PREPARATION AND IMPLEMENTATION OF R&I PROJECTS

GUIDE

ERAdiate

Enhancing **R**esearch and innov**A**tion dimensions
of the University of Žilina in intelligent transport systems

The project receives funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 621386

university science park
University of Zilina

ERAdiate

Enhancing **R**esearch and innov**A**tion dimensions of the University of Žilina in intelligent transport systems

Guide for preparation and implementation of R&I projects

By ERAdiate team:

Prof. Tatiana Kováčiková – ERA Chair Holder

ERAdiate members:

Dr. Ghadir Pourhashem, Assoc. Prof. Ľuboš Buzna, Dr. Giuseppe Lugano, Dr. Martin Hudák, M.A. Nathalie Lugano, M.A Marco Capriotti, Assoc. Prof. Marián Gogola

In kind contribution provided by

Dr. Zuzana Kurillová, Mgr. Marián Magdolen (FBI) and Dr. Miroslava Mikušová (FPEDAS)

Last update: 20.12.2017

Table of Contents

1 Introduction

The aim of this Guide is to support UNIZA academic staff in effectively managing the preparation and implementation of Horizon 2020 (H2020) projects in the field of Intelligent Transport Systems (ITS). The Guide provides a set of guidelines (e.g. practical tips) and recommendations for support structures for UNIZA researchers with regard to the H2020 rules for the preparation and implementation of research and innovative projects.

Preparing successful project proposals and implementing funded projects are transferable skills. Slovakia and in particular UNIZA have not been competitive enough in coordinating H2020 projects so far. In the light of this, the Guide is especially focussed on the role of project coordinator, however, not excluding the role of the project partner. In this document, we also discuss the necessity to develop a set of soft skills for young researchers in preparation of research proposals.

The guide is primarily targeted to UNIZA academic staff, and particularly young researchers, who are involved in the preparation of project proposals at European level and wish to gain in-depth knowledge on how to effectively prepare and implement a research and innovation project under EU Framework Programmes, and more specifically, Horizon 2020. In addition, this guide is also intended for UNIZA management staff involved in R&I cooperation and policy development who would gain a better understanding of the challenges related to the preparation and implementation of EU-funded projects at UNIZA, and who are provided with a series of proposed solutions and recommendations to be implemented at institutional level.

The Guide is composed of two parts. The first part covers the preparation of project proposals under the Horizon 2020 Research and Innovation programmes. The essential information on management structures and procedures that facilitate effective and efficient work in the implementation phase is included in the second part of the Guide.

2 Literature review of existing guides related to Horizon 2020 and other major international programmes

Each grant programme is accompanied by rich documentation explaining the objectives, scope and technical details of each individual call. This documentation is easily accessible on the web and should be carefully studied before starting preparation of a grant application.

In this section, we do not address such materials, but we rather overview other practical and useful guides that provide complementary and insightful information on how to proceed with the preparation of an application in order to maximise the chances to be awarded a grant. We organise literature sources into two groups. Firstly, we briefly overview several very good guides addressing H2020 programme. Secondly, we describe a body of literature dedicated to the writing of research proposals that can be useful to be aware of and is to large extent independent of the grant programme for which the application is prepared. We mark by the symbol [*] guides that are either available freely or available through the UNIZA library services.

- **Horizon 2020 programme guides**

[*] S. McCarthy, How to write a competitive proposal for Horizon 2020: A Handbook for research managers, ISBN-10: 0954625730, http://www.hyperion.ie, 2014.

Dr. Seán McCarthy is Managing Director at Hyperion Ltd, a company that is providing training and consultancy in the preparation of H2020 project proposals. Since the 1980s, Dr. McCarthy has been involved in writing over 150 proposals for the European Union Research and Development programmes. He has been a partner in over 60 contracts and has acted as the coordinator in 16 of these contracts. By utilising his extensive experience, he presents in this handbook practical advice on submitting proposals under H2020. Morover, he provides pactical information on how to streamline the process of writting proposals and on addressing the non-scientific issues such as project implementation and project impact.

[*] M.R. Hoffmann, How to Write Effective EU Proposals: A Practical Guide on Getting Funding for Horizon 2020, ISBN-13: 978-1514, 2015.

The book is written for professionals, ranging from industry innovators to researchers in academia and local government officers, who are interested in participating in Horizon 2020. This book explains how to develop project ideas, professional network, how to find and evaluate project partners and how to write a competitive proposal for Horizon 2020. It also helps with the steps leading to the proposal submission.

[*] E.G. Muntión, M.A. Granados, V.R. Hernández, HORIZON 2020: The new European framework programme for R&D and Innovation: A complete guide, ISBN13:978-1494992392, Research Development Technology and Innovation S.L., 2014.

The handbook explains the origins and motivations behind the H2020 programme, its objectives and main actors. It presents the H2020 structure into pillars and different sub-programmes under each pillar and gives comprehensive overview of project types, instruments and funding allocated for each.

[*] Guide: Get Ready for Horizon 2020, LUXINNOVATION -prepared by the Luxembourg NCP team, 2014 (available online: https://issuu.com/luxinnovation/docs/get_ready_for_h2020).

The purpose of this guide is to provide brief and simple information on Horizon 2020. It makes no claim to be exhaustive, but the handbook provides a brief description of the whole procedure leading to the preparation of a European research and innovation project covering the calls for proposals, partner search, proposal drafting, submission, evaluation, grant negotiations and implementation.

[*] Balkan Security Network, Guide for EU Project Development and Proposal Writing, Balkan Security Network, 2014 (available online: http://www.balkansecurity.net).

This book aims at providing help in developing the capacity to initiate and implement projects co-sponsored by the EU and/or other international donators. It introduces readers to an assembly of recipes, with practical advice, tools and ready-to-use solutions. A detailed list of EU funding programmes and a brief overview of project management processes and project cycle are given. All stages of the project management are described and analysed, while focusing on the management of the project team. Evaluation of accomplished projects is discussed as well.

[*] European IPR Helpdesk, Your Guide to IP in Horizon 2020 (available online https://www.iprhelpdesk.eu/sites/default/files/documents/EU_IPR_IP-Guide.pdf).

The purpose of this guide is to provide readers with basic facts on Intellectual Property (IP) aspects in Horizon 2020 projects.

[*] P. Fabián, L. Krištofová, Z. Jakubcová, Program Horizont 2020: Od nápadu k návrhu projektu, EDIS – University of Žilina, ISBN 978-80-554-1063-0 (available only in Slovak language).

This handbook has been prepared by the Centre of Excellence – Centre of Transport Research (CETRA) of the University of Žilina. The handbook explains how to understand H2020 programme, describes Research and Innovation Actions (RIA) type of projects, and it details the process of preparation of project proposals focusing on the project impacts, work description, project

management, project consortium, budget and evaluation of project proposals.

- **Guides for writing project proposals**

Barbara J. Gabrys and Jane A. Langdale, How to Succeed as a Scientist, Cambridge University Press, ISBN 978-0-521-76586-2, 2011.

This unique, practical guide for postdoctoral researchers and graduate students explains how to manage the necessary research tools and working skills to build a career in academia and beyond. First, it describes the tools needed for independent research, from writing papers to applying for academic jobs; then, it introduces skills to thrive in a new job, interacting with colleagues, designing a university course and giving a good lecture. It concludes with a section on organising your career giving practical advice starting from how to manage stress and explaining how to understand the higher education system. The book encourages readers to apply the theory to their individual situation, it is also illustrated throughout with real-world case studies to enable readers to learn from others' experience.

Sandra Oster and Paul Cordo, Successful Grant Proposals in Science, Technology, and Medicine, Cambridge University Press, ISBN 978-1-107-03809-7, 2015.

Designed to help novice and experienced investigators in writing compelling narratives and acquire research funding, this is a detailed guide to the content, organisation, layout, phrasing, and scientific argumentation of narratives. The authors draw on more than twenty years of research and analysis of grant proposals working with investigators at different levels: they have used this experience to design a framework for scientific writing that you can apply directly to narratives. The guidelines and advice offered are applicable across many funding agencies. Featuring many real-life examples, the book covers a range of topics, from organisational alternatives to best practices in grammar and editing, overview visuals, and working with contributors.

Otto O Yang, Guide to Effective Grant Writing, Springer US, ISBN 978-1-4614-1580-0, 2005.

This guide is addressing important aspects of grant writing such as planning, writing style, aims, significance, research strategy, etc. Although it is primarily dedicated to the NIH grants, almost all advice it gives can be directly applied also in other funding schemes. Where relevant, the chapters end with a list of common errors, and discussions on how to avoid them.

Willo Pequegnat, Ellen Stover, and Cheryl Anne Boyce, How to Write a Successful Research Grant Application: A Guide for Social and Behavioral Scientists, Springer Science+Business Media, ISBN 978-1-4419-1453-8, 2011.

Human behaviour is a subject of research also in the area of ITS. This unique book provides technical assistance for researchers applying for behavioural and psychosocial research funding and can give them an edge in this competitive environment. The book provides invaluable tips on all aspects of the art of grantsmanship, including how to determine research opportunities and priorities; how to develop the different elements of an application; how to negotiate the electronic submission and review processes; and how to disseminate findings. It gives the reader an in-depth understanding of how organisations determine scientific merit and make payment decisions.

Ellen W. Gorsevski, Writing Successful Grant Proposal, Sense Publishers, ISBN 978-94-6300, 2015.

This book is mainly designed to help academics, non-profits, 'creatives,' and entrepreneurs to write successful grant proposals. It is primarily for single authored projects, and for lesser amounts of money. With clear and concise instructions, this book demystifies grant proposal writing, from the initial development phase, the writing and submissions phase, the grant award phase, to the final delivery of project results phase. This small guide lists effective strategies for adapting proposals to meet diversity, digital, and other evolving 21st century constraints of grant review, offering pointers for staying on-task, getting the proposed project done on time and under budget.

3 Guide for preparation and implementation of R&I projects

3.1 Academic carrier and research projects in international context

The preparation of successful project proposals is a transferable skill. Therefore, proper training focused on required skills is very important. Ideally, already young researchers should be supervised by senior advisors who are providing them also with some training focused on the development of skills in preparation of research proposals. This is typically done by gradually involving young researchers in the development of project ideas, preparation meetings and in the proposal writing, while providing them feedback and sharing with them know-how. Another very useful source of knowledge and practical advice are training courses that are specifically dedicated to the proposal writing. However, the success of the proposal does not depend only on the quality of the proposed ideas and quality of the written text. Previous performance in research and previous experience play also a very important role in convincing reviewers and the funding agency that Lead researcher and the project team are in the best position to deliver high quality work and will achieve the project objectives. Lead researcher should have created unique identity that distinguishes her/himself and her/his research within the department, faculty, and institution and also at the national and international level from other researchers. This is extremely difficult and challenging. It also

assumes that the work of Lead researcher is done in the area that is considered to be topical. Popularity and timeliness of research areas and technologies are changing in time which requires flexibility and willingness to change and deep background knowledge of methods and tools that do not change that fast (mathematics, data analysis, etc.). In basic research, it is essential to build a strong portfolio of publications in the area of expertise and establish international and national collaborations with other distinguished researchers. Memberships in research associations and involvement in research networks (e.g. COST) can help to identify the right people. In applied research are also important industrial innovations, patents and network of industrial research contacts. Membership and representation of one's own institution in innovation umbrella organisations can facilitate creations of such contacts. Perhaps the most important is to use funding opportunities and funding for getting high quality research partners and collaborators. This ensures the emergence of synergic effects that can accelerate the research and innovation and help to progress individual research carrier.

