



# Matching People with Jobs & Jobs with People

Jeff Griffiths and Janet Lane | October 2023

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## EXECUTIVE SUMMARY

# Matching people with jobs and jobs with people

The players in Canada's labour market lack the means to communicate effectively, which inhibits the efficient matching of people with jobs and vice versa.

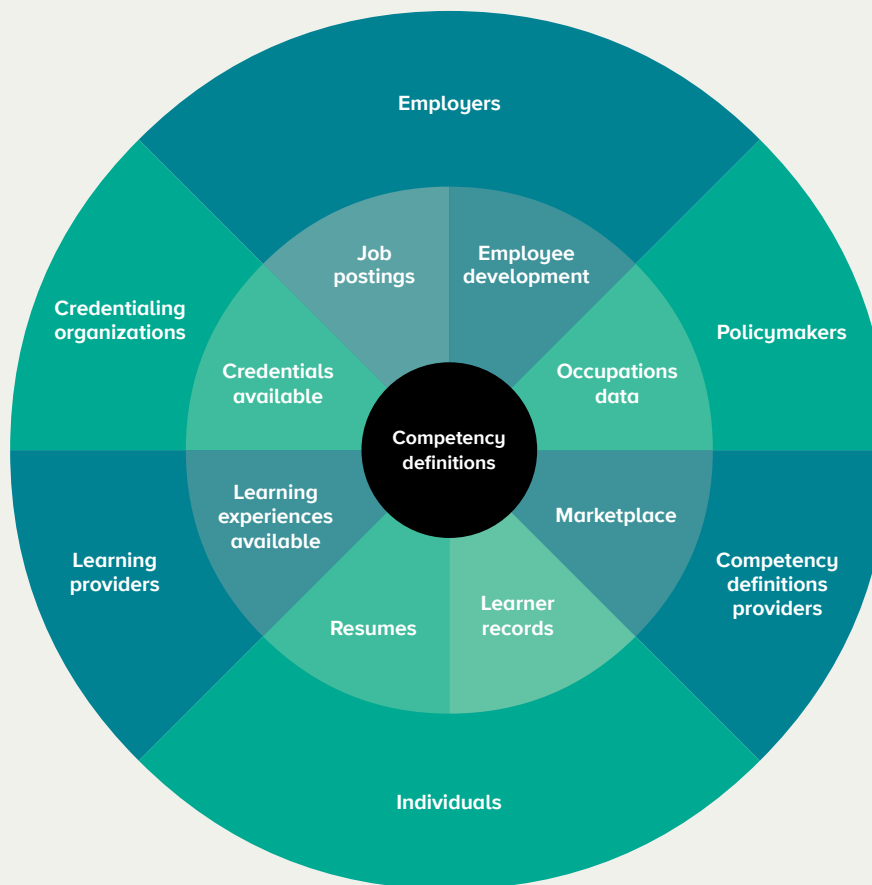
Poor communication causes a problem which manifests in multiple ways:

- Mismatch between the skills needed by jobs and those held by the workforce.
- Miscommunication between the labour market's players.
- Many employers do not fully understand what skills and knowledge are required to perform jobs well and how they are transferable between jobs.
- Learning providers have difficulty keeping up with the vast array of skills, knowledge and competencies required.

The problem can be dealt with through a move to a competency-based system.

When based on standard definitions, competencies (the skills, knowledge and attributes required to perform tasks), allow all the players to understand each other.

In a competency-based system:



### Individuals

- Find their best pathways to and between jobs.
- Connect to employers with open positions most closely matched to their competencies.
- Have greater control over their livelihoods.



### Employers

- Broadcast their competency requirements.
- Quickly find closer matches to those requirements.
- Create re-skill, upskill and continuous learning pathways for existing workers whose jobs are changing.
- Adjust team compositions within the organization to optimize the competency mix.



### Learning providers

- Better tailor their learning experiences to the demands of the economy.
- Segment opportunities to enable individuals to gain required competencies
- More rapidly develop new learning experiences.



### Credentialing organizations

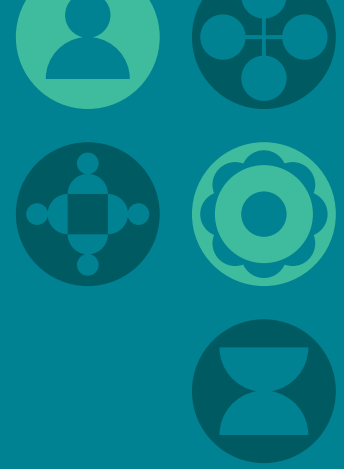
- Adjust their credentials to more closely match industry demanded competencies.
- Dynamically adjust continuing learning requirements for certified individuals.



### Policymakers

- Connect to this open network to access more accurate data about jobs are in demand.
- Better understand trends in the competencies in demand.
- Tailor policy and incentivize behaviours in the market based on more granular evidence.






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# The Labour Market

The labour market, like any market, is a system of interconnected and interdependent elements. There are five different, interdependent groups operating within the labour market:

<b>Individuals</b>		Sell their skills, knowledge and other attributes to employers.
<b>Employers</b>		Purchase skills, knowledge and other attributes on the open labour market.
<b>Learning providers</b> (both public and private)		Provide a means for individuals to acquire marketable skills, knowledge and other attributes and a credential (degree, diploma, certificate, etc.) as evidence that they have been acquired.
<b>Credentialing organizations</b>		Provide, via their certifications, another way for individuals to prove their value in the market, e.g., professional certification bodies.
<b>Policymakers</b> (federal, provincial or territorial and local levels)		Gather and aggregate information about the labour market (LMI data) to help other players make informed decisions and develop regulatory and other incentives to encourage particular behaviours.

These elements rely on balancing and reinforcing feedback loops to regulate fluctuations and reach equilibrium.

# Proxies in the labour market

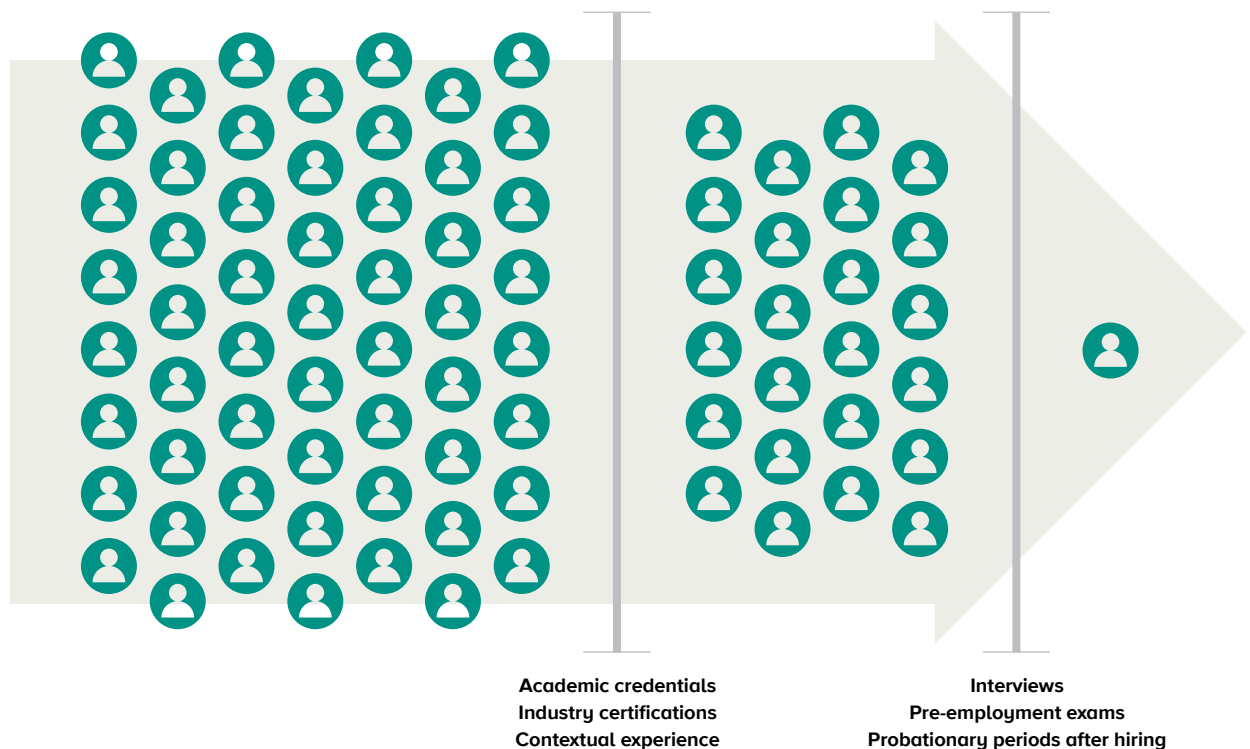
In the current labour market, employers use a series of proxies – academic credentials, industry certifications, and contextual experience – as initial filters within their hiring process to determine whether an individual is a reasonable fit for a particular job. These filters are used to quickly thin the number of potential applicants for any given role. While they may reduce workload throughout the hiring process, most employers recognize that they are not in and of themselves adequate for determining whether someone they hire will be successful. Additional filters – interviews, pre-employment exams and probationary periods after hiring – are used to weed out individuals who do not fit.

Unfortunately, the initial proxy-based filters can also screen out people who have the required skills, knowledge and other attributes, but employers have accepted this as a reasonable risk where there is a relatively large pool of candidates.

