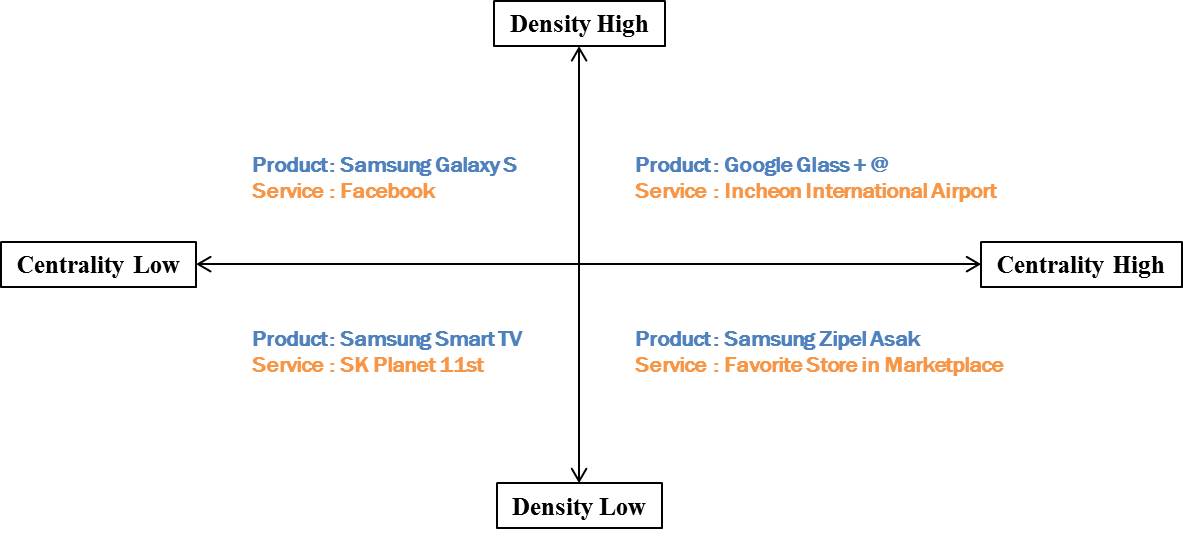
Appendix for Chapter 7: Cases for the Compositional Thread of Experience

Two elements of centrality and density were selected as important factors affecting the degree of relational cohesiveness in the chapter 7 of the book. The 2 by 2 quadrant is shown in Figure 1, consisting of each combination between high/low centrality cases and high/low density cases. The most representative product and service for each cell of the quadrant are introduced in the following paragraphs. In total, there are eight cases, four product and four service cases to be covered. Following three rules are applied to select the eight cases.



[Figure 1] Eight cases used in the case study for the compositional thread of experience

Firstly, each case shows extreme characteristics in terms of density and centrality. For example, Incheon International Airport and Google glass have very high centrality as well as high density. Individual shops in traditional markets and Kimchi refrigerator are the cases of high centrality and low density. In contrast, Smartphone and Facebook has low centrality but high density. Finally, Smart TV and Open market have both low centrality and density.

Secondly, each case is thought to be the dominant design in its respective industry. Being considered as a dominant design indicates that either the product or the service has been or currently is providing a real experience to its users. The important UX factors for real experience represented in each case can best illustrate the experiential characteristics of the given industry. For instance, investigating the essential experience factor to the visitors of Incheon International Airport (IIA) may reveal what is most influential in constructing UX in services with high centrality and high density.

Lastly, the two cases in each cell shown in Figure 1 consist of one product case and one service case. That being said, IIA is an example of such services, and Google Glass of products. The reason for selecting one product and one service case is to demonstrate universally applicable factors found in both product and service forms. If a factor can only be found in a product but not in a service it may be biased to the characteristic of the product and not generally applicable to other products and services.

The case studies for the eight examples were conducted through two-phases of research as was explained in the Appendix for Chapter 5. By meticulously analyzing these cases, we drew out the significant UX factors and design features of the product or service.

1. Google Glass

A product case of high density and high centrality

:( <https://www.google.com/glass/start/> )

Google Glass is a wearable computer experimentally designed by Google in February 2013 shaped almost as the conventional glasses. Google Glass has a dual-core processor, 16GB of flash memory, a video-recordable camera with a prism projector projecting the photos or videos on the glasses, voice-recognizing microphone and other sensors for flawless operation. Of course, the operating system is an Android-based software.

Wearable computers, like the Google Glass, first appeared in 1960 and was used for military purposes in the early 2000s. Those became commonly available for daily use around 2010. Major features of the wearable computer are its mobility and connectivity. Being small and light-weighted, it is portable to any circumstances and seamlessly connects to external devices.

