

# How to Go about RRI and SSH in ICT-related parts of H2020 WP14-15?

## 1. General Overview

The development and deployment of ICTs induces pervasive and radical changes in our lives. Social Sciences and Humanities (SSH) expertise is critical to explore these technologically-induced changes, and it gives a particular importance to Responsible Research and Innovation (RRI). The two cross-cutting issues SSH and RRI<sup>1</sup> are paid particular attention to in the ICT-including parts of the Working Programme 2014-15 (WP14-15) of H2020. This note aims to set out the approach taken to ensure the mainstreaming of these two intertwined, cross-cutting issues.

- 1.1. **Responsible Research and Innovation** is an inclusive approach to Research and Innovation (R&I), to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the values, needs, and expectations of European society. In doing so, it fosters the creativity and innovativeness of European societies to tackle the grand societal challenges that lie before them, while at the same time pro-actively addressing potential side-effects.

In practice, RRI has five different aims:

- engaging society more broadly with research and innovation activities (**public engagement**),
- facilitating the access to scientific results (**open access**),
- ensuring gender equality in both the research process and research content (**gender dimension**),
- taking account of the ethical dimension (**ethical issues**), and
- promoting formal and informal science education (**education**).

- 1.2. **Social Sciences and Humanities** are expected to provide a rich contribution to R&I activities, in at least two ways:

- Monitor economic, legal, and social issues related to technological developments (**ELSIfication**).<sup>2</sup> Contributions should explore the potential impacts of envisaged technological developments in order to mitigate risks and inconveniences and optimise benefits as well as the chance of success/uptake of these technological developments.

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<sup>1</sup> [Proposal for a Council Decision establishing the Specific Programme Implementing Horizon 2020 - The Framework Programme for Research and Innovation \(2014-2020\)](#), Annex I, Section 1.2.

<sup>2</sup> "Ethical, Legal and Social Implications."

- Reframe and update the concepts, meanings, and expectations arising from the deployment of ICTs (*reformulation*). These more pro-active contributions should explore the "rebound" of technologies in society and how societal uptake creates new grounds for innovation.

### 1.3. *Towards an Organic Approach*

1.3.1. First, let's note that topics encounter RRI saliency from four different perspectives:

- **Technological**, i.e. when technological developments raise societal issues (for ex. robotics).
- **Challenge-oriented**, i.e. when the addressed challenge raises societal issues (for ex. e-health).
- **Issues-oriented**, i.e. when sensitive issues are identified and better thought-out technology is called for to address them (for ex. privacy or security).
- **Topics** where the primary objective is to strive for RRI as such (for ex. ICT 10: "Collective Awareness Platforms for Sustainability and Social Innovation").

#### 1.3.2. Topology of the Organic Approach

The organic approach to RRI and SSH is inherently contained in all parts of the WP14-15.<sup>3</sup> Proposals would be well advised to harness the five components of RRI-actions and to call for SSH-expertise wherever it offers an added value; even when these are not explicitly called for.

Beyond this primary baseline, the cross-cutting nature of SSH-expertise and RRI-actions is underlined through their explicit mention in the introductions of the Challenges "*Leadership in Enabling and Industrial Technologies*" (LEIT), "*Excellent Science*" (EXC), and some of the "*Societal Challenges*" (SCs).

Both SSH and RRI are mainstreamed via explicit mentions in the individual topic descriptions also. It is recognized that the level of SSH expertise required can differ from topic to topic.

Some topics are highlighted for their *intensive* need of SSH expertise and RRI actions.

In order to complete and articulate the distributed SSH and RRI expertise and actions across WP14-15, a *hub* for both SSH and RRI has been included in the LEIT WP, in ICT31 "Human-Centric Digital Age".

Note that this hub is allocated a small budget and that funding opportunities are much higher in other parts of the WP! Potential applicants are encouraged to look first for

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<sup>3</sup> The introduction of the WP14-15 makes this clear. Cross-cutting issues including SSH and gender are to be mainstreamed throughout the Work Programmes.

these embedded possibilities and seek funding under ICT31 only if their proposals do not fit in better elsewhere.

