

The background of the image is a long-exposure photograph of a city skyline at dusk or night. A suspension bridge, likely the Manhattan Bridge, spans the right side of the frame. The city lights are reflected in the water below. In the foreground, there are blurred streaks of light in orange and blue, suggesting fast-moving traffic or a train. The KUKA logo is centered over this scene.

KUKA

iiQKA JAI 2022

KUKA



KUKA Story
_guiados por la innovación

_Nuestros segmentos de negocio

KUKA ROBOTICS

CHINA

SWISSLOG

KUKA SYSTEMS

SWISSLOG HEALTHCARE



7 Mercados estratégicos



Automotive



Aerospace



Electronics



Metal



Consumer Goods



Healthcare



E-Commerce/Retail



Dec. 31, 2021

Porqué KUKA?
_las cifras hablan por nosotros

Somos la opción clara para la automatización inteligente.
Hecho por humanos para humanos :
inteligente, confiable y fácil de usar.
Durante más de 120 años nuestra misión ha sido hacer la
vida y el trabajo más fácil. Dar forma a la automatización es
nuestra pasión. Nuestro espíritu pionero nos impulsa.
Diseñamos ventajas. Juntos. En todo el mundo.

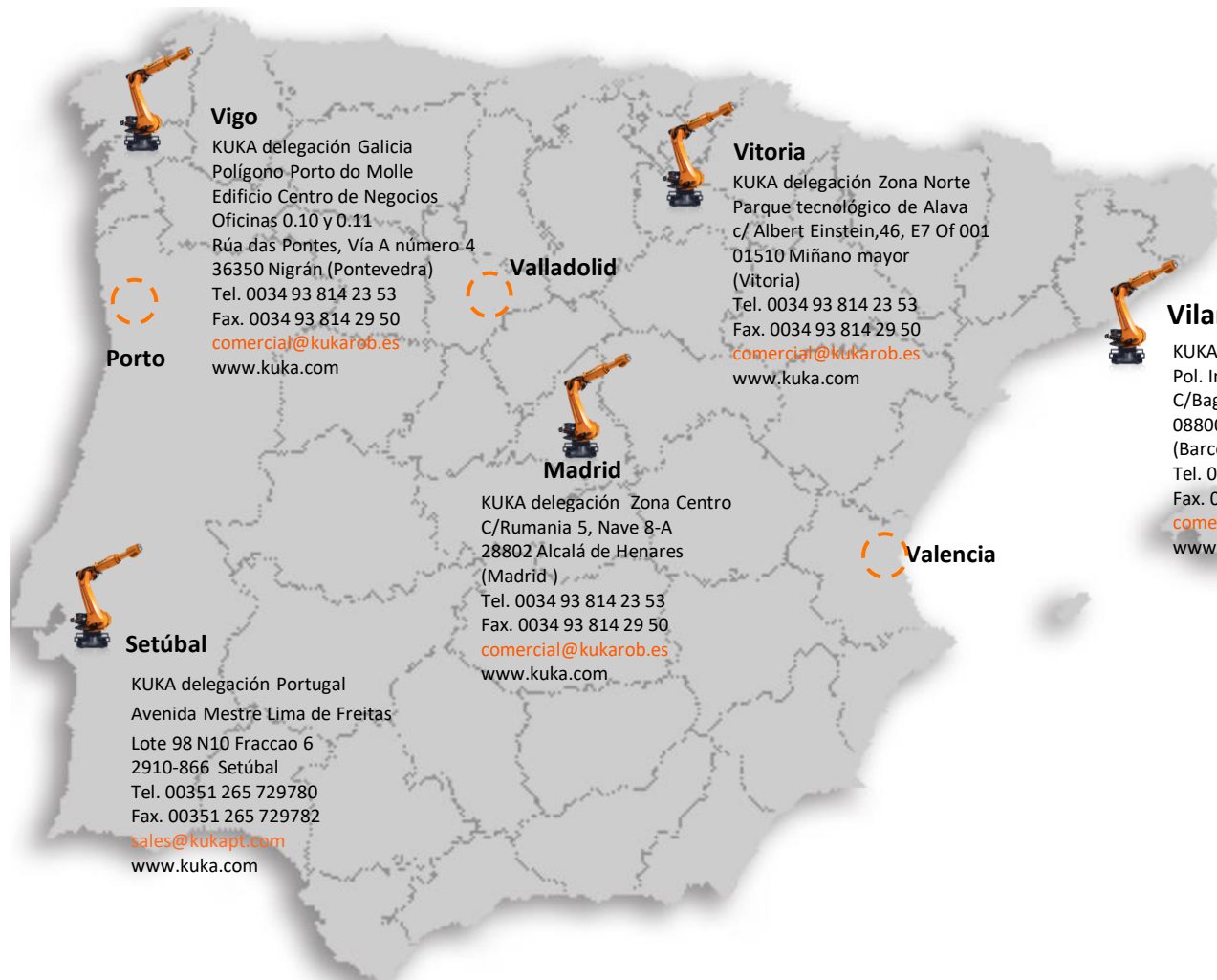
Oficinas centrales KUKA Augsburg , Alemania



Oficinas centrales

KUKA Iberia S.A, Vilanova y la Geltrú, Barcelona (España)





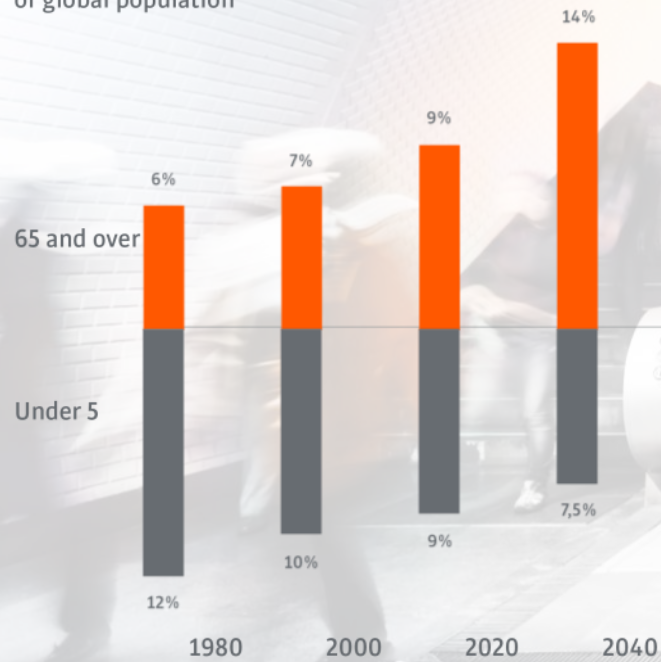
Vilanova i la Geltrú (Barcelona)

KUKA Central
Pol. Ind Torrent La Pastera
C/Bages s/n
08800 Vilanova i la Geltrú
(Barcelona)
Tel. 0034 93 814 23 53
Fax. 0034 93 814 29 50
comercial@kukarob.es
www.kuka.com



Cambios demográficos

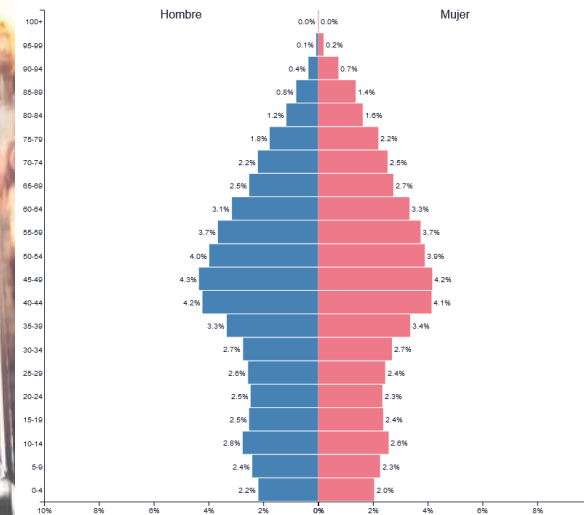
Young children and older people as a percentage of global population



