

Making Blockchain Real for Canadian Corporate Registries

A DIACC Proof of Concept

Presented for the PSCIOC

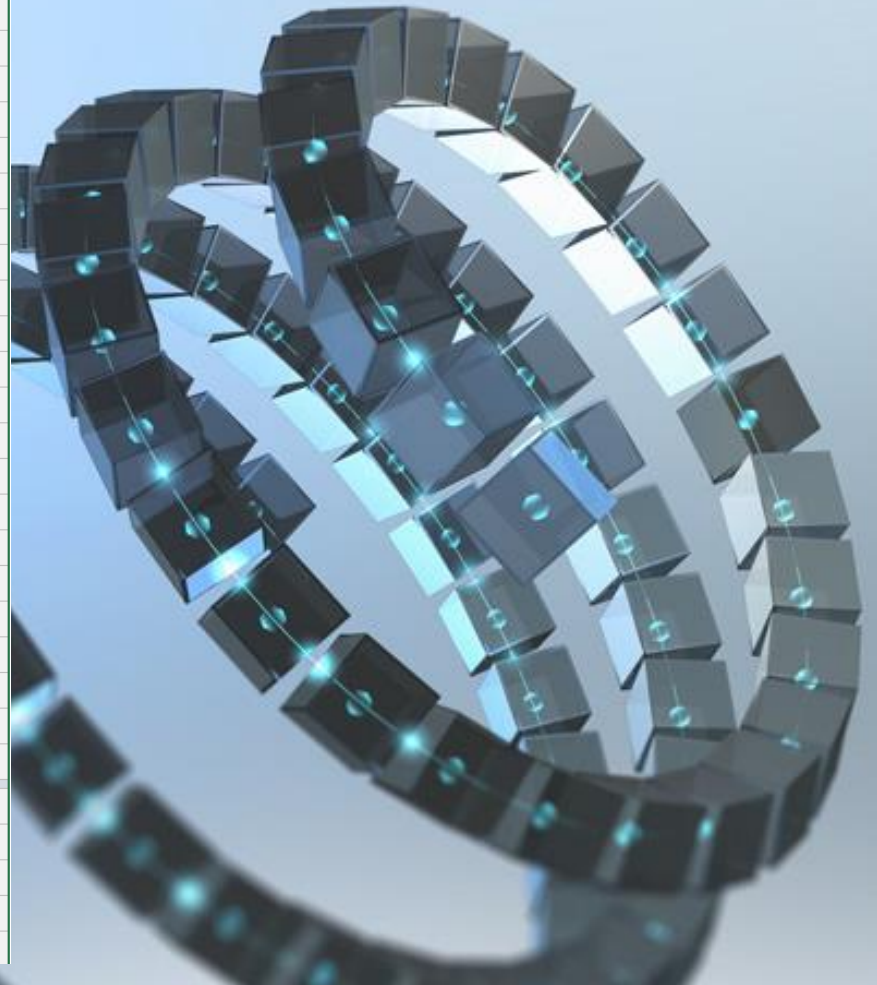
Ian Bailey, Province of BC
Joni Brennan, DIACC
February 2017

Guiding Principles

- **Neutral** – Proof of Concepts (POC) are operated under the neutral governance of the DIACC. POCs provide an opportunity to learn fast by testing viabilities. These slides provide a summary of a workshop and demo developed via an initial sprint. This presentation does not represent an official position of the DIACC.
- **Open** – The POC leverages the hyperledger open standard that is maintained by the Linux Foundation. Further developments of the POC will maintain an open standards based approach.
- **Collaborative** – The POC was proposed by DIACC member IBM in collaboration the Province of British Columbia as an initial key stakeholder. The POC has been developed using a collaborative approach. To begin the POC, IBM facilitated a 2 day design workshop in Victoria, BC to inform interested parties of the core concepts and open source components of blockchain technology.

Attendees List (Design Thinking Workshop Nov 15/16th)

Name	Title	Organization	Role
Ian Bailey	Assistant Deputy Minister, CIO	Ministry of Citizen Services	General Participant
Bev Dicks	Assistant Deputy Minister, Service BC	Ministry of Citizen Services	Sponsored User
Carol Prest	Registrar & Executive Director - Registries & Online Services	Ministry of Citizen Services	Sponsored User
John Jorden	Executive Director,	Ministry of Citizen Services	General Participant
Dmitry Barinov	Chief Technology Officer	Secure Key	General Participant
Joni Brennan	President	DIACC	Sponsored User
Peter Watkins	Executive Director,	Ministry of Citizen Services	General Participant
Cyrus Singh	Sr Policy Analyst	Ministry of Small Business and Regulatory Reform	General Participant
Karim Gillani	Digital Services Architect	Ministry of Citizen Services	Sponsored User
Kaine Sparks	Manager of Registries Operations	Ministry of Citizen Services	Sponsored User
Tammy Wiedeman	Team Lead, Corporations and Societies Unit	Ministry of Citizen Services	Sponsored User
Nikki Sieben	Associate Partner, GBS	IBM Canada	General Participant
Alan Thurlow	Leader, Government Blockchain and Mobility	IBM, UK	Blockchain SME
Richard Nash	Solution Architect	IBM, UK	Blockchain Tech Lead
John Oullette	Project Manager	IBM Canada	General Participant
Amy Bechard	User Experience Senior Consultant	IBM Canada	Facilitator
Ruslan Ardashev	Blockchain Lab	IBM US	Developer
Christine Baghdassarian	Application Development	IBM Canada	Developer
Peter Guest	Solution Architect	IBM Canada	General Participant
Shota Saito	Consulting, Global Business Service,	IBM, Japan	Observer
Takuro Asanuma	Consulting, Global Business Service,	IBM, Japan	Observer
VIA TELECONFERENCE/WEBINAR			
Robert Devries	CIO, Government and Consuer Services	Government of Ontario	Sponsored User
Natalie McGee	Sr Assistant Deputy Minister	Government of Canada	Sponsored User
Haley Clarke	Director of Business Programs	Service Nova Scotia	Sponsored User
Ken Barker	Program Manager, ONBIS Replacement	Service Ontario	Sponsored User





