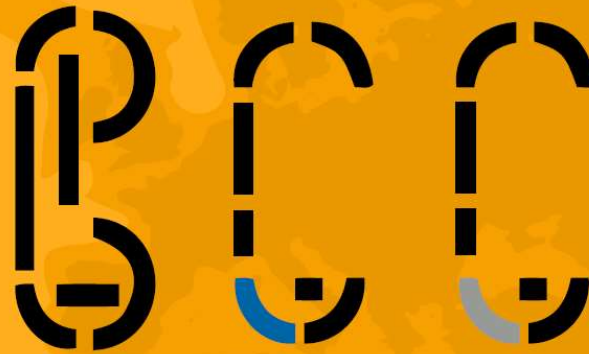




Sustainable



# Summary of THINK TANK ON SUSTAINABLE BUILDINGS





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**THINK TANK SUSTAINABLE BUILDINGS**  
**EUROPEAN SPACE AGENCY**  
**EUROPEAN SPACE ASTRONOMY CENTRE**  
**SUSTAINABLE BCC EELISA COMMUNITY**

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# THINK TANK SUSTAINABLE BUILDINGS ESA — ESAC - SUSTAINABLE BCC EELISA COMMUNITY



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**23rd to 27th January 2023**

**Welcome to the environment in which We all will be operating in the coming years :  
SUSTAINABLE, EFFICIENT & DIGITAL BUILDINGS.**

**Enjoy!!**



SUSTAINABLE BUILDINGS THINK TANK. Madrid 23rd-27th Jan.2023



## The Activity:

The ESA-ESAC - SUSTAINABLE BCC think tank is an educational activity to promote innovation and generate fresh ideas to launch a comprehensive sustainable refurbishment of the European Space Agency (ESA) building “A” in Spain. Together with ESA-ESAC (partner of SUSBCC) we will organise a high impact activity consisting of a large think tank, with the participating students and the support of professors, researchers, and professionals, to undertake a comprehensive rehabilitation operation in the spirit of the New European Bauhaus and with the triple bottom line approach of sustainability (social, economic, and environmental).

This activity is a very good opportunity for students who participate both in person and virtually, to acquire a global and integrative vision from the spirit of the New European Bauhaus and sustainability, gaining awareness and commitment to social, economic, energy, and environmental concerns, as well as discovering the potential offered by current digital trends to support and promote them from a perspective of efficiency.

This activity will take place in a creative and collaborative international environment with the participation of an estimated 300 international students and more than 100 international professors, researchers and professionals.



[https://www.esa.int/About Us/ESAC](https://www.esa.int/About_Us/ESAC)

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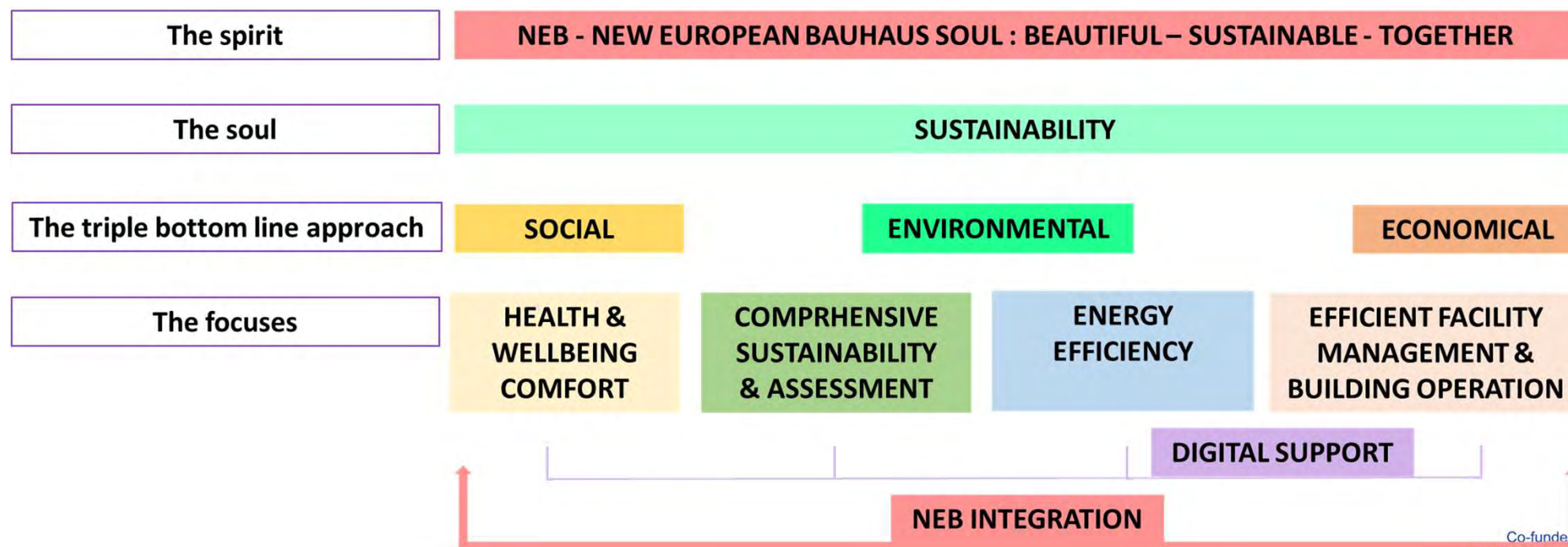




## The Think Tank:

The development of this ESA-ESAC-SUBCC think tank will take place in a hybrid format in the last week of January 2023 (23-27 January) at the ESA-ESAC headquarters in Villanueva de la Cañada, with the participation of around 300 international students (50 on-site). The scope of development will cover the entire academic year 2022-2023, with activities in both the first and second semester.

The think tank is actually composed of **6 different think tanks: 4 working in thematical parallel sessions** from the three pillars of sustainability, **1 cross-cutting** think tank on digitalisation, and **1 collective think tank on integration** through the New European Bauhaus Spirit.





