

6.170 Final Project: “All Politics is Local”

Fall 2020

In case you missed the memo, 2020 is a US election year. As of late September, the two main presidential candidates have raised a staggering \$2.3 Billion dollars to contest this election¹. Given this national focus and extreme expenditure, the quintessentially US adage “All Politics is Local” rings hollow, and Americans’ trust in government is near an all-time low².

For your final project, you will have an opportunity to **use your engineering skills to build software in service of local government**. As you go about this task, we ask you to approach it with humility: “*If I had a million dollars, I probably wouldn’t spend it on software.*” - Quinton Zondervan, Cambridge City Councilor. While software can be a useful tool for supporting municipal governments, it is **not** a silver bullet. Software alone cannot remedy constituent mistrust, resource constraints, or histories of constituent mistreatment³. But software can be an enabler for significant social change.

We have curated a collection of Cambridge-centric project proposals for your team to choose from. If you prefer to focus on the needs of a different municipality or a different societal issue, you are welcome to propose an alternative project (so long as you’re willing to do the extra work involved in exploring the needs of the project). If you do choose to pursue your own project, one starting place is to look for open datasets distributed by your municipality. If you choose an open dataset project, use caution: as this is 6.170, you will be graded only on your full-stack web app functionality, and not on any interesting data science or data visualization efforts. If you want to use your own idea, it should be similar in scope to these proposed projects.

Guiding Principles

This project asks you to consider the societal and ethical responsibilities of computing---both by building for local government and by critically analyzing your design decisions. As part of your Full Design evaluation, you will be asked to complete an ethics protocol-based analysis of your final project for three value-laden design decisions. As part of your MVP and Finished Product, you will be asked to share an updated version of the protocol with one additional design decision (four total), as well as enumeration of changes made to the original protocol after

¹ Candidates Biden and Trump raised a collective \$2.3Bn by the end of September 2020: [2020 Presidential Election Fundraising: Biden Vs. Trump](#)

² Americans’ trust in government is nearing all time lows: [Public Trust in Government: 1958-2019](#)

³ On the role of the internet and software on politics: [Six Models for the Internet + Politics](#)

having iterated on your design. An explanation of analysis with the ethics protocol and examples is in the accompanying slideshow.

As you build your project you should pay close attention to:

- **Stakeholders.** Who are the stakeholders? Should some stakeholders take priority over others?
- **Access.** What resources does someone need to use your application? Who is left out? Which stakeholders have you centered in your design?
- **Defaults.** What defaults show when you open your website? Which stakeholders do these defaults favor?

An Example

The Cambridge web app focusing on [participatory budgeting](#) is an example of a project which meets our standards and would be feasible to develop in this course project timeframe. Some things we like about this website:

- It serves a social need. Cambridge is leaning into participatory budgeting as a means of increasing political engagement, and this website aims to further engage constituents.
- It's interactive, and requires a back end. Cambridge residents can propose ideas for participatory budgeting. Residents can also comment on other proposals.
- It's **not** a data science or data visualization website. While this website uses data, it does not present it in aggregate.

Alternative Projects of Your Choosing

If you wish to work on your own idea for a different municipality or a different social issue, your project should meet the following desired characteristics:

- Serves a social need or a social good; socially responsible computing
- Includes and emphasizes the needs of stakeholders who are different from you
- Addresses a declared need of a municipality, or a need which can be otherwise readily evidenced

Examples of acceptable projects:

- A website to communicate where to get a flu shot (or a COVID-19 vaccine, when available). To make this technically interesting and not just an information board, you could add functionality to allow pharmacies or individual people to comment on vaccine availability and experiences (e.g., wait times, how to schedule an appointment, whether an appointment is necessary).
- A website to help survey local political candidates and share their responses. Currently, all such surveying is done on an ad-hoc basis; candidates must fill in a new survey for each organization that requests one, but many of the questions are the same.

Candidates write their own responses, with no possibility of engagement from community members with respect to any past voting records. See, for example, this voter guide put together by A Better Cambridge, and [this voter guide](#) assembled by Harvard grad students.

- A website to help those in your community who are struggling with housing or food insecurity. You could lean into community engagement to make your full-stack website technically interesting, and not just a digital billboard.

Examples of unacceptable projects:

- A virtual meetup website or new isotope of MIT Confessions. While this project would be technically interesting and is not without social merit, the intended users are likely too similar to you and your friends, and don't require deep consideration of the needs of a less uniform stakeholder population.
- A chore-sharing website. Chores suck, but don't have much impact on the larger community. A variant of this project which would be acceptable is a chore-sharing website *for your community*. For example, in Cambridge residents ["adopt" fire hydrants](#) in the winter, to ensure they are accessible despite snow. You could design a website to chore-share on such a community scale.

Proposed Projects for Cambridge, MA

These project ideas were developed in conversation with Counselors, current employees and former employees of the City of Cambridge, and with academic political scientists.

Open Dataset Project: Cambridge Businesses and COVID-19

Design a website to assist the city in communicating how Cambridge businesses are operating in response to COVID-19. The City of Cambridge has collected a [dataset](#) of businesses, and their COVID-19 operating status: open, closed, offering takeout, delivery, etc. Make this information interactive: embed it on a map, and show the status for each business. Enable community engagement by allowing people (and/or business owners) to add additional details.

