



Under Amsterdam

Design Document

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Premise

A VR puzzle game where players of different companies connect pipes to the right outlets. In our idea, the players will switch companies each round and add more pipes on top of what others have already made without being able to change their previous work.

Gameplay loop

1. Player gets objective to place down 'water/electric/heat/sewage' pipes/cables
2. Player connects the input to the output
3. After 30 to 60 seconds, the player switch companies and must connect a new input and output
4. After five rounds, the players will float up and the top players will be put on the podium.

Player goal

The player must connect an input with its corresponding output without breaking any of the game rules (see 'Game mechanics rules'), preferably with the least cost and within the round time to try and get more points than other players.

Rules

Certain pipes cannot be placed next to each other as their real life 'contents' could pose a danger if mixed, thus the player can't place the following pipes next to each other

- Water → Power
- Water → Data
- Sewage → Water
- Sewage → Power
- Data → Sewage
- Data → Gas
- Gas → Power

The player Must play as each company at least once every game.

The points are an important part of this game, players must manage their points wisely. There are several ways to gain points and to lose points.

A player can gain points by:

- Completing a round, +4000
- Getting a contract bonus, +500
- Scrapping a pipe: +20

A player can lose points by

- Placing a pipe, -40
- Removing a tree root, -220

Game Mechanics

Gameplay Mechanics

Each player is given a company and an input pipe for that company at the start of each round. The input and output pipe is indicated by a smoke flare and hovering marker. To connect these pipes players must place pipes on the tiles between the in and output pipes, players can hover over a tile and see if they can place it or not. A green sphere will pop up indicating that the player may place the pipe. A red sphere will indicate that this is not possible. Players can choose to remove a pipe by using the hammer.

The player will be able to look at the watch on his/her hand which will indicate the amount of points, team color and time left.

If the player touches the watch, a menu will pop up providing sound sliders so that the player can customize them to their liking. It is also possible to put the watch on the right hand and flip the placing pipes/hammer controls with the left hand toggle button.

At the end of a round the players will be stopped and a new countdown will begin for the next round where players will get a new company and they will have to complete that round again.

At the end of the game the top three players will be teleported to a 1st, 2nd and 3rd place podium. All of the player's points will be visible on a leaderboard.

Difficulty

The game has three difficulties: easy, medium, and hard

Each difficulty represents a certain time per round. The round time increases per round, therefore an indication for shortest and longest round. Each game is always five rounds as every company needs to be represented in the game (five companies: water, sewage, power, gas, data).

- Match(easy): 500 seconds → 8 min and 19 sec
Shortest round(easy): 60 sec
Longest round(easy): 140 sec
- Match(medium): 325 seconds → 5 min and 25 sec
Shortest round(medium): 45 sec
Longest round(medium): 85 sec
- Match(hard): 200 seconds → 3 min and 19 sec
Shortest round(hard): 30 sec
Longest round(hard): 50 sec

Controles

- The player can move around using the right joystick
- The player can quickly rotate using the left joystick.
- The player can place pipes by hovering over a tile with their main hand (non hammer hand) and pressing the trigger button.
- Players can grab their hammer by pressing the grip button on their off-hand controller. Players can use the hammer to hit a pipe by swinging towards the pipe with the hammer.
- Players can press and hold the B button on their off-hand controller to spawn an exit valve
- Players can grab onto valves using the grip button on any controller.
- Players can interact with buttons in the world by physically pressing them with their in-game hands.
- Players can high five other players to initiate a contract by holding their hands above their heads and crashing their hands into each other.

Win and lose conditions

The player completes a round when they connect the in and output pipe within the round time. The player loses when they aren't fast enough, or cannot connect the input to the output due to obstacles.

Player with the most points after five rounds wins the game.

Level design

The level is based on a street in Amsterdam with a dig site in the middle of the street. The ends of the street will have a tram running on them. The dig site will be underground and players will float down when they all have picked up their helmet. The dig site is rectangular and has branches which get bigger each round and form an obstacle. The stones will also be an obstacle that the players have to navigate around when placing their pipes from the input to the output. Once all rounds are over, the players will move back up and there will be three big pipes differing in height to form a podium. The top three will be placed on the podium. The dig site floor will be replaced with glass so that the players can look down on the pipes they've placed.

Visual Art Style

UnderAmsterdam kept to a simple cartoonish style for visual art design. We used simple shapes, colors and basic compositing to make sure our players don't get overwhelmed by their environment.