SUSTAINABLE BUILDINGS THINK TANK. Madrid 23rd-27th Jan.2023



## The Workshops and the topics:

### PARALLEL THEMATIC THINK TANKS. WORKSHOPS AND TOPICS

Think tank	COMPREHENSIVE SUSTAINABILITY & ASSESSMENT		HEALTH - WELLBEING & COMFORT		ENERGY EFFICIENCY		EFFICIENT FACILITY MANAGEMENT & BUILDING OPERATION	
Workshops	Code	Topic	Code	Topic	Code	Topic	Code	Topic
1	CSA1	What? Sustainability Assessment	HWC1	Vegetation and outdoor space	EE1	Passive strategies	EFM 1	Facility Management in a nutshell
2	CSA2	Circular Economy - 6R in new building	HWC2	Physical activity and health at the workplace	EE2	Thermal Energy. Active technologies	EFM 2	Integration of FM in daily operations
3	CSA3	Circular Economy - Use of building waste	HWC3	Comfortable and natural lighting	EE3	Renewable electrical energy - BIPV	EFM 3	Application of sustainability in FM
NEB 1	NEB 1	Sustainable Building Retrofitting						
4	DS4	Digital Twins & BIM						
5	DS5	Data Governance & Prioritisation						
6	DS6	Internet of Things & Artificial Intelligence						
7	CSA7	When? Life Cycle Perspective	HWC7	Air quality and hygrothermal comfort	EE7	NZEB - Net Zero Energy Buildings	EFM 7	Technology as part of the FM model
8	CSA8	How? Sustainability strategies	HWC8	Acoustic comfort	EE8	NZEC - Net Zero Energy Clusters	EFM 8	Human centric Models in FM
NEB 2	NEB 2	Innovation in Buiding Retrofitting. Towards NZEB and NZEC						
9 Wrap up	CSA9 WUP	Think Tank Wrap up conclusions and Lessons Learned	HWC9	Think Tank Wrap up conclusions and Lessons Learned	EE9 WUP	Think Tank Wrap up conclusions and Lessons Learned	EFM 9 WUP	Think Tank Wrap up conclusions and Lessons Learned
NEB wrap up	NEB WUP	Think Tank Wrap up conclusions and Lessons Learned						

(\*) Since we are in the planning and development phase, the title and/or content of some workshops may be adjusted.

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# Our Partners participating in this activity: Thank you!!





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## Our numbers:

**2<sup>nd</sup> Registered participants:**

- 118 students (7 grantees+ 43 on site+68 on line)**
- 112 professors, researchers and professionals**
- 5 Other organisers**

**Attendees:**

- 78 students + 7 grantees = 86 students**
- 117 professors, researchers and professionals**

**Badges: 212 Badges (3 com. SUSBCC 178, CRC 14, Circular EElisa 14, Discovery 6)**

**4 Sustainable Think Tanks + 1 transversal Digital Think Tank**  
**+ 1 New European Bauhaus Integration Think Tank**

**30 Different Thematic Workshops**

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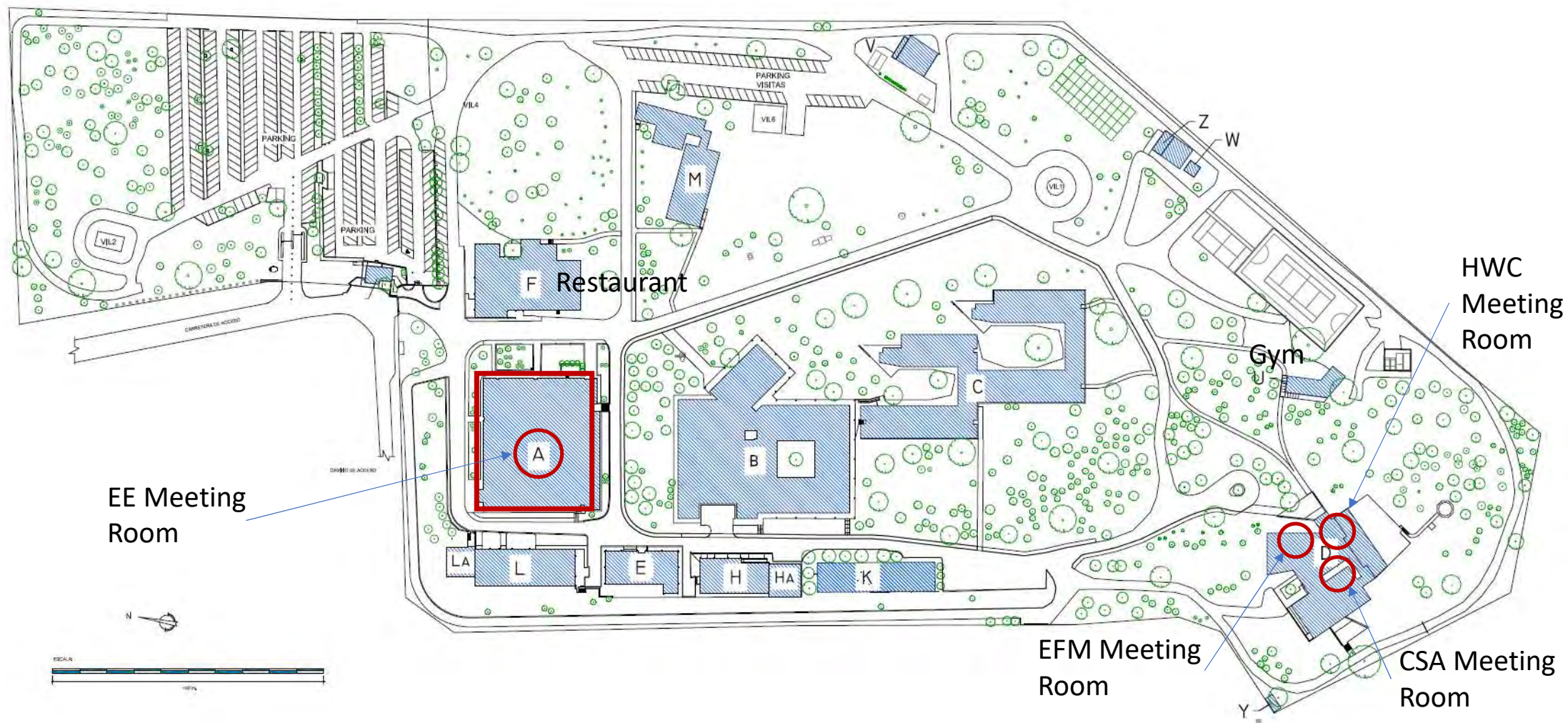
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## Information about the site





