



**FANUC AI & FANUC IoT**

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Member of the Board, Executive Vice President  
General Manager, R&D Administration Division

**Shunsuke Matsubara**

FANUC AI & FANUC IoT

# Outline of FANUC

# Outline



# Major Products

- Launch products specialized in manufacturing industry
- Launch Basic products + Application products

Assembly  
Conveyer

## Application products : ROBOT

Articulated ROBOT, Collaborative ROBOT  
Genkotsu ROBOT

End user products



Drive

## Basic Product : FA

CNC, SERVOMOTOR  
LASER Oscillator  
OEM products

Process

## Application products : ROBOMACHINE

ROBOSHOT, ROBOCUT, ROBONANO, ROBODRILL  
End user products



# Three Key Words



The three business of FA, ROBOT and ROBOMACHINE are unified with SERVICE as “one FANUC” to provide innovation and reassurance to manufacturing sites around the world  
 “one Fanuc” is the new Symbol of FANUC conforming our spirit and determination.

## ***Service First***

In the spirit of “Service First”, FANUC provides lifetime maintenance to its products for as long as they are used by customers, through more than 250 service locations in 46 countries throughout the world.

Reliable  
 Predictable  
 Easy to Repair



FANUC aims to minimize downtime in all factories all over the world.

Reliability of the FANUC CNC system in the field :  
 MTBF of Series 0i-D system\* = 52,200hrs  
\* including spares and supplies

FA · ROBOT · ROBOMACHINE  
**FANUC**

A factory that never stops: the Dream of manufacturing sites throughout the world.  
 FANUC Under the slogan “Reliable, Predictable, Easy to Repair” FANUC strives to enhance operability in manufacturing sites throughout the world.

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# Challenges of Machining Factory





Soaring labor costs

Declining labor force



**Expansion of demand  
for automation**

## Challenges of Machining Factory

- Preventive maintenance  
= a factory that does not stop unexpectedly
- Optimization of processing conditions
- Cell optimization → Factory optimization
- Automate experts' skills



**Actively utilize IoT×AI**



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# Outline of AI Function Development

# Difference of approach to AI

## Cyber world



**Huge IT Companies**

Let' use AI!

## Manufacturing world

Let' use AI!

**FANUC**

Let' collect!

