

(MICRO) CREDENTIALS

Old and New Ways of Communicating Skills, Competencies,
Achievements, and Abilities

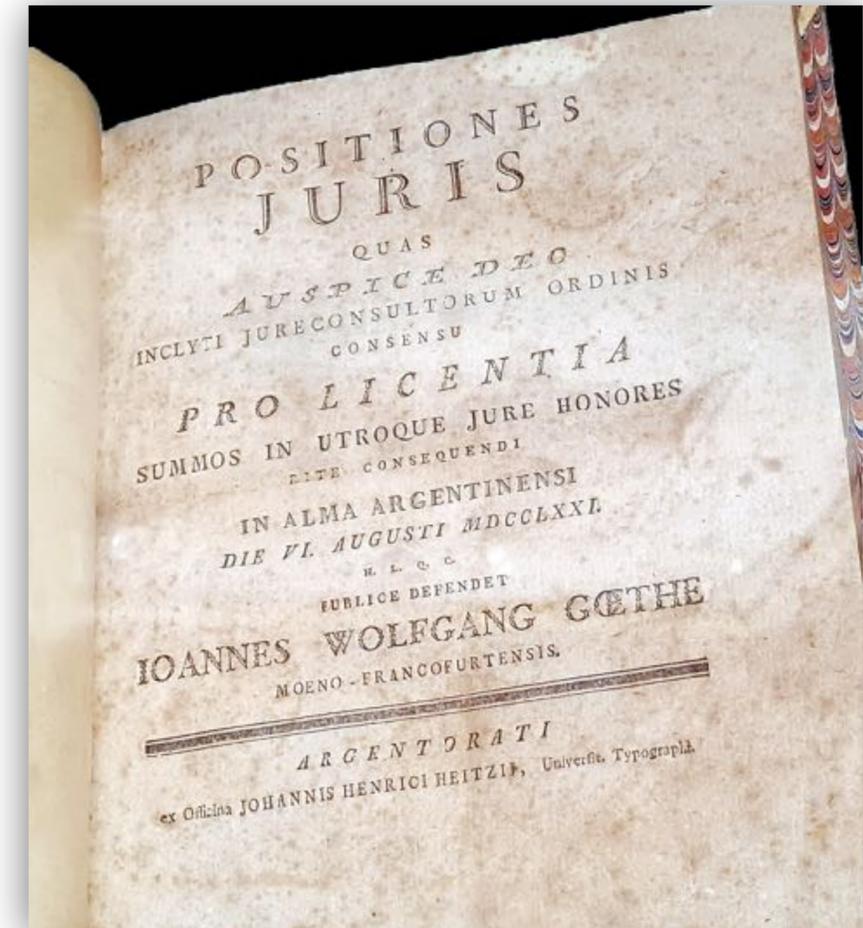
J. Philipp Schmidt
September 13th, 2023

ASPIRATION

The trail of our achievements and corresponding credentials speaks to who we are and what we are able to do, and it opens pathways towards who we want to become.

HISTORICAL EXAMPLES FOR DESIGNING CREDENTIAL SYSTEMS

LICENTIA DOCENDI



APPRENTICESHIPS



"WANDERBUCH"



US AIR FORCE AIRMEN'S COIN



HIGHER EDUCATION

NIT ID: [REDACTED]

Admitted as a Regular Student for Fall Term 2018-2019

Completed Programs:
Management - EMBA (Course 15 E2)/Master's

Subject	Subject Name	LV#	Cred	Grade
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FALL TERM 2018-2019		COURSE:	15 E	GRADUATE STUDENT
15.700	Exec Mod: Ldrship & Integ Mgmt	G	9	P
15.717	Organizational Processes	G	9	A
15.722	Applied Econ for Managers	G	9	B

JANUARY TERM 2018-2019		COURSE:	15 E	GRADUATE STUDENT
15.556	Special Seminar in Management	G	3	P

SPRING TERM 2018-2019		COURSE:	15 E	GRADUATE STUDENT
15.701	Innov-Driven Entrep Advantage	G	12	A
15.714	Competitive Strategy	G	9	B
15.720	Financial Accounting	G	9	A
15.730	Data, Models, and Decisions	G	9	A

SUMMER TERM 2019		COURSE:	15 E2	GRADUATE STUDENT
15.716	Leading Organizations	G	9	P
15.734	Intro Operations Management	G	9	A
15.736	Intro to System Dynamics	G	9	A

FALL TERM 2019-2020		COURSE:	15 E2	GRADUATE STUDENT
15.702	Leading in a Global Context	G	12	A
15.705	Organizations Lab	G	12	A
15.724	Financial Management	G	9	A
15.732	Marketing Management	G	9	B

JANUARY TERM 2019-2020		COURSE:	15 E2	GRADUATE STUDENT
15.718	Intro to Disciplined Entrepren	G	3	P
15.721	Comm & Persuasion Through Data	G	3	P

SPRING TERM 2019-2020		COURSE:	15 E2	GRADUATE STUDENT
Semester significantly disrupted starting 3/13/2020 due to Coronavirus COVID-19 outbreak. Mandatory Alternate Grades in effect.				
15.703	Leading with Impact	G	9	FE
15.704	IDEA Lab	G	15	FE
15.707	Global Strategy	G	6	A
15.727	The Analytics Edge	G	9	FE
15.775	Analytics Proseminar	G	3	FE

-- Continued in Next Column --

28-MAY-2020 Awarded the Degree of Master of Business Administration

Graduate Cumulative GPA: 4.8 (on a 5.0 scale)

-- END OF RECORD --
-- No Entries Valid Below This Line --

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

UPON THE RECOMMENDATION OF THE FACULTY
HEREBY CONFERS ON

THE DEGREE OF
BACHELOR OF SCIENCE
IN

IN RECOGNITION OF PROFICIENCY IN THE GENERAL AND THE SPECIAL
STUDIES AND EXERCISES PRESCRIBED BY SAID INSTITUTE FOR SUCH DEGREE
GIVEN THIS DAY UNDER THE SEAL OF THE INSTITUTE AT CAMBRIDGE
IN THE COMMONWEALTH OF MASSACHUSETTS

JUNE 9, 2006

William A. Weeks
SECRETARY



Susan Hockfield
PRESIDENT

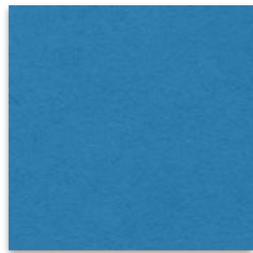
Unofficial without signature
Brian E. Canavan, Registrar

Brian E. Canavan

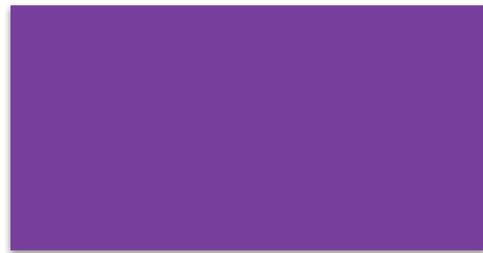
To confirm authenticity, see reverse side. Information must not be disclosed
to other parties without prior written consent of the student.

A black and white document is not an original

THE SHIFTING LANDSCAPE OF HIGHER EDUCATION



Play



Education



Work



Leisure



Play

Education

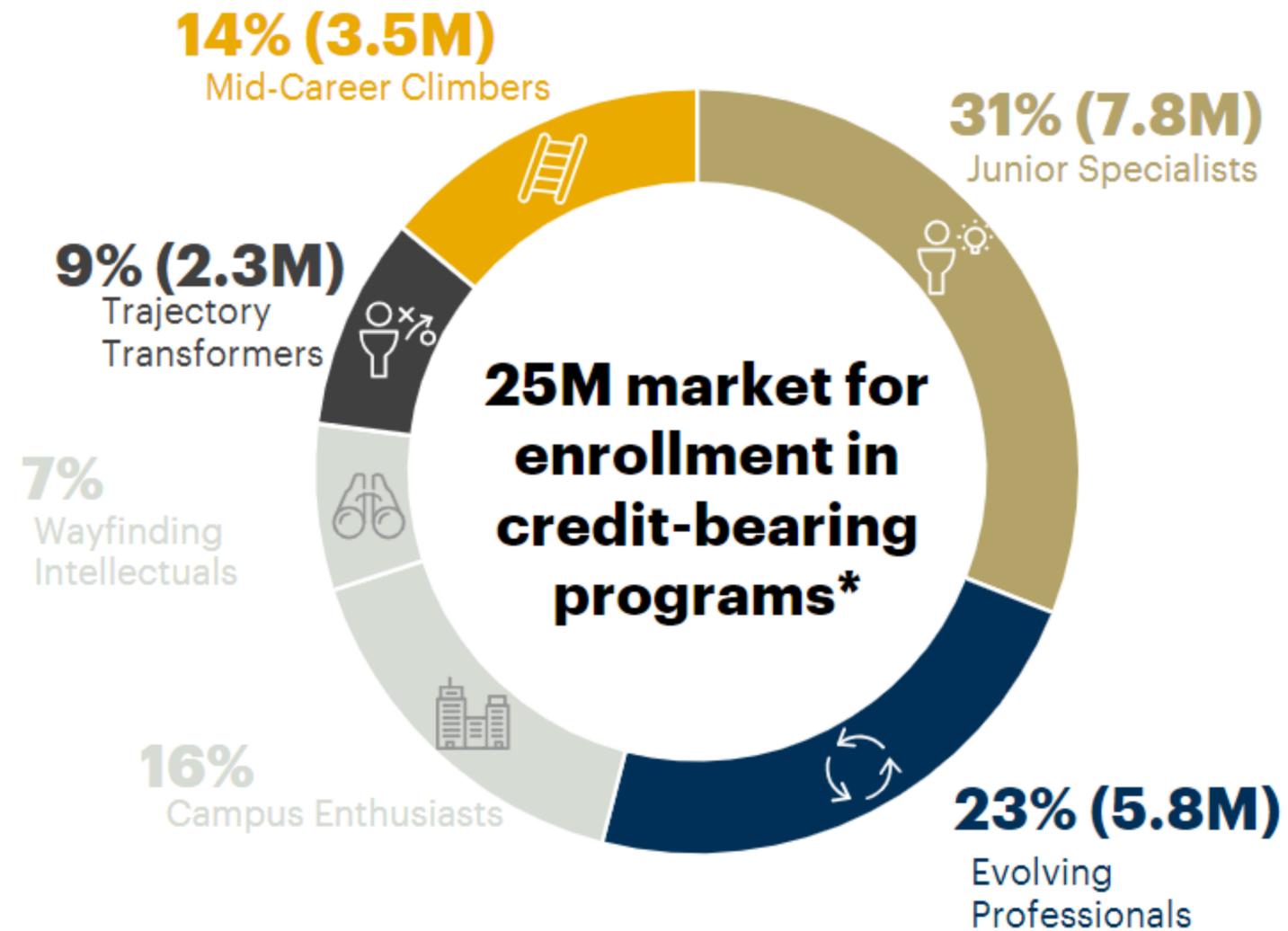
Work

Leisure

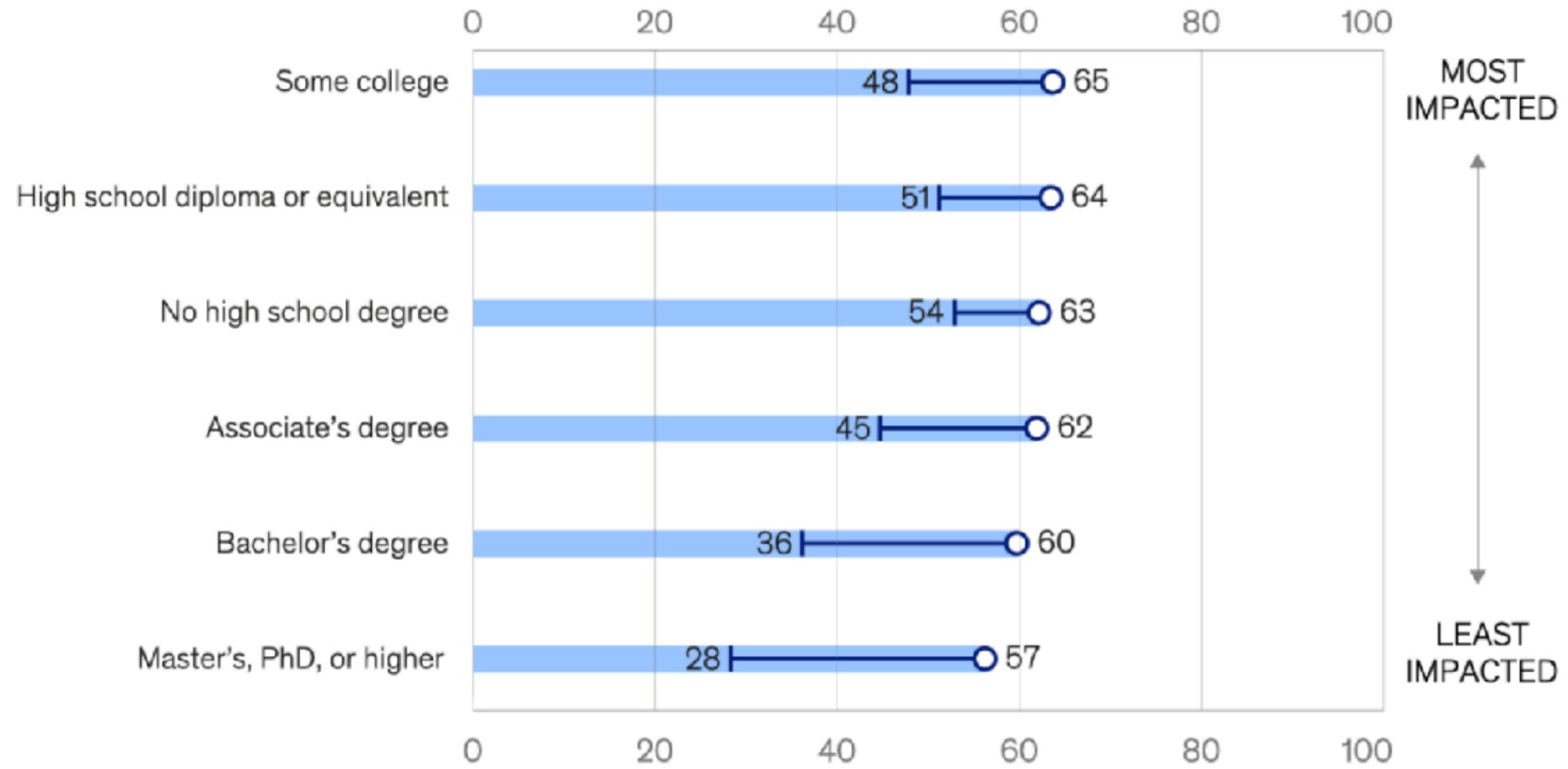


DEMAND FOR A RANGE OF CREDENTIALS

**There are six mindset-based segments of learners;
four of the six can be considered “lifetime learners”**



ADD AI



(McKinsey & Company)

