Intelligent Product Construction and Design in Smart Earth

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Abstract. Under the concept of intelligent earth development, smart products should be born. Smart product building is not the technology of traditional products, but high-tech products to give perception, memory, thinking, reflecting a series of intellectual ability. Its design thinking is more systematic, more macroscopic, more stereo. Smart product design challenges the wisdom of mankind.

1. Introduction
Two thousand years ago, Archimedes once said, "Give me a fulcrum, I can tilt the whole earth." And now, we're building a smart system that's free to play around the globe."

"Wisdom of the earth" concept of development, is IBM in 2008 in the global warming, energy crisis, security issues, based on the "network information highway" construction results, perception of information and communication technology trends and proposed global development New strategy. In simple terms, it is human beings who are developing and using advanced technologies to make the earth, like humans, have brains, a rich nervous system, an acute sensory organ, etc. Have similar human reflect, adjust, replication, repair, and intelligent functions, when their own emergency can make the corresponding intelligent response, timely feedback and solve. Its implementation principle is through embedding sensors and equipment to the electrical grid, railways, Bridges, tunnels, roads, construction, water supply, Dams, oil and gas pipelines and other objects, To connect these objects, form the Internet of things, and then connect the Internet of things with the existing Internet, to integrate human society with the physical system of the earth. And then through cloud computing the analysis of large amounts of data in large amounts of network information, to get the latest information, and make good decisions by analyzing them quickly.

2. The rise of smart products
Since the concept of "wisdom earth" developed, countries around the world have responded positively and combined their development prospects with them. Via mobile Internet, Internet and digital technology, big data and cloud computing, 3s and other modern technology research and development and utilization, promoting intelligence development, urban infrastructure will be more wisdom, can be induced, measurable and fusion. Individuals, community organizations, cities, countries, and the entire world and the entire earth ecosystem are interconnected in digital sensing and measurement. As the construction of intelligent earth continued, the industrial patterns of countries will change. Traditional manufacturing will advance in the direction of intelligent manufacturing. The smart product will be the future design of the idea of intelligent earth development. Smart products will be able to perceive and
measure the fundamental changes of the world. Smart products will be integrated with smart cities and smart environments to realize the concept of wisdom earth development.

Smart products are developed on the basis of intelligent products, but intelligent products are not smart products. A intelligent product is a product with a numerical control system. Numerical control is a method of controlling the mechanical movement and processing using digital information. Early numerical control systems were composed of hardware circuits (Hard NC), whereas modern numerical controls were generally controlled by CNC (computer control). And the heart of smart products is wisdom, which is the ability to be as intelligent as human beings, with a range of functions such as feeling, memory, thinking and behavior. (The accurate sensor accepts external information and performs computational analysis.) The intelligent product is a programmable and versatile machine. Or to perform different tasks with the available computer specialized system change and programmable action, or through the system objects internal task creation, and smart products respond to external demand with thinking.

At present, countries have developed to "smart cities". New smart products are widely used in cities. Such as intelligent bus-stop, the use of mobile Internet, geographic information system, global positioning system (GPS), remote sensing technology, such as technology, timely will the bus real-time location sharing to the bus stop or a specific mobile phone APP, through intelligent technical analysis and processing of the information gathered, the user is able to understand the operation of the bus line in time. It greatly reduces the time spent waiting for the bus, which increases the efficiency and time utilization of people. The smart products of the us and Europe are widely used in urban public environment, and the development of smart products has been extended to the civil domain by public environment and public utilities. The design and development of the conventional smart products are strong. The representative of our country's smart products is Vadi, "Baidu minor", etc. The design and production of smart products in our country are dawning.

3. The construction of smart products

3.1 Construction of perceptual function

The premise of the smart product is that it has a timely response to foreign information, It is the product as an independent individual that perceives external changes through internal sensors to capture external information changes. The sensor receives it and converts it into a digital signal for identification, and then the processing analysis of the next step. This is a critical step in building smart products.

3.2 Construction of memory function

After the product has a perceptive function, the next step is to store the identified data in the background, it depends on powerful electronic chips. Of course, the inside of the chip also needs to store some of the factory information. The electronic chip of a smart product is like a human brain, making it easier to store and provide the corresponding data output directly for subsequent processes.

3.3 Construction of thinking mode

To anthropomorphize the product, the creative product needs to have a mental model. When the product perceives information and stores information, it needs to compare the information that is received externally to the data set inside the chip. After that, make a quick judgment and make a reasonable choice and conduct it. After a series of model, of course, the internal procedures also need to for an analysis of this process, to ensure the final information whether to meet the needs of the outside world. The product has the thought pattern which is the core of the transformation of the common product to the intelligent product.
3.4 Construction of stress reaction
With the three main functions within the product, the system should be established and connected to the outside world. Namely according to external sensing information make corresponding response, people can understand the internal data can be converted to text information, or language information, or behavior, that's where the end of the product comes from.

Smart products from perception, to memory, to thinking, and ultimately to the construction of feedback, are always dependent on intelligence, interconnection, connectedness and interaction. Intelligence enables products to respond quickly to changes in their surroundings and to make decisions and optimizations for the future. Content union is that the product is connected to another object in use, such as a remote control can be used to control air conditioning. Interconnection enables resources and information to be shared, providing a huge amount of comparative resources for thinking about products. Interactions enable people to participate in the interaction with the operating system, the object, and the technology to achieve the interaction between the human and the product, resulting in the experience.

4. Smart product design
Smart products are the products of the wisdom of the earth, the smart cities, and the intellectual environment. Its design is no longer based on traditional industrial design and product design patterns. It need the wisdom of the higher intelligence of the human being, its design thinking is more systematic, more macroscopic, more stereo. Based on this, smart product design challenges human intelligence.

4.1 Location design of smart products
Smart product, though wise, is as impossible as human beings, should have wisdom pointing and functional goals. Therefore, the functional goals of smart products and their corresponding wisdom are critical to positioning design. It is the basis of the development of smart product depth and product performance.

4.2 Planning and design of Intelligent Systems
Smart products are designed not only for "things" but also for the design of intelligent systems. The object is the body of the smart product, and the intelligence system is the soul of the product of wisdom. The spiritual decision of the soul determines the intelligence of the product, and determines the intelligence of the product's function. Different organizations and architectures designed by intelligent systems determine the unique intelligent interaction experience and functional value of a specific target user. Therefore, the planning and design of intelligent systems take more into account the interconnection between people, the relationship between things and objects, the interaction between people and objects, the relationships under the strategy of sustainable development, and the functional effects of relationships.

4.3 Core technical design of the intelligent system
Although different architectural designs of intelligent systems can form different intellectual forms, they are easily homogenized. If we want to increase the core competitiveness of our products, we must strengthen the core technical design of product intelligence system to form the leading position of "no one without me, no one with my advantage". At present, the design of the core technology of the product intelligence system is still in its infancy, and it affects the process of smart products for a period of time. The core technical design of the intelligent system will be the focus of future smart product design.

4.4 Appearance design of smart products
The appearance form of the product is the key to the product's external personality and differential identification, and the smart product is no exception. But in the global view, the focus of today's smart
product design is focused on the high-tech sector, not looking at the design of smart products. Many smart products lead to a high degree of intelligence and rough shape, poor visual recognition, virtually opened the distance between the user and the product. People have higher and higher requirements for the visual emotional experience. Through the personalized design of the appearance of the smart products, the degree of pleasure of the brand image recognition degree and the sensory experience of the users will be enhanced, in order to increase the added value of products.

In the context of wisdom, the vitality of smart products brings us new opportunities and challenges. Are we ready to seize the opportunities and fight?

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