**Key technology**  
How to collect data

Big data  
to be collected



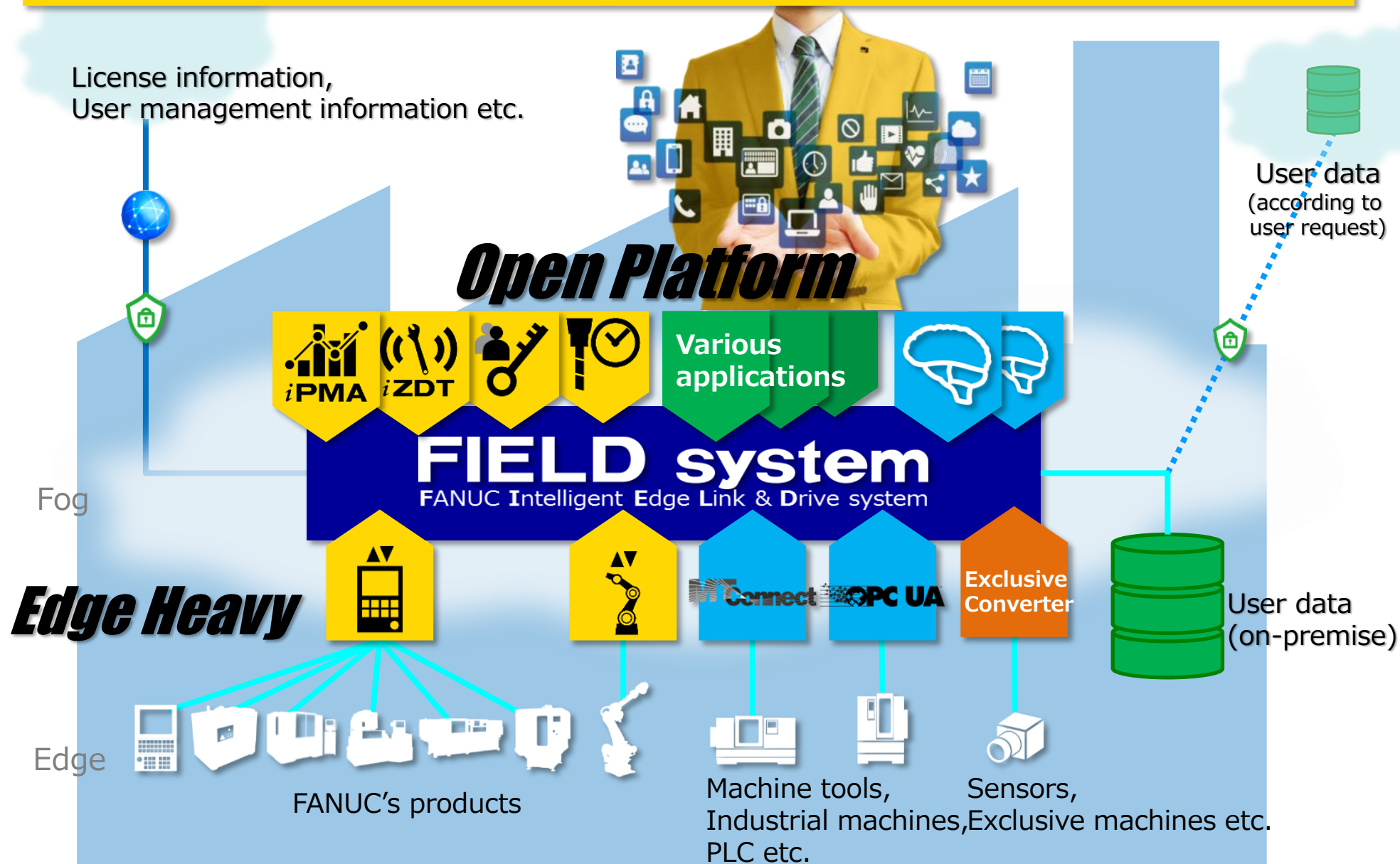


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# **FIELD system**

**FANUC I**ntelligent **E**dge **L**ink & **D**rive **s**ystem

# Conceptual Diagram of FIELD system



# Standing Position of FIELD system at CPS

Hierarchy Levels  
IEC62264//IEC61512

Connected World

Enterprise

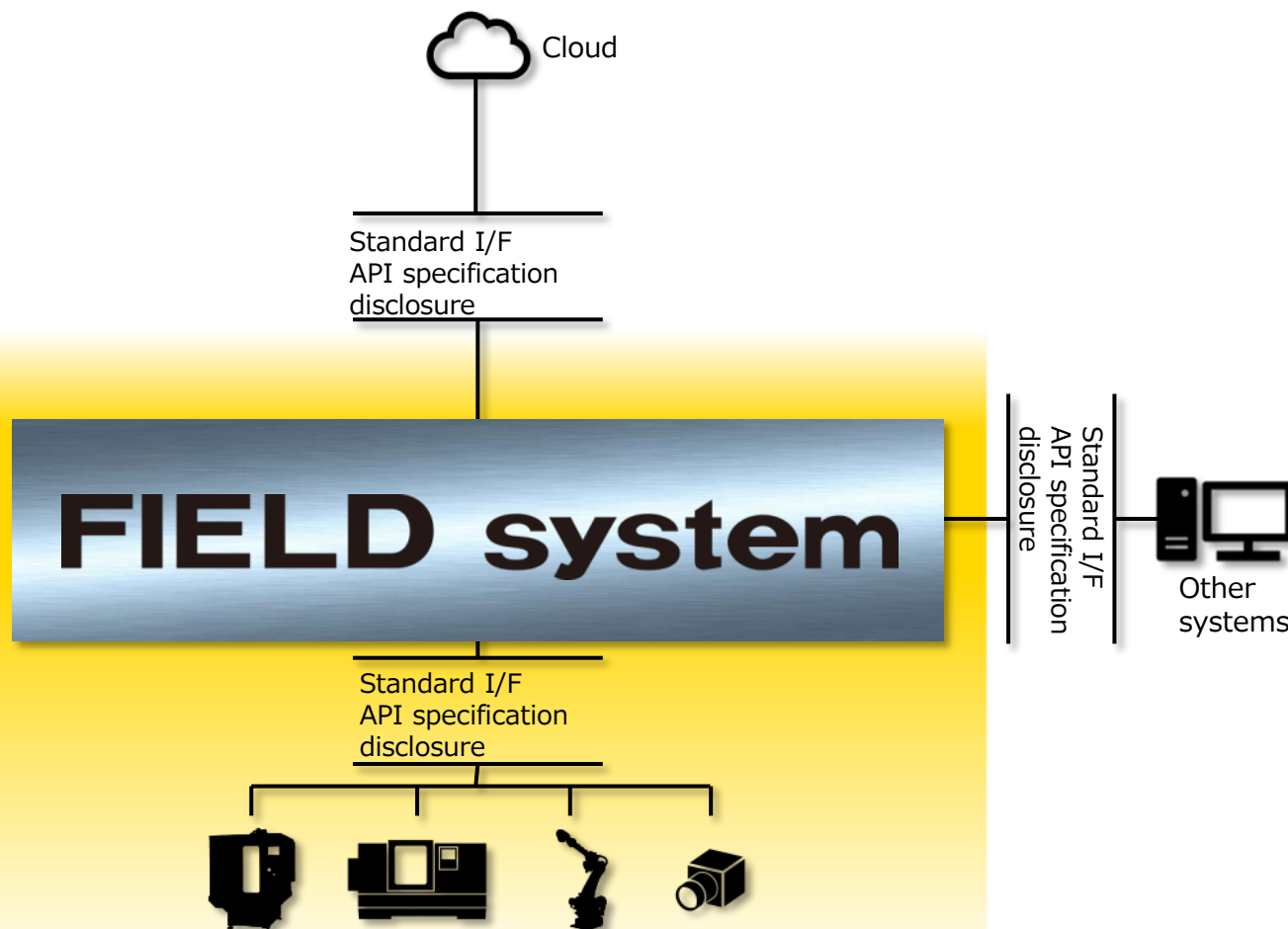
Work Centers

**Station**

**Control Device**

Field Device

Product



In the case of RAMI 4.0

- Publish the standard Inter Face or API specifications for up / down and horizontal connections
- In the case of IIC, China Manufacturing 2025, the standing position is the same.



# Features of FIELD system (Outline)

**“Connect, Monitor, Think, Drive”**

**FANUC Intelligent Edge Link & Drive system**

## Features

- **Edge Heavy**

Heavy processing under the “Fog”, storing user data “on-premise”

- **Open Platform**

Open API. Any company can develop and sell application.

- **Connectivity**

Connect various devices across manufactures and generations.

- **Control**

Drive and control edge equipment.

- **Application & AI**

Use various applications and AI effectively.



# *Edge Heavy* Communication Latency and Security



Not suitable  
for machine control



Internet



Security concerns  
Concern about shutdown due to  
communication disconnection

Suitable  
for machine control

Fog

Edge



User data  
= Treasure mountain

Ideal  
for machine control

## *Open Platform* Free Development of Software

### SDK for FIELD system Partners (Application developers)

- Develop applications
  - Develop converters
- ▶ Review in FANUC ▶ Sell freely  
Price setting freely

