

Software Requirements Specification

for

7 Wonders

Prepared by

Team Name: Int_Elligence

Aidan Snoswell a1607488@student.adelaide.edu.au

Ivan Chen a1208221@student.adelaide.edu.au

Mike Stimson a1608486@student.adelaide.edu.au

Sergei Fadeev a1608693@student.adelaide.edu.au

University: University of Adelaide

Country: Australia

Contents

1	INTRODUCTION	4
1.1	Purpose.....	4
1.2	Scope.....	4
1.3	Definitions, Acronyms and Abbreviations.....	6
1.4	References.....	6
1.5	Overview	7
2	OVERALL DESCRIPTION	7
2.1	Product perspective.....	7
2.2	Product functions.....	7
2.3	User characteristics	7
2.4	Constraints	8
2.5	Assumptions and dependencies	8
3	SPECIFIC REQUIREMENTS.....	9
3.1	Functional Requirements.....	9
3.1.1	Logic.....	9
3.1.1.1	Data.....	9
3.1.1.2	Game Setup	10
3.1.1.3	Turns	11
3.1.1.4	End of an age.....	13
3.1.1.5	End game.....	14
3.1.1.6	Brown Cards	15
3.1.1.7	Gray Cards.....	20
3.1.1.8	Blue Cards	22
3.1.1.9	Red Cards	28
3.1.1.10	Yellow Cards	33
3.1.1.11	Green Cards	39
3.1.1.12	Purple Cards	45
3.1.1.13	Wonder Boards	49
3.1.2	GUI	56
3.1.2.1	Starting a game.....	56
3.1.2.2	Playing area	57
3.1.2.3	Game actions.....	57
3.1.2.4	GUI elements	59
3.1.3	AI	61
3.1.3.1	Artificial Intelligence Players	61
3.1.3.2	Tutorial	63
3.2	Non-Functional Requirements	64
4	SUPPORTING INFORMATION	66
4.1	Appendix 1: Main screen mockup.....	66
4.2	Appendix 2: Trading mockup	67

Revision History

Date	Version	Description	Author(s)
13/09/2013	1.0	Began writing part 1	Mike
17/09/2013	1.1	First draft of section 2	Ivan
21/09/2013	1.2	Integration of new requirements	Mike
24/09/2013	1.3	Integration of new requirements	Everyone
01/10/2013	1.4	Edit and addition of new sections	Everyone

1 Introduction

This document will outline the requirements of the computer game 7 Wonders, based on the board game of the same name. The requirements for this project will be separated into logic, GUI and AI sections. These sets of requirements will be implemented by different software teams. Because of this, the difficulty of implementing each section will be kept approximately equal.

1.1 Purpose

The purpose of this SRS is to be an accurate description of the game written in language which is understandable without coding experience. This document will:

- Explain the external behaviour of the application through descriptions of use cases.
- Describe the non-functional requirements of the system, such as quality, learnability and reliability.
- Describe the constraints and assumptions that will affect the production of the game.

1.2 Scope

The game 7 Wonders is a complex turn based strategy game that revolves around the playing of cards to enhance the city of the player. At the start of the game, each player is randomly assigned one of the 7 wonders of the ancient world around which they must construct their city. Each wonder gives different benefits to the players, such as bonus resources and special abilities. After each player has been assigned a wonder, the game begins. During the game play progresses through three ages of six turns each. At the start of each age, each player is dealt seven cards specific to that age. The total pool of cards for each age changes depending on the number of players so that all cards are dealt at the start of the age. During each turn, all players choose a card to play, then pass their remaining set of cards to the player on their left or right (at the end of the sixth turn the final seventh card is discarded). After every player has played a card, the cards are revealed and their effects take place. Players can also choose not to reveal their chosen card and instead discard it and gain 3 coins, or use it to build a stage of their wonder. All of the cards that are built give benefits to the player such as providing them with resources or causing various effects to improve their score. Each card also belongs to a particular group that has similar effects on a city.

- Brown cards build resource production facilities, such as a Lumber Yard. Resource production facilities allow for the consumption of the marked number of resources once per turn.
- Gray cards build secondary resource production facilities, such as a Loom. Resource production facilities allow for the consumption of the marked number of resources once per turn.
- Red cards provide additional military strength to the player's city in the form of Shields.
- Green cards provide an increased score in one of the three branches of science and can sometimes allow other specific structures to be built for free. The three branches are theology, mathematics and mechanics.
- Blue cards produce civic buildings in the player's city such as a Temple. These civic buildings contribute directly to the player's victory points. They are free to build if the player has already built specific other civic buildings. For example, building the Temple card is free if the player has already built an Altar card.
- Yellow cards build commercial structures in your city. These commercial structures usually give the player Coins based on other attributes of their city. They can also allow

the player to more cheaply purchase resources from their neighbour. Age three commercial structures often directly give victory points to the player based on the number of cards of a certain type in their city.

- Purple cards build guilds in your city. Guild cards are only available in the final age and usually provide victory points based on the buildings built by the player's neighbouring cities.

These cards can have a resource cost to play. For example, building the military Stockade costs one Wood resource, whilst building the East Trading Post commercial structure is free. Thus, if a player wants to play the Stockade card, they must be able to supply one Wood for the construction. They can do this through either by having built a Wood producing card, such as a Lumber Yard, or by purchasing one Wood resource from their neighbours who have Wood. The default cost of a transaction is two Coins for one resource, but some buildings, such as the Trading Posts, can lower the cost of this transaction to one Coin.

The player may also use a card to build their wonder. Building a wonder is done through stages. Each time the player uses a card to build their wonder; they build another "stage". Each stage of the wonder gives the player various points or abilities, and also has a resource cost that must be satisfied for the stage to be built.

At the end of the age, each city has a military conflict with its neighbouring cities. The winner of these conflicts is the city with the largest number of Shields. The winners receive positive conflict tokens and the losers receive negative conflict tokens. Then, the next age begins. A new set of seven cards is dealt to each player and a new sequence of turns begins. At the end of the second age, another military conflict occurs. This time the winners gain higher value conflict tokens. The third age begins and ends in the same way.

After the three ages are complete, victory points are assigned to each player based on their city and the player with the most points wins. These victory points are calculated in a variety of ways:

- Civic buildings give a direct bonus to victory points, specified on the card.
- Conflict tokens are exchanged for a corresponding number of victory points (negative conflict tokens are also exchanged, for a loss in points).
- For each three Coins the player has, rounded down, the player receives a victory point.
- Scientific structures grant victory points based on the following: For each branch of science (Mathematical, Mechanical and Theological) the player gains victory points equal to the square of the number of points they have in that branch. They also gain an additional 7 points for each set of points from all three of the branches they have. For example, a city which has four theological points, two mechanical points and one mathematical point would receive 28 victory points. 16 points for theological science, four for mechanical, one for mathematical and seven for the single complete set.
- Guilds and some commercial structures can grant victory points based on other factors in the game, such as the number of cards of a certain type in the player's city and/or neighbouring cities.
- The player's wonder generates a certain number of victory points depending on how many stages have been built.

