



**Total Resource and Energy Efficiency  
Management System for Process Industries**

## **Deliverable 8.2**

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**Report on communication activities – 1<sup>st</sup> year**

**Date:** 19/09/2016



**Total Resource and Energy Efficiency Management System for Process Industries**



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## 1. Executive Summary

The 1st Report on communication activities (D8.2), describes and analyze the specific communication activities made by the MAESTRI's consortium in the initial phase of the project.

It is designed to complement and report communication activities and result which the consortium planned in the D8.1 "Communication and Dissemination Strategy" at the beginning of the project. As the general aim of the Communication will be shortly reclaimed in the "Objectives of the Communication" below, the current deliverable provides an account of methods and activities undertaken during this 1st year of the MAESTRI project.

In achieving this outcome, the current deliverable will not replicate the aims contained in D8.1 but rather seeks to monitor and report on delivered communication activities and their relative impact

## 2. Objectives and overview of the dissemination

All along the MAESTRI project a continuous monitoring and evaluation of dissemination and exploitation activities will be pursued in order to enhance impact on project's activities. A fundamental enabler to achieve high-performance dissemination and exploitation is the structure of the MAESTRI consortium. Within the project timeline at least two Exploitation Strategy Seminars are planned. The first one has taken place within the first six months of the project (see D7.1), in order to support the consortium set realistic, achievable and focused actions. The second will be scheduled once the first tangible results are ready for a deployment stage, in order to recalibrate the consortium's focus, towards maximising the potential of results exploitation.

The connections with the national and regional entities that participate in the SusChem Platform (European Technology Platform for Sustainable Chemistry) and SPIRE PPP, has been explored by the consortium aiming also to enhance activities in this field. These initiatives intend to contribute for the reindustrialisation of Europe with focus on sustainability and excellence levels of processing efficiency in European and particularly at a regional level.

Due the fact that the project involves the generation and sharing of potentially private and confidential data, special focus will be allocated in the security and privacy of collaboration and information exchange. The project data management platform will feature advanced security protocols and the data will be encrypted. This is essential due to the fact that intellectual property and data regarding the pilot cases will be exchanged between the partners.

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The impact of dissemination of the project will be addressed by multiple actions, namely to inform European process industry stakeholders, research communities (RTOs and universities), as well as system and equipment developers for process industry, of the achievements of the project and of the benefits. They will derive from the adoption of an innovative and flexible platform to enable the assessment of the main inefficiencies regarding resource and energy consumption, and consequently evaluate and support the decision making process on the

implementation of added-value improvements. Dissemination activities will support the exploitation and take-up the project outcomes.

Apart from the dissemination of project's results through project website, social networks, partner's annual reports, etc., targeted dissemination actions are envisaged. These targeted actions will involve key stakeholders at European level from academia, industry and government. Each partner will remain committed and mobilise stakeholders to multiply the effects of the dissemination actions throughout the project in his country/region. The consortium includes 15 partners from 5 EU countries (Portugal, Germany, Italy, UK and Poland) with strong presence in the process industry related events, which will support the dissemination strategy around Europe. A continuous improvement on external dissemination strategy will be realized to ensure a mid- and long-term impact by informing the target audiences.

The foreseen activities related with the dissemination strategy are described in the following table, note that most of the dissemination will occur during the last 9 months of the project, when all the public results and the demonstrators will be ready.

Month	Activity	Participants/Target Audience	done
-12 - 0	Creation of awareness of the project objectives through the Project Consortium; Spreading and refining the project ideas during the proposal preparation	European process industries; European process equipment manufacturers; European process monitoring and control systems providers; Research Community	✓
1 - 6	Web site set up, project presentation Appearance in social networks (e.g. LinkedIn) Newsletter (Issue 1) in electronic form, reporting the project highlights Establishing of User Interest Groups (UIG) of the process industry companies, potential system users	European process industry ICT - process monitoring and control systems providers RTD community	✓
7 - 12	General project information on internal and external seminars, in related communities, including the UIGs, relevant professional associations etc. Leaflet describing the initial results. Newsletter (Issue 2)	Process equipment manufacturers and users – potential system users RTD	✓
12- 36	Paper presentations on 2-4 conferences Europe-wide and journal articles <sup>1</sup>	Wider European process industry community; Promotion Entities, Standardization Bodies; RTD community;	

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<sup>1</sup>Well-known scientific and industrial journals, magazines, newspapers (e.g. IEEE Transactions, Elsevier Journals, ACM series) will enable dissemination through technical and research papers in. The highest impact journals within each sector will be the first option for publication.

Month	Activity	Participants/Target Audience	done
	Workshops and seminars for Intermediaries Newsletter (Issue 3) Workshops and seminars for presentation of the early prototype	ICT (process monitoring and control) community – vendors; Policy makers for environmental aspects	
30- 48	Business case presentations – Demonstrators, Web page updates Newsletter (Issue 4) reporting the major results. Publishing of the project results in at least 3 targeting journals Direct contacts with at least 20 control system manufacturers Final Public Report	Wider European process industry community; RTD community (world); Policy maker creators, Wider society	

The main goal of such a plan will be to strengthen the vision and results of the project on a large scale by establishing a well-defined strategy that will include: a) the definition of the specific target groups as well as the actions required to communicate with them; b) identification of the right dissemination tools to be developed, messages to convey, channels to be exploited, geographical coverage of knowledge transfer and dissemination activities; and c) proper timing and level of intensity of all activities by establishing an efficient actions timetable.

The target audience for dissemination includes different process industries, monitoring and control systems vendors, their business clients, RTD community, SME with R&D capacities and broader society are within the target audience. It should be noted that the end users of the platform will be mainly ICT companies, RTD's, SME with R&D capacities and software companies, since this type of organizations are more prone to be able to use the platform and preform the proper developments over its basis, as well as install and connect all the metring devises with the platform and develop the customized interfaces. Besides the ICT's and software developers, SME's, RTD's and other bodies related to consulting services, focused on process optimization, efficiency and eco-efficiency assessments, are also a target group for the vast services that they can offer with the platform, in the customization and deployment of the Total Resource and Energy Management System. The pilot implementations in real industrial production units are the end users of the Total Resource and Energy Management System, with the software integration and direct feeding of data, for more rapid assessment of systems efficiency and improvement actions execution on the most inefficient situations.

- 6 Within the process industries pilot implementations the target groups are: (1) TopManagement; (2) Middle-Management; (3) Plant manager; (4) Production/Energy/Environment/Quality/Maintenance managers; (5) Companies financial department; (6) Operators. Such target groups are foreseen, since the software will support decisions at many levels and will assist the companies to enhance their sustainability through resource and energy efficiency improvements, which should take place on the shop floor and

be part of the management's strategic vision for sustainable manufacturing and environmental and economic sustainability.

