

FVS

Component Design and GUI Report

Our game went through many design iterations but in the end we settled with a simple visual implementation in order for players to focus on the immersive gameplay rather than being crowded with noisy visuals. Our justification and reasoning behind these design and interaction decisions is below.

Placing a Train

This is one of the fundamental player interactions most of the game is spent either placing a train or routing a train so we wanted to make sure this was a smooth and painless operation. We had two ideas for how trains could be placed, one was that upon being given a train resource from by the game it was placed by the game at random at some city on the map. We quickly disregarded this as we felt it reduced the level of strategy and overall fun of the game. Our second option which we elected to implement involved an inventory based system to store your resources. This was also to enable the possible implementation of other resources later on in development. To place a train the player simply clicks the train they want from the side (see Game screen and GUI) and a dialogue box opens.

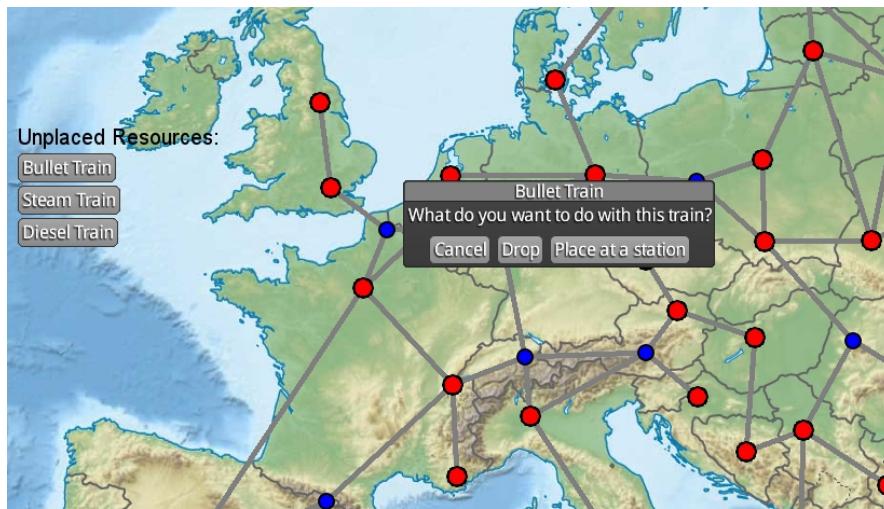


Figure 1 - Train placing dialogue

This gives the player the option to either stop placing the train, drop the train(destroy) or pick a station at which to place it. Once you elect to place it at a station the train attaches to your cursor and you are free to move about the map to pick a station. We settled on this implementation mainly due to the extra flexibility and control it gave the

player and reducing frustration when a train is dumped automatically where you don't want it.

Station stacking dialogue

Once we had trains moving around the map via stations we realised that a lot of the time, especially into the later turns, there would be more than one train at a station and not necessarily of the same player. This can lead to difficulties physically selecting a train to route as well as visually cluttering the screen in and around stations (see Figure 2). The solution to this was to stop rendering trains at the stations instead they "enter" them and stored until they next move. Clicking a station then opens a dialogue listing the trains stationed there as well as which player they belong to, player is then able to pick the train they want and route it as normal.

