SwissCore

Contact Office for European Research
Innovation and Education

Decision model for Horizon 2020

final report

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Executive Summary

Horizon 2020, the European Framework Programme for Research and Innovation from 2014 to 2020, strongly differs from previous framework programmes. The interdisciplinary challenge-based approach, the number of funding instruments and the inclusion of actions covering both fundamental research and close-to-market activities make it difficult to identify the right set of funding opportunities for potential participants, from academia or industry. **This report provides a decision model assisting research support organisations to identify the best opportunity in Horizon 2020**.

The model developed in this work relies on a decision tree that routs the user to a call for proposals in Horizon 2020 through maximally four questions. The decision tree considers the needs and background of the applicant, the position of its research and innovation project between fundamental research and close-to-market activities, its administrative interests and personal objectives. The decision model asks a series of question at each node, which will determine a subset of relevant opportunities. A strength of model is that it moves away to a certain extent from the structure and jargon of Horizon 2020 and links calls for proposals to very specific research areas. The links and the decision models have ultimately been built on 'thematic matrices' which list of calls for proposals for 2014 and 2015 in Horizon 2020 for broad thematic fields. In this work we developed matrices for Information and Communication Technologies (ICT) and health. The thematic matrices can be expanded to other fields at a later stage.

A key element of the decision model are Technology Readiness Levels (TRL), and how they are linked to funding opportunities in Horizon 2020. We defined three categories linked to TRL, namely **'concept development'**, **'proof of principle'** and **'proof of performance'**, which were detrimental. Nevertheless, the fact that the calls for proposals are distributed across the three categories makes it possible to use the model only in conjunction with the other parameters we introduced. We finally provide a set of recommendations describing how the model could be improved and what complementarities and synergies exist with other tools such as the opportunity finder.

Acknowledgement

We would like to thank all experts that helped us in developing the models and provided feedback on various parts of the document. Through their input, we could readily target down our model to a set of key parameters and their valuable comments greatly improved the quality of our work.

Contents

List of Abbreviation

Abbreviation	Meaning
AdG	Advanced Grant
BRIS	Brazil, Russia, India, South-Africa
CIP	Competitiveness and Innovation Programme
COFUND	Co-funding of Regional, National, and International Programmes
CoG	Consolidator Grant
COSME	Competitiveness of enterprises and SMEs
CP	Collaborative Project
CSA	Coordinating and Support Action
DoD	Department of Defence
EC	European Commission
EDCTP	European and Developing Countries Clinical Trials Partnership
EIP	European Innovation Partnership
EIT	European Institute of Innovation and Technology
EEN	European Enterprise Network
ERA	European Research Area
ERC	European Research Council
ESIF	European Structural and Investment Funds
ETP	European Technology Platform
EU	European Union
Europe 2020	European strategy for jobs and growth from 2010 to 2020
FET	Future Emerging Technology
FFG	Austrian Research Promotion Agency
FP7	Seventh Framework Programme for Research and Technological Development from 2007 to 2013
FTI	Fast Track to Innovation
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure on Research and Development
Horizon 2020	Framework Programme for Research and Innovation from 2014 to 2020
IMI	Innovative Medicine Initiative
IA	Innovation Action
IPR	Intellectual Protection Rights
ITN	Initial Training Network
JPI	Joint Programming Initiative
JRC	Joint Research Centre
LEIT	Leadership in Enabling and Industrial Technologies
NOC	Need and Opportunity Checker
MSCA	Marie Skłodowska-Curie Actions
OECD	Organisation for Economic Co-operation and Development
P2P	Public-Public Partnership
PoC	Proof of Concept
PPP	Public-Private Partnership
R&D	Research and Development
RI	Research Infrastructure
RIA	Research and Innovation Action
RISE	Research and Innovation Staff Exchange
SERI	(Swiss Federal) State Secretariat for Education, Research and Innovation
SME	Small and Medium-sized Enterprise
StG	Starting Grant

SyG	Synergy Grant
TRL	Technology Readiness Level
USA	United States of America
WP	Work Programmes

1 European context for research

The aftermath of the financial crisis from 2008 still affects the European Union (EU). Despite the disastrous effect on the EU's economy, EU's Gross Domestic Product (GDP) reached the amount of €13 trillion in 2012 and at the same time overtook the United States of America's (USA) GDP, becoming the world largest internal market (Eurostat, 2013). Furthermore with only 7% of the world population EU's share of global import and export is around 16% (EC, 2011c), which is a quite high ratio. However, the Gross Domestic Expenditure on Research and Development (GERD) is not as good as it used to be. As shown in figure 1-1, EU's share of word GERD used to represent 29% in 2000, but dropped to 23% as of 2009. Not because the EU stopped increasing its real GERD, but because the increase rate was only about 50% while in China it was about 855% and 145% in Brazil, Russia, India and South-Africa (BRIS).

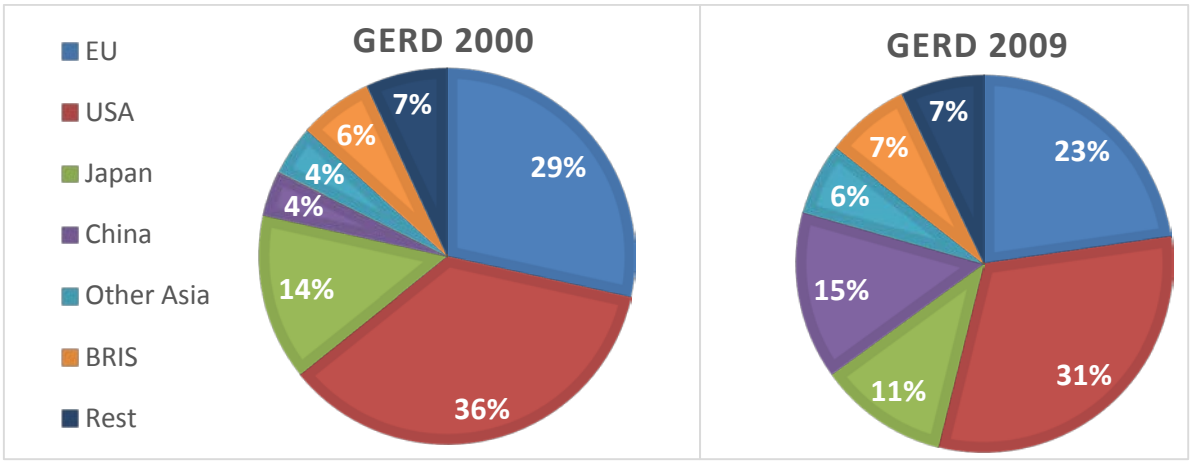

Figure 1-1-1: Evolution of share of world GERD between 2000 and 2009 (EC, 2011d).

The EU's authorities are well aware of this fact and developed a strategy to regain its position in the share of global GERD. This plan is called the European strategy for jobs and growth from 2010 to 2020 (Europe 2020), and will be detailed below.

1.1 Europe 2020, the plan for a renewed growth

To tackle its relative decline in GERD and the lack of investments in Research and Development (R&D), the EU defined the **'Europe 2020' strategy for smart, sustainable and inclusive growth** (EC, 2011a). Europe 2020 sets clear objectives for a higher share of employment in Research and Innovation (R&I), higher investments in R&D, better-trained and more entrepreneurial workforce and for addressing societal challenges such as climate change, demographic ageing and energy. The 'Innovation Union' flagship initiative has been set up under the framework of Europe 2020 and proposes clear measures and targets to reach the Union's goal by 2020 in the field of research and innovation. The 'Innovation Union' emphasises the need of **fostering faster uptake of research results by the market by improving the links between basic research and technological innovation**, which should be in turn a source of jobs and growth. A further priority of the strategy is to link R&I efforts to grand societal challenges identified by policy-makers and experts. The activities therein should therefore directly be targeted at **solving societal and political needs of the EU, but also have a clear impact on economic growth and jobs**. A novelty is also the increased

coherence and complementarities of policies and programmes across different societal and political sectors, which can be seen, for example, with the accent set on R&I by cohesion policies.

1.2 Following the blueprint

The EU adopted the new Framework Programme for Research and Innovation (Horizon 2020) in December 2013 as one of the main vehicle implementing the objectives of Europe 2020 and the Innovation Union. With a budget of around €70 billion, Horizon 2020 contains some extensive changes compared to the current Seventh Framework Programme for Research and Technological Development (FP7). Most importantly, **Horizon 2020 marks the shift from thematic research priorities towards a demand-driven approach with interdisciplinary themes along grand societal challenges**. Furthermore Horizon 2020 will incorporate a **fundamental focus on innovation**, by being clearly linked to the EU's political objectives and by incorporating parts of the Competitiveness and Innovation Programme (CIP) and the European Institution for Innovation and Technology (EIT). This new focus takes the form of a set of transversal funding instruments, which are not thematically bound. In addition Horizon 2020 will aim at creating stronger **synergies and complementarities** with other initiatives such as Public-Public Partnerships (P2P), Public-Private Partnerships (PPP) and programmes under the cohesion policy. All these elements add complexity to Horizon 2020. For this reason Horizon 2020 will be briefly presented below.

1.3 Staring at Horizon 2020

Horizon 2020 will be organised across three priorities called 'Excellent Science', 'Industrial Leadership' and 'Societal Challenges', including two transversal parts labelled 'Spreading Excellence and Widening Participation' and 'Science With and For Society' (EC, 2011b). Compared to FP7, **Horizon 2020 sets a stronger emphasis on innovation** (in the sense of bridging the gap between curiosity-driven research and the commercial exploitation of scientific results) **and on multidisciplinary research**. Horizon 2020 also marks a crucial shift from the thematic approach under Cooperation in FP7 to the 'Societal Challenges' priority in Horizon 2020. This results that research in a particular area, such as for example Information and Communication Technology (ICT), is funded under several research funding instruments of Horizon 2020 and beyond. Co-funding of European and national research activities and instruments for closing the innovation divide in Europe will be emphasised as well. A schematic overview of Horizon 2020 is shown in Figure 1-2 and a more detailed description is given in Annex II. A further analysis of its content can be found in the Joint Report II on Horizon 2020 by SwissCore & Mission CH-EU (2013).