Some ideas:

- Let the establishment (or the crowd) answer COVID-related questions for locals. Does the establishment have outdoor seating? Do they have outdoor heaters? Are the bathrooms open to customers? Are outdoor tables sanitized? Are classes outdoors?
- Let the establishment communicate their needs to locals and the city. For example, Cambridge had initially planned to end the outdoor dining season on November 1st, but has since [extended the period](#), and even started [giving restaurants rebates](#) for purchasing outdoor heaters.

Open Dataset Project: Community Oversight of Policing

Design a website to increase police accountability through increased citizen oversight of crime reports. The Cambridge Municipal Government curates a [dataset of crime reports](#), which include

high-level crime details (effectively: nature of the crime, date, and location). However, this information is inaccessible as a large list, and is one-directional: crime reports are reported by the municipal government and distributed to citizens. Use this data to create a website which provides mechanisms for citizen engagement. Some ideas:

- Your site could show all the crime reports on a map to assess whether certain areas are disproportionately represented, and allow citizens to comment on specific crime reports or on groups of reports to relay such concerns.

Engaging with Open City Meetings

Participating in open city meetings remains challenging. To know whether a meeting is of interest, a constituent must keep track of social media, word of mouth, and the meeting agendas posted online. While technology has potential for improving this process (and remote meetings have increased attendance⁴), the current ["Open Meetings Portal" Page](#) is hard to use. Your task is to redesign the Cambridge meeting mechanism to better share meeting plans and to elicit further constituent engagement. Some ideas:

- Your site could allow residents to sign up for notifications when topics of interest to them are on the agenda. You could pull such data from the existing website, or from other sources like Twitter.
- You could add mechanisms for discussion by allowing residents to comment on agendas, meeting notes, and so on.

Scraping & porting over all the Open Meetings Portal data is not necessary to demonstrate your website. Feel free to use a representative subset, or to create a small quantity of your own (fake) data in a preferred format.

Connecting Neighbors: An Alternative 311 App

311 Apps, like [this one from Cambridge](#), are a common mechanism for constituents to engage with their local government. Typical 311 Apps support service requests: for example, if you saw a tree root had made a sidewalk inaccessible, you could report it to the city through a 311 App. However, 311 Apps have a troubling side effect: these apps make city government feel like a transactional service, and constituents may not engage enough to understand the complexities and constraints of the city governance.⁵ Further, these apps are not meeting the needs of all constituents: users may have different expectations about what warrants reporting through the app⁶. A study of Boston's 311 App also found that Black and Hispanic respondents reported

⁴ Comments from Cambridge Vice Mayor, Alanna Mallon, shared with a computer science class.

<https://twitter.com/kgajos/status/1310727224346267650>

⁵ "The Smart Enough City" by Dr. Ben Green, Chapter 3: [The Democratic City: The Social Determinants of Technology's Impacts](#).

⁶ For example, low-income residents are much less likely to report street conditions of "nuisance issues", despite lower maintenance quality. [Sustainable Cities and Society Bias in Smart City Governance: How Socio-Spatial Disparities in 311 Complaint Behavior Impact the Fairness of Data-Driven Decisions](#)

wanting to use the system to connect with neighbors.⁷ We therefore ask you to build an alternative 311 website which centers connecting neighbors and communicating the collective needs of these groups to city government. *The scope of this proposed project could be very large. Do not try to solve every problem: instead, develop a tool specifically for connecting neighbors, with the underlying motivation of facilitating civic engagement.*

Some ideas:

- Allow users to follow one another's activity in the app
- Allow users to follow neighborhood activity
- Allow users to post to their neighbors, to the city, or to both
- Instead of making 311 requests private, make them public and interactive
 - Allow a back and forth between the City and the individual who filed the report
 - Allow other users to comment and interact with the ticket
- Enable norm setting: where some neighborhoods might take rodents or bad street conditions to be the modus operandi, the app could teach them to make such requests, or actively poll constituents.
- Cambridge MA also shares 311 reports through an [open dataset](#). You could bootstrap some content from this source.

Additional (Strictly Optional) Reading

- On the relationship between inequality and government participation in the United States:
Uslaner, Eric M., and Mitchell Brown. "[Inequality, trust, and civic engagement.](#)" *American politics research* 33.6 (2005): 868-894.
- On how 311 apps are *increasing* socio-spatial disparities, as municipalities are increasingly relying on 311 reports to improve efficiency of city operations.
Kontokosta, Constantine E., and Boyeong Hong. "[Bias in Smart City Governance: How Socio-Spatial Disparities in 311 Complaint Behavior Impact the Fairness of Data-Driven Decisions.](#)" *Sustainable Cities and Society* (2020): 102503.

⁷ Daniel Tumminelli O'Brien, Eric Gordon, and Jessica Baldwin, "Caring about the Community, Counteracting Disorder: 311 Reports of Public Issues as Expressions of Territoriality," *Journal of Environmental Psychology* 40 (2014): 324–325.

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