NAGASE

# FYE March 2021 Second Quarter Financial Briefing

## NAGASE & CO., LTD
## November 26, 2020

# Summary

## ■ FYE March 2021 Second Quarter Results

- The COVID-19 pandemic drove a degradation in the world economy, with particularly significant impact on automotive and cosmetics-related markets
- In other regions, while the situation has returned to pre-pandemic levels in Greater China, economic activity is slow in other regions
- The Prinova Group has contributed significantly to profits. However, costs have increased due to factors such as investment toward sustainable growth (e.g. DX promotion)
- Continuation of sale of strategic shareholdings from last year

## ■FYE March 2021 Earnings Projections

- We see the COVID-19 pandemic continuing to grow worldwide, so we anticipate that the shift to full-fledged recovery will be in the fiscal year ending March 2022 or thereafter
- We project lower sales and profits overall for the full year

## ■Progress of Mid-Term Management Plan *ACE-2020*

- Released TABRASA, a materials informatics platform as one element of DX promoted by the NAGASE Group
- Established the Sustainability Committee

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# FYE March 2021 Second Quarter Results

# Consolidated Statements of Income

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- **Net sales: Sales declined because of the impact of the growth of the COVID-19 pandemic**
- **Operating income: Income declined mainly due to increased costs incurred to promote DX as an investment for sustained growth, though gross profit increased due to the high profitability of Prinova Group**
- **Profit attributable to owners of the parent: Profit increased, mainly due to the recording of profits stemming from the sale of certain shares owned by the Company**

(100 millions of yen)

| | 19/09 | 20/09 | Change | Vs. PY | Orig. Forecast (full year) |
|---|---|---|---|---|---|
| Net sales | 3,919 | 3,811 | ( 107) | 97% | 7,540 |
| Gross profit | 508 | 537 | + 29 | 106% | 1,070 |
| *<GP ratio>* | *13.0%* | *14.1%* | *+1.1%* | — | *14.2%* |
| SG&A expenses | 402 | 448 | + 46 | 111% | 920 |
| Operating income | 106 | 89 | ( 16) | 84% | 150 |
| Ordinary income | 105 | 96 | ( 8) | 92% | 155 |
| Profit attributable to owners of the parent | 74 | 101 | + 27 | 137% | 125 |
| US$ Exchange rate (period average) | @ 108.6 | @ 106.9 | @ 1.7 | strong yen | @106.0 |
| RMB Exchange rate (period average) | @ 15.7 | @ 15.3 | @ 0.4 | strong yen | @ 14.7 |

[Foreign exchange rate impact on 20/09 net sales and operating income results]
Net sales: ¥(3.5) billion (approx.); Operating income: ¥(0.1) billion

[Per-yen exchange rate impact on net sales and operating income (full year)]

| | Impact of US$ /yen | Impact of RMB/yen |
|---|---|---|
| Net sales | ¥1.0 billion (approx.) | ¥8.1 billion (approx.) |
| Operating income | ¥0.0 billion (approx.) | ¥0.4 billion (approx.) |

# Net Sales by Region (Domestic, Overseas)

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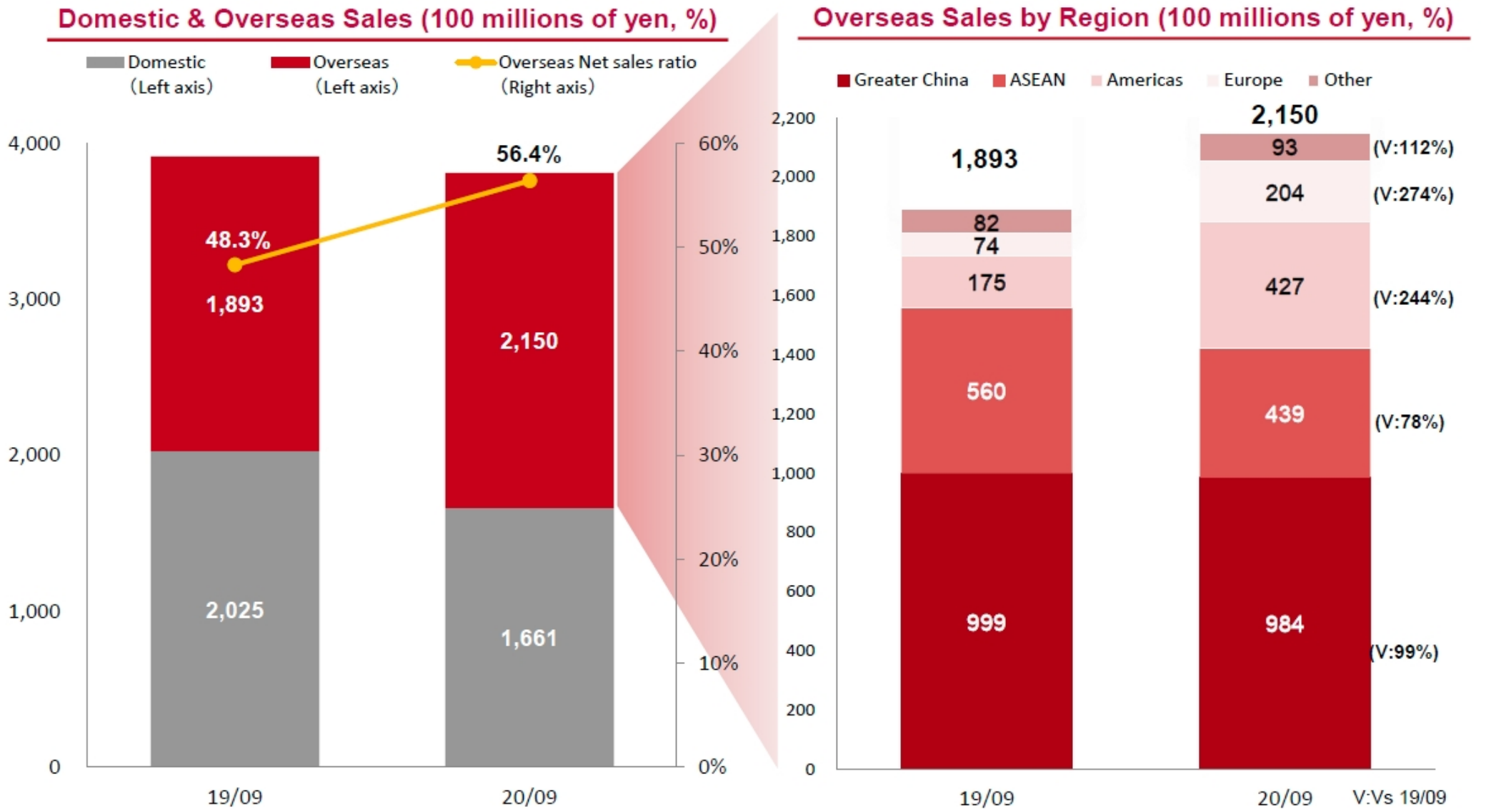
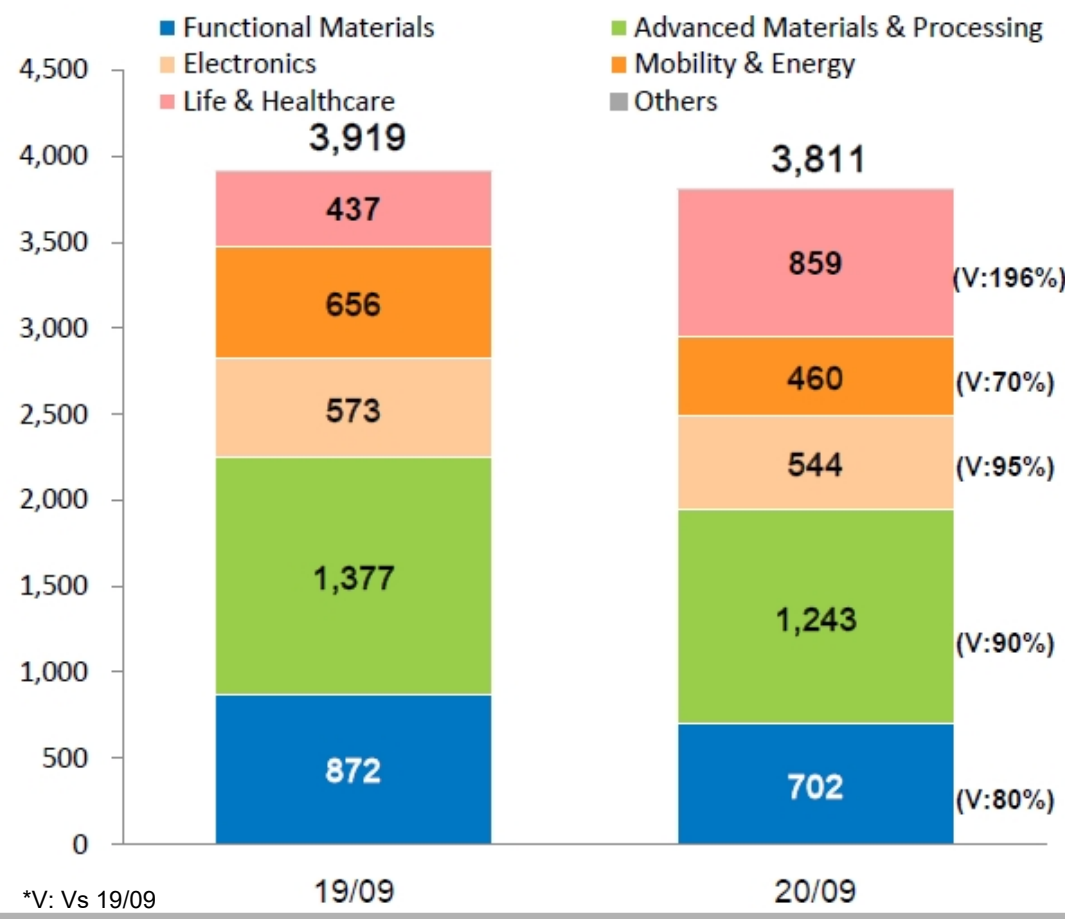
■ **Sales in particular in Japan and ASEAN decreased due to the impact of the growing COVID 19 pandemic, though sales in Europe and America increased sharply due to the addition of sales from the Prinova Group (overseas ratio of total sales: 56.4%)**



# Net Sales: Two Year Comparison (by Segment)

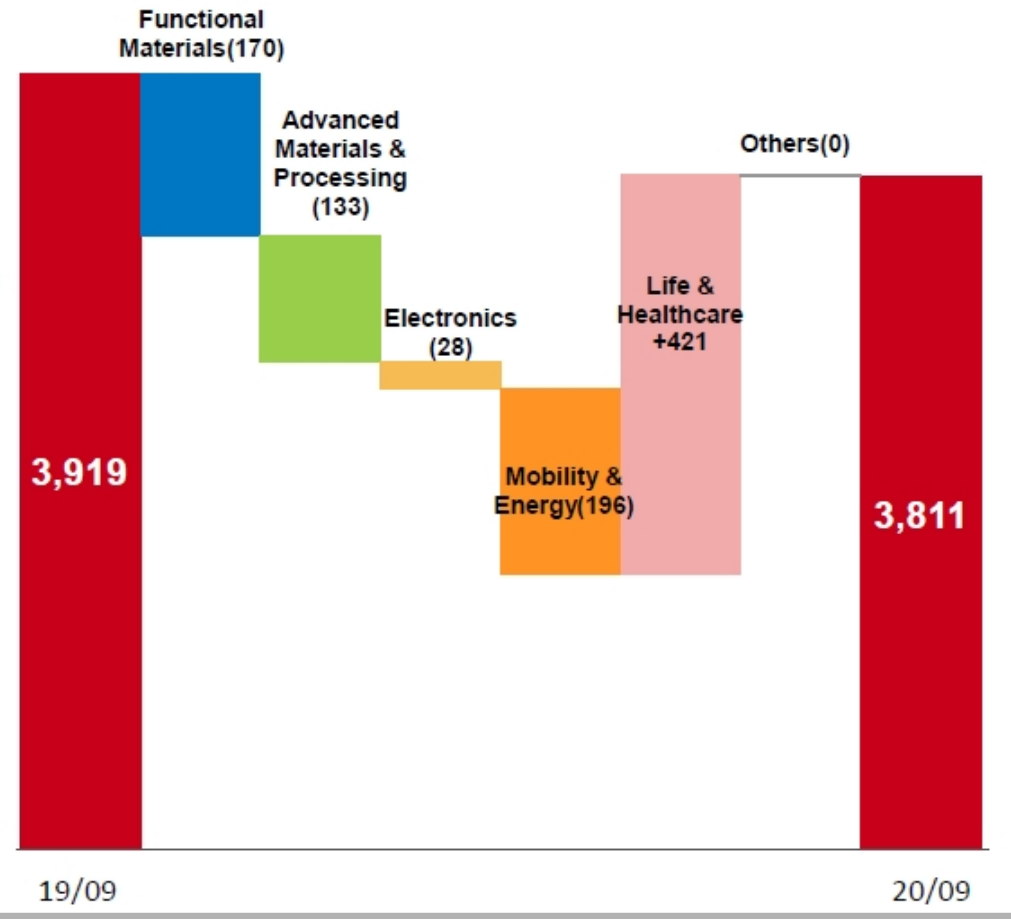
- **Mobility & Energy: Sales declined due to a decrease in the sales of car electronics-related products in Japan and in the resins business in all regions except Greater China, mainly caused by lower automotive production in all regions except Greater China**
- **Life & Healthcare: Sales increased mainly due to increased sales of pharmaceutical raw materials/intermediates and medical materials and of hygiene products-related materials , and due to the addition of sales from the Prinova Group, factors that compensated for the decline in the sales of TREHA™ and other food materials (except for Prinova Group) and AA2G™ and other cosmetics-related materials. The decline was mainly due to a lower demand**

## Net Sales by Segment (100 millions of yen)




*V: Vs 19/09

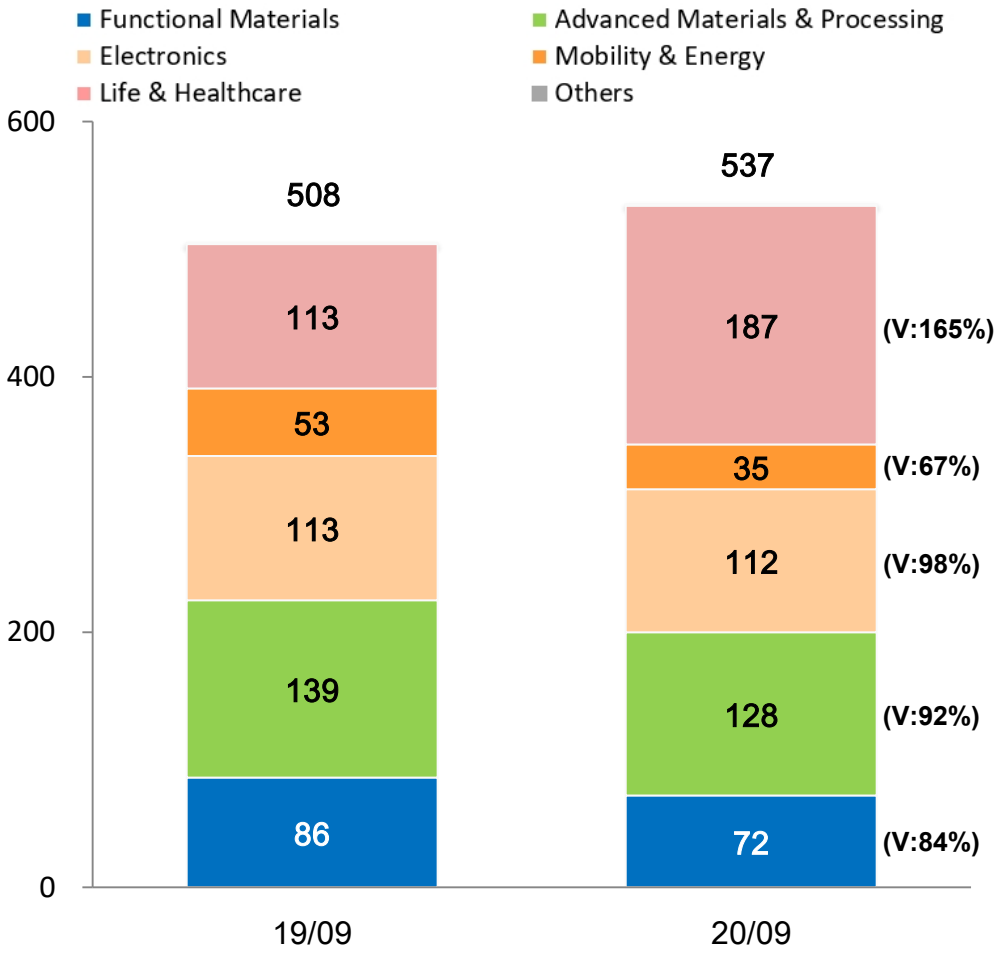
## Change in Net Sales by Segment (100 millions of yen)