Figure 1-2 based on EC 2011c: 4f and instruments (Kneubühler & Youssefzadeh, 2013).

Besides the traditional funding instruments included in Horizon 2020, several initiatives exist at European level targeting activities at different positions on the innovation axis 'from research to retail', i.e. basic research via applied research to experimental development (close-to-market activities). These actions can be found in P2P such as Joint Programming Initiative (JPI) or the European and Developing Countries Clinical Trials Partnership (EDCTP) and Public-Private Partnership (PPP) such as the Innovative Medicine Initiative (IMI). **Horizon 2020 being an all-integrative programme, it will have direct links with activities covered by P2P and PPP**. Thus, Horizon 2020 poses the double challenge to the researcher of being trans-disciplinary and providing funding for activities from 'research to retail'. But before discussing

these challenges, the participation of Swiss researchers in the previous programme will be presented.

1.4 Swiss horizon

As shown in Figure 1-2 , the participation of Swiss research actors in FP7 has been relatively successful, with €**1.2 billion given to Swiss institutions as of June 2012**. The intensity of Swiss participation is, however, not equally distributed across all areas and actions of FP7. The latest statistics from the (Swiss Federal) State Secretariat for Education, Research and Innovation (SERI) indicate that, for Swiss institutions, **the career development programmes of the European Research Council (ERC) and Marie Skłodowska-Curie Actions (MSCA) as well as thematic transnational cooperation projects in the areas of ICT, Health and Nanotechnologies represent CHF1'237.5 million of funding, or 79% of FP7 funds awarded to Swiss participants** (SERI, 2013).

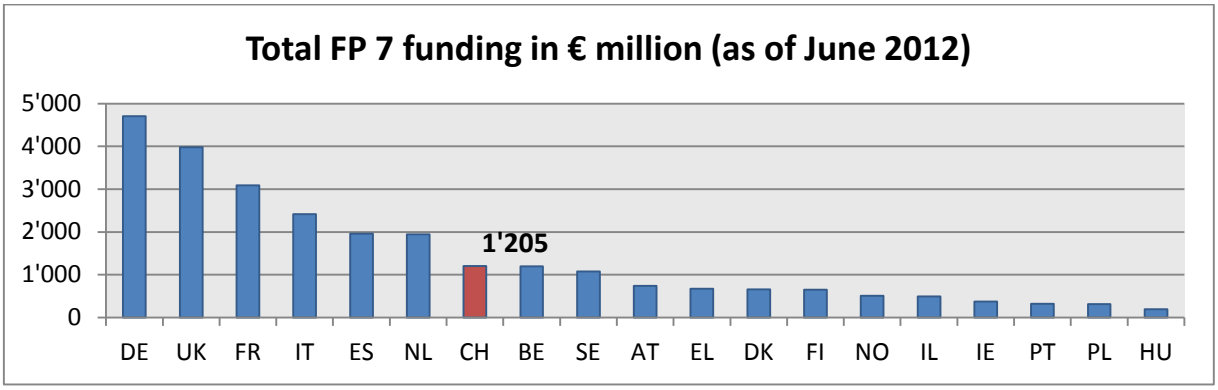

Figure 1-3: Top 20 participating countries to FP7 (SERI, 2013).

Disregarding participation in investigator-driven and bottom-up programmes of FP7, research in ICT, Health and Nanotechnologies represent above 65% of all Swiss FP7 funding. With the new framework programme, the good participation of Swiss research institutions should be maintained. **To optimse chance of success, it is essential to identify the most adequate Horizon 2020 funding instrument for every participant**.

1.5 Decryption of Horizon 2020: goal of report

With the shift-away from the thematic to the demand driven approach and transversal funding instruments, Horizon 2020 might seem rather hard to apprehend. Furthermore, researchers and research support organisation might have some difficulties to identify the right opportunity to apply for grants and funds. That is why SwissCore carried out the research project taking a closer look at Horizon 2020 from the point-of-view of a research support staff. We looked across the entire programme and identified considerations for the applicant along its thematic interests and the nature of its research project. **The goal is to provide research support staff with a guide to the relevant funding opportunities within Horizon 2020**. Thus this research project addressed the following problems:

1. Moving away from a 'thematic approach' to research in FP7 towards a grouping of research topics according to their societal relevance and potential socio-economic impact makes it difficult for applicants to identify the right funding opportunities to which apply.
2. Not only the 'Societal Challenges' approach, but also the focus on innovation and the many instruments supporting projects across the whole innovation cycle will prove to be difficult for applicants to find the opportunities that maximise their chance of success.
3. The research fields in which Swiss institutions have been participating most successfully in the past - such as ICT, health and nanotechnologies - are found in many parts and actions of Horizon 2020, across all the three priorities of the programme. In order to maintain the

good participation and to maximise the chance of success of Swiss applicants, **the right funding instrument for the right project must be easily identifiable**.

This research project therefore aimed at providing facilitators and research support staff in Swiss institutions with a decision model for identifying the funding instrument in Horizon 2020. In other words, the research question is:

The report should thus:

- clarify the uncertainty and identify opportunities for applicants from Swiss institutions;
- provide SwissCore with a stronger knowledge of Horizon 2020;
- provide research support staff of Swiss research institutions and intermediary organisations such as Euresearch with a decision model on the best way to orient researchers in a given field to a specific funding instrument under Horizon 2020.

1.6 Closer look at horizon: defining the scope

This report builds upon previous studies conducted by Swisscore such as the Analysis of Swiss and European innovation funding instruments (Kneubühler & Youssefzadeh, 2013). **This paper will not address the policy issues** related to the topic, but only presents the relevant facts for the audience. All different programmes and actions will be defined in detail and included in a very easily understandable way in the decision model. Furthermore, the scope was limited to research areas in which Swiss institutions traditionally have been strong, i.e. as ICT and health. Analysis of further areas could be based upon the resulting decision model. In addition the research project covered all three priorities of Horizon 2020. The research project considered the first Strategic Programme 2014-2016 and the first call for proposals of Horizon 2020 published on 11 December 2013. However, SwissCore will actively follow Horizon 2020's next triennial strategic programmes, biannual work programmes (WP) and annual call for proposals and update and adjust the model accordingly.

1.7 Sequencing the stages: getting the work done

Using an inductive approach, this report comported four different stages:

- Stage I: the evidence was gathered through literature analysis, open interviews and desktop research systematically processing and summarising the relevant information (see Bibliography).
- Stage II: based on the data collected in stage I, the description of Horizon 2020 and its instruments was done through of an analysis of the work and strategic programmes that define its content. A collection of funding instruments was organised in the form of matrices that link the contents of the work programmes to concrete funding opportunities. Verified semi-structured interviews with experts on draft chapters without transcripts allowed to verify, complement and deepen the preliminary results (see Annex I: List of interviews).
- Stage III: The decision model based on the all the information collected and on the previous models developed by research support organisations (see Annex III) and the Participant Portal elaborated by the EC was shaped.
- Stage IV: The decision model was tested based on the data analysis and again discussed with selected experts (see Annex I: List of interviews)

This chapter 1 presented Horizon 2020, its European context as well as the Swiss interest in participating in this European Framework for Research and Innovation. The research project directed towards developing a decision tree for research support staff guiding Swiss researchers to the right funding instrument was introduced. An important first

recommendation was identified: as the scope of this report was limited to developing the model in the field of ICT and verified in health, one might want to test and further develop the model in other research areas.

The report is organised as follows: Chapter 2 gives an overview of existing decision models guiding research to right funding instruments, presents the definitions and methodology, as well as the decision model used for this paper. Chapter 3 provides the analysis of the funding opportunities in Horizon 2020 for ICT and its testing in health. Chapter 4 presents the final conclusions, provision and observations. It describes in detail the way the decision model has been further adjusted designed and contains user instructions for the decision model.

2 Building the decision model

This chapter delivers the definitions used (2.1) and describes four existing models used by research support staff for FP7 or in preparation for Horizon 2020 (2.2). A review of these models is conducted and their implications for the current work discussed. It then leads the reader to the conceptualisation and description of the model and includes a description of the elements, on which the model is built (2.3). The decision model is based on the applicant (2.3.1), the Technology Readiness Levels (TLR) measuring the position of a project on the 'research to retail' axis (2.3.2), and the administrative interests of a researcher and its home institution such as funding rules, Intellectual Property Rights (IPR) and consortium size (2.3.3).

2.1 Concepts and definitions

In order to avoid any misunderstanding, the main concepts and definitions used for this report are described below:

- **Researcher** is defined according to the definition of the Organisation for Economic Co-operation and Development (OECD) in the Frascati Manual as: "[...] are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned." (OECD, 2002, p. 93)
- **Research Support Staff** is defined in the Frascati Manual as: "Other supporting staff includes skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects or directly associated with such projects." (OECD, 2002, p. 94).In this report we define research support staff as the members of the Euresearch Regional Offices or a research support organisation, which provide researchers support for applying for a European funding scheme.
- **Research and Innovation projects** is defined by the European Science Foundation (ESF) as: "[...] research activities carried out by scientists and academics working at universities or research institutes." (ESF, 2009, p. 9)
- **Research Area** is defined as a specific scientific field in which research activity take place. The issues with the term 'research area' is to define the different scientific fields in a given domain. To this end we will use the definition used by the ERC for the setting of peer-review evaluation panels (ERC, 2011). This implies that the research areas are defined as the areas covered by the sub-panels and are based on definitions given by the scientific community itself. For this paper, we considered the lists of panels and sub-panels provided by the ERC in February 2014.
- We define **Funding Instrument** is defined by a mean to fund a scientific activity, generally awarded by calls for proposals. Specific funding conditions and award criteria are attached to funding instruments. In Horizon 2020, funding instruments provide the means to realised so-called 'actions'.

