Introduction to Systems Thinking and Root Cause Analysis Presentation Facilitation Guide

Total Time for Training ~1h 50m

Key to GKI Facilitation Guide

Bold: Say out loud (Directions or key points)

Regular: script/outline

Italicize: notes for Facilitator

Required Materials

1. Flipchart Paper & Markers for Activity
2. Handouts (Checklist for Your Root Cause Analysis, Exercise 1: Root Cause Analysis, Exercise 2: The 5 Whys, Exercise 3: What Type of Problem Do You Have?, Exercise 4: Assumption Mapping)

0 mins	Title Slide
Welcome and Our Team 2Min	Welcome participants! *Introduction to presenters.*
Introduction to Concept Design Sprints Pt 1	So who has heard of design thinking or human-centered design, can we do a quick poll/show of hands? Can you raise a hand to share what your experience with design thinking or Human-centered design has been so far? Are you an expert or a novice? Maybe you've heard of or read about it, but that's it so far. Have you done training or worked on a project that uses it? Or maybe you're even a coach or a facilitator that teaches it to others? **Take a moment to raise a hand/type in the chat box so we can get a sense of where our group is.**

	We often see design thinking employed in the innovation context. Design thinking is a fantastic set of tools and mindsets that help us design better, more innovative solutions. But there's a caveat, these solutions exist within systems. And, sometimes, design thinking doesn't give us all the tools and mindsets we need to take into account the systems where these solutions will roll out. Also, there are some types of problems that design thinking simply isn't well suited to solve. Luckily, design thinking actually pairs well with another discipline known as systems thinking.
Introduction to Concept Design Sprints Pt 2	**What is your familiarity with design thinking or human-centered design?** *Wait for 3-4 responses* Both design thinking and systems thinking come with A LOT of theory and many tools and methods. We've pulled together what we feel might be most practical for you, both in thinking differently about problems and solutions and for having specific tools you can use. We are not trying to turn you into systems thinking or design thinking experts! You won't get a full 101 type of training on either topic. Instead, hopefully, we'll jump right to the good stuff that you start immediately applying Throughout the slides, we have four categories of information. *Point to the first image* When you see this symbol, you can know that you don't need to master this idea or framework! Instead, go on a journey with us and try on this framework… does it help shift your thinking? Does it give you a new perspective or mindset to consider your problem or solution? Materials, content, and tools that help you make a mindset shift. If you're not sure you fully understand, that's ok. We're still learning too. *Point to the second image* We're going to introduce several tools. We think these are great, practical tools you can take back to your team or organization and use them to improve both your concept and your broader work. However, we encourage you to try a few of these with your team. So, when you see the toolbox symbol, think about how you can try this with your team. *Point to the third image (could take it out if needed)* These exercises will be considered "homework." You won't turn them in, and we won't see them, but we encourage you to keep up with these pieces in

	real time so you'll be well-prepared for submission. *Point to the fourth image* This icon shows opportunities to work together with other teams.
20Sec Today's Agenda	So, what's our agenda for today? We will cover an introduction to systems thinking, root cause analysis, assumption mapping, and writing, "How Might We Statements" As you can see, the most important exercise you want to leave feeling comfortable with is your root cause analysis.
45Sec Our Approach to Facilitation & Participation	Just a few notes on our goals for the learning environment. *Encourage the audience to be participatory, open-minded, and have fun throughout the process. Include other learning expectations here.*
30Sec What is Systems Thinking?	**How familiar are you with systems thinking?** *If in a virtual session, allow participants to answer in chat and return to answers at the end of the slide.* **Systems Thinking is the process of looking at systems and unpacking their components and interactions.** **Systems Thinking requires looking at the formal and informal structures surrounding the challenges you seek to address.**
How We Strategize, How Things End Up 4Min 40Sec	Most of us acknowledge that the conventional approaches we take to tackling challenges are no longer enough for today's biggest problems. Our traditional approaches often: 1. Reduce challenges to a closed, static problem to be solved 2. Assume actors make rational decisions with little 3. and consider only formal structures Systems thinking is a strategic, purposeful approach to addressing complex challenges. No single solution or actor is sufficient. Systems thinking helps illuminate options, opportunities, and threats to innovation. It helps us view challenges as an open, emergent, and non-linear set of dynamics and patterns We can acknowledge that actors are not always logical, have emotions, and can have bias. We can consider both informal and formal structures important Systems thinking helps us iterate, prototype, learn from failure, and evaluate change over time