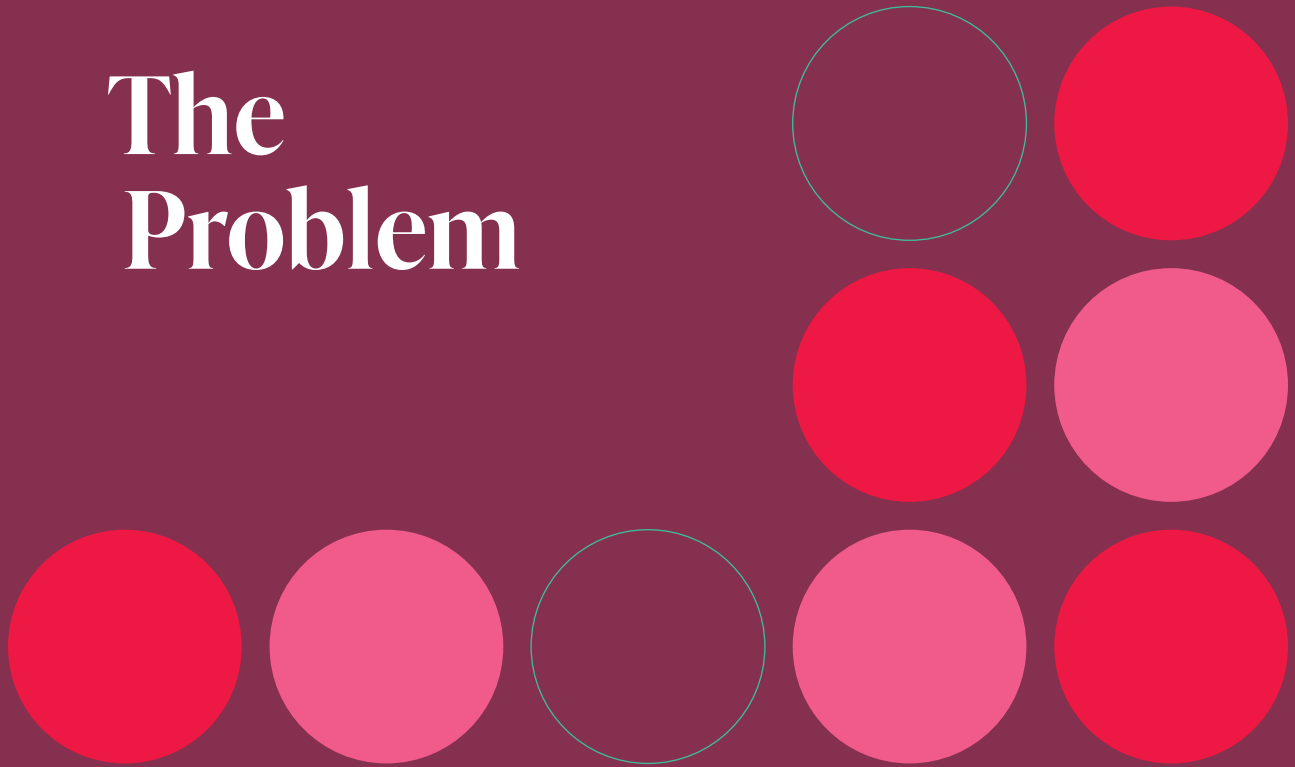
Employers use these screens and filters in the search for (nominally) *competent* candidates – those who have the necessary skills, knowledge and other attributes, with proficiencies gained through applied experience in similar job contexts to increase the probability of job success. It is a laborious and flawed process, but it is the best currently available.

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## IN THE CURRENT LABOUR MARKET, EMPLOYERS USE A SERIES OF PROXIES AS INITIAL FILTERS WITHIN THEIR HIRING PROCESS



# The Problem



As long as the skills requirements of jobs remained relatively stable, as they did through most of the 20th century, the proxies appeared to serve employer needs well enough.

However, the fourth industrial revolution and its associated technological advancements causes whole categories of jobs to disappear and new ones to be created. This rapid change accelerates the obsolescence of current skills and knowledge bundles and the need to develop completely new ones. Meanwhile, the skills requirements of the remaining jobs are being significantly altered.

Every mature system has built-in feedback loops that signal the need for adjustments; sometimes systems can self-adjust. However, the proxies used to send signals across the labour market system, occupations, job titles, job openings, job losses, educational attainment, industry and professional credentials, experience, etc., do not provide the granular detail needed to adequately adjust to the acceleration of change in the economy. This unclear signalling exacerbates oscillations in the system (the feedback loops do not adequately dampen these swings) so corrections take longer, and this ultimately leads to poor decisions, misalignment and waste.

# What's needed is a new tool that better communicates the requirements of the labour market and provides a more effective signalling mechanism that allows the system to better deal with rapid change.

The problem manifests itself in multiple ways:

- 1 There can be a mismatch between the skills jobs in the economy require and those held by the workforce.
- 2 There can be miscommunication between the labour market's players, who, while interdependent, have their ability to communicate hampered by cultures and traditions that encourage the building of silos. In effect, they do not speak the same language.
- 3 The use of currently available proxies can hide the fact that many employers do not fully understand what skills and knowledge (nor the levels of these) are required to perform jobs well. Nor do they understand the degree to which skills and competencies from other contexts may or may not be transferable to their own workplace.
- 4 Systems meant to produce workers the economy needs are insufficiently nimble and have difficulty keeping up with the vast array of skills, knowledge and competencies required, and may lag behind the pace of change.

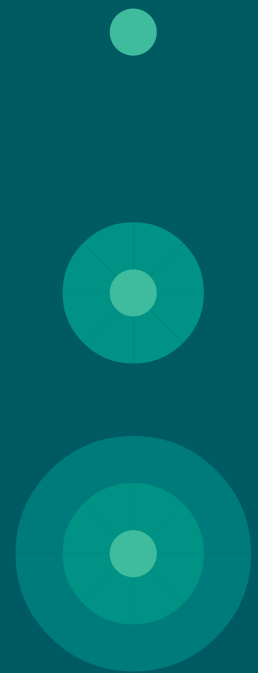
Several major employers have made clear that they prefer not to use credentials as a basis for hiring but would rather review the skills and capabilities candidates can demonstrate. These include significant private sector employers such as Apple, IBM, Google, Accenture, OKTA, Penguin Random House, COSTCO, Whole Foods, Hilton, Publix, Starbucks, Home Depot and Lowes.<sup>1</sup> Even the U.S. Federal Government and several U.S. states have legislated the desirability of skills over qualifications.

What's needed is a new tool that better communicates the requirements of the labour market and provides a more effective signalling mechanism that allows the system to better deal with rapid change.

<sup>1</sup> Joseph Fuller, Christina Langer, and Matt Sigelman. *Skills-Based Hiring Is on the Rise*. Harvard Business Review. Feb. 2022. <https://hbr.org/2022/02/skills-based-hiring-is-on-the-rise>



# The Solution



Currently used proxies serve the labour market poorly and result in miscommunication. Competencies make a more effective communication tool.

## Competencies

Competencies – the demonstrated ability to apply skills, knowledge and other attributes in a particular job context to achieve particular outcomes – are broadly recognized as superior not only for hiring, but also as signals for learning programs to adjust what is taught, for credentialing organizations to adjust what is certified, and for individuals to present to potential employers as evidence of their value. However, in Canada’s current labour market, these are inadequately addressed by different components of the system. If competencies were better expressed, they would constitute a new, better, faster way to ease the frictions in the labour market, resulting in better outcomes for all players in the system.

Table 1 illustrates the future possible for all groups in the labour market through the transition from the old proxies to competencies.

**TABLE 1: CURRENT VS TRANSITION VS FUTURE VISION FOR ALL BASED ON THE USE OF COMPETENCIES**

	CURRENT	TRANSITION	GOAL
<b>Employers</b>	Create job descriptions and proxies for competencies (education, certifications, training, experience, etc.).	Move to competency-based job descriptions, competency-based recruiting.	Visibility into, and predictive comparability of, competencies from all sources.
<b>Individuals</b>	Create resumés that attempt to show fit to employer proxies.	Personal capabilities defined in terms of competencies.	Friction-free (or reduced) pathways from current to future work.
<b>Credentialing organizations</b>	Certifications based on perceived requirements – often include required education/training/ experience as proxies for competency.	Key requirements defined in terms of measurable competencies.	Multiple pathways to credentialing; geographic barriers removed; more aligned with economy; focus on what a person can do, not how much time they need to learn.
<b>Learning providers</b>	Curricula cover a body of knowledge; academic credentials granted to graduates; non-subject-matter competencies rarely accounted for.	Curricula designed to demonstrate acquired competencies, both inside and outside the field of study; trusted assessment of competencies.	Clarity for students and employers on gaps to fill, how/where to fill them and how to assess them. Verified, accepted proof of competencies.
<b>Other learning experiences</b>	Largely undocumented.	Open pathways for learning to include all non-institutional mechanisms for learning.	Broader portfolios of competency for individuals. Learning de-coupled from institutions and formal education.

#### ONE GLARING ISSUE THAT A SHIFT TO COMPETENCIES CAN ADDRESS

Attempts to distill the underlying components of workplace performance often get buried under an avalanche of information. Skills? Knowledge? Other attributes? Experience? Job contexts? Technologies and processes employed? Tasks executed? Occupation(s) that typically do this work? Education requirements? Licenses and certifications? And even if all of these are considered, how should the components be weighted?