2.2 Overview of the existing models

In this paragraph four models are looked at, namely Euresearch's 'Need and Opportunity Checker' (NOC) and 'Opportunity Finder', the decision model of the Austrian Research Promotion Agency (FFG) named '*FFG-Wegweiser*' and the 'Participant Portal' designed by the EC to support potential Horizon 2020 applicants to find the adequate funding opportunity. Different experts developed these models using their personal experience and discussions with applicants in order to guide them towards a specific funding instrument. Our work, thus, would provide complementary insights in the way Horizon 2020 has been designed and the architecture of its funding opportunities.

2.2.1 Need and Opportunity Checker (NOC): the Swiss FP7 decision tree

The model is composed of two decision trees developed by Euresearch to help support organisations identifying the right funding opportunities in FP7 (see Annex III). Both the 'project funding' and 'career development' trees start from the applicants' motivations and are organised along four decision questions, namely:

1. Can the action be funded at national or European level?
2. Is it a 'business', 'innovation' or 'research' oriented project?
3. What is the flexibility of the applicants?
4. Is the applicant considering collaborative action or is he/she looking for an individual grant?

These four questions is used within the NOC to identify the type of funding that best fits the applicants' needs. To finally propose a list of calls for proposal, the results from the NOC are used to fine-tune the output of the Opportunity Finder (see Annex III a & b and section 2.2.2).

The NOC has been designed for FP7 and thus is adapted to the new structure and instruments of Horizon 2020. Moreover, the NOC does not include details regarding the innovation dimension, which is an essential component of Horizon 2020. Still, the approach taken by the NOC is intuitive and easy to use. At each question, the researcher or the research support staff has to choose amongst the possibilities. This method allows the research support organisations to have an overview of all the possibilities after the choice by listing all the opportunities of the framework programme. Thus the main elements, which will be kept for the elaboration of our decision model, are the following: starting from the applicants' motivations as a basis to begin the decision, discriminatory questions will be asked, which will allow to maximise the reduction of the fields of possibilities at each step. Finally the concept of the decision tree, which allow the applicant to have a general overview over all the possibilities, is the form chosen for our decision model.

2.2.2 Euresearch's Opportunity Finder

The opportunity finder[1] is a search engine developed by Euresearch, which contains all FP7 call for proposals. It is more than a simple search engine: it contains a semantic search tool, which allows an easy identification of calls, even though the applicant may not have chosen the right terms. It is also possible to filter and limit the results to either bottom-up actions, calls for proposals or already funded projects. In addition, it is possible to select only certain specific funding instruments from a list or to select only certain type of topics. On the one hand, the opportunity finder offers high level of detail, which is a useful tool for the research support organisations. On the other hand, the applicant needs a broad prior knowledge about the different funding instruments in order to understand the results of the Opportunity Finder and will not get a general overview of the opportunities. The main elements from the opportunity finder, which will be featured in our decision model are: it is based on an ontology, in order for the applicants, who are not familiar with the EU's jargon, to identify the call for proposal in their research area. To this end the lexicon of scientific fields developed by the ERC (2011) will be used. The second analogy with the Opportunity Finder is the level of detail in results for the applicants.

[1] For more information, visit http://www.opportunity-finder.com/search-all/search?q Swisscore

2.2.3 FFG-Wegweiser

The *FFG-Wegweiser*[2] is another web application, which supports applicants in their search for funds from the different European programmes developed by the Austrian Research Promotion Agency (FFG). The *FFG-Wegweiser* is not a search engine like the Opportunity Finder. Instead, it is based on information, which potential applicants provide to the *FFG-Wegweiser.* To communicate the information, the applicant has to select from the pre-defined lists of criteria its research interests. There are five different drop-down lists. From these five lists depending on the criteria the researcher has selected, a list of available opportunities will be presented as result. Thus, the *FFG-Wegweiser* narrows down funding opportunities towards a tailor-made list of possibilities for each user. The following five lists are the following ones:

1. Research Focus	2. Audience
Services Innovation	Small and Medium-sized Enterprise (SME)
ICT	University
Life Science	Consortium
Mobility	Lone researcher
Environment and Energy	Non-profit Association
Space	Big Enterprise
Society	University of applied science
Career in Research	Start-up
Material und Production	Research Institutes
Security	Regional
Other themes	

3. Type of service	4. Geographical scope	5. Submission
Funding	National	Submission possible at any time
Expertise	International	Submission after call for proposals or tender
Partner Search		Other
Other Services		
Training		
Consulting		
Initiative		
Service		
Technology Transfer		
Networking		

Table 2-1: Categories of the *FFG-Wegweiser.*

These different lists, provided us with the starting point which criteria are needed to develop a decision model. Even though these lists seem complete, they do not match the objectives laid out in our research proposal. For example, the geographical scope is not relevant for our model. Therefore each list of criteria was carefully checked and modified for to fit our decision model. Also, the lists have been developed for FP7 and are not up-to-date with the objectives of Horizon 2020. Nevertheless, they provide useful information on the aspects to include in the model.

2.2.4 Participant Portal

The participant portal[3] is a web-based application developed by the EC for Horizon 2020. The portal is a comprehensive tool. It allows the researcher to manage calls and proposals on a single web page. On this page, researchers search, register or manage their home organisation's projects and proposals. The tool also allows to manage grant management and

[2] *FFG Wegweiser* is only available in German at http://www.ffg.at/ffg-wegweiser

[3] The access requires to create an account, the URL is:
https://ec.europa.eu/research/participants/portal/page/home

execution. Finally, participants and applicants can find all Horizon 2020 related documents and more importantly search for calls for proposals. This last point is the most relevant point for this research paper. This participant portal search engine can be seen as a mix between the Opportunity Finder and the *FFG-Wegweiser.* Indeed, it includes a semantic search engines, but also additional options, such as restricting the search to subsets parts of the Horizon 2020 work programmes. It is also possible to restrict the results to certain terms, or to specify whether the search results should consider only a call for proposal or a call for tenders, for example. The call status (open, closed, forthcoming) can also be selected. Finally, the user can sort the results by: publication date, title, call identifier, or deadline date. This model is not updated with all Horizon 2020 texts yet and does not allow a general overview on the whole programme. Also, the semantic search engine of the participant portal relies on the thematic tagging of opportunities in Horizon 2020. The tagging is done by EC itself and concerns have been raised by the scientific community whether the tags correspond to the terms used by potential applicants. Indeed, the use of a thematic tagging system implies a pre-existing knowledge by the users on the Horizon 2020 terminology.

2.3 SwissCore Decision Model

Bearing in mind the existing models guiding applicants and research support organisations in FP7 and Horizon 2020, we introduce in this section the elaboration process of the model. The SwissCore Decision Model (SDM) includes how the funding opportunities are related to political objectives of the EU. The funding opportunities within Horizon 2020 are defined in the biannual Work Programmes. The Work Programmes contains both technicalities and clear references to political strategies. The SDM also offers a comprehensive overview of the calls and how calls are integrated in the broader context. Secondly, the 'innovation criteria' (defined here as the position between basic research and close-to-market activities), which is vital in Horizon 2020, is central to the model. The 'innovation criteria' is defined into more details below.

The decision model is built on four steps (see Figure 2.2.1). The definition of the steps is based on the analysis of the models described in section 2.2 and interviews held with expert advisors of European research framework programmes. The four steps are as follows:

1. The input to the model is the researcher's interest. This includes the motivation, skills and personal objectives of the researcher.
2. The second building-block of the model aims to analyse the position of the foreseen proposal on a scale from basic science to close-to-market activities. We use the Technology Readiness Levels (TRL) to fine-tune the analysis. The TRL's are defined below.
3. The third dimension concerns the administration of the grant and follows the identification of interests concerning IPR, financial needs and links to partners of the applicant's consortium. We will also consider the funding levels available for a particular set of topics within work programmes (100% to 70%).
4. Finally, proposals will be classified according to their thematic area.

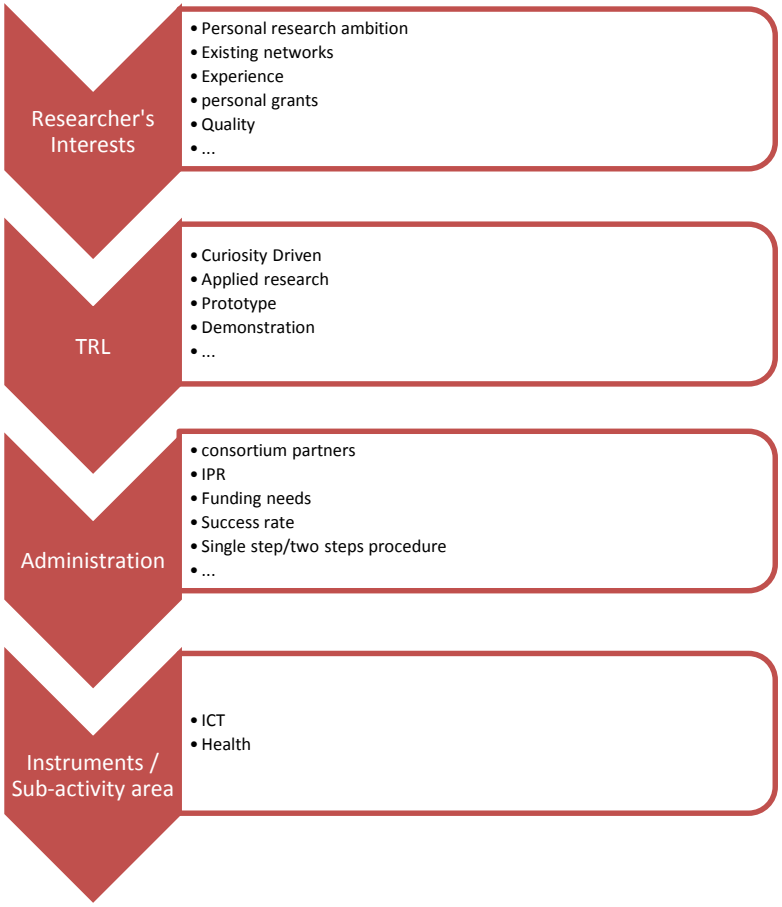

Figure 2-1: Categories of the decision model

The output of the decision model will be a list of funding opportunities, or calls for proposals, that best suit an applicant's needs. The four decision stages are discussed in details in the following sections.

