



# The Newest Economy

Welcome to the Credential Currency Revolution

Creating the Credential Alliance

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## Acknowledgement

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# Foreword

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In “The Newest Economy – Welcome to the Credential Currency Revolution”, Gordon Freedman does a masterful job of showing the historical disconnect between education, job training, employers, and how individuals build a career. Freedman also shows the future for our economy and how the future can be enhanced with a public-private partnership model focused on an education to employment technology solution that is built on the new currency for individuals and employers – credentials. As I read the paper, I was taken back through the first generation of the 21st century and those major events that have shaped education and the economy.

The first major thrust was a focus on basic skills, academic support, and accountability through the No Child Left Behind Act of 2001 (NCLB). Over time, NCLB lost support as Governors, policy makers, and business leaders were complaining about the lack of preparation of the workforce. Education non-profits came together to propose a move away from the basic skills focus of NCLB and move toward all students being college ready. Thus, was born the “Common Core” standards in reading and math. However, due to political pressures, the standards soon came under attack and many employers were concerned that they still could not find the workforce that had the technical skills needed for the jobs of the 21st century. A national focus on both college and career readiness then emerged.

In 2014 the Council of Chief State School Officers (CCSSO), formed a task force to focus on career readiness. The task force report made three major recommendations – states should involve employers in improving the career pathways, ensure pathways lead to a meaningful credential that provides access to jobs in demand that pay a living wage, and make career readiness matter through a measure in the state accountability system. With the recent passage of the Carl Perkins reauthorization, over 40 states now have a career readiness measure in the state accountability model. Private support for career readiness and elevating the value of credentials has been significant.

JP Morgan Chase Foundation funded 10 states through the New 4 Skills for Youth project and now several large urban sites to develop new models to connect education, training, jobs, and careers. Lumina funded several states to work through policy implications for prioritizing those credentials that are in demand, pay a living wage, and provide a career path. In 2018, CCSSO, Advance CTE, and the Education Strategy Group published “Credential Currency, How States Can Identify and Promote Credentials of Value” and introduced the concept of credential currency. Common threads in the focus on credentials are the Education Strategy Group and Credential Engine. Education Strategy Group supports many states in their effort to better align career pathways that lead to credentials of value. Credential Engine provides an open-source language for providers to publish credential information to give the public a better ability to understand, compare and determine the value of the almost one-million credentials available across the nation.

The COVID-19 crisis has seen the greatest impact on education and employment to date. The very nature of education, training, and work has changed. Many low-skill workers have been displaced and their future employment opportunities are very unlikely unless they upskill. This economic impact has led many thoughtful people to work on solutions to the biggest challenge our nation has faced in generations – widespread economic inequalities.

In this paper, Freedman and fellow collaborators have shown a way forward that is built on models that have already been proven effective by the finance and commerce sectors of our nation. The proposed Credential Alliance shows a public-private partnership that could really make a difference for individuals and address the economic inequalities of our nation. I encourage readers to explore the very thoughtful approach laid out in this paper and look for ways to participate in the “Credential Currency Revolution”.

**Terry Holliday**, *Commissioner of Education, Kentucky 2009-2015*

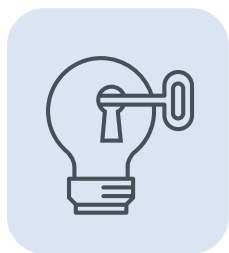
# Introduction

There are aspects of the education “marketplace” that are old, disconnected and entrenched. In today’s world, technology should provide efficiencies, connections and economies of scale.

Pursuing education, occupational training, searching for jobs or building a career have always been disconnected pursuits. However, for the last decade, there has been a steadily increasing drumbeat to connect the four, and to connect individuals to their own personalized pathways from academics, to training to work – and to develop unified pathways to landing a job or starting a career.

The 2008 great recession gave rise to an increasing demand for more efficient career technical education (CTE, Perkins) programs and for the upskilling of displaced, under-employed and unemployed people through workforce development (WIOA) programs. Within academic institutions, primarily community colleges and some high schools, noncredit skill-based certificates began to rise. Four-year institutions vary widely in their ability to help students with employment possibilities during their education or post college completion or in harvesting data of their employment outcomes for the next students.

A dozen years later, in the grips of the COVID-induced economic crisis, many state governments are beginning to fund K-to-Career exploration and pathway systems that cross multiple education and training institutions and connect through data to employers and labor market outcomes. Similar to European education, training and employment models, this approach is a more holistic Human Capital model focused on tracking and fine-tuning education and training inputs and job and employment outputs that are personalized to individual learners and to industries with specific needs. While new activities in this combined modeling are nascent, a number of efforts tackling certain aspects of the problem are making progress on what will create the “newest economy.”



## Filling a Need

This document posits that a theory of education-to-employment practice and policy needs to emerge as a new “category” of overall and connected activity in place of many separate and fractional efforts to align programs, individuals and employers to the benefit of individuals and regional and state economies.

A new method is needed to process knowledge and know-how as continual feedback in a more complex ecosystem of learning-to-earning and running this cycle many times over a lifetime. This is especially true as regions, states and the country all participate in restarting the economy in the wake of the COVID pandemic that has shifted the opportunity and economic landscape from tinkering with these issues to now having an imperative to address them more directly.



# PART I – EMERGING SHIFTS: THE KNOWLEDGE & SKILLS ECONOMY

*The core problem in the education-to-employment continuum is that there are very different means of certifying knowledge and skills on the education and training side of the balance sheet that may not align well with the ever-changing needs and expectations of employers on the other side of the balance sheet. Alignment is critical but difficult.*



## Knowledge Markets

A person's past, current, and potential, knowledge and skills have value in economic and financial terms – based on the market demand for their knowledge, skills and experience.

The value of their knowledge, skills and experience is directly related to what a “buyer” (employer) might be willing to “purchase” from a prospective employee or contractor through employment or contract. In such a case the individual is a “seller” and the employer is a “buyer.” Buyers and sellers are key components of economic markets.

Unfortunately, the four currently disconnected activities – education, training, career exploration and planning, and employment - are not organized or recognized as a marketplace, far from it. They are generally conducted and governed by numerous rigid institutional and organizational structures, each its own siloed entity, without much in common that facilitates building up of an individual's own “supply” and putting that into the demand market of “buyers.”

