

21C Credentials

Final report (2016) of OLT Strategic Priority Project

Curate, credential and carry forward digital learning evidence

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Executive summary

The project proposed to connect Australian higher education providers with national and international networks of innovators and scholars in emerging practices in digital curation and credentialling—that is, conferring macro and micro credentials based on evidence of learning richer than codified marks, grades and credits. Most higher education practitioners applaud the potential of technologies to enable students to curate evidence of achievement for their personal and professional online presence. Many are keen to explore solutions for managing such evidence, creating credentialling systems to warrant student learning, or managing the pathways to and from their institutions based on such evidence or credentials. In early 2016, few institutions have extensive experience granting credit for prior learning based on achievements in massive open online courses (MOOCs); few know how proposed digital micro credentials will be judged or received by peer institutions, or professional bodies that register their graduates as new professionals. Likewise, few institutions have tested the regulator’s view of accrediting learning micro credentials underpinned by badging technologies. This project, led by Deakin University in partnership with Curtin University and an array of national and international collaborators (with a range of expertise), set about researching these matters; examining innovations and practices as they evolved.

This **two-year project** proposed to **deliver five outcomes**:

1. **Connect** Australian higher education providers with national and international networks of innovators and scholars in digital curation and credentialling of rich learning evidence, and its portability across educational sectors;
2. **Research and publish** analysis and commentary on the implications for emerging business models in compliance with higher education standards and regulatory frameworks; and student, employer and provider insights into the practical usefulness, usability and portability of emerging micro credentials;
3. **Provide advice**, in the form of case studies and a good practice guide to inform implementation;
4. **Offer professional development** for higher education practitioners through curation and credentialling of their own learning evidence;
5. **Host a national forum**, with webcast access for all Australian providers, inviting high profile international and national thought-leaders to share their experiences and reflections on the implications of curating, credentialling and carrying forward evidence of learning.

In its early stages, the project focused on digital badging technologies and how they could be deployed in courses within learning management systems and open badging platforms. This was an excellent foundation that assisted project members and participants to understand the affordances of these technologies.

As the project matured, and through the experiences of the partner universities in implementing new credentials, the challenges of deploying ‘badges’ that did not relate to higher education qualification frameworks became clear. Key stakeholders expressed reluctance: students are wedded to credentials they understand (usually degrees) and their currency of choice appears to be marks, grades and credit. Enthusiasm from higher educators, keen to find new, efficient methods to warrant outcomes and standards, waned in discussions about ‘badges’. The language is sometimes a disincentive. Meanwhile, the larger open access courses (MOOCs) have finessed their short courses to include

assessment, that is proctored (for a fee), and certified (for a fee) using various forms of digital credentials. More recently, some platforms allow learners to use their verified credential to purchase (for a fee) credit towards a degree (a macro credential).

These developments have prompted a focus on the affordances and potential pitfalls of 21C credentials, underpinned by badging technologies.

Excellent 21C credentials:

- ☐ Clearly communicate achievement of appropriate outcomes and standards with sufficient granularity to predict future performance;
- ☐ Are based on judgments of rich evidence created in response to authentic assessments in a range of complex, ill-defined tasks;
- ☐ Maximise assessment integrity, appropriately verifying the identity and the contribution of the learner;
- ☐ Balance time and money invested by the learner with benefits realised during and after conferral (credit or entry to a higher credential, enhanced status or career advantage); and
- ☐ Are sustainable, based on sound business models, crisp and consistent value propositions, and compliance with regulatory frameworks.

While one would hope and expect that these characteristics are evident in all credentials, excellent 21C credentials built on badging technologies can be more granular, stackable, evidentiary and personalised, enabling rich analytics.

This report details the key achievements of the five intended outcomes. All outcomes have been achieved: largely thanks to our project manager's excellent networking abilities, the project connected Australian higher educators with national and international networks of innovators and scholars in the national forum, workshops and events, and numerous social media channels. Resources remain available as part of a larger body of work at the Assuring Graduate Capabilities website (assuringgraduatecapabilities.com). And while there have been substantial outputs in terms of research, analysis and commentary, professional development and advice, there will be a continued need, in this fast-moving field, to maintain a watching brief on developments.

The project has produced a number of artefacts, available at tiny.cc/21Ccredentials

- ☐ Good Practice Guide (HTML and downloadable PDF)
- ☐ Ten tips for success (HTML and downloadable PDF)
- ☐ Case studies (HTML and downloadable PDF)
- ☐ Survey of badge technologies (HTML)
- ☐ The paper *Better 21C Credentials: Evaluating the promise, perils and disruptive potential of digital credentials* (downloadable PDF) includes:
 - A survey of recent developments, including implications for business models and regulatory frameworks in the field of digital credentialling;
 - A synopsis of the drivers underpinning these developments, as well as forthcoming developments in the field;
 - An evaluative framework, and 19 case studies tested against that framework.

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1. Background: the challenge of credentialling learning

The transition from education based on inputs to outcomes has been rapid: quality assurance agencies around the world increasingly require higher education providers to contextualise, embed and assess learning outcomes. For example, the Australian Qualifications Framework and the Australian Higher Education Standards Framework both enshrine the language of an outcomes approach to education (Australian Qualifications Framework Council, 2013; Commonwealth of Australia, 2015). Stakeholders want to know and be able to see evidence of what successful students can do in the context of the discipline they have studied (Callaghan, 2015; National Network, 2015).

1.1 Assessing, evidencing and credentialling learning outcomes

Most universities and commentators agree on the outcomes that are important, and are increasingly emphasising the importance of 'soft skills'. In contrast, considerable debate has centred on how to assess, evidence and credential learning outcomes in higher education. Central to this debate is the difficulty of testing generic skills. Consequently, traditional assessments often test what they can, rather than the learning outcome desired; and proxy measures such as self-reported data are frequently used (Barrie, Hughes, & Smith, 2009; Coates, 2010; Oliver, 2010). Assessment tasks need to be designed to specifically test and measure generic skills. Alternatively, Yorke (2008) suggests reframing assessment to ask students how they have met the stated aims for their course. Students could be invited to provide compelling evidence that they have mastered disciplinary knowledge and generic skills at appropriate standards; requiring them to make a case using evidence that could include marks or grades, qualitative assessments of performance in work placements, and claims of unassessed achievements supported by evidence (Yorke, 2008). Better still, assessors other than teaching staff might be involved in the provision of endorsements or feedback as part of peer and mentor assessment of and for learning (Boud & Associates, 2010). This would shift the emphasis from measuring learning to judging whether learning has occurred, based on rich qualitative evidence of achievement. Such judgements might be based on a broader range of evidence including self- and peer assessment within and beyond the classroom, as well as artefacts from formal assessment tasks (Joughin, 2009).

1.2 Portfolio living in the age of MOOCs and professional networks

Naturally, this reframing leads educators to turn to portfolios but the challenges of implementing portfolio systems are well documented (Joint Information Systems Committee, 2006, 2008). They include engaging students to use systems that rarely have longevity beyond a student's enrolment at the owning institution (Jafari, 2004). Concerns are also raised by teaching staff who foresee their marking loads increase exponentially as students, ever hungry for feedback and marks, share mountainous collections of learning evidence (Hallam, Harper, McAllister, Hauville, & Creagh, 2010; Jafari, 2004). In higher education, frenetic activity is associated with massive open online courses (MOOCs) where many prestigious universities, often in commercial partnerships, offer no- or low-cost learning experiences and credentials (IBIS Capital, 2013; Norton, Sonnemann, & McGannon, 2013). At the same time, there appears to be a movement to 'micro' digital habitats and practices: sales of smaller tablet devices outstrip laptop and desktop sales; apps on mobile devices offer focused habitats more cheaply than large installed software applications; social media enable individuals to publish to the world (Twitter), share their thoughts (Blogger) or favourite images (Pinterest), curate their personal presence (Facebook) or professional

portfolio (LinkedIn). The digital lifestyle of the early 21st century appears to embody the paradox of the massive and the micro. Institutional eportfolio systems have now started to look curious in a world where LinkedIn appears to be the essential professional networking platform, supplemented by profession-specific networks such as GitHub, Doximity and similar.

