

UNMANNED STORE-DS

*Shopping Solutions and Smart Staff
Care Delivery Shelf Design Based on the
Background of Hi-tech Parks*





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ABSTRACT | It.

Con lo sviluppo dell'economia in Cina, lo stile di vita delle persone sta migliorando giorno dopo giorno. Lo shopping, attività quotidiana che appartiene a tutti, sta gradualmente acquisendo sempre più attenzione; e per avere più clienti, i commercianti fanno un grande sforzo nel design della shopping experience.

La mia tesi ha come obiettivo quello di migliorare la shopping experience nell'acquisto di snack nel parco Hi-tech, indagando le diverse fasi della user experience. Cercando di comprendere i bisogni delle persone nella maniera più concreta, ho scelto Netease

Hangzhou Park come oggetto di studio. I risultati ottenuti dalla ricerca comprendono il design di una soluzione “DS” per un parco High-tech, di un sistema “DS” per una App (sia per lo staff, sia per il crew support) e di uno Smart Delivery Shelf. Questa soluzione complessa sarà probabilmente utilizzata in migliaia di parchi Hi-tech, grandi e piccoli, in Cina, per migliorare la shopping experience nelle aree di lavoro.

ABSTRACT | Eng.

With the development of China's economy, people's living standard is improving day after day. Shopping, this life-related behavior, is also gradually getting everyone's attention. In order to get more customers, merchants make a great effort to the shopping experience design. In this paper, I try to improve the experience of purchasing snacks in the Hi-tech park by using user experience design method. As I want to find the accurate needs as many as I can, I picked Netease HangZhou Park as my study subject.

The results obtained in this research include High-tech park "DS" solution, "DS" system App design (for both staffs & support crews) & Smart Delivery Shelf design. This solution is gonna likely to be used in thousands of Hi-tech parks in China, the large ones and the small ones, to enhance the buying experience in working areas.

INTRODUCTION |

Whether it is the "Industry 4.0" proposed by Germany, the "Industrial Internet" by the United States or the "Made in China 2025" by China, new technologies such as the Internet, big data, cloud computing, artificial intelligence, unmanned supermarket, AI all have been growing steadily hotter and hotter. First the Amazon Go, later the unmanned store by Jack Ma. And now in China, the unmanned shelves in the office area has attracted numerous giants into the game, from February this year, just in 2 months, unmanned shelf has been publicly financing over 2.5 billion yuan. Its market value is evident.evident.

But there are still many pain points existing in unmanned retail solutions. Based on the analysis of existing market retail models and the interviews' results with staff in the science park, this thesis attempts to refine some pain points by user study methods. Such as Hi-tech park staffs, in the whole process of work, the specific snack needs and the problems encountered for each meal. In response to these needs, I started to do some attempts, in the end I find "DS" solution - smart delivery shelves combined with face ID, AI, big data and some other technologies.




The Internet will not change the nature of retail. The ultimate assessment of whether a retail model is good or not can not be achieved without two criterion: one is cost-effectiveness, another is shopping experience, and one good retail model is the model can meet both requirements. The delivery shelf in this thesis are based on the user experience design, which with the help of Internet technology, it maximizes the transaction efficiency and production efficiency. If the model is successful, the snack market in the office will be a very good scenario for it.

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THE WORLD'S FACTORY - CHINA

Question: What do Lightning McQueen, a Nike sneaker and an iPad have in common? Answer: China. Chinese products seem to be everywhere: the majority of tags, labels and stickers display the legend “Made in China.” The Western consumer may ask, “why is everything made in China?” Some may think the ubiquity of Chinese products is due to the abundance of cheap Chinese labor that brings down the production costs, but there is much more to it. Here are five reasons China is “the world's factory.”

Lower Wages

China is home to approximately 1.35 billion people, which makes it the most populous country in the world. The law of supply and demand tells us that since the supply of workers is greater than the demand for low-wage workers, wages stay low. Moreover, the majority of Chinese were rural and lower-middle-class or poor and until the late 20th century when internal migration turned the country's rural-urban distribution upside-down. Immigrants to industrial cities are willing to work many shifts for low wages.

China doesn't follow (not strictly at least) laws related to child labor or minimum wages, which are

more widely observed in the West. However, this situation may change. According to the China Labour Bulletin, from 2009 to 2014 minimum wages have almost doubled in mainland China. Shanghai's minimum hourly rate is now up to 17 yuan (\$2.78) per hour or 1,820 yuan (\$297.15) a month. In Shenzhen the rate is 1,808 yuan per month (\$295.19) and 16.50 yuan (\$2.69) per hour based on an exchange rate of 1 yuan = \$0.16. The huge labor pool in China helps to produce in bulk, accommodate any seasonal industry requirement, and even cater to sudden rises in the demand schedule. (For more, see: Do Cheap Imported Goods Cost Americans Jobs?)

Business Ecosystem

Industrial production does not take place in isolation, but rather relies on networks of suppliers, component manufacturers, distributors, government agencies and customers who are all involved in the process of production through competition and cooperation. The business ecosystem in China has evolved quite a lot in the last thirty years. For example Shenzhen, a city bordering Hong Kong in the south-east, has evolved as a hub for the electronics industry. It has cultivated an ecosystem to support the manufacturing supply chain, including component manufacturers, low cost workers, a technical workforce, assembly suppliers and customers.

For example, American companies like Apple Inc. (AAPL AAPL Apple Inc 172.98 -0.64%) take advantages of supply chain efficiencies in the Mainland to keep costs low and margins high. Foxconn (the main company which manufactures Apple products) has multiple suppliers and manufactures of components that are at nearby locations, and it would be economically unfeasible to take the components to U.S. to assemble the final product. (For more, see: China's Economic Indicators.)

Lesser Compliance

Manufacturers in the West are expected to comply with certain basic guidelines with regards to child labor, involuntary labor, health and safety norms, wage and hour laws, and protection of the environment. Chinese factories are known for not following most of these laws and guidelines, even in a permissive regulatory environment. Chinese factories employ child labor, have long shift hours and the workers are not provided with compensation insurance. Some factories even have policies where the workers are paid once a year, a strategy to keep them from quitting before the year is out. Environmental protection laws are routinely ignored, thus Chinese factories cut down on waste

management costs. According to a World Bank report in 2013, sixteen of the world's top twenty most polluted cities are in China. (For more, see: Boom or Bust? The End of China's One-Child Policy.)

Taxes and Duties

The export tax rebate policy was initiated in 1985 by China as a way to boost the competitiveness of its exports by abolishing double taxation on exported goods. Exported goods are subject to zero percent value added tax (VAT), meaning they enjoy a VAT exemption or rebate policy. On the other hand, the U.S. doesn't have a VAT and import taxes are only applicable to certain goods like tobacco and alcohol. Consumer products from China are exempted from any import taxes. Lower tax rates help to keep the cost of production low. (For more, see: Top 6 Factors That Drive Investment In China.)

Currency

China has been accused of artificially depressing the value of the yuan to provide an edge for its exports against similar goods produced by a U.S. competitor. The yuan was estimated to be undervalued by 30% against the dollar in late 2005. The Chinese yuan has, however, been steadily increasing in value against the dollar over the past few years. According to the Bank for International Settlements, the real appreciation of the yuan between the end of 2011 and March 2014 was about 7%. China keeps a check on the appreciation of yuan by buying dollars and selling yuan, a practice that has swelled Chinese foreign exchange reserves to approximately \$4 trillion. (See: Why China's Currency Tangos With The USD.)

The Bottom Line

In the recent times, pundits have wondered if China will lose its spot as "the world's factory" as emerging economies offering cheap labor and rising wages dull China's competitive edge. The availability of cheap labor is just one of the many factors that have made China a manufacturing hub, however, and it will take more than cutthroat desire for emerging economies to set up a business ecosystem that can compete with China's. For some time to come, China will be "the world factory" with its low production costs, huge labor pool, vast talent base and business ecosystem.[1]

1. Prableen Bajpai, CFA (ICFAI), "Why China Is The World's Factory"

TRANSITION FROM WORLD'S FACTORY TO INNOVATION HUB

The Chinese like to remind people that they are to thank for a great many inventions, including gunpowder, the compass, printing and paper making. Today, we'd probably refer to them as 'disruptive technologies' as they fundamentally transformed the way things were done. The reason that China is so keen to remind the world of its incredible creativity of the past is its lack lustre present-day performance.

These days, it is common for China-watchers to ask if the country can innovate as it transforms from the world's factory to a nation based on developing cutting edge science and technology? Some leading Western business people don't think the Chinese can do it.

So can the Chinese innovate? Dr Hsiao-Wuen Hon, chairman of Microsoft's Asia-Pacific R&D group certainly thinks so. "People still question this today? With the success of BAT?" (BAT refers to the three Chinese internet giants Baidu, Alibaba and Tencent).

Wuen Hon says the fact that so many multinationals, including Microsoft, set up their R&D centres in China is clear evidence that Chinese scientists and engineers can innovate.

"We invest in 3,000 people here. We contribute a lot to the development of Microsoft's global products. If we don't contribute anything in terms of innovation, why should the company invest in China? It would be totally unthinkable," he told Business Spectator. "I can say that for all the multinational companies based here in China."

Hon, an internationally recognised expert in speech technology, says the idea that Chinese companies simply copy Western technology and business models is out of date. "Now, it is no longer true. I see some of the innovations for the first time in China. China absolutely has first-rate stuff to show the world, I would even say, in some areas, it leads the world," he says.

The veteran computer scientist says that Chinese companies are particularly good at combining, integrating and improving business models, processes and technology. A recent report by McKinsey Global Institute, titled The China Effect on Global Innovation, supports Hon's take.

The report finds China is now taking the global lead in two areas of innovation, namely in improving consumer products and in improving manufacturing processes. To take Tencent as an example, its average revenue per user was \$US16 in 2014, \$US10 more than Facebook.

The Chinese computing giant generates most of its revenue from online gaming. Hon also identifies two areas where the Chinese are overtaking the US: mobile internet and mobile payment. He noted: "In terms of mobile payment, more innovation will come from China." According to Hon, Mark Zuckerberg, the founder of Facebook, is taking hints from Chinese internet giants in terms of mobile payment. There you go, a Silicon Valley giant learning from a Chinese upstart, something no one could imagine just a few years ago.

China's sheer number of consumers also help their companies to thrive. Chinese consumers are ready adopters of smart phones, social media and e-commerce. "That part I have so much confidence in, because if you look at China in terms of mobile internet usage, it is far more than anywhere else in the world. So they have an environment that is better than anyone else," he says.

"If you look at the companies that generate the most wealth, it is the ones that combine technology with better business process and models," he said. "Uber is that type of innovation."

If you are looking for signs of positive development in the world's second largest economy, the ability and enthusiasm to innovate is a good place to start.[2]

GOVERNMENT SUPPORT ON SCIENCE AND TECHNOLOGY INNOVATION

The State Council issued a national scientific and technological innovation plan in a bid to build China into an innovative country and a scientific and technological power. As the world's second-largest economy undergoes economic transition for further development, technology innovation has never been more significant, the plan said. Based on the idea that innovation is the prime development driving force, the plan is a blueprint designed for technological innovation development during the period of the 13th Five-Year Plan (2016-2020).

The plan aims to substantially improve China's technology and innovation capabilities, and lift the country's comprehensive innovation capabilities into the world's top 15. China has witnessed major developments in technology improvements, such as manned space flights and lunar probes, manned deep-sea submersible, deep earth exploration, super computers and quantum communication.

Some figures provide evidence of the nation's efforts and development in technological innovation. In 2015, nationwide expenditure on scientific research and experiments totaled 1.42 trillion yuan (\$213.4 billion); it accounted for the world's second largest number of published international science and technology papers; and the national comprehensive innovation capabilities ranked 18th

in the world.

In addition, the contribution rate of technology to economic growth increased from 20.9 percent in 2010 to 55.3 percent in 2015.

The plan urged to play the key leading role of scientific and technological innovation in uplifting the industries to the medium- and high-end, developing new growth drivers, expanding new development space, improving development quality and efficiency.

The plan called efforts to accelerate the implementation of major national scientific and technological projects and launch the scientific and technological innovation 2030 project.

China should construct an internationally-competitive industrial technology system, make an integrated arrangement of modern agriculture, new generation of information technology, intelligent manufacturing and energy, promote the disruptive technological innovation and lead the industrial revolution, the plan said.

It also called for the building of a technology system which support the improvement of people's livelihood and sustainable development, which can safeguard national security and strategic forces, said the plan.

The plan also said China should take the lead in organizing international big science plans and programs and strive to lead the world science direction in more advanced basic fields and make breakthroughs in more strategic fields.

The plan also called for the building of the innovation bases led by national laboratories and cultivation of world class scientists and technological talents.

The country should support Beijing and Shanghai to build scientific and technological innovation centers with international clout, set up a batch of innovative provinces and cities and regional innovation centers, promote the innovative development of national innovation demonstration zones as well as new and hi-tech development zones, according to the plan.

The plan also urged the building of a Belt and Road innovation community aiming to improve the country's ability in allocation of global innovation resources and fully participate in the global innovation governance.

Furthermore, efforts will be made to further promote mass entrepreneurship and innovation, reform science and technology systems, improve social scientific literacy, and strengthen science

popularization infrastructure, according to the plan.

The plan also urged to clear systematic barriers hampering innovation and the transformation of scientific and technological achievements.

To ensure effective implementation of the plan, efforts will be made to strengthen legal protection on innovation, improve inclusive and supporting policy system, implement intellectual property rights strategies, advance technology standard strategies, and enhance policy coordination, according to the State Council.[3]

3. *English.gov.cn - "China to boost scientific and technological innovation". Aug 8,2016*

O2O - A TRILLION-DOLLAR OPPORTUNITY

Online to offline ("O2O") commerce is all the buzz right now. Last year, when Alibaba invested over \$3 billion in the technology, the media took note and journalists around the world began discussing the future of the O2O industry in Asia and abroad.

Equipped with O2O tools and services, business owners would have an unprecedented level of accuracy in their online marketing and, for the first time ever, would be able to reliably determine ROI from online advertising. Until recently, that technological ability simply did not exist.

Online advertising has innovated remarkably little in the past decade, causing many business owners who want higher conversion rates, better analytics, and better customer targeting to grow frustrated. O2O tracking platforms are the next step forward in an industry that has been lagging behind for years.

According to Jon Carder, CEO of O2O network Empyr, whose mission is to bridge the gap between online and offline commerce, thinks the opportunity is a big one. A trillion dollars to be exact. Later, Carder wrote a blog post titled "The Formula to Create a Trillion Dollar Industry" that detailed the specifics of how the industry could be built up in a very short amount of time.

Enormous volume of offline spending.

According to the Chamber of Commerce, over 93 percent of purchases still take place offline, which accounts for over \$4 trillion each year. Most people are blown away by this number. People think that, given how integrated our lives are with the internet, online spending would be much higher. But the data shows that a massive amount of spending happens offline and that's likely to continue for years. The challenge business owners face is bringing that online audience directly into their stores and knowing how they attracted them and how much it cost to do so.

Trillion-dollar opportunity?

An article in TechCrunch called O2O commerce a "trillion dollar opportunity." They calculated that the average American earns around \$40,000 annually and the average e-commerce shopper spends \$1,000 per year online. Apart from taxes, where does the rest of the \$39,000 go? It goes to the offline economy: grocery stores, real estate, car dealerships, restaurants, etc. Bridging the gap allows businesses to actively compete for that commerce using online advertising. In a recent blog post, Carder outlines the additional steps needed to capitalize on this potentially trillion-dollar opportunity.

Small-business disappointment.

When the Chamber of Commerce ran a survey of small-business owners to better understand their marketing strategies, the data showed that when asked which marketing channels were most effective, "only 3 percent found PayPerClick (PPC)" to be an effective lead generation tool. This is likely because PPC platforms are difficult to set up and often do not offer reliable or easy to understand analytics.

Solutions out there offer advertisers guaranteed ROI on ad spending and small-business-friendly platforms will continue to grow in popularity as online marketing becomes a must for local business owners.

Consumer research trends.

According to studies by the Consumer Barometer, over 60 percent of consumers research a product online before going to a store to make a purchase. Bridging the gap between when someone who is viewing a product online and when they enter a store to complete a purchase could create an entirely trackable revenue stream for business owners. If someone is searching for your product and finds it online, that's a hot lead! You want to capture that. Technology has finally caught up and

making that capture possible, which is an enormous win for advertisers. While buzzwords come and go, the idea behind O2O commerce is here to stay. Despite recent advancements made by companies, the technology has yet to perfectly align with consumer shopping trends and the needs of business owners. The trillion-dollar problem still lacks a perfect solution, but entrepreneurs are rapidly solving that mystery.

As the loop between online and offline commerce closes, business owners, advertisers, and, most importantly, consumers are well positioned for a win-win-win.[4]

4. John Rampton,
"Why O2O Commerce
Is a Trillion-Dollar
Opportunity".



SHOPPING MODES NOWADAYS



Online Shopping - Ebay,
Amazon, Taobao, Ele.me,
Foodora ect.



New mode - Future
supermarket e-coop VR tour

ONLINE SHOPPING |

The Amazon logo consists of the word "amazon" in a bold, black, lowercase sans-serif font. A yellow curved arrow starts under the letter 'a' and points to the letter 'z'.The eBay logo features the word "ebay" in a lowercase sans-serif font. Each letter is a different color: 'e' is red, 'b' is blue, 'a' is yellow, and 'y' is green.The Foodora logo includes a pink icon of a dome-shaped food container with a red lid, positioned above the word "foodora" in a lowercase, pink, sans-serif font.The Alibaba Group logo features an orange stylized icon of a hand holding a globe, followed by the text "Alibaba Group" in orange and "阿里巴巴集团" in Chinese characters below it.The Tmall logo consists of the Chinese characters "天猫" in red, with "TMALL.COM" in a smaller red font below them. At the bottom is a black silhouette of a cat's face with white eyes.The JD.com logo features a grey icon of a hand holding a globe, followed by the Chinese characters "京东" in red and "JD.COM" in a smaller red font.The Weygo logo includes the word "Weygo" in a large, orange, lowercase sans-serif font, with "da.noi.cè" in a smaller orange font below it.The Taobao.com logo features the Chinese characters "淘宝网" in a large, orange, stylized font, with "Taobao.com" in a smaller orange font below it.

Online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine, which displays the same

product's availability and pricing at different e-retailers. As of 2016, customers can shop online using a range of different computers and devices, including desktop computers, laptops, tablet computers and smartphones.

An online shop evokes the physical analogy of buying products or services at a regular "bricks-and-mortar" retailer or shopping center; the process is called business-to-consumer (B2C) online shopping. When an online store is set up to enable businesses to buy from another businesses, the process is called business-to-business (B2B) online shopping. A typical online store enables the customer to browse the firm's range of products and services, view photos or images of the products, along with information about the product specifications, features and prices.

Online stores typically enable shoppers to use "search" features to find specific models, brands or items. Online customers must have access to the Internet and a valid method of payment in order to complete a transaction, such as a credit card, an Interac-enabled debit card, or a service

such as PayPal. For physical products (e.g., paperback books or clothes), the e-tailer ships the products to the customer; for digital products, such as digital audio files of songs or software, the e-tailer typically sends the file to the customer over the Internet. The largest of these online retailing corporations are Alibaba, Amazon.com, and eBay.

Terminology

Alternative names for the activity are "e-tailing", a shortened form of "electronic retail" or "e-shopping", a shortened form of "electronic shopping". An online store may also be called an e-web-store, e-shop, e-store, Internet shop, web-shop, web-store, online store, online storefront and virtual store. Mobile commerce (or m-commerce) describes purchasing from an online retailer's mobile device-optimized website or software application ("app"). These websites or apps are designed to enable customers to browse through a companies' products and services on tablet computers and smartphones.

History of Online Shopping

The growth of the internet as a secure shopping channel has developed since 1994, with the first

sales of Sting album 'Ten Summoner's Tales'. Wine, chocolates and flowers soon followed and were among the pioneering retail categories which fueled the growth of online shopping. Researchers found that having products that are appropriate for e-commerce was a key indicator of Internet success. Many of these products did well as they are generic products which shoppers didn't need to touch and feel in order to buy. But also importantly in the early days there were few shoppers online and they were from a narrow segment: affluent, male, 30+. Online shopping has come along way since these early days and -in the UK- accounts for significant percents (depending on product category as percentages can vary).

Growth in Online Shoppers

As the revenues from online sales continued to grow significantly researchers identified different types of online shoppers, Rohm & Swaminathan identified four categories and named them "convenience shoppers, variety seekers, balanced buyers, and store-oriented shoppers". They focused on shopping motivations and found that the variety of products available and the perceived convenience of the buying online experience were significant motivating factors. This was different for offline shoppers, who were more motivated by time saving and recreational motives.

Digital High Street 2020

Michael Aldrich, pioneer of online shopping in the 1980s.

