



Manufacturing & Procurement Strategy

March 11, 2021

Takaji Ito,
Executive Officer, Deputy General Manager of
Manufacturing & Procurement Headquarters











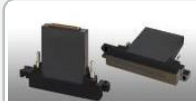

1 . Intangible assets, which are the strength of manufacturing and procurement headquarters ≡ Production capability



Production Types for Konica Minolta Products

Each of our product is manufactured by characteristic production type (≡ production method.)

- Material-type products are manufactured by plants in Japan, device-type products have their technology established with domestic production and are manufactured at overseas our bases.
- Assembly-type products are produced at overseas our bases, low added-value products use OS (outsourcing) and ODM (original design manufacturing).

Office equipment (Digital Workplace and Professional Print)	Industry		Healthcare	
 <p>No. of parts Consisting of about 3,000–4,000 parts</p> <p><Resin parts> <Sheet metal parts> <Electric parts></p>    <p>Assembly accuracy Requires adjustment on the order of microns</p>				
				

Material type (plants)



Device type



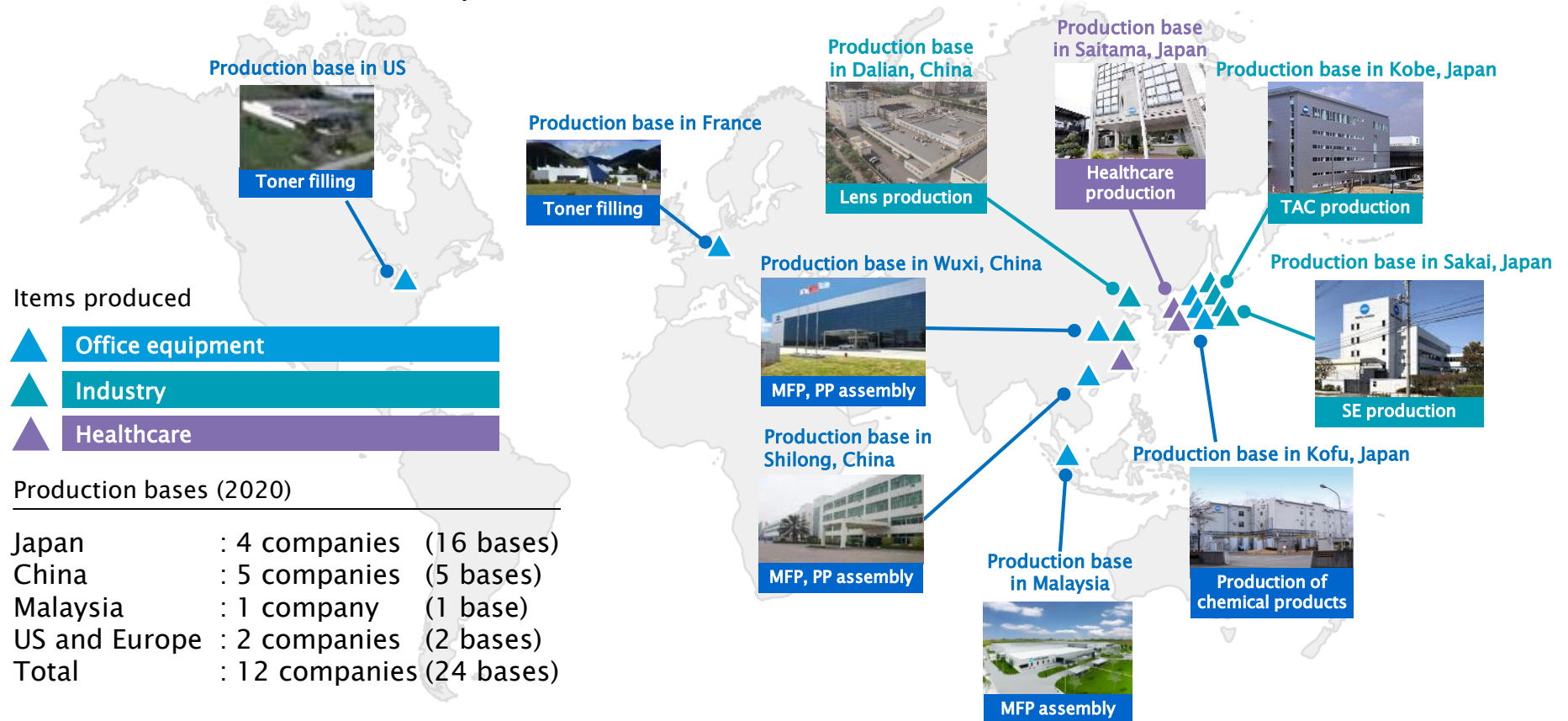
Assembly type





Characteristics of Manufacturing Bases

- Manufacturing involving technical coordination with development and manufacturing, requiring development of manufacturing technology, as well as high value-added production, are performed in Japan. (High value-added production: Toners, TAC film, measuring equipment, new business, etc.)
- Assembly-type production is carried out at bases in China and ASEAN regions, with automation/ICT introduced and promoted.
- Consumables such as toners are manufactured near the place where they will be consumed to shorten lead time and reduce inventory.

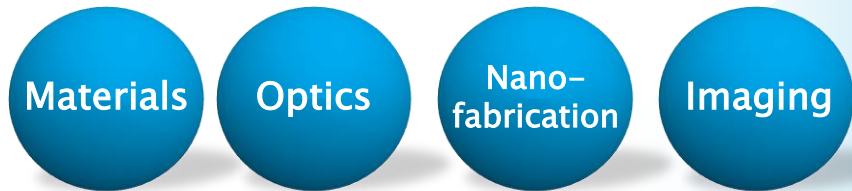




On-site Built-up Capabilities \equiv Intangible Assets That Become Strengths

Konica Minolta has built up four core technologies that cannot be imitated by other companies based on the specialized skills of **engineers and workers** that comes from **experience and technique** at manufacturing site.