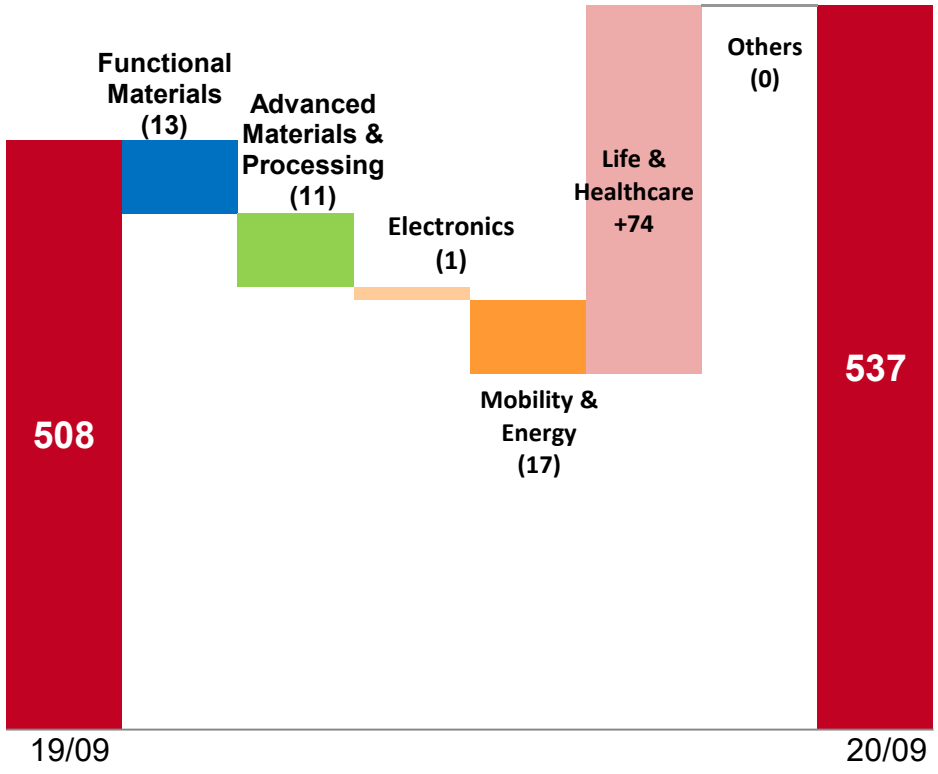
# Gross Profit: Two-Year Comparison (by Segment)

■ **Profit increased as a result of the high profitability of the Prinova Group exceeding the impact of the Company's sales decrease**

## Gross Profit by Segment (100 millions of yen)




## Change in Gross Profit by Segment (100 millions of yen)

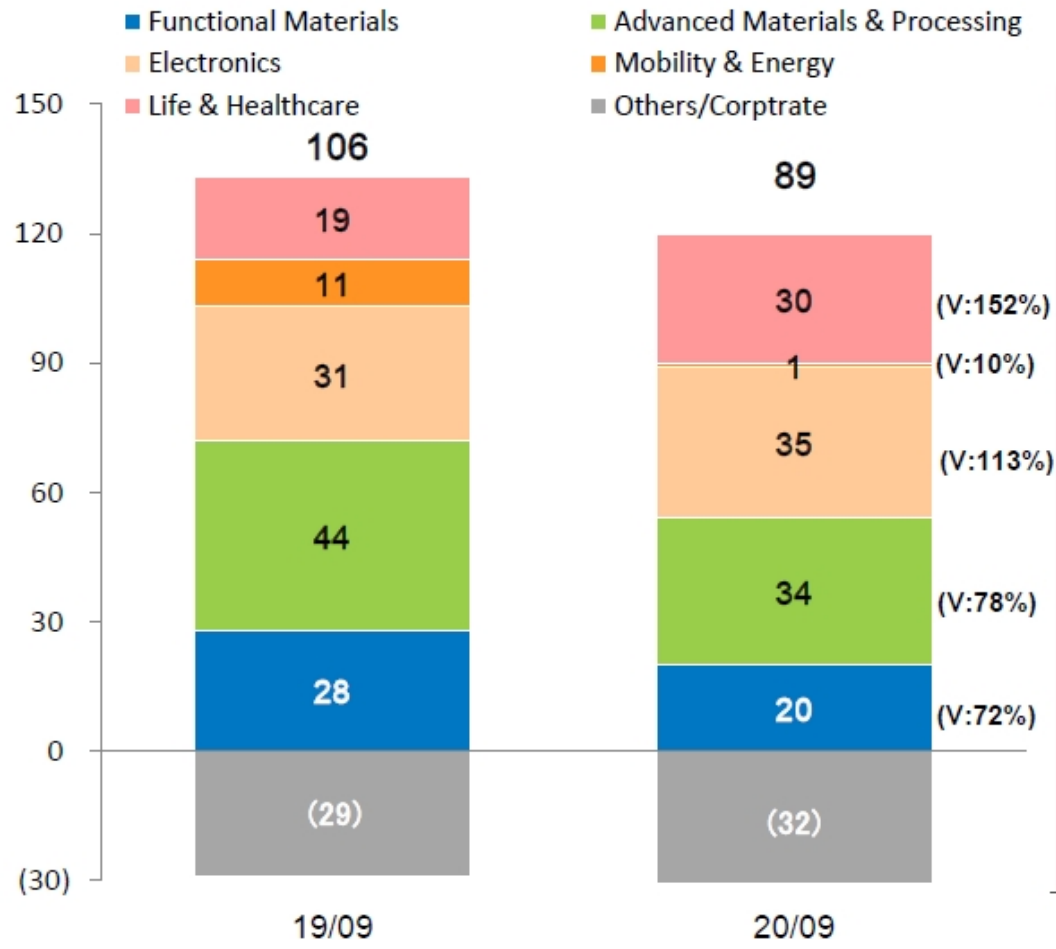



*V: Vs 19/09

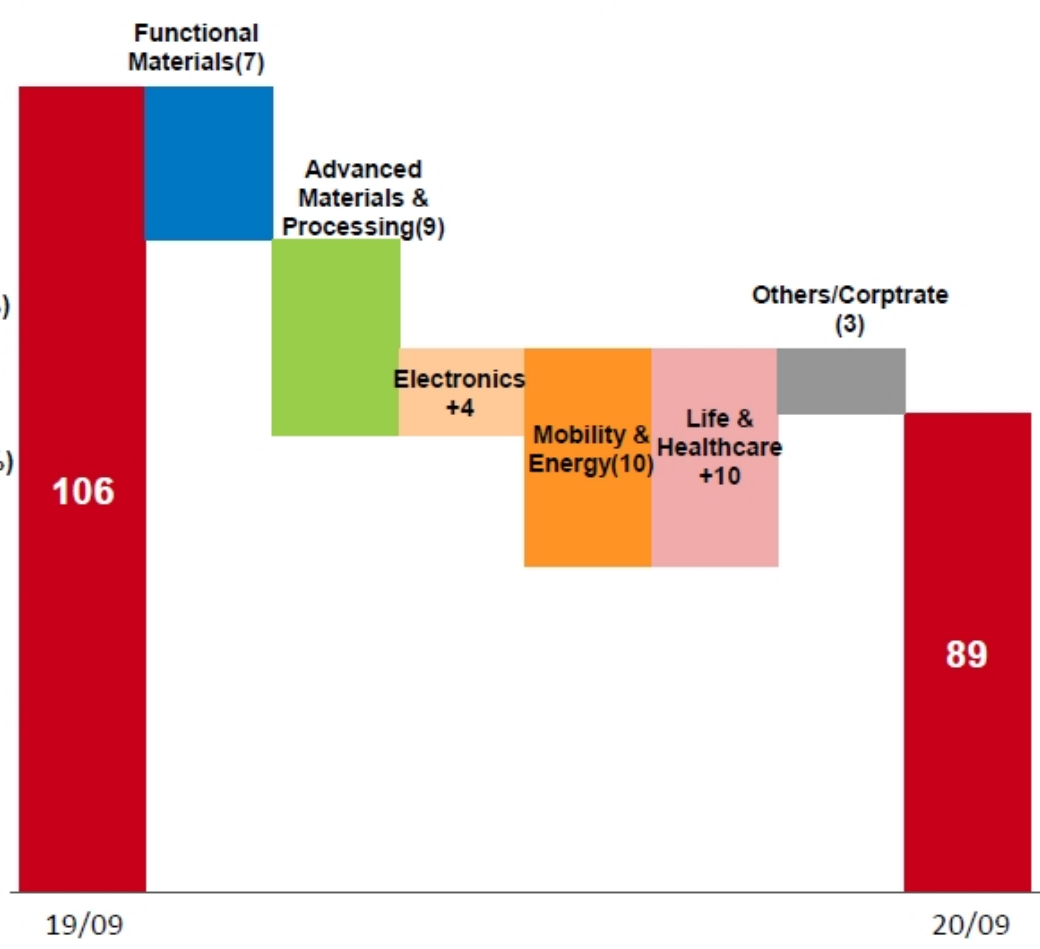
# Operating income: Two Year Comparison (by Segment)

- **Advanced Materials & Processing: Lower profits due to declining sales and degraded market conditions in the digital print processing materials business**
- **Electronics: Despite reduced sales, increased profitability in certain manufacturing subsidiaries led to higher profit**

## Operating income by Segment (100 millions of yen)




## Change in Operating income by Segment (100 millions of yen)




*V: Vs 19/09

# Earnings at Major Consolidated Subsidiaries

- **Nagase Plastics Co., Ltd.: Sales and profits declined due to impact from the COVID-19 pandemic driving down sales of resins for the office equipment, appliance, and electronics industry**
- **Shanghai Nagase Trading Co., Ltd.: Sales and profits increased as Greater China overall shook off the impact of the COVID-19 pandemic at an early stage, with electronics-related and other businesses, primarily semiconductors, trending strongly**

(100 millions of yen)

| | Company Name | Net sales | Vs. PY | Operating Income (Note 2) | Vs. PY |
|---|---|---|---|---|---|
| Manufacturing Companies | HAYASHIBARA CO., LTD. | 114 | 89% | 21 | 80% |
| | Nagase ChemteX Corporation | 120 | 92% | 14 | 108% |
| | Total for manufacturing (Note 1) | 466 | 89% | 45 | 77% |
| Domestic Sales Companies | Nagase Plastics Co., Ltd. | 151 | 80% | 3 | 56% |
| | Nagase Chemical Co., Ltd. | 77 | 80% | 1 | 77% |
| | Nishinihon Nagase Co., Ltd. | 25 | 60% | 0 | 45% |
| | Total for domestic sales (Note 1) | 376 | 80% | 10 | 71% |
| Overseas Sales Companies | Prinova Group, LLC | 444 | - | 25 | - |
| | Shanghai Nagase Trading Co., Ltd. | 218 | 101% | 6 | 187% |
| | Shanghai Hua Chang Trading Co., Ltd. | 192 | 97% | 6 | 120% |
| | Total for overseas sales (Note 1) | 2,128 | 115% | 66 | 169% |

Note 1: Totals for each category are the simple sums of each company in the category. These sums do not equal consolidated figures.
Note 2: Operating income does not reflect amortization of goodwill and depreciation of technology-based assets.

# State of Two Major Manufacturing Subsidiaries

■ Hayashibara Co., Ltd.: Recorded lower sales and profits. Though sales increased for pullulan, a product for the medical and health food industry, and for Fibryxa™, a high-function material for the food industry, impact from the spread of the COVID-19 pandemic led to falling sales in Japan and overseas of TREHA™, a product for the food industry, and AA2G™, a product for the cosmetics industry

■ Nagase ChemteX: Recorded higher profits. Despite a decrease in sales, particularly in the Performance Chemicals Business driven by factors such as impact from the spread of the COVID-19 pandemic, operating income rose thanks to improved product mix, cost reductions, and other factors

## Hayashibara Co., Ltd.

(100 millions of yen)

| | 19/09 | 20/09 | Change | Vs. PY |
|---|---|---|---|---|
| Net sales | 129 | 114 | (14) | 89% |
| Operating income | 26 | 21 | (5) | 80% |

- TREHA™ continued to perform well for some food products due to increased stay-at-home demand, but overall performance was sluggish due to a decrease in demand for souvenirs and the food service industry
- AA2G™ performance remained sluggish due to a decrease in demand in the cosmetics industry
- Fibryxa™ performed strongly with new adoptions of the product in the food industry
- Performance was strong for pullulan used in hard capsules for medical and health food products

⇒ New wing completed in September, increasing manufacturing capacity

## Nagase ChemteX Corporation

(100 millions of yen)

| | 19/09 | 20/09 | Change | Vs. PY |
|---|---|---|---|---|
| Net sales | 131 | 120 | (10) | 92% |
| Operating income | 13 | 14 | +1 | 108% |

- Though the Epoxy Resin Business showed sluggish performance in light electrical applications, primarily for automotives, it showed strong performance in electronic components used for mobile devices
- In the Photolithography Materials Business, though impact from COVID-19 led to temporary reduction in capacity utilization, it is showing gradual recovery
- The Performance Chemicals Business showed sluggish performance in epichlorohydrin conductors for automotive applications and the conductive materials business for the LCD industry
- The Bio Chemicals Business showed strong performance
- Profit was higher due to factors such as improved product mix and cost reductions

# Prinova Group Performance

■ **Though the Armada Business for the sports nutrition market showed sluggish performance because of impact from the COVID-19 pandemic, sales grew for vitamins and other food materials, leading to strong performance overall**

| | FYE March 2021<br>First Half<br>(January-June performance) | *Reference<br>FYE December 2019 (full year)<br>(excluding special M&A-related expenses) |
|---|---|---|
| **Prinova Group net sales** | ¥44.4 billion | Approx. ¥82.0 billion |
| **Prinova Group operating income** | ¥2.5 billion | Approx. ¥4.0 billion |
| **Amortization of goodwill and other intangible assets** | ¥0.9 billion | (Reference)<br>FYE March 2020: ¥0.8 billion in amortization over five consecutive months |

- **The Ingredients Distribution Business and the Solutions (formulating/processing) Business showed strong performance with increased health maintenance consciousness due to the COVID-19 pandemic and recovery in market conditions, leading to increased sales in vitamins and other food materials-related areas**
- **However, the Armada Business (contract manufacturing) showed sluggish performance, with demand falling due to COVID-19 pandemic-driven sports gym closures, sports event cancellations, and so on**

# Consolidated Balance Sheets

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- **Assets decreased ¥9.3 billion due to decreases in cash and deposits, accounts receivable, etc.**
- **Liabilities decreased ¥26.5 billion due to decreased commercial paper and accounts payable**
- **Shareholders' equity ratio rose 3.7 points to 53.6%**