# Information about the site

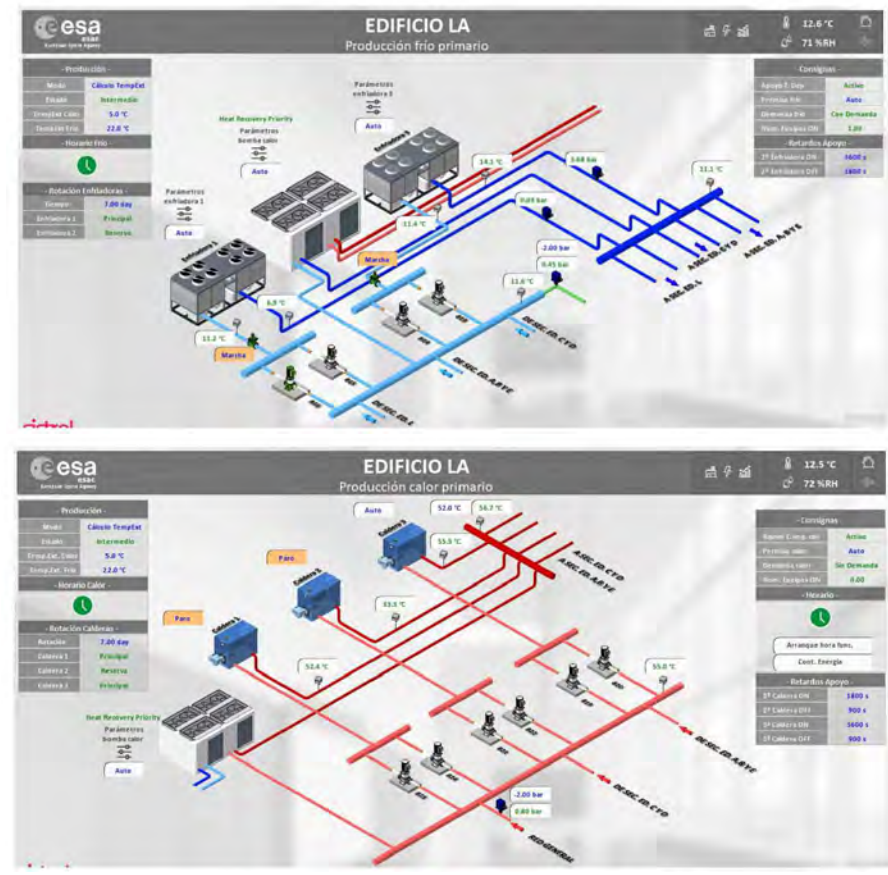
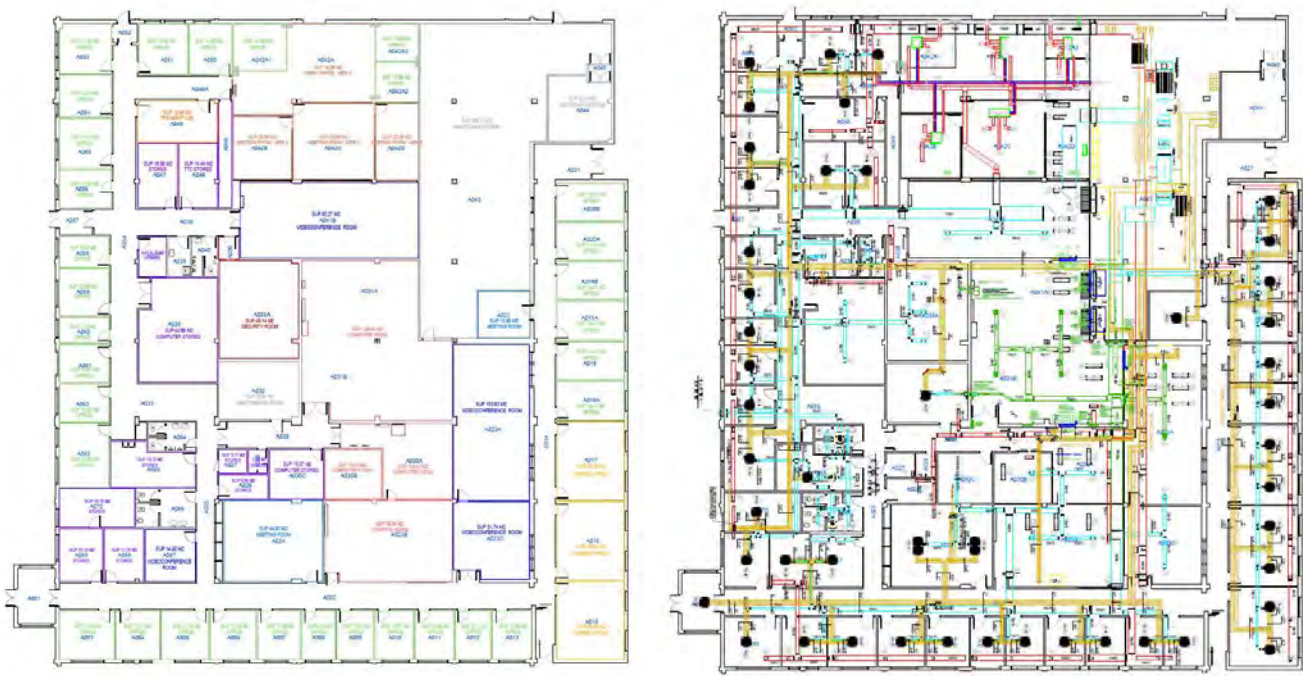






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# Information about the building







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## The welcome at School of Architecture

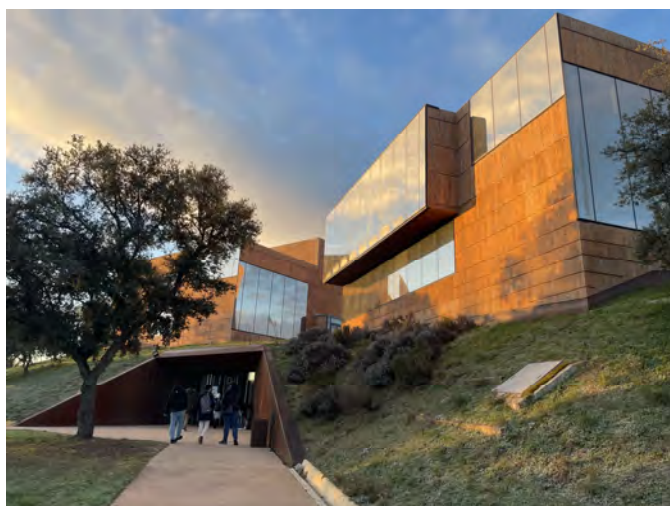






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## The welcome at the ESA - ESAC



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## The WORKSHOPS



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## The WORKSHOPS



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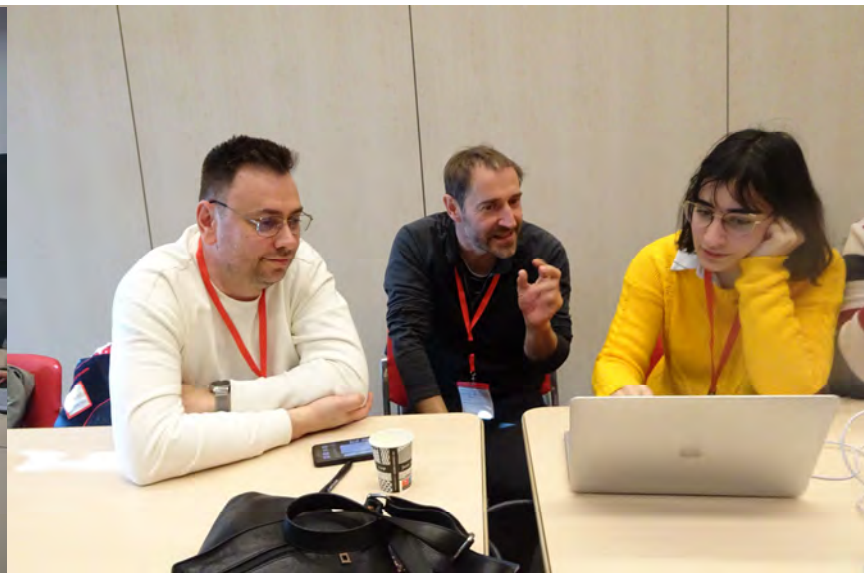