- Knowledge, skills and experience are conceivably like forms of currency, or a mixed financial portfolio, where value can be set by a marketplace of buyers (employers) and sellers (potential employees or contractors) driven by supply and demand dynamics and other less tangible measures.
- The knowledge, skills and experience marketplace actually already operates in the background of all education, training and employment, at all times, in regional, national and international economies and societies. However, it does so in very nontransparent, inequitable and disconnected ways.

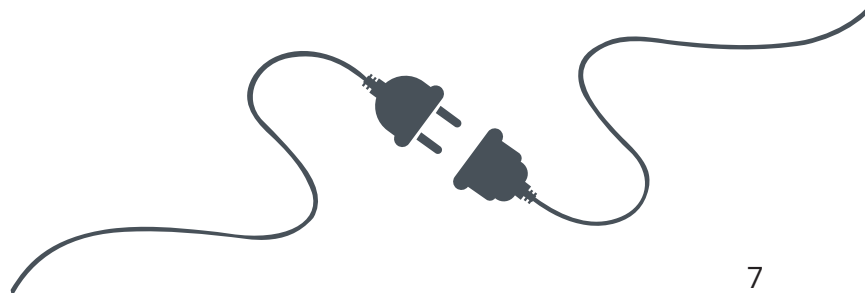
Consequently, each individual student, adult learner or jobseeker is left trying to navigate what they determine is the most appropriate education and training and, eventually, try to link their qualifications and background in online job searches for jobs and careers.

Similarly, employers are trying to find the employees or contractors they need to meet specific knowledge, experience and skill requirements. They, too, have very imperfect methods of making choices in the market. While larger corporations are getting more sophisticated with such analyses, this only serves employers with what talent is currently available and reachable. It does not address the pipeline for talent development for future needs in various industries.

While there are well-founded theories around human capital formation and operations, there are innumerable disconnected technologies that offer single-point solutions, involve large philanthropic projects, government grants, there are large corporate players with powerful and proprietary partial systems, and there are thought leaders and advocates. These individual entities and players have provided very few notions of how to form a well-connected knowledge and skills marketplace and then to socialize it into actual use. Instead, there are various shared data efforts and there are state initiatives. But there is no central core consolidating what the “newest economy” might look like in a more organized, decentralized technology and data leveraged ecosystem that could support a marketplace.

- Despite a great deal of investment, the data systems (across stakeholders) and identity management (of individuals and employers) for this marketplace have simply not emerged. While government, business and education institutional platforms do not talk to each other.
- Unlike the eCommerce and finance and other sectors that are reliant on newer technologies, the accountability in education across institutions and government agencies largely lacks agreed upon measurement or consequences for implementing inefficient systems or rewards for producing efficient systems that are performance based.

It is likely that such solutions have not emerged because, unlike financial, commercial and supply chain marketplaces, the knowledge and skills marketplace does not have a common definitional and common data structure stretching across all of the disconnected participants and stakeholders, nor is there a common “credential currency” that has a floating exchange value (rate of what is selling and who is buying) in terms of qualifications and employment realities.



In the financial markets, which were the first to digitally unify themselves via the Internet across diverse corporations and regulators, currency is currency. In the commercial, eCommerce and supply chain marketplace, the currency is goods and services that rise and fall with supply and demand. However, in the education and training markets, the “goods” are hard to quantify and give value to because the transactional (what training gets what job) data does not exist in a unified system. There are also routine outlier events that can throw off any clear cause and effect in hiring where many people are hired based on other factors and turn out to be highly successful, or the converse.

The data that does exist is overwhelmingly “compliance” data required to be reported by education institutions, workforce agencies and employers who receive some state or federal support or who participate in required national labor statistics reporting. Turning compliance data into performance and outcomes data is not simple when most systems are not organized to do so.

What do we know about valuing education and training that could turn into market performance data?

- We know in gross terms that a general bachelor’s degree has greater exchange value (what a degree will bring in the knowledge marketplace) than a high school diploma. But this is a vague measure and only serves to signal “has bachelor’s degree” and the statistical value might be a result of correlation, not causation. What is known is that a completed general bachelor’s degree will, in general, return higher lifetime earnings, but lower wages early in jobs and careers.
- More specific career-oriented undergraduate degrees or professional master’s degrees have higher or more precise value because they can be measured against hiring in specific fields for those who have specified qualifications.
- We know that various degrees and professional certifications have higher or lower value based on regional and national (and fluctuating) demand as can be seen in Labor Market Information (LMI) data and various state analyses. Yet, none of this is indicated in terms of the value in the market and the likelihood of employment.





## Changing Nature of Postsecondary Degrees & Credentials

The existing solutions in the education, training and labor data world tell us little about the actual daily data flow in the non-organized knowledge markets. Part of the reason for this is that we are in the midst of a slow but steady reorganization and reconceptualization of what education means where it leads.



The shift to online and other changes in the last decade have changed the nature of work, jobs and careers. There is an abundance of skill-based jobs in the United States where a high school diploma and a specific industry-recognized certification will lead to employment.

The abundance of jobs that go unfilled, even in the pandemic, do so because both employers cannot find people with the right skills and people do not know about them, what is required for them and how they pay. There is a schism forming between gaining or finishing a bachelor's degree or earning a certification that leads more directly to a job, or some hybrid of the two. Prior to the pandemic there was already strong growth in career and technical training as part of alternate pathways to work without a college degree. The previous decade had seen strong emphasis and programs for college-going and college-completion.

- As we rebuild our economy, it is clear that the path forward for matriculating students, returning workers and re-skilling adults is to explore all alternatives and manage the timing of when and where to earn a degree, certification or a mix of the two in relationship to employment and career goals.
- This trend is coupled with the high cost of higher education, costly loans, and the challenges for higher education in connecting graduates with work.



This trend – degree versus certification or a mix – is growing and coming out of the pandemic there is every reason to believe it will accelerate. A four-year college degree statically adjusts up lifetime earnings but does not easily secure employment by itself. The world of education and training employment and career is now much more fluid than it has been. The expense of a higher education degree with regard to its employment yield is an open question.

Given the new realities of the preparation necessary for employment, a standards-based mechanism is needed to evaluate an individual based on a heterogeneous mix of certifications, credentials and degrees.