## Assets

(100 millions of yen)

| | 20/03 | 20/09 | Change |
|---|---|---|---|
| **Total current assets** | **3,793** | **3,540** | **( 252)** |
| Cash and time deposits | 514 | 378 | ( 135) |
| Notes and accounts receivable | 2,211 | 2,094 | ( 116) |
| Inventories | 956 | 949 | ( 7) |
| Other | 111 | 117 | + 6 |
| **Total non-current assets** | **2,321** | **2,480** | **+ 159** |
| Property, plant and equipment | 743 | 756 | + 13 |
| Intangible fixed assets | 725 | 690 | ( 35) |
| Investments, other assets | 852 | 1,034 | + 181 |
| Investments in securities | 761 | 941 | + 180 |
| Other | 91 | 92 | + 1 |
| **Total assets** | **6,114** | **6,021** | **( 93)** |

## Liabilities and Net Assets

| | 20/03 | 20/09 | Change |
|---|---|---|---|
| **Total current liabilities** | **2,004** | **1,715** | **( 289)** |
| Notes and accounts payable | 1,082 | 984 | ( 98) |
| Short-term loans and current portion of CP | 618 | 444 | ( 174) |
| Other | 302 | 286 | ( 16) |
| **Total long-term liabilities** | **978** | **1,002** | **+ 24** |
| Long-term loans and Bonds | 726 | 694 | ( 32) |
| Net defined benefit liability | 136 | 139 | + 2 |
| Other (Deferred tax liabilities, etc.) | 115 | 168 | + 53 |
| **Total liabilities** | **2,982** | **2,717** | **( 265)** |
| **Total net assets** | **3,132** | **3,304** | **+ 171** |
| Shareholders'equity | 2,723 | 2,798 | + 74 |
| Accumulated other comprehensive income | 329 | 426 | + 96 |
| Net unrealized holding gain on securities | 326 | 435 | + 109 |
| Translation adjustment | 10 | ( 4) | ( 15) |
| Other | ( 6) | ( 4) | + 2 |
| Non-controlling interests | 79 | 79 | + 0 |
| **Total liabilities and net assets** | **6,114** | **6,021** | **( 93)** |

# Consolidated Cash Flows

NAGASE

## Cash Flows

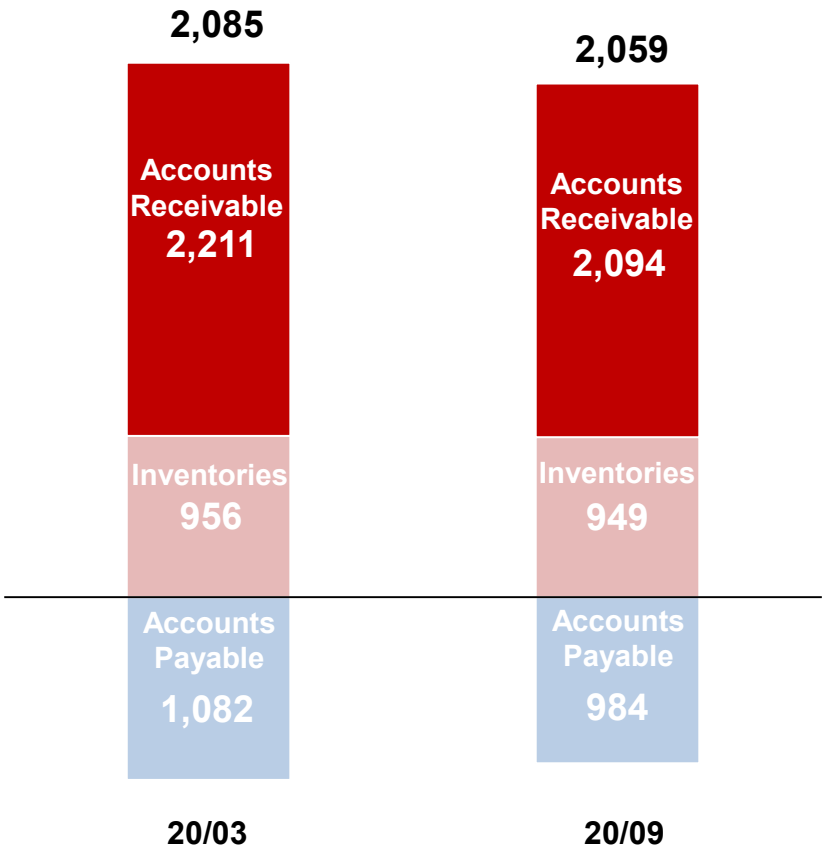
(100 millions of yen)

| | 20/09 | Main factors | 19/09 |
|---|---|---|---|
| Net cash provided by (used in) operating activities | 132 | Profit before income taxes +151<br>Depreciation and amortization/amortization of goodwill +66<br>Change in working capital +22<br>Income taxes paid (53) | 124 |
| Net cash provided by (used in) investing activities | (25) | Purchases of tangible and intangible fixed assets included in other assets (55)<br>Purchases of investments in securities (30)<br>Proceeds from sales of investments in securities +57 | (478) |
| Net cash provided by (used in) financing activities | (236) | Decrease in commercial paper (200)<br>Decrease in short-term loans (38)<br>Cash dividends paid (27) | 394 |
| | | | |
| Effects of exchange rate changes on cash and cash equivalents | (4) | | (23) |
| Net increase (decrease) in cash and cash equivalents | (134) | | 17 |
| Cash and cash equivalents at beginning of the year | 504 | | 440 |
| Cash and cash equivalents, at end of the period | 370 | | 457 |

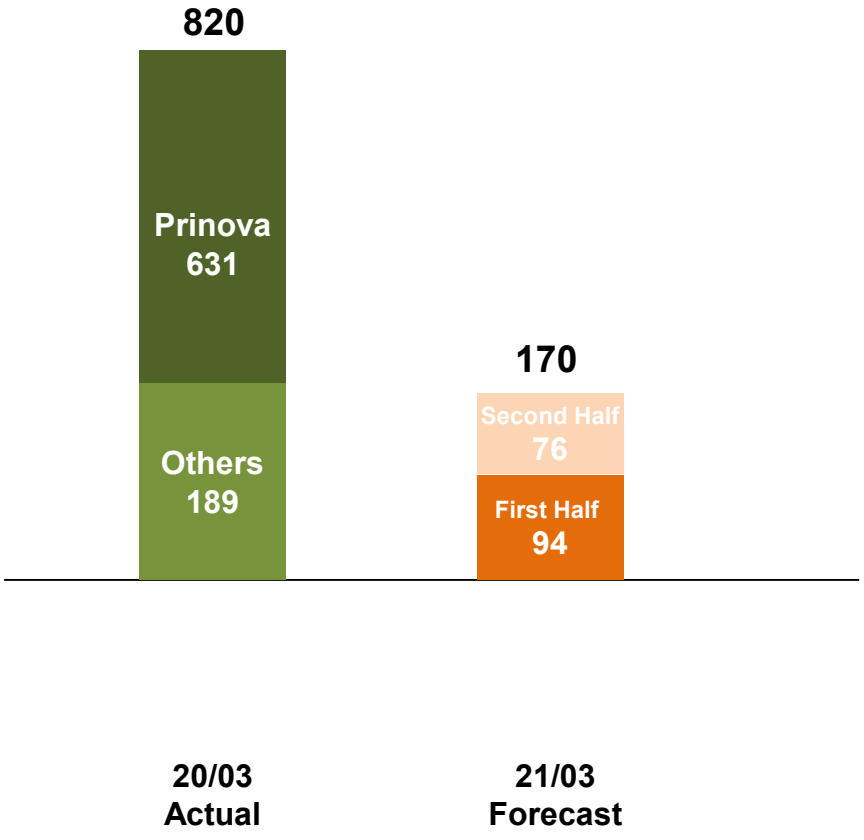
# Working Capital and Investments

- **Working Capital: Continued thoroughgoing management to adjust inventory, inventories were in decline**
- **Investments: Made investments primarily related to focus areas Life & Health Care and Electronics**
  **Completed P Wing at Hayashibara Co., Ltd., where enzymes and pullulan are manufactured**

## Working Capital (100 millions of yen)




## Investment (100 millions of yen)



# ■ FYE March 2021 Earnings Projections

# FYE March 2021 Earnings Projections

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- In the first half, earnings were better than our previously announced forecasts, in part because economic activity resumed faster than expected in Greater China and there was a temporary increase in demand caused by supply uncertainty attributable to the spread of the COVID-19 pandemic
- On the other hand, we see the COVID-19 pandemic continuing to grow worldwide, so we anticipate that the shift to full-fledged recovery will be in the fiscal year ending March 2022 or thereafter
  ⇒We have selected a more conservative macroeconomics in the second half
- Furthermore, in the second half, we anticipate that costs for sustained growth, including investment, will be greater than in the first half
- Based on the above, we forecast lower sales and profits overall (there are no changes to the earnings forecasts released in May 2020)

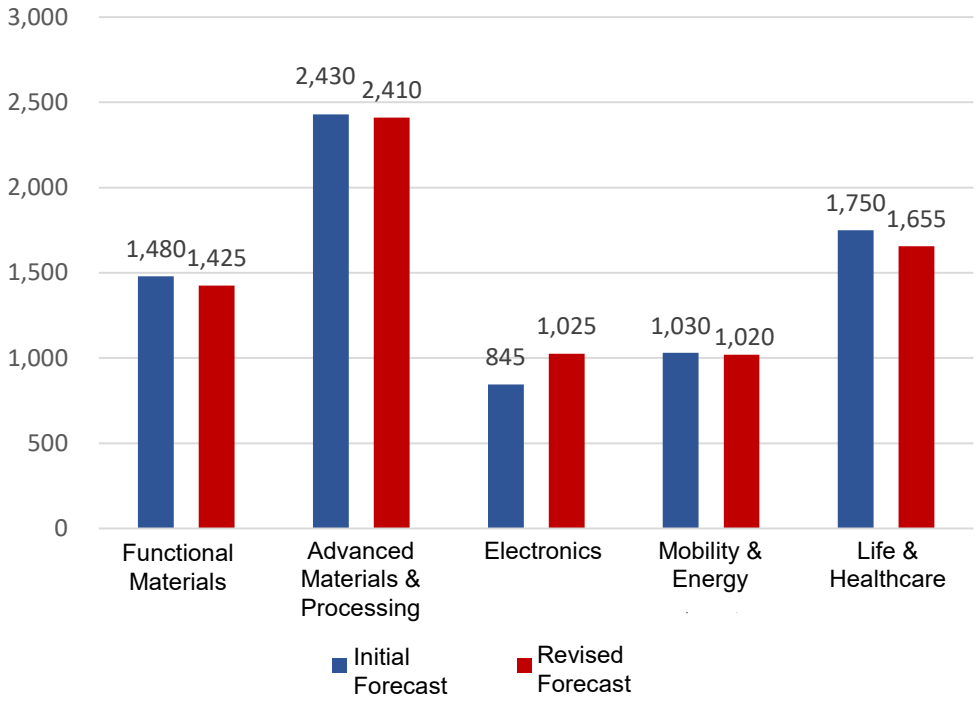
(100 millions of yen)

| | 20/03 Actual | 21/03 Full Year Forcast | Change | Vs.PY |
|---|---|---|---|---|
| Net sales | 7,995 | 7,540 | (455) | 94% |
| Gross profit | 1,049 | 1,070 | +21 | 102% |
| <GP ratio> | *13.1%* | *14.2%* | *+1.1%* | — |
| SG&A expenses | 857 | 920 | +63 | 107% |
| Operating income | 191 | 150 | (41) | 78% |
| Ordinary income | 190 | 155 | (35) | 81% |
| Profit attributable to owners of the parent | 151 | 125 | (26) | 83% |
| US$ Exchange rate (period average) | @108.7 | @106.0 | @2.7 Strong yen | |
| RMB Exchange rate (period average) | @15.6 | @14.7 | @0.9 Strong yen | |

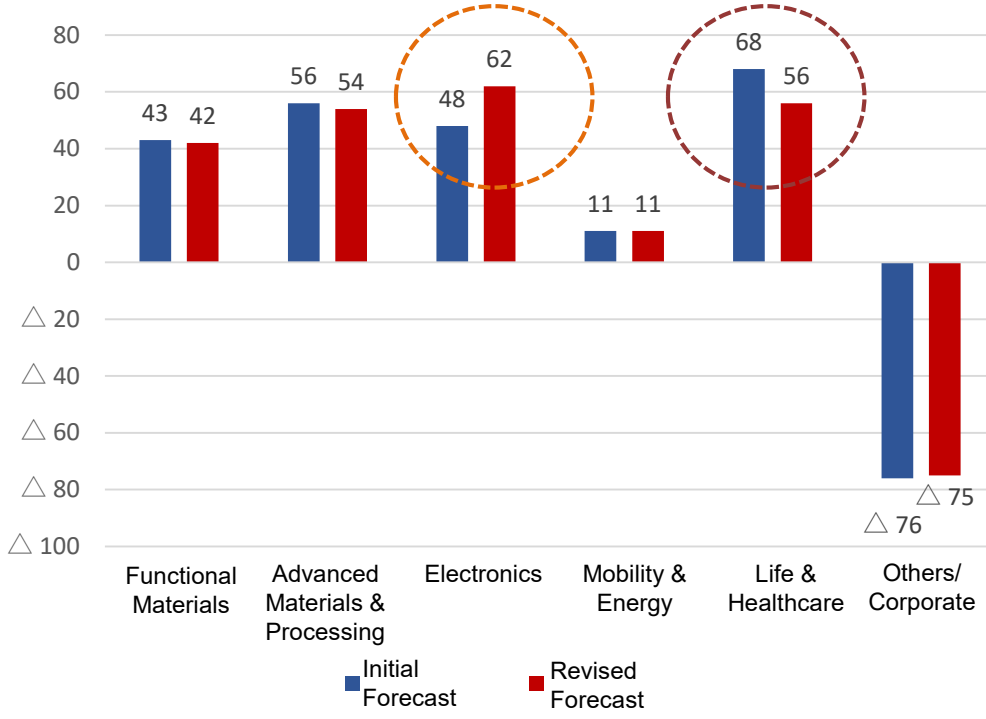
# Revised Earnings Projections (by Segment)

- Revised our earnings forecasts for each segment due to variation in market sentiment and current conditions vs. initial expectations
- As expected, the automotive-related market was in a difficult situation in the first half, but the electronics-related market was stronger than expected
  However, the Life & Healthcare market (e.g. cosmetics) was sluggish

## Net Sales Forecast by Segment (100 millions of yen)




## Operating Income Forecast by Segment (100 millions of yen)



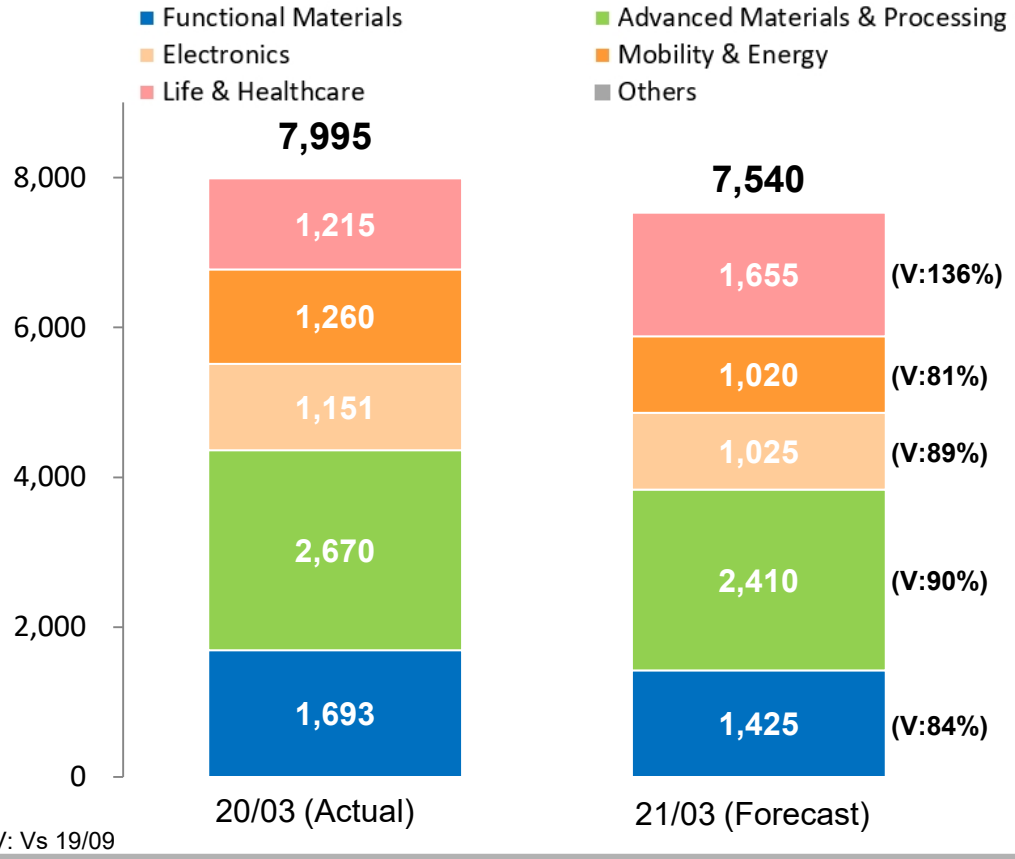

| | |
|---|---|
| **Electronics** | **In our environment, demand is rising beyond expectations for notebook PCs, TVs, and other products. Further, the semiconductor market is trending strongly** |
| **Life & Healthcare** | **Demand for souvenirs and cosmetics is falling beyond expectations as people's movements are being restricted and inbound demand falls** |

*There are no changes in the forecast for net sales in Others.

