



WPI

HAPPY 35th: Celebrating 35 Years of Research at the Venice Project Center

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WORCESTER POLYTECHNIC INSTITUTE
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degree of Bachelor of Science

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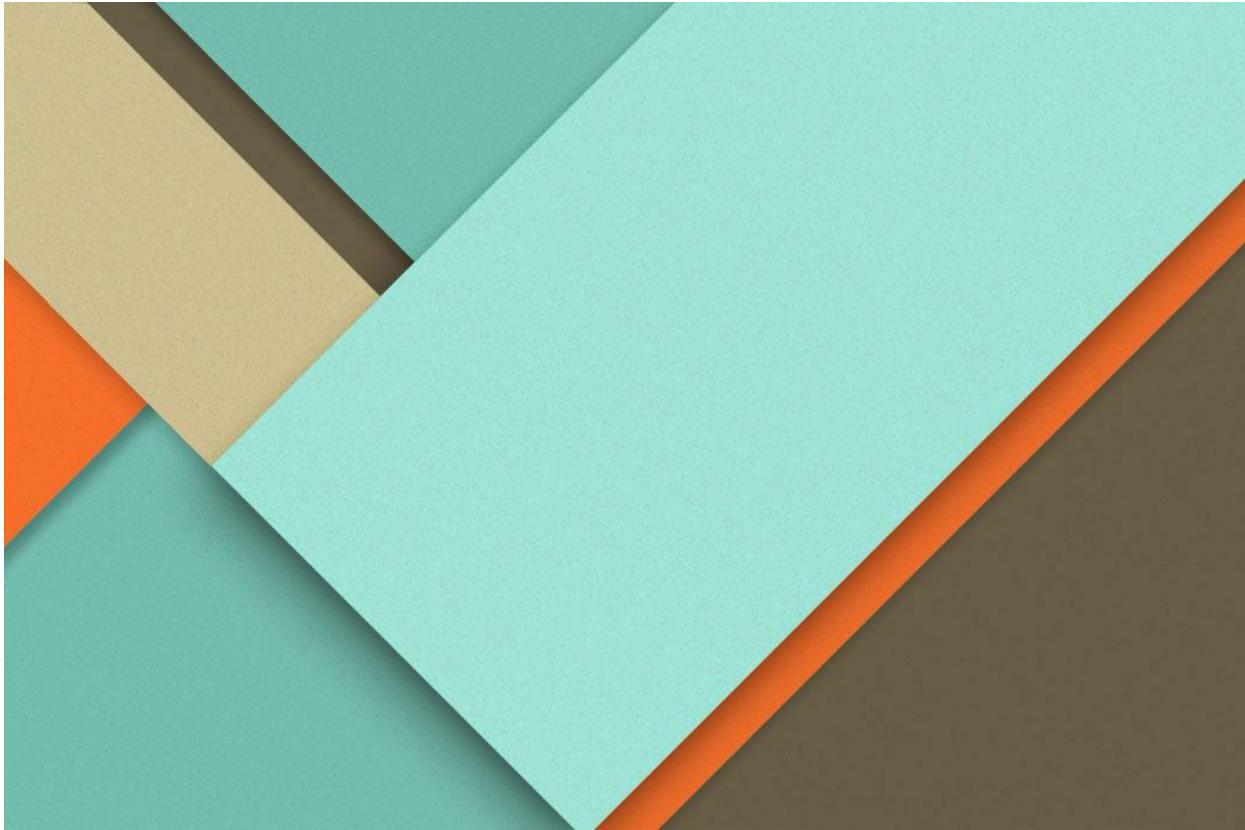
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Happy 35th: Celebrating 35 Years of Research at the Venice Project Center

12.16.2022

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Worcester Polytechnic Institute
Venice Project Center
In collaboration with SerenDPT

Executive Summary

The Venice Project Center has researched many challenges that impact Venice's infrastructure, culture, and people. Over the last 35 years, the VPC has continuously used the latest technologies to better understand and address these challenges. Since 1988, the VPC has hosted over 800 WPI students who have conducted 236 research projects, collaborating with over 100 local sponsors, including NGOs, non-profits, government agencies, and local businesses. VPC research has systematically documented the city's assets and analyzed its evolution; it has assisted the city's decision-makers by providing accurate, up-to-date data on hundreds of topics. The VPC databases are used by Venetian stakeholder organizations and the general public alike. Acknowledged by National Geographic, BBC, Science Magazine, and many others, the VPC is renowned for its contributions to the city and the people of Venice as a whole (Venice Project Center, 2022).

The goal of this project was to recognize and promote the VPC's 35 years of accomplishments and help the Center more effectively disseminate its existing research and data to better serve the greater Venetian community and government.

The first and most crucial objective of this project was organizing and categorizing all of the VPC's assets—including its publications, databases, and online tools. At the start of this project, the primary location of these materials was the Venice Project Center 3.0 website. Our team created a repository to house this information in a more organized way. Our second objective was to identify the impacts the VPC has had. While previous VPC research teams had already investigated and illustrated some of these impacts, we intended to build on their work. Our third objective was to summarize and highlight the VPC's most significant accomplishments by creating new, engaging media. Our team hoped to better educate the average person on Venice's complex challenges of depopulation, over-tourism, and the many threats to the city's infrastructure, but also to highlight Venice's unique history and culture (World Population Review, 2022). Finally, for our fourth objective, we intended to develop a plan for the future dissemination of VPC media.

A repository was created that contains all information our team found on VPC and Venice, seen in Figure 1. This site will be available for future teams to edit and update. The repository houses VPC's projects, reports, applications, data, publications, social media,

and other relevant information. We organized all the data by separating the site into helpful categories, so users can find everything. The projects were assigned themes, subthemes, subtopics, and tags to help users research broad topics or specific information.



[Welcome to the WPI Venice Project Center's REPOSITORY system!](#)

Welcome to the WPI Venice Project Center's REPOSITORY system!

Through this gateway (and the other connected web sites), you will be able to access all of the most significant results produced by over 250 WPI research teams in Venice since 1988.

Figure 1. The VPC's new repository system with tabs for each project category above.

We also organized the VPC's Master Project List, an internal spreadsheet that indexes past student projects at the VPC. This spreadsheet listed the title of each report, student authors, publication year, sponsors, faculty advisors, the topic the project falls under, project deliverables (such as applications, documents, and databases), and links to Google Drives which house reports and data for each project. This list contained information on *almost* every project team before 2018, but many of the links to the Drives required access or were broken. Moreover, older reports that were once stored in a WPI storage system had been recently migrated to DigitalWPI, an online database of all WPI project reports. The spreadsheet still contained inoperable links to the old system. We found that some reports were mistakenly embargoed for public access, missing, or not correctly labeled as Venice IQP projects—only 149 of the 236 student project reports were correctly labeled. Information on VPC projects before 2000 existed only on CDs or floppy disks in Venice; the master list had no link to these materials. Some projects over 20 years old were stored as low-quality black-and-white scans, making them hard to read. Our team remedied these issues by manually finding links to all VPC projects on the new DigitalWPI system and replacing the links that were either inoperable or linked to a former student's personal Google Drive. Additionally, we were able to digitize reports created before 2000 by locating digital versions on disks at the VPC and scanning hard copies of reports that did



not already have a digital counterpart. These reports were compiled and sent to the WPI Archives along with their metadata (authors, sponsors, publication year, etc.) so they could be posted on DigitalWPI.

To accomplish our second objective, we found information on how the VPC has impacted Venice. We developed five main impact categories - Student Education, Collaborations and Partnerships, Media and Publicity, Scholarly Research, and Policies and Procedures. To quantify the impact on student education, we tabulated the number of students that have worked on projects at the VPC. Over 800 students have participated in over 230 projects at the VPC, and students have produced over one million data points. With an estimated 2,000 hours of student work per project, this equates to over 450,000 hours of work done at the VPC to preserve and improve the city of Venice. Included in our recommendations for the future is a survey for VPC alumni. This will allow future teams to gain a better understanding of how the interdisciplinary project experience at the VPC impacted the education of students directly. This survey will also serve as an opportunity for future teams to gather testimony from alumni, which can be showcased in impact videos or in future exhibits.

Next, we examined the collaborations and partnerships the VPC has formed over 35 years. We found that the VPC has partnered with 104 local organizations during its lifetime, and 35 of these organizations have returned to sponsor at least one more project. Nine of these organizations have collaborated with the VPC on five or more projects, the biggest of which being UNESCO (which has worked with the VPC on 35 projects). Additionally, we found that the VPC has created dozens of new organizations and startups itself, the biggest of which being Serenissima Development and Preservation through Technology, or SerenDPT.

For media and publicity, we found that many world-renowned magazines have showcased the VPC's contributions to Venice, such as National Geographic, Smithsonian, and more. The Venice Project Center has also contributed to the publishing of a book titled *Venice: A City of Canals*. The recognition that the VPC gets through media and publicity showcases the efforts that the VPC puts into its data and work. For example, the VPC worked on a project about maps and the evolution of Venice. No other group in the city had focused on that particular area of research before, and as a result, National

Geographic featured the maps the VPC made. Another impact that highlights the efforts of the VPC is the number of times they have won the Best Project of the Year award at WPI, which was eight times. These projects ranged from lagoon archaeology to sewer systems in Venice to the preservation of the Venetian environment.

We then examined where the VPC has been cited or mentioned in scholarly research. We located many of the publications that the VPC has produced and publications where the VPC was a listed collaborator or was cited. There have been at least 150 citations of VPC reports, including student reports in scientific journals. There have been 20 VPC reports that are not student reports cited in other scientific journals. These citations show that accredited researchers and scientists outside of the VPC are taking notice of the work the VPC is doing, and that that work adds significant value to their own research projects.

Finally, we looked at policies and procedures. In certain cases, the VPC has given data to agencies and organizations, data that contributed to later changes in operation or policy. To better tell this story and track these accomplishments interviews with city officials and collaborating organizations need to be done in the future. We started the process of assessing this impact by working with Prof. Carrera to find organizations and individuals that have closely worked with VPC over the years. Not only are these organizations the most likely to have experienced an internal change due to VPC research, but they will also be the easiest to get in contact with for an in-person interview.

To accomplish our third objective, we started the process of interviewing Prof. Fabio Carrera about topics important to Venice that the VPC has covered over 35 years. Prof. Carrera provided an overview of the breadth of work that had been done in these areas, but he also shed some light on the major impacts this work has had on the city. Our team pioneered the interviewing process, using trial and error to figure out how to set up the equipment, capture high-quality video and audio, fix technical issues, and more. We have documented the interview setup and debugging processes as well as general best practices in a separate document, which will be left for future teams. In addition, we created a template for the introduction and ending credits for all future videos that will be made using these interviews. We hoped to get the ball rolling for future teams to create videos at the start of their term. Our team also developed several interactive infographics which visualize the impacts we learned about from Prof. Carrera, and show the project themes

and sponsors over the past 35 years. These can be disseminated through social media or used as additional materials in an interactive exhibit hosted by future teams. Figure 2 shows two diagrams, one with the 6 themes and one with the number of sponsors the VPC has had. For the sponsor diagram, the larger the circle, the more projects the organization has sponsored.

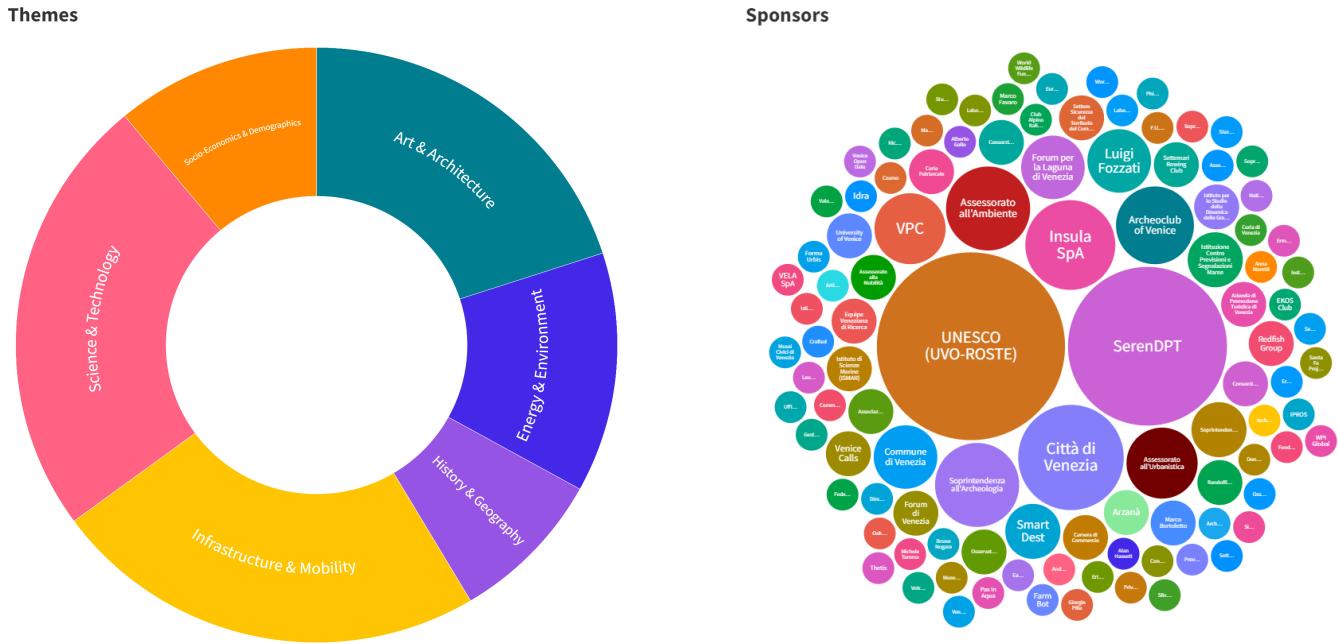


Figure 2. Infographics showing VPC project themes (left) and sponsors (right).

Our final objective was to develop a plan for the dissemination of current and future VPC media. We decided to focus on analyzing what needed to be done at the project center and developing a plan to execute that goal. Our team aimed to document all of the ways past teams have helped to improve upon the project center, as well as our ideas for what else could be done. This entailed publishing the materials we collected and the content our team created as examples to our team website. We also created detailed recommendations for future teams. Subsequently, we created a Google Drive folder "Supplemental Information for Future Teams" and linked that to our website. This included folders on impact data, the master spreadsheet, surveys, interviews and testimonials, events and exhibits, and videos and infographics. There are a lot of resources in these folders to help make the jobs of future teams easier and provide them with a head start.



We split up future recommendations into three sections: Creating Engaging Media, Updating Web Resources, and Plans for Celebrations.

As the first of many project teams that will be celebrating the 35th anniversary of the VPC, our team provided a foundation for the video production, website updating, and exhibition planning to follow. For engaging media, we recommended that teams create infographics, informational videos, and social media content. They should start by using the footage from our interviews with Prof. Carrera and start to make short-form content to showcase the work of the VPC.

The next recommendation we have for the future is to update the web resources. Venipedia is a source that includes information on many of the bridges, canals, churches, bell towers, etc in Venice. This source showcases all the data the VPC collected on these important aspects of the city, and this site should be revived. Future teams should keep adding to the repositories and work on updating the 3.0 website. As more teams come to Venice to do projects, it will be vital for the web resources to work because they will need to showcase the work done by teams.

We started the groundwork for the anniversary event. We recommended bringing back many of the wonderful ideas that the 30th team had such as the interactive timelines and photomosaics but also recommended informational videos that can be created. In sum, these efforts will help the public learn about the impressive work the VPC has done and how it has impacted Venice.



Authorship

The authors, Elizabeth Dahlberg, Anna Kelly, Oliver Shulman, and Matthew Suyer, all contributed equally to this project report. Each member of the team participated, contributed, and collaborated in each section of the report to create this final product. The introduction, background, and executive summary were mainly completed by Elizabeth and Matthew whereas the methods, results, and conclusion were mainly completed by Anna and Oliver. When the authors were done with their section, the whole team reviewed and revised their work. The final result is a coherent report to which all members contributed to.

Acknowledgments

We would like to thank Professor Fabio Carrera and Professor Lorraine Higgins for advising our project. Without Professor Higgins we would not have received such valuable feedback on assignments throughout our project and final report. Professor Carrera provided our team with invaluable insight into the inner workings of the Venice Project Center and tremendous support in navigating the city of Venice. We would like to thank Phil Waterman for helping us gather research through the WPI Gordon Library and Leslie Dodd for providing us with resources to take photos and create videos. Our team would also like to thank those who provided us with information on Venipedia.



Abstract

Over the past 35 years, the Venice Project Center (VPC) has had many impacts on the Venetian community. The goal of this project was to recognize the VPC's 35 years of accomplishments and help disseminate its research to better serve the greater Venetian community. We created an online repository that includes project data, reports, applications, and more. We examined the partnerships the VPC has formed over 35 years, including the number of new and returning collaborators the VPC has worked with. We found that many world-renowned magazines have showcased the VPC's contributions to Venice, such as National Geographic, Smithsonian, and more. We then examined where the VPC has been cited or mentioned in scholarly research. We also looked at instances where research the VPC has done for the city or a collaborating organization led to a change in operations. Finally, we created detailed recommendations and plans that future teams can use to create engaging media, update web resources, and host VPC events and exhibitions.