**DIGITAL (MICRO)CREDENTIALS
LEARNING & EMPLOYMENT RECORDS (LERs)**

LEARNING AND
EMPLOYMENT RECORDS
LERs

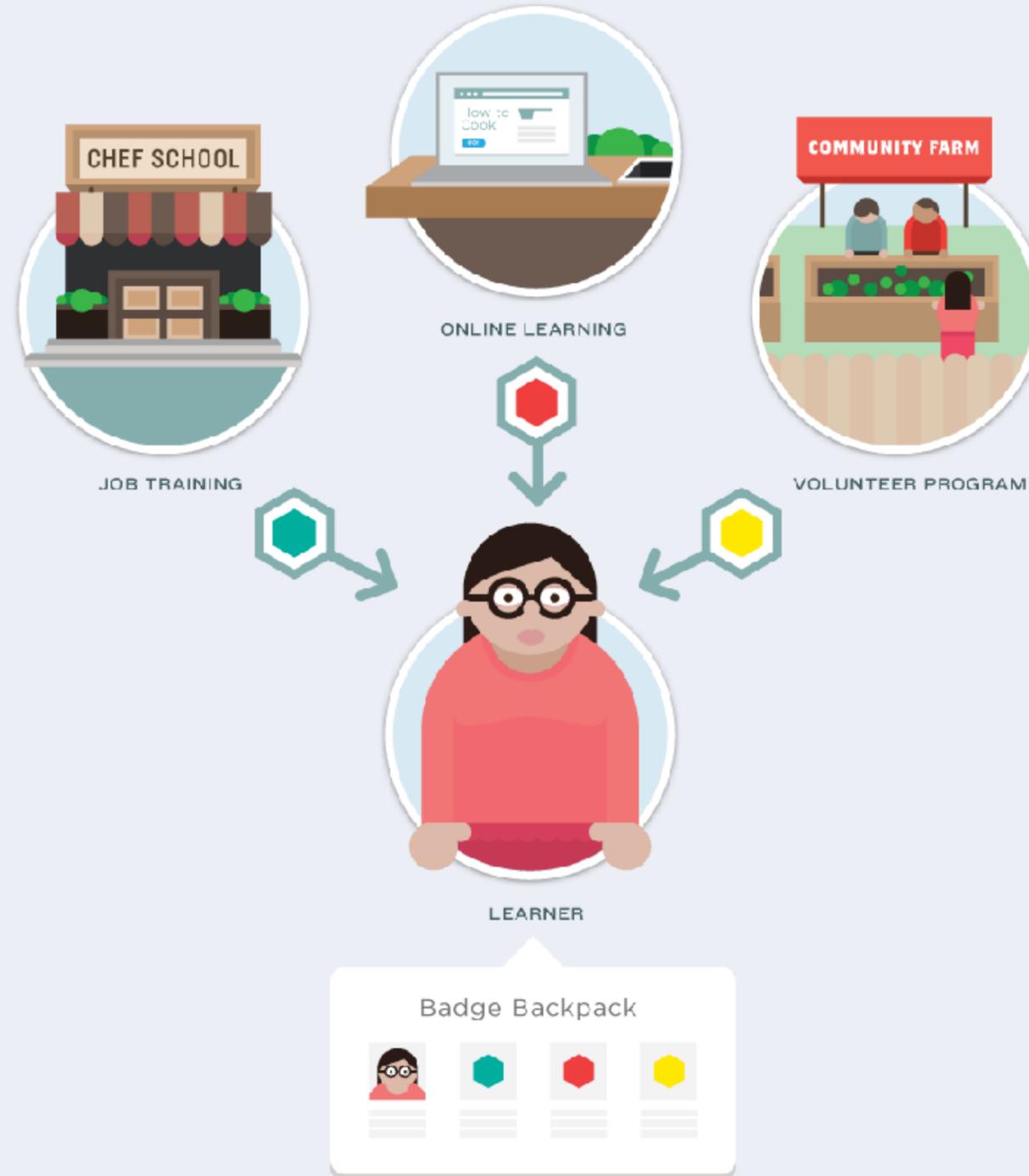
A credential infrastructure that responds to the changing nature of higher education, will recognize a wider range of experiences and achievements, and translate them into economic opportunity.

Learning and Employment Records (LERs) are digital records of a person's jobs and skills acquired through education, credentialing, in the workplace, and through service and life experience.

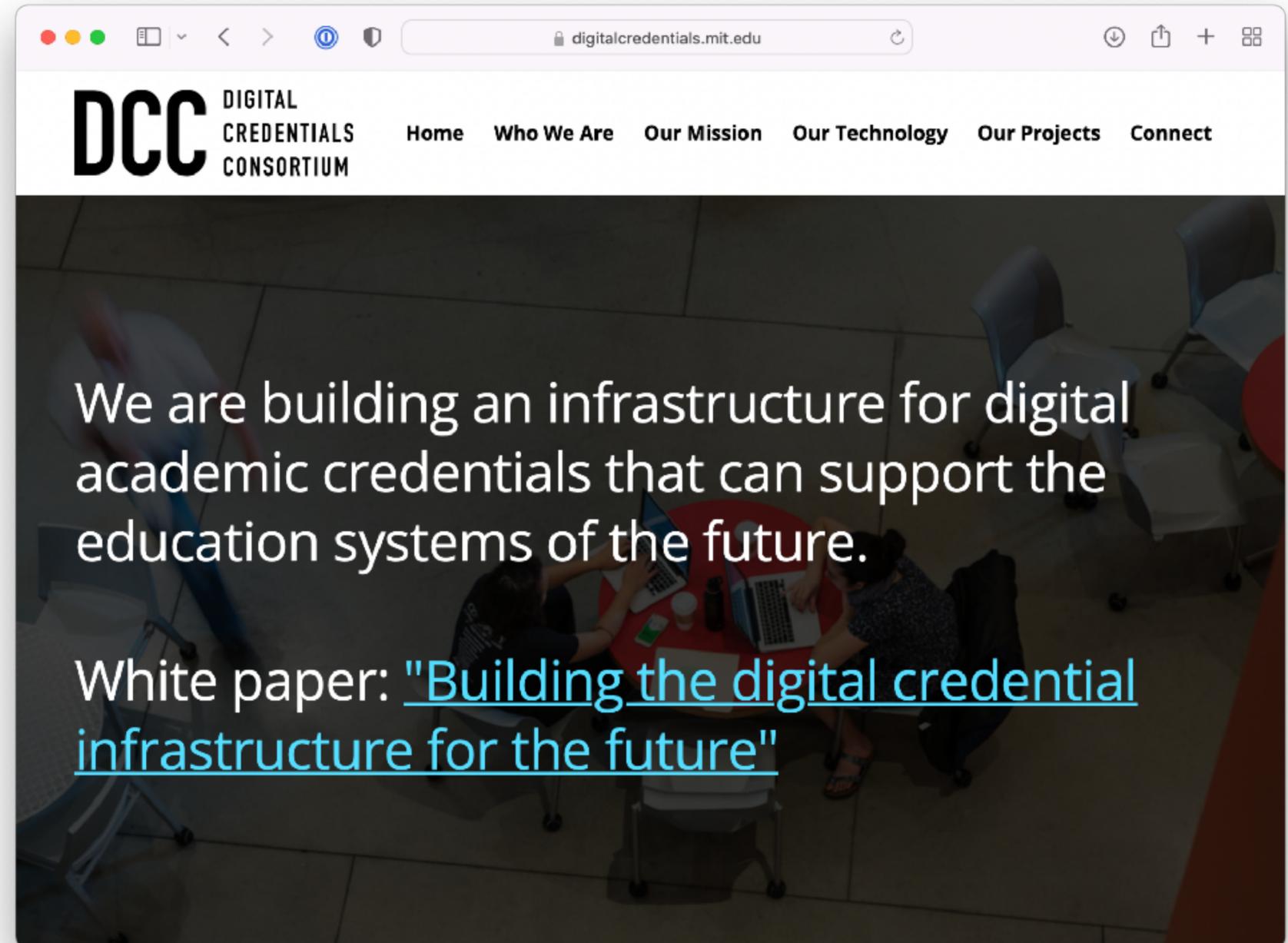
OPEN BADGES v3



Open Badges help you share your skills & interests with the world:



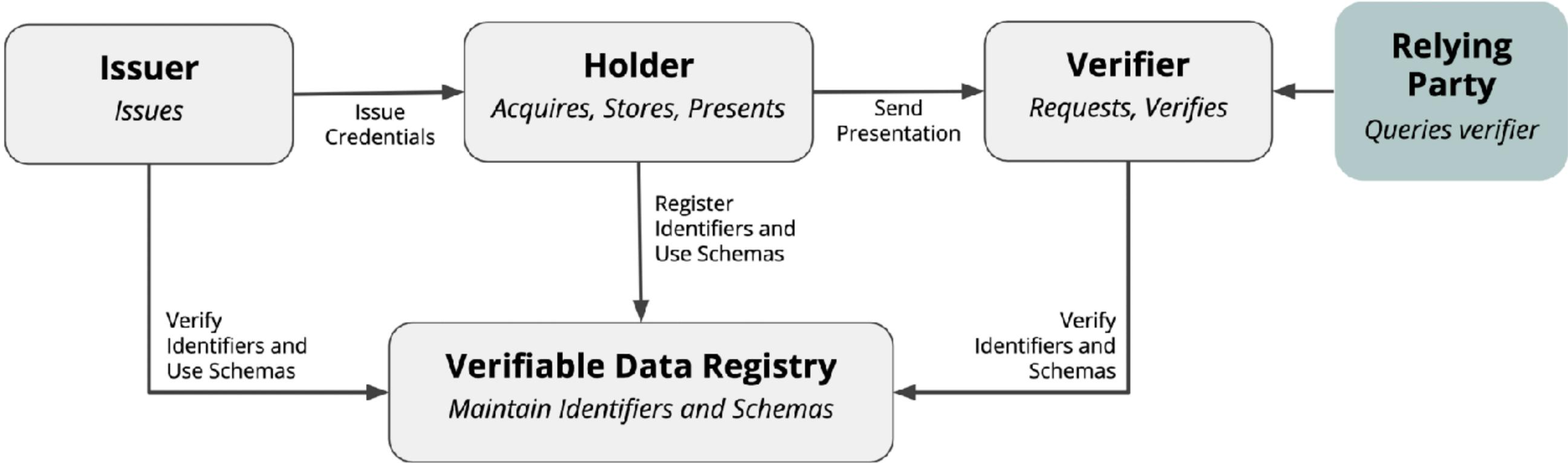
DIGITAL CREDENTIALS CONSORTIUM



DIGITAL CREDENTIALS CONSORTIUM

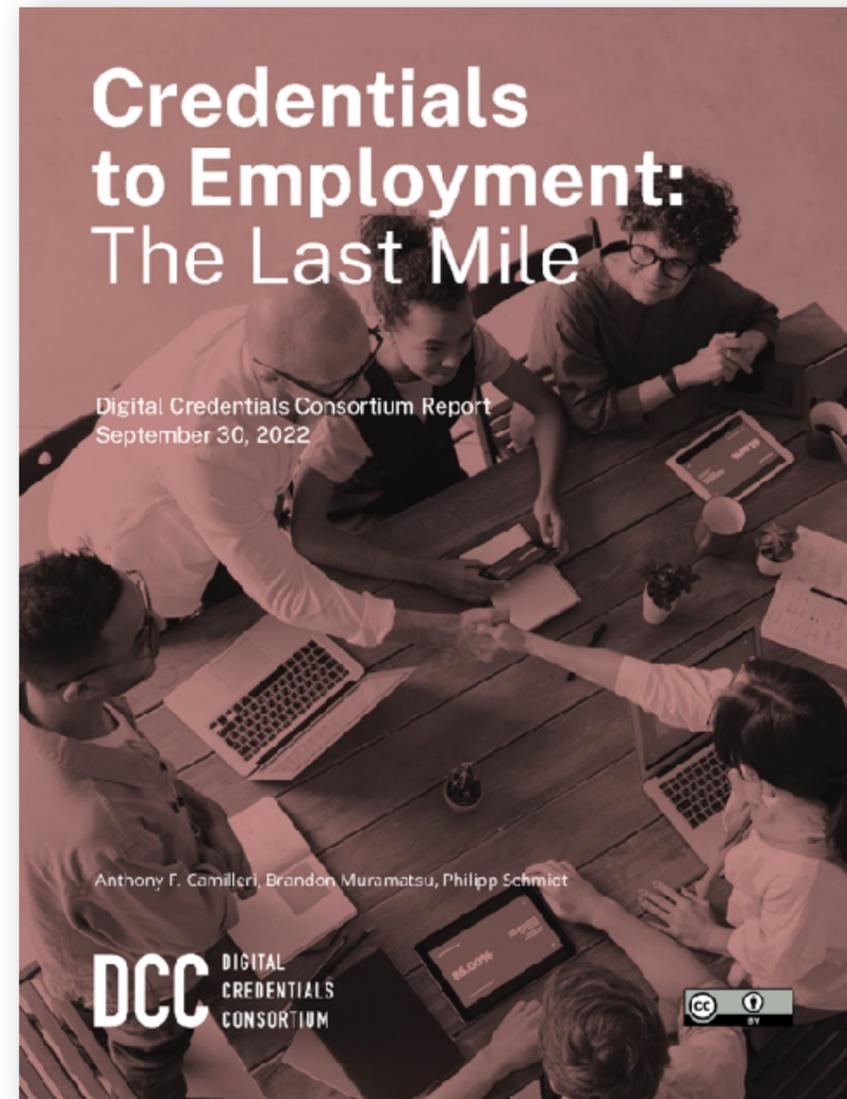
- **Learner agency:** Place the learner at the center of her professional and educational identity.
- **Issuer discretion:** Ensure that issuers maintain authority and flexibility over what is included in their credentials.
- **Portability:** Give learners/workers the ability to share and translate their credentials from one context to another and to represent them in different combinations for different audiences.
- **Verifiability:** Provide more reliable and efficient ways of verifying the authenticity of credentials. This is a fundamental aspect of increasing trust in novel forms of credentials.

W3C VERIFIABLE CREDENTIALS (VC)



Adapted from: W3C VC CCG

USE AND ADOPTION



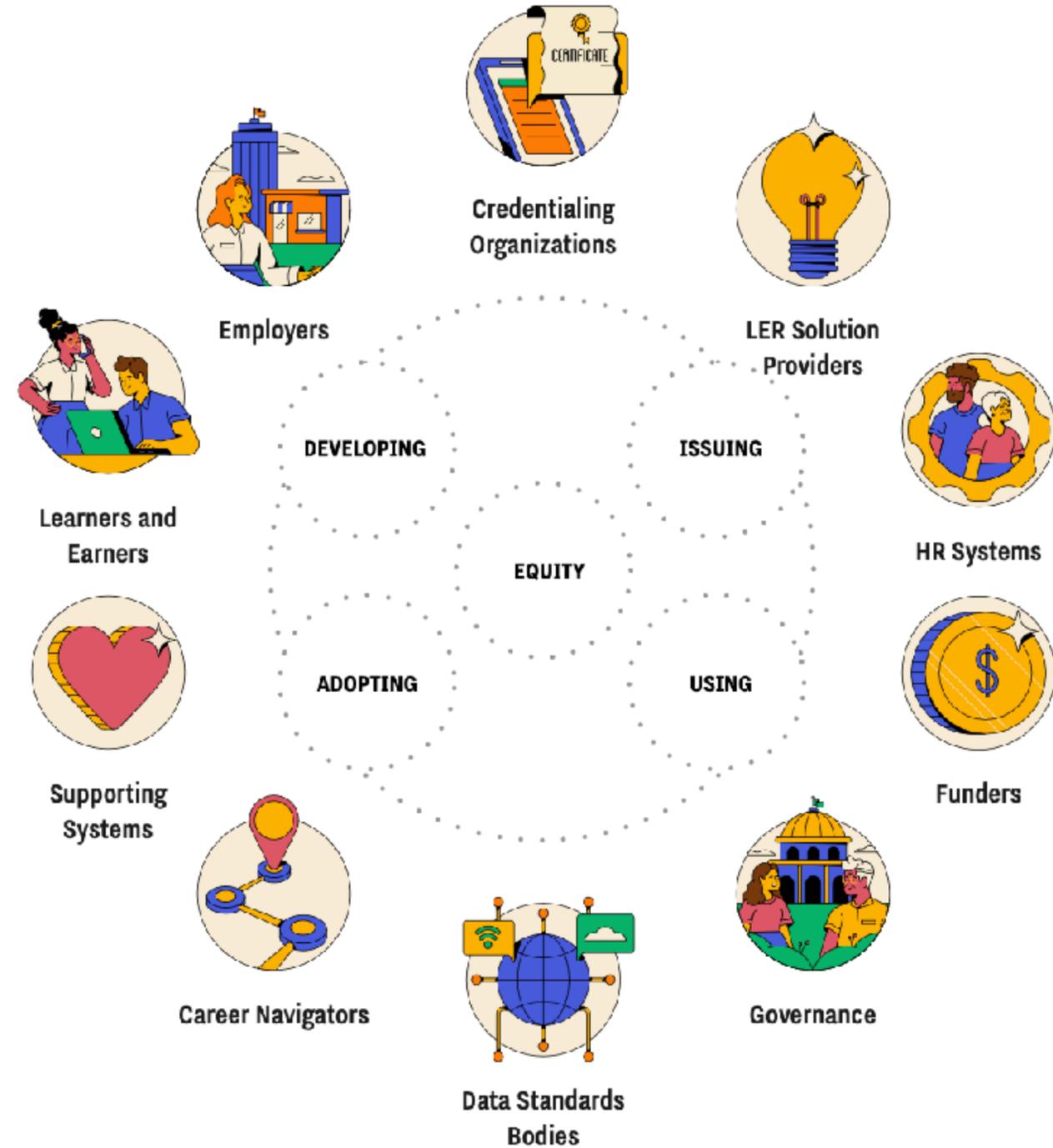
<https://digitalcredentials.mit.edu>

Implications for Higher Education

- Accelerate issuing digital credentials at scale
- Include skills and competencies wherever possible
- Support interoperability

Lack of coordination between stakeholders (colleges, employers, HR systems, etc...) holds back adoption

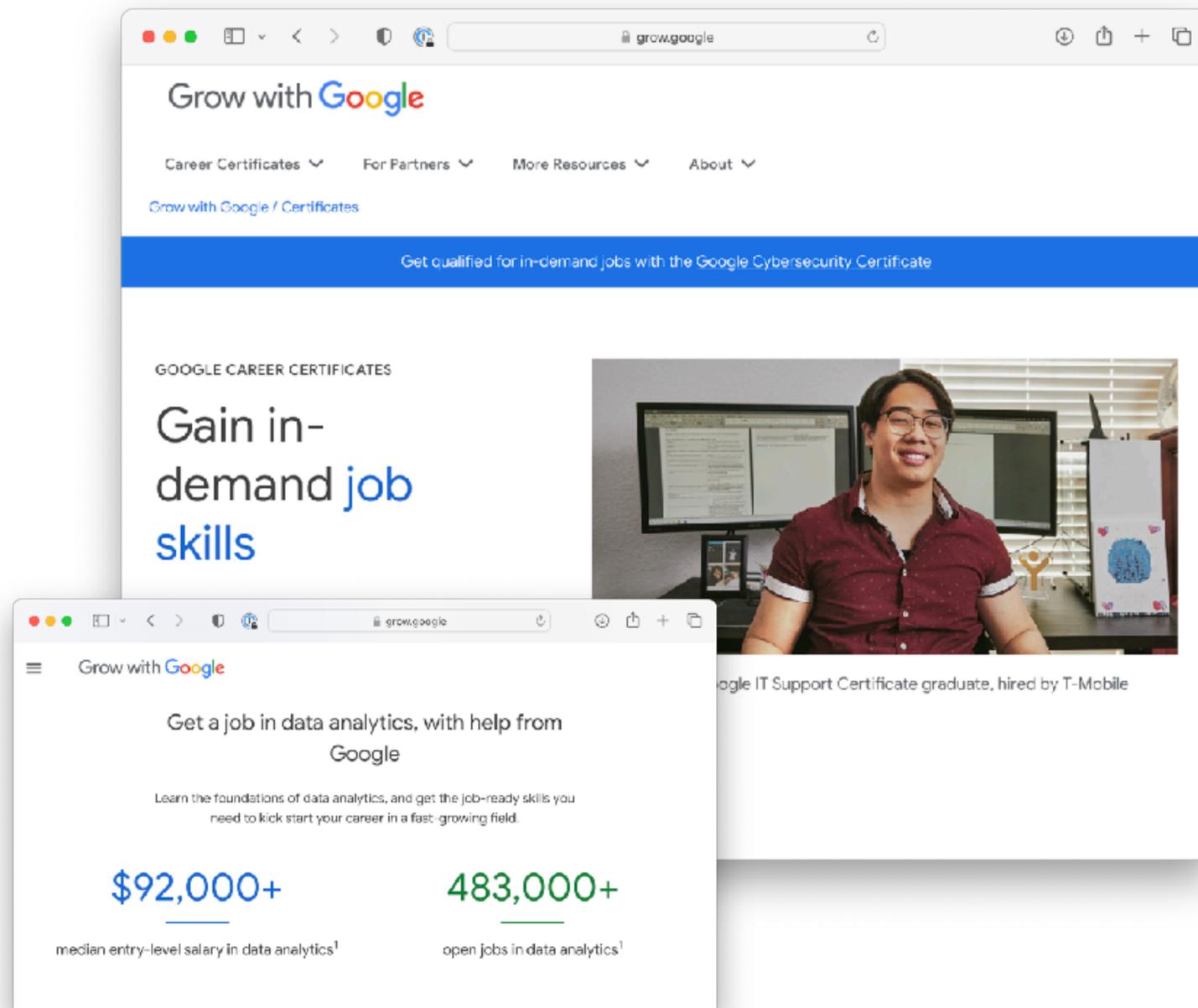
LER ECOSYSTEM MAP



<https://t3networkhub.org/>

2 EXAMPLES

GOOGLE CAREER CERTIFICATES



Goal: Alternative path to good entry-level jobs (in tech-focused careers)

- Fully online courses (on Coursera)
- 150+ employer partners
- 200k Graduates in US (~40% already have BA/BSc)
- 400 higher education partners (e.g. UT System, Coursera, Google) (e.g. pathway into U North Texas bachelor's) (free for community college partners)

Value as an alternative pathway still relatively untested

LEARN OUTSIDE THE BOX

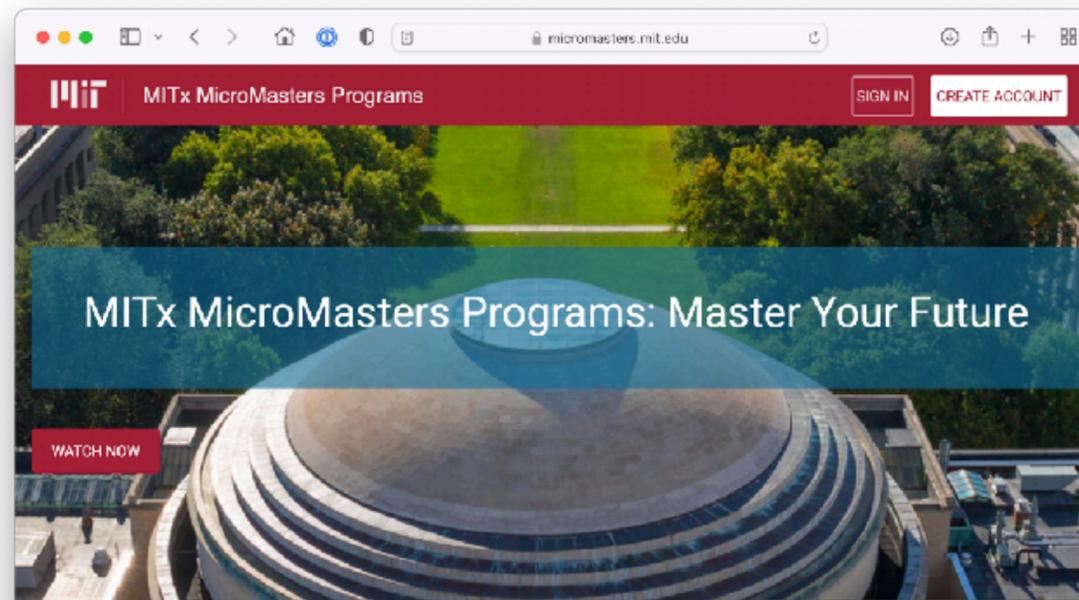
The image features a collage of overlapping browser windows. The top-most window is from Coursera, displaying a course page for 'IBM Training / IBM Credentials: Certification and Skills Badging'. The text on this page includes 'Validate your skills. Earn an IBM Badge. Accelerate your career.' Below this, there are icons for 'Goal Setting: Objectives and Key Results (OKRs)', 'Excel Essential Training (Office 365/Microsoft 365)', 'Interpersonal Communication', and 'Cultivating a Growth Mindset'. Two buttons are visible: 'Start my free month' and 'Buy for my team'.

