

MID-TERM REVIEW HORIZON 2020

IDEA League

a focused network of Universities of Technology, Science, Engineering and Design

Contents

Executive Summary	4
Issues specific for TUs in Horizon 2020	
Generic issues in Horizon 2020	
Strategic issues with regard to Horizon 2020 and beyond	
Introduction	7
Issues specific for TUs in Horizon 2020	8
Impact and Evaluation	
Technology Readiness Levels	
FAIR data	
EIT and KICs (Knowledge & Innovation Communities)	
Consistency and uniformity	
Generic Issues in Horizon 2020	13
Excellence should be the key driver in Horizon 2020	
The need for more simplification in framework programmes	
The rate of oversubscription must be reduced drastically	
Teaming & twinning	
Internally invoiced costs	
The value of international cooperation	
European Innovation Council (EIC)	
Public-Private Partnerships (PPPs)	
Expansion of instruments	
Strategic issues for future framework programmes	15
Free movement of scientists and exclusion policies	
Transition from top down control toward trust and system control	
Risk of budget cuts	
Funding research and innovation beyond Horizon 2020	
Appendix A: References	18
Appendix B: Authors	21
Primary Authors	
Contributors	
Appendix C: List of Abbreviations	22

Executive Summary

International cooperation among researchers is indispensable to achieve world-class research, excellent academic education and ground-breaking innovation. IDEA League fully acknowledges the results achieved by the European Commission (EC) to promote internationalisation of research. Without the EU framework programmes, European universities would not have reached the advanced stage of internationalisation currently accomplished.

Horizon 2020 is an ambitious framework aiming especially at innovation. Universities of Technology, Science, Engineering and Design (TUs) welcome this emphasis on innovation and the close connection to the societal challenges formulated by the EU.

Having stated this, IDEA League also has its concerns regarding the current framework programme. This document elaborates on these concerns. In this document, IDEA League first identifies issues that are of specific concern to TUs. Then it describes issues that apply on a more generic level, both these issues can be addressed in the remainder of the Horizon2020 programme. In addition, IDEA League identifies strategic matters for consideration that can be addressed when shaping the future framework programme.

Furthermore, in the light of the Brexit, IDEA League emphasizes that it sees the European Research Area and Frameworks (such as Horizon 2020) as important achievements. Whatever the composition or exact structure of the European Union is or will be in the future, IDEA League endorses the eight founding principles of the Lisbon Treaty which can be paraphrased as “the obligation of the EU to maintain good relations with all its neighbour member states”.

IDEA League thus encourages the EC to maintain these relations with their neighbouring states. This will ensure collaborations in which the aims of ERA and both current and future framework programmes will not be jeopardized, regardless of these countries being in or outside the European Union.

Issues specific for TUs in Horizon 2020

Firstly, IDEA League identifies a number of issues applying specifically to TUs. These issues do not surface in general evaluations and reviews, yet should still be elaborated on:

Impact & evaluation

The relation and weight of different elements of impact are not always well described in the calls, yet impact is key in the evaluation.

Technology readiness levels

IDEA League advocates a more coherent balance between Technology Readiness Levels (TRL) on the one hand and attention for entire value-adding chain on the other. This should also consider and include fundamental research activities, and emphasizes that TRL is a means of explanation rather than a goal in itself.

FAIR data

IDEA League proposes FAIR (Findable, Accessible, Interoperable, and Reusable) instead of OPEN data; furthermore, the information towards researchers on data management must be improved.

Consistency and uniformity

Different project officers (POs) may have different approaches and situations in which POs deviate from the guidelines occur. IDEA league suggests creating an ombudsman function in the framework programme to raise issues and concerns regarding the PO's ruling.

Generic issues in Horizon 2020

In previous reports, associations like LERU, EUA, use/EuroScience* and others published their concerns regarding excellence, simplification, and oversubscription. IDEA League agrees with these concerns and emphasises the following:

Excellence should be the key driver in Horizon 2020

From fundamental research to innovation, excellence should, without compromise, be the key driver for Horizon 2020. Other initiatives can be developed for different aims and actions outside the Framework Programme.

Allowing usual accounting principles

IDEA League endorses statements made by LERU (LERU, 2015) and the Helmholtz Association (Helmholtz Association, 2016) regarding the acceptance of usual accounting principles.