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## The WORKSHOPS



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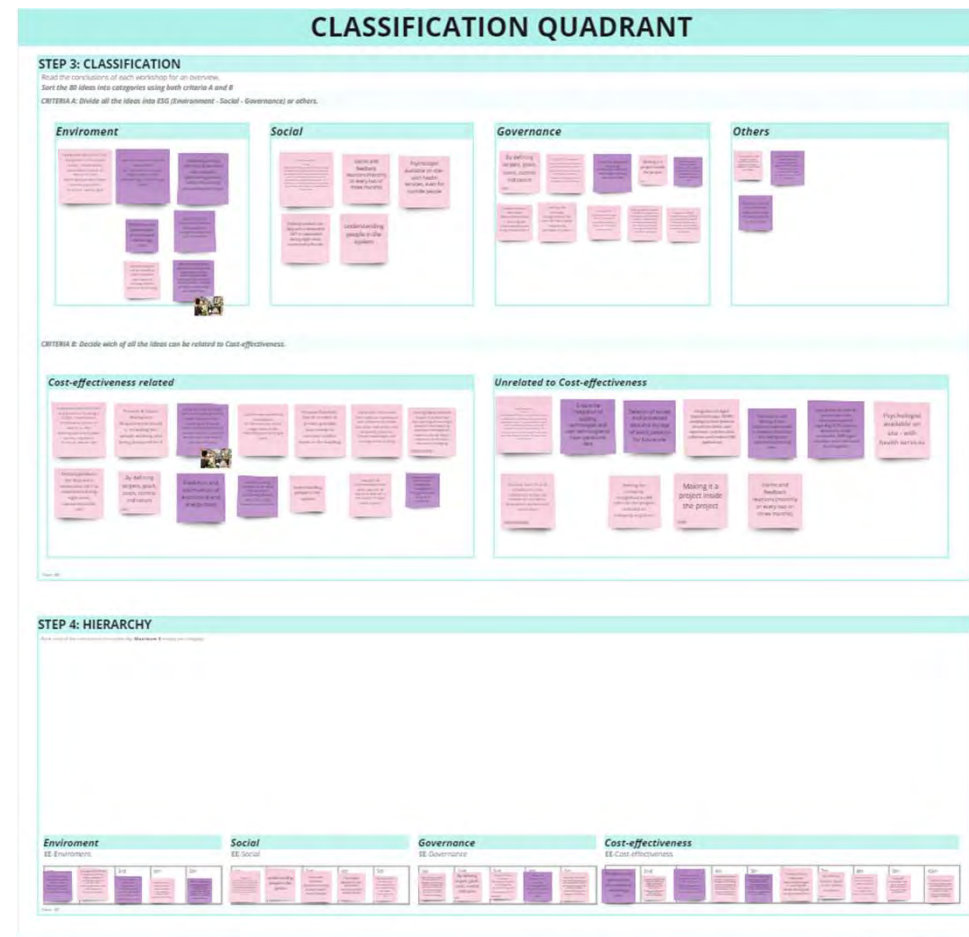
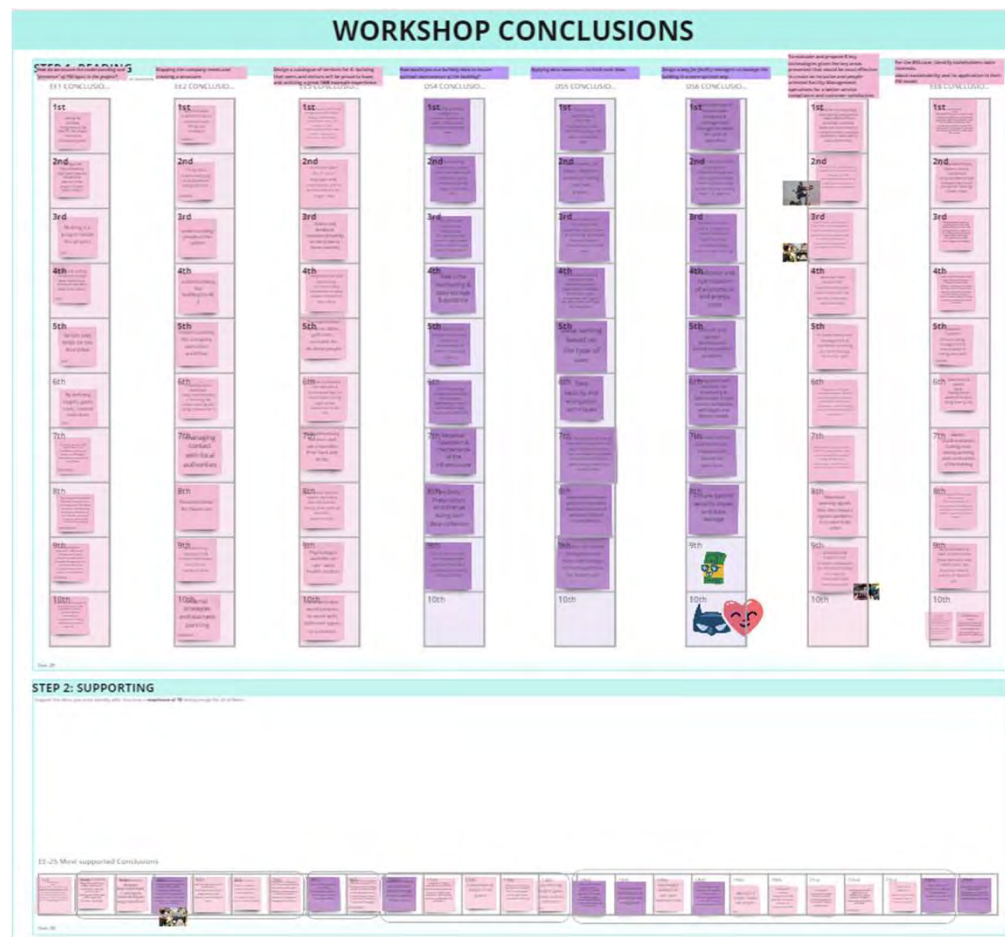
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## Other Activities





## Conclusions Integration



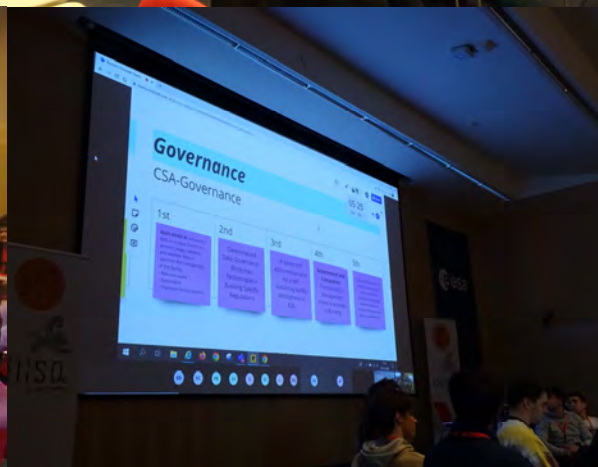


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# The New European Bauhaus Integration



