RESEARCH REPORT

Micro-certification Business Models

in Higher Education

Prepared for eCampusOntario by

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ecampus Ontario

Ontario

About eCampusOntario

eCampusOntario, a not-for-profit corporation, is funded by the Government of Ontario to be a centre of excellence in online and technology-enabled learning for all publicly funded colleges and universities in Ontario.

About this Report

This report was commissioned by eCampusOntario.

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Executive Summary

Background
eCampusOntario commissioned this qualitative scan of international practice in micro-certifications in late 2019, as part of a systems approach to fostering shared approaches to these flexible learning and recognition practices. The intent was to provide a strategic planning tool to help Ontario institutions build their own sustainable micro-certification initiatives and to help encourage the development of a shared recognition ecosystem in the province. The focus was on digital credentials for ongoing recognition rather than for gamification and learner engagement.

Method
Research was conducted by Learning Agents, active in open badges and micro-credentialing since 2012. The research drew on:

- Resources collected and knowledge developed by Learning Agents since 2012
- Connections in the international community of practice, especially through the Open Recognition Alliance
- Additional secondary research
- Interviews with selected practitioners and other thought leaders in the community, including their validation of the models developed

Content overview
The report outlines five overall business models for higher education-based micro-certification initiatives:

1. **Solo Unit**
   - this may be a single department or an externalized subsidiary

2. **Solo Institution**
   - the initiative has begun as or evolved to be institution-wide

3. **Peer Consortium**
   - a group of peer institutions with distributed or rotating leadership

4. **NGO Led**
   - a centralized leader of grouped individual institutions

5. **Industry Led**
   - a large employer or sector body or key domain-specific skill provider (e.g. technology platform)

The models are presented in a matrix which posits strategic considerations for each model such as risk, effort, autonomy and overall strengths and weaknesses.

The five business models are further detailed in strategic and operational “Dimensions”, described in greater detail as follows:

Eight key dimensions, prioritized by eCampusOntario:

1. **Purpose**
   What is being recognized and why

2. **Learning Context**
   Embedded in curriculum or other

3. **Formality of recognition**
   Academic credit or other

4. **Assessment type**
   Standards- based or other, multiple-choice or other

5. **Skills Frameworks**
   Horizontal (transversal) or vertical, internal/custom or shared

6. **Portability of recognition**
   Within and beyond the institution.

7. **Authentication**
   Verification of the institution, the learner, evidence ownership and/or assessment oversight

8. **Payment**
   Free/included or other

Nine additional dimensions suggested by the author and interview respondents as also being significant:

1. **Level of credential: complexity, ambiguity, learner autonomy**
   Formal qualification frameworks such as European Qualifications Framework (EQF), non-formal frameworks, such as Connecting Credentials or internally constructed levels

2. **Credential granularity**
   “Size” or “weight”, expressed in credit units, hours or other methods

3. **Credential type**
   In the context of international standards, as published by Institute for Credentialing Excellence (ICE), the International Standards Organization (ISO) and others

4. **Delivery**
   Online, blended or face to face

5. **Stackability**
   The ability to aggregate micro-certifications into larger units, credit-bearing or other

6. **Quality management**
   Internally and/or externally managed and recognized

7. **Funding model**
   Internally or externally funded, project-based or permanent

8. **Endorsement**
   (not applied to Profiles)
   Third-party recognition of the credential, ranging from formal accreditation to informal approval or collaborative connection.

9. **Learner Support**
   (not applied to Profiles)
   Provided by one respondent (Otago Polytechnic) as a success factor, based on the identified success of Southern New Hampshire University (Kilsby, 2019)

These Dimensions were mapped to at least one exemplar of each model, in “Profiles”, along with a Profile Summary that further describes the initiative and significant insights from the practitioners.

The Conclusion summarizes insights in the following areas:

- Multiple models possible
- Portable recognition for careers is the focus
- Terminology evolves as practices evolve
- Align to horizontal and vertical skills
- Alignment is not just about skills
- Go beyond the assessment of course content
- Start smaller and sooner rather than bigger and later
- Embed appropriate quality that’s fit for purpose
- Iterate toward recognition ecosystems

The Conclusion also suggests next steps for further research and developing the practice of micro-certifications in Ontario.

Note: a longer version of this report, containing more examples and analysis is available in English only. It may be requested by emailing info@learningagents.ca.

Introduction

Innovation in digital credentialing and micro-certification has been hampered in Canada by lack of consensus over the goals, methods and even the terms to used to describe these flexible learning and recognition practices.

Since 2017, eCampusOntario has taken a systems approach to this issue, using a variety of methods to break the ice and align practices, including the Micro-Certification Principles and Framework, funded cross-sectoral pilots, an open badge Passport platform as a recognition hub and community consensus events like the annual Micro-Certification Forum.

This report is an integral piece of eCampusOntario's strategy: a scan of exemplary global practice to inspire Ontario institutions to build their own micro-certification initiatives and help encourage the development of a shared recognition ecosystem in the province.

The research mandate was explicitly requested to be more indicative than exhaustive: "recognition of practice" to provide a simple framework of current and emerging practices. The goal was to develop 4 - 6 clear models of business orientation, based on representative use cases: a crisp, clean, technology-agnostic guide to the most significant options available to higher education institutions.

The resulting report is intended to support Ontario institutions in connecting international practice to their own context as they move forward with their own micro-certification initiatives – to help them "find themselves" in one or more of the models and see how their initial assumptions, exploration plans and lingering questions may have played out in the experiences and practices of institutions actively pursuing micro-certification initiatives.

Scope

The research directive was to go well outside the borders of Ontario to bring in a representative international sampling of business models in the field, along with effective and emergent practices to inform and encourage increased adoption of micro-certifications in Ontario higher education and provide guidelines for sustainable success.

Learning Agents, a Canadian company which had been active in the field of open badges and micro-credentials since 2011, was selected to carry out the research, based in part on its established international network.

The term "business models" was intended by eCampusOntario to imply not just "user pay" models, but a spectrum of how higher education institutions around the world have integrated or are integrating micro-certifications into their mission and daily business, with a focus on effective, sustainable practices.

Underlying questions to answer included:

- What drivers led to adoption?
- How was it implemented and why that way?
- How long did it take?
- What worked, what didn't?
- What risks were anticipated? How did these play out?
- How did different stakeholders in the institution react?
- How did/do you manage change?

- What were the surprises, good or bad?
- Governance
    - Who is part of the conversation?
    - What matters?
    - Who decides?
- How would you describe your business model(s)?
    - How did you arrive at it?
    - How does the model fit your institution?
- What are your next steps?

Perceived barriers to address
These perceived barriers were supplied by the eCampusOntario team, based on dialogue in the community and the Micro-certification Working Group:

- Micro-certifications will devalue academic credentials (degrees and diplomas)
- “It’s (too) complicated”
- “Nobody’s talking about the same thing”
- Distraction from current institutional missions
- Risk of becoming a lackey of industry, a “trainer”, not an educator
- Quality assessment will cost too much
- There is risk of double-charging students

Business Models and Dimensions

Summary Matrix of Business Models

These business models and the multiple dimensions were validated and improved in respondent interviews.

