THE CULTURAL TRI△NGLE OF HONG KONG
REVITALISING ITS COMMUNITY THROUGH A DIGITAL PLATFORM

Smart Cultural Precinct

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Abstract

The Smart Cultural Precinct is an ongoing initiative that aims to uplift the community of Central District, Hong Kong. One proposed method of accomplishing this is through a digital platform, such as a mobile application. The project goal was to design a potential SCP mobile app and assess the feasibility of its development and long-term maintenance. The mobile app would promote and support the SCP region by offering a digital platform to a variety of stakeholders to come together, strengthening the community of Central. Over the course of the project, heritage sites in the SCP were identified, community perspectives were collected, and a market analysis was conducted to create a tangible identity for the SCP app through an interactive app prototype. Targeted feedback was gathered through developer consultations, allowing for the creation of a set of final recommendations for the future of the SCP app.

Sponsors

Strengthening the Community of Hong Kong's Business District

Central District is one of the oldest districts in Hong Kong, known today as a hub for business and retail.[1] Central can be seen as the intersection where modern urbanisation meets Hong Kong's heritage, home to both luxury retail stores and historic street markets. In order to preserve the district's mixture of Chinese and British heritage, many non-governmental organisations (NGOs) have been formed. One such example is the Institute for Sustainable Urbanisation.[2] The ISU has spent several years developing the Smart Cultural Precinct (SCP) to uplift the community of Central as a whole.

The SCP specifically aims to **strengthen** the sense of community in Central District by connecting the district's various stakeholders and preserving its cultural heritage. Although the ISU leads the SCP, UDP International, an urban planning and design firm, and the Chinese University of Hong Kong School of Architecture also support it. The SCP is a conceptual area based in Central, with a "Cultural Triangle" inside of it formed by three heritage sites (Tai Kwun[3], Central Market[4], and PMQ[5]) as its "anchors." The SCP aims to revitalise the area within the SCP and its community to stimulate businesses, attract more visitors, and preserve Central District's collective memories.

As it currently stands, the three anchors are independent sites and operate mainly with their own interests in mind.[6] They host their own events and have their own websites; two of the anchors, more specifically Central Market and Tai Kwun, also have developed their own mobile applications. In a sense, each anchor has developed physical and digital identities within Central. However, there is arguably a missed opportunity in not creating a similar identity for the area within the Cultural Triangle. In addition to making infrastructural changes, NGOs such as the ISU can potentially uplift the Cultural Triangle by creating community programs and digital platforms beyond what the anchors currently run themselves. More community programs could help bring the people in the area together, preserve heritage and traditions, and promote the ever-changing culture of Central. A digital platform such as a mobile application can present information about these programs in an accessible format while also condensing information on key heritage sites, artists, and suggested routes through the area.

The project goal was to **design a potential SCP mobile application**, which aimed to **foster a sense of community** within the Cultural Triangle. In order to achieve this goal, our team divided it into four main objectives: (1) identify heritage sites in the SCP area, (2) collect community perspectives, (3) create an identity for the SCP app, and (4) assess the feasibility of the SCP app. We aimed to support the progress of the SCP in hopes of ensuring the cultural preservation of the SCP, and by extension, Hong Kong's Central District.

The Mixed Heritage of Central District, Hong Kong

Hong Kong is located on the southeast side of China, sharing borders with the Guangdong province. It consists of numerous territories (e.g., Hong Kong Island, the Kowloon Peninsula, New Territories) that were controlled by the British as a colony until 1997, when it was then handed back to China as a special administrative region (SAR)[7]. With the long occupation of the city, a lot of Western values and concepts were introduced. Many of these ideas helped shape Hong Kong into what it is today, as a significant portion of the city's planning was "reflective of a governing philosophy that focused on economic development".[8] Central District is one such example, as it has become **the centre of Hong Kong for retail and finance**. The district houses historic street markets, heritage sites, and landmarks, but also hosts numerous luxury retail stores and international banks. As the blend of British and Chinese heritage is distinct, there have been efforts to preserve it as the city goes through many changes.

Figure 1. Hong Kong Central District[9]

Cultural Heritage Preservation Efforts in Hong Kong

The "New Preservation Movement" grew in the early 2000s in response to the government's demolition of the Star Ferry Pier, Queen's Pier, and Edinburgh Square.[10] The movement consisted of people from all walks of life with one common goal: to preserve the culture and reclaim the land for themselves and the communities they were a part of. The movement continued to gain momentum as the government carried out more than 200 projects to "revitalise" the city. People in the movement fought to protect cultural spots such as street markets offering foods, produce, clothing, and household products. **It was because they realised that these places were part of their social network and their identities that they were able to band together.** The movement also helped form community groups such as the H15 Concern Group and helped create community projects, such as the preservation of the Blue House tenement cluster, in order to accomplish their goals.

Technological Solutions for Preservation

Within the past few decades, there have been cultural preservation efforts in Asia that utilised technology. One example includes two students from Seoul's Chung-Ang University who have investigated several ways to preserve traditional Korean dance and music.[11] This technology includes gyroscopes, accelerometers, and capture devices to

document the movement of the dancer down to their fingers. All of the data was then translated in 3D modelling software, all of which can be viewed by an interested party at any time. Instead of this history being passed down from person to person (i.e., "tribal knowledge"), which can cause gaps in knowledge, the more than 1,500 year old dances and music are now documented in their current form to be preserved and learned from by people years down the line.

Figure 2. 3D Model Generation of Traditional Korean Dancer[11]

Another example includes the Asia-Europe Museum Network (ASEMUS), which has aided Malaysia in virtually documenting its history to be viewed by people worldwide.[12] Not only are photographs collected, but any relevant information is listed alongside the artefact as well. These artefacts include a handcrafted tobacco box, coins from several different centuries, and a patterned shawl. Both locals and tourists are now able to appreciate Malaysia's vast history through the internet.

New technologies are not only being utilised for their efficiency and flexibility in cultural preservation efforts; they are also important tools as younger generations typically connect with these technologies better than older, more traditional formats.[13] By simply presenting themselves as something brand new and polished, new technologies can also help maintain interest among a target population. For example, a study in a high-density Vietnamese city found that using virtual reality (VR) and augmented reality (AR) vision algorithms to make valuable cultural assets and tourism more easily accessible had more success in preserving cultural heritage by translating existing knowledge into more accessible, interfaceable mediums.[14] **Technology, therefore, has become an intersection where modernization and cultural heritage can coexist.**

The Smart Cultural Precinct

The Smart Cultural Precinct (SCP) is a smart city initiative created by the Institute for Sustainable Urbanisation and is supported by UDP International and the Chinese University of Hong Kong School of Architecture.[6] The precinct has three main anchor points, namely Central Market, Tai Kwun, and PMQ. These anchor points, when connected, form the Cultural Triangle of the SCP.

The goal of the SCP is to develop a smart and sustainable city in terms of bettering the current environment, infrastructure, walkability standard, and other aspects that fall under city design.[6] This is achieved mainly through developing and implementing the concept of smart cities in order to **strengthen the ties between the three anchor points, create a more cohesive and collective effort for heritage conservation, and promote community engagement by involving locals** in the project through workshops and tours. Currently, the SCP project is not yet fully realised, but previous

collaborations with Worcester Polytechnic Institute and the SCP's stakeholders in 2017[15] and 2019[16] have aided the project in terms of website feasibility research and the identification of areas in need of modifications. Recommendations made in the 2019 project include creating an interactive forum and events board on the SCP online platform as well as examining the preservation efforts of private buildings that have been identified as culturally relevant by sponsors, the community, or the team. **Our project sought to investigate a possible mobile application through the creation of an app mockup, which would help promote the SCP and enhance collaboration within businesses and the community.**
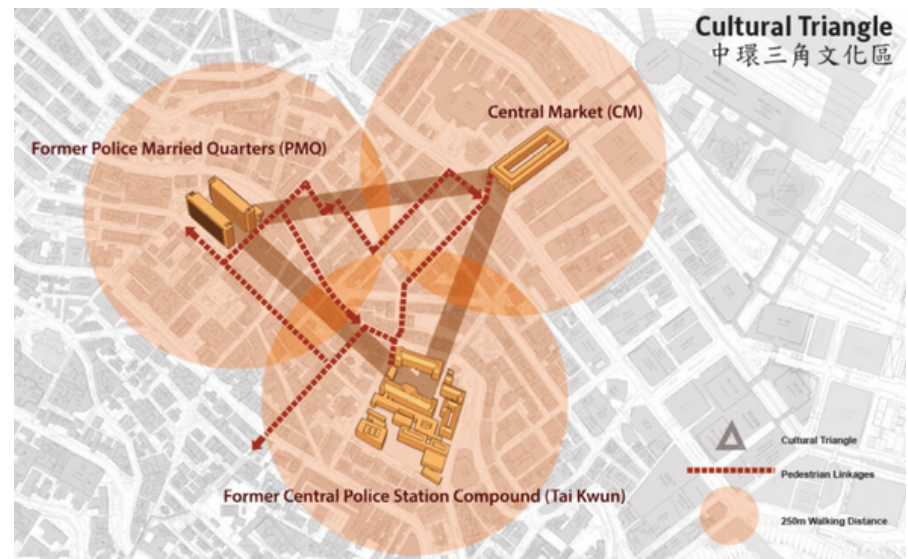