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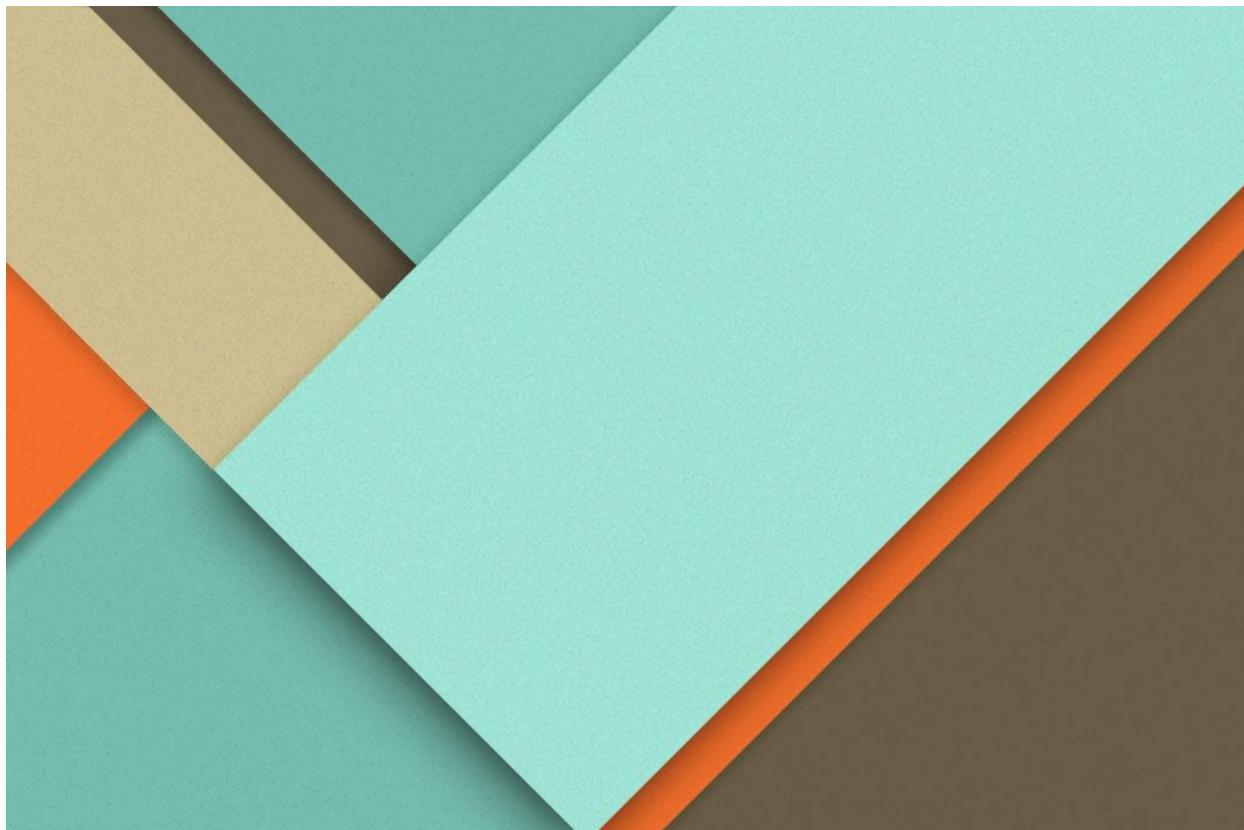


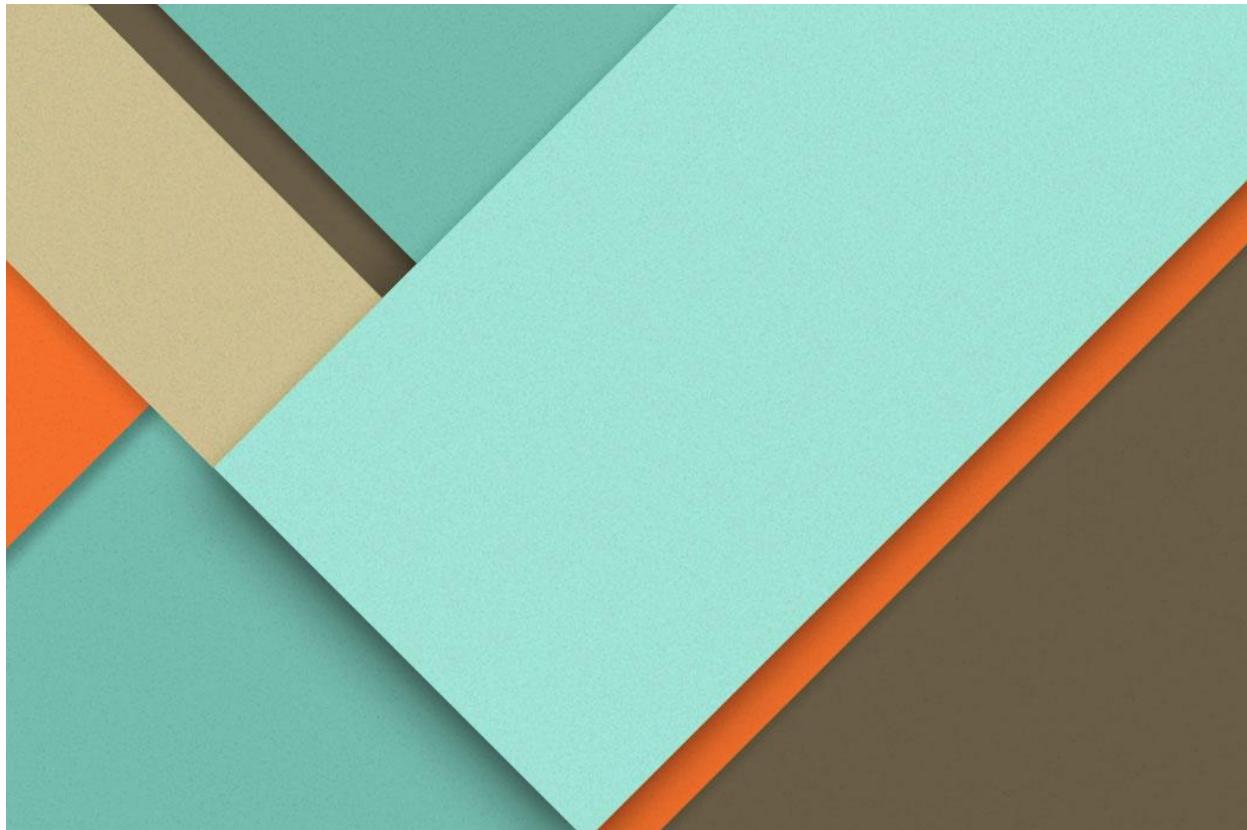
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Introduction

In the 35 years the Venice Project Center (VPC) has operated, Venice has researched many challenges that impact the city's infrastructure, culture, and people. The VPC has continuously used the latest technologies to better understand and address these challenges. Since 1988, the VPC has hosted over 800 WPI students who have conducted 236 research projects, collaborating with over 100 sponsoring organizations, including NGOs, non-profits, government agencies, and local businesses. VPC research has systematically documented the city's assets and analyzed its evolution; it has assisted the city's decision-makers by providing accurate, up-to-date data on hundreds of topics. The VPC databases are used by Venetian stakeholder organizations and the general public alike. Acknowledged by National Geographic, BBC, Science Magazine, and many others, the VPC is renowned for its contributions to the city and the people of Venice as a whole (Venice



Project Center, 2022). **The goal of this project was to recognize and promote the VPC's 35 years of accomplishments and help the Center more effectively disseminate its existing research and data to better serve the greater Venetian community and government.**

The first and most crucial objective of this project was organizing and categorizing all of the VPC's assets—including its publications, databases, and online tools. At the start of this project, the primary location of these materials was the Venice Project Center 3.0 website. Our team aspired to organize the site and supplement it with information stored in less accessible locations. To achieve this, our team created a repository that contains the most extensive information on the VPC and Venice. We gathered as much as we could, but it will be continuously updated in the future by VPC teams. Our second objective was to identify the primary impacts of the VPC. While previous VPC research teams had already investigated and illustrated some of these impacts, we intended to further build on their work. We accomplished this by analyzing the different areas of influence of the VPC and interviewing Fabio. Our third objective was to summarize and highlight the VPC's most significant accomplishments by creating new, engaging media. Creating plans for the future production and publication of short videos and infographics on various topics the VPC has studied, our team hoped to lay the groundwork to better educate the average person on Venice's complex challenges of depopulation, over-tourism, and the many threats to the city's infrastructure, but also to highlight Venice's unique history and culture (World Population Review, 2022). Finally, for our fourth objective, we intended to develop a plan for the future dissemination of VPC media. Acting as planners for future VPC projects, our team created a plan for how to develop materials and host events and exhibitions to celebrate the Project Center's 35th anniversary. Having gathered raw materials (footage, photos, graphics, testimony, etc.) we recommended how future teams might draw on this material to communicate stories about VPC impact. Finally, we mapped out how to update more of the VPC's online resources. While the VPC's website contained a great deal of information on the city's bridges, cultural artifacts, commerce, and much more, our team saw an opportunity to make plans to improve the website's navigation, update them with new data, and represent the VPC's extensive resources and findings in an easily digestible way.



Background

In this chapter, we cover what the Venice Project Center is, its extensive work, and all of its resources as background. We also discuss some opportunities we found for improving the organization of its materials.

About the Venice Project Center

The Venice Project Center was founded in 1988 by Fabio Carrera, a Worcester Polytechnic Institute (WPI) and Massachusetts Institute of Technology (MIT) graduate and native of Venice, Italy, with the help of a team of WPI students. Since its founding, the VPC has used cutting-edge technology to gather data and formulate solutions to Venice's largest problems (Carrera, 2016). From advanced geo-imaging of Venetian infrastructure to the creation of an interactive catalog of Venice's green spaces, the Venice Project Center has

always found novel ways to gather impactful information. By 2022, the Venice Project Center had completed scores of student projects in Venice in a multitude of subject areas¹.

Similar to other WPI project centers², projects in Venice are specifically tailored to address global problems involving technology and society at the local level. The VPC has targeted challenges in the historic city of Venice and has contributed its knowledge and tools to address these problems (Harris, 2002). Though much of this work is sponsored by local Venetian organizations³, the Project Center aspires to spread its valuable content to the greater Venetian community and to researchers worldwide. To disseminate this work, student project teams produce comprehensive reports on their research and supply original databases, educational tools, and other project deliverables to the VPC and its partnering sponsors, who continue building upon this work. It is through these materials the VPC attempts to highlight its key accomplishments, stories, and findings in accessible online resources. Prior to this project, the VPC's primary means of circulating its information had been its VPC 3.0 website, created by a student team for the Center's 30th anniversary in 2018 (Morton et al., 2018). The website had been a repository for VPC project reports, student-made interactive applications, VPC collaborative efforts, and other data.

VPC Projects

The projects conducted at the Venice Project Center undergo many rigorous steps over the course of several months to create accurate, peer-reviewed, and impactful research. To explore project possibilities, the Center first identifies topics of interest to the city, instigated by either local sponsors, past research, or other ongoing challenges discussed in the Venetian community. Next, a small group of WPI students receives the project outline, conducts background research over seven weeks in the US, and collaborates with relevant VPC sponsors, affiliates, and contacts to propose a research plan to assist the Venetian community on this topic. Finally, these students travel to Venice with concrete research objectives and methods for collecting data and designing useful

¹ Projects were categorized into a new set of “subject areas” by this team as discussed later.

² A graduation requirement for Worcester Polytechnic Institute is that all students must work in an interdisciplinary team to complete a project to address or understand a global problem or need at the intersection of science and society. They base the research in local sites around the world.

³ Sponsoring organizations partner with WPI to create, fund, and advise projects for students.

deliverables. These projects may include exhibitions, applications, or other content, compiling the work into a final report and community presentation of the team's findings. Many organizations contact the VPC looking to use this data or to sponsor additional WPI projects to address and explore problems facing Venice. The VPC has partnered with international agencies such as UNESCO, local businesses such as Crafted Venezia, and nonprofits such as Archeoclub, and has even provided information to decision-makers in the Venetian government⁴. This data is crucial to Venice, a city facing many unique problems stemming from over-tourism, environmental damage, and socioeconomic inequality. Especially with such a distinctive and historically significant infrastructure, Venice needs up-to-date information on how to best preserve and improve its ancient and valuable architecture. Student projects have included: the impact of tourism on water levels, methods to decrease water traffic, strategies to fix systematic damage to canals, and 3D modeling of the city, just to mention a few (Zsofka et al.). Much of this data covers topic areas that have never been systematically investigated prior to these projects. As such, the VPC website and its other resources contain valuable information people cannot get anywhere else.

The VPC's Online Resources

The Venice Project Center has established a reservoir of invaluable assets which are stored and disseminated in a variety of ways. Four of the VPC's most important resources are:

1. The VPC Website⁵
2. The VPC's Master Spreadsheet
3. Venipedia⁶
4. DigitalWPI

We intended to organize these resources to make them more navigable and accessible. In reviewing these resources and others, we found that the VPC's irreplaceable

⁴ <http://www.veniceprojectcenter.org/vpc>

⁵ <http://www.veniceprojectcenter.org/vpc>

⁶ <http://www.venipedia.org/wiki/>

data was scattered across many platforms, some of which were not accessible to the public, and would clearly serve to benefit the city if it became available. Ensuring the VPC's data, reports, and visualization tools are accessible in a centralized location and establishing a logical, easy-to-navigate organization is critical for these resources to be used effectively.

The VPC 3.0 Website Overview

The primary platform for storing and communicating all information on the Venice Project Center is the VPC 3.0 website (Figure 3). The website home page links to information on the Center's publications, impacts, student project websites, reports, applications/tools for data collection, analysis, and open data. This website is publicly accessible and allows anyone to navigate the VPC's vast resources and find information on a variety of topics.

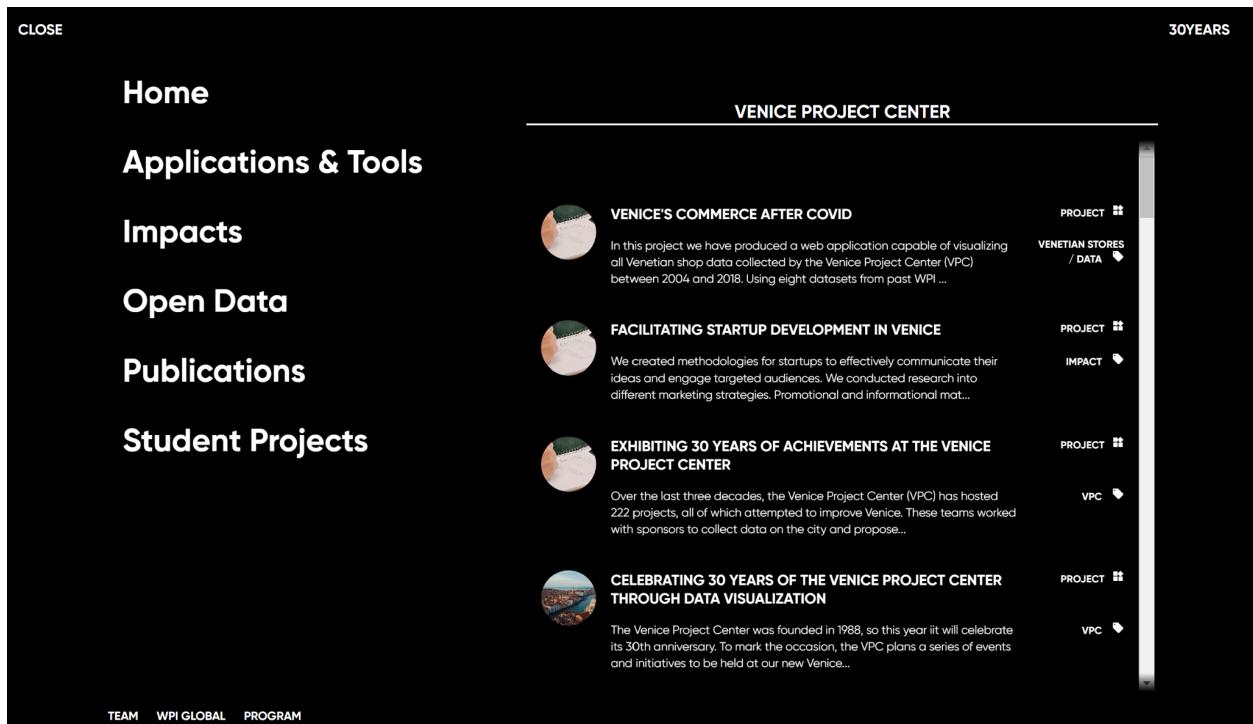


Figure 3. VPC 3.0 Website Overview.

The Applications and Tools page houses informative programs such as interactive maps, timelines, and wide-ranging photo collages on a variety of topics. For instance, you

can filter maps for the location, number, and features of the city's bridges, canals, churches, and bells, among other things. Figure 4 illustrates an application where users can access information on tides and water levels in various canals.

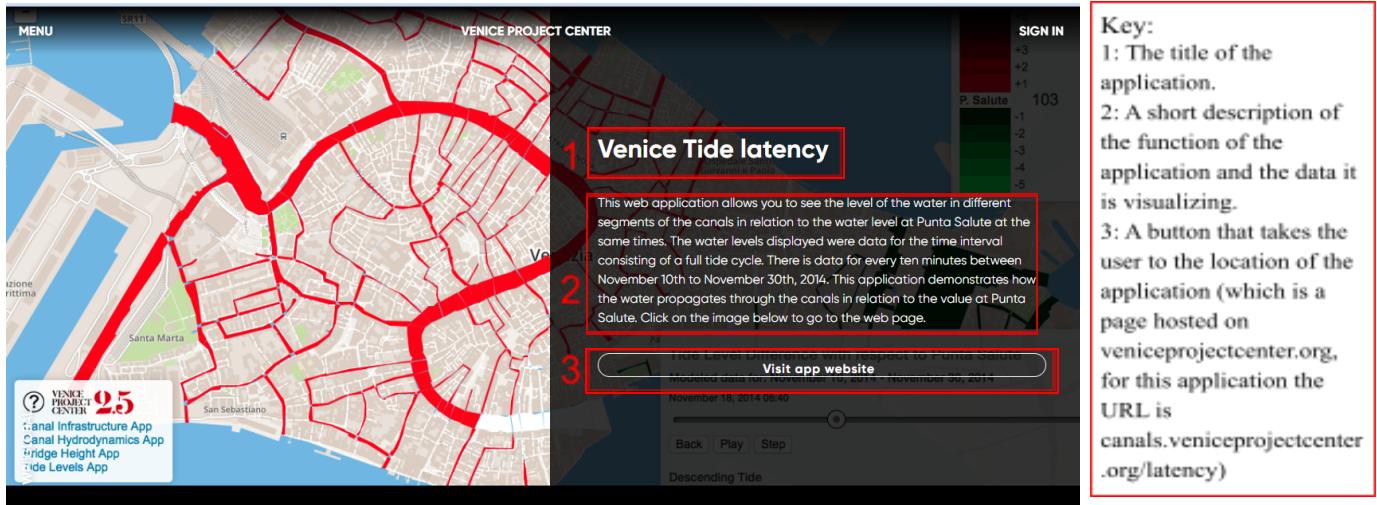
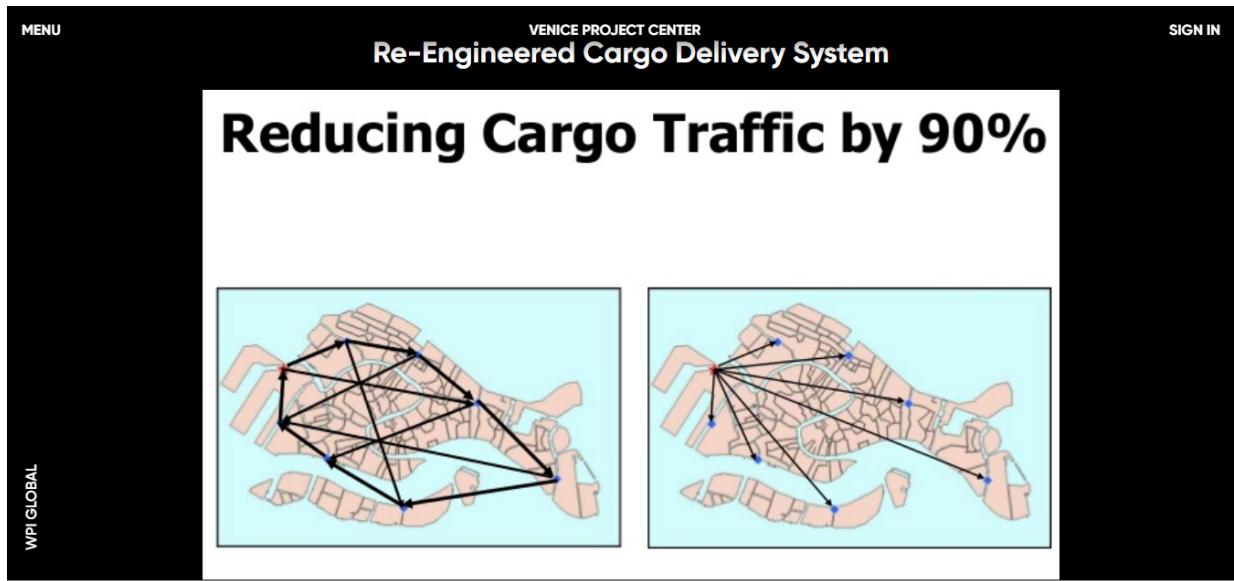


Figure 4. An application that allows users to find water levels in various parts of the city.

