A Study on Smart Household Housing Module

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Abstract : The study applied to a smart technology for every filed in the various countries of world is actively progressing. In the field of construction, a home-network market based on the smart technology is getting to occupy a position as a social issue and lots of construction companies are taking part in the home-network market to take possession of a market and is investing for a markettime and a technical study in abundance.

Key Word : Smart technology, Household Housing, Module

1. Introduction

The study applied to a smart technology for every filed in the various countries of world is actively progressing. In the field of construction, a home-network market based on the smart technology is getting to occupy a position as a social issue and lots of construction companies are taking part in the home-network market to take possession of a market and is investing for a market and a technical study in abundance. As a result, the concern for Household Housing of a future and for how to apply the material technology is getting increase. In this study, it has a understanding of such a necessity and suggests the research of the room-space Module to apply the smart technology and a prototype of a house as a building device. and it predicts not only the development of the technology but also about how to change the home-space that we live. In this study, we have intended to construct and apply the discussion for the modulation of living space, through the modulation of applicable Smart Technology to living space by analyzing the applicable elements for this study and extracting the Smart Technology, based on the review of literatures, web search, previous studies, international research data, and related seminar materials. Therefore, it has been discussed the future change of living space through the modulation of living space applied by Smart Technology. First, it has been discussed the modulation of living space. In particular, we intended to focus on the latest examples of modulation from the before and after the modern architecture. Second, it has been constructed the module which applied by the Smart Technology by categorizing the physical elements of ceiling, wall, and floor of living space based on the analysis results for applicable Smart Technology. It has been suggested the special change for new living space based on the constructed module after understanding the relation between physical elements and applicable Smart Technology.

2. Discussion for the Modulation of Living Space

2.1. Module

In general, it means the yard measure in architecture or the quantitative meaning of flow. The origin of this word is Greek "modulus" and translated as the meaning of rate or coefficient. It can be considered that people might think this could be the reasonable and beautiful unit measure that the standard measure or standard yard has been used as the general meaning of Module. In present, it means both unit measure and the system of value. In architecture, it is MC that the materialized measure used in design & construction and manufacturing by rationalizing the dimension particularly in the matters related with industrial production, and it is a module that the system of dimension used in here. Module includes the issues for large space as well as furniture by its relation with MC, but it has deeper relation with mass production of architecture, particularly.

2.2. Discussion about the Modulation

(1) Modernism – It had been led the early 20th century that the era of modernism by the Great master. They had been proceeded their architectural activities aiming for the functionality, reasonability, and efficacy meeting the needs of new times of the belief and ideology. It has been provided the excuse to be concentrated on the construct itself by the architect that the pursuit of pure modeling or perfect rationalism. However the white cubic constructed by the great masters of modern architecture had been started to discolor in short time, and the constructs designed by the concept of module had created more severe conditions for enduring it due to well-fixed frame.

(2) Post Modernism – The acceleration of industrialization and urbanization in the early 20th century had brought about the endeavor for enlarging the control of space which had been prevailed in modern architecture, and people had concentrated on many aspects of solving urban architectural issues to meet the needs for settling problems in density of construct. The architectural tendency for this time can be classified as two categories as follows. First, it is the standpoint to materialize new architectural function and urban function arouse from the scale...
and compositeness which was never imagined before World War II, through the vast demands for construction and the description of systematic manufacturing technology due to the highly technical enlightenment. Second, it is the standpoint to contradict the proceeding of technical civilization, an endeavor to recover the humanity which has been neglected by the modern technical civilization. With these atmospheres, so many experimental architectural groups have been emerged.

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<td>Module of 11.7m x 5.3m X 3m</td>
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3. Modulation of Living Space by applying the Smart Technology

3.1 Analysis for Applicable Smart Technology and Home Network Technology

(1) Analysis for Applicable Smart Technology – It is required many fundamental technologies to materialize the future Smart Environment. It becomes to be miniaturized, simplified, sophisticated, and maldistributed that the characteristics of technology. These Smart Technologies contain MEMS, RFID, IPv6 address system, Smart Sensor, and so on. It is possible to implement the Smart Environment through the network and an interaction by these technologies.

(2) Analysis for Home Network Technology – It is required the elements to implement the Home Networking that network infrastructure, home server, a middleware of informational home appliance, and etc. Network infrastructure is implemented by Internet Access Network Technology, Home Network Technology, and Home Gateway Technology, and it constructs the home network with home server and middleware of informational home appliance.

3.2 Modulation of Living Space applying the Smart Technology (1) Physical Elements of Living Space and Applicable Technologies

It is constructed the modulation with consideration for all spatial and structural aspects of Smart Technology and Home Network

Technology using the physical elements of wall, ceiling, and floor in living space based on the technical analysis.

(2) Constructing Plan for the Modulation of Living Space

It has been constructed the network by integrating of electrical element into the physical space. As there becomes increase the compatibility problems in each home appliance and communicational device by the advance of technology, it has been devoted to develop the method to connect and standardize them to integrate. Accordingly, it is defined by the hierarchy of space as the system from the introduction of intellectual technology and also as the spatial unit for the integrated control of intellectual technology, enlarged the selective region for the various demands of residents, and changed by its intelligence of space. Each technical element is applied on each physical element of wall, ceiling, and floor, and they are systemized with each module. Each physical element are constructed after systemization, and this system provides the convenience of time-and-space, and the changeability and diversity of interior space in future.

4. Conclusion and Further Research

Until now, it has been discussed the construction of modulation of living space, based on the relation between physical elements and applicable Smart Technology and each of them, by classifying the discussion and applicable technologies for modulation of living space as three physical elements of wall, ceiling, and floor. In this study, we had extracted the applicable architectural elements and concepts through the discussion about the modulation of living space, and had found the applicable technology in constructing the module of living space through analyzing the Smart Technology, and finally, had suggested the constructional possibility of modulation through the spatial and structural review for the physical elements of living space, of wall, ceiling, and floor, based on the above two. In future, it has been recommended to study more detailed aspects for the relation between Smart Technology and physical elements, and the plan for specific constructing method for modulation. In addition, it must be also studied that the future spatial change by applying the constructed module system to the design of living space.

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