Guideline for the innovative design of an online platform for an aging society

by

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Abstract

This study attempts to provide people with a virtual community creative platform design guideline to help aging communities solve the problem of loneliness. Retired people mentor young professionals in product design through the platform, as well as continue to develop their own products in the way of entrepreneurship, thereby providing a source of inspiration for social innovation through culture, human-centered relationships and meaning. Social innovation design, product design and service design are used to build a virtual community, which provides open resources and innovation platforms for innovators. Finally, this study introduces how a new platform innovation collaboration method operates and builds a conceptual framework based on the general innovation business model.

Dedication

During my industrial design graduate study, I completed this thesis. First of all, I want to thank my committee chair Joyce Thomas. Thank you for the weekly thesis meeting that you have been hosting, which provides an important direction for me in the progress and update. Thank you for the discussion and revision of my thesis. Thank my committee members Rusty, Chris and related faculty. I will not succeed without your help.

Thank my friends Shensi Wang, Viki, and Grace Yuan for helping me answer questions when I am confused. Thank you for the advice and help provided by outside friends, and thank Nancy Perkins for hearing my pitch in the middle of the development of my thesis. Thank you to the outside reader, Elizabeth Topping, for helping me revise the thesis.

Finally, I want to thank all my friends and family who give encouragement and help, with their belief in me, so that I can always strive to complete the study. I would also like to thank myself for maintaining the attitude of learning, so that I can have such a valuable experience and lay a solid foundation for my future career.

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1 Introduction

1.1 Problem Statement

The main purpose of this study is to construct a generalized innovation process at the ecosystem level. This study uses cooperative practice to analyze the resource allocation and creativity-driven platform for older individuals. The platform framework consists of the mode of cooperation among various stakeholders in the ecosystem and the capability of people to use it on the internet. This innovative business platform ecosystem will continue to render service innovation through co-creation. The business model innovation ecosystem covers various networks in the ecosystem, collaborative innovation business systems (e.g. manufacturers, craftsmen and consumers provide service innovation through co-creation), and also occurs in cooperation with many other stakeholders including the government, social actors and self-organizing economic actors (Lee, Moon, & Yin, 2020). When collaborative design is applied to co-creation, there are not only user-centered design concepts and practical collaborative operations, but also the participation of stakeholders in the conceptualization of problems and processes, and simple scheme of design created jointly (Light & Seravalli, 2019).

In the relationship between design and innovation platforms, this paper explores how retired people may actively 1) mentor young professionals and 2) participate in continuous entrepreneurial development of independent products

and social innovations. In addition, these activities will stimulate reflection on the development of future designers' cooperative innovation and the resulting new professionals (Attiwill, 2013).

1.2 Need for This Study

Aging is already a common fact facing the whole society. Globally, the population aged 65 and over is growing faster than all other age groups. According to data from "World Population Prospects: The 2019 Revision", by 2050, one in six people in the world will be over age 65 (16%), up from one in 11 in 2019 (9%) (UN, n.d.).

In order to solve the loneliness of aging, social innovation, product design and service design will help an aging population increase community participation and provide opportunities for them to participate in social activities. When human beings solve problems or when human needs increase with the advancement of the times, some people will use their inherent creativity and design talent to invent and create new things, which is called social innovation (Mumford & Gustafson, 1988). Driven by social innovation, it is hoped that a creative design platform can be used so that the older individual can connect with the physical community through the virtual platform, participate in activities, contribute resources and get rid of loneliness.

1.3 Stages of This Study

This thesis intends to provide a collaborative approach that can help connect aging people and other people in society by developing community groups with common characteristics. It provides a guideline to explore on-demand distribution to build an online platform based on an aging community that provides open resources and creative platforms for innovators. This platform (virtual community) invites people from all walks of life (including people who are middle-aged and aging) along with manufacturers to build creative results to make full use of the resources of older people and professionals in various fields, to establish a win-win, long-lasting, age-friendly ecosystem.

By pairing the older individuals and younger innovators, the platform incorporates and utilizes their experience and ability, to further design, develop, prototype, manufacture and sell the resulting products. All of the participating stakeholders will receive royalties for their investment of intellectual property.

The following are the objectives of this thesis:

- Depending on the needs of the distributed community, match the right resources to produce products with specific functions and forms.
- Develop a service process that helps older people collaborate with the community and interact with other stakeholders. To provide opportunities for people who are ageing to remain intellectually active in the areas of product development where they had a professional career. The opportunity can have a number of results that can increase the older individuals pleasure

in solving problems, help them reduce loneliness and obtain reward for the investment of time.

- Explore the level and maximum utilization of available capacity of people who are aging throughout the process. The output of their available capacity will be practicing what they have previously done professionally, sharing knowledge and mentoring others to help turn another person's idea (or their own) into a real product and bring a new product to the market.

1.4 Definiton of Terms

- **Age-friendly communities:** Age-friendly communities are committed to improving the physical and social environments that surround older adults to facilitate independence and neighborhood cohesion (Clark & Glicksman, 2012).

- **Active Aging:** Active aging is defined as the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age (WHO, 2002).

- **Business ecosystem:** Moore (1993; 1996a) coined the phrase business environment. It is defined as an economic community built on a foundation of interconnected organizations and persons, the business world's ecosystems. Business ecosystems are open architecture, which means these organizations can be small companies, large corporations,

universities, research centers, public sector organizations and other parties that affect the system (Peltoniemi & Vuori, 2004).

- **Collaborative retirement:** In the community of retirees, people help each other to complete a specific job, and they work together and use the skills that people are good at to achieve a common goal.

- **High-fidelity prototypes:** “A high-fidelity prototype is often made with the same methods as the final product and hence has the same interaction techniques and appearance as the final product but is more expensive and time-consuming to produce than a low-fidelity prototype” (Walker, Takayama, & Landay, 2002, p. 661-662).

- **Low-fidelity prototypes:** “Low fidelity representations, such as sketches, differ from the final product in interaction style, visual appearance, and/or level of detail” (Walker, Takayama, & Landay, 2002, p. 661-662).

- **Naturally Occurring Retirement Community (NORC):** The NORC program model was developed from the idea that many older adults reside in areas that were not planned as senior communities, yet are home to a significant proportion of residents aging in place (Bedney, Josephson, & Goldberg, 2010; Vladeck, 2004).

- **Social connectedness:** Being able to connect with others and a person's sense of belonging can reflect good social ties. Lacking or weak social connections are often associated with feelings of loneliness. People are

more likely to become isolated because they feel a lack of belonging and cannot establish contact with others (Hausknecht et al., 2015).

- **Social innovation:** The process of developing, gaining backing, and putting into practice new solutions to societal issues and needs (Phills, Deigelmeier, & Miller, 2008). The term social innovation, as used here, refers to the generation and implementation of new ideas about how people should organize interpersonal activities, or social interactions, to meet one or more common goals. As with other forms of innovation, the products resulting from social innovation may vary with regard to their breadth and impact (Mumford & Gustafson, 1988).

1.5 Assumptions

In my research, I assume that I can find available resources regarding the middle-aged between the ages of 60 and 75. Although many people who are in this age group have valuable technical resources to contribute, activities of the older individual often become more and more inconvenient with age. Many skill levels are declining or even being lost, but experiential knowledge can be retained. This group of people needs to be pooled and categorized according to the different skills available to individuals, and the quality of availability. This study did not conduct actual user interviews, focus groups, or offline surveys; therefore, it can only be assumed that there are older individual with skills, such

as handwork, wrought iron, textile, woodwork, glass, mechanical engineering, and painting between the ages of 60 and 75.

1.6 Scopes and Limits

When addressing aging, most existing solutions tend to provide services to older people or address interactions between older people. On the issue of aging, the older individuals are often more passive, and the older individual cannot always solve the problem on their own initiative. How to make full use of the resources and refine quality resources of the older individual to promote and solve the loneliness of the older people and reduce the economic cost of aging will be the content of specific research.

The exploration of countries and various regions of the same country show levels of cultural differences. Local knowledge of an area is important to understand the degrees of aging caused by cultural differences. Because of this, it is necessary to analyze the commonalities and possible complementary relationships between the characteristics of different communities and the stakeholders of the event. Analysis of the different disciplines that will be covered in this study will bring about breakthroughs and innovations in solving the problem of aging.

1.7 Procedures and Methods

Step 1: Research

Identifying User Needs of Project

Identifying User Group and User Analysis

User Portraits/Personas

User/designer Journey Map and Touch Point Exploration

Competitive Analysis and Insight – Case Studies

Market Demand

Step 2: Design Concept Development and Refinement

Refinement of the Storyboards

Logo Design

Website Comps Exploration

Wireframing and Website Flowchart

Step 3: Finalization

Interactive Prototype

User Testing

1.8 Anticipated Outcome

The anticipated outcome of this study is an innovative business model based on user and producer that establishes a distributed manufacturing community which emphasizes prototype innovation and customization. Through

this on-demand production model, combining online and offline services, unnecessary intermediate links could be reduced.

- Community production and commercialization: Bring commercial value while helping to solve the aging problem. Provide a platform for organizers to incubate innovative and collaborative projects.
- Culture-Driving Emotion: Respecting and reinforcing cultural values, and the social and environmental contexts of any design project. Provide opportunities for cultural output and physical products.
- Community: Dig deep into background to match complementary resources. Provide people with a community collaborative approach.
- Human-Computer Interaction: Design technology: that may be used in product development.
- Service Design: Provide opportunities for service blueprint, public sector service design, private sector service design.
- Places: Divide the physical and on-line location of community events through different ages and personal interests.
- Labor Resources: In-depth exploration of older people resources to help economic development. Classify of users by age, individual ability, physical location.
- Social Connectedness: Relieve the loneliness of people who are aging.

2 Literature Review

The literature review introduces the areas of social innovation and active aging collaborative innovation, collaborative cities, connectedness, age-friendly and collaborative communities, loneliness, platform-based service innovation and business ecosystem, as well as platform basic services and business information. Since this study is a creative platform to help aging communities solve the problem of loneliness, it will re-organize and utilize the resources of the people who are aging through the concept of social innovation, community, and maximize the activity of the aging population through collaborative innovation.

2.1 Social Innovation and Connectedness

2.1.1 Definition of Social Innovation

A solution can realize the new problems brought about by social changes, and in the process, promote the mutual benefit and connection of resources among various interest classes (James, Kriss, & Dale, 2008). Social innovation is more of an angle or method, reorganizing social issues from the perspective of social innovation (Chaves, 1970).

The commonality among social innovations is that they all originate from the full coordination, reorganization and utilization of existing resources, expecting new ways to achieve socially recognized goals.

2.1.2 Social Innovation in Relation to People Who Are Aging

Successful social innovation community projects include how people create a good social environment. The good social environment in the community allows the older individuals to be respected in the community, to improve the opportunities for the older individuals to participate actively and voluntarily in activities, to maintain the activity of the older individuals in the community, and to make them feel the sense of achievement in achieving self-social values; therefore the community will have strong social cohesion and strong independence (Emlet & Moceri, 2012). At the same time, maximizing independence and promoting civic society cohesion are also the basic needs that age-friendly communities must meet. In order to improve the social environment around the population of people who are growing older and retiring, social innovation helps to solve problems of aging by promoting independence and social cohesion. According to Martens and Keul (2005), interdisciplinary collaborators, designers, manufacturers and organizers are promoting and co-creating social inclusion activities to serve older individuals. Successful project and social innovation occurs at the intersection of Age-friendly social environment, social cohesion and independence, such that the Age-friendly social environment actually includes being valued and respectful as well as staying active incorporated into the lives of people who are aging. See Figure 2.1.

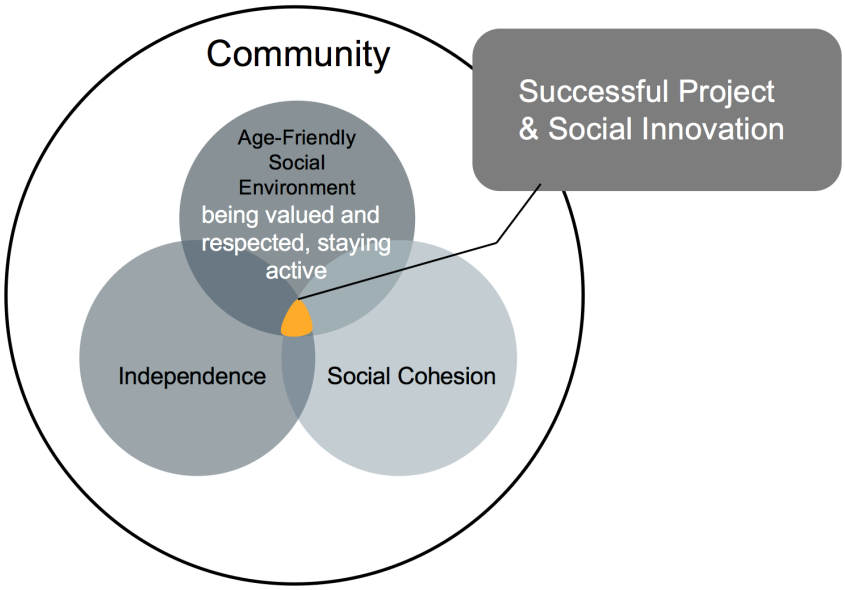


Figure 2.1 Innovation Community Social

2.1.3 Community Organizations and Social Connectedness

Some community organizations serve as vehicles for collective action. They help remove barriers to interaction and give residents a pretext for meeting one another without having to commit to continuing friendship. Community organizations make it possible for residents to work together in a purposeful way and on a continuing basis. The experience of being actively engaged with others is what transforms private individuals into members of a community. They include facilities that bring people together under conditions that are conducive to meeting and interacting. Local facilities (i.e. schools, convenience stores, parks, playgrounds, religious buildings, and civic centers) provide places and opportunities for people to come together. Dependence on these facilities leads to a common interest in their adequacy and the quality of their services (Janowitz & Suttles, 1978; Martens & Keul, 2005, p. 274). At present, many

organizations, volunteers, staff, and managers join the community to help the older individuals, and the participation of the older individuals is in turn considered to affect the accumulation of additional resources. However, these helpers are small in scale, involve few fields, and the autonomy of the older individuals is weak.

2.2 Age-Friendly and Collaborative Communities

2.2.1 Definition of Age-Friendly Communities

A community friendly to older persons can provide opportunities for social participation and promote social linkages for older persons to accommodate their diverse needs and capacities. Age-friendly communities let the older individuals contribute their functional capabilities and perspectives to the community and reflect their capacities and experiences. Older individuals are viewed as leaders rather than recipients of activities and are respected, increasing their opportunity to achieve self-worth. These communities allow the formation of a complementary relationship between social participation and social contributions (Emlet & Moceri, 2012).

2.2.2 Collaborative Cities

A collaborative city is a small-medium scale project in which people work together but each has a division of labor and everyone produces on demand to solve problems such as housing, transportation, pensions, education, food, etc., and often done by ordinary people. This is a way for organizations to participate

in and promote the sustainability of various types of collaboration. These relationships rely on connections with stakeholders to enhance their sustainability through access to critical resources and expertise (Moldavanova & Goerdel, 2017).

Table 1 Guidelines for cities participating in various forms of collaborative innovation

Collaborative Innovation in Cities	Method of Participation	Innovation Outcomes
1. Improvement of everyday activities and living conditions	Support activities by offering tangible and intangible resources, such as tools and knowledge, rather than interfering or steering such activities. Citizens are committed to those activities for their own reasons.	Ideas and knowledge created by citizens and user communities in real-life contexts
2. Creative consumer experiments	Support activities by providing tangible and intangible resources, such as tools and knowledge, but be engaged in the creative activities to practicing new product development, as well as continue to develop their own products entrepreneurially.	Information about the emerging needs and wishes of citizens and customers at the grassroots level, but also as a mechanism to learn novel forms of open collaboration
3. Experimentation and implementation of new technologies	Support the experiments and implementations by offering context, knowledge, and tools.	Validation of new ideas and prototypes of novel technologies
4. Creation or recreation of economic opportunities	Use the city as a platform for creating new ideas, where the plurality of stakeholders, knowledge, and ideas intersect. The city is a boundless source of ideas, but it is also a method of collaboration between and with systems and communities.	New business opportunities

Collaboration and innovation with community retirees can alleviate the loneliness caused by aging in the collaborative cities whether any such social connection can be explained by resource-adjusted connections. According to Ambrey et al (2017), the process of collaboration in social innovation design increases the level of connectedness for older individuals who may experience loneliness after retirement due to a relative dearth of social connectedness.

2.2.3 Loneliness, Active Aging and Social Connectedness

Loneliness – With the declining birth rate, many countries are now facing significant changes in age structure. As the total population of older people increases as well as the proportion of this age group in the overall population, loneliness often appears in this group (Toepoel, 2013). Loneliness also means people's self-feelings, and whether people feel isolated through their experience (Ryerson, 2017). Loneliness is a subjective psychological feeling of the quantity and quality of social interaction. The formation of loneliness is not only related to individual psychological and physiological factors, but also closely related to family members and social environmental factors. From the perspective of social relations, loneliness is a subjective state of social isolation, which is a psychological discomfort caused by the actual lack of social relations. Therefore, improving the quality of life of the aging population to increase their satisfaction is an important aspect of active aging (Kemperman et al., 2019).

To conclude, personal and household socio-demographics, individual mobility characteristics, social network and participation, and qualities of the

living environment are thought to impact feelings of loneliness and isolation (Kemperman et al., 2019). For the conceptual model of these factors, see Figure 2.2.

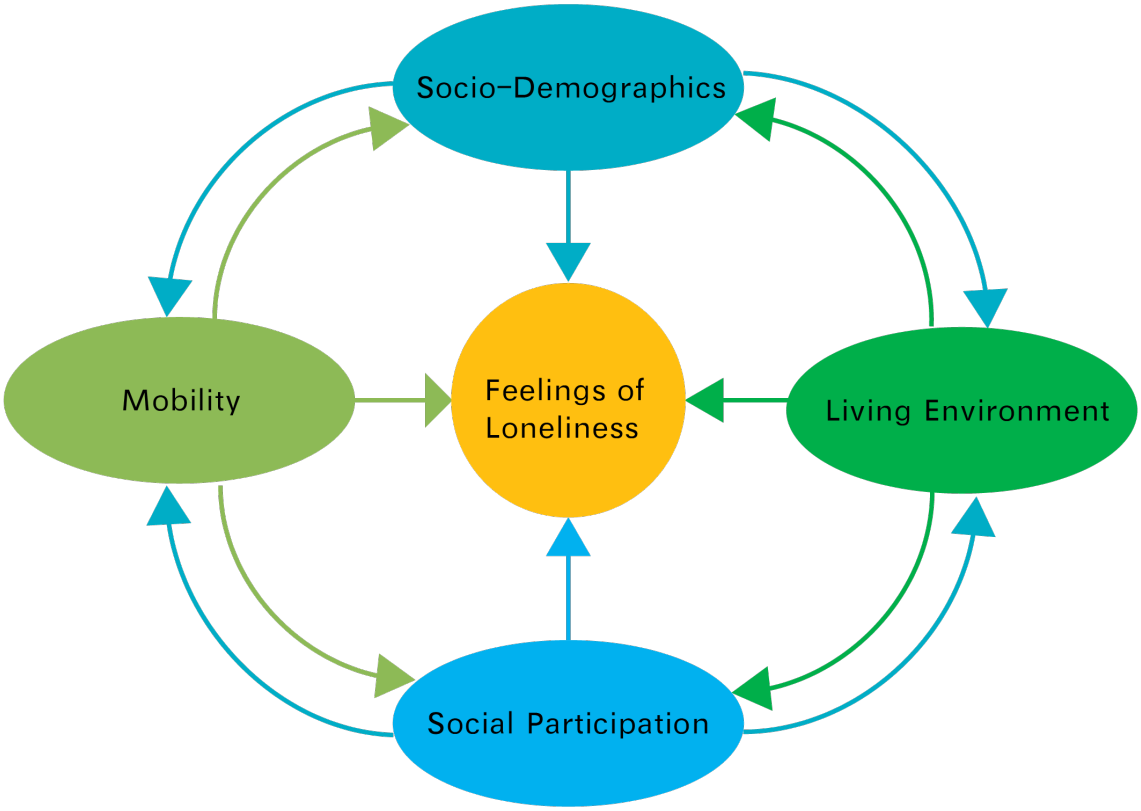


Figure 2.2 Conceptual model: Factors influencing loneliness in the aging population.

Active aging – Active aging is defined as the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age (World Health Organization, 2002, p. 12). Active aging includes engaging in economic or social production activities, the desire and capability of older individuals to participate in physical activities into daily routines (Michael, Green, & Farquhar, 2006). One of the factors that allow people to achieve “active aging”, social support, is very important as fewer social

activities or support will lead to social isolation, loneliness, physical and mental health and well-being decline (Teater, 2016).

The word “active” mentioned in this paper is defined as “continuing participation in social, economic, cultural, spiritual and civic affairs, not just the ability to be physically active or to participate in the labor force. Older people who retire from work and those who are ill or live with disabilities can remain active contributors to their families, peers, communities and nations” (World Health Organization, 2002, p. 12).

People often attach negative and passive stereotypes to older people. This view further explains the importance of enhancing the positive, focusing on leadership and participation. It is necessary to distinguish between activities and negative concepts under the influence of active aging. In this concept, people should actively participate and not be restricted by any rules. To ensure the protection of the aging population, dignity and care is necessary (Foster & Walker, 2015).

