



Digital Transformation (DX) Initiatives

July 8, 2021

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Executive Officer

Division Executive of Information and Communication System Division

Looking ahead,
going beyond expectations

Ahead > *Beyond*

Background

December 2018	Joined company
April 2019	Division Executive of Information and Communication System Division
March 2020	Executive Officer and Division Executive of Information and Communication System Division

Prior to joining EBARA CORPORATION

Kao Corporation

April 1986	Joined company
August 1995	IT Director of Systems Development Department, Kao Industrial Thailand
July 2004	Vice president of Global Business Synchronization Department, Information Systems
October 2012	Senior Vice President of Global Information Systems

LIXIL Corporation

January 2014	Executive Officer, Chief Information Officer and Managing Director of IT Promotion Division
December 2015	Senior Executive Officer, Chief Information Officer and Managing Director of Information Systems Division
July 2016	Corporate Director, Chief Information Officer and Managing Director of Information Systems Division

1. Positioning in E-Plan 2022

E-Vision 2030: Resource Strategies

Achieve optimal resource allocation based on three strategies:

➔ Financial/Investment Strategy ➔ Manufacturing/Technology/Information Strategy ➔ Human Resource Strategy

Strategy 4 Strengthen Capitals (resources)

Evolve and strengthen the six capitals* required for business growth to better invest in adaptations to the changing business environment and global business expansion

*6 capitals: Human, Manufacturing, Financial, Intellectual, Social & Relationship, Natural

Strengthen ROIC/ Portfolio Management

- Conduct capital allocation based on corporate portfolio assessments

Performance indicators:

- ROIC/WACC spread
- Net sales growth rate
- Improve capital efficiency for each business

Manufacturing/Technology/ Information Strategy

- Transform products, services, and business models through the promotion of DX

Examples:

- Introduce ERP companywide and consolidate business infrastructure
- Advance automated production capabilities

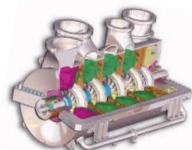
Human Resource Strategy

- Improve internal talent pipelines on a global scale and facilitate greater mobility of human resources
- Promote diversity through increasing mid-career hires

2. Overview of Initiatives

- Aim to lead the industry in terms of efficiency in management and business operations through digital transformation (DX) in order to achieve our mission, expressed in the words “Technology. Passion. Support our Globe.”
- Utilizing data and digital technology, radically transform products, services, and business models through the implementation of “**aggressive DX**” initiatives on a global level, and “**preparative DX**” to develop information infrastructure such as ERP and a global talent management system

【Overview of Digital Transformation Initiatives】



Existing (Core) Businesses (Ongoing)

Aggressive DX

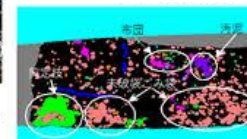
External (Customers, Stakeholders, Society)

2. Innovation of Existing Businesses

- Promote automation and utilization of IoT for production
- Utilization of 3D digital manufacturing
- Employment of automated 3D parametric design
- Application of multifaceted optimization technologies

3. Creation of New Businesses

- Application of AI image analysis technologies
- Promotion of IoT and data mining technologies
- Utilization of virtual and augmented reality technologies



Businesses that are new for the Company/Industry (Unprecedented)



1. Revolutionary Productivity Improvements

- Utilization of ERP
- Implementation of customer resource management systems
- Utilization of global procurement system
- Employment of global talent management system
- Introduction of robot process automation and AI

- Industrial application of supercomputers

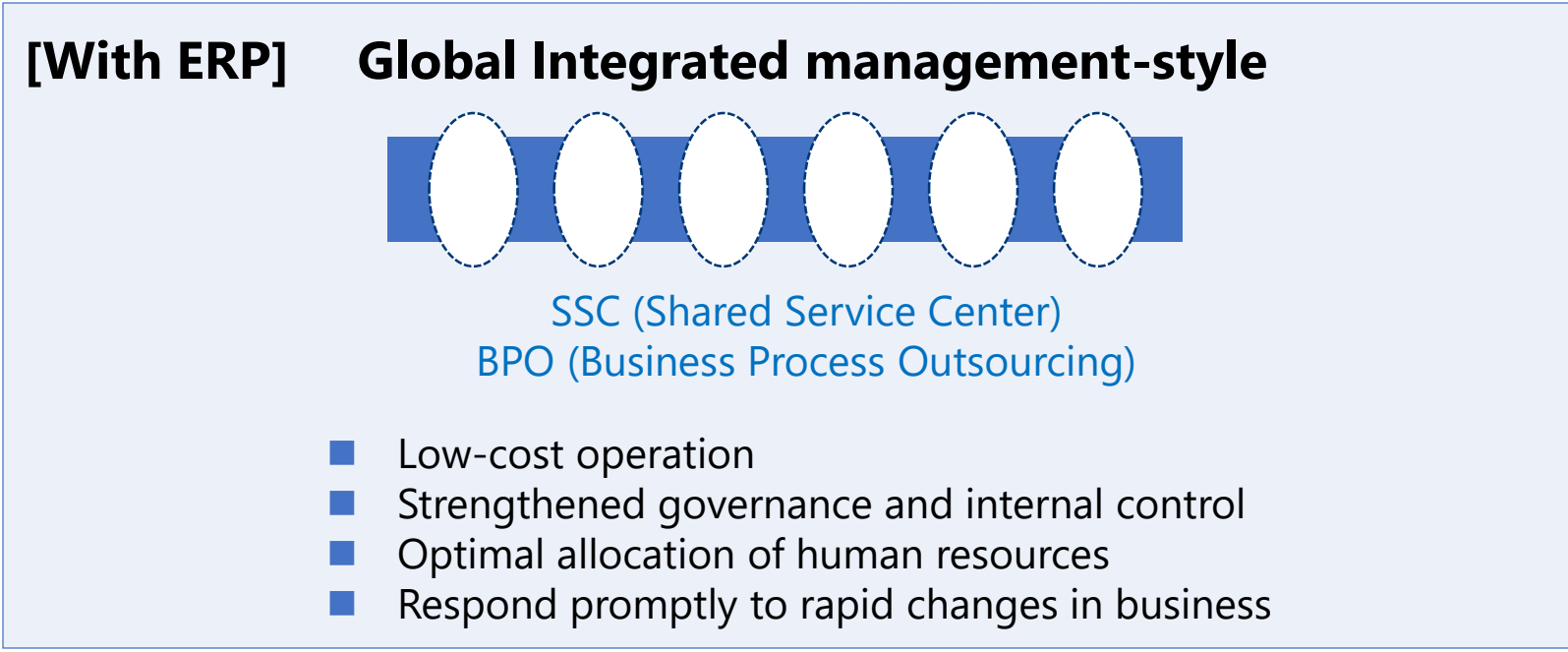
Internal (Company)

