

Research on the System to Activate the Home Networking Industry through a Standardized Certification System for Residential Properties

Byung-Kyu Choi*

Abstract

In this study, it has been attempted to build up a smart, stable, and integrated Next-generation Home Network (NHN) system capable of supporting more comfortable and convenient life in the future human housing domains, and to find out which institutional tasks are required to activate the related industries.

Additionally, this study aims to review a variety of technologies suggested so far in several fields including information and communications, appliance, and building maintenance. This paper analyzes the advantages and disadvantages, acceptance structure and problems of standard technologies and it suggests the political methods and policies to embody them most effectively and integrally in the future.

The said certification system is called 'Standardized Certification System for Korean-style Next-generation Home Network Buildings' (abbreviated to K-NHN) as a new system created for the purpose of developing, more effectively, NHN to be introduced in the future.

Key Words : Next-Generation Home network

1. Introduction

We have forecasted that the Information technology that had begun to spread in late 20th century would bring the rapid change into all the fields of human living. Particularly, as an aging society has been realized, the Information Technology(IT), supporting fresh environment and the lives civilized centering the residence, has been

largely spread, and risen up its head.

Again such an IT has been required to be implemented to the whole system possible to support all the fields including not only home network technology but also residence living. The IT 839 strategy proposed by the ministry of information and communication is regarded to mean that the convergence concept of such unity is ready for newly industrializing.

The SHS(Smart Home Ssystem) technology proposed in the road map of the ministry of industry and resource and the foundation of Korea industry technology also defines the intellectual home environment that things and houses

* Main author : Present work at KT
Tel : +82-31-898-6187, Fax : +82-31-898-6188
E-mail : chebins@paran.com
Date of submit : 2006. 9. 4
First assessment : 2006. 9. 7
Completion of assessment : 2006. 9. 19

possesses intelligence and that a human is the center over them within a home according to diversifying the desire that would share the information in the broad sense due to rapid development of user's environment and personal information terminal unit, In fact, it explains this as a fusion technology that variety of technologies including architecture, media, home appliance, energy, and security in IT, BT, NT, ET and CT are connected organically.

After all, to realize such technologies, we must review at different angles about new momentum for vitalizing the next generation home network (NHN: Next generation Home Network) by uniting the IBS (Intelligent Building System) that has made the possibility of management by intellectualizing the conventional grand building totally with the home automation technology or home network technology that has been limited into residence building.

In such an aspect, to vitalize the industries related with the next generation home network, we would grope for the systematic method with respect to how we shall build the fundamental infrastructure of next generation home network of residence buildings able to realize in the future. Meanwhile, we consider the comparison and analysis of gain and vulnerability of these technologies, and of acceptable structure. Furthermore, a review of the entire paradigm of technologies in the fields of information, home appliance, and architecture that have proposed until now is required.

2. Outline of Home Network

To understand the Korean standard certification system (K-NHN) to build the fundamental infrastructure of residence building that must be ready for realizing the next generation home

network system to be initiated in this present manuscript, it is important that the whole concept of IT 839 strategy by the ministry of information and communication or the smart strategy by the ministry of industry and resource must be understood,

Figure 1 shows an entire schematic diagram to build the home network. It can be classified into 6 technologies: the service technology to provide diverse contents or solution of home network, the access network for the internal data to communicate with that provided by the outside domain, the home gateway used for contacting or matching the internal circuit to the outside circuit, the home network technology for connecting the internal device to the information entering through the home gateway, the home middle ware for processing the signal between the home gateway and the home device. and the home device installed to be realize the final service by controlling the home middle ware.

