Examining the Legacy of the Venice Project Center Through the Use of Interactive Storytelling

An Interactive Qualifying Project
submitted to the faculty of
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Abstract

For the past 35 years, the Venice Project Center (VPC) has led research and data dissemination efforts in the city of Venice. This project tells the story of the VPC through the use of interactive storytelling. We created a storytelling plan for future WPI teams by creating StoryMaps on ten significant topics of VPC research, producing a VPC video on Canals, creating the sample layout for a series of VPC booklets, and developing a layout for a permanent VPC exhibit. In addition, we focused on growing the VPC's online presence by facilitating the sharing of Open Data and by growing the VPC's social media profiles on LinkedIn and Facebook. All of these assets are intended to grow the audience of the VPC, while making its research more accessible for future teams.

Executive Summary

For the past 35 years, the Venice Project Center (VPC) has been at the forefront of research in the City of Venice. With 261 different projects completed by almost 900 students, the VPC has made a significant effort to share its findings both with other research entities and with the general public. Every 5 years, this dissemination effort has been reinforced through anniversary projects, which work to incorporate technological advances and further develop the VPC's legacy. Through the years, new technologies have allowed the VPC to disseminate its findings ever more efficiently to "leave venice better than we found it".

On this 35th anniversary year, our team continued the VPC's tradition of scientific dissemination by creating a multi-faceted storytelling plan to publicize the research of the VPC and its many impacts. We focused on 11 major topics (**Figure A**) and created examples of multiple forms of media, employing both digital and more traditional means of dissemination.,

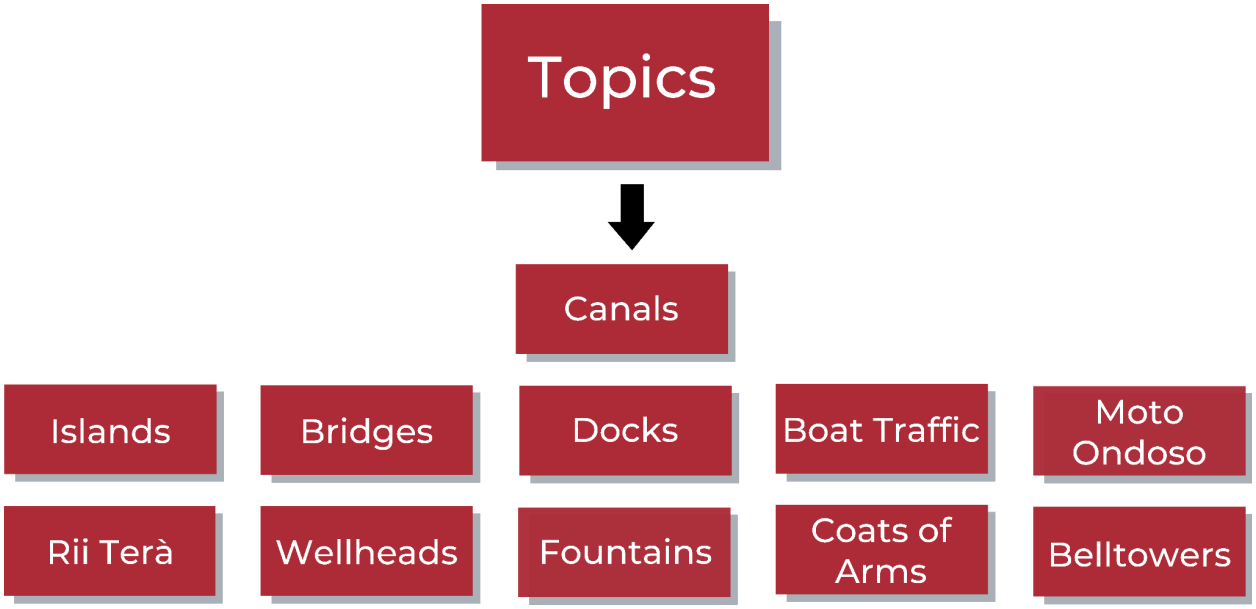

Figure A: Topics covered

. To establish an accurate and compelling storyline for each of the 11 topics, we decided to prioritize the development of StoryMaps, which are interactive online

platforms dedicated to each topic that will be used by future VPC teams to develop all of the other media for the remaining topics..

Over the course of the 7 week term, we actively worked in creating 10 StoryMaps, one for each of the following topics: islands, canals, *rii terà*, coats of arms, fountains, wellheads, docks, boat traffic, *moto ondoso*, and bell towers (**Figure B**).

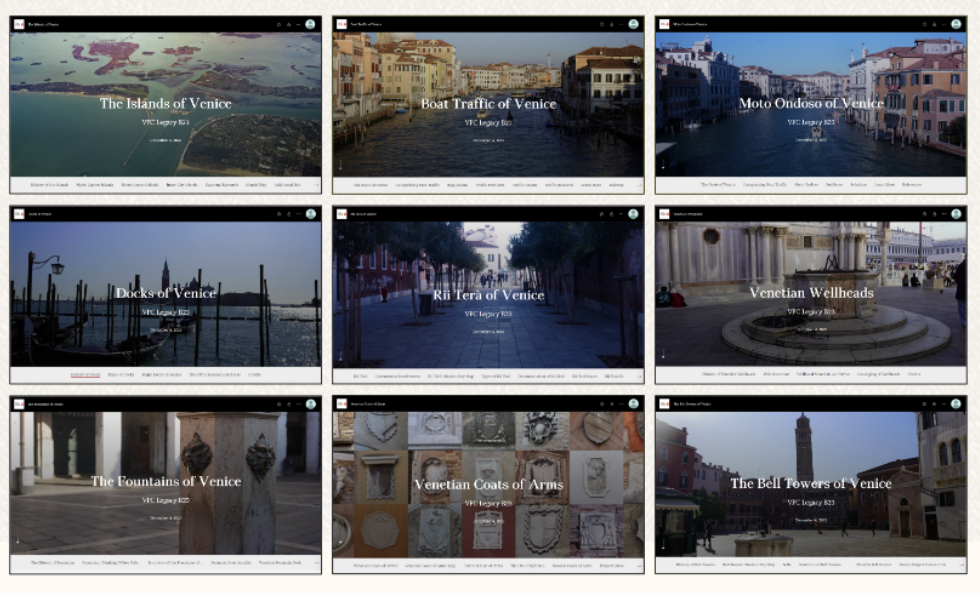

Figure B: Cover pages for 9 out of the 10 StoryMaps

Our suggestion for future groups is to create supplementary StoryMaps covering subjects beyond our team's scope, establishing a framework for upcoming data collection and preservation endeavors. These StoryMaps will serve as foundational structures for future videos, booklets, and exhibits. Among the suggested topics are flagpoles and pedestals, public art, statues and reliefs, shops, and public parks and green spaces. There might be a need for additional topics if these areas necessitate further subdivision.

Utilizing StoryMaps as our foundational framework, we developed a plan for the creation of an exhibit, booklets, and videos to highlight the VPC's accomplishments (**Figure C**) by focusing on one sample topic: the Canals. Future teams should be able

to use our work as a basis for the development of booklets and videos on each of the remaining 10 topics, while also developing a complete physical exhibit along the walls of the VPC.

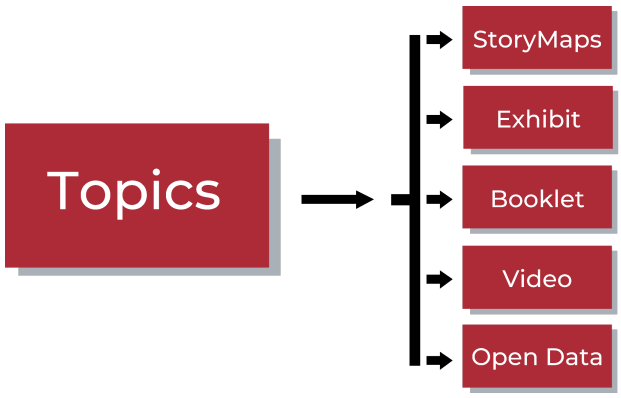

Figure C: Overall workflow for our project

In 2018, a VPC's 30th Anniversary team conceptualized and constructed an **exhibition** showcasing the VPC's endeavors. Organized around twelve distinct topics ranging from the lowest to the highest elevations, this exhibition was initially housed in the bell tower of the VPC's main building until early 2023. However, its design was never intended to be permanent. Consequently, our task involved revising and enhancing the layout of the 2018 team's exhibition. Simultaneously, we relocated it within the VPC building, strategically situating it in a more accessible area for public viewing.

When working with the exhibit we were able to focus on three main areas, location, display layout and hanging materials. We decided on the main staircase at the VPC, because it was very accessible to all who work in the building. For display we moved around all the visuals and arranged them on the wall to see what would produce the best fit and from this we created six posters, two being final posters on the canals (**Figure D**) and four being mockups for future teams to use and follow along with (**Figure E**).

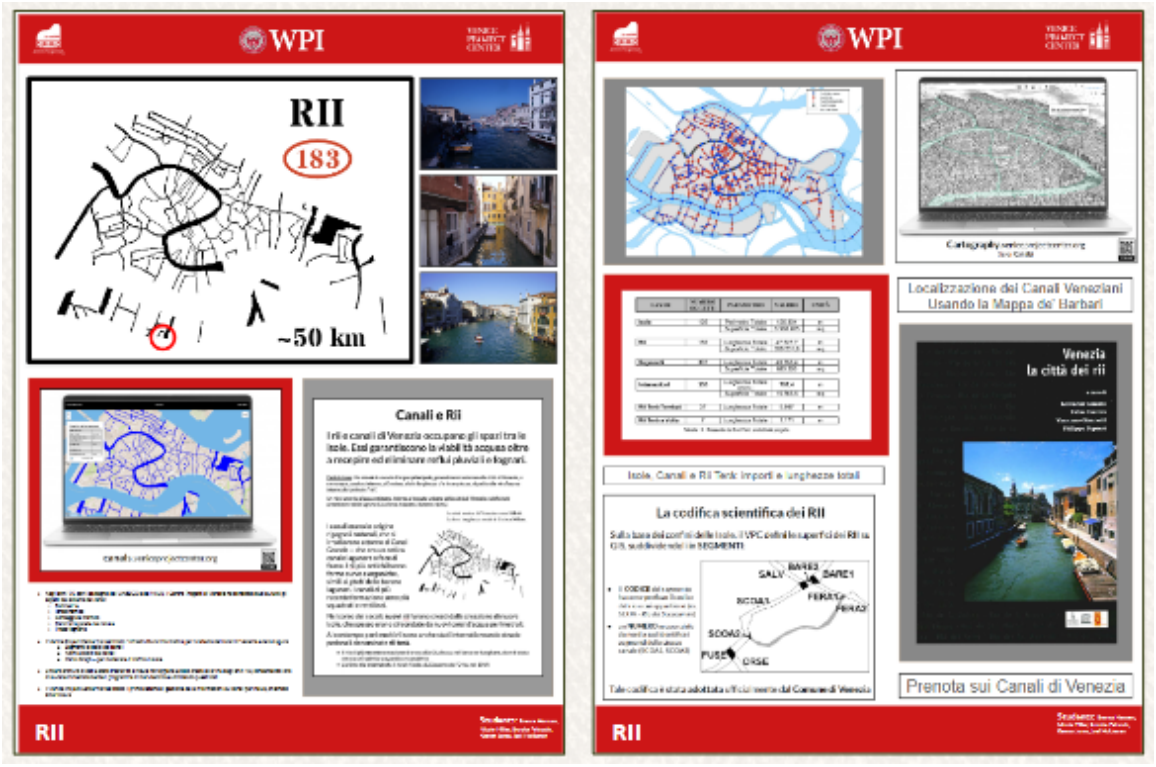

Figure D: Exhibit Posters

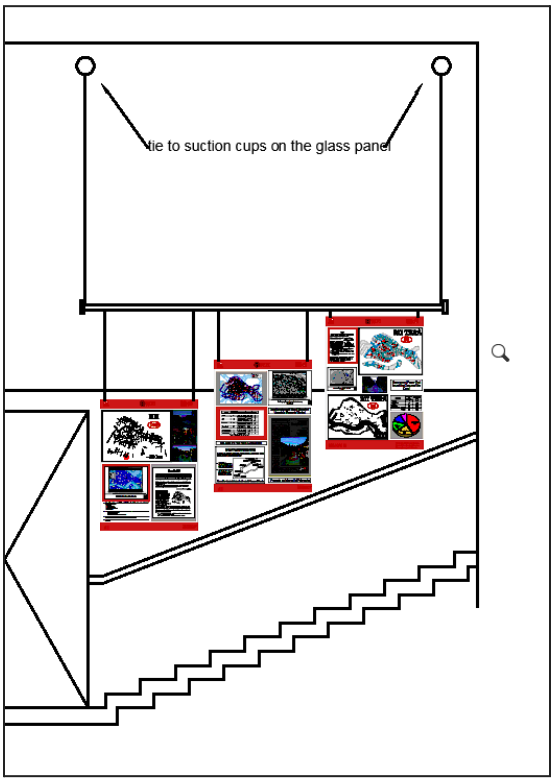

Figure E: Initial Wall Layout of a Canal Section of the exhibit

Lastly we decided on using suction cups and wire, as well as printing the posters on a canvas banner that is 70 cm x 95 cm and include meal grommets to attach the wire to. For future groups we recommend to use the proposed poster size and material, as well as follow the flow of the two canal posters. We also recommend using suction cups on the left side of the staircase and the walls that are between flights of stairs. On the right side we recommend that groups attach the wire to the connector between the railing and the wall, then use a horizontal metal pole to hang three posters maximum. When hanging posters on the top staircase, we recommend using the light fixtures to tie wire to and make a bridge for the posters to rest on.

In our ongoing efforts to disseminate the research data from the Venice Project Center, our team joined forces with VPC interns and a professional videographer to develop a sample **video** on the Canals. Together, we devised a streamlined process for crafting concise documentary-style videos (**Figure F**).

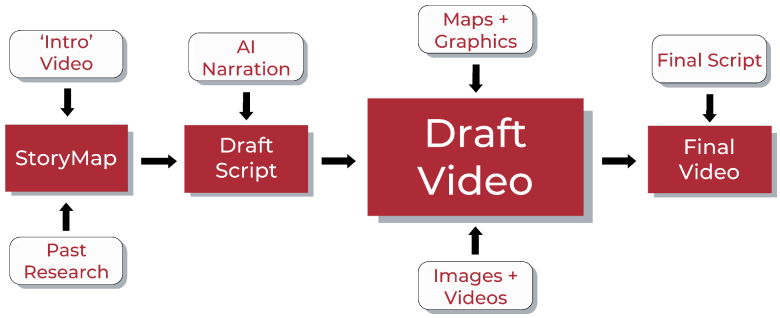

Figure F: Video development workflow

Throughout the IQP term, our team captured unedited videos covering each topic, initiating the groundwork for future video production. Our primary contributions involved establishing the belltower studio, filming introductory segments, drafting scripts, and gathering supplementary footage (b-roll). Our decisions regarding video creation were influenced by recommendations from past teams, input from Mr. Stocco and Prof. Carrera, guiding our approach.

These videos complement the StoryMaps, going deeper into the content covered within each StoryMap in an audiovisual format. Our involvement in this section encompassed creating a comprehensive script and producing an initial video draft

focusing specifically on the canals (**Figure G**). As these videos are intended to form a cohesive series, our draft serves as a blueprint, setting the tone and structure for forthcoming videos. This example will guide the overall style and design for the creation of subsequent videos, ensuring a consistent and informative series

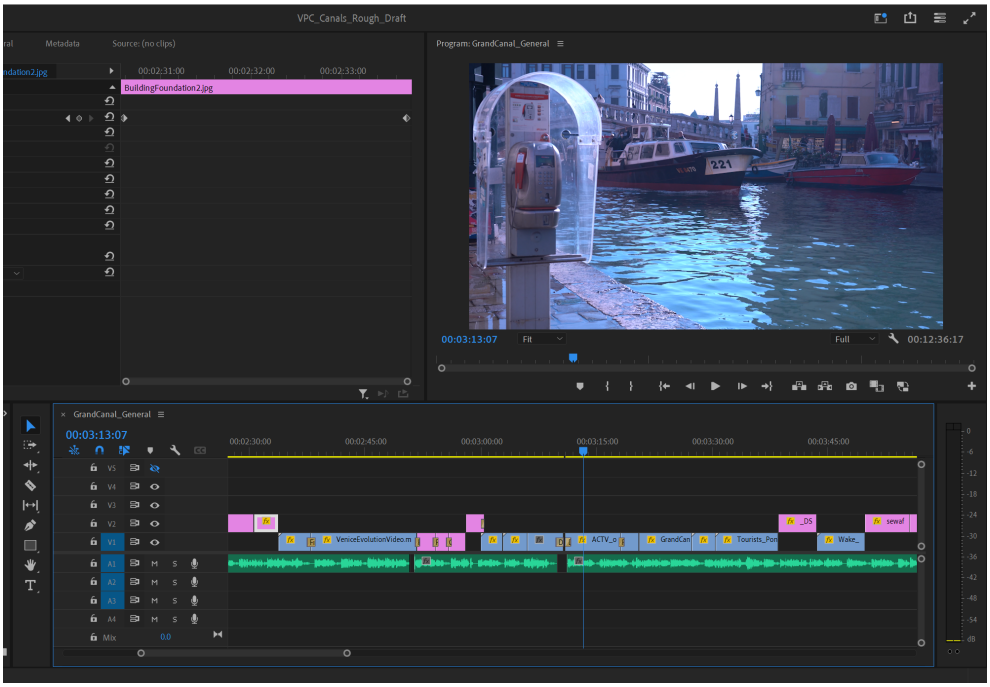

Figure G: VPC video production

In addition to the StoryMaps and documentary video, our efforts to broaden the VPC's impact included crafting an informational **booklet** focused on Canals (**Figure H**). Working with VPC interns, we co-created a prototype booklet and strategically determined the most cost-efficient printing method. Our process involved an extensive review of similar informational booklets, analyzing their production methods, and cross-referencing available resources within Venice to meticulously plan the booklet's printing process.

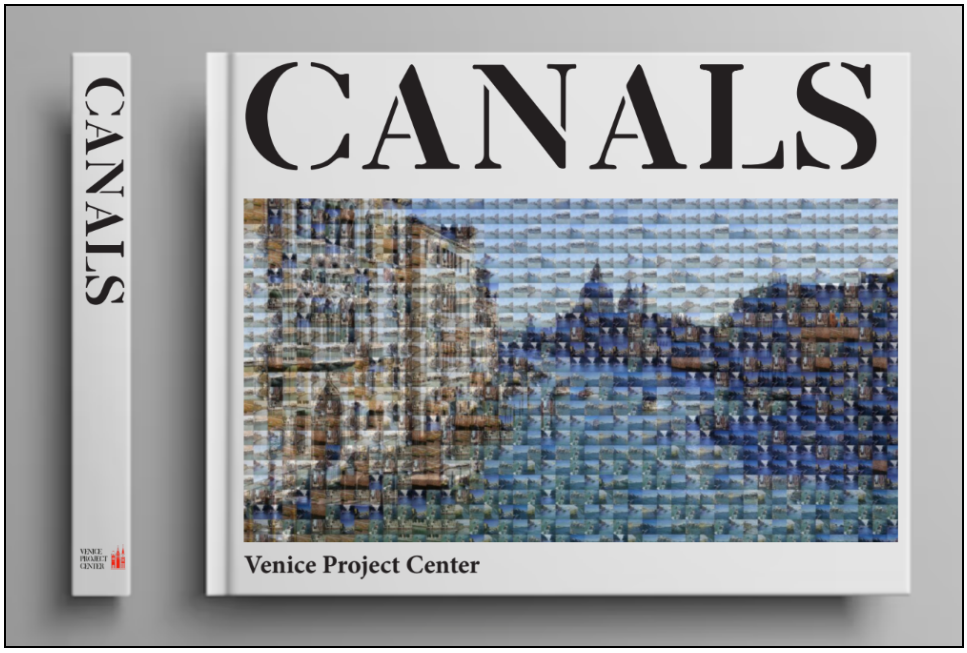

Figure H: VPC Canals Booklet cover page and spine design

The final booklet was created in collaboration with the VPC interns. Size, color, font and information added to the booklet was all decided and printed at a print shop. For future groups we recommend that the booklets should all be in the A5 format, and have at least 80 pages, in order to accommodate for the spine text. The textual content needed to achieve this length should be provided by Professor Carrera. They should also all include all of the features that are on the canals booklet, including a photo mosaic on the cover, about the cover page, table of contents, glossary of terms, bibliography, and QR code. Only high quality images should be used, and images should be taken with a digital camera rather than a smartphone camera. All the booklets should look uniform so that when the whole series of booklets is produced, they will be able to be displayed as a set.

In today's technological era, the core identity of most brands is deeply rooted in their **online presence**. We reviewed the VPC's Facebook and Instagram accounts, and added a new VPC LinkedIn account aiming to forge stronger connections between the center and its key audiences: the residents of Venice, scientists and scholars interested in Venetian issues, and past VPC alumni. Along with this work with the VPC social media, we also worked to make the **Data** from past research more available and easy to

access by developing an API that can be used to access, sort, and refine VPC datasets so that they can more easily be published on the VPC website.

The social media for the VPC was updated by understanding the demographic of who would use facebook and who would follow the VPC. We also worked to create a linkedin page for the VPC (**Figure J**).

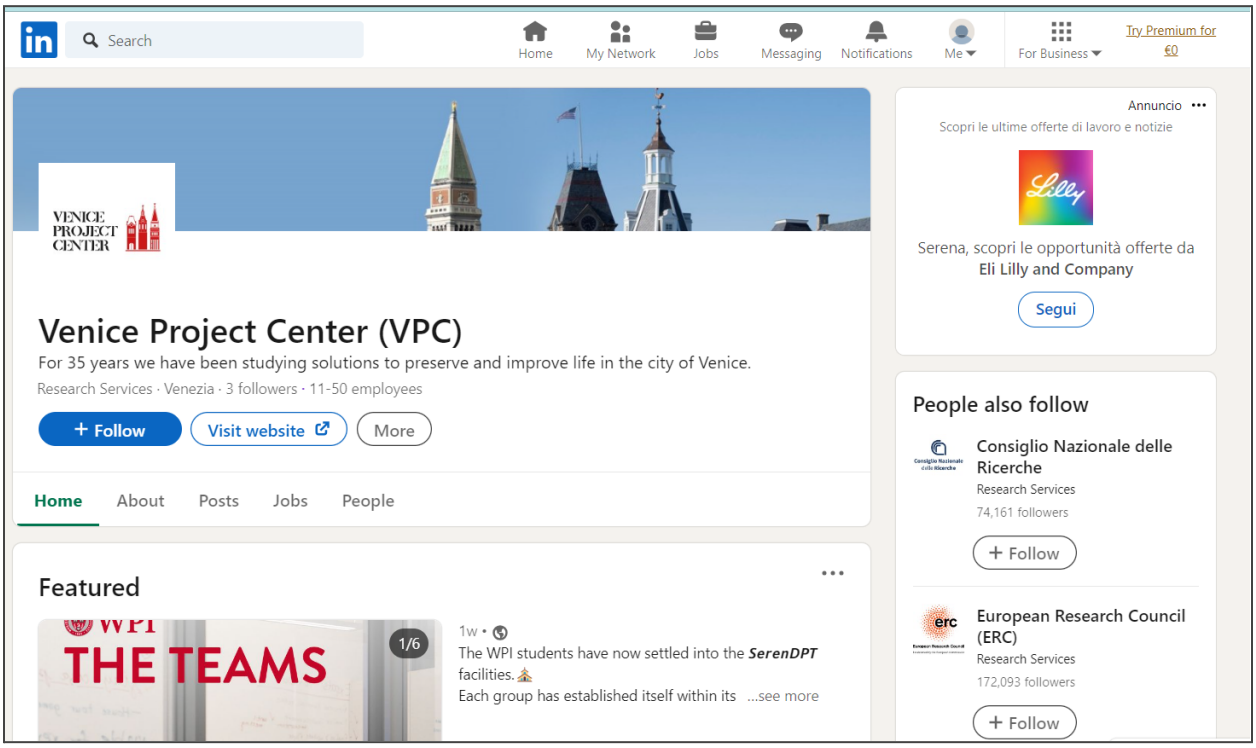

Figure J: VPC LinkedIn account

For the future of social media we recommend the VPC should actively maintain its Facebook and LinkedIn accounts by consistently sharing updates, engaging with alumni, and promoting relevant content from others. A designated staff member should oversee these accounts, posting at least once a week in both English and Italian to cater to a wider audience. Posts should align with VPC's branding and color scheme. Additionally, the VPC accounts should interact with relevant posts from sponsors or partners like SerenDPT.

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Authorship

Brenna Hannam was responsible for the research and writing of the executive summary, along with chapters 1, 2.2, 2.3.1, 5, 5.1, 5.2, 5.3, 5.4, 5.6, 5.7, and 5.8. She also revised chapters 2.2, 2.3.1, 5.1,5.2, 5.3, 5.4, 5.6, 5.7, and 5.8.

Joel Hokkanen was responsible for the research and writing of sections 2.1, 2.1.1, 2.1.2, 2.1.3, 8, 8.1, 8.1.1, and 8.1.2. He also revised chapters 2.1, 2.1.1, 2.1.2, 2.1.3, 8, 8.1, 8.1.1, and 8.1.2.

Keenan Jones was responsible for the research and writing of chapters 2.2, 2.2.1, 2.2.2, 7, 7.1.1, 7.2, 7.3, 7.4, 7.5, and 7.6, along with Appendix E and F. He also revised chapters 2.2, 2.2.1, 2.2.3, 3, 7, 7.1.1, 7.2, 7.3, 7.4, 7.5, and 7.6.

Nicole Miller was responsible for the research and writing of chapters 1, 2.3, 3, 4, 4.1, 4.2, 4.3, 8, 8.2, 8.2.1, 8.2.2, and 9, along with Appendix A, B, C, and D. She also revised chapters 2.1, 2.2, 2.3, 3, 4, 4.1, 4.2, 4.3, 8, 8.1, 8.1.1, 8.2, 8.2.1, 8.2.2, and 9, and contributed to the writing and revising of chapter 6.

Brooke Peloquin was responsible for the research and writing of chapters 2.1.1, 2.1.2, 2.1.3, 6, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, and 6.9. She also revised chapters 2.1.1, 2.1.2, 2.1.3, 6, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, and 6.9.

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Chapter 1: Introduction

Since the inception of the Venice Project Center (VPC) in 1988, students from the Worcester Polytechnic Institute WPI) have been producing projects with the goal to “leave Venice better than we found it.” After 5 years as a ‘project program’, the VPC officially became a project center in 1993, and, for the past 35 years, about 900 WPI students gathered data to support insightful research on a wide variety of topics. These efforts have allowed the VPC to play a significant role in collection and dissemination of data about Venice.

The primary goal of our project was to showcase the contributions and accomplishments of the VPC. Multiple anniversary projects have been dedicated to this objective, but the legacy of the VPC continues to grow beyond the existing records of its accomplishments. In the summer of 2023, a team of WPI students developed a strategy to publicize and update the history of the VPC using a variety of storytelling methods. During the summer, the team made plans for creating StoryMaps, producing videos, and overhauling the VPC website in order to make the story of the VPC more accessible, compelling, and thorough.

In late 2023, our team worked in Venice for two months to execute the plans of the summer team. We created StoryMaps, videos, and booklets on a series of topics studied by the VPC. Our team also examined the methods of data dissemination used by the VPC to organize its decades of projects and data, and we restored and updated a VPC exhibit to include the research performed since the original exhibit’s creation in 2018. Implementing the storytelling methods and plans outlined by the summer team, we highlighted the successes of the VPC and showcased its legacy.

The background of our report includes an overview of data dissemination, the role of storytelling, and a short history of data collection and dissemination at the VPC. These subjects remain relevant throughout this project, and basic information about each topic is essential to understanding the approach and methods of this project as well as its significance. We then present our deliverables by assigning each distinct deliverable its own chapter that includes a short background, methods, results, and recommendations. These deliverable chapters are separated into chapters on

StoryMaps, a VPC exhibit, videos, booklets, and online presence. From this, we conclude with our overall recommendations for both the VPC and for future project teams to pursue.

Chapter 2: Background on the Venice Project Center and the Importance of Research Dissemination

The VPC has researched a multitude of subjects in its 35-year history, but in order for the results to be accessible, the VPC must constantly work to publicize its research. Here we discuss potential methods of distribution of information, the reasons that it remains an essential piece of the research process, and the vital role that storytelling holds within data dissemination.

2.1 Dissemination of Scientific Research

Scientific research is an essential foundation for learning, both in a classroom setting and in the real world. Data collection allows for the publication of scientific facts and evidence, making it the important cornerstone of all research. However, data alone is not sufficient to make scientific progress. Dissemination, the process of sorting data to facilitate its use in additional research, publications, and learning is ultimately how research is distributed to both scientists and the public at large (Forero et al., 2021).

2.1.1 Reasons for Dissemination

The value of research that is acquired is practically negligible until that research has been disseminated and used. Information collected by researchers can bring to light trends and issues that may not have been known, which can benefit various groups. For example, politicians must use statistical research to understand the current state of their community, which then informs their policy decisions (Caskey, 2020). Also, research about a specific issue that a population is facing may encourage manufacturers to create a product to solve this issue. Data is a very important resource, for not just scientists and researchers, but for people in all fields (Institute of Education Sciences, 2023).

Although researchers have the option of keeping their research private to further their own knowledge, the benefits that research can have are most evident when this

research is shared for scholars to use across multiple contexts and disciplines (Moirano et al., 2020). In order to fully grasp the context of their research, as well as the potential implications of their results, researchers need to consult with experts in the field that they are exploring. For example, if a researcher is collecting survey data about a specific cultural group, an anthropologist who has studied this group extensively in their field may be more well-equipped to analyze this research and formulate accurate conclusions about it. If data is not disseminated and is instead restricted to a particular field, researchers lose the beneficial resource of interdisciplinary collaboration and expert perspectives (Kouper et al., 2021).

The dissemination of data is also essential in preventing research from becoming stagnant and allowing scholars to make intellectual progress. Many institutions and fields have overlapping demands for data about certain topics. If data is acquired by one researcher and not disseminated, this data will likely be collected again. While redundancy in data collection can be useful in assessing data accuracy, repeating the same studies over and over instead of acquiring new data can inhibit progress and consume unnecessary time and resources (Kouper et al., 2021).

2.1.2 Repositories in Scientific Research

Research is always time-consuming to produce, and because of this, sharing research has become more common. In recent years, there has been an increasing demand for researchers to make their information universally available (U.S. Department of Health and Human Services, 2022). There are a few primary reasons that widespread sharing of research encourages scientific inquiry. Having access to previously collected research prevents researchers from spending time and resources re-collecting information that could have been found easily (Krumholz, 2015).

First, some research can be extremely difficult to collect, such as if its collection requires travel to a remote location or specific expensive equipment. Sharing this data allows further research from teams and individuals who might not have the resources needed to acquire that type of data themselves.

Second, scientific debate over the interpretation of data is vital to the research process, but if only one group has access to specific data, it stifles debate. The original

researchers' interpretation of data is helpful, but it can be hard to challenge that interpretation without access to the original data.

Finally, while sharing raw data is important, proper data management is just as essential (Institute of Education Sciences, 2023). Even with access to raw data, if a researcher cannot understand it without the help of those who collected it, the data is extremely difficult to use. This is where data management is vital. Keeping detailed records and metadata drastically reduces the amount of work needed to share it with others (Institute of Education Sciences, 2023). Data management of this sort adds an additional layer of complexity, but it is clearly worthwhile, and the additional work can be reduced by maintaining metadata from the very beginning of the data collection process.

2.1.3 Accessibility in Data Dissemination

The accessibility of data plays a critical role in the range of people that data will reach and the impact that it will have (Kouper et al., 2021). One major barrier for people to access data is financial limitations. Some data can only be accessed by purchasing the work or subscribing to a source, which prevents people of lower economic status from having access to this data (Genova et al., 2017). An Ithaka S+R US faculty survey found that when they could not immediately access a resource for free, faculty members tended to either look for free versions of the resource online or give up and find a different resource (Blankstein, 2022). Having research that requires payment to access can prevent major populations from accessing it, which can severely decrease the impact the research can have (Genova et al., 2017). Another factor that prevents individuals from accessing data is language barriers. Data that is only published in one language is less likely to be shared between different countries and cultures (Kralisch et al., 2006). Having access to data about other countries and cultures can be very beneficial in providing information about what systems have succeeded and what mistakes others have made. This information is extremely important in making progress and preventing people from attempting methods that have already been proven to fail.

