Participation in Technology Foresight: Using Expert and Stakeholder Panels

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1. Introduction

Foresight has become an institutional activity as more emphasis has been given to the active participation of experts and stakeholders to shape the future of society. As a key element of Foresight, participation of experts and stakeholders improves the quality of Foresight exercises through the engagement of both scientific and non-scientific knowledge, their values and perspectives. Experts and stakeholders come together to dialogue on alternative courses for the future from their own perspectives and determine the actions to reach to the most desirable future. Their participation elicits knowledge and facilitates mutual understanding and learning and thus increases the legitimacy of Foresight exercises.

Typically, the expert and stakeholder panels are used in most of Foresight exercises at all levels. Their roles and functions are variable. In some cases, panels are the main process centres ('hubs') of a Foresight exercise, gathering and analysing data and community opinions, employing a wide variety of Foresight methods, such as scenarios, and formulating priorities and recommendations for action. In other cases, panels can be given very specific tasks within a much wider process, for example, commenting upon weak signals picked up in environmental scanning or formulating Delphi topic statements.

This paper details this commonly used method in Technology Foresight exercises. Before going into details of how panels work, the paper first clarifies what participation is. As participation is a key component of Foresight, panels have been employed commonly in most Foresight exercises. Then, how panels are used in Foresight will be mentioned by considering the Foresight process from the initial recruitment phase to the dissemination of panel findings. Subsequently, a few practical issues, which should be taken into consideration while working with panels, will be discussed. These include resources needed for panel work, outputs, common advantages and disadvantages of panels. The paper will be rounded off by discussion on how to motivate and keep panel members on board during the Foresight exercise.

2. Participation in Foresight

Collective decision making pertaining to the future through participation is a key characteristic of Foresight, which distinguishes it from other future-oriented policy and strategy making approaches such as Planning, Forecasting, Futures and Technology Assessment. Definitions of Foresight stress its participatory aspects. Miles and Keenan (2002) emphasise five essential elements of Foresight in their definition, where participation is at the core:

"*the application of systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process to informing present-day decisions and mobilising joint actions*" (p.v).

Participation aims at greater *inclusiveness* of social actors such as experts and lay-people, stakeholders and citizens. Participatory approaches foster dialogue among stakeholders towards understanding each other's roles and responsibilities. Depending on the activity being shared and the purpose of participation, stakeholders can be expected to share their perspectives, interests, values, information, knowledge, or ultimately grant their acceptance to a research or management process. Through sharing, the interaction of experts and stakeholders is expected to achieve some synergy whereby the outcome or results is greater than the sum of the individual elements being shared (Currie-Alder, 2003).

Foresight is an activity, which is not merely product-oriented, but also process-oriented. Attempts are usually done to set a balance between the process and product orientation in the exercises. Process orientation represents a focus on networking, capacity building and learning, mutual understanding and collective visions. The participative nature of Foresight helps to address those informal objectives, which are driven by societal needs and interests and which are not always underpinned at the onset of the exercise but which emerge during the implementation process. In the meantime, product orientation represents a strong focus on policies, action plans and priorities, which are the main output expected from the exercises. The participation of stakeholders contributes to the creation of the content of the exercise.

Traditionally, Technology Foresight exercises had participation limited to the involvement of experts. Through appropriate stakeholder identification tools (such as co-nomination), experts contribute targeted knowledge and competencies on the theme(s) being addressed by the Foresight exercise. However, "in recent years, there has been increasing interest in widening the scope of consultation and making Foresight processes more inclusive". The increasing interest in participation has largely been prompted by: "(a) recognition of the limitations of Foresight studies as currently carried out; (b) the lessons learned from the corporate sector regarding the benefits of stakeholder inclusion and (c) trends for increased inclusivity across all areas of policy making" (Loveridge and Street, 2003, p.7).

The interaction of experts and stakeholders in a participative process offers essential added value to deal with complexity, to resolve or avoid conflict, and to empower people to have stronger voice in designing their future. In general, Currie-Alder (*ibid.*) sees the

purpose of participation as a means to enrich decisions through greater understanding, legitimacy or capacity:

- Understanding: Participatory approaches can be used to cope with complexity and share understanding among stakeholders.
- Legitimacy: Participatory approaches seek to make a process more relevant to interested stakeholders of the process and its outputs.
- Capacity: Participatory approaches also seek to improve the skills, knowledge and experience of those involved in the management process through formal and informal learning (p.11).

Thus, participation serves multiple purposes.