Some networks include free resources and courses, but since 2012, dubbed as the year of the MOOC by *TIME* magazine, brands such as edX, Coursera and Udacity have become recognised globally. As they have evolved, they have increasingly offered credentials, usually for payment and for verified assessment (commonly through online proctoring). Their credentials are generally digital. Technology solutions such as **Mozilla's Open Badges** have made it possible for anyone (institution, organisation, small group of individuals) to issue, earn and display credentials (signified as badges) online: helping learners to display 21st century skills, and unlock career and educational opportunities (Eisenberg, 2011; Mozilla, 2012; The Mozilla Foundation and Peer 2 Peer University, 2012; Young, 2012). Issuers of these credentials – be they formal (and potentially credit-bearing) or informal – can design and issue badges; and learners can store earned credentials in digital backpacks and display them on social media sites if and when they choose—just as traditional CVs list degree qualifications. Digital badge credentials can embed more detailed aspects of learning. For example, whereas achievement of learning may be somewhat invisible in collated marks and grades, these digital credentials can have baked-in criteria and learning evidence.

1.3 From badging to the big end of town

During the brief life of this project, this field has transitioned from what some have seen as trivial to having a major impact on established institutions. The meaning and value of the credentials are determined by the issuer; just like monetary currency, the various types and denominations might be exchangeable for credit, or used for entry or higher status in a network. Management systems such as Blackboard and Moodle enable automated digital badging; while platforms such as Credly enable anyone with an Internet connection to design and issue their own badges. These badges are usually unsophisticated in design, and appearance, free and carry a lighter or lower degree of importance or kudos. These badges have often been compared to Scout badges – but they belong to a broad family collectively called digital micro credentials. At the other end of the family tree, digital credentials can be purchased and exchanged for credit towards a macro credential (a recognised and accredited degree). For example, a learner can earn eight edX Verified Certificates (price: USD50 each, total USD400) which, for an additional USD600 each (or a total of USD4,800) can be used to purchase credit towards the completion of the entire first year of an undergraduate degree at Arizona State University. In recent developments, six universities from various countries (including The University of Queensland and The Australian National University) are aligning to recognise edX credentials from agreed partners, for credit towards their own macro credentials (Grove, 2016).

2. Project aims and outcomes

This **two-year project** proposed to establish a high profile national focus to **deliver five outcomes**:

1. **Connect** Australian higher education providers with national and international networks of innovators and scholars in digital curation and credentialling of rich learning evidence, and its portability across educational sectors;
2. **Research and publish** (1) student, employer and provider insights into the usefulness, usability and portability of emerging credentialling tools for large educational providers, within and across sectors; (2) analysis and commentary on the implications for regulatory compliance with emerging and evolving higher education standards frameworks; and (3) analysis of emerging business models, both national and international;
3. **Provide advice**, in the form of case studies and more detailed good practice guides, for Australian higher education providers on the challenges and affordances of emerging solutions to curating, credentialling and carrying forward evidence of learning, including specific solutions enabling equity of access for those less connected to high-speed broadband, particularly those in regional, rural and remote Australia;
4. **Offer professional development** and use cloud and video conference technologies for short courses for higher education course leaders and practitioners so they can upskill as well as experience technologies that enable the curation and credentialling of their own learning evidence;
5. **Host a national forum** with free attendance and webcast access for all higher education providers, to showcase high-profile invited international and national thought leaders (sourced through networks with international partners Mozilla, HASTAC, AAEEBL and CRA) in digital curation and credentialling of learning evidence and the business models that underpin their deployment.

The starting point in a project is never quite the same as the destination, particularly in a volatile field. The volatility is contradictory, at times: on one hand, news announcements change the universe overnight (when, for example, a global platform such as edX announces an innovation or partnership; or a new startup, such as DeakinDigital, launches a product that potentially shifts the means of acquiring a degree); on the other hand, working within established institutions such as universities means that innovations take time to be understood, then accepted, then implemented in systems with sufficient policy safeguards. Researching stakeholder perceptions is a particular challenge when the stakeholders are struggling to keep abreast of products on offer. Regardless, the sections that follow detail the achievements of the project in relation to the five broad intended outcomes.

2.1 Connect Australian higher educators with national and international networks

As a direct result of this project, numerous higher education providers in Australia have heard of, thought about and/or innovated using digital credentials. The project engaged specific institutions to establish a state-based network of national higher education partners selected by the project team. They included: the University of Wollongong as a node in New South Wales; the University of South Australia as a node in South Australia; Queensland University of Technology as a node in Queensland and the Northern Territory; Curtin

University (project partner) as a node in Western Australia; and Deakin (project lead) as a node in Victoria and Tasmania. The node institutions enabled communication, dissemination and professional learning opportunities. The national partnership enabled a wider audience to build capacity and establish a strong base for developing a new knowledge community about credentialling ecosystems in Australian higher education. This was supplemented through social media (Twitter and Facebook), blogs and project sites.

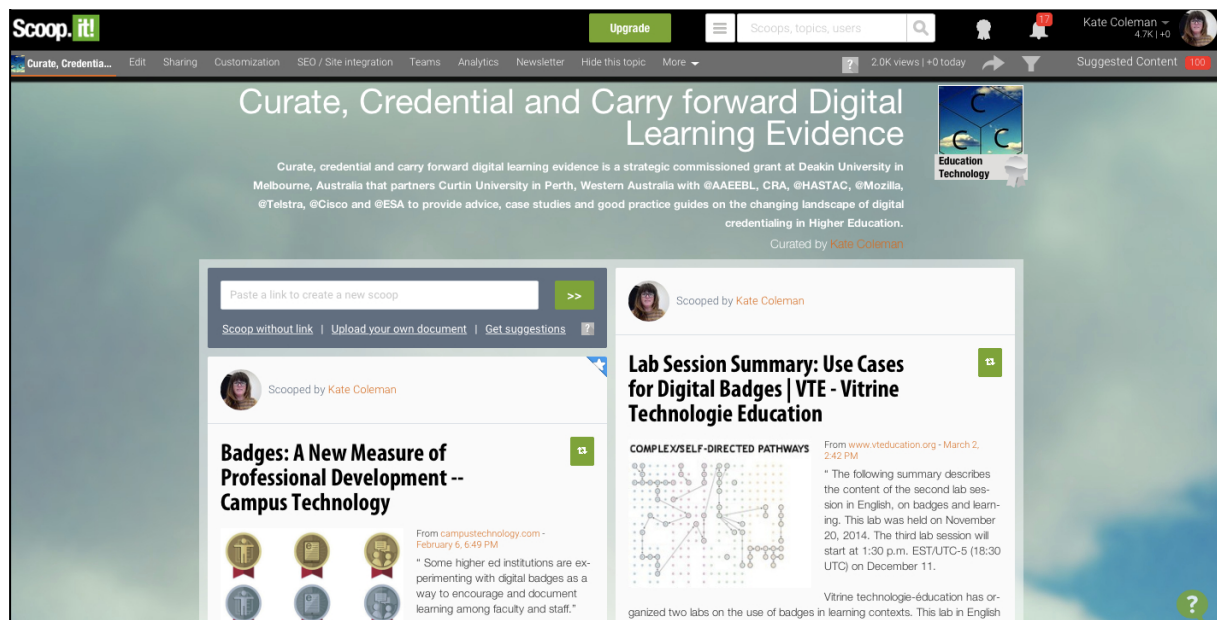


Figure 1: Project curated resource in Scoop.it (<http://www.scoop.it/t/digital-credentials>)

A Scoop.it page was curated on a daily basis to share up-to-date research and resources with our new community (Figure 1); a Facebook page was set up for colleagues to catch up socially about badges and portfolios with posts by our project partners; and the project website tapped into an existing community through the Assuring Graduate Capabilities website (www.assuringgraduatecapabilities.com).

The project connected its community with international partners:

- ☐ In the United States to explore early digital badge case studies (HASTAC and Duke PhD lab, Smithsonian, AAEEBL, National Endowment for the Humanities)
- ☐ In the United Kingdom, particularly through the Centre for Recording Achievement.

Key achievements include:

- ☐ Connection with national colleagues created new partnerships with Queensland University of Technology, University of South Australia and University of Wollongong, each hosting a state-wide seminar in September 2014. These seminars served as an invitation to all higher education providers in each state to openly discuss their ideas, views, aspirations and concerns about new forms of credentialling and open digital badges. They included the opportunity to hear from and speak with the thought leaders and practitioners in the field of open badges in higher education;
- ☐ Use of Cisco's WebEx through project partnership with Cisco enabled virtual hosting of international and national speakers;

- Utilising Padlet to grab and save key insights from project participants. This collaborative writing tool, created an online bulletin board to display information;
- The collaborations with the project partners Badge Alliance, HASTAC and online open badges communities supported by Badge Alliance offered the project team to further explore their research interests in the field of digital education.

