

TreePark City Project:

Marketing Resource Development for Pohon Group

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Introduction

Visualizing great amounts of data into a geographical or interactive formats, are essential skills required in today's digital and complex world. The importance and the effectiveness of these skills are only recently becoming recognized while there is a great demand for these skills as Alberto Cairo of *the functional art* emphasizes the importance of visualization for communication. In the class offered by the University of British Columbia, GEOB472: Research in Cartography, Geography students gained skills in data visualization software and applied their geographic knowledge to generate geographic visualizations of data in infographics and interactive web maps. With newly attained skills, students are equipped with tools that will allow to assist organizations to help geo-reference their qualitative research, and also work to help communicate this data through producing visualizations.

For this assignment, my group members, Sydney Huang, Christy Jauw, and I partnered with an Indonesian firm, Pohon Group, to utilize our newly attain skills to assist in their promotion and marketing plans for their planned development TreePark City. While Pohon Group had made conscious decisions in the geographic location of their new development, these ideas have not been effectively shared with the public through their website. Thus we worked to develop geographically referenced visual resources that would promote the organization's new development in terms of its aspect of accessibility in relation to amenities and transport hubs. The format of these visualizations specified from Pohon Group included:

- 1) An Amenities Map (food sources, schools, hospitals) in the surroundings of TPC
- 2) MRT route and connection Map in relation to TPC
- 3) An Infographic communicating the benefits of the location of the TPC in relation to public transport and sustainability issues.

- 4) Poster or Brochure that synthesizes all the information to be displayed in the office.

Overall, Pohon Group was flexible with these requests which allowed our group to be creative in ways to make appropriate judgement for presenting this information.

To achieve these deliverables, our group went through various processes aligning with Ben Fry's (2007) Data Visualization pipeline from *Visualizing Data*, of a cycle of acquire, parse, filter, mine, represent, refine, and interact. Furthermore, we were influenced by Alberto Cairo's (2012) writings in *The Functional Art* and Edward Tufte's (1990) work in *Envisioning Information*, as guidelines throughout our design decision making process. This write-up of this project will be guided by the scholarship by these experts in visualization to explain the multiple processes and editing done through acquiring the data, and the decisions made in the process of visualizing the data.

Pohon Group and TreePark City

Pohon Group is an Indonesian private developer company based in Jakarta, the capital city of Indonesia. Focusing on mixed-use housing, sustainability, and connectivity, they promote their superblock development TreePark City as one of their most recent developments. Jakarta, a mega city with a population of over 9.6 million people in 2010 (UNData, 2016) is experiencing stress in terms of their land use, population control, and most significantly, their environment. Furthermore, as a common trend in developing countries, the Indonesian society is extremely automobile dependent, adding to the stress on atmospheric pollution (WorldBank, 2013, pp. 29).

Addressing these issues of population and transport issues, Pohon group values mixed use housing and strategic positionality to public transport hubs to reduce the reliance on private transport. The newest TreePark City superblock by Pohon Group is planned in Tangerang region,

in the Banten province, just on the suburbs of Jakarta. The prospective Mass Rapid Transit (MRT) subway line extending from the central hubs in Jakarta will make this region much more accessible to and from the capital city. This aligns with the development model Transit Oriented Development (TOD), a model in which emphasis the “compact development and mixed land uses while still provi[ding] green and natural space” (Hasibuan, Moersidik, Koestoer, and Soemardi, 2014, pp.3). TreePark City is fits perfectly in this model of a “transit oriented metropolises that invested in rail systems to guide urban growth for purposes of achieving larger societal objectives, such as preserving open space and producing affordable housing in rail-served communities” (Hasibuan et al., 2014, pp.6). There are many amenities already established in this region, and thus with TreePark City’s mixed use development, Pohon Group anticipates the proposed superblock to become the new hub site in the Tangerang region that connects all these sprawled amenities.

To demonstrate the conscious design objectives of TreePark City, Pohon Group thus needed a way to communicate the geographic dimension of ‘accessibility’ of their superblock in relation to the planned MRT route and to the various amenities surrounding TreePark City. As Cario quotes Spanish professor Joan Costa, “to visualize is to make certain phenomena and portions of reality visible and understandable; many of these phenomena are not naturally accessible to the bare eye, and many of them are not even of visual nature” (2012, pp.18). Visualizing this accessibility index was best demonstrated through developing a visual that would 1) demonstrate the distance, and 2) the concentration of amenities within the given region.