2.3.1 The researchers offers

This stage is crucial for the decision model, because the information gathered during this stage will impact all following questions in the decision model. Setting the focus on the applicant for the first stage of the decision model was recommended by all the experts interviewed. This stage will allow to identify which form of grants (excellence-driven, collaborative-driven or thematic-driven) is the most adapted for the applicant. This part of the model will focus on following elements:

1. long-term strategic objectives of the applicant;
2. research quality of the applicant;
3. personal grants the applicant already received;
4. existing networks and contacts of the applicant;
5. previous experiences in a given field[4];
6. coherence of the researcher's personal scientific ambitions and the aims/objectives of the European Union.

[4] Previous experience may include knowledge of the relevant societal challenge, its policy areas and the relevant stakeholders, his/her track records in writing collaborative grants and personal research experience.

Thanks to this information, we will be able to give the applicants a certain number of choices for an adequate form of grant and trim down the space of possible calls for proposals.

2.3.2 Assessing the project along innovation

Following the inclusion of parts of CIP and EIT in Horizon 2020, innovation plays a central role in the new framework programme. But in order to find the right opportunity from basic research via applied research and experimental development to commercialisation, one has to identify the 'innovation' content of his proposal. To this end we will use the Technology Readiness Level (TRL), to which reference is made in the Horizon 2020 WP. Depending on the closeness of the project to basic research and respectively the market, the researcher will have access to different funding instruments. The TRL is divided in nine levels, which have each their definition. Here, we use the definition given by the EC in (EC, 2011f):

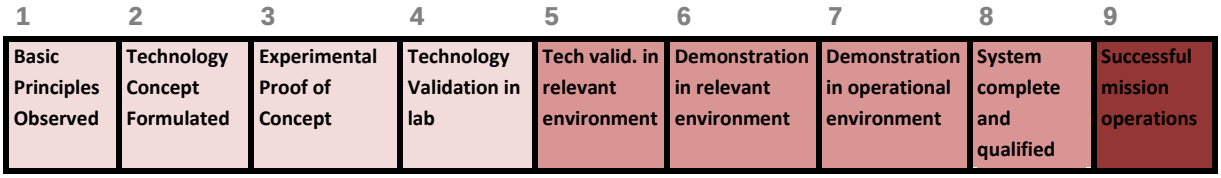

Figure 2-2.2.2: Technology Readiness Levels Scale (EC, 2011f).

The nine TRL are described in details in Table 2-1: TRL as described in the high level expert group report (EC, 2011f)

TRL	Stages	Phases	Description
1	Concept development	Basic Research	Postulation and observation about basic principles but no experimental proof or detailed analysis have been done.
2		Technology formulation	Formulation of the application and implementation of technology concept.
3		Applied Research	Demonstration for the proof of concept and first experimentation of the critical function.
4	Proof of Principle	Small Scale Prototype Development Unit	Identification and validation of the component in a laboratory environment.
5		Large Scale Prototype Development Unit	Testing and validation of the components in intended environment.
6		Prototype System	Scaling-up of the prototype system and identification of the commercial scales system.
7	Proof of Performance	Demonstration System	Integration of the industrial prototype in the intended environment.
8		First of the kind commercial System	Completion and qualification of the technology through demonstration and test.
9		Full commercial application	Technology has proven successful in its mission operations.

Table 2-1: TRL as described in the high level expert group report (EC, 2011f)

2.3.3 Administrative interests

The administrative interests of the researcher and his institution are central. We will orient the applicants depending on his needs related to the administration. More particularly the following elements:

- funding rules, the funding ratio (from 100% to 70%) and overhead costs;
- IPR;
- issues related to data protection;
- management (i.e. will the applicant be a coordinator or not, does he/she have sufficient resources?);
- open access;
- need for a consortium or individual grant.

2.3.4 Enter the matrix: collecting and compiling information

During the final stage, the aim is to identify the real opportunities for the applicants. Given the high numbers of calls in each work programme, it is not realistic to reference all the calls for all priorities, societal challenges and research areas in the time span allocated to finish this report. So in this report we first developed the model based on opportunities in the field of ICT. In a second round, we will test the decision model on Health. Thus in order to develop a clear understanding of the coverage of ICT and Health in calls and work programmes across Horizon 2020, we will elaborate matrices cross-referencing the scientific fields and its position within the different part of Horizon 2020 and its instruments. This allows us to refine the model as proposed in section 2.3 by mapping the full list of opportunities in Horizon 2020. The mapping will indicate the level of TRL of the respective calls for proposals according to a colour code defined in Table 2-2.

Bearing in mind that the outcome of this work will be given to research support organisations and that the model is directly linked to a researcher's need, the definition of scientific fields used in this work must closely reflect the scientific jargon of a discipline, moving away from 'EC-language'.

For the elaboration of the list of scientific fields, we have used the outcome of the experts' interviews. Following these interviews, we were able to create a list, which is as useful and research oriented as possible. The experts brought forward definitions of scientific disciplines based on the EuroVoc thesaurus[5], the European Enterprise Network (EEN)[6], the ScienceWISE project developed by the EPFL[7], the Frascati Manual and finally the peer-review evaluation panels from the ERC (ERC, 2011). From these proposals, we eliminated EuroVoc because it was a thesaurus and was not developed closely enough with the scientific community and thus did fulfil our purpose, the EEN approach was too much oriented towards applied technologies and thus does not cover the needs of basic research and ScienceWISE is not comprehensive enough. We decided to use ERC's model for the elaboration of the matrix, because it fulfilled both criteria of being developed by the scientific community, is well-understood by staff of research support organisations and is detailed enough. We discarded the Frascati manual because its definition of scientific fields is too broad and does not consider sub-disciplines with enough precision.

The matrix will thus have the following lay-out:

[5]For more information see: http://eurovoc.europa.eu/drupal/
[6]For more information see: http://www.enterprise-europe-network.ch/marketplace/index.php?file=bbs-search.php&dissregion=0
[7] For more information see: http://sciencewise.info/

	LEIT	Excellence Science	Societal Challenge
Immunology			
Oncology	BG-1	BG-2	
Clinical test	BG-3		DSR 9

Table 2-2 Draft Matrix cross-referencing Horizon 2020 and Scientific fields for Health.

Chapter 2 presented the methodology, as well as the existing models used to elaborate the decision model and the four stages of the decision model. In the first section (2.1), the definition of the main concept were clarified. In the second section (2.2), the models, which serve as inspiration for this decision model have been presented. From these models, we have selected the following characters for our decision model: a clear overview of all opportunities through a decision tree, the level of details about the calls and finally the input needed for the decision model, i.e. the questions, which the applicant will have to answer. The third section (2.3) lays out the stages of the decision model and the information required for each of this stages. All the required elements and information have been provided, we will now proceed to the elaboration of the model in **Chapter 3**.

3 Making a choice

The main element of **Chapter 3** is the **Horizon 2020 decision model**. The Horizon 2020 decision tree allows to identify the right funding opportunity in Horizon 2020 in four steps. It relies on the 'matrix' introduced in Chapter 2 that classifies funding opportunities in Horizon 2020 according to scientific field, level of technology readiness and type of instrument. We discuss in detail the way the decision model was designed and provide instructions in the form of a set of questions on the most adequate way of using the model. The first section of the chapter describes how the questions have been elaborated and what elements had to be taken into consideration. Following this first step, a decision tree is proposed that builds upon the categories and the analysis done previously.

3.1 Asking the right questions

The key elements of the decision tree are the questions, which the applicant has to answer at each node. The pertinence of the questions and how easily they allow to discriminate between funding options are of utmost importance for building a coherent and efficient decision tree. Based on the analysis done previously and the four stages that compose the model (see Section 2.3), we will now elaborate on the questions that support the model.

3.1.1 Starting from the applicant's offer and needs

We recall the elements introduced in section 2.3.1 and the advice from the consulted group of experts stating that the importance of the applicant when elaborating the model. The elements characterising the applicant can be grouped into four main dimensions (see Figure 3-1), which we label '**mid- to long-term objectives**', '**excellence and experience**', '**existing networks**' and '**knowledge in other disciplines**' that have to be considered jointly. The positioning of the applicant along those four categories and the link with the objectives of Horizon 2020's funding instruments have to be kept in mind when evolving through the decision model. Each category can be further refined with the following questions:

1. mid- to long-term objectives:
    i. Do you want to establish yourself as a leading researcher in your field?
    ii. Are you looking to extend or a new source of funding for a given project?
    iii. Are you looking for new staff in your organisation?
    iv. Do you aim at step up collaboration with given partners (industry, institution from other countries).
    v. Are you looking for a personal grant?

2. excellence and experience:
    i. Do you have a proven scientific track-record?
    ii. Which type of grants/prizes have you won in the past?

3. existing networks:
    i. Do you regularly engage in collaboration internationally?
    ii. Do you dispose of a strong network of potential partners in the industry?

4. knowledge in secondary disciplines:
    i. Are your research and innovation activities interdisciplinary?
    ii. Are partners in the network with which you collaborate active in other disciplines?

