Horizon 2020 – *A beginner's guide from European funding experts*

What is Horizon 2020?

Horizon 2020 (H2020) is a flagship science and technology funding programme from the European Commission that aims to stimulate and facilitate cross-border research and innovation in Europe. It is the largest EU Research and Innovation programme to date, with almost €80 billion of funding available over 7 years (from 2014 to 2020). As the financial arm of Europe's Innovation Union (an initiative to help maintain Europe's global competitiveness), it is viewed as a way to generate growth and create jobs through investing in research and development.

The overarching aim is for European organisations to achieve more breakthroughs and discoveries by taking great concepts from laboratories to the market. The goals are to ensure that Europe produces world-class science, removes barriers to innovation and makes it easier for public and private sector collaboration to deliver innovative technologies that offer the most impact to Europe.

How does Horizon 2020 work?

H2020 is built upon 3 pillars: 'Excellent Science', 'Industrial Leadership' and 'Societal Challenges'. Of the total budget, €24.2 billion is allocated for Excellent Science, €16.5 billion to Industrial Leadership, and Societal Challenges receives €28.6 billion.

H2020 is based on competitive calls for proposals and different funding schemes and actions that are organised into 2 year 'work programmes'. These are set by the EC following extensive stakeholder consultation and integration with EU policy objectives and priorities. European researchers (including industry) can respond to these calls for proposals and a consortium of partners can include both research and industry partners from any EU member state (and associated countries).

For 2016-2017, there is a combined total of €16 billion available, spread across 63 calls that cover over 600 topics under 18 thematic areas. For example, Excellent Science includes Future and Emerging Technologies, whilst the Industrial Leadership pillar has ICT and NMBP – Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing, and Biotechnology. The thematic areas for Societal Challenges cover health, energy, transport and security (amongst others).

To be eligible, the project and proposal content must relate to the topic, which will state a specific challenge to be addressed, the scope, anticipated project size and expected impact. Types of action include 'Research and Innovation Actions', which has a funding rate of 100%, for research projects which could lead to the development of new knowledge or a new technology, and 'Innovation Actions', which has funding rate of 70%, for closer-to-the-market activities aimed at producing new or improved products or services. These types of action require a consortium to comprise at least 3 organisations – commercial enterprises and academic institutions – from 3 eligible countries (often referred to as "the 3 from 3 rule"). Another type of action supported is 'Coordination and Support Actions', where the focus is on the direction and networking of research and innovation projects, programmes and policies, and which has a funding rate of 100%.

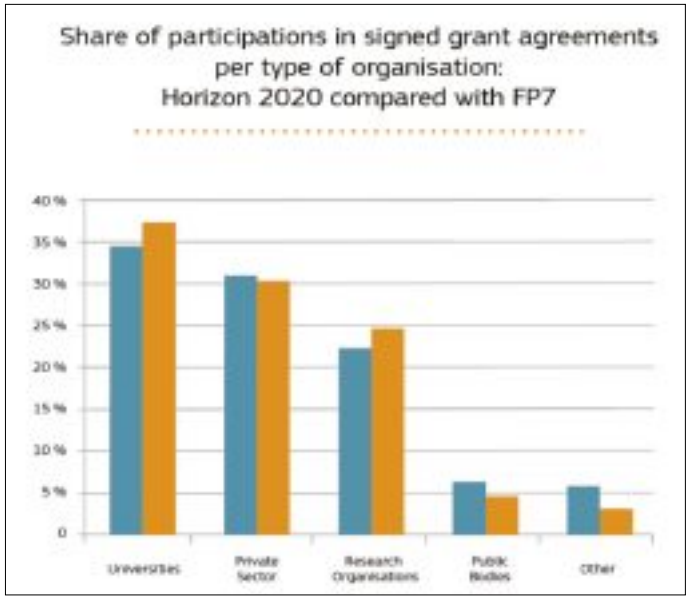
A typical H2020 application comprises 3 key sections: Excellence, Impact and Implementation. Each section is scored out of 5; proposals need to score highly on all 3 sections to reach the threshold and have a chance of securing funding. Excellence should define the concept, the scientific and technical methodology, and make a comparison with the current state-of-the-art. Impact should include not just the primary results, but also the further impact beyond this, such as the wider societal, environmental, economic, political and educational effects of the project. Implementation is where the consortium's capability (why the partners are the most appropriate) and approach (resources, work packages, management structures) for delivering the project should be covered. Assessment usually takes 3-5 months from submission, with a further 3 months to signing of the grant agreement.

