ISYS3303 Gateway One Project Report

Digital Certificates for students

Team: Group 8
Class: Friday 3:00 pm- 6:00pm
Team Members: Dilakshany Ganeshan- s4040797- Project Manager
Biraj Shrestha- s4029944- Project Documentation Manager
Dhanushika Prabaharan- s4035680- QA Lead
Jaya Harris Sivakumar- s4025657- Business Analyst
Nikunj Gupta- s4027333- Lead Researcher
Sulochana Dilrukshi Gamage- s3992883- Business Analyst
Swedha Maruthamuthu- s4027750- Solution Consultant

Team Manager: Dr Huan Vo-Tran

RMIT UNIVERSITY

Table of Contents

Table of Figures

Charter

Student Team Charter

The team charter identifies instructor and student behaviours that the school expects to operate when assessed teamwork constitutes at least 25 per cent of a course's allocated marks.

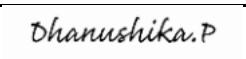
Course Code:	ISYS3303
Course Name:	Business IT Project
Assessment Task/s:	Assessment 2: Gateway One Progress Report
Team Number/Code:	08
Team Manager Name:	Dr Huan Vo-Tran
Class Day:	Friday 3:00-6:00pm

Student Obligations:

We will:

- Create an appropriate team charter at the outset of the course.
- Seek to make everyone feel comfortable and valued by respecting team members and demonstrating sensitivity.
- Encourage team member participation and learning through team discussions, providing and receiving feedback on team tasks.
- Listen and observe effectively.
- Pay sufficient attention to dealing with cross cultural differences that can hamper team effectiveness.
- Guide the team through effective meeting practices and use of collaborative tools and technology that can facilitate team interaction.
- Prompt the team to regularly review effective decision processes.
- Attend all meetings unless unavoidably prevented.
- Ensure outcome-based meetings with timely and appropriate minute taking and evidence-based contributions to the team tasks.
- Shoulder a fair share of the team's agreed work schedule.
- Be fully committed to the team task and individual agreed responsibilities.
- Prevent and manage team conflict (e.g. freeloading team members).

- Be responsible for informing the course coordinator via email as soon as possible when team becomes dysfunctional so that team conflict (e.g. freeloading team members) can be addressed promptly to allow the team to achieve its goals.
- Ensure that the team's work products are the result of integrated thinking and cooperation rather than a collection of individual contributions.
- Complete the course's Course Experience Survey (CES) so that instructors can establish a representative picture of student experience involving assessed teamwork.

Name	Student ID	Email	Signature
Dilakshany Ganeshan	s4040797	S4040797@student.rmit.edu.au	
Biraj Shrestha	s4029944	S4029944@student.rmit.edu.au	
Swedha Maruthamuthu	s4027759	s4027759@student.rmit.edu.au	
Sulochana Gamage	s3992883	S3992883@student.rmit.edu.au	
Nikunj Gupta	s4027333	S4027333@student.rmit.edu.au	
Dhanushika Prabaharan	s4035680	S4035680@student.rmit.edu.au	
JayaHarris Sivakumar	s4025657	S4025657@student.rmit.edu.au	

Introduction

This report will discuss our project, digital certification system for RMIT commissioned by our main client clients Gillian Vesty to represent School of Accounting, Information Systems and Supply Chain at RMIT, Melbourne, Australia. The main issue addressed by them was the need for a digital certificate system for RMIT. With the help of smart contracts and blockchain technology, the recommended approach creates tamper-proof digital certificates that students can display on professional networking platforms such as LinkedIn.

In order ensure that students can effectively showcase their accomplishments to recruiters and educational institutions, this system attempts to improve credential verification, security, and accessibility. The project is in accordance with RMIT's mission to empower students to take charge of their own lives, make a difference, and establish meaningful places for themselves via engagement through a wider community.

This report is divided into 3 major sections including Introduction as first section. Then the project specification discussing the project brief, client, existing technology, stakeholders, project plan and finally, the project background including case studies and relevant literature.

Project Specification

Project Brief

RMIT University has tasked our team with developing a prototype for a Digital Certificate Issuing System. This system aims to provide students with secure, verifiable, and tamper-proof digital credentials that can be shared on platforms like LinkedIn and verified by employers or academic institutions. The proposed system will enhance credential authentication, security, and accessibility which ensures the recognition of students' achievements in professional and academic settings.

To do this, we thoroughly analyzed the cost, scalability, security, and user experience of several credentialing platforms, such as Credly and OpenCerts. The implementation of a blockchain-powered certificate issuance platform that makes use of smart contracts along with decentralized storage for efficiency and security was guided by the insights from this evaluation.

The system will be designed with a focus on:

- Usage of blockchain technologies for tamper- proof verification (e.g., Ethereum/Polygon).
- Decentralized storage for certificate data using IPFS or cloud-based alternatives.
- User-friendliness of the web portal for users from different levels of digital literacy (students, faculty, recruiters and companies) to manage and verify credentials.

This will be implemented as a Minimum Viable Product (MVP) showcasing the certificate issuance and verification process along with a step-by-step system guide with user manuals for stakeholders to administer and optimize the platform.

To ensure compatibility with university policy and technical infrastructure, the project is created by collaborations with key stakeholders, including individuals from RMIT's academic and other services. By improving student job prospects and credibility as institutions in the discipline of digital credentialing, the project's outcomes will support RMIT's overall digital transformation strategy.

The Client

The following project is represented by Gullian Vesty, a Professor and Deputy Dean L&T in the School of Accounting, Information Systems and Supply Chain at RMIT University, Melbourne, Australia.

Existing Technology

The College of Business and Law at RMIT uses multiple educational technologies which consist of Canvas LMS, Folio by Port Folium, Canvas Studio, My eQuals and Emble. The platforms enable essential functions which include knowledge acquisition and interaction along with collaboration and discussion as well as assessment. The enterprise funding model makes these tools available for use by students and both teaching and professional staff members. The project plans to upgrade this ecosystem through the creation of a digital certification system built on emerging technologies such as NFTs and blockchain along with decentralized storage solutions. The digital certificate system improves issuance procedures and storage while streamlining verification processes to match RMIT's capabilities delivering scalable security with user-friendly.