Concerns that the smartphone market had reached a saturation point elevated the attention of the wearable devices market.  Wearable devices offer distinctive values for their users in that they can be used freely regardless of the use contexts, unlike previous mobile devices. Since wearable devices are designed to take a form of traditionally familiar objects in our daily life, for instance glasses, watches, or accessories to clothing, novel types of services and applications that directly connect the human body to the device with less reluctance are suggested. Google glass especially stands out with its progressive design, also powered by superior hardware specifications enabling external speakers and camera functions. Being developed by Google's headquarters it also has outstanding software compatibility and degree of completion. The NYPD (New York Police Department) is currently reviewing the possibility of adopting Google glass to their work practices, and Japan Airlines (JAL) is already utilizing the glass to their practices like plane maintenance and parcel distributions. Hyundai MN Soft is another example of a company that has adapted the use of Google glass to their service by associating it with car navigation. Drawing on current circumstances, Google glass is likely to take a dominant position in the glass-like wearable devices.

As shown in Figure 2, it is hard to suspect that Google glass will become a stand-alone product due to its late processing speed and difficulties in input/output actions for users. However, it can perform as a potential platform for providing optimized experiences to its users by connecting itself with other standalone devices. Google glass has high density in terms of the connectivity with other platforms or devices.  Thus Google glass can deliver constructive user experiences of high density and high centrality.

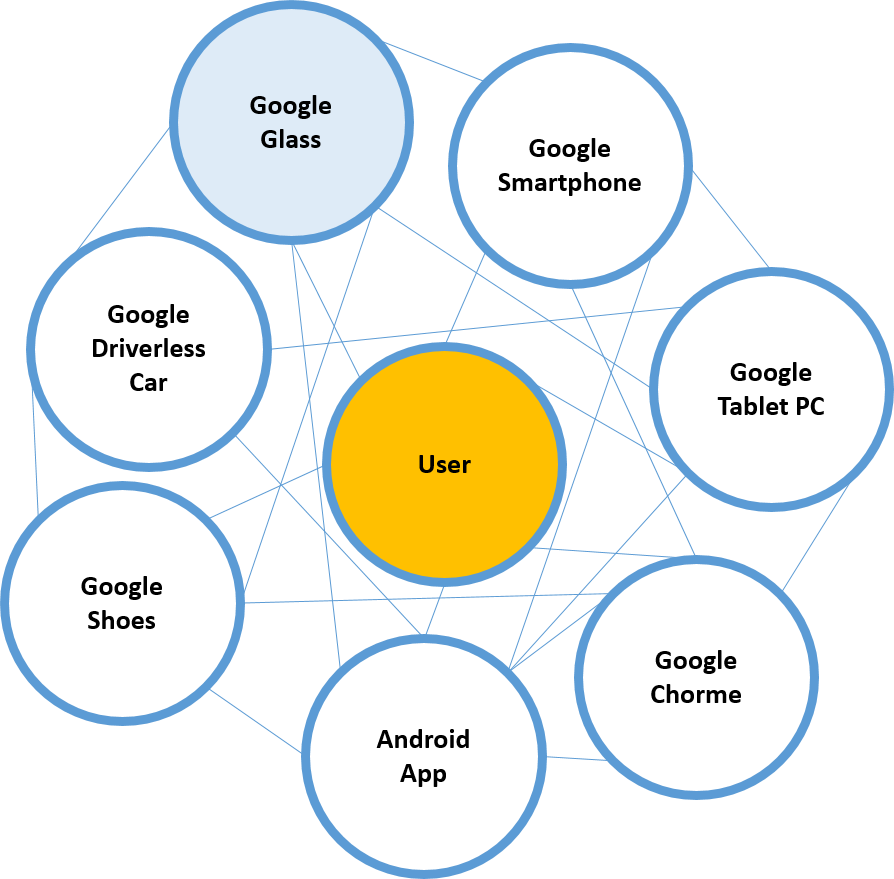


Figure 2.The experience network of Google glass

2. Incheon International Airport

A Service case of high density and high centrality

:(Http://www.airport.kr/eng/)

In a global survey about the service quality and management conducted by Airport Council International (ACI), Incheon International Airport (IIA) topped the list out of 1,800 airports for 9 years in a row. This survey asked users to rate 34 items ranging from service, facilities, to management at a scale of 5 points. Incheon International Airport scored 4.97 out of 5. One example about the excellence of the service by Incheon International Airport is the average waiting time for arrival and departure. While the average waiting time for arrival is 45 minutes and for departure 60 minutes, it is only 11 and 19 minutes respectively at IIA. This is more than three times faster than the average airport. IIA made a partnership with ARINC, a multinational aviation IT company, with a goal to develop an advanced airport management system. As a result, IIA offers the world's fastest and most convenient boarding services which is a part of building up an environment for overseas business expansion for Korean companies. In that sense, it is not an exaggeration to say the IIA is dominating the modern design of the airport service worldwide.

As shown in Figure 3, the service of IIA comprises diverse experience factors distributed to the places where they are supposed to be in the given context. The synergy of these factors delivers optimal experience to the visitors of IIA. In the whole process, all services are intertwined and connected revolving around the visitors of the airport at the center of the connections. Also the network of connections does not have any structural blank. Consequently, the visitors come to be located at the center of the entire airport services network, which results in the high centrality of the user experience for the service. The consistency across different services in the airport is also high as the design of signboards and guide maps show consistent design themes.

