



INTERNET  
OF LEARNING  
CONSORTIUM

## The Internet of Learning Consortium

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**Abstract.** The Internet of Learning Consortium, a 501(c)6 open membership consortium (IOLC), has been formed to increase effectiveness and availability of curricula whose learning outcomes ensure readiness for in-demand professional roles. While not a standards organization, the IOLC and its membership will facilitate the development of roadmaps for technical skillsets that align to job roles, learning curricula, and the validation of curricula effectiveness necessary to close the Skills Gap. Its efforts will create a network effect among employers, job seekers, learning providers and researchers that will produce a steady pipeline of individuals with the appropriate skills to fill digitally intensive positions, thus creating a more efficient job marketplace. The consortium is seeking participants from industry, academia, non-profits, government agencies, and learning providers.

### 1 Preparing the Workforce of the Future

Today's job market is constantly evolving. The world economy is rooted in technology, and technology is changing at an extraordinary pace. Because the pace of change is so rapid, we really have no idea how rapidly current jobs evolve or what the jobs of the future will look like. Technology disruptions have generated entirely new job categories just within the last two decades: data scientist, AI developer, marketing analytics, eBay consigner, solar power technician, medical data analyst, drone pilot, online helpdesk, cyber analyst.

Preparing the workforce with skills in "rapidly-evolved" and "not-invented-yet" technology threatens to become an unprecedented exercise in trying to hit a moving target, particularly since current approaches to developing job-readiness are already producing too few people with the right technical skills for today's jobs:

- In 2014, there were 500,000 open computing positions in the U.S., but only 43,000 computer science students graduating into the job market. <sup>1</sup> The University of Washington only has enough capacity for one-third of freshmen interested in computer science. <sup>2</sup>
- In 2016, 31 percent of IT Decision Makers reported “measurable gaps” in technical skill sets of their employees. <sup>3</sup>
- In 2016, 40 percent of employers<sup>4</sup> and 65 percent of global CIOs<sup>5</sup> reported that skills shortages were having a negative impact on their business.

Faced with a skills shortage that will only worsen as technology advances, how do we best help people develop skills for jobs of the future?

If the solution were as simple as adding computer science classes, increasing physical capacity at universities, industry investing in training and certification, requiring leadership courses, or increasing access to learning via the Internet, the Skills Gap would not be the widest it has ever been since the Great Recession that started in 2008.<sup>6</sup>

### 1.1 The IOLC Engine

The fact that our academic institutions and the corporate programs that supplement their efforts are not successfully meeting the growing demand for people with appropriate job-ready skills, signifies an inefficient job marketplace. While job fairs and online job sites exist to put employers and prospective employees in the same room (or virtual room), the number of matches, and the number of matches that succeed long term, is still too low. This happens because the signals that employers send about which skills they need don’t align with the signals that job seekers send about which skills they have acquired, and both sets of signals are constantly changing.

To optimize the job marketplace, employers and job seekers must first have a common vocabulary so that each can find truly compatible matches. Once it is clear which jobs require which skills, job seekers need a way to acquire those skills from learning providers, who must scale to meet demand. Learning providers, in turn, need

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<sup>1</sup> [The Conference Board’s Help Wanted OnLine® Service](#)

<sup>2</sup> Long, K. (2017). “Students frustrated trying to get into UW’s strict engineering program.” February 19, 2017. Retrieved from: <http://www.seattletimes.com/seattle-news/education/students-frustrated-trying-to-get-into-uws-strict-engineering-program/>.

<sup>3</sup> Global Knowledge, LLC. (2015). 2016 IT Skills and Salary Report: A Comprehensive Study from Global Knowledge. Retrieved from <https://www.globalknowledge.com/us-en/resources/resource-library/special-reports/it-skills-and-salary-report-2016/>

<sup>4</sup> Manpower Group. 2016/2017 Talent Shortage Survey. (2017). Retrieved from: <http://www.manpowergroup.com/talent-shortage-2016>

<sup>5</sup> Harvey Nash. KPMG. (2016). The Creative CIO: Harvey Nash/KPMG CIO Survey 2016. Retrieved from: <https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2016/09/harvey-nash-kpmg-cio-survey-2016.pdf>

<sup>6</sup> Ibid.

a way to confirm whether their curricula and teaching methods are effective, not only for getting people hired, but for helping them excel in their roles.

What's missing today is a formalized engine to produce enough people who have the skills employers need. We propose to do just that: create an Engine for the benefit of employers, learners and the economy.

Creating an engine requires careful examination of market forces:

- Which job roles require which skills?
- How do we maintain maps of jobs skills as technology and economic landscapes change?
- How do learners acquire the right skills? What topics must they learn? What is the best way to teach those topics? How do we accommodate the wide diversity of learning styles?
- Once a learner has completed a course of education, how do we measure whether they have actually acquired the skills we sought to teach them?
- How do we identify which curricula and teaching methods are more effective than others?
- Once learners enter the workforce, how do we track them to measure the impact of their learning on both their personal/professional growth and the success of the business that hired them?

