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# MIND

**Erasmus+ strategic partnership for Higher Education**  
**DEVELOPMENT OF MECHATRONICS SKILLS AND INNOVATIVE**  
**LEARNING METHODS FOR INDUSTRY 4.0**

## E3 REPORT

<b>Project Title</b>	<b>Development of mechatronics skills and innovative learning methods for Industry 4.0</b> <b>2019-1-RO01-KA203-063153</b>
<b>Output</b>	<b>E3 – Guidebook for SMEs and other providers</b>
<b>Date of Delivery</b>	<b>August 2021</b>
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<b>Version</b>	<b>V3, 21.08.2021</b>

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UP  
Universitatea  
Politehnică  
Timișoara

**COMING**  
COMPUTER ENGINEERING

**STU**  
SLOVAK UNIVERSITY OF  
TECHNOLOGY IN BRATISLAVA

**TECHNICAL  
UNIVERSITY**  
OF CLUJ-NAPOCA  
ROMANIA

integra<sup>®</sup>



## 1. Description of MIND Project

EU founded Erasmus+ project MIND (Development of mechatronics skills and innovative learning methods for Industry 4.0, Project Reference: 2019-1-RO01-KA203-063153) is getting closer to its end after close to three years and after facing the current pandemic times.

MIND project has following main objectives:

1. Determine the most frequent mechatronics skills necessary for Industry 4.0 in the partner nations' regions.
2. Raise students' employability, relevant knowledge, and competencies by taking into account the demands of firms implementing Industry 4.0 principles.
3. Construction of an online e-learning platform that will support courses and learning materials on cutting-edge industrial issues will improve the learning experience of teaching staff and students.
4. Enhance and build cross-sector synergies through collaboration between higher education institutions and private sector representatives with the goal of closing the gap between company needs and real capabilities acquired through higher education curriculum.

The MIND project's outcomes were determined by the relevant skills and current technologies used by Industry 4.0, as well as the path that students and teaching staff can take to achieve state-of-the-art knowledge and competences by using the educational MIND platform and taking online video courses.

## 2. Summary of the multiplier event

The Multiplier Event (E3) organised by the Serbian partner COMING and facilitated by UNI was held on 17<sup>th</sup> August 2021 at Science Technological Park, Niš to present the results of the intellectual outputs of MIND project to an invited audience composed of industry experts affiliated mainly to regional companies.

The purposes of the event were:

1. Explanation of the basic concepts of Industry 4.0 and why a new mechatronics curriculum is needed.
2. Dissemination of the results obtained in IO6.
3. Building new connections with firm's representative in order to have their point of view about students' preparation in the context of Industry 4.0

The schedule of the event is presented in the following table:

09:00-10:00	Registration of participants
10:00-10:30	Presentation of project MIND
10:30-11:30	Guidebook for development mechatronics skills Case study - Robotics
11:30-12:00	Coffee break
12:00-12:45	Cloud as integral part of Industry 4.0
12:45-13:30	Kubernetes and Cloud Native applications, Kubernetes with Robot Operating System (ROS)
13:30-14:15	Lunch
14:15-15:15	Mechatronics systems for Industry 4.0 – Document Management System - DMS
15:15-16:15	Mechatronics systems for Industry 4.0 - Fleet Management System - FMS

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16:15-16:30	Feedback for the multiplier event - Presentation of self-assessment procedure and distribution of questionnaires
16:30-17:00	Discussion

The Multiplier event was planned to have six main presentations which were held by the TUCN, UNI and COMING representatives. The presentations were focused on Mind Project objectives explanations, concepts of Industry 4.0 and the results obtained during this project.



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### 3. Attendance

For inviting participants, COMING sent e-mails directly to regional companies who could be interested in the project and for academic staff and students, a press release was published on the UNI - FEM website.