2.2 Forms of Storytelling

Research holds immense potential for informing decisions and shaping perspectives but is ultimately forgotten when it isn't made accessible to the public. Dissemination of research results can take on diverse forms depending on the type of research that is being disseminated. One very powerful avenue for sharing information is through storytelling. Stories have a remarkable ability to transform information into a narrative that people will not only understand, but also care about. This approach of research dissemination leverages humans' natural ability to create stories. In turn, bridging the gap formed between data collection, research, and the public's knowledge on this new information (Mosconi et Al., 2022).

2.2.1 Storytelling Elements

A story has a beginning, an end, a goal, a moral, and an audience it is designed to engage (Mosconi et Al., 2022). For as long as humans have had a form of communication, storytelling has been used to share information. Within storytelling there are several primary forms: written, oral, and visual (Van Pelt, 2018). Along with this, storytelling tends to utilize multiple forms at once, such as in the case of plays, movies, and videos which blend these elements together.

The elements of a story, as previously described, include the goal, theme, and intended audience. These elements are paramount to the form the story will take, and how it will be presented. For instance, many stories intended for younger audiences have lighter themes with distinct lessons as a goal, while those aimed at older audiences often tackle heavier themes and are intended to spark thoughts and debates (Dai et Al., 2022).

In the case of nonfiction storytelling, there is the unique task of balancing an information-dense topic with an entertaining narrative. Though challenging, attaining balance allows for an easier means of sharing information with a given population. A prominent example of this is the documentary genre, which provides scientific and historical information in a digestible format, with a distinct focus on creative narrative. (Goldson, 2015). Both educational and enjoyable, these forms of nonfiction storytelling

have grown to be extensively popular. In 2021, a Carnegie Mellon study found at least 70 percent of the population watch documentaries at least a few times a month and 25.4 percent watch them at least once a week (Ma et al., 2021).

2.2.1 Storytelling in the Digital Age

In recent times storytelling has started to take on many new forms. Due to the massive proliferation of social media in today's society, stories, pictures and general information are more bountiful and present than ever. As of 2021, 72 percent of American adults use some form of social media (Auxier et Al. 2021).

Youtube is the largest of these platforms, a massively popular video sharing platform. The Pew Research Center reports that 81 percent of social media users reported they use the site. Moreover, this percentage has had the highest rise amongst social media apps, rising from 73 percent in 2019 (Auxier et Al.. 2021). Educational content is very common on Youtube as a whole, with entire channels dedicated to education. A few of the biggest channels, *Khan Academy* and *TED,* each have over 2 billion total views across their videos (Youtube, 2023). These factors, along with the fact that the content is free and accessible to anyone with internet access, make Youtube a prominent resource for information sharing.

On a wider scale, even outside of Youtube, most of the public is looking to the internet to gain information and stay caught up, with roughly 86 percent of Americans getting their news from a digital device (Shearer, 2021). One of the most common means of finding information online are on websites. Often websites can display information while telling a story, using the structure of the website to inform the narrative of information. Websites are a useful tool, but the growth of social media and general internet use has made them all the more common. As of June 2023, there were roughly 1.1 billion unique websites on the internet (Netcraft, 2023), while web users form first impressions on pages within 0.05 seconds (Tuch et Al., 2012). In this landscape, audience attention and retention have become extremely valuable. A 2022 study found that one of the best mediums for sharing information and maintaining retention was map based visual storytelling (Song, et Al., 2022). One of the newest and most powerful forms of this map based storytelling are ArcGIS StoryMaps **(Figure 1)**.

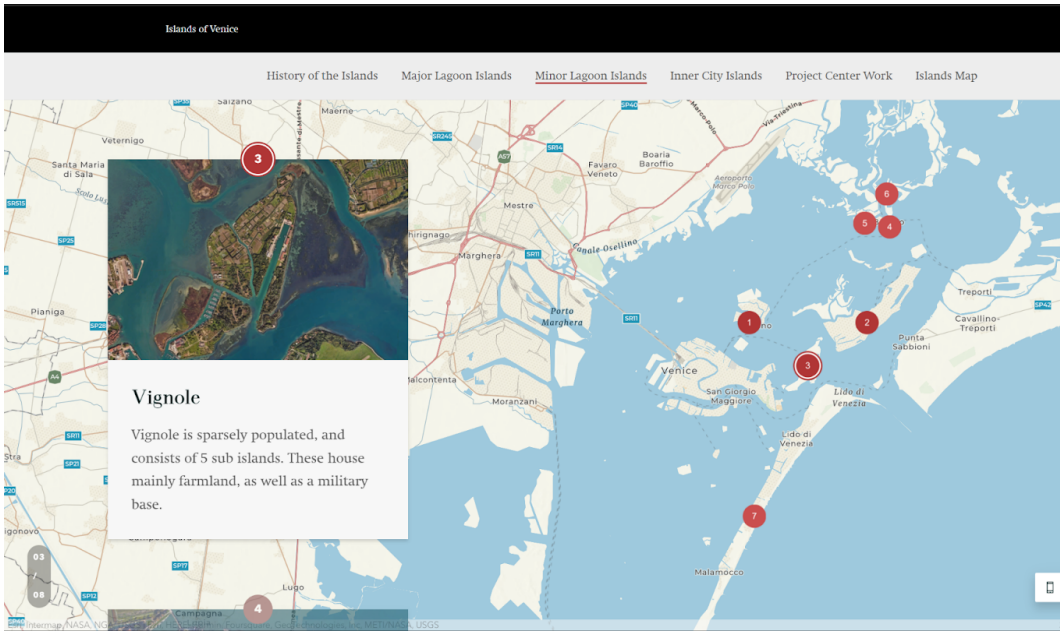


Figure 1: Example StoryMap on islands

StoryMaps are essentially interactive websites, which use storytelling elements to present data in an appealing and captivating way. There are many technical capabilities of StoryMaps, from pictures, graphs and videos to interactive diagrams. The maps provide a way to structure the information with a narrative flow, moving from topic to topic along the way (ESRI StoryMaps, 2023). There are several companies that have created versions of story map softwares, including ArcGIS StoryMaps, Mapbox, and QGIS (Crandall, J. et. al, 2023).

2.2.2 Sharing Data via Storytelling

There is always a goal, or lesson in a story, and for this project, the emphasis was on sharing the data collected by the VPC over the past 35 years. As this is a large wealth of data, we heavily considered how to properly and effectively share this information with the public. The data itself has been accessible in online repositories, but in its raw form. Raw data is useful for building graphics and backing claims, but is difficult to understand in its base form. This is where the previously discussed audiovisual storytelling forms come into play.

The important thing to remember when attempting to disseminate data via storytelling is that it is not simply translating a paper into an audiovisual format (Ratcliff W, 2023). Utilizing the story elements allows the data to be represented in an entertaining and captivating way. This educates audiences while providing an overarching narrative to keep them invested. The platforms of Youtube and StoryMaps provide the most accessible and clear means of displaying the data, along with ensuring their longevity.

2.3 Overview of VPC Research Dissemination

Since 1988, the VPC has performed vital research both in and around the city of Venice, examining social, political, economic, and historical issues. Throughout its substantial project history, the VPC has taken the initiative to maintain a rich backlog of its research, utilizing storytelling as the primary means for doing so. Such maintenance has facilitated the process of disseminating the results of that research to the Venetian public, the Center's sponsors, and to the wider historical and scientific community.

Over the course of its 35-year history, the VPC has frequently adjusted its projects and their goals to meet the needs of the Venetian public. Under the guidance of Fabio Carrera, the founder of the VPC, the Center has tried to focus its efforts into four main areas: heritage, tourism, urban infrastructure, and environment (Crandall et al., 2023). Primarily focused on student-run research through WPI's Interactive Qualifying Project (IQP) program, the Center has already published their findings from 5 projects in 2023, covering topics such as the roles of Expats in Venice, the sustainability of the Venetian fishing industry, and the future of urban mobility within Venice.

2.3.1 Types of projects pursued by the VPC

The VPC has published a total of 246 projects, with 161 of those projects highlighted in WPI's Interactive Qualifying Project Database (Crandall et al., 2023). The Center has primarily focused on compiling and highlighting their research through the use of various applications, utilizing widgets such as interactive maps, graphs, and

dashboards to make their data more accessible to the general public. In 2010, one of the VPC's student-led research teams developed the first complete website for the VPC, building it into a tool for data management and visualization (Brunelli, J. et al., 2010). This tool was further developed in 2013 with a team developing a mobile cell phone app and revising the website's database, enabling it to update in-real time to accurately represent the work done at the Center (Richtmyer, W. et al., 2013).

In 2017 to commemorate the 30th Anniversary of the VPC, a team helped to launch a new platform, known as the VPC 3.0 Website, while also furthering the Center's reach through the creation of social media platforms. The new VPC 3.0 Website was also designed with accessibility in mind, including new sections to the website that highlighted the impacts of projects performed at the Center, the publications produced by the Center, and examples of media created by the VPC (Elzey et al., 2017). For the 35th anniversary, the Summer 2023 team worked to generate a series of videos and interactive media, focusing its efforts in developing forms of modern media for storytelling to convey the work that has been done for the VPC and its impact (Crandall et al., 2023).

The VPC's extensive research endeavors in Venice, spanning over three decades, have generated an abundance of valuable information related to various aspects of the city's social, political, economic, and historical landscape. However, the true impact of this information lies in its dissemination, which is where storytelling comes into play. Through the art of storytelling, the VPC converts its data into narratives that not only educate but also emotionally engage its audiences. By creating compelling StoryMaps and videos around research findings, the VPC effectively links the gap between research and the wider public. In order to best convey the impacts of the information collected by the VPC, we will be compiling and translating it into formats that are easily accessible to the general public, extending the reach of the VPC and its impacts.

Chapter 3: Methods Overview

The goal of this project was to tell the story of the Venice Project Center (VPC) and its impacts.

To accomplish our overarching goal, we:

1. Created StoryMaps to organize and share VPC topics
2. Produced a layout and example of a permanent exhibit of the work done at the VPC since 1988
3. Developed a workflow and model for the production of VPC videos
4. Developed a plan for the creation of printed booklets about VPC topics
5. Developed tools to build the VPC's online presence

Building on the work done by past anniversary project groups, specifically the previous Venice project group (summer '23 Story Team), this project utilized storytelling elements in the form of StoryMaps, videos, and printed booklets in order to display the research and data collected by the VPC. The team also recreated a physical exhibit based on the previous exhibit created by the 30th anniversary project team, which showcased the work done by the VPC.

Given that this project covered the history of the VPC, these objectives provided distinct spatial and temporal boundaries. The past projects referenced were conducted across the city of Venice over the past 35 years, from 1988 to present day. The preparatory period of this project was from August 24th to October 13th, 2023 at Worcester Polytechnic Institute (WPI). The project work was completed from October 23rd to December 15th at the VPC.

For our project, we focused on 11 primary topics that were recommended in other instances across former VPC teams **(Figure 2)**.

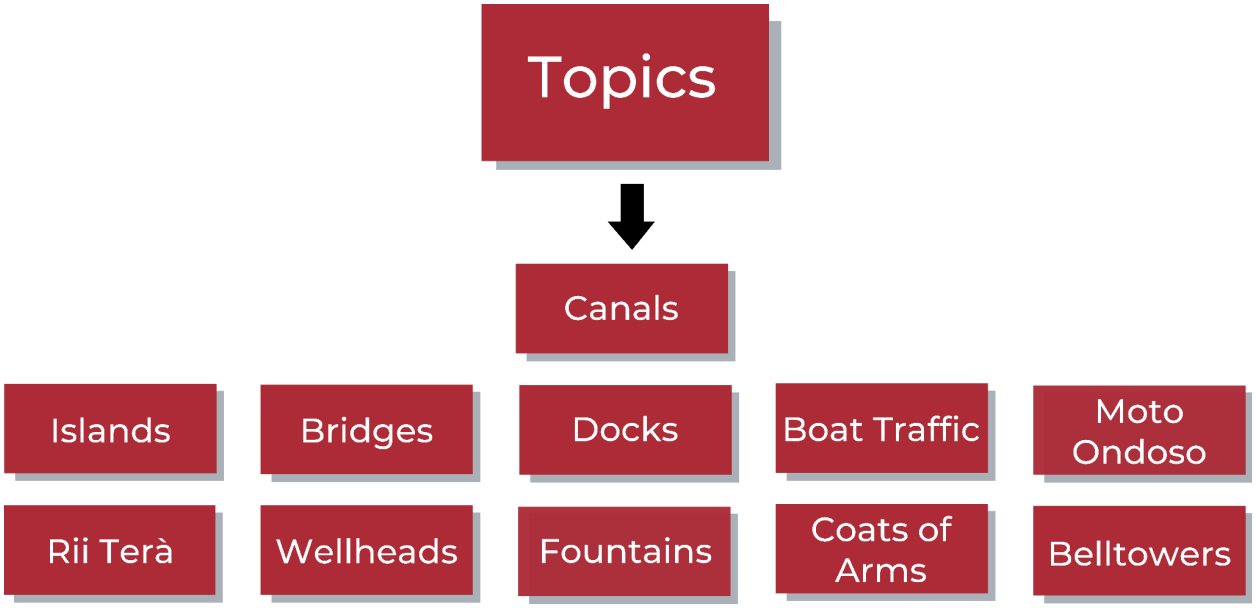


Figure 2: Selected topics

These topics were selected from the list of recommended topics found in *Appendix A* because they have all been detailed in past VPC and for the extensive amount of VPC research that has been performed on them. We initially decided to select 10 of them so that each team member could focus their efforts into two of the topic areas. However, it eventually became clear that the topic of boat traffic was too complex to do as one topic, so we split it into two topics: boat traffic and *moto ondoso* (boat wakes). Thus, we ended up with 11 different topic areas to cover.

For each topic, we developed a workflow to ensure that the topics could be thoroughly covered both by our team and by any future team pursuing this project. First, "intro" videos were recorded of Professor Carrera in the VPC belltower, in which Professor Carrera discussed all of the important details pertaining to each topic, including historical VPC impacts, background information, and locations of additional sources on the topics. During the two recording sessions, we recorded approximately 2 hours worth of footage with information across all 11 topics. This footage was then combined with information found from additional research into past IQP projects, peer-reviewed publications, and government websites to use as a framework for constructing StoryMaps on all of the topics using the ESRI StoryMap software. Using a combination of this information, we crafted 10 different StoryMaps, incorporating various

interactive elements like maps, sliders, and graphs into them to build a written narrative on each topic that can easily be accessed by future teams. From this point, it was decided to proceed forward with the full production of one video, booklet, and piece of the exhibit, all featuring canals. Thus, we used the StoryMap on canals, in combination with the StoryMaps on boat traffic and Moto Ondoso to develop a script for the podcast video on canals, a text document for the booklet on canals, and information for the exhibit on canals **(Figure 3)**.

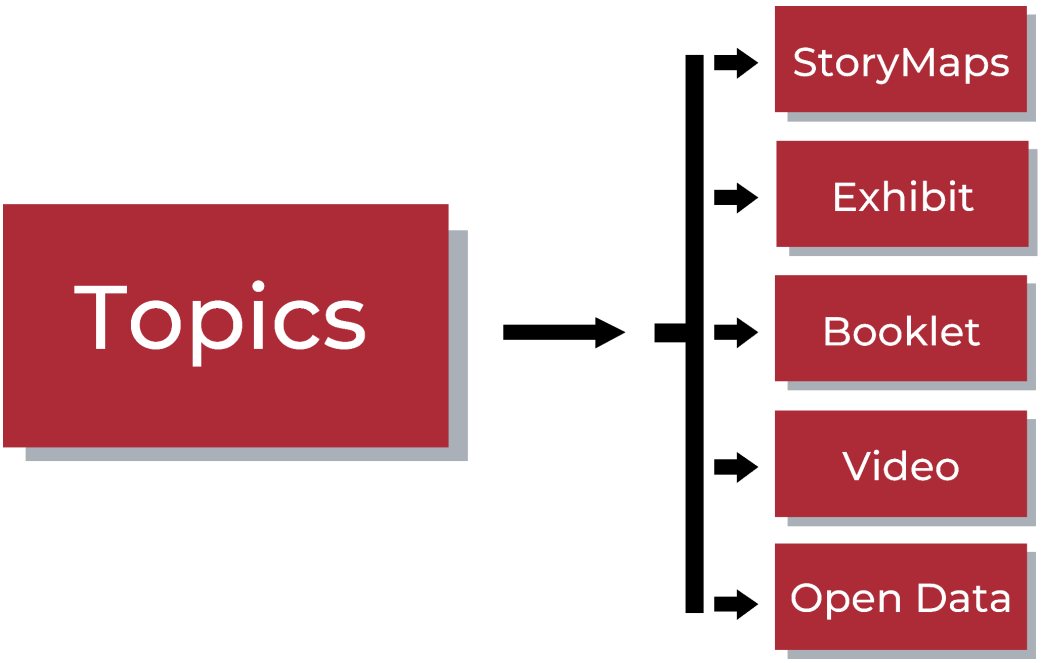


Figure 3: VPC Legacy workflow plan

We selected this topic as the primary focus topic because the VPC has a rich history of work done on the canals, extending beyond the work done on any of the other topics. In addition, the Canal topic relates closely enough to the Boat Traffic and Moto Ondoso topics that it could easily be combined with those topics to form an even more impressive wealth of knowledge to work with in the productions.

We chose this workflow with the express purpose of creating the best possible guide for future teams to continue where we left off and create an expansive collection of informational media. By creating raw videos and StoryMaps for each topic, we provide a very clear foundation and collection of information to build on. Along with this base, by following the workflow to completion on a single topic, we provide a guideline

that future teams can follow for the rest of the topics. This can be thought of as a horizontal and vertical framework, creating the most effective skeleton of the workflow.

In the following chapters we highlight each of our objectives and the work done to accomplish them. Each section will showcase the methodology, results, and recommendations for the highlighted objective.

Chapter 4: StoryMaps to Introduce VPC Topics

Throughout its 35-year history, there have been over 200 projects completed at the VPC by almost 900 students. With such a rich history to analyze, it was important for our team to carefully plan the methods by which we inform people about the VPC to maintain the most accurate representation of the organization. Throughout our process, it became clear that the production of the components necessary to tell the story of the VPC would require multiple terms worth of work. Thus, we determined that we would develop the StoryMaps to create easily accessible, interactive websites for use by future VPC teams on each of the topics. We were then able to use the StoryMaps as the basis to plan out the production of VPC booklets, videos, and an exhibit to showcase the achievements of the VPC, while moving forward with the production of one booklet, video, and a portion of the exhibit on the topic of Canals.

4.1 StoryMapping Methodology

For each of the 10 topics, we developed a StoryMap using the ESRI StoryMap software. In order to obtain the content to be used in each StoryMap, we performed research on each of the 10 distinct topics by splitting them up amongst the five members of our group. Each person was responsible for finding information on their two topics by first consulting Project Center Director Fabio Carrera and watching the intro videos he produced on each of the topics. We then found and used data from previous WPI project reports, obtained from a search of the online IQP database for each of our topics. Since we determined that not all of the 246 IQPs performed in Venice were accessible via WPI's database, we then examined the physical library of reports in the VPC building to find missing WPI reports containing information on our topics. Only after this search was completed did we fill-in missing gaps in our knowledge through the use of peer-reviewed research articles, online databases, and government websites.

We used the ESRI StoryMap software to build a StoryMap for each topic. Every StoryMap includes a section highlighting the history of the selected topic, a history of the VPC's work on the selected topic, and a map showing the detailed locations of

some notable aspects of Venice. Based on the amount of information available for each topic, some StoryMaps had additional subsections to cover additional information. In order to include an interactive map in each of the StoryMaps, we designed these maps using the ArcGIS software in the ESRI suite, which is outlined in *Appendix B*. ArcGIS enabled us to input geographical data both manually and via imported .csv files, so many maps were generated using previously collected VPC data sets. For topics that didn't have existing data sets, maps were manually generated by the team, with reference to VPC research.

To gather photo media for each StoryMap, we utilized the VPC's Sony A7 III camera and walked to notable locations in Venice to photograph elements needed for our StoryMaps. All photos were taken in both the .RAW format and the .JPG format to ensure maximum quality. After the completion of the session, we transferred these photos into Google Drive and sorted them according to topic to ensure that they would be easily accessible. The photos were then able to be used in our StoryMaps.

4.2 StoryMapping Results

Over the course of the 7 week term, we actively worked in creating 10 StoryMaps, one for each of the following topics: islands, canals, *rii terà*, coats of arms, fountains, wellheads, docks, boat traffic, *moto ondoso*, and bell towers **(Figure 4)**. An example of this can be found in *Appendix C*.

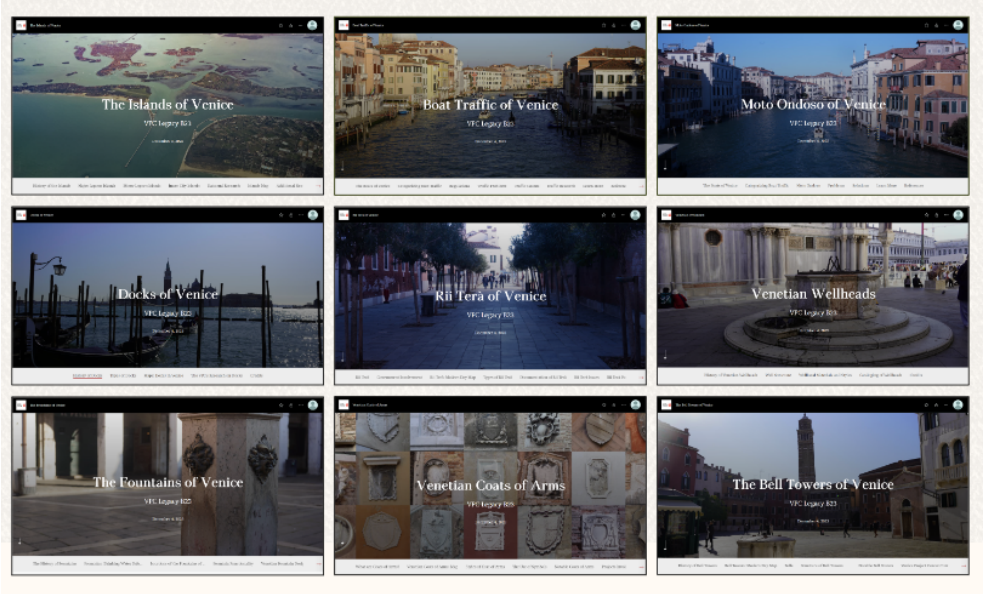


Figure 4: Cover pages for 9 out of the 10 StoryMaps

Following the theme of the Bridges StoryMap created by the Summer 2023 Story Team, we utilized the “slate” theme on the StoryMap application, listed under the “design” section of the StoryMap application **(Figure 5)**.

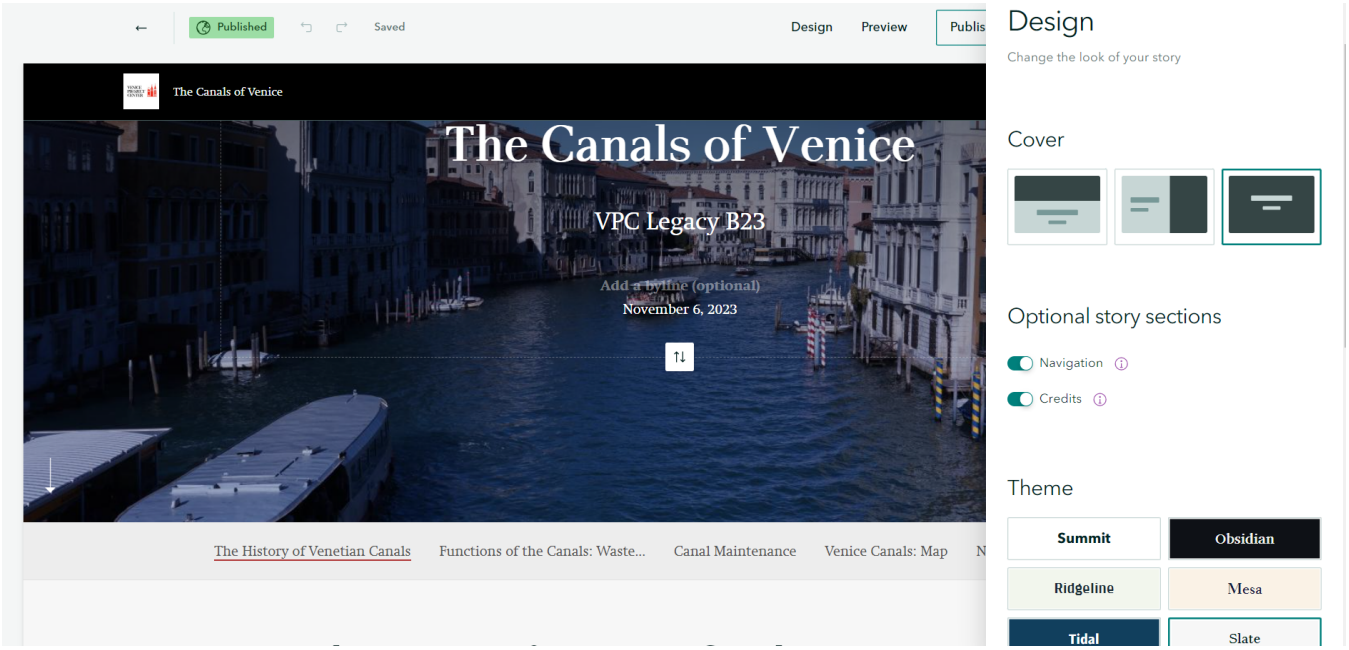


Figure 5: How to select the theme of the StoryMap in the design menu

In the top right hand corner of each StoryMap, we included an image of the VPC logo using the “logo” feature under the “design” menu to link our StoryMaps back to the VPC’s website **(Figure 6)**.

Figure 6: How to select the option to include the VPC logo on the StoryMap

For the structure of each StoryMap, we elected to follow the basic layout developed by the 2023 Story Team that included a section on the history of the presented topic, example images of the presented topic, and a section highlighting different VPC contributions towards research on the presented topic. However, throughout our process, we found that each topic required its own unique sections, meaning that there was some variation that developed between each of the StoryMaps. For example, on the StoryMap about the canals, we elected to write sections about their function as both a source of waste disposal and transportation (**Figure 7**), while on the StoryMap about the Coats of Arms, we elected to write about their role as a symbol of ownership (**Figure 8**).

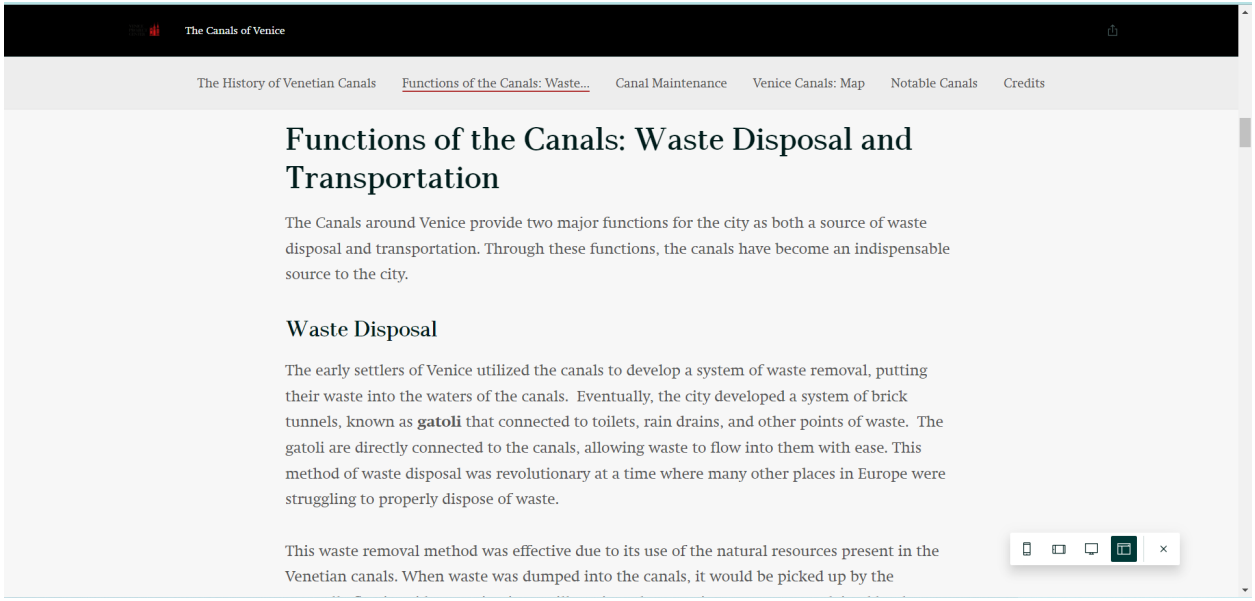


Figure 7: Example of the sections highlighted in the StoryMap on canals

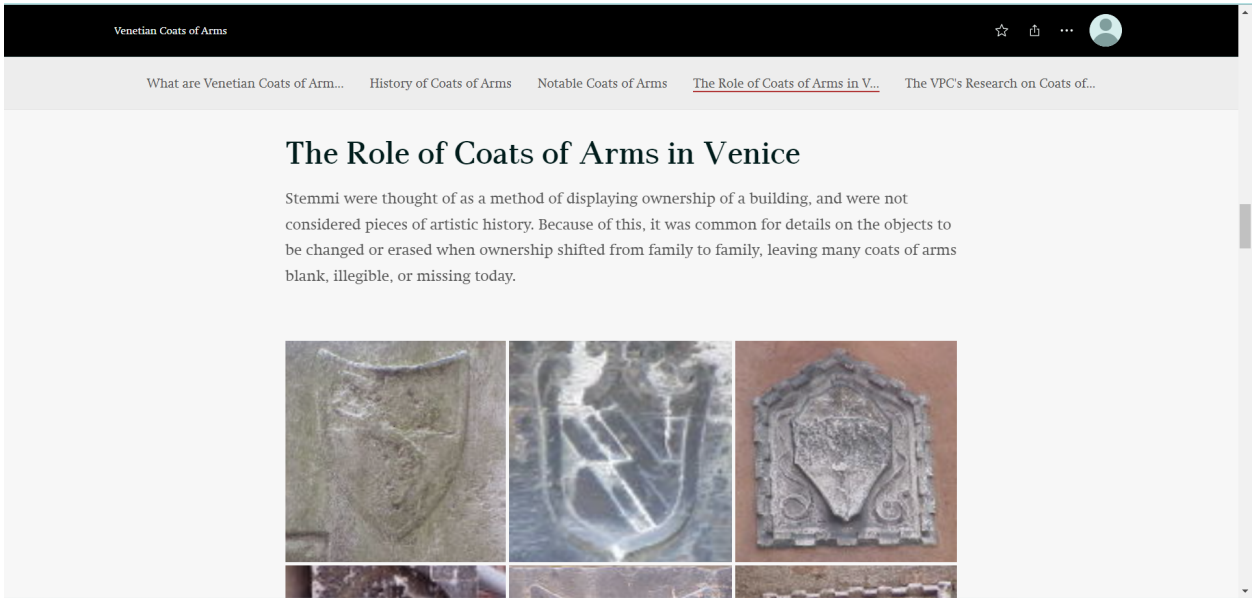


Figure 8: Example of the sections highlighted in the StoryMap on coats of arms

We added additional interactive features to each of the StoryMaps to enhance user experience, including photo sliders, maps, and timelines (**Figures 9, 10, 11**). These features were included on a case-by-case basis, depending on determined need and functionality. For instance, on some of the StoryMaps, we included interactive maps if the VPC already had a complete dataset available. If this was not available, we

decided to omit the map from the StoryMap and replace it with other elements. The StoryMaps also allowed us to embed widgets and applications produced by previous VPC teams (**Figure 12**), enabling us to further showcase the VPC's research.