Source: United Nations, 2013

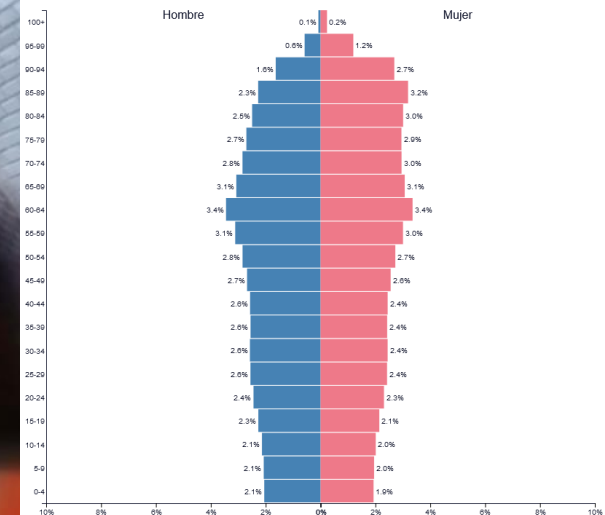
España ▼
2021

Población: 46,745,210



España ▼
2071

Población: 37,747,232

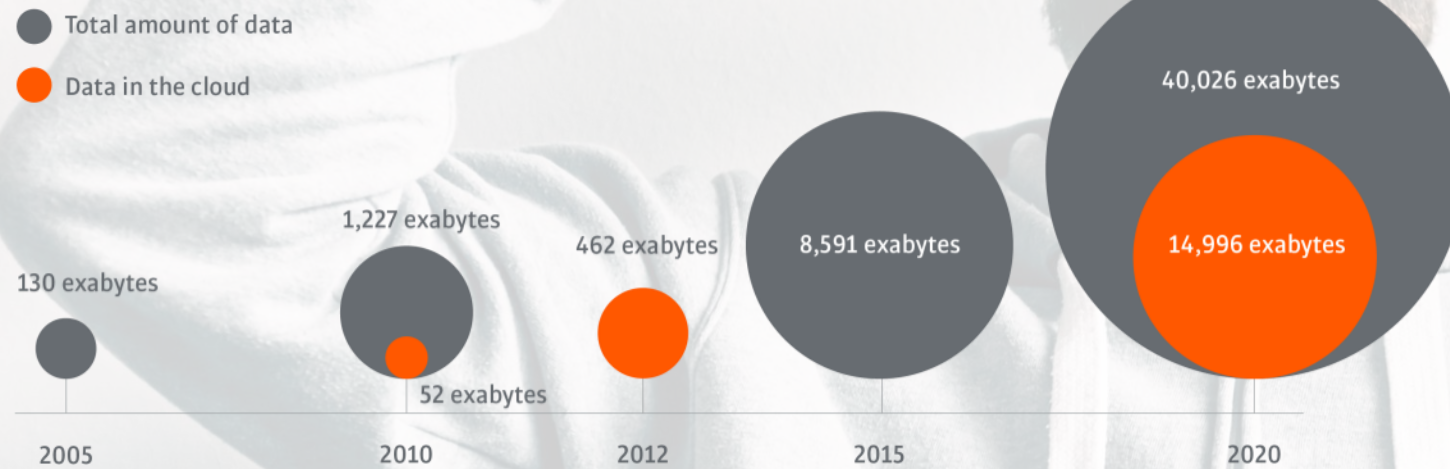


- Pérdida de trabajadores cualificados
- Incorporar gente mayor a la producción
- Formación continua en el trabajo

Digitalización

- Cambios acelerados de tecnología
- Nuevos modelos de negocio
- Uso del Big data
- Conexión entre las tecnologías

Growth of cloud-based data as a percentage of total data



Source: IDC, 2012

Individualización

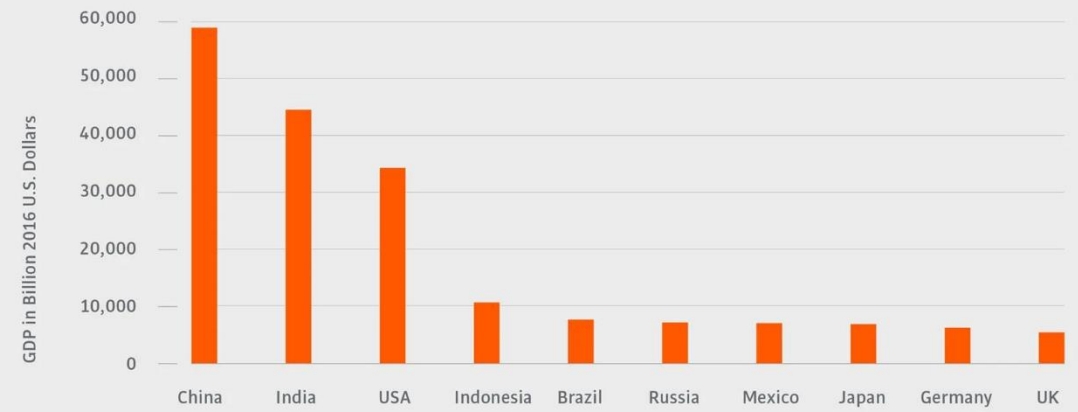


- Lotes de producción unitarios en fabricación industrial
- Modelos de negocio orientados a la demanda del cliente
- Robofacturing

Cambio de la capacidad económica

Cambio en la capacidad de consumo
de los países emergentes

Top Ten Countries Worldwide Projected to Have the Highest GDP in 2050



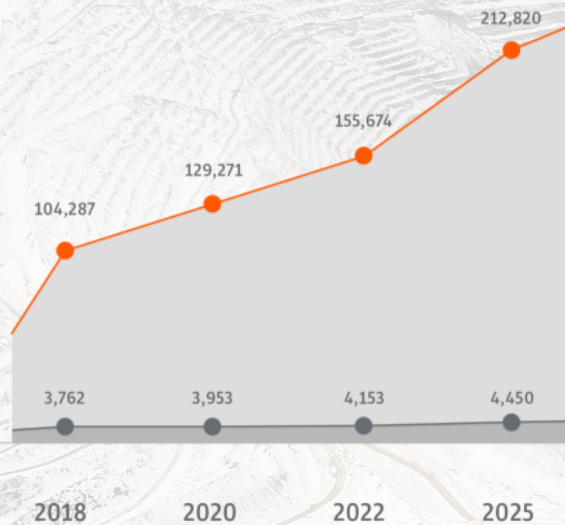
Note: Worldwide; 2016

Source: PwC; ID 674491
www.statista.com/statistics/674974/top-10-countries-with-greatest-gdp-growth/

Escasez de recursos

Lithium demand for batteries (in tons of lithium carbonate)

- Rechargeable batteries
- Non rechargeable batteries



Source: Stormcrow, 2017

- Eficiencia energética y de recursos
- Competencia por los recursos
- Materiales alternativos

iiQKA1.0 lanzamiento oficial El 30 de Noviembre

What is iiQKA system?

- _iiQKA.OS – nuevo Sistema operativo
- _LBR iisy – la nueva familia de Cobots

Key benefits:

- _intuitive como un smartphone
- _integración rápida
- _Complementa el portfolio de productos
- _servicio globales KUKA



KR C5 micro

Full performance controller
in the size of a shoe box



smartPAD pro / iiQKA.OS

Programming, configuration,
diagnosis & help on one device!