The Impacts page identifies 12 key topics that the VPC has explored through its research and projects. These include housing & renting, preservation of bell towers, and boat traffic among others. Visuals provide general information about these topics, the key problems, and the ways VPC research has directly contributed to addressing the problem (see Figure 5 for an example).



This screenshot shows a detailed page from the Venice Project Center website. At the top, it has "MENU", "VENICE PROJECT CENTER", and "SIGN IN". The main content area contains a paragraph about cargo traffic reduction, mentioning the project's history and its impact. Below this is a "View Content" button. Further down, there's a section titled "Related" with a thumbnail image of a canal scene. To the right, there's a sidebar with "VE14-EXPO" at the top, followed by sections for "Final Report", "Executive Summary", "Final Report", "Presentation", "Divergent", and "Team". There are also "Blog Updates" and "Project Progress Progress". The overall layout is clean and professional.

Figure 5. Example of a topic area the VPC explored that can be found on the 'Impacts' page.

The Open Data page features data on a range of Venice features, which can be freely downloaded by anyone that visits the site. Each subject area has an independent module that displays information on the field, relevant applications and projects, and spreadsheets of data for the user to explore and use. Figure 6 presents information on bell towers and how to access available data on them in the Open Data section of the website.



MENU VENICE PROJECT CENTER SIGN IN

Description

The churches of Venice vary in many ways, but one subtle form is the layout of the floor. There are two variants of floor design, namely the latin cross and the greek cross. The latin cross is characterized by forming a traditional cross where the transept intersects the nave and chancel. The transepts are much smaller compared to the nave and located closer to the chancel. The greek cross has equal area for all floor sections and the transept intersects closer to the center of the nave and chancel. A more visible difference in Venetian churches is shown in the many different architectural styles including Gothic, Byzantine, Baroque, and Renaissance. Due to Venice's close proximity to more middle eastern areas it is no surprise that influences of architectural style were allowed to mix. Churches can express characteristics of one or more styles separating Venetian churches from the mostly western designs of Europe. Many churches in Venice also function as more than a traditional church. There are often convents or bell towers attached, or in close proximity to, the churches.

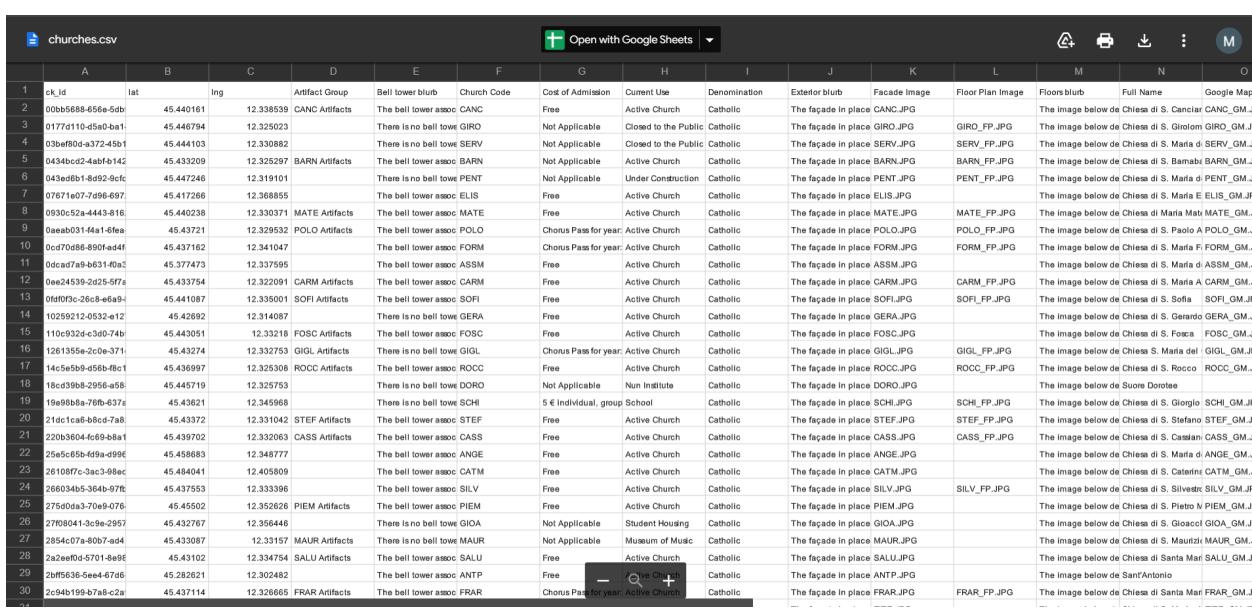
Data

[Download data](#)

Related

WP GLOBAL

The "Related" section contains two images. On the left is a map of the Venice lagoon area with red lines indicating different water levels. A legend on the right side of the map shows a gradient from green to red with labels: Water Level (0, 1, 2, 3, 4, 5, 6) and P. Salinity (0, 1, 2, 3, 4, 5). On the right is a close-up photograph of a person's hands holding a small, thin object, possibly a piece of equipment or a sample, over a blue surface.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	ck_id	lat	lng	Artifact Group	Bell tower blurb	Church Code	Cost of Admission	Current Use	Denomination	Exterior blurb	Facade Image	Floor Plan Image	Floors blurb	Full Name	Google Map
1	00bb5688-656e-5db	45.440161	12.338539	CANC Artifacts	The bell tower assoc: CANC		Free	Active Church	Catholic	The façade in place GIRO.JPG	GIRO_FP.JPG		The image below de Chiesa di S. Canciar CANC_GM.J		
2	0177d110-d5a0-ba1	45.446794	12.325023		There is no bell tow: GIRO		Not Applicable	Closed to the Public	Catholic	The façade in place SERV.JPG	SERV_FP.JPG		The image below de Chiesa di S. Girolm GIRO_GM.JI		
3	03be8f00-a372-4501	45.444103	12.330882		There is no bell tow: SERV		Not Applicable	Closed to the Public	Catholic	The façade in place BARN.JPG	BARN_FP.JPG		The image below de Chiesa di S. Barnab BARN_GM.J		
4	034abc02-e4ab-b142	45.433209	12.325297	BARN Artifacts	The bell tower assoc: BARN		Not Applicable	Active Church	Catholic	The façade in place PENT.JPG	PENT_FP.JPG		The image below de Chiesa di S. Maria di: PENT_GM.J		
5	043ed6b1-8d92-9cfc	45.447246	12.319101		There is no bell tow: PENT		Not Applicable	Under Construction	Catholic	The façade in place ELIS.JPG	ELIS_FP.JPG		The image below de Chiesa di S. Maria E: ELIS_GM.JP		
6	07671e07-7d69-697	45.417266	12.368655		The bell tower assoc: ELIS		Free	Active Church	Catholic	The façade in place MATE.JPG	MATE_FP.JPG		The image below de Chiesa di S. Maria di Mati MATE_GM.J		
7	0930c52a-4443-816	45.440236	12.330371	MATE Artifacts	The bell tower assoc: MATE		Free	Active Church	Catholic	The façade in place POLO.JPG	POLO_FP.JPG		The image below de Chiesa di S. Giacomo POLO_GM.J		
8	0aeeb031441-f6ea	45.43721	12.329532	POLO Artifacts	The bell tower assoc: POLO		Chorus Pass for year:	Active Church	Catholic	The façade in place FORM.JPG	FORM_FP.JPG		The image below de Chiesa di S. Maria F: FORM_GM.J		
9	0cd70f68-690f-ad4f	45.437162	12.341047		The bell tower assoc: FORM		Chorus Pass for year:	Active Church	Catholic	The façade in place ASSM.JPG	ASSM_FP.JPG		The image below de Chiesa di S. Maria di: ASSM_GM.J		
10	0ddca749-b631-40a5	45.377473	12.337595		The bell tower assoc: ASSM		Free	Active Church	Catholic	The façade in place CARM.JPG	CARM_FP.JPG		The image below de Chiesa di S. Maria di: CARM_GM.J		
11	0ee24539-2d25-5f7e	45.433754	12.322091	CARM Artifacts	The bell tower assoc: CARM		Free	Active Church	Catholic	The façade in place SOFI.JPG	SOFI_FP.JPG		The image below de Chiesa di S. Maria di: SOFI_GM.JF		
12	0fdff03c-26c8-e6a9-	45.441087	12.335001	SOFI Artifacts	The bell tower assoc: SOFI		Free	Active Church	Catholic	The façade in place FOSC.JPG	FOSC_FP.JPG		The image below de Chiesa di S. Gerardo FOSC_GM.J		
13	0f269212-6532-e12	45.42692	12.314087		There is no bell tow: GERA		Free	Active Church	Catholic	The façade in place SCHI.JPG	SCHI_FP.JPG		The image below de Chiesa di S. Giorgio SCHI_GM.JF		
14	110c932d-3460-74b	45.440501	12.33218	FOSC Artifacts	The bell tower assoc: FOSC		Free	Active Church	Catholic	The façade in place STEF.JPG	STEF_FP.JPG		The image below de Chiesa di S. Stefano STEF_GM.JI		
15	1261355e-2ce0-371	45.43274	12.332753	GIGL Artifacts	The bell tower assoc: GIGL		Chorus Pass for year:	Active Church	Catholic	The façade in place ANGE.JPG	ANGE_FP.JPG		The image below de Chiesa di S. Maria del: GIGL_GM.J		
16	14c5e509-655b-f6c1	45.436997	12.326308	ROCC Artifacts	The bell tower assoc: ROCC		Free	Active Church	Catholic	The façade in place PIEM.JPG	PIEM_FP.JPG		The image below de Chiesa di S. Rosco ROCC_GM.J		
17	18c3998-2956-a5b	45.445719	12.325753		There is no bell tow: DORO		Not Applicable	Nun Institute	Catholic	The façade in place DORO.JPG	DORO_FP.JPG		The image below de Chiesa di S. Doro DORO_GM.J		
18	19e8b8ba-76b-637a	45.43621	12.345968		There is no bell tow: SCHI	5 € individual, group School	Catholic	The façade in place PIETRO_NIPIETRO.JPG	PIETRO_NIPIETRO_FP.JPG		The image below de Chiesa di S. Pietro NIPIETRO_GM.J				
19	21dc1ca8-8dec-7a8	45.43372	12.331042	STEF Artifacts	The bell tower assoc: STEF		Free	Active Church	Catholic	The façade in place SALU.JPG	SALU_FP.JPG		The image below de Chiesa di S. Stefano SALU_GM.JI		
20	220b3604c69-b8a1	45.439702	12.332063	CASS Artifacts	The bell tower assoc: CASS		Free	Active Church	Catholic	The façade in place FRAR.JPG	FRAR_FP.JPG		The image below de Chiesa di S. Cassian CASS_GM.J		
21	225e565b-659a-d99c	45.456683	12.348777		The bell tower assoc: ANGE		Free	Active Church	Catholic	The façade in place CATM.JPG	CATM_FP.JPG		The image below de Chiesa di S. Maria di: ANGE_GM.J		
22	23108f7c-3a3-98e	45.484041	12.405809		The bell tower assoc: CATM		Free	Active Church	Catholic	The façade in place SILV.JPG	SILV_FP.JPG		The image below de Chiesa di S. Silvestri SILV_GM.JP		
23	24663405-534b-97f8	45.437553	12.333396		The bell tower assoc: SILV		Free	Active Church	Catholic	The façade in place PIEM.JPG	PIEM_FP.JPG		The image below de Chiesa di S. Pietro NIPIETRO_GM.J		
24	27560da3-70e-97f6	45.45502	12.352628	PIEM Artifacts	The bell tower assoc: PIEM		Free	Active Church	Catholic	The façade in place GIOA.JPG	GIOA_FP.JPG		The image below de Chiesa di S. Gioacch GIOA_GM.JI		
25	2770804-3-9e-2957	45.432767	12.356446		There is no bell tow: GIOA		Not Applicable	Student Housing	Catholic	The façade in place MAUR.JPG	MAUR_FP.JPG		The image below de Chiesa di S. Maurizio MAUR_GM.J		
26	2854c07a-80b7-ad4	45.433087	12.33157	MAUR Artifacts	The bell tower assoc: MAUR		Not Applicable	Museum of Music	Catholic	The façade in place SALU.JPG	SALU_FP.JPG		The image below de Chiesa di S. Maurizio SALU_GM.JI		
27	28aef0f-5701-8e8	45.43102	12.334754	SALU Artifacts	The bell tower assoc: SALU		Free	Active Church	Catholic	The façade in place FRAR.JPG	FRAR_FP.JPG		The image below de Sant'Antonio FRAR_GM.JI		
28	2bf5636-5eef-4676	45.282621	12.302482		The bell tower assoc: ANTP		Free		Catholic						
29	30:94b199-b7a-b2a	45.437114	12.326665	FRAR Artifacts	The bell tower assoc: FRAR		Chorus Pass for year:	Active Church	Catholic						
30															

Figure 6. Open Data on bell towers and the table of their data that users can access by clicking the 'Download data' button.

The Publications page includes articles and research papers that reference or have utilized VPC data⁷. The majority of the publications shown were produced by external sources, however many of these articles and papers were published by the VPC itself (see Figure 7 for an example) in an effort to "give back to the city and to people the knowledge gathered during the years of activity" (Morton et al., 2018). This page also showcases the VPC's international notoriety and significance, as the site features many publications from popular and respected science magazines which use VPC research. The 'publication link' button in Italian leads to a PDF version of these materials.



Computerized Catalog of Outdoor Art in Venice with Automatic Estimation of Restoration Costs

This paper describes the methodologies employed in the creation of a computerized catalog of public art in the city of Venice, Italy. Over 1,200 pieces of outdoor art have been catalogued in relational databases and analyzed using custom programs. The data is displayed on outdoor public displays, usually attached to the walls of buildings. Computer vision techniques are used to detect the objects and estimate their dimensions, materials, and colors. The system also provides information on the location, the state of conservation of the pieces. The field data was used to train a neural network to predict the cost of restoration for each piece, using a custom-designed computer program. The results of the analysis are presented in a user-friendly interface, allowing users to search for specific pieces based on their name and state of conservation. The system also provides recommendations for restoration work, which will allow the interactive visualization of the resulting artwork with the original.

[Link pubblicazione](#)

⁷ <http://www.veniceprojectcenter.org/vpc/publications>

Figure 7. Example of a downloadable research paper based on VPC data.

The Student Projects page houses student research and project reports dating back to the VPC's very first project. Clicking on a student project will show the title, team members, sponsors, year, term the project was conducted in, and a description of the project (see Figure 8). Many of these project overviews provide a link to the team's independent project website: this is where you can find a more detailed explanation of the projects and links to the final report, presentation, and other visualizations/applications the project team created.

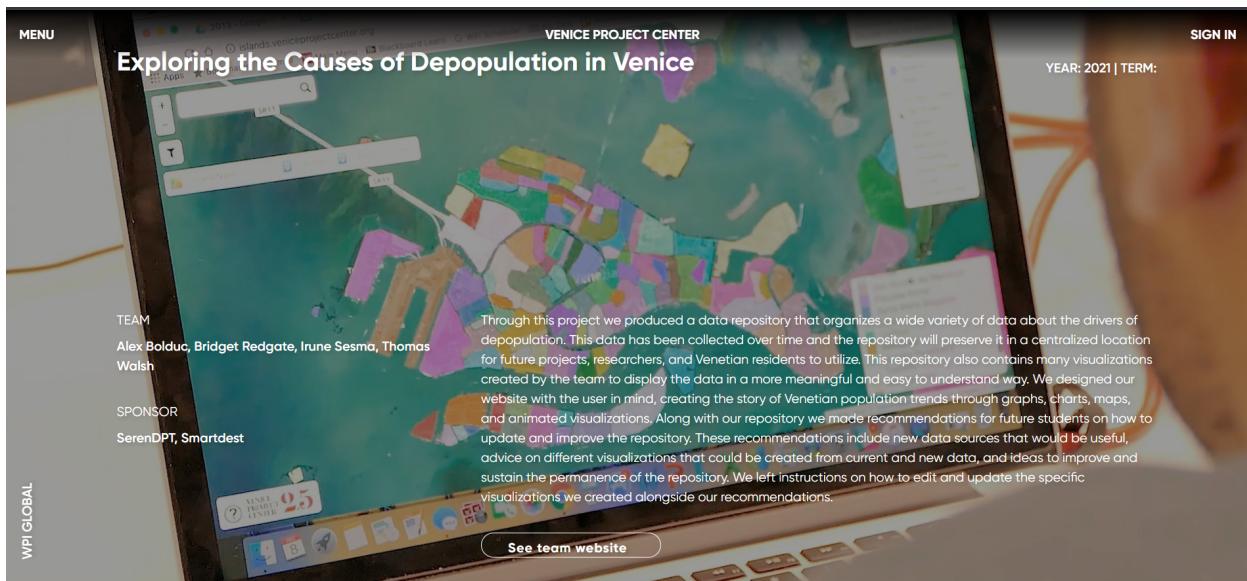


Figure 8. Example from the 'Student Projects' page.

A previous team at the Project Center devised a system to compile and classify student projects on the site. These categories allowed them to better organize and manage the numerous projects on the 3.0 website (Morton et al., 2018). Each project was tagged with one or two broad categories and another more specific subtopic, allowing users to filter by their category, topic, or both. While comprehensive, the large number of categories and topics made searches a bit cumbersome. We set out to devise a simpler system of categorization to improve searchability.

The Master Spreadsheet

The VPC has a spreadsheet titled “VPC: Master Project List” which is an internally held Excel spreadsheet indexing past student projects at the VPC. Prior to our project, this spreadsheet had listed the title of each report, student authors, year of publication, sponsors, faculty advisors, the topic the project falls under, project deliverables (such as applications, documents, and databases), and displayed links to Google Drives which house the reports and data for each project. The list contained information on *almost* every project team before 2018, but many of the links to Drives required a specific account to access them or were no longer functional. Moreover, older reports that were once stored in a WPI storage system had been recently migrated to DigitalWPI, an online database of all WPI project reports, but the spreadsheet still contained inoperable links to the old system. We found that some reports were mistakenly embargoed for public access, missing, or not correctly labeled as Venice IQP projects—only 149 of the 236 student project reports were correctly stored in this system. Information on VPC projects before 2000 existed only in hard copies in Venice, CDs, or floppy disks; the master list had no way to link to these materials. Some projects over 20 years old were stored as low-quality black-and-white scans, making them hard to read.