This problem has been aggravated by a tendency in Canada, perhaps because of the National Occupation Classification (NOC) system, to think in terms of occupations and to view occupations as separate and siloed. There is little useful information to be gained from the NOC regarding what the measurable competencies are for a particular occupation – which can vary drastically geographically and by employer anyway. And occupations as they are defined are often too

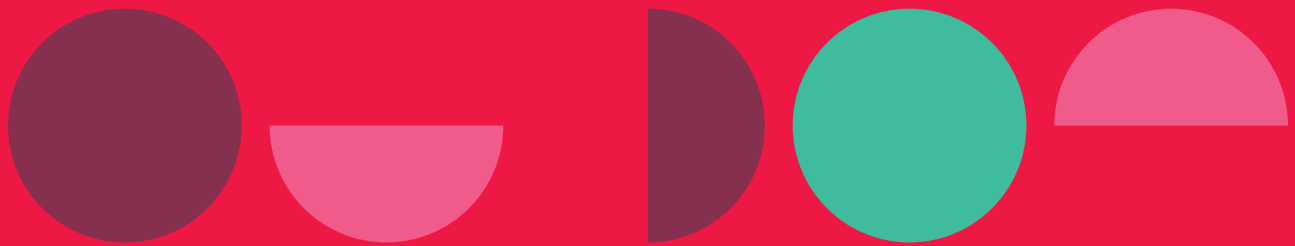
nebulous to relate to a large percentage of the work being done in the economy. Yet, our labour market information system is focused on occupations as the common grouping for the data collected.

While occupations are a relevant construct, particularly in some professions, they become less relevant in other work. For example, many engineers (an occupation and a profession) also manage a function or department in an organization (managers are also an occupation), but not all managers are engineers – so the use of occupations as the basis for so much of the feedback to the system (via LMI data) is one reason for the inability of the system to adequately regulate the skill sets and competencies of their members.

Other countries have focused on competencies disaggregated from occupations as the basis for their approaches, and there is a growing international consensus that this approach is superior.<sup>2</sup>

<sup>2</sup> European Skills, Competences, Qualifications and Occupations. <https://ec.europa.eu/social/main.jsp?catId=1326&langId=en>

# Competencies are a More Effective Communication Tool








Competencies are occupationally agnostic. Workers in different occupations can perform the same competency.

Take for example a competency such as “preparing a table for service” in the hospitality industry. The competency can be described including the standards of performance, underlying knowledge and skills, physical capacity, regulatory requirements, etc. This competency can be performed (and regularly is) by different occupations – waiters and waitresses, bartenders, banquet servers, bussing staff and, if needed, by supervisors and managers in various food and beverage contexts. It is occupationally independent and can be referenced in multiple competency profiles or frameworks.

In chemistry, the basic building block is a molecule. Different molecules can be put together in different combinations and in varying quantities to make widely different elements. Molecules can be broken down into their sub-components (atoms) and sub-sub-components (electrons, protons, neutrons) and even sub-sub-sub-components. But the basic building block is the molecule.

Similarly, competencies are the building blocks for every job and every role, regardless of which occupation performs it, and if described in a standardized common manner they can be used by all the players in the system.

<b>Individuals</b>		Individuals can use competencies to describe their own lifelong portfolio of capabilities, which can be acquired through formal learning, experiential and on-the job learning and any number of informal learning experiences over a lifetime.
<b>Employers</b>		Employers can use competencies to define the requirements of particular jobs and roles, and organize competencies into models and frameworks that are unique to their particular organizational requirements but connected to larger frameworks for industries, occupations, etc. For examples of traditional versus competency-based job descriptions see Appendix 1. For how competencies can cross jobs see Appendix 2.
<b>Learning providers</b>		Learning providers can use competencies to describe the outcomes of their programs and link them to the evolving needs of the marketplace. Learning providers include public and private schools, colleges and universities, union training centres, community organizations, public libraries, etc.
<b>Credentialing organizations</b>		Credentialing organizations can use competencies, including levels of proficiency, to describe the criteria for awarding a particular certification, license or credential.
<b>Policymakers</b>		Policymakers can use competencies to better describe the specific requirements of jobs that the economy demands (to provide more granular LMI data), and to develop policy that incents specific desirable behaviours and measure the impact of those policies.

The use of this common approach will reduce friction and inefficiency in the system as it adjusts to the rapidly accelerating demand for new competencies in new ways of working and the elimination or forced obsolescence of others.

## Network effects applied to competencies

The value of a competency description increases in proportion to the number of people who use it. This network effect applies to many human systems. There are three main barriers to achieving network effects: expectations, coordination and compatibility. These barriers are illustrated in practice by many of the standalone and proprietary competency models and frameworks that have been created to date.

**EXPECTATIONS:** Creating a competency framework and associated competency profiles requires an investment of time and money, and the amount and timing of the return on that investment is difficult to predict. It is difficult to make a compelling case for the value of a framework if it has limited utility – which led to the push for national frameworks.<sup>3</sup> But the evidence tells us that frameworks built at a national or industry level are too generic to offer much value at an organizational level; a low expectation of value translates to a low rate of adoption.<sup>4</sup>

**COORDINATION:** The risk in adopting a particular framework, or using a particular competency definition, is that the related system elements to make it useful also need to be in place. Think of computers – hardware, software, peripherals and training all need to be coordinated before the system is useful. The same holds true

<sup>3</sup> Lane, Janet and Griffiths, Jeff. *MatchUp: A case for pan-Canadian competency frameworks*. Canada West Foundation. 2017

<sup>4</sup> WFSI – internal study of rate of adoption of national-level competencies in Canadian bio-economy, electricity and environmental sectors. WFSI, Calgary 2022, see also presentation on WHY to EHRC Regional Roundtable, May 2023

for competencies – they exist in an ecosystem where education, training, credentials and qualifications, and technology all need to be coordinated for them to have value. If an individual competency has limited scope and reach, there is no economic incentive to put in place all the other required elements required to give it value. This is another situation in which other countries with a National Qualifications Framework have the advantage over Canada. European countries and the U.K. for instance, have NQFs that allow for skill recognition across their countries, vastly improving workforce mobility.<sup>5</sup>

**COMPATIBILITY:** Can components designed for one system work with another? What if things change? If every competency definition, model and framework are proprietary and unique, then there is no way to add value by combining them with others and no way for other system elements to adapt to multiple different models. This is where some degree of standardization becomes attractive. So how can these barriers be overcome to ensure that network effects prevail?

Katz and Shapiro discuss three different scenarios for overcoming barriers:<sup>6</sup>

**A Channel Captain coordinates standards:** In retail, WalMart's dominant position in the industry meant that it could legislate standards for bar codes that became de facto industry standards. The Channel Captain sets expectations, ensures coordination and forces compatibility. There is not really a Channel Captain in the human capital space who can impose standards on others.

**Competition:** A dominant design wins in a competitive market. The classic example of this is VHS vs Betamax in the video recording industry, where VHS won out despite having lower picture quality and a less convenient physical size than Betamax. As with the Channel Captain scenario, it is difficult to see a scenario where competitive pressure leads to a single format for competencies.

This leaves the final option:

**Create inter-operable or compatible systems:** In this scenario, translation of different system formats or languages enables a variety of formats to communicate with each other, so there is no need for a single dominant design to overpower the others.

The use of competencies will ease the flow in the labour market. To leverage network effects, competency systems need to be interoperable. To achieve this interoperability, competencies and competency frameworks need to be “open.”

## Open competency frameworks

Open systems interact. One concept for open frameworks recently published by eCampus Ontario, based on earlier work by Steven Forth, stresses the need for publishing competency frameworks under an open license, that is: “free of legal, financial, and technical barriers and can be fully used, shared and adapted in the digital environment.”<sup>7,8</sup>

If frameworks are created and shared openly, as is the Creative Commons Attribution-ShareAlike 4.0 International license, then the various competencies in the framework can be compared, copied, re-used and modified in other contexts, while still retaining their linkage to the original source.<sup>9</sup> Open competency frameworks are a good start, but they need to be linked together.

<sup>5</sup> The European Qualifications Framework: <https://europa.eu/europass/en/europass-tools/european-qualifications-framework>

<sup>6</sup> Katz, M and Shapiro, C. System Competition and Network Effects. Journal of Economic Perspectives, Vol 8, No.2, Spring 1994. Pp 93-115

<sup>7</sup> <https://www.ibbaka.com/ibbaka-talent-blog/designing-the-open-competency-model-architecture>

<sup>8</sup> <https://ecampusontario.pressbooks.pub/competencytoolkit/front-matter/about-the-toolkit/>

<sup>9</sup> <https://creativecommons.org/licenses/by-sa/4.0/>

## Open Linked Data – the key to making it all work

To truly unleash the potential of open competency frameworks, simply letting people freely use them is not enough. The granular data at the level of competency statements and the relationships between that data (as defined in the framework) needs to be open and linked in machine readable format via the Semantic Web. Machine readable material can be used across computer systems without human intervention, making data and information useful anywhere instantly. In the past, competencies were contained in closed systems, usually in frameworks and profiles established by a particular player for a particular purpose. The emergence of open linked data technologies and Artificial Intelligence/Machine Learning (AI/ML) systems that can process and relate vast data sets across silos to make connections makes the establishment of a competency-focused economy of jobs a viable proposition.

### THE SEMANTIC WEB

The next extension of the World Wide Web (Web 3.0) will transform the Internet as we currently know it (a web of i-distributed documents) to one where all the information and associated data is machine readable – essentially turning the web into a distributed database. This creates a platform for several new technologies (some of which already exist, like blockchain, etc.) as well as others in development. One of the most interesting of these is the notion of a “Semantic Web.”

The Semantic Web - machine readable interconnected and distributed data – opens up the possibility of *interoperable* competency frameworks. The key notion is “interoperability.” Think about international exchanges in monetary instruments. Different jurisdictions may have different currencies (dollars, yen, pounds, euros, etc.) and goods and services can be exchanged between jurisdictions because the values of different currencies can be related to each other through foreign exchange markets.

