

Yokogawa IR Day 2021

~ AG2023 Life Business ~

Vice President
Life Business Headquarters

Hiroshi Nakao

December 3, 2021

Securities Code: 6841
Yokogawa Electric Corporation

Self-introduction

Vice President
Head of Life Business Headquarters

Hiroshi Nakao



Apr. 1989	Joined the Company
Apr. 2004	Solution Business Headquarters, Solution Sales Division 2, Head of Sales Department (Area : China・Korea・Taiwan)
Feb. 2004	Yokogawa (Shanghai) Instrumentation Co., Ltd. Head of Sales Department
Jan. 2006	Yokogawa (China) Co., Ltd. Head of Sales Department 1
Jan. 2007	Solution Business Division, Sales Division 3, Head of Account Sales Department 2
Apr. 2016	Yokogawa Solution Service corporation KANSAI Area Headquarters, Head of KANSAI Sales Department 1
Apr. 2019	Vice President Head of Life Innovation Business Headquarters
Apr. 2021	Vice President Head of Life Business Headquarters (present)

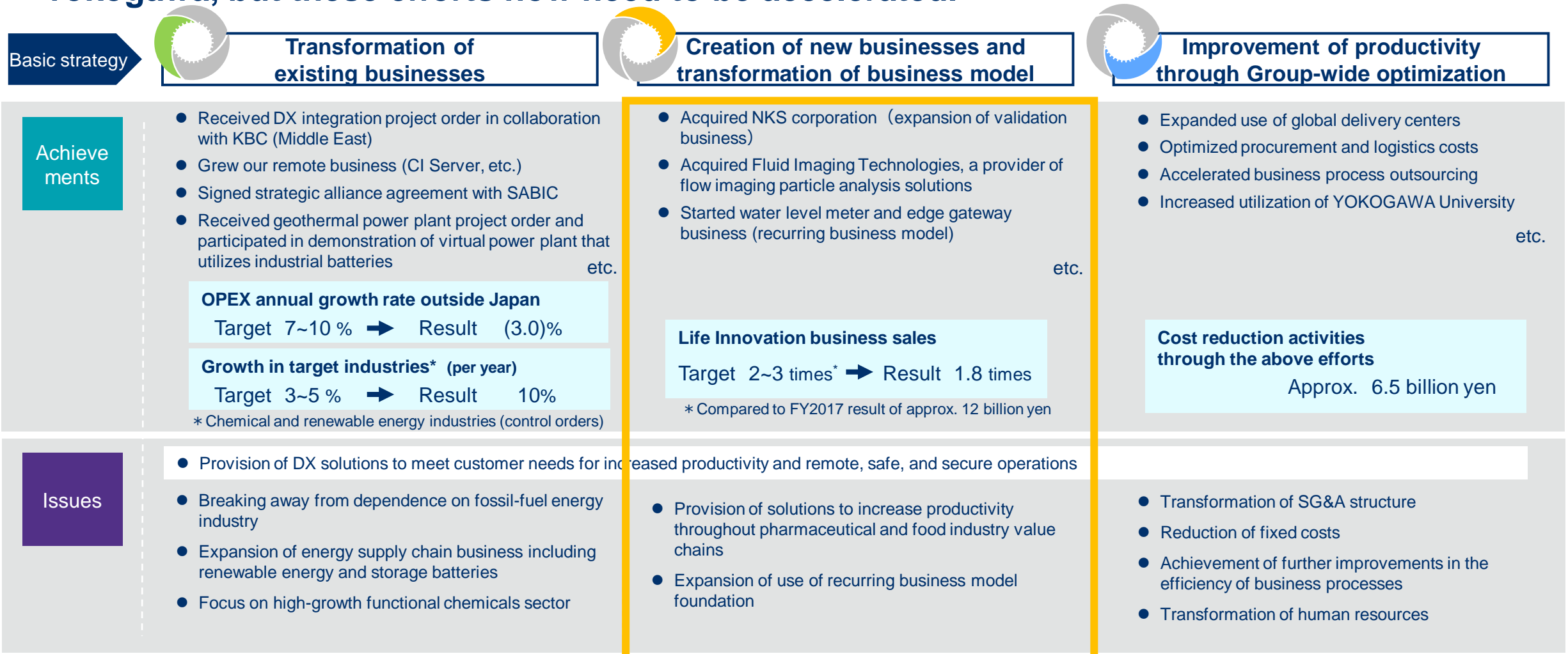
AG2023 Life Business

1. TF2020 Review
2. Life Business Overview / Vision for 2030
3. AG2023 Life Business Basic Strategy
 - 3-1 Market Environment
 - 3-2 Scale of Business
 - 3-3 Segment Strategy
 - ① Life Science
 - ② Bio Process
 - ③ Pharmaceutical
 - ④ Food & Beverage
 - ⑤ Water