In particular, for the process of the proposal preparation it is necessary to develop a set of soft skills that can be gained by training and further improved. Such soft skills include:

- Communication skills that are needed in order to lead or participate in preparatory meetings in an efficient way.
- Writing and presentation skills (not the same as language skills) that are required to be able to present the ideas in clear, consistent and understandable way while taking into account the audience.
- Moreover, techniques and use of personal tools that help to better organise and prioritise working tasks can optimise the time required to manage large workload that is associated with the research career.

Selected reading

A comprehensive overview of the challenges related to the developments of successful carrier in academia (including proposal writing) and advice on how to address them are given in the publication *How to Succeed as a Scientist*[1].

3.2 Looking for funding opportunities

Involvement in Horizon 2020 is about participation and teamwork, which means that researchers must work together in the development of the proposal itself and later on using the results and making sure the proposal achieves the EU's goals through its intended impact.

[1] Barbara J. Gabrys and Jane A. Langdale, How to Succeed as a Scientist, Cambridge University Press, ISBN 978-0-521-76586-2, 2011.

Finding out what opportunities are available is sometimes the most difficult part of applying for funding. Given the competitive nature of grant funding, it is a great advantage to be aware of funding opportunities beyond the more common (and highly competitive) European and national funding streams.

Web-based searchable database can be particularly helpful in keeping with funding opportunities. The European Commission funding opportunities database[2] is a comprehensive source that many calls for proposals under several funding schemes are available there.
A review of the calls in the EC website will provide an understanding of the scope and specific challenges of the call. Therefore, it is the applicant's responsibility to choose a funding opportunity that aligns with his or her own research interests and goals. Furthermore, it is in the researcher's best interest to describe, within the proposal, how the research objectives align with the European goals. Quite often, researchers must reshape their research question to "fit" the European Commission call for proposals. The other EU information website and database is CORDIS[3]. Researchers can search for EU-funded projects and get information on past project participation. The information on past project can give useful information to researchers for finding partners and networking.

Calls and topics differ in their "types of actions". There is a variety of different call types and call areas divided among the three pillars (Excellent science, industrial leadership and societal challenges) and two objectives of Horizon 2020 (Spreading excellence & widening participation, Science with and for society). To gain a better knowledge of major funding schemes, which are suitable for UNIZA faculties, the most important information regarding EU type of actions, are briefly described below.

Research and Innovation Actions (RIA):

Actions primarily consisting of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose, they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment. Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.

[2] http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020
[3] http://cordis.europa.eu/home_en.html

Innovation Actions (IA):

Actions primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose, they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.

A ‘demonstration or pilot’ aims to validate the technical and economic viability of a new or improved technology, product, process, service or solution in an operational (or near to operational) environment, whether industrial or otherwise, involving where appropriate a larger scale prototype or demonstrator.

A ‘market replication’ aims to support the first application/deployment in the market of an innovation that has already been demonstrated but not yet applied/deployed in the market due to market failures/barriers to uptake. 'Market replication' does not cover multiple applications in the market of an innovation that has already been applied successfully once in the market.

‘First’ means new at least to Europe or new at least to the application sector in question. Often such projects involve a validation of technical and economic performance at system level in real life operating conditions provided by the market.

Marie Skłodowska-Curie Actions (MSCA):

Actions providing grants for all stages of researchers' careers – be they doctoral candidates or highly experienced researchers – and encourage transnational, inter-sectoral and interdisciplinary mobility. The MSCA enable research-focused organisations (universities, research centres, and companies) to host talented foreign researchers and to create strategic partnerships with leading institutions worldwide.

The MSCA aim to equip researchers with the necessary skills and international experience for a successful career, either in the public or the private sector. The programme responds to the challenges sometimes faced by researchers, offering them attractive working conditions and the opportunity to move between academic and other settings.

The MSCA are open to all domains of research and innovation, from fundamental research to market take-up and innovation services. Research and innovation fields are chosen freely by the applicants (individuals and/or organisations) in a fully 'bottom-up' manner. Some types of MSCA are listed below:

- Innovative Training Networks (ITN),
- Individual Fellowship (IF),
- Research and Innovation Staff Exchange (RISE).

Fast Track to innovation (FTI)

FTI is a fully-bottom-up measure in Horizon 2020 promoting close-to-the-market innovation activities that is open to all types of participants. It aims to reduce the time from idea to market and to increase the participation in Horizon 2020 of industry, SMEs and first-time industry applicants.

FTI also aims to nurture trans-disciplinary and cross-sector approaches. All kinds of innovation actors can work together to develop sustainable innovations addressing societal needs or areas under 'Leadership in enabling and industrial technologies' and, at the same time, create viable business opportunities. FTI projects must be business-driven and clearly demonstrate a realistic potential for quick deployment and market take-up of innovations.

SME Instrument

This instrument is aimed at highly innovative SMEs with the ambition to develop their growth potential. It offers lump sums for feasibility assessment, grants for an innovation project's main phase (demonstration, prototyping, testing, application development...). Lastly, the commercialisation phase is supported indirectly through facilitated access to debt and equity financial instruments.

- **Feasibility assessment (phase 1) - optional**

Funding is available for exploring and assessing the technical feasibility and commercial potential of a breakthrough innovation that a company wants to exploit and commercialise. Activities funded include risk assessment, design or market studies, and intellectual property exploration. The ultimate goal is to put a new product, service or process in the market, possibly through an innovative application of existing technologies, methodologies, or business processes.

The project should be aligned to the business strategy, helping internal growth or targeting a transnational business opportunity.

- **Innovation project (phase 2)**

Funding is available for innovation projects underpinned by a sound and strategic business plan. Activities funded in phase 2 can be of several types: prototyping, miniaturisation, scaling-up, design, performance verification, testing, demonstration, development of pilot lines, validation for market replication, including other activities aimed at bringing innovation to investment readiness and maturity for market take-up.

A short review of all the Horizon 2020 types of actions and their funding rates has been addressed in Table 1.

Table 1. EU funding rates and actions

Type of Action	Beneficiaries	EU funding rate	Typical duration
Research and innovation action (RIA)	≥ 3 legal entities from 3 Member States or Associated Countries	100%	36-48 months
Innovation actions (IA)	≥ 3 legal entities from 3 Member States or Associated Countries	100% (70% Profit making entities)	30-36 months
Coordination & Support actions (CSA)	1 legal entity from 1 Member State or Associated Country	100%	12-60 months
European Research Council (ERC) - Starting Grants	1 legal entity (host institute) from 1 Member State or Associated Country	100%	60 months
European Research Council (ERC) - Consolidator Grants	1 legal entity (host institute) from 1 Member State or Associated Country	100%	60 months
European Research Council (ERC) - Advanced Grants	1 legal entity (host institute) from 1 Member State or Associated Country	100%	60 months
European Research Council (ERC) - PoC Grants	1 legal entity (host institute) from 1 Member State or Associated Country	100%	18 months

Marie Skłodowska-Curie actions (MSCA)-Innovative Training Networks (ITN)	**ETN**(European Training Network**)** ≥ 3 different Member States or Associated Countries Participation of the non-academic sector expected	100%	48 months Requirement duration 3-36 months EID must spend at least 50% of their time in other non-academic sector)
	EID(European Industrial Doctorate) ≥ 2 different Member States or Associated Countries (At least 1 academic +1 non-academic, preferably enterprise)	100%	
	EJD (European Joint Doctorate) ≥ 3different Member States or Associated Countries (at least 3 beneficiaries must be entitled to award doctoral degree)	100%	
Marie Skłodowska-Curie actions (MSCA)-Individual Fellowship(IF)	**EF**(European Fellowship) 1 legal entity from 1 Member State or Associated Country	100%	12-24 months
	GF(Global Fellowship) 1 legal entity from 1 Member State or Associated Country	100%	12-36 months
Marie Skłodowska-Curie actions (MSCA)-Research and Innovation Staff Exchange(RISE)	≥ 3 legal entities from three different countries of which at least two must be EU Member States or Associated Countries	100%	1-12 months
Fast Track to Innovation (FTI)	≤ 5 legal entities from 5 Member States or Associated Countries	100%	Variable

SME Instrument	**Phase1** ≤ 1 SME from Member State or Associated Country	70%	6 months
	Phase2 ≤ 1 SME from Member State or Associated Country	70%	Variable

More details regarding Horizon 2020 actions can be find on the H2020 grant factsheet[4].

3.3 R&I project proposal preparation

3.3.1 How proposals are evaluated

The evaluation process of proposals by the European Commission for Horizon 2020 is a standard procedure based on 30 years' experience of the Framework Programmes. The administration of the process is very professional and the software systems to support the evaluation are very efficient. Therefore, it is crucial that UNIZA researchers read carefully the specific evaluation criteria, which are published for all calls for proposals before they start with the preparation of a proposal.

Proposals will be assessed by the expert evaluators solely on the basis of reading the word in the proposal. If you have left out something important, the evaluators will not guess what you might have said which means you will not get the money. Therefore, you have to read your funding programme's evaluation criteria, and you should be able to assess whether each of criteria in your project proposal genuinely deserve to be scored as Excellent.

Due to the competitiveness of the Horizon 2020 programme, the evaluation follows certain codes and priorities that have emerged over the years. Each proposal evaluation process has three phases: ***Individual process***, ***Consensus group*** and ***Review panel***[5]. For evaluation, the project officer uses the abstract to select the evaluators for proposals. If the project officer receives 100 proposals for a topic, the only part that they will read will be the abstract. Therefore, it is very important to clearly address the following five key questions[6] in your project abstract:

- WHY? What exact problem will my project solve?
- PRIORITY? Is it a European priority? Look at http://europa.eu for actual priorities. Who wrote the call and what was his/her aim?
- EXISTING SOLUTIONS? Are there any already for our problem? Why is ours better?

[4] http://ec.europa.eu/research/participants/data/ref/h2020/other/gm/h2020-grant-factsheet_en.pdf
[5] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf
[6] http://www.Horizon 2020.lu/Downloads/Get-ready-for-H2020

FIGURE 1. KEY PROJECT PROPOSAL QUESTIONS

- WHY NOW? Why hasn't it been solved yet?
- WHY WE? Why is our team unique?

It is essential to make it easy for the experts who evaluate your proposal to get a full picture of your proposal through a compressive abstract using the actual words and phrases given in the call to emphasise that you project will take into account these criteria. The abstract must inform, convince and excite the evaluators in a very short period of time (i.e. creditability). You must also explain while the idea of your project goes beyond the state-of-the-art, but it is achievable with concrete milestones.

At least three experts will individually read and score your proposal. So, make sure your proposal brings something new. It is very important to keep the evaluators in a good mood by giving them a well-presented document and keep your evaluators awake and focused on the facts in your proposal while they read it. So, remember every half mark in the evaluation will count. Evidence of lack of care in your proposal will imply to the evaluators either that you are not good at quality control and are likely to display lack of care in carrying out the project. If you give the evaluators an impression of lack of care, your project will not be funded. You may find further information concerning evaluation process and how experts will evaluate project proposal on the EU website[7]. An overview of what evaluators expect is shown in Figure 2[8].

The Table 2 contains all evaluation criteria for RIA and IA that are used in the proposal evaluation process[9]. The aspects to be considered in each case depend on the types of action.

