VR Medieval Mysteries

Game Design Document

Version 27
7 November 2016

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Revised by Kathy Smart and Natalie Mondon of The Guilty Villagers

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Version control

Version 1	Blank template.	4 Feb 2016	Kathy and Tyler
Version 2	Version control, synopsis, uniqueness, comparison with similar games, art style, target audience, how game meets audience desires, gameplay features.	5 Feb 2016	Kathy and Tyler
Version 3	How to update this document, logline, breakdown of assets, setting diagram, levels, credits.	6 Feb 2016	Kathy
Version 4	Revised gameplay features, puzzles, music. Added new section heads. Added editor engine, choice of 3D modeler, choice of 2D imager, mystery structure, pacing, mechanics: move, clues, dialogue, arresting, rewards, PC, NPC, GUI elements, lighting, programming folder structure, communication plan.	16 Feb 2016	Kathy and Tyler
Version 5	Added gameplay flowchart, VR mechanics chart, character descriptions, tutorial chart, overview, HQ picture.	23 Feb 2016	Kathy
Version 6	Added in-game economy and marketing plan.	24 Feb 2016	Kathy and Tyler
Version 6a	Karl Cizakowski's feedback	26 Feb 2016	Karl Cizakowski
Version 7	AFTER KC FEEDBACK Changed name of village, moved market research to separate document, need to complete GDD and reconsider scope and fun and give example of procedurally generated puzzle to show its feasibility.	26 Feb 2016	Kathy and Tyler
Version 8	Slimmed Game Design Document to present more manageable document. Added to: Gameplay, story synopsis, levels, project scope, game economy. Revised cluebook. Added clues, menu system flowchart. New game name, team name, PC name, village name.	03 Mar 2016	Kathy and Tyler
Version 9	Kim Forrest's feedback.	9 Mar 2016	Kim Forrest
Version 10	AFTER KF FEEDBACK Logline clarified, synopsis revised, three pillars of fun renamed, USP deleted, story clarified and shortened, gameplay feature example added, description of gameplay corrected, example mysteries described, rewards corrected and reward economy moved, NPC attitudes deleted, cluebook tabs explained, map simplified, business model expanded and re-ordered, hanging deleted. Also correction of arrest/fine system and detection system.	11 Mar 2016	Kathy and Tyler
Version 11	New game name, new team name	17 June 2016	Kathy and Natalie
Version 12	New Part 9, Programming, flow charts amended	19 June 2016	Kathy

Version 13	Rearranged to Gameplay, Art, Programming, Scope, Marketing; added Art Bible	22 June 2016	Kathy and Natalie
Version 14	Added List of Main and Sub Missions, Placed in order of priority.	23 June 2016	Natalie
Version 15	Deleted Art Bible, moved Mission order to Project scope, added Platforms, Sound. Season is spring. New HQ image. Enk is gypsy. Added witch, skyboxes.	27 June 2016	Kathy
Version 16	Added Fundamental Concepts. Changed Witch image. Added Detective Power character and HQ Detective Power. Revised Teaching Mechanics. Deleted option to fine instead of arrest. Deleted pony mission.	29 June 2016	Kathy
Version 17	Deleted cluebook. Added mechanic – handcuffs and warning book glow. Added method of making skyboxes. Added desire to suit game for visually-impaired players.	7 July 2016	Kathy
Version 18	Deleted HQ detective power, made missions continue until successful. Deleted preferred order of missions, reduced number of filler missions to 4. Corrected mission flowcharts. Corrected game economy loop. Listed props.	17 July 2016	Kathy
Version 19	Revised missions, asset lists. Baker changed to cobbler. Added troll baby and beekeeper images. Changed poisoned well image and ending. Added list of characters in each scene. Added dialogue flow chart and table of dialogue lines per character.	27 July 2016	Kathy
Version 20	Reworded logline, 3 pillars of fun and USPs after Kim Forrest feedback. Added Dead Secret and Batman ArkhamVR to comparative analysis.	29 July 2016	Kathy
Version 21	Non-use of Detective Power now creates star beside plaque. Wrong decision now shrinks trophy/gift. Homing red star replaced by HomePlace.	3 August 2016	Kathy
Version 22	Cut out Target audience and Marketing strategy and created Market Feasibility Study with them.	4 August 2016	Kathy
Version 23	Replaced Dialogue trees, expanded Setting, expanded Fundamental Concepts.	18 August 2016	Kathy
Version 24	Replaced Map and character images. **Refined rules –** player can return to HQ in middle of mission, no knocking on shutters, interaction with objects, specify size of reduction for incorrect guesses, there are four endings, game replayability. Added UI sounds. Added clue mechanics. Changed movement. Deleted requirement for audio clips to have small space at start.	23 August 2016	Kathy

Version 25	Added 2.4 All actions after discussion with Dr Mike. Added sound details.	5 September 2016	Kathy
Version 26	Updated sound spreadsheets. Added need for spoken menu. More detailed comparison of Unity3D and Unreal Engine.	14 September 2016	Kathy
Version 27	Revised synopsis. Animation state machines.	8 November 2016	Kathy
Version 28	Faces do not shine for dialogue. Detective Power does not grey out. Movement is now immediate. Handcuffs and warning book no longer shine. Updated Unity scene structure.	16 November 2016	Kathy

1 Game Overview

1.1 Logline

Use a Gear VR to play as a detective academy graduate interviewing quirky medieval villagers and examining physical clues to solve crimes and earn promotion. Gameplay is optimized for visually impaired players.

1.2 Synopsis

A mobile hands free first person single player VR fantasy adventure for all ages over 10, where the player is a detective in a high fantasy setting investigating medieval mysteries in virtual reality by interviewing characters and examining physical clues.

The first VR game for blind players.

VR Medieval Mysteries is a mobile hands-free first-person single-player VR fantasy adventure for ages over 10.

The player begins as a keen academy graduate in a medieval village, choosing crime scenes, searching for clues, and interviewing suspects to solve mysteries such as who shoved the cat up the chimney. His rewards shrink if he makes wrong arrests. The last mission pits the player against the local witch who has scorned and undermined the player throughout the game. The players' choices will lead to one of four different endings.

And if he plays again - the clues will be in different places and the culprit will be a different person! Fear not, the player gets one hint per mystery to help find clues. When he's decided who is guilty, or when he just feels like punishing someone, the player can choose to arrest or warn any suspect. If the player chooses to warn the culprit instead of arresting them, he won't get a trophy but he'll get a gift from a grateful villager.

1.2.1 Core experience

The player experiences the awe of investigating in a VR world.

1.2.2 Three pillars of fun

1. Examining environment in VR
2. Discovering overarching mystery
3. Advancement and trophies

1.2.3 Unique selling points

- playable by visually-impaired people
- unique detective game in fantasy VR world
- mysteries of a village of medieval misfits
- randomly solved puzzles give high replay value
- four different endings

1. Suitable for play by visually impaired people
A lot of people ask why create a VR game for blind people and if so, why bother with art. Firstly, the Oculus sound spatializer provides superb aural cues so that merely by tilting their heads, blind people can locate any sound. Secondly, blind people hate computer mouses and the GearVR requires no peripherals such as mouse, controller or keyboard. Thirdly, studies of the 100 video games made for blind people to date are unanimous with visually-impaired people's regret that the games are purely auditory. They want to be able to share their games with mates and relatives and anyway, many are partially sighted.

3. Overarching story
The player is a gypsy and a foreigner, frightening to the village folk who are only giants, goblins and trolls. The minor mysteries of a village of medieval misfits gradually hint at a cause behind the crime wave, and the player will have to make life-altering decisions.

3. Replayability
Guilt is randomly assigned for every mission except the last. Players may wish to play again to look for clues in new places or hear more of the village mysteries. Completionists may wish to earn a full shelf of trophies or a full set of gold stars (for each mission completed without using a hint) or alternatively a full shelf of gifts such as a cat fur hat.

1.2.4 Story and background

The small medieval village of Clandeston's economy is unbalanced as the dwarves have not come over the mountain with their annual supply of iron ore. This has caused the value of iron to skyrocket and horseshoes and barrel hoops, swords and ploughshares are nigh on unobtainable. Goblin children are starving because no one can afford to trade in the goblin market. Arguments and theft are becoming common.

The player is Enk short for Enquiring, a detective brought to Clandeston to end crime. Initially this seems to involve solving simple mysteries but ultimately Enk uncovers a deeper cause of the economic malaise.

Enk is an academy graduate on his first job. He is a gypsy and no one in village has seen a gypsy before so they continually run away from him. He is keen to win promotion to Senior PeaceWright so he can return to his home city where there are other gypsies and modern conveniences like horses and ale houses.

The game opens at dawn with the Lady of the Manor tersely showing Enk his office (HQ). The Lady tells him they have never had to have a detective before. Enk needs to stop the villagefolk misbehaving without bothering her and not arresting too many people because the Lady does not want to feed and house miscreants.

Enk checks out his first mystery where an Old Woman's cat has been turned invisible. She helps him learn how to talk to people and collect and review clues. He has a detective power which can provide one clue per mystery at the cost of a compromised reward. When Enk thinks he has solved the mystery, he can arrest the perpetrator, earning a trophy, or warn the perpetrator and order redress, earning a gift from a grateful villager. If Enk accuses the wrong person, he has to keep trying until he arrests or warns the right person. His trophy gets smaller with every wrong guess.

Enk's next task is to find why the village bell has been sabotaged. This is a major mystery and solving it leads to his first promotion.

Now Enk has choices of mysteries all over the map. These filler mysteries provide trophies in between major mysteries which lead to further promotion. The day progresses along with Enk's career until at sunset he faces his nemesis, a witch who has been discrediting him all along.

The villagers attempt to burn the witch and Enk can prevent this. If he does, he discovers the reason why everything is wrong in the village. If he doesn't, he can leave with his trophies and promotions.

1.1 Setting and art style

High fantasy characters populate the medieval village of Clandeston and its rural outskirts. They are rendered as low poly realistic models with unique sound signatures.

Settings are bounded by walls.
- HQ
- Village
- Market walled off in village
- Farm

The game is played over the course of a fine spring day in six times ranging from dawn to night.

See the Art Bible for more details.
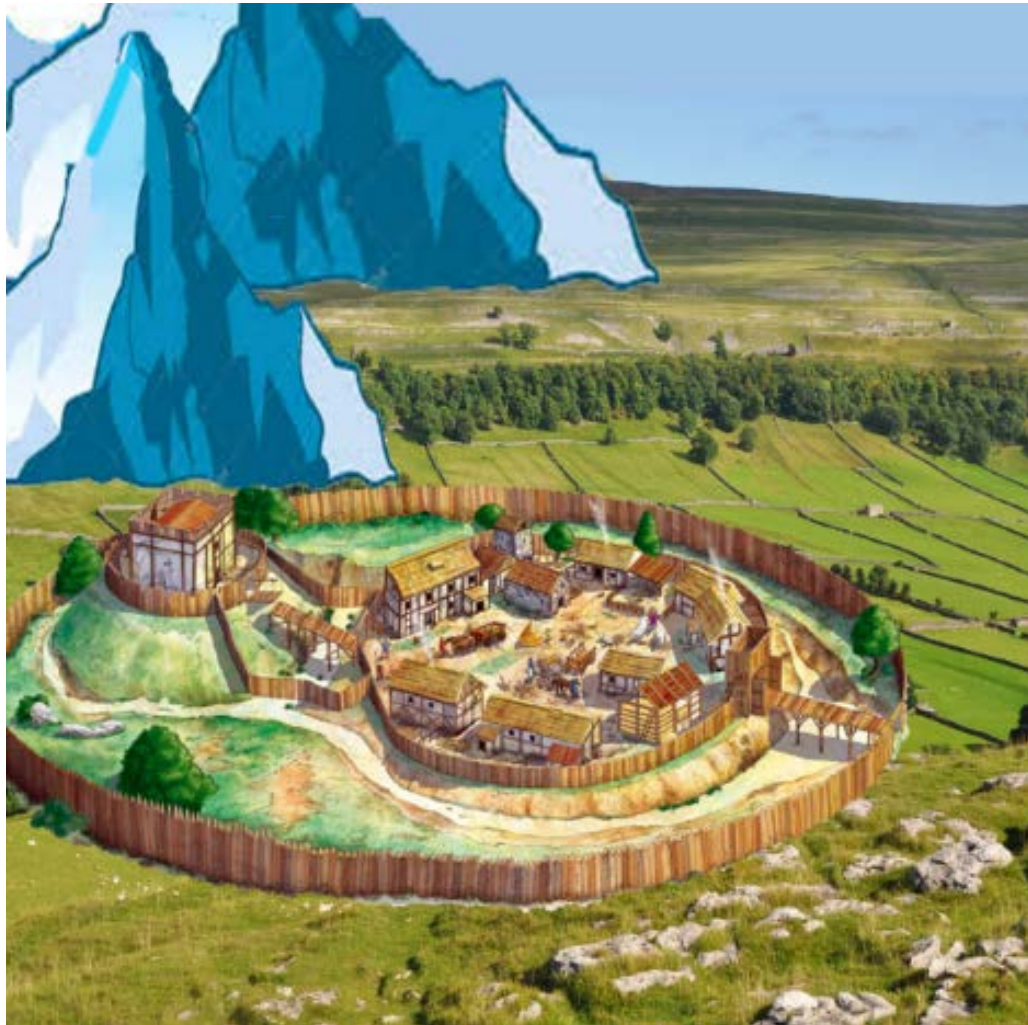
1.3 Fundamental concepts

1.3.1 Goals

- Solve major mysteries to achieve promotion along with trophies or gifts.
- Solve filler mysteries for trophies or gifts.
- Save the witch to solve the overarching mystery, or burn her to return home with trophies/gifts/promotions.

1.3.2 Rules

- This is a walking simulator game using visual and sound cues. Every visual clue has a matching sound clue
- There is explanatory dialogue in the Greeting level but after that, player initiates dialogue
- Player chooses mission in HQ and is teleported to that place, he can walk all over the map but cannot access a different mission without returning to HQ
- Player can return to HQ at any time
- Only filler missions can be chosen out of linear order
- No time limit for completing mission
- Player can walk anywhere within walls
- Player cannot enter buildings
- Player can interact with clue objects, generally they go to specified place or rotate in place
- Player can move specified objects – trophies, stones in wall, bonfire logs, flaming torch
- Player can use detective power which is a verbal hint, but then won't get gold star for mission
- Player can repeatedly listen to same hint from Detective Power
- Player can choose to arrest or warn and game will vary accordingly (NPC reactions, reward)
- Immediate feedback for incorrect guess is handcuffs not working, derisive NPC dialogue and need to try again
- Delayed feedback for incorrect guess is trophy/gift reduced in size by 20% for every incorrect guess
- Major missions progress the time of day which is indicated by bell ringing and skybox change
- Completed missions result in trophy (for arrest) or gift (for letting off with warning) which player finds displayed in HQ
- Player can rearrange trophies and gifts whenever in HQ after second mission
- Mysteries all contain part of larger mystery, solved at the very end
- End game results in one of four victorious displays depending on player decisions
- Game can be replayed for different mystery investigations – each mystery will have same complainant, same suspects, but random perpetrator
- Game can be replayed to obtain perfect line of trophies or gifts
- Game can be replayed to obtain entire story by warning all the incorrect suspects before warning perpetrator
- Game can be replayed to earn one of four different endings

1.3.2.1   Freedom

o   Player can
- teleport to any mystery site available at the time – First Mission 1, then Mission 2, then all Mission 3 and all Filler Missions
- travel anywhere within the village or farm walls including entering and exiting market
- freely and repeatedly interview complainant and suspects
- awake and examine all clues available in that mission in any order and repeatedly
- use detective power at any time and repeat at any time, or not at all
- arrest or warn any suspect including complainant at any time but only once, until correct perpetrator is found
- arrest or warn wrong people
- arrest or warn without having to examine the clues first
- return to HQ at any time
- view and rearrange trophies and gifts in HQ for as long as desired
- view and read plaque with stars in HQ as often as desired

o   Player cannot
- go past bordering walls
- enter buildings
- initiate a new mission without returning to HQ
- arrest a suspect who has already been warned, and vice versa
- repeat a mission in the same game
- choose filler missions before Mission 2 is completed or after Mission 5 is started
- do any of the main missions out of order
- change to new mission before completing incomplete mission
- change trophy/gift awarded for mission
- undo use of Detective Power

1.3.2.2   Agency

- the player is always the one to initiate dialogue except in the greetings level when he is being bullied
- player decides when to start mission and which mission to go to (although only filler missions can be completed out of linear order)
- player decides when and whether to arrest or warn, garnering different responses from suspects
- player decides whether to save or burn the witch who has constantly belittled him
- player decides whether to side with the Lady who has bullied him

1.3.2.3   Deliberation

- If the player focuses on an interactible person or object, they show they have become interactible, allowing player to continue to focus so as to make them work, or to look away so as not to make them work.
- NPCs warn player of impending action to make sure he is doing it deliberately.

1.3.2.4   Recognition of failure

- A correct arrest/warning is instantly rewarded with respectful dialogue and a full sized trophy or gift. An incorrect arrest/warning is met with derision and the player must try again until the correct decision is made. Eventual success will result in a smaller trophy or gift.
- Use of the detective power to gain a hint results in no gold star being awarded for that mission over the name plaque in HQ.

1.3.2.5   Lack of punishment

- All missions can be completed by the player no matter how many errors the player makes, and they always receive a trophy or gift. Completion of major missions results in promotion no matter how many tries it took.

1.3.2.6   Design for vision-impaired players

- Player automatically asks NPC what their name is if they have never spoken to them before. They always address NPC by name.
- An NPC at the beginning of each mission states what the problem is, and why they carry incriminating evidence.
- Every NPC has an idle, awake and activated sound.
- Every interactible object has an idle, awake and activated sound.
- Every item in the game is identified by sound, by the player naming it and/or by its unique sound e.g. NPCs hiding in huts, rats rustling in haystacks, pigs in styes around the perimeter walls locate structures in the player's sound scape.
- Levels are designed to separate items to avoid aural confusion. For example, sites of missions are separated so they are easily distinguished on the mission map.
- Large aural cues such as dragons roaring intermittently are designed to orient a blind player.
- Immediate aural cues such as footsteps let the player know they have left a path.
- Player can bump into every item in the game without penalty, and find out what that object was. "Uh, wall."
- Every sight clue has a matching aural clue.
- Some aural clues, such as dialogue, do not have matching visual clues. There is no text in the game except on the plaque in HQ which player reads out loud by facing it.

1.3.3   Systems

- Map and teleportation including bird's eye camera to mission
- Movement
- Collision
- Game controller including checkpoints
- Skybox progression with bells
- Dialogue initiation
- Dialogue trees
- Clue identification and manipulation
- Detective power
- Arrest or warn
- Teleportation back to HQ

- Trophies in HQ
- Plaque in HQ has surrounding stars
- Sound FX
- AI
- UI

1.3.4   Conflict

- Witch criticises everything player does and says he should not operate in the village
- Lady of the Manor says player will not succeed
- other NPCs start game afraid of player
- NPCs indignant when player incorrectly warns or arrests them
- some suspects can be honest but accidentally guilty
- when making the crucial decision to save or burn witch, every character is shouting, "Burn her! Burn her!" and the Lady of the Manor is bullying the player
- conflicts between suspects who are suffering because dwarves have not come down from the mountain with their annual supply of iron ore

1.3.5   Choices

- A decision to arrest leads to a trophy, a decision to warn leads to a less valuable gift but more story points. The trophies are splendid, the gifts make an untidy display.
- A wrong decision results in a smaller trophy or gift.
- A decision to use the detective power results in a hint but then no star back at HQ for that mission
- The player can choose to by-pass the filler missions but will then complete the game with fewer trophies/gifts and fewer story points.
- In the Lost Jewel mystery, the player's order of questioning will help solve the mystery.
- The crucial decision, about whether to save or burn the witch, results in a splendid trophy or only more story information.
- The final decision is to stay and fight or return to the city which was the player's original stated goal.