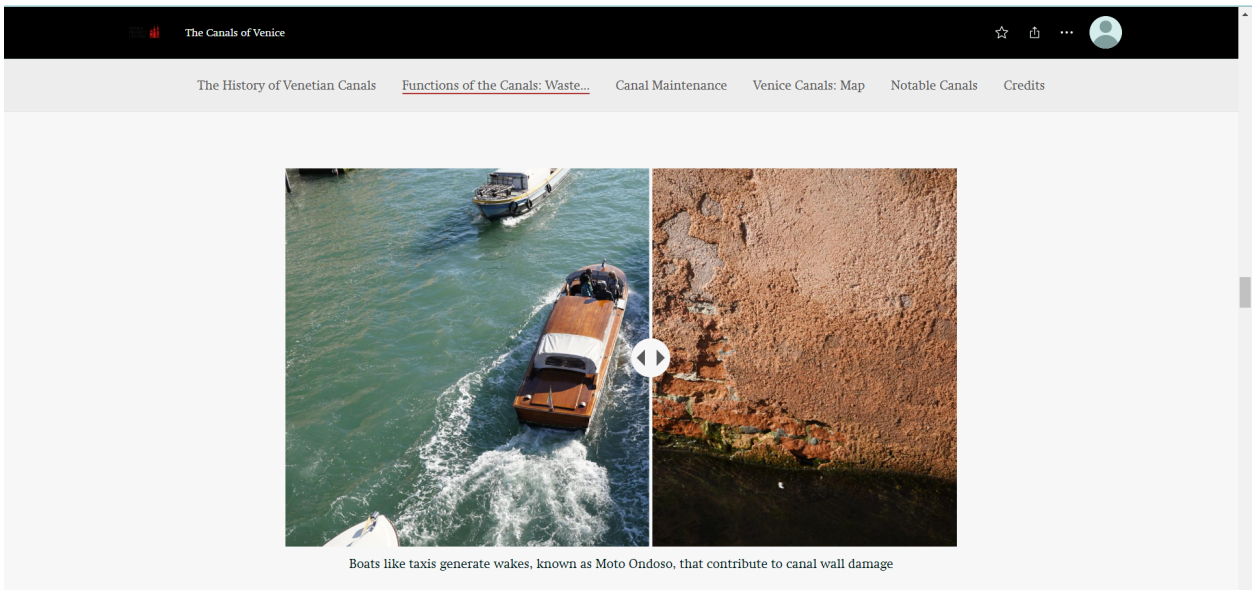


Figure 9: An example of a StoryMap with a photo slider

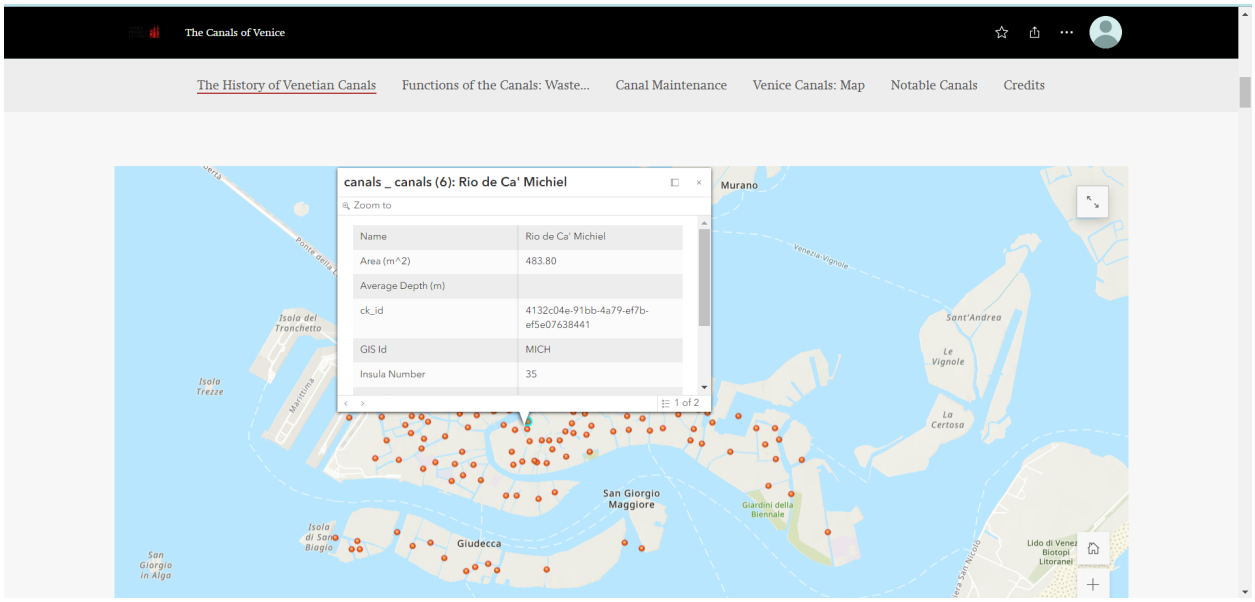


Figure 10: An example of an interactive map in a StoryMap

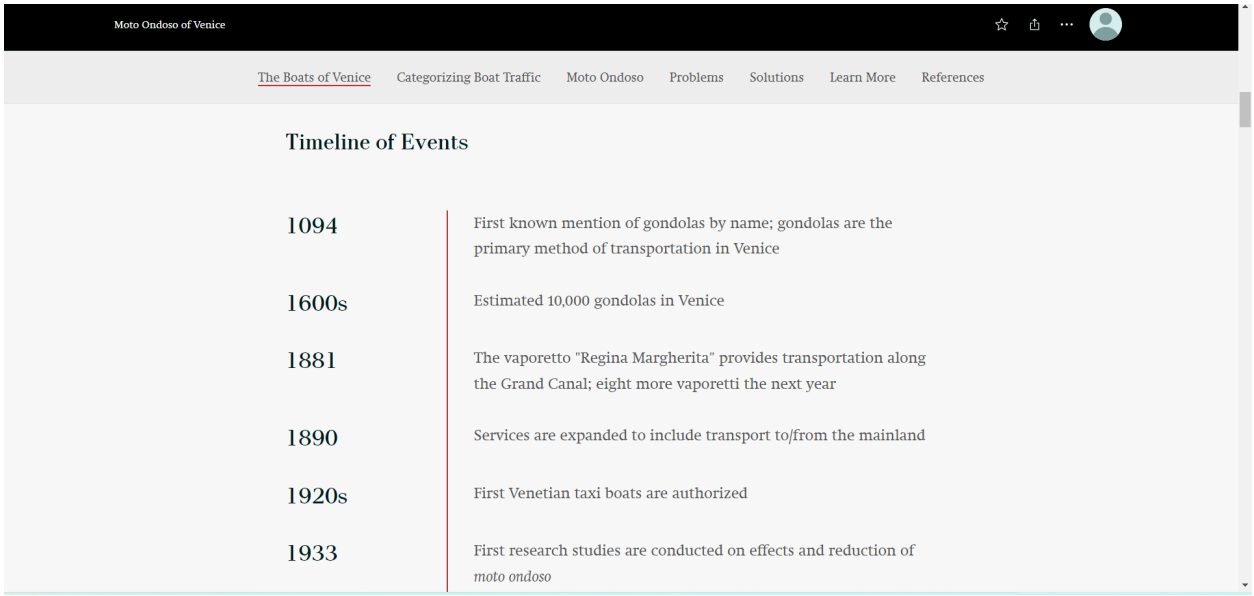


Figure 11: An example of a StoryMap with a timeline

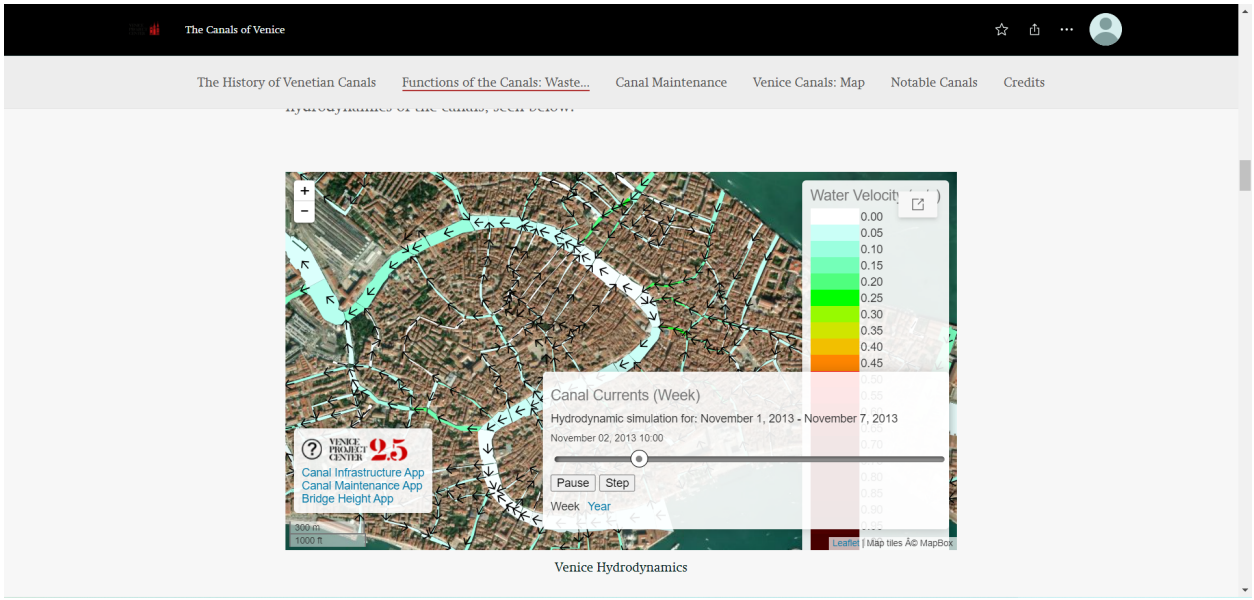


Figure 12: The hydrodynamics map from the VPC's 25th Anniversary

We did not decide on locations for shooting photos for the StoryMaps until we had completed our research and made an initial draft of the content included in each StoryMap. After that, we each determined the photos that we needed for our StoryMaps based on the contextualization provided in the text outline. Once we had determined all of the photos that were needed, we went out into Venice with the VPC's camera and obtained the shots needed for the StoryMaps to be completed.

4.3 StoryMapping Recommendations

StoryMaps are an essential piece of the VPC's efforts to maintain its extensive collection of data. We recommend that additional StoryMaps be made on topics that were not covered by our team to be used as a formula for future data collection and preservation efforts, building the skeleton for future videos, booklets, and exhibits. These topics include, but are not limited to: flagpoles and pedestals, public art, statues and reliefs, shops, and public parks and greenspaces. Additional topics may be required if it is found that these topics need to be split up into further subcategories.

In addition, future StoryMaps should adhere to the standard format that we set in conjunction with the Summer 2023 Story Team, following the same basic layout and stylistic choices. The VPC should work in collaboration with these teams in the

development of the StoryMaps to ensure that all of the data within them is presented in a factual, succinct manner. Furthermore, the VPC should work to create a designated database for the collection and maintenance of all of the StoryMaps created by its students so that they may be used as a resource for future VPC projects.

Chapter 5: Permanent Exhibit of VPC Work

In 2018, the VPC's 30th Anniversary team designed and built an exhibit showcasing the work of the VPC, which formed the basis of the project performed in the summer of 2023. The exhibit expressed these achievements through twelve individual topics that start with the lowest in elevation and end with the highest in elevation.This exhibit was displayed in the bell tower of the VPC's main building until early 2023. However, it was never designed to be permanent. Thus, we worked to update and modify the layout of the exhibit created by the 2018 team, while also relocating it to a new location in the VPC building, where it is now more accessible to the public.

5.1 Exhibit Location

We decided on a new location based on three factors: general accessibility, wall space, and the ability to hang pieces of the exhibit. Based on these criteria, the stairwell of the VPC (**Figure 13**) was selected as the location for the exhibit given its high traffic volume, high walls, and general length. This area of the VPC building also allowed for a more permanent exhibit that can be seen for years in the future. Once the stairwell was selected as the location to display the new exhibit, measurements of the staircase, the walls, and the railings were gathered and were used to create a wall plan in AutoCad. This wall plan was then used with the collaboration of the VPC interns to create possible layouts of the posters and to determine where the canals section of the exhibit would start and end. The layout of the exhibit involved careful planning as well as physical representation, to properly understand the positioning and size of the posters in connection to the hanging options as well as the amount of wall space that is available.

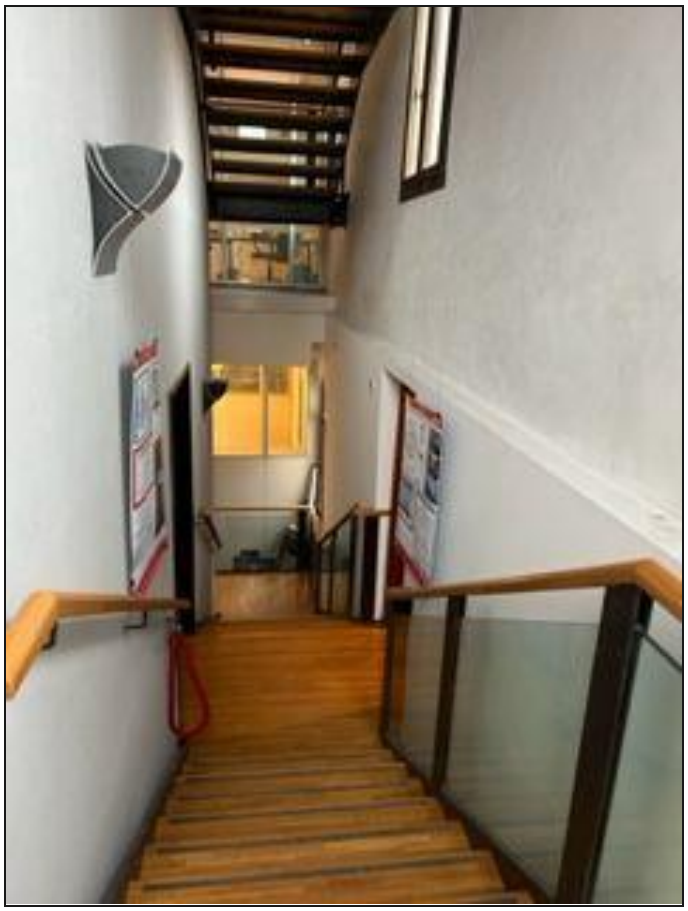


Figure 13: Location, main staircase

5.2 Exhibit Display and Layout

We reviewed the data within each of the previous displays in the exhibit so that the most important data could be extracted and repurposed in the new exhibit. From this review, we found that the data presented in the 2018 exhibit was accurate. However, the display itself lacked accessibility as it was not presented in an easily-readable format, meaning we'd have to decide what pieces still were applicable as well as interpret the overall flow of the exhibit. We determined the descriptions to add based on the pictures given to us by the original exhibit team.

There are twelve different topics involved with the full exhibit and each topic needs their own specific section of the wall. With the intention of finishing every aspect of this project on canals, it provided an interesting challenge of how to do a specific

layout. The plans start with Islands and docks then move on to canals, so in order to plan out the canals section of the exhibit on the wall, we also needed to determine the accurate placement of the islands and docks section. This allowed for different placements of posters to be analyzed and moved around to fit the space, in a technical representation. From this layout printed versions of the posters, that were done with the printing station created in 2018, were then used to create the best options for layout and hanging methods (**Figure 14**).

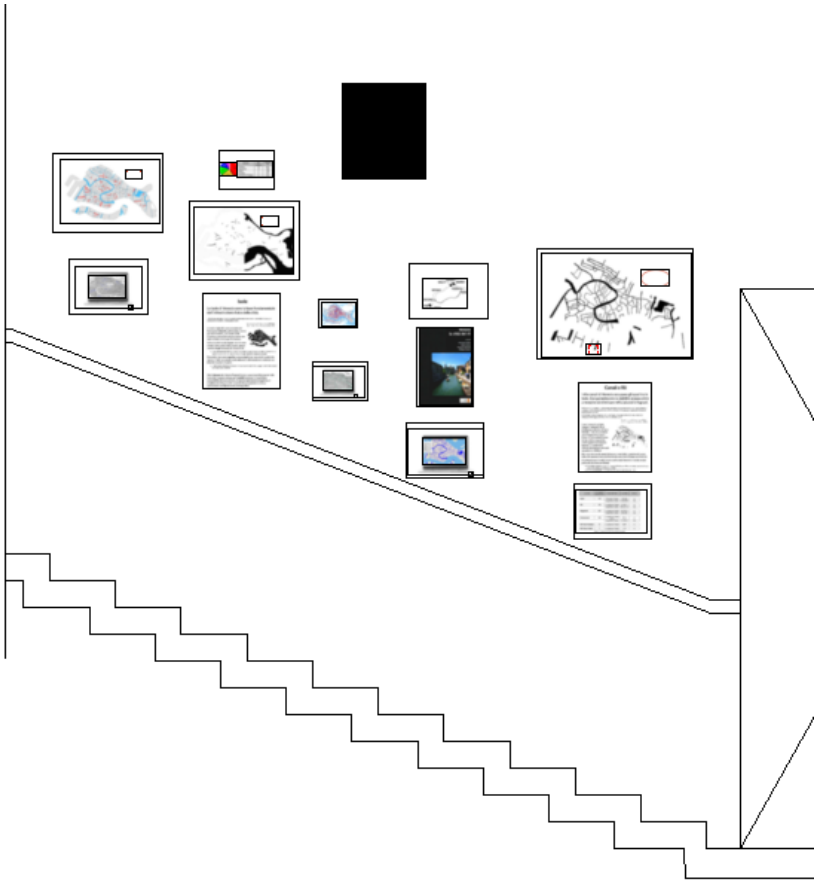


Figure 14: Initial wall layout of a canal section on AutoCad

5.3 Exhibit Hanging Materials

We determined the best ways to hang the exhibit in the decided location. This portion of the project involved research of different methods that could work well with

the location's environment. Keeping in mind that the goal when displaying this exhibit was to leave no damage on any of the walls or stairs, the idea of using a tension rod was made present. By placing tension rods between the staircase and the wall, this would allow the posters to be hung by a wire with no risk of being too close to a person as they walk up the stairs. We decided which type of tension rod would be best suited for the distance between the staircase and the stairs. The tension rod (**Figure 15)** we decided upon was the Goodwin tension rods (white) with a length that can expand between 18-28 cm with a price of 16.98 €,.

Figure 15: Tension rod ordered, comes with six tension rods

Another item we researched for the purpose of connecting the wire to the stairs or wall, was an S hook that was originally planned to rest on the ledge of the wall. The S hooks (**Figure 16**) were the Pyhot Nickel Plated Hooks, 20 Pieces, and cost a total of 13.00 €. We investigated the type of wire that should be used to hang the poster and went looking for inspiration at The Biennale. Aluminum wire was determined to be the best fit for the exhibit, because of its sleek look as well as its strength to hold heavier material. The specific wire was the vinyl coated rope hanging frame, stainless steel wire reel, aluminum, (**Figure 17**) this spool of wire offered 98 ft of wire with a width of 1.5 mm for a total price of 16.99 €.

Figure 16: S hook ordered

Figure 17: Aluminum wire ordered

We looked into using braided fishing wire, but this idea was ultimately scratched because of the flimsiness and less appealing look of the fishing wire. It also needed a way to connect to the poster board. We researched grommets and binder clips, but we decided upon using the grommets that come with the printed canvas posters, to connect

the wire to the poster. These clips are the black paperweight binder clips that had four different sizes and came with a total of 60 clips for 13.99 €.

Between flights of stairs is a glass wall system, and we decided to use these walls as more space for the exhibit. After researching ways to attach elements to a glass surface, industrial suction cups were an attractive solution. These would be placed high above the average person's eye line and a wire would run from one suction cup to another and have individual wires hanging down in front of the glass panels. The suction cups that we tested were the strong vacuum hooks for a bathroom, stainless steel towel hooks (**Figure 18)**, that came in a pack of 4 for 17.99 €. These options all provided the potential to be easily removed without the chance of damage to the walls or staircase.

Figure 18: Industrial suction cups

5.4 Exhibit Topic Placement

The decided location proved to work well with the initial layout of the exhibit, because it also demonstrated the increase in elevation both figuratively and literally. The greatest issue with this location was the limited areas to hang items from and understanding a layout that would allow all topics to be presented on the elevation. From measuring the wall space available on either side of the staircase and on the walls

of the hallways between staircases, we were able to determine a possible layout that would include all topics. The posters have a width of 70 cm and with proper spacing we would want three posters next to each other and lined up with a little bit of spacing so that they didn't look crowded. We decided that the maximum width of all three posters on one wall at a time for one section would be around 230 cm. Since we measured the walls and created an AutoCad layout, we were to accurately place the poster template on the walls and fit all topics, starting with islands and going through to bells.

5.5 Exhibit Posters

The main focus of the final posters were the content, the layout and the design. The content was mostly taken from the 2018 reference files, but there was key information still missing. In order to fill in this key information we used previously made StoryMaps to add captions and more specific details.The initial wall layouts were very helpful and aided in the creation of mock up posters, so that there would be less wires and the exhibit would be more organized. By arranging the initial individual posters,we were able to find a flow that worked well for the final poster.

We created six posters for the exhibit, two being the final canal posters (**Figure 19**) and four being mock up posters of different sections so that future groups could have a general idea of the overall look. This look was decided by our group and with the help of the VPC interns. The color scheme for those designs were crimson red, light gray and white. This was chosen because of the WPI colors as well as the VPC. The main font for the border was Gill Sans and the font for the content was Lato. These posters would be ordered from Pixart, on a canvas banner with a size of 70 cm x 95 cm.

Figure 19: Final poster on canals

5.6 Material Testing

From the testing of the different items, we decided which method was the best suited for the location. The tension wire proved to hold well between the lower area of the staircase and the wall, but one issue with this method included the accessibility to the lower part of each stairs, in which the tension rod would be placed (**Figure 20**). Although it was still possible to place these tension rods, it would be more difficult than other methods. The S hook method was originally tested on the ledge of the wall and provided no support to the wire and didn't fit properly. We then decided to test the S hook on the glass paneling of the stairs and the hook fit perfectly on the glass ledge. The biggest issue with this method was that the S hook is much more noticeable to the public eye than the tension rod, and could have the possibility of being knocked off if someone bumped into it. Also there are only glass panels located on the left side of the

staircase so this method worked on only half. There was a third method tested, which involved wrapping the wire around the staircase lights and the staircase railing. This method was discarded because of the chaotic nature of the wire and the fact that the staircase railings would be less accessible to the public, posing a safety hazard and noncompliance with egress code standards because of the inaccessibility of the railing.

Figure 20: Tension rod testing between staircase and wall

The next step was to test the functionality of the wire. The wire connected to both the tension rod and the S hook (**Figure 21**), in the different stages of testing, worked well with both methods. The length of how much wire needed for one section is about the same as one spool of wire that is 98 feet, from both hanging methods around 12-13 ft of wire would be needed for each section and one spool would create 8 sections of wire. The binder clips were tested and worked well to hold together the poster board and the wire, but were too noticeable.

The industrial suction cup (**Figure 22**) that would be used on the glass wall panel systems, worked very well and even though the glass walls would not be used in this section of the exhibit, it provided the opportunity to layout the rest of the exhibit with the intentions of using the glass walls. We also tested the suction cups on the panels of glass on the staircases that are located on the left side. These suction cups worked very well in this area and were decided to be the best option for this side.

Figure 21: S hook testing on stair glass and aluminum wire

Figure 22: Industrial suction cup testing on glass panel wall, 6cm diameter

5.7 Final Hanging Poster

Once all of the preliminary research, testing and a final layout was decided we printed them out to check sizing. We hung up the posters using the suction cups on the left side of the stairs, on the outside of the glass panel, and used the wire to lower the poster to the first staircase at the desired height. Since there was no grommet on the poster because it was just a printed on paper version, we used binder clips to attach the bottom and tops of the poster to the wire (**Figure 23**).

Figure 23: Paper poster hung up with suction cups and wire

On the Right side we hung up the poster using the railing to wall attachment and hung down the wire to see if this would be a plausible solution. For a specific section of the wall this idea worked well but is also inconsistent as the wall to railing attachments are spaced out differently.

5.8 Exhibit Recommendations

For future teams working on this exhibit we recommend that they start with understanding where the section they are focusing on starts. Based on the proposed measurements for each poster and the amount of posters needed for each section, a basic guide was created shown in (**Figure 24**), so that placement of each topic on the staircase is easy to follow. The recommended size for these posters is 70 cm x 95 cm, so that they are able to fit underneath the lighting fixture and between the railing. When creating the posters for each topic we recommend that the team prints out each individual visual and use masking tape to arrange the visual on the wall of which they will be placed. In doing this the teams will be able to visualize the flow of how the posters could and also determine the amount of posters needed for that section. We

recommend using the same Lato font for captions and descriptions and keeping the font size close to 18 for descriptive text and between 40-50 for heading and title words. The color scheme keeps with both WPI and the VPC colors but can be changed to have a different color per section. We recommend using the site Pixart and buying a canvas banner that you can customize with metal grommets on all four corners.

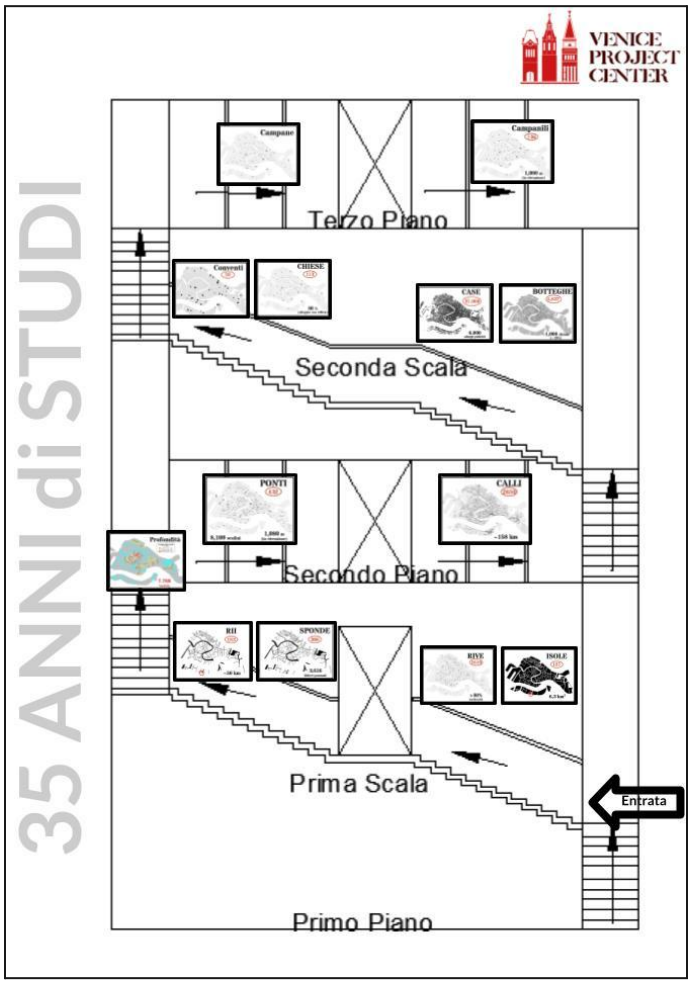


Figure 24: Proposed layout of all topics on the staircase

For hanging methods we recommend using the industrial suction cups on all available glass surfaces, which would be the first set of staircases on the left side and the walls that are in the hallway on the second and third floor. We recommend using two section suction cups around 230 cm apart and attaching the wire to the hooks and making it as long as needed for the desired height on the wall , then connect a

horizontal metal pole to the end of the wires so that it cuts down on extra wires and use of suction cups. From this pole the team can either hang all posters form the same height or add smaller wires to show the change of elevations. On the right side of the staircase we recommend using the connection from the railing to the wall and clamping the wire around that, then doing the same thing with the horizontal pole. The second staircase involves more testing but our main recommendations for that would be to hang a wire between lighting fixtures on the right side. The left side would require some small drilling into the wall and adding a wire across the left side of the stairs. The majority of the content is located in the original exhibit presentation but additional information may be needed. We recommend looking at the StoryMaps created as a main source for descriptions and captions.

Chapter 6: Plan for Printed VPC Booklets

Along with the StoryMaps and documentary video, we increased the reach of the VPC by producing an informational booklet on Canals. For this project, we created a prototype booklet in collaboration with the VPC interns and decided what features the booklet would include. We researched other informational booklets and their means of production, while cross referencing the available resources in Venice in order to accurately plan for printing the booklet. We then printed a sample version of the booklet, which will guide the VPC's production of a series of booklets in the future.

6.1 Book Format

After creating the StoryMap on the topic of Canals, we shared this StoryMap with the VPC interns to provide them with a general idea of what topics and content we wanted to include in the booklet. Using this information, the VPC interns, Lorenzo Seano, Celine Roberti, and Alessia Beghetto, generated a sample booklet using Adobe Indesign, following the A5 format (**Figure 25**), which is 148.5 mm by 210 mm.

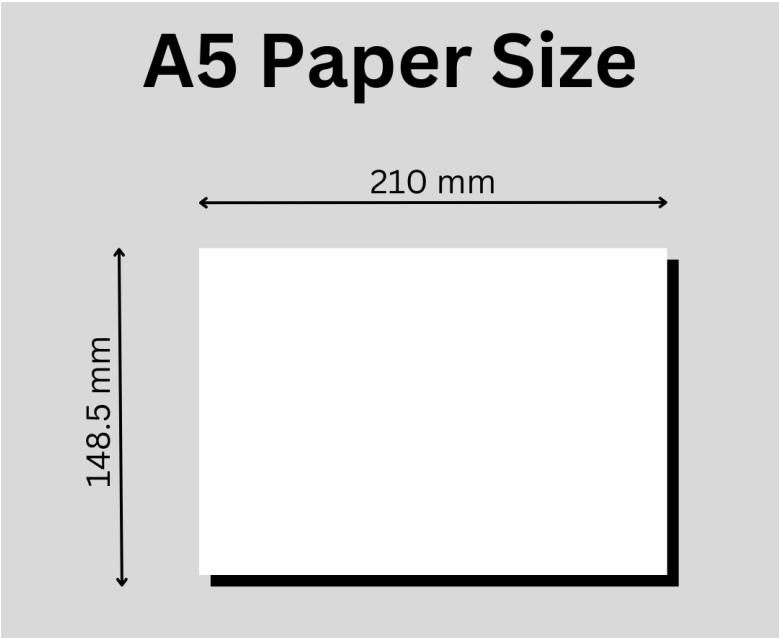


Figure 25: A5 landscape paper size example

The interns designed the booklet to be in landscape orientation, because they believed this orientation would benefit the booklet for multiple reasons. One of these reasons is that we took most of our photos in the landscape format, so it would be easier to showcase them in this format. Also, we wanted to incorporate maps of Venice, which are usually landscape, without having to extend them across two pages. After further consultation and review of other Italian tourism guides, we decided that the A5 landscape format would be the best format to use due to its small size, making it easy to store and carry.

6.2 Book Layout

In collaboration with the interns, we decided on a simple, clean layout for the booklets that would leave space for photos and graphics. The interns elected to provide white space in the margins to be used for labels and headings. This space also ensured that the pages of the booklet would not look too crowded.

We also developed the booklet color scheme with the interns, electing to use mostly, black, white, and gray for the dominant colors (**Figure 26**). We used these neutral colors to keep the booklets clean-looking, limit color variations across the

booklets in the series, and ensure that the booklets were not associated with an outside identity, rather than with the VPC.

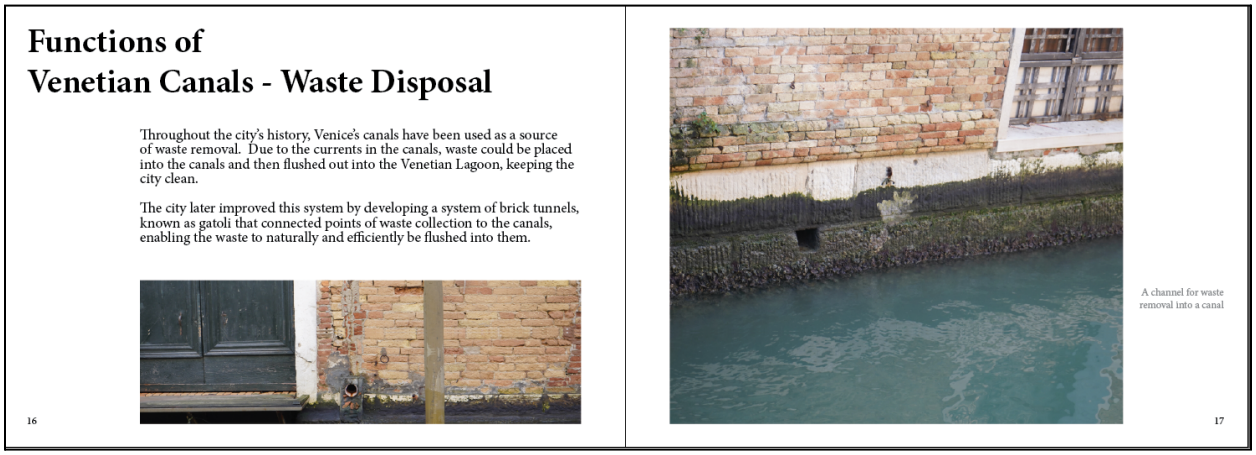


Figure 26: Color scheme of the booklets as seen in the booklet on Canals

For the title and spine text, the interns decided to use the Sotoportego font because it is based off of the stencil used on the signs throughout Venice (**Figure 27**).