2.2 Research and publication

The project set out to research and publish:

1. Analysis and commentary on the implications for regulatory compliance with emerging and evolving HE standards frameworks; and analysis of emerging business models, both national and international; and
2. Student, employer and provider insights into the practical usefulness and usability and portability of emerging credentialling tools for large educational providers, within and across sectors.

For reasons outlined above, timely research outcomes have been a challenge. Implementing digital credentials at the partner institutions (Deakin University and Curtin University) has taken more time than originally imagined; ‘meddling’ with an institution’s credit and credentialling arrangements goes to the heart of the academic enterprise, so change management and policy adaptation take time. Implementation requires internal stakeholder understanding among students, teaching staff, and administrators. Devising new credential systems also requires external stakeholder testing and validation. Formal implementation of systems and policies requires even more time. Research will therefore be ongoing.

Key achievements include:

1. Analysis and commentary on regulatory compliance and emerging business models:
Project outcomes include a substantial stand-alone paper (***Better 21C Credentials: Evaluating the promise, perils and disruptive potential of digital credentials***) available in print format and as a digital download from the project site (tiny.cc/21Ccredentials) which includes:
 - A survey of recent developments, including implications for business models and regulatory frameworks in the field of digital credentialling;
 - A synopsis of the drivers underpinning these developments, as well as forthcoming developments in the field;
 - An evaluative framework, and 19 case studies tested against that framework.
 The publication incorporates a succinct *Good Practice Guide for implementing better 21C Credentials* (also available as a separate download at the project site).
2. Student, employer and provider insights into the usefulness, usability and portability of emerging credentialling tools for large educational providers, within and across sectors: a peer-reviewed journal article, reporting student, employer and provider perspectives of initiatives in digital credentialling at Deakin University.

In addition,

- The Badge Alliance (<http://www.badgealliance.org/>) is a network of organisations working to grow and evolve a self-sustaining open badges ecosystem and aims to provide a framework for open badges in higher educational institutions. Project team members, Kate Coleman and David Gibson, were key contributors to the Alliance’s collaboratively drafted Open Badges Policy document (completed in October, 2014).

- A new startup, DeakinDigital, was established and devised credentials that are now incorporated into a Master of Professional Practice at Deakin University. This included providing information to the regulator (TEQSA), and subsequently securing approval from Deakin University's Academic Board.
- New policy related to the conferral of Deakin Hallmarks, Deakin University awards that recognise outstanding achievement of Graduate Learning Outcomes, has been created, approved (by Deakin University's Academic Board) and implemented. The first Hallmark has been successfully conferred.

2.3 Provide case studies and a good practice guide

The case studies demonstrate a range of digital evidence and credentialling pilots and projects, written and shared by colleagues and associates of the project. Nineteen brief cases studies are included in the publication *Better 21C Credentials*. Additional and more detailed case studies on the project website allow for further in-depth investigation into the application of portfolios and open badges:

- Curtin University: Badges in Digital Learning Experiences;
- Dartmouth College
- DeakinDigital
- Portland State University
- Smithsonian Center for Learning and Digital Access: Smithsonian Quests
- Swinburne University: Digital badging in the Carpe Diem MOOC
- University of Central Oklahoma: Student Transformative Learning Record
- The University of New South Wales: ePortfolios for Reflective Practice, Professional Skills and Employability of Medical Science.
- All Aboard: project funded by Ireland's National Forum for the enhancement of teaching and learning

2.4 Offer professional development

The original plan was to develop a professional online learning experience where higher educators could learn about digital credentialling by experiencing digital credentialling. This was perhaps more challenging in the light of the common belief across the sector that teaching staff in Australian higher education take a dim view of acquiring teaching-related macro credentials (like a graduate certificate, for example). Hosting an entire graduate certificate was never entertained, but it took some time to think through how to engage educators in an online experience where they would acquire an even 'lower-status' (non-credit-bearing) credential. This was quite challenging.

As it was originally conceived, providing a digital credential proved challenging for a second reason: the intended platform became unexpectedly expensive. Investigation of open platforms that enabled the issuing of digital credentials (badges) was a good learning experience, but fruitless in that it became apparent that the experience was quite poor from a user perspective, and would be unlikely to engage the intended audience. Also, even though the *Good Practice Guide* was far from formed at that stage, instincts warned that what was under consideration was not going to be enticing to the intended audience.

After much reflection, the project team alighted on a simple solution, and perhaps one that lent itself to conferral based on work-integrated assessment practices. The Assuring

Graduate Capabilities website, encompassing how to specify, design, assess, evidence, credential and review achievement of capabilities were designated as the self-directed resources available to any learner. Credentials were designed in Credly (credly.com), using images from the AGC site, and are available to anyone at the Achieve section of the site (Figure 2), at no cost. Six credentials are available, each explained in the same format (see Figure 3 for an example).

The system is deliberately very simple, and designed so that practicing higher educators with responsibility for units and courses, can use artefacts from their professional practice to earn a digital credential. Creating the credentials required careful thought as to the value proposition.

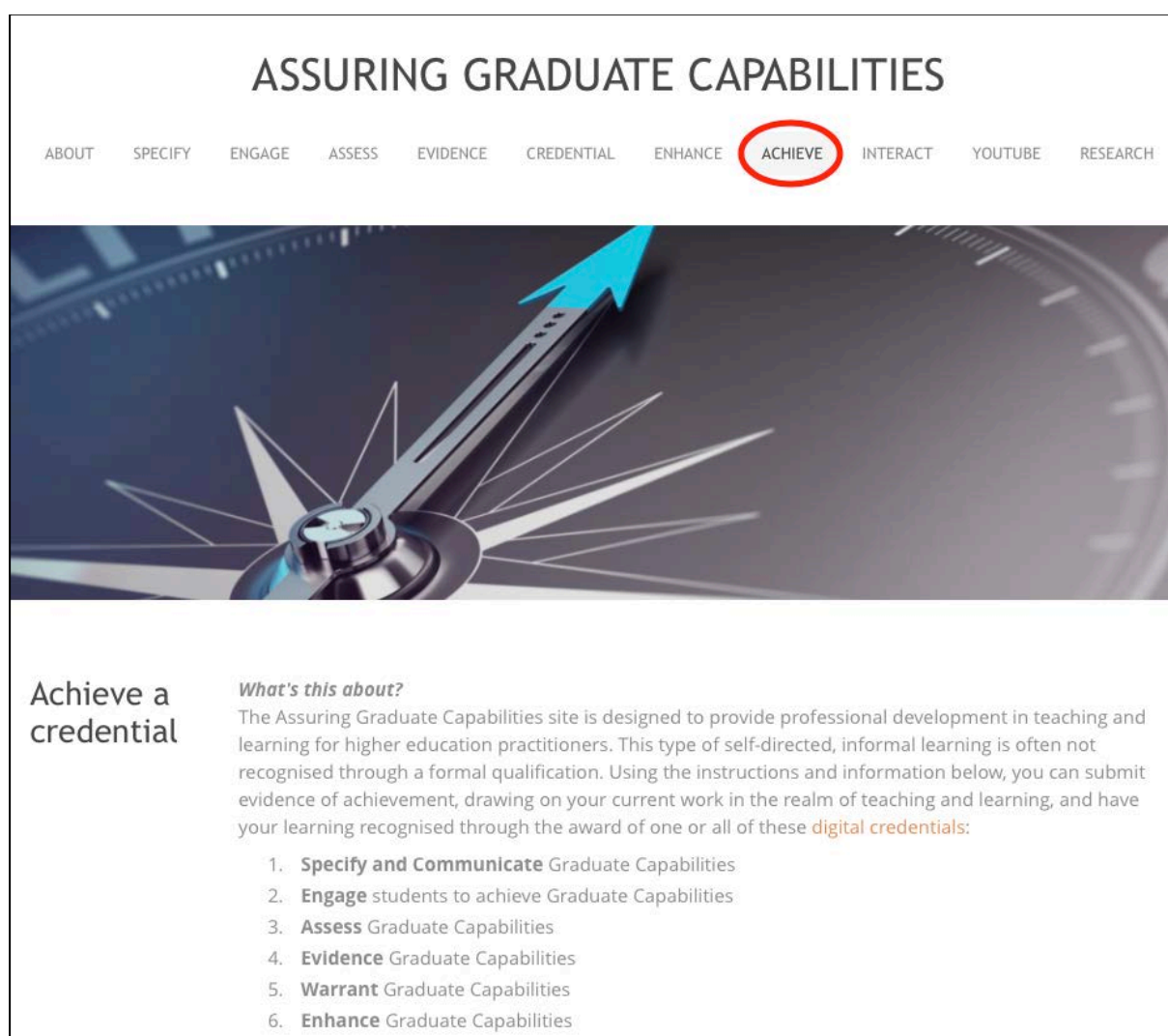


Figure 2: Introduction to credentials on the achieve section of the Assuring Graduate Capabilities website (<http://www.assuringgraduatecapabilities.com/achieve.html>)

1. Specify and Communicate Graduate Capabilities

This credential warrants that the recipient has demonstrated the ability to specify and communicate graduate capabilities for a higher education course (degree).