Application

Open

**FIELD system**

Open

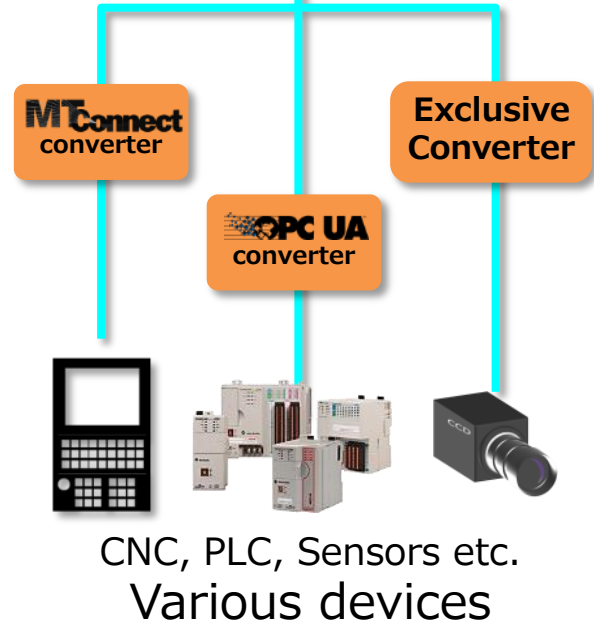
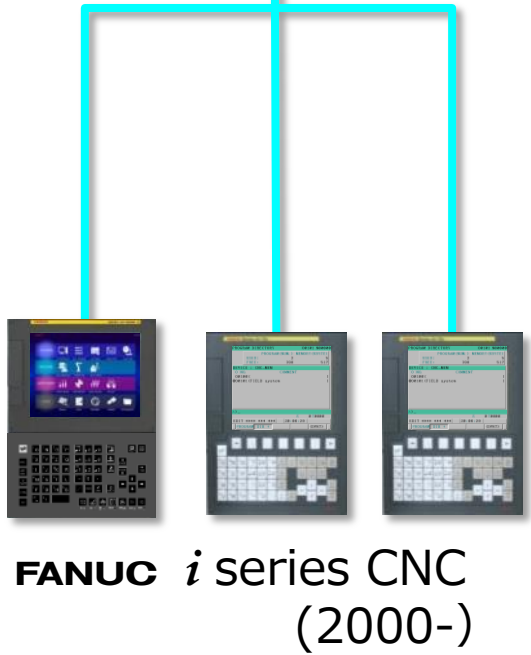
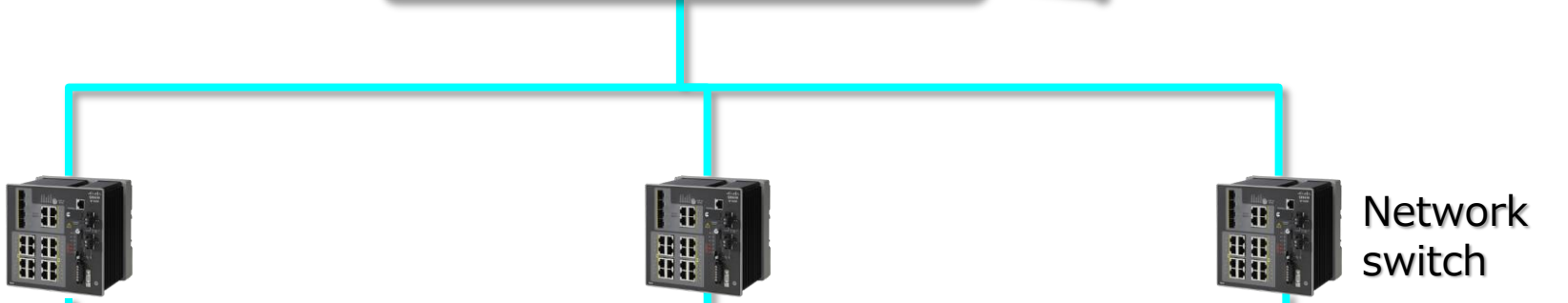
Converter