	Solo Unit	Solo Institution	Peer Consortium	NGO Led	Industry Led
Description	Department or Subsidiary	College or university-wide	Distributed or rotating leadership	Centralized leadership	Large employer or sector body or key domain-specific skill provider (e.g. technology platform)
Examples	Madison ConEd DeakinCo (RPP Credentials) Swinburne Engineering Otago Edubits	Deakin (Hallmarks) RMIT, Curtin	OERu/Edubits University Learning Store Territoires apprenants (FR)	Bestr/CINECA, SURFNet Education Design Lab, Colorado Community College System	IBM Skills Academy, Salesforce Trailhead, Microsoft
Effort	LO	MED	MED	LO	LO
Risk	LO	MED	MED	LO	LO
Speed (Time to Market)	HI	MED	LO	HI	HI
Impact/Benefits Staff, students, LLLs, alumni	LO	MED	MED-HI	MED-HI	MED-HI
Cost	LO	MED	LO-MED Membership fee	LO-MED Membership fee	LO
Autonomy (Flexibility)	HI	HI	MED	LO	LO
Strengths	Potential for most autonomy Fast, flexible, “agile” Emergent practice can inform policy	More, centralized resources, clear branding, clout. Stability, momentum when up and running	Bigger footprint, safety in numbers. Shared values can drive a vibrant community of practice.	More agility due to one decision-maker.	Packaged, tested solution. Brand recognition.
Weaknesses	Branding questions. Inter-departmental fragmentation. Lack of resources, scalability. Vulnerability to policy shifts, loss of senior champion.	Consolidating diverse viewpoints & departments can be slow. Preconceived policies can lead to unsustainable practices.	Peer governance can be s-l-o-w. Can be hard to sustain over time.	Lack of autonomy, control over the agenda, branding. Leadership may destabilize due to political / funding shifts.	Lack of autonomy. Subsidiary identity/branding. Potential for conflicting goals.

INSIGHT: You don't have to choose one strategy. You can actually choose multiple strategies and that's probably where we're at as an institution now in terms of our approach. (A. Kilsby, recorded interview, December 19, 2019).

Multiple Dimensions for the Business Models

The dimensions below inform the models described above. Dimensions have individually defined numbers of facets.

Key dimensions

These dimensions were selected by eCampusOntario as being the most significant.

Purpose	Transition to HE	Student success: self-improvement, compliance, pre-requisites	Transition to employment	Lifelong Learning Maintaining/upgrading, CPD, career transition	
Learning context	Core Curricular (credit)	Cross-curricular / Co-curricular Extra-curricular (non-credit)	Open-curricular (MOOCs, ConEd) (credit/non-credit)	Custom curricular Reflection Application, experience, WIL, applied research Contract training Staff/faculty development	Personal curricular (Instantiated by the learner) RPL/PLAR Learner contract Claimed credential Living credential (dream badge)
Formality of recognition	Formal (credit-bearing)	Non-formal (PLAR-able for credit)	Non-formal (No credit)	Informal (No credit, community recognition)	
Assessment type	Standardized psychometric assessment - multiple choice exam or other (e.g. ISO, ASTM)	Non-standardized multiple choice exam or quiz	Other written exam or quiz	Flexible assessment (Portfolio, work samples, OSCE, observation, interview, etc.)	
Skills alignment	Horizontal (Transversal) / Vertical (Domain-specific, “specialist”, technical)	Institution-specific / Shared / Sectoral/professional standards	External organization-specific frameworks (e.g. for contract training)		
Portability of recognition	Across programs, departments	Across institutions - bilateral	Across institutions - multilateral: “Credit bank” “Non-credit bank”	Industry - standards-based	Industry - agreement-based Non-formal, informal, pragmatic
Authentication	Identity of institution	Identity of individual	Invigilation of assessment Validation of evidence ownership	Cryptographic security (OBI, signed PDF, blockchain)	
Payment	Free/included in tuition or student fees	Free resources / courses, pay for assessment	Pay as you go		

Additional dimensions

Credential leveling	Internal level frameworks	Formal Qualification levels EQF / AQF / NZQF	Non-formal level frameworks, e.g. Connecting Credentials			
Credential granularity	Effort hours Credits	"Units of competency" or "skill sets"	Hybrids (RMIT "Points")	Digital credential as a package for any size credential, from informal recognition to degree		
Credential type	Certification	Assessment-based certificate	Participation-based certificate	Other (e.g. achievement, experience, membership)		
Delivery	Online-public course (e.g. MOOC)	Online restricted access course	Blended course (online/F2F)	F2F: classroom, workshop, makerspace, bootcamp, WIL, workplace demonstration, etc.		
Stackability	Not stackable / not identified as stackable	Prescribed stacking	Complex, adaptable, importable, "discoverable pathway" stacking			
Quality management	Framework: formal / informal Source: internal / external	Evaluation: self / peer / third party				
Funding model	Internally funded	External project funding	Permanent government funding			
Endorsement (not applied to Profiles)	Employer	Partner	Earner	Stakeholder	Funder	Accreditor
Learner support (not applied to Profiles)	None	Demand-based email	Demand-based synchronous voice and chat	Proactive onboarding, coaching (e.g. SNHU)		

These dimensions were suggested by the author and interview respondents as also being significant.

Model: Solo Unit

PROFILE: Madison College Continuing Education / Digital Credentials Institute (US)

Profile summary

Business Model

Solo Unit and Solo Institution

Key Dimensions	Description
Purpose	Across the spectrum
Learning context	Across the spectrum
Formality of recognition	Across the spectrum
Assessment type	Across the spectrum
Skills frameworks	Across the spectrum
Portability of recognition	(Alignments to industry standards – non-formal) Articulation badges (PLAR) or Advanced Standing/Dual Credit badges from High Schools Multilateral HE-HE recognition “in the works.”
Authentication	Capture birthdates for individual authentication, rely on badging platform for cryptographic security
Payment	Free and pay as you go, depending on the program
Other Dimensions	
Credential leveling	Internal to the program, no external frameworks except ACTFL for languages
Credential granularity	Noncredit: one badge per course Credit: badge per skill or knowledge, based on their KSA taxonomy
Credential type	Across the spectrum
Delivery	Across the spectrum
Stackability	Badge clusters with Milestones
Quality management	Internal processes
Funding model	Internally funded

Profile Details

Madison Continuing Education introduced digital badges in 2012 in non-credit programs to recognize micro credentials that students earned in vocational coursework. Madison College was the first community college in the United States to award digital badges.

Madison was serving thousands of adult students, often already well-educated learners, who were taking courses to either upgrade their existing skills or to learn new technical skills. At that time, non-credit course certificates only communicated the outcomes of Satisfactory or Unsatisfactory and these were only assessed on seat time. This did not communicate to an employer what skill set that a learner may have acquired and applied in those courses.

Badges became a mechanism for Madison to assess student learning outcomes and recognize them with a digital credential which showed very specifically what the student learned, how the student was assessed, who issued the badge and when the student earned the badge.

The department had the autonomy to create new programs as long as they were non-credit. The first program chosen was Dietary Manager, a non-credit program which had previously been credit-bearing. This was a good choice because the program had well-defined outcomes and assessments, which could be reflected in the badges. Other programs followed, in Information Technology and other areas.

As the badging program grew larger, the department needed to build an internal structure, workflows and resources to run it. This included dedicated faculty resources, branding standards, an operational flowchart and student/instructor training materials on digital badges.