To facilitate and control the registration of the participants, registration form was enabled on COMING site: <https://coming.rs/dogadjaji/#dogadjaj-prijava> to assure the compliance with the Covid-19 social regulations. The following companies and institutions were present at the event:

- Telekom Srbija
- JKP Medijana
- JP Direkcija za javni prevoz
- JP Gradska toplana
- Fakultet umetnosti
- Prirodno-matematički fakultet Niš
- JP Železnice Srbije
- Gradska uprava Grada Niša
- Metalac AD Gornji Milanovac
- Informatika AD
- BizLink Technology Prokuplje
- Croonus Technologies Čačak
- Zumtobel Group Niš
- Privredna komora Srbije
- Mikrotehnika DOO Niš
- Apoteka Niš
- Državni Univerzitet u Novom Pazaru
- ALEF Beograd
- OKTA Solutions Čačak
- Mašinski fakultet Niš
- Quantum Automarket Beograd
- ETŠ Nikola Tesla
- JP Parking servis
- Webelinx
- Univerzitete u Nišu
- Naučno-tehnološki park
- Tehnička škola 12. Februar



The list of the registered attendees at the beginning of the multiplier event (E3) is presented below.

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Erasmus+ Programme – Strategic Partnership  
Project Nr: 2019-1-RO01-KA203-063153  
Name and number of the multiplier event: Multiplier event E3  
Event host organization: COMING  
Date and Place: 17.08.2021 Niš



**PARTICIPANTS LIST**  
**Multiplier event**

Nr.	Name	Organization	Organization's address	City of the organization	Country of the organization	Signature
1.	ZORAN JOVANOVIĆ	LELEGI SRBIJA	TAKOVSKA 2	BEOGRAD	SRBIJA	Z. Jovanović
2.	SLAVICA MITIĆ	JKP MEDIJANA	HRANORSKA 10	NIŠ	SRBIJA	Slavica Mitić
3.	ANA VUKOVIĆ	JKP MEDIJANA	HRANORSKA 10	NIŠ	SRBIJA	Ana Vuković
4.	IVICA MILIĆ	JKP MEDIJANA	HRANORSKA 10	NIŠ	SRBIJA	Ivica Milić
5.	MILOŠ MILENKOVIĆ	JKP MEDIJANA	HRANORSKA 10	NIŠ	SRBIJA	Miloš Milenković
6.	MAJKA RADOISAVLJEVIĆ	JKP MEDIJANA	HRANORSKA 10	NIŠ	SRBIJA	Majka Radisavljević
7.	PREORAG RANČEVIĆ	JKP MEDIJANA	HRANORSKA 10	NIŠ	SRBIJA	Preorag Rančević
8.	ŠLOBODAN VIDOVIĆ	GRADSKA TOPLANA	BANJINA PAVLOVIĆA 3	NIŠ	SRBIJA	Slobodan VidoVIĆ
9.	DEJAN KRASIĆ	FAKULTET UMETNOSTI	KRUGIĆE LUBICE 10	NIŠ	SRBIJA	Dejan Krasić
10.	VLADANA MIROVIĆ	FAKULTET UMETNOSTI	KRUGIĆE LUBICE 10	NIŠ	SRBIJA	Vladana Mirović
11.	MILOSLAVA GIRIĆ	FAKULTET UMETNOSTI	KRUGIĆE LUBICE 10	NIŠ	SRBIJA	Miloslava Girić
12.	PREORAG NIKOLIĆ	FAKULTET UMETNOSTI	VIŠEGRAĐSKA 33	NIŠ	SRBIJA	Preorag Nikolić
13.	MARCO IGJATOVIĆ	FAKULTET UMETNOSTI	VIŠEGRAĐSKA 33	NIŠ	SRBIJA	Marco IgjatoVIĆ
14.	JADRAN KOSTIĆ	IP ZELENE SRBIJE	NEVAJINA 6	BEOGRAD	SRBIJA	J. Kostić

Host organization	COMING
Name of the legal representative	Drago Samaradžić
Signature of the legal representative	



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**PARTICIPANTS LIST**  
**Multiplier event**

