



WPI

Crowdfunding Heritage Restoration in Venice with Arti.City

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AN INTERACTIVE QUALIFYING PROJECT REPORT
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VENICE PROJECT CENTER

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Abstract

We developed Arti.City, a global crowdfunding platform intended for cultural heritage projects. We designed and built the Arti.City website and demonstrated its capabilities on PreserVenice, an organization dedicated to restoring public art in Venice. We updated the Venice Project Center's database of public art with information about inscriptions and used these inscriptions as sample projects in Arti.City. Although we developed Arti.City using Venice as a model, it can be used for cultural heritage projects around the world.

Executive Summary

Venice possesses a rich cultural heritage and over seven thousand pieces of public art and artifacts. Unfortunately, much of this public art is deteriorating and needs restoration. While many funding efforts have been put in place, funds allocated for art restoration often go to major, high visibility projects or private collections (Comitati Privati 2016), and the small artifacts scattered around the city are neglected (UNESCO 2011). Previous projects by the Venice Project Center worked to rectify the problem through the creation of the PreserVenice application, a crowdfunding platform to raise funds for the restoration of public art. Donors can find the artifacts they wish to donate to through the site or the web app, as well as look up information about the other artifacts in the city. As PreserVenice was implemented, an opportunity presented itself to expand the application beyond the borders of Venice and art restoration.

We developed Arti.City, a global crowdfunding platform geared toward cultural heritage projects. Our goal was to design and build an initial prototype of this application and show how it can be used to implement more localized donation sites such as PreserVenice. The reason a crowdfunding model is important is that it allows for more funding for smaller projects. Large scale funding like grants or committee donations will naturally focus on large projects in desperate need of funding, but individuals are more likely to donate to projects they feel connected to. For example, someone who regularly attends services at a local church is likely to donate to restoring a fresco there. We know that crowdfunding is a feasible option for fundraising for cultural heritage projects from past experience. The restoration of the Statue of Liberty was completed through a large-scale crowdfunding initiative which raised \$243 million. A similar project in 2016 raised \$22,000 for the restoration of a sculpture in Philadelphia.

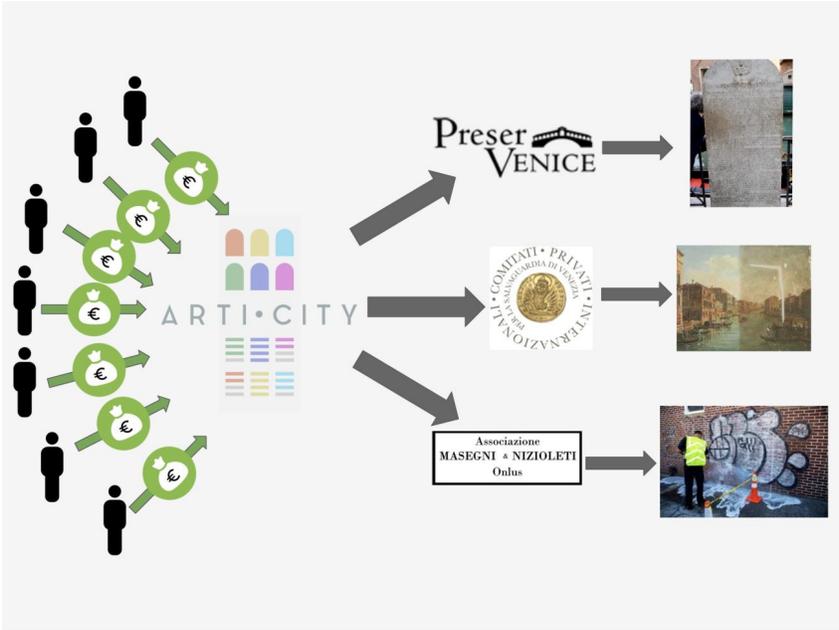


Figure 1: The crowdfunding model allows more organizations to receive funding, and therefore complete more projects.

Before beginning work on creating Arti.City, we wrote and presented a plan for the structure and management of the application (Appendix A). This proposal outlined Arti.City’s role as a “Kickstarter” for cultural projects, as well as the process for donating and creating fundraisers. Traditionally, funding for cultural projects consisted of large government grants or large single donations from wealthy philanthropists. Adding a crowdfunding model allows many people to make small to moderate sized donations for projects they feel connected to. Through Arti.City, we can better connect people’s money with their interests.

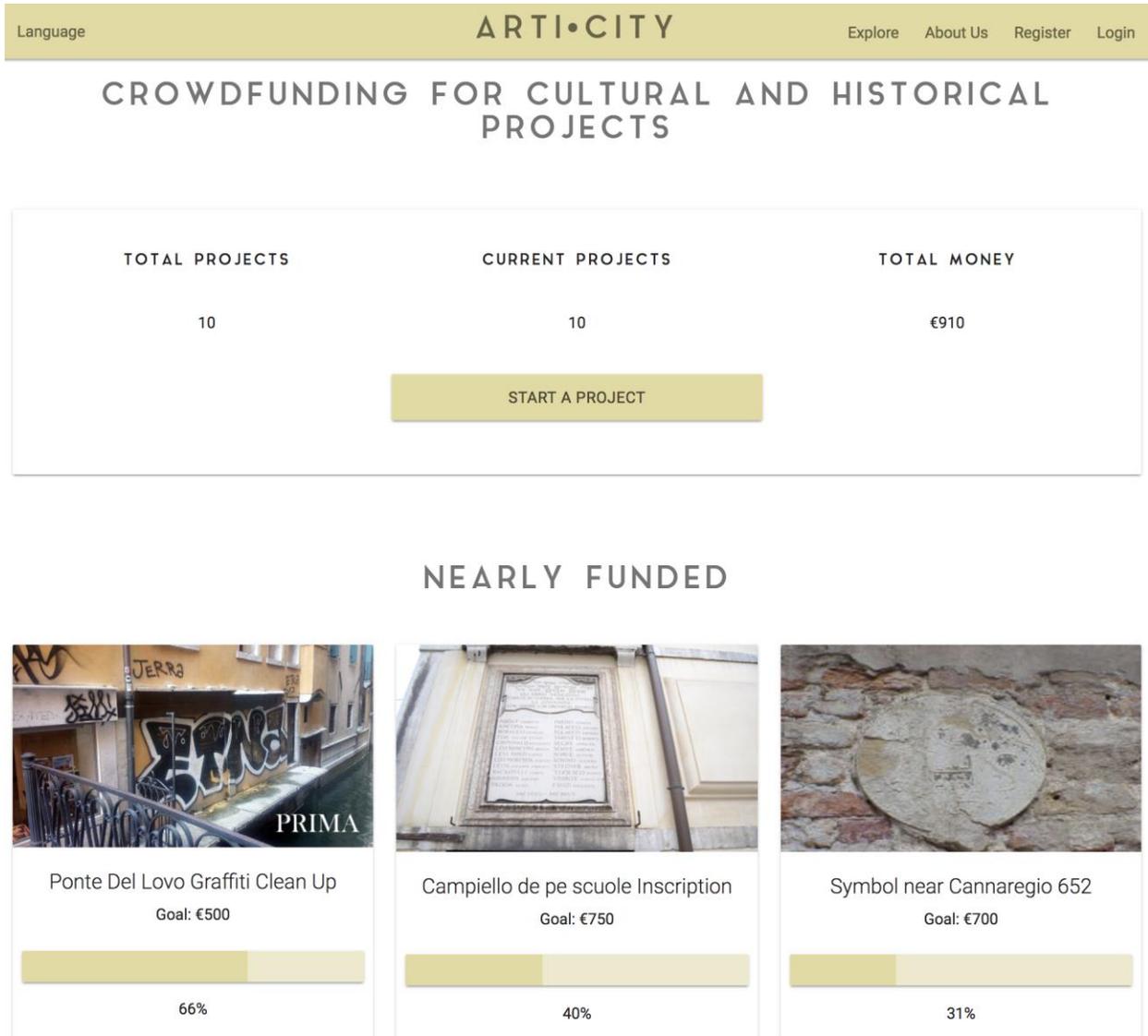


Figure 2: The home page of Arti.City allows users to star projects and view projects run by other users.

In order to demonstrate the capabilities of Arti.City, and to add to PreserVenice’s database of public artifacts, we collected data on inscriptions in the borough of Cannaregio. We chose inscriptions because they are mostly missing from the PreserVenice database. We used a

phone application we developed to catalog artifacts across Cannaregio. We collected a large amount of data on each inscription, including size, height from ground, condition, and photographs. We did this both to provide a set of projects for Arti.City to pull from in the testing phase, and also to expand the Venice Project Center database of public art. While data collection was not the primary goal of our project, we collected data on 63 inscriptions in Cannaregio and our mobile application can be easily used by future groups to finish the database.

Fundraising with Arti.City is simple: after creating an account or logging in, you can click the “Start a Project” button. This brings you to a screen where you can input all of the information about a project, and upload a relevant image. At this point you can publish the project and it will become visible to all other users.

Arti.City provides a large amount of tools for maximizing donations by publicizing projects. The first and simplest of these tools is social media sharing. On the page of every project are buttons for Facebook and Twitter. This allows people to share the fundraising campaign with friends, family, and any groups they are a part of. The share button will automatically generate a post on the user’s page, and anyone who clicks on that post will be brought to the donation page in Arti.City for that project. Social media sharing is especially important for crowdfunding because crowdfunding campaigns are most often advertised through word of mouth, not large scale advertising campaigns.

By making social media sharing as simple as possible, we allow people to quickly and easily get the word out about the projects they are fundraising for. In addition to this, many community groups operate primarily on Facebook. Since we envision much of the fundraising for cultural projects to occur within these small community groups, we made it easy for people to share to these Facebook pages. In the example of the church-goer they can quickly post the fundraiser page for the fresco to the Facebook group of the congregation, the most likely group to make donations.

In addition to sharing directly from the project page, if a user has their own website, we made it easy to embed tools from Arti.City onto their page. The first embeddable widget is social media sharing. Instead of having to direct users to Arti.City’s website to share projects to social media, organizations using Arti.City can embed the sharing button straight on their website. Users who see the project on that organization’s website can share directly from there instead of being directed to Arti.City.

We also give users the ability to embed a map of the location of all of their projects. Visitors to the website can click on any of the pins in the map to see information about that project and donate. The last widget is an embeddable donate button, which users can place on their personal website or blog post. Visitors to their website can click on that button and be brought directly to the donation page, keeping Arti.City behind the scenes.

WIDGETS

Use these widgets to connect with Arti.City from your website

Name	Description	
Facebook	Use this widget to make a share button that shares your profile or project	GET FACEBOOK CODE
Twitter	Use this widget to make a tweet button that shares your profile or project	GET TWITTER CODE
Donate	Use this widget to allow donations to project directly from your website	GET DONATE BUTTON

Figure 3: Users can easily copy and paste code provided by Arti.City to their own website.