Venipedia

While it is no longer operational, Venipedia was a cardinal resource provided by the VPC (Figure 9). Created in 2007, Venipedia was a Wikipedia-like website that helped to share information on specific aspects of Venice using VPC data. It contained pages on a plethora of topics including art, history, and each and every canal and bridge the VPC had data on (UNESCO, 2013). These pages were a convenient and straightforward way for anyone to access and understand different elements of the city. Users could learn about different topics through interactive maps with filters and easily explore a number of interesting subjects (Richtmyer et al., 2013). These maps included a timeline of urban development in Venice throughout the centuries, current commerce in Venice organized by the type of shop, and updated AirBnB availability throughout the city.



Figure 9. Venipedia Home Page from 2019.

According to a 2019 student research team, “as of October 2019, Venipedia had over 27,000 pages and 19,000 articles with hundreds of thousands of views on these pages” (Bajakian et al.). Venipedia was created to be a constantly-updated wiki on all aspects of Venice that would exist independently of the 30th Anniversary team. Unfortunately, cloud-based database infrastructure was necessary to keep the page operational, and due to the rising costs to keep that database online, the website was shut down and the assets there are no longer accessible. With the massive amount of information housed on this site, the 30th Anniversary team was unable to simply move the data to the new VPC 3.0 site. The cloud-based database infrastructure was necessary to keep the page operational, and due to the rising costs of continually keeping that database online, the website was shut down.

This website helped educate the public on what makes Venice and its history so remarkable. Government organizations, citizens, and students could gain valuable insights about the city from the VPC’s 236 projects and their integration into the website; the incorporation of student projects to Venepedia was similar to that of the current VPC 3.0 website. Crucially, these project reports can and have been used to preserve canals, bridges, churches, housing, environment, art, culture, and more (Turcotte, 2009). The VPC

seeks to make its work widely available and easy to interpret and this website serves that purpose.

Perhaps the most useful part of Venipedia was that the information was consistently updated to display the latest VPC data. In fact, there was a webpage for Venipedia creators to showcase live and evolving data that was continuously being fed into the site. For example, if you searched Venipedia for a specific hotel, you would be able to see its booking data and the number of overnight tourists in recent days. There was also an internally held document connected to Venipedia indexing every project completed since 1988, the students who worked on the project, a link to archives where the projects are stored, and a link to each team's website. This document was only able to be accessed by those with editing privileges on the site. Unfortunately, when the site was deactivated, so was this index.

DigitalWPI

The DigitalWPI database archives all WPI project reports, including those of the VPC, from 1999 to 2021 (Figure 10). As shown in Figure 11, users can filter projects and reports by student author(s), publication year, faculty advisor(s), project center, and more. While all users are able to go on the DigitalWPI website, there are certain reports where it is necessary to have WPI access.

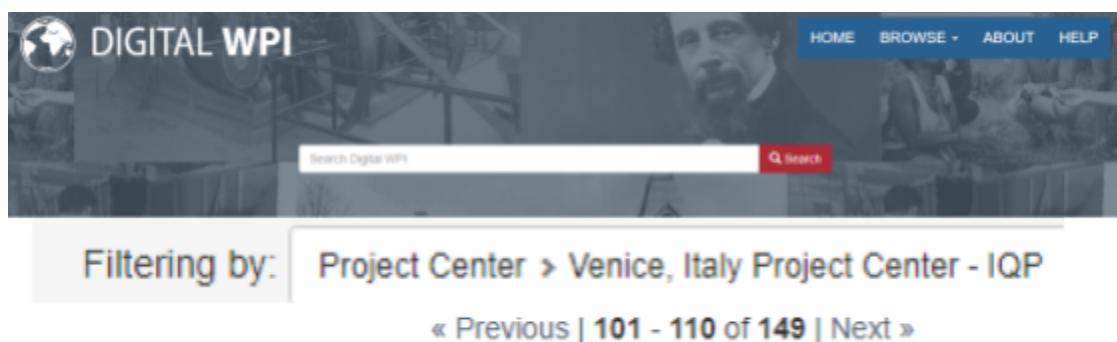


Figure 10. DigitalWPI page showing the search bar and the 149 projects that had been stored there at the start of this project.

Limit your search

- Collections >
- Year >
- Creator >
- Advisor >
- Project Center >
- Publisher >
- Subject >
- Resource type >

Figure 11. DigitalWPI filters.



Methods

Figure 12 maps the methods we used to achieve each of our objectives. The deliverables we achieved are also shown below the corresponding method. In the remainder of the chapter, we discuss these methods in greater detail along with the results and our deliverables.



Our Goal				
The goal of this project is to RECOGNIZE and PROMOTE the VPC's 35 years of accomplishments and to help ORGANIZE and DISSEMINATE the VPC's current and future research and data to better serve the greater Venetian community and government.				
Objectives	Organize and categorize the VPC's research and data over the past 35 years	Identify the impacts the VPC has had on the Venetian community, WPI students, and more	Communicate the VPC's most significant findings and impacts using engaging media	Develop a plan for the events, exhibits, engaging media, and web resources of the VPC
Methods	Collect and consolidate all available documentation of VPC projects and data	Develop and define impact indicators	Consult with the Global Lab on video production and media publishing	Analyze previous VPC and WPI anniversary projects to prepare for the 35th anniversary
Deliverables	Classify the projects into central themes and subthemes to help users more easily find data on relevant topics	Interview VPC Director, Fabio Carrera, and go through past reports	Examine VPC visual resources and conduct field visits to take additional photos and videos	Develop a plan and gather materials to be integrated into upcoming anniversary events and exhibits
	Create a Repository and Update the Master Spreadsheet	Quantify impacts sort all data to fall under impact categories	Create plans for future team to transform this data into engaging media — infographics and videos	Created plans for future events, publishable media, and how to update VPC web resources
				5

Figure 12. Our Goal, Objectives, and corresponding Methods.

Organizing the VPC Resources

The Venice Project Center holds invaluable information on the greatest problems Venice is facing today. Many of the storage systems that house this data, however, are becoming obsolete. Our team collected all available documentation of VPC data and consolidated it into a centralized location: The Master Spreadsheet. This research provided our team insight into the history of the project center, its accomplishments, and how we might build upon what similar teams have done in the past. Next, we re-categorized the different projects completed at the VPC into easily accessible themes and subthemes, building on the work of previous teams to establish our own classifications — displayed in Figure 13. The numbers show the number of projects the VPC has done that fall in each theme and subtheme. These categories are used to help organize the VPC's hundreds of projects and allow for greater navigation of the data.



Art and Architecture 61	Energy and Environment 47	History and Geography 21	Infrastructure and Mobility 77	Science and Technology 80	Socio-Economics and Demographics 50
Art 11	Solar power 4	Archeology 8	Bridges 3	Education 20	Housing 5
Architecture 2	Agriculture 2	Cartography 4	Maintenance 5	Applications 19	Retail 12
Public art 13	Pollution 8	Tradition 7	Traffic 18	Instruments 28	Tourism 16
Bell towers 10	Islands and the Lagoon 15	Origins and DNA 2	Transportation 11	Startups 13	Demographics 13
Churches and Museums 13	Sustainability 16		Accessibility 10		Urban Development 4
Preservation 12	Environment 2		Canals 30		

Figure 13. The 6 Themes of VPC Projects and Their Subthemes.

As previously mentioned, one of the greatest resources for VPC projects is their Master Spreadsheet. This document holds a large amount of information on each student project, but over time, almost all of the links provided on this spreadsheet have become inoperative and require further research. This issue is likely due to DigitalWPI (WPI's online database for project reports) being updated, which altered all previous hyperlinks to the site. We accessed the reports separately on DigitalWPI and found that many of them were either restricted to the WPI community, embargoed from all users, not labeled as Venice Project Center files, or completely missing. The WPI database only contains student project reports and does not have the data each project is built upon. We then began working with the WPI archive team to rectify all of these issues and consolidated all the reports into the Final Master Spreadsheet.

The VPC's 3.0 Website also had some issues that would be easy for future teams to rectify. Originally acting as a very effective display of VPC projects, student-built

applications, and the accomplishments of the Project Center, the VPC 3.0 Website and many of its features have become obsolete since its launch in 2018. Specifically, the VPC 3.0 website presents four key areas of improvement: overall functionality, outdated or incomplete data, user accessibility, and aesthetics.

Limitations of the VPC 3.0 Website

Functionality

The creation of this website was very beneficial in terms of making the VPC's research more accessible, however, the majority of the hyperlinks on the site are no longer operational. Resultantly, many of the student project reports on the site are not obtainable, see Figure 14. As well, VPC applications, open data, and other project deliverables are not available to the site's viewers. There are many different causes for this behavior, although in many instances it is merely due to the desired data being moved and stored in a new location. As DigitalWPI and Google Drive store many student reports, the migration of these accounts over the last several years has significantly affected the VPC's website. As well, many of the Google Sites that past research teams have made to display their applications and data are no longer running.

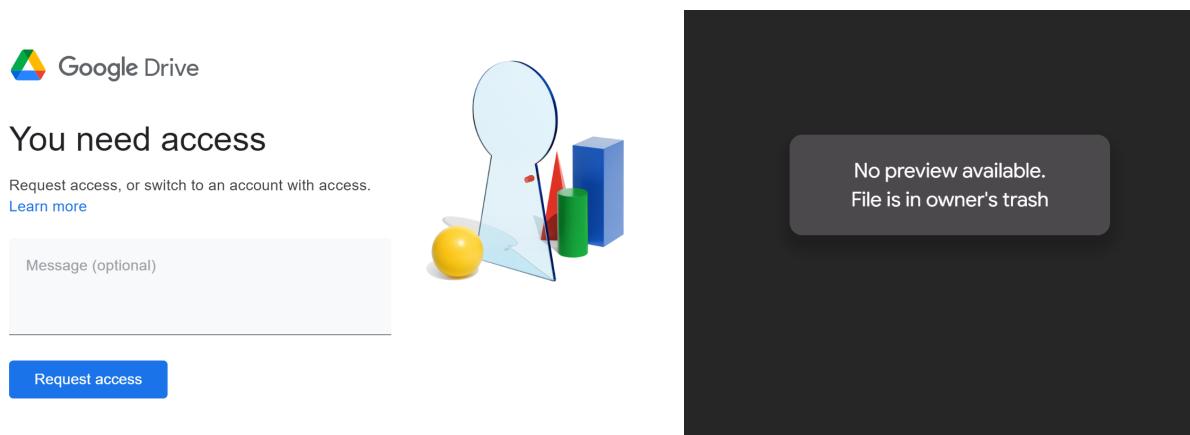


Figure 14. Inoperable links on the VPC website.



Outdated or Incomplete

As dynamic and extensive as the VPC 3.0 website is, many of the tools and datasets displayed are from projects of decades past. Many of the timelines shown on the website use data and illustrations of Venice as it was twenty years ago and do not exhibit an accurate representation of the city. This flaw in the website is especially distressing as there have often been several projects conducted at the VPC in years past with up-to-date information that could be implemented instead. Additionally, there are several topics on the VPC's site that would be more effectively expressed if more specifics and detail were added. For example, while the impact section of the VPC's website was a good foundation and successfully illustrated much of the great work the center has accomplished, we determined it might be made even better with more statistics showing some evidence of effects on the city or on organizations.

User accessibility

Overall, a redesign of the website that keeps user accessibility in mind would significantly benefit the efficacy of the site. The website is very difficult to navigate and filter, only assisting those who already know exactly where their data is. Researchers with specific topics and data in mind, as well as tourists who just want to learn about Venice, would have difficulty finding desired information on the site. On certain internet browsers, the website's text boxes—used to filter its many projects and various data—appear completely blank. Even on devices where these filters are serviceable, there are so many different topics that it might be challenging for users to effectively navigate to relevant data, as seen in Figure 15.

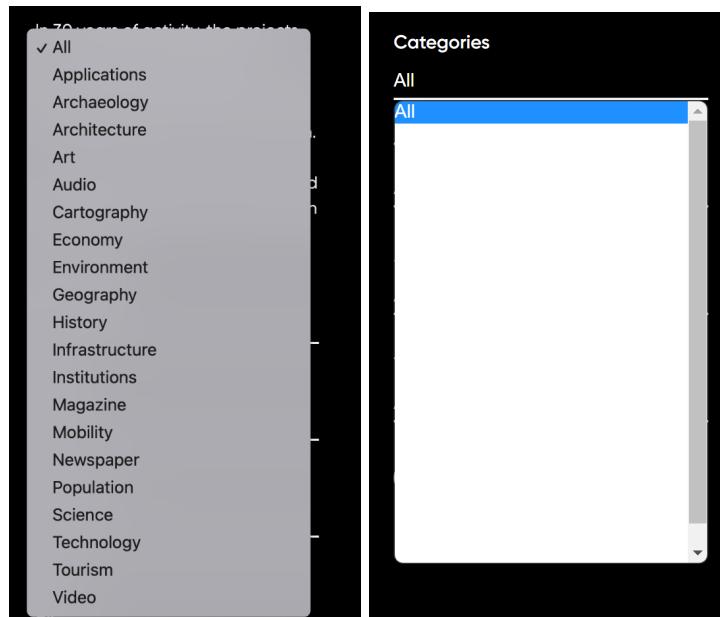


Figure 15. Search categories are too numerous in some cases or absent in others depending on Safari Vs. Google Chrome User Interface.

Aesthetics

We identified areas where the visual design of the site might be improved when visiting the website. The same background image is unintentionally displayed on every student project, certain pages lack a description of their topic, and pages with descriptions unexpectedly end mid-sentence. The tags assigned to each project are challenging for the average user to comprehend and searching for specific projects is nearly impossible. Our team believes that each page of the website should be reevaluated to appear more appealing and accessible to users.

Identifying VPC Impacts

We sought to understand the impacts the VPC has had on Venice so we could communicate them in our plans for exhibits and published media. We also wanted to communicate the impacts by creating engaging media to share with the public.

Prior anniversary teams have detailed the broad scope of the VPC's research, specifically the 30th anniversary team. They began to do some of this work through

exhibits they created in 2018 and 2019. We continued their work by identifying the more precise effects the VPC has had on the city of Venice as a whole. Before we could determine the overall impact of the Venice Project Center though, we first defined what exactly constitutes an impact. Our team developed five new metrics for defining the impact the VPC has had on Venice. Under each of the categories are the concrete ways to measure each indicator. They are shown in Figure 16.

Media & Publicity	Student Education	Scholarly Research	Policies & Procedures	Collaborations & Partnerships
Media coverage and mentions (Amount of public recognition)	Professional communication	Citation of Carrera or student researchers in scholarly journals	Changes to the city's policies	Number and diversity of collaborators and sponsors
Number of hits on our websites	Teamwork	Number of reports and public databases the VPC has produced	Changes to the operations of the city	Number of returning collaborators and sponsors
Awards and grants	Research and analysis		Changes to local organizations	Creation of new collaborations

Figure 16. Table displaying the impact categories and what is included under each.

Media & Publicity

Firstly, we seek to understand the breadth of media outlets that have mentioned the Venice Project Center and assemble them into a comprehensive catalog. After this collection we can begin to form an understanding of the public's perception of the VPC as



well as the sheer amount of times the project center has been referenced. Publicity is an effective way to measure the value of the VPC's research to major news organizations or other outlets and to what extent the VPC has been recognized and shared with a broad audience; while we are already aware that highly circulated and respected magazines such as National Geographic and the Smithsonian have featured articles about the VPC's work, we would like to gain a more exhaustive understanding of how frequently the VPC has been mentioned across a range of news outlets and media. We will also examine archival documents such as Venetian newspapers and publications from organizations that have sponsored projects at the VPC. Furthermore, we will identify any awards or grants the VPC has received over its 35 years of operation, as these serve as additional examples of public recognition of the VPC's value.

Student Education

In this manner, we will also examine the VPC's impacts on students, the effect the VPC has had on those who have worked alongside the VPC, and what those students have gained from doing their research at the VPC. With nearly 800 students attending in its 35 years, the Venice Project Center has presented a fantastic opportunity for WPI students to gain experience and exposure to a professional environment creating impactful work.

Students learned how to :

- Professionally communicate
- Work well on a team
- Lead others
- Define achievable project goals and objectives
- Manage time and tasks for a complex project
- Conduct research using multiple information sources
- Critically analyze and evaluate information
- Generate new ideas and think creatively

Scholarly Research

Next, we will examine the research the VPC has published—including student reports—and identify where this research has been published or cited. This is why we will



examine not only how much data the VPC has collected and published (quantified by the number of reports and public databases the VPC has produced) but also where this work has been cited. Citations from organizations or other researchers serve as a definitive measure of impact - we can look at the work these groups produce and immediately see how the VPC's data helped that work progress.

Policies and Procedures

We will also examine any actual change the VPC has contributed to, either to the city's operation and policies or to local organizations who work with the city of Venice. The challenge of this impact will be finding direct connections between data collected by the project center and the actions of the intricate Venetian community. In tracking social change it is difficult to see simple cause and effect. However, we can trace the ways in which a government or sponsoring organization tells us they used VPC data to shape policies or changes in operations. We can also look at physical changes and innovations such as new tools produced by the VPC or new infrastructure that was influenced by VPC work, etc.

Collaborations & Partnerships

Subsequently, we will catalog VPC partnerships by looking at the number, diversity, and longevity of VPC sponsors and collaborators, which is a testimony of our value to local organizations. We will record how many unique sponsors the VPC has worked with and how those sponsors have used the VPC's work to further collaborate with other organizations around Venice. Every organization using VPC data to collaborate with nonprofits, NGOs, government agencies, etc. shows the importance of the work the VPC has done not only for the one organization but all others affiliated with it. Additionally, we will explore how many organizations have returned to the VPC to sponsor additional projects. Organizations returning to do more work with the VPC speaks not only to the quality of the VPC's research and deliverables, but also to the value and impact that research has on those sponsors.

Communicating Impacts Through Engaging Media

To accomplish our third objective, we started the process of interviewing Prof. Fabio Carrera about many topics important to Venice that the VPC has covered over 35 years. Prof. Carrera provided not only an overview of the breadth of work that had been done in these areas, but also shed some light on the major impacts this work has had on the city of Venice. Our team pioneered the interviewing process, using trial and error to figure out how to set up the equipment, capture high-quality video and audio, fix technical issues, and more. We have documented the interview setup and debugging processes as well as general best practices in a separate document, which will be left for future teams. In addition, we created a template for the introduction and ending credits for all future videos that will be made using these interviews. We hoped to get the ball rolling for future teams to create videos at the start of their term.

We also looked for impacts in the work of previous anniversary teams. They created a myriad of exhibitions and visualizations, so our team examined all video and photo archives, as well as media from the VPC's 25th and 30th anniversary, for materials that might be used to communicate impacts and organized it for future teams to use. We found that when going through the archives, most images were frustratingly vague in their organization and were almost never labeled and we also found that not all of them were high enough quality to put in our videos. We then sorted the photos and put the usable ones into a google doc and labeled them as seen in Figure 17. After thoroughly investigating VPC resources, we concluded that we needed to independently collect additional images and videos for our content. We then conducted field visits to the various churches, bell towers, bridges, and additional sites around Venice. Fortunately, the project center has also recently acquired equipment that our team utilized to collect even more materials.