The rate of oversubscription must be reduced drastically

An increase on the current and future economic support to the framework programmes will allow for all excellent proposals to be funded. Clearer topics with narrower scopes will help to improve the quality of submissions. The most oversubscribed action is FET-Open. The EC should take measures to further inform the scientific community about the crucially important novelty elements of an FET-Open project.

* A full list of references can be found in Appendix A

Strategic issues with regard to Horizon 2020 and beyond

To ensure maximum effectiveness of the Horizon 2020 programme, it is crucial that boundary conditions are met. These include the mobility of researchers within the union and strategic partners as well as using the budget for its allocated purposes.

The value of international cooperation

Increased international scientific collaboration is driven by the pursuit of quality; for maintaining competitive European research, international collaboration is essential to enhance competencies at the individual, organizational and societal level as well as to address the grand challenges.

European Innovation Council

With regard to the European Innovation Council, IDEA League endorses the joint statement made by speaking with one voice[†].

Free movement of scientists and exclusion policies

IDEA League embraces transnational as well as international collaboration in science and technology and recognises this as being fundamental to excellence. Limitations on the free movement of scientists around Europe (including Third Countries) should be addressed and minimised.

Horizon 2020 does not allow money streams following researchers if they were to change jobs between institutions within member states and third countries. Since this financial flexibility would contribute greatly to the mobility of researchers and the quality of the research, IDEA League argues for the possibility that funds can go along with the individual researcher.

Transition from top down control toward trust

Once the quality of a system or institution has been assessed and approved, Horizon 2020 should rely on control of the overall system, and not on monitoring all detailed parts of that system that has been approved and accredited.

Risk of budget cuts

During the last two years, the Horizon 2020 budget experienced serious cuts. Potential further budget cuts pose a serious threat to the quality of the work delivered.

Funding research and innovation beyond Horizon 2020

Opportunities to conduct excellent research in a collaborative manner should be increased. The full innovative potential of researchers should be facilitated by promoting their leadership and participation in collaborative research projects, targeting in particular first-ever, exploratory, multi-disciplinary and innovative research. Last, but not least, future innovation funding instruments should allow for an active and smooth participation of TUs along the entire innovation chain.

[†] Speaking with one voice is a collaboration between five university associations - CESAER, CLUSTER, EuroTech Universities Alliance, IDEA League and Nordic Five Tech. While each association has its own specific history, rationale and focus, they recognize the necessity to speak with a strong and coherent voice on the European landscape and to work together on issues of common interest and relevance.

Introduction

IDEA League, established in 1999, is a focused network of five leading Universities of Technology, Science, Engineering and Design in Europe: TU Delft, ETH Zurich, RWTH Aachen University, Politecnico di Milano and Chalmers University of Technology. These universities, strong in research, education, and technology transfer, have a wide experience with Horizon 2020. In this paper, IDEA League would like to share this experience with Horizon 2020. The aim of this discussion paper is to recommend the EC on the improvements can be made for the remainder of the Horizon 2020 programme as well as recommendations with regard to future framework programmes.

The core of this report is formed by the elements in Horizon 2020 that are of specific relevance to TUs. All issues noted are accompanied by recommendations for the remainder of Horizon 2020 and, if applicable, also with recommendations for a framework beyond the Horizon 2020 scope. These topics are accompanied by notes on generic and strategic issues.

The working group that produced this report consisted of the senior policy makers who support academic staff in obtaining and managing Horizon 2020 grants. All working group members have a longstanding experience with various EU framework programmes. Based on their experiences combined with discussion papers, recommendations and policy papers that have already been produced (e.g., LERU, EUA) the writing has selected the key issues for TUs with regard to Horizon 2020. The identified issues and recommendations have been thoroughly discussed with leading PI's in the four institutions, whom have validated and enriched the analysis and the recommendations.

IDEA League's joint board, consisting of the heads of the five universities has approved the report on October 1, 2016

Issues specific for TUs in Horizon 2020

Impact and Evaluation

Europe needs to close the R&D and knowledge gaps between its regions and to shape its innovation strategy for the global stage: Horizon 2020 is meant as a stepping stone.