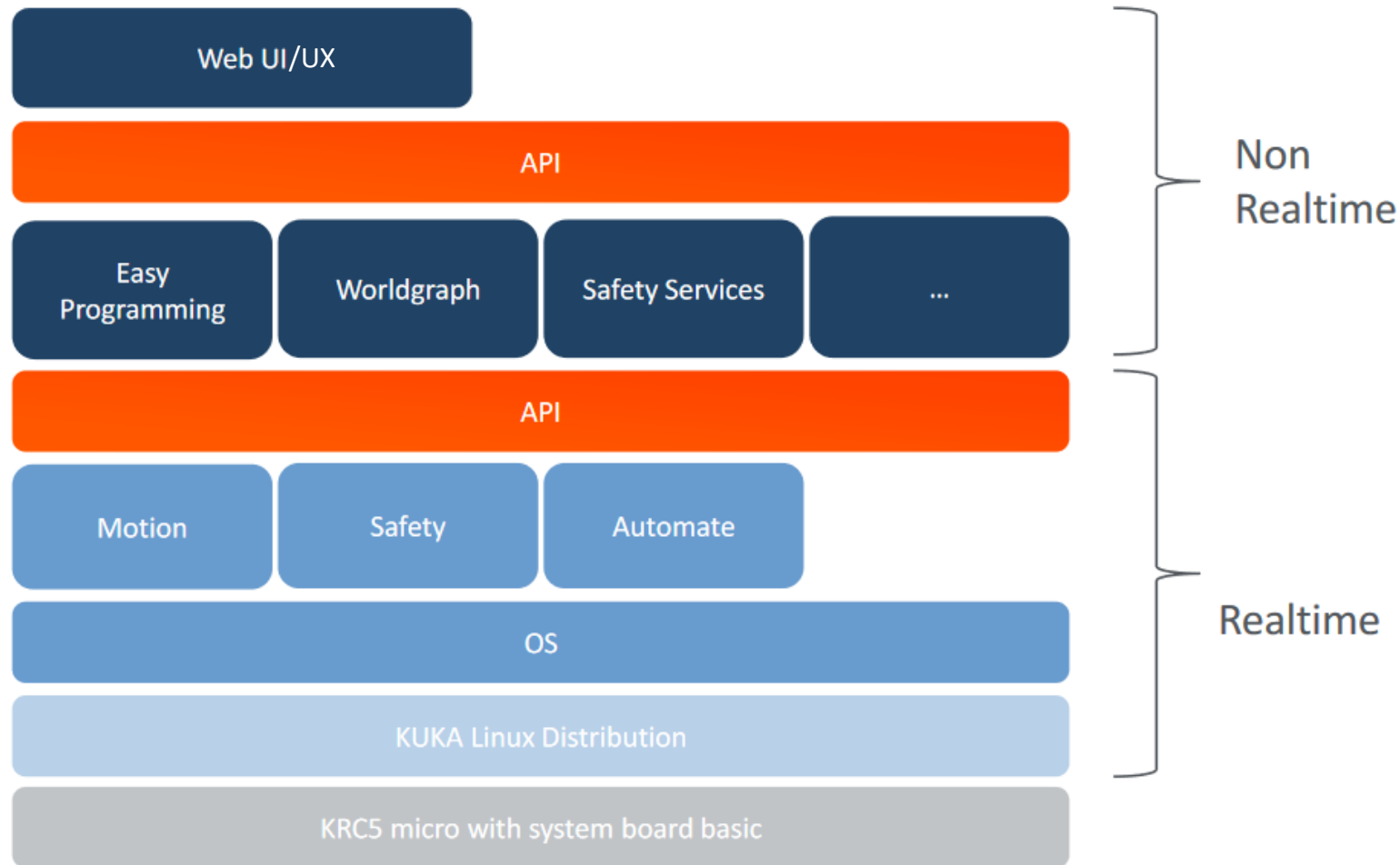
LBR iisy

Payload, reach on industrial
proven mechatronic



Growing ecosystem with ready to
integrate components

System architecture iiQKA.OS



Main messages:

- Linux base
- Containerized – Podman
- Web UI
- Worldgraph as central business data service

iiQKA.OS 1.0 - Main features

Application oriented safety monitoring

Handguiding

CoAct-Gripper (option, **only for LBR iisy 3**)

Custom Gripper (if needed)

I/O Config for 16 I/Os

KR C5μ

EtherCAT / FSoE-Slave

Safe I/O Signals (e.g. Emergency Stop)

Safe Laser scanner integration

User interface on
smartPAD Pro

LBR iisy 3, 11, 15

HRC

- Complete HRC function set for fenceless operation

Programming

- Easy programming
- Logics and additional functions

3D Scene

- Visualization of robot
- Safety Workspaces
- Safety Tool spheres

Safety

- Pre-configured
- Collision detection and compliant reaction incl. singularities
- Monitoring of axis range, cubes prisms, velocity, force
- Modelling robot and tool with spheres

Authentication

- System registration
- User authentication

Gripper SDK possible to use for partners

iiQKA.OS

Support Cobot Portfolio

Features:

- HRC ready for fenceless operation
- Best in class handguiding for all cobots via commander
- Easy to use in startup, configuration, programming, diagnosis and extensions
- Performance Level D according to ISO 13849-1

Customer Benefit:

- Use the Cobot that is needed for the customer project
- best in class handguiding
- Industrial proven components for long life usage



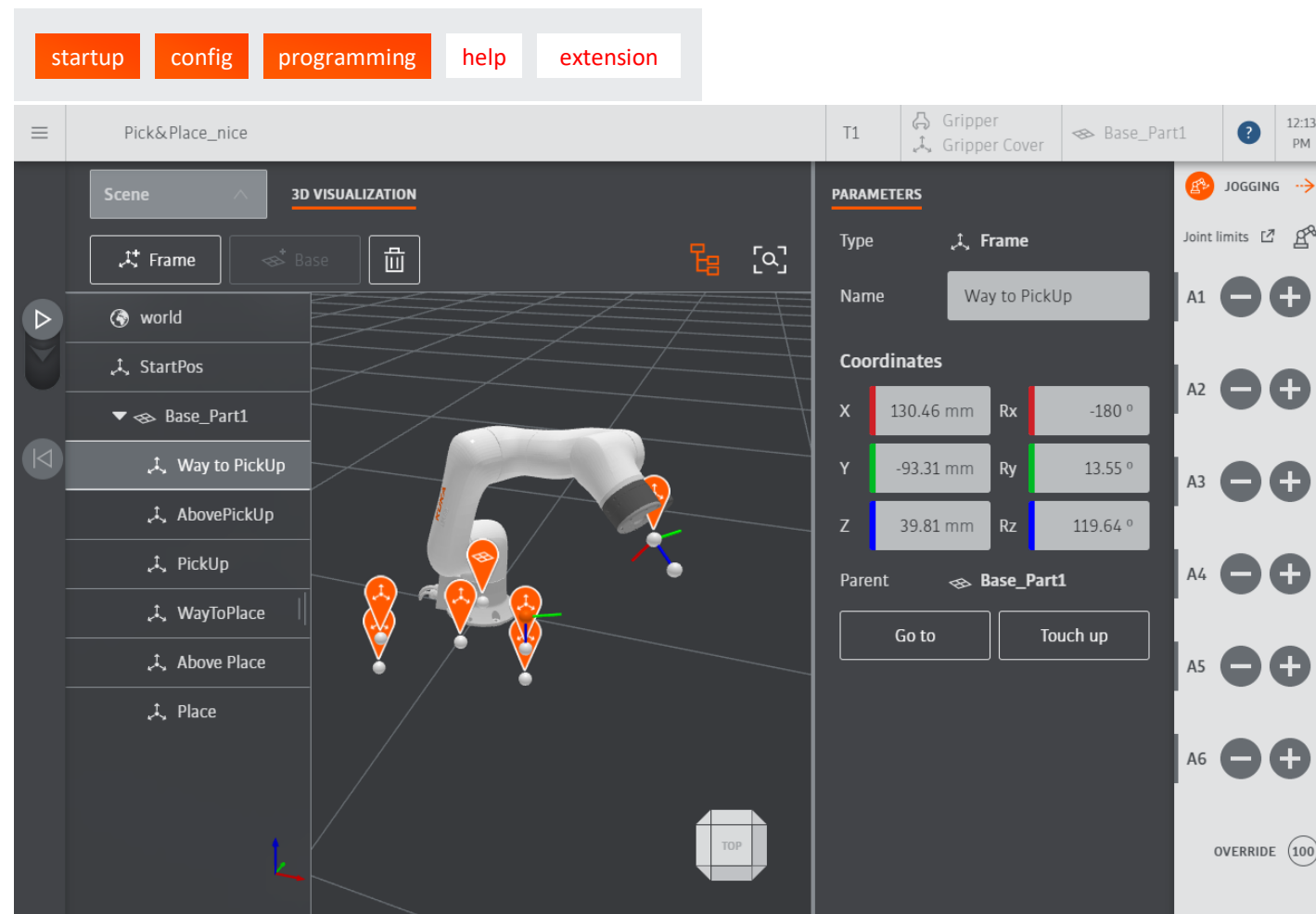
iiQKA.OS smart_3D-View

Features:

- Multiple gestures usable (zoom, slide, rotate)
- Selected program can be started
- Robot, Positions and Frame coordinates visible
- Go to Frame and Touch Up included
- Monitoring spaces can be visualized
- Base configuration with direct 3D feedback
- Pre-defined views reachable with one click

Customer Benefits:

Modelling, configuration, scene overview in one view



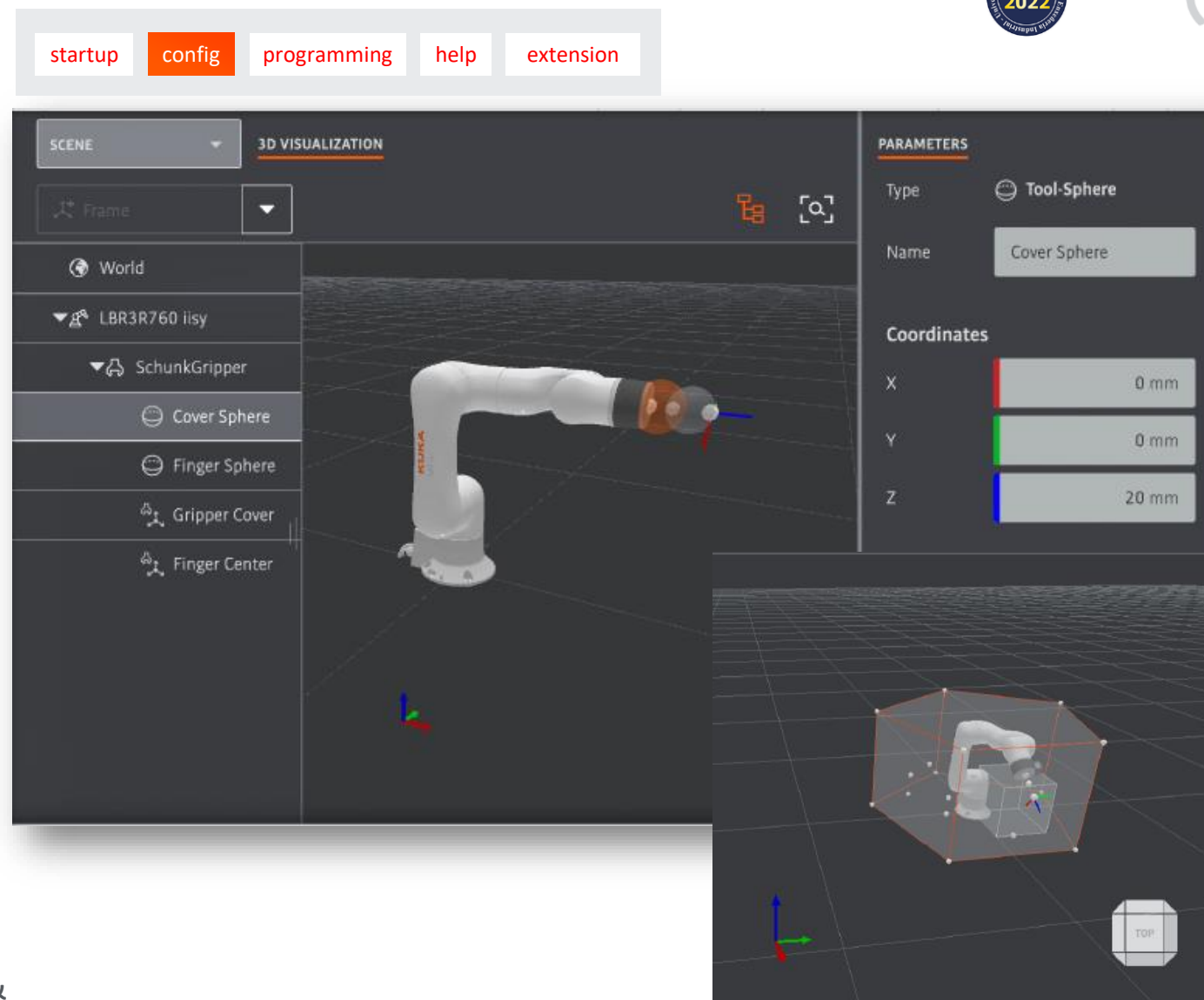
iiQKA.OS smart_3D-View safety

Features:

- Config, edit and view safety spheres
- Maximum 6 spheres per tool
 - Considered in velocity and cartesian space monitoring
- easy to use
 - directly visible
 - part of selected gripper

Customer Benefit:

- Easy2Use & cost saving
 - Fast understanding of safety configurations
 - Decrease time for commissioning
 - Increase the understandability for beginners & experts



Help section on smartPAD pro

Feature:

- Improved help system
- Document and content search

Customer Benefit:

- Cost savings: No training requested
- Enable Learning on the job
- find fast answers on the smartPAD pro
- Find direct links (via QR-codes) to knowledge data base Xpert

HELP

Getting Started

The 3D Scene

Programming

Input/Output

Documents

GENERAL OPERATION >

GENERAL OPERATION

General operation

Overview of the user interface

Shutting down or restarting the robot controller

Changing the operating mode

Changing the user role

Coordinate systems

Moving the robot manually

Program execution

Brake test

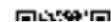
Mastering the robot

Mastering approval

- Status bar (upper edge of screen)
- Control bar for jogging (right-hand edge of screen)
- Program control bar (left-hand edge of screen)
- Main view in the center



Robots 101 help materials
on KUKA Xpert online



iiQKA.OS

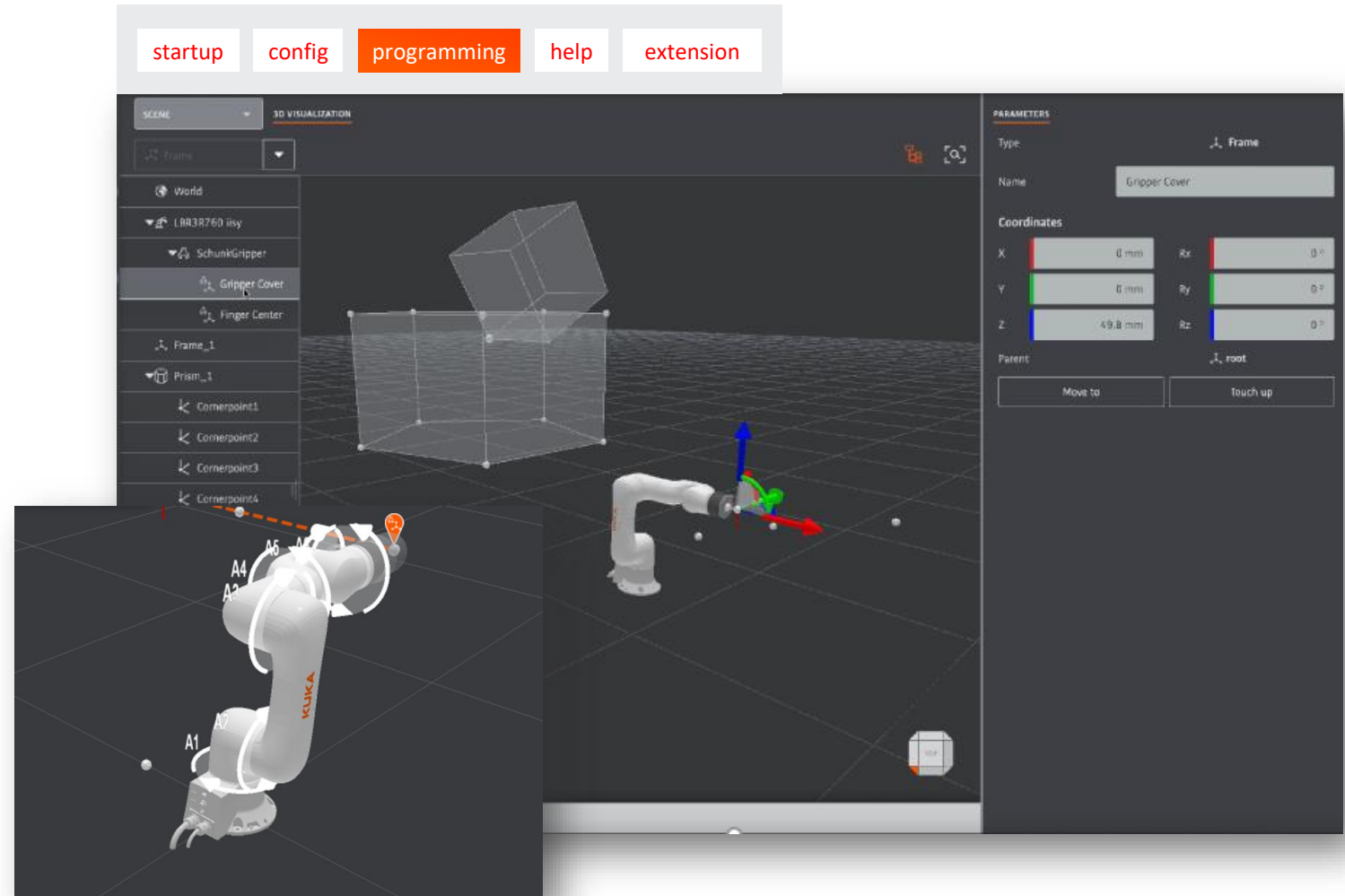
smart_3D-View, Best in Class Coordinate Helper

