



EUROPEAN COMMISSION

DIRECTORATE-GENERAL
JOINT RESEARCH CENTRE

5th International Conference on Future-Oriented Technology Analysis (FTA)

Engage today to shape tomorrow

Brussels, 27-28 November 2014

Call for contributions – Extended deadline 11 July 2014

1. THE FUTURE-ORIENTED TECHNOLOGY ANALYSIS (FTA) CONFERENCES AT A GLANCE

Since 2004, the Joint Research Centre of the European Commission has organised four editions of FTA Conferences. The FTA, or Future-Oriented Technology Analysis,¹ conferences have been providing a common platform for the closely related communities of foresight, forecasting and technology assessment, where experts interact and help guiding strategy, policy and decision making to anticipate and shape future developments. The key objective of the Conference is to strengthen the international network of foresight academics and practitioners in business, civil society organisations and government. It is a unique occasion for participants from all continents to meet and mutually enrich their forward looking approaches.

Considerable progress has been achieved since the first FTA event, as FTA disciplines have been growing substantially over the years. From a taking-stock seminar between Europe and the United States which focused on methods, it was possible to deepen and broaden the scope providing an opportunity to those involved in forward-looking disciplines to bring their ideas and knowledge together. The previous conferences included themes such as the impact of foresight on policymaking, the way in which FTA can contribute to different areas (including environment, food, agriculture, health, research and innovation), the role of foresight in the business context, and the use of

¹ Future-Oriented Technology Analysis includes strategic foresight, forecasting and technology assessment. Technology can be understood as involving both a body of artefacts and practice as well as a body of understanding, which co-evolve with each other over time. From this perspective, technological systems are best understood as being composed of both physical technologies (i.e. in the form of components, combined systems and infrastructure), and social technologies (i.e. institutions, in the form of social patterns, constraints and mechanisms of behaviour such as social norms, routines, legislation, standards and economic incentive mechanisms).

foresight in developing new governance approaches. In addition, the multinational dimension of the FTA Conference was enlarged making it a regular international conference with participation from all over the world. The scientific impact of the FTA Conference also increased over the years. The conference in 2006, for example, led to the publishing of the book 'Future-Oriented Technology Analysis - Strategic Intelligence for an Innovative Economy'² and the conference in 2011 resulted in six special issues of academic journals.

2. THE 2014 EDITION OF THE FTA CONFERENCE

The fifth edition of the FTA conference will be held on the 27 - 28 November 2014 in Brussels, Belgium. The focus of the conference will be on the potential of FTA to *Engage today to shape tomorrow*. There are three main conference themes that will help structure contributions and discussions:

Theme 1: FTA and Innovation Systems

Theme 2: Creative interfaces for forward looking activities

Theme 3: Cutting edge FTA approaches

The conference is open to practitioners, researchers, and decision makers from around the globe, and will feature a rich program of keynotes, papers, posters, workshops and knowledge labs.

² Following the 2011 Conference a series of 6 special issues have been published in academic journals (TFSC, TASM, SPP, Futures, and 2 in Foresight). The 2008 FTA Conference generated 4 special issues in 4 academic journals (TFSC, TASM, SPP and Futures). The 2006 edition led to the publication of a book on FTA and a special issue in TFSC, and the 2004 EU-US seminar was followed by a TFSC special issue. The footnote includes the web-links of the special issues and the book.

Special issues following the 2011 FTA Conference:

- Technology Analysis & Strategic Management [TASM](#)
- Technological Forecasting and Social Change [TFSC](#)
- Science and Public Policy [SPP](#)
- [Futures](#)
- [Foresight first issue](#) and [Foresight second issue](#)

Special issues following the 2008 FTA Conference

- Technological Forecasting and Social Change [TFSC](#)
- Technology Analysis & Strategic Management [TASM](#)
- Science and Public Policy [SPP](#)
- [Futures](#)

Publications following the 2006 FTA Seminar

- Technological Forecasting and Social Change [TFSC](#)
- Book: Cagnin, C., Keenan, M., Johnston, R., Scapolo, F., Barré, R. (Eds.) [Future-Oriented Technology Analysis - Strategic Intelligence for an Innovative Economy](#).