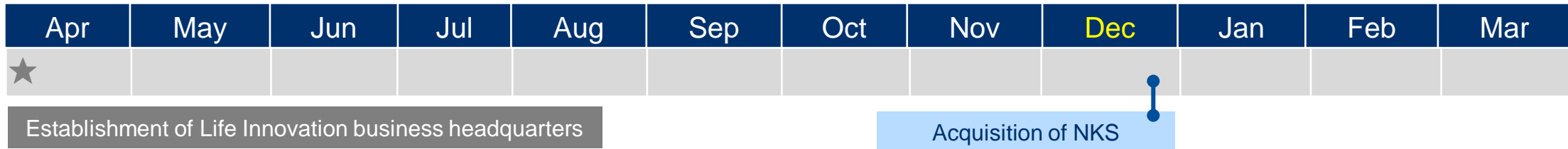
1. TF2020 Review

TF2020 Review Basic strategies – Achievements & Issues

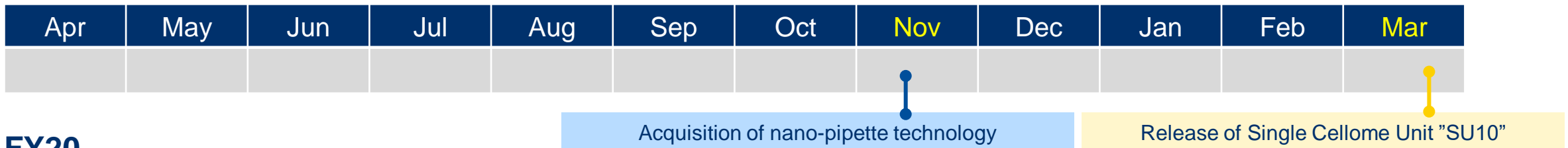
In a dramatically changing business environment, we took on the challenge of transforming Yokogawa, but these efforts now need to be accelerated.



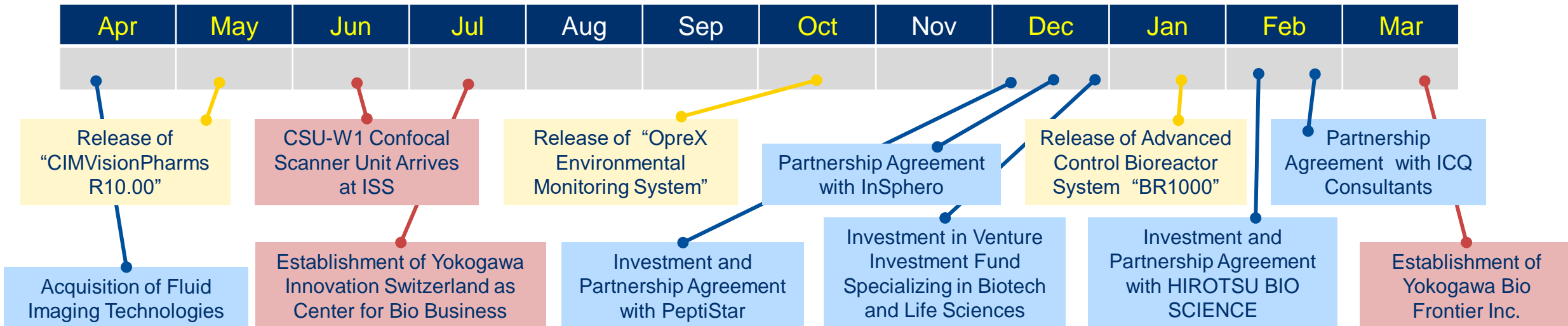
FY18



FY19



FY20



2. Life Business Overview / Vision for 2030

Business segment

- Expanding experience and know-how acquired in “Japan” to overseas countries as Center of Excellence (CoE)
- Expand business focusing on "North America / Europe / Asia", which has a large market, and expand to other countries / regions

Energy & Sustainability

- Oil & gas
- Petrochemicals
- Renewable energy
- Electric power
- EMS
- Energy storage