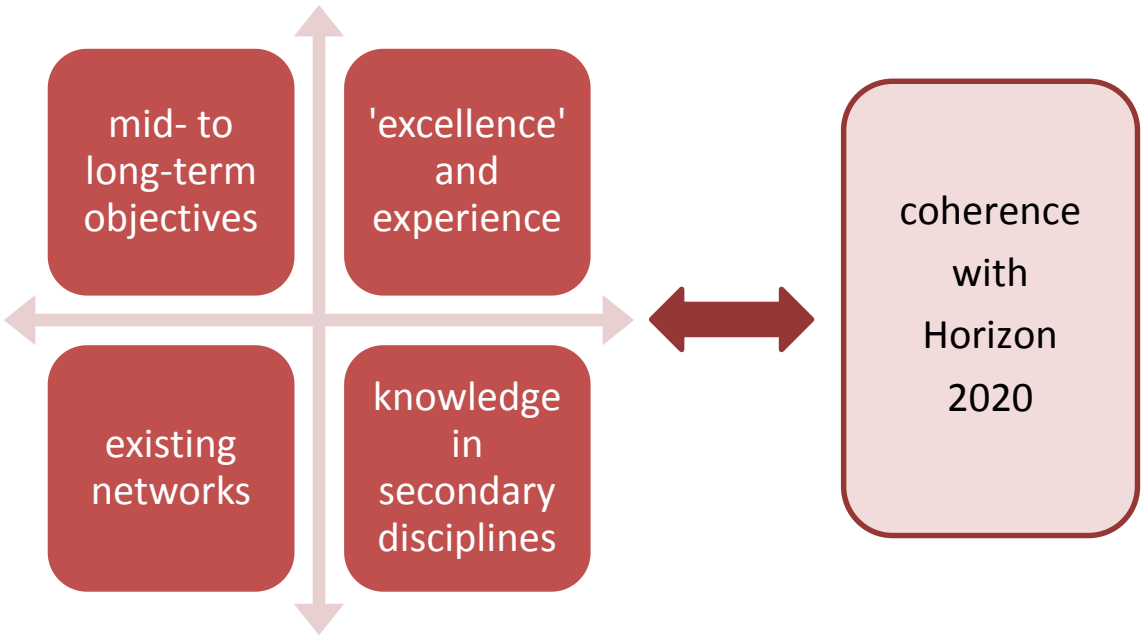

Figure 3-1: assessing the applicants' needs

3.1.2 Grouping the TRL

Based on our analysis of funding opportunities in Horizon 2020 and while building the decision model, we realised that using each and every level of TRL seems not to be the most efficient method for elaborating the decision tree. On top of that, while elaborating the ICT calls for proposals matrix, we saw that Horizon 2020 funding instruments could be grouped in four different levels, as shown in the table below.

LABEL	DESCRIPTION	TRL
Concept development	Basic research, technology formulation, applied research	1-3
Proof of principle	Small /large scale prototype development unit prototype system	4-6
Proof of performance	innovation system, first of the kind commercial system	7-8

Table 3-1: Labelling the TLR groups

The first TLR group consist in **concept development**, this includes both bottom-up propositions and calls for proposals. In this first group activities such as basic research, technology formulation and applied research are included. The second TLR group addresses the **proof of concept** and contains small and large scale prototype as well as prototype system. It brings together TRL 4 to 6. The third group combines TLR 7 and 8 and deals with **proof of performance**. It involves the development of first commercial systems or applications and innovation system.

In Horizon 2020, we observed that most RIA deal with projects falling in group 2, while 'Innovation Actions' (IA) almost exclusively address projects of TLR between 4 and 6 and Pre-Commercial Public Procurement (PCP) deal with TLR 7 and higher. Based on this observation, we concluded that selecting the calls based on the four groups of TLR would allow to readily discriminate between different types of funding instruments and would thus be a very efficient first step in the decision model. Therefore, due to the apparent strong segregationary power of TLR groups, **the decision tree will start assessing this criteria and then move down the**

decision tree by taking the other variables described in Figure 2-1 into account, namely the administrative interests of the applicant and the thematic area of his project.

3.2 Linking the tree to the matrix

As announced in section 2.3.4, we relied on the so-called 'matrix' to list all opportunities within a certain thematic area and link them to a set of scientific field. To elaborate the decision tree, we based our analysis on all calls for proposals dealing with ICT in Horizon 2020. The matrix is given in Annex IV.

While elaborating the decision tree, we stumbled upon difficulties to put all tree question types together. Thus we had to rearrange the order in which the question were to be asked. It seemed to make more sense to begin with the TRL followed by the different elements of the applicant's background (experience, network, personal objectives) and then to refine the choice with the administrative framework. The final step is to use the matrix to find what calls may correspond to the applicant's scientific fields. Additional administrative constraints such as IPR and open access allow to refine the output of the model. At first sight the link between the matrix and the decision tree might not be easy to grasp. But the matrix is needed to conclude the final step of the decision tree and to provide the most adequate proposition for the applicant. The decision tree is illustrated in Figure 3-2. We will now proceed with the questions and decisions to be taken at each step of the node.

Question 1

The first question to ask the applicants concerns the level of TRL his project fits best.
- **Where would you locate your project between basic research and innovation?** We refer to the definition on TRL given in section 2.3.2 and the grouping of TLR provided in Table 3-1. We distinguish between three categories, namely 'concept development', 'proof of principle' and 'proof of performance'.

Question 2

Once this issue has been settled, the second question for the applicant is related to the applicant's background. Depending on the positioning of the proposal between basic research and commercialisation, the question will be different. In case the answer is either, 'concept development' or 'proof of principle', the applicant will have to answer one of the following question.

1. 'Concept development':
   a. **Do you want to pursue a career in the academia?**
      If this is the case, then the individual grant is the most suitable option.

   b. **Are you looking for new staff or staff development in your organisation?**
      If yes, go for a MSCA ITN or RISE project.

   c. **Do you dispose of a strong international network of potential partners in the industry and academia? Or are you looking to extend or a new source of funding for a given project?**

If yes, RIA is the optimal funding instrument. The link to the right funding opportunity in Horizon 2020 depends on the relevant scientific field(s) and is given by consulting the list of calls for proposals in the matrix.

d. **Is you are idea 'disruptive' and has a strong 'technological breakthrough' potential or are you a young researcher?**
   FET-Open is the right instrument.

2. 'Proof of principle'
   a. **Are you looking for new staff or staff development in your organisation?**
      If yes, go for a MSCA ITN, IF or RISE project.

   b. **Do you dispose of a strong international network of potential partners in the industry and academia? Or are you looking to extend or a new source of funding for a given project?**
      If yes, collaborative projects are the optimal option. The link to the right type of opportunity is given in the next step. The administrative needs will help you define which type of opportunity suits best your needs.

   c. **Are you an SME without the right networks?**
      If yes, the SME instrument might be the adequate instrument.

3. 'Proof of performance'

In case the applicant's project is in demonstration phase (TRL 7 to 8), the applicant can directly consult the matrix and find the adequate proposal based on the field of interest.

Question 3

The third level question concerns applicants, whose projects fall into the 'individual grant' and 'collaborative projects' category. In this case we will have specific question for each of the two possibilities. For the 'individual grant' the experience will be important and for 'collaborative project' the administrative needs are central.

For 'individual grants'

a. **Do you have a proven scientific track-record and are a leading researcher in your field?**
   A positive answer to this question will lead the applicant to an ERC grant. Otherwise, MSCA Individual Fellowships is the adequate funding option.
   In the case the answer was ERC grant, than the applicant should answer the following question:
   a (i). **What is your research experience and what type of grant are you looking for?**
   The response to this question defines whether the applicant should be directed to an ERC Starting, Consolidator, Advanced or Proof-of-Concept Grant.

For 'collaborative project'

b. **Do you need to fully recover your direct costs?**
   If the answer is yes, you have to consider RIA.

The link to the right funding opportunity in Horizon 2020 depends on the relevant scientific field(s) and is given by consulting the list of calls for proposals in the matrix.

Question 4

After having identified the right opportunities within the relevant area of expertise, additional constraints linked to IPR and open access to research data might apply. Indeed, pilot calls requiring data management plans and the release of the research results after project completion fall into several parts of Horizon 2020[8].

a. **Do you have limitations with regards to IPR and open access requirements?**
   If the answer is yes, do not apply to calls for proposal falling under priorities marked with '*' in the matrix.

b. **Do you need funding immediately or in 2015?**
   The year of the call is given in the matrix.

[8] Participants to the pilot on open access to research data have the possibility to opt-out of this requirement. It is however unclear how such proposals will be evaluated and compared to proposals that opt-in.