Also, having no full-time faculty meant more freedom, but it also meant that many of the non-credit programs were not as well-structured with outcomes and appropriate assessment. Viewing these programs through a transparent badge lens revealed many shortcomings and inconsistencies and led to a campaign to improve the quality of those programs over several years.

According to Lesley Voigt, the current Director, Madison College now has an active library of 150 badges - “for credit” badges are the greatest area of growth.

The Digital Credentials Institute (DCI) was set up as a new Madison initiative in early 2018. It began with a strong research mandate but went through several changes in late 2018 and early 2019. It now acts primarily as a service bureau for badges across Madison College and for external clients in the US and abroad, across multiple platforms, mostly in higher education.

DCI services include:

- Workshop delivery, online and on-site
- Service bureau: badge implementation, administration and hosting (with platform partners) - this is the largest revenue generator
- Consulting

DCI published a useful Digital Badge Taxonomy in early 2020, displayed below.

MADISON COLLEGE

DIGITAL BADGE TAXONOMY

Use this chart to determine where your digital badge fits within the schema.

DIGITAL CREDENTIALS INSTITUTE

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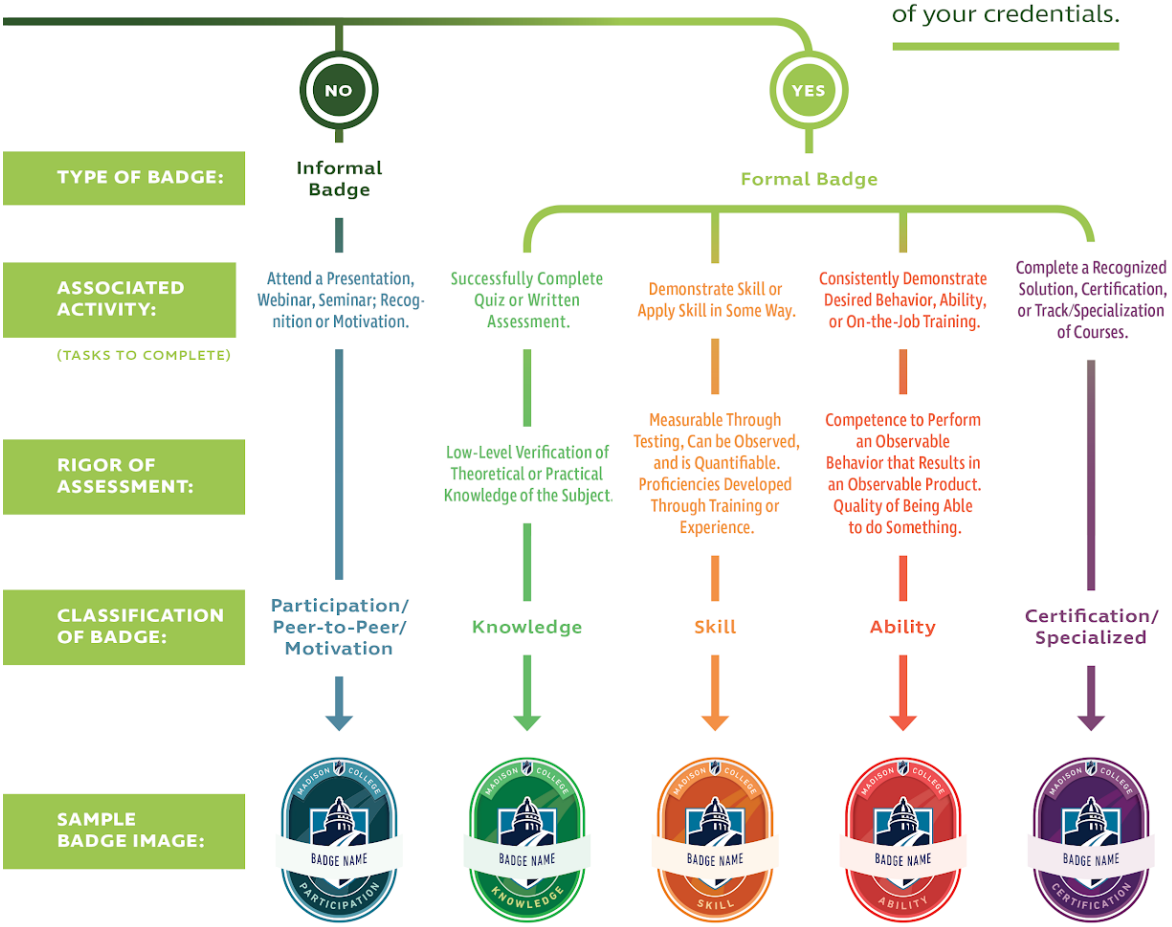
Let us show you the **power** of your credentials.

Is there an Assessment?



Learn It. Earn It. Share It.

A primary purpose of KSAs is to measure those qualities that will set one candidate apart from the others. In federal personnel guidance, KSAs are defined as the factors that identify the better candidates from a group of persons basically qualified for a position. https://www.cdc/gov/hrmo/ksahowto.htm

(Voigt, 2020)

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Voigt, L. (2020, January 15). Higher Education Digital Badge Taxonomy. Retrieved from https://dci-madisoncollege.org/digital-credentials-institute-higher-education-digital-badge-taxonomy/

Model: Solo Institution

PROFILE: Royal Melbourne Institute of Technology (RMIT) (AU)

Profile summary

Business Model	
Solo Institution	
Key Dimensions	**Description**
Purpose	Transition to employment, lifelong learning (some student success)
Learning context	Embedded in curriculum, extra-curricular, open curricular
Formality of recognition	Non-formal, moving to credit
Assessment type	Various
Skills frameworks	Transversal (11 skills), technical skills
Portability of recognition	"Industry backed" (RMIT Industry Engagement Unit) Internal pathway recognition. Working on cascading Creds > FutureSkills > AQF
Authentication	Several emerging solutions, blockchain will likely play a part.
Payment	Creds are free/included for full-time students Working on pay as you go for external learners of Creds Future Skills is already pay as you go.
Other Dimensions	
Credential leveling	Aligned to Australian Qualifications Framework (AQF)
Credential granularity	Effort hours, "Points" (combining effort duration, level of complexity, rigour of assessment)
Credential type	Assessment-based certificate
Delivery	Online, blended
Stackability	Yes
Quality management	Internal processes, aligned to industry practice and government regulation
Funding model	Internally funded

Profile Details

RMIT has implemented and continues to evolve a university-wide, carefully managed "suite" of digital credentials, designed to give "students, staff and lifelong learners the skills and experience to get them and keep them ready for life and work".

The value of RMIT micro-credentials is very tightly coupled to the university's brand and purpose. For this reason, they worked from the beginning with frameworks, taxonomies, weighting and value propositions, etc., which has entailed a significant amount of effort and risk.

RMIT's Digital Credentials suite includes:

- **RMIT Creds - Open Access**
  Offered to registered students for free as extracurricular enhancement, students choose what they want (a project is underway to make choices more meaningful and informed) soon to be offered to external learners on a pay as you go basis.
  There are currently about 125 Cred offerings and they have tracked 150,000 enrolments by 53,000 students, with an average completion rate of 35-40%, although some program completions are 75-85%, such as for emotional intelligence. The Creds program is in the process of retiring low enrolment/low completion offerings using a quality framework that includes completion rates, customer satisfaction, number of attempts, etc. They will also soon add an employer impact criterion - whether employers see the value of the credential.