Below the Coursera window is a window from Grow with Google showing a 'Goodwill® Career Certificate' page. The text includes 'Launch your path in career navigation. In this experience required.' and 'Instructor: Goodwill Academy'. It also states 'Financial aid available' and '4,602 already enrolled'.

Another window from Grow with Google is partially visible, featuring the text 'Gain in-demand job skills'.

The bottom-most window is from Grow with Google, displaying a promotional message: 'Get a job in data analytics, with help from Google'. It includes the text 'Learn the foundations of data analytics, and get the job-ready skills you need to kick start your career in a fast-growing field.' Below this, two statistics are shown: '\$92,000+' (median entry-level salary in data analytics) and '483,000+' (open jobs in data analytics).

MAKE CREDENTIALS STACKABLE



MITx MicroMasters® Programs

Advance your career or accelerate your Master's degree with a graduate-level digital credential from MIT.

The MicroMasters program credential from MIT Open Learning is a **professional and academic** credential that is recognized by employers and academic institutions anywhere in the world who seek focused, accelerated advancement.

Enroll in a program—no admission required—and take a series of graduate-level online courses, MITx Online.

Earn a program credential by completing the course and passing one or more proctored exams.



5 Programs

> 1.5M Learners

> 7,000 Graduates

Credit pathways: 55 schools (30 countries)

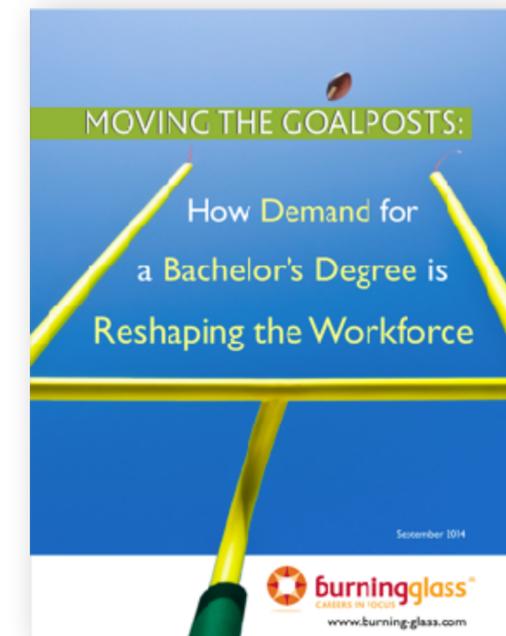
<http://micromasters.mit.edu>

THE PROMISE AND REALITY OF SKILLS-BASED HIRING

DEGREE INFLATION

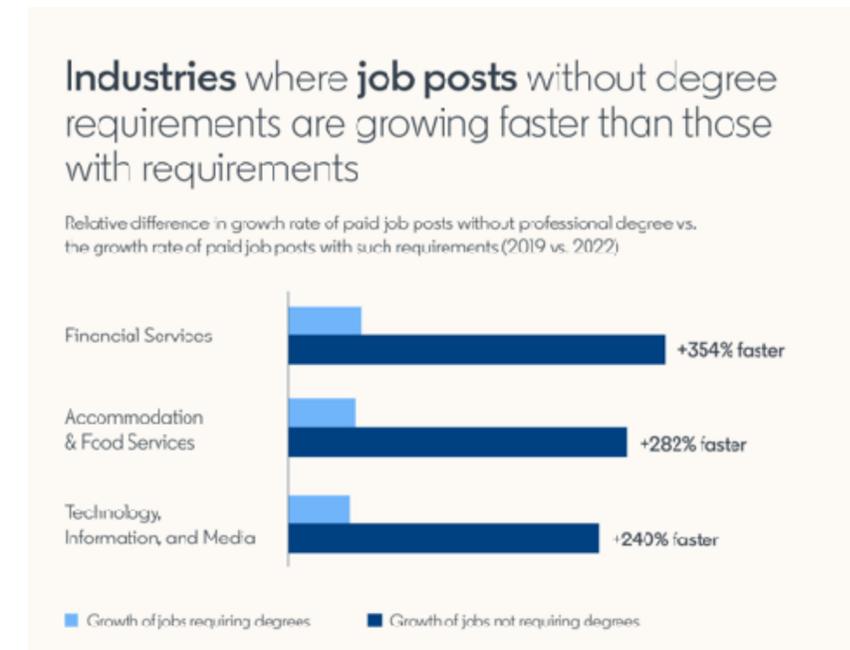
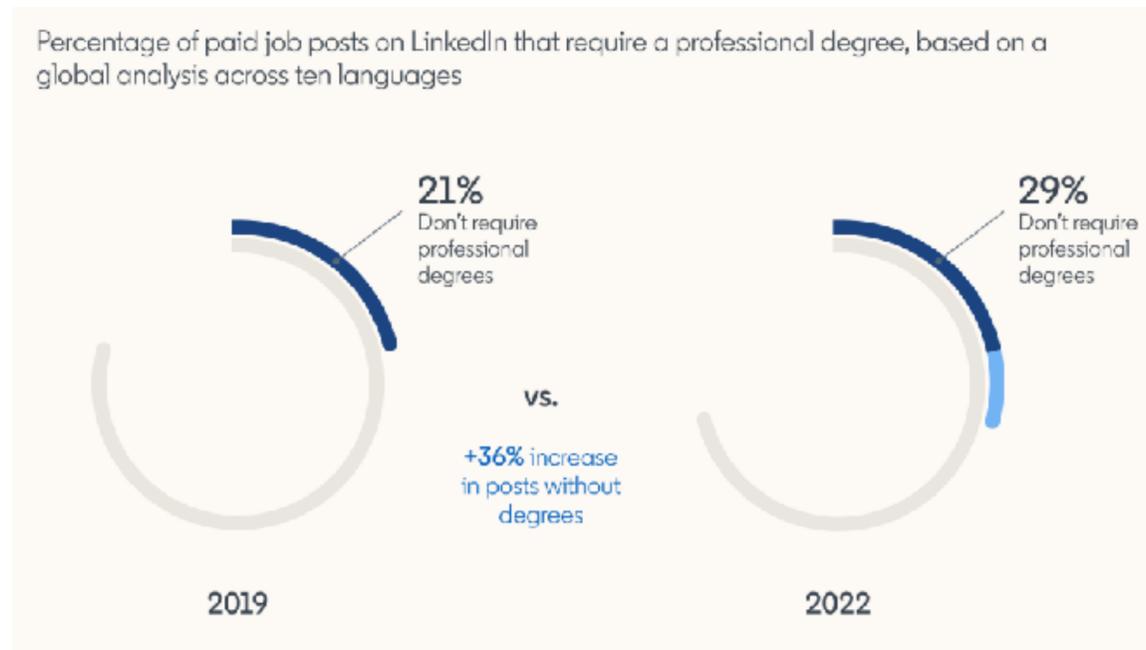
“65% of postings for Executive Secretaries and Executive Assistants now [2014] call for a bachelor’s degree. Only 19% of those currently employed in these roles have a B.A.”

“70+ Million adults in the U.S. are skilled through community college, workforce training, bootcamps, certificate programs, military service or on-the-job learning, rather than through a bachelor’s degree. This group is majority Black, Hispanic, essential workers and veterans.” Opportunity@Work



SKILLS-BASED HIRING

14 States (and counting) and many large employers have started relaxing degree requirements. “While the move toward “skills, not schools” is evident in job postings, the actual hiring behaviors haven’t necessarily caught up. “



+6%

+11%

+3%

(Insights from LinkedIn, 2023)

SKILLS-BASED HIRING

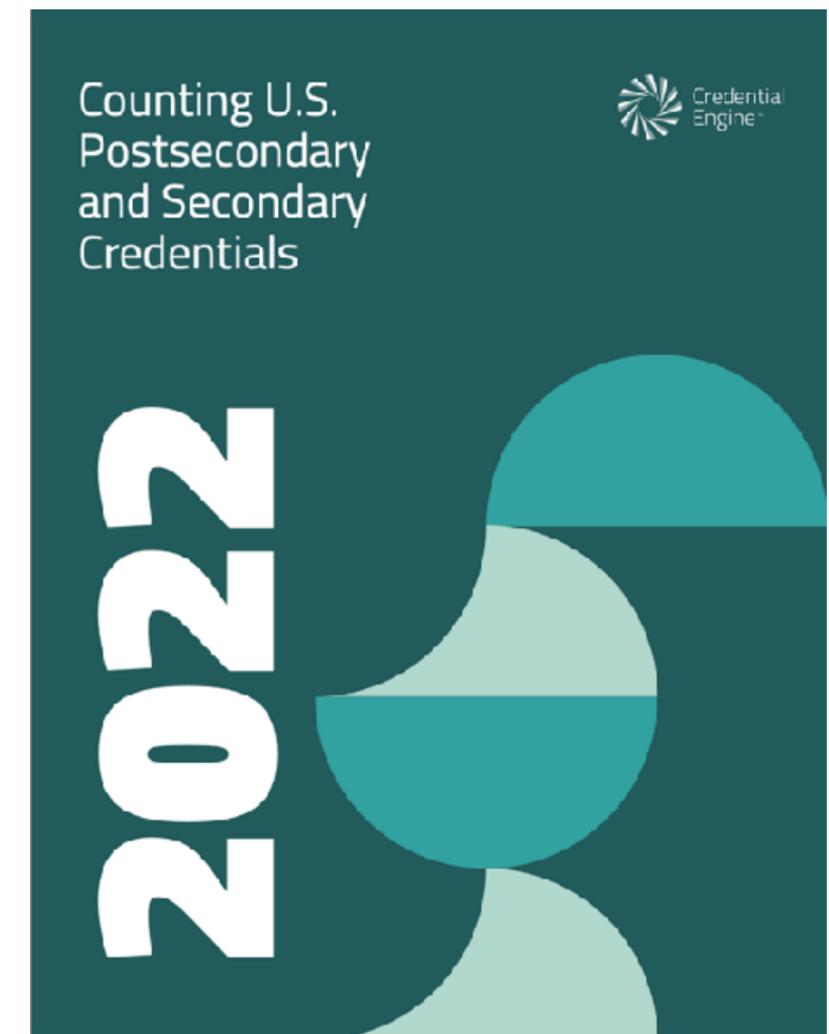


(SHRM Foundation)

MAJOR CHALLENGE: QUALITY

1,076,358 unique credentials in the U.S

- **Post-Secondary Educational Institutions: 350,412** degrees and certificates
- **MOOC Providers: 13,014** course completion certificates, micro-credentials, and foreign online degrees, etc.
- **Non-academic providers: 656,505** badges, course completion certificates, licenses, certifications, and apprenticeships
- **Secondary Schools: 56,179** diplomas from public and private secondary schools, etc.



MAJOR CHALLENGE: QUALITY

O*Net: O*NET database contains hundreds of standardized and occupation-specific descriptors on 923 occupations covering the entire U.S. economy. Taxonomy is periodically revised; the last revision was in 2019.

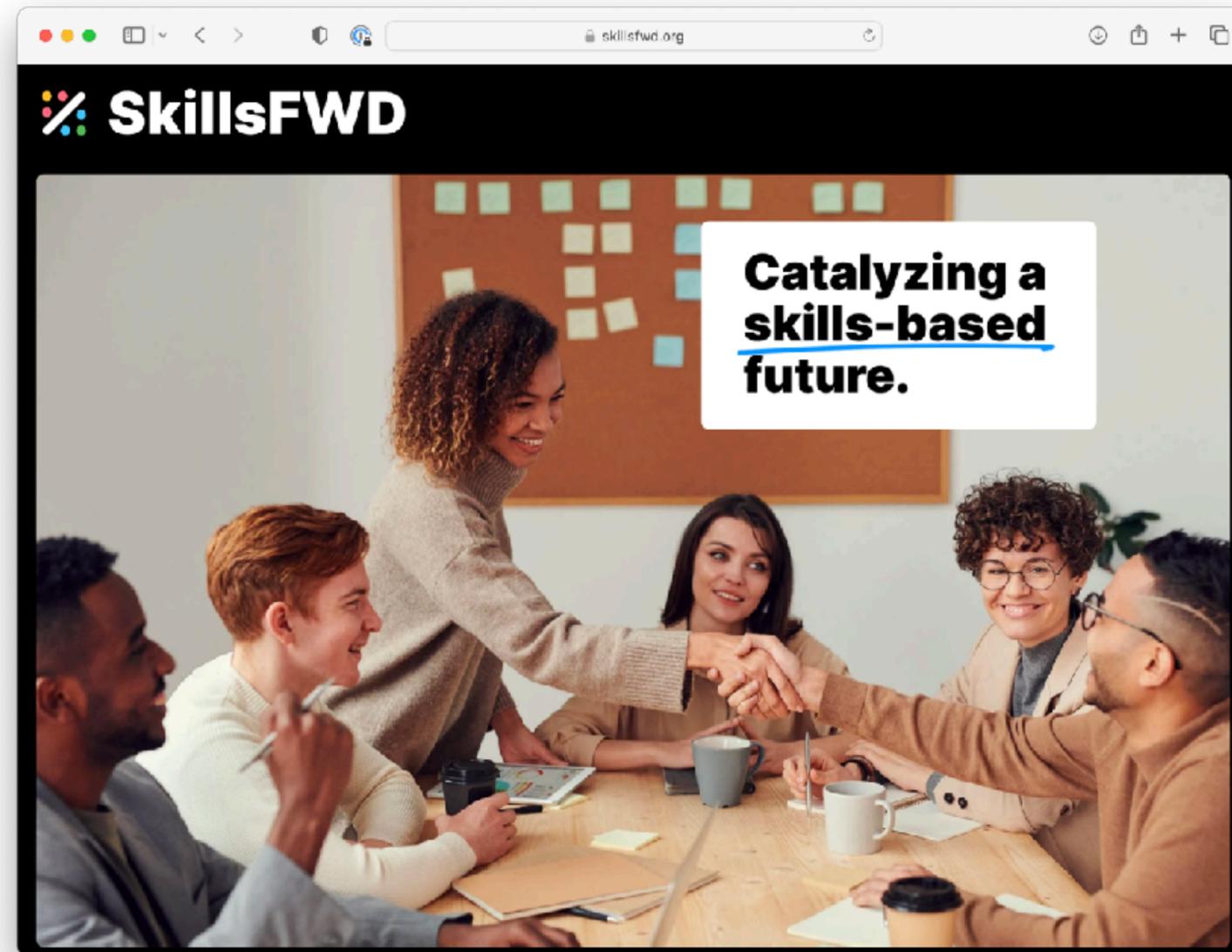
Lightcast: Skills library of over 32,000 skills that is updated every two weeks from online data (resumes, job postings, etc...).