Social Connectedness – Being able to connect with others and a person’s sense of belonging can reflect good social ties. Lack of social connections are often associated with feelings of loneliness. People are more likely to become isolated because they feel a lack of belonging and cannot establish contact with others (Hausknecht et al., 2015). Strong social connections are crucial to our physical and mental health. These connections may disappear when vulnerable older individuals experience setbacks or life shifts. Studies have shown that

long-term isolation and loneliness have a negative impact on health. Although it is harmful to people of any age, it is especially so for older individuals (Ryerson, 2017).

As new cities develop, existing cities grow, and the overall population ages, the emergence of aging friendly communities provide security through social connections (Plouffe & Kalache, 2010). The rapid development of cities and people's age have contributed to the emergence of aging communities, and aging-friendly communities have increased opportunities for participation and security to encourage active aging in order to improve the quality of life of people as they age (Emlet & Moceri, 2012). Friendly communities change the existing living environment of the older adult by improving their happiness and quality of life through internal social connections and daily social activities among people (World Health Organization, 2007). Personal social communication, capacity, daily activities and local society combine to form a positive, friendly environmental relationship. This social structure attribute can improve the negative impact of environmental pressure, labor weakening, and emotional depression brought by the aging of the community. The intersection of social ties and active aging in friendly communities can reflect the activities of older individuals and their behavior within communities, thus helping to increase awareness of the loneliness of older individuals (Yen et al., 2012).

2.3 Platform-Based Service Innovation and Business Ecosystem

2.3.1 Platform-Based Innovation

Innovation platforms can be simply defined as using external and internal thinking as input of innovative content, and combining internal and external market paths to obtain the results of innovative products (Internal, 2003)

An innovation platform is defined as a method to systematically attract, promote and coordinate innovation with external participants, aiming to develop solutions for the problems and needs of platform owners (Ojasalo & Kauppinen, 2016). The platform is the basis of complementary products and services. On this basis, different stakeholders can combine resources to create value. Some resources may be internal, permanently owned by the company; some can be shared; some may come from external ecosystems. Value mainly comes from the dynamic connection between these resources and participants (Yablonsky, 2018).

Innovation platforms can help user communities to participate on a larger scale and provide visible ideas so as to create opportunities for bottom-up innovation. The more citizens influence results, the greater their interest in participation. Although citizens may not consider participating in innovative business opportunities, they are usually very interested in developing and updating their urban living environment, which inspires them to contribute to the innovation process (Yablonsky, 2018).

2.3.2 Design-Platform Model Based on Service Design

This study builds a creative platform model based on the concept and method of service design. In design thinking, service design is a method of organizing and connecting the early ideas. The service innovation platform is a concept that focuses on resource integration efficiency. However, in order to adequately address the difficulties of an aging society, boosting prosocial conduct among the people who are aging should come first, before the issue of resource integration efficiency. The goal of this study is to figure out how social innovation services work as a platform for service exchange in order to encourage older people to be more prosocial (Ho & Shirahada). Finally, the use of personas, user/designer journey map, touch points and storyboards will help to build an innovation design platform. The new platform service system will improve the satisfaction and emotional appeal of the aging population, as well as provide mentoring (Hu et al., 2019). In the process of service design, it helps to find the touch points of the platform and the experience value of customers, and provides the basis for platform design and the direction of updating iteration. This paper later discusses how service design contributes to and provides methodological support for building a platform system in social innovation (Kuure, Jylkäs, & Miettinen, 2019).

Nowadays, with the rapid development of the service economy, more and more industries begin to apply service design, for example as an upgraded service. While in the field of academia the definition of service design is different

from that of industry, common points can be found from the following aspects: (1) It will develop the design thinking process, which involves collecting and sharing ideas to seek alternatives; (2) In-depth analysis of the relationship between stakeholders and encouragement for stakeholders to intervene with each other; (3) Through the use of comprehensive research methods, the tangible and intangible services of customer experience are visualized to improve customer experience value (Jeon, 2019).

Participatory design in service design is an activity product to create shared value, because it covers the collaborations with experts and stakeholders who exceed the active participation of users. Normally, this is the most advanced form of user problem solving, because once the user is satisfied with the unilateral service, they will continue to try to solve the problem, and further try to find the essence of the problem by analyzing the internal movement (Jeon, 2019).

2.3.3 Business Ecosystem

Moore (1993; 1996a) put forward the concept of business ecosystem. The business definition of business ecosystem mainly emphasizes the relationship between economic entities and the facts that they rely on. He regards the business ecosystem as a kind of framework to understand how the economic community operates. He called the Economic Community a business ecosystem. It is generally believed that a new concept is needed to build strategies in interrelated business and formulate strategies (Anggraeni, Den

Hartigh, & Zegveld, 2007). As a clear definition, the business ecosystem is a dynamic structure composed of interconnected organizational groups (Peltoniemi & Vuori, 2004).

Business ecosystems are open architecture, which means these organizations can be small companies, large corporations, universities, research centers, public sector organizations and other parties that affect the system (Peltoniemi & Vuori, 2004). People can access and use resources from open platform resources to develop innovative products and enhance system interactivity and existing capabilities to jointly create innovative business model systems to integrate resources among stakeholders, increase cooperation opportunities and make full use of existing resources (Lee, Moon, & Yin, 2020).

In summary, the innovative design platform is a form of social innovation – a service platform provided to innovators for collaborative creation based on the concept of social innovation. This study wants to create a social innovation service platform around the active participation of the middle age and senior population to solve the loneliness of the people who are aging. First of all, we need to understand the concept of social innovation and the relationship between age-friendly society and the middle agers and seniors. Secondly, understanding collaborative creation can help the aging population to solve the loneliness they can experience. Finally, the project will explain how the service design will be used in social innovation and determine the basic service design methods and business model definition.

3 Guideline for Designing a Creative Online Platform for an Aging Society

3.1 Overview

This chapter will provide designers a process and guidance on how to design platform products, as well as the factors that need to be considered in each process. This guidance is based on research cases discussed in Chapter 4 and puts forward the important factors of this guidance from the analysis of the existing platform observation by introducing some basic information of product research (such as user research content, user touch point, product function, scenarios, framework of platform, etc.) to tell people how to use these methods in research to obtain useful results.

Figure 3.1 presents a flow chart of the overall product design guideline, including the considerations needed in each step of the process.

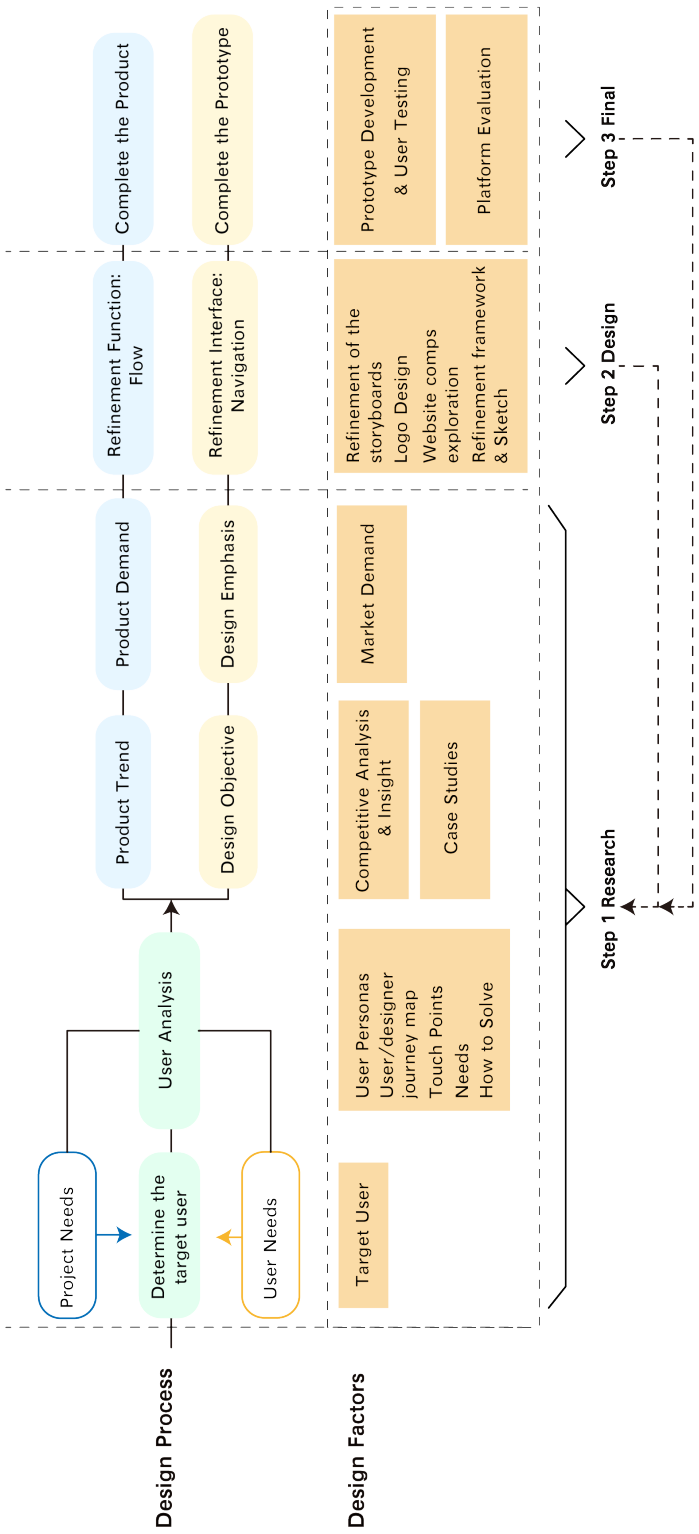


Figure 3.1 Guideline for Creative Platform within the Design Process

3.2 Step 1: Research

Design Process represents the elements of the overall process. The Design Factors represent activity and actions that the design will be taken in this step.

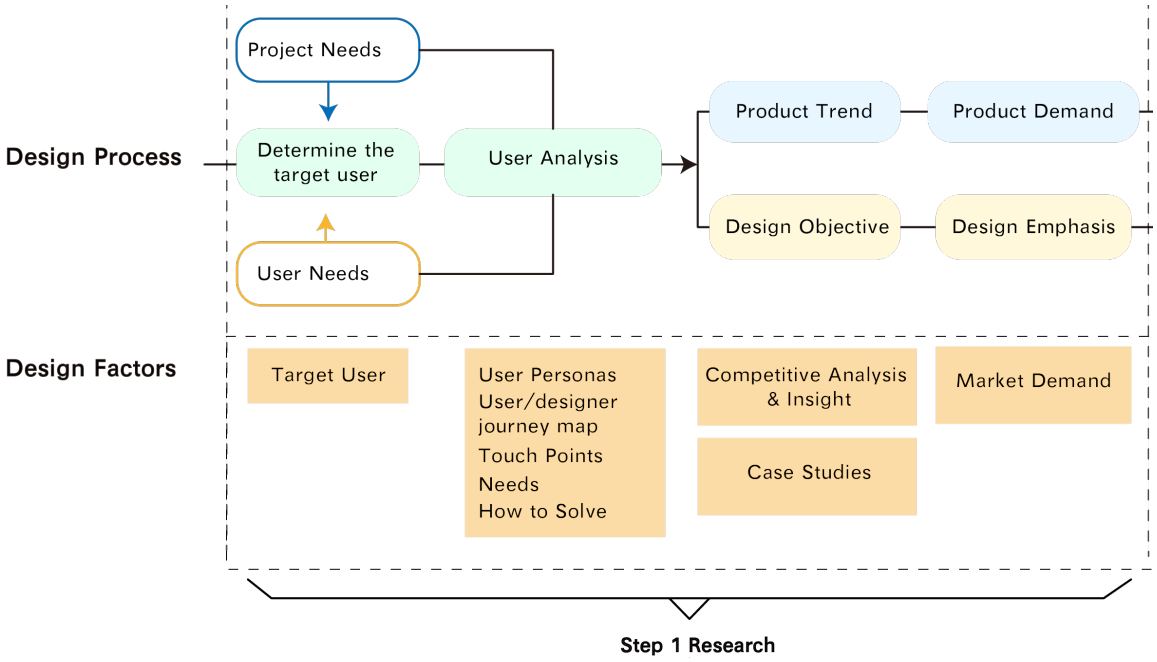


Figure 3.2 Step 1 of the Guideline - Research

3.2.1 Identifying User Needs of Project

At the start of the design of an online platform, designers should consider their own core target groups and the core value of the project. In this step, designers need to think about the design, content and requirements of the project, the goal, and the problems to be solved (see Figure 3.2). The preliminary research process of platform design is inspired by the design research method of the first step of the circular design process (Figure 3.3). The results and

definitions of each design process of the first step of the platform design research need to be determined by the factors considered in each process. Designers conduct research according to the design thinking factors corresponding to each goal in the design process.

The Circular Design Process shown in Figure 3.3 is adapted from Walter Schaer (1977). It presents a series of actions or steps taken to achieve a specific purpose. This process allows the designer to examine each step by using visuals and written descriptions to evaluate them and recommends that the designer circle back and reevaluate their design based on new information. The first step will be the research phase, research-insight and opportunity (identifying problems and needs), as can be seen in Figure 3.3. Starting from the definition of product demand, information is collected through field research or the Internet, and the required information about products is analyzed as comprehensively as possible to prepare for the subsequent development of products. The designer determines whether 2D and 3D product research is needed according to the product itself designed by the designer.

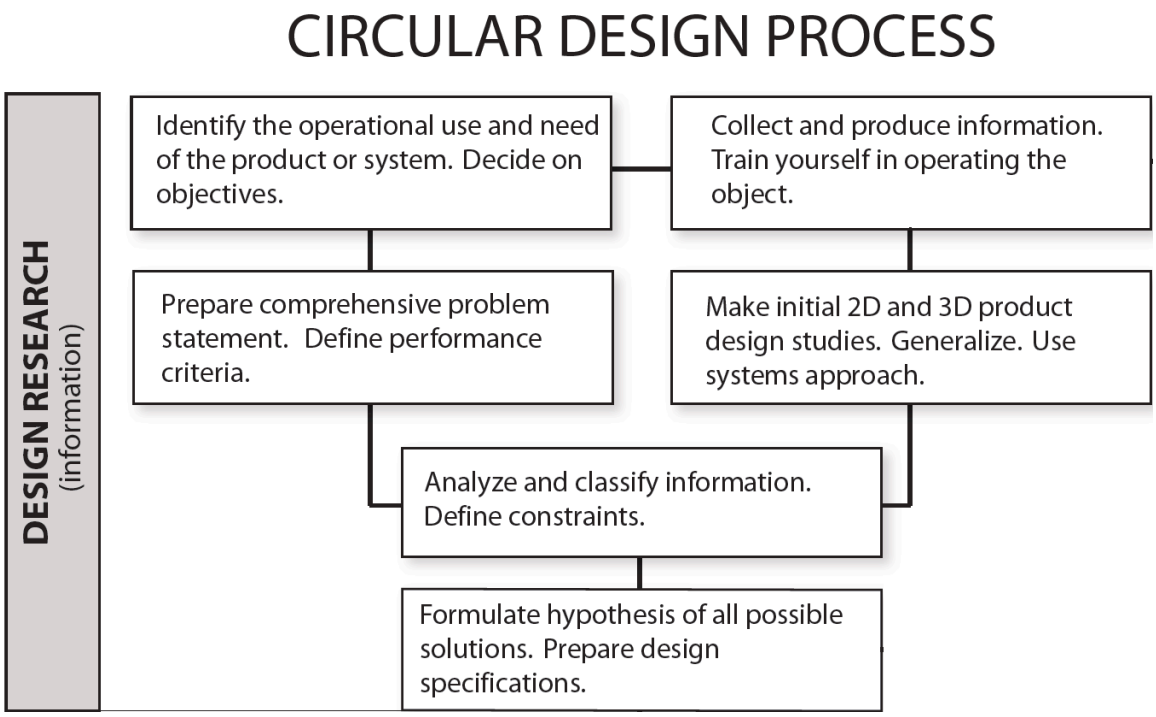


Figure 3.3 The Circular Design Process

3.2.2 Identifying User Group and User Analysis

To identify the user group, a designer should define the relationship between the target user and stakeholders involved in the project and determine the group of user relationships. In the next section, research and design will be conducted around the defined user group. All platform services will be based on target users that include multiple kinds of stakeholders (e.g. manufacturers, craftsmen and consumers provide service innovation through co-creation), and also occurs in many other stakeholders, including the government, social actors and self-organizing economic actors.

In this research phase, in order to better understand the user, designers should create a fine, complete user portrait/persona by analyzing and classifying

information about the user. They should use user/designer journey map and touch point exploration to analyze the user's behavior before and after using the product and the pain points behind the behavior in order to understand the user's use scenarios and habits. Based on the behavior analysis, the market judgment of the product can be more accurate, and the product designers can accurately evaluate the user behavior for function transformation, product revision, and the impact of a new function of the product and obtain more accurate evaluation results.

3.2.3 User Portraits/Personas

It is recommended to gather valuable information in the user analysis phase and fully understand users. For example, "What are their perceptions and attitudes about this?" "What do users really want?" "How did they accomplish this?" "What are the scenarios in which they use our products/services?" Data collection for users from attitude to behavior to some detail features is crucial to building a Persona with reference values. There are many ways to gather data, including actually interviewing users. Before gathering data, we should first clarify the scope of our research and specifically mine relevant information on real users/customers. It is recommended that the designer converge this information into specific user personas that describe who this platform will be designed for.

User personas will show the basic information, motivation and behavior of typical users applicable to products. “The purpose of personas is to create

reliable and realistic representations of your key audience segments for reference" (Affairs, 2013). These representations are usual artificial fictional roles, but include real and potential customer needs, goals, and behavior patterns. Creating user personas can help designers to provide a reference value in determining product functions, which is conducive to insight into the user's needs and attention to user's behavioral habits.

3.2.4 User/Designer Journey Map and Touch Point Exploration

From the perspective of users, the story of interaction between users and products is intuitively constructed, and the behaviors of users before, during and after use are recorded in the way of narrative stories. The experience of using products or receiving services is displayed in the way of visual graphics. Designers find the user pain points and needs throughout the journey, and the process help designers determine the function of the product, and finally extract the optimization points and design opportunities in the product or service. At the same time, the process lets the product (service) team understand users, allowing them from the user point of view to consider and design products. The presentation of the whole process is the user journey map.

The map considers the user's and designer's journey across three timeframes; 1) Before, 2) During, and 3) After. It illustrates and evaluates their experiences in the following ways:

- User Behavior – Record the user's behavior in the use of products and services on the customer travel chart.

- User Demand – Summarize the key behaviors that users need to perform each action
- User Behavioral Process – Detail the whole process from how users access the product/service to the final completion of the use of product/service behavior records.
- User Touch Point – Designers can observe or discover the influencing factors that users encounter when using the products/services through user narration.
- User Expectation and Feeling – From the touch points the influencing factors and user behavior, use visualization to show the good or bad user experience.
- Designer Pain Points – In this step for the designer, the designer through the visualization of user behavior of touch point finds the pain point conclusion.

When designing a platform solution, the designer can use this template to record the user's behavior before and after using the product and map the stage of the situation faced by the user by defining the situation (see Figure 3.4).

Figure 3.4 User Journey Map

3.2.5 Competitive Analysis and Insight – Case Studies

An in-depth evaluation of 3-10 online product platforms is recommended. These platforms should be chosen by the designer utilizing the criteria that the designer determines to be useful. For example, the designer may choose to evaluate websites that are primarily for social or professional connections and news, for portfolios of work or travel locations, for selling products, and other reasons.

The case studies are intended to allow evaluation of what these different kinds of platforms are doing. These specific platforms should be chosen because knowledge regarding them is valuable to the new platform that the designers are going to build. From the analysis, designers can learn what they are doing and what they do well before developing a unique platform. Within the design implementation in Chapter 4, the following platforms are discussed:

- Facebook: A Social Platform that has groups and individual members. The basic functions have a market and group, can be used for sharing information, trading goods, and looking for common hobby organizations and activities. This is a service provided by the platform for organizing online to offline community activities. This is a good opportunity to improve people's contact and bring social innovation.
- Linkedin: This platform includes business people making business connections.
- Airbnb: This service is essentially an online platform through which ordinary people can rent their own space as an accommodation to tourists, usually involving private rooms or the entire apartment or unique accommodation (Guttentag, 2015). Not only are there affordable prices, Airbnb' s accommodations also bring benefits to the community market. Some hosts like to interact, learn and share with other hosts outside of the Airbnb platform, so Airbnb facilitates this (Reinhold & Dolnicar, 2018).
- Quirky: This online program brings brands and manufacturers together to help inventors turn their ideas into life by licensing them. “Quirky is an invention platform that connects inventors with companies that specialized in a specific product category” (Quirky,

2021) This provides a platform for dreamers, makers and inventors to inspire each other.

- Coroflot: Creatives can publish their own works or ideas to this creative pool, and the platform provides an opportunity to display and exchange products. The platform helps creative professionals establish business connections with recruitment companies.
- Behance: Similar to Coroflot, Behance is an online community website for designers to display and communicate. Designers around the world publish works on it. People can collect, organize and share image-based content (promoting original works created by users themselves), discover creative works and establish contact with other people with similar interests.
- Stitch: This platform was specifically designed for people over 50 as a social interactive place for this specific age group.
- KiwiCo: Compared with Quirky, each of KiwiCo's products is designed by professionals, "Everything we produce is designed by experts and tested by kids" (KiwiCo, 2021). Creative products on the platform are designed by designers and then sold. Products vary by age group. The platform uses creative questions to inspire children.

