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Project Coordinator: Christian ROLANDO – CNRS-
Contact: christian.rolando@univ-lille.fr

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Document Abstract

This deliverable is part of WP6, of which one of the objectives is to obtain the expected impacts, consistently with the respective legitimate interests and business perspectives of the Consortium members.
Closely linked with the task T6.3 “Innovation management and impact assessment”, the present deliverable presents the methods and tools to be used to conduct impact monitoring and assessment activities in the context of the EU-FT-ICR-MS project. The methodology and first identification of the first immediate effects expected by the project presented in this first iteration will be used to prepare the subsequent iterations (D6.4 and D6.5).

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Introduction

Impact assessment (IA) is the systematic analysis of lasting or significant change – positive or negative, intended or not – brought about by a series of actions.
In the framework of a collaborative multi-disciplinary research project, we consider that a study that focuses on impact needs to look at the processes and results of the project, and then builds on this to understand what the impact is or would be.

IA considers the immediate outputs and outcomes of a project but is also very much concerned with its consequences in the medium and long term. This crucially should include examples of expected, unintended, positive and negative impacts. In order to evaluate, what has changed as a result of a project and what difference it makes, it is crucial that change processes are tracked throughout its life cycle. Understanding and measuring change should therefore be a focus of IA.

In the first part of this deliverable, we will present the IA methodology that will be followed and the tools that will be used throughout the IA study. The methodology is inspired and adapted from the SEQUOIA methodology[1] to the characteristics of the project.

In the second part, the data and information already available from the EU FT-ICR MS project data, as well as a first list of immediate effects expected by the project will be detailed.

1 Scope and context of the impact assessment

Conducting an IA will go through impact monitoring, analysis and evaluation of the results and advancement of the project towards its main goal and objectives, taking into account both the successes and the failures which may have occurred since the beginning of the project, and have had an impact on technology, environment and society.

The process of evaluating work and its impact is essential if the actors in the project learn from the experience and if they want to use their experience to influence others. Impact assessment requires an honest and self-critical approach and a learning culture with good and trusting relations between the partners. Recognizing and understanding failures and successes is equally important.

How does impact assessment relate to Project planning and implementation, project monitoring, impact data analysis?

Project planning, project implementation, project monitoring, impact data analysis and evaluation focus on the processes and direct results of a project. Building on these, impact assessment focuses on long-term and wide-ranging changes beyond the immediate results of the work.

Assessing long-lasting change is impossible without a good understanding of the intermediate stages and processes leading to change. Therefore, it is important that impact assessment is embedded in all the stages of the project spiral.

[1] SEQUOIA is a support action (7FP – DG Information Society and Media) that has developed a methodology for a socio-economic impact self-assessment suitable for SaaS and IoS projects. Its approach and data gathering instruments have been developed and applied to 30 projects.

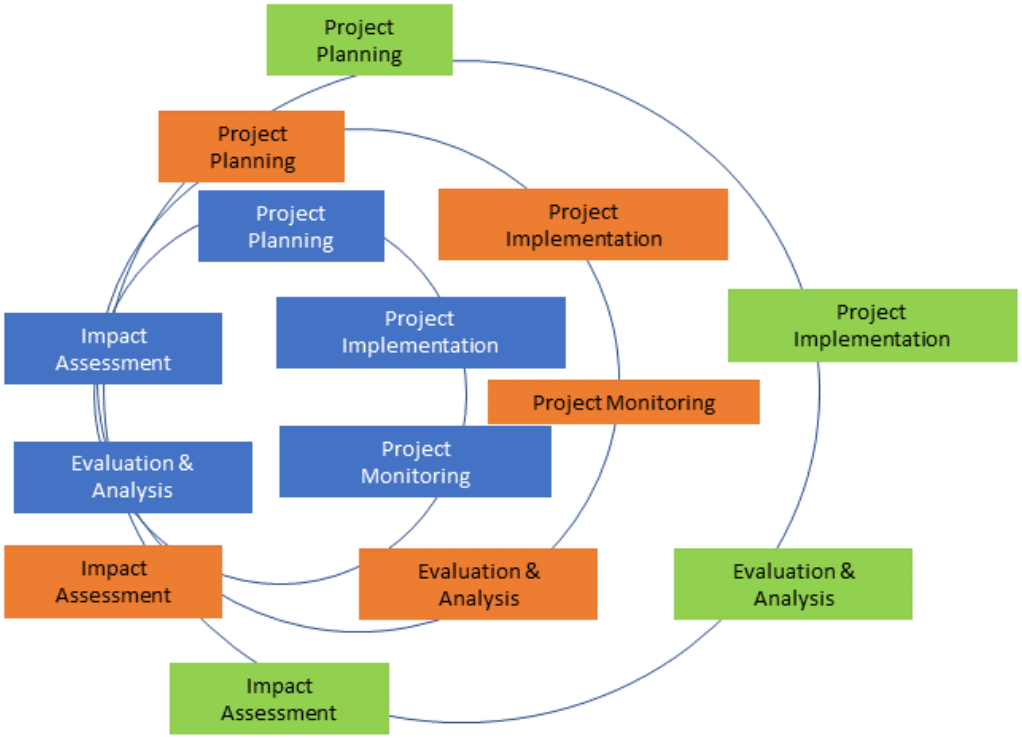

Figure 1: Project Spiral

1.1 Intended use of the IA

One can list four main goals for conducting an IA:

Advocacy: Proving the value of the project and the beneficial impacts it will have on its environment to justify the request for financial aid and the monitoring of the project.
Analysis: Inform on the allocation of resources in the project to confirm the effectiveness of the use of resources and prioritise the allocation of funds.
Accountability: Understand the reasons for the success/failure of the results and identify the lessons to be learned and improvements to be made.
Allocation: Demonstrate the results achieved (in terms of impacts and significance) and attribute them to the project.

