

The need to integrate
the Social Sciences and Humanities
with Science and Engineering
in Horizon 2020 and beyond



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New technologies, such as those developed through funding from Horizon 2020, can only be successful if they are fit for market and society. The dramatic scale and pace of technological developments offers tremendous potential, but with these opportunities come new dangers and new responsibilities. This implies that technological innovations need to pay close attention to the social contexts in which they are to be placed. Moreover, many social innovations require technological development to be successful. Thus, social and technical research need to go hand in hand, but in much of Horizon 2020, this has not been the case. In this short paper, we, the advisory group to FET – the largest H2020 programme solely devoted to ground-breaking technologies – propose that much more attention should be paid by Horizon 2020 and its successor to supporting multidisciplinary and interdisciplinary research that brings together engineering, natural science and the social sciences and humanities in a way in which no one discipline is pre-eminent, but all work together, each inspiring and depending on the others.

Robotics, mobiles and Internet based technologies have already caused revolutions in social organisation well beyond the communication area. Similar effects are being caused by the explosively developing bio- and pharma- technologies. In the past, each radical shift in human society has been driven primarily by one key enabling factor – from wood, stone, bronze, and iron, to steam, electricity, factory automation, and the Internet. Today, science and technology enabled shifts will redraw not only our economy, culture and society, but also our biology and our ethics. It is thus of utmost importance to incorporate a social sciences and humanities research component in the development of these new technologies from the earliest stage.

To some extent, the social sciences and humanities (SSH) have been integrated into H2020 through programmes such as ‘Science with and for Society’ which aims to integrate Responsible Research and Innovation into H2020 research, and through the increased emphasis in H2020 on issues of ethics and gender. There are also a number of areas within H2020 that address issues where SSH has primary expertise, principally the Societal Challenge 6 on ‘Europe in a changing world—Inclusive, innovative and reflective societies’. However the impact of SSH even in these areas has been patchy.¹ Moreover, there are large swathes of H2020 where SSH is either not present or merely paid lip service.²

¹ A Commission review of SSH within the Societal Challenges concludes that “Projects selected for funding under SSH-flagged topics show a fair integration of SSH in terms of participation and budget. However, there is still room for improvement, notably when it comes to the qualitative integration of the SSH. To address this issue, the topic texts of future Work Programmes need to explicitly call for SSH contributions and be framed with the SSH as an integral part of the solution. In addition, the range of SSH disciplines invited to contribute needs to be significantly broadened.” European Commission (2015) **Integration of Social Sciences and Humanities in Horizon 2020: Participants, Budget and Disciplines** <https://ec.europa.eu/programmes/horizon2020/en/news/integration-social-sciences-and-humanities-horizon-2020-participants-budget-and-disciplines>

² There have been a number of reports that also call for a better integration of SSH in H2020. A recent example is the **Science Europe Position Statement: The Framework Programme that Europe Needs** (October 2016, p. 12), which states that “The insufficient integration of the social sciences and humanities (SSH) in the ‘Societal Challenges’ priority exemplifies the rather limited notion of societal value adopted by Horizon 2020. It is essential that the SSH contribution to a project is not limited to a token component.... For a better SSH integration, SSH must be involved throughout the whole process, including the problem formulation phase, the drafting phase of work programmes, the design of topics, and the final evaluation phase. The ultimate goal is for SSH to be an integral part of the development process for new research questions.”

Horizon 2020 is the EU's main programme aimed at securing Europe's global competitiveness. How could the social sciences and humanities contribute more to this mission, so that science and technology developments fulfil their primary purpose, which should be serving humanity and sustaining the environment?

SSH has many roles that it can play, in addition to its contribution to the Societal Challenge 6 Work Programme (SC6)³:

1. **Opening up new policy questions and identifying new societal needs.** For example, users and organisations are increasingly aware of and demanding that software preserves their privacy. In response an approach called 'privacy by design' is becoming popular among software designers. But what do users mean by privacy and how should it be designed into software? What are the trade-offs involved? This is an area where the social sciences have already helped to set the agenda.

A second example: the so-called 'sharing economy' (as represented by Uber and AirBnB) have pointed to a new kind of division of labour, with the platforms and those who operate and own them making high salaries and large profits while the operators (drivers, room sharers) not only earn little, but are also stuck at the bottom of the organization with little job security. Research, some funded by H2020, has begun to propose new ways of distributing value in the collaborative economy in a way that is potentially more equitable and is as 'disruptive' as the current sharing platforms. However, refining these ideas requires a close cooperation between social scientists and software developers (see CAPS 2016⁴).

2. **Developing and promulgating new social 'technologies' and defining a more holistic approach to technology governance.** For example, in an increasingly complex world, it becomes ever harder to evaluate public policies to see whether they are actually working as intended, or even to determine whether some observed change is in fact the result of the application of a policy initiative. Social scientists are developing new methods (some involving advanced mathematics and statistics, and some using computational modelling techniques) to get a better understanding of policy impacts. Success would mean that we could become much better at formulating policies that actually have their intended effects.

Another example is the development of 'community energy': local, distributed energy generation and supply from renewable sources such as wind, photovoltaics and biomass. Current research shows that the prime obstacles to community energy schemes are social and economic: the need to find ways to bring together volunteers with sources of finance and to develop novel and sustainable business plans. However, these depend on the development of appropriate technologies that are cost-effective at the local scale and can

³ http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-societies_en.pdf

⁴ Collective Awareness Platforms for Sustainability and Social Innovation (CAPS)

<https://ec.europa.eu/programmes/horizon2020/en/h2020-section/collective-awareness-platforms-sustainability-and-social-innovation-caps>

be maintained using local labour. Social and economic research needs to go hand in hand with technical development of the generation equipment.