We provide the ability to generate QR codes for organizations that are able to utilize them, such as museums. This makes it effortless to get potential donors to a donation page. It is always easier to convince someone to donate to a cause if they are face-to-face with the problem, and QR codes make it simple for a visitor to see the donation page. By making the process as straightforward as possible, we increase the chance that someone will donate. Another way to incentivize people to donate to projects is through Italy's Art Bonus. The Art Bonus is a tax refund in Italy that people receive when they make donations to art, or cultural project. While this type of refund is specific to Italy, it's not the only one available. As many countries have their own systems for refund, Arti.City will rely on the organizer to keep their donors up to date on these opportunities.

In order to keep donors up to date on the status of a fundraiser, we proposed an email notification system. When a user donates to a campaign, their email will be added to a contact list. Project organizers can easily send updates about the project including when the project has been fully funded, when the work on the project begins, and when donors can visit the project site to see the completed work.

While we designed the Arti.City application to be location agnostic, there are many organizations in the city of Venice that can benefit from the tools provided by Arti.City. One such organization is Masegni e Nizioleti, a group in Venice that works to clean graffiti on walls and bridges. This organization could post sites that they are seeking to clean up in the future. Residents or foreigners interested in assisting in the cleanup can then donate to the campaign. Once the campaign is funded, Masegni e Nizioleti will be able to purchase any supplies they need for the cleanup and get to work. When the cleanup is completed, they can take photos of the newly cleaned site and Arti.City will send an email using the built-in notification system.

We demonstrated the capabilities of Arti.City by updating the PreserVenice using the tools we created. We added a donation button on the homepage, a map of all public artifacts in Venice, and a live-updating twitter feed. These are all easily implemented on any website

through our widget manager. The PreserVenice organization can easily publish these updates at any point as the code has already been generated and just needs the PreserVenice datasets to be imported into Arti.City.

Arti.City is a flexible platform and promises to add value and create jobs in Venice. The Venetian startup SerenDPT has plans to continue the development of Arti.City. We have recommendations for future maintenance, additions to the website, and the structure of the organization. For the Arti.City website, we believe the highest priority additions are a dashboard for donors, bulk uploading of projects, and a mobile application that accompanies the website. Arti.City will also need to develop more detailed plans for holding funds in escrow and dispersing them to the fundraising organizers.

We hope this project has a large impact on the historic city of Venice. Our work in creating Arti.City is having an impact in Venice not only by helping people to raise funds for cultural heritage projects but also by creating jobs for software engineers and programmers in Venice. The continued development of Arti.City will keep more Venetians in Venice and promote the formation of the “Silicon Lagoon.”

Our project is a perfect example of a symbiotic relationship between technology and culture. The fundamental problem that Venice is facing is the loss of cultural artifacts, and we are able to address this problem much more effectively using new crowdfunding technologies. Without the internet, social media, and innovative crowdfunding platforms, it would be very challenging to raise the necessary funds to complete restorations of public art in Venice.

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1.0 Introduction

Major cities around the world have culturally significant works of public art that preserve the history of the area by providing a connection to the past. Unfortunately, countless pieces of public art are falling into a state of disrepair due to environmental and human factors. Preserving these important works of art and maintaining the connections to the past requires the ability to raise funds for restoration work.

Venice is a poignant example of a city at risk of losing its cultural heritage because of the deterioration of public art. There are over seven thousand public artifacts throughout the city ranging from wells and statues to plaques and coats of arms. These artifacts represent a link to the rich history of the city. Unfortunately, large numbers of artifacts are deteriorating and in need of restoration. Artifacts that have not yet fallen into disrepair must be preserved to avoid expensive restorations in the future. Additionally, the thousands of small artifacts spread around the city are neglected in favor of a few high visibility projects, such as the Doge's Palace (UNESCO 2011). If nothing is done to restore and preserve smaller public artifacts, that part of Venice's history will disappear.

The PreserVenice application was created to combat lack of funding for public artifacts and to attempt to conserve the public art in Venice. It acts as an interface for the centralized database of public art collected by WPI's Venice Project Center, and serves as a global source of information on Venetian public art. The system is currently able to accept donations, however the functionality was not published as there was no plan for how to handle the restoration after funding was secured. There is also no way for individual users to add artifacts to PreserVenice, limiting its versatility.

By adding a way for users to upload artifacts, the application could be used to fundraise for public artifacts and cultural projects not only in Venice, but across the world. Our goal was to create a generalized crowdfunding application called Arti.City for cultural projects that will be implemented and demonstrated by the current system, PreserVenice.

Our objectives for this projects were as follows:

1. To design and prototype the donation side of Arti.City, a global crowdfunding platform for art restoration.
2. To design and prototype a fundraising dashboard for Arti.City.
3. To demonstrate the tools and functionality of Arti.City by updating the PreserVenice website.
4. To use the tools of Arti.City through PreserVenice to update the database of Venetian inscriptions.

Once we created the Arti.City platform, we used new functionality to rebuild the PreserVenice website, and began adding more artifacts to the system.

2.0 Background

Venice, Italy is one of the most culturally significant cities in the world. The Grand Tour, a popular trip taken by wealthy, coming-of-age British men, almost always included a stay in Venice (Redford, 1996). Throughout its thousand-plus-year history, Venice has developed a rich culture, prominently displayed in its public art and architecture.



Figure 4: Venice contains over seven thousand pieces of public art.

Venice boasts over seven thousand pieces of public art, ranging from small plaques and inscriptions to wells to bridges. Despite their cultural significance and historic value, many of the pieces are deteriorating because of a combination of environmental factors, flooding, tourism, and neglect. Money budgeted for the preservation of art in Venice is often allocated towards high-visibility projects or time-sensitive structural repairs (UNESCO 2011). Venice needs funding specifically focused on preservation of public art to curb deterioration.

2.1 Public Art in Venice

The term public art, or public artifact, is defined as any piece of art that is accessible to people in a common space (Knight, 2011) including art in churches and public buildings, but excluding private collections. Much of Venice's art is in varying stages of disrepair, due to centuries of wear and tear, exposure to the elements, heavy foot traffic, and lack of funds and attention. (Bezek et al, 2010). Figure 5 shows the relief of an angel as it deteriorates between the years of 1978 and 2008. In the space of thirty years it became almost unrecognizable. This is representative of other public artifacts in the city, and the rate at which they are deteriorating.



Figure 5: Public art is deteriorating at a frightening pace.

While there is money in the Italian government’s budget for art conservation, much of it goes to notable, large-scale projects. Even the money sent to Venice is clustered around places like the Palazzo Ducale and the Basilica San Marco. The thousands of small artifacts sprinkled around the city receive minimal funds (UNESCO 2011).

2.1.1 Venetian Public Artifact Collections

Due to the tremendous quantity and importance of public art in Venice, there have been multiple attempts to create a complete catalog. One of the largest was created by Dr. Alberto Rizzi in 1987. Titled *Scultura Esterna a Venezia*, the catalog details any pieces of public art which have been moved from their original position, dubbed “erratic” sculptures. It connects each piece of art with an identification number and location, as well as approximate age, materials, and a description (Fitzgibbon, 2011). This catalog is an important source for the location of artifacts.

Another catalog is *Lapidi e Iscrizioni* by Gianni Simionato. This book details almost all of the inscriptions and gravestones in Venice. Published in 2016, this catalog is much newer, and while it is a good source for finding inscriptions throughout the city, it is missing some examples and is often inconsistent when it comes to inscriptions on church properties.

2.1.2 The VPC Digital Public Art Catalog

The Venice Project Center was founded in 1988 and collaborates with Venetians to solve

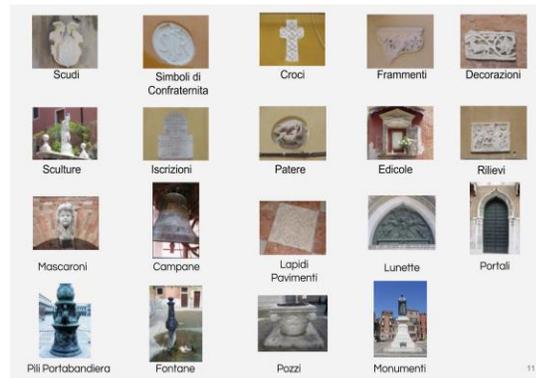


Figure 6: The Venice Project center contains data on various types of public artifacts.

a wide range of social problems in the community, including expanding the catalog of public art begun by Dr. Rizzi. In the last thirty years, more than 763 students have completed over 209 projects, and a substantial amount of data has been collected about Venice. There are more than 17,000 articles on historic artifacts in the Venipedia database. The data has gone through several iterations, eventually culminating in the City Knowledge Console. Numerous past and present projects use the console as a source of data.

Within the City Knowledge Console are the datasets dedicated to public art in Venice. The first such projects for collecting this data were titled *Computerized Catalog of Venetian Bells and Bell Towers*, *Computerized Catalog of Outdoor Art in Dorsoduro, Venice*, *Computerized Catalog of Venetian Decorative Keystones*, and *Computerized Catalog of the Wellheads of Venice in the Sestiere of Dorsoduro*, and were completed in 1995. These projects paved the way for others such as *Computerized Catalog of Flagstaff Pedestals in Venice, Italy*

which was completed in 1997 all the way to *Preserving Venice's Bells and their Towers* in 2015. (See appendix C for a more comprehensive list of all the projects that used the City Knowledge Console).

These datasets, while mostly complete, are still missing some information and categories (Figure 7). For example, some of the information, such as the condition of the artwork has become outdated as it has deteriorated further and the information has not been updated. In other cases, photographs or information are missing. There are also some types of artifacts, such as inscriptions, that are largely unfinished.

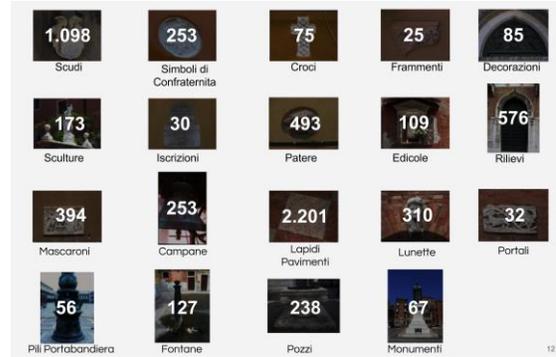


Figure 7: Of the data sets collected by the VPC, inscriptions is one of the least complete.

2.2 Art Conservation in Venice

There are currently insufficient efforts to conserve the thousands of public artifacts in Venice. This is mostly due to the fact that funding for art restoration in the city is used for large-scale projects, and public artifacts fall through the cracks. Despite the recognized value and importance of the art in Venice (UNESCO, 2017), it is still in a state of disrepair (Venipedia, 2014).

