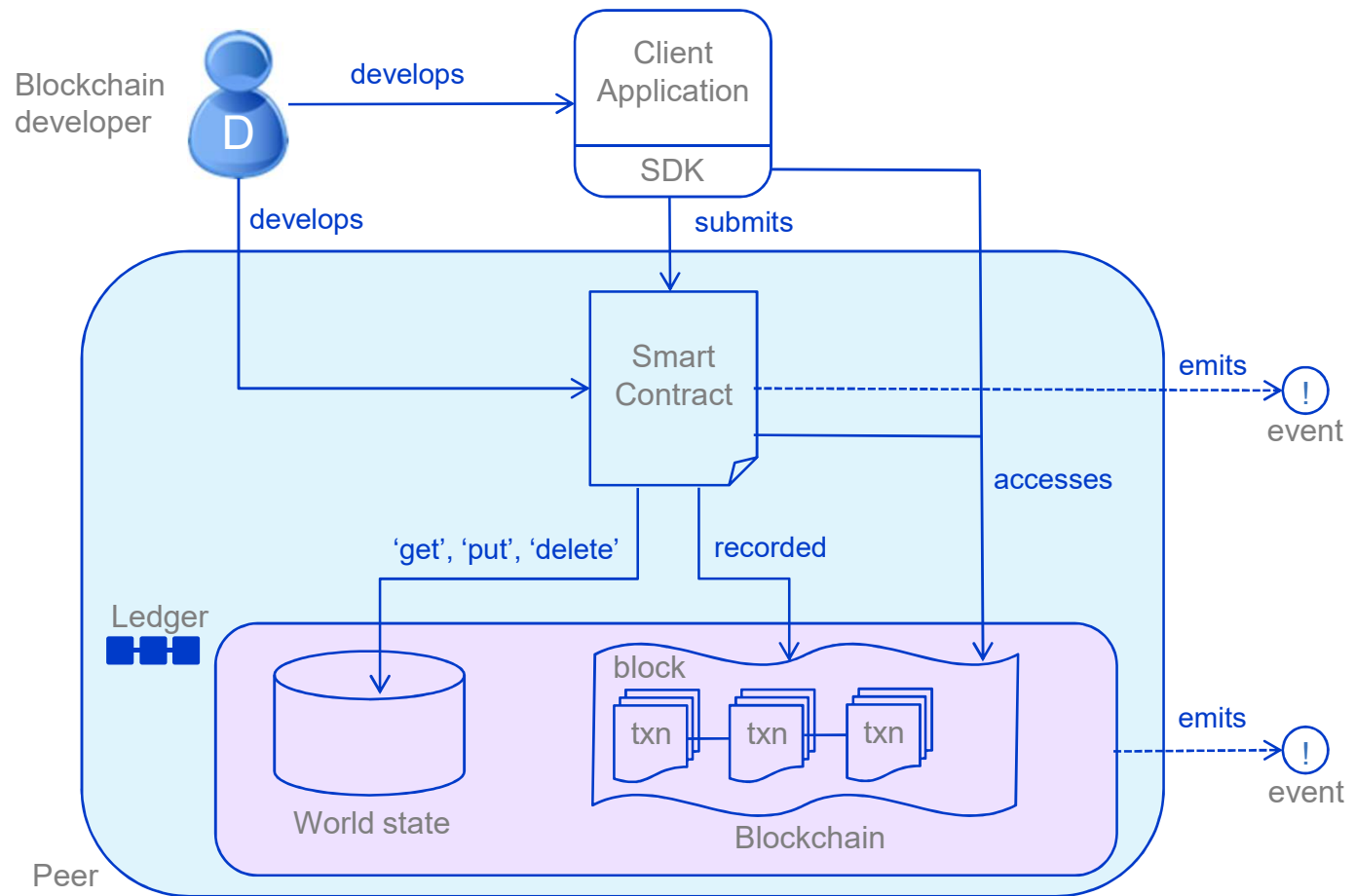
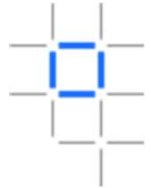
- Architected for High Availability and Disaster Recovery
- Highly secured and suitable for transactional workloads