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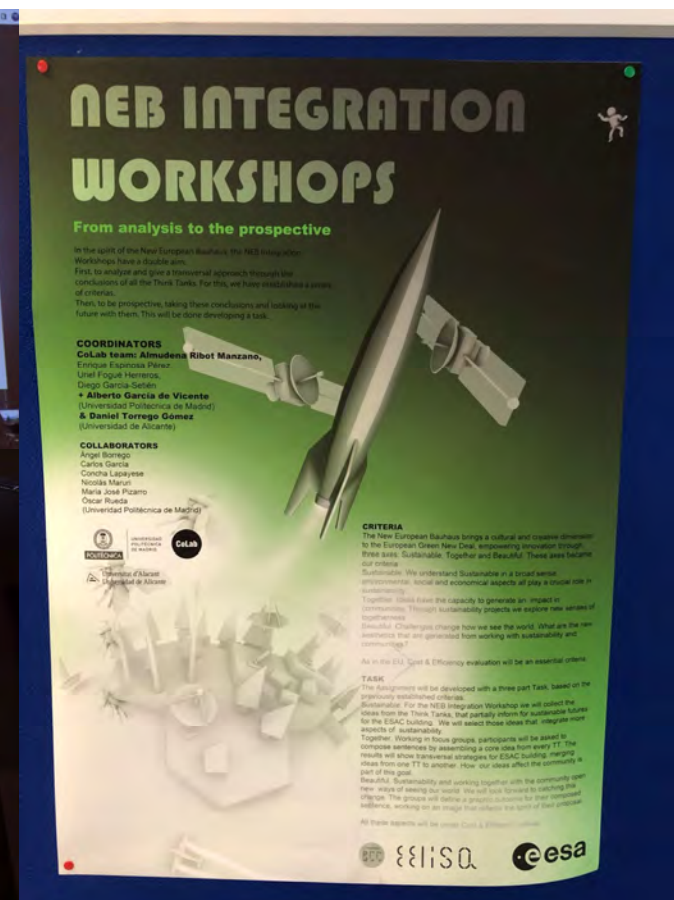
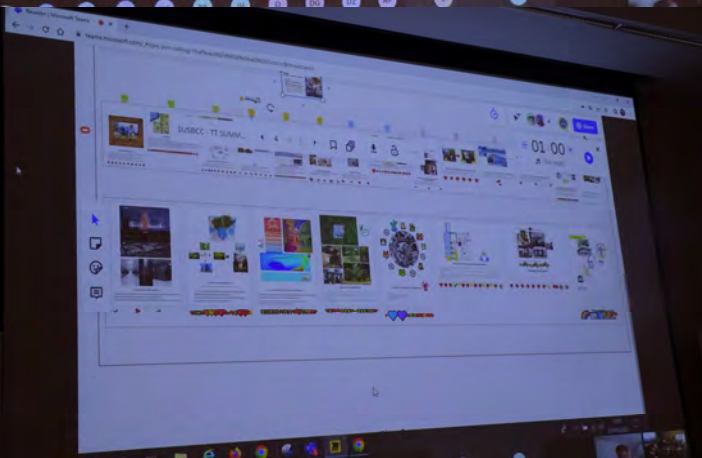
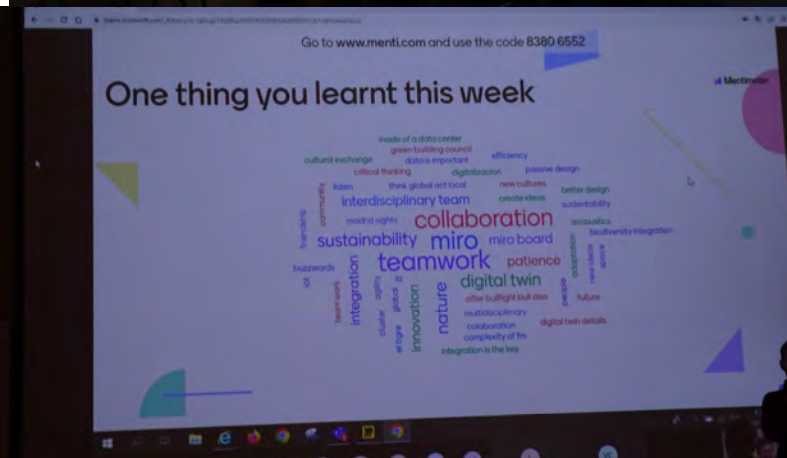
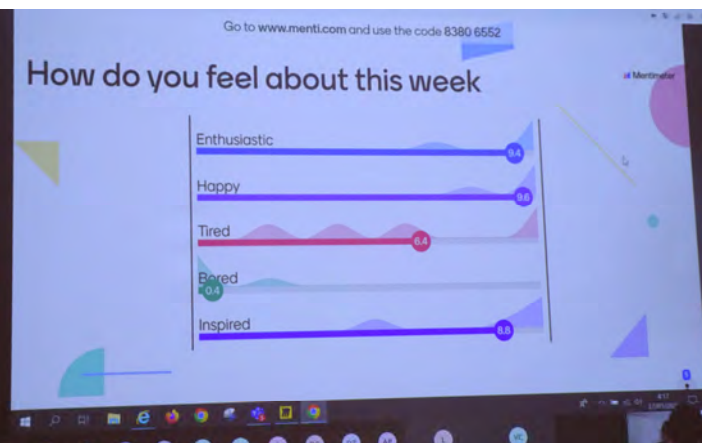


**SUSTAINABLE BUILDINGS THINK TANK. Madrid 23rd-27th Jan.2023**



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# The New European Bauhaus Integration





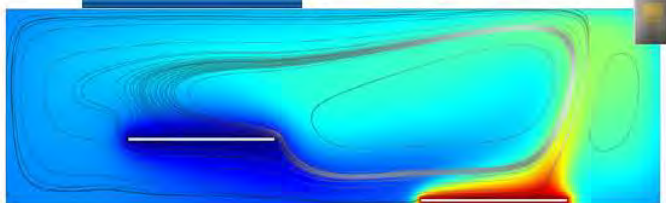


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# The New European Bauhaus Integration

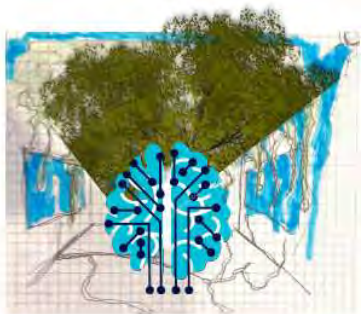


A.I.