Konica Minolta's core technology

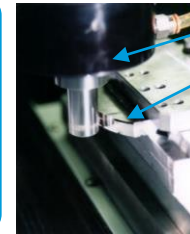


Konica Minolta's on-site capabilities (Manufacturing technology and skill)



Examples Precision rotation processing for metals

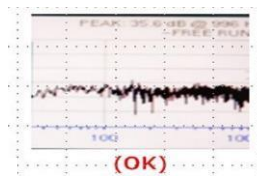
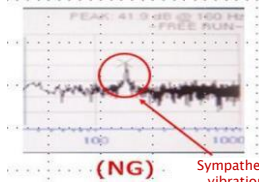
Era in which technology and skills are digitized



Industrial tool spindle work

Processing accuracy can be confirmed by measuring vibrations during precision rotation processing

Results of vibration measurement during processing



Identifying cause and responding

People's Experience and skills



(Five senses and experience)
The strike of the blade, rotation speed and shaving sound, habits of the equipment...



Strengths Achieved by Collaborative Activities with Suppliers

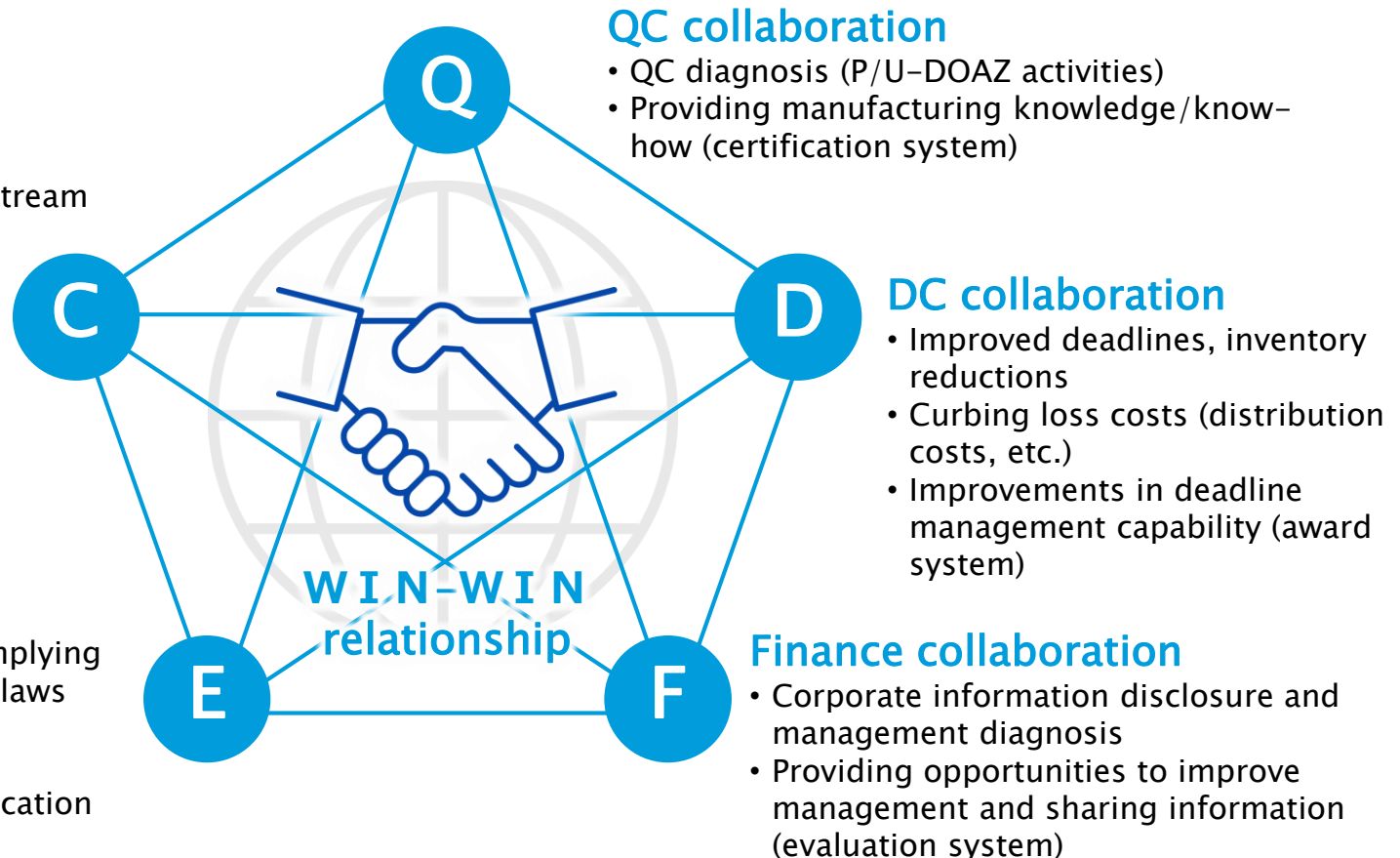
- Konica Minolta thinks of its suppliers all over the world as partners, and **visits suppliers' sites to work together** on quality, deadlines, costs, environmental response and reducing financial risks **so that we can grow together**.
- Relationships with local suppliers have become solid, and have steadily continued through to the present, contributing to BCP response during the Great East Japan Earthquake and the COVID-19 pandemic.

