Cascade Diagram Exercise – Facilitator's guide

OBJECTIVE: TO EXPLORE PLAUSIBLE FUTURE IMPLICATIONS OF A WEAK SIGNAL*

This is the first exercise in which participants begin to explore future consequences through group discussion. For a large meeting, it is suitable as a breakout session in small groups.

People:
1 facilitator
5–8 participants
1 note-taker (optional)

Materials:
- Markers
- Notepad for each participant

Post on the wall:
- A visual agenda (optional)
- Rules of engagement (optional)
- 2 headings on sticky notes (optional): What worked? What could be better?

Meeting Space:
A room with a large writeable wall, a large roll of paper on the wall, or flip chart sheets arranged adjacently. Seating for all conducive to hearing other participants, seeing the cascade diagram and recording personal notes.

Agenda at a Glance

TIME	ACTIVITY
5 minutes	1. General meeting introductions (if needed)
60 minutes	2. Give context for the cascade diagram exercise (1 minute) 3. Provide activity instructions (1 minute) 4. Ensure the group has a shared understanding of the weak signal (8 minutes) 5. Explore first order consequences (10 minutes) 6. Explore second, third and fourth order consequences (30 minutes) 7. Discuss most impactful and surprising outcomes (10 minutes)
10 minutes	8. Reflect on and/or evaluate the exercise
EST. TOTAL TIME: 75 minutes	

* This exercise can also be used for a group of weak signals. Cascade diagrams can be helpful for moving from weak signals to insights.

BEFORE THE MEETING: CHOOSE A WEAK SIGNAL

At any stage of the scanning and foresight process, a cascade diagram exercise is a valuable brainstorming tool to deepen understanding of a potentially disruptive change. In this exercise, the cascade diagram is used to explore plausible implications suggested by a weak signal of change. At this stage, the tool helps determine whether there is a good insight to be gleaned from the weak signal (or cluster of weak signals). In module 5 (Change Drivers), the cascade diagram tool is revisited to explore the consequences of a change driver.

This annotated agenda assumes the facilitator has a weak signal in mind to use to draw a cascade diagram. For instance, the facilitator may be holding the session in order to share a new weak signal and discuss the implications with others. Or, if the group is regularly discussing weak signals already, the facilitator may have ideas of weak signals that it would be beneficial to develop through a cascade diagram. Alternately, if the facilitator is introducing scanning to their workgroup, the attached sample pre-workshop questionnaire and optional activity at the end of this facilitator's guide can be used to collect weak signals, share them briefly and nominate one for deeper discussion through a cascade diagram.

If there is a lot riding on the outcome of the cascade diagram meeting, the facilitator may want to do a test run diagram with the weak signal that will be used. This can help the facilitator anticipate possible twists in the conversation and identify key questions to explore with the group.

Prepare the room

- A cascade diagram is intended to be displayed for participants while it is being developed, and it requires a lot of space. A large whiteboard or write-erase walls are ideal; however, a large roll of paper on the wall or several flip charts together would also work. Alternatives to writing on a wall surface include using an online mind-mapping tool such as Mind42.com and displaying it on a large screen as it is developed, or taking notes on large sticky notes and posting them in the shape of a cascade diagram. These alternatives are discussed at the end of the annotated agenda.

- Set up the room for a small group discussion, with a chair and writing surface for each participant. Have pens and scrap paper on hand for participants.

- Post on the wall any visuals that will be referred to during the meeting.