1.2 Specificities of the IA

Context and resources of the IA

All activities related to IA are linked to a specific part of the work planning where a budget has been foreseen. As detailed in the table below, there are different approaches to conduct IA activities: Desk-based – Rapid – Intermediate Comprehensive.

Time allowed (Indicative)	***2-6 weeks for one person full time.***	***6 to 12 weeks for one person full time.***	12 weeks to 6 months for one person full time.	6 to 12 months for one person full time.
Objective	***Provides a broad overview of potential impacts.***	***Provides a more detailed overview of potential impacts.***	Provides a more thorough assessment of potential impacts, and more detail on specific predicted impacts.	Provides a comprehensive assessment of potential impacts.
When?	***Could be used where time and resources are limited.***	***Could be used where time and resources are limited.***	Requires significant time and resources.	Requires significant time and resources.
How?	***Is an 'off the shelf' exercise based on collecting and analysing existing accessible data?***	***Involves collecting and analysing existing data with limited input from experts and key stakeholders***	Involves collecting and analysing existing data as well as gathering new qualitative data from stakeholders and key informants.	Involves collecting and analysing data from multiple sources (qualitative and quantitative)
What?	***Activities include accessing off the shelf resources and synthesising and appraising information.***	***Activities include accessing resources, hosting and supporting meetings, and synthesising and appraising information.***	Activities include accessing resources, hosting and supporting meetings, identifying stakeholders and key informants, gathering and analysing qualitative and quantitative data, and synthesising and appraising information.	Activities include accessing resources, hosting and supporting meetings, identifying stakeholders and key informants, gathering and analysing qualitative and quantitative data, and synthesising and appraising information.

Table 1: Context and resources for conducting an IA (4 possible approaches)

Timing of the IA

An IA can be carried out at different point in time as explained in the table 2 below.

TIMING	DESCRIPTION	IN H2020 PROJECTS
Ex-ante	Done before project implementation	In order to submit a proposal to H2020, normally a desk-based evaluation
During implementation	Done to provide evidence about the likely impacts identified as the project progresses	Already planned in the working packages of the project
Ex-post	Done after project implementation (although started well before its completion)	In order to obtain a new funding to continue on the advancement achieved by the previous project

Table 2: Timing of the IA

2 Impact assessment methodology

The proposed IA methodology comprises 4 distinct steps. Each step includes objectives and tasks to be carried out to efficiently perform the IA until the project completion in cooperation with the partners' impact data providers. The 4 steps are the following:

•Step 1: Screening and scoping of the project
•Step 2: Identifying, mapping, classifying and prioritizing the impacts
•Step 3: Evaluating the impacts
•Step 4: Final assessment analysis and reporting

2.1 Step 1: Screening and scoping of the project

In this first step the focus is on defining the project and its characteristics, clarifying whenever possible, at least in qualitative terms, what the benefits generated by the outputs of the research project under assessment are, with the understanding that such benefits are additional to those already created by other existing initiatives, and identifying and engaging the partners and relevant stakeholders of the project.

2.1.1 The project and its characteristics

Vision, mission, objectives of the project

To understand the way the project works and produces valuable outputs in comparison to a situation where the project does not exist, it is necessary to recall the vision, mission, objectives of the project and link all its components of to figure out how they influence each other. Each component has a direct influence on the next one (from the mission of the project, one needs to derive the objectives which will determine the outputs and the inputs/activities needed to achieve these).

The main goal of this step is to identify, qualify all the components of the project, explaining how they interact between each other, and ensure if the way the project produces valuable outputs is understandable by all.

The project logical framework[2] includes the following components:

[2] In the context of EU FT – ICR MS, the logical framework (Logframe) is a management tool used in the design of a programme or project. It correlates key strategic elements, including objectives, inputs, outputs, outcomes and impact, with indicators.

Inputs: What resources are needed to conduct the activities? (e.g. staff, funding, partnerships).

Activities: What actions are taken or what work is performed through which inputs, technical assistance and other types of resources are mobilised with the intention of delivering the outputs? (e.g. technology development, education, engagement).

Outputs: What products and services need to be delivered to achieve the outcomes? (e.g. publications, patents, prototypes, training packages, students trained, reports).

Outcomes: What are the intended or desired immediate and medium-term effects /changes expected to be achieved from successful delivery of research outputs? (e.g. adoption of new techniques, process and behavioural changes, new products, licences/IP sold).

