



EnAIP FVG e KUKA, insieme per la formazione nella robotica

KUKA Overview, Sustainability, AI and more

Alberto Pelleri
Head of Business Development
KUKA Roboter Italia SpA

Agenda

15:00	KUKA Overview, Robot Market, Educational	A. Pellerio
15:30	Cobot & AMR	F. Ponsetti
16:00	Presentazione dei servizi di EnAIP FVG per le imprese	R. Miceli
16:15	Tour dei Laboratori con Live Demo delle soluzioni KUKA	P. Germani, D. Piasentin
17:00	Networking & Rinfresco	

KUKA



_you encounter KUKA everywhere

Corporate Core

Systems

KUKA

Smart, safe & efficient
production solutions



Robotics

KUKA

Hardware, software & services
for smart automation



Digital

KUKA **DEVICE INSIGHT** **VISUAL COMPONENTS** **mosabot**

Digital Solutions for
Manufacturing lifecycle



KUKA China

Swisslog

SWISSLOG

Data- & robotic-driven
logistics automation



Swisslog Healthcare



Material Transport &
Pharmacy Automation



Global Business Service  as a stable basis

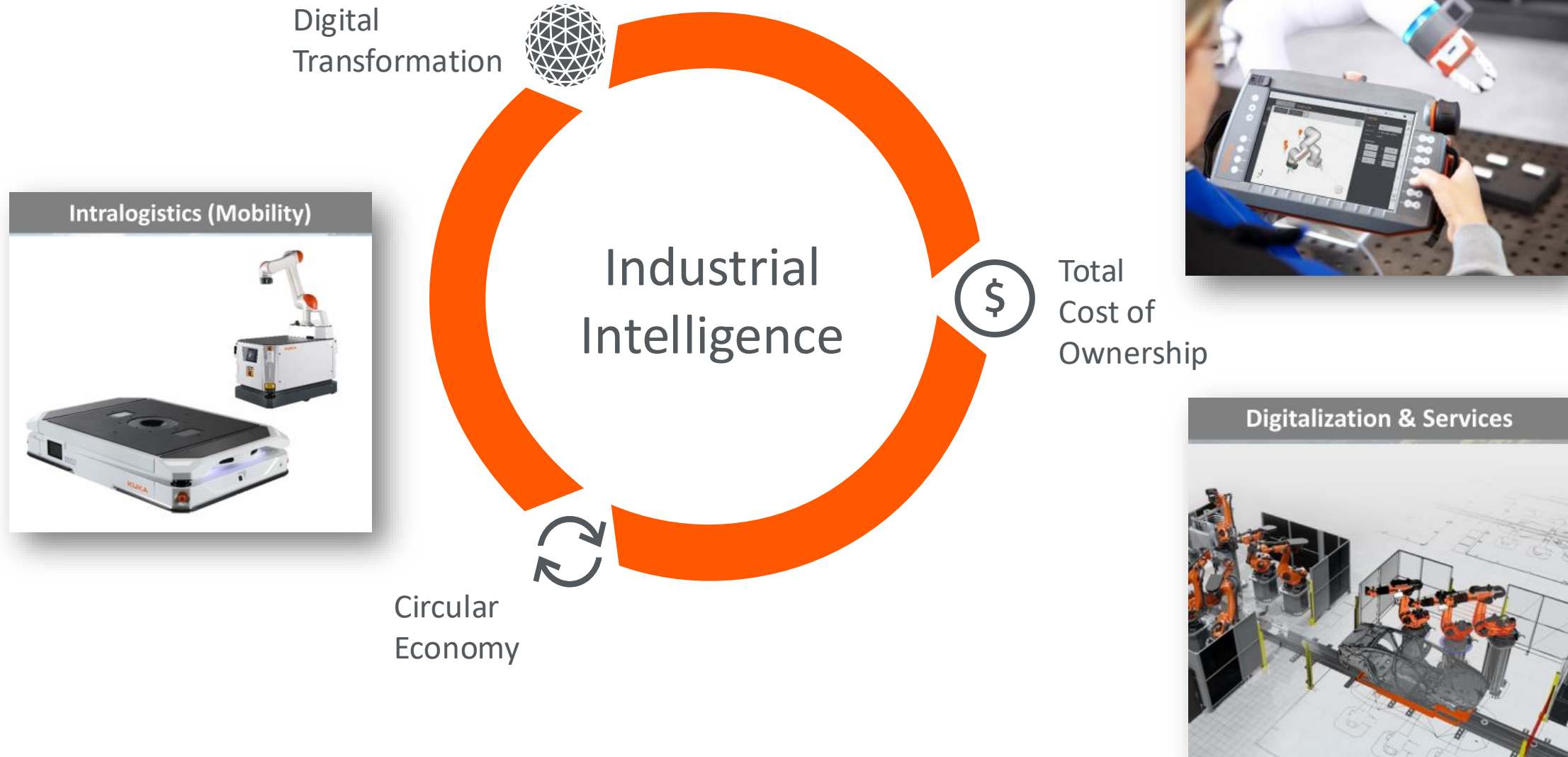
 **Factory Automation**

 **Warehouse Automation**

 **Hospital Automation** 



Why KUKA?
_the numbers speak for us



TOP 5 GLOBAL ROBOTICS TRENDS IN 2024

1

**AI AND
MACHINE
LEARNING**



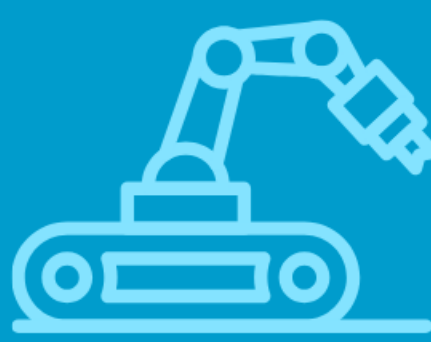
2

**COBOTS IN
NEW
APPLICATIONS**



3

**MOBILE
MANIPULATORS**



4

**DIGITAL
TWIN**



5

HUMANOIDS



Find out more at:

<https://ifr.org/ifr-press-releases/news/top-5-robot-trends-2024>



TOP 5 GLOBAL ROBOTICS TRENDS IN 2025

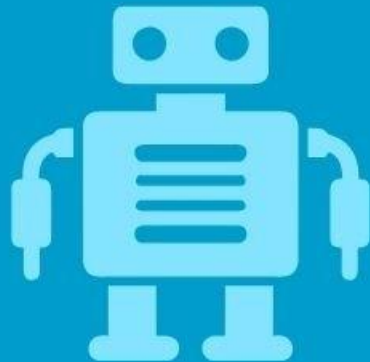
1

**PHYSICAL,
ANALYTIC &
GENERATIVE AI**



2

**SINGLE PURPOSE
HUMANOIDS**



3

**SUSTAINABILITY
AND ENERGY
CONSUMPTION**



4

**NEW FIELDS OF
BUSINESS AND
CUSTOMER
SEGMENTS**



5

**ROBOTS
ADDRESSING
LABOR SHORTAGE**

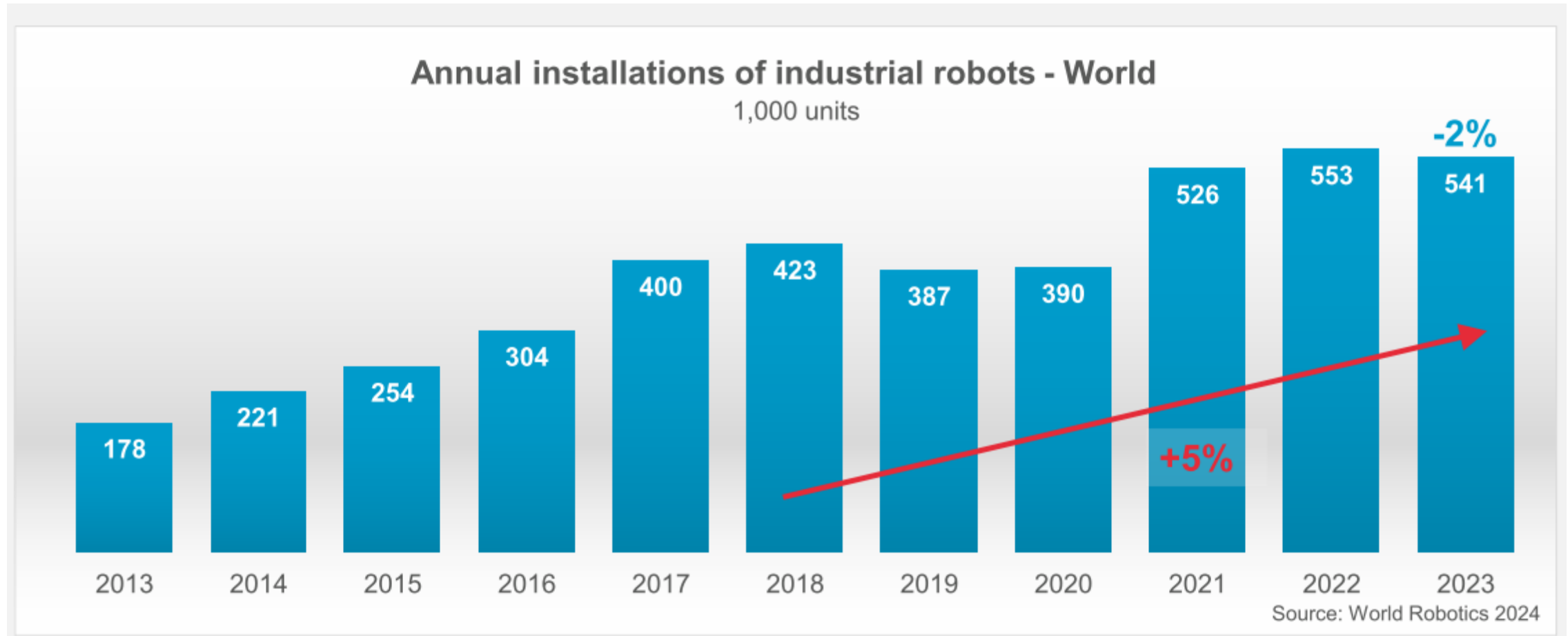


Find out more at:
<https://ifr.org/ifr-press-releases/top-5-global-robotics-trends-2025>

Source: International Federation of Robotics

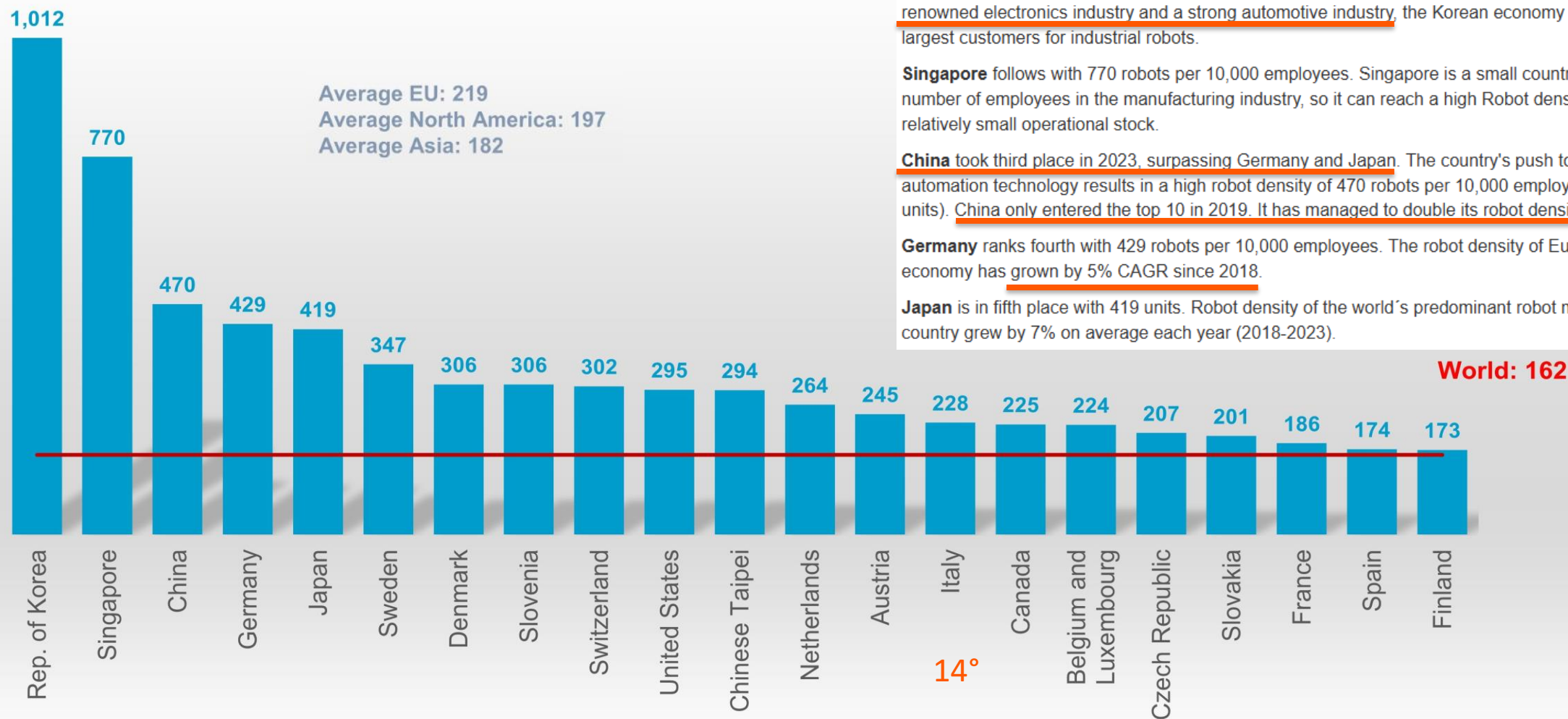
Robotics Market





Robot density in the manufacturing industry 2023

robots installed per 10,000 employees



The **Republic of Korea** is the world's number one adopter of industrial robots with 1,012 robots per 10,000 employees. Robot density has increased by 5% on average each year since 2018. With a world-renowned electronics industry and a strong automotive industry, the Korean economy relies on the two largest customers for industrial robots.