1.3.6   Theme

- People always have reasons for what may seem like odd behaviour.
- Kindness is its own reward.

1.4 Platforms

Target platform
- Gear VR

Future platform
- Oculus Rift

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2 Gameplay

2.1 Gameplay features

We are making this game to provide a short fun immersive VR mystery experience with the following features:

- Logic puzzles solved by examination of physical evidence
- Non-linear gameplay where possible
- Verbal and physical humour
- Meaningful decisions such as choosing to arrest or merely warn
- Progression through completion of levels and subsequent promotion
- Differentiated rewards based on player decisions such as trophies or gifts, hints or stars
- All mechanics are engaged by head movement, aiding in immersion and providing a comfortable "swivel chair" experience
- Suitable for visually impaired players as all mechanics are grounded in sound

2.2 Description of gameplay

1. Choice of mystery.
   - 1.1.   The map in HQ has crime scenes with sounds. Enk focuses on the scene he would like to investigate and is transported there.
   - 1.2.   On arrival at scene, Enk can choose to go to Homeplace to return to HQ.
2. Crime scene investigation.
   - 2.1.   Enk can move around the crime scene by tilting head down.
   - 2.2.   Enk is free to move anywhere within the level which is bounded by walls.
   - 2.3.   The complainant is the first person Enk sees but Enk always initiates dialogue.
   - 2.4.   During dialogue (except warn and arrest), Enk can stop looking at NPC who breaks off dialogue.
   - 2.5.   Enk can initiate dialogue with any NPC with a shining face after complaint made.
   - 2.6.   Enk can repeat interrogation of any NPC.
   - 2.7.   Enk can examine objects by focusing on them. They will rotate or write etc according to their nature.
3. Strategic use of limited resources.
   - 3.1.   Gazing at the Detective Power icon in the sky will wake it. It warns Enk that he can have a hint for solving the mystery but then he will not get a star on his plaque in HQ for that mission. Continuing to gaze activates the warning.
4. Puzzle solving.
   - 4.1.   Enk can repeat interrogations and clue examination until he is satisfied he has solved the mystery, or he can guess and not even examine clues.
5. Decision time.

5.1.   Enk chooses to warn suspect or arrest suspect by first focusing on suspect to make them interactible, then focusing on handcuffs or warning book until warning or arrest initiated.

6. Reaction.
    6.1.   The accused NPC reacts. Other NPCs react.
        6.1.1.   If incorrect arrest or warning – suspect protests and handcuffs don't work.
        6.1.2.   If correct arrest - suspect is handcuffed, and explains.
        6.1.3.   If correct warning – suspect explains with more story points than for arrest.. Different grateful suspect bestows gift.
        6.1.4.   When correct suspect arrested or warned, revelation and clues to overarching mystery are provided via dialogue.
        6.1.5.   After correct arrest or warning, mission is complete and no further dialogue, arrest or warning can be initiated.

7. Mission completed.
        7.1.1.   After completion of major mission, bell rings.
        7.1.2.   After completion of major mission, skybox changes indicating day is progressing.
        7.1.3.   After completion of mission, Enk can wander around but no further missions until he returns to HQ.
        7.1.4.   Enk can go to Home Place to return to HQ.

8. Reward.
    8.1.   If Enk was correct first time, he will find a full-sized reward on the trophy shelf in HQ. The reward will be either a gift from a citizen after a warning or a trophy after an arrest.
    8.2.   For every incorrect arrest/warning, the trophy/gift will be shrunk.
    8.3.   If no detective power was used for that mission, a gold star will be awarded over the name plaque in HQ. If no detective power is used in whole game, the gold stars will animate.
    8.4.   Completion of major missions always results in promotion, indicated by change of plaque in HQ.

9. Ending.
        9.1.1.   Enk's final mission is to save or burn the witch by either dislodging the bonfire wood or using a flaming torch to light it.
            9.1.1.1.   If Enk burns the witch he is transported to HQ where he has earned the biggest trophy of all and told he has earned promotion back to the city.
            9.1.1.2.   If Enk saves the witch this results in story explanations.
        9.1.2.   Enk's final choice is to commit to an expedition into the mountains, or go back to the city.
            9.1.2.1.   If Enk is in HQ and says he'll stay he is told the villagers will bow before him.
            9.1.2.2.   If Enk is in HQ and won't stay he is given a medal to show off back in the city to improve the consequence of the Lady of the Manor.
            9.1.2.3.   If Enk is in the village and won't stay he is told the witch will be punished.
            9.1.2.4.   If Enk is in the village and promises to stay he is surrounded by cheering villagers.

2.3 Mission flow – each mission

```
                          ┌──────────────┐
                          │    Select    │
                          │   mission    │
                          └──────┬───────┘
                                 │
                          ┌──────▼───────┐
                          │   Mission    │
                          │    starts    │
                          └──────────────┘
        ┌──────────┐   ┌──────────────┐   ┌──────────┐
        │   Use    │◄─►│  Interview   │◄─►│ Examine  │
        │detective │   │    NPCs      │   │  clues   │
        │  power   │   └──────┬───────┘   └──────────┘
        └──────────┘          │
                          ┌───▼──────┐
                          │  Decide  │◄──────┐
                          └──┬────┬──┘       │
                             │    │          │
                     ┌───────┘    └───────┐  │
                  ┌──▼───┐           ┌─────▼──┐
                  │Correct│          │Incorrect│
                  └──┬───┘           └─────────┘
                     │
                 ┌───▼───┐
                 │ Reward │
                 └────────┘
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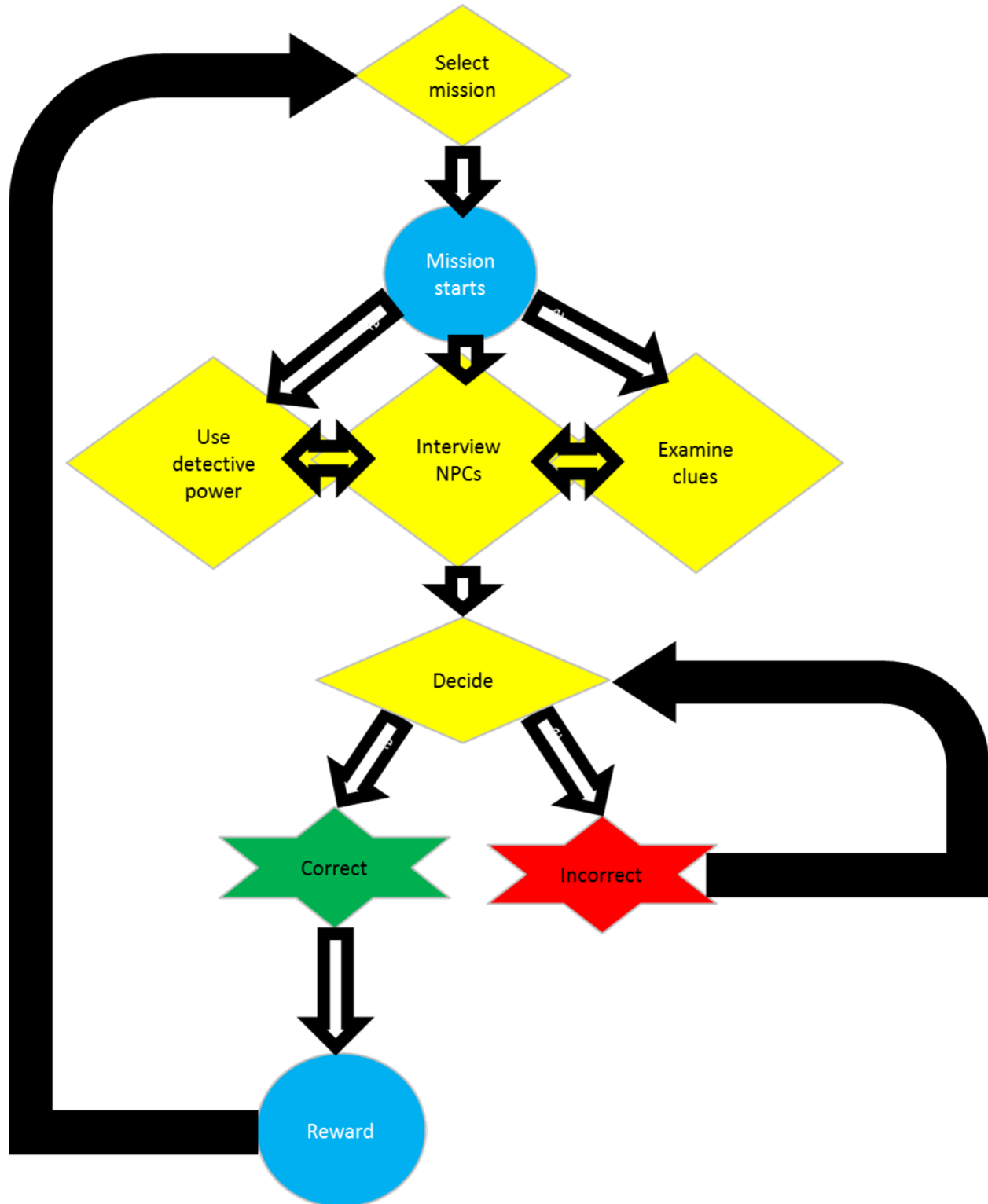
2.4 All actions

- Housekeeping
    - wearing earphones or headphones
    - seated with 360 degree movement
    - how to pause
    - how to return to Oculus main menu
- Greeting mission 0
- Choose mission
    - if start to choose Mission 5, Detective Power warns
- Start mission
    - hiding sounds
    - suspect 0 can wake
    - suspects 1-4 cannot wake
- Talk to suspect 0
    - ask name if never spoken before, suspect responds
    - complaint
    - suspects 1-4 can now wake
- Interrogate suspects 1-4
    - ask name if never spoken before, suspect responds
    - suspects 1-4 play mission-specific dialogue, this can be repeated
    - if player looks away, suspect stops speaking
- Special dialogue for missions 1, 3, 5, 6, B and D
- Move anywhere inside level walls
    - name all objects the first three times gazed upon
    - collide with objects and name them
    - collide with NPCs and name their species
- Activate mission-specific clues
    - name clue
    - examine clue more closely
    - compare clues to objects in scene
    - follow trails in missions 5 and A
    - line up suspects in mission B
    - rebuild wall in mission D
    - light fire or pull apart logs in mission 6
- Look up to Detective Power in the Sky
    - Detective Power warns of loss of gold star
    - if continue to look, Detective Power gives hint
    - if look up again, gain repeat of hint without warning
- Prepare to arrest/warn suspect
    - suspect protests
- Arrest suspects 0-4 by saying [name] you are under arrest
    - suspect responds according to whether warning correct or incorrect

- o   if player looks away, suspect continues speaking
  - o   incorrect arrests can be repeated
  - o   after correct arrest
    - ▪   no further arrests or warnings can be made
    - ▪   NPC goes to handcuff animation
    - ▪   handcuffs appear over NPCs hands and descend
- Warn suspects 0-4
  - o   suspect responds according to whether warning correct or incorrect
  - o   if player looks away, suspect continues speaking
  - o   incorrect warnings can be repeated
  - o   after correct warning
    - ▪   no further arrests or warnings can be made
    - ▪   different suspect gives gift
- Wrap up dialogue
  - ▪   Same suspect for every mission provides revelation
  - ▪   Same suspect for every mission provides overarching mystery info
- Mission complete
  - o   in main mission, bells ring and skybox changes
    - ▪   PC names time of day
  - o   if PC does not return to HQ, hint provided to go back
  - o   if PC is about to return to HQ, Suspect 0 comments on this
- HQ activity
  - o   inter-mission plaque reading
  - o   inter-mission counting stars on plaque
  - o   inter-mission trophy and gift manipulation
  - o   consider next action

2.5 Mission flow – all missions
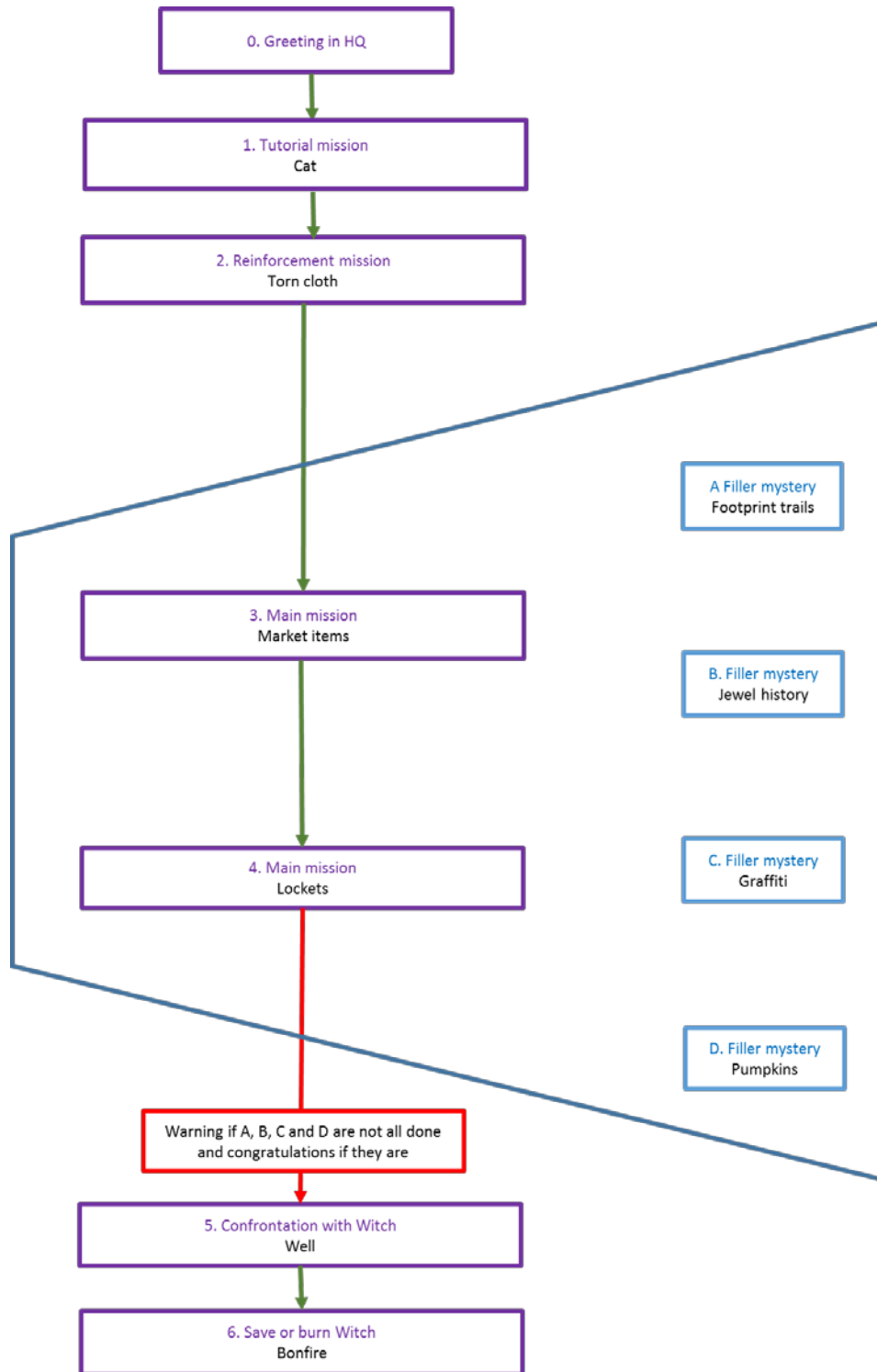
The main storyline has 7 missions and each unlocks the next.
While the main mission available is 3 or 4, filler missions are also available for once-only play.

2.6 Example missions

2.6.1   Tutorial mission - Invisible cat

- After a rude greeting in HQ, Enk focuses on the gold star caterwauling on the map, and is transported outside a house in village.
- Old Woman Giant explains he can choose to return to HQ by going to the Homing Place, but she really wants his help.
- Old Woman is wailing because the witch has turned her cat invisible. The cat's miaows can be heard but the cat cannot be seen. Old Woman reminds Enk to focus on her glowing face to speak to her and reminds him how to move around.
- By moving to where the cat sounds are loudest, Enk triggers dialogue and announces the cat must be up the chimney. The delighted Old Woman rescues her cat.
- Old Woman explains why she was so distraught. She has no one but the cat because she is widowed and her only son is a missing soldier. He was sent out into the mountains and he never returned. They said he deserted but he would never do that. She's sure the Frost Giants got him.
- The Witch arrives and says Old Woman should not be talking to Enk. He is a gypsy and a Peacewright, the Witch is the only one who can help with magic.
- Enk declares he will discover who stuffed the cat up the chimney. Old Woman helps him figure out how to find and examine clues. Focusing on noisy objects enables Enk to identify them as clues and Enk finds a poker. (This can happen before or after the cat is found.) By focusing on the clue icon on the poker, Enk makes it rotate slowly. Enk sees and hears a clump of cat hairs on the poker.
- Old Woman encourages Enk to use his detective power to hear a clue and the Detective Power in the sky explains this will stop him getting a gold star for the mission. If Enk decides to use the power, he is told, "The cat left hairs on her assailant." He finds he can ask as often as he likes and always gets the same clue.
- Poeple hiding in houses whisper. The only people Enk can interact with are the complainant, the Witch, and three other suspects.
- When Enk faces them, the suspects' faces shine and their unique sounds increase, indicating Enk can hold dialogue with them. Enk can choose to speak to all or some or none. Each suspect has cat scratches and a different explanation for them. [Guilt is randomly assigned with any one of the suspects potentially being guilty including the Old Woman and the Witch.]
- Enk can guess who he believes the suspect to be, but if he inspects the suspects more closely, he will see and hear one has cat hair on them. That person is the perpetrator.
- Enk must choose to arrest or warn his suspect.
- The accused suspect reacts according to whether they are innocent or guilty.
- If Enk is wrong he has to guess again until he gets it right.
- If Enk makes a correct arrest, handcuffs disappear from him and appear on the suspect. The suspect briefly explains.
- If Enk makes a correct warning, the suspect is warned and told how to make redress. The suspect explains at more length. A grateful villager announces a gift for Enk.

- After the correct suspect has been arrested or warned
  - the blacksmith, guilty or not, provides a revelation about the upcoming mission
  - the Old Woman provides information about an overarching mystery
  - the bell rings and the skybox changes indicating the day is progressing
  - Enk can focus on the now resounding Homing Place to return to HQ
- After Enk is whisked back to HQ
  - If he arrested the correct suspect, a trophy has appeared on his trophy shelf.
    - The trophy has 5 sizes and volumes depending on how many guesses Enk made.
  - If he warned the correct suspect, a gift has appeared on his trophy shelf.
    - The gift has 5 sizes and volumes depending on how many guesses Enk made.
- The plaque on his desk has changed from Academy Graduate to Apprentice Peacewright.
- If Enk did not invoke the Detective Power, there is a gold star humming over his plaque.
- The map now shows one large gold star for the next mission (bell sound) and one yellow star for the completed mission (cat purr). Filler missions are still not yet available and show as small blue stars (low hums).

2.6.2   Reinforcement mission, morning - Bell sabotaged

- Enk focuses on the large gold star on the map and is transported to the top of the bell tower.
- Enk instigates dialogue with bellringer. No one else will speak until Enk has spoken to the complainant.
- The bellringer is scared because he couldn't ring the bell for dawn and doesn't know why.
- If Enk examines the bell he will find it sounding strange as the clapper has been stolen.
- Enk finds a cloth nearby which has jagged edges and a tearing sound.
- The Witch arrives and taunts Enk as she will do in every mission.
- Enk can activate the Detective Power in the Sky which warns him his reward will be compromised if he asks for a clue.
- Enk can insist on his clue by staring at the Detective Power. He will hear: "Match the suspects' torn clothing with the cloth found at the scene of the crime." He can ask for this clue to be repeated as often as he likes.
- Enk may wander around village looking for people with similar cloth.
- Enk may instigate dialogue with all suspects. All suspects are wearing torn cloth with different sounds.
- All the suspects have good reasons for wearing torn cloth, and good reasons for not wanting the dawn bell rung. All lead back to the village's economic woes.
- Ideally, Enk will recognise a piece of cloth matching the tearing sound / edges of the clue cloth.
- Enk chooses to arrest or warn and a suspect and the suspect reacts.
  - Incorrect arrest/warning
    - Enk must try again.
  - Correct arrest/warning
    - Revelation and clues towards overarching mystery provided.
    - Bell rings and skybox changes indicating day is progressing.
    - Enk encouraged to return to HQ by the louder Homing Place.
- Enk can wander around village but cannot return to HQ until he visits the HQ Homeplace.

- Back in HQ
  - new trophy/gift sounding on shelf sized by how many guesses used.
  - trophy/gifts can be rearranged on shelf.
  - plaque changed to Journeyman Peacewright with new gold star on plaque if detective power not used.

2.6.3   Final mystery - poisoned well - follow a disguised trail

There is a bag of poisoned herbs in the well. Each of 5 characters has a trail starting with a symbol. Only one trail leads to the poison. Follow the trail by going to the next symbol with the same (sound) or colour (pitch).

Who poisoned the well?

If Enk follows the path correctly he can show the witch laid the herb bag in the well. The witch protests it's not actually poisonous. She was trying to show everyone needs her. Enk can't go around solving everyone's problems, that's her job. Being a witch is how she has earned her living since the Lady of the Manor left her family destitute after their soldier father died. Enk has the revelation that the witch has only been pretending to have magic all along.

2.6.4   Ending

The enraged townsfolk build a bonfire to burn the witch and Enk can choose to set the logs on fire with a flaming torch or separate the logs to rescue her. If he executes the witch, the Lady of the Manor gives him a magnificent trophy and tells him he can go back to the city as a Champion Peacemaker.

If Enk warns the witch instead of arresting her, he finds out more. She became a fake witch as a child when her father died in the war defeating the Frost Giants and the Lord and Lady of the Manor refused to support her widowed mother. Then nobody would teach her a trade so she stayed a witch, providing food to her mother and younger brother until he supported them as a soldier. Then her brother was sent to the mountains to bring the dwarves across the mountains. He never came back and she had to fall back on her old trade as a witch. She has begged people to help her go and rescue her brother but no one will go.

Revelation of the overarching mystery is why the dwarves flung the village into economic misery by not coming this year. They have been waylaid by the Frost Giants who are coming to attack the village. The final choice is whether to stay and help in the coming war and the game ends with Enk deciding to help or not. Final rewards are one of: a medal, higher status in the village, punishment for the witch or the villagers all cheering.

2.7 Available missions

Mission	Mystery	Place	End time	Puzzle
M0_HQ_Review	Trophies and gifts	HQ	Any time	Line up trophies
M1_Greeting	Greeting	HQ	Dawn	Star map
M2_DawnMystery	Invisible cat	House by forge	First Hour	Cat hairs
M3_MorningMystery	Bell sabotaged	Bell tower	Third Hour	Jagged edges
M4_MiddayMystery	Market stall upended	Market	Midday	Order of items
M5_AfternoonMystery	Troll baby kidnapped	Farm	Ninth Hour	Match silhouette
M6_SunsetMystery	Well poisoned	Well	Sunset	Magic symbols trail
M7_NightEnding	Witch staked	Town square	Night	Burn or save witch
Filler mission A	Apple stolen	Behind forge		Footprints trails
Filler mission B	Jewel found	Under tree		Line up witnesses
Filler mission C	Graffiti	Market wall		Writing implement
Filler mission D	Wall broken	Farm		Rebuild wall / pumpkin silhouette

2.8   Progression