# Net Sales Forecast (by Segment)

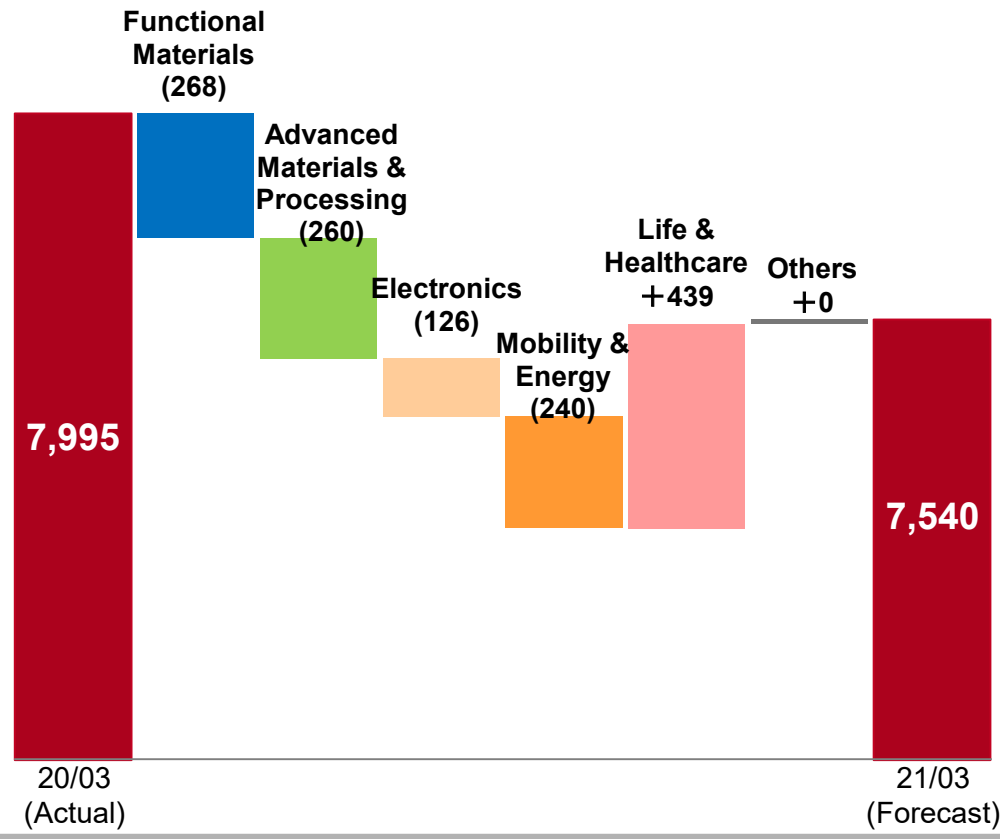
- **Functional Materials: Though sales are to recover gradually and end higher versus the first half in coating raw materials and urethane materials thanks to recovery in automotive production in the second half, we forecast a decrease in net sales over the full year**
- **Electronics: Though sales for formulated epoxy resins used in areas such as mobile devices and heavy electrical applications are to trend level versus the first half, given the uncertainty in the market ahead we forecast decreasing sales in display-related products, with net sales down in the second half versus the first, and down for the full year**
- **Life & Healthcare: In the second half, sales of AA2G™ for the cosmetics market and TREHA™ for the food market are expected to remain sluggish and sales are expected to fall versus the first half, we forecast an increase in sales over the full year due to the significant contribution of the Prinova Group consolidation**

## Net Sales by Segment (100 millions of yen)




*V: Vs 19/09

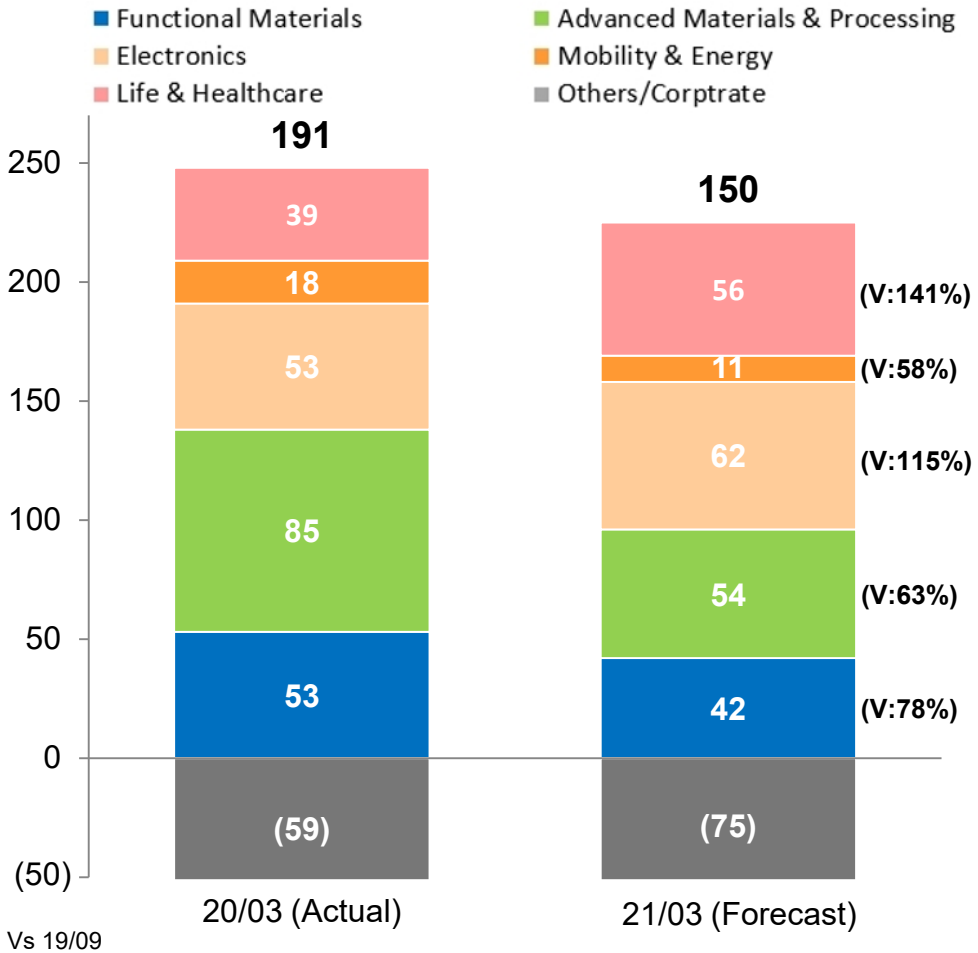
## Change in Net Sales by Segment (100 millions of yen)



# Operating Income Forecast (by Segment)

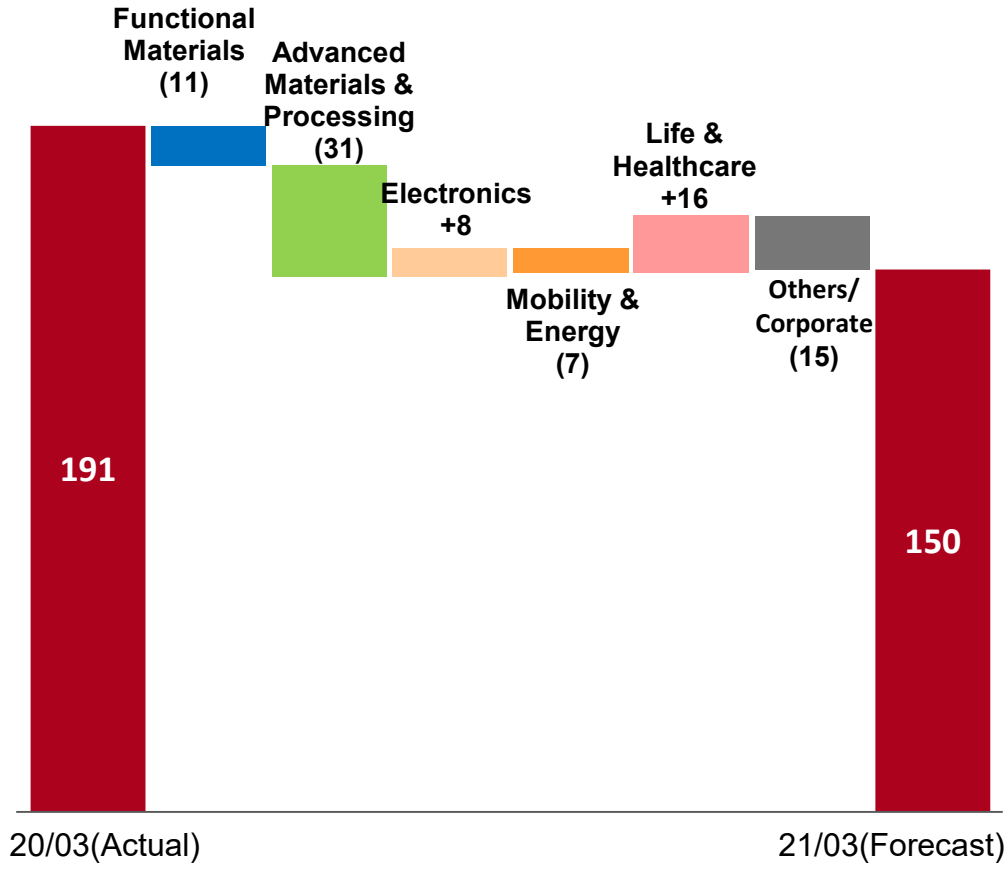
- **Advanced Materials & Processing: Lower profits mainly due to degraded profitability driven by declining sales and degraded market conditions in digital print processing materials**
- **Life & Healthcare: Higher profits mainly due to contributions throughout the fiscal year from the Prinova Group**
- **Other/Corporate: Higher costs due to promotion of DX for medium- to long-term growth and acceleration of investment in leading-edge technology**

## Operating Income by Segment (100 millions of yen)



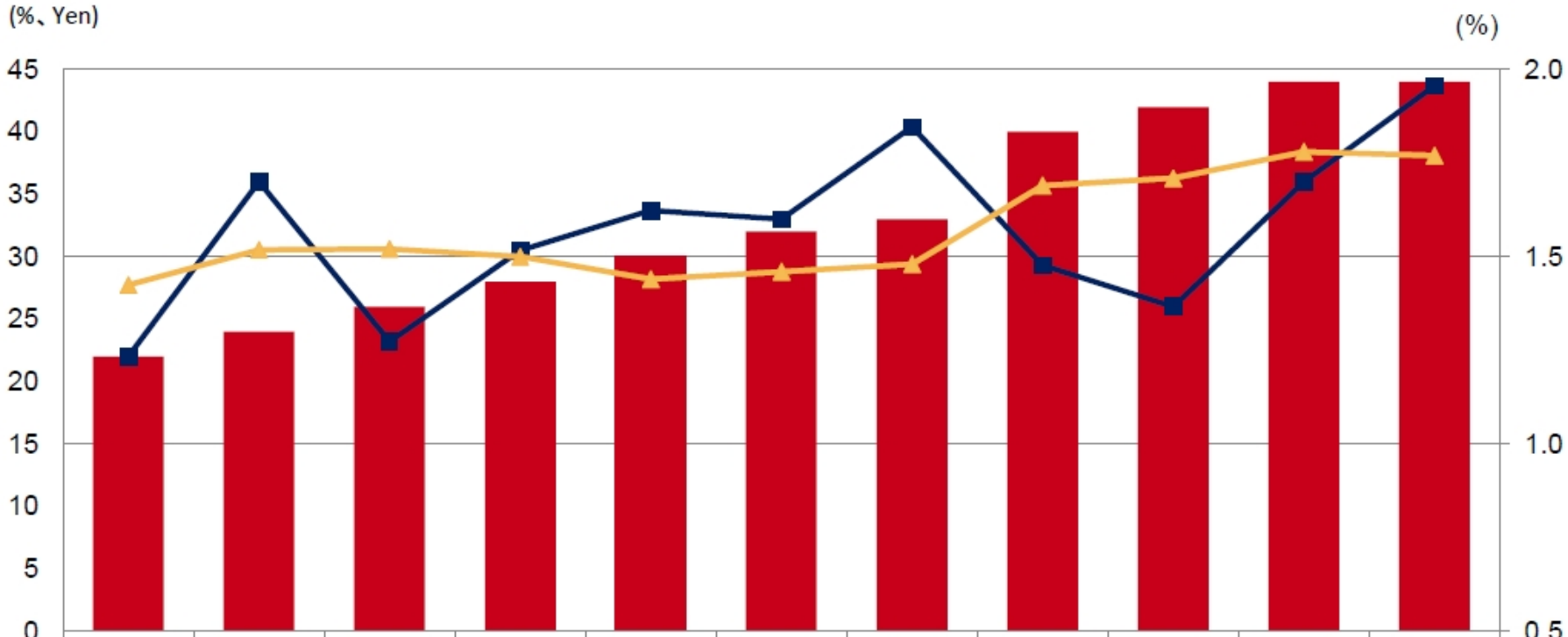

*V: Vs 19/09

## Change in Operating Income by Segment (100 millions of yen)



# Dividends

■ **Expecting to pay dividends of ¥44 per share for the full year, consisting of a ¥22 per share interim dividend and a ¥22 per share year-end dividend**




| | 11/03 | 12/03 | 13/03 | 14/03 | 15/03 | 16/03 | 17/03 | 18/03 | 19/03 | 20/03 | 21/03 (Forecast) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dividend per Share (left axis) | 22 | 24 | 26 | 28 | 30 | 32 | 33 | 40 | 42 | 44 | 44 |
| Payout Ratio (left axis) | 22.0 | 36.0 | 23.2 | 30.5 | 33.7 | 33.0 | 40.4 | 29.3 | 26.0 | 36.0 | 43.7 |
| DOE (right axis) | 1.42 | 1.52 | 1.52 | 1.50 | 1.44 | 1.46 | 1.48 | 1.69 | 1.71 | 1.78 | 1.77 |

*1 FYE March 2018 dividends include a special dividend of ¥5 per share.
*2 21/03 yearend dividend to be submitted for approval to the 106th general meeting of shareholders scheduled for June 2021.

