



# Issue verifiable digital records.

Learning Machine provides a complete system to issue official records using a blockchain-anchored format that is instantly verifiable anywhere in the world.



# Contents

03 / **Executive Summary**

04 / **Why Blockchain**

05 / **Starting with Open Standards**

08 / **Learning Machine Issuing System**

10 / **Customer Success Stories**

17 / **Key Takeaways**

# Executive Summary

Learning Machine is the world leader in blockchain-secured digital records that are recipient owned, vendor independent, and verifiable anywhere.

Learning Machine Technologies, architect of the Blockcerts open standard with the MIT Media Lab, is the world leader in issuing blockchain-secured records that are recipient owned and instantly verifiable. As the only blockchain-based records provider in the world with an in-market product for multi-chain issuing and self-sovereign digital identity, our offering is revolutionizing the way business in all sectors issue and verify claims and the way individuals understand and use their digital identities.

# Why Blockchain

Blockchains offer a new public infrastructure for verifying credentials in a manner far more durable, secure, and convenient than relying upon a single authority.

## **Improve Efficiency**

Blockchain-anchored records don't require middlemen to send or verify.

## **Provide Ownership**

Empower recipients with records they own and can have verified anywhere.

## **Increase Security**

Know that records are secure, tamper proof, and vendor independent.

## **Promote Awareness**

Draw attention to your programs and your brand with records that can be shared online.

## **Prevent Fraud**

Make it hard to impersonate records from your organization with cryptographic signatures.

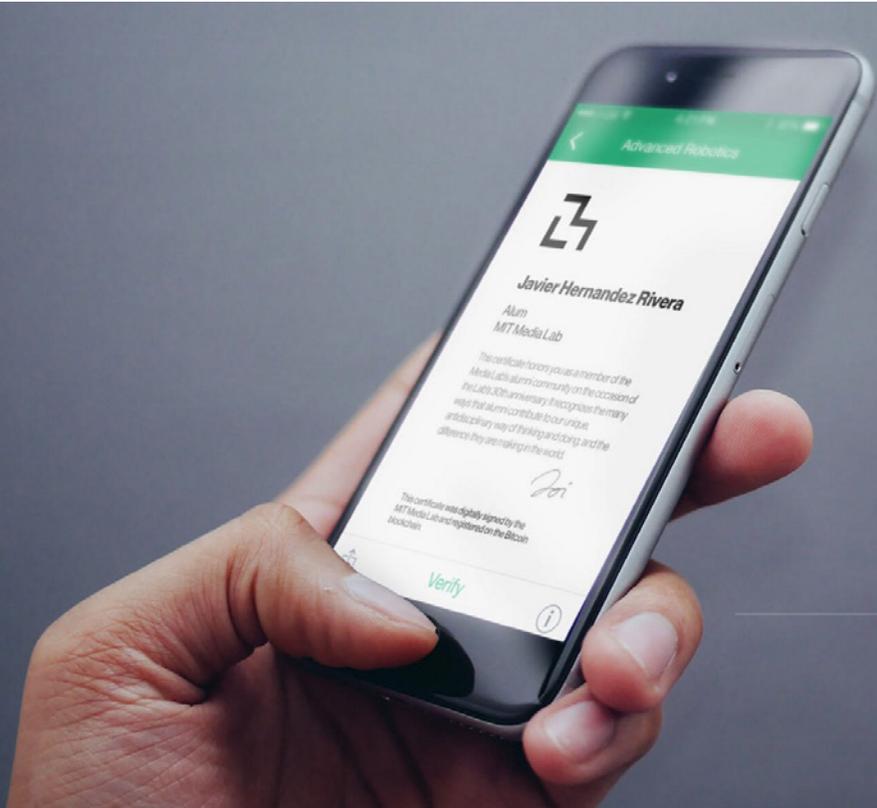
## **Gain Insight**

Build reports to better understand your credentialing trends.



# Starting with Open Standards

Initially incubated by MIT and evolving in alignment with the W3C, Blockcerts.org is the open standard to issue and verify blockchain-based official records. It is the most widely adopted global open standard for anchoring records to *any* blockchain. Learning Machine makes it easy to issue records in a format that is fully compliant with the internationally-recognized open standard.



