Trail Map Proposal for the Town of Middleton- 7/13/2020

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Target User Profile:

Name & Position: Jade Thomson, Data Scientist

Description: Jade recently moved into the Madison area to pursue a career opportunity offered by a regional employer. She wants to walk the trails in the area, including those in the Town of Middleton. She would like to have a single website from which she can plan her walks, meaning that it would include information already provided on the town website as well as instructions on how to access the trails. The interactive map would be a great medium for visually representing all of this information. For example, the map would differentiate between trail types, allowing her to identify trail surfaces in advance. She would be able to plan her walks according to her trail preferences without having to navigate between different pages on the Town website.

Use Case Scenario: From the Town website homepage, Jade navigates to Pope Farm Conservancy-North page on her mobile device. She is able to read about the amenities offered at the conservancy and access the interactive map via a link. When she accesses the map in this manner, it loads so that the extent covers only the conservancy and its immediate vicinity. She can identify the trails according to their type, as indicated by a collapsible legend. She also notices that the amenity locations within the conservancy are represented on the map. After deciding to visit the conservancy, she clicks the popup near Old Sauk Rd, then clicks on the "Directions" link. This link takes her to the Google Maps website, where she can click the directions button to start navigating to the parking lot on Blackhawk Rd.

Use Case Scenario: Jade wishes to walk her dog on a trail in the Town of Middleton. After reading the description of the interactive trail map on the Town website, she realizes that the map has the information she needs. So she clicks the link to the interactive map, which shows the entire town. She clicks on the collapsible legend, expanding it. There are a number of overlays that she can toggle, including "Trails Where Dogs Are Allowed". She clicks that area of the legend to toggle the layer, making the dog-friendly trails and their respective parks apparent. She clicks on the Ed Tallard Park popup and the affordance reading "Directions" appears in the popup. She clicks on that button to start the navigation process on Google Maps.

Name & Position: Mason Perez, High School Student

Description: Mason grew up in the Madison area and occasionally visits his family members in the Town of Middleton. On nice weekend days, the adults in the family carpool to different Town parks with the children. Mason is usually tasked with navigation since he's the most familiar with mobile phones. Since the Middleton Town website lists the amenities provided at the parks, Mason uses it to choose which parks to go. After doing so, he simply uses the website's online map to navigate to them.

Use Case Scenario: Mason's family is looking for a park with trails for some of the adults to walk on while the other adults accompany the children. Mason opens the Town website on his mobile phone. Mason sees on the Town website that Cherrywood Acres Park has a soccer field and swings that could keep the children occupied. He opens the link for the interactive map to see the extent of the trails in and around the park. To do this, he toggles uses the layer toggle on the top right corner of his screen to make the trails layer visible. Once he sees that a trail of an

appropriate length passes through the park, he clicks on the popup at the Cherrywood Acres Park, sees a parking icon and knows that they will be able to drive there. He then proceeds to get the directions to the park from the family household.

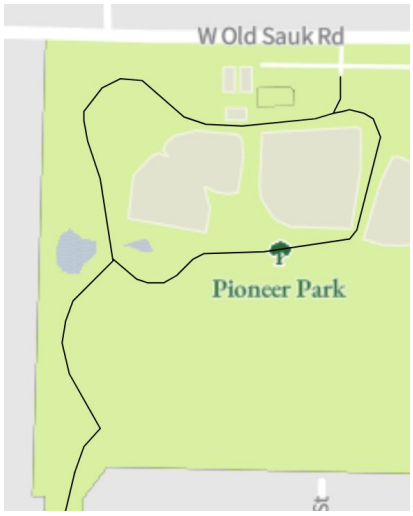
Requirements Document

Representation		
1	Maps	One interactive map of the Town of Middleton; one static map of the Town of Middleton; one static map for each major park and conservancy; one static map for each proposed trail conglomerate (emphasize trail connectivity); one static map for dog-friendly trails
2	Basemap	Town of Middleton data; full extent of town on static map; minimal styling of land cover/landscape (emphasis on map features/less distracting)
3	Trails	Symbolized by lines; differentiated by trail type; omission of trail manager for public maps, included for commission maps; proposed trails will have distinct symbolization
4	Roads	Symbolized by lines distinct from trails
5	Contour lines	Symbolized by dashed lines; distinct index contours
6	Parks	Stylized polygons; differentiate between town parks and other parks
7	Parcels	Stylized polygons
8	Points of Interest	Unique icons based on feature type (parking, water, etc.); new icons when needed and pre existing town icons when applicable
9	Selections	Highlighted features and translucent periphery
10	Scale	Map generalizes in response to small cartographic scale/zooming out (affects number of total features shown); map detail at higher zoom levels matches level of detail in static maps of individual parks/conservancies

