

Kuraray's Research and Development Strategy

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Director and Primary Executive Officer
Chief Technology Officer (CTO)
Kuraray Co., Ltd.
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Occupational Career

- 1971 Join Kuraray Co., Ltd, Assigned to Central Research Laboratories
- ~ 1984 Engaged in Organic Synthesis (Isoprene related) 8years in Research lab., 2years in Niigata Plant, 3years in Kashima plant.
- 1984 ~ 2000 Planning and Development of Fine Chemical's Products (Aroma chem., Vitamin, Intermediate materials for medicine & Agricultural chemicals)
- 1994 ~ 1997 Planning and Administration Department (Business division and Corporate)
- 2001 Manager of Fine Chemical Department
- 2002 President of Chemical Company (+Isoprene Division)
- ~ President of Chemical Company (+Methacrylate *Genestar*)
- 2007 President of Chemical & Medical Company (+ Medical)
- 2008 Chief Technology Officer

kurararay World No.1 / Only 1 Products

World-leading businesses are businesses that have the world's top market share, or are the world's only business in their category(in-house)

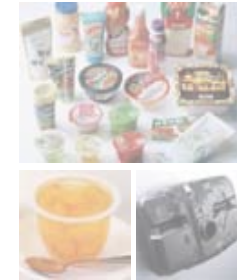
Poval



Optical-use Poval film



EVAl (EVOH resin)



KURALON KURALON K- PVA fiber



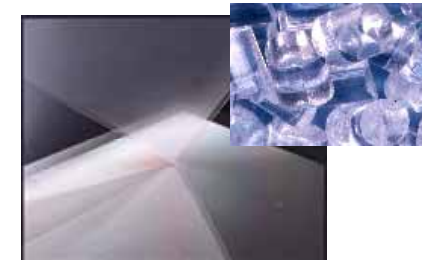
Isoprene chemicals

One-of-a-kind products derived from synthetic isoprene (MMB, MPD, etc...)



Methacrylic resin

(Molding materials for light-guide plates)



CLARINO

Man-made leather



VECTRAN

High-strength polyarylate fiber



GENESTAR

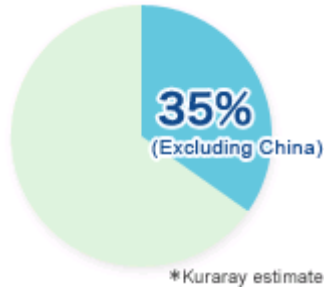
Heat-resistant polyamide resin



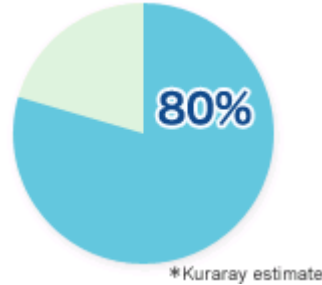
Kuraray World No.1 / Only 1 Products

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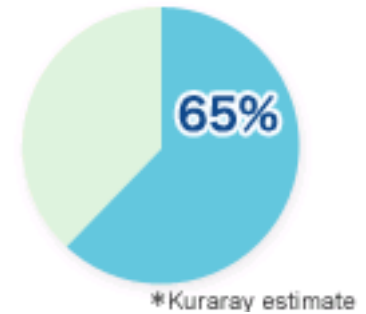
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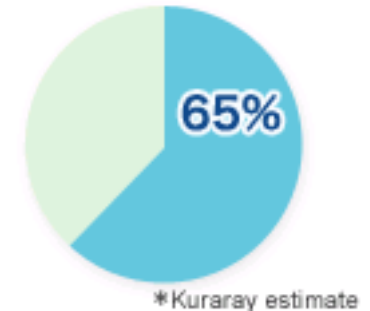
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Our corporate culture

It is absolutely necessary for a growing company to “grow while playing a new role in the national economy.”

Company profits should be “only profits due to technological innovations and earned as consideration for commensurate contributions to society and the national economy.”