English entrepreneur Michael Aldrich was a pioneer of online shopping in 1979. His system connected a modified domestic TV to a real-time transaction processing computer via a domestic telephone line. He believed that videotex, the modified domestic TV technology with a simple menu-driven human-computer interface, was a 'new, universally applicable, participative communication medium — the first since the invention of the telephone.' This enabled 'closed' corporate information systems to be opened to 'outside' correspondents not just for transaction processing but also for e-messaging and information retrieval and dissemination, later known as e-business. His definition of the new mass communications medium as 'participative' [interactive, many-to-many] was fundamentally different from the traditional definitions of mass communication and mass media and a precursor to the social networking on the Internet 25 years later. In March 1980 he launched Redifon's Office Revolution, which allowed consumers, customers, agents, distributors, suppliers and service companies to be connected on-line to the corporate systems and allow business transactions to be completed electronically in real-time. During the 1980s he designed, manufactured, sold, installed, maintained and supported many online shopping systems, using

videotex technology. These systems which also provided voice response and handprint processing pre-date the Internet and the World Wide Web, the IBM PC, and Microsoft MS-DOS, and were installed mainly in the UK by large corporations.

International statistics

Statistics show that in 2012, Asia-Pacific increased their international sales over 30% giving them over \$433 billion in revenue. That is a \$69 billion difference between the U.S. revenue of \$364.66 billion. It is estimated that Asia-Pacific will increase by another 30% in the year 2013 putting them ahead by more than one-third of all global ecommerce sales. The largest online shopping day in the world is Singles Day, with sales just in Alibaba's sites at US\$9.3 billion in 2014.

Customers

Online customers must have access to the Internet and a valid method of payment in order to

complete a transaction. Generally, higher levels of education and personal income correspond to more favorable perceptions of shopping online. Increased exposure to technology also increases the probability of developing favorable attitudes towards new shopping channels.

Customer buying behaviour in digital environment

The marketing around the digital environment, customer's buying behaviour may not be influenced and controlled by the brand and firm, when they make a buying decision that might concern the interactions with search engine, recommendations, online reviews and other information. With the quickly separate of the digital devices environment, people are more likely to use their mobile phones, computers, tablets and other digital devices to gather information. In other words, the digital environment has a growing effect on consumer's mind and buying behaviour. In an online shopping environment, interactive decision may have an influence on aid customer decision making. Each customer is becoming more interactive, and though online reviews customers can influence other potential buyers' behaviors.

Subsequently, risk and trust would also be two important factors affecting people's behavior in digital environments. Customers consider to switch between e-channels, because they are mainly influenced by the comparison with offline shopping, involving growth of security, financial and performance risks. In other words, a customer shopping online that they may receive more risk than people shopping in stores. There are three factors that may influence people to do the buying decision, firstly, people cannot examine whether the product satisfies their needs and wants before they receive it. Secondly, customers may be concerned about after-sale services. Finally, customers may be afraid that they cannot fully understand the language used in e-sales. Based on those factors, customers perceive risk may be a significant reason influencing the online purchasing behaviour.

Online retailers have placed much emphasis on the customer trust aspect, trust is another way driving customer's behaviour in a digital environment, which can depend on customer's attitude and expectations. Indeed, the company's product design or ideas can not meet customer's expectations. Customer's purchase intention based on rational expectations, and additionally impacts on emotional trust. Moreover, those expectations can be also established on the product information and revision from others.

Product selection

Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine. Once a particular product has been found on the website of the seller, most online retailers use shopping cart software to allow the consumer to accumulate multiple items and to adjust quantities, like filling a physical shopping cart or basket in a conventional store. A "checkout" process follows (continuing the physical-store analogy) in which payment and delivery information is collected, if necessary. Some stores allow consumers to sign up for a permanent online account so that some or all of this information only needs to be entered once. The consumer often receives an e-mail confirmation once the transaction is complete. Less sophisticated stores may rely on consumers to phone or e-mail their orders (although full credit card numbers, expiry date, and Card Security Code, or bank account and routing number should not be accepted by e-mail, for reasons of security).

Shopping cart systems

Simple shopping cart systems allow the off-line administration of products and categories. The shop is then generated as HTML files and graphics that can be uploaded to a webspace. The systems do not use an online database. A high-end solution can be bought or rented as a stand-alone program or as an addition to an enterprise resource planning program. It is usually installed on the company's web server and may integrate into the existing supply chain so that ordering, payment, delivery, accounting and warehousing can be automated to a large extent. Other solutions allow the user to register and create an online shop on a portal that hosts multiple shops simultaneously from one back office. Examples are Big Commerce, Shopify and FlickRocket. Open source shopping cart packages include advanced platforms such as Interchange, and off-the-shelf solutions such as Magento, osCommerce, Shopgate, PrestaShop, and Zen Cart. Commercial systems can also be tailored so the shop does not have to be created from scratch. By using an existing framework, software modules for various functionalities required by a web shop can be adapted and combined.

Design

Customers are attracted to online shopping not only because of high levels of convenience, but also because of broader selections, competitive pricing, and greater access to information. Business organizations seek to offer online shopping not only because it is of much lower cost compared to bricks and mortar stores, but also because it offers access to a worldwide market, increases customer value, and builds sustainable capabilities.

Advantages

Convenience

Online stores are usually available 24 hours a day, and many consumers in Western countries have Internet access both at work and at home. Other establishments such as Internet cafes, community centers and schools provide internet access as well. In contrast, visiting a conventional retail store requires travel or commuting and costs such as gas, parking, or bus tickets, and must typically take place during business hours. Delivery was always a problem which affected the convenience of online shopping. However to overcome this many retailers including online retailers in Taiwan

brought in a store pick up service. This now meant that customers could purchase goods online and pick them up at a nearby convenience store, making online shopping more advantageous to customers. In the event of a problem with the item (e.g., the product was not what the consumer ordered or the product was not satisfactory), consumers are concerned with the ease of returning an item in exchange for the correct product or a refund. Consumers may need to contact the retailer, visit the post office and pay return shipping, and then wait for a replacement or refund. Some online companies have more generous return policies to compensate for the traditional advantage of physical stores. For example, the online shoe retailer Zappos.com includes labels for free return shipping, and does not charge a restocking fee, even for returns which are not the result of merchant error. (Note: In the United Kingdom, online shops are prohibited from charging a restocking fee if the consumer cancels their order in accordance with the Consumer Protection (Distance Selling) Act 2000).

Information and reviews

Online stores must describe products for sale with text, photos, and multimedia files, whereas in a physical retail store, the actual product and the manufacturer's packaging will be available for direct inspection (which might involve a test drive, fitting, or other experimentation). Some online stores provide or link to supplemental product information, such as instructions, safety procedures, demonstrations, or manufacturer specifications. Some provide background information, advice, or how-to guides designed to help consumers decide which product to buy. Some stores even allow customers to comment or rate their items. There are also dedicated review sites that host user reviews for different products. Reviews and even some blogs give customers the option of shopping for cheaper purchases from all over the world without having to depend on local retailers. In a conventional retail store, clerks are generally available to answer questions. Some online stores have real-time chat features, but most rely on e-mails or phone calls to handle customer questions. Even if an online store is open 24 hours a day, seven days a week, the customer service team may only be available during regular business hours.

Price and selection

One advantage of shopping online is being able to quickly seek out deals for items or services provided by many different vendors (though some local search engines do exist to help consumers locate products for sale in nearby stores). Search engines, online price comparison services and discovery shopping engines can be used to look up sellers of a particular product or service. Shipping costs (if applicable) reduce the price advantage of online merchandise, though depending on the jurisdiction, a lack of sales tax may compensate for this. Shipping a small number of items, especially from another country, is much more expensive than making the larger shipments bricks-and-mortar retailers order. Some retailers (especially those selling small, high-value items like electronics) offer free shipping on sufficiently large orders. Another major advantage for retailers is the ability to rapidly switch suppliers and vendors without disrupting users' shopping experience.[5]

5. Kishor Nivrutti Jagtap, "E-Commerce – Use Of Its Common Application– Online Shopping". (Smt. C. K. Goyal Arts and Commerce College, Dapodi, Pune, Dec 06, 2016)

NEW SHOPPING MODE



Supermarket of the Future - COOP VR Tour

Coop Italia, Italy's largest supermarket chain, has collaborated with Accenture (NYSE: ACN) to reinvent the customer experience in grocery shopping with the opening of its Supermarket of the Future store.

The new flagship store, located in Milan's University area of Bicocca, provides a welcoming, innovative and informative shopping environment. It merges the physical and digital to recreate the atmosphere of local open-air markets, combined with innovative digital solutions that provide useful product information, while improving store navigation.

Accenture helped Coop to completely redesign the supermarket's information architecture. Working with Avanade, a joint venture company between Accenture and Microsoft, Accenture helped implement the IT infrastructure, and analyze and develop point-of-sale touch points. The result is a modular and flexible solution, underpinned by a Microsoft Azure cloud-based platform that can be easily scaled to a large number of stores.

“Following the great success and positive feedback we received when we showcased the Supermarket of the Future concept at Expo Milano 2015, we got straight to work to make our vision a reality,” said Marco Pedroni, President of Coop Italia. “Using their digital expertise, Accenture and Avanade have helped us redesign the grocery shopping experience through a digital journey that meets customer demand for information, engagement and functionality in a simple and intuitive way.”

The customer experience is enabled by the implementation of interactive food display tables and smart shelves to make shopping more relevant and personalized by providing customers with a range of product information. The project incorporates a series of technical solutions originally developed by Accenture for COOP at Expo Milano 2015, based on designs by MIT professor and head of Carlo Ratti Association, Carlo Ratti, the Supermarket of the Future includes:

1. Interactive tables: Products are exhibited in the supermarket on large interactive tables where a simple movement of the hand shows augmented information about the product on a monitor, including its origins, nutritional facts, the presence of allergens, waste disposal instructions, correlated products and promotions. This augmented experience is made possible by Microsoft



Kinect sensors that use body detection to interpret the customer's gestures.

2. Vertical shelving: In the new store the traditional layout of the shelving has been rethought and associated with a touch application, which enables the customer to navigate through the product categories, to filter and search for most suitable products, discover promotions, view detailed product information. The result is an augmented label that gives the customer deeper insight into the product they are purchasing.

3. Real Time Data Visualization: During the journey through the store, the customer can take a look at a large real-time data visualization screen showing content including: Coop's brand values, special daily offerings and cooking suggestions, social media information including posts on Coop's Facebook account, top selling products and promotions for each category, facilitating an additional interaction point with the shoppers.

6. *Accenture News, "Milkman and Coop Alleanza 3.0 Come Together for the Future of Online Grocery Retail" (Milan, February 27, 2017)*

"Through Coop's Supermarket of the Future, we are bringing to life how the physical and the digital are capable of converging to create an engaging and immersive grocery shopping experience," said Alberto Pozzi, managing director in Accenture's Retail Practice in Italy. "Coop is shaping the future of supermarkets by combining hyper personalization, deep product information and connected devices in-line with customer buying journeys. We are looking forward to continued collaboration and bringing future innovation straight into the hands of Coop's customers." [6]



please
cash counters



casse
cash cou



3

UNMANNED STORE



New retail - Jack Ma



Cashier-free convenience store - GuoXiaoMei



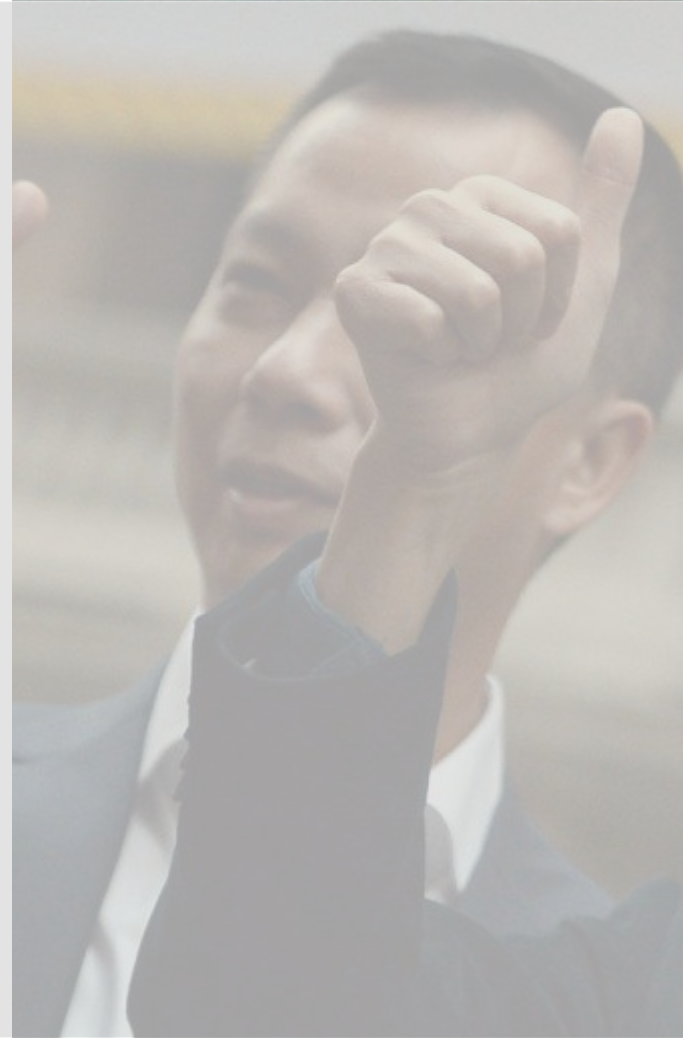
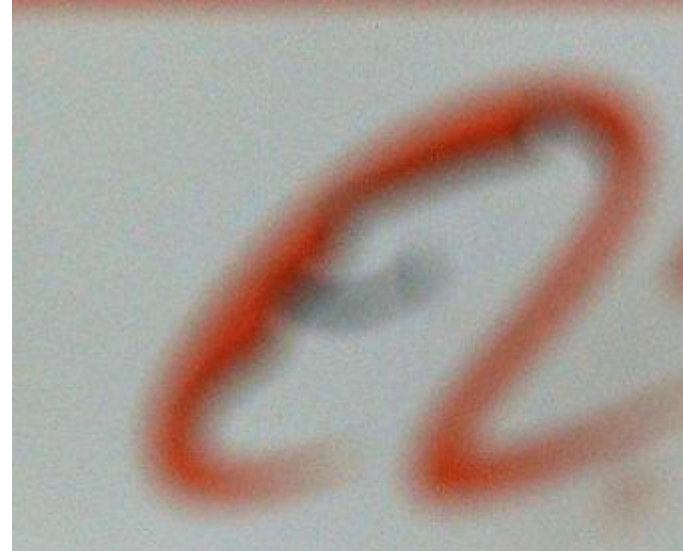
A huge and growing economy in office retail

NEW RETAIL - JACK MA

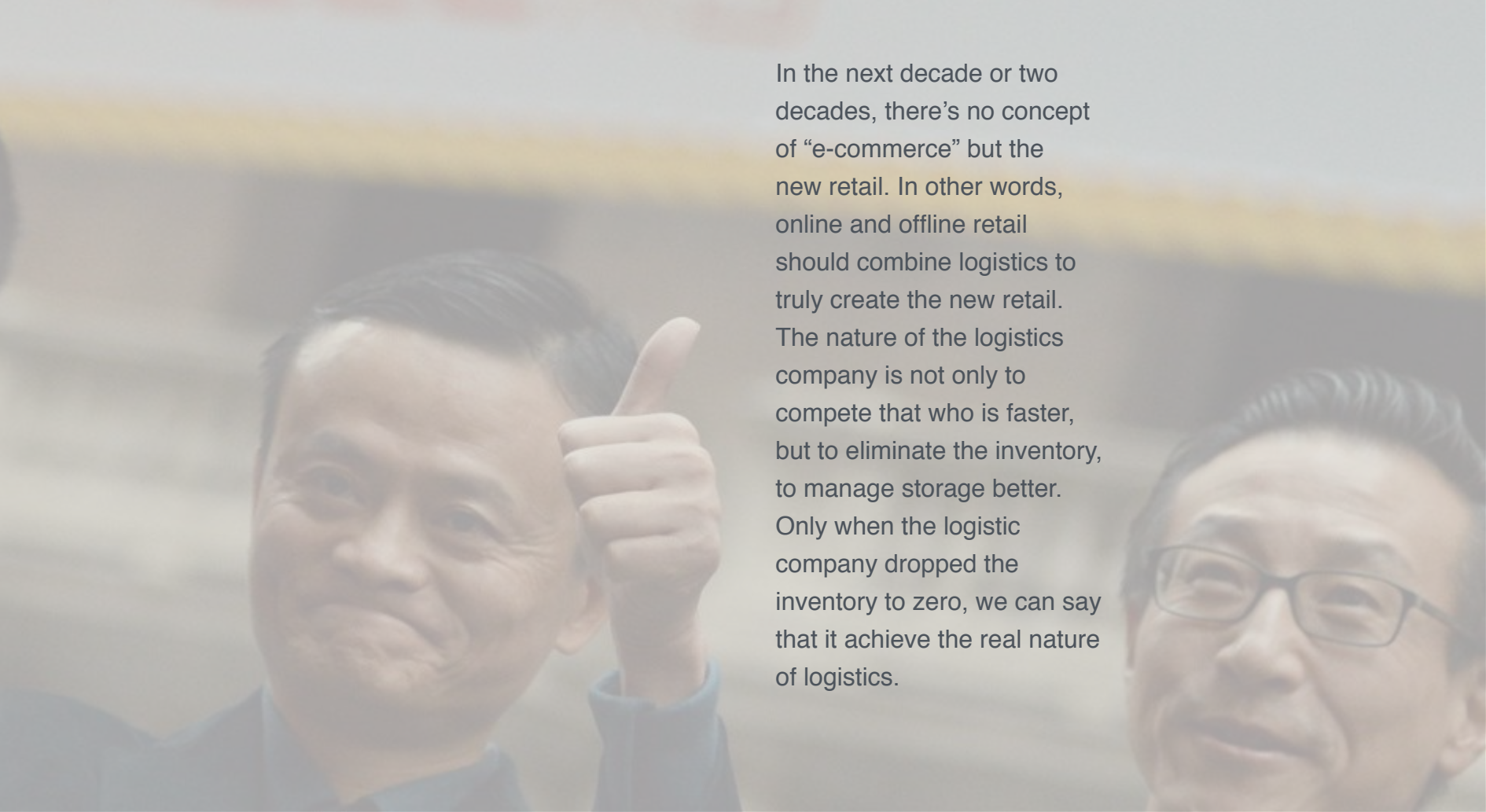
October 13, 2016, in the conference in HangZhou YunQi,[7] Alibaba Group Chairman Jack Ma proposed that the next 30 years will be period of time with dramatic changing. The world will change far beyond our imagination, and the concept of “e-commerce” will soon be eliminated.

Ma believes that the first changing is new retail: the traditional retail industry is now suffering a huge impact from the e-commerce, which is because they did not grasp the technology of the future, only have the imagination of yesterday not the future. Traditional retail should co-operate with Internet companies, modern logistics and big data to create the new retail . Otherwise, the birth of new retail will further impact the pure offline retail.

*7. The Computing
Conference organized
by Alibaba*



Alibaba Group



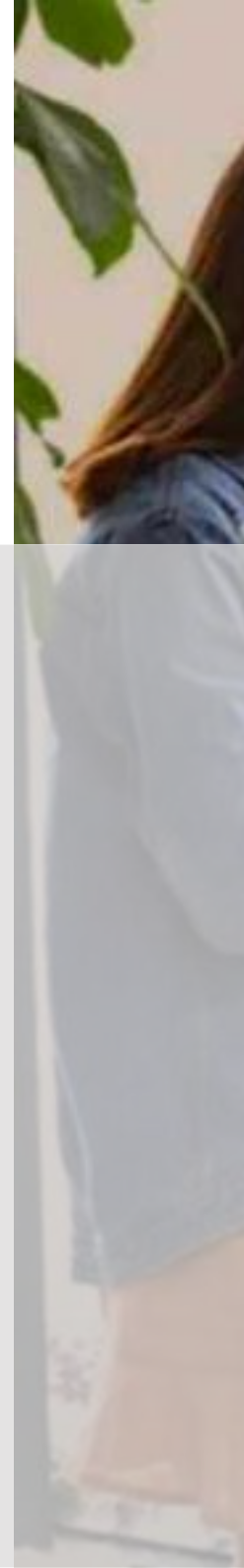
In the next decade or two decades, there's no concept of "e-commerce" but the new retail. In other words, online and offline retail should combine logistics to truly create the new retail. The nature of the logistics company is not only to compete that who is faster, but to eliminate the inventory, to manage storage better. Only when the logistic company dropped the inventory to zero, we can say that it achieve the real nature of logistics.