Consortium has elaborated a dissemination strategy in detail during the development of the Plan for the exploitation and dissemination, however, to assure maximum commitment of project partners over the entire project duration and after its completion, the dissemination activities were already planned along the proposal preparation.

All publications or any other dissemination relating to foreground will include the statement (translated into the language of the dissemination activity) to indicate that the foreground was generated with the assistance of financial support from the EC. All dissemination activities will be reported in the Plan for the exploitation and dissemination of the results, including sufficient details/references to enable the Commission to trace the activity.

An appropriate approach to communication will be furthermore defined updating the communication plan, to ensure a high visibility of the project actions and help maximise the impact of the project results. The communication measures for promoting the project and its results during the period of the grant, as described above under the dissemination topics, will be focussed on creating and maintaining direct contacts with as wide as possible communities potentially interested for the project results. The communication ways will include, not being limited to, direct contacts with UIG members, participation at different scientific events, the related fairs and contacts and social networks. To support to communicate issues related to the project of the importance for wider community, the consortium will use the articles also in newspapers and popular journals dealing with technical topics (content).

### Internal Dissemination within partners' networks

Each of the consortium partners will organise seminars as well as internal meetings during the project development to inform their employees about the project achievements and business benefits for their organisation, specifically addressing potential multipliers, capable of spreading the messages over the entire community of interested organisations. The main aim of the internal dissemination will be to foster a wider reuse of results within the partner's institutions, while the key employees will be encouraged to monitor the project achievements by regularly visiting the MAESTRI Web site. Wider internal dissemination (outside the immediate groups involved) will have a substantial internal audience as well as an external impact by close cooperation within network environments, as presented in next Table.

Audience	Potential audience / Dissemination multipliers	Number of participants
Applied research institutions and universities	<p>Researchers, academics, consultants and learners</p> <p>Researchers, lecturers and learners, students</p>	600 persons dedicated to knowledge transfer at universities and RTD institutions

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Audience	Potential audience / Dissemination multipliers	Number of participants
<b>Process Monitoring and control equipment vendors</b>	Companies and their business partners, as well as a number of networks to which they belong	About 100 designers and service providers as well as shop-floor experts at 3 industrial partners and their customers who may be involved in collaborative PSS engineering; About 500 experts in their networks
<b>ICT providers</b>	Consultants, IT developers, IT researchers	About 100 persons dedicated to commercial and research activities

**Relation to SusChem platform and SPIRE PPP:** The consortium has already established strong connection to **SPIRE PPP** and will assure that the work to be carried out will be in line with further MANUFUTURE strategy.

**Project Web Site:** A project web site has been established early in the project to provide wide dissemination of the results and papers, and information about the project. All public deliverables will be available on the internet site including the MAESTRI project presentation and leaflet.

**User Interest Groups:** UIG be established in 5 European countries (Portugal, Germany, Italy, UK and Poland. Seminars will be held in these 5 countries to publicise the project to the UIG members, and they will be kept informed of progress. The seminars will be very useful in getting feedback from other organisations. There will be two workshops in each country during the project (in Italy and Portugal we foresee 3 workshops/training sessions). The workshops differ on the basis of the target public. There will be workshops/training sessions aimed to involve the general public, as potential multipliers of project outcomes. In this typology of workshops professionals, practitioners and company technicians/middle managers will be involved. Another typology of workshops/training sessions will be specific and organised in potential companies and sectorial associations and clusters interested in replicate the MAESTRI system. The description of training activities is detailed in WP 8. The interest that MAESTRI subject raises in different sectors is evident in the received letters of intent of support, that include: 4 Sectorial Platforms [DECHEMA (Society for Chemical Engineering and Biotechnology), PRODUTECH (Production Technologies Cluster) and ENEGRYIN (Competitiveness and Technology Cluster for Energy) and WCCT (Wroclaw Center for Technology Transfer)] and 2 companies [SACMI IMOLA S.C. and Pirani Srl].

**Video Demonstrators:** Video demonstrators will serve as a powerful tool for project results dissemination. They will be made available in different forms (as case study, movies and life demonstrators for visitors).

**Social networks:** LinkedIn, Youtube Channel and Twitter as Electronic information channels (using also partners' own websites, relevant external ones, online journals and electronic newsletters) will be used to disseminate the project results to circles of individual contacts and wider potentially interested communities, respectively.

**Intermediaries:** Part of the project strategy is to bring in European platforms, organisations and associations, which support their industrial communities. The aim is to work with these organisations for dissemination, wider project impact, and for possible leveraging activities (these organisations either have some funds available to augment the project, or are able to



apply for government funding). These intermediaries will disseminate project publicity and other documents, and will provide seminar and exhibition space for project dissemination, e.g. ATB disseminates results in co-operation with the Innovation Relay Centre AXON in Bremen. ATB will also approach Government and regional support organisations. Both ISQ and INEGI have strong connections with most of the Portuguese Technological Centres (Metals, Textiles, Mouldmaking, special Tooling, Plastics, Leather, ...) which will be used to for the dissemination of project results within specific sectors. ISQ and INEGI have will also use their strong connection to sectorial clusters and platforms, such as ESTEP (European Steel Technology Platform) DECHEMA (Society for Chemical Engineering and Biotechnology), PRODUTECH (Production Technologies Cluster) and ENEGRYIN (Competitiveness and Technology Cluster for Energy) to increase the dissemination.

**EC dissemination activities.** The project will make use of the dissemination activities undertaken by the EC and by EC-funded projects in Horizon 2020, and other EC programmes. All possibilities offered for dissemination will be analysed and the project will use each opportunity that looks promising to enable an effective and Europe-wide dissemination of the project's experiences and results.