'Impact' means "the wider societal, economic or environmental cumulative changes over a longer period of time" and hence it is inseparable from both 'innovation' and 'fundamental research'. It is neither always easy to measure nor immediately visible to society. Neither 'innovation' nor 'impact' is possible without fundamental research calls. Therefore, calls with high and low TRLs should be equally balanced.

The criterion of impact shall be given a higher weighting for proposals with close-to-market actions in Horizon 2020, without sacrificing criteria on excellence. IDEA League questions the EC's focus on measuring the immediate economic impact of research projects. Industry partners use generic new knowledge to - several years - later be implemented in products and services. Therefore, it is difficult to see to what extent this EU-based knowledge is used. Direct links and traces are not visible, partly due to it being intellectual property or otherwise being an industrial secret. Therefore, attention should not only be focused on short term but also on long-term output. Moreover, the EC support to research and innovation has also a clear structuring effect that contributes to create a more competitive and attractive EU research and innovation landscape, thus "behavioural additionality"* should also be taken into account when assessing impact. IDEA League welcomes the constitution of the Expert Group on Evaluation Methodologies for Horizon 2020 Interim & Ex-Post Evaluations since a coherent set of indicators capable of capturing all impact generated by the EU research funding is needed.

The interdependency of 'fundamental research', 'innovation' and 'impact' is also one of the reasons that IDEA League highly appreciates the open challenge-based approach of the calls for collaborative projects.

* Behavioural additionality refers to the effects on the funded organisations' behaviour and strategy as a result of governmental intervention.

However, the experienced oversubscription and low success rate of these calls endanger real innovation-other than funding opportunities with a higher directly visible economic impact.

The Evaluation Summary Report (ESR) was a very helpful tool to support research teams in improving their proposal for a successful re-submission. It has however become generic, and as a result unhelpful. This leads to a reduced added value. Evaluators, of whom the majority are researchers themselves, have become 'innovation barriers' rather than 'innovation improvers' as their expertise is only required for benchmarking and not for "drivers of innovations" as they used to be in previous framework programmes. A role, they themselves perceived as highly rewarding.

These recommendations are in line with the EARMA publication stating "EARMA calls for more clearly defined expected impacts in the work programmes/call documentation providing also, where possible, links to background policies and documents showing why the topic was chosen as the subject of a call and having due cognisance of the alignment of impacts to the differing TRLs of a specific action type." (EARMA, 2016)

Key Recommendations

- Evaluation and improvement of the call texts, especially in respect to expected impact allowing for better consortia and more focused proposals and consequently a better and smoother evaluation process.
- Better balance between high and low TRLs instead of focusing too strongly on calls with higher TRLs in the hope for achieving an immediate economic impact.
- Evaluation and improvement of the current evaluation system. IDEA League recommends that the evaluation of Horizon 2020 proposals should learn from the positive aspects of the ERC evaluation process. Evaluators should be encouraged to better explain a proposal's shortcomings.
- Development of a methodology to identify and assess the wider impacts of the framework programmes.

Technology Readiness Levels

IDEA League embraces that innovation in terms of setting aims and working together has become key to research and product launch within Horizon 2020 projects. TUs maintain their business cooperation on a long-term to allow creating market developments, reacting to market growth and changes and also pushing new technological challenges.

IDEA League however, questions the EC's focus on the Technology Readiness Level (TRL) grading seen as a single and binding classification system. The grading scale was originally developed to improve the understanding of the added value and workability of the research between researchers, industry and policy makers. Furthermore, it does not equally fit all areas as research often is not linear. Collaborative research shall not have an overly one-sided orientation to applied science and applications of technology only because innovation depends on a strong research basis to pursue a vision. IDEA League therefore urges the EC to see a TRL classification as a qualitative explanation of how the research must be interpreted rather than a binding delimitation.

IDEA League, like EARMA, "believes a clear briefing to project officers and evaluators/panel members on the distinction between different categories of impact and how they align to different actions/projects at different TRLs should occur." (EARMA, 2016). IDEA League's statement also relates to LERU's

statement that "there should be more room for bottom-up, collaborative research in the EU's framework research programme" (LERU, 2016)

Marketable innovations cannot be successfully developed without an appropriate and effective balance between fundamental research, application-oriented research, applied science and industrial application. Outstanding approaches to develop prototypes are not predictable during the planning phase or at the beginning of a project and are doomed to failure in case of insufficient financial means. This is in line with the first point made in ise/EuroScience's interim evaluation of Horizon 2020.

