

**25 - 26**  
**NOV**  
**2021**

**TALENT'S ON**  
**e.DO Cube**  
**HACKATHON**

**ARE YOU READY FOR INDUSTRY 4.0?**

Face a robotics challenge!

# Event agenda - November 25th



9.00 - 9.30  
CET

## The challenge: how to face it!

Goals, output, evaluation, prizes and mentorship system



9.30 - 10.00  
CET

## Inspirational talk by Ezio Fregnan

Comau Academy & Education Business Director



10.00 - 10.45  
CET

## Hackathon technical details explanation

e.DO Cube and virtual platform



10.45 - 11.30  
CET

## A little coding challenge

Ice-breaker: to familiarize with the team and the e.DO Cube



# Event agenda - November 25th



11.30 - 12.00  
CET

## Q&A Session – The challenge

Use this time to ask all the questions about challenge



12.00 – 21.30  
CET

## Hackathon

Each team can book 3 time slots of X minutes each with Comau Mentors Team!



19.00 - 19.30  
CET

Panel I: .....(PoliMI)



21.30 - 22.00  
CET

## Have a goodnight!

Amazing photos

The mentors will be available in the common room for more 30 minutes

# Event agenda - November 26th



9.00 – 9.15  
CET

**Good morning!**  
Wake up photos



9.15-9.45  
CET

**Panel II: .....(EIT M)**



9.45-17.30  
CET

**Hackathon**

Each team can book 3 time slots of X minutes each with Comau Mentors Team!



17.30 – 18.00  
CET

**Delivery and final party**

Final photos  
Connect to the last 15 minutes of the hackathon

# The challenge

Virtual Robotics and 3D printing are two of the significant technologies of industry 4.0. Today e.DO, thanks to its ability to leave a trace of its trajectory, is your 4.0 tool.

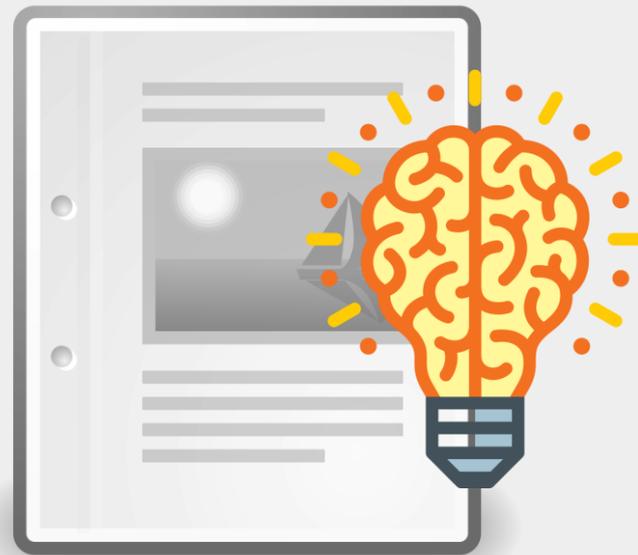
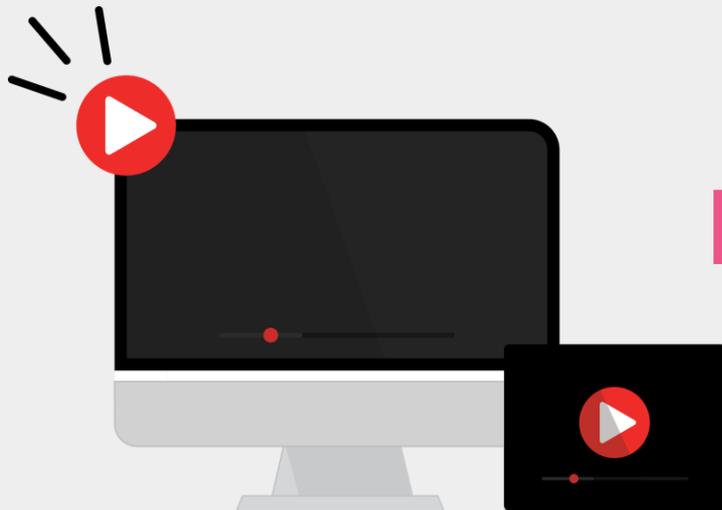
Use your creativity and your skills to design and develop the product, defining the final users and the scope of use/application.