The Workshop

Day 1

Day 2

Workshop
Introduction

Introduce
Problem
Statements

Persona's

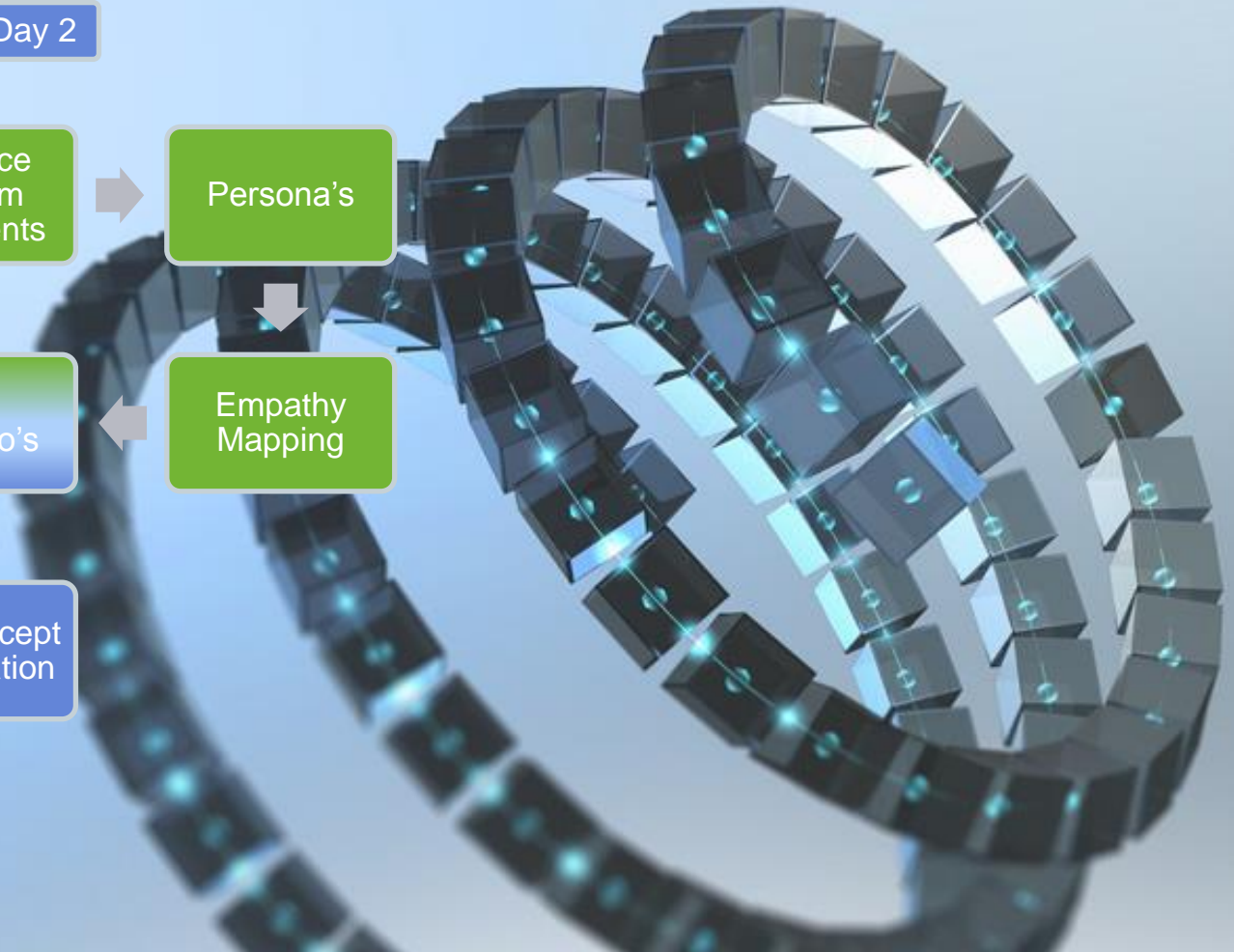
Prioritization
of issues

As-is
Scenario's

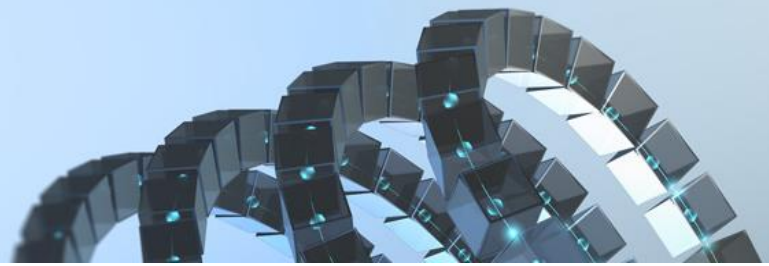
Empathy
Mapping

Ideation

