Enabling Open Standards at Scale

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By strengthening our trust, we change the world

What can we do together?
We’re entering a new age of education

Education must

address the

technological

disruption upon us.

Trust disruption

Trusted communications and information are more important than ever—but serious challenges remain.

Data disruption

Data is the world’s next natural resource—we need to put it to good use.

Business disruption

Future collaboration with new kinds of partners will be required—future growth depends upon it.
Credentials unlock the value of our experiences

• Credentials are evidence of mastery of skill.
• Credentials are issued by 1000s of organizations.
• Mastery can be demonstrated multiple ways.
• The emerging concepts of credentials can unlock their value.
To unlock the value of credentials we need to address their current weaknesses

**Reducing costs**
Verifying, assessing and qualifying credentials is costly and inefficient.

**Trust and fraud**
Twenty percent of applicant degree credentials are reported to be inaccurate.

**Regulatory requirements**
Professional licensing and ongoing credentialing is inefficient and expensive.

**Pathways to employment**
Personalized learning pathways are complex and inefficient.

**Empowered learners**
Learners have weak insight to their accumulated skills causing difficulties.

**Transparency and insight**
Lack of insight into credentials impedes critical decisions.
A credential blockchain: the transformative technology to unlock their value

“A shared, replicated, permissioned ledger with consensus, provenance, immutability and finality for credentials”*

- Built on existing education industry and technical standards
- Founded by key education institutions and leaders of the education industry
- Supporting all credential use cases
- Available to all stakeholders working with credentials

IBM is exploring a Learning Credential blockchain to focus on six core functions:

- **Issue Credential**: Streamline the issuance of credentials that demonstrate skill mastery.
- **Search Credentials**: Look inside an individual’s skill-wallet and find credential matches for job candidates, school admission, projects, etc. (“the job will find me”).
- **Manage Credentials**: Update, revoke, and aggregate view of credentials from multiple organizations.
- **Verify Credential**: Instant verification by issuer that a learner credential is authentic.
- **Exchange Credential**: Share MY credentials with others for jobs, admissions, certifications, etc.
- **Articulation agreements**: Identify equivalency of credentials between organizations.
IBM and CNM are partnered on exploring the creation of a global learning credential blockchain.

CNM and IBM believe they will expand both organizations’ opportunities and skills in supporting the transformation of the education industry through blockchain.

- Envision the use of blockchain by and between institutions, stakeholders, providers, employers and other interested members.
- Envision the creation of a global learning credential blockchain and collaborate with others with similar objectives.
- Utilize IBM as an experienced advisor in the domain of blockchain governance, methodology, tools and technologies.
- Collaborate, as appropriate, with standards setting bodies such as IMS Global, the Sovrin Foundation and PESC.
CNM and IBM’s exploration was informed through a collaborative design thinking workshop

Design Thinking Overview

Using user-centered practices, the team sought to understand the target personas by working through the As-Is Process and identifying key Pain Points.

Each participant then ideated potential solutions using Vision Storyboards before combining and presenting them as a group. The storyboards were designed to consider how we might solve the key pain-points. This allowed us to draft a Vision Statement for each persona’s future experience.

In order to define an MVP, the team discussed and prioritized the Assumptions & Risks involved in our vision. We then designed an MVP Process that would test our biggest assumptions.

1. Understand
   Exercises to identify and empathize with a user and their pain points.

2. Explore
   Exercises to ideate ways to fix the user’s pain points.

3. Define
   Exercises to decide on the right place to start with an MVP.

- Persona As-Is Maps
- As-Is Process Map
- Need Statements
- Storyboards
- Vision Statements
- Assumptions & Risks
- MVP Process Map
- MVP Statement

Together we brought expertise in university administration, university admission, HR, IT, recruiting, and much more!
The workshop helped identify the compelling value proposition of a blockchain for the learner, institution, and employer.

<table>
<thead>
<tr>
<th>Learner</th>
<th>Institution</th>
<th>Employer</th>
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<tbody>
<tr>
<td><strong>As a Learner, I need a dynamically evolving record of skills and certifications and easy process of sharing so that I don’t have to repeat the process for every application.</strong></td>
<td><strong>As an Institution, I need to transfer ownership of credentials to students so that I'm no longer the middle man between the student and employers.</strong></td>
<td><strong>As an Employer, I need a way to quickly verify credentials so that we don’t miss out on the opportunity to hire a qualified person.</strong></td>
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<tr>
<td><strong>As a Learner, I need a way to demonstrate skills that aren’t on my transcript so that I can show my unique competitive edge.</strong></td>
<td><strong>As a Learner, I will have a single evolving verified record of skills and qualifications that I can selectively share instantly and cost effectively anytime, anywhere, forever to help me differentiate myself when applying for a job or to a institution.</strong></td>
<td><strong>As an Institution, I will be able to process transfers quickly and efficiently, which will encourage people to apply and avoid administration costs.</strong></td>
</tr>
<tr>
<td><strong>As an Employer, I will be able to proactively invite qualified applicants to apply, and find the perfect candidate for the position I’m looking to fill.</strong></td>
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Our joint vision would result in use case(s) that would further CNM’s mission and improve the student experience.

*Credentialing with blockchain reduces paper processes, speeding up transaction times and increasing efficiency.*

Rebecca is studying at the university.

She completes her Bachelor of Science in Software Engineering.

The university issues a BS credential on the blockchain network.

Once an organization issues a credential, it cannot be altered.

Rebecca works at IBM®. She passes the certification and is issued an IBM Blockchain Foundation for Developers credential on the blockchain network.

Rebecca’s credentials are on the blockchain network along with everyone else’s, creating a single, tamper-resistant ledger.

Her manager wants to verify her credentials. Rebecca’s BS and Blockchain credentials are easily traced back to the organizations that issued them.
The IBM Blockchain platform

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

- **Developer tools** make use of Hyperledger Composer to quickly build blockchain application
- Hyperledger Fabric provides the ledger, managed through a set of operational tools
- **Governance tools** for democratic management of the business network
- The highly secure and performant IBM Cloud™ environment

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### Network convening power
IBM provides global leadership in education and blockchain.

### IBM Blockchain platform
IBM’s depth and breadth of blockchain technical and industry experience is an essential aspect of success.

### Technical expertise
IBM depth and breadth of expertise leads the education industry in blockchain transformation.

### Roadmap for the future
IBM’s guidance on education blockchain will assist the industry in growing its network.
Thank you

For more information on IBM and Blockchain:

• https://www.ibm.com/blockchain