Project Structure Document

Part 2 - Game Prototype

Computer Games Laboratory

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Contents

1. Prototype Description

Motivation:

Our goal with the prototyping process was to help identify the following:

- Solidify the core mechanics and clean up any inconsistencies in the gameplay loop.
- Identify challenges that could occur when transitioning from a physical medium to digital space.
- Identify areas of improvement that a digitized game provides over the traditional board game experience.

Approach:

In order to model our board game easily over a virtual environment, we used Tabletop Simulator (TTS) by Berserk Games. TTS is a physics sandbox that can be used for rapid prototyping and refinement of tabletop games. After uploading our assets into the simulator, we ran multiple tests to help identify issues with the gameplay loop and solidify the core mechanics.

We also researched existing digitized adaptations of board games that were recently released, in order to understand how they approached the digitization process. The games Scythe Digital, Root, and Battle Brothers were played multiple times, so in short this was probably the most fun research experience we had. We also looked up documentation of such releases online, and were able to connect with like minded developers from indie studios, to help understand some of the challenges they encountered and lessons learned when transitioning from the physical to digital space.

At all stages of the process, we kept referring back to our knowledge of the Unity game engine and related networking tools, to draw parallels in the way certain functionality could be implemented, as well as potential challenges and gaps that would exist. These learnings are summarized in the section following the gameplay details.

1.1. Gameplay Details

The following section was also provided in the Game Pitch Report, albeit with older versions of some sketches. The duplication will be removed in the final consolidated report.

Prototype Summary:

The following image lists the overall prototype fully laid out in Tabletop Simulator.

Figure 1: Prototype Overview

1.1.1. Game Flow

The game is played over a series of Action and Reset turns. The player with the Action marker starts the game and plays their Action turn. Immediately after, the player with the Reset marker plays their Reset turn. After both players complete their Action and Reset turns respectively, they move each marker clockwise.

Action Turn:

The purpose of the action turn is primarily to save people. Players may choose to do so in an orderly fashion, or they may even create additional **chaos** to save more people and meet secret objectives. Players play actions by moving workers from their available pool to the action mat. A player may use up to 2 workers on their Action turn, by placing their workers on the corresponding location on the Action mat. A player may choose from the following 5 actions:

- Authorize: Permit someone into the city, different types of villagers have restrictions.
- Swap: Interchange the position of two people.
- Riot: Create chaos with a Guild Knight and run into the city. Commoners may follow, receive Disgrace based on injuries caused.
- Revive: Assist an injured villager up and gain Honor.
- Objective: Draw a new objective card.

Reset Turn:

The purpose of the reset turn is to restore **order** by:

- Maintaining the flow in the evacuation board by moving villagers forward while maintaining queuing priority and refilling the empty spaces with new villagers.
- Relieving used workers from the action mat back to make them available in the players' pool again.
- Maintaining knight formation against the giants or retreating.

The Reset player chooses one ability from each side of the Reset mat (Guild Orders and Relief Orders). The player may use these chosen abilities in any sequence during their turn.

Move Turn Markers:

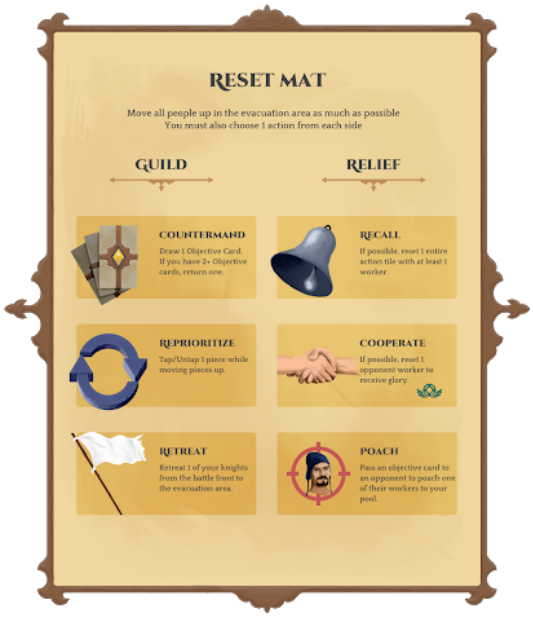
Once the two players have taken an Action and Reset turn respectively, each marker is moved one step clockwise to the next player. Play then continues with the player with the Action marker taking their Action turn and the player with the Reset marker following with their Reset turn, until the Game End is triggered.