3.2.5.1 Platform Business Model

The designer should compare these product's functions through the measurement standards of platforms. The Platform Canvas tool provides the designer a way to visualize the business model of an online platform. This is available through Creative Commons licensing at www.businessmodelgeneration.com (see Figure 3.5 and Figure 3.6). Using the platform canvas to identify the business model of each Case Study, designers do a visual analysis of information organization and how a user moves around on these platforms.

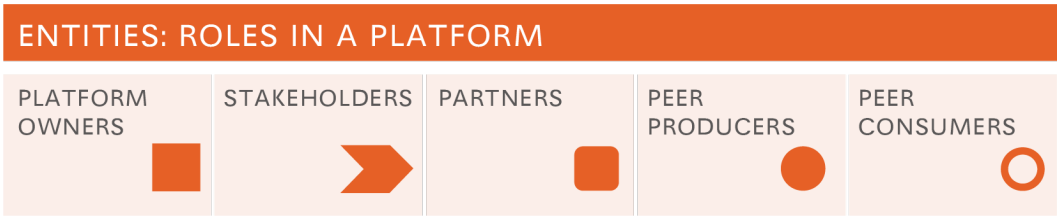
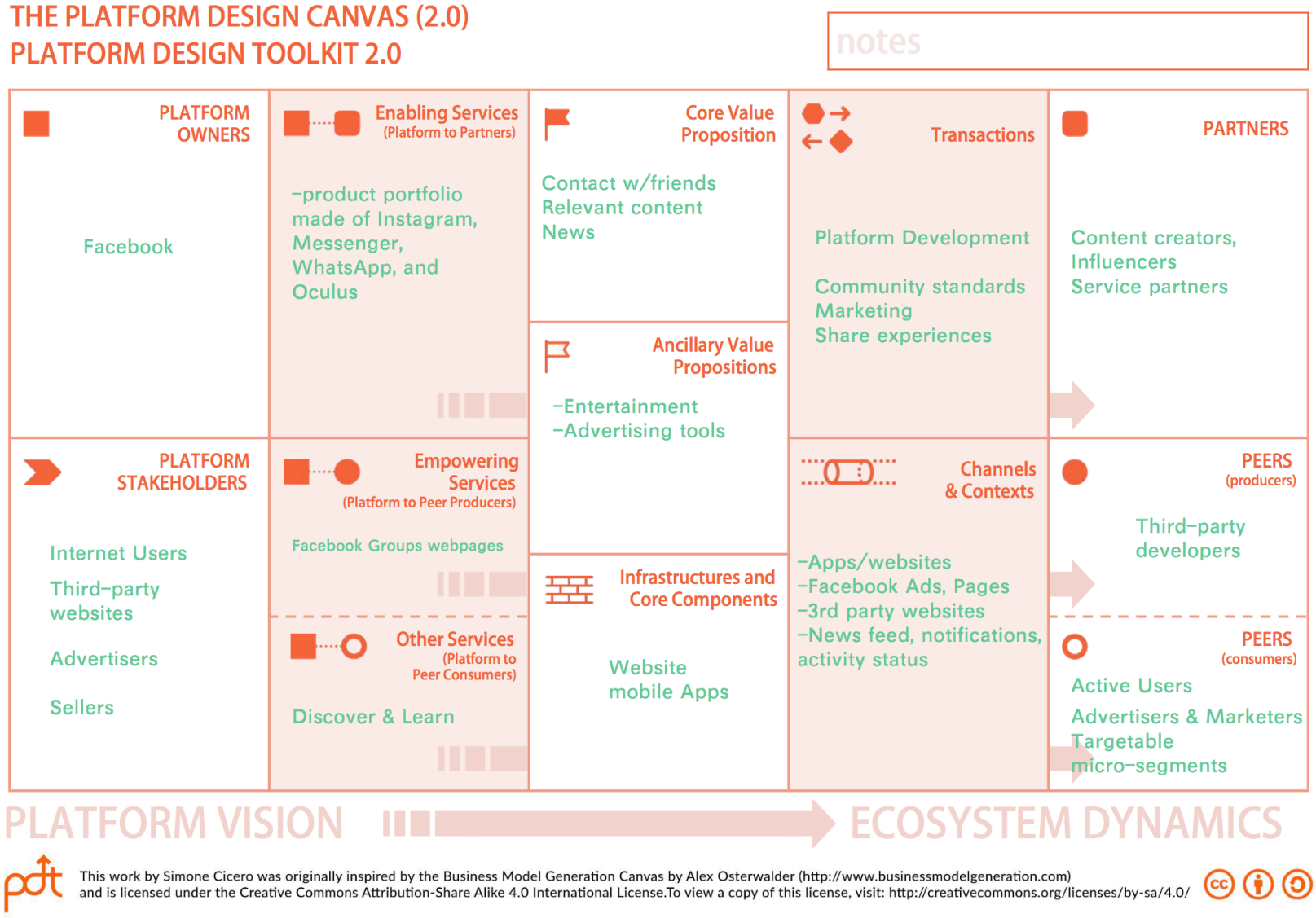


Figure 3.5 Key Roles of The Platform Design Model

Figure 3.6 Facebook Business Platform Using the Canvas



Through these comparisons, designers continuously collect information on similarities and differences with competing products to determine the relative advantages and disadvantages of the products that need to be designed, and further develop the corresponding core business. Analysis and evaluation results for designers determine the core function of the product as a reference, so that product orientation is more evidence-based, in order to find business opportunities and so as to find relevant factors to promote the core function.

3.2.5.2 Website Visual Composition

The Gestalt is a psychological interpretation philosophy. These concepts can be used by web designers to decide the placement, size, color, and form of user interface (UI) components, resulting in more intuitive and satisfying experiences for the users (Kapllani & Elmimouni, 2020). Designers can use the Gestalt princlples in UI design to analyze the visual perceptual effects (which visual elements are most effective in any given situation) of websites by analyzing and comparing existing platform cases. Analyzing these examples can help designers make more confident and effective visual choices for their own design.

This guideline proposes using a visualization template to compare how effectively the series of existing platforms chosen by the designer use the Gestalt Principles in their user interface design. The template should include the following areas:

- **Organization of Information** – List the aesthetic evaluation criteria of the gestalt in the left side column, and list the existing website brands to be compared in the first row horizontally at the top of the table. Critically review whether the website reflects a good visual effect under each principle through the evaluation criteria. If finding the website page corresponds to the basic principles, make a page screenshot and paste into the table as a reference for evaluation. If there is no effect or the effect is not good, it can be marked missing. See Figure 3.8.
- **Gestalt Principles** – These principles have been extensively embraced for enhancing software user interfaces. A designer may increase the overall clarity of a software solution because "visual interfaces often rely heavily on association between graphical elements, such as the placement of a label next to a checkbox, or the grouping of items in a list" (MacNamara, 2017); these are the principles recommended to evaluate the website. See Figure 3.8.
    - Principle of Diversifiable Design – It indicates that diversified interface design styles are reflected due to different contents of platform websites. The designer should evaluate how well the various content areas have diversified design to help them stand out as different from other information and from each other.

- Principle of Figure Ground – The human eye is able to separate objects on different planes of focus. We know which elements are placed in the foreground and which ones are in the background intuitively. Evaluate how well the website design use this graphic technique to highlight the important information to be expressed. Do more important objects or information stand out from the background better than general information?
- Principle of Common Region – Objects placed within the same region are perceived to be in the same group. How well have the designers summarized information with some common characteristic or functionality when evaluating website design? How well does the visual connection of different contents on the website make them appear related and part of the same group?
- Principle of Skeuomorphism – Skeuomorphism is a term most often used in graphical user interface design to describe interface objects that mimic their real-world counterparts in how they appear and/or how the user can interact with them (IDF). Designers should evaluate the simulation levels of website interface objects through the object form in the real world. For example, the icon for

folders on the interface is usually an imitative object in the real world, allowing users to quickly identify their uses during interaction.

- Navigation Controls Styles – To make content on websites easy to discover, navigation is an important part of web site design. Different navigation styles have been devised and used on real-life web pages, with the majority of them having sound rationales in terms of intuitiveness and usability (Burrell & Sodan, 2006). The designer should evaluate how to reasonably design the position of the navigation controls according to the content and layout of the website.
- Branding (colors) – The theme color of the website brand reflects a main tone on the whole. The main color will help people produce some emotions or feelings. The main color is the color that you want the audience to remember when they think about your brand. The brand logo is generally consistent with the main tone. The designer should evaluate how well the color theme reflects the branding.
- Branding (visuals) – The overall visual effect of the website is very important, from the page layout design, layout, pictures and color matching, web content to show the visual effect

of a website. You can summarize some websites with the same visual effects from these evaluation criteria as a reference for your latest website.

- **Website Analysis** – Using the radar chart (consistency, coherence, info placement, text visualization, color) for a web page basic evaluation project is simple but useful visual support (see Figure 3.7). The five vertices of the pentagon radar chart point to five web page basic evaluation items, from the center point of the radar chart to the most peripheral pentagon point (five points), increasing in turn indicates the degree from bad (at the center) to good items. According to each feature, the platform vision is evaluated, and the point connections marked at different stages in five vertices are finally presented as an area range. The larger the area is on the radar chart, the better the comprehensive effect of the website is (see Figure 3.7), Figure 3.8 shows a visual comparison of the Case Studies from the implementation of the guideline discussed in Chapter 4 using the Gestalt principles along with website analysis in the radar chart. The last line in this figure shows the evaluation results of each platform. The maximum area of Coroflot is evaluated as a platform case with better comprehensive visual effect by the largest the area on the radar map.

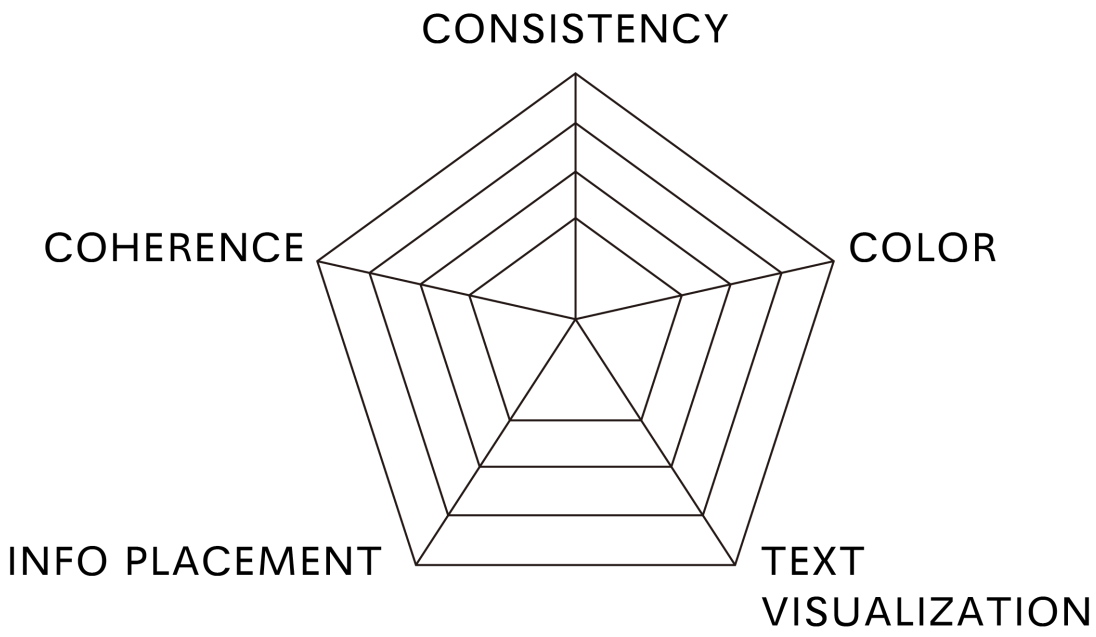


Figure 3.7 Website analysis radar chart.

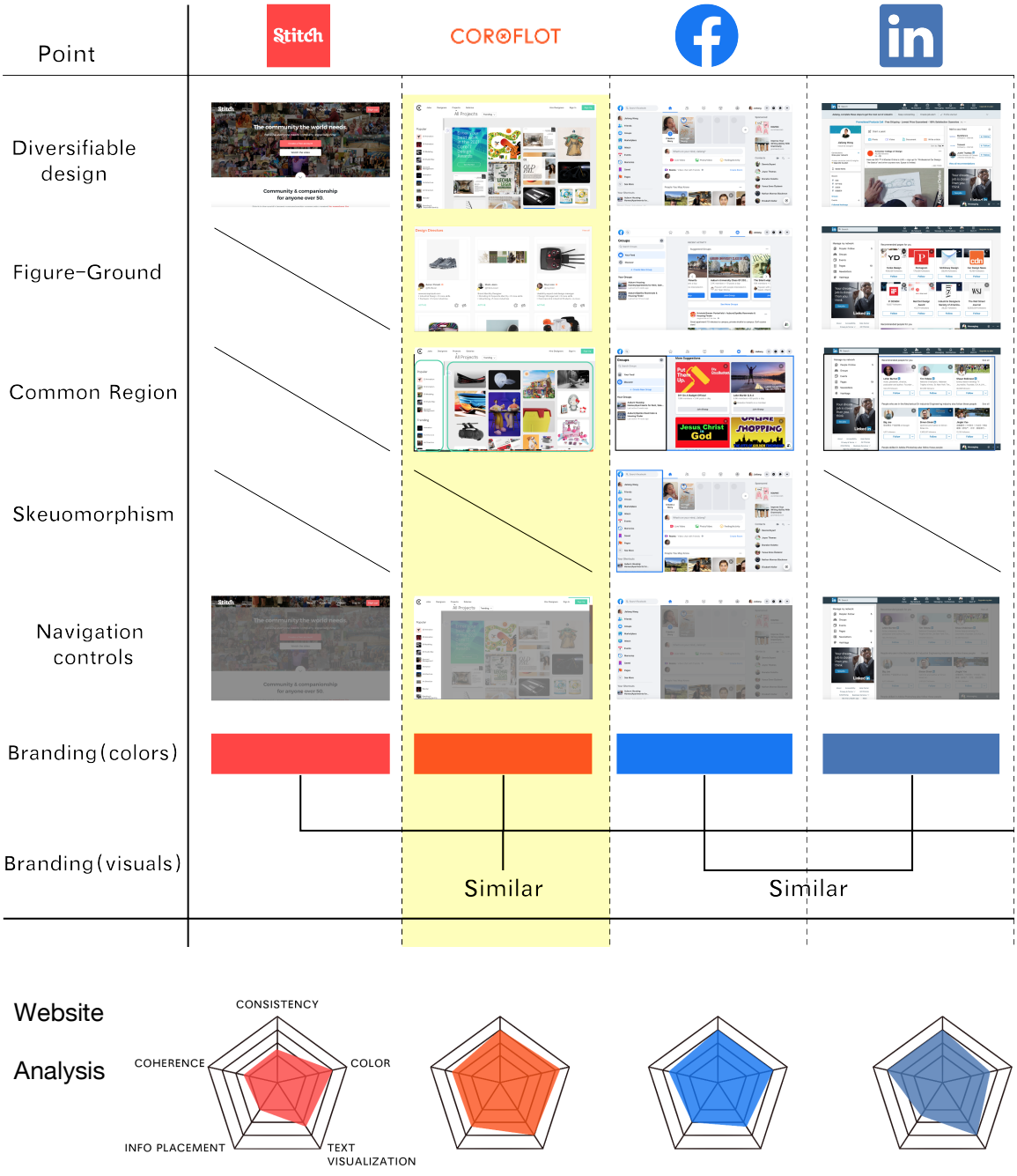


Figure 3.8 Visual comparison of Case Studies using the Gestalt principles, website analysis and radar chart.

- **Visual Analysis of Interface Information** – The designer should complete a visual analysis of interface information categories,

including basic functions and information, main information and additional information. Designers may utilize this information to categorize, evaluate, and sort out the complicated interface design layout of major social network platforms (see Figure 3.9).

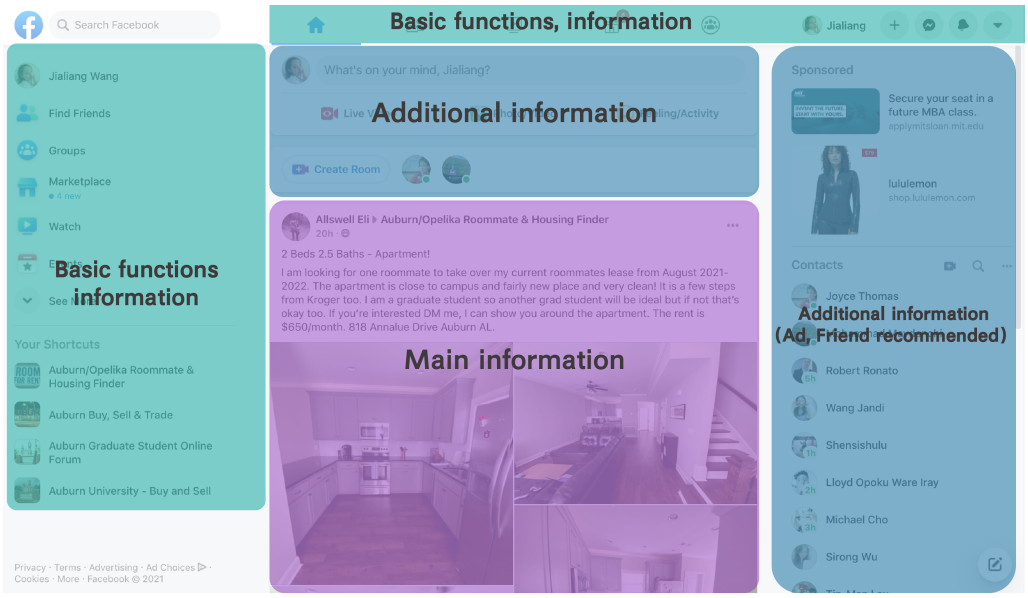


Figure 3.9 Visual analysis of how information is delivered on a website

3.2.6 Market Demand

Demand is the first step in making products. Meeting the market demand for opportunities means a good product. Clear market demand and mining opportunities make the product more advantageous; and only by tapping enough profit through demand to make the product beneficial, can designers continue to innovate. To begin, it is vital to comprehend the fundamental needs of the online display form, as well as the product's category and scope of use, and to ensure that it is compatible with PC, APP, and iPad. The designer should go to the application market to investigate whether the existing platform has a

mobile application design. As a reference, designers should consider whether the platform to be designed needs also to be applicable to mobile devices.

3.3 Step 2: Design Concept Development and Refinement

Figure 3. illustrates Step 2 in this design guideline and breaks this step down into two factors - the design process and design factors.

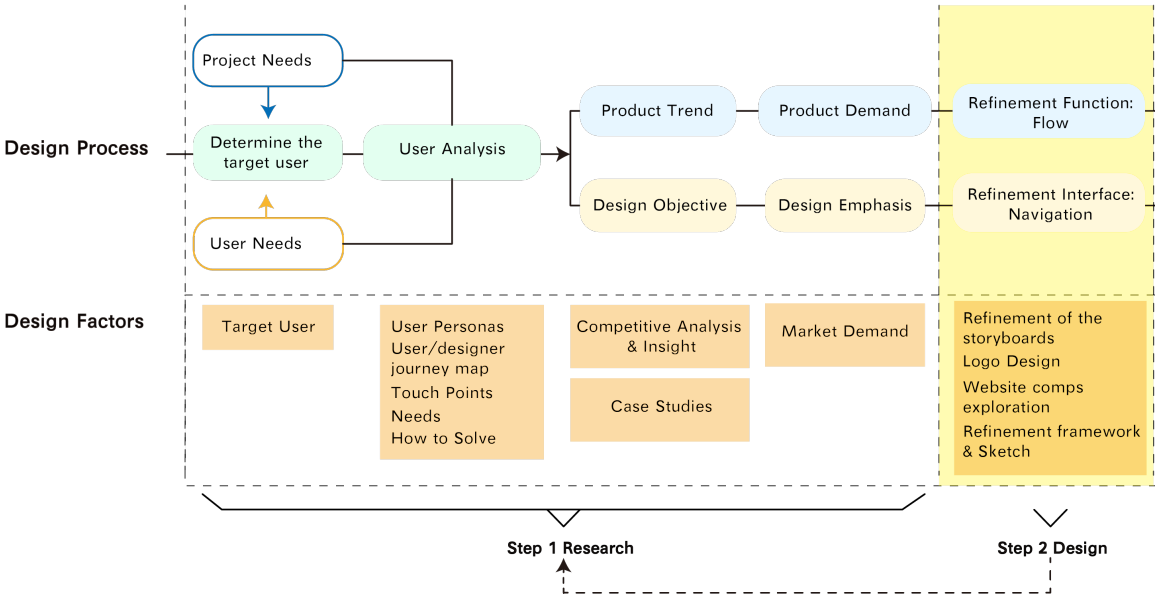


Figure 3.10 Step 2 of the Guideline - Design Concept Development and Refinement

3.3.1 Refinement of the Storyboards

The traditional use of storyboard and story development is to evaluate and select strategies, explore future possibilities, and collect future-oriented data. The only correct view of the future and the implied strategic response measures are not determined by storyboard planning, but contain uncertainty and put forward various views in the uncertain future (do Prado Leite et al., 2000). “There are several styles in which scenarios are built. such as textual

narrative, storyboards, video mock-ups and written prototypes" (do Prado Leite, 2000, p. 2). The storyboard is used to keep track of the objectives and issues that need to be addressed, the connection between roles and tasks, from why to enter the site to what roles desire to visit the site to do what duties. The storyboard is used to depict what occurs when users interact. This will aid designers in determining what information and functionality the website should have in order to enhance the user experience throughout the tale.

