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A Piece Of Tarots

by Yuxuan Lei

PROJECT DESCRIPTION

Problem

In 2012, Flavie Halais published a paper entitled "Has South America's Most Sustainable city Lost Its Edge?" on City Lab." and expressed his concern about the increasing ratio of automobile per inhabitant and the declining public transportation usage in the City of Curitiba. The underused bike paths and a 4.3 percent (about 14 million rides) plunge of the BRT usage in the past four years brought a slew of urban problems to the city such as air pollution, road accidents, and congestion, etc.

Meanwhile, Linha Turismo, a sightseeing bus line of Curitiba that provides one-stop Hop-On Hop-Off Tours service to tourists is also whined for its over-crowded condition, infrequency, and expensive cost.

Bus Card System

In Curitiba's transportation system, the distribution of flow and resources is uneven. more and more middle-class citizens give up the public transportation and commute by cars, and tourists still tolerate the expensive cost and overcrowd condition of Linha Turismo. Based on reflections on the above issues and user behaviors, the project envisions a bus card gamification system, **A plece of Tarots**. The goal of this project is to attract more tourists and citizens to use public transportation through the fun of the gamified system, so as to transfer the congested traffic load from the other sectors, encourage people to explore the city, and rebuild Curitiba's city identity.

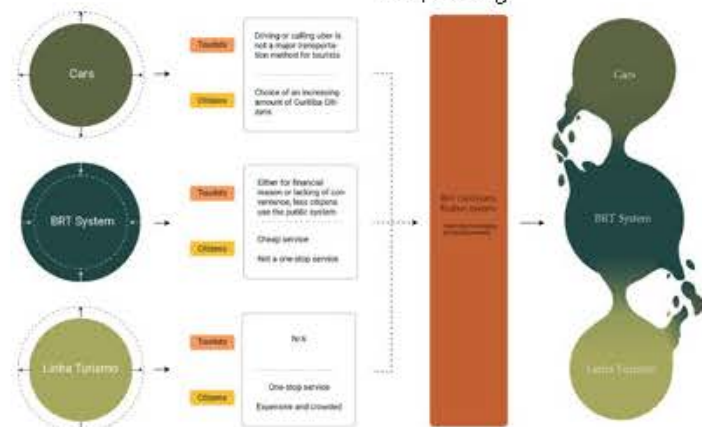1 https://www.gsb.stanford.edu/insights/itamar-simonson-what-makes-people-collect-things

"Tarots" is an analogy term refers to puzzle rather than a real tarot card. In this system, people of the city will become potential puzzle collectors. The mechanism is simple: By visiting BRT stations and using the BRT system, users can collect different types of random bus card fragments. After collecting a full puzzle, they can either redeem it for a physical reward, such as a discount ticket for the BRT system or free membership to a museum, etc., or exchange and share it with other users.

Collecting is a universal behavior in human culture. The process of unpacking surprise and owning a reward can build users' self-cognition and emotional connection to the BRT system. According to a recent study by Itamar Simonson, a professor at Stanford Graduate School of Business, "People are more likely to begin a collection once they possess two of one item. This is because people begin to associate owning the same

objects with being superfluous or superfluous. But don't want to get rid of something they enjoy. This redundancy becomes about the to the justify, and thus, a collection ensues.²"

Database

While users are benefited from the physical reward and psychological emotional experiences, the BRT system can also increase its usage without decreasing the ticket price. In addition, as a digital bus card system, the tarot system can collect real-time data from the App, thus providing an integrated database platform that records people's usage of each station and the traffic flow. By analyzing the year-on-year and sequential trends of these data and observing short-term to long-term flow changes, the city of Curitiba is able to observe the usage pattern and evolving demographics of BRT system timely, so as to formulate corresponding policies, operation strategies, and new planning.

Brazil's Curitiba was once a model of sustainable planning. Now, it's struggling with a slew of urban problems.

Has South America's Most Sustainabl Lost Its Edge?

FLAVIE HALAIS   JUNE 6, 2012

Car culture is growing in all of Brazil's major cities, as the growing middle-class happily gives up inefficient public transportation. But the much-praised BRT, which inspired systems like Bogotá's TransMilenio, wasn't expecting to see its popularity decline. The blame, according to critics, lies with URBS, the city agency in charge of managing the system, which has failed to adapt to changes in usage patterns and evolving demographics.

cidade de curitiba

Maria
Female | 27 Years Old
Self-guided tourist

Profession
Photographer and blogger

Frustration
* Some stops of Linha Turismo can be very crowded.
* The travel expenses is expensive
* The bus comes every 30-minutes, and I spent a lot of time on waiting.

