

HOW TO USE THIS TEMPLATE

An Introductory Point

This template is not designed to provide a full project Quality Management Plan (QMP). It only includes sections that will be pertinent to the assignment. If you want to see what a proper QMP looks like, you can generally find free simplified copies on the internet. Additionally, most major organisations have their own standards for these, so you would typically use theirs when you need to develop one for that company.

The project QMP would be created during the Planning Phase of the project. The intended audience is normally the Project Sponsor, Project Manager, project team, and stakeholders whose support is needed to carry out the plan.

Using this Template

Firstly, after downloading this template from the LMS, make a copy on your computer using the conventions discussed in the Assignment 2 instructions.

As discussed above, this template provides some of the standard types of information that you can expect to find in a QMP. Text that is provided in black Times New Roman font, will remain in your final version. You will need to add the information that is required to deliver the material requested for each section of the QMP. These requirements are defined using blue font text shown in square brackets (e.g. [these are the instructions for the information that you need to include]). Read these instructions carefully, before you do your drafting, as they provide important hints and guidelines.

When drafting your responses for each section, the key is clarity and the level of thought that you have put into assessing the issues. Consequently, you do not need to provide long detailed prose. Clear, well-thought-out dot-points will be better in most situations.

Once you have drafted the required content, you should remove the [blue font instructions] so your draft would then be ready to be forwarded to the Project Sponsor for final approval (as simulated by uploading this into the LMS). Additionally, you should remove the information on this page, so your response just starts with the Introduction on the following page.

In practical terms, once you have completed the draft (by taking the preceding steps) and the other required documents, these should be uploaded to the LMS, in accordance with the Assignment 2 Information instructions.

Apart from the changes discussed in the preceding elements on this page, you must not change this template. This reflects real-world imperatives. Companies generally want you to conform to the templates that they provide. Therefore, get used to utilising standard templates now.

1 INTRODUCTION

1.1 Purpose of the Project Quality Management Plan

This Project Quality Management Plan (QMP) documents the necessary information required to effectively manage quality issues from project planning to delivery. This QMP, therefore, defines the EduStream project's quality policies, procedures, criteria, areas of application, and the roles, responsibilities and authorities allocated to involved stakeholders.

1.2 Objective

The objective of this QMP is to help ensure that the EduStream project is delivered in accordance with the identified specifications, so it satisfies stakeholder requirements. Additionally, it is intended that this QMP, and the associated procedures, will reduce the cost of quality, by helping to avoid costly re-works, cost non-conformity, deficiencies, unnecessary future maintenance and repair costs. In practice, this means that the quality approach defined in this QMP aims to help ensure that the project will be completed successfully, and in-line with identified success criteria detailed in the associated project documentation.

Quality management for this project shall focus on project Quality Assurance (QA) and Quality Control (QC) (*including service quality from the Service Desk*) and Document Control (DC). Project QA will, therefore, be concerned with improving our joint processes. DC will manage the documentation processes under the overarching requirements for QA. QC is focussed on what is delivered (*in line with the defined specifications and requirements*).

2 PROJECT SCOPE

The EduStream project is an ambitious initiative to develop a comprehensive streaming platform, providing users easy access to various educational content, including videos and interactive games. To successfully achieve this goal, the project will involve the collaboration of eight specialised groups, each contributing their expertise to various aspects of the project.

The Web Development Group, led by James Wasley, Project Manager, will focus on creating the front-end user interface, ensuring a user-friendly experience that allows users to navigate the platform and access content easily. In parallel, the Client Database Group will be managed by Jin Cherng Chong, EdMI Quality Team Manager (QTM), and they will develop a secure and efficient database system to store user information, manage access control, and enable personalised content recommendations.

The Video Streaming Group, led by Nicholas Caruso, Quality Lead StreamTech, will be tasked with implementing the Open Connect Appliances (OCAs) to ensure the efficient streaming and delivery of video content to users while optimising the video format and compression for optimal performance. The Games Development Group, led by Steve Jobs, Quality Lead DemSet, will manage the development and integration of educational games, working to ensure seamless streaming and secure access controls through the implementation of software tokens.

To monitor and optimise system performance, the System Health Management Group, led by Bill Gates, EdMI Test Manager (TM), will develop a monitoring and management solution to track the performance and utilisation of the various components within the CDN nodes, enabling load sharing. Meanwhile, the Client Application Development Group, led by Roy Clark, StreamTech Test Lead, will create the client application, ensuring compatibility across various devices and operating systems, including Android, Apple, and smart TVs, while integrating the necessary codecs and control interfaces for a seamless user experience.

The Network Engineering Group, led by Pardeep Kaur, DemSet Test Lead, will focus on establishing reliable and high-speed network connections between the clients and CDN nodes, ensuring consistent performance and efficient content delivery. Lastly, the Security Group, led by Catherine Dobbs, DCPlus Quality Manager (QM), will be responsible for implementing a comprehensive security strategy, encompassing physical security, secure network connectivity, application security, and database encryption to protect user data and maintain the platform's integrity.

Throughout the project, Rajiv Singh, MBSD Quality Lead (QL), will oversee the overall quality aspects and ensure adherence to quality standards. Angele Smith will serve as the EdMI Document Controller (DC) to manage project documentation, and Dan Hill will be the JP-Media Client Support Manager, responsible for client support and communication.

The project will involve the development of a client application and establishing three Pilot Content Delivery Network (CDN) nodes in Perth, Sydney, and Melbourne. As the project progresses, additional capabilities such as load sharing, batch updates, and database replication will be implemented, ensuring consistent performance across all nodes and accommodating future growth. Once the pilot sites have been tested and refined, the EduStream system will be ready for further expansion through the deployment of additional nodes as needed.