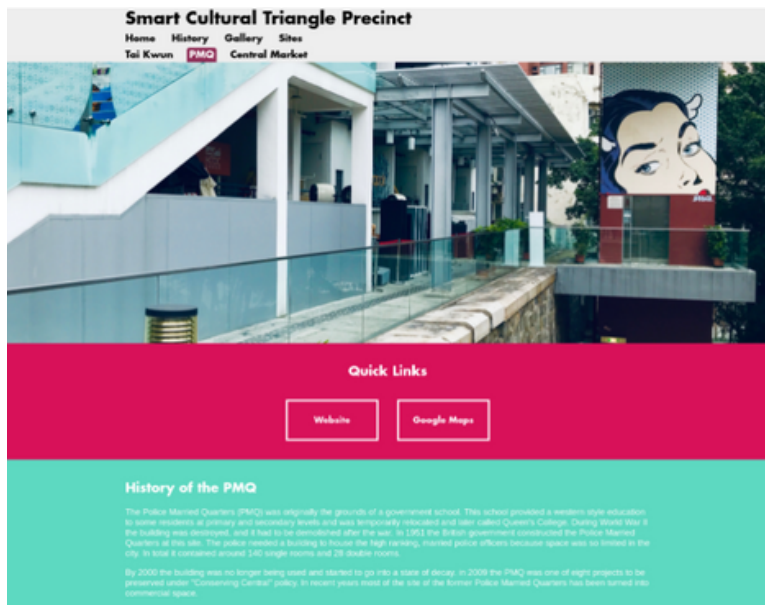
Figure 4. Planning of the SCP Area[17]

Figure 3. Website for the SCP Area[16]

Figure 5. Map of the SCP with Heritage Sites[17]

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Project Methodology

This chapter details the methodology we used in designing an SCP mobile application. First, to determine the scope of the SCP, we gathered investigative data through a literature review of the area and city observations. Second, we collected feedback for the potential SCP app from expert interviews and community surveys. Third, we created a tangible identity for the SCP app through an interactive prototype based on the feedback we collected and a market analysis of existing applications. Lastly, we gathered professional opinions on our prototype from a focus group and interviews from software developers. These methods are defined under four main objectives:

1. identify heritage sites within the SCP,
2. collect community perspectives,
3. create an identity for the SCP app, and
4. assess the feasibility of the SCP app.

Our flow chart (Figure 6), summarises our objectives and their corresponding methods used to complete our goal of designing a SCP mobile application.
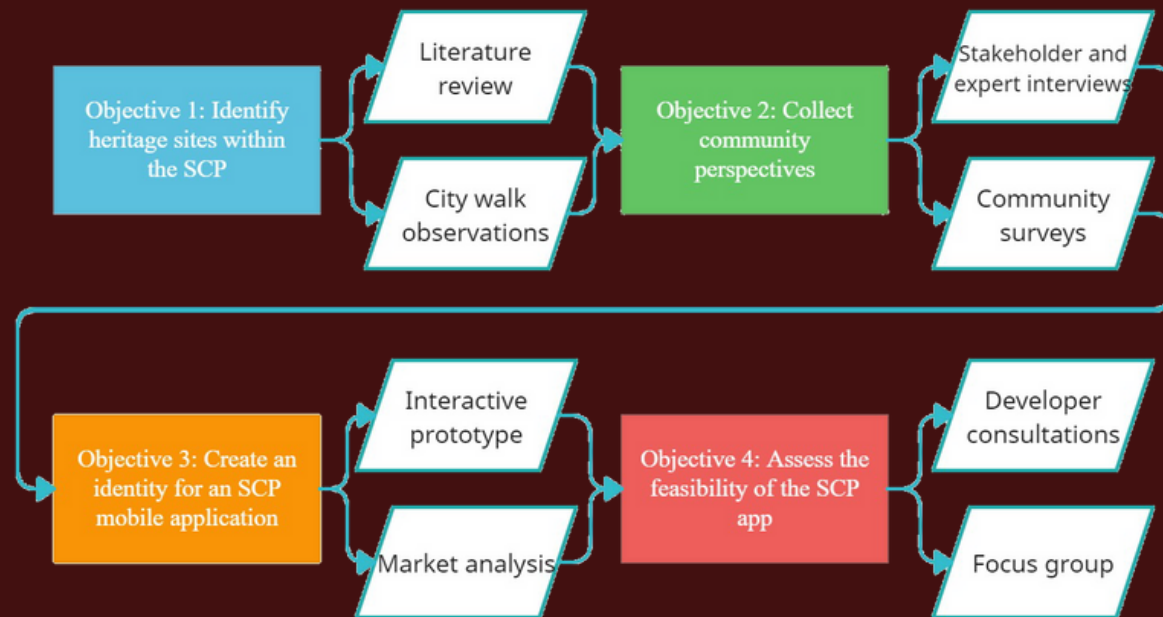

Figure 6. Flowchart of Project Objectives and Methods

Objective 1: Identifying Heritage Sites Within the SCP

To gain an initial understanding of the culture and history of Central District, we first conducted a literature review on the SCP area. This allowed us to get a deeper understanding of not only the SCP and the past work that had been done, but also the different stakeholders involved. To build off of this and familiarise ourselves with the physical SCP area, our team conducted observations via city walks. This allowed us to learn more about the personality of each street and characterise their walkability and accessibility. Walkability, for this project, is defined as how strenuous a route is, i.e., higher walkability indicates less strain, and lower walkability indicates more strain. Accessibility, for this project, is defined as if a person with bodily restrictions and/or sight difficulties would be able to complete a task without hindrance. Therefore, an accessible route allows any individual to commute from point A to point B.

Literature Review

The literature review was a means to establish familiarity with the SCP and frame our thinking in terms of cultural preservation and building a sense of community. It also provided us with a way to refine our methods by looking at past research and finding gaps that we could fill in with our project. To define these gaps, we noted the negative impacts that could be associated with the urban redevelopment of Central District. These impacts were mainly observed in priority areas within the SCP which were considered on the basis of several factors: a danger to the site being destroyed, areas with high foot traffic, or areas directly identified by the sponsors or by the community members within the SCP. Having completed the literature review, a concrete plan of action was conceptualised for data collection.

City Walk Observations

After solidifying the foundation of our research through a literature review, our team gathered observations of the streets and walkways in the SCP area. Besides gathering qualitative observations on features such as signage, we also assessed the walkability and accessibility of each street by measuring the walkways and counting obstructions. Before starting, we set data collection standards to ensure that everyone would obtain the same results when conducting the same city walk route at the same time. For walkability, two factors were considered: slope and width of the walkable area of each street for every ten paces. Slope was measured in degrees then converted to percent grade, and width was measured in metres. By looking at the average slope and path width, we could mathematically assess the walkability of each street; for example, a higher slope implied increased strain due to gravity, while a narrower path implied difficulty to find space to walk. For accessibility, we specifically took note of the number of accessibility aids, such as railings, tactile indicators for stairs, and signage. Besides taking note of specific objects like these, we were also able to use the original walkability measurements to determine whether a street in the SCP was fully accessible or not. This was achieved by comparing the slope and path width to standards set in Hong Kong's building codes.

Objective 2: Collecting Community Perspectives

In order to determine the public opinion on the current state of the area within the Smart Cultural Precinct, we gathered data through a community survey as well as expert and stakeholder interviews. By asking people who knew the area well, we were able to create a more well-rounded view when closely examining the sites in terms of their cultural importance and ensured that we had quantifiable data on the public's opinion.

Community Survey

To gain a broader understanding of the public's opinion of the Smart Cultural Precinct, our project teams conducted a community survey. This community survey helped our teams discover the target community's attitudes, public opinions, and experiences covering the identification and evaluation of heritage sites within the SCP. We created our survey using Qualtrics, an online platform used for the creation and distribution of web-based surveys. The survey was also translated to traditional Chinese allowing Chinese speakers that do not speak English to participate. Before formulating questions for the survey, we outlined three goals for areas we wanted to learn more about: (1) which areas do locals favour more than others, (2) what would the public sentiment be towards an SCP mobile app, and (3) what were their thoughts on the accessibility and walkability of the Central District.