Impact: What are the longer-term effects, changes or benefits to the economy, environment or society beyond those contributions to academic knowledge? Impacts include scientific and technological, economic, environmental and social impacts (e.g. increased economic activity, productivity improvement, water savings, reduced greenhouse gas emissions, improved health and wellbeing, etc.).

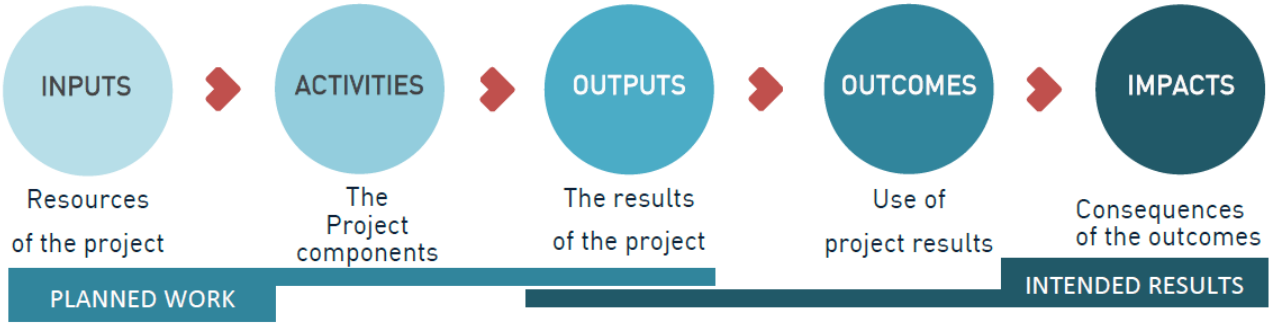

Figure 2: Project logical framework components

2.1.2 The project's outputs and their future exploitation

This part intends to describe the changes brought by the project outputs, with the consideration of their possible applications to real life and the way in which such outputs can be used practically. Ideally, all the project's outputs should be identified, and with a description on how they work in practice (e.g., how they will be used by beneficiaries).

2.1.3 Other similar projects/initiatives and their outputs

In this part, whenever possible, other past or present projects and initiatives that have some similarities with the project under assessment should be listed along with their outputs. If possible, the similarities between the project under analysis and the projects/initiatives identified should be highlighted and their advantages compared.

As stated in the economic literature on projects evaluation [3], a project's impact assessment should be done by comparing two different scenarios: the base-case and the ex-post scenarios. In the proposed IA methodology, the base-case scenario will be based on the information related to other similar projects/initiatives and their outputs, while the ex-post scenario will focus on the project's outputs and their future exploitation.

[3] European Commission (2008), Guide to Cost-benefit analysis of investment projects

2.1.4 Identify and engage the partners and relevant stakeholders of the project

Project Partners (direct participants to the project)

The project partners, being directly affected by the project's intended outputs, play a valuable role in the IA study.

The responsibilities and role of the project Partners towards IA

The project partners will be all involved in the IA activity

. They will need to be informed about their responsibilities in the evaluation and the role they will have to fulfil to make it successful.

It is essential that each partner is aware about the purpose of the IA and agrees upon its objectives before the evaluation is started. During this step, all the viewpoints regarding the IA will be collected and a common vision to lead the evaluation will be established. Every partner will be asked to appoint an "Impact data provider" to provide their organization's impact data.

Project Stakeholders (external individuals or organizations)

It is also important to consider: i) the relevant stakeholders that could be indirectly affected by its intended outputs; ii) the relevant stakeholders that could be directly affected by its unintended outputs4; iii) the relevant stakeholders that could be indirectly affected by its unintended outputs.

Link the project partners and relevant stakeholders with the project logical framework

Once the project logical framework is understood and formalized, each of the partner identified need to be positioned into it. By adding the partners in the project logical framework, one can have a clear view about which partner takes part in what activity and produces outputs in the project and is finally impacted.

Likewise, by adding the mapped and selected external stakeholders in the project logical framework allows to understand how they can be impacted.

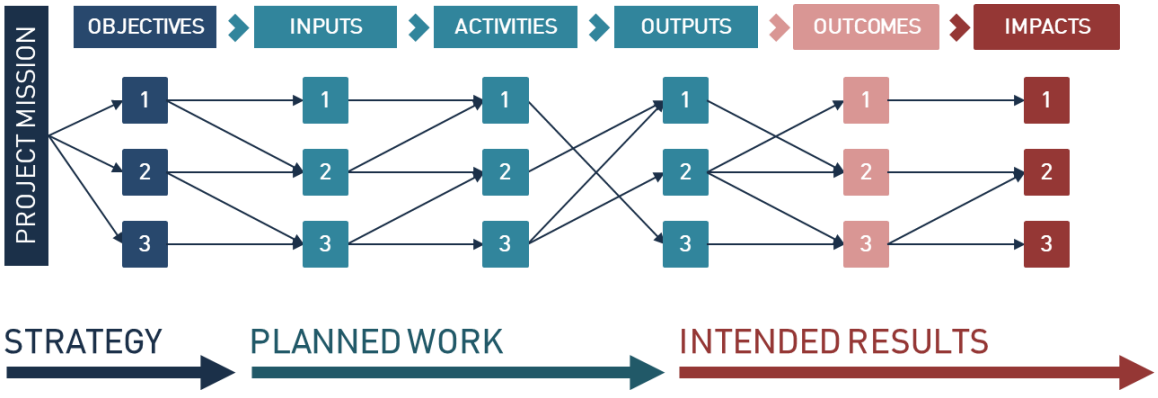

Figure 3: Full project logical framework Model

2.2 Step 2: Identifying, mapping, classifying and prioritizing the impacts

This second step consists in identifying, mapping, classifying and prioritizing all the impacts of the project from different sources: Description of Action, Project's outputs, Library of impacts, Other sources (indirect, unintended, cumulative impacts). This step is of importance as it should allow to check that the expected impacts relate to the components of the project logical framework in a consistent manner.

