

## Final Requirements

Table Key:

C	Constraint Requirement
F	Functional Requirement
NF	Non-Functional Requirement
P	Performance Requirement

Software Requirements Specification Table		
ID Number	Requirement	Rationale, Assumptions, Associated Risks and Alternatives
C1	System must be able to run on a computer in the Computer Science department.	The game should at least be able to run on an operating system that the computers in the department have, (Windows or Linux). Additionally, we should take into account devices with lower specs being able to run the game as well.
C2	The system should appeal to our SEPR cohort and prospective university students.	Based on the University of York Communication Officer's statement the game will be used at open days to advertise to prospective students. Hence, we need to target the game at an age range of 17 – 20 year olds. A risk here is that we may alienate other demographics such as older users, (i.e. parents).
C3	The game shall be able to take input from both the mouse and the keyboard.	Team names will need to be entered using the keyboard and the mouse/keyboard should be used to navigate and control the game. There is a potential risk to make the controls too complex here which would make the game difficult for new players.
F1	Game time should be between 10 and 30 minutes.	Our user questionnaire [2] suggested a game time of approximately 1 hour, however our client requires that the game should typically last 10 to 30 minutes [4]. It will also reduce the risk of a player becoming bored part way through a game, as it is shorter.
F2	The game should feature a turn timer and allow for the turn timer to be an optional setting.	Based on our user questionnaire [2] and validation in the client meeting [4] the player should have the option at the start of a game to enable or disable a turn timer.
F3	The turn timer, if enabled, should pause while the mini-game is being played.	If the Vice-Chancellor appears then the turn timer should be paused for the duration of the mini-game as the current player would be unfairly disadvantaged if they missed out on part of their turn time.
F4	Turn time limit should range between 30 and 120 seconds. The game should contain a turn time limit.	Based on our user survey [2] the median group of users felt a turn should last between 30 and 120 seconds. This however needs to be tested.
F5	A mechanism is required to resolve	Relating to requirement F6 this mechanism will contain an element of RNG but will have an

	conflicts, i.e. Team A is attacking a sector held by Team B.	element of skill involved as well. The amount of skill required should be based on the relative strength of armies in combat. Meaning that if the attacker is significantly more powerful than the defender then it will not take much skill to defeat the opponent.
F6	The battle mechanic requires an element of skill.	User feedback suggested that the combat mechanic should contain an element of skill [2]. We must consider play testing a mechanic like this to make sure it keeps the game balanced and fun.
F7	When a player conquers a sector there is the possibility that the Vice-Chancellor may appear, triggering a mini-game.	The Vice-Chancellor mini-game is triggered upon conquering a sector he is hidden on. If it was too frequent, we risk the mini-game becoming tedious and annoying so a possible spawn rate for the Chancellor should be added.
F8	The Vice-Chancellor mini-game should last approximately 30 seconds.	Our client specified in an interview [4] that the mini-game should last approximately 30 seconds. If the game lasted much longer it would risk becoming boring and other players waiting for their turn could become bored.
F9	No bonus should be awarded to the player if they fail the Pro-Vice Chancellor mini-game.	Due to ambiguity in the brief we validated this requirement with the client [4].
F10	A player limit of 2-4 players and in games of 3 or 4 players there may also be a neutral player.	This was a decision we came to based on the data gathered from the user survey and client interview [2, 4]. A risk here is that map size is fixed. Meaning if 4-players decide to have a game then it could get crowded if the map size is too small.
F11	A third neutral AI player must be present in a 2-player game.	This AI can only defend and will never receive reinforcements or move. As validated by the client [4], the purpose of this AI is to also create a layer of unpredictability in the game.
F12	The system should include the ability to save at least one game and be able to reload it at a later time.	Mentioned in the brief this is essential due to how long a game could possibly go on for.
F13	The system should contain a GUI based on the university campus map, subdivided into sectors.	The map should be recognisable as the University of York campus; however we have the liberty to modify it to a degree in order to improve gameplay. There is a risk that if we try to make the map too much like reality we will not be able to make it balanced.
F14	A bonus mechanism should be included for holding sectors at the end of the player's turn.	For each sector that the player captures, at the end of their turn, they will be given some bonus. This bonus could be troops or in-game currency. If the bonuses are poorly balanced then we risk it being impossible for a losing player to make a comeback as one player could become unfairly powerful.
F15	Before the start of every game the user should be prompted	This ensures the user can alter the system environment in a controlled way before games start. This eliminates the frustration of having to