*Excerpt from remarks by
Soichiro Ohara*

Our corporate culture

We in the Kuraray Group are committed to opening new fields of business using pioneering technology and contributing to an improved natural environment and quality of life.

Corporate mission established 2003

Needs

Contributing to the world and individual well-being through actions that others are unable to produce

Technology

History of business development

- Started with the shift from natural materials to chemical product replacements

■ Rayon (Silk)

➔ Triggered the move to chemistry

■ *KURALON* (Cotton, wool)

➔ Vinyl acetate related chemical products

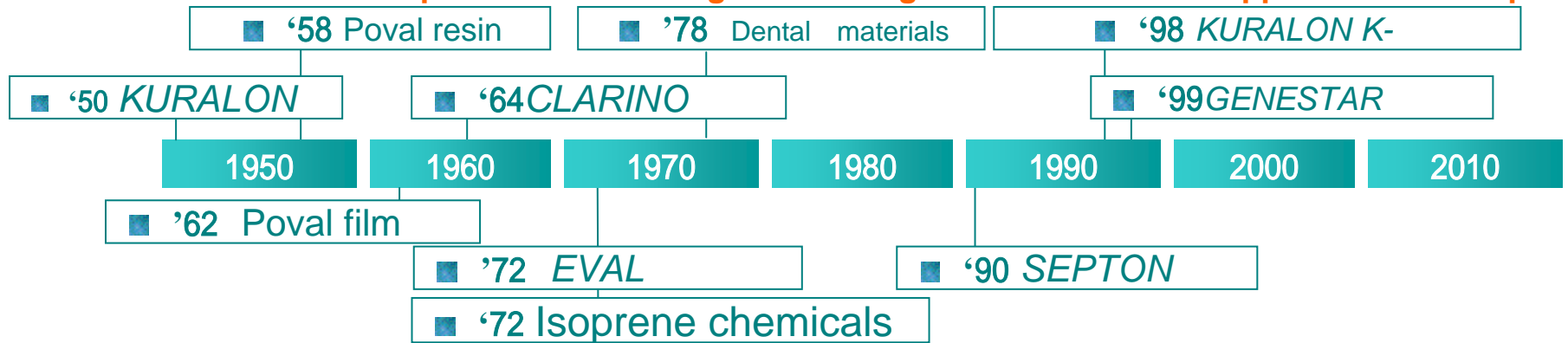
■ Synthetic rubber (Natural rubber)

➔ Isoprene chemical products

■ *CLARINO* (Natural leather)

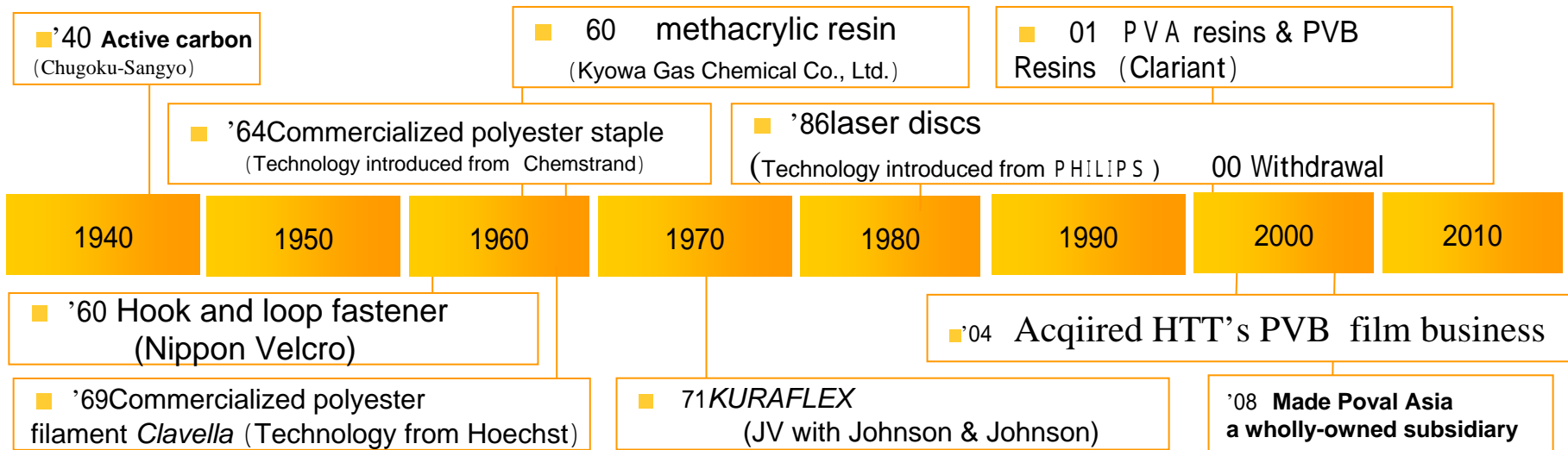
Expansion of Core Materials Using Proprietary Technologies