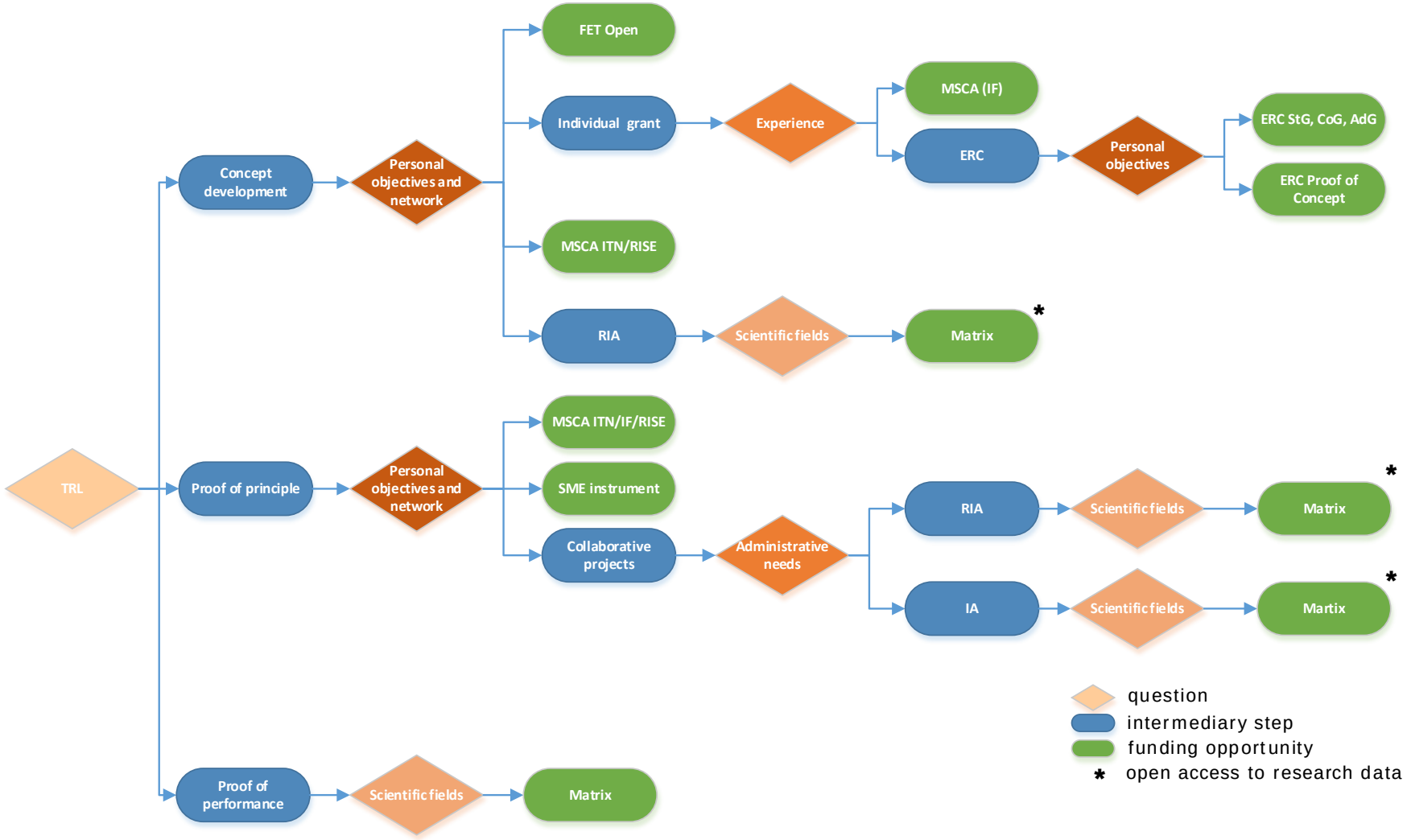

Figure 3-2: Horizon 2020 decision tree

Chapter 3 shed light upon the mechanism, which had been used to create the decision tree. This process has been quite complex and needed detailed explanation. **Chapter 3** also gave insight on the elaboration of the questions that guide the user through the different nodes that compose the tree. It was shown that the most adequate funding opportunity in Horizon 2020 can be reached in four steps. Finally **chapter 3** helps the user to understand how the decision tree is linked to the matrix and how one would be useless without the other. The quality of the model will be evaluated in **chapter 4**, along with a set of recommendations and conclusions

4 Recommendations and conclusions

Chapter 4 presents the general conclusion of the work, some limitations of the model as well as a list of possible improvements. The improvements touch upon the selection of research areas and the extension to new ones, TRL, the further development of thematic matrices and possible synergies and complementarities with the other models described in Chapter 2.

This paper's main goal is to provide research support staff with a tool, which would **optimise the researcher's chance to get funded in Horizon 2020**. This optimisation was oriented towards the area and the nature of the research's activity. During the development of the decision model we used different ways to assess the nature and the area of their activity such as the TRL, the administrative interests of the applicant, his background and motivations. Thanks to these elements, we were able to elaborate a series of questions, which quickly direct the applicant to the right opportunity in Horizon 2020. We try to stick as far as possible away from the official jargon of Horizon 2020 and move closer to the way an applicant would describe its activity as is felt that it was important to deconstruct Horizon 2020 and better understand how its parts interact. It must be pointed out that the decision model has been developed for research support staff and not for applicants themselves. Even though the decision model simplifies to a great extend the different elements of Horizon 2020, **extensive knowledge** is needed in order understand the logic behind the building of the model and use it to identify the best funding opportunities.

We stumbled across **major issues** and were caught in lengthy discussions when it came to identifying the best way to define specific research areas, TRL and how to interpret TRL for different research areas. Therefore, the model has to be used with precaution and it must be kept in mind that the model still might evolve, depending on the scientific field and the interpretation of TRL in subsequent work programmes. It is also in this light that users of the decision model must consider the analysis of concurrent models done in section 2.2. They may provide additional information on how one might look at Horizon 2020 and find his way into the programme. Complementarities between the decision model described in this paper with others provide food for further development. They are listed below. Finally although this model contains many different type of opportunities, it still misses some important areas around Horizon 2020, such as the PPP and the P2P. Moreover this decision model has a temporal limitation, because the calls present in the matrix are valid for the period 2014-2015. We elaborate more on possible ways to improve the model in the next section.

4.1 Recommendations for further development

4.1.1 The area's specificity

While elaborating the matrices for 'Health' and 'ICT' (see Annex IV and V), we realised that the two matrices have important differences. More particularly, one con observe that ICT calls are distributed amongst every part of Horizon 2020. ICT-related calls can also be found in six of the seven societal challenges and they are classified in both 'concept development' and 'proof of principle' phases. This differs significantly with the distribution of 'Health' funding opportunities in Horizon 2020. The calls are mainly located in the societal challenge 'Health, Demographic Change and Wellbeing'. Furthermore these calls are not as diverse as the ICT calls when it comes to the TRL phase. Indeed more than 90% of the calls related to health are in the 'concept development' phase. As noted in the introduction, the model was developed based on ICT in Horizon 2020 and, accordingly, the decision tree reflects the repartition of ICT-related calls and might be therefore two complex for other fields of scientific activity.

- **The model could be better fine-tuned to different scientific fields. One might draw matrices for every field of interest and adapt the model to its specificities.**

4.1.2 The TRL

TRL are traditionally used in selected areas, such space, to assess the maturity of technology. The interpretation and relevance of TRL for other scientific fields might differ and this would have an influence on the classification of calls for proposals between the 'proof-of-principle' and 'concept development' phases in our model. It is known for example that in health research, clinical trials are essential when testing new drugs and bringing new products to market. However, it is not straightforward to transpose different phases in clinical trials to a precise TRL.

- **Further work is needed when defining the position of an activity between basic research and commercialisation and how to link it to a specific, or a group of, TRL depending on the general scientific field of the activity.**

4.1.3 The matrices

This leads to another recommendation for the decision model. Due to time constraints, only two matrices for Horizon 2020 were developed, without taking into consideration other initiatives around Horizon 2020 such as JTI, for example. But in order to be complete and fully functional, the matrices need to be extended to initiatives around Horizon 2020 and to other scientific fields for the decision model. Moreover, the two matrices developed for this report are only valid for the 2014-2015 period and Horizon 2020 will last until 2020. Thus these matrices need to be updated regularly.

- **To complete the decision model, the matrices listing all calls for a given field of activity must be expanded to also consider funding opportunities around Horizon 2020, such as PPP and P2P. Matrices for different scientific fields could also be developed. The matrices must be updated at least yearly with the publication of subsequent work programmes.**

4.1.4 Synergies

The last recommendation considers potential synergies with other decision models, based on the review we did in Chapter 2. For some models like the *FFG-Wegweiser,* there is little room synergies possible because the approaches used are hardly compatible. For others, we see the possibility for a combination with our approach. The call search in the participant portal, for example, is a can be used in parallel, or subsequently, with our decision model. This would allow for a much easier identification of relevant funding opportunities.

Contrarily to NOC, we did not consider national funding opportunities. It is useful for research support organisation to understand the interplay between European and national programmes for maximising the chances of success of potential applicants. This work could be extended and reinforced by integrating national research and innovation instruments into the tree and the lists of questions.

Finally, strong complementarities exist with the 'opportunity finder'. The set of opportunities identified by our decision model could be used to fine-tune the search results of the opportunity finder. Additionally, the opportunity finder could provide list of possibilities for areas not covered by the matrices.

- **Similarly to the approach chosen by NOC, our model could be complemented by considering also national funding opportunities. It must be investigated whether our decision model can be combined with the opportunity finder to further refine the list of results. Also, the opportunity finder could also be used to list funding opportunities for areas for which the thematic matrices have not been developed.**

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Annex I: List of interviewees

Interviews at Swiss level

Operational level, September 2013

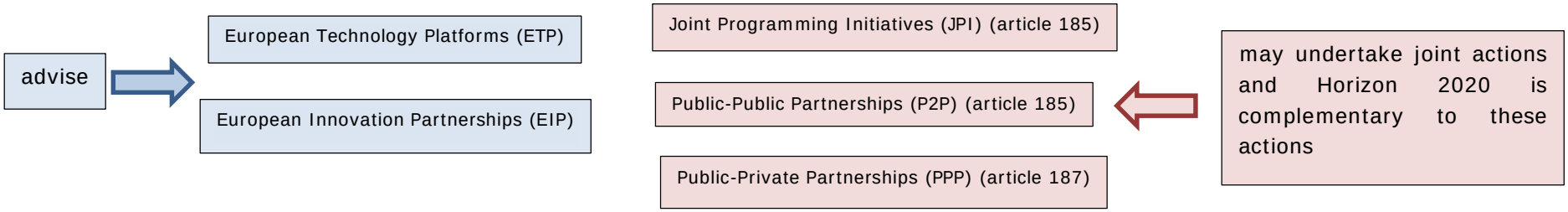
Name	Organisation	Function
Peter Erni	Euresearch	Director
Patrick Furrer	Euresearch	Vice-Director
Agatha Keller	EU GrantsAccess Zurich	Head of office
Olivier Küttel	EPFL	Head European Public Affairs
Lotte Jaspers	Yellow Research	Director
Piret Noukas	DG Research and Innovation	Policy officer