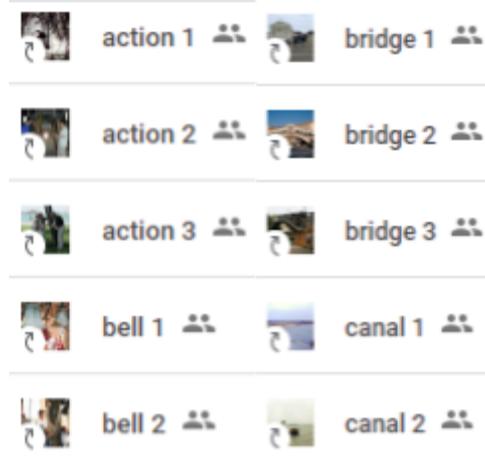


Figure 17. Usable photos labeled to represent what the picture is depicting.

We also collected our own data on these impacts using desktop research, publication and citation searches, and interviews with the VPC director. Our interview questions are shown in Appendix A.

We used the resources we found as a starting point for creating plans for updated stories and visuals. We want future teams to analyze the influence research has had on the city over time, but before we could start making plans and suggestions, we needed to understand video production and media publishing.

Our team built a foundational understanding of media production by consulting with a media expert, Leslie Dodd from Worcester Polytechnic Institute Global Labs. She was helpful in informing our team on the process of media production, storyboarding, and how to use transmedia to tell a story. We also were given exemplary resources such as Unpacked: Refugee Baggage and a New York Times website called Hands of Labor. These projects stood as exceptional examples of what our team wanted to exemplify in future media and provided our team with a baseline for what transmedia we would like teams to create.

Developing A Plan for the Future

The fourth objective was to develop a plan for the events, exhibits, engaging media, and web resources. To do this we analyzed previous VPC anniversary projects as well as



looked at other WPI Project Centers, specifically the Melbourne Project Center, and their anniversary projects.

The first thing we did was talk to the VPC Director about how he thought we should go about things. He told us what specific anniversaries to look at and helped us to understand why some of them might not have been the most well-designed. For example, the 2019 30th Anniversary team had a great idea to host the anniversary exhibit in the VPC Church (Bajarkian et al., 2019). Unfortunately to preserve the brickwork of the church, nothing could be tacked into the walls, thus the printed images displaying different projects were only held up by adhesive tape kept falling from the wall. We took notes on what we thought were good ideas that we wanted to incorporate into future exhibits and what things were best not to repeat. We also did this for infographics from past teams. We looked at which infographics were too confusing to understand and which ones were perfect for an exhibit. We compiled all of them into a folder so we could then start outlining our plan.

We also spoke to the Melbourne 25th Anniversary Team who informed our team on prior anniversaries and events conducted at the Melbourne Project Center. Their team provided us with infographics, media, and impact categories their center are using to display their work. One example of this is a helpful infographic their team located, originally created by the Copenhagen Project Center in 2017, that our team utilized to better view and understand the work at our own center.



Results

Overview of Recommendations for Future Anniversary Teams

Our final objective was to develop a plan for the dissemination of current and future VPC media. We decided to focus on analyzing what needed to be done at the project center and developing a plan to execute that goal. Our team aimed to document all of the ways past teams have helped to improve upon the project center, as well as our ideas for what else could be done. This entailed publishing the materials we collected and all of the content our team had created as examples to our team [website](#). We also created detailed recommendations for future teams. Subsequently, we created a Google Drive folder "Supplemental Information for Future Teams" and linked that to our website. This included folders on impact data, the master spreadsheet, surveys, interviews and testimonials,



events and exhibits, and videos and infographics. There are a lot of resources in these folders to help make the jobs of future teams easier and provide them with a head start. In this plan, we will discuss three main categories of plans we have created for future teams: ways for future teams to plan events and exhibits as well as what they should include in them, what engaging media future teams should create, and what web resources need to be updated and in what ways. Below is a breakdown of those three plans which shows the specific deliverables for each plan.

Outline of Plan for Future Teams

1. Plan for creating engaging media
 - a. Infographics
 - b. Informational videos
 - c. Social media content
2. Plan for updating web resources
 - a. VPC Home Website
 - b. Venipedia
 - c. Repository and Master Spreadsheet
 - d. Web Tools
3. Plans for celebrations
 - a. Events
 - b. Exhibits

Goals for Part 1 of Plan

- I. Showcase Impacts and VPC Research Data
- II. Get Venice excited for future Celebrations

Specifics for Goal 1

The main object for this goal is to showcase impacts and VPC research data. There have been over 800 students at the VPC, allocating close to half a million hours of total man-hours and we want to highlight their efforts. Past anniversary teams have done this in a variety of ways, which we have discussed above. Future teams should follow the examples set by past anniversary teams, and our team, as well as brainstorm new ideas for what could be created.

The 2018 30th Anniversary team used a variety of engaging visuals to demonstrate the type of work that has been done at the VPC, utilizing graphs, maps, and infographics to communicate project impacts and VPC history on the VPC 3.0 website, see Figures 18 and 19. Some of these are not published directly on the VPC 3.0 website, so we aimed to have future teams cull the most impactful visuals for the website and chronicle the story of the VPC for its 35th anniversary.

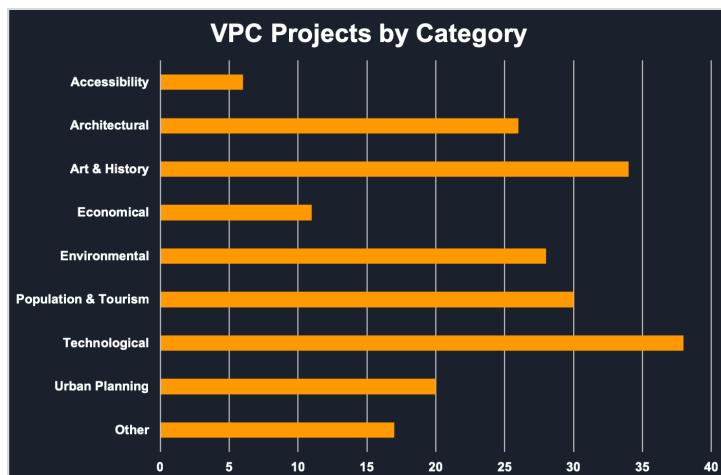


Figure 18. VPC Projects by Category (Morton et al., 2018)

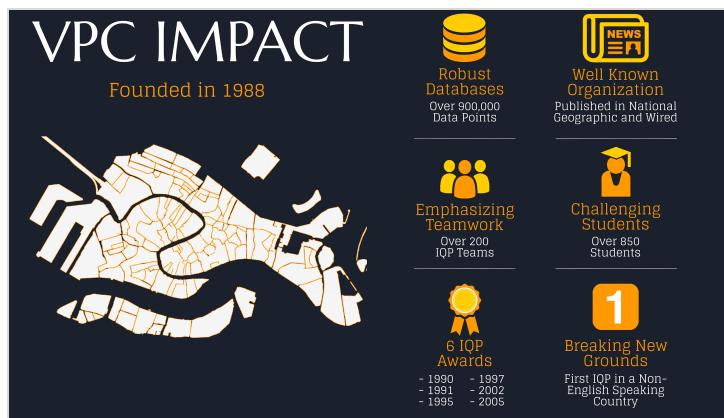


Figure 19. VPC Impact (Morton et. al, 2018)

We started future teams off by finding the most impactful, meaningful, and/or impressive projects of each category. We showcase each of these projects and more in each category in our presentation, which can be found [here](#) (the video of us presenting is [here](#)).

In Art and Architecture, we highlighted the PreserVenice project, which involved VPC students undertaking nearly three decades of cataloging over 7000 projects throughout Venice. These artifacts included wellheads, reliefs, coats, fragments, flagstaffs, and fountains. VPC students then used the data collected to analyze the restoration priority of these artifacts. Finally, students created an online crowdfunding platform where users could see an interactive map of all the artifacts by type in Venice, read more information about each type, and donate to the restoration of specific artifacts.

In Energy and Environment, we found that the VPC contributed to the creation of a published atlas about the islands and lagoons of Venice titled "Comune di Venezia: Atlante della Laguna". We also put one of the projects that won an IQP award in this category, which focused on breaking dunes up by type based on soil analysis and mapping those results across Venice.

In History and Geography, we chose to showcase one of the first VPC projects to catch the attention of a major scientific magazine. VPC students sought to trace the origins of native (mainland) Venetians over 70,000 years ago by interviewing those with a long Venetian lineage and taking DNA samples. They were then able to map those DNA samples to different historical migratory patterns across continents to determine when and how



native Venetians arrived in Venice. National Geographic decided to highlight the VPC's research, data, and visuals, which was a huge accomplishment for such a young project center.

In Infrastructure and Mobility, we featured a project the VPC can definitively prove led to a direct policy change in the city. Over many years, several teams of students would position themselves all over Venice to collect extensive data on the damage done to canal walls. Students would get in boats - often very early in the morning to catch the low tide - and use the proprietary tools and methodology they developed to measure the extent of damage on the walls. They then made interactive maps and visuals of the data they collected and broke the city into sections to better represent which areas had the highest levels of damage. They then gave their data, visuals, and methodology to the city, which not only changed how the city collects data on canal walls, but this research also directly led to the re-dredging of the canals.

In Science and Technology, we first begin by highlighting the major ways that technology has evolved over the VPC's 35 years of operation and how the VPC was always on the cutting edge of technology. For example, the very first VPC projects were done using brand-new GIS (Geographic Information System) technology in an operating system called MS-DOS, which predated Windows. As the web became more popular and the first web GIS systems were developed, the VPC moved their GIS systems online. The VPC also developed its first app in the very same year the first iPhone was released. Specific Science and Technology projects of interest include the VPC developing its own proprietary fog catcher and a project that designed a Citizen Science Platform for Venice.

In Socio-Economics and Demographics, we highlighted a project which showed the urban development of the evolution of Venice from the ninth to mid-nineteenth centuries through maps. This team produced a set of maps that show established urban areas in a particular century by highlighting areas of Venice in different colors. Stringing these maps together chronologically gradually shows more and more of the city being highlighted as the colors change, ultimately culminating in a final multicolored map showing the complete evolution of Venice.

Infographics (Photomosaics, Timelines, etc)

Displaying all 236 projects that VPC has completed over the past 35 years is not realistic; in celebrating the VPC, our team believes one of the most effective ways to showcase all of the data and research of the VPC in an engaging way is to create infographics that crystalize and condense the VPC's work. Our team developed several infographics which visualize the VPC's impacts, project themes, and sponsors over the past 35 years. These infographics are interactive online, but they are still informative as static images. Colorful, easy-to-understand visuals like these can be disseminated through social media or used as additional materials in an interactive exhibit hosted by future teams. See Figure 20. Sizes of the slices of the donut chart and of the different circles represent the number of projects in each category and the number of projects each project sponsored, respectively.

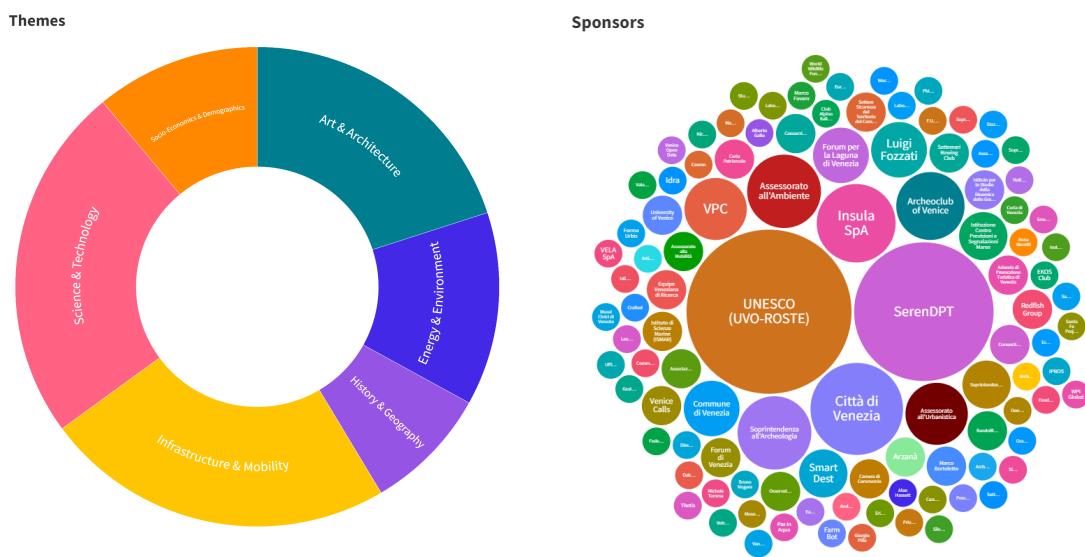


Figure 20. Infographics Showing VPC Project Themes (Left) and Sponsors (Right).

There are two topics we would like future teams to focus on when creating additional infographics: overall impacts and research themes. Impact infographics will primarily display the most significant impact data anniversary teams have discovered based on the categories our team has illustrated. Research infographics would display the

various topics conducted by the VPC, which will also be supplemented by the categorization and research our team has already conducted.

Additional impact data can be collected through research, similar to how our team collected it. A good resource for future teams would be to look at our presentation, linked [here](#). Interviews can also be conducted. Our team conducted 6 recorded interviews with Prof. Carrera to gain deeper insight into the things that make up Venice, such as canals and bridges. Prof. Carrera should be interviewed again because of the vast knowledge he has of the VPC. He can provide detailed examples of how Venetian life has been impacted through the work of the VPC, as well as the changes made throughout the city. It would also be useful to conduct interviews with city officials and Venetian residents to gain their insights on the impacts the VPC has had.

Our team organized all of the projects at the VPC into categories and sub-categories⁸. If a group created an infographic on Infrastructure and Mobility, there are 77 projects in that category. Teams could narrow down this research into specific infographics such as canals, which has 30 projects in that category. By re-categorizing and indexing projects under clear topics, it will be easier for future teams to locate relevant materials that can be used to create media stories.

More detailed infographics could also display the more particular sub-categories which fall under their general category, along with the number of projects in each. Similar to our presentation, each of these displays could include the most interesting parts of each project. There are thousands of photos prior teams have collected that could be further examined for this purpose. For example, Figure 21 shows a photomosaic of the famous Bartolomeo Colleoni statue in Venice. It was constructed using all of the photos of statues the VPC research teams had collected. Figure 22 shows a photomosaic of the Rialto bridge, which is constructed using all of the photos of bridges taken by teams.

⁸ Some projects may be double-coded. Will not add up to 236.



Figure 21. Photomosaic of the Bartolomeo Colleoni statue created by the 30th Anniversary Team.

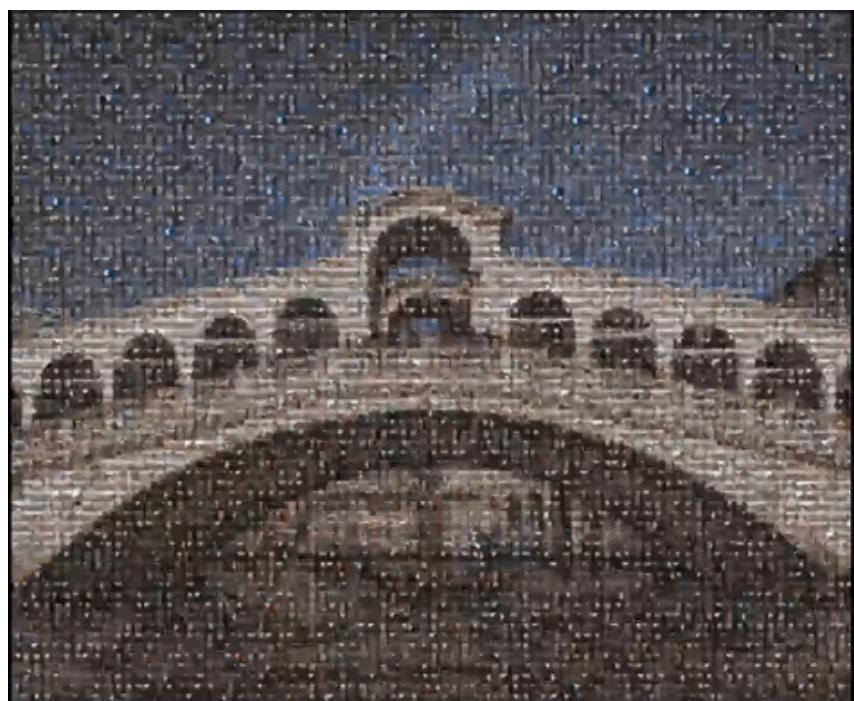


Figure 22. Photomosaic of the Rialto bridge created by the 30th Anniversary Team.



Future teams should also continue to demonstrate the impact and research of VPC by continuously updating the VPC timeline. The template that will be used in the upcoming years and timelines our team created are in Appendix C.

Videos

As part of the celebration, we also want computers to be set up around the exhibit where various videos can be played. Each video would be on a specific topic, similar to the infographics. These topics would be something that is an important aspect of Venice that the VPC has researched. As with the infographics, the topics include canals, traffic, bridges, etc. There will also be videos on the impact the VPC has had on the Venetian community. Each impact category of the 5 listed in the methods section should have a video describing the broad impacts and then more specific impact videos. The goal of these videos is to inform everyone of the work of the VPC, and the key message for them is whatever topic the video is about. If the topic was important enough to have a project or multiple projects on it, then it should be discussed in a video, even a short one.

To get content for the impact videos, teams need to understand the quantifications of each impact category as defined above. The most beneficial way to do this would be to conduct interviews or surveys with the relevant people. This could be city officials, WPI Alum, VPC affiliates, or Prof. Carrera. The most impressive impacts of the VPC will come from the Venetians themselves.

To elaborate, if a team is going to do a video on Student Education, they would need to analyze what the most significant projects affecting student education did. These could be the projects that won IQP awards, projects that were particularly impactful to the Venetian community, etc. They would also send out the survey our team created to WPI Alumni in order to quantify the impacts on students. They could also go further and send out an email to past advisors and even their current advisor if they have worked with the VPC before. Finally, there will be 24 students from the 2022 B Term still at WPI next year that the next anniversary team can contact for recent opinions on how the VPC impacted student education. This will be one of the most important impacts because it justifies the existence of the VPC and also shows the impacts through the students' eyes.



