



DTAM

**DIGITAL TRANSFORMATION IN
ADVANCED MANUFACTURING**

DTAM- IOT HUB: INTERNATIONAL NETWORK OF IOT LABS

An Erasmus+ project

27 September 2023 | JOKIN GOIOAGA

VISIT [DTAMPROJECT.EU](https://dtamproject.eu) TO LEARN MORE

#DTAMPROJECT #UPSKILLINGYOURFUTURE

DTAM IOT HUB -> WHY?



OBJECTIVE:

Create and coordinate an interconnected DTAM IoT HUB connected thanks to a network of IoT International labs

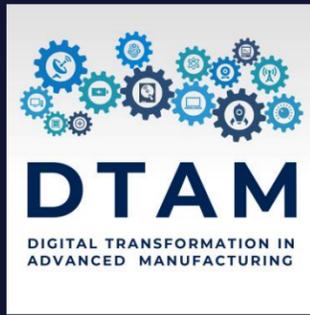
“Connects learners to an International network of partner IoT labs for specific (collaborative or hybrid) learning challenges “

DTAM IOT HUB



“A centre for sustainable cooperation for various stakeholders”





Collaboration



Co-funded by the
Erasmus+ Programme
of the European Union

"In DTAM IOT HUB we have created an environment of **trust** thanks to the teamwork from the last 3 years and we are joining forces to help our students to **tackle complex challenges and pioneer IoT solutions.**"

WHAT IS THE IOT HUB



**COLLABORATIVE
SPACE**



**BASED ON IOT
TECHNOLOGY**



**REMOTELY
AVAILABLE
EQUIPMENT**



**SUSTAINABLE
PARTNERSHIP**



**REMOTE
FACILITIES
AVAILABLE**



**DIFFERENT
INDIVIDUAL
FOCUS BUT ONE
VISION**



INTERCONNECTION

FOCUS OF THE LABS



Predictive analytics
using **machine
learning** models



Data visualization
and interpretation
(Python, Grafana
and Thingsboard)



Data collection
from commercial
and didactic IoT
and industrial
devices



Generate local
and cloud
databases



Practice with **IoT
sensor**: physical
connection,
programming and
data reading



Secure connections
configuration
(**Cybersecurity**)



Data
communication
using different
protocols (Node-
red and MQTT)

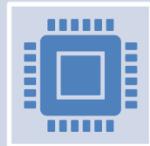


FabLab for primary
and secondary
school students

IOT LABS



IoT labs are **dynamic learning spaces** where students can put their knowledge into practice in a controlled environment.



Equipped with sensors, connected devices, and programming tools, these labs allow students to experiment and solve **real-world problems**.

**EXPERIENTIAL
LEARNING**

**EMPLOYMENT
READINESS**

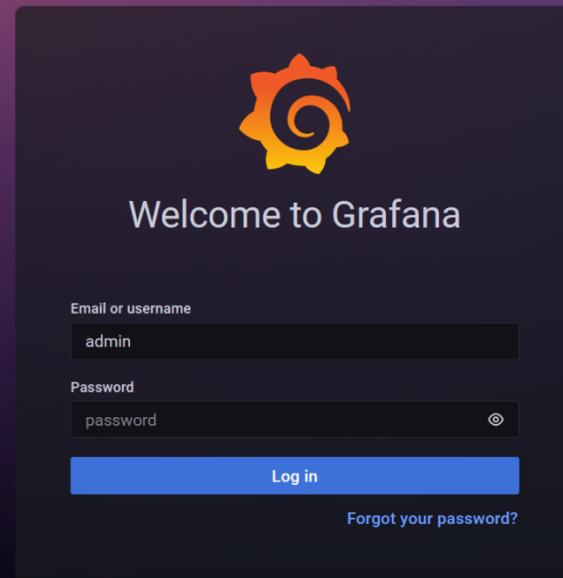
INNOVATION

HOW IS INTERCONNECTED



The DTAM IOT Hub counts on a cloud solution (Sarenet) for the interconnection of individual Labs through VPN, which provides:

- Ability to upload and manage heterogeneous content
- Securely and with controlled diffusion distribution of contents (encrypted storage).
- Each LAB must have as many user accounts as there are teams in the demonstration area
- The platform is multilingual



Welcome to Grafana

Email or username
admin

Password
password

Log in

[Forgot your password?](#)

VPN Conectada



Nombre de VPN DTAM
Dirección IP 10.10.10.1
Nombre de Usuario davinci
Duración 00:00:17
Bytes Recibidos 2.39 KB
Bytes Enviados 22.41 KB

Desconectar

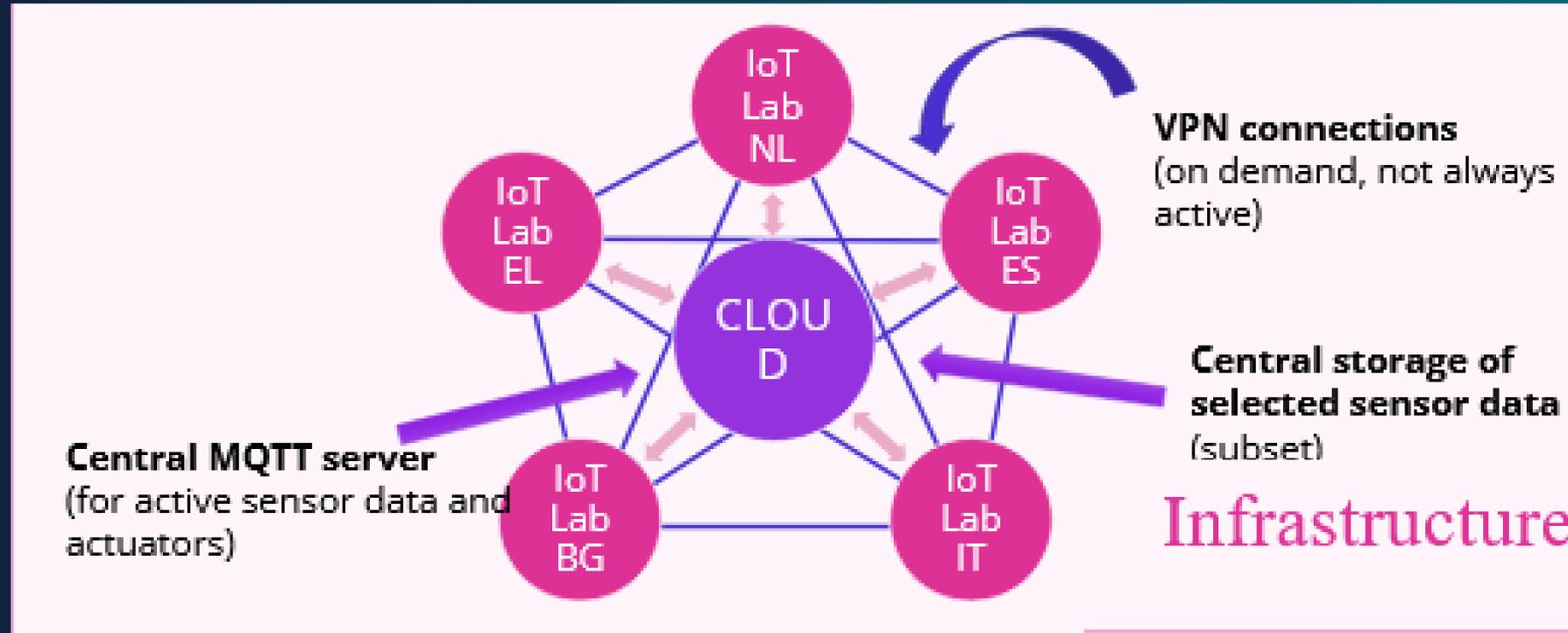
RESERVATION SYSTEM IN PLACE



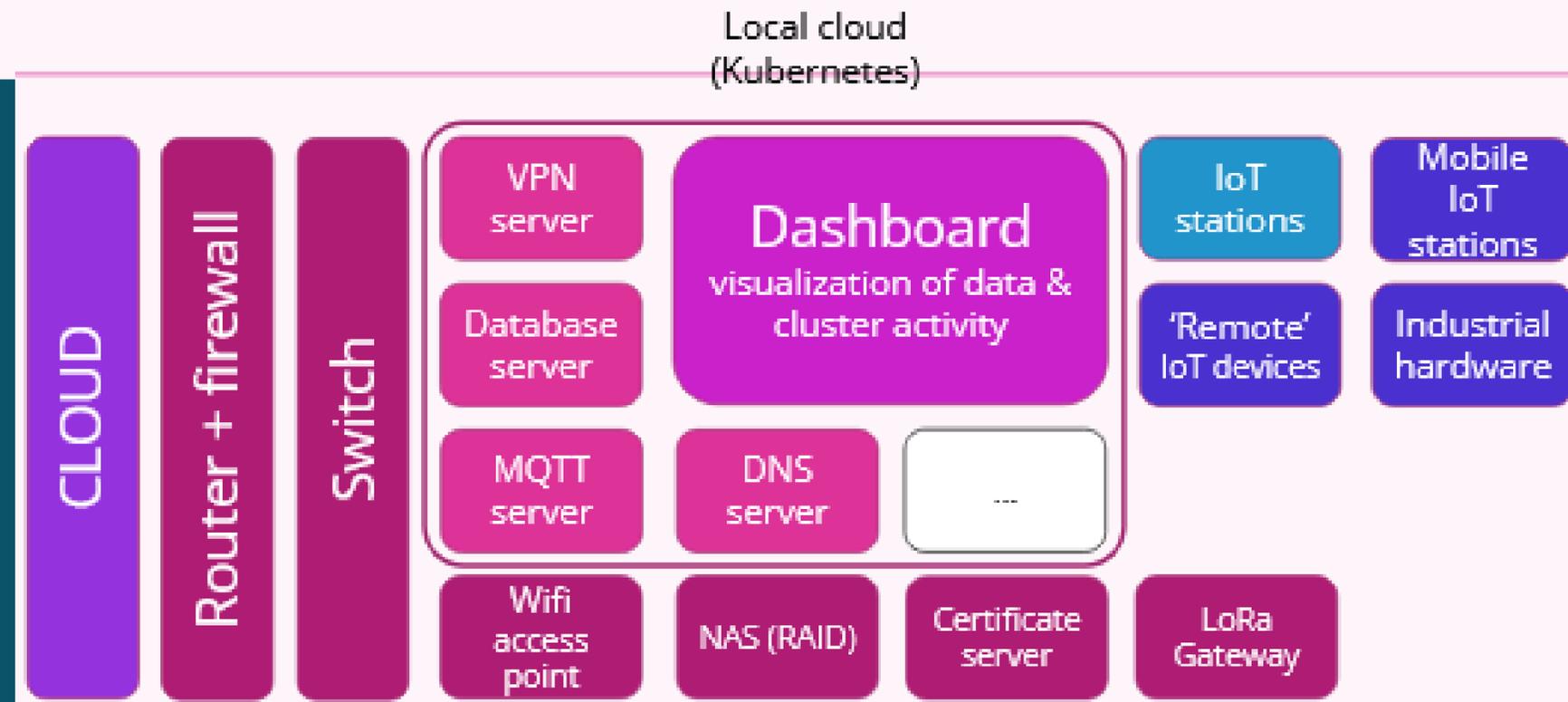
WORKING TOGETHER



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Infrastructure IoT Lab





DTAM TRAINING



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ONLINE TRAINING PLATFORM:

- **Advanced Sensorica**
- **Big Data**
- **Machine Learning**
- **Cybersecurity**
- **Transversal Skills (Team work...)**



Location:

Derio (Basque Country) Spain

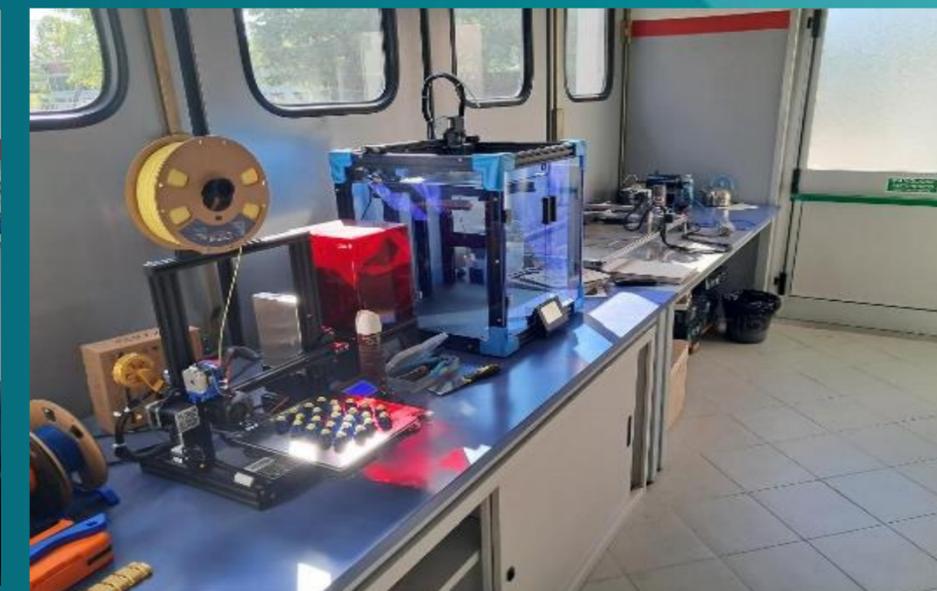
Space:

70 m² – 8 workspaces

Focus:

Industry 4.0

N° of sensors	123
N° of PLC screens	6
N° of engineering workstations	12
N° of available IoT gateways	4 commercial Lora indoor 6 didactic Lora
N°. of connections to machines/processes	
No. of open source software and learning options available via the various partner IoT Labs	Node-red, Mysql Database, Chirpstack Lora server, Arduino and Raspberry Pi, Portainer for docker administration, Grafana for visualization, Jupyter for Python compiling