ANNOTATED AGENDA

TIME	ACTIVITY	NOTES
5 minutes	**1. General meeting introductions (if needed)** • Introduce facilitators • Provide context for the session (why are we here?) • Allow participant introductions if they are unacquainted • Consider adding a few minutes to the agenda to: ° build rapport through an ice-breaker activity ° review or develop a list of ground rules on the wall	• If this is one of several activities, consider using a visual agenda to situate this activity within the day's events. • A list of rules of engagement posted in the room during the meeting is a visual reminder of the group's commitment to support a good discussion.
1 minute	**2. Give context for the cascade diagram exercise** • A cascade diagram is a useful way to: ° push our thinking out of the present and into the future; ° explore a range of plausible outcomes; and ° consider potential consequences further out from what we can initially anticipate. If this is the first time participants are meeting together for such a brainstorming exercise, set the tone by reminding participants of a few principles:	

	• This is a brainstorming exercise:
	  ◦ We're interested in ideas; don't censor yourself as thoughts come to mind.
	  ◦ Be open to others' ideas. You might ask how someone arrived at an idea in order to understand, but do not evaluate it.
	  ◦ If you don't agree with a point raised, simply propose an alternative; we'll note both.
	• Create a comfortable space for conversation:
	  ◦ Share the time; be concise and encourage others to contribute.
	• Recall that we are interested in plausibility, not probability:
	  ◦ We don't need to assess how likely it is that an event could occur.
	  ◦ There will be other opportunities to investigate and validate the brainstormed ideas from this session, through further scanning and other foresight exercises.
	• In this conversation you are an informed participant with many hats, not a representative of your department advocating on behalf of your file. Bring all your knowledge to bear.	

1 minute	**3. Provide activity instructions** • "We're going to do a cascade diagram to consider the follow-on (or "cascading") consequences of this weak signal. We will start with what we know about the weak signal, and then move to the first-order consequences we anticipate. After that we'll want to push ourselves further to ask: and then what, and then what, and then what? The 2nd, 3rd or 4th order implications may be the ones to hold the potential surprises. "	• According to preference, the cascade diagram could be drawn by the facilitator or by a note-taker. • The person drawing writes the weak signal being explored on the wall, leaving lots of room to the right and some to the left.
8 minutes	**4. Ensure the group has a shared understanding of the weak signal** • The facilitator records a list of key points about what is known of the weak signal(s), soliciting input from participants or presenting the information as appropriate. • Possible questions to participants: ° "How do we know this weak signal is happening? (Where have you heard about it? Any statistics? Examples of the change?)" ° "Are there multiple parts to it? What do we know? What might we consider the expected future of this weak signal—might it continue at a steady pace, accelerate….?" ° "Where is it happening? Only in Canada or internationally? In a particular sector or more broadly? Who is it happening to?" ° "What other changes could see this weak signal strengthen?"	• Some participants may not be knowledgeable about the evidence supporting a weak signal. That's ok; they will have an opportunity to contribute to the next stages of the exercise. • What is known about the weak signal is written on the left, and the plausible consequences are written on the right.

	• At some point the conversation will drift towards the consequences of the weak signal, at which point the facilitator can move to the right hand side of the diagram	

10 minutes	**5. Explore first order consequences**
	• Facilitator asks participants for a list of first-order consequences and prompts with questions as necessary.
	  ◦ If this weak signal strengthens, what might happen?
	  ◦ What changes might come about as a result of this development?
	  ◦ What else can you imagine happening?
	  ◦ How would different actors be affected?
	  ◦ Etc.
	• To ensure a broad range of consequences, the facilitator could start the right side of the cascade diagram with the first-order categories of Social, Technological, Economic, Environmental, Governance (STEEG).
	• <u>Alternative:</u> The facilitator can present questions in the form of an impromptu guided imaging exercise (forthcoming) (see Option A further in this document), possibly drawing on the initial discussion about the weak signal. The facilitator would ask participants to close their eyes, project themselves 15 years into the future and envision how the strengthening of the weak signal has changed Canada/the world/a particular system.
		• Constrain the first-order conversation (e.g. ask for about 8 consequences) to ensure sufficient time remains for the next steps. A broader range of first-order impacts comes at the expense of developing further into the future.