Preparative DX

3. Example of Defensive DX : Leveraging ERP From Multinational management-style to Global Integrated management-style



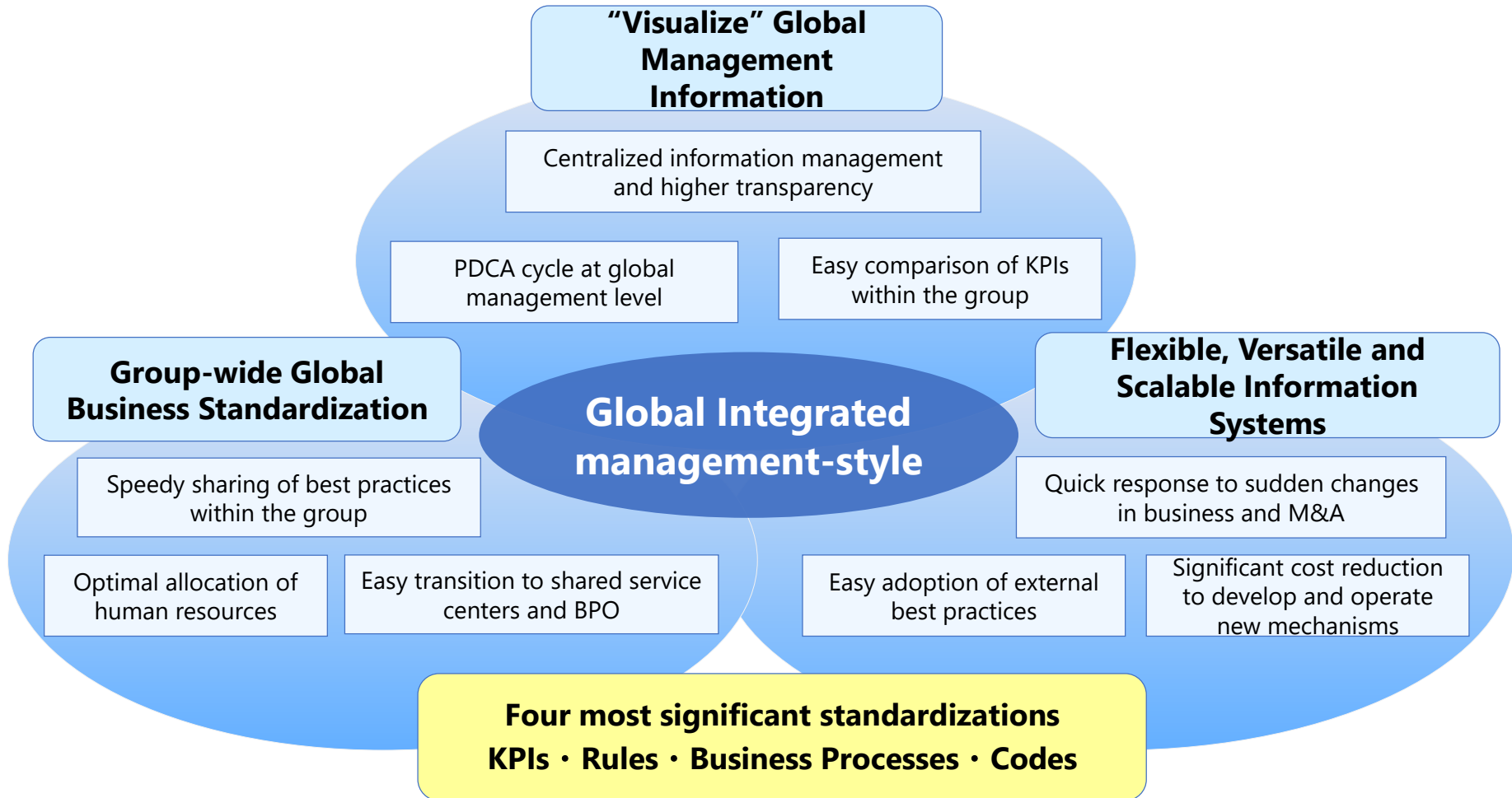

ERP deployment = Global operation standardization



3. Example of Defensive DX : Leveraging ERP

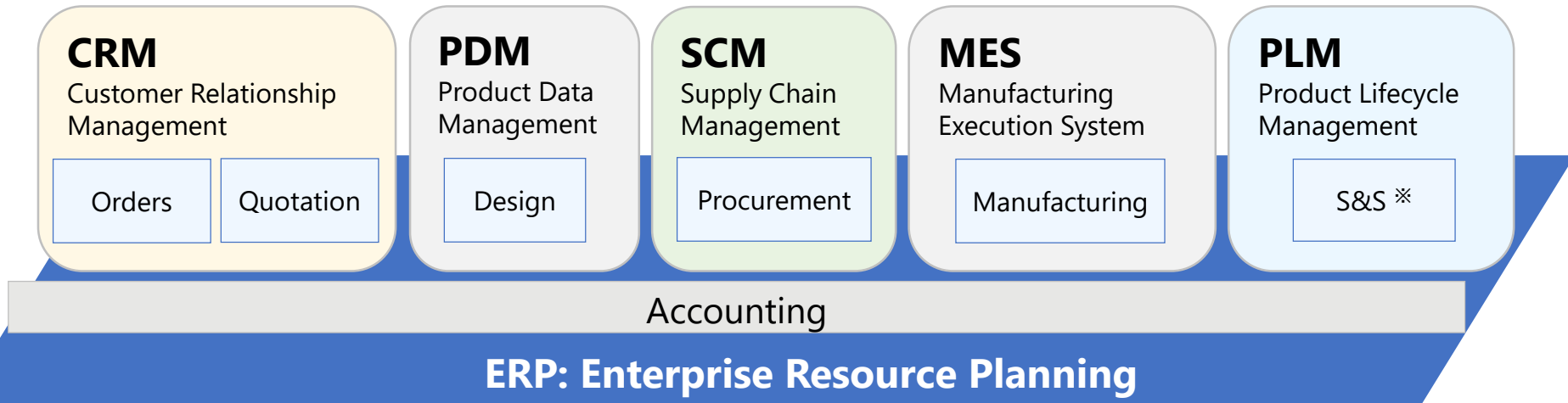
Company-wide ERP implementation

- Standardize operations and build a management foundation to transform from multinational management-style to global Integrated management-style



3. Example of Defensive DX : Leveraging ERP

Overview after ERP Deployment



※S&S : Services & Support

■Schedule

Introduce on a global scale to all group companies by the end of 2024

■Specific effects

1. Enhance Business Administration Capabilities