Materials

- Functional chemicals
- Biomass materials
- Pulp & paper
- Textiles
- Steel
- Non-ferrous metals
- Mining
- Mobility
- Electrical/electronics

Life

- Pharmaceuticals
- Healthcare
- Food
- Water

Contributing to SDGs in the Life Business by 2030

Improving efficiency in society & industry

Value chain optimization for pharmaceutical and food customers (Consultation, ERP, MES, EMS)



Improving health & safety

Life science business
Pharmaceuticals and food
Lifeline, water and sewage businesses



Creating a resource-recycling ecosystem

Contributing to functional chemical and biochemical industries, Supporting the improvement of the efficiency of recycling businesses



Ideal form for Life Business

Speed up the expansion to other industries, the expansion of business areas, and the shift to a solution business in a way that fits the frontline business.

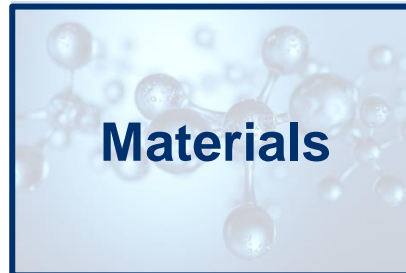
Quickly respond to and solve broad social issues with business segments that are focused on these social issues.

Ideal form for the industry segments



Energy & Sustainability

Support safe and optimal operations in a diverse range of energy sectors, spanning the entire value chain of production, supply, use, disposal, and recycling.



Materials

Contribute to the achievement of a recycling-oriented society that is in harmony with the environment.



Life

Contribute to the supply of pharmaceuticals that protect people's lives and health, and the supply of safe water and food everyone can drink and eat with peace of mind.



Three goals

AG2023 Life Business

Contribute to the supply of pharmaceuticals that protect people's lives and health, and the supply of safe water and food everyone can drink and eat with peace of mind.

Life Business Vision (2021 – 2030)

We will lead the world in advancing
“Bio Industrial Autonomy(BIA)”, and
contribute to a future embracing global harmony.

Business Domain

Pharmaceutical, Food, Beverage, Water & Biotech

Our Strengths

“Measurement, Imaging, Analysis, Diagnosis, Integration”

Basic research

Applied research

Development

Production

Logistics & service

● Life science business



Confocal Scanner Unit
"CSU-W1 SoRa"



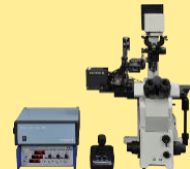
High-Content Screening System
"CV8000"



Benchtop High-Content Analysis System
"CQ1"



Intracellular Sampling Single Cellome™ System
"SS2000"



Nano-point Delivery Single Cellome™ Unit
"SU10"

Single-cell Analysis

● Bioprocess business

Cell-based manufacturing

Lab



Advanced Control Bioreactor System
"BR1000"

Production

Advanced measurement and control unit for manufacturing reactor

Biological contamination management

● Water (Water & Waste water Treatment, Distribution)

- Integrated management
- Wide area monitoring
- Optimized operation
- Equipment management
- Operator training simulator
- Field instruments
- Liquid Analyzers



Production control system for regenerative medicine

● Pharmaceutical business

● Food & Beverage business

- Quality management
- Production / Manufacturing management
- Asset management
- Environmental monitoring system
- Process control
- Field instruments

OpreX™ Environmental Monitoring System

OpreX™ Laboratory Information Management System



Calibration & Validation (NKS) / Particle observation solutions (Yokogawa Fluid Imaging Technologies)



Digital twin solutions (Insilico Biotechnology)



Dotted lines indicate future release plan

M&A, Alliance

3. AG2023 Life Business Basic Strategy

3-1 Market Environment



3-1 Market Environment (Life Business)

Life Science

- Personalized medicine studies are increasing
- Increasing need of sophistication and automation in laboratory experiment
- Accelerating Open innovation
- Growing demand in live cell imaging field

Bio Process

- Progress in technology such as Genome analysis/manipulation, cell processing
- Application to pharmaceutical, food, materials
- Market ranking and share are not fixed yet

Pharmaceutical

- Data Integrity (DI) demand worldwide : Increasing as GMP regulations are spreading
- Expansion of biopharmaceuticals
- Needs of PIC/S member countries - Introduction of audit response system
- New systems are required for new modalities (regenerative medicine, peptides, etc.)