CE collaboration

- Joint initiatives from upstream development process
- Joint creation of cost reduction proposals
- Cost improvements at manufacturing site (award system)

Environmental collaboration

- Addressing and complying with environmental laws and regulations
- Promotion of green procurement (certification system)
- Green supplier activities

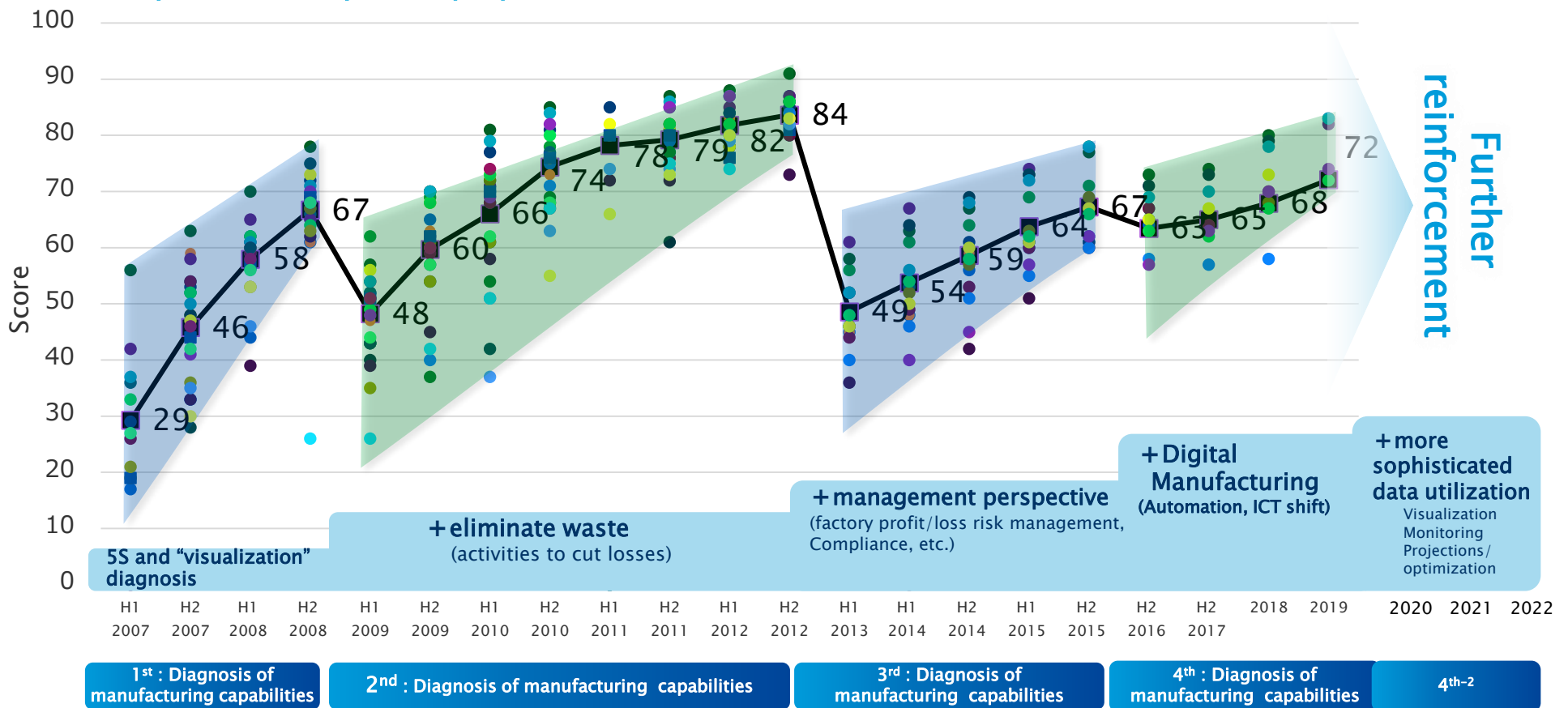


1. Intangible Assets, Which are the Strength of Manufacturing and Procurement Headquarters \Rightarrow Production Capability Create Continuous Growth Culture with Activities Aimed at Strengthening Manufacturing



KONICA MINOLTA

- All sites are improving by learning from each other and are raising their level, and at present, the fourth stage is being implemented.
- We always aim for progress, adding digitalization elements and contributions to many bases to the score.
- **These initiatives also helped to prevent infections during the COVID-19 outbreak (ensuring safety and security of employees).**