Where competencies form the basis for a common understanding of relative value, comparisons can be made, and the degree of similarity (or difference) between two bundles of competencies can be resolved.

Competency definitions built to meet standard criteria can be created in different places, by different organizations for different contexts and different reasons. By:

- a) creating competency definitions to a common standard (see page 16 for an example);
- b) connecting the systems housing the definitions via Linked Open Data protocols across the “Semantic Web”; and
- c) making use of increasingly sophisticated AI/ML tools

it should be possible to collect, compare and determine (to a degree of probability) whether two competency definitions are equivalent and if not, the difference between them. This means that pathways from a particular basket of competencies (i.e., a job) to another basket of competencies can be calculated and a pathway between them resolved. Data standards and a common language (competencies) means clearer signals between various elements of the system – which improves the responsiveness of the feedback loops and allows the system to adjust to change much faster than is currently the case. It should also be possible to connect and compare competencies contained in many different locations and from many different sources and understand how to navigate from anywhere in the job economy to anywhere else in the job economy based on competencies.

An efficient method of exchange, with competencies as the mechanism for comparison, eliminates frictions in the current system.

Eric Shepherd from Talent Transformations ([www.talenttransformation.com](http://www.talenttransformation.com)) refers to this as a “Job Positioning System (JPS)” with linked open data and competencies in the place of satellites and geo-locations in a Global Positional System (GPS).<sup>10</sup>

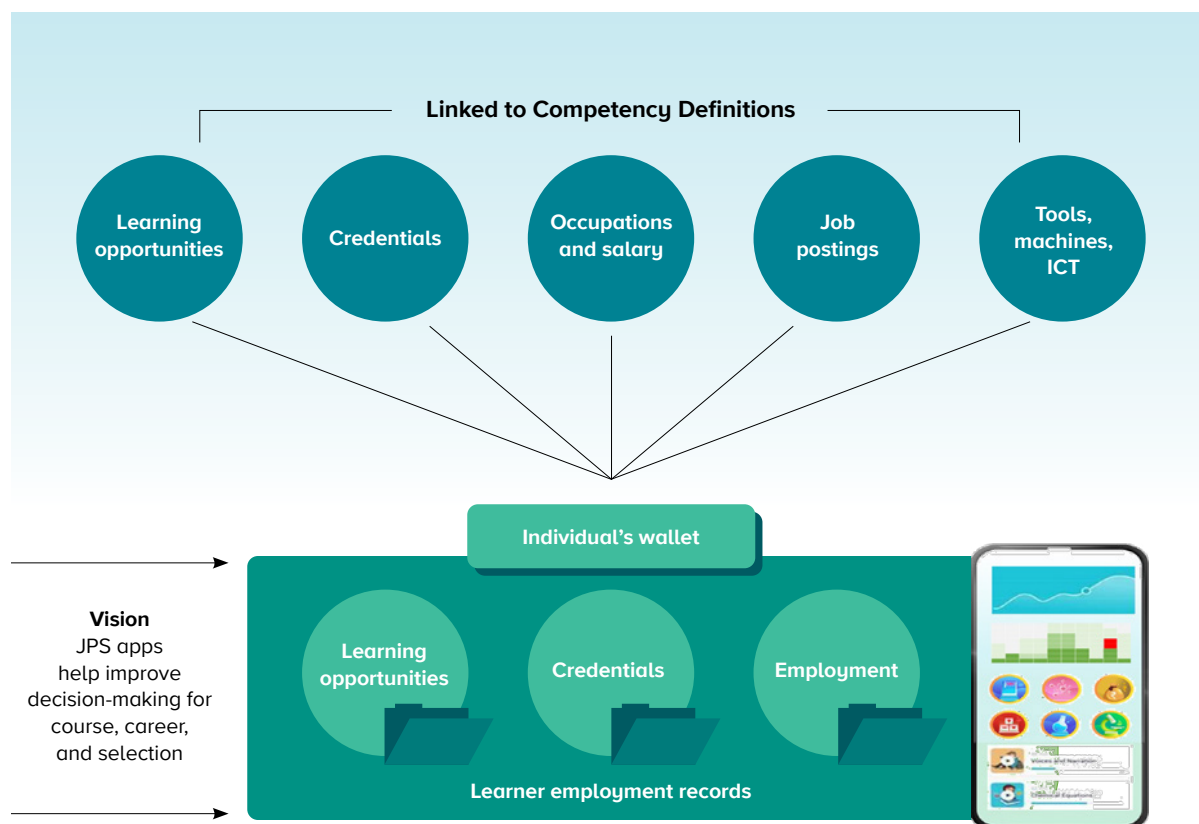
<sup>10</sup> Eric Shepherd, *The Value of Competency Definitions and Frameworks Explained*, 2022 [eric.shepherd@talenttransformation.com](mailto:eric.shepherd@talenttransformation.com), <https://www.linkedin.com/in/shepherd-eric/>

# Job Positioning Systems

Think of the GPS and mapping system on your smartphone. If location is turned on, the phone knows where it is. If you tell the system that you want to get from Point A to Point B, the program on your phone interacts with the other elements of the GPS system to calculate and offer several options you could take to get there. Now imagine that you have, via a JPS app on your phone, your entire portfolio of competencies – all the things you have ever done, learned to do, the jobs that were associated with those competencies, the industries where they were applied, etc. If you want to move to another job, a Job Positioning System could plot a path for you – indicating which learning opportunities and experiences would fill particular gaps in your competencies on the way to the desired location.






## JOB POSITIONING SYSTEMS (JPS)

*(using open data not satellites)*



Source: Adapted by Canada West Foundation from *Value of Competency Definitions and Frameworks Explained* © 2022 by [Eric Shepherd](#) is licensed under Attribution-ShareAlike 4.0 International

A Job Positioning System (based on standardized approaches to competency definitions) places the individual in the centre of the ecosystem and gives them control over their journey through the economy. Such a system would benefit all participants in the labour market.

<b>Individuals</b>		<p>Find their best pathways to and between jobs.</p> <p>Connect to employers with open positions most closely matched to the competencies they already have.</p> <p>Have greater control (worker sovereignty) over their livelihoods.</p>
<b>Employers</b>		<p>Broadcast their competency requirements.</p> <p>Quickly find closer matches to those requirements.</p> <p>Create re-skill, upskill and continuous learning pathways for existing workers whose jobs are changing due to new technologies, new products and services, new markets, etc.</p> <p>Adjust team compositions within the organization to optimize the competency mix as people come into and leave the organization, or people within the organization acquire new competencies.</p>
<b>Learning providers</b>		<p>Better tailor their learning experiences to the demands of the economy.</p> <p>Segment opportunities to enable individuals to gain required competencies (or the knowledge/skill components of those competencies) without needing to attend entire courses or programs.</p> <p>More rapidly develop new learning experiences in response to shifting requirements.</p>
<b>Credentialing organizations</b>		<p>Adjust their credentials and certifications to more closely match the competencies demanded by particular industries.</p> <p>Dynamically adjust the continuing learning requirements for certified individuals.</p>
<b>Policymakers</b>		<p>Connect to this open network and gain real-time access to more accurate data on which bundles of competencies (AKA, jobs) were in demand in which regions and industries.</p> <p>By extension, better understand trends in the actual competencies in demand, regardless of which job or occupation they were attached to.</p> <p>Use this information to tailor policy and incentivize, via taxes, subsidies and regulations, behaviours in the market in a more evidence-based fashion than is currently possible (even with the recent and planned enhancements to national LMI systems).</p>



## A common definition of a competency

Unfortunately, until recently there has been no common, consistent and systematic way of describing competencies. To create an ecosystem of competencies, common standards for defining competencies need to be developed and implemented. Notable work in this area has been undertaken by the Institute of Electrical and Electronic Engineers (IEEE), an international organization headquartered in the U.S. with a mission of *advancing technology for the benefit of humanity*. IEEE working groups have developed two protocols that can enable interoperability using competencies as the key. IEEE stakeholders contributing to these initiatives include policymakers from a number of countries, educators, credentialing organizations, employers and labour groups.

**IEEE 1484.20.3-2022** IEEE Standard for Learning Technology – Data Model for Shareable Competency Definitions. IEEE is developing the Data Model for Reusable Competency Definitions to create a standard way to define competencies that can then be used across a wide variety of industries and technologies.<sup>11</sup> Incorporating this sort of standard can make it easier to link open competency frameworks and develop technology platforms to manage the exchange of information.<sup>12</sup>

## IEEE 1484.20.2 (2022) Recommended Practice for Defining Competencies

This document details the required and optional elements of a good competency definition which can then be stored and accessed through the data model mentioned above. It recognizes that different organizations will develop competencies and frameworks for different purposes and does not seek to prescribe how they are written but instead suggests information (including metadata) they should contain. It also recommends developing frameworks and competencies that are reusable and inter-operable.

All competencies created would require certain minimum attributes:

- A unique identifier,
- A short name, and
- A competency statement that details the behaviours and capabilities necessary to perform a particular task.

Additional information is optional and could include:

- A plain-language description of the competency,
- Proficiency level descriptions,
- Additional metadata (i.e., data about data = other information related to the competency that will aid in interpreting it), and
- Associated competency models and/or frameworks.

In effect, the definition should contain any data and attributes that help define the competency, whether they are embedded in the definition itself, or linked from other sources.