Stakeholder Requirements

The project aims to enhance the students' employability and institutional credibility. To ensure system feasibility and policy alignment, the stakeholder's requirements are developed in collaboration with RMIT's Academic and IT Departments. This report has identified 4 main stakeholders based on their importance:

Stakeholder 1: RMIT Admin / Faculty

The system must provide a streamlined and user-friendly method for issuing and administering digital certificates, allowing professors and administrators to easily issue, distribute, and validate credentials without requiring technical knowledge (Waterer, 2025). Integration with current RMIT systems, such as student records and learning management platforms, is critical for maintaining a seamless workflow and reducing disruptions.

Furthermore, the solution should be cost-effective and scalable, lowering long-term maintenance requirements while complying with security and compliance standards to prevent fraud and illegal changes (Advanced Secure Technologies, 2025). A reporting function that monitors granted certificates and their use could improve oversight and administrative efficiency.

Stakeholder 2: Students / Former students

Students are interested in a certification system that gives them complete ownership and quick access to their credentials, allowing them to highlight their accomplishments on professional networks such as LinkedIn. The procedure of getting and using these certificates should be straightforward and intuitive, without requiring extensive technological knowledge, and providing access for all students (El Hakim, 2025).

The reliability of these digital certifications is also critical, as they must be recognized and respected by prospective employers. Another important concern is future-proofing students should be able to access their credentials indefinitely, even after they have left RMIT. A verification option should also be offered, allowing third parties, such as employers, to swiftly and securely confirm the legitimacy of certificates (BCdiploma, 2017).

Stakeholder 3: Microsoft Clients – Gillian Vesty

As industry specialists, Microsoft representatives are interested in cutting-edge technologies like blockchain-based credentials, NFTs, and Microsoft-backed solutions like Azure Blockchain and Entra Verified ID. Their primary focus is on scalability, ensuring that the suggested system can be spread beyond RMIT to other educational institutions. Security and trust in the system are key challenges, necessitating strong safeguards to avoid fraud and illegal changes.

Furthermore, the solution should be compatible with Microsoft's technology capabilities and industry standards, perhaps allowing for additional collaboration or industry acceptance (Bakharev, 2024). Clear documentation on the technological architecture, security procedures, and scalability choices would be helpful in Microsoft's study.

Stakeholder 4: IT Team

The IT team seeks a technically feasible solution that can be implemented inside RMIT's current infrastructure without causing significant interruptions. Integration with platforms such as Credly, learning management systems, and student databases is critical for ensuring smooth operations. The system should be built for long-term use, with detailed documentation for maintenance, security updates, and scalability.

Performance is also important- the system must manage large-scale certificate issuing efficiently while maintaining security and dependability. In addition, the IT team requires an administrative dashboard to monitor system performance, resolve issues, and guarantee compliance with data security regulations. RMIT may consider expanding the certification system in the future, therefore, flexibility for feature upgrades should be prioritized.

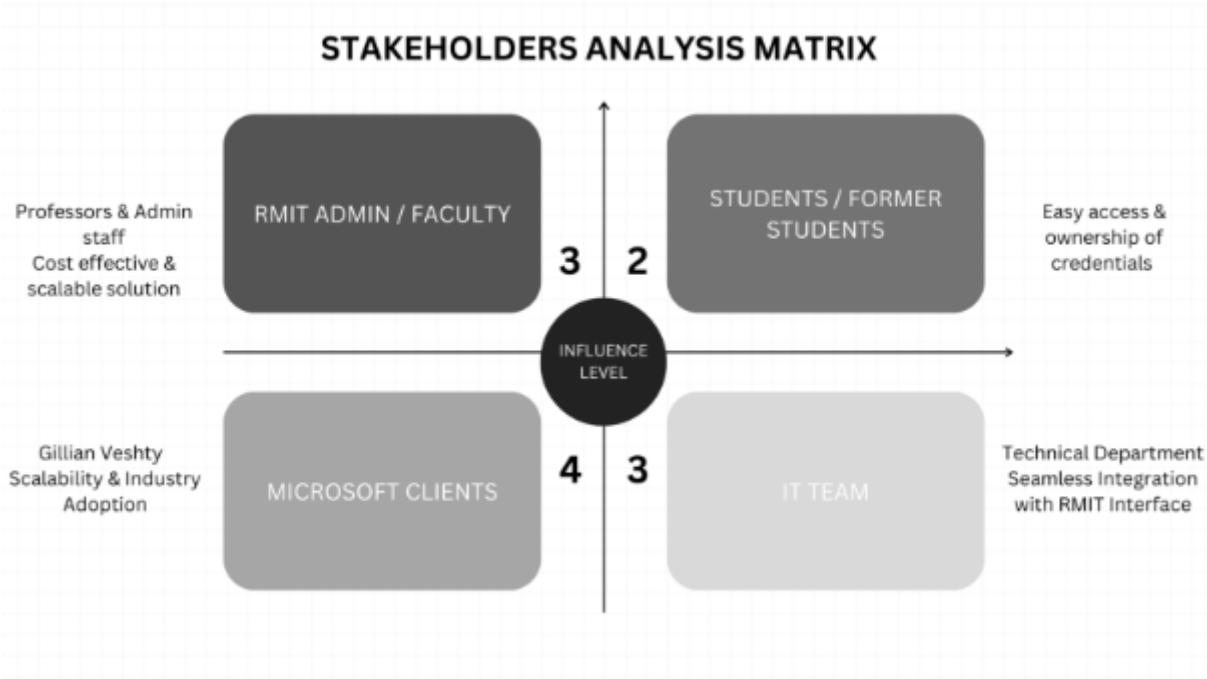


Figure 1: Stakeholder Analysis Matrix

Project Plan

The project team comprises seven members and oversees managing a distinct area to guarantee the project's successful completion.