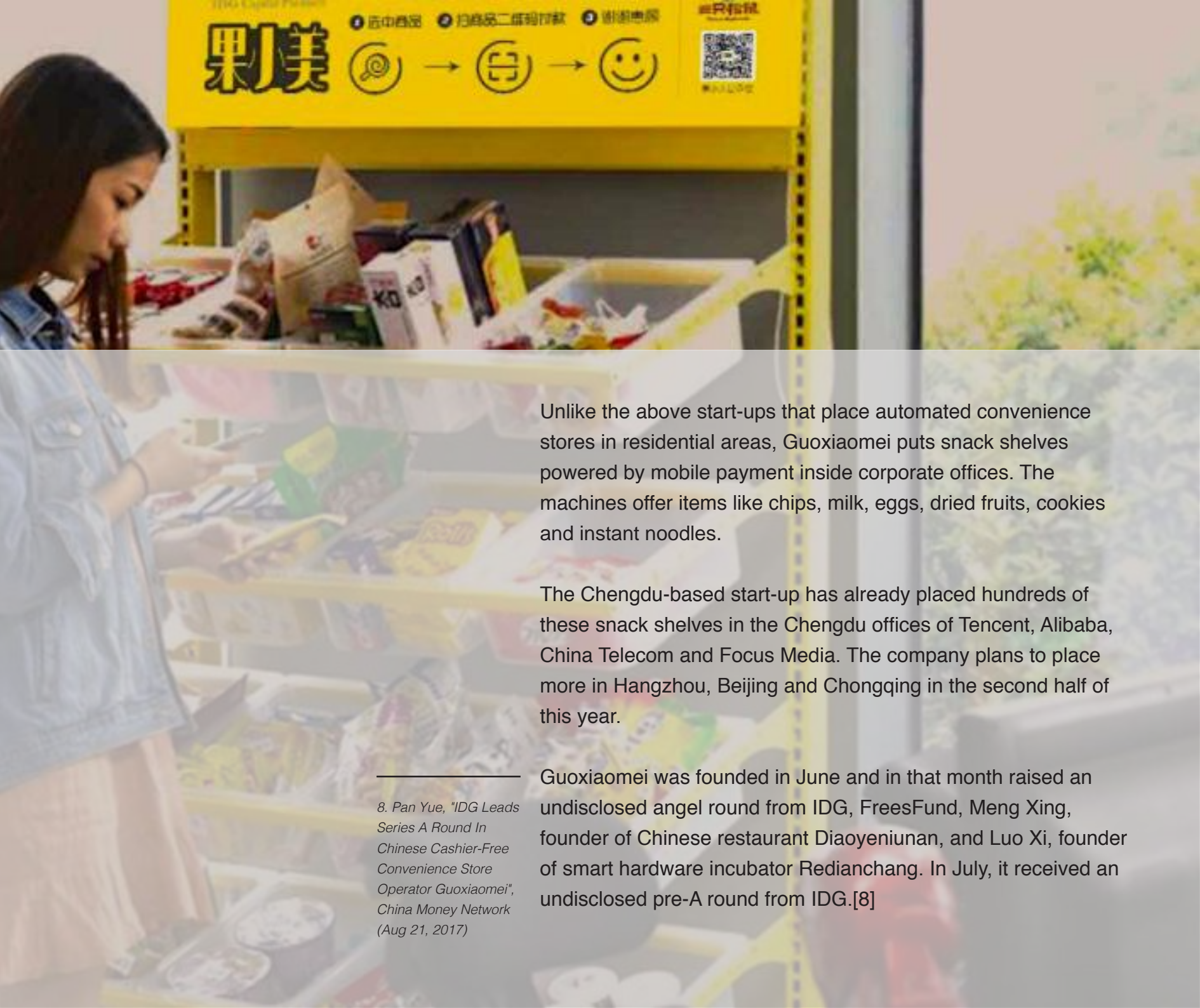
GUOXIAOMEI CASHIER-FREE CONVENIENCE STORE

Chinese venture capital firm IDG Capital has led a series A round in Guoxiaomei, a cashier-free convenience store operator that places snack bars in corporate offices. Financing details were not disclosed, but IDG has likely invested tens of millions of RMB in the start-up, including in an earlier pre-A round completed last month.

“The theme of New Retail is one of the most important focuses of IDG,” said Lou Jun, chairman of IDG Capital, in a company announcement. “What Guoxiaomei offers is like placing a convenience shop right in an office, so goods are much closer to consumers.”

Cashier-free convenience stores have attracted a number of investors recently. Players including Bianlifeng, Bingobox, F5 Store and Xiaomai raised nearly US\$38.5 million in total last month. Internet giant Alibaba Group Holding Ltd. launched its own self-service store Tao Cafe in the same month.





Unlike the above start-ups that place automated convenience stores in residential areas, Guoxiaomei puts snack shelves powered by mobile payment inside corporate offices. The machines offer items like chips, milk, eggs, dried fruits, cookies and instant noodles.

The Chengdu-based start-up has already placed hundreds of these snack shelves in the Chengdu offices of Tencent, Alibaba, China Telecom and Focus Media. The company plans to place more in Hangzhou, Beijing and Chongqing in the second half of this year.

Guoxiaomei was founded in June and in that month raised an undisclosed angel round from IDG, FreesFund, Meng Xing, founder of Chinese restaurant Diaoyeniunan, and Luo Xi, founder of smart hardware incubator Redianchang. In July, it received an undisclosed pre-A round from IDG.[8]

8. Pan Yue, "IDG Leads Series A Round In Chinese Cashier-Free Convenience Store Operator Guoxiaomei", China Money Network (Aug 21, 2017)

OFFICE RETAIL A HUGE AND GROWING ECONOMY

With the development of the Internet and the increasing demand of consumers for shopping convenience, the retail pattern in China is undergoing profound changes. Unattended retail is changing the retail pattern and retail landscape of the entire market, connecting smart devices to e-commerce on the one hand and saving space and labor costs on the other, taking the lead in the current retail industry. In 2017, the transaction volume of unmanned retail stores in China is estimated to reach 10 billion yuan. In the next five years, unmanned retail stores will usher in eruptions. By 2022, the market turnover will be close to 1 trillion yuan, and the user size will reach 2022 , Unmanned retail store users up to 240 million people.[9]

Unmanned shelves are unmanned retail derived from the new format. Unmanned shelves are mainly set in the office space, consumers pick up the goods and scan the two-dimensional code to pay on the shelves, the typical representative, including aphrodisiac, snacks e home, with snacks and so on. Compared to vending machines, unmanned shelves low cost, generally no resident rent, the disadvantage is the loss rate is difficult to control. As of the end of September 2017, at least 16 unmanned shelves have been invested, the highest reached 330 million yuan, the total financing of more than 2.5 billion yuan. Although many inbound suspects that "this is a loss-making business" during the period, the amount of financing that has been repeatedly refreshed makes it a dark horse under the new retail market and becomes a new outlet after charging the treasure and sharing the

bicycle.

China Industrial Research Institute released the 2017 edition of China's unmanned shelves market research and investment prospects research report by veteran experts and researchers through thorough market research, the National Bureau of Statistics, government departments and agencies released the latest authoritative data, and a number of Based on in-depth interviews with senior industry experts, they are written through tools, theories and models of relevant market research. This report provides a detailed exposition and in-depth analysis of the current status of the retail industry, the development environment of the unmanned shelves industry, the current market conditions, business models, and operating enterprises. Based on the development of the industry, the report provides future development trends and investment opportunities Cautious judgments for unmanned shelf project investors looking for new investment opportunities for enterprises to understand unmanned shelves, invest in the field to provide decision-making reference.

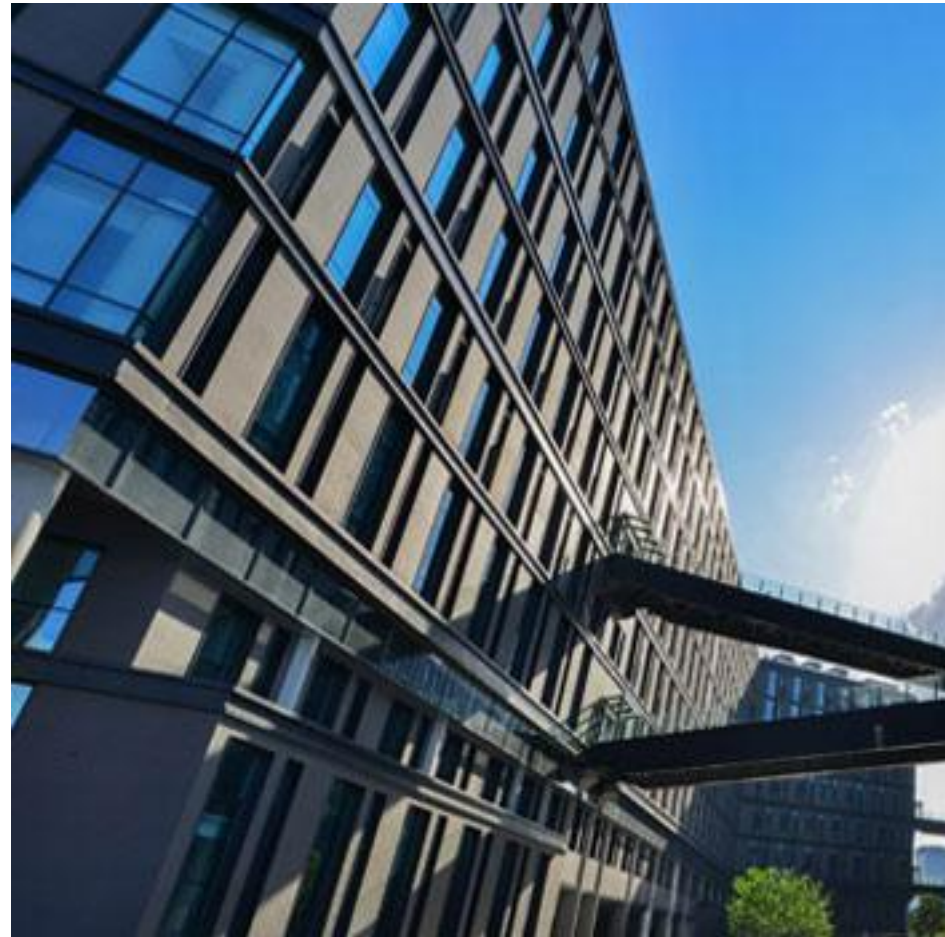
4.1

**PROJECT BRIEF
- DESIGN BACKGROUND**



NetEase

NetEase, Inc. (Pinyin: Wǎng Yi) is a Chinese Internet technology company providing online services centered on content, community, communications and commerce. Founded in 1997, the company was a key pioneer in the development of Internet services for China. Today, NetEase develops and operates some of China's online PC and mobile games, advertising services, e-mail services and e-commerce platforms.





The results obtained in this research include High-tech park "Snack Time" - Unmanned Store solution, Unmanned store system App design (for both staffs & support crews) & Future delivery shelf design. This solution is gonna likely to be used in thousands of Hi-tech parks in China, the large ones and the small ones, to enhance the buying experience in working areas. The results obtained in this research include High-tech park "Snack Time" - Unmanned Store solution, Unmanned store system App design (for both staffs & support crews) & Future delivery shelf design. This solution is gonna likely to be used in thousands of Hi-tech parks in China, the large ones and the small ones, to enhance the buying experience in working areas. The results obtained in this research include High-tech park "Snack Time" - Unmanned Store solution, Unmanned store system App design (for both staffs & support crews) & Future delivery shelf design. This solution is gonna likely to be used in thousands of Hi-tech parks in China, the large ones and the small ones, to enhance the buying experience in working areas. [10]

10. Wikipedia, Netease Inc. (November 17, 2017)

QiuYi Road

• YanXuan Netease



• KaoLa Netease



• Canteen Netease

Times Avenue

BinAn Road



Netease Hangzhou Center covers an area of 52000 square meters with a total construction area of 135,000 square meters and a total green area of 30,000 square meters. 70% of the staff have master degree, each of them owns a 4.5-meter-tall office, 10 square meters of office space, 1: 0.7 parking space, 5 meals a day for free and a full range of fitness and recreational facilities.

Design Aim |

- Improve the experience of buying foods in the Hi-tech park
- Unmanned store "DS" solution
- "DS" system APP design
- Smart delivery shelves design

4.2

**PROJECT BRIEF
- CASE STUDY**

- 
- Amazon Go
 - Walmart - Scan & Go
 - Supermarket self checkouts
 - Honesty Store
 - RFID radio frequency solution
 - Pepper - Robot receptionist
 - Yape - Self-driving home delivery system

LINES. NO CHECKOUT
(NO, SERIOUSLY.)

JUST
WALK
OUT
SHOPPING

amazon go

Amazon go. Unmanned supermarket.

**Hands-free help from
the Google Assistant.**

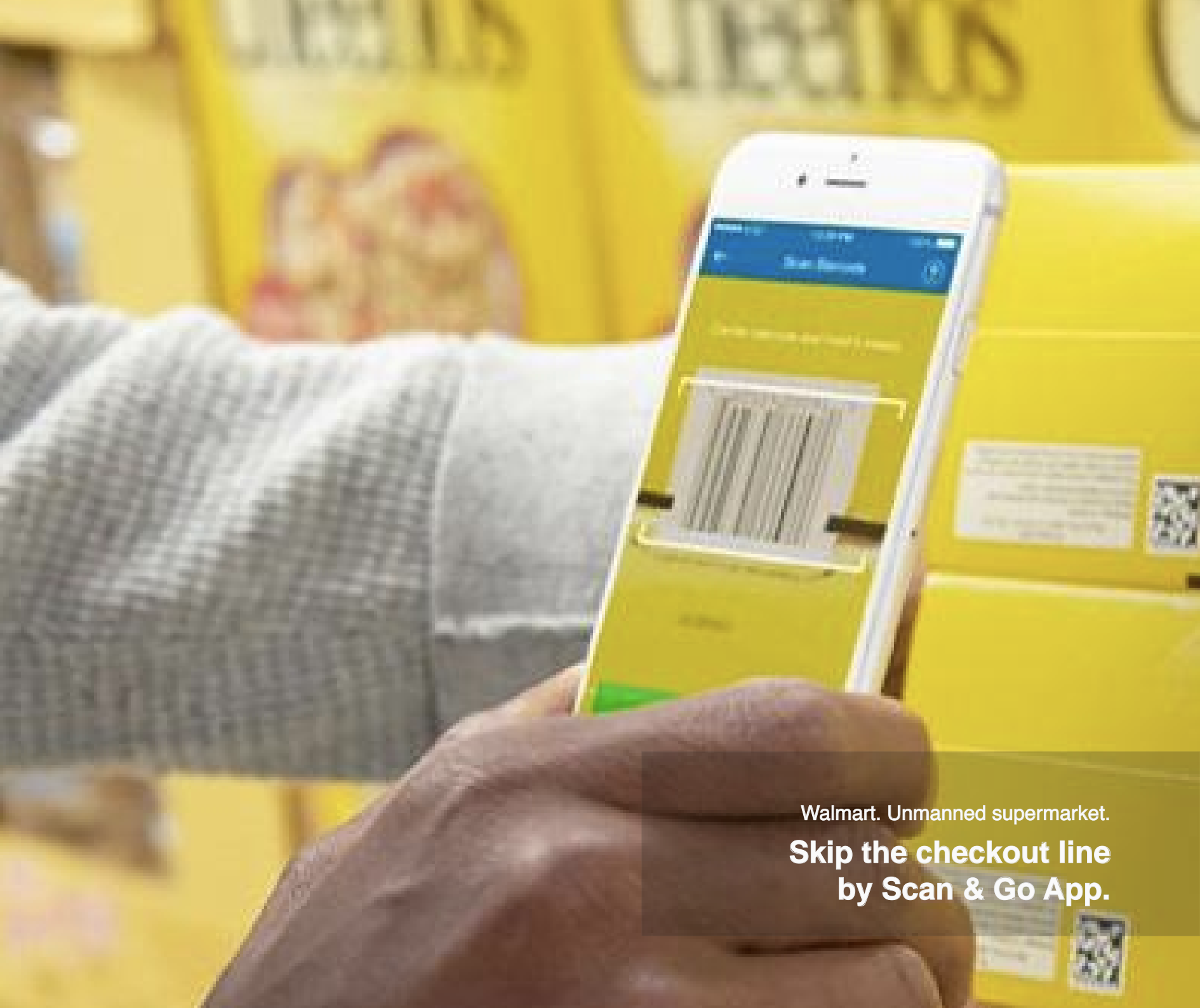
Amazon Go is a prototype grocery store operated by online retailer Amazon.com, with one location in Seattle, Washington. The first store, opened on December 5, 2016, in the company's new headquarters, is partially-automated, with customers able to purchase products without using a cashier or checkout station.

In its report on the opening the Wall Street Journal reported that this first location was one of at least three Amazon planned to open, each of which was in a different format. In October 2016 the Business Insider reported they had seen internal Amazon documents that described Amazon opening up as many as 2000 stores, over the next ten years. Amazon spokesmen refuted the reports of 2000 stores, insisting they were still learning. The Business Insider predicted that Amazon was likely to open only twenty or so stores, during the next two years.

The Verge reported this first store was scheduled to open to the public in early January 2017; its December 2016 opening was a Beta version for Amazon employees only. The first store was only 1800 square feet, the size of a corner convenience store. The other test stores will be larger. As of October 2017, the store has yet to open due to issues with the technology tracking over twenty people at one time.

PAINPOINT

Unknown technology realization level, technical costs, certain rate of stealing loss.



Walmart. Unmanned supermarket.
**Skip the checkout line
by Scan & Go App.**

The concept of Scan & Go is pretty simple. Using the provided scanners or the Walmart Scan & Go app on your smartphone, just scan everything as you put it in the cart. The app maintains a running total of the items in your cart. You can simply click a button to pay for your goods right from the app, and you're done. Well, almost. You do still have to have a Walmart employee verify the receipt on your smartphone and clear you before you can leave.

PAINPOINT

Profit can not cover the stealing loss .

UT.

CATERING

FLEXIBILITY FOR



**COR
DORF**
International GmbH
orf-Ring 1
derborn
693-3901
ornixdorf.com
or-nixdorf.com

Supermarket Self Checkouts.
**Scan & pay your goods
by yourself quickly.**

Self-checkout (also known as self-service checkout and as semi-attended customer-activated terminal, SACAT) machines provide a mechanism for customers to process their own purchases from a retailer. They are an alternative to the traditional cashier-staffed checkout. The customer performs the job of the cashier themselves, by scanning and applying payment[clarification needed] for the items.

In self-checkout systems, the customer is required to:

1. scan the barcodes;
2. input the types of items such as fruit and vegetable (usually with a touchscreen display);
3. weigh them, if applicable;
4. and place all scanned items into a "bagging area". The weight observed in the bagging area is verified against previously stored information to ensure that the correct item is bagged, allowing the customer to proceed only if the observed and expected weights match.
5. payment by various methods may be accepted by the machines: card via EFTPOS, debit/credit cards, electronic food assistance cards, cash via coin slot and bank note scanner, and in-store gift cards where applicable. Most coupons also have barcodes and can be scanned the same way that items are scanned, although some require entry by a member of staff.