2. Who is typically involved?

In Foresight exercises there are often four main expert and stakeholder groups involved:

1. Public decision and policy makers
2. Private sector
3. Civil society
4. Scientific researchers

The figure below illustrates those groups in a wider context. The participants of a Foresight programme may include a broad range of actors, including national and regional governments, universities, businesses, chambers of commerce, local media, industry associations, other NGOs, and wider citizenry, could all potentially be included. The success of the programme is dependent to its ability to attract sponsors and engage stakeholders.
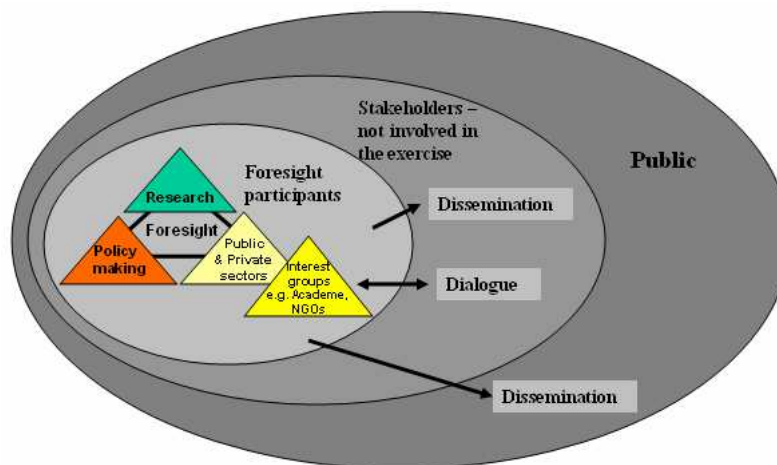
Figure 1: Participants for Foresight programmes
Source: Saritas *et al.* (2007)

The managers and practitioners of Foresight may strive to engage a wide pool of experts and stakeholders beyond the 'usual suspects' in order to avail itself of knowledge which is specific to the thematic, sectoral, national and/or regional context within which the exercise is carried out and which is thus relevant to the policy-making and/or decision-making processes. Moreover, the engagement of non-scientific knowledge, values and

preferences in the process through social discourse improves the quality of the exercise by giving access to a wider range of perspectives and opinions. However, it should be borne in mind that the nomination of participants depends heavily upon the Technology Foresight programme's scope, objectives, coverage and the intended audience.

3. Benefits and functions of panels in Foresight

Foresight activity should be based upon the best available evidence and judgement, and should reflect as diverse opinions as possible. These conditions make the use of expert and stakeholder panels a natural choice in Foresight exercises. Panels not only open up the Foresight process to potentially hundreds of individuals, they are also ideal forums for in-depth discussions and debate. In this regard, some of the common benefits of panels include:

1. Availability of expert judgement 'on tap' at the centre of an exercise, which can be particularly important when dealing with the uncertainties associated with the future;
2. In-depth and meaningful interaction and networking between different scientific disciplines and areas of expertise that would otherwise be difficult to organise;
3. The ease with which panels can complement other methods used in Foresight. Indeed, with some methods, panels are a near necessity for the generation of inputs, the interpretation of outputs, and/or the overall conduct of the method;
4. Credibility and authority lent to the Foresight exercise through the profile of panel members and the visibility of expert/stakeholder panels; and
5. The moulding of influential individuals (panel members) into Foresight ambassadors and change agents in support of panel findings.

In a Foresight exercise the expert and stakeholder panels have the following functions:

1. Gathering relevant information and knowledge
2. Synthesising the information gathered
3. Stimulating new insights and creative views and providing a vision of future possibilities, as well as creating new networks
4. Diffusing the Foresight process and its results to much wider constituencies, and
5. Influencing Foresight in terms of follow-up action

Thus once they are established they are the main actors carrying out the process throughout the exercise.

4. Working with panels in Foresight

The following sections detail the use of panels in Foresight throughout the Foresight process from initial recruitment to the dissemination of findings.