PoC Concept
Identification



Business Problem Statement

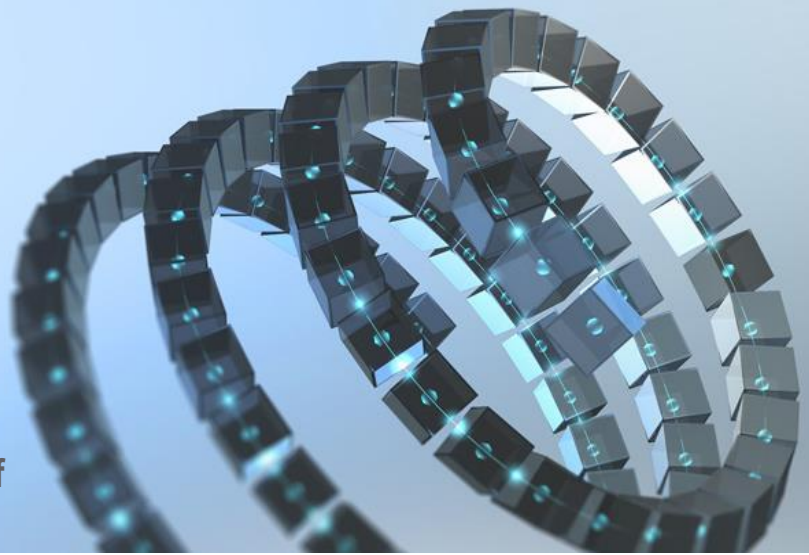


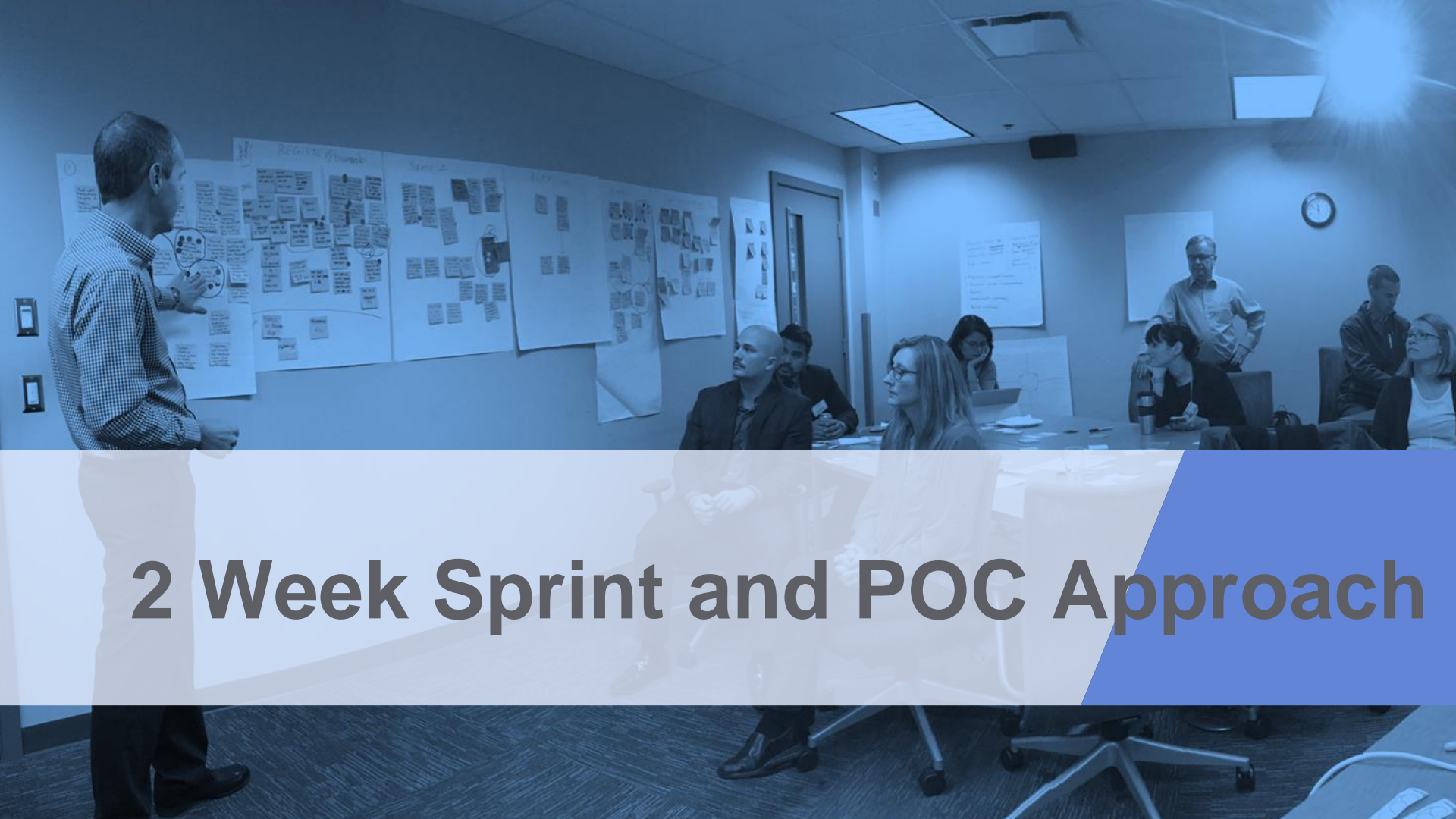
*Developed in collaboration
and with the consideration
of Blockchain related
capabilities...*