Program e.DO Cube through its Blockly interface to 3D-print a POC of an innovative product, in line with the Sustainable development Goals Agenda 2030

# The outputs

 Upload your solution (video + description) by 17.59 CET,  
26th November!



A 3 minutes video to present your solution.  
Upload your video into your Team solution folder.

An accurate description of your solution.  
Fulfill the format you can find into your Team  
solution folder.

# Your solution

Prepare and write down all your answers in a text editor.

Create your video and upload it on YouTube or Vimeo and copy the link to share.

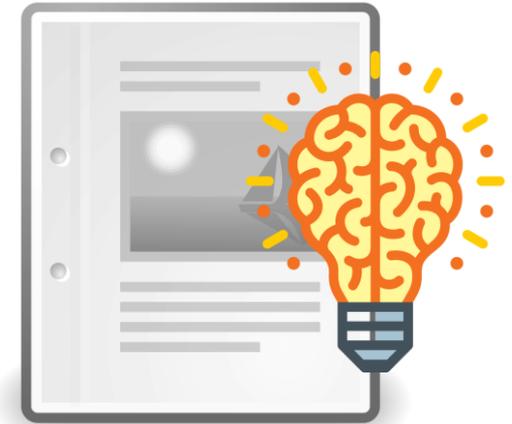
When you're ready, log in to your participant's pages, go to "website content", then to "create new solution" and start filling the form.

Remember to save frequently.

Title + Intro text

Solution description

Video (~3 minutes)



# Evaluation criteria

A jury will evaluate your solutions based on the following criteria.

**0-5**  
points

## Quality

What is the **added value** of your solution for the **target** you selected?

**0-5**  
points

## Originality

Does your solution have some **elements** of innovation?

**0-5**  
points

## Feasibility

Is the implementation of your solution feasible in the context?

**0-5**  
points

## Sustainability

Is your solution in line with any Sustainable Development Goals of 2030 ONU Agenda?

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

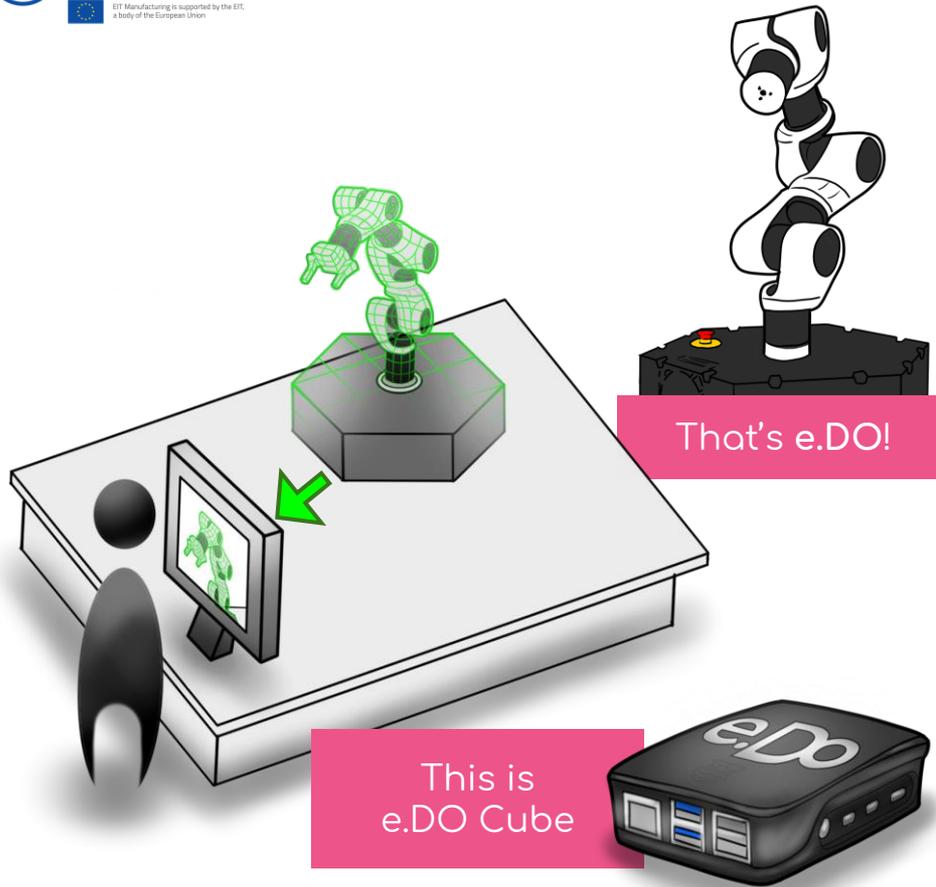


**SUSTAINABLE DEVELOPMENT GOALS**



The team with the total highest score is the winner!