- Dilakshany Ganeshan- Project Manager
- Biraj Shrestha- Project Documentation Manager
- Dhanushika Prabaharan- QA Lead
- Jaya Harris Sivakumar- Business Analyst
- Nikunj Gupta- Lead Researcher
- Sulochana Dilrukshi Gamage- Business Analyst
- Swedha Maruthamuthu- Solution Consultant

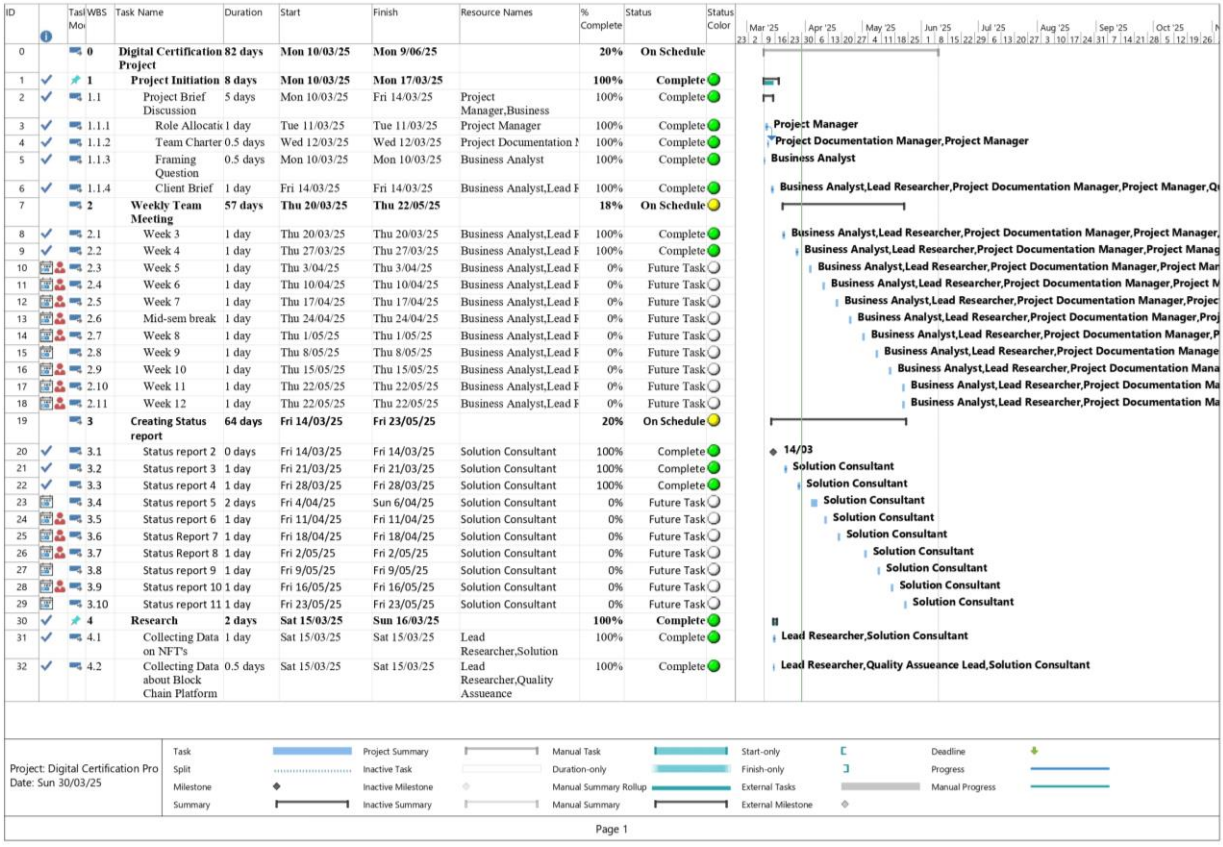
Each week, meetings of the project team are held online on Sundays and Thursdays using Microsoft Teams, and in person on Fridays after class. Every week, the positions of meeting chair and note-taker rotates every week. These sessions are aimed to monitoring project development, resolving issues, and creating plans of action. While evaluating the project by assigning a Green, Amber, or red rating depending on its present state, the project manager oversees updating previous and future contributions.

Key tasks included writing the introduction, providing background information, figuring out resource needs, defining the project's scope, defining its deliverables, and identifying important stakeholders helped to establish the project's scope. By finishing necessary tasks like project specification, project brief preparation, client coordination,

stakeholder engagement, project plan development, background case study analysis, and submission of the Gateway One report, the project moved forward into the next phase.

Despite the fact the project schedule might need to be modified because of changing needs, reordering of tasks, or unanticipated delays, all significant milestones will be reached on time.

The Project Schedule as of Gateway One Review is provided below:

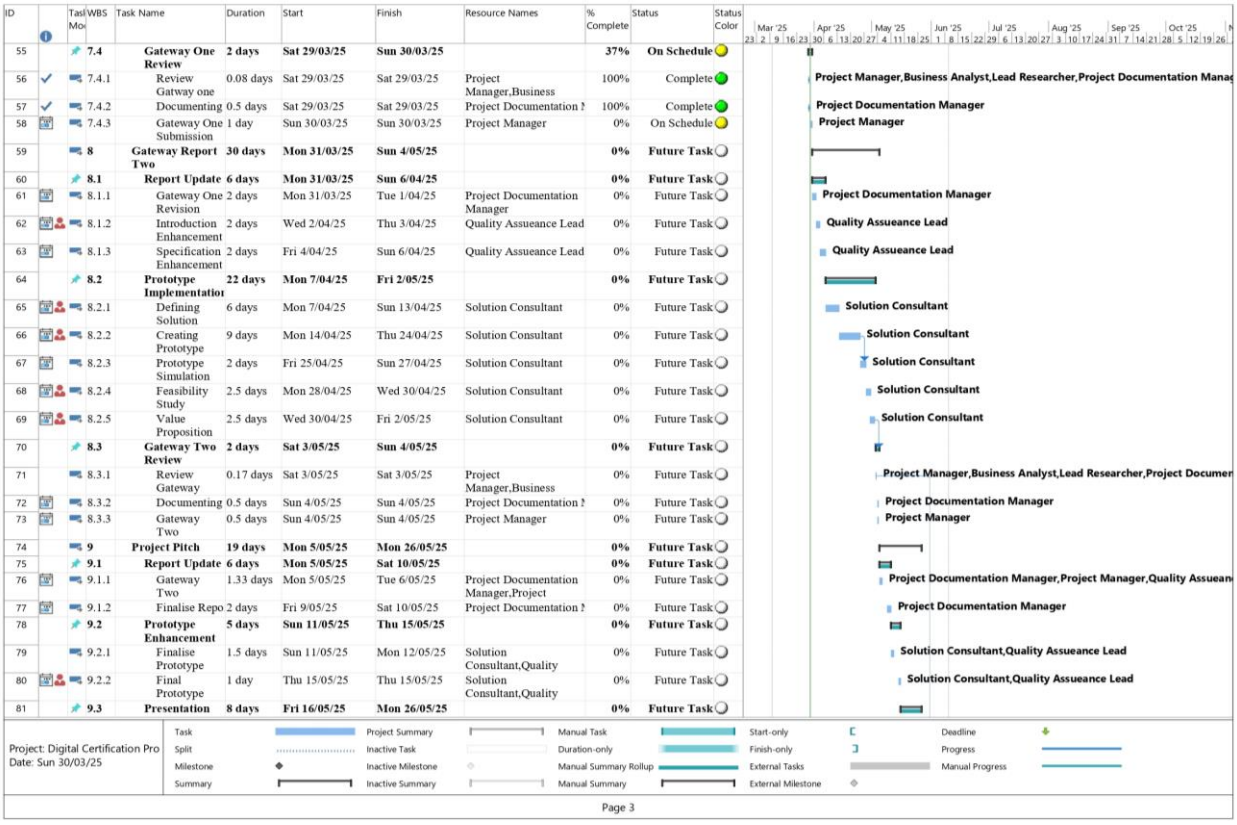


ID	Task Mode	WBS	Task Name	Duration	Start	Finish	Resource Names	% Complete	Status	Status Color
0		0	**Digital Certification Project**	**82 days**	**Mon 10/03/25**	**Mon 9/06/25**		**20%**	**On Schedule**	
1		1	**Project Initiation**	**8 days**	**Mon 10/03/25**	**Mon 17/03/25**		**100%**	**Complete**	
2		1.1	Project Brief Discussion	5 days	Mon 10/03/25	Fri 14/03/25	Project Manager,Business	100%	Complete	
3		1.1.1	Role Allocatic	1 day	Tue 11/03/25	Tue 11/03/25	Project Manager	100%	Complete	
4		1.1.2	Team Charter	0.5 days	Wed 12/03/25	Wed 12/03/25	Project Documentation M	100%	Complete	
5		1.1.3	Framing Question	0.5 days	Mon 10/03/25	Mon 10/03/25	Business Analyst	100%	Complete	
6		1.1.4	Client Brief	1 day	Fri 14/03/25	Fri 14/03/25	Business Analyst,Lead F	100%	Complete	
7		2	**Weekly Team Meeting**	**57 days**	**Thu 20/03/25**	**Thu 22/05/25**		**18%**	**On Schedule**	
8		2.1	Week 3	1 day	Thu 20/03/25	Thu 20/03/25	Business Analyst,Lead F	100%	Complete	
9		2.2	Week 4	1 day	Thu 27/03/25	Thu 27/03/25	Business Analyst,Lead F	100%	Complete	
10		2.3	Week 5	1 day	Thu 3/04/25	Thu 3/04/25	Business Analyst,Lead F	0%	Future Task	
11		2.4	Week 6	1 day	Thu 10/04/25	Thu 10/04/25	Business Analyst,Lead F	0%	Future Task	
12		2.5	Week 7	1 day	Thu 17/04/25	Thu 17/04/25	Business Analyst,Lead F	0%	Future Task	
13		2.6	Mid-sem break	1 day	Thu 24/04/25	Thu 24/04/25	Business Analyst,Lead F	0%	Future Task	
14		2.7	Week 8	1 day	Thu 1/05/25	Thu 1/05/25	Business Analyst,Lead F	0%	Future Task	
15		2.8	Week 9	1 day	Thu 8/05/25	Thu 8/05/25	Business Analyst,Lead F	0%	Future Task	
16		2.9	Week 10	1 day	Thu 15/05/25	Thu 15/05/25	Business Analyst,Lead F	0%	Future Task	
17		2.10	Week 11	1 day	Thu 22/05/25	Thu 22/05/25	Business Analyst,Lead F	0%	Future Task	
18		2.11	Week 12	1 day	Thu 22/05/25	Thu 22/05/25	Business Analyst,Lead F	0%	Future Task	
19		3	**Creating Status report**	**64 days**	**Fri 14/03/25**	**Fri 23/05/25**		**20%**	**On Schedule**	
20		3.1	Status report 2	0 days	Fri 14/03/25	Fri 14/03/25	Solution Consultant	100%	Complete	
21		3.2	Status report 3	1 day	Fri 21/03/25	Fri 21/03/25	Solution Consultant	100%	Complete	
22		3.3	Status report 4	1 day	Fri 28/03/25	Fri 28/03/25	Solution Consultant	100%	Complete	
23		3.4	Status report 5	2 days	Fri 4/04/25	Sun 6/04/25	Solution Consultant	0%	Future Task	
24		3.5	Status report 6	1 day	Fri 11/04/25	Fri 11/04/25	Solution Consultant	0%	Future Task	
25		3.6	Status Report 7	1 day	Fri 18/04/25	Fri 18/04/25	Solution Consultant	0%	Future Task	
26		3.7	Status Report 8	1 day	Fri 2/05/25	Fri 2/05/25	Solution Consultant	0%	Future Task	
27		3.8	Status report 9	1 day	Fri 9/05/25	Fri 9/05/25	Solution Consultant	0%	Future Task	
28		3.9	Status report 10	1 day	Fri 16/05/25	Fri 16/05/25	Solution Consultant	0%	Future Task	
29		3.10	Status report 11	1 day	Fri 23/05/25	Fri 23/05/25	Solution Consultant	0%	Future Task	
30		4	**Research**	**2 days**	**Sat 15/03/25**	**Sun 16/03/25**		**100%**	**Complete**	
31		4.1	Collecting Data on NFT's	1 day	Sat 15/03/25	Sat 15/03/25	Lead Researcher,Solution	100%	Complete	
32		4.2	Collecting Data about Block Chain Platform	0.5 days	Sat 15/03/25	Sat 15/03/25	Lead Researcher,Quality Assueance	100%	Complete	

