



Faculty of Design

2022

Powers Of Ten: Mapping systems-level gaps using the SX Canvas

Marines, Luis and Ávila, Lucía

Suggested citation:

Marines, Luis and Ávila, Lucía (2022) Powers Of Ten: Mapping systems-level gaps using the SX Canvas. In: Proceedings of Relating Systems Thinking and Design, RSD11, 3-16 Oct 2022, Brighton, United Kingdom. Available at <https://openresearch.ocadu.ca/id/eprint/4232/>

Open Research is a publicly accessible, curated repository for the preservation and dissemination of scholarly and creative output of the OCAD University community. Material in Open Research is open access and made available via the consent of the author and/or rights holder on a non-exclusive basis.

The OCAD University Library is committed to accessibility as outlined in the [Ontario Human Rights Code](#) and the [Accessibility for Ontarians with Disabilities Act \(AODA\)](#) and is working to improve accessibility of the Open Research Repository collection. If you require an accessible version of a repository item contact us at repository@ocadu.ca.



Relating Systems Thinking and Design
2022 Symposium
University of Brighton, Brighton, UK,
October 13-16, 2022

Powers Of Ten: Mapping systems-level gaps using the SX Canvas

Luis Marines, Lucía Avila

Fjord | Tecmilenio

The emergence of global policies and restrictions throughout the pandemic has only maximised the VUCA (volatile, uncertain, complex, and ambiguous) environment we live in and that we have experienced for decades; accelerating at the same time processes of cultural transformation and reinforcing the inequality gaps that have characterised developing countries, markedly conducted by neoliberal public policies.

Due to the multiplicity of critical scenarios that we face nowadays, it is essential for designers to accelerate the way we adopt and adapt thinking models and frameworks that allow us to visualise the interdependencies, causalities, and purposes presented within complex systems, to ideate potential interventions that enable systems-level changes.

The Systemic Experience Canvas is a tool that helps to visualise the quality of interactions between a system and the experience of its stakeholders. During this workshop, participants use the Systemic Experience (SX) Canvas, a generative tool based on the soft systems methodology and designed to constantly 'zoom in & zoom out' of a wicked problem alternating both user and system-centric perspectives to understand an issue. This workshop aims to offer practitioners an alternative method to easily integrate both macroscopic and microscopic perspectives into their projects. By using a framework that allows diverse stakeholders to discuss and confront their perception about a

system and its embedded experiences, the SX Canvas represents an approachable option to generate system & user-centred visions and conversations while working with complex issues.

KEYWORDS: strategic design, generative tools, systems mapping, causal loops

RSD TOPIC(S): Methods & Methodology, Society & Culture, Sociotechnical Systems

Using the SX Canvas

This tool allows workshop attendees to strategically identify and visualise the elements, relationships, and the quality of interactions between a system and the experience of its actors, which generates dynamics with social, economic, cultural, and technological implications that could be considered to design intervention strategies through participatory processes amongst different kinds of stakeholders. In other words, the SX Canvas has been designed to accelerate the process of identifying the root causes behind a problem and potential leverage points by making explicit the relationships between both the system and its embedded human experiences (Avila L. & Marines, 2020).

Pre-work activity

Participants are asked to walk around their cities to locate and record (with video/photo) scenes of relevant systemic issues with both local and global implications. These visual records will be shared prior to the workshop to identify common topics that could be addressed during the session.

SX Canvas Mapping

Participants are split into small groups to map the elements and systemic experiences of a wicked problem selected by each group, using the SX Canvas's sections:

- Situation: Visual evidence that describes the situation of interest (e.g., a moment of a user journey, a process from the perspective of a user). Some questions during this sub-stage:

- What moments are we observing? Why do we consider these moments as the most important? Do we recognize any pattern or similarity between the situation presented by another participant?
- Is this situation too specific or can we consider it as part of a larger problem that is replicated in other contexts?
- How relevant are these situations? How has it changed over time (e.g., considering the COVID-19 pandemic)? Do we have a way to represent this variation over time (e.g., comparing the situation with a photo from 2018 versus one from 2021)?
- Circumstances: List of circumstances that contribute to producing the situation of interest (e.g., societal, or ecological issues). Some questions during this sub-stage:
 - What major events or moments are supporting this situation? Is there a concept or theory that has already classified these events (e.g., “social distancing”)?
 - What are the social, economic, and technological factors that are driving this situation to reproduce? Can we recognize some that are more difficult to change or have been happening for a long time in the same context?
 - Does the circumstance you noted change if we view it with a zoom-in or a zoom-out in space or time (e.g. from minutes to weeks, from individual to society)?
- Actants: Network of actants involved or related to the described circumstances (e.g., institutions, users, employees). These sets of networks are based on service design theory (Shostack, 1984), which describes three levels of how to deliver value or a service to the user: front-stage (direct network), backstage (indirect network) and support processes (or support network):
 - (1) Front-stage or direct network, refers to the actors who have direct contact with the priority community.

- (2) Support processes or support network, refers to the actors that perform activities that do not have direct contact with the priority community but whose actions or activities are necessary for the delivery of value or service.
- (3) Back-stage or indirect network, refers to actors who have invisible contact with the priority community but are relevant to the delivery of value or service.

