IoE Service Process Research to Maximize Efficient Information Storage and Utilization

효율적인 정보 저장과 활용을 극대화하기 위한 IoE 서비스 프로세스 연구

Young-Hyun Chang*, Sang-Yeb Oh**, Chang-Bae Ko***

장영현*, 오상엽**, 고창배***

Abstract The IoE service process for maximizing efficiency of information storage and utilization classifies in step five which are interconnected, data collection, storage, organize, analyze, and share. Two key processing elements are store and forward. Keeping the useful knowledge in safe location is "store processing", and utilization of stored useful knowledge is defined as "forward processing" during the IoE service process. Where, past experience data can tell us how to prepare the future utilization. That is, past experience is organized store processing, and preparation for the future is shared forward processing through analysis. To maximize the utilization and storage of information effectively, the various methodologies for IoE service process propose and research in this paper.

요 약 효율적인 정보의 저장과 활용을 극대화하기 위한 IoE 서비스 프로세스를 상호연결, 데이터 수집, 저장, 체계화, 분석, 공유의 5단계로 분류한다. IoE 서비스 프로세스의 2가지 핵심 처리요소로서 유용한 지식을 안전하게 보호하는 것이 저장처리이고, 저장처리에서 유용한 지식을 이용하는 것을 활용처리라 한다. 이 처리과정에서 과거의 경험 자료를 기반으로 미래 활용을 대비할 수 있다는 중요한 사항을 선택할 수 있다. 과거의 경험은 체계화되고 보호된 처리 자료이고 미래에 대비하는 것이 분석을 통한 공유된 활용처리다. 본 논문은 효율적인 정보 저장과 활용을 극대화하기 위하여 IoE 서비스 프로세스의 다양한 방안들을 제안하고 연구한다.

Key Words : IoE, Process, Storage, Utilization, Interconnect, Share, Store processing, Forward processing

Ⅰ. Introduction

Information for IoE(Internet of Everything) service process is the aggregate of processed or organized data for certain purpose using meaningful symbols or symbolic systems. Therefore, information is organized or refined data to be utilized for certain objective. Data is based on character, sound, image, video, etc[1].

Due to the advancement of IT, many corporates have used safe information storage system with security, integrity, accessibility, and dependency. In this study, proto-type storage system is proposed to resolve the foreknown issues. Proposed system can prevent the information leakage from cloud storage, and utilize encryption technology for data security and integrity[2].

*정회원, 배화여자대학교 스마트IT학과
**정회원, 가천대학교 컴퓨터미디어학과
***종신회원, 경동대학교 경영학과 (교신저자)
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In addition, effective IoE service process to maximize storage and utilization of information is studied.

II. Related Works

The development of wireless communication technology and change in the ICT(Information and Communications Technologies) market has led to the development of the IOT(Internet of things) service and technology[3]. The IoT technology enable objects around user to be connected with each other for sharing information[4]. IoT service process is by connecting the previously unconnected, we create incredible potential for businesses to improve the speed and accuracy of decision making[5].
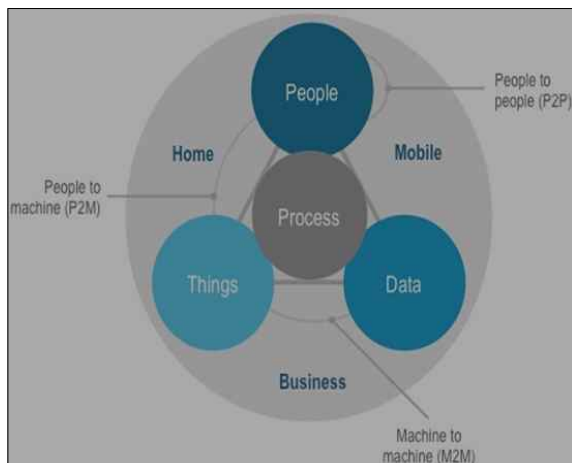

Fig. 1. Internet of Everything
그림 1. 만물인터넷

From the Internet of Things (IoT), where we are today, we are just beginning to enter a new realm: the Internet of Everything (IoE), where things will gain context awareness, increased processing power, and greater sensing abilities. Add people and information into the mix and you get a network of networks where billions or even trillions of connections create unprecedented opportunities and give things that were silent a voice.