How to achieve this credential

With reference to pertinent aspects of the relevant regulatory frameworks, provide evidence that demonstrates your ability to specify and communicate graduate capabilities for a higher education course (degree). Your evidence must include

- **An introductory statement** that describes the course and its context (the student cohort, enrolment modes, the likely career or study destination of its graduates)
- **Specified Course Learning Outcomes**
- **Commentary** (in any format: audio, video or text) that includes (1) the strategy for collaboration with stakeholders (students, teaching colleagues and professional bodies or industry representatives) to design and validate these Course Learning Outcomes, including discussion of external reference points and (2) the strategy to communicate the Course Learning Outcomes, and how you plan to test (or how you have tested) that the strategy is effective.
- **A brief statement** from your current institution and manager authenticating your identity and evidence.

See **Criteria** describing the expected standard of evidence.



Figure 3: Example of a credential on the Assuring Graduate Capabilities website

The Frequently Asked Questions section, copied here, explains the systems as simply as possible, with the final point prompting learners to ask their institution whether their Assuring Graduate Capabilities credential merits credit towards a formal qualification, career progression, or any other form of recognition that is meaningful to them. This is deliberately included, because teaching staff are likely to field similar questions from learners who have acquired a range of credentials from various online providers.

Frequently asked questions

- ❑ **What is a digital credential?** Digital badging technologies and platforms enable issuers to award certified credentials to recognise achievement, or to motivate and engage learners.
- ❑ **What does this digital credential look like?** The image (above right) shows the credential available at this section of the site. The credential is issued and managed through the **Credly** platform.
- ❑ **Why not just offer a PDF certificate?** Digital credentials (generated through badging platforms) can incorporate more information, including a description of the assessment task and context, the assessment criteria, the evidence provided by the recipient (in a range of file formats including PDF, image, voice recording, movie, and so on).
- ❑ **Do I have to achieve all the credentials?** You may submit evidence for as many or as few credentials as you wish.
- ❑ **Do I have to achieve them in any order?** You may approach the credentials in any order.
- ❑ **What can I do with this credential?** The recipient may choose to share the credential on social media platforms, or as part of their resume or career narrative. The recipient may also use the credential to seek recognition for prior learning towards a formal qualification. In Australian universities, the relevant qualification is often a Graduate Certificate of Higher Education (or similar) aligned with the Australian Qualifications Framework (AQF).
- ❑ **How do I prepare and apply for this credential?** First, prepare your evidence in response to the assessment task above, paying particular attention to the expected standards. If you would like to network and discuss this with like-minded colleagues, interact with other site users [here](#). When you are satisfied that your evidence meets the expected standards, provide your evidence by [email](#).
- ❑ **What happens after I provide my evidence?** You will receive an acknowledgement of your submission within 48 hours.
- ❑ **When will my evidence be assessed, and by whom?** Your work will be assessed by a member of the Assuring Graduate Capabilities team (supervised by Professor Beverley Oliver, ALTC

National Teaching Fellow and Deputy Vice Chancellor Education, Deakin University) within ten business days of submission.

- ***How will I receive the credential?*** You will be emailed to say that your assessment has been successful, and that your credential is available to you at Credly.com where you can store, retrieve and share it through social media such as LinkedIn, Wordpress and Facebook.
- ***What if I am not deemed successful?*** If your evidence is deemed not to meet the expected standards, you will be provided with formative feedback as to how to improve your evidence. You may resubmit your improved evidence when you believe it meets the standard.
- ***Is there a limit to the number of times I can submit evidence?*** No, but if you have been provided with feedback twice that your evidence needs improvement, we strongly suggest you seek assistance through a mentor, tutor or coach (at your expense).
- ***Is there a cost for this credential or assessment?*** No, there is no cost for this service.
- ***Which institutions will consider my digital credential(s) for recognition for prior learning (RPL)?*** Educational institutions around the world are reconsidering their RPL arrangements with regards to open online courses, digital credentials and badges. You are encouraged to ask institutions whether your Assuring Graduate Capabilities credential - or collection of credentials - merits RPL towards a formal qualification, career progression, or any other form of recognition that is meaningful to you.

2.5 Host a national forum

The national forum was held on November 13, 2014 at Deakin University (Melbourne), with virtual partner sites in most states: Curtin University (Perth), University of Wollongong (New South Wales), Queensland University of Technology (Brisbane) and University of South Australia (Adelaide). It was attended by over two hundred participants, and the presentations were wide ranging, starting with the premise of digital badging, and generating wider discussion on credentials and their meanings. Topics included:

- Credentials and credit
- How to credential skills in addition to discipline knowledge
- Unbundling credentials and creating new credentials
- Assessment, and how to create, curate and warrant evidence of learning achievements.

The forum was organised by project manager, Kate Coleman, and convened by project leader, Professor Beverley Oliver, Deputy Vice-Chancellor Education, Deakin University. International speakers, recruited through internal partner institutions and connections, included.

- Professor Dan Hickey, Indiana University, Director of the Open Badges Design Principles Documentation Project
- Dr Nan Travers, State University New York; Director of Office of College wide Academic Review
- Dr Michael Evans, Neukom Fellow, Dartmouth College
- Ms Joanna Normoyle, Experiential and Digital Media Learning Coordinator, University of California, Davis
- Dr Janet Strivens, Senior Associate Director, Centre for Recording Achievement, United Kingdom.

Contributors from the Australian sector included:

- Associate Professor David Gibson, Curtin University
- Mr Allyn Radford, Chief Executive Officer, DeakinDigital
- Ms Senaya Krishnan, Graduate Recruitment Manager, Telstra Human Resources
- Ms Kate Coleman, Deakin University.

All videos from the national forum keynote presentations session are available at the project website.

Key achievements included:

- Presenting local and global perspectives on open badges and the potential for credentials in higher education. All sessions were well regarded, in particular the keynote speakers Associate Professor David Gibson and Telstra HR recruiter Senaya Krishnan, with many delegates offering their thanks for being able to listen to such a diverse range of high quality speakers. One comment included, “the speakers were great and provided new insight into the complexity of credentials and open badges in HE”.
- 252 colleagues participated in the forum: 150 attended at Deakin; 77 attended through live-streamed access at partner institution sites, including 10 in Wellington, New Zealand (live streaming); a further 27 logged in independently from sites around the globe.
- The Cisco WebEx live streaming was deemed a success: One virtual participant commented, “It was great to be able to come in and out of the presentation to align with what I had on at work as well. I thought the technology worked well, very happy.” Another commented that “once the conference was underway it worked well.”
- The staging of the forum early in the project provided an introduction so that participants could continue to access resources, workshops and discussions as the project unfolded.
- Several speakers also led interactive workshops in Melbourne, allowing local participants to engage more deeply with concepts related to digital credentialling.

Data was collected at the time of registration and through a post-session survey. The number of participants who responded to the post-session evaluation survey was very low (n=12). Emails following the forum were congratulatory: *Thank you – the National Forum was an excellent experience and I am so pleased I attended the whole day to hear from all of the innovative presenters.*

The forum Twitter content was also curated by a participant on Storify: <https://storify.com/RobertLeckie/oltbadgeforum14> This comprehensive narrative of the day’s events and subsequent tweets of physical and virtual participants includes links to resources and reflections on the content.