Some questions during this sub-stage:

- Which people and living beings are involved in the situations mentioned in the previous section?
- How can we differentiate them by their level of influence and proximity to the main problem? Why? (e.g., friends are closer to the youth than the government since they have constant and direct communication with him).
- Does the level of influence amongst actants change over time? Is there an actant that goes from the direct network to being part of the support network? (e.g., the friends abandon the young man and become just a community again)
- Is there an actant that we are not considering? Is it possible that we are excluding someone because we are looking at the problem as external viewers? Is the existence of another network something that we can or have to investigate or validate?
- Ideal relationships: Ideal/desired value exchange relationships/transactions between the actors and the mapped circumstances (e.g., emotions, transactions, etc.). Some questions during this sub-stage:
 - What is the ideal purpose that each of the listed actants should fulfil with each other? Can we represent this as a give-and-get interaction? (e.g., the police should give protection to the civilian population, the civilian population should offer respect to the regulation of public life)

- What types of exchanges are most important to define the relationship between actants as “ideal”? Do we recognize various exchanges? Is there any more relevant and decisive than another? (e.g., economic transactions, material exchanges, supply & demand chain value, etc.)
- Experiences: Reasons why the ideal relationships are not met, or, in other words, the gaps between the experience lived by the actants and the ideal relationship (e.g., pain points, needs, etc.). Some questions during this sub-stage:
 - What are the main reasons why the original purposes of the ideal exchange relationships between the actors are not fulfilled?
 - What is missing, is not fulfilled or is not achieved satisfactorily? Why? Is this gap decisive for expectations not being met? Is there any other influencing factor?
 - What criteria are we considering reassuring this is the gap that exists between the ideal and the real relationship? Is there something that we may be assuming or starting from some preconception?
- Mental models and consequences: Implicit norms and consequences that are generated as a result of these experiences (e.g., mindsets, myths, etc.). Some questions during this sub-stage:
 - What are the implicit norms or mental models that we believe support and maintain the gaps that we have just described between how it should be and what the current experience is like?
 - What consequences, positive or negative, result from these norms? Is it possible to anticipate them or do we discover them until they affect the problem in the long term? How can we name them in a single word (e.g. “normalisation”, “minimization”)?
 - How do these rules and consequences connect with the circumstances we mapped at the beginning of the activity?



Figure 1. SX (Systemic Experience) Canvas beta 0.5

Causal loop building

After using the SX Canvas to map their problem, participants are asked to identify patterns and dynamic interactions that could be connected to each other. Then, they will be required to map one causal loop that is embedded into their system map.

References

Avila L. & Marines L. (2020) *Systemic Experience Canvas*. Mexico: 'Utopías Líquidas': Latin American Virtual Architecture Meeting.

Avila L. (2016) *Subsistence Farming Household Dynamic Profile*. (Thesis) Norway: University of Bergen

Booth Sweeney, L & Meadows, D. (1995) *The Systems Thinking Playbook: Exercises to stretch and build learning and systems thinking capabilities*. USA: Chelsea Green Publishing Company

Bringing Users Into Your Process Through Participatory Design (2013) UX Week: Frog

Beundermann, J et. al. (2017) *Building impact movements: Place-based systems change for children and young people in North Camdem*. United Kingdom. The Winch.

Cabrera, D & Cabrera, L. (2018) *Systems Thinking Made Simple: New Hope for Solving Wicked Problems*. USA: Plectica LLC.

Covarrubias, J. (2020). *Radars for selection of situations of interest. Mexico: Systems Thinking Workshop on the Generation of Resilience Capacities to Face Adversities and Conflict Resolution in Communities of Adolescents and Youth from 13 to 20 years old*. Participatory Workshop.

Diller, S., Shedroff, N. y Rhea D. (2008). *Making Meaning: How Successful Businesses Deliver Meaningful Customer Experiences (Voices That Matter)*. USA: New Riders

Handbook on Planning, Monitoring and Evaluating for Development Results (2009) USA: United Nations Development Program.

Hovmand, P. (2014) *Community Based System Dynamics*. USA: Springer Science + Business

Maani, K. (2017) *Multi-stakeholder decision making for complex problems: a systems thinking approach*. Singapore: World Scientific Publishing.

Meadows, D. (2008). *Thinking in Systems: A Primer*. USA: Chelsea Green Publishing.

Sanders, E. & Stappers, P. (2012). *Convivial Toolbox: Generative research for the front end of design*. Netherlands: BIS Publisher.

Jantsch, E. (1970). *Toward a Methodology for Systemic Forecasting*. USA: American Elsevier Publishing Company Inc.

Shostack, G. (1984) *Designing Services That Deliver*. USA: Harvard Business Review

Tooley, C. (2021) *What systems thinking actually means - and why it matters for innovation today*. Reino Unido: World Economic Forum.

Workshop format

180 minutes | in person | maximum number of participants 15 | using printed canvas

Workshop agenda

30 min Pre-work activity: Locate and record (with video/photo) scenes of relevant systemic issues with both local and global implications.

SX Canvas Mapping: Small groups map the elements and systemic experiences of a wicked problem selected by each group, using the SX Canvas's sections.

25 min Circumstances: List of circumstances that contribute to producing the situation of interest (e.g., societal, or ecological issues).

25 min Actants: Network of actants involved or related to the described circumstances (e.g., institutions, users, employees).

25 min Ideal relationships: Ideal/desired value exchange relationships/transactions between the actors and the mapped circumstances (e.g., emotions, transactions, etc.).

25 min Experiences: Reasons why the ideal relationships are not met, or, in other words, the gaps between the experience lived by the actants and the ideal relationship (e.g., pain points, needs, etc.).

25 min Mental models and consequences: Implicit norms and consequences that are generated as a result of these experiences (e.g., mindsets, myths, etc.).

25 min Causal loop building: After using the SX Canvas to map their problem, participants can identify patterns and dynamic interactions that could be connected between each other and map one causal loop.