Nr.	Name	Organization	Organization's address	City of the organization	Country of the organization	Signature
15.	MILOSLAV POPOVIĆ	GRADSKA UPRAVA GRADA NIŠA	UL. 7. JULI 2	NIŠ	SRBIJA	M. Popović
16.	ŠLOBODAN RANČIĆ	NETALAC A.O.	VUČE ALEKSANDRA 212	GORNJI MILANOVAČ	SRBIJA	Slobodan Rančić
17.	SVEVOSLAV DETALJANOVIĆ	INFORMATIKA A.D.	KOSTE STAMENKOVIĆA 11	NIŠ	SRBIJA	S. Detaljanović
18.	IGOR STOJKOVIĆ	INFORMATIKA A.D.	KOSTE STAMENKOVIĆA 11	NIŠ	SRBIJA	Igor Stojković
19.	ZARKO GRUJIĆ	BIZLNIK TechnoLab	VASIĆA BUKOVIĆA 11	PROKUPJE	SRBIJA	Z. Grujić
20.	STEFAN ČEBIĆ	CRONUS	DE. DELETIĆE MILOVIĆA 19C	ČAČAK	SRBIJA	Stefan Čebić
21.	ALEKSANDAR PETROVIĆ	FINTEBEL GROUP	UL. GINTOBEZ 1	NIŠ	SRBIJA	A. Petrović
22.	ĐOKIĆ ANTIĆ	DELTA DVA PROMER SRBIJE	KESAVSKA 13-15	BEOGRAD	SRBIJA	Đ. Anić
23.	DRAGAN JOVANOVIĆ	MIKROTEHNIKA	ANTE ANDREJEVIĆ 6	NIŠ	SRBIJA	D. Jovanović
24.	DRAGAN PETROVIĆ	APOTEKA NIŠ	BUL. DR. ŽORANA ŽILJKIĆA 6	NIŠ	SRBIJA	D. Petrović
25.	EDIJ NUŠEVIĆ	DRŽAVNI UNIVERZITET U NOVOM PAZARU	MILICA KATROVIĆA 8B	NOVI PAZAR	SRBIJA	E. Nušević
26.	BOJANA GLOGOVIĆ	ALEF	VLADIMIRA RADOVIĆA 6	BEOGRAD	SRBIJA	B. Glogović
27.	MARCO MILOŠEVIĆ	ALEF	VLADIMIRA RADOVIĆA 6	BEOGRAD	SRBIJA	M. Milošević
28.	VLADIMIR BOSIČEVIĆ	OKTA SOLUTIONS	DE. DELETIĆE MILOVIĆA 19C	ČAČAK	SRBIJA	V. Bosićević

Host organization	COMING
Name of the legal representative	Drago Samaradžić
Signature of the legal representative	

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Erasmus+ Programme – Strategic Partnership  
Project Nr: 2019-1-RO01-KA203-063153  
Name and number of the multiplier event: Multiplier event E3 Serbia  
Event host organization:  
Date and Place: 17.08.2021, Niš, Science Technological Park



**PARTICIPANTS LIST**  
**Multiplier event**

Nr.	Name	Organization	Organization's address	City of the organization	Country of the organization	Signature
29	MILOS SIMONOVIC	MILITARSKI FAKULTET U NISU	Aleksandrova Medvedeva 14	NiS	Srbija	M Simonovic
30	DRAGAN VOJICIC	QUANTUM-AUTOMARKET	Jose Jovanovica 7	BEOGRAD	Srbija	Dragan Vojicic
31	MILU BOBROVIC	QUANTUM-AUTOMARKET	Jose Jovanovica 7	BEOGRAD	Srbija	Milobobro
32	MILAN SAMARDZIC	QUANTUM-AUTOMARKET	Jose Jovanovica 7	BEOGRAD	Srbija	M. Samardzic
33	MIDORAG NIKOLIC	JKP MEDICINA	HRANDOSKA 10	NiS	Srbija	M. Nikolic
34	ZORAN PANKOVIC	JKP MEDICINA	HRANDOSKA 10	NiS	Srbija	Z. Pankovic
35	DEJAN ANDELKOVIC	ELEKTRO TEHNIKA SKOLA NIKOLA TESLA	HERCZANOVA 18	NiS	Srbija	Dejan Anđelković
36	DRAGAN NITRONIC	GRADSKA ŠKOLA NIKOLA TESLA	VIŠEGRAĐSKA 33	NiS	Srbija	Dragan Nitronic
37	SARA STANKOVIC	PRIGOVNO-MATEMATIČKI FAKULTET	VIŠEGRAĐSKA 33	NiS	Srbija	S. Stankovic
38	MILAN RADEKOVIC	GRADSKA ŠKOLA NIKOLA TESLA	UL. 7 JULI 2	NiS	Srbija	M. Radekovic
39	MILOS MARINOVIC	JKP PANKOVA ŠKOLA	HERCZANOVA 18	NiS	Srbija	M. Marinovic
40	MILAN ILIC	JKP PANKOVA ŠKOLA	HERCZANOVA 18	NiS	Srbija	M. Ilic
41	DANIJELA MAVIC	GRADSKA ŠKOLA NIKOLA TESLA	UL. 7 JULI 2	NiS	Srbija	D. Mavic
42	MILAN TRIVKOVIC	WEBELINX	VOJVODE HANCOVICA 32	NiS	Srbija	M. Trivkovic