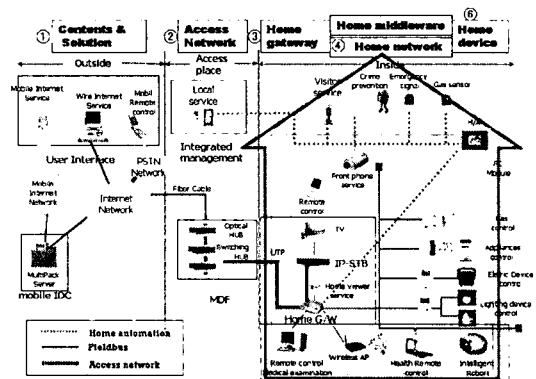


Fig. 1. Schematic diagram of next generation home network

3. The Market Tendency of Domestic and Overseas' Home Networks

All global market volume of digital home

including wired/wireless networks, home gate ways, ubiquitous computing and intellectual information home appliance will be grown up to 102.7 billions in 2007 from 40.7 billions in 2002, and in the case of home gate way or home server, it is projected that the market scale will reach up to 12.5 billions by 2007 from 1.1 billions in 2002. This is due to a rapid growth of up to 63[%] annually.

Table 1. Global marketing scale of home network (unit: a hundred million USD)

구 분	'02	'03	'04	'05	'06	'07
Homenet work	15	25	35	43	49	55
server/gateway	11	24	50	79	103	125
computing	8	12	16	20	25	35
home quipment	373	457	537	626	717	813
(total)	407	518	638	768	894	1,027

source : kwanghyun, Seo, Direction of construction for Digital Home, ministry of Information, 2003. 7

Table 2. Market scale of home network in home (unit: ten millions won)

구 분	'06	'07	'08
Service	21,384	37,160	43,092
Gateway/server	56,829	67,068	78,458
Equipment	178,437	224,831	256,307
(Total)	256,650	329,049	377,857

source : IITA,IT Report of Next-generation growth-power, 2005. 6

In the relational market tendency of home market and the plan to bring up into effect as a core growing industry in next generation, announced according to a supporting policy like IT 839 strategy by the ministry of information and communication or Smart Home System by the ministry of industry and resource, also a significant advance in technology that has been

realized, the infrastructure of the environment using commercialized internetwork has lead into a cyber apartment complex as the world first cutting edge.

As shown in table 2, it is expected that the marketing scale will grow up to nearly 3.7 billions won as in 2008.

4. Instances of Built-up Next Generation Home Networks

The next generation intelligent house developed first in the United States supplied intelligence of a Smart House. The terminology generally expressed of an intelligent house in the United States, which can be interchangeably used with the Smart House, was firstly constructed in the state of Maryland in 1987 by the consortium comprised of forty companies. Based on that, the law of joint research was established in 1984. Also, the smart house for an old man was developed in Portland of Oregon state by an Elite Care Company in October 2000. It was one among the famous real instances of Smart Houses in the United States.

The United Kingdom also began the same study as the integral concept that combines the meanings of intelligence house and Green house. To go forward with this project, 15 partners including the Building Research Group, the BRE, the Berkely Partnership Homes, Electrplux, Housing Association etc, In total, a class of 150 companies and organizations participated.

The secured quality and efficiency, through dry construction method, were pursued. The wiring system toward the future of communication and home automation, automatic control, security, and the system supporting lives were implemented. By using low energy, the system leads into preservation of water and the building material durability. About 50[%] of energy saving and

30[%] of resource nursing can be realized from the designed system with respect to conventional house.

In France, the plan of PHI(Interactive Dwelling) also begun fin 1990 and in April of 1999 had spread the international standard and the frame of home-automation, the products group through international certification, and multi vendors. The EHBESA (European Home and Building Electronic System) is another founded convergence union under an umbrella of the participating companies like BatiBUS, EIBEHS, Bosch telecom, Delta Dore, Merten, Schneider Electric, and Siemens.

5. Implementation of Next Generation Home Network Technology

5.1 Outline

NHN(Next Generation Home Network) technology can be regarded as a home network system fully manageable by intellectualizing all the machineries or the network to be used to form the best comfortable and ease residing environment for human in a very near future to come

While the conventional IBS concept is about a controlling system subject to commercial buildings, the NHN means a total managing system for provide the completion of residential living of human.