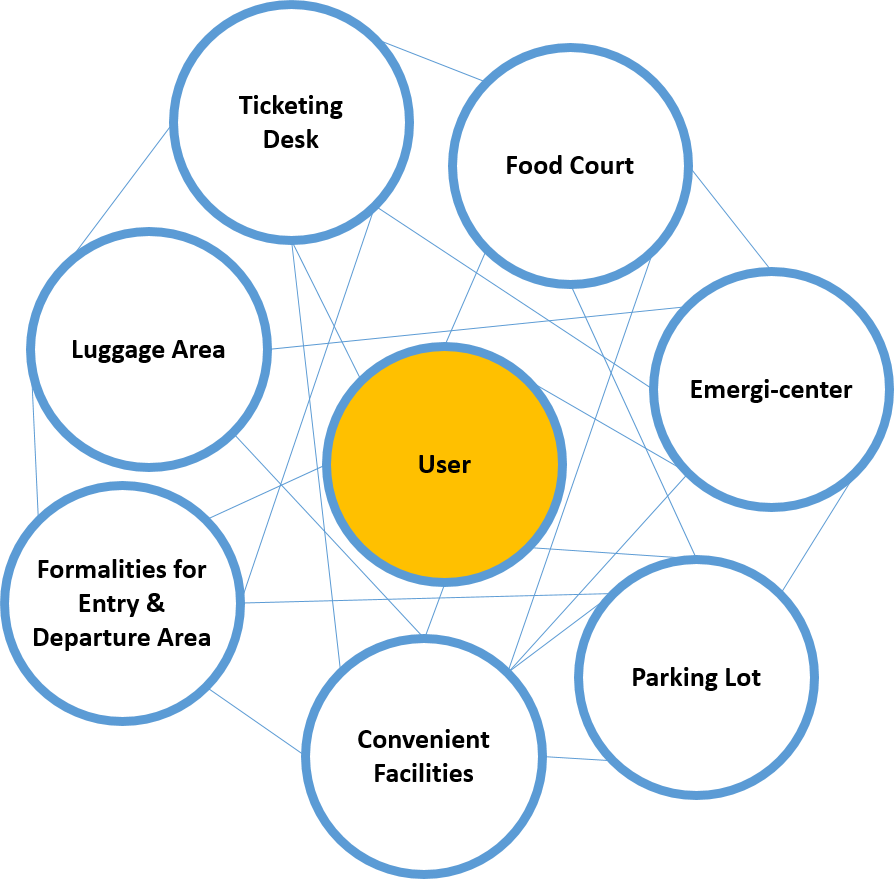


Figure 3. Experience network structure of the Incheon International Airport

3. Samsung Zipel Kimchi Refrigerator

(<http://www.samsung.com/sec/consumer/kitchen-appliances/kimchi-refrigerator/> ).

A product case of low density and high centrality

Speaking of Korea's representative food, everyone will think of Kimchi. Kimchi refrigerator is a refrigerator that has the design and thermostat adjustment features specialized in storing Kimchi at the most suitable temperature in order to preserve the long-lasting fresh taste. The inside temperature can be adjusted down to 1 degree lower than what is capable of normal refrigerator given that Kimchi hardly freezes in cold temperature. Additionally, the temperature is kept stable so that Kimchi will not easily go bad. Cool air reaching -5 to -7 degrees is discharged regularly to inhibit bacteria from producing further lactic acid, which ferments and determines the acerbic taste of Kimchi. In addition, it holds the smell of Kimchi inward, preventing the smell leaking out from the refrigerator, which has been the prominent problem of conventional refrigerators in Korean culture.

It is rather obvious that famous manufacturers of Kimchi refrigerators are Korean companies. The products by Samsung Electronics, LG Electronics, and Winia Mando have good reputations from the global market. Almost every Korean home has at least one or more Kimchi refrigerators. Manufacturers of most of the Kimchi refrigerators including the target of this case study, Samsung Zipel Kimchi refrigerator, have developed its own cooling system that can hold the taste of Kimchi for a long time without the worry of it getting spoiled. Clean deodorization capsule is also adopted to the refrigerators and successfully controls the level of smell of Kimchi. Due to these unique characteristics, Korean Kimchi refrigerators achieve high sales even in US and Europe as well as Japan, China, and many Asian countries. In short, the Kimchi refrigerators from Samsung Electronics are thought to have dominant designs in the specific domain.

As you can see from Figure 4 below, Kimchi refrigerators are not linked to the main refrigerator or other home appliances. As Kimchi refrigerators are specialized in keeping only Kimchi, using the product for that designated purpose maximizes their effectiveness. Inevitably, the relationship density between Kimchi Refrigerators and other appliances is quite low. From user's viewpoint, they should directly control Kimchi refrigerators and other home appliances since there is no central device or system to coordinate diverse electronic kitchen appliances. In this sense, the centrality of Kimchi refrigerators from the user's perspectives can be said to be high.