Needs
* Flexible schedule
* Comfortable and cheap transportation experiences that encouraged me exploring the city.
* Know more about the city from other means than visiting tourist attractions.

Jose
Male | 24 Years Old
Curitiba Citizen

Profession
Mechanical Engineer live in the suburban area of Curitiba

Frustration
* The nearest BRT station from my home is 20 min walk.
* Driving in the rush hour for daily routine is a pain.
* BRT system is increasing the price.
* Multiple transfer also bother me in continue using the BRT for daily routine.

Needs
* Better options for daily transportation
* Better experiences when using the BRT system

PERSONAL INTERACTIONS

In order to adapt to the gamified bus card system, I designed new ticket machines and ticket gates for the BRT station where personal interactions will happen.

The first design principle is to simplify the card collection process so that the game mechanics will not compromise the efficiency of passengers buying tickets and checking pass, and the second concern is making the process fun to operate and observe by users.

The following is the senario explanation user will experience:

○ Firstly, user comes to a ticket machine and select their preferred ticket plans. Like all other public transportation systems, he/she can choose from various types of plans, such as monthly pass, or pay per ride, etc.

○ Different choices automatically identified the user to different personas, either tourist or citizen. By default, the system assumes that most passengers who choose monthly

pass are citizens rather than tourists, while those who choose pay per ride are more likely to be tourists.

○ According to the plan selection (and a hidden process of persona identification), the bus card will be divided into different numbers of fragments. tourists who stay for a shorter time get 15 fragments per bus card, while the citizens who live for a long time will get 30 fragments per card (correspondingly, the rewards will be more after the collection).

BRT Station

Ticket Machine

Ticket Pass Plan

Persona Identification

Fragments of collection

Card Types

Print card

White card

Check in

Collecting Pattern
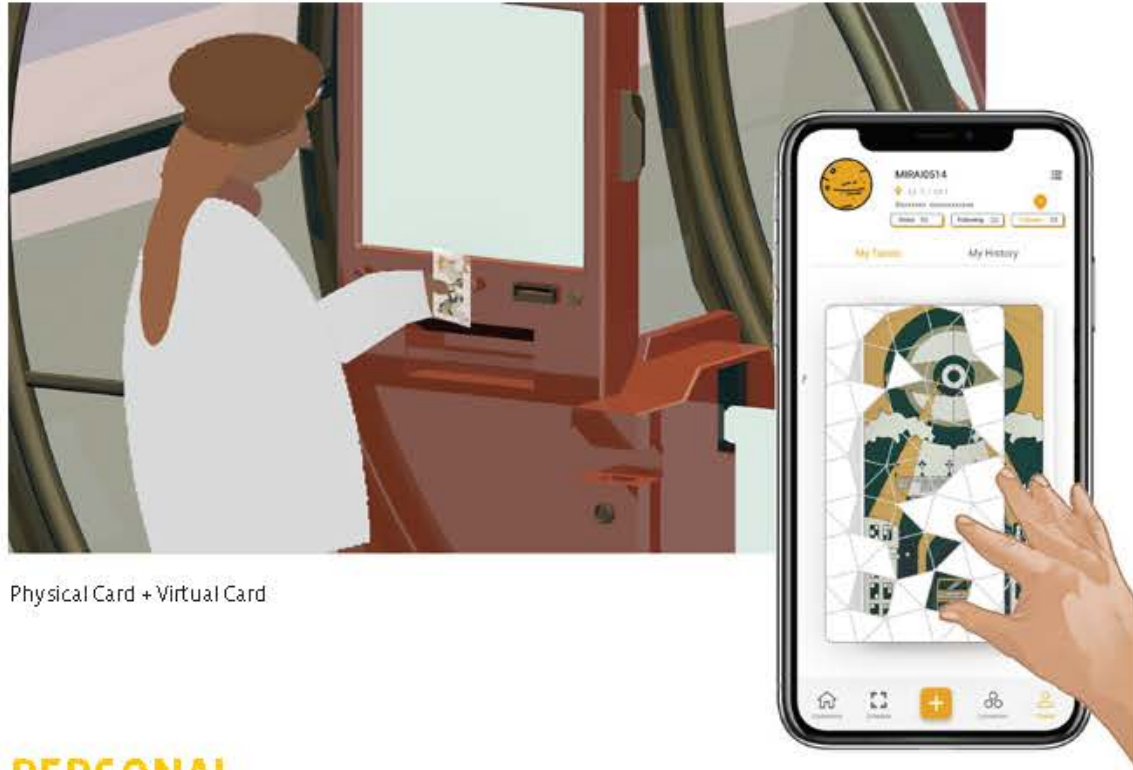
Physical Card + Virtual Card

PERSONAL INTERACTIONS

○ Different types of cards correspond to multiple reward options. For example, as showed on the right page, six patterns of cards matched with the physical reward of discounted bus tickets, fresh food, musuem membership, bike rides, donations, and related products.