~ Increased International Competitiveness Through Technological Innovation and Application Development ~



Business Expansion Through Technology Introduction & M&A

~ Established Areas of Superiority Through Higher Added Value Using Process Technology etc. ~



Vinyl acetate chemical products

- ***KURALON*(polyvinyl alcohol fiber) development was the start**

Emphasis on role in the national economy

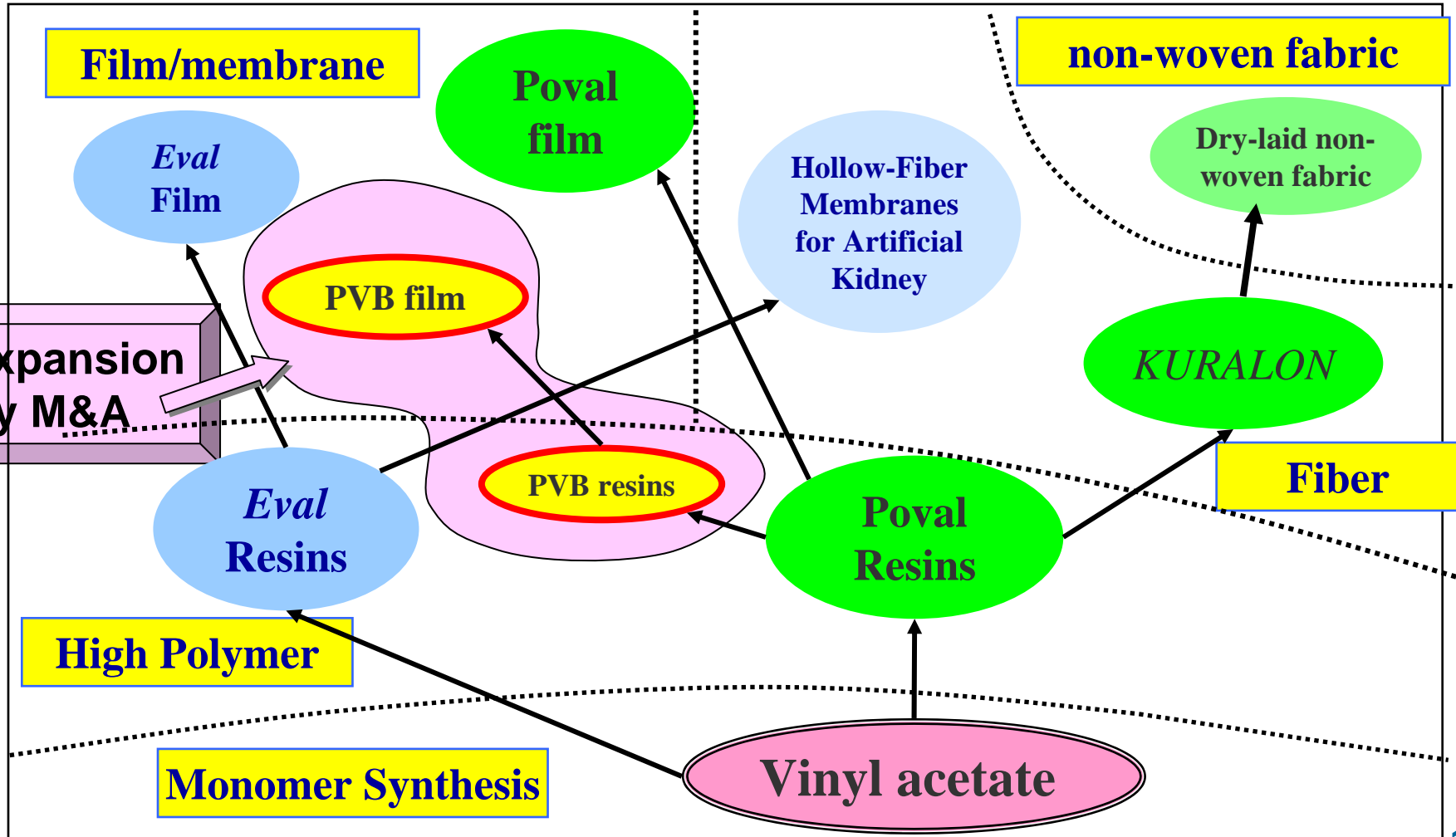
- Carbide, a domestic resource, was Kuraray's starting material. The Company believed using domestically developed technologies would help contribute to Japan's economic independence after the war. Thus, Kuraray didn't work with fibers such as nylon, polyester, but concentrated on *KURALON*.