3. **Proactively critiquing current technologies and structures.** For example, social science might show that certain technologies, and formations based on those technologies, discriminate against some groups. A classic example is the way in which violent and competitive video games, favoured by boys, can lead to girls being influenced away from pursuing computer science and technology at school and university.

A second example: Some 40 percent of energy is used directly by households, for heating, cooking, leisure etc. Because the demand for electricity is very uneven through the day and capacity has to be provided by generators to meet the maximum demand, even small shifts in the timing of peak electricity demand can yield substantial economic and environmental benefits. One proposed technology is to install smart meters and use differential pricing – charging more during peak hours – but pilots have shown that this achieves very modest reductions. It is probably not new technology that is required, but new social practices: that is, new ways of doing things that become habitual and customary. Understanding behaviour in terms of ‘social practices’ is an emerging and potentially disruptive approach that stands in opposition to the usual ideas of individual behaviour change.

4. **Mapping trends in values for the future of Europe.** Practices can be modified more efficiently and more rapidly if we know the values and norms that will become predominant in the future. What Europeans think about euthanasia, immigration, vegetarianism and so on, and what they *will* think about these values in the near future, crucially impacts the kinds of practices and technologies that should be developed. The way in which social and moral norms evolve is an important aspect of social science and its study should go hand in hand with the development of each technology with potential societal impact.
5. **Developing a reflection on institutional design.** The design of new, more efficient interconnected European institutions (academies, political parties, voting systems, firms) requires a joint reflection from the outset by experts in new technologies and in institutional design. For example, rethinking collective systems of voting through new technologies requires a joint effort between the social sciences and ICT research. Large scale, European collaborative projects to design new institutions can give Europe a competitive advantage and contribute to creating templates for institutions that will serve as models for other countries. A specific example is the European effort to develop the next generation of the Internet where issues of trust, values and participation are of prime importance⁵.
6. **Integration of innovative perspectives from the arts and humanities into technological research.** The development of socio-technological systems requires a “thinking out of the

⁵ “The Internet of the future should be more open, provide better services, more intelligence, greater involvement and participation. It needs to reflect the European social and ethical values: free, open and more interoperable.”
<http://ec.europa.eu/futurium/en/node/1460>

box” approach. Integrating techniques of reflection coming from arts and humanities (constructing narratives, scenario building, art performances, etc.). Promoting collaborations between the arts and humanities and science and technology will strengthen the creativity of European projects.

7. **Improving the usability and attractiveness of technologies.** It is often assumed that this is the only contribution that social science and humanities are able to make in technological and scientific projects: a role where social scientists are either consigned to cleaning up the mess that technology design has created, or are used to develop marketing materials to promote technical innovations. Hopefully the above examples show that this is not SSH’s only role.

We believe that:

The social sciences and humanities can make a significant contribution to generating the innovation that H2020 is looking for. This is especially true for large projects, such as the Flagships. Generally, *the larger the project and the greater the technical breakthroughs and social impacts envisioned, the greater the need for a SSH contribution.* This contribution must be incorporated from the earliest stage onwards.

Recommendations

What could be done to increase the contribution the SSH could make to H2020 and its successor? The aim should be to attract proposals in which social scientists (and humanities scholars) are *equal partners* with those from other disciplines. Options to achieve this include:

- i. **Making clear in Calls that social science input into funded projects is welcomed and that inter-disciplinary proposals in which the social science questions are the driving force are eligible and encouraged;**
- ii. **Recognising that the larger the scale of the EU-funded S&Tproject (e.g. FET Flagships or the EIT KICs), the greater the need for the SSH component;**
- iii. **Making explicit in Work Programmes that social science and humanities have a role to play, especially when working with science and technology;**
- iv. **Publicising exemplary projects that feature productive collaborations among social scientists and technologists in outlets such as the *Horizon Magazine*⁶;**
- v. **Ensuring the inclusion of SSH expertise in the evaluation of proposals;**
- vi. **Maintaining a list of reviewers who have a track record of successfully evaluating inter-disciplinary proposals that include SSH;**
- vii. **Encouraging academic and industrial career paths that provide technologically literate social scientists and social science literate technologists.**

⁶ *Horizon The EU Research&Innovation Magazine* <http://horizon-magazine.eu>

Acknowledgements

This position paper resulted from numerous discussions carried by the FETAG on the future of FET and other European technological programs, especially those under umbrella of the Horizon 2020. It is also a follow-up of our recommendation paper on the future of FET. We stated there⁷ that: *A key element of the FET mission in the future should be to connect in new ways the creativity of European researchers and the rest of society (citizens, civil society, and other stakeholders). FET should also broaden the definition of innovation beyond technology, to include for example, social sciences, especially with respect to social sciences that result in new challenges and ideas for technology and create innovative collaborations.*

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FET Advisory Group, December 2016

⁷ THE FUTURE OF FET: A possible nucleus for the European Innovation Council, FETAG, Sept 2015, https://ec.europa.eu/futurium/en/system/files/ged/the_future_of_fet.pdf

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⁸ <https://ec.europa.eu/digital-single-market/en/future-emerging-technologies-advisory-group-fetag>