This standards-driven necessity would join the range of badges, certifications, degrees and other credentials into a common method for rating and evaluating what people know, and the skills and experience they have acquired. The “newest economy” is going to require a new culture and mechanism for exploring and equating education and training to employment and career development.



## The Emergence of the Newest Economy

The term “knowledge economy” was coined in the mid-1960s and popularized by the prescient thinker and management consultant, Peter Drucker. This was long before even a hint existed of what the Internet would bring to the global economy and to individuals. Since the World Wide Web was not yet conceived, it is amazing what Drucker foretold.

*“Every few hundred years throughout Western history, a sharp transformation has occurred,” Peter Drucker observed in a 1992 essay for Harvard Business Review. “In a matter of decades, society altogether rearranges itself – its worldview, its basic values, its social and political structures, its arts, its key institutions. Fifty years later a new world exists. And the people born into that world cannot even imagine the world in which their grandparents lived and into which their own parents were born. Our age is such a period of transformation.”*  
**Harvard Business Review, September-October 1992**

It did not take fifty years as Drucker opined. Now, just thirty years later, job boards and professional networking, social media, resumes online, online university and training programs, state and Federal labor data, the gig economy, ecommerce, and learning are ubiquitous on the Internet. While the solutions addressing some portion of the education-to-employment continuum are now digital, they still operate largely as separate and disconnected entities. This makes it difficult to foster a new knowledge and skills economy with such a level of discontinuity.

Three decades after Drucker’s prediction emerged, we have yet to solve the fundamental problems of the knowledge economy – where is the common data system and what is the common currency to assess value at multiple levels between supply and demand between sellers and buyers of knowledge and skill?

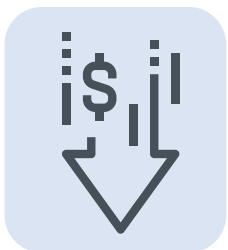
We know that knowledge or human capital far exceeds the value of plant, equipment, goods and services, but we lack the structures to most effectively capitalize on it.



- There is yet to be a universal standard and valuing mechanism for equating (or calculating) the relationship of education and training to jobs and careers. There is no one common reference site for labor market data (demand) and knowledge and skill creation (supply).
- A knowledge economy model would have one or more marketplaces and a common currency or common exchange rates.

In today's hyper connected and data-rich world, stakeholders A, B, C and D (below) are the core constituents of a knowledge economy. They need to be more closely linked to manage an end-to-end education-to-employment model.

- A. Governments (Policy & Regulation):** State and the federal governments need yield data to make the most informed investments in K-12 schools, higher education, career and technical programs and workforce development.
- B. Education/Training Institutions & Programs (Content & Credentials)** K-12, higher education, CTE and workforce stakeholders need continual guidance and feedback on how and where to invest for the best outcomes for their learners.
- C. Employers (Talent Demand):** Require a vibrant and versatile knowledge and skills conduit to meet current and future job requirements.
- D. Individuals (Talent Supply):** Need methods to better explore, evaluate and vet their options for education and training to the highest payoff for work or career building in both economic and lifestyle interests and a place to manage their knowledge credentials, or currency.



This void of alignment between education institutions and the job marketplace will continue to impact any economic recovery and growth. Relying on past labor data is not sufficient to signal institutions and programs on where to concentrate their efforts today. Employers are challenged enough in forecasting knowledge and skill hiring demands while disconnected from the knowledge and skill conduit.

In the last ten years, there have been a variety of a) practical point solutions, b) labor market data services, c) integrated training and employment offerings, d) coding of academic and training programs, e) longitudinal attempts at education-to-employment data systems, e) learner portfolios, f) digital student and employment records, and g) regional and state funded contracts let for data, employment and career exploration services, and h) employment and unemployment and career exploration services. Various forms of these solutions service stakeholders A, B, C or D, but not all of A-D. It is a complex matrix and the lack of clarity in the marketplace is very expensive and inefficient for all concerned.

All of the nonprofit and for-profit products, services and solutions are currently competing in a complicated emerging knowledge and skills ecosystem for buyers' attention, setting up trials and making sales, but none has produced a reasonable or proximate method to operate a true marketplace.

- Such a marketplace is complex and would have to solve a multitude of integration and standards issues between the various stakeholders – employers, education and training institutions, state agencies and especially individuals who are, additionally, used to and expect everything to be accessible on their mobile device.

## It's Happened Before: Standardization in Supply Chain and Publishing

The consumers of Amazon and of other eCommerce services that know the sellers, the buyers, and the patterns developed between them can serve as a model for not only the technology but for a common culture where employers can review and access talent that has been trained or certified in various ways while educators, trainers and agencies can audit the data and make adjustments to public investments.

Standardization is the hallmark of markets. Think of the stock market. The data beneath each company, and the unified method of pricing, selling and tracking stocks and bonds. The markets are so precise that bets are being automated at close to the speed of light because of standardization for owners, buyers and sellers.

Standardization also happened early in the automotive industry where the industry and secondary part suppliers agreed on common standards and definitions. This launched a full automotive supply chain marketplace open to companies as well as consumers.

Similarly, in book publishing, distribution and sales, a variety of data solutions existed to define individual titles using ISBN numbers, the Dewey Decimal System, and the Library of Congress classification system. However, when book and book sales databases and library reference systems became digital (pre-Internet) there was not a common and reliable way to search for books and journals, let alone their content, or track sales.

In 1967, Ohio College Library Center changed its name to the Online Computer Library Center, now simply OCLC. OCLC became a method of using meta-data to describe collections for library use, today we use WorldCat (World Catalog) for library searches.

Later, as the Internet was emerging, questions of meta-data – data about data – used for searching for content including books and journals began, and a new global standard emerged called the Dublin Core.

As a project with OCLC, the Dublin Core helped form the bridge for describing, cataloging and searching for published content from established publishers and Web newcomers. But none of these systems could do the one critical thing necessary for a marketplace – say who the user was. They could describe the author, publisher, content and other reference points, even sales data, but not who was consuming their products, doing the purchasing or what they were reading.

When Amazon began, first in the book business, the company wanted to unite the published goods, and eventually their actual contents, with the actual book purchasers. Later, as Amazon introduced the Kindle reader, Amazon could actually measure consumption levels of actual individuals inside a digital book they had purchased.