The **time and effort** to create and maintain corporate registry information that is **shared between jurisdictions** (Province to Province, Province to Federal Government, Provincial Government to Municipal Government) **is high**. For example, adding Manitoba to the New West Partnership will create a significant amount of work and new processes and checkpoints. **Is there a way to decrease the effort and improve the experience of both the Registrars and the businesses?**

Key Workshop Conclusions:

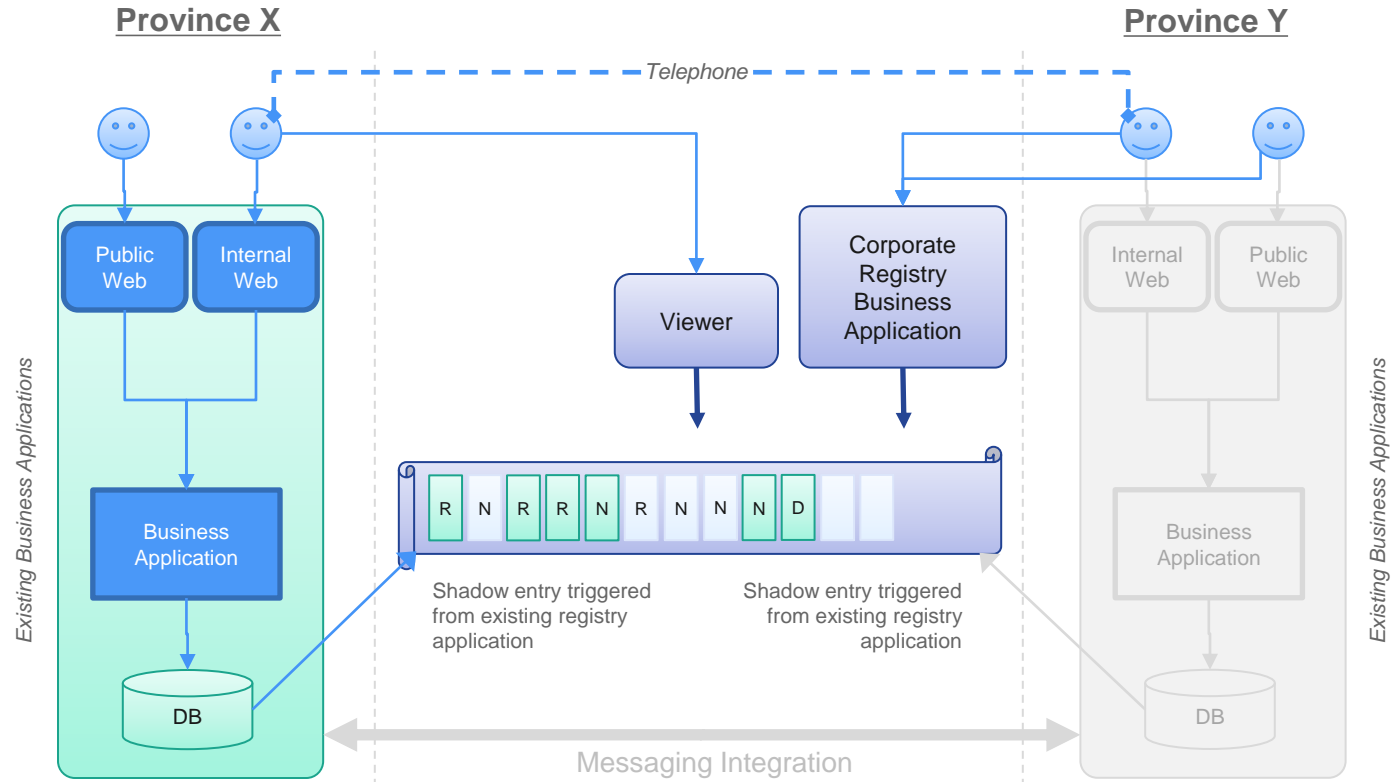
- A number of significant business challenges were uncovered that can be independently actioned by the business – workshop was high value in this regard.
- Blockchain capabilities could assist the business with key business issues surrounding the **misalignment of corporate registry data cross provinces** leading to process / data issues and unhappy corporations
- A POC solution would be able to demonstrate how Blockchain could act as a cross province audit log. This could immediately help the business owners improve services by making cross provincial data more easily available to internal staff
- Over time this could be developed further to potentially replace the key components of the multiple systems used across the jurisdictions to manage corporate registries.





