



# Technology of imagination: a card-based public engagement method for debating emerging technologies

## How do citizens form their opinions on emerging technologies?

### Introduction

**NANO2ALL** is an initiative funded by the European Union's Horizon 2020 Research and Innovation programme under the Grant Agreement Number 685931. It supports the establishment of Responsible Research and Innovation (RRI) policy and governance on nanotechnologies. NANO2ALL also aims to identify RRI practices, with a focus on societal engagement in nanotechnology research and innovation (R&I) across Europe and beyond, with the purpose to share knowledge, experience and recommendations with other nanotechnology stakeholders and motivate a wider application of such mechanisms in our region.

RRI is an *“approach that anticipates and assesses potential implications and societal expectations with regard to R&I, with the aim to foster the design of inclusive and sustainable R&I”*<sup>1</sup>. As a dimension of RRI, societal engagement implies interactions between relevant stakeholders (companies, research organisations, policymakers, civil society organisations (CSOs), consumers, affected citizens and others) in order to align research, development and innovation with the values, expectations and needs of the society. Such interactions can take various shapes, such as brainstorming, scenario workshops, user committees, online forums, dialogues, informal / formal meetings, or other formats.

**This short overview of a scientific paper provides practical insights into the design of IMAGINE, a qualitative research method that also aims to encourage societal engagement with science and emerging technologies** (Felt, Schumann, Schwarz & Strassnig, 2014). The overview was validated through a short phone interview with Dr. Claudia Schwarz-Plaschg from the University of Vienna, one of the authors of the scientific paper.

Drawing on concepts from Science and Technology Studies, the authors discuss the method's structure as well as how citizens in the four discussion groups appropriate the setting. The cards' tangibility and their content organise the discussion choreography to move between individual and collective positioning. This choreography presents a **Technology of Imagination** which contributes to citizens' capacity-building in developing broader

<sup>1</sup> European Commission website: <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation>



imaginations in relation to potential developments of emerging technologies in a specific context. Finally, the review finishes with brief recommendations on the aspects of applying this research method and the implications of its limitations.

## IMAGINE NANO in Austrian context

IMAGINE is a qualitative research method, created from a learning need on how to facilitate the development of citizens' imaginations on NANO (Nano Science and Nanotechnologies). It was developed with the purpose to be validated as tool for qualitative research on societal engagement in emerging technologies (e.g. nanotechnologies) and applied in the Austrian context with 24 participants between November 2009 and January 2010. **The discussion format was a public engagement consisting of 4 thematic workshops, each with a maximum of 6 participants, who spent 4 hours together, with the support of a moderator, debating NANO in the field of medicine, food, information and communication technologies (ICTs), and consumer products** (each workshop focused on one of these fields). The method allows to gain a better understanding of how citizens form their opinions on emerging technologies and this can in turn contribute valuable insights for research and policymaking. **The selection of participants was directly based on gathering profiles with diverse positions and social backgrounds to form “mini-publics”** (Goodin and Dryzek, 2006), thus, including everyone interested in discussing the topic— not discriminating already engaged citizens and the ones that have a strong opinion on NANO. The authors claim that they opted for heterogeneously mixed groups of diverse genders, ages, educational and professional backgrounds in order to observe and document individual critical thinking and the (re)shaping of opinions due to an influence of other participants' views. The call for participation was disseminated through flyers delivered to households in Vienna, and distributed at science museums and science events in Vienna, Austria.

**The Austrian context is of a peculiar nature, due to culturally firmly established hierarchies between citizens and experts in which the public rarely challenges experts in physical encounters** (Felt et al., 2009). Conversely, the chosen method created a space in which criticism of expertise and expert opinions became possible. In addition, Felt and her colleagues (2014) address **NANO as an S&T area in which it is difficult to find a right moment for intervention** since the nano-products are both downstream and upstream products in the innovation process — meaning that a range of nano-enabled products are already on the market, and at the same time many of them are still “future technologies” (visionary products) in a wide range of domains.

In general, card-based methods have been shown to work well **when the employed tool represents a good structure to initiate talk about sensitive issues** (see Chang et al., 2005; Sutton, 2011) **and in reflective exercises to analyse people's approach to ordering and classification** (see Bloor et al., 2001; Kitzinger, 1994). Thus, Felt and her colleagues claim that the cards facilitate engagement since the participants **“use their embodied skills from playing games, which include bodily performances, know-how (of rules) and interpretations (e.g. of the other players' behaviour).”** (p. 237)

## Societal engagement through IMAGINE

The scientific paper explains in detail the whole process of selection, integration, facilitation and moderation of a public debate in the format that was aforementioned. Through this methodology, participants were guided through a step by step learning and reflection process.

Firstly, an introductory video and **story cards** supported demystifying new terminologies, questioning and clearing ideas. The experts' visions and opinions were duly incorporated in the story cards' content. The **function of the cards was mediated via their interpretative flexibility and ability to impersonate human actors and their positions**. Secondly, **application cards** spoke about contemporary nano-products applications and thirdly, **issue cards** leveraged potential risks and problems in the NANO field (i.e. ethics). In the final stage, **future cards** stimulated participants' imagination of how nanotechnology and society might or should co-evolve in the future. **The authors also stress that the participants were not asked to reach consensus throughout the debate in order to be able to keep the diversity of opinions and the richness of discussion**. In addition, the process of card selection by citizens seemed to be guided by the following motives: i) either connecting a card with a pre-existing personal agenda or ii) balancing different cards, both of positive and negative aspects. The biggest difficulty for the citizens was imagining and questioning issues that are distant from their daily reality, even when considered interesting or pertinent to be discussed.

Moreover, **the capacity-building of individual/collective was an ongoing process that contributed to creating possible future scenarios when considering sociotechnical developments**. The authors claim that participants became more comfortable with narrative building through expression and imagination.

## Recommendations and needs for sustainable societal engagement with NANO through IMAGINE

The authors particularly recommend applying the IMAGINE method for societal engagement when there is a need for forming a public opinion about a subject-matter in research and innovation, having in consideration that the method:

- May be applied to a variety of broad or specific topics (i.e. issues that are publicly polarized) when societal engagement is a desired process and an outcome is required that reflects public opinion on a subject-matter;
- Provides an appropriate framework to treat everyone in an equal and equitable way, providing a sufficiently flexible structure and content for individual self-capacitation to be able to form an opinion in discussion with others;
- May need a follow-up activity for a more clear and precise insight to evaluate any potentially occurred social impact (e.g. conduct interviews with individuals who participated in the workshops and see how possibly their approach changed to the subject-matter);
- Needs a moderator who only facilitates a dialogue among participants, without imposing one's expertise (in case of existing capacity);
- Might benefit from a video recording of the workshops to capture non-verbal practices of handling cards (decision-making processes);
- May trigger further discussion if questioning about non-chosen cards;
- Can provide experts' insights in a non-imposing way and materialize them through cards.

To conclude, **this is not a ready-made template that can be easily incorporated from one national or cultural context to another**. In order to utilize the IMAGINE method, it is necessary to adapt it to the new experiences, cultural contexts and needs of the specific topic to be discussed.

## Reference

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## Further literature

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