**Journals/Conferences/Exhibitions.** Journal articles and other publications will be part of the dissemination activities. All partners will publish papers on the project results, and will present the project at European and national conferences, conventions and exhibitions, both RTD-oriented ones and those more oriented to process industry. The initial list of conferences that will be targeted for publication of papers and articles includes, but is not limited to: Global Conference on Sustainable Manufacturing, CIRP, etc. Moreover, the International Journals with high Impact Factor will also be targeted from prestigious international publishers (Elsevier, Springer and Taylor and Francis). Specifically, the following journals and trade magazines will be considered for publication: J. of Control Engineering, J. of Cleaner Production, J. of Manufacturing Science and Technology, Int. J. of Sustainable Manufacturing, Energy Technology, J. of Material Cycles and Waste Management, Int. J. of LCA, Flexible Services and Manufacturing J., among others. With regard to the dissemination of results through scientific publications, open access to the research results and data shall apply under the terms and conditions defined in the IPR Help Desk documents (*as presented in Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020, Version 16 December 2013*) which are to be laid down in the consortium agreement. Thereby, the consortium will take care to lay down terms and conditions under which open access to such results shall be provided, and taking into consideration the legitimate interests of the participants and any constraints pertaining to data protection rules, security rules or intellectual property rights. However, open access requirements in no way imply an obligation to publish results. The decision on whether or not to publish lays entirely with the project participants. Open access becomes an issue only if publication is elected as a means of dissemination. Moreover, open access does not interfere with the decision to exploit research results commercially, e.g. through patenting. Indeed, the decision on whether to publish open access must come after the more general decision on whether to publish directly or to first seek protection.

### 3. Target groups

Stakeholder engagement is key to the success of any initiative. One of the principal tasks of the MAESTRI Consortium is to define and agree upon stakeholder and target groups to be addressed by the dissemination and communication activities.

This task will form the basis of engaging stakeholders through interviews, focus groups, workshops and other means throughout the project and will ensure that the consortium's analyses, findings and recommendations are based on stakeholder reality.

The target groups of stakeholders can be divided into the following group:

- **Governmental/Policy makers:** This includes representatives from different levels of governmental organisations such as the European Commission, Member State governments or local governments.
- **Industries and Associations of industries:** This includes private companies providing security solutions through research and development as well as manufacturers, suppliers, distributors, service providers, vendors, system integrators, industry associations and professionals at the frontline of addressing security needs.
- **Consultants and supporting companies:** companies which support industries with specific services (e.g. energy audit). The consortium can leverage on their customer networks to increase the effectiveness of dissemination.
- **Research institutions:** This includes organisations whose primary focus is higher education and research, such as universities and other academic institutes.
- **The media:** includes all kinds of communications platforms like television, radio, newspapers, magazines, journals, blogs, and websites.
- **General public**

The following countries are represented in MAESTRI by individual partners: Germany, Italy, Poland, United Kingdom and Portugal.

It is expected that dissemination at the national and regional levels will be more intensive in these countries than other countries not represented in MAESTRI, although efforts will be made to disseminate outputs through additional existing networks.

Each partner has been provided with the table inserted below, in order to fill the addresses of the relevant actors in their networks. The table will be updated during the whole project duration.

#### 4. Internal Dissemination tools

The internal communication within the MAESTRI was developed ensuring the involvement of all project partners in communication, and it is developed among project partners through electronic communication, the project website, partner meetings, etc.

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For the successful advancement of the project, the communication and cooperation among partners is accomplished with the use of following communication tools: e - mail, the website of the project, videoconference, work meetings, telephone, and fax. The tools below are used in internal communication between the MAESTRI partners:

2.2.1. Fraunhofer BSCW portal

All partners have to work together remotely. By using BSCW portal, a private online system, the collaboration from different locations is more fluent, but also more productive and organised.

### 2.2.2. Citrix GoToMeeting

This conferencing software makes it simple and cost-effective to hold online meetings with all the partners.

### 2.2.3. Consortium Internal Mailing List

The contacts between the members of the consortium of the project are maintained and facilitated by an internal mailing list. This mailing list was adapted to all the personnel actively working on the project, allowing a practical internal dissemination of information and an overall increase of the efficiency of the consortium.

### 2.2.4. Partner Meetings

The partner meetings and the advisory board are providing an effective mechanism for formative project evaluation. During the partner meeting (every six month), an overview of the active participation of all the partners of the project is given, involved in the explanation of the state of affairs of their contributions within the project, through power point presentations.

During the advisory board, all the members receive first-hand information concerning the on-going of the project..

## 5. External Dissemination tools

### 5.1. VISUAL IDENTITY

With the aim of making each univocally identifiable business, product or result of the project, we decided to develop a coordinated visual identity used by each partner of Maestri. Every document, report and result must bear the logo of the project, the project logo SPIRE - Sustainable Process Industry through Resources and Energy Efficiency and the disclaimer as required between the obligations to the European Commission.

### 5.2. DISCLAIMER

The disclaimer must appear on all official communication of the project and be entered in English and depending on the language basis of deliverables. Addition to the assumption of responsibility, the disclaimer must also contain the reference to financing by the Horizon 2020 program with the number of the grant agreement. It shows the official name.

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"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 680570.

The sole responsibility for the content of this document lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European

Commission are responsible for any use that may be made of the information contained therein."

The disclaimer mentioned above must be used together with the emblem of the European Union.

The logo of the SPIRE programme, as well as the Disclaimer, will appear on all official communication of the project, in all reports, on the deliverables, on the website, and on the training materials produced.

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The program logo SPIRE, in extended, compact, right angled and left angled versions, is the follows:

**SPIRE** Sustainable Process Industry through  
Resource and Energy Efficiency



Sustainable Process Industry through  
Resource and Energy Efficiency

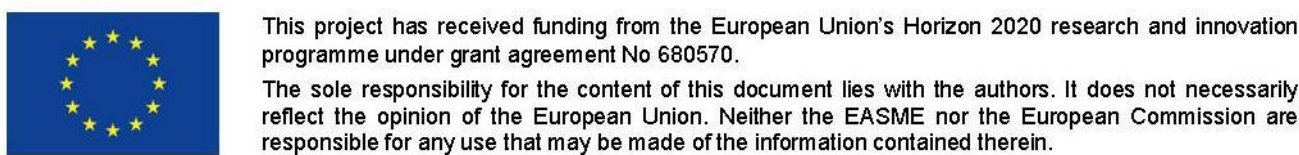
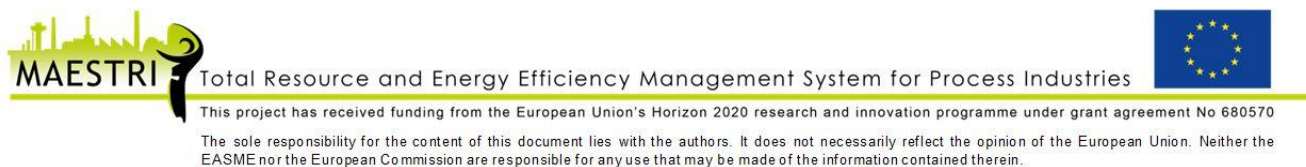


As required by the "Horizon 2020 Annotated Model Grant Agreement" available at: ([http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/amga/h2020-amga\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf)), the emblem of the European Union will be as follows and will be used together with the disclaimer.