2.2.1 Identify all the impacts

Expected impacts stated in the Description of Action (DoA)

First and foremost, the DoA states how the project will contribute to each of the expected impacts mentioned in the work programme, under the relevant topic the project is related to, and to any substantial impacts not mentioned in the work programme, that would enhance research and innovation capacity; create new market opportunities, strengthen competitiveness and growth of companies, or bring other important benefits for society.

Expected impacts related to the project's outputs and their future exploitation

Different methods can be used for identifying such impacts: Surveys with set questionnaires; interviews, workshops with open discussions, etc. Preferably, a combination of methods should be used so that impact data can be cross-checked.

Expected impacts from the library of impacts

Based on a library of impacts (list of impacts established for H2020 projects) other impacts which are the most recurring and transversal can be added to the list of impacts already identified. It will be necessary to check to what extent the project can produce those impacts and aggregate these with the impacts identified along with the partners and in the DoA.

RESEARCH	**Employement**	How the project is creating opportunities for people in its research field	Creating opportunities for scholars Improving employement in the fields of the project	Number of PhD students sponsored/funded by the project Number of post-doc researchers sponsored/funded by the project Number of employment positions generated by the project through collaboration agreements with enterprises and third parties and/or through the creation/enlargement of spin-offs Work positions generated by the project	Quantitative
RESEARCH	**Knowledge production & Academic field advancement**	To what extent a project is making its field advance and produces new or enhance knowledge.	Enrichment of knowledge in your field Taking the field to new perspectives and opportunities	Alternative metrics score H-index Number of journal articles published or submitted in peer-reviewed journals Number of books published Number books chapters edited Number of articles presented at conference or published in proceedings	Quantitative
RESEARCH	**Scientific collaboration and knowledge sharing**	To what extent a project can enhance the collaboration between organisations of a same fields on the same topic.	Establish strong connexions between universities Alignment with other initiatives/programs Enhance knowledge sharing Availability of papers and deliverables through project website	Number of knowledge exchange initiatives performed Number of new scientific collaboration links established Number of training modules created Number of new collaboration links established with research institutes Number of new collaboration links established with industry partners Number of scientific events where project has been presented	Quantitative
RESEARCH	**Research networks**	Integration in (inter)national scientific-scholarly networks and research teams	Participation to emerging topics in the related field	Nb of (inter)national collaborations including coauthorships Nb of participation in emerging topics	Quantitative
SOCIAL	**Employment and work routine**	What are the benefits from the social point of view of employement, well-being at work and work processes ?	Enhance the job dynamic for partners & sector Better processes for the work routine Improvement of users' working routines	Evaluation of the work routine process	Qualitative
TECHNICAL	**Technological advances**	The technological advances provided by the project in the related field	Use of project results by project partners Influence of the project results on the technology construction	Nb of technological advances used by partners Appreciation of how the project helped the technology construction	Quantitative Qualitative
TECHNICAL	**Technological benefits**	Technological benefits of a project due to the outputs it produces	License Copyrights, trademarks, registered designs, IPR Exploitation of results by Patents	Nb of ouputs generated by the project	Quantitative
TECHNICAL	**Technology performances**	The technological outputs and outcomes of a project are supposed to improve the performances of the technology in its globality.	Increase Availability of [project technology] Increase performance of [project technology] Increase of reliability of [project technology] Enhanced productivity	Appreciation of availability, performance and reliability brought by the project Appreciation of the productivity gained thanks to the project	Qualitative

Figure 4: Library of Impacts

Other sources for impact identification:

Indirect (second and higher order) impacts

The project could be contributing to produce indirect or secondary (and higher order) impacts i.e. those impacts which are not of a great importance but nonetheless can influence the project environment at small scale. Although they might not be directly linked with the project, they may have an influence on it, and could be later of importance in a different context.

Unintended impacts

In every project, not all the outcomes can be anticipated beforehand. However, some of them can have a great importance and influence for the project environment (negatively or positively). Thus, they need to be identified, mostly during or after the project. They can also be anticipated to some extent before the project starts as a risk and then influence or not the way the project is carried out.

Cumulative impacts brought in by the project

Some of the impacts that are identified can be the result of previous impacts resulting from previous projects. Additionally, one can expect that some of the impacts produced by the project can lead further to other impacts. Therefore, to ensure a long-term vision of the effects that the project will produce, one need to take into account this cumulative aspect of the impacts and think on what previous impact basis the project could be generating new impacts.