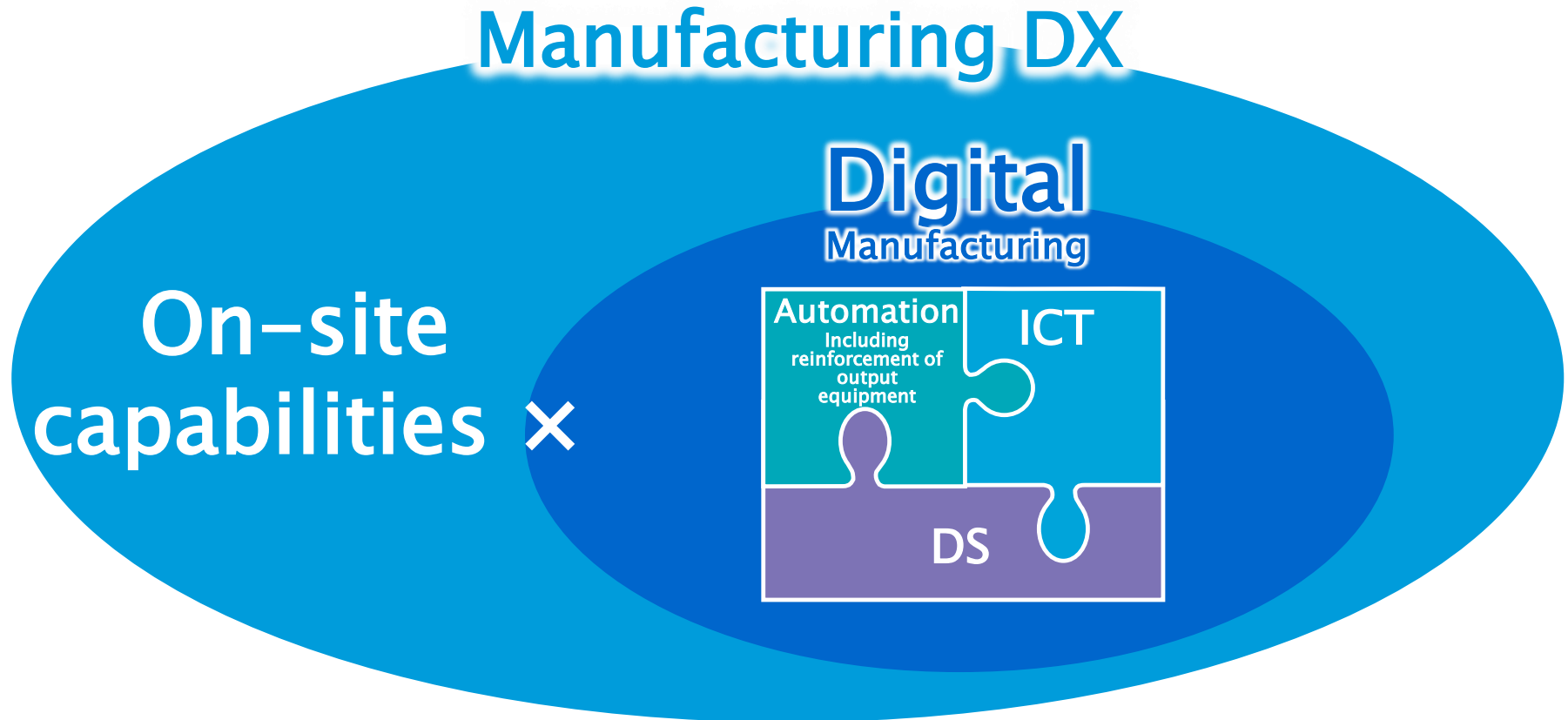
2. Accelerating manufacturing DX to further strengthen manufacturing capability and KPIs



Definition of Manufacturing DX

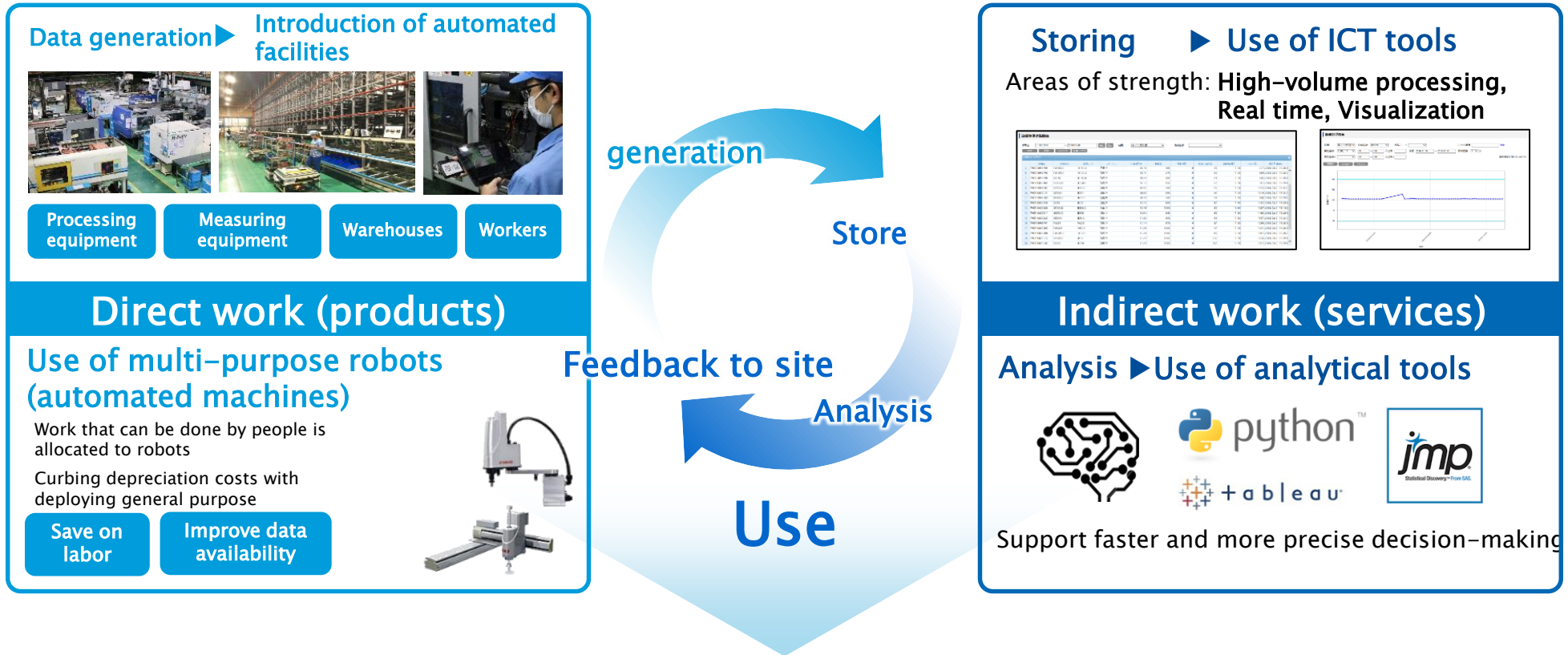
No change in value of manufacturing DX = improved QDC!

