

# Le soluzioni pensate alle nuove sfide del mercato

Tiesse Robot S.p.A. - Kawasaki Robotics Southern Europe HUB

24/02/2023 - Ing. Flavio Marani



# Tiesse Robot - OGGI

- ▶ Fondata: 1976
- ▶ Capitale: M€ 2,2
- ▶ Sede: Visano (BS)
- ▶ Dipendenti: 72
- ▶ Uff. Progettazione: 9
- ▶ Fatturato 2022: M€ 34,2
- ▶ Kawasaki Heavy Industry shares: 24,9%







Superficie totale: 17.600 mq

Coperti: 7.000 mq



Southern Europe HUB

# Chi è Kawasaki Heavy Industries:



**Rolling Stock**



**Aircraft**



**Plant**



**Precision Machinery**



**Industrial Robot**



**Jet Ski**



**Gas Turbine**



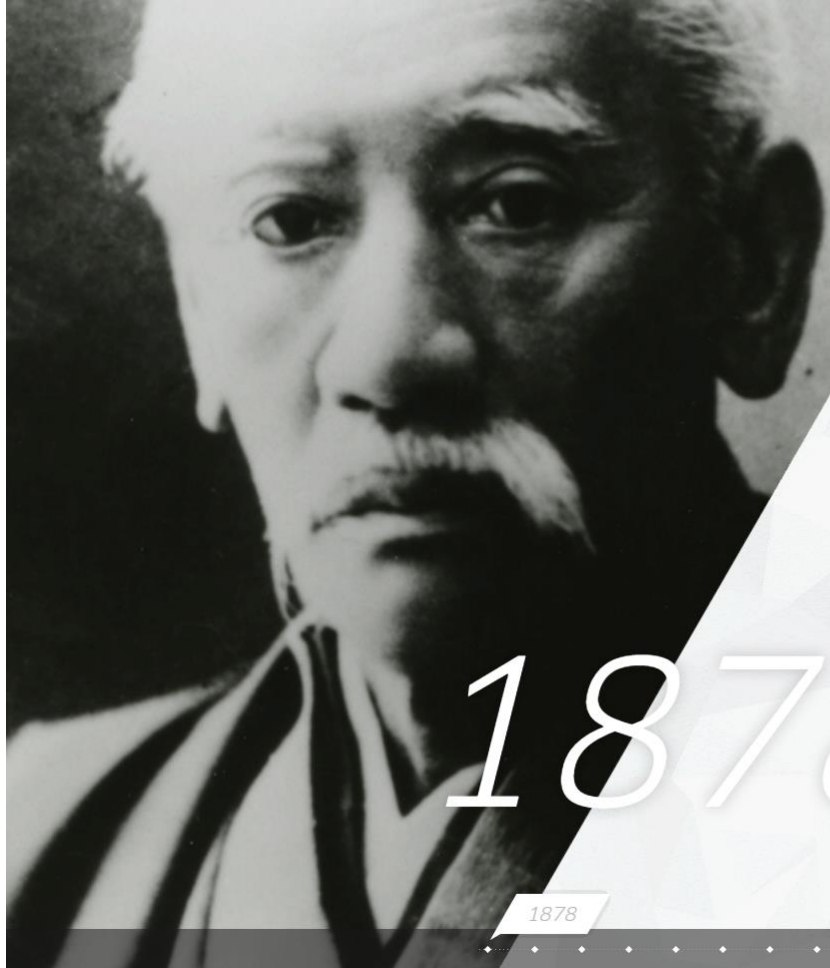
**Ship**



**Motorcycle**



# La storia di Kawasaki:



1878

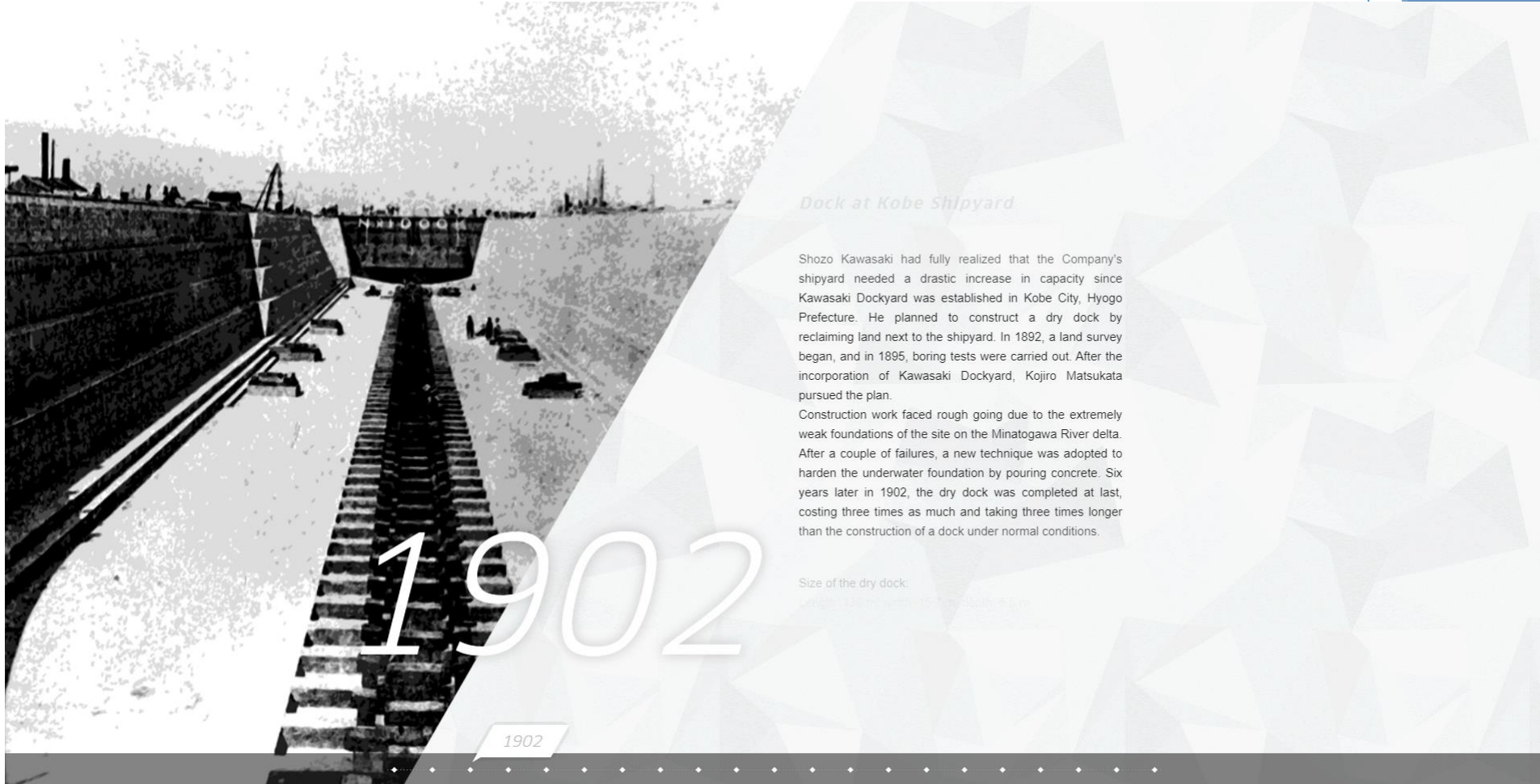
(Tokyo)