Annex II: Visualised structure of Horizon 2020

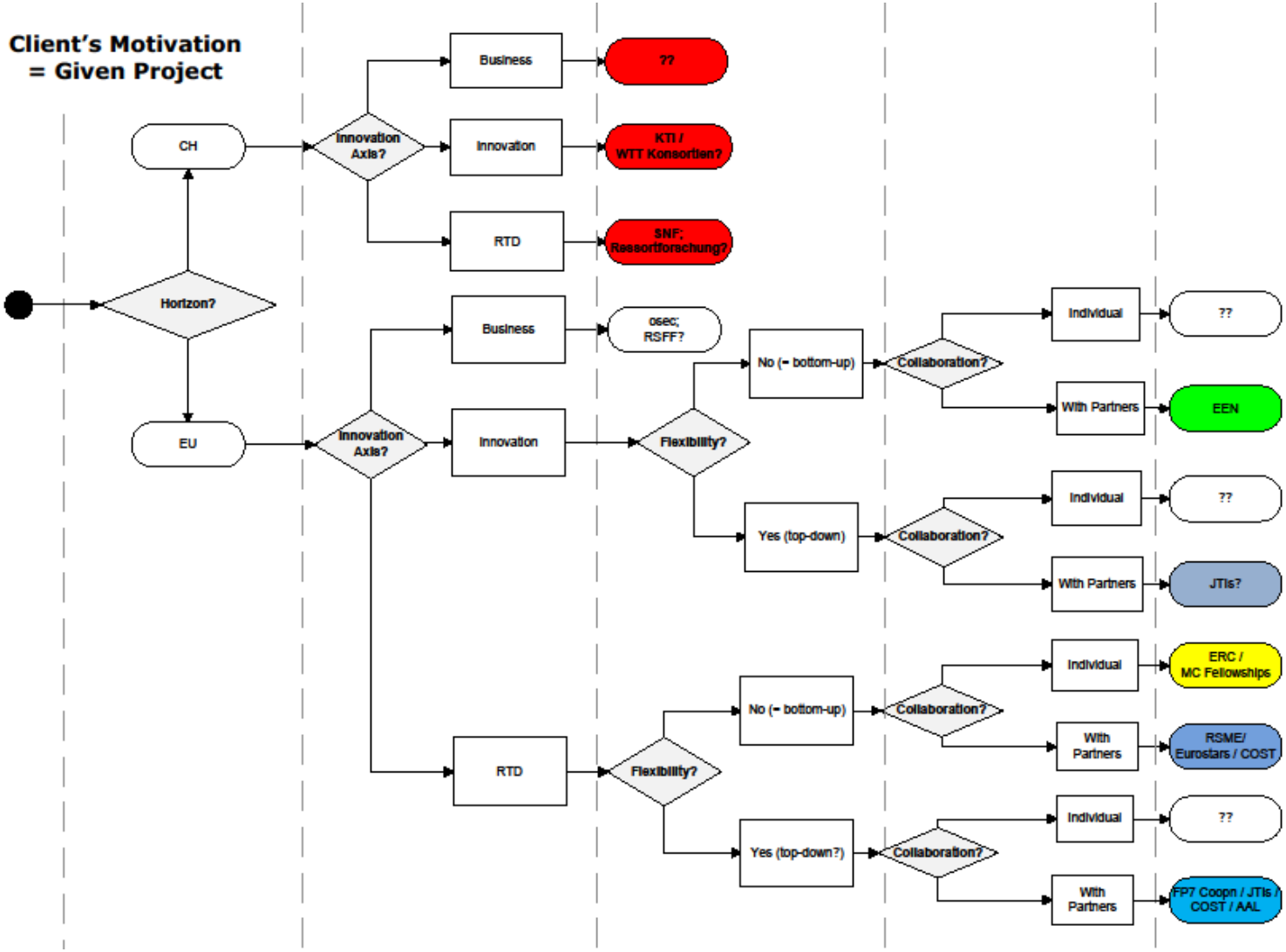
<table>
<tr><th colspan="4">FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION (HORIZON 2020) (article 173 and 182 TFEU) €77bn</th></tr>
<tr><th>PART (PRIORITY) I
EXCELLENT SCIENCE
€24.44 bn[9]</th><th>PART (PRIORITY) II
Industrial Leadership
€17.02 bn</th><th>PART (PRIORITY) III
SOCIETAL CHALLENGES
€29.68 bn</th><th>PART IV
NON-NUCLEAR ACTIONS OF JOINT RESEARCH CENTRE (JRC) €1.90bn</th></tr>
<tr><td>European Research Council (ERC) €13.09 bn:
1. Starting Grant (StG)
2. Consolidator Grant (CoG)
3. Advanced Grant (AdG)
4. Proof of Concept (PoC)
5. Synergy Grants (SyG)</td><td rowspan="2">Leadership in Enabling and Industrial Technologies (LEIT) €13.56 bn:
1. ICT
2. nanotechnologies
3. advanced materials
4. biotechnology
5. advanced manufacturing and processing
6. space</td><td rowspan="4">1. health, demographic change and wellbeing €7.47 bn
2. food security, sustainable agriculture and forestry, marine and maritime and inland water research and bioeconomy €3.85 bn
3. secure, clean and efficient energy €5.93 bn
4. smart, green and integrated transport €6.33 bn
5. climate action, environment, resource efficiency and raw materials €3.08 bn
6. Europe in a changing world – inclusive, innovative and reflective societies €1.31 bn
7. secure societies – protecting freedom and security of Europe and its citizens €1.69 bn</td><td rowspan="4">Thematic areas:
1. towards an open and competitive economy
2. development of a low carbon society
3. sustainable management of natural resources
4. safety of food and consumer products
5. security and crisis management
6. reference materials and measurements</td></tr>
<tr><td>Future Emerging Technologies (FET) €2.70 bn:
1. FET Open
2. FET Proactive
3. FET Flagships</td></tr>
<tr><td>Marie Skłodowska-Curie Actions (MSCA) €6.16 bn:
1. Initial Training Networks (ITN)
2. Individual Fellowships
3. Research and Innovation Staff Exchange (RISE)
4. COFUND</td><td>Access to Risk Finance €2.84 bn:
1. Debt Facility
2. Equity Facility
3. Capacity-Building in Technology Transfer</td></tr>
<tr><td>Research Infrastructures (RI) €2.49 bn:
1. developing European RI for 2020 and beyond
2. fostering innovation potential of RI and their human resources
3. reinforcing European RI policy and international cooperation</td><td>Innovation in SME €0.62bn</td></tr>
<tr><td colspan="4">SPECIFIC OBJECTIVE PART IIIa Spreading Excellence and Widening Participation (article 184) €0.82 bn</td></tr>
<tr><td colspan="4">SPECIFIC OBJECTIVE PART IIIb Science with and for Society €0.46 bn</td></tr>
<tr><td colspan="4">European Institute for Innovation and Technology (EIT) (article 173) €2.71 bn</td></tr>
</table>

[9] All budgets are indicated in 2011 current prices

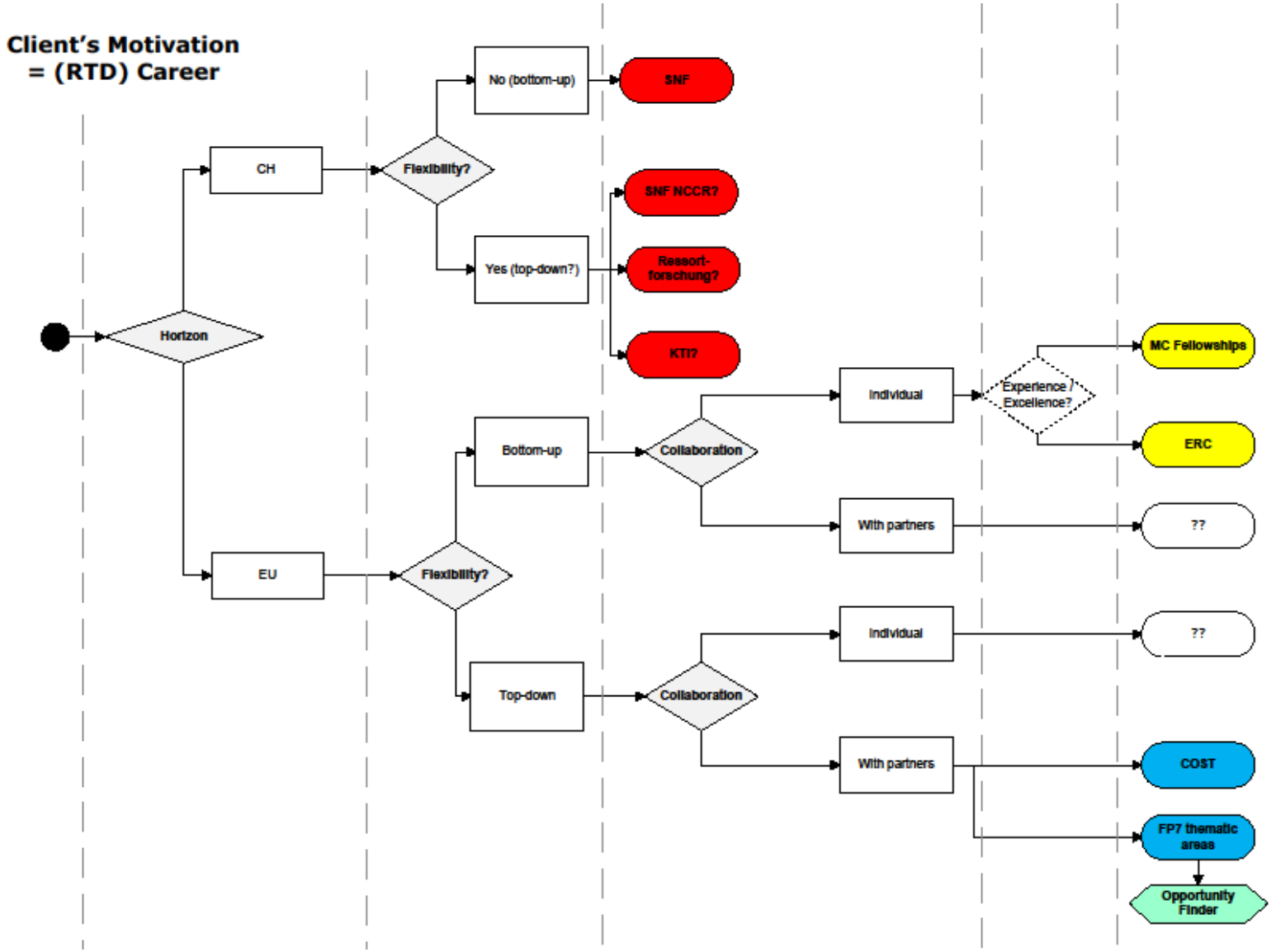
CROSSCUTTING ISSUES
• development and application of key enabling and industrial technologies as well as future and emerging technologies and to areas relating to bridging from discovery to market application • cross-disciplinary and cross-sectoral research and innovation • social and economic sciences and humanities • climate change and sustainable development • fostering the functioning and achievement of the ERA and of the Innovation Union • framework conditions in support of the Innovation Union • contributing to all relevant Europe 2020 flagship initiatives • widening participation across the EU in research and innovation and helping to close the research and innovation divide in Europe • international networks for excellent researchers and innovators such as European Cooperation in Science and Technology (COST) • International cooperation with third countries and international organisations • responsible research and innovation including gender • SME involvement in research and innovation and the broader private sector participation • enhancing the attractiveness of the research profession and to facilitating cross-border and cross-sector mobility of researchers
Complementarity with other Union policies and programmes, including European Structural and Investment Funds (ESI), Common Agricultural Policy, Programme for the Competitiveness of Enterprises and SMEs (COSME), Erasmus+ and Life+
Complementarity to 185-Joint Programming Initiatives and 187-Joint Undertakings
Synergies with the European Structural and Investment Funds (ESI)