To gather a pool of participants to complete our survey, we used convenience sampling, in which we asked people passing by in certain locations (i.e., in areas at each of the three anchors of the Smart Cultural Precinct and other major points of interest). This was a useful method for gauging public opinion within a randomised sample of local people, and it helped expedite the process of collecting data. We also put up flyers at the Chinese University of Hong Kong School of Architecture to further expand our pools of participants.

Expert and Stakeholder Interviews

Our interviews with a variety of stakeholders provided a broad perspective on the scope of our project and allowed us to draw ideas from the public's opinion. We initially identified stakeholders under the following categories: business owners, government officials, tourists, and members of the local community. Experts in the fields of urban design, architecture, and cultural preservation were also beneficial to interview, as they had a wealth of knowledge in regards to relevant theoretical frameworks and similar projects carried out in the past. In the end, we interviewed the following individuals:

- Vicky Chan, Founder of Avoid Obvious Architects, an NGO based in Hong Kong
- Alvin Yip, former Curator-in-Chief of Central Market and Ernie Hsieh, an urban planner at ChinaChem Group
- Phil Kim, Chairman of Urban Land Institute, and Connie Cheng, Program Director for the Urban Land Institute in Hong Kong

The general goals of each interview were as follows: (1) understand the interviewee's background and what their current relevant experience is that tied them with this project and local area; (2) determine a rough idea of the stakeholder's opinion and what needs our app should address as a result; (3) gauge interest in development of an app that promoted historical and cultural heritage of Hong Kong, specifically the SCP; (4) receive recommendations on how to complete the project; and (5) find other contacts in Hong Kong that we would be able to survey or interview. For basic interview questions with stakeholders and experts, see the supplemental booklet.

Objective 3: Creating an Identity for the SCP App

After identifying heritage sites and collecting community perspectives within the SCP, we worked to elevate the SCP app from a proposed concept to something more tangible. First, to ensure that the SCP app adds unique value that similar apps do not, we conducted an app market analysis. This involved the close examination of local mobile apps that accomplish similar goals or have similar themes to the proposed SCP app. We looked for ways the SCP app could add value by filling gaps or missed opportunities in other apps. Once we identified these gaps, we generated a list of important features for the SCP app to have and created an interactive prototype. Completing this step helped us solidify the SCP app as something real, and allowed us to create a detailed identity for something which was originally an idea.

Market Analysis

We first conducted a market analysis based on similar apps before we created a visual representation that closely resembles an app that would be desired by both the project sponsor and any potential users. Our team conducted a market value analysis of apps created for the PMQ, Tai Kwun, and similar projects to the SCP. We assessed if they had features such as an activities/events board, member registration, or guided tours. We also checked to see if the sites had any other corresponding social media platforms such as their own website or Instagram account. This allowed us to see what the SCP app would need in order to gain relevance to both consumers and businesses involved.

Interactive Prototype

An interactive prototype was then created based on the previously gathered data, ensuring that the app's features align with the interests of its potential audience. It allowed us to create a tangible version of the app that people easily understand and provide feedback on. This process involved creating a mobile phone mockup of the app's user interface using the free web application Figma. One of the eventual goals of creating the prototype was to demonstrate it to a focus group to receive specific feedback on the app's features, design, and overall usability. An example of a UI mockup screen can be found in the supplemental booklet, along with the original UI example provided by the sponsor. We also prepared mockup testing participant questions, which can be found in the supplemental booklet alongside the procedure and protocol for

conducting the survey. Creating a UI mockup using an application such as Figma does not require any programming skills, only design skills and a basic understanding of different user flows. It enabled our team to gather feedback on a digestible version of SCP mobile application without spending extensive time and resources developing the app with code. User feedback on the mockup could provide us with a strong understanding of the most favoured features, ideal visual layouts, and general user experience.

Objective 4: Assessing the Feasibility of the SCP App

In order to assess the feasibility of an SCP mobile application, we sought targeted feedback on the interactive prototype and the proposed app features. We presented the app prototype to a focus group via a SCP community workshop. After this, we met with software developers, product designers, and branding professionals to gain more complex feedback about the SCP app.

Based on the feedback received, we identified obstacles in creating an SCP app and formulated possible strategies that can be used to overcome them.

Focus Group

To assess the feasibility of the SCP mobile application, we needed to understand the users needs and their initial impressions of the concept. This was accomplished through a focus group conducted at an SCP workshop hosted by the ISU. All participants were introduced to the SCP concept through various presentations from our sponsors and both SCP groups: the app group and the CBID group. Later in the workshop, we had a breakout session with the workshop participants in which we presented the SCP app mockup to. We demonstrated the interactive prototype and had users play with all the features of the app. We then presented the feedback we gained from the breakout sessions to the workshop as a whole.

Developer Consultations

After hearing broader feedback from participants of the SCP workshop, we also sought more complex feedback from software experts to determine the

technical feasibility of the SCP app. Rather than being structured interviews, these were broader discussions that encouraged participants to provide critical feedback and insights. Experts in the fields of branding, software development, product design, and urban technology were contacted, as they had a wealth of knowledge in regards to the technological and design aspects of app development. In the end, we interviewed the following individuals:

- Brian and Barry Cheng, Co-Founders of WeSuperseed, a brand consulting company in Hong Kong
- Brian MacPherson, a software engineer, full stack developer, and project manager based in Hong Kong
- Kamakshi Pathapati, a Senior Product Design Manager for Wayfair and Mayank Ojha, a Research Associate for MIT's Urban Risk Lab

By talking to people from a wide variety of fields, we looked to gain useful feedback beyond the app's technological development alone. Other topics such as branding, image, and user experience could be discussed to help us formulate specific strategies for the future of the SCP app.

Overview

There was **one central theme** that emerged from our data collection; this theme was then **broken up into three distinct subject areas**. The theme and its subject areas then informed our decision to choose the mobile application as our digital platform. We will discuss our findings in the following sections.

The Importance of Community

A sense of community, or SoC for short, is a psychological term used to refer to the quality of an individual's social network.[18] It can be defined through geographical means (e.g., an individual's residential neighbourhood), however it does not necessarily have to be. Within Hong Kong, SoC is affected by two opposing sets of values: Western values, which mainly emphasises individualism, and Eastern values, which mainly emphasises collectivism. This mixture of values can be attributed to the combination of the former British colonial rule and Chinese family principles.
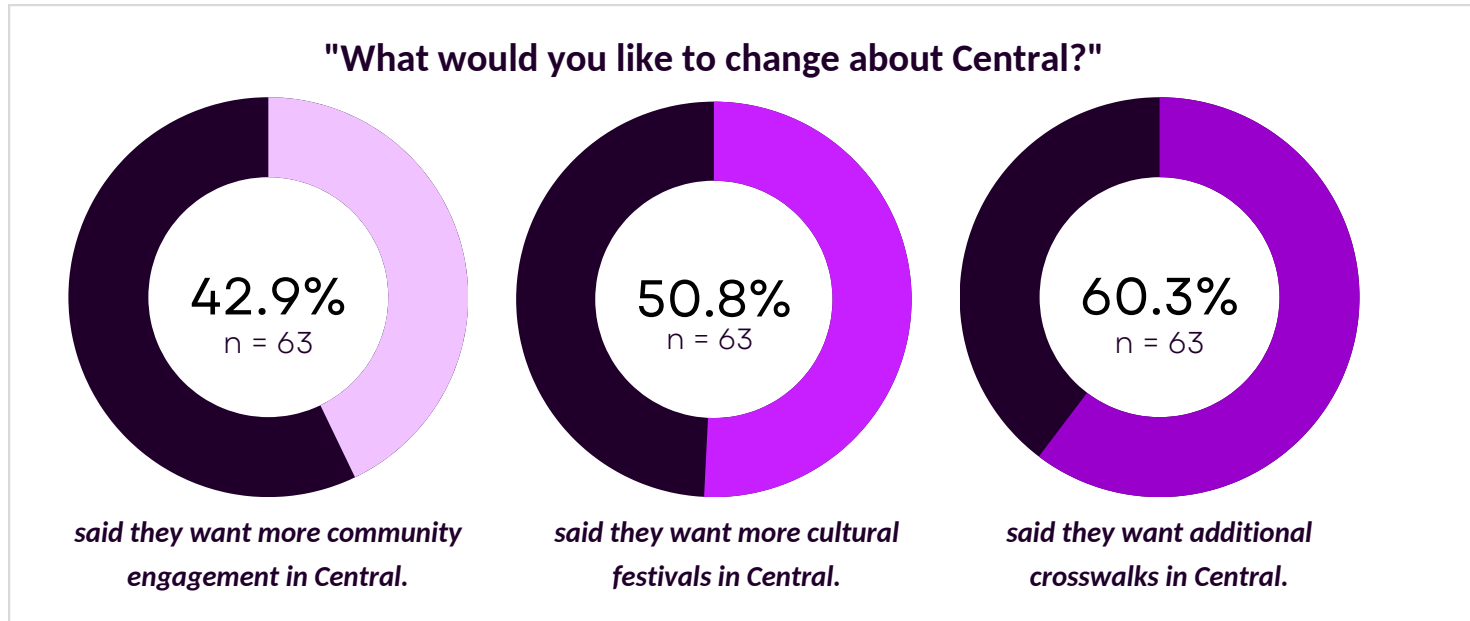
One of our interviewees, Vicky Chan, Founder of Avoid Obvious Architects, highlighted that individualism can be seen in the fact that "Hong Kong is a very capitalist city," and that he was only able to "work out a capitalist way to organise the city" (see transcript in supplemental booklet). Another interviewee, Alvin Yip, former Curator-in-Chief of Central Market, expanded on this further, saying that "Hong Kong is one of the ultimate cities of brutal capitalism" and although there is some collaboration, "usually competitive collaboration is not choice number one" (see transcript in supplemental booklet). Competitive collaboration, in this case, is to work together with business competitors in order to boost their respective businesses or to create something new.

