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## **BUSINESS CASE: SMALLWOOD RUGBY**

**TEAM EH 16**

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**DATE: 29.09.2021**

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LUKE	<b>SECTIONS 13-16 + APPENDIX D</b>
THEO	<b>SECTIONS 17-19 + APPENDIX B</b>
DYLAN	<b>SECTION 20-22 + APPENDIX C</b>



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## 1. EXECUTIVE SUMMARY

This business case's creation is in response to Smallwood Rugby's brief, who are looking for an automated program to assess the security of their network. The following business case defines how the Project Team (EH16) from Abertay University shall handle the creation and delivery of the program. The business case will also discuss Smallwood Rugby's current concerns, benefits for the company, and suggestions with justifications for this project. On top of this, the business case will discuss the general overview for the project and the Project Teams chosen way to confront the task.

### 1.1. Issue

Smallwood Rugby currently makes use of two Windows servers that provide software, file shares, and various Intranet sites for the company. As they only have two IT staff who are inexperienced in penetration testing, there are concerns about the security of their network. Currently, Smallwood Rugby is entirely uncertain about how secure their systems are and have no way to test this. Especially as the company looks to expand their network, this could have severe repercussions in financial and public relations terms. In order to check the networks security mechanisms and identify threats and vulnerabilities, Smallwood Rugby is looking for a fully automated security assessment with a report generated for a non-technical audience. With this program, the company can have fewer worries about the current status of their network and assist them in fixing any potential security concerns, reducing the demands placed on their hard-working IT staff.

### 1.2. Anticipated Outcomes

Creating an automated security assessment will give Smallwood Rugby the peace of mind that their sensitive data and network systems are protected from malicious attackers. It shall also reduce the stress on the IT staff, as it will be fully automated and create a readable non-technical report for them to continue with any necessary action. Smallwood Rugby will also take advantage of better security practices from its employees. For example, a password cracker will see if any user passwords are found in commonly used password lists, which are easily accessible for any attacker to exploit. Additionally, the program will note any additional devices connected to the network since the last scan or any of the devices have any noteworthy changes, such as hosting a web server. Finally, the report that the program will generate at the end of its cycle will be clear and concise for whoever is reading it, making it clear to the user what the main concerns for the network are.

### 1.3. Recommendation

As Smallwood Rugby currently has no security analysis software or staff trained in penetration testing, there is a wide field of security analysis to be done on their servers. In addition, the lack of network security leaves the project team with a broad scope of possibilities, as there is a lot that the company could focus on to improve its



security. After analysing the brief, several points were made clear to the project team, which have been outlined below:

- The report generated at the end of the program shall be non-technical, meaning the IT staff will be able to interpret it and make use of it
- The program shall be fully automated, giving the IT staff less work to ensure they are not overwhelmed with a lot of new responsibilities
- The program will also be flexible, allowing for the addition of new features or the removal of old features as the requirements of the client adapt

#### 1.4. Justification

Creating an automated security assessment is imperative for Smallwood Rugby, especially regarding concerns for GDPR, which puts a greater spotlight on companies to protect their users' data. If or when a breach is made public, the company shall come under greater scrutiny from the public eye, negatively impacting public relations. It is also vital to follow GDPR, as not doing so can result in a substantial fine. (either 4% of the annual turnover or 20 million euros, whichever value is more significant) (SuperOffice, 2021). The program is also the most efficient use of the company's time and resources. Rather than hiring penetration testers every time the company wishes to do a security assessment, an automated program means that Smallwood Rugby would only have to outsource the work if they were unsure how to deal with a particular vulnerability discovered by the program. Therefore this program aligns best with the company's objectives.

The creation of the software will have the following benefits:

- Users will feel more confident in using the network provided that they are aware the company is applying safe security practises
- The chances of being exploited by a malicious attacker are significantly reduced or, at the very least, would slow the attacker down, reducing their chances of success
- Awareness of any vulnerabilities the network may have, a problem cannot be fixed if there is no awareness of its existence
- Assisting the company to comply with GDPR and to avoid any fines due to non-compliance

#### 1.5. Team Experience

The team consists of six students currently undertaking their third year at Abertay University for Ethical Hacking. Our previous experience includes programming in various languages, including Python and C++. The teams' expertise also includes Web



Development, Network Analysis and Vulnerability Testing. These skills qualify the team to assist Smallwood Rugby with their needs. We can be contacted via teams or through our student emails; the client has access to both.