2.2.1 UNESCO Heritage Sites

The United Nations Educational, Scientific and Cultural Organization, UNESCO, is the humanitarian arm of the United Nations. Their mission statement is “to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information” (UNESCO, 2017). UNESCO takes a particular interest in the preservation of history and culture, marking certain places that



Figure 8: UNESCO provides a framework for protecting important historical and cultural sites across the world.

have special cultural or physical significance as World Heritage Sites. There are currently 1,073 recognized World Heritage Sites, with Italy having the most at fifty-three (UNESCO, 2017). The entire city of Venice and its lagoon are demarcated as a World Heritage Site. This status grants certain protections, but also imposes a number of restrictions and rules. Any work done in Venice requires special permission from UNESCO, making art restoration significantly harder.

2.3 Funding for Art Conservation

Funding is a major issue for public artifacts, and can be split into two categories: availability and allocation of funding. Governments handle large quantities of money, and there is an ever expanding list of uses for that money. Art preservation and restoration, while seen as important, are rarely at the top of the list. This is no different for Italy, especially Venice, where only 4.1% of the 2005 budget was spent on culture and heritage, as shown in Figure 9 (OECD Publishing, 2010).

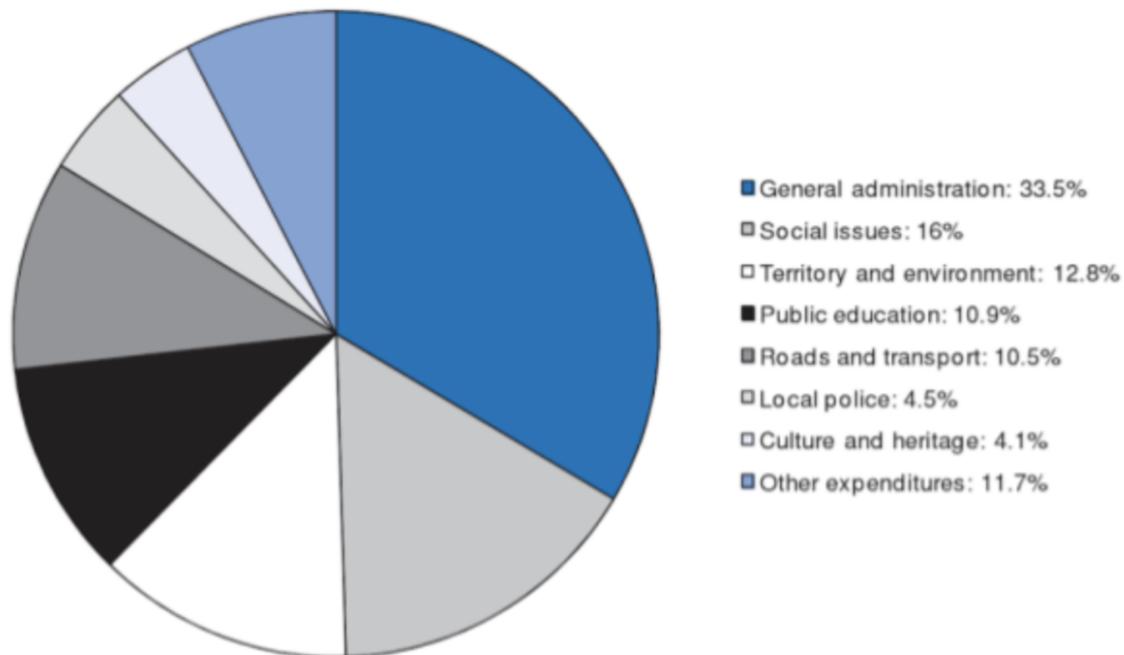


Figure 9: Main expenditure items in Venice, 2005

Preservation of small pieces of art is often much less attractive to the general population than the restoration of a widely known piece or building. As a result, Italy's public spending for culture and heritage is often allocated to restoring large-scale projects such as the Colosseum or various Roman-era buildings. Almost no funding is allocated for smaller public artifacts (UNESCO, 2017). People who feel connected to an artifact culturally may be more likely to want a local artifact conserved. For example, a person who attends services weekly at a local church will most likely be invested in maintaining the Madonna there. There is not enough money in Venice's budget to restore and preserve all of its public art, leaving a large financial burden on the shoulders of the individuals wishing to conserve a local piece.

Public fundraising can be used to combat the lack of government funds dedicated to the restoration and preservation of public art. Benefits of fundraising include being able to gather large sums of money as well as spreading awareness of the project. Crowdfunding succeeds due to the personal connection between the donor and the organizer. Research has shown that the creators of crowdfunding campaigns use this funding technique to create long-term relationships beyond the monetary donation. In addition, those who give to crowdfunding campaigns are

motivated to make donations to support a cause they normally would not be able to support. Crowdfunding builds a sense of community, which can inspire more donations (Gerber, Hui, Kuo, 2012).

2.3.1 General Fundraising Successes

Crowdfunding campaigns have been shown to be effective. In March 1986, the Statue of Liberty-Ellis Island Foundation, a private nonprofit organization, raised funds for the restoration of the Statue of Liberty in New York harbor. The company raised money through multiple means, including cash donations, pledges, commitments, and private investments. Money was donated by schools, fraternities, civic organizations, and charitable foundations as well as sponsorship from private companies in return for advertising (Hamilton, 1986). This was a large-scale fundraiser, generating \$243 million in donations.



Figure 10: A crowdfunding campaign in Philadelphia raised \$22,000 for the restoration of the "doughboy memorial"

Another example of a crowdfunding success is a restoration project by the Northern Liberties Neighbors Association (NLNA). The NLNA worked to reach their \$22,000 fundraising goal to restore what is known as the Doughboy Memorial, a bronze statue in Philadelphia. They were able to secure funds through a grant from the Philadelphia Department of Public Works, Transport Workers Local 234, and the remaining amount through a GoFundMe crowdfunding campaign (Hanisco, 2016).

It is not feasible to perform conservation work on every public artifact using tax money, but crowdfunding can supplement government grants. On Kickstarter, a crowdfunding website, 35% of the projects meet or exceed their donation goals with 78.31 million dollars raised for art projects. The power of crowdfunding becomes evident when considering over \$3.3 billion has been raised on just this one website (Kickstarter, 2017). When tax money is not enough, crowdfunding can be leveraged to raise the required funds for public

art conservation efforts.

2.3.2 Soprintendenza

The Ministry of Cultural Heritage and Activities and Tourism (Ministero dei Beni e delle Attività Culturali e del Turismo) is the governmental body that oversees most of the art conservation in Italy. In 2007 the Superintendent of Archaeology, Fine Arts and Landscape for the City of Venice and Lagoon (Soprintendenza Archeologia, belle arti e paesaggio per il Comune di Venezia e Laguna) was created to handle the management of Venetian buildings, art and artifacts (Venice, 2006). The Soprintendenza is essentially a subcommittee of the Ministry of Cultural Heritage, and manages the day to day operations of cultural heritage in Venice. The budget for art conservation in Venice is controlled by the Soprintendenza, but since they handle both the architecture and the art, decisions are often made to conduct restoration work on

buildings that are in danger of collapsing rather than spending money on preserving public artifacts because of limited funds. Once again, the governmental budget falls short of being able to fully fund the conservation of public art and artifacts in Venice, forcing the city to turn to other options.

2.3.3 Comitati privati

In 1966 a historic flood damaged a large amount of art, raising awareness of the fact that this art needs to be preserved. Shortly after the flood, the Private Committees, or Comitati Privati, were created to raise funds for restoration projects. The Comitati Privati is an association made up of thirty member teams from eleven countries. Venice in Peril was founded by the British, Comite Francais by the French, and two charities, Venetian Heritage Inc. and Save Venice by the United States. In fifty-one years, the Private Committees were able to fund the restoration of more than one thousand pieces of art and over one hundred monuments. All of these private committees work together to fundraise for the restoration and preservation of Venetian culture through its public art. However, the private committees focus mostly on large-scale restorations, and small public artifacts often fall through the cracks here as well. (Foley et al., 2008). Since their founding, the Committees have restored nineteen public artifacts.



Figure 11: The 1966 flood damaged huge amounts of art and buildings in Venice.

2.4 PreserVenice: A Crowdfunding Application for Venice

In 2007 a project titled *PreserVenice: Preserving Venetian Public Art* spawned a series of related projects focused on preserving public art and artifacts in Venice. The goal of the original project was to collect data on public art in Venice and the surrounding lagoon islands and begin work on a non-profit organization, PreserVenice, that would manage the collection of data and act as an intermediary between donors and art restoration groups (Kent et al. 2007).

The following year, the *Preserving Venetian Heritage* project focused significant effort on the preserver Venice website, researching effective design techniques for donation websites and integrating these features into PreserVenice (Foley et al. 2008). In 2009, *PreserVenice: Preserving Venetian Public Art* compiled all previously collected public

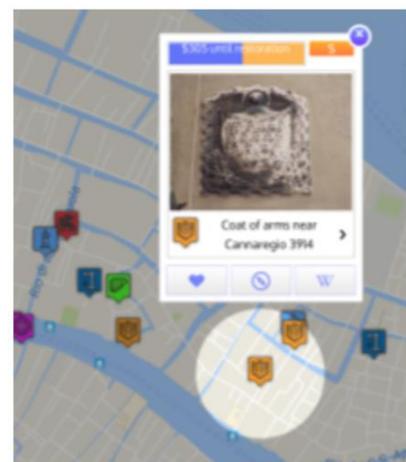


Figure 12: An artifact selected in the PreserVenice application will provide information to users.

artifact data into one database, in addition to making plans for advertising PreserVenice to the public and accepting donations (Bezek et al. 2010).

In 2010, *PreserVenice: Preserving Venetian Material Culture* focused heavily on updating the PreserVenice website as well as developing a mobile application. They developed an interactive app that allows users to locate pieces of art in Venice on a map. Upon clicking on the artifact in the app, information about the artifact was displayed to the user. The mobile application allows users to explore Venice through their phone. When a user points the phone's camera at a piece of public art, they can view both the artwork and information about it on their screen (Ascare et al. 2010).

Finally, in 2011 *PreserVenice: Preserving the Material Culture of Venice* expanded on the augmented-reality mobile application. They added a GPS feature that could notify users when they are near a public artifact. The user can then use their camera to obtain information about the artifact. Additionally, they added a button that brings users to the PreserVenice website so they can donate to the artifact's restoration or preservation (Fitzgibbon et al. 2011).