Singapore follows with 770 robots per 10,000 employees. Singapore is a small country with a very low number of employees in the manufacturing industry, so it can reach a high Robot density also with a relatively small operational stock.

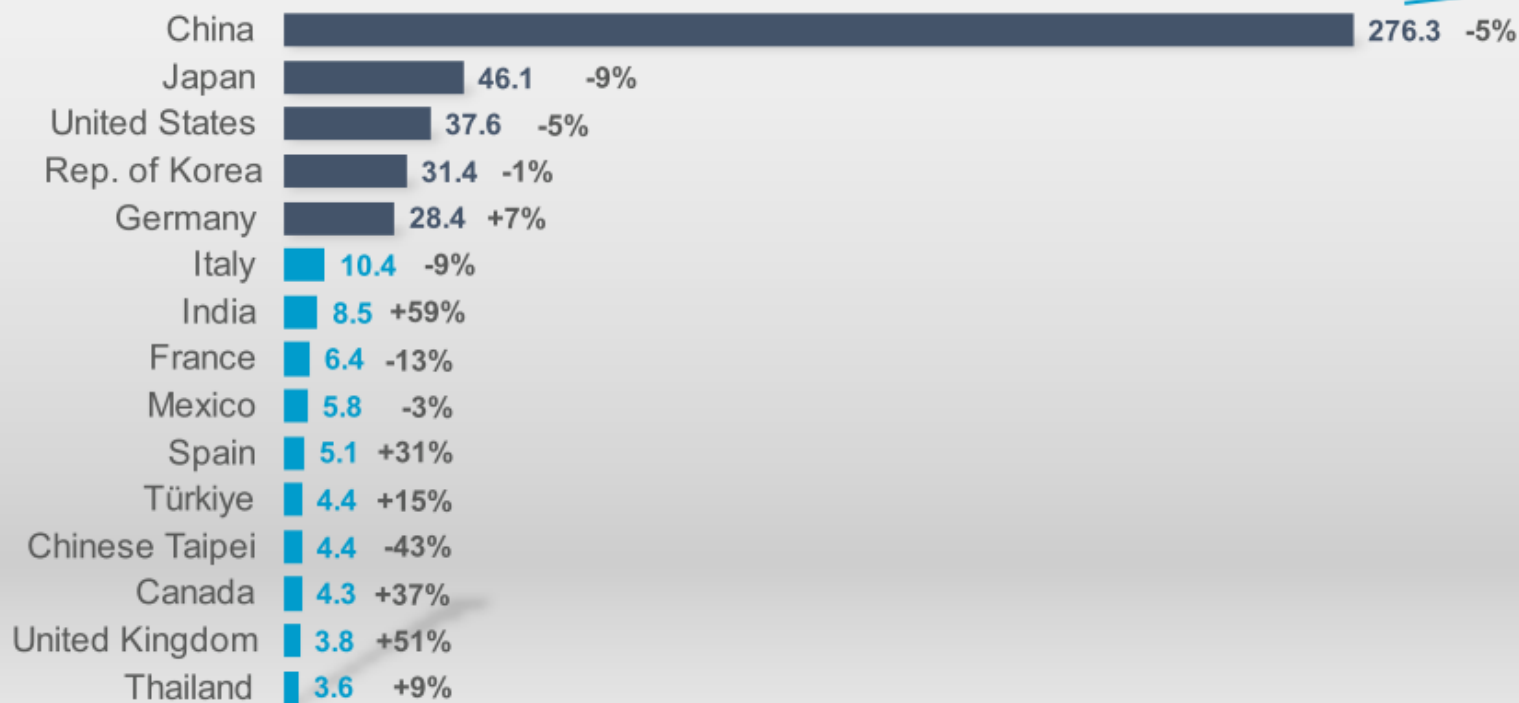
China took third place in 2023, surpassing Germany and Japan. The country's push to the use of automation technology results in a high robot density of 470 robots per 10,000 employees (2022: 402 units). China only entered the top 10 in 2019. It has managed to double its robot density within four years.

Germany ranks fourth with 429 robots per 10,000 employees. The robot density of Europe's largest economy has grown by 5% CAGR since 2018.

Japan is in fifth place with 419 units. Robot density of the world's predominant robot manufacturing country grew by 7% on average each year (2018-2023).