1.3 Definitions, Acronyms and Abbreviations

AI	Artificial intelligence
Bank	The store of Coins and military victory points that no player owns.
Board	A large card depicting one of the 7 Wonders. The player places cards on or around this board.
Coin	The currency used to trade between two players or a player and the bank.
Conflict Token	The tokens received displaying the result of a conflict.
Discard pile	The set of cards which have been discarded during play.
Effect	The results of playing a card or building a wonder. Unless otherwise specified, these are applied at the end of the current turn.
GUI	Graphical user interface
Manufactured resource	Resources given each turn through trading, owning a gray resource card or wonder bonuses.
Mathematical point	The points received for building a scientific building with a compass symbol on it.
Mechanical point	The points received for building a scientific building with a cog symbol on it.
Military point	The points received for building a military building with a Shield symbol on it.
Neighbour	A player either to the left or right of another player.
Raw resource	Resources given each turn through trading, owning a brown resource card or wonder bonuses.
Science point	A point in one of the scientific branches (either Mathematical, Mechanical or Theological)
SRS	This document, The System Requirements Specification for 7 Wonders
Theological point	The points received for building a scientific building with a tablet symbol on it.
Victory point	The points received at the end of the game based on the game state.

1.4 References

The 7 Wonders board game rulebook.

1.5 Overview

The second part of this document will describe the general factors that affect the production of this game that are not requirements. These factors will include the project perspective, user characteristics and the assumptions and constraints placed on development of the game.

The rest of this document will focus on addressing all of the specific requirements of the system. These will include the AI, logic and GUI requirements as well as the non-functional requirements.

2 Overall Description

2.1 Product perspective

7 Wonders is aimed toward gamers who like challenging games. It is exceptional amongst challenging board games in that a single game in most cases does not take longer than 20 minutes. However, the board game requires a large amount of initial set up time. Because of this, the computer version will improve on the board game by automating and speeding up as much of the game process as possible.

This game will contain both single-player and multi-player modes. All elements and rules of this game will be designed and implemented following the existing 7 Wonders card game. This will help the game be an accurate adaption. In addition, AI players will be available in both single-player and multi-player mode. This will provide the desired gaming environment for all numbers of players.

2.2 Product functions

7 Wonders will provide the following functionalities:

- A Graphical User Interface (GUI) which will allow the player to input commands to play the game. The GUI will also show a navigable game area to each player.
- Network functionality to facilitate a multiplayer online environment.
- A logic engine which will ensure the rules of the game are upheld.
- A series of AI players which can be included in both single player and multiplayer games. These AI players will make informed decisions based on the state of play.
- A simple tutorial which teaches the rules and controls of the game.

2.3 User characteristics

7 Wonders should be able to be used by any player who has completed the game tutorial. No outside knowledge or skills should be needed besides basic computer skills. There are three main potential groups of users of this game:

- New player - A player with no or limited knowledge of 7 Wonders.
- Experienced player - A player with advanced knowledge about 7 Wonders who has played the game multiple times.
- Developers/Testers - People who design, implement or test the game.

2.4 Constraints

The production of 7 Wonders will be limited by the following constraints:

- To play the game in multiplayer mode a network connection will be required.
- The game should not be hardware intensive and thus should be able to run on most personal computers.
- The game should work on any system which can run EiffelStudio.
- This game will be written in Eiffel and so it must conform to Eiffel limitations. These include:
 - The code will be object oriented.
 - There will be no manual memory allocation.
 - The code will follow a design by contract testing and validation stratagem.

2.5 Assumptions and dependencies

The production of 7 Wonders will proceed under the following assumptions and dependencies:

- Most network functionality will be supplied to the development teams.
- A main menu system through which the game is launched will be supplied to the development teams.
- Each development team will complete their tasks on time and with a high level of quality.

3 Specific Requirements

3.1 Functional Requirements

3.1.1 Logic

3.1.1.1 Data

Requirement ID	LDCT
Title	Card types
Description	<p>All cards belong to exactly one of the following types:</p> <ul style="list-style-type: none"> • Brown cards: raw resources • Gray cards: manufactured resources • Red cards: military • Yellow cards: commerce • Green cards: science • Blue cards: civil • Purple cards: guild
Priority	1
Risk	C

Requirement ID	LDP
Title	Players data
Description	<p>As the game progresses, players maintain and modify a collection of objects they "own". These include:</p> <ul style="list-style-type: none"> • A "Wonder board" • A number of Coins • A number of military victory and defeat tokens • A set of cards they have "played" with the "Build" action • A set of cards they have "played" with the "Wonder" action • The player to their left and to their right
Priority	1
Risk	C

Requirement ID	LDCB
Title	Basic (non-guild) card data
Description	<p>Each non-guild card has:</p> <ul style="list-style-type: none"> • the age it appears in • the colour of the card • the numbers of players needed for it to appear in the deck • the resource cost to build it • a set of cards which will allow this card to be built for free • a set of cards which this card will allow to be built for free • an effect
Priority	1
Risk	C

Requirement ID	LDCG
Title	Guild cards
Description	<p>Guild cards are the same as the basic cards, except they:</p> <ul style="list-style-type: none"> • always appear in age 3 • are always purple type • don't have a number of players needed to play • don't have cards which allow them to be built for free • don't have cards they allow to be built for free <p>(they still have a resource cost and effect)</p>
Priority	3
Risk	L

Requirement ID	LDW
Title	Wonder board data
Description	<p>The wonder boards have:</p> <ul style="list-style-type: none"> • A resource they provide • 2, 3 or 4 wonder stages (ordered) • a resource cost for each stage • an effect for each stage <p>For each wonder board there are two variations, called the "A side" and "B side". The two variations have a different set of wonder stages.</p>
Priority	2
Risk	M

Requirement ID	LDD
Title	Discard pile
Description	A set of cards is maintained called the "discard pile".
Priority	3
Risk	L

3.1.1.2 Game Setup

Requirement ID	LSW
Title	Wonder board assignment
Description	<p>At the start of the game, each player is randomly assigned a wonder board. Each player must have a different wonder board.</p> <p>In a beginner game, every player plays on the "A side". In a normal game, players are randomly assigned a side.</p>
Priority	2
Risk	M

Requirement ID	LSC
Title	Starting Coins
Description	At the start of the game, each player is given 3 Coins.
Priority	1
Risk	H

Requirement ID	LSP
Title	Player positioning
Description	At the start of the game, players choose which other players are on their left and right. Every player must have a player on both their left and their right. These players must be different, and cannot be themselves. If player A is on the right of player B, player B must be on the left of player A. The players to the left and right of a player are called their "neighbours".
Priority	1
Risk	H

Requirement ID	LSN
Title	Player number
Description	There shall be no more than 7 and no less than 3 players in a game. This number includes both human and AI players.
Priority	1
Risk	H

Requirement ID	LSD
Title	Deck selection
Description	At the start of the game the decks used for the 3 ages are selected from the pool of cards. Every card in the pool with a number of needed players less than or equal to the number of players in the game is added to the deck for the age it appears in. Additionally, (number of players + 2) guild cards are randomly chosen from the set of guild cards and are added into the deck for the 3rd age.
Priority	1
Risk	C

3.1.1.3 Turns

Requirement ID	LTAT
Title	Ages and Turns
Description	The game shall be split up into 3 ages, each of which will be split up into 6 turns.
Priority	1
Risk	C

Requirement ID	LTP
Title	Playing a card
Description	Each turn all players receive a set (or "hand") of cards. They choose one card to play and pick one of three actions to do with it: "Build", "Wonder", or "Discard".
Priority	1
Risk	C