Publications following the 2004 EU-US Seminar

- Technological Forecasting and Social Change [TFSC](#)

THE SCIENTIFIC COMMITTEE MEMBERS:

Per Dannemand ANDERSEN, Technical University of Denmark;
Cristiano CAGNIN, Center for Strategic Studies and Management, Brazil;
Jennifer CASSINGENA HARPER, Malta Council for Science and Technology;
Paolo CIUCCARELLI, Politecnico di Milano, Design Department, IT;
Kerstin CUHLS Fraunhofer ISI, DE;
Adrian CURAJ SNSPA-National School of Political Science and Public Administration, RO;
Cornelia DAHEIM Z_punkt GmbH The Foresight Company, DE;
Luke GEORGHIOU University of Manchester, UK;
Ron JOHNSTON Australian centre for Innovation;
Geci KARURI SEBINA South African Cities Network;
Riel MILLER UNESCO;
Byeongwon PARK Future Strategy Centre, S&T Policy Institute, South Korea;
Alan PORTER Georgia Institute of Technology, US;
Andrea RICCI Istituto di Studi per l'Integrazione dei sistemi, IT;
Ozcan SARITAS Higher School of Economics, National Research University, Moscow;
Matthias WEBER Austrian Institute of Technology;
Fabiana SCAPOLO, **Peter DE SMEDT** and **Karel HAEGEMAN** Joint Research Centre, European Commission.

3. THE CONFERENCE THEMES

Theme 1. FTA and Innovation Systems

The year 2014 marks the 15 year anniversary of the article ‘Technology Foresight for Wiring Up the National Innovation System’ by Ben Martin and Ron Johnston on technological forecasting and social change. Until then, most foresight work had focused on the exploration of future potentials within science and technology. This article, however, placed emphasis on the role that foresight could play in enhancing the performance of innovation systems. Since 1999, the practice and the theoretical understanding of FTA for innovation policy making have undergone significant changes. It is the intention of this strand to take stock and draw some new perspectives. For this strand of the FTA conference the following developments are of particular interest.

- FTA for innovation policy making has embraced a more systemic and evolutionary understanding of innovation into its conceptual development and its applied practice, which is mirrored in the wider innovation policy literature.
- FTA has adopted bottom-up approaches for co-designing, implementing and evaluating innovation policies through entrepreneurial discovery processes. In some countries more emphasis has been put on the embedding of foresight in science, technology and innovation policy making and thus on establishing it as part of the policy cycle.
- There is a growing concern with impact assessment of FTA as a tool in innovation policies and its impact in general. Also, the wider innovation policy literature has stressed the need for evidence-based policy making.
- FTA has broadened up its interest in policies for national innovation systems to comprise related concepts such as sectoral innovation, innovation systems around emerging developments in technology, regional innovation systems and clusters. The interest in FTA and regional innovation systems is not new, but has received

increasing attention in recent years, both from the wider innovation system community and from policy-making. Most recently, smart specialisation³ has become an important policy concept under the Europe 2020 agenda. FTAs role vis-à-vis regional innovation policies and the smart specialisation agenda are of particular interest.

Martin and Johnston's article took its theoretical departure from the much larger and wider literature on technology and innovation policy. This literature has also developed significantly since 1999. However, there is still a vast potential for FTA to draw from and contribute to the larger literature on innovation studies, industrial dynamics and technology & innovation policy. A distinction needs to be made between two main ways in which FTA is linked to innovation policy. On the one hand, there is FTA for innovation policy, relating to its advisory and strategic function, where FTA serves as a tool to inform and develop policies. FTA as a policy instrument relates to its role in serving the implementation of budgetary, structural or cultural changes in the domains of science, technology, and innovation policy. On the other hand, FTA can focus on both the demand and supply side of innovation, including FTA related to capacities, competencies and skills, as well as innovative public procurement.