Feature:

Help to understand axis directions and robot coordinates directions

Customer Benefits:

Beginners can easily move the robot



iiQKA.OS

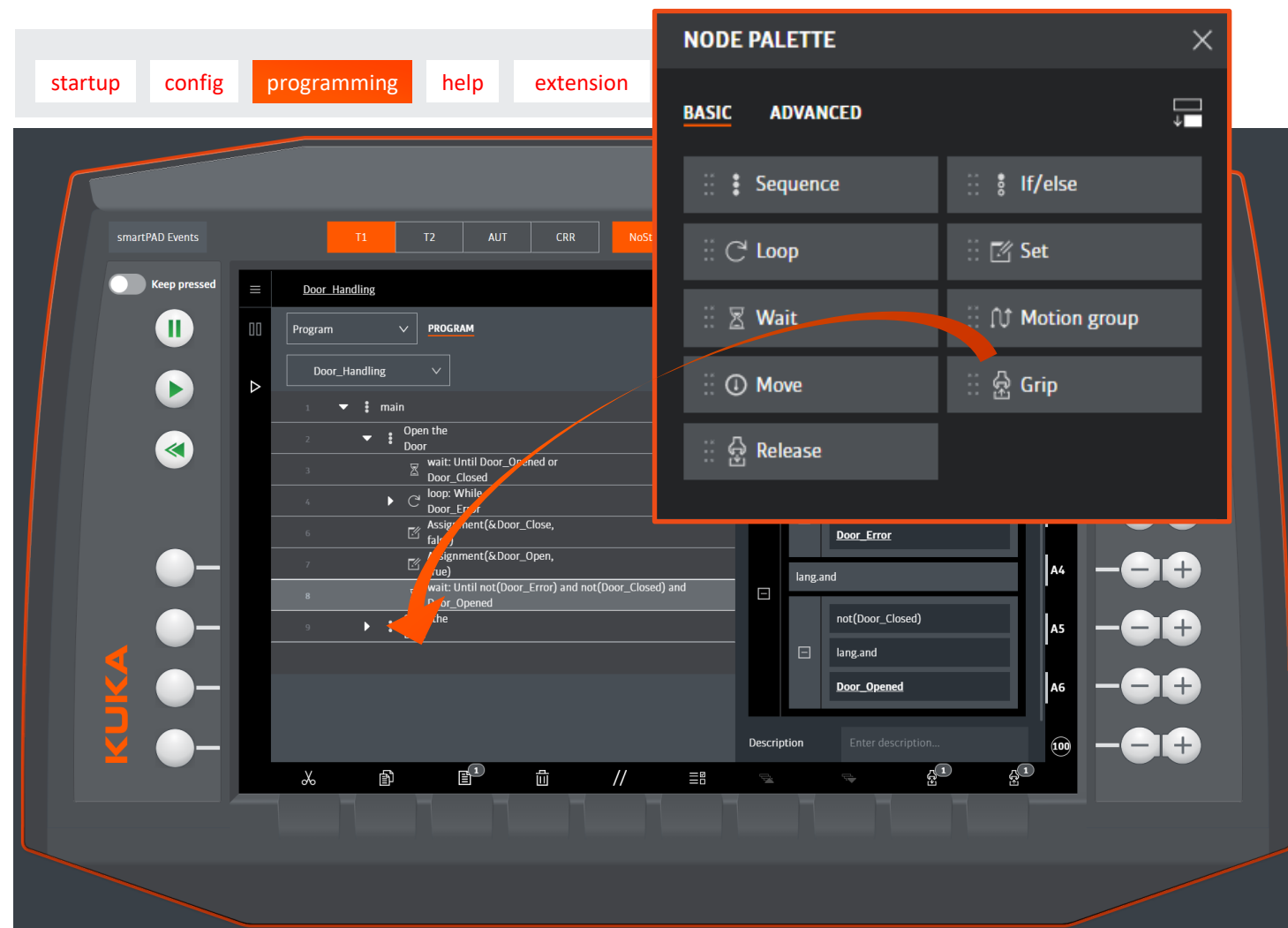
smart_programming

Features:

- Nodes, the new way of programming
 - Drag&Drop
 - Program structurable
- Online View on program sequence
- Restructuring per drag&drop, copy&Paste, multiselect
- Toolbox commands as part of node functions
- Change parameters while programming
- Disable commands during debugging

Customer Benefits:

- No need of external development environment
- All in one page
- Functions easy to implement



iiQKA.OS

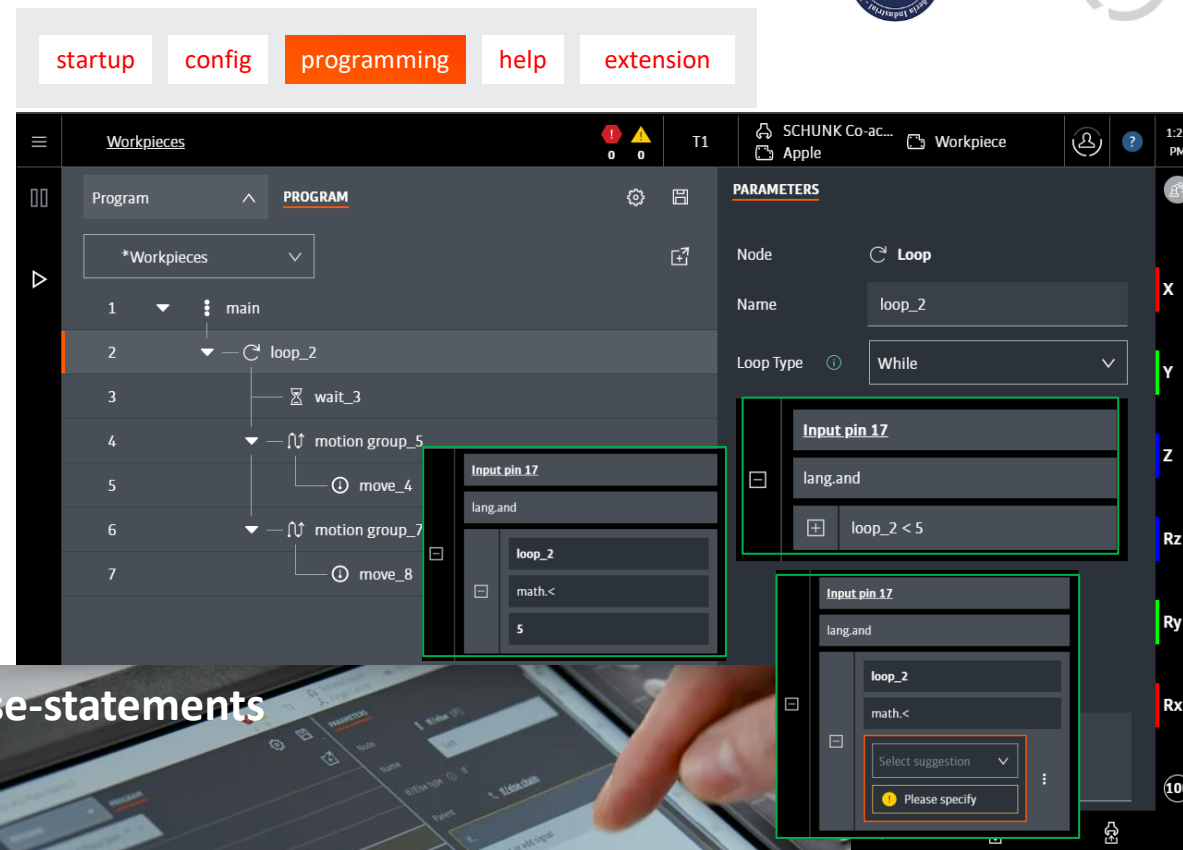
smart_programming - Expression support

Features:

- Programming with expressions Wait, If, Set
 - Full Signal support:
Boolean [true/false], Number: [0.212373]
- Create simple mathematical expressions with Signals; e.g.:
 - “while (Signal_1 <= 4.1)”
 - “if ((Signal_3+Signal_7) > Signal_9)”
- Limitation:
 - no user variables yet
 - no numeric offset correction of Frames

Customer Benefits:

- More complex Applications possible



if/else-statements



<https://youtu.be/pH4BB0Io5cw>

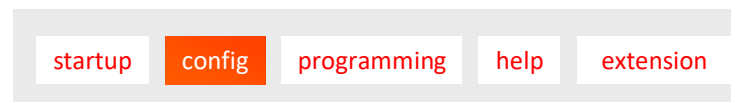
iiQKA.OS smart_config_I/O

Features:

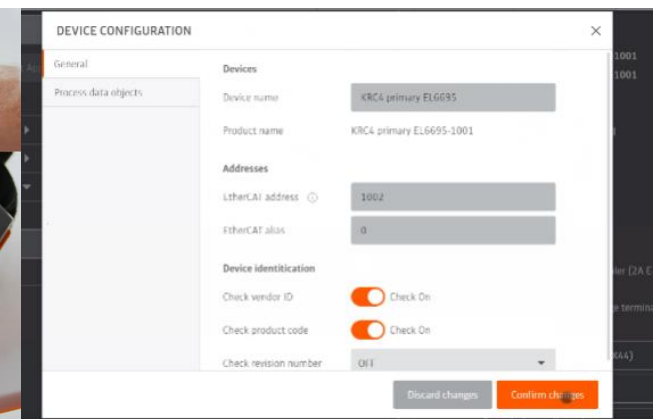
- 16 discrete I/Os (non-safe)
- 4 safe-inputs, 1 safe-output
- EtherCat device configuration
- Support of EtherCAT – FSoE Slave over EL6695-1001 Bridge
- Extended Datatype Support to support e.g. Analog EtherCAT Devices, EL6695-1001

Customer Benefit:

- Enable additional applications
 - Creating Machine2Robot Interface with non&safe Signals



<https://youtu.be/j8f8QDh8qJE>



iiQKA.OS smart_config tool

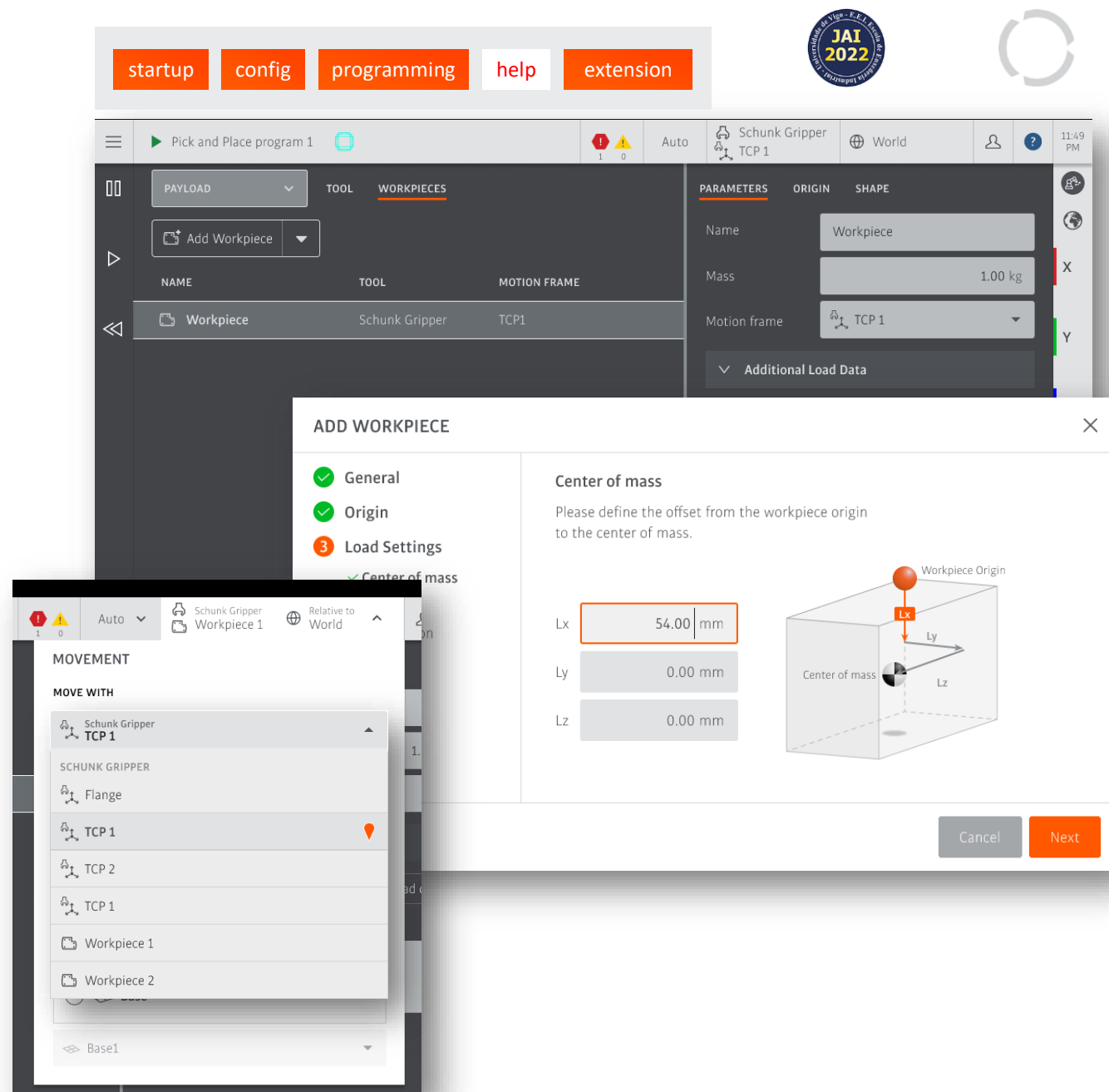
Feature:

Workpiece Management

- Define different workpieces to be handled by the robot
- Guided setup process
- Quick selection of workpieces and TCPs for jogging and programming
- Workpiece visualization in 3D scene
- Load considered for safety, manual guidance

Customer Benefits:

- Enable additional applications & easy 2 use
 - Enable real fenceless applications with the correct understand of tool & workpiece
 - Easier to understand



iiQKA.OS

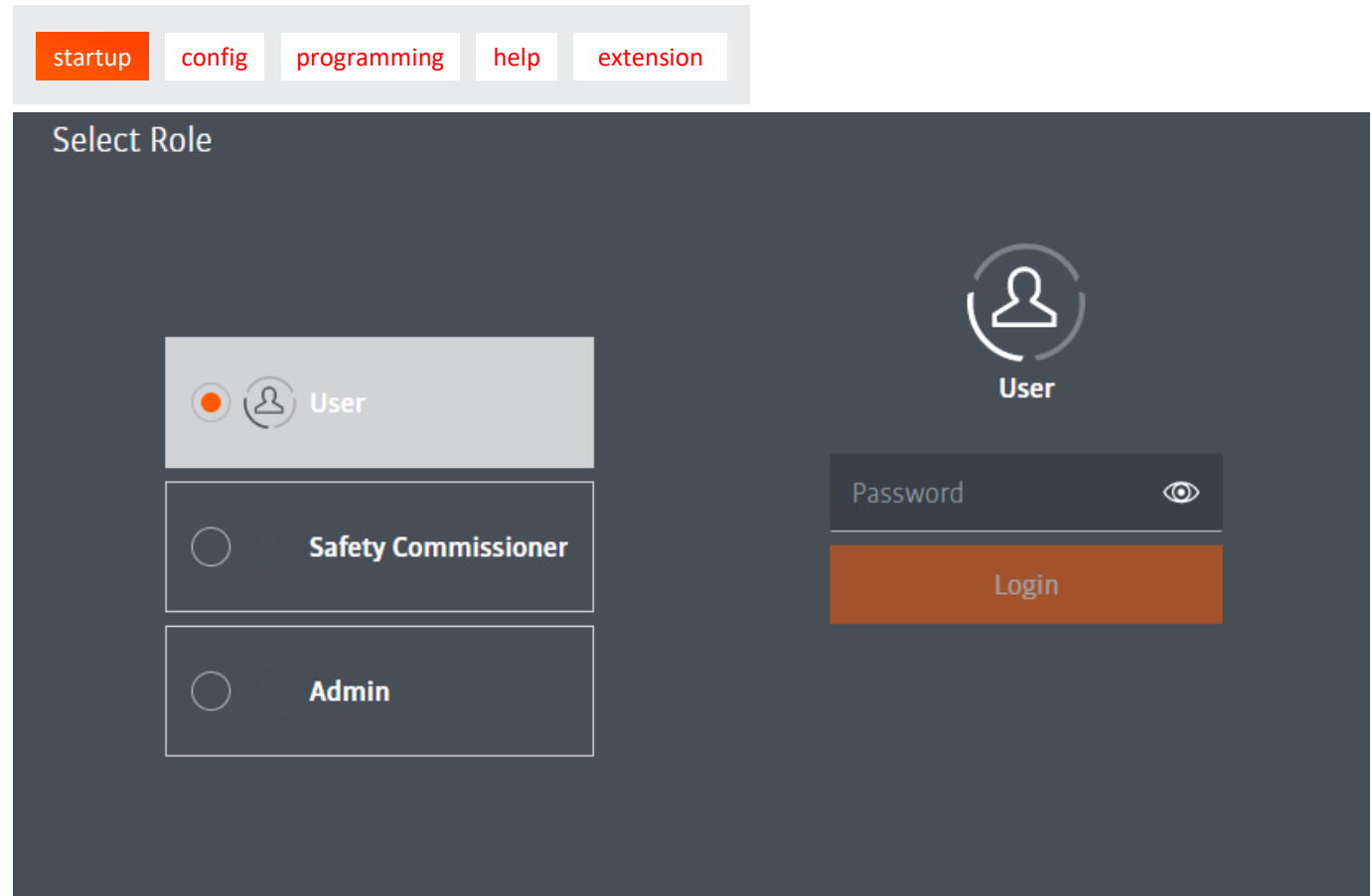
Roles and Permissions

Feature:

- Predefined user accounts
- Covered feature areas:
 - Safety configuration including related geometries and I/Os
 - critical configuration changes only by safety comm.
 - Enable admin access for KUKA customer service

Customer Benefit:

Make sure that system can only be controlled by people with the right knowledge



The screenshot displays the iiQKA.OS login screen. At the top, there is a navigation bar with five tabs: 'startup' (highlighted in orange), 'config', 'programming', 'help', and 'extension'. Below this, the main area is titled 'Select Role'. On the left, there are three role selection buttons: 'User' (selected with an orange dot), 'Safety Commissioner', and 'Admin'. On the right, there is a login section with a 'User' icon, a 'Password' input field with an eye icon, and a 'Login' button.

iiQKA.OS

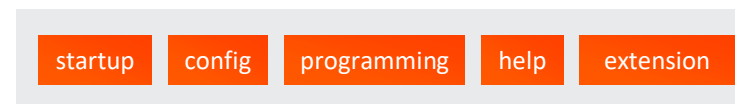
System update, upgrade, restore

Features:

- Install and Uninstall of SW packages
- Installation of Add-Ons
 - via USB
 - Via my.kuka.com
- Backup & restore of controller content

Customer Benefit:

- Time savings for update
 - Download link
 - No external engineering necessary
 - Automatic program & config sync
- No need of direct access to the internet



Software			
Operating System		PACKAGE	VERSION
Installed Packages		▶ KUKA iiQKA.Gripper CoAct Toolbox	1.0.0
Updates		▶ KUKA iiQKA.Gripper Toolbox	1.0.0
Upgrades		▶ iiQKA OS robotics software (Office)	0.5.1
Settings		▶ Robot data for Ibr3r760-iisy	0.1.0
		▶ iiQKA.OS Translations	0.5.2

iiQKA.OS

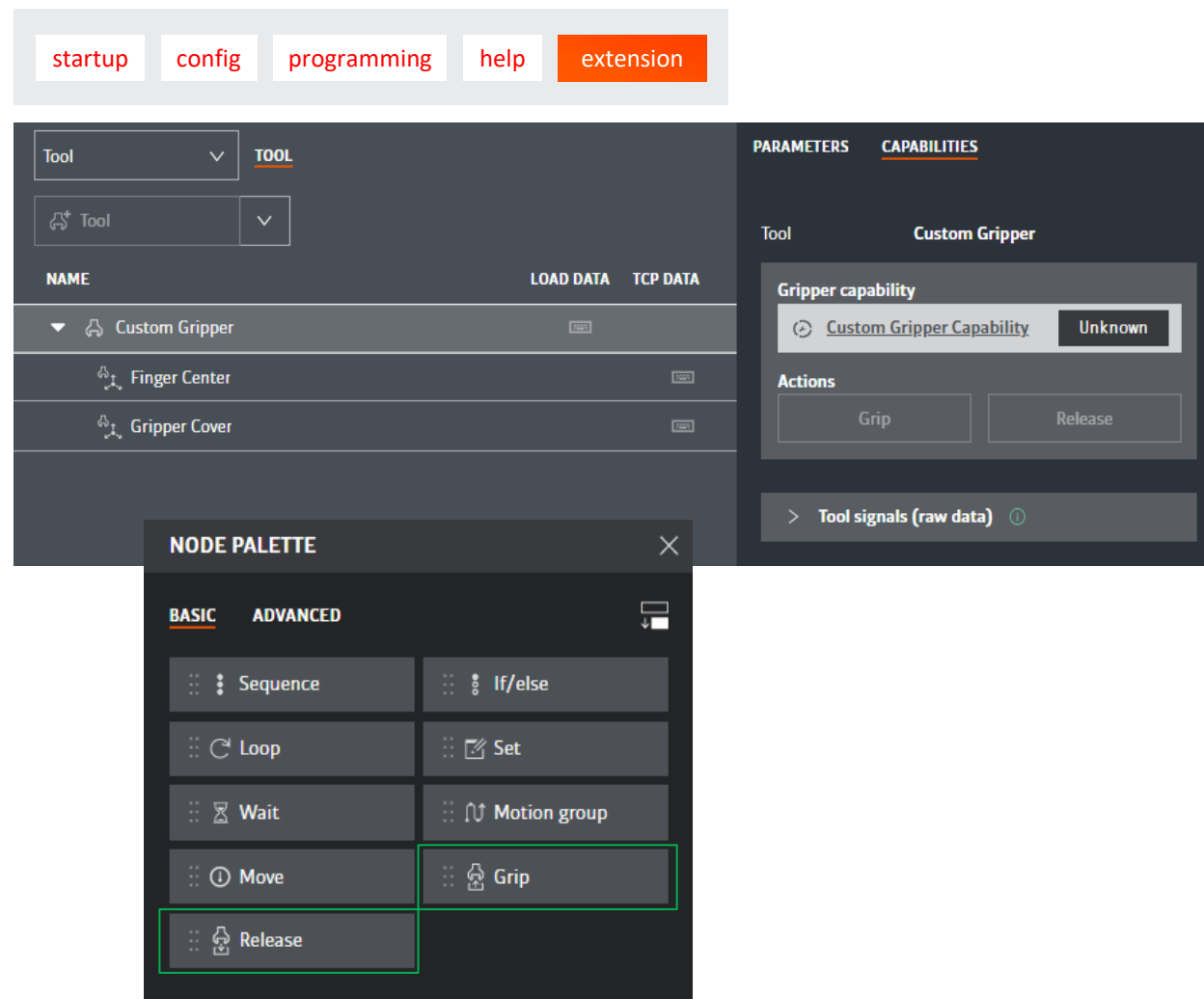
iiQKA.GripperToolbox

Toolboxes are used to extend the system functionality.