Key recommendations

- TRL must be regarded as a qualitative means to explain the research rather than a target in itself.
- The TRL-based focus should be simplified by introducing yield-expectations for researchers.
- Project calls on innovation should obtain a well-defined window on (fundamental) science and technology.
- Keep stipulating, strengthening and spurring fundamental research and innovation. This will lead to a long-lasting successful horizon of developments, which is only possible in an academia-industry-public sector setting with close interplay between the people involved.

FAIR data

Open Science (Force11, 2014; Wilkinson et al., 2016) is an important policy aim of the EC and in principle, IDEA League supports both the envisioned outcomes and the tools and incentives introduced to achieve those aims. However, with regard to Open Data, one of the three key dimensions of Open Science, IDEA League proposes a different approach. IDEA League prefers to speak of FAIR (Findable, Accessible, Interoperable and Reusable) data rather than Open Data. IDEA League endorses the Call for action of the EU Council (EU, 2016).

Key recommendations

- The research data must at least follow the FAIR Data Principles if there are compelling reasons it cannot be made open.
- Improve information about publishing research data, particularly in applying openness within the context of the FAIR Data Principles.
- Avoid competition between local infrastructures complying with the Data Seal of Approval (Data Seal of Approval, web) and the results of local investments and EU infrastructures funded with public money by making their archiving costs equally eligible for funding.
- Clarify how and when costs for archiving data in repositories are eligible for reimbursement or compensation.
- Create agreement with EU Auditors in the application of guidelines and evaluation criteria for reimbursement.
- Provide greater clarity regarding on opting out of Data Management Plans.

Supporting Points

- IDEA League supports the EC's aim for Open Science. It is very positive that researchers are now requested to make a Data Management Plan on starting a project. The Horizon 2020 pilot has generated the attention of the researchers and has set research data management on the academic agenda.

- However, as TUs collaborate frequently with industry partners, IDEA League urges the EC to make recommendations for cases when Open Data is not feasible for legal or commercial reasons. It urges the IDEA League response to the Horizon 2020 policy on Open Research Data Commission to recommend FAIR (findable, accessible, interoperable, and reusable) data. This expresses the TUs' commitment to good research data management, whilst still facilitating close cooperation with industry.
- Furthermore, IDEA League believes that the recommendation to use the FAIR Data Principles will assist all Horizon 2020 applicants, providing guidelines as to how their data can be shared more widely.
- There still remains some confusion as to the impact of opting out from writing a Data Management Plan or making data open. IDEA League would like to see reassurance from the EC that, when there are compelling reasons, this does not affect applicants' chances of success
- Costs: Within the data management plan, researchers are asked to submit a cost prediction, which in essence is not wrong, but it is often unclear what these costs are. Researchers fear that budget needed for good data management and long-term data deposit will mean less money for their research budget. On top of that, there are huge differences among data sets in the various types of research; one more complicated than the other. In budgeting the costs, the arbitrariness of the auditors is a problem, too as not all evaluations are done in the same way.
- The guidelines state that "participating projects are required to deposit the research data described above, preferably into a research data repository" and "any costs relating to the implementation of the pilot will be reimbursed". However, most of these archiving costs fall outside of the project period and as a result (most) are not covered. Furthermore, it is not clear whether EU funded repositories are to be favoured over local or national infrastructures.

EIT and KICs (Knowledge & Innovation Communities)

For TUs the KICs are important networks for innovation within H2020. Whilst IDEA League endorses the central aims of the KICs (to implement innovative products and services relevant to grand challenges; to start new companies; to train a new generation of entrepreneurs) it argues that there is still room for improvement.

IDEA League endorses the observations and recommendations in the special report of the European Court of Auditors (ECA, 2016). Our main concerns are the undue administrative burden imposed on the project consortia by the KIC administration and the inefficient management.

In general, processes take up too much capacity and time. This particularly applies for reporting, which in some KICs are due every three months, regardless of the funding level and project runtime. IDEA League observed this applying to projects with duration of just one year and a low amount of funding. When combined with the (too) complex KAVA-KCA system, it becomes a burden for potential applicants who decide to abstain from participation in calls.