3.3.2 Logo Design

After the storyboard has been laid out, factors such as a visual effect of colors, logo design and interface can be discussed. The establishment of a brand is an important factor in building a platform. It is well known that a logo is a symbol indicating the characteristics of things. They are widely used in various ways to promote simple, intuitive, convenient identification and memory. The brand and the image symbol convey brand information, expresses the brand connotation, as well as transmitting an emotion to the user.

The characteristics of logos on the website are concise, significant and high recognition, which can reflect the theme of the platform. This includes enterprise name, enterprise domain, enterprise culture, enterprise spirit, enterprise goal and so on. When designing a platform logo, designers can use keywords to define the style of the logo, and then simplify and visualize these complex things. In addition, the logo also plays a leading and extensive role in the overall visual effect of the web page.

3.3.3 Website Comps Exploration

In this step, the designer is incorporating all of the case study research and user understanding from the previous steps, Designers and development teams (typically members of the team) began developing a website strategy before beginning to construct their own website. This phase and those that follow are a collaborative effort between them all.

The visual effect of a website page first defines the theme color. Any home page should have its style and form determined according to the content of the theme, because only the perfect unity of form and content can achieve the ideal publicity effect. The most important choice of website style is to match the nature of its own industry, and different design styles are suitable for different industries. For example, the homepage style of government departments should be more solemn, and the contrast should not be too prominent in color selection, while the entertainment industry can be bright and lively. According to this guideline, it is recommended that the style of the homepage of the cultural and educational department should be elegant and generous, while the business homepage should be relatively versatile so that the public can enjoy it. The designers should explore commonly used design styles in existing platforms (see Figure 3.10). The following four styles are recommended based on current market trends and are based on styles collected for the project implementation of this guideline. This includes nature

with light colors (2 versions), nature with saturated colors, and photo background.

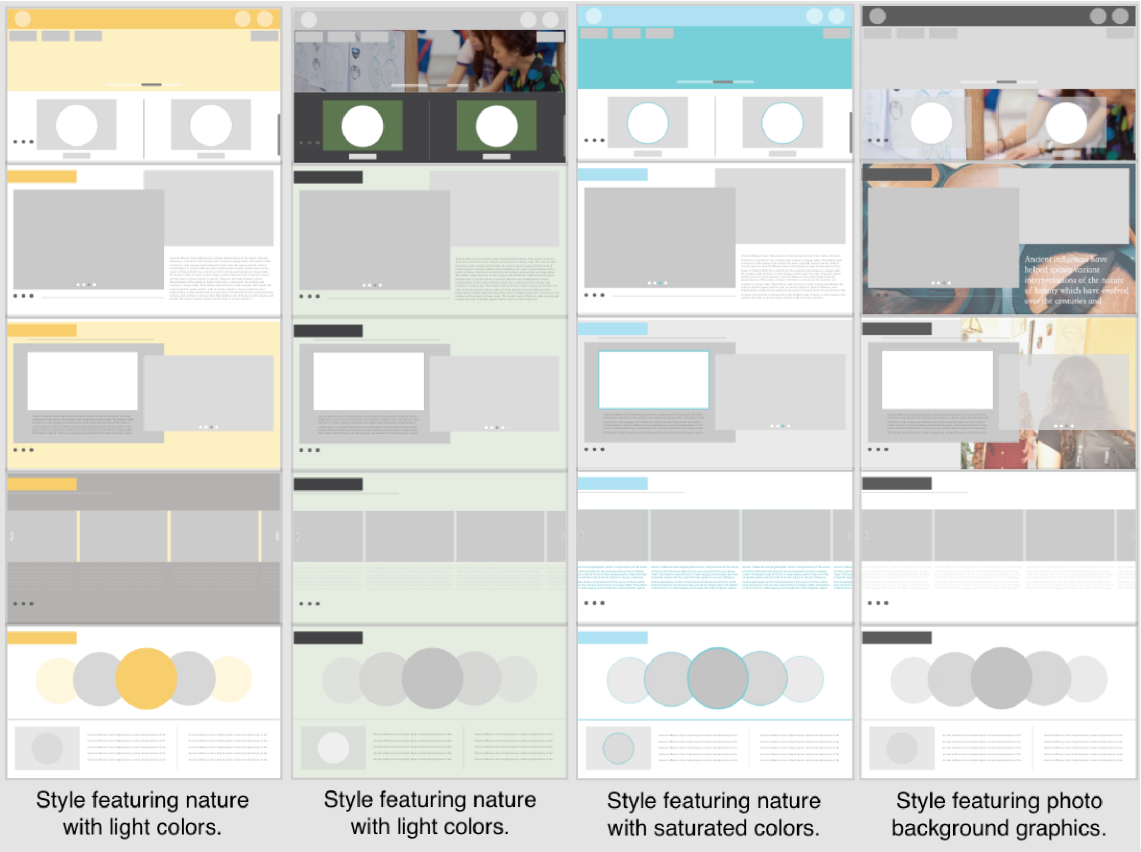


Figure 3.10 Four types of website combination exploration

3.3.4 Wireframing & Website Flowchart

The designer continues to do his or own research in this next step. The wireframe is a two-dimensional illustration of the page interface, which focuses on space allocation and priority ordering of content, functionalities available and intended behaviors (Affairs, 2013). It is a page or screen layout that helps sort out the information needed on each page and is based on assigning layouts to complex interfaces. It demonstrates what elements will exist on a specific page

or screen and can be seen as a page framework. It does not include any color, style or graphics, because the designers should be focused on understanding the function, prioritizing the location of key elements and how users will interact. The website Fuzzy Math (https://fuzzymath.com/) shows a good overview of what a wireframe might look like and how to understand the various elements and their importance. An excerpt of that illustration is shown in Figure 3.11.

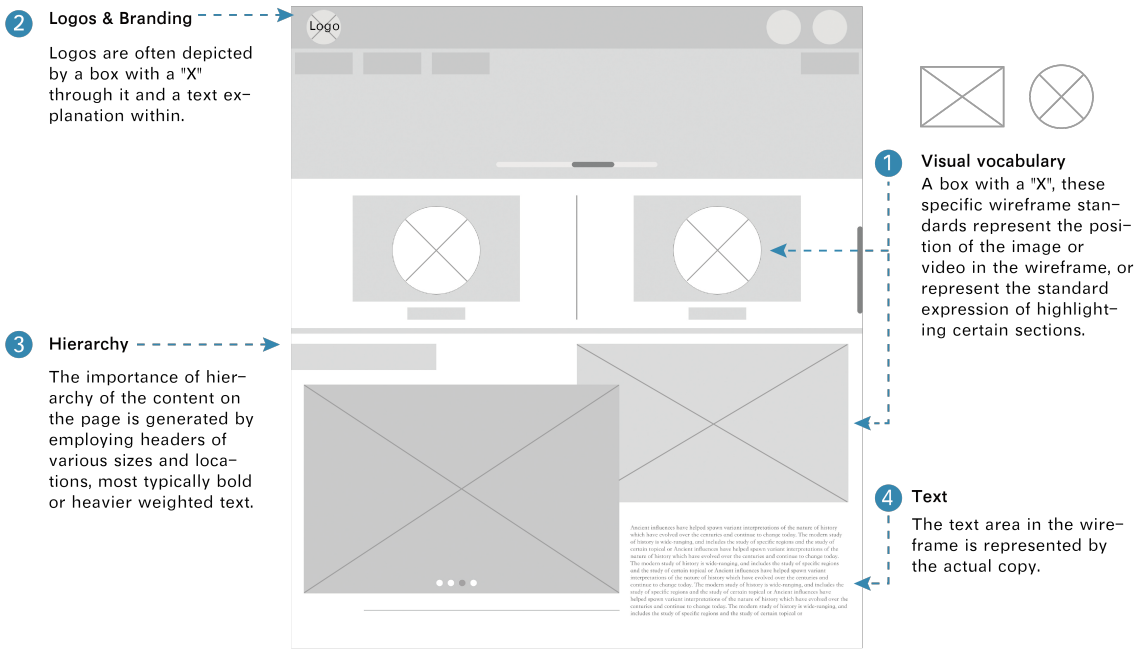


Figure 3.11 A typical page wireframe diagram analysis

Wireframe diagrams are used in the initial design process. In order to quickly change the initial design draft and obtain feedback, the wireframe diagram can realize the function of rapidly presenting the page, finding problems and saving modification time. It can highlight feasibility problems, and designers tend to measure the availability of design throughout the development process (from wireframes to prototype to final deliverables) instead of changing the final

model with a large number of visual elements. By eliminating color, image and other details, the wireframes focus on the main navigation of the website, content elements and the structure required for the best user experience. Since wireframes are two-dimensional, they are not often used to represent dynamic interactions.

Types of Wireframes – The types of wireframe are divided into low fidelity and high-fidelity wireframe prototypes in terms of wireframe production or functionality level. Low fidelity wireframes are usually a simple and rapid way to form a mockup, including the most basic content and visual effects, usually static (non-interactive), and tend to be drawn paper sketches. Although a high-fidelity wireframe takes more time, it has more details than low-fidelity wireframes, and is even more specific about specific items, sizes, and any information related to interaction on each page.

To help with the part of the design process, the designer can refer to these examples: Figure 3.12 and Figure 3.13..

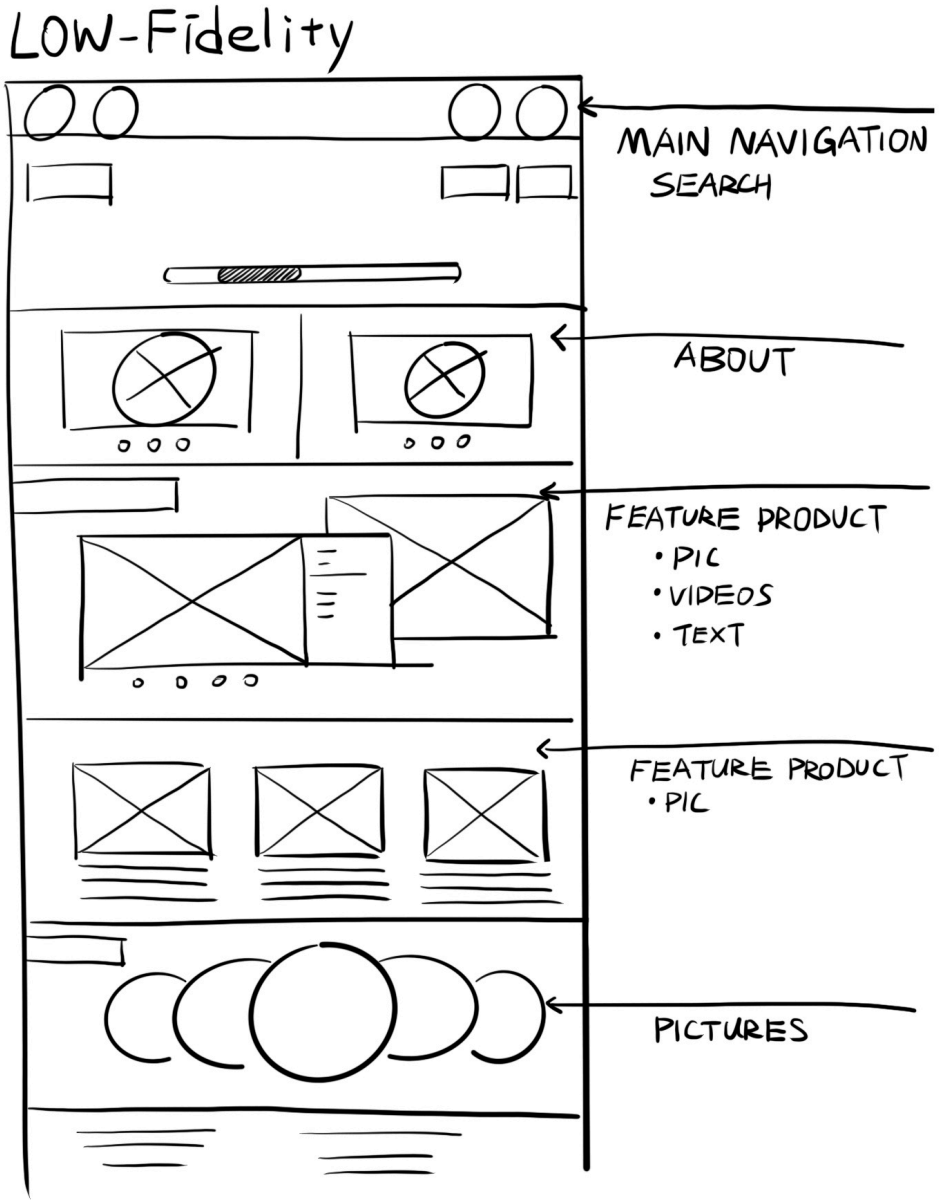


Figure 3.12 Low-fidelity wireframe prototypes

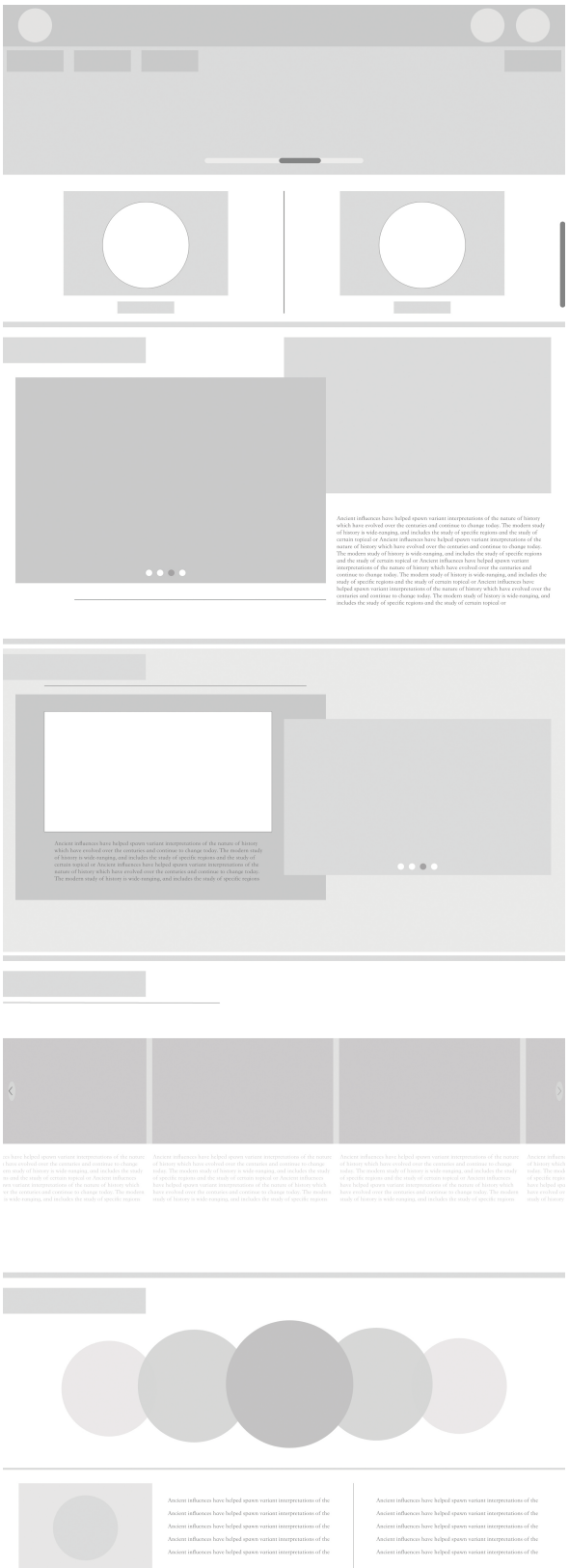


Figure 3.13 High-fidelity wireframe prototypes

Website Flowchart – A flowchart is constructed using pages of the website and the jump relationships that allow the user to move between them (Figure 3.15). It is composed of thumbnails of pages, action points and connecting lines. The page thumbnail only needs to clearly show where the user clicks on the page. In the flowchart construction process, two pages are linked by lines that illustrate the jump process (page to which it will jump) until all pages are sorted out. After determining the wireframe diagram and page composition, the website flowchart will describe the steps to complete the task of building the website.

There are a variety of resources that a designer can access to help with this portion of their design process, including wix.com, lucidchart.com, and miro.com to name a few. Designers can also use other software such as PowerPoint or Adobe Illustrator, or even draw it by hand.

Figure 3.14 is an illustration of one method of creating a website flowchart.

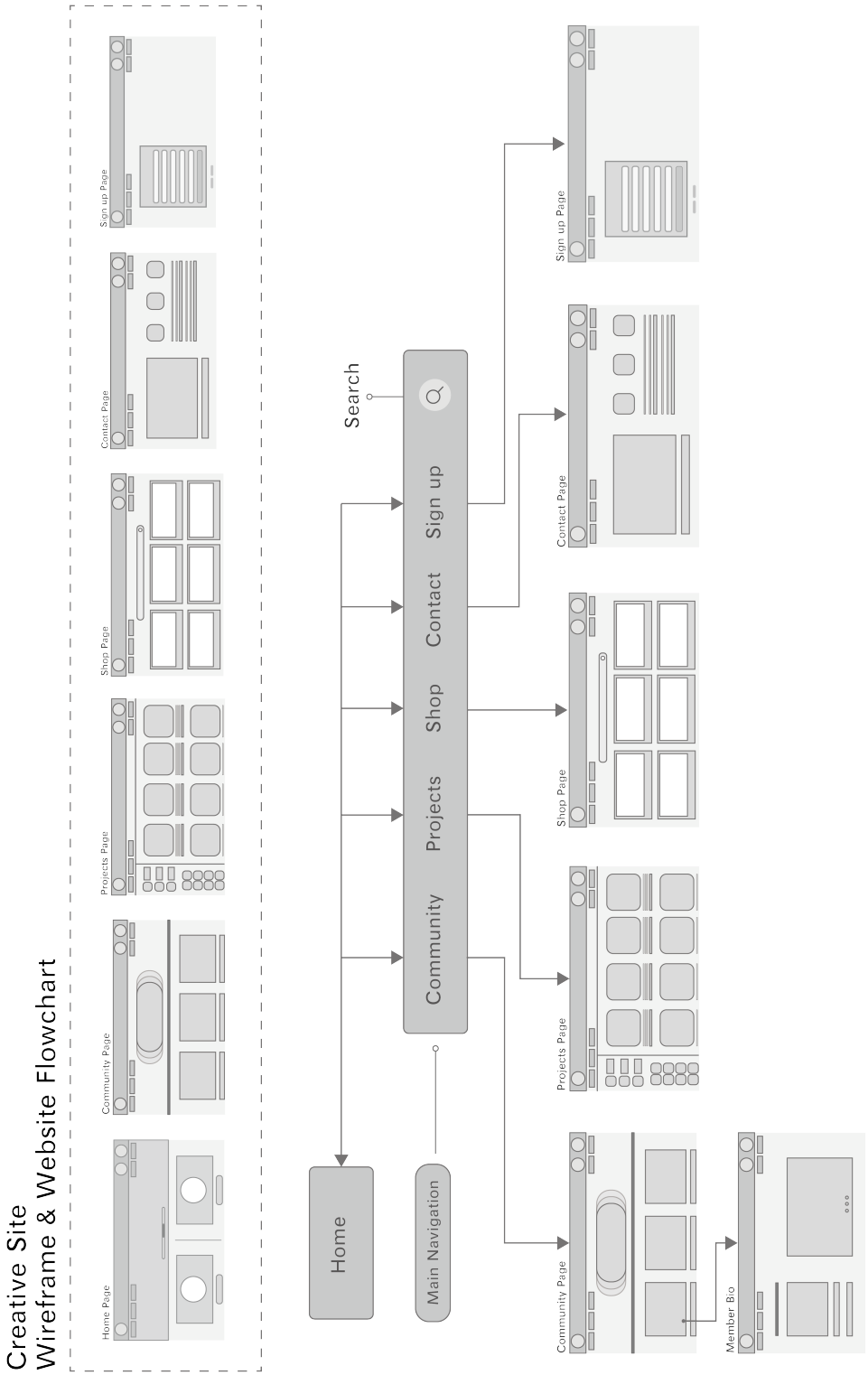


Figure 3.14 Website Flowchart

3.4 Step 3: Finalization

Figure 3.15 illustrates Step 3 in this design guideline and shows the finalization of the product in the third step design process - results of prototype development and test evaluation of design factors.

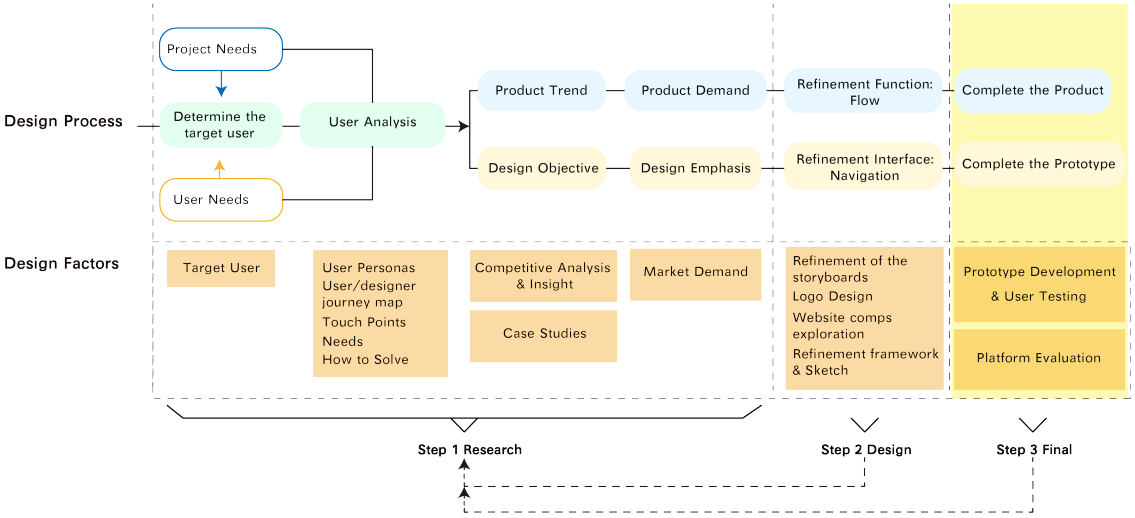


Figure 3.15 Step 3 of the Guideline - Finalization

3.4.1 Interactive Prototype

The prototype of this step will be more specific, and quality needs to meet interactive requirements for user testing. The product will update iteratively according to the market demand and user feedback in the use stage, so there is no final version of the product prototype, which is more used for testing and iterative reference. The quality of the prototype needs to be closer to the final online product. After the previous steps, prototype production can be a more efficient and accurate completion of static compilation or wireframe diagram of interactive prototype transformation.