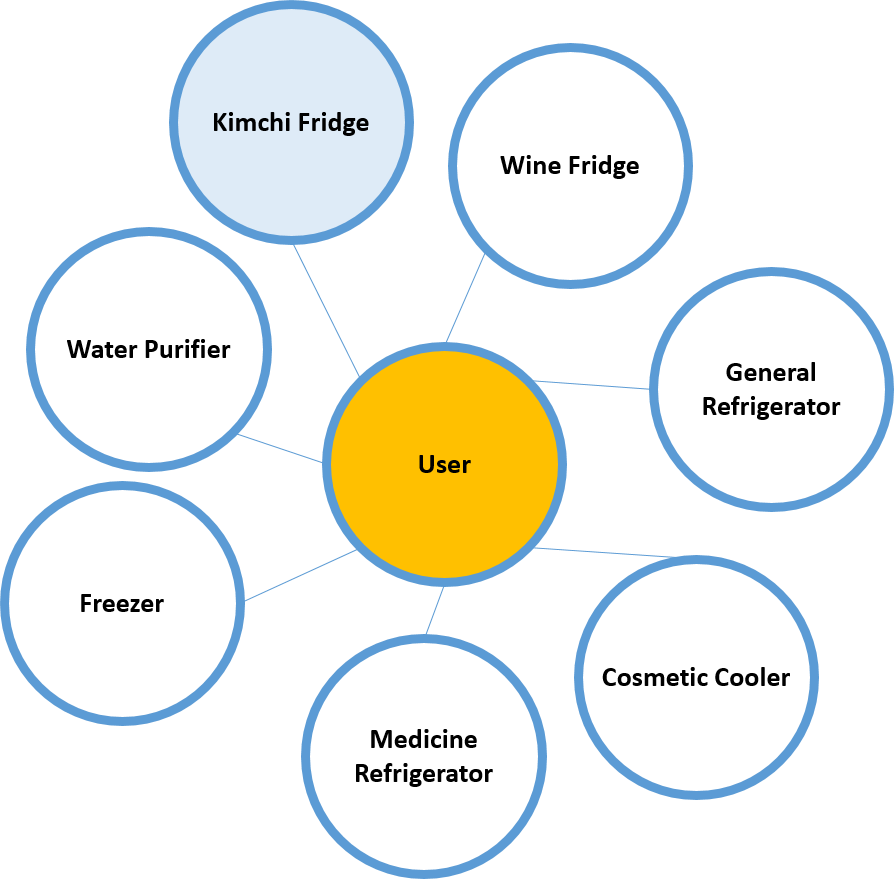


Figure 4.The experience network structure of Samsung Zipel Kimchi refrigerator

4. Traditional Korean Market: A service case of low density and high centrality: (Www.ddm-mall.co.kr):

Most countries with long histories have traditional markets. South Korea also has several traditional markets: East-gate Market, South-gate Market, Kyungdong Market, Jung-bu Market, and Noryangjin Market, all of which are old bazaar with their own histories and traditions. These markets are in tough fights with supermarkets. Although the majority of consumers today are turning to supermarkets for its convenience, accessibility, and hygiene, many still visit the old bazaars. Such bazaars are known for its generosity and geniality of merchants, but there are also other reasons to visit them. It is easy to make bonds with merchants. As an example, my mother has been visiting the same fish shop at East-gate Market for decades. Drawing on the rapport built over the years, she can trust the owner for providing only fresh fish. Sometimes the owner even asks her to wait for even fresher fish arriving that same day.

This concept of a regular customer for decades applies to the grocery stores as well. The grocery store in my neighborhood is a perfect place to buy tender lettuce and fresh leeks that have just been harvested. After taking a round through the bazaar, we end up having a handful of baskets filled with fresh fish, vegetables, and fruit for the daily meal. Of course, it is much more convenient to buy all things at once from a large supermarket. But the attachment felt from shopping at a traditional bazaars is a charm so hard to be missed.

Two patronized stores in a bazaar have no direct links with each other as presented in figure 5. From my experience, the two shops do not know each other and of course have no interaction. As reflected in this case, the relationship density between stores at bazaars is relatively low. No service fills the structural gap between the traditional stores and consumers. Since a consumer should fill the gap by oneself, the centrality experienced by the consumer is high in the traditional bazaars.