More transparent internal processes for calls, proposal evaluation, contracting, cash flow, project steering and management are needed. The lack of clarity in the process and management leads to unnecessary drop out

of partners, especially smaller companies. In many cases projects had to start with considerable delay due to inefficient management on the part of the KIC administration. IDEA League does see improvement when comparing the early and newer KICs, seeing the added value of the steps taken. Nevertheless, there is still incompatibility between the basic idea of a KIC, to be a platform for innovation, and the drivers and logic of research projects and their funding. This is reflected in and reinforced by the complicated and non-transparent internal processes of the KICs. IDEA League encourages making pragmatic changes to the preconditions and demand for transparency, for the purpose of simplification and more effective use of resources.

Key recommendations

- IDEA League considers the KAVA-KCA system too complex and in some essential points unclear, as there is no feasible definition of KCA, and urges the commission and EIT to rethink the system.
- Keep the reporting process pragmatic in relation to project duration and funding granted.
- Develop frameworks to increase transparency in calls, proposal evaluation, contracting, cash flow, project steering and management. These frameworks should be published in advance and should be stuck to.

Consistency and uniformity

The current processes and administrative activities in general terms have been a great improvement in comparison to earlier framework programmes. The processes and administration in Horizon 2020 is more straightforward than other research and innovation programmes.

The modus operandi of the Project Officers (PO) is however not always uniform. A possible reason for this may be the personal responsibility of the POs. Most POs act in a pragmatic and well foreseeable manner, whereas others deviate from the general pattern and may request extra measures and actions, often to make consortia motivate minor cost elements. Participants would appreciate more uniformity in processes and communication.

Next to this, IDEA League also sees occurrences where the PO is changed multiple times throughout the project life time. This is perceived as having a negative effect on the cooperation between the EC and the researchers. IDEA League proposes to assign every project a team with a lead and backup PO to prevent unforeseen problems in transfer of knowledge regarding projects and to assure knowledge is not confined to one EU representative.

Key recommendations

- IDEA League calls for full consistency and uniformity, and coupled to that, a fully visible function to file complaints pertaining to deviations in prescribed processes. Therefore, IDEA League would welcome the introduction of an ombudsman function within the programme, to which consortia can turn when confronted with anomalies significantly impacting the project processes.
- Assign every project a team with a lead and back-up PO to prevent unforeseen problems in transfer of knowledge about projects and to assure knowledge is not confined to one EU representative.

IDEA League strongly agrees with a range of ideas and issues already brought to attention by institutions and alliances over the past years, inter alia; LERU, and IGLO. The section below provides an overview of these issues.

Generic Issues in Horizon 2020

Excellence should be the key driver in Horizon 2020

IDEA League fully agrees with the EC's strategy which is based on innovation to strengthen Europe's competitiveness on the global market. Similar to the LERU and ise/EuroScience statements on Horizon 2020, IDEA League agrees that excellence is and should remain the key driver in calls and actions without compromise. Innovation with high quality and sustainable impact emerges from excellence in fundamental research and applied science. Additional actions and programmes can be developed with different aims and other incentives. For Horizon 2020, excellence as seal of quality from fundamental research to product development must, however, remain the key driver.

The need for more simplification in framework programmes

A range of measures has already been applied in Horizon 2020 in order to improve the simplification in comparison to earlier framework programmes. Major improvements can still be made with regard to conflicting rules and regulations, project throughput time, and cost reporting. A more pragmatic approach would benefit all stakeholders in a range of situations. IDEA League endorses the contributions made by EARMA (May 2016) "that further, effective, administrative simplification must continue and must, in the first instance, be based on trust between the EC and research performers with appropriate levels of verification where warranted" (EARMA, 2016).

In addition to this, we see a chance and need for further simplification in Horizon 2020, e.g., in KIC programmes and the Joint Technology Initiative (JTI) on Bio-based industries (BBI).

In the JTI Bio-based Industries, researchers are charged with a fee of 4% of the total amount of funding as set out in the consortium plan by the Industry Association. IDEA League and its researchers are unhappy with this charge for a number of reasons.

