

# INNOVATION OF SAMSUNG'S SMART CHOPSTICKS

Prepared for:

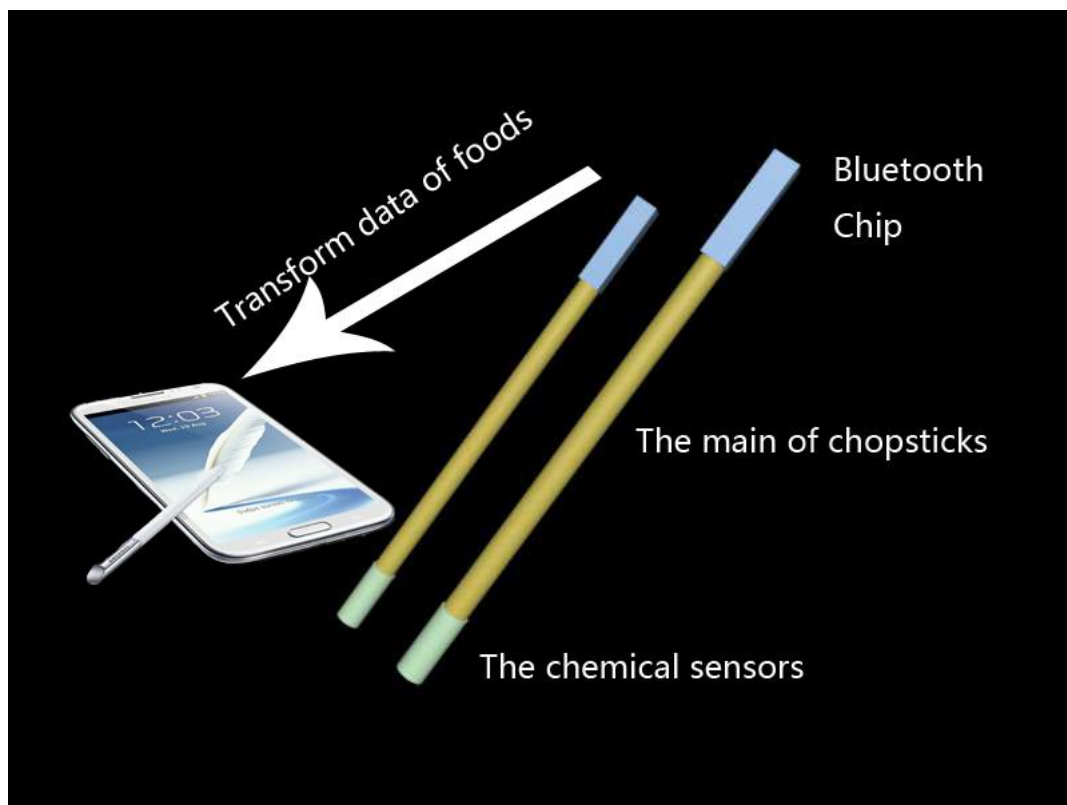
R&D of SAMSUNG

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Smart-Chopsticks Program  
R&D department of Samsung  
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Dear Manager:

We are grateful for you choosing us to develop an idea of company's innovative product. After 2 months research and discussion, we have developed an idea of a new smart product which can benefit both people and company-Smart Chopsticks. This assignment was arranged on March 25, 2015. We now prepare a complete report about it for you.

This report mentions all ideas, technical details of product and discusses the future market of the product. Nevertheless, it is still just a hypothetical which lacks testing, so challenges must exist on the way. However, this product is designed to test the nutrition element and calories which is the first chopsticks having these functions ever. Its market is likely to be very vast.

Thank you for the opportunity to develop this kind of product. We look forward to accepting your approval so that we can turn this idea into reality and work more efficiently for company.

Sincerely,  
Qian Huang,  
Electric Engineer

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## **EXECUTIVE SUMMARY**

In the past two months, our group which is one of the teams of R&D department of SAMSUNG has come up with an innovative idea about the Smart-Chopsticks. We need to obtain suggests and support so that we can turn it into reality, that is, start putting it into producing. I have listed ideas, technical details and future potential market.

This product is unique and useful. It is designed to test the nutrition element and calories such as fat and sugar for young people who want to lose weight and middle-aged people who should control the nutrition intake to keep healthy. We choose young and middle-aged people who care about their health a lot as our target market. And through investigation, we get that the market of it is very ideal, this product has potential to attract customers rapidly. So it is worth being investing.

# **INTRODUCTORY**

## **2.1 Idea Introduction**

It is acknowledged that Samsung has dominated the market of electric consume. Our team decided to develop an chopsticks which can help Samsung occupy this market a little more. smart chopsticks is designed to test the nutrition element and calories such as fat and sugar for young people who want to lose weight and middle-aged people who should control the nutrition intake to keep healthy. Our product will remind you if the calorie intake exceeds the amount you set previously and can upload the data to your mobile phone via Bluetooth and then the smart chopsticks app will analyze the data and give some suggestions.

