Endeavors of Digital Game Preservation in Japan- A Case of Ritsumeikan Game Archive Project

Akinori (Aki) Nakamura
Ritsumeikan Center for Game Studies
Ritsumeikan University 56-1 Tojiin-kitamachi, Kita-ku, Kyoto 603-8577
nakamu-a@im.ritsumei.ac.jp

Koichi Hosoi
Art Research Center
Ritsumeikan University 56-1 Tojiin-kitamachi, Kita-ku, Kyoto 603-8577
hosoik@me.com

Kazufumi Fukuda
Kinugasa Research Organization,
Ritsumeikan University 56-1 Tojiin-kitamachi, Kita-ku, Kyoto 603-8577
fukudakz@gmail.com

Akito Inoue
Visiting Researcher, Ritsumeikan Center for Game Studies
Ritsumeikan University 56-1 Tojiin-kitamachi, Kita-ku, Kyoto 603-8577
glocom.inoue@gmail.com

Muneyuki Takahashi
Visiting Researcher, Ritsumeikan Center for Game Studies
Ritsumeikan University 56-1 Tojiin-kitamachi, Kita-ku, Kyoto 603-8577
mnykt.ac@gmail.com

Masayuki Uemura
Ritsumeikan Center for Game Studies
Ritsumeikan University 56-1 Tojiin-kitamachi, Kita-ku, Kyoto 603-8577

ABSTRACT

In 1998, one of the first academic institutions, which focuses on pursuing the appropriate ways of the video game preservation, the Game Archive Project has been established. The sentiment toward the digital games being products rather than "viable cultural artifact", the efforts have started slowly. In our continuous efforts to enlighten academic as well as the professional community for this cause, however, the importance of the preservation activities has been embraced in both domestic and international communities, leading to being a part of the national project for the creating of the Media Art Database D by the Agency of Cultural Affairs, Japan. The present paper attempt to introduce an overview of our efforts.

KEYWORDS

Digital Game Preservation, Database-Design, Emulation

1 ORIGIN

Ritsumeikan Game Archive Project (or GAP in abbreviation, henceforth, GAP), was established in April 1998. Our endeavours can be categorized into three forms of preservations, which are namely, 1) physical preservation, accompanying with digital data archive which registered information sufficient to identify the preserved materials, 2) preservation in the form of emulation, and finally 3) digital moving images of the people actually playing the preserved object[2]. Thus, the next phase of our institutions was to examine each of mentioned endeavors

2 GENERAL RESULTS FROM EACH PRESERVATION EFFORT

2.1 Physical Preservation

Physical Preservation was initiated simultaneously with the establishment of GAP in 1998. We visited several studios to initiate the actual preservation of game titles. One of the studios, SEGA understood our intention and started donating products published by SEGA from 1998 to the end of 2003 when the major corporate re-organization took place. Other than SEGA, various game titles from multiple platforms had been donated regularly, slowly expanding the number of collections at Game Archive Project.

2.2 Preservation through the Development of Emulator

Figure 1: Emulation Box

Development of Emulation Box (hence forth "the box") for the Famicon initiated in 2002 with the realization that physical objects would decay in the long run. The overall design of the device is shown in the Figure 1. The box was designed to emulate precisely as the Famicom, it would behave both in digital and the analogue as the game data run from a generic computer. The system composed of a server, the game data transfer system, and emulator of the Famicom's memory management unit which is compatible to over 10 types of Read Only Memory architectures as well as the Famicom Disk System architecture, which allow the device to be compatible to all of the titles released for the Famicom. Only original components used for the device is used was the game

controller interface as this analogue portion of the device is impossible to emulate and thus the device was connected to the actual controller so that software can be operated precisely as they were originally intended. For the testing purpose, two titles, namely, Donkey Kong and Mario Brothers were stored in the generic computer and play tested with the device. The limitation, however, also became apparent as the legal process was found to be a lot more complex for what we anticipated, forcing GAP from pursuing the option for the video game preservation efforts.

2.3   Preservation through the Video Image

Figure 2: Simultaneous Recording of Game Play Images and Pressing of the Input Interface

Regarding video games as cultural artifacts, recording the visual image of the gameplay naturally became a vital part in the preservation activities. Our approaches, however, were not merely recording the playing images, but also simultaneously recording the timing of pressing of buttons for each game play so that spectators will be able to view how they were playing and also precisely how they used the interface upon playing.   This was possible by showing both playing images and signal patterns from the pressing of the buttons as shown in the Figure2.   The studies further revealed that there were differences in the play styles between novice players and those of avid players, further showing the importance of the preserving the game play images in this manner.

3   Expansion of the Efforts

3.1 Developing Metadata of Digital Game

These efforts lead GAP to work under the Agency of Cultural Affairs for constructing a digital game section of Media Arts Database since April 2012. The data have been cross-referenced before the registration, allowing other researchers to use these data as a source of reference. Number of game titles which have been registered in the database reached 44683 titles by March 2017[3]. The team has been working on modifying the former systems to create with entity-relationship model, considering a special property that enables archivists for cataloging and designing of metadata for the database. The scrutinizing data allow us on examining the differences in reception of Japanese titles in Japan

and the west [4] as well as the changing on the naming patterns of game titles [5].

3.2 Expansion of Physical Preservation

As our efforts has led to extend our network not only to academic institutions, but also to libraries and museum of which the video game has been objects of collections and exhibitions, making us further realize the importance of preserving physical objects not only for the Japanese community but also for collaborating with the international community of the video game preservations. By March 2017, there are 6211 as shown in the Table 1

Table 1: Number of the Titles Collected

Platform	Titles	Release Year
PlayStation	1615	1994
SEGA Saturn	609	1994
Super Famicom	526	1990
PC Engine	521	1987
Family Computer	473	1983
PlayStation 2	467	2000
Dream Cast	357	1998
PlayStatio Portable	322	2004
Nintendo DS	269	2004
SEGA Mega Drive	214	1988
Gameboy Advanced	141	2001
Nintendo GameCube	107	2001
Game Boy	104	1988
Others	538	-
Others	6263	

4 Future Perspectives of the Game Archive Project

As the video game preservations has been increasingly acknowledged by the public, the demand for further security on this subject has become ever more important. For recent years, GAP has been extending our network both domestically as well as internationally with hope of an organizing international consortium of digital game preservation. By uniting the endeavors together with other institutions around the globe, we will strive to continue in our efforts to preserve this important cultural artifact in our era.

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