- The communication is unclear and not transparent. Yet the financial regulation on the BBI Joint undertaking (JU) demands this.
- While the fee is an actual cost for the research organisation, it may not be included in the budget and thus is non-eligible. As a consequence, research organisations participating in BBI-projects, including those that are publicly funded, de facto co-finance the BBI's Programme Office.
- It is unclear whether this practice is compatible with the BBI JU model grant agreement (EC, 2015).

The rate of oversubscription must be reduced drastically

The overall success rate of eligible full proposals in H2020 has fallen to 12-14% (from previous 19-21% in FP7). Oversubscription worsens the quality of evaluations. Moreover, the low success rates have a negative impact in how researchers perceive the programme. IDEA League calls for an increase of the current and future economic support to the framework programmes in order to allow for all excellent proposals to be funded.

Additionally, a clearer description of the scope and expected impacts of the topics will improve the quality of submissions. In this regard, IDEA League will welcome the breakdown of calls in more specific topics if needed. Narrowing down the current broad description of some topics will prevent the submission of un-focused proposals.

Especially in FET-Open, the EC should take measures to further inform the community about crucial elements in the FET-Open projects. Pre-checking proposals, as was common for this call in FP7, will help to improve the participation in this scheme.

Teaming & twinning

A considerable group of entities in a group of member states has yet to succeed in qualifying for Horizon 2020 funding. To address this, the EU defined a specific set of calls under Horizon 2020. IDEA League emphasizes the importance that the EU and its member states should allow new members more time to catch up with the high speed of moving in the framework- and other subsidising programmes. However, Horizon 2020's mission and ambition should not be toned down by objectives and calls coming forth out of other EU treaty provisions. Horizon 2020 as a whole should stick to its core objectives.

Internally invoiced costs

As other reports already indicate, internally invoiced costs form a problem. IDEA League fully endorses the recommendations made by LERU and the Helmholtz Association.

Previous reports argue the possibility to invoice internal costs for the usage of facilities (e.g. testing equipment or clean rooms). This possibility should be recovered from FP7, given that these are auditable. The current situation "is not only a heavy additional administrative burden on beneficiaries, including their scientific, technical and administrative staff, but it will also be impossible to execute in most cases." (Helmholtz Association, 2016; 1).

Strategic issues for future framework programmes

The strategic issues discussed in this section are not necessarily linked to the remainder of Horizon 2020 but are relevant for future frameworks. Sustainable reinforcement of Europe's competitiveness and research excellence demands the preservation of boundary conditions. Freedom of movement of researchers and students within the Union and associated countries is fully guaranteed in accordance with EU law. Mobility is an essential aspect of IDEA League's commitment to scientific excellence in science, engineering and design, both research and education.

The value of international cooperation

The scientific landscape has seen a growth and spread of science during the past decades expressed, e.g., in increased global spending on R&D, particularly in BRIC countries, and in increased international scientific collaboration. This is driven by the pursuit of quality, access to research infrastructure, and the grand challenges requiring input from different regions, disciplines and players.

For maintaining competitive European research, international collaboration is essential to enhance competencies at the individual, organizational and societal level, e.g., through high-quality candidates/students and opportunities for industry engagement. Furthermore, it contributes to a strong and interdependent community in science and technology which can provide policy makers with the tools to build consensus on actions needed to address the grand challenges.

European Innovation Council (EIC)

With regard to the European Innovation Council, IDEA League fully endorses the statement made by Speaking with one voice (April 2016).

Public-Private Partnerships (PPPs)

IDEA League fully endorses the approach of PPP. However, the realisation of the PPPs research agenda and the way the evaluations are conducted are not completely transparent to all stakeholders and this process could be improved. Moreover, IDEA League stresses that public funding of private activities should always include an in-depth assessment of the balance of public risks versus private benefits.

Expansion of instruments

IDEA League sees the EU is expanding a number of its instruments including the FET-Flagships, we see this as a very valuable development if done with care. Our partners have experience in participating in these large-scale research programmes. We are thus very keen on sharing our experiences in these instruments with the commission in order to create an as seamless as possible implementation.