- Shorter management cycle and faster closing of financial results
- More accurate budget/actual management
- Stronger management accounting

2. Business reform

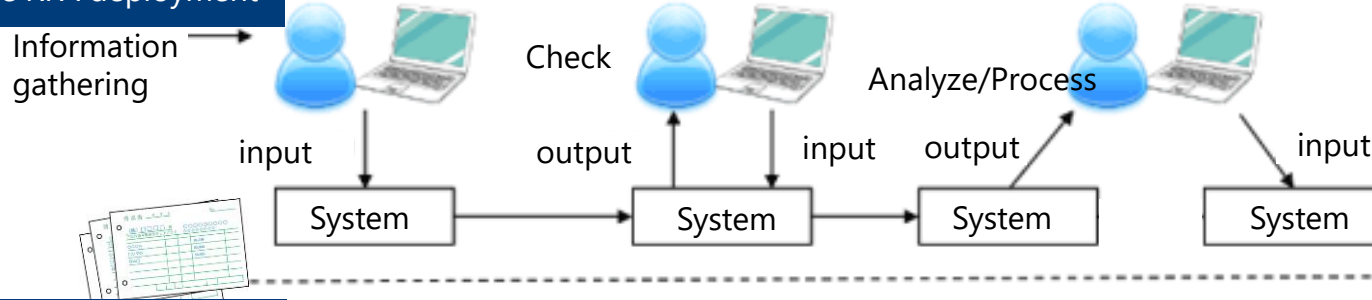
- Streamline and improve operation processes
- Standardize operations globally
- Reduce number of applications/systems, reduce IT-related costs

3. Example of Defensive DX : Leveraging ERP

Select the most efficient ERP

■ Tasks from "people" to "digital" and from RPA to ERP

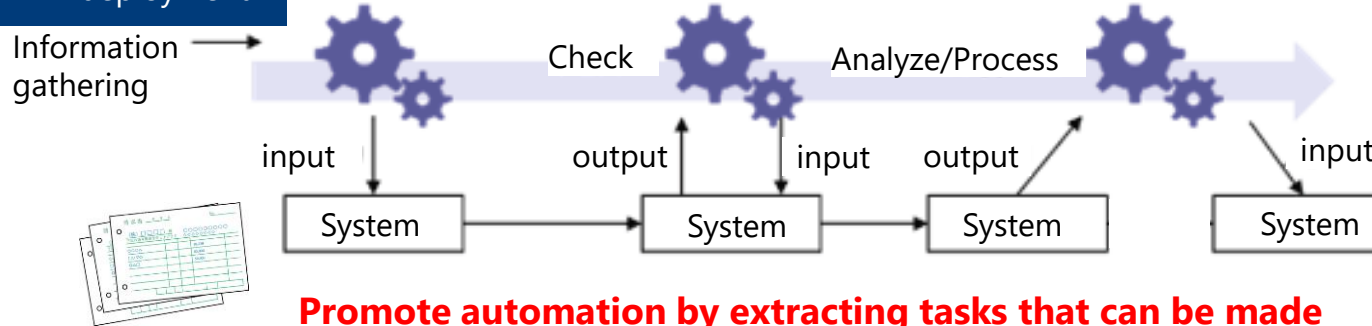
Before RPA deployment



People perform routine tasks such as entering voucher information on a daily basis.



After RPA deployment

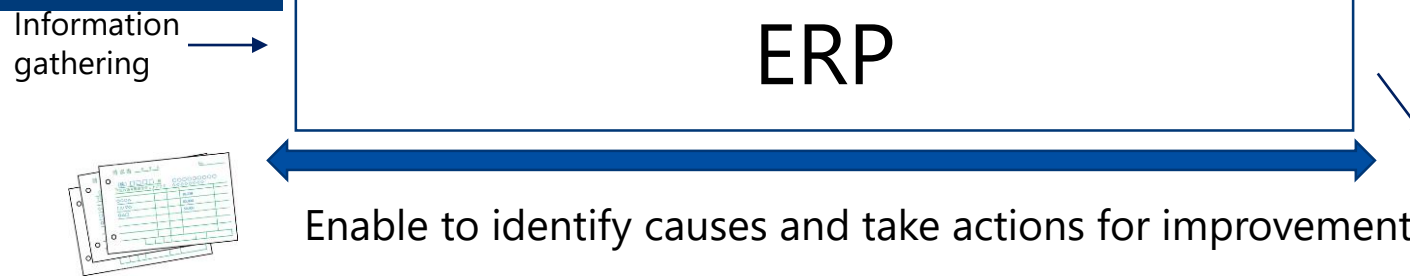


Software robots automatically perform routine tasks.