The local and global perspectives on open badges were cited as the most significant aspect of the forum, enhanced by the opportunity to hear from thought leaders in research and practice. *The diversity of opinion and perspectives offered by the speakers was valuable.*

Overall, people commented that the forum was exciting, a great place to find out what others were doing, to network and seed new knowledge communities. Online participants were also very satisfied. A number of attendees wanted to access the presentations at a later date, and to be able to share them with colleagues.

3. How the project unfolded

3.1 Enablers

The project commenced with gusto in 2014 – even in the period intervening between application and notification of success, the landscape of digital credentialling was evolving rapidly. The project team was collaborative, with enthusiasm and engagement from both university partner teams, with international networks in the US and the UK, and with external collaborators such as Telstra, Cisco and ESA.

- Regular, collaborative partnerships were established early with all project partners (national and international) and this was a significant contributor to the success of the project.
- A highly enthusiastic and energetic project manager, Kate Coleman, who built networks and formed alliances and partnerships provided ongoing updates on the international developments, pilot studies and implementations. The project manager's capabilities also meant strong engagement with educators across all parts of the Australian sector.
- A diverse and committed national and international project team, from different sectors of education, disciplines and areas of pedagogy and technology.
- A well-designed, timely and relevant project scope and project plan.
- Partner universities who were led by enthusiasts who could influence change and innovation: both Deakin and Curtin have, during the course of the project, implemented significant startups and strategies in digital credentialling.
- Tech-savvy project members who used all the tools available (Weebly site, Credly badging, Cisco live streaming, Google docs, social media) to engage and disseminate concepts, ideas, developments and questions.
- The evaluator, Grace Lynch, was consistently connecting, supporting and providing constructive feedback.
- Our project partners played an integral role in the direction of the project fulfilling its outcomes. These collaborations have provided nominations for speakers at project events, invitations to present at partner events and a platform for online dissemination. Some example activities are:
 - AAEEBL: annual conference workshop, presentation of keynote, publication of project on the association's website
 - CRA: collaboration and partnership of resources for project, partnership with ADPIOS and ePIC 2015 forums
 - HASTAC: collaboration and partnership in research, presentation at 3 state partners seminars, ongoing research dissemination
 - Badge Alliance: Campus Policy document, support for national forum planning and speaker suggestions, technical support for open badge infrastructure and BadgeKit implementation
 - Telstra: workshop with HR and planning of national forum
 - ESA: workshop with Scootle team and planning for 2015 research
 - Cisco: workshop with state team leads, training and support of WebEx, WebEx Evaluation account and platform support for September seminars, one-month access account for national forum.

3.2 Challenges

- The project was very future-focussed by design. Digital credentials take time to devise, socialise and implement. Only then can potential adopters, including teaching staff and students, see examples and the potential of the innovation. This has meant that progress in the project has been iterative, at times.
- Remaining abreast of developments in such an agile field is also time-consuming, and at times, just keeping up to date is a challenge.
- Like many national project teams, this one experienced a high degree of turnover of project members, even losing our highly-valued project manager just before project completion. This brought the usual challenges, including corporate memory and continuity.

4. Dissemination

4.1 Project website resources

By mutual agreement with the project team, the project website was incorporated into the pre-existing Assuring Graduate Capabilities website (<http://www.assuringgraduatecapabilities.com/>), under the section titled 'Credential.'

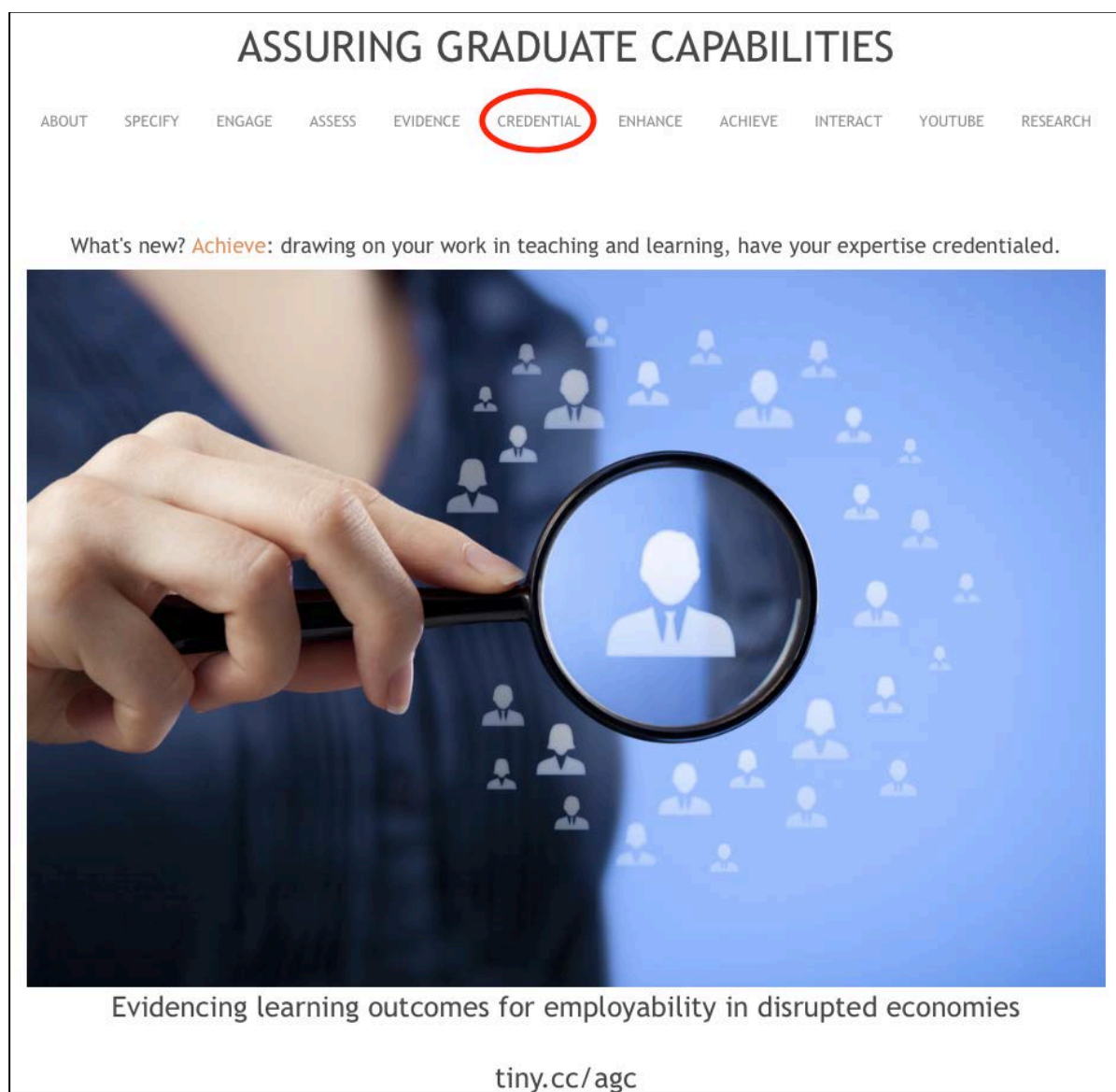


Figure 4: Link to the project on the Assuring Graduate Capabilities website

The Credential section of the site has evolved and developed as the project has unfolded. It bears the images which brand the project, and takes the user through a series of steps associated with macro and micro credentials. It also includes extra 14 downloadable case studies that tap into practice in Australian and international higher education. These examples continue to be enhanced and augmented. For direct access, the project section of the website has its own shortened URL: tiny.cc/21Ccredentials.



Figure 5: The project website (tiny.cc/21Ccredentials)

4.2 Project workshops

Participant engagement and attendance at the forum was largely owing to successful preparation through preparatory workshops led by Kate Coleman and Zosh Pawlaczek. These attracted 65 participants at Deakin University (July 2014), and others in state-based workshops as follows: in September, 65 participants at the University of South Australia and University of Tasmania; 63 participants at Queensland University of Technology; and 100 participants in NSW from University of Wollongong, Charles Sturt University, and The University of New South Wales.