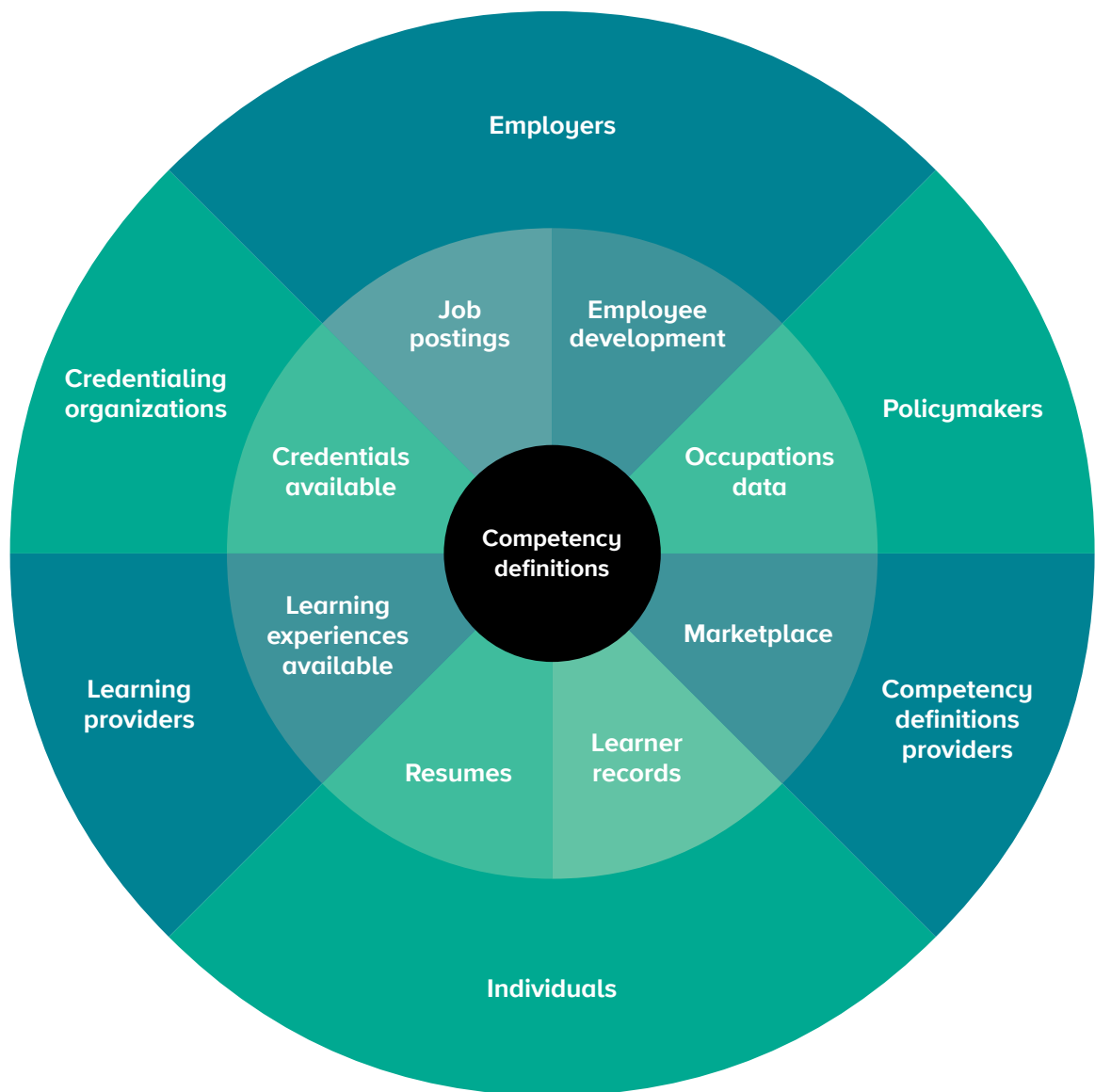
A competency developed in this manner is disaggregated from a competency framework, competency model, learning opportunity, or any job, role or occupation – but can be referenced by any of these.<sup>13</sup>

<sup>11</sup> <https://www.ieeeeltsc.org/NewsItems/ieee-1484-20-1-data-model-for-reusable-competency-definitions-published/>

<sup>12</sup> [https://www.techstreet.com/standards/ieee-p1484-20-3?product\\_id=2252572](https://www.techstreet.com/standards/ieee-p1484-20-3?product_id=2252572)

<sup>13</sup> Eric Shepherd, *The Value of Competency Definitions and Frameworks Explained*, 2022 [eric.shepherd@talenttransformation.com](mailto:eric.shepherd@talenttransformation.com), <https://www.linkedin.com/in/shepherd-eric/>

## COMPETENCY DEFINITIONS AS A COMMUNICATIONS TOOL



Source: Adapted by Canada West Foundation from *Value of Competency Definitions and Frameworks Explained* © 2022 by [Eric Shepherd](#) is licensed under Attribution-ShareAlike 4.0 International

When competency frameworks are built and populated using these international protocols, and then linked to the web, the Internet of Skills described by the authors in [Matchup: A case for pan-Canadian competency frameworks](#) becomes a reality.

Many organizations in Canada, the U.S. and elsewhere are making strides in the development of the components of an open, linked competency system. For an annotated list of these initiatives, see Appendix 3.

RECOMMENDATIONS FOR

# Policymakers. Employers. Learning providers.

Much of the system needed to make the adoption of competency as the labour market communication tool is already available, however much remains to be done. The following recommendations are offered to complete the system.

---

RECOMMENDATIONS FOR

## Policymakers

- Continue the evolution of the LMI system toward a more granular, competency-based model.
- Lead by re-vamping governmental HR systems to open competency frameworks based on defined competency definition criteria (e.g., IEEE 1484.20.2) and
  - Encourage other employers to do the same.
  - Incentivize the creation of open, linked data between the players in the eco-system.
  - Collect, aggregate and share the data collected to enable all players to benefit from it. This should be a public good as the public has already paid to collect the data (via taxes).
  - Encourage learning providers to develop learning pathways and outcomes based on competency definitions (per IEEE).

- Encourage credentialing organizations to define their certifications based on the incorporated competencies, defined to a common standard (per IEEE).
- Incentivize the development of a Job Positioning System based on data made available freely and openly for that purpose.
- Break down the barriers and silos between the provinces, and internationally, by promoting competencies and the common definition architecture as noted above.

---

## RECOMMENDATIONS FOR

# Employers

- Reconstruct current job/role descriptions along measurable competency lines and align them with the criteria established by the IEEE standards.
- Encourage adoption of Enterprise Resource Planning systems (Oracle, SAP, etc.) that are compatible with the IEEE data model. The use of standard competencies defined per the IEEE model within firms will expand the power of the HR components of ERPs and assist organizations using them to better manage the flow of people (and their competencies) into and out of projects, teams and be more precise in their people development efforts.
- Conduct thoughtful exercises around what data is truly proprietary, in preparation for open data environments and Web 3.0.
- Insist that learning providers in talent supply chains articulate the outputs of courses and programs in competency terms, compatible with the IEEE standards.

---

## RECOMMENDATIONS FOR

# Learning providers

- Begin to articulate the outputs of courses and programs in competency terms, compatible with the IEEE standards.
- Include competency information from courses and programs and co-curricular activities in a much more detailed and student centric Comprehensive Learner Record or Diploma Supplement (i.e., more than the current “course transcript” approach).<sup>14, 15, 16</sup>
- Fully adopt competency-based approaches to articulating the non-technical skills (generally referred to as soft skills) accrued through the learning journey, and document them as noted above. (The Association of American Colleges and Universities VALUE rubrics or the National Association of Colleges and Employers (NACE) Career Readiness guidelines would be a good starting point.<sup>17, 18</sup>)
- Validly, reliably and consistently assess competencies gained by students. (Multiple choice exams are rarely a valid assessment of competence. Provincial licensing bodies do not accept written proof that a driver can parallel park a car.)

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<sup>14</sup> <https://www.ledtech.org/initiatives/digital-credentials/clr>

<sup>15</sup> <https://education.ec.europa.eu/education-levels/higher-education/inclusive-and-connected-higher-education/diploma-supplement>

<sup>16</sup> Gary W. Matkin. Alternative Digital Credentials: An Imperative for Higher Education. UC Berkeley. 2018. <https://cshe.berkeley.edu/sites/default/files/publications/rops.cshe.2.2018.matkin.altdigitalcredential1.30.2018.pdf>

<sup>17</sup> NACE Career Readiness: <https://www.nacweb.org/uploadedfiles/files/2021/resources/nace-career-readiness-competencies-revised-apr-2021.pdf>

<sup>18</sup> <https://www.aacu.org/initiatives/value-initiative/value-rubrics#:~:text=VALUE%20rubrics%20are%20open%20educational,%2C%20cross%20cutting%20learning%20outcomes.>

# Conclusions



In the years since *MatchUp: A case for pan-Canadian competency frameworks* was published, the technology required to create such frameworks has evolved.<sup>19</sup> It is now not only possible to develop competency frameworks – the standards for making them interoperable are now available. A Jobs Positioning System, a global positioning system for jobs and competencies for the benefit of all users of the system, is the ‘Internet of Jobs’ envisioned by the authors in 2017. However, while the possibility exists and progress has been made, much is left to be done.

There is a need for policymakers, employers and learning providers to support and encourage innovation in the way the labour market operates. Frameworks of open, linked competencies would enable a more efficient labour market. With a more efficient labour market, the match between people and jobs would be much closer, vacant jobs could be filled more easily, productivity would increase and ultimately, so would GDP.

One final note: Without valid, reliable and consistent assessment of competencies against standards of competence set in conjunction with the needs of the buyers in the market, there will continue to be frictions in the labour market. If individuals and employers cannot rely on them, competencies too will become just another proxy.