Promote automation by extracting tasks that can be made routine-type tasks from repetitive tasks that occur in daily operations.

After ERP deployment



Enable to identify causes and take actions for improvement

4. Selected as DX-certified operators by METI

- Certified as a "DX-certified operator" under the DX Certification by the Ministry of Economy, Trade and Industry ("METI"), as of April 1

DX-certified operators : 116 (as of June 1, 2021)

- Overview of DX Certification

Certification based on the "Partial Revision of Act on Facilitation of Information Processing," which came into force on May 15, 2020.

Under this certification, METI certifies business operators conducting excellent initiatives in accordance with the Digital Governance Code, based on the government guidelines (Guidelines on operation and management of information processing systems).

Condition for the DX certification is that "companies are ready to transform their own business through digital."





Digital Transformation (DX) Initiatives
Case Study of Offensive DX: Compressor and Turbine (CT) Business

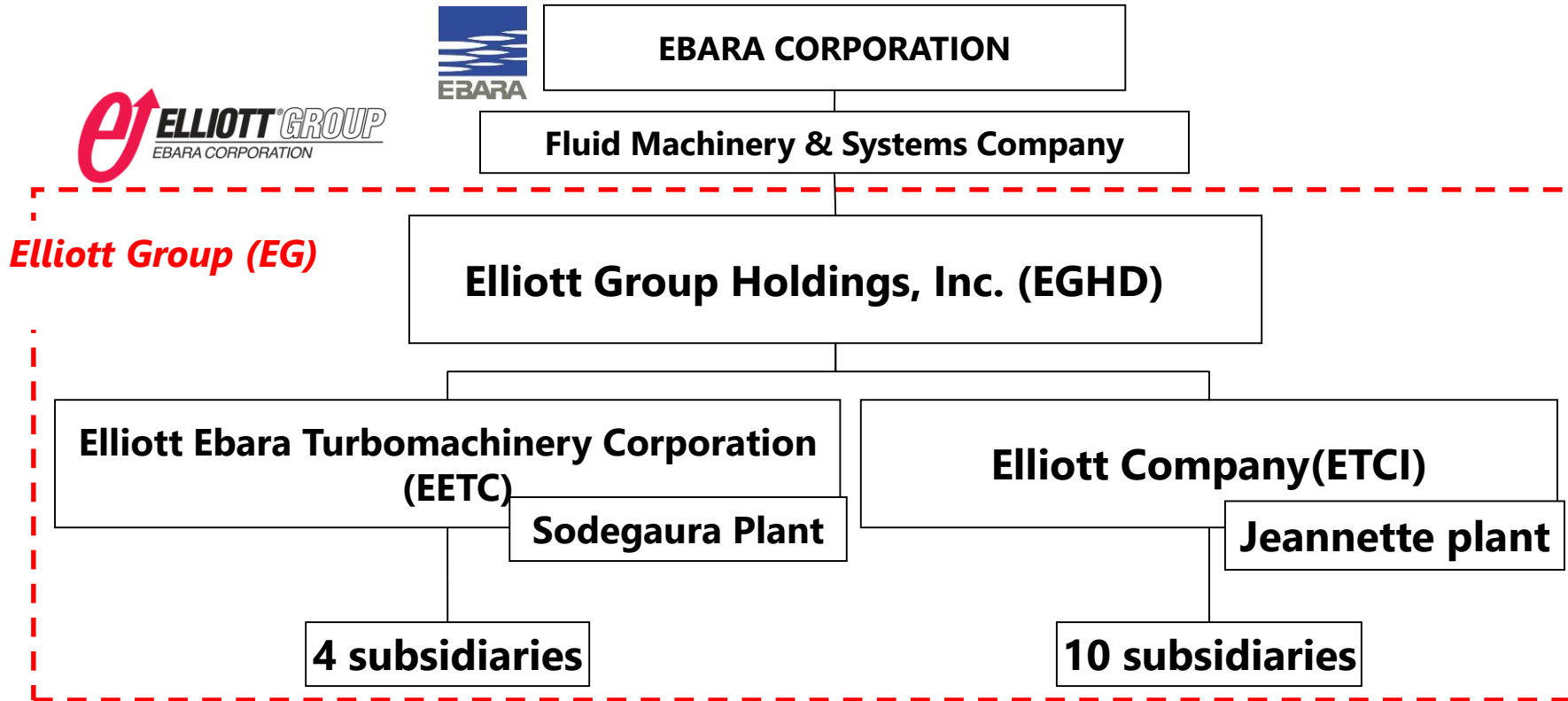
**Automated Design of Custom Products
using Parametric Design**

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Masahiro Kashiwai
Assistant to Director in charge of Engineered Products (EP)
Elliott Ebara Turbomachinery Corporation



Elliott Group, in charge of CT business in EBARA Group Organization

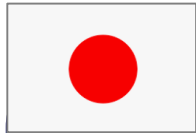


- 1968 Technical alliance with Elliott Company in the U.S., on compressors and steam turbines
- 2000 Acquired 100% ownership of Elliott Company
- 2002 Established EETC
- 2011 Established Elliott Group Holdings, Inc.