	◦ "Now imagine that you are in 2030 AND this weak signal has become more prevalent. We are an older society, more technological, more integrated in the global economy… [add more context to help participants understand the subject matter]. How is this change playing out?" ◦ "We might be seeing some of the initial consequences already; what others could you imagine happening?" • This is a helpful way to break away from discussion of the present (what is) and shift the discussion into a more imaginative space (what could be). A guided imaging exercise might add an additional 5–10 minutes to the agenda. However, this will help catalyze the discussion, and the cascade diagram will move faster. Participants may start building on each other's ideas, with little need for prompts to move into 2nd and 3rd order consequences (see next step). Listen for when a chain of events is being described, where participants are quickly moving from 1st to 2nd to 3rd order consequences, and record it accordingly. Then bring participants back to 1st order implications in order to record alternative pathways.	• It is not necessary to gather input from participants in a systematic way, (e.g. seeking input from each person sequentially). However, to benefit from the breadth of perspectives in the room, consider: ◦ Asking for one consequence from each person. ◦ Reminding participants to be concise and to share the time. ◦ Seeking input from participants who speak up less often.

30 minutes	**6. Explore second-, third- and fourth-order consequences**
	• Facilitator asks for second-order consequences, each one building off a first-order consequence.
	• Participants will most likely generate ideas on their own; however, some prompts may be useful to ensure good conversation:
	  ° Have we thought about all the relevant actors and how they might respond?
	  ° How do you see the Canadian government responding to this event?
	  ° What issues could arise? What opportunities?
	• If participants are all from a single department, it may be useful to keep a list of the department's mandate areas as prompts.
	• Manage time to ensure participants have a chance to consider a few strands in greater depth (e.g. develop a few ideas to the 3rd, 4th, 5th, 6th order consequences if possible.)
	• Offer a quiet round (or several) of reflection so participants can record their thoughts on sticky notes. This will accelerate the pace of output, ensure divergent thinking, and is often appreciated by quieter participants.
		While structured, the cascade diagram exercise leaves the facilitator some flexibility. Options include:
		• Allow participants to each choose one consequence and suggest a next-order consequence. Numbering the first-order consequences may make the conversation more efficient. E.g. "To outcome #4, I'd like to add the consequence…"
		• At any point, the facilitator might want to orient discussion towards interesting/ strategic points. E.g. "What do you think about consequence #6—surprising? impactful? If it were to happen, then what could happen next?"

	• Remember that the aim is to generate new insight about the significance of the weak signal and its implications. The conversation should be guided towards plausible outcomes that are less familiar lines of thinking; the facilitator may have a sense of this or can remind participants to focus on the ideas that are new and undiscussed. Listen for the energy in the room; if it seems like participants are repeating old thoughts heard elsewhere, ask a question to help them form new connections.	• Likewise, the facilitator might ask participants to nominate the consequences (nodes) they'd like to develop further as a group. E.g. "Which of these consequences seems most surprising? Which consequences could have a significant impact?" Horizons often uses this technique to focus discussion.
10 minutes	**7. Discuss the most impactful and surprising outcomes** • At this point, participants reflect on the results of the cascade diagram, looking for observations that would be good material for an insight. These are the a-ha moments. • Ask participants for the highlights of the conversation, e.g. policy challenges, opportunities and surprise events. Possible questions could be: ° **POLICY CHALLENGE** – "What did you see that you don't think government is prepared for? ° **POLICY OPPORTUNITY** – "Is there anything exciting here? Policy opportunities to be embraced?"	• If the cascade diagram exercise is done concurrently in breakout groups, allow time for sharing results in plenary. Participants could do a walk-around of the cascade diagrams, or each group could give a verbal report back.