Requirement ID	LTS
Title	Simultaneous turn outcome
Description	The outcome of each turn is not calculated until all players have selected a card and a valid action for that card (and chosen to use their Wonder ability if they have access to one). Players cannot change their decision once this outcome has been calculated.
Priority	1
Risk	H

Requirement ID	LTR
Title	Cards players receive each turn
Description	In the first turn of an age, players receive 7 randomly selected cards from the deck for that age (this results in the whole deck being split between the players). In all the other turns players receive the unused cards from the player to their right (during ages 1 and 3) or their left (during age 2).
Priority	1
Risk	H

Requirement ID	LTAD
Title	Discard action
Description	When players choose the "Discard" action, at the end of the turn the chosen card is added to the discard pile and they gain 3 Coins.
Priority	2
Risk	M

Requirement ID	LTAW
Title	Wonder action
Description	A player may choose the "Wonder" action if they have not finished building their wonder, and they can fulfil the resource requirement needed to build the next stage of their wonder (see requirement RLTBR). When they choose this action at the end of the turn, the card they chose is added to the set of cards they have used to build their wonder, and the effect of the next stage of their wonder is applied.
Priority	2
Risk	M

Requirement ID	LTAB
Title	Build action
Description	<p>The build action can only be played on cards that both:</p> <ul style="list-style-type: none">• the player does not already have in play• the player can satisfy the resource cost for, using either a resource build (requirement RLTBR), chain build (requirement RLTCR), or using an effect that allows them to build something for free <p>When the player uses this action on a card, at the end of the turn the chosen card is added to the set of cards the player has built, and any immediate effect of the card is applied.</p>
Priority	1
Risk	C

Requirement ID	LTBR
Title	Build requirement (resource build)
Description	<p>When a player tries to use the "Build" or "Wonder" action on a card, they must have access to, at minimum, the resources specified on the card or wonder stage. Each resource needed can either come from the players city (brown, gray and yellow cards, and the Wonder resource and possible Wonder stage effects if the stage is built), or from a city from either the left or the right (brown and gray cards, and Wonder resource only).</p> <p>Two resources can't be provided by the same resource production effect, including resources that allow a choice from two or more resources.</p> <p>If the player needs resources from the player to the left or the right, to satisfy the resource requirement they must give 2 Coins (unless a trading effect for that resource is in play to the neighbouring player, in which case 1 Coin) to that player at the end of the turn. The player must have these Coins before they can choose to play the card; otherwise they do not meet the requirement and cannot build the card.</p>
Priority	1
Risk	C

Requirement ID	LTCR
Title	Build requirement (chain build)
Description	<p>If a player has built a card (card A), and that card "chains to" another card (card B), then the player may build card B for free (that is, without satisfying the requirements in LTBR or using any other effects which could build the card for free).</p> <p>If card A "chains to" card B, then it is said that card B "chains from" card A.</p>
Priority	2
Risk	H

3.1.1.4 End of an age

Requirement ID	LAD
Title	Discarded cards (from age end)
Description	In the last turn of an age, when players receive 2 cards, the one which they don't play in that turn will be added to the discard pile.
Priority	3
Risk	L

Requirement ID	LAC
Title	Conflict
Description	<p>After the last turn of an age, players gain conflict tokens. For each player on their left or right that has more military points than them, the player gains a -1 value token.</p> <p>For each player on their left or right that has less military points than them, the players gains a:</p> <ul style="list-style-type: none"> • +1 token if age 1 just finished • +3 token if age 2 just finished • +5 token if age 3 just finished <p>(for each player to the left or right with the same number of military points, the player gets nothing)</p>
Priority	2
Risk	M

3.1.1.5 End game

Requirement ID	LEE
Title	End of game
Description	The game ends after the conflict resolution of the 3 rd age. Points are calculated and the player with the most points is the winner.
Priority	1
Risk	C

Requirement ID	LEP
Title	Point calculation
Description	Points are calculated by summing the different ways of getting points. These are specified in requirements LEPC, LEPM, LEPE, and LEPS
Priority	1
Risk	C

Requirement ID	LEPC
Title	Coin points
Description	At the end of the game, each player gets 1 point for every 3 Coins they have (rounded down).
Priority	3
Risk	L

Requirement ID	LEPM
Title	Military points
Description	At the end of the game, each player gets a number of points equal to the sum of the values of all the military tokens that player have.
Priority	2
Risk	M

Requirement ID	LEPE
Title	Effect points
Description	At the end of the game, each player gets points for every effect from a card or wonder stage in play that grants them points at the end of the game. If the number of points granted by the effect depends on a number of cards built by the player or neighbouring players, then the number of cards is counted at the end of the game, not the time at which the effect came into play.
Priority	1
Risk	C

Requirement ID	LEPS
Title	Scientific points
Description	<p>At the end of the game, players gain points for both:</p> <ul style="list-style-type: none"> • The square of the number of science tokens they have in a branch (this is applied to all 3 branches) • Another 7 points for every set of tokens containing one from each of the branches that the player has (this is equivalent to 7 multiplied by the minimum number of tokens in a branch that the player has) <p>If a player has any effect(s) in play that grants them a token from any one of the three branches, use the one(s) that would give them the most amount of points.</p>
Priority	3
Risk	L

3.1.1.6 Brown Cards

Requirement ID	CBR01
Title	Brown Card: 1
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Lumber Yard</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Wood</p>
Priority	2
Risk	M

Requirement ID	CBR02
Title	Brown Card: 2
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Stone Pit</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Stone</p>
Priority	2
Risk	M

Requirement ID	CBR03
Title	Brown Card: 3
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Clay Pool</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Clay</p>
Priority	2
Risk	M

Requirement ID	CBR04
Title	Brown Card: 4
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Ore Vein</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Ore</p>
Priority	2
Risk	M

Requirement ID	CBR05
Title	Brown Card: 5
Description	<p>The following card should be available in the card pool:</p> <p>Name: Tree Farm</p> <p>Available: Age 1</p> <p>Amount: 1 card for 6 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to a choice of either 1 Wood OR 1 Clay each turn</p>
Priority	3
Risk	M

Requirement ID	CBR06
Title	Brown Card: 6
Description	<p>The following card should be available in the card pool:</p> <p>Name: Excavation</p> <p>Available: Age 1</p> <p>Amount: 1 card for 4 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to a choice of either 1 Stone OR 1 Clay each turn</p>
Priority	3
Risk	M

Requirement ID	CBR07
Title	Brown Card: 7
Description	<p>The following card should be available in the card pool:</p> <p>Name: Clay Pit</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to a choice of either 1 Clay OR 1 Ore each turn</p>
Priority	3
Risk	M

Requirement ID	CBR08
Title	Brown Card: 8
Description	<p>The following card should be available in the card pool:</p> <p>Name: Timber Yard</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to a choice of either 1 Stone OR 1 Wood each turn</p>
Priority	3
Risk	M

Requirement ID	CBR09
Title	Brown Card: 9
Description	<p>The following card should be available in the card pool:</p> <p>Name: Forest Cave</p> <p>Available: Age 1</p> <p>Amount: 1 card for 5 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to a choice of either 1 Wood OR 1 Ore each turn</p>
Priority	3
Risk	M

Requirement ID	CBR10
Title	Brown Card: 10
Description	<p>The following card should be available in the card pool:</p> <p>Name: Mine</p> <p>Available: Age 1</p> <p>Amount: 1 card for 6 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to a choice of either 1 Ore OR 1 Stone each turn</p>
Priority	3
Risk	M

