

OUTLINE OF INTERMEDIATE REPORT ON THE PROJECT'S PROGRESS

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**ECS_00000037 MUSA
Multilayered Urban
Sustainability Action**



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SECTION 1 - ORGANIZATION OF THE IMPLEMENTING ENTITY (TO BE UPDATED ONLY IN CASE OF CHANGES)

- 1) Title - theme, description of the Hub (date of establishment, legal form, shareholder list, beneficial owner, and main internal rules of operation)

Title: MUSA – Multilayered Urban Sustainability Action

Main Topic (with reference to the Clusters of the Second Pillar of the Horizon Europe Framework Programme): Climate, Energy and Mobility

Description of the Hub:

MUSA scarl is a limited liability consortium, an organisational structure that fully meets the requirement of providing the Hub with a stable and reliable structure as well as with a separate legal personality.

It has been established on June 10th 2022 by the following shareholders:

- Universities and research institutions: Università degli Studi di Milano – Bicocca, Università degli Studi di Milano, Università Bocconi, Politecnico di Milano and CNR
- Territorial Bodies: Regione Lombardia and Comune di Milano
- Foundations: Fondazione Cariplo and Fondazione Riccagioia 5.0
- Companies: Eni Spa, Edison Spa, A2A Spa, Thales Alenia Space Italia Spa.

Such shareholders fully represent the issues and specific needs of all the partners and stakeholders tackled by MUSA project.

MUSA scarl, in order to ensure a smooth and timely management of the project, relies on the following bodies:

- General Assembly (GA) → members appointed
- Board of Directors (BD) → 4 out of 5 members appointed
- External Board of Auditors (EBA) → members appointed
- Scientific Committee (SC) → not appointed yet

Furthermore, after an open call, the Programme Manager was selected and joined MUSA on December 15 2022.

In addition to the Hub management structure, the overall scientific coordination structure includes:

- MUSA Scientific Coordinator: Prof. Salvatore Torrisi (University of Milano-Bicocca)
- Spoke 1 Leader: Prof. Massimo Labra (University of Milano-Bicocca)
- Spoke 2 Leader: Prof. Ernesto Damiani (Milan University)
- Spoke 3 Leader: Prof. Andrea Sianesi (Polytechnic University of Milan)
- Spoke 4 Leader: Prof. Andrea Beltratti (Bocconi University)
- Spoke 5 Leader: Prof. Alessandro Brun (Polytechnic University of Milan)
- Spoke 6 Leaders: Prof. Elisabetta Biffi and Prof. Monica Guerra (University of Milano-Bicocca), Prof. Marilisa D'Amico and Prof. Matteo Turri (Milan University)

- 2) Description of the implemented management and organizational structure and how the Hub ensures:
 - a. The ordinary administrative control - accounting regularity of the own expenses that need to be reported but also of the Spoke and of the affiliated and implementing entities.

All the aforementioned figures, and especially the Programme Manager, supported by dedicated
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operational units, ensure the timely collection and monitoring of MUSA own expenses as well as of those incurred by spokes and affiliates, supporting all the implementing entities in administrative duties such as personnel variations and technical issues concerning At Work monitoring platform.

In addition, the Hub acts as the unique interface with the funding agency (MUR) and as a collection point for queries, documentation, set up of internal procedures, as well as of project's deliverables and technical reports.

The Hub also analysed and shared the guidelines for financial and technical reporting published by the funding agency, shared their content with all Spokes and Affiliates, interacted with the MUR on open questions. The Hub regularly meets with dedicated administrative staff from the Spokes and Affiliates to ensure expenses and costs are correctly reported through the use of the AtWork platform.

- b. The adoption of measures to prevent and combat serious irregularities such as fraud, conflict of interest, double financing as well as verifications of data required by anti-money laundering regulations ("beneficial owner")

Firstly, in order to prevent irregularities the Hub is finalising the Hub-Spokes-Affiliates agreement setting up obligations and rules under responsibility of each partner.

Starting from European and national regulations, the agreement clearly lists all the duties that each beneficiary needs to perform to be eligible for funding, such as ensuring traceability of expenses and avoidance of double funding of operations, through a separate accounting system and information coding procedures.

In addition, the Hub regularly checks the partners' declarations about their managing bodies (e.g. Dichiarazione antimafia) in order to verify if any change occurred as well as their purchase procedures to ensure their transparency and the absence of any conflict of interest. Similarly, the Hub is going to check that each recruiting procedure and tender is compliant with the checklists provided by MUR.

In this context, a tight cooperation between the Hub and the funding agency is required to ensure a continuous double check on the documentation provided and to achieve, especially, the ambitious objective to put in place anti-fraud measures that are effective but simple, thus avoiding unnecessary administrative workloads and burdens for the beneficiaries.

- c. compliance with the conditionalities and all additional requirements related to the NRP Measures¹, in particular:

- DNSH principle and legislation under the Environmental Code;
- contribution to common indicator and environmental and digital tagging;
- equal opportunity, generational and gender.
- information and advertisement ;
- principles Open science and FAIR Data

The DNSH principle is based on the provisions from the "Taxonomy for Sustainable Finance" (Regulation 2020/852) and supports the achievement of the objectives of the EU Green Deal and identifies six criteria for determining how each economic activity substantially contributes to protecting the ecosystem, without undermining any of the environmental goals.

To be compliant with the Taxonomy under NRRP, the Ministry of Economics has produced the DNSH Operational Guide to assist administrations and beneficiaries in the process of orientation, gathering information and checking.

More in detail, through an accurate mapping action, for each mission, component and investment of NRRP

¹ We refer to the conditionalities stipulated in the CID, in the operational arrangements, compliance with the timelines stipulated in the Procedural Timeline that each Administration has entered in ReGis for each NRP measure, the target constraints to the climate and digital transformation goals stipulated in the NRP, and the individual project's contribution to the common indicator associated with the measure stipulated in the NRP.

the related economic activities required for implementation have been matched and provided with technical sheets reporting operational and regulatory aspects and checklists so that each beneficiary can self-assess its compliance to DNSH.

Given this framework, an awareness action towards all MUSA partners has been carried out and is still in place, in order to ensure that all the project's actions will be compliant with the DNSH principle. As a consequence, in order to provide the overall DNSH declaration signed by MUSA representative for each reporting period, a DNSH self-assessment is required periodically to each beneficiary and, when relevant, to tenderers.

According to the Eu Parliament, digital tagging is needed to assess to what degree the national plans contribute to the digital objectives set out in Next Generation Europe.

In particular, Member States are invited to explain how their plans will improve their digital performance, as measured by DESI – Digital Economy Society Index.

For instance, Italy performs particularly bad in the human capital dimension (25th out of 27) and this means a serious gap in digital skills and inclusion.

In this regard, the measure concerning the Innovation Ecosystems is entirely devoted to digital tagging.

Hence, in MUSA all the expenses are checked and monitored in order to be correctly matched with digital tagging to support the digital transition fostered by research and innovation with a particular focus to support disadvantaged groups in their inclusion path. More precisely, all the MUSA expenses fall under "Support for innovation clusters including between businesses, research organisations and public authorities and business networks primarily benefiting SMEs" (Intervention Field 019 in Annex VII of the RRF).

MUSA partners are strongly committed to fostering equal opportunities in research, notably concerning gender and inter-generational issues, and creating an Ecosystem with the potential to attract the best-talented researchers from the international context, thus contributing to the international excellence of the Milan area in R&I.

The rationale is twofold: to ensure representativeness and balance the unique opportunity provided by the participation in the Innovation Ecosystem, notably for career development perspectives.

Concerning promoting gender equality, it is emphasized that the four partner Universities have adopted or are completing their Gender Equality Plans in line with recommendations from the European Commission.

More in detail, from one side gender equality is reflected in MUSA team itself: the critical mass overall is composed by 41% of female researchers/professionals. Furthermore, the attribution of responsibility roles is as much as possible balanced. For example, the President of the Board of Directors – Prof. Iannantuoni – is a woman.

Gender balance in the team, also to match the recruitment objectives related to female researchers and phd, as well as in responsibility roles will be monitored throughout the project and short reports will be made publicly available.

From the other side, under spoke 6, gender equality is one of the research themes to be investigated through the creation of a specific observatory and of datasets and surveys to assess the needs, the opportunities and limits for female researchers and professionals in Milan universities.

Concerning the involvement of young researchers, first of all it is relevant to consider that about 100 academics from MUSA critical mass, corresponding to 14% of the total force of researchers, got their PhD less than 10 years ago. To further support the overcoming of the "generational gap" there is a specific commitment of the 4 involved universities to recruit new research staff and, as specified in the previous paragraph, through active networks and partnerships that will be activated at the European level.

Indeed, one of MUSA main aim is to create an environment for the growth of human capital and research that leverages the best skills and young people.

For equal opportunities in recruitment procedures, please refer to the data reported in Section 2.1.b.

MUSA has been working to adopt the NRRP logotype in all its formats and templates both for communication and dissemination. These formats have been shared with all MUSA partners and an accurate analysis of the guidelines for information and advertisement has allowed to develop material that gives fully acknowledgment to the NRRP funding. Moreover, all the communication and dissemination activities are constantly monitored through a dedicated milestone and supported, also in their visual identity, throughout the entire project's duration.

Data collection is a crucial aspect of each of the 6 MUSA spokes. Data will be collected both from secondary sources (such as administrative data, census, sample data) and primary (collected with ad hoc quantitative and qualitative surveys within the project). Further data will also be generated during the project, as results of functional simulations or analyses to the technical-scientific objectives of the spokes and/or to statistical analyzes and impact definition. More in detail, data collected during the project are aimed at finalizing the objectives of the programmes run by each spoke as follows:

- Spoke 1 Urban regeneration (City of tomorrow) is dedicated to the redesign of the city and to the development of smarter renewable energy solutions, waste management systems and of the territory and new models of mobility.
- Spoke 2 Big Data-Open Data will develop an innovative digital platform for the rapid and secure storage and exchange of big data in life sciences, with the aim of translating the basic research in concrete applications focused on improving an holistic approach to wellbeing for citizens based on data collection and processing through AI techniques.
- Spoke 3 Deep Tech: Entrepreneurship & Technology Transfer will enhance entrepreneurship through the transfer of research and technological innovation and the development of innovative services for local businesses, especially for SMEs. This will be achieved by transforming powerful ideas into companies (open innovation), as well as by establishing new joint laboratories where the consolidated skills from big companies will support the training needs of future industrial researchers and technological entrepreneurs.
- Spoke 4 Economic impact and sustainable finance will develop new fintech solutions and learning tools to support the decision-making process of financial users, improve their financial well-being and contribute to social impact. The final aim is to start a process of "democratization of finance" for the community at large, developing and disseminating the culture of data-driven decision-making.
- Spoke 5 Sustainable Fashion, Luxury and Design will drive key sectors of the Milan economy towards an ecological and digital transition and will contribute to the transformation of sustainable production and distribution processes to reduce environmental impacts.
- Spoke 6 Innovation for Sustainable and Inclusive Societies aims to strengthen inclusiveness in society by addressing inequalities, promoting public engagement, strengthening social sustainability and technological tools and innovation for individual and social well-being.

As described in the project's Data Management Plan, officially transmitted to the Funding Agency in the Negotiation Phase, all the data produced and collected by MUSA will be findable, accessible, interoperable and reproducible and - when possible - openly available thus contributing to the sharing and enhancement of knowledge.

3) data of Spoke and affiliates - registry and beneficial owner, allocation of activities between Spoke and affiliates.

The following table reports the list of beneficiaries, including their role in each of the six Spokes: Spoke (S) or Affiliate (A)



Short Name	Name	1	2	3	4	5	6
UNIMIB	UNIVERSITA' DEGLI STUDI MILANO BICOCCA	S	A	A	A	A	S
UNIMI	UNIVERSITA' DEGLI STUDI DI MILANO	A	S	A	A	A	A
POLIMI	POLITECNICO DI MILANO	A	A	S	A	S	A
UNIBOCCONI	UNIVERSITA' COMMERCIALE LUIGI BOCCONI	A	A	A	S	A	A
A2A	A2A S.P.A.			A			
ALMAVIVA	ALMAVIVA SPA		A				
ASTRAZENECA	ASTRAZENECA S.P.A. (CON UNICO SOCIO)			A			
BIO4DREAMS	BIO4DREAMS S.P.A.		A				
BRACCO	BRACCO S.P.A.		A				
CAMOZZI	CAMOZZI AUTOMATION S.P.A.			A			
EDISON	EDISON SPA	A					A
ENI	ENI SPA	A					
FBK	FONDAZIONE BRUNO KESSLER				A		
FPM	FONDAZIONE POLITECNICO DI MILANO			A			
HUAWEI	HUAWEI TECHNOLOGIES ITALIA SRL			A			
HUMANITAS	HUMANITAS UNIVERSITY			A			
INFINEON	INFINEON TECHNOLOGIES ITALIA SRL			A			
LUMSON	LUMSON S.P.A.					A	
NOVARTIS	NOVARTIS FARMA SPA		A				
OFFICINE_INN	OFFICINE INNOVAZIONE SRL			A			A
PIRELLI	PIRELLI & C. S.P.A.	A					
RCS	RCS MEDIAGROUP SPA				A		
TASI	THALES ALENIA SPACE ITALIA S.P.A.	A					A
TIM	TIM S.P.A.		A				

SECTION 2 - OVERALL PROJECT'S PROGRESS SUMMARY

Title	MUSA – Multilayered Urban Sustainability Action
Theme	Climate, Energy, Mobility
Research Manager	Vittorio Biondi (since 15/12/2022)
Approved funding	109.996.000,50 €
Disbursement received	0,00 €
Costs reported*	2.490.855,03 €
Completed Milestones	None

*Disclaimer: the costs reported here should be considered as provisional. The participants still need to provide and/or validate and/or integrate them.