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The disclaimer with the emblem of the European Union and the MAESTRI official logos will be present in the following versions:



### 5.3. MAESTRI LOGO

The official logos developed for the project are two: a graphics-only version and a version with the extended title of the project. Both types have a version for printing on white and a version for printing on black background. The different versions are as follows:



### 5.4. TEMPLATES

In order to develop a coordinated project visual identity, all Maestri template see the project's logo and colors. The consortium has agreed to put the logo of all partners only in external communications.

Afterwards it is shown in the attached template for the various products of the project Masters:

1. **newsletter:** see attachment T8.
2. **deliverable:** if the product is a document, it must have the cover as shown in the model attached T1. For any other form in which it is presented a product of the project, must be present:
  - project name extensively: "MAESTRI - Total Resource and Energy Efficiency Management System for Process Industries"
  - acronym: MAESTRI,
  - No of grant agreement: 680570
  - Project logos (one of those listed in Cap. 5)
  - Partners logos
  - EU logo
  - SPIRE logos
  - disclaimer
  - reference to WP and/or Deliverable
  - WP leader
  - format (paper, digital...)
  - language
  - website.
- **Training material:** the title page of the printed materials will be developed on the model of Annex T5 and T6; in every case the material should contain:
  - project name extensively: "MAESTRI - Total Resource and Energy Efficiency Management System for Process Industries"
  - acronym: MAESTRI,
  - No of grant agreement: 680570
  - Project logos (one of those listed in Cap. 5)
  - Partners logos
  - EU logo
  - SPIRE logos
  - disclaimer
  - reference to WP and/or Deliverable
  - WP leader
  - format (paper, digital...)
  - language
  - website.
  - Documento object

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The same recommendations apply for the cards of enrollments, attendance certificates and any other official documents related to the formation.

3. minute: see attachment T2
4. meeting attendance register: see attachment T3
5. power point: see attachment T4 and T6



6. Leaflets: see attachment T7.

The font type to be used will be the Century Gothic.

## 5.5. PROJECT SITE

This tool is devoted to enhance communication of the project results to our target audiences. Via website visitors are able to access further in-depth information about project results, PR materials, all publications of the project, services and tools, as well as detailed partner information. Announcements about the national workshops and other events can also be found there. The website will be updated with relevant news from the field of the project



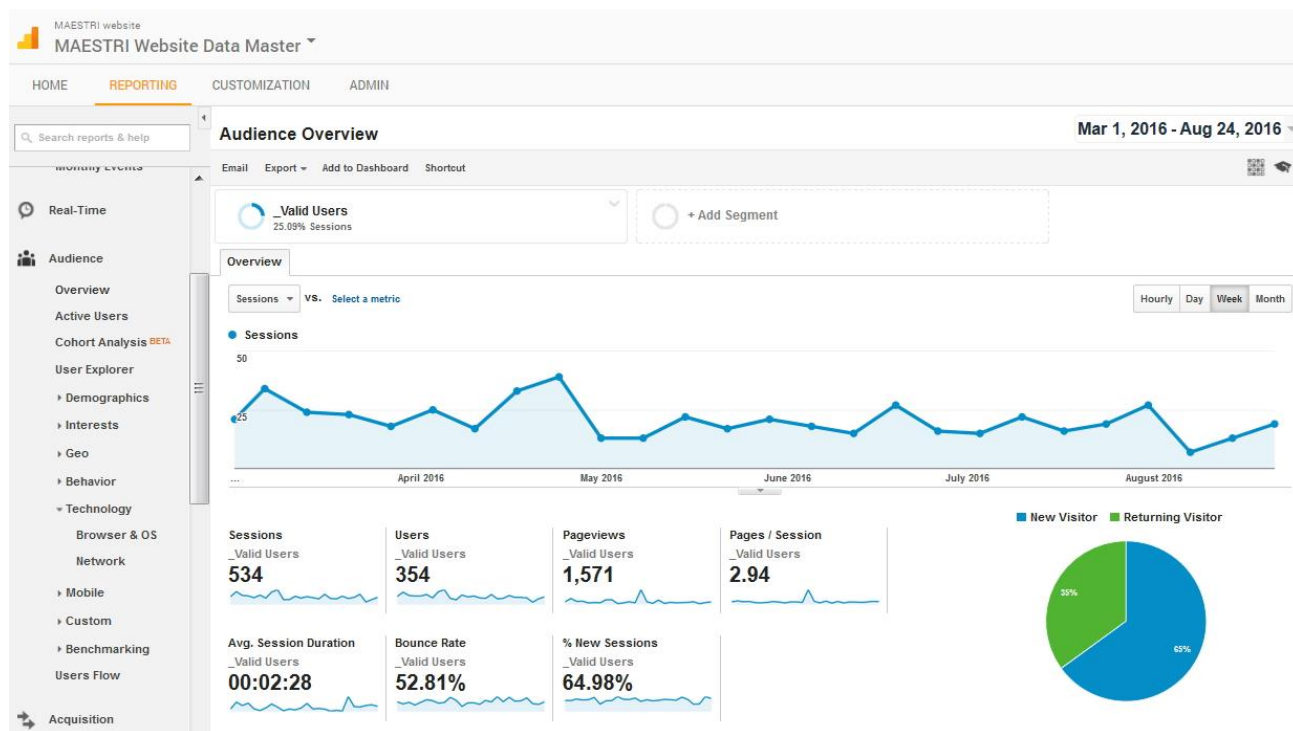
### MAESTRI - a H2020-Project under the SPIRE-PPP Initiative

The MAESTRI project aims to advance the sustainability of European manufacturing and process industries. This is done by providing a management system in the form of a flexible and scalable platform, and to guide and simplify the implementation of an innovative approach, the Total Efficiency Framework. The overall aim of this framework is to encourage a culture of improvement within process industries by assisting the decision-making process, supporting the development of improvement strategies and helping define the priorities to improve the company's environmental and economic performance. Its development and validation will be achieved through application in four real industrial settings across a variety of activity sectors.

The Total Efficiency Framework will be based on four main pillars to overcome the current barriers and promote sustainable improvements:

- a) an effective management system targeted at process and continuous improvement;
- b) efficiency assessment tools to define improvement and optimisation strategies and support decision-making processes;

Referring the monitoring of the website visits, the image below summarises the performance of this communication tool. <http://maestri-spire.eu/>



### 5.6. MAESTRI On TWITTER



As Twitter is a quick mode to link different informations and results from the Consortiums' work and from other relevant projects, results and specialized magazines, it is constantly used by the MAESTRI project (and linked in the project website) to spread useful information to target users.