	What I like about this perspective on systems change is that if you are doing anything from the column on the right, you're already applying a systems perspective! The rest is just a set of tools in your toolbox. **We would love some participation, which practice on the left is something you struggle with personally, and which practice on the right is something you apply naturally?** *The facilitator should provide the first example answer to generate conversation.*
30Sec Complicated and Complex Systems	Next, we will dive into complicated and complex problems. These are two types of problems that our traditional approaches do not solve. These are actually components of a broader framework called Cynefin ("Kuh-nev-vin"),
5Min Video	We're going to watch a quick video on the Cynefin framework. This is a very common framework in systems thinking, it can get a bit technical and theoretical. Our goal in introducing this framework is to help you think about different types of problems and, more importantly, different types of solutions. *Show Video. The video is linked here →* https://www.loom.com/share/4473a41dfda44e459ef0c902110bb8b5
30Sec How do you solve a problem?	This all might feel a bit theoretical. **Keep in mind that we have the mindshift icon up for these slides.** You don't need to master the Cynefin framework fully. However, it is important that we become familiar with the concept so that we start to shift our thinking on how we solve different types of problems. When we try to figure out what problem this is, we start thinking of different solutions and ways to propose to work. We are used to solving simple problems. We're even trained to address complicated problems, all of you here are experts on something! But systems are in the complex category.
1Min 30Sec Complex Challenges	So, what do we do with complex challenges? You have to start with the mental shift that you cannot "solve" a complex challenge - you can only test and try and improve. *Click through the slideshow to show animations of X appearing and disappearing on screen as you say the next paragraph.* You do not know what all of the variables are. You don't know who is involved, what information they have, or how they will act. And they are moving around like they are in this slideshow.

	So your goal is to test, which we should clarify is not a pilot project. The first step is to bring in additional perspectives to uncover those variables you may not know. This is the role of convening and having low-cost conversations with stakeholders in the field. What are other organizations working towards the same outcome that you could collaborate with to help you access new perspectives? Next, we need to identify and test assumptions that combine well with design thinking which you might be familiar with. Some example questions are… 1. Why do you believe this is the right intervention to make a positive difference? 2. What needs to be true for your intervention to work? Finally, we should be prepared for unintended consequences as we try things within complex systems. Not all unintended consequences are negative, some can be positive, and you might want to build on them. Ok, we've been talking a lot about systems in an abstract way, but what practically are we talking about? We will start working on root cause analysis soon, but before we do, we will ground ourselves by answering some examples of systems that we should be thinking about.
What does a system look like? (Ex. healthcare)	*The facilitator can recreate the slide with a different example. This slide specifically looks at a healthcare system.* Now, let's shift a little bit to thinking about what's a system in the real world. We know all of these types of systems, they're all around us, and we live in them, work in them, and have to battle against them every day. Let's see some examples of systems that could be relevant to us and may impact our work as humanitarian innovators. For today I've picked healthcare as an example. So let's see what a healthcare system could possibly look like. And if you as an organization or if your solution is impacted by it, what are the factors/things that you should be considered while creating the system? Several factors can affect the healthcare system. If we take the shortage of medical supplies as a problem, then there are all these factors that can adversely affect the healthcare system. For instance, the government not having timely plans for regular medical supplies as well as hospitals and clinics do not timely process information about out-of-stock supplies. All of these can cause shortages in supplies. This can eventually lead to an increase in prices for those limited supplies which are available, causing people to pay more out of pocket. This can also affect people's perception of the quality of service and result in a lack of motivation among doctors and nurses. All of these may lead to a lack of access to healthcare for general people.
When Formulating	*OPTIONAL SLIDE DEPENDING ON TIME CONSTRAINT*