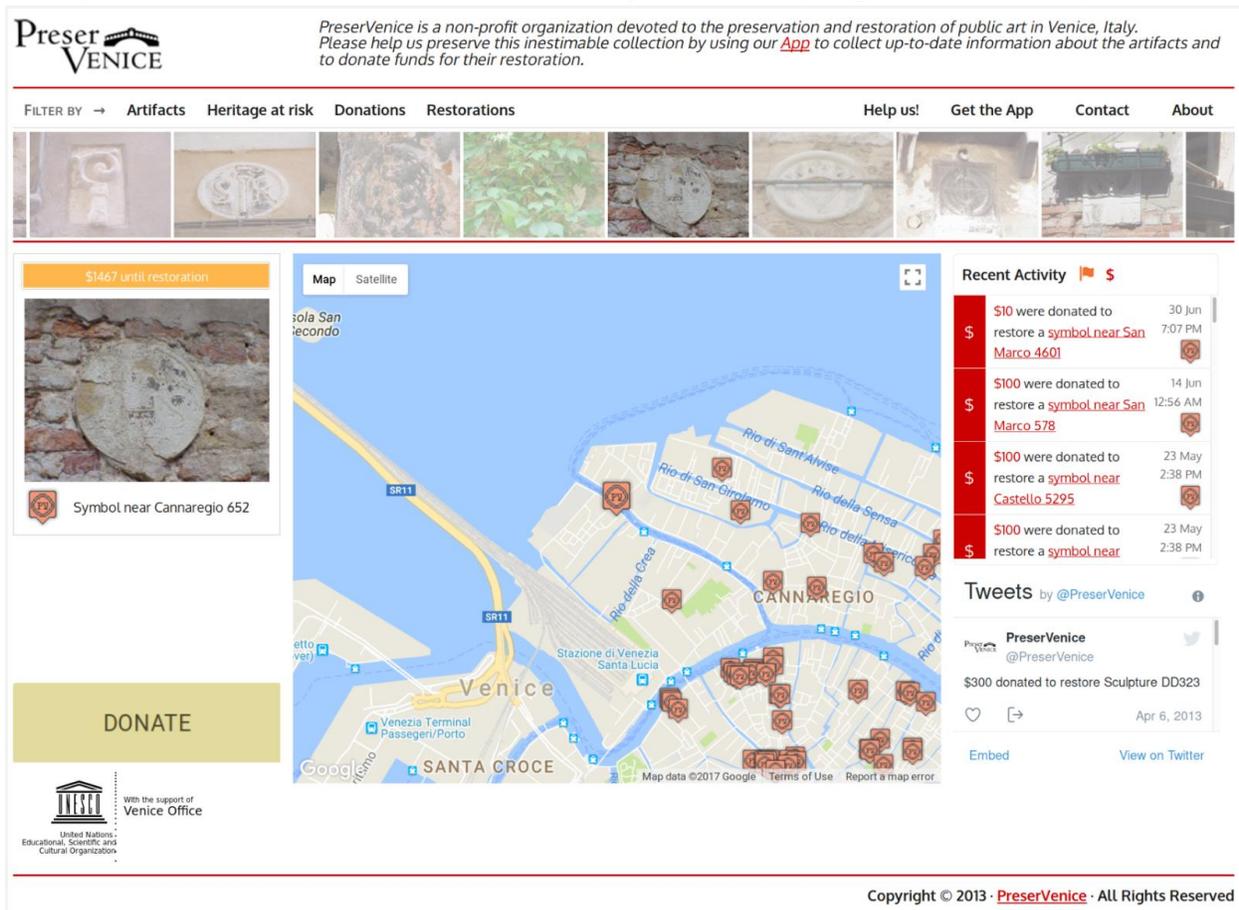


Figure 13: PreserVenice is an application that provides information on thousands of artifacts all across the city of Venice.

No projects have been devoted to PreserVenice since 2011, but several have contributed to its underlying database of public artifacts. While the core of the website and the mobile application function as expected, several key features are missing. At present, there is no

mechanism to donate money to the restoration of an artifact. Some of the dynamic elements on the webpage, like the social media widget and finance platform, are currently in the prototype stage. There is no way to fundraise for artifacts not in present in the catalogue. Nevertheless, throughout the years PreserVenice has built a rich collection of Venetian artifacts and became the backbone for a powerful crowdfunding platform.

3.0 Building Arti.City



Figure 14: The Arti.City homepage shows data on the current total projects.

In the process of updating the PreserVenice application, the Venice Project Center saw an opportunity to build a world-wide crowdfunding platform for art restoration. A parent organization called Arti.City will contain artifacts from all over the world, and allow individuals and organizations to fundraise for restoration. We were tasked with designing and creating Arti.City, coming up with a plan for its operation and organization, to create the tools that Arti.City will provide, and to update PreserVenice using those tools.

3.1 The Arti.City Plan

Before we began building the Arti.City application we had to develop a plan for how the fundraising process would occur. We compiled a report, both to guide us in building the application, and as a recommendation for future projects. Since Arti.City is still in its beginning stages of development as a company there was a need for our team to create a plan for how the company would function. The first step for this was decide on a higher level what Arti.City would provide and who its client base would be. With this decided the next step was creating the

process for how each type of user, both Organizers and Donors, would use the platform. These roles and processes were written down into an organized plan that is in the attached appendices.

3.2 Creating the Arti.City Application

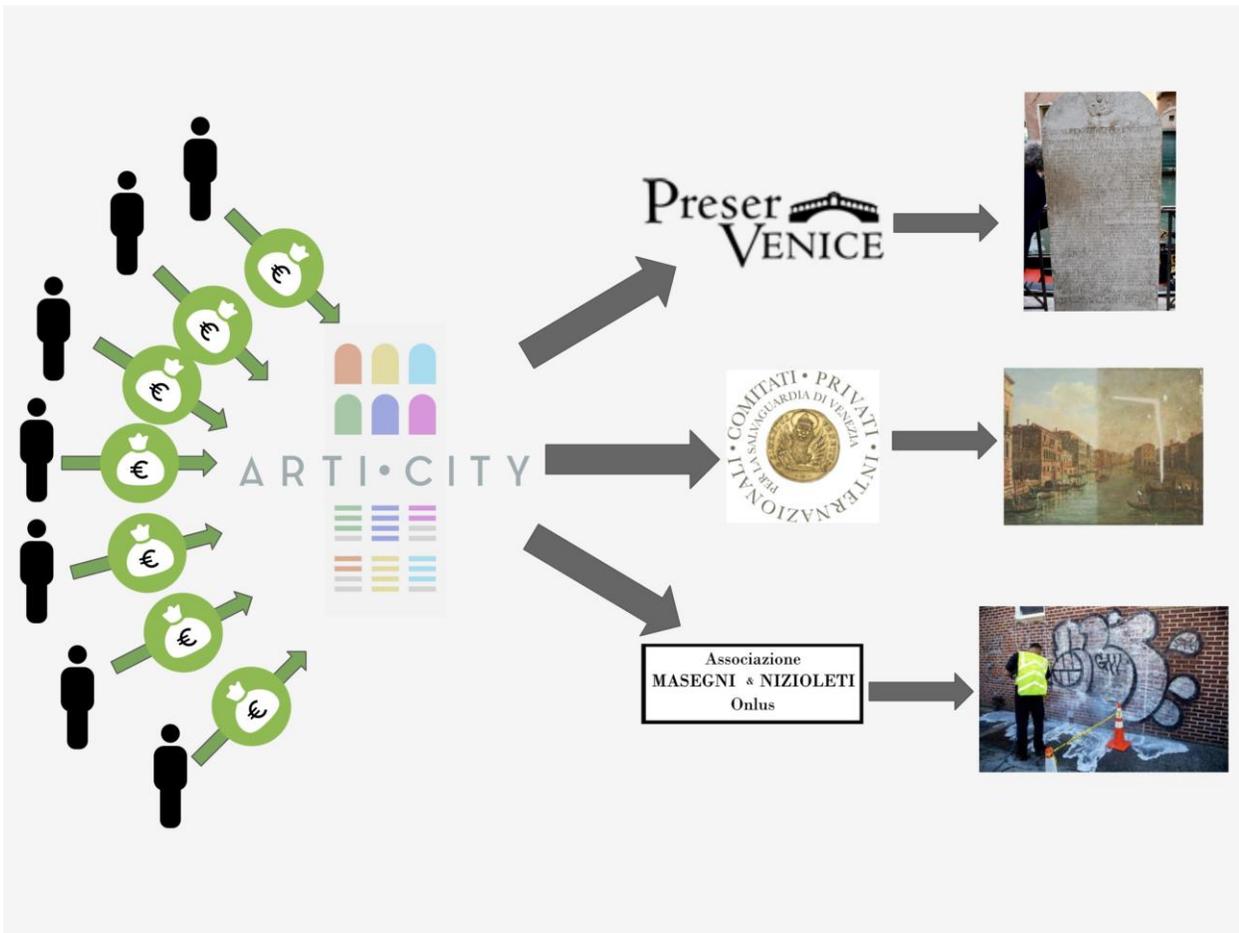


Figure 15: A model showing how funds for different cultural projects can be raised using Arti.City.

Creating Arti.City first required designing the layout of the website. Using Adobe XD, a user experience design software, we iterated through a few designs with a professional web designer. Once the base design for the website was established, we used Google services to develop the website. Firebase was used for the backend, Angular2 for front-end user interface, and Materialize as a CSS framework.

3.2.1 The Home Page

The homepage of Arti.City allows users to login if they already have an account, or sign up if they wish to make an account. The home page also displays “featured projects” which are projects that are close to reaching their funding goal. Below the featured projects, we have a

Google map displaying a pin for each project uploaded to Arti.City. When a user clicks on the pin, information about the project appears and they are given the option to donate. Users are able to use filters on the map to sort through the different projects as well as search for a project by name.

3.2.2 User Pages

There are two types of users that can use Arti.City. The first type of user is known as an “Organizer” and is an administrative user. This type of user actually adds the artifacts to be restored and is in charge of connecting with a restoration company once the money has been donated. The second type of user is known as a “Donor.” These users simply donate to projects and can optionally create an account to keep track of what they have donated to.

In order to implement these types of users, we created sign-in and login pages for Arti.City. When signing up, one can choose what type of account they want to create: Organizer or Donor. When logging in, the system remembers what type of user is logging in and the website is tailored to that type of user.

