

System Mapping Exercise – Facilitator’s Guide

OBJECTIVE: TO DEFINE AND UNDERSTAND THE RELATIONSHIPS BETWEEN ELEMENTS IN A SYSTEM.

This exercise helps simplify a complex topic into the most critical components for understanding the changes acting upon it. Like a domain map, it can help a group of participants develop a shared mental model of their subject and delineate the boundaries of a system. A group of participants can generate a simple system map in a little over an hour.

People:

- 1 facilitator
- 4-25 participants (divided into groups of 4-7)
- 1-2 assistants (optional)

Materials:

- Whiteboard, smartboard or flipchart for each group
- Suitable markers for each group
- Projector/computer (optional)
- Sticky notes for each group, in various colours

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 large room with a large whiteboard (or several flipcharts). Seating for all, conducive to both hearing other participants and seeing the whiteboard. Use breakout rooms for group work if available.

Agenda at a Glance

TIME	ACTIVITY
5 minutes	1. General meeting introductions (if needed)
70 minutes	2. Give context for the system map exercise (3 minutes) 3. Provide instructions for the exercise (2 minutes) 4. Activity: create system maps (40 minutes) 5. Review the participants’ system maps (10 minutes) 6. Summarize points of system maps (10 minutes)
10 minutes	7. Reflect on and/or evaluate the exercise (10 minutes)

EST. TOTAL TIME: 80 minutes

Before the meeting: from domain mapping to more complex system mapping

Once the scope of a foresight project has been defined through a domain map, the team can examine the system in more depth. For some studies, it is possible that the domain is the system to be understood. For others, it may be smaller systems within the domain. For example, a study on the future of immigration could seek to understand the domain of immigration as a general system of actors, processes, functions and structures. Alternatively, the domain of immigration could also be understood as a grouping of smaller systems such as migration of skilled workers, family reunification, refugee resettlement, temporary foreign work, student visas, etc., each with their own actors, processes, functions and structures. The choice of system depends on the research interest. As an organization serving the broad cross-departmental interests of the Government of Canada, Horizons often explores broad domains containing more than one system and sometimes many systems.

This guide is written for facilitators running several breakout sessions to map different systems. An alternative is to have breakout groups (or individuals) develop maps of the same system, for discussion at the end. Comparing different versions can inform a more refined final system map (if desired). Each of these variations will offer some degree of system learning, to the extent that participants can think through the parts and connections in the system and hear how others understand it.

Example: A system map of values



Build your own system map

It is a good idea for the facilitator to have prepared a preliminary system map on the chosen topic before the workshop, for their “back pocket.” This helps the facilitator to anticipate what topics are likely to arise and what challenges participants may encounter.

Prepare the room

- Each participant will need a chair, writing surface and a clear sightline to the wall/white board/flipchart where the system map(s) will be created. If possible, allow breakout groups to go into separate rooms so they can talk without distraction.
- If the breakout groups will be self-facilitating, be prepared to assign a system mapping recorder for each team and to provide them with the [system mapping handout](#) to guide the activity. It is helpful to have one participant per team function as the discussion leader/recorder while the rest brainstorm. If the team is large enough, a second participant can be assigned to be the recorder.
- A lead facilitator and an assistant can circulate among the groups to provide support.
- Provide markers for each team, including a choice of colours to allow the option of assigning meaning through colour.
- Alternately, different coloured sticky notes can be used.

ANNOTATED AGENDA

TIME	ACTIVITY	NOTES
5 minutes	<p>1. General meeting introductions (if needed)</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ◦ build rapport through an ice-breaker activity ◦ review or develop a list of ground rules on the wall 	<ul style="list-style-type: none"> • 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.
3 minutes	<p>2. Give context for the system map exercise</p> <ul style="list-style-type: none"> • Why and when we use system maps: <ul style="list-style-type: none"> ◦ To understand the complexity of the topic. ◦ To recognize the interactions and relationships among elements. Changing one element can have wide-reaching and often unintended consequences on the whole system. ◦ Very useful in building a common mental model of the system. ◦ Best used early in the foresight process as it sets the stage for subsequent work (knowing where to scan, ensuring coverage of certain topics, etc.). ◦ It is often useful to develop a domain map before a system map. 	

	<ul style="list-style-type: none"> Remind participants that a system map is a representation of a system, rather than the system itself. There is no “right way” to draw one. Provide an example of a system map: <ul style="list-style-type: none"> E.g. For the system map of values, the group identified: <ul style="list-style-type: none"> actors using yellow sticky notes (e.g. government, media, citizens) processes using blue sticky notes (e.g. lobbying, policy development) the group indicated directions of influence using arrows and words e.g. connections between actors: media targets citizens; citizens digest media 	
2 minutes	<p>3. Provide activity instructions</p> <ul style="list-style-type: none"> Organize the teams—ideally 4–7 participants per team If groups will self-facilitate, provide written instructions (including approximate time for each step) to guide their mapping and assign leaders for each team, or ask for volunteers. Assign the systems to be mapped. Have teams assemble around their whiteboards, allowing extra time if groups are relocating to breakout rooms. 	<ul style="list-style-type: none"> If groups are self-facilitating, consider having a facilitator and an assistant check in on them, particularly if using breakout rooms. If available, assign facilitators with experience in system mapping to lead each team map.
40 minutes	<p>4. Activity: create system maps</p> <ul style="list-style-type: none"> If groups are self-facilitating, consider budgeting more time and ensure each group has: <ul style="list-style-type: none"> a group member designated as facilitator/recorder a copy of the system mapping self-facilitation handout 	<ul style="list-style-type: none"> For small groups/teams, it can be more engaging if everyone has a marker and can work on the map together.