Since 1999, several studies have emerged exploring the conceptual interconnection between foresight and wider innovation literature. These studies, however, often focus on how foresight can contribute to innovation system policies, with FTA being regarded as one among a range of other systemic policy instruments. There is a need for better understanding of how FTA experts can influence innovation systems and how recent developments in innovation literature can contribute to the practice and theoretical underpinning of FTA.

We invite both theory-oriented and practice-based contributions for this strand. Contributions could comprise:

- Review papers and conceptual papers on how recent development in the wider innovation literature can contribute to the practice of FTA in the public sector as well as in a business or corporate setting.
- Practice-based papers on individual cases of FTA for shaping national innovation systems, sectoral innovation systems, regional innovation systems, clusters, innovation eco-systems, smart specialisation, etc.
- Synthesis papers on multiple cases of FTA for innovation systems.
- Papers on individual cases of applying FTA for entrepreneurial discovery processes in design, implementation or evaluation of innovation policies.
- Papers dealing with the impact of FTA at all levels including at system level – or particular interest are papers dealing with empirical evidence.

³ Smart Specialisation is a strategic approach to economic development through targeted support to Research and Innovation (R&I). It will be the basis for European Structural and Investment Fund interventions in R&I as part of the future Regional and Cohesion Policy's contribution to the Europe 2020 jobs and growth agenda. More information available at <http://s3platform.jrc.ec.europa.eu/>

- Papers addressing approaches to achieve the institutional embedding of FTA in systemic science, technology and innovation policies, as well as in the corporate or business context.

Theme 2. Creative interfaces for forward looking activities

The future is open, emergent and rich in possibilities, but also uncertain and complex. Inherent to its nature, no facts or evidence of the future exist: some near futures seem probable, and others, although possible, may never materialise. The future matters and not all futures are preferred. Whatever will happen in the future, it will affect us all. Furthermore, our actions, or lack of actions, today have consequences both on shaping our futures and on preparing us to come to grips with whatever future will unfold.

Creative forward-looking interfaces can be seen as a means to better imagine, debate, use and shape the future by taking actions already today. The power of the future arises from the dual role of anticipation– in what we know and what we do. Therefore, it is important to distinguish search from choice and the role of the future in both. The FTA conference aims to contribute to more creative ways for imagining futures to understand the present, prepare for tomorrow and enable more clarity regarding the anticipatory assumptions on the kind of futures we seek to achieve or avoid. The search for transformative solutions provides a way for rethinking the conditions of change and the consequences of decisions in the present.

This theme reaches out to different creative and scientific approaches which aim to expand our mental models, build continuous engagement, and frame and reframe our anticipatory assumptions. In doing so, the FTA conference aims to shed light on novel approaches that help us embrace rather than reduce complexity and uncertainty. Such approaches may be based on dialogue, engagement or collective intelligence. Discipline in connecting systematic methods from a variety of disciplines to individuals' observations, insights, experiences, emotions and abstract models may be a common feature, which should be made explicit.

In this context, the current edition of the FTA conference particularly encourages contributions from different communities and disciplines (including system thinking, strategic design, futures literacy, anticipation, strategy and policy simulation, sociology of time, cognitive psychology, and behavioural science), which among others, aim to enrich and improve our forward thinking capacity from a wide set of perspectives.

We invite both theory-oriented and practice-based contributions for this strand. The contributions should focus on concepts and application of:

- Creative approaches to support a wide range of techniques from predictive forecasting to paradigmatic discontinuity for analysing anticipatory systems to better understand how society and the future are perceived and imagined.
- Imagination-inspiring approaches, design thinking and creative engagement as a means to establish high levels of continuous connectivity built around individuals' experiences, emotions and scientific methods positively impacting societies overall, thereby enhancing organisational success and anticipating change.

