

Facilitator Skills

The role of the facilitator in a SHELF workshop is an important and challenging one. Anyone taking on this role for the first time will naturally feel some trepidation about how they can successfully manage a group of experts who may have strong conflicting opinions. Even more experienced facilitators are aware that they can always improve with more practice. SHELF was developed primarily to help people to tackle this task and to develop their facilitator skills.

You are an expert, too

It can be daunting to come into a workshop with anything up to eight high-powered experts who all obviously know much more about the Quantity of Interest (QoI) than you do, but remember that you're an expert, too. You have expertise in the elicitation process, in guiding the experts to give the best possible quantification of their knowledge, and your expertise is vital. Unless you believe that, and the experts accept it, you won't be able to do the job properly.

So, even if you don't feel confident that you have that expertise, try to behave as if you do! It is easier to take control from the start of the workshop if you practice how you are going to handle the first few minutes. Here are some suggestions:

- Dress in a business-like way. "Power dressing" may be appropriate.
- Even though it will be more comfortable in the workshop to be sitting most of the time, stand up initially.
- Begin with introductions. Ask each person around the table to introduce themselves and state their expertise. You can begin with yourself, saying that you are the facilitator and your expertise is in managing an elicitation workshop and guiding the experts to express their knowledge as carefully and accurately as possible.
- Then outline the purpose of the elicitation and the importance of eliciting expert knowledge about the QoIs. Emphasise how much the participation of the experts is appreciated and valued. Point out that they are not expected to know the values of the QoIs – uncertainty is inevitable and the real purpose of the workshop is to quantify uncertainty. Stress that you need honest expressions of knowledge, not claiming too much or too little certainty.
- You can now display the SHELF 1 form in preparation for completing it. This is an opportunity to sit down, and perhaps also take off your jacket, indicating that it is time to get down to business.

Getting the language right

Communication is fundamental to good facilitation. The onus is on the facilitator to ask questions in language that the experts understand. Remember that the experts have several new concepts and terms to learn, such as subjective probability, quantifying uncertainty, plausible range, median, tertiles, etc. So try not to add to this by using unnecessary jargon.

You can prepare by learning a little about the topic, so that you know some of the experts' language. Aim for a level of familiarity that means you can at least understand the evidence dossier. It is sometimes useful to have a technical observer in the workshop who is not one of the substantive experts but who understands the topic well – for instance, this may be an author of the evidence dossier. Such an observer can help to translate between the experts and the facilitator, but this is not a substitute for the facilitator making an effort to engage with the topic.

Because quantifying uncertainty will be an unfamiliar task for the experts, when describing what you want them to do it is important to be very clear and consistent in the language you use. In particular, they will generally not be familiar with the use of probability as a personal judgement, so your language should continually reinforce the fact that they are making personal judgements.

- Never refer to 'the' probability of something, 'the' median, etc. When speaking to the experts, say 'your' probability, 'your' median, and so on.

For instance:

<i>Wrong</i>	<i>Right</i>
Your judgement of the probability that ...	Your probability that ...
Write down the median for ...	Write down your median value for ...
The probability of the quantity being below the median is 0.5	Your personal probability of the quantity being below your median value is 0.5
There should be a 50% chance that the quantity lies between the lower and upper quartiles	You should give 50% probability to the quantity lying between your lower and upper quartiles

- Never refer to a relative frequency or a proportion as a probability.

For instance, if you are interested in the risk that people with a certain disease will not be detected by a screening test, do not refer to the ‘probability’ that the disease is not detected. Speak instead of the ‘proportion’ of times the disease is not detected, or the ‘frequency’ with which it is not detected. It is this proportion or frequency that is the QoI, and experts will be asked to express their personal probabilities concerning it. Confusion is sure to arise if you ask experts to express probabilities of probabilities.

The SHELF templates

The elicitation workshop is documented through completion of the SHELF templates. Make sure you are familiar with the templates that you are going to use, and with the advice in their annotated versions. Until you have some experience with SHELF, you should keep hard copies of the annotated templates beside you to refer to in the workshop if needed.