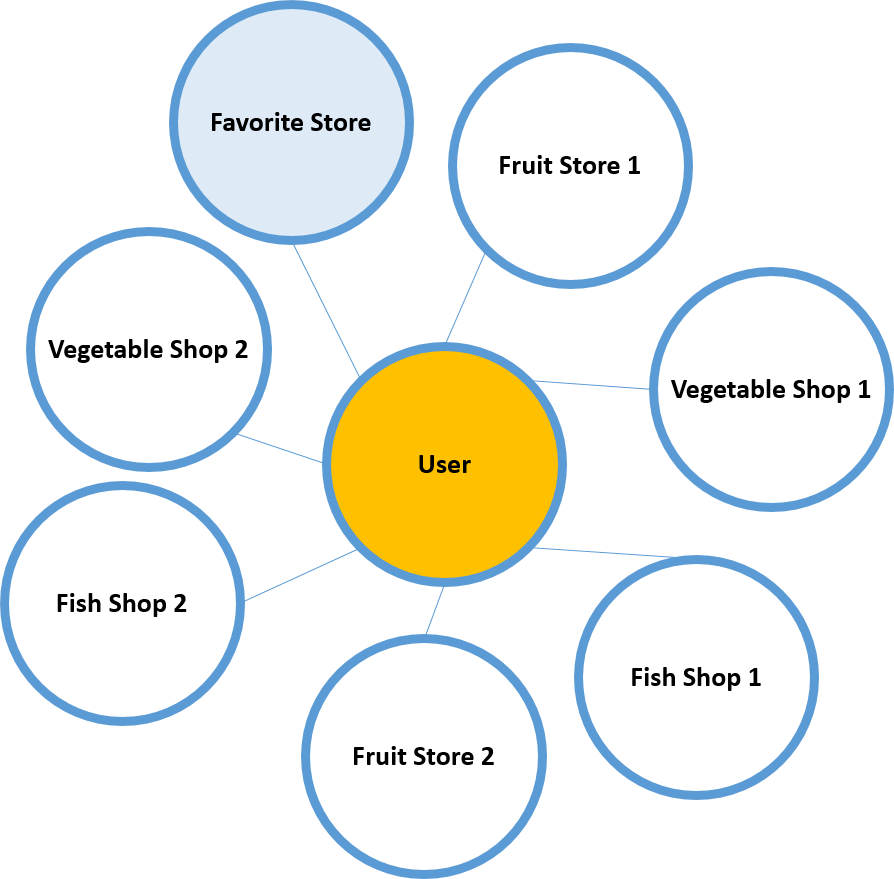


Figure 5.Experience network of the stores at a traditional bazaar

5. Samsung Galaxy S Series

: A Case of high density and low centrality Product

( <http://www.samsung.com/sec/galaxys3/> )

Smartphones such as Apple's iPhone and Samsung's Galaxy are already widely used and known to people. The biggest difference of smartphones to feature phones from the past is its convergence. Along with basic mobile phone functions, smartphone functions include features such as a camera, a mp3 player, a notepad, etc. Numerous functions are fused into this single device. Tons of software applications are also tightly converged into a smartphone. Adding to that, it has very high compatibility to other peripheral devices. For example, wearable devices that collect bio-signals from the human body or temperature are often designed to interlock with smartphones.

Since 2011, Apple's iPhone and Samsung's Galaxy have dominated the global smartphone market. The smartphones made by companies who take up the remaining share of smartphone market are for example Huawei, LG Electronics, and Sony. They are not significantly different from the ones made by Samsung and Apple. In light of that, the smartphone designs by Samsung and Apple are dominant in the market.

As shown in Figure 6, a smartphone acts as a central tool in the experience network. Smartphones include all the features, and are connectable to all the devices. Since it is a complete product by itself, users do not need to bring peripheral devices as long as they have their smartphones. To this end, the experience to use smartphones can be said to have low centrality from the user’s perspective. On the contrary, the experience of using portable IT devices with a focus on the smartphone has a rather high density, considering that features in smartphones are closely related and can transmit data to each other. Even the interlocked devices to the smartphone can connect with each other.