the System to Focus on Consider... Pt 1	Now, let's move on to another example, the technology system. A lot of you are probably addressing problems that somehow get affected by the technology system. What should you consider if you're trying to formulate a technology system that impacts your work? You can ask yourself: "What problem are you trying to address? What kind of future are you creating? And how is technology impacting it?" Try to find diverse viewpoints: Understanding the world you work in can provide a significant competitive edge, as you can then truly innovate with different users in mind. Map out your ecosystem: No company works in a void. What larger systems are you a part of, and what are the flows of resources, thoughts, activities, emotions, and/or people that you rely on to succeed? How do your measures of success relate to this system? Predict and adapt: If the relationships in the system change, what happens to your company? Or what happens if certain connections or resource flows are strengthened or weakened? In addition to those, look into other factors which can affect the system, such as government policies, public and private-sector investments, and new advancements in tech.
When Formulating the System to Focus on Consider... Pt 2	You can see the economic, legal, and education systems listed here, along with relevant factors affecting them. While going through those please remember, we're not saying that these are the only systems out there, nor are we saying that the factors we listed are the only factors you should consider. It's provided to help you think deeper as we're about to get into our root cause analysis exercise, and you will have to identify some systems as root causes. **Now, I have given examples of healthcare and technology as a system. I want to hear from you all–what are some of the other systems that come to your mind? Let's see what you all are thinking about!** *Aiming for rapid-fire responses. Allow people to say as many as they can think of in a minute.* **Excellent. These are some really interesting systems that would be fun to dig into. For now, let me show you some more examples of different systems and what you need to consider while formulating that system, hoping you may find them useful.**
45Sec Root Cause	Now, we will get into our root cause analysis exercise. **A root cause analysis is an umbrella term for many tools and techniques you might see for**

Analysis	**understanding underlying causes of big problems.** There are a few tips we can offer, but there's no one perfect way to complete a root cause analysis. It is important to start by identifying your big problem. The big problem will have many branches, leaves, and roots, as shown in our metaphor here. The big problem will have negative impacts or consequences. These can be different categories, such as health and well-being, environmental impacts, economic impacts, etc. They all are direct consequences of the big problem, however. The roots are our systems levels, complex problems that cause the big problem. In this type of root cause analysis, we want to be identifying those particular complex systems as that first root layer, and then we will unpack the levels above. **Let's move on to an example.**
2 Min 30Sec Example	*This example was pulled from Global Knowledge Initiative's Accelerating Innovation for Resilience 2022-2023 project in Bangladesh. The presenter may change the slideshow and example to a more familiar example for participants.* Let's introduce a quick example. This example was used during GKI's AI4R project in Bangladesh and is focused on flooding in Dhaka. Note that we've blended fact and fiction here to create a nice, neat teaching example. So please excuse that we've likely strayed from an accurate root cause analysis. There are several impacts or consequences of flooding that you all experience, from a minor annoyance to catastrophic loss of life. A few that we've noted here are disruptions in traffic and day-to-day activities. Damage to roads and infrastructure. Water pollution and the spread of disease, and finally, damage to trees and vegetation. **So what are the primary systems that are first-level root causes of this big problem? Take a moment to read the systems that we've identified and then share. Do you agree with these systems, or is there a big system that we missed? Take a moment to read and absorb.** *Wait for 2-3 comments.*
15Min Problem Tree Exercise	Let's practice! We will split into 4 different breakout groups. We'd love for at least one team per group *(can amend instructions depending on the specific program format)* to share the big problem that you think your concept is tackling. Then, everyone in the break-out group can make some suggestions on consequences and root causes. *If online, can create 4 breakout rooms.*

	As you're doing this, remember to identify systems as root causes. In some cases, there may be a few very direct, simple causes, and that's good to know and address. But today, we want to sit with the hard problems a little more.
15Sec Checklist for Your Root Cause Analysis	This is a checklist that we borrowed from Ashoka and edited ourselves. As you're going to do a root cause analysis outside of this session, this will guide you to create a rigorous root cause analysis and help you think through several important elements.
1 Min 45Sec What Type of Problem Do You Have?	We've started to identify some systems that are associated with the root causes of our big problem, we're going to go further down into those roots. But first, let's remind ourselves of the types of problems that we might encounter from the Cynefin framework. How will we know if our root causes are simple, complicated, complex, or chaotic? Here are four simple questions that you can ask to get yourself started. *Click to make the first question/answer appear.* First, is the effect connected to a single cause? Yes? You have a simple problem with a straightforward solution. *Click to make the second question/answer appear.* Second, are there many causes for an effect? If that's the case, it's at least a complicated problem. *Click to make the third question/answer appear.* Next, is clear or unclear what is causing the problem? If it's unclear, then you either need more information, or the cause is not entirely knowable at this stage, so you have a complex problem. *Click to make the final question/answer appear.* Finally, if there is an active crisis where actors have different information, then you have a chaotic problem. As we break down our root causes, we want to try to unpack our root causes to a place where we can move complex systems to complicated and simple problems that we can solve. Where this cannot be achieved, we want to recognize this and plan for activities that are better suited to complex and chaotic problems than traditional, linear solutions.
1Min Simple & Complicated Problems? 5 Whys	The 5 Why's is a very simple but powerful tool for identifying actionable root causes, illuminating the limits of your understanding, and possibly unearthing some of your assumptions. How does it work? You start your problem, and then you simply begin asking