Annex III: NOC model

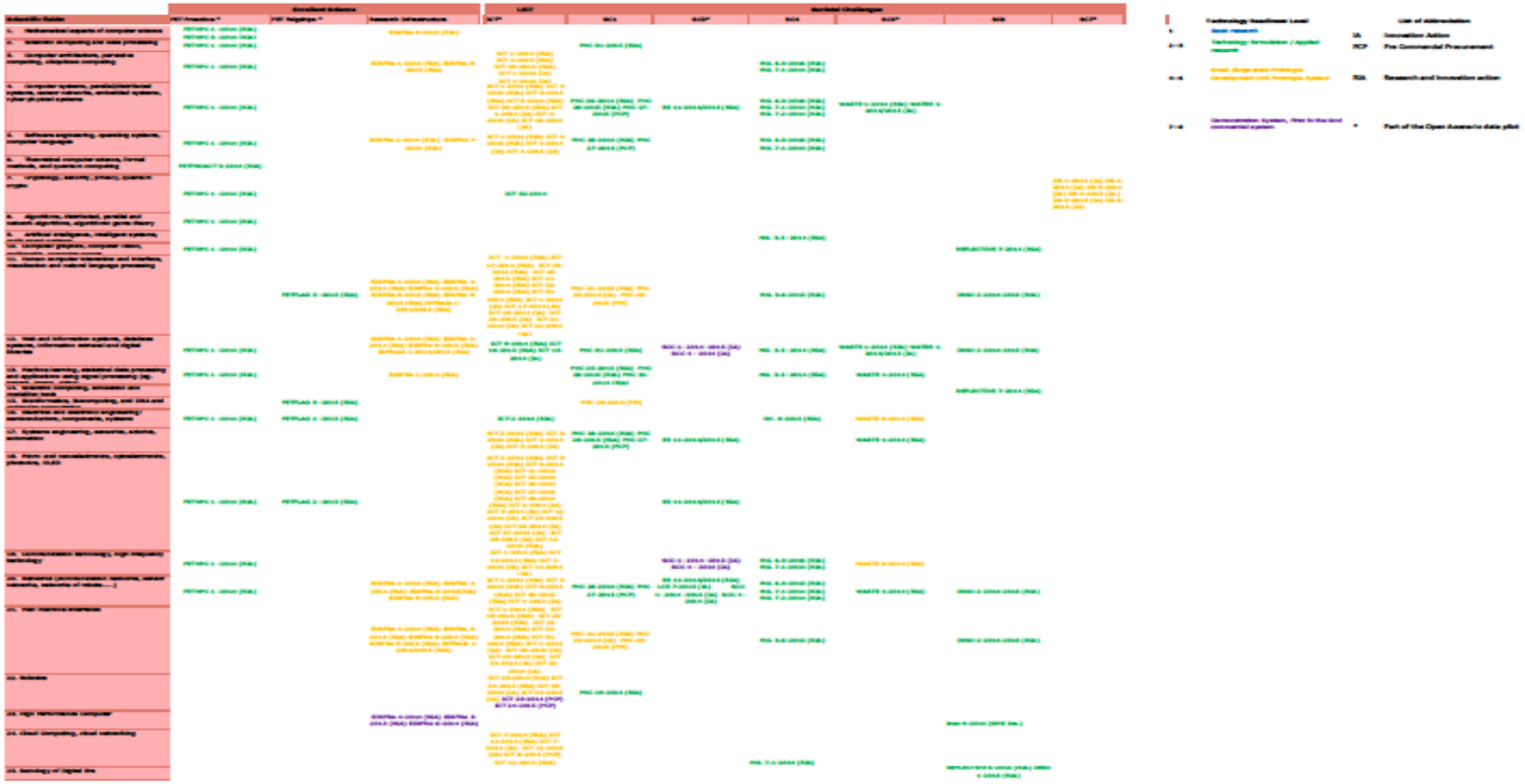


Annex III a: Decision Tree for project funding



Annex III b: Decision Tree Career perspective

Annex IV: ICT Matrix



Annex V: Health Matrix

	Excellent Science		LEIT	Societal Challenges		
Scientific fields:	**FET Proactive ***	**FET Faigships ***	**ICT ***	**SC1**	**SC2**	**SC7 ***
1. genetics				PHC 16 -2015 (RIA)		
2. genomics				PHC 5 - 2014 (RIA)		
3. bioinformatics				PHC 32 - 2014 (RIA)		
4. biological modelling and simulation		FETFLAG 3-2015 (RIA)				
5. genetic epidemiology				PHC 5 - 2014 (RIA)		
6. cell biology				PHC 16 -2015 (RIA)		
7. pathophysiology				PHC 2 - 2015 (RIA) PHC 3 - 2015 (RIA)		
8. neurobiology, neuroanatomy	FETPROACT 2-2014 (RIA)	FETFLAG 3-2015 (RIA)				
9. neuroimaging systems		FETFLAG 3-2015 (RIA)		PHC 11 - 2015 (RIA)		
10. neuroscience	FETPROACT 2-2014 (RIA)	FETFLAG 3-2015 (RIA)	ICT 20 – 2015 (RIA)	PHC 19 - 2014 (RIA) PHC 22 - 2015 (RIA)		
11. psychiatry			ICT 31 – 2014 (RIA)	PHC 22 - 2015 (RIA)		
12. immunobiology				PHC 2 - 2015 (RIA) PHC 3 - 2015 (RIA)		
13. virology				PHC 2 - 2015 (RIA) PHC 3 - 2015 (RIA) PHC 7 - 2014 (RIA)	SFS 14 - 2014 (RIA)	
14. parasitology				PHC 7 - 2014 (RIA)	SFS 14 - 2014 (RIA)	
15. dynamics of infectious diseases	FETPROACT 1-2014 (RIA)			PHC 2 - 2015 (RIA) PHC 3 - 2015 (RIA) PHC 4 - 2015 (RIA) PHC 5 - 2014 (RIA) PHC 7 - 2014 (RIA)	SFS 14 - 2014 (RIA)	DRS 2 - 2014 (IA) DRS 4 - 014 (C&S)
16. treatment of disease				PHC 2 - 2015 (RIA) PHC 3 - 2015 (RIA) PHC 5 - 2014 (RIA) PHC 8 - 2014 (RIA) PHC 9 - 2015 (RIA) PHC 13 - 2014 (RIA) PHC 14 - 2015 (RIA)		
17. regenerative medicine				PHC 15 – 2014/15 (RIA) PHC 16 -2015 (RIA)		
18. ageing				PHC 1 - 2014 (RIA) PHC 17 - 2014 (RIA) PHC 19 - 2014 (RIA) PHC 21 - 2015 (RIA) PHC 22 - 2015 (RIA) PHC 26 - 2014 (IA)		
19. Prevention				PHC 4 - 2015 (RIA) PHC 5 - 2014 (RIA) PHC 6 - 2014 (RIA) PHC 23 - 2014 (RIA)		
20. Diagnotics				PHC 10 - 2014 (RIA) PHC 11 - 2015 (RIA) PHC 12 - 2014/15 (SME Instrument) PHC 21 - 2015 (RIA) PHC 26 - 2014 (RIA) PHC 22 - 2015 (RIA)		
21. Imaging systems				PHC 10 - 2014 (RIA) PHC 11 - 2015 (RIA) PHC 12 - 2014/15 (SME Instrument) PHC 21 - 2015 (RIA)		
22. pediatric medicine				PHC 18 - 2015 (RIA)		
23. personalised medicine				PHC 24 - 2015 (RIA)		
24. toxicology				PHC 33 - 2015 (RIA)		

Technology Readiness Level

1	Basic research
2--3	Technology formulation / Applied research
4--6	Small /large scale Prototype Development Unit Prototype System
7--8	Demonstration System, First fo the kind commercial system

List of Abbreviation

C&S	Coordination and Support Action
IA	Innovation Action
RIA	Research and Innovation Action
*	Part of the Open Access to data pilot