[7] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-evaluation-faq_en.pdf

[8] S. McCarthy, How to write a competitive proposal for Horizon 2020: A Handbook for research managers, ISBN-10: 0954625730, http://www.hyperion.ie, 2014

[9] http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-h-esacrit_en.pdf

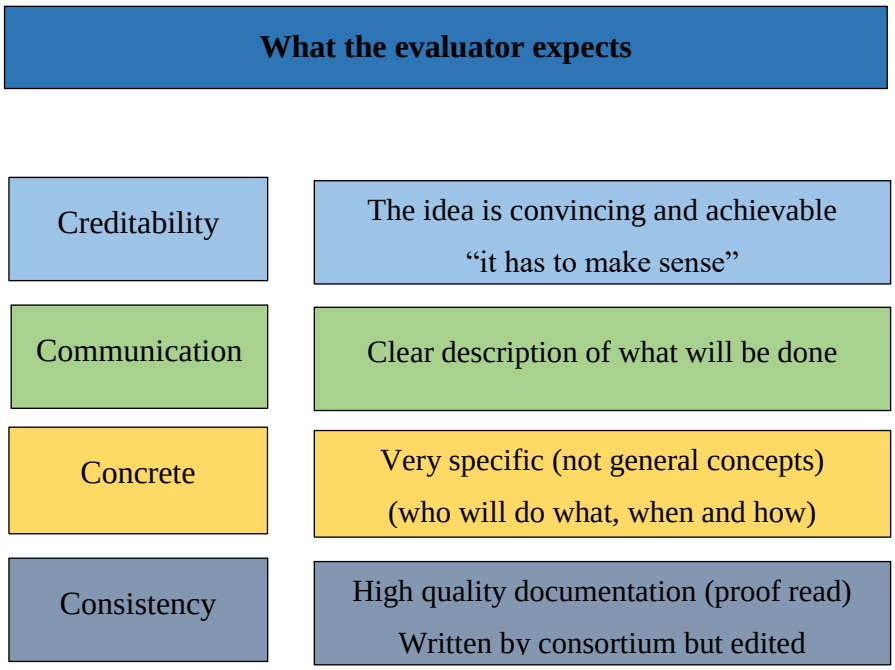

FIGURE 2. AN OVERVIEW OF WHAT EVALUATORS EXPECT

Table 2. RIA & IA evaluation criteria

Excellence (33%)	**Impact (33%)**	**Quality and Efficiency of Implementation (33%)**
▪ Clarity and pertinence of the objectives ▪ Creditability of the proposed approach ▪ Soundness of concept, including trans-disciplinary considerations, where relevant ▪ Extent that proposed work is ambitious and demonstrate innovation potential (e.g. novel concepts and approaches , ground breaking objectives)	▪ Enhancing innovation capacity and integration of new knowledge ▪ Strengthen the competitiveness and growth of companies by developing innovations meeting needs of European and global markets ▪ Address environmental and social impacts and other important benefits for society ▪ Effectiveness of proposed measure to exploit and disseminate project results(including management of IPR) and to communicate the project and manage research date	▪ Coherence and effectiveness of the work plan including appropriateness of the allocation of tasks and resources. ▪ Complementarity of the participants within the consortium ▪ Appropriateness of the management structure including risk and innovation management
Max: 5 points	**Max: 5 points**	**Max: 5 points**

Bear in mind that evaluators will pay particular attention to key aspects of the award criteria and key elements to be provided as part of a proposal, notably: "excellence", "impact" and "quality and efficiency of the implementation". The aspects to be considered in each case depend on the types of action. For Horizon 2020 you may find evaluation criteria at the following links:

http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/from-evaluation-to-grant-signature/evaluation-of-proposals/elig_eval_criteria_en.htm,
http://ec.europa.eu/research/participants/data/ref/h2020/other/gm/h2020-grant-factsheet_en.pdf.

Award Criteria:

Each criterion will be scored out of 5.0[10]. Individual thresholds for each criterion is 3 out of 5. It should also be noted that for Innovation Actions (IA), criterion "**Impact**" is multiplied with the factor 1.5.

- 0- Proposal fails to address the criterion or cannot be assessed due to missing or incomplete information.
- 1- Poor. The criterion is inadequately addressed, or there are serious inherent weaknesses.
- 2- Fair. The proposal broadly addresses the criterion, but there are significant weaknesses.
- 3- Good. The proposal addresses the criterion well, but a number of shortcomings are present.
- 4- Very Good. The proposal addresses the criterion very well, but a small number of shortcomings are present.
- 5- Excellent. The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

[10] http://ec.europa.eu/research/participants/data/ref/h2020/call_ptef/ef/h2020-call-ef-ria-ia-csa_en.pdf

Key points for successful proposal evaluation :

- Ensure your proposed objectives and work packages meet the challenges addressed by the call.
- Be as concise and precise as possible. Avoid general statements.
- Follow exactly the structure given in the guide for applicants.
- Use Self-evaluation form[11].
- The consortium of partners must be excellent and appropriate for the tasks.
- Do not overcrowd objectives and show how you achieve them.
- Have the evaluator and the evaluation criteria at the forefront when writing the proposal.
- Treat each section as if it is the most important section.
- Think about presentation and the layout of the proposal. Use diagrams to explain complex concepts.
- Sell your idea, don't tell. Make the evaluator feel your passion. In addition to having an excellent idea which is the basis of any successful proposal, researchers must sell the concept to the evaluators and overall flow of the narrative.
- The project has to serve the needs of the European Community / European Policies (Impact).
- Proof-read and check for spelling mistakes.

3.3.2 Developing the project idea

Developing a project idea for the European Framework programme requires finding the suitable intersection between personal research agenda (or research agenda of the group or institution/organisation you are representing) and available funding opportunities. For applied projects, we recommend to start by getting perfectly familiar with the funding opportunities. In basic research, the situation is different and calls (e.g. FET Open) are usually open to project ideas from any scientific discipline, therefore, one can start with exploration of ideas for excellent research and leave the thorough investigation of funding scheme and programme for later.

- **Identification of funding opportunities**. In this phase, it is not important just to read call documents, but also to read available background documents (annexes and H2020 documentation) and get familiar with the bigger picture, i.e. to know in detail the goals and expected impacts and indicators[12] set in the Framework Programme. This should help in understanding the text of the call and expected impacts of the project from the right

[11] http://ec.europa.eu/research/participants/data/ref/h2020/call_ptef/ef/h2020-call-ef-ria-ia-csa_en.pdf

[12] http://ec.europa.eu/newsroom/Horizon 2020/document.cfm?doc_id=10927

perspective. Thus, the first goal is to identify a set of calls that represent funding opportunities and get familiar with the expected impacts and indicators used in accessing them. It is advisable to attend events, organised by the EC, National Contact Points or local contact points or get into direct contact with them to collect more information and clarify possible ambiguities.

- **Exploration of project ideas:** In this phase, one should describe in two or three sentences all possible project ideas and evaluate possible impacts, target groups and groups interested in possible outcomes and European dimension.

- **Knowing earlier projects:** Having collected some potential ideas for the project, it is required to investigate previous and ongoing projects. This phase should make sure that the project proposal will build on the results achieved in other previous projects and at the same time extend them. It is recommended to use CORDIS and do extensive Internet search.

- **Feasibility check of project ideas:** When selecting the project ideas, it is important to assess the degree of their feasibility by analysing the answer to the following questions: Are you ready to dedicate a significant amount of time over the next year to this particular idea? Is now the right time to develop the idea? Is it possible to build a competitive consortium to implement the project idea?

  At this stage, we also advice discussing selected project ideas with colleagues or possible partners you know well and double check with them your assessments. Another useful step is to analyse how well the final outcome or the main goal of the project is positioned with current policy, market and technology trends. This can be done by studying relevant official documents (e.g. EC, OECD), reading market research reports or technology assessment reports.

- **Matching ideas with Horizon 2020 calls:** When having some ideas that passed through the feasibility check, it is required to go back to H2020 calls and compare them. Often it is obvious which call fits best the project idea, however, sometimes it can be quite difficult as some ideas might be on the intersection between several research domains. In such situation, it is required to carefully evaluate the overlaps and the chances to build the competitive consortium. It should be also considered that within H2020 it is also possible to develop research ideas within project schemes that at first look do not look like research projects, for example H2020-MSCA-ITN that support networks of PhD students.

- **Preparation of short description of the project idea:** After identifying the most promising idea, it is advised to start with the preparation of a document outlining the project idea. The document should include: project title, contact details, call identifier, description of the idea, objectives targeting European dimension, impacts, users, structure of the consortium and which roles need to be filled, estimated budget, project duration, etc.

  The document is to be used to share and discuss the idea with other people more efficiently. Typically, it takes a form of one-page document, but for some occasions, a short Power Point presentation (3-4 slides) can be more appropriate. At this stage, it is also important to decide whether you want to join other consortium with your idea or whether you are going to take the role of coordinator. This is very different from the point of view of time and amount of work that you will have to do.

  Roughly, the coordinator has to put into preparation of the project proposal from 3 to 6 times more time than partners. The coordinator is expected to organise the preparation of the project and take care of its submission. This requires organisation and moderation of preparation meetings, division and allocation of work, collection of all needed data and inputs from partners in time and in high quality, taking care that the text is consistent and compact, taking plenty of small decisions how exactly certain aspects are presented in the proposal, etc.

3.3.3 Study of relevant materials

The Commission publishes manuals to guide project leaders and assist them in understanding all the finer points of the selection procedure and sometimes that of project implementation. These guidelines are generally published with the call for proposals text on the Internet sites of the programmes.

For an optimal choice amongst the programmes, you will need to collect a documentary environment useful for understanding the expectations of the European Union in your domain and for suitably integrating it with your project.

The ***Participant Portal*** is your entry point for electronic administration of EU-funded research and innovation projects, and hosts the services for managing your proposals and projects throughout their lifecycle. As a non-registered user, you are able to have some services such as search for funding and read the Horizon 2020 online manual and download the legal documents. To be able to login on the Participant Portal and benefit fully from these services, users have to register first for

EU Login account. The creation of an EU Login account is free and easy[13]. To be able to use the Participant Portal Submission Service, it is mandatory that you have EU Login account and PIC number. More information about the EU Login account can be found on the Frequently Asked Questions page of the Participants Portal[14].

Once you find a Call for Proposals which you think may be relevant to your research field and organisation, you should download all the relevant documents attached to the Call. The most important of these are the ***Guidelines for Applicants***, and the ***Grant Application Form***.
In the Horizon 2020 online manual you can find an overview of all steps you need to know for the electronic management of proposals or grants and a brief description on how to complete your tasks. National Contact Points (NCPs) as national structures (that are established and financed by governments of the 28 EU member states and the states associated) provide support on the spot and in applicants' own languages. In case you need further information concerning Horizon 2020 calls, following basic services are available in accordance with the NCP Guiding Principles:

- Guidance on choosing relevant H2020 topics and types of action,
- Advice on administrative procedures and contractual issues,
- Training and assistance on proposal writing,
- Distribution of documentation (forms, guidelines, manuals, etc.),
- Assistance in partner search.

3.3.4 Building a consortium

A consortium is at the heart of any Horizon 2020 project. Consortium partners, once chosen and settled, will undoubtedly impact the success rates of the project itself. Because of this, building a consortium is a very important stage of the Horizon 2020 project development. This is especially true since there are some definite ways to doing it wrong and right. In terms of project evaluation, beyond eligibility, the structure and composition of the consortium is also very important and should not be taken lightly. Complementarity and the sharing of know-how among the consortium partners are essential to the success of the project. Therefore, you must show that consortium partners are the best combination of partners for solving the problem in the proposal. The complementarity of

[13] https://webgate.ec.europa.eu/cas/eim/external/register.cgi
[14] http://ec.europa.eu/research/participants/portal/desktop/en/support/faq.html

participants and the extent to which the consortium will bring together the necessary expertise, particularly in quality and efficiency of the implementation of proposed project, should be clearly addressed to highlight the operational capacity of applicants. What the EC wants to see are the indications that project partners can successfully and reliably work together and having a good fit with project goals that lead to expected impacts.

