A National Learning and Employment Records Infrastructure

Progress Towards a Skills Economy

Executive Summary

A white paper from Central New Mexico Community College, IBM, Western Governors University, Randa, Public Consulting Group, and Solutions for Information Design

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CONTRIBUTORS

The principal contributors to this white paper are:

CENTRAL NEW MEXICO COMMUNITY COLLEGE

Erica Barreiro, Future of Work Strategist
Bill Halverson, Senior Technology Advisor
Kyle Lee, CEO, CNM Ingenuity
Juan Munoz, Student Intern
Angelica Ruiz-Olivas, Digital Platform Architect

RANDA SOLUTIONS

Marty Reed, CEO
Kimberly Linson, Director of Credential Ecosystems

IBM

Rick Goldgar, Associate Partner, Digital Credentials
Alex Kaplan, Partner and Global Leader, Digital Credentials
John Kirby, Managing Consultant, Blockchain

WESTERN GOVERNORS UNIVERSITY

Darin Hobbs, Vice President of Academic Records, Credentials & Careers

PUBLIC CONSULTING GROUP

Joshua Marks, Senior Solutions Architect/Advisor
Greg Nadeau, Manager

SOLUTIONS FOR INFORMATION DESIGN, LLC

Taylor Davis, Analyst
Lauren Runco, Director of Strategy
Rita Dietrick, Project Manager

WORDSLINGERS, LLC

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INDIVIDUALS PROVIDING REVIEWS AND COMMENTS INCLUDE:

Naomi Boyer, Education Design Lab
Holly Custard, Strada Education
Deb Everhart, Credential Engine
Gordon Freedman, GoEducate
Taylor Kendal, Learning Economy Foundation
Sharon Leu, JFF Labs
Nick Moore, Office of the Governor of Alabama
Ricardo Torres, National Student Clearinghouse

EXECUTIVE SUMMARY

A national Learning and Employment Record (LER) infrastructure revolutionizes outdated credentialing and hiring systems. Using an LER infrastructure, learners and employers will communicate through a shared skills language and interoperable technology infrastructure designed to easily connect workers with both jobs and skills-building opportunities. The LER infrastructure will become core to an individual's lifetime cradle to career skills-building journey. It will assist them in charting and managing their career as they move from one learning and employment environment to the next. The LER will also enable community and non-profit organizations, government agencies, learning providers, and employers to create actionable, linked, and interoperable systems that support each individual's education and employment journeys. With an LER, learners, earners, employers, and education providers will effortlessly and efficiently exchange trusted information about proven learning and employment achievements. These exchanges will reduce the complexity of navigating talent pathways by providing everyone with clear roadmaps to careers and skills-building activities. All of this will make it easier to connect workers with jobs that fit their skills, interests, and aspirations. Finally, the LER will ensure all this exchange of personal information is protected and under the control of each individual as they navigate their journey.

BACKGROUND INFORMATION ON (1) SKILLS-BASED HIRING PRACTICES, (2) THE LEARNING AND EMPLOYMENT RECORD (LER) ECOSYSTEM, AND (3) WHY EXPANDING EMERGING TECHNOLOGIES LIKE BLOCKCHAIN ARE THE FUTURE

The needs of our workforce have moved us towards an economy where "skills are the currency of the future" (Estrada, 2020). The national Learning and Employment Record (LER) ecosystem revolutionizes our outdated and confusing skills-credentialing and hiring systems. This revolution will come about through the broad-scale adoption of new standards and technologies, making it easier for individuals to navigate the talent marketplace and employers to connect with the right talent for their jobs. This national LER ecosystem, designed and deployed using open-standards-based blockchain architectures, makes it possible for the effortless and efficient exchange of verifiable lifelong skills and employment history.

> "By moving towards a system where individuals and employers can understand the skills an individual has by the credentials they hold, we enhance the power of the LER as an accelerator for skills-based hiring and education practices." (American Workforce Policy Advisory Board, 2020, p.8).