○ Users can select the bus card type they want to collect by pushing the button on the ticket machine, or they can skip this step and be randomly assigned to a card type.

○ After completing the buying process, passengers will be given a white card.

○ The design of the ticket check-in machine allows passengers to scan the QR code on the back of the white card to check in.

○ While scanning, an embedded Direct-to-Card-Print head in the ticket gate machine will print the pattern of card fragments collected by passengers on the front face of the white card.

In the whole process, passengers didn't waste time on collection while they can personally experience the visual process and observe the changes from a white card to a designed pattern intuitively.

In addition, if passengers accidentally collect other types of fragments, the collection will be stored as a virtual card in the BRT app. After collecting the whole virtual card, the thing can be printed as a physical one.

Top: Virtual Card App and physical card system

Free/Discounted BRT Pass

Fresh Food

Musuem Membership

Free/Discounted Bike ride

Donation to BRT

Related BRT Brand Products

Similar with Curitiba's Trash Exchange program that citizens living in different areas can exchange their trash for different benefits, the Tarot system designed six types of cards to fulfill various needs of citizens, families, and tourists.

Top: Tarots Design

URBAN
INTERACTIONS

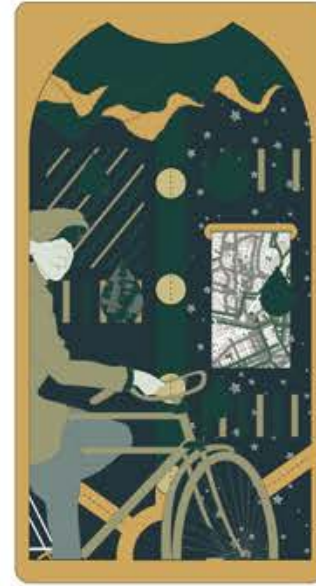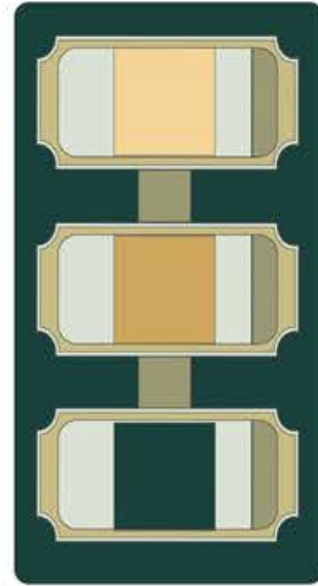In a 1991 article published in the Journal of Social Behavior and Personality, Russell Belk, professor of marketing at York University in Toronto, said that "the desire to collect isn't driven by a need to complete a collection. "You're not striving for that closure as much as striving for bigger and better collections," he says. "That implies some social comparisons -- that your collection is in some sense better than theirs."²"

Similarly, with the potence to influence the city and users' behavior,

the tarot system takes advantages of the inducement that people want to collect better cards to encourage them to change their schedule and routes and explore the city differently. Similar to Pokémon go, users can observe the types of card fragments being refreshed at each BRT station in real time on the app. The flow of people will change in order to collect rarer cards.