- **RMIT Creds - Embedded in curriculum**
  These can be one of two options:
  - Generic, loosely coupled (Auto-enrolled, "Lift and Shift" from Open Access, assessment can be generic or contextualized). Generic Creds are more common than the Contextual Creds described below.
    The better the course coordinator integrates and explicitly justifies the reason for the Creds, the better the academic outcomes. For example, a Teamwork Cred may be assigned ahead of a big team-based project. Students are awarded Creds as they earn them during the course. Course coordinators can decide whether to award marks or not for the Creds.
  - Contextual, tightly integrated (contextualized content & assessment). These are less common due to cost and complexity, but not surprisingly tend to have better outcomes. Performance varies based on the degree of proactive faculty embedding effort. This model is currently paused due to an institution-wide transformation of formal qualifications.

- **Future Skills – Open external**
  RMIT offers about 30 courses of 6 weeks or more duration on digital/technical subjects, similar to MOOCs, delivered via RMIT Online on a "pay as you go" basis.

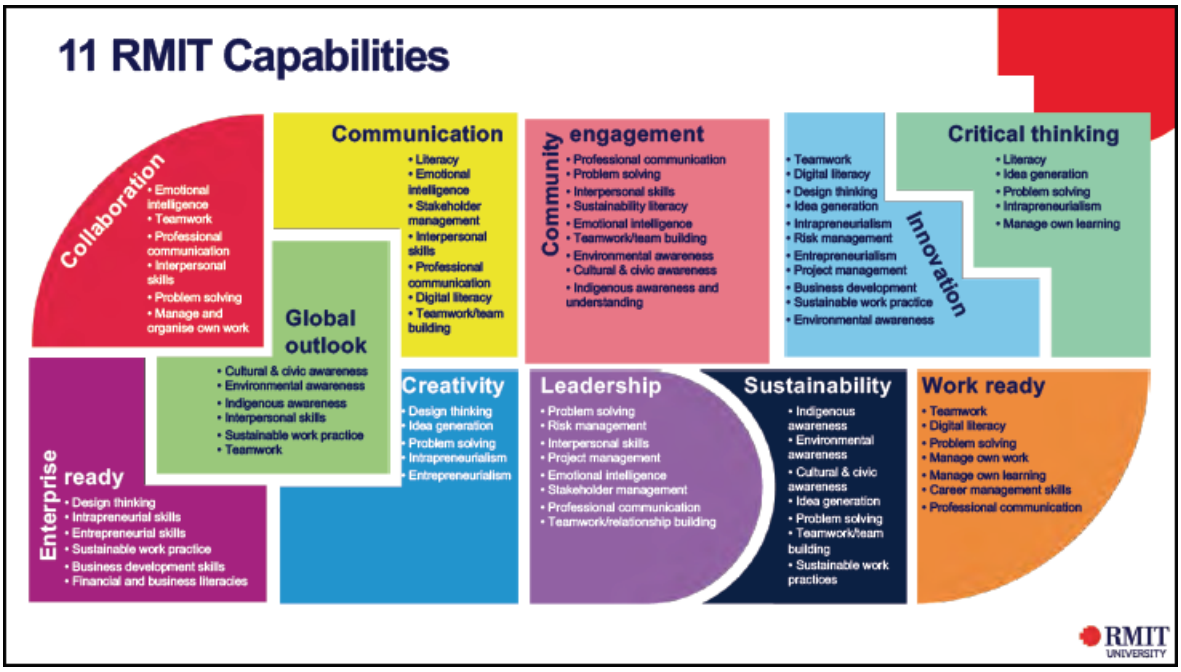
According to Rossiter (2020), so far, RMIT haven't unbundled or disaggregated the learning experience - if a learner wants the credential, they must take the course and be assessed on it. Currently they do not support an "RPL-based model", allowing learners to challenge the Cred without taking the content, but this is part of RMIT's overall model and appears on their roadmap.

RMIT has developed its own unique Skill Points system for describing the value of Creds, combining effort duration, level of complexity, rigour of assessment and industry endorsement. They have developed a rubric drawn from the Australian Qualifications Framework (AQF) to support this system. Smaller Creds are 5-10 points, larger Creds are 20 points or more. They were careful to label this system Skill Points to keep them distinct from "credit points", but they have mapped how Skill points could map to credit to support RPL into formal academic recognition, according to Rossiter. The Skills Points rubric is currently under review to better

align the cost of assessment rigour with Cred value and adding other elements, such as reflection and industry partnerships for portfolio and evidence package evaluation.

Creds are assessed both automatically and by humans, and their Skill Points scores reflect this. For example, Future Skills Creds are assessed by industry representatives. Other larger Creds are assessed by faculty and staff in the library, Career Centre and in academic departments. Smaller (lesser points) Creds in the “open market” are automatically assessed.

In 2016, RMIT introduced a transversal skillset of eleven “key capabilities” which were drawn from secondary research about 40 sources regarding 21st Century Skills. See diagram below:



(Tynan, 2018)

RMIT Capabilities were “road-tested” in several industry forums in the first year. The framework has been useful as a guide for “building with purpose” and providing a way to map holistic skill development across a variety of learning contexts. This framework has served them well, but is now due for a refresh, which will include more dynamic alignment to “discovered skills” and “job sets” from web scraping labour market information services such as Burning Glass. Another priority is to develop and recognize cutting edge technical skills that employers are currently seeking. They had been trying to map these technical skills to the 11 Capabilities, but it didn’t work well in many cases. Rossiter feels that having a common language for transversal skills is important in broader communities across institutions and even countries is important, but that this is still emerging in the ecosystem.

According to Rossiter at the end of 2019, RMIT are pausing on scaling up their Creds program and taking more time to develop insights about what is working and what isn't. They have also been spending a lot of time and money working to ensure there are flexible pathways and robust user-friendly technologies to provide a seamless experience, whether learners be embedded full-time students or “pay as you go” external learners. For example, RMIT Creds are increasingly recognized in Future Skills course. Future Skills courses are beginning to be

“laddered” into AQF-accredited programs. At the time of writing, RMIT was close to completing a framework which would range from 2-hour Creds to 120-hour post-graduate credit courses.

Looking back, Rossiter wishes they had actively engaged students during initial development to provide a better student experience. That said, they also wish they had designed for scalability sooner, due to “massive student engagement” for the open market Creds.

On the industry engagement side, many employers did not adequately appreciate the time and resources required for effective co-design. Ongoing industry engagement processes are increasingly focusing on clarifying the commitment required early on, managing expectations and measuring ongoing mutual benefit.