This section summarizes the personnel employed on the program, according to the distinction also requested by the MEF (Ministry of Economy and Finance), and the public evidence procedures put in place, highlighting those pertaining to the cascading calls referred to in Article 5 of the Public Notices (calls for the recruitment of personnel to carry out the Spoke's activities under the Program, for the granting of funding to external parties for research activities consistent with the specific Program, and for the purchase of supplies, goods and services necessary for its implementation).

- 1) Summary of personnel employed (to be repeated for each Spoke and affiliated entity)
 - a. Personnel already employed by the subject
 - b. Implemented recruitment procedures (description, procedure data and records, outcomes, including any appeals and their outcome)
- a. The list of personnel already employed by each subject has been transmitted to the Funding Agency, together with a subsequent request for modification where necessary. For the sake of readability, the lists are not included in this document.
- b. The recruitment procedures by the Universities involved in the MUSA project are reported below. Overall, it is worth mentioning that until 31/01/2023 211 recruitment procedures have been opened. Out of these, 137 are concluded; women account for 72 (53%) of the recruited researchers/PhD students.

Legend: RTDa: Fixed-term researcher
Op.: Procedures opened
Ass.: Assigned positions
W: No. of women (among assigned positions)

Overall for all Universities

No.	RTDa			Technologist			PhD			Collaborators		
	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W
1	10	6	3	3	0	0	13	12	4	13	9	5
2	7	4	2	2	0	0	10	10	5	14	11	5
3	13	9	2	2	0	0	19	9	3	13	7	4
4	9	6	2	3	0	0	2	2	2	7	4	3
5	2	1	1	0	0	0	9	9	5	8	7	6
6	14	8	5	5	0	0	10	10	8	23	13	7
Tot	55	34	15	15	0	0	63	52	27	78	51	30

Detail for UNIMIB

No.	Role	RTDa			Technologist			PhD			Collaborators		
		Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W
1	Spoke	4	0	0	3	0	0	11	10	3	8	6	4
2	Aff.	2	0	0	0	0	0	2	2	2	4	2	1
3	Aff.	3	0	0	0	0	0	7	4	3	8	4	3
4	Aff.	2	0	0	0	0	0	1	1	1	0	0	0
5	Aff.	1	0	0	0	0	0	6	6	5	1	1	1
6	Spoke	4	0	0	2	0	0	3	3	3	12	8	6

Detail for UNIMI

No.	Role	RTDa			Technologist			PhD			Collaborators		
		Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W
1	Aff.	4	4	3	0	0	0	1	1	1	4	2	1
2	Spoke	5	4	2	2	0	0	4	4	3	10	9	4
3	Aff.	1	1	0	2	0	0	0	0	0	1	0	0
4	Aff.	4	3	2	3	0	0	1	1	1	6	4	3
5	Aff.	0	0	0	0	0	0	0	0	0	6	5	5
6	Aff.	8	6	3	3	0	0	4	4	4	4	2	0

Detail for POLIMI

No.	Role	RTDa			Technologist			PhD			Collaborators		
		Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W
1	Aff.	2	2	0	0	0	0	1	1	0	1	1	0
2	Aff.	0	0	0	0	0	0	4	4	0	0	0	0
3	Spoke	8	8	2	0	0	0	11	5	0	2	2	0
4	Aff.	3	3	0	0	0	0	0	0	0	0	0	0
5	Spoke	1	1	1	0	0	0	3	3	0	1	1	0
6	Aff.	2	2	2	0	0	0	3	3	1	5	3	1

Detail for UNIBOCCONI

No.	Role	RTDa			Technologist			PhD			Collaborators		
		Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W
1	Aff.	0	0	0	0	0	0	0	0	0	0	0	0
2	Aff.	0	0	0	0	0	0	0	0	0	0	0	0
3	Aff.	0	0	0	0	0	0	0	0	0	2	1	1
4	Spoke	0	0	0	0	0	0	0	0	0	1	0	0
5	Aff.	0	0	0	0	0	0	0	0	0	0	0	0
6	Aff.	0	0	0	0	0	0	0	0	0	2	0	0

Detail for HUMANITAS

No.	Role	RTDa			Technologist			PhD			Collaborators		
		Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W	Op.	Ass.	W
3	Aff.	1	0	0	0	0	0	1	0	0	0	0	0

- Implemented acquisition procedures for supplies, goods and services (description, data and acts of the procedure, outcomes, including any appeals and their outcome)

No data available for the reference period.

3) Implemented Financing procedures (cascading calls), with evidence of granted state aid (description, data and acts of the procedure, outcomes, including any appeals and their outcome)

No cascading call has been opened in the reference period. Expected values are reported below.

Spoke No.	Public Spoke	Total Amount	Amount devoted to Southern regions	Industrial Research	Experimental Development
1	UNIMIB	3.200.000 €	3.200.000 €	1.620.000 €	1.580.000 €
2	UNIMI	5.000.000 €	5.000.000 €	5.000.000 €	-
3	POLIMI	4.850.000 €	4.850.000 €	2.425.000 €	2.425.000 €
5	POLIMI	150.000 €	150.000 €	-	150.000 €
6	UNIMIB	1.800.000 €	1.800.000 €	1.050.000 €	750.000 €
Total		15.000.000 €	15.000.000 €	10.095.000 €	4.005.000 €

SECTION 3 - REPORT ON ACTIVITIES CARRIED OUT DURING THE REPORTING PERIOD (BASED ON THE TIMELINE)

1) Description of activities carried out for:

a. Control routine of administrative-accounting regularity - expenses that need to be reported, including those of the Spoke, affiliated and implementing entities;

The structure and figures described in Section 1.1, and especially the Programme Manager, supported by dedicated operational units, ensure the timely collection and monitoring of MUSA own expenses as well as of those incurred by spokes and affiliates, supporting all the implementing entities in administrative duties such as personnel variations and technical issues concerning At Work monitoring platform.

In addition, the Hub acts as the unique interface with the funding agency (MUR) and as a collection point for queries, documentation, set up of internal procedures, as well as of project's deliverables and technical reports.

The Hub also analysed and shared the guidelines for financial and technical reporting published by the funding agency, shared their content with all Spokes and Affiliates, interacted with the MUR on open questions. The Hub regularly meets with dedicated administrative staff from the Spokes and Affiliates to ensure expenses and costs are correctly reported through the use of the AtWork platform.

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b. prevention and countering of serious irregularities such as fraud, conflict of interest, double financing as well as verifications of data required by anti-money laundering regulations ("beneficial owner");

Firstly, in order to prevent irregularities the Hub is finalising the Hub-Spokes-Affiliates agreement setting up obligations and rules under responsibility of each partner.

Starting from European and national regulations, the agreement clearly lists all the duties that each beneficiary needs to perform to be eligible for funding, such as ensuring traceability of expenses and avoidance of double funding of operations, through a separate accounting system and information coding procedures.

In addition, the Hub regularly checks the partners' declarations about their managing bodies (e.g. Dichiarazione antimafia) in order to verify if any change occurred as well as their purchase procedures to ensure their transparency and the absence of any conflict of interest. Similarly, the Hub is going to check that each recruiting procedure and tender is compliant with the checklists provided by MUR.

In this context, a tight cooperation between the Hub and the funding agency is required to ensure a continuous double check on the documentation provided and to achieve, especially, the ambitious objective to put in place anti-fraud measures that are effective but simple, thus avoiding unnecessary administrative workloads and burdens for the beneficiaries.

c. compliance with the conditionalities and all additional requirements related to the NRP Measures², in particular:

- DNSH principle and legislation under the Environment Code;³
- contribution to common indicator and environmental and digital tagging⁴;

² We refer to the conditionalities stipulated in the CID, in the operational arrangements, compliance with the timelines stipulated in the Procedural Timeline that each Administration has entered into ReGiS for each NRP measure, the targeting constraints to the climate and digital transformation goals stipulated in the NRP, and the individual project's contribution to the common indicator associated with the measure stipulated in the NRP.

³ Complete and attach the "Declaration of Compliance with the DNSH Principle and Further Compliance with the Environmental Code" specifically describing in item A of that Declaration the reasons why the activities do not cause significant harm to each of the environmental objectives.

- equal opportunities, generational and gender;
- information and advertisement;

The DNSH principle is based on the provisions from the "Taxonomy for Sustainable Finance" (Regulation 2020/852) and supports the achievement of the objectives of the EU Green Deal and identifies six criteria for determining how each economic activity substantially contributes to protecting the ecosystem, without undermining any of the environmental goals.

To be compliant with the Taxonomy under NRRP, the Ministry of Economics has produced the DNSH Operational Guide to assist administrations and beneficiaries in the process of orientation, gathering information and checking.

More in detail, through an accurate mapping action, for each mission, component and investment of NRRP the related economic activities required for implementation have been matched and provided with technical sheets reporting operational and regulatory aspects and checklists so that each beneficiary can self-assess its compliance to DNSH.

Given this framework, an awareness action towards all MUSA partners has been carried out and is still in place, in order to ensure that all the project's actions will be compliant with the DNSH principle. As a consequence, in order to provide the overall DNSH declaration signed by MUSA representative for each reporting period, a DNSH self-assessment is required periodically to each beneficiary and, when relevant, to tenderers.

According to the Eu Parliament, digital tagging is needed to assess to what degree the national plans contribute to the digital objectives set out in Next Generation Europe.

In particular, Member States are invited to explain how their plans will improve their digital performance, as measured by DESI – Digital Economy Society Index.

For instance, Italy performs particularly bad in the human capital dimension (25th out of 27) and this means a serious gap in digital skills and inclusion.

In this regard, the measure concerning the Innovation Ecosystems is entirely devoted to digital tagging.

Hence, in MUSA all the expenses are checked and monitored in order to be correctly matched with digital tagging to support the digital transition fostered by research and innovation with a particular focus to support disadvantaged groups in their inclusion path. More precisely, all the MUSA expenses fall under "Support for innovation clusters including between businesses, research organisations and public authorities and business networks primarily benefiting SMEs" (Intervention Field 019 in Annex VII of the RRF).

MUSA partners are strongly committed to fostering equal opportunities in research, notably concerning gender and inter-generational issues, and creating an Ecosystem with the potential to attract the best-talented researchers from the international context, thus contributing to the international excellence of the Milan area in R&I.

The rationale is twofold: to ensure representativeness and balance the unique opportunity provided by the participation in the Innovation Ecosystem, notably for career development perspectives.

Concerning promoting gender equality, it is emphasized that the four partner Universities have adopted or are completing their Gender Equality Plans in line with recommendations from the European Commission.

More in detail, from one side gender equality is reflected in MUSA team itself: the critical mass overall is composed by 41% of female researchers/professionals. Furthermore, the attribution of responsibility roles is as much as possible balanced. For example, the President of the Board of Directors is – Prof. Iannantuoni – is a woman.

Gender balance in the team, also to match the recruitment objectives related to female researchers and

⁴ Complete and attach the "Declaration of Compliance with the DNSH Principle and Further Compliance with the Environment Code," specifically describing in item B of the same Declaration how the activities substantially contribute to the goal of climate change mitigation, if the project activities are to contribute to the climate contribution of the investment according to the classification (Fields of Intervention) in Annex VI of Regulation (EU) 2021/241 (Scheme 1).

phd, as well as in responsibility roles will be monitored throughout the project and short reports will be made publicly available.

From the other side, under spoke 6, gender equality is one of the research themes to be investigated through the creation of a specific observatory and of datasets and surveys to assess the needs, the opportunities and limits for female researchers and professionals in Milan universities.

Concerning the involvement of young researchers, first of all it is relevant to consider that about 100 academics from MUSA critical mass, corresponding to 14% of the total force of researchers, got their PhD less than 10 years ago. To further support the overcoming of the “generational gap” there is a specific commitment of the 4 involved universities to recruit new research staff and, as specified in the previous paragraph, through active networks and partnerships that will be activated at the European level.

Indeed, one of MUSA main aim is to create an environment for the growth of human capital and research that leverages the best skills and young people.

For equal opportunities in recruitment procedures, please refer to the data reported in Section 2.1.b.

MUSA has been working to adopt the NRRP logotype in all its formats and templates both for communication and dissemination. These formats have been shared with all MUSA partners and an accurate analysis of the guidelines for information and advertisement has allowed to develop material that gives fully acknowledgment to the NRRP funding.

Moreover, all the communication and dissemination activities are constantly monitored through a dedicated milestone and supported, also in their visual identity, throughout the entire project’s duration.

d. compliance with open science and FAIR Data principles.

Data collection is a crucial aspect of each of the 6 MUSA spokes. Data will be collected both from secondary sources (such as administrative data, census, sample data) and primary (collected with ad hoc quantitative and qualitative surveys within the project). Further data will also be generated during the project, as results of functional simulations or analyses to the technical-scientific objectives of the spokes and/or to statistical analyzes and impact definition.

More in detail, data collected during the project are aimed at finalizing the objectives of the programmes run by each spoke as follows:

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- Spoke 4 Economic impact and sustainable finance will develop new fintech solutions and learning tools to support the decision-making process of financial users, improve their financial well-being and contribute to social impact. The final aim is to start a process of “democratization of finance” for the community at large, developing and disseminating the culture of data-driven decision-making.
- Spoke 5 Sustainable Fashion, Luxury and Design will drive key sectors of the Milan economy towards an ecological and digital transition and will contribute to the transformation of sustainable production and distribution processes to reduce environmental impacts.

- Spoke 6 Innovation for Sustainable and Inclusive Societies aims to strengthen inclusiveness in society by addressing inequalities, promoting public engagement, strengthening social sustainability and technological tools and innovation for individual and social well-being.

