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XtendR

Extended Range for Cobots

An X2 Technology solution powered by RiACT

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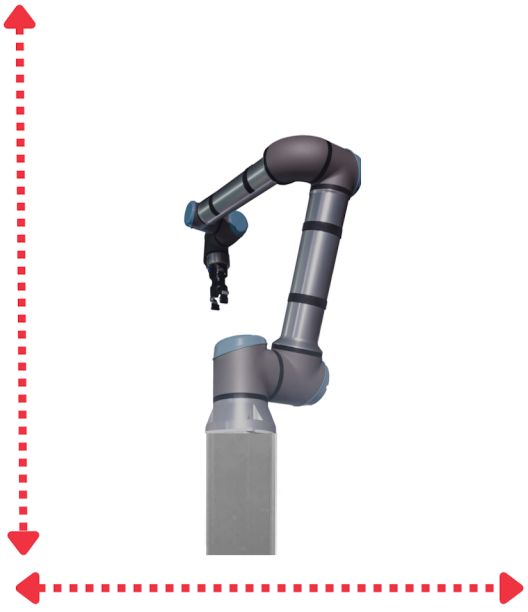
Technical specifications

- Standard stroke 900 mm
- Standard retracted length 700 mm
- Standard extracted length 1 600 mm
- Up to 100 mm/s
- Standard foot print 219 x 157 mm
- Standard 10% duty cycle
- Standard payload 1 250 N
- Customisations for stroke, retracted length, duty cycle, foot print and payload available

- Support for all robots: Yes
- Customisable column length: Yes
- Push and pull columns: Yes
- Multi-column support: Yes
- Plug & Produce: Yes
- Fully integrated 7th axis: Yes
- Software included: Yes
- Applications included: Yes

Cobot reach without 7th axis



Cobot reach with 7th axis

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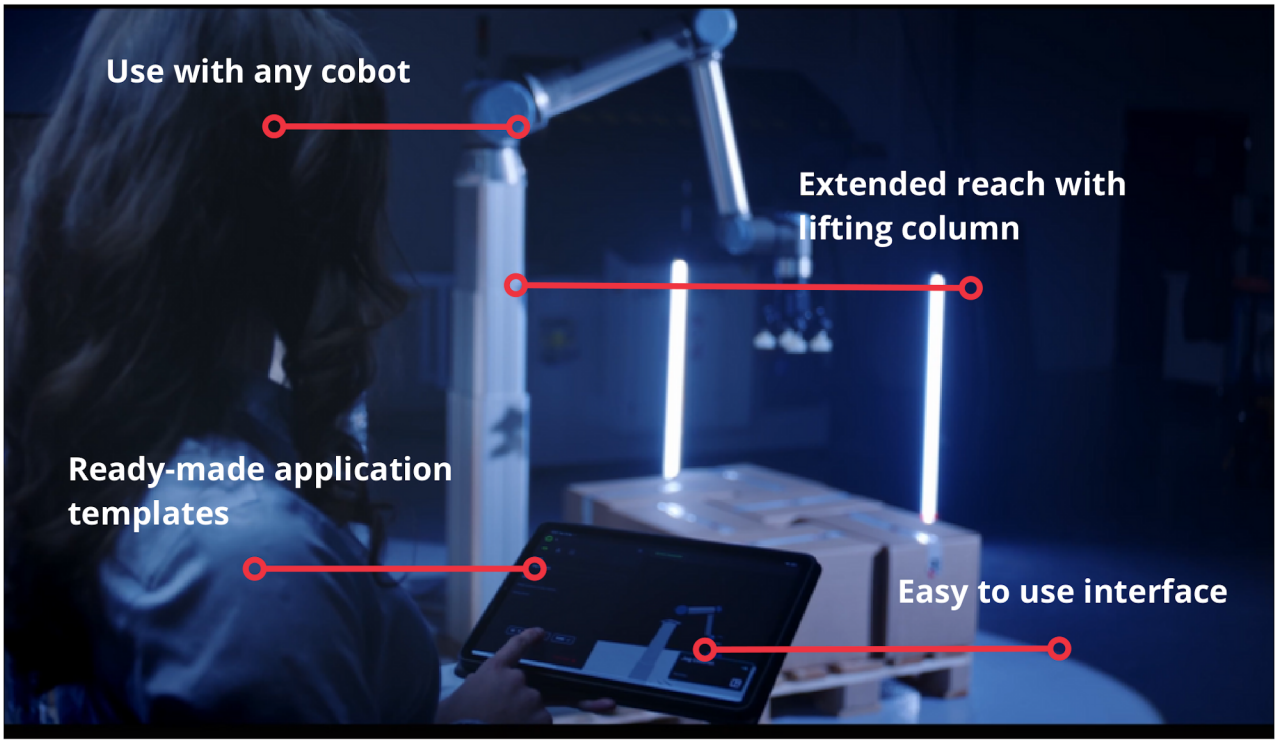
XtendR