1.3.3. The rest of this note reviews the available possibilities through a screening of the three main blocs of H2020:

- [Leadership in Enabling and Industrial Technologies \(LEIT\) – Information and Communication Technologies](#)
- [Societal Challenges \(SCs\)](#)
- [Excellent Science \(EXC\)](#)

A table following the conclusion provides an overview via a mapping of the manifold ways in which the organic approach to RRI/SSH manifests itself in the WP14-15.

## 2. Review of SSH and RRI in LEIT

The need for SSH-expertise and RRI-actions is included as a baseline in the introduction to [LEIT](#).<sup>4</sup>

Mainstreaming opportunities are explicitly spelled out in numerous topics. These either call for SSH/RRI embedded into multidisciplinary projects, or for dedicated SSH/RRI projects.<sup>5</sup>

A topic worth emphasizing for its intensive RRI/SSH component is ICT 10: "*Collective Awareness Platforms for Sustainability and Social Innovation*," which will harness the collaborative power of ICT networks to create awareness about the multiple sustainability threats our society faces. ICT 10's Digital Social Platforms (DSP) will facilitate the transposition of societal solutions to larger groups active on transnational scales. Multidisciplinary proposals addressing critical factors for demand-driven societal innovation are welcome. Findings should be transferable and scalable to other societal challenges.

ICT 31: "*Human-Centric Digital Age*" explores the two-way interaction between technology and society to lay the foundation for future ICT developments. This topic has a budget of 7 million €. Of these, 6 million € are devoted to R&I Actions that explore fundamental notions<sup>6</sup> in the hyper-connected age.

One million is budgeted for a coordination and support activity, to ensure RRI across all WP topics and projects. This strategic activity is expected to function as a common

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<sup>4</sup> On page 11 of Annex 5 you may find a whole section devoted to Responsible Research and Innovation. See [here](#) for the ICT WP.

<sup>5</sup> In WP15: ICT 10, 19, 20, 24, 30 & 39. See Annex 1 for a full list.

<sup>6</sup> Such as identity, privacy, relationships, culture, reputation, motivations, responsibility, attention, safety, and fairness.

platform to coordinate and support RRI in ICT R&D&I areas of the H2020 WP14-15. It will:

- Provide a consolidated vision of SSH expertise and RRI activities across the WP,
- Support embedded SSH expertise to enable them to inspire RRI in their respective projects,
- Extract best practices from the multidisciplinary approach,
- Formulate recommendations to improve the overall RRI approach.

### 3. Review of SSH and RRI in EXC

The introduction to the **FET WP** explicitly promotes cooperation between science, industry, citizens, and policymakers, while paying attention to issues of gender, age, culture, and public engagement. Through the overarching promotion of "digital science" it also emphasises open research collaborations, which serve to increase involvement of the general public in research. Hence, RRI actions are called for across FET allowing for broad mainstreaming opportunities. Furthermore, the fully open scope of FET Open provides openings for interdisciplinary research projects with an intensive SSH dimension connected to science and technology development. "FET-Open research projects"<sup>7</sup> particularly look to stimulate the driving role of women in research and innovation, while the "Coordination and Support Activities" for 2014 and 2015<sup>8</sup> are based on a wide definition of research stakeholders including the public at large.

Two FET proactive topics are worth emphasizing for their intensive RRI/SSH component: (i) "*Global Systems Science*" (GSS) and (ii) "*Knowing, Doing and Being: Cognition beyond Problem Solving*."<sup>9</sup> GSS aims to radically improve the way in which scientific knowledge can stimulate, guide, and help to evaluate policy and societal response to global challenges. '*Knowing, Doing and Being*' strives to renew ties between the different disciplines studying knowledge, cognition and related issues including, most notably here, social ones.

In **e-Infrastructures**, mainstreaming opportunities for SSH expertise and RRI actions are called for in "*Centres of Excellence for Computing Applications*."<sup>10</sup> "Managing, Preserving and Computing with Big Research Data" highlights the need to coordinate with upcoming RRI projects under the related "Science with and for Society" call. "E-

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<sup>7</sup> FETOPEN 1. See Annex 2 for a full list.