Kawasaki's origins go back to 1878, when Shozo Kawasaki established Kawasaki Tsukiji Shipyard in Tokyo. Eighteen years later, in 1896, it was incorporated as Kawasaki Dockyard Co., Ltd.

Born in Kagoshima to a kimono merchant, Shozo Kawasaki became a tradesman at the age of 17 in Nagasaki, the only place in Japan then open to the West. He started a shipping business in Osaka at 27, which failed when his cargo ship sank during a storm. In 1869, he joined a company handling sugar from Ryukyu (currently Okinawa Prefecture), established by a Kagoshima samurai, and in 1893, researched Ryukyu sugar and sea routes to Ryukyu at the request of the Ministry of Finance. In 1894, he was appointed executive vice president of Japan Mail Steam-Powered Shipping Company, and succeeded in opening a sea route to Ryukyu and transporting sugar to mainland Japan.

Finance, who was from the same province as Kawasaki, he established Kawasaki Tsukiji Shipyard on borrowed land from the government alongside the Sumidagawa River

# La storia di Kawasaki:



## Dock at Kobe Shipyard

Shozo Kawasaki had fully realized that the Company's shipyard needed a drastic increase in capacity since Kawasaki Dockyard was established in Kobe City, Hyogo Prefecture. He planned to construct a dry dock by reclaiming land next to the shipyard. In 1892, a land survey began, and in 1895, boring tests were carried out. After the incorporation of Kawasaki Dockyard, Kojiro Matsukata pursued the plan.

Construction work faced rough going due to the extremely weak foundations of the site on the Minatogawa River delta. After a couple of failures, a new technique was adopted to harden the underwater foundation by pouring concrete. Six years later in 1902, the dry dock was completed at last, costing three times as much and taking three times longer than the construction of a dock under normal conditions.

Size of the dry dock:

Length: 120m, width: 27m, depth: 9.6m

# La storia di Kawasaki:

*2000, the first Japan-made industrial robot*

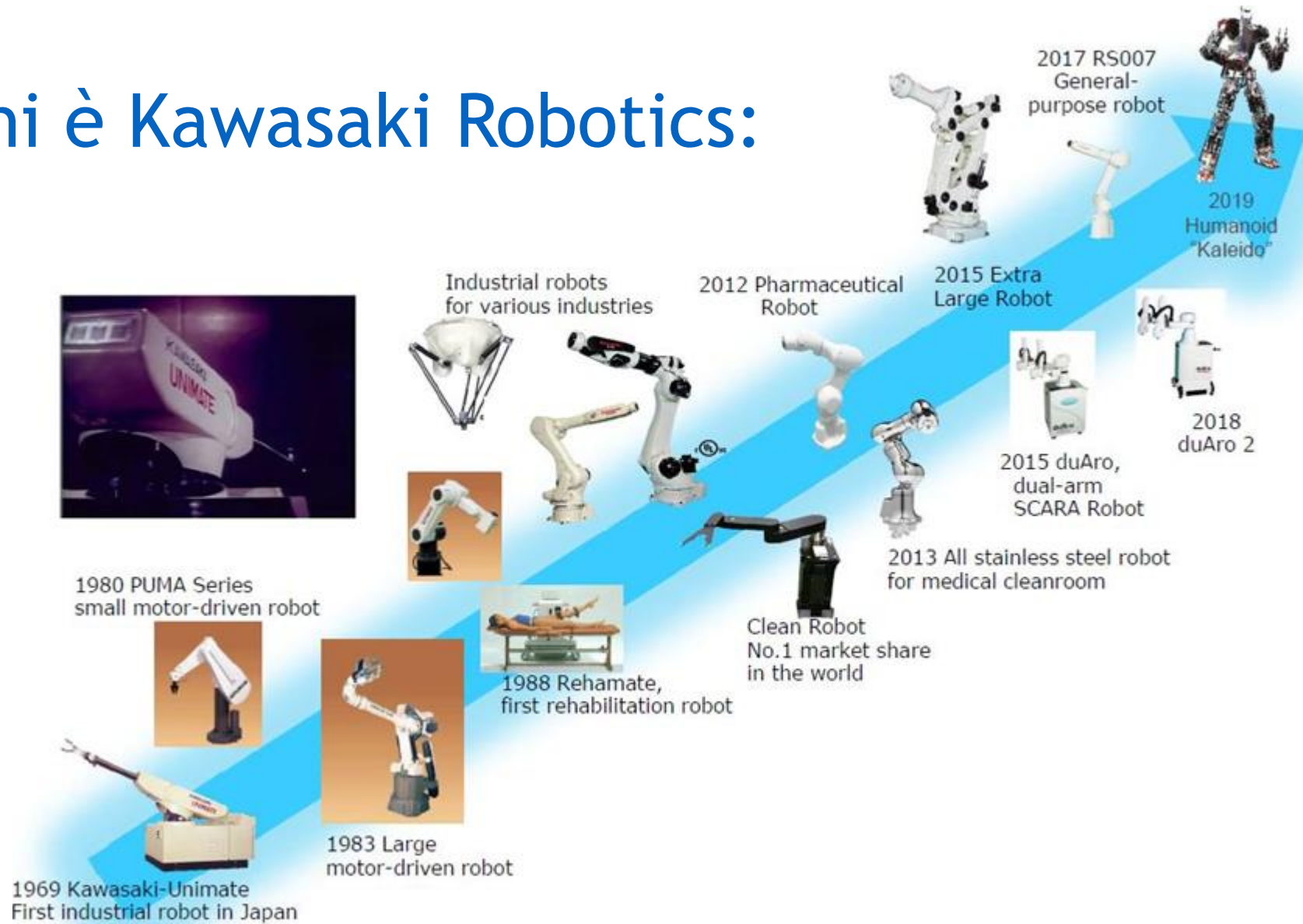
Kawasaki regarded the development and production of labor-saving machines and systems as an important mission, and became Japan's pioneer in the industrial robot field. In 1968, the Company (Kawasaki Aircraft) entered into a technical agreement with Unimation Inc., a U.S. company specializing in industrial robots, and began development work. In 1969, the Company succeeded in developing the Kawasaki-Unimate 2000, the first industrial robot ever produced in Japan.

1969

1969



# Chi è Kawasaki Robotics:





# Chi è Kawasaki Robotics:

Kawasaki ha sviluppato robot per ogni specifica applicazione: manipolazione, saldatura, pallettizzazione, verniciatura e medicale/farmaceutico.

Ogni applicazione ha le sue criticità e ogni serie di robot Kawasaki è dotata di specifiche peculiarità che permettono di eccellere in ogni settore.



# Tiesse Robot e Kawasaki Robotics festeggiano 30 anni di partnership

Una storia di successi nel mondo ed un connubio nato dal comune slancio verso le frontiere della tecnologia e dell'innovazione.

Da 30 anni le due società sono viste e riconosciute come un'unica realtà ed un unico marchio: forza tecnologica e produttiva da parte di Kawasaki unita alle capacità ingegneristiche e commerciali da parte di Tiesse.



# La nascita del: Kawasaki Robotics Southern Europe HUB

A partire dal 2022 la collaborazione tra Tiesse Robot e Kawasaki si incrementa ulteriormente.

La Tiesse Robot diventa Kawasaki Robotics Southern Europe HUB prendendo in carico come distribuzione e service dei prodotti Kawasaki non solo il mercato italiano, ma anche l'area balcanica del sud Europa