Cisco defines IoE as bringing together people, process, data, and things to make networked connections more relevant and valuable than ever before—turning information into actions that create new capabilities, richer experiences, and unprecedented economic opportunity for businesses, individuals, and countries[6].

Just like value creation, connecting to the cloud forces a new mindset around value capture, the monetization of customer value. At most product companies, value capture has been as simple as setting the right price to maximize profits from discrete product sales. Sometimes this is done creatively, as with the razor-and-blades model made famous by Gillette. Margins are maximized to the extent that companies leverage core capabilities in bringing products to market, and are able to establish control of key points in the value chain, for example regarding commodity costs, patents, or brand strength. Fig 2. shows some ways to shift your thinking when it comes to both value creation and capture[7].

Fig. 2. IoE business mindset
그림 2. 만물인터넷 비즈니스 방식

III. Needs for Information Storage using IoE Service Process

Fundamental architecture is needed to develop complex and advanced architecture, which is

knowledge-based IoE service process one. To resolve issues in complex architecture, simple architecture needs to be looked into details. However, it is not made from scratch. Keeping the knowledge in safe location is "store", and utilization of knowledge from storage is "forward". To provide various applications in location-based service and telematics, object database system that can store and search large amount of location data using IoE service process is essentially required. [4]

For example, human does not stand erect from the start (homo erectus). Why does human become standing? If this thesis is used to explain as store (cause) and forward (result), it is more appropriate to be 'human needs to stand (result) to see ahead and use its hand (cause)' rather than 'human can see ahead and use its hands (result) after standing erect (cause)'.

Where, re-stored process can explain that speed of movement is reduced after human stands. Therefore, human should utilize hands more intricate, and brain development is followed. Human that cannot fully utilize its brain function is faced natural selection, and utilization of natural phenomenon is advanced. After time passes and utilization of nature advances, the better anticipation of natural change is achieved, and it becomes as part of knowledge in human. Where, human can prepare the future (forward) out of past experience (store) concerning IoE service process.

IV. Proposal and Utilization of IoE Service Process Information and Human Relations

1. Human Relations and Property Information

Human learns the storing of produced properties out of asset and value, and storing enables its utilization. This can be the first concept of store and forward, which is one of various forward mechanism using IoE service process.

Primitive communism shares the properties but no recycling. The biggest problem in primitive communism is that the absence of redistribution of stored properties. Since there is a surplus, usage of fire, tool, salt, etc. brings the huge benefit to human, which eventually leads to storage. From storage, concept of "have" is started, and differentiated distribution based on contribution is initiated. This is the starting concept of 'Store & Forward', and capitalism is based on Table 1. step1-step6.

Table 1. Formation of properties using IoE service process
표 1. 만물인터넷 서비스 기반 특성의 구성

PHASE	PROCESS
STEP 1.	Human possesses asset
STEP 2.	Surplus forces asset protection, and the corresponding mechanism is formed.
STEP 3.	The one with having and one without is established; to maintain system, authority and duty is formed along with money making.
STEP 4.	Extravagance of concentrated property
STEP 5.	Development of Master-Slave Relationship
STEP 6.	Establishment of Prolific Extension

2. Human Relations and Knowledge Information

Human develops the mechanism that binds people with better capability and worse capability or intelligent and non-intelligent. Therefore, balance and harmony through authority and responsibility according to personal and organizational setup. There are two ways to achieve. One is conquering by the stronger on the weaker, but this includes many risks. Second is a peaceful resolution by giving away each other, which requires many discussions between two parties. Society has ruled over logic (legal) and ethic (moral) to control the system. Ethic and logic compensates each other. Fair society is based on logic and ethical rules,

which are accepted by the most of constituents concerning IoE Service Process.