However, there is still a push for collectivism in Hong Kong. In Figure 7, when asked "What would you like to change about Central?" in our community survey, 27 out of 63 responses or 42.86% reported that the district needs "More community engagement," mea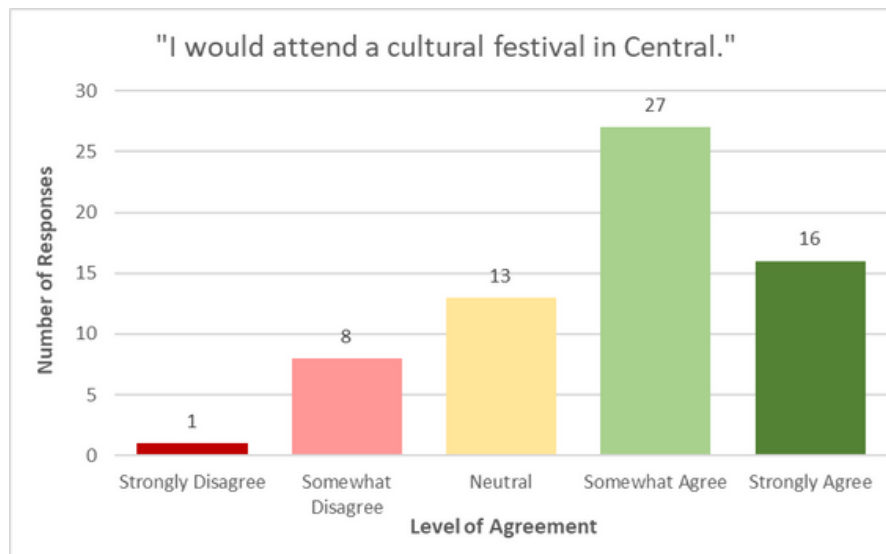ning that people wanted to meet and connect with other people. **SoC is important because not only does it promote strong social connections, but it is also positively linked to an individual's quality of life.**[19] As a person's SoC grows, they start to experience more happiness in their day-to-day lives. Therefore, in order to increase SoC, we identified three areas that can be improved within the SCP area: culture & heritage, walkability & accessibility, and engagement with local artists & small businesses.

An Emphasis on Culture and Heritage

The celebration of culture and heritage can increase an individual's sense of community. Specifically, cultural festivals can create stronger bonds within the community and even promote the growth of that community as it brings locals and tourists together.[20] One such example is in Cheung Chau, Hong Kong. As the community prepares for the annual Cheung Chau Bun Festival, many people contribute artisan crafts, souvenirs, food, and even their own dancing skills; usually entire families are involved in one way or another. Even

"What would you like to change about Central?"

42.9%
n = 63

said they want more community engagement in Central.

50.8%
n = 63

said they want more cultural festivals in Central.

60.3%
n = 63

said they want additional crosswalks in Central.

Figure 7. Suggested Changes to Central District in Hong Kong

"I would attend a cultural festival in Central."

Level of Agreement	Number of Responses
Strongly Disagree	1
Somewhat Disagree	8
Neutral	13
Somewhat Agree	27
Strongly Agree	16

Figure 8. Opinion on Cultural Festival Attendance

when people move away for other opportunities, they take the time to travel back just to celebrate the festival. With these benefits in mind, it suggests a potential reason as to why 43 out of 66 responses or 65.15% either strongly agreed or somewhat agreed that they "would attend a cultural festival in Central" (Figure 8). Additionally, 32 out of 63 responses or 50.79% reported that Central District needed even "More cultural festivals" (Figure 7).

However, Phil Kim, Chairman of Urban Land Institute, and Connie Cheng, Program Director of Urban Land Institute, added a different viewpoint to the conversation (see transcript in supplemental booklet). **It is not that there is a lack of cultural festivals, but a lack of awareness of them.** In general, they both agreed that the average Hong Kong resident knew only about 10% of events going on. This suggests that the participants in our survey, 90% of whom identified as Hong Kong residents, simply did not get enough exposure to the cultural festivals that could be occurring within the Central District (Figure 10).

Central District's wealth of history is not well-known to both tourists and local residents. As tourists and researchers unfamiliar with the area, we learned a great deal by simply walking through it. For example Graham Street is well-known to both locals and tourists for its open-air wet market while in comparison, Hollywood Road is well-known for its famous murals and its antique shops. We also saw an augmented reality (AR) project aimed towards tourists on Hollywood Road called "City in Time," in which passersby can scan a QR in order to see how Central looked in certain decades.[21] Tourists are not the only ones interested in history. In Figure 11, 38 out of 66 or 57.58% of participants strongly agreed or somewhat agreed that they "would attend a historic walking tour of Central." **This suggests that a significant percentage of residents would like to spend a portion of their time to explore the untapped history of the district.**

Semenza et al. found that murals have been positively linked to an individual's sense of community as street art embraces and beautifies the area it is

located in.[22] This study conducted in three sites of Portland, Oregon, United States showed that there was an increased sense of community after the murals were painted, as shown by the responses taken before and after. However, this benefit can decrease over time. Numerous murals can have a cultural significance in the time period it was created, and thus their importance can slowly disappear as time passes.[23] **Therefore, murals can fall into disarray or be removed entirely because the population that would be living in that area would forget the historical context behind when the murals were painted.** Within the SCP area alone, there are dozens of street murals that adorn building walls, some already covered by grime or graffiti. The famous Old Townhouse mural on the intersection of Graham Street and Hollywood Road has huge chips in the painting and some graffiti painted on top or nearby.