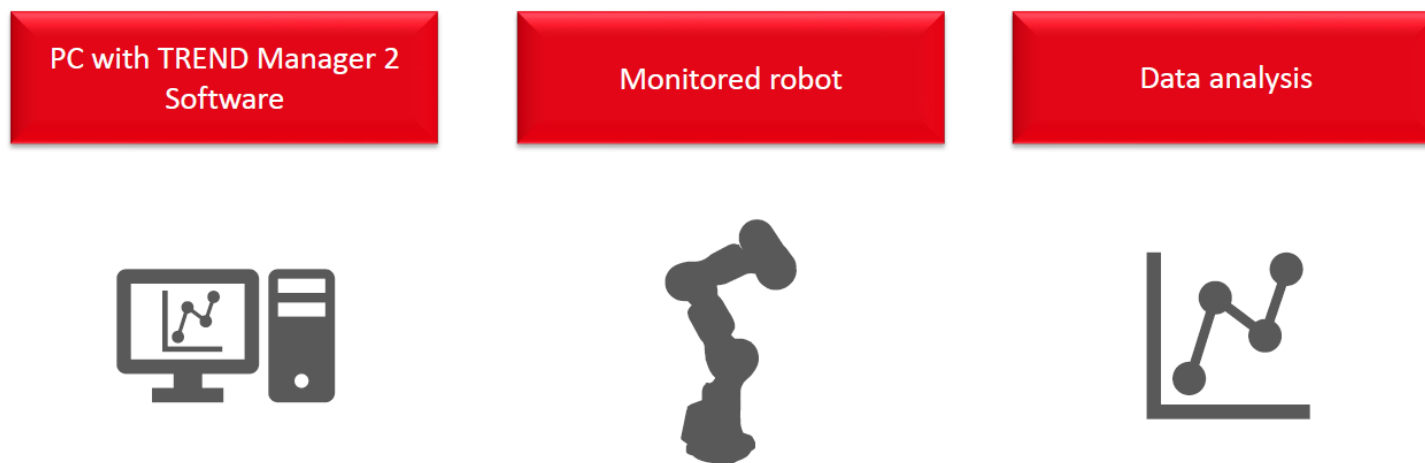
Southern Europe HUB



# TREND MANAGER: La manutenzione predittiva by Kawasaki

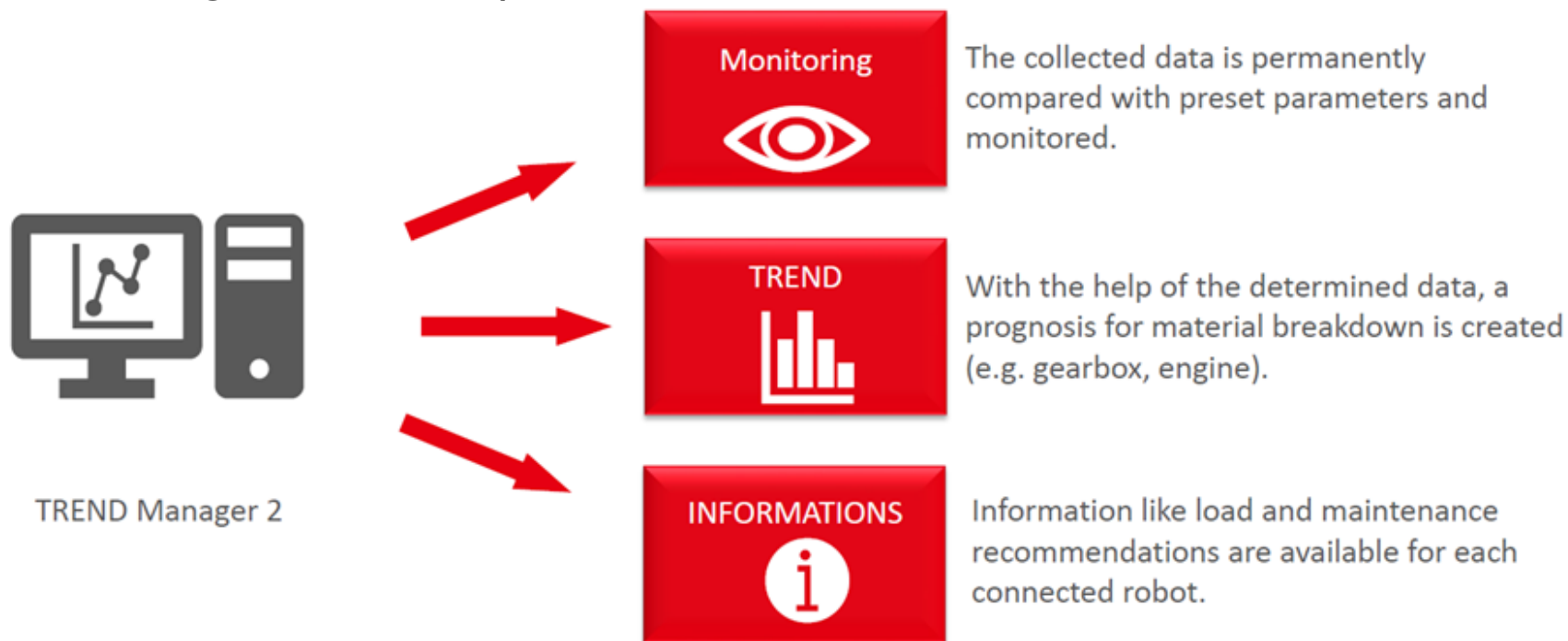
Massima affidabilità garantita grazie alla manutenzione preventiva!

- ▶ TREND Manager 2 è un software per PC che raccoglie i dati dal robot e li elabora successivamente.
- ▶ Overview del sistema:



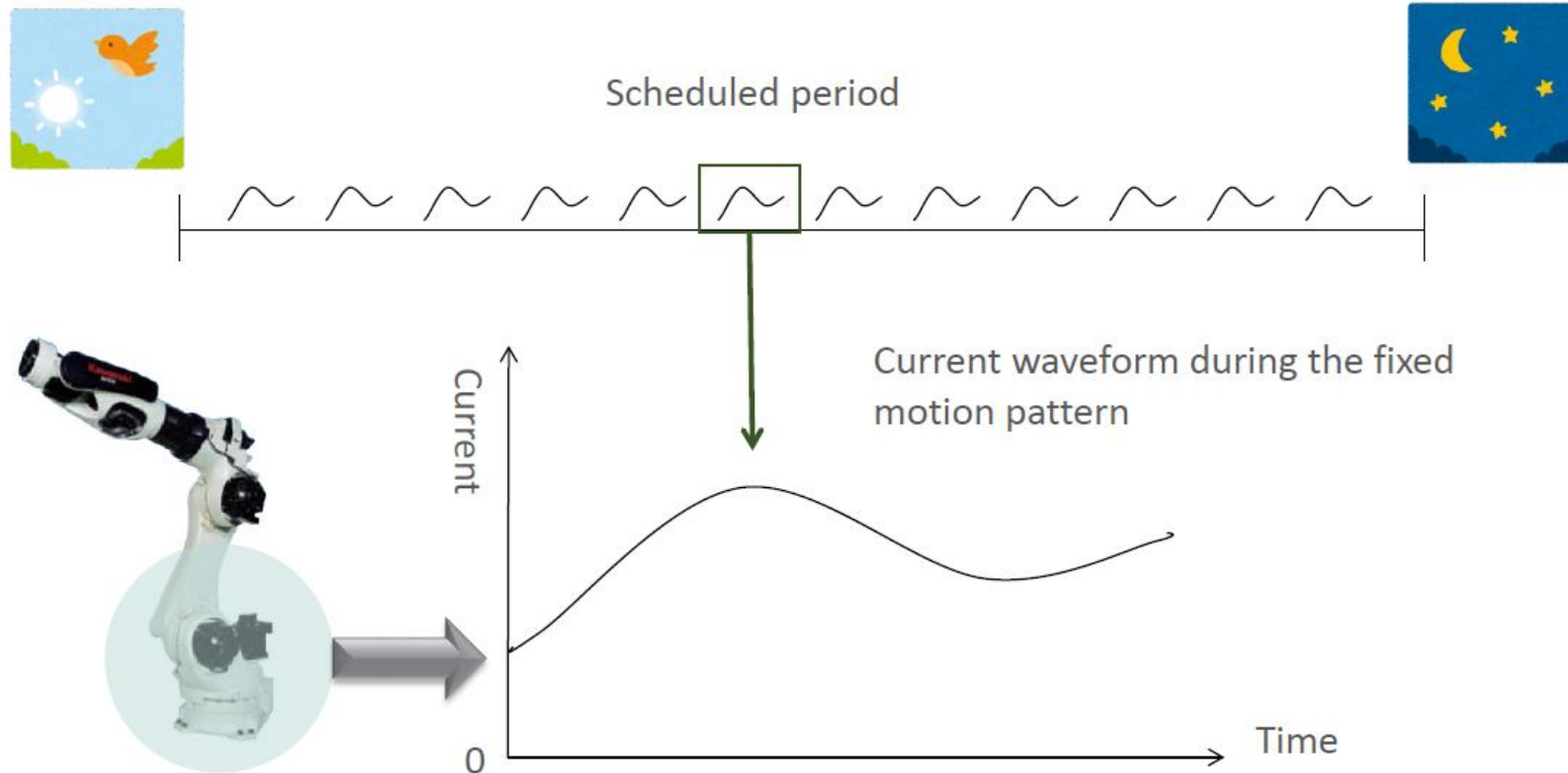
# TREND MANAGER: La manutenzione predittiva by Kawasaki