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<sup>19</sup> Lane, Janet and Griffiths, Jeff. *MatchUp: A case for pan-Canadian competency frameworks*. Canada West Foundation. 2017

# Appendices

## APPENDIX 1: EXCERPTS FROM TWO COMPETENCY-BASED JOB DESCRIPTIONS

SALES MANAGER DESCRIPTION		
	Traditional (pulled from an Indeed ad)	Competency-based
<b>General overview</b>	<p>The Sales Manager serves the company's customers. They assist in the creation of marketing and advertising strategies, resolve complaints from customers, and ensure that sales team members follow company policies and regulations.</p> <p>The Sales Manager leads and motivates their team. Key duties include:</p> <ul style="list-style-type: none"> <li>• Managing the sales team</li> <li>• Conducting research to penetrate and grow in new markets</li> <li>• Training new employees on company sales processes and software</li> <li>• Resolving disputes between employees</li> <li>• Developing sales strategies</li> <li>• Analyzing sales data to determine performance of products and sales people</li> <li>• Utilizing software to collect and analyze sales data</li> <li>• Communicating with sales team, department heads, customers, and suppliers</li> </ul>	<p>The Sales Manager oversees the teams responsible for generating organizational revenue through sales. They are responsible for creating and executing sales strategies, managing and developing the sales team, assigning sales territories and quotas, analyzing customer and sales data to determine opportunities and adjust sales tactics, championing technological innovation in sales, and general departmental management duties.</p> <p>The Sales Manager may also be involved in managing key accounts, assisting in sales negotiations, and building strategic relationships with clients and prospective accounts. In addition to sales, management, and business acumen, the Sales Manager must also have a deep technical understanding of the technical and scientific basis for the products or services being sold, and extensive understanding of the environment and constraints under which sales are conducted.</p> <p>This includes end customer requirements and constraints and the specific regulatory constraints associated with the markets in which they operate. They also act as a conduit to the business for feedback from customers that can inform adjustments to sales strategies and campaigns, influence product enhancements, and serve as feedback loop to evaluate customer/rep relationships.</p>
<b>Duties/ Responsibilities</b>	Plan and monitor sales campaigns	<p><b>Sales Planning</b></p> <p>Breaks down organizational strategies to develop targeted sales strategies for territories, product/service lines, and market segments to achieve organizational revenue targets.</p> <p>Competency in this role is demonstrated when the individual:</p> <ul style="list-style-type: none"> <li>• Conducts internal analysis of sales performance by product line, territory, salesperson, and account as required to determine total sales potential.</li> <li>• Analyzes client buying behaviour to inform sales planning.</li> <li>• Gathers information from key accounts/clients to inform planning.</li> <li>• Develops and implements processes to identify top clients.</li> <li>• Develops and implements a strategic account planning process to map out client-specific sales plans.</li> <li>• Utilizes predictive models and technology to indicate pipeline health, including win rates, average deal size, average sales cycle length, or other relevant variables.</li> <li>• Negotiates realistic, achievable sales/revenue targets with senior management.</li> <li>• Provides opportunities for bottom-up goal setting within the sales team.</li> <li>• Sets quotas and targets for products and territories.</li> <li>• Leverage research to assist in promoting sales.</li> </ul>

Table continues >

Traditional (pulled from an Indeed ad)	Competency-based
Manage the sales team and ensure sales team performance	<b>Sales Team Management</b> Manages the individual and collective performance of the sales team to deliver on the organization's revenue goals. Competence at this level is demonstrated when the individual: <ul style="list-style-type: none"> <li>• Establishes and communicates performance expectations and metrics for every stage of the sales cycle.</li> <li>• Conducts regular team meetings to troubleshoot sales tactics and share best practices.</li> <li>• Conducts regular meetings with individual representatives to review performance.</li> <li>• Monitors to ensure representatives are following established sales processes.</li> <li>• Ensures that reps are correctly using appropriate sales technologies (CRM, etc.).</li> <li>• Participates in sales "ride-along" calls and other field activities to assess performance and identify good practices and opportunities for improvement.</li> <li>• Motivates the sales team with both monetary and non-monetary incentives.</li> <li>• Holds individual team members accountable for their performance.</li> <li>• Follows appropriate procedures to manage poor performance (up to and including reassignment or termination).</li> </ul>

## DIRECTOR OF BUSINESS DEVELOPMENT (WBLC)

### Position Description/Tasks

Responsible for initiating, directing, conducting and managing the marketing process including sales and providing customer service. Identifies and develops new and expand existing markets. Works closely with potential and existing clients, and with the organization's Product Development function in order to meet customer needs. Manages marketing and sales staff and the order desk. Responsible for the preparation of technical sales proposals, bids etc. Responsible for environment and competitive scans and knowledge.

Business Competencies		Proficiency Level
B-1	Understands the Business	4
B-2	Facilitates Change	3
B-3	Plans Ahead	3
B-5	Takes Personal Responsibility	3
B-12	Business Savvy	4
B-13	Drives for Results	4
B-14	Thinks Creatively	4
B-16	Thinks Strategically	4
B-19	Persistence	4
Relational Competencies		
R-1	Customer Focused	5
R-7	Persuades and Influences	4
R-9	Negotiating Skills	4

Table continues >

Business Competencies		Proficiency Level
R- 10	Fact Finding Skills	3
R-13	Organizational Awareness	3
<b>Core Company-specific Competencies</b>		
C-1	Communicates Effectively	4
C-2	Teamwork	4
C-3	Values Driven	4
C-4	Inspires Others	4
C-5	Leadership	4
<b>Technical Competencies</b>		
T-F-6	Product Costing	2
T-MS-2	Product/Services Knowledge	4
T-MS-3	Competitors' Product/Services Knowledge	4
T-MS-7	Principles of Selling	4
T-MS-8	Marketing Strategies	5
T-MS-9	Product Life Cycle	3
T-MS-10	Managing Customer Service	3
T-SP-1	Business Strategies	5
T-SP-2	Strategic Planning	3
T-M-3	Bid Management	4
T-M-4	Program Management	3

**Education:** Related University Degree

Business Competencies Full Descriptions	Proficiency Level
<b>B-1 Understands the Business</b> Demonstrates knowing what the organization's most important goals, strategies, directions, markets, products and services are, as well as the major resources inside and outside the organization, including sources of profit and revenue. Knows one's own role in the organization and how the organization operates in its broader environment. Understands what other departments do and how products and services are interrelated. Knows where improvements are possible.	<b>4</b>
<b>B-2 Facilitates Change</b> Understands that change is required to progress; promotes and supports change. Open to suggestions, prepared to try something new and different. Adapts positively to changing circumstances and priorities and questions accepted ways of doing things that no longer make good business sense. Is aware of key changes currently underway in the workplace and suggests improvements to work practices. Can articulate how important it is to manage change on an ongoing basis and what the consequences are of not adapting to changing needs. Facilitates basic techniques for managing change such as target setting, planning and forecasting.	<b>3</b>
<b>B-3 Plans Ahead</b> Plans and coordinates work of self and others to achieve business goals and targets. Ensures work is done within agreed time scales through managing time efficiently and effectively within realistic estimates. Breaks down tasks into manageable parts, sets priorities and objectives, and plans for resources. Carries out the organizational guidelines for action planning and objective setting for own job and reporting employees in light of own and other departments' plans and objectives. Ensures planning and scheduling takes the needs of internal and external customers into account.	<b>3</b>



This leadership model is for all senior leaders across NASA no matter in which facility they work, or location.

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**NASA | CORE COMPETENCIES****Senior Leader**

*Senior Leader: AA, Associate AA, Center Director or Associated Center Director, etc.*

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**Performance Dimension: Personal Effectiveness**

COMPETENCIES	SKILLS
<b>Cognitive Skills</b> Applies critical and appropriate judgment, decision-making and thinking strategies to organizational, interpersonal and competitive issues.	<b>Strategic Thinking</b> <ul style="list-style-type: none"><li>• Devotes appropriate time and attention to strategic issues.</li><li>• Considers complex cross-functional, cross-center, division, business and geographic implications when approaching problems or issues.</li><li>• Anticipates potential threats and opportunities.</li><li>• Balances short-term needs with long-term priorities.</li><li>• Analyzes problems from different points of view, including many sources of information.</li></ul> <b>Decision Making</b> <ul style="list-style-type: none"><li>• Makes effective decisions during times of ambiguity or when there is insufficient “hard” data or information.</li><li>• Creates an environment where complex decisions can be made and executed.</li><li>• Makes decisions even when solutions may produce unpleasant consequences.</li><li>• Perceives the long-term impact and implications of decisions.</li><li>• Makes decisions in a timely manner.</li><li>• Approaches problem situations with a clear perception of organizational and political realities.</li><li>• Makes decisions based on a “ONE NASA” philosophy.</li><li>• Seeks multiple and dissenting opinions before making decisions.</li></ul> <b>Creativity and Innovation</b> <ul style="list-style-type: none"><li>• Constantly seeks new insights into his/her job, organization and the outside world.</li><li>• Applies innovative solutions.</li><li>• Encourages an environment for innovative approaches.</li></ul>

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## APPENDIX 3: NOTES ON EMERGING WORK ON COMPETENCIES

The world is taking notice of the shift toward competencies as the key molecule in the jobs ecosystem. Notable work includes:

### WORK BASED LEARNING CONSORTIUM

Work Based Learning Consortium (WBLC) develops and manages work-based learning programs for entry- to mid-level skilled jobs, predominantly in the manufacturing sector. WBLC integrates into their program a compensation package for employers. With support from a variety of government funders, WBLC compensates its partner employers for time spent in the provision of the 'on-the-job' learning. Compensation is paid upon the trainees' successful achievement of all required job-specific competencies. However, the largest positive financial impact on an employer's business results is that trainees become more proficient more quickly, so the company improves its productivity and competitiveness.