SOLVING THE QUALITY CHALLENGE

Colleges could play a key role in solving this challenge

- **Building on existing expertise and experience**
- **Collaborating with non-education partners**
- **Leveraging AI**

PUTTING SKILLS-BASED
APPROACHES INTO PRACTICE



<http://skillsfwd.org>

CONTACT

J.Philipp Schmidt

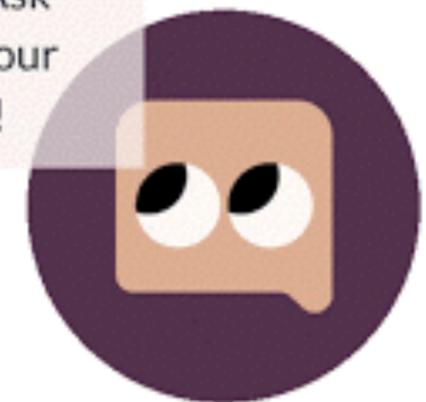
 phi.schmidt@gmail.com

AI

Changes **what** we need to learn, and **how** we might learn it

Could have massive impact on skills to career translation

Hi, I'm Khanmigo! Ask me anything—I'm your new learning guide!



What is a Digital Credential?

Two components

Document – is like the diploma a university issues to a graduate, which might contain the name of the recipient as well as a description of the credential they received

Envelope – protects the content of the document so it cannot be changed and it reliably communicates the authenticity of its contents

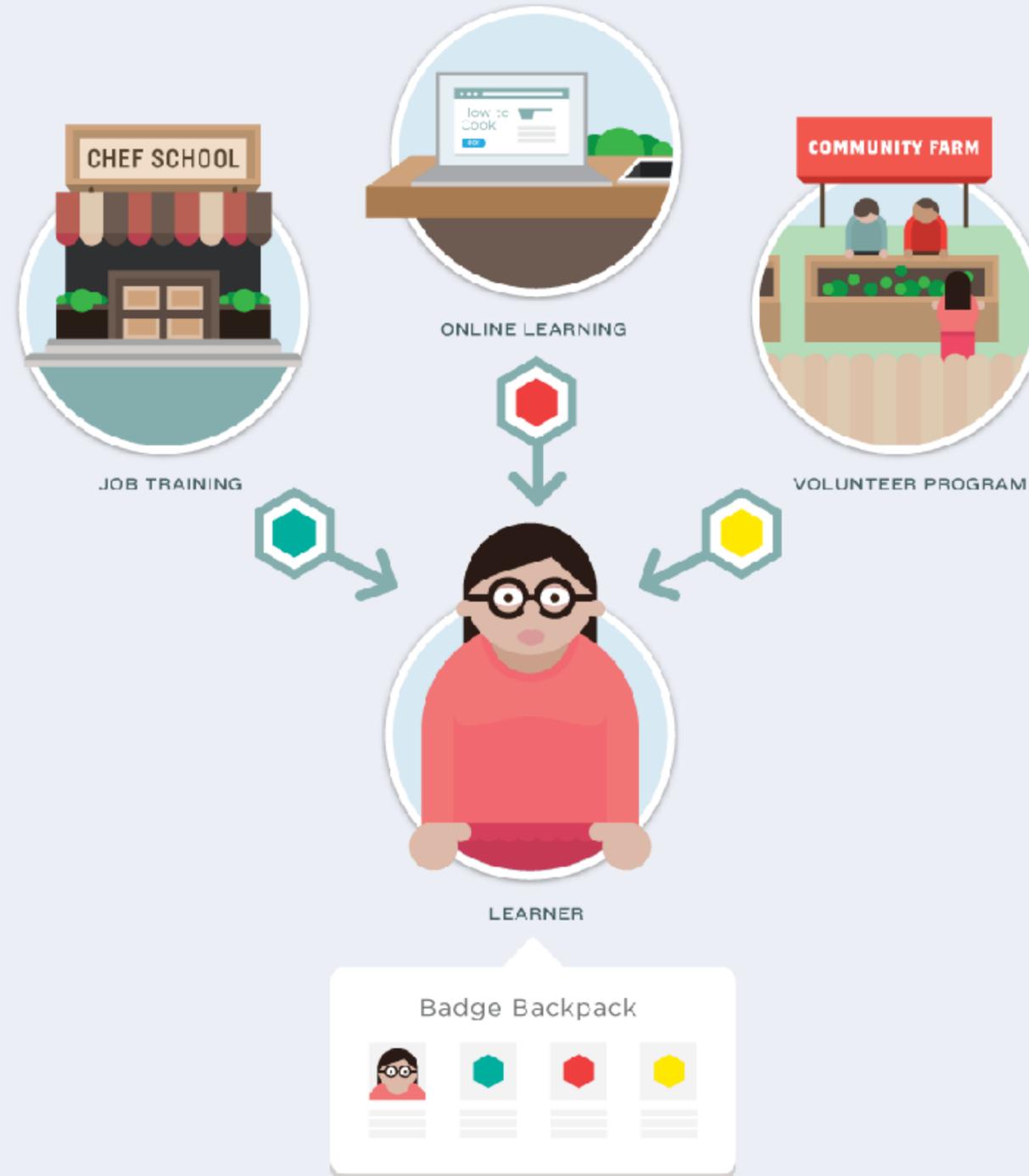
The Digital Credentials Consortium to date has focused on the envelope and the system that provides safe delivery and storage of multiple envelopes—similar to the postal service for mail.

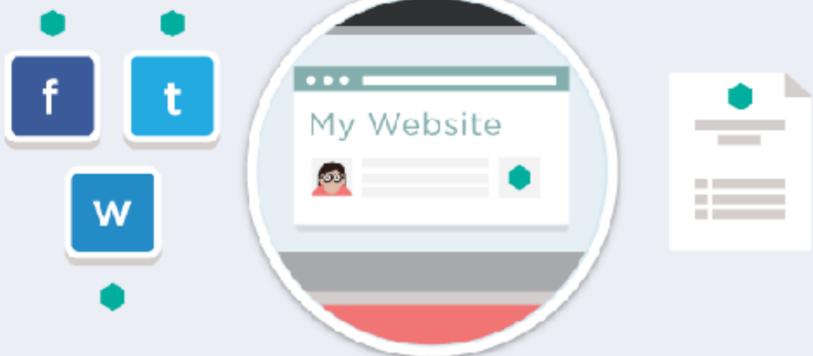
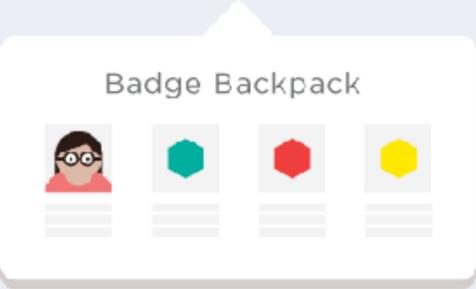
Open Badges (2011)

Many more new types of credentials that represent meaningful achievements and learning

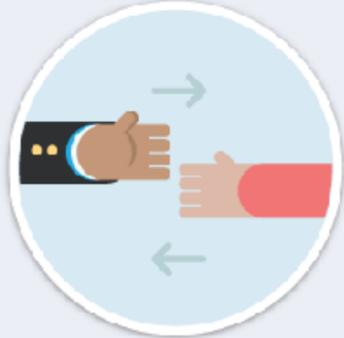


Open Badges help you share your skills & interests with the world:





PERSONAL NETWORKS, SITES & MORE



JOB OPPORTUNITIES



LIFELONG LEARNING



UNLOCK NEW POSSIBILITIES



Media Lab Credentials / Blockcerts (2016)

Open badges & blockchains

Credentials are impossible to fake and can be verified without contacting the issuer.

Student can have true ownership



BELL 4:21 PM 100%



Javier Hernandez Rivera

Alum
MIT Media Lab

This certificate honors you as a member of the Media Lab's alumni community on the occasion of the Lab's 30th anniversary. It recognizes the many ways that alumni contribute to our unique, antisciplinary way of thinking and doing, and the difference they are making in the world.

This certificate was digitally signed by the MIT Media Lab and registered on the Bitcoin blockchain.

Verify certificate

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

1HYPitzbwR83M3Smw6GWS5XeQzBWoJAEeS

Blockchain Address

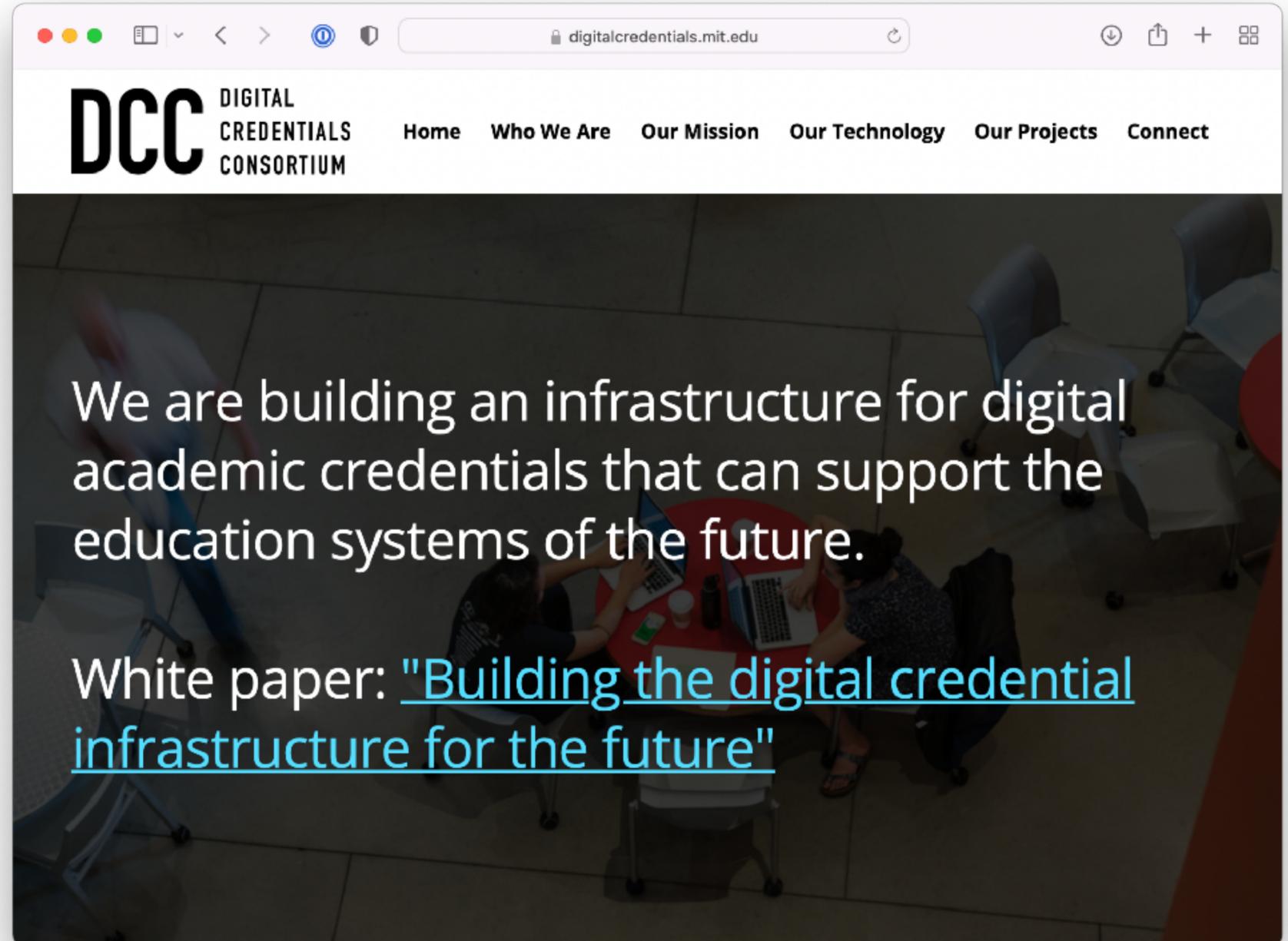
48f64ff1517554dac3496e9da0a28ca0ae492682b0898e38a4e17e7f90ee1295