Open

- Based on popular and open Linux Foundation Hyperledger technologies
- Avoid vendor lock-in! Embraces open source, open standards and open governance

Developing Blockchain Applications



IBM Blockchain

Peer

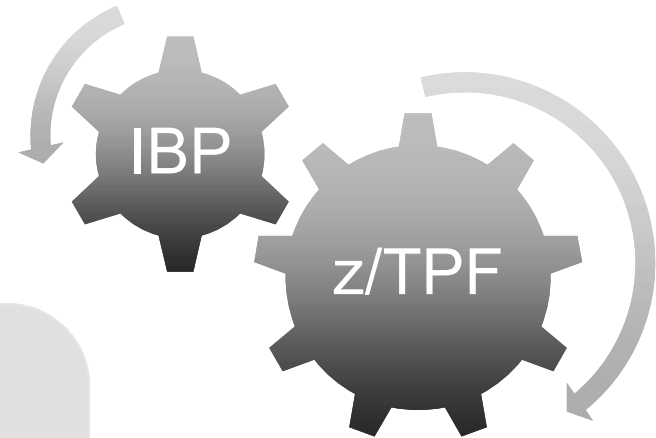
IBM

Shifting Gears: Sync between z/TPF and IBP

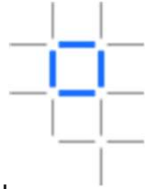
IBM can help you to identify good blockchain use-cases for Blockchain for your enterprise.

There should always be:

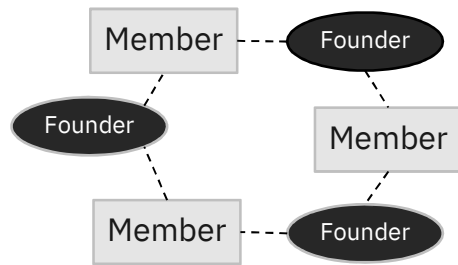
1. A **business problem** to be solved
 - That cannot be more efficiently solved with other technologies
2. An identifiable **business network**
 - With Participants, Assets and Transactions
3. A need for **trust**
 - Consensus, Immutability, Finality or Provenance



Building Communities in Blockchain Networks



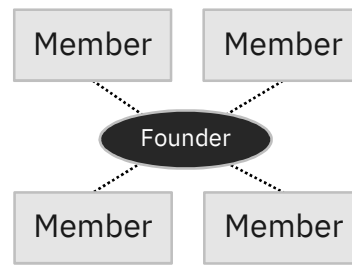
Consortium Based Network



Founders are equal among other participants, may include a joint legal entity among the founders (e.g. – Joint Venture)



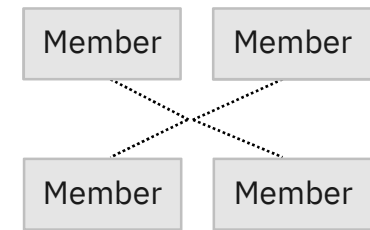
Founder Directed Network



Individual founder in a position to provide strong direction



Community Based Network



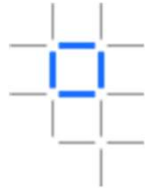
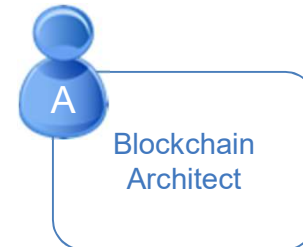
Driven by industry standards bodies or existing non-blockchain network owners



