



FACTORY AUTOMATION

Processing Line Digital Transformation Solution

# MONOZUKURI DX Solution





More and more factories are adopting automation and IoT solutions. However, challenges exist that make it hard for users to fully implement.

Leveraging the knowledge and synergy of Mitsubishi Electric and its partner companies in manufacturing  
**Cloud platform for manufacturing starting at the**

## MONOZUKURI DX Solution



Safely and easily, connect and use  
with anyone, anywhere

shop floor

# MONOZUKURI DX Solution

1

**Supports manufacturing to  
optimize processing and  
increase overall factory productivity**

2

**Easily adopt  
Automation and IoT Solutions**

3

**Information sharing and communication  
with customers through platform**

The rise of automation and IoT adoption in factories poses various challenges, including data- and digital-driven transformation of the shop floor and finding ways to exploit the data obtained from machines.

With our new cloud platform, Mitsubishi Electric will help customers to solve challenges and to support so business opportunities will no be missed.

Customers can use of handy and knowledgeable manufacturing support apps provided by Mitsubishi Electric or by partner companies through open and secure cloud.

The platform will allow customers to access various types of data in every area of the engineering chain, such as development and design to maintenance and service, which can be applied to the shop floor easily.

We want to solve our customers' challenges through the cloud platform - "Connected and Used Safely and Easily by Anyone, Anywhere".

# What is holding back digital transformation in manufacturing industry



Poor digital- and data-literacy



Siloed organizations



Scarcity of talent needed for digital transformation



Unclear cost benefits



## Solution to various issues on the shop floor



## Expected benefits



Quality improvement



Productivity increase



Reliable operation



Safety improvement



Lead time reduction



Security enhancement



Decarbonization and energy conservation

# Achieve improvement on the shop floor across the engineering chain by drawing on the knowledge acquired over time

## Value it offers

### Processing support that helps "craftspeople" skills to be handed down via the platform

IIoT and solutions such as processing recipes are offered in combination on the platform, enabling processing that is not achievable by the shop floor alone.

### Embrace new technologies and bring about co-creation

Users can use new functions and models of tools and machine tools and share know-how and skills on the platform.

### Operation and maintenance services to maximize utilization

Operation support and maintenance menu to maximize utilization are offered on the platform.



#### Design4U

Development and Design



#### Machining4U

Processing and Manufacturing



#### Remote4U

Maintenance and Operations

#### Level.1 Visualize



Machine interference,  
scratches, processing time,  
dimensions  
Program errors

Tool usage and lifespan  
Setup and  
operational history

Operating rates,  
alarm details  
Power consumption,  
parts operational history

#### Level.2 Analyze



Cause of scratches  
Optimal processing conditions

Tool defect,  
setup issues

Operational losses,  
cause of stop  
Wasteful power usage,  
analysis of parts consumption

#### Level.3 Optimize



Path variability  
Parameter adjustment  
Process splitting

Tool replacement  
Operational error prevention

Operational and power losses  
Parts replacing orders

# Various applications



**Design4U** Development and Design

## NC Virtual Simulator

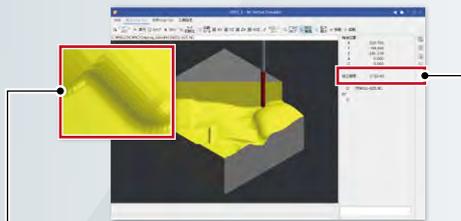


### Reduce the work required for trial processing through highly accurate simulation

Highly accurate simulator that digitizes processes from product design to trial processing to help increase work efficiency and productivity. NC Virtual Simulator enables users at the designing stage to check processing failure that could previously be detected only through trial processing, helping reduce the work involved in trial processing.

#### Work simulation

Processing time is predicted accurately using digital position data that simulates even smoothing, acceleration/deceleration and servo response delay. The operation of a processing program can be checked safely and quickly through the more accurately depicted surface geometry.

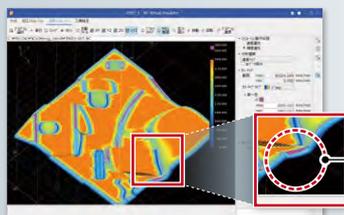


Even tool marks can be visualized  
\*Pinpoint zoom display

Predict processing time

#### Analysis simulation

<Color map display>  
Change in speed, acceleration, speed difference between adjacent segments, and other data is plotted as color map. It helps determine where processing failure would occur.



Visualize difference between adjacent segments



**Machining4U** Processing and Manufacturing

## Offset Status Visualizer



### Facilitate analysis of the cause of processing failure using the data (e.g. tool data) automatically backed up on the cloud

The cause of processing failure can be identified with the aid of functions such as one that automatically backs up the data including tool data (tool offset data, workpiece coordinate offset data) and one that displays the history of obtained tool data.



Automatically retrieve tool data, etc. regularly

日付	時刻	項目	値	フィードバック	設定	変更
2022/11/1	14:00:00	Prog	start	101		
2022/11/1	14:10:00	Sub	start	201		
2022/11/1	14:20:00	Prog	end	101	0.000	32.000
2022/11/1	14:30:00	G54	X		0.000	32.000
2022/11/1	14:40:00	G54	Y		12.234	15.000
2022/11/1	14:50:00	奥溝深	#5		2.333	5.000
2022/11/1	15:00:00	溝幅	#5		45.716	45.716
2022/11/1	15:10:00	溝深	#5		0.000	10.000
2022/11/1	15:20:00	溝幅	#5		0.000	4.500
2022/11/1	15:30:00	溝深	#5		0.000	10.000
2022/11/1	16:00:00	Prog	start	100		
2022/11/1	16:10:00	Prog	end	100		

Highlight the change in retrieved data in the history display

Help to identify the cause of failure quickly using the tool offset data history

#### History display check

Whether the correct offset values were set in setup can be verified by displaying the history of tool offset data and workpiece coordinate offset data.