- iiQKA.GripperToolbox pre-installed and free of charge
- Supports generic I/O-based grippers
- Visualization of the Gripper within the 3D Scene
- Gripper control by smart_programming nodes
- Control of the gripper via manual UI interaction

Customer Benefit:

Save time, enjoy programming grippers



Motion – collision reaction

Feature:

HRC during transient collision

Compliance control after collision:

Configurable stop reaction “stop 1 - compliant”

HRC in clamping situation

In case of a clamping, the robot is not only stopped but also softened (bouncing effect) to minimize the peak force

- More accurate collision detection within robot workspace (includes wrist singularities)
- Can be combined with workspace monitoring (up to 20 Cartesian spaces)

Customer Benefit:

Enable more applications

- Enable real fenceless applications
- Higher speed for Fenceless applications possible
- Comparable / better then Competitors
- Lower contact force, no constant pressure in clamping situations

startup

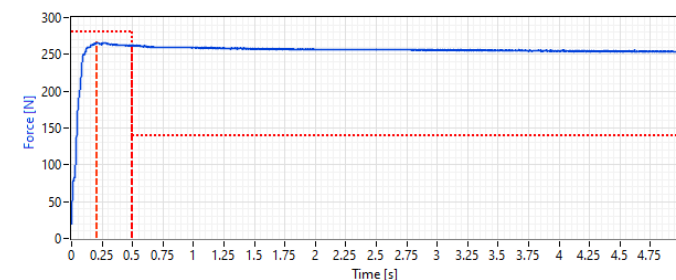
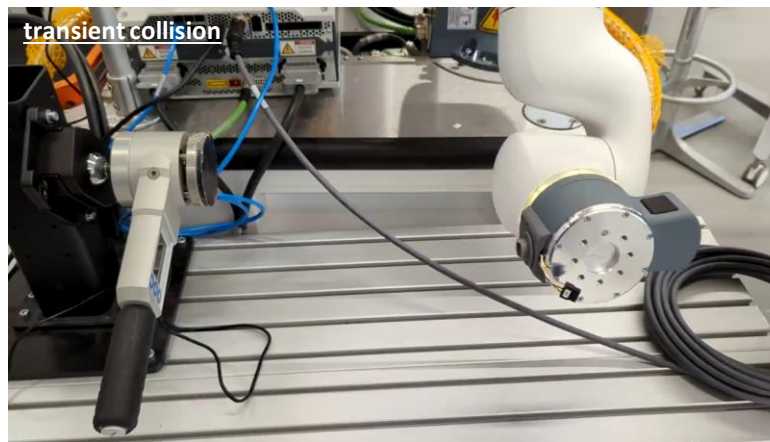
config

programming

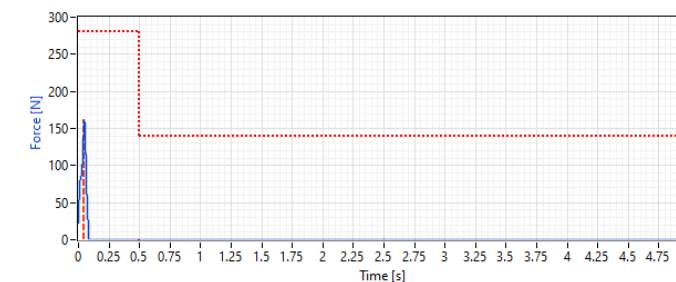
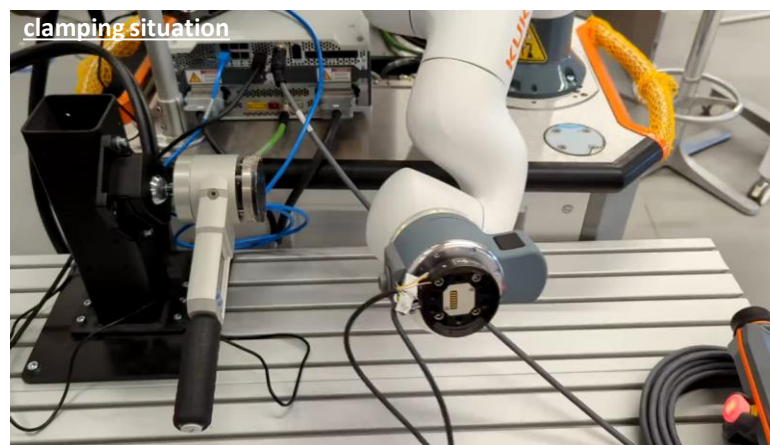
help

extension

transient collision



clamping situation



The new KUKA Cobot Portfolio

easy to use robot portfolio



LBR iisy 3 R760

Payload	3kg
Reach	760mm
Installation	Floor, Ceiling, Wall
Protection class	IP30
HRC	Fenceless coexistence



LBR iisy 11 /15

Payload	11 - 15kg
Reach	1300 - 930mm
Installation	Floor, Ceiling, Wall
Protection class	IP54
HRC	Fenceless coexistence

NPI OCT 2022

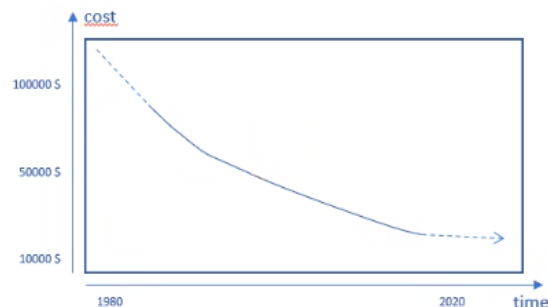
- Easy 2 Use / Intuitive
- Affordable
- Industrially Proven
- Easy and fast to implement
- Most experienced in HRC / Fenceless Operation
- Fast ramp up / Ecosystem



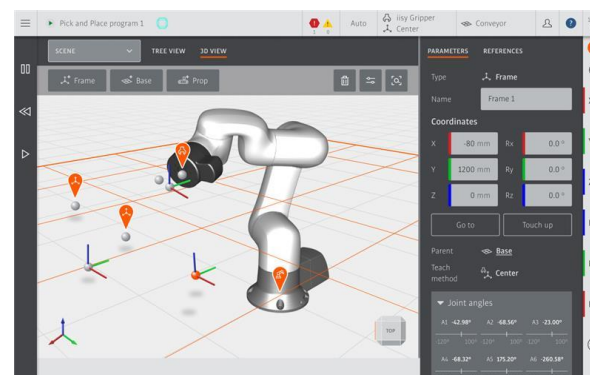
Powered by KR C5 micro and iiQKA.OS

What are the **immediate market demands** KUKA addresses with iiQKA?

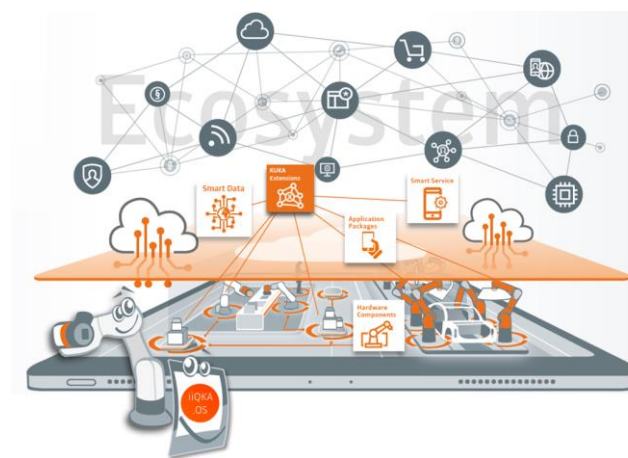
Low-cost, accessible **hardware**



End-user **usability**: Easy setup, easy configuration, easy programming, easy system extension



Ecosystems for developer and end-user usability



KUKA Portfolio | Update and exclusive outlook

More freedom in automation