## **2.2 Report Introduction**

Our report introduces our product from 3 aspects. The first part is how our product fits the Samsung strategy. We will list the Samsung's strategies and explain why Samsung will be willing to accept our product. Second, we will give readers the technical details about our product to make readers more aware of the details about our products. Third, we will show the result of our market research and it is clearly illustrated that why we chose the young people who want to keep fit and middle-aged people who want to keep healthy as the lead customer. You can learn more of our groups with the aid of the description of the department and get the overall concept of our product through the conclusion part.

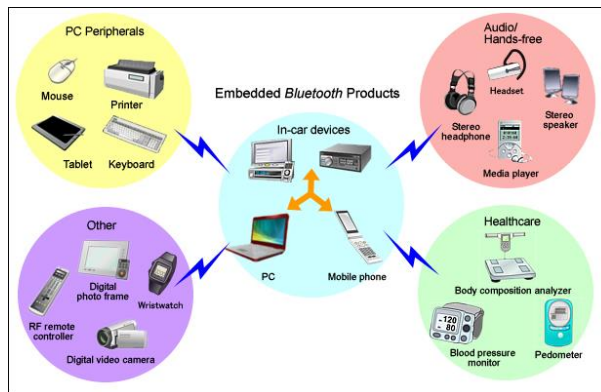
# TECHNICAL DETAILS

## 3.1 The technical base of the product

### 3.1.1 Bluetooth

Bluetooth is a specification (IEEE 802.15.1) for the use of low-power radio communications to link phones, computers and other network devices over short distances without wires. Bluetooth is a specification (IEEE 802.15.1) for the use of low-power radio communications to link phones, computers and other network devices over short distances without wires.[2]

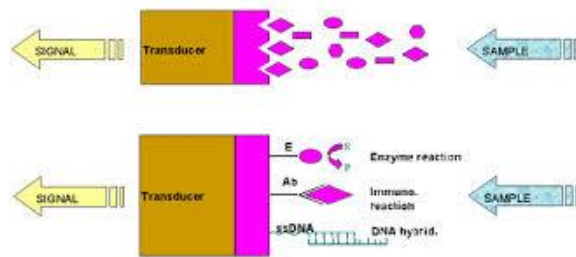
With the aid of Bluetooth, we connect our product and the smart phone, so our product can transmit the data it gets from the food to the smart phone, where the data will be processed along with other physical data which will be mentioned in the following passages.



### 3.1.2 Chemical sensor

Chemical sensor includes the sensors of chemical substances, which can measure the concentration of specific substances in the food, and convert the concentration to the electrical signal and form specific data.[3]

So we used specific kind of chemical sensor and tried to change the appearance, in order to make it fit the space in the chopsticks. When users use the chopsticks to get food, the concentration of the substances which is related to people's health will be transformed to the electric signal, and transmit through the Bluetooth function.



### 3.2 The technological description of product

In order to accomplish the target function of our product, the first step is to find the small size chip which can integrates the function of chemical sensors. The second step is to connect the sensor with the Bluetooth chip. The digital signal transformed by the sensor can be transmitted to the user's Samsung smart-phone via the Bluetooth. The third step, design appropriate mobile phone application. Establish the connection between intelligent tableware and Bluetooth to receive the digital signals sent from intelligence tableware. When user has meal in the use of our intelligent tableware, the data of the amount of various nutrients (carbohydrate, fat, amino acid etc.), all kinds of harmful substances (bacteria, viruses etc.), and some pathogenic chemicals existing in the food intake will be passed to the application through the transmitted digital signal. Then, after computing, the information will be displayed on the user's mobile phone. The fourth step, on the basis of the existing Samsung exercise software(S-health), we increase the function of the mobile phone application. By the scientific computing, user can obtain the energy intake and consumption every day. Consequently, it can achieve the purpose of monitoring the health status of the user.

The materials used for tableware must be suitable as in non-toxic, antibacterial, corrosion resistant and harmless to the human body. The most vital part is to make sure the sensor located inside the material can obtain all the information of the food that user needs to know about. The fifth step, we need to find a proper way to install the sensor chip to the exterior of tableware which should be made of the suitable material. The sixth step, we will test the use of the intelligent tableware, the stability of the digital equipment, as well as the safety when put to use, and then make the improvement accordingly.

### 3.3 Brief description of the process of product

- 1) Construct the chip of the sensor and connect the chip and the smart-phone with the assistance of Bluetooth.
- 2) Design smart-phone terminal application that can monitor and compute the health data.

- 3) Select the appropriate material that the tableware's exterior will be made of and embed the chip in it.
- 4) Use the newly-built model for further testing and make improvement plan accordingly.

### **3.4 Required resources:**

#### **3.4.1 Raw materials:**

Corresponding chemical sensor.

Various plastic material sample.

Bluetooth chips.

#### **3.4.2 Tools:**

Molds, injection molding machine, plasticator for producing the plastic tableware.

ISE10.1, the software used for digital chip design.

Measuring cup and chemical reagent for testing the effect of the sensor.