PAINPOINT

Customer could get the more expensive product by scanning the cheap one (same weight)

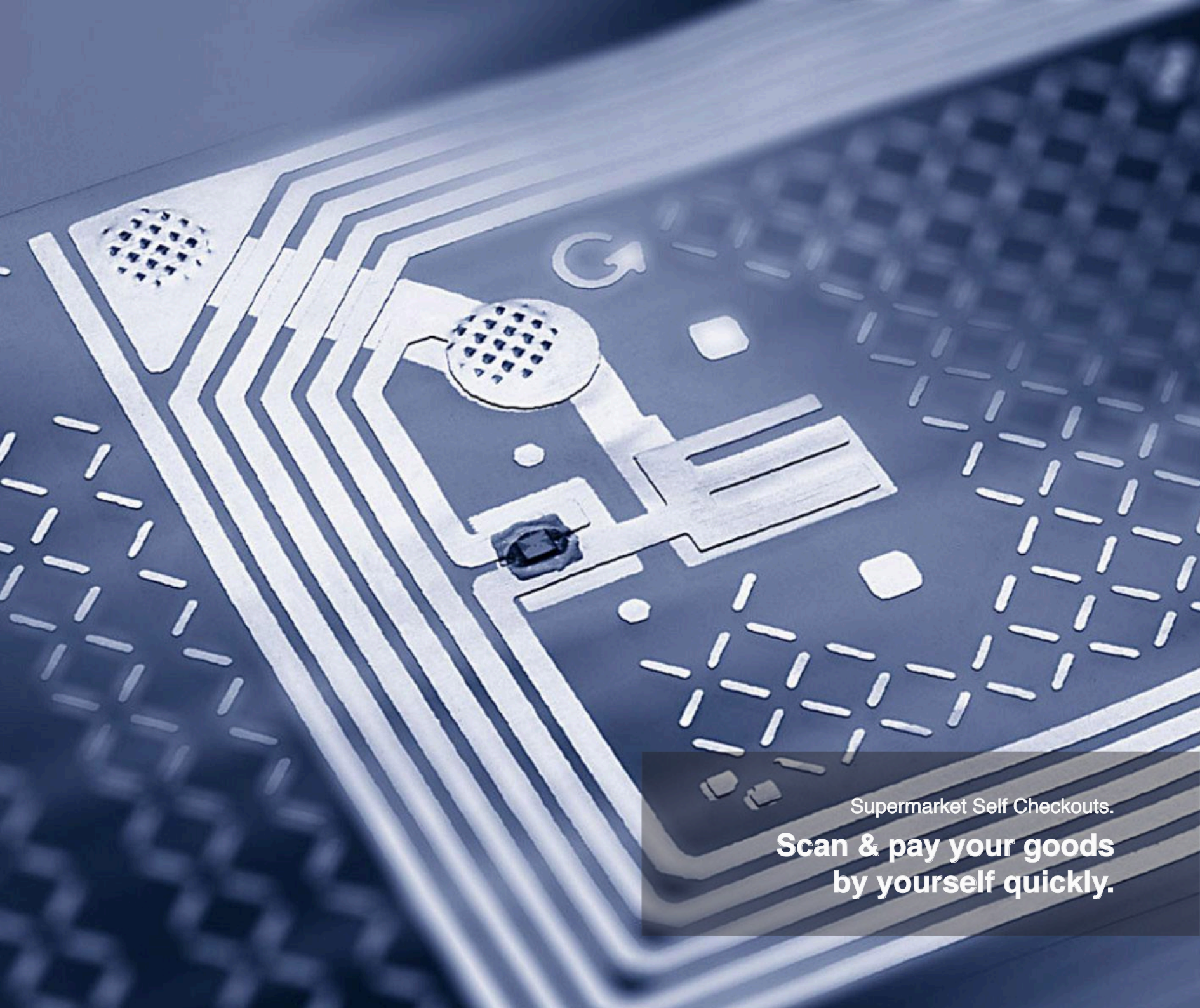


Honesty Store MARIA DE LA PAU JANER

**Self-service shopping
consciously pay, no
regulatory measures.**

Honesty store just like the normal ones. But the honesty store has no one to supervise. To pay or not to pay, is all by self-conscious. Customer choose their items, and pay the items by themselves. During the buying process, there's no any regulatory equipments or supervisors.

PAINPOINT*Stealing loss* .



Supermarket Self Checkouts.
**Scan & pay your goods
by yourself quickly.**

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader. Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method for Automatic Identification and Data Capture (AIDC).

RFID tags are used in many industries, for example, an RFID tag attached to an automobile during production can be used to track its progress through the assembly line; RFID-tagged pharmaceuticals can be tracked through warehouses; and implanting RFID microchips in livestock and pets allows for positive identification of animals.

PAINPOINT

Cheap products can not afford the costs of RFID-tag. And this solution produces RFID trash.



**SMALL
STORES**



SUPERMARKET



**ONLINE
SHOPPING**

WHAT IS

ON - LINE
↓
OFF - LINE

O2O



**UNMANNED
STORE**



**CASHIER
FREE SHELF**

THE NEXT?



Pepper Robot.
**The newest receptionist
social care robot.**

Pepper, the newest recruit to the people team at Southend-on-Sea borough council, has many of the skills and characteristics of a model social care employee. He perceives emotions and adapts his behaviour accordingly, and he can memorise personality traits. He can also speak 12 different languages, dance to Gangnam Style and does a mean impression of R2D2. But Pepper's not like any other member of staff – he's a 120cm, 28kg humanoid robot.

Developed by Japanese company Softbanks, Pepper was first envisaged as a companion robot but is already being used in a variety of settings worldwide. He guides patients to different hospital departments in Belgium, welcomes bank customers in Canada, and sells coffee machines in Japan. But in the UK, Southend-on-Sea is the first local authority to buy a Pepper to work in its services.

Initially, the council hopes that Pepper will be used for community engagement, awareness raising, and to facilitate reminiscence activities. During his own demonstration, Pepper displays video clips of the 1966 World Cup final and the Moon landings on his built-in Android screen.

Phil Webster, the council's equipment manager, is developing a memory game for older people and Pepper could also be used in Southend's intergenerational projects. In one group, where older people teach children how to knit, he could display knitting techniques and video tutorials.[11]

11. *The Guardian*, "Meet Pepper the robot – Southend's newest social care recruit" (October 16, 2017)



Yepa robot.

**Self-driving home
delivery system.**

Home delivery in city areas thanks to the help of a robot on two wheels: nimble, intelligent, lightweight, able to cross the street and to move on sidewalks, this vehicle is able to deliver goods at record time while avoiding traffic and producing zero emissions. This is the future of urban delivery services and e-Novia's answer to the exponential growth in the demand for home delivery. YAPE, Your Autonomous Pony Express, is the e-Novia project that has given birth to the first self-driving home delivery vehicle entirely designed and built in Italy.

Thanks to a number of unique features, YAPE is able to move with ease in the narrow streets and alleys typical of many European, and especially Italian cities, either on sidewalks (with a maximum speed of 6 kilometres per hour) or on bicycle lanes (up to 20 km/h) with a range of about 80 km. YAPE moves on two wheels driven by autonomous electric engines which help to minimise energy consumption and, at the same time, to maximise the vehicle's agility of movement. What is more, the robot is able to rotate on the spot and to overcome obstacles such as tram tracks and sidewalk edges.

YAPE produces a digital map of the city with the help of sensors in the form of video cameras and lasers. These are able to interact with sensors that are already installed throughout the city such as those placed near traffic lights for monitoring purposes. This constantly updated digital representation of the city allows

for real-time detection of holes in the pavement, of accidents, construction sites and other obstacles and potential dangers on the way from the sender to the recipient. YAPE creates an extremely detailed and updated map of the city, providing useful data for the urban services sector, such as, for instance, information regarding traffic on bicycle lanes and on lanes reserved for disabled persons. In this way YAPE is able to cope with the dynamic and unpredictable traffic flows typical of modern cities.

The YAPE «ecosystem» is based on a control platform which allows users to call the robot to their homes by using the designated app. The sender places the parcel inside the vehicle's empty luggage compartment (which has a load capacity of up to 70 kilograms) and then, again by using the app, indicates the recipient: with the help of the recipient's Gps position – also the recipient must be registered at the YAPE platform – the robot is able to automatically determine the delivery address. Posting and delivery of the parcel are both certified and secured by the sender's and the recipient's credentials when using the app and by an advanced face recognition system integrated into the robot. With the help of the latter access to the vehicle's luggage compartment is granted only to authorised users.[12]

12. E-novia, "YAPE, the self-driving home delivery system".



4.3

**PROJECT BRIEF
- USER EXPERIENCE DESIGN**



Personas



User Journey



Needs conclusion - Staff,
Support Crew, High - tech
Park

Hesitations

" If Hi-tech park has a unmanned store, will its tech reliable? How much risk will I take for using it? Will it charge my account accurately? What should I do when I got a wrong bill?"

Expects

1. Please offer lots kinds of snacks in the unmanned store, and if possible I would like to have someone buy snacks for me when I do not want to leave my seat.
2. I want have the fasion drinks. Like Starbucks, Heytea & Yidiandian in recent times.
3. After lunch I want more kinds of fruits for choosing.

WANTS

- I really want to drink milk tea when I at Company, But in the Hi-tech park, there's even no snack store.
- After lunch, I usually eat the fruit which I prepared at home. But if Hi- tech's canteen offers fruit also, it will be so great for me.
- It would be good to have some snacks when I become greedy during my work.

Common used social Apps



Favorite snack & drink brands



FRUSTRATIONS

- There's no stores in the Hi-tech park, if I got greedy, I should bring snacks from home. Cause the snack store & supermarket are far from the Hi-tech park.
- Hi-tech park offers buffet drinks, but all of them are hot drinks and the kinds of drinks are very limited.

USER

I am new here in Netease Hi-tech park, as a programmer girl, I'm not only good at codes but also like fasion things.

- Huawei mate 9 pro
- Ipad mini 4.

Abby Xu

26, Programmer Netease
HangZhou, ZheJiang



Hesitations

" Will this system be simple to use? Do I need some extra training? Should I think a lot when I use it? Is it smart enough to run this unmanned store well?"

Expects

1. Hope the system be simple to use.
2. The system should be smart enough to guide my work, so that there will not be so many decisions I should make.
3. I'm familiar to my cell phone and I want to use this unmanned store too, so it will be great to work with a system which just on my phone, no needs of other devices.

WANTS

- Unmanned store can lighten my work pression.
- Offers more informations about customers' preference.
- Smart system to communicate with suppliers.
- More profits.

Common used social Apps



Favorite snack & drink brands



FRUSTRATIONS

- My daily work is offering a better working environment for Hi-tech Park's staffs, such as replenish the buffet drinks, set unmanned selling points near canteen to offer fruits. But my work is heavy and with less profits.
- Sometimes I prepared one kind of fruit, but less people like it. In the end, they all have been thrown away.

CLIENT

Hello there, I'm a staff of Hi-tech Park support department. I'd like to create better environment for Hi-tech Park with efficient working methods.



Vincent Yang

28, Support Crew Netease
HangZhou, ZheJiang

Expects of Staff

1. Please offer lots kinds of snacks in the unmanned store, and if possible I would like to have someone buy snacks for me when I do not want to leave my seat.
2. I want have the fasion drinks. Like Starbucks, Heytea & Yidiandian in recent times.
3. After lunch I want more kinds of fruits for choosing.

Expects of Support Crew

1. Hope the system be simple to use.
2. The system should be smart enough to guide my work, so that there will not be so many decisions I should make.
3. I'm familiar to my cell phone and I want to use this unmanned store too, so it will be great to work with a system which just on my phone, no needs of other devices.

PHASE

BREAKFAST

LUNCH

USER GOALS

● Buy breakfast in other place quickly.

● Want fruit after meal.

PROCESS

- Get up late
- See long queue in canteen
- Take a tea from buffet drinks
- Go to work

- Rush out of the office building
- Head to the canteen
- Pick a menu in which offers fried shrimps
- Feel a little oil after the meal
- Go supermarket near Hi-tech park to buy fruits with colleagues

EXPERIENCE



Why there's no convenience store in High-tech Park? The nearest supermarket is 2 miles away! What a unbearable place!



What a good meal! It's so lucky to have shrimps still when I arrive at canteen. Usually at this time, shrimps run out often! But it is a little pity that after meal there's no fruit to eat.

THINK&FEEL

PROBLEMS

Sometimes you have no time to get breakfast in canteen, and you got no where to buy other foods or snacks too. Hi-tech park is too far from center city so there's few supermarket or stores nearby.

Everyday an apple keeps doctors away. No where in Hi-tech park can buy fruits.

IDEAS

Find a way to offer substitute foods/snacks/breakfasts to the staffs.

Hi-tech park can set a fruit selling point near canteen.

DURING WORK

DINNER

- Change working mood and find some snacks for my poor greedy tummy
- Discussed a problem about 3 hours with colleague, but it doesn't go well. Interrupt the working process
- Decide to have a drink and change the mood.
- Find that the buffet drinks has nothing new.
- Go to the coins machine, but find that the machine at this floor is broken.
- Someone is trying to take back their coins.
- Go to the downstairs, find a coin machine and selected some snacks from the few kinds.

- Buy something to eat when I didn't have a good meal.
- Run to the canteen after I finished my work.
- When I arrived my preferred dishes were gone out.
- Select the rest ones but didn't eat so much.
- After meal I still feel a little hungry.
- Wanted to buy something to eat but supermarket is too far, I still have work to finish.
- Remembered that I still got some cookies in the office which prepared 2 days ago.
- Turn back office and eat up all rest cookies.



Why can't they repair the coin machine in time just once?
Why can't they add some snacks we like?



Why canteen can not offer more XXX dishes? I really like that!
Why supermarket is so far from Hi-tech park?
Why there's no food store in Hi-tech park?

Buffet drinks has limited drinking kinds.
Coin machine can not offer the snacks we like and it gets breakdown sometimes.

No where else in Hi-tech park can offer some extra food.

Somewhere to go and have a drink.

Somewhere to buy extra food.

STAFF EXPECTS



Find a way to offer substitute foods/snacks/breakfasts to the staffs.



Hi-tech park can set a fruit selling point near canteen.



Somewhere to go and have a drink.





Somewhere to buy extra food.



Expects of Support Crew

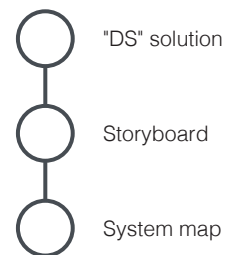
1. Hope the system be simple to use.
2. The system should be smart enough to guide my work, so that there will not be so many decisions I should make.
3. I'm familiar to my cell phone and I want to use this unmanned store too, so it will be great to work with a system which just on my phone, no needs of other devices.



UNMANNED
STORE

5.1

**HIGH-TECH PARK "DS"
UNMANNED STORE SOLUTION**



UNMANNED STORE-DS PRODUCT POSITIONING

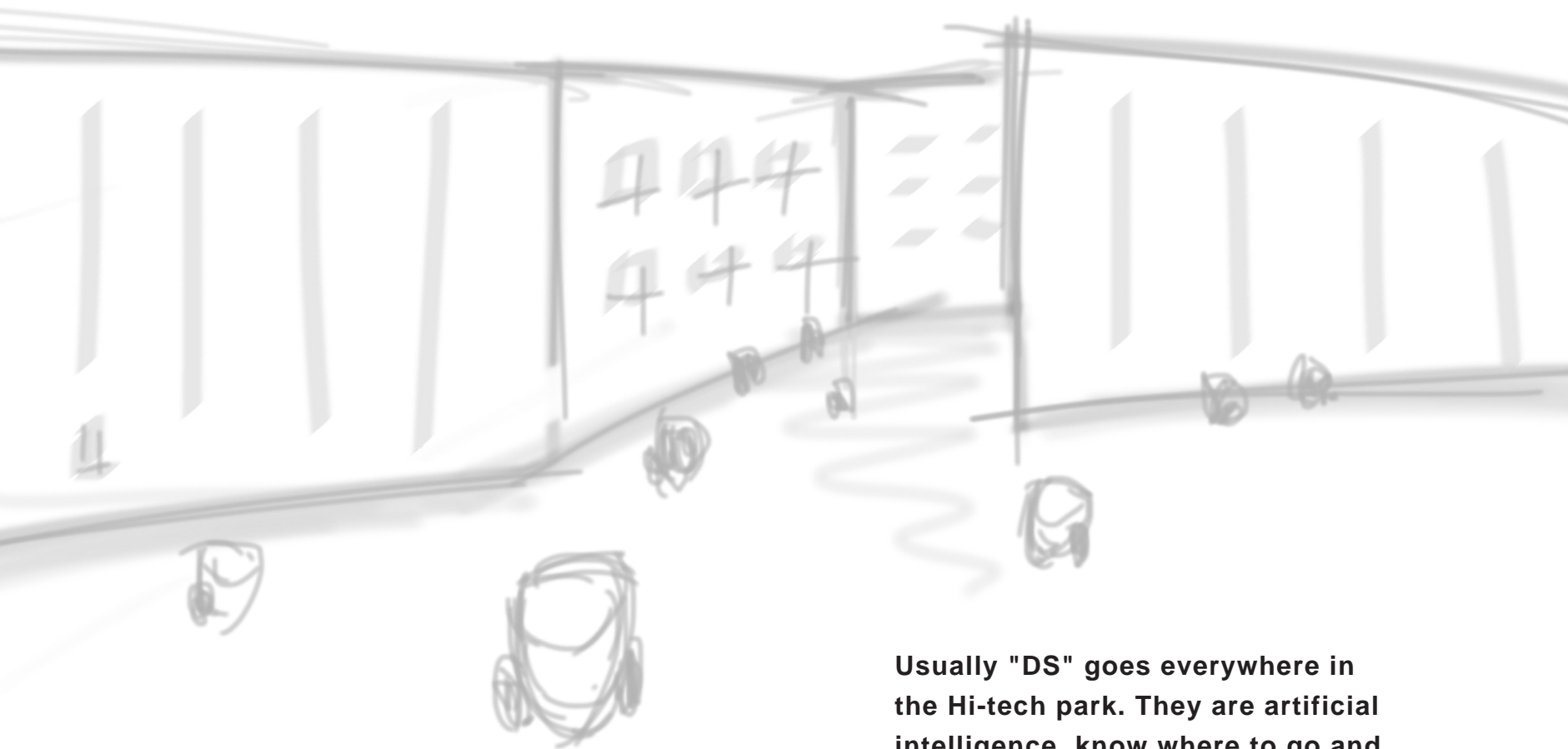
Target users: Staff of Hi-tech park, support crew.

Staff needs: Free to buy snacks in the park.

Hi-tech park needs: Customers can freely buy snacks in Unmanned Store and the storage can be managed smartly.

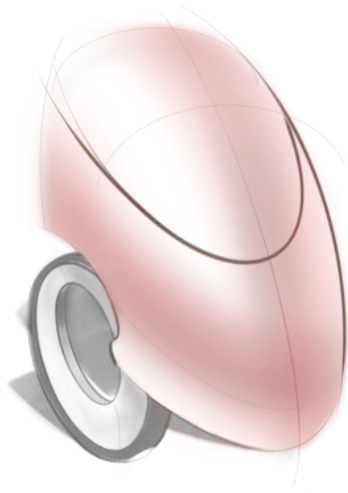
Pain points: The stealing loss rate of Unmanned Store.

Solution: Artificial intelligence "DS" delivery shelf offers a service never happened before. It is not a fixed shelf any more, it can go everywhere.

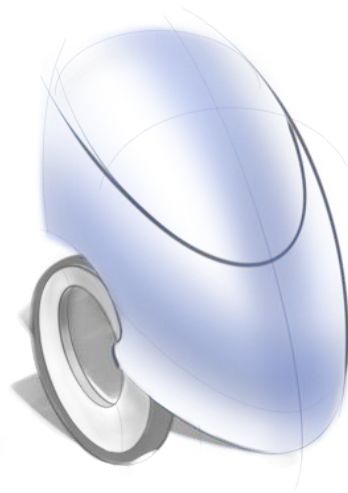


Usually "DS" goes everywhere in the Hi-tech park. They are artificial intelligence, know where to go and where to hide the rain. So you also can see them in your office. When you wanna have a rest, maybe you also can have a chat with them. And in this way, they can learn who you are, where you work, and what you like etc.