As described in the project's Data Management Plan, officially transmitted to the Funding Agency in the Negotiation Phase, all the data produced and collected by MUSA will be findable, accessible, interoperable and reproducible and - when possible - openly available thus contributing to the sharing and enhancement of knowledge.

The next part describes the activities of each Milestone and specifies how the reported costs are related to the activities actually implemented, in order to facilitate the evaluation by the Scientific-Technical Experts (ETS) and the MUR, as well as any variations from the initial forecast and critical issues encountered in the execution of the Program in relation to the Milestone.

For the sake of clarity, the actual description is preceded by a summary Table illustrating the active Milestone for the reference period, i.e., 01/09/2022-31/01/2023.

<i>Milestone No.</i>	<i>Short description</i>	<i>Category</i>
1	Management and Coordination of the R&I Programme	Hub
2	Recruitment of fixed-term researchers and technologists	Recruitment
4	Recruitment of PhD students and research collaborators	
6	Design of the R&I Programme	R&I Programme by Spokes and Affiliates
10	Dissemination for Year 1	
16	Design and set-up of Living/Fab/Joint Labs, Use cases, and Incubation and (pre)-Acceleration Programmes	
22	Design of the Education and Training Programmes	
25	Design of the territorial Observatories	

Milestone 1

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (30/09/2022 – 31/08/2025)

Description: Activities of the Hub: overall management and coordination of the research programme.

M1.a) Detailed description of the activities' progress.

A continuous coordination activity, with the aim of helping all spokes and affiliates to interact each other, and actively participate in the process, was made throughout the entire period September 2022 – January 2023. The coordination activity is and will constantly keep going during the entire project lifetime.

Similarly, the Hub has participated to all the meetings with the funding agency (MUR) in order to learn and be updated about:

- guidelines for financial reporting;
- operational instructions about the reporting platform "At Work";
- useful documents for technical, financial reporting and to cope with PNRR indicators (e.g. DNSH, gender equality, young researchers);
- guidelines for dissemination and communication.

These meetings have also fostered the exchange of information and good practices among the funded projects.

On August 25th, 2022, a public tender was published for the recruitment of the Hub's Managing Director / Programme Manager and a selection procedure was implemented. On October 10th MUSA's Board of Directors appointed Mr. Vittorio Biondi and he took office on December 15th.

On January 20th, 2023, a meeting with representatives of all spokes and affiliates was organised with the goal of explaining and sharing rules, procedures and tools of the reporting process.

Monitoring activities for the first two required reporting periods (Sept-Dec 2022; Jan 2023) have been concluded.

A set of actions to properly raise awareness about the MUSA project has been implemented since September.

- On September 6th a public event to present the project has been organised at Milano Bicocca University.
- One of B-Research issues has been entirely dedicated to the MUSA presentation, providing contributions from all spokes and affiliates .

A landing page (Italian and English version) will be made available by the end of February, containing all relevant information about MUSA and its spokes, the project's goals and MUSA initiatives and links to partners' web site (www.musascarl.it). A more structured web site is going to be implemented in the next months.

The following activities have been carried out for Milestone 1 in the period September-December 2022:

- public presentation of MUSA project
- appointment of the HUB's managing boards
- appointment of the Programme Manager, in response to an open call
- arrangement of coordination meetings

- approval of the preliminary budget for 2023-2025
- first definition of MUSA visual identity and communication plan

The following activities have been carried out for Milestone 1 in the period January 2023:

- Continuous coordination activity with the aim of helping all spokes and affiliates to interact and actively participate in the process
- Coordination of the monitoring activities for the first two periods (Sept-Dec 2022; Jan 2023)
- Activation of all relevant Milestones (M6, M10, M16, M22, M25) and coordination of the reporting activities
- On January 25th a meeting with representants of all Spokes and Affiliates was organised with the goal of explaining and sharing rules, procedures and tools of the reporting process.
- Progress towards the Communication Plan, the MUSA landing page and the Agreement between Hub, Spokes and Affiliates

M1.b) Description of the costs associated with the activities shown in the project statement.

As of 31/01/2023, the Hub has not reported costs on the AtWork platform yet. This will be updated in the near future, also for the reference period September 2022 – January 2023.

M1.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

The original formulation of Milestone 1 involved the signature of the Agreement by the Hub, the Spokes, and the Affiliated Entities. It has been considered more meaningful to include in Milestone 1 all the activities by the Hub: the duration of Milestone 1 has thus been extended to cover the whole project duration. Overall costs for the Hub are unchanged.

M1.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

Milestone 2

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (28/02/2023 – 28/02/2023)

Description: RTDa and Technologist (Art. 24bis, Law 240/2010) call 1st cycle: Opening and public advertising of fixed-term researchers (RTDa) and fixed-term technologists (Art. 24bis, Law 240/2010) positions, via the institutional channels of the recruiting universities.

M2.a) Detailed description of the activities' progress.

The details of the recruitment procedures by the five Universities involved are provided in Section 2.1.b and the data have been uploaded to the reporting platform AtWork.

M2.b) Description of the costs associated with the activities shown in the project statement.

The recruitment Milestone has no associated costs.

M2.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

The costs for the salaries of the recruited researchers were originally allocated to this Milestone. In agreement with the funding agency, those costs have been moved to the Milestones related to the R&I Programme leaving Milestone 2 without associated costs.

M2.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

Milestone 4

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (30/04/2023 – 30/04/2023)

Description: PhD and research collaborators/Postdoc (Assegni di ricerca) call 1st cycle: Opening and public advertising of PhD and research collaborators/Postdoc (e.g. Assegni di ricerca) positions, via the institutional channels of the recruiting universities.

M4.a) Detailed description of the activities' progress.

The details of the recruitment procedures by the five Universities involved are provided in Section 2.1.b and the data have been uploaded to the reporting platform AtWork.

M4.b) Description of the costs associated with the activities shown in the project statement

The recruitment Milestone has no associated costs.

M4.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

The costs for the salaries of the recruited researchers were originally allocated to this Milestone. In agreement with the funding agency, those costs have been moved to the Milestones related to the R&I Programme leaving Milestone 4 without associated costs.

M4.d) Any critical implementation and corrective measures taken.

Whenever a selection procedure has not given a positive outcome, the relevant University has considered or is considering the option of activating a new procedure for the same or for a similar position. These cases are limited.

Milestone 6

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (30/04/2023 – 30/06/2023)

Description: R&I programme - Needs analysis and Design: Assessment of the current framework and analysis of the needs and targets where to focus the R&I interventions; survey of the existent; definition of the R&I strategy; literature review and patent search; definition of protocols.

M6.a) Detailed description of the activities' progress.

The progress of the activities is shown by Spoke (1 to 6). To help the reader, main activities and results are illustrated prior to advancements by individual participants on Milestone 6.

Main activities and results – Spoke 1

Activity M6.1.1 Environmental, ecosystem and human behavior aspects to design urban regeneration

Participants: UNIMIB, UNIMI, UNIBOCCONI, POLIMI

Within the overall aims of evaluating and developing technological tools to promote urban regeneration, the initial phase has been completed, in particular through the following:

- Identification of the key variables for urban transition in terms of environment, biodiversity, human health risks and human behavior needs. The analysis included: ecological dynamics in the urban and peri urban context; human well-being and prevention of communicable diseases; social, psychological and behavioral needs of modern citizens in sustainable cities.
- Identification of the pilot areas to experiment urban regeneration processes, including the tools validation in an operational environment and data integration. Area1 is a square (in the Bicocca district) that will be transformed into a green area. Area 2 is an indoor area where insulation strategies, energy recovery and users well-being will be tested.
- First assessment and market surveys for the sensors to be installed in the above-mentioned pilot areas. Namely, the sensors needed to estimate the water permeability and the phytosequestration capacity of pollutants have been identified, as well as sensors for biodiversity analysis. Definition of confidentiality agreements is ongoing with leading companies in sensors development, for measuring qualitative and quantitative aspects of biodiversity in urban contexts
- Preparation of operational protocols for volunteering subjects profiling for human well-being analysis; identification of the procedures necessary to carry out the assessments
- Preparation and publication on specialistic journal of a critical review paper about building environment with a specific focus of environmental and human microbiome in the historical and modern days buildings

Activity M6.1.2 - Open platform for Recycling and Upcycling urban waste

Participants: UNIMIB, UNIMI, UNIBOCCONI, POLIMI

General achievements in terms of open labs for recycling and upcycling of urban biomasses have been:

- Development of facilities and expertise for the classification of waste in terms of the main constituents and possible valorisation strategies.
- Development of technical recycle and upcycle protocols for the use of urban wastes as raw materials for chemical or biobased transformation.
- Definition of pilots for open labs, based on chemical and microbiological technologies, to be tested in relevant and operational environment. The two identified pilots are:
 1. Chemical transformation of vegetal residual in vegan substitutes for leather, fabrics and foams. Foams are of particular interest within MUSA in terms of urban renovation actions, as they can be used as substitutes of petrochemical derived materials in the developments of sound-absorbing and thermal insulating panels.

2. Valorization of cotton residual biomass for the microbial production of sustainable dyes.

Activity M6.1.3 - CO2 conversion: development of catalysts for thermo promoted conversion of CO2 in Methanol

Participants: UNIMIB, ENI

A Joint Lab with ENI, dedicated to the development of sustainable solutions for the catalytic conversion of CO2 in Methanol, has been setup. The rationale for the choice of this particular transformation over the several possible schemes of CO2 conversion lies in the relative maturity of the technology (one plant already existing and operational) and in the synergistic approach with respect to other green technologies like renewable energy sources and green hydrogen production. The lab will study existing catalytic technologies through a combined experimental and computational approach to develop new and improved solutions based on the experience built up. The shared facility will include production and testing of new catalytic solutions thanks to the development of a dedicated prototype plant. The mission of the new lab will not be confined to the sole development of methanolization catalysts but will provide a flexible platform for joint development activities with SME partners interested in CO2 capture and conversion.

The following activity has been performed:

- Mapping of existing technologies for the catalytic conversion of CO2 in methanol through a combined experimental and computational approach.

Activity M6.1.4 - New energy solutions

Participants: UNIMIB, UNIMI, UNIBOCCONI, POLIMI

One of the aim of the spoke in terms of energy solutions is to test both standard and newly developed models to be applied in urban context by developing a specific integrated outdoor laboratory, focusing in parallel on the photovoltaic and geothermal technologies:

Photovoltaics: Mapping of technical needs (i.e. instrumentation, spaces) to create a technological platform to test new photovoltaic materials (e.g. organic materials) and combinable / interchangeable modules to increase energy conversion efficiency. Design of an experimental station to measure the conversion efficiency for new generation modules, more performant to the different irradiances and environmental conditions typical of the urban contest. The site to house both the module measurement station and the small house to simulate and to test applications in build integration configuration has been identified. The load bearing capacity of the slab hosting the structures have been verified too.

Geothermal: The main data to set up a geothermal model starting to the district at Bicocca campus up to the Milan Metropolitan area have been collected and a 3D database for geothermal/hydrogeological model at Milan metropolitan scale was created. In particular, several ground samples were taken in order to obtain the granulometric, permeability and geological characterization of the subsurface. Aiming to include the previously mentioned project in a larger-scale context (in the whole Milan area), to assess the impact of the technologies that will be applied, a robust hydro-thermo-geological campaign of data collection (both in-situ and from literature) was begun with a view to constraining future analyses as much as possible. The goal achieved was to set the scientific and technological background of the entire project.

Selection of a pilot building (at Politecnico of Milano) to carry out innovative strategies for indoor and outdoor comfort, to test new technological solutions able to contrast the effects of climate change indoor and outdoor. Experimentation on the Polimi approved by the department council.

Activity M6.1.5 - Services and policies for sustainable mobility at the neighbourhood – first activities.

Participants: UNIMIB, UNIMI, UNIBOCCONI, POLIMI, PIRELLI

The activity has focused on the following items:

- Study of strategies for indoor mobility within the university buildings, customized for different users and able to take into account human disabilities.
- Identify and develop connection technologies between indoor and outdoor mobility.
- Analyze short-range electric mobility solutions (Bicocca district).

- Analysis of behaviors regarding the different types of mobility
- Analysis of road and POI networks through urban audits

Two major activities are in an advanced state, currently still ongoing:

- A review, mapping and benchmarking activity on policies and interventions to promote sustainable mobility behaviors, services for sustainable urban neighborhood mobility at national and international level and the requirements for the development and implementation of demonstrators in the field of autonomous vehicles and tokenization and gamification
- The definition and setup of joint research activities with PIRELLI, dedicated to the development of innovative services aimed at promoting sustainable mobility (e.g. digital platform for indoor/outdoor routing and the promotion of sustainable and inter-modal mobility suited for different populations engaged with tokenization and gamification processes).

Main activities and results – Spoke 2

Activity M6.2.1 - Requirements elicitation of Cloud and 5G Infrastructure towards the definition of data management protocols

Participants: TIM, ALMAVIVA, UNIMI

Spoke 2 WP1's 5G based infrastructure for data transmission and sharing will host large scale validation pilots, This activity focused on requirements collection from the pilot owners on the following topics: Virtual Biobank, Federated learning on the diagnostic imaging data, Flow chemistry for ML-controlled accelerated reactions development, Collection of therapeutic target structures, and Development of innovative descriptors for ligand-protein interactions.

Questionnaires and elicitation sessions were organized to elicit requirements from each pilot. More in detail, the activity included:

- Design of the MUSA 5G support for deployment and execution of the data analytics services required by pilots on the Medical Devices-to-Edge-to-Cloud Continuum. The design identifies the configuration of an innovative private 5G network to host low-latency medical services.
- Preparation of a questionnaire for gathering data and service requirements from pilots about the raw data they start from, the initial transformation and preparation activities they carry on, and the analysis and results they need to achieve. The aim of the requirements elicitation questionnaire is to identify the data that should be handled by the MUSA platform and the services that could be made available for the pre-processing and analysis of the data.