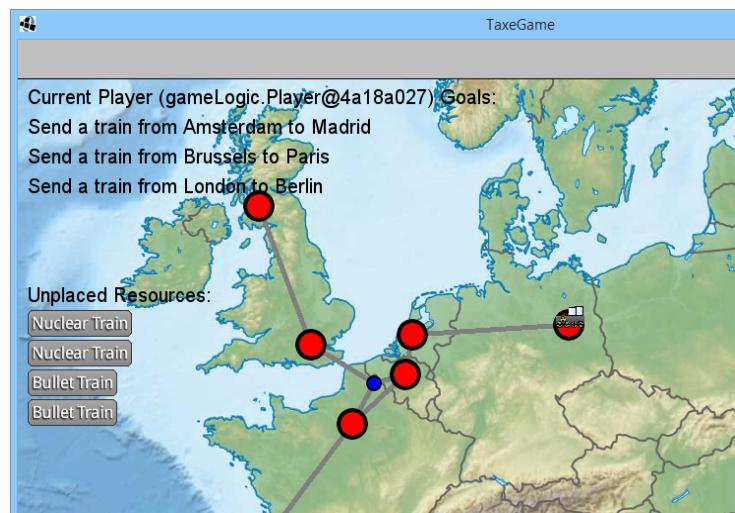


Figure 2 - Issue with multiple trains at stations

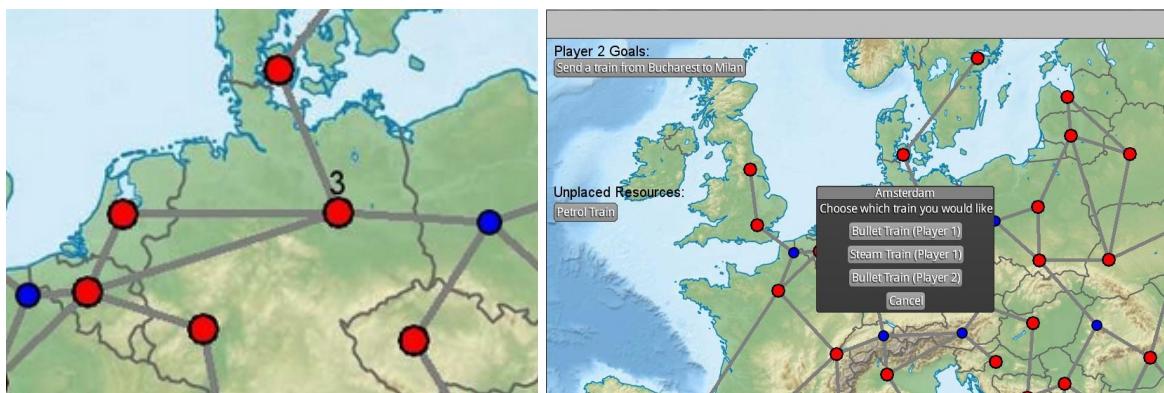


Figure 3 - What happens when multiple trains are at the same station

Once a train has entered a station a number appears indicating the number of trains at that station. Whilst this isn't a foolproof solution and does rely on the player having some sort of idea where their train is there is little need to use it once a train has been

routed. The main purpose of implementing it was for aesthetic purposes and to make it easier for players to place a train at a station by removing the train sprite from view.

Game screen GUI

When deciding how to organise the main game screen we had several decisions to make. How and where the various bits of information are displayed is very important to making the game enjoyable to play. Our first decision was to decide how we would display and keep track of resources. Given that we had chosen to store the resources in an inventory all that remained was how to display it and let the player access it. One choice was to have an inventory button as a permanent fixture of the top bar which when clicked lists the resources the player has available in a pop up box. While this had its merits of reducing clutter on the screen, due to the map we had picked having a large space on the left hand side we had plenty of room to display resources in a list on the screen. We took a similar approach with how to display goals, once we made the decision to put resources straight on the game screen it made sense from a design standpoint to also display goals in a similar manner for a more cohesive feel. Very early on in development we wanted some way of passing messages to the player, anything from “Goal complete” to displaying information about various trains. So we elected to include a status bar along the top. Further reasoning behind this decision can be seen in the “Top bar” section.

Main menu screen

To make sure the players weren’t just thrown into the start of the game without warning we put together a simple intermediate screen to make sure that starting the game required a decision. We ensured that the start screen wasn’t needlessly complex just displayed the option to start the game or exit. We chose bright and intuitively coloured buttons to remove any ambiguity.