A similar thing can be done to quantify the impacts of Collaborations and Partnerships, Media and Publicity, Scholarly Research, and Policies and Procedures. For the first two, it would be beneficial to interview past sponsors and VPC collaborators to gain insight into how they felt the VPC impacted them and what publicity they did about the project they sponsored. A great example of this could be the VPC's work with National Geographic. Providing National Geographic with accurate maps of the city, a DNA analysis of Venetian origins, and even being displayed in recorded segments on the challenges of the city, the Venice Project Center has established itself in the media time and time again. For Scholarly Research future teams could interview the people cited in the report to talk about the process of going from simply working on a degree-required project to publishing their research outside of WPI. For Policies and Procedures, city and government officials will be the main point of contact for information about that category, and those should be facilitated by Prof. Carrera. One of the most impactful projects in this category would be the VPC's analysis of canal damage, maintenance, and sediment. The VPC's data in this area has led to the city of Venice restoring canal walls, dredging canals, and adopting VPC techniques of data collection and organization.

Prof. Carrera provided our team with a list of who he thought would be best to interview, listed below. This list included personnel from UNESCO, Insula, the Head of the Traffic Department, an old sponsor for canal projects, and an alumni who is still very active with the VPC.

To get the content for the research videos, teams should conduct background research on each topic by looking at the project reports that fall under each category. They should then plan on talking to experts on the subject, such as a city official who works in an office about the topic. They could also talk to the Venetian citizens themselves.

For example, if a team was doing a video on retail, they would look under that category in our Repository and find that there are 12 projects that fall under that category. They could then conduct interviews with government officials that oversee the retail sector and shop owners around Venice to gather more information.

The content of the video will be created by cutting clips of the interviews to use as voiceovers. Any remaining information that is not covered in the interviews but should be included in the video will be voiced by the team. The images in the video can be pictures,

infographics from the report, infographics that the team has created, etc. All videos will have the same opening credits and template for the end credits. See Figure 23. They have been put into the Supplemental Information For Future Teams folder in google drive, along with photos that can be used in the videos. We suggest that the next team use a drone and fly through the VPC to make for a more engaging and creative opening credit scene.

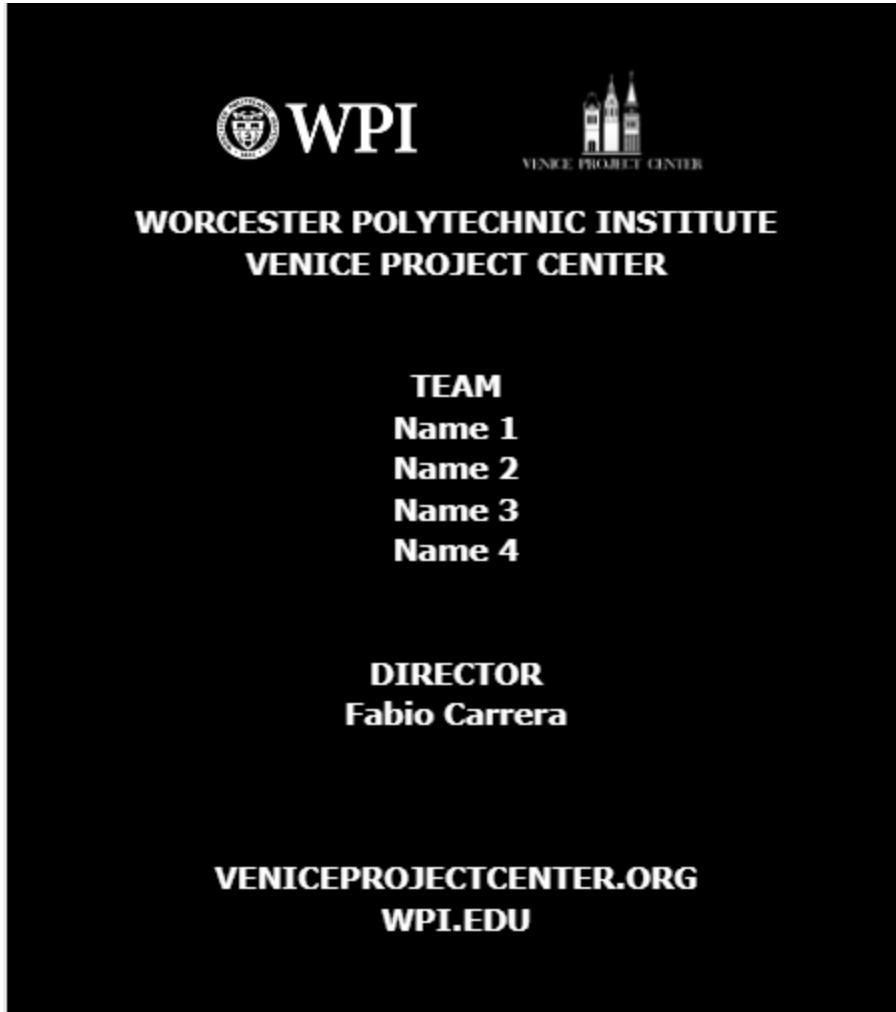


Figure 23. End Credit Template.

Our team has also recorded multiple interviews with Prof. Carrera on various topics - these videos are labeled and included in the folder. He provided not only an overview of the breadth of work that has been done in these areas, but also shed light on the major impacts this work has had on the city of Venice. Our team pioneered the interviewing process, using trial and error to figure out how to set up the equipment, capture



high-quality video and audio, fix technical issues, and more. We have documented the interview setup and debugging processes as well as general best practices — see Appendix D.

Good examples of videos can be found on WPI's Global Projects website and used as a template. These examples show how intro and end credits should look in a video as well as how still images can be integrated with live footage. The content of the videos contains both an overview of the subject matter and an explanation of such. For videos created by future teams, the overview would be from Prof. Carrera and the explanation would be of either the impact of the VPC's work or the overall research done on a specific topic. The supplemental material provided with the report includes a list of who else should be interviewed. Future teams will then be able to have multiple people doing voice-overs during their videos.

Specifics for Goal 2

To get the VPC more publicity, we wanted to establish a pipeline for the publishing of current and future VPC media, along with our suggestions on what new media could be produced. By next year the VPC should have a LinkedIn, which is used more than Vimeo.

Social Media Content

The most important way to showcase the impacts and research of the VPC is by posting on social media. The VPC already has an Instagram, a Vimeo, a Youtube, and a Facebook account. They will soon also have a LinkedIn account. Over the four accounts, they have 1119 followers, with 815 of them being through Facebook.

On the social media accounts, the infographics and videos made will be posted. Posts of students working will also be included, which can be found in the Venice Project Center google drive. In 2018, the 30th Anniversary team recognized this fact and created a social media campaign titled *VPC Impact Week*. On each of the 5 days they posted about a different important topic the VPC has done research on and has heavily impacted. The first day was on canals, the second day was on public art, the third day was on cargo delivery, the fourth day was on boat traffic, and the fifth day was on the Moto Ondoso Plan.



Our recommendation is to do this leading up to the various events and exhibits that are being hosted to celebrate the 35th Anniversary. We also, though, believe this should be done more often throughout the year. At least once a week there should be a post to the accounts about anything. If something major happened in Venice or at WPI, if something with a project was really successful, etc. Constantly posting increases the likelihood of gaining followers which increases the likelihood of more people learning and caring about the VPC. We also recommend that every few days during the IQP prep term and the term in Venice the team in charge of social media should post an update about how the project is coming along, rotating through which project they talk about every week. That way, during the prep term each team gets a spotlight post twice, which should create a buzz in the city of Venice for when they finally arrive. We believe it would be beneficial if the citizens knew who we were before we came to Venice because we would be a lot more likely to get interviews with them.

Posts should continue every few days leading up to the final presentations to help with excitement and to increase the attendance of the presentation. This will also help the impact on the students because they will feel a lot more rewarded for giving a presentation about what they have done over the past 16 weeks to a large audience rather than mainly the other WPI students.

Goal for Part 2 of Plan

I. Update data and make it accessible for all

Specifics for Goal 1

The main thing we wanted to focus on with this goal was making the VPC's data more accessible. We wanted to create a plan for future teams to update the VPC website and other VPC web resources, such as Venepedia. The revival of Venepedia and other currently inaccessible VPC platforms would require updated data that our team did not have enough time to gather. Instead, we decided to give a plan for what needs to be updated for the websites.

VPC Home Website

The knowledge our team gained from weeks of research was expressed through our plans for improvements to VPC resources, starting with the VPC website. Our team reviewed the VPC's online resources and documented areas where information was outdated or incomplete, also illustrating various strategies that could be implemented to improve functionality. We then began to address these gaps and flagged them for future teams to improve the overall user experience of the Venice 3.0 website. We planned for them to revise and improve the Venice 3.0 website in a number of ways.

After ensuring that each project report is properly accessible to all users, we suggest that each project report description be rewritten by future teams on the VPC website since many of them are truncated in the preview due to a word limit. We also suggest attaching the correct image associated with each project which is currently displayed incorrectly. Under the Projects tab, we suggest recategorizing student projects using a simpler system. It will better assist users in finding VPC information and navigating the website. The new filtering system will be functional for all browsers and devices, instead of limiting its use to Safari. In addition, our team suggests that a Current Student Projects page be added to promote the newest ongoing VPC work. This would be a page in which all current and future IQP teams can directly manage their project on the VPC's website, along with uploading their reports and data to the site upon the conclusion of their projects. This would significantly prevent the center from accumulating google drive links that are no longer operational. This would also serve as an effective way to highlight the current project teams at the center by having a page dedicated to them.

Following those updates, we aimed for future teams to incorporate valuable features from other WPI project center websites, such as the Copenhagen Project Center's interactive project map into our plan⁹ (Sawin et al, 2017). We believe future teams should make their own version with VPC data. This map categorizes all of the projects into the different themes, subthemes, and the year they were created. When a user hovers over a dot, it displays important information regarding the project such as the project title, the

⁹ Categorization tool adapted from Brawley et al., 2017

sponsor, the theme and subtheme, and the year it was published. The dot can then be clicked to access the report.

Another aspect of the website we wanted to enhance is the impacts section. The current impacts page provides great examples of the topics the VPC covers, but the impact categories our team created should be added to the website.

Ways to Improve the Website:

Data Visualization is “the graphical representation of information and data” (Tableau, n.d.). It is crucial in disseminating data and data-driven insights in an accessible way (Islam, 2019) and in a way where it is easy for audiences to “understand trends, outliers, and patterns in data” (Tableau, n.d.). The VPC needs engaging and informative visuals to effectively communicate the research they have completed. Data Visualization is not a new priority for the VPC; in fact, nearly all projects incorporate some sort of visual component into a final presentation and/or deliverables. For example, Figure 24 shows a map, produced by a team in 2016, demonstrating all public housing in Venice (Boigenzahn et al., 2016) and an additional infographic, produced by a team in 2013, of a typical trip through Venice (Bossalini et al., 2013).



Figure 24. (Left) Map of Public Housing in Venice, (Right) Visual of an Average Walk in Venice.

We decided to more precisely divide the website into simple sections that represent the most up-to-date information the center has to offer. After reviewing the center's various resources and noting the problem described in the previous chapter, we planned



for how best to update and organize the site. The VPC previously had projects separated into many different categories, which makes it difficult to find what you are looking for. We narrowed down the categories to only six. We planned for future teams to update the website so that when you search through student projects, you will have the opportunity to select which of the six categories, or themes, you want to look up. You will also be able to filter by the sponsor, year, and other attributes. Each main theme is split into several subsections, which the viewer will be able to easily understand and maneuver to the subsection they would like to view. For each student project, we verified that the accurate authors' names, sponsors, publication year, and the project abstract are displayed in the Master Spreadsheet. We also organized project resources such as the final report, final presentation, information about the team, and more to be properly depicted on the website. As it stands, almost all of these hyperlinks needed to be updated. Our team also reevaluated the various images shown on the VPC website, as many of its images were improperly applied; all student projects were mistakenly utilizing the same photo. Our team also captured additional photos of our own in Venice that may be used in conjunction with the VPC's current resources.

Finally, our team hoped to further investigate the VPC's impacts and include our findings on the VPC's website. In researching the project center, our team discovered substantial information provided by previous VPC anniversary teams, detailing the history, breadth, and scope of the center's work. Past VPC teams have speculated possible impacts the project center has had on Venice and provided these results on the website, but rarely have direct and precise impacts been shown. The Venice Project Center and its vast knowledge of the city have been mentioned numerous times in the media, but unfortunately, these media descriptions are abstract and non-specific. Many of these news outlets have spoken to the Venice Project Center itself and therefore sourced the center and its personnel for an article, however, this poses an issue, as the impacts described are circularly illustrated by the organization that's making them. While the work of past anniversary groups has been more than admirable, our team hopes to continue this work and explore the VPC's impacts to a greater extent, as later described in our third project objective.



Venipedia

There were two 30th anniversary groups which updated information on Venipedia and the VPC website. These teams were instrumental in categorizing VPC data and providing that information to the public. As we have described previously, we hope for future teams to further take advantage of these resources and use these platforms as a template for possible future web resources. Though we do not have concrete plans on how to revive the website, we believe it would be crucial for future teams to bring it back.

Repository and Master Spreadsheet

Even though individual exhibitions such as “Knowing Venice” have been discontinued, dissemination of the VPC’s data in an easy-to-understand way has always been a critical objective of the project center. Our team contributed to this objective by continuing the process of publishing VPC data so that it is easily accessible to the public. There are many different websites that house the project center’s data, but many of these platforms only tell a part of the VPC’s story. We hope to better allocate this information to allow users to read about the great work the Venice Project Center has accomplished in 35 years. One way we hoped to accomplish this goal was by reorganizing a repository with the data in a more accessible format.

To consolidate all of the VPC’s resources, our team created a repository that houses and connects the project center’s projects, reports, applications, data, publications, social media, and relevant information. Separating the site into helpful categories, users can find resources on each of our six classifications. Each project has been assigned designated themes, subthemes, subtopics, and tags to help users research broad topics as well as find very specific information. Once the user selects a topic, they can access any reports or tools relevant to their research. This repository allows current VPC teams to update the site with new information, data, and resources so that the very latest information is always available. The repository also links to the project center’s Zotero account, which now exhibits every publication created by the VPC, mentioning or referencing the VPC, and all academic papers related to the VPC. Additionally, the repository connects to the VPC’s social media accounts and provides alumni information for past students.



Finally, the repository contains an updated master spreadsheet. Our team edited the spreadsheet to now contain every single project and project report, along with the project's authors, advisors, sponsors, and other metadata. This information has all been passed along to the WPI Archives, which are in the process of permanently storing and displaying the project reports our team located: this is far more preferable to the Google Drives, CDs, and paper copies of the reports previously available.

Goal for Part 3 of Plan

- I. Develop plans how to celebrate how the VPC research has been used to preserve and improve life in Venice for the events and exhibits

Specifics for Goal 1

Events

The main objective of this goal is to garner more publicity for the VPC. The social media posts should help with that, but another way to get more publicity would be by hosting a fundraiser. This would be advertised through all of the VPC's social media and will request that people share the post with their friends. Not only will that lead to more people knowing about and following the VPC, but hopefully more people will then show up to the fundraiser. For the event, we thought it would be best to keep it simple. The hosts can advertise in the week prior to the event that whoever takes pictures with the most statues or bell towers, etc. will win a prize. Then there can be silent auctions or other things to get people to donate. The donations will go towards covering the cost of getting the materials needed for the exhibit, such as poster boards and printed infographics.

That leads to another way to get Venice aware and excited would be to disseminate the engaging media we have created through online and in-person exhibits. This media will complement the anniversary event, which will showcase more about the projects that made those impacts possible.

Exhibits

When planning the exhibit there are many important aspects to think about. These include the location of the exhibit, the invitations, the floor plan, and what displays to include. See Figure 25 for the invitation.



Figure 25. Draft of invitation to be sent out for Anniversary Event.

Our team decided that the best location would be the Venice Project Center H3 Factory, but set up slightly differently than past exhibits. The floor plan is listed below. Figure 26 is the floor plan from a previous exhibit. The walls of the bell tower were lined with displays, but unfortunately, the walls of the bell tower were not good at holding the displays and they kept falling. We decided to move the exhibit away from the bell tower and into the rooms in the VPC. We thought about the best way for the projects to flow so people can see a clear picture of all of the great work the VPC does in both a chronological and easy-to-understand manner.

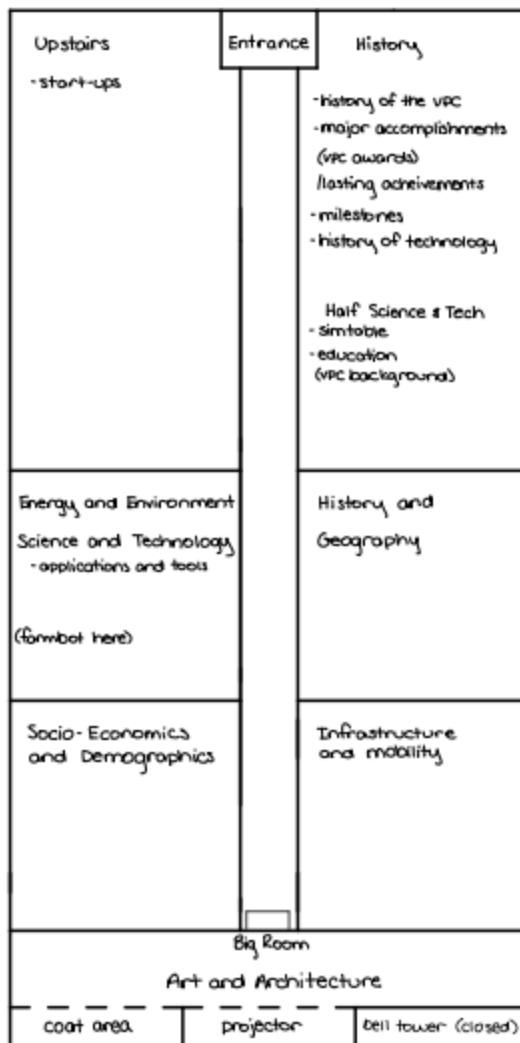


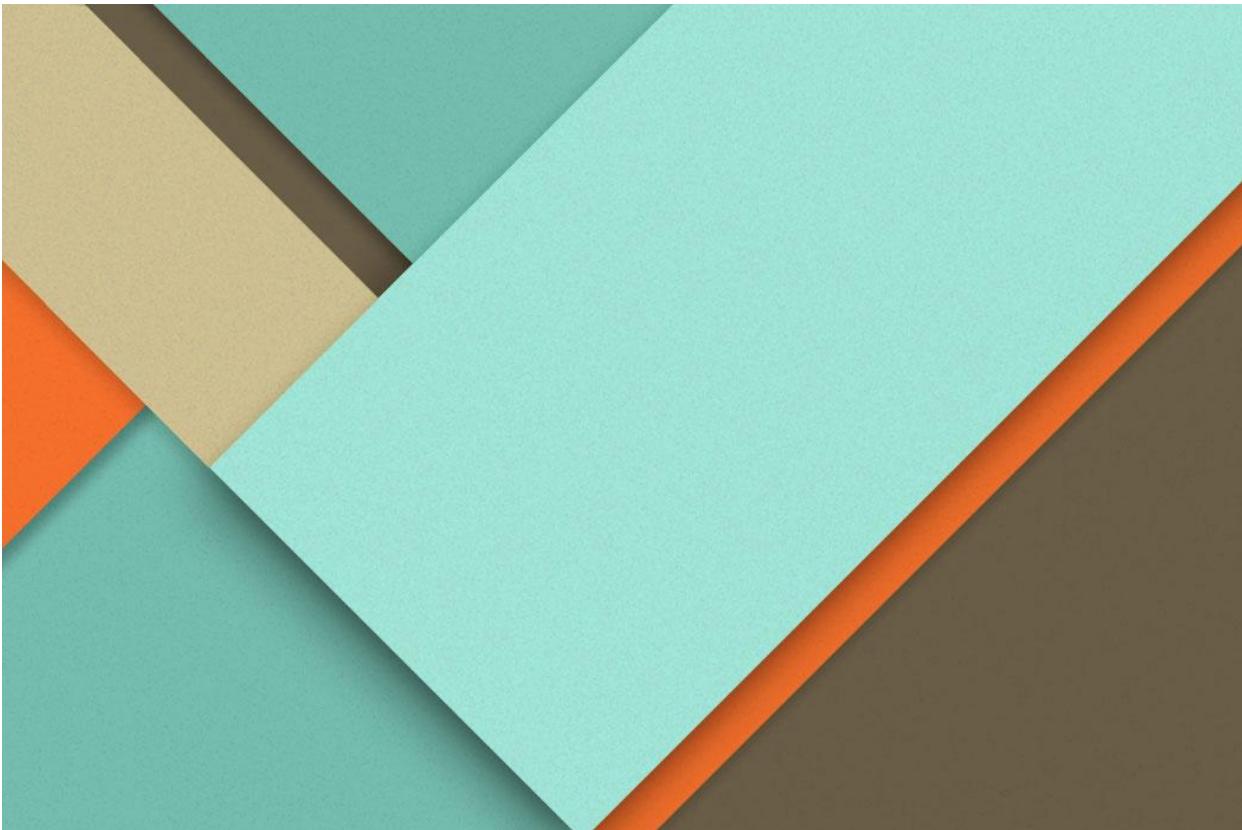
Figure 26. Example Floor Plan for Anniversary Exhibit.