Activity M6.2.2 - Methods for preprocessing of biomedical signals

Participants: UNIMI, ALMAVIVA

This activity regards the development of signal processing methods for the preprocessing of signals to be collected by WP2 telemedicine platform. It includes:

Development of a Kalman filter/smoothing-based design and the implementation of related digital IIR filters.

Automatic detection of the sub-quadricipital recess distension is an important component of a Computer Aided Diagnosis (CAD) system. We have trained and tested a multi-task machine learning model that can classify images of knee recess and (a) classify the recess as distended or not and (b) identify the recess position in the image. Results show a balanced accuracy of 0.78 and a rate of correctly identified recesses of 82%.

develop a system for point of care acquisition of ultrasound images. We designed a first system prototype based on a portable ultrasound device and a mobile application (running on a tablet computer). The application recognizes reference points (i.e., femur and patella) in real time and automatically acquires an image when they are in the correct position.

Initial CCTA images recruitment started. CCTA images are being semi-automatically processed using a commercial software to segment different volumes of interest (plaque and vessel segments), and to build 3D models of the coronary tree. Gray-value thresholding on the CT slices to obtain a 3D mask of the object of interest have been defined. The first patient data has been elaborated.

Activity M6.2.3 - Use of digital datasets to produce artificial organs for surgical planning and training

Participants: UNIMI

Identification and preparation of datasets for 3D printing of 3D models of human organs.

Development of 3D printing approaches for soft tissue printing and molding. Start of virtual data implementation.

Activity M6.2.4 - Diagnostic, screening tests, and visual assessments as new strategies for diseases prevention

Participants: UNIMIB

In the framework of Spoke 2, WP3 activities draw on a data-driven approach to disease prevention and healthy living for the general population in the following fields. First, the definition of diagnostic and screening tests (including innovative technologies) for the investigation of the prevalence of novel or under-studied cardiovascular risk factors in an urban population, and of procedures aimed at carrying out eye examinations and visual assessments. The following actions have been implemented: identification of cardiovascular risk factors, definition of diagnostic and screening tests, and elaboration of a data analysis strategy. Second, elaboration of a data analysis strategy to evaluate athletes' well-being after an injury. The following actions have been implemented: protocols development, procedures for the recruitment of the target population, definition of inclusion\exclusion criteria, and definition of a data management plan. Third, definition of protocols about the use of mobile applications and wearables to promote workers' health and well-being. The following actions have been implemented: definition of assessment procedures, user needs requirements, meetings with relevant stakeholders, definition of a data analysis strategy for the effectiveness of mobile applications and wearables to promote workers' health and well-being.

Activity M6.2.5 - Selection of use cases for continuous monitoring of population aimed to wellbeing, and health

Participants: POLIMI

Description of the activity:

In the framework of WP3 development of a data-driven approach to disease prevention and healthy living for the general population, this activity regards the selection of the most suitable fields of application and case studies of large interest for the urban population. Identification of the requirements in terms of needed data, sensors, functionalities, study population and future usability are specific elements of this transversal activity. Literature survey and analysis of solutions available on the market regarding wearable sensors for monitoring parameters of motor activity and cardiorespiratory functions. Initial conception of a platform for schools to facilitate screening of learning disorders in the first years of primary school, with the collaboration with the board of the project IndipoteDNs (<https://varese.istruzione.lombardia.gov.it/archivio-focus>). The platform integrates screening questionnaires, a webapp for anonymized data collection already in charge of Polimi, and a smart ink pen devoted to the characterization of handwriting acquisition and a teleconsultation platform to facilitate a first clinical screening of children with persistent weaknesses.

Initial retrieval and study of the current state-of-the-art concerning data analysis and data modeling techniques for multi-label classification problems, to be considered for the development of the project in the contest of continuous monitoring, wellbeing, and health.

Designing and including features (e.g., use of echogenic materials replicating the acoustic impedance of human tissues) that will allow for the acquisition of 2D or 3D ultrasound imaging well resembling in vivo imaging. These new-generation set-ups will allow not only for the training of small surgical equips (i.e., main operator and sonographer), but also for the sound validation of algorithms for the processing of ultrasound imaging.

Main activities and results – Spoke 3**Activity M6.3.1 - Idea scouting and assessment within POLIMI**

Participants: POLIMI, FPM

The TTO at POLIMI and FPM focused on the identification of the most active internal research groups in deep-tech topics related to sustainability, to be supported within MUSA in their further development and pushed to higher TRL values.

The following areas, with corresponding research groups and projects in the departments, have been identified: medical devices and smart sensors; photonics and ionizing radiation detection for applications in basic science, life sciences and industrial instrumentation; X-ray spectrometers smart manufacturing, with 3D printing and advanced electronics; sustainability and citizens' health; safety and health in indoor/outdoor environments; green space technology; electricity and energy storage

The research was done through two tools: i) by consulting the POLIMI research competence map, developed by the TTO in the year 2021; ii) through the POLIMI patent database. After identifying the research groups the TTO proceeded with meetings with the different research teams. Depending on the case, the meetings were followed by prior art research according to the technological sector, to plan the development of each research project also from a commercial and business point of view and evaluate possible future patent assets.

Activity M6.3.2 - Reward crowdfunding dataset and preliminary literature review

Participants: UNIMIB

Crowdfunding has become an established source of funding for entrepreneurial firms. BiUniCrowd is the reward crowdfunding program regularly launched by UNIMIB, with 4 calls realized in the past 4 years.

We collected data on the campaigns of the four calls and the candidate projects of the first call, to build up a database of crowdfunded projects launched by BiUniCrowd, with data like amount raised, team members, project description, number of bakers, founders and their relationship with external actors. BiUniCrowd represents a valuable data source whose analysis will provide insights into the role of crowdfunding in involving stakeholders (e.g., users) in innovation development.

Activity M6.3.3 - Switch to Product and 'call for ideas' actions

Participants: FPM, OFFICINE_INN

With the aim of acceleration of Deep Tech solutions, several activities have been implemented:

- Design of a new acceleration program for Climate-Tech startups
- A Benchmark of best potential deep tech project and identification of most suitable candidate for the already started acceleration phase.
- The design of the 4-months acceleration program (ENCUBATOR) (31st Jan – 6th June 2023), leveraging the internal knowledge about start-ups support activities and leveraging the expertise acquired over the years with other acceleration programs. The team specifically designed: Workshops contents: based both on standard contents for early-stage start-ups (business fundamentals, customer discovery, fundraising) and specific contents for climate-tech start-ups (impact measuring, climate-tech industry, climate strategy, ESG analysis). Deliverables: Individual exercises for each team to put into practice theoretical contents acquired during frontal workshops using standard frameworks and with the objective to reach milestones. Mentors and coaches matching: Assignment of a mentor and/or a coach to each of the selected teams to ensure the best possible fit. Events: networking and inspirational events as part of the acceleration program.
- Eventually a definition of Technology Transfer research paper index has been delivered.

Main activities and results – Spoke 4

Activity M6.4.1 - Literature review on impact finance instruments

Participants: POLIMI

A literature review was carried out to map the different impact finance instruments: Impact and Outcome Funds, Social Loans, Pay for Results, Social Impact Bonds, Purpose-Driven Crowdfunding. A

report has been drafted to collect the main information for each instrument. In order to prototype tailor-made instruments for the specificities of local SMEs and SEs, we started drafting an interview protocol for SMEs and SEs to understand their needs in terms of impact-oriented financing and assessment of their investment readiness.

Activity M6.4.2 - Startup of the activities in financial education

Participants: UNIBOCCONI, POLIMI

The activity has mainly focused on the finalization of the work plan approved in the proposal, on the coordination among the different actors within each University (e.g. researchers and University staff involved with the organization of the activities for example schools contact, website preparation, videos) and on the coordination among the four Universities.

The main results are the following:

- Coordination within Bocconi on the Bocconi PNRR web page,
- coordination on the list of contacts with the public schools for delivering financial education products and services,
- discussion on development of an on-campus area for involving Bocconi students and the public at large in Spoke 4 activities,
- The POLIMI team has started to work with intermediary and high schools on flipped classroom projects focused on mathematical finance, and started to project two MOOCs on cryptocurrencies and frauds

Activity M6.4.3 - Design of the research, organization of the team and identification of the dataset characteristics

Participants: UNIBOCCONI

- We decided to focus the Sustainable Fintech and Tech4 Fin action on the interaction between the existing firm networks that are regulated through business network contracts and the potential improvements on their financial and governance sustainability that may arise from the adoption of new blockchain-based infrastructure named Decentralized Autonomous Organizations.
- We leveraged on the existing FINTECH LAB resources to form the team and start analyzing the existing technological solutions
- We started the assessment of the existing technological and legal barriers to implementation reviewing the existing legal and technological status of firm networks
- We collected relevant information about the available technological solutions and the challenges and risks that undermine it.
- We identified the relevant datasets and the general structure of the new dataset of the Fintech businesses in the Milano area (to be delivered at M12). The new dataset will be constructed as follows:
 1. Classification of the existing models, templates, of Decentralized Autonomous Organization that are currently already in use. They will be classified in relation to: i) the specific financial tasks that can be accomplished; ii) the legal requirements; iii) the technological characteristics
 2. Classification of the existing firm business networks in relation to: i) their production based characteristics; ii) their impact on firm financial characteristics and their ability to raise capital; iii) their impact on firm ESG scores.
 3. The 'merge' of 1. and 2. to identify use cases where DAO technology and existing business networks can be efficiently integrated.

Main activities and results – Spoke 5

Activity M6.5.1 - A new tool to assess the maturity level, and to guide the digital and sustainable transformation of companies in fashion, design & luxury sectors

Participants: POLIMI, UNIMI, UNIMIB, UNIBOCCONI

A Maturity Model is a tool to guide companies in a roadmap for improvement.

Within MUSA Spoke 5, the maturity model is a fundamental tool that will help companies in understanding their maturity level in terms of application of sustainable practices and innovative technologies, providing them with tools for self-assessment and definition of a roadmap. Our particular focus is on the digital and sustainable transformation, but it is important to develop a model that could be applied to different kinds of transformation paths.

The main benefits of the tool being developed are:

- Evaluation of company progress, at different steps of the journey.
- Comparison with benchmark companies in the same sector.
- Overview of possible actions and solutions to implement.

At this stage, the model architecture was defined and a first survey, with questions to experts (academics/industrial) to fine tune the framework, was conducted. The survey is currently being conducted to validate the first framework of the model. Until now, five experts has been involved.

Activity M6.5.2 - Sustainable Luxury Platform conceptualization

Participants: POLIMI, UNIMI, UNIBOCCONI, UNIMIB

The final objective is the creation of a “Sustainable Luxury Smart Manufacturing and Retailing Platform” by developing “Extended Enterprises” supported by digital tools, where large customers, suppliers, start-ups, SMEs, retailers, and technology partners can share ideas, solutions, competencies, and data for the development of new products through a sustainable value chain.

This activity focused on the conceptualization of the platform and the onboarding of the tech provider.

Furthermore, in the direction of creating a physical collaboration space, where partners can interact and share projects, technologies, manufacturing and retail capacity, the partner universities were engaged in the research of the most appropriate spaces. The appropriate location (a first one, more may follow) has been identified and secured for the project, within the Bocconi premises. Collaboration has also started with a tech provider for the design, construction and finalization of the platform.

Main activities and results – Spoke 6

Activity M6.6.1 – B.Youth Forum

Participants: UNIMIB

Within the “Festival GenerAzioni” (Activity M10.6.1) palimpsest, the B-YOUTH Forum (the Bicocca Youth Forum) has been launched. The B-YOUTH Forum is a permanent forum of citizens aged 14 to 25 for the development of participatory research and training activities on public Engagement and civic participation of young people (students from high schools and universities).