Figure 27: Example of the signs in Venice that inspired the booklet font

The use of this font gave the booklet a subtle association with Venice, while still maintaining its own graphical identity and clean look.

6.3 Chapter Structure

We used the division of sections from the canal StoryMap to start planning the chapter division of booklets. From this, we decided to include a general history of canals, functions of canals, canal maintenance, and notable canals as some of our chapter topics. We then brainstormed potential sections to add to the booklets that were not included in the canals StoryMap, and decided to incorporate information from the boat traffic, *moto ondoso*, and Rii Terá StoryMaps in order to provide some more background information. We took some topics that were briefly mentioned in the StoryMaps (but did not have their own dedicated sections) and expanded them to make additional chapters in the booklet. Once we finalized the chapters, we listed them and their accompanying page numbers in a table of contents at the beginning of the booklet (**Figure 28**).

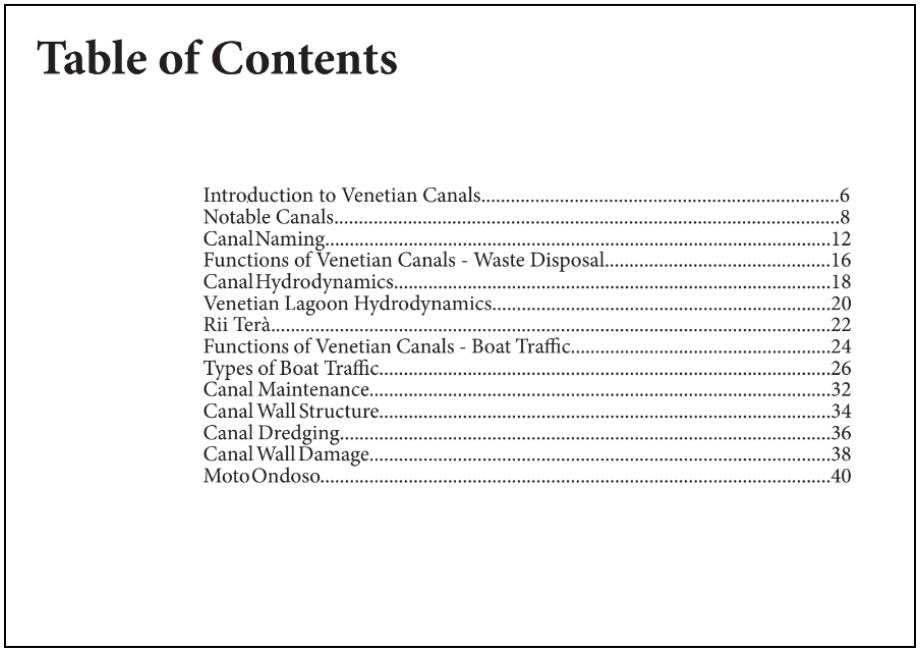


Table of Contents

Figure 28: Table of contents

We determined the amount of text that we would need to include in order to produce a booklet of our desired length, and decided that we would obtain more textual content from Professor Carrera when the booklets were fully developed. We also considered including a general overview of docks, using the information from the docks

StoryMap, but decided to keep it separate so a future team could make a dock booklet without there being too much overlap.

6.4 Graphics

Specifically for the canal booklet, we elected to use images we had already taken for the StoryMaps, in the booklet. This was primarily done to save additional time on the production of the booklets. However, we only selected high quality images, sorting through the photos that we had already taken to obtain photos with the best resolution and lighting. To keep the images consistent, we also only used images taken in the .jpg format.

The VPC interns were responsible for finding and designing graphics for use in the canal booklet. We helped them research and obtain graphics by pulling them from various sources, including IQP reports and Professor Carrera's dissertation (**Figure 29**).

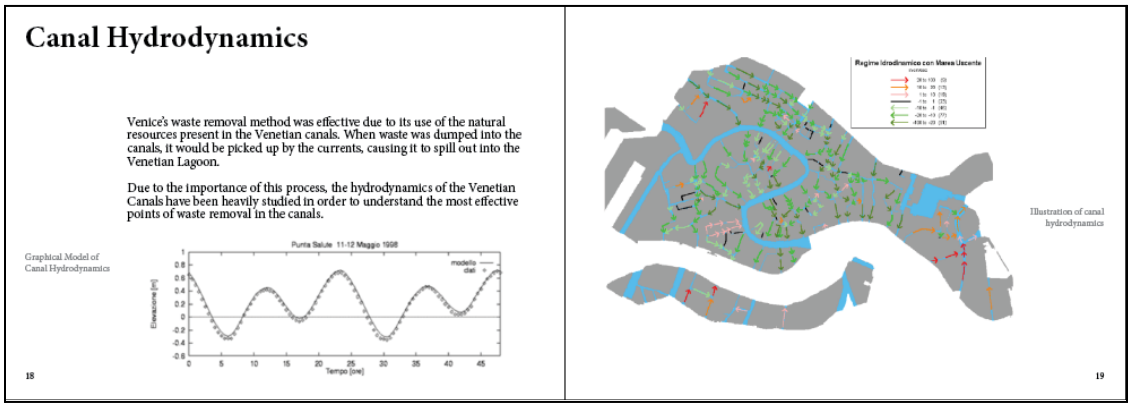


Figure 29: A page from the booklet using a graphic from Professor Carrera's dissertation

Once they had access to the graphics, the interns revised some of the graphics to make them better suited for the format we selected, and made sure the information included was the most recent information collected by the VPC.

6.5 Cover and Spine

Because the booklet was intended to be one piece in a larger series, we wanted the cover and spine design to be simple so that it could look uniform on all the booklets.

We decided that all the covers will have the topic name in large letters on the top (in the Sotoportego font), and a photomosaic of the topic underneath. The photomosaics show many small photos of the booklet subject arranged together to make up a large image of that subject (**Figure 30**).

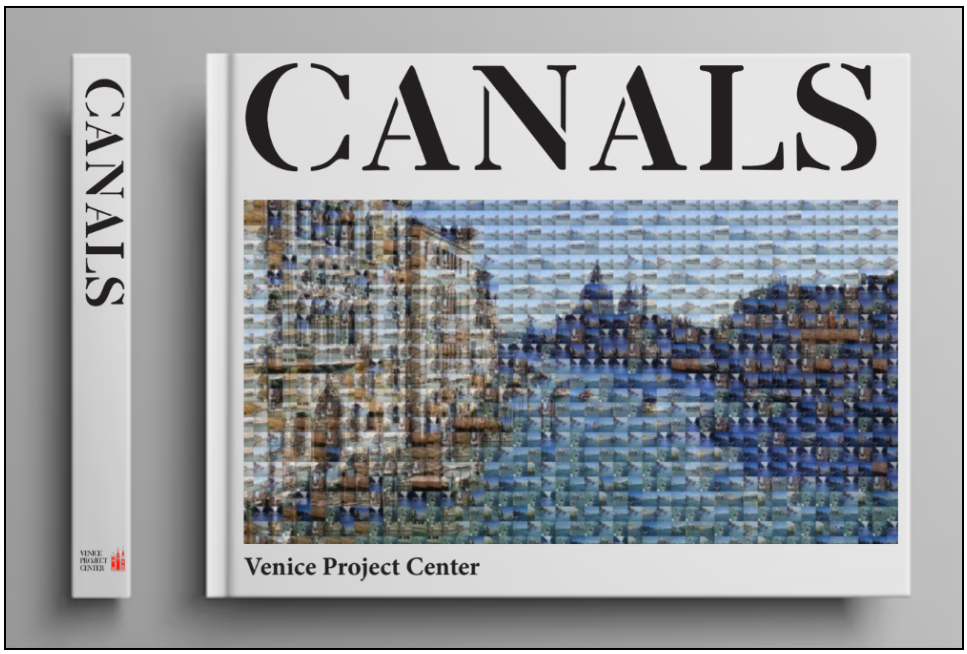


Figure 30: Front cover and spine

In order to explain the photomosaic and give credit for the front cover, we decided to add an “About the Cover” page at the beginning of the booklet, which gives a short paragraph about the cover of the booklet (**Figure 31**).

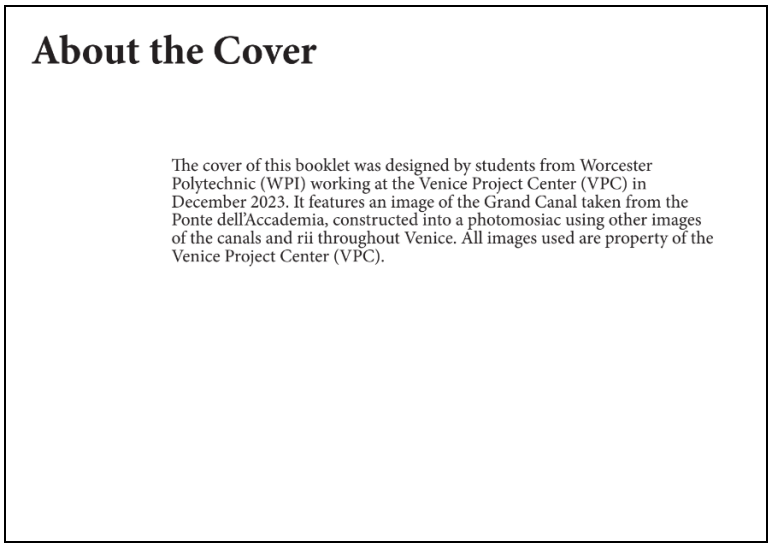


Figure 31: About the cover page

Along with the “About the Cover” page, we also added an “About the Venice Project Center” page, to give some background about the VPC (**Figure 32**). This page explains to the reader what the VPC is, and also gives a brief history of the VPC.

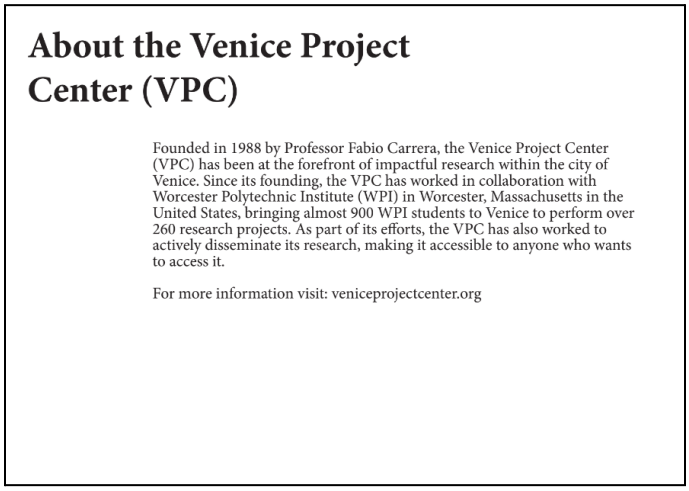


Figure 32: About the Venice Project Center page

6.6 Bibliography

In order to provide a space to cite the sources used to research for the booklet, we included a bibliography section in the back of the booklet (**Figure 33**). The citations

in the bibliography were done in the APA format, and provide important information like the title, author, and date of the sources used.

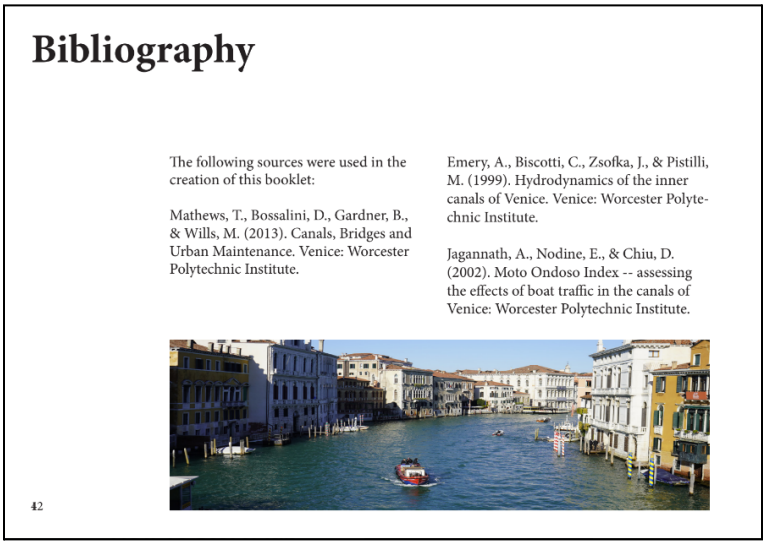


Figure 33: Bibliography

6.7 End Matter

One of the other decisions we made during our booklet production process is what additional features we wanted to include at the end of our booklet. The first feature we chose to add was a glossary of terms, which gives the definitions of terms that are used in the booklet that the reader may not be familiar with (**Figure 34**). We added this feature to allow the reader to quickly and easily refer to the back of the book if they come across a term that is unfamiliar or confusing. This will also help English-speaking readers understand and remember the Italian terms relevant to the topic of the booklet.

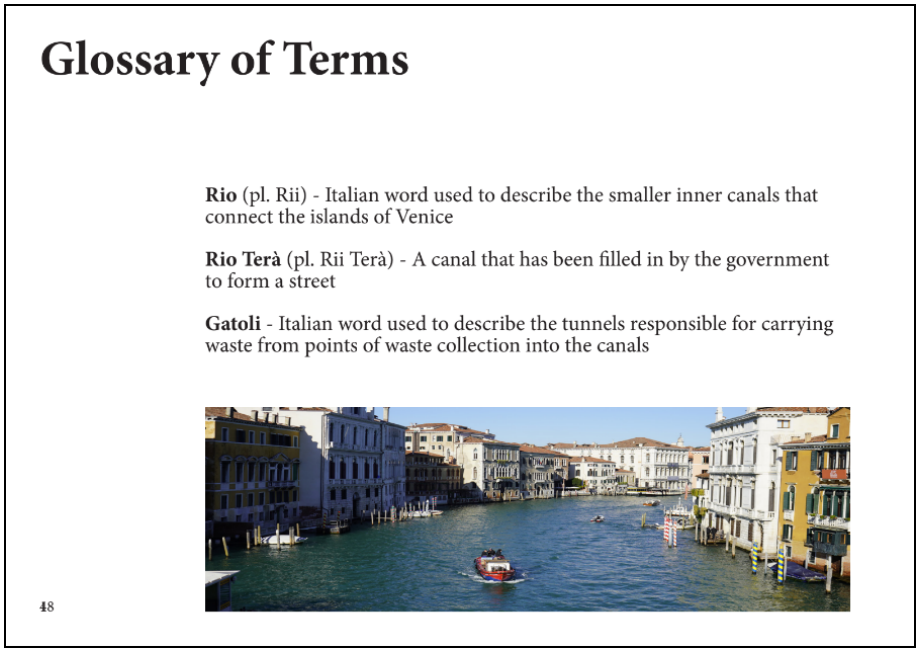
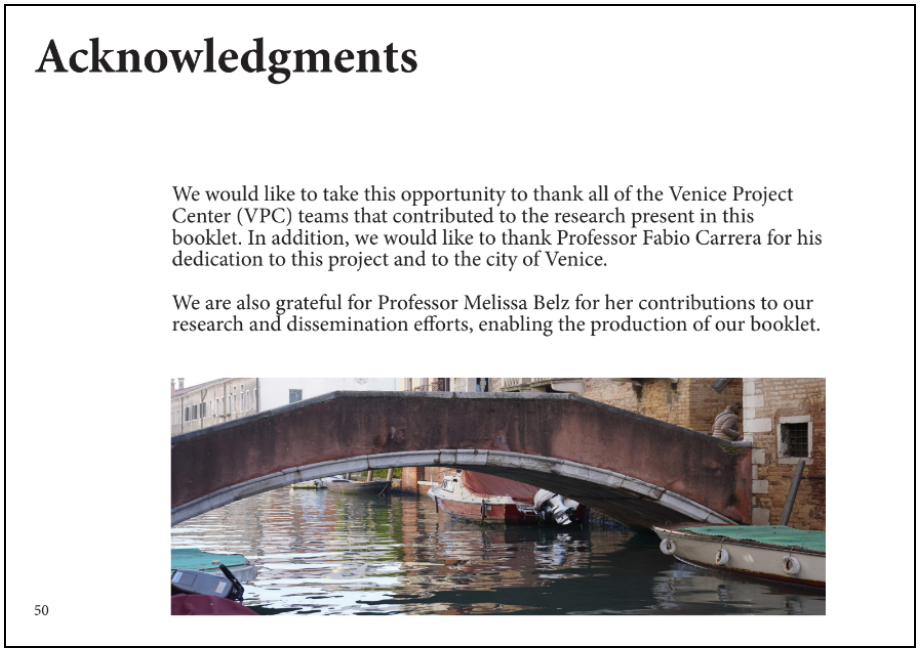


Figure 34: Glossary of terms

We also decided to include an acknowledgements page in the back of the booklet to provide a space to thank all the people and organizations who contributed to the creation of the booklet (**Figure 35**).



Acknowledgments

We would like to take this opportunity to thank all of the Venice Project Center (VPC) teams that contributed to the research present in this booklet. In addition, we would like to thank Professor Fabio Carrera for his dedication to this project and to the city of Venice.

We are also grateful for Professor Melissa Belz for her contributions to our research and dissemination efforts, enabling the production of our booklet.

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Figure 35: Acknowledgements page

The final aspect of the book that we had to design was the back cover. We wanted to keep the back cover simple and clean looking, but not empty. We also wanted to provide the reader with a way to easily access the VPC's online resources. With these factors in mind, we decided to include a small QR code on the bottom left corner of the back cover which, when scanned, will bring the reader to the VPC website (**Figure 36).**

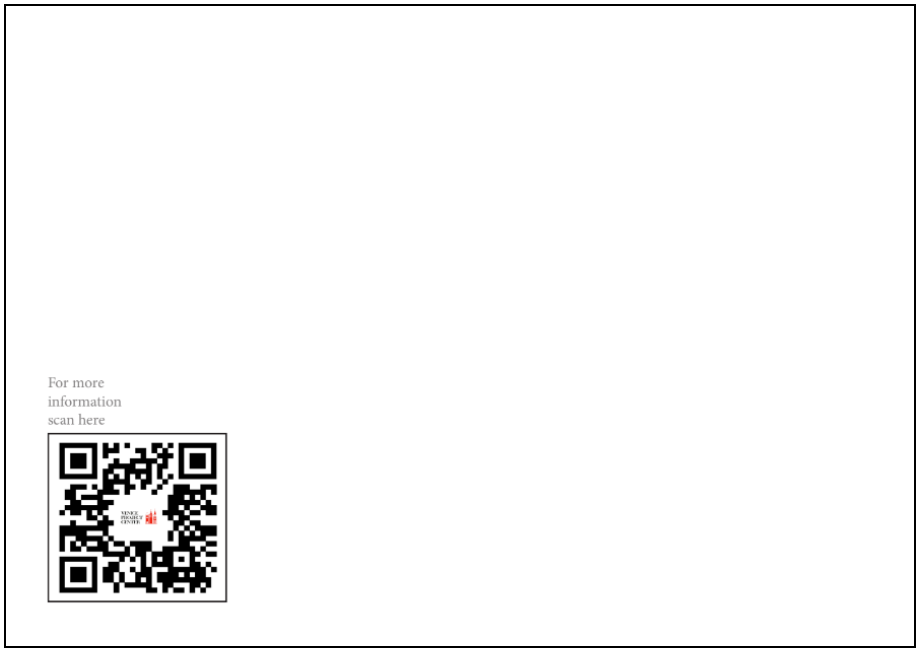

Figure 36: Back cover

This QR code will allow the reader to refer to open data, projects, publications, applications, and other information from the VPC that will further their knowledge on the topic of the booklet they are reading. This feature will also help share the impacts of the VPC to a wider audience, through the promotion of the VPC website.

6.8 Producing the Sample Booklet

We had several meetings with the interns, discussing how to make a standardized version of the booklet to produce. We considered how to make the booklet layout accessible to future teams without using an application that had limited design functionality, and discussed the benefits and drawbacks to using a google docs template. We decided that Adobe Indesign would be the best tool for graphic design because it was recommended by the interns who study graphic design, and future project teams can access the application for free through WPI.

Once the design and content of the booklet was finalized, we worked with the interns to determine a means of printing a copy of our sample booklet on canals. To do this, we explored various printing shops in Venice, per the recommendations of the interns and Professor Carrera. Once we chose a printing shop, we printed multiple

samples of the booklet, one with only the completed content we produced, and one with extra sample pages to reach the desired page length. This allowed us to get a feel for what the booklet would be like when it was fully written by Professor Carrera and reprinted by a future team.

6.9 Booklet Recommendations

We recommend that the VPC continue assigning teams to create booklets in an attempt to produce one for each topic shown in *Appendix A.* All of these booklets should be created using the format that the VPC interns created, following the instructions provided in *Appendix D* to keep the book series consistent. All the booklets should have a uniform layout and design so that when the whole series of booklets is produced, they will be able to be displayed as a set.

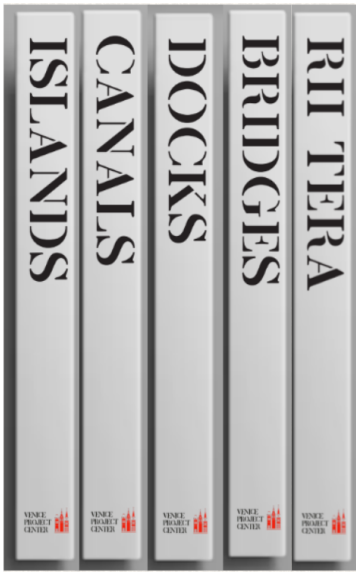

Figure 37: Example of some of the booklets displayed in a set

The booklets should have at least 80 pages in order to accommodate for the spine text. The textual content needed to achieve this length should be provided by Professor Carrera. The booklets should also all include all of the features that are in the canals booklet, including the photomosaic on the cover, “About the Cover” page, “About the Venice Project Center” page, table of contents page, bibliography, glossary of terms, acknowledgements page, and QR code on the back cover. Only high quality images

should be used, and images should be taken with a digital camera rather than a smartphone camera. Graphics should be sourced from Professor Carerra's dissertation.

When booklets are created on all of the topics, they should be printed and assembled in a box set that is organized by order of elevation, in order to remain consistent with the exhibit.

Chapter 7: VPC Videos Production Workflow

To continue in the dissemination of the Venice Project Center research data, our team collaborated with VPC interns and a professional videographer to create a workflow for the production of short documentary style videos. These videos cover the same topics, expanding on the information covered in each StoryMap in an audiovisual format. Our contributions to the creation of these videos included writing a full script and creating a rough draft video for one topic, namely canals. Because these videos are planned to be a full uniform series, this draft will stand as an example, informing the general structure and style/design for the creation of future videos.

Prior to starting the recording process, we reviewed videos created by previous VPC teams. There were a handful of interview-style videos conducted with Prof. Carrera by the 2022 winter project (B22) team. These videos were long form and unstructured, presented more like a casual conversation, which would have made them difficult to edit into a video production. Also, only a few of these videos were directly related to our topics, leaving gaps in background information. Due to this, we determined that these previous videos would be of limited use to our project.

Following this assessment, we devised a full workflow for the production of videos (**Figure 38**). This workflow would bring us from baseline information to completed final video, covering the main steps along the way. The process started with a series of "intro" videos to provide a basis for the general background and narrative structure of each topic. The background information and additional research were used to create the aforementioned StoryMaps. Using the Storymap information and structure, we wrote a draft script, which then was converted to speech using AI tools, providing a narration. The narration, along with maps, graphics, images and videos were then edited together into a draft video. The draft video will be used as a template to inform the structure of a final video, which will utilize a finalized script and graphics. Our team followed this workflow specifically for the topic of canals, and brought it to the stage of a rough draft video.

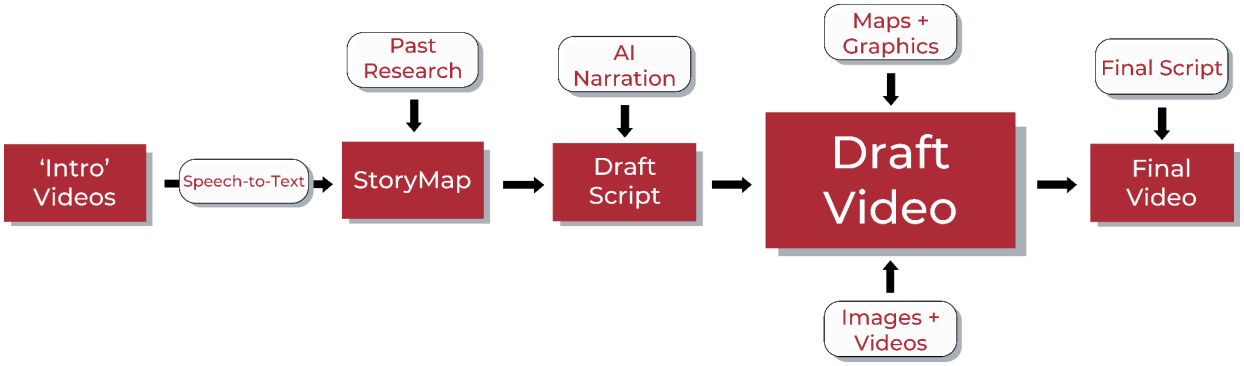

Figure 38: Video production workflow

7.1 'Intro' Videos

Once the workflow was discussed, our team got to work on creating the initial 'intro' videos. These videos required a recording studio of sorts to be created, as to ensure proper audio clarity. The summer team had previously identified a room at the top of the belltower in the VPC as a valid option for recording use, so we created a makeshift studio there.

In order to set up the studio, we used the equipment already available at the VPC. Some of the equipment available included: a Sony A7 III camera, a DJI portable wireless lapel microphone set, a small portable green screen, two studio lights, and a curtain backdrop. This room should remain in the same setup for future teams to use, but in the case it needs to be recreated, there is specific information related to the studio in *Appendix E: Video Production Guide.*

Following the completion of the studio, we met with Enrico Stocco, a professional videographer/video creator who worked with the VPC previously. During our meeting, we discussed the general plans of the video. We then produced a test video alongside Mr. Stocco in the belltower. In this meeting we adjusted the studio setup (**Figure 39**) and further refined the production workflow. We decided that the most efficient means of creating videos would involve using the intro videos and consequent StoryMaps to inform the narrative structure of the video, and then each topic would be expanded into a full script.

Figure 39: Belltower recording studio

After our consultation with Mr. Stocco, we began recording the videos with Professor Carrera, in which he talked about each topic without the use of script. These videos were still rather unstructured and consisted of Professor Carrera providing background information on the topics, stating their importance, issues, and related VPC research. Filming occurred over three total sessions, resulting in the production of multiple videos spanning the 11 total topics.

7.1.1 Speech-to-Text

Following the completion of the videos, we also explored utilizing "Speech-to-Text" tools to convert the content of the videos into text form (see *Appendix E: Video Production Guide*). Specifically, we utilized the transcription tools within *Microsoft Word* (**Figure 40**), as these were readily available and adequate for our needs. All Worcester Polytechnic Institute students have access to the Microsoft suite, so we decided this would be the best base option for our team as well as future teams. We found that this software did a rather good job at converting Prof. Carrera's words

into a cohesive transcript, and after a small amount of review and polishing, the text was fully viable. If Speech-to-Text becomes a more relevant step in the workflow of this project, future teams may want to explore other options, as there are many more advanced programs available that are focused solely on this. By having this text, the information of the videos can be easily added to StoryMaps, scripts, or any future media.

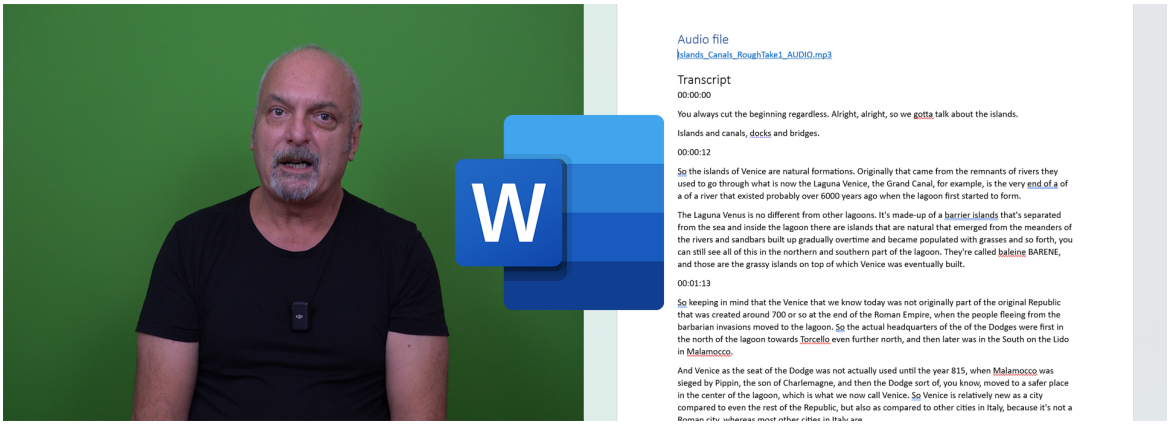

Figure 40: Speech-to-Text via Microsoft Word

7.2 Video Structure

The next step in the production workflow was to create a general structure for the video to follow. We started by identifying the style of video we wanted to produce. After discussing options with Prof. Carrera, we decided that the videos would feature a voice over and supplemental media including maps and graphics, and be roughly 8-15 minutes in length. Since most of our products for this project built off of each other, the actual structure of the video wasn't very difficult to determine. The narrative structure and sections of the **canals StoryMap** were used directly to inform the structure of the video, with the plan to embellish each section with additional research in order to approach a 8-15 minute runtime. This left us with the following structure, which can also be followed for any future videos; *Introduction, Brief History, Main Uses/Roles, Related Issues, Associated VPC Research and Solutions, Outro.*

At this stage in the process, we essentially had a skeleton of the video which allowed us to begin identifying and gathering the content we needed for the final product. This included doing additional research, gathering photos and videos, and related graphics. Much of the additional information, as well as maps and some photos were collected from resources in the VPC drive. This saved the team quite a bit of time which would have been dedicated to searching for related images and remaking maps and graphics.

7.3 Video Script

With the video structure planned out, the team began writing the full script for the video. As previously stated, this process started with taking the content that was already developed for the StoryMaps, which was tweaked and polished to work in the context of the video. Next, we began using additional research gathered on the canals to provide more in depth information on each of the sections. The most useful resource for this process was Prof. Carrera's dissertation, *City Knowledge: An Emergent Information Infrastructure for Sustainable Urban Maintenance, Management and Planning.* Specifically the section of the paper describing the "Venice Inner Canals" Project was incredibly helpful. This provided us with extremely in depth information regarding the work done by the Venice Project Center on the canals in the 1990s and early 2000s, information that we adapted directly into portions of the draft script.

Typically in a video production workflow, the script is reviewed, finalized and recorded before any supplemental videos, graphics or animations are made, allowing the script to be the guide for editing the full video. In order for our team to follow this workflow, it would require multiple thorough review passes of our script by Prof. Carrera; a process we simply wouldn't have had time to complete during our limited project term.

AI narration tools allow for more efficient script drafting, as any edits that need to be made to the recording can be done in the script document, then narrated by the AI, removing the need to reshoot any actual footage. By employing these tools, it made for an easily updatable draft script, allowing us to move on to the basic editing of the draft video.

For this project, we used Play.ht, an AI voice cloning and narration software (**Figure 41**). The software has a free version which is available on their website, allowing for the creation of a voice clone and text to speech narration. The voice cloning process consists of uploading a 30 second audio file of a person speaking, which the software uses to create an AI clone of that voice. That voice clone can then be used to recite any text to speech, essentially replicating the chosen voice. Our team utilized the intro videos for the audio file upload, and in turn created a clone of Prof. Carrera's voice. In both our team and Prof. Carrera's opinions, the AI is shockingly similar to his voice, capturing some of his accent and inflections quite well. However, due to this being a new technology and a demo version at that, it comes with a few issues. The AI tends to mispronounce difficult words, provide strange inflections, change speed randomly, and even produce literal gibberish at times. Due to these imperfections, it was decided that this would be a tool used to assist in the production of the videos, but likely the final script will be actually narrated by Prof. Carrera himself instead.