## 2. BUSINESS CASE ANALYSIS TEAM AND STAKEHOLDERS

### 2.1. Business Case Analysis Team

The Business Case Analysis team is as follows:

Role	Description	Name/Title
Project Manager	Responsible for the creation of the business case and the project team	Tomasz, Project Lead
Communication Manager	Responsible for the primary communication between the project team and the client.	Lukas, Project Team

### 2.2. Project Team

The project team consists of the following individuals:

Role	Description	Name/Title
Lead Programmer	Responsible for keeping the programmers on track and for doing a more significant amount of the code	Theo, Project Team
Lead Designer	Responsible for keeping the designer on track and for doing a more significant amount of the design of the project	Dylan, Project Team
Investigator	Responsible for completing research for the project (and assisting with other areas once the research is complete)	Evan, Project Team
Programmer	Responsible for assisting with the code of the project	Tomasz, Project Lead
Programmer	Responsible for assisting with the code of the project	Lukas, Project Team
Designer/Programmer	Responsible for assisting with the code of the project and responsible for assisting with the code of the project	Luke, Project Team

### 2.3. Client and External/Internal Stakeholders

As well as the client recorded below the following stakeholders have been identified:



Role	Description	Name/Title
Client	Sponsor for project	Smallwood Rugby (Colin McLean)

### 3. PROBLEM DEFINITION

#### 3.1. Problem Statement

Smallwood Rugby consists of an enthusiastic group of Architects that use Windows servers to assist them in their day-to-day operations, including file shares and several Intranet sites. There are currently two IT staff as a part of their workforce. Unfortunately, these employees have no experience in penetration testing, meaning that Smallwood Rugby would have to outsource any security assessments to a third-party penetration tester, which can be extremely costly. As Smallwood Rugby grows its client base, ensuring that their systems are secure and stable is vital. The UK Government released a survey this year stating that four out of ten businesses reported a cyber security breach or attack last year. (UK Government, Department for Digital, Culture, Media & Sport, 2021) It is more relevant than ever for Smallwood Rugby to ensure that their systems are protected from a security breach.

#### 3.2. Organisational Impact

Creating an automated security testing software will have several significant impacts on Smallwood Rugby, affecting the organisation, tools used, and processes followed.

**Roles/Responsibilities:** The IT group will be responsible for running the program and reporting on its results; however, due to the nature of the program, the effect on their day-to-day operations should be minimal.

**Processes:** Creating the Security Analysis software will reduce stress on staff as a whole as they will have reassurances that the company has obtained a good level of security. This project will also significantly reduce pressure on IT staff as they do not have to go out and learn a new skill; they will only have to learn how to use the software (which will be very simple as per the brief)

**Tools:** As this is a new piece of software, new tools will be installed onto the machine that Smallwood Rugby has made available for the Project team; however, these tools will be entirely automated by the software the Project team produces.



Software/Hardware: Along with the program and report, the Project Team will also recommend additional software/hardware that could be added to the project given more time and money to increase its effectiveness.

### 3.3. Technology Integration and/or Migration

As this business plan discusses the creation of a new piece of software, the team only has to look at the implementation of the software within Smallwood Rugby. The result of this is that there shall be an insignificant impact on day-to-day operations, as once the program is up and running and staff are trained on its usage, it will only be run whilst there is minimal stress on the network. Therefore, the software integration has been broken down into a phased approach:

Phase I: The Project team will conduct research surrounding similar automated security assessments and different programming libraries to assist the project team in replicating these.

Phase II: The Project team will then design a prototype of the front-end and the layout of the report to be handed to the client for feedback. This will assist the Project Team to ensure the product matches the clients requirements.

Phase III: The Project Team will begin the development phase, programming the Front and Back end with continuous feedback from the client to ensure the client is satisfied whilst also testing the product to ensure it meets the requirements.

Phase IV: A white-paper document shall be written up alongside the software to explain how it works and how the team got on with its creation. This will be given to the client alongside the software.

## 4. PROJECT OVERVIEW

The EH16 Project overview will provide details on exactly how this project addresses the business needs of Smallwood Rugby. This section will cover in detail the Project description, goals and objectives, project performance criteria, constraints, project assumptions, and major milestones.





#### 4.1. Project Description

The EH16 Project will produce a piece of software that will periodically review and report on the overall security of the network(s) and machine(s) in use by Smallwood Rugby. The use of this piece of software will be non-technically and will require no knowledge of Penetration Testing to operate.

The result of this project is greater machine and network security, less work required from the IT staff as the software runs in the background and is automatic, and a lower risk of data breach that could severely affect the business.

#### 4.2. Business Goals and Objectives

The EH16 Project supports many of Smallwood Rugby's business goals and objectives. These are listed in the following table, along with a description of how we meet these business goals / objectives.

Business Goal/Objectives	Description
Improve Staff Efficiency	Software is automated, freeing up IT staff to work on potentially more important issues.
Accurate Reports/Record Keeping	Software generates non-technical reports after running on a basis set by the user

#### 4.3. Project Performance

The table below details the key resources, processes, or services along with an expected business outcome in measuring the general performance of the EH16 Project.

Key Resource/Process/Service	Performance Measure
IT Resources	Autonomous software lets IT Staff better manage their time.
Network and Machine Maintenance	Decreased cost and less IT resources needed as software checks maintenance on a set basis automatically.



Key Resource/Process/Service	Performance Measure
Documentation/Reporting	Less staff resources and requirements as software will generate report.