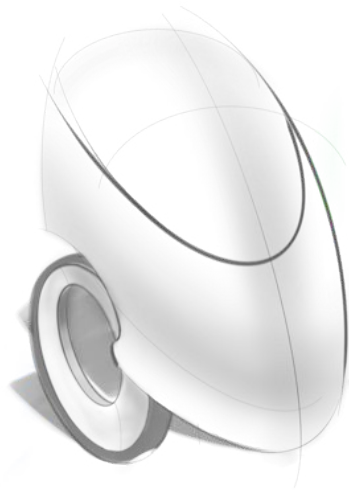
**HOT ONES
(breakfast)**



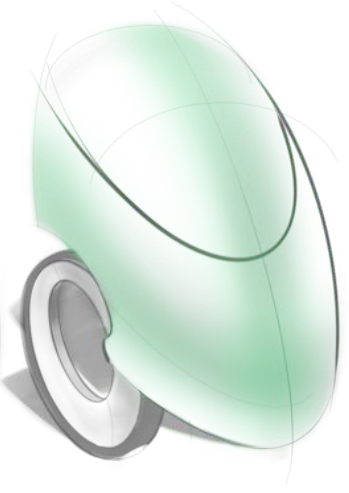
DRINKS



SNACKS



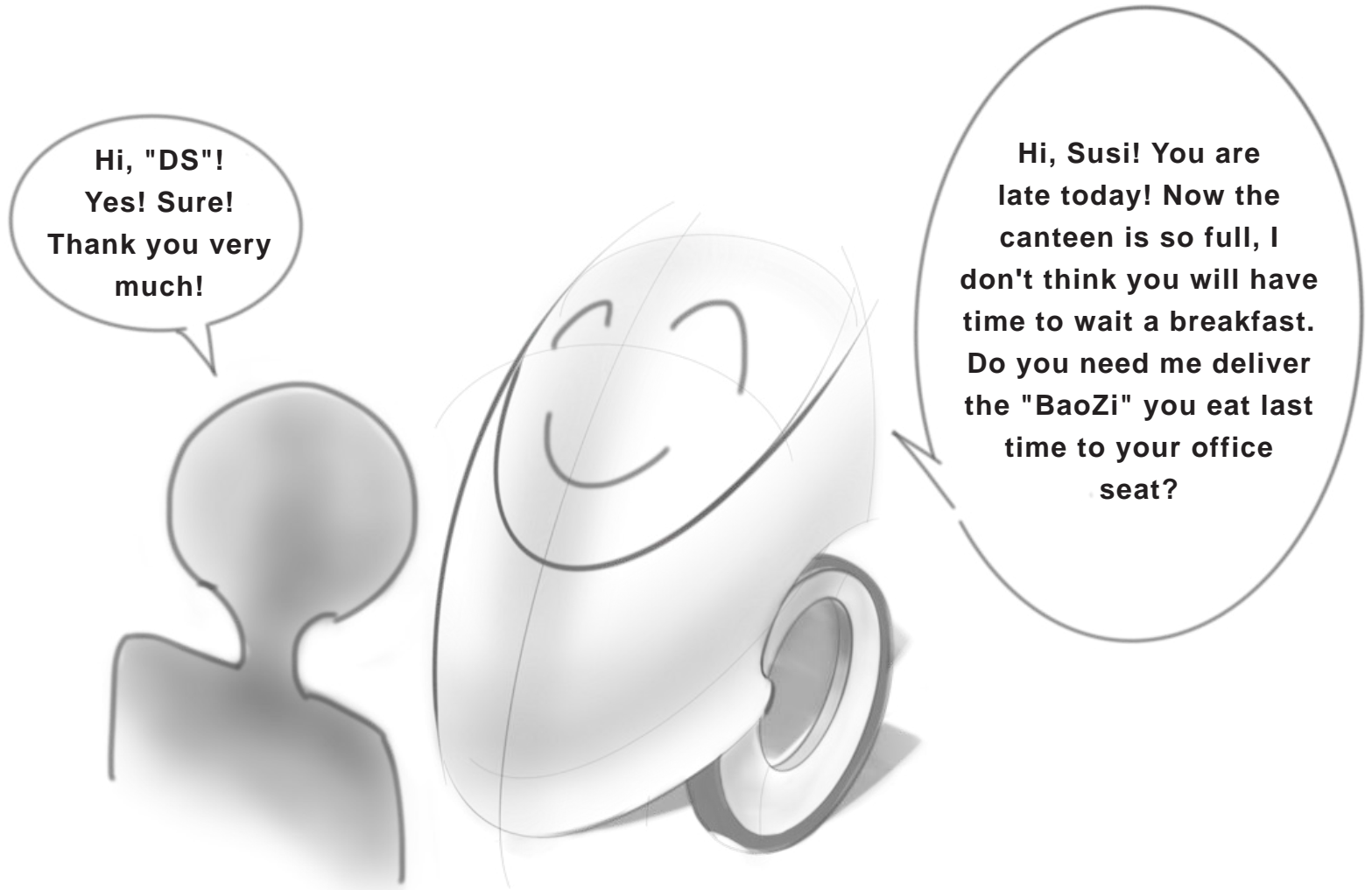
FRUITS



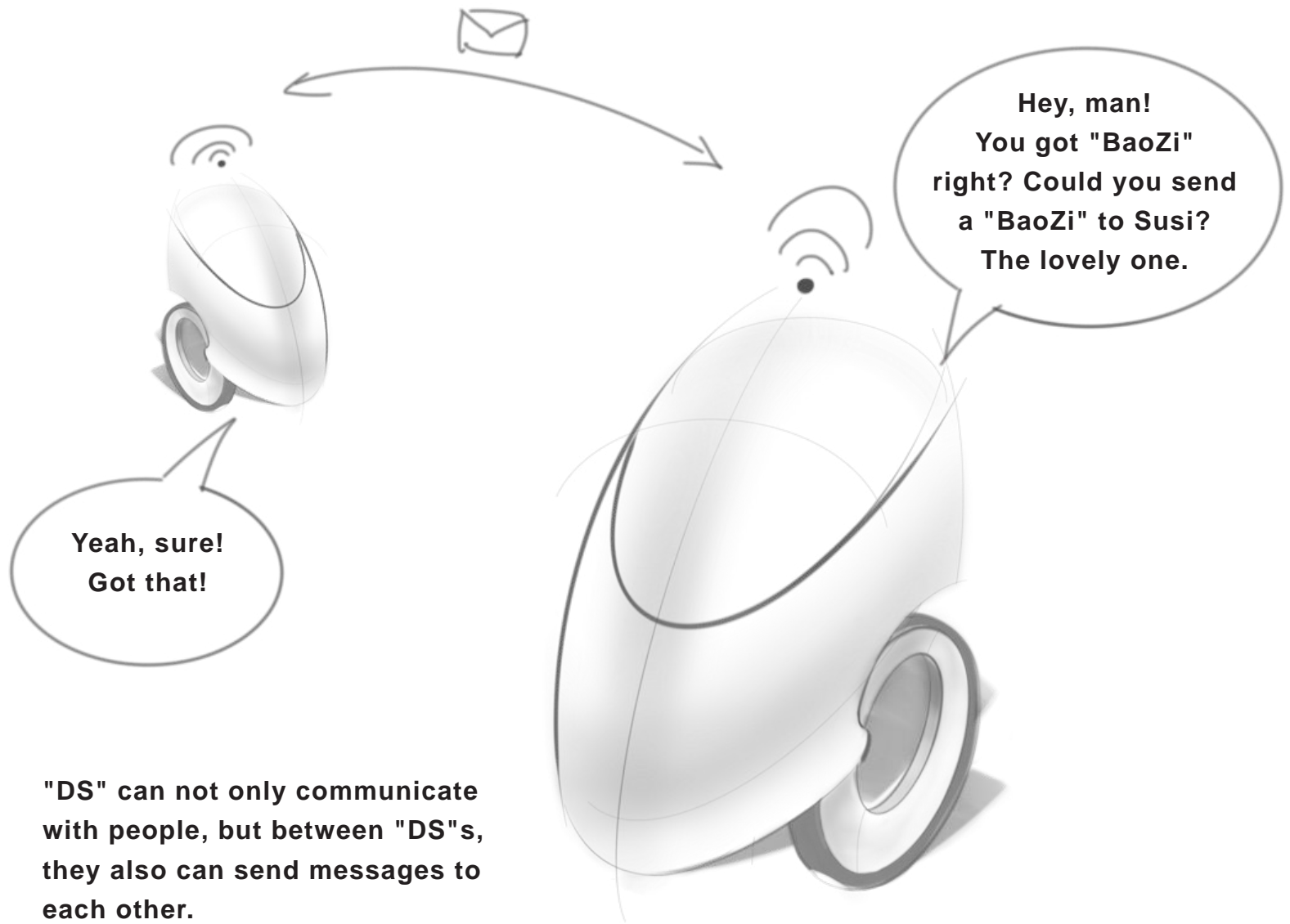
Each "DS" is a movable shelf, but the difference between "DS" and traditional shelf is that they do not need a store to be accommodated. Each of them carries a different snack in their "stomach". When they are "hungry", they just go to the big storage to "eat". And then keep strolling in the Hi-tech park.



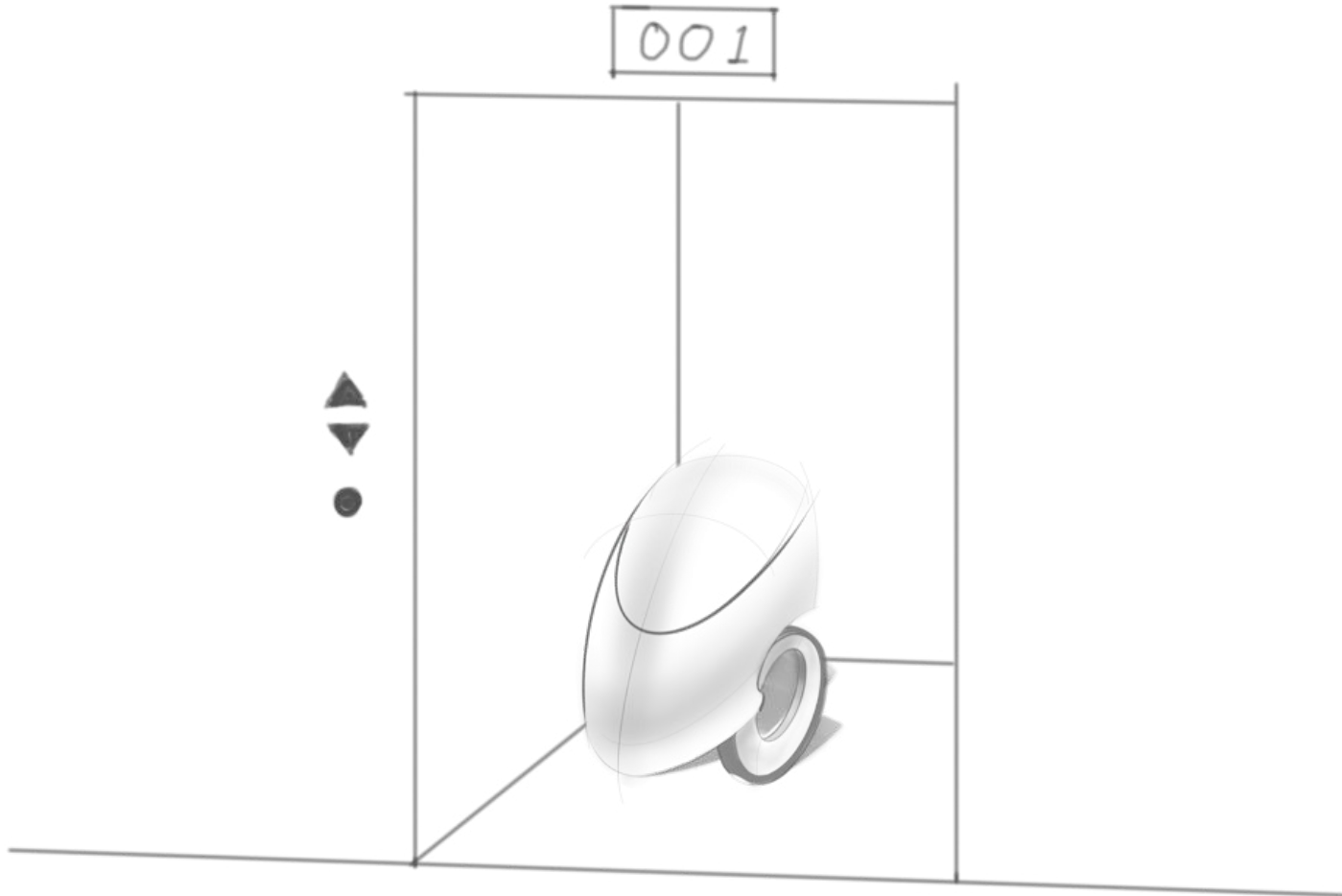
Each "DS" has "face ID" sensor, in just one look on its face, it will recognize who you are, what you like, what's your behaviour! And it will act in different ways to fit different people's personalities.



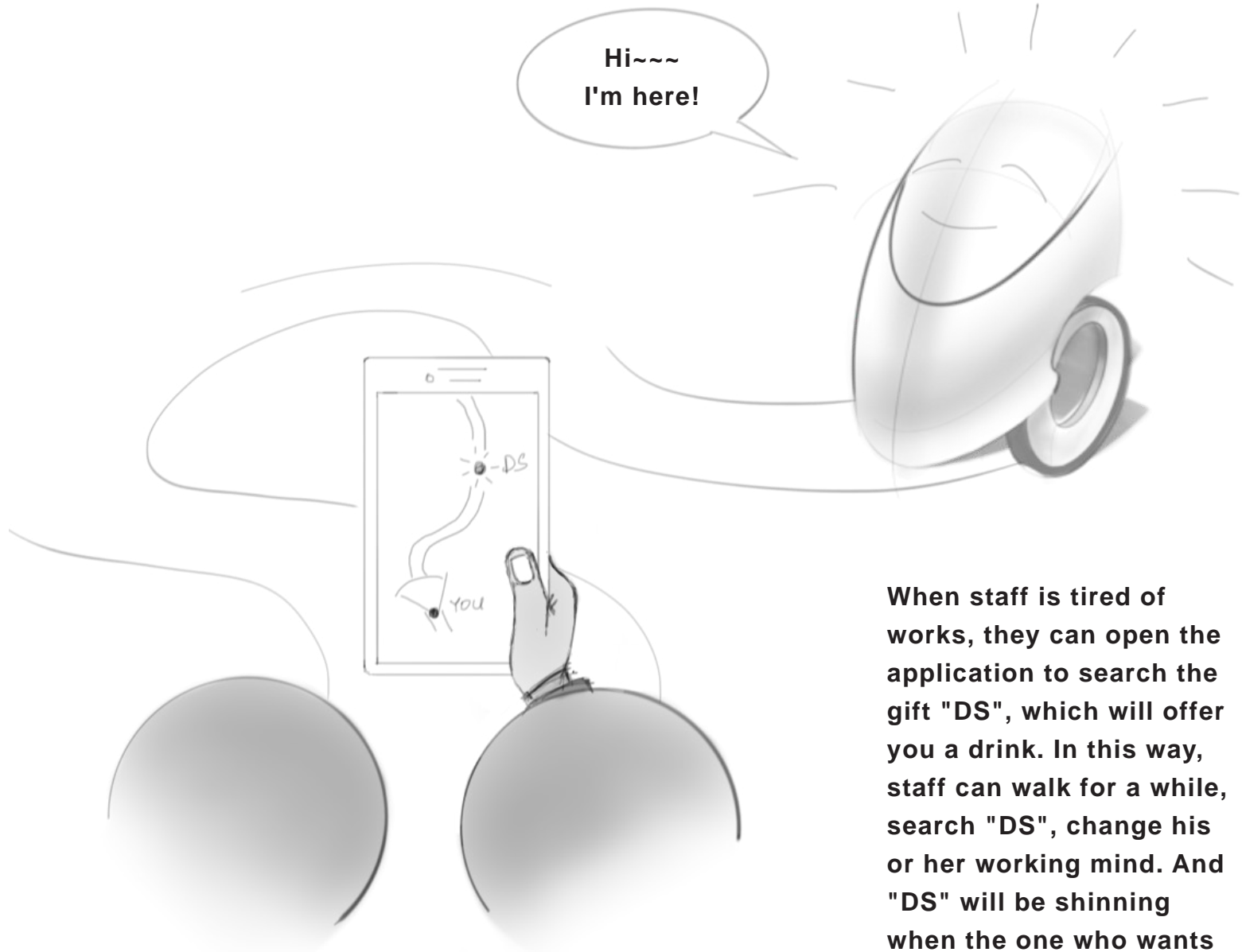
"DS" records all the information it got when it talks with the staff, so when it sees the staff again, it will recognize who this is, knows what she likes, and according to this information, it will act differently.



"DS" can not only communicate with people, but between "DS"s, they also can send messages to each other.



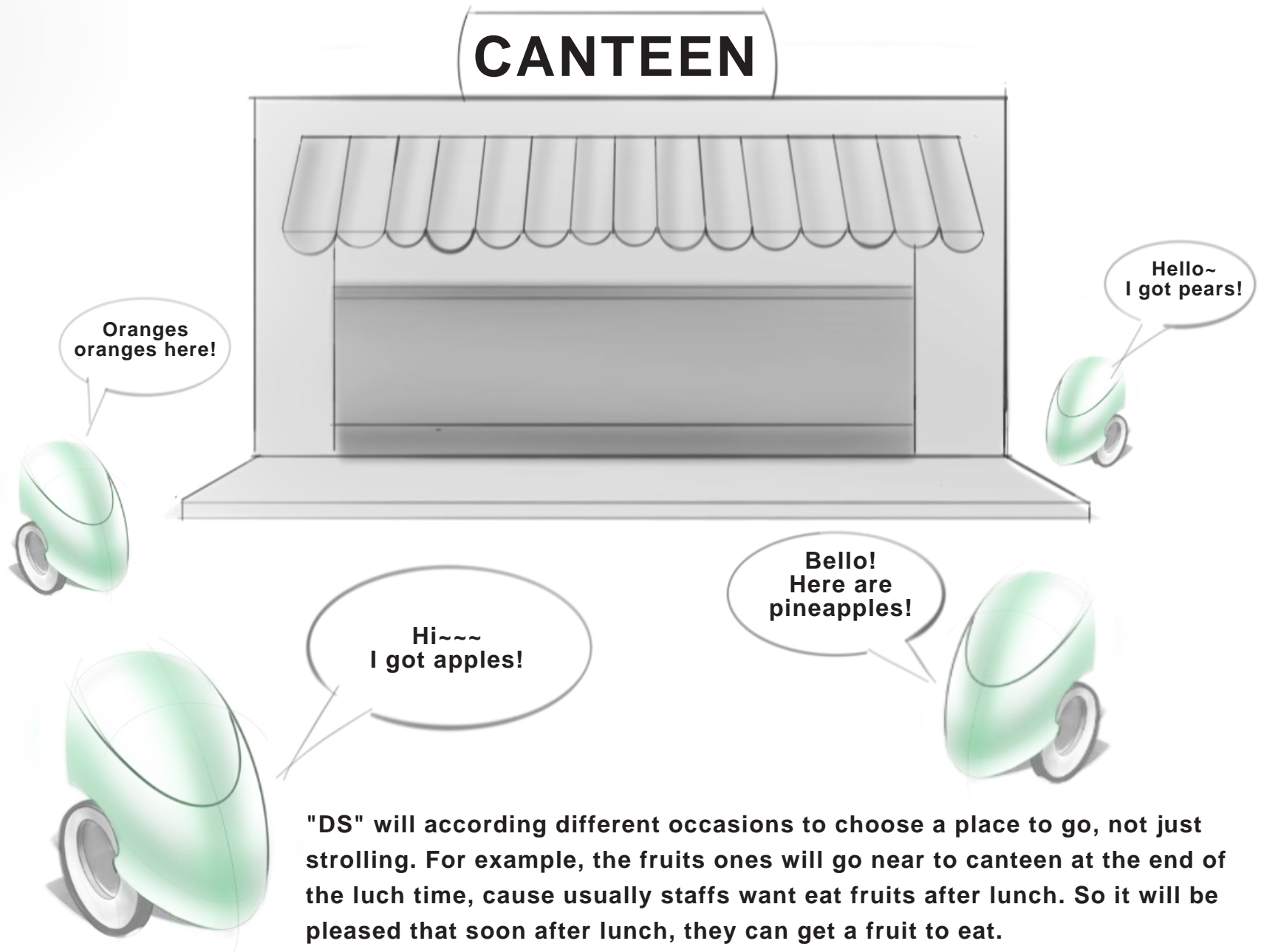
When "DS" take a lift, it will communicate directly with the back system. to call the lift.



When staff is tired of works, they can open the application to search the gift "DS", which will offer you a drink. In this way, staff can walk for a while, search "DS", change his or her working mind. And "DS" will be shining when the one who wants to search it is nearby.



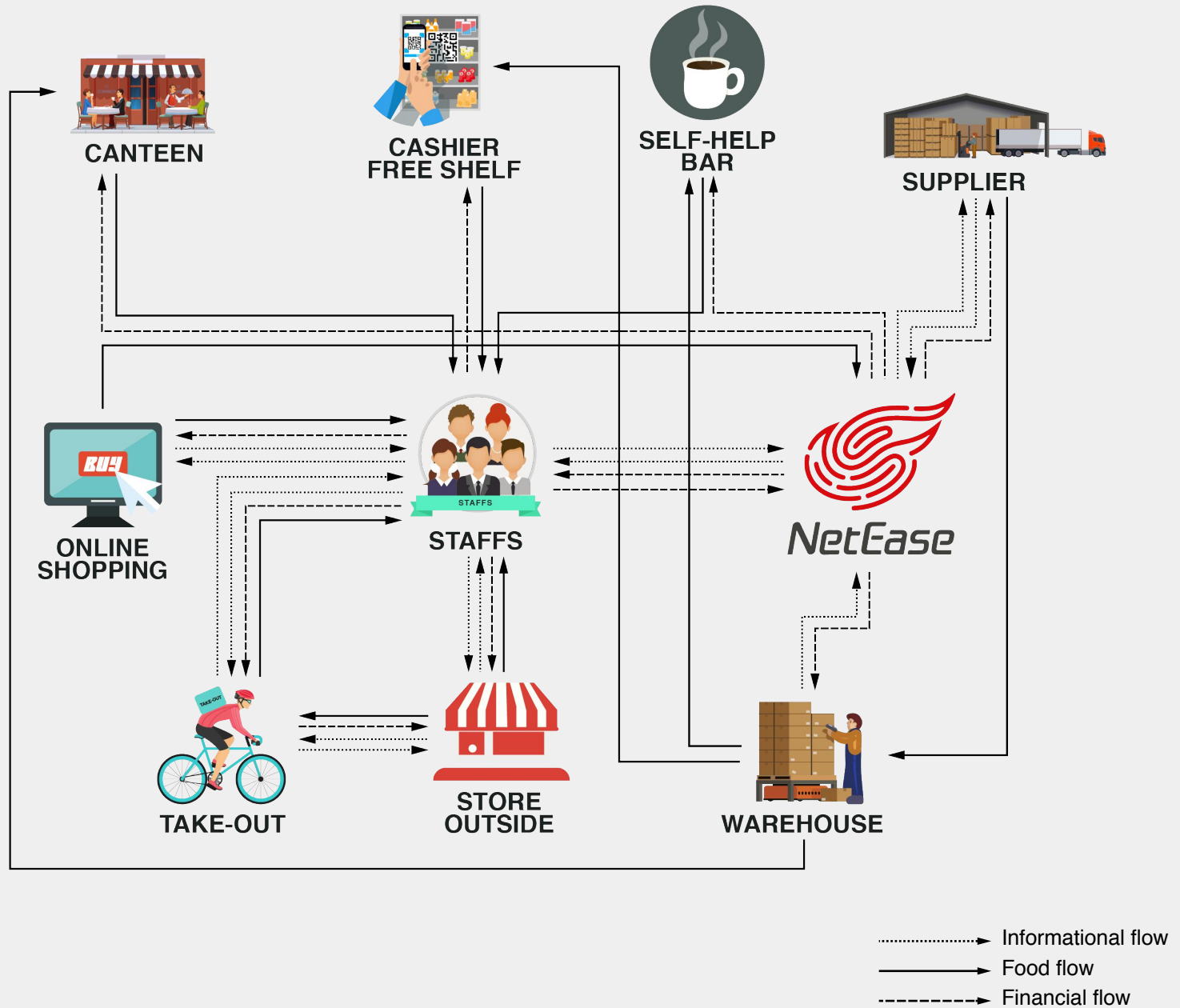
If "DS" meet lovers in the Hi-tech parks when they strolling, it will play love songs for them. Which will offer a romantic environment to this lovers.