5.2 Constitution and function

The basic components of NHS as figure 2 below can be constituted with not only communication network but also five components deciding the intellectual level with respect access technology and implemental functions to all devices within a home.

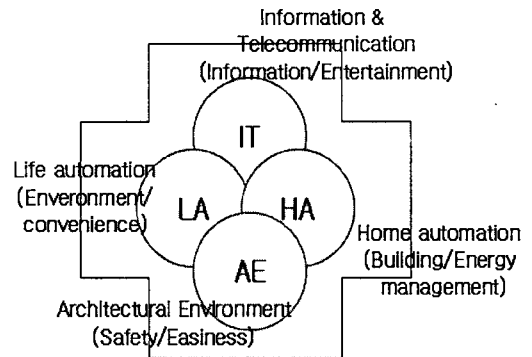


Fig. 2. Component of NHN

The NHN components can be classified into four categories. The first category is and IT (Information and Telecommunication) category that enables to provide a new additional service by combining the automation technology of residence that providing a supply to users connecting with the outside wide network including the gateways, the middle ware, and the home network technology. The second one is an LA (Life Automation) to make it possible for total controlling of all kinds of equipments including home appliances within a home or information and communication devices, equipment for heating, medical apparatus, security, gas etc. as the networking technology within a home. Thirdly, an HA (Home Automation) being possible for automatic detection and action with warnings by diverse sensors including CCTV. It must also be able to support the crime prevention, prevention of fire, and prevention of disaster through optimization and security of maintenance and operation of the building management system, air condition, energy, and electric power, etc. The last category of the components is an AE (Architectural Environment) enable to make environmental friendly with nature by grafting with the technology of familiar natural environment.

Also the function of easiness, convenience, safety, confidence, efficiency, and flexibility must be offered to residents dwelling in NHN.

5.3 Tasks to Realize the Next Generation Home Network (NHN)

Firstly, it is the most critical and un deniable fact that the fundamental facilities within a building and infrastructure are not well enough. If that is the case, an internetwork requires to make use of copper wire, UTP cable, copper axis cable, and optical fibers, so that a new network system able to connect with all devices within a home is facilitated to build up the home network. However, there particularly exists nothing yet of being utilized except the special house earlier mentioned of the instances of built-up in section 4 of this paper. In the case of our country (Korea), though the new changes were attempted through the certification system with respect to the buildings having superhigh speed networks of information and communications, it has been yet at difficult scenario to drive toward the proposal's concreteness. Now, though the base of the telephones is transformed into the facilities based on the internetworking, when it is seen in the aspect of technology point of view of the next generation home network, it is still the most critical problem that the built up of the facilities within a building and infrastructure must be addressed.

Secondly, though from April 1999, the ministry of information and communication has endowed the certification with respect to the building equipped with the facilities of information and communications beyond a certain criterion within own district, there is still nothing well defined in connection with the facilities within districts.

Also, since this assessment of certification has been done over the residential buildings of more than 50 households or over the official buildings whose land areas are beyond 3,300 m², this policy has been the system that has no relation with the facilities within individual homes. Therefore, since the system to certify the grade with respect to the intelligence building, operated by a private organization, IBS Korea company is subjected to the official buildings, at large, there exists a limitation over applying into the building up technology of home network.

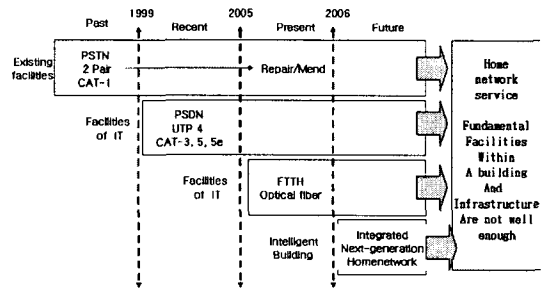


Fig. 3. The change tendency to build up the building infrastructure in domestic

Thirdly, at the point of view of the government's policies, the service technology related to home network among IT 839 strategy is regarded to contain the components of strategies to develop the kernel industries, the smart strategies by the ministry of industry and resources, the certification system of building environment-friendly infrastructures by the ministry of construction and transportation, and the efficient system strategies in energy supply by the ministry of industry and resources will make the systems be able to provide the momentum changeable to the residence culture.