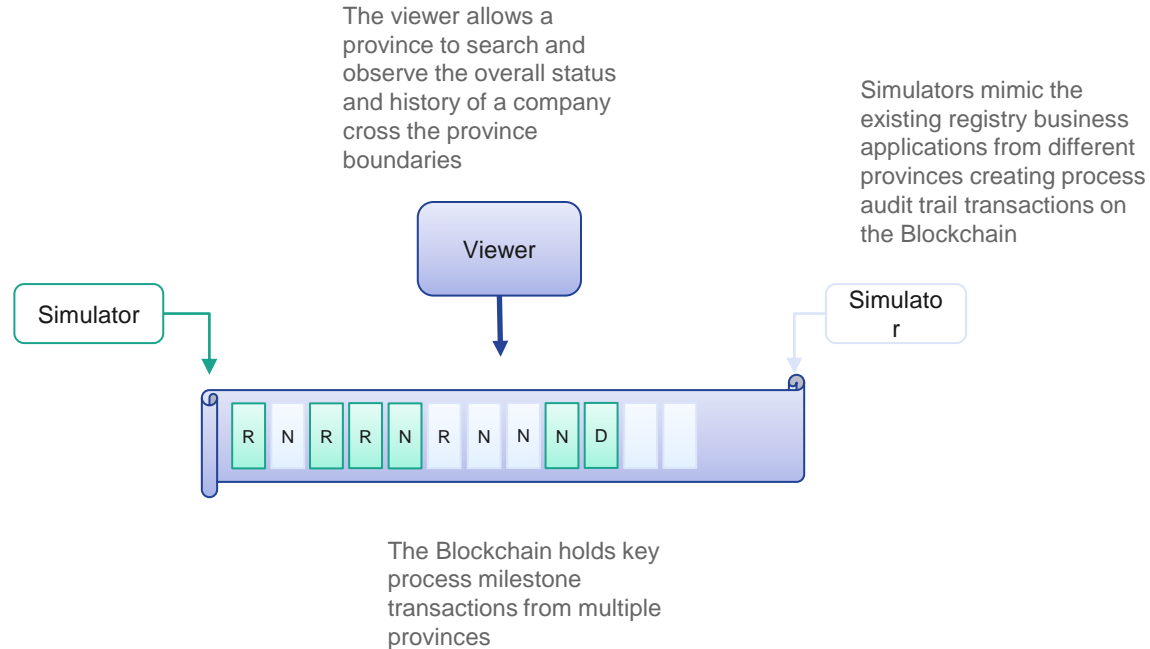
2 Week Sprint and POC Approach

Future State: Blockchain “Phased Registry Implementation”



Provinces are able to move at different speeds choosing when to transform to a fully Blockchain enabled corporate registry decommissioning their old applications

Agile Sprint #One: December 5-16, 2016

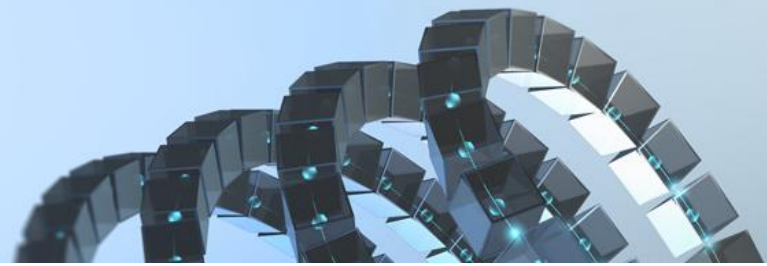


Note: Agile sprint 1 focused on demonstrating the core concepts required to create a process milestone audit trail. This step is standalone from all existing systems and processes and is for demonstration purposes only.



Demonstration

Open Standards Based Blockchain (Hyperledger)



- Today's demonstration is running locally the presenter's machine. The service could ultimately run on servers of the participating organization's choice including an organization's own server or IBM's Bluemix open platform for access to micro services.
- The value of Blockchain for corporate registries is the transactional providence (longitudinal record) of a corporation, and the immutable aspects of the record due to consensus across nodes/peers (cannot be tampered with).
- The Blockchain being proposed in the POC is a "permissioned" Blockchain opposed to an anonymous Blockchain like that of Bitcoin or others.
- IBM is a founding member of the Linux Foundation hyperledger project to advance Blockchain.

POC Web App Entry Point



Corporate Registries

Blockchain Proof of Concept

The Corporate Registry Blockchain Proof of Concept is a 'shadow ledger' that captures an audit trail of Corporate Registry transactions within and across jurisdictions. The POC records Corporate Registry transactions such as registration, a name change or a dissolution into a Blockchain. The intention of the POC is to demonstrate how Blockchain technology can benefit Corporate Registries across jurisdictions by providing valuable insight into Corporate Registry transaction history.