For example, with the collection system, tourists will explore the city more than before. Tarots provides an
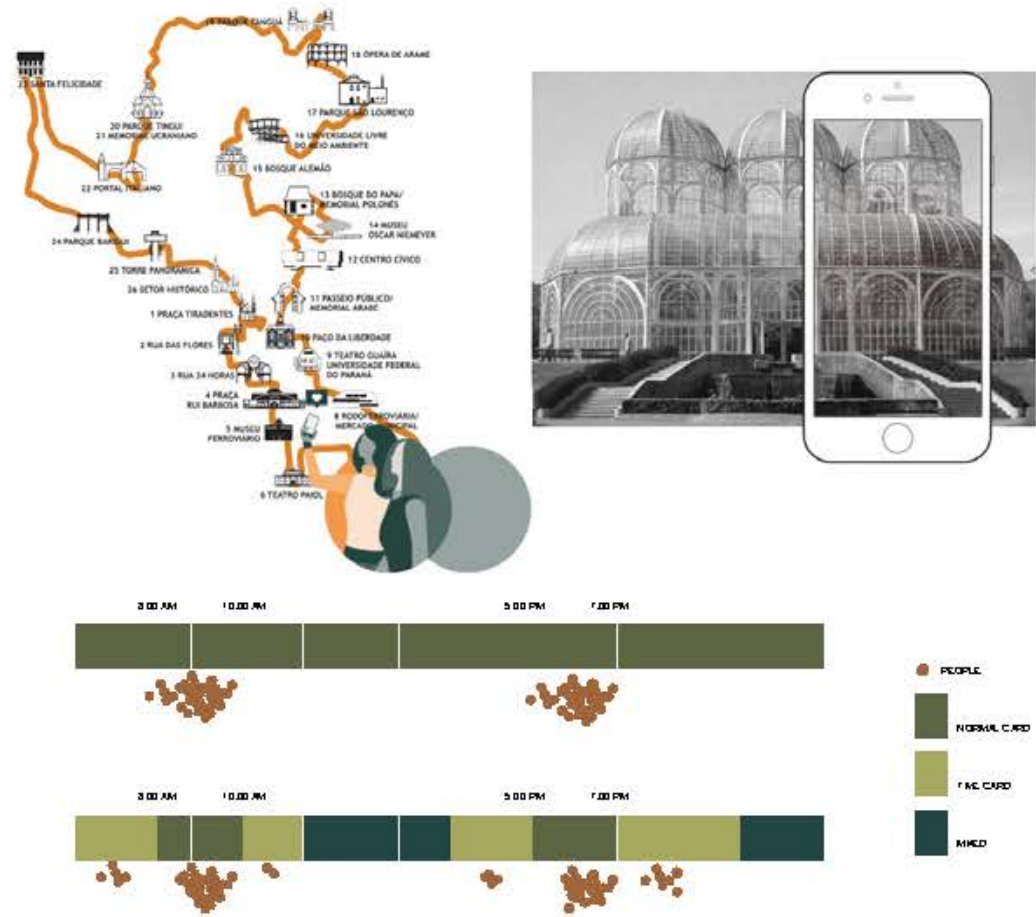
AR recognition collection method. When tourists arrive at popular tourist attractions, they open the camera in the app to scan buildings. The camera can identify the feature points of the building and record the user's visit to this spot. Visitors who have visited all of Curitiba's recommended attractions can get a special Area card for commemoration. Once they have a sense of mission and purpose, it will be more fun and easier for them to stick to the whole journey.

Another special card is the time card. During the hours before or after rush

hour, rare cards in BRT station will be collected by tourists with a higher probability. This design is to disperse the flow of people, relieve the rush hour congestion, and encourage people to commute earlier.

Top: AR Recognition Collection

Bottom: Time Card Collection

2 https://www.forbes.com/sites/jvchamary/2016/07/12/science-collecting-pokemon/#3c2552903808
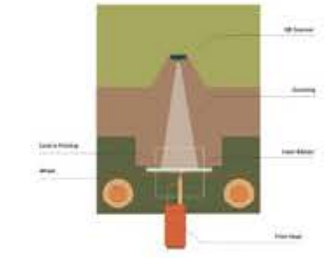
TECHNOLOGY DESCRIPTION

In this project, the main technologies applied are QR code and direct-to-card printing technology based on dye-sublimation and resin thermal transfer.

In the ticket machine, different card types are stored separately in containers. Although all card in each card storager have similar appearance, the QR code data on each type card contains unique distinguishable data. A unique QR code can be used to identify your choosen card type and plan. Ticket gate first detects the position detection pattern, Timing Patterns, and Alignment Patterns of QR code through the camera. Then it reads and encodes the Alphanumeric mode and mask data of the code. The

output recognized the card type and fragment pieces and is transmitted to the embedded direct to card printing machine. The machine then load the corresponding print patterns and identifies a random point of a white blank spot on the card (where haven't been drawn)

The print is conducted through a Direct-to-Card printing technology, which is also the most common technology used by photo level card printing. Its advantage is that it allows the machine to print directly onto the surface of a plastic card. The printing happened by heating a special color ribbon under a thermal print head, and the color will be transfered from the source to the blank card.

Top: Section of the ticket gate

Bottom: Technology Flow chart

1 TouchScreen
2 Physical Button
3 Card Reader
4 Camera
5 Embedded Card Print
6 Automatic Door