Profile References:

Australian Qualifications Framework (AQF). (2020, January 31). Website portal. Retrieved from https://www.aqf.edu.au/

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PROFILE: EduBits/Otago Polytechnic (NZ)

Profile summary

Business Model

Solo Institution

Key Dimensions	Description
Purpose	Across the spectrum
Learning context	Across the spectrum
Formality of recognition	Credit-bearing (OERu) and non-credit-bearing, but all have credit "value", aligned to Otago's quality framework
Assessment type	Typically, summative assessment of evidence packages, some online testing
Skills frameworks	Transversal: *IamCapable* Learner Capability Framework, based on research, validated with employers (research project). Also vertical.
Portability of recognition	Yes, for OERu-credit-bearing micro-credentials. Investigating other forms of portability
Authentication	Online invigilation practices for online testing, attestation forms for observers. Leveraging the badging platform blockchain capability. Evidence packages are often validated by interviewing learners.
Payment	Yes. Pricing for EduBits varies by NZ Qualifications Framework (NZQF) level and number of credits. Non-assessed PDF participation certificates are offered in some courses for NZ$10 (digital badge is free). Pursuing a publicly funded unbundled "training scheme" with the NZ Qualifications Authority as an alternative to user pay
Other Dimensions	
Credential leveling	Several NZ Qualifications Framework (NZQF) Levels
Credential granularity	Expressed in credits and cost
Credential type	Assessed Certificates
Delivery	Blended, F2F
Stackability	Small clusters of EduBits (3-5) add up to larger credentials
Quality management	New Zealand Qualifications Authority (NZQA) accreditation for publicly funded programs; the same quality standards are applied to non-credit EduBits
Funding model	Internally funded, wholly owned subsidiary

Profile Details

According to Phil Ker, Otago's Chief Executive, EduBits is an autonomous business startup of Otago Polytechnic, with a focus on sustainable revenue streams. It brings in external expertise but uses a modified version of Otago's internal academic approval processes, leveraging the polytechnic's New Zealand Qualifications Authority (NZQA) Category 1 (i.e. top level) quality status as an institution. This adaptation required constructive dialogue with the academics who sit on the approval panels, to reduce the level of formality that is normally required in larger format credentials. (Ker, 2019)

Ker states that the Polytechnic starting thinking about EduBits in 2015/2016, based on clear trends that were emerging in attitudes about post-secondary education: learners were dissatisfied with the cost and perceived value and employers felt they were waiting too long for qualified graduates in a quickly changing skills landscape. Their target market needed short duration credentials that demonstrated skill sets which had been validated by assessment.

Andy Kilsby, Director of EduBits, described Otago's offerings in 3-4 channels:

- B-C (Business to Consumer): "Retail" programs for individual learners (consumers), which can be credit or non-credit
- B-B (Business to Business): "Wholesale" (customizable) programs for businesses
- G-C (Government to Consumer): government funded programs for individuals as an alternative to longer academic programs
- G-B (Government to Business): government funded programs for groups of businesses

Kilsby says EduBits started with a "scattergun" approach, trying to do too many things for too many people, based on gut instinct rather than careful research and planning. Their approach now is more selective and business-driven: build sustainable revenue streams by identifying opportunities for well-defined audiences, develop strategies to deliver what those audiences need and monitor progress with KPIs. Kilsby, 2019)

Ker says that EduBits decided on open badges as the "credential medium" and got to work. At first, they "got it wrong" by using the same academics who were already developing the mainstream programs that were taking so long to deliver - they "over-cooked the assessment". It took EduBits a while to understand that assessment was about evidence - how much is enough to say that a person "knows and can do?". Over time, they streamlined "authentic" assessment, usually relying on artefacts naturally produced in work-related environments. They decided to focus on emerging skill sets: two early programs were in "Digital Health" (lay diagnosis of childhood ailments by non-clinical care workers) and electrical vehicle (EV) safe use and maintenance (NZ has one of the highest uptake rates for EVs). Their micro-credentials for EVs hit the market a full year before the mainstream certificate did - a good illustration of the relative agility of the two approaches.

Ker says that EduBits opened with an assessment only "show what you know" Minimum Viable Product (MVP) to leverage their leading position as a Recognition of Prior Learning (RPL) and gain a first mover advantage. The idea was that focusing on outcomes and assessment rather than content creation would make program creation more agile and increase flexibility for learners. This was only intended to be an opening move but the "show what you know" model swamped the public perception of EduBits, which initially slowed growth. They had always intended to be a training and assessment service; the Digital Health and EV programs above are examples of this. And "retail" learners seem to prefer this training/assessment bundled approach.

According to Ker, most EduBits are delivered via workshops or in blended mode, except for the OERu ones (see separate profile below). For these, Otago has adopted an agile approach for G-C EduBits with a feedback loop to gauge learner demand: “Training schemes” are written up by SMEs with an average effort time of 8 hours. Approval of the scheme by the NZQA takes 2-4 weeks. Maximum early investment is roughly $2000 NZD. Once the training scheme is submitted, they begin marketing it as “pending approval”, with a lead time of about 3 months. They monitor inquiries and enrolments and if they have enough interest 6 weeks ahead of course launch, they trigger content creation with fast-moving teams of developers. A typical micro-credential is 10 NZ credits, amounting to 100 learning hours or 1/12 of a year of study, which limits the content required. Other factors supporting fast turnaround include:

- Workshop facilitation reduces the need for polished packaging of content, in contrast to online learning
- The focus is on practical application, supported only by theory that supports the practice. (This approach works best for more practical programs; those requiring more cognitive development take longer.)

Kilsby says that for some situations and learners, the reason for having a credit-bearing credential may not be so much for advanced standing or stacking toward a larger credential, it may solve other problems such as funding support or transferable recognition by another institution for whom the NZQA stamp of approval is important. However, NZQA do not approve a micro-credential unless there is an associated program of learning with that micro-credential. Eventually, Otago and EduBits hope that their own micro-credentialing framework, complete with clear indications of granularity and levels, backed by their brand and reputation will provide some of that portability. Their goal is to make EduBits a brand for quality-assured micro-credentialing. That said, full-time programs at Otago represent another market for credit-bearing micro-credentials, with EduBits acting as an “external” supplier, similar to IBM or Cisco.

According to Kilsby, this timeline can be somewhat shorter for non-credit B-C programs that don’t require NZQA approval, if there are strong indicators of consumer demand. But the biggest barrier to the B-C model overall is still public awareness.

Kilsby says that a small market research team develops ideas for programs that have “face validity” based on current trends. For example, they are developing a set of transferable soft skills micro-credentials. One dependable revenue generator is supervisory management programs for topics such as “having difficult conversations” or developing high performing teams.

Ker says that New Zealand has a well-defined apprenticeship and industry training model managed by industry training organisations which is directed at standard industry qualifications. In contrast, B-B micro-credentials are driven by employers’ perceived needs. Micro-credentials have helped transform Otago’s B-B “wholesale” service to employers, because they can demonstrate Return on Investment, providing evidence that learners not only achieved course outcomes but that they also applied their learning back in the workplace. This new model has a well-defined needs analysis phase which uses consultants to diagnostically scan workers and manager perceptions about current workforce skills and then plan for confirmation assessments or training programs as required. Basically:

- Tell us what you need
- We validate and structure that need
- We then triage (assess) your people and gap train them to meet that need

Kilsby mentions that as a measure of success, Otago is starting to turn down “old-school” training program opportunities that only offer unvalidated “training experiences”. The B-B service is not marketed to employers and organisations, relying solely on word of mouth and referrals for a steady stream of new and returning business. Mostly, it is a problem-solving service model that leverages a growing set of adaptable resources and processes, which has micro-credentials at the heart, as key communicators of outcome and impact.

Kilsby emphasizes the need to be nimble, to be able to back out of things that aren’t working and take advantage of serendipitous opportunity, such as recent interest in credentialing Maori cultural skills and biculturalism in the workplace. Another example is workplace compliance, such as for health and safety, that relies on simple knowledge transfer validated by online testing. Employers are beginning to ask about alignment to non-academic quality standards such as ISO and EduBits is exploring that.