Many participants also attended the workshops in Melbourne, led by international speakers following the national forum:

- ☐ Badging economies in the classroom, Joanna Normoyle (18 participants)
- ☐ What does it mean to take seriously the recognition of learning? Nan Travers (25)
- ☐ Assessment, Portfolios and Open Badges, Janet Strivens (14)
- ☐ Participatory Learning and Assessment, Dan Hickey (19)
- ☐ Believing in Badges, Michael Evans and Mike Goudzwaard (25)

Participants commented that they appreciated hearing about the latest research and practice in the field. They suggested that the workshops had helped them to better understand the possibilities of digital credentials and their use in their own context. Some said they would use what they had learned to incorporate the use of digital credentials in their own teaching practice, or to support colleagues with curriculum design. It was also suggested that gaining insights from the perspective of employers had been valuable.

4.3 Other Dissemination

So far the outcomes of this project have been disseminated through presentations at 18 national and international events (Appendix B), and through publication of over 20 artefacts (Appendix C), including book chapters, a policy framework for open badges, and conference papers or abstracts.

5. What have we learned, and what are we yet to learn?

5.1 Learnings to date

Disruptive innovations take time to create, socialise, and implement. Creating new, supplementary or competing credentials is like introducing a new currency. To draw on this analogy, the world has many well-established and interoperable monetary currencies – Euros can be exchanged for dollars using agreed conversion rates. But bitcoin is a new type of currency, and sceptics will be wary until it is well-understood and accepted. New digital credentials are untried, like bitcoin. According to Rogers (1995), several factors affect the rate of adoption of innovations (Rogers, 1995), including:

- ☐ Relative advantage (is the innovation seen by adopters as better than what it supplements or supersedes? Higher advantage assists adoption);
- ☐ Compatibility (is the innovation seen as compatible with the user needs?);
- ☐ Complexity (is the innovation difficult to understand and use? Simplicity assists adoption);
- ☐ Trial-ability (can the innovation be trialed on a limited basis?) Those innovations that can be trialed, and then discarded if unwanted, are more likely to be adopted; and
- ☐ Observability (are the outcomes of the innovation visible? Higher visibility increases the likelihood of adoption).

Applied to digital credentials, these read as a set of questions, each of which requires commentary:

- ☐ **Is the new digital credential seen as better than what it supplements or supersedes?**
In comparison to traditional credentials, ‘better’ digital credentials could be any number of things, including more timely (faster), more effective (better), or more efficient use of resources (cheaper to produce, or cheaper to acquire). In terms of compatibility, the question raised repeatedly is whether the new credentials are eligible for credit towards an existing higher credential (usually a degree). Clarifying the value proposition for a new credential is absolutely essential – why should learners invest time and effort in credentials which are as yet unproven, or unknown to potential employers?
- ☐ **Is the new digital credential easy to understand?**
The new credential must be explainable in a concise and consistent manner – one-minute concept videos are an excellent tool for this.
- ☐ **Can the new digital credential be trialled then rescinded if unwanted?**
This is a key question for established institutions. Once a credential is established, it is imperative that it is properly maintained, recorded and archived, just like university degrees. If the proposed credential is credit-bearing, this has serious implications. Use of an institution’s logo may also imply endorsement, and future credit: these details need to be made clear to learners and employers from the outset.
- ☐ **Is the new digital credential visible?**
Digital credentials, like other digital artefacts such as photos, movies and ebooks, can be visible online, but not on a mantelpiece. It is worth considering whether a digital credential can be also printed and displayed, and whether this might add value in the eyes of the learner.

These are some of the questions with which the team has grappled during the project, observing the process for implementing credentials adopted by others, but also in the creation of credentials by the partner universities. These and other learnings are encapsulated in the evaluative framework for Better 21C Credentials:

1. **Clear communication of appropriate outcomes:** Does the credential include assessment of appropriate outcomes – employers and industry questions the value of focusing too much on knowledge acquisition and too little on other the so-called ‘soft’ skills and capabilities related to performance in employment. Are stakeholders such as employers, industry and the wider community satisfied that those who graduate with new and emerging credentials have the skills to match their qualifications? Does the credential have sufficient granularity to clearly communicate what the learner can do?
2. **Assessment:** Are the underpinning assessments appropriate, challenging learners to tackle a range of complex, ill-defined issues that simulate those they will encounter as graduates? Do assessments provide assessors with an array of evidence upon which to make judgements about complex performance?
3. **Integrity:** Can the credential be attained fraudulently? What measures are in place to ensure academic integrity, including assuring the identity of the learner?
4. **Cost-benefits:** what is the cost of the credential to the learner (in time or money) and what are the benefits (for example, credit or entry to a higher credential or does it bring status or career advantage?). Is the advantage durable – is it likely to last over time?
5. **Sustainability:** what is the business model and how does it ensure the financial sustainability of the institution? Can quality be assured when such credentials are conferred at scale?

5.2 The opportunities for future projects based on this project

Credentials are the core business of higher education, and they can only be sustained if they are underpinned by excellent and appropriate assessment accompanied by timely and constructive feedback. When designing for generation Google, who are surrounded by open access learning resources, the key may be to spend less time reinventing learning resources, and more time and energy giving feedback and coaching, based on more authentic assessment. Ramsden claims that the aim of teaching is simple: it is to make student learning possible (Ramsden, 2003). To paraphrase: the aim of credentialling is less simple, but its prime purpose is to warrant that learning outcomes and standards have been demonstrated. Truly 21C digital credentials can also be more granular, stackable, evidentiary and personalised, enabling rich analytics and more visible learning. They can work alongside traditional credentials, including continuing professional development and accreditation ecosystems. Digital badges also have the capacity to connect these accreditation and recognition ecosystems and allow the earner to narrate their learning experiences and knowledge for a range of audiences, for any purpose and in a number of digital contexts. Future projects could focus on how digital credentials could forge stronger relationships between higher education providers and professional associations.

We also need to rethink the limits of credential integrity. No matter what methods are deployed when we invigilate assessments on campus or in the cloud, those who are determined to subvert them do so. Sadly, we only know who cheats when we catch them.

Perhaps the way forward is to have highly authenticated and rich qualitative assessments at key milestones in a course.

Experts in innovation tell us that a minimum viable product can be any two of the following: fast, good or cheap (Linkner 2015). If we extend this, somewhat clumsily to higher education, we could challenge ourselves to rethink educational design and delivery to create 21C credentials that are: faster, in that they are achieved in a more timely fashion for the user; better, in that they are more effective signifiers of appropriate achievements, and cheaper, in that they are more efficient (lower price for learners, less resource intensive for educators).

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Appendix A: Certification

Certification by Vice-Chancellor

I certify that all parts of the final report for this OLT project provide an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name: Professor Jane den Hollander

Date: 30 March 2016

Appendix B: Evaluation

Evaluation Reflections

Dr Grace Lynch, RMIT University

Background

The original aim of this project was to network and advise Australian higher education providers on how to (1) deploy tools that enable all students to curate rich evidence of learning; (2) credential learning outcomes using digital badging; and (3) explore and disseminate pathways, alliances and business models to remain competitive in a disrupted environment. Higher education providers credential learning based on signals and codes such as marks, grades and credit. How might technologies enable additional methods, so that: **students** are encouraged to create and curate rich evidence of their learning; **educators** have richer ways to warrant and credential such evidence; and **providers** can test new business models associated with credentialing? This project, led by Deakin University in partnership with Curtin University and a number of national and international collaborators set out to research these questions, examining practices as they evolved.

Outcomes

There were 5 proposed outcomes of the project:

- **Connect** Australian higher education providers with national and international networks of innovators and scholars in digital curation and credentialing of rich learning evidence, and its portability from K-12, VET, higher education and continuing professional development;
- **Research and publish** (1) student, employer and provider insights into the practical usefulness and usability of emerging credentialing tools for large educational providers, within and across sectors; (2) the implications for regulatory compliance with HE standards frameworks; and (3) analysis of emerging business models;
- **Provide advice**, in the form of case studies and a more detailed good practice guide for Australian higher education providers to enable solutions to curate, credential and carry evidence of learning including enabling equity of access for those less connected to high speed broadband;
- **Offer professional development** (using cloud and video conference) for higher education practitioners so they can up skill as well as experience technologies that enable the curation and credentialing of learning evidence;
- **Host a national forum**, with free attendance and webcast access to all higher education providers, to showcase high profile invited international and national thought leaders in digital curation and credentialing of learning evidence and the business models that underpin their deployment.

The guiding focus of the evaluation was to determine if the project's aims were achieved and outcomes delivered within budget and on time.