A plug & produce solution for cobot applications demanding extended operational range

- 50% reduced engineering time due to standardized hardware integration
- 2x faster programming than with conventional operator interfaces
- 100% user autonomy making factories less dependent on engineering suppliers
- 3x faster reconfiguration for new products with ready made application templates
- Less than 10 clicks to change cobot, product or application



How to get started

1. Select column height

2. Select cobot

3. We customize the rest for you, plug & produce

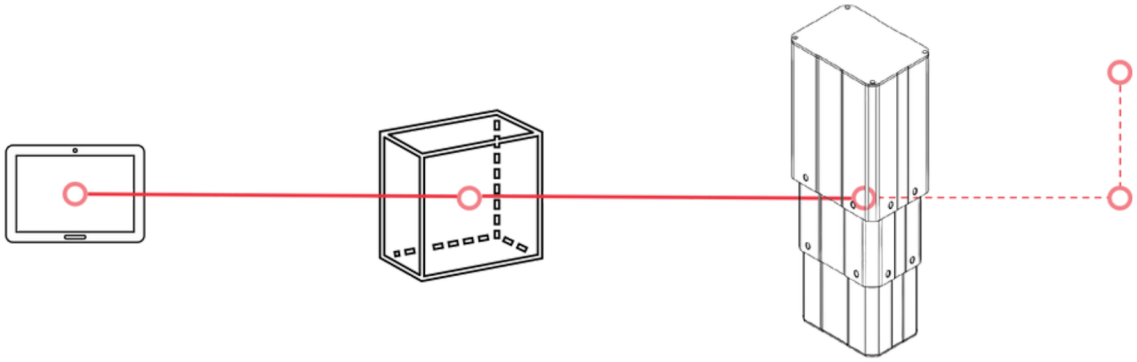
What is included?

Cabinet

Includes computer, controller and router; all you need to get started

Cobot and gripper

Purchased from distributor



Software

Interface for controlling lifting columns and cobots in one system. Can run on any screen with a web browser (tablet, computer, phone etc)

Lifting column

Standard or customized column for vertical lifting

XtendR includes all neccessary hardware and software to run the lifting column with the cobot. It includes a lifting column, control unit, computer, router and software. Cobots and grippers of your choice are to be supplied by a local cobot vendor and is not included in the package by default. Different levels of service agreements are available on request to make sure you can get the most out of your solution.

Lifting column

Cabinet

Software

Features

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Easy to install

Plug & Produce solution: Fully integrated 7th axis

Easy to use interface with no programming needed

From simulation to deployment in 1 click

Customizable

Customizable column length of up to 3 meters

Configurable application templates

Floor or ceiling mounted columns

Compatible

Use with cobots and tools from different suppliers

Multi cobot and column collaboration and coordination

Communication with auxiliary hardware (PLC, conveyor etc)