- Step 1 of 5  
Computing SHA256 digest of local certificate [DONE]
- Step 2 of 5  
Fetching hash in OP\_RETURN field [DONE]
- Step 3 of 5  
Comparing local and blockchain hashes [PASS]
- Step 4 of 5  
Checking MIT signature [PASS]
- Step 5 of 5  
Checking not revoked by issuer [PASS]

**VERIFIED**

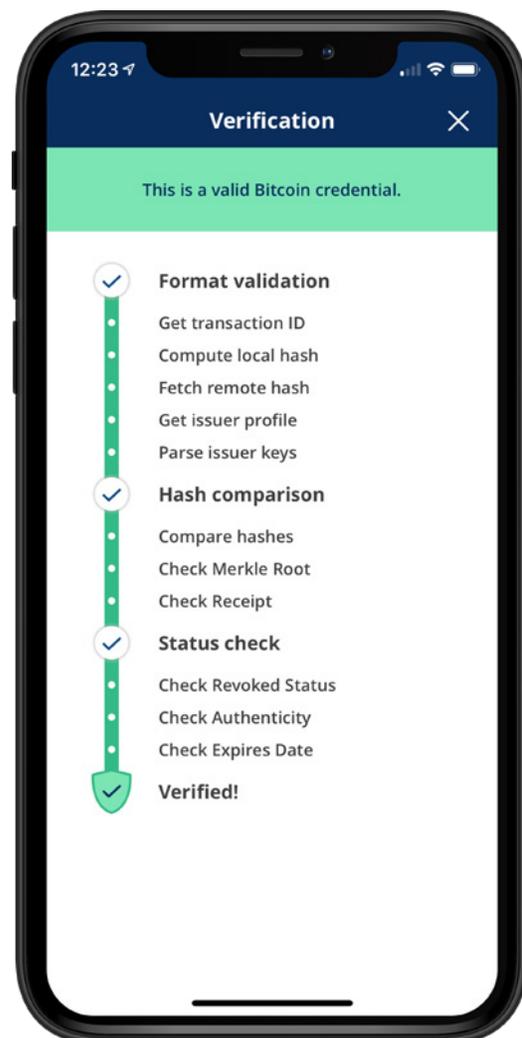
**Public Key**  
1HYF1tzbwR83M3Sm6GWb5X6eQzEw6JAEs

**Blockchain Address**  
4bf64ff1517554dac3496e9da0a28ca9ae492682b0098e384ea17e7f90ee1295

# Owning, Sharing, and Verifying Blockcerts: Instant and Free

Blockcerts are a new type of record that individuals own for a lifetime and can easily share with anyone they choose. Employers, governments, and schools can instantly verify whether a Blockcert is authentic by clicking a button or scanning its QR code. No special software is needed to verify documents. No more fees need to be paid to issuing institutions or software vendors to store, share, and verify documents.

Blockcerts includes a free open source mobile app for recipients, available on iOS and Android, that acts as a private collection of official records. The mobile app stores, shares, and verifies records from any institution that issues Blockcerts—even if they don't come from Learning Machine.



# Blockcerts Use Cases

Blockcerts are the most secure digital document format available today and can be used in any industry that needs to verify documents with a high level of security. This list of use cases is not exhaustive. Any record that must be verified with the highest degree of certainty can be issued as a Blockcert.



**Transportation:** Driver's License, Commercial Driver's License, Pilot License, Vehicle or Aircraft Maintenance Certification



**Education:** Diploma, Transcript, Co-Curricular Record, Enrollment Verification, Award, Examination Results, Course Completion Certificate, Education Verification



**Workforce Development:** Apprenticeship Training Certification, Training Completion Certificate, Industry Certification



**Healthcare:** Prescription, Vaccination Record, Medical Examination Results, License to Practice Medicine



**Government:** National ID, Social Security Document, Passport, Birth Certificate, Marriage Certificate, Death Certificate, Benefits Eligibility Document, Pension Contribution Receipt, Benefits Disbursement Confirmation



**Law:** Court Verdict, Court Injunction, Patent, Will, License to Practice Law



**Insurance:** Proof of Insurance

# Learning Machine Issuing System

Learning Machine sets the global standard for records that are independently verifiable, tamper evident, and owned by issuers and recipients. Managing standards-compliant records at scale is easy with our line of products, built to meet the needs of governments, corporations, and educational institutions. The Learning Machine Issuing System allows any organization to easily design their records, import recipient data, issue records, and manage the entire credentialing life cycle.

