

Mitsuru Irie
 Production System Engineering major

1. Research topic: Using optical discs for digital archives




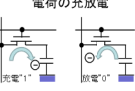
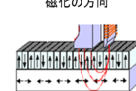

	半導体メモリ Solid State Drive (SSD)	磁気メモリ Hard Disk Drive (HDD)	光メモリ Optical Disk Drive (ODD)
外観			
デジタル情報記録方法	電荷の充放電 	磁化の方向 	凹凸ピット (断面) ビット形状 

Figure 1: Types of digital data storage devices and methods of saving data

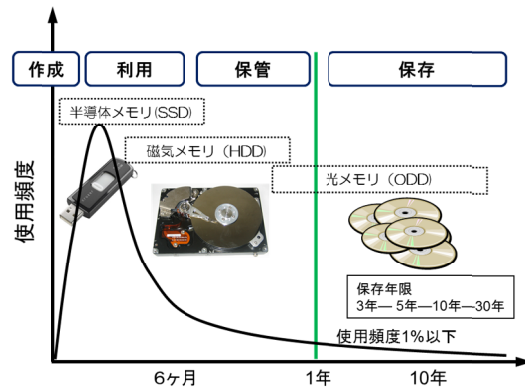


Figure 2: Document data life cycles and storage memory

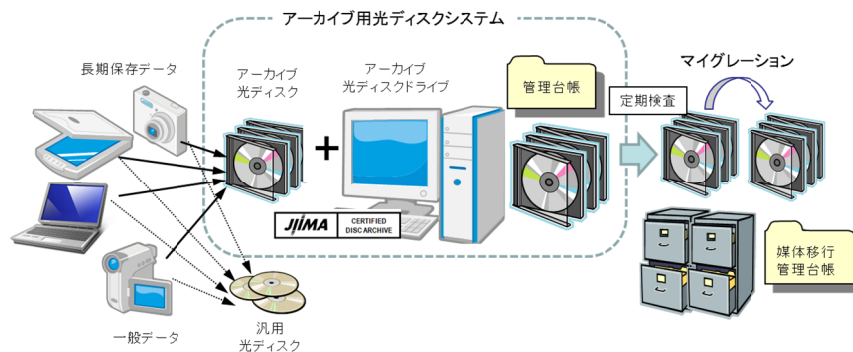


Figure 3: Operational model for long-term storage of electronic documents using optical discs

外観	Exterior appearance
デジタル情報記録方法	Digital data storage methods
半導体メモリ	Semiconductor memory
Solid State Drive (SSD)	Solid-State Drive (SSD)
電荷の充放電	Charging and discharging electrical charges
充電 “1”	Charge “1”
放電 “0”	Discharge “0”
磁気メモリ	Magnetic memory
Hard Disk Drive	Hard Disk Drive (HDD)
磁化の方向	Direction of magnetization
光メモリ	Optical memory
凹凸ピット	Pits

断面	Cross section
ビット形状	Pit shapes
図 2	
作成	Create
利用	Use
保管	Save
保存	Archive
使用頻度	Usage frequency
半導体メモリ(SSD)	Semiconductor memory (SSD)
磁気メモリ(HDD)	Magnetic memory (HDD)
光メモリ(ODD)	Optical memory (ODD)
保存年限 3年—5年—10年—30年	Storage periods Three, five, ten and thirty years
使用頻度 1%以下	Usage frequency 1% or less
6か月	Six months
1年	One year
10年	Ten years
図 3	
アーカイブ用光ディスクシステム	Optical disc system for archiving
長期保存データ	Data stored for long periods
一般データ	General data
汎用光ディスク	General-purpose optical discs
アーカイブ光ディスク	Optical discs for archiving
アーカイブ光ディスクドライブ	Optical disc drives for archiving
管理台帳	Management ledger
定期検査	Periodic inspections
マイグレーション	Migration
媒体移行管理台帳	Management ledger for media migration

2.Featured published articles

1) Study of Statistical Analysis using Fisher Information for Life Expectancy, Mitsuru IRIE, Toshio Suzuki、Takao Ihashi and Yoshinobu Mitsuhashi, Technical digest of International symposium on optical memory, 124-125 (2014)

2) ISO/IEC standard: ISO/IEC 16963 2nd ed.: 2014, Test method for the estimation of lifetime of optical media for long-term data storage, Editors: Mitsuru IRIE、Mark Worthington and Toshihiro SUGAYA

3) Reliability Evaluation Item of Optical Archival Storage in BD, Mitsuru IRIE、Toshio Suzuki、Takao Ihashi and Yoshinobu Mitsuhashi, Technical digest of International symposium on optical memory, 104-105 (2013)

4) Mitsuru Irie and Kunimaro Tanaka, The Search for Permanent Digital Data Archiving with Optical Discs. *Journal of Digital Practices, Vol. 1, No. 2* (pp. 71-76). 2010.

5) Mitsuru Irie, Akiyoshi Inoue and Isao Taniguchi, Current State of Longevity Evaluation in Optical Disk, *Journal of the Institute of Image Information and Television Engineers, Vol.*

63, No. 11 (pp. 26–29). 2009.

6) Simple Estimating Method for Life Expectancy Using Re-sampling Statistical Analysis, Mitsuru IRIE, Yoshihiro OKINO, Japanese Journal of Applied Physics, Vol. 47, No. 7 6035--6038 (2008)

3. Main books

1) *Zukai DVD Dokuhon* (An Illustrated DVD Reader), Ohmsha, Ltd., September 2003.

2) *DVD Gijutsu no Kihon to Shikumi* (DVD Technology Basics and Mechanisms), Shuwa System Co., Ltd., October 2005.

3) *Saisentan Denshi Debaisu • Buhin ni Okeru Shinraisei Shiken • Hyoka* (Cutting-Edge Methods for Testing and Evaluating the Reliability of Electronic Devices and Parts). Technical Information Institute Co., Ltd., November 2006.