Outline of Elliott Group's Products and Services Business Unit

Sodegaura Plant



EP

CT products
(Custom-made)

GS

After-sales services

Jeannette plant



CP

Cryogenic pumps
(Custom-made)

IP

General-purpose
turbines



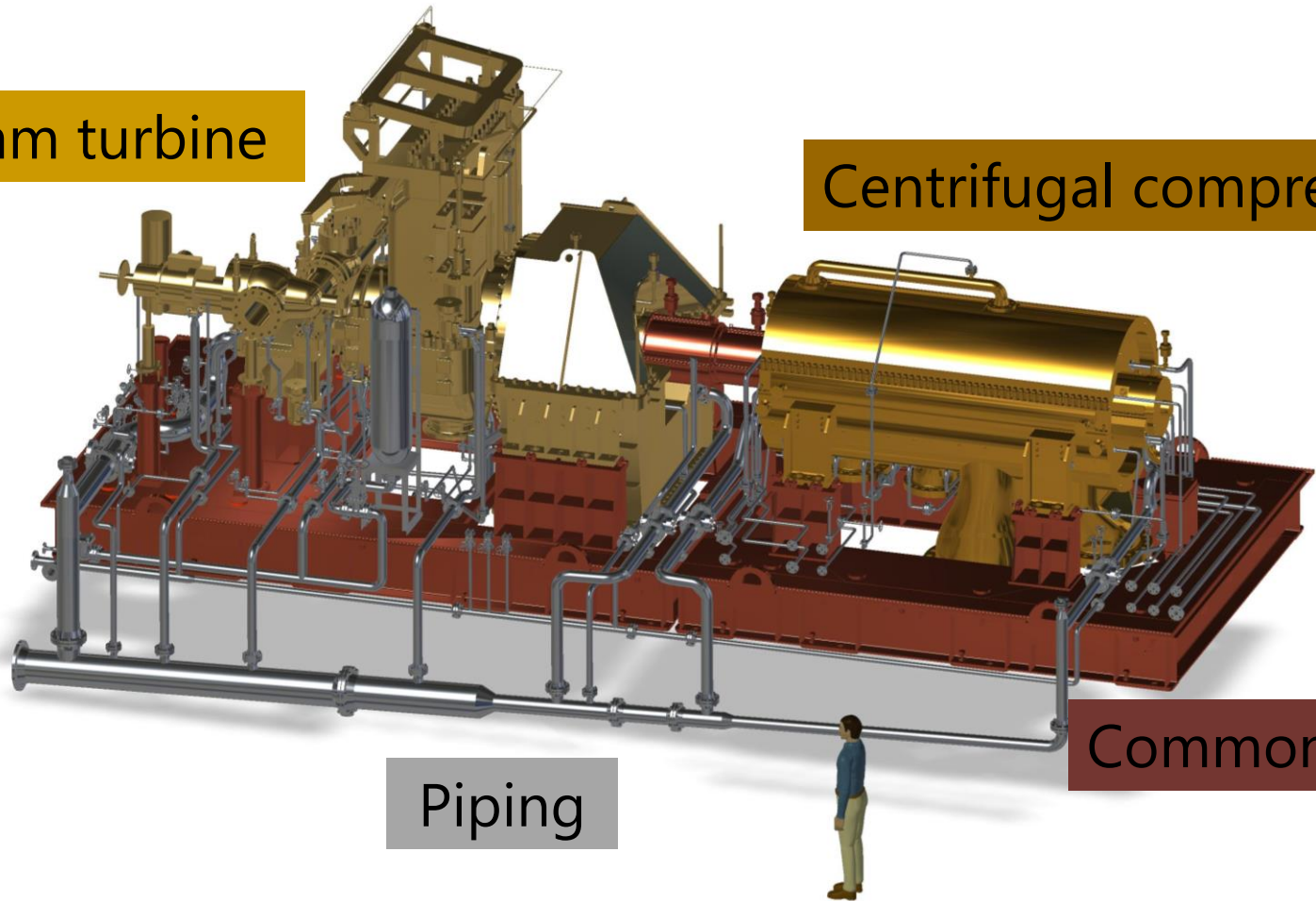
The world turns to Elliott

Products Manufactured in-house

- Target of automated design is the four main internally-manufactured units.