4.1 Assembling an expert and stakeholder panel

The first step is to develop a profile of the panel, i.e. to identify the sorts of expertise and/or stakeholders that should be represented in light of the panel's remit. There are two interrelated considerations to take into account when profiling panels:
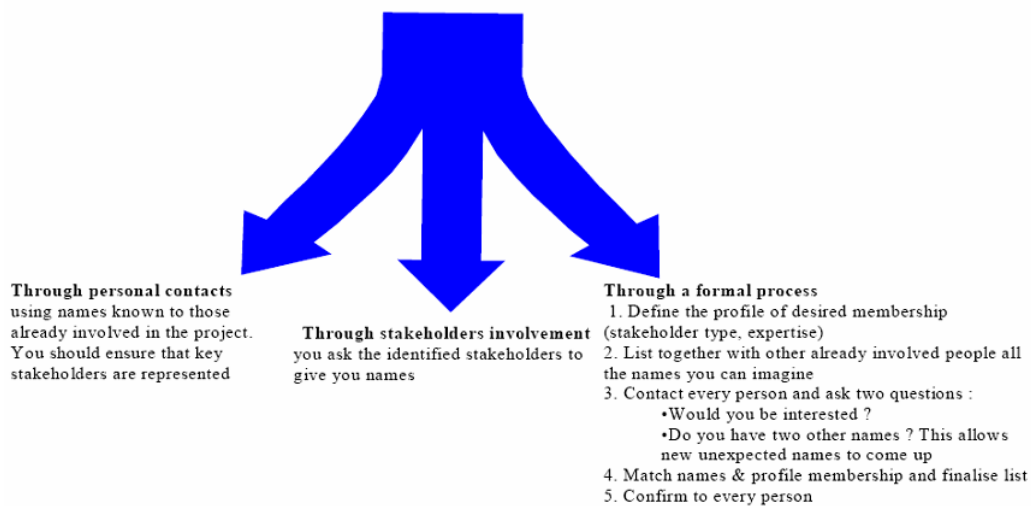
1. **Composition** – what mix of knowledge is required to address the panel remit?

2. **Balance** – what mix of views / positions / value judgements / scientific disciplines should be represented on the panel to ensure even-handed analysis and conclusions?

These are major concerns in Technology Foresight, since panels must be perceived to be technically qualified and even-handed if the exercise is to achieve authority, credibility and legitimacy. It must, however, be acknowledged that panel members will bring their own interests and biases to the table and to pretend otherwise is unrealistic. Indeed, expertise in a given area normally means that an individual has some sort of stake, whether financial, professional, political, &c. in that area. With stakeholder panels, this link is typically even more obvious.

On a practical level, there are a number of approaches for actually identifying individual participants. These can be divided into:
1. **Personal contacts:** Using names known to those already involved in the project
2. **Stakeholders:** Identify major stakeholders in the areas of concern, request them to provide names
3. **Formal process:** Involves more systematic search processes. Types of expertise and stakeholder are identified; first set of names suggested; these are asked to nominate key people (introducing new names); then final selection of people whose involvement is to be solicited (Figure 2)

Through personal contacts using names known to those already involved in the project. You should ensure that key stakeholders are represented

Through stakeholders involvement you ask the identified stakeholders to give you names

Through a formal process
1. Define the profile of desired membership (stakeholder type, expertise)
2. List together with other already involved people all the names you can imagine
3. Contact every person and ask two questions :
   • Would you be interested ?
   • Do you have two other names ? This allows new unexpected names to come up
4. Match names & profile membership and finalise list
5. Confirm to every person

Figure 2: Three approaches to recruiting members and participants
Source: Miles and Keenan (2002)

The initial aim is to generate a long list of candidates for panel membership. This list will then need to be cut down to a short list of primary nominees and alternates. Key stakeholders typically contribute to the composition and procedural design of expert panels, which helps ensure that those stakeholders will find panel results credible. Stakeholders include sponsors of the Foresight exercise as well as those organisations that might be expected to act in light of the exercise's findings.

Clearly, having people on panels that are acceptable to organisations responsible for implementing Foresight findings is important for policy impacts. On the other hand, some care needs to be taken to avoid situations where panels are solely composed of an elite of 'usual suspects'. Technology Foresight should be about interaction between different communities, disciplines, and ideas. This aim is seldom best served by filling a panel solely with nominees from, for example, a sponsoring ministry. This is why many national Foresight exercises have used co-nomination approaches to broaden the knowledge base, by bringing new faces into the Foresight process.

When the shortlist is agreed upon, nominated individuals must be sounded out on their willingness to serve on a Foresight panel. Such approaches are typically done by the project manager through a telephone call. During this initial contact, the exercise should be described to the nominee, explaining clearly why it is being carried out. The remit of the panel should then be summarised, indicating the key tasks and, most importantly, the time and effort needed. Evidence from past Foresight exercises suggests that most people are flattered to be asked to serve on such panels and typically accept the invitation, especially if the exercise has a high profile and political backing. Those individuals who are unable to accept or those who are not approached to serve as panel members may be used in other parts of the exercise, for example, as recipients of questionnaires and consultation documents and/or invitees of workshops and other consultation fora.