The following actions have been implemented:

- the official launch of the B-YOUTH Forum during the Festival Generazioni
- design meetings with partners (i.e. Municipio 9, Fondazione Feltrinelli)
- construction of the organizational and training plan
- definition of tools to involve students (PCTO, OPEN BADGE)
- outline of the structure of the connected B-YOUTH 2023 Summer School (for PhD students and early researchers on the theme of B-YOUTH Forum)

Activity M6.6.2 - Initial steps to consolidate and scale up legal clinics activities

Participants: UNIBOCCONI

- Maintained the legal desk and relative data collection at San Siro
- Reinforced/expanded the activities of the legal desk for Ukranian refugees, with the involvement of 5 new law students
- Conducted a literature review on legal clinics and their interaction with the Third mission of Universities
- Participated and presented at the National Annual Conference on legal clinics (supported by

- UNHCR), taking stock of the current experience to ground the future steps within MUSA
- Held meetings with local institutions (e.g., schools) and associations to identify legal emerging needs, with a special focus on school drop-out
 - In-depth analysis of the legal requirements to be satisfied to have access to citizenship
 - Drafted a Vademecum on how to conduct interviews with foreigners in marginalized conditions

Advancements by Individual participants

Short Name	Description
Spoke 1	
EDISON	Definition of the activities together with other spoke members. In particular: M6: Needs analysis and Design: Assessment of the current framework and analysis of the needs and targets where to focus the R&I interventions
ENI	Joint team has been set up and project activities defined as follows: 1. Direct methanol production from CO ₂ : a. screening of state-of-the-art catalyst (characterization and testing); b. improved catalyst synthesis (characterization and testing). 2. Joint lab set-up at Bicocca facilities to support catalyst characterization and testing activities: As regards line 1 activity, state-of-the-art catalyst was identified and supplied to Bicocca facilities in order to proceed with further characterization analysis.
PIRELLI	Activities carried out until January 2023: - Definition of internal organization to manage and monitor project activities between actors involved; - Development Plan of project activities with related GANTT (including actions, deadlines, people involved/in charge of activities, expected outputs, ...).
POLIMI	The activities developed so far are: TEAM & RESOURCES \ Human resources recruitment; Initiation of the subcontracting and equipment purchase procedure; research meeting for alignment; CASE STUDIES \ Field survey for the definition of the case studies' specific areas (with Ac. 1,2, and 1.3); DATA (physiological, phycological - with Ac. 1.3 -, and environmental data) \ Data input protocol first setting and data acquisition in vivo testing using aligned multiple devices; Data post-processing protocol and post-processing data testing for data analysis; DISSEMINATION \ public presentation of the research. Choice of a case study, launch of a selection for human resources
UNIBOCCONI	Definition of the activities together with other spoke members, meetings with UN-Habitat and with OECD to share evaluation methodologies of urban regeneration processes
UNIMI	Permanent staff costs dedicated to the implementation of M6 in Spoke 1. In particular, needs analysis and design, focused on the assessment of the current framework and analysis of the needs and targets where to focus the R&I interventions.
UNIMIB	Task 3.1 - Technical innovations for promoting zero-emission buildings and districts (Sept 22 - Jan 23) Study and development of processes and products for increasing the use of renewable energy in urban areas, including energy harvesting (photovoltaics), geothermal energy and Blue Green infrastructures. Activities performed: 1- identification of the outdoor sites where to install the equipments to test the innovative PV module 2- Selection of commercial equipments for testing BIPV modules 3. Planning of demonstration intervention and sites in Bicocca urban district
UNIMIB	Task 2.2 - Microbial- and enzymatic-based upcycling of residual biomasses into virgin chemical platforms. Urban area is a hotspot in terms of needs for resources and generation of wastes: a significant fraction of wastes is constituted by biomasses, which has the potential to contain chemical platforms that, in a logic

	<p>of biorefineries can be used for the production of good and services, therefore helping in closing the loop of human needs. Microbial and enzymatic biodiversity can be exploited under controlled and industrially relevant conditions to transform hydrolyzed residual biomasses into virgin chemical platforms or final products. Cell factories and enzymes will be tailored and designed for specific purposes. Fermentations and bioconversions in bioreactors will be developed as case studies. The first actions were aimed at: i) identification of principal biomasses and of potential target (bio) products; ii) identification of microbial species/strains to be used for the fermentations process; iii) census and selection of tools and technologies for the actual implementation of the activity (e.g. fermentation and downstream platform).</p>
UNIMIB	<p>Task 2.1 - Open platform for Recycling and Upcycling urban waste (Sept 22 - Jan23) The activity aims at developing an open lab dedicated to the recycle and upcycle of the agri-food waste. The project builds upon the previous experience of the research teams involved in the developments of vegan substitutes for leather. The new lab will provide facilities and expertise for the classification of the wastes in terms of the main polymeric constituents, pretreatment to get rid of water and low molecular species (to be treated according to a biorefinery approach developed in a synergic action), compounding with suitable reactive monomers, also of renewable origin and transformation of goods including but not limited to leather, fabrics and foams. The foams are of particular interest within MUSA as they can be used as substitutes of petrochemical derived materials in the developments of sound-absorbing and thermal insulating panels of great value for the urban renovation actions. The activities focused on: 1 – Development of a characterization protocol for the sorting of different wastes 2 – Scaling up of existing protocols for the pretreatment of the wastes 3 – Development of foams based on the upcycled wastes</p>
UNIMIB	<p>Task 1.2 - Urban regeneration safety (Sept 22 - Jan 23) The action is aimed at the development of tools able to rapidly predict risks for human health as well as safe and resilient environments, taking into account indoor contaminants and pathogens (e.g., microbial pathogens in drinking water, air pollutants) as well as those outdoors (e.g., invasive arthropods and other animals, potential vector of pathogens or reservoir of diseases, highly allergenic pollens). Predictive models (microbial co-occurrence analysis and machine learning approaches) and remote sensing systems (based on ICT) will be used. The activities focused on: 1- the identification of indoor and outdoor sites where to create experimental design 2- the identification of an experimental design concerning the recruitment of the subjects for monitoring the selected sites 3- the planning of a demonstration intervention in the sites</p>
UNIMIB	<p>Task4.1 - Analysis and design of sustainable, safe, and inclusive mobility (Sept 22 - Jan 23) The activity is devoted to the development of the working plan and it aims at reach the following goals: i) carry out reviews, AS-IS mapping and benchmarking on policies and interventions to promote sustainable mobility behaviors, services for sustainable urban neighborhood mobility at national and international level and the requirements for the development and implementation of demonstrators in the field of autonomous vehicles and tokenization and gamification solutions; ii) identify and profile the territory, populations and travel behaviors of the area covered by the interventions.</p>
UNIMIB	<p>Task 1.1 - Ecosystem services values (Sept 22 - Jan 23) The action is aimed at process and product innovation to carry out urban regeneration processes aimed at increasing green areas and developing resilient urban ecosystems. The activity focused on: 1- identification of the areas where to create experimental green</p>

	urban areas 2- Selection of commercial sensors and/or new sensors and/or innovative parameters for monitoring urban green area 3. Planning of demonstration intervention in urban area
Spoke 2	
ASTRAZENECA	September2022 -January2023. Assessment of the current framework and analysis of the needs and targets of the 2 Hospitals in Lombardy that will be part of the experiment. definition of where to focus the R&I interventions; definition of the R&I strategy; set up the project governance and related tools and resources, mobilizing key stakeholders, take part in periodic alignment meetings of stakeholders from different organizations.
BIO4DREAMS	<p>During the reporting period, Dr. Pelos was responsible for identifying, also through specific meetings, any innovative solutions emerging from the national research and innovation fabric particularly similar to the issues being defined within the project. Finally, he participated in the study of the scientific and patent literature to understand the technical-scientific state of the art relating to the R&D issues being defined within the project. During the reporting period, Dr. Bortolini was responsible for identifying, also through specific meetings with the project partners, the specific needs of the project as well as supporting the definition of targets for R&D interventions. Finally, he participated in the study of the scientific literature to understand the technical-scientific state of the art related to the R&D issues being defined within the project. During the reporting period, Dr. Barone took care of supporting, also through specific meetings, the definition of the targets for the R&D interventions within the project.</p> <p>Furthermore, through an in-depth analysis of the literature, he actively participated in understanding the technical-scientific state of the art relating to the R&D issues being defined within the project.</p>
POLIMI	Initial identification of the use cases to be developed during the project with specific focus on data collection, sensors, analysis tools, interpretation models and design of test for the assessment of future usability. At this purpose meetings have been organized among task leaders within WP4 and with representatives of WP3 and WP2 to define synergies and collaborations. A preliminary list of use cases has been discussed and defined. The identified use cases include: the cardiovascular prevention, sport medicine, service of a pedagogical vision of learning, virtual simulator for surgical training and applications, mental stress management, pregnancy and prenatal life, safety and wellbeing at the workplace. At least two will be developed in collaboration with UNIMIB (WP3). Three PhD students have been enrolled. Additional calls for 1 PhD and 1 junior researcher have been opened.
TIM	set up activities for the collection of the requirements from pilots
UNIBOCCONI	Revision of Implementation Science Framework and Review of Regulatory Approaches for Digital Technologies
UNIMI	Permanent staff costs dedicated to the implementation of M6 in Spoke 2. In particular, needs analysis and design, focused on the assessment of the current framework and analysis of the needs and targets where to focus the R&I interventions.
UNIMIB	WORKERS' HEALTH AND WELLBEING (Sept 2022 - Dec 2023). - Definition of protocols about the use of mobile applications and wearables to promote workers' health and well-being. The following actions have been implemented: definition of assessment procedures, user needs requirements, meetings with relevant stakeholders - Definition of a data analysis strategy for the effectiveness of mobile applications and wearables to promote workers' health and well-being -

	Definition of a project communication strategy and a project communication plan for the project aimed at promoting workers' health and well-being. The following actions have been implemented: design and development of project promotional material including the factsheet, brochure PowerPoint template for internal and external communication, etc; definition of the recruitment campaign procedures.
UNIMIB	ATHLETES' WELLBEING (Sept 2022 - Jan 2023). - Definition of diagnostic and screening tests (including innovative technologies) for the the investigation of athletes' well-being. The following actions have been implemented: protocols development, procedures for the recruitment of the target population, definition of inclusion\exclusion criteria, definition of a data management plan - Definition of data analysis strategy for the protocol to evaluate athletes' well-being after an injury. The following actions have been implemented: protocols development, procedures for the recruitment of the target population, definition of inclusion\exclusion criteria, definition of a data management plan
UNIMIB	CARDIOVASCULAR RISK FACTORS (Sept 2022 - Jan 2023). - Definition of diagnostic and screening tests (including innovative technologies) for the investigation of the prevalence of novel or under-studied cardiovascular risk factors in an urban population. Activities include: protocols development, definition and planning of the recruitment process, definition of the inclusion\exclusion criteria. - Definition of the data analysis strategy and procedures for risk stratification for the investigation of the prevalence of novel or under-studied cardiovascular risk factors in an urban population. Activities include also the definition of the data management plan. - Definition of procedures aimed at carrying out eye examinations and visual assessments. The following actions have been implemented: identification of cardiovascular risk factors, definition of diagnostic and screening tests and definition of data analysis strategy
Spoke 3	
FPM	Personnel recruitment, involvement of other people from the research unit and organization. Meetings with the different research teams for the selection of the best research projects (deep tech) for every Politecnico di Milano department. Support to the identification of PoliMI laboratories. All the activities have been performed by Fondazione Politecnico di Milano as affiliate of SPOKE 3
HUMANITAS	Hours worked by researchers of HU for spoke 3 from the 01.09.2022 to the 31.01.2023
INFINEON	Introduction to Test Development Visit to Pavia's Test Lab Description of the R&D topics running in our lab Definition of list of the topics suitable for the PhD
OFFICINE_INN	a) Switch 2 Product (idea generation challenge) boost program and scouting evaluation b) Scientific coordination in order to define the most synergic activity research within Spoke 3 and definition of an analysis related to a Tech Transfer sustainable model
OFFICINE_INN	1) S2P acceleration program design 2) Definition of the Tech Transfer sustainable report agenda
POLIMI	Identification of best research activities in various thematic areas (with focus on sustainability and TRL increase) and started the definitions of technical requirements. Lierature survey and preliminary definition of targets. Preliminary contacts with suppliers. Internal procedure for the identification of labs.
UNIBOCCONI	To provide better incubation and acceleration services, different research activities have been initiated: a) a comprehensive literature review on accelerators (using keyword searches identified 700+ articles published in 15 top journals, then manually selected 84, which is in the process of reading); b) gathering of a dataset on accelerators in Europe that will allow to study the relationship between types of accelerators and startup performance; c) analyze

	<p>the relationship between deeptech startups and VC funding by using a large dataset. -To understand the relationships between startups, VC, and large companies, different research activities have been initiated to: a) provide a comprehensive literature review of the top journals in finance, economics, and strategy to identify the most relevant research articles; b) gathering of a dataset on corporate and VC events involving European startups active in the software industry and/or adopting a platform business model; c) analyze the typical trajectory of the most successful startups. -To provide better representation and comprehension of the VC ecosystem, different research activities have been initiated: a) a comprehensive literature review on venture capital networks; b) a comprehensive literature review on network analysis techniques, especially bipartite networks and fitness models; c) gathering of a dataset on investors, companies, and individuals that will allow to study the relationship between types of accelerators and startup performance; d) analyze the relationship between VC funding in the core version of the model.</p>
UNIMI	<p>Permanent staff costs dedicated to the implementation of M6 in Spoke 3. In particular, needs analysis and design, focused on the assessment of the current framework and analysis of the needs and targets where to focus the R&I interventions.</p>
UNIMIB	<p>SURVEY AND BENCHMARKING OF INTERNAL FACILITIES AND INFRASTRUCTURE [WP4] (Sept 22 - Jan 23). A comprehensive assessment of the internal facilities and platforms available at UNIMIB was performed, as the first step towards the definition and development of models for the valorization of research and to rationalize and facilitate the access to instrumentations for clients and future users. The results of the survey are organized in 3 different main thematic clusters (Materials, Analytics, and BioTech) and include the comparison of the typology and characteristics of the services offered, with a benchmarking with public and private competitors offering the same kind of services (Relevant KPI: over 300 different instruments and facilities considered in the original survey; 10 competitors evaluated in the benchmarking activity).</p>
UNIMIB	<p>PREACCELERATION ACTIVITIES [WP3] (Sept 22 - Jan 23). 1) Systematic literature review on the state of the art and best practices on venture building and incubation/acceleration services. Preliminary surveys of national and international incubators, website research databases, acceleration/incubators databases, reports on incubators, accelerators. 2) Preliminary design of a qualitative research based on multiple case studies and focus groups to identify venture building, incubation/acceleration services at the regional, national, and international level.</p>
UNIMIB	<p>ENTREPRENEURSHIP, INNOVATION MANAGEMENT, CROWDFUNDING, LIVING LABS [WP1 and WP2] (Sept 22 - Jan 23). 1) Literature review on: entrepreneurship and entrepreneurial finance; on economics and management of open innovation, living labs and crowdfunding. 2) Data collection and database creation of crowdfunded projects launched by BiUniCrowd. BiUniCrowd is the crowdfunding campaign, regularly launched within UNIMIB (4 calls realized in the past 4 years, for a total of 18 campaigns and 41 participating projects). Within the scope of Spoke3, BiUniCrowd is a valuable data source to provide insights on the role of crowdfunding in developing innovation: a dataset collecting the population of start-ups (projects information, evaluation, follow-up) that underwent a crowdfunding campaign at BiUniCrowd was created. 3) Engagement in a preliminary discussion with researchers (mostly by UNIMIB, involved in Spoke1 research activities) for the design and creation of potential future living labs.</p>
Spoke 4	