- SHELF 1 is completed at the start of the workshop to record basic information about attendance, training, etc.
- SHELF 2 is completed to record the elicitation of a distribution for every continuous QoI (i.e. a QoI that can take any value in some range). See the advice document “SHELF Methods” regarding choice of the elicitation method.
- SHELF 3 Discrete is completed to record the elicitation of a distribution for every discrete QoI (i.e. a QoI whose value must be in a set of distinct values). See the advice document “Discrete Quantities” regarding the use of this template.
- SHELF 3 Copula is required to record the elicitation of a multivariate distribution using the Gaussian copula method. See the advice document “Multivariate Elicitation” regarding the use of this template. A separate SHELF 2 template is completed for each marginal distribution in this method.
- SHELF 3 Dirichlet is required to record the elicitation of a Dirichlet multivariate distribution. See the advice document “Multivariate Elicitation” regarding the use of this template. A separate SHELF 2 template is completed for each marginal distribution in this method.
- SHELF 3 Extension is used for two distinct purposes – to elicit a distribution for a *target* quantity using the extending the argument elaboration to condition on an *extension* variable, or to elicit a joint distribution through a marginal distribution and a conditional distribution. See the advice document “Extension” regarding the use of this template. Additional templates may be required, such as

SHELF 2 or SHELF 3 Discrete for the marginal distribution of the extension variable.

You are strongly recommended to have a recorder with you (see the section on the elicitation team in the “Pre-elicitation” advice document).

Preliminaries

The SHELF 1 template is mostly straightforward, but you may find the following notes useful.

Attendance and roles	
Purpose of elicitation	
This record	Participants are aware that this elicitation will be conducted using the Sheffield Elicitation Framework, and that this document, including attachments, will form a record of the session.
Orientation and training	
Participants' expertise	
Declarations of interests	
Strengths and weaknesses	
Evidence	
Structuring	
Definitions	

Figure 1. Principal fields in the SHELF 1 template.

As suggested above, you can begin by establishing your position as facilitator before displaying the SHELF 1 template. At the top of the form, there are fields to record the title of the elicitation, the date of the meeting and the start time – these can generally be filled out prior to the workshop. The body of the template then contains the fields shown below in Figure 1.

You will already have discussed “Attendance and roles” and the “Purpose of elicitation”. These could also have been filled out prior to the workshop, but can now be revised if necessary. If you have a Recorder to assist you, then he or she could carry out any such revisions during those initial discussions, so that these two fields are already complete and correct when the form is displayed.

The field “This record” is also always pre-filled, but this is an opportunity for you to emphasise to the experts that you are following an industry-

standard elicitation protocol. You can point out that the completed SHELF templates will provide a written record of the elicitation, and that the experts will be able to see them and comment before they are finalised. Finally, you can explain that although the experts are named in this template they will be referred to anonymously in all subsequent templates that record actual judgements.

The “Orientation and training” field refers to how the experts have been prepared for their task. They may have been sent the “SHELF Expert Briefing” document, which will have introduced them to probabilities as personal judgements, and to the kind of judgements they may be asked to make. They may even have had some training in probabilistic judgements prior to attending the workshop. You should make sure that you know what their level of preparation is, and should be ready to provide training in the workshop to address any deficiencies. All training should be recorded in this field.

Whatever their level of preparation, it is always useful to take the experts through a practice elicitation – see the “Pre-elicitation” advice document. This should also be recorded here.

If the experts have been sent the SHELF “Expert Enquiry” document, they will have provided information for the “Participants’ expertise” and “Declarations of interest” fields, which can then be filled out in advance and simply confirmed in the workshop.

Through the “Strengths and weaknesses” field you have an opportunity to get the experts to see themselves as a group, working together, as they pause to consider their combined strengths and weaknesses.

Evidence, definitions and structuring

These are the subject of the next three fields in the SHELF 1 template, and they are also topics that are revisited when completing each SHELF 2 template. At the SHELF 1 stage, you should introduce the final version of the evidence dossier and record this in the “Evidence” field. It is often useful for someone who was involved in putting the dossier together to make a short presentation at this point. This will cover evidence for all the QoIs to be addressed in this workshop. Then, when it comes to eliciting judgements for each of these QoIs, you will review the evidence relating to that QoI, noting this on the relevant template. At both stages, you can invite questions of clarification, but make it clear that discussion around the significance, quality or interpretation of the evidence will be invited later (during the group discussion) – not now.