Nevertheless, these policies should be simultaneously done within a systematic system, where they are currently operated in independent standards to each other so that the restriction

force is not much enough. Otherwise, there should be technical development independently by the home appliances or research institutions that make into difficult into the earlier settlement of standardization for building-up new systems or supplemental methods of the infrastructures lacking the standard technologies. In addition, it might be a cause to reduce, by about a half, the synergy effect of a prior occupation of international standard technology of next generation home network.

6. The Plan with Respect to the Standard Certification System of Residential Buildings

6.1 The plan for vitalizing NHN

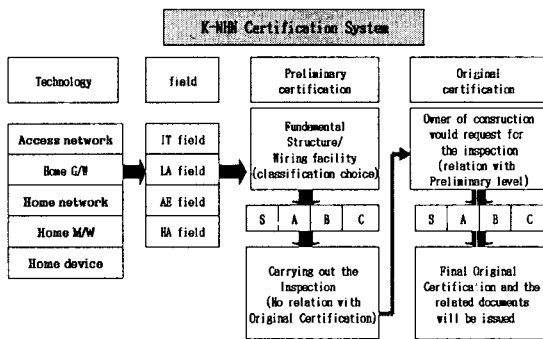


Fig. 4. conception diagram of certification system of K-NHN

As mentioned in section 5, the process evolved into the intellectual home system currently by developing the home network from home automation has been achieved in a short time while the structural infrastructure of the facilities within a building to accept this technology has been risen its head as relatively, the most serious and critical problem. Therefore, the present scripts in this section try to propose the system of

standard certification of new buildings through preliminary and original certification in the kind of technologies and designing fields to be implemented in the next generation home network with respect to fundamental matters about building infrastructures.

6.2 Outline of Standard Certification System

The K-NHN certification system is a systematic plan that enable to be utilized by installing the basic wiring infrastructure of building according to each grade. It deals into the possibilities to make it to be accepted by whatever technology in a platform based on the technology opened internationally to constitute the next generation home network as a plan to standardize the new Korea type certification system (hereafter called Korea-NHN: K-NHN certification system). It is proposing to add or expand the fundamental infrastructure with respect to conventional buildings and new buildings that cannot accept the next generation home network.

Table 3. Outline of K-NHN certification system

Subjection	K-NHS(Korea type of certification system of building employed with next generation home network)
buildings subjected	new / remodeling building for residence
Implementation technology (five technologies)	1. Access Network 2. Home gateway 3. Home network 4. Home middleware 5. Home device
Designing field(four)	1. IT(Information Telecommunication) 2. LA(Life Automation) 3. AE(Architectural Environment) 4. HA(Home Automation)

Kind of certification (two)	1. Preliminary certification (fundamental structure/ certification of wiring facility) 2. Original certification (implementation certification of home network)
Certification grade (four)	1. C(Common)grade : basic grade(obligation) 2. B(Business)grade : general grade(option) 3. A(Advance)grade : high grade(option) 4. S(Special)grade : special grade(option)
Decision method (YES/NO)	1. B,A,S grades are chosen, and conduct into preliminary certification and original certification 2. When to judge, it is judged by the concept of YES and NO according to each item
Character	1. It is possible to build up the fundamental infrastructure through the preliminary certification.(no relation with original certification) 2. Since the optional grade is chosen, no need investment may be suppressed, so that it is possible to build up the economical system.

6.3 Operational System of K-NHN Certification System

The building subjected to the certification system of K-NHN intellectual home system contains new building/remodeling for residence.