Game End:

The end of the game is triggered when:

1. All villagers have been brought to safety OR
2. The total guild knight strength in the battlefront is lower than the strength of the giants

(a) Actions Possible



(b) Reset Abilities

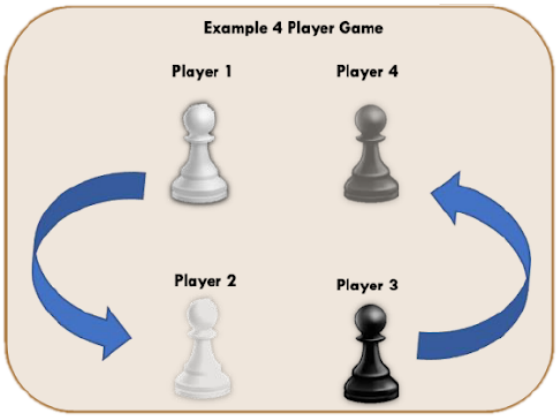


Figure 3: Move Turn Markers

Scoring:

Players earn Influence Points for the following categories, the player with the most IP wins the game:

- 1 IP per piece rescued by the player (includes villagers AND guild knights)
- Value from glory tracker
- Value from completed objectives
- Value from claimed inner city rewards

1.1.2. Additional Rules and Content

Further rules and envisioned content are listed as follows:

Movement Rules:

Pieces may only move forwards towards the city gate. Backwards and lateral movement is not allowed.

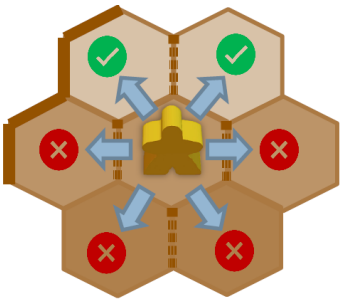
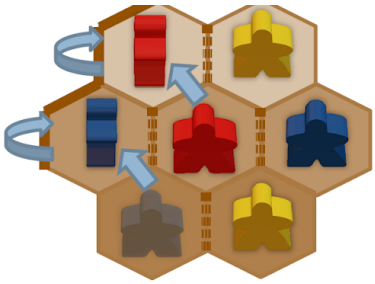


Figure 4: Movement Rules

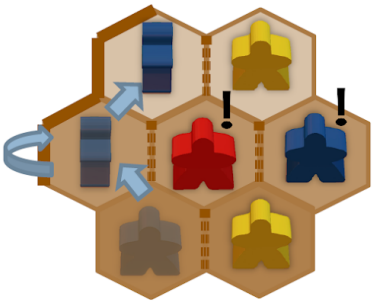
Queuing Order:

As upholders of justice and equality, the city of Kota prides itself on its adherence to order at all times, even in the midst of a crisis. The movement of people into the city is tightly regulated by a FIFO (First In First Out) system, to ensure that there is no discrimination of any kind. FIFO is maintained on the basis of priority levels, and is tracked via rows (distance to the city gate).

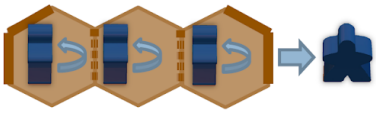
- Untapped and injured pieces are considered high priority, tapped pieces are lower priority.
- Within a row, all high priority pieces must be moved first. If this order is violated, the player receives a Disgrace for each piece that breaks FIFO. (5b)
- An adult moved forward must tap. (5a)
  - Children never tap and are always high priority.
  - An adult moving forward to an empty row does not tap.
  - Tapped pieces remain tapped while moving forward.
- If an entirely filled row contains only tapped pieces, then all of the pieces in the row must be immediately untapped. (5c)



(a) Tapping



(b) Breaking FIFO



(c) Untapping

Figure 5: Queuing Rules

Objectives:

Objective cards are hidden goals that each player is trying to complete. Objectives may be completed by a player at any point during their Action or Reset turn. There is no limit to the number of objectives that a player may hold in their hand, or the number that they may complete on a single turn.