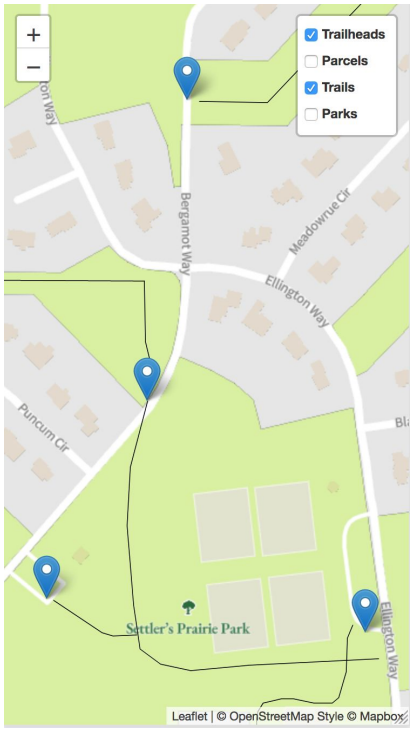
11	Labels	Differentiated according to feature type (1 typeface for built environment; 1 typeface for natural features)
12	Responsive Design	Collapsed layer toggle is default; layer toggle on bottom right (Thumb friendly)
13	Legend	Anchored to corner of screen; displays sample symbols of different types of trails

Sample Images:

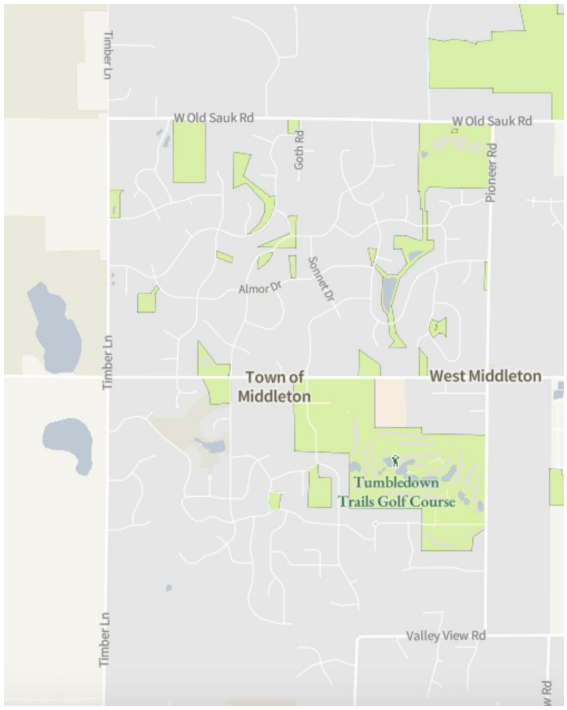
This is an example of trail symbolization over a stylized basemap. The basemap emphasizes the parks since they are among the most relevant map features. Road and park labels are also shown here, serving as examples for the two typefaces used in the map.



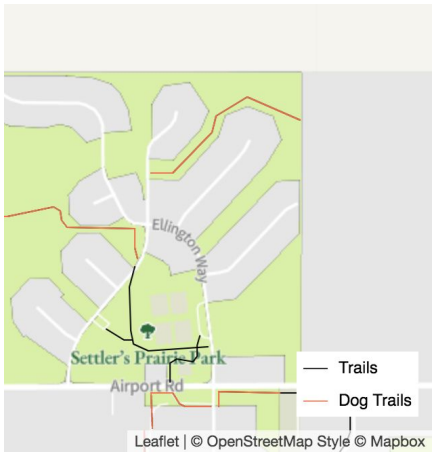
The dimensions of the image below correspond to that of an iPhone screen, and the layout shows how the site would respond to such a screen.



At lower zoom levels, the map generalizes, meaning that less detail is shown. This zoom level lacks the side street labels and building footprints seen in the higher zoom levels, which are shown in the other sample images.