Figure 9. Old Townhouse Mural Deteriorating
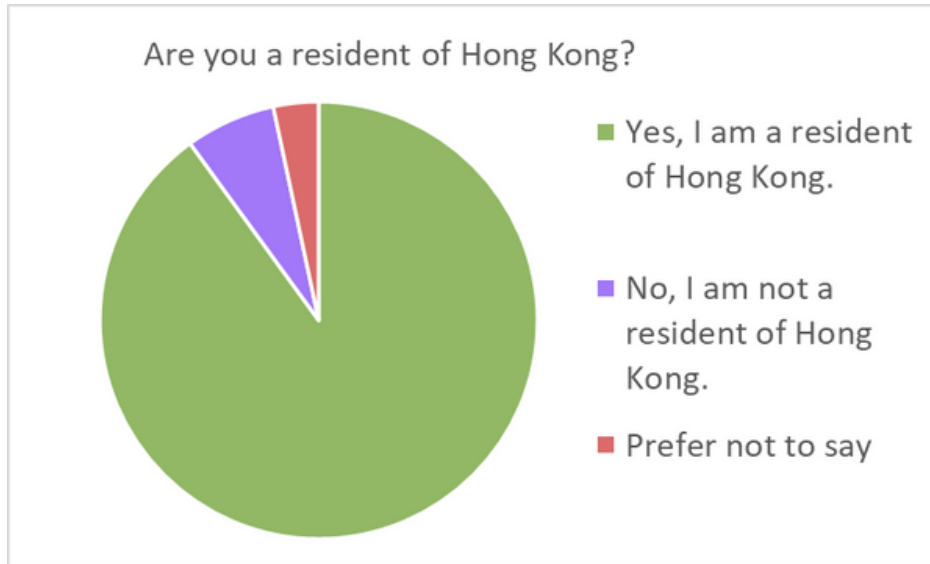
Figure 10. Residential Demographic Data for Community Survey
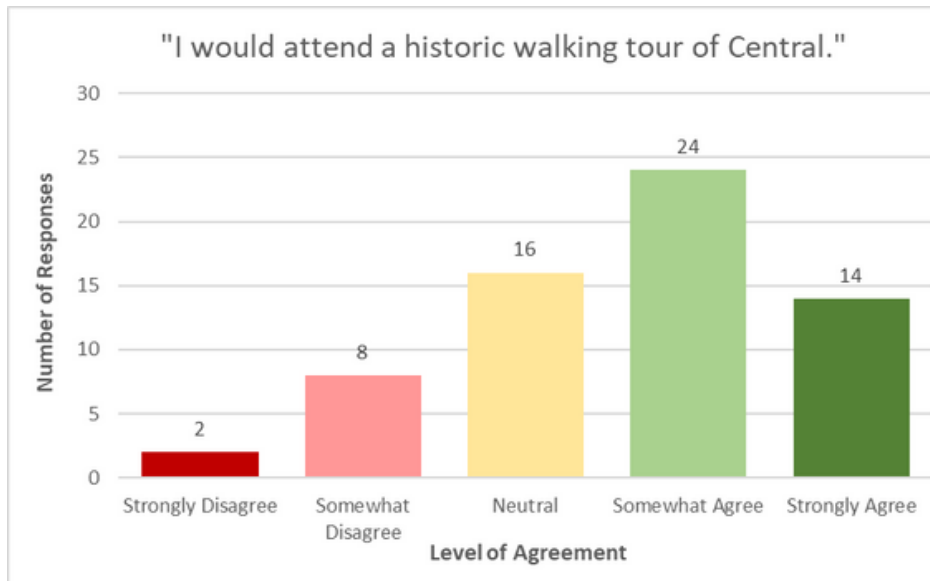
Figure 11. Opinion on Historic Walking Tour Attendance

The Difficulties of Navigating the SCP Area

Walkability has been connected to an individual's sense of community. This is shown in past research, which indicates that there is an increased probability for chance encounters with residents as the amount of walking increases.[24] Therefore, as a person chooses to walk in the neighbourhood, they are more likely to see a neighbour and stop to chat with them. **When walkability is affected by negative factors, it is safe to assume that sense of community would thus decrease. Some of these factors include: lack of pedestrianisation (e.g., street parking, car-centric roads)[25] and high incline of pavements or walkways.[26]** When pedestrians do not feel as though the area is suitable for them to walk through, it is possible that they would pursue other means of transport.

In our community survey, there was some indication of dissatisfaction in how walkable the current streets of the

Central District are. In Figure 12, 50 out of 66 responses or 75.76% either strongly agreed or somewhat agreed that streets should be made more pedestrian-friendly by being closed off to automobile traffic. When we conducted our walkability observations, we found that only a few streets in the SCP area were blocked off for street markets. Elgin Street was the only street with barriers blocking vehicle traffic for most of the days of the week. Additionally, in Figure 7, 38 out of 63 responses or 60.32% reported that Central District should "have additional crosswalks," so that there are more chances for pedestrians to cross the streets safely instead of having to walk farther down the road to get to a crosswalk or to use a pedestrian-crossing bridge. We found during our observations that parts of the Central District have railings along entire blocks, with few crosswalks in between to allow pedestrians to cross. Queen's Road Central was one such street where the road was more car-centric than pedestrian-friendly.

However, there is also an indication of satisfaction in how walkable the current

streets in Central are—or at least, acceptance. In Figure 13, when asked to agree or disagree with the statement, "It is easy to walk around comfortably in Central," 39 out of 66 or 59.10% of participants either strongly agreed or somewhat agreed. Looking at the demographic data, we can see some reasons why it was skewed in this way. As stated previously, a majority of the participants reported that they were a resident of Hong Kong. This suggests that they were used to the lack of walkability within Central, even if they would prefer a more convenient route created by pedestrianisation. **In two separate interviews, Connie Cheng, Phil Kim, Alvin Yip, and Ernie Hsieh—an urban planner at ChinaChem Group—all agreed that walkability was *not* the main issue at hand, but accessibility was.** Although we did not explicitly ask our community survey participants if they had a disability that would affect how they moved, a significant portion, 35 out of 61 or 57.38% reported that they were in the age ranges of 18-24 or 25-34; typically, it can be assumed that the younger a person is, the less likely they have developed health problems (Figure 14).

Figure 12. Opinion on Making Roads More Pedestrian-Friendly
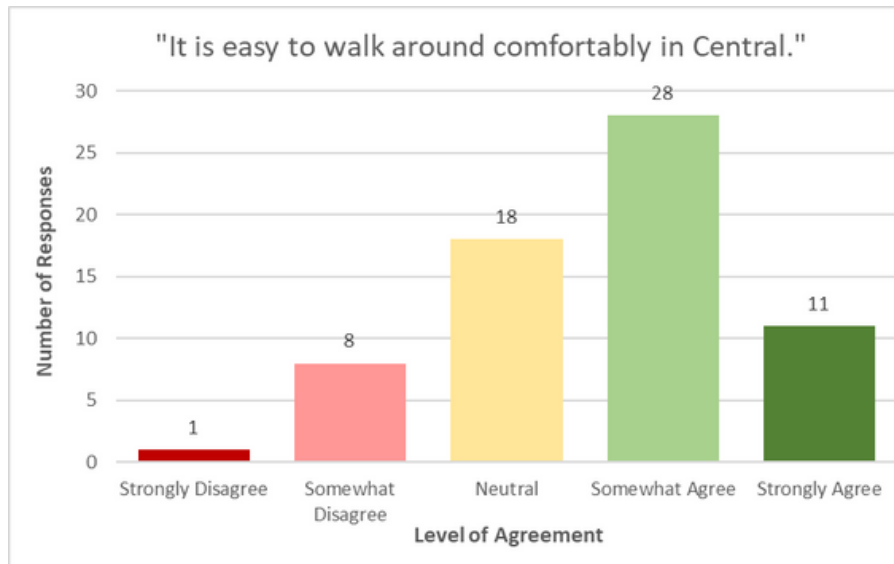
Figure 13. Opinion on Walkability of Central

This meant that we might have missed collecting a more representative set of voices.

Although our team decided to focus on investigating the accessibility of the streets rather than walkability, the incline of streets has importance for walkability, as it has been negatively linked to SOC, and for accessibility. Data retrieved from Hong Kong's 2020 General Household survey show that approximately 244,000 people experience a disability that restricts their body movement and another 47,600 people experience a disability that affects their sight—this does not include people whose vision is corrected by glasses or contact lenses.[27] Thus, it was deemed necessary to conduct our city walk observations, especially in terms of slope, due to the significant number of people who are affected by disabilities (who might either want to visit the district or live in the district itself).

# Engagement with Local Artists and Small Businesses

Central District is known for its immense art community, both in terms of its ability to attract artists and for the number of artworks it hosts. Central Market held a Chinese New Year Bazaar in January 2023 in which local artists were seen selling anything from jewellery to clothing, Tai Kwun houses several artists in its Barrack Block and JC Contemporary buildings, and PMQ hosts over 100 artists in its semi-open air buildings. Looking at the three anchor points alone, there is no doubt that the SCP area has a vibrant art scene. There are also over a dozen art galleries on the streets within the border of the SCP, and a plethora of more right outside it. **Although the art scene is vast, there is a lack of collaboration between the three anchors and the smaller artists.** Interviewee Vicky Chan claims that the 3 anchor points are fighting each other, trying to get the most attention from potential visitors (see transcript in

supplemental booklet). To outsiders, PMQ, Tai Kwun, and Central Market are similar enough that if a person goes to one, they most likely will not go to the rest. Art galleries are also individually owned, and thus might not get enough exposure in comparison to the anchor points.