## ESAC A.I ASSISTED INDOOR SOCIAL HEALTH GUIDELINES

campus protocol to implement IEQ with a social innovative approach, impacting positively at local and global scale  
The protocol should be developed, at least, among users, engineers, architects and health professionals so they can share ideas, understand the objectives and,  
The protocol should address both human health at planetary health, and physical, mental and social health  
the protocol would be co-created with the community, building users & connected stakeholders  
IA would compile the community findings and, once processed, would assist the users in reaching better decisions



## Autonomous maintenance

A facility management system based on the life cycle of nature

Inspired in how the roots of trees operate we believe that a system of building management could be devised in which the main regulator of Comfort is the nature planted in and around the building that with its natural cycles already manage the temperature, light and humidity of the spaces. But, this plant based system is not perfect on its own so an AI trained on detecting the internal changes of nature, like the falling of the trees or release of oxygen levels, gathers this data against the needs of the users and compensates for where nature is lacking. In this manner, we would create a positive feedback loop where the AI manages the caring of the plants themselves, therefore bettering the comfort levels of the space, therefore minimizing the actual additional artificial help the AI will have to give through artificial changing the windows, heating, humidity...

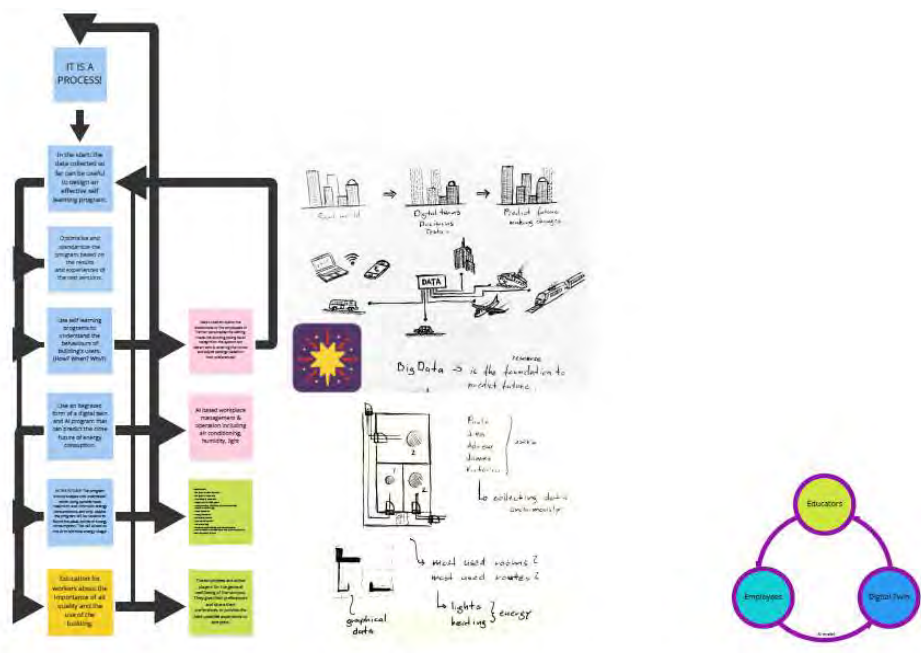
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# The New European Bauhaus Integration



Digital Twin for a Smart, Sustainable and Personalised WorkPlace

We want to create a digital twin of our campus, in order to elaborate possible future scenarios about energy consumptions, possible accidents or employees well-being.

In this process, the AI model will not only receive information about the building itself, but also from the feedbacks and preferences of the employees.

While providing this personalised experience, we want to inform the employees about how this AI model works, in order to make them aware of how the campus is changing, making them active part of the process. In addition, our priority is educating them on positive behaviours for the reduction of the energy consumptions.



## HEALTHY WORKPLACE

The greenest workplace, where the nature take care of the building color. Nature adapts to the needs to create a perfect working environment.

It helps improve your quality life. Gardeners will have more time because these plants needs less care.

The collected water from rains will be used for moisturizing the air in the summer with the help of nozzles.

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## The visit to the Astronomy Centre

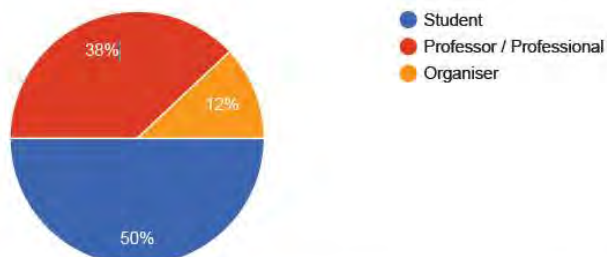


# Summary of general survey results

Publicar datos de análisis

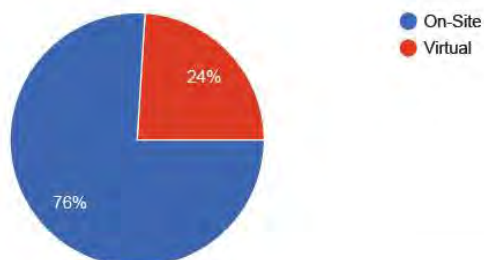
## What was your role in the activity?

50 respuestas



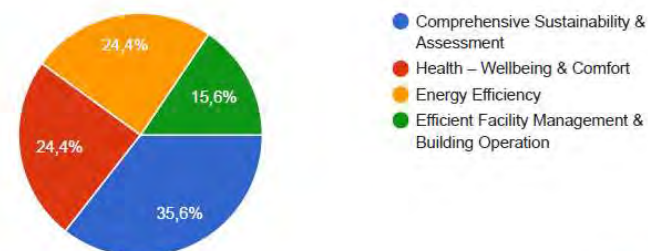
## Were you attending this activity on-site or virtual?

50 respuestas



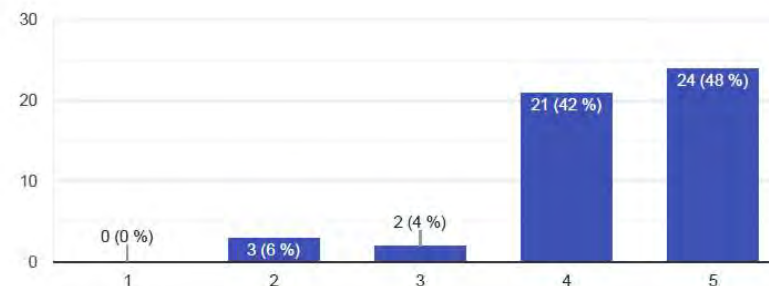
## Which Think Tank did you attend most of the time?