To ensure stakeholder satisfaction, the project will track and evaluate its financial performance using Earned Value Management (EVM). EVM results, including profits and targeted outcomes for stakeholders, will be regularly analysed and reported to provide insights into the project's financial success and its alignment with stakeholder expectations.

In keeping with the ambitious yet feasible timeline set out for this project, the transition from the project phase to the full operational environment for the EduStream platform is planned for December 15, 2023. This date marks the full market opening and the beginning of the platform's availability to educational institutions and students nationwide. It's important to note that this transition represents the culmination of extensive collaborative efforts, risk management, and adherence to relevant standards and laws, thus facilitating a smooth shift to the operational phase.

In summary, the EduStream project represents a forward-thinking initiative to revolutionise how users' access and engage with educational content. Through the combined efforts of the eight specialised groups and the careful consideration of various technical, network, and security requirements, this project aims to deliver a high-quality, scalable, and secure platform that will bring the world of education to the fingertips of users everywhere.

3 PROJECT QUALITY OVERVIEW

3.1 Specific Roles in the Organisation

The Project Quality Management Team (QMT) will be a part of EdMedia International's (EdMI) EduStream Project Office (PO). The personnel listed in Table 1 will be responsible for implementing Quality Assurance (QA) (including DC) and Quality Control (QC) across the entire team. Contractors will be responsible for ensuring that EdMI's mandated QA and QC procedures are implemented effectively, in conformance with the requirements specified in the engagement contracts. The relationships between each of these roles are discussed in more detail within Section 3.3.

Table 1: EduStream Project – Project Quality Team Members

Project Quality Team Members		
Name	Role	Responsibilities
James Wasley	Project Manager	<p>Oversee the Quality Management Team's (QMT) activities and ensure that these procedures and methods reflect appropriate best practices.</p> <ul style="list-style-type: none"> - Choosing the appropriate individuals and companies/vendors for the project by conducting interviews and making careful selections. - Providing updates on the project's status and development to the project sponsor and board ensuring that the project is effectively organised, executed, tracked, managed, and completed. - Identifying and evaluating any potential project risks and takes steps to manage them. - Managing any potential issues that may occur in other roles. - Making sure that the project achieves important milestones and meets established deadlines. - Accountable for ensuring that each project member fulfils their designated responsibilities while also promoting active participation from all members. - Responsible for setting and establishing the goals and targets of the project. - Foresees and is responsible for meeting schedules, organising, preparing important project documents and submission. - To estimate and predict the total expenses and financial resources required for the project.

Project Quality Team Members		
Name	Role	Responsibilities
Jin Cherng Chong	EdMI Quality Team Manager (QTM)	<p>Responsible for coordinating the implementation of all aspects of QA and QC across the entire team.</p> <ul style="list-style-type: none"> - Making sure that each business function meets the required standards for auditing and quality control. - Accountable for providing all necessary reports to the project manager. - Responsible for managing the entire production process of EdMI's products and services, from product design and pricing to ensuring quality control and high-quality assurance. - Satisfying customer product needs and requirements whilst also addressing high-level escalation and complaints. - Foreseeing and identifying areas where training is needed. - Accountable for ensuring that EdMI's products and services meet high standards of quality from manufactures and vendors.
Nabeel Ashraf	EdMI QC Team Leader (QCTL)	<p>Responsible to the QTM for coordinating all QC related activities (<i>including system monitoring</i>).</p> <ul style="list-style-type: none"> - Responsible for reporting to the quality control manager and overseeing the quality team's production and management of internal and external guidelines. - Conduct thorough investigations of all QC incidents and provide the QTM with a detailed report of the findings. - The QC team leader is responsible for organising and coordinating team meetings. - Maintaining records of product quality and deciding how best to allocate resources for quality assessments.

Project Quality Team Members		
Name	Role	Responsibilities
Angele Smith	EdMI Document Controller (DC)	<p>Responsible to the QTM for the coordination, management and storage of the project and design documentation.</p> <ul style="list-style-type: none"> - Both digital and physical copies of the documents are appropriately labelled, arranged, processed, and stored. - Verify that all signatures on documents are authentic and correct. - Creating copies of important documents made by higher authorities and verifying that all files contain precise and corresponding information.
Nicholas Caruso	Quality Lead StreamTech	<p>Responsible to:</p> <ul style="list-style-type: none"> - The EdMI QTM for coordinating all QA activities; - The EdMI QCTL for all QC related activities; and - The EdMI DC for the development of all documentation, in line with EdMI's requirements; <p>associated with StreamTech's workshare.</p> <ul style="list-style-type: none"> - Collaborate with all stakeholders to ensure that everyone is well-informed, in agreement, and that all issues have been resolved. - Responsible for StreamTech project test plans. - Ensuring that the QA and QC team members adhere to the agreed standards and requirements, while meeting all customer requirements. - Incorporating technology viewpoints into board meetings. - Conducting and approving acceptance tests (AT).

Project Quality Team Members		
Name	Role	Responsibilities
Steve Jobs	Quality Lead DemSet	<p>Responsible to:</p> <ul style="list-style-type: none"> - The EdMI QTM for coordinating all QA activities; - The EdMI QCTL for all QC related activities; - The EdMI DC for the development of all documentation, in line with EdMI's requirements; <p>associated with DemSet's workshare.</p> <ul style="list-style-type: none"> - Create all necessary documentation for fulfilling EDM's requirements. - Modify software applications on a regular basis in accordance with established guidelines and standards. - Ensure that quality control standards and benchmarks are consistently monitored and observed.
Bill Gates	EdMI Test Manager (TM)	<p>Responsible to the EdMI QCTL for planning and implementing all aspects of testing across the entire joint team.</p> <ul style="list-style-type: none"> - Responsible for identifying and addressing any software glitches or problems discovered, ensuring they are resolved prior to the product's release. - Responsible for devising and executing a comprehensive testing strategy across the EdMI Quality Control and Testing Lab. - Ensuring that the system is functioning at its highest level of quality, performance, and reliability. - Developing a plan for testing work and allocating necessary resources to carry out the testing effectively.