```
┌─────────────────────────────────────┐
│           Greeting in HQ             │
│    Named as Apprentice PeaceWright   │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│           Tutorial mystery           │
│    Promotion to Journeyman PeaceWright │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│        Reinforcement mystery         │
│    Promotion to Licensed PeaceWright  │
└─────────────────────────────────────┘
                   │
                   ▼
          ┌──────────────────┐
          │  Filler mystery   │
          └──────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│           Major mystery              │
│     Promoted to Expert PeaceWright    │
└─────────────────────────────────────┘
                   │
                   ▼
          ┌──────────────────┐
          │  Filler mystery   │
          └──────────────────┘
                   │
                   ▼
          ┌──────────────────┐
          │  Filler mystery   │
          └──────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│           Major mystery              │
│    Promotion to Master PeaceWright    │
└─────────────────────────────────────┘
                   │
                   ▼
          ┌──────────────────┐
          │  Filler mystery   │
          └──────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│       Confrontation with Witch       │
│  Promotion to Grandmaster PeaceWright │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│         Save or burn Witch           │
│   Proclaimed Champion PeaceWright     │
└─────────────────────────────────────┘
```

2.9 Rewards

- Tutorial and filler mysteries
    - trophy for arrest
    - gift for warning
- Major mysteries
    - trophy for arrest
    - gift for warning
    - plaque in HQ alters to show promotion
- Ending: medal or verbal hurrahs

Flow	Rank plaque	Reward
Greeting in HQ	Apprentice PeaceWright	
Tutorial mystery	Journeyman PeaceWright	or Cat hair hat
Reinforcement mystery	Licensed PeaceWright	or Bell miniature
Filler mystery ✴		or Apple pie
Major mystery	Expert PeaceWright	or Copper coins
Filler mystery		or Jewel
Filler mystery		or Charcoal pencil
Major mystery	Master PeaceWright	or Baby dummy
Filler mystery		or Pumpkin
Confrontation	Grandmaster PeaceWright	or Herb posset
Ending	Champion PeaceWright	or Medal

✴Filler mysteries are optional and can be completed in any order after Reinforcement mystery. See Mission Flow 2.5.

2.10 Player feedback

The player is motivated to play
- by the Lady's challenge in her greeting and the NPCs' distrust
- by the intrigue of exploring a highly immersive environment
- by the fun of holding dialogue with quirky characters
- by the intellectual reward of working on unique puzzles
- by the power over NPCs and the ability to help or punish them
- by line of gifts and trophies clearly showing progression to an end
- by the chance to humiliate the insulting witch
- by the increasingly important need to solve an overarching mystery
- by the ability to decide life or death for the witch

2.11 Pacing

2.11.1 Flexibility

Player is free to explore two entire walled area and there is no time limit, so player sets own pace.

2.11.2 Skills

Skills are taught gradually over greeting, tutorial mystery, and first (reinforcement) mystery.

2.11.3 Difficulty

Major mysteries increase in difficulty.

2.11.4 Career

Player career progresses with every major mystery
1. Academy graduate
2. Apprentice PeaceWright
3. Journeyman PeaceWright
4. Licensed PeaceWright
5. Expert PeaceWright
6. Master PeaceWright
7. Grandmaster PeaceWright
8. Champion PeaceWright

2.11.5 Bells and skybox

After each major mystery is solved the bell rings the hour and the skybox changes to show the progression of the day as a metaphor for Enk's progression on his career path.

2.11.1 Check points

Game saved after each mission is completed.

2.11.2 Settings

The player always goes back to HQ between mysteries. Mysteries are set in village, then in village or market which is a walled-off part of village. After the third major mystery, farm mysteries are available.

2.11.3 Hold attention

The witch challenges the player in nearly every mission, motivating the player to beat her once and for all when she is accusing him of incompetence in the final mission and she is a prime suspect.

2.11.4 Overarching mystery

Overarching mystery hints are provided in every mystery. Crucial hints are in major mysteries so player does not miss them.

2.12 Controls

2.12.1 Head based controls

All interactive NPCs and objects have idle sounds. Player can gaze at them to wake them which increases the volume and pace of their identifying sounds. If player continues to gaze at them, they interact.

- Gaze at humming star on map to be transported to that place
- Gaze at singing Homeplace to be transported back to HQ
- Shift head downwards to move forward
- Gaze at clue to examine clue, that is, make it rotate or whatever that clue does
- Gaze directly up at icon in sky to exercise magical detective power, that is, ask for hint
- Gaze at NPC then handcuffs or warning book to arrest or warn
- Gaze at NPC's face to initiate dialogue
- Gaze at plaque in HQ to read it and hear how many stars it has
- Gaze at anchors on trophies and gifts to rearrange them
- Press button on Gear VR to pause, continue, stop or start game
    o See User Controls

2.12.2 VR special needs

Bring perspective in at end of game to help players adjust to real world view they are about to see.

3 Mechanics

3.1 List of mechanics

Here are the mechanics required for the game.
- Follow how-to-use-Gear-VR tutorial
- PC movement and collision
- Crime scenes on map show availability by sound and colour
- Teleport to crime scene
- NPCs wake when PC approaches
- PC faces NPC to begin and continue conversation
- Move around crime scene
- Identify clues, examine clues
- Speak to complainant/suspects
- Use detective power
- Arrest or warn
    - Handcuffs and warning book go from idle to awake to interactive then act
    - Perpetrator goes to handcuffed pose
    - Handcuffs disappear from PC and appear on perpetrator
    - Gift presented by thanker in handcuffed pose
- Skybox changes and bells indicate time passing
- Trophy or gift appears in HQ after completed mission, has smaller size if first guess(es) incorrect
- Trophies/gifts can be rearranged
- Plaque in HQ changes after each main mission
- Plaque in HQ has places for a gold humming star for every mission which are enabled if detective power not used in that mission. If entire game played without detective powers, humming gold stars twinkle and sing
- Unique clue mechanics for every mission
    - 1. Rotate poker to view pining cat hairs
    - 2. Lift ripping sound cloth beside suspect's torn clothing
    - 3. Player dialogue identifies order of objects on ground in market (top, second from top…)
    - 4. Lift decorated pin beside mark on suspect's clothing
    - 5. Five different trail sets with 48 different symbols each with unique SFX and identifying dialogue. Idle, awake, interactive, identified as part of trail.
    - 6. Player can lift and drop bonfire logs, move torch and light fire which moves and grows
    - A. Footprints trail each footprint idle to awake if in same trail, turns off if next one not same trail
    - B. Suspects change place in line by moving to left when spoken to
    - C. Lift writing implement beside graffit to compare sounds
    - D. Player lifts stones which stick in place if move to right place. When wall built, player can get pumpkins to lift beside wall to compare size of worms/pumpkin shapes

- Teleport back to HQ

PC must focus on star at base of statue to be transported back to HQ.
When star is awakened, NPC checks that PC wants to go back and if he continues to focus on the star, he is transported back to HQ.
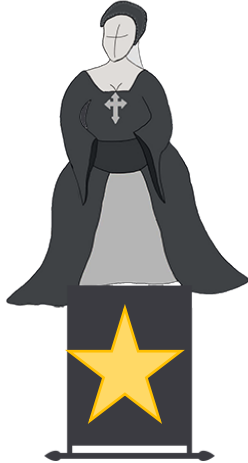
3.2 Dialogue interaction

When PC faces NPC, their idle changes to wake status. The NPC's sound goes louder and faster and they can now be interviewed or warned or arrested.
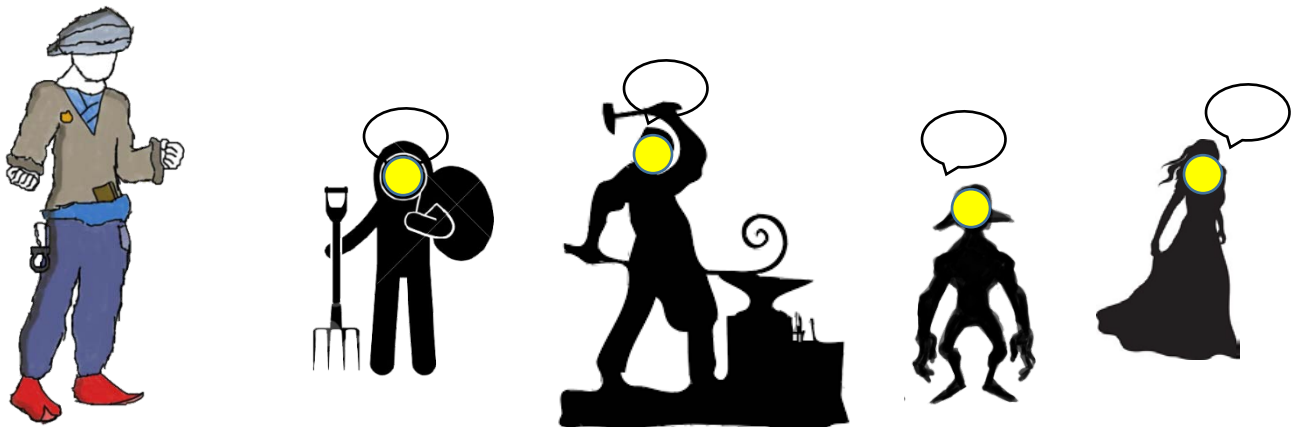
3.2.1   First time and interrogation dialogue

When PC speaks to NPC for first time, he asks the NPC's name and NPC states their identity. Every time PC interacts with that NPC they provide the same information for that mission.
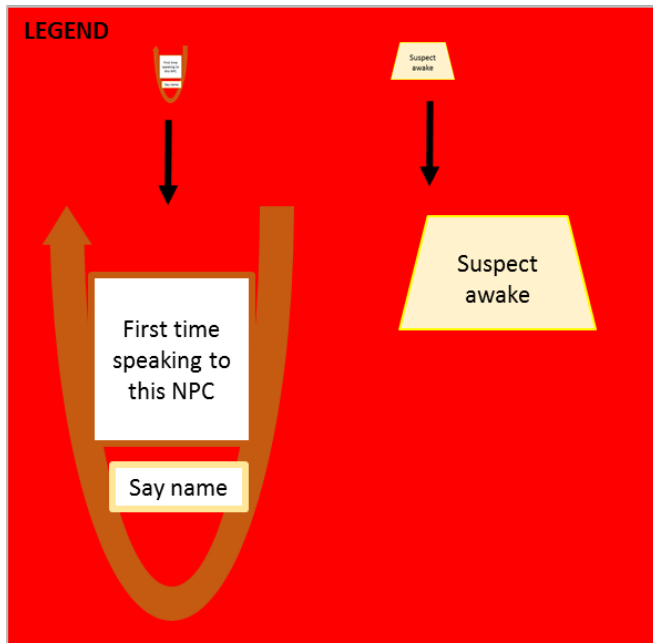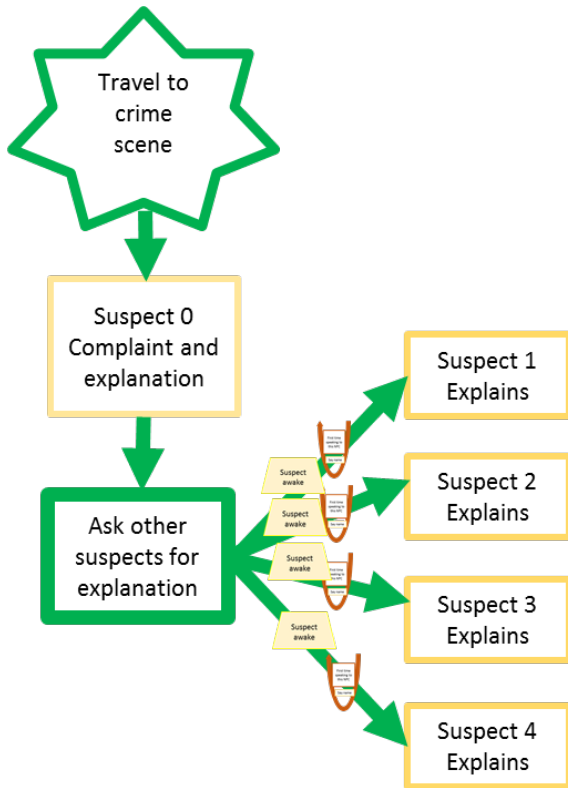
3.2.2   Warning/arresting dialogue

PC continues to warn and/or arrest suspects until he warns or arrests the perpetrator. Then he is provided with a revelation and details about an overarching mystery.
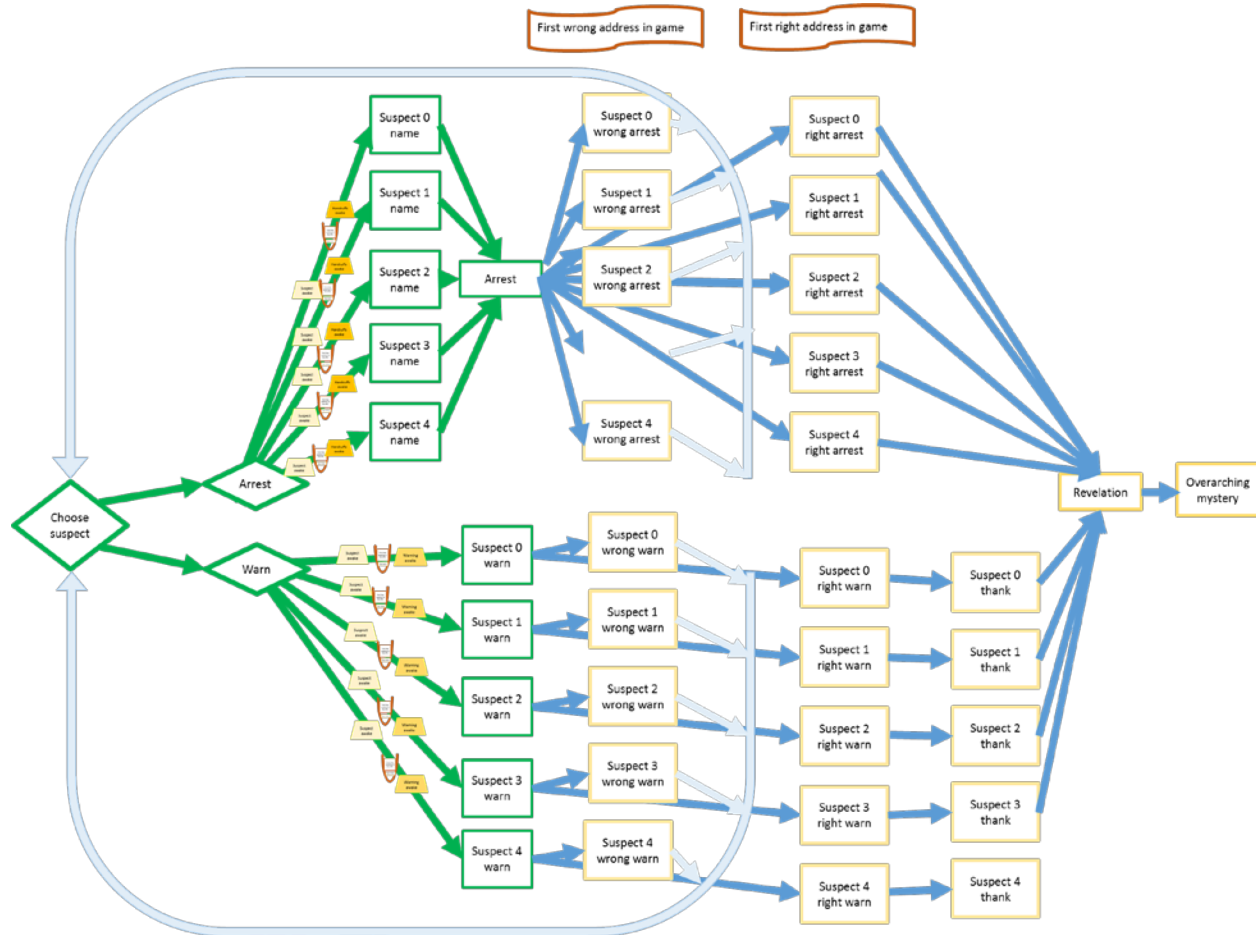
3.3 Manipulate clues

PC speaks as he identifies and manipulates clues.

Clues change with player's gaze.
- Idle
- Awake
- Active

3.4 Detective power

Big voice in sky.
When PC gazes at star at top of sky, this wakes the Detective Power.
- Detective power explains Enk can use one detective power per mystery, to be given hint.
- If detective power is used, trophy or gift will be compromised.
- PC uses Detective Power by continuing to gaze at the star.
- PC may listen to same hint as often as he/she wishes for that mission.

Look at	Temporary effect	Keep looking	Examples
Map icon	Icon grows if mission available at that spot	Point to point travel	Arrive at stables
			Return to HQ
Object		Travel to object	Look at ground, travel around
			Look at haystack, go there if it has a clue for current mission
Object patch		Examine object	Jewel rotates
Notebook	Notebook clasp glows	Notebook opens → Notebook menu	Clue recorded
			Logic grid completed
NPC	NPC shines if can speak	NPC dialogue	Troll farmer gives clue
			Footprint trail illuminated
Sky	Detective power icon shines	Detective power lights up	PC can choose to listen to hint at expense of compromised trophy/gift