The Process:

In the visualization process, Ben Fry of *Visualizing Data* provides a useful framework to better understand the various interrelated steps required to take to achieve the final deliverables as follows:

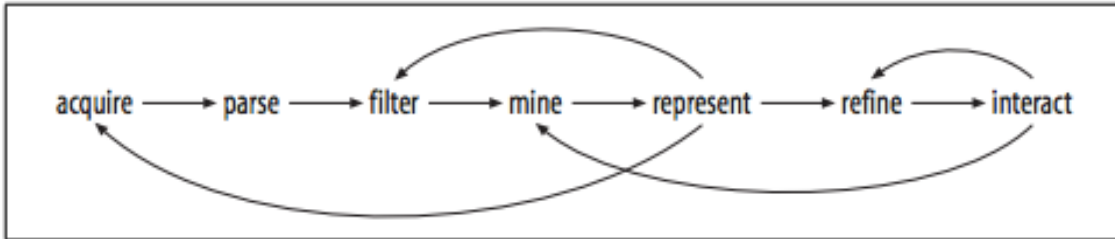


Figure 1-12. Interactions between the seven stages

Figure 1: Data Visualization Pipeline diagram acquired from *Visualizing Data* by Ben Fry (2008) pp.5

With this diagram, Fry demonstrates the interplay of processes in achieving a final visual representation. Throughout the entire process of creating the visuals, our group made key considerations to create a visual that was easily understandable to the common reader, and collect data in a format that could be used by the developers or easily interacted with by users. The following explanation of the process in creating our deliverables in paper will be founded on this layout by Fry.

Acquire:

Among the seven steps outline by Fry, the first step in ‘acquiring the data’ was the one of the most critical components of our project. This is because it is one of the main reasons why Pohon Group and TreePark City were struggling to communicate their intentions—they did not have any data that demonstrated the empirical and geographic significance of their design intentions. Our first step was thus to find a data source that would be geographically referenced and compatible with a user-friendly visualization platform. As the data and the platform of use

were foundational to the final maps and deliverables to be created, there was a lot of back and forth interaction within the cycle of the ‘acquire’ and ‘represent’ stages in the data visualization pipeline. Throughout the processes we were conscious that the data acquired would impact the representation and vice versa, as well as the limitations of our skills as map creators, and finally the final objective of creating a database that is user-friendly to the community partner.

Proprietary vs Open Sourced

With these elements in mind, we went through a lot of trial and error and going back and forth between acquiring and representing to decide on our preferred visualization. To begin, we approached the issue from a classic cartographic method by using QGIS which is an open-source equivalent of the proprietary cartography software ArcGIS. To create a map, the standard QGIS mapping procedure requires shapefiles and vector files, and therefore by taking this approach, the type of the data and the database options we accessed at the start of this procedure was catered to these requirements. To acquire shapefiles and vector files, we accessed various data sources to acquire data on the region around TreePark City in the Tangerang area. We tested shape file and vector files

downloaded from various data sources including the Esri database, but we consistently faced the issue of finding data for the capital city, Jakarta, but not the Tangerang suburb. This struggle demonstrated to us the political component of data

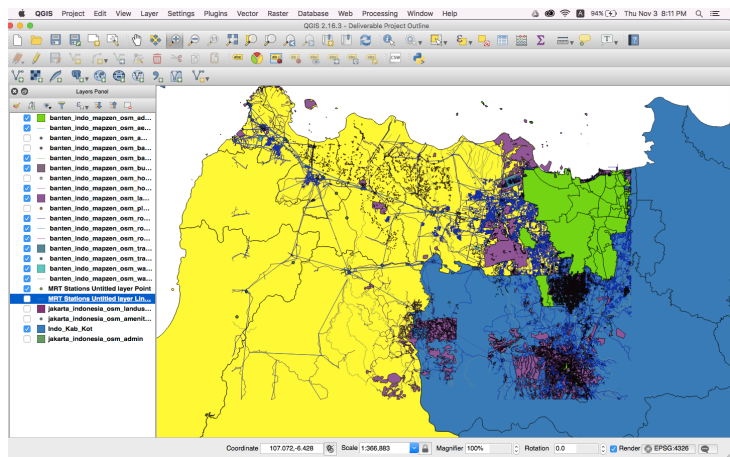


Figure 2: Screenshot from QGIS

collection whereby data and information on regions with greater population and economic activities are more readily available by official data providers.