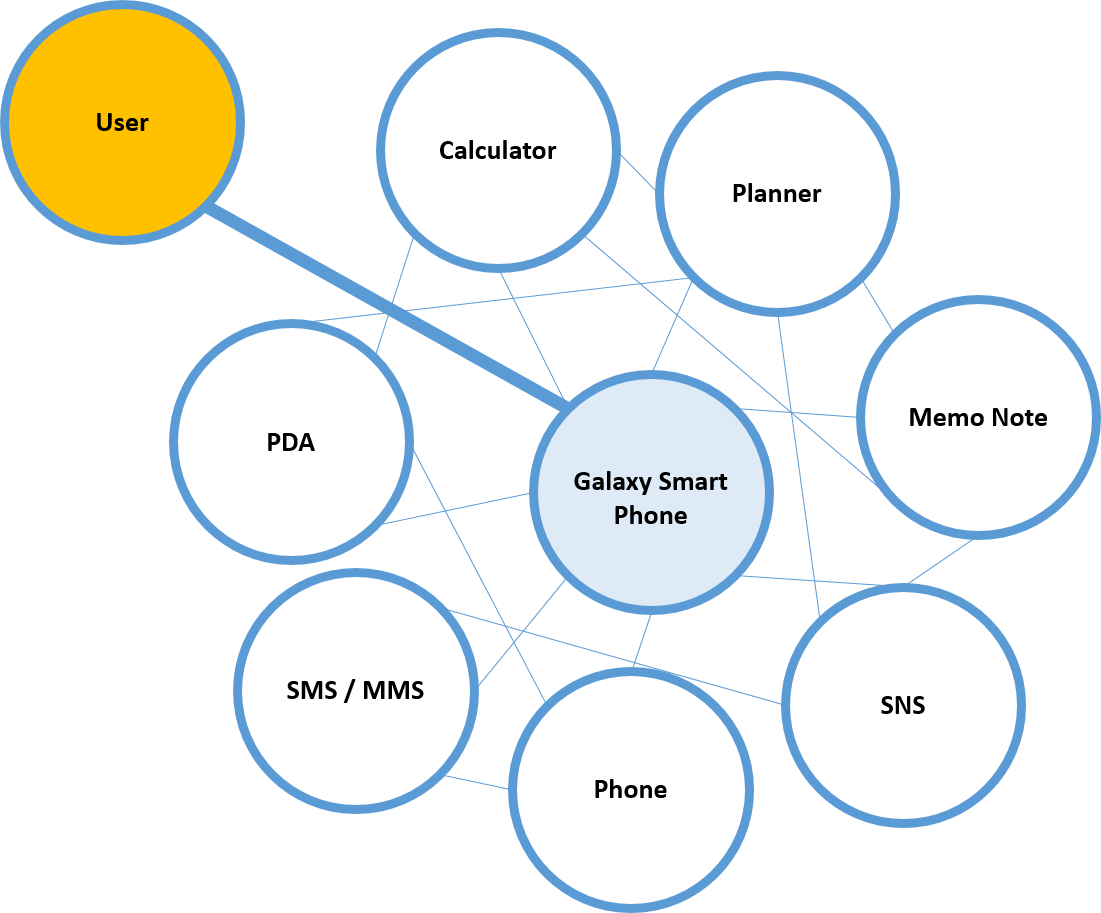


Figure 6.The experience network of smart phones

6. Facebook

:A service case of high density and low centrality ( [www.facebook.com](http://www.facebook.com) )

Facebook is one of the most famous social network services of our time. It supports exchanging personal information, stories, photos, and videos online. The name "Facebook" comes from the book distributed to freshmen students in order to know each other at the beginning of the school year. At first, Facebook was made ​​available only for Harvard University students then extended its access to most universities in the US, and finally became open to anyone with an email address from 2006. Entertainment Weekly listed Facebook to be the best service in 10 years, saying "How could we check our ex-relationship status, remember the birthday of a colleague, and make fun of our friends without Facebook?” The quote indicates the popularity of Facebook, an online service that has the most registered users as well as the most active users.

As you can see from Figure 7 below, Facebook plays a hub that connects all our friends, their content, networking functions and applications. Since it became possible to register other online services with a Facebook ID, it works as a public identification key. This makes Facebook the hub filling the structural blank of experience network. User’s centrality is rather low due to the fact that they can be friends with others only through Facebook. But the density of relationships is high because the intimacy and social interaction shared by people in the network is very high given that using the platform with friends are closely interrelated.