This raises the question, where is the Amazon for education and training supply and employment demand and consumption and the patterns between the two?



## Credential as Metadata

There is a “content” and “qualification” issue at the heart of the education-and-training to employment-and-jobs data and metadata continuum, and how that data, in the aggregate, is analyzed for reporting trends, evaluating and ranking successes and failures, and everything in between.



Much like the Dublin Core for books and content, issues early in the life of credential services require a way to bring singularity to data definitions that equally unite a person, a program, a job, and the data reporting these to state agencies, institutions, and to individuals. The prevailing wisdom is to do this through standards-based, openly defined, transparent and aligned credentials -- small, medium or large.

Each side of the equation that defines credentials already exists in a basic form among education program descriptions captured in data, employment and job descriptions captured in data, and education program and labor category data as represented by the U.S. Department of Labor and the U.S. Department of Education.

- In all cases where employers and education institutions rely on the federal government for regulation or funding, employers and institutions must provide descriptions and data.

Unfortunately, the two data classification systems, known as the SOC (labor) and CIP (instructional programs), respectively, are marginally mapped to each other by the federal government, but it is insufficient for the purposes proposed here.

The two classifications use different terminology and codes and have to be “cross walked” locally and regionally by practitioners and employers, in a “best guess” one-to-many mapping using clunky spreadsheet-like systems. There is myriad CIP to SOC “crosswalks” that are in existence across the country, and none are synced and universally used.

- In the U.S., descriptions of jobs and employment are captured in the U.S. Department of Labor Education and Training Administration (DOL/ETA) Occupational Information Network, O\*NET. O\*NET leverages the Standard Occupational Codes (SOC), managed by the U.S. Bureau of Labor Statistics, that is the Federal standard for employment categories. Most employers provide SOC data.



Much like the OCLC in the library world, jobs are categorized and described, and standardized data is collected from hiring SOC codes, and this makes up the basic Bureau of Labor Statistics (BLS) reporting on job growth and decline by category.

The categories are not always exactly correct or up to date, as many jobs change frequently. However, a number of companies have their own improvements on O\*NET and the SOC codes, including **Burning Glass Technologies**, **Emsi** and **Public Insight**. These data and their metadata are particularly useful anchor points to associate other data, such as education and training programs in the CIP to SOC crosswalk.

Ultimately, the huge problem to be solved has to do with how employment data using the SOC codes can be aligned with education and training data and with individual learners, so there can be matches across jobs, skills, people and education training, including in electronic resumes or digital learning and employment records. Again, going back to the book model, we know what jobs (or books) are in the marketplace, but we only have partial understanding of a) who is in those jobs and b) what education and training feeds into those jobs. Let's call this the education-to-employment problem. It may be that CIP and SOC are not the best way to manage the alignment in the newest economy.

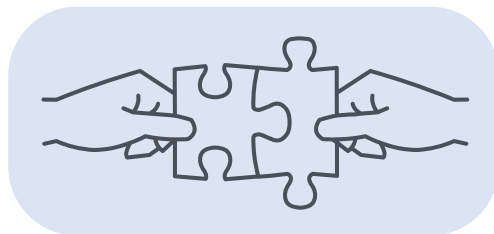
- Like the Department of Labor, which requires employers to report SOC code data from employers, the US Department of Education, likewise, requires higher education institutions receiving federal funds to provide corresponding course, program and degree data in the Classification of Instructional Programs (CIP codes). Since most institutions and many training programs receive Federal Title funds for education support, the CIP codes are ubiquitous but, as stated, it is a challenge to crosswalk them with the SOC codes.

There are good point solutions in the market that provide their own crosswalk mechanisms, but none of these are yet based on common open standards that are widely adopted. Like other efforts for open data standards, the acid test will come in actual adoption and use which is more likely in a marketplace than as data sets and alignment apps.

- Getting employers, educators, trainers, state agencies on the same page is the challenge. Adding public transparency to what credentials have what value will hopefully apply the needed pressure to nudge the education-to-employment continuum from a variety of point solutions and compliance reporting requirements into a true human capital marketplace for all.

# PART II – INTRODUCING FLOATING VALUE CREDENTIALS

In a landmark report (October 2018), entitled, “**Credential Currency, How States Can Identify and Promote Credentials of Value**” The Council of Chief State School Officers (CCSSO), Education Strategy Group (ESG), and Advance CTE raised the question of “credentials as currency” in their opening paragraph:



Postsecondary credentials matter more today than any time previously in history. They provide currency in the labor market and serve as key momentum points for individuals on a path to economic opportunity, especially those from underserved communities. From industry-recognized credentials to postsecondary certificates and licenses to associate and bachelor’s degrees, “post-high school credentials” have become necessary for career success, and those with a high school diploma or less are often left behind.

In its press release for the report, the **Education Strategy Group**, listed three core recommendations which several states subsequently have taken up in their policy and strategic planning. Those are as follow:

- 1. Identifying high-value credentials.** Employers must serve as a lighthouse as states work to identify which credentials have value. States can harness employer signals in job postings, hiring decisions, and employee pay. And they can prioritize credentials that count for or stack to postsecondary credit;
- 2. Incentivizing attainment of high-value credentials.** States can and should catalyze high-value credential attainment through a robust set of incentives. That includes demonstrating the impact credentials have on students’ futures, promoting school and district prioritization of high-value credentials through funding and accountability policies, and communicating publicly the importance of specific credentials; and
- 3. Collecting and reporting credential attainment data.** States can set forth new expectations for data collection and quality that bypass self-reported information to more reliably report industry-recognized credential attainment.



In 2018, when the Credential Currency report was released, it was too early to determine if an actual credential marketplace could be designed and what the core components of it might be. The report provided the framework and objectives. Since then, multiple states have adopted some if not all the Education Strategy Group (ESG) recommendations contained in the Credential Currency report.



## Enabling Credential Currency

However, ESG's report did not then envision how such a well thought out strategy could be turned into a cloud-based marketplace that included all of the ecosystem stakeholders – education and training providers, regional economic development, workforce and CTE program, employers and, most importantly learners and jobseekers.