	◦ **SURPRISE** – "Where did you understand something in a new way? Is there a new question you are motivated to look into further?" • Facilitator/notetaker notes these points with an asterisk or sums them up on a new flip chart ◦ Where time allows, taking a moment to sum up observations on a new flip chart is preferable, as it allows participants to assign new meaning/ context to the events raised in the cascade diagram. This information allows the facilitator to better understand why certain events are more surprising or significant.	
10 minutes	**8. Reflect on and/or evaluate the exercise** • Give participants an opportunity to provide feedback on the exercise. • This might take the form of: ◦ A Q&A discussion ◦ Participant completion of an evaluation form ◦ Informal evaluation—On their way out the room, participants are asked to post one comment on a sticky note for each of two wall headings: - What Worked? - What Could Be Better?	• Provide evaluation forms or sticky notes as appropriate.

Alternatives to drawing a cascade diagram on a writeable wall:

1. Using online mind-mapping tools:
If the workshop will be run in a room with a large computer screen, the facilitator (or a notetaker) may prefer to record the conversation through an online mind-mapping tool. Some Horizons analysts prefer mind-mapping software over drawing by hand, finding it more legible, faster to type and easier to modify or move an idea. After the meeting, it is easy to print the result or rework the contents by modifying and collaborating with others, much like a wiki document. It takes a little practice to create nodes, type and move ideas with ease while following a conversation, but it is worth the time for facilitators who expect cascade diagramming to be a recurring part of their work. Horizons often uses Mind42.com (available free), although other mind-mapping tools can likely achieve similar results.

2. Using sticky notes:
In a pinch, with just a large wall surface and a pack of large sticky notes, a cascade diagram can happen anywhere. As with mind-mapping software, sticky notes present the advantage of relocatable nodes. The facilitator can record points on the sticky notes and/or ask participants to record them themselves. A disadvantage is that the sticky note configuration is often harder to follow and some participants' writing may be hard to read. The use of different coloured sticky notes to differentiate threads of thought or distinguish orders of outcomes (e.g. first, second, third order) can help. Participants can also be given a little guidance when asked to write, e.g. a suggested word limit and a model of readable-size text.

Add-ons / Modifications to the cascade diagram exercise

OPTION A: PRE-ACTIVITY: Sharing weak signals and choosing one for cascade diagram development
Where possible, it is a good idea to give participants a chance to choose the subject of discussion. Furthermore, if the objective is to create a scanning community, where participants are expected to generate weak signals and develop insights from them, it may be preferable to demonstrate the cascade diagram using material discovered within the group. The scanning module contains a sample pre-workshop questionnaire that can be tailored to solicit weak signals in advance of the workshop. By collecting weak signals from participants in advance, the facilitator can anticipate the subject matter that participants may raise. Here is a short process to briefly discuss participants' weak signals and vote on a weak signal to develop further.

This activity will need another writeable wall surface to record a list of weak signals.

1 minute	**Introduction**
	Participants will be asked to brainstorm weak signals of changes that could have significant consequences for the system they are considering, and to nominate one to consider in depth.
	• "We are going to have a quick sharing of ideas, then we will choose one and explore its consequences for [the domain, e.g. the Canadian economy]."
	• "I want to remind you of an example mentioned in the pre-workshop questionnaire."
	  ◦ Several countries (China, Argentina, Philippines) are adopting India's softer stance on intellectual property for pharmaceuticals, suggesting a potential shift in international IP trade norms.
	• "Here's how I would record that on the wall:
	  ◦ India and others are taking a softer stance on IP - > new global norms around IP"
	• "Think about the last year or so and some of the changes you learned about in the world that seemed important and that you think could reshape [the Canadian economy] for the next 15 years. These changes may originate within the economy or come from another domain, e.g. changes in society, new technology, the environment, or political or governance changes."	