Host organization	COMING
Name of the legal representative	Drago Samardzic
Signature of the legal representative	



Erasmus+ Programme – Strategic Partnership Project Nr: 2019-1-RO01-KA203-063153  
Name and number of the multiplier event: Multiplier event E3, Serbia  
Event host organization: COMING  
Date and Place: 17.08.2021, NiS, Science Technological Park



**PARTICIPANTS LIST**  
**Multiplier event**

Nr.	Name	Organization	Organization's address	City of the organization	Country of the organization	Signature
43.	MILOS GREDANONIC	MAKULIO-TEHNOLOSKI PARK NIS	Aleksandrova Medvedeva 8B	NiS	Srbija	M. G.
44.	DRAGAN CRETKOVIC	MAKULIO-TEHNOLOSKI PARK NIS	Aleksandrova Medvedeva 8B	NiS	Srbija	Dr. Cretkovic
45.	MILOS BABIC	MAKULIO-TEHNOLOSKI PARK NIS	Aleksandrova Medvedeva 8B	NiS	Srbija	M. Babic
46.	MIDORAG NIKOLIC	PRIGOVNO-MATEMATIČKI FAKULTET	VIŠEGRAĐSKA 33	NiS	Srbija	M. Nikolic
47.	RUŽICA NIKOLIC	PIŠKARU-TEHNIKA ŠKOLA NIKOLA TESLA	HERCZANOVA 18	NiS	Srbija	R. Nikolic
48.	ALEXANDAR ĐORĐEVIĆ	UNIVERZITET U NISU	UNIVERZITETSKI TRG 2	NiS	Srbija	A. Đorđević
49.	MILAN NIKOLIC	UNIVERZITET U NISU	UNIVERZITETSKI TRG 2	NiS	Srbija	M. Nikolic
50.	ALEXANDAR STANOJEVIĆ	WEBELINX	VOJVODE HANCOVICA 32	NiS	Srbija	A. Stanojevic
51.	STEFAN STOKIJKOVIC	TEHNIKA ŠKOLA "14. FEBRUAR"	BEOGRADSKA 22	NiS	Srbija	S. Stokijkovic
52.	NIKOLA JOVIC	TEHNIKA ŠKOLA "14. FEBRUAR"	BEOGRADSKA 22	NiS	Srbija	N. Jovic

Host organization	COMING
Name of the legal representative	Drago Samardzic
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Every participant received a bag with dissemination materials that included a short description of the MIND project and the key elements of the curricula prepared by the project partners, a notebook, and a pen.

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### 3. Questionnaire/Inquiry data and results

The attendees were kindly asked to complete anonymously the following questionnaire. In this questionnaire were included questions about the organizational part of the event, about the materials that were presented and the overall impressions about attending the Multiplier Event E3. Also, the attendees could give suggestions about the aspects that can be improved.

**Instructions:** Please indicate your level of agreement with the statements listed below, on a scale from 1 to 5, where:

1 - Strongly disagree  
2 – Disagree

3 – Neutral  
4 – Agree

5 – Strongly agree

#### A. Objectives of the meeting

Statement	Score				
	1	2	3	4	5
1. The objectives of the meeting were clearly defined.					
2. The objectives were met during the meeting.					
3. All the relevant topics were covered during the meeting.					
4. The content was well organized and easy to follow.					
5. I obtained useful information and knowledge that will help me in my activity at work.					