Requirement ID	CBR11
Title	Brown Card: 11
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Sawmill</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 4 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to 2 Wood</p>
Priority	2
Risk	M

Requirement ID	CBR12
Title	Brown Card: 12
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Quarry</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 4 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to 2 Stone</p>
Priority	2
Risk	M

Requirement ID	CBR13
Title	Brown Card: 13
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Brickyard</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 4 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to 2 Clay</p>
Priority	2
Risk	M

Requirement ID	CBR14
Title	Brown Card: 14
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Foundry</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 4 or more players</p> <p>Requirements: 1 Coin</p> <p>Effects: Gives access to 2 Ore</p>
Priority	2
Risk	M

3.1.1.7 Gray Cards

Requirement ID	CGR01
Title	Gray Card: 1
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Loom</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 or more players 2 cards for 6 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Loom</p>
Priority	2
Risk	M

Requirement ID	CGR02
Title	Gray Card: 2
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Glassworks</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 or more players 2 cards for 6 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Glass</p>
Priority	2
Risk	M

Requirement ID	CGR03
Title	Gray Card: 3
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Press</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 or more players 2 cards for 6 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Papyrus</p>
Priority	2
Risk	M

Requirement ID	CGR04
Title	Gray Card: 4
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Loom</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 5 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Loom</p>
Priority	2
Risk	M

Requirement ID	CGR05
Title	Gray Card: 5
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Glassworks</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 5 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Glass</p>
Priority	2
Risk	M

Requirement ID	CGR06
Title	Gray Card: 6
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Press</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 or more players 2 cards for 5 or more players</p> <p>Requirements: None</p> <p>Effects: Gives access to 1 Papyrus</p>
Priority	2
Risk	M

3.1.1.8 Blue Cards

Requirement ID	CBL01
Title	Blue Card: 1
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Pawnshop</p> <p>Available: Age 1</p> <p>Amount: 1 card for 4 players 2 cards for 7 or more players</p> <p>Requirements: None</p> <p>Effects: Gives 3 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL02
Title	Blue Card: 2
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Baths</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 1 Stone</p> <p>Chains to: Aqueduct</p> <p>Effects: Gives 3 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL03
Title	Blue Card: 3
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Altar</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: None</p> <p>Chains to: Temple</p> <p>Effects: Gives 2 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL04
Title	Blue Card: 4
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Theater</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: None</p> <p>Chains to: Statue</p> <p>Effects: Gives 2 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL05
Title	Blue Card: 5
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Aqueduct</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 3 Stone</p> <p>Chains from: Baths</p> <p>Effects: Gives 5 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL06
Title	Blue Card: 6
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Temple</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: 1 Wood 1 Clay 1 Glass</p> <p>Chains from: Altar</p> <p>Chains to: Pantheon</p> <p>Effects: Gives 3 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL07
Title	Blue Card: 7
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Statue</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 1 Wood 2 Ore</p> <p>Chains from: Theater</p> <p>Chains to: Gardens</p> <p>Effects: Gives 4 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL08
Title	Blue Card: 8
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Courthouse</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 2 Clay 1 Loom</p> <p>Chains from: Theater</p> <p>Chains to: Gardens</p> <p>Effects: Gives 4 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL09
Title	Blue Card: 9
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Pantheon</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: 2 Clay 1 Ore 1 Papyrus 1 Loom 1 Glass</p> <p>Chains from: Temple</p> <p>Effects: Gives 7 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL10
Title	Blue Card: 10
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Gardens</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: 1 Wood 2 Clay</p> <p>Chains from: Statue</p> <p>Effects: Gives 5 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL11
Title	Blue Card: 11
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Town Hall</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 card for 5 players 3 cards for 6 or more players</p> <p>Requirements: 1 Glass 1 Ore 2 Stone</p> <p>Effects: Gives 6 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL12
Title	Blue Card: 12
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Palace</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 1 Glass 1 Papyrus 1 Loom 1 Clay 1 Wood 1 Ore 1 Stone</p> <p>Effects: Gives 8 Victory points</p>
Priority	2
Risk	L

Requirement ID	CBL13
Title	Blue Card: 13
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Senate</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 1 Ore 1 Stone 2 Wood</p> <p>Chains from: Library</p> <p>Effects: Gives 6 Victory points</p>
Priority	2
Risk	L

3.1.1.9 Red Cards

Requirement ID	CRE01
Title	Red Card: 1
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Stockade</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 1 Wood</p> <p>Effects: Gives 1 Military point</p>
Priority	2
Risk	M

Requirement ID	CRE02
Title	Red Card: 2
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Barracks</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 1 Ore</p> <p>Effects: Gives 1 Military point</p>
Priority	2
Risk	M

Requirement ID	CRE03
Title	Red Card: 3
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Guard Tower</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: 1 Clay</p> <p>Effects: Gives 1 Military point</p>
Priority	2
Risk	M

Requirement ID	CRE04
Title	Red Card: 4
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Walls</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 3 Stone</p> <p>Effects: Gives 2 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE05
Title	Red Card: 5
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Training Ground</p> <p>Available: Age 2</p> <p>Amount: 1 card for 4 players 2 cards for 6 players 3 cards for 7 or more players</p> <p>Requirements: 1 Wood 2 Ore</p> <p>Effects: Gives 2 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE06
Title	Red Card: 6
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Stables</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 1 Ore 1 Clay 1 Wood</p> <p>Chains from: Apothecary</p> <p>Effects: Gives 2 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE07
Title	Red Card: 7
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Archery Range</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: 2 Wood 1 Ore</p> <p>Chains from: Workshop</p> <p>Effects: Gives 2 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE08
Title	Red Card: 8
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Fortifications</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 1 Stone 3 Ore</p> <p>Effects: Gives 3 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE09
Title	Red Card: 9
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Circus</p> <p>Available: Age 3</p> <p>Amount: 1 card for 4 players 2 cards for 5 players 3 cards for 6 or more players</p> <p>Requirements: 3 Stone 1 Ore</p> <p>Effects: Gives 3 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE10
Title	Red Card: 10
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Arsenal</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 4 players 3 cards for 7 or more players</p> <p>Requirements: 1 Ore 2 Wood 1 Loom</p> <p>Effects: Gives 3 Military points</p>
Priority	2
Risk	M

Requirement ID	CRE11
Title	Red Card: 11
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Siege Workshop</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 1 Wood 3 Clay</p> <p>Chains from: Laboratory</p> <p>Effects: Gives 3 Military points</p>
Priority	2
Risk	M

3.1.1.10 Yellow Cards

Requirement ID	CYE01
Title	Yellow Card: 1
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Tavern</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 5 players 3 cards for 7 or more players</p> <p>Requirements: None</p> <p>Effects: Gives 5 Coins</p>
Priority	2
Risk	M

Requirement ID	CYE02
Title	Yellow Card: 2
Description	Name: East Trading Post Available: Age 1 Amount: 1 card for 3 players 2 cards for 7 or more players Requirements: None Chains to: Forum Effects: Starting on the turn following the one in which this building was constructed, the player may purchase raw materials from the neighbouring city to the right for 1 Coin instead of 2
Priority	2
Risk	H

Requirement ID	CYE03
Title	Yellow Card: 3
Description	Name: West Trading Post Available: Age 1 Amount: 1 card for 3 players 2 cards for 7 or more players Requirements: None Chains to: Forum Effects: Starting on the turn following the one in which this building was constructed, the player may purchase raw materials from the neighbouring city to the left for 1 Coin instead of 2
Priority	2
Risk	H