#### 4.4. Project Assumptions

The following is a list of assumptions that apply to the EH16 Project. As the project progresses and develops, more assumptions may be identified and will be added to the list in accordance.

- Smallwood Rugby has a machine available, on which any software, such as Virtual machines, or tools can be installed.
- An azure machine will be provided throughout the duration of the project.
- Relevant Smallwood Rugby staff will provide feedback on the various prototypes presented to them throughout the duration of the project.
- Project has executive-level support and backing.

#### 4.5. Project Constraints

The following is a list of constraints that apply to the EH16 Project. As the project progress, more constraint may be identified and will be added to the list accordingly.

- Smallwood Rugby staff require the software to produce a non-technical output due to limited knowledge of Penetration Testing.
- Software requires an easy-to-use GUI.
- Final version of software needs to run suitably on one machine.

#### 4.6. Major Project Milestones

The table below shows the known major milestones of the project. As the project continues through its development, milestones may have their completion date changed.



Milestones/Deliverables	Target Date
Project Plan Review and Completion	15/12/2021
Start of Project	25/01/2022
Research Complete	01/02/2022
Design Complete	15/02/2022
Front End	22/02/2022
Back End	15/03/2022
Testing	29/03/2022
Final Documentation / Software Completion	12/04/2022

## 5. STRATEGIC ALIGNMENT

The EH16 Project aligns with Smallwood Rugby's business goals. By supporting these business goals, our Project will greatly benefit the company and help push it forward towards higher business goals.

Plan	Goal	Relationship to Project
2021 Smallwood Rugby Strategic Plan for Innovative Technology Solutions	Make use of new technology to benefit the company.	Software will automate previously manual tasks and do it more efficiently.
2021 Smallwood Rugby Strategic Plan for Professionalism and Integrity	Protecting client information gathered and stored by our company	Software ensures the overall security of the company's machines and network(s), drastically reducing the potential risk of client data being leaked/stolen.
2021 Smallwood Rugby Strategic Plan for Information Management	Improve documentation and record keeping.	Software automatically generates weekly reports in a consistent format.

## 6. COST BENEFIT ANALYSIS

The following table lists the expected costs and benefits that will come with the EH16 Project over the course of the first year. It details a projected net first year savings at the bottom of the table.



Action	Action Type	Description	First year costs (- indicates anticipated savings)
Purchase Software product and licenses	Cost	Investment required for EH16 Project. £63,360.00 pay for 6 project staff over the course of the 12-week project duration	£100,000.00
IT Staff no longer must handle security checks themselves	Saving	IT Staff currently spend 4 hours a week carrying out security checks, which the software will now automate. IT Staff are paid £12.00 per hour, resulting in £96.00 saved per week.	-£4,992.00
Installation of Software	Cost	Cost for IT group to install custom software	£5,000.00
Data Breach risk drastically reduced	Saving	Smallwood Rugby could be fined up to £17.5 million or 4% of their annual turnover, whichever is greater. In this case, £17.5 million would be fined in the event of a data breach.	-£17,500,000.00
Net First Year Savings			£17,399,992.00

The cost benefit table above shows a significant amount of money will be saved with the success of the EH16 Project. Increasing the security of the network and network will drastically reduce the risk of a data breach fine that could put an end to the business.

## 7. ALTERNATIVES ANALYSIS

The table below lists alternatives to the EH16 Project that were considered but ultimately rejected. It goes into detail on the exact alternatives suggested and the reason they were rejected.

No Project	Reasons For Not Choosing Alternative
Continuing without Penetration Testing software	<ul style="list-style-type: none"><li>IT Staff will have to conduct Pen Tests themselves without the necessary skills and taking up extra work time</li><li>Risk of potential data breach fine due to lack of thorough security checks</li><li>Lack of consistent, reliably weekly security reports</li></ul>
Alternative Option	Reasons For Not Selecting Alternative
Develop software internally	<ul style="list-style-type: none"><li>No qualified staff</li><li>Lack of resources</li><li>Cost of creating software internally is significant and time consuming</li></ul>



No Project	Reasons For Not Choosing Alternative
Alternative Option	Reasons For Not Selecting Alternative
Purchase licenses to penetration test / security software tools such as Nessus	<ul style="list-style-type: none"><li>• Tied into Yearly fees for licenses (Nessus minimum £2,938.12 per year)</li><li>• Lack of specific features requested, such as password checking and monitoring of changes on workstations.</li></ul>

## 8. APPROVALS

The following people whose signatures are below understand the full content and purpose of this document. A signature indicates that you approve of the project proposed and detailed in this document and that the next steps can be taken to progress the Project forward to the formal stage.