#### B. Organization of the meeting

Statement	Score				
	1	2	3	4	5
6. The meeting was well organized.					
7. The facilitators were knowledgeable about the discussed topics.					
8. The facilitators were dedicated and supportive.					
9. Participation and interaction were encouraged.					
10. The schedule and the agenda were observed throughout the					

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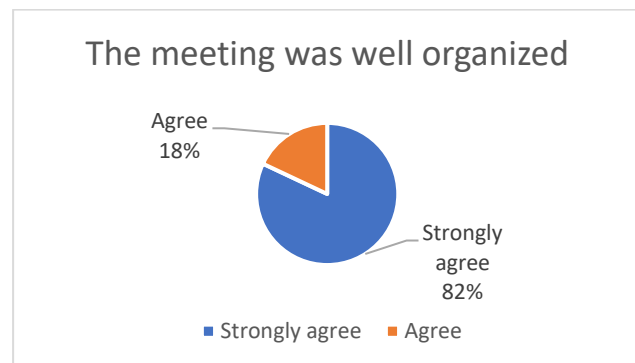
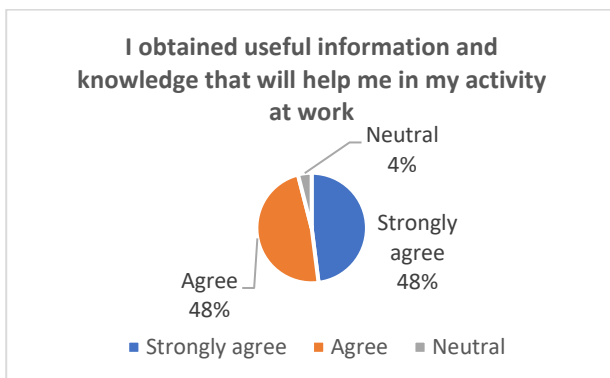
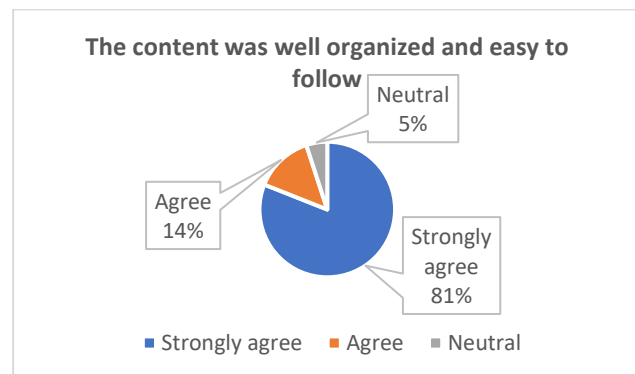
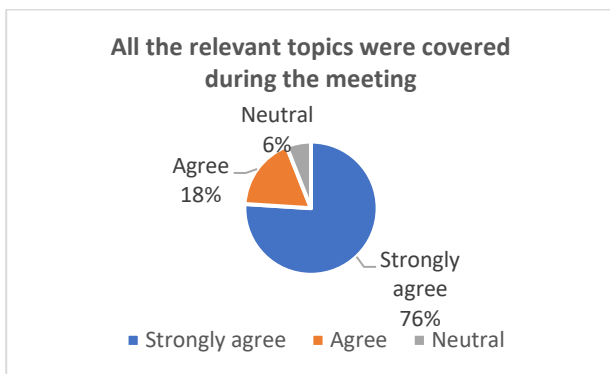
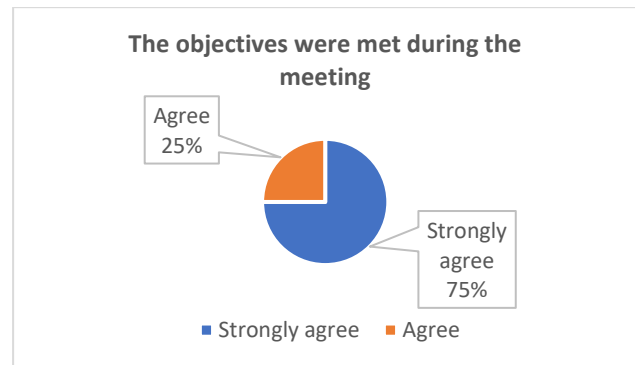
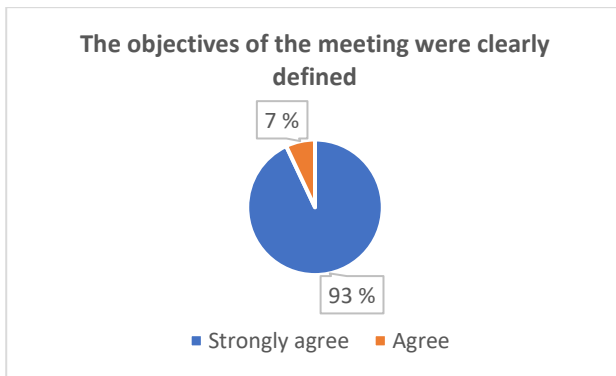
meeting.					
11. The materials distributed were useful.					
12. The time allocated for the meeting and for the activities, was sufficient.					
13. The meeting room and facilities were adequate and comfortable.					