Own cuffs [story mission]	Action choices shine	Place cuffs on NPC or advise NPC	Arrest NPC
			Advise NPC
Own fine book [filler mission]	Action choices shine	Place fine on NPC or advise NPC	Fine NPC
			Advise NPC
Trophy	Trophy shines	Move trophy	Rearrange trophies

3.5   Teaching mechanics

Mechanic	Actions	Where introduced	How taught	How repeat	How experiment	How remember
Choose quest on map and travel there	Face star on map in HQ	Greeting - last thing learned in greeting level	Lady tells PC to look at the star on the map; it is the only glowing icon; it shines and hums when looked at; when looked at long enough it transports PC; rushing sound and screen fade; when arrive NPC exclaims how PC has arrived.	When back in HQ, all map stars with available quests glow. When facing map, it hums and PC says, "It looks like I'm needed."	PC can transport self to any place using glowing star. NPCs start quest dialogue which always has option for PC to opt out by focusing on NPC red star.	If no action in HQ for 10 seconds, PC says to self, "I should look at my map."
Travel back to HQ	Focus on red star on Complainant NPC	Tutorial mission	Old Woman says, "If you want to go back to HQ just focus on my star, dear. You can come and go any time."	Icons for coming and going are identical.		If player focuses on Old Woman's red star, Old Woman asks if they are sure they want to go back to HQ. If player focuses on NPC red star, NPC asks if they are sure they want to go back to HQ.
		All missions				
Move around	Look at objects to travel around	Greeting	Lady says "Look at the map to go towards it."	Map hums when selected.	Map stops humming when face away from it.	If no ground or object raycast for 10 seconds, PC says to self, "I can look at certain things to go towards them."
		Tutorial mission	Old Woman says "Look at things to go towards them."		PC can go anywhere within boundary walls.	
	Boundaries	All missions	When hit boundary, PC says, "Uh, wall."	When hit boundary, PC says, "Uh, wall."	All walls block PC: wooden town wall, stone town buildings, stone field walls	

Mechanic	Actions	Where introduced	How taught	How repeat	How experiment	How remember
Find clue	Clue icon will show and hum when PC close enough to object of interest.	Tutorial mission	Old Woman says "Now that you're close enough, can you take a good look?"		Clue icons only available when NPC close enough to object of interest. NPC will need find object first. Then clue icon will appear with thin singing noise. It will vanish if PC moves away from object.	If clue trigger active for 2 seconds without icon being focused on, PC says to self, "I guess I need to focus on that clue sign."
Examine clue	Focus on clue icon to make the clue sing and rotate or glow	Tutorial mission	If player does not focus on the clue icon within 2 seconds, Old Woman says, "Just focus on the glow, dear."			
		First major mission		NPC says "What did you do? Can you see something?"		
All clues collected	When all clues collected, handcuffs/finebook and warning book hum and shine.	Tutorial mission	Two seconds after all clues collected, Old Woman says, "Dear, you must have enough information by now. Can't you look at your little book and figure it out?"			
		All missions		When all clues collected, NPC says, "Mate, you must have enough information by now. Your cluebook looks full."		

Mechanic	Actions	Where introduced	How taught	How repeat	How experiment	How remember
Approach NPC to speak **complainant suspects**	Focusing on shutters will make shutters open and NPCs appear in windows. Focusing on NPC will move player towards that NPC and colour their face when they are close enough to speak.	Tutorial mission	Old Woman says, "Come closer, dear, if you want to talk to me. I'll never hear you otherwise."	NPC says, "Ssh. We don't have to talk to him unless he knocks on the shutters."	NPCs appear in windows but close them after 5 seconds if PC does not focus on their faces to speak.	If NPCs not approached, PC says to self, "Is there anyone I need to speak to?"
Speak to NPC	PC must focus on NPC coloured face to speak.	Greeting level	Lady is the only NPC who initiates dialogue. She has dialogue icon on her face whenever she speaks.	Lady says, "Well, look at me when you want to talk to me." Then, "Can't you see I'm ready to talk to you?" Or, "I can't talk to you if you won't face me."	Lady is ready to speak whenever PC faces her dialogue icon.	
	PC may wish to examine NPC appearance before speaking. PC must focus on NPC face for more than 0.5 seconds to speak.	Tutorial mission	Old Woman says, "It's good manners to look a person in the face if you want to talk to them."			
		All missions			NPCs of interest show shining dialogue icons on faces but may be turned aside so PC has to walk around them to face them to speak.	After NPC approached but not spoken with, NPC says, "Does he want to talk to me? He's not looking into my face."

Mechanic	Actions	Where introduced	How taught	How repeat	How experiment	How remember
Use one detective power	Focus on red star at top of sky to invoke detective power. Special sound and sky flashes gold and icon vanishes. Next clue now in cluebook.	Tutorial mission	Old Woman says, "Don't you city detectives get special teDective powers?" If PC does not look up, Old Woman says, "Look up at the teDective power at the top of the sky." Detective in the Sky says, "Detective, you may invoke your power once per mission. This will put a clue in your cluebook, or if all clues are found, it will indicate the perpetrator. If you wish to use your Detective Power now, continue gazing here."			
		First major mission		When one clue to go, NPC says, "Are you going to use your magical Detective Power?"		
		All missions	Detective in the Sky says, "Continue your gaze if you wish to use your Detective Power for this mission now."			

Mechanic	Actions	Where introduced	How taught	How repeat	How experiment	How remember
Arrest or warn	Handcuffs and warning book clink on chest. Focusing on one or the other results in arrest or a warning. This can be done at any time and the NPC that last had a coloured face will be arrested/warned. NPC dialogue will occur, and winning or losing music, then player will be teleported back to HQ.	Tutorial mission	Old Woman says, "Oh, are you going to arrest or just give a warning? Who? Who will you do it to? Of course, the last person you spoke to. Why don't we have a practise. Pretend it was me, I made my cat invisible. Look at me to make my face red, then look at your handcuffs to arrest or warn me. This is going to be such fun!" Old Woman reacts to confirm arrest/warning, explaining the trophy/gift choice if player is right and chance of promotion, then encourages player to arrest or fine, saying there won't be a way of making things right if mistake is made.			
		First major mission		PC says, "I can arrest you at any time, you know. Or just warn you. I only have to look at you and then choose the handcuffs or the warning book."		When all clues collected, PC says to self, "Shall I arrest or let them off with a warning? Hmm, a trophy or an unknown gift."
		All missions				When all clues collected, PC says to self, "I need to focus on the guilty villager. Shall I arrest or let them off with a warning?"
Rearrange trophies and gifts	Focus on anchor icon of trophy and it makes sparkling sound and is selected. Move it to another place on the shelf and this shifts all others along.	HQ	Entering HQ, minimum of two trophies/gifts displayed, no rearrangement done yet, player says, "I can always move those things around."			Trophy shelf in HQ displays trophies for correct arrests, gifts for correct warnings, nothing for mistakes.

4 Characters

4.1 Enk

- 21-year-old gypsy, Enk, short for "enquiring". Nickname given as always asking questions.

4.1.1 Background

- Graduated from Academy highest in class as enquiring and loves solving mysteries.
- Outsider so trying to overcome prejudices that he is not needed, will be biased, stupid, won't stay in the job.
- Highly motivated to earn trophies and be promoted to get back to the city.

4.1.2 Physical description

- Played in first person but can see body when player turns head right around or looks down.
- Carries handcuffs, warning book.
- Cute fast voice, makes jokes.
- Different from everybody else.

4.1.3 Special abilities

- One magic detective power clue can be invoked for each mystery (see Gameplay Features).
- Can choose to arrest NPC, or warn and advise.

4.1.4 Weaknesses

- Can make arrest decision early, before all clues collected.
- Irreverent sense of humour.

4.1.5   Strengths

- Enquiring, smart, well-trained in finding clues.
- Cares about community.
- Motivated to succeed.

4.2   Non-Playable characters

5 suspects per mystery including witch and complainant.
Characters reoccur in storylines for sense of community and ongoing story.
Characters have clues like cat scratches and jagged clothing.

4.2.1   Lady of manor
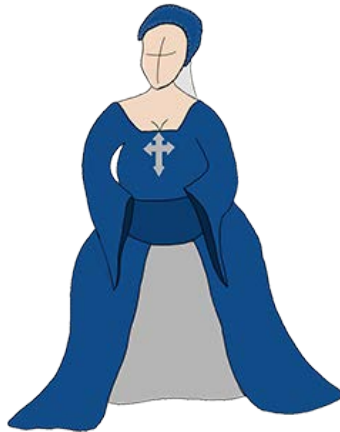
- Human.
- Middle-aged and fat.
- Grumpy, caring only for wealth.
- Does not care about lawbreakers in village.
- Does not support Enk, did not ask for Enk, has provided HQ office and that is enough.

4.2.2 Witch

- Beautiful.
- Mean words and criticism.
- Bosses everybody by saying she can do magic, but can't do magic.
- Became a witch as a child to feed mother and younger brother.
- Younger brother now lost in war like father but no one will help rescue him.
- Will do anything to get rid of Enk who threatens her reputation and livelihood.

4.2.3 Craftspeople - bearded giants

Old Woman
Blacksmith
Old miller
Bell ringer

- Naive, believe in magic
- Frightened of witch and Enk
- Hardworking craftspeople
- Dismayed by economic woes, beginning to distrust goblins

4.2.4 Marketers - goblins