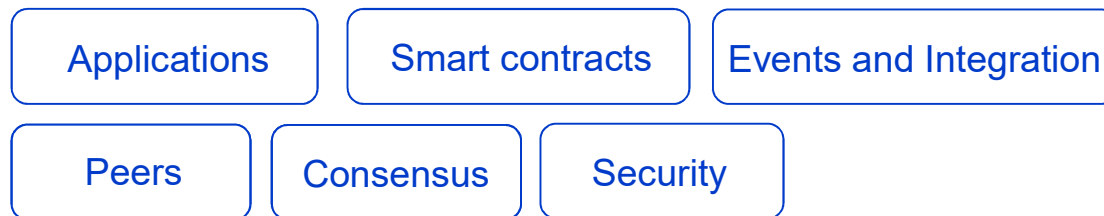
IBM Blockchain



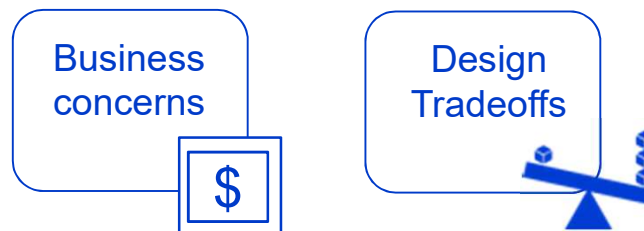
You, as a blockchain architect



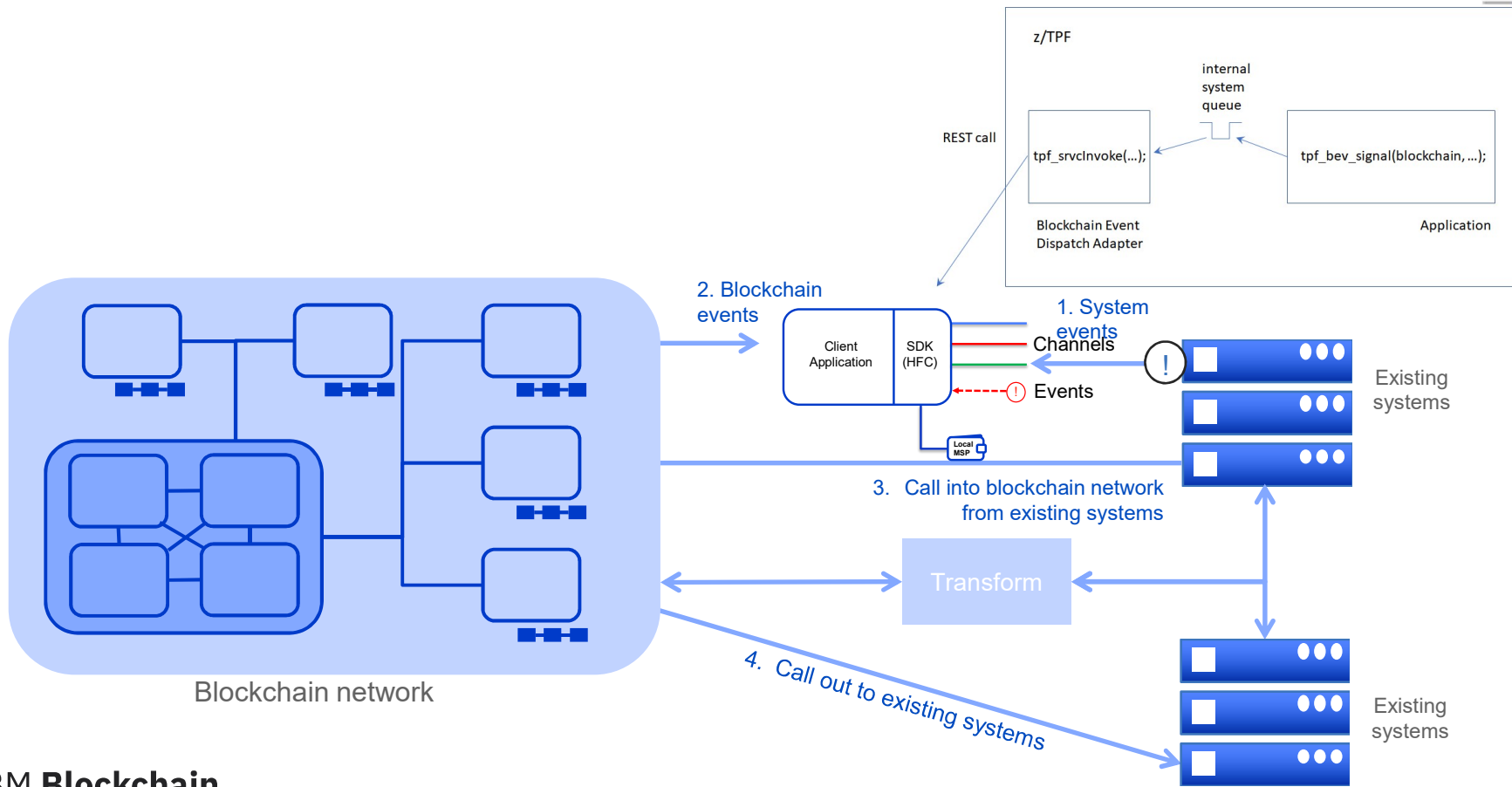
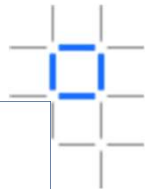
For a successful solution, blockchain architects need a good understanding of many development and operational concerns:



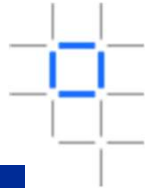
However there are additional considerations for architects to bear in mind from the outset. For example:



Integrating with existing systems – possibilities



Blockchain Applied



Trade Finance	Pre and Post Trade	Complex Risk Coverage	Identity / KYC
Digital Trade Chain			
Unlisted Securities / Private Equity Fund	Incentive Program	Medicated Health Data Exchange	Government
			
Distributed Energy / Carbon Credit	Supply Chain	Food Safety	Provenance / Traceability
			

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Example: Supply chain



- What
- Provenance of each component part in complex system hard to track
 - Manufacturer, production date, batch and even the manufacturing machine program

- How
- Blockchain holds complete provenance details of each component part
 - Accessible by each manufacturer in the production process, the aircraft owners, maintainers and government regulators

Benefits

1. Trust increased, no authority "owns" provenance
2. Improvement in system utilization
3. Recalls "specific" rather than cross fleet

Example: Audit and compliance



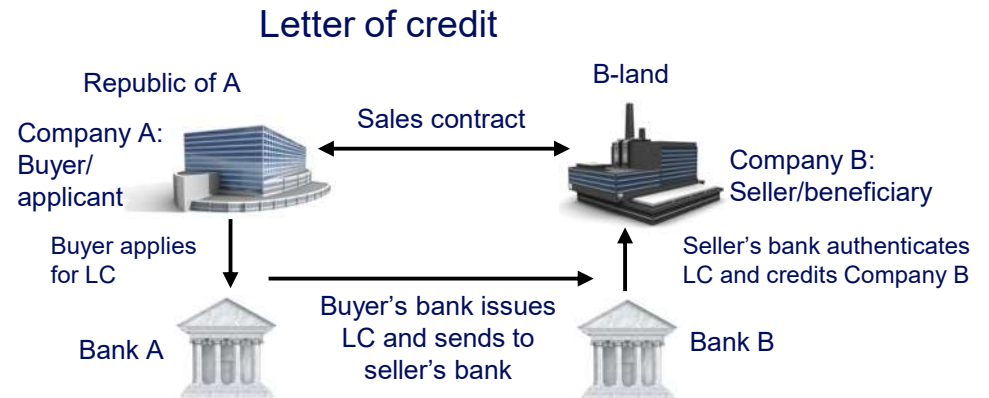
- What**
- Financial data in a large organization dispersed throughout many divisions and geographies
 - Audit and Compliance needs indelible record of all key transactions over reporting period

- How**
- Blockchain collects transaction records from diverse set of financial systems
 - Append-only and tamperproof qualities create high confidence financial audit trail
 - Privacy features to ensure authorized user access