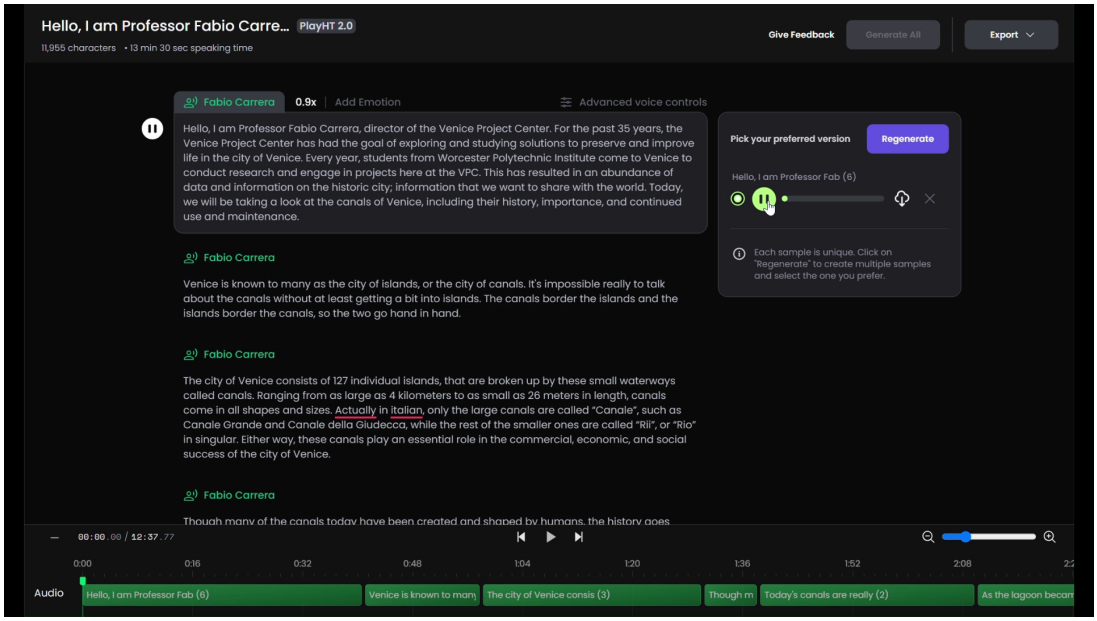

Figure 41: Screenshot of Play.ht text-to-speech interface

7.4 B-roll Media

One of the most important aspects of a video production is having an extensive collection of B-roll media for use in editing. B-roll is a term often used in the media

production field, which refers to any videos, images, or graphics that are supplemental to the main footage or subject of the video. In our case these are the things being displayed in the video during the background narration. Often, it helps to use the video plan to inform what B-roll will be needed before actually capturing it. Also it can be useful to plan to capture a bit more of this media than necessary, so if changes are made to the video in later stages, it doesn't require another round of B-roll gathering. In the case of our project, our team knew we wouldn't have a finalized script to plan our media off of, so instead we focused on gathering media related to the 11 relevant topics discussed prior, with a focus on canals (**Figure 42**). Our B-roll collecting consisted of going out across Venice several times across the term, with the intent of capturing as many relevant photos and videos as possible. The advantage of capturing media in this way meant that we created a full collection of assets that could be used for any of the products completed by our team or future teams.

Figure 42: Various B-Roll images

7.5 Rough Cut

Taking everything we had created and gathered for the video up to this point, the team then produced a 'rough cut' of the canals video. This combined the AI narration of

our script, B-roll media, and graphics and maps to create a unified product. Since this video was meant to be an early draft, less time and effort went into using the exact videos and graphics that aligned with the script, and emphasis was instead placed on developing a clear style and pacing. The video itself was produced and edited in *Adobe Premiere Pro* (**Figure 43**). The audio of the AI narration was first imported into the premiere file, and the rest of the media was built off of it, using the narration as a guideline for what to include. In certain sections relevant graphs, maps or videos are shown in direct relation to the script, while other sections are filled with general footage of canals and Venice for visual appeal. As with the script, much of the visual graphics and maps were pulled directly from Prof. Carrera's dissertation, to provide a related visual for the specific references throughout the narration. In its current state, the video is just over 12.5 minutes in runtime, which fits perfectly into our proposed length range. The rough cut can be viewed at the link below: https://drive.google.com/file/d/18FNPiSACrhRF3OcW3VeF1l9t3mihovKT/view?usp=drive_link

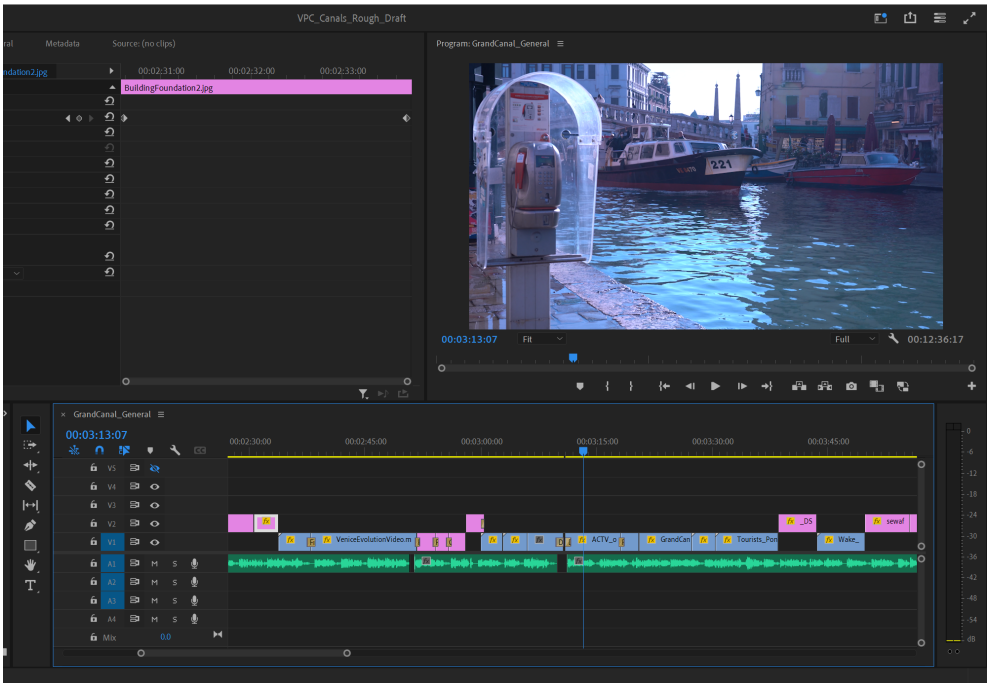

Figure 43: Editing of the Canal Video Rough Cut

The video is distinctly a rough cut, and should be used by future teams as a template to be polished into a final video, as well as a guide for future videos. Our hope is that the general script structure, audiovisual style and general design/aesthetic will be replicated by future teams for each topic, to create a uniform feeling across the videos and save added time invested in the decision process. In specific, the general script structure refers to narrative flow and sections; Audiovisual style refers to narration style, images, videos, and graphics; Overall design/aesthetic refers to color scheme, font and branding. Between both the production workflow discussed in this section and the example draft, this will provide a solid framework to assist in future production.

7.6 Final Cut

The next step in the video production would be to take the rough cut video template, and fully polish it, to create a final cut. There are many steps involved in this process, and much of it is dependent on what parties are involved in the final production of the video. At this current stage, the tentative plan is for the Venice Project Center to hire Mr. Stocco to produce the full series of VPC videos. In order to ensure the best translation of our team's and Prof. Carrera's ideas, it is important to understand the next steps of the process. It is our hope that this can provide a clear example of our goals to whichever party is responsible for the final productions.

This revision process starts with the script and moves through the main content of the video. As previously discussed, due to the limitations of our project, we utilized the AI narration of our script, which is a departure from a typical video production workflow. In moving to the final cut, the script would first need to be finalized. This will likely involve a multi-step iterative review process with Prof. Carrera, in order to ensure the best quality and accuracy. With a script finalized, it can be read out and recorded, creating a final voiceover narration. This final narration will be used to evaluate the current video, and determine which B-roll media is usable and which will need to be revised or recaptured. The final cut will likely need more B-roll footage to be captured, as our team captured limited media in direct relation to the video content. Along with this, more graphics, maps and possible animations will need to be made to fill the runtime. Our team utilized many maps and graphics that were readily available from

previous research teams, but there are plenty more that could be made for the direct use in the video. As previously mentioned, there are many useful graphics and maps in Prof. Carrera's dissertation, though they are too low resolution to be used in their current state. It would be worthwhile to recreate these maps in a new format for use in the final cut. Lastly, it will be necessary to decide on a set theme and structure for the intro and outro segments of the video. It is very important for these sections especially to have a uniform theme as they will be the same across all of the topic videos, and will aid greatly in creating cohesive branding.

Chapter 8: Building the VPC's Online Presence

In addition to creating media (StoryMaps, exhibit, videos, and booklets) to facilitate dissemination of VPC research, we examined and improved the online presence of the Venice Project Center. Currently, the VPC has three main components to its online presence: its website, an open data repository, and social media accounts. While each of these aspects has its own goals, the overall objectives of the online presence are to present the work of the VPC to interested groups such as Venice-based companies, the Venetian public, and alumni of the VPC.

The website is the most common way that people discover the VPC, since it appears more often in web searches and is linked from articles and other pages that reference VPC research. The VPC website has had many iterations—often as part of anniversary projects—since the first site in 1998, and today the website serves as the face of the VPC by explaining the VPC's mission and featuring links to all of the VPC's research, data, and social media (**Figure 44**).

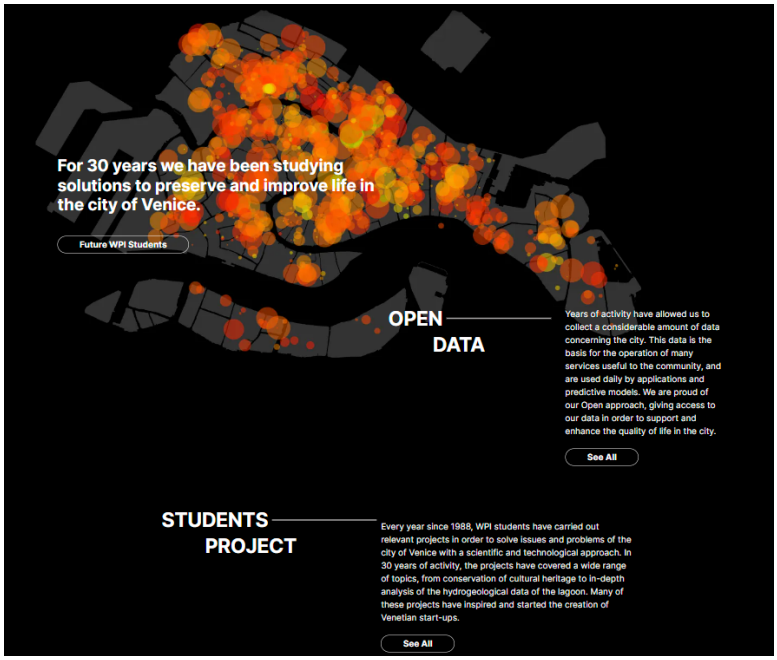

Figure 44: The VPC website home page

The VPC social media accounts help to connect the VPC with alumni, Venetians, businesses, and others. By reaching out to former WPI students who worked on projects with the VPC, we hoped to foster a network of alumni who are interested in current VPC projects and who may financially contribute to future VPC projects. Many Venetians are interested in the VPC's work, since they deal with the problems that the VPC is trying to solve. Involving more local Venetians will help the VPC to grow and to implement the recommendations of its projects, as well as benefit the startup companies that often work with the VPC. In order to reach these two groups via social media, we determined the ideal platforms for the VPC to focus on, and worked with VPC staff to update the VPC Facebook page and to create a LinkedIn account for the VPC.

8.1 Open Data

The Venice Project Center has collected an enormous quantity of data on a diverse array of topics over the decades, and much of that data has been extremely helpful to the city of Venice and other researchers. Unfortunately, it is not so easy to

access the data. While VPC project reports have always been published, disseminating the raw data that accompany those projects is a separate task. The VPC website featured an “Open Data” page (**Figure 45**), but only a small portion of the VPC’s data was available. To access any other data, one would need to contact the VPC directly and ask for data to be retrieved from the VPC database (**Figure 46**).

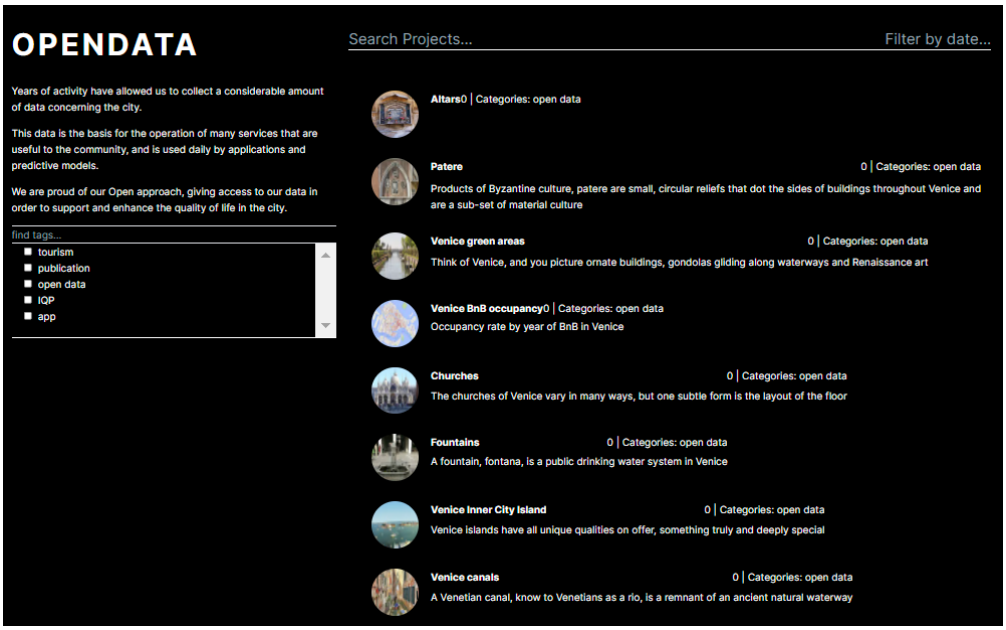

Figure 45: The Open Data page on the VPC website

A database is effective as a storage location, but on its own, it is not an effective method of dissemination because it is not available to the public, and requires familiarity with database systems to use comfortably. Our goal was to increase the accessibility of the VPC data so that anyone could easily view and use the data.

CK_ID	birth_id	lat	lng	parent_id	group_type	initial_group	
46fa3eac-86f6-6eaf-9ef0-e7cc949cd3bd	PRIU	45.44184128	12.33542562			MERGE Canals	EDIT
47c639a8-84ab-c1de-2c1b-69492ff53c30	GUER	45.44212357	12.3361069			MERGE Canals	EDIT
4ee3ea83-46a1-ab64-c095-7b3e1a305e8d	MAVA					MERGE Canals	EDIT
4f4ee1fc-9a98-fa9a-d574-52d32277272f	VEMA					MERGE Canals	EDIT
51635f40-edf1-19df-e8d7-e1adbe78b264	FORN	45.42975049	12.3326683			MERGE Canals	EDIT
78b23f5b-6022-ec8c-8fd9-f22d662810ae	SEBA	45.4319189	12.32048035			MERGE Canals	EDIT
bbaa6ea6-2b39-4e73-aaa0-1c7f34b25d64	DGIO					MERGE Canals	EDIT
bd81af03-59f9-5725-611b-60871f3a05e4	BARE	45.43605971	12.33754992			MERGE Canals	EDIT

Figure 46: A screenshot from the database used by the VPC

We planned to update the Open Data page of the VPC website to include the most recent VPC data on each of the 11 topics we focused on during this project (*Appendix A*). This would allow anyone to find and view VPC data on a specific topic within minutes, making it extremely easy to share VPC data with collaborators and to showcase the work done by the VPC to the public. We also hoped that easy access to VPC data would help future project teams by alleviating some of the difficulties that we encountered during this project working with VPC data.

In order to make the data available on the website, we chose to create an API (application programming interface) that would fetch data from the VPC database and deliver it to the user for download in a convenient file format.

8.1.1 Open Data Results

Before we could begin work on an API, we first needed to locate the desired data and determine what process would be required to deliver it to a user. The database used by the VPC was initially difficult to work with due to a lack of available documentation, but with the help of Alireza Dehgan, the technical intern at the VPC, we were able to access the database using an existing API. Unfortunately, this API delivered data as a .json file that did not format the information in a convenient way, meaning that it would need to be “cleaned” (edited into more convenient formatting) before delivering to a user.

While it would have been possible to clean the 11 data files manually and make them available on the Open Data page of the VPC site, we chose to create an additional

API that would fetch the most recent data from the database, clean the .json file, convert it to a .csv file, and return it to the user for download.

The primary benefit of using this method rather than simply linking files that each contain a data set is that when the data sets in the database are inevitably edited as new data is collected, the website does not need to be updated. When the API is used, it fetches data directly from the database, so it eliminates the intermediate step of an additional file. Of course, the website will require an update in order to add a new dataset, but it will take a minimal amount of work to do so, and this method will be far easier to work with in the future. The Open Data page of the VPC website now provides the most recently collected VPC data for each of the 11 topics.

8.1.2 Open Data Recommendations

Throughout this project, we observed first-hand the importance of maintaining previous data, research, projects, and their documentation. We encountered difficulties when attempting to access certain information as it was often inaccessible due to being outdated. As technology evolves and the VPC moves on to new projects, it is extremely important that it maintains its previous work.

An example of this is the WPI project archives. The VPC has produced 246 projects in collaboration with WPI; only 161 of those projects are currently accessible on WPI's digital archive (**Figure 47**). The rest of the reports likely exist in a paper format as they were completed prior to the creation of this WPI archive, but the records have not fully kept up with advances in technology. Ideally, the archive should be a record of all projects. The VPC should collaborate with WPI to scan the remaining records of these missing reports and publish them to the archives page.

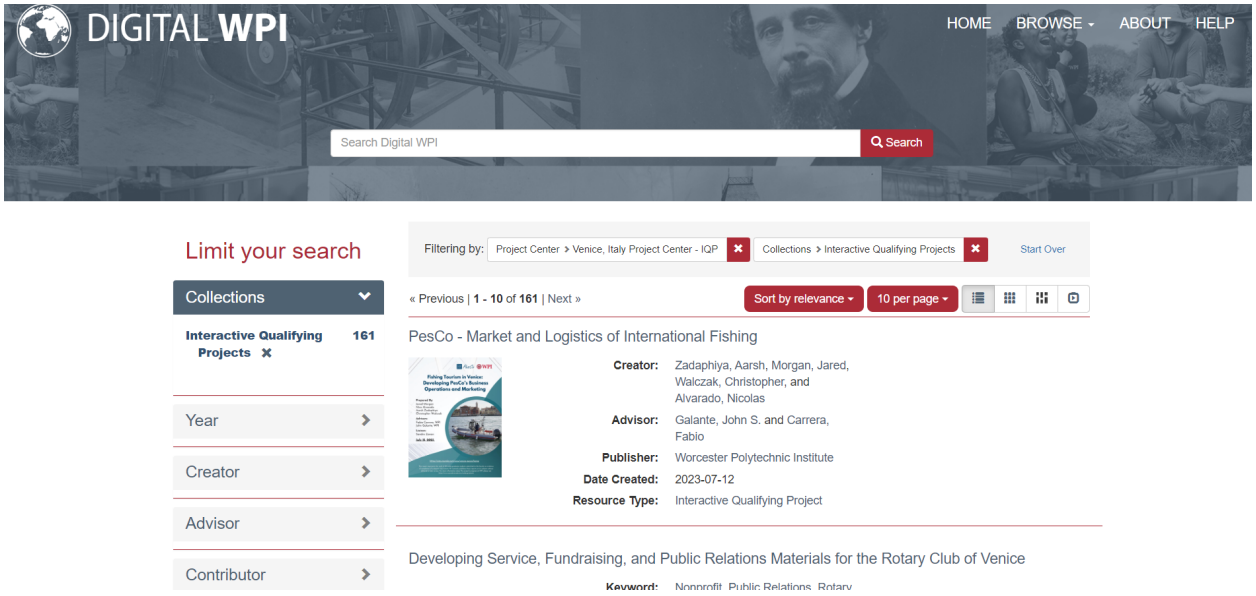

Figure 47: WPI's Digital Archive with record of all Venice IQP projects

Additionally, we found that only 10 of the 20 web applications on the VPC website were functioning, many due to relying on outdated software. After working with the VPC interns to address this, 19 of the applications now work properly (**Figure 48**). However, we recommend that, in the future, the VPC frequently checks and maintains its tools.

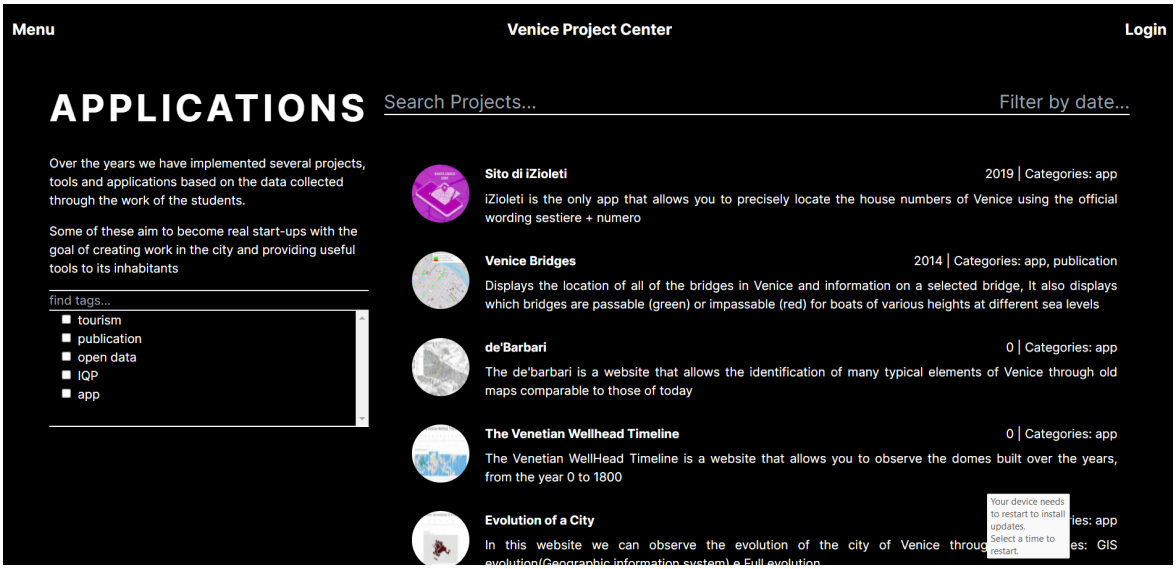

Figure 48: The Applications page on the VPC website

In an attempt to better maintain the VPC's data, we recommend that the VPC assign at least one project team over each 5 year anniversary period to be responsible for maintaining VPC research by organizing, updating, and distributing data.

8.2 Social Media

As part of our effort to expand the VPC's online presence, we also revived and created new VPC social media accounts with the intention of reaching out to VPC alumni and the Venetian public. This was done by first performing an assessment of the state of the VPC's social media accounts and then utilizing statistics to determine where to focus our efforts. We decided to primarily focus our efforts on creating a VPC LinkedIn account, while also examining the VPC's Facebook and Instagram accounts to determine their potential for revitalization and their capacity for outreach.

8.2.1 Social Media Results

The first step towards connecting with alumni of the VPC was to determine the primary age demographic of VPC alumni. To do so, we sorted a master list of VPC alumni by year and determined the number of alumni from each year since 1988 and the total number of students who had worked on projects at the VPC (896).

Using 20 as the average age of VPC students, we estimated the current age of VPC alumni. For example, we estimated alumni who worked at the VPC in 2022 to be 21 today, and alumni who worked at the VPC in 2022 to be 55. By plotting the number of alumni from each year against their estimated age, we found the average age of VPC

alumni to be 36.8 years old (**Figure 49**).

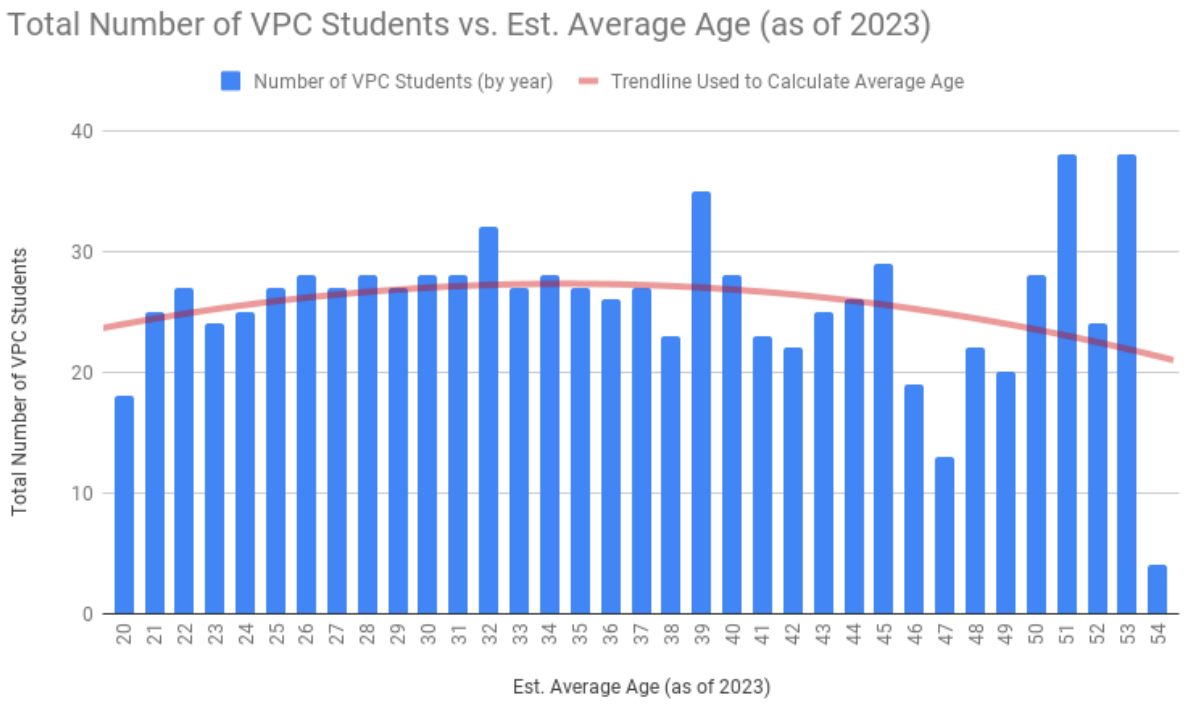

Figure 49: Graph used to calculate the average age of VPC alumni

We compared this result with a 2021 study by the Pew Research Center, which found that the social media platforms most commonly used by people between ages 30 and 49 are Youtube and Facebook, with 77% of the people in this age range reporting that they use Facebook on a regular basis (Auxier & Anderson, 2021). As the average VPC alumni age falls directly in the middle of the range, both of these platforms would be strong choices on which to focus the VPC's social media. While each platform has its own benefits, we concluded that Facebook would be the most effective platform to reach VPC alumni and the Venetian public for two reasons. First, Facebook has a much more flexible approach than YouTube, as it allows text posts, images, videos, live streams, and sharing posts from other pages, whereas YouTube is strongly focused on videos. Second, the VPC already has over 800 followers on Facebook but only a minimal presence on YouTube. We also determined that Instagram would be an effective platform to reach younger VPC alumni as it is the most popular social media platform amongst 20-29 year-olds according to the research performed at the Pew

Research Center. By establishing relationships with these alumni early, we believe that we can create a stronger network for future use.

Finally, we created a VPC LinkedIn account, which will be particularly useful for reaching alumni. LinkedIn maintains a reputation as the top professional social media platform, and it is popular among WPI students and graduates, so many alumni are likely to already use LinkedIn. In the account's creation, we used the logo, images, and text that follow the VPC's branding on its website and other platforms (**Figure 50**).

To begin making connections and adding content to the page, we followed the WPI and SerenDPT pages and reposted a recent post from SerenDPT that included information about current projects (**Figure 51**).

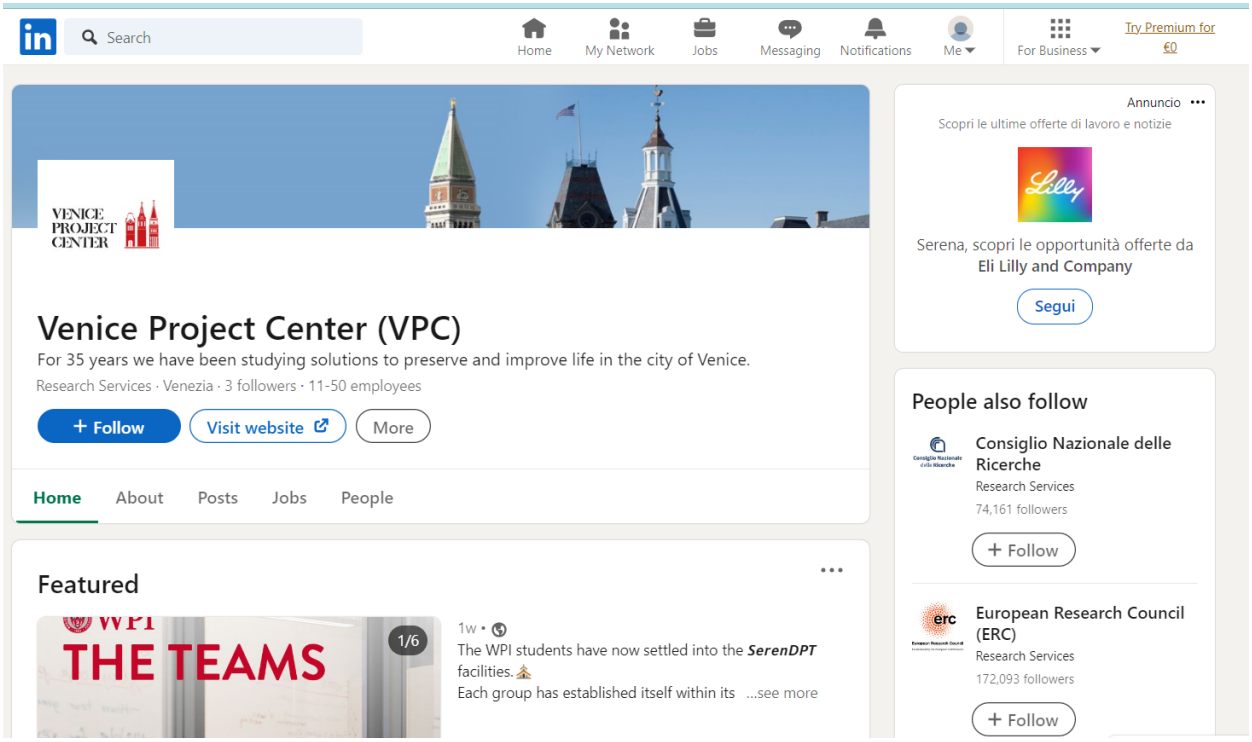

Figure 50: VPC LinkedIn account

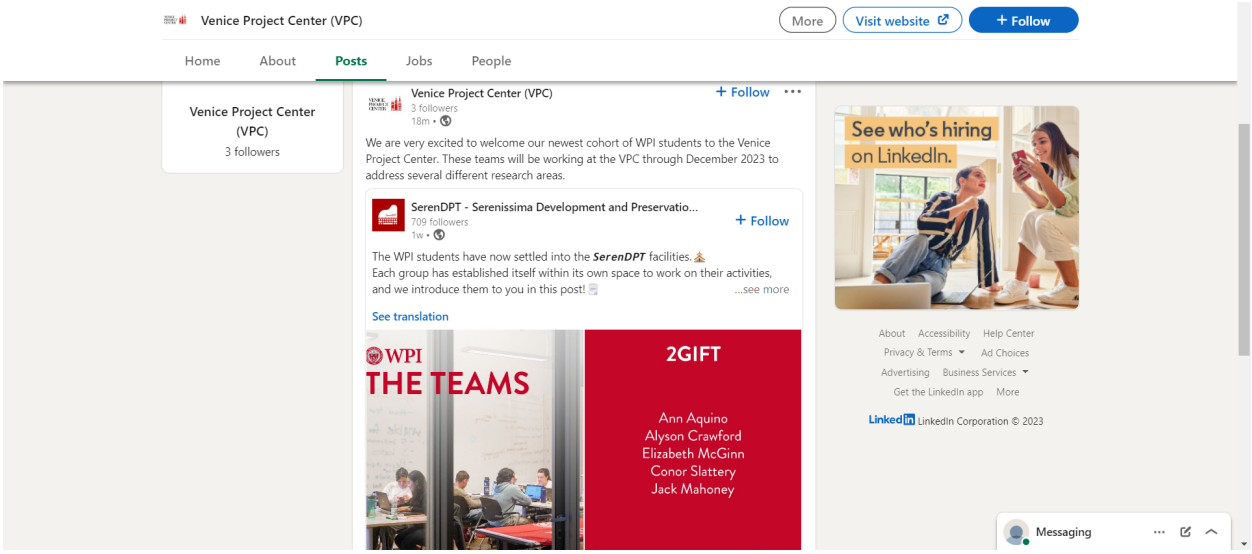

Figure 51: Reposted SerenDPT post on the VPC LinkedIn account

We also viewed the VPC's Facebook (**Figure 52**) and Instagram (**Figure 53**) profiles in order to connect with alumni on different platforms. We found that neither of the platforms had been updated on a regular basis. Thus, we decided that it would be best that these platforms are revitalized by VPC staff or students in the coming terms.