- ▶ I dati raccolti vengono utilizzati per:



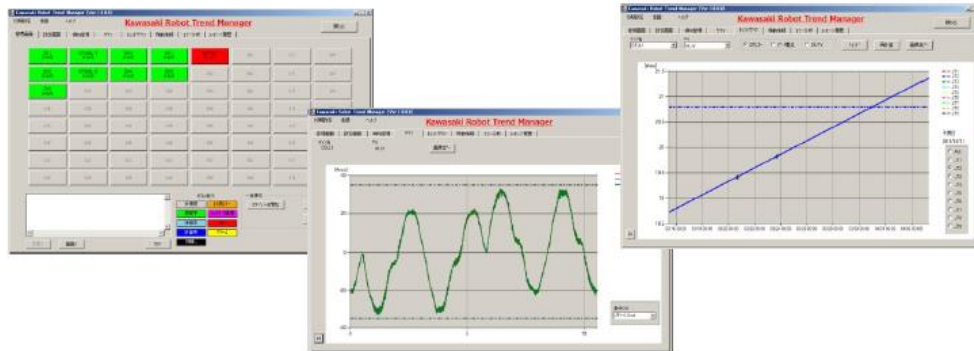
# TREND MANAGER:

La raccolta dati avviene in un periodo definito





# TREND MANAGER: Il software controlla la corrente dei motori!

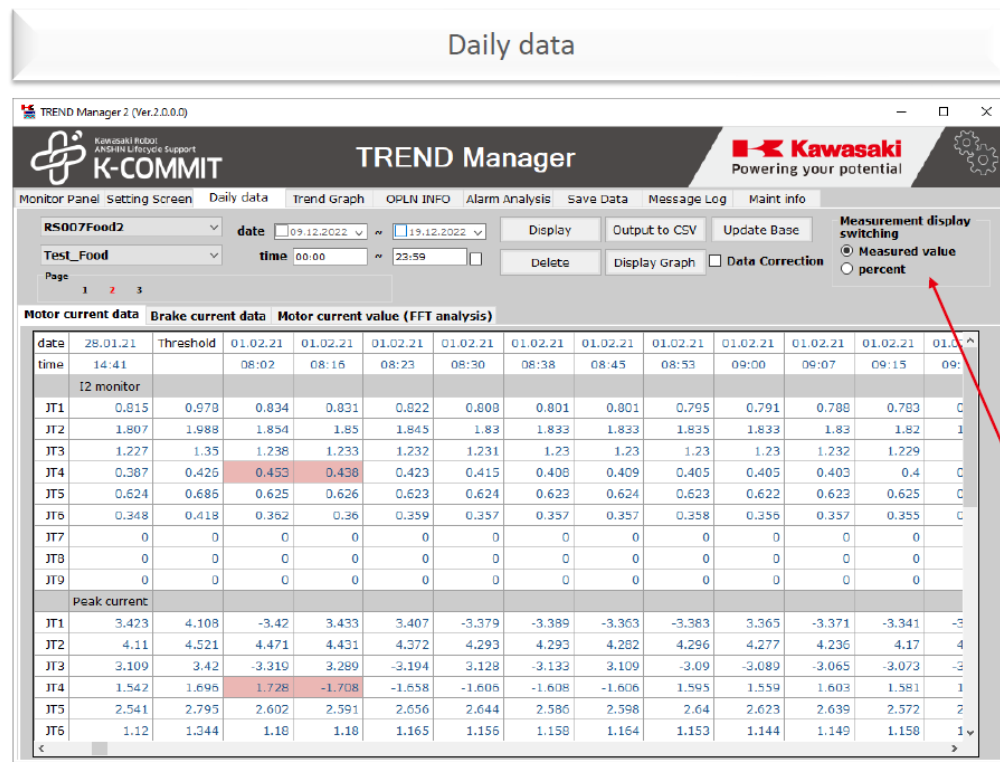


TREND Manager 2 predicts the failure or malfunction of the robot's most important parts, such as the reduction gear and servo motor, and alerts the user before the robot fails due to the damage.