Project Quality Team Members		
Name	Role	Responsibilities
Roy Clark	StreamTech Test Lead	<p>Responsible to the EdMI TM for planning and implementing all aspects of testing across StreamTech's (and their subcontractor's) developments/systems (including all aspects of Unit, Integration, System and Acceptance Testing).</p> <ul style="list-style-type: none"> - Ensuring that the testing methods being used are up-to-date and appropriate for the task at hand. - Accountable for devising a comprehensive project development plan that encompasses details such as project status, activities, available resources, budget, and relevant stakeholders. - Ensures that all materials meet appropriate dimensions and techniques standards.
Pardeep Kaur	DemSet Test Lead	<p>Responsible to the EdMI TM for planning and implementing all aspects of testing across DemSet's developments/systems (including all aspects of Unit, Integration, System and Acceptance Testing)</p> <ul style="list-style-type: none"> - Responsible for organising meeting with both the management team and stakeholders to strategies testing procedures and plans. - Establishing the criteria for measuring project performance, which will be utilised to focus on the project's objectives. - Managing and overseeing the testing team. - Reporting regularly to EdMI TM about the progress of work and if milestones have been reached. - Ensuring all equipment and materials are current and of high quality especially with their dimensions.
Catherine Dobbs	DCPlus Quality Manager (QM)	<p>The DCPlus Quality Manager is the point of liaison for coordinating QM issues related to the datacentres.</p> <ul style="list-style-type: none"> - Determines the KPIs and quality goals of the project and signs off on all quality checks.

Project Quality Team Members		
Name	Role	Responsibilities
		<ul style="list-style-type: none"> - Actively reports and updates everything to DCPlus Client Manager. - Accountable for constructing and directing the team towards accomplishing the project's goals while ensuring adherence to all quality standards. - Responsible for overseeing the projects annual budget. - Accountable to making sure everyone within the quality team is efficient, effective, and profitable. - Continuously gets involved with the design and use of products, actively making sure they meet the needs and requirements of the customers - Ensuring that the organisation is profitable. - Working directly with the Quality control policy. - Manages and resolves any issues or incidents that may occur within the quality department. - Accountable for testing the project and making sure project requirements are met.
Rajiv Singh	MBSD Quality Lead (QL)	<p>The MBSD QL will be the point of liaison and coordination for implementing the Quality systems developed by EdMI and implemented through the Service Desk.</p> <ul style="list-style-type: none"> - Examining and investigating all quality complaints made by stakeholders, following up on them, and keeping them informed of any changes or updates that may have happened as the project moved forwards. - Make certain that quality control requirements and benchmarks are consistently met. - Responsible for monitoring the team members to ensure that their work is of high-quality, and they are meeting the needs and standards that the customers expect.

Project Quality Team Members		
Name	Role	Responsibilities
		<ul style="list-style-type: none"> - Monitor, update, and review existing documentation to ensure that it is in line with the current EDMI requirements - Monitors software performance after implementation. - Evaluates software products and makes suggestions for improvement, representing the technical side of the project in meetings.
Dan Hill	JP-Media Client Support Manager	<p>The EdMI project team is responsible for educating JP-Media and their own Marketing Department about EduStream and its capabilities.</p> <ul style="list-style-type: none"> - Provide input on the design of the user interface to develop a user-friendly product that will attract a broad market audience. - Keep clients updated with information relevant to their needs. - Analyse customer service data to identify trends and areas of improvement. - Produce reports to assess whether the company's KPIs are being met and highlight any areas that could possibly need development. - Create and supervise the implementation of client service protocols - Work with internal and external stakeholders to ensure customer satisfaction - Actively check on customers' issues and attend to any disputes or worries in a promptly and professional manner.
Kate Lundy (Manager) Jim Davis (Salesperson) Doug Dundas (Salesperson)	EdMI's Marketing Manager & Marketing team	<ul style="list-style-type: none"> - Develop a mass marketing strategy for EduStream. - Responsible for educating JP-Media and EdMI's own marketing department on the EduStream product and its capabilities. - Manager working directly for the CEO.

Project Quality Team Members		
Name	Role	Responsibilities
Sue Ledger (Salesperson) Joe Bunnings (Salesperson)		<ul style="list-style-type: none"> - Monitor the progress of the campaign. - Inform customers on any new/upcoming product. - Invite any new and existing clients to the beta/acceptance testing. - Responsible for introducing the company to a larger market. - Regularly evaluating the project/company's sales and promoting all good sales. - Monitor customer activities and trends to identify new opportunities for growth. - Track customer feedback and use it to refine the products and services offered. - Analyse customer data to identify gaps in customer experience and plan strategies to improve it. - Working alongside experienced consultant team, which will help reach the right target audience and maximize the brands market presence encouraging the mass marketing of the products.
Bill Sykes	EdMI's legal and contractual expert	<ul style="list-style-type: none"> - Provides guidance on legal and regulatory compliance issues that might be applicable to the business. - Development of the End User License Agreement. - Aids in the contract development and negotiations with suppliers and contractors.
Don Lemon	EdMI Security Expert	<ul style="list-style-type: none"> - Working alongside the bylaws of the Privacy Act and finding appropriate solutions based on the Act. - Informing the board of any security questions they may have. - Supports the project with any Security issues that may occur throughout the duration of the project.
Pam Duggins	EdMI Educational Content Expert	<ul style="list-style-type: none"> - Aid in the development of media content within the streams.