A special mention should be given to the choice of panel chairperson. Two main criteria are typically used for selecting such individuals in Foresight – their profile and standing, and their time commitment. Having someone who is well known and (more importantly) well respected in a given community (or even nationally) will provide an invaluable boost to a panel's work, lending it authority and legitimacy. People will be more inclined to respond to surveys and to read a panel report if the chair is well respected. Unfortunately, many of the really good people are too busy to chair a Foresight panel, which requires probably at least twice as much commitment in time than being simply a panel member. However, it is not impossible to attract really good people but it does require a lot of effort on the part of project managers. Further considerations on the suitability of an individual to serve as panel chair (in addition to the ones already mentioned for panel members more generally) is an ability to lead a team, good project management skills (especially given the time constraints common to most Foresight exercises), and political skills for dealing with sponsor and stakeholder organisations.

4.2 Defining a panel's mandate
In a Foresight exercise, expert panels are expected to carry out specific tasks within a given timeframe (e.g. the duration of the exercise) related with their functions. There are two documents that are used to inform the panels about their tasks prior to the start of their works (i) Proposal and (ii) Terms of Reference

The proposal document explains what the panel will do, and who (which experts/stakeholders) should be involved. Drawing on the proposal, terms of reference

sets out what they should do, how it should be done, and when it should be completed. A short and succinct 'terms of reference document' can be divided into four parts:

1. Background, which provides some background on the Foresight programme and the purpose of the terms of reference document
2. Description of each phases of the programme, setting out (i) what needs to be achieved, (ii) how the panel should go about its work, and (iii) a series of milestones
3. Description of the way in which the panels' work fits into the overall Programme
4. Account of the human, infrastructural (including training) and financial resources available to the panels in support of their work

This document is distributed to all panel members in the Programme and was used by the sponsor and project management team to monitor progress of the panels.

4.3 Getting started

Once the panel chair and other panel members have been appointed, they will need further detailed briefing on the task at hand. This can be done face-to-face at the first panel meeting. But face-to-face briefing may also be supported by the prior distribution to panel members of more detailed project plans, summaries of the methods to be deployed, and brief résumés of the other panel members. This means that panel members will have reasonable knowledge of the exercise by the time they arrive at the first panel meeting. Many national Foresight exercises have also used training workshops to acquaint panel members with working practices and the methods they will be using. This is strongly advised if panels will be using unfamiliar futures or forecasting techniques. Training sessions should be run by experienced trainers/facilitators.

It is imperative that the panel gets off to a good start, necessitating special attention be paid to the first panel meeting. After brief introductions, the panel chair and/or project manager should lead discussion of the Foresight exercise's scope and the panel's remit within it. This might be followed by discussions with the sponsor, although this often does not happen – instead, the project manager may articulate the views and expectations of the sponsor. Discussion could then be widened to include consideration of the expectations of a wider group of stakeholders, especially of those who might be expected to act in light of Foresight findings.

Some further time will need to be spent on fuller introductions, where panel members spend a few minutes setting out their interests and experiences in more detail. At this point, panel members may decide that there is a need to appoint additional members to cover anticipated knowledge gaps. If it is deemed necessary, then new members will need to be appointed by the time of the second meeting.

In the first meeting it is also important to get panel members to start to think about the issues they will need to consider in their work. This can be done through presentations and panel brainstorming sessions. Whilst the process and content of sessions will depend on the remit of the panel, likely outcomes of panel discussions will probably include

formulation of preliminary questions and issues for further discussion. Issues surrounding data access and the panel's research needs may also begin to emerge at this early stage.

Finally, 2-3 hours will need to be set aside to formulate the overall approach to the task. In many Foresight exercises, panels are given quite tight terms of reference that clearly specify the methods to be used and the types of outputs to be produced by certain fixed dates. In other instances, panels have a greater degree of freedom in how they go about their work and in what they produce, although even here, milestones are likely to be set. The sorts of things that will need to be discussed and decided upon include:

1. Working practices and panel structure – for example, will the panel work as a whole or through sub-groups? Will particular panel members be assigned to lead on specific areas?
2. What are the data and research requirements? How will data be collected and analysed? Who will conduct research (e.g. project team, consultants, panel members)? What wider consultation will be carried out? What facilitation will be required for specialist methodology? Panels will need experienced Foresight practitioner help to be able to answer these questions effectively.
3. What will be the schedule of panel meetings? This includes the total number of meetings and their frequency. These can vary widely between panels, even within the same Foresight exercise. The panel (or project team) may also decide to prescribe the topic for each meeting – for example, 'meeting no.3' might be scheduled to deal with SWOT analysis or the like.
4. What will be the schedule of panel outputs, including the final report? In order to track and monitor progress, an agreed-upon milestone chart will need to be formulated (if not already specified a priori in the terms of reference).