Applications

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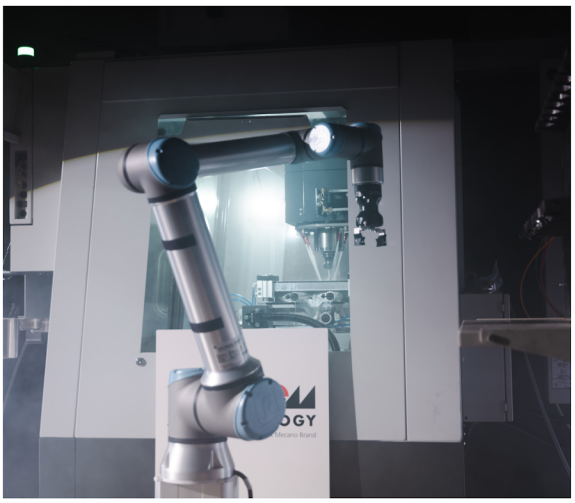
Machine tending

XtendR is ideal for machine tending applications as it can feed parts continuously, improving productivity and reducing workplace injuries. With the lifting column, the cobot will reach new heights of the machine, feeders and shelves.

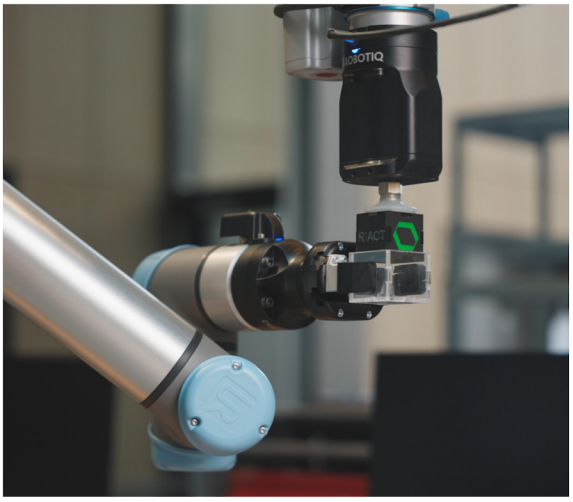


Palletizing

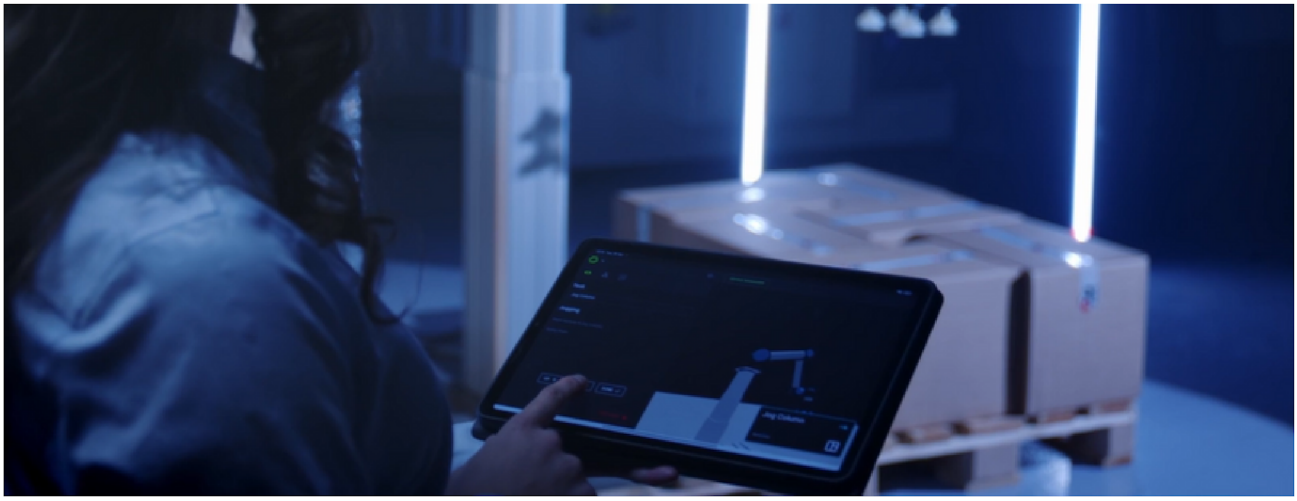
With automized palletizing cobots, labor costs can be reduced while the output rate increases. XtendR optimizes the palletizing application by letting the cobot pack in multiple layers. Select predefined palletizing layouts or create your own in minutes.