Central District also hosts many small businesses, which fall under numerous categories: food & beverage, retail, and street vendors to name a few. In fact, looking at only the ground floor level businesses, there are over 1,200+ businesses within and around the SCP area; 32.6% of these businesses fall under the food & beverage category, 22.3% fall under the retail category, and 14.1% fall under the street vendor category (see land use survey in supplemental booklet). When interviewed further on their opinions of doing more community events such as pop-ups or festivals, 21 out of 29 or 72.41% of businesses were either strongly interested or somewhat interested in doing so (see business survey in supplemental booklet). Although it is a small sample size, we
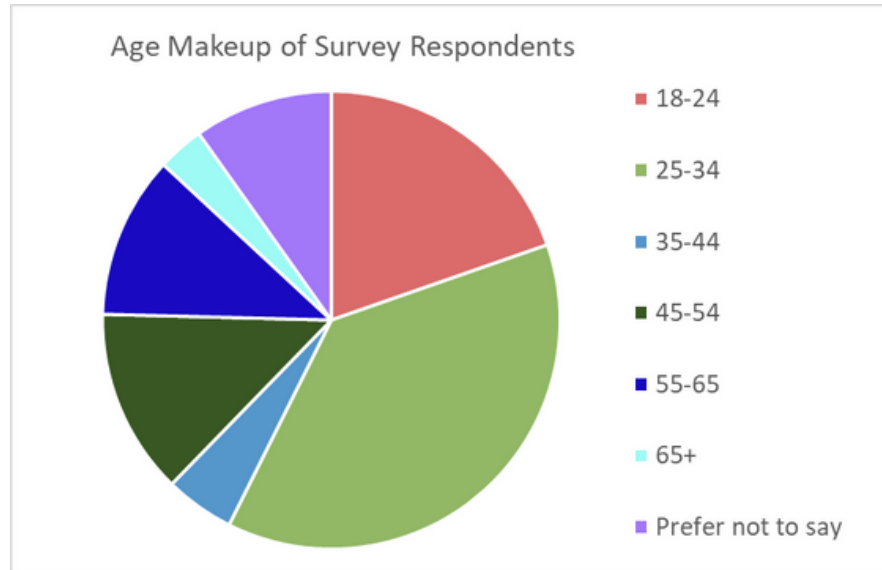
Figure 14. Age Demographic Data for Community Survey
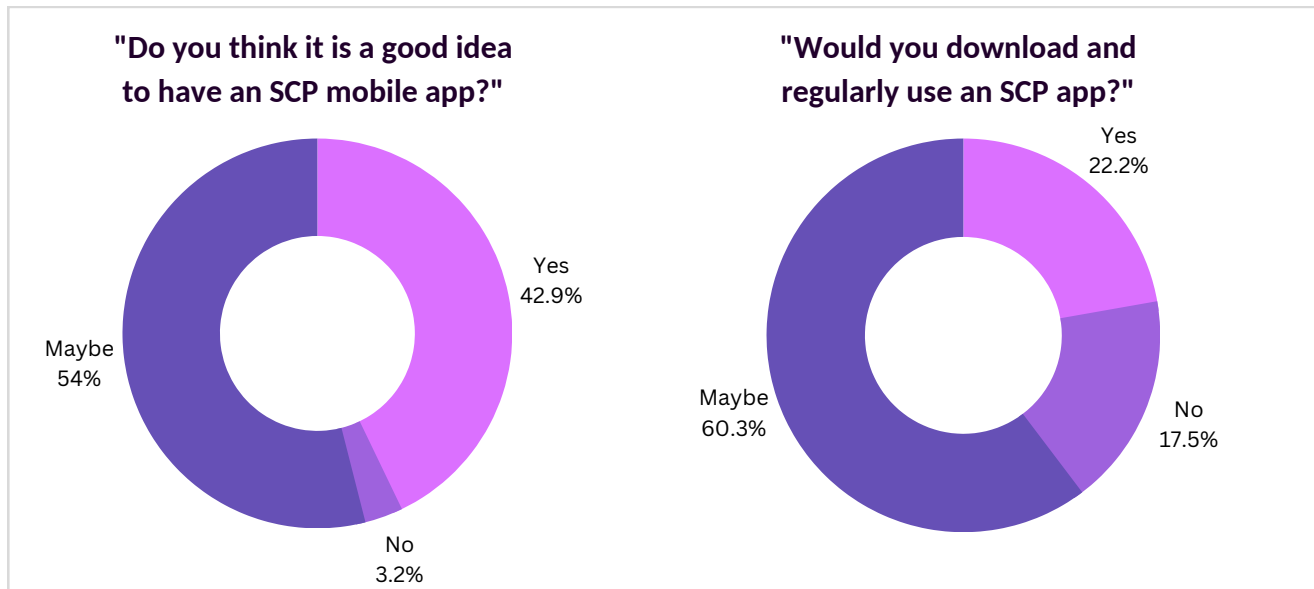
Figure 15. Opinion on a Potential SCP app

believe that these responses can be generalized to a larger population, meaning that a majority of businesses were interested in being more connected with each other in order to create more competitive collaboration.

Choosing our Digital Platform: The Mobile Application

When we first brought the mobile application idea to our interviewees, there was a sense of scepticism. It seemed as though there was an agreed consensus that we needed to focus on making the design unique. In particular, Alvin Yip said that from "[his] position as a Hong Konger, the app is not attractive to [himself] or [his] business" (see transcript in supplemental booklet). This perspective was reflected in our community survey, as one of our questions was, "Do you think it is a good idea to have an SCP mobile app?" Although there were only 2 respondents that chose "No," with 34 out of 63 or 53.97% who chose "Maybe" and 27 out of 63 or 42.86% who chose "Yes," it is

important to look at the following question as well: "Would you download and regularly use an SCP app?" For this question, 38 out of 63 or 60.32% filled out "Maybe" and 11 out of 63 or 17.46% filled out "No" (Figure 15). **If the app is too similar to ones in the market, there would be a lack of interest for people to decide to download it.** Yip then went on to say that if we were going to follow through with this application, it must be something that will legitimately add "value" to the global community, such as connecting users to artists in the area. Thus, we conducted a market analysis to learn what features the SCP app would need to have that will add value to the community rather than oversaturating what is already on people's phones.

In our market analysis, we found that the three anchor points (Tai Kwun, Central Market, and PMQ) have several social media platforms, which included a website, Instagram account, and Facebook account. Additionally, two of the three anchor points (Central Market and Tai Kwun) have mobile applications with 10,000+ downloads each, signifying their popularity. However, we identified

features in a mobile application that could attract users, which are divided into the three areas outlined previously to promote a higher SOC: culture & heritage, accessibility, and engagement with local artists & small businesses.

Preserving Heritage, Innovating Culture

Street Profiles (Figure 16): As stated previously, we learned a lot about the streets within the SCP area as we conducted our city walk observations. Discussing what we saw, we concluded that each street had its own personality, and their culture & history should be showcased somewhere on the mobile application. Under the interactive map feature in our app mockup, users can click onto each street individually. A pop-up would show, and a historical overview would be listed among other information such as a photograph of the street and accessibility notes (which will be discussed in the following section).

Events Board (Figure 18): Although many individual businesses have their own events and happenings throughout the year, there are no mobile applications that compile all of these events together.
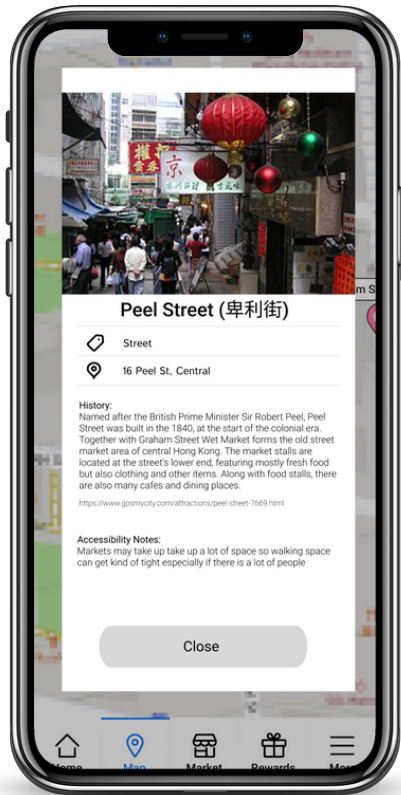
Figure 16. Street Profile
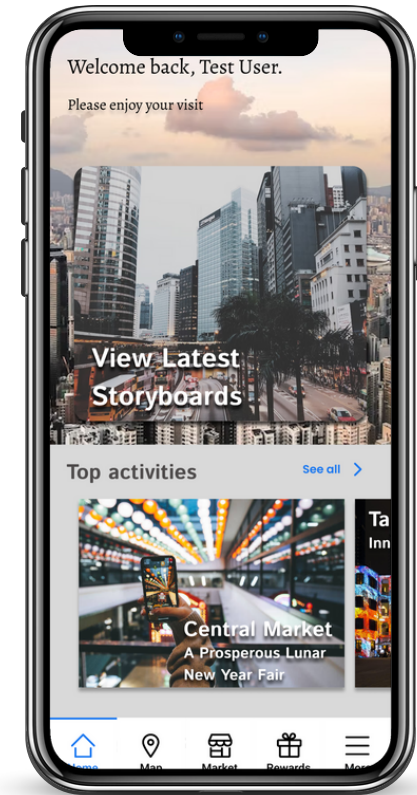

Figure 17. AR(T)

Figure 18. Events Board

Following what Phil Kim and Connie Cheng said about how the average Hong Konger did not know a majority of the events that were going on, we decided to add an events board feature onto our app mockup. This would be listed on the homepage under "Top Activities." Users would be able to see a short collection of events catered to them and/or were happening relatively soon, and they would also be able to click "see all" to view more events.