4.4 Conducting Foresight work

During the conduct of Foresight work there is a challenge of getting panels to think creatively about (a) the future, and (b) the means of getting there. People seem to find this difficult, partly due to the unfamiliarity of thinking in this way. It is therefore imperative to ensure that panels take sufficient account of (a) the long-term (short-termism is a common weakness in panels and workshops) and (b) a wide variety of perspectives on any given topic.

Creativity courses and handbooks, as well as tips from several creativity Internet sites, can help project managers to encourage out-of-the-box thinking within panels. Inspirational or even controversial speakers can be brought into some meetings to stir things up. Provocative 'think-pieces' (e.g. essays) can also be prepared for panels to read. Some of the major Foresight methods, borrowed from the worlds of forecasting and futures studies, are also useful in encouraging creativity. Popular approaches in expert panels include brainstorming and scenario-writing. A panel composed of members from diverse backgrounds should also help, particularly for encouraging consideration of different perspectives. As a general rule, panel members are expected to behave as individuals rather than advocates of the 'corporate' views held by their particular organisation.

At the same time, panels should not stray into the realms of wishful thinking – their analyses and recommendations need to be based upon sound data of the past and present, as well projections of those trends that can be projected with reasonable confidence of accuracy, e.g. demographic change. SWOT analyses, reviews, and trend analyses are therefore commonly used. Some further research and data analysis is usually required, which can be carried out by members of the project team, external consultants, or even panel members. But careful considerations needs to be given to the commitment required from panel members to deal with such data. Foresight panels are usually composed of volunteers who tend to be extremely busy people with little time for collecting and analysing data. Much of this work will need to be out-sourced to project managers and/or technical consultants, with analyses written-up in attractive formats for panel members to easily digest.

A further general principle that should be highlighted is the necessity and benefits of wide consultation. The temptation might be for panels to settle for internal discussion – things tend to get done more quickly, and greater control over the scope and direction of deliberations is possible. But panels that talk only amongst themselves risk missing important information and perspectives, even when members come from diverse backgrounds. Moreover, consultation lends a panel visibility, which can be important if findings are to be effectively disseminated. And stakeholder commitment to a panel's results, garnered through direct involvement, should not be underestimated. Of course, consultation should not be done for its own sake – it should have a clear purpose in the overall methodological approach used by a panel. Neither should it be confined just to those communities served by the panel. A Foresight exercise should provide space for interactions with other communities, most obviously through developing linkages between the various panels set up within a Foresight exercise. In general, consultation can be conducted through a wide array of mechanisms (e.g. workshops, questionnaire surveys, expert hearings, Delphi, consultation documents and Internet mail groups).

Panels can carry out their work through various organisational configurations, and a popular approach makes use of sub-groups within panels. These might focus upon a particular topic or task, with their small size (typically 2-5 members) allowing for more concentrated effort through the assignment of specific roles to individual panel members. However, to reiterate an earlier point, consideration will need to be given to the time requirements of such work, since panel members tend to be busy people.

The overall governance of volunteer panels is relatively straightforward when tightly specified terms of reference are provided. Panels meet a fixed number of times within a well-defined framework to carry out a particular task. But many panels in Foresight exercises are given wider remits whereby they have the freedom and relative autonomy to decide on their own approach and the substance of their reports. In these instances, the role of the chair and her/his relationship with the project manager are crucial. For instance, prior to all panel meetings, the chair should discuss the meeting agenda and any documents or analyses to be presented with the project management team. It is important that the chair and project manager come to an understanding on all meeting items so that they can be mutually supportive in the panel meeting. This is not to say that the chair

should stifle debate – on the contrary, the chair should encourage expression and discussion of diverse viewpoints. Fairness and flexibility should be employed toward the goal of achieving a group consensus view where possible. But panels work within budget and time constraints and the chair must ensure that the panel effectively meets its remit within these constraints.

Increasingly important considerations for panels and other public committees are accountability and transparency. In this regard, the substance of discussions within closed panel meetings may be publicly reported, although the norm is to keep these confidential. In this way, panel members have the relative freedom to express opinions without having to publicly account for them. Meetings should be transcribed and minutes prepared – the latter could be made publicly available on a web site if personal opinions are sufficiently anonymised. Panel members should also respect this confidentiality and should not brief the media or other groups without the expressed permission of project managers and/or the panel chair. Indeed, relations with the media should be carefully managed and an information dissemination strategy developed. The panel chair should act as the official spokesperson for the panel and its reports in dealing with the media, sponsors, and audiences.