The next field in the SHELF 1 template is entitled “Structuring”, referring to the possibility of redefining the QoIs using the technique of elaboration. You should familiarise yourself with the discussions of elaboration in the “Definitions” and “Multivariate Elicitation” advice documents. Ideally, any structuring/elaboration will have been done prior to the workshop, so

that the QoIs as notified to the experts will need no further elaboration. However, it is important to check in the workshop whether the experts are indeed comfortable with expressing judgements about these QoIs, or whether further elaboration would be appropriate.

Whether or not some elaboration is decided upon, the finally agreed definitions are noted in the “Definitions” field in the SHELF 1 template. It is important that each definition is unambiguous and defines a single uncertain quantity – see the “Definitions” advice document. The definition of each QoI is reviewed again before making judgements about that QoI, and the “Definition” field of the SHELF 2 or SHELF 3 Discrete template also affords another opportunity to consider structuring/elaboration.

Once the definition of a QoI is finalised, we recommend displaying it prominently, perhaps by writing it on a flip-chart, so that it can be referred to throughout the elicitation of judgements about that QoI.

Individual judgements

The elicitation of a distribution in SHELF comprises two rounds of judgements, individual and group, with a group discussion after the individual judgements, but the details of which judgements are to be made will depend on the QoI(s) and the facilitator’s judgement. In the remainder of this document, we assume that a single continuous distribution is to be elicited using a SHELF 2 template. The principles will readily carry over to the use of other templates.

The principal challenge for the facilitator in the individual judgements phase is to explain clearly to the experts what each judgement means and how to make those judgements so as to accurately reflect the expert’s own knowledge and beliefs. .

You will have determined, through discussion with the rest of the elicitation team, which SHELF method to use for the individual judgements – tertile, quartile or roulette – see the “SHELF Methods” advice document. Each begins with judgements of a plausible range, but then each method asks the experts for different judgements. There are PowerPoint slides for each of the judgements, as set out in the annotated version of the SHELF 2 template. These should certainly be used by less experienced facilitators, projecting these slide sets live in the workshop to lead the experts through their judgements. More experienced facilitators may still find this approach convenient, but they may also develop their own preferred ways of presenting the judgements.

The individual judgements phase ends with fitting a probability distribution to each expert’s individual judgements. SHELF provides some simple software for this, although you may always use your own preferred fitting tools.

Fitted distributions will sometimes look strange, exhibiting J or U shapes, particularly when the tertile or quartile method has been used for the individual judgements. Although such distribution shapes might genuinely represent an expert's knowledge, they more often arise from failure to place tertiles/quartiles close enough to the median. It also sometimes happens that a fitted distribution is uniform (the fitted density is a horizontal line), because the expert has simply placed his or her median mid-way between their plausible limits, and the tertiles or quartiles one-third or one-quarter of the distance from each limit to the other.

This problem will often be discovered during a practice elicitation, giving you an opportunity to explain the causes, it can arise during elicitation of one of the QoIs. If so, it is best simply to carry on after a little discussion of the expert's likely misconceptions, without trying to revise their judgements. The individual judgement phase still serves its purpose of establishing initial positions, and the final elicited distribution will come from the group judgements.

Group discussion

Following the fitting of individual distributions, these should be shown to the experts, and will form the background to the group discussion. (If some experts' distributions have strange shapes due to misplaced judgements, it may be helpful, and less distracting, to show the experts' plausible ranges, medians and tertiles/quartiles without fitted distributions.) You should lead this discussion, and managing the discussion is the most significant challenge for your facilitation skills.

If experts outside the workshop group have been invited to provide evidence – see the “Pre-elicitation” advice document – this is the time when their opinions should also be introduced alongside the individual distributions of the experts present. However, you should advise the experts to treat these opinions with appropriate scepticism – they may be exaggerated or consciously biased, and certainly have not been obtained through careful interaction with a facilitator.

The idea of the group discussion is to explore the experts' differences of opinion, and most importantly to understand the reasons for any disagreement. So you should direct the discussion around every area where there is divergence of opinion, as revealed by their fitted distributions. For instance, if Expert A's distribution is concentrated on higher values of the QoI than those of the other experts, you can ask Expert A why he or she thinks such high values are probable, and you may then invite the other experts to say why they think lower values are more plausible. It usually only takes a little prompting from the facilitator for the experts to engage enthusiastically in debate! Indeed, the greater challenge is generally not to stimulate discussion but to keep discussions focused, and to avoid rambling and repetitious debate.