Figure 52: VPC's Facebook account

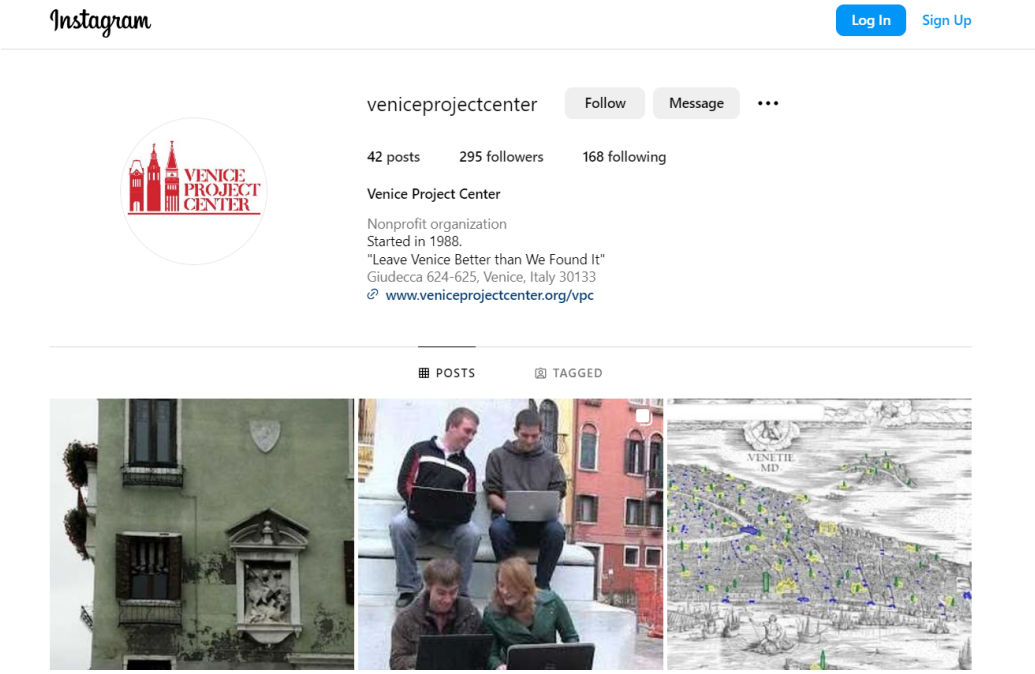

Figure 53: VPC's Instagram account

8.2.2 Social Media Recommendations

We recommend that the VPC actively maintain its social media accounts, Facebook, Instagram, and LinkedIn, by actively posting updates and information, by sharing relevant posts from others, and by reaching out to alumni. The VPC should appoint a staff member who maintains access to both accounts, adding at least one post per week to maintain an open line of communication with its followers.

All VPC posts should be made in both English and Italian to maximize their reach with both VPC alumni and the Venetian public, and all VPC posts should follow the VPC's color scheme and branding to maintain a standardized brand across platforms. VPC accounts should share and comment on posts that are relevant to the VPC, such as SerenDPT or another sponsor posting about a VPC project.

In addition, as VPC students complete their work with the project center, whoever is responsible for the upkeep of the social media accounts should attempt to connect with those students in order to grow the VPC's online audience of younger alumni. This person should also be responsible for individually following each VPC alumni (if possible), ensuring that a connection is built with older VPC alumni as well.

Lastly, we recommend that the VPC develop its YouTube channel so that videos can be shared through that platform as well. Informational videos like the ones planned in chapter 6 would benefit from posting on YouTube, so that they can be shared with more people. The account is up to date as of November 2023, but it should be continuously updated and shared on the VPC's other platforms in order to ensure that the maximum audience is being reached.

Chapter 9: Conclusion

Our project focused on laying the groundwork for future VPC teams to complete projects based on our deliverables. Thus, we recommend that each of these projects be continued by future VPC project teams, with each section of our project getting its own individual IQP project. To facilitate these projects, we developed guidelines for future VPC teams to follow in their iterations of this project.

In addition, we recommend that individual IQPs are set up on a single-topic basis in order to create a complete set of deliverables for each specific topic. The first IQPs completed should follow the topics that we already laid out in our project, to facilitate the collection of information and data on them. Once these topics have been completed, other topics can be explored from the list in *Appendix A.*

Through our project, we worked on the creation of several deliverables, including StoryMaps, a VPC canals video, a VPC canals booklet, and a portion of a VPC exhibit. In addition, we examined the best strategies to grow the VPC's online presence through refining its open data collection and by revitalizing and creating new VPC social media pages. These tasks were performed to display the importance of research repositories, like those created by the VPC, and the essential role that dissemination has in research as it facilitates the collection, storage, and retrieval of information for scientific purposes.

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Appendices

Appendix A: Full List of VPC Topics

The following list includes all of the topics that the VPC has covered in its research and data dissemination:

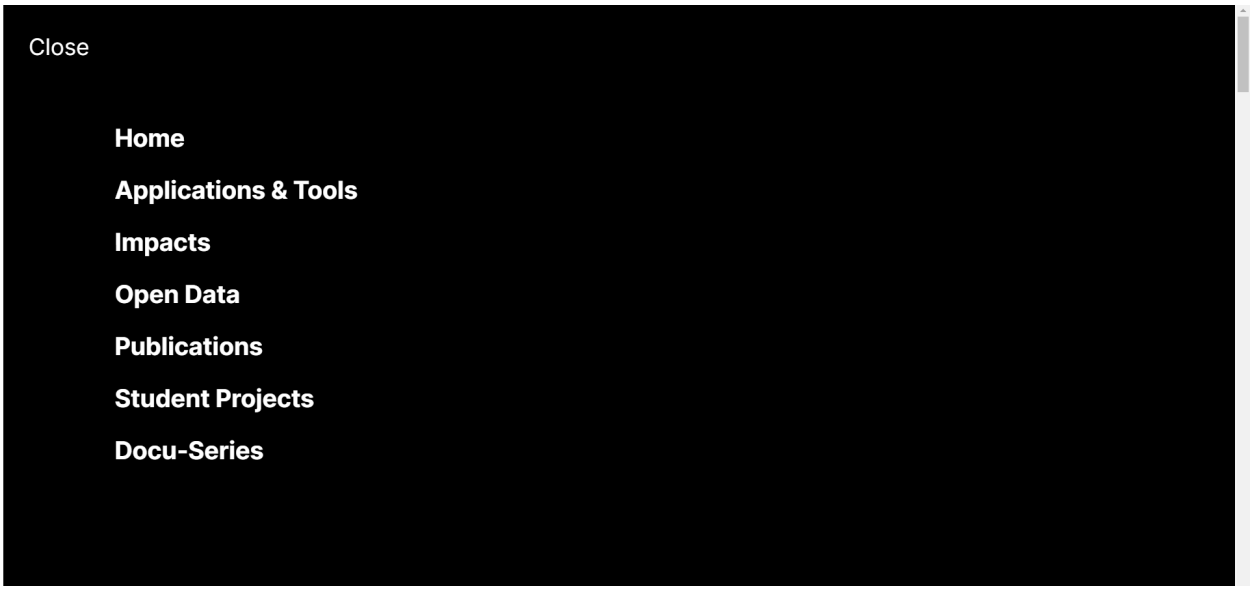
1. Archaeology
2. Islands
3. Canals
4. Docks
5. Boat Traffic
6. Moto Ondoso
7. Bridges
8. Streets
9. Houses
10. Stores
11. Demographics
12. Tourism
13. Pedestrian Traffic
14. Wellsheads
15. Fountains
16. Monuments
17. Coats of Arms
18. Statues
19. Reliefs
20. Convents/Churches
21. Bell Towers
22. Bells

Appendix B: ESRI Mapping Instructions

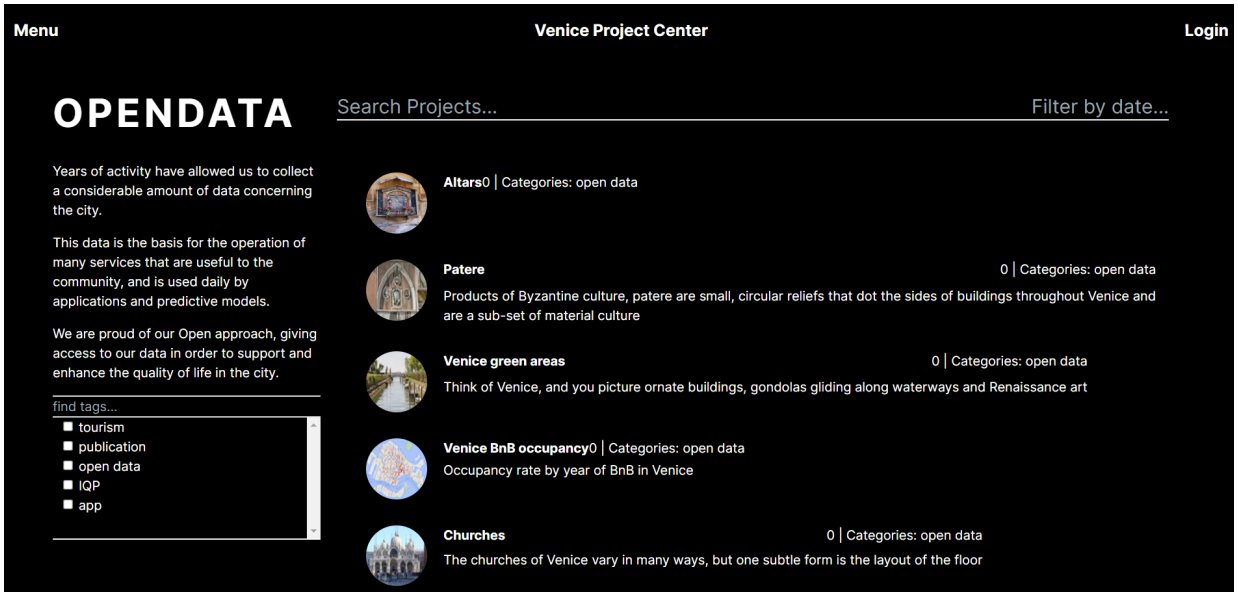
One feature of ESRI StoryMaps is their ability to incorporate interactive maps using data collected in .csv files. The following instructions outline how to generate an interactive map using a .csv file.

Accessing .csv Files of VPC Data

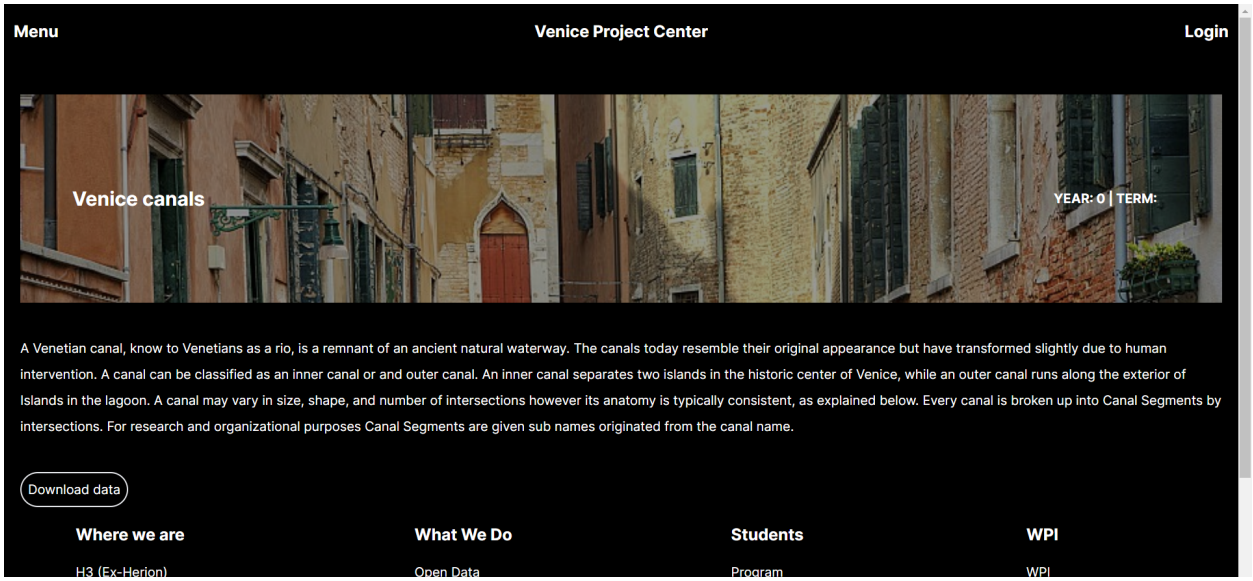
On the VPC website, there is a tab labeled “open data”. Click on this link to access the full list of data files that the VPC has published. After doing so, identify the data that you wish to source and open the link to it by clicking on it. This will bring you to a page specifically for that topic, where you will see an option that says “download data”. Clicking on this link will prompt a .csv file with the data to open in the browser. However, you should click on the button that says “Open in Google Sheets”.



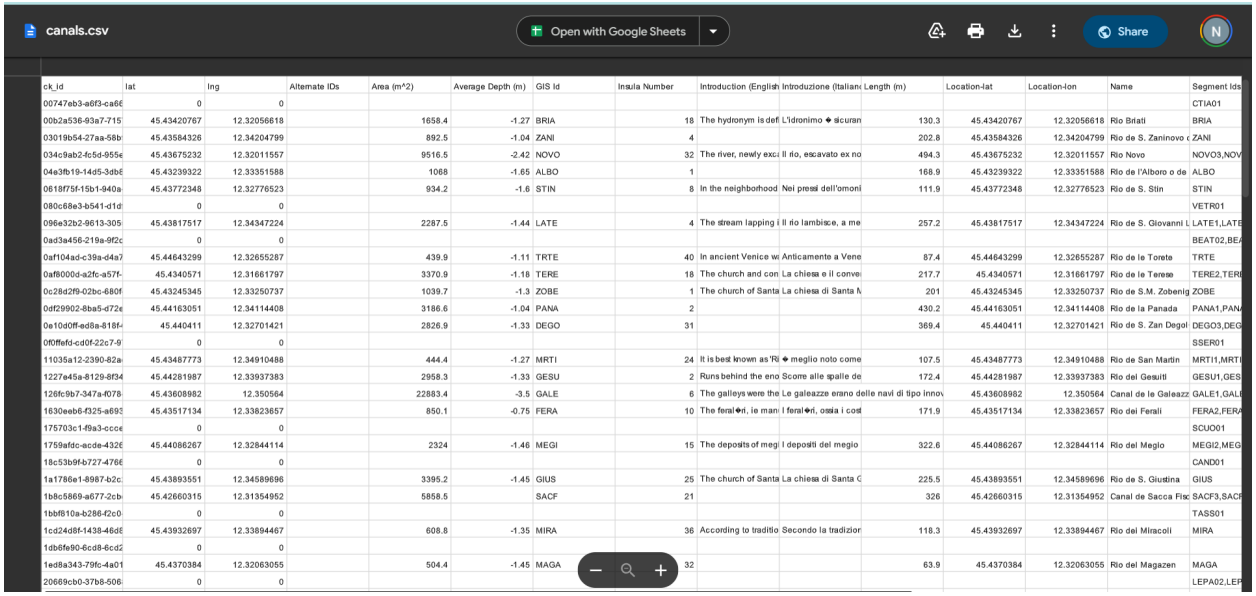
How to access the “Open Data” tab on the VPC Website



VPC Open Data Page

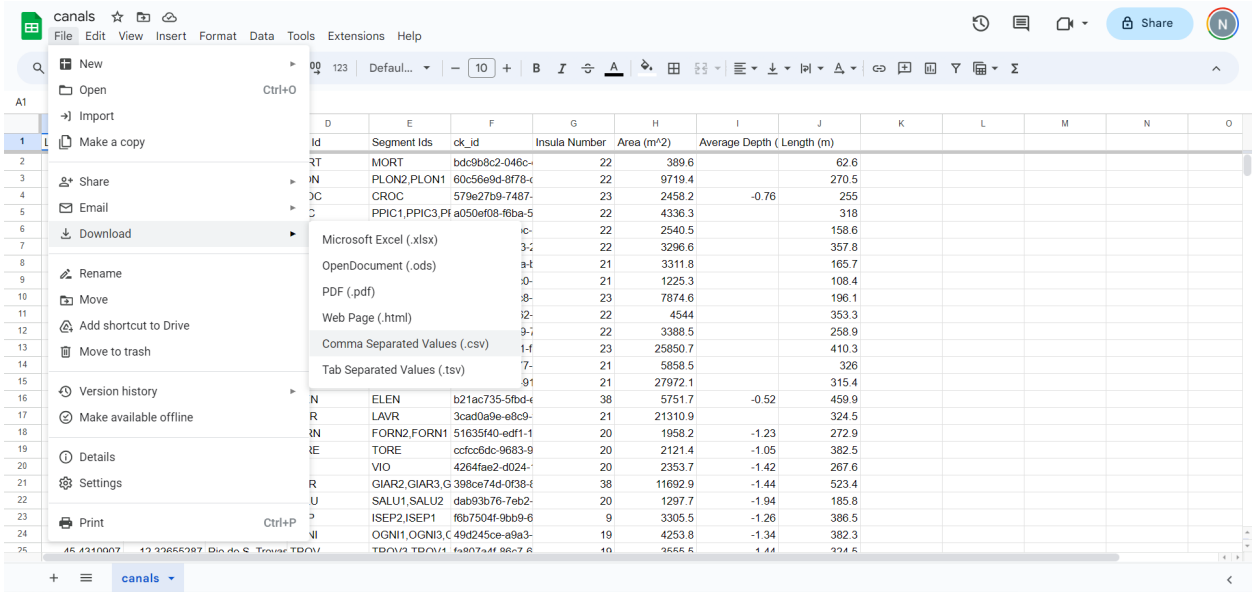


VPC Open Data Page On Canals



The Canal .csv File Open in the Browser

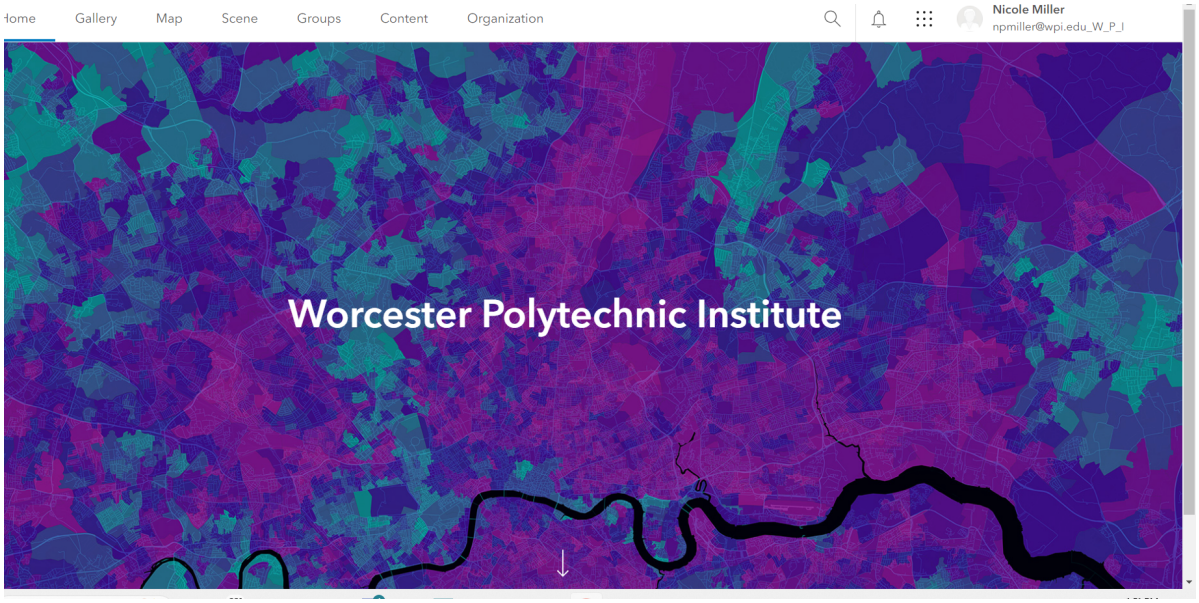
Once the data has been opened in Google Sheets, you should download the .csv file to your computer by going to the “file” button and selecting the “comma separated values (.csv)” option.



How to Download the .csv Data

Uploading and Plotting Map Data from File

After downloading the file to your computer, open ESRI's ArcGIS application in your browser, ensuring that you are logged in to the platform. On the homescreen, select the "Map" option to open up a blank map.



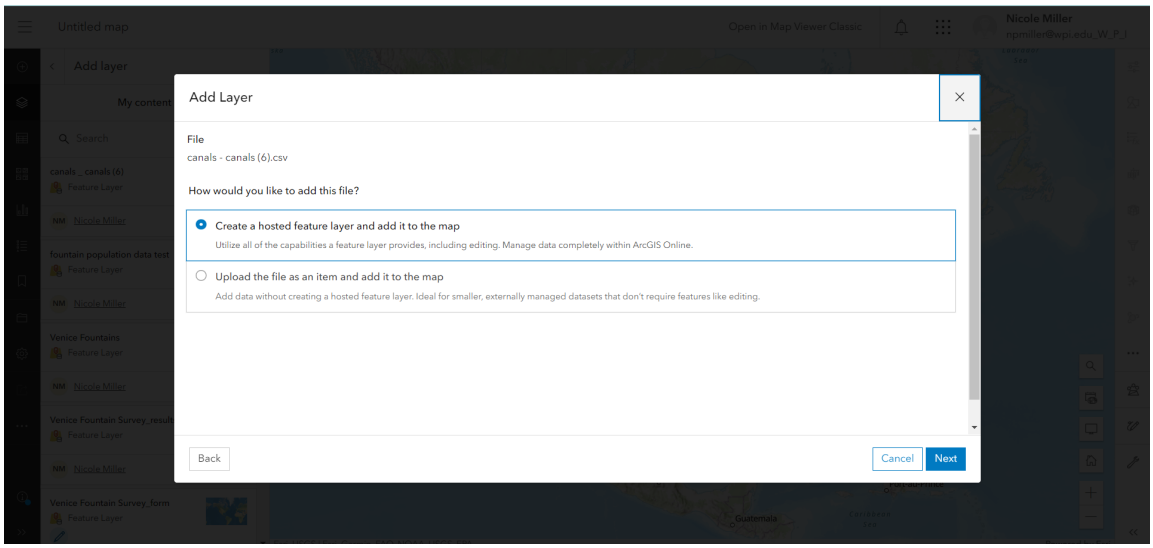
ArcGIS Homepage

Blank Map in the ArcGIS Application

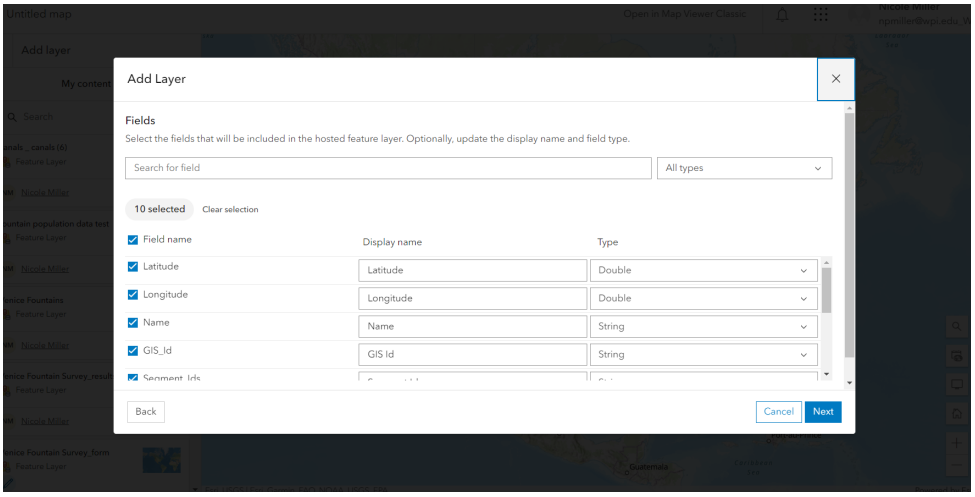
Then, go to the symbol in the top left hand corner of the screen that says "add layer" and select the option to "add layer from file". Upload your .csv file and follow the prompts as directed below. Ensure that the latitude and longitude are selected as the coordinate system, and then press the final button "create and add to map". Once this is

selected, the map points will be uploaded to your blank map, creating one like the example below. The map is then complete. Make sure to press the “save as” button to keep the map stored in your content.

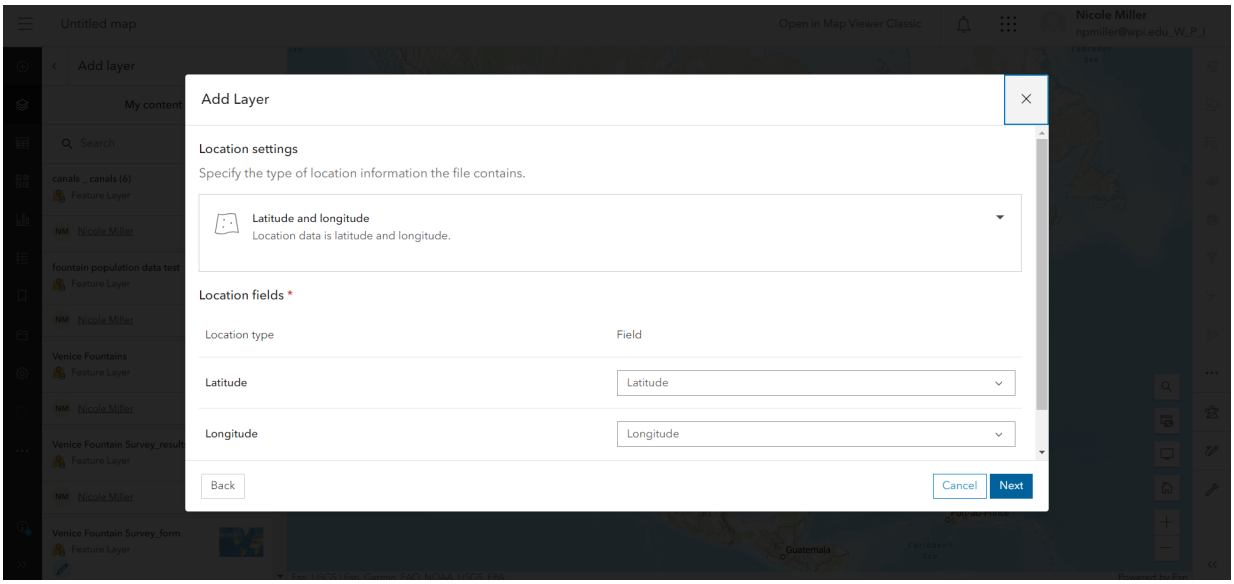
How to Upload a Layer from a File



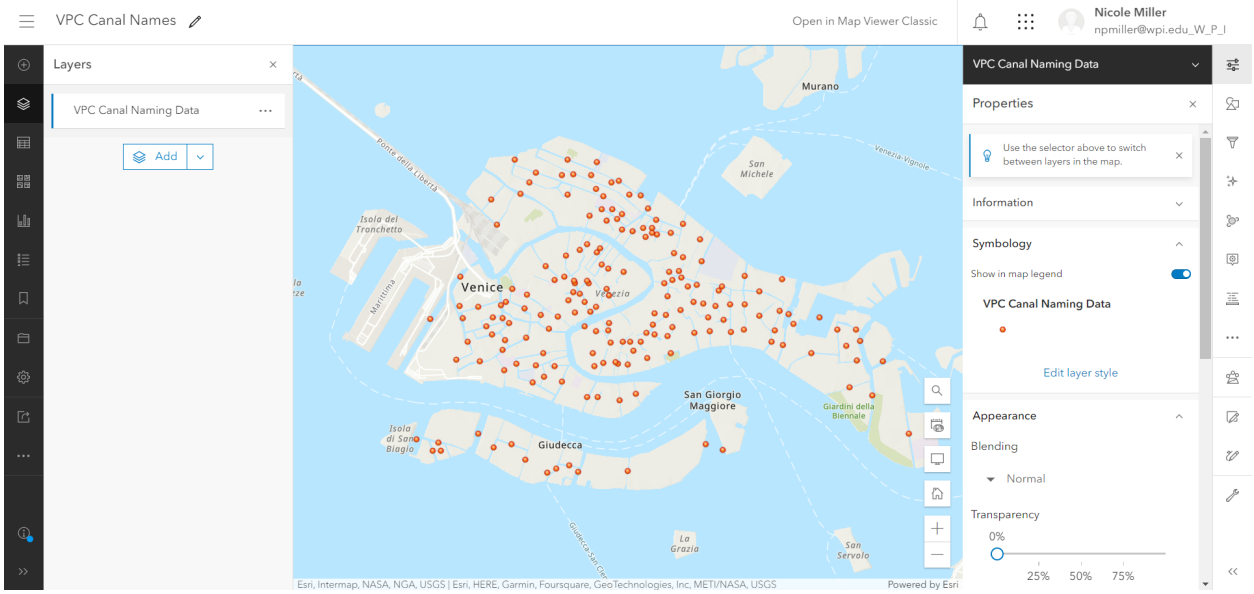
Prompts to follow for the upload of the file



Prompts to follow for the upload of the file



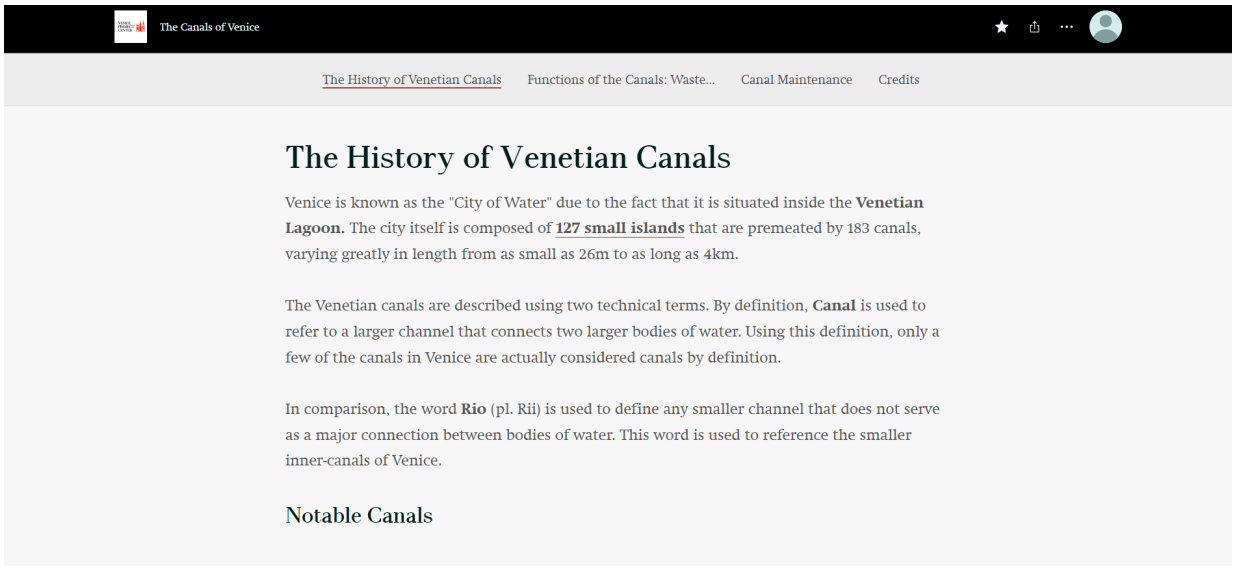
Prompts to follow for the upload of the file