When all the impacts are identified, they could be added into the project logical framework. This will enable to identify the project elements (e.g., inputs; activities, outputs) that lead towards the impacts and position the partners with respect to them.

2.2.2 Map, classify and prioritize the impacts

Once all the impacts are identified, one needs to map, classify and prioritize them.

The identified impacts will need to be mapped and classified across impact areas (scientific/technological; environmental, economic and socio-economic).

In the case of too many identified impacts, it will be necessary to prioritize them in terms of importance and potential. For this purpose, we will rely on the Pugh Matrix, a criteria-based decision matrix which uses criteria scoring. As a weighted decision matrix, the Pugh Matrix involves the concept of weighting the criteria (effect duration; probability of occurrence; scale; significance) in order of importance (from 1 to 3).

Each of the impact can be scored depending on how it is considered with respect to a situation where the project did not exist:

- -1: if the impact is negative or low;
- 0: if the impact is neutral;
- 1: if the impact is positive or high.

Each of the impact's score is multiplied by the weighting given to each of the criteria in order to produce a result.

By following this approach, we are able to select only the most relevant impacts (those impacts with the highest scores) that will be included in the assessment.

2.2.3 Establish the impact pathways

Establishing the relations between the impacts identified and the other components of the project logical framework will allow to understand the following:

How the project elements in the project logical framework relate to the impact

The project logical framework can be completed with the impacts identified. On this occasion, it will be necessary to highlight how the impacts relate to the outcomes (immediate or medium-term effects) of the project, as they are the utilization of the project's outputs (results) leading to new practices, possibilities and thus modification of the project's environment.

Who is going to be impacted and when (short-term and long term).

The target groups benefitting from the impacts are the project partner organizations and their researchers, and the external stakeholders represented by: Different communities and players active in the fields concerned by the project (scientists and industry), society on the whole etc.

2.3 Step 3: Evaluating the impacts

In this step, all the data related to the expected impacts defined in the step 2 will be collected, so that the measure and evaluation of the improvements brought by the project could be performed. For this purpose, an appropriate set of impact indicators will be defined and agreed with the partners.

Step 3 should be considered as a crucial step as it will secure a proper implementation of step 4 (Final assessment analysis and reporting).

2.3.1 Collect and retrieve data for evaluation

From the expected impacts (scientific/technological; environmental, economic and socio-economic), impact indicators will be defined so as to gather specific quantitative and qualitative data from the partners and the stakeholders and measure the actual impacts.

The impact data collection phase represents a fundamental milestone of the process. This will be done mainly through a questionnaire. Where needed phone or face-to face interviews could be arranged to gather extra data that would be necessary.

2.3.2 Manage and exploit the data

All efforts will be ensured so that all the data collected from the partners be curated, easy to understand and re-use.

2.3.3 Choose for each impact the appropriate evaluation method

To assess the project's performance globally with the use of aggregated and synthetic indices, we will rely on two analytical methods in three phases:

- Cost Benefit Analysis (CBA) method (Phase 1)
- Multi Criteria Analysis (MCA) method (Phases 2 and 3)

Depending on the areas of impacts evaluated (scientific/technological; environmental, economic and socio-economic) the CBA or MCA methods will be implemented.

Performing an economic impact assessment aims to understand whether the project output(s) is able to improve the total welfare of society by measuring, in economic terms, the range of direct

and indirect impacts affecting both the users and non-users of the project outputs. A cost-benefit analysis therefore will be implemented to measure in monetised form the economic improvements. The final output of the economic assessment will be condensed into three indices: the iROI, the xROI and the tROI.

Not all the impacts generated by a project can be measured in monetary terms: the impact on the technological improvements, society an environment brought by the project outputs, in fact, cannot be easily transformed into economic and financial values. Such impacts can however be assessed through the use of the Multicriteria Techniques (MCA), according to which, where monetization is not possible, each impact must be expressed in its most appropriate and suitable units of measurement.

Finally, the three economic indices (iROI, xROI and tROI) and the multicriteria indices will be condensed into the global index called Return on Investment Research (RORI).