Free movement of scientists and exclusion policies

The partial association of Switzerland to Horizon 2020 has resulted in the distortion of the scientific competition in Europe. Not only that the ERA Vision 2020 - which says that ... by 2020, all actors fully benefit from the "Fifth Freedom" across the ERA: free circulation of researchers, knowledge and technology ... is endangered, but worse, already today researchers working and living in Switzerland might not be able to continue working on their research grants when moving to the EU, while researchers in the EU might suffer the same fate when moving to a so-called Third Country to the EU. In this regard, the outcome of the British EU-referendum represents an additional threat to free movement of scientists. IDEA Leagues considers that the results of the framework programme, as well as the academic community as a whole benefit from British participation.

For the sake of the ERA Vision, for the researchers today and tomorrow and for the successful continuation of transparent, cooperative and highly competitive research projects we recommend to install a "money follows researcher co-operation line". This scheme would allow researchers, who have been awarded a grant in EU, MS, AC to transfer the grant including the budget to Third Countries, while projects funded by Third Country agencies could continue when moving abroad. Thus, in principle, a transfer of any grant

would be possible in any country. EU rules and regulations would apply for the new host outside EU and vice versa. Given that these agreements also work in the opposite directions as such that the strategic partners would also allow to transfer grants back to the EU, whilst not negatively impacting the partner providing the grant. Two important aspects have to be considered when addressing this issue:

- As grants often include institutional commitments with regard to infrastructures, larger groups of researchers and broader issues of governance than just the individual researcher concerned, the decision that the grant will follow the researcher can only take effect after institutional approval.
- Reciprocity is the underlying principle. Funds from the EU can go to strategic third countries and in the same way, funds from these strategic partners can be imported in the EU.

Three examples that we can learn from in this light are

- The agreements between SNSF and Fonds National de la Recherche (FNR) Luxembourg as well as agreement between SNSF, Deutsche Forschungsgemeinschaft (DFG) Germany and Wissenschaftsfonds (FWF) Austria (SNF, 2014).
- The letter of intent of the former EURO-HORCs (now Science Europe) member organisations.
- The NWO MfR-scheme (NWO, 2016).

Transition from top down control to-wards trust and system control

IDEA League fully understands the need for transparency and accountability. Recent literature on regulation and control (de Bruijn, van der Voort, Warmelink, van Wendel de Joode, & Willems, 2014) has shown the negative effects of top-down control: the organization that has been monitored will tend to approach the minimum requirements set by the regulator. IDEA League supports the transition towards trust and system control. Once quality of a system or institution has been assessed and approved, Horizon 2020 should rely on control of the overall system, rather than monitoring detailed parts and projects of that system that has been approved and accredited.

Risk of budget cuts

It cannot be tolerated that Horizon 2020 budgets are used for other European priorities as they opportunistically arise. The European Fund for Strategic Investments (EFSI) was an initiative that has been marked as a one-time experiment that should never be done again. A recent study published by the EUA (EUA, 2016) concludes that 77% of EFSI financing has gone to infrastructure development in different sectors and SME support, while only the remaining 23% went to RDI activities. Moreover, according to an assessment by Bruegel (Bruegel, 2016) the majority of EFSI projects are similar to those funded under the traditional EIB portfolio. IDEA League agrees with EUA that this questions the added value of EFSI as a means of funding research and innovation as it proves that money taken out of Horizon 2020 is not largely flowing back to research. The interference with and cutting into the budget for opportunistic occasions or other purposes has reached a crucial point at which the quality of the output is starting to suffer. The EC needs to realise that when excellence is the key driver, it can't be compromised, and the budget needs to allow for this.

Funding research and innovation beyond Horizon 2020

Research based innovation is not possible without excellent science. IDEA League acknowledges the role of Horizon 2020, and in particular of the ERC, in fostering excellence in research. However, IDEA League believes that there is very little room within Horizon 2020 to conduct excellent research in a collaborative manner. IDEA League will welcome an increase in funding for these activities. This could include for instance re-launching ERC Synergy Grants and increasing the funding allocation for the FET OPEN programme.

Human resources are of paramount relevance to innovation. IDEA League recognises the role of the Marie Skłodowska-Curie programme in shaping the careers of young researchers. Nevertheless, in case Europe aims at capturing the full innovative potential of young researchers, it should facilitate their leadership and participation in collaborative research projects, targeting in particular first-ever, exploratory, multi-disciplinary and innovative research. This could be done by designing specific programmes based on the lessons learned from the former FET Young Explorers programme.