Also the procedure and treatment of the official work in this system must be decided by each responsible department by discussing between the ministry of information, the ministry of construction and transportation, and the ministry of industry and resources. Besides, since it is related to the permission of construction, the official work also must be in context with each other and, hence, the owner of construction should submit the documents and the drawings of the design. In addition, the basic operational procedure shall be

progressed as expressed in the procedural diagram in figure 5.

The owner of construction should submit the application for site inspection when the rate of progress has been reached up to 50[%] of the entire construction process. Then after, he/she will be instructed from the middle direction and when it is finally completed, he/she must submit the application for inspection for a preliminary certification.

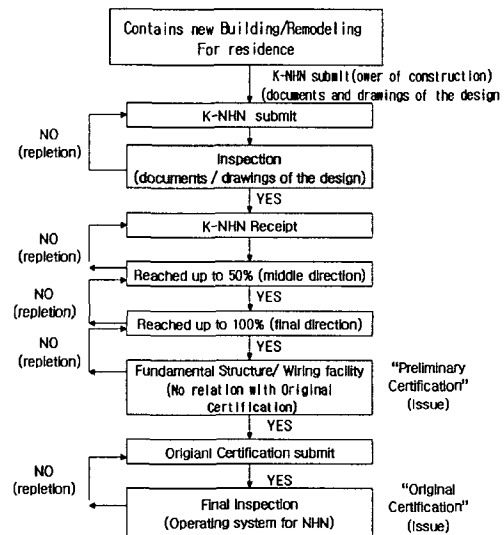


Fig. 5. The Order Diagram of Certification and Operational Procedure.

The responsible agency issues the preliminary certificate after having confirmed whether the construction work for the building's foundation is completed according to the grade applied by carrying out the inspection for preliminary certification according to K-NHN. It will also be responsible with authority for the completion inspection of the building. Again, when the owner of construction would request for the inspection, according to the original preliminary certification, the final original certification and the related documents will be issued.

6.4 The Constitution of K-NHN Certification System.

As K-NHN certification system is the technology to be implemented in the residential buildings, it may classify the fields according to table 3 where each field may be classified into more detailed items which may lead into a total of 53 items classified in the said table.

Table 4. The Items According to Each Constitutional Technology.

Field	Description in detail	Remarks
IT field	The field of basic network/system	10 items
LA field	The field of automatic control of residence living	22 items
AE field	Architectural structure/environmental control field	7 items
HA Field	Controlling field of instrument management	14 items
4 fields		53 items

(1) Information Technology(IT) field

Table 5. Classification table of information and communication field in detailed items

Design region	Classification	Description in detail	grade
Designing for Space	IT-1	Design of Sytem space	C
	IT-2	Design of Device space	C
	IT-3	Utilizing plan of ceiling	C
Pipe arrangement for IT	IT-4	Design of pipe arrangement for WAN	C
	IT-5	Design of vertical pipe arrangement	C
	IT-6	Design of horizontal pipe arrangement	C
	IT-7	Design of terminal pipe arrangement	C

Design region	Classification	Description in detail	grade
Designing for operating system	IT-8	Design of pipe arrangement for CATV	C
	IT-9	Design of pipearrangement for satellite	C
	IT-10	Design of space for wireless and mobile	C

(2) Residence Automation Field (LA)

Table 6. Classification table of Residence Automation Field in Detailed Items

Designing region	Classification	Description of technology in detail	grade
Designing for kitchen	LA-1	Design of automatic control of gas valve	C
	LA-2	Design of automatic control of pressurized oven	B
	LA-3	Design of controlling the ventilation fan for kitchen	B
	LA-4	controlling refrigerator	B
	LA-5	Controlling Kim Chi refrigerator	B
	LA-6	Automatic control of dish washer	S
	LA-7	Controlling TV of kitchen	B
	LA-8	Controlling AV system of kitchen	B
	LA-9	Automatic control system of drinking water	B
	LA-10	Controlling detection of gas leak in kitchen	C
Design of living room	LA-11	Automatic control of beam screen	A
	LA-12	Controlling of AV equipment	A
	LA-13	Automatic control of image equipment	A