The turning point that decided Kuraray's future

- Given the reasons stated above, Kuraray aimed for integrated production from raw materials (from carbide to vinyl acetate).
- Expansion from fiber products to Poval resin, *EVAL*, Poval film, etc. has led to the Company's current line of vinyl acetate chemical products.

Vinyl acetate related chemical products

Businesses has expanded both by ourselves and M&A



Lessons from history

Growth is not in the target area itself but in derivative areas.

Businesses that would be withdrawn from under typical management decision-making grow.

EVAL, Poval film, isoprene

”Only one” unique materials have a competitive advantage.

EVAL, Poval film, (GENESTAR)

Killer applications come from the customer side.

KURALON, EVAL, Poval film, (GENESTAR)

To combine all of this in one word,

Mirabakesso

(New materials that transform into the future)

Research and development strategy

1 . Target (What to do)

Business area

Topic

The Kuraray corporate culture underlies all of this.

Top down approach with feedback coming from the bottom up.

2 . Framework (How to do it)

Level

Motivation

Collaboration

Collaboration by highly motivated researchers will show results.

Improvements in Kuraray's development framework

- April 2007 Creation of the Chief Technology Officer (CTO) post**
 - Company-wide integration of R&D and production technology development
 - Activation of the business interface between R&D and production technology development

- Oct 2007 Redistribution of R&D resources**
 - Shift from existing businesses to new businesses
 - Distribution tilted toward key areas

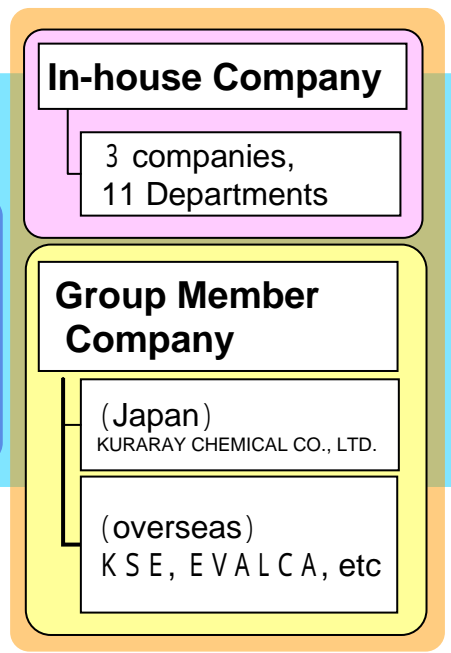
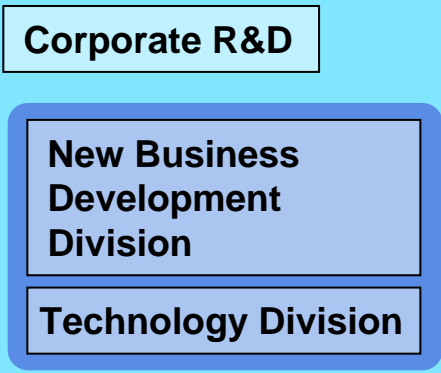
- July 2008 Establishment of the New Business Planning Department**
 - New business creation from a business point of view (M&R&D)