IDEA league acknowledges the innovation gap between scientific breakthroughs and the realisation of new and advanced products and services for the benefit of the society at large. Horizon 2020 has made significant steps into bridging the so-called 'valley of death' by focusing on different new approaches to foster innovation. TUs play a critical role at the various stages of the innovation chain. TUs actively generate new scientific knowledge that nurtures new innovations, create disruptive innovations by developing innovative technology concepts and can act as reliable and strategic partners helping industry to deliver demonstrator projects and pilots of products closer to the markets. Thus, the design of future innovation funding instruments should allow for an active and smooth participation of TUs along the entire innovation chain, avoiding credit-based financing.

Appendix A: References

LERU

Horizon 2020 - Keep It Simple & Straightforward

October 2015

Pages 5, 7, 13

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Page 12

Speaking with one voice

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2015

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Rathenau Instituut

Chinese borden

March 2016

EARMA

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May 2016

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Force 11

Guiding principles for Findable, Accessible, Interoperable and Re-usable data

<https://www.force11.org/fairprinciples>

Page 10

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Page 10

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Page 10

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Page 17

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Pages 5, 9, 13

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Page 9

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Page 10

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Page 11

EC
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Page 13

SNF
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Page 16

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Page 16

NWO
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2016
Page 16

EUA

One year of EFSI: What's in it for universities?

16 June 2016

Page 16

Bruegel

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17 May 2016

Page 16

Appendix B: Authors

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Appendix C: List of Abbreviations

BBI	Bio-based Industries
BRIC	Brazil, Russia, India, China
DFG	Deutsche Forschungsgemeinschaft
EARMA	European Association of Research Managers and Administrators
EC	European Commission
ECA	European Court of Auditors
EFSI	European Fund for Strategic Investment
EIB	European Investment Bank
EIC	European Innovation Council
EIT	European Institute of Innovation and Technology
ESR	Evaluation Summary Report
ERA	European Research Area
EU	European Union
EUA	European University Association
EUROHORC	European Heads of Research Councils
FAIR	Findable, Accessible, Interoperable, and Reusable
FET	Future and Emerging Technologies
FNR	Fonds National de la Recherche <i>Foundation for Research in Luxemburg</i>
FP7	Framework Programme 7
FWF	Fonds zur Förderung der wissenschaftlichen Forschung <i>Austrian Science Fund</i>
H2020	Horizon 2020
IGLO	Informal Group of RTD Liaison Offices
ise	Initiative for Science in Europe
JTI	Joint Technology Initiative
JU	Joint Undertaking
KIC	Knowledge and Innovation Community
KCA	KIC Complementary Activities
KAVA	KIC Added Value Activities
LERU	League of European Research Universities
MfR	Money Follows Researcher
MGA	Model Grant Agreement
MSCA	Marie Skłodowska-Curie Actions
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek <i>Dutch Organization for Scientific Research</i>
PO	Project Officer
PPP	Public-Private Partnerships
RDI	Research, Development, and Innovation
SNSF	Swiss National Science Foundation
TU	University of Technology, Science, Engineering, and Design
TRL	Technology Readiness Level

IDEA League



CHALMERS

Students: 9,418
Doctorate: 1,140
Professors: 189
Academic Staff (fte): 741
ERC grants (2013): 23



Students: 18,781
Doctorate: 2,445
Professors: 226
Academic Staff (fte): 2,836
ERC grants (2013): 7

ETH Zürich

Students: 14,151
Doctorate: 4,026
Professors: 467
Academic Staff (fte): 5,065
ERC grants (2013): 81



POLITECNICO
MILANO 1863

Students: 41,519
Doctorate: 1,204
Professors: 330
Academic Staff (fte): 2,239
ERC grants (2013): 20

RWTHAACHEN
UNIVERSITY

Students: 42,289
Doctorate: 4,750
Professors: 538
Academic Staff (fte): 5,2300
ERC grants (2013): 5

Students : 126,158
PhD : 13,565
Professors : 1,750
Academic staff : 13,872
ERC grants (2013) : 136

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