# The tool



- e.DO Cube is a virtual tool that simulates e.DO, an educational robotic arm.
- Each team will the chance to access remotely to e.DO Cube to imagine, design and test the solution.

# The teams



- Each team is made of up to 5 people.
- We have assigned you to a team, please contact us and we will provide all the needed information.
- If your name does not appear in the teams list file, please contact us.



## Teams list

Here you can find the list of all the teams name and members we have received in advance.

# The winner ceremony

December 15th  
..... CET

Connect to this special  
online event to discover  
the winning teams of the  
hackathon!



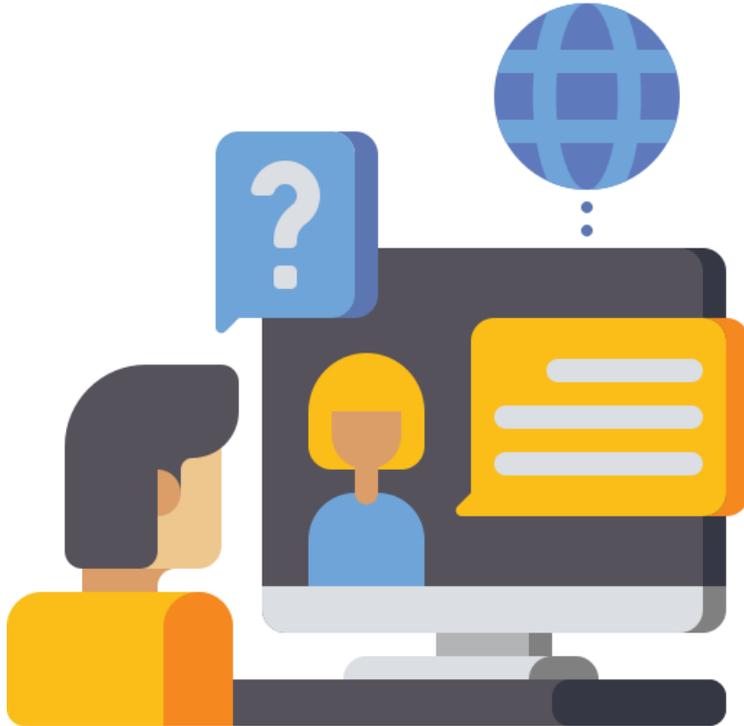
# The prizes

The first 3 winning teams  
will receive an e.DO Cube!

One e.DO Cube for each teammate!



# Mentoring sessions



- Each team can book 3 time slots of 20 minutes each with Comau Mentors Team.
- November 25th  
Mentors are available from 15.00 to 18.00 (CET).
- November 26th  
Mentors are available from 9.00 to 18.00\* (CET).

# How to talk with a mentor

- Use the link to access the table to book your time slots.  
**Link: .....**
- Choose your slots wisely!  
 Each team can book three slots maximum (60 minutes of mentorship in total).
- To book your slot, write the name of your team in the right cell.  
 DO NOT overwrite or cancel cells already filled by other teams.

	h [CET]	SLOT 1	SLOT 2	SLOT 3
<b>DAY 1 (25/02)</b>	15:00-15:20			
	15:30-15:50	Example Team		
	16:00-16:20			
	16:30-16:50			
	17:00-17:20			
	17:30-17:50			

“Example Team”  
is booking the mentoring slot  
15.30-15.50

# The mentors

Giuseppe Daquà



Irene Vetrò



Salvatore Marino



Luca Vinci



Fabrizio Timò



Stefano Pesce



Marta Barriolo



Andrea Zucchi





# Recap!



## Open session on G Meet

A plenary on G Meet session (Main Room) is always open



## Upload your solution

Remember to upload your solution (video + description) into your Team folder



## e.DO Cube access

Each team has remote access to one e.DO Cube to develop its solution



## Jury

All the solutions will be evaluated by the jury



## Mentorship

Each team can book up to 3 slots (20 minutes each) with the mentors



## Prizes and winner ceremony

The winning teams will be announced on December 15<sup>th</sup>!