**Location:**

Alba (Piedmont) Italy

Space:70 m² – 18 workspaces**Focus:**

Industrial Production

N° of sensors

>200

N° of PLC screens

40

N° of engineering workstations

20

N° of available IoT gateways

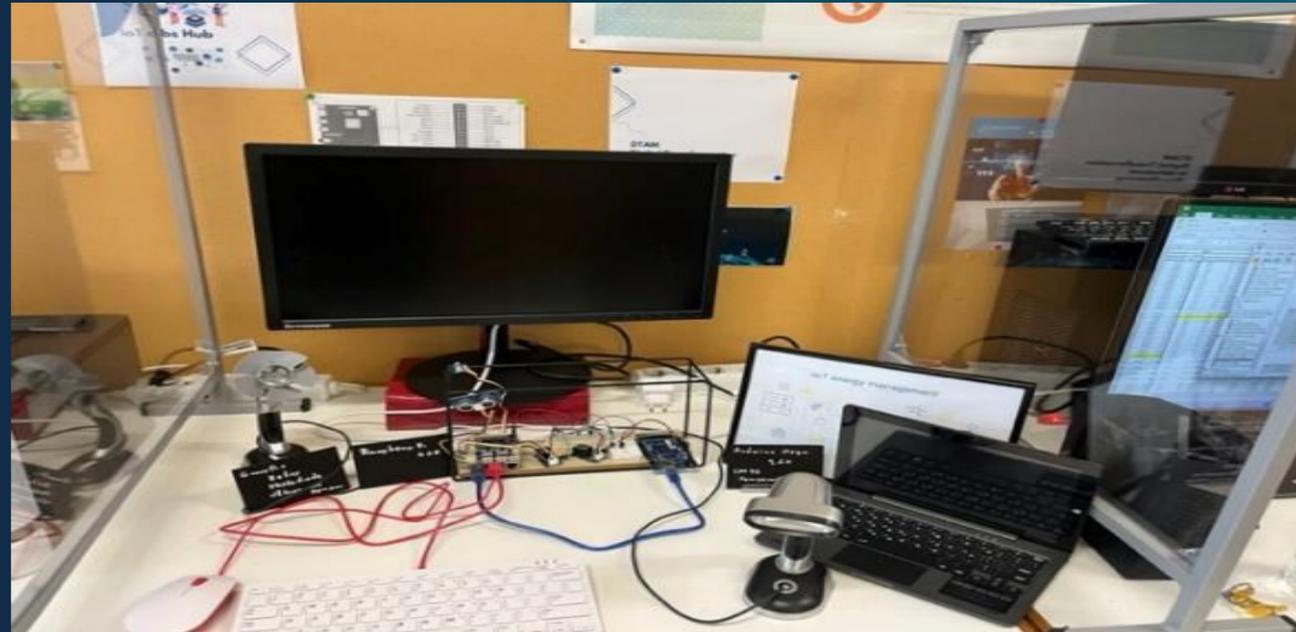
10

**N°. of connections to
machines/processes**

10

**No. of open source software and
learning options available via
the various partner IoT Labs**

open software, such as
Node-red, Mysql Database,
Chirpstack Lora server,
Arduino and Raspberry Pi,
Portainer for docker
administration, Grafana for
visualization, Python



Location:

Patras (Western Greece)

Space:

84 m² – 20 workspaces

Focus:

Industrial Production

N° of sensors	106
N° of PLC screens	no PLC
N° of engineering workstations	20
N° of available IoT gateways	0
N°. of connections to machines/processes	status of many network devices in lab



DA VINCI



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Location (2):

Gorinchem and Dordrecht (South Holland) Netherlands

Space:

Gorinchem: 30 workspaces

Dordrecht: 24 workspaces



N° of sensors	>200
N° of PLC screens	no PLC
N° of engineering workstations	6
N° of available IoT gateways	1 (beta)
N° of connections to machines/processes	6
No. of open source software and learning options available via the various partner IoT Labs	status of many network devices in lab Node-Red, Grafana, MySQL, PHP Webserver, Python runtime environment, Portainer for Docker containers, Arduino and Raspberry





WORKING TOGETHER



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Custom 4			
VPN - APRO	WAN-dtam (WAN-dtam)	Up	
VPN - DA VINCI	WAN-dtam (WAN-dtam)	Up	
VPN - TXORIERRI	WAN-dtam (WAN-dtam)	Up	
VPN - UPATRAS	WAN-dtam (WAN-dtam)	Up	

```
pi@DAVINCI-RPI-1: ~  
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| 3153 | GRC | 2023-09-27 18:51:30 | 25 | upatras |  
| 3154 | GRC | 2023-09-27 18:52:31 | 25 | upatras |  
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| 3156 | GRC | 2023-09-27 18:54:31 | 25 | upatras |  
| 3157 | GRC | 2023-09-27 18:55:30 | 25 | upatras |  
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| 3159 | GRC | 2023-09-27 18:57:30 | 25 | upatras |  
| 3160 | GRC | 2023-09-27 18:58:31 | 25 | upatras |  
| 3161 | GRC | 2023-09-27 18:59:30 | 25 | upatras |  
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| 3164 | GRC | 2023-09-27 19:02:31 | 25 | upatras |  
| 3165 | GRC | 2023-09-27 19:03:30 | 25 | upatras |  
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| 3167 | NLD | 2023-09-27 18:04:10 | 23 | davinci |  
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| 3171 | NLD | 2023-09-27 18:06:10 | 23 | davinci |  
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| 3173 | NLD | 2023-09-27 18:07:10 | 23 | davinci |  
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3134 rows in set (0.01 sec)  
mysql>
```

OVERALL INFRASTRUCTURE



Thanks to collaboration and interaction of the individual labs we cover a much bigger approach.