Food & Beverage

- While major US and EU customer companies supply products globally, there are also many small and medium-sized customers in each country
- Accelerated remoteization / automation / autonomy due to shortage of human resources and infectious disease control
- smartification of the primary industry and accelerating utilization of food tech technology

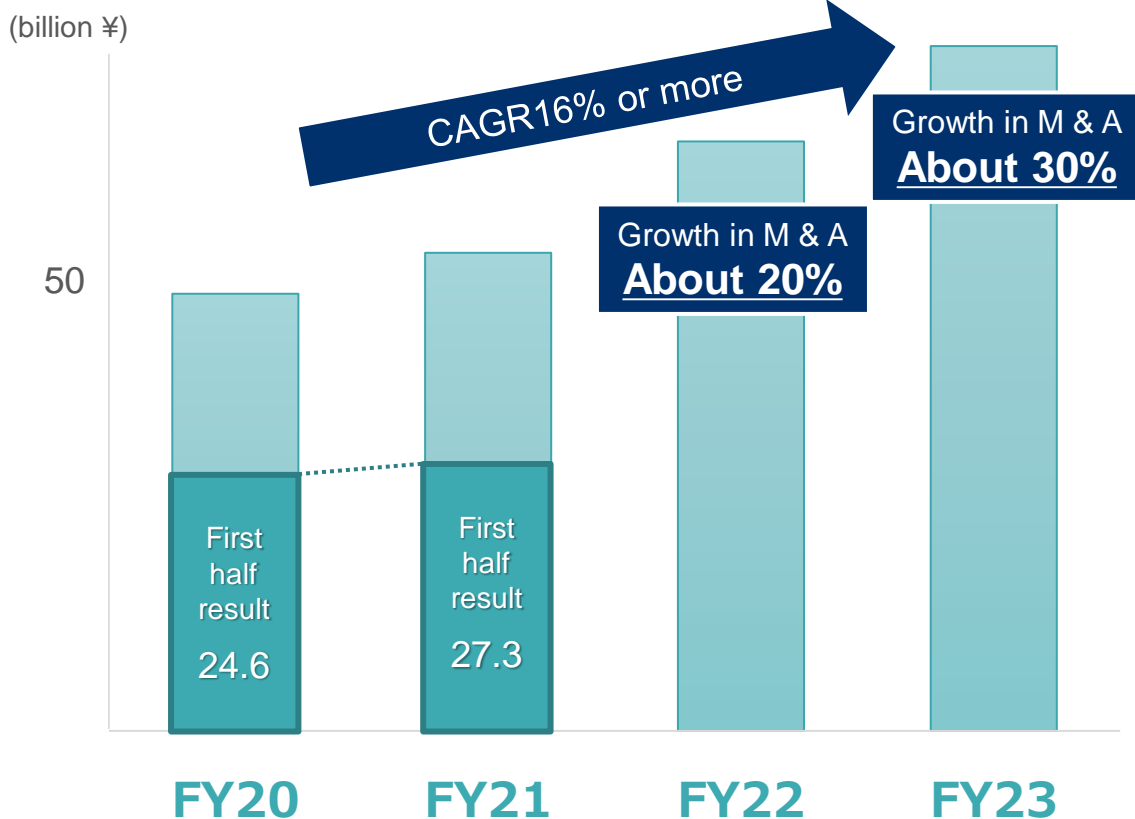
Water

- Outlook for global growth in the monitoring, control and data field as water infrastructure investment is increasing
- Increasing demand for water due to population growth, and emerging problems on stable water supply
- Demands vary from region to region, and it is necessary to provide solutions according to the stage of development