Figure 4 - Start game screen

Top Bar

After we had added some complexity to the game we realised we needed some way of giving the player information about their actions. At first we thought about doing it via pop-up dialogue boxes but after some talking and looking at examples of this we concluded that these pop-ups unless giving urgent information are rather intrusive so we elected for a different approach. As none of the information we needed to give the player was strictly 'need-to-know' we decided to try a more passive method of displaying it. We created a bar along the top of the map which we could use to display these messages. Information it displays includes, information about the train you click on (whose train it is, what type and what speed), displays when you have completed a goal, indicates time is passing.

We also used the top bar to hold the end turn and route complete buttons. Seeing as we weren't using the full length of the bar for any message it made sense to utilise some of the space for something else. Messages are all displayed for the same amount of time (2 seconds plus fade time) and time passing is displayed for the duration of animation (1.75 seconds plus fade time). Fade time is 0.25 seconds and this is simply due to animations taking 2 seconds to play and we wanted messages to fade out

smoothly.



Figure 5 - Goal complete message

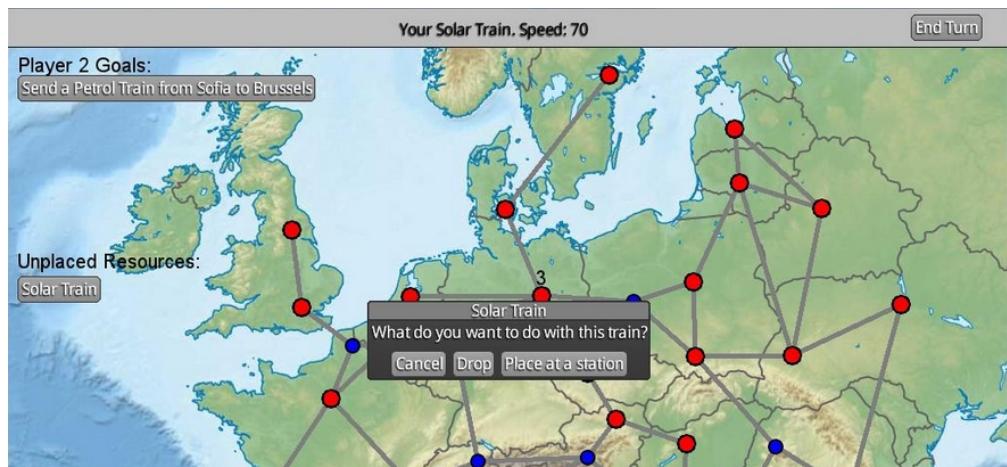


Figure 6 - Train info in top bar

Station hover tooltip

Once a reasonable number of stations had been added we quickly noticed that creating a route quickly became something resembling a geography quiz. We don't and don't expect others to know where Sarajevo is and how to get from there to Zagreb. We therefore needed some way of displaying the stations names. Our first idea was to have them adjacent to the stations in a tube-map-esque fashion. While there was nothing intrinsically wrong with this idea we felt that in some of the areas where the stations are more clustered that the names just made the map look to busy and cluttered. We then decided to use a tooltip on hover to show the station name. Our reasoning behind it being you don't need to know all the station names all the time, it is

enough to simply know the names of the station you are immediately interested in. This also cleared up the map and made it look significantly tidier.

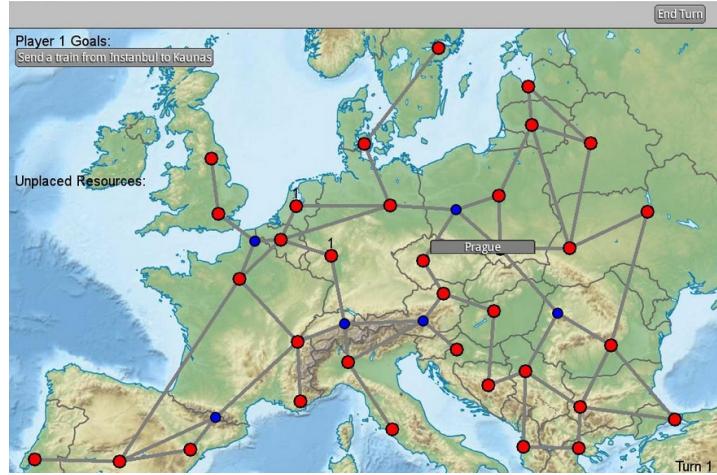


Figure 7 - Name tooltip in use

Map

The map went through a couple of iterations before we settled on our current one, initially we went with a cartoony abstract map of europe.