However, as noted by Martin Dodge, Mary McDerby and Martin Turner in *Geographic Visualization*, with the “digital transition” that has allowed us to break from our reliance on the formal methods of data collection to produce geospatial information, and allows us to gather data on unexplored regions based on how data collection has evolved (p.6). The significance of the rise in crowd sourced data as users are given greater power to create our own custom data files and extend the possibilities for cartographic analysis and representation. In our case, we came across an online software called “Mapzen” which extracts data from any selected region from the crowd sourced mapping portal, “OpenStreetMap” and compiles it into convenient file formats for QGIS and other GIS mapping software. This software allowed us to overcome the data access issues previously explained.

User Consciousness

Once we were able to generate a geographic representation of the Tangerang region, there was a temporary sense of accomplishment, but which was quickly overcome by a sense of confusion. Reassessing the objective of this map, we had to reconsider if the format and the kind of data that was being represented in the map was relevant and appropriate for our purposes to represent the various amenities and transit connectivity and accessibility of TreePark City. While for the amenities map we were looking for locational data on services such as local restaurants, recreational centers, hospitals and schools, the “Amenities” shapefiles that we acquired from OpenStreetMap and Mapzen were locations such as airports and major tourist hubs that were irrelevant to what we hoped to present. Furthermore, while working with QGIS, we experienced

first-hand of the complexity of using QGIS. Beginning with our struggle to find the appropriate data format to import into QGIS, and the amount of time it took us to understand where all the data editing tools were, we realized that this platform was not the appropriate software to pass on to our community partner. As it is emphasized by Robert Roth, Kevin Ross, and Alan MacEachren (2014), it is critical to consider a “user-centered design” especially in the case we are working with a community partner. With the format we had using QGIS was therefore too complex and hard to manipulate and unsuitable for our community partner. This was again, another reminder of the repetition of the stages of Ben Fry’s data visualization pipeline in which conscious visualization processes requires a constant readjusting and reformatting based on existing foundations.

After experimenting with a variety of visualization platforms, we settled on the combination of two online mapping softwares, MyMaps offered by GoogleMaps, and online map editing site, Carto. For our transit map, we were fortunate that the MRT Jakarta homepage had provided an official route map file that was created through Google’s MyMaps. MyMaps is also perfect for geographic locating as it enables to create georeferenced data points right in the application using its established foundations from GoogleMaps, removing the extra complication of the need to geocode data using an API. Realizing the simplicity of MyMaps, we did some research to find that we could export data from MyMaps into a kml file. Having had some familiarity with Carto we also knew that Carto was compatible with this file type which added to its convenience. Carto, as a map editing software was also fitting for this project because it is a fairly user intuitive interface that allows one to adjust the data directly on the platform that immediately reflects onto the visualization. The interactive elements of Carto of layer toggling, access from multiple devices, the ability to share, the visual look, were all factors that went into

the decision making of using the combination of MyMaps and Carto as our tools to create these deliverables.

Parse/Filter/Mine:

In MyMaps, we easily located TreePark City, our central focus for our maps. However, from there we needed to make decisions on what amenities to highlight, and our filter limit on how far out from TreePark City we were going to include in our map. As a group we decided on to include the following amenities: Dining, Recreation, Shopping, Police, Schools, Supermarkets, Hospitals. These amenities were chosen based on considering what kind of amenities families would value and would consider essential facilities around TreePark City. Considering the objective of TreePark City in promoting its accessibility, we decided on a 5km radius around TreePark City as we believed that this was a walkable distance.

MyMaps was particularly convenient because it incorporated a feature where we can add rows and columns to the data file directly in the online portal. Using this feature, we were able to organize and add structure to our data directly in MyMaps. In addition to the name and we added extra columns of ‘Type’, ‘Address’, and ‘Phone Number’ to prepare the data so it can be easily used in Carto, but also for when the data was converted into csv files and analyzed by the community partners in the future.

By preparing and organizing the information into separate columns, it also allowed us to make creative variations and analyses the data and maps in Carto. For instance, we were able to overlay the different ‘types’ of amenities with a layer that calculated the ‘concentration’ of amenities in one location to demonstrate the convenience of TreePark City’s location in relation to all other amenities. Another example is with the original request from Pohon Group for us to

create a map focusing on the accessibility of food locations (restaurants, cafes, fast food).