Goblin chief
Goblin cobbler (female)

- Seem to care only about increasing wealth but actually need money for food for children.
- Honest but only after questions if paid.
- Lowest status in village.
- Resentful.

4.2.5 Farmers - trolls

Farmwife
Beekeeper (female)
Troll baby

- Live outside on farm, rarely venture to village.
- Unintelligent.
- Take everything literally.
- Do not trust Enk until he solves crime for them.

4.2.6 Detective Power

- Big voice in the sky all powerful, weary.
- Sounds like a master trying to teach an apprentice.
- Becomes more respectful as player progresses through game.

5 Environment

5.1 Setting

Cold spring day in magical medieval Europe, from dawn to sunset.

5.3 Village

5.4 Market

5.5 Farm

Farm shed

Farm house
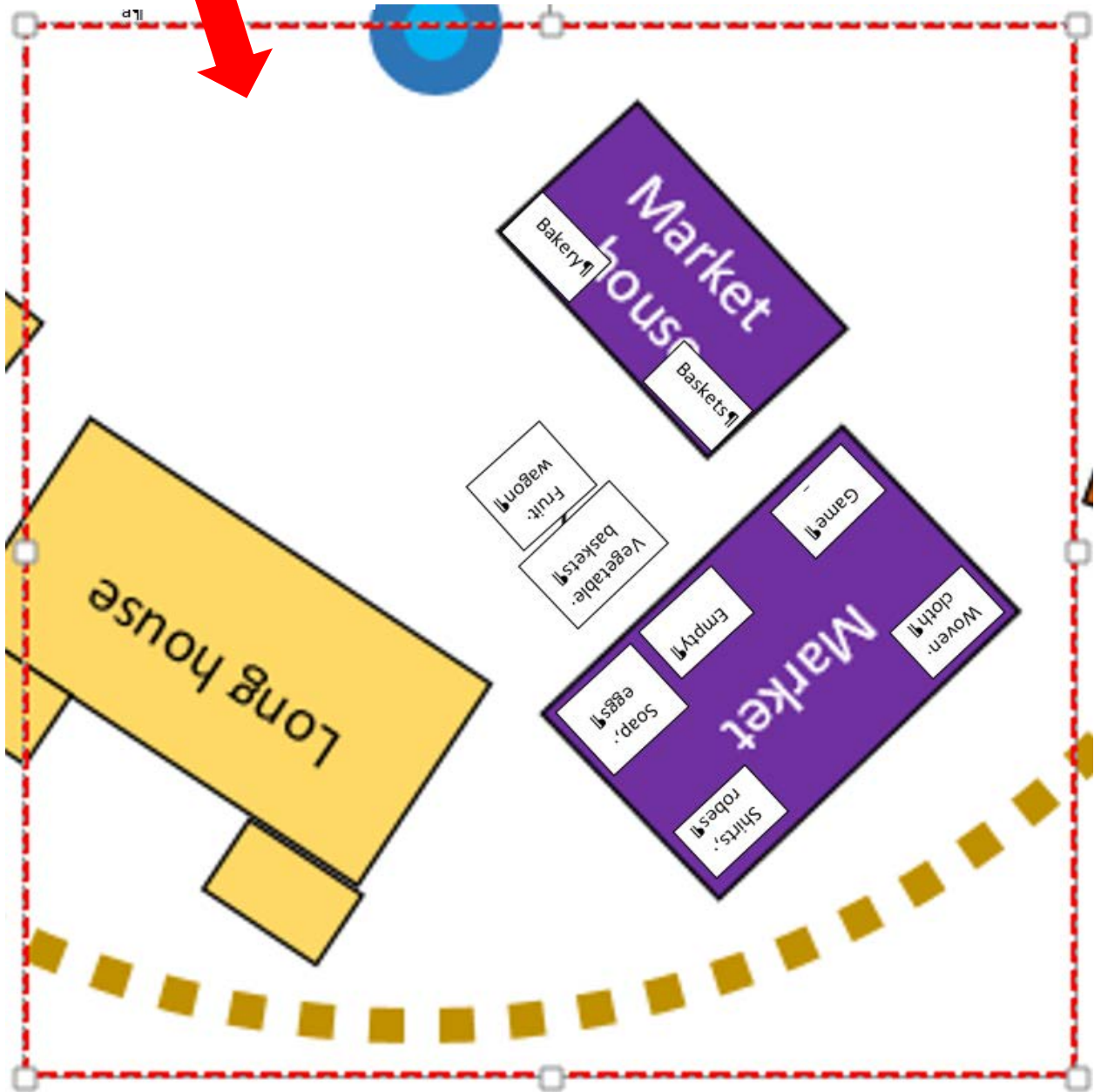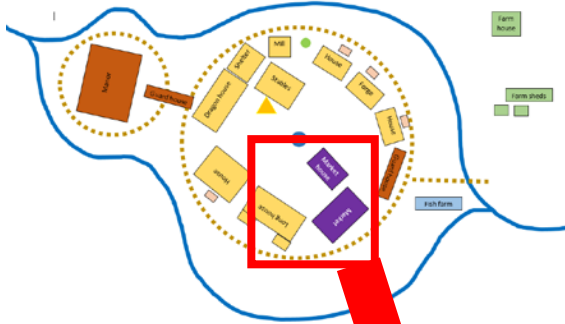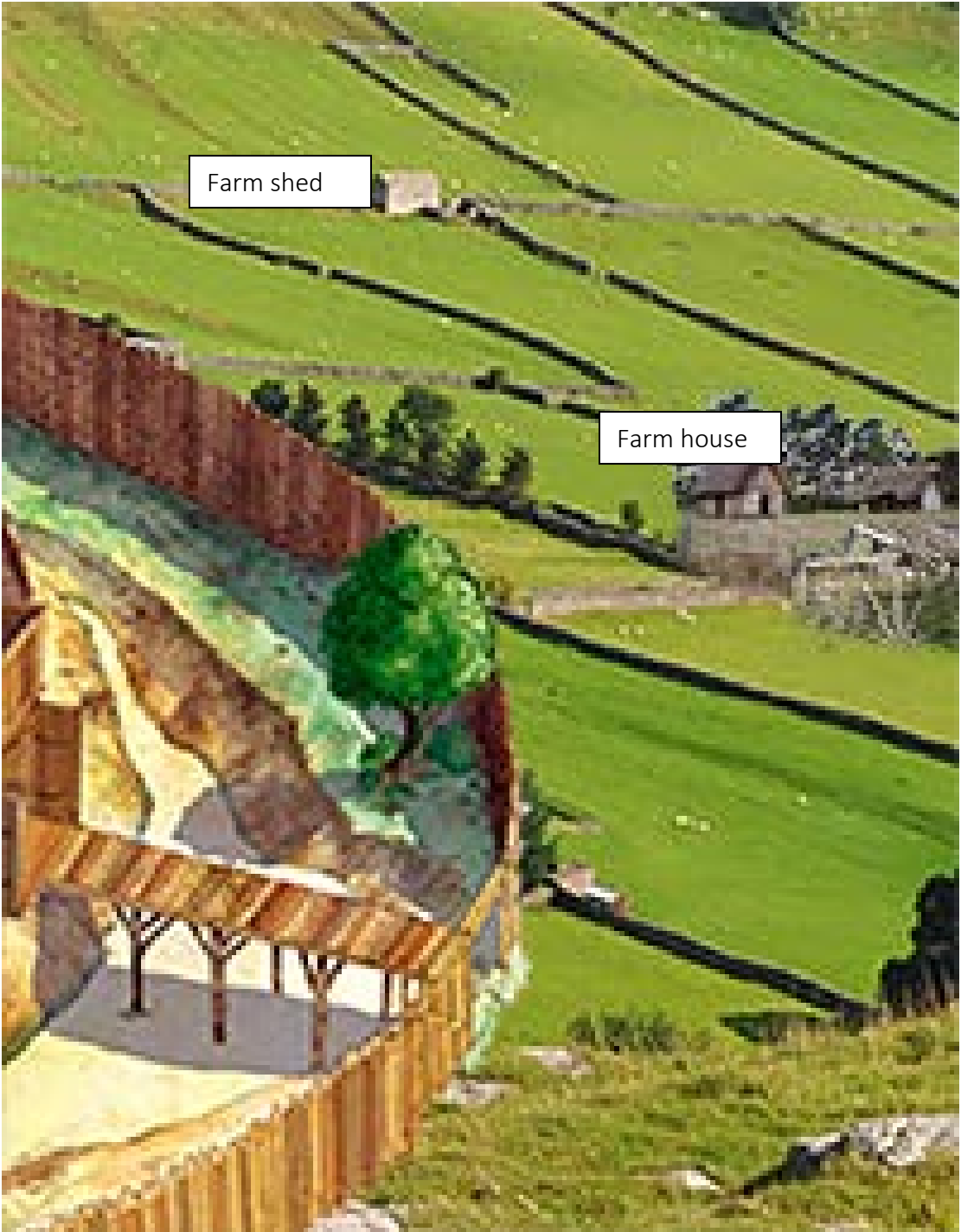
5.6 Skyboxes

Detective power at zenith.

Mountainous – large mountain in corner which is where dwarves were supposed to come, described in game dialogue.

Always day time. Bells herald skybox changes whenever main mystery complete, to show it is getting later in the day.

Skybox tutorial: https://www.youtube.com/watch?v=F93wzC-JzDc

This way gives 1 texture and 1 drawcall instead of 6

- o use one 360 degree image
- o put skybox texture in Textures
- o Texture type - Cubemap
- o Mapping - Mirrored ball (Spheremap)
- o Tick Fixup Edge Seams
- o Filter Mode changed to point (but couldn't see a difference)
- o Default Override for Android
- o Reduce Max Size to 1024
- o Format [texture] cannot be crunched so will have to be compressed
- o Compression Quality Fast
- o Apply
- o Put the skybox shader in a Unity Resources folder to force it to be included in the build
- o Window / Lighting Scene tab, Edit Render settings, bring skybox in

5.7 Sound assets

5.7.1 Voice recording

766 lines

	Actor			Hiding	General	HQ	M0	M1	M2	M3	M4	M5	M6	FA	FB	FC	FD	Lines
						HQ	Greeting	Cat	Bell	Market	Farm	Well	Bonfire	Apple	Jewel	Graffiti	Animals	
Gypsy	Gabriel	Enk		hcuffs jingle	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	244
Humans	Celeste	Lady		jewels tinkle	Lady		Lady						Lady					31
	Ellen	Witch		clothes rustle	Witch			Witch	Witch	Witch	Witch	Witch	Witch	Witch	Witch	Witch	Witch	71
Giant villagers	???	V OldWoman	cat in basket	V OldWo	V OldWoman			V OldWo				V OldWo	V OldWo		V OldWon	V Blacksm		53
	Michael	V Blacksmith	tools in pou	V Blacksr	V Blacksmith			V Blacksr	V Blacksr	V Blacksr				V Blacksm				44
		V BlacksmithWife		V Blacksr														7
	Michael	V Old Miller	smacks lips	V Old Mi	V Old Miller						V Old Mil			V Old Mill				23
		V Potter (F)		V Potter														5
		V Carpenter		V Carpen														4
		V Dragon keeper		V Dragon														4
		V Henkeeper (F)		V Henkee														4
	Michael	V Bellringer	bell on belt	V Bellrin	V Bellringer			V Bellrin				V Bellrin	V Bellrin		V Bellring			34
		V Boy		V Boy														4
		V Girl		V Girl														4
Goblin merchants	Celeste	G Goblin chief	coins jingle	G Goblin	G Goblin chief			G Goblin	G Goblin	G Goblin		G Goblin	G Goblin chief	G Goblin c	G Goblin c		47
		G Errand runner		G Errand	runner													4
	Celeste	G Cobbler (F)	toolbelt ratt	G Cobble	G Cobbler (F)			G Cobble	(F)				G Cobbler (F)	G Cobbler	G Cobbler	38
		G Trinket seller		G Trinket	seller													4
		G Boy		G Boy														4
		G Girl		G Girl														5
Troll farmers		T Farmer		T Farmer														4
	???	T Farmwife	lamb in apro	T Farmwi	T Farmwife			T Farmwi	T Farmwife		T Farmwi	T Farmwi	T Farmwi	T Farmwife		T Farmwif	52
		T Goatherd		T Goatherd														4
	???	T Beekeeper (F)	bees buzz	T Beekee	T Beekeeper (F)				T Beekee	T Beekeeper (F)			T Beekeeper (F)	T Beekee	36
		T Dairy troll		T Dairy troll							T Dairy troll							4
	???	T Troll baby	babbles	T Troll ba	T Troll baby						T Troll baby				T Troll bab	20
Detective Power		Detective Power					Detectiv	Detectiv	Detectiv	Detectiv	Detectiv	Detectiv	Detectiv	Detective	Detective	Detective	Detective	12
																		766

5.7.2 SFX

168 sound effects

All levels	All levels	HQ	M1	M2	M3	M4	M5	M6	Bells	FA	FB	FC	FD	
Ambient	General	HQ	Cat invisible	Bell sabotaged	Market stalls upended	Troll baby kidnapped	Well poisoned	Witch at stake	Bells	Apple stolen	Jewel found	Graffiti	Wall broken	
Location guidance	Gameplay guidance	Rearrange trophies	Find hairs on villain	Match tears on cloth	Find item at bottom	Match locket to dent	Follow symbols to poison	Move or light firewood	Signify end of main mission	Follow footprints trail	Place witnesses in order	Compare writing sounds	Rebuild wall for pumpkin match	
All levels	All levels	HQ	Village	Village	Market	Farm	Village	Village	Village	Village	Village	Market	Farm	
37	44	9	7	6	5	5	18	7	5	6	1	5	13	168

5.7.3 Music

At beginning and end credits only
Free druidic music from Incompetech

5.8 Story

Dialogue scripts for Greeting, 5 main missions and 4 filler missions.
Each mission ends with revelation and more information about overarching mystery which is played out in Missions 5 and 6.
Player choice decides which of the four endings the player will experience.

5.9 Gameplay assets

5.9.1 Props

- Map with stars
- Clues

> Poker
> Cat hairs, scratched characters
> Jagged edged clothing
> Market items spilled
> Brooches on 5 characters
> Footprints trail
> Dialogue clues about jewel provenance
> Graffiti implement sounds
> Wall in pieces, pumpkin splatter
> Symbols on well bricks
> Bonfire logs and witch stake

- Warning book
- Handcuffs
- Office plaque indicating promotions with stars for missions completed without hints
- Trophies
- Gifts

> Cat hair hat
> Bell miniature
> Copper coins
> Troll doll
> Herb bag
> Apple
> Jewel
> Charcoal pencil
> Pumpkin
> Medal

6 Sound

Sound design suitable for vision-impaired players requires an audio cue to match every visual cue. This also improves play for fully sighted players. In reviewing a game for the blind called *Blind Legend*, reviewer Christopher Livingston stated: "I'd really love to see this level of attention paid to audio in more games. It would give players with visual impairments more games to choose from, and provide a more immersive experience for everyone else."[1]

6.1 Dialogue

6.1.1   Mission dialogue flow chart

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[1] http://www.pcgamer.com/a-game-about-a-blind-knight-played-entirely-with-sound/
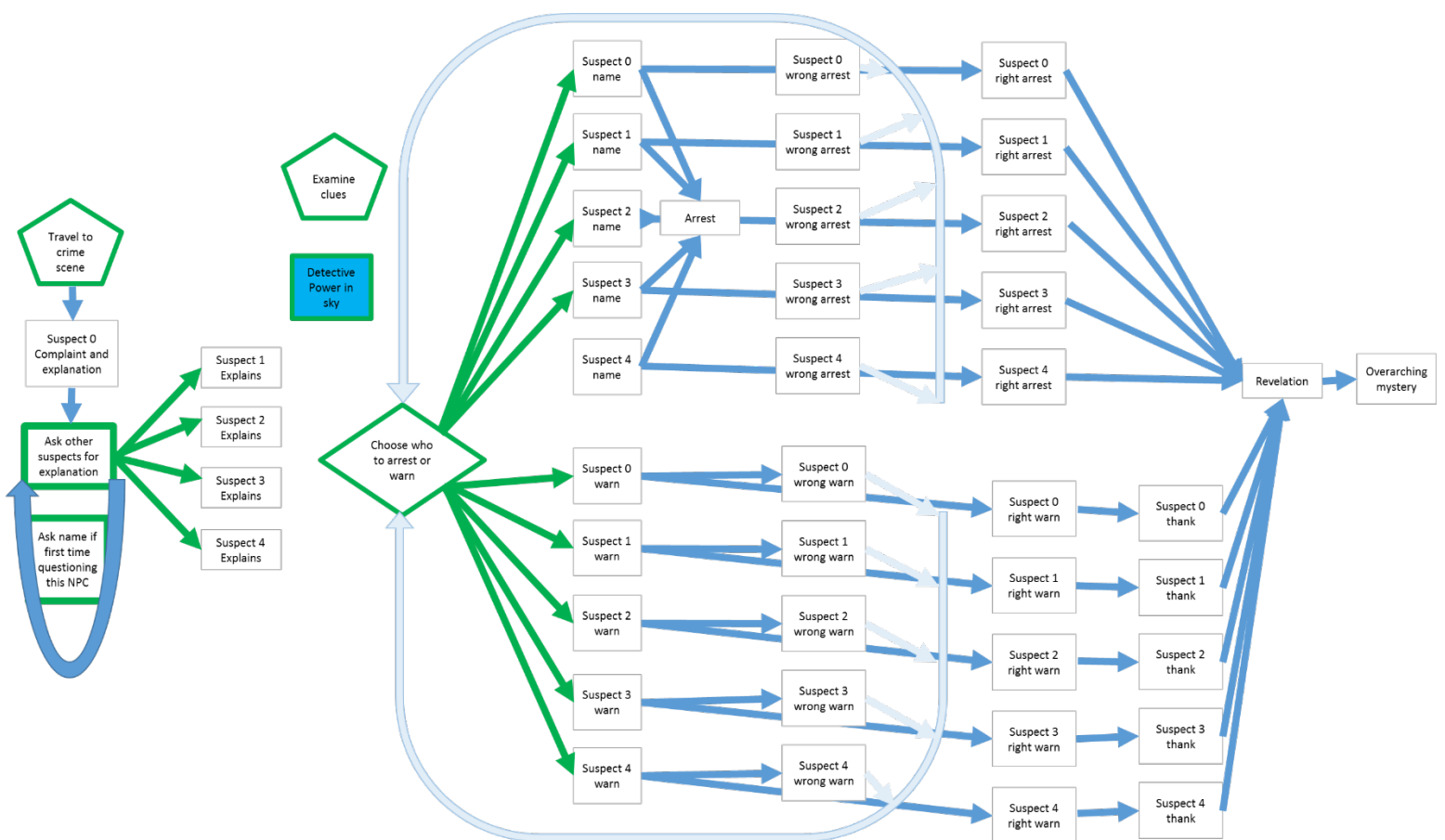
Note that as described in section 3.2, before interaction takes place, NPC shows they are awake.
Then player can hold dialogue with them, warn them or arrest them.
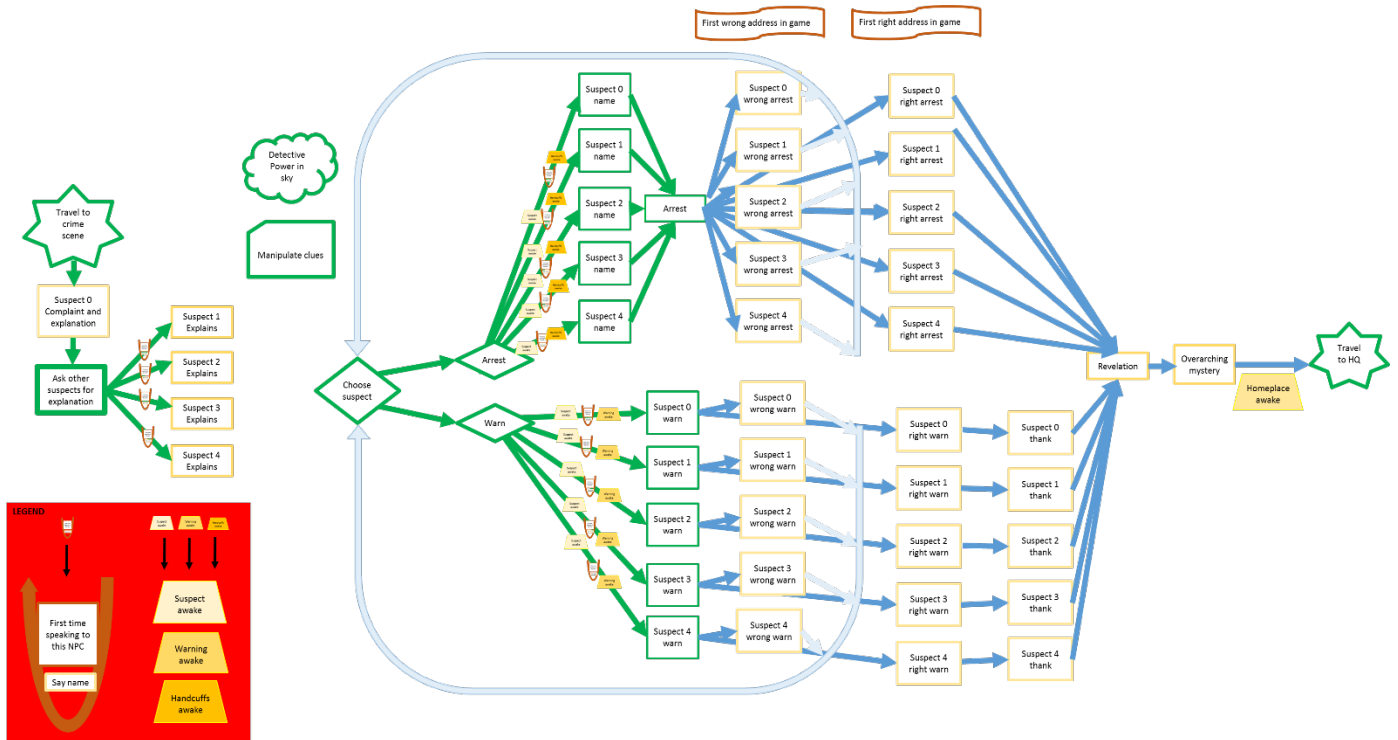
6.2 Sound FX

6.2.1 UI

Everything which can be touched has an idle sound.
Everything which can change state has an idle and awake sound.
Everything which can be interacted with has an idle, awake and active sound.

Exceptions:
- Detective Power does not have idle sound as player has been taught to look straight up to activate it.
- NPCs do not have active SFX as they have dialogue instead.
- Plaque in HQ only has idle as player reads it immediately on passing gaze over it.

There are as few artificial UI sounds as possible, so as to create the illusion that the player is moving in a real world.

- Detective power crackle of speakers
- Base of statue (home place)
- Trophies
- Stars on plaque twinkle
- Map on wall hums
- Mission 5 right and wrong guesses, trail build, final triumph

6.2.2 Ambient sounds

All items in the level have a unique sound unless far away, then only named, e.g. "castle".
- Ambient – help player navigate
- General
    - NPC idle and awake
    - Detective power awake and active
    - Handcuff/warning book idle, awake and active
    - Homeplace idle, awake and active
    - PC dialogue and SFX when he bumps into things
    - Hiding dialogue identifying buildings and explaining why no one walking in village
- HQ
    - Trophy idle, awake, active and move
    - Plaque idle (when woken, player immediately reads it)
    - Plaque star idle and awake
    - All plaque stars twinkle together if player returns having completed all filler missions and burned the witch, without using Detective Power
    - Map on wall idle and awake
    - Crime scenes on map have sounds unique to each crime and wake when gazed on
    - Whoosh of teleportation
    - Door slam (no idle for door, desk or walls as these are named by player dialogue)

6.2.3 Other diagetic sounds

Some clues are mission-specific. In the poisoned well mission, the player is guided by the type of sound (equivalent to shape for a sighted person) or the pitch and length of the sound (equivalent to colour and size for a sighted person).

See SoundFX_inOrder file

All levels	All levels	HQ	M1	M2	M3	M4	M5	M6	Bells	FA	FB	FC	FD	
Ambient	General	HQ	Cat invisible	Bell sabotaged	Market stalls upended	Troll baby kidnapped	Well poisoned	Witch at stake	Bells	Apple stolen	Jewel found	Graffiti	Wall broken	
Location guidance	Gameplay guidance	Rearrange trophies	Find hairs on villain	Match tears on cloth	Find item at bottom	Match locket to dent	Follow symbols to poison	Move or light firewood	Signify end of main mission	Follow footprints trail	Place witnesses in order	Compare writing sounds	Rebuild wall for pumpkin match	
All levels	All levels	HQ	Village	Village	Market	Farm	Village	Village	Village	Village	Village	Market	Farm	
45	44	10	7	6	5	5	18	7	5	6	1	5	13	177

(See SFX list)

6.2.4 Footsteps

Included in SFX list

6.3 Music

Druidic music from Incompetech ducking under the credits.

6.4 VR sound issues

- no pinpoint sounds - sounds must attenuate over distance
- no stereo ambient loops (traffic, birds etc) as will not match head tracking
- multiple mono loops for moving object like wind or fly or bullet
- very few main loops