<sup>8</sup> FETOPEN 2 & 3. See Annex 2 for a full list.

<sup>9</sup> Respectively, FETPROACT 1 & 2. See Annex 2 for a full list.

<sup>10</sup> EINFRA 5. See Annex 2.

Infrastructures for Virtual Research Environments (VRE)" specifically mentions social sciences and humanities as a possible area for VRE.<sup>11</sup>

#### **4. Review of SSH and RRI in SCs**

4.1. In **SC 1 – Health, Demographic Change and Wellbeing**, the organisation of appropriate stakeholder and public engagement is called for in all topics. Mainstreaming opportunities for SSH/RRI are located in all ICT-including "*Call – Personalising Health and Care*" (PHC) topics.<sup>12</sup> In the coordination activities supporting the "*European Innovation Partnership on Active and Healthy Ageing*,"<sup>13</sup> civil society organisations are expected to play a major role in establishing a roadmap of research priorities.

4.2. In **SC 3 – Secure, Clean and Efficient Energy**, the introduction makes clear that socio-economic research is comprised in all topics. Furthermore, the introduction to the "*Call – Energy Efficiency*" states that gender issues, the ethical dimension and the relevant socio-economic implications should be paid due attention. This applies obviously to the topic "*New ICT-based Solutions for Energy Efficiency*."<sup>14</sup> Similarly, in the introduction of the "*Call – Competitive Low-Carbon Energy*," enhanced cooperation between all stakeholders including the research community and society at large is required. This applies obviously to the ICT-based topic "*Distribution Grid and Retail Market*."<sup>15</sup>

There is an explicit RRI mainstreaming opportunity in the "*Call – Smart Cities and Communities*" where an integrated approach is needed that, amongst other aspects, includes engagement.<sup>16</sup>

4.3. In **SC4 – Smart, Green and Integrated Transport**, the introduction underlines the need for the socio-economic research necessary to meet the challenges raised by transport and the societal needs related to it. This also applies evidently to the ICT-based topic "*Cooperative ITS for Safe Congestion-Free and Sustainable Mobility*."<sup>17</sup> The topic "*Safe and Connected Automation in Road Transport*"<sup>18</sup> explicitly calls for a multi-stakeholder engagement process and for ethical and gender issues to be duly considered.

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<sup>11</sup> Respectively, EINFRA 9 & INFRASUPP 7. See Annex 2 for a full list.

<sup>12</sup> In WP15: PHC 21, 25, 27, 28, 29 & 30. See Annex 3 for a full list.

<sup>13</sup> HCO 1. See Annex 3.

<sup>14</sup> EE 11. See Annex 3.

<sup>15</sup> LCE 7. See Annex 3.

<sup>16</sup> SCC 1, 2, 3, 4 & 5. See Annex 3.

<sup>17</sup> MG.3.5. See Annex 3.

<sup>18</sup> MG. 3.6. See Annex 3.

- 4.4. For **SC 6 – Europe in a Changing World – Inclusive, Innovative and Reflective Societies**. Open innovation and engagement of civil society are called for across all topics of the Call "*New Forms of Innovation*." This also applies to the topics "*ICT-enabled open government*" and "*Platform for ICT for Learning and Inclusion*" the former of which looks to empower citizens while the latter puts a spotlight on citizens at the risk of digital exclusion.<sup>19</sup> "*Innovation Ecosystems of Digital Cultural Assets*"<sup>20</sup> explicitly calls for SSH expertise as an enabler to a technology-abetted exploration of Europe's cultural heritage. "*Advanced 3D Modelling for Accessing and Understanding European Cultural Assets*"<sup>21</sup> calls for collaborations across disciplines, technologies and sectors.