POLIMI	The Polytechnic of Milan team, concerning Spoke 4, selected internally responsible and started the research activities related to each work package. In particular, for the "Best practices in Finance 4 sustainability" (Head of Prof. Calderini) a literature review was carried out to map the different impact finance instruments. An interview protocol for SMEs and SEs is being drafted to understand their needs in terms of impact-oriented financing and assessment of their investment readiness. In the "Financial education" (Head of Prof. Barucci) started to work on the design of MOOC on cryptocurrencies and frauds. In the "Sustainability measurement and impact analysis" (head of Prof. Giudici) the research team mapped the industry of ESG scoring and engaged in a reverse-engineering analysis to learn about the different methodologies and evaluate asymmetries in metrics, weights and performance. Finally, in the "FinTech & Tech4Fin" (Head of Prof. Giorgino) is going on a mapping activity about fintech organisations using the tools to improve their ability in supporting new and social entrepreneurship
UNIBOCCONI	Design of the research strategy to pursue in order to hit the targets associated with Spoke 4, in terms of interaction with other researchers, non-research units, and other Universities
UNIMI	Permanent staff costs dedicated to the implementation of M6 in Spoke 4. In particular, needs analysis and design, focused on the assessment of the current framework and analysis of the needs and targets where to focus the R&I interventions.
UNIMIB	DIGITAL NUDGING AND FINANCIAL WELLBEING (Sept 2022 - Jan 2023). The main objective was the assessment of the potential of the digital world for the implementation of nudges in support of financial sustainability. A research was carried out on the main nudges that can improve financial decision-making and well-being and which can be the object of digital design.
UNIMIB	BEHAVIORAL ECONOMICS AND FINANCIAL BEHAVIOUR (Sept 2022 - Jan 2023). The main objective was the creation of the map of behavioral biases and distortions in the economic and financial decision-making process in conditions of risk. A bibliographic analysis of the international literature was started to enumerate and describe the main behavioral biases in the economic and financial decision-making process. This phase will be followed by the creation of a questionnaire for a survey on a national sample
Spoke 5	
POLIMI	In these months of work, three Kickoff "workshops" (rather than "meetings") have been held. Considering the heterogeneity of the objectives and resources involved in the spoke, several workpackages (WP) have been identified. Activities will be coordinated by a "Spoke Project Manager", but a leading university is defined for each WP, in which at least 1 person from each university is involved
UNIBOCCONI	Team members carried out internal meetings to: evaluate the needs of different stakeholders and define the template for benchmarking analysis for R&I platforms; organize a systematic mapping of sustainable SMEs and startups and of existing sustainability services in the fashion industry; define how to organize dissemination events and networking activities.
UNIMIB	Sustainable business models in luxury service companies (Sept 2022 - Jan 2023) Supporting luxury service companies (e.g., luxury hotels and resorts) in the transformation of their business models towards sustainability, both within and outside of the territory, and abroad. Studies have begun to verify the possibility of increasing the sustainability of hotel and resorts overlooking the sea starting from the preservation of the natural environment that surrounds them, preparing guidelines for environmental protection and consequently increasing the business

	of luxury resorts.
UNIMIB	Packaging material: adoption of monomaterial and totally recyclable packaging (Sept 2022 - Jan 2023) Development of new packaging solutions from available or lab scale developed sustainable biomaterials. The team started working on a new packaging product to be used in the world of luxury and characterized by being sustainable. In particular, work has begun on a product which, once its function as a container has finished, becomes a substrate for the coral reef to regrow. To date, the bibliographic analysis has been performed and we have begun to get to know the reality of the packaging industries by visiting trade fairs specialized in this field.
UNIMIB	Development of a sustainable cosmetic product (Sept 2022 - Jan 2023) Production of a new sustainable cosmetic product dedicated to the luxury market. The scientific team has studied the potential of using two plants (Prosopis cinerea and Avicenna Marina) in luxury cosmetics starting from the bibliographic analysis. Furthermore, plant samples were collected and used for the identification of active biomolecules. Biological cultures were prepared to test the anti-aging potential in vitro. A paper has been published in this topic (Eco-luxury: Making sustainable drugs and cosmetics with Prosopis cineraria natural extracts, Marco Giustra, Federico Cerri, Yaprak Anadol, Lucia Salvioni, Tatiana Antonelli Abella, Davide Prospero, Paolo Galli and Miriam Colombo. 2022 Frontiers in Sustainability)
Spoke 6	
POLIMI	The group has worked on the definition of the detailed topic articulation. We have worked through collective meetings to define and finetune the specific research objectives and research action to be carried out in 2023. Moreover, the we have completed the recruitment process, to complete the multidisciplinary work group.
UNIBOCCONI	Analysis of the literature, design of surveys and guidelines for interviews; - Set up of a benchmark analysis of research initiatives on social inclusion; -Development of contacts with relevant stakeholders (e.g. schools, school principals, NGOs and firms); -Reinforced/expanded the activities of the legal desk for Ukrainian refugees, with the involvement of new law students; Literature review on legal clinics and their interaction with the Third mission of Universities; -Meetings with local institutions (e.g., schools) and associations to identify legal emerging needs, with a special focus on school drop-out; -First steps in the review of international experiences of social inclusion policies through the creation and implementation of local welfare platforms
UNIMIB	TERRITORIAL WELFARE MODEL DEVELOPMENT (Sept 22 - Jan 23). As initial steps towards the identification of best practices in local territorial welfare in Milano and the following formulation of policy recommendations, an overview of the integration between social and healthcare services in Lombardy has been carried out; the work plan has been finalized.
UNIMIB	MAPPING AND ANALYSIS OF CIVIC AND SOCIAL PARTICIPATION OF MIGRANT WOMEN IN METROPOLITAN CITY OF MILAN (Sept 22 - Jan 23). Research activity focused on the analysis of the presence of migrant women in the Metropolitan City of Milan, in particular collecting studies on the phenomenon of immigration in Milan, and mapping the activities aimed at migrant women or carried out by migrant women themselves. A report on the survey of these activities was produced, highlighting projects of associations composed of migrant women; projects of other associations; projects of anti-violence centres; cooperatives; European projects.
UNIMIB	EARLY SCHOOL LEAVING IN DISADVANTAGED NEIGHBORHOODS (Sept 22 - Jan 23). The project studies endogenous and exogenous causes of the relationship

	<p>between schools, families and territories on "drop-out" and Early School Leavers (ESL) phenomena. It envisages a participatory methodology in multidisciplinary teams for the development of reorientation interventions, second-chance actions through community empowerment processes. Task actions taken so far for the implementation of interventions to prevent and combat early school leaving at macro and micro level in the San Siro area (NIL Selinunte): 1) In agreement with Off Campus San Siro Polimi, of "L'Abc di quartiere" (Centre for children and families and study space) and construction of the multidisciplinary team (researchers, doctoral students, PCTO high school students, volunteer teachers, educators, pedagogists 2) involvement of the Stakeholder Network (Milan City Council, Bambini Bicocca, Fondazione Terzo Luogo, Aler); 3) involvement of the network of after-school activities (7 non-profit organisations and associations of educators and social workers); 4) involvement of 40 teachers of two primary and secondary schools and start of educational and didactic co-designing (realisation of focus groups and interviews and co-designing of literacy interventions study support for 70 children from 6 to 11 years old; 5) stable constitution of a group of families with children from 3 months to 14 years old (realisation of focus groups); 6) Starting the literature review 6) First redefinition of the research project and literature review</p>
UNIMIB	<p>OBSERVATORY FOR GENDER EQUALITY AT UNIVERSITY (Sept 22 - Jan 23). The actions included the scientific management and setup of the UNIMIB Observatory for Equal Opportunities, with a plan of the research activities, periodical coordination meetings, the reporting of the GEP activities for 2022 and the planning for 2023. Internal dissemination within university was also performed.</p>
UNIMIB	<p>DIGITAL TRANSFORMATION, REMOTE WORKING AND WELLBEING (Sept 22 - Jan 23). Scientific planning of the activity, timeline and responsibilities. Definition of the research questions. Definition of the instruments to be used (questionnaires, interviews, focus groups). Definition and identification of stakeholders groups (managers, workers, other actors). First planning of the contents of questionnaires and interviews, with dedicated focus on remote working and digital wellbeing.</p>
UNIMIB	<p>INCLUSIVE EMERGING TECHNOLOGIES (Sept 22 - Jan 23). Development of new learning instruments based on advanced technologies (AR/VR, 3D, interactive and web-based interfaces) for enhancing human performances and capabilities; development of digital tools and strategies to support vulnerable groups and social inclusion. The activity included the preparation of the initiatives, in details: launching of the activity within the UNIMIB Mind and Behavioural Technological Center, MiBTec and Bicocca Center for Applied Psychology, BiCApP; presentation of a model of e-learning caregiver skills training module in the context of periodical workgroup meetings coordinated by the World Health Organization (WHO); definition of the software needs and requirements; organization of the setup for the study; initial scoping review of the literature (with specific reference to processes of UX and UI design); identification of possible stakeholders (e.g., caregivers, professionals) for planned focus groups.</p>
UNIMIB	<p>YOUTH FORUM (Sept 22 - Jan 23). Youth Forum Bicocca is a participatory project aimed at citizens aged 14 to 25, for the development of a permanent forum for the participation of young people (students from high schools and university). The following actions have been implemented: official launch of the Youth Forum during the Festival Generazioni; design meetings with future partners (Municipio 9, Fondazione Feltrinelli, RIL Factory); construction of the organisational chart; training plan; construction and publication of tools to involve students (PCTO, OPEN BADGE); outline of the structure of the JustChild 2023 Summer School,</p>

	identification of the keynote speakers and preparation of the material for the web page.
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M6.b) Description of the costs associated with the activities shown in the project statement.

Disclaimer: the costs reported here should be considered as provisional. The participants still need to provide and/or validate and/or integrate them.

Participant	Activity	Category	Amount (EUR)
UNIMIB	Industrial Research	Personnel cost	692.675,00
UNIMIB	Experimental Development	Personnel cost	22.195,00
UNIMI	Industrial Research	Personnel cost	397.214,00
UNIMI	Experimental Development	Personnel cost	95.268,00
UNIBOCCONI	Industrial Research	Personnel cost	104.133,50
POLIMI	Industrial Research	Personnel cost	246.218,00
POLIMI	Experimental Development	Personnel cost	93.002,00
ASTRAZENECA	Industrial Research	Personnel cost	34.725,00
BIO4DREAMS	Industrial Research	Personnel cost	21.870,00
EDISON	Industrial Research	Personnel cost	35.148,00
ENI	Industrial Research	Personnel cost	6.364,00
FPM	Industrial Research	Personnel cost	7.166,00
HUM	Industrial Research	Personnel cost	3.198,00
INFINEON	Industrial Research	Personnel cost	12.400,00
OFFICINE_INN	Industrial Research	Personnel cost	70.136,00
PIRELLI	Industrial Research	Personnel cost	1.083,50
TIM	Industrial Research	Personnel cost	8.934,73
Total			1.851.730,73

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M6.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

Minor updates to Milestone 6 have been made since the Negotiation phase:

- The duration has been extended by two months, since in the very initial phases of the project some aspects concerning rules and procedure were not clear.
- The overall costs of the Milestone have been updated, mainly considering part of the costs of the recruited researchers moved from Milestones 2 and 4 to Milestones 6-12 and 16-27.

None of the changes has an impact on the purposes nor on the scientific objectives of Milestone 6.

M6.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

Milestone 10

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (31/08/2023 – 30/09/2023)

Description: Dissemination, public engagement and networking (Year 1): Dissemination events, workshops, conferences, seminars, public engagement initiatives, installations. Planning and realization of the events, including co-creation and participatory approaches. Qualitative and quantitative assessment of the dissemination activities.

M10.a) Detailed description of the activities' progress.

The progress of the activities is shown by Spoke (1 to 6). To help the reader, main activities and results are illustrated prior to advancements by individual participants on Milestone 6.

Main activities and results – Spoke 4

Activity M10.4.1 - O-Fire Observatory for ESG Finance – First report

Participants: UNIMIB

The O-FIRE (Osservatorio Finanza di Impatto e Ricadute Economiche) is an observatory on the role of ESG finance in facilitating sustainable investments. It brings together UNIMIB, Banca Generali and AIFI (Italian private equity, venture capital and private debt association), to permanently monitor the ESG finance and contribute to its development in analytical terms.

O-FIRE presents its first annual report. The report, titled “Simplified reading of the European taxonomy and first assessment of its implications” starts from the taxonomy on sustainable finance promoted by the European Union (EU Taxonomy Regulation 2020/852) and by the current economic, environmental and energy context, and returns an impact assessment, with an analysis of ESG investments contributing to climate change mitigation, particularly in the energy and mobility sectors. The report has been finalized, published and disseminated in national and international venues

Main activities and results – Spoke 5

Activity M10.5.1 - Communication Assets – mission&vision statements; IG posts and hashtags

Participants: POLIMI, UNIBOCCONI, UNIMI, UNIMIB

The first step to get ready for the cultural dissemination is to define the strong and overarching messages to pass. A inter-university MUSA workshop carried out on November 7th, 2022 focused on the creation of relevant assets. Each of the 5 groups involved created a set of useful assets, including:

- A visual (to be also used as a reference for the creation of further visuals) – NB: these visuals are not necessarily copyrights free, so for the time being they are intended for internal use only
- A strong statement – which could be a Vision Statement, a Mission Statement, or a tagline for posts and other communications
- A set of 6 hashtags, to be employed for posts on social media

All the assets were then systematized in a powerpoint deck. It is the Version 1, and the intention is to maintain and update the deck with further assets, which will be developed during the workshops planned in 2023.