## Technical support

Each team can ask for technical support by writing in Main Room chat



## Homework and free timetable

You are free to manage your time during Teamwork session



## Participants folder on GDrive

Here you can find all the documents you might need (this presentation included!)

[link](#)



## GSheet for booking mentors slot

[link](#)



## Google Meet plenary session

You will find this G Meet session always open to chat with others and with mentors

[link](#)



## Upload your solution

Each team has access to its own Team solution folder

[link](#)

# The organizer



# Main Partners



**eit** Manufacturing



EIT Manufacturing is supported by the EIT,  
a body of the European Union



**POLITECNICO**  
**MILANO 1863**

# The current scenario

- Industry 4.0 requires valuable new skills for the 21st century: in the next few years, the integration between men and machines will drive the industrial world, while robots and augmented solutions will increase their presence in our daily
- Thinking about today young adults, we consider as crucial to grow future citizens able to use new technologies to face present trials, cooperating in a productive and sustainable way, being able to interact among themselves, independently by their culture and backgrounds.

# Inspirational Talk



Ezio Fregnan  
Comau Academy & Education Business Dire

- Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur

# About e.DO

Educational robot  
Easy to use  
6 axes

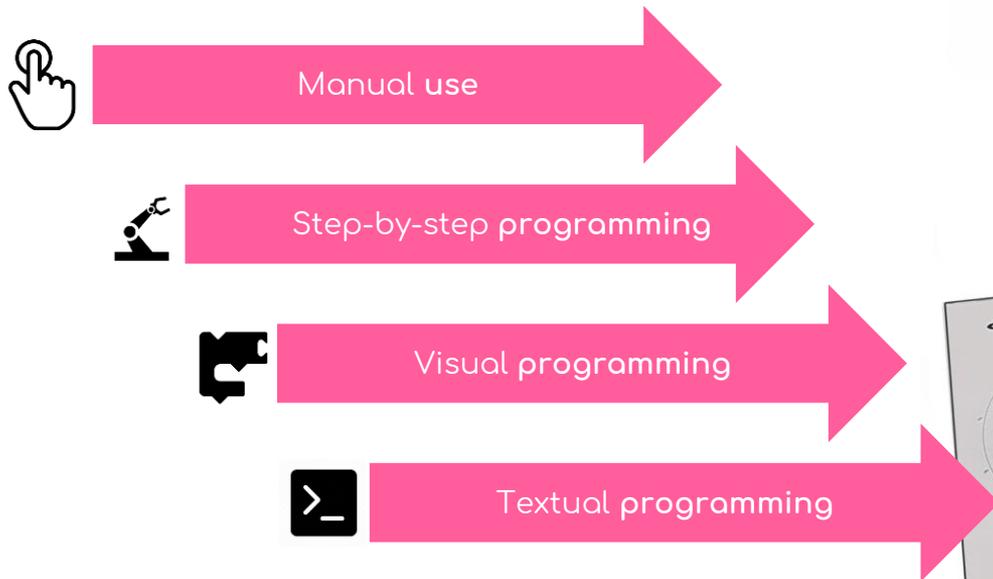


Discover more about e.DO

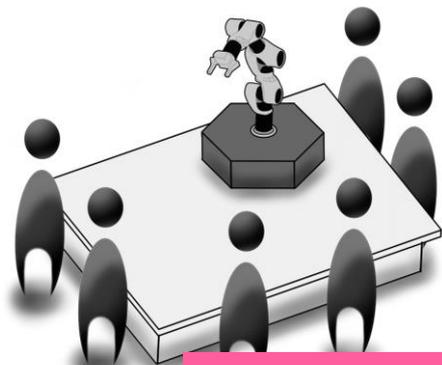
You can find all the technical information and  
the details about e.DO on its website