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Acutally, the selected hashtags for the project's official twitter accounts are:

**#MAESTRI; #H2020; #SPIRE; #Lean; #IoT; #LCA; #IndustrialSymbiosis; #LeanManufacturing; #efficiency; #industry40**

After one year to the start of the project, twitter page has increased followers and followings.



**Tweet: 435**  
**Following: 806** (it was 405: +100%)  
**Follower: 434** (it was 140: +310%)  
**Likes: 247** (it was 135: +180%)

<https://twitter.com/MaestriH2020>

### 5.7. MAESTRI on LINKEDIN

On LinkedIn, MAESTRI is diffused using a 'group'. A group is a virtual space in which group members can post, provide comments and discuss on different topics. An official linkedin group has been created.

In the official linkedin group it is possible for every member to post contents related to the project and to comment posts and start discussion.

Other useful activities are related to the "reply" of post from other useful existing groups field-related with the MAESTRI project

The MAESTRI staff in charge to manage the group is:

- Giovanni Pedè, SINERGIE – group owner
- António J. Baptista, INEGI
- Emil Lezak, IZNAB
- Ricardo Rato, ISQ

The managers are allowed to moderate discussion and posts and to send invitation to new members.

<https://www.linkedin.com/groups/8404326/profile>

### 5.8. MAESTRI FLYER

The official leaflet of MAESTRI project.

**The project**  
 The MAESTRI project aims to advance the sustainability of European manufacturing and process industries. This is done by providing a management system in the form of a flexible and scalable platform, and to guide and simplify the implementation of an innovative approach, the Total Efficiency Framework.

The overall aim of this framework is to encourage a culture of improvement within process industries by assisting the decision-making process, supporting the development of improvement strategies and helping define the priorities to improve the company's environmental and economic performance. Its development and validation will be achieved through application in four real industrial settings across a variety of activity sectors.

The Total Efficiency Framework will be based on four main pillars to overcome the current barriers and promote sustainable improvements:

- an effective management system targeted at process and continuous improvement;
- efficiency assessment tools to define improvement and optimisation strategies and support decision-making processes;
- integration with a toolkit for Industrial Symbiosis focusing on material and energy exchange;
- an AI software Platform, based on the Internet of Things (IoT), to simplify the concept implementation and ensure an integrated control of improvement processes.

Over a period of 4 years, the project will deliver exploitable results structured into technological outputs (including innovative products, processes and services tailored to industrial end-users) and structured software (including technical, economic, legislative and policy solutions synergistically combined).

**Project Partners**  
 ISQ, ineqi, PSMB, AZE, Fraunhofer, UNIVERSITY OF CAMBRIDGE, SINERGIE, IZNAB, IMP, MCG, WOKLEE, IANOMER, DMS, GUN PLAST

**Project vision**  
 Manufacturing Industries should deliver competitively priced goods and services that satisfy human needs and bring quality of life, by finding progressively smarter and finer trade-offs between business and sustainability concerns.

**The approach**  
 Based on a holistic approach which combines different assessment methods and tools, the overall purpose of the framework is to generate improvement on a continuous basis and increase eco-competitiveness by fostering sustainability in routine operations.

It's conceptual approach will be based on a life cycle perspective, centred on models for dynamic simulation and optimisation of both individual and complex systems, to better understand processes and the opportunities to add value. The life cycle approach is important to avoid problems arising from one life cycle stage to another.

We also believe that in order to develop more resource and energy efficient processes, utilize waste streams and improve recycling in a sustainable manner, modelling and assessing all the interacting value chains is essential. However, despite the environmental, economic and social improvement potentials by sharing resources (e.g. energy, water, residues and recycled materials), it is essential to understand and assess resource and energy efficiency in order to optimize production systems.

**Overall concept**  
 The main concept of the MAESTRI project consists in the development of a flexible and holistic integrated framework to foster manufacturing sustainability in process industry. The 'Total Efficiency Framework', the overall aim of the 'Total Efficiency Framework', is to promote improvement culture within process industries by assisting decision-making process, supporting the development of improvement strategies and helping on the definition of priorities to improve the company's environmental and economic performance.

**Objectives and results**  
 In connection with SPIRE and ALPHE, the main objective of MAESTRI is to create both concepts and tools capable to achieve the prosecution and adoption of energy and resource efficiency in production systems of any company (large, medium or small). For this reason, MAESTRI project aims to develop a Management System (MS) to promote and simplify the implementation of the Total Efficiency Framework on a continuous basis. The framework intends to enable the identification and assessment of the main inefficiencies in resource and energy consumption, and consequently support the decision making process for the implementation of added-value improvements.

In order to test and validate the developments of this project, 4 pilot implementations in real industrial settings will be conducted.

Over a period of 4 years, the MAESTRI project will allow to reach a wide range of relevant exploitable Results (R), which can be mainly clustered into technological outputs, that are eco-innovative products, processes and services tailored to industrial end-users, and structured solutions – involving technical, economic, legislative and policy solutions synergistically combined – exploitable by cross-sectorial multi-stakeholder based value chains.

**Overall methodology**  
 In line with the approach, the project methodology consists on the development of 9 main activities supported by a strong involvement of industrial partners and stakeholders. These activities are organized into 9 Work Packages:

- WP1 - Requirements (Leader: IEI)
- WP2 - Efficiency Framework (Leader: INEIQ)
- WP3 - Management System (Leader: IIS)
- WP4 - Industrial Symbiosis (Leader: IZC/M)
- WP5 - IoT Platform development (Leader: IZM)
- WP6 - Pilot Implementation and Validation (Leader: ISQ)
- WP7 - Exploitation and sustainability actions (Leader: IZAB)
- WP8 - Communication and Dissemination (Leader: SINERGIE)
- WP9 - Coordination and project management (Leader: ISQ)

The official SPIRE projects brochure.





Total resource and energy efficiency management system for process industries

the AIM

MAESTRI aims to provide a resource and energy management system in the form of a flexible and scalable platform to promote and simplify the implementation of an innovative approach: the Total Efficiency Framework. Based on a holistic approach, which combines different assessment methods and tools, the Framework generates improvement on a continuous basis and increases eco-competitiveness by fostering sustainability in routine operations.

the CONCEPT

The Total Efficiency Framework will encourage a culture of improvement within process industries by assisting decision-making processes, supporting the development of improvement strategies and helping define the priorities to improve the company's environmental and economic performance. The Framework's development and validation will be achieved through application in four real industrial settings across a variety of activity sectors. It will be based on four main pillars: (1) an effective management system targeted at process and continuous improvement; (2) efficiency assessment tools to define improvement and optimisation strategies and support decision-making processes; (3) integration with a toolkit for Industrial Symbiosis focusing on material and energy exchange between plants and operations; (4) a software platform, based on the Internet of Things, to simplify the concept implementation and ensure an integrated control of the improvement process.