Digital manufacturing (DM) is defined as initiatives utilizing data, including further use of data science (DS) in automation/ICT. This, integrated with the on-site capabilities (communication skills x ability to carry out operations/ability to notice) built up already, is defined in a broad sense as manufacturing DX.



Infrastructure for Advancing Manufacturing DX = Existing Data

With automation/ICT developments based on the Digital Manufacturing concept, major progress can be made in collecting and storing various types of data at the manufacturing site.



Accelerate activities to improve productivity using data

Strengths of Manufacturing DX, Konica Minolta Style

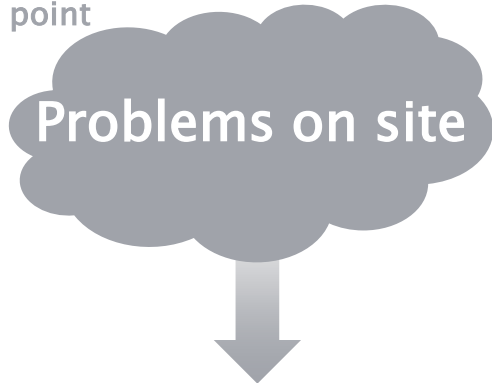
It would be a mistake to think that using data is the objective!

The starting point is the problems on site!

The way to resolve on-site problems is to establish a process and system for problem solving that combines on-site capabilities with data science. The workflow framework is created as several themes revolve.

Process=Answer manual

Starting point



Three-pillared system, including workers on site

Person working on site



Analytical professional



Promotion leader



Problem discovery phase

Convert on-site problems to data analysis problems and put them into words

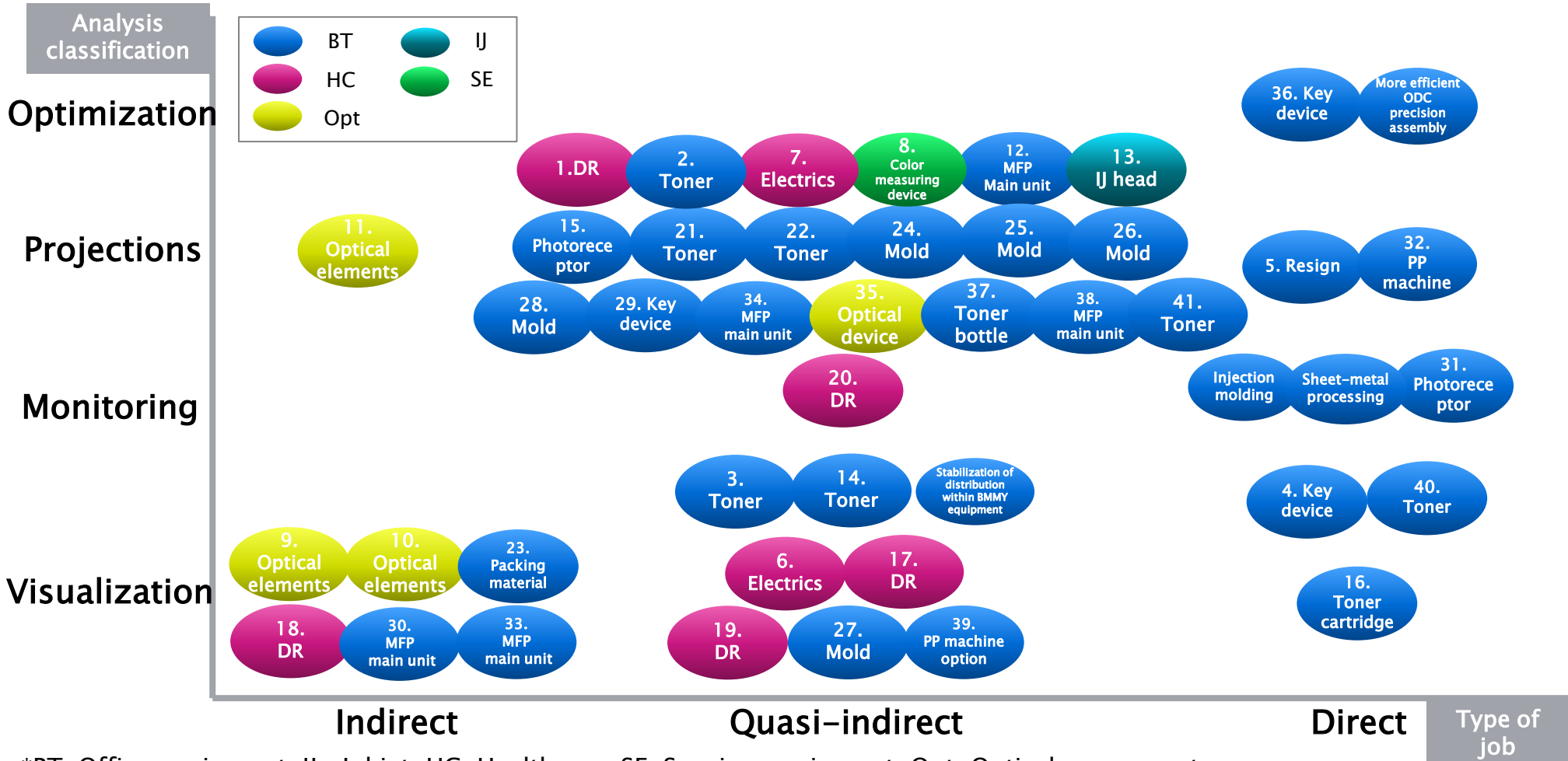
Data analysis phase

Solve problems with combination of on-site knowledge and analytical techniques

Manufacturing DX, Konica Minolta Style: Example of Use of Data Science



The process for designing theme has been standardized (answer manual) and 50 cases of problem solving have been implemented thus far in a broad range of manufacturing fields. These activities are being expanded much further.