China installs every other robot

Annual installations of industrial robots 15 largest markets 2023



51% in China

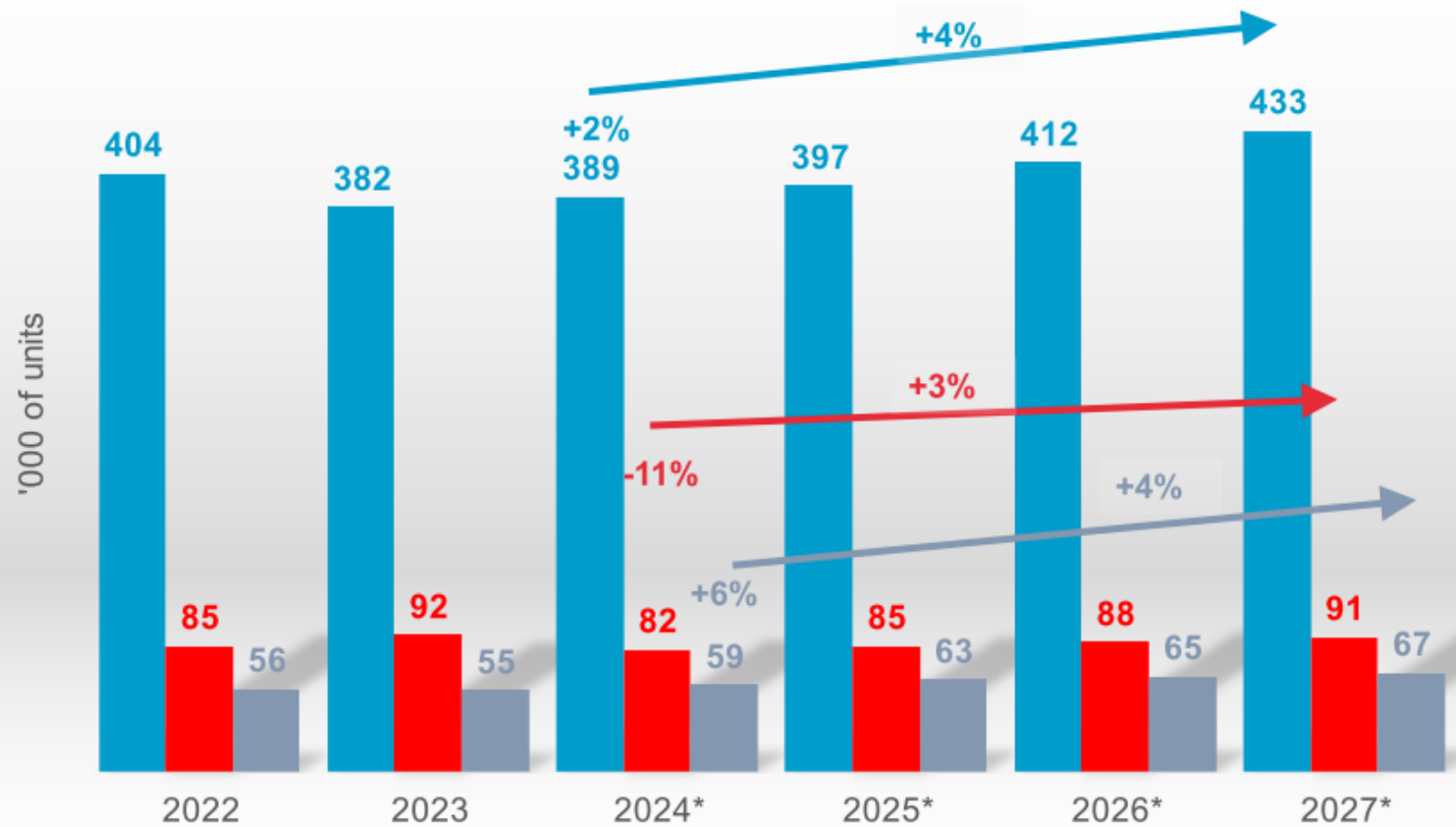
79% in the
top 5 markets

'000 of units

Source: World Robotics 2024

Forecast

Annual installations of industrial robots 2022 -2023 and 2024*-2027*



*forecast

■ Asia/Australia ■ Europe ■ The Americas

Source: World Robotics 2024



Image: Neura Robotics

- Technological advances, e.g. in **generative AI**, improve **robot performance and applicability**
- **Demographic change**: scarcity of labor is driving robot demand
- Need for further **standards**, e.g. on **safety**
- **Excellent long-term prospects**

IFR statements for Robotics and AI

The use of Artificial Intelligence offers a tremendous opportunity for the robotics industry to respond to these customer and societal needs.

AI itself is not new to robotics. Vision and learning intelligence has been built into robots for many years. Robots excel at tasks humans find difficult – strenuous, repetitive, dull, dirty or dangerous. AI can make robots better at fulfilling those tasks: more capable of learning; able to learn by experience, rather than programming; able to work in dynamic environments, or around people. It is rapidly changing what is possible.

What does this mean in practice?

Independent studies have suggested that Japan may face a shortage of more than 11 million workers by 2040, as its population ages rapidly. Similar forecasts in the U.S. suggest more than 2.1 million manufacturing jobs there will be unfilled by 2030. And earlier this year, more than half Germany's companies said they were struggling to fill vacancies due to a lack of skilled workers.



NVIDIA CEO says coding is dead but reiterates the importance of human intervention in the biggest technology revolution with AI

Kevin Okemwa

Tue, April 30, 2024 at 11:21 PM GMT-2 · 2 min read



Elsewhere, robots today use vision and learning abilities to navigate autonomously without guidance, to transport items efficiently around the factory or warehouse.

AI can even enhance maintenance in the production line. Using AI planning and programming software, designing the most efficient movement path for a robotic arm takes a fraction of the time of an engineer programming the same path manually; turning a 90-minute maintenance task into a two-second adjustment.

Ease of use and access to automation is more important than ever for more industries, segments and geographies. Generative AI has the potential to be a game changer – making robots even more accessible for small and medium-sized businesses, by making programming and coding faster and easier, lowering barriers even further for robots to be integrated and adapted to different environments.

Imagine being able to just speak to a robot and it performs a new task straight away: the intelligence it needs to do that is in AI.

The new generation of AI is a powerful tool to help us continue this journey, to make work better – for individuals, for businesses and for the environment.

KUKA approach to AI



AI Offering – DevOps & Consultancy

Generative AI



GenAI can create new and original content, such as text, images, music, and videos, by learning from examples. Most common GenAI Tool is “ChatGPT” from OpenAI.

Computer Vision



Giving eyes to a computer, allowing it to see and understand pictures and videos just like humans do. It helps machines recognize objects, people, and scenes in the visual world.

Data Science



Involves analyzing large amounts of data to find patterns, trends, and insights. It's like being a detective, using data to uncover hidden stories and information that can help make better decisions



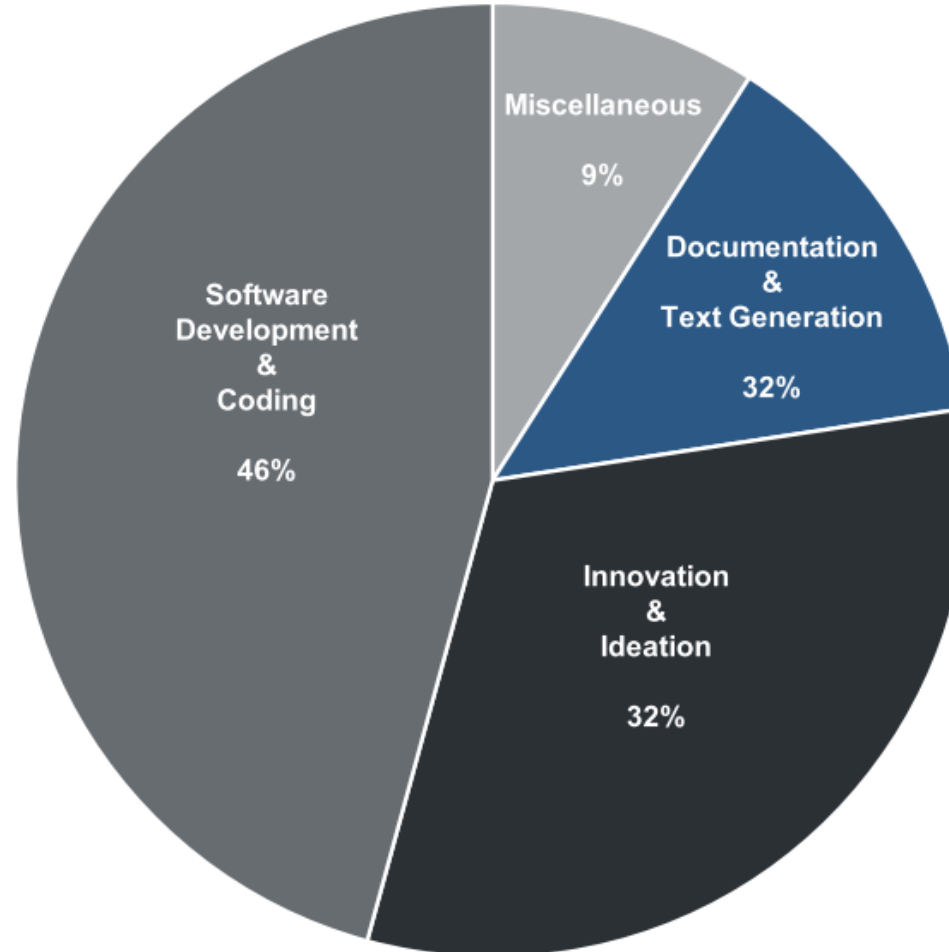
How do the employees of KUKA Group want to use the Azure Open AI Services? Analysis of 356 use cases of the pilot registration process.