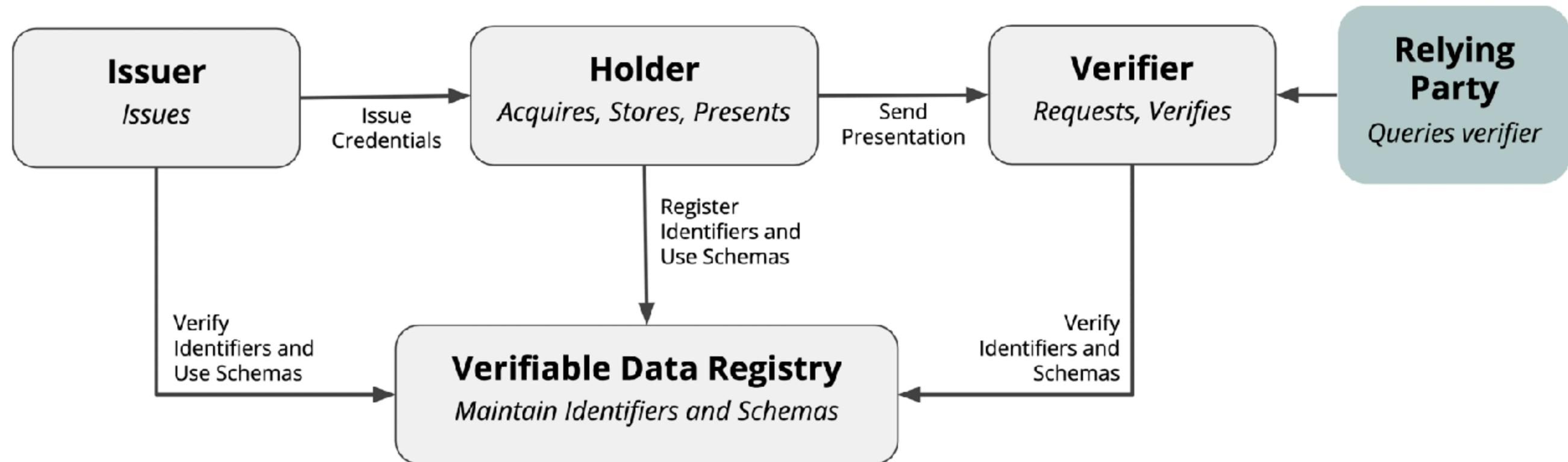
Potential Benefits **(and Risks)** of Digital Systems

- (1) True student ownership
- (2) More trustworthy and de-centralized verification
- (3) More diverse meaningful types of credentials
- (4) More accurate data and insight (at higher resolution)
- (5) Increased ability to track and sort**

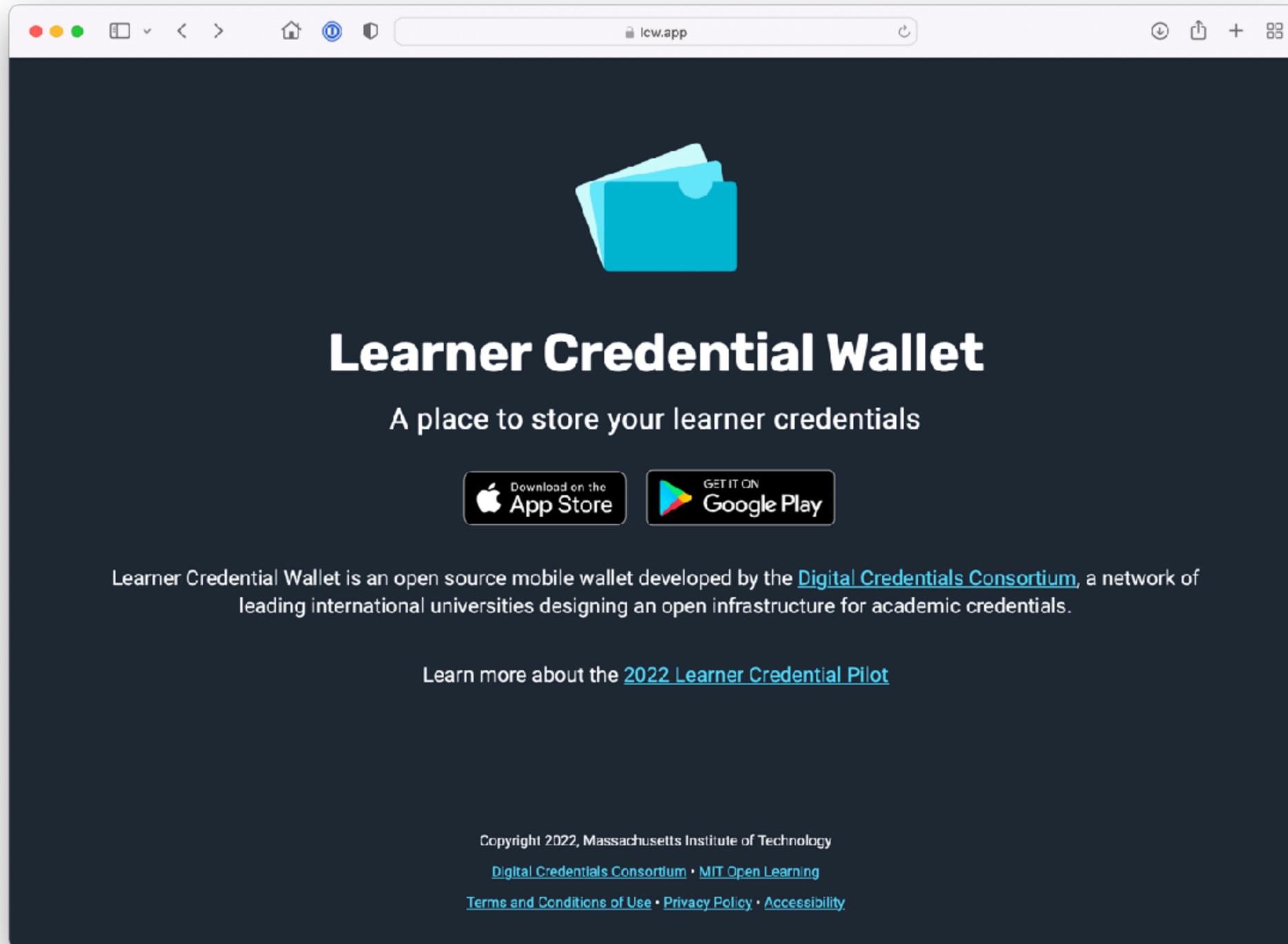
CREDENTIALS

Digital
Credentials
Consortium
(2018)

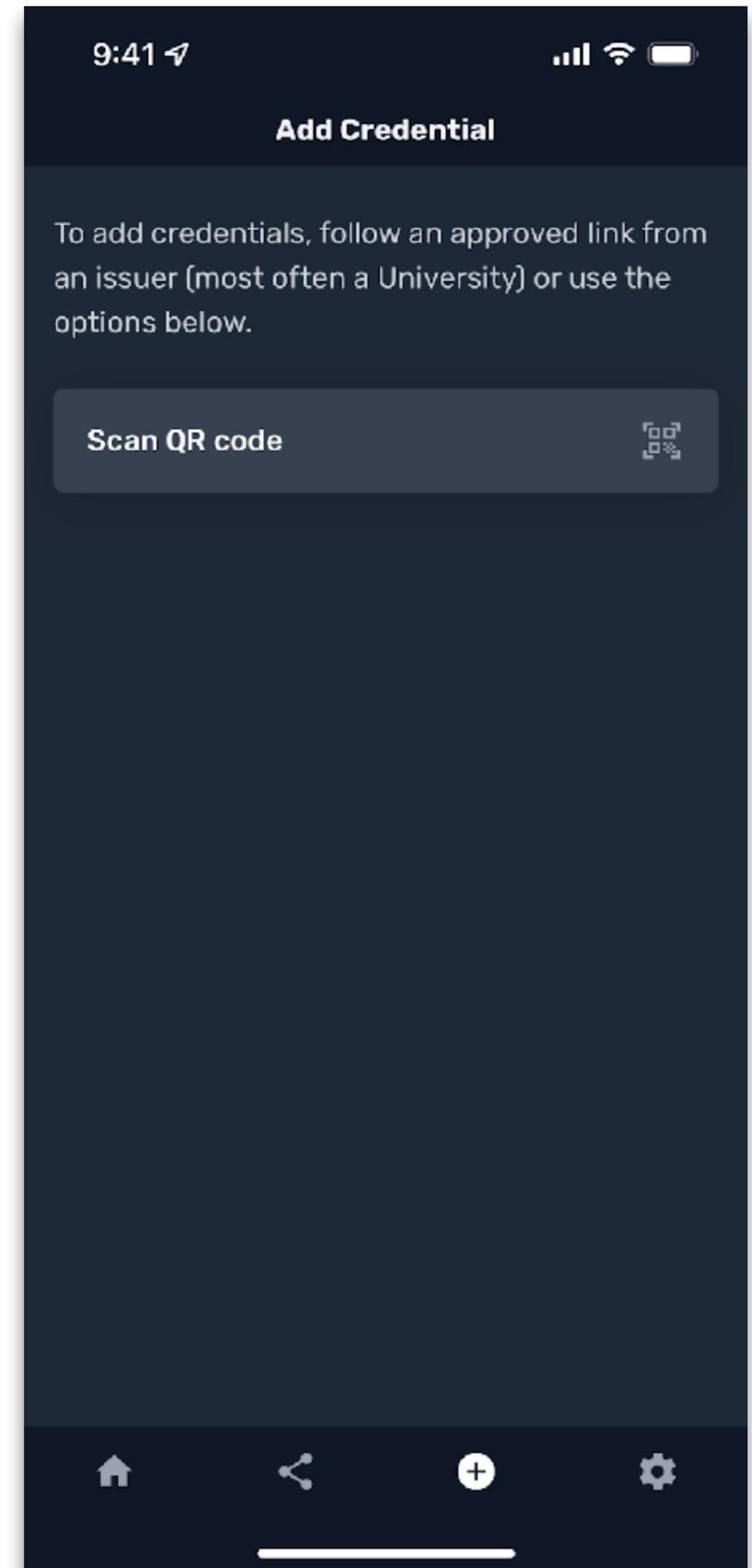
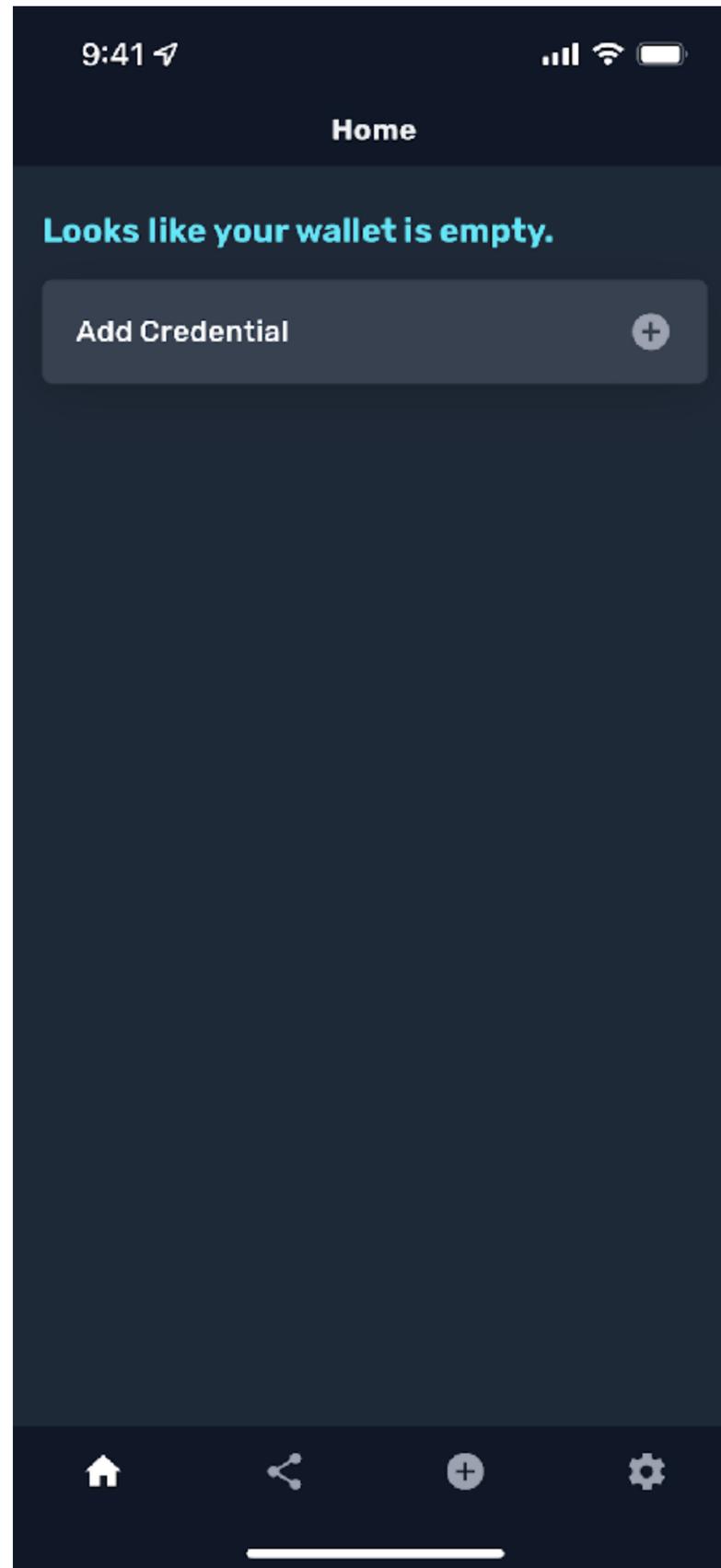
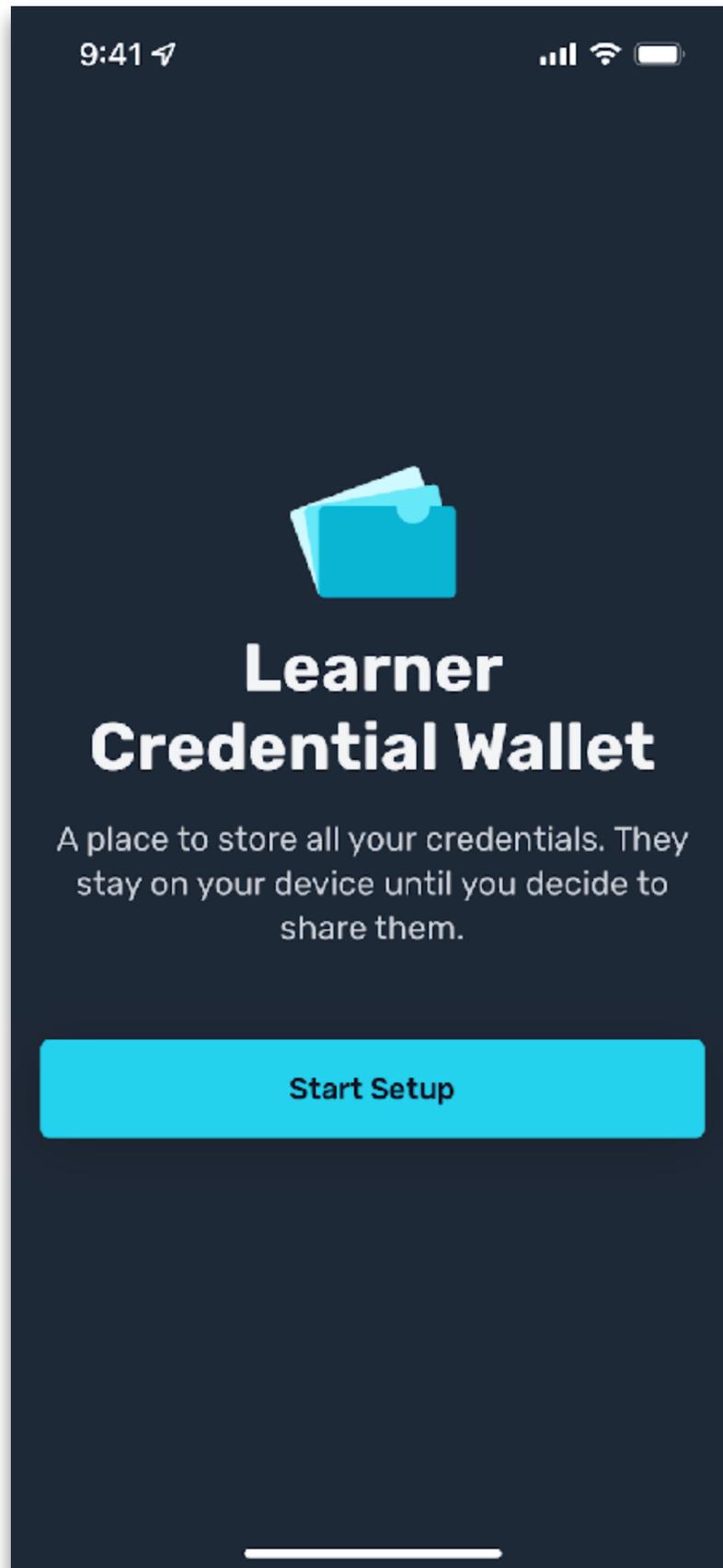