10 minutes	**Identify weak signals of change** • Ask participants to take a minute to write 1 or 2 weak signals each on a sticky note. (A total of 6–12 weak signals would be enough for the group to consider without being overwhelmed with too many choices.) • Ask each participant to share their weak signal; the facilitator listens and records the key point on the wall. • With each weak signal, there may be some response from others. Try to keep the conversation moving along to the next weak signals (or consider adding time to discuss them more thoroughly). • If a participant shares a weak signal that seems to relate to one already discussed, consider combining the two. (If kept separate, they will split the votes in the next step) • "We have generated some good ideas, but we have time to discuss just one of them, so we will choose one that we agree will make for a good discussion."	• Have 1–2 sticky notes available to each participant • Writing their weak signal on a sticky note before sharing it allows participants to sum up their thought concisely.
5 minutes	**Participants indicate their top 3 choices** • "To choose a weak signal for discussion, remember from the pre-workshop questionnaire that there are four criteria we need for a great weak signal:	• The scanning module includes a poster of weak signal criteria that can be posted in the room for reference.

- **Plausibility** - there is some evidence that it is occurring or could occur
  - (note we are not interested in how likely it is, but we do need to know it is something that is happening/ could happen)
- **Novelty** – it is relatively unknown to you and/or those who could be affected by its consequences
  - it isn't being discussed and you suspect it should be
- **Significance** - if it does occur, it could have a significant, disruptive impact on the system we are interested in (e.g. the economy, industrial sectors, and/or innovation)
- **Timely** – it could occur over the period we are interested in (10-15 years)"
- "With these criteria in mind, I would like you to weigh in on which weak signals would be most valuable for you to discuss. I'm particularly interested in your assessment of Novelty. Something that you've heard about, but don't see in policy discussions in your department, would be ideal."
- For ease of voting, the facilitator can number the list of weak signals and ask participants to write down 3 choices that they think would make a good discussion.

	• Go through the weak signals, asking for how many hands vote for #1, then #2, then #3, etc.	
10 minutes	**Break – Facilitator considers the votes and makes a selection** • If possible, give the participants a break so the facilitator can look over the voting results and ensure a good discussion follows. The facilitator can draw on their experience and familiarity with the subject by considering questions such as: Is it sufficiently broad? Interesting? Do I know enough about it? • If the facilitator is doubtful that a good discussion can be had with the highest-voted weak signal, they can choose another well-supported weak signal. In that event, the facilitator should briefly explain to the group why they chose an alternative.	

OPTION B: After developing the initial cascade diagram, vote on the most significant branches and build priority branches with further implications

This option balances the free-flowing brainstorming style of a cascade diagram exercise with the need to ensure sufficient time is spent on branches of conversation that are of strategic importance. A way to set some priorities (without hindering the brainstorming process) is to develop the cascade diagram over two sessions, with a voting stage in between to establish priorities. After generating the initial cascade diagram in the first session, the facilitator can ask participants to vote on the most significant consequences of the weak signal, i.e. the disruptions that may produce further consequences that might not normally be considered. This step can be done at the end of the cascade diagram activity described above and should take 5–10 minutes. The second session would then explore and rebuild only those branches on the cascade diagram that received the most votes. During the time between sessions, the facilitator can pare down the cascade diagram to a more workable version that highlights the branches/consequences that received the most votes.

OPTION C: Vote on the most significant branches to develop as you build the cascade diagram

Another variation is to ask participants to vote as you build the cascade diagram. Once you have a good list of first order consequences, ask participants to choose a consequence to push out further to second order. Ask again, and at each subsequent order, decide which consequence to push out further. This can focus a cascade diagram exercise and save a lot of time, but it may also not generate as much information or allow quite as free a brainstorm.

Building a Foresight Workshop: Complementary Activities to Consider

For facilitators with multiple objectives for a foresight workshop, below are a few suggestions of activities that would pair well with the cascade diagram exercise for weak signals.

Before the exercise:

- Deliver the Introduction to Scanning presentation.
- Deliver the Assumptions presentation and Assumptions exercise (module 2). After the cascade diagram discussion, have the participants review the initial assumptions to consider whether some appear vulnerable in light of plausible changes discussed during the cascade diagram exercise.

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