Objective cards will be of three types: Rescue (set collection of villagers), Observe (pattern formation in the crisis area), and Admin (miscellaneous logistics activities). A set of standard game objectives is present inside the city, which may be claimed once by each player with the use of a Guild Knight.

Types of Pieces:

The pieces involved in the crisis are of four types:

- Children: Possess mobility in the queue and are always high priority. But they must be accompanied by an adult, as the city does not take kindly to negligence.
- Commoners: Run of the mill villagers. They possess herd mentality, which allows them to become followers in Riots.
- Elderly: They are slow moving, but the city expects special care to be given to accommodate them, in which case they provide Honor. Failure to do so leads to Disgrace.
- Guild Knights: Player specific pieces, which participate in the defence against the giants. They may be used to start Riots in the queue, as well as to secure additional influence in the castle.

Glory Tracker:

The city of Kota takes special pride in the glory of its guilds. Good deeds (maintaining order, going above and beyond) are rewarded with Honor. Misdemeanors (creating chaos or breaking rules) will be deemed a Disgrace. These values are tracked via pieces for each player, and the final value is added to the end game score.

Figure 6: Glory Tracker for Disgrace and Honor

2. Gameplay Experience

Our gameplay experience varied on the basis of our overall experience with board games (casual gamers or hobby gamers).

Casual Gamers:

Our casual board game players found the game itself very enjoyable. While the game is not a brain teaser (in a good way, since we would want to keep the gameplay somewhat casual), it still requires strategic thinking and adaptability.

Overall, the game is quite sufficient when it comes to content. Elements such as objective cards and global objectives (inner city reward system) definitely help a lot keeping the game alive and avoid getting any stale vibes. The pattern recognition tasks were particularly cool since players don't know which pattern objective their opponents have, which in turn leads to more unpredictability (also toning up the chaos/order aspect of the game). Another aspect of the game which our casual gamers really enjoyed was the two turn mechanic (action/reset): it severely decreases the downtime for players and almost constantly keeps players in the loop, which could be particularly useful for a "digital" game since players usually tend to lose concentration faster/easier when there's no physical presence.

Hobby Gamers:

Our hobby gamers echoed most of the feedback of the casual gamers, with the additional note that the ability to form combinations and optimize actions in the game is quite high. This means that although each individual action is simple to execute, a player can get a high reward for strategically chaining actions in a certain way to accomplish multiple objectives simultaneously.

The above distinction helps the game fit its targeted audience, namely hobby gamers who would also look to play with their casual gamer friends. The low skill floor but high skill ceiling of the game means that a larger demographic of players can be involved in the game. The hidden nature of the scoring means that new players won't often feel out of the game, which helps them retain their engagement. The low luck in the game means that experienced players are rewarded for their planning.

3. Lessons Learned and Design Revisions

The lessons learned and subsequent design revisions made have been condensed into a single section, so that it is easier to flow from point to point. As discussed at the start of the report, there were three goals identified when entering the prototyping process. Our lessons learned and design revisions made have been organized across these goals.

3.1. Goal I

Solidify the core mechanics and clean up any inconsistencies in the gameplay loop.

- **Observation:** The abstract notions of the queue were not intuitive to players. In particular, a funnel structure is necessary for the FIFO system of the game to function, however this is an extension of the traditional interpretation of a queue. Multiple pieces can be at the same priority in later rows, in contrast to a single piece holding a priority at each slot in a queue.

  Solution: Thematic changes were adopted where the villagers are attempting to enter a guarded city with the partially opened gates forming the required funnel shape. This also led to the ripple effect of renaming a few of the basic actions of the game to help it fit with this new theme of a guard authorizing an individual to pass.

- **Observation:** Gameplay loop breaks in a few edge cases. The gameplay loop was found to break in rare cases. One instance is where a player has no available workers to reset on the action mat since they have been targeted by multiple players with the poach action. At the same time, they could not counter poach if they were out of objective cards to use as payment.

  Solution: The Countermand reset option was modified from a card swap to instead allow the drawing of a card, followed by card return only if a player had two or more cards in hand. This would allow the stuck player to guarantee their use of the poach action, and also provide a useful optimization tool to other players who were out of objective cards, even if they didn't want to poach.