AR(T) (Figure 17): AR is a relatively new technology that allows digital content to be overlaid onto the physical world. As there are many murals within the SCP area, some of which are decaying as stated previously, we decided that it would be beneficial to have an AR feature implemented to enhance the existing murals and garner some of the lost interest. This would be listed on the homepage under "Discover AR(T)" where users can click to scan a mural. The mural would have a specialised effect or game in which users can interact with; additionally, users would also be able to click "Learn More," which directs them to information about the mural and the artist(s) who created it.

Making the SCP More Accessible

Accessibility Ratings & Notes (Figure 19): During our city walk observations, we measured the slope of the pavement as well as the width of it. According to Hong Kong Buildings Department (HKBD) standards, the maximum grade of the pavement should be 8.33% and the minimum width of the pavement should be 1.05 metres.[28] In order to create the ratings, we used the percentage of the street that did follow the HKBD standards, as well as the maximum and minimum for the grade and the width, respectively (see accessibility data in supplemental booklet). For example, 13.80% of Peel Street is accessible due to its extreme grade, with the maximum grade being 24.93%. However, 72.41% of Peel Street is accessible in terms of its pavement width, with the minimum width being 0 metres as one side of the street blocked pedestrians from walking through. Combined, only 3.448% of Peel Street is accessible when factoring grade and pavement width. Some of the accessibility notes for this street included, "Uneven surface for sidewalk plus no railing," and "No road blockage sign." All of these notes would be listed in the street profiles in the overview page, with a more extensive explanation listed in a separate accessibility tab.
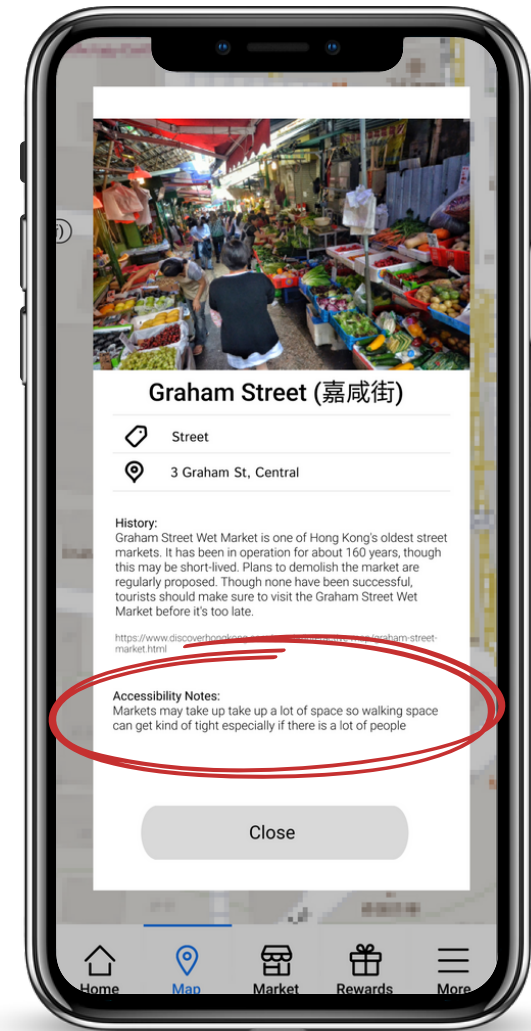

Figure 19. Accessibility Notes

Strengthening the Network of Artists and Businesses

NFC Technology (Figure 20): In order to get more competitive collaboration, as businesses would be working together within the app to increase their own revenue, we decided a near-field communication (NFC) feature would help increase the amount of foot traffic for many businesses within the SCP area. As the name suggests, the user's phone must be within a short distance of another NFC device in order to activate the action. In order to incentivise more people to walk through the SCP area, we decided that a rewards system would be beneficial: as people explored the area and were physically present in buildings/stores, they would gather points and/or coupons. This feature would be listed under the rewards section, where users can view their collected rewards under the "rewards" tab and users can collect deals under the "scan" tab. NFC technology in this scenario could also be used to quickly send business owners non-identifying information about customers that can then be used for simple data analytics for their business.

Creator Marketplace & Artist Profiles (Figure 21 & 22): Artists would benefit from a creator marketplace, although small businesses would be able to promote their own stock as well. The mobile application would provide a centralised digital marketplace in which users can buy directly from their favourite vendors. This feature would be listed under the market section, where users can search by category or by artist. In order to directly connect the artist to the user, the feature would be listed on the homepage under "Featured" and on the marketplace. When users click on the artist, a profile appears, detailing a short biography as well as their website or contact information.

Assessing the Feasibility of the Proposed Mobile Application

To assess the feasibility of a mobile app, we consulted Brian Macpherson, a software engineer with 5+ years of experience (see transcript in supplemental booklet). He agreed that the application would be technologically feasible and estimated that its development would cost approximately HK$1.5-2 million. However, he added that this estimate is on the lower end, which meant a lower quality finished product; therefore, it would cost more to create an application that would not only be developed based on our listed features, but also be fully sustainable long term. Additionally, we presented to the Urban Renewal Authority, who was looking to do something similar. **Their application was created within a year, and so we believe that our proposed design could be developed within a year and launched into the market within several years**. Finally, we tested our app mockup with a smaller focus group of users at the SCP workshop in February 2023. Although there was general interest within the potential application, their comments and suggestions helped inform our recommendations outlined in the following chapter.
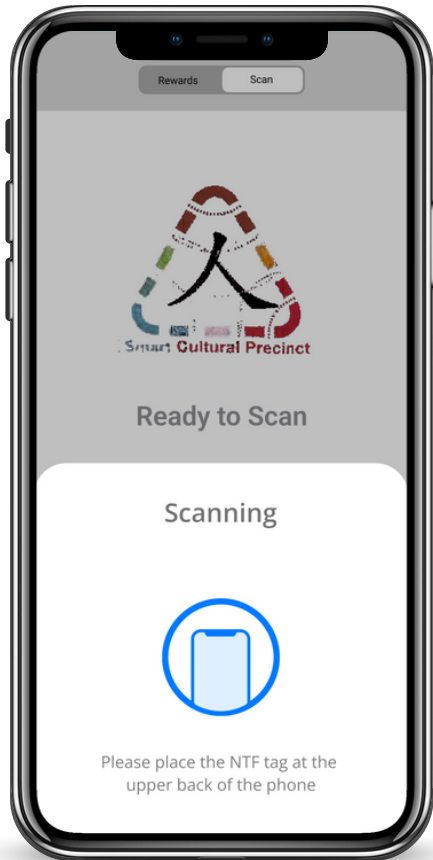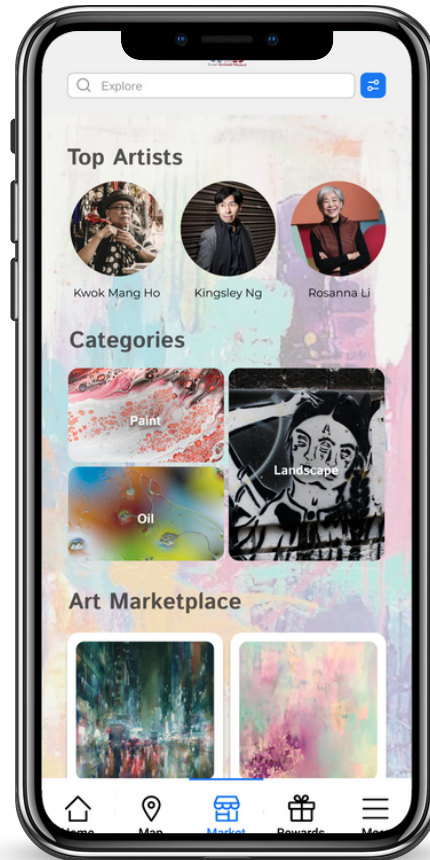
Figure 20. NFC Rewards System