- wideband sounds with high frequencies
- small audio cues can distract
- match audio room size with visual room size
- outdoors, turn down reflections except the floor
- small rooms - Oculus - high reflection values in small rooms may cause distortion due to volume overload
- no reverb unless stationery

7 User Interface

7.1 Menus

7.1.1 Wireframe UI

medium press

cancels long press

long press

Large button

Oculus System Activities

12:45PM   88%

Universal menu
Pass-Through Camera
Oculus Home link
Reorient
Do Not Disturb
Comfort Mode options
System Indicators

SPLASH SCREEN

GAME
INSTRUCTIONS

Visit main menu

Start new game

Master Vol
Sound FX
Music

GAME SCREEN

PAUSE SCREEN

Continue

Main menu

Hints

MAIN MENU

Resume

Sound

Hints

New game

Credits

Oculus Home

Exit

CREDITS

NO

Confirm

YES

END SCREEN

Play again

Main menu

Exit

Confirm

YES

End

NO

7.1.2 Menu system flow chart

All menus are voiced. Choices are made by focusing on objects in game with the exception of the back button menu [outlined in blue].
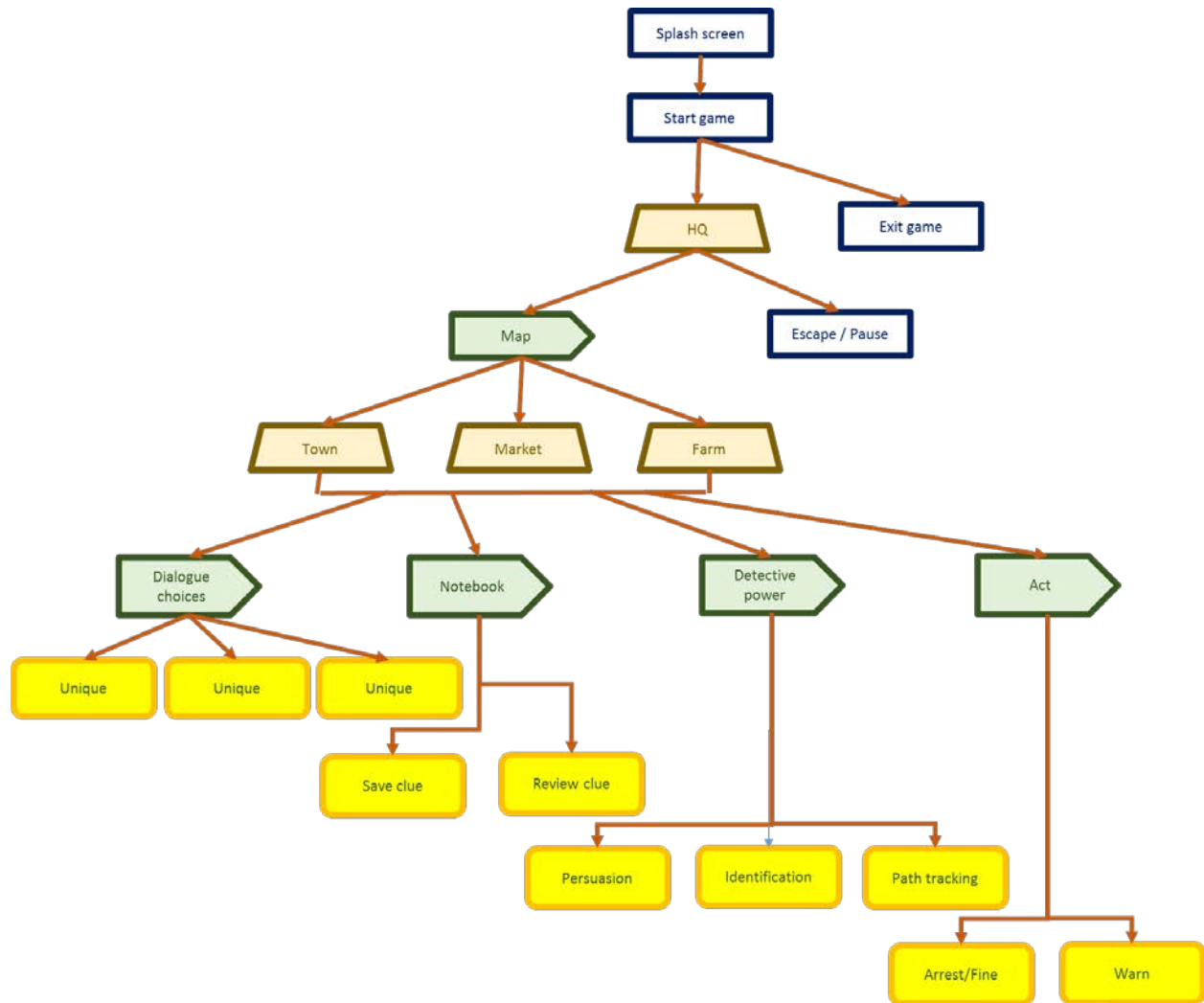
7.1.3   Universal menu

Oculus main menu uses large button short and long press.

A long-press occurs when a user presses the back button and holds it for more than 0.75 seconds, then releases it.

- A long-press must always open the Universal Menu.
- Apps must implement Universal Menu access through integration with the Oculus Mobile SDK when long-presses are detected.

The Universal Menu[2] provides features such as the Pass-Through Camera, shortcut to Oculus Home, Reorient, Do Not Disturb, and Comfort Mode options, along with various system state indicators such as Wi-Fi signal strength and battery level.
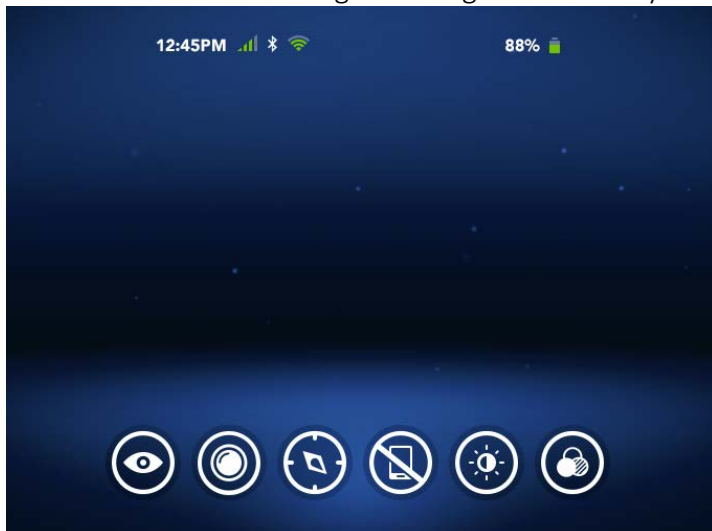
The Universal Menu is part of the Oculus System Activities application which is installed to the user's device along with Oculus Home and Horizon.

Players can long-press back button to leave game and can return to exact point and position they left.

7.1.4   Volume

Phone volume control must be set manually before game or by pausing game and taking off headset.

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[2] https://developer.oculus.com/documentation/mobilesdk/latest/concepts/mobile-umenu-intro/.

7.1.5   Other back button menus

A short-press occurs when a user presses the back button once within a 0.25 second window, then releases it.

Short-presses are typically (but not necessarily) treated as a generic back action. For example, a short-press on the back button may bring up the application's own menu. In another application, a short-press may act as a generic back navigation in the UI hierarchy unless the root is reached, at which point it may bring up an application-specific menu, or enter the Universal Menu with a confirmation dialog, allowing the user to exit the application to Oculus Home.

- If a single press of the back button is longer than a short-press (0.25 seconds) but shorter than a long-press (0.75 seconds), it results in an aborted long-press and cancels the Universal Menu timer.
- The way in which a back action is handled by an application depends on the application's current state. Back actions usually prompt apps to navigate one level up in an interface hierarchy. For example, if the top-level screen of an app menu is active, a short-press will exit the app menu. If no satisfactory stateful condition is identified by the application, the short-press opens the Universal Menu with a confirmation dialog allowing the user to exit the app and return to Oculus Home.
- The Gear VR back button is used to access the game pause menu using a short press.

7.1.6   **Beginning of play**

Games should be played using headphones because the output source follows the user's head movements when they wear headphones, but not when they use speakers. Menu person checks player can hear sound in left ear. If not, menu person recommends earphones or headset. Assure player they will not lose place in game if they take off headset.

Menu person advises play is best if player is sitting on swivel chair. Ask player to turn right around, reward with cheer if they do so. Ask to look directly up if they wish to continue.

7.1.7   **Pause**

7.1.8   **Volume** button/key interactions

Volume buttons must adjust the volume using the VR volume UI provided by the Oculus Mobile SDK.

7.2 User controls

UI has been simplified so all gameplay is done with head movement because using the trackpad tires the arm and is not a natural way of pointing. Controllers and keyboards tie the player down and trammel the VR experience.

No canvas is used because even for fully sighted players a static HUD is easily misplaced in a VR game and a UI floating in space breaks immersion and can lead to visual confusion. But more importantly, moving by looking around is intuitive and fun.

User controls
- localize player with sound FX and dialogue saying what things are
- identify objects with sound FX and dialogue
- ability to turn off identifying dialogue
- feedback indicating extended gaze
  - footstep sounds for moving
  - idle and awake NPC sounds and red face for dialogue interaction
  - idle and awake detective power sounds
  - idle and awake handcuffs sounds
  - idle and awake warning book sounds
  - idle and awake and interactive clue sounds
  - idle and awake object sounds

7.2.1 Map on wall of HQ

Travel to mission site

- Available missions are red [now gold] stars emanating sounds unique to their missions, not yet available invisible and silent, completed ones yellow and softer sounds.
- Player focuses on star, which glows and grows in volume.
- If player continues to focus on star, he travels to mission with whooshing sound and bird's eye camera movement.
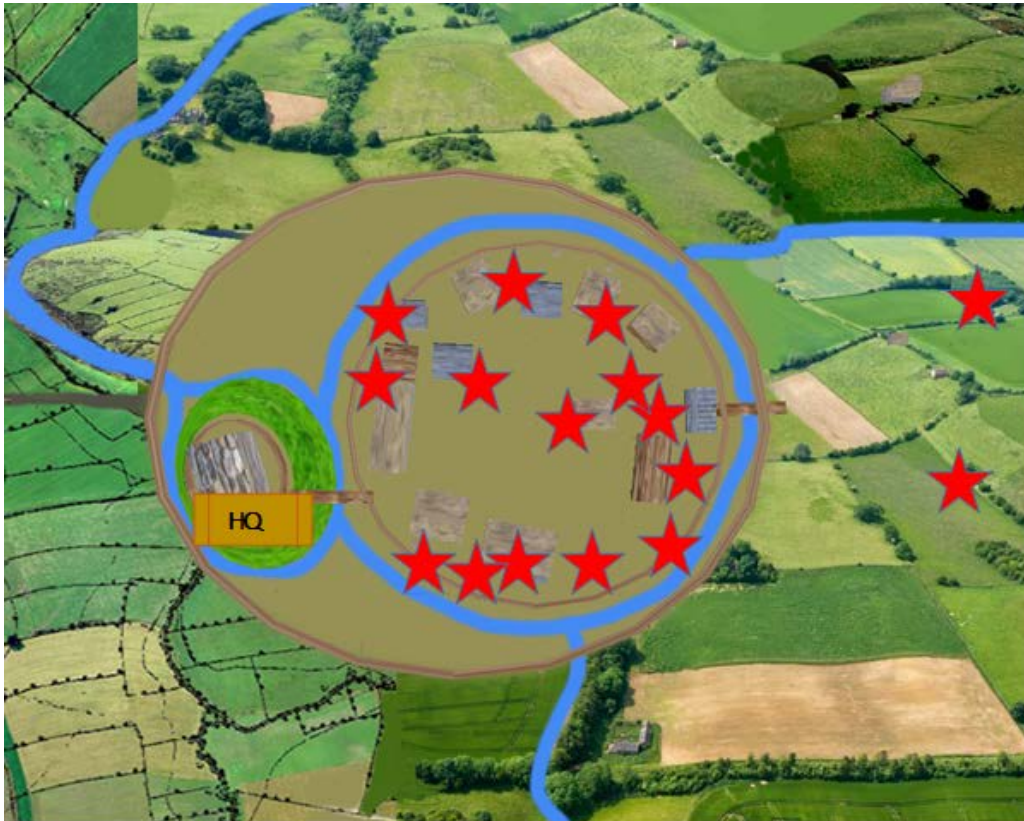
7.2.2 Homeplace star

- PC must focus on star at base of statue to be transported back to HQ.
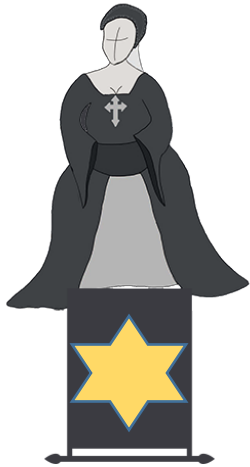
Player can go to Homing Place to return to HQ at any time.

7.2.3 Movement

- Travel around mystery site

Looking down causes player to move forward immediately.
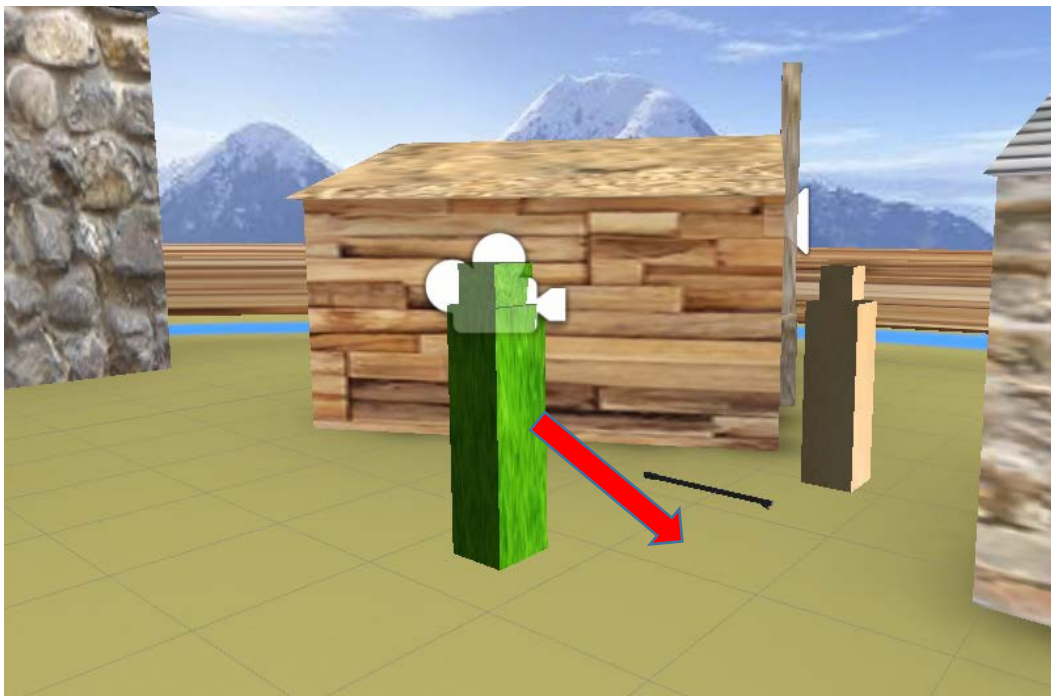
7.2.1 Examine clues

- Wake clue

Viewing any game object which is relevant to that scene's mystery will make that clue's sound increase in volume and speed.

- Interact with clue.

Continuing to gaze at the clue will make clue rotate or shine depending on its nature.

In this example close examination of rotating clue shows cat hairs wailing on end of poker.
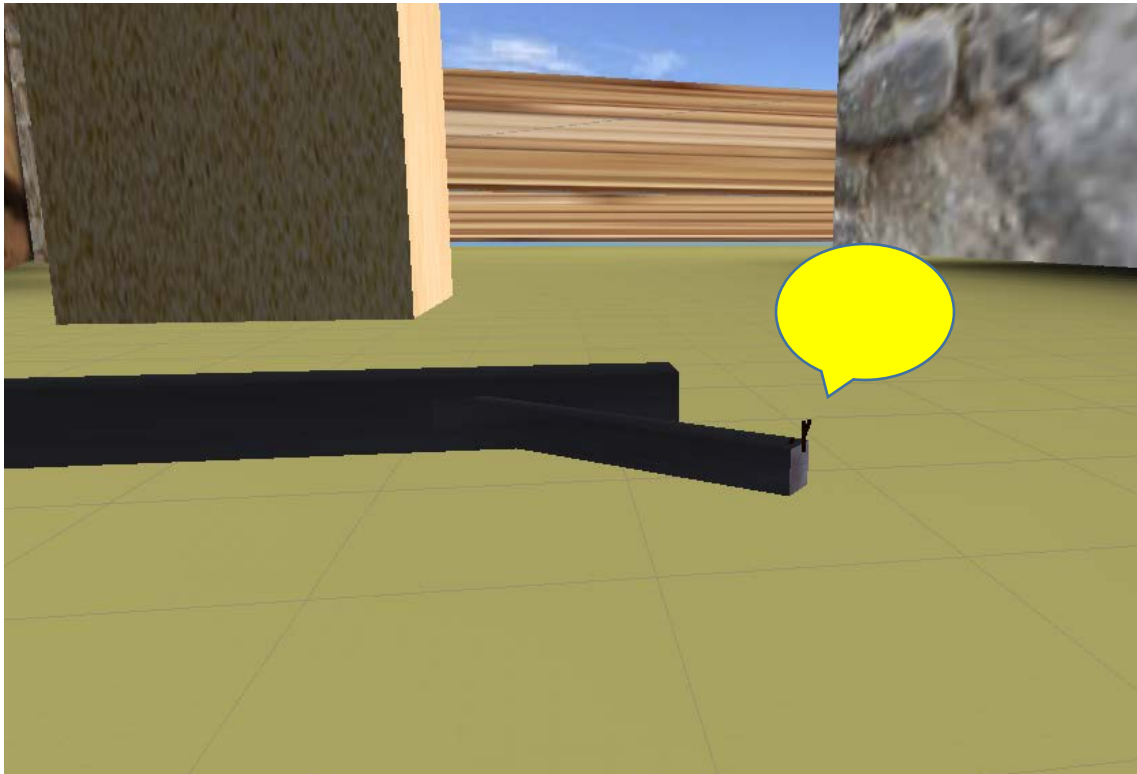
7.2.2 NPCs

- NPCs make faster louder sounds when focused on.
- point face at NPCs to make them interactible to
    - have dialogue
    - warn them
    - arrest them
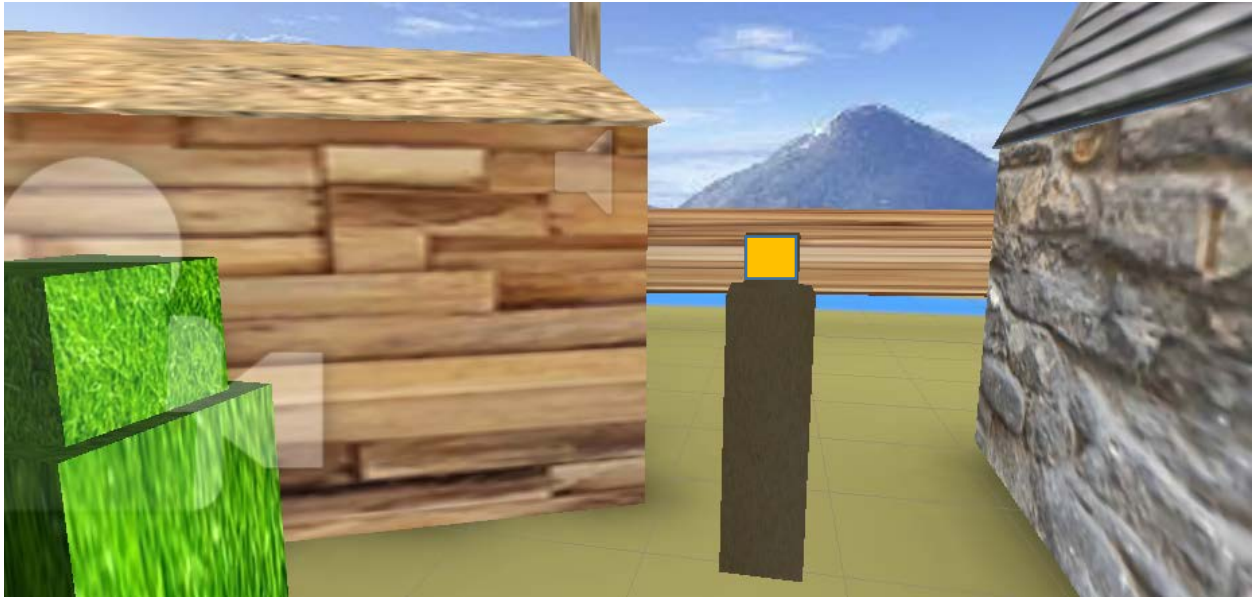
7.2.3 Magic detective power

- Gaze up at Detective Power icon in sky which responds with warning: Does player want to use it as it will prevent him getting a star for the mission?
- If player continues to gaze at it, clue is provided.
- It will now provide the same clue at any time player focuses on it during that mission.
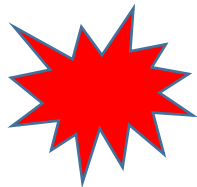
7.2.4   Handcuffs, warnings book

- Choose to arrest
    - Handcuffs appear and sound when look down after focusing on NPC
    - NPC protests imminent arrest
    - Arrest initiated if continue to focus on handcuffs

- Choose to warn
    - Warning book appears and sounds when look down (but not as far down as for handcuffs) after focusing on NPC
    - NPC protests imminent warning
    - Warning initiated if continue to focus on warning book

Warning book and handcuffs

7.2.5   Rearrange trophies and gifts

Trophy shelf on desk in HQ has gifts and trophies earned by PC, each with their unique sound. They have anchors, allowing player to move them.

7.2.6   Witch save/burn

Bonfire logs can be moved by gazing at them until anchor set, then moving head.
Bonfire logs have rigid body physics so moving the bottom one will upset the higher ones and break the fire apart.

Flaming torch can set fire to logs.

8 Programming

8.1 Choices for programmer to make

- Coroutines vs. state machines.
- Nested prefabs vs. linked prefabs vs. God prefabs.
- Data separation strategies.
- Ways of using sprites for states in 2D games.
- Prefab structure.
- Spawning strategies.
- Ways to locate objects: by type vs. name vs. tag vs. layer vs. reference ("links").
- Ways to group objects: by type vs. name vs. tag vs. layer vs. arrays of references ("links").
- Finding groups of objects versus self registration.
- Controlling execution order (Using Unity's execution order setup versus yield logic versus Awake / Start and Update / Late Update reliance versus manual methods versus any-order architecture).
- Selecting objects / positions / targets with the mouse in-game: selection manager versus local self-management.
- Keeping data between scene changes: through PlayerPrefs, or objects that are not Destroyed when a new scene is loaded.
- Ways of combining (blending, adding and layering) animation.

8.2 Documentation

- Layer uses (for collision, culling, and raycasting – essentially, what should be in what layer).
- Tag uses.
- GUI depths for layers (what should display over what).
- Scene setup.
- Idiom preferences.
- Prefab structure.
- Animation layers.

8.3 Naming standards

see http://www.glenstevens.ca/unity3d-best-practices/#Documentation

8.3.1 Audio clips

Audio clips will only work with Unity if they
- start with letter not number
- have no hyphens [-]
- have no more than 3 underscores [_]
- end with length in number of seconds to help with programming. Generally round up to next second but where timing is more important, use fractions of second
    - Example **Char_NameOfClip_x**, where *x* is length of clip in seconds rounded up e.g. 1.5f

8.3.2 Models

PC_03

8.4 Unity folder structure