# Progress of Mid-Term Management Plan *ACE-2020*

Accountability / Commitment / Efficiency

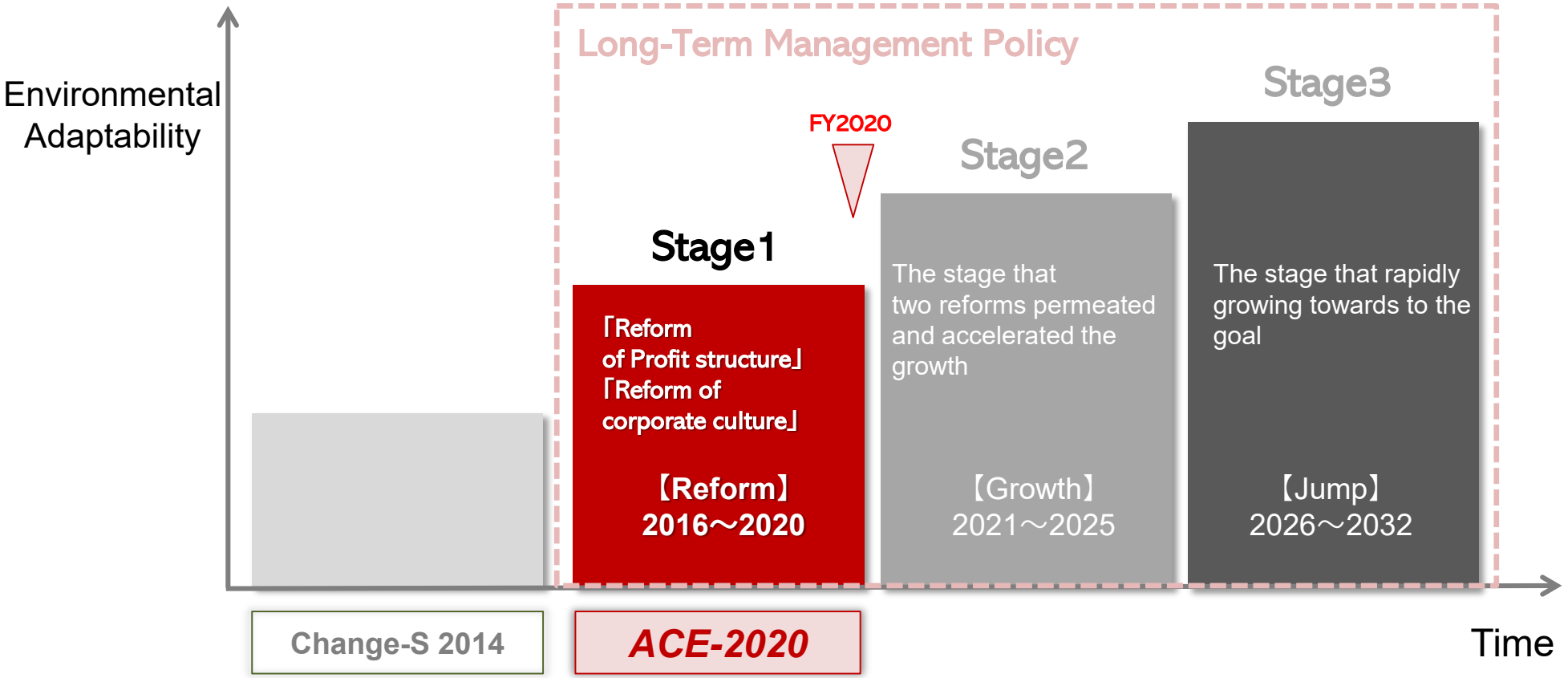

**NAGASE Transforms from *Shosha/Trading* to *Business Designer***

# Positioning of *ACE-2020*

To achieve our goal by 2032, the last year of Long-Term Management Policy, we divide 17 years of its term into 3and start stage 1 as the beginning of the Mid-Term management Plan ***ACE-2020***.

In FY2020 we will continue the fourth year of ***ACE-2020*** and continue reforming the business aiming for significant growth.

*Our goal: Normalization of the profit more than tripled.



# *ACE-2020* Basic Policy

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## NAGASE Transforms from “Shosha/Trading” to “Business Designer”.

NAGASE strings all the groups together to create and provide new value to the world through 6 key functions.

Leverage Group functions to achieve the quantitative and qualitative targets.


【6 Functions】

### Reform Profit Structure

#### Portfolio Optimization

Categorization of business and execution of strategy that matches with the area

Replacement of asset and reallocation of resources

Acceleration in investment that creates core business of group

#### Expand and Strengthen Revenue Base

Accelerate globalization ” G6000”

Improve manufacturing profitability

### Reform Corporate Culture

#### Mindset

Breed independence and responsibility

Share the management’s message

Thorough monitoring and PDCA

#### Strengthen Management Platform

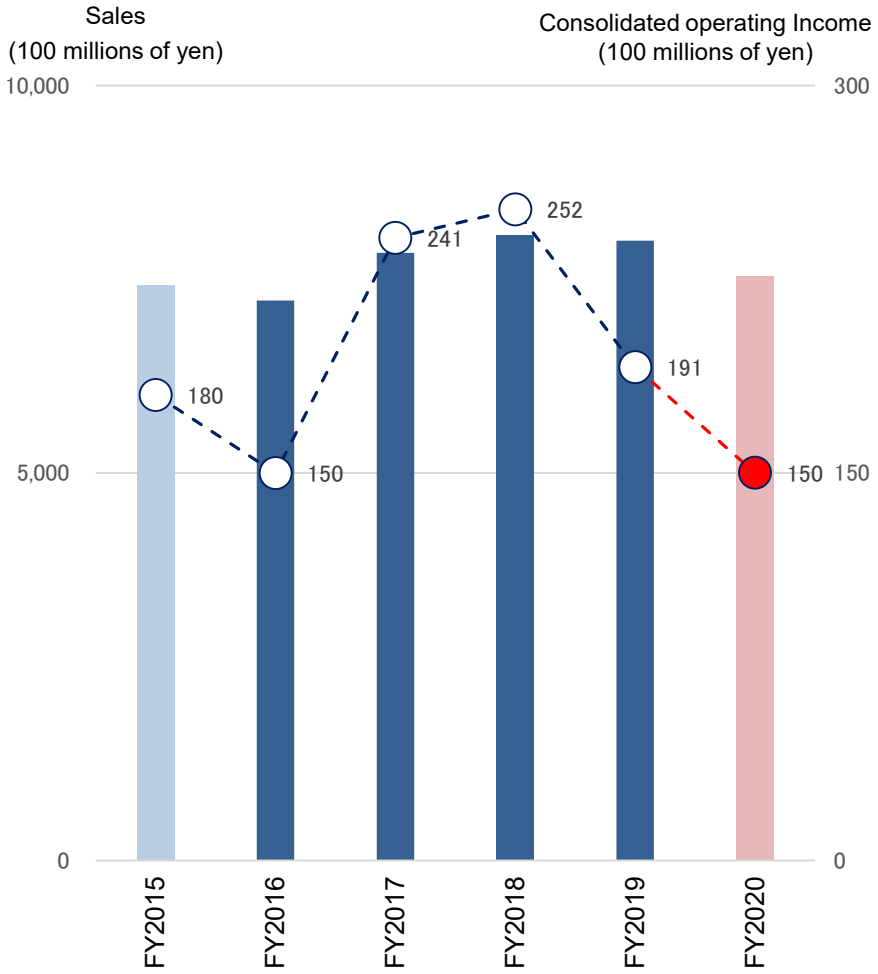
Pursue efficiency

HR development

# Progress of Mid-Term Management Plan *ACE-2020* KGIs

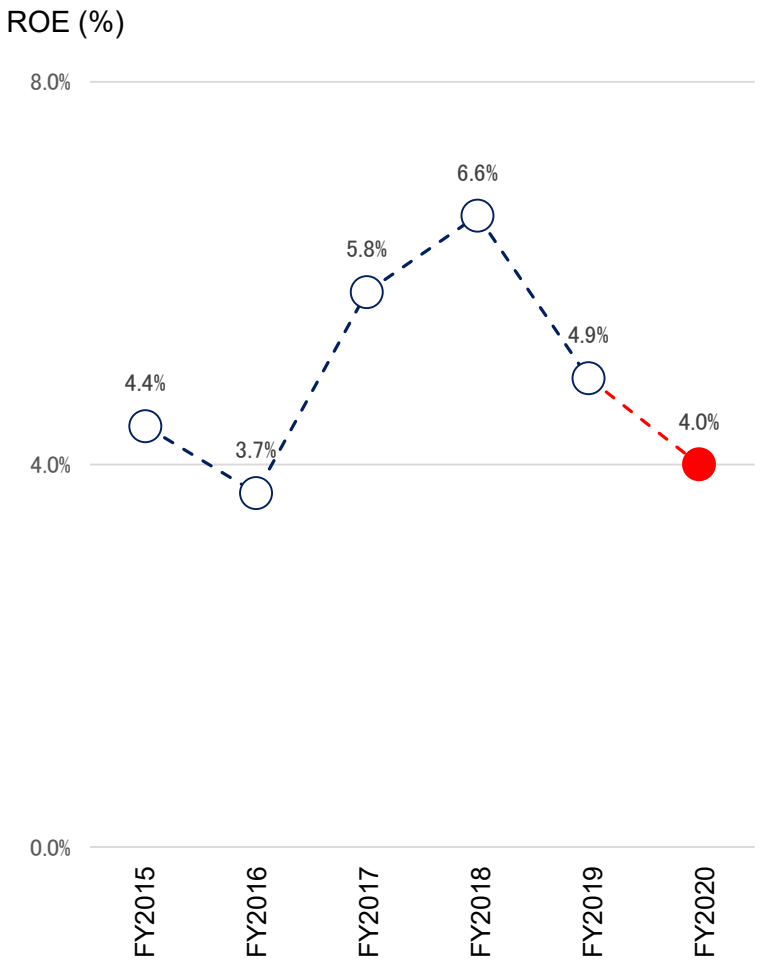
## Consolidated Sales/Operating Income

**1.0 Trillion Yen/30 Billion Yen or more**




## ROE

**Normalize Over 6% at early stage**



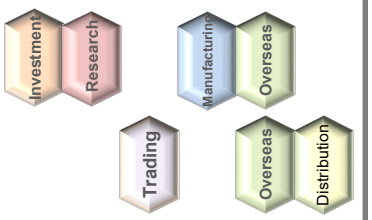
# Progress of Mid-Term Management Plan *ACE-2020*

NAGASE

## Reform of Profit Structure

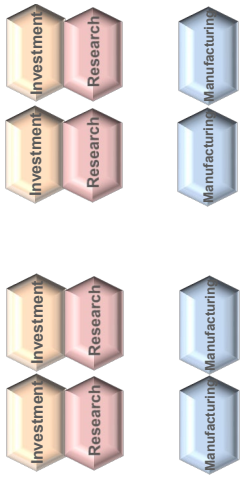
### Focus Area

- **Established the Regional Innovation Center, a food materials lab in Singapore.**
  Second overseas expansion after Xiamen, China - acceleration of overseas expansion in the food materials field
- **Prinova nominated as sales partner of Emerald Kalama Chemical**
  Expansion of sales of flavor and fragrance ingredients in Southeast Asia




### Growth Area

- **Launch provision of SaaS services on the TABRASA new material search platform**
  Features analytics and cognitive capabilities to explore new materials more efficiently
- **Established business alliance with Karydo TherapeutiX, using AI to predict efficacy and side effects with high accuracy**
  AI analysis data of COVID-19 therapeutic drug candidates is provided free of charge to all players in industry, academia, or government
- **Jointly-proposed separation membrane process with Unitika Ltd. selected for NEDO subsidy**
  Reduces energy costs in the organic solvent reuse process to less than 1%
- **Named a Zero-Emission Challenge Company by the Ministry of Economy, Trade and Industry**
  For development of bio-derived product production technology and high-function product production technology using living organisms




### Base Area

- **Launched the Chemical Outsourcing Coordination website and an online customer platform offering antifoaming agent solutions**


## Reform of Corporate Culture

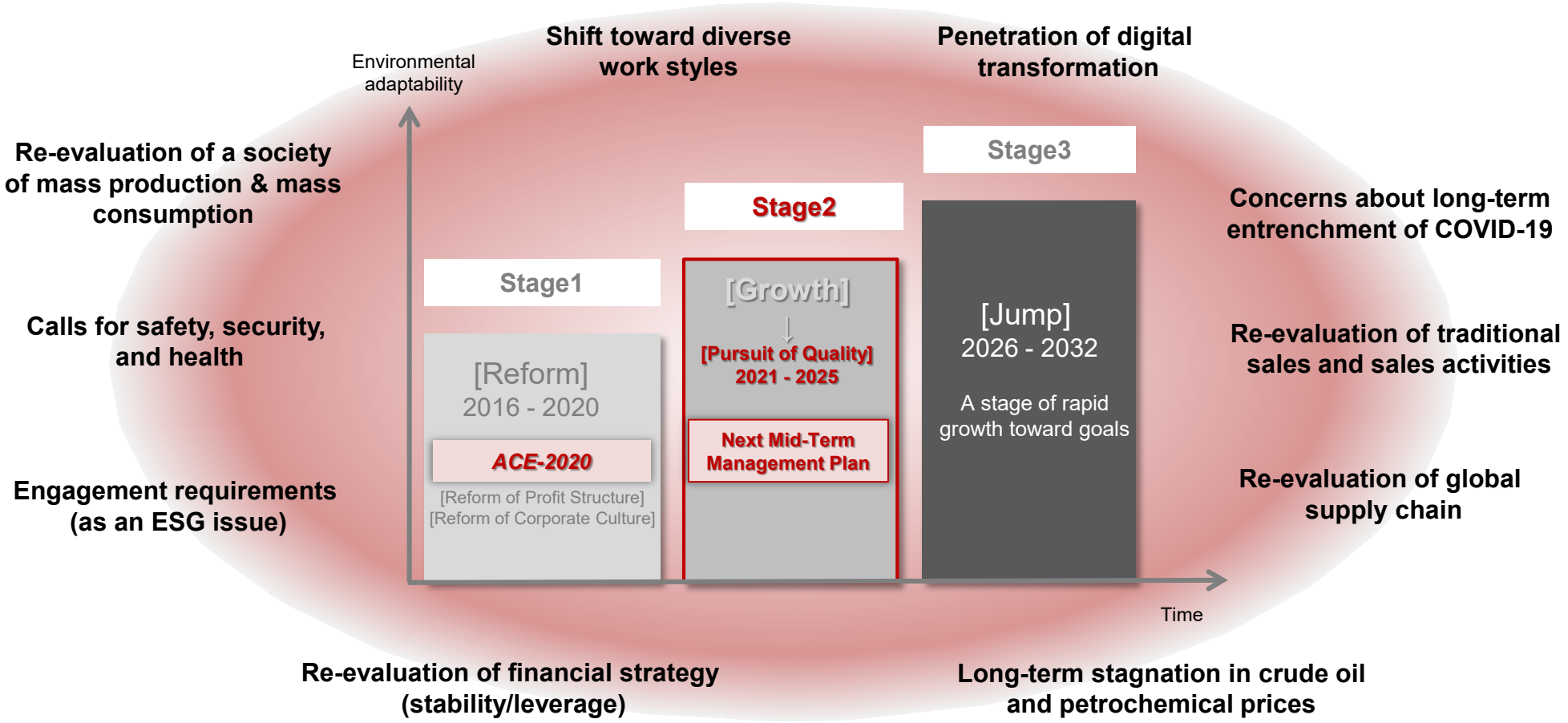
- **Established the Sustainability Committee**
- **Established Nagase & Co. official social media accounts (on Twitter & Facebook)**