<https://edo.cloud/>

# About e.DO



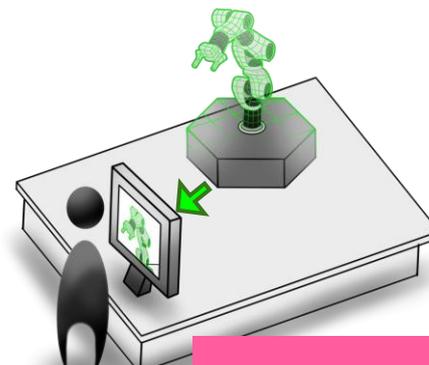
# About e.DO Cube



e.DO Robot

## Robotic Arm

Team work experience, perfect for insite activities, similar to an industrial robot



e.DO Cube

## Virtual simulator

Individual experience, perfect for remote or blended learning, e.DO virtual twin

# How to access e.DO Cube

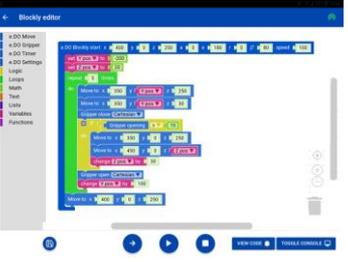
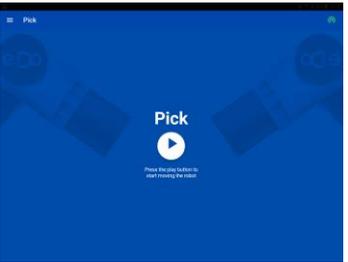
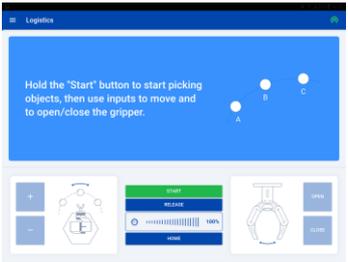
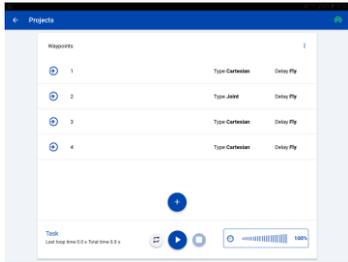
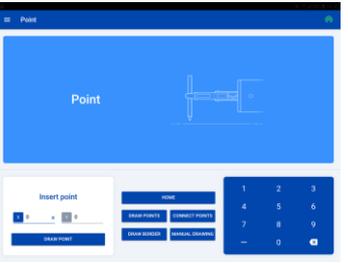
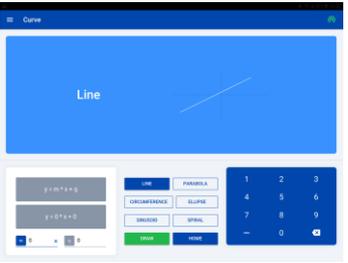
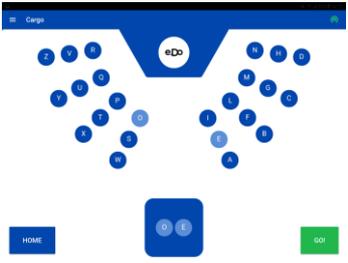
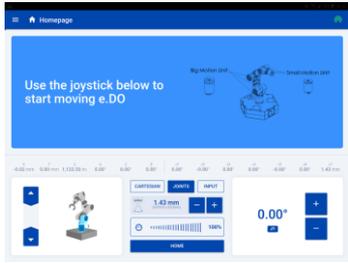
# e.DO App



e.DO App



One app  
 Many interfaces



# e.DO App

☰ Homepage

Use the joystick below to start moving e.DO

X 0.00 mm Y -0.00 mm Z 1,122.49 ... A 0.00° E 0.00° R 0.00° J1 0.00° J2 0.00° J3 0.00° J4 -0.00° J5 -0.00° J6 -0.00° J7 0.00 mm

CARTESIAN JOINTS INPUT

0.00 mm GRIPPER OPENING - +

100%

HOME

0.00° J1 + -

Menu

- e.DO
- Homepage
- Projects
- Blockly
- Calibration
- Plugins
- Curve
- Point
- Pick
- Cargo
- Logistics
- T-Blocks
- Settings
- About
- Disconnect

☰ Homepage

Use the joystick below to start moving e.DO

X 0.00 mm Y -0.00 mm Z 1,122.49 ... A 0.00° E 0.00° R 0.00° J1 0.00° J2 0.00° J3 0.00°