Project managers should publish brief progress reports at regular intervals – perhaps every 4-6 months, depending upon the duration of an exercise – whilst analyses prepared for or by the panels (e.g. SWOT analyses, literature reviews) could also be made publicly available. In this way, the evidence base (and assumptions) upon which a panel is working can be scrutinised. Such reporting may also be used as an opportunity to consult with wider communities of actors. Thus, in many Foresight exercises, interim reports containing preliminary analyses and findings are published and feedback invited.

4.5 Reaching consensus and identifying priorities
One of the chief aims of appointing panels in Foresight is to nurture deliberation amongst a group of recognised experts and/or stakeholders around a set of issues with a view to generating enlightenment and policy advice. Policy advices clearly set out what needs to be done and why, and suggest who should take action. In some Foresight exercises, panels may not be required to reach consensus or to identify priorities, let alone outline recommendations for policy and investment.

4.6 Reporting on the panel process and findings
Panels will need to report on their findings, both at the end of their work and in interim. The main rationale for reporting is to disseminate analyses and findings and to present priorities and recommendations for further action. Reports should therefore be tailored to their intended audiences. Reports are also used to demonstrate that panels conducted their work with integrity, drawing upon the best available evidence to support their findings.

Report preparation should be given early and careful attention and not just left to the end of a panel's tenure. It is advisable to define the report architecture early on, no matter how tentatively, and to refine this later on. Panel members can take responsibility for writing the final report themselves, but it is more usual for the panel secretary (who will

be part of the project management team) to lead on this and to consult panel members in the process. More often than not, the panel chair plays a pivotal role in report drafting.

The project management team might also decide to assign a technical writer to draft the report, not only to ensure one consistent style but also to present the panels findings in as an attractive way as possible. Before being published, panel reports should be peer reviewed to check for (i) factual or analytical errors, (ii) coherence in analysis that shows convincingly how priorities and recommendations were arrived at, and (iii) overall readability and visual appearance of the report. Draft reports are also normally sent to the sponsor for review.

4.7 Dissemination of panel findings
All too often, consideration of a dissemination strategy for a panel's findings is left to near the end of a Foresight exercise. This is not advisable – dissemination and implementation should be considered from the outset and the panel's approach designed with this in mind. Dissemination should also be budgeted for, both in terms of time and costs, particularly as it is likely to involve at least some panel members (especially the panel chair) in further activities. As the sponsor is likely to play a significant role in dissemination activity, the panel chair should consult them on their strategy for diffusing the messages contained within the panel report. In instances where panels have been assembled to carry out a specific task as part of a wider process, there may not be a panel report produced that is suited for wide dissemination. Instead, the sponsor alone may take full responsibility for disseminating the findings of the whole exercise later on.

On their publication, panel reports are typically announced in a press release. The panel chair normally promotes the report and addresses any questions or queries on substance, at least in the first instance. After some time, the sponsor may become the chief spokesperson for the panel's findings. Report summaries may be produced that are targeted at the media and/or high-level decision makers who may not have the time to read the whole report. Every panel report has its own audience depending on the topic area being covered and the recommendations made (if any). The panel report should be interesting to its audience and clear on the message it wants to convey. But this may not be enough in itself, and it is quite common for panel reports to be formally presented at meetings and conferences and for recommendations and implications to be discussed and debated at workshops. Panels may even be retained after their reports have been published in order to promote dissemination of their findings and implementation of their recommendations. This is, however, quite rare, with the UK Foresight Programmes being the notable example.

5. Resources
Regarding to the human resources, a related issue concerns the number of panel members to appoint to each panel. Most Foresight exercises have opted for 12-25 individuals per panel, with the average number being around 15. Typically, a small number of individuals are absent from each panel meeting, and this needs to be taken into account when deciding on the final number.

Considering the financial resources, costs must be taken into account when appointing panels. Financial costs include the following possibilities:

1. Honoraria may be paid to panel members and/or the panel chair. This has not been common practice in technology Foresight up until now – the prestige associated with being a panel member in a high profile exercise has usually proved to be sufficient reward. The amount paid represents a token of appreciation rather than a payment for services at normal professional consulting rates.

2. Panels tend not to run themselves but are typically supported with facilitators and/or secretaries. Secretarial support, for instance, minute taking and document preparation, may be provided by staff from the sponsor or the organisation awarded the contract for running the exercise. Facilitation of meetings is largely carried out by the panel chair, but additional specialist facilitation is also often required in technology Foresight (e.g. for the running of scenario sessions, the writing of Delphi topic statements). Such skills may reside in the organisation managing the exercise, although often this is not the case and other contractors must be brought in.

3. Research and technical services will probably be needed to support the work of the panel. Some of this can often be prepared before the panels start their series of meetings, but other research and technical assistance demands are likely to emerge as the panels undertake their work. Research and technical services can often be provided 'in-house', for example, by the sponsor or the project management team. In other instances, however, it will be necessary to bring in outside expertise to write specialist reports, collect and analyse data, &c.