Pick & Place

XtendR enhances the reach of the cobot arm to let the cobot pick and place from different heights and locations. New pick and place locations can easily be teached and modified in the user interface.



Interface and use



One operating system to serve the full solution

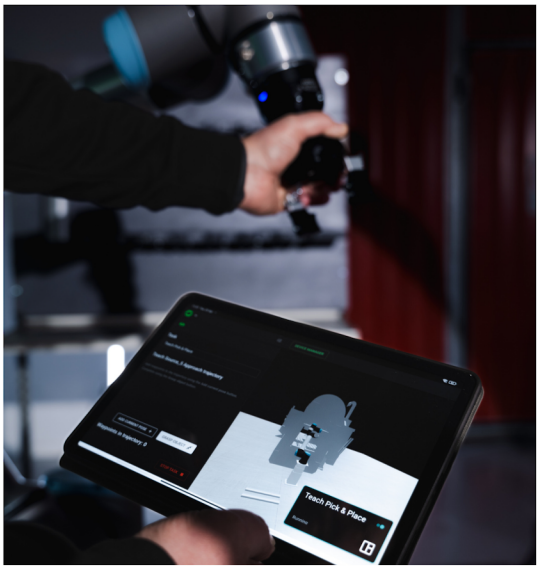
RiFLEX is the intuitive interface to control all cobots and automation devices from one place: The fast-track for millions of manufacturers to join the Industry 4.0 revolution.

The software offers one system to serve the cobot, lifting column, gripper and other devices from one standardized system. With ready made application templates, setting up and configuring new cobot tasks is easily done. The World Editor lets you create a 3D-model of your application by simple drag & drop. Solutions can be simulated to get upfront verification of your project and be deployed in 1 click.

Simple to connect: only one control system to integrate the hardware

Simple to configure: ready-made application templates, user-friendly interface.

Simple to run: automated coordination between devices and direct remote support



Lifting column specifications

An additional vertical axis increases the range of the cobot arm which is a valuable asset in many applications. The lifting columns can be ordered in a standard package or customized to your application.

Standard version

Retracted length: 700 mm

Stroke: 900 mm

Extracted length: 1 600 mm

Payload: 1250 N

Speed: 80-100 mm/s

Duty cycle: 10% (1 min on / 9 min off)

Customized version

Retracted length: Min 400 mm

Stroke: Up to 3 000 mm

Payload: Max 2 500 N

Speed: Max 100 mm/s

Duty cycle: Max 100%, continous

Add-on options

- Longer/shorter stroke and retracted length
- Brushless motor for continuous duty cycle
- Customized mounting plates for cobots
- Floor mounted push columns or ceiling mounted pull columns
- Cabinet to store all electronics
- HD tablet to control the system wirelessly

Machine tending application

Coordination of machine and cobot: Insert parts from a location or a grid into a machine, activate the machine, and remove the part from the machine onto another location or grid. The extended range from the XtendR allows the cobot to reach new heights of the machine, feeder and shelf.

Typical use-cases:

- Machine tending for CNC machines
- (Multi-)part feeding for assembly press
- Part removal from injection molding machine

Easy to install

Choose the cobot and gripper suited for your parts and extend the range of your robot with an additional axis. Attach any supported machine to our interface to control the machine (1).

Configurable

Configure your application to work with multiple parts and setups. Show the robot where to pick and place the parts and how to insert them in the machine.

Compatible

Seamless integration with many machine brands via generic I/O connections and native automation devices such as lights signal, proximity sensors, PLCs via I/O and fieldbuses.

(1) Wired connection should be installed by a professional integrator.