Project Quality Team Members		
Name	Role	Responsibilities
		<ul style="list-style-type: none"> - Overseeing the customers engagements from the content. - Responsible to streaming content online. - Develops more content by working with programmers. - Specifically focusing on gaming/video-producing providers that make instructional videos and video games for learning. - Gaining feedback from customers and implementing their ideas.
Ben Dover	EdMI CIO & Project Sponsor	<ul style="list-style-type: none"> - Reports to the CEO for any ICT within EdMI. - Stepping in and checking up on progress if he has concerns that enough or accurate work is not being done. - Contacting either CEO or the Project Manager with anything relating to the project - Engages in negotiations with vendors and IT architecture stakeholders. - Responsible for overseeing short-term planning activities and documentation processes. - Implementing the project - Oversees the process of developing client service platforms and ensures their successful implementation.
Donna Jenner	EdMI CEO	<ul style="list-style-type: none"> - Daily executive management of EdMI - identifiable to track progress and success. - Formulates and executes the vision and mission of the company, ensuring alignment with organisational goals and objectives. - Overseeing and reviewing any reports handed to her. - Developing the company's overall short-term and long-term strategies. - Actively and consistently engaging in board communications. - Addresses the concerns and issues raised by employees, suppliers, and

Project Quality Team Members		
Name	Role	Responsibilities
		clients, ensuring timely and effective resolution. - Conducting performance analysis of executive leaders within the company to evaluate their effectiveness and success of the project goal.

3.2 Overview of the General Requirements [1M] Angel

Table 2 outlines elements of the key activities required to achieve the QA (including DC) and QC roles. Please note that this table only provides an overview and is not an exhaustive listing.

Table 2: EduStream Project – Roles necessary to achieve

Quality Assurance	& Document Control	Quality Control
<ul style="list-style-type: none"> ♦ Review material submittals and methods statements ♦ Verify compliance with quality criteria ♦ Evaluate inspection records ♦ Identify training needs ♦ Evaluate project records ♦ Conduct audits of project procedures 	<ul style="list-style-type: none"> ♦ Update project records and registers ♦ Receive and register relevant documents and upload these into the project Knowledge Base (as necessary) ♦ Distribute documents to stakeholders (as necessary) ♦ Develop and maintain other documentary or knowledge related materials (as necessary) 	<ul style="list-style-type: none"> ♦ Inspect materials and equipment as a part of the procurement and test processes ♦ Coordinate testing in accordance with the Test Plan and associated methods ♦ Produce appropriate checklists, forms and other records to facilitate testing ♦ Implement tests as outlined in Appendix 1.

3.3 Team Organisation and Lines of Responsibility [1M] Nabeel

The relationships between the roles outlined in Table 1 are illustrated in Figure 1. These relationships and the lines of authority/responsibility are discussed in the following paragraphs.

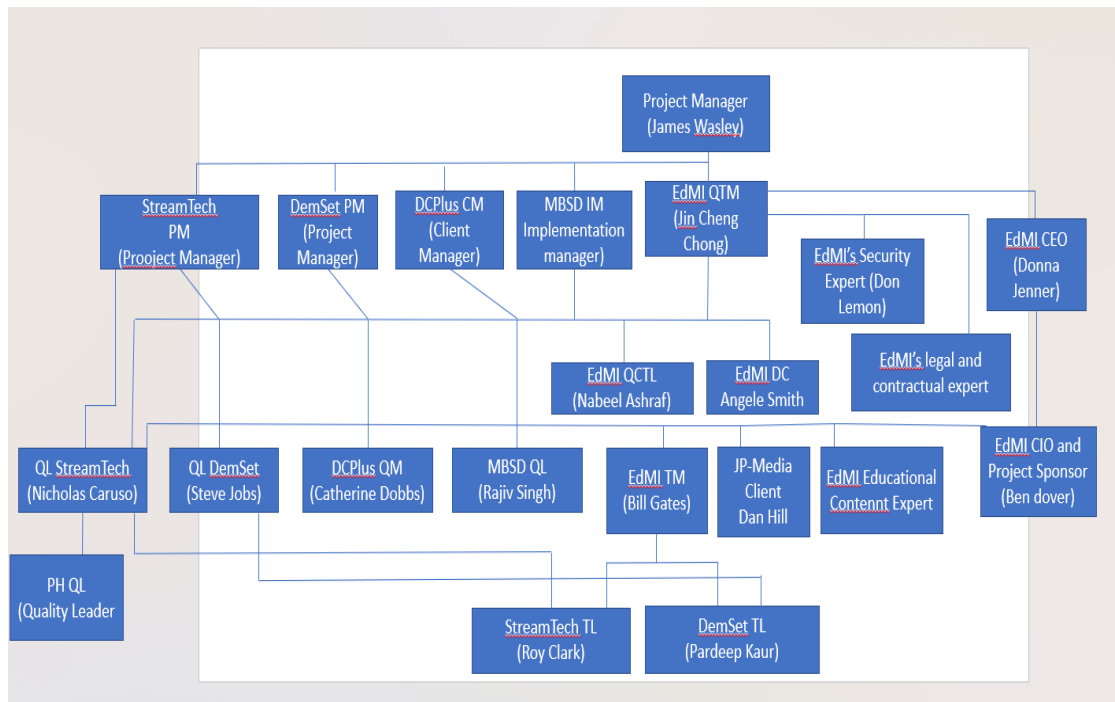


Figure 1: The EduStream Project Quality Management Team

In an organisational structure, authority and responsibility are the main ideas that develop connection between roles within a team or hierarchy. Authority is given to the specific role within the organisation to make choices, take command, and take action for the benefit of organisation. Responsibility, on the other hand means the requirement to carry out tasks to achieve the result required. The lines connecting team members in the organisational chart reflect the line of authority and duty. These lines represent relationships and authority within the team. Others higher in the hierarchy, such as the Project Manager (James Wasley), EdMI Quality Team Manager (Jin Cherg Chong), and EdMI Quality Control Team Leader (Nabeel Ashraf), have authority over others related to them at a lower level.