[REGISTRY SIMULATOR](#)[REGISTRY VIEWER](#)

Developed by IBM using
Hyperledger Fabric



POC Corporate Registries Simulator

Register

Register a corporation in a jurisdiction. This form will create a registry entry on the blockchain for a corporation.

Corporate Information

Jurisdiction: <input type="text" value="British Columbia"/>	Filing Date: <input type="text" value="05-01-2017"/>
Corporate Name: <input type="text" value="ABC Inc"/>	Corporation Number: <input type="text" value="11111"/>
Director First Name: <input type="text" value="Bob"/>	Director Last Name: <input type="text" value="Test"/>
E-Mail Address: <input type="text" value="bob@abcinc.com"/>	

Registered Office Address

Street Address: <input type="text" value="123 ABC Street"/>		
City: <input type="text" value="Victoria"/>	Province: <input type="text" value="British Columbia"/>	Postal Code: <input type="text" value="V8V 8V8"/>

REGISTER

Data can be input in to the POC via a batch process. This ensures that historical data is captured. For the purpose of the demo, the presenter will input a record by hand.

Amalgamate

Amalgamate two corporations into a new corporation. This form will create an amalgamation entry on the blockchain by dissolving the two corporations and registering a new corporation.

Corporation 1

Jurisdiction: <input type="text" value="British Columbia"/>
Name: <input type="text" value="DEF Inc"/>

Corporation 2

Jurisdiction: <input type="text" value="British Columbia"/>
Name: <input type="text" value="XYZ Inc"/>

New Corporation Information

Jurisdiction: <input type="text" value="British Columbia"/>	Filing Date: <input type="text" value="05-01-2017"/>
Corporate Name: <input type="text" value="DEFXYZ Inc"/>	Corporation Number: <input type="text" value="333333"/>
Director First Name: <input type="text" value="Barb"/>	Director Last Name: <input type="text" value="Smith"/>
E-Mail Address: <input type="text" value="barb@defxyzinc.com"/>	

Registered Office Address

Street Address: <input type="text" value="567 Defxyz St"/>		
City: <input type="text" value="Spuzzum"/>	Province: <input type="text" value="British Columbia"/>	Postal Code: <input type="text" value="VoV oVo"/>

AMALGAMATE

POC Corporate Registries Simulator

Report

Perform an annual report for a corporation. This form will confirm the corporations registered office address and add to the blockchain.

Corporate Information

Jurisdiction:

British Columbia

Reporting Date:

05-01-2017

Corporate Name:

XYZ Inc

Registered Office Address

Street Address:

785 New Street

City:

Vancouver

Province:

British Columbia

Postal Code:

V4V 4V4

REPORT

Dissolve

Dissolve a corporation. This form will add a dissolve record to the Blockchain for the selected company.

Jurisdiction:

British Columbia

Corporate Name:

DEFXYZ Inc

DISSOLVE

Name Change

Change the name of a corporation. This form will add an amendment to the blockchain for the corporate name.

Jurisdiction:

British Columbia

Corporate Name:

ABC Inc

New Corporate Name:

XYZ Inc

CHANGE NAME

Admin

Perform administrative functions on this page.

LOAD DEMO DATA

POC Corporate Registries Viewer

Transactions

The corporate registries viewer allows you to view the transactions that have occurred for corporations across jurisdictions. In addition you may filter by jurisdiction or by corporate name.

Filter by Corporate Name:

Filter by Jurisdiction:

☒ Select All

☒ Alberta

☒ British Columbia

☒ Manitoba

☒ New Brunswick

☒ Newfoundland and Labrador

☒ Northwest Territories

☒ Nova Scotia

☒ Nunavut

☒ Ontario

☒ Prince Edward Island

☒ Quebec

☒ Saskatchewan

☒ Yukon

☒ Federal Government

Corporate Name	Jurisdiction	Type	Additional Information	Block	Timestamp
DEFXYZ Inc	BC	Dissolve	Dissolved	6	04 Jan 2017 13:28:57
DEFXYZ Inc	BC	Amalgamation	Corporations Amalgamated: 1: DEF Inc BC 2: XYZ Inc BC	6	04 Jan 2017 13:23:11
XYZ Inc	BC	Report	#765 New Street Vancouver BC V4V 4V4 05-01-2017	5	04 Jan 2017 13:21:08
XYZ Inc	BC	Name Change	Old Name: ABC Inc	4	04 Jan 2017 13:18:39
DEF Inc	BC	Register	222222 Bill Smith 456 DEF Street Victoria BC V9V 9V9 bill@definc.com 05-01-2017 Active	3	04 Jan 2017 13:17:15
ABC Inc	BC	Register	11111 Bob Test 123 ABC Street Victoria BC V8V 8V8 bob@abcinc.com 05-01-2017 Active	2	04 Jan 2017 13:15:59

Corporations

List of corporations and the status retrieved from the blockchain.