Designing region	Classification	Description of technology in detail	grade
	LA-14	Automatic control of curtain of rooms	S
Design of environment	LA-15	Automatic control of cooling and heating system	B
	LA-16	Automatic control of cleaning robot	S
Design of toilet	LA-17	Automatic control of image equipment of equipment	A
	LA-18	Automatic control of AV in toilet	A
	LA-19	Automatic control of ventilation of toilet	B
Design of veranda	LA-20	Automatic control of curtain of veranda	A
Design of medical treatment	LA-21	Controlling of medical treatment system.	A
	LA-22	Controlling of medical emergency system	S

(3) Architecture and Environment Field (AE)

Table 7. Classification Table of Architecture and Environment Field in detail

Design region	Classification	Description in detail	grade
Structural design	AE-1	Design of detecting seismic	S
	AE-2	Design of detecting load	S
Environmental design	AE-3	Design of adjustment of lighting	S
	AE-4	Design of adjustment of air circulation	A
	AE-5	Design of adjustment of window and door	A
	AE-6	Utilizing plan of regenerator by sunlight	S
	AE-7	Design of detecting air in rooms	A

(4) Automation Field of Management (MA)

Table 8. Classification Table of items of Management Automation

Design region	Classification	Description in detail	grade
Design of controlling	HA-1	Design of total NHS system build up	C
	HA-2	Design of automatic control of machinery	C
	HA-3	Design of automatic control of electricity monitoring	C
	HA-4	Design of automatic of illumination	A
	HA-5	System governing and managing the parking	B
Design of porch	HA-6	Check of visitor	C
	HA-7	Automatic control of door open/close	C
	HA-8	Outside monitoring system of door	B
Design of crime prevention	HA-9	Detection system by infrared during nights	S
	HA-10	Detection system of precious things robbery	S
Design of fire extinction	HA-11	Fire detection system	C
	HA-12	Fire suppression system	B
Plan of emergency	HA-13	Preliminary reservoir system for portable water	S
	HA-14	Supply system of emergency electric power	S

6.5 Kinds of NHN Certification Grades

The grade level of K-NHN certification is made to be accepted, suitably, by classifying into each grade according to the use or the purpose.

Accordingly, as the grade C is the most basic level, it is applied to the building grade for only building up the infrastructure of basic internetwork installation and basic information communication. Therefore, all the buildings are, obligatorily, forced to install it. That is, it can be regarded as the grade connected with the basic elements of the next generation home network on the foundation of building a premises certified with cyber of information and communication.

The next grades are classified as follows: grade B is the level when the functions of necessity and convenience of residence lives on the grade C have to be added. Grade A is added with a high option except the functions of grade B. An S grade enables to install all the technologies possible in the NHN, So, they are all made available to be implemented by accordingly choosing them properly.

Table 9. Technology Level According to the Certification Grades

Grade	Description	Remarks
Special (S: special)	The level realizing the best condition of residence living by intellectualizing completely the entire networks of interior of building	option
Advance (A: high)	The high level realizing the management function, and intellectualizing more than 77.3[%] among the entire networks of interior of building	Option
Business (B: general)	General level realizing management function and intellectualizing more than 56.6[%] among the entire networks of interior of building	Option

Grade	Description	Remarks
Common (C: basis)	The level setting at least 35.8[%] of building up the fundamental infrastructure by centering with IT base	Option

(2) The items applying with technology level of certification grade

The items corresponding to certification standards are classified according to the importance of each technology field. Accordingly, though the higher of grade, the more the difficult it increases, the present system would not realize the high expense, it is rather the target that prepares in advance the minimum of facilities in a district, so that the grade would be defined to be implemented in preference.