- We can think of a system map as a diagram of the connections among various layers of information.
 - More specifically: Actors use processes that operate within structures to achieve certain functions (outcomes).
- The first question(s) to ask when developing a system map are:
 - Who are the actors in this system?
 - What are the processes in this system?
 - What are the structures in this system?
 - What are the functions in this system?
- Note that a system map will often focus on only one or two of these dimensions.
 - Write the elements the group generates on the page.
 - Using post-its on a white board is a good way to do this. Colour coding may also help if you are mapping multiple dimensions (e.g. actors in red, structures in blue)
- The second set of questions to consider relates to the relationships between elements:
 - Look for the flow of people, money, information, influence, etc.
 - Begin to draw lines and arrows showing which elements are related to which other elements in the system.
 - Where possible, use a word to define each relationship, e.g. A funds B, X regulates Y.
- The third set of questions relates to outside influences shaping the system:
 - As it is easy to lose focus during a mapping exercise, so keep your participants on topic.
- A system map discussion can reveal new awareness of the assumptions about the system (e.g. What functions are assumed to exist? What constraints are assumed?)
- If a statement is raised that doesn't have an obvious fit on the map, the facilitator can record it on a sticky and put it aside.

	<ul style="list-style-type: none"> ◦ What are some sources of change that are acting on the system (from the outside)? ◦ Possible examples: population aging, climate change (This question relates to the topic of change drivers, which are discussed in module 5.) • Final step: Label the maps with the system map subject, so they are clear to others. 	
10 minutes	<p>5. Review the participants' system maps</p> <ul style="list-style-type: none"> • If using breakout rooms, bring participants back to the large common room with their maps. • Ask for a representative from each group to share a few points from their system map (allow approximately 2 minutes per group). <p>Alternative: If maps will not be reviewed again by participants, allow them some time during this meeting to walk around the room to see how other groups have described their systems. This option might require an additional 5 minutes, depending on the number of maps.</p>	

10 minutes

6. Summarize key points about system maps and the exercise

- If foresight learning is a key objective of the exercise (as opposed to content development), ask participants to share observations on thinking about this subject in a systems way. Possible discussion questions:
 - How has this exercise affected how you see your system?
 - What worked well? What was tricky?
 - Any observations when looking at other system maps?
 - Invite volunteer/assigned facilitators to share their perspectives.
 - Ask if participants noticed new assumptions through this exercise.
- Some things to point out:
 - There is no correct way to do a systems map.
 - This is about the discussion and seeing a system in a holistic way. Hearing others' perspectives helps break us out of our own thinking and makes us aware of our unexamined assumptions.
- Concluding remarks about system mapping:
 - With this exercise, the group is developing a shared mental model of the subject.
 - Highlight the iterative nature of the exercise—maps tend to get better over time:

	<ul style="list-style-type: none"> - The involvement of subject matter experts can be helpful in refining the map. - Elements can be added or removed as understanding changes. - Consensus on what is involved in the system map may evolve. <ul style="list-style-type: none"> • Consider leaving the maps in a shared place for participants to access (even if photos are saved in a folder). The map can suggest topics for participants to scan. Participants might even revisit the map and add to it if they know the map will be referred to again (e.g. if it will be refined eventually for a publication). • If the system maps will be revisited and revised, indicate by whom, how and when. 	
10 minutes	<p>7. Reflect on and/or evaluate the exercise</p> <ul style="list-style-type: none"> • Give participants an opportunity to provide feedback on the exercise. • This might take the form of: <ul style="list-style-type: none"> ◦ 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 three wall headings: <ul style="list-style-type: none"> - What Worked? - What Could be Better? 	<ul style="list-style-type: none"> • Provide evaluation forms or sticky notes as appropriate.

Add-ons/Modifications to the system map exercise

OPTION A: After developing the map, vote on the most important elements

After the group generates their system map, it is often helpful to evaluate which elements are the most critical to the system. This provides an idea of where participants might want to focus their attention, for example when scanning.

A way to do this is to ask the group to vote on the most important elements at the end of a system map activity. Give each participant 3–5 votes (they can use a marker or dot stickers) to distribute among the elements on the map as they wish. To determine importance, the questions to consider are:

- Which elements do participants expect to change the most?
- Which elements would be most disruptive for policy, should they change significantly?

After voting, the facilitator can briefly highlight a few of the most popular elements and remind participants that these are good topics to monitor when looking for signs of disruptive change affecting the system.

Option B: Engage experts after the workshop to deepen understanding of the system

If participants have access to subject matter experts, consider utilizing their knowledge to bring more depth to the map. With a legible version of the system map (perhaps one typed up using online mind-mapping software), ask the experts for their comments. Is there anything they would add/remove/change? Be aware that they may not have a holistic perspective on the system and that they may be biased by their own area of expertise.

Building a Foresight Workshop: Complementary Activities to Consider

For facilitators who have multiple objectives for a foresight workshop, below are a few suggestions for activities that would pair well with the system map exercise.

Before the exercise:

- Deliver the [Systems Mapping presentation](#).
- Develop a [domain map with the group \(module 4\)](#).

After the exercise:

- To emphasize the domain mapping exercise as a learning experience, consider sharing and discussing the facilitator's "back pocket" system map. (You may need a projector, internet access etc., arranged ahead to display your map). How did you:
 - create the map (Google Docs, Post-its, Insightmaker, Visio, Simplemind, Mind42, etc.);
 - choose the elements;
 - etc.
- Develop a polished version of the system map. Print a large format, colour copy of the map. It is useful to be able to refer back to the map in subsequent sessions.
- Deliver the [system mapping exercise \(module 4\)](#).

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