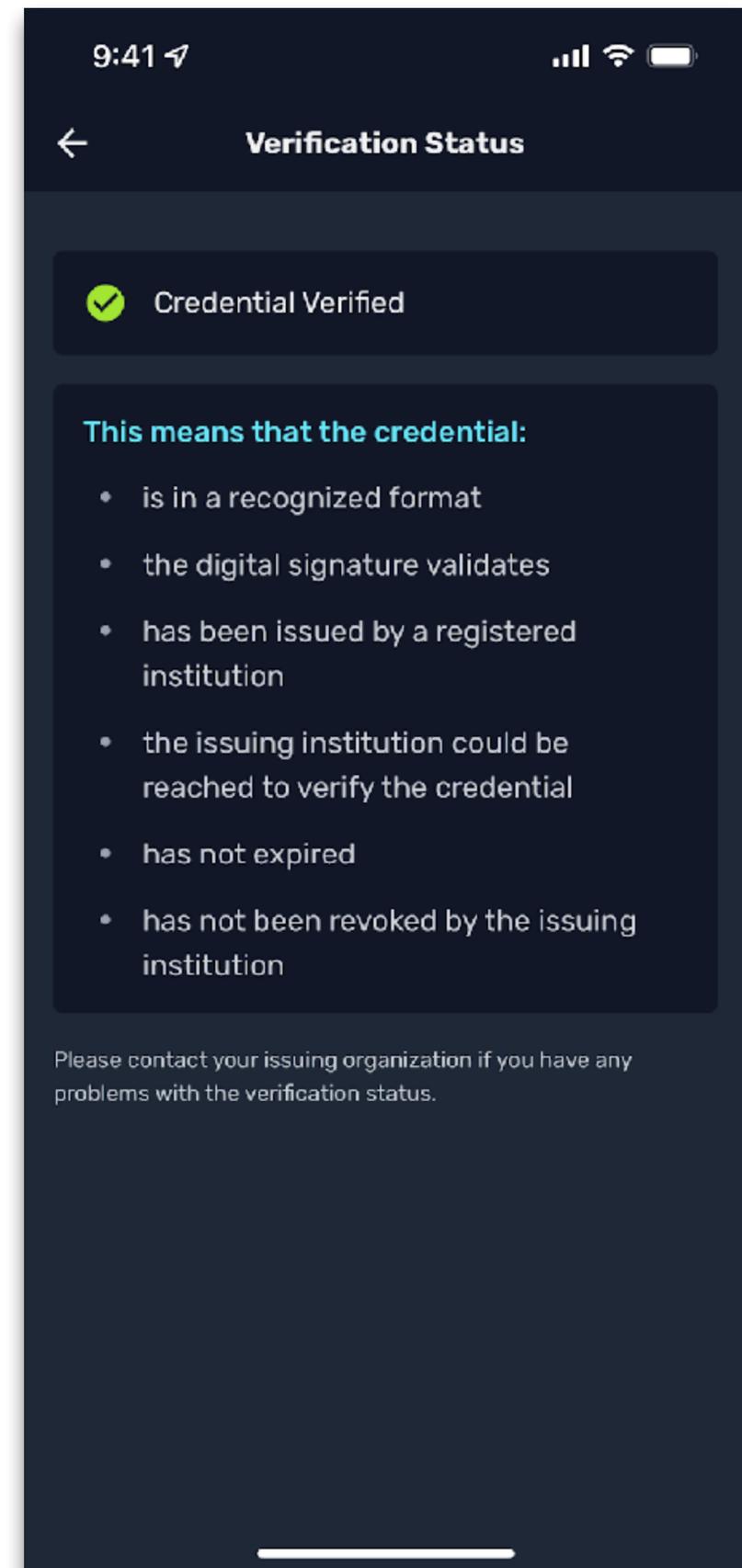
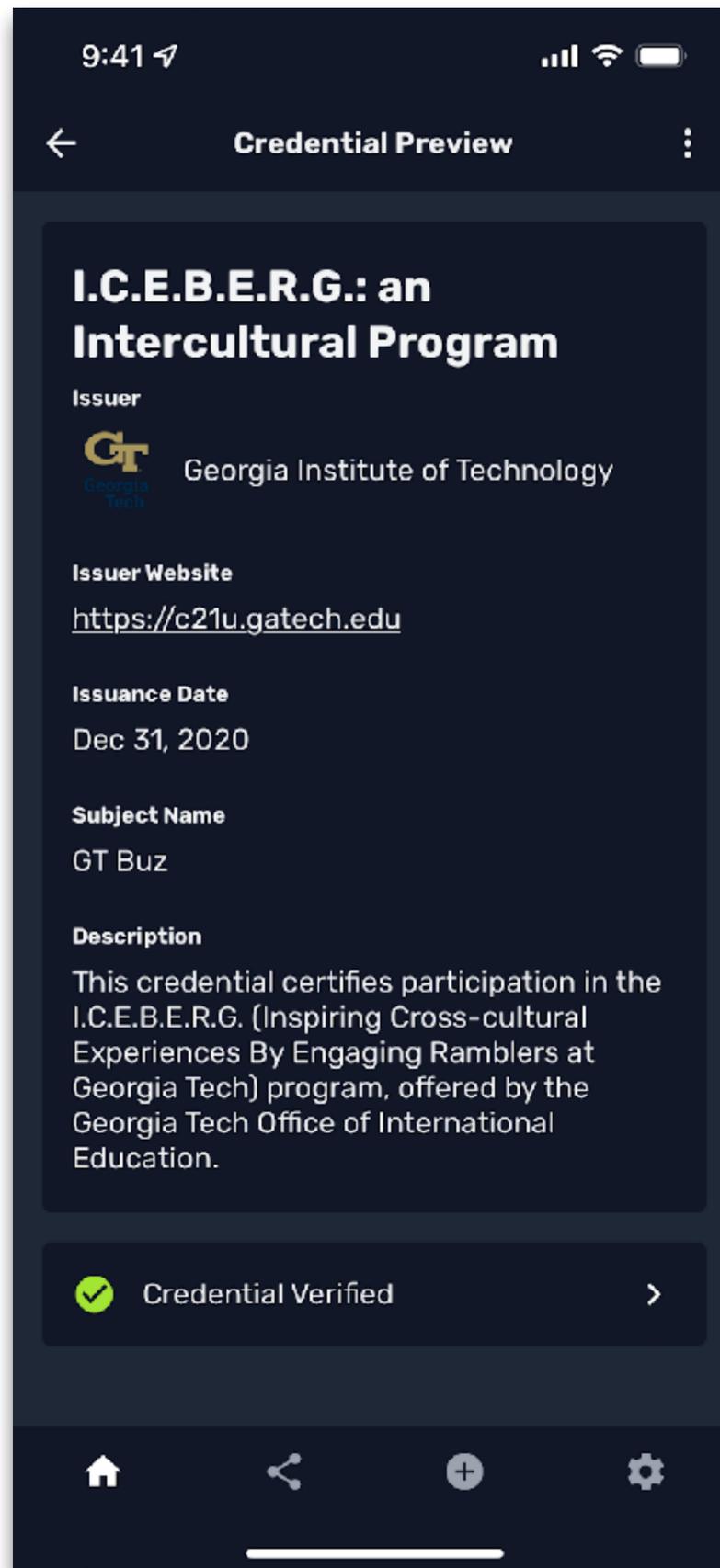
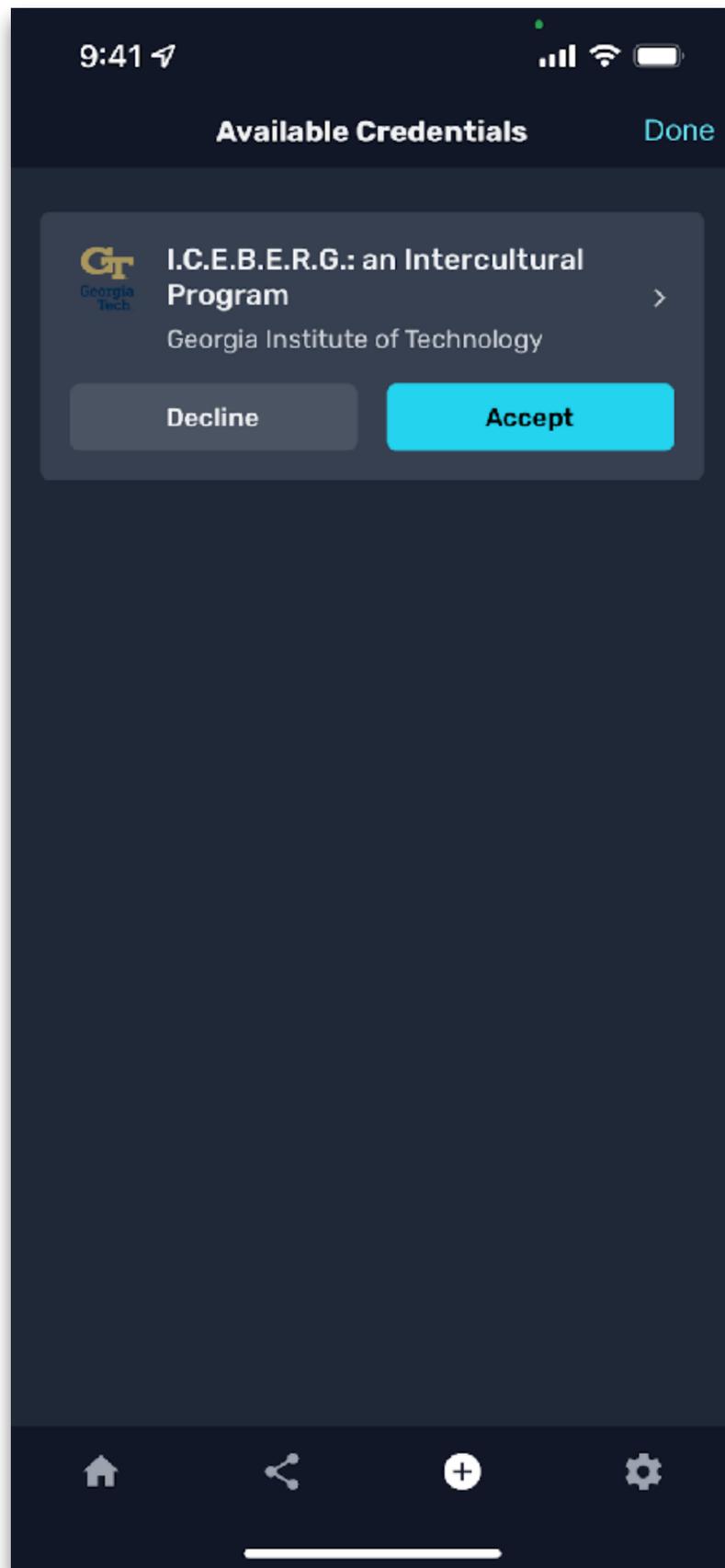