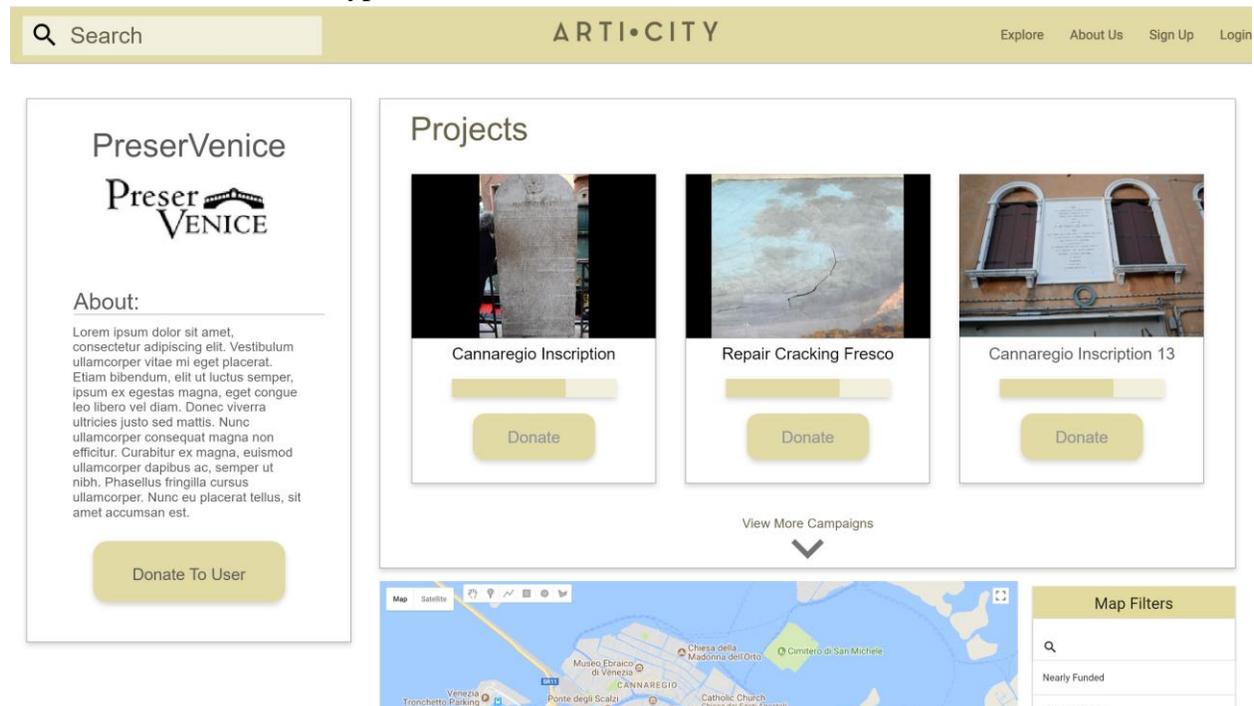


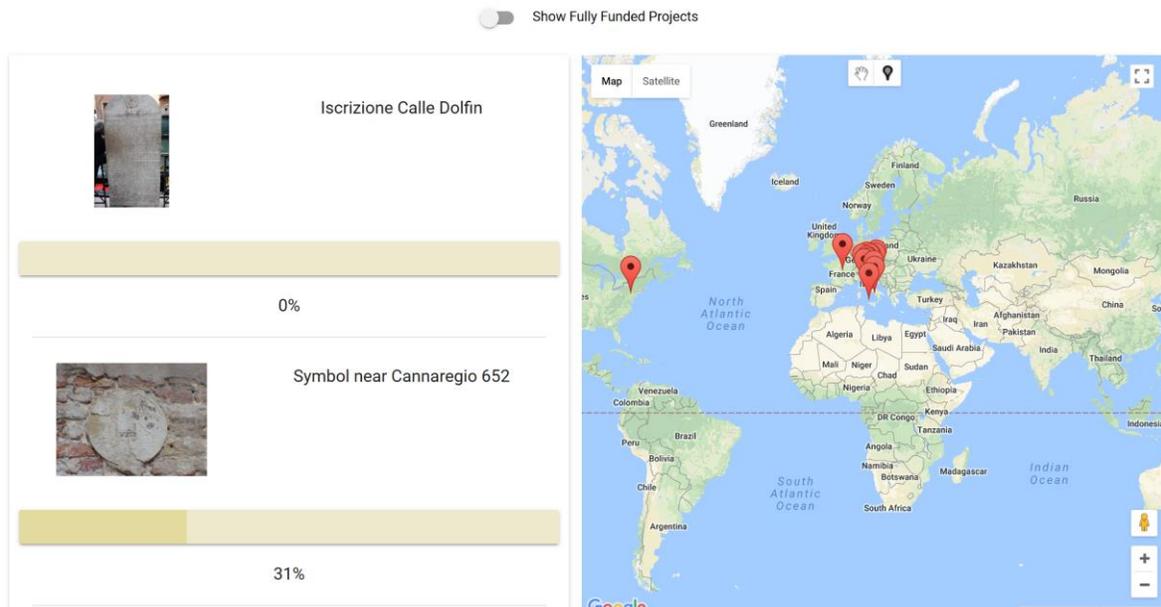
Figure 16: Arti.City's public profiles will allow donors to learn about the organization they are donating to.

3.2.2.1 Organizer Dashboard

Organizations or people that wish to set up a fundraiser need a way to manage their fundraiser. Our admin page allows these users to upload projects that they would like to fundraise for. Once there are projects in their database, they can view the progress of donations. The dashboard contains statistics on the user such as number of projects uploaded, number of active projects, and total funds raised. On the dashboard users can also see links to all of their

projects, the funding status of those projects, and a map of the locations of all of their active project. At the bottom of the page are embeddable widgets that users can place on their own website. We describe this process in detail in section 3.2.4.

MY PROJECTS



3.2.2.2 Item Upload

From the Organizer Dashboard the user has the ability to upload items and start fundraisers. After selecting the “Start a Project” button, the user then has the chance to choose between a bulk upload and a single item upload. Uploading a single item will require filling out a simple form and uploading a photo of the item. If the user wishes to upload multiple items at once they then have the ability to upload a CSV file or a JSON file with all the items. Once the file is uploaded the user can then link pictures to each of the items to finish the upload.

CROWDFUNDING FOR CULTURAL AND HISTORICAL PROJECTS

TOTAL PROJECTS	CURRENT PROJECTS	TOTAL MONEY
10	10	€780

[START A PROJECT](#)

NEARLY FUNDED



Figure 18: Item upload starts on the homepage by clicking on the "Start A Project"

Project Name
Iscrizione Calle Dolfin

Select Location

Latitude: 45.44002336017464
Longitude: 12.336667459749151

€ Donation Target (EUR)
800

Type of Project
Restoration

About this Project

Figure 19: Users must fill out a simple form with information about the project they are uploading

3.2.3 Artifact Pages

Each artifact gets its own personalized webpage that users can explore. Each page has the information about the artifact, an image, a donate button, and various social media share buttons for organizers or donors. Social media sharing is one of the most powerful tools for publicizing a fundraising campaign. By sharing a project on social media, users can advertise to friends, family and any groups that they are a part of. This is especially important for small community groups that might not have dedicated websites. These community groups usually exist on Facebook, and social media sharing allows users to quickly and easily advertise to large

numbers of people who may be interested in a project. As users donate to the artifact, they will be able to see the current donation amount and bar update in real time.

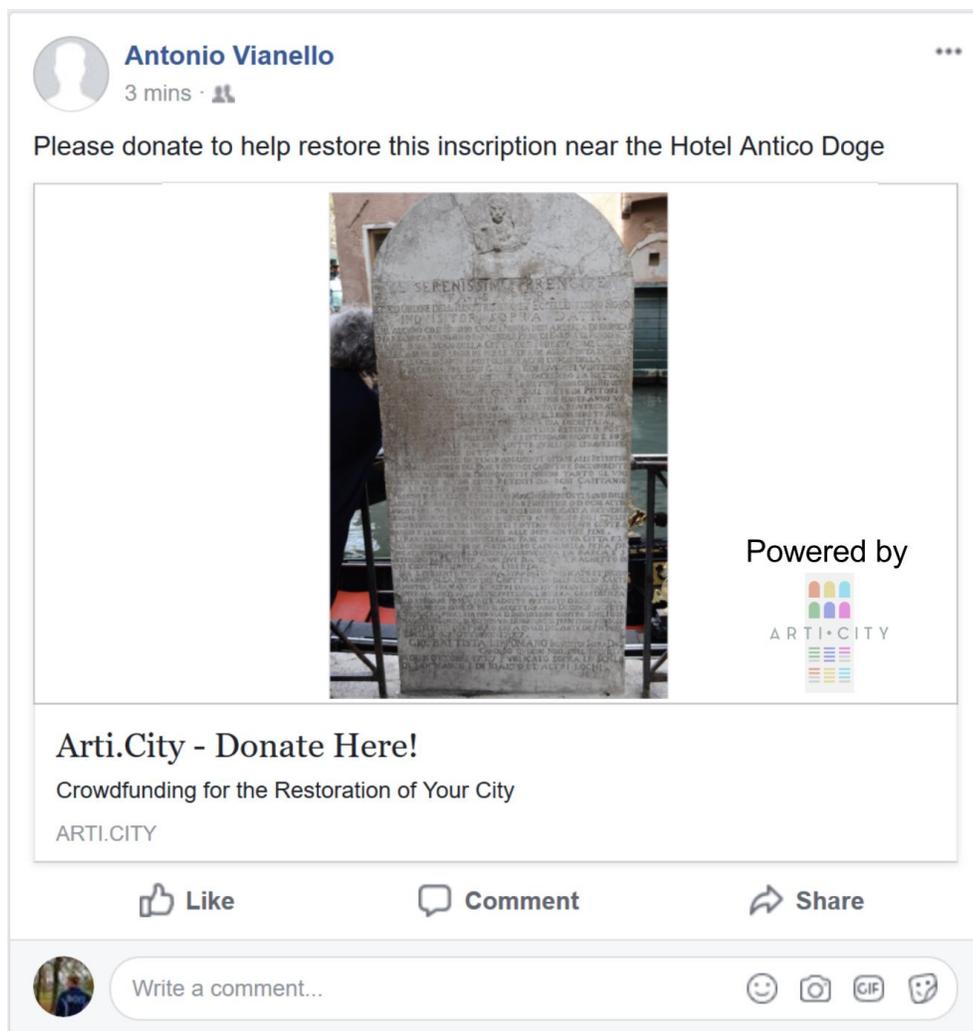


Figure 20: Arti.City allows the user to share their projects on Facebook.

3.2.4 Template Widgets

An important component of Arti.City, is the ability to use it to power another website. If an organization already has their own website dedicated to cultural projects, they can use Arti.City to power their website behind the scenes. The Arti.City application provides a toolkit of widgets that other applications can import. These widgets are short snippets of JavaScript and

HTML. These snippets can be added to a third-party website to provide a small window into Arti.City.

WIDGETS

Use these widgets to connect with Arti.City from your website

Name	Description	
Facebook	Use this widget to make a share button that shares your profile or project	GET FACEBOOK CODE
Twitter	Use this widget to make a tweet button that shares your profile or project	GET TWITTER CODE
Donate	Use this widget to allow donations to project directly from your website	GET DONATE BUTTON
QR Code	Generate a qrcode for this artifact	GET QR CODE

Figure 21: Users can get code to put widgets on their personal page from Arti.City

The first of these widgets is social media sharing. Users can copy a snippet of code to have Facebook and Twitter sharing enabled. Once the code is in place, the share buttons for each of these social networks will be visible on the page. When clicked, the social network will open and the user can type a message to accompany the link. Friends, family, followers, and anyone who sees the post can click on this link to be brought to the project donation page.