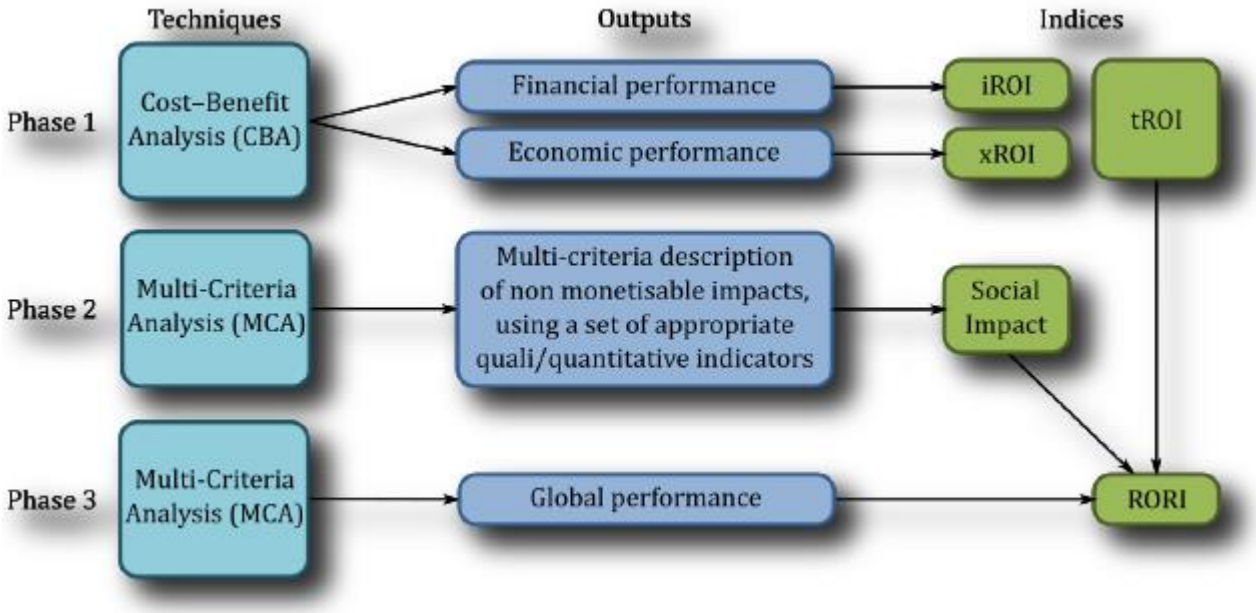

Figure 5: **The impact evaluation method in three phases**

2.3.4 Calculate the score for each impact

This section describes in detail the meaning of each index (iROI, xROI, tROI and RORI) and show the inputs to be included and formulas to be used for calculating such indices.

iROI (Internal Return On Investment)

This index provides information about the financial sustainability of the project, by measuring the (potential and/or future) financial return for the consortium partners.

The iROI index is based on the financial evaluation of the total cost for performing the research project and on the identification of the financial returns for the consortium partners, deriving mainly from selling the output(s) produced by the project.

The formula for iROI calculation is the following:

$$\boldsymbol{iROI = \frac{(Financial\ investment\ inflow - Financial\ investment\ outflow)}{Investment\ cost}}$$

xROI (External Return On Investment)
This index quantifies the net economic benefits (other than the financial ones) that the project generates in society as a whole (considering both users and non-users of research outputs). In order to be included into the xROI, each impact of the project (positive or negative), other than the financial ones, must be expressed in monetary terms by using appropriate proxies.

The formula for xROI calculation is the following:

$$xROI = \frac{(Socioeconomic\ Benefits - Socioeconomic\ Costs)}{Investment\ cost}$$

tROI (Total Return On Investment)
This index quantifies the total monetisable impacts of the research project, both those experienced by the consortium's partners and by the whole society. It is calculated by summing up all the information gathered by the iROI and the xROI indices.

The formula for xROI calculation is the following:

$$tROI = iROI + xROI$$

Multicriteria Assessment
The main impacts to be considered in the MCA method, with an indication of the most suitable metrics to be used for their measurement, are:
1. Technological benefits (scale 1 -10)
2. Impact on employment and working routines (absolute values and scale 0-4)
3. Impact on knowledge production and sharing (absolute values, scale 0-4 and scale 0-1)
4. Impact on social capital (absolute values and scale 0-4)

RORI
Once all the information about the financial (iROI) and economic (xROI) performance of the project is available and after the assessment of other non-monetisable impacts through the use of the MCA method, the final step consists in calculating the global index, synthesizing all the information generated during the assessment, and showing the total performance of the project.

As explained above, this index is called **RORI,** as it expresses the global **R**eturn **O**n **R**esearch **I**nvestment.

The issue, here, is to put together all the information generated during the analysis, both qualitative and quantitative, both monetary (or monetisable) or not. The resulting index, therefore, does not have a strict economic meaning but, at least, it provides a measure of the whole performance of the project in a given moment.

The RORI index is calculated as a weighted sum of the iROI, the xROI, and the other non monetisable impact indicators collected in the multicriteria table.

The formula for the calculation of the RORI is the following:

$$RORI = \sum_n (X_n \times w_n)$$

where

$n = 1, \dots, N$

$\sum_n w_n = 1$

N is the number of variables

w are the weights of the normalized indicators

X are the normalized indicators

2.4 Step 4: final assessment analysis and reporting

Once the RORI has been calculated, the impact evaluation is completed and the step 4 could be implemented. As all the indices calculated in step 3 are not self-explicative, the main findings of the evaluation will need to be analysed and presented in a balanced way and with an emphasis on the positive as well as negative impacts.

This work will be followed by the preparation of the final report to be communicated to the project partners and relevant stakeholders.

As the impact assessment aims to enhance accountability for the partners and the stakeholders, it is important that the all the results are communicated in a meaningful concise and structured manner.

Therefore, the final report will include as much as possible significant information (qualitative, quantitative and financial aspects) on the socio-economic value being created during the project's lifetime. Providing enough information will help the partners and the stakeholders or any reader to feel confident that the calculations are robust and accurate.