#### Graphical display of offset value change history

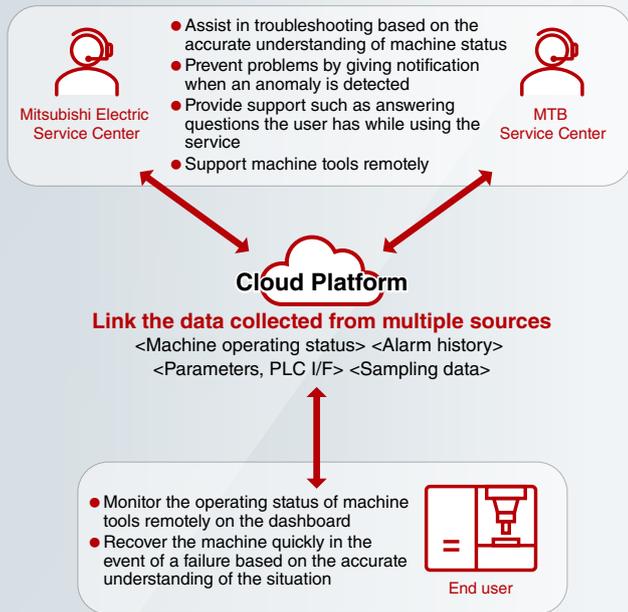
The change in the tool wear amount can be viewed easily by graphically displaying the change history of the offset value for the offset number selected in the history display window.



## iQ Care Remote4U



**Remote service that allows the status of machine tools to be checked in a Web browser, assisting users in the aspect of productivity and maintainability**



### Dashboard function

**Improve production processes and reduce running costs**  
The operation data of the machines with Mitsubishi Electric CNC can be checked in real time.

### Remote diagnosis function

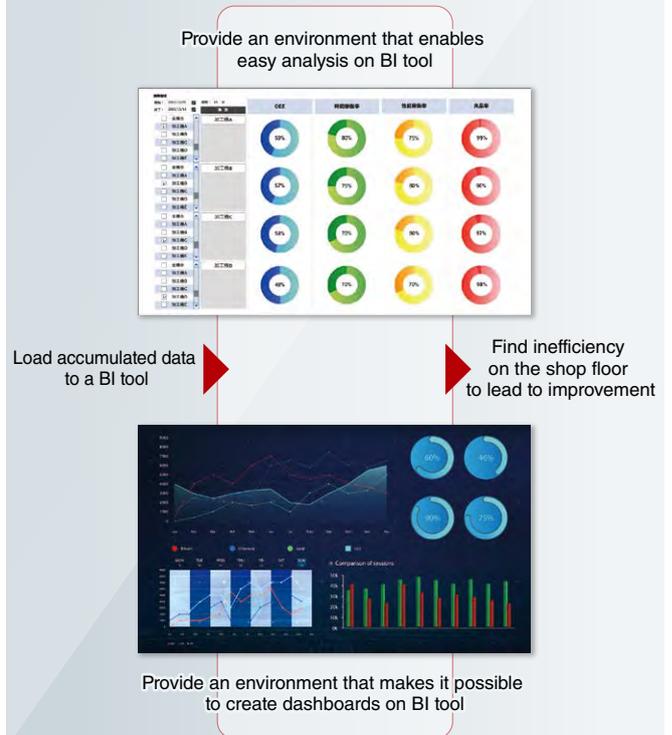
**Increase maintainability**  
Our Service Center remotely supports Mitsubishi Electric CNC on customer's machine.

## Machinery Quick Visualizer



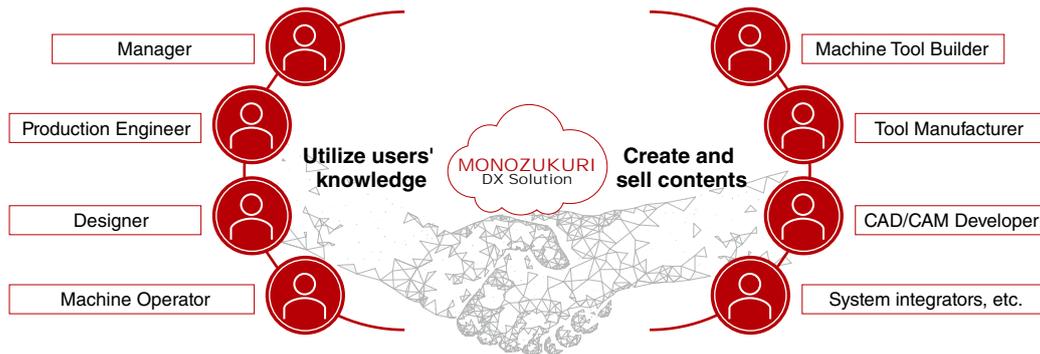
**Visualize the machine operating status up to the present time on the data analysis environment dashboard**

Users can download NC data accumulated in the cloud and use it to analyze contributory factors to low utilization, for example, by using the template report provided by Mitsubishi Electric.



- Visualization is made easy by the dashboard template provided by Mitsubishi Electric, helping users identify the bottlenecks and inefficiency on the shop floor that decrease productivity.
- Dashboards can be customized to suit users' preferences, allowing users to make a dashboard focused on the data of interest.

## Join us as a partner!



Mitsubishi Electric will continue to engage in MONOZUKURI DX Solution that connects not only machines but also the businesses of customers and partner companies through the cloud platform.

If you are interested in joining as a partner, please contact us.

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