Software Development & Coding

- “As a Software Developer i want to generate code and i want to check my docu writings, and many elses”
- “Code generation in Java and python for my projects. Chatbot functionality for knowledge base”

Innovation & Ideation

- “Developing new and innovative solutions to complex problems.”
- “Brainstorming new ideas and approaches using Open AI technology.”



Documentation & Text Generation

- “Quick creation of documentation and requirement specification: keyword-based creation of texts.”
- “I would like to test the Open AI service to evaluate a Use Case, which is about text summarization and QnA on the content of the document.”

Miscellaneous

- “I would like to use it to search for legislation and legal cases”
- “Assisting in develop marketing activities, roadshow content and mailings to customers. The use of AI greatly makes our daily work more effective”

Object identification through AI algorithm (neural network) 2018



KRL Code Generation

“Create a palletizing program that picks different colored blocks from a conveyor and sorts them on two pallets. Each color of block goes to its own pallet”

+ clarify prompt if needed:

“can you modify the program so that it places the blocks in 9x9 patterns on the pallet”



KRL Copilot

Welcome to the KUKA KRL Copilot Chatbot.

Important Information

i Please be aware that your chat data and feedback is stored to improve KRL Copilot. Please don't include personal or sensitive data in your chat.

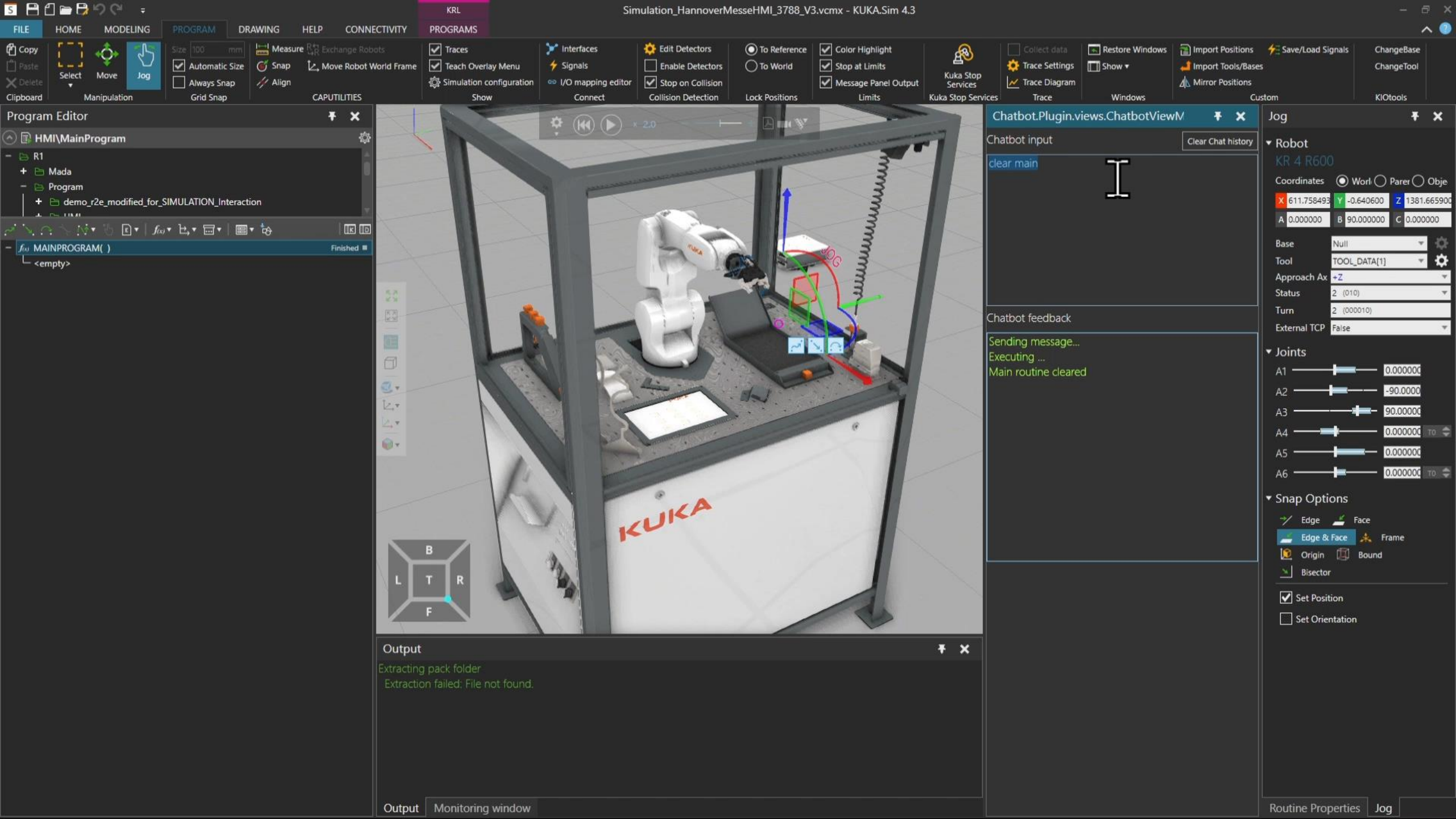
⚠ Please test the generated code before using it on a real robot.