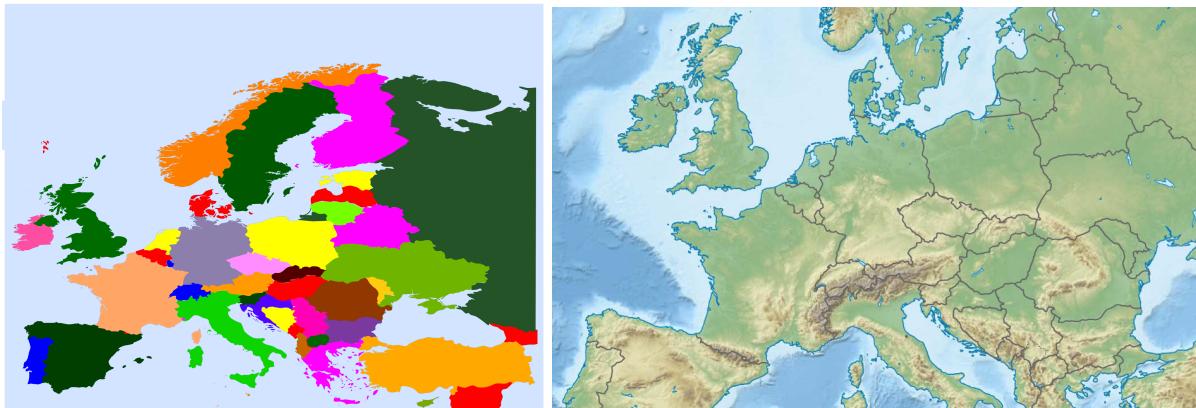


Figure 8 - Map iterations

While initially we were happy with how it looked we ran into several issues with scaling it and the fact that some of the country proportions seemed slightly off. This made it difficult to place stations and the bright colours were rather loud and looked out of place with the rest of the art. After some looking around we found a relief map of Europe on Wikimedia [1]. We then cropped it and removed the rivers off it by hiding they layer in the svg, the rivers were removed as they added a level of clutter that wasn't needed for the game. Due to this map being more accurate it enabled us to strive for a geographically accurate (where possible) map of major European cities. This was somewhat important to us as we wanted a degree of realism in the game.

Train and station/rail textures

When designing the trains for our game we settled on a fun cartoon style with a consistent theme, allowing types of train to be added to the game with minimal effort as each train simply has a defining feature that allows it be recognisable for example (Figure 7) the MagLev train vs the standard steam train. Our aim was to try and make trains easy to distinguish as well as easy to design and a consistent design can be seen throughout all our trains.