14. What did you like the most about how the meeting was organized?

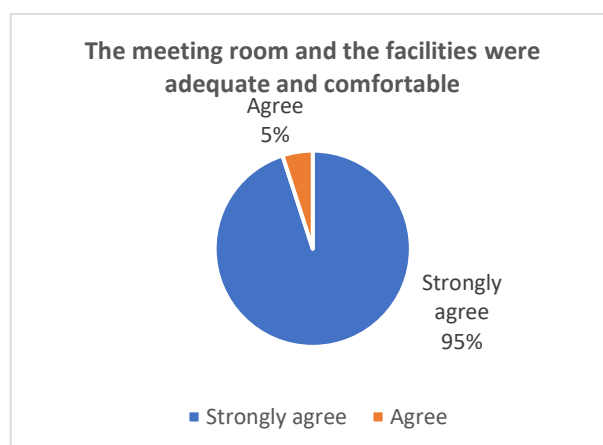
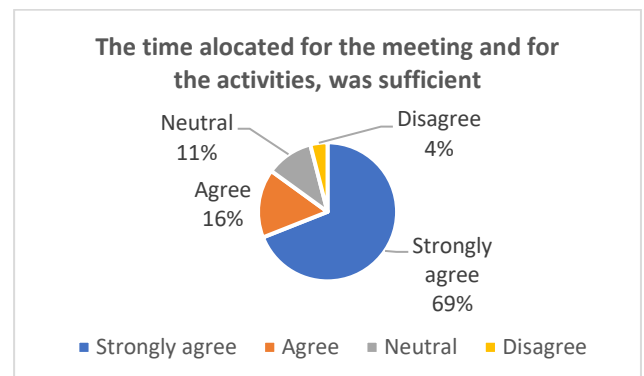
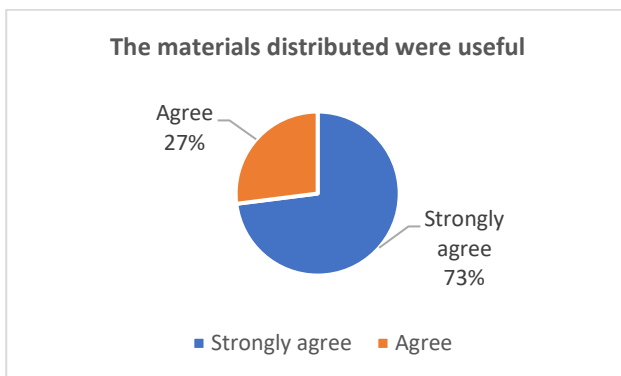
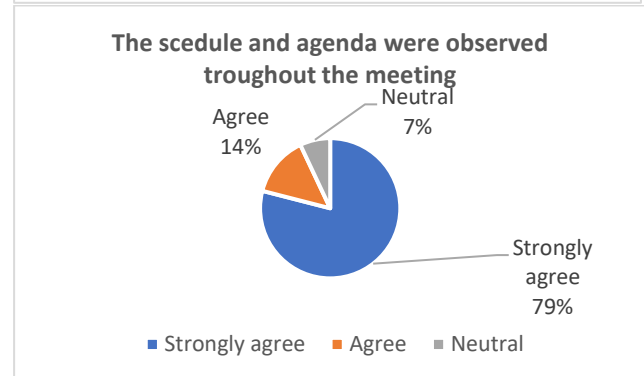
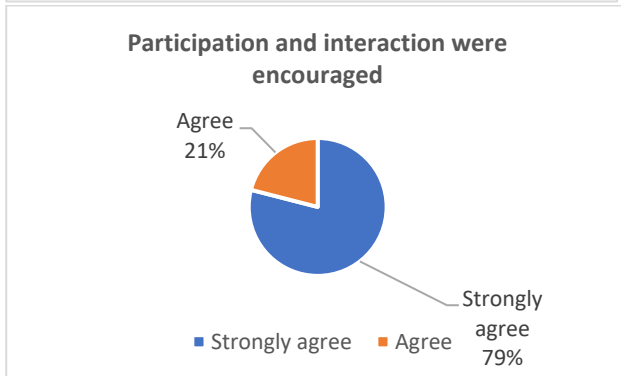
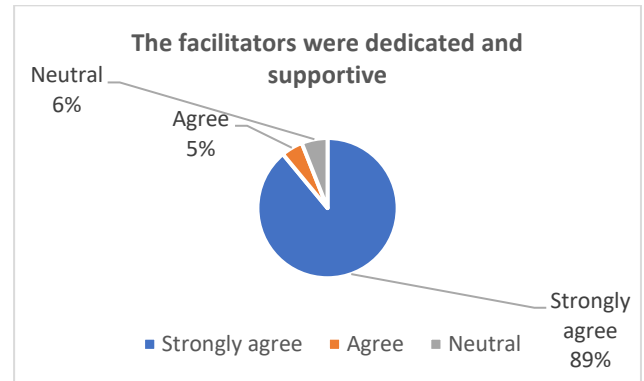
15. What aspects of the organization could be improved?