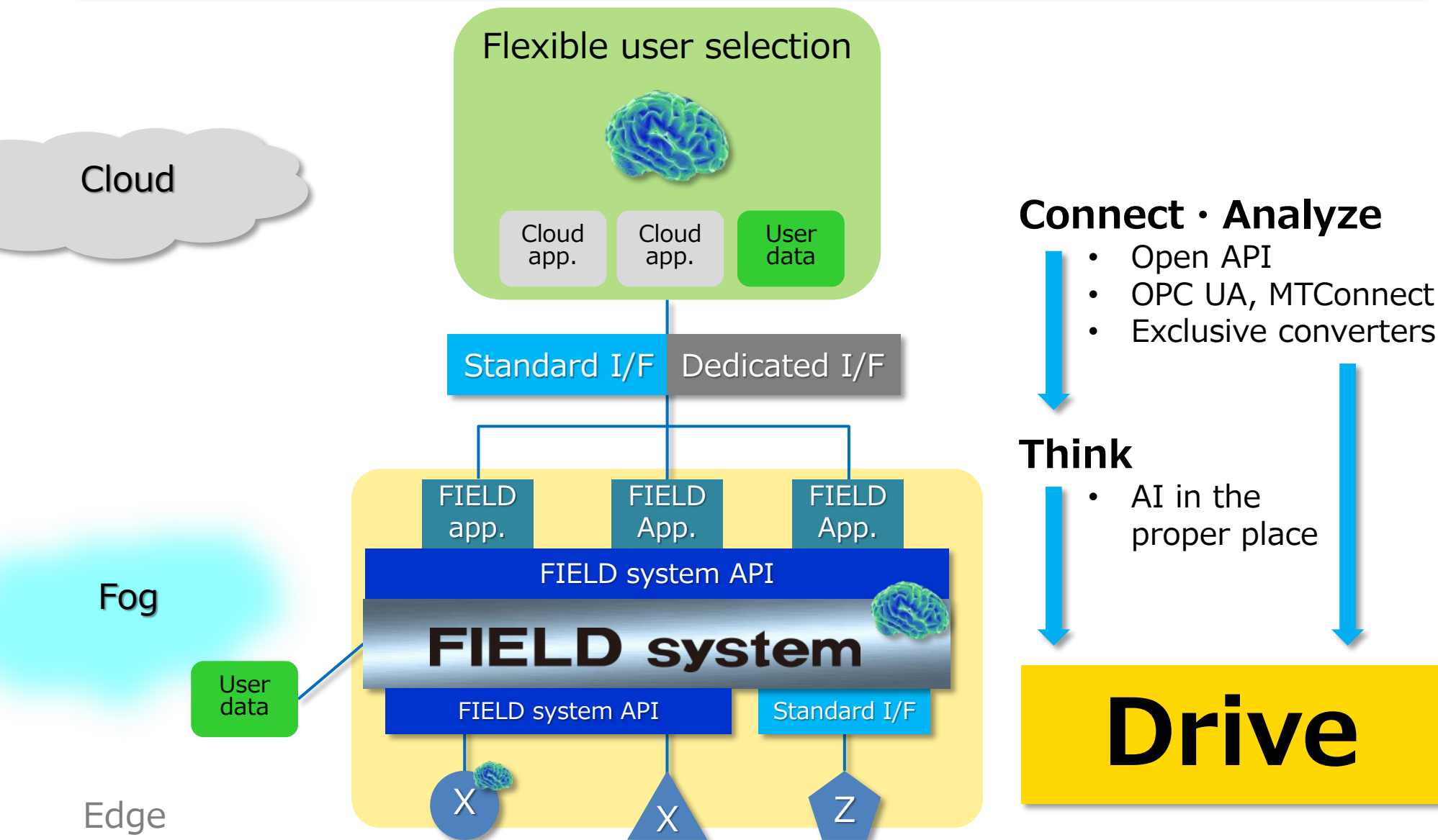
Application Developer

# Connectivity Across Manufactures & Generations

Note :  
Functions may be restricted depending on device specifications.