The New Zealand government is funding micro-credentials that are quality assured by the NZQA, which is a great advantage for G-C Otago EduBits, says Ker.

However, the government has recently begun a process to merge all post-secondary vocational education into one national institution (Small & Macdonald, 2019). This will mean big changes at Otago. The target date for final implementation is three years away according to Ker and the hope is that by that time EduBits will have become successful enough to adapt into a service for the national institution. There are some early signs that this may come about if EduBits maintains its current startup momentum.

Ker mentioned that Otago’s EduBits is also working with secondary schools on a G-C model to credential transferable skills for students who leave school early and do not get into training or work.

Kilsby mentions that an emerging opportunity for exploring the power of micro-credentials for soft skills is represented by the soon-to-be-released IamCapable unit of Otago. IamCapable uses a reflective model of RPL for adult learners in the workplace who are under-credentialed for their career aspirations. Learners are assessed on transferable skills that map to a Learner Capability Framework of 25 skill sets. The Learner Capability Framework is based on a scan of international frameworks and was recently validated in a primary research initiative with employers, as part of a larger ongoing research study. The framework provides a transferable skills dictionary that can be adapted to different industry clusters. It is deliberately not finely tuned for level and granularity, due to the difficulty of doing this effectively across domains - it is a simple, “big bucket” categorization tool to communicate skills and capabilities claimed by learners, backed by primary evidence which is validated by Otago.

Ker says that on the roadmap for 2020 are NZQA-approved standalone (i.e. useful in themselves) micro-credentials that will be able to stack up into larger qualifications. The NZQA refuses to approve the deconstruction of existing qualifications but has agreed to look at this more constructive stacking approach. EduBits is working on a supervisory management qualification that follows this model. However, Kilby cautions that the stacking should solve a problem, not be something for its own sake. For example, their 8-Edubit modularization of the Graduate Diploma in Tertiary Education is used to adapt industry professionals into educators and for international teacher training, using an RPL model that reduces wasted re-education.

Ker mentions that Otago EduBits are also starting to offer extra-curricular employability micro-credentials to full-time undergraduate students - a good example is their Sustainability badges.

Kilsby says that EduBits is currently partnered with Humber Polytechnic in Canada and VIA University College in Denmark to co-deliver EduBits, starting in corporate training. Their "Global Polytechnic Alliance" was created in October 2018. (Humber Today, 2018)

According to Kilsby, going forward, EduBits will be looking to significantly improve learner support, inspired by the example of Southern New Hampshire University (SNHU) – learner support is seen as the "secret sauce" of their success, driven by detailed learner analytics, to help drive retention and completion rates, especially for online programs.

According to Ker, EduBits is operating as a spinoff startup, wholly owned by Otago, which means they are investing more than the revenue stream. There is a solid revenue stream and the component parts are profitable, but the overall investment means they're still in deficit, as with any startup. They estimate that they have spent about $1m NZD to date and have a proposal in front of their board to invest another $500K in 2020. They plan to break even in 2020, start generating a 3% profit in 2021, which should accelerate from there.

Key insight from Phil Ker: "Practice leads policy with ethical leadership."
If we had policy drive everything, start to imagine the things we would never have. Because how do you make good policy around something that you don't know what it looks like? You can have policy at a principles level and if policy started and finished there I wouldn't have a problem. But policy seldom does that and I think you've got to have a practice base to inform the policy. If we had waited for NZQA to develop a policy framework around micro-credentials, we'd still be waiting. Part of what got them moving was the work that we were doing. And we were coming from a pretty ethical base, that these had to be worthwhile things that people were learning. They had to be assessed, they had to be quality assured in terms of our own internal processes. They had to be worth doing in their own right. We had a framework around what we put together, and then NZQA developed a policy around the practice, to get the stamp of approval and the funding (for G-C micro-credentials).
(Ker, 2019)

Key insight from Andy Kilsby: Solve a problem
If you're not solving a problem with the micro-credential, it doesn't work. At the moment, we have this immature market, in terms of recognition of the value of micro-credentials from learners, employers and third parties. You need a sense of buy-in, why do I need to do this extra thing? What value does this provide? So you have to package it on the basis of solving a particular problem that learners or employers or institutions might have. …. And then you're building a collection of evidence, use cases, situations where this has worked. And then you can say: "And actually, folks, this is called micro-credentialing." And then you have people's attention.
(Kilsby, 2019)

Key insight from Andy Kilsby: Provide a "good enough" solution
In his interview, Andy quoted from a presentation by Paul Leblanc of SNHU, saying "We're building Hondas, not Maseratis." Andy works to restrain faculty from building the best quality experience they can, rather than something that's "good enough" to meet the learning requirement without putting undue pressure on the budget.
(Kilsby, 2019)

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Model: Peer Group

PROFILE: Réseau Badges Ouverts À Tous (B.O.A.T.) (FR)

Profile summary

Business Model	
Peer Group	
Key Dimensions	**Description**
Purpose	Across the spectrum, including educator PD
Learning context	Diverse
Formality of recognition	Non-formal, Informal (moving to formal for HE)
Assessment type	Across the spectrum
Skills frameworks	Researching/adapting domain-specific skill sets. Investigating European Skills/Competences, Qualifications and Occupations (ESCO) framework alignment for the future
Portability of recognition	Vision is to extend across institutions and organizations in the region, also nationally.
Authentication	Platform-based (implementing signed PDFs)
Payment	Currently funded to support free participation for earners, cross-subsidize smaller players.
Other Dimensions	
Credential leveling	European Qualifications Framework (EQF) / French national qualifications framework (NQF/RNCP) for some micro-credentials
Credential granularity	Diverse (hours, credits, outcomes...convert to credits via RPL)
Credential type	Various - informal/non-formal focus
Delivery	Various
Stackability	Building pathways with Milestones
Quality management	Developing a “b-connexion” quality framework for evaluating, endorsing
Funding model	Internally funded, seeking project funding

Profile Details

According to Caroline Bélan-Ménagier, one of its founders, BOAT is an emerging network that began as a collaboration of a handful of educational institutions in the new region of Nouvelle

Aquitaine in France in 2017. It is now in the process of being formalized as a network or "territoire apprenant" (learning region), with participation from regional and national organisations in K12, higher education and other players in the region who are mainly focused on adult education. BOAT aims to support the exchange of practices and tools for assessment and recognition using open badges for lifelong learning across sectors and to facilitate and contribute to the development of projects around badges. Their vision is to create a regional recognition ecosystem. (Bélan-Ménagier, 2019).

The key hub for this recognition ecosystem will be the BOAT Passport (branded "b-connexion"), similar to the eCampusOntario Passport, which launched in February 2020.

Early members include:

- Université Confédérale Léonard de Vinci (also known as ComUE Léonard de Vinci), the association of universities and higher education institutions in the northern section of Nouvelle-Aquitaine
- Rectorat de l'Académie de Poitiers
- Maurice Bedel College
- Canopé Network, a national educational resource publisher
- Institute of Advanced Studies of Education and Training (IH2EF), a national professional development network for educators

Since late 2017, according to Bélan-Ménagier, early costs for the network have been self-funded by the large founding institutions, cross-subsidizing for smaller members. Network development has been fostered by regional events to build awareness among newcomers to badge recognition and to focus efforts of those already on the journey, in order to develop common understandings about assessment, authentic evidence, endorsement, etc., using badges as a communication medium. Although the membership is still mostly education-related institutions and organizations, word of mouth and networking is starting to bring in other sectors.