16. Please share other comments and suggestions that were not covered in the previous questions:

A total of 38 participants completed the feedback questionnaires and the result is presented in the following graphs:



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For the questions 14, 15, 16 the answers were:

*What did you like the most about how the meeting was organized?*

- The diversity of covered subjects and professionalism of the facilitators
- I like how the meeting was organized
- Venue, covered subjects and agenda
- Nice location, on schedule and respecting the social gathering requirements
- The strong collaboration between project partners
- Knowledgeable and professional lecturers
- Content of presentations and covered subjects
- The presenters were dedicated and answered all the addressed questions

*What aspects of the organization could be improved?*

- Everything was perfect
- The chairs were bad
- More interesting projects can be presented
- More topics could be covered
- The project should be advertised more
- More time meeting like this

*Please share other comments and suggestions that were not covered in the previous questions:*

- Next time I would like to last longer
- This kind of events should be organized more often
- Thank you for the invitation
- Interaction with the public
- Organize the meeting in different period of time (September or October)

#### 4. Conclusion

The results of the questionnaire show that the attendees were mostly satisfied with the organization part of the event (the place and time), the objectives of the Multiplier Event were clearly presented and achieved at the end of the event (according to the answers of the question 2).

Also, the materials of the presentations were well structured, and it was easy to follow the aspects that was discussed, even for the participants that weren't familiar to Mechatronics and Industry 4.0.

About the improvements that can be done, it was mentioned the lack of advertising, so for the next events, the organizations will take it into account and will be more active also on social media platforms.

It needs be mentioned that plenty of questions were received during the Q&A session after the presentation of the MIND Guidebook for SMEs and others, that shows the interest of the participants for the results of the intellectual outputs presented during the event. The attendees were motivated to try the platform and develop new mechatronic skills, that are needed for integration of the Industry 4.0 in the companies that didn't adopt this technologies yet, or are at the beginning of this process.

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