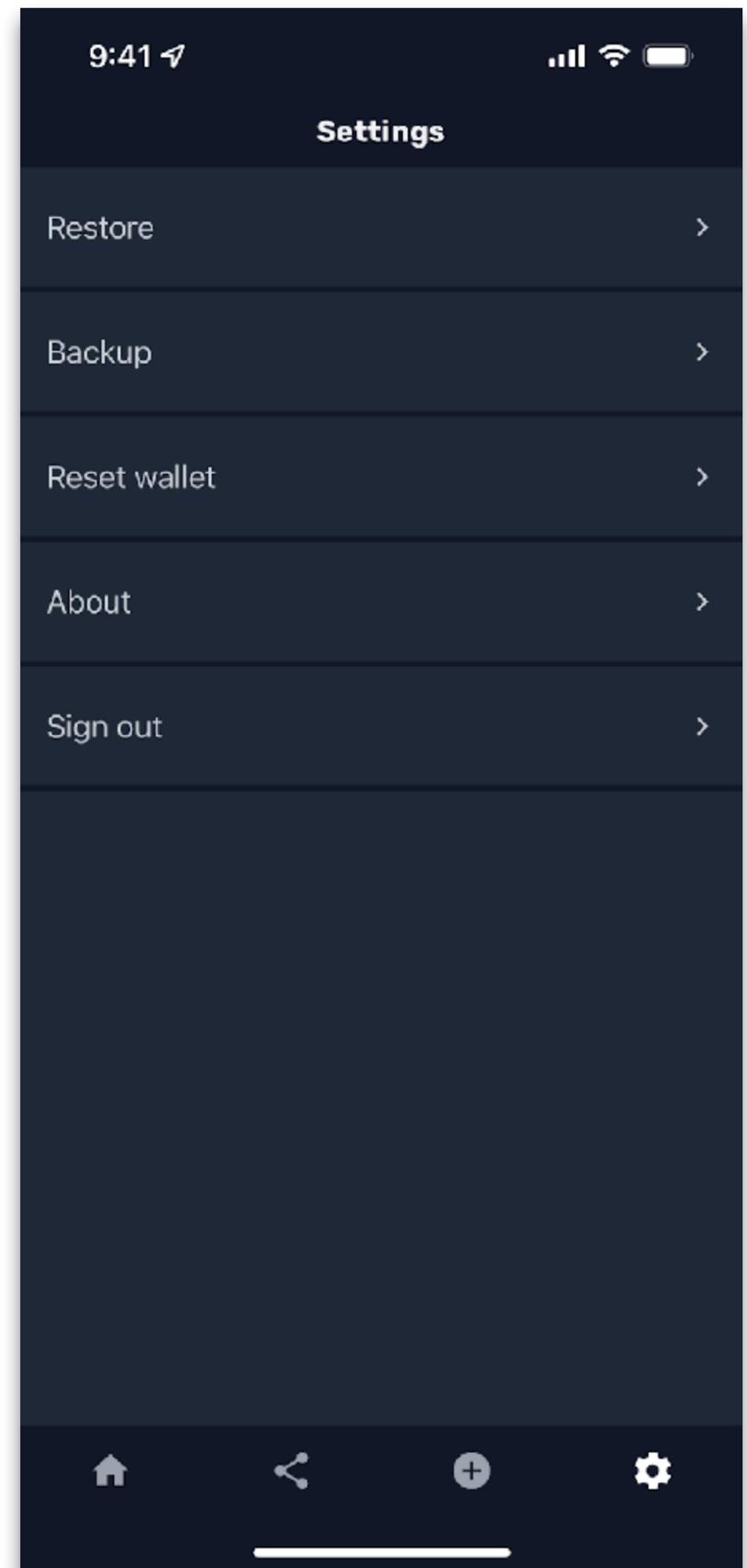
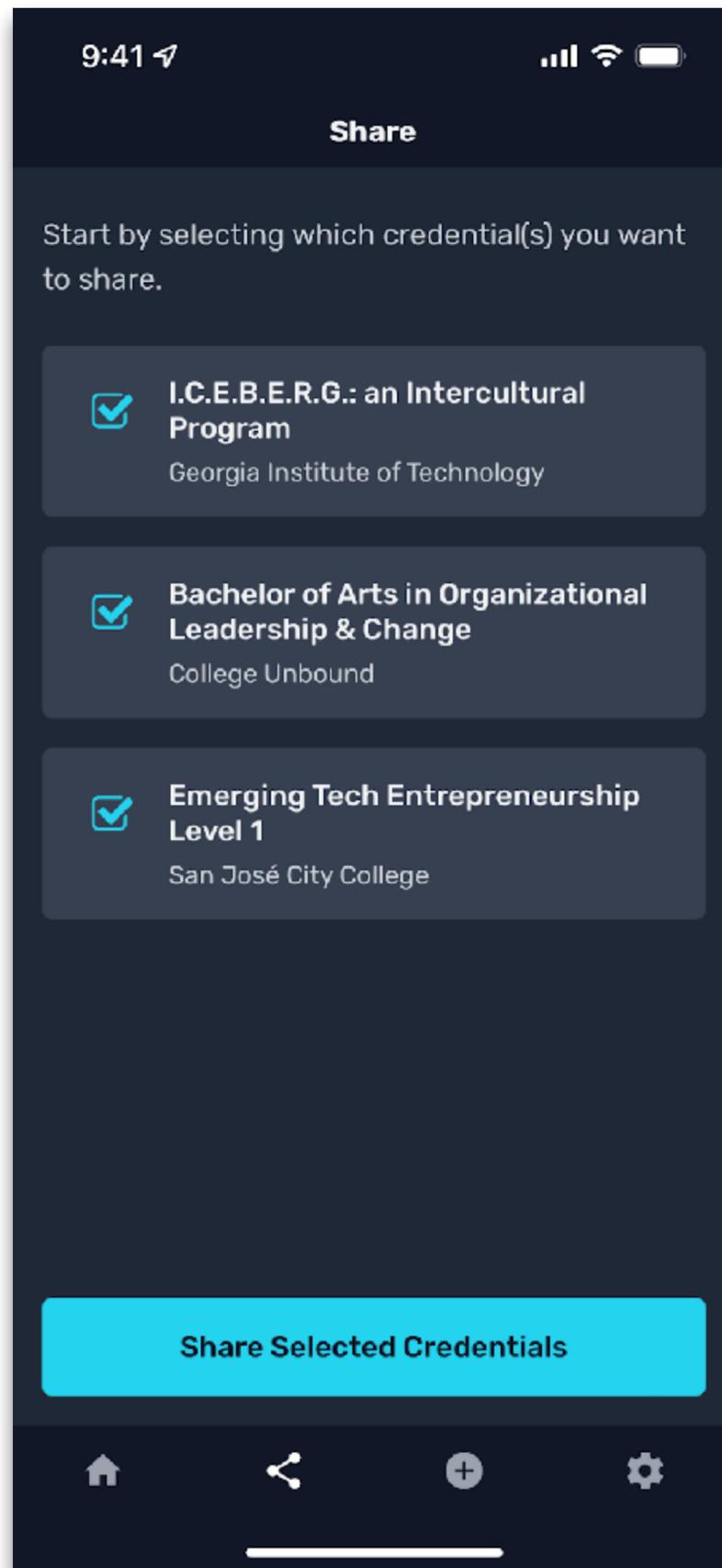
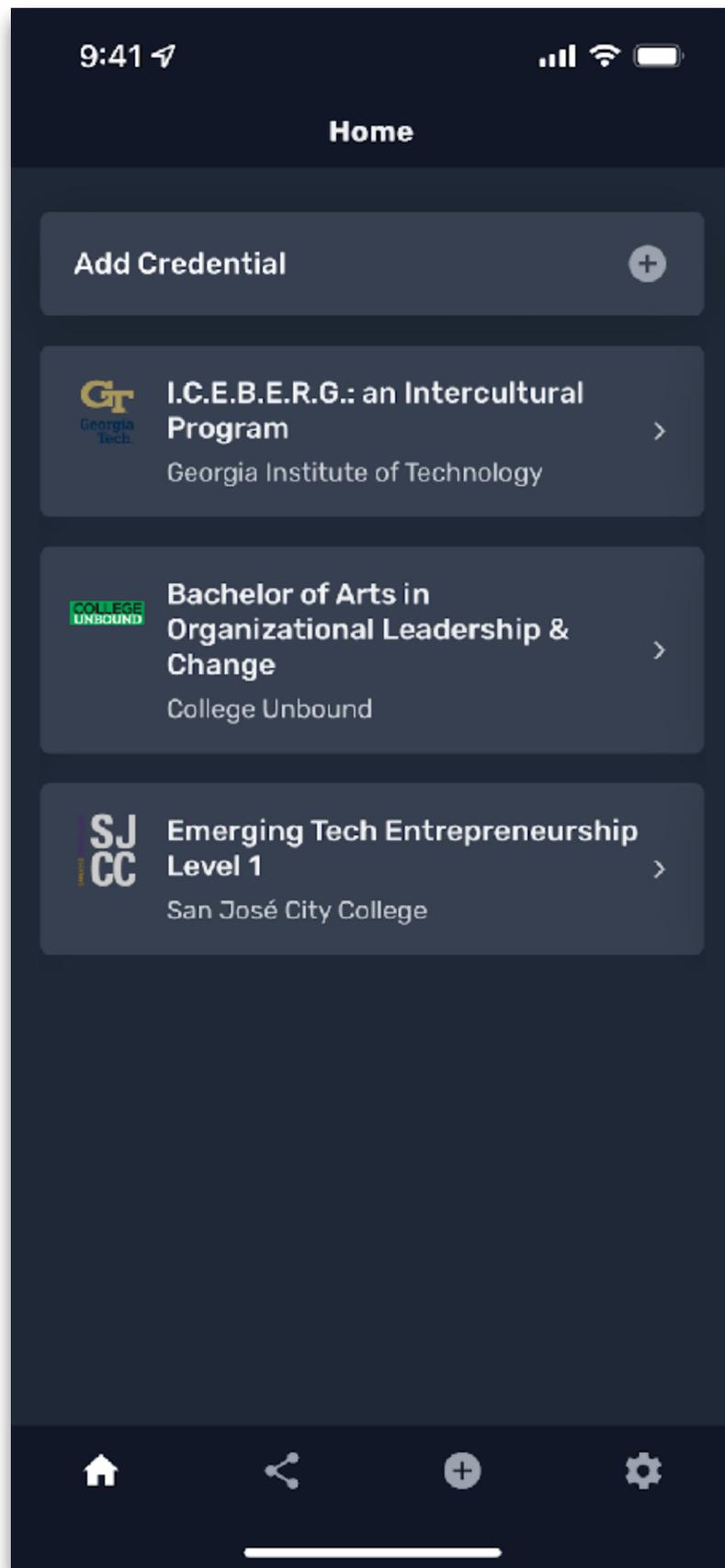
Adapted from: W3C VC CCG



<https://lcw.app>







Employer Perspective

- Increased reliability and efficiency in highly regulated industries
- Attractive to medium-sized enterprises who lack verification services
- Rich meta data (document $\langle \rangle$ envelope) enables skills-based hiring
 - Any taxonomy
- Upcoming report “Bridging the last mile” - **Online event (April/21)**

Credentials are core to the purpose of the university, creating and sharing knowledge.

Credentials exist within socio-technical systems, in which universities play an important role.

Technology enables new types of credential systems, which offer opportunities for improvements and also for monopolies or abuse.

It is in the interest of the higher education sector to take an active role as designers (and maintainers) of future credential systems.

DEMAND FOR A RANGE OF CREDENTIALS