Approver Name	Title	Signature	Date
Colin McLean	Client (Smallwood Rugby), CEO		

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## **PROJECT MANAGEMENT PLAN: ETHICAL HACKING 16 PROJECT**

**TEAM ETHICAL HACKING 16  
LUKAS, EVAN, TOMAS, LUKE, THEO, DYLAN**

**ABERTAY UNIVERSITY  
DUNDEE, DD1 1HG**

**DATE: 14.12.2021**





## 9. INTRODUCTION

The Smallwood Rugby company has given permission to proceed with the Ethical Hacking 16 project, which has given Ethical Hacking 16 green light to go forward with the vulnerability assessment tool. The result of the project will be Security Analysis tool which will have many features, will be easy to use and create easy to read and understand reports for the users. The tool will increase the network vulnerability knowledge and will give ease of mind to the IT staff working at the Smallwood Rugby as they do not have any solution that would provide comparable results implemented. The Smallwood Rugby is a small architect company that employs 50 people. Only two people of the staff work in IT department and look after the network servers and are usually very busy. The company asks for a solution that would give them a ballpark idea about the security of their systems. With growing client base the Smallwood Rugby is forced to either pay every time for outsourcing penetration testing to a third-party penetration tester or pay for a development of security baseline application that the IT staff would be able to use. Apart from that the Smallwood Rugby already has the infrastructure to run aforementioned application on one of the computers in their network. The Smallwood Rugby company understands how important the security of their network is and how devastating potential data breach would be resulting in financial loss, reputational damage, operational disruptions, and legal ramifications. That is why they were looking for someone to develop automated tool to help and assist the IT department.

The software developed for the Smallwood Rugby will be multiplatform, will be able to run on any computer in the network and will offer many features including vulnerability scanning, scheduling option, tracking changes of devices on the network and create easy to read reports. The software will only need basic computer knowledge from the user in order to run.

[Implementation of the software will result in improved staff efficiency as the software will run automatically and potential savings of millions of pounds and reputational damage in case of data breach. Also the company will be able to create consistent and reliable security reports.

## 10. PROJECT MANAGEMENT APPROACH

Tomasz who is the Project Manager / Project Lead for the Ethical Hacking was given responsibility and authority over the project execution and management. The project team include six experienced Ethical Hacking students who are studying Year 3 at Abertay University at the moment. The team has experience in the fields of Penetration Testing, C++ and Python programming, Networking and Web Development. The team include:

Tomasz– Project Manager and Programmer – who is responsible for the creation of the business case and the project team and creating the software code.



Lukas– Communication Manager and Programmer – who is responsible for the primary communication between the project team and the client and creating the software code.

Theo– Lead Programmer – who is responsible for keeping the programmers on track and for creating most of the software code.

Dylan– Lead Designer - who is responsible for keeping the designer on track and for doing most of the design of the project.

Evan– Investigator - who is responsible for doing most of the research for the project and assisting other party members when research is done.

Luke– Designer and Programmer – who is responsible for assisting with the design of the project and creating code. Project planning will be performed by the project manager working with all the resources available. The project will have to be evaluated and accepted by the Smallwood Rugby and the company will be responsible for funding decisions.

The constraints and limitations that will be faced by the Ethical Hacking team include the fact that the team will have only 12 weeks to finish the project and the fact that the Smallwood Rugby IT department consists only of two people who do not have spare time. That means that the application will have to be fully automated and easy to use. The Graphical User Interface will have to be user friendly and the application's output will have to create reports that do not include very detailed information.

The process model that the team will follow will be the Prototype model as it is one of the best models for software development. It allows to create an early prototype of the software for the client to interact and receive feedback from the sponsor about the direction the project is going so that the next revisions can be done up to the final product. It also enables the team to gain an overall structure of the project software with less time and effort comparing to other process models. The communication manager Lukas and project manager Tomasz are both responsible for communication with the client company – Smallwood Rugby. The team is already familiarised with the work components so the Bottom-up approach will be used for estimating effort for individual work components.

The Bottom-up project means that the project will be broken down into smaller and deliverable tasks. The Bottom-up approach tends to work better for new projects where the final goal of the project is known but the team has never done this kind of project before. Also by using this approach the team has more power over the project because the Bottom-up projects usually are more democratic comparing to other approaches. The Bottom-up approach lets the team estimate how long each task will take and then calculate the length of the whole project based on these numbers.





## 11. PROJECT SCOPE AND MILESTONE LIST

The scope of the of the Ethical Hacking 16's project includes researching, designing, prototyping, development, writeup and transformation of the Ethical Hacking Network Analysis tool. The software will be created with Data Protection Act 2018 and GDPR laws (which state that the user has right to their privacy and the penalty for data breach is 20 million euros or 4% of the total annual worldwide turnover in the preceding year, whichever is higher) in mind and will follow ISO 9000 standard, which is defined as "a set of international standards on quality management and quality assurance developed to help companies effectively document the quality system elements needed to maintain an efficient quality system".

The project will be considered finished when the software will be installed on the computer in Smallwood Rugby network and the staff will familiarise themselves with on how to use the software. The software research, designing, prototyping, development and writeup will be done internally by the Ethical Hacking 16 team.