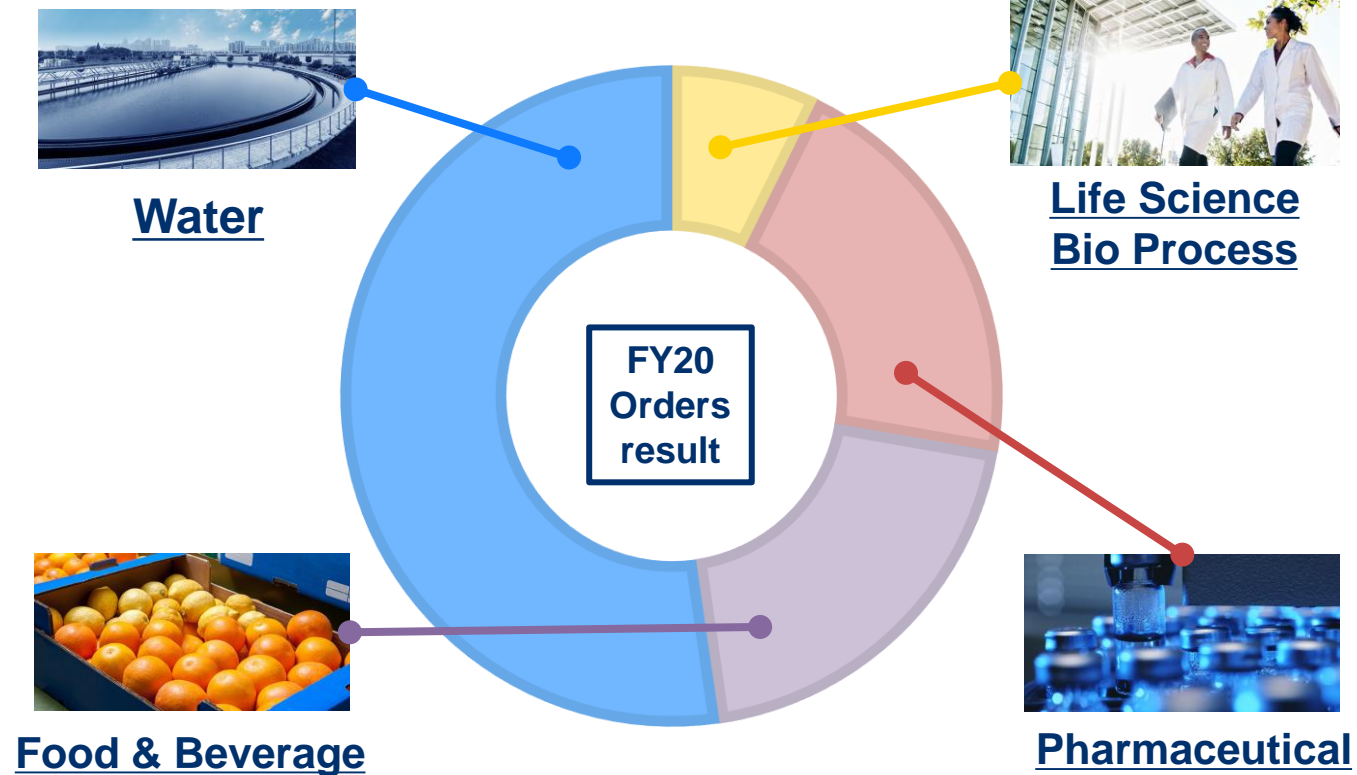
3-2 Scale of Business

Leading growth in biotechnology, including M&A and Alliances

By Year (Orders)



By Industry (Orders)