Filter by Corporate Name:

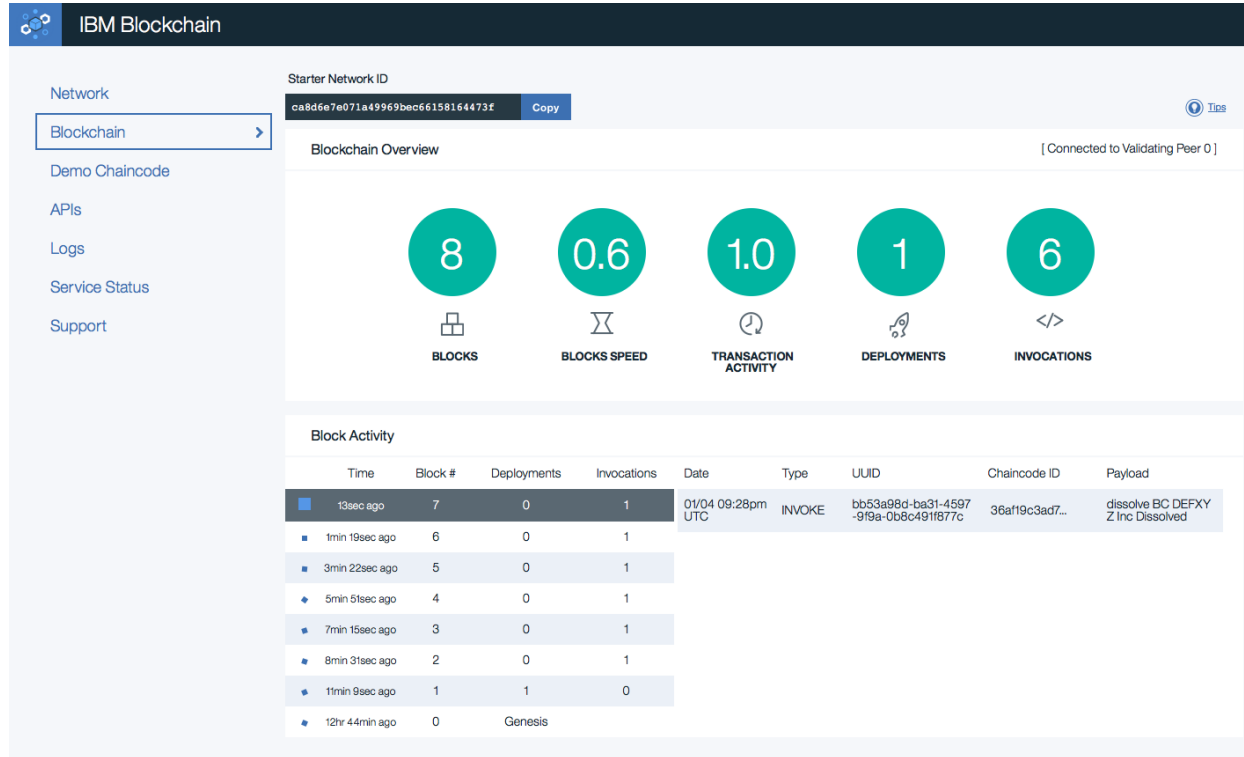
Corporate Name	Number	Register Date	Jur.	Director	E-Mail	Registered Office Address	Status
DEFXYZ Inc	333333	05-01-2017	BC	Barb Smith	barb@defxyzinc.com	567 Defxyz St Spuzzum BC V0V 0V0	Active
DEF Inc	222222	05-01-2017	BC	Bill Smith	bill@definc.com	456 DEF Street Victoria BC V9V 9V9	Dissolved
XYZ Inc	11111	05-01-2017	BC	Bob Test	bob@abcinc.com	765 New Street Vancouver BC V4V 4V4	Dissolved

Data can be loaded in to the POC via a batch process. **More data is needed to demonstrate the value and potential of the POC.**

The viewer is the most exciting component of the POC. The viewer enables different provinces, or communities, to see a file's status in real time.

This powerful feature provides value to registry operators and could be repackaged to provide value to business owners, and to the public.

Blockchain on Bluemix



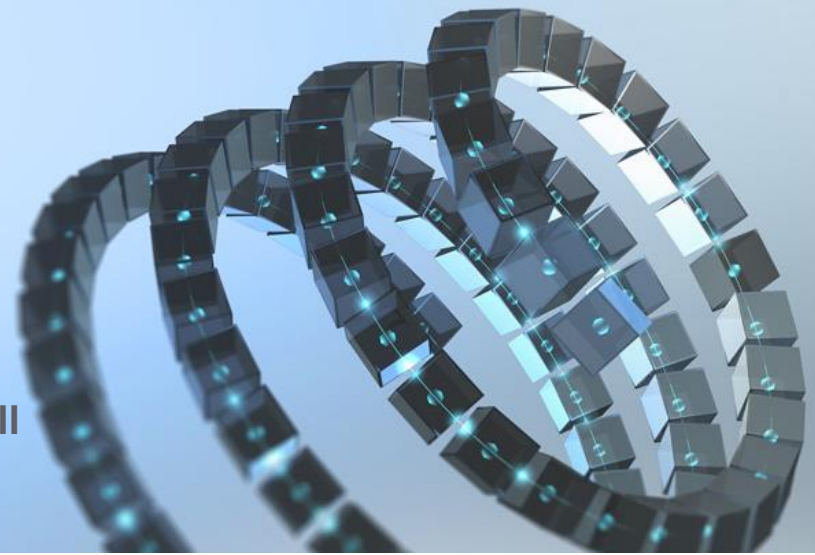
Bluemix server is used as an example here, however the services can run on the server of choice.