Requirement ID	CYE04
Title	Yellow Card: 4
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Marketplace</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: None</p> <p>Chains to: Caravansery</p> <p>Effects: Starting on the turn following the one in which this structure was built, the player may pay for the manufactured goods bought from his or her neighbours 1 Coin instead of 2</p>
Priority	2
Risk	H

Requirement ID	CYE05
Title	Yellow Card: 5
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Forum</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 6 players 3 cards for 7 or more players</p> <p>Requirements: 2 Clay</p> <p>Chains from: East Trading Post OR West Trading Post</p> <p>Chains to: Haven</p> <p>Effects: Gives access to a choice of either 1 Loom OR 1 Glass OR 1 Papyrus each turn</p>
Priority	2
Risk	M

Requirement ID	CYE06
Title	Yellow Card: 6
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Caravansery</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 5 players 3 cards for 7 or more players</p> <p>Requirements: 2 Wood</p> <p>Chains from: Marketplace</p> <p>Chains to: Lighthouse</p> <p>Effects: Gives access to a choice of either 1 Clay OR 1 Stone OR 1 Ore OR 1 Wood each turn</p>
Priority	2
Risk	M

Requirement ID	CYE07
Title	Yellow Card: 7
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Vineyard</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: None</p> <p>Effects: On the turn following the one in which this structure was built, the player gains 1 Coin per brown card built in the players city AND in the two neighbouring cities</p>
Priority	2
Risk	L

Requirement ID	CYE08
Title	Yellow Card: 8
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Bazar</p> <p>Available: Age 2</p> <p>Amount: 1 card for 4 players 2 cards for 7 or more players</p> <p>Requirements: None</p> <p>Effects: On the turn following the one in which this structure was built, the player gains 1 Coin per gray card built in the players city AND in the two neighbouring cities</p>
Priority	2
Risk	L

Requirement ID	CYE09
Title	Yellow Card: 9
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Haven</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: 1 Loom 1 Ore 1 Wood</p> <p>Chains from: Forum</p> <p>Effects: On the turn following the one in which this structure was built, the player gains 1 Coin per brown card present in a player's city. At the end of the game, the card is worth 1 victory point for each brown card present in the player's city</p>
Priority	3
Risk	L

Requirement ID	CYE10
Title	Yellow Card: 10
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Lighthouse</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: 1 Glass 1 Stone</p> <p>Chains from: Caravansery</p> <p>Effects: On the turn following the one in which this structure was built, the player gains 1 Coin per yellow card present in the player's city. At the end of the game, the card is worth 1 victory point for each yellow card present in the player's city</p>
Priority	3
Risk	L

Requirement ID	CYE11
Title	Yellow Card: 11
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Chamber of Commerce</p> <p>Available: Age 3</p> <p>Amount: 1 card for 4 players 2 cards for 6 or more players</p> <p>Requirements: 2 Clay 1 Papyrus</p> <p>Effects: On the turn following the one in which this structure was built, the player gains 2 Coins per gray card present in the player's city. At the end of the game, the card is worth 2 victory point for each gray card present in the player's city</p>
Priority	3
Risk	L

Requirement ID	CYE12
Title	Yellow Card: 12
Description	<p>The following card(s) should be available in the card pool:</p> <p>Name: Arena</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 5 players 3 cards for 7 or more players</p> <p>Requirements: 1 Ore 2 Stone</p> <p>Chains from: Dispensary</p> <p>Effects: On the turn following the one in which this structure was built, the player gains 3 Coins per wonder stage built in the player's city. At the end of the game, the card is worth 1 victory point for each wonder stage built in the player's city</p>
Priority	3
Risk	L

3.1.1.11 Green Cards

Requirement ID	CGE01
Title	Green Card: 1
Description	<p>Name: Apothecary</p> <p>Available: Age 1</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 1 Loom</p> <p>Chains to: Stables Dispensary</p> <p>Effects: Gives 1 Mathematical point</p>
Priority	3
Risk	M

Requirement ID	CGE02
Title	Green Card: 2
Description	Name: Workshop Available: Age 1 Amount: 1 card for 3 players 2 cards for 7 or more players Requirements: 1 Glass Chains to: Archery Range Laboratory Effects: Gives 1 Mechanical point
Priority	3
Risk	M

Requirement ID	CGE03
Title	Green Card: 3
Description	Name: Scriptorium Available: Age 1 Amount: 1 card for 3 players 2 cards for 4 or more players Requirements: 1 Papyrus Chains to: Courthouse Library Effects: Gives 1 Theological point
Priority	3
Risk	M

Requirement ID	CGE04
Title	Green Card: 4
Description	<p>Name: Dispensary</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: 2 Ore 1 Glass</p> <p>Chains from: Apothecary</p> <p>Chains to: Arena Lodge</p> <p>Effects: Gives 1 Mathematical point</p>
Priority	3
Risk	M

Requirement ID	CGE05
Title	Green Card: 5
Description	<p>Name: Laboratory</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 2 Clay 1 Papyrus</p> <p>Chains from: Workshop</p> <p>Chains to: Siege Workshop Observatory</p> <p>Effects: Gives 1 Mechanical point</p>
Priority	3
Risk	M

Requirement ID	CGE06
Title	Green Card: 6
Description	<p>Name: Library</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: 2 Stone 1 Loom</p> <p>Chains from: Scriptorium</p> <p>Chains to: Senate University</p> <p>Effects: Gives 1 Theological point</p>
Priority	3
Risk	M

Requirement ID	CGE07
Title	Green Card: 7
Description	<p>Name: School</p> <p>Available: Age 2</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 1 Wood 1 Papyrus</p> <p>Chains to: Academy Study</p> <p>Effects: Gives 1 Theological point</p>
Priority	3
Risk	M

Requirement ID	CGE08
Title	Green Card: 8
Description	<p>Name: Lodge</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 6 or more players</p> <p>Requirements: 2 Clay 1 Loom 1 Papyrus</p> <p>Chains from: Dispensary</p> <p>Effects: Gives 1 Mathematical point</p>
Priority	3
Risk	M

Requirement ID	CGE09
Title	Green Card: 9
Description	<p>Name: Observatory</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 2 Ore 1 Glass 1 Loom</p> <p>Chains from: Laboratory</p> <p>Effects: Gives 1 Mechanical point</p>
Priority	3
Risk	M

Requirement ID	CGE10
Title	Green Card: 10
Description	<p>Name: University</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 4 or more players</p> <p>Requirements: 2 Wood 1 Papyrus 1 Glass</p> <p>Chains from: Library</p> <p>Effects: Gives 1 Theological point</p>
Priority	3
Risk	M

Requirement ID	CGE11
Title	Green Card: 11
Description	<p>Name: Academy</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 7 or more players</p> <p>Requirements: 3 Stone 1 Glass</p> <p>Chains from: School</p> <p>Effects: Gives 1 Mathematical point</p>
Priority	3
Risk	M

Requirement ID	CGE12
Title	Green Card: 12
Description	<p>Name: Study</p> <p>Available: Age 3</p> <p>Amount: 1 card for 3 players 2 cards for 5 or more players</p> <p>Requirements: 1 Wood 1 Papyrus 1 Loom</p> <p>Chains from: School</p> <p>Effects: Gives 1 Mechanical point</p>
Priority	3
Risk	M