## **Single Issuing System**

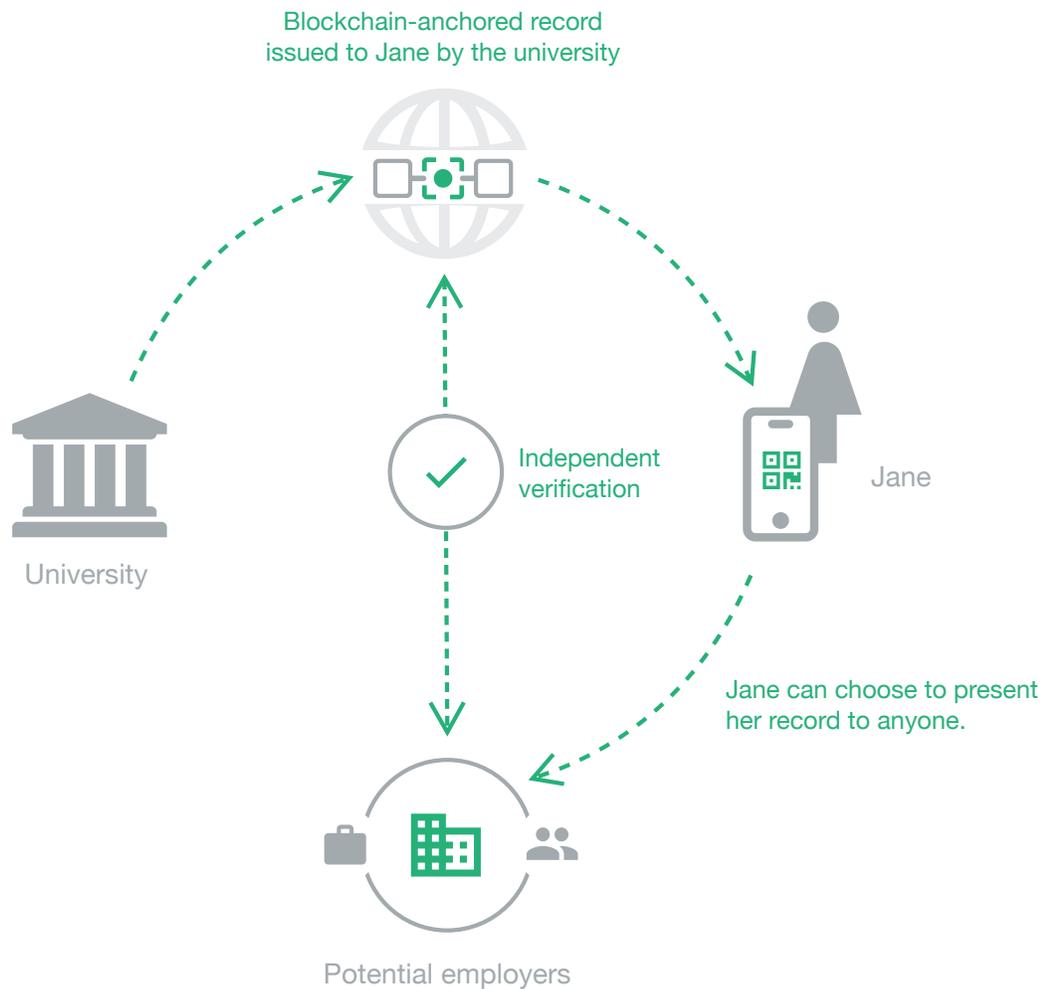
The System allows a single organization to gather analytics and create beautiful data visualizations that can be used for reporting, policymaking, curriculum development, workforce development, alumni relations human resources and more.

## **Federated Issuing System**

At a higher level, the Learning Machine Federated Issuing System acts as a governance tool that allows large accounts to centralize and view their credentialing operations across multiple issuing organizations within one federated system.

# A Sample Scenario

Jane has recently graduated from college and receives an official copy of her digital diploma, issued by the university containing her keys. She can choose to present her diploma to anyone—like a potential employer—who can independently verify the issuer of the diploma, the time of issuance, and its status (valid, expired, or revoked).



# Customer Success Stories

Learning Machine serves customers all over the world who are leading the way for the next generation of digital records.