The table that is visible below this text shows the list of known major project milestones. As the project continues through its development the milestones may have their completion date changed. Any smaller milestones have been omitted from the table. In case of any delays that impact the project the project manager will be contacted immediately in order to put measures in place to allieviete to stick to the original milestone dates.

Milestone / Deliverables	Date
Project Plan Review and Completion	15/12/2021
Start of Project	25/01/2022
Research Complete	01/02/2022
Design Complete	15/02/2022
Front End	22/02/2022
Back End	15/03/2022
Testing	29/03/2022
Final Documentation / Software Completion	12/04/2022

## 12. WORK BREAKDOWN STRUCTURE (WBS)

The WBS for Ethical Hacking 16 Project is made of deliverable based work packages. Each of the workstream parts takes at least one week up to three weeks in case of Front End / Back End and Testing workstream. The schedule was created after consultation with all the team members and then consulted with the CEO of the Smallwood Rugby.



The WBS consist of three levels and is presented in tabular view:

Level 1. The project overall.

Level 2. Represent work packages / workstreams. Research, Design (Prototype), Front End, Back End, Testing, Writeup

Level 3. All the level two workstreams divided into smaller deliverables. The deliverables include: research on networking, research on vulnerability testing, research on scanning tools, research on GUI frameworks, designih GUI template, getting GUI template accepted by client, programming GUI using framework, getting GUI accepted by the client, implementing basic program functions, implementing additional features, testing scanning option, testing tracking changes, testing report generation, finishing writeup.

In case of the situation that the Cost Performance Indicator raises above 1.2 or drops lower than 0.8 the change request will be submitted to the project manager. The same applies to the Schedule Performance Indicator.

### **13.CHANGE MANAGEMENT PLAN**

Due to the small team working on this project, there is no formal change control process, and instead a close working relationship with the other members with valuable communication to make any change as easy to implement as possible. We use this three-step plan of identification, evaluation, and implementation, whenever possible.

#### **Step #1: Identification**

The member of the team wanting the change should first identify why the change is needed, the best way to implement this, and the repercussions of the changes. The requestor must minimise the issues that would arise from the change to the best of their knowledge. Then alert the team with this information.

#### **Step #2: Evaluation**

The team will discuss the changes put forth and the complications that may arise from them, they would see if the implementation suggested from the requestor is appropriate and if there is a detriment to the cost, risk, schedule, or scope and if that detriment is acceptable.

#### **Step #3: Implementation**

Once all members have agreed that the changes are doable, they will be added to our work schedules where appropriate to keep the project on track.

Due to the small team working on the project, there isn't any outside group to review changes to the project, hence it must all be done in our small group. Tomasz (project leader) will log all changes to the project and track the progress of each to verify the final product is of appropriate standard.



#### 14. COMMUNICATIONS MANAGEMENT PLAN

Our Communication Management Plan sets out the methods of communication for the duration of the project and includes a table with all planned communication and deliverables as well as a directory to all team members is included. Lucas, the Communications Manager will be the member planning most communications throughout this project.

Communication	Description	Frequency	Format	Organiser	Attendants
Status Update	Summary of the weeks progress	Weekly	Microsoft Teams	Lucas (Communication Manager)	Project Team, Client
Team Meeting	Meetings to review project progress and discuss Technical aspects	Semi-Weekly	In-person, Microsoft Teams	Lucas (Communication Manager)	Project Team
Monthly Review	Detailed encapsulation of current progress	Monthly	In-person	Tomasz (Project Manager)	Project Team, Client

##### *Team Directory:*

Name	Position	E-mail
Colin McLean	CEO of Smallwood Rugby	
Tomasz	Project Manager	
Lukas	Communications Manager	
Luke	Designer/Programmer	
Theo	Lead Programmer	
Evan	Lead Investigator	
Dylan	Lead Designer	

##### *Meetings:*

Meetings will happen twice a week, these will be scheduled the same days each week unless a member specifically requests a change. These will be used for verifying the assigned task are being completed and that the project is on target. Lucas (Communications Manager) will take notes of the meeting and share to the team members afterwards. The meetings will be held to the highest of standards with each member prioritising these meetings above all else.



#### *Microsoft Teams:*

MS Teams is the chosen platform for the majority of our communications and file sharing due to its ease of use, flexibility, and familiarity with all the team members. MS Teams is used for our Semi-Weekly Meetings as well as our team's status updates as it allows us to post our individual updates in a well organised thread. Our communications on MS Teams will always go out to the correct members as the groups have already been organised on MS Teams. All communications through MS Teams which is relevant to the project should be open to all members of the team, allowing for each individuals unique insight to the problems that may arise. Informal communications will most often happen through MS Teams; But should happen in a separate channel, making sure the vital information is always easy to access.