*BT: Office equipment, IJ : Inkjet, HC: Healthcare, SE: Sensing equipment, Opt: Optical components

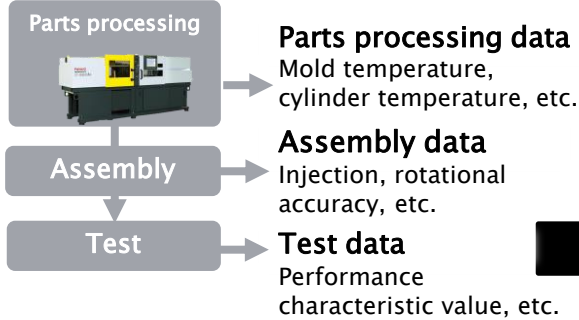


Case Study: Projection and Optimization: Reducing Manufacturing Loss Using M2M Data

Collection

Data on manufacturing process for key devices

Highly precise, high-performance roller parts



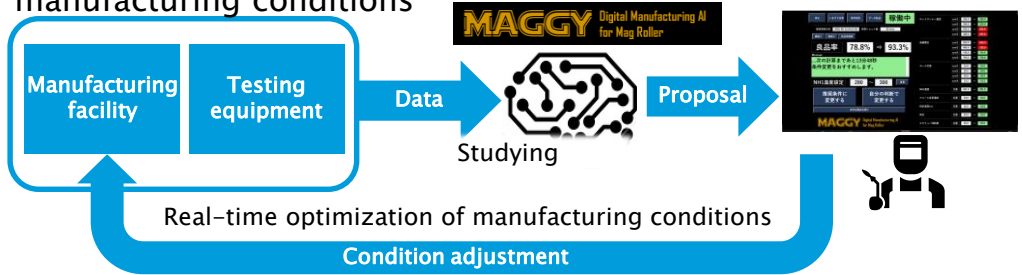
Edge PC/Cloud



M2M

Utilization

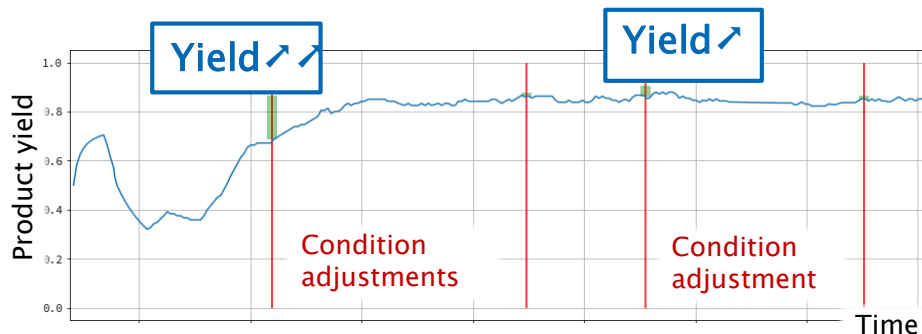
Study data in real time and calculate optimization of manufacturing conditions



On-site workers can be told precisely which conditions can be changed and by how much of them; the ratio of non-defective products can be improved without any trial-and-error

Effect

Improved yield for high-performance parts



Non-defective production ratio improved by 20% or more

Disposal loss reduced by ¥20 million a year

Even new workers can maintain quality

Maintaining manufacturing that does not depend on people



Expanding Manufacturing DX

In-house implementation means that, with improved QDC of our products as the scope, we have both a data science method (model) to refine our manufacturing DX method and on-site capability. We can package those solution model and workflow and build up realistic solutions to problems.

Method for data use

Changes of workflow

Visualization

Raise the data items and frequency of updates, expand the connected scope, and make what couldn't be seen before visible



- Identify problems that had not been noticed before
- Implement PDCA based on data
- Rapid shared understanding based on data
- Raise speed of analysis of factors behind problems

Monitoring

Automatically monitor real-time data, warn of changes on site and give feedback



- Respond promptly to abnormalities on site and minimize losses
- Notice the signs before abnormalities occur and take steps to prevent

Prediction and optimization

Predict unknown future based on past results, and draw out optimal solution for assessments and actions



- Change of process design and product design that do not cause problems on site
- Select optimal solution when there are many tradeoffs and major options

Realistic problems and examples

Parts inventory field

Problem: Difference in actual versus planned inventory

Assessment:

Degree of impact by factors for inventory (production delays, safety inventory, discrepancy with timing of parts delivery, excess delivery)

Equipment on production line

Problem: Emergency breakdown ↔ excessive maintenance

Assessment:

Quantify degree of abnormality in equipment

High-performance device

Problem: Yield (Many quality tradeoffs)

Assessment:

Manufacturing conditions to optimize yield

Expanding Manufacturing DX: from Konica Minolta's Own Implementation to Suppliers and Then CX

Due to our own implementation, we are able to package a problem resolution model in the manufacturing field. Deploying it to suppliers leads to further reductions in costs, while also refining the package.