Additionally, we implemented a map of all of the projects that a user has uploaded. This allows organizations to plot all of their projects. This also allows users who are visiting the organization's webpage to see projects located near where they live or work.

We added an embeddable donation button as well. This allows the user to create a page for a project and add donation capability using the style of Arti.City. This is useful as it allows Arti.City to handle the logistics of accepting donations and monetary transactions, but makes it easy for the user to not have to deal with setting up online monetary transactions.

Arti.City also provides users access to the Arti.City database through the Firebase API. A user can copy and paste the code given by Arti.City into their own website, and they will be able to read data from the same database. This allows for increased flexibility as the user can decide what they want to do with the data and how they want to display it. Since the database is real time, information on the user's website will update automatically to reflect changes in the Arti.City database - a user will not even have to refresh the page.

3.2.5 Multilingual Capabilities

The website currently supports English and Italian. On the top left corner of the screen there is a drop down menu where a user can switch between languages. We have designed the application in such a way that future addition of languages will be very easy.



Figure 22: Arti.City can currently be viewed in both English and Italian

3.2.6 Tax Refunds

Since all the Arti.City projects will be for cultural heritage issues this allows for organizers to utilize tax refunds. In Italy the refund is known as the Art Bonus and is applicable when Italians donate to any art, architecture or cultural projects. Upon proof of a donation, 65% of the donation amount can be deducted from their taxes. While this type of refund is specific to Italy, it's not the only one available. Since many countries have their own systems for refunds, Arti.City will rely on an organizer to keep their donors up to date on these opportunities.

4.0 Using Arti.City to Update PreserVenice

In order to demonstrate the Arti.City widgets and to update the existing PreserVenice website, we implemented them within PreserVenice. The first and most visible widget implementation is the map on the homepage of PreserVenice. We added the Arti.City map widget and replaced the old map with a version that linked each artifact to its respective fundraising page. In addition to the map, we placed a running feed of projects close to their funding goals at the side of the page. This feed shows the funding status of all artifacts that are closest to 100% funded. Visitors to the PreserVenice website will be able to see which projects are closest to being fully funded and are able to help where the money is needed most. These updates can be easily published by the Venice Project Center at any time as the code has already been generated.

4.1 Map Implementation

We chose to create an interactive Map widget that could be exported to websites like PreserVenice. The map reads from the Arti.City database and shows the user the locations of all their projects in the forms of pins. A user can then select one of the pins and find out more information about that project.

To implement the map, we simply went to the dashboard, scrolled down, and found the code snippet for the map. The code snippet contains one block of code from google, and another block we wrote that connects the map to our database and gives it read access. This new map replaced the existing PreserVenice map and seamlessly linked the website to Arti.City.

4.2 Sharing to Facebook

Each artifact in PreserVenice now has a Facebook share button that allows anyone to share information about that artifact. Using the “Get Facebook Code Snippet” button on the Arti.City project page, we copied the two sections of code necessary to implement this widget.

Firstly, we copied the “open-graph meta tags” into the header section of PreserVenice. Meta tags are specific text that web browsers look at to figure out the title and content of a webpage. Open-graph tags are specific meta tags that Facebook uses to determine the content of a web page so that it knows how to display a preview of the web page on Facebook. Pasting this section of the code snippet into PreserVenice allows Facebook to know about the artifact it is sharing. The second section of the code snippet is the code for the actual share button. We pasted this code into the PreserVenice page for specific artifacts and the Facebook share button now allows PreserVenice users to share those artifacts on Facebook.

4.3 Firebase Connectivity

We implemented the necessary framework in PreserVenice to connect it to the Arti.City database. Currently, PreserVenice has a separate database, but with the new additions it will also be able to draw information directly from Arti.City. Once PreserVenice's data is in the Arti.City, PreserVenice will be able to display real time updates to the funding status of all of its artifacts. Additionally, other features will be easy to implement, such as a nearly funded panel or searchable map.

4.4 Donate Button

When a user clicks on an artifact in PreserVenice, there is now a donate button that appears in the bottom right hand corner. This button is powered by Arti.City, and is taken directly from code provided on the Arti.City website. When a user clicks on the donate button, they are brought directly to the Arti.City payment page for that project without having to navigate through Arti.City themselves.

The screenshot displays the PreserVenice website interface. At the top, the logo for PreserVenice is on the left, and a mission statement is on the right: "PreserVenice is a non-profit organization devoted to the preservation and restoration of public art in Venice, Italy. Please help us preserve this inestimable collection by using our App to collect up-to-date information about the artifacts and to donate funds for their restoration." Below the header is a navigation bar with "FILTER BY" and categories: Artifacts, Heritage at risk, Donations, Restorations, Help us!, Get the App, Contact, and About. A row of small image thumbnails follows. The main content area features a map of Venice with a "DONATE" button overlaid on the bottom right. To the left of the map is a "Symbol near Cannaregio 652" artifact card. To the right is a "Recent Activity" widget showing donation logs. Below the activity is a "Tweets by @PreserVenice" widget. Annotations with red arrows point to these elements: "Activity widget provided by code from Arti.City" points to the Recent Activity widget; "Map uses code provided by Arti.City" points to the map; and "Twitter Sharing from Arti.City" points to the Tweets widget. At the bottom right, there is a copyright notice: "Copyright © 2013 - PreserVenice - All Rights Reserved".

Figure 23: A number of the tools on PreserVenice came from Arti.City.

5.0 Updating the Database with Inscriptions

We used the new interface to add artifacts to the existing database of Venetian public art. We focused on plaques and inscriptions, as those areas require the most work. Each of the following are data types that were collected for plaques in the City Knowledge Console:

- CK_ID: Unique identifying number in the CKC
- Lat: latitude of the object
- Lng: Longitude of the object
- IMG: An image of the Artifact
- SNum: the identifying number of the artifact in Simionato's catalog.
- Height: Distance from the lowest point of the object to the ground
- Flaking: How much flaking has occurred: None, Light, Heavy
- Cracking: Location of cracks on the object

When going into the field to collect this data, we relied on Gianni Simionato's catalog of plaques and tombstones. The catalogs give a location for each entry, so we were able to travel to each piece of art to fill in the information for the data type specified above using the updated application.

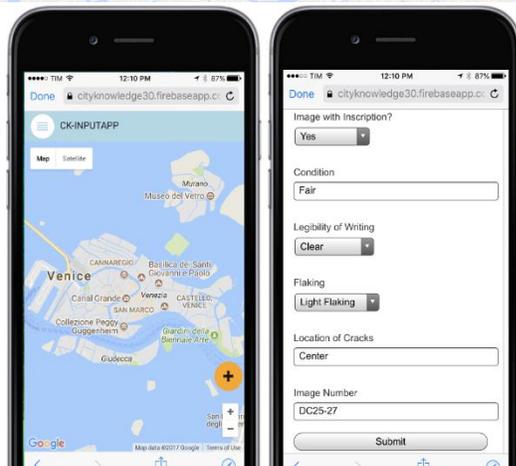


Figure 25: Uploading an inscription is easy with our mobile app

ting each

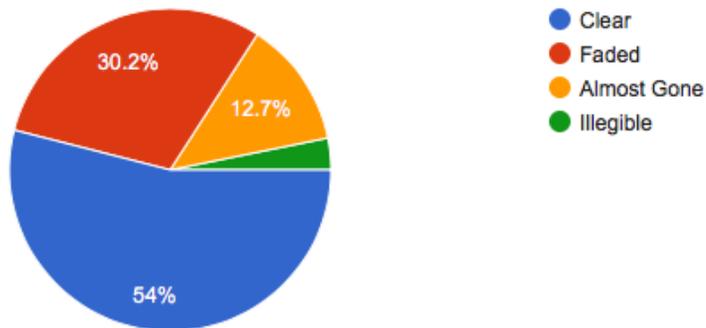
In order to collect data in the field we used Gianni Simionato's book *Lapidi e Iscrizioni Nel Comune di Venezia* as a guide for plaques located in the city. We systematically located each object by address one borough at a time. One person took a photo of the artifact, while the other located the GPS coordinates. Starting either at the first or last entries of a single borough the navigator led the team to the public artifact. Once there the recorder took a picture of the artifact. If the artifact was above eye level then the camera was attached to the tripod and lifted up as close as possible to the level of the artifact, which allowed for the picture to be taken at less of an angle than if it was held at eye level. Once the picture is taken the recorder filled out the prepared data sheet on their phone. While the data sheet is being filled out the navigator retrieves the latitude and longitude using the GPS locating system and provided that information plus the SNum to the recorder, as a

guide for plaques located in the city. We systematically located each object by address one borough at a time. One person took a photo of the artifact, while the other located the GPS coordinates. Starting either at the first or last entries of a single borough the navigator led the team to the public artifact. Once there the recorder took a picture of the artifact. If the artifact was above eye level then the camera was attached to the tripod and lifted up as close as possible to the level of the artifact, which allowed for the picture to be taken at less of an angle than if it was held at eye level. Once the picture is taken the recorder filled out the prepared data sheet on their phone. While the data sheet is being filled out the navigator retrieves the latitude and longitude using the GPS locating system and provided that information plus the SNum to the recorder. Using this method our team was able to collect data for 63 different inscriptions in the borough of Cannaregio. We then used the data on these inscriptions to test out some of the features on Arti.City.

The recorder used an app developed through our project to help record data quickly and accurately. Once signed into the app, we were able record data for each inscription through a form. The form contained a field for each of the data types mentioned previously. After completing all of the fields we input the photo id, which ties the inscription data to the photo taken. By collecting this data we were able to add to the Venice Project Center database of public artifacts, as well as create a group of test objects to add to Arti.City.

Legibility of Writing

63 responses



After cataloging the data we were able to do some basic data analysis. One note is that

Figure 26: While most of the inscriptions are legible, 46% of them still need work.

many inscriptions are also accompanied by an image. Of the 63 inscriptions that we cataloged 41.3% of them also had a relief that was with them. Also in general the inscriptions were in good condition, with 54% of them having clear writing and 50.8% of them not containing any flaking on the surface. There were also 35 inscriptions that contained no cracking on the stone at all, showing that all most of the inscriptions need is just a surface cleaning. We found that 46% of

the inscriptions we surveyed had unclear writing, and 49% were flaking in some way. This shows that a large portion of the public art in the city of Venice is in need of some kind of restoration.