The legend is on the bottom right and provides keys for the different types of trails, which are symbolized differently by color

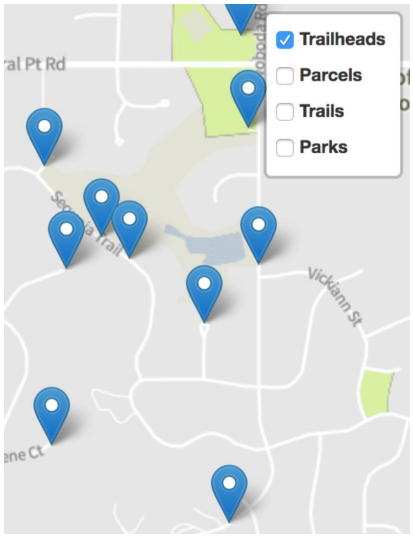


Interaction

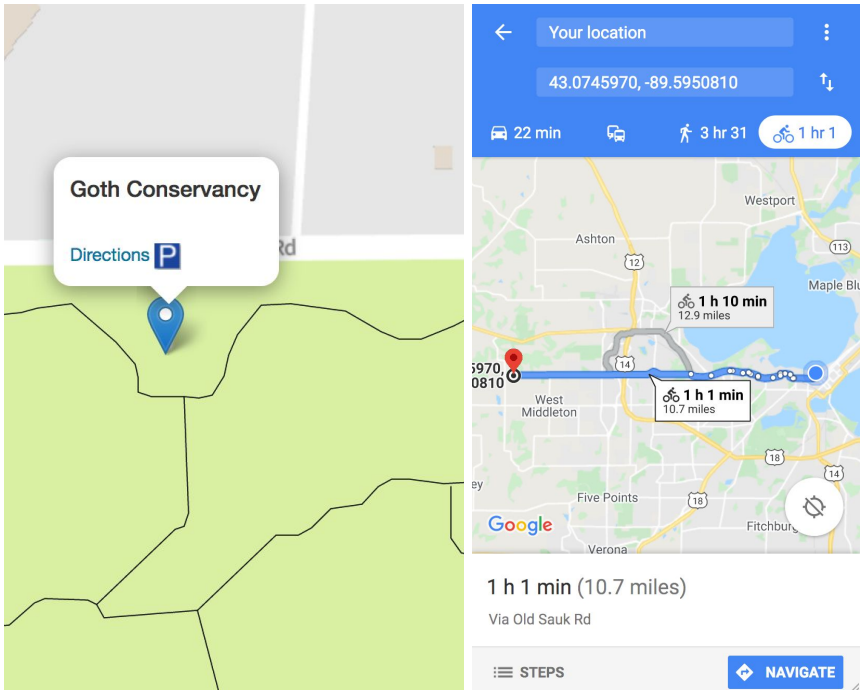
1	**Trail, Park, & POI Selection**	Retrieve links to park and trail webpages; initiate navigation Selected parks are highlighted
2	**Layer Toggle**	Overlay proposed trails, dog friendly trails, etc. onto map, which are not shown by default
3	**Directions**	Link to Google Maps on all “Directions” buttons

Sample Images:

In this image, the layer toggle is expanded and the trailheads layer is turned on.



The user calls a popup when they click on a trailhead. In the left image is an example of a popup, which has the name of the trailhead, a parking icon, and a hyperlink to GoogleMaps. The right image is a demonstration of clicking the directions button and putting “Your location” in the top search bar.



Non-functional Requirements		
1	**Utility**	Trail map will have improved utility largely through overlay feature (more information on map than currently exists); One map for all of Town (not split in two)
2	**Availability**	Users can access map in standalone link or via park specific links
3	**Updates**	Inserting new trails into map when they are constructed
4	**Usability**	Number of clicks to navigation reduced by maintaining Google Maps links on park webpages (maintain efficiency); Highly visible feedbacks (selection highlight); Colorblind-friendly scheme;
5	**Modifiability**	Modifications can be made through JavaScript, Cascading Style Sheets, Hypertext Markup Language, Comma Separated Values, and/or Illustrator files

Glossary

Responsive Design- Methods and technologies pertaining to web design meant to automatically accommodate different computing devices, especially mobile devices

Non-functional Requirement- An aspect of a product, such as an interactive map, that relates to how the product works and how the product fulfills user needs in ways other than its design components and basic interactive features

Utility- Practical aspects of a product

Usability- Relative easiness or difficulty of using a product

Modifiability- Adaptable aspects of a product; relative ease or difficulty with which a product can be changed

Payment (Student Cartographer Hourly Pay is $10.50 at Cartography Lab for reference)

Proposal - 5 hours

Data Sifting - 15 hours

Interactive - 50 hours

Ground-Truthing - 10 hours

Static Map Creation - 50 hours

Google Maps Directions/Pin Locations - 3 hours

Approximate Total Hours: 133 hours = $1,396.50 ~ $1,400