# Positioning of the Next Mid-Term Management Plan

NAGASE

## Positioning change: from *a growth period* to *Pursuit of Quality*

**In recognition of the dramatic degradation of the external environment occurring in the final year of Stage 1, we have changed the positioning in Stage 2 from *a growth period* to *pursuit of quality***
**We have positioned this period as one where we create value for our stakeholders in a tangible *form* (businesses, mechanisms, culture) looking ahead to 2032, and we are working to formulate plans that revolve around improvement of social and environmental value, leveraging of advanced technology, and improvement of capital efficiency**



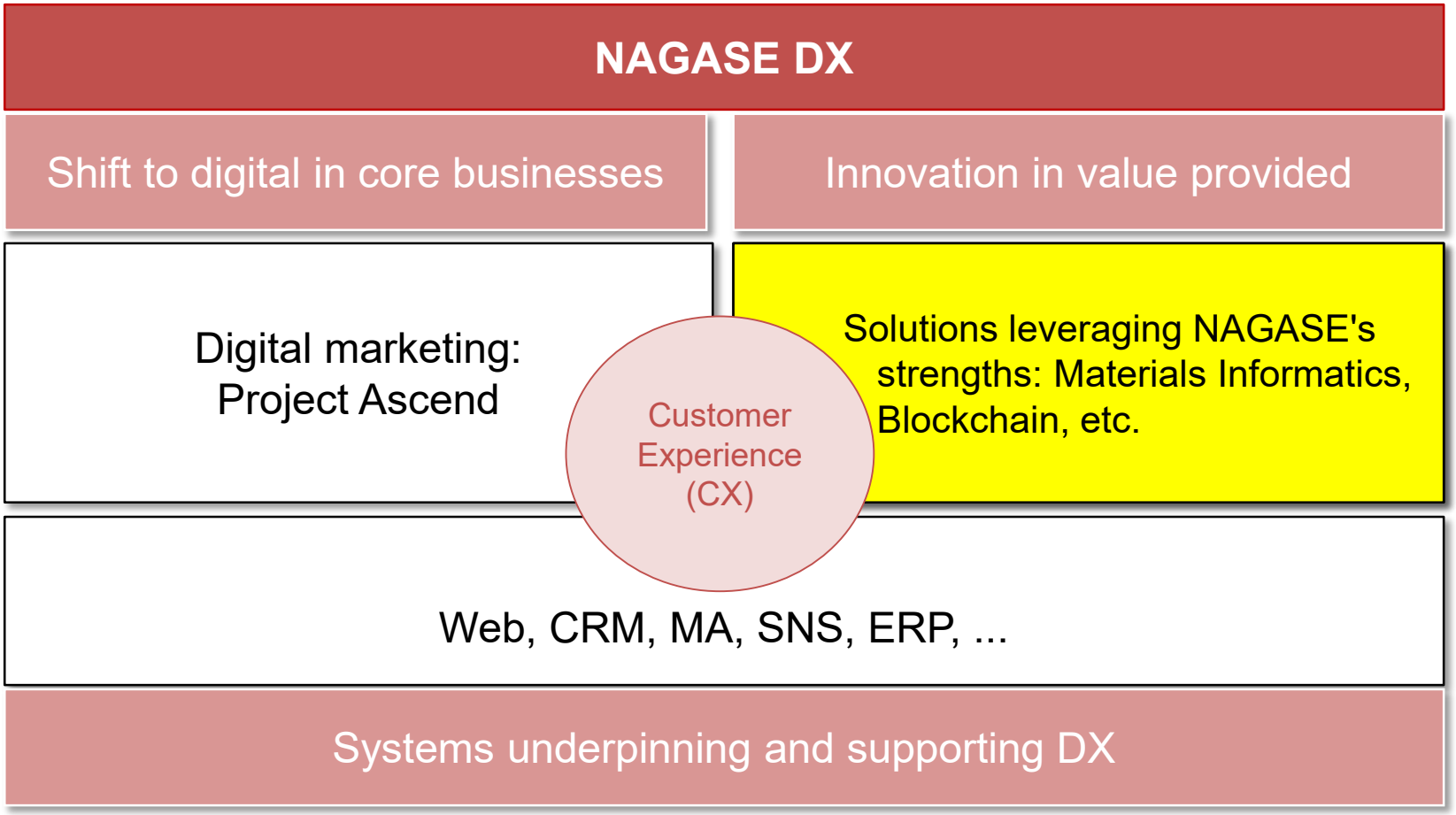
NAGASE

# Materials Informatics SaaS Services


**Yasumitsu Orii**

**Ph.D., Engineering**
**Executive Officer and General Manager of the New Value Creation Office**

# NAGASE's Digital Transformation (DX) Strategy




NVC Office
(New Value Creation Office)

Est. April 1st, 2017

# NAGASE Materials Informatics Platform

## Leading-edge materials development technology fusing data processing technology with materials science


×


= Materials Informatics

**While attention is being gathered on this technology because of its ability to significantly shorten R&D times, development costs and securing specialized human resources are issues**

↓

**NAGASE Materials Informatics allows users to utilize cutting-edge MI (materials informatics) services without making initial investments and only incurring running costs**

↓

**As an industry-standard R&D platform, this will contribute to value creation for our customers**

known materials 1,000,000,000

$10^{9}$

unknown materials

$10^{62}$

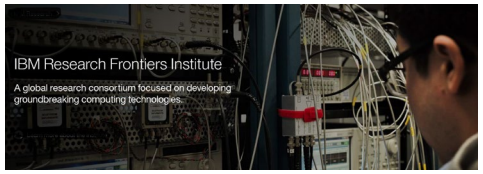
Reference : Kirkpatrick R.S, C.McMartin W.C Guida Chemical Space, Nature.432(7019):823-865, 2004
Drafted by Takeda, IBM Research - Tokyo, IBM Japan

# Background of Materials Informatics System Development

Service Launch (Nov. 18)

2016 2017 2018 2019 2020 2021

IBM Research Frontiers Institute




Nagase & Co., participation

Joint Development Agreement (JDA)

SaaS system construction

Phase1 Phase2 Phase3

Six RFI founding members: Nagase, Canon, Samsung electronics, JSR, Hitachi Metals, Honda R&D

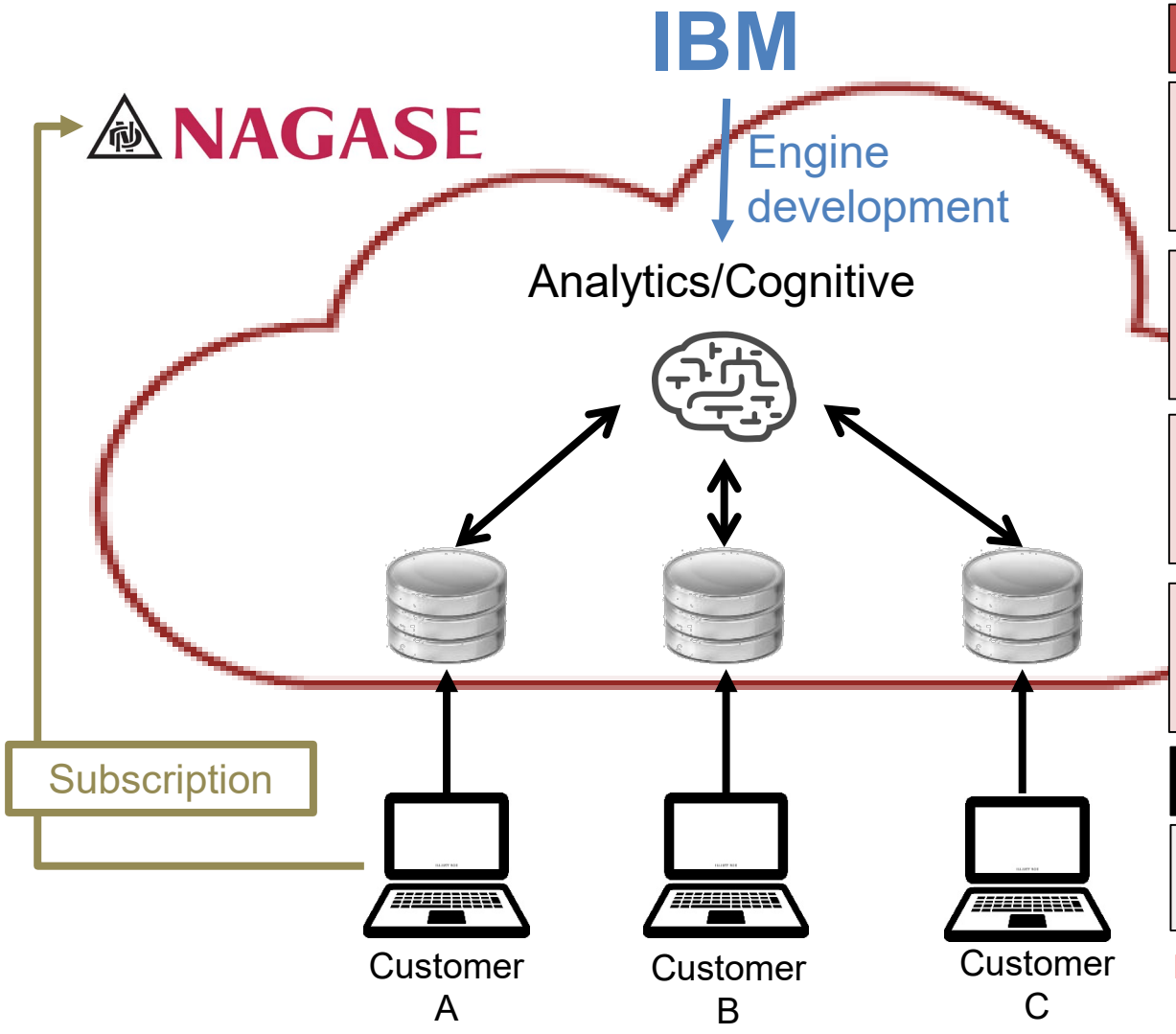
Established a JDA with IBM on one of the 10 development themes, Accelerated Material Discovery

| | 2019 (Jan-Dec) | 2020 (Jan-Dec) | 2021 (Jan-Dec) |
|---|---|---|---|
| Overview | System development: Hayashibara Co., Ltd. Nagase ChemteX Corporation | System development: Hayashibara Co., Ltd. Nagase ChemteX Corporation | Predictive model development |

# The "SaaS" (Software as a Service) Business Model

NAGASE

The SaaS business model is capable of generating benefits for both customer and operator so long as the operator can continue to provide a high level of service.




## Benefits to the customer

**IBM-developed engine**
Customers continue to enjoy cutting-edge technology

**Cloud-based software**
Customers can design their own solution without disclosing important customer data to us

**Graphical user interface**
Enables MI launch without the usual enormous investments (e.g. hiring data scientists)

**SaaS usable under a subscription model**
Removes need for large-scale systems investment

## Benefits to Nagase

Provides outlook for continuous, stable business revenue

**Rapid achievement of a multi-billion yen business**

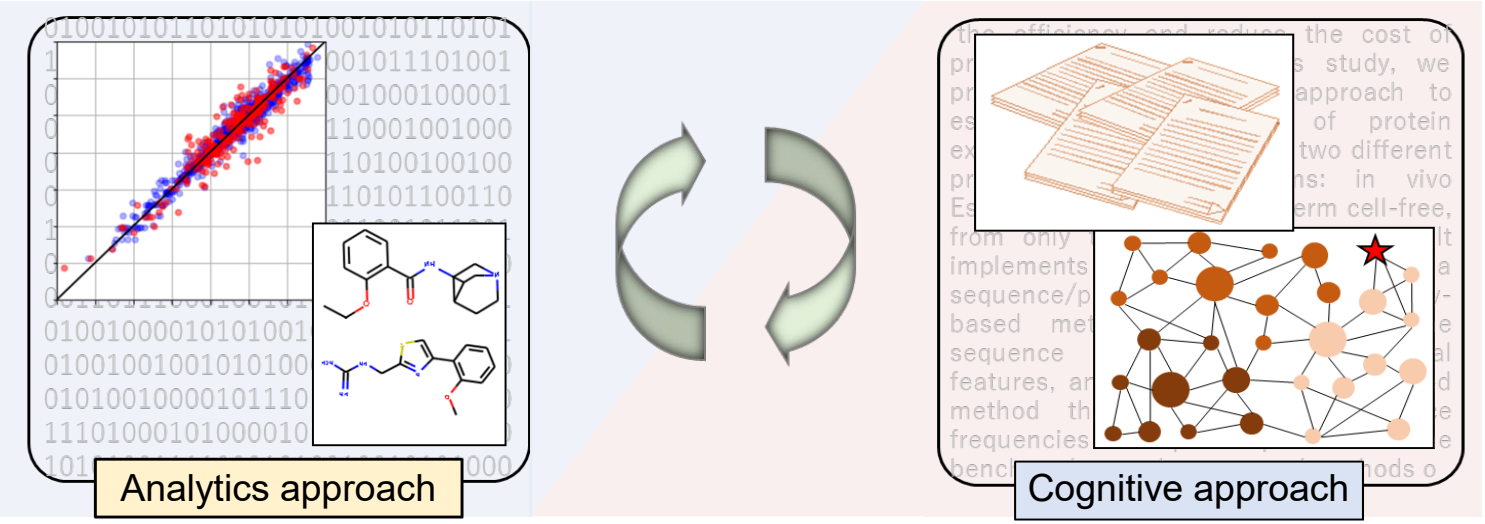
**(Annual usage fee × no. of customers)**

NAGASE

# The NAGASE MI Platform

We provide a development platform offering a comprehensive set of peripheral services, contributing to value creation for our customers

***Core Engine (Analytics, Cognitive)***

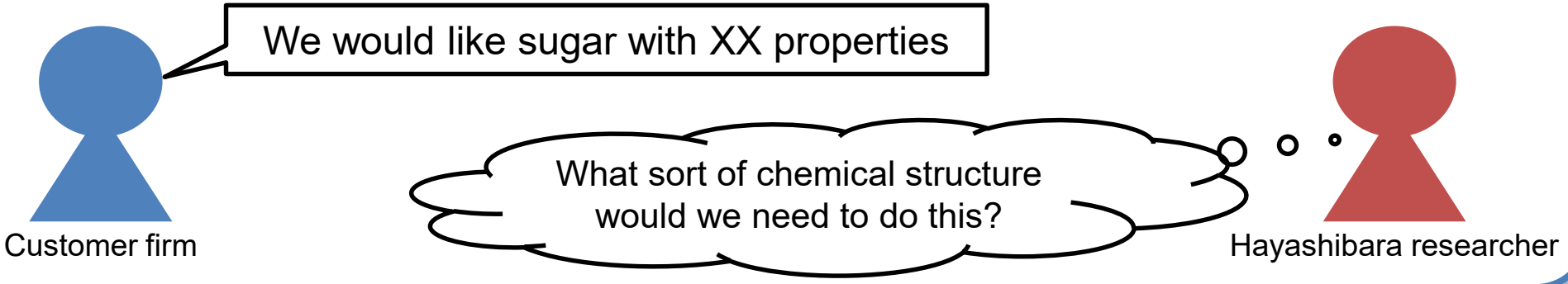



| Analytics | Approach | Cognitive |
|---|---|---|
| Small molecule structure and physical property values | Input | Documents (papers/technical materials) |
| Mathematical calculation, machine learning | Method | Language processing, data structuring |
| Chemical structural formula | Output | New knowledge |

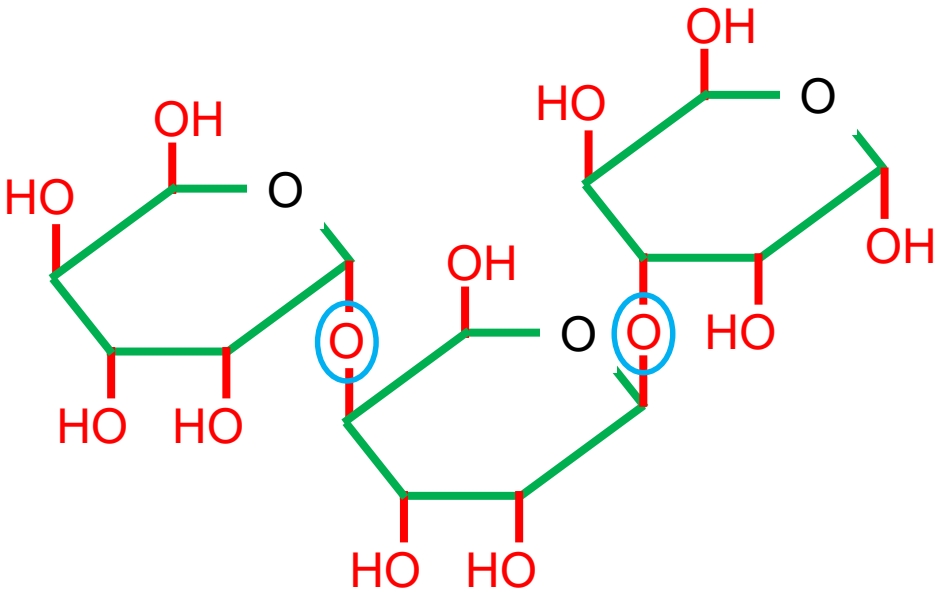
# Sample Use Case for Analytics

NAGASE

A daily issue at Hayashibara:




Since sugars have many structural variations (theoretically, more than 10 billion), it is very difficult to pinpoint sugars with specific physical property values.