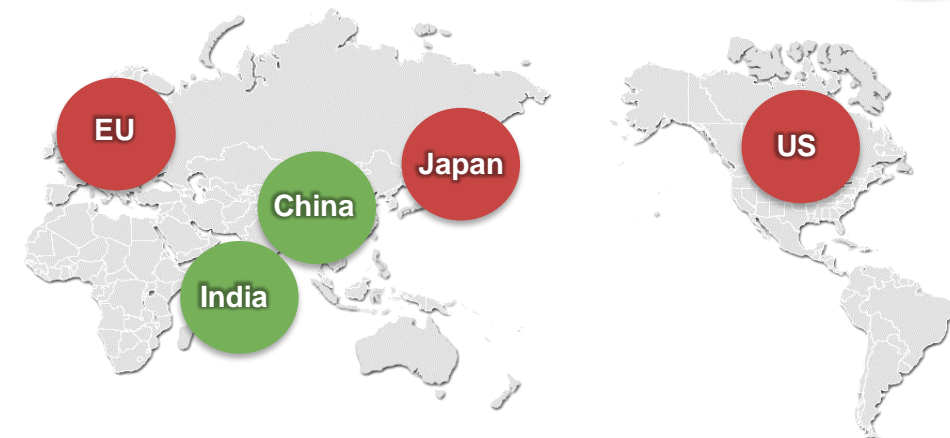


Basic Strategy

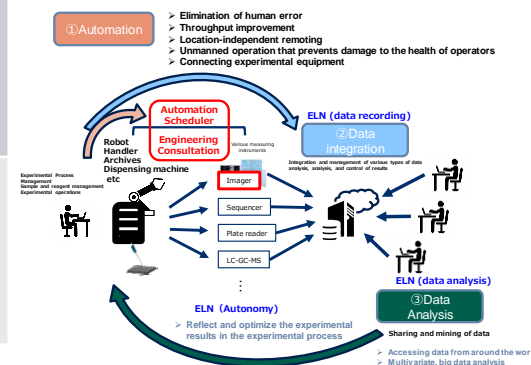
Focus Area	<ul style="list-style-type: none"> US : The world's largest market (Most important area) EU : Second largest market after US China/India : High market growth
Existing business	<ul style="list-style-type: none"> Expansion of functions of imaging equipment (CSU, HCA, Single-cell, FlowCam)
New product New business	<ul style="list-style-type: none"> Lab automation Remote analysis service system Search and develop technologies for next generation microscope Testing and diagnosis support business
Issue	<ul style="list-style-type: none"> Improving name recognition and awareness overseas

CSU : Confocal Scanner Unit / HCA : High-Content Analysis /
FlowCam : Flow Imaging Microscopy (Yokogawa Fluid Imaging Technologies products)

Focus Area



Lab automation



Cancer diagnosis business



New product : Single Cellome System “SS2000”

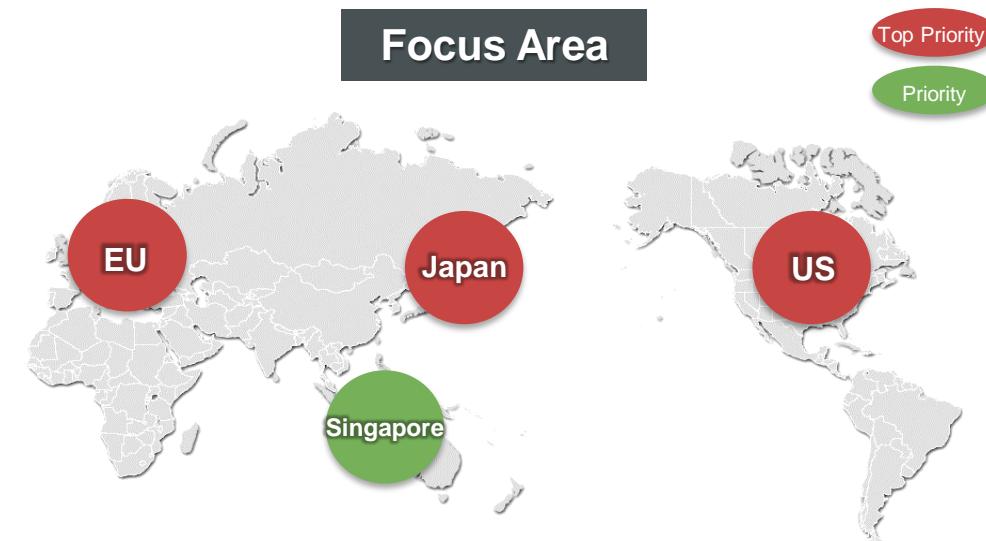
Develops Single Cellome System “SS2000” for Intracellular Sampling

- A single-cell analysis solution that revolutionizes efficiency in drug discovery research by automating the collection of specific cells and intracellular components -



3-3 ②Bio Process


Basic Strategy	
Focus Area	<ul style="list-style-type: none"> US : The world's largest market (Most important area) EU : Second largest market after US
Existing business	<ul style="list-style-type: none"> Advanced Control Bioreactor System 「BR1000」
New product New business	<ul style="list-style-type: none"> Cell production (BDX) Solutions Culture process Digital twin Scalable reactor system (production scale) Establishment of multi-component sensing technology
Issue	<ul style="list-style-type: none"> Improving name recognition and awareness overseas Enhancement of applications



2021/11/2 Press release
Yokogawa Acquires Insilico Biotechnology, Developer of Innovative Bioprocess Digital Twin Technology



+



(Digital Twin)

Bio-Process DX Solution (Bio-DX)

<https://www.yokogawa.com/news/press-releases/2021/2021-11-02/>

Synergies with Insilico Biotechnology

Insilico Biotechnology 's technology

1. Modeling

- Construction of metabolic model
- Various cell types can be constructed

2. Bioprocess analysis

- Simulation bioprocess analysis

3. Condition optimization

- Propose optimal conditions in a short time from millions of culture conditions

4. Bioprocess control

- Real-time analysis of reaction system
- Keep the state of the optimal process

Process development

INSILICO



BR1000

Culture condition
optimization solution

Scale-up



Scale-up solution

Production scale

INSILICO



Advanced
measurement and
control unit for
manufacturing reactor
(under development)