Machine tending application

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Application configuration

Parts (depends on Robot & Gripper)	Any weight	Any size	Any shape	Configurable / Teachable
Feeders	Single parts (Conveyor, Turntable)	Grid of parts (Rack / Pallet)	Multiple different parts (2 or more locations)	Configurable / Teachable
Drop-offs	Any location	Grid of parts (Rack / Pallet)	Different locations for different parts	Configurable / Teachable
Machine tasks	Milling & Turning	*Pressing & Assembling**	*Injection molding**	Others on request
Integration (coordination via I/O or fieldbus)	Run as master Control other devices such as conveyors or status lights	Run as slave Trigger task by other devices such as PLCs	*Monitor task** Provide current task status via fieldbus	*Configure task** Configure task by setting next part type or order by MES

Hardware support (2)

Robot brands	Universal Robot	Techman Omron	*Dobot**	Others on request
Robot extensions	Phoenix Mecano X2 lifting column	*RK Rose+Krieger Linear unit**		
Gripper brands	Robotiq 2-finger & Vacuum	OnRobot 2-finger & Vacuum	Schunk 2-finger	*Custom** I/O (on/off)
Gripper mounts	OnRobot QuickChanger	Angular brackets	*Dual-gripper**	*Custom**
Machines (control via I/O)	CNC machines	*Assembly press**	Auto door support	Others on request

(2) Find detailed information about supported hardware devices & models in the *Hardware support* documentation.
* *Planned in 2023*

Palletizing application

Pick parts from a static location, for example a conveyor or a grid and stack/pack them in a predefined pattern at a target location such as pallet, grid or box. The extended reach from XtendR allows the cobot to palletize in several layers to optimize the packaging line.

Typical use-cases:

- Palletizing
- Depalletizing
- Packaging

Easy to install

Choose your robot and gripper suited for your parts and extend the range of your robot with an additional axis. Use one or multiple pallets to stack your products.

Configurable

Configure your application to work with multiple parts, use predefined palletizing patterns or create your own. Show the robot how to pick the parts and where to place them.

Compatible

Seamless integration with auxiliary hardware via generic I/O connections and native automation devices such as lights signal, proximity sensors, PLCs via I/O and fieldbuses.

Palletizing application

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Application configuration

Parts (depends on Robot & Gripper)	Any weight	Any size	Any shape	Configurable / Teachable
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Hardware support (1)

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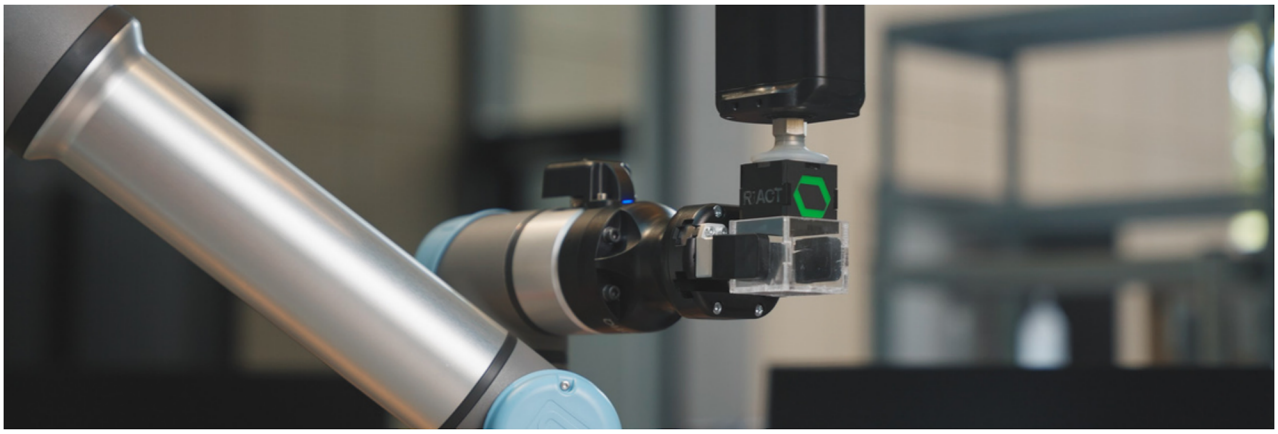
Pick & Place application



Transfer parts from a static location or a grid to another location or grid. The extended reach from XtendR allows the cobot to pick & place from various heights and locations.