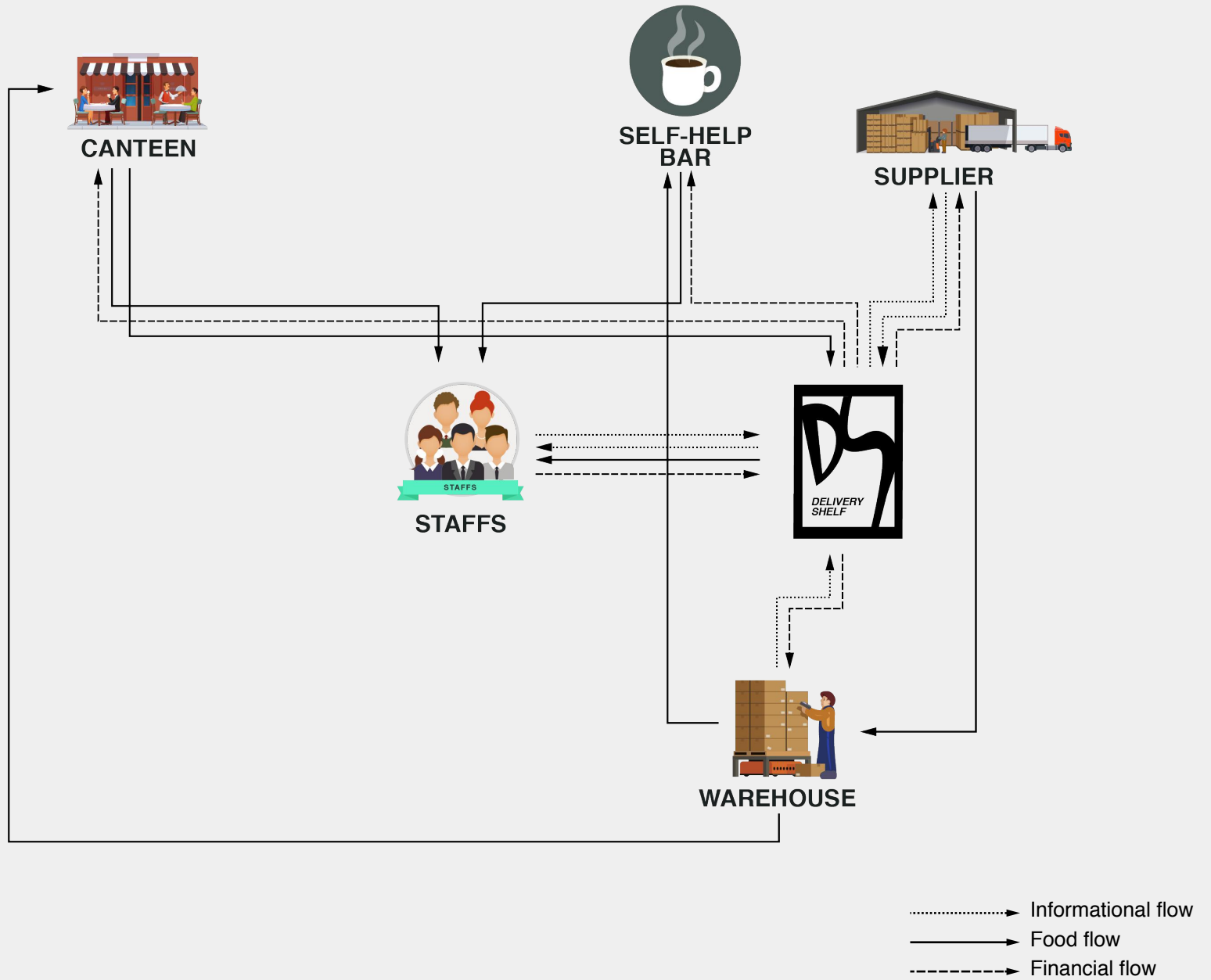


SYSTEM MAP BEFORE & AFTER

The system map visualize the food purchase organization of the Netease Hi-tech park before and after with DS: the different stakeholders involved, their mutual links and the flows of food, information and money through the system.

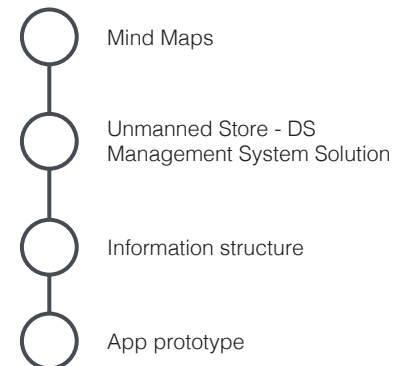
The main role of the subject which this system map emphasizes involved: the staffs, Netease Hi-tech park, DS, the warehouse, the supplier.

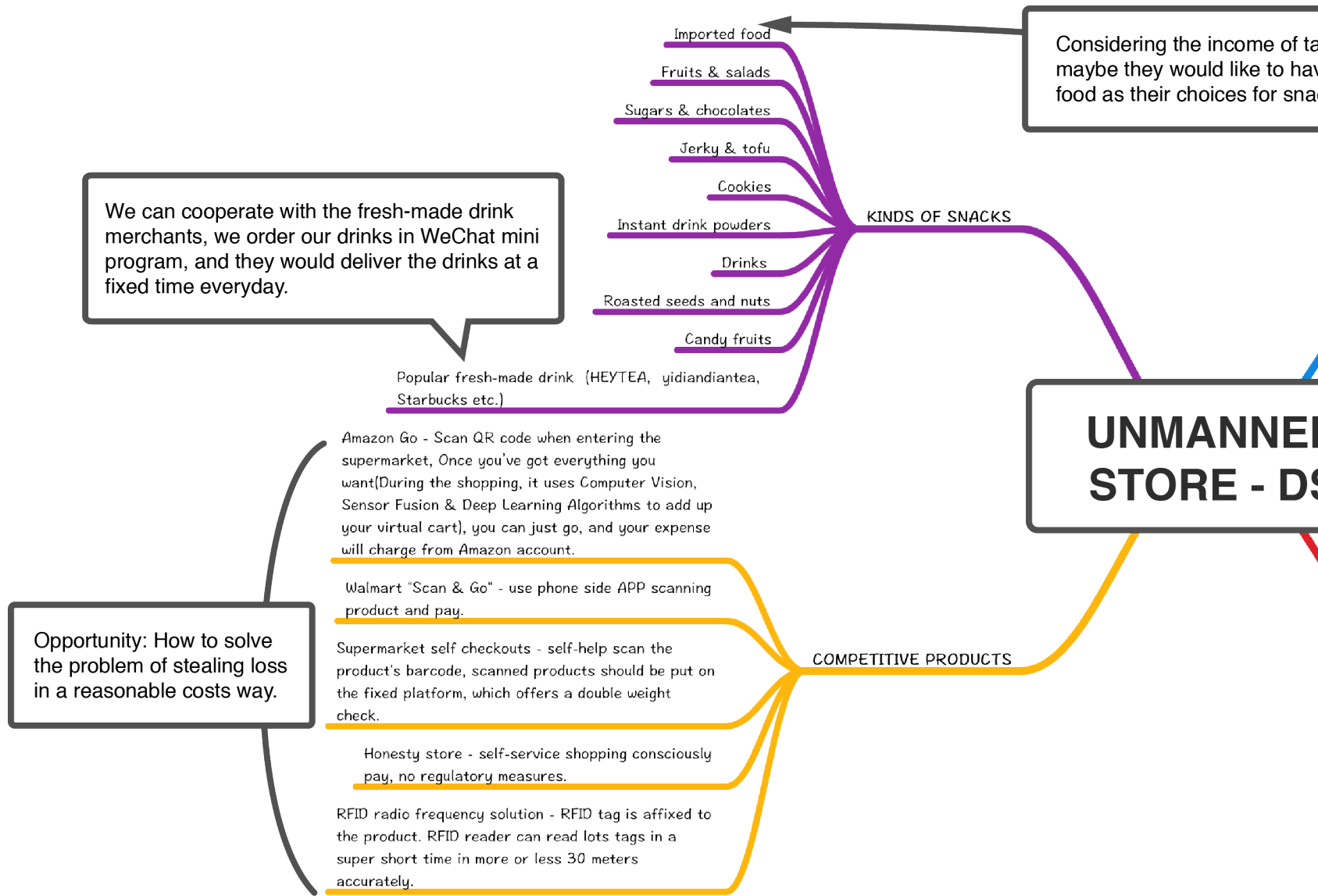


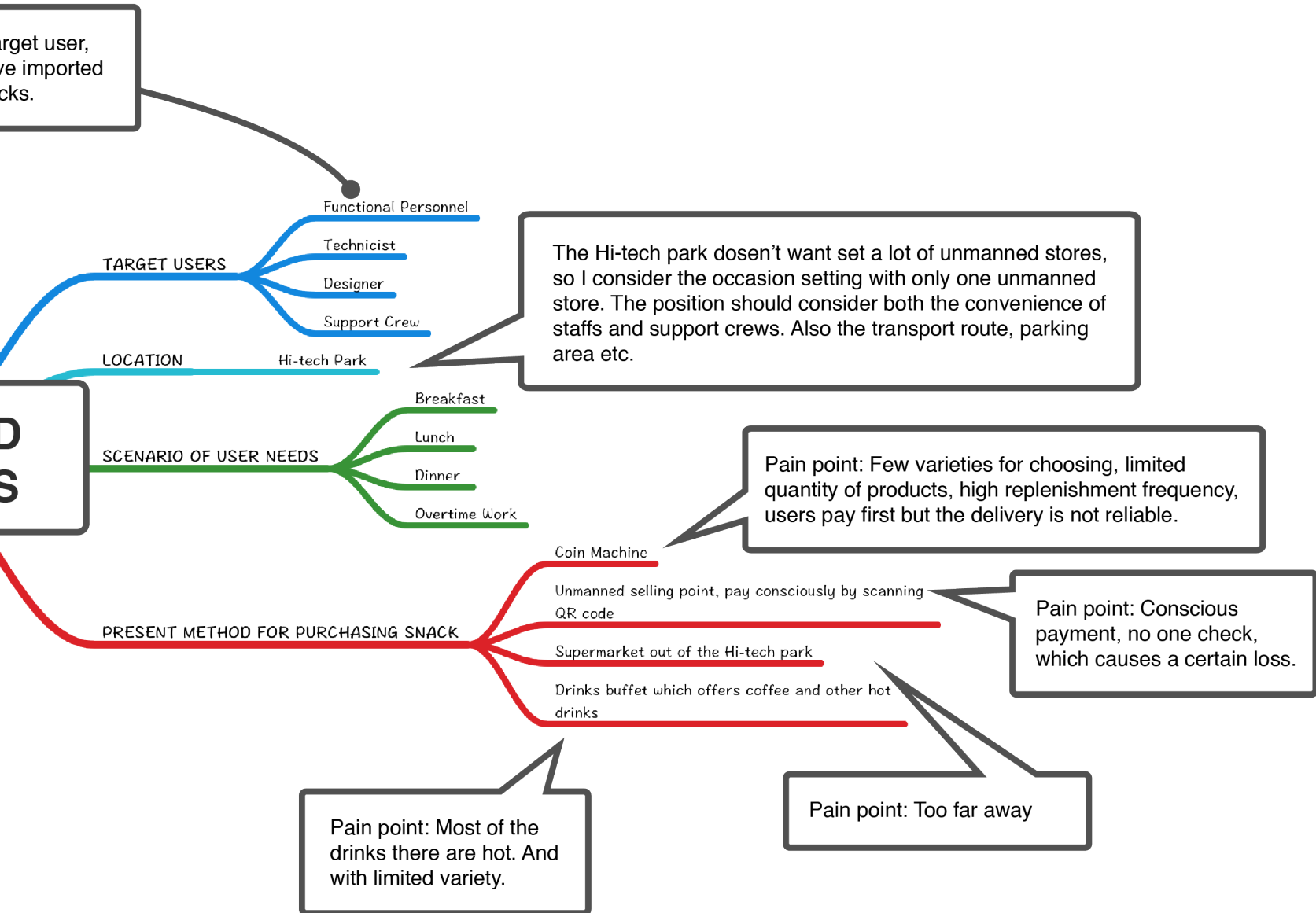


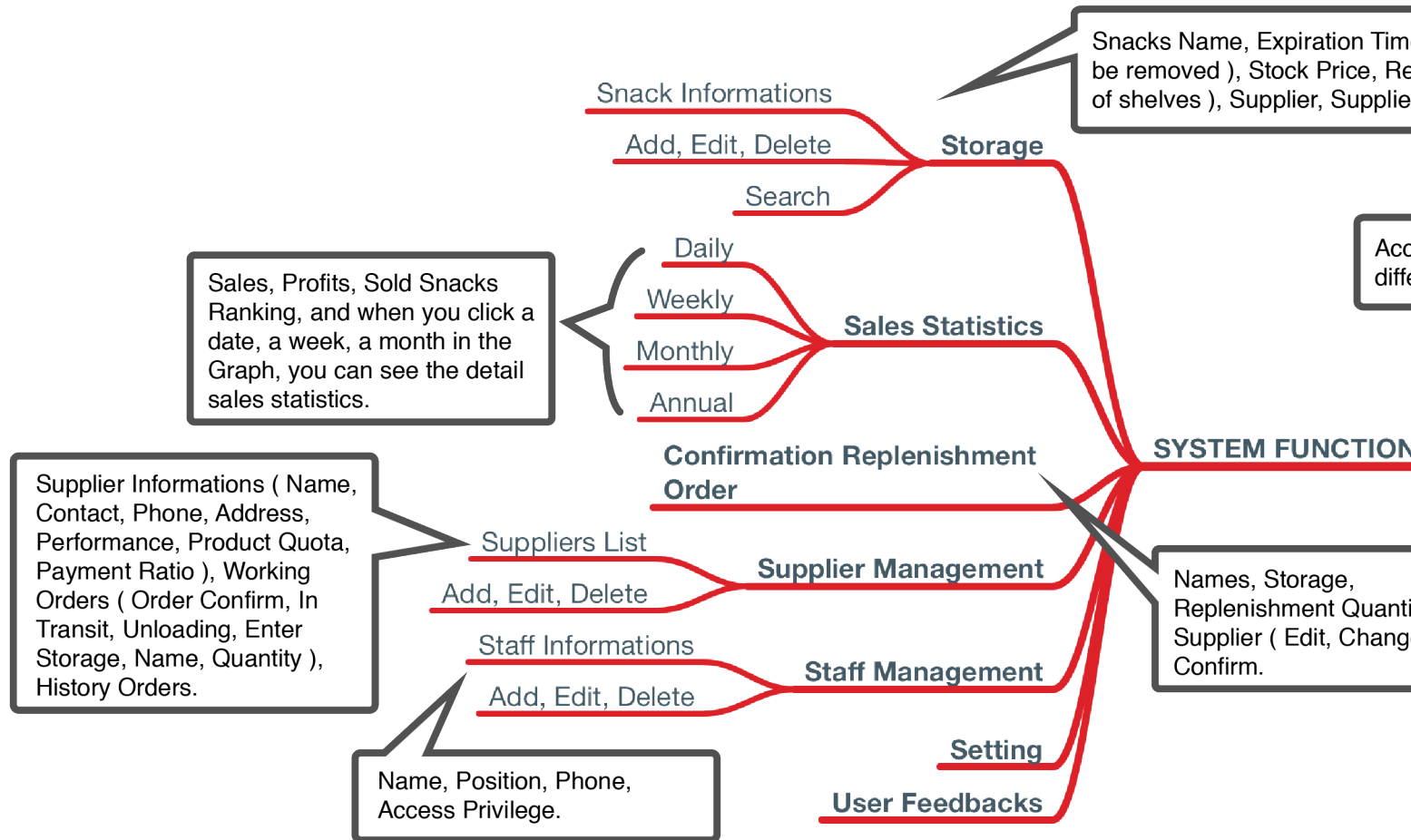
5.2

"DS" SYSTEM APP DESIGN









...e (for reminding to have a promotion activity or just to tell the snack should
...etail Price, Lucky Price (for lottery), Length*Width*Height (guide the choice
...r Alternatives, Storage Quantity (Shelve Inventory & Storage Inventory)

...ording to the staff logging information, grant
...erent accesses for different users.

UNMANNED STORE - DS MANAGEMENT

...S

...ty,
...e),

USER NEEDS

Smart Unmanned Store Management

As far as possible to reduce the cost of personnel. Customers buy things freely.

Timely feedbacks of any problems. Well understand the staffs' snack preferences.

More profits

USER SCENARIOS

Recording products information

Timely replenishment

Contacting suppliers

Entering storage

Dealing customers' feedbacks

Low training costs for new staffs

USERS

Support Crews

Support Department

MANAGEMENT SYSTEM SOLUTION ABSTRACT

Key words: Smart, Low Cost

In the process of running the Unmanned Store, Support Crew doesn't need to think too much, as long as follow the system instructions step by step. And usually there's no need to have special crew to run the store, support crew can use the fragmented time to deal with the store.

SPECIFIC MANAGEMENT PLAN DESCRIPTION

1. Product information input

The support crew finds the “ Add Goods” button, click to add snacks. And the system will guide him/her to finish all the information inputs. And the system will organize the snacks well in the shelves according to these information.

2. Replenishment

When one snack runs out of the storage, the subscription will send notifications to support crew, and the crew should just follow the steps which the system tells him/her to do. When crew goes to store with replenished snacks, clicking the button “Replenish to shelf ”, the shelf which should be replenished will lighten its lights to guide the replenishment. And if there’s not enough inventory, the system will generate

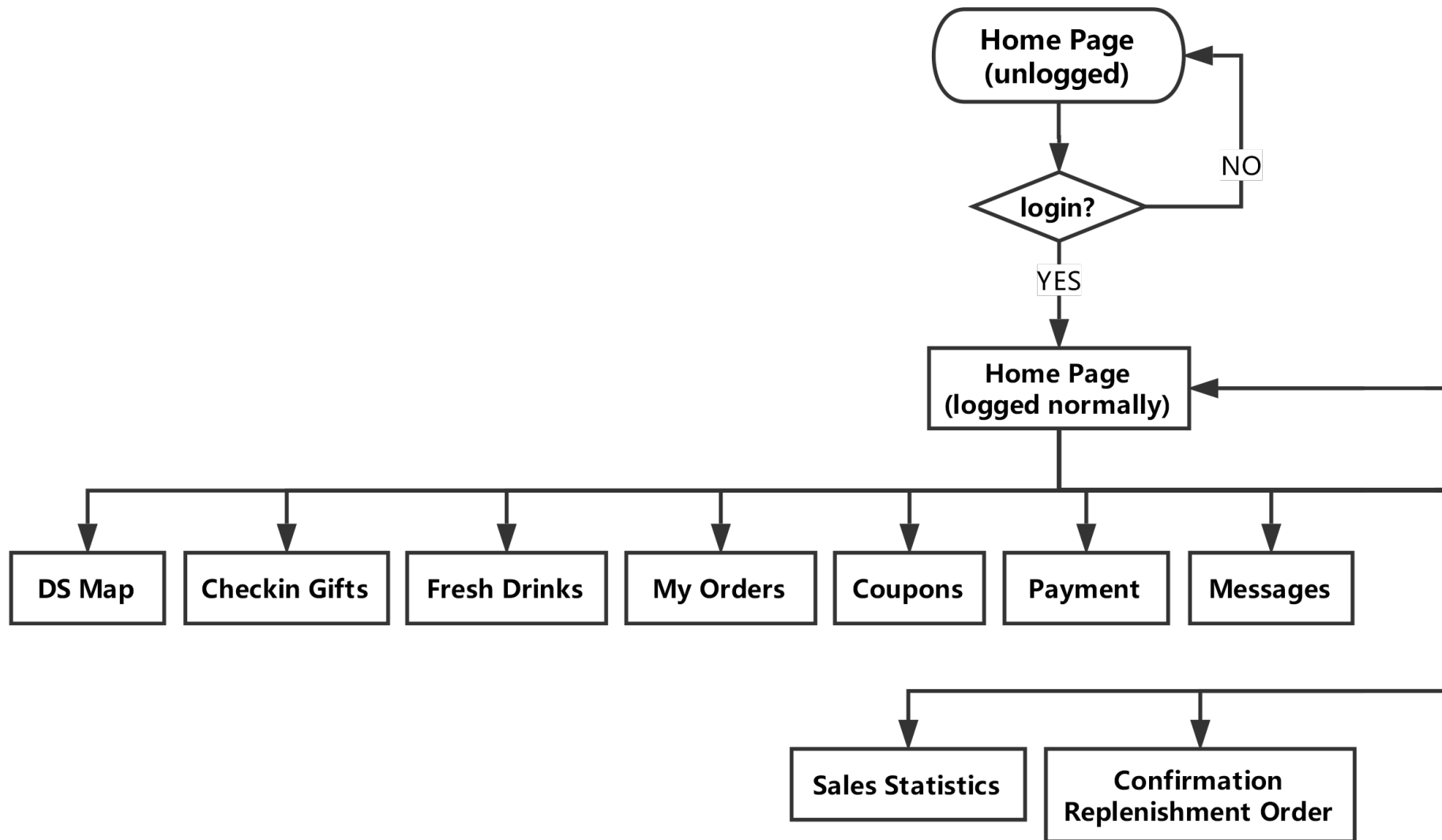
the replenishment order automatically, and send the message to the principal to confirm the order for suppliers.