Bélan-Ménagier says that early development was somewhat hampered by negative pre-conceptions about badges (especially in higher education), lack of awareness about the technology and even awareness of how to frame, develop and assess skills as opposed to knowledge. There was a common tendency to recreate existing credentialing systems. But the sometimes frustrating slowness of this co-creation process has been a necessary collaborative learning journey for the organizations involved, a meaningful way of getting them onto the same page.

Examples of collaborative development of badges include a system for the UNESCO Sustainable Development Goals, skills for remote facilitation of learning and skills for video for learning. These are leveled using the European Qualification Framework for complexity and learner autonomy. (Bélan-Ménagier, 2019)

Bélan-Ménagier says that next steps for BOAT include:

- Launching the BOAT Passport and supporting website at http://bconnexion.fr/
- Helping smaller organizations use and build on the frameworks and badge systems that have been developed to date
- Developing a quality framework for badges that can be used for evaluation and endorsement
- Developing networking skills for large and smaller organization players in the network to improve collaboration and co-creation

- Developing resources for end users to get the most from their badges
- Easing the transition from badging for children under fifteen to badging for adults while remaining GDPR-compliant
- Shifting focus to broader policies and strategies to pave the way for a skills recognition ecosystem for the whole territory
- Further developing an inclusive and sustainable membership-based shared service for large and small organizations that supports the issuing and leveraging of badges through centralized purchasing and tiered engagement. The evolving membership model will enable the participation of organizations from outside the region at a cost premium (Bélan-Ménagier, 2019)

Bélan-Ménagier and BOAT are hoping to collaborate with other networks on issues of common interest, including Passport-based networks such as hpass.org and badges.ecampusontario.ca.

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Model: NGO Led

PROFILE: SURFnet eduBadges (NL)

Profile summary

Business Model	
NGO Led	
Key Dimensions	**Description**
Purpose	Student success, transition to employment, Lifelong Learning
Learning context	Curricular, Co/Extra, ConEd, Professional Development
Formality of recognition	Formal, non-formal, informal
Assessment type	Various
Skills frameworks	Mostly domain-related
Portability of recognition	Seeking cross-institutional stackability - no examples yet
Authentication	Exploring various solutions including blockchain
Payment	Yes, for Continuing Education
Other Dimensions	
Credential leveling	Dutch Qualification Framework (NLQF) for curricular badges
Credential granularity	Various - defined by time and credits
Credential type	Full spectrum except for certification
Delivery	Full spectrum
Stackability	Various types
Quality management	Various, according to institution
Funding model	Multi-year government project funding

Profile Details

SURFnet is a subsidiary of a not-for-profit foundation, SURF (Samenwerkende Universitaire Reken Faciliteiten; English: Co-operative University Computing Facilities). SURFnet develops, implements and maintains the national research and education network (NREN) of the Netherlands. (Wikipedia, 2020). It serves 180 institutions with over 1 million users. (Ward, 2018).

SURFnet has been pursuing a strategy for issuing digital badges for students since 2015. Following a Proof of Concept phase with 9 participating institutions in 2017-2018 (SURFnet,

n.d.), it is now engaged in a pilot with 17 participants, which is due to end in March 2020. The ultimate goal is to have an eduBadges service offering across the Netherlands HE sector in 2020.

Highlights of the initiative:

- SURFnet are developing a micro-credentialing ecosystem that will support both for-credit and not-for-credit EduBadges (EduBadges, 2019).
- Central coordination of business processes and infrastructure
- Authentication of Issuer ID, Earner ID and badge content is viewed as a key issue. They are exploring technical solutions for advanced encryption to support long term storage – up to 50 years (van Rein, 2018)
- They are aligning to the NLQF and international standards and frameworks such as the European bachelor-master system (Ward, 2018).
- They have not yet reached beyond Higher Education to partner with other sectors.

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Model: Industry Led

PROFILE: IBM Skills Academy (Global)

Profile summary

Business Model	
Industry Led	
Key Dimensions	**Description**
Purpose	Transition to employment, professional development
Learning context	Curricular/extra-curricular, Faculty PD
Formality of recognition	Non-formal and formal - some credit awarded based on institution/faculty judgement
Assessment type	Successful non-standardized exam for Mastery certificate; otherwise an Explorer certificate (participation)
Skills frameworks	Vertical – industry roles; aligned to curriculum by institution
Portability of recognition	Industry non-formal
Authentication	Unknown
Payment	Free for registered students
Other Dimensions	
Credential leveling	College/university level
Credential granularity	Not stated
Credential type	Certificate
Delivery	Blended, applied
Stackability	None
Quality management	Non-formal (IBM); internal institution for alignment, assessment, etc.
Funding model	Internally funded, partnerships with institutions

Profile Details

IBM Skills Academy is an international program designed to help post-secondary faculty to provide students with additional skills to help them into the job market. Participating institutions in Canada include:

- Bow Valley College
- Mohawk College
- SAIT
- Seneca College

Once an institution signs and agreement with IBM, students can begin to access IBM's course materials and hands-on training exercises. The program also offers a chance for teachers to advance their skills and pass them on to their students, for which they can gain badged recognition.

Students are encouraged to explore one of eight career paths:

1. Big Data Engineer
2. Business Intelligence Analyst
3. Predictive Analytics Modeler
4. Security Intelligence Engineer
5. Business Process Analyst
6. Cloud Application Developer
7. Artificial Intelligence Analyst
8. Business Process Developer

Each career path is described in terms of summary information skills and market demand, including average salary.

Each career path has a 2-3 module course associated with it. A blended learning approach allows interaction with content online and in the classroom. Access to online tools such as IBM Watson enables applied learning.

Open Badges are earned as follows:

- Explorer Award (*Participation-based*)
  The Explorer Award badge represents achievements on the part of the learner who is in the earlier stages of acquiring knowledge and developing skills for a particular area of interest. Activities associated with Explorer badges include instructor led training, self-directed learning assignments, workshops, mentoring sessions, and quizzes or assessments.

- Mastery Award (*Assessment-based*)
  The Mastery Award badge is awarded to individuals who have successfully completed and passed the IBM Skills Academy final exam. This badge is typically associated with the learner who has achieved and demonstrated a high level of understanding of the topic represented by passing the final exam.

- Instructor Award
  The Instructor Award badge reflects demonstrable skills achievement and is associated with the individual who has reached a higher level of proficiency for a particular area of interest, badge holders will already be holders of a Mastery Badge, and will have successfully delivered the associated course to one or more groups of students.

- Author Award
  The Author Award badge is awarded to subject matter experts who have actively contributed to the development of one or more courses and/or the associated exams. The individual will have extensive experience within the technology area and will be regarded by peers as an expert.

Profile References

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Conclusion

Summary of insights

These insights are based on both secondary and primary research conducted for this report.

Multiple models are possible

As examples such as Madison College and Otago Polytechnic demonstrate, these business models are not mutually exclusive – two or more may be pursued sequentially or simultaneously, such as a Solo Unit evolving into an institution-wide initiative or a Solo Institution also playing a role in a Peer Consortium while subscribing to an Industry Led initiative at the same time.

According to Otago's Kilsby (2019), "*You don't have to choose one strategy. You can actually choose multiple strategies."*

Portable recognition for careers is the focus

This report would be far less useful if micro-certifications were primarily about student engagement or gamification or even student success and compliance examples such as plagiarism awareness.