For the exhibit displays, we want future teams to add to the timeline created by the 2019 30th Anniversary team (Bajarkian et al., 2019). This timeline has the VPC's achievements, milestones, and important pieces of history. The timeline also has general information about what was going on in the world at the time, such as evolutions in important pieces of hardware and software that are still used today. The reasoning for this was to help viewers recognize how cutting-edge the VPC is and how well the VPC keeps up with the times. The future teams would add additional achievements in data collection to show how the VPC has kept updated on technology. They will also use photomosaics



similar to the ones used by the 30th anniversary team to show different aspects of Venice (Wong et al, 2019).

As can be seen in the floor plan above, there will be some projects in the large room of the VPC, which has stone walls. Our team thinks it best to use the glass walls for some of the displays and then to get demountable walls to put partially in front of the stone walls to house more displays.



Summary of Recommendations for the Future

The following is a high-level look at our recommendations for future teams, which has actionable items to get them started, requirements for deliverables, and advice on best practices from what our team has learned and experienced.

- Look at our Google Drive folder, "Supplemental Information for Future Teams" which is linked to our website.
- Future teams should follow the examples set by past anniversary teams, and our team, as well as brainstorm new ideas for what could be created.
- Cull the most impactful visuals for the website and chronicle the story of the VPC for its 35th anniversary.

- 
- Create two types of infographics and videos. The first type is impact which is basically just where significant impact data is displayed. The second type is VPC research data.
 - Impact infographics/videos:
 - Collect data through research, interviews, surveys
 - Update the VPC timeline
 - The goal of these videos is to inform everyone of the work of the VPC, and the key message for them is whatever topic the video is about. If the topic was important enough to have a project, or multiple projects on it, then it should be discussed in a video, even a short one.
 - Research infographics/videos:
 - Conduct background research on each topic by looking at the project reports that fall under each category.
 - Plan on talking to experts on the subject, such as a city official who works in an office about the topic.
 - Talk to the Venetian citizens.
 - Impact video on Student Education example:
 - Need to analyze what the most significant projects affecting student education did.
 - These could be the projects that won IQP awards, projects that were particularly impactful to the Venetian community, etc.
 - Send out the survey our team created to WPI Alumni in order to quantify the impacts. They could also go further and send out an email to past advisors and even their current advisor if they have worked with the VPC before.
 - There are 24 students from the 2022 B Term still at WPI next year that the next anniversary team can contact for recent opinions on how the VPC impacted student education.
 - Impact video on other categories:
 - Collaborations and Partnerships and Media and Publicity: Interview past sponsors and VPC collaborators to gain insight into how they felt the VPC impacted them and what publicity they did about the project they sponsored.

- 
- Scholarly Research: Interview the people cited in the report to talk about the process of going from simply working on a degree-required project to publishing their research outside of WPI.
 - Policies and Procedures: Interview city and government officials will be the main point of contact for information about that category, and those should be facilitated by Prof. Carrera.
 - Research video on Retail example:
 - Look under that category in our Repository and find that there are 12 projects that fall under that category.
 - Conduct interviews with government officials that oversee the retail sector and shop owners around Venice to gather more information.
 - Social media:
 - Create LinkedIn for VPC
 - Post often!
 - Post leading up to the various events and exhibits that are being hosted to celebrate the 35th Anniversary.
 - Post at least once a week - there should be a post to the accounts about anything. If something major happened in Venice or at WPI, if something with a project was really successful, etc.
 - Post every few days during the IQP prep term and the term in Venice. The team in charge of social media should post an update about how the project is coming along, rotating through which project they talk about every week. That way, during the prep term each team gets a spotlight post twice, which should create buzz in the city of Venice for when they finally arrive. We believe it would be beneficial if the citizens knew who we were before we came to Venice because we would be a lot more likely to get interviews with them.
 - Venice 3.0 Website
 - Rewrite each project report on the VPC website since many of them are truncated in the preview due to a word limit.
 - Attach the correct image associated with each project which is currently displayed incorrectly.

- 
- Under the Projects tab, recategorize student projects using a simpler system. It will better assist users finding VPC information and navigating the website.
 - Update the website so that when you search through student projects, you will have the opportunity to select which of the six categories you want to look up. You can also filter by the sponsor, year, and other attributes. Each main theme is split into several subsections, which the viewer will be able to easily understand and maneuver to the subsection they would like to view.
 - Make sure the new filtering system will be functional for all browsers and devices, instead of limiting its use to Safari.
 - Update all hyperlinks.
 - Create a Current Student Projects page to promote the newest ongoing VPC work. This would be a page in which all current and future IQP teams can directly manage their project on the VPC's website, along with uploading their reports and data to the site upon the conclusion of their projects.
 - Incorporate valuable features from other WPI project center websites, such as the Copenhagen Project Center's interactive project map.
 - Enhance the impacts section. The current impacts page provides great examples of the topics the VPC covers, but the impact categories our team created should be added to the website.
 - Venipedia - Either revive or put the information it housed somewhere else
 - Events
 - Host a fundraiser to get money to help pay for exhibits
 - Advertise through social media
 - Silent auction and prizes
 - Exhibits
 - Host in the H3 factory
 - Do not use the bell tower - displays will not stick to the walls
 - Displays
 - Timeline
 - Photomosaics



Conclusion

This is just the beginning of celebrating the VPC's 35 years of accomplishments

To conclude, the Venice Project Center has produced an immense amount of research and projects on a multitude of aspects of Venetian life. The 35th anniversary of the VPC serves as an opportunity to celebrate, validate, and further disseminate the results of projects that have been used to preserve and improve life in Venice. Our group laid the groundwork for future teams by organizing VPC projects, identifying VPC impact categories, recording interviews and producing infographics, and developing a plan for future anniversary teams. The range of data and research themes was updated and synthesized, but still needs to be made more accessible to the public. The VPC has great resources to



collect and distribute data, but there are areas of improvement where the VPC could better organize and visualize its existing data. Additionally, short-form media and other visuals will help further elucidate the impacts the VPC has had on the city of Venice.



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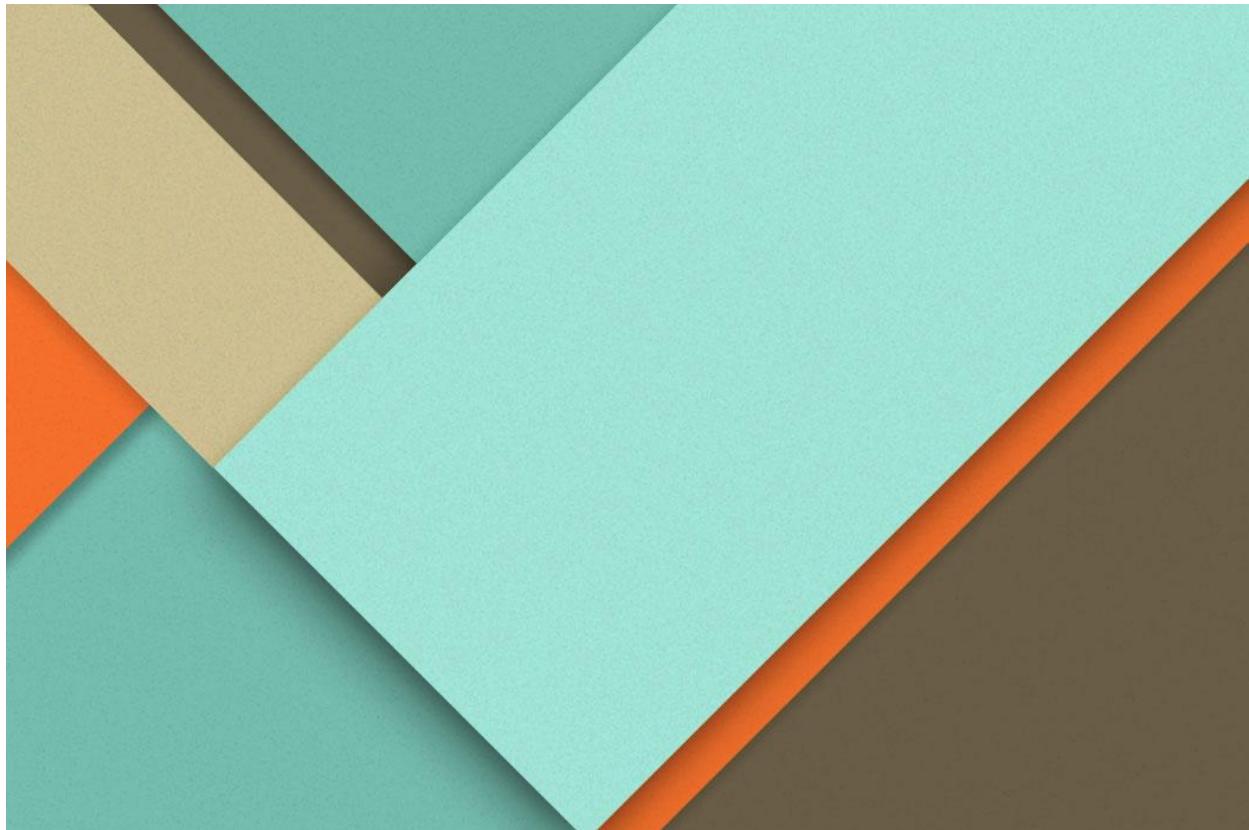
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Appendices

Appendix A: Interview Questions

Interview Questions for Past Sponsors:

***Before we begin we would like to refresh you on the project that you have sponsored.

1. How long have/had you been in connection with the Venice Project Center?
2. What different project themes has the VPC facilitated for your organization?
3. What were some of the most notable or memorable projects in terms of their outcomes and specific impacts on your organization? Were the project outcomes and results/data useful to your organization? If so, how?
4. Do you know of any data or publications that have documented this impact?
5. Why has your organization found it useful to continue sponsoring projects for the VPC? What are the benefits?
6. What impacts have you seen in the Venetian community during your collaboration with the VPC? Any wider impacts? For example, were the results of the research used or discussed by other groups that you are aware of? Was the data used to change any policies or make changes in the community?
7. Do you know of any members of the community you think we should interview about the impacts these projects have had?
8. What aspects of your project experience could WPI work on to help improve the quality of future projects?
9. Is there anyone else in your organization or anyone outside who has worked with the VPC (or might be interested in working with the VPC) that you can refer us to?
10. Do you have any media - photos, videos, recordings - related to the projects that you could share with us?
11. Do you have any last comments or suggestions? Do you have any questions about our projects, the VPC, or WPI?



Interview Questions for VPC Director Fabio Carerra:

1. What impacts have you seen in the Venetian community since the founding of the VPC?
2. How do you envision sharing all of the VPC's accomplishments?
3. How has the VPC affected you personally?
4. What are some of the educational impacts that you have seen on the students at the VPC?
5. Can you go into detail about how the VPC has affected x category.

Categories we decided on:

- a. Arts and architecture (thursday 12/1)
 - i. Preservation
 1. Public art → erratic sculptures, monuments, fountains, well heads/wells
 2. Bells/Bell towers
 3. Churches/Church floors (convents) (connects to archaeology)
- b. Infrastructure and Mobility (12/6)
 - i. Moto Ondoso
 1. Cargo deliveries
 - ii. Traffic (corresponded with canal projects)
 - iii. Bridges and Canals → depths/sediment, x, canal wall/canal wall damage
- c. History and geography (12/7)
 - i. Archaeology and History
- d. Energy and environment (12/8)
 - i. Islands
 - ii. Environment
- e. Socio-economics and demographics (12/9)
 - i. Tourism
 - ii. Housing
 - iii. Stores/retail

- 
- f. Institutions and Organizations (last week if time)
 - i. History of the VPC
 - ii. Anniversaries → produce new and different things (dashboard, venipedia, old maps)
 - g. Science and Technology (last week if time)
 - i. Technology - cutting edge things

Appendix B: Alumni Survey¹⁰

Questions:

Thank you for taking the time to complete this survey! It should take about 5-10 minutes, and your response will help us understand the impacts of the Venice Project Center on Student Education. Your name is asked for the purpose of identifying what project sponsor you worked with. Your responses will be kept anonymous unless you indicate that we can use your name. Your email will not be shared, and no identifying information will be included in our final report of this information. * Required

1. What is your full name? *
2. What is the name that appeared on your final report? *
3. What year did you complete your IQP? *
4. What term did you complete your IQP? *
5. Which of the following most closely fits the project theme of your IQP? * *Check all that apply.*
 - Arts and Architecture
 - Energy and Environment
 - Socio-Economics and Demographics
 - Institutions and Organizations
 - Science and Technology
 - Infrastructure and Mobility
 - History and Geography
 - Other:

¹⁰Deliverable from the Melbourne Project Center 20th Anniversary Team (2016) was used as a template for our survey. https://digital.wpi.edu/concern/parent/vd66w0599/file_sets/kp78gg94c

6. What kinds of deliverables did your project produce? * *Check all that apply.*

- Training or Educational Materials
- Promotional Materials and Events
- New Procedures and Processes
- Information Repositories, Databases, or Websites
- Computer Programs, Applications, or Tools
- Built Structures or Products
- Designs for Built Structures or Products
- Recommendations and Proposals
- Published Academic Work
- Other:

7. To what extent did your project experience enhance your abilities in these areas? * *Mark only one oval per row.*

	Not at all	Slightly	Moderately	A Lot	Extremely
Professional written communication					
Professional oral communication					
Professional visual communication					
Working on a team					
Leading others					
Defining achievable project goals					



and objectives					
Managing time and tasks for a complex project					
Conducting research using multiple information sources					
Critically analyzing and evaluating information					
Generating new ideas and thinking creatively					

8. If you answered "A Lot" or "Extremely" to any of the above, can you explain which aspects of the project helped you develop that skill?

9. To what extent did your project experience change your awareness of or attitudes about the following? * *Mark only one oval per row.*

	Not at all	Slightly	Moderately	A Lot	Extremely
Connections between society and technology					
Global issues					
Ethical responsibilities and impact on others					
Cultural differences and ways of interacting					
The interdisciplinary nature of complex problems					

10. If you answered "A Lot" or "Extremely" to any of the above, can you explain what facet of your project changed your awareness or attitude regarding that topic?

11. How did the skills you gained from your project benefit you in your professional work after graduation? * *Mark only one oval.*

- Not at all
- Slightly
- Moderately
- A Lot
- Extremely

12. What improved skill or personal growth from the project aided you professionally? How did that help you in your career? *

13. To what degree do you feel your project had an impact — on either your sponsor, on other organizations or businesses, or on members of the community? * *Mark only one oval.*

- None at all
- A little
- A moderate amount
- A lot
- A great deal

14. To your knowledge, which of the following groups were affected by your project? *

Check all that apply.

- Sponsoring organization
- Other organizations or businesses beyond the sponsor
- General public/members of larger community

- 
- Specific demographic

- None of these groups

15. If you checked off "Specific demographic", what was the demographic (e.g. 10-17 year old girls, people with visual disabilities, shop owners on the island of Dorsoduro)?

16. Can you elaborate on the specific impacts your project had, or any changes that came about as a result of your project? *

17. How did your project experience affect you personally? * *Check all that apply.*

- Influenced my self confidence
- Stimulated new interests
- Motivated personal changes in my lifestyle or attitude
- Impacted my personal goals
- New and/or lasting friendships
- Other:

18. To what degree would you recommend completing a project through the Venice Project Center to another student? * *Mark only one oval.*

- Strongly advise against
- Advise against
- Neither recommend or advise against
- Recommend
- Strongly recommend

19. We are looking for action shots (photographs) of students working at their sponsor sites or with community members in Venice as well as photos of tangible achievements that grew out of project work (e.g. an event you orchestrated, something you built or created for

the sponsor, etc). If you would like to share any photos and you have any files readily available, you can upload them here. Otherwise, you can email them to venice.wpi@gmail.com at any time. Note that any media you provide here may be used in the future for VPC promotional materials, such as videos or pamphlets. For proper attribution, please include your name, graduating year, and a short description of the content.

Files submitted:

20. In our project report, and in future VPC publications, we may wish to quote directly from some of the responses in this survey. Please indicate your preference in terms of attribution below. * *Mark only one oval.*

- I agree to being quoted and identified.
- I agree to being quoted anonymously as "a VPC alumnus or former student participating in the VPC."
- I would not like to be directly quoted in any form.

21. If you clicked "I agree to being quoted and identified", we may wish to follow up on your responses with a few quick questions over the phone. If so, would you be willing to be contacted about a phone interview? *Mark only one oval.*

- Yes
- No

22. If you clicked "Yes", please indicate your preferred email address here, and we may contact you within the next month to schedule a brief phone conversation.

23. If you would like to be included in a raffle for one of three \$25 Amazon Gift Cards, please provide an email address where we can notify you and send your online gift voucher. The email you provide will only be used to notify you if you win the gift card, or if you indicated that you would be willing to speak with us further.

24. If you would like to share a longer testimonial of your experiences, want to elaborate on something this survey did not cover, or have any questions or comments about this survey and the VPC, please don't hesitate to contact us at venice.wpi@gmail.com!