Sample sugar structure (trisaccharide)

Types of sugar structures:

- Permutations of up/down orientation of OH groups:
  $2^5 \times 2^5 \times 2^5 = 2^{15}$
- Skeleton types:
  Minimum of 8 types per ring
  For 3 rings, $8^3$
- Bonding position between rings:
  OH groups: 5 positions x 5 positions x 5 positions = $5^3$

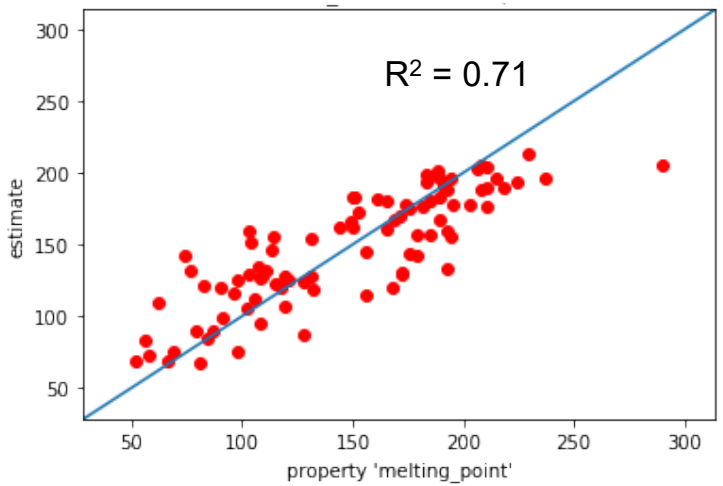
Structural variations:
$2^{15} \times 8^3 \times 5^3$ = over **10 billion possibilities**

# Designing Sugar with Analytics

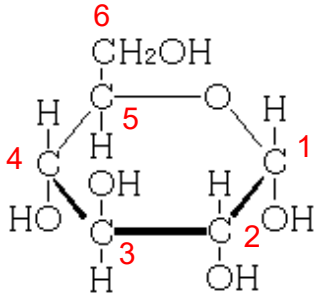
NAGASE

## Data set

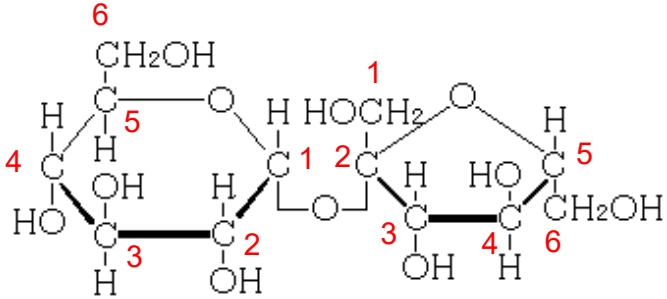
- 153 data points (monosaccharides, disaccharides, trisaccharides)
- Physical property value: Melting point




## Basic sugar skeleton




Glucose

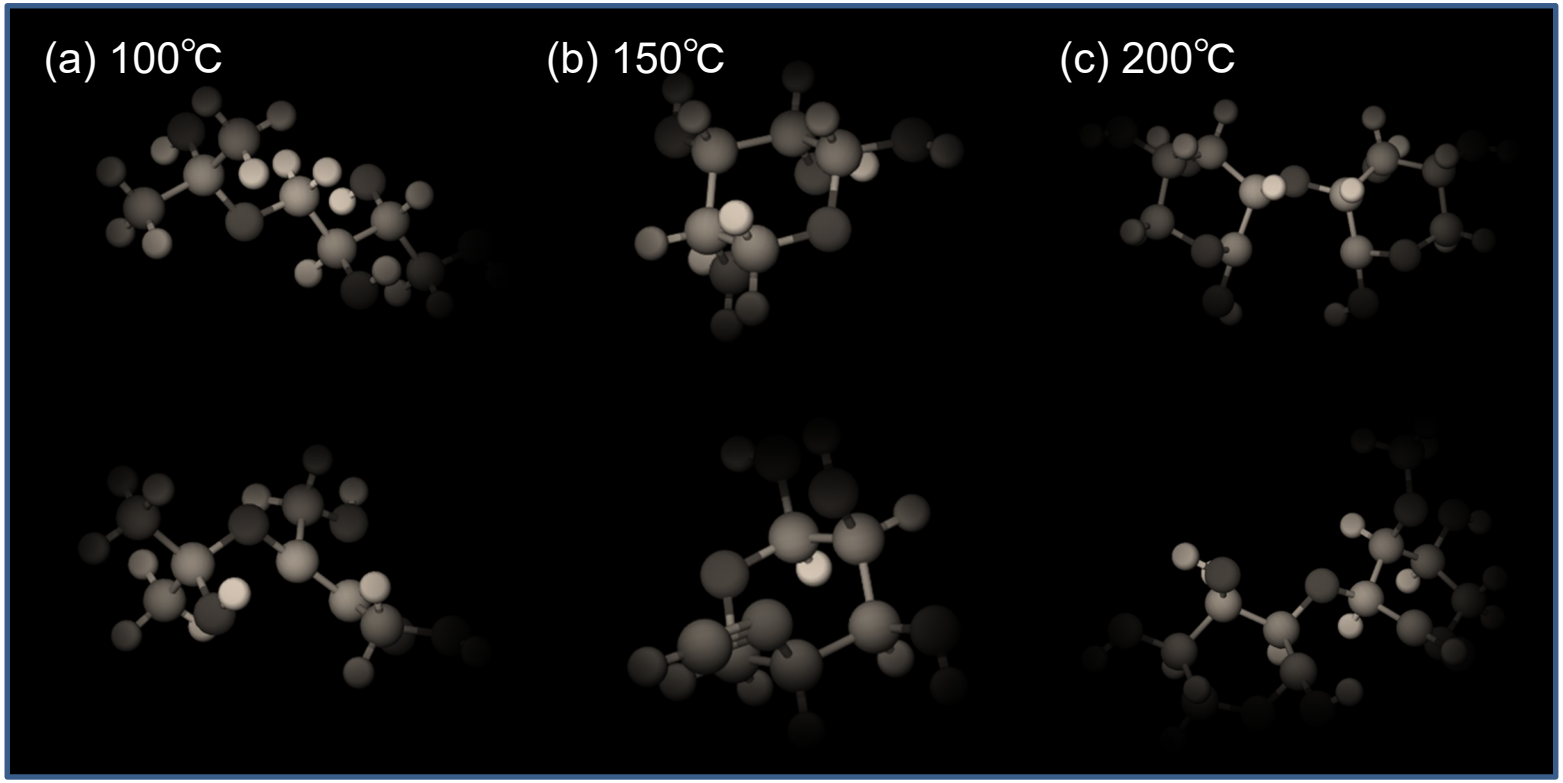



Sucrose

# Example Sugar Design

NAGASE

Analytics output



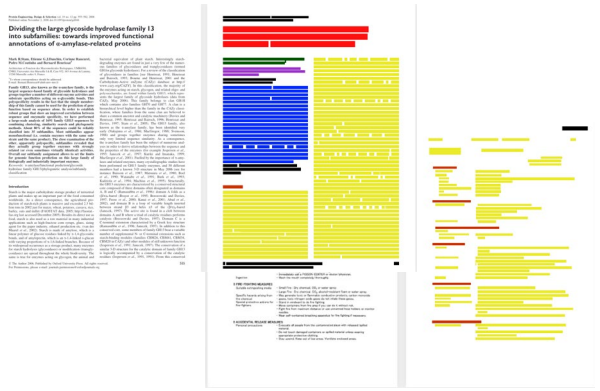

No. of sugar structures discoverable via analytics: 10 per day
(30 times faster than a highly-skilled researcher)

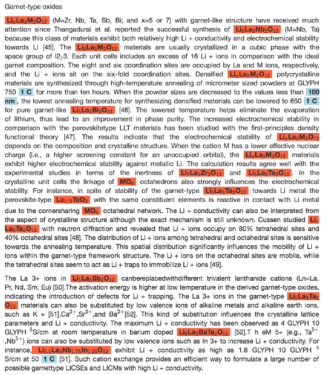
# Overview of the Cognitive Approach

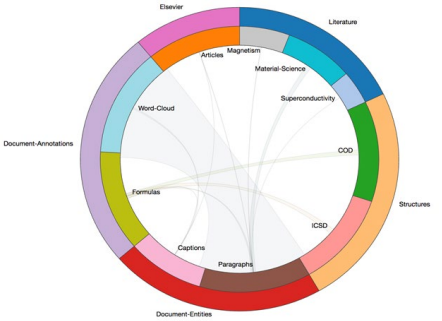
NAGASE

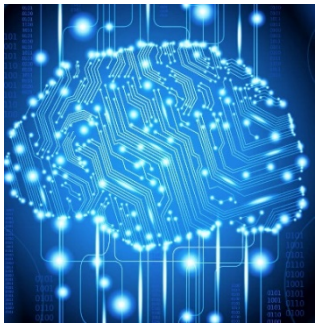
Reorganizing recording media into data with digital structure → Extracting specialized data from information → Converting specialized data into knowledge → Using knowledge to draw inferences, create insights

Parse PDFs/documents | Natural language processing | Knowledge graph search | Supposition model







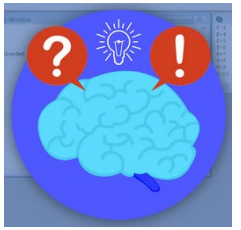
Big data

Analysis

Extracting knowledge

Forecasting

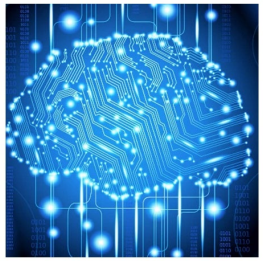
New insights

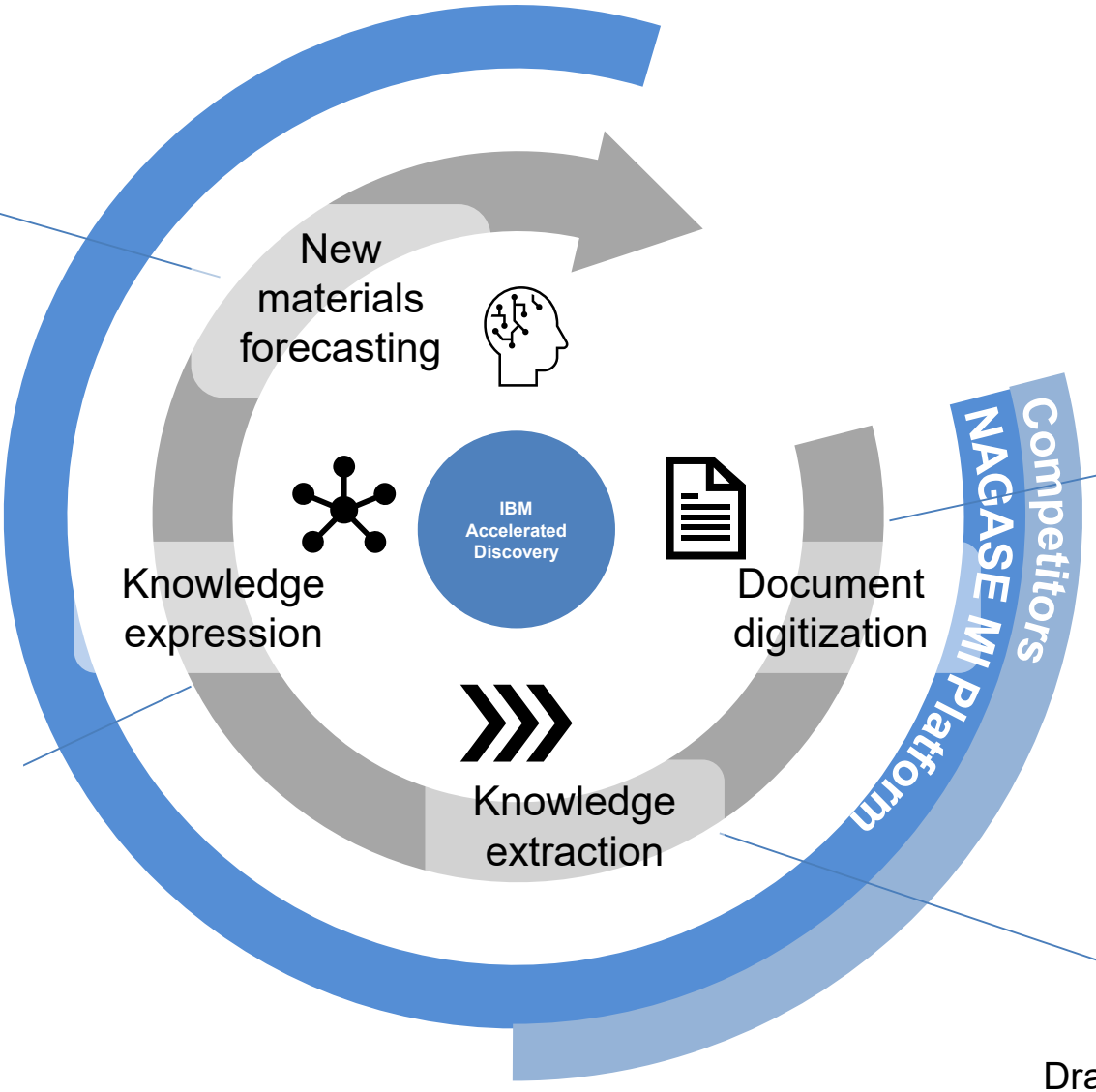


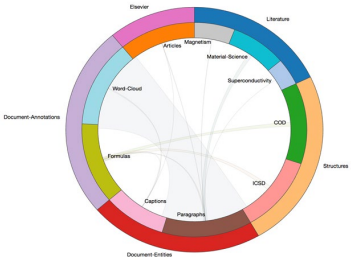
# Characteristics of the Cognitive Approach

NAGASE

World-class AI: State-of-the-art technology drives all processes from knowledge to reasoning





Drafted by IBM Research - Zurich

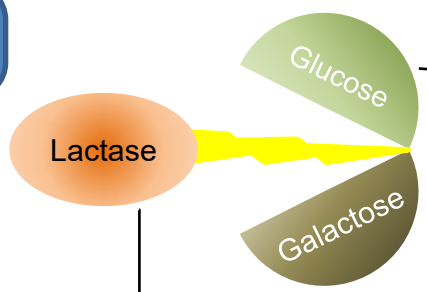
# Sample Use Case for Cognitive

NAGASE

## Is it possible to search for an enzyme that reacts with lactose from AI-generated knowledge of enzymes?

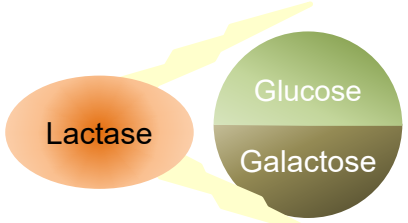
Lactose is a disaccharide commonly found in milk and dairy products