3. Human Relations and Process Information

Matrilineal society does not have a concept of store and forward, and only animalistic instinct prevails. Direct reaction to external threat is provided. First human being only has survival instinct. Since moving away from matrilineal society, new IoE Service Process architecture as below is formed.

- Tool < Storage < Surplus < Recycling
- Development of manufacturing tool
- Affordable life
- Allowed personal time

- Idea < Change in value < Creation of organization
- Smart Thinking
- Individualism
- Roles and responsibility
- Anticipation of future
- Complex rules Methodology and standardization
- Due to advancement of organization, methodology and standard is created.
- Human with knowledge-based architecture
- Human with store & forward principle, which is based on knowledge using IoE Service Process

With formation of new definition (synthesis in thesis-antithesis-synthesis), A + Anti-A = B, B + Anti-B = C..., new problem is happened with existing methodology and standard. After series of this process, newly established methodology and standard becomes dominant. That is, Process ==> Stored Process ==> Modular (Utility) ==> Knowledge Based (System) using IoE Service Process. Because the situation is getting complex over time, the dominant logic becomes obsolete. Therefore, as depicted in step1-step6 below, Simple ==> Complex and Complex is re-defined as simple logic.

Step 1. Two types of information
   ==> Process (Module => Program => System)
   ==> Data (Element => Group => Entity)
Step 2. Increased Store
   ==> Data will be expanded but less feedback to Process.
Step 3. Change Oriented Process
   ==> Standardization of Process, and expansion in data portion
   Process becomes modular, and object is re-defined
Step 4. Systematic approach based on Change Oriented Methodology and Standards, which needs to be de facto standard
Step 5. Store & forward logics of Knowledge Based Architecture
Step 6. Clear definition of Input => Process => Output, Feedback

V. Conclusion

For the maximizing efficient information storage and utilization concerning IoE service process, this study proposes the following.

Firstly, knowledge management from organization and personal knowledge creation using IoE service process should be established.

Secondly, many KBAs (knowledge based assets) need to be stored, forwarded, and re-stored after forwarding.

Thirdly, abundant experience and knowledge throughout the IoE service process is required.

Fourthly, quick decision making using IoE service process is essential.

Fifthly, understanding on various information concerning IoE service process is needed.

Sixthly, personal / organizational development concerning IoE service process should be through Professionalism, Empowering, and Integration.

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저자 소개

장 영 현(정회원)

• Received B.S., M.S. degrees in Computer Engineering from Inha University Korea, in respectively 1985, 1987 and Ph.D. degree in Convergence Engineering from Hoseo Graduate School Of Venture, Korea, in 2011. He is a professor in the Department of Smart Information Technology, Baewha Women's University, Korea. He was awarded with The Institute of Information Communication Ethics 2013 and with The Institute of Internet, Broadcasting & Communication 2012 and with The Korea Society of Computer and Information 2009 BestPaper Award. His areas of interests include Smart IT, Cloud Computing, Internet Application, IT Convergence, Automatic Control.

오 상 엽(정회원)

• Received the B.S. degree in Computer Engineering from Kyungwon University in 1989 and M.S., and Ph.D. degrees from the Kwangwoon University, Korea, respectively in 1991, 1999 by the Department of Computer Science. He is currently a professor in the Department of Computer Media, Gachon University, Korea. His research interests include Voice signal processing, Speech Recognition, Vehicle Safety Communications.

고 창 배(종신회원)

• Changbae Ko is a professor in the Department of Business Administration at Kyungdong University. He received his PhD from the Kyonggi University. His current research interests include strategic use of information systems, information strategy planning, application of customer relationship management and mobile internet service.