Figure 2.1: Project Schedule 1

ID	Task Mode	WBS	Task Name	Duration	Start	Finish	Resource Names	% Complete	Status	Status Color
33	✓	4.3	Research on existing technologies and case studies	1 day	Sun 16/03/25	Sun 16/03/25	Lead Researcher,Solution Consultant	100%	Complete	
34	✓	**5**	**Project Scope**	**1 day**	**Sun 16/03/25**	**Sun 16/03/25**		**100%**	**Complete**	
35	✓	5.1	Drafting Introduction	0.25 days	Sun 16/03/25	Sun 16/03/25	Business Analyst	100%	Complete	
36	✓	5.2	Specifying Scope	0.25 days	Sun 16/03/25	Sun 16/03/25	Business Analyst	100%	Complete	
37	✓	5.3	Defining Deliverable	0.25 days	Sun 16/03/25	Sun 16/03/25	Business Analyst	100%	Complete	
38	✓	5.4	Identifying Stakeholder	0.25 days	Sun 16/03/25	Sun 16/03/25	Project Documentation Manager	100%	Complete	
39	✓	**6**	**Planning Operation and**	**1 day**	**Mon 17/03/25**	**Mon 17/03/25**		**100%**	**Complete**	
40	✓	6.1	Compliance and Regulatory Check	0.5 days	Mon 17/03/25	Mon 17/03/25	Quality Assueance Lead	100%	Complete	
41	✓	6.2	Analyse Project Risk	0.5 days	Mon 17/03/25	Mon 17/03/25	Solution Consultant	100%	Complete	
42		**7**	**Gateway One Report**	**13 days**	**Tue 18/03/25**	**Sun 30/03/25**		**92%**	**On Schedule**	
43	✓	**7.1**	**Project Introduction**	**2 days**	**Tue 18/03/25**	**Wed 19/03/25**		**100%**	**Complete**	
44	✓	7.1.1	Drafting Introduction	2 days	Tue 18/03/25	Wed 19/03/25	Business Analyst	100%	Complete	
45	✓	**7.2**	**Project Specification**	**6 days**	**Thu 20/03/25**	**Tue 25/03/25**		**100%**	**Complete**	
46	✓	7.2.1	Project Brief Specification	1 day	Thu 20/03/25	Thu 20/03/25	Project Documentation Manager	100%	Complete	
47	✓	7.2.2	Engaging with Client	1 day	Fri 21/03/25	Fri 21/03/25	Project Manager	100%	Complete	
48	✓	7.2.3	Engaging Stakeholder	1 day	Sat 22/03/25	Sat 22/03/25	Project Manager	100%	Complete	
49	✓	7.2.4	Project Plan	3 days	Sun 23/03/25	Tue 25/03/25	Project Documentation M	100%	Complete	
50	✓	**7.3**	**Project Background**	**3 days**	**Wed 26/03/25**	**Fri 28/03/25**		**100%**	**Complete**	
51	✓	7.3.1	Conduct Case study	1 day	Wed 26/03/25	Wed 26/03/25	Lead Researcher,Solution	100%	Complete	
52	✓	7.3.2	Conduct Literature Review	0.75 days	Thu 27/03/25	Thu 27/03/25	Lead Researcher,Solution Consultant	100%	Complete	
53	✓	7.3.3	Existing Solution and Practices	0.5 days	Fri 28/03/25	Fri 28/03/25	Solution Consultant	100%	Complete	
54	✓	7.3.4	Regulatory and Compliance	0.5 days	Fri 28/03/25	Fri 28/03/25	Solution Consultant	100%	Complete	

