Making the ISOM Optical Memory Roadmap

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ABSTRACT

The International Symposium on Optical Memory (ISOM) committee made a technical roadmap of optical memory for the industry and academic. We focused on data storage capacities form 200 GB/disk to 1 TB/disk, and on data transfer-rate from 200 Mbps to 1 G bps. Thus, we will make milestones on our roadmap, so we and others can easily review our progress.

Key words: roadmap, optical memory.

1. BACKGROUND

For a long time, we have followed the trend of a combination of a short wavelength and a high NA. Fortunately, we have not required a roadmap because we just have to keep following the trend. Recently, however, the trend has begun breaking down. Then engineers feel uneasy about the future of our industry. Component and material manufacturers are troubled when planning future investment. Optical memory application designers have difficulty visualizing future applications. Therefore, the ISOM committee decided to make a technical roadmap for the industry and academic.

2. ORGANIZATION

The ISOM committee delegated two members as coordinators to promote the roadmap. The coordinators selected five future technology candidates that take major parts among the presentations in high density sessions. They nominated five members as organizers to play central roles in making roadmaps of each technology. The organizers brought together a group of about five engineers and researchers who are specialists in the some field of optical memory.

3. GUIDELINE and GOAL

We settled guidelines for making the roadmap as follows: We did not touch on the current business practices. Instead, we focused on data storage capacities form 200 GB/disk to 1 TB/disk, and on data transfer-rate from 200 Mbps to 1 G bps. Thus, we will make milestones on our roadmap, so we and others can easily review our progress.

4. PROCEDURE

We planed to start in April 2005 and finish at ISOM 2006 in October 2006. In midstream, Dr. Murakami, Chair of the ISOM steering committee, reported the intermediate results as the keynote speech at the ODS/ISOM 2005 meeting in July 2005[1].

The future technology is supported by many elemental technologies. To complete the roadmap, we had to investigate the interfaces between future and elemental technologies. Thus, we nominated five committee members to organize the following elemental technologies in December 2005: media, component, head, mastering & stamping, and signal processing.

We held two types of meeting to foster smoothly discussion between the future technology and elemental technology group, i.e. a meeting between organizers and one between group members of each technology group.

5. PRESENTATION

We presented the results of the future and elemental technology groups at ISOM2006 on 19th of October last year[2]. At this symposium, I will explain the outline of our activity and the summary of the ISOM road map.

6. AFTERWORD

We hope that our roadmap inspires not only engineers and researchers in our field but also people in related industry. In addition, we published the ISOM roadmap report and are calling for the application for the report on the ISOM web site (http://www.isom.jp/). The ISOM committee expresses gratitude to all group members and organizers who contributed to making the roadmap. We listed them at the last page of this report.

REFERENCES

1. Digest of ISOM lecture meeting 2005, Tokyo, December (2005)
2. Technical Digest of ISOM2006, We-NS-01, Takamatsu, October(2006)

Biographyies

Takeshi Maeda: He was born in Fukuoka, Japan, in 1948. He received the B.S. , M.S. and Ph.D. degrees in electrical engineering from Waseda University, Japan, in 1971, 1973, 1998, respectively. Then, he has worked at Central Research Laboratory, Data Storage & Retrieval System Division, and Multimedia Systems R&D Division, Hitachi Ltd., Japan. Now, he is working at Storage Technology Research Center, Central Research Laboratory, Hitachi Ltd. He has developed many kinds of optical disks for thirty-three years, i.e. a video disk player, a digital audio disk, a digital optical disk, a digital versatile disk and Blu-ray disk. He mainly focused on developing servo system and read/write signal processing. Recently, he is interested in high density recording on optical disk. He is a member of the Institute of Electronics, Information and Communication Engineers of Japan and the Society of Applied Physics. Also he is a senior member of IEEE.

Role	First name	Last name	Affiliation
Coordinator	Takeshi	Maeda	Hitachi
	Jyunji	Tominaga	AIST

Technology	Group	First name	Last Name	Affiliation
Future technology	Multi-layer	* Tetsuya	Iida	Pioneer
		Takuo	Tanaka	RIKEN
		Isao	Ichimura	Sony
		Motoyasu	Terao	Hitachi
		Takashi	Kikukawa	TDK
		Syuuichi	Maeda	Mitsubishi Chemical
	Two photon	* Yoshimasa	Kawata	Shizuoka Univ.
		Hiroshi	Kubo	Fuji Film
		Norihito	Nishizawa	Nagoya Univ.
		Tsuyoshi	Tsujioka	Osaka Kyoiku Univ.
		Kiyoshi	Yokomori	Ricoh
	Hologram	* Kazuhisa	Yamamoto	Matsushita
		* Tsutomu	Shimura	University of Tokyo
		Toshio	Ando	JVC
		Tomoki	Kanesaka	Sony
		Hiromi	Sakurai	Asahi Glass
		Kennichi	Kasazumi	Matsushita
	Near field	* Masataka	Shinoda	Sony
		Kiichi	Uyeyanagi	JST
		Kenya	Goto	Tokai Univ.
		Tetsuya	Nishida	Hitachi
		Masakazu	Hirata	SII
	Super-RENS	* Jyunji	Tominaga	AIST
		Takashi	Nakano	AIST
		Takashi	Kikukawa	TDK
		Osamu	Nagumo	Pulstec
Elemental technology	Media	* Reiji	Tamura	Hitachi Maxell
		Sumio	Ashida	Toshiba
		Shuichi	Ohkubo	NEC
	Head	* Masahisa	Shinoda	Mitsubishi
		Kousei	Sano	Matsushita
		Masakazu	Ogasawara	Pioneer
		Yoichi	Tsuchiya	Sanyo
		Hiroshi	Fuji	Sharp
	Component	* Shuichi	Ichiura	Sanyo
		Takeharu	Asano	Sony
		Toshio	Ando	JVC
		Shigeki	Okauchi	Nichia
		Masaaki	Onomura	Toshiba
		Hiroshi	Hatano	Konica Minolta
		Katsumi	Yoshizawa	Pioneer
	Mastering & stamping	* Minoru	Takeda	Sony
		Nobuyuki	Takamori	Sharp
		Yasuo	Hosoda	Pioneer
		Seiji	Morita	Toshiba
		Takashi	Ohgo	JVC
	Signal processing	* Kunimaro	Tanaka	Teikyo Heisei Univ.
		Toshiaki	Iwanaga	NEC
		Yutaka	Kashihara	Toshiba
		Hideki	Kobayashi	Pioneer
		Manabu	Yamamoto	Tokyo university of Science

* : Organizer or co-organizer