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DATA VISUALIZATION

Program2

Can increasing game literacy implement a better understanding of the world around us? Thats the question I am diving into with this project. One interesting phenomena is the level of understanding that the average game player has about the world in witch they are playing. Increasing the literacy of the general person in relation to spatial data the best way that GIS can benefit from the world of game development. AAA game engines like Unity3d are already setting the bar for GIS based experiences through integrative data, cutting edge displays and visualizations. Essentially video games are virtual worlds that are extremely engaging, cant GIS be also?

While game development and GIS remain far separated ideas in the mind of the average person. The truth is that the two are on a collision course toward each other at alarming speed. MMO (Multi Massive On line) games and others role playing games are about understanding the world through the data that it provides you. On line GIS systems like ARC are already creating dynamic story maps through the power of data visualization. By integrating the world of GIS and playing virtual games, data could be collected and used to improve the conditions in our cities and more through the same principals games use to integrate the player into the full experience.

Real world problems through video games are already being addressed by companies like World of War Craft, in understanding the economic real world theory of hyper inflation. This is done by research dealing with currency manipulation on a pseudo real environment. One example is understanding the idea of currency sinks and how it relates to the real world with taxes. The game also explores a war environment in which groups of civilizations, war time economy, and interpersonal interactions together giving players a better insight into the complexities of war and cultural

interactions.   Sections of MMO games also deal with spatial issues facing the player in a almost real world geographic scale to increase the understanding of the distances the player must travel. The goal of the project to to give better incite in regards to the converging fields of Geographic Information Systems and game development.

In creating the mapping functions and integrating Tiled an open source tile engine, many challenges seem to come my way. Some of the biggest challenges were understanding the process that the map tiles would have to go through in order to render them in proper way. This included picking the math that would be the simplest in reference to what kind of tiles that I was producing. How to manage the tiles that came into the view of the user; "drawing all the tiles that can not be seen is wasteful, however, and can take a toll on performance(as I know from work with JavaScript https://developer.mozilla.org/en-US/docs/Games/Techniques/Tilemaps)". Yet the program that we are writing is not served through the web, so I decided to render them all at once. To do this I had to restrict the view port of the user to the size of the window, rather than the Processing PApplet window (the sketch) being the size of the actual running program.

My process involved creating the size of the map and rendering the entire TMX object along with the TSX (XML for Tiled no to be confused with React Typescript). After going over about 5 tutorials I was able to render the orthogonal orientation tiled objects, all others need to be added to the Java class. The center of the screen is indicated by the user marker, and is the absolute center of the user window no matter the resize. This allows for a fixed point (20 pixels) that can be used to do collision testing with the TSX (Tiled XML) objects that are embedded in the TMX.   The Math was a major issue, in fact it was the biggest challenge in completing the project. Having a clear understanding of the mathematical concepts is a must if I were to go any further into the creation of different mapping types like the Staggered offered in the Tiled Software. A detailed record of the formulas used are included within the mentioned resources. The amazing thing is that the readings I

have done will give me jump off point to create a better mapping formula. The Program will be a

starting point for a open source game engine I want to make, and it will be made only with processing .