Steam turbine

Centrifugal compressor

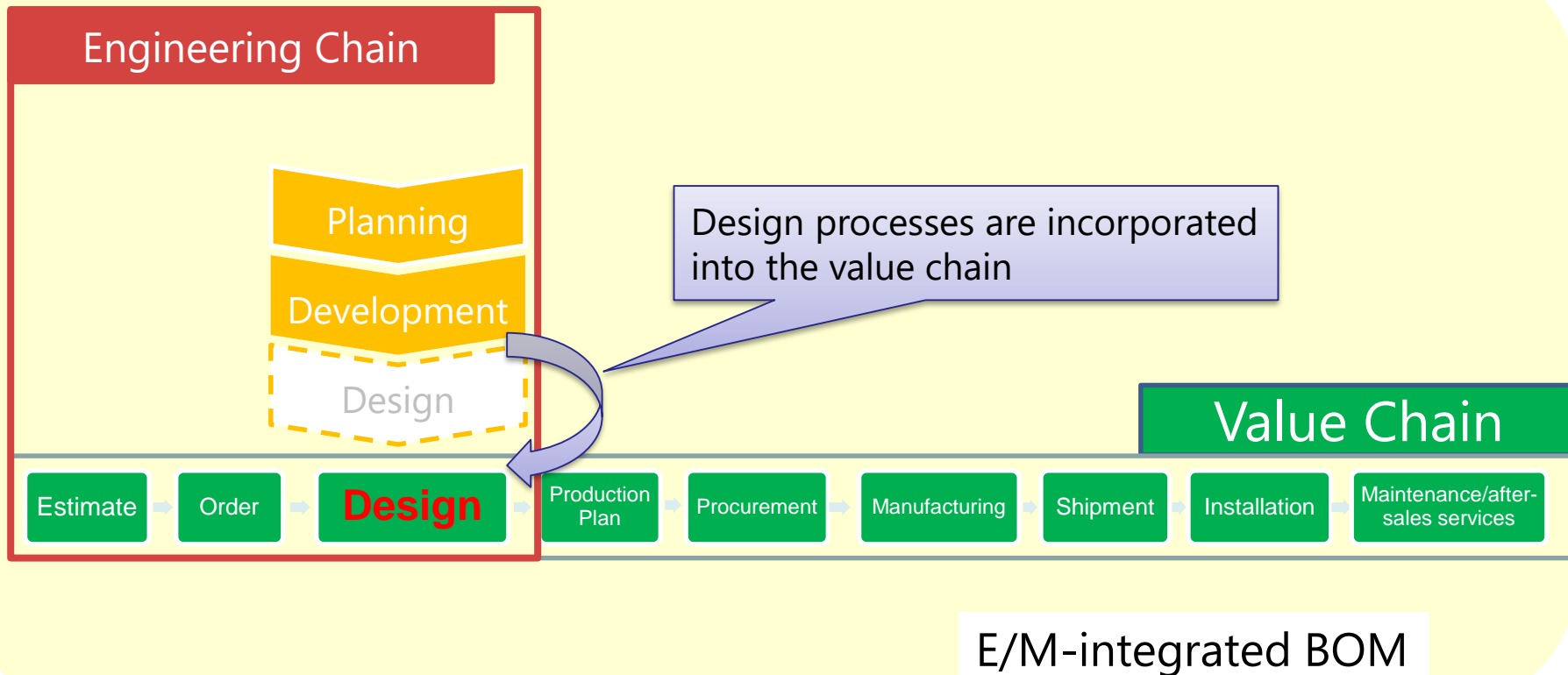


Piping

Common base

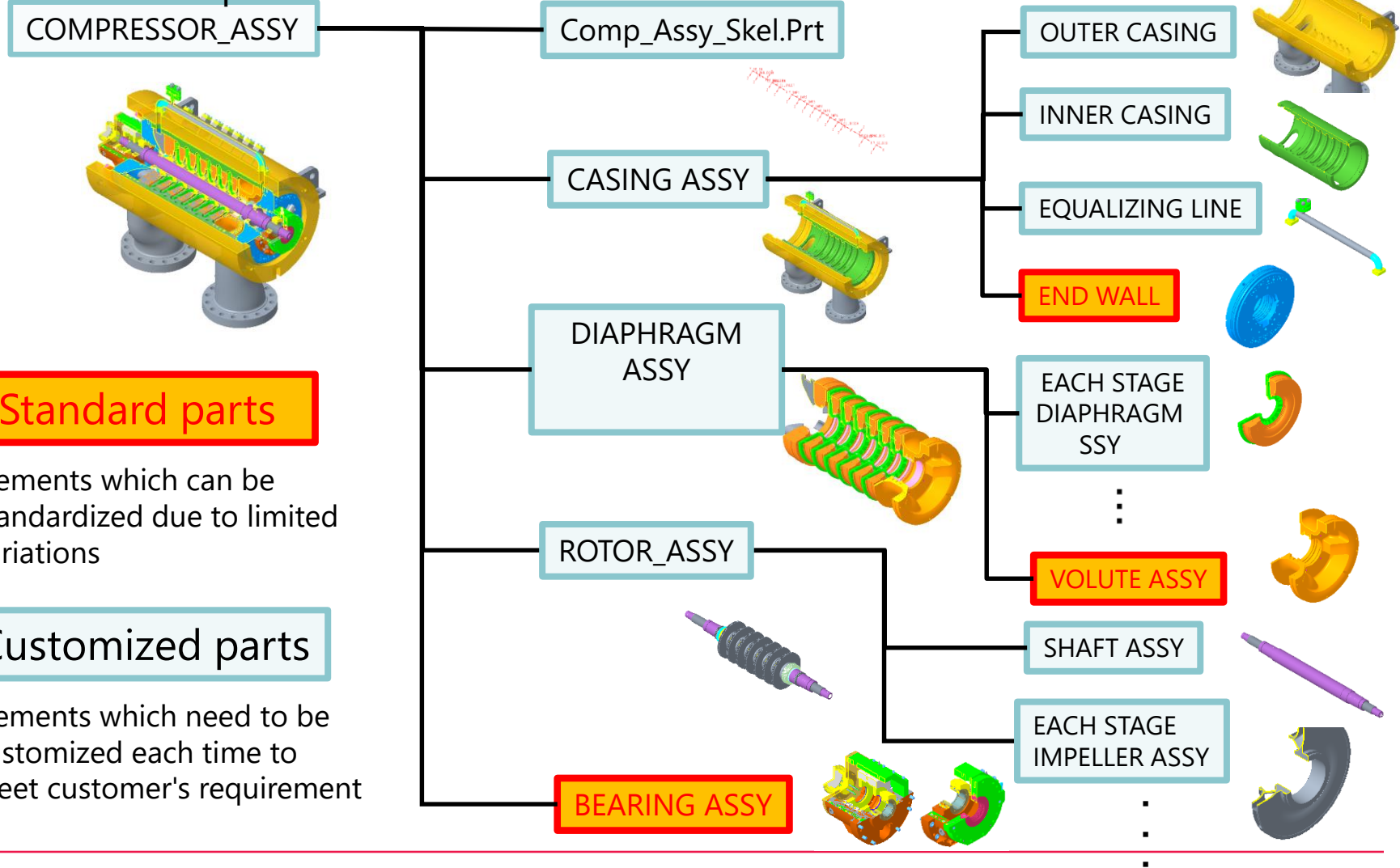
Business Flow of EP Products (Custom-order-designed Products)

- Because design processes are part of the value chain, improvements in drawing lead time and drawing quality have a significant impact on product delivery time.



Separation of Standard parts and Customized parts of Centrifugal Compressor

■ The first step in automated design is to separate standard parts and customized parts.