In the organizational structure, the following are some essential relationships associated with responsibility/authority:

1. Project Manager (James Wasley) has authority over the Quality Management Team (QMT) and oversees their actions and results. He is responsible for team coordination, creating goals, managing risks, making sure that milestones are reached, delivering updates to project sponsor and board members.
2. The Project Manager reports to the EdMI Quality Team Manager (Jin Cherg Chong). EdMI QC Team Leader (Nabeel Ashraf) and EdMI Document Controller (Angele Smith) report to him. He is responsible for Quality assurance and quality control activities, ensure the standards are met, managing the production and answering queries.
3. The EdMI Quality Team Manager reports to the EdMI QC Team Leader (Nabeel Ashraf). Has power over the members of the QC team. Coordination of QC activities, management of guidelines, investigation of occurrences, and allocation of resources for quality assessments are all responsibilities.

4. Angele Smith, EdMI Document Controller, reports to the EdMI Quality Team Manager. Coordination, management, and organisation of project and design documentation, guaranteeing correctness and proper storage.
5. The EdMI Quality Team Manager reports to Quality Lead StreamTech (Nicholas Caruso) and Quality Lead DemSet (Steve Jobs). Coordination of QA efforts, collaboration with stakeholders, incorporation of technical viewpoints, acceptability testing, and standard conformance are all responsibilities.
6. Bill Gates, EdMI Test Manager, reports to the EdMI QC Team Leader. Responsible for team testing strategy and implementation, discovering software flaws, executing testing methodologies, and guaranteeing high-quality system performance.
7. Roy Clark, StreamTech Test Lead, and Pardeep Kaur, DemSet Test Lead: Inform the EdMI Test Manager. They are in charge of planning and executing testing within their particular teams, as well as managing resources, reporting progress, and ensuring quality standards.
8. The EdMI Quality Team Manager reports to the DCPlus Quality Manager (Catherine Dobbs). Responsible for organising data centre quality management concerns, defining quality goals, supervising the team, and testing project requirements.

Escalation is the process of elevating difficulties or problems to a higher level in the organisational structure in order to speed up their resolution. It involves recognising when an issue cannot be solved effectively at the current level and seeking the assistance of persons with more authority or decision-making capacity. Escalation is critical in project management to ensure that problems are addressed quickly and efficiently, hence minimizing their influence on project progress.

Escalation is important for sustaining efficient problem-solving and communication procedures within the given organisational structure. It is the duty of each team member to escalate any problems that they cannot handle on their own to their immediate supervisor or the appropriate higher-level authority. This enables the application of the proper knowledge and decision-making authority.

For example, if the EdMI QC Team Leader (Nabeel Ashraf) discovers a quality control incident that needs more investigation or resolution beyond their skills, the issue would be escalated to the EdMI Quality Team Manager (Jin Cherng Chong). The QC Team Leader would submit a full report of the results to the Quality Team Manager, who would be in charge of assessing the situation, making informed judgements, and taking appropriate action. This escalation guarantees that the issue is addressed by someone with the required competence and decision-making authority, hence speeding up the resolution process.

Similarly, additional team members within the organizational structure can escalate problems within their individual spheres of influence. The idea of escalation promotes collaboration, where people know what their roles are and ask for help when they need it. It makes efficient decision-making possible and guarantees that problems are handled by those who have the necessary power and knowledge.

The organisational architecture facilitates effective communication and collaboration, allowing issues to be resolved quickly, by introducing a systematic escalation mechanism. It fosters a collaborative atmosphere where team members are aware of their roles and duties and collaborate to find solutions to problems.

4 PROJECT QUALITY MANAGEMENT

4.1 Project Quality Management Methodology

Figure 2 provides an overview of the Quality Management Methodology (QMM) that will be applied to successfully deliver the EduStream project. This methodology is explained in more detail within the following paragraphs of this section.