Finally, the final report will also include recommendations, for future directions and options, with as many details as possible. The recommendations could be as follows:

- What course(s) of action should be taken after the project completion;
- How they should be implemented, by whom, and when;
- What resources, or inputs, are required (including money, people, assets; training, time);
- The constraints or problems that are likely to occur and how they can be addressed;
- The follow-up that will be needed to make sure the recommendations are acted upon.

Even if this level of detail cannot be achieved, it is still important to provide recommendations for future directions and options.

How can the impact assessment results be used and by whom?

In particular, impact assessment results can be used by:

Project partners: to be involved in analyzing what changes have taken place, what different factors have combined to bring about changes, and how the changes affect them. This is also crucial for identifying unintended or potentially negative impact.

Project managers: to look more widely at change in project partners' lives, and how different factors combine and interact to bring about change. This can support decision-making, and provide a basis for stronger partnerships in the future.

European Commission: a longer-term perspective gives a broader view of the role of the European Commission in different contexts, and can be used for long-term planning and policy development.

What follow-up can be done to help put the recommendations into practice?
Once the recommendations have been shared and accepted by all the relevant actors in the project, it may be necessary to provide support to those responsible for putting them into practice. This may include for example:

• Ensuring all actors concerned, support the changes required which may include changes to working methods, additional resources, etc;

• Follow-up meetings to assess the relevance and effectiveness of the recommendations.

Who should be involved and what are their tasks and responsibilities?
It is essential to consider who will be needed to carry out different tasks in the exercises related to project monitoring, analysis and evaluation and impact assessment, and make sure there is enough time to carry out each task.

Time often runs out at the end of the exercise, leaving less time for proper consultation with all the actors involved about the conclusions and recommendations. There is then a danger that the findings will not be used after all.

3 Conducting impact assessment in the context of the EU FT-ICR project

Conducting an impact assessment in EU FT-ICR MS will go through impact monitoring, analysis and evaluation of the results and advancement of the project towards its main goal and objectives, taking into account both the successes and the failures which may have occurred since the beginning of the project, and have had an impact on technology, environment or society.

The impact assessment will also provide, along with the findings and conclusions drawn from the impact evaluation and analysis advices and recommendations, possible evolutions and improvements for the subsequent phases of the project and beyond.

The impact monitoring activities and impact assessment in EU FT-ICR MS will be implemented as per the 4 distinct steps described in the chapter 2 of this deliverable.

3.1 Step 1: screening and scoping of the EU FT -ICR MS project

EU FT-ICR MS main goal and objectives

Fourier Transform - Ion Cyclotron Resonance Mass Spectrometry (FT-ICR MS) is one of the most ubiquitous and powerful analytical techniques in use today to get information on the composition and structure of substances.

Chemistry, biology, environmental sciences, food industry, big pharma, hospitals, etc., many different fields from fundamental to applied research need to use MS and especially FT-ICR MS. But this equipment is rare, due to high price and necessity of having very qualified skills for obtaining the best results: in Europe, the number of FT-ICR instruments is limited, making access difficult for scientists and engineers' communities.
Thanks to the to the involvement of 10 FT-ICR MS centres from 8 different European countries + Russia, in association with a SME software company, a FT-ICR MS network was created to provide the best facilities to European scientists and engineers community.

The objectives of the EU FT-ICR MS project therefore aim to:

- Offer to European scientists from academia and companies an easy access to FT-ICR MS combining excellence in the equipment with strong expertise in dedicated fields covering a large spectrum of scientific specialty.
- Build an EU community of end-users and FT-ICR MS scientists: thus, trainings will be provided and advanced education in the field of FT-ICR MS promoted, through dedicated workshops and events. Extra-European networking (with USA) and staff exchanges will also be promoted.
- Bring an open access to data and open-source software for transnational users.
- Strengthen the FT-ICR MS application fields by promoting innovative and cooperative research between European FT-ICR MS academics scientists and private companies (instrumentation and software), thus pushing innovative developments in FT-ICR MS for opening solutions for unsolved problems.

Partnership

The EU-FT-ICR-MS project is coordinated by CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE - CNRS (P01 CNRS), France.

The EU-FT-ICR-MS consortium is composed of 11 partners and 4 linked third parties.

Research and Technology Organisation (RTO)

Centre National de la Recherche Scientifique (P1 CNRS with three centers: LILLE; ORSAY; ROUEN), France.

Academic Institutions

Université de Lille (P1.1 – UL), France
Université Paris Sud (P1.2 – UPS), France
Université de Rouen (P1.3 – URO), France
Université de Liège (P2 - LIEG), Belgium
Mikrobiologicky Ustav AV CR V.V.I (P3 – PRAGUE), Czech Republic
Universitaet Rostock (P4 – UHRO), Germany
Ita-Suomen Yliopisto - University of Eastern Finland (P5 - UEF), Finland
Università degli Studi di Roma La Sapienza (P6 – ROMA), Italy
Fciencias.ID Associacao Para a Investigacao e Desenvolvimento de Ciencias FC.ID (P7 – FC-LISB), Portugal
Faculty of Sciences of the University of Lisbon (P7.1 – FCUL), Portugal
Skolkovo Institute of Science and Technology - Skoltech (P8 – MOSCOW), Russia
The University of Warwick (P9 – WARWICK), UK

Small and Medium Entreprises (SMEs)

CASC4DE (P11 - CASC4DE), France
AK GROUP (P12 – AK), France. AK is the partner in charge of facilitating the reflection and discussion related to the impact study.