Flaking

63 responses

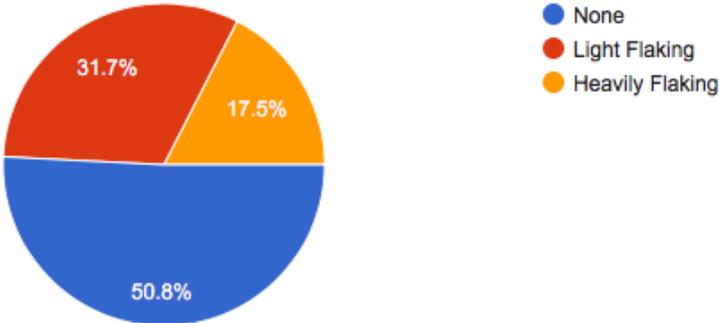


Figure 27: More than 49% of inscriptions contain some kind of flaking on the surface

6.0 Conclusions and Recommendations

Arti.City provides tools for organizations across the world to fundraise for cultural projects. Funding for these projects was previously acquired from government grants or large donations from wealthy philanthropists. By adopting a crowdfunding model and providing a simple funding framework, Arti.City enables more donations, and therefore more projects. Our work on Arti.City has brought it from a concept to reality. The website is now functional and restoration projects throughout the city of Venice have been added to the database. We hope that our work will have a positive impact on the state of public art both in the city of Venice, and across the globe.

We hope this project has a large impact on the historic city of Venice. The work that we have done on creating Arti.City is important because not only will it help people who want to start cultural heritage projects but this company will also create job openings in Venice for software engineers to help with the upkeep and continued development of the platform hopefully keeping more Venetians in the City of Venice.

Our project is a perfect example of a symbiotic relationship between technology and culture. The fundamental problem that Venice is facing is the loss of cultural artifacts, and we are able to address this problem in a much more effective way using technology. Without the internet, social media, and most importantly crowdfunding, it would be very challenging to raise the necessary funds to complete restorations of public art in Venice.

6.1 Recommendations

Since the scope of Arti.City is such that it will continue on past the end of our time in Venice, we have recommendations for future maintenance and additions to the website, and the structure of the organization that will run it. First, it is important to consider the implications of handling the large quantities of money that Arti.City will inevitably be faced with. We have written a monetary disbursement plan that deals with both the large-scale fundraising problems, and the specific case of PreserVenice.

This plan can be found in Appendix B. In addition to the monetary disbursement plan, we also provide a plan for the organization of the website, including possible expansions in Appendix A.

While we did not implement some of the functionality that was considered, we have made significant progress and future teams will find it much easier to pick up where we left off. One example of this is the use of Arti.City as a database of artifacts not undergoing funding. We would like Arti.City to provide organizations with archival capabilities and allow them to spread information about artifacts in their collections, even ones that may not be in need of restoration. While we did not implement this functionality, the object framework in Arti.City makes future work in this area very simple.

After presenting our project, we were able to receive some great feedback from the audience. One concern that the organization Masegni & Nizioletti had with the platform is its

ability to effectively spread the word of projects without much effort from the organizer. Since they are a grassroots organization, they have difficulty spreading news of their projects outside of the small group of people that know who they are. It is the organizer who shares the project on social media, puts the widgets on their personal website and decides how to utilize the QR codes. The only way that Arti.City can increase an organization's following is by making the project an organizer has created available on the explore page of the website. Another possibility for the future is for Arti.City to have its own social media accounts and to share projects through that over time. Emails from Arti.City can also refer donors for one project to another by recommending other projects.

Making a personal and emotional connection with each project is important to getting donations. One of the things that makes Kickstarter so unique as a crowdfunding platform is the video requirement for each project. While it does make starting a project a lengthier process, it also makes each of the Kickstarter projects and pages unique and allow a potential backer to get real insight on how much a project organizer is invested in their project. In the future, Arti.City can allow users to upload a video with their project.

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Appendix A: Arti.City Plan

Role of Arti.City

Arti.City will be an international company that serves as virtual crowdfunding platform for cultural heritage projects. Arti.City will provide its users with a backend toolkit that will help manage and promote crowdfunding projects. This includes easy to use widgets for the fundraiser's personal websites and custom webpages hosted by Arti.City. There will also an online dashboard available to the client where they can keep track of all of their fundraising information as well as social media links that will provide the user with a way to advertise the project or projects they are fundraising for.

On Arti.City's home page, users can register, start a project, view statistics on projects using Arti.City, view projects that are nearly funded, and view a map of projects powered by Arti.City.

Process for Restoration Organizers

1) Registration

The registration page on Arti.City's website has two options: Organizers and Donors. Organizers can be individuals or organizations that want to start a fundraiser, and they will be collecting money from the donors.

2) Fundraising Dashboard

Once the user completes the registration they will automatically be given access to a dashboard which will act as a command center for their fundraising operations. On this page they can view projects that are already being funded, and view a list of donors and their contributions. An organizer's dashboard will show all of the artifacts they have uploaded, statistics on those artifacts and the donations they have received, as well as the status of any artifacts they have donated to.

3) Creating a fundraising Campaign

In order for a user to start fundraising for an artifact a user must first have an account. If the user clicks the "Start a Project" button on the landing page before creating an account, they will first be prompted to sign up. Once a user has an account, they will be brought to their fundraising dashboard. When the user clicks on the 'Start a Project' button they need to select one of two types of projects: a single fundraiser or a bulk upload of multiple fundraisers. For a single project, the user will be required to fill out fields that specify what type of project it is, where it is located on a map, how much money the user is looking to raise, a short description of the project, and a photo of the project. Once the user clicks submit, the project will be saved into the Arti.City database, and the fundraising campaign will officially begin.

If the user is looking to fundraise for multiple projects they can select group projects instead of single. After selecting the bulk upload option the user will then be prompted to upload a CSV or JSON file that contains all the information on the items they are uploading.

4) Getting donations

Once the funding process for a project begins, the user will be provided with options by Arti.City to help advertise their campaign and get donations. When an individual wants to donate money to a project, they will be directed to a page that contains information about the project and a space where they can input their payment information and choose how much they wish to donate. This can either be a page on the Arti.City website, or widgets implemented on the user's website if they have one. The following are the tools that will be provided to each user to help boost their donations:

Widgets

A widget is a module on a website or application that allows users to access information or perform a function. In the case of Arti.City, the widgets provided by the company will be easy to incorporate into a third party website. The goal of these widgets is to allow for easy online advertising for a fundraiser. Some examples of these widgets include, but are not limited to, a map that can keep track of all of the projects that a user is fundraising for, a donate button that will bring a potential backer straight to the donation page in Arti.City and personal social media sharing buttons that a user can embed in their own website.

QR Code

Each fundraising campaign will receive its own automatically generated QR code containing a link to the Arti.City fundraising page. This code will act as a quick way for users to get an art piece's donation page. This QR code can then be sent out in emails, put on flyers or posted right next to the piece that the fundraising campaign is for.

Automated Mailing Lists

In order to keep up to date on the status of the projects that they have donated to, users will be able to optionally subscribe to email updates. Users will then receive emails when the project they have donated to is fully funded, when the project breaks ground, and when it is completed.

Facebook Posts/Twitter Tweets

A lot of information is shared via Facebook and Twitter and most community groups have pages. Therefore, there will be an option for automatic posting from project pages in Arti.City. These posts will include information about the project, the title of the project, and a picture of it. The user can customize the text that goes along with their post to give more information or share that they donated.

5) Goal is Reached

When the goal for a restoration is reached the campaign will close and the organizer will be sent a notification email to let them know. They will then be sent a check for the money and an email will be sent to the campaigns donors to let them know the project's goal has been reached. Alternatively, organizers can choose to receive money from Arti.City throughout the course of the project, but they may be subject to more fees due to the amount of transactions that will be made.

6) Project is Completed

Once the actual project is complete the user then can log back into their dashboard, upload photos of the completed piece, and write a general note of thanks to the donors. Once this note is filled out it will then be automatically posted on the user's social media pages and an email notification will be sent out to all the donors. The photos showing the completion of the project will be available on Arti.City.

Process for Donors

Donors will be any individual or group that wish to make a contribution to an organizers current campaign. There two ways that someone can contribute to a campaign. The first is as a guest, and the second way is through a registered account.

Guest Donation

If a user would like to make a one-time donation they can do that as a guest, which means that they can donate without making an Arti.City account.

A guest donor begins by viewing a project's donation page. The page can be reached through QR codes, links from Facebook or Twitter, the campaign's widgets, or Arti.City's homepage. Once on the donation page, the potential donor can click the donate button. A window will appear with two options, to either sign in or donate as a guest, and the user will select the latter option. This will cause a form to appear and the user must fill out all fields which include the amount they are donating, payment information, email, their name or if they want to remain anonymous, and an optional message with the donation. Once they click the confirm button the donation will go through and they will receive an email as confirmation. The email address they submitted will be used to keep the donor up to date on the project. Then the user's name or anonymous will be added to the official list of donors. At the end of the checkout process, an option will be presented to save the information of the guest for future donations. If they choose this option, the donor will be taken to the registration page, where any information that has been input will be automatically populated.

Registered Donor

The benefit of having the option for being a registered donor is that it makes the donation process easier after the initial registration.

The registration will require some basic information such as first and last name, email, a password and payment information. Once this information is complete the account will be created and they can start donating. If the user has an account and is signed in then all they would need to do to donate is to find a project declare how much they would like to donate and the donation goes through using the account information. Once the donation goes through they will receive an email as confirmation. The email address they submitted will then be used to keep the donor up to date on the project. Then the user's name will be added to the official list of donors.

Appendix B: Monetary Disbursement Plan

Although the donation platform has been finalized, there was not a plan for how the money would be disbursed to those who were fundraising for an artifact. We conducted a content analysis of existing crowdfunding websites to see their disbursement policies. The websites included were Indiegogo, Kickstarter, and gofundme. We adapted some elements of each, and wrote a disbursement proposal for the Venice Project Center, which can be found in the appendix.

Included in the disbursement plan are guidelines for automating and bundling artifact restoration. One of the reasons public art is often not restored is that they are too small and cheap to repair to be worth the time of a restoration company. The disbursement plan outlines a method of automatically submitting paperwork for restorations as well as collecting several artifacts into bundles that would be auctioned to restoration companies as a whole. This plan was presented to the VPC and PreserVenice as a possible direction for the platform.

Appendix B-1: Proposal for Arti.City Fund Handling

In order to minimize the effects of transaction fees, organizers can choose to accept donations in chunks. As each donation is made, Arti.City will deduct a 5% fee, and the money will be transferred to an account for that specific fundraiser. At any point during the fundraiser, the organizer can choose to withdraw all funds currently in that account. When the withdrawal request is made, the money will be transferred to the user's account, or mailed as a physical check depending on the user's preference. Any related transaction fees will be deducted from the total amount given to the user.

Appendix B-2: Proposal For Restoration Funding Disbursement Through PreserVenice

Pre-Funding Disclaimer

All crowdfunding websites surveyed contained a disclaimer that was presented before any donations were finalized. This disclaimer explained that the website was not responsible for any promises made by the fundraising organization or individual, and that the website was merely a platform to make funding more accessible. Using these themes, an example for PreserVenice was drafted.

"I acknowledge that PreserVenice gives no guarantee that this artifact will be restored, even if the funding goal is met. I understand that all donations are final and that no refunds will be given, should the donation target fail to be reached. If the target is not reached, or the

restoration prove to not be viable, I understand that my donation may be used to restore other artifacts within the city of Venice.”