Because the data was already categorized into the 'type' of amenity, we were easily able to make a map analyzing the concentration of food amenities surrounding TreePark City.

Through this process of refining and filtering our data, we had inherently generated an organized database of the various amenities. It was thus convenient to save and forward this file to our community partner as an overall database. By saving this as an csv file, the community partner is given the resources in which they can work with in the future to make other kinds of relevant analyses with the data.

Representation/Interaction

In accordance to our deliverables listed in the first section of this paper, we were required to create an amenities map, MRT route connection map, an infographic, and a poster. As listed in the previous steps, the amenities map was created from extracting the data from MyMaps and imported and adjusted in Carto. The MRT route map was created by the same procedures, but based on the some of the design limitations in Carto to add text and lines, we used Adobe Illustrator and Photoshop to make specific design adjustments.

Throughout the representation processes, we were especially conscious of Tufte's (1990) teachings in the emphasis of simplicity in communicating the truth within complex realities. This was especially relevant for the amenities map and the infographic because we dealt with several different types of amenities on one map, and therefore we needed to be careful not to overcrowd the visual. To achieve this balance, we were especially conscious of the colour contrast between the background and each marker on the map. We had many markers that need to be colour coordinated, but we had to make sure that the colours would not confuse or overwhelm the user.

Therefore for each marker, we were careful to choose colours that contrasted with each other yet had colour connotations with what they meant to represent. For instance, we maintained food related symbols with warm toned, appetite inducing colours such as yellow and orange for supermarkets and restaurants, but balanced the tones with cooler undertoned markers such as blues and purples for facilities such as malls and schools. Furthermore, when we needed to decide on a colour for the density overlay of the concentration of amenities, we experimented with all different colours until we tested with the black, which resulted in the perfect underlay that contrasted well with the vivid colours of the different amenities. These considerations were applied to the MRT Transit map and the overall poster as well, keeping the background neutral to create a contrast with the brighter colours of the proposed MRT lines.

In comparison to the two maps created on Carto, the infographic required a different kind of strategy for representation. As Cairo (2012) emphasizes, for this visual, we needed to make correlations evident through this visualization, between the significance of TreePark City and its accessibility to the proposed MRT station. Following Cairo's teachings, in order to achieve this, we structured a thesis that communicated the thesis of the benefits of TreePark City's location through a very careful balance of the texts, images, and numerics that could be easily decoded by the common reader. Furthermore, we guided the reader's eyes through giving the infographic some structure by making divisions and headers, and by concentrating images and text from top to bottom. Considering the context in which this infographic is expected to be printed in high volumes, we kept the background colour primarily white, and limited our use of colour only to highlight the most important parts.

One of the advantages in creating these maps in Carto was specifically the agency given to the community partner and the user through its immediate interactive features. Through Carto,

the creator is able to regularly update the data, and the user can use the interactive features through the widgets to customize the information based on their interests. Using an interactive map in these ways minimizes John B. Harley's (1989) concerns of the "omnipresence of power in all knowledge" and especially in maps (pp. 3) that is susceptible to framing information with vested interests. Some features that we added were the toggle feature that allows the user to filter their view to their amenity of interest, and a click and hover option which allows the user to examine an amenity through a 'pop-up' feature that lists the Name, Address, and Phone number of the facility. For the community partner, with this flexible and accessible platform, they are easily able to make geographic analyses with the data like the features we used to visualize the concentration of amenities in a region. These features give agency and creates the space for the user and creator to make their own analyses of the geographic data themselves.

Community Partner

Apart from some communication barriers between Indonesian and English, overall our collaboration with Pohon Group was very harmonious. While they requested specific deliverables, they were also very flexible and accommodating to the critical decisions that we made as well. For instance, when they requested a food map on the poster, after some testing, as a group we realized that a food map perhaps lost the effectiveness of the poster. After sharing these concerns with Pohon Group, they were open to make changes and trusted our change to add an overall amenities map in exchange for the food focused map. We also were able to contribute creative alternatives such as the QR code that we created as a way to easily access the interactive map from a mobile device. As they were a business, we were required to create visuals that had a professional look, which our group strived hard to achieve. I believe our group

did especially well in achieving efficiency throughout this project by dividing the work based on individual strengths in either data management, qualitative analysis, or visual representation.

Maximizing each other's strengths, we were able to focus on what we did best individually, and then later combining our individual efforts to create our visuals.

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