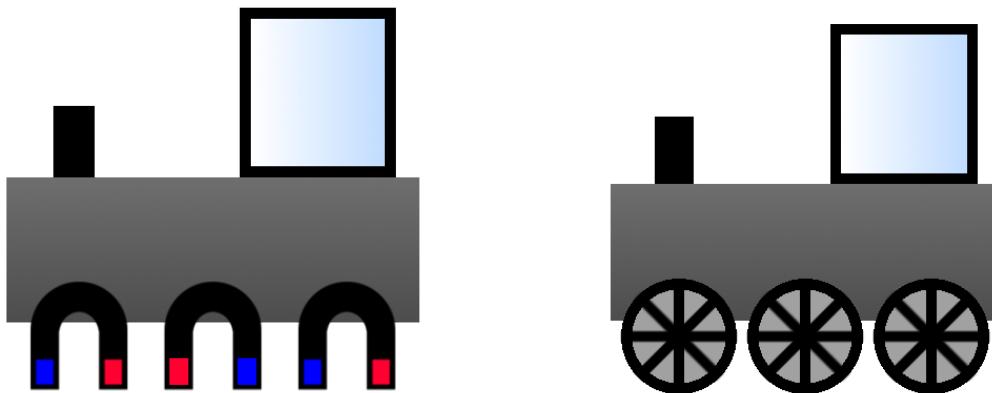


Figure 9 - MagLev vs Steam

Station design is something that went through many design iterations, the initial design was a roof with rails coming out. We scrapped this design after we changed the map as it didn't fit with art style. We then moved to a map representation of a station this was acceptable until we needed to add and display junctions. Given our implementation of junctions as stations you can't stop at we wanted them to displayed in a similar fashion to stations. There was no way of doing that with the logo so we abstracted away even further and resorted to dots. A red dot indicates a station and a blue one indicates a junction.

Once we had changed our station design our rail/connection design no longer made sense. Since we had abstracted away from an actual station and gone with just dots it made sense for our connections to also be abstracted away, seeing as the map was now resembling an actual map we went for a simple straight line between stations.

Routing

Routing the trains around the map was the most important component of the game to get right. We wanted it to promote a level of forward thinking in the player but not burden them with needless choices. We had several choices for this implementation and our options and final choice and rationale behind will be outlined.

Our first option was to simply implement one of the many shortest path algorithms and let the game choose for you how to get from A-B, we discarded this for numerous reasons but most of all because it subtracted from the player actually playing the game and made it needlessly simulator-esque. We wanted the player to have an active as possible role in the game and this option didn't quite cut it.

We toyed with the idea of having a dialogue box which allowed you to specify your end location and any locations to go via which then auto generated the route. This was discarded because it made routing a rather complex memory game which forced you to memorise your route beforehand.

Our final implementation and the one we ultimately went with was a full manual routing. Once the train you wish to route is selected and routing begins the player clicks from station to station (provided a direct link exists) until their desired route is in place then ends the route.

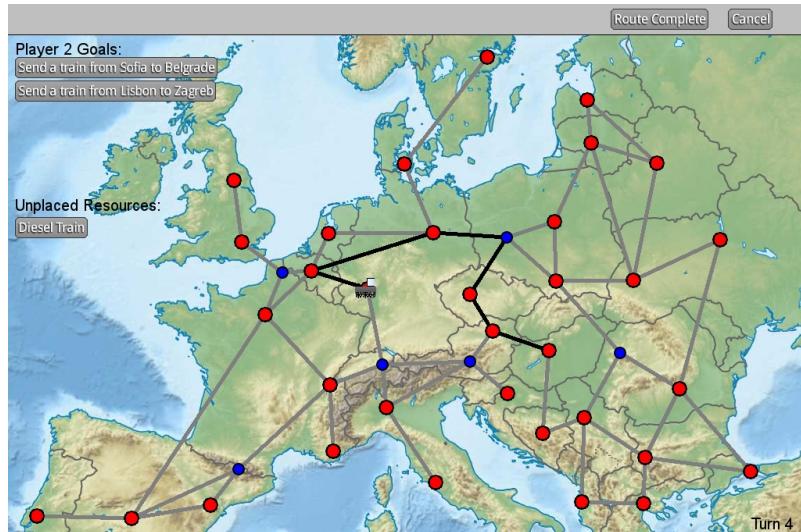


Figure 10 - Routing in progress

Figure 10 shows how the current route progress is highlighted in black, the top bar gives the option to either cancel the current routing or finish it. This accomplishes what we wanted in making the game reward careful planning and not simply spoon feeding you results. This routing system also allows for counterplay from the opponent as you can attempt to “force collide” your train with your opponents.

References

- [1] 'Map of Europe'. [Online]. Available:
http://commons.wikimedia.org/wiki/File:BLANK_in_Europe_%28relief%29_%28mini_map%29.svg. [Accessed: 16-Jan-2015].