- **Observation:** Further strategy potential utilizing the queue exists. The rules around FIFO help build a fundamental system on top of which a lot of gameplay is layered. While the incentives of the higher level layers are easy to see (such as rescue of a piece, completion of an objective etc.), the direct value of FIFO is a bit hard for players to interpret, and could thus be mistakenly viewed as unnecessary to the game.

  Solution: Our solution with regards to this is to explore some additional incentives around FIFO which occur at a lower layer, such that players can see immediate tangible benefits of smart queuing.

3.2. Goal II

Identify challenges that could occur when transitioning from a physical medium to digital space.

We consider this our most important goal in the prototyping process, since it could make our digitization process orders of magnitude easier or more difficult.

- **Observation:** Objective cards and inner city rewards will be complex to code. The nature of the objective cards and by extension inner city means that each individual card would need a custom set of rules or checks to decide if a valid completion has occurred.

  Solution: Fortunately, all of these checks would derive from a fundamental rule set required by the game system to operate. Our solution is thus to move this requirement to the high target section, so that we can tackle it after the rules engine is stable.

- **Observation:** Drag and drop is clunky.Our experience with interacting with pieces in Tabletop Simulator gave us a good precursor into how gameplay experience can be ruined by latency. The drag and drop effects can be extremely clunky and create frustration for the player.

  Idea: Having explored other digital board games, we are exploring the idea of using a flat UI in the form of a click and select to interact with pieces. This would be followed by the required drag and drop animation being loaded from the main system instead.

- **Observation:** Game logic is not the same as rules. Although the rules of the game are already complex, enforcing them with a rules engine would require further additions and logic checks.

  Idea: We plan to split our core game logic into two parts. The first part would include performing the actions assuming that the players maintained the validity of rules internally. This is similar to how sandboxes like Tabletop Simulator operate, placing the onus of responsibility on the players instead of the engine. This step would allow us to first incorporate all the possible actions and required animations and effects into the system. Our second step would build in a rules enforcer to check if actions are valid. This would be consistent with our tiered approach of eventually adding objectives as a layer above this.

Some challenges where board games can't be rivalled easily are:

- **Observation:** Tactile experience cannot be easily replicated. Physical games are great because players can touch and feel components in the game. This is naturally an extremely difficult feat to replicate in a digital version.

  Idea: We will continue to explore solutions, but our preliminary solution is to add satisfying sound effects for tactile interactions, along with other aural cues that may not exist in the physical space. The hope is that this can provide a viable trade-off between the two senses.

- **Observation:** Board games provide a social experience.

  Idea: We are aiming for good networking, but even this may not be a perfect substitute for a table of interacting board gamers. The addition of text and audio could perhaps help bridge some of this gap.

3.3. Goal III

Identify areas of improvement that a digitized game provides over the traditional board game experience.

Our final goal seeks to take a positive look at the opportunities that our prototype provides.

- **Observation:** Rulebooks are cumbersome to read in board games, and can be a huge barrier to entry.

  Solution: A digital adaptation provides a unique way to have an interactive tutorial, such that players can learn as they play. This could help expand the reach of traditionally difficult board games.

- **Observation:** Administration tasks such as setup and cleanup are cumbersome, which is also applicable to our game. Complex board games often have myriad components with detailed setup instructions that may even vary across different scenarios and player counts.

  Benefit: Digital board games provide a unique way to automate all of the background admin tasks related to board games, drastically speeding up the setup and teardown of sprawling games. This can in fact help increase the reach and replayability of such games.

- **Observation:** FIFO Tapping and rules in general are complex to remember in board game.

  Benefit: Our game system would eventually be able to do the rules enforcement and tracking for the players, greatly simplifying the process and providing visual cues as required. For instance, rule checking could be performed after an action is performed, and cues such as lighting could be used to highlight viable options for the player.

3.4. Conclusion

In summary, our prototyping process was an extremely illuminative exercise that has helped us identify potential challenges with our game design process as we enter the next phase of development. Based on some of the changes we have made to account for the challenges, we feel well equipped to proceed with development.