



<b>Project Name</b>	Observing Emergence OBSERVE
<b>Grant No.</b>	665136
<b>Project Type</b>	Coordination and Support Action
<b>Project Duration</b>	1.6.2015 - 30.5.2017 (24 Months)
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<b>Funded under</b>	Future and Emerging Technologies FET
<b>Workpackage</b>	WP4 Dissemination
<b>Deliverable</b>	4.6 User Brief 3
<b>Submission Date</b>	06.2017
<b>Version</b>	1
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# 1 Background

The Future & Emerging Technologies (FET) programme of the European Commission invests in transformative frontier research and innovation with a high potential to benefit our economy and society. FET provides a unique combination of high risk, long term, multidisciplinary and collaborative research, which lays the foundations for radically new, next generation technologies. It converts proofs of concept into industrial applications and systems.<sup>1</sup> The OBSERVE project supports FET by screening emerging developments that could be relevant to be taken up in the FET funding activities. From 2015 to 2017 OBSERVE has set up a stepwise process of horizon scanning, assessment and sense making.

As a result of this process a 360° Radar was generated that comprises the following elements (c.f. Figure 1):

- 171 hypotheses of emerging seeds of change of 5 different types (OBSERVE Horizon Scanning Report Deliverable 1.2),
- 34 Potential Hotspots that combine a number of the emerging seeds of change. Each potential hotspot is assessed with respect to different criteria relevant for FET such as level and dynamics of scientific publications and potential impact level (OBSERVE User Brief 2 and OBSERVE Potential Hotspot Report Deliverable 2.1),
- 17 Hotspots identified with experts in a sense making workshop as an example of using the radar for strategic conversations (OBSERVE 360° Radar Deliverable 3.1).

The methodology for the radar generation is presented and discussed in the Methodology Reports (D1.2 Horizon Scanning) and D3.2 (Clustering and Assessment). This is the third and last User Brief from the OBSERVE project. It presents a step by step approach for using the Radar in strategic conversations. The approach is built on the OBSERVE sense making process and adapted according to the feedback received from participants.

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<sup>1</sup> <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/future-and-emerging-technologies> last accessed 19.06.2017