THE LER INFRASTRUCTURE AND INTEROPERABILITY: (1) WHAT IS AN LER, AND (2) WHY INTEROPERABILITY IS IMPORTANT IN DESIGNING AN LER INFRASTRUCTURE

The LER infrastructure (learning and employment records) provides a digital record of an individual's education, training, and work achievements. As interoperable records, they connect with other digital records providing broad insights concerning jobs, careers, and the skills required for success. The T3 Innovation Network noted that LERs are for skills and hiring what Electronic Health Records (EHRs) are for medical care. Both combine data about the individual that allows the person to understand better their "diagnoses" and available options based upon these "diagnoses." Individuals easily find matching educational and employment opportunities by exchanging, viewing, and verifying LER records. In addition, an LER empowers individuals with informed decisions about career and educational possibilities. This efficient and private means of sharing verified credential information lowers barriers to education and employment. The LER infrastructure provides shared and interoperable services connecting employers, education, and individuals through standards-based technology, secure data repositories, and well-defined governance practices.

Essential to the success of the LER Ecosystem, interoperability enables an individual to carry their LER information with them as they move through their cradle to career journey. Interoperability allows information to be transferred, linked, and aggregated from different education entities, employers, and other sources. To achieve interoperability, LERs must utilize a commonly agreed-upon set of public domain data and technology standards that are not proprietary to any one LER system provider.

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CURRENT STATE OF THE LER INFRASTRUCTURE: (1) ISSUES WITH TRADITIONAL CREDENTIALING, (2) ISSUES WITH CURRENT TALENT MARKETPLACES, AND (3) HOW ADVANCEMENTS IN THE LER ADDRESS THESE CHALLENGES

The recommended LER infrastructure overcomes the limitations of traditional credentialing and talent marketplace systems by taking advantage of advancements in current LER systems. The limitations of traditional systems include the inability to share trusted skills-based credentials between systems and a lack of standardization which impedes credential reviewers' understanding of the value and provenance of the provided credentials. Further, traditional systems make it difficult to trust the credential's authenticity and to assure that control of the credential belongs to the individual. These limitations hamper broad-scale adoption.

Advancements in LER systems address these limitations by using common standards and governance approaches that mitigate these issues. These advancements include governance approaches that use permission-based and decentralized blockchain-based technologies. Blockchain technologies provide a decentralized "ledger" with strong support for credentials verification, an individual's control over their data, and "permissioned" governance structures that assure all ecosystem users have the appropriate rights and permissions for their specific activities in the LER ecosystem. In addition, the LER systems support robust trust protocols that empower the user to decide who can access and share credential-based information while also supporting the confirmation of the owner's identity.

REQUIREMENTS FOR A NATIONAL LER INFRASTRUCTURE

An LER infrastructure consists of shared services that include a technology platform, technology and data standards, registries to assure identity and trust, and governance structures that support the management of the national LER infrastructure.

The LER infrastructure is part of a much larger talent and education ecosystem that uses LERs for various needs around identifying skills, hiring, jobs, educational needs, and staying current with a job's evolving skill requirements. Stakeholders will rely on the LER infrastructure technology platform functions and the services it provides:

- management of issuing, updating, maintaining, and revoking credentials, wallet provider's solutions enabling individuals to store and manage their credentials,
- career and learning pathways solutions that guide learners on their cradle to career journey,
- operator services to run the permission-based LER infrastructure.
- cryptographically based trust to ensure insights into the authenticity and provenance of the credential
- technological standards that enable interoperability of credentials between different LER systems,
- governance frameworks that ensure regulatory compliance and data privacy protection.

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THE ESSENTIAL ROLE OF SKILLS-BASED LEARNING IN A NATIONAL LER INFRASTRUCTURE AND LER ECOSYSTEM & THE ROLE OF DATA AND TECHNOLOGY STANDARDS

The increasing diversity of existing job classifications and the acceleration in creating novel job categories make a national interoperable LER infrastructure timely and important. It is not enough to have a degree: a person must also demonstrate employment-ready specialized skills. Employers need to both confirm and understand these skills by verifying an individual's credentials and having insight into the credential's provenance and content.

The national LER infrastructure addresses these requirements, identifying and confirming skills across interoperable LER systems. The national LER infrastructure also benefits individuals by giving them control over the records of their achievements, skills, and credentials, all using technology that will protect the individual's privacy.