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement n° 680570  
www.maestri-spire.eu



5.9. MAESTRI POSTER

Poster presentation for Industrial Technologies 2016 held in Amsterdam on June 22-24, 2016.

**MAESTRI**  
RESOURCE AND ENERGY EFFICIENCY FOR PROCESS INDUSTRIES

**1. DOING MORE WITH LESS**  
Process industries represent the foremost part of the manufacturing base, around 20% of the total European manufacturing industry, which include:  
- More than 450,000 individual enterprises (EU27)  
- Employment of around 8 million citizens  
- Generation of more than 1,600 billion € turnover.  
Process industries are largely dependent on resources imports from international markets. Industry accounted for more than a quarter of total energy consumption in 2014 in Europe.  
This represents both an opportunity and responsibility of this sector contribution to the sustainability challenges of European societies, being imperative to drastically reduce the environmental footprint and increase competitiveness and production systems efficiency.

**2. THE GOAL**  
MAESTRI project aims to advance the sustainability of European manufacturing and process industries by providing a management system in the form of a flexible and scalable platform to promote and simplify the implementation of an innovative approach, the TOTAL EFFICIENCY FRAMEWORK.

**3. PROJECT VISION**  
Manufacturing industries should deliver competitively priced goods and services that satisfy human needs and bring quality of life, by finding progressively smarter and finer trade-offs between business and sustainability concerns.

**4. GAPS AND SOLUTIONS**  
Three main gaps for an effective implementation of energy and resource management were identified. To address these gaps, MAESTRI will develop an innovative and integrated platform combining holistic efficiency assessment tools, a novel management system and an innovative approach for industrial symbiosis implementation.

**5. TOTAL EFFICIENCY FRAMEWORK**  
The overall aim is to promote improvement culture within process industries by assisting decision-making process, supporting the development of improvement strategies and helping on the definition of priorities to improve the companies' environmental and economic performance.  
This approach will be based on four main pillars:  
1. An effective Management System targeted for process and continuous improvement;  
2. Efficiency assessment tools to define improvement and optimization strategies and support decision making process;  
3. Integration with Industrial Symbiosis concept addressing material and energy exchange;  
4. An IoT Platform to simplify the concept implementation and ensure an integrated control of improvement process;

**6. OBJECTIVES**  
MAESTRI main objectives:  
• Develop a software platform, incorporating the Total Efficiency Management System;  
• Demonstrate eco-efficiency decision support methodologies/tools/software and systems in real industrial environments;  
• Develop models to identify and simulate appropriate consumption patterns and waste flows;  
• Evaluate and manage energy and resource efficiency of industries;  
• Investigate and adopt real time metering for energy and resource flows by adopting the Internet of Things (IoT) concept;  
• Definition and monitoring of relevant KPIs aiming the identification of potential improvement initiatives and decision support making process;  
• Adopt a new industrial symbiosis approach;  
• Support the implementation of SPIRE PPP RoadMap;

**7. IMPACTS**  
**TECHNOLOGICAL**  
• Highly replicable and flexible solutions because of the software platform's flexibility and scalability;  
**ECONOMIC & SOCIAL**  
• Strengthen European process industries competitiveness;  
• Improve resource efficiency and energy efficiency performance by 20%;  
• Reduce energy and resources costs by over 20%;  
• Creation of more robust and highly productive organisations and better jobs;  
**ENVIRONMENTAL**  
• Reduction of process industry environmental footprint;  
• Reduction of residues disposed of as waste by maximizing the "waste-to-resource" ratio via in-plant symbiosis and outside the plant (value-chain symbiosis);

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Poster presented during the EPSRC Industrial Sustainability Conference of Cambridge on July 7, 2016

**Value creation through Industrial Symbiosis**

**INDUSTRIAL SYMBIOSIS IN MAESTRI PROJECT**

**Conceptual integration of Industrial Symbiosis into the Total Efficiency Management Framework**

The MAESTRI project aims to tackle improvements in the impact of manufacturing activities at both company level and system level in order to achieve significant results.

A holistic approach will enable process monitoring and optimization, as well as focus on an integrated and cross-sectoral interaction that can have a greater impact within the process industry.

MAESTRI project encompasses an Industrial Symbiosis (IS) approach, which, within the scope of sustainable manufacturing for process industries, fosters the sharing of resources (energy, water, residues and recycled materials) between different processes of a single company or between multiple companies.

**WORK IN PROGRESS**

**Benefits of adopting Industrial Symbiosis approach**

- Economic benefits from savings in inputs costs and waste management and from new opportunities of revenues generated by waste and by-products.
- Environmental benefits due to reduction in resource needs, reuse and recycling of waste streams and pollution control.
- Additional business benefits derived from new and/or improved relationships with other agents and the community, green marketing, social corporate responsibility and the creation of new market opportunities.
- Benefits for the community as a source of new employment, securing existing jobs, improving local ecosystems and of a cleaner and safer environment.

**Challenges and success factors identification**

Based on the analysis of literature and the review of state of practice.

- Opportunity identification & definition**
  - Opportunities need to take advantage of the nature of the waste / by-product; however, its nature is also a source of limiting factors.
  - Efforts to analyse and characterize themselves their waste streams, which may vary with changes in production plans.
  - Awareness of the difficulties of dealing with their waste discourages the search for opportunities for those particular waste types.
- Exchanges design & planning**
  - Main challenges are related to partner identification and to legislation barriers to trade a particular types of waste, either due to non possible trade or to need to involve intermediaries.
  - Success factors at this stage:
    - Keep a learning approach to explore different designs.
    - Design a solution that maximizes the value of waste/by-product.
    - Collaboration with competitors to achieve volume.
- Exchanges implementation & progress**
  - Success factors in network management, coordination and evolution:
    - Trust and cooperation environment
    - Institutional capacity
    - Mutually beneficial transactions
    - Social capital and embeddedness
    - Joint network vision
  - Challenges in network resilience:
    - Entrants / exits of companies in network
    - Community reaction and sector trends

**Tools to fully exploit Industrial Symbiosis**

There is a need for tools that can support companies to identify and evaluate, at early stages of ideation, the different possibilities for their waste streams and by-products.