Figure 2.2: Project Schedule 2



ID	Task Mode	WBS	Task Name	Duration	Start	Finish	Resource Names	% Complete	Status	Status Color
55		**7.4**	**Gateway One Review**	**2 days**	**Sat 29/03/25**	**Sun 30/03/25**		**37%**	**On Schedule**	
56	✓	7.4.1	Review Gatway one	0.08 days	Sat 29/03/25	Sat 29/03/25	Project Manager,Business	100%	Complete	
57	✓	7.4.2	Documenting	0.5 days	Sat 29/03/25	Sat 29/03/25	Project Documentation M	100%	Complete	
58		7.4.3	Gateway One Submission	1 day	Sun 30/03/25	Sun 30/03/25	Project Manager	0%	On Schedule	
59		**8**	**Gateway Report Two**	**30 days**	**Mon 31/03/25**	**Sun 4/05/25**		**0%**	**Future Task**	
60		**8.1**	**Report Update**	**6 days**	**Mon 31/03/25**	**Sun 6/04/25**		**0%**	**Future Task**	
61		8.1.1	Gateway One Revision	2 days	Mon 31/03/25	Tue 1/04/25	Project Documentation Manager	0%	Future Task	
62		8.1.2	Introduction Enhancement	2 days	Wed 2/04/25	Thu 3/04/25	Quality Assueance Lead	0%	Future Task	
63		8.1.3	Specification Enhancement	2 days	Fri 4/04/25	Sun 6/04/25	Quality Assueance Lead	0%	Future Task	
64		**8.2**	**Prototype Implementatio**	**22 days**	**Mon 7/04/25**	**Fri 2/05/25**		**0%**	**Future Task**	
65		8.2.1	Defining Solution	6 days	Mon 7/04/25	Sun 13/04/25	Solution Consultant	0%	Future Task	
66		8.2.2	Creating Prototype	9 days	Mon 14/04/25	Thu 24/04/25	Solution Consultant	0%	Future Task	
67		8.2.3	Prototype Simulation	2 days	Fri 25/04/25	Sun 27/04/25	Solution Consultant	0%	Future Task	
68		8.2.4	Feasibility Study	2.5 days	Mon 28/04/25	Wed 30/04/25	Solution Consultant	0%	Future Task	
69		8.2.5	Value Proposition	2.5 days	Wed 30/04/25	Fri 2/05/25	Solution Consultant	0%	Future Task	
70		**8.3**	**Gateway Two Review**	**2 days**	**Sat 3/05/25**	**Sun 4/05/25**		**0%**	**Future Task**	
71		8.3.1	Review Gateway	0.17 days	Sat 3/05/25	Sat 3/05/25	Project Manager,Business	0%	Future Task	
72		8.3.2	Documenting	0.5 days	Sun 4/05/25	Sun 4/05/25	Project Documentation M	0%	Future Task	
73		8.3.3	Gateway Two	0.5 days	Sun 4/05/25	Sun 4/05/25	Project Manager	0%	Future Task	
74		**9**	**Project Pitch**	**19 days**	**Mon 5/05/25**	**Mon 26/05/25**		**0%**	**Future Task**	
75		**9.1**	**Report Update**	**6 days**	**Mon 5/05/25**	**Sat 10/05/25**		**0%**	**Future Task**	
76		9.1.1	Gateway Two	1.33 days	Mon 5/05/25	Tue 6/05/25	Project Documentation Manager,Project	0%	Future Task	
77		9.1.2	Finalise Repo	2 days	Fri 9/05/25	Sat 10/05/25	Project Documentation M	0%	Future Task	
78		**9.2**	**Prototype Enhancement**	**5 days**	**Sun 11/05/25**	**Thu 15/05/25**		**0%**	**Future Task**	
79		9.2.1	Finalise Prototype	1.5 days	Sun 11/05/25	Mon 12/05/25	Solution Consultant,Quality	0%	Future Task	
80		9.2.2	Final Prototype	1 day	Thu 15/05/25	Thu 15/05/25	Solution Consultant,Quality	0%	Future Task	
81		**9.3**	**Presentation**	**8 days**	**Fri 16/05/25**	**Mon 26/05/25**		**0%**	**Future Task**	

Figure 2.3: Project Schedule 3

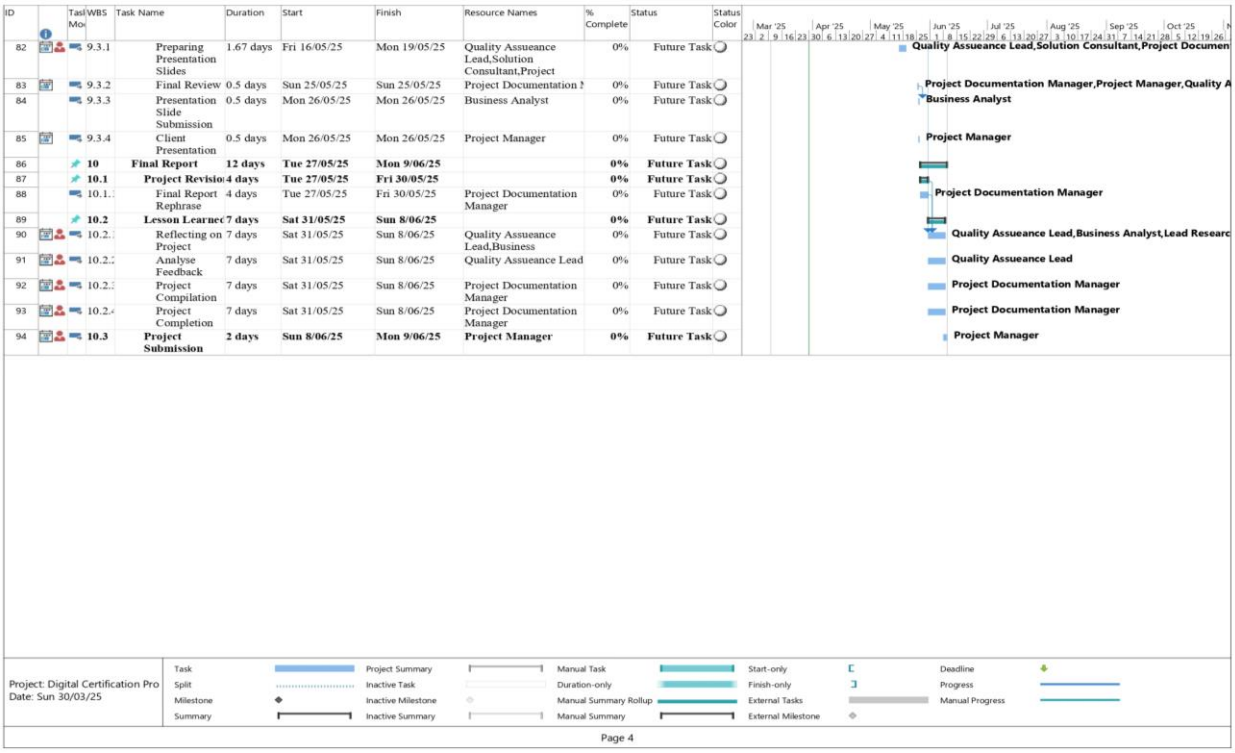


Figure2.4: Project Schedule 4

Background

The following sections offer the client an overview of current case studies within the industry. These case studies highlight how blockchains have been used to generate digital certificates for students.

Blockchain is a specialized database that organizes data into blocks, which are securely linked together in a continuous chain. Each block contains a cryptographic hash generated from its data, along with unique information such as a timestamp, ensuring a secure connection between blocks. This cryptographic structure enhances security and makes the system resistant to tampering. Additionally, blockchain operates on distributed technology, further strengthening its integrity and reliability (Murugavel et al. 2023). Below are some of the case studies integrating blockchain in the education field.