Standard parts

Elements which can be standardized due to limited variations

Customized parts

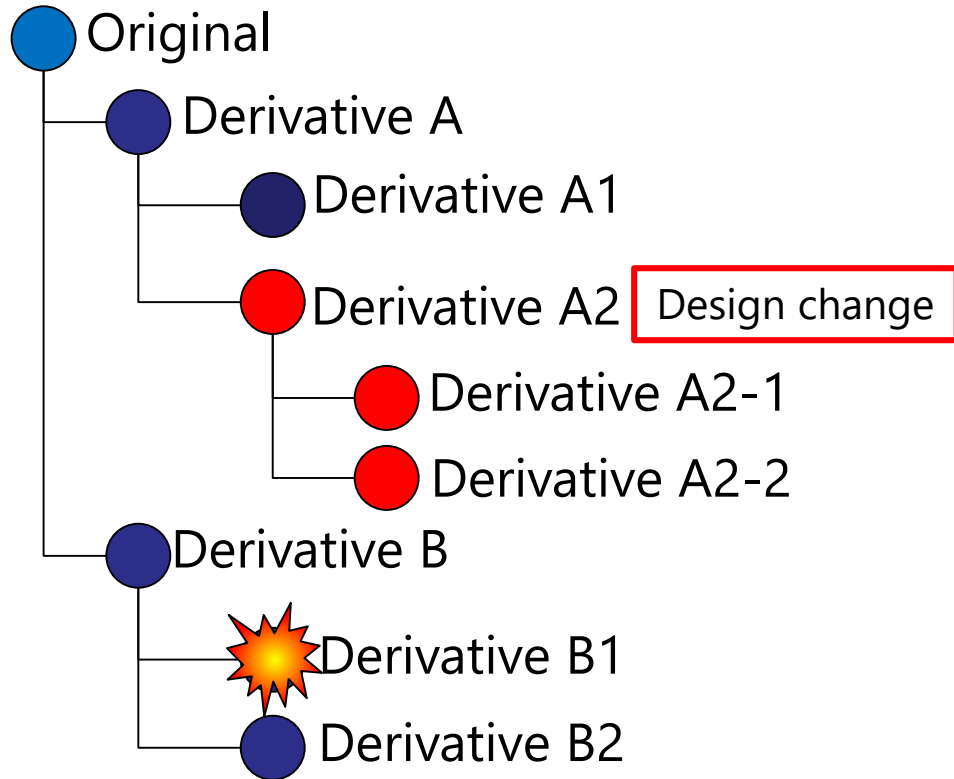
Elements which need to be customized each time to meet customer's requirement



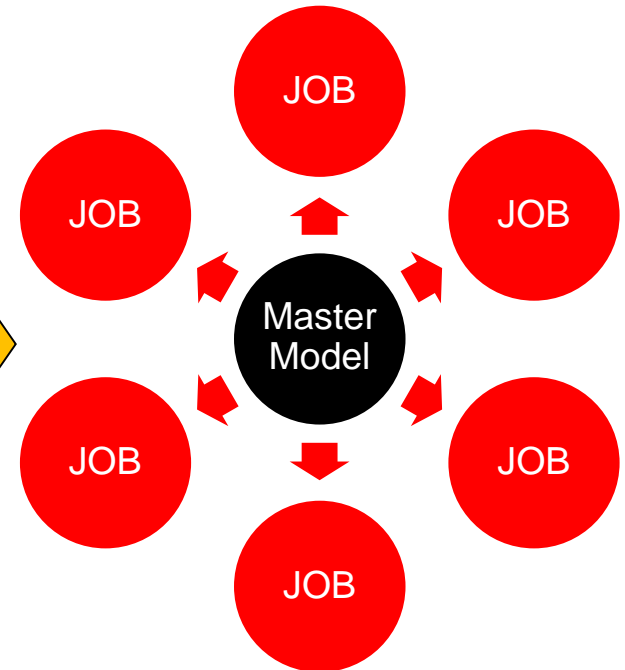
Problems with Drawing Editing for “Customized parts” diverting Past Drawings

- It is common to divert existing drawings and edit them for a new product. However there are various problems in this method. Examples: Required changes may be missed. Selection of the original drawings tends to vary depending on who makes the selection.
- Parametric automated design consistently generate "Variable Elements" from Master Model.

[Conventional Editing based on Diversion]



[Concept of Parametric Automated design]