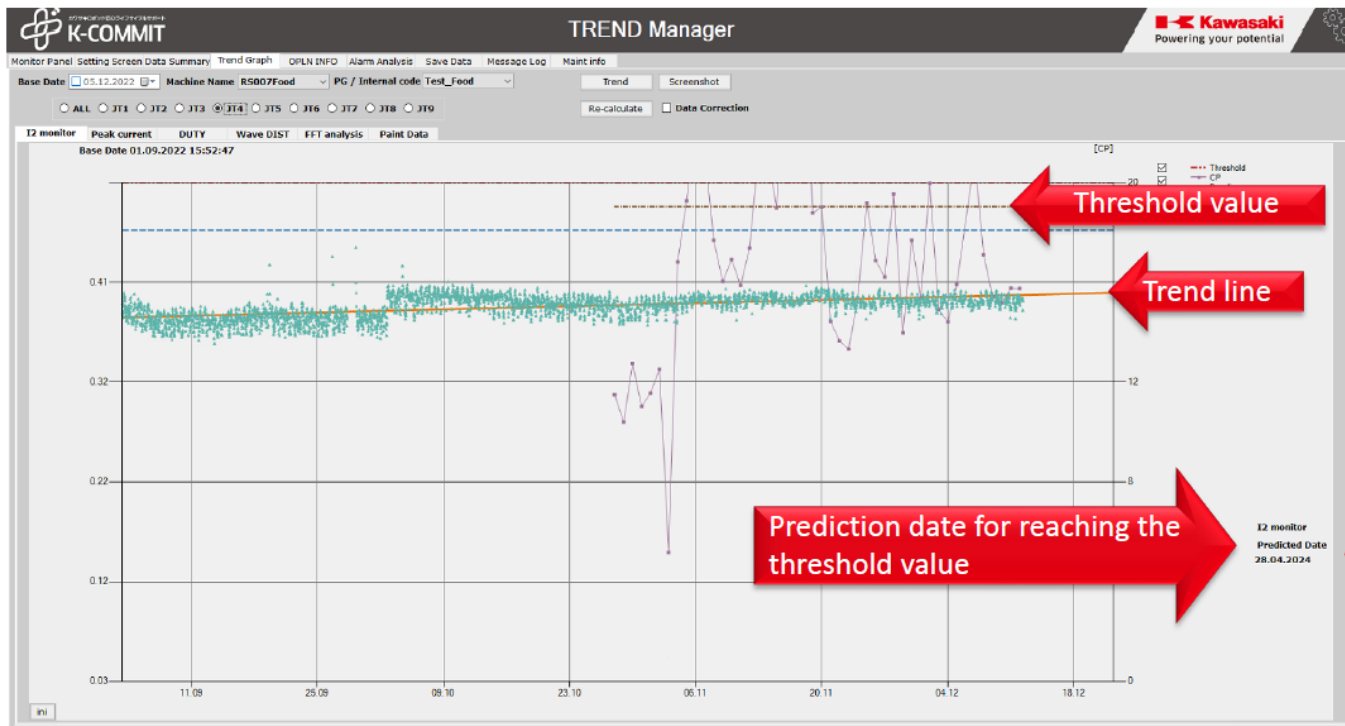
The worse the condition of a reduction gear or motor, the greater the motor current.  
TREND Manager 2 constantly monitors the motor current to detect the increasing trend of the motor current.

# TREND MANAGER: L'elaborazione dei dati mostra la linea di tendenza



# TREND MANAGER: L'analisi dei dati

Trend Graph (View of one axis)



The trend graph can be displayed individually for each axis.

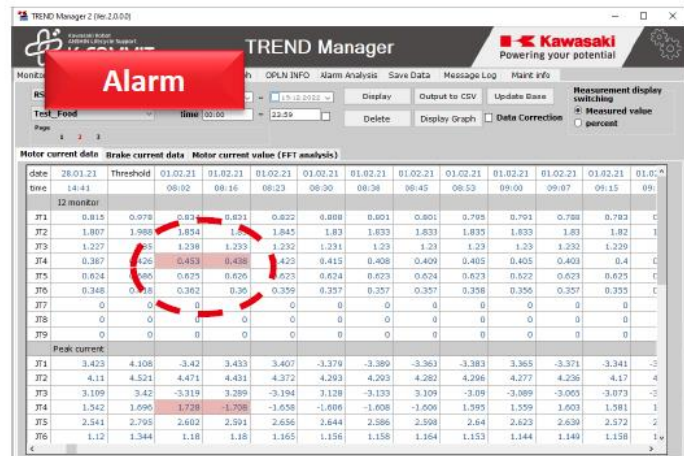
On the left side of the window, the prediction date for reaching the limit value is shown.