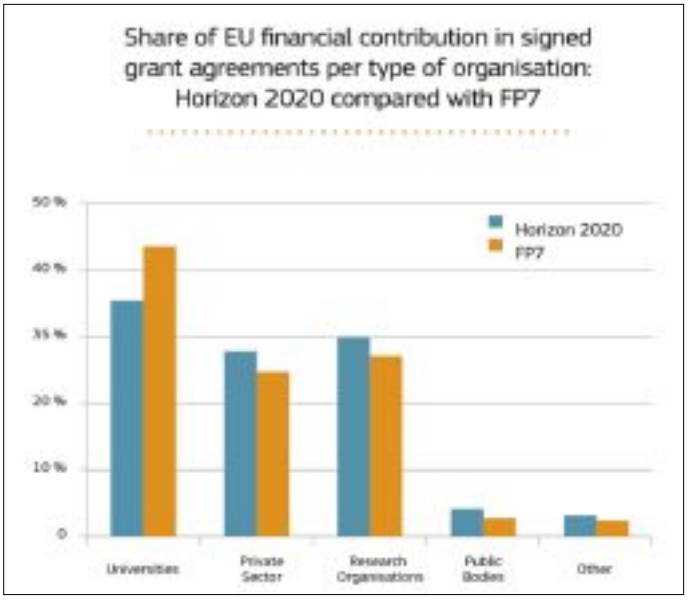
Horizon 2020 – observations so far

Calls for proposals are particularly competitive, as evidenced by an average success rate of approximately 14% for the first 100 calls released in H2020, with just over 4,300 full proposals retained for funding from over 31,000 submitted. Nevertheless, over one third of applicants were newcomers, i.e. organisations who had not participated in Framework Programme 7 (FP7), H2020's predecessor, and the EC contribution to the funded projects was over €5.5 billion[1].

1 https://ec.europa.eu/programmes/horizon2020/en/horizon-2020-statistics

Figure 1: Share or participants and share of EU financial contributions by type of organisation (EC, July 2015)





By the end of 2015, over 7,100 proposals were retained, which had over 33,000 project partners and €14 billion of EC funding requested[2]. Whilst universities still have the highest share of participation and funding contributions, further breakdown (see Figure 1, below) shows an increase in the private sector share for H2020 participation and funding contributions compared to FP7[3].

Indeed, across the 2014-2015 Work Programmes, the industrial participation rate for the Industrial Leadership and Societal Challenges pillars was 42%. The 20% target for SME participation was met[4]. In 2014, for Leadership in Enabling and Industrial Technologies the number of participations was around 6.5 with an EU contribution of €2.1 million. For Societal Challenges these figures were around 7.5 with an EU contribution of €2.7 million[5].

However, a note of caution: innovation funding experts have estimated the cost (in time and effort between partners in a consortium) of preparing a collaborative single-stage proposal to be between €70,000 and €100,000 on average. Furthermore, the same commentator identifies how pressure on budgets for national funding can lead to higher numbers of proposals submitted to H2020, "whether they are well suited for the call or not, and irrespective of their objective level of research and innovation quality"[6]. Therefore, the key question is how can the time, effort and money in preparing proposals be spent to make applications worthwhile, despite the comparatively low success rate? There is no simple definitive answer, but the next section gives a selection of tips and tricks.

Horizon 2020 – Tips and Tricks

Whilst many national funding schemes are competitive and involve detailed applications, many European funding schemes, including H2020, require applicants to go further. With so much at stake – the potential funding available, the success rates, even the shape of H2020's successor – there are a number of matters that proposals must address. The advice presented below is a guide to strengthening proposals, not a guarantee of success.

Proposals must demonstrate:

- **Credibility of the concept**, including clear progress beyond the state-of-the-art; the Impact section has a higher weighting, so it could be decisive in scoring and ultimately, whether the proposal is funded.
- **Communication and consistency** – Applicants should make sure that the proposal is easy to read and assess, by being clear and concise, but without foregoing a complete proposal that is comprehensive in the level of detail required.
- **Quality of objectives** – these should be linked to the scientific and technical approach that will be taken to develop the concept, not just to the expected results.
- **Relevance to the call topic** – there is a specific challenge to address, a scope within which this can be attempted and an expected impact from the actions proposed; to secure the funding these should be treated as requirements, not options.