Evidence

The first interactions between the Project and Evaluation Team were at the OLT workshop in April 2014 for all 2013 Strategic Commissioned Projects. Within the Technology Enabled Learning Cluster, there were three projects, with this project being led by Professor Beverley Oliver with project team members from both Deakin and Curtin Universities. There was also

a dedicated Project Manager – Kathryn Coleman who provided guidance and assistance throughout the extended project lifecycle.

In order to identify that the project's aims were achieved and outcomes delivered both formative and summative evaluation strategies were utilised. The Evaluation team was included in all project team and Reference Group communications. In addition a member of the evaluation team was a participant in virtual and face to face project team, reference group meetings and cluster meetings and was able to provide input and advice throughout the lifecycle of the project the evaluation team provided input and advice. In addition the Evaluator worked very closely with the Project Manager to provide support and guidance throughout the project.

The Evaluator found several key factors that contributed to the successful achievement of the aim and goals. These factors include:

- ☐ Regular meetings of the project team with the Evaluator from the beginning of the project, which were well supported by project plan updates and reports on activities. This ensured that the team were provided formative feedback to further enhance the proposed project outcomes.
- ☐ Project Manager allotted during the project lifecycle which assisted with project documentation and prioritising of team activities.
- ☐ Active and sustained communications between the partner institutions.
- ☐ Strong project management, as demonstrated in appropriate documentation.
- ☐ Individual meetings with the Project Lead and External Evaluator on regular touch points during the project.

Project Management

It has been documented that effective project management has the following elements:

- ☐ Identifying requirements,
- ☐ Establishing clear and achievable outcomes,
- ☐ Balancing the competing demands for quality, scope, time and cost,
- ☐ Managing the expectations of various stakeholders, and
- ☐ Adapting plans to overcome challenges.

It must be noted that many of the project members had never previously worked together. This necessitated a longer initiation/commencement phase for the project for team building to occur and for the team to settle into working relationships. Due to the extended timeline for this project there were also several changes in project team membership resulting in some disruption in project timelines and deliverables. Team members who moved to positions with other institutions included the project manager – Kate Coleman, Professor Kay Souter, Associate Professor Scott Beattie and Associate Professor Zosh Pawlaczek. New project team members included Professor Liz Johnson, Professor David Boud and Sue Owen. Members of the project leader's own team, Dr Trina Jorre de St Jorre and Siobhan Lenihan assisted in the closing stages of the project. There was some shifting in project

responsibilities due to these moves as everyone settled into new roles and understandings about ongoing project involvement.

From a Project Management perspective then, while there were some challenges for this team that were resolved and the project then ran to its ultimate conclusion even though it was delayed several months.

The strong leadership from Professor Beverley Oliver along with Kate Coleman as a project manager were key factors in the success of this project. They both demonstrated strong professional commitment and slightly adapted the original aims of the project as the challenges of deploying 'badges' that did not relate to higher education qualification frameworks became clear.

Achievement of Outcomes

The key summative evaluation questions centred on the findings from the scoping study, case studies, surveys and national workshops. The key outputs were:

- Good Practice Guide
- 19 Case studies
- 10 tips for success in delivering 21C Credentials
- Project Website – (www.tiny.cc/21Ccredentials)
- Paper on Better 21C Credentials: Evaluating the promise, perils and disruptive potential of digital credentials
- Over 250 participants at National Forum
- Almost 400 participants in state based preparatory workshops
- Presentations at 18 national and international events with almost 1300 participants

Summary

The project activities ensured that a large number of stakeholders were not only consulted in developing the findings, but were also engaged with evaluating the promise, perils and disruptive potential of digital credentials.

On the whole it was a pleasure to work with this well led team that achieved not only its project outcomes but also extended impact in a number of areas. The relationships formed during this project will continue in the future.

Appendix C: Project presentations

Date	Title and location	Purpose and description	Participants	Institutions
9-12 Mar 2014	Project presentation to international partners and pilot studies	<p>To develop a strong network with the project partnerships with:</p> <ol style="list-style-type: none"> 1. HASTAC, presentation of project outcomes at Duke PhD Lab 2. Badge Alliance, presentation of project outcomes. 3. AAEEBL, presentation of project outcomes with President and CEO, invitation to run a workshop at the AAEEBL 2014 conference, President presented partnership in the AAEEBL 2014 Keynote. 4. Harvard Graduate School of Education, presentation of project outcomes 5. National Endowment for the Humanities, meeting established by HASTAC to present project outcomes 	<p>10</p> <p>3</p> <p>3</p> <p>10</p> <p>3</p>	<p>=5</p> <p>=2</p> <p>=2</p> <p>=2</p> <p>=2</p>
10-11 Jun 2014	Learning and Teaching for our times: higher education in the digital era, OLT Conference, Sydney	To present the project in a parallel session of technology-enabled learning, OLT projects to Australian higher education colleagues.	60	>10
18 Jul 2014	RMIT Symposium: Monetising MOOCs, EPublishing, Curations and Credentials, Melbourne	To present the project alongside new research into MOOC's, digital curation and portfolios with Dr Heather Ruland Staines (sipx).	40	=4
23 Jul 2014	Deakin Seminar: Curate, Credential and Carry Forward Digital Learning Evidence: Digital Badging, Deakin University Melbourne Burwood Campus	To present the project to all Deakin staff to openly discuss their ideas, views, aspirations and concerns about micro credentialling in the form of digital badging.	60	=1

Date	Title and location	Purpose and description	Participants	Institutions
24 Jul 2014	Curate, credential and carry forward digital learning evidence Workshop, Telstra, Melbourne	To workshop the project ideas, research, emergent findings and future collaboration with the project partner.	10	N/a
28 Jul 2014	AAEEBL Annual Conference: Engaged Learning and ePortfolios: Advancing Learning-Centered Cultures in a Multimodal Age, Boston	Invited Workshop: To present the project as a workshop to explore new ways to recognise knowledge, skills and experiences and focus on the design, construction and application of badges in real-case scenarios. The workshop is intended to provide a collaborative environment to talk and share, and participants are invited to bring information related to their own potential digital badging and curation ideas to the workshop.	50	>10
30 Jul 2014	AAEEBL Annual Conference: Engaged Learning and ePortfolios: Advancing Learning-Centered Cultures in a Multimodal Age, Boston	Open Badges and ePortfolios Workshop, project presented in collaboration with a pilot case study (Harvard University) to consider the emergent findings of the project through a design thinking workshop, utilized to design and implement digital badges and portfolios.	50	>10

Date	Title and location	Purpose and description	Participants	Institutions
29-31 Oct 2014	17th UNESCO-APEID International Conference The Powerhouses of Education: Teachers for the Future We Want Bangkok	<p>The project presented to members of National Commissions of UNESCO, members of APEID Associated Centres and networks; representatives of UNESCO and United Nations affiliate groups; education ministers, policy makers and planners; principals, leaders and administrators of educational institutions including</p> <ul style="list-style-type: none"> <input type="checkbox"/> Teachers, educators and trainers <input type="checkbox"/> Researchers and academicians <input type="checkbox"/> Students and representatives from youth groups <input type="checkbox"/> Representatives from international and non-government organisations and associations <input type="checkbox"/> Representatives from community and indigenous organisations <input type="checkbox"/> Representatives from business, industry and training organisations 	100	Unknown
1-2 Oct 2014	ePortfolio Australia, eportforum. Melbourne	The project was invited to present a pre-conference workshop for academics and researchers to design open badges and eportfolio solutions for graduate employability.	30	>8

Date	Title and location	Purpose and description	Participants	Institutions
4-5 Nov 2014	Australian National Symposium on OER, Hobart	<p>The project was invited by The Australian National Symposium on OER to present a workshop for senior executives, policy makers, other government and educational decision makers, educators, researchers, OER advocates, practitioners in general and researchers to design open badges as possible solutions for open education strategies while building communities of practices through collaboration and exchange of ideas around this topic.</p> <p>The Australian National Symposium on OER provided participants nationally and internationally the opportunity to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Raise awareness of the issues around OER <input type="checkbox"/> Network with national and international advocates and experts <input type="checkbox"/> Showcase their institutional OER projects and initiatives. 	25	>15
13 Nov 2014	National Forum: Curate, credential and carry forward digital learning evidence. Melbourne, Brisbane, Adelaide, Perth, Wollongong, Wellington (NZ)	<p>This Office for Learning and Teaching national forum showcased examples from the thought leaders in the field in prior learning, credentialling, open badges practice and research, and offer an employer's perspective. The forum was a national event at Deakin University Burwood campus with sites for colleagues in New South Wales, Queensland, South Australia and Western Australia. We utilised Cisco's WebEx as our streaming platform for our national host sites through our partnership with Cisco as a project partner.</p>	200+	>15