While there are many efforts aimed at this goal, there are few true manifestations of a marketplace. Essentially, a marketplace cannot be stood up unless there are two critical components:

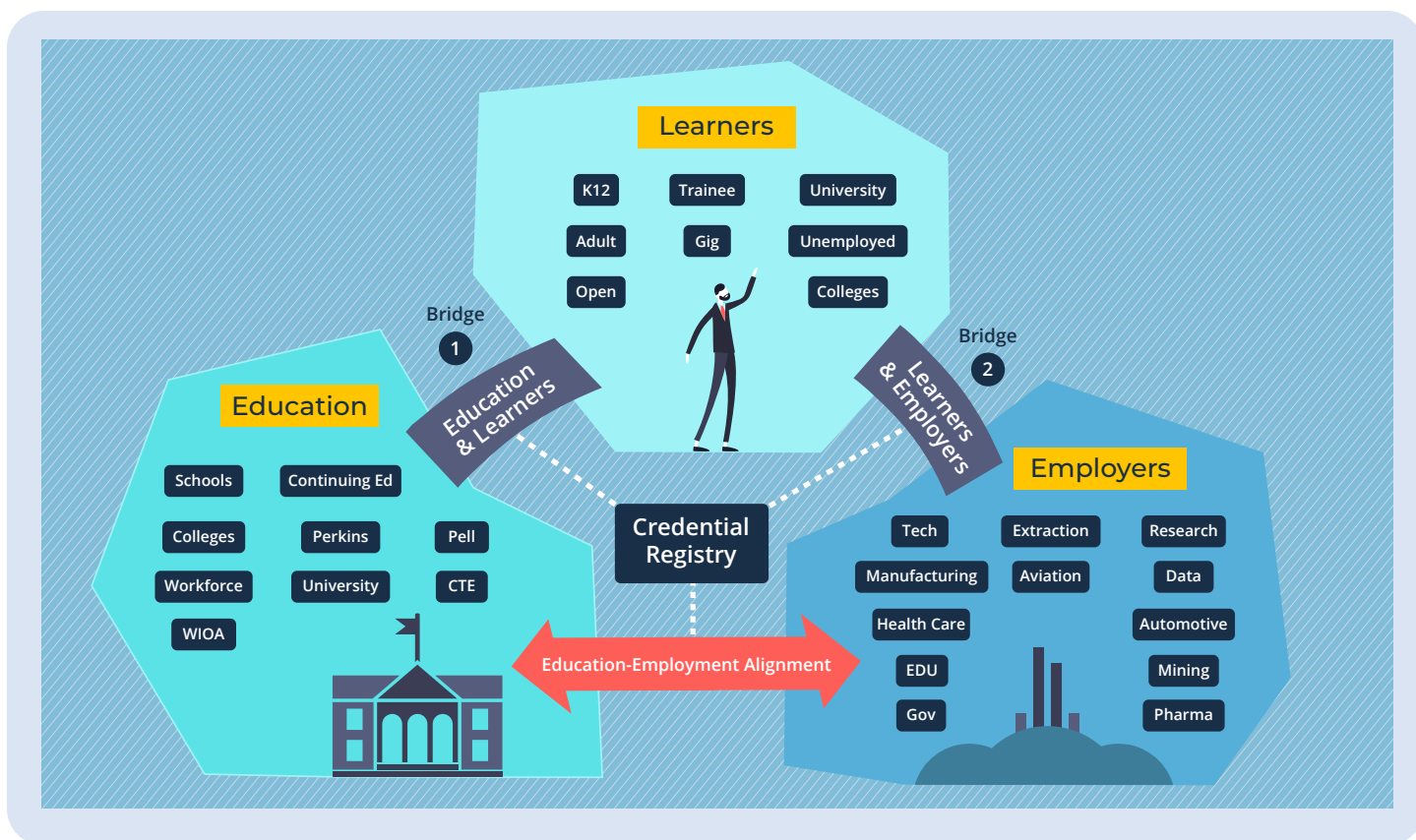
- A transformational service based on open and transparent standards in which multiple players can participate
- A technological, data and communication ecosystem that provides a cross-organizational platform of which learners and employers can be a part.

Without these two, it is unlikely that a marketplace could emerge. To make these two marketplace components work, the definition, identification, data-tagging and alignment of various credential types exchanged between education/training, employment, individuals and government agencies must be determined.

## Two Critical Bridges

By way of metaphor, think of the stakeholders in the education-to-employment ecosystem as occupying separate islands that are close to each other but separated from each other by a channel. Now imagine these islands could be connected by several bridges, what would that mean in the context of credential currency in an end-to-end system?





Let's surmise that the first bridge connects the education and training island with the employers' island through a common link, in this case shared data definition for education programs and skills and for jobs from employers. Let's think further that learners are on their island and have acquired academic or occupational credentials, and they now can link via a second bridge to the employer's island. So, two bridges facilitate an ecosystem. Education and training providers link to employers via bridge number one and individuals who receive education and training link to employers via bridge number two.

## Enabling the end-to-end solution via two critical “bridges”

In the world of data standards, to enable some form of valuing credentials in a marketplace, two open standards-based “bridges” are needed to organize the underpinnings of an end-to-end, education-to-employment marketplace. As described above, one bridge links education and training to jobs and employment while the second bridge links individuals (student, adult workers, returning workers, jobseekers) directly to employers' human resources (HR) systems and to job portals. Bridge one produces a data-driven credential description that is based on open standards and is the same for education and training and employment and job systems. Bridge two takes that open data-described credential and allows an individual to manage it in a digital wallet, transcript or portfolio that can communicate with employer HR systems.

### Bridge One: Shared Credential Data & Descriptions for Education-to-Employment

- Education and training program providers, federal and state agencies, and employers need to work within an open-to-all and transparent method for describing the same credentials, and to be able to use those descriptions as the basis for a common data and description language for programs and for jobs to facilitate and link the federally mandated education program “CIP” codes and the federally mandated employer “SOC” job codes. Such credential descriptions can be catalogued and publicly accessed in a transparent credential registry.

Together, the two bridges allow the production of linked data documenting the credential traveling from education and training (and the skills they embody) to jobs and employment. The outcome of that journey will determine the value of the credential.

Fortunately, the two open and transparent data bridges already exist and are well defined, understood and operationalized. However, they need to be scaled up in a unified marketplace.