- Visualisation techniques including methods for analysing, representing and sharing images, scenarios and narratives used in support of the analysis and communication of outcomes of forward-looking activities.
- New ways of representing and interacting with complex and multi-dimensional futures information to support the design and creation of effective and novel visual interfaces such as policy and strategy simulation and serious gaming.

Theme 3. Cutting edge FTA approaches

Recent years have witnessed major advancements in science, technology and society. The new global context suggests that increased financial, trade and investment flows are leading to a more interconnected world. Rapid technological progress in areas such as Information and Communication Technologies (ICTs), bio- and nano-technologies, and energy technologies affect economies and societies dramatically. Meanwhile, severe social and economic instability have been witnessed due to economic recession, lack of fresh water, food, and energy supply, climate change, regional conflicts, ageing, and respective population movements. In such a rapidly changing environment, it becomes crucial to develop “cutting edge FTA approaches” to provide strategic intelligence for strategy, policy and decision makers.

To facilitate this process, FTA approaches make use of quantitative and qualitative methods to develop new visions, explore ideas, acquire information and data, clarify situations and negotiate solutions. In recent years, the ICTs have provided great opportunities for FTA and have started revolutionising the activity. Plenty of ICT tools have become available that are transforming the way the FTA activities are designed, organised, managed and implemented – as they open new possibilities in terms of accessing, collecting and analysing large amounts of information and data, enable new ways of engaging FTA communities, and allow sharing insight with the civil society. Hence, several forms of innovation in the development of cutting edge FTA approaches should be considered.

Input innovation. Innovation in this domain involves scanning, surveying and intelligence gathering for new sources of data and information as inputs for FTA activities. Besides traditional data and information generation methods like reviews, expert consultations and interviews, more recently, FTA practice has witnessed the increased use of “Big Data” through advanced analytics, stronger computing power, larger data storage and faster networking capabilities. Today, societies live in the age of “too much information”. There is a greater need for FTA to get hold of this amount of information to understand the dynamics of trends and developments, key driving forces, weak signals and wild cards associated with significant future changes. Thus, this theme of the Conference is concerned primarily with the extraction of new inputs for FTA activity and novel ways of using, presenting and visualising data to recognise patterns and generate knowledge. It also includes the challenges associated with the organisation, filtering, and use of crowdsourcing data to serve as input to FTA.

Instrumental innovation. Instruments for the FTA involve quantitative and qualitative methods and tools, and enabler applications, software and hardware. Novel approaches in this domain should address the key attributes of FTA in terms of exploring multiple, plausible, contingent prospects in a participative and collaborative way by seeking diversity and formulating policies and strategies to enhance one's agility and ability to adapt, exploit and survive change. The Cutting edge FTA approaches theme welcomes

new ideas on the development of novel approaches for existing and new FTA methods. Specialised applications, software and hardware for the deployment of FTA methods can be presented within this stream. Furthermore, discussions can be carried out on the new skills requirements for the designers, organisers and managers of FTA activities to handle these more advanced tools and approaches. Both novel instruments derived from advanced conceptual design and tools induced from experimental practice will be of interest for this theme.

Process innovation A wide array of methods is used in FTA and the number keeps growing. This offers an opportunity for more tailored design of FTA to address a variety of issues, which may involve quantitative and qualitative evidence and judgement, and usually a mix of both. The process challenge is to propose innovative methodological combinations reflecting the interactions of social, technological, economic, environmental, political and value/cultural contexts, where the FTA is embedded. Here, it will be of particular importance to adapt and combine approaches and methods in a way that pays tribute to the specific needs and context of the targeted “user” of FTA, and thus achieve stronger impacts in the policy and decision making processes that FTA feeds into. Cutting edge FTA approaches are invited to demonstrate solid theoretical and practical premises with policy and strategy relevance and impact, as well as building trust through inclusiveness and transparency during the process.