Date	Title and location	Purpose and description	Participants	Institutions
12-14 Nov 2014	Curate, credential and carry forward digital learning evidence workshops Melbourne	Curate, credential and carry forward digital learning evidence workshops. Open Badges OBI Meeting: Deakin eSolutions, CSU, DeakinDigital, Badge Alliance and Professor Dan Hickey, Indiana University (10 participants) Badging economies in the classroom: Joanna Normoyle, (18 participants) What does it mean to take seriously the recognition of learning? Dr Nan Travers (25 participants) Assessment, Portfolios and Open Badges Dr Janet Strivens (25 participants) Participatory Learning and Assessment Professor Dan Hickey (19 participants) Believing in Badges Dr Michael Evans and Mike Goudzwaard (25 participants)	100+	>15
21-22 Nov 2014	The Center for Innovation and Technology for Learning (CITA), Pedagogical Conference on Technology and Pedagogical Innovation, Universidad Casa Grande, Spain.	The project was invited by The Center for Innovation and Technology for Learning (CITA) to present on Curtin's research and practice in open digital badges and related pilots to the educational community, researchers and professionals interested in Games-Based Learning (digital or video), as a tool for education and training.	100+	Unknown
23-26 Nov 2014	Rhetoric and Reality, Critical perspectives on educational technology, 2014 asilite conference, Dunedin, New Zealand	The project shared a place in a Practice Session with OLT TEL at the 2014 ACILITE conference for leaders, practitioners, and researchers to reflect on and discuss the state-of-the-art and the state-of-the-actual, exploring the visionary rhetoric on educational technology and debating the imperfect reality of current educational practices.	20	<10

Date	Title and location	Purpose and description	Participants	Institutions
27 Nov 2014	National forum: 'Developing Graduate Employability Through Partnerships with Industry and Professional Organisations. Melbourne,	The project was invited by this national forum to prepare a vignette on open badges and employability for employers, professional bodies, academics, professional staff and students across three sessions to build relationships and foster conversations on emerging findings on the topic of 'graduate employability'.	18	>5
9-12 Mar 2015	Badge The World: Global Lessons in Open Badging Around the world, SXSWedu, Austin, Texas	The project manager was invited to present the project as a case study alongside Badge Alliance partners at SXSWedu. The panel session, Badge The World: Global Lessons in Open Badging Around the World, invited participants to discuss how innovators in education and workforce are using data-rich open badges to identify talent, mark learning pathways and open doors to opportunities worldwide. The panel experts shared case studies in badging from the US, Europe and Australia, exploring five key lessons learned in badge system design and implementation.	200	>25

Date	Title and location	Purpose and description	Participants	Institutions
16-17 Apr 2015	ePortfolios and Open Badges: Friends or Foes, 4th CRA International Seminar: Researching and Evaluating Recording Achievement, Personal Development Planning and e-Portfolio Plymouth, UK	The project was invited as a partner to present key learning at Plymouth University celebrating teaching, learning and pedagogy in higher education over two days. The project was positioned alongside innovative leadership - "Europortfolio initiative, the 'Digital Credentialling' project in Australia, and the work of the Inter/national Coalition for Electronic Portfolio Research and the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL) in the US. These each seek to use e-portfolio tools and the functionalities associated with them to promote self-regulated, transformative, personalised or integrative learning, to align assessment with learning and to support employability, 'graduateness', transitions and the development of professional identity and capability".	40	>15
16-17 Apr 2015	'The global e-portfolio research forum: joining the dots and identifying the gaps.' 4th CRA International Seminar: Researching and Evaluating Recording Achievement, Personal Development Planning and ePortfolio Plymouth, UK	The project was also invited to co-present on an international plenary, discussion and panel of experts: 'The global e-portfolio research forum: joining the dots and identifying the gaps.'	150	>25

Appendix D: Project publications and presentations

- Beattie, S. (2014, 19-21 March) Height vs. Depth in the Design of Badge Frameworks. Presented at Mahara Hui, Wellington, New Zealand.
- Breckendorff, P., Pawlaczek, Z., Smart, V. & Coleman, K. (2014). Technology enabled learning: Can it enhance the student learning experience? Rhetoric and Reality: Critical perspectives on educational technology. Presented at ascilite2014, Dunedin, New Zealand.
- Casilli, C., Flintoff, K., Gibson, D., & Coleman, K. (2014). Campus policy framework for open badges. Retrieved from https://www.academia.edu/8830797/A_collaboratively_drafted_campus_policy_framework_for_open_badges
- Coleman, K. & Wisser, W. (2014, July) Design thinking: digital badges and portfolios. AAEEBL, Engaged Learning and ePortfolios: Advancing Learning-Centered Cultures in a Multimodal Age.
- Coleman, K. (2014, July). Digital Credentialling: How will digitisation change how we think, work and learn? AAEEBL, Engaged Learning and ePortfolios: Advancing Learning-Centered Cultures in a Multimodal Age.
- Coleman, K. (2014, October). Badges, Curation, Credentials and Portfolios. Presented at the ePortfolios Australia Forum: Moving Forward, La Trobe University.
- Coleman, K. (2014, November). Curate, Credential and Carry Forward Digital Learning Evidence: The potential of open badges and open education. Presented at the OER National Symposium, University of Tasmania.
- Coleman, K. (2014, November). Open Badges and Employability Round Table, Developing graduate employability through partnerships with industry and professional organisations. Presented at the OLT National Forum: Developing Graduate Employability through Partnerships with Industry and Professional Organisations, RMIT University with partners Monash University and University of Southern Queensland.
- Coleman, K., Ravet, S., Riches, M. & Riches, T. (2015, 9-12 March). Badge the World: Global Lessons in Open Badging. Presented at SXSWedu, Austin Texas, USA.
- Coleman, K. (2015, 9-12 March). Panel of digital badge experts at SXSWedu. Austin Texas, USA.
- Coleman, K. (2015, 16-17 April). Researching and Evaluating Recording Achievement, Personal Development Planning and e-Portfolio. Presentation to the 4th Centre for Recording Achievement International Research Seminar, Plymouth University.
- Gibson, D. (2015). Knowledge and skill based digital badges. In M. Spector (Ed.), *The SAGE encyclopedia of educational technology* (pp. 433–437). Thousand Oaks, CA: SAGE Publications, Inc. doi:10.4135/9781483346397
- Gibson, D. & Coleman, K. (2015). Digital Badges to curate, credential and carry forward digital learning evidence. Webinar Hosted by Professor Geoffrey Crisp, RMIT University and Dr Mathew Hillier, University of Queensland, Australia.
- Gibson, D., Coleman, K. & Irving, L. (in press). Learning journeys in higher education: Designing digital pathways for learning, motivation and assessment. In Ifenthaler, D., Bellin-Mularski, N. & Mahin, D.K. (Eds) *Foundation of Digital Badges and Micro-Credentials*, Springer, New York.

- Oliver, B., & Souter K. (2013). Imagining the future of assessment: for evidence, for credit and for payment. In H. Carter, M. Gosper and J. Hedberg (Eds.), *Electric Dreams. Proceedings ascilite2013*, Sydney, pp. 657-660.
- Oliver, B. (2016). *Better 21C Credentials: Evaluating the promise, perils and disruptive potential of digital credentials*. Melbourne.
- Oliver, B. (2015, 16-17 April). Researching and Evaluating Recording Achievement, Personal Development Planning and e-Portfolio. Presentation to the 4th Centre for Recording Achievement International Research Seminar, Plymouth University.
- Oliver, B. (2015, 8-10 June). ePortfolios, Open Badges and Identity - disruptive technologies for transformative learning. Keynote address presented at ePIC, Barcelona.
- Oliver, B. (2015, 8-10 June). Poster, European Distance and E-Learning Network – EDEN, Barcelona.
- Souter, K. (2014). Digital Badges. The Future of Learning Conference 2014, Sydney.
- Souter, K., Pawlaczek, Z. & Coleman, K. (2014, June). Curating and credentialling digital learning evidence. OLT Conference, Learning and teaching for our times, Higher education in the Digital era.