**I2 monitor**  
**Predicted Date**  
**28.04.2024**



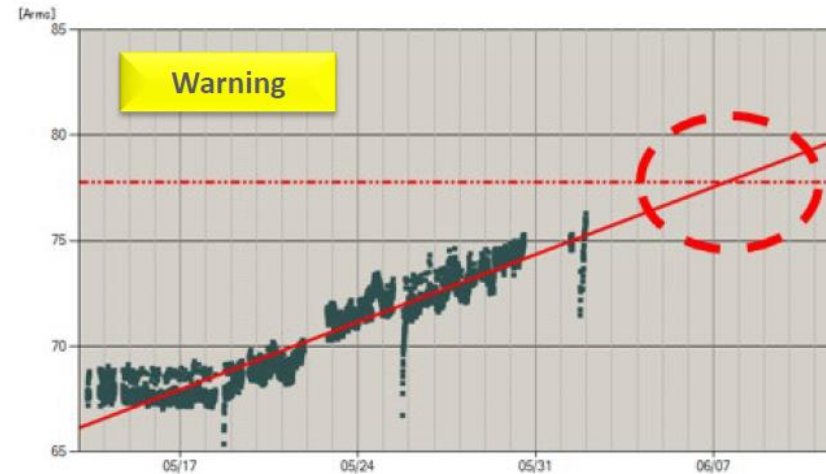
# TREND MANAGER: La funzione di warning / allarme

Warning function / Alarm function



The screenshot shows the TREND Manager software interface. A red 'Alarm' notification is visible in the top left. Below it, there is a table with columns for 'date', 'threshold', and 'Motor current data'. The table contains data for various motor axes (JF1 to JF9) and their current values over time. A red dashed circle highlights a specific data point in the table.

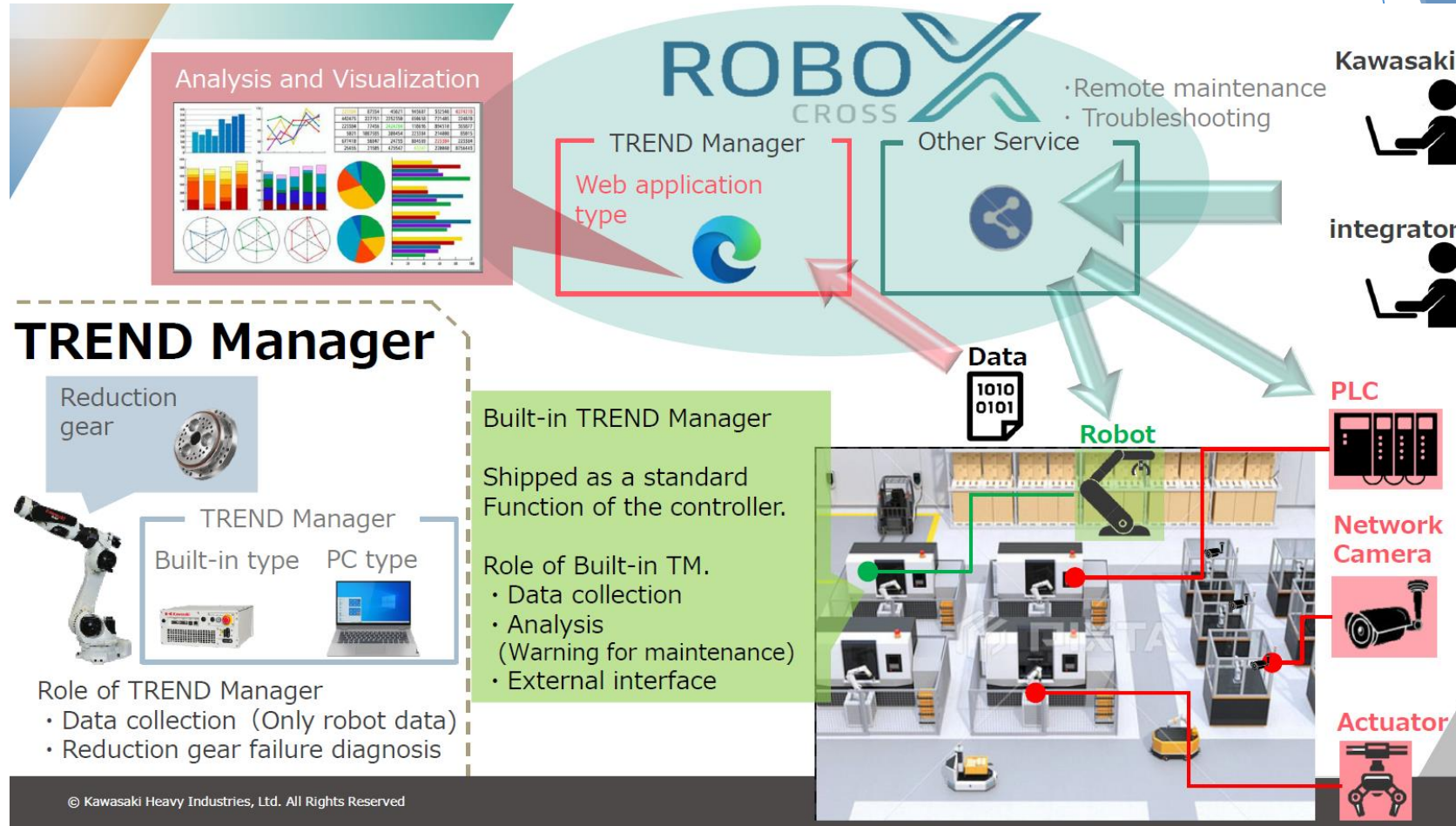
date	threshold	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21	01.02.21
14:41	06:02	06:16	06:23	06:30	06:38	06:45	06:53	06:59	09:00	09:07	09:15	09:21	09:28	09:35	09:42
12 monitor															
JF1	0.815	0.978	0.821	0.831	0.822	0.808	0.801	0.801	0.795	0.791	0.789	0.783	0.783	0.783	0.783
JF2	1.807	1.988	1.854	1.854	1.845	1.83	1.833	1.833	1.835	1.835	1.83	1.83	1.83	1.83	1.82
JF3	1.237	1.237	1.239	1.233	1.232	1.231	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
JF4	0.387	0.426	0.453	0.426	0.423	0.415	0.408	0.409	0.405	0.405	0.401	0.4	0.4	0.4	0.4
JF5	0.624	0.605	0.625	0.625	0.623	0.624	0.623	0.624	0.623	0.623	0.622	0.623	0.623	0.623	0.623
JF6	0.348	0.348	0.362	0.36	0.359	0.357	0.357	0.357	0.358	0.356	0.357	0.355	0.355	0.355	0.355
JF7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JF8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JF9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak current															
JF1	3.423	4.108	-3.42	3.433	3.407	-3.379	-3.389	-3.363	-3.383	3.365	-3.371	-3.341	-3.341	-3.341	-3.341
JF2	4.11	4.521	4.471	4.431	4.372	4.293	4.293	4.282	4.296	4.277	4.236	4.17	4.17	4.17	4.17
JF3	3.109	3.42	-3.319	3.289	-3.194	3.128	-3.133	3.109	-3.09	-3.089	-3.066	-3.073	-3.073	-3.073	-3.073
JF4	1.342	1.696	1.728	1.956	-1.856	-1.806	-1.808	-1.808	1.595	1.595	1.603	1.581	1.581	1.581	1.581
JF5	2.341	2.795	2.602	2.591	2.656	1.644	2.586	2.598	2.64	2.623	2.639	2.572	2.572	2.572	2.572
JF6	1.12	1.344	1.18	1.18	1.165	1.156	1.158	1.164	1.153	1.144	1.149	1.158	1.158	1.158	1.158