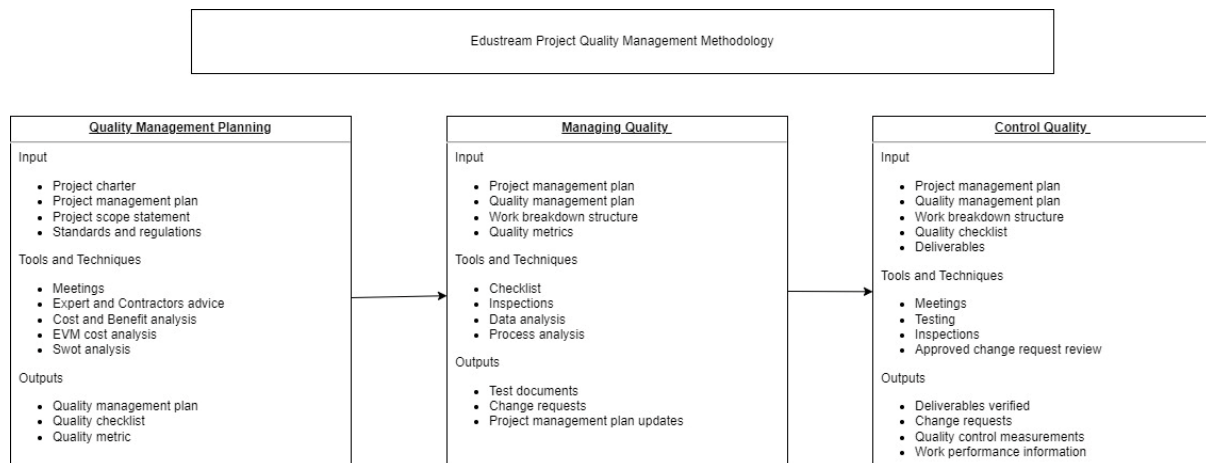


Figure 2: An overview of the EduStream Project Quality Management Methodology

Figure 3 illustrates the EduStream Project Quality Management Methodology. The figure covers the three steps to ensure that the project continuously meets or exceeds stakeholder expectations. These steps include Quality Management Planning, Managing Quality, and Control Quality. All three steps contain various inputs, tools and techniques, and outputs.

Firstly, EduStream Quality Management Planning covers defining and detailing acceptable standards and quality requirements that the EduStream project must uphold. Additionally, this step provides guidance on how quality is to be managed and controlled. Completing this step helps establish general consensus among stakeholders and ensures consistency. In EduStream's case, one of the inputs is the project scope statement, which helps EdMI generate a quality criteria plan that aligns with achieving the agreed-upon items. For the EduStream project, quality planning likely involves the various contractors. For instance, the DemSet team reusing 30% of their existing code base would have likely been agreed upon during Quality Management Planning involving EdMI and DemSet.

The inputs for Quality Management Planning include the project charter and project management plan. These inputs are necessary as they help outline the relevant scope items in the EduStream project. To build consensus on the acceptable standards, meetings shall occur between various parties. The contractors for the EduStream project will also provide useful advice in setting appropriate standards. The output includes a quality management plan that will form the foundation for the latter two steps.

Secondly, the second step, Managing Quality, covers the implementation of procedures and activities to assess the quality and standards of the project. While some procedures outlined in the first step may be practical on paper, the actual implementation in this second step may highlight impracticalities and inefficiencies. In the EduStream project, demanding every

contractor to request Edustream's signature to proceed with a minor bug or issue resolution sounds good on paper. However, given the EduStream project has many contractors, it may not be ideal since it could create bottlenecks and inefficiencies for the contractors. The contractors may have to halt development and wait for a response regularly. Hence, the second step helps ensure the quality procedures and activities are practical.

The inputs for the Managing Quality stage include the work breakdown structure and quality metrics. The quality metrics were an output of the Quality Management Planning step. Both the work breakdown structure and quality metric help evaluate appropriate standards for the project. For instance, the WBS outlines the deliverables, and by identifying the deliverables, all the required measurements can be identified relevant to the deliverables. Once appropriate project quality standards are finalized, the output of test documents in this step can be formed.

Thirdly, the Control Quality step covers monitoring and controlling deliverables to ensure they meet the quality and standards outlined in the previous steps. Control quality generally spans from planning to post-close of a project life cycle. In the case of EduStream, control quality will start from submission to the board to formal pilot project closure. Within the control quality duration, the EdMI team will communicate with the various contractors to ensure the standards outlined are met. For example, DemSet contractors agreed with EdMI that their client database data replication system will leverage Oracle protocols. This step encompasses verifying whether the standard has been met by DemSet. Ideally, the verification is done by the EdMI team themselves or DemSet showing the feature.

The inputs for the Control Quality step include test documents and quality checklists. Both are useful tools in helping monitor and control deliverables' qualities and standards. Meetings are set up to enable the project test team to raise any deliverable quality or standard issues. The output for this step is ultimately the deliverables meeting the quality and standards outlined at the start.

4.2 Associated Documents

This Quality Management methodology is intrinsic to all elements of the project. Consequently, this QMP forms a part of the overall Project Management Plan, and is closely associated with the following EduStream project documents:

- a) Project Scope Management Plan,
- b) Project Requirements Management Plan,
- c) Project Schedule Management Plan,
- d) Project Cost Management Plan,
- e) Process Improvement Plan,
- f) Project Human Resource Management Plan,
- g) Project Communication Management Plan,
- h) Project Test Plan,
- i) Project Risk Management Plan,
- j) Project Procurement Management Plan,

- k) Project Stakeholder Management Plan,
- l) Project Financial Management Plan, and
- m) Project Health and Safety Management Plan.

5 PROJECT QUALITY STANDARDS

The quality standards listed in Table 3 shall be applied for the EduStream project.

Table 3: EduStream Project – Project Quality Standards

PROJECT QUALITY STANDARDS	
STANDARDS/LAWS/REGULATIONS TO BE APPLIED	EQUIPMENT/SYSTEMS/METHODS/ETC. TO WHICH THE STANDARDS/LAWS/REGULATIONS ARE APPLICABLE
<u>Project Management Standards</u>	
ISO 9001:2015 Quality management systems	All quality management processes within this project
ISO/IEC 21500:2012 Guidance on project management	Applicable to all aspects of the project planning, implantation, and monitoring.
ISO/IEC GUIDE 37:2012 Instructions for use of products by consumers	Applies to the documentation and guides for the EduStream.
ISO/IEC 27001:2013 Information technology - Security techniques - Information security management systems – Requirements	Applies to the security of the system in regard to safe keeping protected data. For instance, encryption methods and authentication protocols.
ISO/IEC 20000-1:2018 Information technology - Service management - Part 1: Service management system requirements	Applies to the EduStreams service management. This includes, issue tracking systems, incident response planning, and customer service workflows.
<u>Product/System Standards</u>	
Standard TCP/IP (Transmission Control Protocol/Internet Protocol)	Network connections between the clients and CDN nodes.
Real Time Streaming Protocol (RTSP)	Applies to the real time transmission of video and audio data.