As all the partners will expect/experience impacts through their involvement in EU FT-ICR MS project, an active participation to the impact study is expected from everyone. For the sake of efficiency, one contact per partner is identified as “Impact data provider”. A first session in the form of an introduction to the impact study has been organized at the end of the first reporting period.

External stakeholders could be also surveyed in order to collect useful information about the effects the project will have on their activities.

The EU FT-ICR MS project logical framework that links the specific project inputs to specific activities and outputs and outputs and from which we could position the partners and finally derive the project value chain is defined in the table xx below.

Objectives	**Inputs**	• 10 technical partners (RTO & SME) – Subcontractors • Complementary skills & competences (Biology-Chemistry-Environmental & Medicinal Analysis-Imaging-Mass Spectrometry-Fourier-Transform Ion-Cyclotron-Resonance (FT-ICR)-Ultra-high resolution) • Domains of expertise (Petroleomics-biofuels research, and environmental studies-Top-down and middle down proteomics-Physical chemistry, ion molecule reactions-Ion spectroscopy-Metabolomics-glycomics-lipidomics-Mass spectrometry Imaging-Cultural heritage-Art and archaeology-Ultra high resolution-2D FT ICR-FT-ICR manufacturer-Software developer • Total efforts: 500 P*M • EU funding: 4.9M€
	Activities	• WP1 TNA – TransNational Access - (**FC-LISB**, CNRS, LIEG, PRAG, UHRO, UEF, ROMA, MOSC, WARW) • WP2 NA - Training, education and networking activities - (**ROMA**, CNRS, LIEG, PRAG, UHRO, UEF, FC-LISB, MOSC, WARW, CASC4DE) • WP3 Open Data and e-Infrastructure - (**CASC4DE**, CNRS, LIEG, PRAG, UHRO, UEF, ROMA, FC-LISB, MOSC, WARW) • WP4 JRA - Joint Research Actions - (**LIEG**, CNRS, PRAG, UHRO, UEF, ROMA, FC-LISB, MOSC, WARW, CASC4DE) • WP5 Dissemination activities and exploitation roadmap - ALL PARTNERS • WP6 Project decision making and innovation management -ALL PARTNERS • CNRS (TNA-increase quality of service-training new & advanced users) • LIEGE (TNA-increase quality of service) • PRAGUE (TNA-increase quality of service-training new & advanced users) • UHRO (TNA-increase quality of service) • UEF (TNA-increase quality of service-training new & advanced users) • ROMA (TNA-increase quality of service-training new & advanced users) • FC-LISB (TNA-increase quality of service-training new & advanced users) • MOSCOW (TNA-increase quality of service) • WARWICK (TNA-increase quality of service) • CASC4DE (e-infrastructure deployment-increase qualityof service)
	Outputs	• 1000 days of TNA provided • 400 projects in 4 years • 100 days (in average 25 days per center and per year) • 40 projects per center • End-users' indice of TNA satisfaction in average higher or equal to very good on a 5 level scale • 100 gold open access scientific publications • 2 End users schools • 2 Advanced users school

		• 10 short courses • 4 exchanges per center • A Data management plan and 3 updates • Central storage up to 1 PetaByte in total • One integrating open source software dedicated to high resolution FT-ICR MS data. • Three innovative data mining innovative tool plugins for the integrating open source software above • Deployment on the 10 TNA sites of the solution allowing data sharing and processing, centralized management, and remote operation. • One open source software for distant access of data localized on the central storage • 75% of the TNA centers in the range of statistical error for round-robin test • At least 50% of TNA centers are Good Laboratory Practice (GLP) or ISO9001 compliant • At least 6 standards protocols developed • At least 3 new techniques transferred to 3 new centers
	Outcomes **(first immediate effects of the project)**	• EU Researchers, SMEs, Indutry benefit from better organised and harmonised access to FT ICR MS centers. • Creation of FT-ICR MS scientist communities (end-users, advanced-users, staff and students) through training and networking activities (End-user schools, advanced-user schools, dedicated short courses and staff exchanges). • The EU FT-ICR MS network is relying strongly on key information technology and can provide all transnational users with integrated data management, user interface over each site and easy access to FT-ICR MS and data for the European FT-ICR MS community. • Increased quality of the service at four levels: ○ improving the quality of service to end-users with existing instruments, data treatment and sample preparation; ○ New uses of existing methodologies developed; ○ Newly introduced FT-ICR MS techniques for exploring new scientific fields put into action; ○ Pushing innovative developments in FT-ICR MS for opening solutions for unsolved problems.

Table 3: EU FT-ICR MS Inputs, Activities and Outputs and Outcomes

Conclusion

In this first iteration of the Impact Assessment study the IA methodology that will be followed, according to 4 distinct steps, and the tools that will be used throughout the IA study have been presented. The data and information already available from the EU FT-ICR MS project data have been detailed (Step 1). The first immediate impacts expected by the project have been highlighted. The next iteration will be focused on step 2 (Identification of all the impacts in EU FT -ICR MS).

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