Case A- Massachusetts Institute of Technology (MIT)

The Massachusetts Institute of Technology (MIT) introduced its digital diploma initiative using BlockCerts, an open standard for blockchain-based digital certificates (MIT Media Lab, 2017). This system enables students to securely receive, store, and share their diplomas. By leveraging blockchain technology, BlockCerts guarantees authenticity and safeguards against tampering. Graduates receive a unique, verifiable credential that employers

and institutions can independently authenticate without the need for a centralized authority (Durant and Trachy, 2017).

Suitability

- **Similarities –** MIT's proposal centres on the digital ownership, security, and verifiability of academic credentials, much as RMIT's planned digital certification system. Regarding professional networking sites such as LinkedIn, both seek to give students shareable, tamper-proof certifications.
- **Differences –** MIT employs blockchain-based BlockCerts, RMIT's suggested approach might look into other decentralised digital certification technologies like NFTs. While RMIT's proposed system seeks to validate abilities and skills rather than complete diplomas, MIT's model focusses primarily on awarding degrees.

Benefits

- **Secure and tamper-proof**: Blockchain makes sure that certificates are legitimate, preventing fraud.
- **Verifiable anywhere**: Without contacting MIT, employers can quickly confirm credentials**.**

Drawbacks

- **Complexity of Blockchain:** Demands that educational institutions and students comprehend digital wallets and blockchain technology.
- **Insufficient scalability**: Micro-credentials and skill-based prizes are less appropriate than degree-level qualifications.

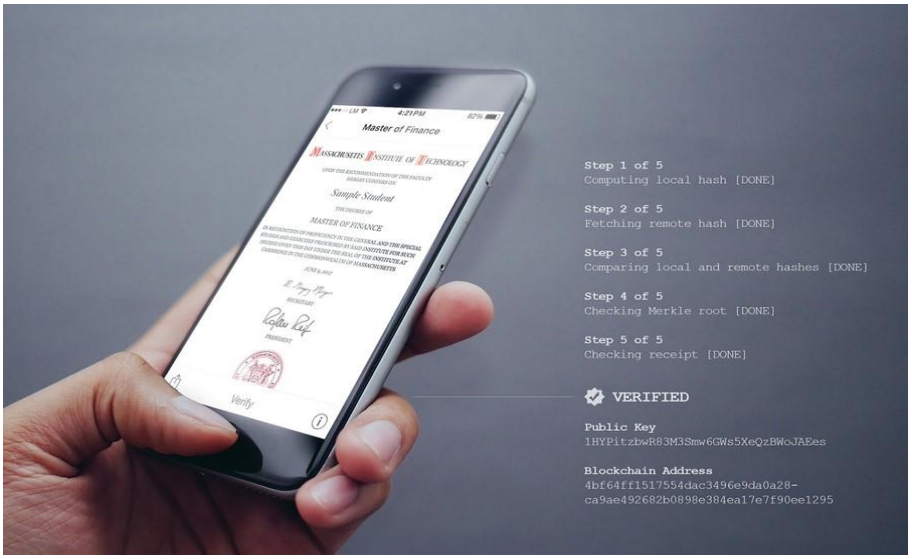


Figure 3.1: – MIT Digital certificate verification

Figure 3.2: MIT Certificate

Case B – IBM Digital Credentials

Students completing IBM-certified courses, IBM created a blockchain-based digital credentialing system that allows them to receive verifiable digital badges. The program, which focusses on talent validation and lifelong learning, allows users to post their credentials on employment sites and LinkedIn with the assistance of Credly, a platform for issuing and managing digital badges. (Kaplan, 2019).

Suitability

- **Similarities –** RMIT digital certificate system and IBM share the goal of giving students safe, verifiable credentials. Blockchain technology guarantees tamper-proof credentials that are compatible with professional networks such as LinkedIn. The goal of both systems is to give students control over their credentials so that employers can more easily verify them.
- **Differences**- IBM's system prioritises professional talents and industry certifications over academic credentials. The suggested system from RMIT may grant capability-based credentials across different educational phases, whereas IBM's badges are skills-oriented and given out after finishing particular courses. Additionally, RMIT may consider a broader choice of platforms or even NFTs for storing and exchanging credentials, while IBM's approach leverages Credly as a platform.

Benefits

- **Ownership and Control:** Students are in complete control of their credentials, enabling them to share and modify them as they see fit on various platforms.
- **Recognition**: Employers greatly respect IBM badges, which can improve students' employment chances.

Drawbacks

- **Dependency on Third-Party Platform:** Using Credly as a middleman could add more levels of complexity and reduce the amount of customisation options available for the credentialing process.
- **Technology fragmentation**: Students' and institutions' experiences may become fragmented because of IBM's utilisation of several platforms and technologies, including blockchain and Credly. The dependence on several external tools may provide integration and user experience issues.

Figure 4: IBM Digital Badge

Case C: Open University UK

Self-Sovereign Identity (SSI) and Verifiable Credentials (VCs) have been incorporated into the Open University's (OU) digital certification system in UK. SSI is a decentralised identity management system that lets people manage and control their own online personas independently of centralised authorities. To securely issue and validate digital credentials, the OU makes use of blockchain technology. This technology allows students to take charge of their education and accomplishments, allowing them to safely and conveniently communicate their credentials with universities and professional networks.

Suitability

- **Similarities** – RMIT's objective of developing a safe, decentralised digital certificate system for students is in line with the OU's use of SSI and VCs. Both systems place a high value on students owning their credentials and emphasise the ease with which certificates can be shared for networking and employment.
- **Differences** – RMIT's system may use other technologies, including NFTs, to validate abilities and accomplishments across a range of academic programs, whereas the Open University uses SSI and VCs, which concentrate on identity verification and credential

authenticity. Furthermore, RMIT may choose a more centralised architecture whereas the Open University stresses a self-sovereign approach where students directly control their data.