45 respuestas



## How would you rate the Organisation & Site of the activity?

50 respuestas



8,64

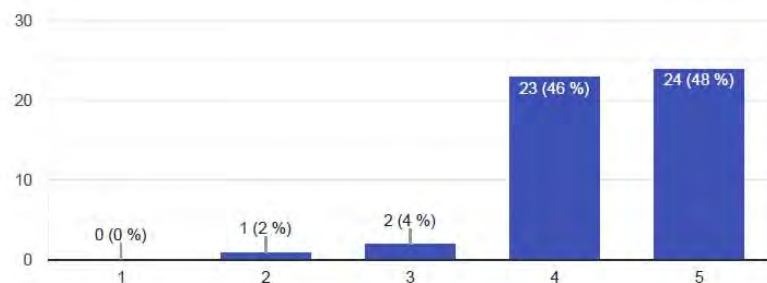


# Summary of general survey results

8,8

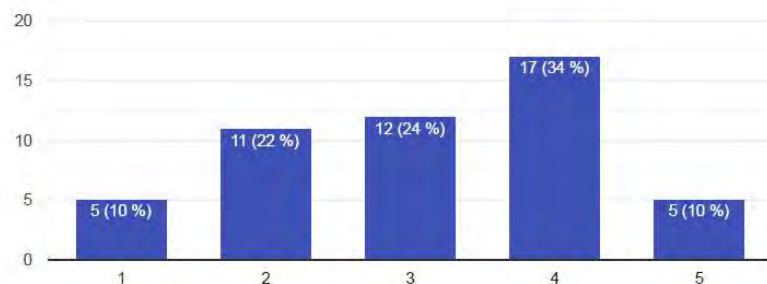
How would you rate the social interaction and the collaborative work?

50 respuestas



How do you assess the hybrid collaboration (mixed on-site & virtual)?

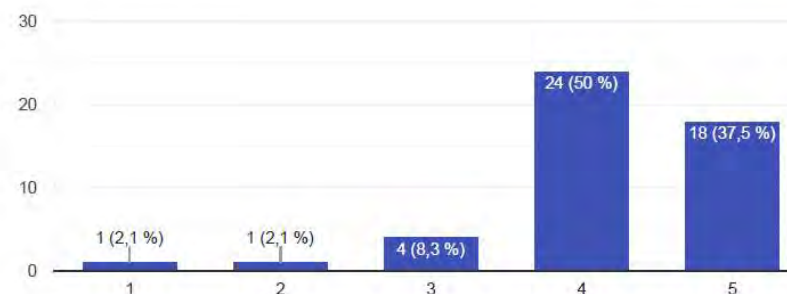
50 respuestas



6,24

How would you rate the regular Think Tanks workshops?

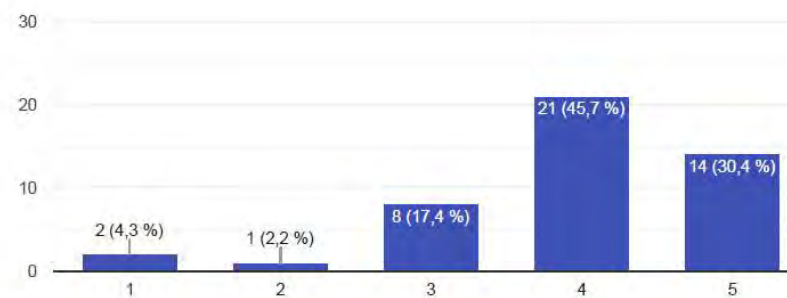
48 respuestas



8,37

How would you rate the NEB Integration Workshops?

46 respuestas



7,91

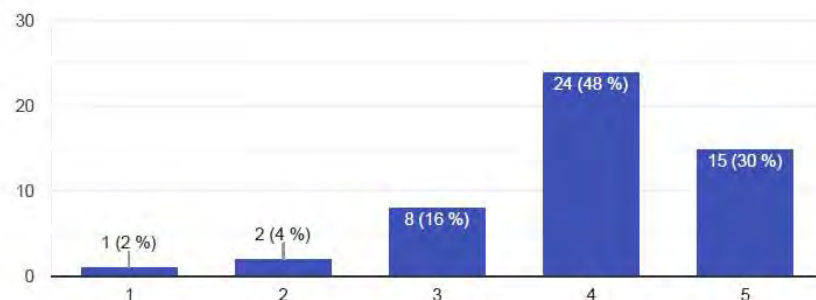
# Summary of general survey results

8,0

How would you rate the challenge based learning experience?



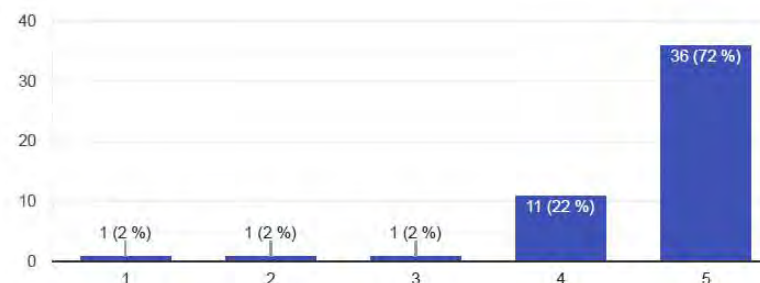
50 respuestas



Would you recommend this kind of activity to your friends?



50 respuestas

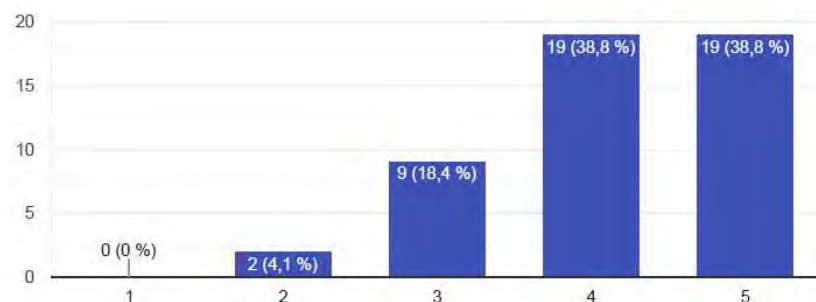


9,20

How much has this activity contributed to your Comprehensive Understanding & Awareness?



49 respuestas

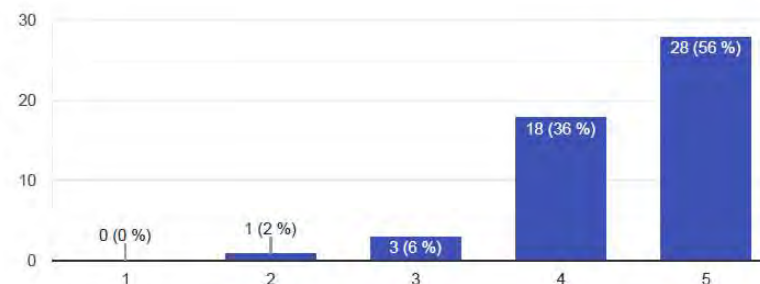


8,25

How would you overall rate this EELISA activity?