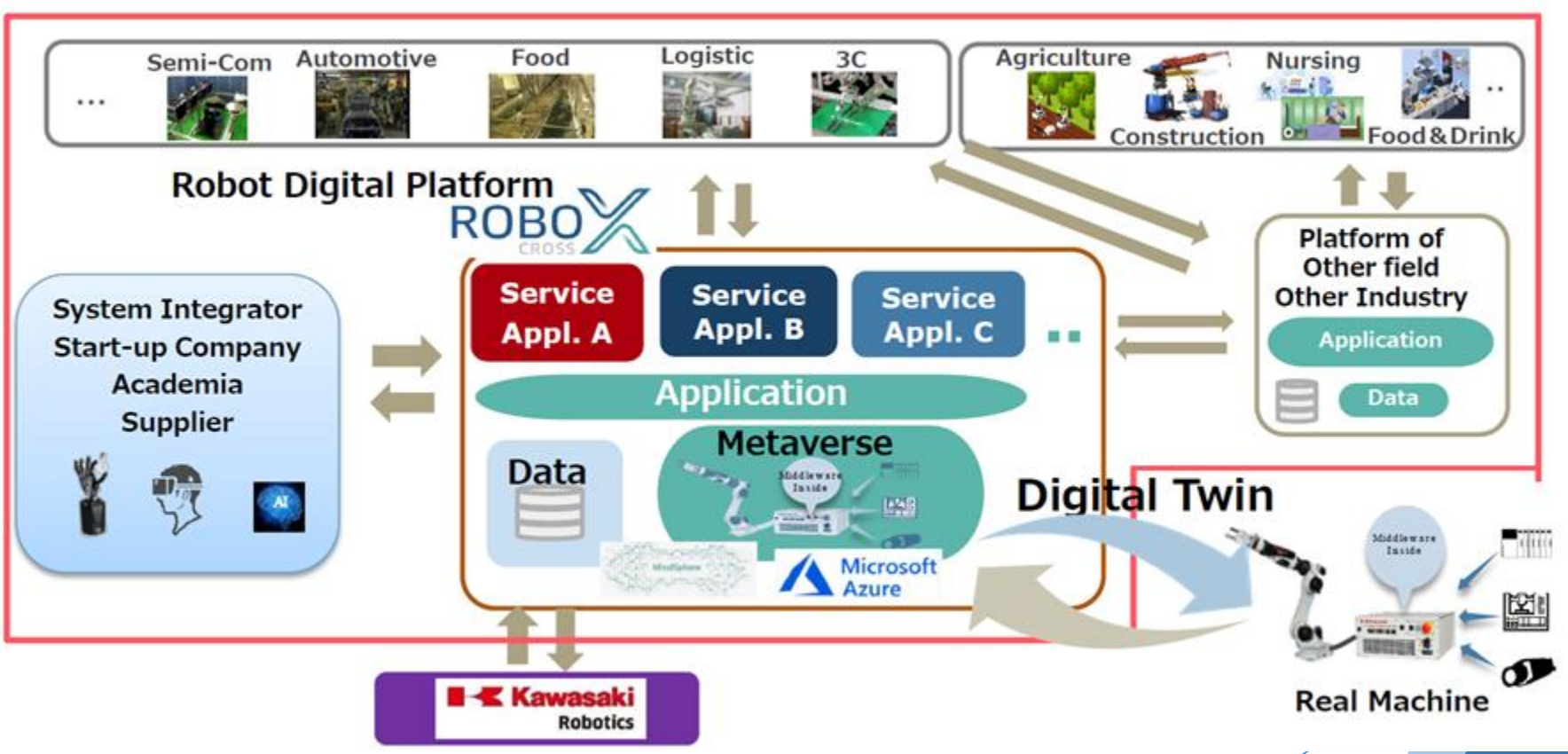
An alarm is generated when the value of an axis has exceeded the agreed limit.

A warning is generated when the predicted trend line will exceed the limit within the prediction period.

# Quale è il prossimo passo?



# Kawasaki Robotics presenta: Robot Digital Platform - ROBO CROSS





# ROBO CROSS Concept - il video:

[https://youtu.be/90DvU0g\\_rFo](https://youtu.be/90DvU0g_rFo)



# Grazie per l'attenzione!

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