The formal criterion for setting up a consortium is straightforward: it must be composed of at least three partners from at least three member states or associated countries. Legal entities must be independent of each other to be considered as different partners[15]. During the initiation phase, it is important to decide whether you will take the lead role in consortium and act as a ***Coordinator*** or as one of the ***partners***. Bear in mind that the coordinator has a very specific role among the project partners. This role is usually carried out by an experienced organisation in EU-funded projects that has the capacity to take on the overall project management. The coordinator shall be the principal point of contact between the members of the consortium in relations with the Commission or the relevant funding body, unless specified otherwise in the Grant Agreement or in the event of non-compliance with its obligations under the Grant Agreement[16]. Therefore, taking the role of coordinator will bring greater financial and managerial responsibilities compared to the role of partner who can lead one or implement specific tasks within work packages.
The following points can be helpful if you are considering joining a consortium as project partner or coordinator.

- **Partner searching tool:**
  - **Ideal-ist**[17], an international network, funded by the European Commission, more topic-oriented.
  - **Cordis**[18], community research and development information service of the European commission.
  - **Labs Explorer**[19], search engine where you can find easily laboratories in any field of research.

[15] https://issuu.com/luxinnovation/docs/get_ready_for_h2020
[16] http://www.fch.europa.eu/sites/default/files/h2020-rules-participation_en.pdf

[17] https://www.ideal-ist.eu/
[18] https://cordis.europa.eu/partners/web/guest
[19] https://www.labsexplorer.com/

- **RICH 2020**[20], the European Network of National Contact Points (NCPs) for Research Infrastructures in Horizon 2020 can distribute your research to their European counterparts for finding research partners.
- **ETNA2020**[21], European Transport Network Alliance (ETNA) provides a variety of services that are tailored to the specific needs of stakeholders in the transport sector, including all the transport modes and several cross-cutting areas (e.g. Safety, Logistics, Urban Mobility, Intelligent Transport Systems, Infrastructures, Socioeconomic and behavioural research).
- **SLORD**[22], Slovak Liaison Office for Research and Development, where you can find research partner in any field of research.

- **Participating in Brokerage events**

  For certain calls, Europe-wide or local brokerage events are organised where participants can pre-arrange meetings and talk to a large number of potential consortium partners in a short time.

- **Participating in Relevant Research events and info-days**

  Conferences and consultation workshops are key places for networking among participants. Participation in info-days is also a good opportunity to meet representatives of EU, key persons from organisation that have been participating in EU funding programmes to promote your competencies.

Some tips for building your consortium:

- Create a map of resources needed for a Horizon 2020 call. Expertise, project management experiences, access to networks, dissemination and exploitation of results. Be precise about what your organisation needs from a partnership!
- Be selective. As a rule of thumb, each partner should add value to the consortium. Don't bring in your 'friends' unless they have a clear role! Include partners that are well-known throughout Europe, but also give opportunity to the younger generation of high-potential researchers.

[20] http://www.rich2020.eu/
[21] https://www.transport-ncps.net/partner-search/
[22] http://slord.sk/sk/hlavne-sekcie/partner-search.html?page_id=305

- Make a balance between partners with different backgrounds (academic disciplines, possibly different regions, non-academic partners…) from different EU member states. Horizon 2020 has required an expansion of certain types of partners, particularly from industry!
- Involve partners in the proposal preparation. Agree on a working method for the proposal phase and make a plan for their contributions. Each partner's role must be specified at the early stage. Avoid surprises after submission!
- Explore alternatives early, but be ready to change plan – change/renounce a country if you do not secure the right partner.

You may also find some useful tips and considerations concerning finding suitable partner and building a consortium at the following link: https://www.ideal-ist.eu/how-build-consortium.

3.3.5 Proposal writing

This part will follow the structure of the Horizon 2020 project application and give practical advice how the individual part of proposal should be written.

- Excellence

Excellence as a part of the H2020 programme deals with following issues, which are important to take into account:

- clarity and pertinence of objectives;
- credibility of the proposed approach;
- soundness of the concept, including trans-disciplinary considerations, where relevant;
- extent that proposed work is ambitious, has innovation potential and is beyond the state of the art (e.g. ground-breaking objectives, novel concepts and approaches).

Objectives

This section describes the specific objectives of the project, which should be clear, measurable, realistic and achievable within the duration of the project. Objectives should be consistent with the expected exploitation and impact of the project. When you are defining the objectives, the SMART theory with its questions might be helpful[23]. Figure 3 describes the SMART theory.

[23] *Doran, G. T. (1981). "There's a S.M.A.R.T. way to write management's goals and objectives". Management Review. AMA FORUM. 70 (11): 35–36.*

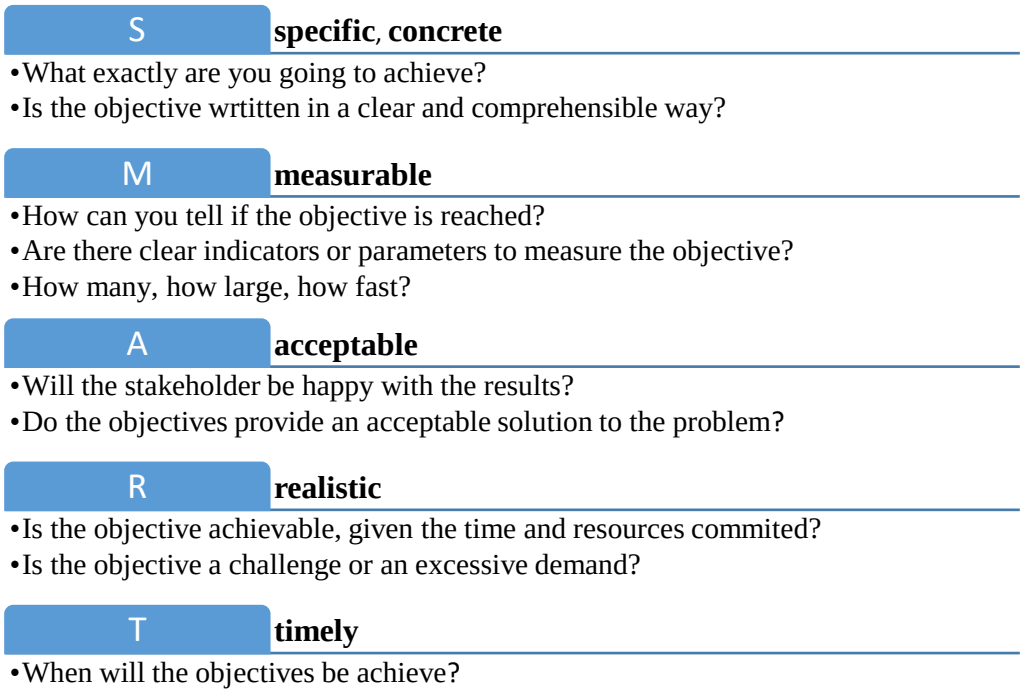

FIGURE 3. SMART OBJECTIVES

Tips for Objectives:

Keep it short, firm and powerful. Try to state the specific objectives listed with bullet points. Short introductory paragraph answering the five following key questions is also welcome:

- Why bother? Which problem are you trying to solve?
- Is it a European priority or could it be solved at national level?
- Is the solution already available?
- Why now? What would happen if we did not do this now?
- Why you? Are you the best people to do this work?

To make it clear what are the expected outcomes when reaching defined objectives, it might be appropriate to list after each objective the values of Key Performance Indicators (KPIs) that characterise quantitatively what will be the properties of results/solutions/products meeting the objectives or what will be the frequency or intensity of actions that will be taken to meet the objectives.

Relation to the work programme

Every call is a part of a bigger picture that defines the expected impacts of investments into research projects funded from the Framework Programme. Prior to writing this section, it is required to study carefully the call documentation and H2020 background documents to properly understand the policy behind the call. A practical way how to write the text in a way that makes it easy for readers to see how the topic of the work programme (specific challenge) matches with the project approach is to prepare a table with two columns, see Table 3. The details can be then explained in the text.

Table 3. How the project approach related to the work programme.

The scope of the call	How your project (Acronym) will address challenges and scope defined in the topic
Work Programme scope 1 - text	(Acronym) will provide a holistic approach to …
Work Programme scope 2 - text	(Acronym) will realise a set of demonstrators …

This part of the proposal should convince reviewers that the project fits the scope of the call and thus the call was properly chosen.

Concept and methodology

a) Concept

Another important step is to describe and explain the overall concept underpinning the project. This requires to describe the main ideas, models or assumptions involved and to identify any trans-disciplinary considerations. The concept should be based on a certain model/hypothesis/assumption that should be clearly stated and elaborated (best if the hypothesis is based on findings of consortium members). It is worth to develop a diagramme that visually represents the main concept of the project, while representing the main components of the approach as blocks and indicate the relationships between them.

The next point is to describe the positioning of the project, i.e. where it is situated in the spectrum from 'idea to application', or from 'lab to market'. This can be done by describing the "big picture" and indicating where is the project positioned[24]. This should help understand the focus of the project.

[24] McCarthy, How to write a competitive proposal for Horizon 2020: A Handbook for research managers, ISBN-10: 0954625730, http://www.hyperion.ie, 2014

To provide information about maturity of proposed solutions, refer to their positions in the innovation chain by stating the Technology Readiness Levels (TRL). It can be very illustrative to prepare a table with key elements of the project and assign them TRLs before and after the proposed work is done. The structure of TRLs is depicted in Table 4[25].

Table 4. Technology readiness levels.

TRL9	Actual system proven in operational environment • Full commercial application
TRL8	System complete and qualified • System complete and qualified
TRL7	System prototype demonstration in operational environment • Demo/system prototype in operational environment
TRL6	Technology demonstrated in relevant environment • Demo in relevant environment
TRL5	Technology validated in relevant environment • Validation: large scale prototype/ in relevant environnement
TRL4	Technology validated in lab • Validation: small scale prototype/ in lab
TRL3	Experimental proof of concept • Experimental proof of concept
TRL2	Technology concept formulated • Technology formulation
TRL1	Basic principles observed • Basic research

Similarly, the position of the project can be characterised by describing the Value chain[26] for the particular area of the project (steps a business goes through from raw materials to the end-user) and stating what improvements the project will provide.

The third crucial step is to describe any national or international research and innovation activities linked to the project (esp. where outputs from these will feed into the project). Here, simply show to the evaluators how your project connects to the rest of the world, and that you are aware of ongoing projects in the field. One of the best solutions is to create a table that includes the following information about other similar projects:

- Name and acronym of the project and its level (local, regional, national, international);
- Project duration;

[25] https://www.fitforhealth.eu/sites/default/files/01_excellence_0.pdf

[26] Porter, M. E. *The Competitive Advantage: Creating and Sustaining Superior Performance*. NY: Free Press, 1985. (Republished with a new introduction, 1998.)

- Outputs and results from projects and relation to your project;
- Names of partners in your project who have a relationship to other projects.

It is not necessary to list all of previous projects in this section, considering a strict limit on the number of pages. It is highly recommended to mention only five most significant projects, which are relevant to your project.

b) Methodology

In this part of the proposal, it is important to describe and explain the overall methodology, distinguishing, as appropriate, activities indicated in the relevant section of the work programme, e.g. for research, demonstration, piloting, first market replication, etc. It is necessary to summarise the overall approach and methodology of the project:

- Which main activities do you plan in your project?
- What do you plan to do in each activity? Highlight that those activities are required to achieve the results. This is the chance to demonstrate the excellence of the consortium. List all excellent/ground breaking technologies you will be applying and why you have composed it this way.
- How are these activities related? It must be clear that each activity is crucially important for successful completion of the project. Remember that all of these activities have their budget and evaluators must be sure to allocate money to the right project for the sake of transparency in public spending.