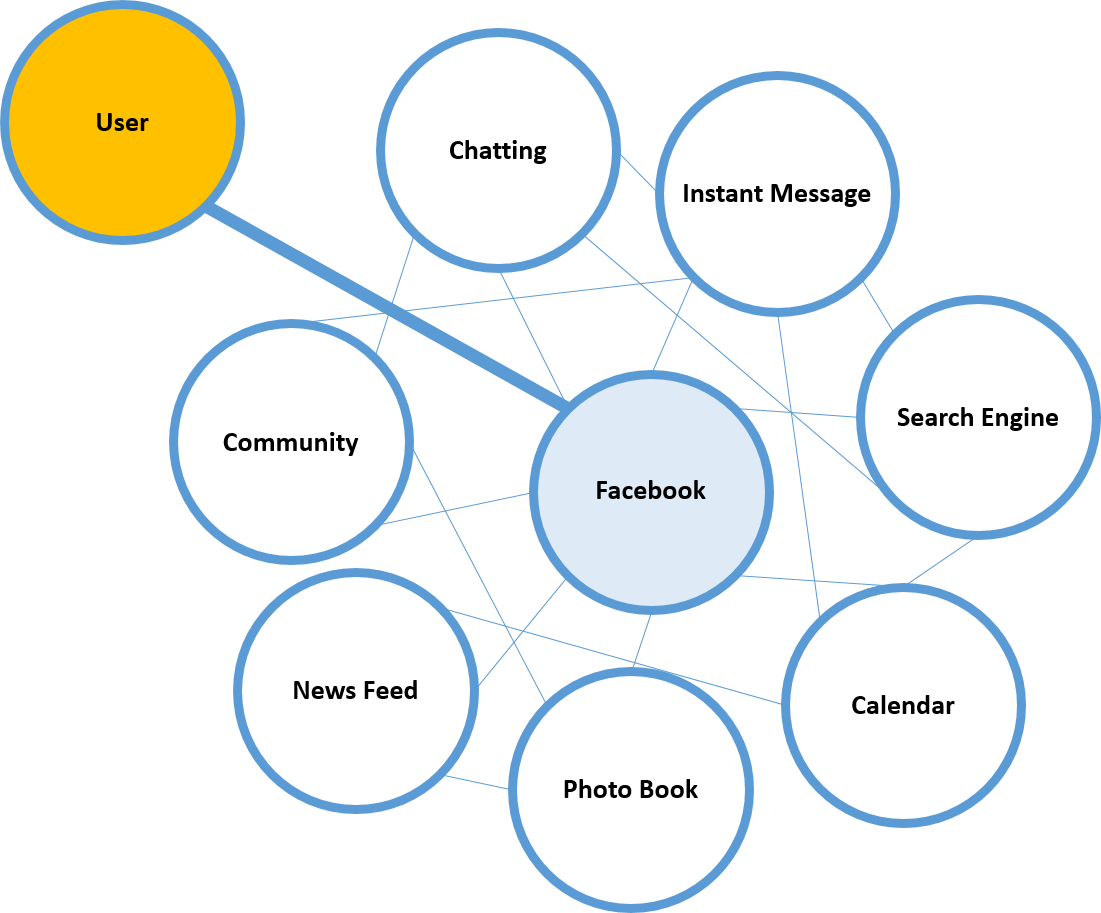


Figure 7.The experience network structure of Facebook

7. 11ST Online Shopping Mall

:A service case of low density and low centrality ( [www.11st.co.kr](http://www.11st.co.kr) )

11ST online shopping mall (11ST) is a Korean open market platform operated by SK Planet. Open Market (Online marketplace) is different from traditional online shopping mall in that individual sellers upload the information about their products online and sell them directly to the customers. Commission fee is absent at the Open Market, allowing the sellers to set their prices lower than traditional online shopping malls.

In Korea, G-market, Auction, and 11ST have dominant market shares in the open market industry. G-market and Auction are run by eBay, a multi-national firm, which makes 11ST the only purely Korean open market. In particular, 11ST is trying to increase customer convenience and the pleasure of shopping by improving their user interface easier and more intuitively. Due to these efforts, 11ST had the biggest number of website visitors according to a recent survey.

As shown in Figure 8, 11ST is a typical open market that binds various sellers within its platform. Drawing on this, the experience network of 11ST can be viewed to be highly centralized. Both sellers and customers can communicate with each other only by the mediation of 11ST. So this results in low centrality from the viewpoint of customers.

In addition, there are no explicit relationships among the sellers in 11ST. That being said, all of the sellers who sell the same product X do not have any visible relationships with each other. This goes the same for product Y, and to the sellers who sell both product X and Y at the same time. Thus the relationship density is low drawing on that there is no other explicit relationship but the one between sellers and 11ST.

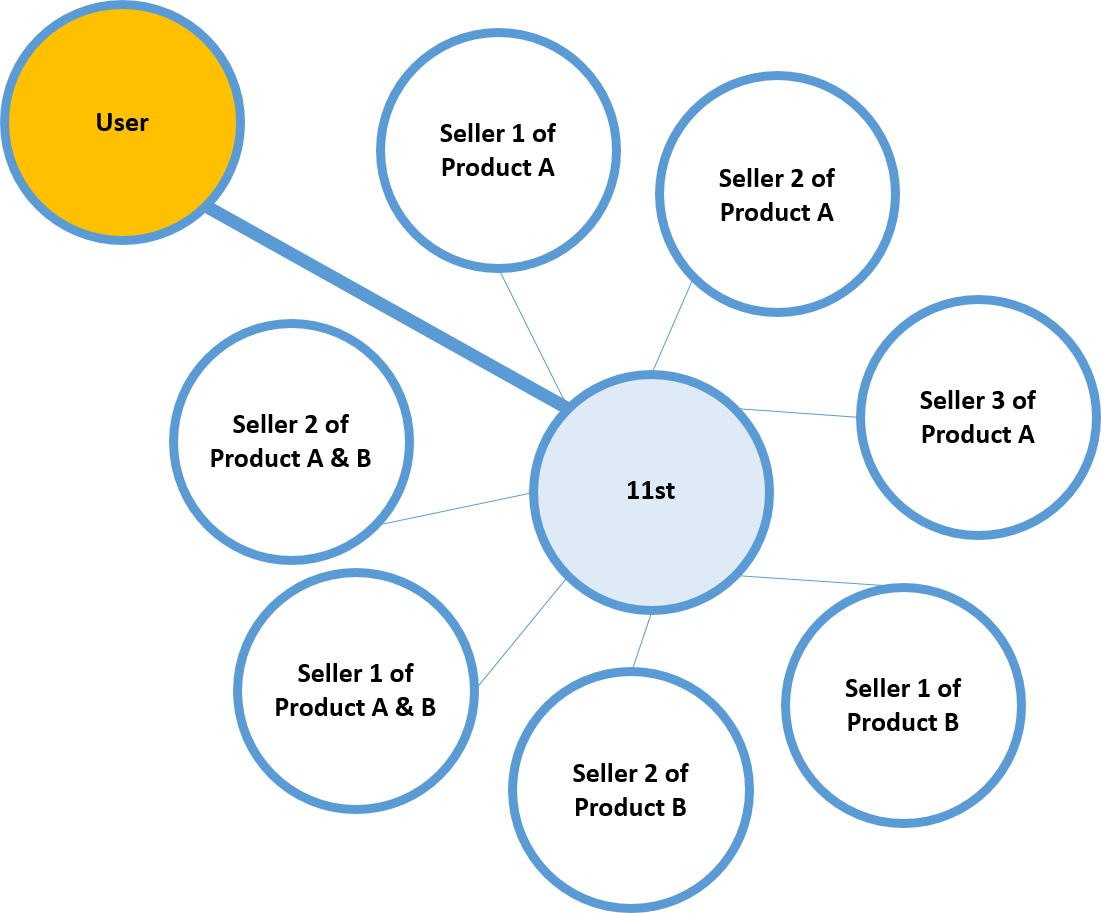


Figure 8. The experience network structure of 11ST

8. Smart TV

: A product case of low density and low centrality ( <http://kr.lgappstv.com/appspc/main/main/main.lge> )