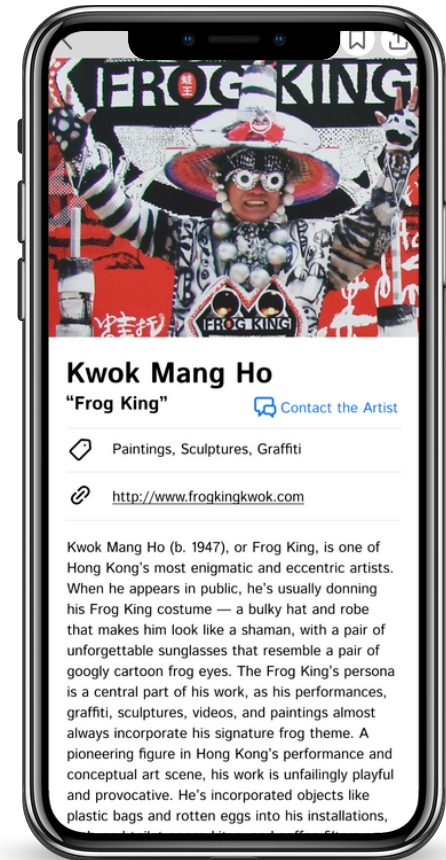**Figure 21.** Creator Marketplace

Figure 22. Artist Profile

Framework of the Mobile App Development

To synthesise our findings on the proposed SCP mobile app, we offer a possible framework for its future planning process. Through the identity we have created for the mobile app, we aim to provide a means to digitally connect people and highlight heritage within the SCP area. **Having consulted with app developers on our interactive prototype and analysed findings from our research, we have identified some of the risks associated with developing an SCP app as well as recommendations for our sponsors to potentially mitigate them.** We further outline these recommendations under three phases of the development process: pre-development planning, development & design, and future maintenance.

Phase 0: Pre-Development Planning

This phase encompasses the span of time until sufficient provisions are met for the beginning of the SCP app development. During this time period, we have multiple suggestions, one being the development of the SCP concept to a greater extent. We found that 60.32% of respondents answered that they would "Maybe" download and regularly use an SCP app (Figure 15). If these respondents were more familiar with the SCP concept and had a positive opinion of it, we expect a majority of respondents to shift towards the "Yes" category. Increasing the community awareness of the SCP concept would make people more receptive to an SCP app in general. A way to do this could be through community events or smaller physical additions, methods suggested by Brian Cheng and Barry Cheng, co-founders of the brand consulting company WeSuperseed. Some physical additions can include

wheatpasting signs detailing what the SCP is as well as painting sign posts a different colour to make the SCP more visible (see transcript in supplemental booklet).

Another requirement to fulfil is the collaboration of stakeholders. **In order for the SCP app to take shape, it needs to have all stakeholders on board, especially with Central Market, Tai Kwun, and PMQ forming the Cultural Triangle.** This goes towards the previous point because the first step in getting the support of these stakeholders is to show them that the SCP is community-backed and worth investing in.

Once stakeholders are willing to work together, we suggest an SCP committee be formed to facilitate changes in the SCP area. **This committee would consist of representatives from each of the stakeholders including community groups and the government.** Each representative would agree upon regular meetings to discuss planning, development, and management of the SCP area. Similar to the Harbour-front

Enhancement Committee, strict guidelines must be put in place to enforce a focus on community, sustainable development, and cultural preservation.[29] In the future, the SCP committee would also take charge of maintenance of the SCP mobile app to build consensus on management decisions such as what goes on the front page and what additional features to implement. This way, private incentives are removed in order to create a centralised community app for the SCP.

Besides increasing collaboration with stakeholders, the app's proposed features should be further developed to best suit the many different stakeholders involved in the SCP area. Currently, looking at our interactive prototype for reference, the SCP app primarily focuses on tourists, local residents, businesses, and artists. According to feedback from Mayank Ojha, a research associate for MIT's Urban Risk Lab, this can be achieved by spending more time solidifying the narrative associated with the SCP app (see transcript in supplemental booklet). The narrative of the app should highlight how each type

of user connects to the next type of user, and so on, to fully demonstrate how the SCP community is being connected. Targeted features or user experiences create a sense of personalisation that is beneficial for a mobile app's long-term user engagement. With this in mind, additional brainstorming can be done to think about how to optimise the user experience for stakeholders such as the local government and Urban Renewal Authority. Kamakshi Pathapati, a Senior Product Design Manager for Wayfair, added that this **continuously developed personalised user experience should undergo frequent user testing** to ensure that the SCP app has a constant flow of feedback from the community (see transcript in supplemental booklet).

For initial development of the SCP app, Brian MacPherson, a senior software engineer at FreeD Group, roughly estimated that HK$1.5-2 million is needed (see transcript in supplemental booklet). To help fund this, our sponsors should consider applying for the Urban Renewal Heritage Preservation and District Revitalization Funding Scheme, which offers grants up to HK$5 million

per application.[30] Although the sixth round of the Funding Scheme application deadline has already passed as of March 2023, the Urban Renewal Fund (URF) launches more rounds approximately every 1-2 years. The URF supports "[heritage] preservation and revitalisation projects initiated and implemented by various stakeholders in the community" which aligns completely with the goals of the SCP app. The URA has also connected with the ISU in the past and expressed the common goals they share with the SCP project, so this may be the most realistic way in obtaining funds for the SCP app development.

Phase 1: Development and Design

Under this phase, we will cover all recommendations we have gathered for the initial SCP app development to its launch. These recommendations are primarily referenced by experts in the app design field as well as feedback from an SCP workshop. First, the branding of the SCP app needs work as it is a most crucial factor in attracting an audience as

well as memorability. We learned this from discussions during the SCP workshop where people from the community provided feedback upon testing our prototype. The most common criticism we received was the lack of a thematic idea. Brian and Barry Cheng also mentioned how our prototype seemed too broad and widespread in terms of features and targeted users (see transcript in supplemental booklet). In the future, **the SCP app must be narrowed down and include features that follow a central theme**. With the goals and features of the app being focused around the SCP community, we could leverage off that and create a brand that embodies this idea of "community".

In the interview with MacPherson, it was said that in-house development is the most recommended option for creating the SCP software (see transcript in supplemental booklet). Commissioning third party software firms may result in cheap code that is unsustainable or unscalable. Having **trusted developers that care about the app's future** and

maintenance is generally the best option if a long-term adaptive app is desired.

Another finding from the interview with MacPherson was to create a "minimum viable product" (MVP) for launch (see transcript in supplemental booklet). As long as it offers a flawless user experience and implements key features, the SCP app does not need to be elaborate. Focusing on the release of an MVP allows early users to provide feedback and avoids potentially unnecessary work for developers. After showcasing the features in our prototype to app designers and community members, we found that the features that provide the highest value and engage users the most are the events board, the art marketplace, and the NFC rewards system.

Phase 2: Future Maintenance

For the SCP app's long-term sustainability, methods in order to monetize it must be addressed. Developers have three main ways to monetize their apps: (1) put a price on

downloading the app, (2) offer in-app purchases, and (3) advertising.[31] The first method is not viable as the goal with the SCP app is to make it open to the community. Putting a paywall on it would be contradictory to the community focus of the app. The second method has potential with the implementation of a digital marketplace within the SCP app. Charging a small fee for any transactions made through the app could generate a significant amount of revenue. The major issue with a digital marketplace, however, is that there will always be disputes between buyers and sellers. If the digital marketplace were to be implemented, the SCP app committee should not involve themselves unless necessary to absolve responsibility for settling disputes. The third method appears the most practical and simplest solution. **Selling online ad space is one of the most popular monetization models for mobile apps.** In 2015, "the global spending on mobile in-app advertising was almost 30 billion USD" and is only predicted to increase in the future.[32] For the SCP app to be viable for advertising, there needs to be a large influx of people using it as well as specific

user data. This user data must include frequency of visits, impressions, unique visitors, and where they are on the app. As such, generating revenue through advertising should be put on hold until sufficient user data is collected.

Impact of an SCP Mobile Application

In summary, an SCP mobile app has the potential to provide long-term value to the people of Central District. **We envision a centralised community app where businesses, artists, and all citizens may thrive and build upon their culture, although much time and work is necessary for such an app to become fully successful.** This project only sets the foundation for future development of the SCP app and how a digital platform to engage the community could be feasible. These recommendations will be used to further advance the goals of the SCP and pave a path for stakeholders to become more involved. If these measures prove to be successful, we believe other districts could benefit from adopting a similar community-run digital platform.

Acknowledgements

Figure 23. The SCP App Team

Figure 24. The SCP App Mockup in Figma

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