# The Republic of Malta

## Launched

October 2017

## Sector

Government

## Partner

Ministry for Education and Employment

## Upward Mobility

Malta is the first nation-state to implement blockchain-based credentials across their spectrum of educational providers to facilitate smooth transitions from being a student into joining the workforce. One of the central points of friction has historically been transmitting and verifying official records. So, various types of training programs across Malta — higher education, skills training, and K-12 — are issuing records of achievement to graduates that can immediately be used for job applications. The Ministry for Education and Employment uses a Federated Issuing System, which gives them an analytical view into the dynamics of their educational economy.

This infrastructure provides Maltese learners and workers a way to securely store all of their records of lifelong learning in one place, prove that they own them, and share them with anyone in the world for free. Employers and others can instantly verify that a credential is authentic using independent blockchain verification, saving significant time and money. This allows institutions to prevent fraud and protect their brands while giving learners and workers full control of their official records.

”

*Maltese businesses will find that hiring workers with the right qualifications has gotten much easier. This is a win-win for Malta, whose skilled workforce is among the primary drivers of its economic success.*

Evarist Bartolo, Minister for Education and Employment



# Massachusetts Institute of Technology

**Launched**

October 2017

**Sector**

Education

**Partner**

Office of the Registrar

**Digital Diplomas**

In 2017, MIT began issuing digital diplomas to select groups of students graduating within Undergraduate, Masters, and PhD degree programs. These tamper-proof records are registered on the Bitcoin blockchain, so they can be shared peer-to-peer and independently verified. The blockchain, combined with strong cryptography, provides a new security infrastructure that guarantees the authenticity of these records and enables convenient verification.

Learning Machine's collaboration with MIT began in 2016 to develop Blockcerts, the open-source standard for blockchain based records. Later that fall, when MIT Registrar Mary Callahan became aware of the project, she recognized the opportunity to deliver on the promise of student-owned records. An initial pilot project became a full institutional rollout in 2018, with all MIT Undergraduates and Graduate Students receiving digital diplomas as Blockcerts.

”

*From the beginning, one of our primary motivations has been to empower students to be the curators of their own credentials. This pilot makes it possible for them to have ownership of their records and be able to share them in a secure way, with whomever they choose.*

Mary Callahan, MIT Senior Associate Dean and Registrar



# Central New Mexico Community College

## Launched

December 2017

## Sector

Education

## Partner

Office of the President

## Educational Achievement

In December 2017, CNM became the first community college in the United States to issue digital diplomas, securely anchored to the blockchain, giving students the power to manage their own credentials using the free Blockcerts mobile app.

“We are very excited to begin adopting this technology that’s going to provide more value, independence and convenience to our students throughout their lives,” CNM President Katharine Winograd said. “Students put forth tremendous effort to earn their higher education credentials and we’re going to start empowering more students with stewardship over their own educational achievements.”

The diplomas issued to students within CNM’s Ingenuity programs use the BTC blockchain, which means they can never be tampered with and can easily be verified by any potential employer. As of the Summer Term, Ingenuity had issued about 300 total diplomas.

CNM has continued to expand the use of digital credentials in phases across all programs at the college. Starting August 30th, all graduates across CNM were granted the option to receive digital diploma, with the first batch being issued September 18th 2018.

”

*We've seen the vulnerabilities of the internet, and Blockchain is definitely the future because the data that lives there is not only verified, but also immutable and totally trustworthy.*

Bill Halverson, Senior Technology Advisor to CNM Ingenuity

# Key Takeaways

- Recipients own their records via control of their keys, provided by the Blockcerts mobile app.
- Records can be verified across blockchains using the Blockcerts Universal Verifier.
- Records can be aggregated across various institutions, forming a lifelong record of learning and achievement.
- All content and personal data is stored off chain for maximum privacy.
- Records are standards-compliant JSON files, compatible with virtually any back-end system.
- The entire ecosystem is open source, vendor independent, and aligned with other data standards.



Website

[learningmachine.com](https://learningmachine.com)

Contact us

[learningmachine.com/contact](https://learningmachine.com/contact)

Twitter

[@learningmach1](https://twitter.com/learningmach1)

Open source website

[blockcerts.org](https://blockcerts.org)

Open source Twitter

[@blockcerts](https://twitter.com/blockcerts)