👤 Create a palletizing program that picks different colored blocks from a conveyor and sorts them on two pallets. Each color of block goes to its own pallet



DAT file:

```
DEFDAT PalletizingProgram
;Declaration of variables
DECL E6POS ConveyorPos={X 1000.0, Y 0.0, Z 500.0, A 0.0, B 0.0, C 0.0, S :
DECL E6POS Pallet1Pos={X 2000.0, Y 500.0, Z 500.0, A 0.0, B 0.0, C 0.0, S
DECL E6POS Pallet2Pos={X 2000.0, Y -500.0, Z 500.0, A 0.0, B 0.0, C 0.0, :
DECL CHAR BlockColor
ENDDAT
```



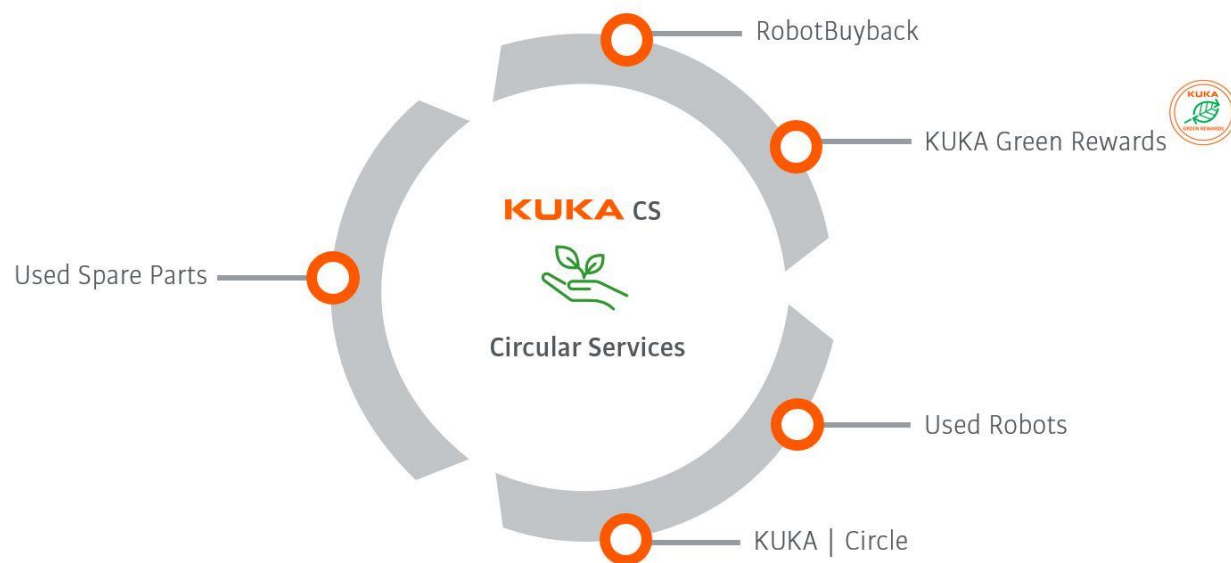
KUKA approach to sustainability





Circular Services

Meeting sustainability goals with circular economy



KUKA Green Rewards *

Reward Program to speed up and simplify purchasing process.

KUKA | Circle

As an additional platform for buying and selling, we offer a digital marketplace for used KUKA robot systems from 3rd party suppliers.

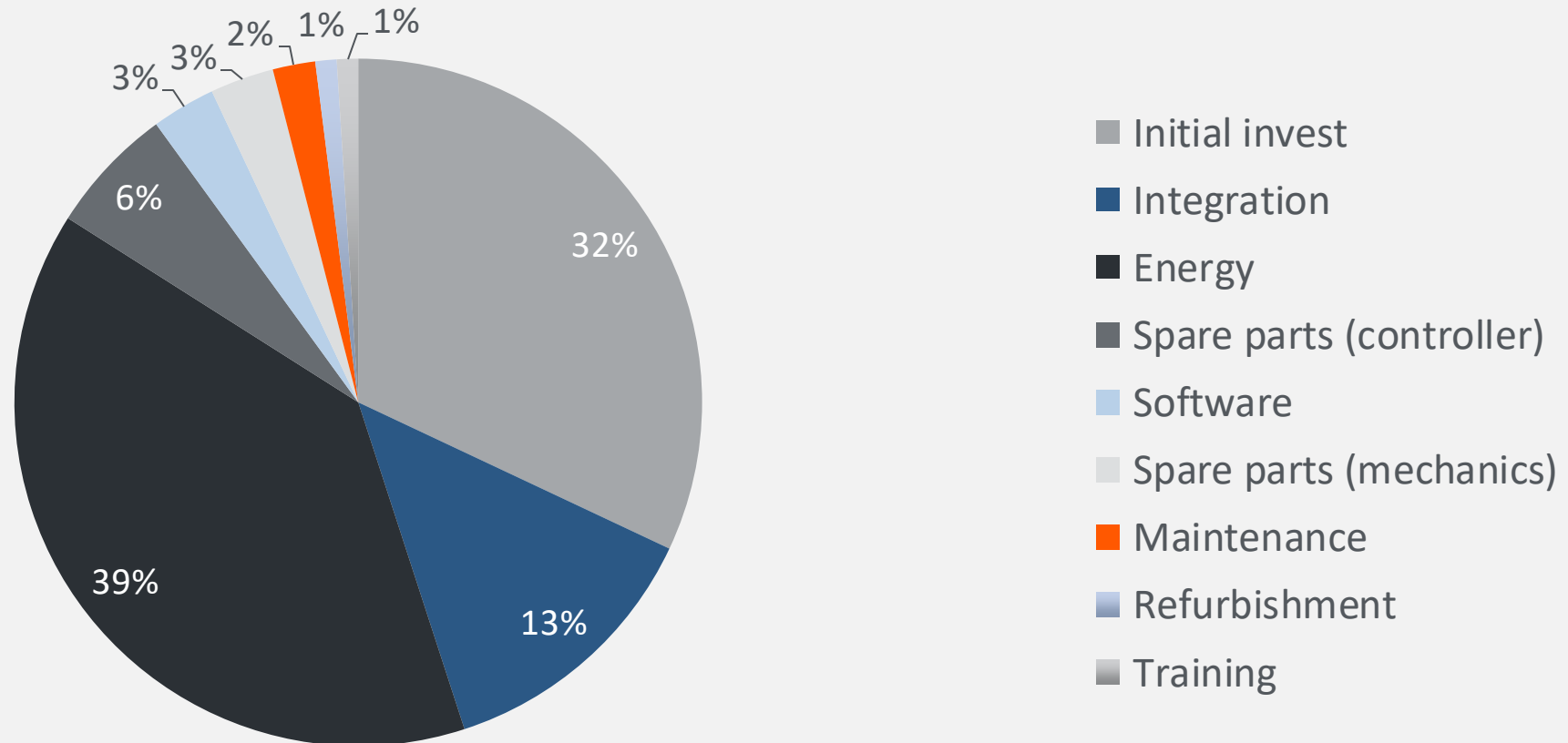


EU is striving to be the **first climate-neutral continent by 2050** (European Green Deal).

Many **new regulations** that will come into force as early as 2024.