# *Control* "Drive" by FIELD system



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# Application & AI (AI applications)



## Features of FANUC AI (1/2)

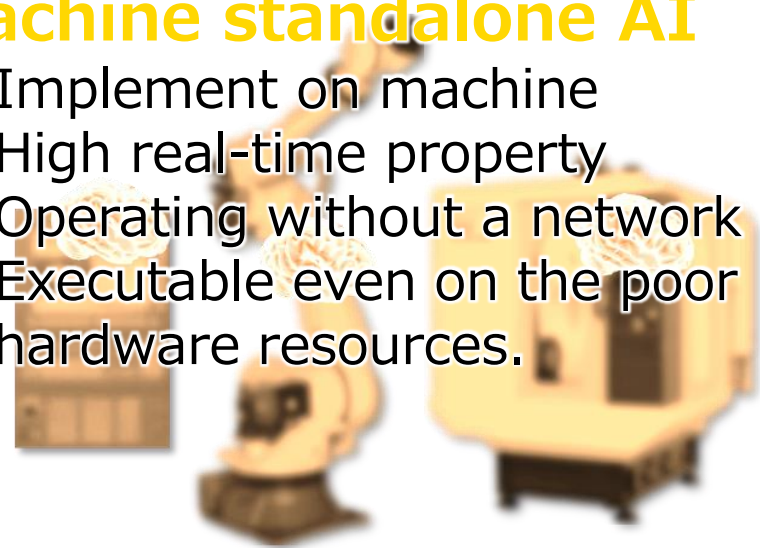
# FANUC AI

The logo for FANUC AI features the word 'FANUC' in red and 'AI' in large black letters, with a blue brain graphic behind the text.

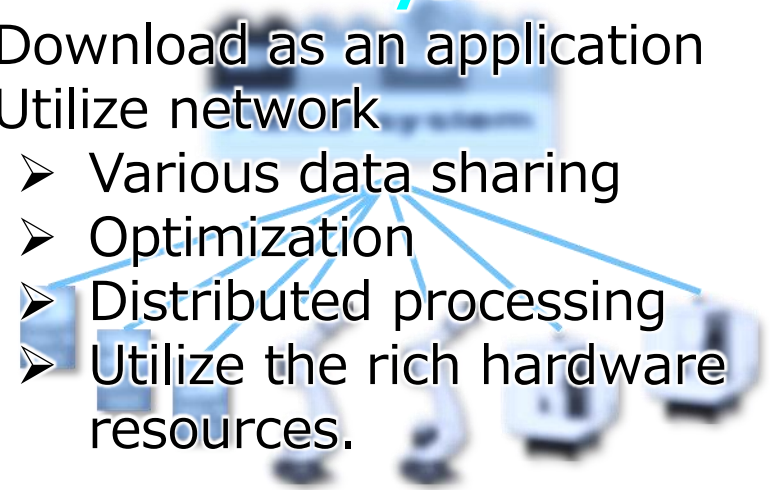
- Function as a product meeting market needs→AI not ending in a dream
- Practical AI→Improve and solve troubles in the manufacturing site

## Categorize by implementation (in the right place)

### Machine standalone AI

- Implement on machine
  - High real-time property
  - Operating without a network
  - Executable even on the poor hardware resources.
- 
- A yellow FANUC industrial robot arm is shown in the background of the 'Machine standalone AI' section.

### AI on FIELD system

- Download as an application
  - Utilize network
    - Various data sharing
    - Optimization
    - Distributed processing
    - Utilize the rich hardware resources.
- 
- A network diagram with a central blue node and several lines connecting to other nodes is shown in the background of the 'AI on FIELD system' section.

## Features of FANUC AI (2/2)

# FANUC AI



- Function as a product meeting market needs→AI not ending in a dream
- Practical AI→Improve and solve troubles in the manufacturing site

## Categorize by function

### Performance improvement Inspection

- AI thermal displacement compensation (for ROBODRILL, ROBOCUT and MTBs)
- Servo parameter tuning (FF)
- Inspection for smartphone surface
- 
- 
- 