Gender equality is an important aspect of EU science and research policy. The main purposes are:

- Increase women's participation in research;
- Promote equality between women and men in career growth in research organisations;
- Stimulate excellence in science through gender analysis and gender equality analysis.

Where relevant, describe how sex and/or gender analysis is taken into account in the project's content, the differences in your research area between female and males, and how do you address these differences in your project design?

Ambition

Evaluators are asked to assess the extent to which the proposed work is ambitious, has innovation potential and goes beyond the state-of-the-art. This part of the proposal should refer to the objectives, concept and the methodology and explain in what and how do they go beyond the state-of-the-art. Current state of the knowledge, existing approaches or available technologies can be characterised by referring to the literature, referring to the existing projects or presenting the results

of patent search carried out. Then, the ambition of the project to go beyond the current state should be explained. For example, this can be done by preparing a table where in the first column are listed the selected domains where the project aims to go beyond the state-of-the-art and in the second column are explained expected contributions of the projects.

Furthermore, innovation potential of the project should be presented by describing novel products and services enabled by the project. This can be done by describing the products or services already available on the market and explaining how the project could innovate them. It can be also appropriate to briefly discuss the potential of enabled innovations to spill-over into other areas.

Additional Tips for Ambition:

- If applicable, prove your "freedom to operate" (e.g. are there any existing similar patents in this field? Would this hinder your project freedom? Or do you own the patents yourself?).
- Do not be overambitious, since overambitious objectives are factors that reduce the likelihood of achieving project objectives.

▪ Impact

Impact is a vital part of the H2020 programme. It plays a key role in the evaluation of project proposals. Impact distinguishes your project from the others. So what exactly is impact? Frankly, it is the reason whether your project would be funded or not. It is about what is the ultimate goal of the project and how are you going to achieve it? What difference will your project make to the EU and beyond?

Impact takes many different forms, not just commercial or fiscal. To properly consider the impact your project will have, you must think of the target audience that will be affected by your project. Are they policy-makers, scientists or specific communities? The measures and impacts achieved should benefit everyone involved in the project, from the end-users to the partners and also the EU itself.

Hence, it is recommended that researchers do not write the impact part, since they usually think about the scientific community as their target groups and they judge their performance based on the number of publications in scientific journals, presentation in conferences or number of PhD students. The impact section of the proposal should be written by the partners from industry who will use the project results.

Bear in mind to write a winning proposal. First, you must get into the mind of evaluators by making your proposal more attractive through answering these questions:

• Which results are expected from this project?

- Who is the main user of the result?
- What is the relevance for the dedicated user, the target group?

In order to better identify the stakeholders that will benefit from the achieved project goals, you can use the following Fast Track Impact stakeholder and publics analysis template (see Table 5).

Table 5. Fast Track Impact stakeholder and public analysis

Name of organisation, group or segment of the public	Likely interest in your research	What aspects of your research are they likely to be interested in? Identify key messages linked directly to your research for this group (e.g. Innovation capacity, innovation potential, market opportunities, benefits to society, etc.)	What level of influence might they have on your capacity to generate impact and/or what level of benefit might they derive from the research?	Comments on level of influence and/or likely benefit (e.g. times or contexts in which they have more/less influence over the outcomes of your research, ways they might block or facilitate your research or impact, types of benefit they might derive from the research)	If influence is high but interest is low, how might you motivate greater interest and engagement with the research?

Once you have identified what the impact is and who is involved, it is time to think about how to the project results will be disseminated and exploited. You should go through answering the following questions:

- How can you ensure that the user knows about obtained results?
- What are your plans about exploitation of obtained results?

- Which steps do you plan for exploitation of results after the end of the project?

To write a Horizon 2020 proposal that impresses on impact you can use the following key points in expected impact of your proposal[27].

Key points for Expected impacts of proposal:

- Define the "big picture". What specific part of challenge you are addressing (tackling).
- Show the stakeholder diagram (Social science) or Value chain (technology).
- Identify the lead users of the results (Target groups).
- Define how the lead users will take the results to the next level.
- Select Partners to cover the relevant TRLs.
- Select partners from the relevant part of the value of chain or stakeholder diagram.
- Define the steps needed to bring about the long-term impact.

For your proposal, you should also include a draft plan for the dissemination and exploitation of the project's results and communication strategy. All R&I Horizon 2020 projects must have a communication plan and related work package in the proposal. Often these are written by industrial partners with communication expertise, who are brought into the consortium specifically to design and deliver a work package on communication and impact. You should also consider adapting your dissemination strategy according to the different needs of your target groups. For instance, if your project impact includes commercial exploitation, you should also ask your industrial partner to do the necessary market research that enables you to propose a credible commercialisation strategy. Also, make sure you cover any issues around Intellectual Property (IP). Do not forget about IP-protection and data-management if you will deal with research data generated/collected.

As regards the communication plan, you must address communication measures that will be applied to promote the project and its archived results. For instance, when to disseminate what, where to promote the project? (e.g. at fairs, conferences, workshops, summer schools, etc.), how to promote via internet? (e.g. project website, newsletter, blogs, and social media) and dissemination material

[27] McCarthy, How to write a competitive proposal for Horizon 2020: A Handbook for research managers, ISBN-10: 0954625730, http://www.hyperion.ie, 2014

to be generated (e.g. flyers, banners, fact sheets, reports, etc.).

An overview of how to formulate your research impact for the dissemination and exploitation of the result among project partners and stakeholders are shown in Figure 4[28].

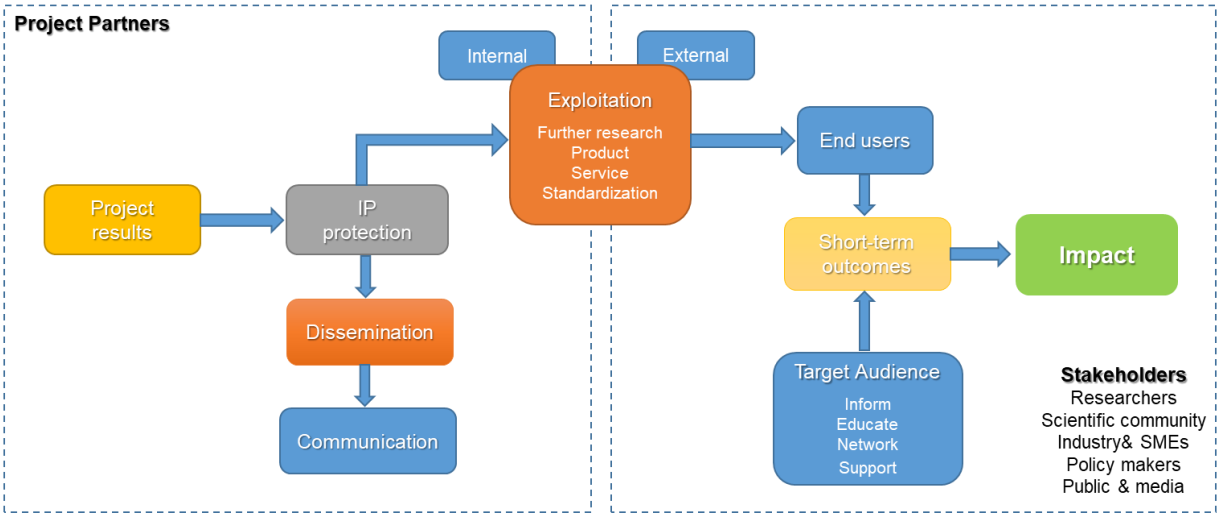

FIGURE 4. FORMULATION OF RESEARCH IMPACT FOR DISSEMINATION AND EXPLOITATION

- Quality and Efficiency of the Implementation

  - Work plan

In this part of the proposal, you should describe the work plan of the project. That means you should explain work packages (WPs), tasks and deliverables. The implementation process covers all actions from signing the Grant Agreement to the end of the project. Therefore, in the work plan you should describe all planned work and actions that will be taken to achieve the objectives of the project.

Each major step that needs to be taken in order to reach the project impacts should be described as a task and set of related tasks should be organised as a work package giving a hierarchical structure to the work plan. Thus, it is recommended to build tasks and work packages around expected impacts. This way the links between these two parts of the proposal will became obvious and it will be clear what steps will be taken in order to achieve the project impacts.

The first draft of WPs should be prepared by the project coordinator. The responsibility for WPs should be distributed to project partners. This also includes the identification of a leading partner for each WP. The first draft is then discussed and further developed. For this activity the project coordinator should allocate sufficient time. It is also recommended to identify the leading partner

[28] https://www.tekes.eu/globalassets/tekeseu/nyt/esitysaineisto/building_impactv2.pdf

and contributing partners at the level of tasks. This helps to define responsibilities of partners more precisely, which can prevent unnecessary disputes during the project implementation.
A recommended structure of the text to describe WPs is given in the template to be downloaded from the Participant Portal. Each project consists of many tasks; however, three groups of tasks should be identified:

- tasks related to the project objectives and impacts,
- tasks addressing dissemination and communication activities, and
- tasks devoted to the administration and management of the project.

Therefore, the project work plan should have one WP that is targeting project administration and management, one WP ensuring dissemination and communication activities and then, depending on the size of the project, between 3 to 7 WPs focused on the implementation of core project activities. The following example shows how to practically start with determining the WPs:

- WP1 – Project administration and management,
- WP2 – Research and development of conceptual framework,
- WP3 – Implementation and testing,
- WP4 – Demonstrations, evaluation and monitoring,
- WP5 – Dissemination and promotion.

WP1 includes all tasks related to the project coordination and management. It is expected that the project coordinator is responsible for WP1. WP2 can define scientific or conceptual approach in order to state the way how the project can reach its goals. WP3 consists of all tasks that will cover implementation and testing of proposed actions or methods. Within WP4 prototypes or proposed solutions are evaluated and, if necessary, also monitored for a long enough period of time to validate their full usability. Promotion and dissemination in WP5 is very important and it is obligatory for each project. This is accounting for sharing information about the project and its outputs with relevant target groups, such as scientific community (e.g. conferences, seminars, scientific and research papers), general public (e.g. public reports, newspaper articles), policy makers (e.g. policy reports), industry (e.g. handbooks), etc.
In order to have an overview of all tasks and deliverables, it is recommended to have a visual chart, e.g. Gantt chart, where all actions are placed on a time line indicating the expected starting and ending date. This chart will also help in planning other project activities. It is recommended to pay attention to the logical relationship between single tasks or deliverables. For instance, you should avoid the situation where the due date of a deliverable is before the required research equipment is ready for the experiments.

In the task description, it is recommended to give numbers whenever possible, to quantify the volume or frequency of taken actions (e.g. minimum number of experiments, minimum amount of collected data, minimum number of demonstration events, etc.). On the one hand, it simplifies following the work plan when the project is implemented, the estimation of the required budget and it defines more clearly partners' responsibilities. On the other hand, it increases the chances that the proposal will be accepted as it enables reviewers to get a clearer picture about the proposed approach.

- Management structure and procedures

In this part of the proposal, organisational structure and decisions-making procedures should be explained and justified, including critical risk relating to the project implementation. What is a suitable management structure for the project depends on the size of the project (number of partners, budget and duration of the project). It is recommended to visualise the structure with a diagramme. Some examples of diagrammes illustrating management structures that fit large project consortia and small project consortia are given in reference[29]. In the text, the role of all project bodies (boards, committees, management groups, positions fulfilling special function) should be detailed. Useful tips on roles and decisions-making rules can be found in the Consortium Agreement models[30]. These models have been developed by different entities and are not binding, but rather should be used as template to be adjusted to meet particular needs of the project.