KPIs with DX2022 by Reinforcing Manufacturing Capacity

The value of manufacturing DX is improved QDC. Activities focused on reducing costs and cutting losses are carried out.

Reduce manufacturing costs

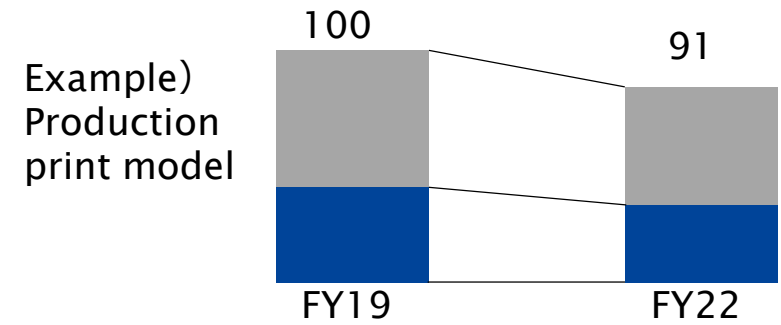
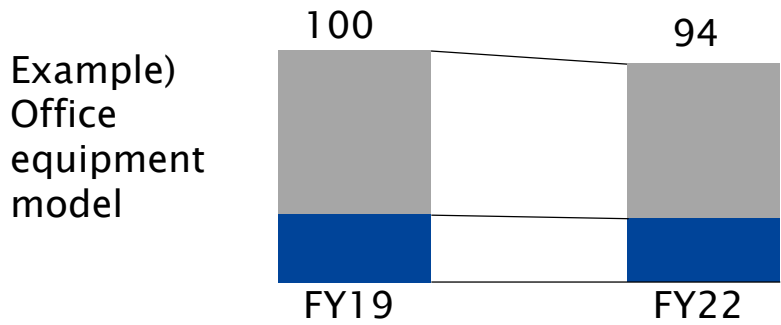
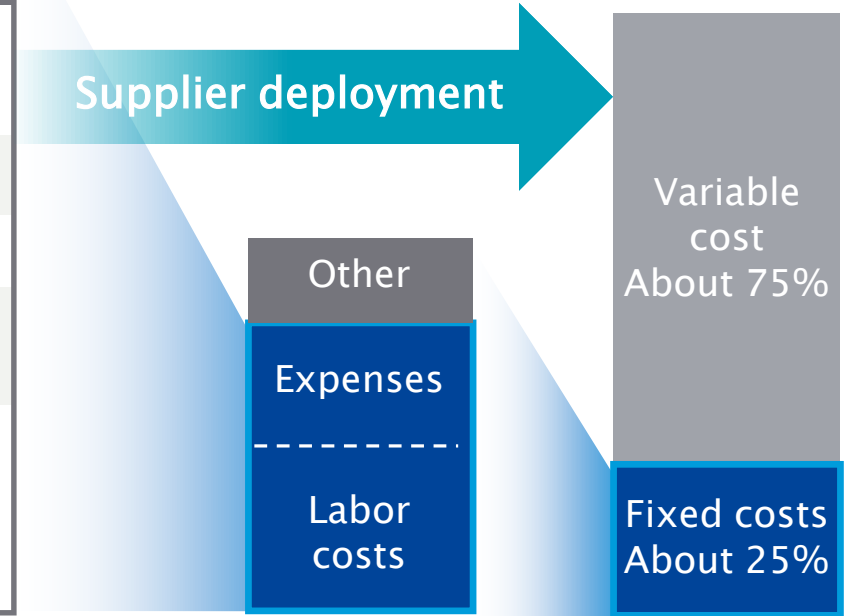
By promoting DX with integrated activities at development/manufacturing sites, improve QDC for existing products and new products.

Objective 1 ● Reduce fixed costs (labor costs + amortization costs) and minimize input

- KPI: Reductions to labor costs and waste costs achieved through automation

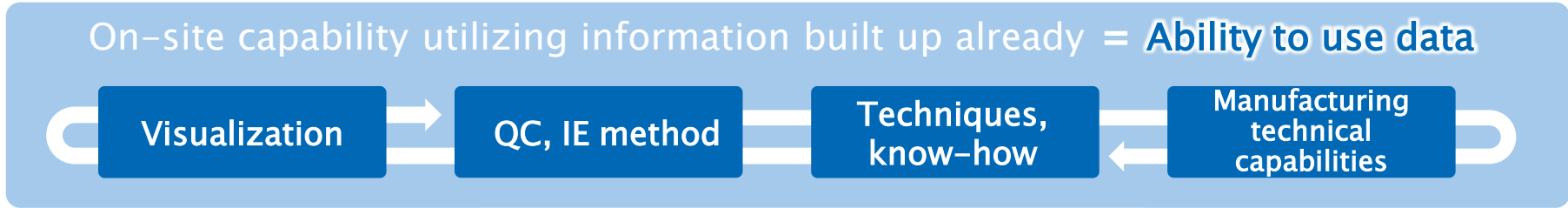
Objective 2 ● Improve manufacturing capacity and maximize output
 Manufacturing capacity = Volume per man-hour

- KPI: Improved quality, fewer cases of anomaly
- KPI: Improved operating time, shorter LT, cuts of waste
- KPI: Improved volume per man-hour (improved efficiency)
 Shorter cycle times, improved proficiency at work, speedier production