4. Travel costs and other communications (e.g. telephone, document courier) also need to be factored for. In some countries, most expertise resides in the capital city and meetings are held there. But even in such situations, some people will have to be brought in from elsewhere, though costs are likely to be quite low. In many Foresight exercises, expertise or stakeholders are more geographically dispersed. Here, meetings may be held in many different locations with perhaps most panel members having to travel. Some countries have two dominant centres between which meetings may be split (like in the Turkish case where national Foresight panel meetings were largely distributed across two centres, Ankara and Istanbul.

5. Rental of facilities may also be necessary, especially if panel meetings move about. It is normal for the sponsor to make its premises available for meetings. Sometimes panel members' own organisations may offer similar facilities for free (this happened extensively in the UK national Programme, but it should not be taken for granted). If meetings stretch over a day or more, it may also be necessary to pay for hotel accommodation.

6. If panels are to carry out questionnaire surveys and/or organise workshops, materials will need to be provided. Moreover, reports will have to be published and disseminated.

Time is needed for assembling the panel and any support staff, holding meetings, using methods such as Delphi or scenarios, preparing reports, and disseminating the final

results. Realistic estimates must be made of the time and costs required to complete these tasks. This can prove difficult at the outset, and it is common to underestimate, especially with respect to the time needed. Indeed, it is not uncommon for Foresight exercises to overrun – usually by only a few months, but sometimes it can be longer.

6. Output

Typically reaching consensus on key issues or to identify priorities, let alone outline recommendations for policy and investment are among the outputs of the expert panels. Where priorities are requested, these should be determined in a transparent and systematic manner if they are to be credible. For a panel to arrive at priorities, it must reach some level of consensus and closure. This is usually achieved through the power of analysis and panel debate. If serious disagreements between panel members remain, these should be highlighted rather than obfuscated. Where panels must prioritise large lists of topics, for example, in critical technology exercises, voting procedures are commonly used. Voting is nowadays done online, and can in theory be opened up to invited individuals from outside the panel.

It is one thing to identify priority areas but quite another to formulate recommendations for action. Recommendations set out actions that need to be taken in light of the priorities identified by a panel and tend to be directed at named organisations. This means that they are highly political in nature. For this reason, many Foresight exercises chose either not to make any recommendations at all or they at least clearly separate panel analysis and priority-setting activities from the task of setting recommendations. In such situations, panels do not get involved in formulating recommendations. If recommendations are to be set, special forums of stakeholders are organised to consider the implications of panels' analyses and priorities.

7. Common advantages and drawbacks of panels

The main advantage of working with expert panels is that different types of players who might not normally meet in the course of a panel such as innovators, sponsors, policy makers, academic researchers, users and/or consumers can be brought together. Expert panels provide an environment where diverse viewpoints of stakeholders can be brought together freely.

However, the experience has demonstrated that the operation of expert panels is far from routine and unproblematic. To be able to understand this it is important to mention some of the characteristics of group or individual behaviours that are exhibited by panels during their work. These characteristics that may prevent the panel to work effectively include:

1. A dominating personality or outspoken person takes over the panel process so that the outcome tends to be his or her view
2. Individuals are unwilling to commit themselves on an issue
3. The superior vs. subordinate relationship hampers free expression of opinion by subordinates
4. The unwillingness to abandon a position once it has been taken publicly

5. Committee members are not necessarily familiar with the needs of the Foresight process and may fall into a conventional mode inappropriate to developing a longer term view of the topics under discussion

Thus during the conduct of an exercise the management of the group and individual behaviours becomes and important issue. This is because panel members bring their own interests and biases to the table. These factors, which emerge on the panel work process, are likely to affect the Foresight process, the ideas created, and the quality and quantity of the output. Therefore, two main ingredients need to be paid sufficient attention in panel works:
1. Participants
2. Facilitators

Individual participants play an important role in panel processes. The depth and breadth of their knowledge and their experience in the field are crucial. In addition to these technical qualifications, it should be borne in mind that the personal characteristics of participants are influential on the work done. For panel work, it is important that, the individuals are creative thinkers, who can work well in groups.

At the individual participant level, creative performance requires a set of skills. This includes the ability to think creatively, to generate alternatives, to engage in divergent thinking, and to suspend judgment. Creativity also requires some level of internal, sustaining force that pushes individuals to persevere in the face of challenges inherent to creative work. As a result some individuals are more creative than others.