- Consortium as a whole

Within this part of the proposal, a comprehensive explanation of complementarities between project partners should be provided. This can be done by describing special skills and expertise needed in the project and the resources and assets that are critical for the project implementation and how they are supplied by project partners. To provide a structured view on the complementarities between partners it can be useful to create a diagramme visualizing the required skills in the project in an organised way and indicate the contributions of project partners. Another useful representation is a skills matrix that identifies skills required for meeting the project objectives (in the first column), indicating which skills are covered by partners (in the second column) and summarising the role of each partner (in the third column). Descriptions should also address links with WPs and tasks. To better characterise the role of each partner in the delivery and in the use of project results, the

[29] *McCarthy, How to write a competitive proposal for Horizon 2020: A Handbook for research managers, ISBN-10: 0954625730, http://www.hyperion.ie, 2014*

[30] https://www.iprhelpdesk.eu/kb/3261-are-there-any-models-consortium-agreements

position of partners within the innovation chain (innovation stages ranging from basic research to the applications in the real-world) and in the value chain (business processes ranging from raw materials to the final services or products) could be indicated, while describing their role within the activities leading to the project objectives. Furthermore, it can be appropriate to explain how the consortium is handling the European dimension of the project.

- Resources to be committed

Requested budget should perfectly match reasonable costs of activities that are necessary to reach project objectives. When designing a budget it is useful to start with a table, where in rows are WPs and individual tasks, columns correspond to project partners and to different categories of costs (personnel costs, travel, equipment, other goods and services). You should add to the table the assumptions taken when estimating costs. Such table can be used as a basis for discussions and negotiations about the distribution of the project budget and later, if the project is funded, it can be used to control spending. Rates should be based on *actual costs* in a given country. Thus, it is important to estimate the costs for a person month based on the actual costs in the recent past, while accounting for realistic estimation of changes in the costs in the future. Large organisations provide recommendations on rates that should be applied in international projects. Regarding this but also other questions, UNIZA researchers can contact the NCP for financial issues Mr. Peter Beňo, CETRA representatives (Assoc. Prof. Peter Fabián), or national delegates in the Framework Programme, where several of them come from UNIZA (Prof. Tatiana Kováčiková, Prof. Martin Klimo, Assoc. Prof. Peter Braciník). A simple way how to check whether costs are appropriately estimated is to calculate budget/work ratio for each partner. Too small or too high values can help to spot potential problems in the budget design. All significant deviations from the proposed average values (e.g. too small or too high budget/work ratio, too small or too high travel costs, too small or too high costs for other goods and services, etc.) should be properly justified.

3.3.6 Ethic self-assessment

For all activities funded by the European Union, ethics is an integral part of research from beginning to end, and ethical compliance is seen as pivotal to achieve real research excellence. There is a clear need to make a thorough ethical evaluation from the conceptual stage of the proposal not only to respect the legal framework but also to enhance the quality of the research. Ethical research conduct implies the application of fundamental ethical principles and legislation to scientific research in all possible domains of research. In Horizon 2020 Research and Innovation projects, Ethical issues may arise on aspects such as:

- involving human embryos or foetuses,
- involving work with humans,
- using, producing or collecting human cells or tissues,
- collecting and processing of personal data,
- involving animals,
- third countries (non-EU countries)
- environment protection,
- dual use of project results,
- exclusive focus on civil application,
- misuse of research data and other ethics issues that may not be listed in Ethics Issue Table in the Horizon 2020 guidelines.

So, for the project proposal applicants have to fill in some parts concerning to ethical issues - Part A (e.g. 5 ETHICS AND SOCIETAL IMPACT) and the ethics self-assessment in Part B of the project proposal. In the ethical issue table (part of form A), the project coordinator is asked to provide answers to questions that should help identify whether the project is addressing potentially sensitive issues. The main goal of these questions is to prevent funding research that is not in line with fundamental rights and to ensure that sensitive issues are recognised and at the later stages properly handled. If for some questions there is uncertainty in what reply is applicable, more detailed explanations can be found in the document "H2020 Programme – Guidance - How to complete your ethics self-assessment"[31]. If there is a need to handle some sensitive issues (often it is personal data protection), we recommend to contact UNIZA experts on data protection issues: Prof. Ing. Tomáš Loveček, PhD. and Mgr. Marián Magdolen, PhD. At the later stage, it might be required to provide to the project officer a signed approval that sufficient measures have been taken and the project approach meets European and national legal and ethical requirements. For the domain of data protection, UNIZA data protection officer Mr. Jozef Hazucha at Department of Crisis Management can be contacted. Furthermore, in this matter we strongly recommend to contact the Slovak NCP specialised in ethics issues[32] RNDr. Soňa Ftačniková, PhD. to get qualified advice on how to proceed in your particular case.

[31] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/ethics/h2020_hi_ethics-self-assess_en.pdf
[32] http://www.cvtisr.sk/cvti-sr-vedecka-kniznica/podpora-vedy/horizont-2020/kontakty.html?page_id=6725

3.4 Project implementation

Succeeding in H2020 (or any other R&I competitive funding programme) is a reason for celebrating the achievement with colleagues and project partners, keeping in mind that this is only the end of the "project proposal stage" (submission and evaluation) and the beginning of the "project implementation", which starts with the Grant Agreement preparation. Figure 5 shows that the Grant Agreement preparation is a time-bound process[33].

FIGURE 5. GRANT AGREEMENT PREPARATION PROCESS

While the aim of the proposal stage is to have a project selected and funded, the project implementation stage focuses on its smooth and successful setup and kick-off from both an administrative, financial and a scientific viewpoint. Once the proposal evaluation is completed, coordinators of evaluated projects receive a formal notification via the European Commission Participants Portal with the results of the evaluation (the Evaluation Report). In addition to the evaluation report, successful Coordinators are also asked to act and start the preparation of the Grant Agreement and various supporting documents and annexes.

The main issues to be addressed are the following:

- Grant Agreement preparation,
- Consortium Agreement preparation,
- Addressing Ethics Requirements (if any),
- Developing trusted relationship with the EC Project Officer,
- Strengthening collaboration with Project Partners,
- Internal organisation (e.g. budget allocation to partners, hiring staff as required, trainings, setup of IT tools),
- Planning activities in detail, both from scientific and administrative/financial viewpoints,
- Promote the project nationally and internationally.

[33] http://ec.europa.eu/research/participants/data/ref/h2020/other/events/2017-03-01/1_gap-overview.pdf

To support coordinators in the process of getting a project started, the European Commission typically organises a 1-day H2020 Coordinators Workshop in Brussels. The aim of the meeting is both to provide an overview of relevant information about financial, administrative and scientific requirements and procedures, but also to allow meeting other coordinators of newly granted projects and to have a first meeting with the EC Project Officer.

3.4.1 Consortium Agreement preparation

One of the requirements to fulfil to start a project is the signature of a Consortium Agreement (CA) by all project partners. In some cases, the signature may be requested to third parties involved in the consortium as well. The CA is a private **agreement** between project beneficiaries to set out the rights and obligations amongst themselves. The European Commission does not review or comment the CA, but requires that it is signed as a prerequisite for the signature of the Grant Agreement between the EC and the coordinator.

There are CA models available to be used and customised according to the project needs. For instance, the DESCA 2020 Model Consortium Agreement[34]. Among others, the CA addresses issues such as responsibilities of parties, liability towards each other, project governance (in line with proposed project Implementation), financial provisions, results including intellectual property rights (ownership, transfer, dissemination) and access rights (background included and excluded).
A good practice is that the Consortium Agreement is checked by a lawyer or another expert in legal matters (employee from legal department), preferably with competence in the specific areas (R&I projects). Additionally, the coordinator should make use of the National Contact Point (NCP). For Slovakia, the legal NCP is currently JUDr. Viera Petrášová (viera.petrasova@cvtisr.sk)[35].

Several iterations of the drafting of the CA are typically needed, as the coordinator needs to take into account feedback from partners. Therefore, it is essential to prepare a draft of the Consortium Agreement (based on general principles already agreed with partners at proposal stage) as early as possible to avoid delays or stressful situations in which consensus is not easily found.

Once partners agree on the final draft of the CA, this needs to be signed by all partners. Signatures are collected by the coordinator, who compiles the signed version and shares it with all partners.

---

[34] DESCA 2020 (Development of a Simplified Consortium Agreement) www.desca-2020.eu
[35] Slovak National Context Points (NCPs) : http://h2020.cvtisr.sk/en/national-contact-points.html?page_id=672

For the purpose of the Grant Agreement, it is sufficient that the signed version of the CA is available in electronic version. The printed version of the CA can be made available to partners at a later stage (e.g. sent by post, or distributed at a project meeting).

3.4.2 Grant Agreement preparation

The Grant Agreement (GA) preparation aims at

- gathering legal, administrative and financial information from the coordinator as a prospective beneficiary (project participant) and any linked third parties;
- making sure the Description of the Action (DoA, Annex 1 to the Grant Agreement) and the Estimated budget for the action (Annex 2) match the proposal, any relevant information in the invitation to prepare the Grant Agreement, and, if applicable, the ethics review report, and the security scrutiny report;
- establishing the key points of the Grant Agreement (when the project starts, reporting periods, amount of pre-financing, need for Consortium Agreement, and, if applicable, ethical issues, third parties linked to the beneficiaries, in-kind contributions provided by third parties, subcontracting);
- verifying the financial capacity of the beneficiaries.

The preparation of the GA is a rather complex process carried out through the Participant Portal to provide any legal and administrative details not included in the proposal. The whole process must be completed within a few weeks by the coordinator, with the support of his/her institution and project partners. As a matter of fact, the GA must be signed within 3 months from the notification to the coordinator. The notification letter from EC specifies the deadline by which the GA must be ready. The deadline is strict. If not met, the project risks not to get funded and to start at all.

EC Project Officers closely monitor the process and regularly review progress of the coordinator on all issues to be addressed. The Project Officer will set a first deadline to submit a first draft of the Grant Agreement. Between the first and final deadline, the draft is further updated and refined.
For the EC, it is important to recognise that the consortium is reliable and active, even before the start of the project. As a good practice, in case of uncertainty or difficulties the coordinator should seek advice from the EC Project Officer.

The GA consists of several parts, the most important (from a proposer point of view) being Annex 1 Part A, Annex 1 Part B and Annex 2 - Estimated budget for the action.

- **Grant Agreement Terms and Conditions:** based on the Annotated Model Grant

Agreement of the European Commission[36]. This is automatically generated based on the information encoded in the EC Participants Portal by the EC Project Officer and the coordinator. Apart from the standard articles and clauses, it includes information on the project such as its duration, start date, maximum grant amount and reimbursement rate.

- **Annex 1 – Part A:** this is automatically generated based on data that the coordinator and other partners encode in the EC Participants Portal. Some of the required information (e.g. deliverables, milestones, WP description) is removed from the proposal and encoded in the portal.
- **Annex 1 – Part B:** this part is manually uploaded (as a pdf file) by the coordinator and it includes the updated version of the proposal. As the project must be implemented in accordance with the assessed proposal, the Grant Agreement must not differ from the project proposal. However, the initial proposal might need to be corrected if the evaluation feedback and/or the Project Officer raised issues to be addressed:
    - as result of an ethical review or security scrutiny;
    - to ensure the project conforms to the applicable rules, e.g. legal and financial rules;
    - to remove clerical errors or clear inconsistencies;
    - when, under exceptional circumstances, a partner is removed from the consortium during the grant preparation;

  Additionally, some sections of the proposal (e.g. deliverables, milestones, WP description) are removed and encoded in the Participants Portal because they will be part of Annex 1 – Part A.
- **Annex 2 – Estimated budget for the action:** summary table with budget breakdown by beneficiary and form of costs (e.g. Direct Personnel Costs, Other Direct Costs, Indirect Costs).