- Feb. 2009 Implementation of topic evaluation/investment adjustment system**
 - Implemented a system that visualizes evaluations and makes the results easier to understand and accept

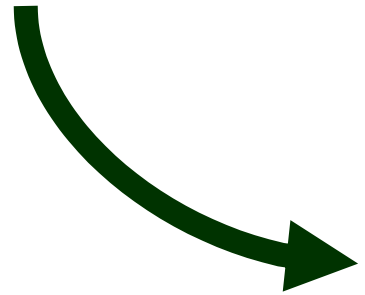
- April 2009 Reorganization of research facilities/ Implemented a matrix-type organization**
 - Improved the quality of R&D while speeding up product (business) development
 - Expanded the water treatment business with the establishment of the Environmental Business Development and Promotion Division
 - Introduced APQP (Advanced Product Quality Planning)

Creation of the Chief Technology Officer (CTO) post (April.2007)

~ 2006

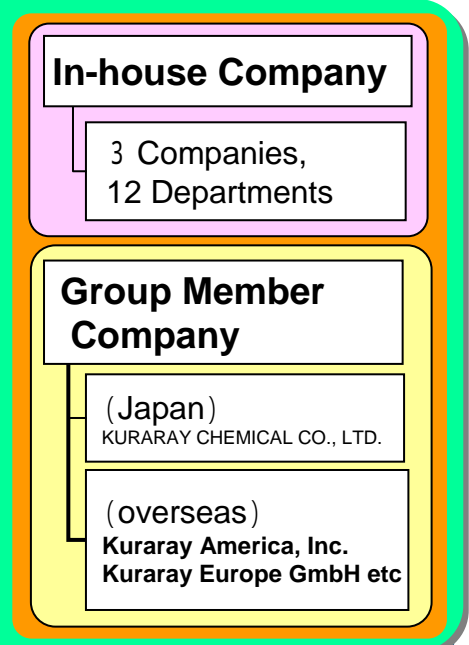
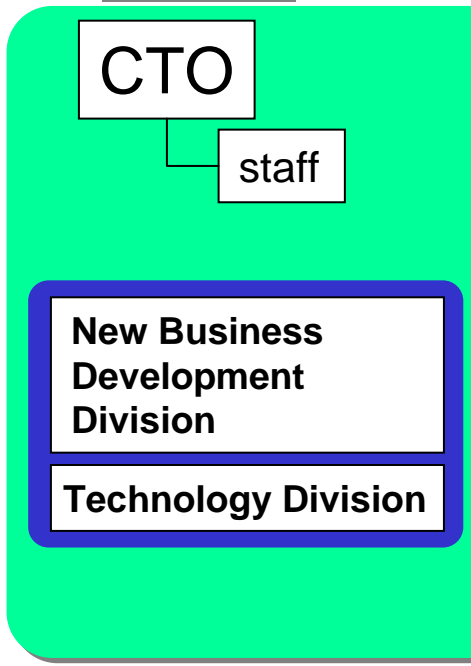


Matrix-like management



Management by CTO

2007 ~



未来に化ける新素材。

kuraray

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