Here are a number of tips, based on the experience of the SHELF authors.

1. Allow discussion to continue all the while it is introducing new arguments, or while it is clarifying or developing ideas and arguments that have already been introduced. Do not allow experts to keep going over old arguments without adding anything new. Repeating an argument does not make it more persuasive.
2. Make sure all opinions are heard and properly considered. You may need to bring in quieter members of the group by directly asking for their views, or to stop more outspoken members from dominating the discussion.
3. Bear in mind each person's expertise and what knowledge they are expected to bring to the workshop, and be prepared to challenge them if they appear to be speaking outside their own area of expertise.
4. Listen! Try to understand the main reasons that are advanced for each expert's position, and to get a sense of the strengths of the competing arguments. The importance of this will become apparent when we look at the group judgements phase. If you have a technical observer, they can help you with this.
5. From time to time pause the discussion in order to review key points that have been made. This has a number of benefits. First, it allows you to check your understanding. Second, it helps to focus the discussion on the points that matter. And third, it will help the recorder to make good notes of the discussion.
6. In justifying their opinions, experts will be relying on both the evidence and their own experience and expertise. It should always be clear which. When they are using the evidence ask them to identify the relevant items in the dossier. This is where experts can debate the interpretation and value of each item of evidence.
7. Don't let an expert abuse the evidence. Make sure that the evidence does genuinely justify their claims. If in doubt, ask the other experts.
8. Poor quality or indirect evidence should not be over-used. When the evidence in the dossier is generally weak, experts are inclined to give too much weight and credibility to it. Strong opinions that appear to be based only on weak evidence should be challenged!

Group judgements

When it appears that all useful arguments have been presented and no new ideas are coming forward, bring the group discussion to an end and initiate the group judgements phase.

This is the time to explain what kind of 'consensus' judgements you are asking the group to make. It is vital that they understand and accept the

perspective of the Rational Impartial Observer (RIO). A PowerPoint slide set is provided to help you to explain this key idea.

You will have determined, together with the other members of the elicitation team, which of the SHELF methods – probability, tertile or quartile – you will use for the group judgement phase.

Be prepared to challenge the experts' group judgements. You know what they individually believed prior to the group discussion, and you have been listening to the discussion. If opinions have changed in ways that do not seem to you to be justified by the intervening debate, you should probe for explanations. For instance, you might want to ask for clarification of their judgements if:

- the experts don't appear to have given proper consideration to an argument that sounded valid to you;
- any expert's initial beliefs are not represented in the group judgements, with no obvious reasons for that expert to have changed – we don't want valid opinions to be overlooked or lost through other experts' force of personality or because an expert can't be bothered to argue any longer;
- the experts don't seem to be expressing enough uncertainty – they may be giving too much weight to the available evidence, or they may be letting the warm feeling of reaching consensus trick them into being overconfident (a phenomenon known as 'group think').

When you and the experts are satisfied with their group 'consensus' judgements, a distribution can be fitted. It is important to show this to the experts and to present suitable feedback. The fitted distribution will almost inevitably fail to fit exactly all the experts' stated group judgements, so they need to confirm whether the fitted distribution is an acceptable representation of what a Rational Impartial Observer might reasonably believe, having heard their various opinions and arguments. If they are not happy with the fitted distribution, it will be necessary to explore the basis for their concern, and to revisit their judgements and/or the fitting process.

Once a final distribution is agreed, it is noted in the SHELF 2 form and the elicitation for this QoI is finished.

The facilitator is not passive

It will be clear from the above that the facilitator can, and generally will, influence the course of an elicitation workshop. The facilitator is particularly active in leading and managing the group discussion, and in challenging or approving the group judgements. There is therefore the potential to influence the final outcome.

This is a feature of the behavioural approach to elicitation which SHELF uses. You will be bringing your own expertise to the workshop. You are

not contributing knowledge about the QoI – that is the role of the substantive experts – but you are contributing your knowledge about elicitation.

Sample templates

See the “Sample SHELF 1” and “Sample SHELF 2” files for examples of completed templates.