**NEXT STEPS**

- Build a library of case studies**  
Collect a set of different case studies of industrial symbiosis and make them available through MAESTRI dissemination platform.
- Build an open source waste database**  
Create a database of exchanges, based on findings from the analysis of case studies through the use of the MAESTRI management system.
- Develop a toolkit for industrial symbiosis**  
Create, test and refine a set of tools to support industrial symbiosis activities, in particular companies could use the toolkit to identify opportunities to obtain higher value from their waste.

**HOW TO ENGAGE?**

We are working closely with companies!

If you would like to:

- explain us your approach towards Industrial Symbiosis;
- include your company case in the library of case studies;
- participate in the toolkit development and testing activities.

To find out more about industrial symbiosis activities within MAESTRI project and how your institution could participate please contact: [maestri@spire.eu](mailto:maestri@spire.eu)

**4-year project | 01.09.2015 – 31.08.2019**  
 15 partners from 5 different countries  
 + 30 researchers / industrialists participating  
 Total effort: 787.25 Person-months

Dr Maria Holgado | [mh769@cam.ac.uk](mailto:mh769@cam.ac.uk)  
 Centre for Industrial Sustainability  
 University of Cambridge

5.10. MAESTRI NEWSLETTERS

Official first newsletter # 1 of MAESTRI project.

**MAESTRI** Newsletter #1

**Project vision**

“Manufacturing Industries should deliver competitively priced goods and services that satisfy human needs and bring quality of life, by finding progressively smarter and finer trade-offs between business and sustainability concerns.”

**Project Partners**

Coordinator: **ISQ**, **ineq**, **SMB**, **AVB**

Partners: **Fraunhofer IPT**, **UNIVERSITY OF CAMBRIDGE**, **SINERGI**, **Chad Spire**, **MP**, **MCG**, **WORLEE**, **J.W. OSTENDORF**, **QAS**, **GLN PLAST**

[www.maestri-spire.eu](http://www.maestri-spire.eu)

**Follow us on**

**Maestri H2020**

**Maestri: Total Efficiency Framework and Overall structure of work plan** Page 02

**Maestri: and Internet of Things (IoT)** Page 04

**Exploitation and dissemination strategy** Page 06

**Industrial symbiosis progress towards understanding the main challenges and success factors** Page 07

MAESTRI Newsletter #01



## 5.11. PARTICIPATIONS ON DISSEMINATION EVENTS

Total number of Communication activities after the 1st year: 15

WP 8 - Report on communication activities (NEWSLETTER and REPORTS)								
N°	Partner name	Date	Venue	Kind of event (press conference, speech to conference/seminar, stakeholders presentation, web article, send of newsletter...etc)	audience/targets	Reached persons	Presented materials and records: Power point, photo, video, article, other	Description/Comments/Achievements
1	ISMB	08/09/15	ISMB institute - Website	News about MAESTRI Kick-off on Istituto Superiore Mario Boella Newsletter in September 2015	ISMB institute researchers, customers and students. The web site and the newsletter are public.	ISMB institute researchers, customers and students. Professors and researchers from Politecnico di Torino university. The web site and the newsletter are public.	The Newsletter can be accessed here: <a href="http://www.ismb.it/en/node/3321">http://www.ismb.it/en/node/3321</a>	News about MAESTRI Kick-off on ISMB institute Newsletter
2	ATB	10/09/15	ATB Institute for Applied Systems Technology Bremen - Website	News about the start of the MAESTRI project on ATB's Institute Website	Visitors of the ATB website, e.g. shareholders, project partners, the general public	Visitors of the ATB website	The news item on ATB's website: <a href="https://www.atb-bremen.de/index.php?id=62&amp;L=1&amp;tx_ttnews%5Btt_news%5D=348&amp;cHash=fbc32ef8998092abfe9faeed9782d58e">https://www.atb-bremen.de/index.php?id=62&amp;L=1&amp;tx_ttnews%5Btt_news%5D=348&amp;cHash=fbc32ef8998092abfe9faeed9782d58e</a>	A short description of the MAESTRI project and ATB's role in MAESTRI was published as news on ATB's website

3	UCAM	1/10/15	EPSRC Centre for Innovative Manufacturing in Industrial Sustainability - Annual Report 2014-2015	Annual Report 2014-2015 of the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability	EPSRC Centre mailing list consisting on university professors and researchers, manufacturing companies and sustainability consultants	EPSRC Centre mailing list. Attendees of EPSRC Centre events and conferences	The report can be downloaded here: <a href="http://www.industrialsustainability.org/media/60229-EPSRC_Centre_for_Industrial_Sustainability_AR_2014-2015.pdf">http://www.industrialsustainability.org/media/60229-EPSRC_Centre_for_Industrial_Sustainability_AR_2014-2015.pdf</a>	Brief summary of MAESTRI project was included in the Annual Report of the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability
4	UCAM	1/10/15	EPSRC Centre for Innovative Manufacturing in Industrial Sustainability - Website	News about MAESTRI Kick-off on the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Newsletter in October 2015	EPSRC Centre mailing list consisting on university professors and researchers, manufacturing companies and sustainability consultants	EPSRC Centre mailing list consisting on university professors and researchers, manufacturing companies and sustainability consultants	The Newsletter can be accessed here: <a href="http://createsend.com/t/d-46FFA69E7D91C587">http://createsend.com/t/d-46FFA69E7D91C587</a>	News about MAESTRI Kick-off on the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Newsletter
5	UCAM	1/10/15	Institute for Manufacturing (IfM) Newsletter September 2015	News about MAESTRI Kick-off on the IfM Newsletter in September 2015	IfM mailing list consisting on both academic and industrial members	IfM mailing list consisting on both academic and industrial members	Newsletter is normally distributed in pdf and paper copies are exposed in the IfM building	News about MAESTRI Kick-off on the IfM Newsletter
6	INEGI	1/12/2015	Instituto De Ciência E Inovação Em Engenharia Mecânica E Engenharia Industrial (INEGI) Newsletter December 2015	News about MAESTRI on INEGI's Newsletter in December 2015	Academic and industrial members	Academic and industrial members	Newsletter is available in pdf and paper copies are exposed in the INEGI's building <a href="http://www.inegi.up.pt/publicacoes/boletim/pdf/_bi_41.pdf">http://www.inegi.up.pt/publicacoes/boletim/pdf/_bi_41.pdf</a>	News about MAESTRI on the INEGI's Newsletter
7	INEGI	23/10/15	Instituto De Ciência E Inovação Em Engenharia Mecânica E Engenharia Industrial (INEGI) October 2015 Website	News about MAESTRI on INEGI's Website in October 2015	Academic and industrial members	Academic and industrial members	The news can be accessed here: <a href="http://www.inegi.pt/instituicao/noticias_detalhe.asp?ano=2015&amp;idm=1&amp;idsubm=9&amp;id=32&amp;noticiaid=727&amp;LN=">http://www.inegi.pt/instituicao/noticias_detalhe.asp?ano=2015&amp;idm=1&amp;idsubm=9&amp;id=32&amp;noticiaid=727&amp;LN=</a>	News about MAESTRI on the INEGI's Newsletter