```
Audio
Editor
Materials
Models
  Characters including animations
  Structures
  Objects
Plugins
Prefabs
  Characters
  Structures
  Objects
Resources
Scenes
Scripts
Textures
UI
```

8.5 Unity scene structure

```
PC
Town assets
Characters
Missions
Light
```

8.6 Sound

- add Oculus Audio SDK spatialization component to Unity's native audio object objects
- Advice may be out of date: Native Spatializer for Unity: Set void SetParameter(ref AudioSource source) function within ONSPAudioSoure.cs to public. When instantiating a prefab with this component, please be sure to call this function (and pass a reference of the AudioSource component) before calling AudioSource.Play().
- spatially correct audio source for every sound
    - o no speech over central audio channel or L and R channels
    - o spatialize audio to NPC position
    - o place audio source and listener in centre of player's head
- Edit > Project Settings > Audio Manager > Default Speaker Mode – Mono

8.7 Animation state machines

8.7.1 General

Giants
     Bellringer
     Blacksmith
     Miller
     OldWoman
Goblins
     Cobbler
     GoblinChief
Trolls
     Beekeeper
     Farmwife
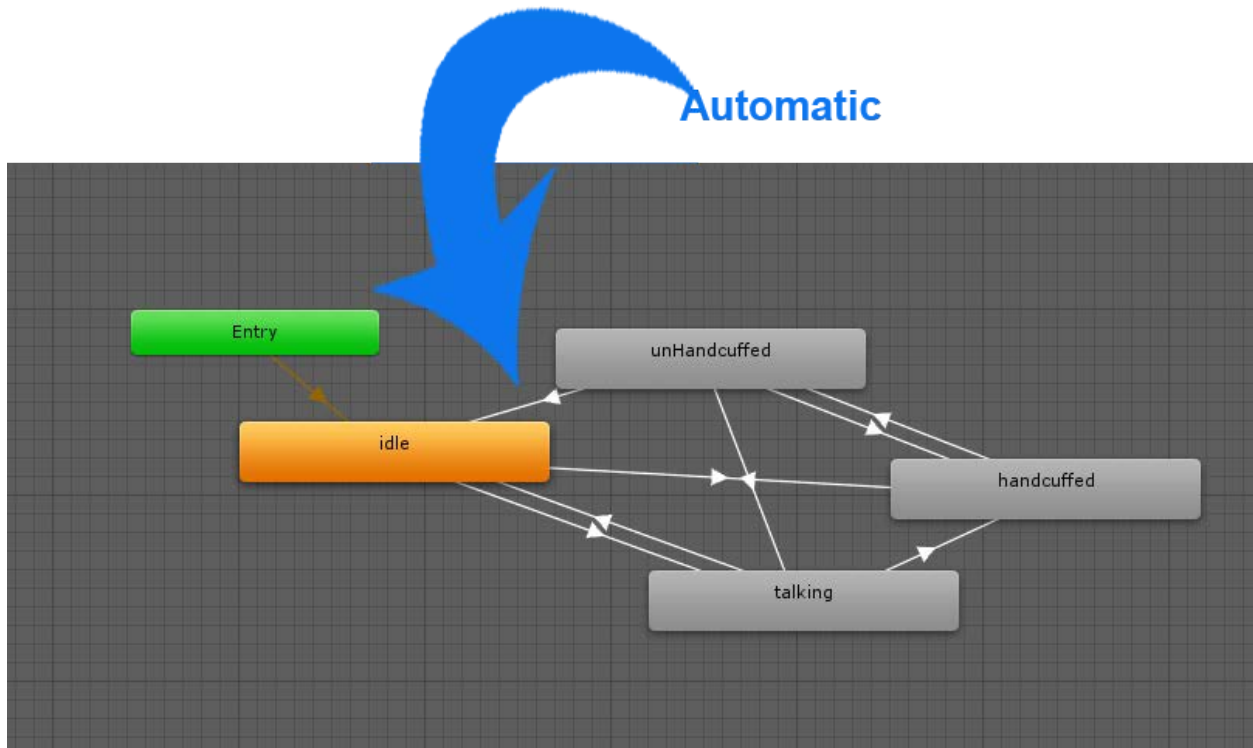
8.7.2 Troll baby
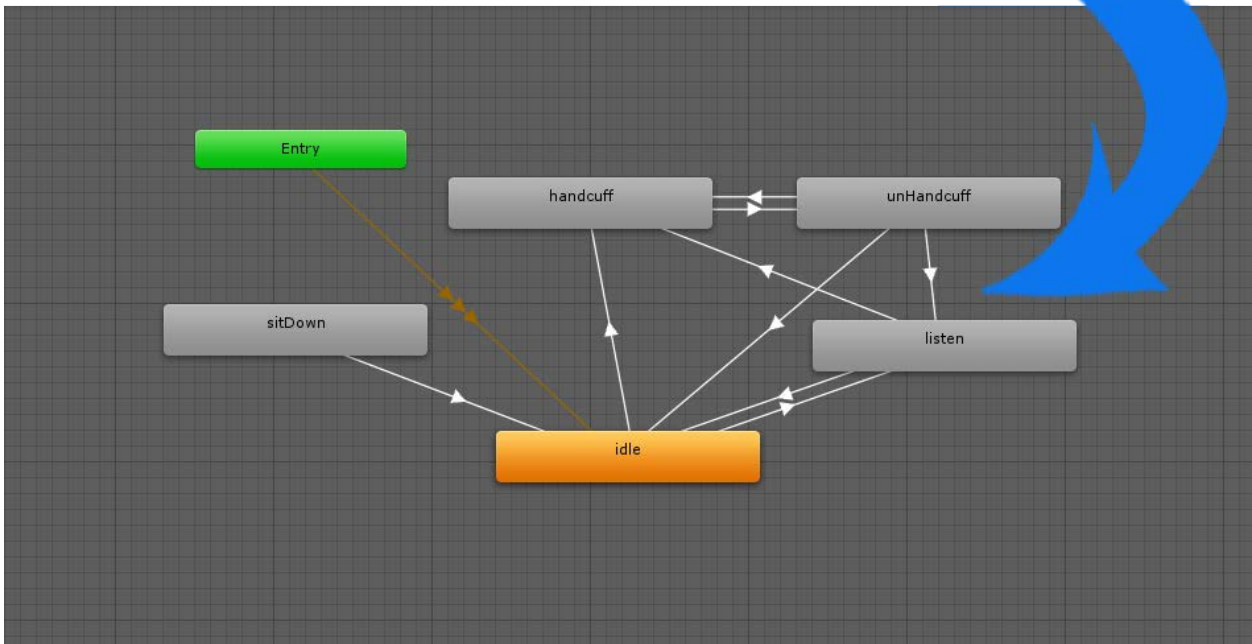
8.7.3 Lady of Manor
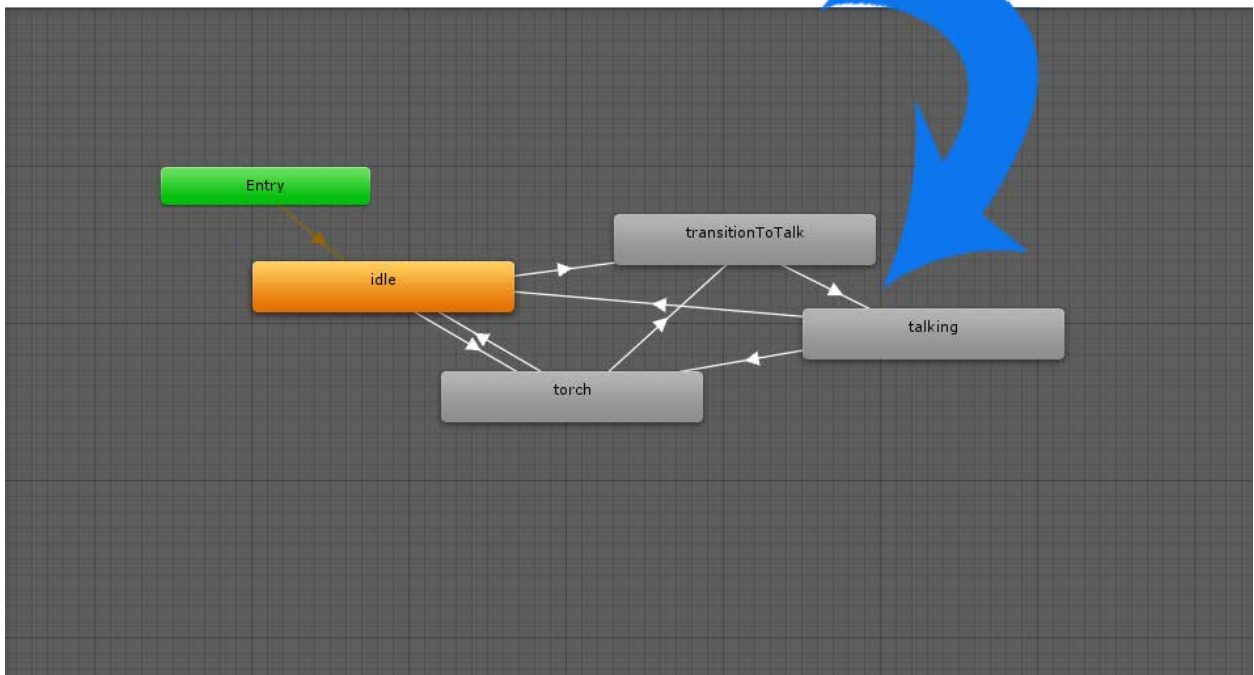
8.7.4 Witch

Automatic
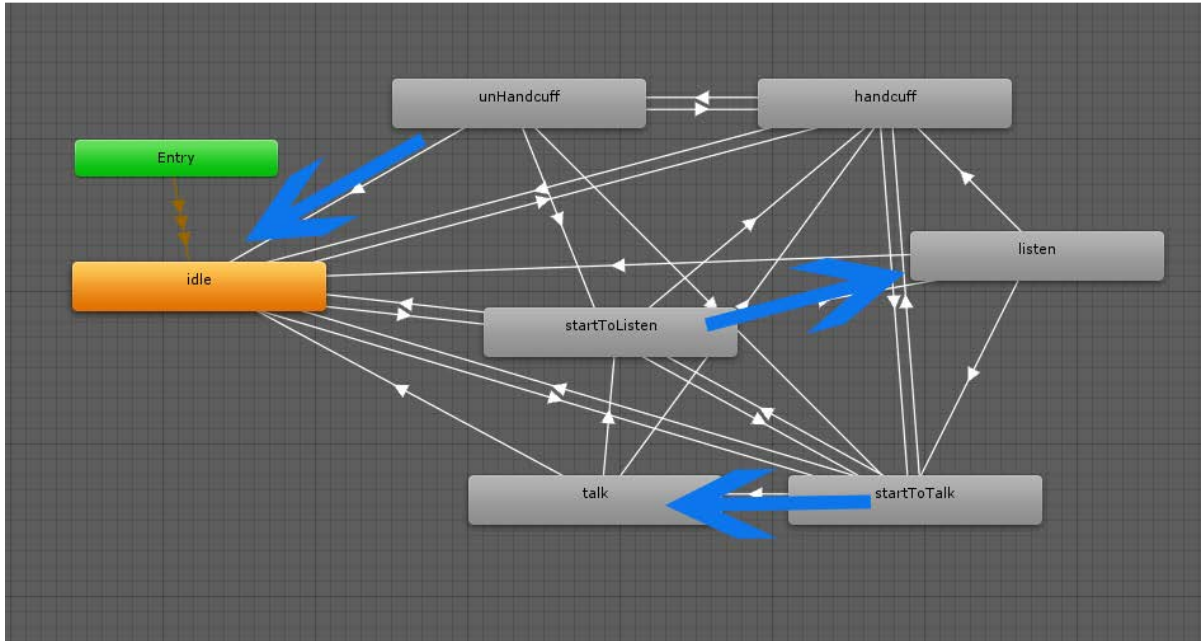
9 Project scope

9.1 Tools

9.1.1 Model maker

- Maya and Photoshop
- excellent for creation and texturing of simple shapes

9.1.2 Sound

- Audacity: powerful, easy to use, free digital multi-track audio editor and recorder
- ProTools: professional sound recording for best aural experience for visually impaired players with sophisticated aural skills

9.2 Equipment

- Android Samsung Note 5 phone and cable
- Gear VR headset

9.3 Editor/Engine

Both Unreal Engine and Unity3D were considered as they have the following features.

- pre-existing code base, no need for a custom built engine
- native support for Photoshop and Maya to create game assets
- strong documentation and forum support including community-made programs
- support for Oculus Gear VR
- free

Unity was chosen as it features

- native audio plug in for Oculus 3D spatializer
- faster iteration due to ability to see game in DK2 and rapidly prototype
- sound files can be ogg, nearly 10 times smaller than Unreal Engine's 16 bit WAV files
- texture files can be legacy Vertex Lit, much smaller than in Unreal Engine
- faster loading of ASTC textures than Unreal Engine
- coding in C# which is simpler than C++ although miss out on simplified Blueprints
- more forum support than Unreal Engine
- better portability without a massive rewrite for each new platform

Specifically the 5.4 Unity build has

- better multithreaded rendering
- better VR performance

9.3.1 Disadvantages of Unity

- programmed VR movement uses clumsy reticle – programmers will code from scratch
- bloated buggy VR code – programmers will not use this

9.4 Version control

9.4.1 GitHub via SourceTree

- Perforce is not available to students outside school.
- Other source control programs do not have the power of GitHub.

- GitHub has an excellent gitIgnore function useful for preventing the saving of bulky non-original code such as Standard Assets.
- GitHub is supported at AIE with tutorials and teacher help – looking at you, Dr Mike!

9.5 Asset breakdown

Content complete at Beta - no more assets to be added after that point.

9.5.1 3D models

9.5.1.1 Characters
- Gypsy with handcuffs, warning book
- Witch
- Lady of the Manor
- Giant Old Woman
- Giant blacksmith
- Giant Old Miller
- Giant bellringer
- Goblin chief
- Goblin cobbler
- Troll farmwife
- Troll beekeeper (female)
- Troll baby

Appearances relevant to solving mysteries: cat scratches, jagged clothing, brooch pin holes.

	Artist				M0 HQ	Hiding Voices	M1 Greeting	M2 Cat	M3 Bell	M4 Market	M5 Farm	M6 Well	M7 Bonfire	FA Apple	FB Jewel	FC Graffiti	FD Animals
Gypsy	Jordan	Enk	PC	hcuffs jingle	Enk		Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk	Enk
Humans		Lord															
	Zack	Lady	Lady	chewing			Lady						Lady				
	Zack	Witch	W	magic sparkles				Witch	Witch	Witch	Witch	Witch	Witch	Witch	Witch	Witch	Witch
		Soldiers															
Giant craftsmen																	
	Jordan	V OldWoman	vOW	cat in basket		V OldWo		V OldWo				V OldWo	V OldWo		V OldWon		
	Joel	V Blacksmith	vBS	limp		V Blacksm		V Blacksm	V Blacksm	V Blacksm					V Blacksm		V Blacksm
		V BlacksmithWife	vBW			V Blacksm											
	Joel	V Old Miller	vOM	cane		V Old Mi					V Old Mi				V Old Mill		
		V Potter (F)	vP			V Potter											
		V Carpenter	vC			V Carpen											
		V Dragon keeper	vDK			V Dragon											
		V Henkeeper (F)	vHK			V Henke											
	Joel	V Bellringer	vBR	bell on belt		V Bellrin		V Bellrin				V Bellrin	V Bellrin		V Bellrin		
		V Boy	vB			V Boy											
		V Girl	vG			V Girl											
Goblin merchants																	
	Joel	G Goblin chief	gGC	coins jingle		G Goblin chief		G Goblin	G Goblin	G Goblin		G Goblin	G Goblin		G Goblin c	G Goblin chief	
		G Errand runner	gER			G Errand runner											
	Joel	G Cobbler (F)	gCOB	wheezy		G Cobbler (F)				G Cobbler (F)					G Cobbler	G Cobbler	G Cobbler
		G Trinket seller	gTS			G Trinket seller											
		G Boy	gB			G Boy											
		G Girl	gG			G Girl											
Troll farmers																	
		T Farmer	tF			T Farmer											
	Jordan	T Farmwife	tFW	lamb in apron		T Farmwife		T Farmwife	T Farmwife		T Farmw	T Farmwi	T Farmwi	T Farmwife			T Farmwif
		T Goatherd	tGH			T Goatherd											
	Jordan	T Beekeeper (F)	tBEE	bees buzz		T Beekeeper (F)					T Beekee	T Beekeeper (F)			T Beekeeper (F)		T Beekeep
		T Dairy troll	tD			T Dairy troll											
	Zack	T Troll baby	tBAB	babbles		T Troll baby					T Troll baby						T Troll bab
Detective Power in the Sky																	
		Detective Power	DP														
								scratches	jagged cl		locket		roped wi	footprints		drawing things	

9.5.1.3 Environments

HQ

- desk (wood, vanished)
- map (with stars)
- door (wood)
- plaque (different ranks), gold stars for each mission
- trophy shelf
- trophies
- gifts – see props

Town

- walls
- moat
- dragon house
- mill
- bell tower
- blacksmith forge near apple tree
- well with brick walls
- town square
- stables
- village houses (per character, one has to have a chimney)

- shutters on houses – no longer to open
- haystack (cone, karts)
- trees (apple tree has no apples)
- guardhouse
- castle in distance, very low poly

Market

- no food stalls or very little food
- trinket stall
- cobblers stall with boots and belts
- graffiti in shape of mountain on market wall behind cobbler's stall
- in one scene, market stalls upended, holes dug underneath
- props to go around the stalls (your choice)
- high walls around market on 3 sides

Farm
- low stone walls surrounding fields
- wall broken in one place and pieces scattered about which can fit back together to mend wall
- external farm-house

- Skyboxes

  - dawn
  - first hour
  - mid morning
  - midday
  - late afternoon
  - sunset
  - night
  - Detective Power – see 2D art
  - mountains in background with snow on top

9.5.2 Props

- Handcuffs – see Gypsy
- Warning book – see Gypsy
  - Poker
  - Cat hair clump
  - Large bell with separate clapper
  - jagged cloths to match all 5 pieces of torn clothing
  - market stalls upended, see Environment
  - pin held by Troll Baby, hidden in hand, to match 5 different sets of pin holes
  - witch stake
  - bonfire log

- o burning wooden torch
- o apple
- o footprint trails around apple tree which has no apples
- o jewel – see gifts
- o jewel with fish scales stuck to it
- o Pumpkin with foot-shaped hole in it – see gifts
- o charcoal stick – see gifts
- o crayon
- o pencil
- o paintbrush
- o quill
- Gifts
  - o Cat hair hat
  - o Bell miniature – see Bellringer
  - o Copper coins
  - o Troll doll
  - o Herb bag
  - o Medal
  - o Apple pie slice
  - o Jewel
  - o Charcoal stick -see props
  - o Pumpkin

9.5.3 2D images

- map in HQ
- crime scenes on map
- ranks to show on plaque in HQ
- stars for detective power
- magic symbols on bricks on well

9.5.4 Non-game 2D Art

- game logo
- team logo
- android banner
- title screen
- credits
- game presentation slides
- sell sheets
- posters
- website images

9.5.5   Sound

9.5.5.1   Dialogue pattern for PC and NPC, mission specific and special

PC		NPC				
		Hiding dialogue all missions except M0 and M6	5			
		NPC idle	11			
		NPC awake	11			
		Complaint by suspect 0 (includes explanation)	10			
[Ask name if first dialogue]	1					
Interrogate suspect	9					
		[response if first time dialogue]	11+1			
		Suspect 1-4 explanation	37			
		Detective Power awaken	1			
		Detective Power hint	13			
PC names clue	38					
Examine clue more closely	1					
PC manipulates clue	19					
		Suspect about to be arrested or warned	11			
First arrest	1					
[name]	11					
Arrest	1					
		First correct arrest in whole game	11+1			
		Suspect wrong arrest	39			
		First wrong arrest in game	1			
		Suspect right arrest	41			
Warn suspect	42					
		Suspect wrong warn	39			
		Suspect right warn	41			
		Thanks	41			
		Revelation	12			
		Overarching mystery	13			
Name time of day [end of main m	7					
		About to go to HQ	11			
Collide with wall, tree, pigsty	3					
Name places first three times	26					
Name species of NPC	3					
		Mission specific dialogue		**Special dialogue**		
		Complaint	10	94 special dialogue types	387	
		PC interrogates suspects	9			
		Suspect 1-4 explanation	37			
		Detective Power hint	13			
		PC manipulates clue	19			
		Warn suspects 0-4	42			
		Wrong arrest suspects 0-4	39			
		Wrong warning suspects 0-4	39			
		Right arrest suspects 0-4	41			
		Right warning suspects 0-4	41			
		Thanks	41			
		Revelation	12			
		Overarching mystery	13			
			356		387	743

9.5.5.2   Dialogue lines per character

Scene	Enk	Lady	Witch	OldWom	Blacksmit	OldMiller	Bellringe	GoblinCh	Cobbler	Farmwife	Beekeep	TrollBaby	DPower	Extras	Total
In all miss	92	5	6	5	5	6	6	5	5	7	5	7	1	4	159
HQ	49														51
Greeting	3	9													12
M1	19		7	35	7			6						1	83
M2	7		6		6		7	7							40
M3	18		6		6			8	9						54
M4	7		6				7		6						43
M5	9		4	3				3	3						27
M6	10	16	9	2	3	2	2	3	2					28	86
FA	6		6		6		6		6						37
FB	19		5	5		6			6						47
FC	7		6		6		6	6	6						38
FD	9		6						7						42
Hiding				1	1		1		1						24
	255	30	67	50	40	22	30	45	36						743

Extras overlay:

Extras		Running	Hiding	M1	M6
G Boy			1		2
G Errand runner	6		1	2	1
G Girl	6			2	1	2
G Trinket seller	6			1	1	2
T Dairy troll	8	8		6	1	1	2
T Farmer	4		1		1