### **15.COST MANAGEMENT PLAN**

During the project, Tomasz (Project Manager) will be responsible for managing the costs of the project. He will be using PV (planned value calculations) and EV (earned value calculations) to manage our current progress and cost accounts. As well as these, beginning work on our work packages will also be tracked using the 25/75 technique to manage what has tasks have begun and what are finished.

Tomasz will also create control accounts to better manage our CPI (Cost Performance Index) and SPI (Schedule Performance Index). As a team, we have chosen if either our CPI or SPI have a deviation of 15% it will be discussed within the team, but with a deviation of 30%, this will result in the team quickly going to correct this and as well as discussions with Smallwood Rugby, if this cannot be resolved quickly, discussions on changing the scope or budget of the project will begin with our client, Smallwood rugby.

During our weekly meeting Tomasz will discuss the project team's current performance, to confirm all members are on task, as well as alerting to any potential deviation in our CPI or SPI. We will also alert the client, Smallwood Rugby, to any potential deviations in performance. During our monthly reviews. Tomasz will present our current cost deviations and we will discuss potential ways of getting back on track if we fall behind schedule. As well as a breakdown on our performance and earned value calculations will be presented to the Smallwood Rugby clients.

### **16.PROCUREMENT MANAGEMENT PLAN**

Due to the nature of this project, us as a team as well as the client (Smallwood Rugby) there should be no procurement required. However, in the event we need procurement, Lucas (Communications Manager) must discuss with the client if we could receive a possible budget. However, the client has already provided us with everything we should require for the project and could possibly provide us with what we require without needing procurement.

In the event of procurement, it is entirely the responsibility of Lucas (Communications Manager), this is to avoid stress and extra work to the rest of the team members. They will have to work with the entire project team to ensure that all the required goods and services are procured for the project. It is their responsibility to discuss this with the client, and they will decide if its worth the



time to create the resources needed or the cost to purchase them, Lucas will then discuss this with the appropriate vendors to get the required resource. Lucas will be responsible for the goods or services we have procured as well as reporting performance of the resource back to the vendor.

## **17. PROJECT SCOPE MANAGEMENT PLAN**

The project scope will be roughly defined through discussions with the client, who will be clarifying what their vision for the final project is. The scope will be further refined through feedback from the rest of the team, who will be expected to mention any strengths or limitations that could potentially expand upon or restrict the project the client wants. Discussions will then continue with the client until a realistic project scope is reached. This entire process should be completed in one meeting with the client.

Management of the project scope will be the responsibility of the team's Project Manager, as well as ensuring that all team members can complete the tasks required of them to satisfy the project scope. If the Project Manager finds that it is not possible for the team members to meet the project scope within the given time to the expected quality standard, then the Project Manager will have to call a meeting and attempt to find a way to meet the deadline. If they can't do so, they will have to meet with the client and either come up with an improved project scope which can be completed in the timeframe, or extend the timeframe in which the project has to be completed.

Progress towards achieving the project scope will be measured by ensuring that the team are meeting the milestones within the expected timeframe, as well as assessing the quality of the work that has been produced. If they are not meeting their milestones on time, or not meeting the expected quality standards, the Project manager will have talks with the team members causing the setbacks, and identify why they are happening. From there on they will attempt to discuss possible solutions with the team members so that the project can remain on schedule and at the expected quality standard.

Scope changes can be suggested to the Project Manager by the client, or any of the team members. If the change has been suggested by a team member, the Project Manager will assess whether the change is necessary and feasible. If the scope change is deemed necessary, the Project Manager will set up a meeting with the client to make sure the client is happy with the adjustments and that they meet their wishes, after which the change will be communicated to all relevant team members, as well as in an update to any documentation regarding the project. If the client is the one to suggest the change, the Project Leader will call a meeting with the entire team. The team will discuss whether the scope changes can be feasibly implemented without impacting the project schedule. If this is possible, the change will be applied and the



client will be informed. Otherwise, the Project Manager will call a meeting with the client to discuss how to adjust their expectations or the project's expected deadline.

The client will be the one to accept the final project deliverable as well as approve acceptance of the project scope.

## **18.SCHEDULE MANAGEMENT PLAN**

The schedule for the project will be created using the "Precedence Diagram Maker" extension for Google sheets with the stages decided upon by the team. Durations and precedence requirements will be decided on by the team, as well as further refining by team members with involvement in their specific stages.

Once the first version of the schedule has been created, each section will be further discussed with the team to attempt to find the best way to fulfill it, as well as identify any previously unknown issues that could slow down progress.

To determine the team's rate of progress through the project schedule, the following milestones will be used:

- The start of the project
- Assigning workloads and duties to team members
- A basic working prototype
- Creating a basic user interface
- Completion of a satisfactory and functional user interface
- First working prototype with a full user interface and all planned features
- Beginning of the testing phase
- Fixing all identified bugs
- The final project is accepted by the client

The Project Manager will be the one to ensure that all the independent parts of the schedule can be completed by the expected deadline, and that each part has a realistic amount of time in which to be completed. The Project Manager will also be expected to ensure that the whole team is working at the desired pace, so as to not delay the project's progress and so avoid going over the deadline.