Table 10. Constitution Table of items According to Each Grade of K-NHN

Grade	Field	Constitutional item	Number of items
C	LA	1,10	19
	IT	1,2,3,4,5,6,7,8,9,10	
	HA	1,2,3,6,7,11,12	
B	LA	2,3,4,5,7,8,9,15,19	11
	HA	5,8	
A	AE	4,5,7	11
	LA	11,12,13,14,17,18,20	
	HA	4,	
S	AE	1,2,3,6	12
	LA	6,16,21,22	
	HA	9,10,13,14	
Total			53

6.6 Kinds of NHN Certification Ranges

(1) The Range of Preliminary Certification
The preliminary certification may be rewarded

when the completion inspection with respect to 100[%] of construction work and the middle inspection with respect to 50[%] of the entire process are passed as per the reference of designing documents of preliminary application submitted according to K-NHN official work procedure as laid down in figure 5. Also, even though the NHN system in reality is not yet implemented, when the hardware infrastructure for NHN system is constructed and completed, its certification range may be applied.

(2) Original Certification Range

The original certification means that the state that one is able to apply for residence living in real completely establishment as the NHN has been installed and wired according to the drawings after the preliminary inspections have been completed.

6.7 Designing Standards of Original Certification of K-NHN

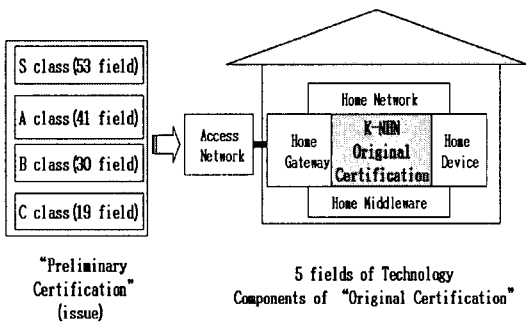


Fig. 6. Five Fields of Technology Components of Original Certification

The designing standard of original certification means that the process of inspecting whether, or not, the real use is possible after the construction work is completed according to the design of building up the NHN system identified with the technologies and the grades according to figure 6 as clarified after the inspection with respect to the

preliminary certification according to each completed level.

6.8 The Prospect in Utilization of K-NHN Standard Certification System

The certification system of intelligence home system can be prospected largely into four fields to expand the utilization into the social side that the technologies have added the high value to be realized in the future.

Firstly, it is the general concept that the fresh, comfortable and stable space must be created.

Secondly, the convenience of the intelligence type home system is easy to expand into the silver industry in the aging society in future, and therefore it may become the best suitable model in offering the diverse convenient facilities.

Thirdly, it can have the intelligence type home system access into the technology of survival conception. It may be possible to implement as the model of building for survival strategy due to unstable natural environment and disaster by change of earth environment. Fourthly, it may be implemented completely into cyber environment through internetwork, and provide the space of living in future for doing duty in the home or SOHO completely.

In the aspect of technology, big companies like Samsung and LG, it will provide the chance possible to standardize, into Korean type, the open access technology with respect to all home devices for homes to implement the intelligence type the future home network related to the home appliances.

In economical side, when the standardized technology is applied into all electronics home appliances produced domestically and export them into the whole world, it may be placed as the

component to drive the core of rapid industrial growth.

6.9 Problems in Execution of K-NHN Certification System

6.9.1 Architectural Field

In the architectural field, new standards of architectural design to accept the NHN technology are required. To adopt into the standards of certification system, the fundamental infrastructure are somehow complicated like spider's thread, and therefore, to build up such an infrastructure, new designing standard in the conventional story height or the acceptable space in rooms, duct space, pipe size of walls, etc should be well proposed.

Particularly, the sensors installed for detecting the crack state of columns or beams, the or sensors for detecting seismic, it will require high technology to enable attempting them in grade S. This, this may become the first step to realize virtually what is able to see, with one eye, the state of building in three dimensional space in future.

