# > Technology Futures

## Anticipation – Creation – Assessment

### acatech IMPULSE – SUMMARY

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Different ideas about what the future holds play a key role in debates about technology in our society. These ideas are expressed in a variety of ways, for example as predictions, scenarios or visions. Some are produced by scientists using techniques such as model-based scenarios, others – such as science-fiction novels or movies – are conceived by artists, whilst others embody expectations or fears that are publicly communicated by the media.

Ideas regarding future socio-technological projections, referred as technology futures, often include opinions about which societal and technological realities are possible, likely to occur or expectable in the future and whether or not they are desirable. These technology futures combine different types of knowledge and contain various assumptions and value judgements. Furthermore, the past few decades have seen a fundamental change in what we expect from predictions about the future. The prevailing approach today is to think in terms of a series of alternative futures, presenting several scenarios that branch off from each other depending on the choices made at particular points in time. Consequently, it is appropriate to talk of "technology futures" in the plural.

While many technology futures are disputed by the public they play a key role in various areas of our society and in different decision-making processes. They influence the project definitions in engineering research and technology development and thus determine the shape of future technological systems and how they are used. Moreover, in the realm of research policy, technology futures are used to orientate and legitimise government funding initiatives and therefore have a substantial influence on the themes and objectives of future research and technological development. Most important of all, however, technology futures are at the heart of the public debate about which technologies society wishes to live with in the future.

The future of technologies and the ways in which they are embedded in society are the outcome of complex social interactions. Whilst, on the one hand, social development is strongly influenced by new technologies, technology is at the same time itself a product of society. It is to a large extent impossible to make accurate predictions about how this complex interaction will unfold. Consequently, technology futures can only make a statement from which socio-technological developments could potentially occur. As such, they will always present alternatives to the vision of the future, meaning that there are always several technology futures that are discussed in the public arena at any given time.

**At a glance**

- Technology futures are at the heart of the public debate about which technologies society wishes to live with in the future.
- There is no such thing as objective technology futures – they always contain assumptions and value judgements.
- There is never just one single technology future – there are always several possible alternatives for how technology and society could develop.
- The authors of technology futures have a particular responsibility, especially when providing scientific policy advice. The values, agendas and interests underpinning the technology futures should be disclosed.
- The production and evaluation of technology futures should be regarded as a task for the public authorities.

Technology futures perform a variety of functions in society. They influence the strategy of companies and are also employed to orientate and legitimise policy decisions. Depending on their function, technology futures and the way they are created have different requirements which are, however, not always met.

Technology futures are often presented in the shape of expert scientific reports and thereby claim to be especially well-founded. As a result, they are often given particular credence by policy-makers. When providing scientific policy advice, the authors of technology futures therefore have a special duty to disclose the premises and value judgements that underpin them. In order to enable an open discourse about the future conditions of our life, it is essential for technology futures to be produced in a transparent manner.

## KEY GUIDELINES

1. When creating technology futures, social conditions and any potential changes to them during the period under consideration should be borne in mind at all times.

2. The project teams charged with drafting technology futures should be interdisciplinary in nature. Similarly, it is important to ensure that an appropriately diverse range of methodologies is employed.

3. The plural of technology futures should be taken seriously. In particular, technology futures should avoid providing narrow, one-dimensional forecasts about how things will look in the future.

4. The fact that different people have different ideas about what the future holds should not be seen as a reason to give up thinking about the future. Rather, it should be viewed as a sign that we are at least partly able to shape our own future and should therefore be regarded as an opportunity.

5. In matters pertaining to the public interest and democratic public debates, the values, agendas and interests underpinning the drafting of technology futures should be disclosed. They should be produced in a transparent manner.

6. Technology futures that span lengthy periods of time should be updated and adjusted to incorporate new assessments and knowledge.

7. Whilst technology futures produced for consultancy purposes should focus on the client's specific interests and concerns, they should still comply with the other guidelines presented in this document.

8. Engineers should study how to create and evaluate technology futures as part of their training.

9. Engineers and scientists should see their involvement in drafting and communicating technology futures as informing and participating in a wider public debate about how we shape the future.

## CONTACT

acatech – NATIONAL ACADEMY OF SCIENCE AND ENGINEERING, November 2012

Munich Office
Residenz München
Hofgartenstraße 2
80539 München

Berlin Office
Unter den Linden 14
10117 Berlin

Brussels Office
Rue du Commerce/Handelsstraat 31
1000 Brüssel

T +49 (0) 89 / 5 20 30 90
F +49 (0) 89 / 5 20 30 99
www.acatech.de

This summary is based on: acatech (Ed.): *Technikzukünfte. Vorausdenken – Erstellen – Bewerten* (acatech IMPULS), Heidelberg et al.: Springer Verlag 2012.
Project lead: Prof. Armin Grunwald, Karlsruhe Institute of Technology (KIT)

The original version of this publication is available at www.springer.com or www.acatech.de