Over the past nine years, more than 60 advanced manufacturing companies in Ontario have partnered with the WBLC team to train over 600 employees in entry- to mid-level skilled jobs, with over 90 per cent of trainees becoming long-term employees.

WBLC operates under the following competency-based pillars:

- 01 A focus on 'in-demand' jobs – actual vacancies for which employers are ready and willing to hire and train people. Training programs are built and delivered to meet real skills shortages and require that employers hire trainees as full-time, permanent employees at the start of their learning program. Trainees earn while they learn.
- 02 Employers work with curriculum developers to define the technical and non-technical competencies (knowledge, skills and attributes) a skilled worker needs to be proficient in each specific skilled job.
- 03 Job seekers are selected for training for a skilled job based on the fit between their cognitive, personal and relational, and workplace readiness competencies and those that are essential for success in the specific skilled job.
- 04 Job seekers who 'fit' the job are hired by the employer at the outset of their training program.
- 05 Employers are active participants in delivering the 'practical' training needed to develop the technical competencies required for the skilled job and have incentives and support for doing so.
- 06 As and when appropriate, modular e-learning is offered to carry the principal load for knowledge training and close alignment of e-learning content with shop floor learning tasks.
- 07 Trainees' success in their learning program is affirmed through an independent, valid and reliable competency-based certification process.

## JOB DATA EXCHANGE (JDX)

JDX is an initiative of the U.S. Chamber of Commerce Foundation to create an internet of skill using the power of emerging semantic Web technology. The idea is to produce job descriptions and job postings in both human readable and machine-readable (JSON-LD) formats that facilitate ease of use, advanced analytics, and interoperability across many different systems.

JDX aims to create a system where the competency requirements of jobs can be stripped from company HR systems and connected to the competency profiles of individuals, and the competency creation capabilities of training providers at scale, allowing faster matching of jobs to people and people to jobs, as well as making it easier for individuals to trace a competency-based pathway to the job they want, via the most appropriate development pathway based on the gap between the competencies they have and the competencies they need.

The aim is reducing the friction in the workforce generation system, thereby improving outcomes for employers, talent providers (i.e., schools, training organizations) and job seekers.

The JDX project is working on creating open data standards for job descriptions and job posting, and the open data tools to support them. By creating open data standards and separating competency information from proprietary business information, JDX will facilitate the creation and linking of open competency frameworks, which can be kept relevant by constant reference to the ever-growing aggregate job and competency data from the myriad systems that are linked together.

Example from JDX <https://jobdataexchange.io/specs/jobschema-example-files/>

## OPEN RECOGNITION DECLARATION

The Open Recognition Declaration builds on Open Badges by bringing together individual and collective actors globally who share a vision of an open and learning society which is based on the recognition of the talents, skills and aspirations of individuals, regardless of where and how they are learned. When individual competency can be recognized without barriers, the individual, their community and overall society benefits.

Open Recognition promotes the informal recognition between peers in a community. It removes one of the barriers for marginalized segments of society for whom formal education, training and credentialing may not be an option. Open Recognition relies on open competency framework concepts as a key piece of the overall socio-technical system in the economy.

Open Badges combined with Open Recognition provide the means and the opportunity to put an end to disparities within the competency recognition landscape. Connecting and informing competency frameworks, they become the building blocks of an open architecture for the recognition of lifelong and life-wide learning achievements and create a system where individuals have control of their own recognition and establish their agency. The concept can encompass formal (i.e., within learning institutions) and informal (within and across communities of practice) recognition of competency.

Open recognition by itself is somewhat problematic if the person providing the recognition is not a reliable evaluator. Combining open recognition with trust algorithms (based on Bayes theorem)<sup>20</sup> allows recognition of a competency to be given higher credence (weighting) if the person who provides the recognition also has that competency and is highly regarded by others for having that competency. Technological solutions (for example Ibbaka Talio) use this approach as a means of opening up the field to non-traditional (i.e., not based on formal credentials) forms of competency recognition.

<sup>20</sup> <https://plato.stanford.edu/entries/bayes-theorem/>

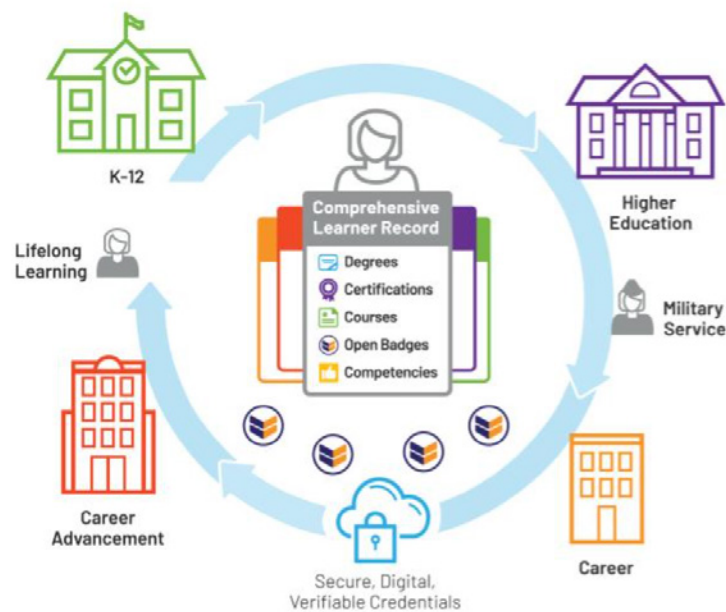
Open Badges 2.0 is the current leading format for digital badges, maintained by the *IMS Global Learning Consortium* (currently re-branding as 1EdTech). The architecture provides a verifiable and shareable credential that includes detailed information about the competencies an individual has achieved, how they achieved them, and who recognized the achievement. Open Badges have the potential – when combined with Open Competency Frameworks – to create a flexible and portable way to recognize competencies whether they are learned through traditional means (i.e., formal instruction) or experientially, augmenting traditional qualifications and professional certifications.

The Open Badges 3.0 protocol will contain additions and enhancements to the current format and should roll out in mid-2024.<sup>21</sup>

## Interoperable Learning Records

**IMS Global** (EdTech) also maintains the Comprehensive Learner Record (CLR)

<https://www.imsglobal.org/activity/comprehensive-learner-record>



Source: <https://www.imsglobal.org/activity/comprehensive-learner-record>

This is one example in a range of new types of secure and verifiable learning and employment records being rolled out by different organizations that can be used to support a wide variety of both academic and workplace learning environments. All of these different approaches essentially provide a technical specification for a digital learning record that is inter-operable across HR systems, academic systems, and credentialing systems, which will enhance the value of learning and prevent unnecessary re-work when switching careers or industries. It will provide trusted tracking of competency attainment for all stakeholders for their lifetime. The key to these new records is that they are ultimately controlled by the learner, giving the individual sovereignty over their competency profile and ensuring portability.

CLR combined with Open Competency Frameworks creates a flexible landscape for continuous lifelong learning and recognition for individuals.

<sup>21</sup> Open Badges v3/ VC 1.1 [https://1edtech.github.io/openbadges-specification/ob\\_v3p0.html](https://1edtech.github.io/openbadges-specification/ob_v3p0.html)

CLR Example:



UMUC  
University of Maryland  
University College

Peyton Andrews  
Student id: 94194633  
Status as of: 06/30/2016

OFFICIAL TRANSCRIPT

This is an official transcript.  
Student information is guaranteed unaltered from the source.

MASTER OF BUSINESS ADMINISTRATION

Print »

Organizational Leadership

Organize document or presentation clearly in a manner that promotes understanding

In-ProgressEvidence (1/3)

- Present material in clear and/or logical order appropriate to task
- Articulate thesis and purpose clearly
- Create coherent progress from introduction through conclusion
- Distinguish clearly between main points and supporting details
- Support thesis and purpose fully
- Transition smoothly and develop connections from point to point

Create and employ multimedia supports, visual aids and/or documents appropriate to the needs of the project, the message and the audience

In-ProgressEvidence (2/3)

- Create coherent progress from introduction through conclusion
- Create neat, clear, and professional document and/or multimedia aids

## HR OPEN STANDARDS

The HR Open Standards Consortium is the only independent, non-profit, volunteer-led organization dedicated to the development and promotion of a standard suite of specifications to enable human-resource-related data exchanges. The Consortium is creating Global HR vocabularies that are shareable across different HR technologies and different organizations. The standards are being developed internationally, using JSON and XSD data protocols.



## Project Methodology



Proposal

- Confirm sponsors
- Identify Roles & Participants
- Finalize Scope & Deliverables
- Get Board Approval



Development

- Define
- Actors
- Triggers
- Use Cases
- Diagrams
- XSD/JSON
- Examples
- Documentation

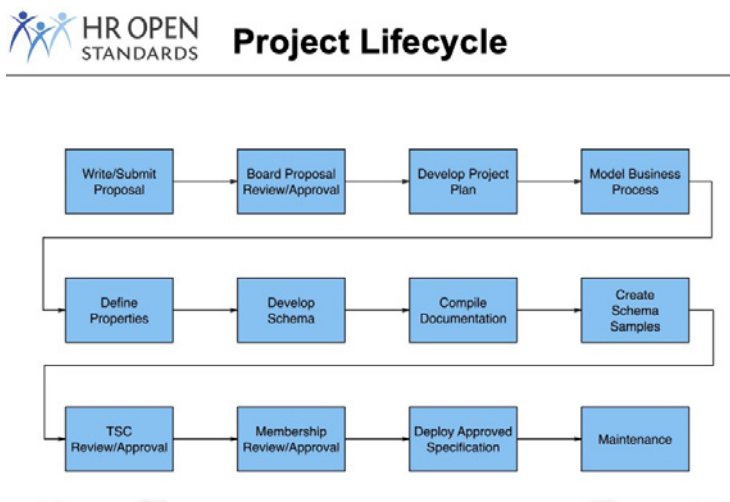


Review/Approval

- Workgroup
- TSC
- Board
- Membership

HR Open is designed to support the integration between learning assessment and recognition, recruiting, onboarding and performance management. It goes beyond the competency information exchanged via JDX to create actionable tools for effectively managing the data for a variety of HR activities.