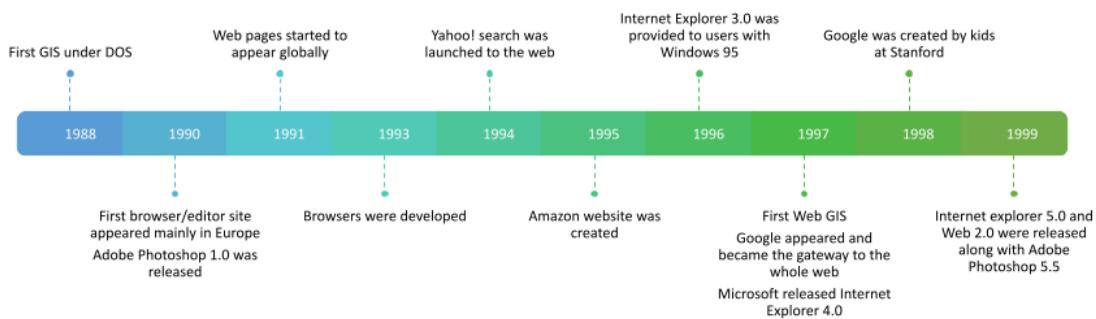


Deliverables Expanded:

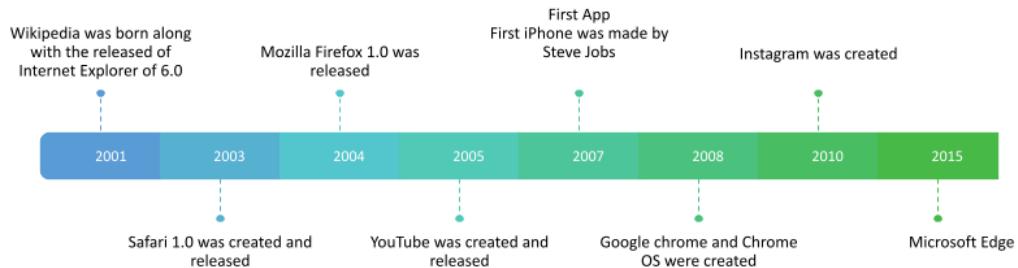
- Training or Educational Materials
 - Curriculum, activities, workshops, videos, modules, instructions, handouts etc.
 - Visitor handouts
- Promotional Materials and Events
 - Promo Strategies
 - Ads, brochures, posters, commercials, fliers to advertise an org, event, product
 - Also for promoting the sponsor's cause
- New Procedures and Processes
 - This if for if they do it, not if they only recommend it
 - Strategic models are included here
 - Assessment Tools, and tools for the business to use in the future are included here
 - Including standardized evaluations
 - To improve the way something is done, help work more efficiently, create strategies
- Information Repositories, Databases, or Websites
 - Editing a website goes here too, along with designs for websites
- Computer Programs, Applications, or Tools
- Built Structures or Products
- Designs for Built Structures or Products
 - Including floor plans
- Recommendations and Proposals
 - Only big detailed analysis, not standard background research
 - Data analysis (only if they did it, not if they gave data to the organization to analyze)
 - Recommendations for new procedures and processes
- Published Academic Work
 - Reports published by the students outside of the final report required for completion of the IQP

Appendix C: Timelines

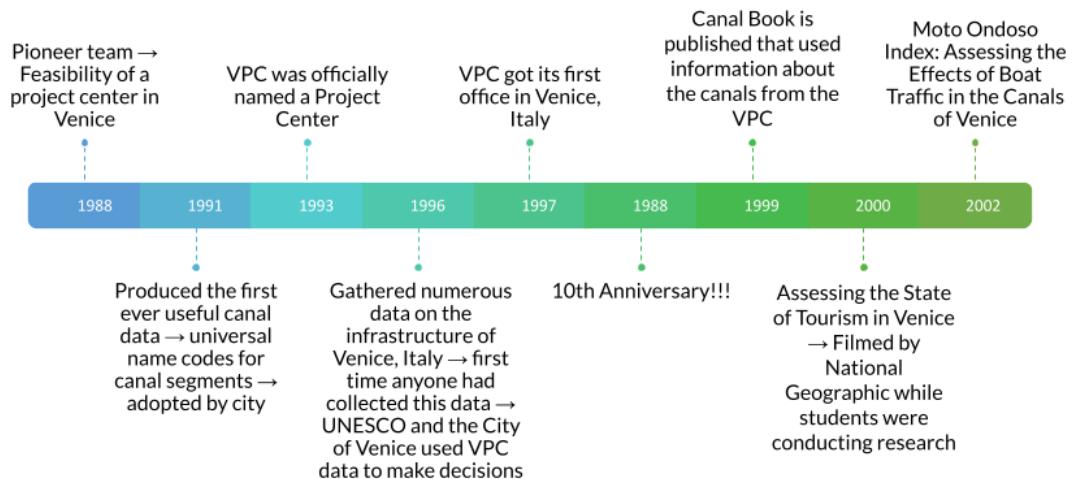
History of Technology 1988-1999



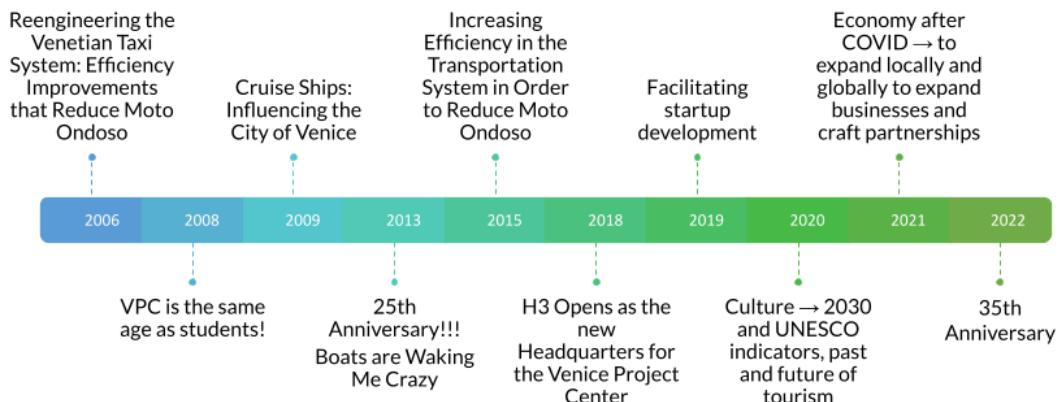
History of Technology 2001-2015



Milestones 1988-2002

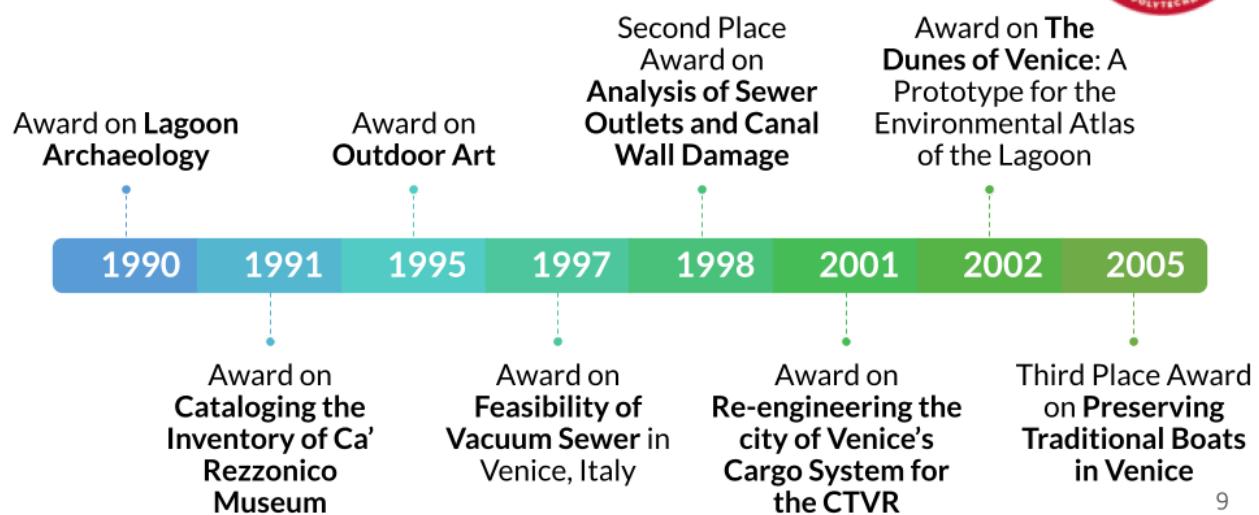


Milestones 2006-2022

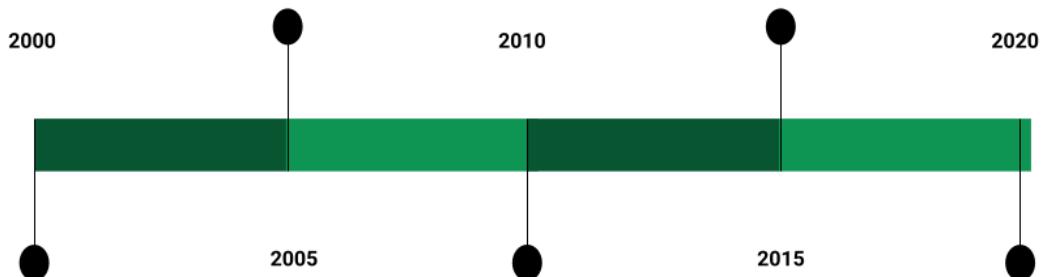




The VPC Has Won 8 Best Project of the Year Awards



Template for All Future Timelines



Appendix D: Interview Setup, Debugging Processes, and General Best Practices

Hardware requirements:

Laptop with both USB-C and USB 3.0 (the blue USB port)

ATEM MINI switcher

USB-C to USB cable

Mini-HDMI to HDMI cable

DJI MINI wireless mics

Tripod

Sony Alpha 7 camera

Optional:

Tripod + GoPro (technically not GoPro brand, but it's a tiny GoPro-like camera)

Lighting stands with umbrella

Software requirements:

OBS

Video editing software of choice (we used Adobe Premier Pro)

The instructions to record are as follows:

Hardware:

Set up the camera on the tripod.

- Adjust the leg heights and use the green bubble on the tripod to ensure that it is level. Remove the top piece of the tripod (the rectangular piece with a screw on it) and tightly screw it into the bottom of the camera. Secure the top piece back on top of the tripod. Ensure the camera and tripod are still level.

Plug the ATEM MINI into a power outlet. Plug the Mini-HDMI into the camera and the HDMI into the ATEM MINI input labeled "HDMI 1". Plug the USB-C into the ATEM MINI port labeled "USB out", and the USB into a USB 3.0 port on the computer. Turn on the camera. Remove the receiver and one microphone from the DJI mic case. The microphone should turn on automatically upon being removed from the case. Plug the receiver into the USB-C port on the computer.

Below is a picture of the interview setup used by our team:



(Note that this setup has a microphone on top of the camera - this is an optional addition, as we found the DJI microphones to have much better quality.)

Below is a picture of the ATEM MINI settings used to capture video on the Alpha 7 through OBS:

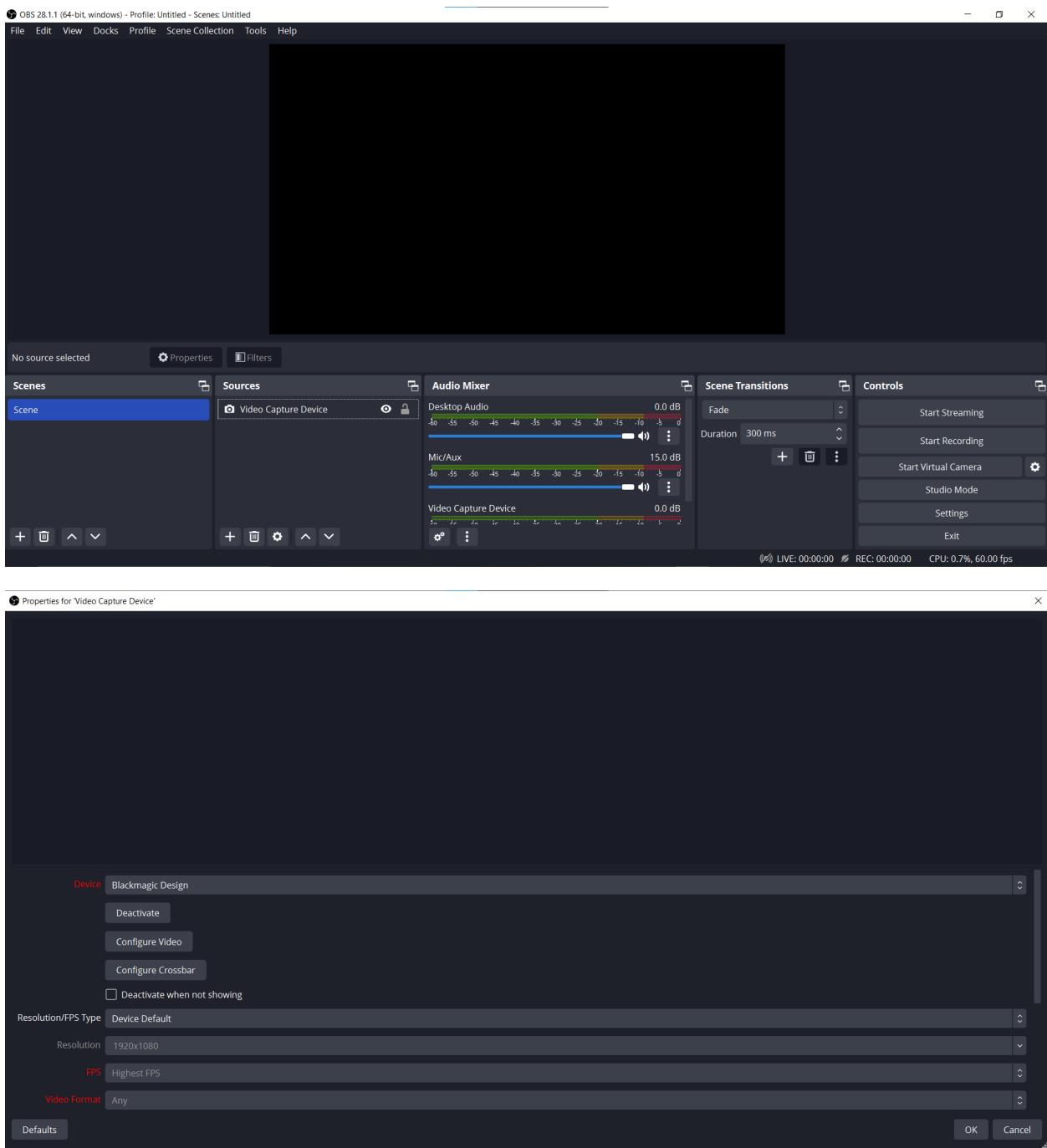


(Note that the switcher can control multiple camera angles - connecting multiple cameras to the switcher via HDMI may require different settings.)

Software:

Open OBS. Configure the Blackmagic Design (ATEM MINI) switcher as a new video source, and make sure the “Mic/Aux” audio mixer setting is detecting the DJI mic as opposed to the computer mic (this can be changed in “Properties” and/or in the computer’s sound settings). We found that increasing the DJI mic settings to +15 dB in OBS (while leaving the receiver at +0 dB) provided an appropriate volume level.

Below are the OBS settings used by our team:

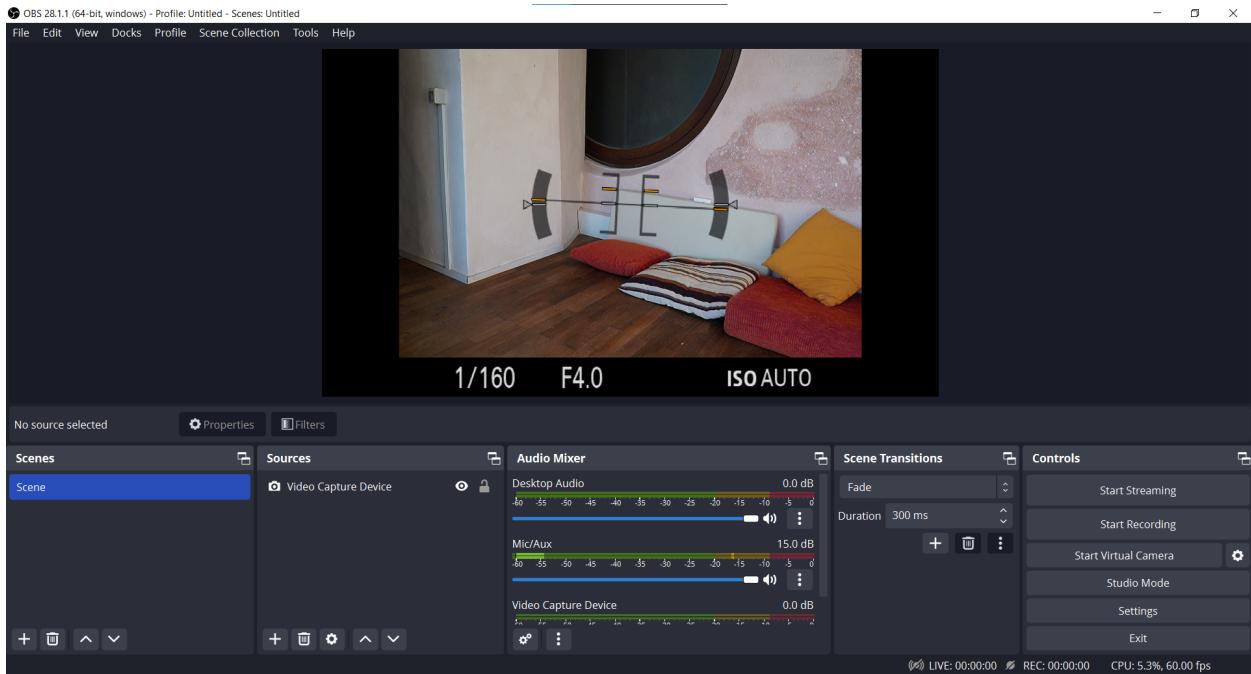


(Note that the camera feed should be visible where the black box is and that the red words should be white when the ATEM MINI is properly connected to the computer.)

Click "Start Recording" to begin recording the camera feed and the audio. The default output location is the "Videos" folder on the computer.

You may need to change “Resolution/FPS Type” to Custom temporarily (once the white lettering is present) to see the camera view.

If you accidentally take a picture with the camera, you may see the following in your camera view:



If you start recording on OBS, the metadata will be visible in the recording since OBS is essentially screen-recording the camera screen. The way our team circumvented this problem is to start recording on the camera. This will clean up the display and allow for recording on OBS to begin. This also means you will have two copies of the recording - one on OBS with the high quality audio from the DJI mics, and one on the camera's SD card without that audio. The camera recording may have higher quality than OBS, but you would have to manually separate the audio from the OBS recording and align it with the video from the camera. If you wish to keep the recording on the camera, make sure an SD card with enough storage is in the camera - the camera WILL act like it is recording and then only tell you there isn't an SD card when you stop recording.