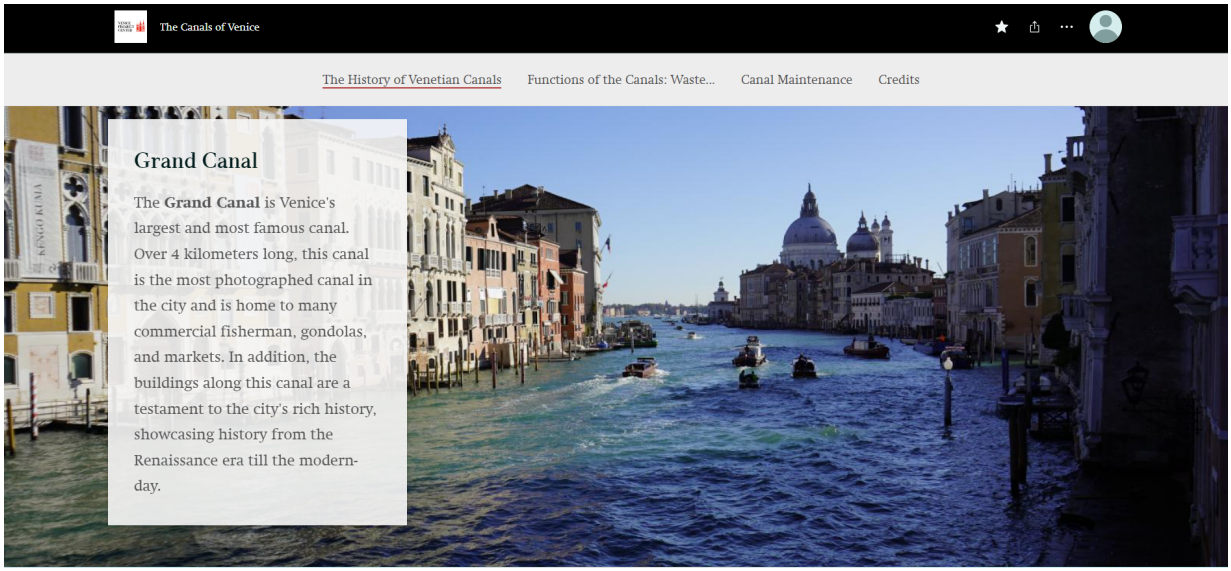


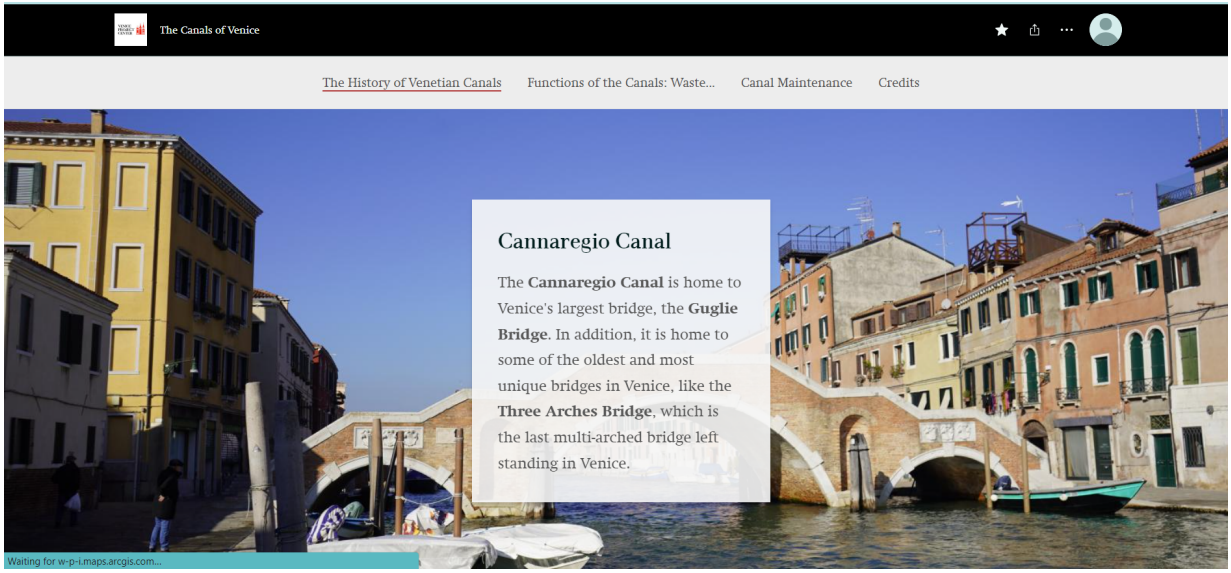
Plotted points on the ArcGIS map from the .csv data

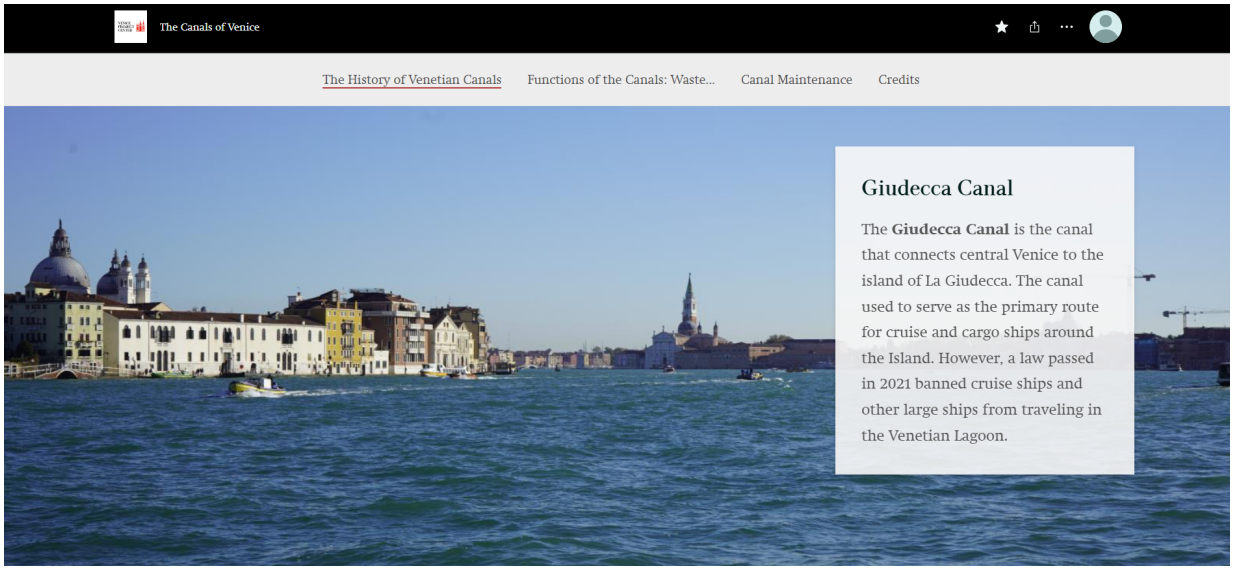
Appendix C: Example StoryMap on Canals

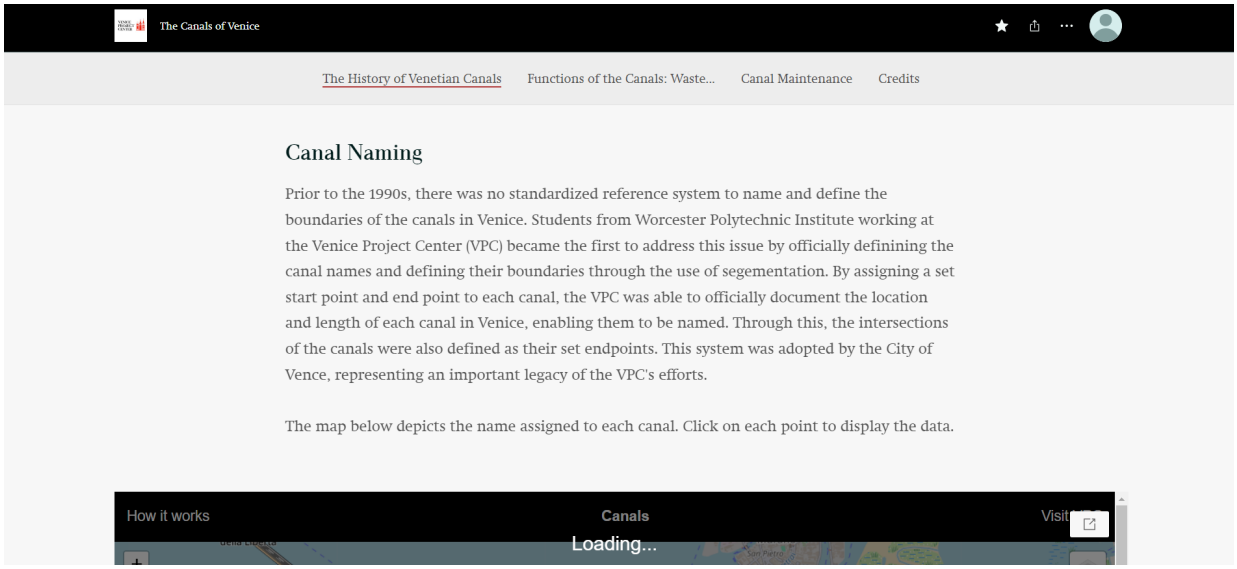
The following images are taken directly from the sample StoryMap on Canals. They are intended to depict the length and details covered in a sample StoryMap.

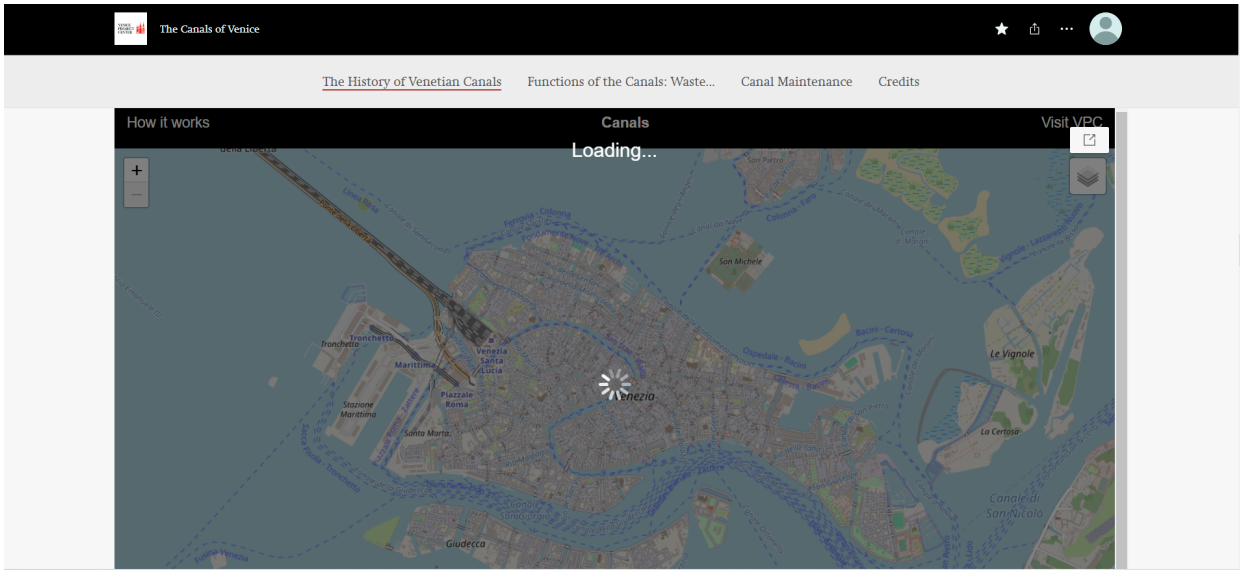


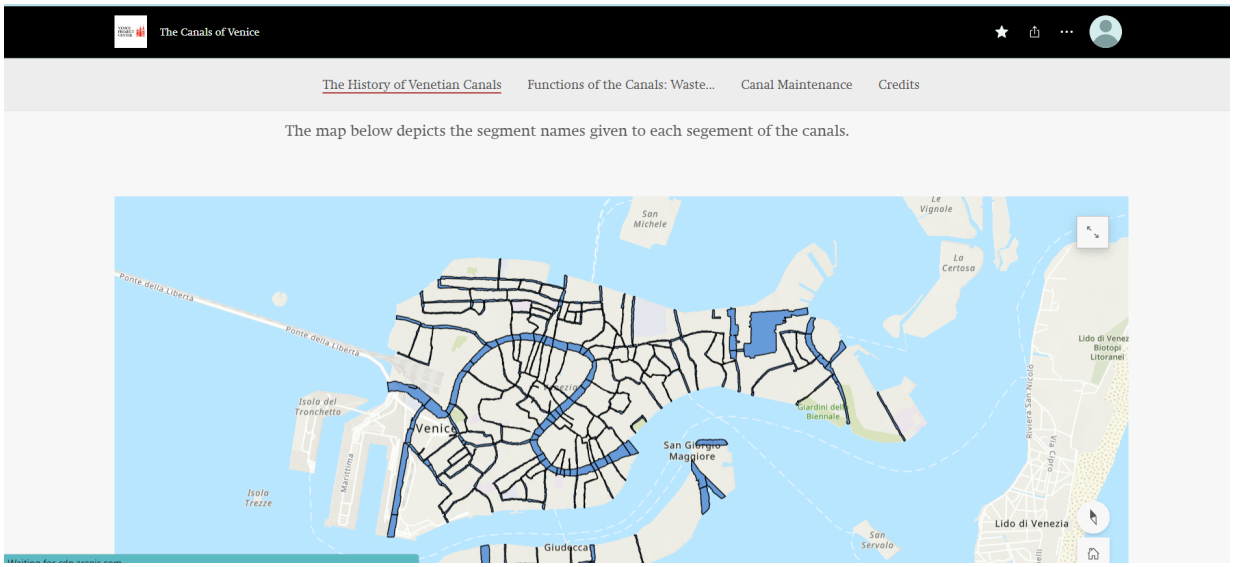

The Canals of Venice
The History of Venetian Canals
Functions of the Canals: Waste...
Canal Maintenance
Credits
Grand Canal
The Grand Canal is Venice's largest and most famous canal. Over 4 kilometers long, this canal is the most photographed canal in the city and is home to many commercial fisherman, gondolas, and markets. In addition, the buildings along this canal are a testament to the city's rich history, showcasing history from the Renaissance era till the modern-day.


The Canals of Venice
The History of Venetian Canals
Functions of the Canals: Waste...
Canal Maintenance
Credits
Cannaregio Canal
The Cannaregio Canal is home to Venice's largest bridge, the Guglie Bridge. In addition, it is home to some of the oldest and most unique bridges in Venice, like the Three Arches Bridge, which is the last multi-arched bridge left standing in Venice.
Waiting for w-p-i.maps.arcgis.com...


The Canals of Venice
The History of Venetian Canals
Functions of the Canals: Waste...
Canal Maintenance
Credits
Giudecca Canal
The Giudecca Canal is the canal that connects central Venice to the island of La Giudecca. The canal used to serve as the primary route for cruise and cargo ships around the Island. However, a law passed in 2021 banned cruise ships and other large ships from traveling in the Venetian Lagoon.


The Canals of Venice
The History of Venetian Canals
Functions of the Canals: Waste...
Canal Maintenance
Credits
Canal Naming
Prior to the 1990s, there was no standardized reference system to name and define the boundaries of the canals in Venice. Students from Worcester Polytechnic Institute working at the Venice Project Center (VPC) became the first to address this issue by officially defininining the canal names and defining their boundaries through the use of segementation. By assigning a set start point and end point to each canal, the VPC was able to officially document the location and length of each canal in Venice, enabling them to be named. Through this, the intersections of the canals were also defined as their set endpoints. This system was adopted by the City of Vence, representing an important legacy of the VPC's efforts.
The map below depicts the name assigned to each canal. Click on each point to display the data.
How it works
Canals
Loading...


The Canals of Venice
The History of Venetian Canals
Functions of the Canals: Waste...
Canal Maintenance
Credits
How it works
Canals
Visit VPC
Loading...
Venezia
San Michele
Le Vignole
La Certosa
Giudecca


The Canals of Venice
The History of Venetian Canals
Functions of the Canals: Waste...
Canal Maintenance
Credits
The map below depicts the segment names given to each segement of the canals.
San Michele
Le Vignole
La Certosa
Ponte della Libertà
Isola del Tronchetto
Venice
San Giorgio Maggiore
Giardini della Biennale
Isola Trezze
Giudecca
San Servolo
Lido di Venezia

Functions of the Canals: Waste Disposal and Transportation

The Canals around Venice provide two indispensable functions for the city as both a means of waste disposal and transportation.

Waste Disposal

Throughout the city's history, Venice's canals have been used as a source of waste removal. Due to the currents in the canals, waste could be placed into the canals and then flushed out into the Venetian Lagoon, keeping the city clean. The city later improved this system by developing a system of brick tunnels, known as **gatoli** that directy connected points of waste collection to the canals, enabling the waste to naturally and efficiently be flushed into them.

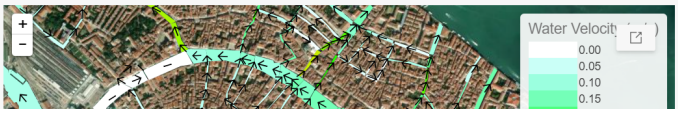
This waste removal method was effective due to its use of

The Canals of Venice

The History of Venetian Canals | Functions of the Canals: Waste... | Canal Maintenance | Credits

This waste removal method was effective due to its use of the natural resources present in the Venetian canals. When waste was dumped into the canals, it would be picked up by the currents, causing it to spill out into the Venetian Lagoon. Due to the importance of this process, the hydrodynamics of the Venetian Canals have been heavily studied in order to understand the most effective points of waste removal in the canals. The map below illustrates the hydrodynamics in the canals.

An outlet for waste to flow into the canals



Venice Hydrodynamics

The Canals of Venice

The History of Venetian Canals | Functions of the Canals: Waste... | Canal Maintenance | Credits

When a canal in Venice was identified as being stagnant, working against the flow of the natural waste removal, it was filled in by the government to create **Rii Terà**. The government filled-in a total of 50 canals to form Rii Terà throughout the city's history.

Long term, it became apparent that the canals were not a sufficient source of waste disposal, especially as other cities began to develop modern sewer systems. The Venetian government attempted to address this through the creation of a sewer system. However, the canals still continue to hold their original function as the the primary mode of waste disposal in the city.

A Rii Tera in Venice

Transportation

The canals also serve as the primary mode of transportation in the city of Venice, acting to facilitate the transportation of people, goods, and services via

Transportation

A Rii Tera in Venice

The canals also serve as the primary mode of transportation in the city of Venice, acting to facilitate the transportation of people, goods, and services via boats.

Before the development of bridges enabled people to travel by foot, the canals were the only method of transportation between islands, making them an essential piece of the city's economy.

In early years, people traveled through the canals on rowboats or gondolas. However, as technology has continued to evolve, motorized boats have come to dominate the canals as they transport people and goods.

The Canals of Venice

The History of Venetian Canals | Functions of the Canals: Waste... | Canal Maintenance | Credits

Canal Maintenance

Despite the fact that the canals of Venice generated through natural means, they have frequently been altered and reinforced in order to maintain them over the years. With Venetians relying on the canals as a means of transportation and waste disposal, the canals have gradually become damaged, eroded, and deteriorated over time.

Canal Wall Structure

The canal walls are primarily constructed with two materials: brick and Istrian stone. In addition to building the basic structure of the canals, the canal walls also serve as the foundation for many buildings in Venice, making their materials even more critical. The non-porous Istrian stone is used instead of brick at the base of buildings because it does not corrode in water. Brick, meanwhile, is used more widely within the canals as it is relatively inexpensive and easy to acquire. However, brick is much more susceptible to being damaged by frequent exposure to water.

Canal Dreging

Sedimentation is a never ending process in the canals, which leads to the periodic need for **dredging** to remove the excess mud that accumulates on the bottom of canals. The sediment does not just precipitate to the bottom as soon as it is unloaded into the canal, but rather it floats to the bottom with a certain rate of precipitation which depends on what the suspended solids are made of.

Due to this, dredging must occur frequently to compensate for the rate of sedimentation in canals. Dredging is performed to keep all of the canals at least 2m deep at all times. This number was determined using two factors: the depth of the gatoli (120cm) and the depth required for boats to travel through the canals at the lowest tide (50cm).

In order to facilitate the dredging process, students from Worcester Polytechnic Institute developed a coding system for the canal segments, specifically used for maintainence purposes.

Canal Wall Damage

The Canals of Venice

The History of Venetian Canals | Functions of the Canals: Waste... | Canal Maintenance | Credits

Canal Wall Damage

If the canals do not get dredged properly, sediment will build-up, blocking **gatoli** and **fognature** (sewer outlets) and preventing the removal of waste products. As a result of this blockage, sewer pipes rupture, weakening the mortar that holds the bricks of the canal walls in place. When prolonged, or combined with external factors such as **moto ondoso** (boat wakes), this instability can result in the formation of large **caverns,** or holes, within canal walls.

An example of damage done to a canal wall

The Canals of Venice

The History of Venetian Canals | Functions of the Canals: Waste... | Canal Maintenance | Credits

Credits

The following articles and websites were used as a source of reference for this StoryMap.

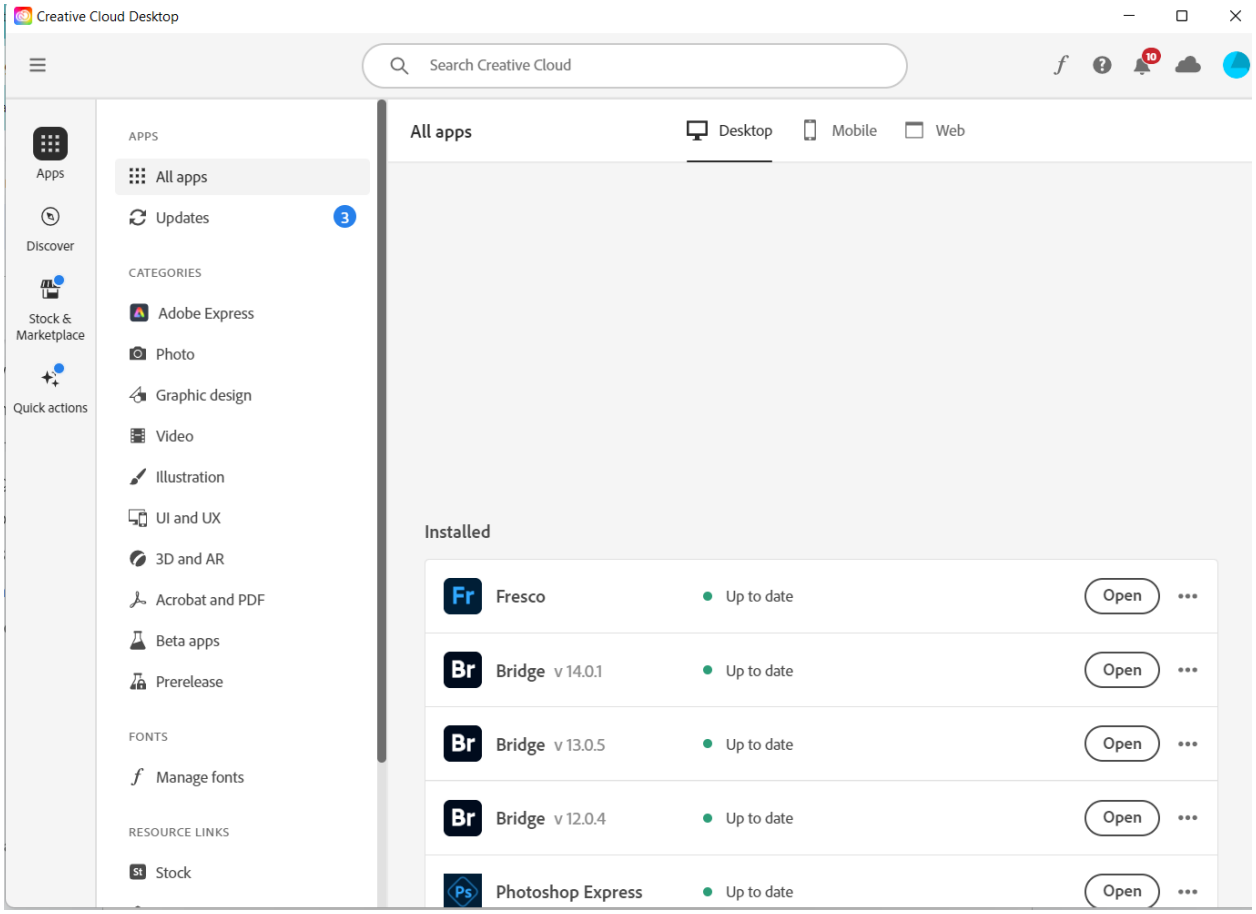
Hydrodynamics of the inner canals of Venice (1999)	https://digitalwpi.wpi.edu/pdfviewer/jd472w79n
Moto Ondoso Index – assessing the effects of boat traffic in the canals of Venice (2002)	https://digitalwpi.wpi.edu/pdfviewer/x633f149z
CanalSpace – managing the use of Venetian canals (2006)	https://digitalwpi.wpi.edu/pdfviewer/6m311p64r
Re-engineering the Venetian Taxi Transportation System: Efficiency Improvements That Reduce Moto Ondoso	https://digitalwpi.wpi.edu/pdfviewer/t435gd43s
Return to the City of Water: Quantifying Change in the Venetian Canals (2010)	https://digitalwpi.wpi.edu/pdfviewer/5h73pw70v
An Update on the Hydrodynamics of the Venice Canals (2011)	https://digitalwpi.wpi.edu/pdfviewer/6w924c06t
Streamlining Canal Hydrodynamic	https://digitalwpi.wpi.edu/pdfviewer/000000

Appendix D: Accessing Sample Booklet

The following guide provides step-by-step instructions on how to access the sample booklet in *Adobe InDesign* so that it can be edited for future use.

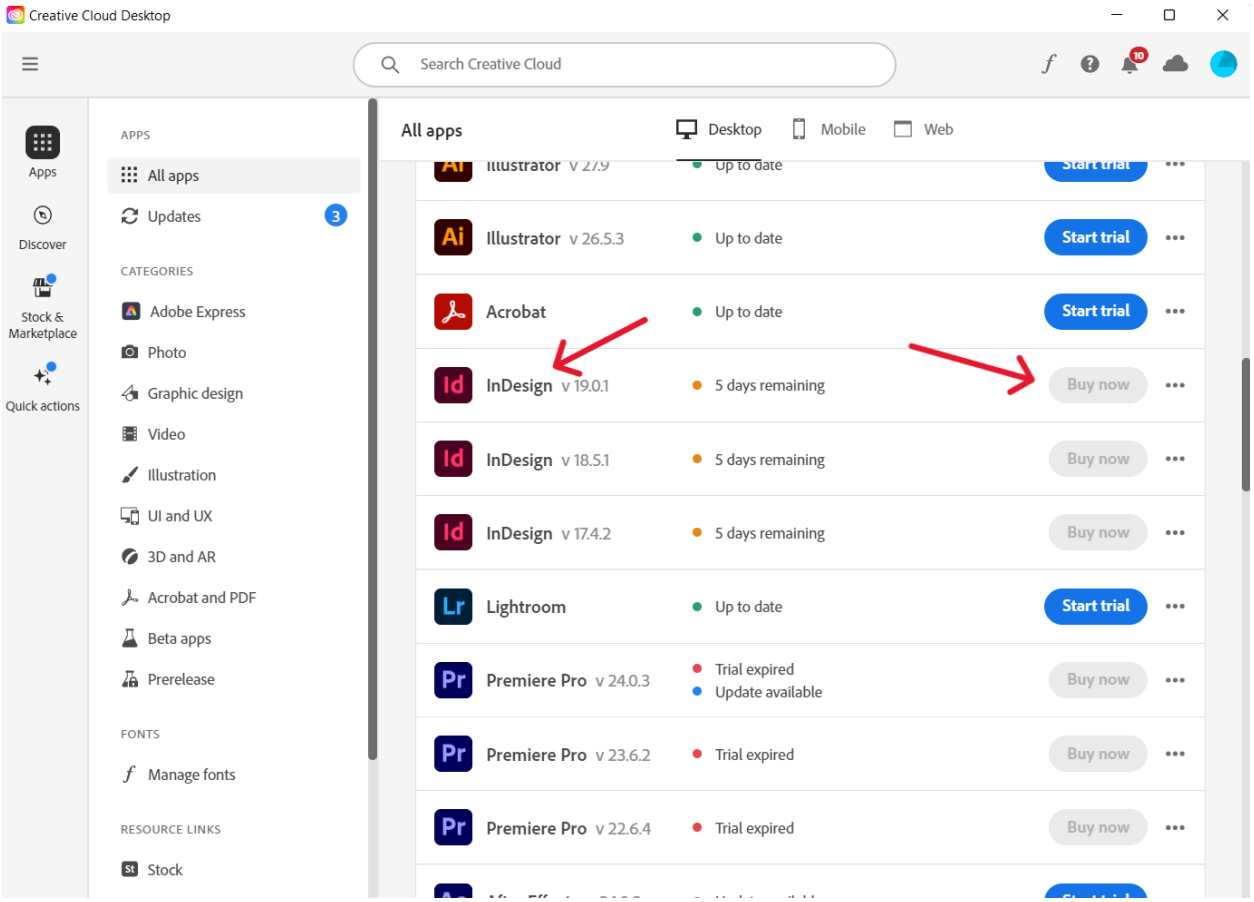
Downloading InDesign

Before the booklet can be accessed, you must obtain a license for the *Adobe Creative Cloud Suite* from the WPI IT Department. To do so, email it@wpi.edu to request the license. Within 48 hours, you should receive assistance from the IT help desk. Ideally, this should be done during the preparatory term to ensure that the license is active for the entire duration of the project. Once the license has been distributed, you can download the *Adobe Creative Cloud* application to your computer.



Adobe Creative Cloud Application

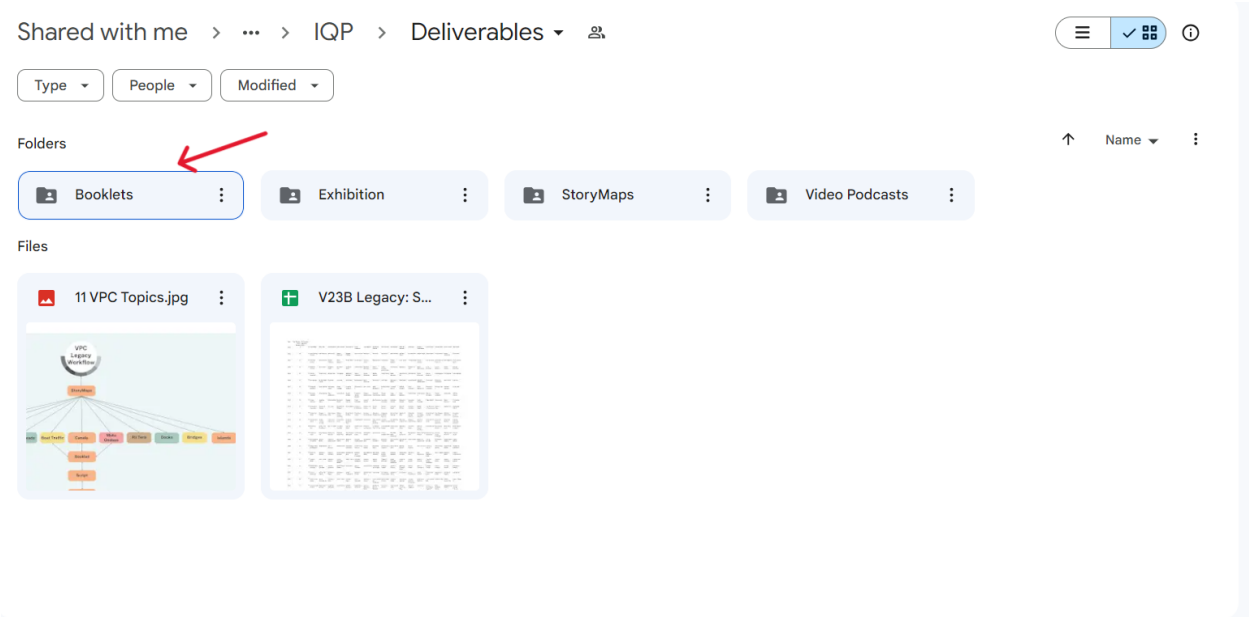
Once inside the *Adobe Creative Cloud* application, scroll down to the *InDesign* application, ensure that you are using the most recent version of the application. If you have an active license for the Adobe suite, then it will show a button that says “install”, allowing you to directly install it to your computer. If the license has not been activated yet, you may begin a 7 day free trial of *InDesign*, which will also download the application to your computer.