3.1.1.12 Purple Cards

Requirement ID	CPU01
Title	Purple Card: 1
Description	<p>Name: Workers Guild</p> <p>Available: Age 3</p> <p>Requirements: 2 Ore 1 Clay 1 Stone 1 Wood</p> <p>Effects: At the end of the game, gain 1 Victory point for each brown card your neighbours have built</p>
Priority	2
Risk	H

Requirement ID	CPU02
Title	Purple Card: 2
Description	<p>Name: Craftsmens Guild</p> <p>Available: Age 3</p> <p>Requirements: 2 Ore 2 Stone</p> <p>Effects: At the end of the game, gain 2 Victory points for each gray card your neighbours have built</p>
Priority	2
Risk	H

Requirement ID	CPU03
Title	Purple Card: 3
Description	Name: Traders Guild Available: Age 3 Requirements: 1 Loom 1 Papyrus 1 Glass Effects: At the end of the game, gain 1 Victory point for each yellow card your neighbours have built
Priority	2
Risk	H

Requirement ID	CPU04
Title	Purple Card: 4
Description	Name: Philosophers Guild Available: Age 3 Requirements: 3 Clay 1 Loom 1 Papyrus Effects: At the end of the game, gain 1 Victory point for each green card your neighbours have built
Priority	2
Risk	H

Requirement ID	CPU05
Title	Purple Card: 5
Description	Name: Spies Guild Available: Age 3 Requirements: 3 Clay 1 Glass Effects: At the end of the game, gain 1 Victory point for each red card your neighbours have built
Priority	2
Risk	H

Requirement ID	CPU06
Title	Purple Card: 6
Description	Name: Strategists Guild Available: Age 3 Requirements: 2 Ore 1 Stone 1 Loom Effects: At the end of the game, gain 1 Victory point for each defeat token your neighbours have earned
Priority	2
Risk	H

Requirement ID	CPU07
Title	Purple Card: 7
Description	Name: Shipowners Guild Available: Age 3 Requirements: 3 Wood 1 Papyrus 1 Glass Effects: At the end of the game, gain 1 Victory point for each brown card AND gray card AND purple card the player has built
Priority	2
Risk	H

Requirement ID	CPU08
Title	Purple Card: 8
Description	<p>Name: Scientists Guild</p> <p>Available: Age 3</p> <p>Requirements: 2 Wood 2 Ore 1 Papyrus</p> <p>Effects: At the end of the game, the player gains an extra Science token of their choice</p>
Priority	2
Risk	H

Requirement ID	CPU09
Title	Purple Card: 9
Description	<p>Name: Magistrates Guild</p> <p>Available: Age 3</p> <p>Requirements: 3 Wood 1 Stone 1 Loom</p> <p>Effects: At the end of the game, gain 1 Victory point for each blue card your neighbours have built</p>
Priority	2
Risk	H

Requirement ID	CPU010
Title	Purple Card: 10
Description	<p>Name: Builders Guild</p> <p>Available: Age 3</p> <p>Requirements: 2 Stone 2 Clay 1 Glass</p> <p>Effects: At the end of the game, gain 1 Victory point for each stage of the wonder the player AND their neighbours have built</p>
Priority	2
Risk	H

3.1.1.13 Wonder Boards

Requirement ID	WON01
Title	Wonder 1
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Colossus of Rhodes</p> <p>Free resource: 1 Ore</p> <p>Stage 1 – Side A: Cost: 2 Wood Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 3 Clay Effect: Gives 2 Military points</p> <p>Stage 3 – Side A: Cost: 4 Ore Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 3 Stone Effect: Gives 1 Military point Gives 3 Victory points Gives 3 Coins</p> <p>Stage 2 – Side B: Cost: 4 Ore Effect: Gives 1 Military point Gives 4 Victory points Gives 4 Coins</p> <p>Stage 3 – Side B: Cost: - Effect: -</p>
Priority	2
Risk	H

Requirement ID	WON02
Title	Wonder 2
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Lighthouse of Alexandria</p> <p>Free resource: 1 Glass</p> <p>Stage 1 – Side A: Cost: 2 Stone Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 2 Ore Effect: Gives access to a choice of either 1 Clay OR 1 Ore OR 1 Wood OR 1 Stone each turn (this resources cannot be bought by neighbouring cities)</p> <p>Stage 3 – Side A: Cost: 2 Glass Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 2 Clay Effect: Gives access to a choice of either 1 Clay OR 1 Stone OR 1 Ore OR 1 Wood each turn (this resources cannot be bought by neighbouring cities)</p> <p>Stage 2 – Side B: Cost: 2 Wood Effect: Gives access to a choice of either 1 Glass OR 1 Loom OR 1 Papyrus each turn (this resources cannot be bought by neighbouring cities)</p> <p>Stage 3 – Side B: Cost: 3 Stone Effect: Gives 7 Victory points</p>
Priority	2
Risk	H

Requirement ID	WON03
Title	Wonder 3
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Temple of Artemis in Ephesus</p> <p>Free resource: 1 Papyrus</p> <p>Stage 1 – Side A: Cost: 2 Stone Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 2 Wood Effect: Gives 9 Coins</p> <p>Stage 3 – Side A: Cost: 2 Papyrus Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 2 Stone Effect: Gives 2 Victory points Gives 4 Coins</p> <p>Stage 2 – Side B: Cost: 2 Wood Effect: Gives 3 Victory points Gives 4 Coins</p> <p>Stage 3 – Side B: Cost: 1 Papyrus 1 Loom 1 Glass Effect: Gives 5 Victory points Gives 4 Coins</p>
Priority	2
Risk	H

Requirement ID	WON04
Title	Wonder 4
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Hanging Gardens of Babylon</p> <p>Free resource: 1 Clay</p> <p>Stage 1 – Side A: Cost: 2 Clay Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 3 Wood Effect: At the end of the game, the player gains an extra scientific symbol of their choice</p> <p>Stage 3 – Side A: Cost: 4 Clay Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 1 Loom 1 Clay Effect: Gives 3 Victory points</p> <p>Stage 2 – Side B: Cost: 1 Glass 2 Wood Effect: At the end of each age, the player will play their seventh card instead of discarding it. This card can be played by paying its costs, discarded to earn 3 Coins or used in the building of the third stage of the Wonder</p> <p>Stage 3 – Side B: Cost: 1 Papyrus 3 Clay Effect: At the end of the game, the player gains an extra scientific symbol of their choice</p>
Priority	2
Risk	H

Requirement ID	WON05
Title	Wonder 5
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Statue of Zeus in Olympia</p> <p>Free resource: 1 Wood</p> <p>Stage 1 – Side A: Cost: 2 Wood Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 2 Stone Effect: The player can, once per Age, build a structure of their choice for free</p> <p>Stage 3 – Side A: Cost: 2 Ore Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 2 Wood Effect: Starting on the turn following the one in which this stage of the wonder was built, the player can purchase raw materials from the neighbouring cities for 1 Coin instead of 2</p> <p>Stage 2 – Side B: Cost: 2 Stone Effect: Gives 5 Victory points</p> <p>Stage 3 – Side B: Cost: 1 Loom 2 Ore Effect: At the end of the game, the player can choose to copy a purple card built by one of their neighbours</p>
Priority	2
Risk	H