People whose stomachs don't rumble



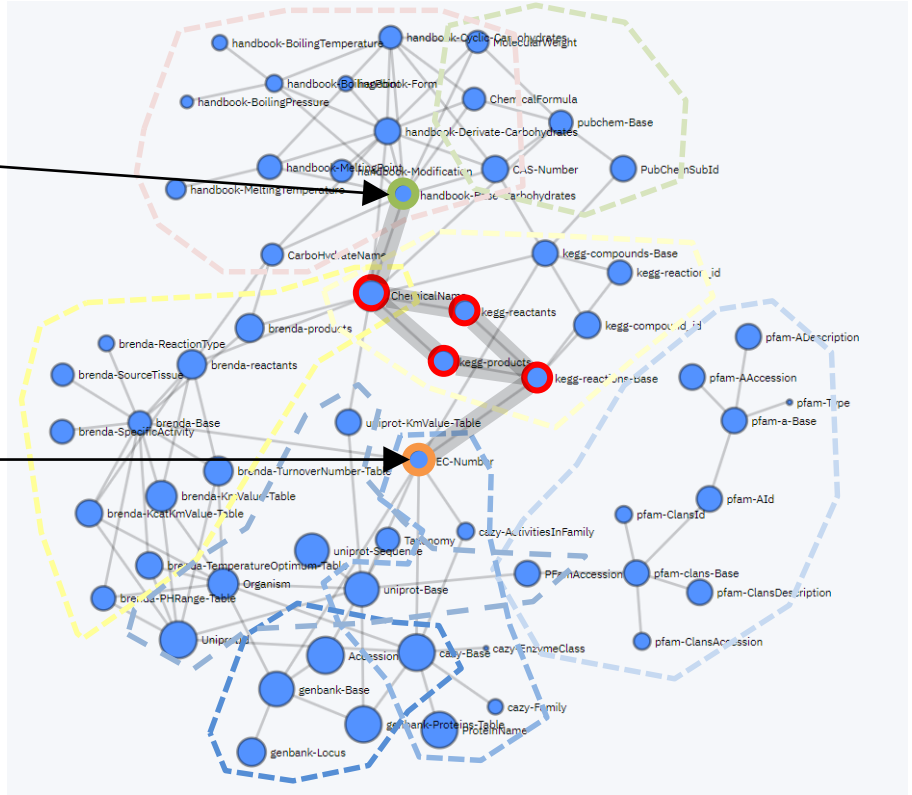

People whose stomachs rumble

Cause of rumbling stomachs




Poor efficacy

Enzyme knowledge graph




This contains data from one book and seven public databases.
These represent more than 11,000,000 data points.

# Knowledge Graph Evaluation

NAGASE

## Searching for an enzyme that reacts with lactase

|  | Expasy<br>**Experts search enzyme DB**<br>*The KG does not include Expasy | **Enzymes** |
|---|---|---|
| ○ ← | | Enzyme producing ketones from the reducing end of lactose (1.1.99.13) |
| ○ | ○ | Enzyme synthesizing lactose (2.4.1.22) |
| ○ | ○ | Enzyme producing phosphoric acid from lactose (2.7.1.207) |
| ○ ← | | Enzyme breaking down lactose (3.2.1.23) |
| ○ | ○ | Enzyme breaking down lactose (3.2.1.108) **Lactase** |
| ○ ← | | Enzyme hydrolyzing the non-reducing ends of oligosaccharides (3.2.1.140) |

Discovery of new knowledge

NAGASE

NAGASE
Bringing it all together

November 18, 2020
NAGASE & CO., LTD.

# NAGASE to Launch SaaS Service Powered by TABRASA New Material Search Platform: Value Provided by Data on Systematic Materials Informatics Knowledge Developed Jointly with IBM Will Accelerate R&D Innovation through Digital Transformation

- NAGASE, a trading company specializing in materials, has launched a cloud-based SaaS service for materials informatics which developed by jointly with IBM.
- The service will achieve an industry first in incorporating two different approaches: in addition to analytics, which are mainstream in materials informatics, it features a cognitive approach enabling more efficient searching for new materials.
- The NAGASE Group will leverage its customer networks to expand provision of the service widely throughout the industry.

MI is a materials development technology that utilizes artificial intelligence (AI) and the latest data processing techniques to efficiently search for new materials. Major materials manufacturers in Japan and abroad have been developing their own MI technology as a way of enabling them to achieve much shorter R&D timelines, but development costs and recruitment of specialist personnel have presented obstacles. TABRASA overcomes such obstacles, since the service is delivered through a SaaS platform that securely manages users' confidential information in IBM's cloud environment and offers a high degree of usability even in the absence of specialist personnel with advanced knowledge and techniques. Users can access a leading-edge MI service without initial investment, simply by paying running costs.

# NAGASE Materials Informatics Trademark

TABRASA


*Tabula rasa* is Latin for "a blank slate."

Like with the blank slate, we will engrave letters in the form of structuring, accumulating, and leveraging an abundance of knowledge to help generate new value for our customers. Thusly, we have named our product TABRASA.

Please click the link below to access our promotional video (only in Japanese)

https://www.youtube.com/watch?v=i_jlfMO_ipw

Nagase & Co., Ltd. strives to always be listening for the voices of the future, using TABRASA as a conduit to contribute to its customers' business success and innovation.

***Customer Success !!***

**Powered by**

TABRASA

Please access the following website for any inquiries about TABRASA (Japanese only).

**https://tabrasa.jp/**

# (Reference) Information by Segment

# Functional Materials Segment

NAGASE

## <Net Sales/Operating Income by Location>

(100 millions of yen)

| | | FYE 03/20 | | FYE 03/21 | | | |
|---|---|---|---|---|---|---|---|
| | | Interim | Full-Year | Interim | Vs. PY | Year Forecast | Vs. PY |
| Net sales | Domestic | 807 | 1,577 | 655 | 81% | 1,379 | 87% |
| | Overseas | 288 | 558 | 238 | 83% | 473 | 85% |
| | Eliminations | (223) | (442) | (191) | - | (427) | - |
| | Total | 872 | 1,693 | 702 | 80% | 1,425 | 84% |
| Operating income | Domestic | 20 | 40 | 16 | 80% | 33 | 83% |
| | Overseas | 8 | 14 | 5 | 59% | 10 | 73% |
| | Eliminations | (0) | (1) | (1) | - | (1) | - |
| | Total | 28 | 53 | 20 | 72% | 42 | 78% |

*Figures above are a combination of consolidated entities by location.
Inter-region eliminates are not reflected; adjusted provided in the eliminations column.
(Includes amortization of goodwill and technology-based assets)

## FYE March 2021 Second Quarter Results

**Net sales** ¥70.2 billion (80%)

- ◆ The Performance Chemicals Business recorded lower sales due to lower sales in coating raw materials and urethane materials as a result of lower automotive production
- ◆ The Specialty Chemicals Business recorded lower sales overall due to falling sales of processed industrial oil solutions and plastic materials resulting mainly from lower automotive production, despite strong performance of the filter business mainly due to growing demand for TVs/monitors

**Operating income** ¥2.0 billion (72%)

- ◆ Lower profits, mainly due to lower sales.

## FYE March 2021 Outlook

- ◇ In the second half, sales are to increase for products like coating raw materials, urethane materials, and processed industrial oil solutions mainly due to recovery in automotive production, and we forecast an increase in sales versus the first half
- ◇ For the full year, impact is to grow from the COVID-19 pandemic, with forecasted decreases in both sales and profit

# Advanced Materials & Processing Segment

NAGASE

## <Net Sales/Operating Income by Location>

(100 millions of yen)

| | | FYE 03/20 | | FYE 03/21 | | | |
|---|---|---|---|---|---|---|---|
| | | Interim | Full-Year | Interim | Vs. PY | Year Forecast | Vs. PY |
| Net sales | Domestic | 891 | 1,749 | 717 | 80% | 1,485 | 85% |
| | Overseas | 863 | 1,653 | 819 | 95% | 1,571 | 95% |
| | Eliminations | (378) | (731) | (293) | - | (646) | - |
| | Total | 1,377 | 2,670 | 1,243 | 90% | 2,410 | 90% |
| Operating income | Domestic | 28 | 54 | 17 | 63% | 27 | 50% |
| | Overseas | 17 | 30 | 18 | 105% | 31 | 103% |
| | Eliminations | (1) | 1 | (1) | - | (4) | - |
| | Total | 44 | 85 | 34 | 78% | 54 | 63% |

*Figures above are a combination of consolidated entities by location.
Inter-region eliminates are not reflected; adjusted provided in the eliminations column.
(Includes amortization of goodwill and technology-based assets)

## FYE March 2021 Second Quarter Results

**Net sales** ¥124.3 billion (90%)

◆ The Colors & Advanced Processing Business recorded lower sales overall, mainly due to decreased sales of dyes and additives, digital print processing materials, and plastic resins for industrial and packaging applications and conductive materials in Japan

◆ The Polymer Global Account Business recorded lower sales overall due to decreasing sales in Japan and ASEAN, while sales were slightly down for plastics in Greater China

**Operating income** ¥3.4 billion (78%)

◆ Lower profits due to declining sales and degraded market conditions in the digital print processing materials business

## FYE March 2021 Outlook

◇ In the second half, although sales of dyes and plastics are expected to gradually recover, sales of digital print processing materials are expected to decrease due to COVID-19, with this impact forecasted to lead to falling sales and lower sales versus the first half

◇ We project lower sales and profits for the full year

# Electronics Segment

## <Net Sales/Operating Income by Location>

(100 millions of yen)

| | | FYE 03/20 | | FYE 03/21 | | | |
|---|---|---|---|---|---|---|---|
| | | Interim | Full-Year | Interim | Vs. PY | Year Forecast | Vs. PY |
| Net sales | Domestic | 583 | 1,174 | 557 | 96% | 1,126 | 96% |
| | Overseas | 325 | 661 | 338 | 104% | 615 | 93% |
| | Eliminations | (336) | (684) | (351) | - | (716) | - |
| | Total | 573 | 1,151 | 544 | 95% | 1,025 | 89% |
| Operating income | Domestic | 20 | 39 | 22 | 110% | 42 | 107% |
| | Overseas | 9 | 17 | 14 | 147% | 23 | 133% |
| | Eliminations | +0 | (3) | (1) | - | (3) | - |
| | Total | 31 | 53 | 35 | 113% | 62 | 115% |

*Figures above are a combination of consolidated entities by location.
Inter-region eliminates are not reflected; adjusted provided in the eliminations column.
(Includes amortization of goodwill and technology-based assets)

## FYE March 2021 Second Quarter Results

**Net sales** ¥54.4 billion (95%)

◆ Although sales of abrasive-related products for intermediate semiconductor processes and materials for notebook PCs were strong, sales of photolithography materials, formulated epoxy resins, and equipment-related products decreased, resulting in a decrease in sales as a whole

**Operating income** ¥3.5 billion (113%)

◆ Despite reduced sales, increased profitability in certain manufacturing subsidiaries led to higher profit

## FYE March 2021 Outlook

◇ In the second half, formulated epoxy resins are to recover in on-board applications and remain strong in electronic components used for mobile devices, leading to increased sales versus the first half. However, in our business for notebook PCs and other products, given the uncertainty in the display-related market ahead we forecast lower sales versus the first half, and lower sales in the segment overall versus the first half

◇ For the full year, despite reduced sales, impact from improved profit and loss in certain manufacturing subsidiaries and other factors are expected to lead to higher profit

# Mobility & Energy Segment

NAGASE

## <Net Sales/Operating Income by Location>

(100 millions of yen)

| | | FYE 03/20 | | FYE 03/21 | | | |
|---|---|---|---|---|---|---|---|
| | | Interim | Full-Year | Interim | Vs. PY | Year Forecast | Vs. PY |
| Net sales | Domestic | 387 | 764 | 251 | 65% | 611 | 80% |
| | Overseas | 384 | 723 | 291 | 76% | 627 | 87% |
| | Eliminations | (116) | (227) | (82) | - | (218) | - |
| | Total | 656 | 1,260 | 460 | 70% | 1,020 | 81% |
| Operating income | Domestic | 5 | 10 | (1) | - | 3 | 37% |
| | Overseas | 5 | 8 | 2 | 46% | 8 | 102% |
| | Eliminations | +0 | +0 | +0 | - | +0 | - |
| | Total | 11 | 18 | 1 | 10% | 11 | 58% |

*Figures above are a combination of consolidated entities by location.
Inter-region eliminates are not reflected; adjusted provided in the eliminations column.
(Includes amortization of goodwill and technology-based assets)

## FYE March 2021 Second Quarter Results

**Net sales** ¥46.0 billion (70%)

◆ In the Mobility Solutions Business, sales declined due to reduction in the resins business in all regions other than Greater China, mainly caused by lower automotive production in the aforementioned regions

**Operating income** ¥0.1 billion (10%)

◆ Lower profits, mainly due to lower sales.

## FYE March 2021 Outlook

◇ In the second half, automobile production is to recover, resin sales in Japan and overseas are to increase compared to the first half, and sales of materials and parts related to car electronics are to remain strong mainly due to the launch of new businesses, leading to a forecast of increased sales versus the first half

◇ For the full year, impact is to grow from the COVID-19 pandemic, with forecasted decreases in both sales and profit

# Life & Healthcare Segment

NAGASE

## <Net Sales/Operating Income by Location>

(100 millions of yen)

| | | FYE 03/20 | | FYE 03/21 | | | |
|---|---|---|---|---|---|---|---|
| | | Interim | Full-Year | Interim | Vs. PY | Year Forecast | Vs. PY |
| Net sales | Domestic | 508 | 1,044 | 495 | 97% | 1,002 | 96% |
| | Overseas | 73 | 468 | 512 | 695% | 986 | 210% |
| | Eliminations | (145) | (298) | (148) | - | (333) | - |
| | Total | 437 | 1,215 | 859 | 196% | 1,655 | 136% |
| Operating income | Domestic | 32 | 67 | 30 | 95% | 58 | 86% |
| | Overseas | 3 | 19 | 28 | 721% | 53 | 271% |
| | Eliminations | (16) | (47) | (29) | - | (55) | - |
| | Total | 19 | 39 | 30 | 152% | 56 | 141% |

*Figures above are a combination of consolidated entities by location.
Inter-region eliminates are not reflected; adjusted provided in the eliminations column.
(Includes amortization of goodwill and technology-based assets)

## FYE March 2021 Second Quarter Results

**Net sales** ¥85.9 billion (196%)

◆ Sales increased mainly due to increased sales of pharmaceutical raw materials/intermediates and medical materials and of hygiene products-related materials, and due to the addition of sales from the Prinova Group, factors that compensated for the decline in the sales of TREHA™ and other food materials (other than Prinova Group) and AA2G™ and other cosmetics-related materials

**Operating income** ¥3.0 billion (152%)

◆ Higher profits, mainly due to higher sales.

## FYE March 2021 Outlook

◇ In the second half, sales of Prinova will continue to be strong, with sales at similar levels to those in the first half, and sales of pharmaceutical raw materials and intermediates, as well as medical materials, are expected to remain strong. However, we presume that there will be continued impact from the COVID-19 pandemic and inbound demand will not recover, with sales of Hayashibara Co., Ltd. products like TREHA™ and AA2G™ to be lower versus the first half, leading to a forecasted decrease in sales overall for the segment versus the first half

◇ For the full year, impact is to grow from Prinova consolidation, with forecasted increases in both sales and profit

# For Inquiries

Please use the following contact information to reach us in the event of any inquiry regarding today's presentation or regarding these materials.

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