	with an intermediate setup/options menu.	alter game settings mid game. We also found that through user scenarios [5] this is a mechanism the game needs for the user to transition smoothly into a game.
F16	A mechanism for calculating how many new gang members each gang receives in each turn.	Each sector has a value for the amount of reinforcement troops it provides at the end of a player's turn if they own it. The player can then allocate these troops to any sector they are currently holding.
F17	At the start of the game, all sectors are unclaimed. Each sector should be allocated (by some random mechanism) to a gang.	The allocation mechanism needs to be tested so the gameplay is balanced. i.e. Players don't receive too many high value sectors. The risk here is that a completely random mechanism could create disadvantages for some players and advantages for others.
F18	A mechanism for allocating gang members to held sectors.	Gang members should be allocated to any sector a player currently holds.
F19	The game must feature two types of gang member referred to as 'Undergraduates' and 'Postgraduates'	The two types of gang member should differ [6] in regards to their strength and the way they are used in combat.
F20	The mechanism for allocating gang members must be able to allocate both types of gang member.	The two types of gang members should be distributed by a mechanism that allocates gang members to the player's sectors, so that the player may have some of each type of gang member [6].
F21	There should be a mechanism for allowing players to acquire punishment cards.	The system should have a way of deciding when a player should receive these punishment cards and a means of providing the player with these cards [6].
F22	The player must be able to use these punishment cards during the player's turn.	The player should be able to use punishment cards in their turn in order to penalise other players [6].
F23	There must be at least three different punishment card types.	These different types of punishment card should be visually different and should have different effects when played. At least one of them should be humorous [6].
NF1	The game must be easy for new players to pick up.	This must be considered as the game will be used at University open days and UCAS days. A complicated game will just frustrate users who may only have a couple of minutes to try it out before moving on. But, there is a risk of making it too simple. Turn based strategy games are known for being complicated and we don't want to drive away experienced players of the genre.
NF2	The game should be stylised using a hybrid between realistic graphics and cartoons.	This style was chosen based on user feedback from the survey [2]. A risk here is that producing all of the graphical resources could consume a lot of time.
NF3	The game should be suitable to use in advertising situations.	The product must be suitable for the University to use in advertisements, such as at open days and UCAS days. Regular meetings with the

		client should ensure that the product we are developing is suitable for the University to use in this way.
NF4	The game should have a soundtrack including background music and sound effects.	Relating to requirement C2 and NF3 the game needs to engage the player and capture the user's interest respectively. By using a soundtrack we can immerse the user more. There is a risk that the sound production process may take more time and resources than we can allocate.
NF5	The game should have accessibility features for disabled users	A risk here is that implementing such features may consume a lot of development time.
P1	The game must run smoothly. i.e., Should not crash or lag.	If an issue is found with performance on lower spec devices we can optimize the game.

Requirements in blue are new requirements added in Assessment 4.

Requirements in red are requirements that we have decided to remove in Assessment 4.

Requirements in black are requirements adopted from the previous team.

- [1] I.S. Sommerville and P.S. Sawyer. Requirements Engineering, A Good Practice Guide. <https://www.scribd.com/document/337626753/Sommerville-Ian-Sawyer-Pete-Requirements-Engineering-A-Good-Practice-Guide> [Accessed: Oct. 31, 2017].
- [2] SEPR "Survey Results Analysis" Risky Developments [Online]. Available: <http://riskydevelopments.co.uk/documents/UserSurveyResults.pdf> [Accessed: Nov. 3 2017].
- [3] "IEEE Xplore Document. IEEE Recommended Practice for Software Requirements Specifications". [Online]. Available: <http://ieeexplore.ieee.org/document/392555/> [Accessed: Oct. 31, 2017].
- [4] SEPR "Client Interview Records" Risky Developments [Online]. Available: <http://www.riskydevelopments.co.uk/documents/ClientInterviewRecords.pdf> [Accessed: Nov. 3 2017].
- [5] SEPR "Use Cases" Risky Developments [Online]. Available: <http://riskydevelopments.co.uk/documents/UserScenarios.pdf> [Accessed: Nov. 3 2017].
- [6] SEPR "Assessment 4: Requirements Changes"