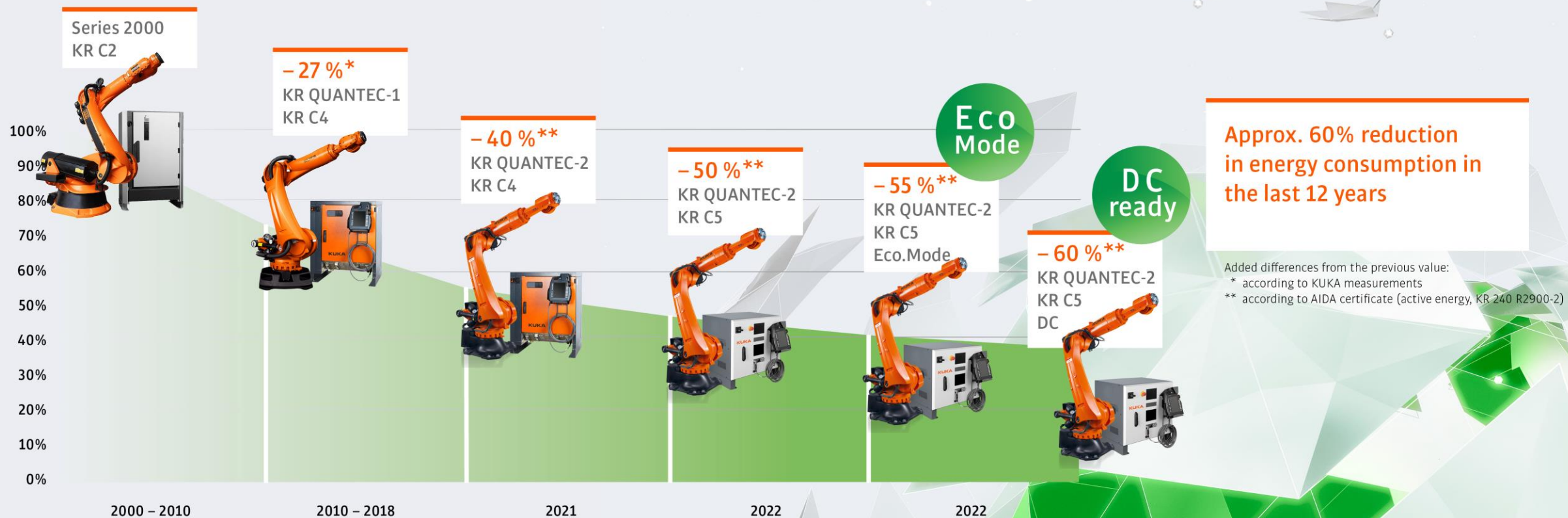
KUKA Circular Services offer a coordinated range of five program components to help customers meet the challenge of improving their sustainability while continuing to grow.

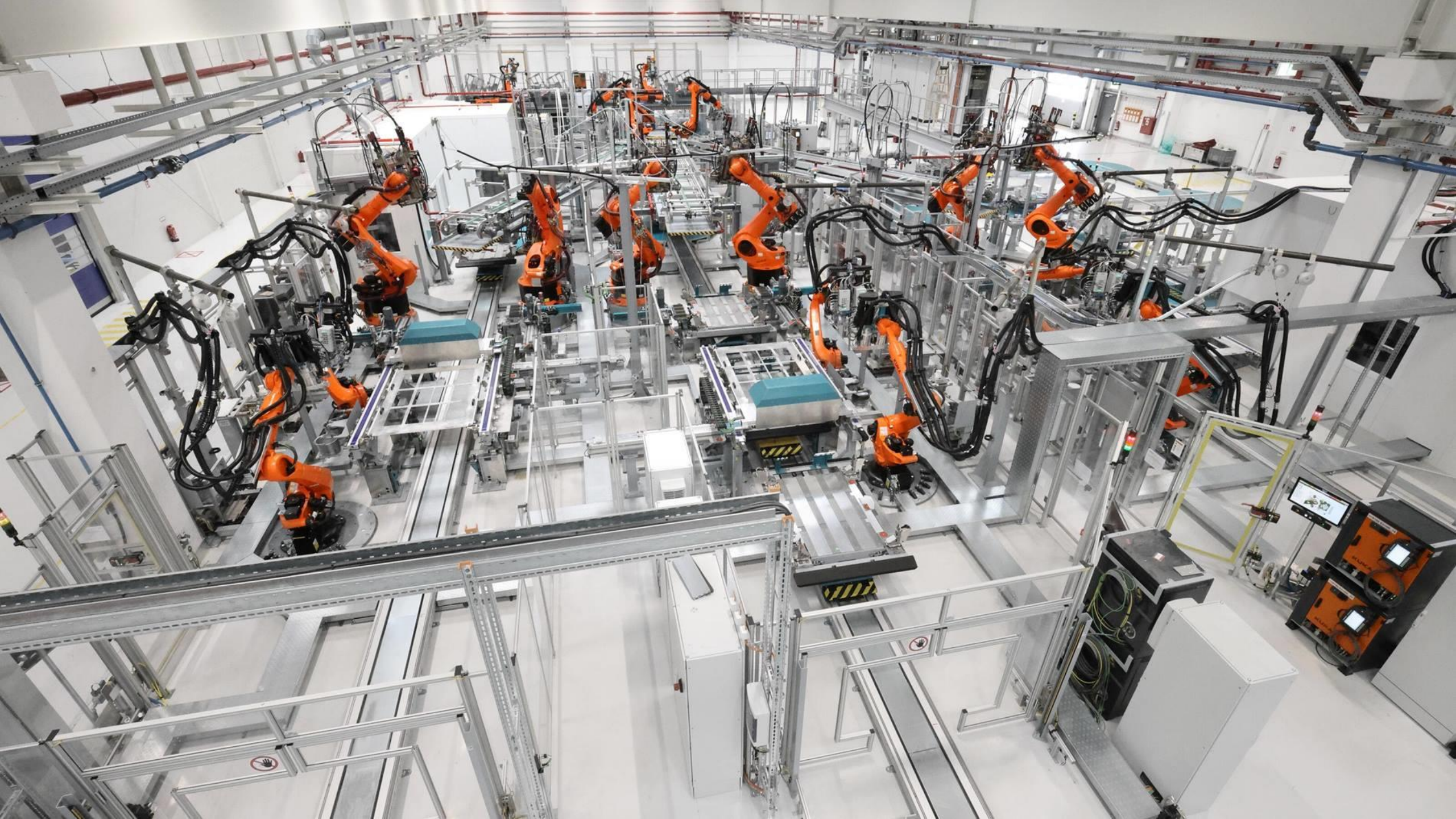
Costs distribution





_Development of the energy efficiency of a KUKA robot system



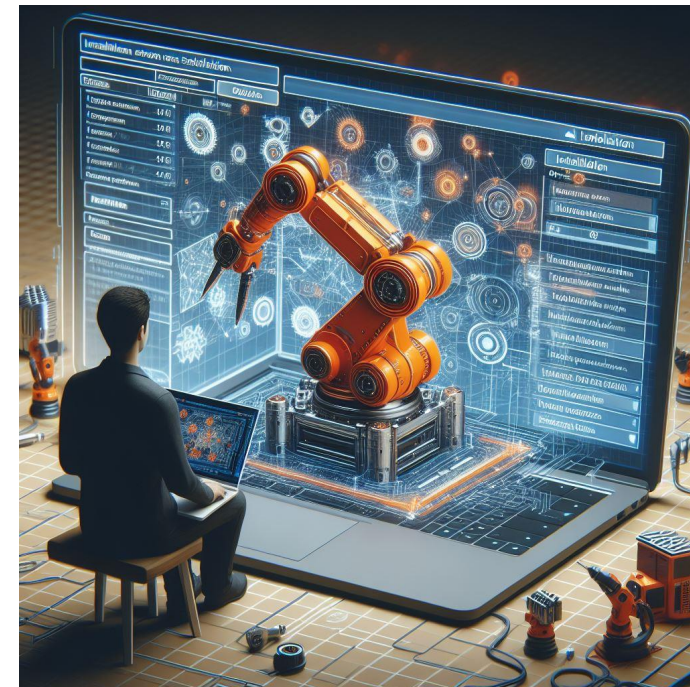


Grazie per l'attenzione



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Our most significant **Opportunities**
will be found in times of **greatest Challenges**