Each of the team members is responsible for clearly defining their parts of the schedule, as well as clarifying which parts are prerequisite to theirs, and which sections their parts are prerequisite to. If they were to fail to do so, this could result in the schedule management plan



being incorrect, and potentially having team members waiting for the completion of tasks that they didn't anticipate having to wait for.

Should any part of the project fall behind schedule, there is a one week float from the earliest possible project end date to the project deadline, meaning occasional small delays can be tolerated. However if there are more substantial delays that threaten to result in the project being completed past the due date, the Project Manager will be expected to call a team meeting. The team should discuss what areas of the project could possibly be completed in a smaller timeframe or, in a worst-case scenario, which sections could have parts cut to reduce the workload and so reducing the amount of time required for the project to be completed.

To better illustrate the expected timeframe of the project as a whole, a Gantt chart and a precedence network can be found in Appendix B. The Gantt chart has been colour coded in regards to which team members are allocated to each section, and the precedence network has its critical path highlighted in red. It should be noted that the only section not in the critical path is the "Front end" section. This is because, if it were absolutely necessary, the front end could hypothetically be cut and the client could be provided with a program that required set up through command line. This would not be exactly what the client requested, but it would at least produce the outputs required.

## 19. QUALITY MANAGEMENT PLAN

The Client will be expected to provide their expectations of what quality standard they want the final project to be, and so will be the one to set the quality standard. They will be consulted for their feelings regarding the project's state at certain project milestones, as well as being the one to accept the final project. Should they be displeased with the project during any meeting, the team will attempt to improve it within the time they have left.

All team members will be expected to ensure their work meets the quality standard agreed upon with the client. The responsibilities for the team members are as follows:

The Project Manager will be expected to monitor the quality standard of the project during all of its stages. They will also be expected to communicate the project's progress to the client at certain milestones. If a team member is falling behind, compromising the quality of the project, or having any other negative impact on the project, the Project manager will be expected to ensure that the problem is sorted out or, if that is not possible, distribute the work amongst the other team members. In a worst case scenario where the team member cannot complete their workload due to unforeseen circumstances, the Project Manager should call a team meeting to discuss if the rest of the team members can handle the additional workload. If not, then the Project manager should set up a meeting with the client to discuss adjusting the workload, the





deadline, or even hiring another team member, as the previous workload would be impossible to complete on time with the reduced team size.

The rest of the team will be expected to ensure their sections of the project meet the quality standard set out by the client. They will also be expected to inform the Project Manager when they meet milestones, so that the Project Manager can pass this information on to the client.

The project will have to meet the following quality and legal standards:

- The end user will have to be catered towards to ensure that they can effectively use the project's user interface, as well as be able to make use of the information that the project will be expected to output. This will mainly be down to the designers as they will be to create the user interface, but also partially down to the programmers as they will be in control of the project's output format.
- The project will be interacting with sensitive user information, such as password hashes and emails. It is the responsibility of the programmers to ensure that this information is handled in an appropriate manner.

## **20. RISK MANAGEMENT PLAN**

## **21. STAFFING, RESOURCE AND COST**

## **22. QUALITY BASELINE**







## SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

\_\_\_\_\_

<Project Sponsor>

<Project Sponsor Title>

Date: \_\_\_\_\_





## **APPENDIX A: WORK BREAKDOWN STRUCTURE**

### **INTRODUCTION**

The Work Breakdown Structure presented here represents all the work required to complete this project.

### **TABULAR VIEW**

Level 1.	Level 2.	Level 3.
1. Ethical Hacking 16 Project	1.1 Research	1.1.1 Research on networking completed 1.1.2 Research on vulnerability testing completed 1.1.3 Research on scanning tools completed 1.1.4 Research on GUI frameworks completed 1.1.5 Research completed
	1.2 Design (Prototype)	1.2.1 GUI template created 1.2.2 GUI accepted by client 1.2.x Design completed
	1.3 Front End	1.3.1 GUI programmed using framework 1.3.2 GUI accepted by client 1.3.3 Front End completed
	1.4 Back End	1.4.1 Basic program functions implemented 1.4.2 Additional features implemented 1.4.3 Back End completed
	1.5 Testing	1.5.1 Testing scanning option completed. 1.5.2 Testing tracking changes completed. 1.5.3 Testing report generation completed. 1.5.4 Testing completed
	1.6 Writeup	1.6.1 Writeup completed