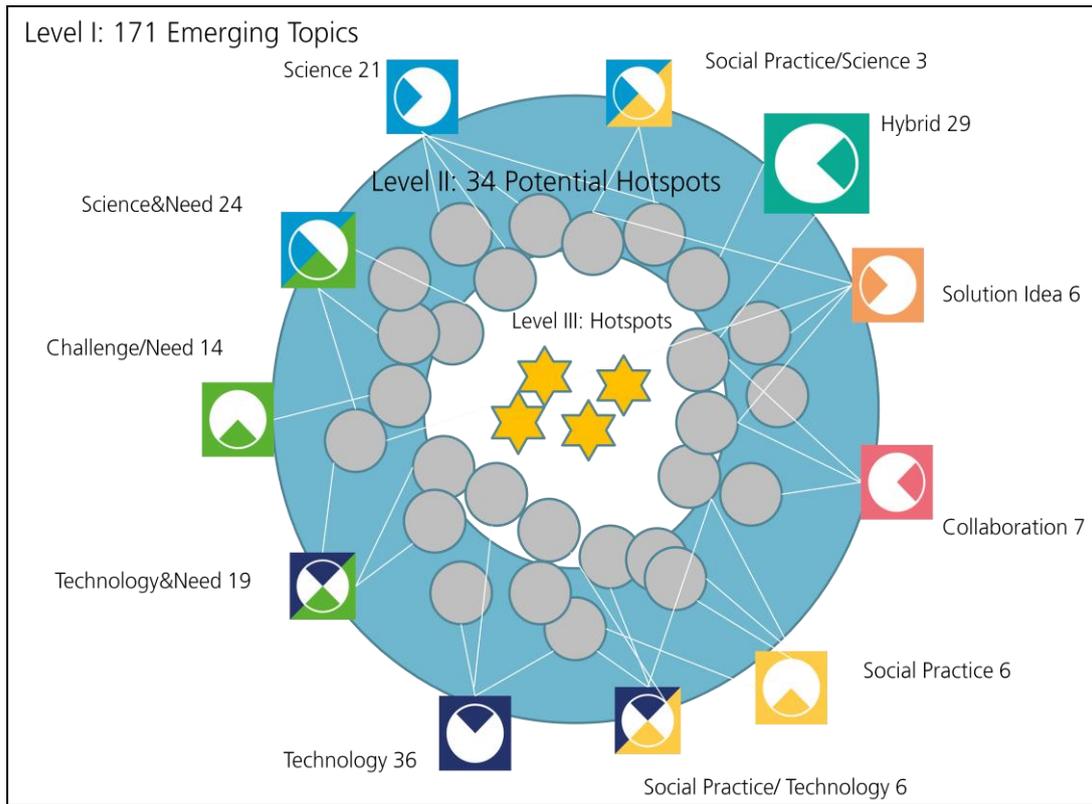


Figure 1: Overview Radar Material

## 2 .OBSERVE Radar Based Strategic Conversation

### 2.1 Purpose

Identify research and innovation topics with high potential to mobilise diverse communities and transformative potential for the benefit of society.

### 2.2 Preparation & Material

The following material from the Radar can be used in this strategic conversation:

- Set of 171 OBSERVE cards<sup>2</sup> of emerging topics
- Set of 34 OBSERVE clusters of potential hotspots<sup>3</sup>

<sup>2</sup> The cards downloaded on the OBSERVE Website <http://www.horizon-observatory.eu/radar-en/deliverables/4.3.php>. A printed set can be provided by the OBSERVE team on request.

<sup>3</sup> The clusters with assessments are provided in OBSERVE User Brief 2. They are also available on printable cards as part of the OBSERVE Roadshow.

The 34 clusters can be arranged in piles with the respective cards belonging to the cluster. In addition the full set of cards is provided for further inspiration.

Depending on the specific background and focus of the strategic conversation, the cards and the clusters offer the possibility to adjust the material provided. While in some strategic conversations the aim is to open up the perspective to many diverse influences from very different areas, other strategic conversations will want to focus on one specific domain. The high number of cards and clusters offers the possibility to adjust the concept for both aims. The cluster cards can be attached to a wall and the emerging topic cards can be arranged around them. Alternatively the cards and clusters can be pinned to a wall in an exhibition manner. The material can already be reviewed by participants during arrival and welcome coffee or specific information can be sent out to the participants beforehand.

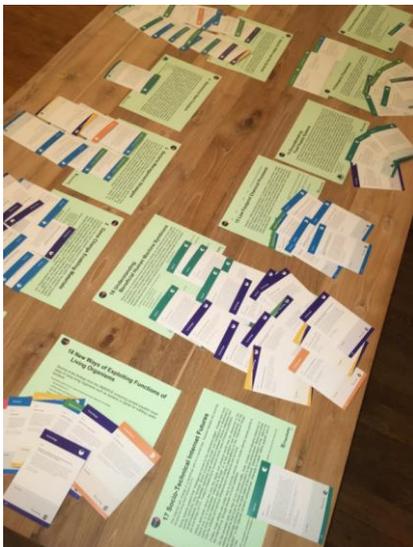


Figure 2: Hotspot cards arranged with respective emerging topics



Figure 3: Additional material - new clusters and full set of emerging topics

Organisations wishing to tailor the conversation to their specific needs may wish to use instead similar material specific to the organisation e.g. outcomes from scouting or horizon scanning activities instead of (or in addition to) the OBSERVE emerging topic

cards. Also the 34 OBSERVE potential hotspots can be replaced or complemented e.g. by selected priority topics. In the case of OBSERVE e.g. recent results from the FET advisory board were integrated by printing them on cards in a similar format as the hotspots. We recommend sending a background document with the hotspot cluster topics in advance to the workshop.

## 2.3 Participants

In order to identify topics with potential to really mobilise diverse communities it is extremely important to have participants that come from very different backgrounds. In the case of FET this meant mainly (but not only!) different scientific disciplines but in the case of an organisation or a company this could e.g. be representatives of different departments or business units. In order to identify topics with transformative potential for the benefit of society it is mandatory to involve not only researchers and innovators with a science and technology background but also those familiar with social change such as social scientists, designers and artists.

## 2.4 Process

The basic idea of the workshop is to use the collective intelligence of a group of actors with diverse background each with a high degree of awareness of the cutting edge developments in her or his field. Only topics that are taken up by different persons make it into the “core of the radar”. Accordingly, the process is characterised by a sequence of alternating plenary and groupwork sessions. The basic organising principle is a “bar-camp” i.e. self organised forming of working groups catalysed by topics of shared interest. Concretely the following steps could form the main elements<sup>4</sup>:

### 1. Warm up

**Setting:** teams of two or three diverse people that do not know each other.

Aims:

- Getting to know each other
- Learning something about the professional background of the other participants
- Getting into a creative, out of the box thinking mood
- Starting to think across disciplines

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<sup>4</sup> We present only the main steps, it is evident that agenda items like introduction of the project, explanation of the purpose and the agenda of the day as well as feedback round need to be added depending on the context.