Finally, creativity inherently involves risks. That is, to develop new and useful products or processes, individuals have to be willing to try and to possibly fail. The participants should be able to speak freely without fear.

Regarding the composition of panellists, expert panels need to avoid too narrow representation. Narrow representation is liable to result in little challenging thinking. Interaction with a diversity of others is a necessary precondition for creative performance. Reflecting the networking elements of institutional Foresight, it is valuable to bring together different types of players who might not normally meet in the course of a panel (e.g. innovators, financiers, policymakers, academic researchers and 'users' of the innovation).

Panels need to be chaired and facilitated effectively in order to maintain motivation and morale, to resolve conflicts, to keep an eye on timetables and to prevent over-dominance of strong personalities. In order for creativity to occur, a facilitator needs to play an active role in fostering, encouraging, and supporting the activity. Hence the role of the facilitator is to ensure that the structure of the work environment, the climate and culture, and the human resource practices as such that creative outcomes can and do occur.

Participation of an outsider in an expert panel works would be useful for obtaining diverse information and ideas to motivate and support the 'human divergent thinking

process'. This outsider agent participates in the meetings (e.g. in brainstorming and discussion sessions), listens to the experts opinions and provides some input information based on an outsider's viewpoint. However, the involvement of an outsider, especially as a facilitator, may also cause lack of authority on the members of the panel.

The climate at the organisational level, which covers for instance all panels, project managers and steering committees in Institutional Foresight exercises, is another factor that affects creativity. An organisation's structure can play a critical role in enhancing and hindering creativity. For instance, structures that promote open, ongoing contact with external others or information seeking from different or multiple sources increase communication and creativity.

Finally, it is important to know that an expert panel cannot produce a statistically significant outcome. The results provided by a panel will not reflect the response of a larger population or even the findings of a different panel. The panels usually consult through surveys, meetings or conferences to gather opinions from wider participants. However, at the end the outcomes will represent the synthesised opinions of the panel.

8. Possible variations in working with panels
In a typical panel, participants meet face-to-face, normally in private session, at regular time intervals over a fixed time period. During this time, they use their judgement in interpreting available evidence. They report their findings, usually through a written report that is later disseminated and, in ideal situations, acted upon. Besides this some panels never meet at all. In such cases, interaction may be through the Internet or through a survey process, e.g. a Delphi. This also means that panel numbers need not be limited to 12-15 members but can be much larger. Panels can also meet in public sessions, although this tends to be reserved for those instances where panels wish to consult with a wider public. Finally, panels can, in some instances, be constituted for an indefinite period of time. This often occurs where the desire is to establish an 'independent' authority for dealing with long-standing challenges, e.g. global warming. Such panels report periodically, often on a specific topic or theme.

9. Motivating and keeping Panel members on board
Foresight requires a broad base of participation. A sufficient number of stakeholders, often balanced in representation, is desired. However, participants must invest considerable time when participating in Foresight. It is particularly challenging to recruit senior people. Therefore, an important practical challenge of Foresight is to recruit stakeholders and subsequently keep them engaged. Various incentives can be mentioned for individuals to participate in Foresight (Table 1).

Table 1. Incentives for stakeholders to participate in Foresight

Incentive	Description
Learning	Learn from other stakeholders through dialogue; learn about state-of-the-art from experts
Networking	Make valuable contacts with other stakeholders
Lobbying	Have influence on policy makers or on public debate by influencing the outcome of the Foresight (e.g. a vision), which is disseminated into society
Developing individual strategy	Use Foresight results to develop individual strategy for own organization (e.g. business)
Developing collective strategy	Help in developing a collective strategy for national, regional and/or sectoral development

Learning, networking and lobbying are incentives for individuals to involve themselves in Foresight or any other action-oriented participatory process. Through participation participants learn from each other. Panel work also provides an opportunity to come into contact with other participants. Foresight programmes often provide opportunities to lobby with other stakeholders and to try to influence the outcome of a Foresight exercise, which is particularly relevant for stakeholders if the Foresight outcome has repercussions on policy or public opinion. Another incentive for participation in Foresight is developing an individual or collective strategy. Because Foresight evaluates and prepares for future, it can help stakeholders in attaining a strategic advantage.

Finally, it is important to mention that there can be various obstacles to participation. Loveridge and Street (*ibid.*) mention two kinds on obstacles the obstacles to wider society inclusion in Foresight:
1. Physical
2. Psychological.

Some obstacles are physical, such as how it can be done and how to cope with the additional workload. Others concern psychology and the credence the study sponsor and its managers give to opinions expressed from an ever-widening range of experience; variability in knowledge of the subject matter involved; the volatility of personal opinions and the need to make some technologies 'understandable' to non-experts.

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