Activity M10.5.2 – Communication Assets - Covers for books, handbooks, brochures

Participants: POLIMI, UNIBOCCONI, UNIMI, UNIMIB

In order to prepare for the cultural dissemination, we started designing the covers of books, handbooks, brochures.

To carry out this task, each of the over 40 academics involved in the workshop on November 7th, 2022, imagined what we would like to communicate about MUSA after the project is completed. We imagined ourselves in 2025, and we envision a future in which MUSA was able to bring significant results to both

the city of Milan and the entire Lombardy region.

Thanks to the success, the 4 partnering universities decided to publish books and other relevant materials, to describe the journey of the 3 years spent together and highlighting the possible future evolutions.

Which image to use in the book cover? Which is the book title? And what is the short synopsis of the book?

The most relevant results were then systematized in a powerpoint deck.

Main activities and results – Spoke 6

Activity M10.6.1 – Festival GenerAzioni

FESTIVAL "GenerAzioni" is the annual dissemination and public engagement event that UNIMIB dedicates to the themes related to a sustainable and inclusive society, focusing on children and youth. The 2022 Festival edition (6th-7th October 2022) was focused on 'Engagement and activism by young people' as the central theme. The task activities included: 1) realization of the 2022 edition of the Festival; 2) reporting and assessment activity of the 2022 edition; 3) initial planning of the 2023 edition.

Activity M10.6.2 - Human Rights HUB activities: Seminars, Conferences, and Workshops

Participants: UNIMI, OFFICINE_INN

MUSA will feature the creation of the Human Rights Hub, as a digital and physical laboratory to develop advocacy activities, public engagement, and social interaction.

In parallel with the formal establishment of the Human Rights Hub and its official launching (expected by beginning of March), a preparatory phase has seen the planning and organization of several seminars and conferences on themes that will be of competence of the Human Rights Hub. Prominent speakers from outside MUSA have been invited, from NGOs, Universities and Research centers. The events were public and open to the general public and third sector, beside the academic community.

Activity M10.6.3 - Participatory research with families on digital wellbeing

Participants: UNIMIB

The task foresees a participatory research action involving families of the Milano Municipality, teachers, institutions, to make informed and adequate choices on the themes connected with the precocious use of digital devices by minors (e.g., the age at which children are granted a personal smartphone, can use social media, the basic notions of "parental control" schools should offer to parents, how to manage digital homeworks, etc). The research will result in the co-creation of shared "Digital educational pacts", aiming to offer practical indications at a community level to protect the safety, health and well-being of children and pre-adolescents.

Task activities performed so far included: 1) finalization of the workplan, with the exact definition of the phases of the project (launching; exploratory phase; informative phase; consultations and surveys; creation of the pacts; dissemination of the pacts); 2) launching event (17th Nov 2022), held within the "Milano Digital Week" where the first results of the participatory process were promised for the next edition of the event (October 2023); 3) identification of the 5 schools involved in the exploratory phase of the study; 4) opening of the call for families to participate in the research, with a total of about 150 families engaged so far, that will be involved in 10 focus groups during the month of February 2023; 5) appointment of the members for the technical panel for the redaction of the Pacts documents: the panel includes, among others, the Municipality of Milano, the school district, the local police, a primary association of pediatricians, the regional communication agency (Co.re.Com).

Advancements by individual partners

Short Name	Description
Spoke 1	
EDISON	Definition of the activities together with other spoke members. In particular: M10 Dissemination event

UNIBOCCONI	Participation in the kick-off of the project on 29/09/22; Project presentation to Bocconi University professors 24/01/23
Spoke 2	
BIO4DREAMS	Dr. Albertini and Dr. Cantarelli, during the reporting period, supported the various communication, networking and dissemination activities related to the development of the project. In particular, it has actively participated in supporting the development of conventions and conferences, also within the MIND-Milan Innovation District, the reference site of the Bio4Dreams partner, with particular reference to online communication activities, and management of networking events.
UNIBOCCONI	International Round-Table with key institutional players in the EU aimed to provide input for the mapping and analysis activities of Task 5.2 (November 15th, 2022)
UNIMIB	STAKEHOLDER ENGAGEMENT AND COMMUNICATION PLAN (Sept 2022 - Jan 2023). - Promotion of the project activities to the stakeholders, policy actors, and society. The following actions have been implemented: meetings with relevant stakeholders and policy actors (Municipio 9, ATS, Distretto Bicocca) to promote engagement, networking, and collaboration. - Definition of a project communication strategy and a project communication plan for the cardiovascular and the athletes' projects. The following actions have been implemented: design and development of project promotional material including the factsheet, brochure PowerPoint template for internal and external communication, etc; definition of the structure of the project website; definition of the recruitment campaign and development of communication plan to motivate citizens to register as a participant.
Spoke 3	
FPM	Scouting, Promotion and Networking activities for call 4 ideas under SPOKE 03.
Spoke 4	
UNIBOCCONI	Presentation of PNRR projects including MUSA at Bocconi University-January 24th
UNIMIB	O-FIRE OBSERVATORY FOR ESG FINANCE (Sept 2022 - Jan 2023). Finalization, publication and dissemination of the first report from the O-FIRE (Osservatorio Finanza di Impatto e Ricadute Economiche) observatory, on the role of ESG finance in facilitating sustainable investments. O-FIRE brings together UNIMIB, Banca Generali and AIFI, to permanently monitor the ESG finance and contribute to its development in analytical terms. The first O-FIRE annual report (titled "Simplified reading of the European taxonomy and first assessment of its implications") focuses on the EU Taxonomy Regulation 2020/852, with an analysis of ESG investments contributing to climate change mitigation, particularly in the energy and mobility sectors.
Spoke 5	
UNIMI	Permanent staff costs dedicated to the implementation of M10 in Spoke 5. In particular, qualitative and quantitative assessment of the dissemination activities.
Spoke 6	
EDISON	Definition of the activities together with other spoke members. In particular: M10 Dissemination events.
OFFICINE_INN	1) Project management and awareness activities on first Milan High Education Observatory report 2) Design of the social innovation accelerator
UNIBOCCONI	Participation to the National Annual Conference on legal clinics in Naples from November 24 to November 25
UNIMIB	PARTICIPATORY RESEARCH WITH FAMILIES ON DIGITAL WELLBEING (Sept 22 - Jan 23). The task foresees a participatory research action involving families of the Milano Municipality, teachers, institutions, to make informed and adequate choices on the themes connected with the precocious use of digital devices by minors, up to the co-creation of shared "Digital educational pacts". These pacts have the aim

	to offer practical indications at a community level to protect the safety, health and well-being of children and pre-adolescents. Task activities performed so far included: 1) finalization of the workplan, with the exact definition of the phases of the project (launching; exploratory phase; informative phase; consultations and surveys; creation of the pacts; dissemination of the pacts); 2) launching of the initiative, with an event held within the "Milano Digital Week" (Nov 2022) which promised the first results of the participatory process for the next edition of the event (Oct 2023); 3) identification of the 5 schools involved in the exploratory phase of the study; 4) opening of the call for families to participate in the research, with a total of about 150 families engaged so far; 5) appointment of the members for the technical panel for the redaction of the Pacts documents: the panel includes, among others, the Municipality of Milano, the school district, the local police, a primary association of pediatricians, the regional communication agency (Co.re.Com).
UNIMIB	FESTIVAL "GenerAzioni" (Sept 22 - Jan 23). Festival GenerAzioni is the annual dissemination and public engagement event that UNIMIB dedicates to the themes of youth participation in public life. The 2022 Festival edition had 'engagement and activism by young people' as main theme. The task activity included: (a) realization of the 2022 edition of the Festival (Oct 2022); (b) reporting and assessment activity of the 2022 edition; (c) initial planning of the 2023 edition
UNIMIB	CULTURAL DISTRICT (Sept 22 - Jan 23). Participatory public engagement activities in the Bicocca District, as first steps for the creation of an Open Air lab for culture, art and science. In particular the activities focused on the realization and assessment of the following initiatives: (1) "Le arti dell'educare" (24.11.2022): constructed as a public event, the conference allowed professionals and the community to discuss together the links between arts and education for social, environmental and economic sustainability, beginning to network the many resources in the area and in the city. (2) "Ritratto con quartiere / Bicocca" (from 24.11.2022 to 06.12.2022): photographic exhibition documenting the experience of a participatory action in the district, thinking about Bicocca district's identity through images and words, where each individual story participates in the construction of a collective story.

M10.b) Description of the costs associated with the activities shown in the project statement.

Disclaimer: the costs reported here should be considered as provisional. The participants still need to provide and/or validate and/or integrate them.

Participant	Activity	Category	Amount (EUR)
UNIMIB	Experimental Development	Personnel cost	58.082,50
UNIMI	Industrial Research	Personnel cost	60.445,00
UNIBOCCONI	Industrial Research	Personnel cost	2.064,00
BIO4DREAMS	Industrial Research	Personnel cost	12.600,00
EDISON	Industrial Research	Personnel cost	9.762,00
FPM	Industrial Research	Personnel cost	1.080,00
OFFICINE_INN	Industrial Research	Personnel cost	58.036,00
Total			202.069,50

M10.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

Minor updates to Milestone 10 have been made since the Negotiation phase:

- The duration has been extended by one month, since in the very initial phases of the project some aspects concerning rules and procedure were not clear.
- The overall costs of the Milestone have been updated, mainly considering part of the costs of the recruited researchers moved from Milestones 2 and 4 to Milestones 6-12 and 16-27.

None of the changes has an impact on the purposes nor on the scientific objectives of Milestone 10.

M10.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

Milestone 16

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (31/08/2023 – 31/10/2023)

Description: Identification, selection and design of Living/Joint/Fab Labs/ Use cases/ Incubation & Acceleration programmes for Year 1: Definition and planning of collaborative initiatives between academic and non academic entities; design of incubation and acceleration programmes; selection of promising ideas for further development.

M16.a) Detailed description of the activities' progress.

The progress of the activities is shown by Spoke (1 to 6). To help the reader, main activities and results are illustrated prior to advancements by individual participants on Milestone 6.

Main activities and results – Spoke 1

Activity M16.1.1 - CO2 conversion: setup of the Joint Lab

Participants: UNIMIB, ENI

To set-up the Joint Lab described in M6.1.3 the following activities have been performed:

Mapping of the instrumental requirements necessary to carry out the trials (preparation of a detailed list of necessary instruments)

Definition of the procedure to develop a dedicated prototype plant.

Main activities and results – Spoke 3

Activity M16.3.1 - Joint lab with HUAWEI: design and initial setup

Participants: UNIMIB, HUAWEI

Description of the activity:

A joint lab will be created by the collaboration initiated by UNIMIB and HUAWEI, for the characterization of electronics devices, in support to integrated circuits development, in particular for sub-THz devices, material characterization and modelling.

The following activities have been completed:

- identification of items for the collaboration within the joint lab for device and material models;
- definition and analysis of the suitable instruments and appropriate techniques;
- definition of equipment to be purchased for the setup of the laboratory, and of the precise metrics for the calls for tenders;
- meetings with potential vendors' technical staff combined with detailed literary reviews on state of the art equipment;
- assessment of the feasibility of the measurement-setup design, with a special attention to the scalability and long-term sustainability of the lab;
- identification of the suitable spaces in the university premises devoted to the joint lab, according to the required physical and logistic specification;
- definition of a roadmap for the joint lab creation.

Activity M16.3.2 - Joint lab with INFINEON: design and initial setup

Participants: UNIMIB, HUAWEI

A joint labs will be created by the collaboration initiated by UNIMIB and INFINEON, for semiconductors products and systems for optimized energy consumption devices, through a lab for automatic test development on ATE.

The following activities have been completed:

- definition of the different electronic equipment and accessories to be combined for the lab setup;
- definition of the precise metrics for the calls for tenders;
- identification of the suitable spaces in the university premises devoted to the joint labs, according to the required physical and logistic specifications;
- definition of a roadmap for the joint lab creation.