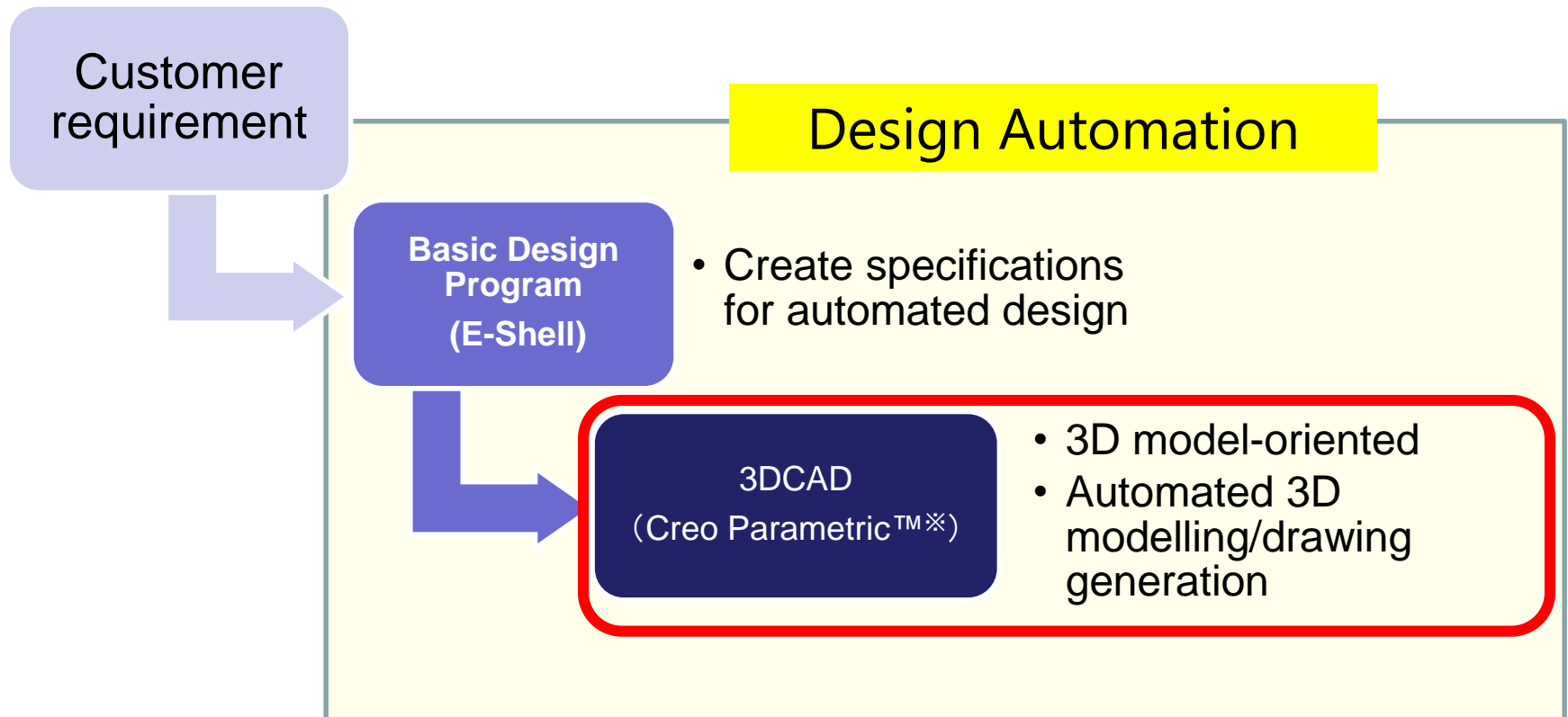


●: Design changes reflected

●: Design changes NOT reflected

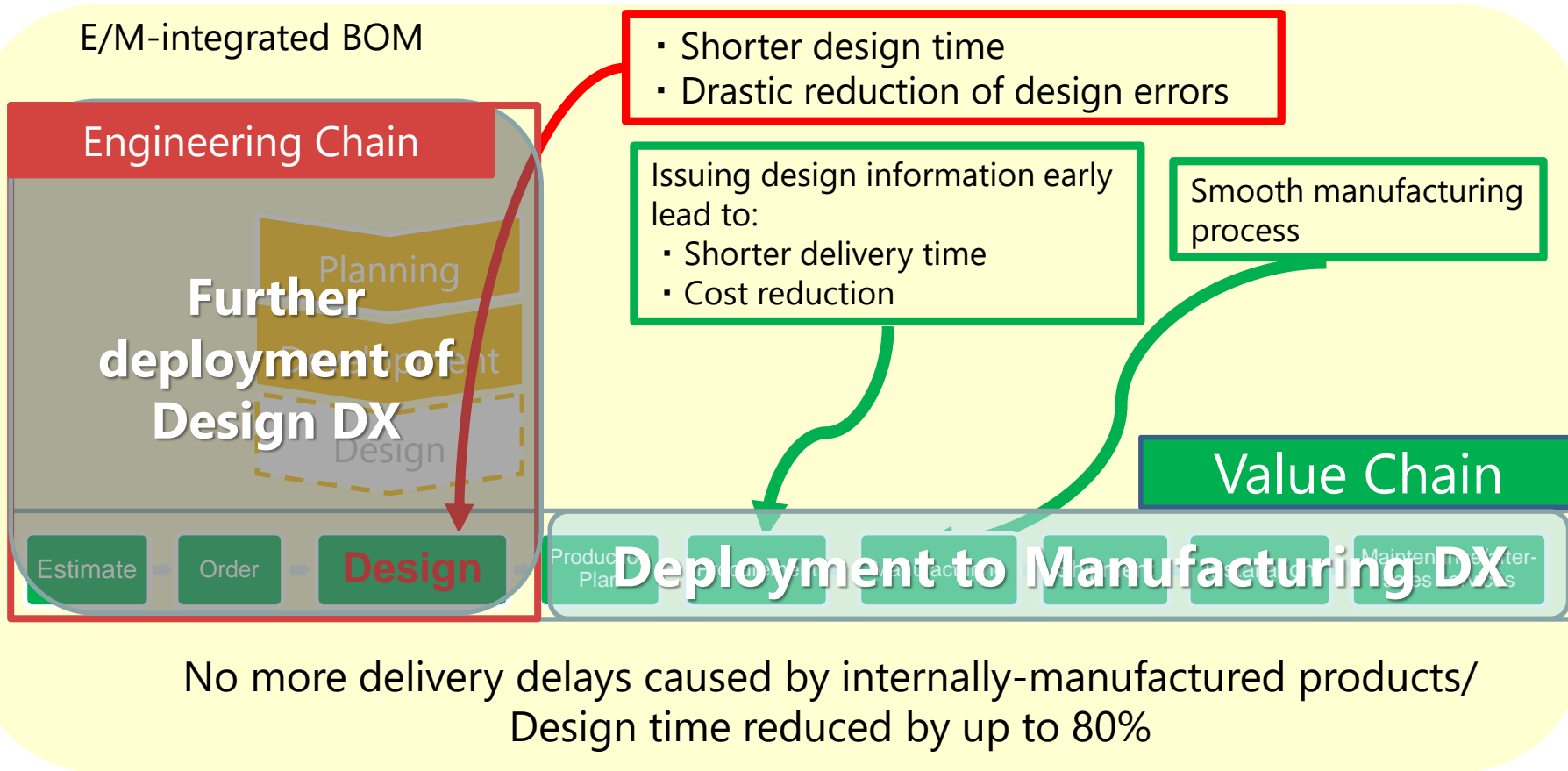
Initiatives

- Achieve automated design by integrating basic design program and 3D CAD programming functions
- Develop all systems with in-house resources
- Parametric automated design as a proprietary technology



Effect

- Improved EP (CT products) profitability



- Contributed to shortened CT products lead time by up to 20%
⇒ More opportunities to win orders for highly profitable projects



**The world turns
to Elliott.**



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