## GLOSSARY OF TERMS

**Work Package:** A Work Package is a deliverable or work component at the lowest level of its WBS branch.



## **APPENDIX B: GANTT CHART AND PRECEDENCE NETWORK**

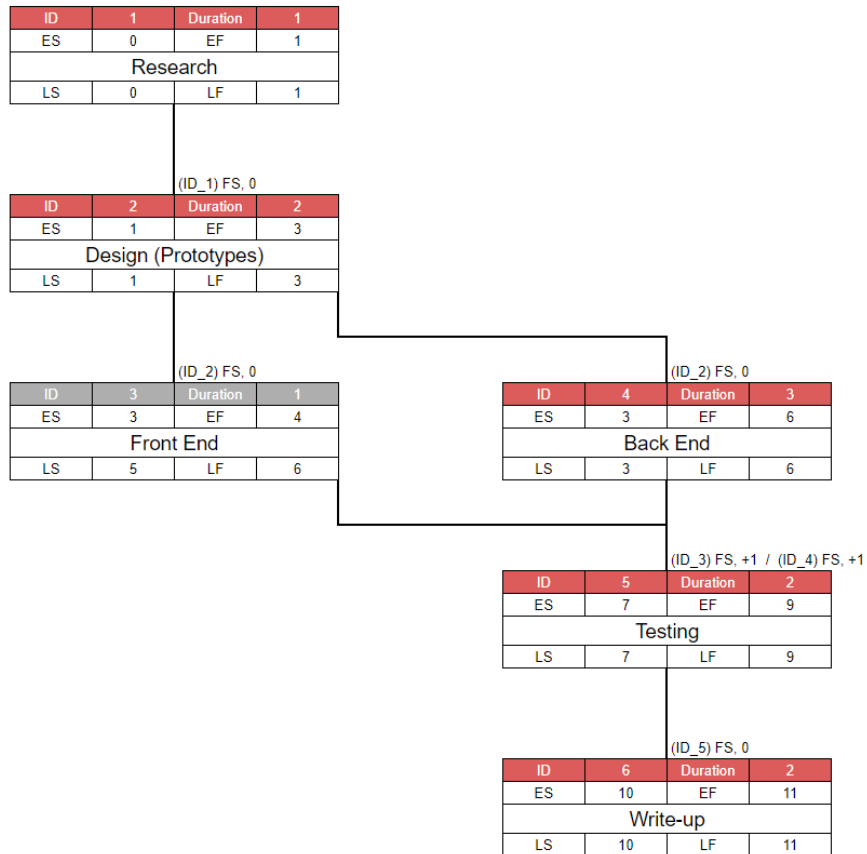
### **GANTT CHART**

Activity \ Time	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Research												
Design (Prototypes)												
Front End												
Back End												
Testing												
Write-up												

Full team	Designers (Dylan & Luke)	Programmers (Theo, Tomasz, Lukas, and	Investigator (Evan)
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## PRECEDENCE NETWORK WITH IDENTIFICATION OF CRITICAL PATH

### Smallwood Rugby





**APPENDIX C: RISK ASSESSMENT**





## **APPENDIX D: QUALITY METRICS**

These quality metrics are based on what the client, Smallwood Rugby, have requested. We have compared their requests with industry standards as well as what our team could physically accomplish in the time period given. These metrics all been approved by Smallwood Rugby.

### *Accuracy of the Vulnerabilities:*

Our project is being used for a small network, repeatedly each week for the foreseeable future. Our vulnerability scanner needs to identify a wide range of issues on the network. This is the primary security Smallwood Rugby will use for this network so each identified vulnerability needs to be as accurate as possible to give Smallwood Rugby the safest network they can. We will determine the quality of this through how accurate the scanner is, we have determined a 1 in 100 false positive accuracy rate.

### *Range of Vulnerabilities:*

Since our software will be the primary security for Smallwood Rugby's network, our software needs to have a wide range of vulnerabilities that it detects as to not have any vulnerabilities missed as they will not be detected through anything else. Due to the vulnerabilities predicted to be on their network, as well as industry standards, we have determined that a failure to detected a vulnerability should happen only 1 in 200 vulnerabilities.

### *Reliability:*

Our project is being used by a small team with limited knowledge on cyber security, this means our project must be as reliable as possibly as any potential errors that may appear after we have given away the program are very likely not to be fixed. This could lead to further mistakes and issues down the line, causing problems for the client. We have determined that one failure should happen every fifty times the program runs.

### *Usability:*

Our project, as stated before, is being used by a team with limited knowledge in cyber security. This means our project should be as usable as possible. This is to make sure the project ran as often as the client wants without user issues and without having to train anyone on how to use the software. So to measure how usable the software is we will be asking how different Smallwood Rugby employees find the software and have them rate it on a scale of 1 to 10. We will be asking the employees on a variety of criteria consisting of: ease of use, readability, features, speed of use, and the complexity. We will then calculate the average score and the score must be a 8/10 or higher.

Metric	Standard	Report
Accuracy of Vulnerabilities	1 in 100 vulnerabilities	As achieved
Range of Vulnerabilities	1 in 200 vulnerabilities	As achieved
Reliability	1 in 50 scans	Monthly Quality Management Report (QMR)
Usability	8/10 or higher	Initial testing



PROJECT  
MANAGEMENT  
DOCS

[ProjectManagementDocs.com](http://ProjectManagementDocs.com)







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