There is a growing awareness inside and outside formal education that these types of digital credentials can enable life and career transition: into higher education, into the workplace, up career ladders or across occupations and sectors, and back into higher education - lifelong learning.

There are emerging examples of micro-meso-mega credit stackability, whereby smaller credits can count toward larger credits and these examples excite many inside the formal education sector – they are often less compelling to employers embedded in the world of work, unless combined with robust ways to recognize learning outside the classroom and or to build personal learning pathways that meet career and organization needs, rather than simply deconstructing degrees, as the Otago example indicates.

In many cases, non-formal (i.e. non-credit) recognition can be enough for career advancement, if its quality is transparent, fit for purpose and trustable.

Terminology evolves as practices evolve

As mentioned in the Introduction, many educators have been hampered by confusion over evolving definitions of terms. For example:

- What is the difference between a digital badge and an open badge?
- What is a micro-credential and how is it different from an "alternative" credential?

eCampusOntario coined the term "micro-certification" partly as a strategy to stake new semantic territory to move forward, supplemented by its Micro-certification Principles and Framework

(eCampusOntario, 2019). A similar approach is outlined Bev Oliver's Making micro-credentials work for learners, employers and providers (Oliver, 2019) .

Both these examples emphasize pragmatic transparency and actionable, working definitions to help educators get started.

Align to horizontal and vertical skills

"Hard" vertical skills are easier to teach, recognize, share and recruit for, but there is growing awareness that soft skills are more important in the rapidly changing world of work where hard skills will become obsolete quickly.

The challenges for soft skills are in defining (or even naming) them in a consistent way to support shared alignment and easy discovery, then building and assessing them in authentic, applied ways that can scale and will have a measurable impact in the workplace.

Alignment is not just about skills

Skills frameworks represent just one way to align micro-certifications to make them more machine-readable, portable and discoverable across recognition ecosystems. Standards represent another. These may be industry standards, such as those applied by Madison College for many of their workplace-embedded badge systems, or education level standards, such as the European, Australian and New Zealand Qualification Frameworks.

Go beyond the assessment of course content

Most current definitions of micro-credentials cite assessment as a key component for quality, but Ker (2019), Kilsby (2019), Mann (2019), Bélan-Ménagier (2019) and others warn about a widespread academic tendency to create and assess a course as a default conception for a micro-credential rather than authentic assessment of applied capability, which would be the typical need of a micro-credential in the workplace, for example. The latter is less familiar but can be faster to deliver and far more valuable, particularly when applied to transversal skills.

Start smaller and sooner rather than bigger and later

Practitioners such as Ker and Kilsby emphasize the need to get started with small, low risk (generally non-credit) pilots, informed by a high-level goal, then to build up over time, adding value based on responsive feedback from micro-credential consumers and earners, particularly employers.

This agile approach contrasts with the "waterfall" approach, which may develop a comprehensive policy and processes, then move toward implementation. This approach can be much slower, and its results may not align with consumer demand. Policy can be developed in parallel and be updated over time, informed by practice.

According to Ker (2019):

> If we had policy drive everything, start to imagine the things we would never have. Because how do you make good policy around something that you don't know what it looks like? You can have policy at a principles level and if policy started and finished there, I wouldn't have a problem. But policy seldom does that, and I think you've got to have a practice base to inform the policy.

Another danger of waterfall development uninformed by feedback is the potential for wasted development by "pre-loading" too much content in the absence of evidence of demand. Ker (2019) and Rossiter (2020) all mentioned that significant proportions of their course catalogues were underutilized and needed to be revisited

One way to start small is to isolate a department as the piloting entity in order to maximize autonomy and opportunities for innovation. Departments such as Continuing Education and Professional Education and Contract Training can work well, due to the closeness to the workplace and the number of non-credit courses. Otago Polytechnic went further, by spinning EduBits off as a wholly owned subsidiary, for greater fiscal clarity and flexibility, while still maintaining the backing of the institution for credibility.

Embed appropriate quality that's fit for purpose

Many educators express concerns about quality in micro-certifications, which often implies comparison with traditional credentials such as degrees and diplomas. But Kilsby (2019) warns that "we're making Hondas not Maseratis" with micro-certifications. He advises that it's more sustainable to consider what kind of micro-credential will "do the job" of signaling competency and differentiated capability to an employer, rather than building the absolute best credential that can be provided for the purpose. Ker describes early missteps in "over-cooking the assessment" and advocates a focus on authentic evidence, typically embedded in workplace practice.

That said, providing transparency regarding quality will help clarify expectations for all stakeholders and drive acceptance and portability. This can include alignment to standards of credentialing rigour. At the time of writing, BOAT was developing a quality framework for its network in France.

Iterate toward recognition ecosystems

Networks such as BOAT and SURFnet provide interesting parallels to the eCampusOntario network in its journey toward a shared recognition ecosystem.

A community approach that encourages sharing contrasts sharply with the more fragmented, individualistic vision of a single institution issuing its own micro-credentials to individual learners, who share them to their own individual accounts on social media, thereby leaving any future value of the issued credential to private sector interests such as LinkedIn's Economic Graph rather than a lifelong learning and recognition community anchored in higher education.

Features and affordances of common technology standards such as Open Badges can be further leveraged by individual platform capabilities such as shared and delegated issuing between partners, common learning pathways, cross-recognition and endorsement and shared alignment to increase this concerted network effect.

Suggestions for further research and next steps

Further research

- **More Profiles and deeper analysis**
  A series of shorter reports could drill into particular areas of interest

- **Quantitative analysis**
  Some reviewers of this report have expressed interest in seeing how the various models compare in terms of numbers deployed. These statistics may be difficult to generate, but a starting point could be research conducted in 2018 by the Digital Credentials Institute in partnership with IMS Global to develop an estimate of total badges issued to date.

Building out a Community of Practice

Recognition is ultimately social – it empowers learners in the context of communities. Practice communities can build portable recognition ecosystems using collaborative, co-creative and community-based approaches.

At the regional level, eCampusOntario's systems approach to fostering shared recognition practices already includes the Micro-Certification Principles and Framework, funded cross-sectoral pilots, the eCampusOntario Passport and the Micro-certification Forum. Other strategies for building consensus and traction will no doubt emerge, such as community-based approaches to onboarding new Ontario institutions and other stakeholders.

At the global level, building community means reaching out beyond Ontario to international institutions, initiatives and networks profiled in this document, through personal communications, webinars, visits and exchanges, larger events and shared projects and frameworks.

Suggestions for building out a Community of Practice include:

- **Webinars and "clinics"**
  A regular schedule of practitioner use case presentations and collaborative solution development workshops on topics such as soft skills and Work Integrated Learning can help continue to inform the eCampusOntario and bind it around shared objectives.

- **Community onboarding / learning pathways for institutions**
  Similar to models developed by BOAT and other networks, eCampusOntario could create an Ontario-adapted Principles and Framework-aligned onboarding program for member institutions that could include curriculum, resources and various forms of recognition.

- **Linkages to other communities**
  eCampusOntario is already a member of IMS Global, has connected with the Open Recognition Alliance and is actively participating in the recently formed International Council on Badges and Credentials (ICoBC). Other linkages for mutual benefit could include SURFnet, BOAT and other networks.