To create the Engine, collaboration among parties with a vested interest in solving the problem is essential. Disjointed, trial-and-error methods are not going to close the Skills Gap as quickly as the global economy requires. This is like trying to cure disease without sharing findings among researchers, doctors, pharmacists, and biologists. What's needed is a complex systems approach.

## 2 The Internet of Learning Consortium

Institutions that have a vested interest in creating a more efficient job marketplace need to come together to invest in the technology necessary to create and maintain skills maps, evaluate curriculum design, measure and track learning outcomes, systematize and standardize methodology based on data, and to broadly share best practices in the learning arena.

The Internet of Learning Consortium will facilitate this process. By developing and driving adoption of vetted and endorsed curricula (backed by data and aligned to skills maps for real world roles), it will create a multi-sided network of learning providers, job seekers, learning scientists, and employers that will accelerate widespread acquisition of technology skills.

The consortium's vision, mission, and strategy are summarized below:

- **Vision:** The global economy benefits from a steady flow of individuals with current, job-ready technical skills who contribute to innovation and growth in all industries and digitally-intensive professions.

- **Mission:** Increase effectiveness and availability of curricula whose learning outcomes ensure readiness for in-demand professional roles that require technical skills.
- **Strategy:** Establish a process for creating jobs skills maps, evaluating and endorsing curricula, and tracking outcomes.

## 2.1 Consortium Activities

The consortium will operate as a lean enterprise, defining a Minimum Viable Product, testing it in the marketplace, and continuously refining it based on feedback and data.

The to-be-defined Minimum Viable Product could include the following:

- Definitions of job roles and skills maps, backed by data.
- Independent reviews of curricula that teach the skills mapped to job roles.
- Branded endorsement of curricula.
- Evidence of learning outcomes and workforce contributions, via anonymized data, to inform future curricula reviews.

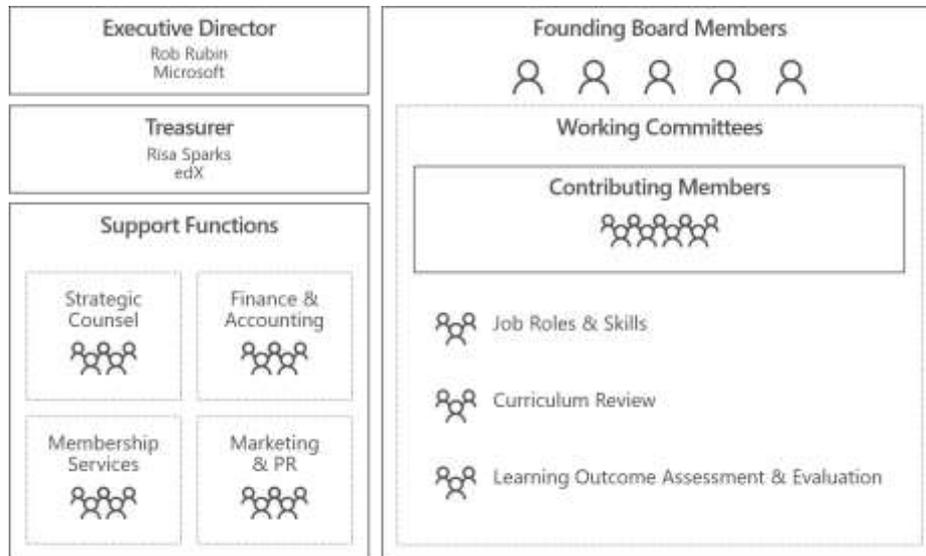
The consortium's output will contribute to a steady pipeline of skilled, lifelong learners who contribute to their own companies economic growth, and growth across all industries and digitally-intensive professions. Key annual performance indicators for the consortium will include the following metrics:

- Number of major job families identified and skills maps completed.
- Number of curricula endorsed.
- Number of learners who consume the endorsed curricula.
- Number of learners who land jobs as a result of obtaining technical skills through the curricula.
- Number of consortium members and other organizations who hire and advance those learners.

A starting point could be identifying and mapping skills for three major job families and endorsing four relevant curricula, and then analyzing learner outcomes and employer metrics.

## 2.2 Consortium Structure

The consortium is established under Joint Development Projects, LLC, as a 501(c)6 Agreement in the United States. As defined in the bylaws, the consortium structure is minimal.



**Figure 1.** Internet of Learning Consortium organizational structure.

Three proposed committees will conduct the work of the consortium:

The **Job Roles Working Group** conducts data-driven analyses of skills clusters and critical roles. It identifies and publishes job role descriptions and skills maps, along with supporting data.

The **Curriculum Working Group** solicits and reviews submissions from consortium members based on guidelines it establishes. The committee may award a reviewed curriculum a branded endorsement.

The **Learning Analytics Working Group** defines data to be collected and shared for evidence of learning the consortium will make available for review and further analysis. The consortium will request anonymized data from members who distribute branded curriculum.