	why until you get to an actionable cause or you get stuck. **Let's do a very simple example. I have a problem, my boss is mad at me.** *Other co-facilitator will ask* **Why is that?** *Click for animation* *Answer:* **I was late this morning** *Another co-facilitator will ask* **Why is that?** *Click for animation* *Answer:* **My alarm didn't go off** *Other co-facilitator will ask* **Why is that?** *Click for animation* *Answer:* **My phone was dead.** *Other co-facilitator will ask* **Why is that?** *Click for animation* *Answer:* ***I keep forgetting to charge it.*** *Click for animation* *Other co-facilitator will suggest* **Why don't you set a reminder at 10 PM every night to plug in your phone.** The idea here is that you eventually get to a cause that's actionable, and you can start working on a solution. Or, you and your team may realize you've hit the limit of your knowledge, and you need to do more research. It's also possible, as we've discussed, that you hit a complex or chaotic situation that cannot be broken down further at this stage, particularly without collaboration and sense-making.
1Min 20Sec The 5 Whys in Real Life…More Like the 2 Whys?	There are a few limitations to the 5 Why's exercise. The first is, it's not always 5 layers! There's no right number of times to ask why. Next, it won't always be linear. You may have a Why that has multiple next layers. Finally, the goal is to find actionable underlying causes. If you continue to go deeper on the exercise, you'll eventually get to some reasons where you and

	your team lose agency. Stop where you find actionable reasons! At the same time, don't avoid complexity in the underlying causes. It's definitely a balance. And remember, it's just a tool! It won't work perfectly for all the problems you might encounter.
50Sec Example	*This example was pulled from Global Knowledge Initiative's Accelerating Innovation for Resilience 2022-2023 project in Bangladesh. The presenter may change the slideshow and example to a more familiar example for participants.* Let's go back and look at a few root causes to answer how then, might your underlying causes look once you start to unpack them. First, let's look at the drainage system. What is happening here? Why are drains staying clogged? Well, we did some digging and realized there are no standard protocols for a response after a storm, and responsibilities for maintenance are unclear. Why is that? Well, we did some asking around, and we realized that there are 7 different government departments managing sewage, canals, and pumps! And, they don't seem to be collaborating. So now, we've possibly moved from a complex system to a complicated problem. This has some potential solutions. So, why don't they collaborate? Well, each department has its own plan, its own budget, and reports up different chains of command. This is an issue. While there is a Dhaka Detailed Area Plan (DAP), the departments do not seem to derive their budget and activities from it.
1Min 30Sec Example Continued	Let's look at a few more of our complex systems. We also identified that waste disposal on the roads is a systemic issue. Why does this happen? This might not actually be the case, but let's say, just for an example, that it turns out there is not a simple linear reason. Let's say that there is no regular, reliable waste pick-up available. Because there is no regular waste pick up, it's socially acceptable behavior to dump waste on the roads. Because it's an acceptable behavior, people might not be using garbage pick-up or waste receptacles when they're available. Oh wait.. it looks like we may have found a causal loop? This example is just to emphasize that your root cause analysis may not be perfectly linear. Identifying a loop here is very helpful. We've distilled our complex systems into a complicated problem. We realize a solution is possible, but it will involve multiple actors and interventions. For example, we can assume the problem would not get solved unless we solve both reliable, regular waste pickup, and *at the same time* that we may launch a behavior change campaign around dumping waste.
1Min	What types of problems did we identify as root causes?