Benefits

- **Decentralised Control**: SSI promotes privacy and data sovereignty by guaranteeing that students own and manage their credentials independently of a central authority.
- **Flexibility and Scalability**: The system is perfect for wide range of academic programs and the possible addition of both degree-based and capabilities-based credentials because it can be scaled for micro-credentials or skills-based certificates.

Drawbacks

- **Adoption & Integration Difficulties:** Although SSI provides decentralisation, it might take some time to be widely adopted and integrated with other systems, such as employer platforms and other educational establishments.
- **Initial Setup Complexity**: SSI and VC adoption may need a large investment of time and energy to build up infrastructure, train teachers and students, and guarantee broad platform compatibility across stakeholders.

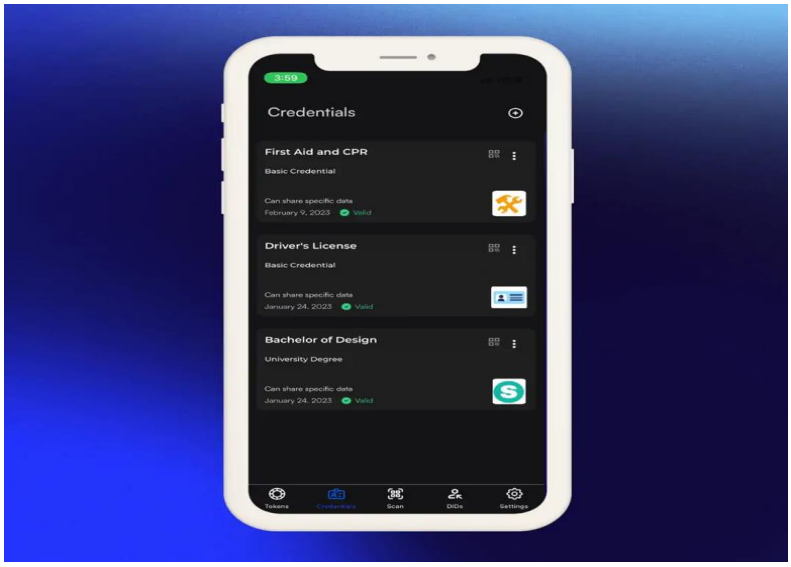
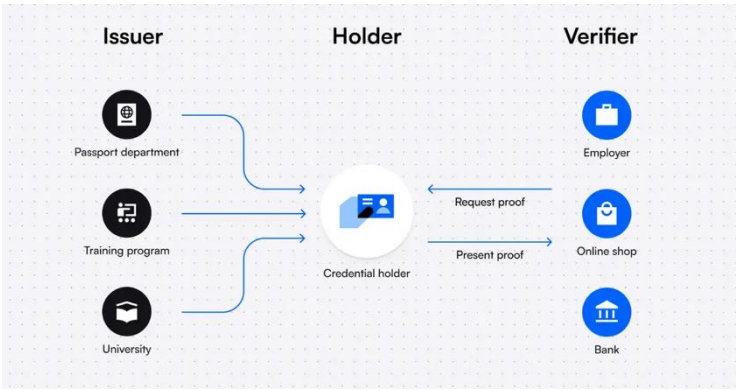


Figure 5.1: Open University Credentials



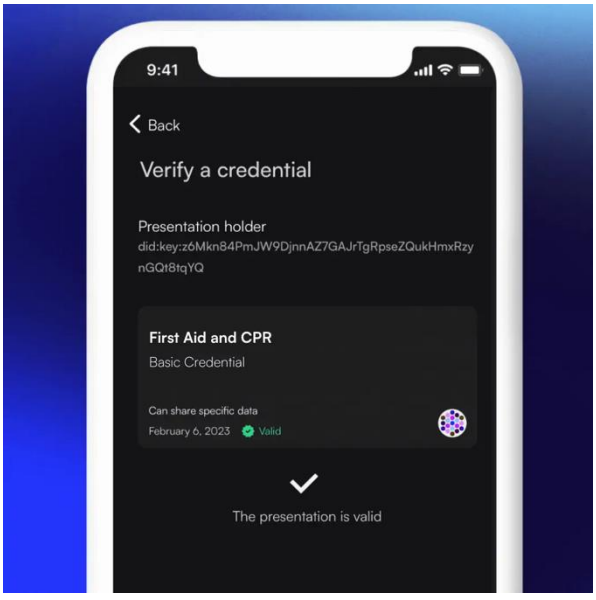


Figure 5.2: Open University Credential process

	MIT	IBM	Open University - UK
Technology Used	Blockchain (BlockCerts)	Blockchain (Hyperledger Fabric)	Self-Soverign Identity (SSI) and Verfiable Credentials (VCs)
Credential Type	Degree-level diplomas	Employee certifications and digital badges	Academic credentials including micro-credentials and skills-based certificates
Key Features	• Shareable on digital platforms like LinkedIn • Tamper-proof diplomas • Digtial ownership	• Blockchain based digital certificated • Integrate with workforce development	• Decentralized identity • Blockchain-based VCs for verification • Student-controlled credentials
Scalability	Focusing on degree/diploma level. Less suitable for micro-credentials	Wide range of corporate certification	Highly scalable for micro-credentials and diverse educational programs
Benefits	• Easy sharing for employment opportunities • Secure and tamper-proof • Verifiable anywhere	• Secure and verifiable credentials • Scalabale across organizations	• Decentralized identity • Full control for learners • Secure credentials
Drawbacks	• Unsuitable for micro-credentials • Complexity in understanding blockchain	• Requires integration with exisiting systems • Designed for corportate	• Requires understanding of SSI and blockchain • Adoption challenges across instituions and employers.
Suitability for RMIT	Provides secure digital certifications but needs more flexibility for micro-credentials	Less suitable for academic, can be considered for internal RMIT certifications	Offers a flexible, student-controlled approach to digital credentials, suitable for RMIT's capabilities-based certification system.

Figure 6: summary table

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