"*Meeting New Societal Needs by Using Emerging Technologies in the Public Sector*"<sup>22</sup> requires multidisciplinary research taking into account societal factors. Finally, "*Societal and Political Engagement of Young People and their Perspectives on Europe*"<sup>23</sup> is an e-Participation project taking into account the characteristics of young people, including the gender context.

- 4.5. In **SC 7 - Secure Societies – Protecting Freedom and Security of Europe and Its Citizens**, the call on "Digital Security: Cybersecurity, Privacy and Trust" addressing the societal dimension of security and privacy in the digital ecosystem requires harnessing by SSH-expertise and engaging in RRI-actions.

Furthermore, SSH-expertise and RRI-actions are explicitly called for in numerous topics within this call. The "*Privacy*" topic thus focuses on solutions to protect individuals' privacy by default. Actions under the topic "*Access Control*" will improve the level of security of online services. The topic "*Secure Information Sharing*" encompasses the implementation of a network for secure sharing of sensitive information between pertinent societal actors. The topic "*Trust e-Services*" will increase interoperability and thus empower citizens as users in their digital experiences. Finally, the topic "*Risk Management and Assurance Models*" is to revise traditional risk management methods with a dynamic approach.<sup>24</sup>

A topic that is worth highlighting for its intensive RRI/SSH component is DS 7: "*Value-sensitive technological innovation in Cybersecurity*." The coordination and support action in this topic will bring together stakeholders from civil society, research, industry and public bodies to define what is needed to ensure a flourishing information society which offers safety and security and at the same time respects Europe's fundamental values and rights.

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<sup>19</sup> INSO 1 & 6 respectively. See Annex 3.

<sup>20</sup> REFLECTIVE 6. See Annex 3.

<sup>21</sup> REFLECTIVE 7. See Annex 3.

<sup>22</sup> EURO 6. See Annex 3.

<sup>23</sup> YOUNG 5. See Annex 3.

<sup>24</sup> DS 1, 2, 4, 5 & 6. See Annex 3.

## 5. **Conclusion**

With this note, we hope to have made clearer the numerous entries and modalities through which SSH expertise and RRI actions are called for in the sections of the WP14-15 related to the DAE.

Potential applicants are highly encouraged to explore these numerous possibilities and check the best place where they can add value with SSH expertise and RRI actions. As a first step, SSH teams could approach ICT departments in their own organisations to enquire about cooperation possibilities and raise awareness with engineers and ICT researchers about the need to partner with SSH expertise and RRI practitioners, in order to ensure that the proposals meet the required quality and relevance standards.

**Mapping of the Organic Approach to RRI/SSH in WP14-15**

<p><i>Focus Areas:</i> <i>Need for SSH-expertise and RRI-actions assured via:</i></p>	<p><b>LEIT</b></p>	<p><b>EXC</b></p>	<p><b>SC</b></p>
<p><b>An Explicit Mention in the Introduction</b></p>	<p><i>Yes</i></p>	<p><i>Yes</i></p>	<p><i>Yes, for SC 1, 3, 4 &amp; 7</i></p>
<p><b>Mainstreaming in Individual Topics</b></p>	<p><b>WP14:</b> <i>ICT 1, 2, 5, 7, 13, 14,15, 21, 22 &amp; 35; EUJ4</i></p> <p><b>WP15:</b> <i>ICT 19, 20, 24, 30, 39</i></p>	<p><b>WP14:</b> <i>EINFRA 1; FETOPEN 1 &amp; 2; INFRASUPP 7</i></p> <p><b>WP15:</b> <i>FETOPEN 1 &amp; 3; EINFRA 5 &amp; 9</i></p>	<p><b>WP14:</b> <i>PHC 19, 20, 26 &amp; 34; HCO 1 &amp; 2; LCE 7; SCC 2, 4 &amp; 5; MG 3.5; YOUNG 5; INSO 6; REFLECTIVE 7; DS 1, 2 &amp; 6;</i></p> <p><b>WP15:</b> <i>PHC 21, 25, 27, 28, 29 &amp; 30; EE 11; SCC 1 &amp; 3; MG 3.6a &amp; 3.6b; GV 8; EURO 6; REFLECTIVE 6; INSO 1; DS 4 &amp; 5</i></p>
<p><b>SSH/RRI-Intensive Topics</b></p>	<p><b>WP15:</b> <i>ICT 10</i></p>	<p><i>FETPROACT 1 &amp; 2</i></p>	<p><b>WP15:</b> <i>DS 7</i></p>
<p><b>The Hub Topic</b></p>	<p><i>ICT 31</i></p>	<p>–</p>	<p>–</p>