### 3 Creating a Network Effect to Close the Skills Gap

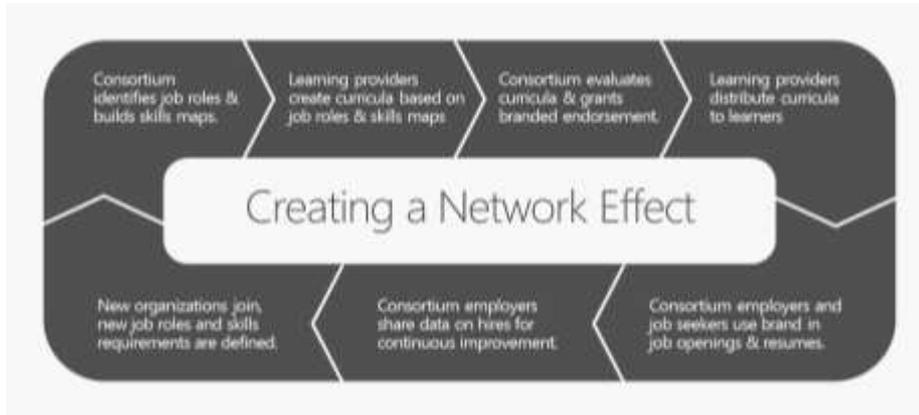
The consortium committees, as well as individual consortium members, will contribute to a self-reinforcing, multi-sided network that will expand over time to create a more efficient job marketplace, as illustrated in Figure 2 below. The network will originate as follows:

1. Based on input from employers who are members of the consortium, the Job Roles and Skills Committee will identify high opportunity job roles and will map the skills required for each role. It will then publish these roles definitions and skills maps.

2. Learning providers will create curricula based on the published job roles and skills maps. They will submit these curricula to the consortium's Curriculum Committee for review.
3. The Curriculum Committee will solicit and evaluate curricula against the objective domain designed to develop the skills required for job roles. Based on its evaluation, the committee may endorse a curriculum with the consortium brand in the form of a seal.
4. The learning provider will distribute endorsed curricula to learners using any means of distribution they choose.
5. Job seekers will consume the curricula and signal successful completion by placing the consortium brand on their resumes.
6. Consortium employers will publish job openings that signal desired qualifications using the consortium brand. Job seekers who have earned the appropriate credentials will apply for those jobs.
7. Consortium, learning providers, and employers will track and share anonymized metrics, such as hire and promotion rates, individual career growth, and organizational contributions for job applicants with consortium-branded credentials.
8. Learning scientists will analyze employer metrics to help the consortium improve job roles definitions, skills maps, and curriculum review.

The network effect will multiply as consortium activities gain momentum.

- When job seekers with consortium-branded credentials get hired and promoted, and make substantive contributions to their organizations, more employers seeking skilled workers will join the consortium to help build definitions and skills maps for additional job roles they need to fill.
- When job seekers with consortium-branded credentials get interviews, get hired, get promoted, and grow personally, more job seekers will consume branded curricula, put the branding on their resumes, and apply for jobs that include branded credentials in job descriptions.
- As more job seekers consume consortium-branded curricula, and more job roles and skills maps definitions become available, learning providers will sell more learning experiences. This will provide an incentive to produce additional curricula to expand market opportunities, which will lead to additional branded credentials for employers to seek and for job seekers to offer.
- When employers analyze and share data with learning scientists, the consortium can use findings to refine job roles definitions and skills maps, which will lead to curricula improvements and better learning outcomes, and, in turn, to more qualified candidates who will land jobs more successfully and make stronger contributions to their employers. The higher the number of employers who join the consortium, the more data will be available to learning scientists.



**Figure 2.** Creating a Network Effect by building the IOLC Engine.

#### 4 Call for Consortium Members

The consortium is currently soliciting “founding” members. While the bylaws do not define formal criteria for participation, members in good standing will contribute to committee efforts in one or more of the following ways:

1. Collaborating with consortium members to build a multi-sided network, anchored on skills maps curricula, that will increase job marketplace efficiencies and help close the Skills Gap.
2. Submitting curricula for review, and assigning Subject Matter Experts to review curricula
3. Placing the consortium’s branded endorsement on curricula and on job-descriptions.
4. Interviewing, hiring and promoting learners who complete consortium-endorsed curricula.
5. Sharing anonymized data and evidence of learning outcomes.
6. Conducting longitudinal studies on the impact endorsed curricula have on their workforce.

Organizations who join as board members may assign a representative to the consortium’s board of directors, and may assign participants to all work streams. Our goal for the first year is to have 7 – 12 board member organizations.

Any interested organization may also become a contributing member. Contributing members may assign observers to all work streams, and may apply to participate in work groups. As the consortium gains momentum, we expect several hundred organizations to participate as contributing members.

#### 4.1 Consortium Dues

To cover consortium operations and marketing efforts, members will contribute according to the schedule summarized in the table below:

	Steering Group	Associate member
Corporation	\$50,000 USD	\$25,000
Non-profit	\$7,500 USD	\$2,500

Dues will be paid at the beginning of each Fiscal Year, defined as starting July 1.

#### 4.2 For More Information

To learn more about joining the consortium, please contact Rob Rubin, executive director of the consortium at [rorubin@microsoft.com](mailto:rorubin@microsoft.com) or +1 (781) 307-2463.