8	ATB	18/07/16	ATB Institute for Applied Systems Technology Bremen - Annual Research Report	Annual Research Report of ATB	ATB's shareholders, project partners and the general public via the ATB website	ATB's shareholders, project partners and visitors of the ATB website	The report can be downloaded from: <a href="https://www.atb-bremen.de/fileadmin/download/atb-bremen/Forschungsbericht_EN_2015_v4.3.pdf">https://www.atb-bremen.de/fileadmin/download/atb-bremen/Forschungsbericht_EN_2015_v4.3.pdf</a>	The annual research report about ATB's work in 2015, which was also announced on the ATB website and is publicly available for download, reported the start of the MAESTRI project
<b>WP 8 - Report on communication activities (CONFERENCES)</b>								
1	UCAM	5/04/16	Sustainable Design and Manufacturing conference 2016, Chania, Greece	Paper presentation in the Sustainable Design and Manufacturing conference 2016, held in Chania, Greece, on 4, 5 & 6 April 2016	Researchers community working on sustainable design and manufacturing related topics	Researchers community working on sustainable design and manufacturing related topics	Conference website: <a href="http://sdm-16.kesinternational.org/index.php">http://sdm-16.kesinternational.org/index.php</a>	Holgado, M., Morgan, D., Evans, S. 2016. Exploring the scope of Industrial Symbiosis: implications for practitioners. Sustainable Design and Manufacturing Conference 2016, 4-6 April 2016, Chania, Crete, Greece. Volume 52 of the series Smart Innovation, Systems and Technologies pp 169-178. The Springer publication of this paper is available here: <a href="http://link.springer.com/chapter/10.1007/978-3-319-32098-4_15?no-access=true">http://link.springer.com/chapter/10.1007/978-3-319-32098-4_15?no-access=true</a>
2	UCAM	11/04/16	3rd International EurOMA Sustainable Operations and Supply Chains Forum, Lancaster, UK	Paper presentation in 3rd International EurOMA Sustainable Operations and Supply Chains Forum, held in Lancaster, UK, on 11-12 April 2016	Researchers community working on sustainable operations related topics	Researchers community working on sustainable operations related topics	Euroma Forum website: <a href="http://www.lancaster.ac.uk/lums/euromaforum/about-the-forum/">http://www.lancaster.ac.uk/lums/euromaforum/about-the-forum/</a>	Holgado, M., Morgan, D., Evans, S. 2016. Supply Chain implications of Industrial Symbiosis in manufacturing industry. Working paper. 3rd International EurOMA Sustainable Operations and Supply Chains Forum, 11-12 April. Lancaster, UK.
3	JWO	19/04/16	18th ENERGY MANAGERS DAYS 2016, Portoroz, Slovenia	Presentation "J.W. OSTENDORF – A PAINT MANUFACTURER WITH A VISION OF ENERGY EFFICIENCY AND SUSTAINABILITY" with focus on MAESTRI	Around 400 energy managers, energy experts, scientists, business consultants, company executives from the energy sector and industry	Around 400 energy managers, energy experts, scientists, business consultants, company executives from the energy sector and industry	<a href="http://www.dnevi-energetikov.si/program/">http://www.dnevi-energetikov.si/program/</a>	Presentation on J.W. Ostendorf's sustainability performance including an extensive description of the MAESTRI project.

4	ISQ	19-20/4/16	SPIRE Project's Conference	Presentation of the MAESTRI project in the SPIRE Project's Conference, held in Brussels, BE, on 19-20 April 2016				
5	UCAM	7/07/16	EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016, Cambridge, UK	MAESTRI and WP4 posters exhibited during the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016, Cambridge, 7-8 July 2016	Attendees to the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016. Academic community by poster diffusion through ResearchGate	Attendees to the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016. Academic community by poster diffusion through ResearchGate	The ResearchGate DOI for the poster is DOI: 10.13140/RG.2.1.1542.9367	Description of the conference can be found here: <a href="http://www.industrialsustainability.org/news-events/capturing-sustainable-value/">http://www.industrialsustainability.org/news-events/capturing-sustainable-value/</a>
6	UCAM	7/07/16	EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016, Cambridge, UK	MAESTRI WP4 presentation done during the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016, Cambridge, 7-8 July 2016	Attendees to the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016. The presentation video is available in the EPSRC Centre Youtube Channel	Attendees to the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability Conference 2016. The presentation video is available in the EPSRC Centre Youtube Channel	The conference presentation can be accessed here: <a href="https://www.youtube.com/watch?v=pmHCofW5GPE&amp;feature=youtu.be">https://www.youtube.com/watch?v=pmHCofW5GPE&amp;feature=youtu.be</a>	Description of the conference can be found here: <a href="http://www.industrialsustainability.org/news-events/capturing-sustainable-value/">http://www.industrialsustainability.org/news-events/capturing-sustainable-value/</a>
7	ISQ	20-22/7/16	The 7th International Conference on Systematic Innovation (ICSI 2016)	Paper and oral presentation of the MAESTRI project in the ICSI 2016 conference, Lisbon, PT, 20-22 July 2016	Conference attendants and research community		Conference website: <a href="http://www.icsi2016.com/">http://www.icsi2016.com/</a>	
<b>WP 8 - Report on communication activities (POSTERS and BROCHURES)</b>								
1	SINERGIE	9-10/6/16	R2B Research to Business	presentation of MAESTRI to Italian and European companies and research institutions	research community, companies and industries	research community, companies and industries	<a href="http://www.rdueb.it/rdueb16/pages/home/">http://www.rdueb.it/rdueb16/pages/home/</a>	Poster and MAESTRI brochure. 17 participants from Italy, Romania, Bulgaria, Turkey, Armenia, Germany

2	ISQ	24/06/16	European Conference Industrial Technologies 2016.	Networking conference in the field of new production technologies, materials, nanotechnology, biotechnology and digitalisation in Europe	Expert on research, industry, education, finance and policy from manufacturing and process industry and technology domains	Expert on research, industry, education, finance and policy from manufacturing and process industry and technology domains	Scientific poster	
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