## ***Annex 1 – LEIT-Topics Requiring ICT-Related SSH Expertise:***

### *Information and Communication Technologies*

#### **A New Generation of Components and Systems**

- ICT 1 – 2014: Smart Cyber-Physical Systems
- ICT 2- 2014: Smart System Integration

#### **Future Internet**

- ICT 5 - 2014: Smart Networks and Novel Internet Architectures
- ICT 7 - 2014: Advanced Cloud Infrastructures and Services
- [ICT 10 - 2015: Collective Awareness Platforms for Sustainability and Social Innovation](#)
- ICT 13- 2014: Web Entrepreneurship
- ICT 14 - 2014: Advanced 5G Network Infrastructure for the Future Internet

#### **Content Technologies and Information Management**

- ICT 15 - 2014: Big Data and Open Data Innovation and Take-up
- [ICT 19- 2015: Technologies for creative industries, social media and convergence](#)
- [ICT 20- 2015: Technologies for better human learning and teaching](#)
- ICT 21 - 2014: Advanced Digital Gaming/Gamification Technologies
- ICT 22 - 2014: Multimodal and Natural Computer Interaction

#### **Robotics**

- [ICT 24 - 2015: Robotics](#)

#### **ICT Cross-Cutting Activities**

- [ICT 30- 2015: Internet of Things and Platforms for Connected Smart Objects](#)
- ICT 31 - 2014: Human-Centric Digital Age

#### **Horizontal ICT Innovation actions**

- ICT 35- 2014: Innovation and Entrepreneurship Support

#### **International Cooperation Actions**

- [ICT 39 - 2015: International Partnership Building in Low and Middle Income Countries](#)

#### **EU- Japan Research and Development Cooperation in Net Futures**

- EUJ4- 2014: Experimentation and development on federated Japan – EU testbeds

***Annex 2 – Excellent Science Topics Requiring ICT-Related SSH Expertise:***

*Future and Emerging Technologies (FET)*

- FETOPEN 1 – 2014/2015: FET-Open Research Projects
- FETOPEN 2 – 2014: Coordination and Support Activities 2014
- FETOPEN 3 – 2015: Coordination and Support Activities 2015
- FETPROACT 1 – 2014: Global Systems Science (GSS)
- FETPROACT 2 – 2014: Knowing, Doing, Being: Cognition Beyond Problem Solving

*European Research Infrastructures (Including e-Infrastructures)*

**E-Infrastructures**

- EINFRA-1-2014: Managing, Preserving and Computing with Big Research Data
- EINFRA-5-2015: Centres of Excellence for Computing Applications
- EINFRA-9-2015: e-Infrastructures for Virtual Research Environments (VRE)

**Support to Innovation, Human Resources, Policy and International Cooperation**

- INFRASUPP-7-2014: e-Infrastructure Policy Development and International Cooperation

### **Annex 3 – Societal Challenges Topics Requiring ICT-Related SSH Expertise:**

#### *SC 1 – Health, Demographic Change and Wellbeing*

##### **Personalising Health and Care**

###### ***Advancing Active and Healthy Ageing***

- PHC 19 – 2014: Advancing Active and Healthy Ageing with ICT: Service Robotics within Assisted Living Environments
- PHC 20 - 2014: Advancing Active and Healthy Ageing with ICT: ICT Solutions for Independent Living with Cognitive Impairment
- PHC 21 – 2015: Advancing Active and Healthy Ageing with ICT: Early Risk Detection and Intervention