CARTESIAN JOINTS INPUT

0.00 mm GRIPPER OPENING - +

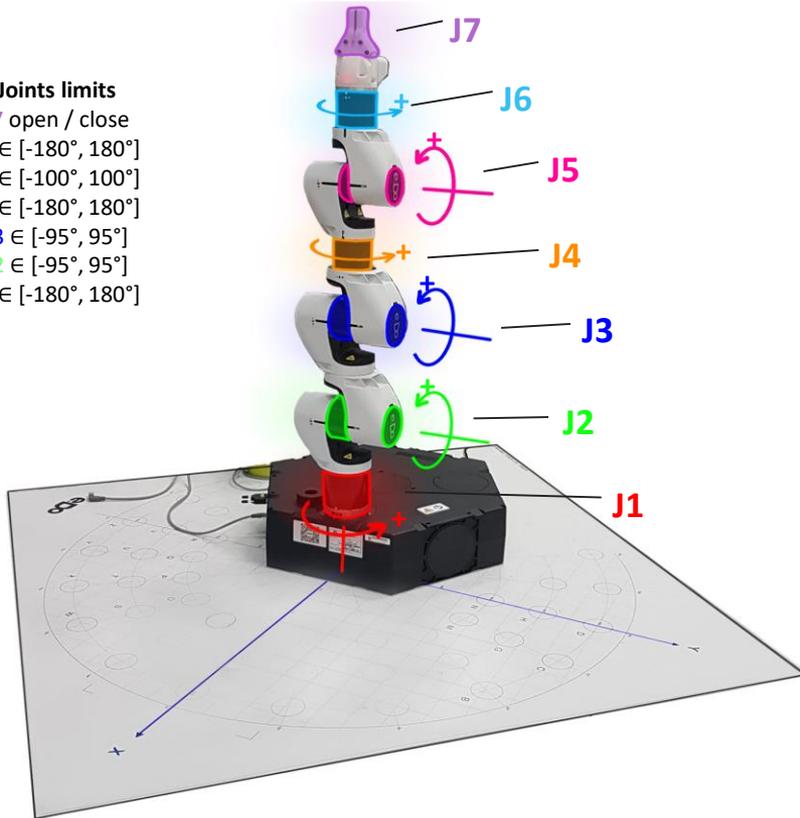
100%

HOME

# Moving e.DO

## Joints limits

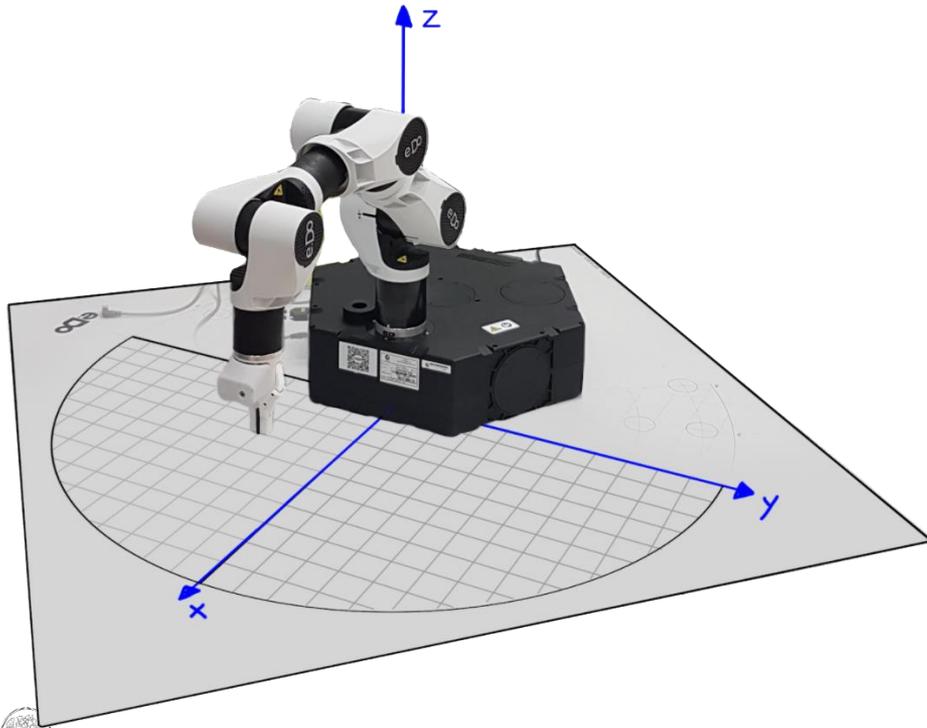
- J7 open / close
- J6  $\in [-180^\circ, 180^\circ]$
- J5  $\in [-100^\circ, 100^\circ]$
- J4  $\in [-180^\circ, 180^\circ]$
- J3  $\in [-95^\circ, 95^\circ]$
- J2  $\in [-95^\circ, 95^\circ]$
- J1  $\in [-180^\circ, 180^\circ]$