Advancements by individual participants

Short Name	Description
Spoke 1	
EDISON	Definition of the activities together with other spoke members. In particular: M16: Definition and planning of collaborative initiatives between academic and non-academic entities.
ENI	Joint team has been set up and project activities defined as follows: 1. Joint lab set-up at Bicocca facilities to support catalyst characterization and testing activities: a. instrumentation for catalyst synthesis and characterization; b. bench scale plant to test catalyst performance. Proper location within Bicocca facilities was identified. All the instrumentation for catalyst synthesis and characterization was identified. First evaluation on bench scale plant were started.
UNIMIB	Joint Lab with TASI: Joint Lab on Keypoint Technologies for Next Generation Earth Observations from Space (Sept 22 - Jan 23). In this joint lab different expertises coming mainly from the Physics and Material Science departments meet those of the Aerospace Industry Thales Alenia Space Italy (TASI). The joint lab will focus on selected projects considered strategic to make steps forward in technologies relevant to the next generation of instruments for Earth observations from space. The characteristic of this joint lab is that it is organized as an ideas incubator where promising concepts are permanently evaluated and eventually feeded with the support of scientists and engineers. The first phase of research and brainstorming resulted in the selection of the activities to be promoted in the joint lab: - development of an innovative on-board CPU for future satellite - development of a miniaturized gyroscope platform - an R&D for a thermal infrared detector based on quantum dots technology - an R&D on a microfluidic device for micropower generation a- mission definition design for a satellite devoted to the calibration of ground based microwave telescopes.
UNIMIB	Joint Lab with ENI: Development of catalysts for the thermo promoted conversion of CO ₂ in Methanol (Sept 22 - Jan 23). The Joint Lab is a multidisciplinary facility dedicated to the development of sustainable solutions for the catalytic conversion of CO ₂ in Methanol. The rationale for the choice of this particular transformation over the several possible schemes of CO ₂ conversion lies in the relative maturity of the technology (one plant already existing and operational) and in the synergistic approach with respect to other green technologies like renewable energy sources and green hydrogen production. The lab will study existing catalytic technologies through a combined experimental and computational approach and develop new and improved solutions based on the experience built up. The shared facility will include production and testing of new catalytic solutions thanks to the development of a dedicated prototype plant. The mission of the new lab will not be confined to the sole development of methanolization catalysts but will provide a flexible platform for joint development activities with SME partners interested in CO ₂ capture and conversion. Activities performed so far included: 1 - Identification of the instrumentation required for the characterization of the catalysts 2 - design of a prototype plant for the testing of catalytic activities. 3 - Setting up of a baseline by characterization and testing of existing catalysts 4 - Installation and testing of the

	prototype plant and integration with the characterization facilities.
Spoke 3	
FPM	Design and implementation Call 4 Ideas and design of the 4-months acceleration program. Composition of the selection committee and jury under SPOKE 03
HUAWEI	Joint-Lab Map Definition: Collaboration items, Suitable Instruments and Appropriate Techniques in order to setup a lab for Sub-THz device and material characterization and modeling - Kick Off of the activities and discussion of collaboration items: Introduction to innovative industrial requests, Analysis of Joint Lab needs (identify existing and new ideas), Proposals for implementation of advanced measurement set-up, Description of the R&I topics running in our lab, List of the topics suitable for the PhD
INFINEON	Preliminary study of the required and adequate - Spaces - Facilities - Equipments In order to setup a lab for automatic test development on ATE
UNIMIB	JOINT LAB DESIGN AND INITIAL SETUP [WP4] (Sept 22 - Jan 23). Two joint labs will be created by the collaboration initiated by UNIMIB and: 1. Huawei (for characterization of electronics devices at sub-THz frequencies, in support to integrated circuits development); 2. Infineon (for semiconductors products and systems for optimized energy consumption devices). The following activities have been completed: definition and analysis of the equipment to be purchased for the setup of the laboratories; meetings with potential vendors' technical staff combined with detailed literary reviews, to obtain the technical information; assessment of the feasibility of the measurement-setup design, with a special attention to scalability and long term sustainability of the labs; definition of a detailed roadmap for the joint lab creation; identification of the suitable spaces in the university premises devoted to the joint labs, according to the required physical and logistic specifications.
Spoke 6	
EDISON	Definition of the activities together with other spoke members. In particular: M16: Definition and planning of collaborative initiatives between academic and non-academic entities.

M16.b) Description of the costs associated with the activities shown in the project statement.

Disclaimer: the costs reported here should be considered as provisional. The participants still need to provide and/or validate and/or integrate them.

Participant	Activity	Category	Amount (EUR)
UNIMIB	Industrial Research	Personnel cost	99.700,00
EDISON	Industrial Research	Personnel cost	7.621,00
EDISON	Feasibility Studies	Personnel cost	13.950,00
ENI	Industrial Research	Personnel cost	1.591,00
FPM	Industrial Research	Personnel cost	15.104,00
FPM	Industrial Research	Advisor services	5.200,00
HUAWEI	Industrial Research	Personnel cost	31.176,00
INFINEON	Industrial Research	Personnel cost	24.800,00
Total			199.142,00

M16.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

Minor updates to Milestone 16 have been made since the Negotiation phase:

- The duration has been extended by two months, since in the very initial phases of the project some aspects concerning rules and procedure were not clear.
- The overall costs of the Milestone have been updated, mainly considering part of the costs of the recruited researchers moved from Milestones 2 and 4 to Milestones 6-12 and 16-27.

None of the changes has an impact on the purposes nor on the scientific objectives of Milestone 16.

M16.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

Milestone 22

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (31/05/2023 – 30/06/2023)

Description: Design of Education and training programme: Conception of the training programme, also through innovative didactic methods. Development of courses and educational programmes. Preparation of the relevant training/teaching materials.

M22.a) Detailed description of the activities' progress.

Advancements by individual participants	
Short Name	Description
Spoke 3	
UNIMIB	TRAINING COURSES AND BEHAVIOURAL AUDITS [WP1] (Sept 22 - Jan 23). 1) Literature review on behavioural audit and entrepreneurship education. 2) Bibliographic analysis on cognitive and behavioral models that explain the propensity to create a business; analysis of best practices based on team experience aimed at designing entrepreneurship and entrepreneurial behaviour courses for students and graduates.
UNIMIB	ALTERNATIVE FINANCE EDUCATION [WP3] (Sept 22 - Jan 23). 1) Literature review on needs analysis in the alternative finance domain. 2) Definition of the innovative financial instruments to be promoted as subjects of the forthcoming learning environment portal (Matchmaking portal) for start-ups and SMEs skills development.
Spoke 4	
FBK	The main activity focused on designing a training school on evaluation topics to be offered to civil society, companies and public institutions. Beyond the identification of the specific topics and structure of the training, the activity involved the preparation of a first draft of training activities to be presented at a meeting with private and public institutions to be held in March
UNIBOCCONI	Design of new Financial Investment education material
Spoke 6	
POLIMI	Design of Edu and Training Programme
UNIMIB	INNOVATIVE DIDACTICS IN LAW AND PLURALISM (Sept 22 - Jan 23). Definition of the constitutional court use case (Constitutional Court decision no. 1/1956) that will be the subject for the immersive trial (based on 3D technology and Augmented Reality), to be developed and used for novel didactic methods in Law . Definition of the needs and requirements for an interactive software which will help the referring judges and the applicants to submit questions of constitutional legitimacy.
UNIMIB	INNOVATIVE DIDACTIC METHODS WITH A TELESCOPE (Sept 22 - Jan 23). Scientific participatory action and experimentation of innovative didactic methods, through night sky observation activities with an optical telescope mounted in the Bicocca University campus, accessible to students and citizens. The activity included the preparation and launching of the initiative, through: the commissioning of the telescope; the definition of the internal management structure; the initial advertisement of the project in (selected) primary and secondary schools; the development of pilot programmes for primary and secondary schools in collaboration with selected school partners (Brianza Bilingual Education Schools, IIS Cremona)

M22.b) Description of the costs associated with the activities shown in the project statement.

Disclaimer: the costs reported here should be considered as provisional. The participants still need to provide and/or validate and/or integrate them.

Participant	Activity	Category	Amount (EUR)
UNIMIB	Experimental Development	Personnel cost	44.532,00
UNIMIB	Education	Personnel cost	20.697,00
UNIBOCCONI	Education	Personnel cost	624,00
POLIMI	Industrial Research	Personnel cost	6.000,00
FBK	Industrial Research	Personnel cost	4129,80
Total			75.982,80

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M22.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

Minor updates to Milestone 22 have been made since the Negotiation phase:

- The duration has been extended by one month, since in the very initial phases of the project some aspects concerning rules and procedure were not clear.
- The overall costs of the Milestone have been updated, mainly considering part of the costs of the recruited researchers moved from Milestones 2 and 4 to Milestones 6-12 and 16-27.

None of the changes has an impact on the purposes nor on the scientific objectives of Milestone 22.

M22.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

Milestone 25

- Expected start date - Actual start date (01/09/2022 – 01/09/2022)
- Expected end date - Actual end date/ongoing (31/08/2023 – 31/10/2023)

Description: Design of Observatories (Innovation, Sustainability, Higher education, Social inclusion, Wellbeing): Conception, creation and enhancement of territorial observatories , designed and equipped to monitor and analyse the scenarios and the roles of the relevant stakeholders.

M25.a) Detailed description of the activities' progress.

The progress of the activities is shown by Spoke (1 to 6). To help the reader, main activities and results are illustrated prior to advancements by individual participants on Milestone 6.

Main activities and results – Spoke 6

Activity M25.6.1 - First steps for the structuring of the Milano Higher Education Observatory (MHEO)

Participants: UNIMI, OFFICINE_INN

MHEO collects and analyses data on the tertiary education system in Milan and Lombardy through an evidence-based approach in order to raise awareness of the role and impact of knowledge on people and territories, increasing the knowledge of students, enterprises and public administrations.

- Collection, preliminary analysis, and processing of data on universities and tertiary education institutions in Milan and Lombardy. This dataset collects and interprets data on students enrolled, matriculated, graduated in universities and AFAMs in Italy, Milan and Lombardy. In addition, data is collected on the number of teachers, staff and recipients of regional grants.
- Building a network with possible partners outside the MHEO Observatory, including the Ministry of University and Research and Cineca.
- Preliminary organisation of two events (planned in May 23) where the MHEO Observatory and its activities will be presented; the first report with the analysis of the size phenomenon of tertiary education in Milan and Lombardy will be presented.
- Development of the observatory's digital identity

Activity M25.6.2 - MUSA collaboration within the framework of the QuBì project

Participants: UNIMI, UNIBOCCONI, UNIMIB, OFFICINE_INN

Description of the activity:

QuBì-“The recipe against child poverty” is an aid program for children from poverty-stricken families in Milan, active in the city of Milan since 2017, funded and promoted by Cariplo Foundation. The overall objective of QuBì is to combat the phenomenon of child poverty, by promoting collaboration between public institutions and the third sector in 25 districts of the city of Milan. MUSA's activity fits into one of these districts and precisely in the San Siro-Selinunte district, characterized by the presence of numerous inhabitants of foreign origin, processes of marginalization and school drop-out. Three of the universities involved in MUSA are implementing tasks in collaboration with QuBì, each with a specific project, based on the legal and pedagogical skills of the PIs: UNIMI for the “San Siro Informa” listening and orientation desk; BOCCONI for the legal clinics; UNIMIB for the early school leaving. The collaboration of QuBì with MUSA was started in the context of the 2.0 program (ended in Dec 2022) and found explicit recognition in the context of the new 3.0 project financing cycle, launched in Jan 2023.

The “San Siro Informa” desk (featuring the presence of UNIMI researchers, on a weekly basis). has the role of filtering requests for information and of possibly redirecting them to other services that can respond to the user's demand. The desk is also a key hub for the collection of data for research analysis and subsequent definition of operational projects. UNIMI provides legal consultancy on migration law issues and simultaneously carries out a field research on the needs and critical issues in accessing social services by foreign women and minors, which represents its specific object of investigation.

Advancements by individual participants

Short Name	Description
Spoke 6	
UNIMI	Permanent staff costs dedicated to the implementation of M6 in Spoke 6. In particular design of Observatories (Innovation, Sustainability, Higher education, Social inclusion, Wellbeing): Conception, creation and enhancement of territorial observatories , designed and equipped to monitor and analyse the scenarios and the roles of the relevant stakeholders.

M25.b) Description of the costs associated with the activities shown in the project statement.

Disclaimer: the costs reported here should be considered as provisional. The participants still need to provide and/or validate and/or integrate them.

Participant	Activity	Category	Amount (EUR)
UNIMI	Industrial Research	Personnel cost	157.128,00
UNIMI	Experimental Development	Personnel cost	4.802,00
Total			161.930,00

M25.c) Any variations from the approved project proposal, highlighting the impacts on: the purpose of the intervention; achievement of milestones and targets, intermediate and final; implementation timeline; and volume of expenditure.

Minor updates to Milestone 25 have been made since the Negotiation phase:

- The duration has been extended by two months, since in the very initial phases of the project some aspects concerning rules and procedure were not clear.
- The overall costs of the Milestone have been updated, mainly considering part of the costs of the recruited researchers moved from Milestones 2 and 4 to Milestones 6-12 and 16-27.

None of the changes has an impact on the purposes nor on the scientific objectives of Milestone 25.

M25.d) Any critical implementation and corrective measures taken.

Nothing to be reported.

The section concludes with a summary of the status of the Milestones planned during the reporting period in order to facilitate the assessment of the ETS and the MUR.

<i>MILESTONE</i>	<i>Description Milestone</i>	<i>Status</i>	<i>% completion</i>
M 1	Management and coordination of the R&I Programme by the Hub	Partially completed	14%
M 2	Recruitment of fixed-term researchers and technologists	Partially completed	83%
M 4	Recruitment of PhD students and research collaborators	Partially completed	63%
M 6	Design of the R&I Programme	Partially completed	50%
M 10	Dissemination Year 1	Partially completed	45%
M13	Open Calls Year 1	To start	0 %
M 16	Design and set-up of Living/Fab/Joint Labs, Use cases, and Incubation and (pre)-Acceleration Programmes	Partially completed	36%
M 22	Design of the Education and Training Programmes	Partially completed	50%
M 25	Design of the territorial Observatories	Partially completed	36%

SECTION 4 – IMPACTS (ONLY IN CASE OF FINAL REPORT)

This section shall not be considered in intermediate reports.

SECTION 5 - STATEMENT ON THE MAINTENANCE OF REQUIREMENTS

The Implementing Entity declares that none of the Applicants are in any of the following conditions:

- be among the companies that have received and subsequently not returned aid identified as illegal or incompatible by the European Commission;
- being in a condition to be a firm in difficulty as defined by Article 2 of Regulation 651/2014 and the Guidelines on State aid for rescuing and restructuring non-financial firms in difficulty, as set out in Notice 2014/C 249/01 of 31 July 2014, as amended;
- other specific requirements provided by the relevant European or national regulations;
- delinquency and failure to repay the pre-amortization interest or instalments of financing granted, except for situations related to the issuance of specific emergency measures aimed at introducing temporary moratoria on the payment of mortgages and financing;
- bankruptcy of the performing entity or opening against it of other bankruptcy proceedings, without prejudice to the possibility for the MUR to assess the compatibility of such proceedings with the continuation of the project.

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Any special situations referring to the above points to be brought to the attention of the MUR

Nothing to be reported.

The Legal Representative
(digital signature)

ATTACHMENTS

The following documents are also attached to this technical report:

All.1 - Declaration of compliance with the DNSH principle signed by the implementing entity.