There are some uncertain factors in the prototype. After all, its purpose is to quickly publish products in the market and seize the market. Therefore, the functions on each page are not fully considered. The prototype is used to do user testing, find problems and solve problems.

Interactive prototype design software such as Adobe XD, Sketch, Axure and MockingBot can be used to realize the dynamic interaction of page jump.

3.4.2 User Testing

The success of new internet platforms depends on users testing the interactive prototype. It is necessary to test and plan the product prototype diagram with the team in the ideal period and let the team members record the key issues and improvement suggestions in the test in order to prepare for the product’s functional iteration. Before starting the test, designers need to know the basic information about the user and introduce the test purpose and process to the user. Designers should provide users with tasks consistent with actual usage storyboard and let users perform these tasks in sequence. The tester observes and records the user's description of the problems in order to later address them. Figure 3.16 shows the design team and users doing user testing.

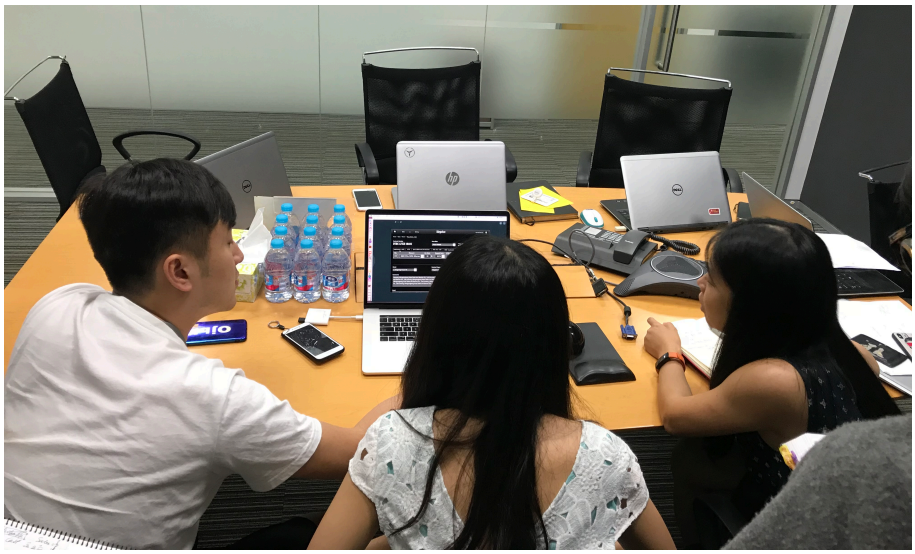


Figure 3.16 User Testing: First from left: Design team designer. Middle: user. Right one: The recorder of the design team

3.5 Summary

In summary, a guideline for factors that need to be considered in creating an online platform product are introduced from the perspective of designers. A platform product also needs the important link of program development beyond the typical designer's skills. In this guideline, only the design factors (problem definition, interface and interaction design) that designers mainly consider are explained. The designer 's work will run through the whole production process, and they will communicate with programmer engineers in the later stage with wireframe diagram, low-fidelity or high-fidelity prototype. In the end, it will eventually be a product created by a team.

4 Implementation - a Creative Platform to Help Aging Communities Solve the Problem of Loneliness

To build a distributed network based on an aging community that provides open resources and creative platform for innovators, this platform invites people from all walks of life including manufacturers and people who have retired from practicing new product development who would like to mentor young professionals and continue to develop their own products entrepreneurially. Virtual communities in innovation platforms are used for product design and development, brand cooperation and other offline community activities of stakeholders through the resources provided by participants. The potential older individual core resources in the community promote the rational allocation and reuse of resources in the community. The process of older individual's contribution behavior promotes solving the problems related to community aging (Tsai & Bagozzi, 2014).

4.1 Application of Step 1: Design Research

4.1.1 Identifying User Demands and Needs of Project

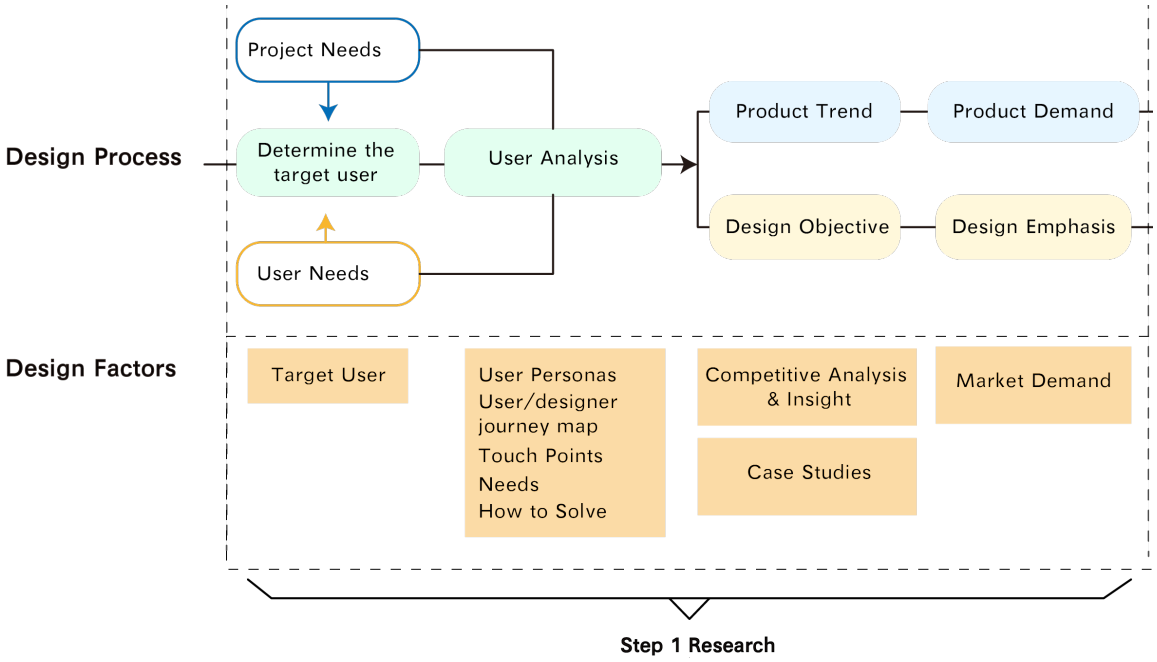


Figure 4.1 Application – Step 1 of the Guideline - Research

In the context of aging, the older adult or retirees often feel lonely because of the reduction of participation in social activities. Retirees need higher social participation, while they still have the capability to utilize their knowledge. In this project, it is first determined to help the older adult solve the problem of loneliness. The target users will be those who have a certain ability and have retired from the development of new products, hoping to mentor young professionals and continue to develop their own products.

4.1.2 User Personas

This website will also face many different types of user groups for people who want to receive mentoring and those who are willing provide resources and mentoring. When it comes to people who want guidance, the user here may be for youth roles, college students and young or early professionals. These people will be students at school or creative innovators in the social network. The other half of the population is those who are willing to share knowledge with others to provide guidance. This study sets this kind of population as middle agers and seniors group that is capable of continuing to develop their own business.

Example Persona Andrew represents one of several personas that were used in the development of this platform. He is in his 60s and retired. He likes woodworking. However, unfortunately, children are not around, so due to the lack of companions he feels lonely. It becomes more and more difficult to find suitable activities in his daily life.

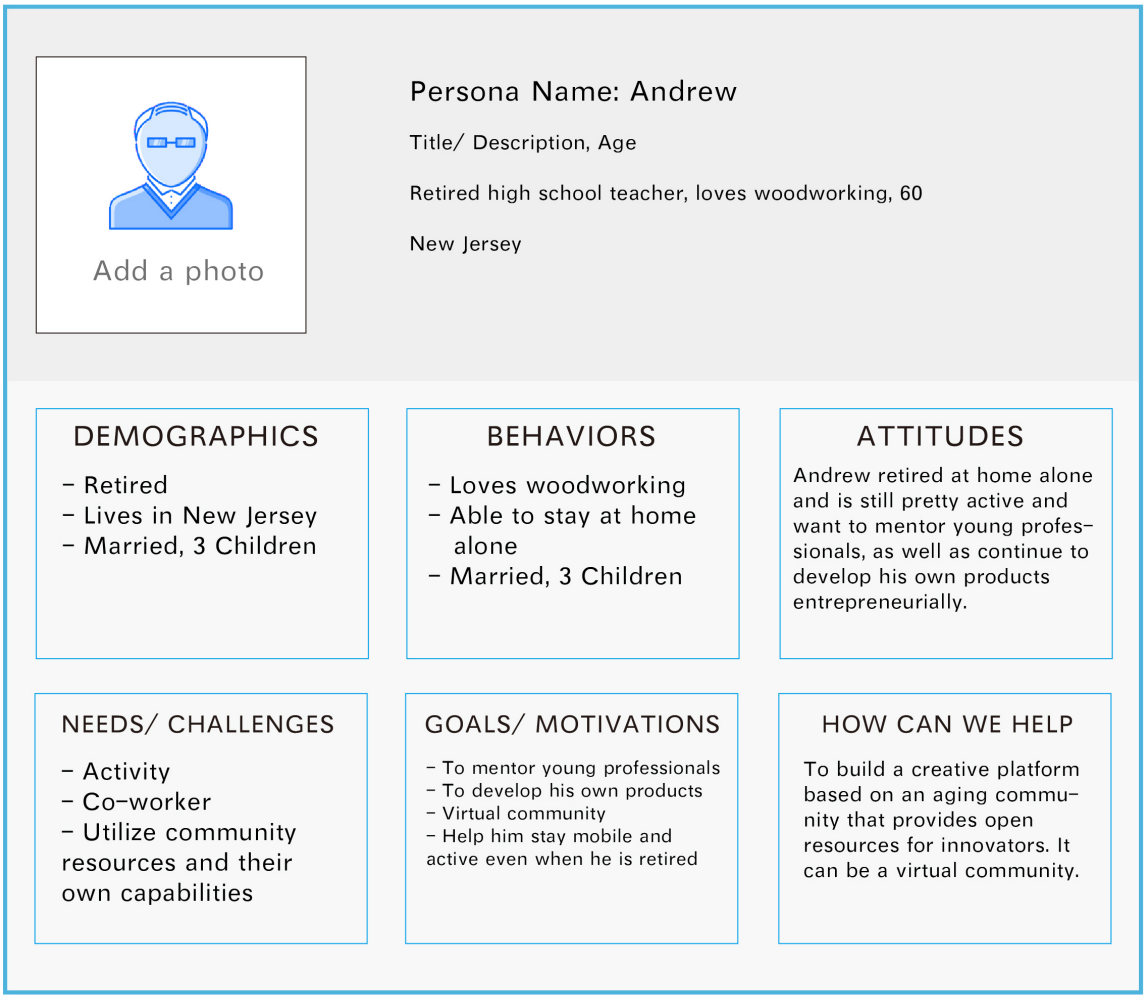


Figure 4.2 A Typical Persona Developed

4.1.3 User/Designer Journey Map and Touch Point Exploration

First of all, Andrew wanted to find the creative inspiration to make a new woodwork product through a platform. So, he entered the platform to search for relevant information, and found existing work that can be co-created or others. However, he found that the existing work lacked some cross-industry cooperation, which limited his creative thinking. He continued to find cooperation partners on the platform and reached a cooperative consensus to produce together. During the cooperative production, more off online interaction

occurs, but the platform lacks the links between stakeholders. Finally, he entered a platform to sell product. Figure 4.3 is an illustration created using the guideline of Andrew's journey before, during and after his exploration.

Andrew is looking for a platform that can provide opportunities for collaboration, help achieve resource sharing, and sell products. Currently there are a series of typical platforms that Andrew might engage with to satisfy his needs for his creative inspiration. These include:

- Facebook – personal connections and Marketplace selling. It can help people find groups with the same interest on the platform and organize related activities in the same community.
- Stitch – personal connections in age specific retired community. Only middle agers and seniors can share resources and interact with each other on this platform to help the aging population in the community find their own groups. It also helps the aging community to resolve issues of loneliness.
- Quirky and KiwiCo – design, manufacturing, and selling. These websites can help people improve design to manufacturing. Participants can find ideas, cooperate in the process, and finally sell products on the platform.
- Coroflot or Behance – online portfolios of design work. Here you can look for inspiration and cooperation opportunities while showing your ideas for attention.

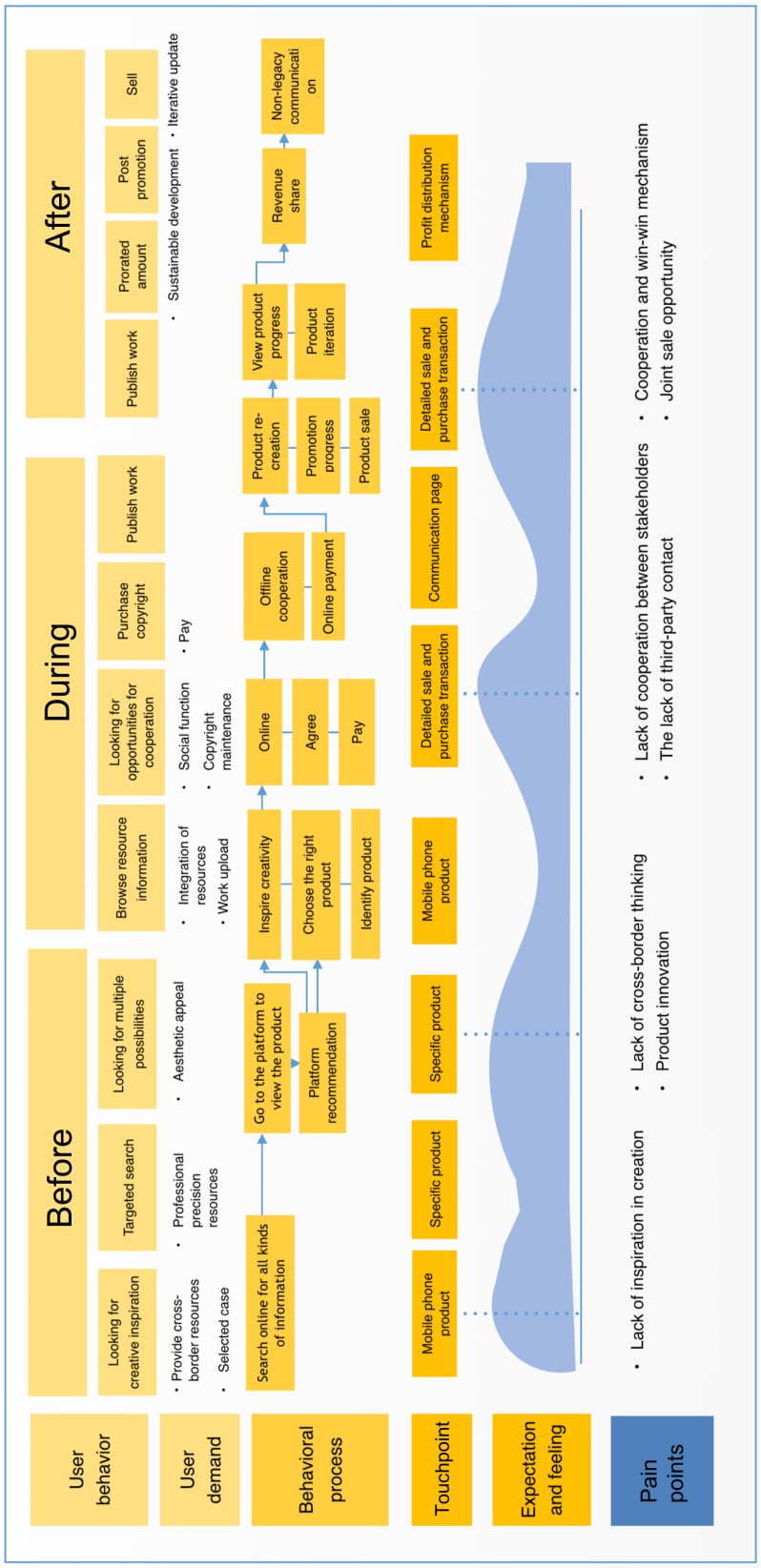


Figure 4.3 Customer Journey Map Using Creative Platform

4.1.4 Competitive Analysis and Insight – Case Studies

Eight examples (Facebook, Linkedin, Airbnb, Stitch, Quirky, Coroflot, Behance, KiwiCo) of successful online platform-based innovation are examined and analyzed in this implementation of the guidelines. These examples were chosen to illustrate platform-based service innovation, creative platform ecosystems and business ecosystems relevant to this design implementation.

To get the best results, all platforms were evaluated with each recommendation in the guideline; however, in this section only one evaluation for each platform is illustrated.

Illustrations from each of these online platform pages will show the most representative pages that fully demonstrate the features of the platform, such as user homepage, news feed engagement with other users, community events and activities, and selling platform.

Different websites have different design styles when performing the same function. In turn, the interface corresponding to all the basic functions of the website is classified, and it is found that the functional areas of Facebook and LinkedIn are similar. There is a similar design pattern between Stitch, Coroflot and Airbnb. According to the radar chart of website analysis in Chapter three, the Coroflot composite index is the highest.

The Platform Design Canvas (2.0) in the Platform Design Toolkit 2.0 (Boundaryless SRL, 2021) has also been used to analyze the internal operation of platforms and ecosystems in some of these specific cases. Based on a

platform-driven strategies and key elements (see Figure 3.5) of the platform design models, analysis provides understanding of what innovative platforms are and how they operate. The Platform Design Canvas must be grasped before comprehending platform design. This is because it is based on the ‘Business Model Canvas' (Osterwalder & Pigneur, 2010) to visually portray how different parts of the platform are interconnected. The Platform Design Canvas is quite useful and simple to use. This analysis will determine the stakeholders and highlight crucial aspects of their business models that may not be immediately apparent to platform users, but which will be important in developing a guideline to assist other designers in developing new platforms.

4.1.4.1 Facebook

www.Facebook.com

Facebook is an open social media software that provides basic social networking services. Facebook enables people to connect, share, discover and communicate with each other on mobile devices and personal computers, giving people a community and a closer contact with the world (Caers et al., 2013). People use Facebook to keep in touch with friends and family, discover what is happening in the world, and share and express what they think is important (see Figure 4.4). Users will obtain information about status updates and other activities (joining the group or becoming fans of things they like) from their friends. Users can organize offline activities by contacting communities through interested groups. Figure 4.4 captures a moment in time of how

Facebook shows the user homage and friends. and Figure 4.5 shows the study to understand Facebook business platform using the Platform Design Canvas (2.0).