An abstract 3D graphic featuring a sphere composed of interlocking cubes. The cubes are arranged in a complex, overlapping pattern, creating a sense of depth and movement. The cubes are primarily dark grey or black, with some lighter grey or white cubes interspersed. Small, glowing blue dots are visible on the surfaces of the cubes, particularly along the edges and corners, suggesting a digital or technological theme. The background is a light blue gradient. A semi-transparent white horizontal band is positioned across the middle of the image, and a solid blue triangular shape is located in the bottom right corner.

Next Steps

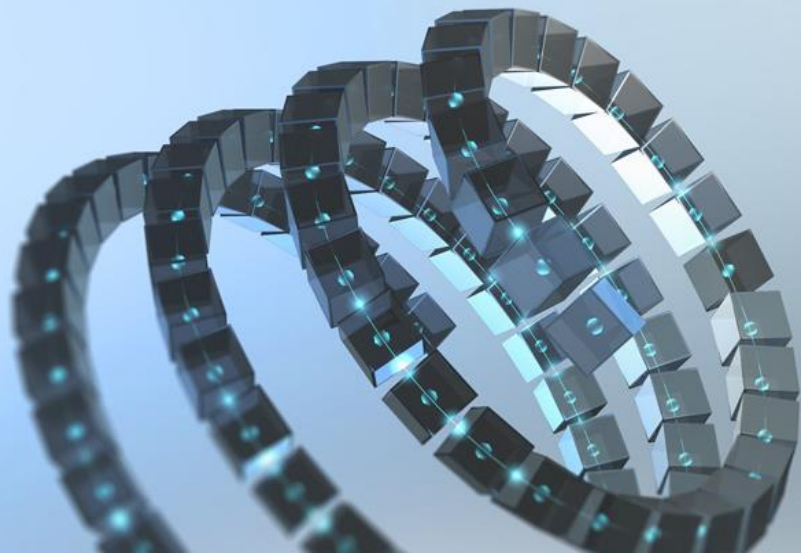
Level Set:

- There is significant potential for Blockchain to assist in areas of challenge for Corporate Registries particularly cross jurisdictionally.
- Blockchain is **not proposed as a replacement of all systems** but has the **potential to replace some elements** of the current registry systems - primarily where specific actions need recording, and providence of those actions is key.
- Development of Blockchain is iterative and agile and will take collaboration across parties interested in participating.



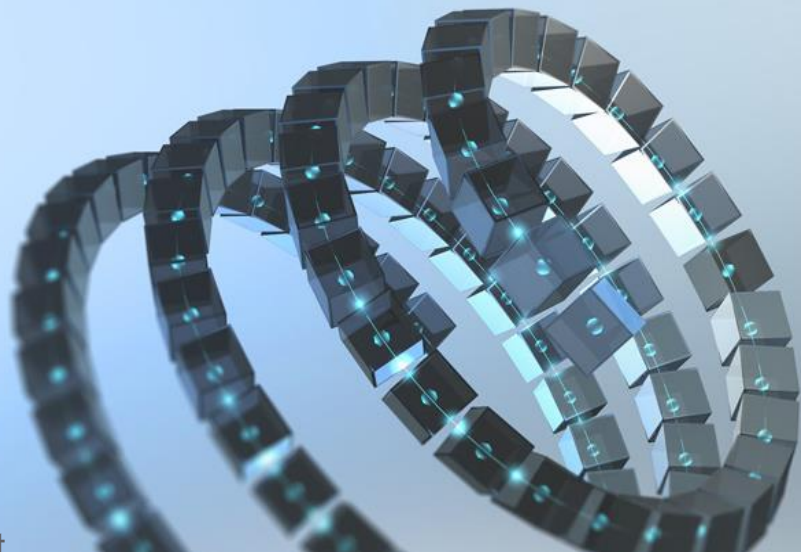
Future Vision:

- DIACC working with member stakeholders to share the progress, **engage more participants** for inclusion of their **business requirements**
- Load more batch data to demonstrate the **potential value** of the POC at larger scale
- Create a shadow registry to run along side current registry systems as a proof point
- Iterate and extend for potential use in production environment



DIACC Thanks!

- To Province of BC for their insights as key stakeholders. Special thanks to **Beverly Dicks** and **Ian Bailey** for their breadth of participation through the collaborative input of the Province of BC teams.
- To the **IBM team** for producing an informative workshop and for the development of the POC sprint 1 deliverables.
- To all of the **participants in the workshop**. By working together we will accelerate the establishment of a made-for-Canada digital ID ecosystem that Canadians can use with confidence!



Questions?

To ask questions or to get in touch
with the POC participants please
message info@diacc.ca