What Type of Problems Do You Have?	Well, we began with chaotic flash flooding. There's an underlying system here that is still chaotic - climate change. But, there are other systems that we can unpack further. We identified two complex systems in our root cause analysis - the water drainage system and the waste disposal system. But these were still too complex to find solutions. So we broke them down with our 5 Whys exercise. This led us to identify a few complicated problems that we wanted to influence. This helped us realize we had to incentivize coordination between departments and launch a behavior change campaign around waste disposal. These aren't easy problems, but expertise here can be applied. Finally, we also identified a few simpler problems, such as the number and placement of trash bins. Now that is the basic idea of the Cynefin framework. You want to move from chaotic to complex to complicated to simple problems. Now, some parts of our root cause analysis will not be broken down further. Some problems will stay chaotic or complex.
10Min Let's Practice!	**Let's practice! We're going to break into the same small groups again. Take just one of the complex systems that you identified as a root cause, and start using the 5 Whys to try and break it down as a group.** *Break into smaller groups and provide handouts and markers for participants* **We will take 10 minutes for this activity.** *Return to larger group discussion after 10 minutes. Move to the next slide for the activity debrief.*
3Min Let's Practice	**How did it go? Is one group willing to share where they got stumped?** *Wait for a show of hands and/or 1-2 responses* **For those of you that got stuck at one of your whys, did that illuminate what further investigation you need to do? Did you start thinking about who else you need to talk to feel confident in your Whys?** *Wait for a show of hands and/or 1-2 responses* **One last question here… did anyone realize they were making an assumption or multiple assumptions about their whys?** *Wait for a show of hands and/or 1-2 responses*
7Min Let's Practice:	**Ok, now we're going to pause and do some quiet, individual thinking. From your group exercise, what kind of problems did you find in your root**

What type of problems do you have?	**causes? Were they simple, complicated, complex, or chaotic?** Take a few minutes, and sketch to yourself where these problems fall. *Wait 3-5 minutes for participants to think to themselves.* Ok, would anyone like to share? Did anyone get stuck? Where did you get stuck? *Wait for 1-2 responses*
2Min 30Sec Picture Activity	**[INSERT ACTIVITY]** *Consider activities that help demonstrate internal biases or make assumptions. You may consider Visual Thinking Strategies' "What Going on in this Picture?" as featured in the New York Times Learning Blog.* This exercise demonstrates how we all bring filters, biases, and assumptions to life constantly. When we think about being biased or making assumptions, that has a very negative connotation so we tend to think that we don't do that! We're good people. We're not prejudiced, we're open-minded. So our first step to correcting our assumptions is acknowledging that we have them!
3Min Assumptions	Now, let's talk about some of the assumptions you were making in your breakout groups. You started to name those assumptions already. We're going to have a number of assumptions in our root cause analysis. These are embedded in our root cause analysis. Now we're going to ask, how will we address these. You can use a simple two-by-two table. For your assumptions, which are you more certain about and which are you less certain on. Which are more important and which are less important? **Thinking back to our flooding example and some of the root causes we unpacked. What are some examples of assumptions that are baked into some of the work we did there?** I'll start us off with one example: All people have the same attitude to waste disposal on the street *Wait for a participant to share their ideas in a chat box (online) or out loud (in-person). Graph these assumptions in real-time on the slide (online) or just discuss where they should be placed.* It is important to identify and test these assumptions because if you build a solution from one of these assumptions that turns out to be wrong then it could ruin the entire solution. As we think about these assumptions, some of them are more important than

	others. We also might be more or less certain about an assumption. The most urgent assumptions are the ones that are most uncertain, but most important. These are the ones that your team should prioritize doing further investigation or testings
30Sec-2Min 30Sec What Type of Impact Is Happening?	*OPTIONAL SLIDE DEPENDING ON TIME CONSTRAINTS* *LEVEL OF IMPACT (30 SEC)* Finally, we need to think about what level of impact we're aiming for. As with most of the tools and frameworks we've shared, you could find different versions of this chart. You could use different categories to understand the impact. This is simply one way of categorizing the impact that we borrowed from Ashoka. For your solutions, you likely have a blend of direct services, scaling services, systems change, and mindsets shifts. Though we're not ready to dive into the solution just yet we do want to begin thinking about how we might have a systems-level impact within your solution.
1Miin Bring It All Together	You may be the type of thinker who likes to pull everything together, though. So, in the worksheets we provide, we'll have one table where you can keep track of your team's thinking. First, we look at the problem side - Starting from your root cause, continuing with what type of problem you have, and areas where you have critical assumptions. Then, we gradually start to think about our solution in the right two columns, starting with - What type of impact will we have if we solve this? **Finally, we're going to end on how might we statements. Who has heard of or used HMWs before?** *Raise hands or type in the chat box. Wait for 1-2 responses.* How Might We statements are a way to begin framing your insight about the problem so you can start thinking about the solution.
30Sec How to Write "How Might We?" Questions	In a different training, we're going to work on ideation and co-creation methods. So, you can get a head start on our sessions by beginning to turn these problems into How Might We's. By shifting the focus from a problem to an opportunity and phrasing the opportunity as a question, we naturally open our teams up for creative design and collaboration.
10Sec Let's Connect	**Thank you for attending, please stay in touch and have a good morning/afternoon/evening.**