Fund Storage & Bundling

In order to maintain a level of trust between donors and PreserVenice, money that is donated will be held in an internet escrow account until the donation target has been reached. Once the donation target is reached, the money will be transferred to a **bundle account**. The bundle account contains the money for all recently funded artifacts that have not yet been bid on by restoration companies. Once the total funds in the bundle account reaches the **bundle threshold**, or minimum amount to be considered by restoration companies, all artifacts in the bundle will be put up for bidding.

Once bidding begins, the bundle account will no longer accept additional artifacts. If the winning bid is below the amount in the bundle account, the remaining money will be transferred to artifacts still undergoing fundraising in increasing order of money left to raise. If no companies bid on the bundle, then the bundle will be reopened to accept more artifacts.

Appendix C: List of Previous Projects the Used the City Knowledge Console

Treasures Underfoot: Preserving Venice's Church Floor Artifacts: 2012-B Term by Danielle Catherine Dechaine; Meghan D. Hennessey; Jeffrey Orszulak; Kevin Alexander Rullmann
http://www.wpi.edu/Pubs/E-project/Available/E-project-121312-084544/unrestricted/Churches_B12_Final_Report.pdf

Venice Bells and Bell Towers: A Striking Source of Knowledge 2012-B Term by Frederick Anthony Baruffi; Janelle Marina Boucher; Madalyn E. Coryea; Danielle A. Spector
http://www.wpi.edu/Pubs/E-project/Available/E-project-121312-204447/unrestricted/VE12-Bells_Report.pdf

Streamlining Canal Hydrodynamic Measurements in Venice: Updating Measurements and Developing Plans for Extensive Data Collection 2012-B Term by Emanuel DeMaio; Emily Kathryn Jones; Louie-John Vincenzo Mistretta; Olive Ruth Rappoli
http://www.wpi.edu/Pubs/E-project/Available/E-project-121412-134321/unrestricted/VE12-Hydro_Final_Report.pdf

Venipedia: An English Language Data-Driven Wiki Dedicated to Venice 2012-B Term by Patrick Anthony Bobell; Lauren Barbara McCarthy; David Michael Poganski; Alyssa B. Tsiros
http://www.wpi.edu/Pubs/E-project/Available/E-project-121412-163337/unrestricted/VE_12-Venipedia_Final_Report.pdf

Merchants of Venice: A Look At the Changes in the Venetian Stores and Tourist Accommodations and Their Impact on the Local Population 2012-B Term by Benjamin Nathanael Bruso; Hongling Chen; Amanda Olm; Iliana Jeanne-Marie Schulman
http://www.wpi.edu/Pubs/E-project/Available/E-project-121512-170738/unrestricted/VE12-Stores_Report.pdf

Boats and Bottlenecks: Improving Mobility in Venice 2013-B Term by Kelsey Marie Brofford; Riley David Larkins; Luis Jose Pernia-Rovayo; Alexandra Elizabeth Shea
http://www.wpi.edu/Pubs/E-project/Available/E-project-122013-101335/unrestricted/VE13-MOB_Final_Report.pdf

Tourism in the City of Canals: Managing Venice's Love-Hate Relationship with its Visitors 2013-B Term by Alexander Lochan Gorowara; Aquame Justin Matthews; Daryn James Russo; Armagan Sezer

http://www.wpi.edu/Pubs/E-project/Available/E-project-122013-111816/unrestricted/VE13-DEMO_FinalReport.pdf

Ecclesiastical Architecture of Venice: Preserving Convents, Churches, Bells and Bell Towers 2013-B Term by Dylan Joseph Heinricher; Lauren Michelle Kahn; Ian Maxwell Maitland; Nolan P. Manor

http://www.wpi.edu/Pubs/E-project/Available/E-project-122013-112739/unrestricted/Venice_B13_Final_IQP_Report.pdf

Venice Through the Canals of Time: Mapping the Physical Evolution of the City 2013-B Term by Justin Francis Chines; Eric Eoff; Alexander Christian Reynolds; Amanda Michelle Weishttp://www.wpi.edu/Pubs/E-project/Available/E-project-122013-113233/unrestricted/Venice_through_the_canals_of_time.pdf

Canals, Bridges and Urban Maintenance 2013-B Term by Dominick Christopher Bossalini; Brian William Gardner; Tyler Douglas Mathews; Mitchell Edwin Wills
http://www.wpi.edu/Pubs/E-project/Available/E-project-122013-134409/unrestricted/IQP_Final_Report.pdf

25 Years of Venice Knowledge Online 2013-B Term by Kristen Lee Brann; Gregory Thomas Giola; Dylan Joseph Kirby; William Hames Richtmyer http://www.wpi.edu/Pubs/E-project/Available/E-project-122113-100840/unrestricted/Ve13_25th_Final_Paper_Submit.pdf

Missing Venice: Tracking the Global Movement of Venetian Art and the Evolution of Venetian Architecture and Infrastructure 2014-B Term by Daniel J Benson; Andrea N Boxell; Grant M Brining; Jonathan L Leitschuh http://www.wpi.edu/Pubs/E-project/Available/E-project-121814-093844/unrestricted/VE14-Miss_Final_Report_pdfa.pdf

Preserving Venice's Bells and Their Towers 2015-B Term by Christopher Bove; Kristin Gallagher; Meghan Hickey; James Honicker https://web.wpi.edu/Pubs/E-project/Available/E-project-121815-055420/unrestricted/VE15-Bells_Final_Report.doc.pdf

Venice Big Data, Visualizing the Continuum of Data in Venice 2016-B Term by Joseph Bremner; Austen Couvertier; Frank Egan <https://web.wpi.edu/Pubs/E-project/Available/E-project-121616-115533/unrestricted/BigData-FinalProposal.pdf>

Preserving Venetian Bell Towers Through Virtual Experiences Documenting the Bells and Bell Towers de Ultra 2016-B Term Rachel Huntley; Frederick (Ricky) Metters; Obatola Seward-Evans; Frederick (Fritz) Brokaw https://web.wpi.edu/Pubs/E-project/Available/E-project-121616-080142/unrestricted/VE16_Bells_Final_Report.pdf

Appendix D: Automated Mailing

When a fundraising campaign begins, two mailing lists will be created. One is specifically for the organizer of the fundraiser, and the other is for users who have donated to the project. The organizer mailing list will be used to update the organizer on the current status of the fundraiser and notify the organizer of anything that requires their attention. The following are examples of scenarios in which the organizer would be sent an email.

- Fundraiser has begun
 - The organizer will receive an email after the fundraising page has gone live so that they know that the process has begun. This email will also include some information on how to best promote their fundraiser.
- No Recent Donations
 - Organizers will be sent an email if there have not been any donations for a certain amount of time. This is so that they are given the chance to renew their campaigning efforts to get as many donations as possible. The organizer can choose the amount of time they would like to pass before an email is sent, or opt out of this email completely.
- Fundraiser status
 - The organizer will receive an email notification when the fundraiser has reached a certain percentage of the funding goal. This gives the organizer a chance to check up on the progress of the funding. The user can select any percentages but the default will be 50%, and 90%.
- Goal Reached
 - The organizers will of course get a email notification when the fundraising goal for a project has been reached. This will notify the user that they can now withdraw any donations left and begin work on the project.
- Individual Donations
 - This option will not be enabled by default, but users can choose to receive an email notification every time a donation is made. This is helpful if the project is small, or the user wants to keep constant track of the progress of the fundraiser.

Situations in which the donor will be sent an email notification are as follows:

- Donation Confirmation
 - The organizer will be given the chance to write a custom thank you message to donors. If they decide not to do so, a generic thank you message will be sent. This email acts both as a digital receipt and as a contact point for donors. Donors can

click the link in the email to be brought back to the project page and see the current status of that project.

- Project updates
 - Organizers can post periodic updates on the project page about the status of the project. Donors can choose whether they would like to receive these updates as email notifications.
- Funding Goal Reached
 - Donors will be notified when a project they have donated to reaches the funding goal, along with a custom message from the project organizer. If the organizer does not write a custom message, the email will include a generic thank you message.
- Project Completion
 - When an organizer completes a project using the funding money (completed restoration, concert occurs, etc.), they have the option to mark the project as “Completed” in the Arti.City dashboard. This lets all of the donors know that the money they donated has been put to good use. The organizer can also include a custom message and photo in this email if they choose.

Appendix E: Conservation Vs. Restoration

The most important facet of art conservation lies in the distinction between *conservation* and *restoration*. To conserve an artifact is to prevent it from deteriorating any further without making any structural or aesthetic modifications. To restore an artifact is to use traditional methods and materials to return the artifact to a condition similar to the original. While restoration certainly has its place, the general consensus is that structural restoration erases the piece's history. The vast majority of work that occurs on historical artifacts is conservation work. The art community around the world has moved away from structural restoration (Venice Charter, 1964).

Appendix F: Types of Public Artifacts

Public art in Venice is split into several categories, including coats of arms, crosses, decorations, flagstaff pedestals, fountains, fragments, inscriptions, patere, reliefs, sculptures, street altars, and symbols. Coats of arms (Figure 28) are unique engravings that wealthy families in Venice created to mark buildings and other properties they owned. Decorations are small artworks that sit atop buildings, bridges, or other structures. Flagstaff pedestals traditionally held



Figure 28: Cover of *Scultura Esterna A Venezia*

(Venipedia 2014). All of these artifacts are significant parts of Venice's cultural heritage and must be saved from falling into disrepair.

flags used to symbolize allegiances to different organizations within the city. However, as this practice waned, the ornate pedestals are all that remain. Fragments are small pieces of destroyed sculptures or other works that have been set into a wall during construction. Inscriptions are historic or religious messages carved into stone at public locations. Patere (Figure 29) are small circular reliefs (sculpted images set into the sides of walls) on the sides of buildings all across Venice. Street altars are religious shrines found in the streets of Venice. Finally, symbols are similar to coats of arms in that they signify ownership of a building, but are not specific to families



Figure 29: Patere are small circular reliefs

Appendix G: Why Use Restoration Companies

Art restoration and preservation should be done by trained professionals. There have been cases across the world where unqualified people performed art restorations. For example, an elderly woman at a church in Spain attempted to repair a famous fresco in 2012, and permanently damaged it (Figure 30) (Willis, 2012).



Figure 30: The restoration of a Spanish Fresco was botched by an amateur.

While many companies hired to do restorations are not exclusively restoration companies, they still require proper licenses and expertise. Often construction or design firms are qualified to do restorations. One such company is called NERI, a design firm that is focused on restoring historic light posts in Venice (Venice restoration, 2017). In other cases, rather than hire companies, specific architects are hired to oversee restorations that are then performed by qualified skilled laborers and artists. For example the city of Venice hired the British architect Sir David Chipperfield to oversee the restoration of The Procuratie Vecchie, a building in Saint Mark's Square (Squires, 2017).