Locating Adobe InDesign

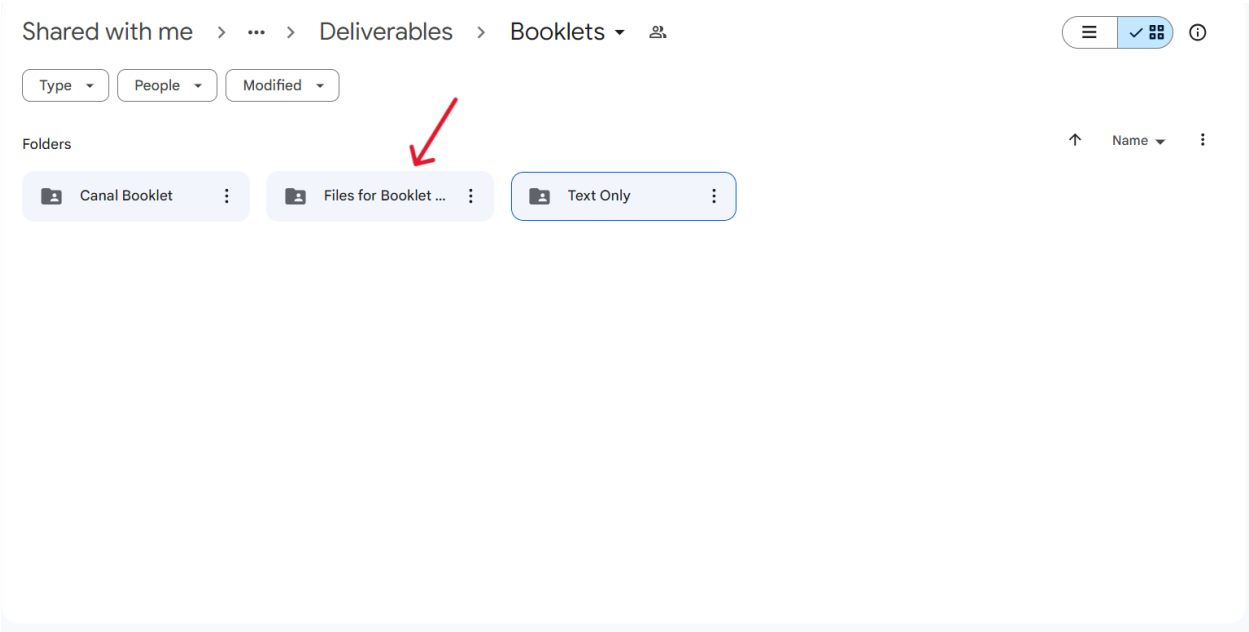
Downloading Fonts

Before you can properly view the booklet in *InDesign*, you must download the fonts used in the booklet to your computer. To do so, go into the V23B-Legacy Google Drive, click into the “IQP” folder, and go to the “deliverables” folder. Within that folder, there is a section called “booklets” which contains all of the assets necessary for the construction of the booklet.



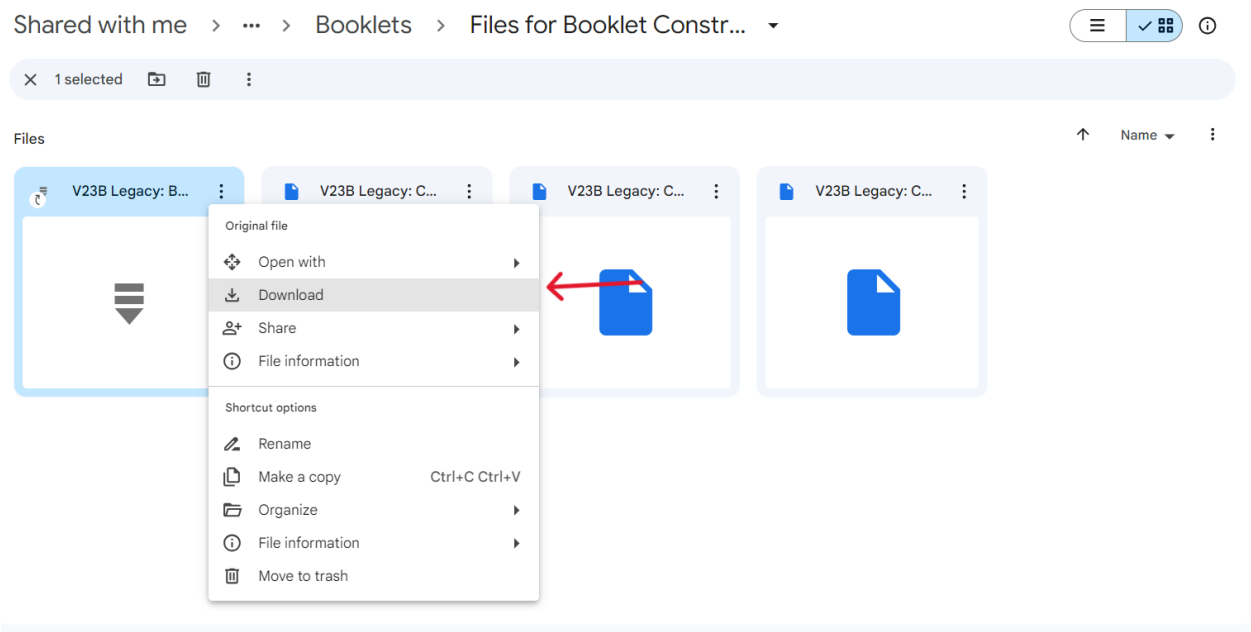
"Booklets" Folder Located in the V23B-Legacy Drive

Within the booklets folder, there is a .zip file titled "V23B Legacy: booklet resources" that can be found in the sub-folder titled "Files for Booklet Construction".



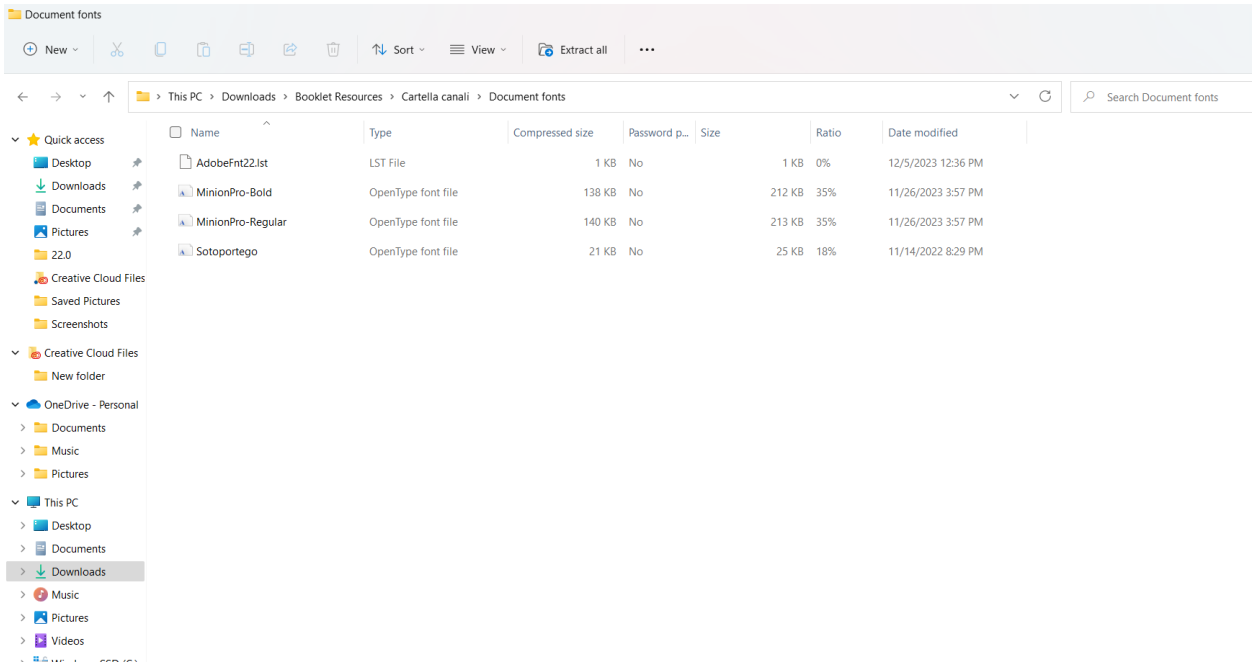
Location of "Files for Booklet Construction" Folder

Download this zip file to your computer and open up the file in your File Explorer. Once the file is opened, there should be a subfolder titled “booklet fonts” which should also be opened.



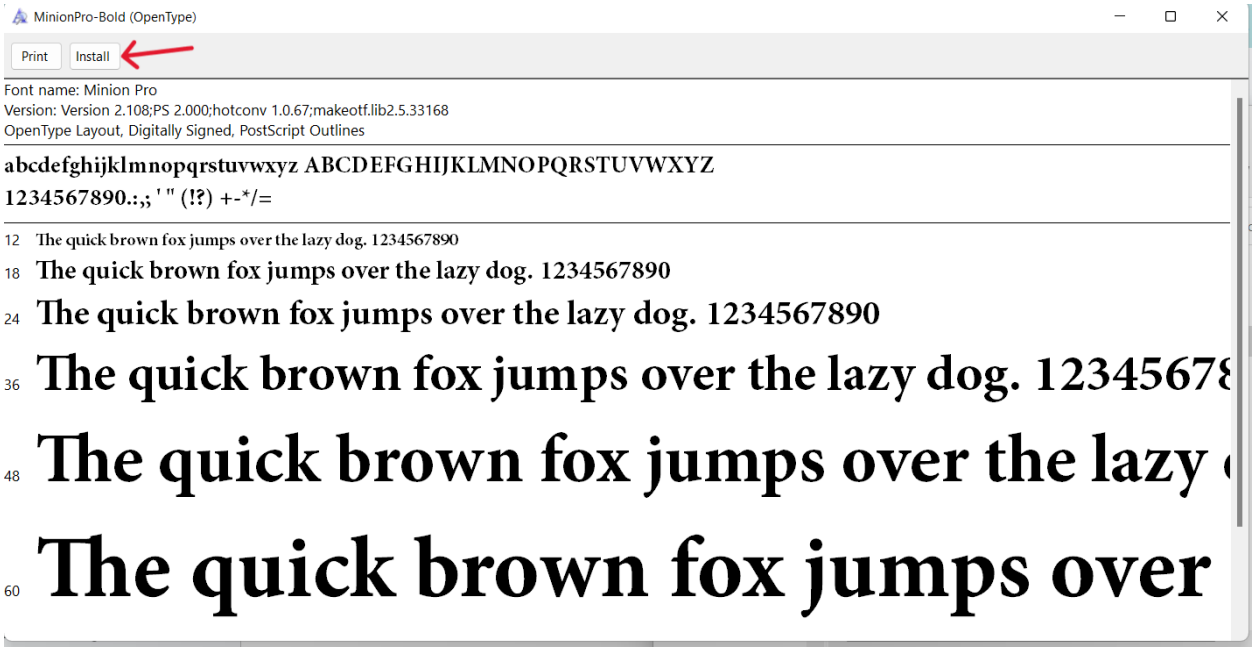
Downloading the Booklet Resources .Zip File

Inside the “document fonts” folder, there will be three different font files.



The Three Different Fonts Located in the “Document Fonts” Folder

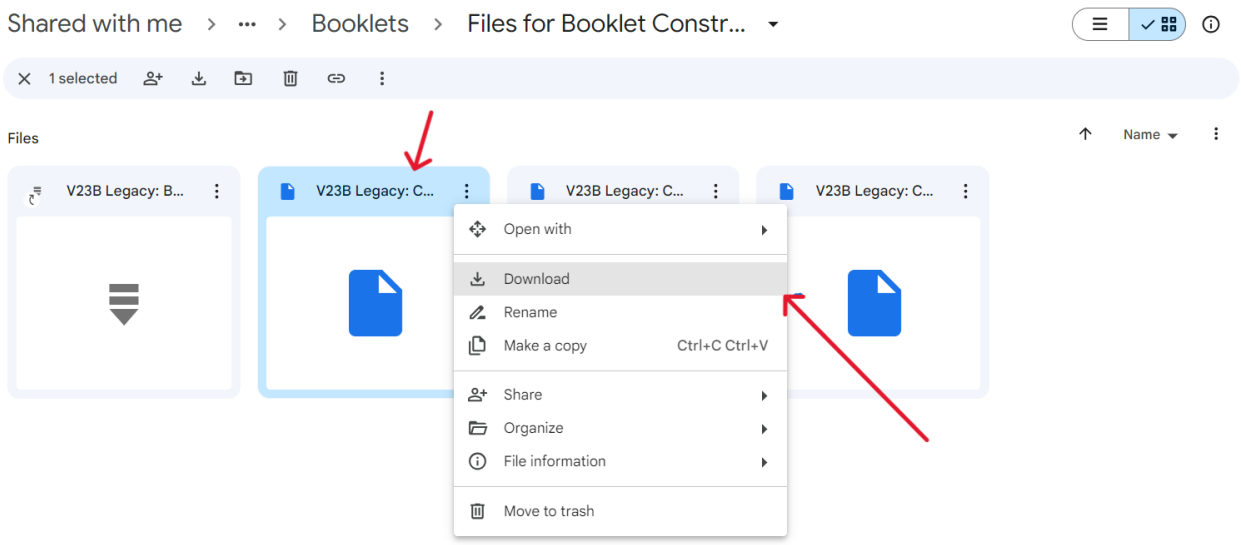
Open up one of the font files by clicking on it, it should open to a page with the font displayed that says “install” in the top left hand corner. Click this button to download the font to your computer and repeat for the remaining two fonts.



Download Font Screen

Opening Booklet in InDesign

Now that the fonts are downloaded, you can open the booklet layout in InDesign. Go back to the “Booklet” folder in the V23B-Legacy Google Drive. Once again, go to the sub-folder titled “Files for Booklet Construction”. Inside of this folder, there should be a document titled “V23B Legacy: Canal 80 Page SAMPLE Booklet”.



“V23B Legacy: Canal 80 Page SAMPLE Booklet” Document Location

Download this file to your computer then access it through your File Explorer to open it in *InDesign*. Once it is open in *InDesign*, you can begin to edit the booklet. After editing, ensure that you save the file under a new name as to not override the previous file.

Booklet File Open to Edit in InDesign

Appendix E: Video Production Guide

The following guide provides in depth information on all aspects of the process of video production, including: Previous production guidelines, equipment utilized, general studio setup, camera settings, and file management.

Previous Production Guidelines

In order to stay on track with the creation of videos, our team followed the production guidelines laid out by both the winter B22 and summer E23 teams. These thorough production guidelines covered the usage of equipment, the creation of digital assets for StoryMaps and documentaries, and the production/editing of audiovisual media. These guidelines were referenced and occasionally revised throughout the project. For example, the B22 team utilized the VPC's *Black Magic Atem Mini* switcher run through OBS in order to capture their interview videos. During our consultation with Mr. Stocco, this setup was deemed unnecessary, and a separate recording configuration was created. For more specific information on the video production, *See Appendix E: Video Production Guide.*

Generally the previously created media production guidelines were followed by our team. Specifically we utilized the timeline structure created by the E23 team to inform our own video workflow. The team's recommendations included: using the belltower as a recording site, creating shot lists to maximize efficiency of B-roll collection, using the stock media company *Artlist* for additional audio and visual media, and using either *Da Vinci Resolve* or *Adobe Premiere Pro* for video editing. Many of these recommendations included specific guides, which were very helpful for getting things up and running quickly.

It is also important to note that, though many guidelines from the E23 team were followed, much of their work regarding planned future videos was revised. Though the general 10 topic structure was decided on during their project term, their team created an entire plan for the production of episode-like videos, covering much smaller and

more specific sub topics from the 10 larger ones. (For example, the team produced a video on traditional boats, a smaller subcategory detail of the larger topics of boat traffic and canals). Early into our project term, it was decided that the videos would take a different direction, instead with a one topic to one video structure, even possibly combining multiple topics if relevant.

Equipment List

The equipment used to set up / record in the bell tower studio is as follows:

- Black curtain backdrop with stand
- Elgato portable green screen
- 2 x studio tripod lights
- Edelkrone StandPLUS camera stand
- Sony A7 iii Camera w/ 28-70 mm lens
- DJI wireless microphone set
- RODE *Lavalier GO* lavalier microphone
- 2 x power strip extension cords
- Chair + Folding table

Studio Setup

With help from Mr. Stucco, the team organized the equipment in the studio space to create the best recording conditions. The location of the feet of all stands (curtain, tripods, lights etc.) were marked with duct tape on the floor to ensure easy recreation. These tape spots should remain until the next time the studio needs to be used, but if not, this guide should assist in replicating the setup. For general directions, the black curtain was hung up to block the windows on the right side of the room, with the green screen and chair on the left. The camera and lights were placed just in front of the curtain, and aimed at the chair. The lights were placed to each side of the camera and adjusted to reduce the shadow on the green screen as much as possible. The following pictures show the layout of the equipment in the room:

VPC Bell tower recording studio setup

Floor tape markers

Camera Settings

For the filming of any future episodes or "intro" videos, the camera settings should be the same, to maintain a consistent filming style. The settings for the camera, as recommended by Mr. Stucco, are below:

- Aperture: F5.6 - F8.0
- Manual Focus
- ISO: 550 - 600
- Shutter Speed: 1/50

These settings should be saved onto the camera's "1" preset

Audio Recording

The DJI wireless microphone system was used for recording audio directly into the camera. The mics should be automatically paired to the transmitter when the case is opened. To record into the camera, the transmitter was placed in the hot shoe (the flash mounting area at the top of camera) using the included attachment, then plugged into the camera's microphone port using the included 3.5 mm audio cable. For the first set of videos, the DJI microphones were used directly as lapel mics, and attached to Prof. Carrera's shirt using the included magnets. For the second set of videos, we instead utilized the RODE *Lavalier GO* lavalier microphone. This microphone functions as a lighter weight extension of the DJI mic and plugs directly into the mic port on the DJI. The lapel mic was then clipped onto Prof. Carrera's shirt collar in similar fashion.

Speech-to-Text

This is a short guide documenting how to convert the 'intro' videos to text via *Microsoft Word'*s Speech-to-Text Transcription tool.

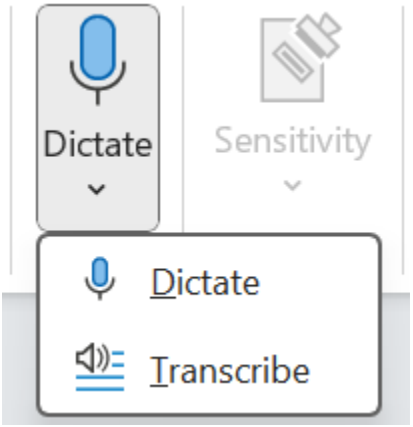
First, the video must be converted from a video (.mp4) file to an audio (.mp3) file. There are a few ways of doing this, and future teams are welcome to determine their own. A simple method our team used and recommends was the convert tool within *VLC Media Player*. *VLC Media Player* is a commonly used software for video playback and

simple editing/converting. The steps for converting a video to audio file in *VLC* are as follows:

- Open video file within *VLC Media Player*
- Select Media, then Convert / Save
- Click the ‘Add’ button and navigate to the desired file
- Once desired file is added, click ‘Convert/Save’
- In this menu, check ‘convert’ and set the ‘Profile’ to ‘Audio - MP3’
- Choose the desired file output location and click ‘start’. The conversion will commence

Once the file is converted to audio, it can be uploaded to *Word* for transcription. The steps for creating the transcription in *Word* are as follows:

- Open a new document in *Microsoft Word*
- From the top menu bar, find ‘Dictate’. Right click on this, and select ‘Transcribe’
- Click ‘Upload Audio’ and upload the desired audio file. Transcription will ensue.
- Once transcription is finished, Click ‘add to document’. At this point you can decide to add a combination of speaker titles, timestamps, and text. For our needs we just chose text.
- The transcribed text can then be reviewed and polished, in case any errors were made.



File Management

In order to share the videos in the most efficient way, a simple file management process was used. Due to the videos being recorded in 4k, the file sizes for each video were incredibly large (Roughly 400 mb per minute of footage). Since the videos were made to primarily provide background knowledge and narrative ideas for each topic, it was illogical to try uploading the full size videos to our team's google drive. Thus, the full size videos were uploaded to the VPC external hard drive (labeled “VPC Videos”), and then compressed to a smaller file size before uploading. In this way, the videos in the

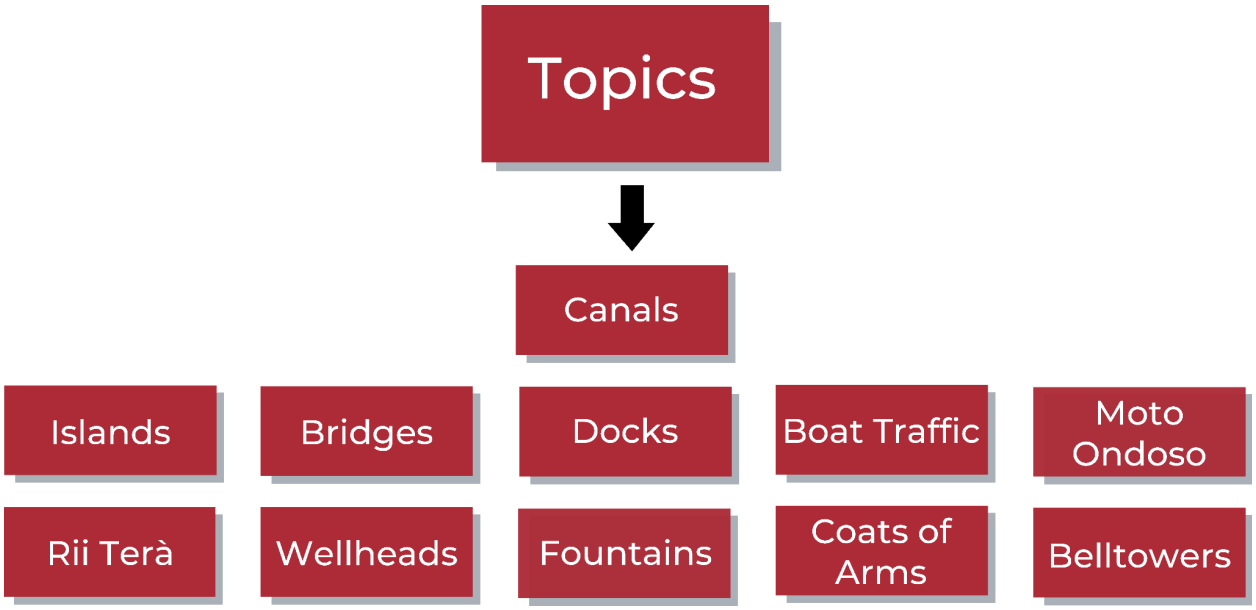
google drive are lower quality, to be used only for viewing, and the videos in the hard drive are full quality, to be used for editing and production if desired.

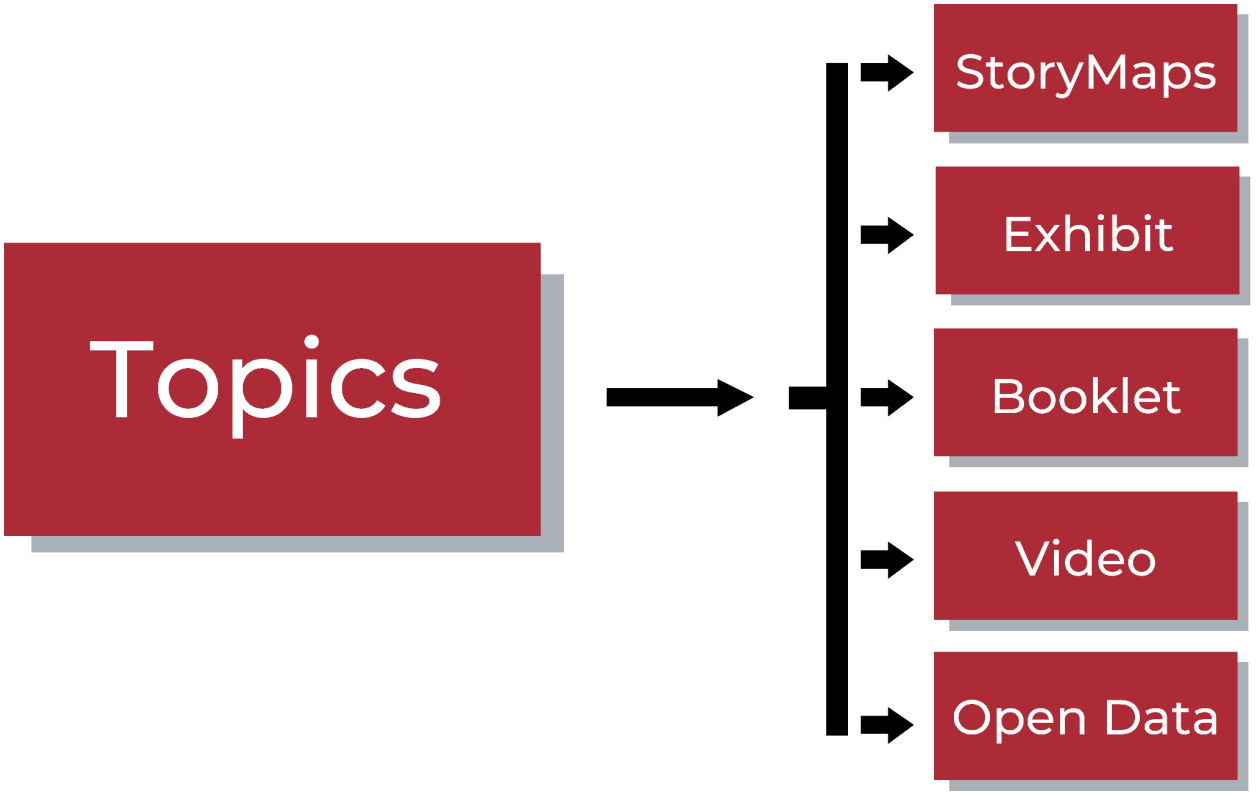
Compressing the videos wasn't a complicated process, but it may be foreign to those who don't have experience with video editing or the Adobe Suite. Therefore it is outlined step by step below:

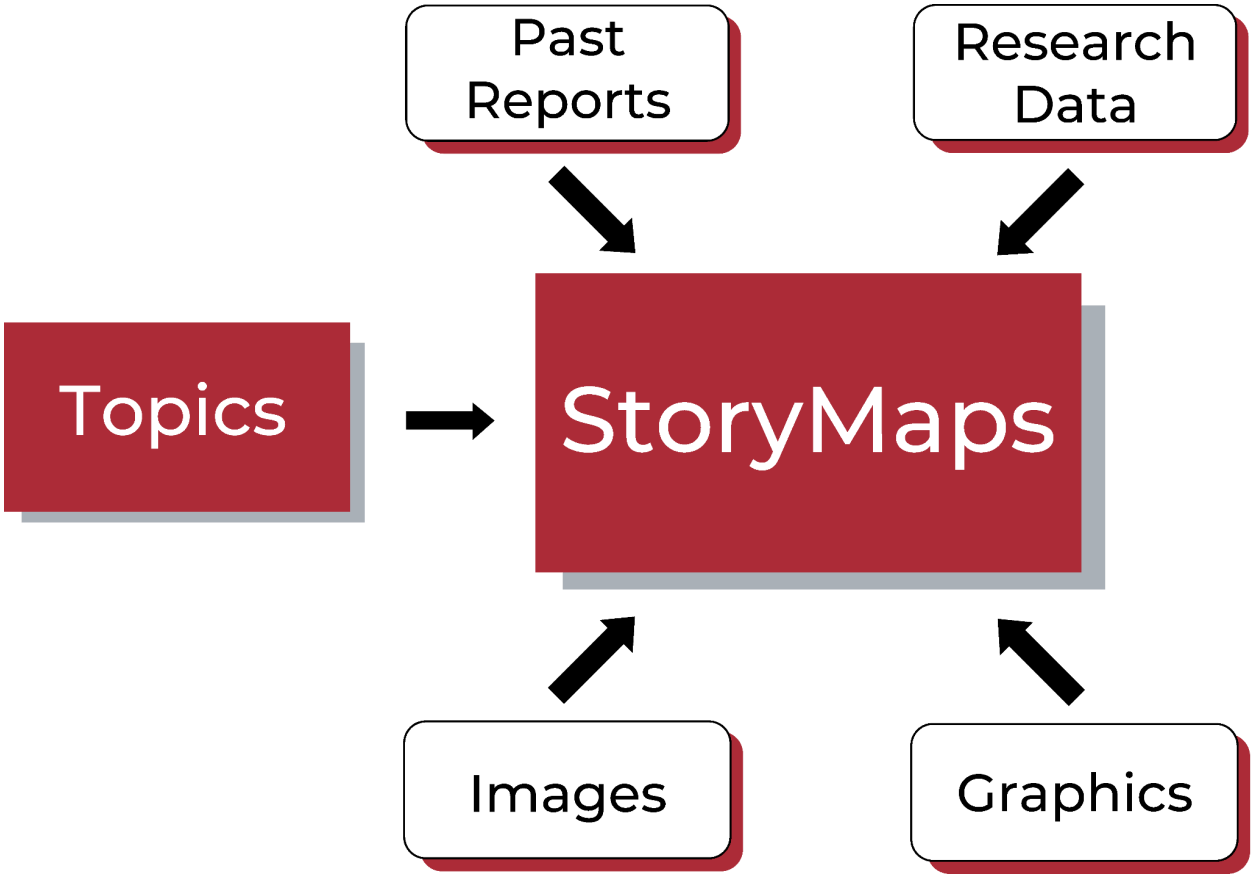
- Open video file(s) in *Adobe Premiere Pro*. Trim / combine videos if necessary
- Go to File > Export > Send to Adobe Media Encoder
- Once in Adobe Media Encoder, the next step is changing the format and preset
- Click format options arrow (next to "*H.264*") and select "*HEVC (H.265)*" from dropdown menu
- Click preset options arrow (next to "*Match Source - High Bitrate*") and select "*HD 720p*" from dropdown menu
- Click output file to choose where to save and rename file if desired
- Click the green play button in the top right corner. The encoding process will ensue, and the compressed file will be output.

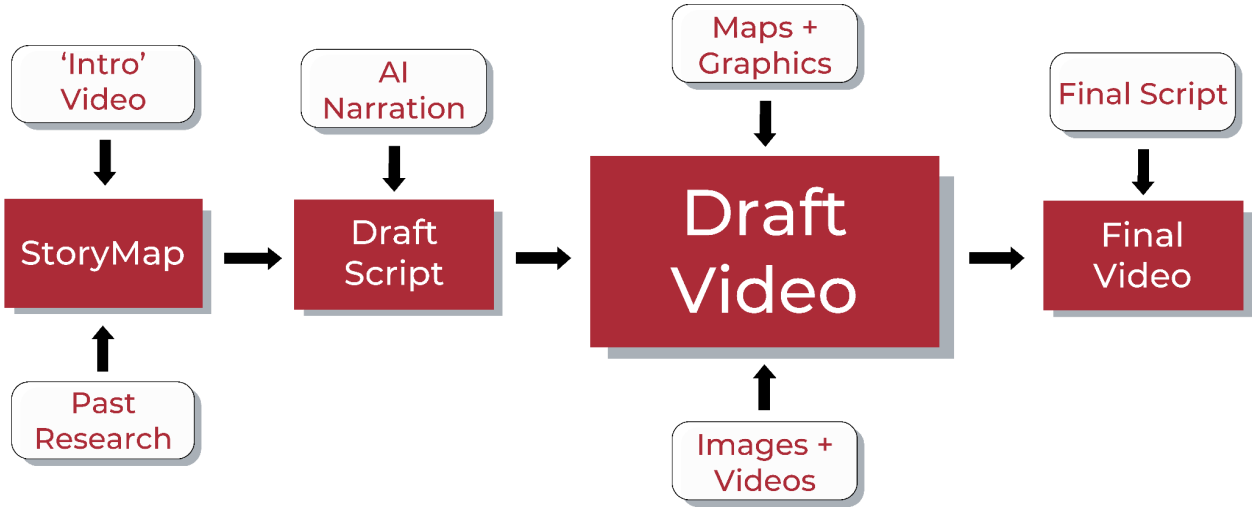
- This process is specific to the adobe suite, if future teams use other softwares they will need to determine their own methods of compression

Appendix F: Workflow Graphics






Past Reports
Research Data
Topics
StoryMaps
Images
Graphics


'Intro' Video
AI Narration
Maps + Graphics
Final Script
StoryMap
Draft Script
Draft Video
Final Video
Past Research
Images + Videos