**Task:** “Imagine winning a large funding sum in 20 years time and describe what kind of research or innovation group you would be creating with this money. Make sure, that all the competences represented in the group are taken up and contribute to the research or innovation. Please come up with an inspiring name for the newly formed research/innovation group.”

**Presentation:** Presentation of participants and their imagined future research.

## 2. Individual reflection

**Setting:** Individual work

Aims:

- Identifying first topic candidates starting from the individual perspective
- Participants develop ideas based on their personal background without being influenced by other, potentially dominant, participants

**Task:** Review of the potential hotspots and to select x topics where they see outstanding potential to be developed into a Hotspot<sup>5</sup>. New suggestions can be made but in this case a minimum of emerging topic cards should be attached to the topic covering at least two different areas e.g. “technology” and “solution ideas”.

## 3. Barcamp Plenary

**Setting:** Plenary discussion using a grid schedule with as many time slots of ca 45 Minutes as are available in the workshop.

Aims:

- Hearing good arguments for the topics,
- Finding topics that are of interest for several people,
- Reducing the number of topics, so that it can be handled during the workshop time

**Process:** Participants present their selected topics and argue why they see special potential in it. Each participant signs in for a limited number of topics where they would be interested to join. The topics with a minimum of X participants are arranged in the grid in a way that everybody can participate in their selected groups.

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<sup>5</sup> In our case of FET hotspot is a topic with highest transformative and transdisciplinary mobilisation potential, other organisations may wish to use specific criteria.

Table 1: Example Grid Schedule

BARCAMP SCHEDULE				
10-10.45	Topic: xy Participants: A,B,C	...	...	...
11-11.45	...	...	...	...
13-13.45	...	...	...	...



Figure 4: Barcamp arrangement from OBSERVE workshop

#### 4 Topic elaboration

**Setting:** Work in small groups of 4-6 participants.

**Aims:**

- Fostering transdisciplinary discussions
- Developing collective intelligence
- Capturing the tacit knowledge and ideas of the participants

Participants work in small groups to elaborate the topics. A template can be used to structure the discussion. E.g. in the case of OBSERVE we asked to specify the main

breakthroughs and the communities required to realise the research programme. Asking participants to draw or otherwise represent their vision (e.g. by collage techniques) will encourage out of the box thinking.

## 5 Presentation of groupwork results

Groups present their findings preferably directly after the session when the memory is still fresh. We recommend recording this presentation as often aspects are mentioned that were not captured in the template.

## 6 Multi criteria assessment

**Setting:** Plenary session

**Aims**

- Engaging all participants in the evaluation of all ideas
- Mobilizing the interest in the ideas of the other groups
- Reducing the number of the ideas
- Understand the strength and weaknesses of the topics concerning the different dimensions.

The final session can be dedicated to an assessment of the topic with respect to the relevant criteria for the organisation. In our case of FET this was the “long-term visionary transformative potential” and the “ability to mobilise diverse communities”. We used sticky dots of different colours for participants to indicate their top topics. Following advice from the OBSERVE advisory board we also asked experts to indicate their “gut feeling” about the topics. Another interesting indicator for relevance is the number of experts who selected the topic for elaboration. Nevertheless it should be noted that minority topics may have an especially transformative potential so the assessment results should be used carefully.



Figure 5: Assessment Process

## **7 Commenting**

**Setting:** Individual Work

Aims:

- Capturing ideas of people that have not spoken up loud during the discussion
- Grasping many comments and inputs without spending a long time for discussing all topics
- Giving everybody the opportunity to comment on all ideas
- Wrapping up the workshop day

In this final step all participants are invited to add comments to also the topics they were not working on. Especially aspects like ethical concerns but also additional aspects and suggestions for actors to be taken into account can be voiced here.

## **8 Optional Additional Elements**

The workshop can well be combined with an online dialogue that can be implemented both before and after the face to face interaction. Both the input material and the outcomes may be presented online for debate also with a wider group than the immediate participants. A shared Wiki Platform may serve to further develop the topics.