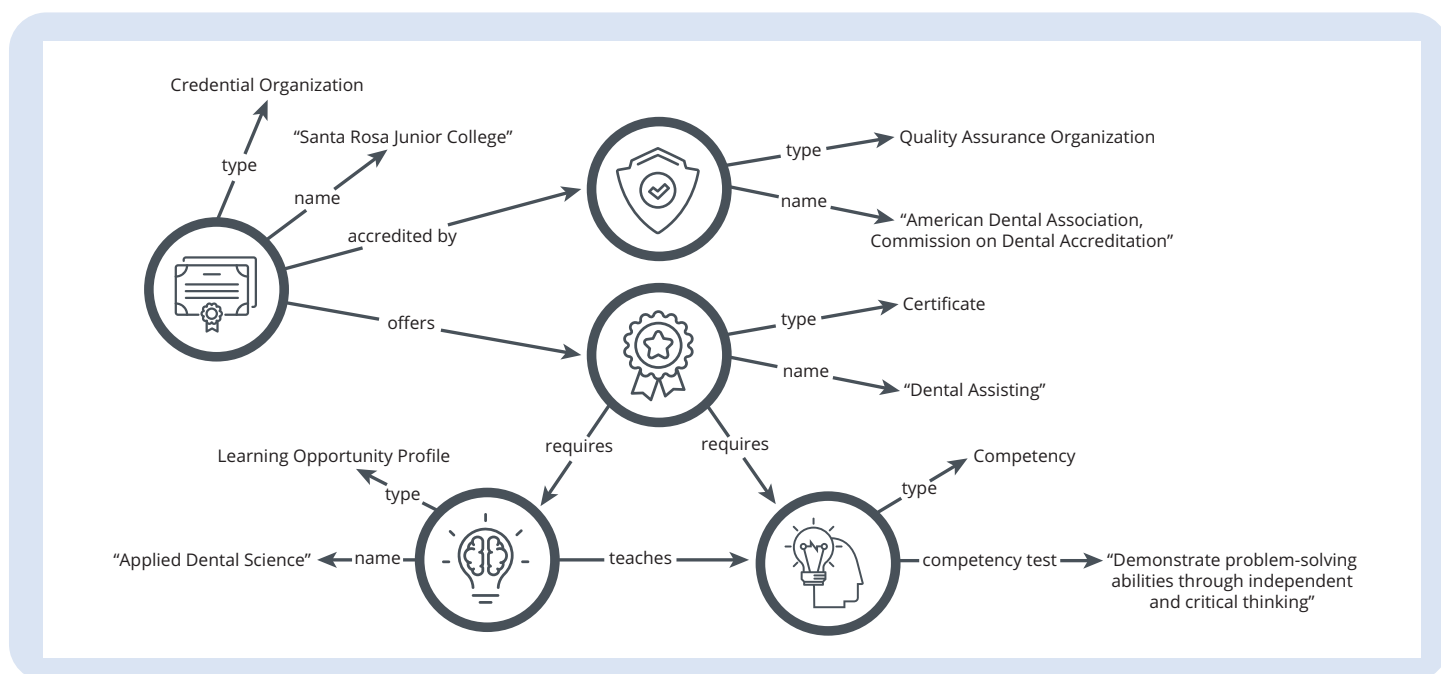
- Bridge One, Education-to-Employment is **Credential Engine**.
- Bridge Two, Individual-to-Employer, is the **Velocity Network Foundation**.

## Credential Engine

The core organizer for the alignment and valuing of credentials is Credential Engine, [www.CredentialEngine.org](http://www.CredentialEngine.org), a powerful nonprofit that grew out of a seed operation and research at The George Washington University. It has been funded by the Lumina Foundation, JPMorganChase and **others**, and is working with numerous states and federal agencies.

Credential Engine's tagline, "Making ALL Credentials Transparent & Revealing the Marketplace of Credentials" underlies their creation of a common definition and data standard called the "Credential Transparency Description Language" or **CTDL**. The CTDL, like the early Dublin Core, does two things. From CTDL handbook:

1. Creation of simple descriptions and to serve as a basis for website markup
2. Rich descriptions to support fairly refined comparisons among credentials



Above is visual flow of how the CTDL works.

Source: CTDL Handbook, section 2.1.2, <https://credreg.net/ctdl/handbook>

Since we are not quite at the Amazon level yet, the creation of CTDL descriptions from both the CIP codes (education and training programs) and the SOC codes (from the employers' side) and other cross-walk information must be coded into a Credential Registry where they exist as common openly defined credentials. CTDL supports rich and complex metadata that goes far beyond CIP-SOC descriptions of credentials and their value. Resumes or learning and employment records can be defined by the credentials in an individual's digital knowledge wallet, which can refer to CTDL data.

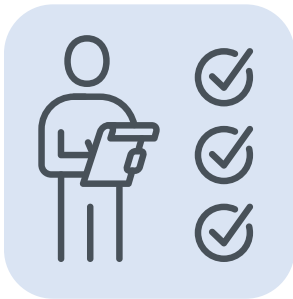
Credential Engine has agreements with many state governments with more than half of the states working toward using the Credential Registry to align education/training data to the states' employment/workforce data. Once this occurs, high value credentials can be better understood. As is the case in many states, incentives can be given to institutions and career and technical education programs that organize themselves around high value credentials to increase hiring success and the demand for their programs. The same system can also be used for incentivizing degree completion.

Credential Engine and the CTDL help in state and regional economies, supporting the first movers, which are state governments that want to become more streamlined by introducing transparency and actionable accountability into their human capital development and want high schools, community colleges, and state higher education institutions to become more efficient, aware and purposeful in providing educational pathways and well-structured career and technical education (CTE) for students and employers.

Credential Engine is also expanding its relationships with course and program developers in higher education and CTE so that the CTDL descriptive metadata can be filled out in more detail prior to integration with a state or other credential marketplace. The same is true with employers, so that job descriptions – internally and externally – can be CTDL-ready. This effort will go a long way towards building the bridge between education and training and employers.

### **Bridge Two: Shared Credential Data & Descriptions for Individuals-to-Employers**

- Individual learners, adult learners, re-skilling, job seekers need an open-to-all and transparent method to describe credentials earned (badges, certificates, industry certifications, academic degrees) and to enable those to be securely transported into the human resource (HR) systems operated by employers. That secure transportation is via a credential wallet, meaning that solutions that provide students and learners with credential wallets, badges, profiles or portfolios can reference a credential registry, and operate in an open-standards way, enabling individuals to have reliable and secure digital mobility to communicate their validated credentials more seamlessly and uniformly to employers.