50 respuestas



8,92





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# Summary of general survey results

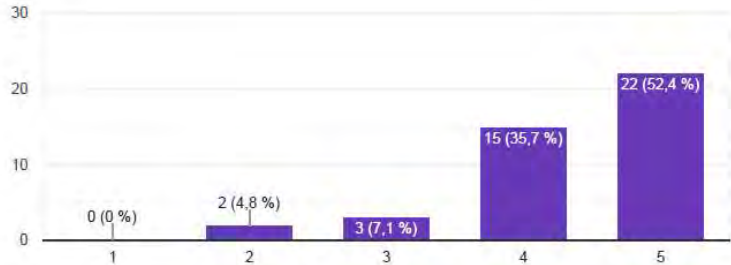


8,71

8,71

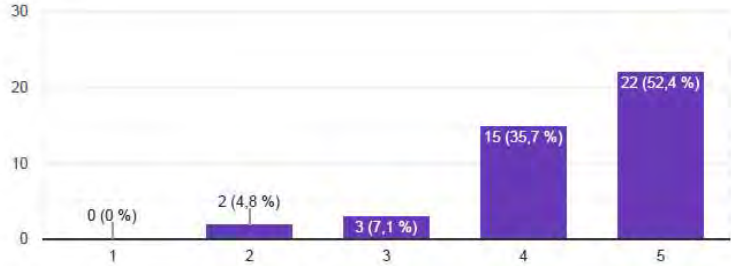
d. The degree of correspondence between the planned activities, contained in the agenda, and the activities carried out has been:

42 respuestas



d. The degree of correspondence between the planned activities, contained in the agenda, and the activities carried out has been:

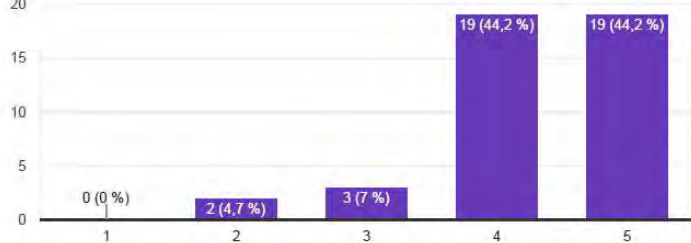
42 respuestas



## 1. Planning and general organization of the event

a. The overall assessment of the planning and general organization of the event is:

43 respuestas

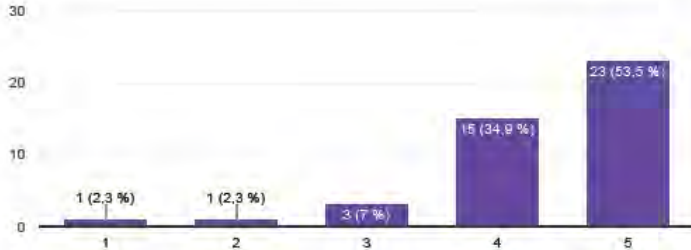


8,56

## 5. Carrying out the activities in the work rooms and/or in the EELISA activity in general

a. My degree of satisfaction with the approach, content, formats, methodologies and supports of the workshops in general has been:

43 respuestas



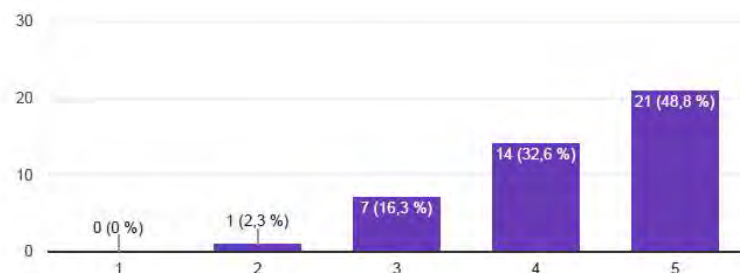
8,70



# Summary of complete survey results

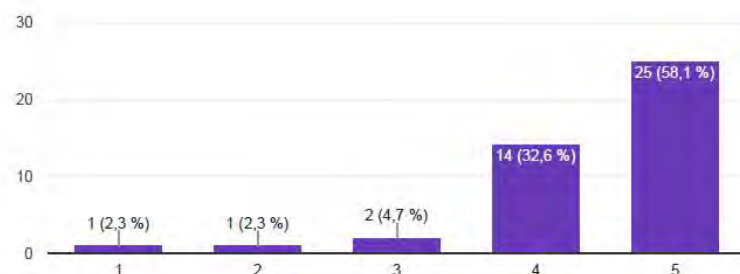
b. The degree of effectiveness of the guides and instructions dedicated to the preparation of teamwork has been, in my opinion:

43 respuestas



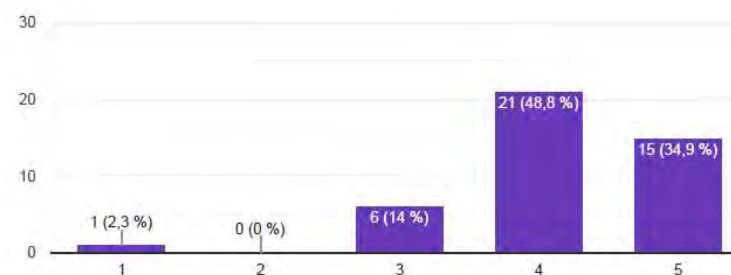
c. The usefulness of the direct support received in think tanks and workshops has been, in my opinion:

43 respuestas



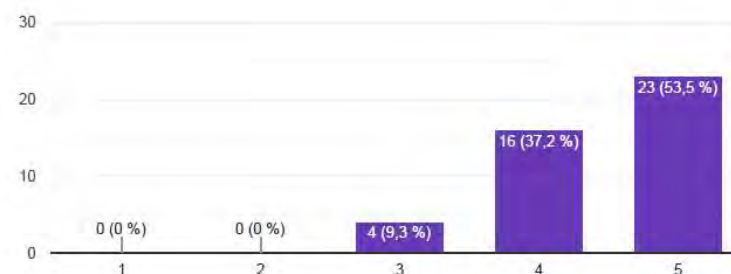
d. The result obtained in the think tanks and workshops in relation to the proposed objectives has been, in my opinion:

43 respuestas



e. My degree of general satisfaction with the results achieved, compared to my previous expectations, has been:

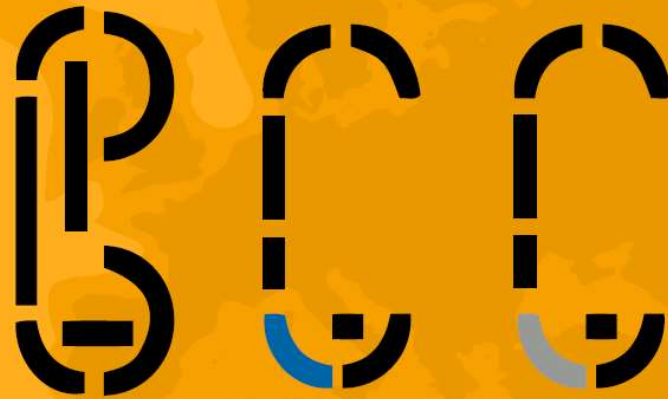
43 respuestas







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