6.9.2 NHN Technology Field

If the fundamental infrastructure is implemented for the NHN, the second problem is to standardize the acceptance of the technologies.

The solution depends on which technology among the technologies, developing without stopping and all running over the world, shall be preferably, chosen. Particularly, the platform technology based on the internal home gateway or on the middleware and the interchangeability or ability of terminal device technology will be faced as one of the most critical problems.

6.9.3 NHN Certification System Field

To be certificated with the NHN, the government does not yet prepare the system in detail. The system currently operating is for certificating the building subjecting to the superhigh speed communication and information which is only an initial step.

Many people might think that the intelligence type home system is certificated at the same time when the building subjecting to superhigh speed communication and information obtains the certification. This is, in contrary, the system for only certificating the access performance of broad band of access network. Therefore, the certification system of intelligence building proposed by IBS Korea defined only the level needed for intellectualizing the official building so that it is expected much difficult to apply it into the NHN for residences.

7. Conclusion

The study has proposed about the present K-NHN certification system and the need to grope for new policy to accept more effectively the home-system to be realized in near future.

In such aspect, the certification system of standard buildings for residence, as a measure of the institutional device and vitalizing according to the result analyzed of "what is the most critical problem", has come to be proposed.

The limitations of the present standards certification system include: Firstly, that the diverse kind of services except the 53 kinds of detailed items proposed in this study could not be shown at all. Accordingly, if the service forms are politically studied more profoundly, more grades of services or items would have been proposed. Hence, many kinds of services and grades would have been analogized. Secondly, since there exist

many parts sharing the diversified and dedicated architectural technologies in too detailed designing fields with respect to the fundamental infrastructure facilities to accommodate many services according to the service grades, we cannot propose the detailed technology or engineering methods to build up infrastructure. However, if such a point is reviewed in politically, the detailed technology standards might be set when the technology standards of IT are fused well with the technology standards of architecture.

Thirdly, as the technologies according to the five enumerated fields have been proposed in realized technology related to the present certification, there is exists no technology that shall be recommended properly as the limitation at present. Of course, though it is no wonder that the international standards technologies are used, since the research institutions or development companies have a private character, much flexibility must be provided as a technical limitation according to the place the technology is built up.

Accordingly, the study direction of present paper, hereafter, is not to realize the completed system, rather to propose the setting of direction about how we shall go in preparation for the system of next generation home network against the real problems that we are in.

Therefore, currently, the most critical problem is that there exists no fundamental infrastructure and based on this point, it is earnestly wished that the K-NHN certification system proposed in here, as a method of how we shall overcome the problems, would be reviewed and accepted as a systematic alternative plan.

References

- [1] Ministry of information, IT839strategy, 2004.
- [2] (사)IBS KOREA, "Guide and application of intelligent building system", Gidari, 2002.
- [3] Korea association of IT, "Homenetwork investigation and Home digital srevice", Jinhan M&b, 2004.
- [4] Korea industrial technology foundation, "Smart Home", Jinhan M&b, 2004.
- [5] Kwanghyun, Seo,, "Direction of construction for digital home", ministry of information, 2003.7.
- [6] Kyunghye, Lee, "Architecture, Information, Equipment system of Intelligent building", Gimundang, 2002.
- [7] IITA, IT, "Report of Next-generation growth power", 2005.6.
- [8] James Gerhart, "Home Automation and wiring", McGraw-hill,1999.
- [9] Hans Rudolf Kranz, "Building control", expert verlag, 1997.
- [10] Markus Christen, "Raumautomation", verlag, 1999.
- [11] <http://www.mic.go.kr>.
- [12] <http://www.kotef.or.kr>.
- [13]. <http://www.osgi.org>.

Biography

Byung-Kyu Choi

Graduation of industrial management of post graduation school of Chung Ang Univ(Master).
Completion of doctorate of information and communication post graduation school of Han Kyong National Univ.
Present work at KT(Korea telecommunication cooperation).
E-mail : chebins@paran.com