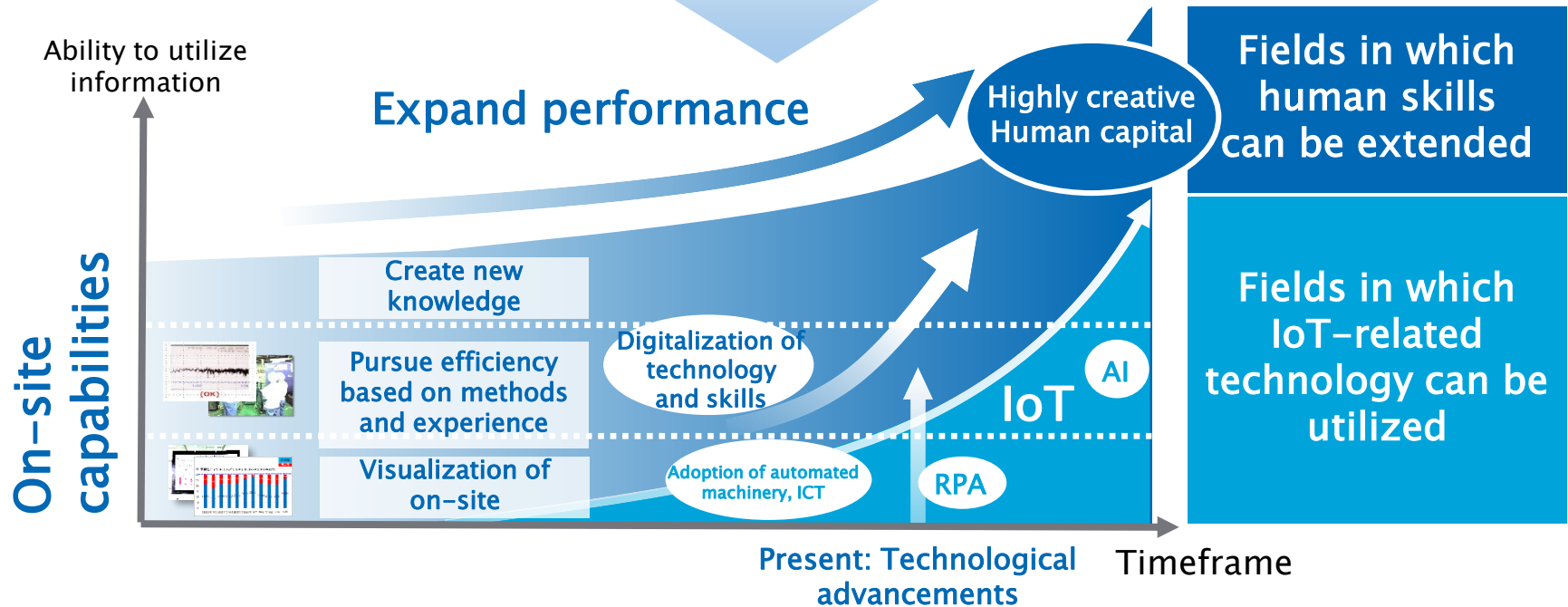


Direction of Manufacturing DX

Expanding scope of data usage and making it more efficient is a chance to utilize on-site capability!



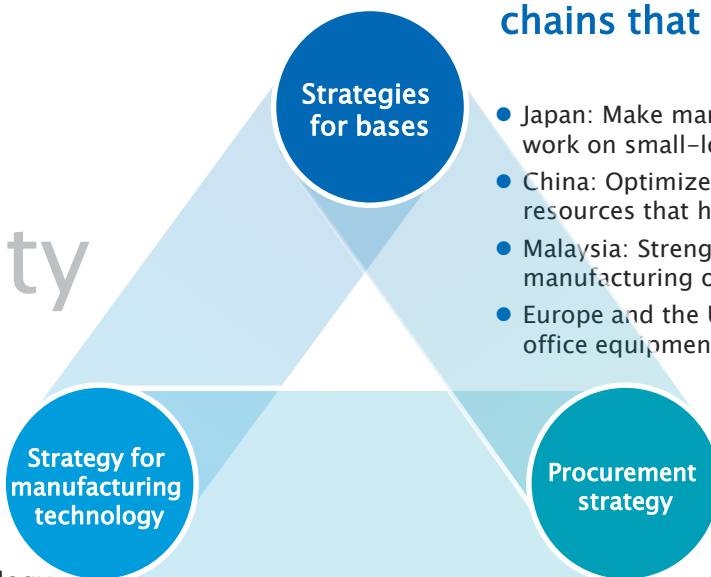
Further refine on-site capabilities and progress to a manufacturing process that leads to more customer value



Speed
&
Flexibility

Establish and implement technology originating on front lines

- Acquire and strengthen small-lot manufacturing technology that needs on-demand manufacturing
- Standardize and share design and manufacturing at sites that integrate development and manufacturing



Build manufacturing bases and supply chains that are resilient in the face of change

- Japan: Make manufacturing factories the “mother” factories that primarily work on small-lot products
- China: Optimize use of the technology and techniques, know-how and resources that have been built up
- Malaysia: Strengthen cost competitiveness by pursuing efficiency in manufacturing of main office equipment
- Europe and the US: Expand production of consumables, parts and units for office equipment that will be consumed locally

Procurement that adapts immediately to change

- Centralized procurement, including collaborative procurement
- Reinforce cost-cutting through product design at the upstream level involving suppliers

Boosting strength of human capital

- Strengthen and pass on core technologies and techniques that fit the front lines
- Expand technical human capital to accelerate manufacturing reforms

Reinforcing foundation of Manufacturing and Procurement

Operational reform through utilizing DX

- Thoroughly curb loss and waste through advanced data use
- Improve efficiency by cooperation with digital technology along the supply chain



KONICA MINOLTA