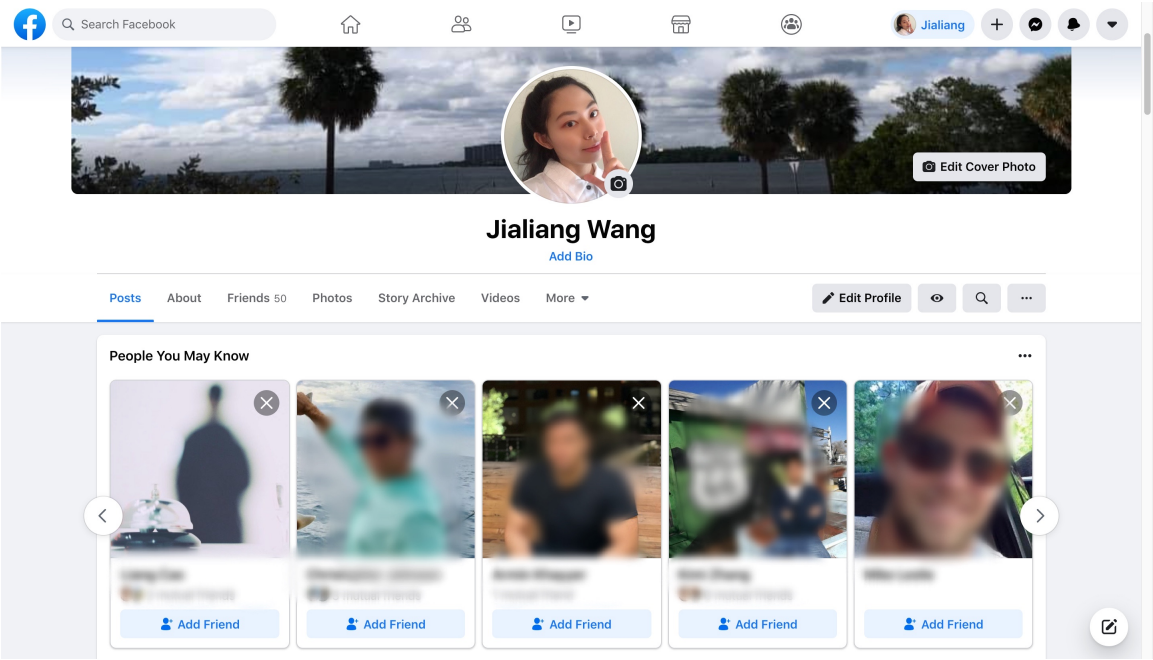
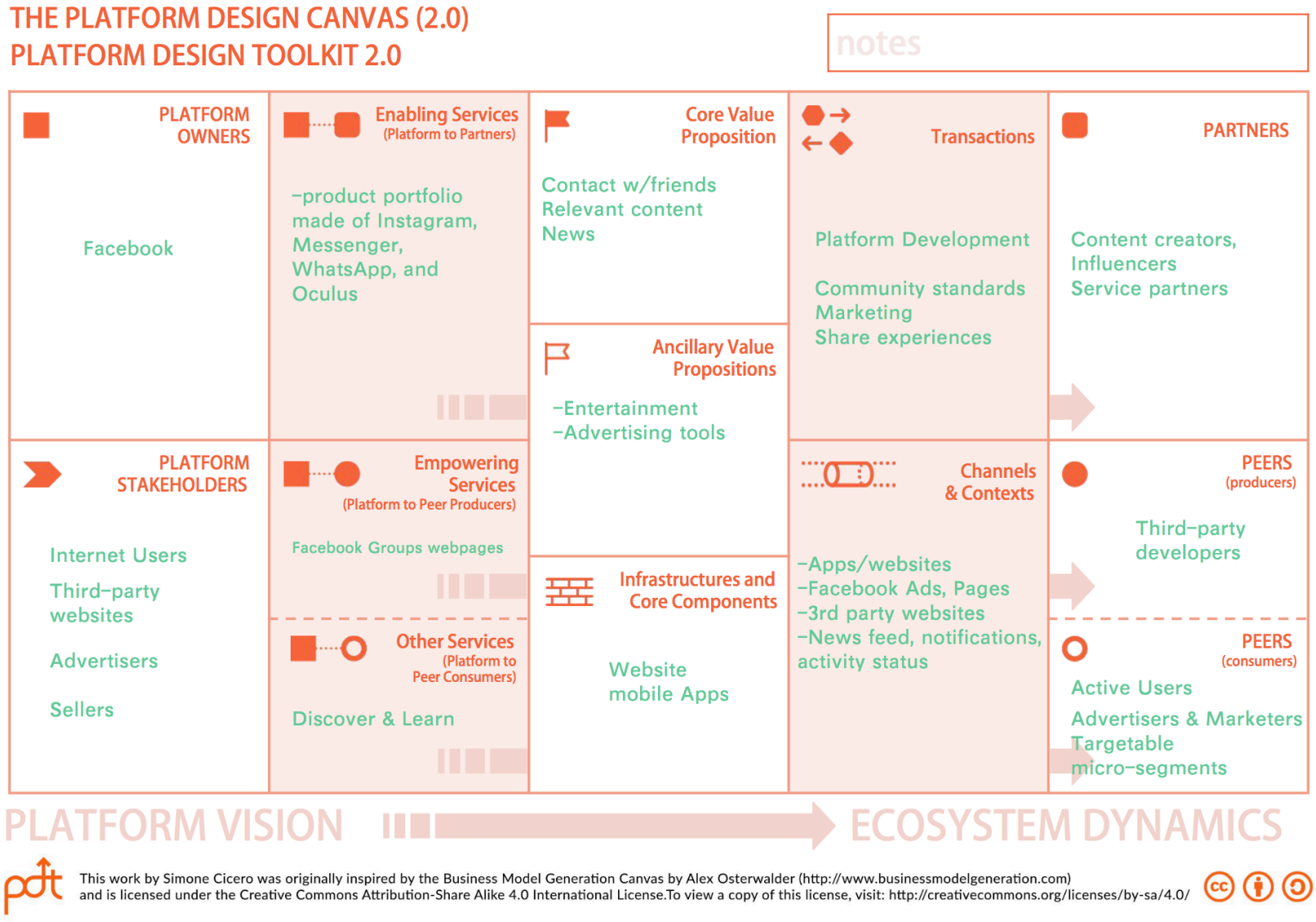


Figure 4.4 Facebook User pages

Figure 4.5 Facebook analysis using the Platform Design Canvas



Although to the users the most important function and mission of Facebook is to give people the ability to share and connect to the whole world, the platform of its business model is through the release of advertising, so that businesses and users contact each other to achieve the value of the business. Most of the revenue comes from advertising and third-party sales media.

Figure 4.6 illustrates a visual analysis of information categories on their web page including basic functions and information, primary or main information, and additional information to sort out complex interface design layout. By analyzing mainstream social media products such as Facebook and LinkedIn, it is found that basic functions are usually placed at the top, main functions and information are placed in the middle, and additional information is placed on both sides. This strategy can help designers organize a large amount of display information (i.e. company logo, search, user information, navigation, developments, friend recommendation, etc.) to the appropriate functional areas.

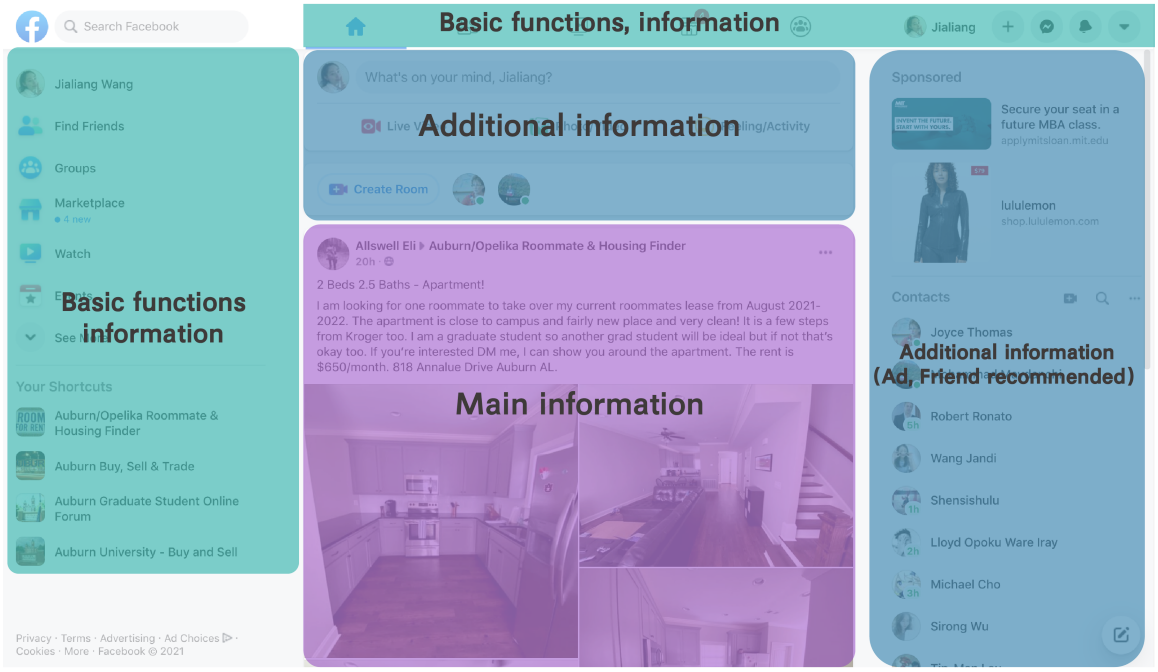


Figure 4.6 Analysis of Facebook community pages layout by information classification

4.1.4.2 Linkedin

www.LinkedIn.com

LinkedIn is a global leading workplace social network platform for rapid establishment of interpersonal relationships and rapid transactional communication. Its core value is to help professionals establish in-depth contacts worldwide (Quinton & Wilson, 2016). Figure 4.7 is an analysis of this platform using the Platform Design Canvas.

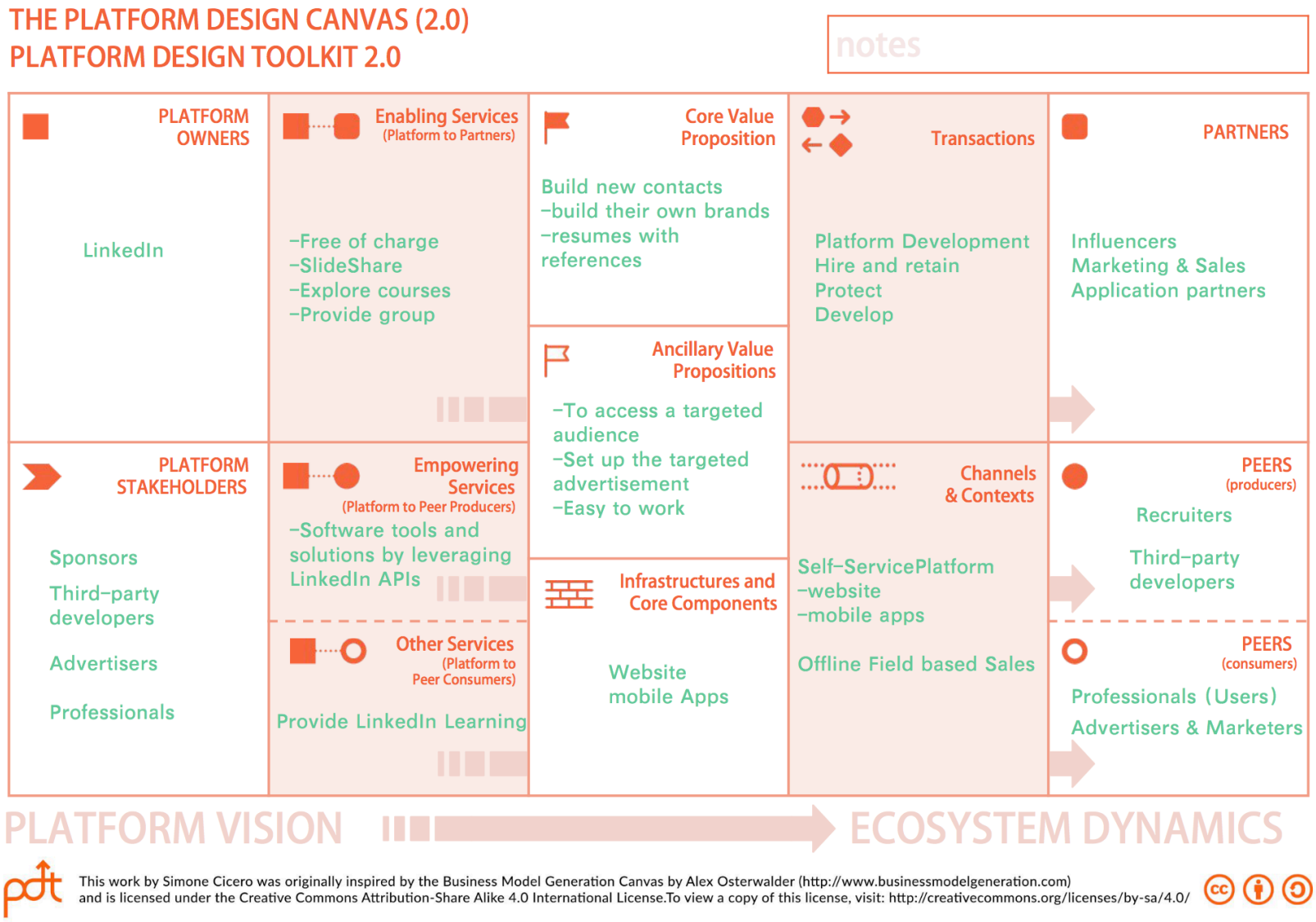


Figure 4.7 LinkedIn analysis using the Platform Design Canvas

LinkedIn is neither a general social platform like Facebook nor a recruitment portal. It is a workplace social platform for professionals and combines the advantages of both. Users can contact other professionals on LinkedIn by sending requests to connect. Other users (including enterprises) can see members' work experiences, work skills, as well as their vision and goals for work through their personal data. Users can learn methods through LinkedIn Pulse to describe professional information and publish their own professional insights, thereby creating a personal profile. LinkedIn and Facebook are similar in that they have added group tags. LinkedIn users are more likely to establish connections by discovering groups related to their own professions and establish deep connections between professionals. At the same time, LinkedIn also meets the different requirements of professional users in hiring new employees, launching marketing activities, and learning business concepts.

Figure 4.8 illustrates a typical user 'homepage' on LinkedIn that is accessible by clicking on the Home icon on the top navigation bar.

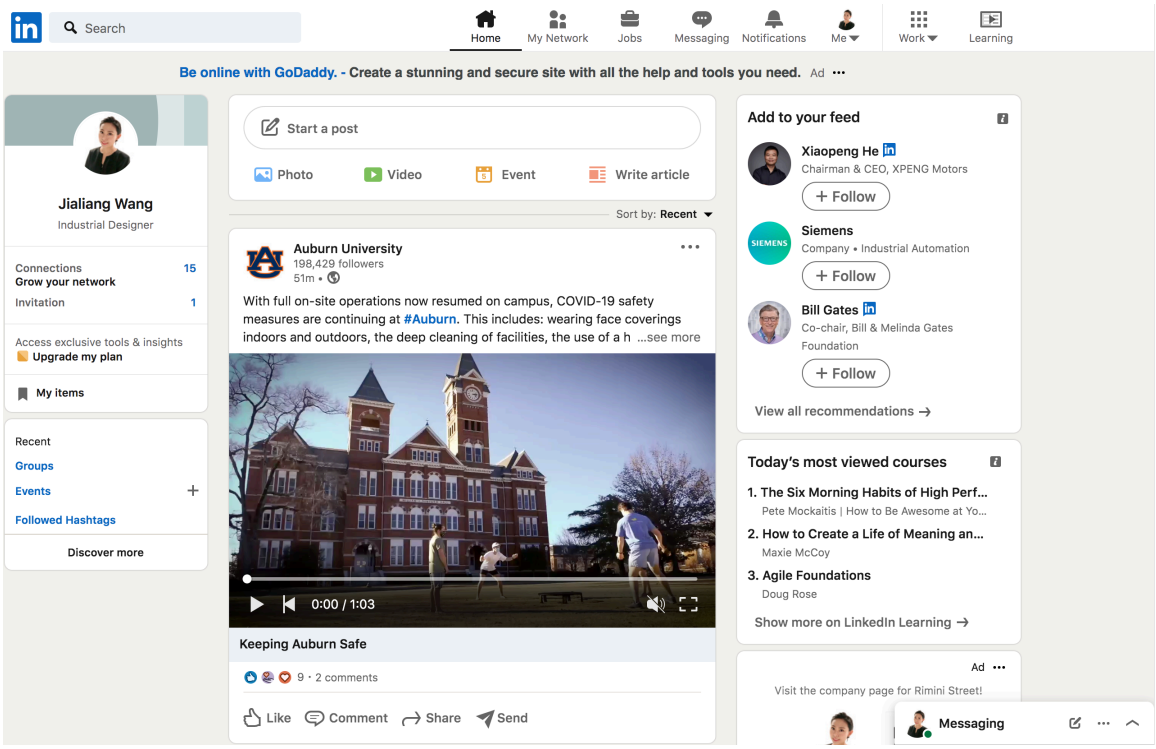


Figure 4.8 LinkedIn Home pages

4.1.4.3 Airbnb

www.airbnb.com

The Airbnb platform offers an interface that allows guests to efficiently compare and book a substantial number of accommodation options around the world 24 hours a day. It is essentially an online platform through which ordinary people can temporarily rent a space they own as an accommodation to tourists, usually involving private rooms or the entire apartment or unique accommodation (Guttentag, 2015). The Airbnb process enables guests to enter and access the property through the required steps of the platform. Platform management has taken a series of measures to reduce the perceived risks to both the owner and the renter, including encouraging review, dealing with

currency transactions, and providing guarantees and assistance to guests if they encounter difficulties in boarding procedures. Many hosts of Airbnb provide insider tips for guests about the destinations, making their experience more memorable than just providing beds (Reinhold & Dolnicar, 2018).

Not only are there affordable prices for guests, Airbnb's accommodations also bring benefits to the community market. Some hosts like to interact with, learn from and share information with other hosts outside of the Airbnb platform, so Airbnb facilitates this (Reinhold & Dolnicar, 2018). Some visitors may prefer staying at a home rather than staying at a hotel. Airbnb guests can also use practical residential facilities, such as fully equipped kitchens, washing machines and dryers. Airbnb is a more scattered residential community than traditional accommodations. Guests have the opportunity to experience this living environment like locals, interact with the host or neighbors, and possibly stay in a ‘non-touristy’ area for more ‘local’ experiences since Airbnb owners may be able to provide useful local advice (Guttentag, 2015).

Airbnb is an online reservation platform for booking lodging. They also use this platform to help people find activities to do at potential destinations. Figure 4.9 illustrates this segment of their platform.

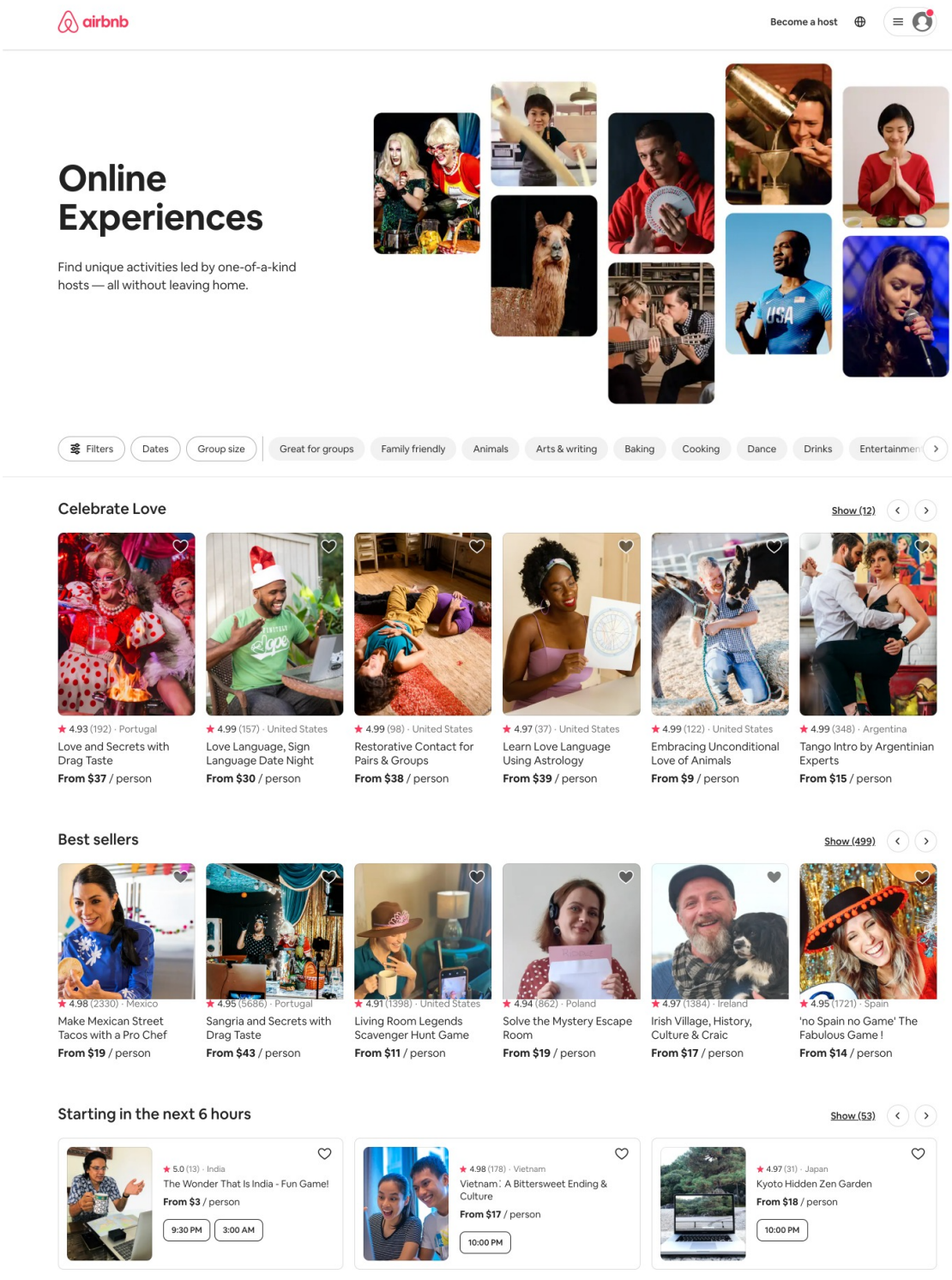


Figure 4.9 Airbnb Online Experience page

4.1.4.4 Stitch

www.stitch.net

The Stitch is the largest companion community in the world created by members over fifty. According to its website: “Stitch helps its members find and make new friends and companions who are enriching their lives through shared interests and activities” and “What makes Stitch completely unique is that it’s a community, one that’s been built by members, for members” (Stitch, 2020, May 05). The purpose is to help members who face social isolation and loneliness find common interests. Stitchers can find local activities or discuss online with other members around the world to carry out group travel activities. Stitch proposes to actively help to improve the lives of older adults in every country around the world, and ultimately everyone can play a role in making each other’s lives better. Older adults can seek friendship and romance here and find organizations that interest them as well.