Social innovation Although FTA suggests Future-oriented “Technology” Analysis by name, it goes beyond technology in its scope, processes and outcomes. The activity essentially implies a social process of dialogue, networking, partnerships and collaboration among and between researchers, industry, policy makers and governments along with the other relevant stakeholders. FTA offers a means for developing and strengthening those linkages. Thus, the Cutting edge FTA approaches theme invites contributions to present and discuss innovation in ways of engaging FTA stakeholders. Contributions are expected to emphasise the need for effectiveness and efficiency in identifying and meeting society’s use of resources. Social networking and engagement tools for FTA merit consideration.

Product innovation In line with the changes and transformations in society, economy and technology, “new media” has emerged. This “new media” refers to on-demand access to content anytime, anywhere, and on any digital device, as well as interactive user feedback and creative participation, while allowing the real-time generation of novel content. The amount of time people spend with new media has risen dramatically. In parallel, it is expected that the results of FTA need to be conveyed through new modalities. Contributions are invited to discuss the role of technologies like the Internet, websites, computer multimedia solutions, mobile applications, and gamified approaches enabled by digital interactivity. Attention is warranted to how these tools can be used to increase interactivity during and after the FTA process, how they can help to communicate FTA outcomes, and what additional demands their extensive adoption puts on both content and format of the FTA products, including contestability and speed of obsolescence.

In addition to the innovations listed above, more futuristic FTA approaches will be considered under the Cutting edge FTA approaches theme. For instance, the trend towards singularity (i.e. smart computers and artificial intelligence) indicates that revolutionary developments are expected in the use of ICTs in FTA. There are already systems that scan large amounts of data sets, identify trends and detect product, market, technology, and R&D gaps. Some more advanced systems go further and entertain new

hypotheses for research, collecting data through sensors, cameras, and remote sensing tools to perform experiments and fill the R&D gaps themselves. Certainly, with advances in computing, some portion of FTA-supported decision-making activities can be undertaken by computers. Meanwhile, human enhancement technologies are creating further opportunities to deal with complex and uncertain systems.

We invite both theory-oriented and practice-based contributions for this strand, which can comprise one or more of the domains of innovation presented, as well as focusing on other thought-provoking ideas:

- New sources of data and information (input innovation).
- Cutting edge approaches, tools and methods, while improving the existing ones, and new skills for FTA (instrumental innovation).
- Novel ideas on combining and using the quantitative and qualitative FTA approaches, methods, and tools (process innovation).
- Fresh ways of engagement and outreach by involving a wider audience; combining supply and demand sides; and integrating innovation actors (social innovation).
- Innovative ways of converting tacit concepts and ideas into explicit outputs, and advanced means of production and dissemination of those outputs (product innovation).

4. SUBMITTING CONTRIBUTIONS

The conference organisers encourage contributions from practitioners coming from science, business, policy making and civil society organisations. The conference aims at bringing these communities together to engage in discussing the use and impacts of FTA approaches and to identify and explore possible synergies and future developments.

For the three themes of the 2014 FTA conference, contributions are sought either in the form of papers or posters and can either be scientific or practice-oriented as follows:

- a) Scientific papers should be empirically grounded, with a strong theoretical component and demonstrating critical or new methodological approaches.
- b) Practice-oriented papers should clearly demonstrate how FTA approaches have been implemented in practice to support policy making and strategy processes.
- c) Posters should have a strong visual dimension and should clearly illustrate the process, outcomes and possible impacts of the applied FTA approach.

Abstracts should have a maximum of 500 words. Please note that only abstracts submitted directly through the online form will be considered. Abstracts should include a clear description of the contribution to the selected theme, the methodological approach, the results and/or impacts.

To submit your contribution: <http://ec.europa.eu/eusurvey/runner/FTA2014>

5. DEADLINES

The **Extended deadline for submitting abstracts is Friday 11 July 2014**. Authors will be informed by **22 August** whether their abstracts have been accepted. Full text of papers and posters, as well as presentations, are to be submitted no later than **22 October 2014**.

6. REGISTRATION

The Conference will have a limited number of places. Conference registration will open at the beginning of August. There is no conference fee charge for participants.