## Velocity Network

The second missing ingredient is the “well-defined individual,” be they students, adult learners, military, returning workers, incarcerated learners, and general job seekers. There are a great many solutions in the works to manage learning and employment records. In the academic space, the Post-Secondary Electronic Standards Council, or **PESC**, has organized a number of efforts to unify college transcripts via data schema. A number of companies provide secured transfer of high school records and other learning records to college and work. And the **National Student Clearinghouse** has a method for students, institutions and employers to request a third-party verified transcript.

However, what is missing in all of these is an open standards method to move applicant, candidate, employee, and digital student records seamlessly into employer HR systems. The **Velocity Network Foundation** is leading the way to provide open standards-based, secure, individual records and transport of a person’s records to an employer. Their method of doing this is through a decentralized and open-source platform that can be used by vendors in the academic space, as well as HR systems, and can connect seamlessly with the CTDL and Credential Registry of Credential Engine.

Velocity Network is the largest endeavor to unify the infrastructure underlying the global labor market and deploy the Internet of Careers®.

It is an innovative blockchain based utility layer, which makes it simple for organizations to issue verifiable, immutable, trusted career credentials straight from their system of records, and for individuals to claim their credentials, own them, and selectively share them with employers and labor market stakeholders across various use cases.

The network is governed by the Velocity Network Foundation, a nonprofit organization established to govern the use of the Velocity Network by all involved parties; continuously build the rulebook, a common framework that ensures operational consistency and legal clarity for every transaction; promote global adoption and support among stakeholders and constituents; guide the development of the decentralized protocols; and support research and development of applications and associated services, fostering a community of open-source developers.

## Credential Engine Plus Velocity Networks as an End-to-End Solution

Credential Engine and Velocity Network are unique in their public nature, size, scale and agreement among education institutions, training providers, state agencies and employers, creating the potential to link both bridges to form a credential currency ecosystem, essentially taking the concepts in the Credential Currency report, mentioned earlier, and bringing them to life online, one step away from enabling a marketplace.

Many states are adopting the Credential Registries to manage CIP-to-SOC alignments. And many employers are adopting Velocity Network to manage trusted career records using blockchain solutions. Together, they provide the basis for an end-to-end platform to give differential value to credentials and to manage incentives for institutions to provide instruction and training that matches demand or anticipated demand. To bring this end-to-end solution to life, a powerful multi-function secure cloud infrastructure is needed.

# PART III – A CREDENTIAL CURRENCY ECOSYSTEM “ALLIANCE”

The question arises, can a floating value credential marketplace be constructed that meets the three objectives of the **Credential Currency** report utilizing Credential Engine and Velocity Networks?

1. Identifying high-value credentials
2. Incentivizing attainment of high-value credentials
3. Collecting and reporting credential attainment data

In order to determine how to operate a credential marketplace, an end-to-end solution must exist that would provide individuals with persistent profiles across heterogeneous providers of academic and occupational program institutions and agencies. It also must allow for exploration of careers, manage the open credentials defined and housed in the Credential Registry, and provide an open and secure way for learners to pass those credentials to a potential employer, job board, for employment agency. At the same time, this infrastructure would need to report out the value and traffic of credentials in the system and provide that data in various forms to state agencies, to employers and to the learners. This would automate a process of identifying and regularly updating credentials of value and validating them regularly through labor market demand data that is constantly changing.

During the height of the pandemic, the National Laboratory for Education Transformation, **NLET**, author of this report and a research and development California nonprofit dedicated to 21st century solutions to the education-to-employment problem, was introduced to a company that had created such an end-to-end exploration, pathway management, engagement and reporting platform called **GoEducate**, Inc.

For ten years, NLET had been involved in numerous national grants and working groups exploring issues across the academic, workforce development and career and technical education (CTE) spectrum in order to develop and outline what an end-to-end solution might look like and how it might operate.

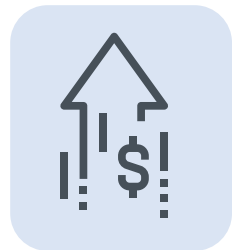




To support piloting and experimentation with such an ecosystem, the notion of floating value credentials (i.e., credential currency) must be placed into a sophisticated functioning marketplace, such as an Amazon-like system that links all the stakeholders into a knowledge and skills economy, replacing what is now largely a set of institutional, agency and employer structures and various partial solutions. GoEducate, which spent nearly five years developing its career and pathway exploration, pathway management and data reporting system, has the capabilities of incorporating Credential Engine and Velocity Networks into its marketplace ecosystem and testing such a platform.

## Launching the Credential Alliance

To start experimenting with, piloting, and installing an Amazon-like system, NLET has formed the Credential Alliance with the nonprofits Credential Engine and Velocity Networks Foundation, GoEducate, and the service, evaluation and technical training organization the Southern Regional Education Board (SREB). GoEducate has donated its platform for several pilots and to develop several experimental laboratory environments with Credential Engine, Velocity Networks, SREB and NLET.



The core members of the Credential Alliance are indebted to the work of Education Strategy Group and several members of its advisors, notably Terry Holliday, former Commissioner for the Kentucky Department of Education, and who has spent a decade bringing career and technical education into the maturity it deserves.

The Credential Alliance seeks to pilot, test and define actual floating value credential currency marketplaces that can harness alignment and data reporting of Credential Engine's Credential Registry (aligning education and employment data) with a Credential Wallet, developed by GoEducate and built on Velocity Network's blockchain platform, for individuals to securely communicate their locked credentials with employers. These will be tested and later scaled through GoEducate's GoPathways platform.

## Southern Regional Education Board (SREB)

NLET and the Southern Regional Education Board, **SREB**, one of the nation's most sophisticated and dedicated policy and practice organizations, will work together in the alliance to examine the new credential currency landscape and to work directly with school districts, higher education and state agencies to experiment with, gather feedback and implement credential management.