Stitch pays attention to the security of users. In order to ensure that all members are over 50 years old, new users must pass special age authentication, and need to submit a photo of themselves. Only through trusted Stitchers verification can new members participate in community activities and communicate with others.

Figure 4.10 shows the community home page of the Stitch, including the upcoming community events and activities, to provide reservation services for platform members.

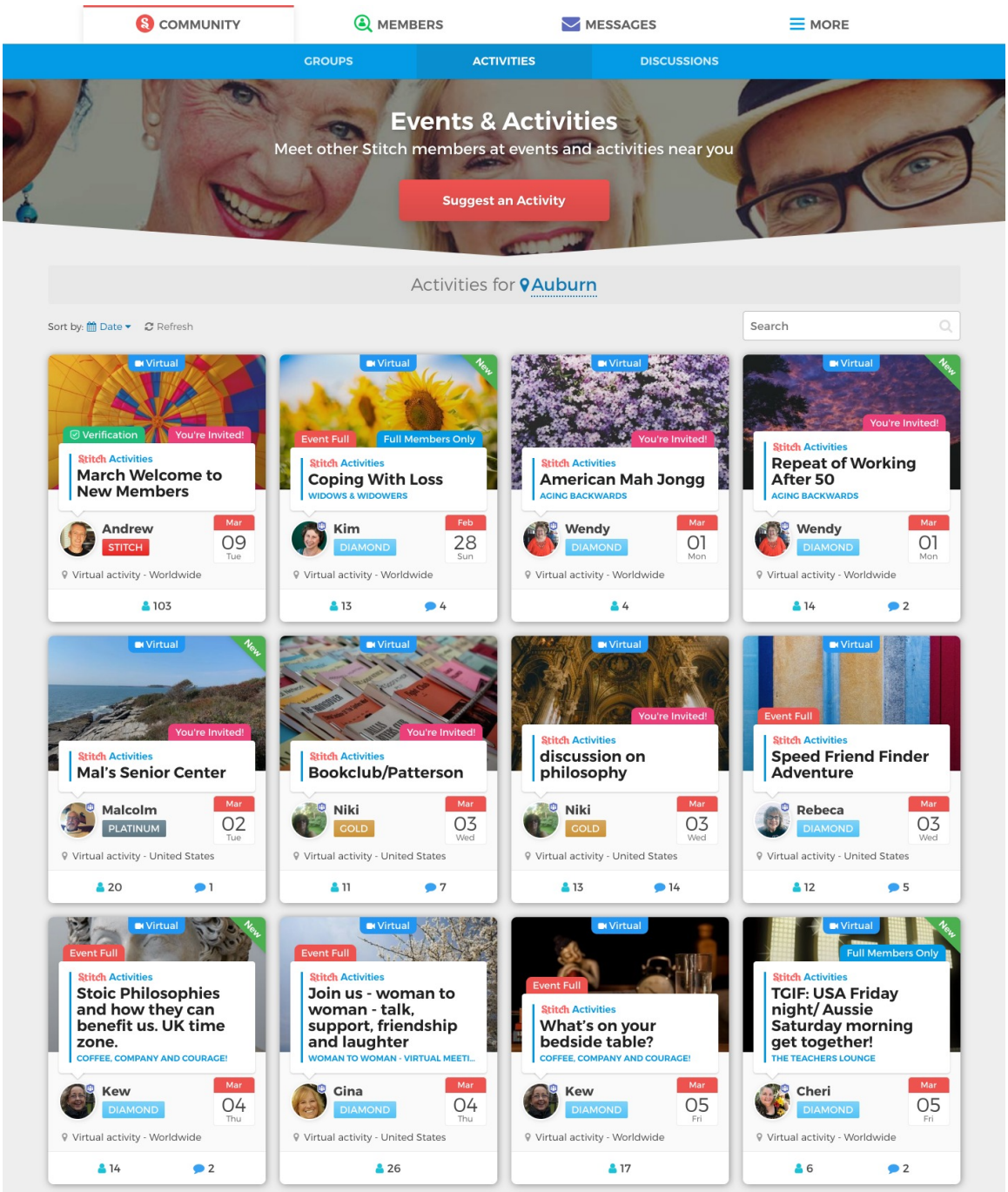


Figure 4.10 Stitch Online Community page

4.1.4.5 Quirky

www.quirky.com

Quirky brings brands and manufacturers together to help inventors turn their ideas into life by manufacturing and licensing them. “Quirky is an invention platform that connects inventors with companies that specialized in a specific product category” (Quirky, 2021) that provides a platform for dreamers, makers and inventors to inspire each other. Anyone who has ideas can discuss them here, diving deep into every idea, a process that brings considerable benefits to the idea providers.

If there is a great product idea that just takes simple steps, the idea provider can submit its product idea to the website. Figure 4.11 illustrates four steps of how Quirky engages users. Figure 4.12 shows how a platform can utilize a product selling page.

Figure 4.11 Steps of How Quirky works

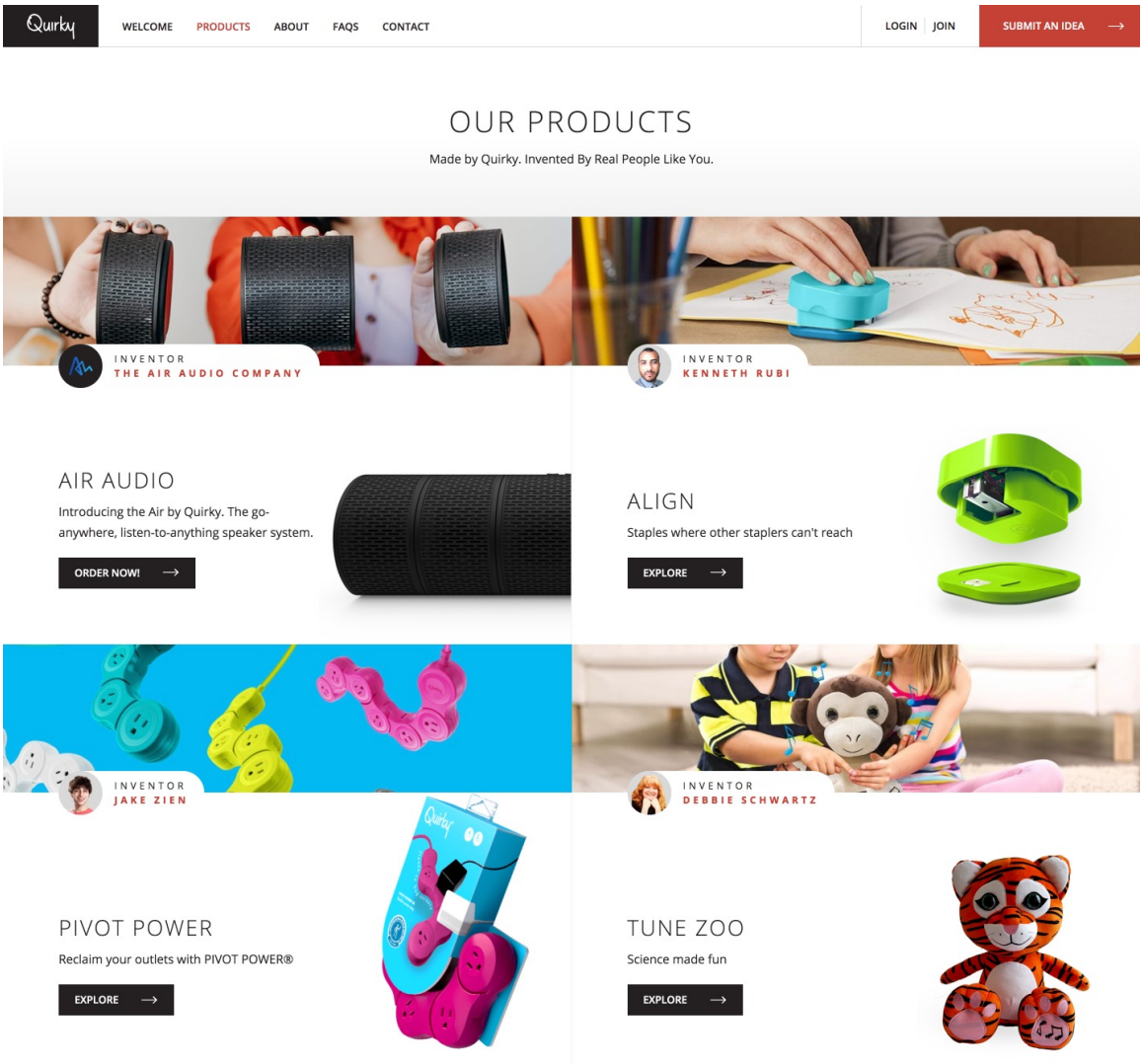


Figure 4.12 Quirky Our Products page

4.1.4.6 Coroflot

www.coroflot.com

Coroflot is designed by designers to build a platform between creative professionals and recruitment companies. The platform environment provides a better professional experience where designers can publish their portfolio or projects to show their professional level and find professional opportunities. Innovative companies can find outstanding professionals and develop

recruitment channels. Figure 4.13 is an example of how creators can publish their works or ideas to this creative pool; the platform provides the opportunity to display communication products.

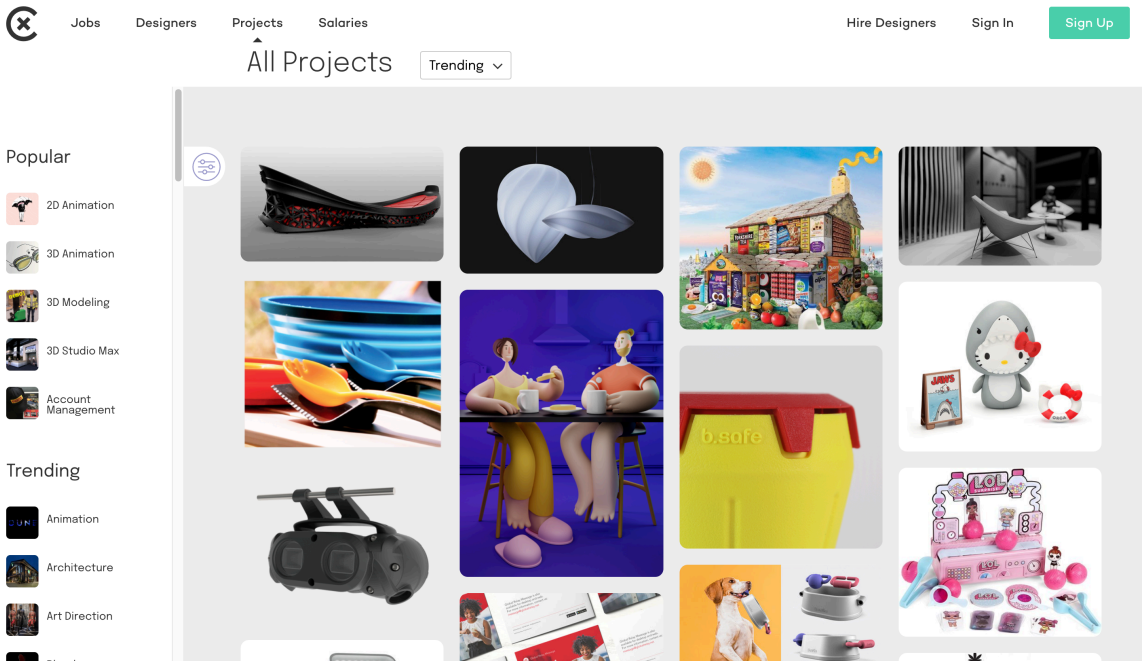


Figure 4.13 Coroflot All Projects page

The platform also provides designers with information about industry standards and trends for reference in choosing employment. Whether it is to find creative suggestions, professional exposure, the next design work or the next design hires, Coroflot can be an important information exchange platform for the design profession.

4.1.4.7 Behance

www.behance.com

Similar to Coroflot, Behance is an online community website for designers to display their body of work and communicate with each other and potential employers. Designers around the world publish works through it. People can collect, organize and share image-based content (promoting original works created by users themselves), discover creative works and establish contact with other people with similar interests. The difference between Behance and Coroflot is the layout design of the website home page. The main navigational information about Behance is designed at the top of the page, and the navigation bar of Coroflot is designed at the side of the page. Behance helps designers to inspire, help users to become better designers and influence others to become better, and also provides professional information to employers and designers. Users can directly take the initiative to search jobs in the job search sector, and all job information is published globally, which can be searched according to national regions.

Figure 4.14 is an illustrated a ‘homepage’ on Behance. The platform provides the opportunity to display communication products or ideas to this creative pool. Designers can use the visual analysis method of website pages referred to in the guideline (see Figure 3.9) to analyze this home page, classify, evaluate and organize the layout of the home page interface design, and provide references for the design layout of the new platform website.

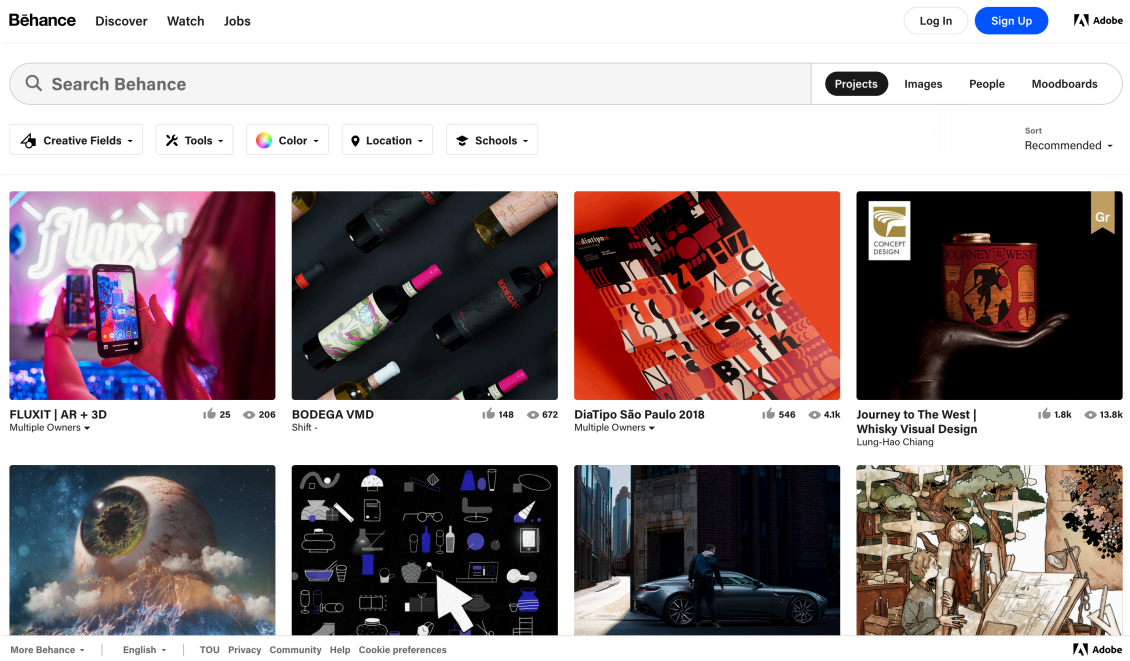


Figure 4.14 Behance Home page

Behance is a website based on the exchange of pictures taken and uploaded by designers. Most designers are students, junior designers or independent designers. Then the viewer spontaneously praises, comments, or collects, which, just relative to a single picture, can be relatively complete to allow other members see the design results (in particular, not the design process).

Figure 4.15 shows the most common user profile page layout, which includes basic information about the user including their previous creative works, as well as opportunities to create inspiration source mood boards, discovery collection design, personal project drafts. Figure 4.16 shows the design recruitment information posted on the Behance Jobs page, allowing designers and potential employers to communicate.

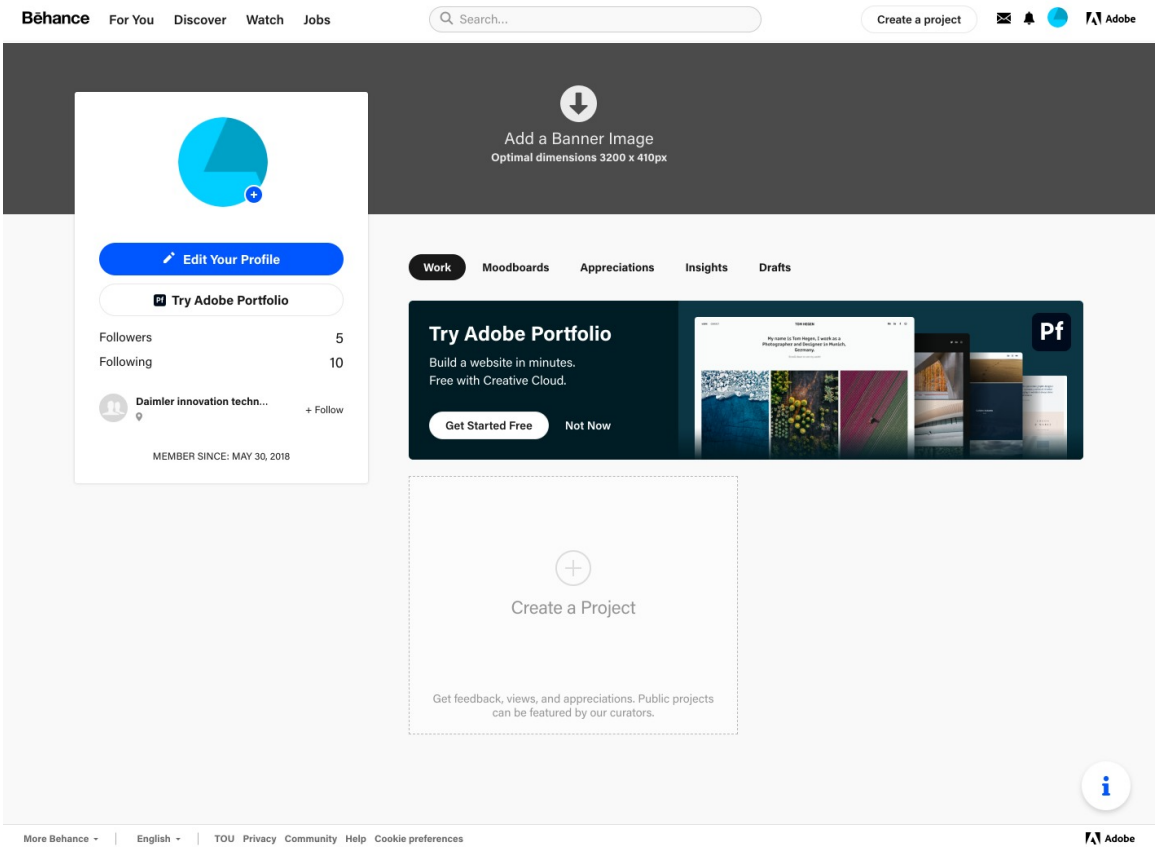


Figure 4.15 Behance User Profile page

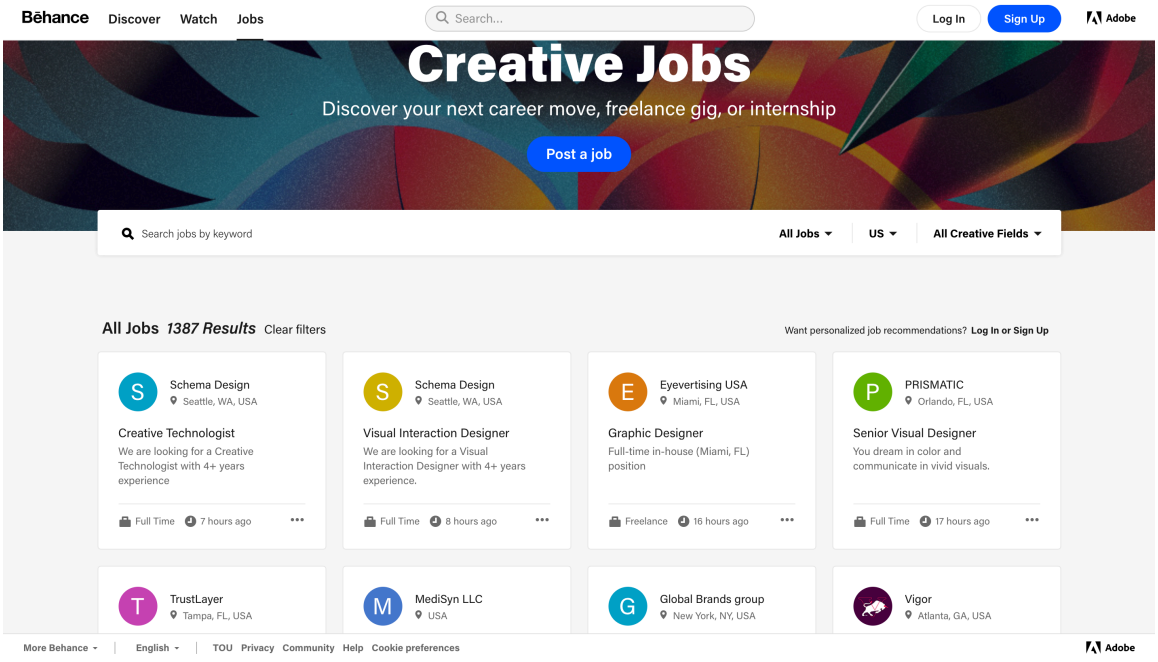


Figure 4.16 Behance Jobs page

4.1.4.8 KiwiCo

www.kiwico.com

“Everything we produce is designed by experts and tested by kids” (KiwiCo, 2021). The products of the platform will inspire people of all ages to become creative problem solvers. Kiwico is a creative factory. Users can find creative activities through age screening, which can help busy parents raise the natural curiosity and creative vision of their children. Also, it helps parents provide a rich experience for their children (KiwiCo, 2021).