###### ***Integrated, Sustainable, Citizen-centred Care***

- PHC 25 - 2015: Advanced ICT Systems and Services for Integrated Care
- PHC 26 - 2014 – Self-Management of Health and Disease: Citizen engagement and mHealth
- PHC 27 - 2015: Self-management of Health and Disease and Patient Empowerment Supported by ICT
- PHC 28 - 2015: Self-management of Health and Disease and Decision Support Systems Based on Predictive Computer Modelling Used by the Patient Him or Herself
- PHC 29 – 2015: Public Procurement of Innovative e-Health Services

###### ***Improving Health Information, Data Exploitation and Providing an Evidence Base for Health Policies and Regulation***

- PHC 30 - 2015: Digital Representation of Health Data to Improve Disease Diagnosis and Treatment
- PHC 34 – 2014: eHealth Interoperability

##### **Call Co-ordination Activities**

- HCO 1 – 2014: Innovation Partnership: Support for the European Innovation Partnership on Active and Healthy Ageing

#### *SC 3 – Secure, Clean and Efficient Energy*

##### **Energy Efficiency**

###### ***Buildings and Consumers***

- [EE 11 – 2014/2015: New ICT-based Solutions for Energy Efficiency](#)

## **Competitive Low-Carbon Energy**

### ***Modernising the European Electricity Grid***

- LCE 7 – 2014: Distribution Grid and Retail Market

## **Smart Cities and Communities**

### ***Enhancing the Roll-Out of Smart Cities and Communities Solutions by Stimulating the Market Demand***

- [SCC 1 – 2014/2015: Smart Cities and Communities solutions integrating energy, transport, ICT sectors through lighthouse \(large scale demonstration - first of the kind\) projects](#)
- SCC 2 – 2014: Developing a framework for common, transparent data collection and performance measurement to allow comparability and replication between solutions and best-practice identification
- [SCC 3 – 2015: Development of system standards for smart cities and communities solutions](#)
- SCC 4 – 2014: Establishing networks of public procurers in local administrations on smart city solutions
- SCC 5 – 2014: Smart Solutions for Creating Better Cities and Communities – Assistance for a Prize Competition

### ***SC 4 – Smart, Green and Integrated Transport***

## **Mobilities for Growth**

### ***Road***

- MG.3.5 – 2014: Cooperative ITS for Safe, Congestion-Free and Sustainable Mobility
- [MG.3.6a – 2015: Safe and Connected Automation in Road Transport](#)
- [MG.3.6b – 2015: Safe and Connected Automation in Road Transport](#)

### ***Green Vehicles***

- [GV-8-2015](#). Electric vehicles' enhanced performance and integration into the transport system and the grid

*SC 6 – Europe in a Changing World – Inclusive, Innovative and Reflective Societies*

**Overcoming the Crisis: New Ideas, Strategies, and Governance Structures for Europe**

- [EURO 6 – 2015: Meeting New Societal Needs by Using Emerging Technologies in the Public Sector](#)

**The Young Generation in an Innovative, Inclusive, and Sustainable Europe**

- [YOUNG 5\(b\) – 2014: Societal and Political Engagement of Young People and their Perspectives on Europe](#)

**Reflective Societies: Cultural Heritage and European Identities**

- [REFLECTIVE 6 – 2015: Innovation Ecosystems of Digital Cultural Assets](#)
- [REFLECTIVE 7 – 2014: Advanced 3D Modelling for Accessing and Understanding European Cultural Assets](#)

**New Forms of Innovation**

- [INSO-1-2014/2015: ICT-enabled open government](#)
- [INSO-6-2014: Platform for ICT for Learning and Inclusion](#)

*SC 7 – Secure Societies – Protecting Freedom and Security of Europe and Its Citizens*

- [DS 1 – 2014: Privacy](#)
- [DS 2 – 2014: Access Control](#)
- [DS 4 – 2015: Secure Information Sharing](#)
- [DS 5 – 2015: Trust eServices](#)
- [DS 6- 2014: Risk Management and Assurance Models](#)
- [DS-7-2015: Value-sensitive technological innovation in Cybersecurity](#)