PROJECT QUALITY STANDARDS	
STANDARDS/LAWS/REGULATIONS TO BE APPLIED	EQUIPMENT/SYSTEMS/METHODS/ETC. TO WHICH THE STANDARDS/LAWS/REGULATIONS ARE APPLICABLE
SO/IEC 23009-1:2014 Dynamic adaptive streaming over HTTP (DASH)	Applies to the development of the video streaming and game servers. For instance, HEVC H265,
ISO/IEC 27033-1:2015 Network Security - Part 1: Overview and concepts	Applicable to the network infrastructure of EdMI's project including the implementation of network connectivity by DCPlus
ISO/IEC 27701:2019 Privacy Information Management	This standard applies to the handling of personal data across the EdMI project
<u>Operating System Standards</u>	
Windows 7-10	Applies to all windows-based PCs
Apple Mac OSX Snow Leopard (10.6) to Catalina (10.15)	Applies to all Apple computers
Apple iPhone IOS3 to IOS13	Applies to all Apple iPhone users
Android OS Compatibility (2.0-Éclair to 10.0-Q)	Applies to all Android users
Smart TV Operating Systems	Applies to: Apple Tv, Android Tv, Samsung Tizen, WebOS
<u>Laws and Regulations</u>	
Broadcasting Services Act 1992 (Cth) https://www.legislation.gov.au/Details/C2019C00338	Broadcast scheduling, licensing, and compliance with regulations
Classification (Publications, Films and Computer Games) Act 1995	Content classification, compliance with age restrictions and content warnings
Competition and Consumer Act 2010 (Cth)	Pricing policies, fair trading, and consumer rights

PROJECT QUALITY STANDARDS	
STANDARDS/LAWS/REGULATIONS TO BE APPLIED	EQUIPMENT/SYSTEMS/METHODS/ETC. TO WHICH THE STANDARDS/LAWS/REGULATIONS ARE APPLICABLE
Copyright Act 1968 (Cth)	Content procurement, copyright permissions, and licensing
Education and Care Services National Law Act 2010	Development and broadcast of educational content, compliance with educational standards
Privacy Act 1988 (Cth)	Protection of personal data in the client database, handling of customer information
Spam Act 2003 (Cth)	Communication with clients via email or text message, compliance with opt-in/opt-out regulations

6 PROJECT TESTING

6.1 Introduction to Project Testing

The detailed project testing approaches, strategies, and techniques are explained in the associated Test Plans. However, the general principles that are applicable to this project include the information provided in the following subsections. The table in Appendix 1 also maps how key functional and non-functional tests will be implemented during the project.

6.1.1 Functional Testing

Functional testing is a crucial part of software testing, where test data is inputted into the program to assess and validate its outputs against the project's functional requirements and focuses primarily on testing the execution and behaviour of the software. In the EduStream project, several necessary functional tests can be utilised and applied to ensure the software operates correctly. Here are some examples of these tests:

- Unit Testing.** The primary objective of unit testing is to assess whether various independent units meet the required standards for practical use. Unit testing is a critical approach software developers employ to evaluate the functionality of various testable components within an application. These components range from hardware to unique codes, software and interfaces. Developers can identify and address software defects early by conducting unit tests, resulting in cost, time, and resource savings. Moreover, unit testing facilitates a comprehensive understanding of the testing code base, enabling developers to make timely modifications as needed. Additionally, unit tests serve as valuable project documentation, capturing the intended behaviour of the components. Furthermore, unit tests promote code reuse by incorporating code and tests into EduStream, a platform for managing software development. For example, in scenarios

where a streaming function relies on variables or objects that have not yet been created, unit testing compensates for this by utilising mock objects specifically designed for testing that certain section of code, which aids in identifying and rectifying any possible issues quickly and effectively.

- **Integration Testing.** This testing supports the integration of software elements, it is performed to examine the system as a unified whole. The primary objective of this test is to identify any potential issues that may arise when different modules are integrated with each other. For instance, in the context of EduStream, a specific scenario could involve the unlocking of content only after a customer logs in. The purpose of this test is to verify whether the intended logic functions properly, ensuring that educational content remains inaccessible until the customer successfully logs into the system. By conducting this test, the seamless integration and synchronisation between the login functionality and content availability can be validated.
- **System Testing.** This testing can only be done through WAN connectivity as the Edu teams are in different locations. It is a comprehensive full system test conducted by the QA team to ensure that all codes and functions within the software application function as intended. They would examine the compatibility and integration of different modules, components, and subsystems to verify their seamless interaction, and this testing also helps ensure a robust and reliable system that meets the expectations and requirements of its users. Several areas can be evaluated by determining the effectiveness of this type of testing in EduStream, including video streaming services, the database functionality, and the login page, which would produce error codes, redirect users to the correct page and many more. These aspects can indicate the overall system's performance and functionality.
- **Acceptance Testing.** This is the final stage of testing, a complete system test where the system is shown to the client, intended users or customers and tested against acceptance criteria followed by the user's feedback. The acceptance testing phase is crucial since, in this phase, the client's approval of the system takes place. The purpose of this test is to check and verify that the system is working as per the specifications to see if it is ready for the final delivery or if it still needs more alterations. EduStream clients can engage in various activities to assess the software's performance and make informed decisions regarding its approval. Clients can test the account creation process to verify its ease of use and accuracy. They can also evaluate the login functionality, ensuring the system securely authenticates users and grants appropriate access. Testing the playback of videos and games allows clients to assess the quality of streaming, smoothness of playback, and overall user experience. Furthermore, clients can test other specified requirements in real-time, ensuring that the software meets their expectations. By actively participating in these tests, clients can gain firsthand experience of the software's capabilities and functionality. Their feedback and observations are vital in determining whether the software meets their needs and requirements.