Requirement ID	WON06
Title	Wonder 6
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Mausoleum of Halicarnassus</p> <p>Free resource: 1 Loom</p> <p>Stage 1 – Side A: Cost: 2 Clay Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 3 Ore Effect: At the end of the turn, the player may look through all the cards discarded since the beginning of the game (those discarded for Coins as well as those discarded at the end of an age), pick one and build it for free (any card discarded at the end of this turn can also be chosen)</p> <p>Stage 3 – Side A: Cost: 2 Loom Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 2 Ore Effect: Gives 2 Victory points At the end of the turn, the player may look through all the cards discarded since the beginning of the game (those discarded for Coins as well as those discarded at the end of an age), pick one and build it for free (any card discarded at the end of this turn can also be chosen)</p> <p>Stage 2 – Side B: Cost: 3 Clay Effect: Gives 1 Victory point At the end of the turn, the player may look through all the cards discarded since the beginning of the game (those discarded for Coins as well as those discarded at the end of an age), pick one and build it for free (any card discarded at the end of this turn can also be chosen)</p> <p>Stage 3 – Side B: Cost: 1 Glass 1 Papyrus 1 Loom Effect: At the end of the turn, the player may look through all the cards discarded since the beginning of the game (those discarded for Coins as well as those discarded at the end of an age), pick one and build it for free (any card discarded at the end of this turn can also be chosen)</p>
Priority	2
Risk	H

Requirement ID	WON07
Title	Wonder 7
Description	<p>The following wonder should be available to be selected:</p> <p>Name: The Pyramids of Giza</p> <p>Free resource: 1 Stone</p> <p>Stage 1 – Side A: Cost: 2 Stone Effect: Gives 3 Victory points</p> <p>Stage 2 – Side A: Cost: 3 Wood Effect: Gives 5 Victory points</p> <p>Stage 3 – Side A: Cost: 4 Stone Effect: Gives 7 Victory points</p> <p>Stage 1 – Side B: Cost: 2 Wood Effect: Gives 3 Victory points</p> <p>Stage 2 – Side B: Cost: 3 Stone Effect: Gives 5 Victory points</p> <p>Stage 3 – Side B: Cost: 3 Clay Effect: Gives 5 Victory points</p> <p>Stage 4 – Side B: Cost: 1 Papyrus 4 Stone Effect: Gives 7 Victory points</p>
Priority	2
Risk	H

3.1.2 GUI

3.1.2.1 Starting a game

Requirement ID	GUISM
Title	Main page
Description	There must be a page where users can choose to: <ul style="list-style-type: none">• Create a new game lobby• Join another players game• Exit the game
Priority	2
Risk	M

Requirement ID	GUISL
Title	Game lobby
Description	When users choose to create a new game lobby, they must then be able to: <ul style="list-style-type: none">• Set the number of players (any players who aren't real users will be AI players instead)• Set the maximum time players have to choose their action(s) each turn• Set the level of the AI players in the game• Set the difficulty of the game (see requirement LSW for description of difficulty)• Start the game <p>They must also be able to see users who have connected to their game, and eject them from the lobby if they choose.</p>
Priority	1
Risk	H

Requirement ID	GUISJ
Title	Joining a game
Description	When users choose to join a game, they must somehow be able to connect with a user who has created a game lobby.
Priority	1
Risk	H

Requirement ID	GUISP
Title	Game setup
Description	Before the first turn of a game begins, every player must be able to choose their neighbours and be shown their assigned wonder board (and side).
Priority	1
Risk	H

3.1.2.2 Playing area

Requirement ID	GUIP
Title	Game platform
Description	<p>During the game, the players will be able to view a number of things at any time. These include:</p> <ul style="list-style-type: none"> • The discarded cards • The current age and turn • The time remaining in the current turn (if a turn is happening) <p>And, for each player in play (including themselves) they will be able to view:</p> <ul style="list-style-type: none"> • The neighbouring players • The wonder board • The Coins and conflict tokens • The cards that have been built • The stages of the wonder that have been built <p>The players will not be able to view any other cards (except the cards they choose from each turn), such as cards used to build a stage of a wonder, cards other players have chosen to play (but have not played yet), or cards that other players are currently choosing from. If those cards need to be represented in the GUI in some way, the “back” of the card will be shown instead, as specified in requirement GUIEB.</p> <p>Appendix 1: Main screen mockup includes a basic mockup of how this may look to the player.</p>
Priority	1
Risk	H

3.1.2.3 Game actions

Requirement ID	GUIAP
Title	Playing cards
Description	<p>Each turn, the player will be shown the set of cards they can choose from to play. They will then be able to:</p> <ul style="list-style-type: none"> • Choose a card • Choose an action (build, use to build wonder, or discard), as long as they can play that action on the chosen card <p>The player can change their mind until every player has made a decision, or the time for the turn is up. If a player has not made a decision before the timer expires, a random card will be selected and discarded as their play for that turn.</p>
Priority	2
Risk	H

Requirement ID	GUIAT
Title	Trading
Description	<p>If a player needs to trade to build a resource, they must be able to select which resources they are going to buy from each of their neighbours to satisfy the build requirement. If they have effects which give them a choice of resources each turn, they may also choose which of those resources they are using (as this may effect which resources they have to buy).</p> <p>Appendix 2: Trading mockup includes a basic mockup of how this may look to the player.</p>
Priority	3
Risk	L

Requirement ID	GUIAEB
Title	Free effect build
Description	<p>If a player has the effect from the wonder board “The Statue of Zeus in Olympia” which allows them to build one card for free each age, and they have not already used the effect in the current age, they must be able to indicate that they will use the effect in the current turn, and then they can pick any card to build (using the effect).</p>
Priority	3
Risk	L

Requirement ID	GUIAET
Title	Effects at the end of a turn
Description	<p>If a player builds a stage of their wonder which allows them to take another action at the end of their turn (either “The Mausoleum of Halicarnassus’s” effect allowing the player to build a card from the discard pile or “The Hanging Gardens of Babylon’s” effect allowing the player to play the last card of an age instead of discarding it) then, after the turn is over and the player has seen the outcome, but before the start of the next turn where players receive their next set of cards, the player must be able to choose what they want to do with that action.</p>
Priority	3
Risk	L

Requirement ID	GUIAC
Title	Conflict
Description	<p>At the end of each age, players will see who won and lost all the conflicts, and the tokens which each player gains as a result.</p>
Priority	3
Risk	L

Requirement ID	GUIAE
Title	Victory and loss actions
Description	At the end of the game, users will see a message indicating whether they won or lost, as well as the final scores of every player.
Priority	2
Risk	H

3.1.2.4 GUI elements

Requirement ID	GUIEW
Title	Wonder boards
Description	<p>Players will be able to see details of the boards the other players are using, including:</p> <ul style="list-style-type: none"> • Which side the player is using • The resource the wonder provides • The stages of the wonder (including the cost for the stage, and the effect of building the stage)
Priority	1
Risk	C

Requirement ID	GUIEM
Title	Coins
Description	<p>Coins will be displayed as two different tokens:</p> <ul style="list-style-type: none"> • Golden Coins with “3” at front side (worth 3 Coins) • Silver Coins with “1” at front side (worth 1 Coin) <p>When showing a “number of Coins”, these tokens will be used to display them.</p>
Priority	3
Risk	L

Requirement ID	GUIECT
Title	Conflict tokens
Description	<p>Four sizes of tokens will be used to display military victory/defeat:</p> <ul style="list-style-type: none"> • Small eagle shield with a “1” on it • Medium eagle shield with a “3” on it • Large eagle shield with a “5” on it • Octagon defeat token with a “-1” on it
Priority	1
Risk	H