Forecast Guidance
Solution

Bio-Process DX Solution

3-3 ③Pharmaceutical

Basic Strategy

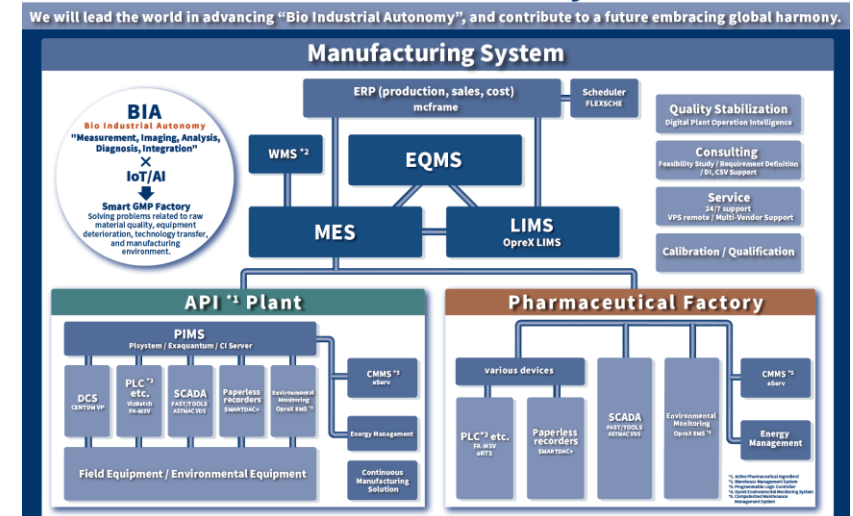
Focus Area	<ul style="list-style-type: none"> US : The world's largest market EU : Leading the market of biopharmaceuticals and pharmaceuticals China/India : Leading the market of small molecule drug substances
Existing business	<ul style="list-style-type: none"> Expansion of problem-solving solution (MES / LIMS / EQMS cooperation) business for PIC/S member countries OpreX LIMS, OpreX EMS, eServ
New product New business	<ul style="list-style-type: none"> Microbial contamination management solution Production control system for regenerative medicine Providing solutions for new processes (polymer/medium molecule/continuous production)
Issue	<ul style="list-style-type: none"> Strengthening engineering resources Human resource development that can propose problem-solving solution

PIC/S : Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme / MES : Manufacturing execution system
 LIMS : Laboratory information management system / EQMS : Enterprise quality management system / EMS : Environmental monitoring system
 eServ : Computerized maintenance management system