T Goatherd	4	2		2	1	1	28
V Blacksmith Wife		1	3	1	1	2
V Boy			1	1	2
V Carpenter			1	1	2
V Dragon keeper		1	6	1	2
V Girl			1	15
V Henkeeper (F)		1	21	14	48	2
V Potter (F)			2	2
		4	15	1	28

plus	Credit lines	
	TAFE SA students	6
	AIE students	1
		7

9.5.5.3   Sound FX

SFX are produced by type

- Animals
- Plants
- Weather
- Fire
- Structures
- Manmade things
- Cloth

Animals	Plants	Weather	Fire	Footsteps	Structures	ManMade	Cloth	UI	
47	12	7	3	30	12	42	9	15	177
3	4	0	0	20	11	28	4	0	70
10	8	0	0	0	0	11	5	13	47
34	0	7	3	0	0	2	0	2	48
0	0	0	0	10	1	1	0	0	12
47	12	7	3	30	12	42	9	15	177

9.5.5.4   Dialogue and Sound FX by mission

Mission specific dialogue	Gen Dial	Gen SFX	HQ Dial	HQ SFX	M0 Dial	M0 SFX	M1 Dial	M1 SFX	M2 Dial	M2 SFX	M3 Dial	M3 SFX	M4 Dial	M4 SFX	M5 Dial	M5 SFX	M6 Dial	M6 SFX	MA Dial	MA SFX	MB Dial	MB SFX	MC Dial	MC SFX	MD Dial	MD SFX	TOTALS
Complaint							1		1		1		1		1		1		1		1		1		1		10
Interrogation							1		1		1		1		1		1		1		1		1				9
Suspect 1-4 explanation							4		4		4		4		4		4		4		4		4		1		37
Detective Power hint							1		1		1		1		1		1		1		1		4		1		13
PC manipulates clue							2				10 (blue)		1		1						2		1		1		19
Warn suspects 0-4							5		5		5		5		5				5		5		5		2		42
Wrong arrest suspects 0-4							5		5		5		5		4						5		5		5		39
Wrong warning suspects 0-4							5		5		5		5		4						5		5		5		39
Right arrest suspects 0-4							5		5		5		5		1				5		5		5		5		41
Right warning suspects 0-4							5		5		5		5		1				5		5		5		5		41
Thanks							5		5		5		5		1		5		5		5		5				41
Revelation							1		1		1		1		1		1				1				5		12
Overarching mystery							1		1		3 (blue)		4		1		1				1						12

In all missions

	Gen Dial	Gen SFX	HQ Dial	HQ SFX	M0 Dial	M0 SFX	M1 Dial	M1 SFX	M2 Dial	M2 SFX	M3 Dial	M3 SFX	M4 Dial	M4 SFX	M5 Dial	M5 SFX	M6 Dial	M6 SFX	MA Dial	MA SFX	MB Dial	MB SFX	MC Dial	MC SFX	MD Dial	MD SFX	TOTALS
PC footsteps, heartbeat																											
Ground		5																									5
Grass		5																									5
Mud		5																									5
Heartbeat Idle / Awake / Active		3																									3
NPC idle	2	9																									11
NPC awake	12	9																									21
[Ask name if first dialogue]	1																										1
[response if first time dialogue]	12 (blue)																										12
Lady footsteps		2																									2
Witch footsteps		2																									2
Giant footsteps		2																									2
Goblin footsteps		2																									2
Troll footsteps		2																									2
Running dialogue all missions exc	5	8																									13
Unseen villagers hiding	24 (blue)																										24
Detective power awaken	1	2																									3
Suspect about to be arrested or w	11	6																									17
First arrest	1																										1
[name]	11																										11
Arrest	1																										1
First correct arrest in whole game	12 (blue)																										12
First wrong arrest in game	1																										1
About to go to HQ	11	3																									14
Name clue	38	34																									72
Examine clue more closely	1																										1
Collide with wall, tree, pigsty	3	7																									10
Name places first three times	26																										26
Name species of NPC	3																										3
Name time of day	7	5																									12
Animals		16																									16
Plants		1																									1
Water		1																									1
Structures		2																									2
Building dialogue		25																									25

HQ dialogue

	Gen Dial	Gen SFX	HQ Dial	HQ SFX	M0 Dial	M0 SFX	...	TOTALS
PC names things			6	2				8
PC reads plaque			21	2				23
PC assesses trophy/gift			19	54				73
PC next action			3	20				23
DP warnings			2					2
Teleportation to crime scene					1			1

M0 introductory dialogue

	M0 Dial	M0 SFX	TOTALS
Initial dialogue	1		1
Introductory dialogue	5		5
Lady moves to map	1		1
Lady leaves	1	1	2
Mechanics instructions	4		4

Mission 1 dialogue and SFX

	M1 Dial	M1 SFX	TOTALS
Introductory dialogue	6		6
Tutorial - return to HQ	2		2
Tutorial - non-Suspects	2		2
Extra dialogue	5		5
PC hint to self - find cat	1		1
PC finds cat	1	5	6
Old Woman goes to get cat	1		1
PC states mission task	1		1
Old Woman returns	1		1
PC interrogates Old Woman	1		1
Old Woman explanation	1		1
Witch arrives	1		1
First time clue activated in game	2	3	5
Tutorial - Detective Power	4		4
PC hint to self - find guilty person	1	1	2
Tutorial - warn or arrest	4		4
Return to HQ	1		1
Tutorial - mechanics	7		7

Mission 2 SFX

	M2 Dial	M2 SFX	TOTALS
Bell		1	1
Torn clothing		10	10

Mission 3 dialogue & SFX

	M3 Dial	M3 SFX	TOTALS
Suspect 3 payment demand	3		3
Market items		5	5

Mission 4 SFX

	M4 Dial	M4 SFX	TOTALS
Lockets		10	10

Mission 5 dialogue and SFX

	M5 Dial	M5 SFX	TOTALS
PC announces solution	1		1
Symbols		15	15
Symbol trail		2	2
Thunder		1	1

Mission 6 dialogue and SFX

	M6 Dial	M6 SFX	TOTALS
Instructions	5	7	12
Callout Burn the witch	20		20
Decision A - save witch	1	1	2
Thank for Decision A	1		1
Decision A dialogue	7		7
Beg for Decision A1 - stay	3		3
How to make decision A1 or A2	2		2
Decision A1 - Stay	1		1
Decision A2 - Leave	2 (blue)		2
Thank for Decision A1	23 (blue)		23
Thank for Decision A2	1		1
Decision B - burn witch	1	1	2
Thank for Decision B	1		1
Return to HQ	1		1
Decision B reward	1		1
Beg for Decision B1 - stay	1		1
How to make decision B1 or B2	1		1
Decision B1 - Stay	1		1
Decision B2 - Leave	1		1
Thank for Decision B1	1		1
Thank for Decision B2	1		1

Mission A SFX

	MA Dial	MA SFX	TOTALS
Apple		1	1
Footprint trails		5	5

Mission B dialogue and SFX

	MB Dial	MB SFX	TOTALS
Jewel		1	1
Questions	6		6
Answers	5		5
PC announces solution	1	2	3
Arrest suspects 0-4	5		5

Mission C SFX

	MC Dial	MC SFX	TOTALS
Writing implements		10	10

Mission D dialogue and SFX

	MD Dial	MD SFX	TOTALS
Decide to rebuild wall	1		1
Clue description	2 (blue)	1	3
Stone movements		2	2
Pumpkins, pumpkin fly, pumpkin matches		10	10

TOTALS

	Gen Dial	Gen SFX	HQ Dial	HQ SFX	M0 Dial	M0 SFX	M1 Dial	M1 SFX	M2 Dial	M2 SFX	M3 Dial	M3 SFX	M4 Dial	M4 SFX	M5 Dial	M5 SFX	M6 Dial	M6 SFX	MA Dial	MA SFX	MB Dial	MB SFX	MC Dial	MC SFX	MD Dial	MD SFX	TOTALS
TOTALS	183	156	51	79	12	1	83	9	40	11	54	5	43	10	27	18	86	9	37	6	47	4	38	10	42	13	1074

> This table shows a pattern exists. A readable spreadsheet is available entitled Dialogue_and_SFX2

> Blue shaded cells indicate dialogue from different sources being connected, for example when the Farmwife translates for the Troll Baby

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9.5.5.5 Music

During credits only.
Druidic Incompetech files.

9.5.5.6 Credits

Spoken

9.5.5.7 Menu

Spoken

9.5.6 Lighting

Due to VR constraints, only one directional light.

9.5.7 Levels

- HQ - greeting in HQ, return to HQ between missions
- village - tutorial mystery, reinforcement mystery, 1 major mystery, 2 filler mysteries, ending
- market - 1 major mystery, 1 filler mystery
- farm - 1 majory mystery, 1 filler mystery

9.5.8 Story

Standalone but set up for sequels.

9.5.9 Puzzles

Mission	Mystery	Place	End time	Puzzle
M0_HQ_Review	Trophies and gifts	HQ	Any time	Line up trophies
M1_Greeting	Greeting	HQ	Dawn	Star map
M2_DawnMystery	Invisible cat	House by forge	First Hour	Cat hairs
M3_MorningMystery	Bell sabotaged	Bell tower	Third Hour	Jagged edges
M4_MiddayMystery	Market stall upended	Market	Midday	Order of items
M5_AfternoonMystery	Troll baby stolen	Farm	Ninth Hour	Missing brooch
M6_SunsetMystery	Well poisoned	Well	Sunset	Trail of symbols
M7_NightEnding	Witch staked	Town square	Night	Save or burn witch
Filler mission 1	Apple stolen	Behind forge		Footprints trails
Filler mission 2	Jewel found	Under tree		Line up suspects
Filler mission 3	Graffiti	Market wall		Writing implement
Filler mission 4	Wall broken	Farm		Pumpkin splatter match

9.6 Core loop

Limited number of mysteries. As mysteries are solved the player unlocks more challenging story missions, trophies and career advancement.

HQ -examine rewards	Main Missions -trophy or gift -promotion	Filler Missions -trophy or gift
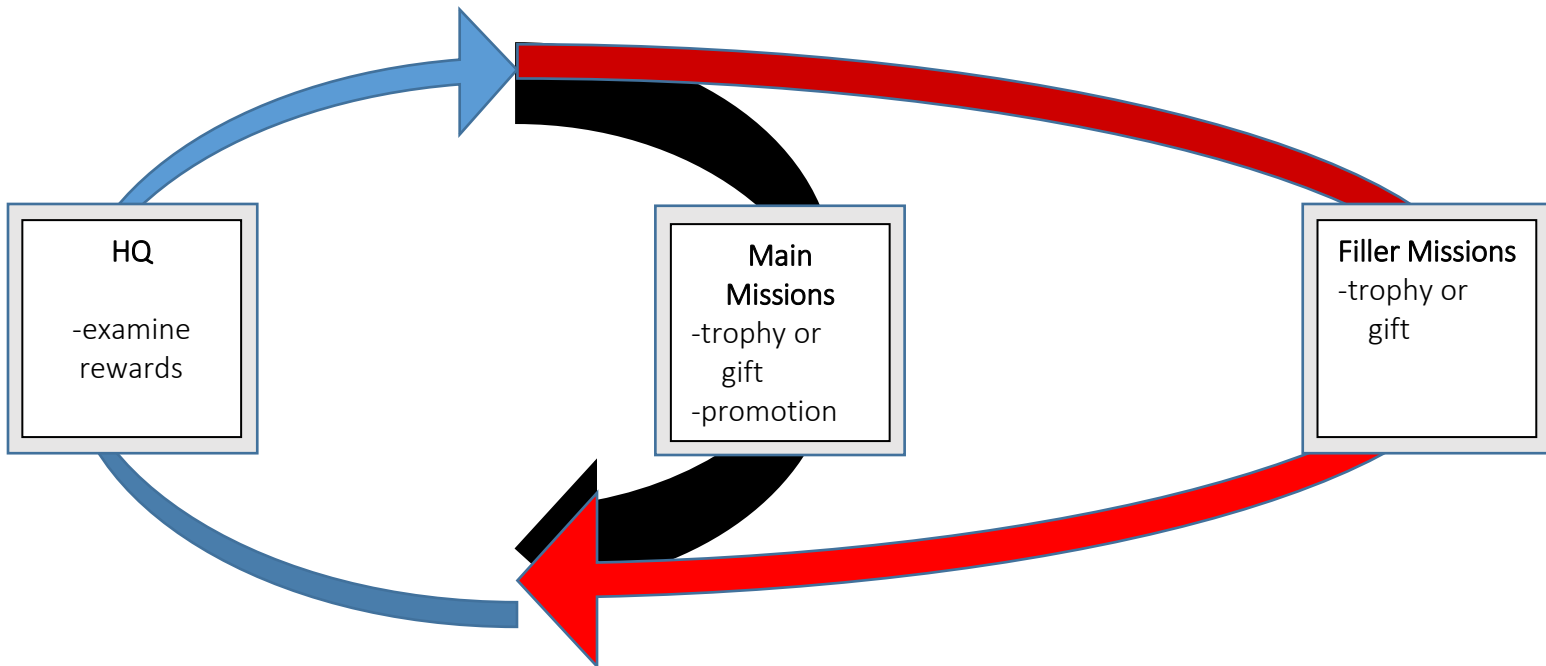
9.7 Player assets

The game-defined economy comprises the assets of value to the player. The currencies that we will be playing with are:
- Clues. The player must decide when to stop collecting clues and make a decision.
  - clue examination leading to solution of mystery
  - NPC dialogue additionally providing story points
- Story points towards gradual discover of overarching mystery
  - NPCs provide more story points if player warns instead of arrests
- Detective power – provides hint to help solve mission at cost of gold star on plaque
- Power to warn; power to arrest
- Mystery solutions
  - main mysteries, increasingly difficult
  - filler mysteries, limited number, optional
    Mysteries have randomly selected solutions so retain value for replay.
- NPC respect
  - derision when warn/arrest wrong suspect
  - respect when warn/arrest right suspect

- Gratitude of different NPC if warn rather than arrest (but then no trophy, only gift which is less shiny and less valuable)
- Trophies and gifts
    - smaller for every wrong warning/arrest
- Plaques indicating career status
    - earned with completion of every major mission
    - surrounded by gold stars for each mission completed without recourse to detective power
- Four different triumphant endings

The player's choice to warn creates tension between the desire to get the maximum number of trophies by exercising power and being ruthlessly efficient, and the risk of getting a worthless gift which does not match the other items on the trophy shelf. This is balanced because players who choose to let NPCs off with a warning are given more story points, and some may value the quirky gifts.

Trophies or gifts are earned by successfully completing missions and therefore indicate the player's progression and success. Players may rearrange these to increase their perceived value by showing them to best advantage.

Plaques are earned by successfully completing a main mission. Plaques are displayed in HQ showing the player's increasingly important career status and what he/she has earned in the game.

Plaques are embellished with gold stars where the player succeeded in completing missions without using detective power hints. This creates tension between taking the risk of making an incorrect arrest/warning and the loss of a star.

9.8 Unlockables

There is a secret overarching mystery.
There are four endings.
Game must be replayed to hear all NPC reactions.