Figure 4.17 shows the age lines from 0 to 104 years old, and each age line has creative products suitable for this age group. This is their selling page based on specific age groups so that people can explore opportunities to purchase a crate of ‘stuff’ that allows for serious play and creativity.

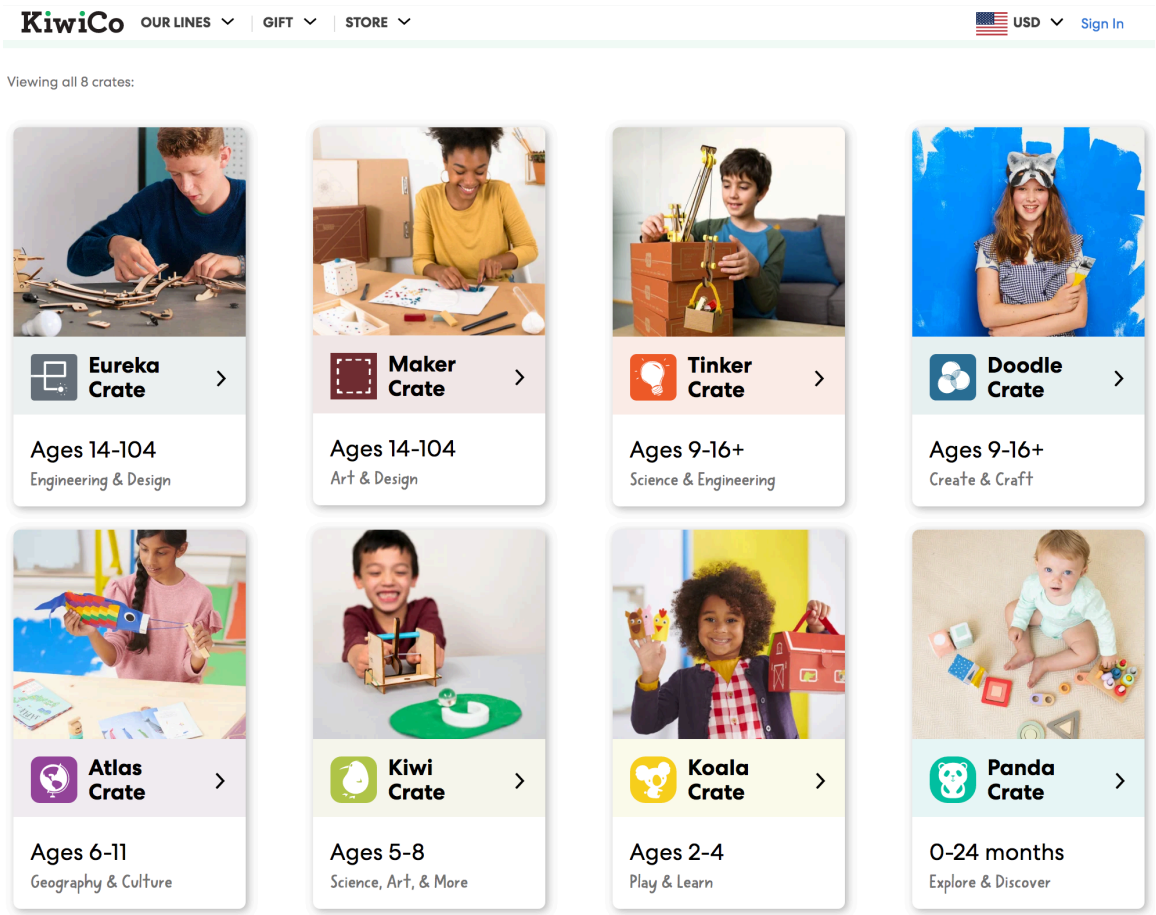


Figure 4.17 Eight KiwiCo lines

4.1.5 Market Demand

After the previous product demand positioning and user research, the project needs to be carried out both online and physically at the same time. Users can find resources online and then available resources and manufacturing can occur in physical places. The platform will need the website version and the mobile terminal. The design guidelines and consideration of the mobile terminal are the same as those of the site version, but the display devices between the two are different, and the basic page size and design specifications will be different in the design steps.

4.2 Application of Step 2: Design Concept Development and Refinement

4.2.1 Refinement of Scenario

This scenario describes a young user who visits the site to find creative inspiration and guidance, and finally cooperate with a retired professional to create the product. It recorded the goals and problems to be achieved. From the why to enter the site, to the role of wanting to visit the site to complete what tasks, the interaction between the roles and tasks is apparent. The scenario is used to represent what happens between users. This will help designers to think about what content and function the website should contain to improve user experience through the story.

The designers created a storyboard to show the scenario events in turn: 1. A young professional (Andrew) in the search for creative inspiration encountered problems. 2. He listened to friends who mentioned a creative cooperation platform so he intends to see what good ideas can be found. 3. Andrew was attracted by the resource information displayed on the front page, which made him interested in continuing his search, and then he found the unique design of a retired person (Joe). 4. So Andrew entered the membership page to browse more works and information about Joe. 5. Andrew found Joe's contact information and sent him a message to express the hope of cooperation. 6. The two people exchanged design ideas and production methods. 7. Andrew, the young professional, used the patterns from other

pattern creators and drew them on sports shoes 8. The final output was a pair of sports shoes with unique styled patterns (see Figure 4.18).

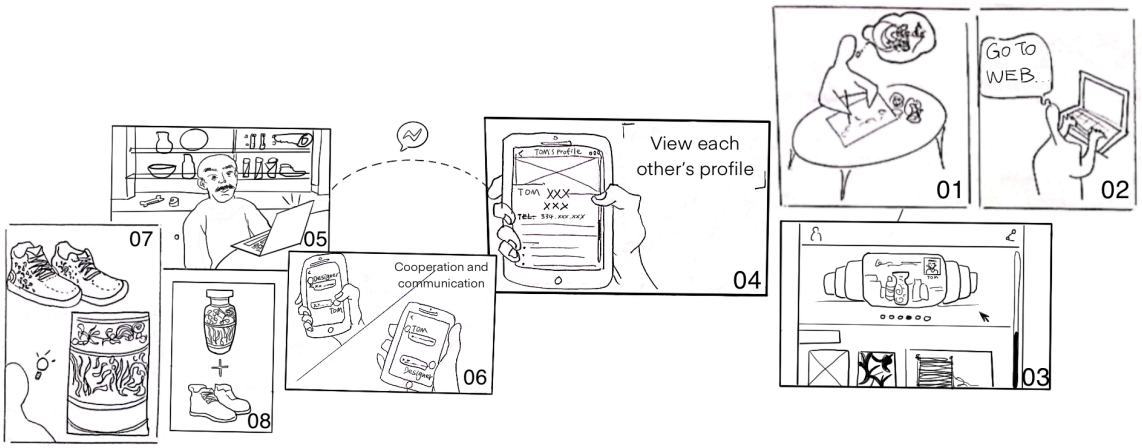


Figure 4.18 Storyboard of the Process of Using the Creative Platform

4.2.2 Logo Design

Brand design is an important part of the platform. In the new platform design, since the product is a creative community combining online and physical sites, the top view of the building is refined as the basic form of the logo in the brand image design, and the simple geometry is refined to make the logo simple and orderly. The colorful color prominent platform community is an innovative representative. The center of the graphics and the first letter C to enhance the overall brand promotion effect (see Figure 4.19).

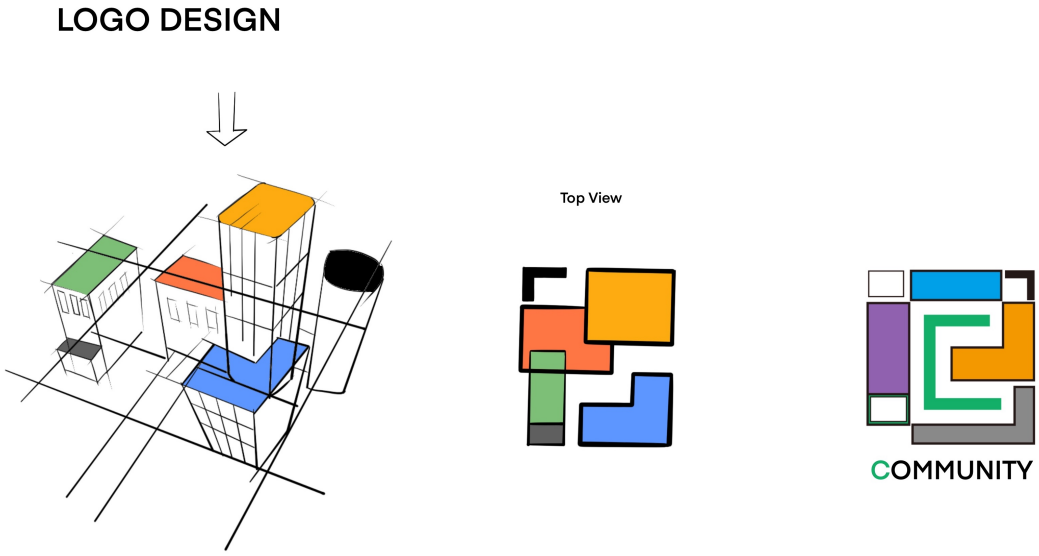


Figure 4.19 Creative Platform Logo Design

4.2.3 Website Comps Exploration

Before designing a new platform, through the investigation of the webpage styles in the market, four styles were illustrated in Figure 3.10. A style suitable for the platform's product theme and content based on the above style was selected and is shown in Figure 4.20.

Figure 4.20 Chosen Design Direction

4.2.4 Wireframe & Website Flowchart

According to the basic functions of the platform, there are six main navigation interfaces, home page, community, projects, shop, contact and sign up. Designers can use this mockup using gray blocks to quickly show the content structure of each page and lines to guide the jump to the next page (see Figure 4.21).

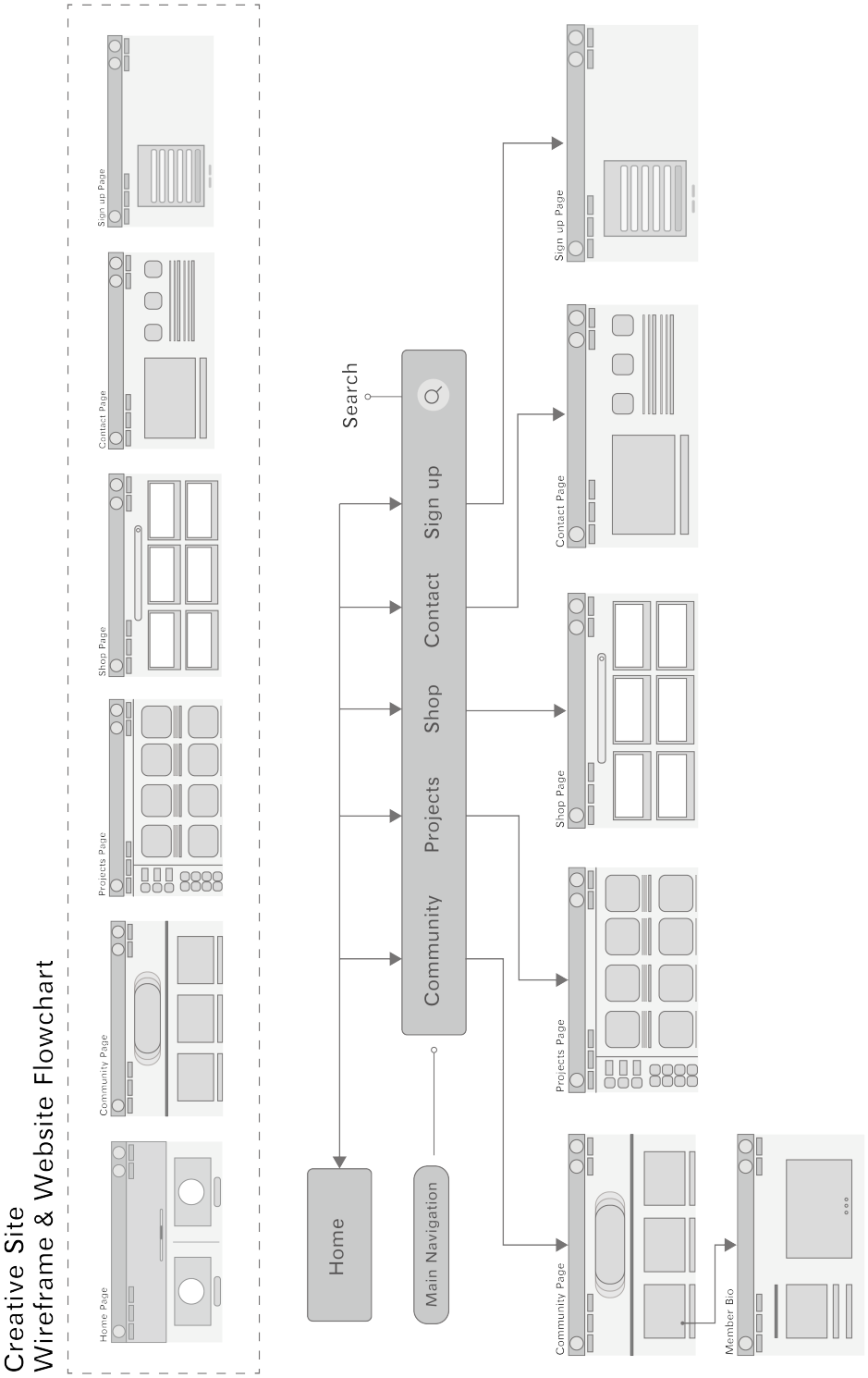


Figure 4.21 Creative Site Wireframe & Website Flowchart

4.2.5 Interactive Prototype

Images shown in Figure 4.23 through Figure 4.25 represent the prototype of a creative platform to help aging communities solve the problem of loneliness.

Figure 4.22 Home and Community Pages of the Prototype

Figure 4.23 Other Pages of the Prototype

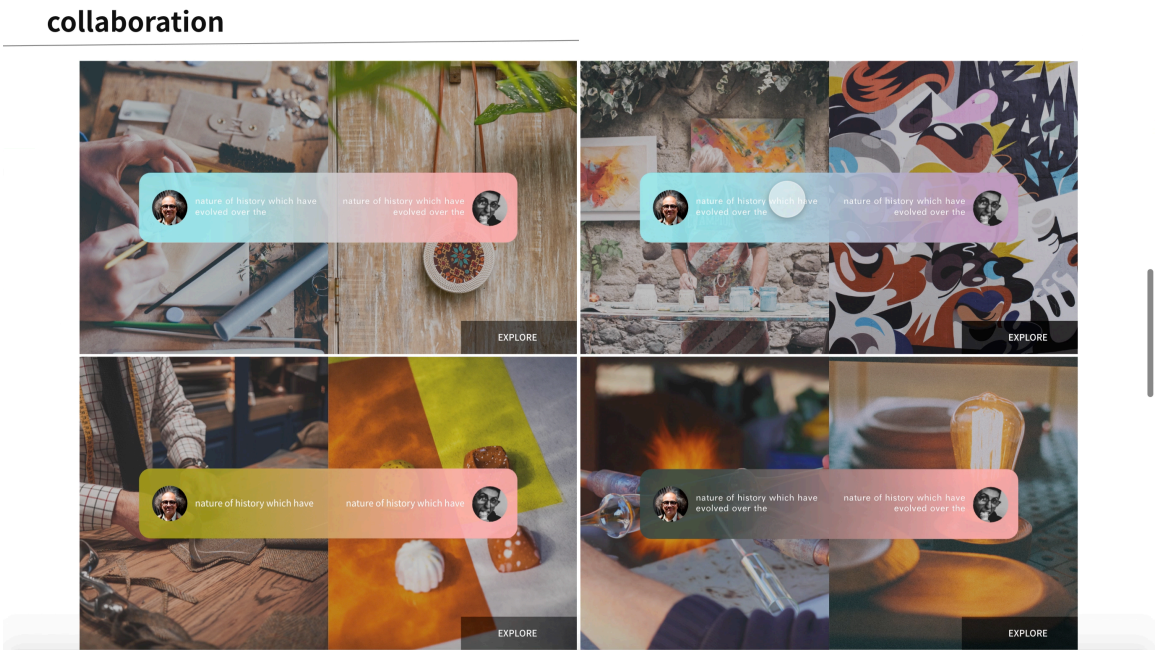


Figure 4.24 Interactive Webpage Prototype in Adobe XD

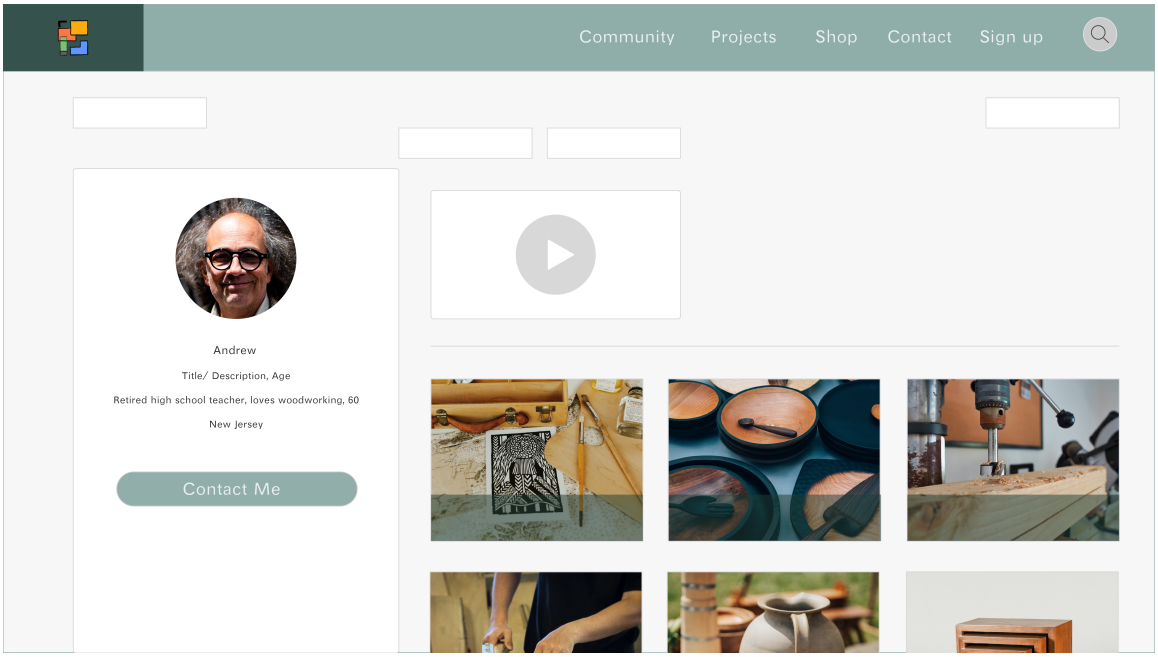


Figure 4.25 A User Page Accessed From the Collaboration Page (shown in Figure 4.24)

4.2.6 User Testing

After the interactive prototype was completed, it was generated and exported. A group of seven testers who fit within the younger persona group used and accessed the platform (see Figure 4.26). Testers needed 1) to know the basic information about the user (age, gender, job title), 2) introduce the test purpose and process to the user, 3) provide users with tasks that were consistent with the real scenario (for example, how to add products to the shopping cart for checkout), and 4) to observe and record the user's description of problems they encountered using the interactive prototype. The users were able to use this prototype to experience the content and service of the platform. Relevant records were recorded regarding problems that the users encountered in actual operation, which will be used for iterative product explorations in the future.

Figure 4.26 User Testing

4.2.7 Platform Evaluation

The main purpose of user testing is to find usability problems in design and improve the user experience of products by optimizing iteration. In this evaluation, users tested the whole process of log in from the home page of the website, browsing information on the home page, entering the commodity interface, and choosing goods to place into the shopping cart. The implementation process of the prototype helped to understand the real user's thinking and operating behavior. During the test, it was found that when users log in to the home page, some users could not quickly find the information they wanted on the home page. From this feedback result, the next goal is to develop the function of jumping to different homepages after a user selects their role –

such as those who need to find resources and those who are willing to provide resources. Each role will see different content home pages when they log in with their own identity.

5 Conclusion

This guideline proposes design processes and design factors to help a designer develop an online innovation platform to connect communities of people that they have identified. It illustrates steps from the initial product research to the finalization of the website platform design.

The implementation described in this thesis addresses a creative platform to help aging communities solve the problem of loneliness. It addresses building a distributed network that provides open resources and a creative platform for innovators who have retired from practicing new product development who would like to mentor young professionals and continue to develop their own products entrepreneurially.

By studying the support mechanisms of innovation platforms, this thesis addresses the influence of creativity and innovation platform design on the organizational culture of the community and the cooperation opportunities to stimulate innovation. The platform mainly obtains innovation sources through collaboration with the community and interaction with users, and gradually promotes the improvement of innovation ability. It also helps the aging community to resolve issues of loneliness, so that professionals and community

groups can communicate with each other through innovation and culture. In co-creation and innovation, the platform builds a bridge between stakeholders and makes reasonable use of the resources of community retirees. At the same time, the values, capacities, and beliefs of community retirees can play a role in creativity and innovation, so as to realize the social value of individual groups (Martins & Terblanche, 2003).

The platform will combine online and offline activities to provide activities and services suitable for local communities. The older individuals in the community seek cooperation opportunities by looking for characteristics that support their own needs and preferences in the platform. The offline work of the platform undertakes the functions and services of supporting community opening, allowing residents to use relevant places to enhance personal independence and promote residents ' participation in community activities (Black & Hyer, 2020).

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