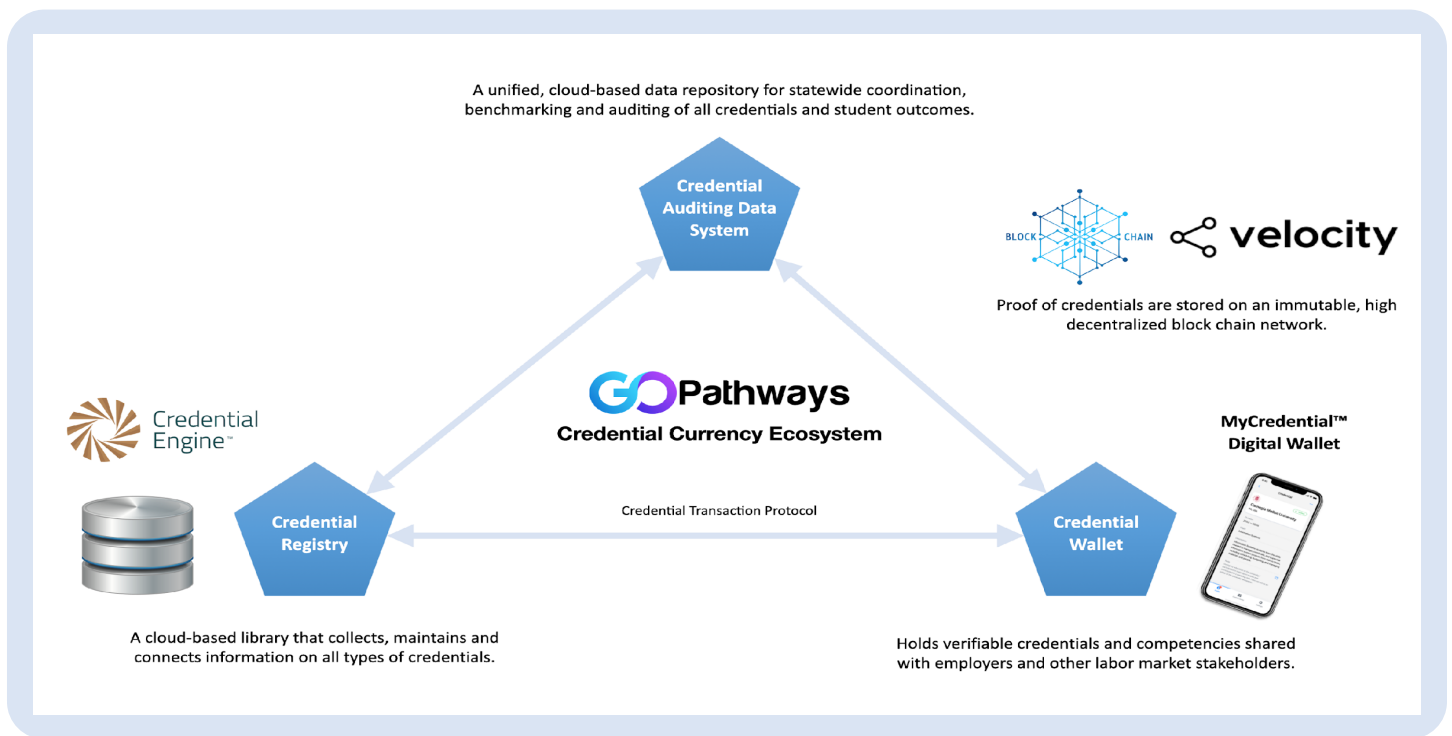
SREB was formed by 16 state governments in 1948 to bring improvement across its members in K-12, higher education, workforce development and career and technical education. SREB is relied on by states, counties, systems, institutions and agencies for analyses, evaluations, and program development and management.

SREB will work with the consortium to ensure effective policy and practice implementation and development and to socialize these new constructs publicly.

### GoEducate's Ecosystem Model

Piloting and testing credentials as “currency” is a worthy aspiration. The Credential Alliance has helped to evolve GoEducate’s Credential Currency Ecosystem. GoEducate has taken that aspiration and turned it into a transactional and data rich model that calculates courses, programs, and credentials with actual employment opportunities and does so by each learner individually and all learners in aggregate data.

The graphic below describes the core elements of a credential currency ecosystem. Such a system can manage the two bridges – one through Credential Engine and one through Velocity Networks – and can report data through a “follow-the-credential” model that enables individuals to manage their own credential wallet(s) and profile.



## Aims of the Credential Alliance

The Credential Alliance (CCA) is led by NLET but will rest on the technology, data systems and services provided by Credential Engine, Velocity Network and SREB. The goals of the Alliance are multiple:



- Experiment, adjust and improve the credential currency ecosystem both in theory and in practice with the core founders of the Alliance and others who want to participate in the ecosystem.
- Work with pilot sites deploying the platform supported by the Alliance and with lab sites that will be providing deeper levels of input, specification design and running experiments.
- Seek funding collectively to deepen the research, data collection and efficacy of end-to-end solutions.
- Work with state agencies, workforce boards and CTE associations, and policy organization to better track real-time data of actual individuals and their credentials flowing through the system, as opposed to relying on compliance data.
- Work with data scientists, economists and social researchers to determine how systems such as the credential currency ecosystem can come to characterize how organizational structures that exist now can work more seamlessly and securely in modern technology, data and identity system to reach higher success rates than are available through traditional means.

### Credential Currency Alliance - Goal

Our goal is to make credentials the common currency in the education-to-employment ecosystem

through the following focused areas...



#### Credential Registry

A Unified, cloud-based library that maintains information on all types of credentials



#### Guided Pathways

Credential Value and ROI embedded in career pathways and guided pathways



#### Credential Wallet

gives Students ownership of verified and Immutable records of their skills and achievements



#### Accountability Data System

The Collecting, identifying and reporting credential Value and attainment data

# About the Author

**Gordon Freedman** is both president and founder of the California-based research and development education nonprofit, the National Laboratory for Education Transformation ([www.NLET.org](http://www.NLET.org)). Freedman is also the managing director of the education consultancy Knowledge Base, LLC ([www.KB-LLC.com](http://www.KB-LLC.com)) where he serves as strategic advisor to higher education institutions and education technology companies, including GoEduate, Inc, featured in this paper. In both capacities Freedman is dedicated to modern systems development for education, training and employment issues.

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Education Transformation

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