6.1.2 Non- Functional Testing

Non-functional testing is the evaluation of a software system's characteristics without consideration of how well it performs. These tests concentrate on evaluating the system's usability, security, performance, and other non-functional elements. Non-functional testing is

essential to the EduStream project's goal of ensuring that the software meets both user expectations and the necessary quality requirements.

There are matching non-functional tests that must be performed for each of the functional tests mentioned in the section before. The main categories of non-functional tests related to the EduStream project are as follows:

- Performance Testing:

Performance testing is done to assess how responsive, scalable, and stable the system is under different workload scenarios. It assists in locating any stumbling blocks, resource constraints, or performance problems that could harm the user experience. Performance testing can be used to evaluate EduStream's capacity to support numerous concurrent users, stream content effectively, and respond to user requests fast.

- Usability Testing:

Usability testing focuses on determining the system's usability and simplicity of use. It entails soliciting input from representative users in order to discover any usability flaws, confusing interfaces, or areas that need to be improved. Usability testing in the context of EduStream might include tasks such as navigating the platform, accessing material, managing user preferences, and providing feedback. The goal is to make the platform intuitive and accessible to the programme's intended users, who include students, teachers, and administrators.

- Security Testing:

Security testing is done to detect vulnerabilities, flaws, and potential threats to the security of the system. It entails evaluating the efficacy of security policies, authentication systems, data encryption, and protection against common security threats. Security testing is critical for EduStream in order to protect user information, restrict unauthorised access to educational resources, and assure data integrity and confidentiality.

- Compatibility Testing:

Compatibility testing determines whether a system is compatible with various contexts, gadgets, browsers, and operating systems. It guarantees that the EduStream platform operates without a hitch across a range of platforms and setups, giving consumers a constant experience. Compatibility testing aids in identifying any problems with hardware and software requirements so that the platform may be efficiently accessed by the largest user base.

6.2 Practical Implementation

6.2.1 Overview of the Testing Regime for the Client Software

As an example, of the practical implementation of this approach, this section provides an outline of the testing regime that will be applied for the development of the Client Software (Workstream 2).

Testing	Who	When	Where	How
Unit Testing	Streamtech	Throughout the development process	StreamTechs location at Sydney	Testing will be coordinated through an online project management tool that allows the Perth-based EdMI team to monitor progress in real time. Test results will be documented.
Hardware and Software Testing	StreamTech and EdMI	After hardware is set up and as software modules are developed, they will be tested immediately to catch any bugs early.	Both at Sydney and Perth	Hardware and software test cases will be developed and tracked using a shared online platform, allowing both teams to understand, execute, and assess the test results.
Integration Testing	Streamtech, DemSets, and EdMI	Once individual components have passed unit testing and the software components are ready to be combined.	Sydney and Melbourne (coordinated remotely)	Teams will coordinate using video conference calls and shared documentation, ensuring that test cases and results are effectively communicated across all teams involved. StreamTech will conduct this alongside DemSet's Web Team for thin-client deployments, and with EdMI for fat-client systems.
System testing	StreamTech, EdMI and DemSets	After successful integration testing, ensuring the entire system functions as intended.	At each team site in Sydney, Perth, and Melbourne	Done in simulated environments that mimic real-world deployment as closely as possible, at Sydney, Perth, and Melbourne locations. Testing will be coordinated through shared project management tools, with documentation of test plans, results, and any issues that arise.
Acceptance Testing	End users, school reps/clients	Once system testing is successful, and the systems are ready for production.	CDN nodes in DCPlus datacenters and the actual sites of use in various schools and remote communities.	EdMI will manage and coordinate the tests, with assistance and support provided to users/clients involved in the testing. Tests will be scheduled around the users'/clients availabilities (Considering factors such as school holidays.)

	Availability	Compatibility	Compliance	Configuration	Interoperability	Recoverability	Security	Performance	Regression	Usability
Unit										
Hardware	✓	✓	✓	?		?	✓	✓	?	?
Software (Including interfaces)	✓	✓	✓	✓		✓	✓	✓	✓	✓
Network/Connectivity	✓	✓			✓		✓	✓	?	
Integration										
Hardware	✓	✓					✓	✓		✓
Software (Including interfaces)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Network/Connectivity	✓	✓					✓	✓		
System										
Hardware	✓	✓	✓				✓	✓		✓
Software (Including interfaces)	✓	✓	✓		✓	✓	✓	✓	✓	✓
Network/Connectivity	✓	✓		✓			✓	✓		✓
Acceptance										
Hardware	✓						✓	✓		✓
Software (Including interfaces)	✓			✓	✓	✓	✓	✓	✓	✓
Network/Connectivity	✓			✓	✓		✓	✓		✓

The symbols in the cells of this table mean the following:

✓ or Yes = This type of test would normally be applied for this element of the testing regime

? = This type of test may be applied to this element of the testing (but it will be situation-dependent)

Blank = This type of testing is typically **not** done for this type of functional testing.