Requirement ID	GUIEB
Title	Backs of cards
Description	<p>When showing the “back” of a card, a different card will be shown depending on the age the card came from, these are:</p> <ul style="list-style-type: none">• Brown cards with a roman numeral “I” for cards from age 1• Blue cards with a roman numeral “II” for cards from age 2• Purple cards with a roman number “III” for cards from age 3
Priority	3
Risk	L

Requirement ID	GUIEC
Title	Front of cards
Description	<p>When displaying a card, the player must be able to determine:</p> <ul style="list-style-type: none">• The name of the card• The colour/type of the card• The resource cost of the card (where applicable)• Any other cards which chain from, or to this card• The effect of the card
Priority	1
Risk	C

3.1.3 AI

Requirement ID	AIB
Title	AI basics
Description	An AI player does not use the GUI, but every AI player must have access to everything a user would have access to through the GUI, and nothing else. An AI player may also have knowledge of the cards that are in the deck (and will be in play with the current number of players).
Priority	1
Risk	C

3.1.3.1 Artificial Intelligence Players

Requirement ID	AIPR
Title	Random AI
Description	<p>An AI player which makes actions somewhat randomly.</p> <p>Each turn, the AI will first try and use a random card to build a stage of its wonder.</p> <p>If that is not possible it will try and build a random card. If it needs to trade to build the card, it will choose the cheapest method to build the card, or randomly where there are multiple options which would cost the same. If the AI cannot build the chosen card, even with trading, it will pick another random card.</p> <p>If the AI cannot build a stage of its wonder or build any card, it will discard a random card.</p>
Priority	1
Risk	H

Requirement ID	AIPO
Title	Random order AI
Description	<p>An AI player who randomly chooses an ordering for the different card colours at the start of the game (e.g. red, brown, purple, blue ... etc.).</p> <p>This AI is the same as the AI in AIPR, only it will always choose cards with a colour earlier in its ordering where possible.</p>
Priority	1
Risk	M

Requirement ID	AIPE
Title	Easy AI
Description	<p>At any turn, if this AI can build a stage of its wonder, it will do so with a random card.</p> <p>In the first age, this AI will build the most expensive card (the card that costs the highest number of resources) it can, or a brown card otherwise, followed by grey cards, followed by a random card. If it can't build anything it will discard a random card instead.</p> <p>After the first age, the AI will create an ordering of preferences based on the effects granted to it by the stages of its wonder (which are all unbuilt at this point) and the cards it has in play. It will choose this ordering by selecting the colours which it has the highest number of cards in play (plus wonder stages with effects that would come from that colour), and choosing randomly where there are ties.</p> <p>In the second age, the AI will try to ensure it has access to at least one of every resource first (either in its city or a neighbouring one). Then it will try and build cards in the order of its preference, same as AIPO.</p> <p>In the third age, the AI will try and build at least 1 guild. Otherwise, it will try and build in order of its preference as before.</p>
Priority	1
Risk	M

Requirement ID	AIPM
Title	Medium AI
Description	<p>An AI player which acts like AIPE, only instead of the random ordering it will try and play the card which would grant it the largest amount of victory points. If there is a tie the AI will try and build cards in the order of the number of cards of the same colour it has already played. If there is still a tie the AI will choose randomly.</p>
Priority	2
Risk	M

Requirement ID	AIPH
Title	Hard AI
Description	<p>An AI player which acts like AIPM, except where it would choose randomly from a selection of cards it instead attempts to use the cards which would be most beneficial to another player, preferentially players with higher numbers of points.</p> <p>Also, in ages one and two it will build resource cards which it needs to construct the stages of its wonder where possible.</p>
Priority	2
Risk	M

Requirement ID	AIPI
Title	Insane AI
Description	An AI which functions like AIPH, except it also factors in knowledge of the card pool and keeps track of the cards it can see in play and the cards it has passed on in previous turns to estimate probabilities of which cards it will receive in future turns. When wishing to make a certain play, the AI may “guess” at what cards are coming in future, and use those potential future cards to satisfy its motives and allow it to make a different play immediately.
Priority	3
Risk	L

3.1.3.2 Tutorial

Requirement ID	AIT
Title	Tutorial Level
Description	In addition to a written tutorial, a playable tutorial level should also be supplied. This will include the player being prompted through a game with non-randomized cards being dealt at the start of each age. The prompts should instruct the player which cards to choose and show them how to play those cards in the first age before letting the player take over in ages two and three. Any time something the player hasn't seen before (in the tutorial) appears, a prompt should appear to explain it.
Priority	2
Risk	M

3.2 Non-Functional Requirements

Requirement ID	NFR001
Title	Accessibility
Description	The game should be able to be used on any system which can run EiffelStudio. These systems will require an internet connection to facilitate playing against other non AI players.
Priority	1
Risk	H

Requirement ID	NFR002
Title	Usability
Description	<p>The game should be easily useable by any user who has:</p> <ul style="list-style-type: none">• At least minor experience with a computer• Read the game rules and instructions• Completed the tutorial level
Priority	1
Risk	H

Requirement ID	NFR003
Title	Stability
Description	<p>The game should not crash or perform any unspecified behaviour during normal game operation. It should also continue operating in more unusual cases, such as when players try to do illegal actions or in the case of an error. If there is an unrecoverable error or a situation arises where the game cannot continue, the game should exit cleanly and show the user a simple error message. In this case the game might also give the user the option to send more detailed information to the developers.</p>
Priority	1
Risk	H

Requirement ID	NFR003
Title	Security
Description	<p>The players of a game should not be able to view data that has not been explicitly shown to them. Nor should they be able to perform actions that aren't available to them, or perform the actions of another player.</p> <p>In particular, players should not be able to, in any way, view the cards other players are choosing from, or the actions another player is choosing to make until all players have made their choice.</p>
Priority	2
Risk	H

Requirement ID	NFR004
Title	Difficulty
Description	7 Wonders should provide an enjoyable level of challenge to each player. This challenge level should facilitate the average user being able to easily defeat the easy AI and having a progressively more difficult time against the other AIs.
Priority	2
Risk	M

Requirement ID	NFR005
Title	Response Time
Description	The game should respond to the player's actions in a short time, preferably fast enough that the player cannot notice a delay.
Priority	2
Risk	M

Requirement ID	NFR006
Title	Disconnection issue
Description	The game should be able to deal with disconnection of players in the game. This means that when a disconnection occurs in the game, the game should stop and the disconnected player should be able to reconnect. During this time the other players should be alerted that the game has lost connection to a player. If a player is disconnected for a long period of time, an AI player may take the place of the disconnected player and continue to play the game.
Priority	3
Risk	M

4 Supporting Information

4.1 Appendix 1: Main screen mockup

Other players (who are not neighbours). This shows the name and an indicator for whether the player has chosen their action for this turn or not

Choice of cards the player can play this turn

Other players' number of Shields

A neighbouring player. This shows name, status indicator, number of Shields, number of coins and the number of **tradeable** resources this player has



The player's current resources and coins

The player's wonder board. This also shows built wonder stages (backs of cards placed under the stage) and the cards the player has built (placed above and behind the wonder board)

The player's current number of Shields, conflict tokens, and science points.

4.2 Appendix 2: Trading mockup