## **MARKET RESEARCH**

### **4.1 Target market**

We decided to choose young and middle-aged people who care about their health a lot as our target market.

### **4.2 Leader customer**

We choose the white-collars in big cities that need to know about their condition of health in a convenient way because of their long-time work and have the ability to afford the expenses of the new product as the leader customer of our new product.

### **4.3 Main market research**

Samsung has set up its own leader status in the global Smart-phone market with its excellent product line, but with the development of Apple's ecosystem, Samsung come to realize that it has become a big challenge for future development of the company to maintain customers' loyalty. Canaccord Genuity's report shows that



Apple owned 65% of profit in the global smart-phone market in the first quarter of 2014, but the quantity of sale and profit of Samsung's smart-phone has decreased. The data shows that Samsung's market share of smart-phone has decreased 2 percent to 30.2%. At the same time, Samsung's profit share also decreased 2 percent to 41%.[4]Under this circumstance, Samsung decided to develop the smart chopsticks to build the ecological system to maintain customer loyalty.

Top Five Smartphone Vendors, Worldwide Shipments, and Market Share, Q1 2014

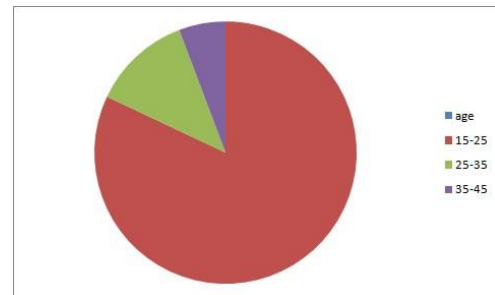
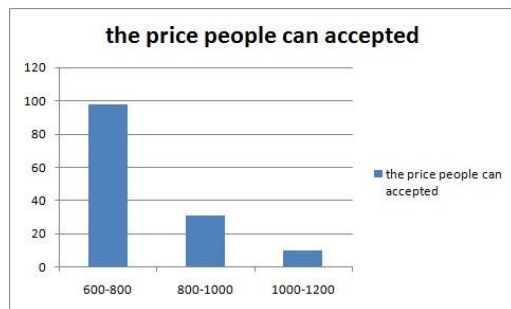
Vendor	1Q14 Shipment Volumes	1Q14 Market Share	1Q13 Shipment Volumes	1Q13 Market Share	Year-Over-Year Change
Samsung	85.0	30.2%	69.7	31.9%	22.0%
Apple	43.7	15.5%	37.4	17.1%	16.8%
Huawei	13.7	4.9%	9.3	4.3%	47.3%
Lenovo	12.9	4.6%	7.9	3.6%	63.3%
LG	12.3	4.4%	10.3	4.7%	19.4%
Others	113.9	40.5%	84.2	38.5%	35.2%
Total	281.5	100.0%	218.8	100.0%	28.6%

We surveyed with the methods of exploration and description, because the smart chopsticks has not come out before. We hope we can get enough information about the chopsticks' market environment and the customers' need of this kind of product.

We collected the original data information by giving out questionnaires. Since we mainly aimed at the people who estimate their food intake on the basis of their physical conditions, we gave out most of the questionnaires in schools and office blocks.

We analyzed the data that questionnaires reflected by statistical analysis. We choose 139 people from 15 to 45 years old in different ages, different genders, and different occupations to fill in the questionnaires. There are 139 people finished the questionnaires and 85% of them are valid. About 82% of the people we investigated are between 15 to 25 years old, 12.2% are between 25 to 35 year-old and 5.8% are between 35 to 45 years old. The result shows that around 35.3% of them care about the amount of food intake including nutrition and the quantity of heat etc., 38.1% of them are willing to know the information of the food they eat with the help of the smart chopsticks to keep fit. We can conclude from the information we got that the prospect of smart chopsticks is great. According to the information, the price range that most people can accepted vary from 600 to 800, so we will control the cost under 800. The requirements of the smart chopsticks are simple and handy, easy to carry and use, so we will select proper materials to make the smart chopsticks to meet these needs. Some of the people indicated that if a product of Samsung is very attractive and other products of Samsung have good compatibility, they are willing to buy more Samsung products and be loyal to Samsung. Therefore, our group believes that the

smart chopsticks can be released as a final product and it will be a great success. At the same time, Samsung can build an ecological system to maintain customer loyalty even be more competitive than Apple.



## CONCLUSION

### 5.1 Recommendation

This new product will make a difference in the market of health keeping by the digital technology, and will improve the competitive advantages of Samsung in the market of electric consume.

### 5.2 Summary

#### 5.2.1 Strategy

In this section, we discuss the strategic significance of intelligent chopsticks for Samsung in the intelligent health care market, which can enhance the competitiveness of Samsung in the electronics market.

#### 5.2.2 Technology

In this part, we deeply discuss the basic technical needs of making intelligent chopsticks, the time arrangement of development, and also give a simple description of the product manufacturing process.

#### 5.2.3 Market

In this section, we get the general information of our potential customers' attitudes toward our product through market research, and discuss the meaning of this new product to Samsung.