An additional requirement to be fulfilled at this stage concerns the signature of the Declaration of Honour, to be signed by the legal representative of the beneficiary. For UNIZA, the Declaration of Honour is signed by the Rector. The Grant Agreement, as well as the accession form and Declaration of Honour do not need to be manually signed. All signatures are electronic. It is important to note that the signature of the Consortium Agreement by all project partners is a requirement for the Grant Agreement signature.

The Grant Agreement enters into force on the day of the last signature. Typically, the coordinator

[36] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

or sole applicant signs first, followed by the Commission or agency.

In a consortium, beneficiaries other than the coordinator accede to the Grant Agreement by signing an accession form. Linked third parties, if present, are not requested to sign neither the agreement nor an accession form.

Key points (once Grant Agreement is ready):

- The EC notifies the coordinator by email as soon as the Grant Agreement is available for signature.
- The coordinator signs the Grant Agreement online in the EC Participants Portal.
- The EC signs the Grant Agreement online and the Grant Agreement enters into force.
- The EC notifies the other beneficiaries as soon as their accession forms are available for signing.
- All beneficiaries except the coordinator sign the accession form online (EC Participants Portal) up to 30 days after the Grant Agreement enters into force.

3.4.3 Setting-up the project team

In parallel to the Grant Agreement preparation, the successful applicant of the project needs to take care of the internal planning on how the project will be implemented at his/her institution. This phase is particularly demanding in case the project is implemented as coordinator.

The aim of this phase is to prepare an overview of the **team setup,** which is a plan describing how many team members will be involved in carrying out the scientific activities and support functions. It is worth noting that special attention must be paid in satisfying the administrative and financial requirements (e.g. available budget).

Ideally, the team setup should be not too different from the initial plan discussed before the proposal was submitted (i.e. each partner specifies in the proposal a list of persons to be involved in the project), at least in its key contributors. However, the coordinator must be prepared to deal also with cases in which major changes to the initial plans are required. This may involve, for instance, the need of recruiting additional experts nationally or internationally.

The team setup must be optimised both from the scientific viewpoint of expertise needed to carry out the tasks envisaged in the Grant Agreement, and from the administrative and financial perspective. In this respect, the plan for the team setup must include an hourly rate and overall

assessment of expenditure for each member (i.e. net and gross salary, plus information on total cost for the institution). The financial overview will have to consider, for each team member, his/her role (e.g. WP/Task Leader, member), professional experience (e.g. Professor, PhD student) and estimated involvement in the project (PMs, % of working time). It is worth noting that at this stage also administrative and financial support has to be discussed (typically, this is provided within the department/faculty/institute).

In addition to consider the allocation of "personnel costs" for the project, some considerations should be made also in relation to "other direct costs" foreseen in the Grant Agreement such as the purchase of technical equipment needed for the project (according to a public procurement procedure, which in Slovakia must be followed for any expenditure higher than 1 EUR).

3.4.3.1 Kick-off meeting

One of the first decisions to be taken within the project consortium concerns the date and location of the kick-off meeting (e.g. for instance, via a Doodle poll). This is typically a 2-day meeting hosted by the coordinator and attended by all project partners. It is organised shortly after the project starts, and in any case within the first 2 months of the project in order not to delay the planned activities. The EC Project Officer is also invited to attend the project kick-off meeting to meet the project participants and to illustrate the project framework (i.e. in relation to EU policies, H2020 programme, and the administrative/financial rules to be followed).

The primary objective of the kick-off meeting is to achieve a common view of the project objectives and activities to carry out, and to establish the best possible conditions to work together in the project. This includes, for instance, sharing a strategic vision for the project and the commitment to deliver high-quality results in line with the description of work.

The preparatory work of the coordinator includes the meeting logistics (e.g. meeting room, meeting invitations, practical information supporting travel and accommodation arrangements), meeting content (e.g. agenda, presentations) and overall promotion of the project (e.g. online news, press release, local dissemination).

Although there is not a standard practice for organising a kick-off meeting, some considerations can be made on various crucial elements:

- **Meeting Agenda**: this is the key document around which the whole meeting is structured. It is prepared by the coordinator, with the input of project partners. The first draft of the agenda should be prepared well in advance and circulated to partners at least 6 weeks before

the meeting takes place. The agenda should clearly indicate, for each item to be discussed, how much time is allocated, and which partner is responsible for it. Content-wise, in addition to the overall presentation of the project and its administrative/financial setup, the agenda should reserve sufficient time for the presentation and discussion of each Work Package, and for a strategic discussion on the implementation of the project and the action plan for its first year. Some topics may also benefit from focused small-group discussions: for this, the agenda could reserve sufficient time (2-3 hours) for "working group discussions and reports".

- **Meeting invitations**: invitations must be sent to all partners well in advance (i.e. at least 7 weeks in advance) together with all the relevant documentation. This includes the draft meeting agenda and practical instructions supporting partners' travel and accommodation arrangements. As a good practice, this information should be made available online in the website of the project coordinator.
- **Meeting logistics:** the organiser takes care of reserving meeting room, catering, networking dinner, shuttle bus/local transport tickets and technical support needed for the kick-off meeting. Expenditure should stay within the budget allocated to organise the kick-off meeting, as defined in Grant Agreement. Due to Slovak legislation, the organiser has to carefully assess which expenditure would require public procurement, and in this case, prepare a call for tender (or more, if necessary) covering the meeting requirements. To minimise administrative requirements, the meeting organiser should consider making use of facilities and services of the institution (e.g. UNIZA menza for catering), which do not require following the public procurement procedure.
- **Promotion of the event:** the kick-off meeting, as the whole project, should be promoted at the website of project coordinator. The kick-off meeting may include, whenever possible, side-events to promote the project topic to the local research community and/or stakeholders. It is also recommended to publish a press release from the meeting and to distribute it to relevant stakeholders.
- **Minutes of the Meeting:** a person should be appointed as secretary to take notes from the meeting and to prepare the minutes. The meeting minutes should follow the meeting agenda, without describing all points of discussion, but rather focusing on its "high-lights" and decisions made (e.g. date and place of next meeting). In case some decisions are not finalised at the meeting, the meeting minutes are left "open" until these decisions are taken (typically,

within 2-3 weeks from the meeting). The draft of the meeting minutes is circulated to partners for feedback and, once in its final version, approved and archived.

- **Meeting presentations:** kick-off presentations should be collected by the coordinator and shared with all project partners shortly after the meeting together with the minutes of the meeting. Presentations should also be made available in the online repository of the consortium (e.g. private area of project website, or other online collaborative space).
- **List of participants:** at the meeting, it is important that a list of participants is prepared and signed by all participants, for each day of their attendance. The signed attendance list demonstrates that the meeting took place and it should be annexed to the meeting minutes.

3.4.4 Administrative and Financial Management

In parallel to the organisation of the kick-off meeting, the coordinator receives the pre-financing amount from the European Commission. This is paid to a bank account opened by the coordinator specifically for the project. For Slovak universities, the bank account must be opened at the State Treasury (ŠTÁTNA POKLADNICA), which implements centralised and comprehensive financial management of public finances and management of cash, debt and investment of short-term liquidity surpluses in the public sector. It provides, inter alia, centralisation of revenue and implementation of public budgets, administration of debts and commitments of the state budget and daily liquidity of the state budget. Request to open the bank account is made by the project coordinator to the administrative personnel of his/her institution.

The coordinator should prepare a plan for the distribution of budget to project partners, and inform partners accordingly. The plan represents the basis for the financial management of the project: the whole project could be broken down into periods (e.g. 6-month period) and the amount to transfer to partners could take into account the tasks and PMs to be performed by each partner within a specific period. Towards the end of the period, each partner would provide information concerning expenditure and an assessment for the following period to the coordinator as a basis for the following payment. Monitoring partners' expenditure periodically supports the preparation of financial reports to the European Commission, as well as raises awareness on the progress of the project. Possible remedies to emerging issues may have to be considered (e.g., partner is over-spending on a task, which is delayed).

It is worth noting that financial management includes both a "European dimension" and a "national dimension", since the expenditure should comply both to EU rules and national legislation. As such,

the coordinator should consider both how to take care of financial reporting towards the European Commission and towards national authorities. At a practical level, this requires setting up and configuring suitable accounting and bookkeeping systems. At UNIZA, expenditure is encoded in the SAP accounting system by employees at the Rector's office in a way that is common to all the institution (e.g. labels, categories). The way information is encoded in SAP is not suitable for EC reporting (e.g., it does not allow to specify that an expenditure relates to a specific project task and the documents generated by SAP are provided in Slovak only). Therefore, it is frequent practice that the coordinator sets up a system (e.g. Excel spreadsheet, or other specialised accounting system) to encode expenditure in line with EC reporting requirements. The main challenge, in this case, is to ensure a good and efficient communication channel between the Rector's office and the coordinator to avoid discrepancies between the two views on the project expenditure.

3.4.5 Project Coordination and Management

The daily management of the project requires an efficient coordination of the activities to be carried out within one's own institution, and to follow up progress made by partners in line with the overall project schedule. This is best achieved if the team setup envisages the two key complementary roles of Project Manager and Project Coordinator.

Although delegation of work is common practice, the Project Manager is responsible and accountable for the successful delivery of the project outputs. The Project Coordinator is a complementary figure to the Project Manager and his/her closest ally, since its role is to ensure that the project and all related processes run smoothly.

The coordinator, as the role says, coordinate activities, resources, equipment and information, bringing to the attention of the project manager any issues which cannot be resolved. Coordination can range from administration duties (maintenance of project documentation, plans and reports, organisation of meetings and agendas), through engineering duties (maintenance of headcount databases, materials, configuration management) right up to junior project management duties (updating risk/opportunity registers, schedule updates, financial updates).

On the other hand, the Project Manager spends much of the project time in internal and external communication with team members, partners and project stakeholders. This is in line with one tacit rule of project management, which is to focus first on people, instead of formal tools or structures.

3.4.5.1 Project communication and collaboration among partners

There are many things that contribute to the success of a project, but one of the most important is the effective communication and collaboration with consortium partners. Communication is an essential part of project management. As a coordinator, sufficient time should be devoted to communicating individually with each partner to gain awareness of progress with their tasks, as well as to discuss any problems or issues they may experience. One of the key enablers for a successful project is the basis of trust between project participants. Trust develops with time and requires face-to-face meetings, which are not so frequent in a project. Therefore, it is common that a consortium with many members who do not know each other will take longer to establish an effective collaboration compared to a consortium with several partners having previously worked together. To support trust development and effective collaboration, the choice of appropriate and suitable means for communication and collaboration is crucial.

Every project has its unique set of individuals and circumstances that dictate which forms of communication will work best, but for all projects the goal is the same: help every team member carry out allocated tasks precisely and make good decisions. Decisions require open channels of communication so information can flow back and forth as needed. Hence, project partners should use tools that are tailored to the specific type of communication needed according to the type of information shared between partners. Below are some of the commonly used tools for project communication and documentation.

Communication and collaboration tools:

- **Skype** (https://www.skype.com). One of the biggest reasons that Skype is the most popular communication tool is that is free. Skype allows audio and video calls between multiple devices. One of the most important features for the project is the group call that is very practical for the project communication.
- **Google Groups** (https://groups.google.com). When you need to organise your email channels into groups, for example according to work packages of the project, use Google Groups. The messages will be received by only those who are interested and it will prevent overwhelming the consortium and considering the project messages as spam. The participants need to have a Gmail account. But you can use other services with this account, such as Google Hangout, Google Docs and Google Drive, too (described later)
- **Google Hangout** (https://hangouts.google.com/). Group calls' rival to Skype.
- **Doodle** (https://doodle.com/) is a simple tool to decide on dates, places and more. If your team needs to make decision about next meeting, choose Doodle voting.