HR Open is linked to Open Competency Frameworks via the learning assessment and recognition aspect of the standard.



### T3 INNOVATION NETWORK | [www.t3networkhub.org/](http://www.t3networkhub.org/)

Another initiative of the U.S. Chamber of Commerce Foundation, the T3 Innovation Network, brings together several stakeholders (including HR Open) to develop open standards for the exchange of competency and employment information. The intent of the T3 Innovation Network is to modernize the technologies that underpin the talent marketplace. Several working groups have been established, each focusing on one aspect of the overall talent data landscape. Workgroup #3 is focused on developing and analyzing competencies, and Workgroup #4 is focused on new architectures and uses for linked individual data in the overall talent data landscape.

The T3 Innovation Network is now made up of over 300 organizations and is a major clearing house for the latest thinking and ideas in the Open Competency Frameworks community.

### IBBAKA TALIO (B.C.)

Ibbaka Talio is a talent management technology developed in Canada by Ibbaka. It is aimed at facilitating the understanding of the capabilities and skills that organizations and individuals need to thrive in a rapidly changing world. The platform may allow individuals to build and manage their own competency profiles, identify opportunities to grow their skills and competencies over time, link to the learning resources they need to improve their competencies, and find career opportunities that match their current and desired future competency profiles. The system may also provide a mechanism for the translation and sharing of open competency frameworks in ways that make the overall talent marketplace more efficient, while empowering individuals to take control of their own development.

### OPEN COMPETENCY FRAMEWORK TOOLBOX (eCAMPUS ONTARIO)

eCampus Ontario has published a toolkit to support the development of common, open competency frameworks for in-demand sectors of the labour market. Open Competency Frameworks are the key to developing a robust eco-system for learning and micro-credentialing and support the development of continuous re-skilling/up-skilling of the workforce.

The toolkit provides a cookbook for developing competency statements and grouping competency statements into frameworks that can be used at the organizational level, but that also provide the basis for broader frameworks at the sectoral level – improving data sharing and interoperability.

## CORPORATION FOR A SKILLED WORKFORCE (CSW)

CSW is a U.S. national non-profit organization that partners with government, business, education and community leaders to connect workers with education and good jobs, increase the competitiveness of companies and build sustainable communities. It seeks to identify opportunities to foster innovation in work and learning to provoke transformation at the policy level and in day-to-day practice. The organization is focused on competencies – what someone can DO – as the important centre of the jobs ecosystem. It has launched The Competency Project (<https://thecompetencyproject.com>) to accelerate the use of competencies within work and learning.

Example of projects: <https://skilledwork.org/what-we-do/current-past-work/>

## CREDENTIAL ENGINE

Credential Engine is a non-profit whose mission is to map the credential landscape with clear and consistent information, fueling the creation of resources that empower people to find the pathways that are best for them. The intent is to bring more transparency to credentials by using technology, and to this end, Credential Engine provides a suite of web-based services that creates a centralized Credential Registry to house up-to-date information about all credentials (academic, professional, industry, etc.), a common description language to facilitate credential comparability and a platform to support customized applications to search and retrieve information about credentials. It is hoped that this will bring increased transparency/literacy to the credentialing marketplace. Credential Engine has spawned two notable technological advances:

- A language for describing credentials called CTDL (Credential Transparency Markup Language) as a common language and rules of the road for how credentials, credentialing organizations, quality information and competencies are written, whether in open networks (LOD) or in firewalled (closed) systems.
- A web-based service to collect and warehouse credentials so they can be accessed and compared.

And in the EU, there is now a set of three separate but interconnected frameworks to describe the foundations for lifelong learning across the economy:

**DigComp 2.2** (2022) describes the digital competencies necessary to function in an increasingly information-oriented and digital world. DigComp has five areas (groupings of competencies), 21 separate competencies with descriptors, eight levels of proficiency to measure those competencies, 168 contextual learning outcomes and descriptions, and examples of the knowledge, skills and attitudes applicable to each competency.

**EntrComp** (2016) describes the critical entrepreneurial competencies necessary to see and respond to needs, and organize to address those needs, in an agile manner – whether this is in a for-profit or non-profit environment. It consists of three areas (groupings of competencies), 15 separate competencies with hints and descriptors, 60 different thematic threads, which unfold into eight proficiency levels and 442 contextualized learning outcomes.

**LifeComp** (2020) describes the critical personal and interpersonal (social) competencies that are necessary to function in our society. LifeComp has three areas (groupings of competencies) and eight separate competencies with a subtitle and three descriptors to show what awareness, understanding and action looks like for each.

These three frameworks are foundation documents that other frameworks can build upon to create robust competency definitions for any role and encourages individual remixing and transforming in new contexts.

## WORXICA

Worxica is a *job market research tool* that tracks Canadian job market trends by collecting and analyzing information from millions of Canadian job ads found online in the past year. Worxica answers questions like: How many job postings were advertised in the past year in your selected occupation, in your region (except Quebec)? Who was hiring? What skills and certifications did they require? How much did they pay? How does your region compare to the rest of your province / territory? And more.

## Thank You to Our Supporters | 2022-23

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Arthur J.E. Child Foundation  
Endowment Fund at the  
Calgary Foundation

Brawn Family Foundation

Cenovus

Enbridge

Exploron

Government of Alberta

Government of Saskatchewan

Manitoba Chambers of Commerce /  
Government of Manitoba

Government of Canada, Prairies  
Economic Development Canada

Government of Canada, Pacific  
Economic Development Canada

Work Based Learning Consortium

### Patrons (\$25,000+)

CN

Expander Energy Inc.

Export Development Canada

Shell Canada

### Builders (\$10,000+)

Alberta Wheat and  
Barley Commission

Business Council of Alberta

Calgary Reads

Canadian Construction Association

Canpotex

CAPP

C.P. Loewen Family Foundation

CWF Staff

Gary G. Mar, KC

Imperial

LNG2023

Loran Scholars Foundation

Ron Wallace

The Rotary Club of Calgary –  
Adult Literacy Committee

Western Canada Road Builders  
& Heavy Construction Association

Vancouver Fraser Port Authority

### Members (\$5,000+)

Agriculture and Agri-Food Canada

Alberta Pork

Alberta Pulse Growers

Bennett Jones LLP

Jim Dinning and Evelyn Main

Doug Black

Explorers and Producers Association  
of Canada (EPAC)

Government of Canada,  
International Economic Policy  
Bureau, Global Affairs

Larry B. Haggart

Martha Hall Findlay – In memory  
of Betty (Joy) & Hugh Hall

Vernon Jones

Hal Kvisle

Manitoba Pork

Roderick & Jean McKay

James A. Richardson

Saskatchewan Pork  
Development Board

Saskatchewan Heavy  
Construction Assoc.

Anonymous

## CWF Board of Directors | 2023

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### OFFICERS

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Chair of Audit, Finance and  
Investment Committee

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Vice-Chair, AB

**Nancy Hopkins, KC**  
Vice-Chair, SK

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**James K. Gray, OC**

**CHAIR EMERITUS**  
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Larry Blain  
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**Saskatchewan**  
Terry B. Grieve  
Nancy Hopkins, KC  
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**Manitoba**  
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Former Premier of British Columbia

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Former Premier of Alberta

**Hon. Brad Wall**  
Former Premier of Saskatchewan

**Hon. Gary Doer**  
Former Premier of Manitoba



CANADA WEST FOUNDATION appreciates the support of the donors and project funders and the expertise of partners who contributed to our body of work on competencies over the last eight years. Special thanks to: Business Council of Canada, Jeff Griffiths, The Counselling Foundation of Canada, Waiward Industrial, Jim Kanerva, Ironworkers Local 720, Go Productivity, Work Based Learning Consortium, and Stephen Murgatroyd.

We look forward to working with partners and funders to implement a Canadian competency-based system for matching people with jobs and jobs with people.

CWF REPORTS & BRIEFS | COMPETENCIES | [cwf.ca](http://cwf.ca)

2015



**Competence is the Best Credential**

2015



**Building Blocks:**  
Modular credentials for Canada's trades

2016



**Know, Do, Understand:**  
Development of competencies in Canada's schoolchildren

2016



**Start 'Em Up:**  
Incubating nextgen innovators

2017



**MatchUp:**  
A case for pan-Canadian competency frameworks

2017



**Beyond the Rules:**  
Moving safety from compliance to competence

2017



**The Skill Advantage:**  
the 21st century challenge for Canada's Unions

2018



**WHAT NOW?**  
Blueprints for work-based learning

2019



**WHAT NOW?**  
Digital Skills Decoded

2020



**Upgrade:**  
Towards a Rural Digital Economic Strategy

2021



**WHAT NOW?**  
Micro Credentials: 'Small' qualifications, big deal

2022



**WHAT NOW?**  
Rapid Employee Upskilling and Reskilling

**CANADAWEST  
FOUNDATION**

**Good for Canada.  
Good for the West.**