

# Promotion of InfoEver SIG (Special Interest Group), the Research Group Seeking to Establish a Grand Design for Long-Term Preservation of Digital Information in the Super Smart Society

Extended Abstract<sup>†</sup>

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## ABSTRACT

Advancements in information science technology are generating anticipations of a “super smart society” that integrates the physical and cyber worlds. A research group that discusses the grand design for a long-term digital information preservation system that can respond to the super smart society from the perspectives of information science, materials science and social science is being promoted. The group started its activities on March 2016, and has completed the first phase on March 2017 by conducting a basic survey. For 2017, the research group will continue on to the second phase by specifically deciding on the targets for digital preservation and their methods, and then propose strategies on the long-term preservation of digital information in the super smart society in 2018.

## KEYWORDS

digital information, long-term preservation, super smart society, blockchain, AI, IoT, Big Data

## 1 INTRODUCTION

Precious information on mankind is currently in danger of extinction in many fields of society, and various measures are being taken to develop a long-term preservation and recording system for digital information [1]. However, much of the actions focus on the research and development of media and devices [2] that preserve recorded data for extremely long times, and research on the system from the standpoints of information science and technology are seldom being conducted.

Meanwhile, a super smart society with the physical and cyber worlds integrated is being anticipated following the rapid advancements in the information science field such as AI, IoT and Big Data [3]. Moreover, blockchain that the virtual currency Bitcoin is based on is drawing attention for its innovations and significant potentials in application. A wide array of blockchain expansion is currently being proposed, and centralized databases to record information will consequently become unnecessary if transaction data are distributed and shared.

Considering such background, we have formed a research group that will develop the grand design for preserving digital information in the super smart society, with the belief that a long-term preservation system compatible with the society with physical and cyber worlds integrated will be essential in archiving digital information. Named the InfoEver SIG (Special Interest Group) Meeting, the research group started its activities on March 2016.

## 2 RESEARCH GROUP GOALS, PLANS FOR PROMOTION AND PROMOTION METHODS

### 2.1 Goals

To develop the grand design for long-term preservation of digital information that is compatible with the super smart society in the future, where physical and cyber worlds will be integrated.

### 2.2 Plans

- Phase 1 (March 2016 – March 2017) Basic survey
- Phase 2 (April 2017 – March 2018) Promote the activities of the research group by deciding on the data to archive and their preservation methods.
- Strategic proposal for long-term preservation of digital information that corresponds to the super smart society (April 2018)

### 2.3 Promotion Methods

The members elected from corporations, the National Diet Library and universities for the research group will gather bi-monthly for meetings. The meetings are open to the public and welcome nonmember participants, and with planned themes, invite external specialists involved in the latest research and business for lectures. Based on the lectures, the research group members hold discussions on the long-term preservation of digital information from various standpoints, and review options towards the super smart society.

### 3 RESULTS

The research group started activities from March 2016, and completed the first phase on March 2017 by conducting a basic survey. The results of Phase 1 activities (March 2016 - March 2017) are as follows:

#### 3.1 Kickoff Workshop

March 7, 2016: Keihanna Open Innovation Center (“KICK”)

Forewords: Makoto NAGAO

(Director, International Institute for Advanced Studies)

Keynote speeches:

- 1) “Current Status and Future Challenges of Ultra Long-Term Storage Device/Systems R&D”  
Seiichiro KAWAMURA (Fellow of Center for Research and Development Strategy, Japan Science and Technology Agency)
- 2) “Blockchain Technology of Bitcoin and its Applicability to Long-Term Preservation of Digital Information”  
Shoji KASAHARA (Professor of Graduate School of Information Science, Nara Institute of Science and Technology)

InfoEver SIG (Special Interest Group) Meeting was established starting from this kickoff workshop.

#### 3.2 InfoEver SIG (Special Interest Group) Meeting Activities

*1<sup>st</sup> meeting:* May 13, 2016 (International Institute for Advanced Studies)

Invited lectures:

“The Millennium EHR Project toward Japanese National Medical Data Repository”

Tomohiro KURODA (Professor, Kyoto University Hospital)

“Preservation of Cultural Property Photography in the Digital Era: In-Between Bequeathing and Inheriting”

Ichiro NAKAMURA (Specialist, Nara National Research Institute for Cultural Properties)

Special lecture:

“The Importance of Information Recording and Discussions on the Latest Super-High Resolution Digital Records”

Kenji SUMIYA (Senior URA, Kansai University (former CTO of Hitachi Maxell))

*2<sup>nd</sup> meeting:* June 20, 2016 (International Institute for Advanced Studies)

Invited lectures:

“Long-Term Preservation of Digital Information”

Sadayasu ONO (Vice President, O&G Corporation)

“Issues in Digital Archiving: Continual Operation of Long-Term Recording Systems”

Hiroyuki KAWANO (Professor at the Faculty of Science and Engineering, Nanzan University)

*3<sup>rd</sup> meeting:* October 7, 2016 (International Institute for Advanced Studies)

Invited lectures:

“New Hardware Technologies for Cognitive Computing”

Shintaro YAMAMICHI (Senior Manager, IBM Research – Tokyo, IBM Japan, Ltd.)

“Visions of the Future through Blockchain Technology”

Yasunori SUGII (Representative Director and CEO, CurrencyPort Limited)

*4<sup>th</sup> meeting:* January 27, 2017 (International Institute for Advanced Studies)

Invited lectures:

“Leveraging IoT and Time-Space Big Data”

Nobuo KAWAGUCHI (Professor at Institutes of Innovation for Future Society, Nagoya University)

“New Memory Technology and its System Eyeing an IoT/Big Data Society”

Tetsuo ENDOH (Center Director and Professor at the Center for Innovative Integrated Electronic System, Tohoku University)

*5<sup>th</sup> meeting:* March 7, 2017 (International Institute for Advanced Studies)

Invited lecture:

“Long-Term Usage of Digital Archives and Their Contents: From a Metadata Perspective”

Shigeo SUGIMOTO (Professor at the Faculty of Library, Information and Media Science, University of Tsukuba)

Based on these results, Phase 2 (April 2017 – March 2018) activities will decide on the data to archive and their preservation methods that are compatible to the super smart society.

### 4 CONCLUSIONS

A research group to discuss ways to develop the grand design of the long-term digital information preservation system compatible with the super smart society that integrates the physical and cyber worlds from the information, physical and social science perspectives was established. The research group started activities with members from corporations, the National Diet Library, and universities, and completed the basic survey in the agenda for Phase 1 on March 2017 after holding six meetings. For 2017, the group will continue on to Phase 2 to decide on the specific data to archive and their preservation methods, and then propose strategies on the long-term preservation of digital information in the super smart society in 2018.

### ACKNOWLEDGMENTS

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