Typical use-cases:

- Part transfer: Transfer (multiple) parts between stations (feeders, conveyors, racks).
- Part sorting: Sort parts from a location into one or more containers. (1)

Easy to install

Choose your robot and gripper suited for your parts and extend the range of your robot with an additional axis.

Configurable

Configure your application to work with multiple parts and easily pick & place locations.

Compatible

Seamless integration with native automation devices such as lights signal, proximity sensors, PLCs via I/O and fieldbuses.

(1) If the part identification is provided by an external device.

Pick & Place application

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Application configuration

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Hardware support (2)

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Gripper mounts	OnRobot QuickChanger	Angular brackets	*Dual-gripper**	*Custom**
Additional devices (via I/O or dielfbus)	Proximity sensors Wait for signal	Light indicators Monitor status	Conveyor belts Control devices (on/off)	Others on request

(2) Find detailed information about supported hardware devices & models in the *Hardware support* documentation.
* *Planned in 2023*

Frequently Asked Questions

Setup

Do I need different software for different cobots?

No, you have the same interface for any cobot supplier.

Which hardware devices are supported with XtendR?

Current support of hardware is focused on cobots and end-of-arm-tools. Other devices can be integrated using various communication models. You find information about supported hardware in the *Application Blueprints.*

Which hardware is necessary to use the system?

We have assembled everything you need to get started in one plug & produce cabinet. Everything can be controlled wirelessly from a web browser. See page 3.

Do I need internet to run the system?

No, XtendR is installed on-premises and can run securely on a local network without internet access. Additionally, the user can enable remote control from the interface to get instant support by 4G or WiFi.

How is the XtendR connected with other systems?

Cobot, column and other devices are connected in (via ethernet, USB, I/O) to the cabinet. Wirelessly connect any screen with a webbrowser (like Chrome) to the cabinet in a local network to control the system in real time.

Can multiple devices be coordinated in the software?

Different devices can be coordinated as one coherent solution. It works similar to a smart soft PLC, in which the program can adapt according to internal knowledge or information retrieved from sensors or other peripherals. The communication between devices is intrinsic, so that the user does not have to deal with different protocols or different brands and can solely focus on the control flow.

Can XtendR connect to a Programmable Logic Controller (PLC)?

Yes, XtendR is fully compatible with various Programmable Logic Controllers (PLCs).

Can XtendR be used with industrial robots?

The XtendR can be used with both collaborative robots and industrial robots. Lifting columns can be customized to fit the required height and payload for the solution.

Does XtendR function as a master or a slave system?

XtendR is adaptable, capable of serving as both a 'slave' device controlled by an external master such as a PLC, receiving commands, and executing them accordingly. XtendR can also act as the 'master' system itself, coordinating and controlling other devices in your network.

Interface and use

Which applications are supported with XtendR?

See *Application Blueprints*.

How are application templates used and how do I configure an application?

Wizards guides the user through every step in the setup. Select an application template and set the configurations (e.g. which cobot to be used, which object to grasp, speed etc.). Everything else will automatically update to the setup modelled in your scene. No programming is needed.

How are applications sent to the cobot?

Everything is controlled from the computer included in the cabinet.

How is fine tuning of the waypoints done?

Precise positions for waypoints can be adjusted using coordinates, jogging capabilities, or teaching by demonstration.