The recommended national LER infrastructure requires adherence to standards. Standardized data assures LER records can be widely shared and understood. Furthermore, open standards, rather than proprietary ones, will help ensure no single vendor can control the LER and that it will belong to the individual. In the United States, collaboration between the government, business, and education stakeholders enables common, shared standards. Supported by policies and security functions, these standards help assure individual privacy.

LEGAL AND REGULATORY REQUIREMENTS FOR A NATIONAL LER INFRASTRUCTURE

As LER systems evolve, applicable legal and regulatory requirements will guide their use and adoption. The legal landscape will continue to be dynamic as the transition to digital credentials accelerates, adoption increases, and people and organizations interact with each other through these interoperable digital credentials. Long standing laws and regulations governing the world of physical skills-based credentials will evolve along with the creation of new emerging laws for the digital world. How the LER infrastructure evolves and is adopted will be intertwined with the changing legal and regulatory landscape.

Four primary regulatory frameworks guide the current environment:

- The European Union's General Data Protection Regulation (GDPR), one of the strictest privacy and security regulations, imposes obligations on worldwide organizations collecting data related to EU citizens.
- The California Consumer Privacy Act (CCPA), a consumer privacy law like the GDPR; with a broad view on what constitutes private information.
- The Family Educational Rights and Policy Act (FERPA) guides any LER implementation that uses data from educational agencies receiving federal education funding.
- The Fair Credit Reporting Act (FCRA) governs, in part, the permissible use of personal data, which requires explicit permission from individuals for their data to be used for education admissions, college transfers, and employment. FCRA also governs audit controls on the use of data and actions taken to contest erroneous data.

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NATIONAL LER INFRASTRUCTURE RECOMMENDATIONS

LER infrastructure development is at a critical juncture in the United States, requiring state and national leadership to help craft policy and create the necessary infrastructure. To achieve the adoption of the national LER infrastructure, we recommend that state and national leaders, in partnership with employers, educational providers, and learners, advance the following:

- Technical Standards:
- Continue to mature LER-related standards to support our evolving job roles and hiring practices.
- Shared Services:
- Create a technical infrastructure that provides shared identity/trust and skill/credential services for all LER ecosystem stakeholders.
- Talent Marketplace:
- Integrate Talent Marketplace provider offerings with the LER infrastructure. Regional LER Projects:
- Invest in regional/sectoral LER projects, connect-a-thons, reference implementations and develop a supporting LER Issuer Maturity Model.
- Legal and Regulatory Frameworks:
- Develop and document standard legal and regulatory terms of use, user agreements, and requirements for data sharing and trust.
- LER Infrastructure Compliance:
- Create an organization that certifies LER technologies and applications as “LER infrastructure compliant.”

EXECUTIVE SUMMARY SYNOPSIS

The complete report describes the current state of LERs, the requirements for that infrastructure, and the proposed efforts to scale to a national LER infrastructure. Appendices include case studies on the four most mature LER ecosystems, a summary of applicable core LER legal and regulatory frameworks, and a technical decision guide for the adoption of LER infrastructure systems and applications.

This report is a collaborative effort between six organizations engaged in projects representing some of the most mature LER efforts. These organizations are Central New Mexico Community College, IBM, Public Consulting Group, Solutions for Information Design, LLC, Randa Solutions, and Western Governors University. This effort was coordinated by Central New Mexico Community College, a Hispanic and Native American serving technical and transfer community college and the first community college in the nation to issue non-degree and degree credentials to students on a blockchain.

Over almost one year, this team met bi-weekly to define, debate, and synthesize their knowledge of and perspectives on a definition of a shared infrastructure that allows interoperability between current leading and future LER architectures. Our goals were to discuss and describe how the United States could create an infrastructure that would make it easier to connect workers with jobs and provide decision-makers and technologies guidance on the “nuts and bolts” of creating a national LER infrastructure. Before the publication of this report, the team engaged in a peer review process, inviting 20+ individuals from organizations who have been pioneers and thought-leaders in the work to create a national LER infrastructure. Their generous feedback on this report’s concepts, architecture, and recommendations are greatly appreciated and acknowledged.

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