Benefits

1. Lowers cost of audit and regulatory compliance
2. Provides “seek and find” access to auditors and regulators
3. Changes nature of compliance from passive to active

Example: Letter of credit



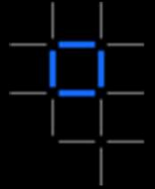
- What**
- Bank handling letters of credit (LOC) wants to offer them to a wider range of clients including startups
 - Currently constrained by costs & the time to execute

- How**
- Blockchain provides common ledger for letters of credit
 - Allows all counter-parties to have the same validated record of transaction and fulfillment

Benefits

1. Increase speed of execution (less than 1 day)
2. Vastly reduced cost
3. Reduced risk, e.g. currency fluctuations
4. Value added services, e.g. incremental payment

Blockchain is much more than technology



Dream big
and act
intentionally

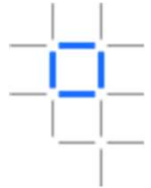


Motivation
drives
momentum



The whole is
greater than
the sum of
the parts

Learn More About Blockchain



- Engage with an **IBM Cloud Garage with Blockchain** to in a discovery or design thinking workshop or to develop an MVP
www.ibm.com/blockchain/garage
- Read The Founder's Handbook to understand best practices in Blockchain adoption and network creation
<https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=28014128USEN>
- Explore common use cases
<https://www.ibm.com/blockchain/use-cases/>
- Sign up for a no cost “starter” network during our beta period
<https://www.ibm.com/blockchain/getting-started.html>
- Activate and grow your production network
<https://www.ibm.com/blockchain/platform/>
- Learn more about other IBM Hyper Protect Services
<https://www.ibm.com/cloud/hyper-protect-services>




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Thank you

*Bob Blessing-Hartley
CTO, IBM Blockchain Platform*

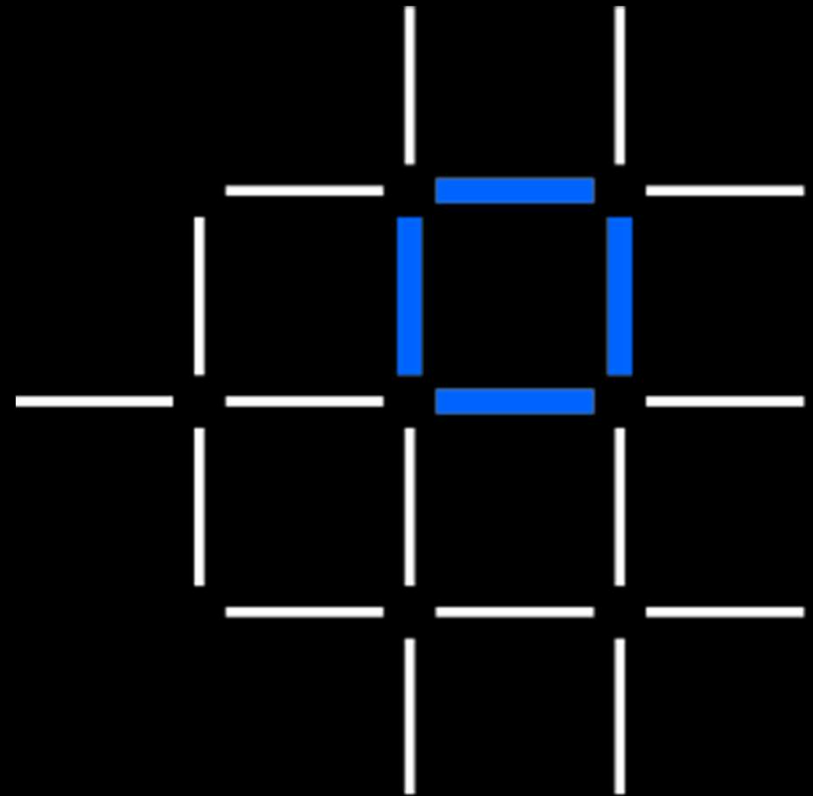
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go to ibm.com/blockchain*

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