N° of sensors	>600
N° of PLC screens	46
N° of engineering workstations	100
N° of available IoT gateways	21
N°. of connections to machines/processes	16
No. of open source software and learning options available via the various partner IoT Labs	Node-Red, Grafana, MySQL, PHP Webserver, Python runtime environment, Portainer for Docker containers, Arduino and Raspberry

MULTI-STAKEHOLDER COLLABORATION

CHALLENGE BASED LEARNING



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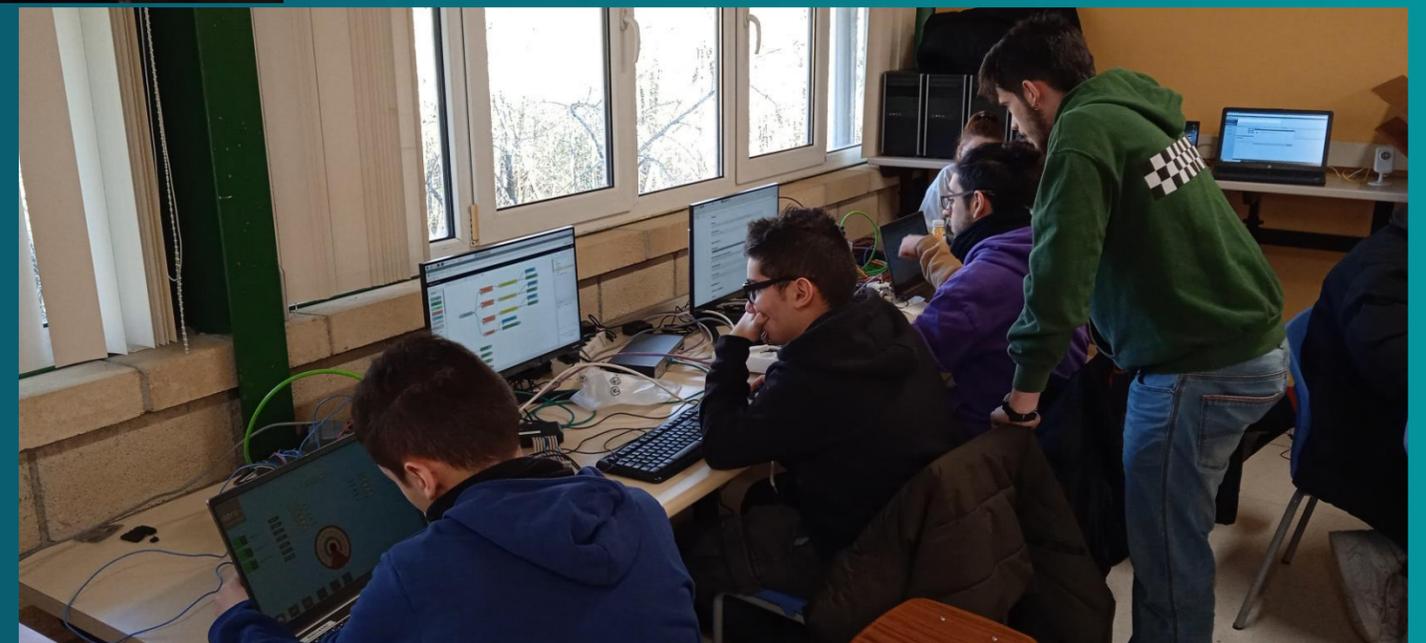
CHALLENGE BASED LEARNING



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Thanks to collaboration and interaction of the individual labs we create multidisciplinary international teams.



OTHER ACTIVITIES



Organize local **webinars and workshops** to engage with stakeholders, share knowledge, and **promote DTAM IOT HUB.**



Collaborate with industry associations, educational institutions, and business networks to host **joint events, conferences, or panel discussions** on digital transformation



Attend relevant **conferences, trade shows, and exhibitions** to showcase the network



Establish **strategic partnerships** with industry leaders, IoT solution providers, and technology companies



Collaborate with educational institutions and training centers to integrate DTAM network services into **their curriculum and offer joint programs or certifications**

The DTAM IOT Hub was initiated by 4 LABs



But it is an Open Network, other LABs can join the initiative

Requisites to join the DTAM IOT Hub:

- 1) To have a lab dedicated to IOT which can join our network
- 2) To keep the spirit of COLLABORATION!!



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JOIN US!



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Find Us Online!



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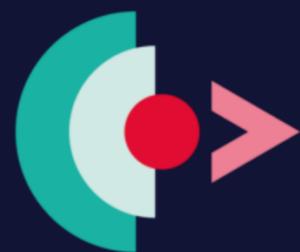


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Thank you!



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Jokin Goioaga

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