3. Suppliers Management

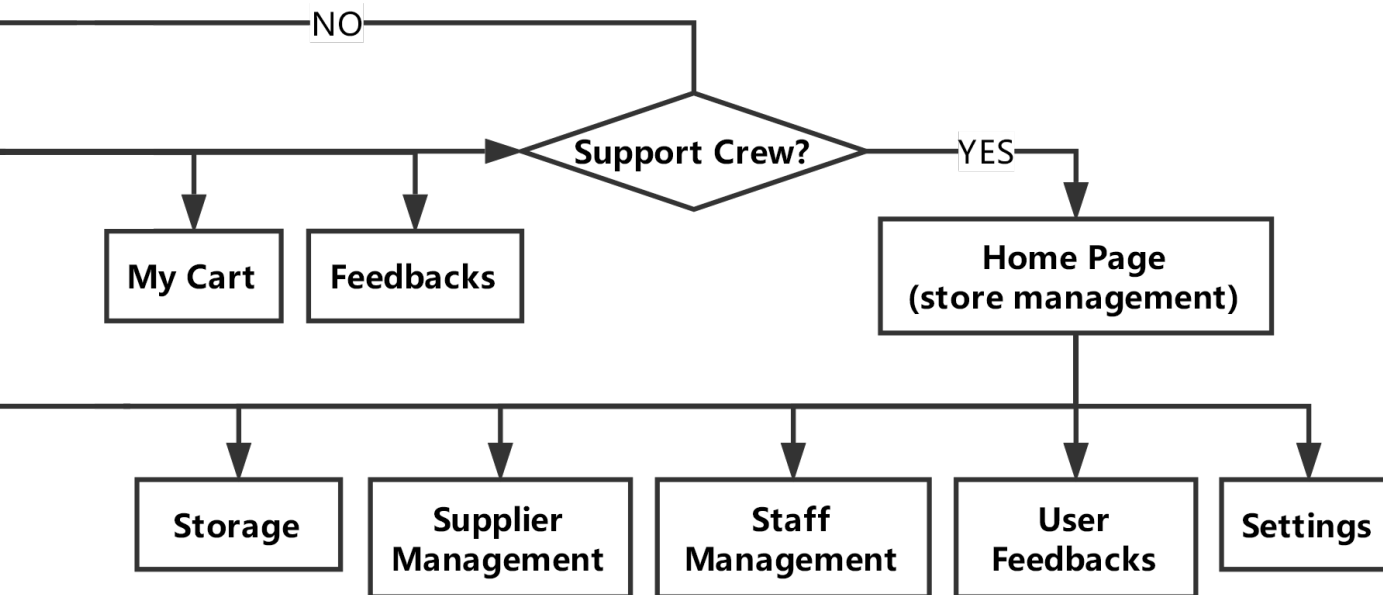
In the interface of Suppliers Management, the principals can edit the information of suppliers and check the orders status.

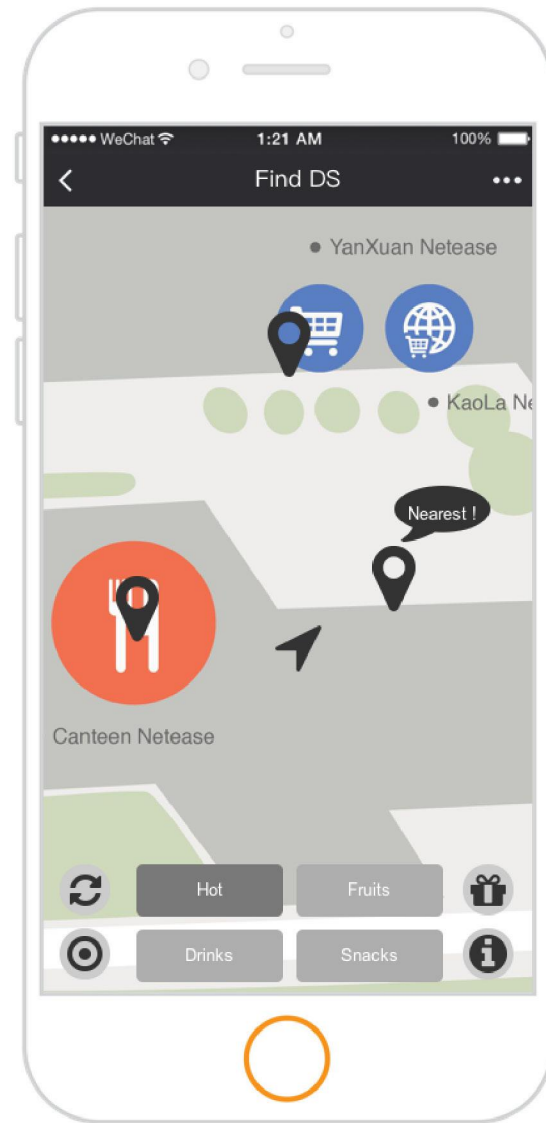
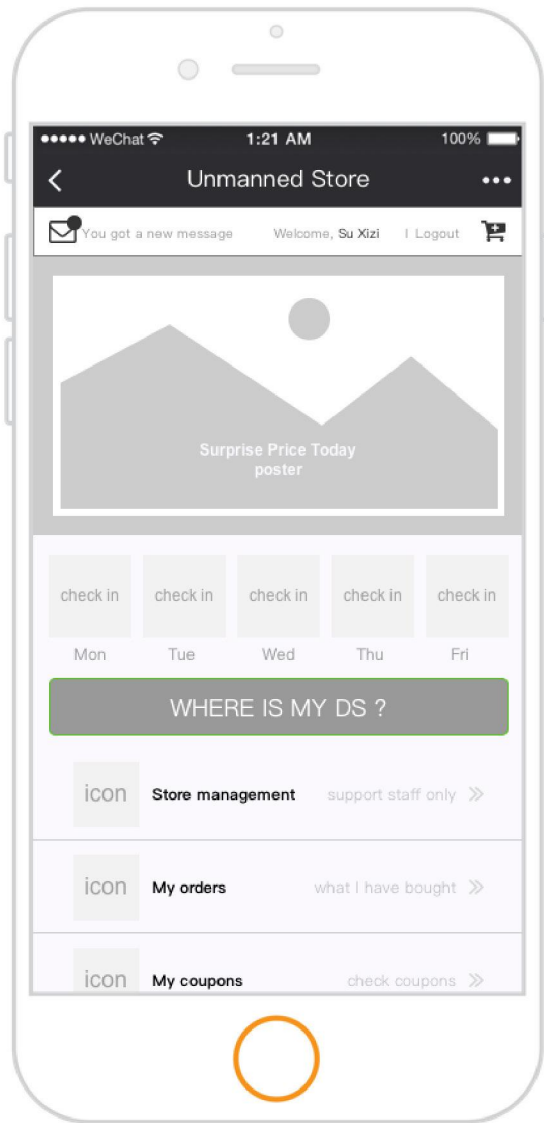
4. View the sales statistics & Deal user feedback

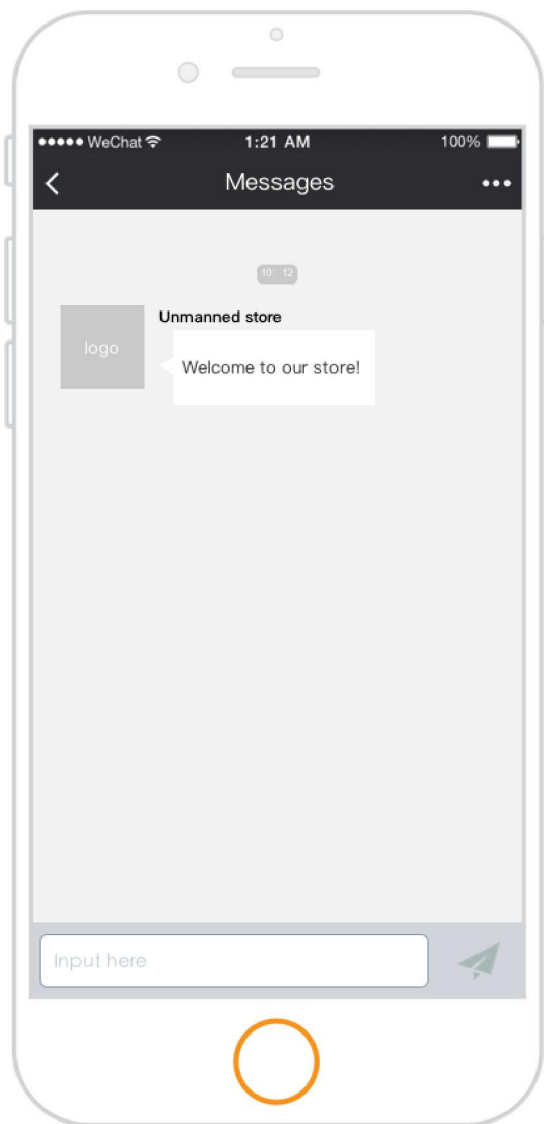
In the page of Sales Statistics, you can view the daily, weekly, monthly, annual sales statistics reports. Based on these data, you can make better decisions of restocking. In the page of User Feedback, you can receive feedbacks from Hi-tech park staffs.

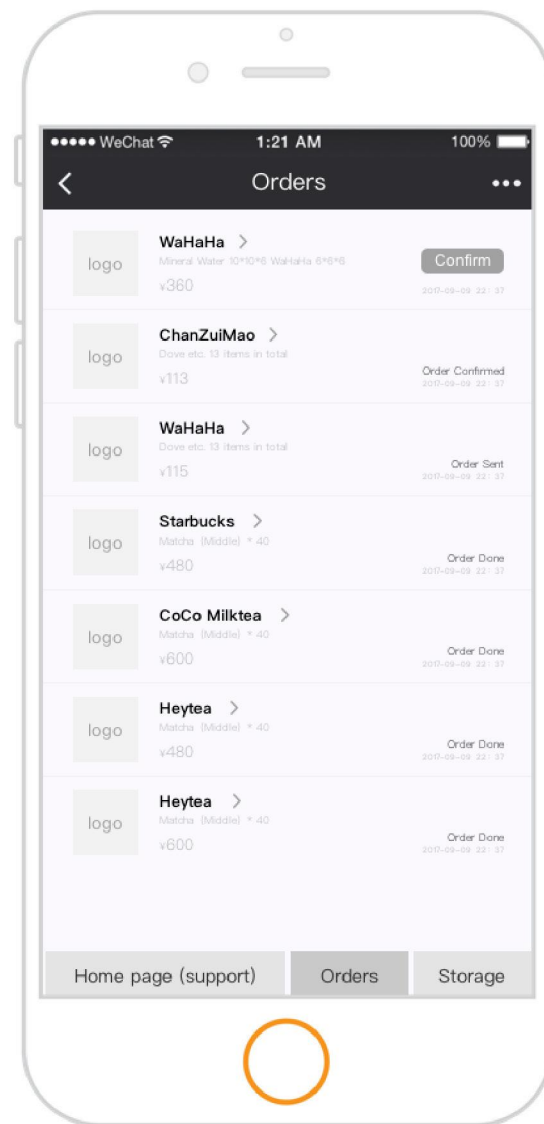
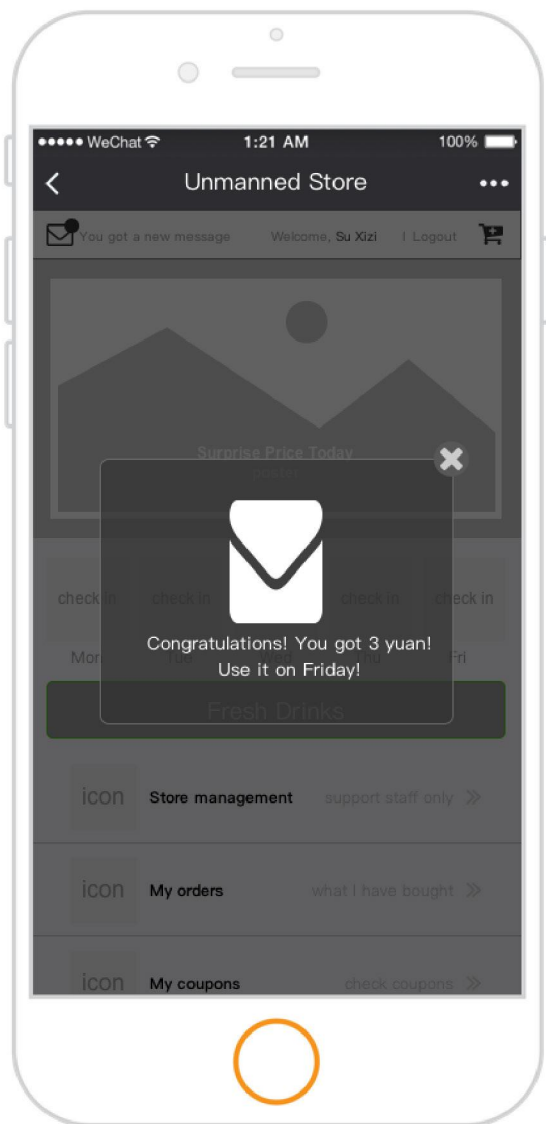


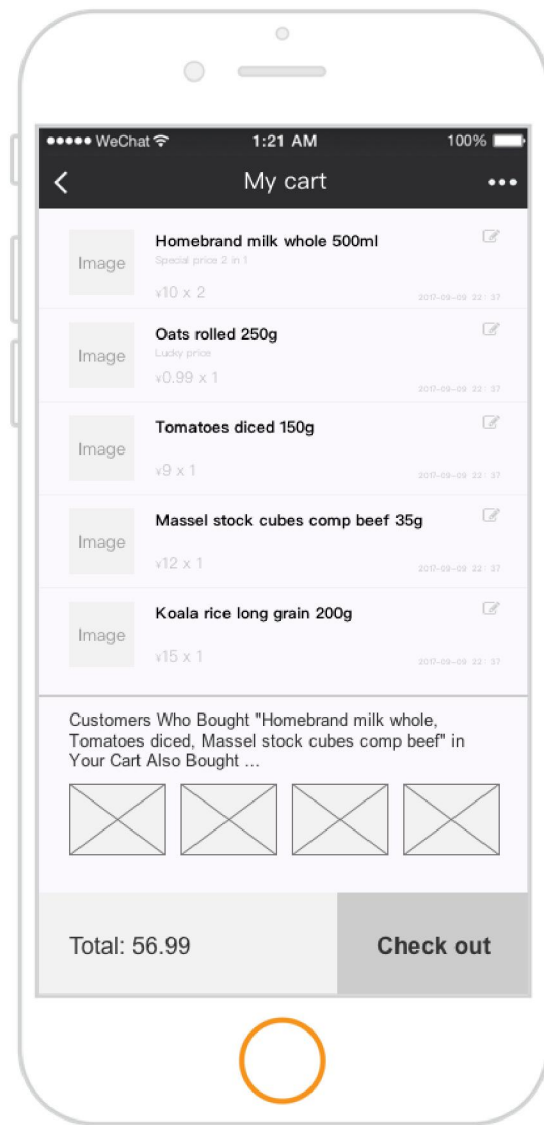
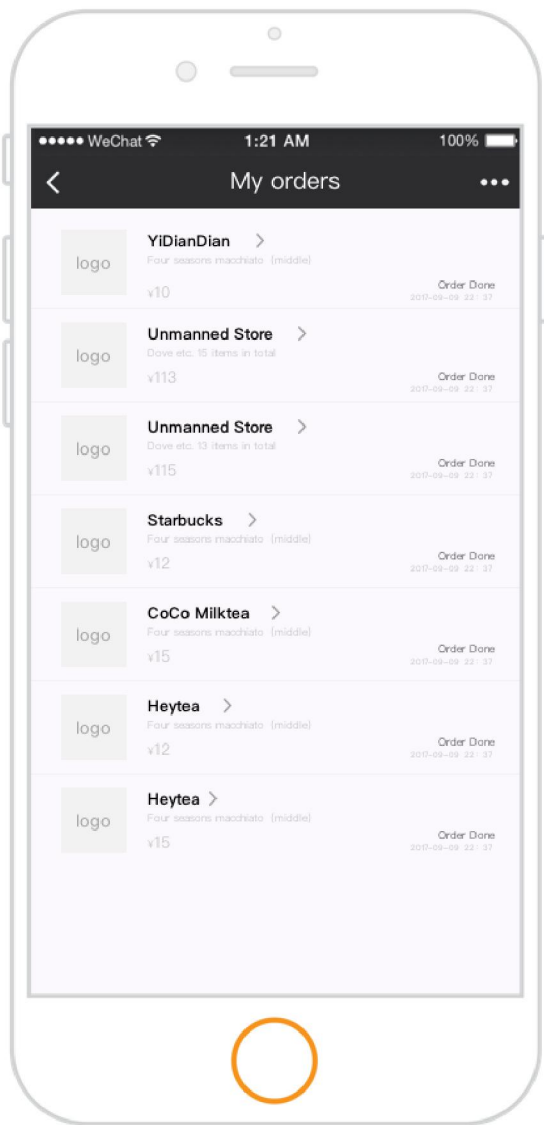
SYSTEM APP INFORMATION STRUCTURE