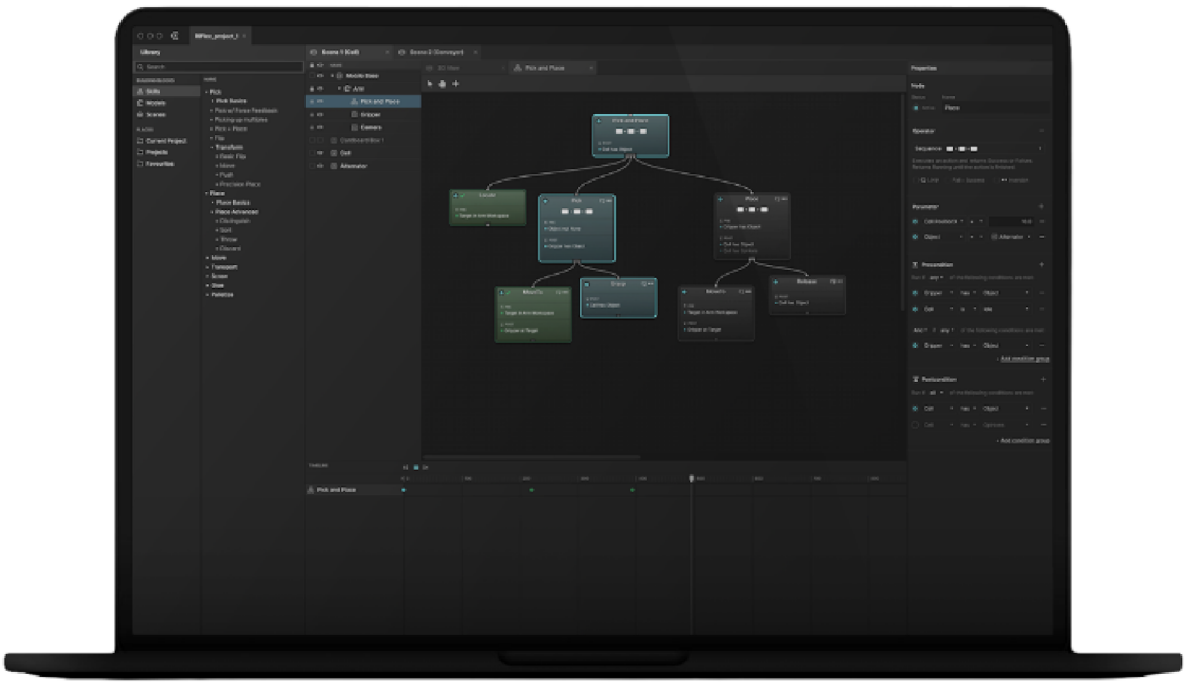
Can the user-interface be customized for the operator?

The software anticipates different levels of customer sophistication allowing to adjust the degree of complexity to the specific user. User-levels gives access to different views in the interface:

- Operator: The operator controls cobots from the Runtime interface. Here, all relevant information about the application (design, configuration, interaction) is displayed.
- Developer: The system integrator can adapt configuration parameters, text and interaction possibilities according to the operator's needs in the World Editor.

Can you adjust application templates to fit specific use-cases?

The Developer interface allows to modify the desired behavior for the use-case. Sub-branches of applications can be disabled and enabled.



Can we ensure safe operation with XtendR?

- Safety features (e.g. emergency break of cobot on collision, joint limit violation)
- Hard-wired emergency stops (e.g. Emergency button, Safety PLCs)
- Constraints and limits defined in the software (e.g. use proximity data to slow down cobot movement depending on distance)

Soft limits and constraints can be monitored at around 20Hz from the software and allow prevention of accidents, whereas hardwired safety reduces the possibility of injury when a collision occurs.

Can XtendR deal with alarms and faults?

In the Developer interface, the user can integrate handling of faults in different scenarios. Applications are build in a way that allows to change the behavior in cases where e.g. system faults or exceptions are detected. In this way the software acts similar to a safety PLC. The user is pinged when there is an alarm.

How can XtendR deal with cyber threats?

XtendR runs on-premises without access to the internet. In case of remote support or updates, the user can enable the remote support module directly in the interface and connect the system to internet for the required time.

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