Proposals should avoid:

- The scientific and technical approach insufficiently matching the objectives.
- An unclear or unconvincing advancement of knowledge and/or the state-of-the-art.
- The technical solution's proposed performance not offering enough commercial potential at EU and international level (see above, the importance of the Impact section)
- The methodology being too general – insufficient detail on work packages, risks, etc.
- High subcontractor involvement and/or unjustified subcontracting costs.
- Missing compulsory components (which happens even though it may seem obvious)

Think critically about your proposal and subject it to extensive scrutiny. Do this before submitting rather than solely reacting to assessor feedback.

Other Horizon 2020 Funding

Aside from the core funding available through H2020's three core pillars, there are other options that are worth considering, such as the **SME Instrument** (SME-I).

2 Cross, Alan (Horizon 2020 Policy, DG Research and Innovation), "Horizon 2020 – Taking stock, looking ahead", Welsh Government's Horizon 2020 Annual Event, Cardiff, 17 March 2016.

3 https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/P22_H2020_Statistics_A4_Horizonta l_July_2015.png

4 Cross, Alan – at fn2 (above).

5 http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2015-011626&language=EN

6 Pennings, Roy (PNO Consultants), "Horizon 2020: How to avoid its success becoming its failure", ScienceBusiness.net, May 2015.

SME-I is a dedicated scheme to support established SMEs to develop new products, process and services all the way through to commercialisation, acting as a vehicle that will allow the company to enter into global markets, achieve growth, and create a high return on its investment. During H2020's lifespan (2014-2020), a total of €3 billion funding is available with around 4 cut-off dates per year. The scheme is open in technology and sector focus, but topic areas are defined within the Horizon 2020 pillars of Societal Challenges, specifically Leadership in Enabling and Industrial Technologies. SMEs are free to choose their collaborative partners and organise the project to suit their needs, so subcontracting is permitted.

SME-I supports projects across 3 phases. Phase 1 support is for concept and feasibility assessment, and provides up to €50,000 for projects with an average duration of 6 months, to assess the scientific or technical feasibility and the commercial potential of a new idea. Phase 2 is funding support to advance a feasibility assessment by developing the innovation of the project, which includes a range of activities: design, miniaturisation, scaling-up, prototyping, performance verification, testing, demonstration, development of pilot lines and validation. Project durations of 12-24 months are expected, with between €0.5 million and €2.5 million available. Phase 3 is non- financial support for the commercialisation, which is provided through (funded) coaching and mentoring to facilitate access to private capital and early customers. Other forms of support includes networking , training, IP management, dissemination. It is not compulsory to apply to all 3 phases and SMEs have the opportunity to access support at the best time to suit their plans. To encourage participation, the SME-I is governed by 'SME-friendly rules and procedures', such as providing a faster time-to-contract (as short as 8 weeks is possible for Phase 1, with Phase 2 taking approximately 3 months); and allowing more flexible and efficient project management by 'simplifying' the rules, such as one project, one funding rate, with a broader acceptance of SMEs accounting practices.

Although early observations noted issues such as projects making the threshold but not receiving funding[7], and success rates can be lower than H2020 core funding (most recently less than 9%[8], which could act as a disincentive to apply), over €500 million was awarded in 2014-15 for 1,444 projects (1,166 at Phase 1,278 at Phase 2)[9].

Conclusion

H2020 offers extensive funding opportunities for organisations involved in science and technology with the highest amount of funding for research and innovation funding that Europe has ever had. However, with those opportunities come challenges (e.g. the resources required, success rates), so the approach taken to securing funding should be sufficiently thorough, perhaps to a similar extent to that which would be required for the innovation to be delivered successfully. All aspects of your proposal must stand up to assessment and be presented accordingly. Having a professional grants consultant to write or review a proposal could give an edge in an intensely competitive environment.

7 Pennings, Roy (PNO Consultants), "Give failed H2020 'SME Instrument' grant proposals a second chance!", May 2015: http://www.pnoconsultants.nl/Portals/2/Documenten/Give-failed-SME-Instrument-grant- proposals-a-second-chance-%C2%A9-Roy-Pennings.pdf

8 https://ec.europa.eu/easme/en/news/sme-instrument-invests-73-million-50-innovative-smes-under-phase-2 9 Cross, Alan – at fn2 (above).

9 Cross, Alan – at fn2 (above).

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