A smart TV stands now as a platform that is used not only for the traditional broadcasting service but also for various services such as internet surfing, e-mail and instant messaging. There are two representative types of smart TV. First one is embedding the internet function and operation system (OS) to the TV at manufacturing level (e.g. Samsung and LG Smart TV). Second one is providing additional OTT (Over-the-top) box (e.g. Amazon, Google and Apple TV).

It is still not clear what will be the dominant platform in the smart TV domain. All-in-one Smart TV has 31% of the total proportion, while set-top box and console has 16%, 28%, respectively. In February 2014, the Smart TV claimed 33% of the total market share in the global flat TV market. Total number of sales in 2013 was 7.6 million, which is an increase of 55% compared to the previous year.

As shown in Figure 9 below, a smart TV provides a connection among different home entertainment systems such as information searching, IPTV, games, and shopping. From the user’s perspective, a smart TV plays a role of a central device, which is providing a connection among the whole entertainment system, even the home network system. Therefore, the centrality of using a smart TV is quite low because users do not have to control additional devices. Meanwhile, each module of the smart TV system is not strongly correlated. For example, while a smart TV can display the image from the home security system that function is not fully connected to other features on the smart TV, such as the internet search. Thus, it can be said that the smart TV has low density because the connectivity among individual devices is low.

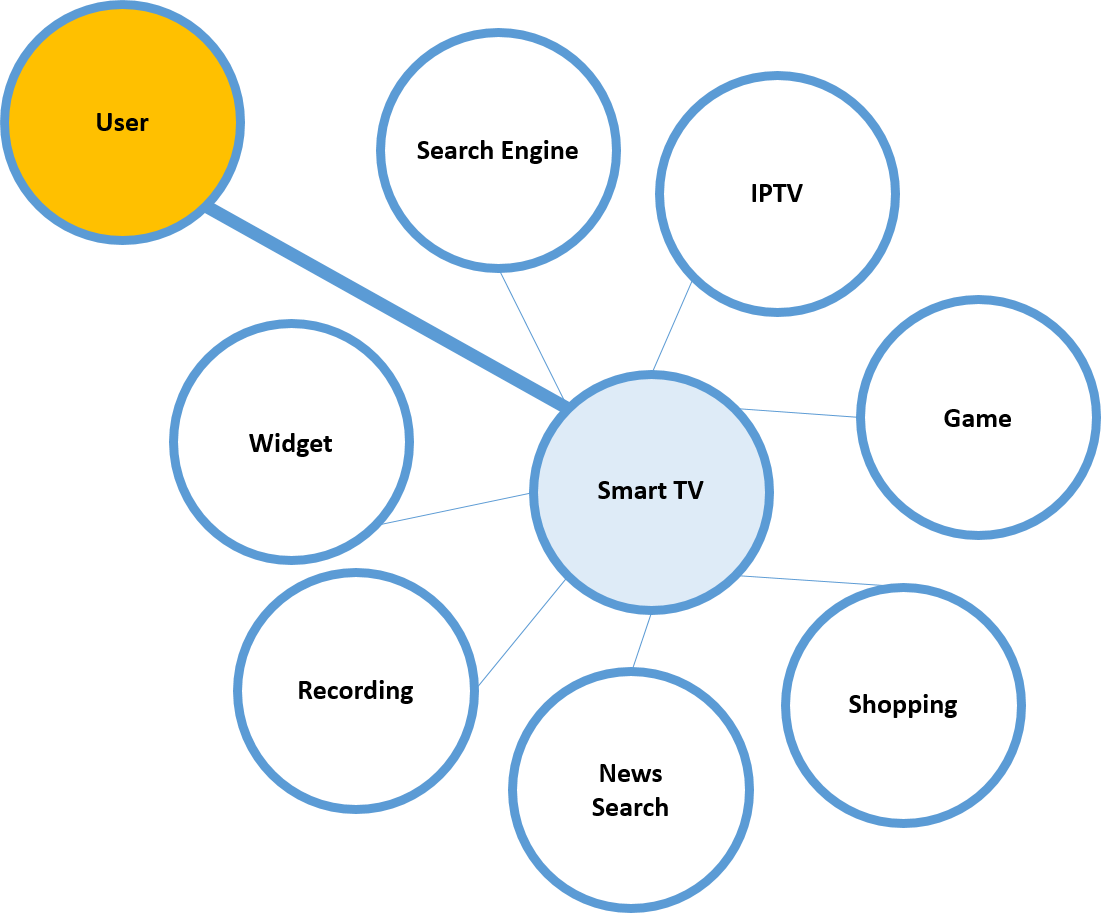


Figure 9. Experience network structure of Smart TV