## Joints Movement

- The user has control over the rotation of each joint of the robot.
- In order to reach a certain position the user has to choose all the angles of rotation of the joints.

# Moving e.DO



## Cartesian Movement

- Each position in the space is indicated by a triplet of Cartesian coordinates  $(x, y, z)$ .
- e.DO moves with a linear movement from a point in the Cartesian space to the another.

# Programming e.DO

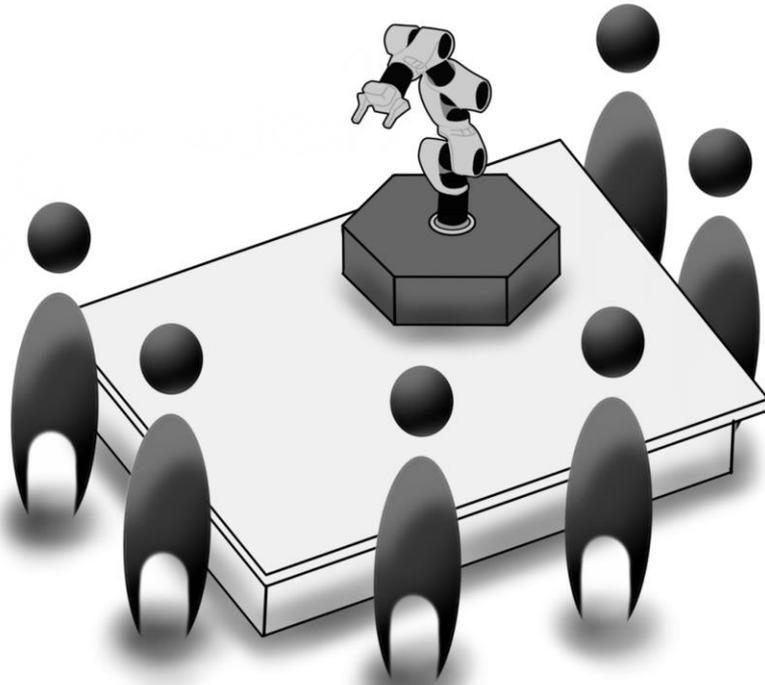
You have to use *Blockly* interface for the Challenge

The screenshot displays the e.DO Blockly editor interface. On the left is a navigation menu with options: e.DO, Homepage, Projects, **Blockly** (highlighted with a red box), Calibration, Plugins, Curve, Point, Pick, Cargo, Logistics, T-Blocks, Settings, About, and Disconnect. The main workspace shows a program titled "e.DO Blockly start" with the following code blocks:

```
e.DO Blockly start x 400 y 0 z 200 a 0 e 180 r 0 j7 80 speed 100 mask 127  
count with i from -150 to 150 by 100  
do  
  Move to x 350 y i z 120  
  Move to x 350 y i z 50  
  Gripper close Cartesian  
  Move to x 350 y i z 120  
  Move to x 400 y i z 120  
  Move to x 400 y i z 80  
  Gripper open Cartesian  
Move to x 400 y 0 z 200
```

At the bottom of the editor, there is a label "AC2.12\_c\_for" and several control buttons: a save icon, a back arrow, a play button, a stop button, a "VIEW CODE" button, and a "TOGGLE CONSOLE" button. A small 3D model of the e.DO robot is visible in the lower-left corner of the workspace.

# Extra session about e.DO



Do you want to discover more about e.DO, e.DO Cube and the e.DO Experience? Join an extra session today at .....CET with our mentor Marta Bariolo!

# Let's try!



## A little coding challenge with e.DO Cube



3 extra points to teams that reproduce the video movement with edo.cube programming in blocky and deliver the result in the assigned room by 11.15 am

# Movement to reproduce



# Solution



Now we are ready to go

**Let's start!**