- **Yammer** (https://www.yammer.com/) is a social network that is entirely focused on your project. In order to join your project's Yammer network, your team member must have a working email address from your own domain.
- **Slack** (https://slack.com) is the powerhouse messaging app used by remote teams. At its core, Slack operates in channels. A company can create channels to track and archive conversations around teams and projects in order to get things done. Slack's search feature ensures that you will never "lose" a conversation about a project.
- **Mailbird** (https://www.getmailbird.com/) is an email client for Windows. With Mailbird, you experience a seamless experience managing your online communication. Mailbird's third party integrations allow you manage messenger platforms like Facebook right from the email client.

▪ *Documentation tools*

- **Google Docs** (https://docs.google.com) is the easiest way to collaborate, share, edit, and eventually publish documents of all kinds. It is possible to create documents, blog posts, spreadsheets, and presentations as a group, seeing all the comments and changes of the others.
- **Office Online** (https://www.office.com/) – rival to Google Docs. There are certain limitations on the features that you get for free, though. For instance, if you wish to add a references section such as a table of contents and add citations, you will need to upgrade to the paid version.

▪ *File Sharing Tools*

- **Google Drive** (https://www.google.com/drive/) – When you need safe storage for all of your files, this is the app to use. You will have 15 GB of free storage for photos, documents, and any other digital file you need to store for later use. Files are safe, but easily accessible by you and your team, and you can access them from any device. Organise items quickly and easily, and then share them and collaborate with your team.
- **Dropbox** (https://www.dropbox.com/) allows you to synchronise your work no matter where you are or what device you are working on. While individuals can use Dropbox for free, the Dropbox most affordable business version allows more space (1 terabyte, or enough to store 250 movies) and more features, such as priority email support and higher sharing limits.

- **Box** (https://www.box.com/home) – projects will get a file sharing service, collaboration services, a content management system and the ability to manage your project from a centralised dashboard.
- **Hightail** (https://www.hightail.com/) is a file sharing platform that allows for creative collaboration among teams. Hightail is designed to help you manage a project from start to end. You can bring clients in on projects, track changes, and ultimately speed up the pace at which your team completes projects.
- **OneDrive** (https://onedrive.live.com/about/en-us/) is brought to you by Microsoft as part of its Live brand. With OneDrive, you get 5 GB for free and if you need extra space, you can get another 50 GB a small fee. OneDrive is pre-installed on Windows 10, and it works on all devices. Access and share files and photos on PC, Mac, Android, and iOS. OneDrive allows you and your colleagues to collaborate with Word, Excel, PowerPoint, and OneNote from your desktop, mobile device, and the web.

- *Project Management Tools*
  - **Basecamp** (https://3.basecamp.com/r/2ha7) – Simple, easy to use, powerful and very affordable software, it is perfect for small projects.
  - **ProofHub** (https://www.proofhub.com/) – From adding people to assigning different roles to them and defining who's who of the project, you can do it all with ProofHub. You get a view on important events with the help of native calendar. The option to set dependencies on tasks makes it even easier to plan your project activities.
  - **GitHub** (https://github.com/) is the most popular software repository on the web. GitHub wraps a version control system called a Git where developers can host their projects for free as well as exchange and talk "code" with other developers.
  - **Jira** (https://www.atlassian.com/software/jira) **–** issue and project tracking software. Jira is equipped with features that support every stage of your software development process to help you plan, track and report.

3.4.5.2 Dealing with Data Protection

All ethics requirements due after project start are automatically included in the Grant Agreement in the form of deliverables. These deliverables are known as 'ethics deliverables' (e.g. D 7.1 Ethical General Requirements, D.2 Protection of Personal Data - Requirements) and will be placed in an automatically generated work package called 'ethics requirements' (e.g. WP 7 Ethics requirements). Depending on the ethics assessment, the project may not have any extra deliverable, or just one

(Ethical General Requirements or Protection of Personal Data) or two.

Ethics issues arise in many areas of research. Apart from the obvious example, the medical field, research protocols in social sciences, ethnography, psychology, environmental studies, security research, etc. Ethics issues may involve the voluntary participation of research subjects and the collection of data that might be considered as personal.

In many cases, ethical issues concern the protection of personal data. Processing of personal data' means any operation (or set of operations) performed on personal data, either manually or by automatic means. This includes:

- Collection (digital audio recording, digital video caption, etc.),
- Recording,
- Organisation and storage (cloud, LAN or WAN servers),
- Adaptation or alteration (merging sets, amplification, etc.),
- Retrieval and consultation,
- Use disclosure by transmission, dissemination or otherwise making available (share, exchange, transfer),
- Alignment or combination blocking, deleting or destruction.

Some projects raise ethical issues during the project implementation, that coordinator and consortium partners should be aware of and take appropriate measures to cover them. In such cases, all activities need to be carried out ensuring the ethical principles in accordance with EU legislation requirements that are addressed below:

- Horizon 2020 Regulation,
- Grant Agreement Requirements,
- Consortium Parties Agreement Requirement,
- EU Legislation Requirements:
    - Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data,
    - Regulation 679/2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (GDPR),
    - WP29 Guidelines, Recommendations, for example:
        - Guidelines on Data Protection Impact Assessment (DPIA) and determining whether processing is "likely to result in a high risk" for the purposes of

Regulation 2016/679 (10/2017),
    - Guidelines on Personal data breach notification under Regulation 2016/679 (10/2017),
    - WP29 Opinion 02/2013 on apps on smart devices (5/2013),
    - WP29 Opinion 05/2012 on Cloud Computing (6/2012),
  - ePrivacy,
  - EDPS – Guidelines, Recommendations,
- National Legislation Requirements,
- Technical standards requirements:
  - ISO/IEC 29100:2011 Information technology -Security techniques -Privacy framework,
  - ISO/IEC 29101:2013 Information technology -Security techniques - Privacy architecture framework,
  - ISO/IEC 29134:2017 Information technology -Security techniques -Guidelines for privacy impact assessment.

3.4.6 Concluding the project

After the conclusion of the H2020 project, the IPR provisions will remain in force, such as the obligations regarding confidentiality, exploitation and dissemination. Consequently, participants are required to properly manage the post-contract phase and to consider the following[37]:

- During the implementation of the action and for four years after the project, in accordance with the general model Grant Agreement participants must keep confidential any data, documents or other material (in any form) that is identified as confidential. Such a confidentiality time limit may be extended for the information shared among the consortium partners in their Consortium Agreement, which should be checked so that you know for how long participants are bound by confidentiality commitments in your project.

- Measures to ensure the exploitation of results must be performed up to four years after the project, requiring participants to be truly engaged in the use of their results.

[37] https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-IP-Management-H2020-Project-Implementation-and-Conclusion.pdf

- When disseminating the results without protecting them first, deciding to stop protection or not to seek extension, participants that have received EU funding must up to four years after the project formally notify the Commission in advance according to the requirements established in the Grant Agreement.

- The obligation to protect results remains, including the need to include the statement of financial support in any application for protection of results, whenever possible.

- Dissemination obligations also stay in force, including the need to mention the EU funding and to include a disclaimer.

- Participants are entitled to request access rights up to one year (or any other time limit agreed) after the conclusion of the project and therefore exclusive licences require during this period a prior written waiver of rights from the other consortium partners concerned.

- Obligations regarding the transfer of results also remain in force.

According UNIZA directive No. 153/2017, the project coordinator is also obliged to update status of the project in Information System for UNIZA projects (https://vav.uniza.sk) after the financial closing of the project. For those projects that received co-founding from UNIZA, the project coordinator is obliged to mark all the project documents with a registration code and archive them at the registration office (Registratúry pracoviska in Slovak). The registration office can be located at each department or university institute. For all other projects, the project manager must archive the project documents at his/her own place for a time period specified by Grant Agreement and the internal UNIZA regulations.

4 Conclusions

The main purpose of this document is to simplify access to the information resources. Regarding its definition as a 'Guide for preparation and implementation of R&I projects', this document can be used as an entry point and in case a specific issue needs to be solved or a question needs to be answered. The guide has been written primarily for all UNIZA academic staff (professors, associate professors and researchers) who are interested or already have been involved in the project proposal preparation at the Slovak national level and European level. In general, the situation concerning participation in Horizon 2020 R&I projects among other Slovak Universities and research institutes is similar to University of Žilina. Therefore, we believe the provided practical advice in the manual

are applicable by other researchers in Slovakia. In addition, the document may find a broader audience such as University administrative staff to help in gaining knowledge of roles of Project Coordinator within the consortium and to understand procedures in the implementation phase once a Horizon 2020 R&I project was granted.

To maximise the impact of the guide, we intend to raise awareness about its availability through ERAdiate dissemination and communication channels (e.g. Web-site, Twitter, LinkedIn) and distributing it during events organised by ERAdiate (e.g. Summer school, seminars, workshops, meetings). We will notify UNIZA management about the availability of the guideline and ask them to promote it.

We also would like to take an opportunity to encourage UNIZA researchers to contact ERAdiate and share their views on challenges that they are facing during preparation of proposals and implementation of granted projects. Any suggestions for improvement raised by UNIZA academic staff are welcome since we expect that the guide could be updated during the funded time of ERAdiate based on received feedback from UNZA academic staff.

ACKNOWLEDGMENT:

Preparation of this guide was supported by the FP 7 project ERAdiate [621386] "Enhancing Research and innovation dimensions of the University of Žilina in Intelligent Transport Systems".

This document is an excerpt from the deliverable D5.1 of ERAdiate project. Public has restricted access to this deliverable. Therefore, with the permission of the ERAdiate project officer and ERAdiate project coordinator, the text which is not sensitive got published in this document.

5 **Annex 1 – Acronyms**

CA	Consortium Agreement
CETRA	Centre for Transport Research (CETRA) at the University of Žilina
COST	European Cooperation in Science and Technology
CORDIS	Community Research and Development Information Service
CSA	Coordination & Support actions
EC	European Commission
EF	European Fellowship
EJD	European Joint Doctorate
EID	European Industrial Doctorate
ETN	European Training Network
ERC	European Research Council
FET- Open	Future and Emerging Technologies-Open
FTI	Fast Track Innovation
GDPR	General Data Protection Regulation
GF	Global Fellowship
H2020	Horizon 2020
IP	Intellectual Property
ITS	Intelligent Transport Systems
GA	Grant Agreement
GDPR	General Data Protection Regulation
ITS	Intelligent Transport Systems
MSCA	Marie Skłodowska-Curie actions
MSCA-ITN	Marie Skłodowska-Curie action- Innovative Training Networks
MSCA-IF	Marie Skłodowska-Curie action- Individual Fellowship
MSCA-RISE	Marie Skłodowska-Curie action -Research and Innovation Staff Exchange
NCP	National Contact Point
R&I	Research and Innovation
SLORD	Slovak Liaison Office for Research and Development
SME	Small and Medium-sized Enterprises
SRDA	Slovak Research and Development Agency
UNIZA	University of Žilina
WP	Work Package

CONTACT US

erachair@uniza.sk

Project Coordinator
Prof. Milan Dado

ERA Chair Holder
Prof. Tatiana Kováčiková

University of Žilina
University Science Park
Univerzitná 8215/1
010 26 Žilina
Slovakia

Follow @ERAdiateITS

www.linkedin.com/groups/13400280

www.facebook.com/ERAdiateITS