The image shows a modern industrial training environment. In the foreground, two men in dark blue KUKA-branded work suits are looking at a large orange KUKA robotic arm. To their right, a woman in a blue shirt and dark pants is operating a white KUKA robotic arm using a handheld controller. Both robotic arms are housed within safety enclosures with transparent glass doors. The background shows a clean, well-lit factory floor with various industrial equipment and overhead structures.

**KUKA per il settore
educational**
Ivano Garino, Key Account
Manager Sales GI

Lavorare nell'industria 4.0: una questione di competenze



Lavorare nell'industria 4.0: una questione di competenze



Le imprese sono chiamate ad affrontare un processo di ***trasformazione digitale***

Non è sufficiente “riempire la fabbrica” di tecnologia, bisogna puntare sull’incremento delle competenze.

Esiste un profondo legame tra innovazione e occupazione.

Come cambierà il mondo del lavoro?

Secondo il **World Economic Forum**
entro il 2028 ci sarà una **perdita**
di **83 milioni di posti di**
lavoro tradizionali compensati dalla
creazione
di **69 milioni di nuovi posti** in settori
specializzati.

Secondo l'indagine **Manpower**
grazie allo sviluppo di nuove
competenze, si prevede un
incremento dei posti di lavoro tra
il **23% e il 25%** nei prossimi cinque
anni.

Possiamo trasformare la sfida in una opportunità senza precedenti?

FORMAZIONE INTERNA

Verso chi dovrà entrare nel mercato del lavoro
Verso il personale già presente nelle aziende

LEGAME SCUOLA E IMPRESA.

Creare profili coerenti con la richiesta del mercato



KUKA per il settore educational

KUKA offre un'ampia gamma di **soluzioni formative per le scuole, mirate a fornire competenze pratiche e teoriche** nel campo della robotica e dell'automazione.

Celle Didattiche Ready2_educate e LBR iisy EDU KIT

Sono celle didattiche pronte all'uso che permettono agli studenti di apprendere le basi della programmazione e del funzionamento dei robot utilizzando hardware e software standard industriali.



KUKA EDU CELL – Ready2_educate KR4



KUKA EDU CELL – LBR iiwa EDU KIT



KUKA per il settore educational

Programmi Didattici Personalizzati

Le scuole possono configurare soluzioni personalizzate per soddisfare le loro esigenze specifiche, integrando componenti e software KUKA nei loro programmi di studio.

Collaborazioni con Istituti Tecnici e Licei Tecnologici:

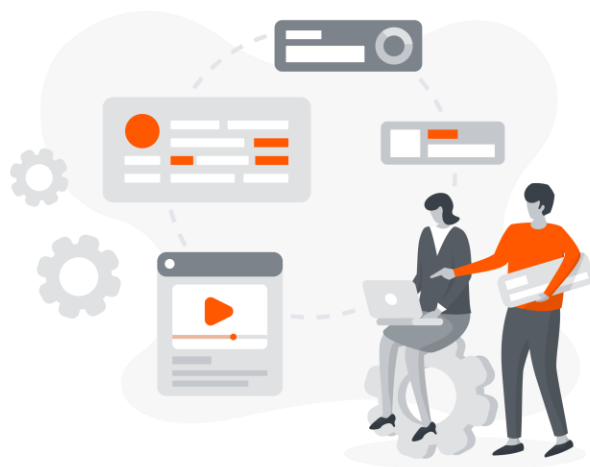
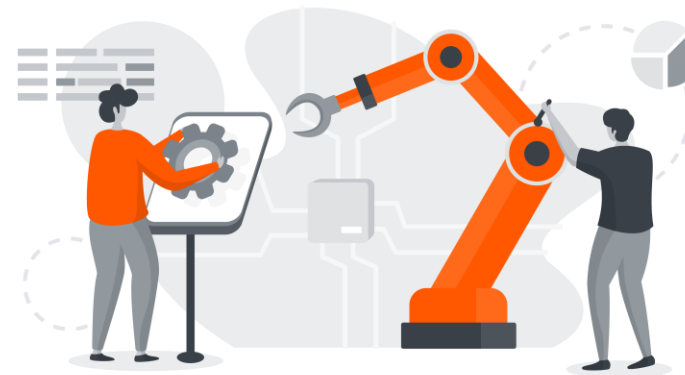
KUKA collabora con scuole e istituti per sviluppare programmi didattici che includono l'uso di software come KUKA Sim Pro, che consente la programmazione offline di celle robotizzate



KUKA per il settore educational

Formazione Pratica

Gli studenti possono acquisire competenze pratiche direttamente nelle loro sedi scolastiche, utilizzando le celle didattiche KUKA per completare la teoria con esperienze pratiche



E-learning e Risorse Digitali:

Attraverso il portale digitale my.KUKA, studenti e insegnanti possono accedere a corsi di e-learning gratuiti e altre risorse didattiche per approfondire le loro conoscenze

Metodologia didattica



- La struttura modulare dei seminari consente un apprendimento Step-by-Step.
- Ripartizione: 50% teoria e 50% di pratica con l'utilizzo delle celle didattiche fisse o mobili.
- A conclusione della sessione formativa, dopo il superamento di un test, è previsto il rilascio di una certificazione ufficiale KUKA

Il Portale KUKA College

- Nel portale KUKA College college.kuka.com sono disponibili informazioni dettagliate su tutti i corsi ed è possibile iscriversi direttamente online, scegliendo come sede qualsiasi KUKA college al mondo.
- Nel catalogo è disponibile un'offerta di circa 200 seminari fruibili sia in formazione in presenza che in modalità online, oltre a diversi e-learning gratuiti.
- È possibile accedere rapidamente a tutte le informazioni importanti su seminari ed eventi come contenuti, gruppi di destinatari, sedi, giorni di svolgimento, prezzi e posti disponibili.



Grazie!

Ivano Garino, Key Account Manager Sales GI

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