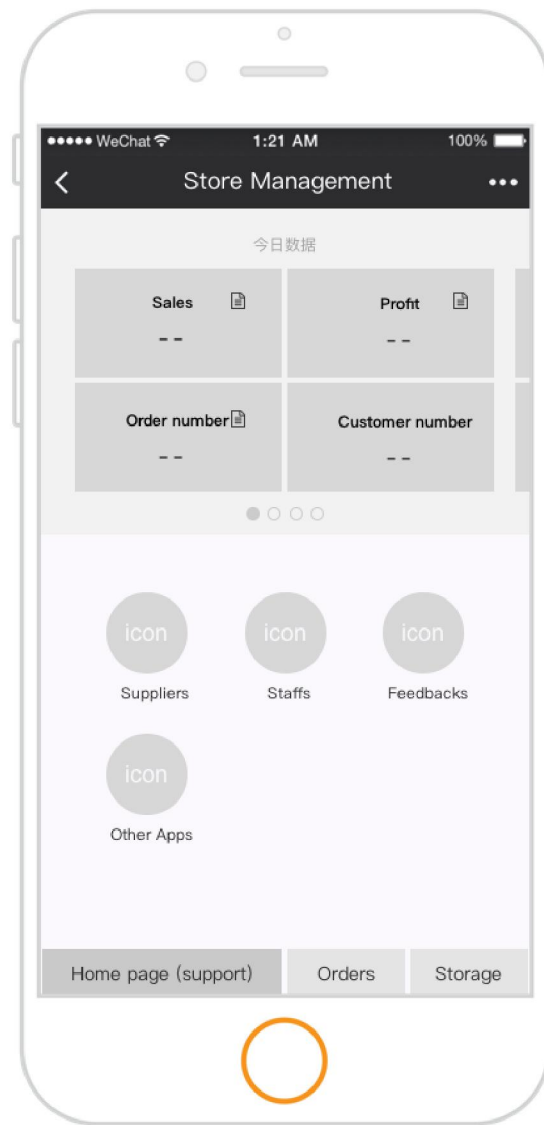
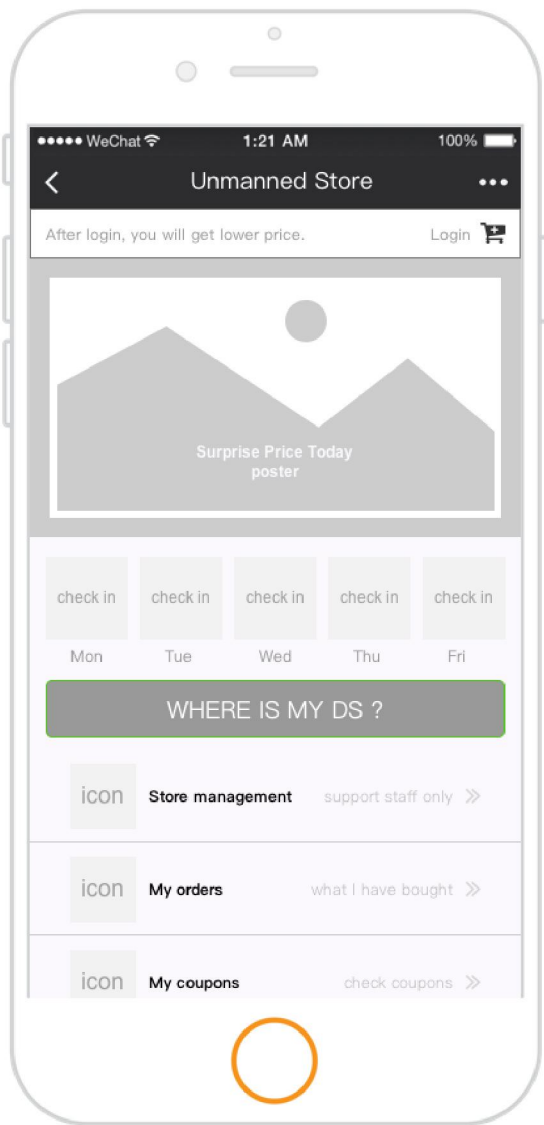


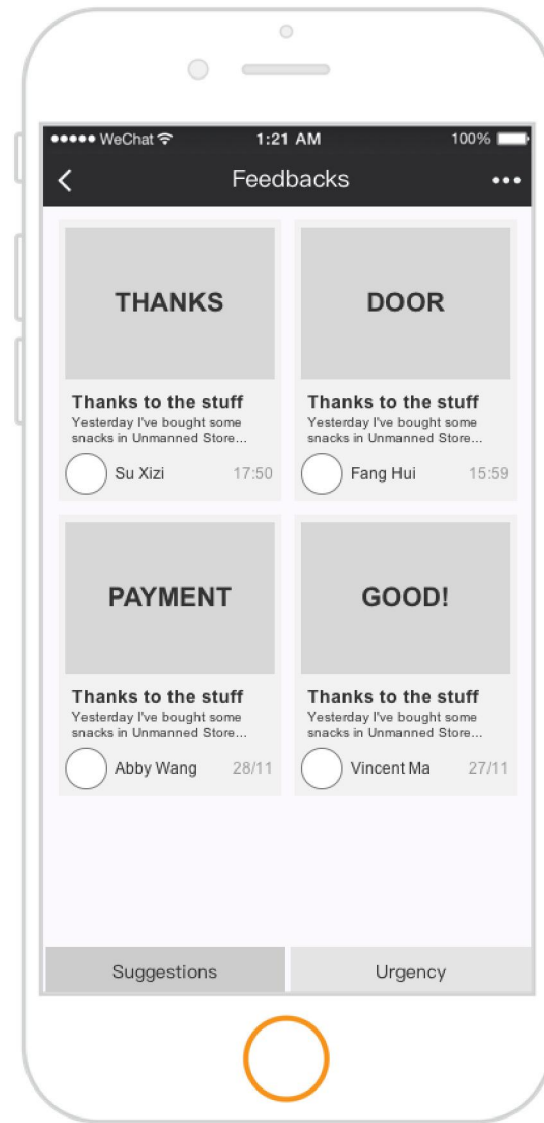
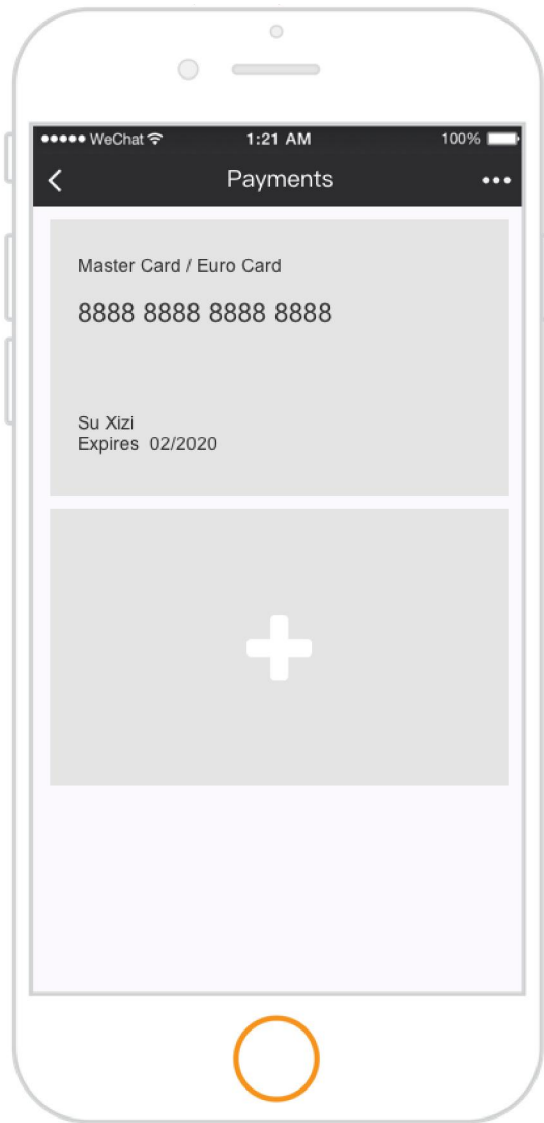


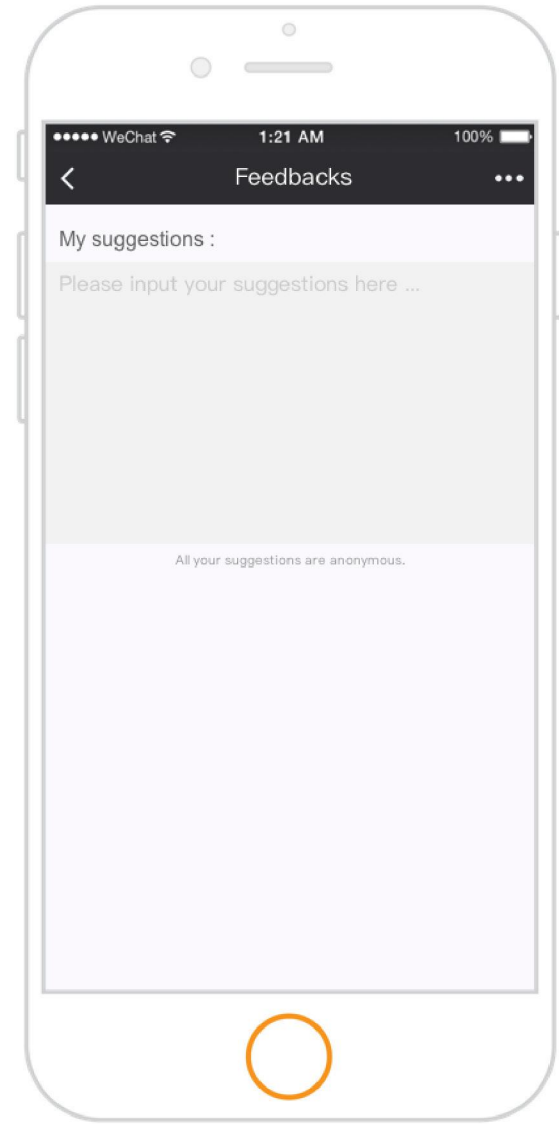
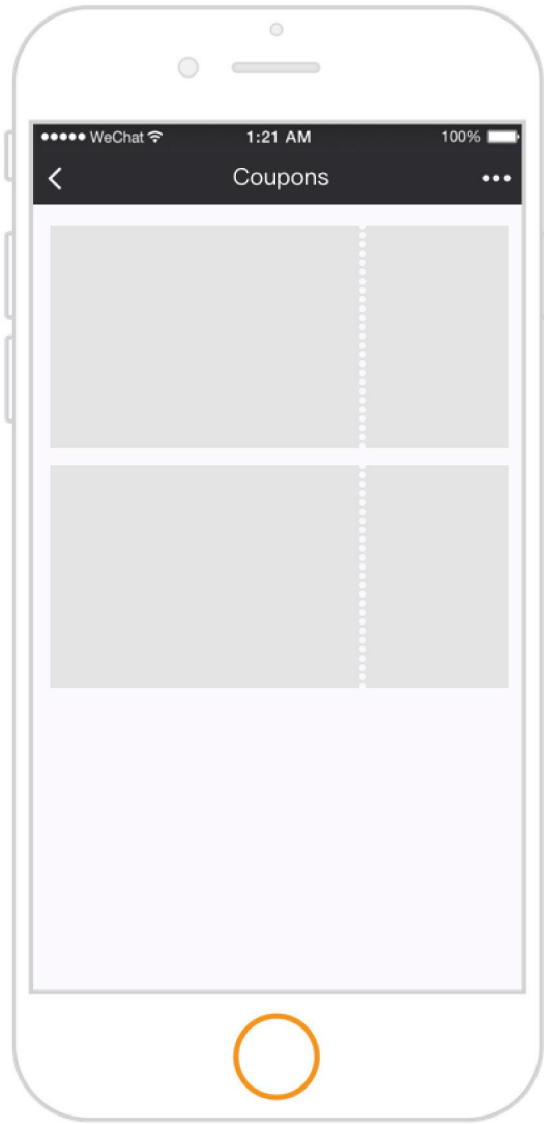


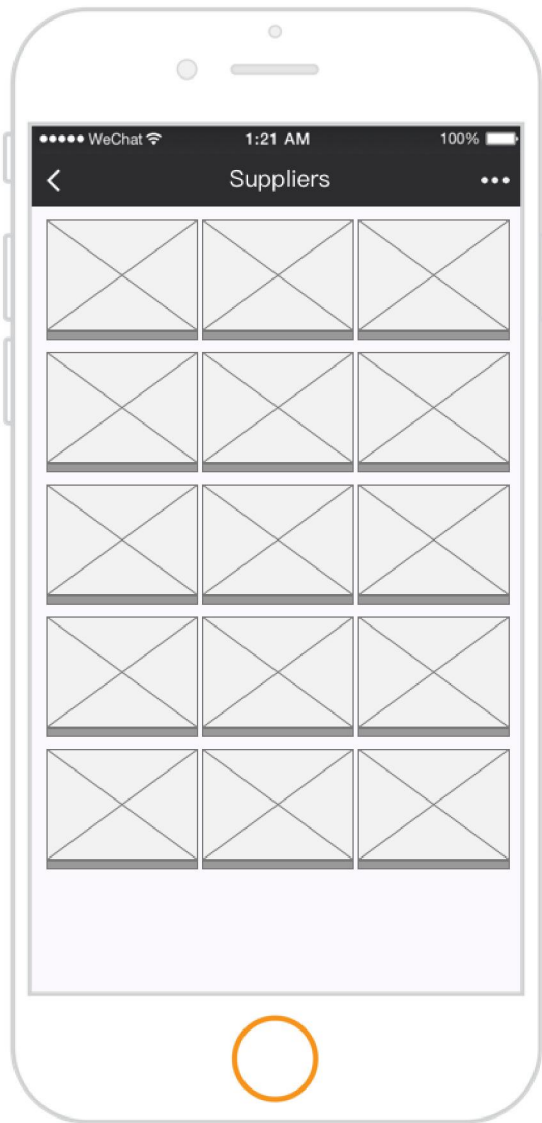




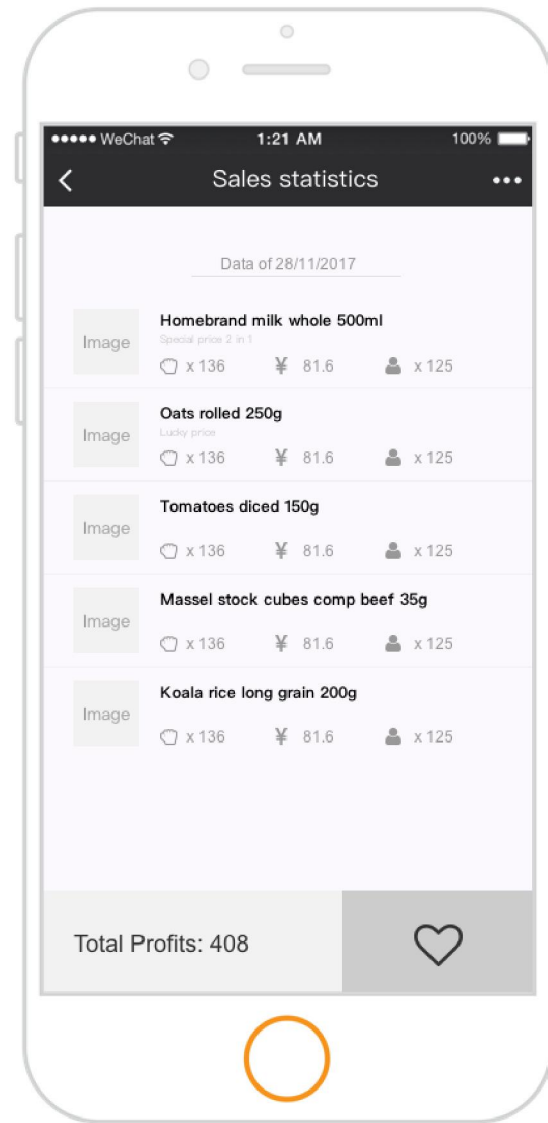












5.3

SMART DELIVERY SHELF DESIGN

- Sketches
- Rendering
- Usage visuals
- Technical reference



Open.

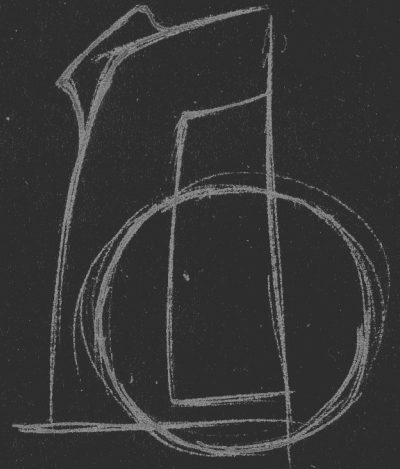


Take your snacks!

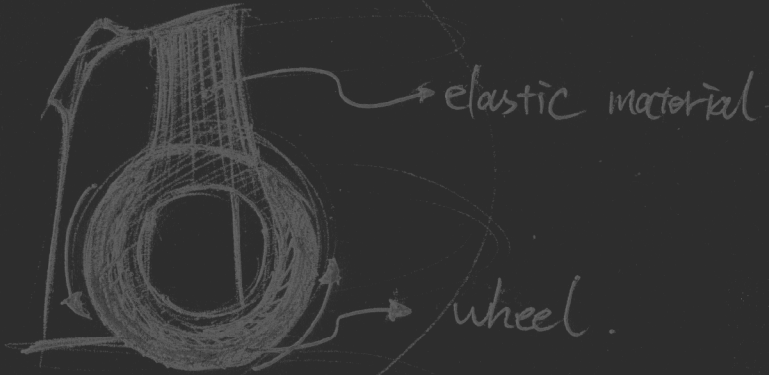
Screen



side view.

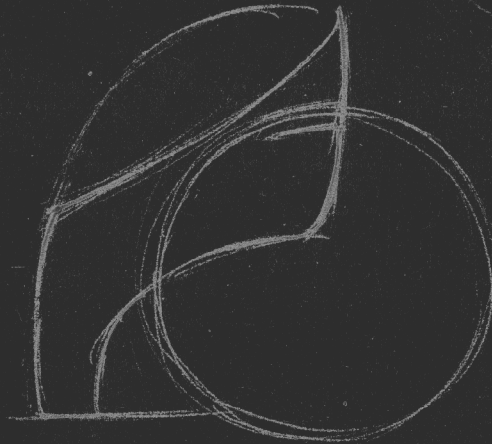
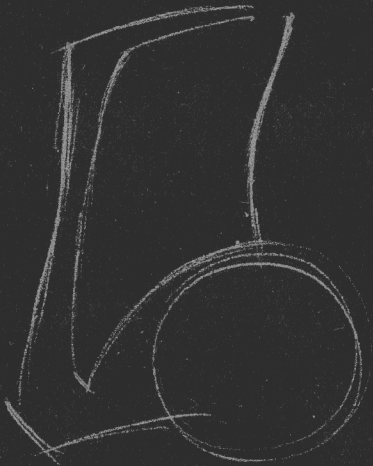


SKETCHES



Walking Mode.

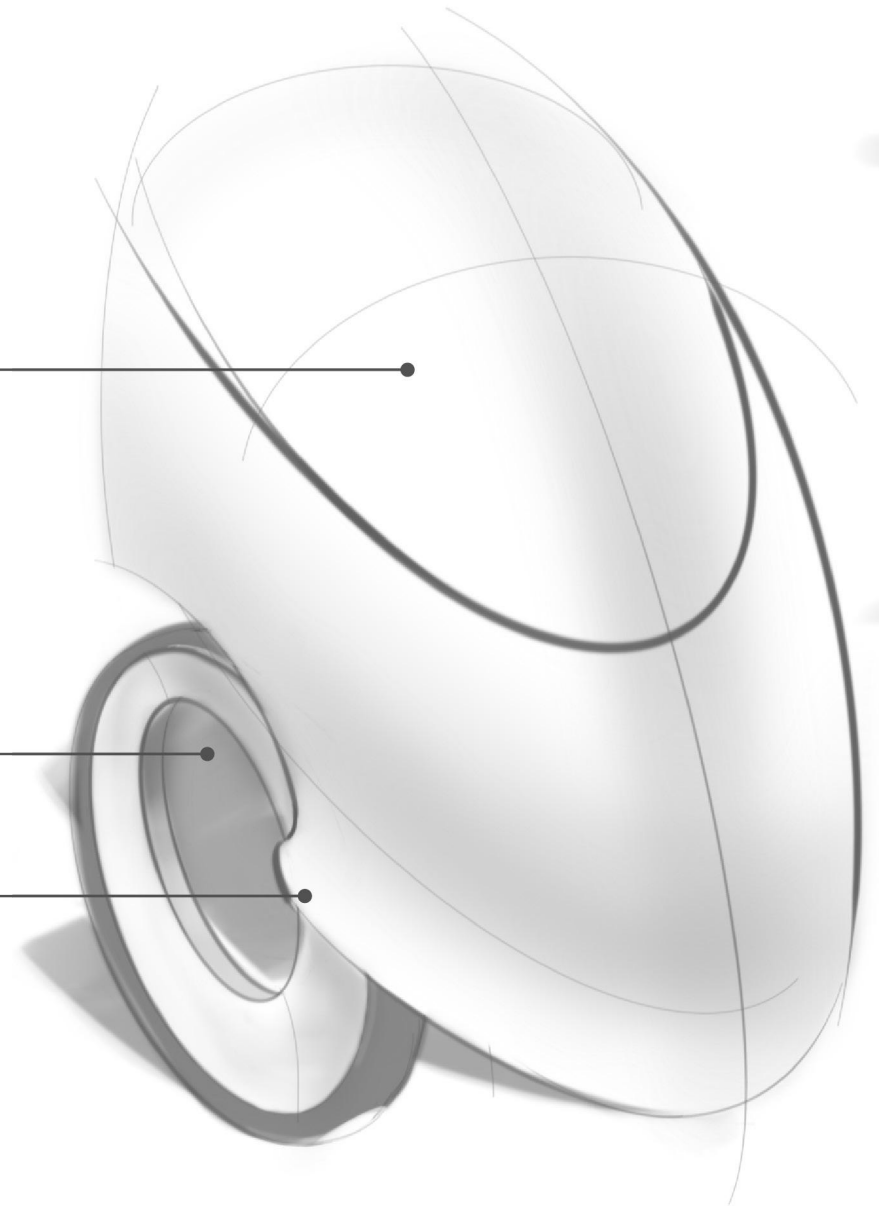
Transparent. (see snakes)



DIGITAL TRANSPARENT
TOUCH SCREEN

WHEELS WITHOUT HUB

WHEEL DRIVE





TAKE SNACKS WHEN IT
OPENED

RUBBER TIRES

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