### Digitalization of expert's skills Ease of use

- Bin Picking Robot

### Preventive maintenance

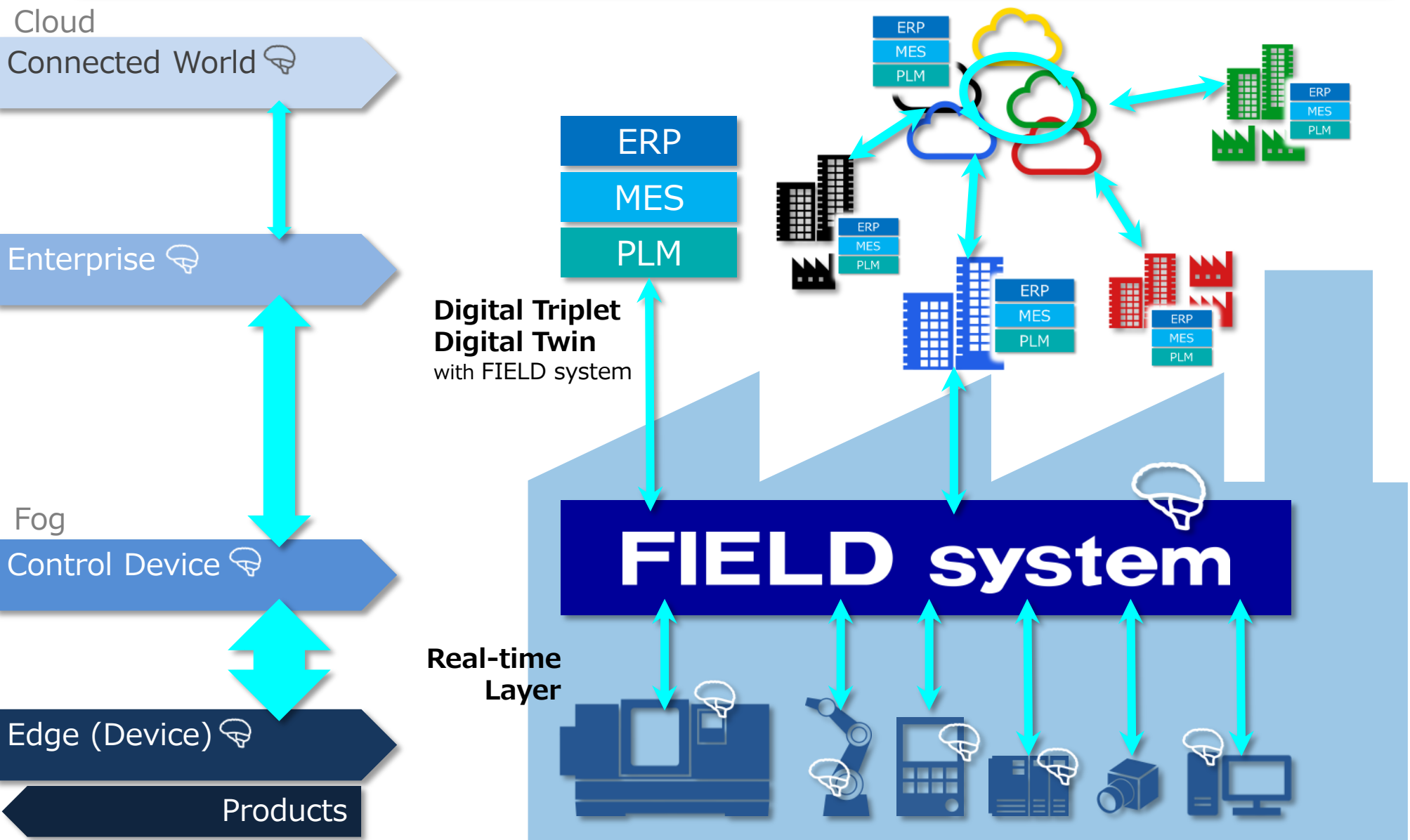
- ZDT function
  - Failure prediction of robot reducer
  - Failure prediction of spindle motor
  - Back-flow monitor (ROBOSHOT)
  - 
  - 
  -

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# **FIELD system & FANUC AI in CPS**

## **Conclusion**

# FIELD system & FANUC AI in CPS





**Thank you for your attention.**