Focus Area



Smart GMP Factory

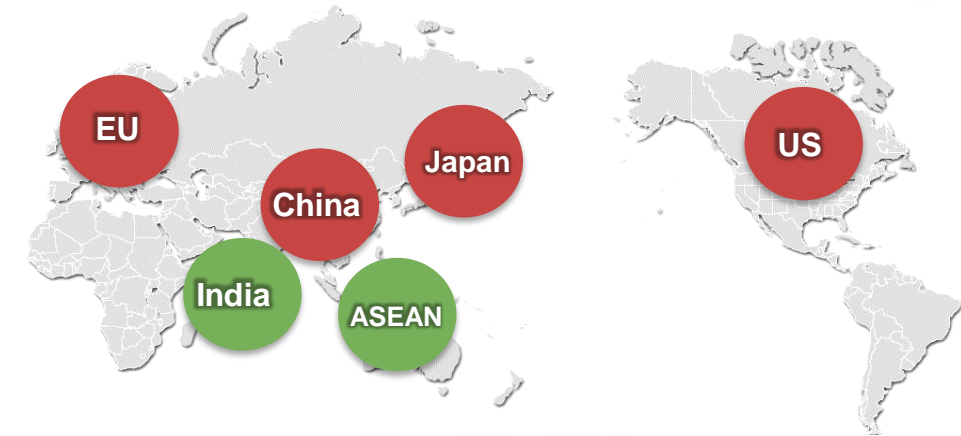


3-3 ④ Food & Beverage

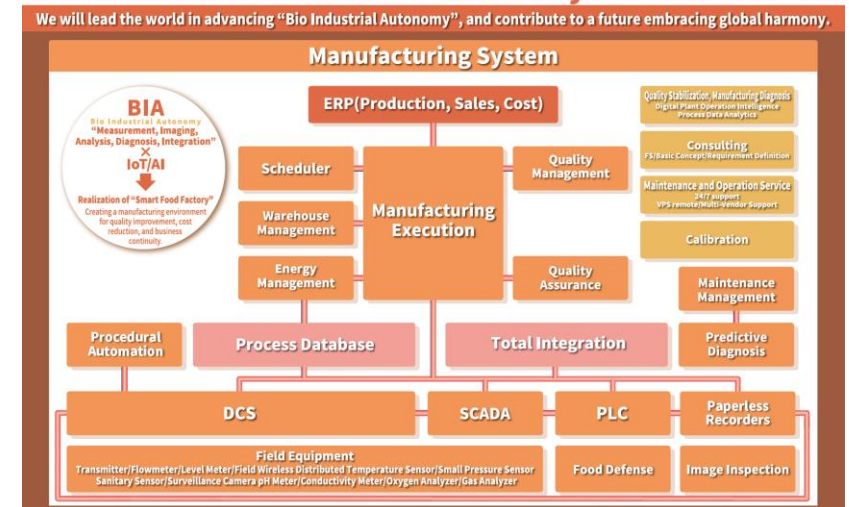
Basic Strategy

Focus Area	<ul style="list-style-type: none"> China / US : Large market EU : Low growth but large market size India・ASEAN : High growth
Existing business	<ul style="list-style-type: none"> Development of field equipment and control systems (many achievements in dairy industry, beverages, and sugar manufacturing overseas) Expansion of problem-solving solution business
New product New business	<ul style="list-style-type: none"> Microbial contamination management solution Next-generation smart factory (system /equipment cooperation) New sensing technology Factory automation/autonomy
Issue	<ul style="list-style-type: none"> Strengthening engineering resources Human resource development that can propose problem-solving solution

Focus Area



Smart Food Factory



Basic Strategy

Focus Area	<ul style="list-style-type: none"> Japan : Wide-area cooperation, public-private partnerships Developed country : Ensuring water quality, effluent regulation, natural resources saving, energy saving, and water reuse Emerging countries : Expansion of water infrastructure, seawater desalination, and water leakage management
Existing business	<ul style="list-style-type: none"> Emerging countries ODA (Official Development Assistance) Automation of water and sewage facilities
New product New business	<ul style="list-style-type: none"> Wide-area cooperation platform for water services Reclaimed water Water distribution management including water leakage management Energy saving of wastewater treatment
Issue	<ul style="list-style-type: none"> Technology that differentiates us from our competitors Proposal of solutions considering national and regional characteristics

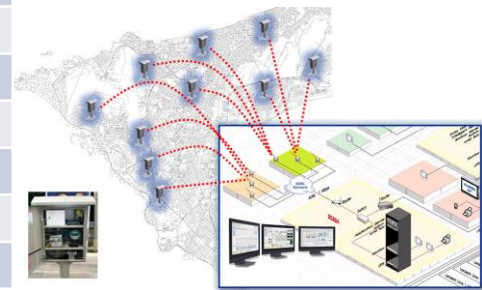
Focus Area



2021/10/21 Press release

Yokogawa Wins Water Supply Management System Order from National Water Company of Senegal
- Improving access to safe water for the people of Senegal -

Location	Dakar Region, Republic of Senegal
Customer	National Water Company of Senegal
Scope of work	<ul style="list-style-type: none"> Dakar water supply management system construction Water pipe network monitoring system Water leakage management system District metered area remote monitoring system Training in operation of the above systems
Expected	First half of 2024



<https://www.yokogawa.com/news/press-releases/2021/2021-10-21/>

Disclaimer

The information pertaining to our business plans and forecasts that has been provided in this presentation and at analyst meetings contains forward-looking statements that are based on our management's current knowledge and require the making of assumptions about future events.

As such, it cannot be guaranteed that these statements will not differ materially from actual results.

Yokogawa undertakes no obligation to publicly update or revise any forward-looking statements after the issue of this document except as provided for in laws and ordinances.

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The information has not been restated to reflect the revision of the initially allocated acquired costs that was decided upon finalization of the tentative accounting treatment and application of the "Partial Amendments to Accounting Standard for Tax Effect Accounting."

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