Lesson 3

The Lifetime of a Technology

How do I test, adapt, scale, and track the impact of a tech intervention for long-term success?

In this lesson, we'll look at what needs to be considered over the lifetime of a tech intervention. How will the tech scale and last? How will it be retired? What is the tech's long-term future?

In the previous lessons, we explored ways to anticipate risks, ethical challenges, and unintended consequences. But any intervention, no matter how thoughtfully planned, will need to adapt as the world around it changes. There's no way we can foresee and design for every possible eventuality. The key to successful long-term projects is to build a plan that can evolve and grow over time, to account for new threats, unintended consequences, or opportunities that appear. We'll use examples of adaptive management to explore how conservation interventions can flexibly respond to changing conditions.

Finally, we'll invite you to dream big as you imagine the impact of your intervention: building a powerful tool is a great start, but how can you scale this initiative to grow into something much bigger? How can your technology help drive a larger movement that changes the landscape of conservation tech?

By completing this lesson, you will

- Explore examples of risks and unintended consequences that conservation tech interventions faced, and analyze how successful projects have accounted for these by adapting or pivoting their designs.

- Build a flexible plan for how you'll roll out your tech and scale its impact over time.

- Dream big to imagine the long-term future of your tech, and how it might be a catalyst for changes that extend beyond what you and your team can achieve on your own.

Pre-Reading

- **Composite Case**: **Addressing risks of tracking wildlife**. These articles offer a preview of the sorts of risks you need to watch out for as your project grows, and some examples of how organizations have taken accountability and iterated in the face of these risks. Not doing so could lead to disastrous consequences, where tech exacerbates the problem it's intended to solve.

    - The dark side of digitally tracking endangered species and Tracking Wildlife for Science Could Actually Help Poachers lay out the problems and risks when we use tech to track locations of rare or endangered species, and how these risks increase as projects scale.

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- ○ [eBird Is Now Censoring Sightings for 325 At-Risk Species](#) shares an example of a technology that has responded thoughtfully to these problems, protecting at-risk species by managing their data differently.

  - ○ [A decision tree for assessing the risks and benefits of publishing biodiversity data](#) offers an excellent summary of the risks captured in the above cases, and a framework for accounting for risks and benefits when making decisions around sharing data.

- Why do well-designed technologies fail to scale? [Addressing the Problem of Scale in Conservation](#) explores why projects that are technically sound will often still fail to gain traction.

- At the end of the lesson, we'll do an exercise that will help you envision what your chosen challenge might look like in 10 years. This article can help you imagine what the future might hold: [From drone swarms to tree batteries, new tech is revolutionising ecology and conservation](#).

Lesson Content

WARM-UP ACTIVITY [Evolving to meet changing needs](#)	We only see the end result of the technologies we love, but most of them went through a lot of iterations to get where they are today. The reason why they've become great is their flexibility and responsiveness to the needs they discovered as they developed.
COMPOSITE CASE STUDY [Tracking wildlife: Risk management and unintended consequences](#)	Explore an example of how conservation projects can face major, complex risks - and respond thoughtfully to mitigate them. Hone your ethical compass with regards to the responsibilities that tech organizations have to manage risks.
VISUAL AID [The lifecycle of technology](#)	Start to consider the longevity of your tech, and the environmental impacts it might have during and after its useful life.
WORKSHEET [Your tech's lifecycle](#)	To create a responsible tech intervention, it's essential to consider all phases of a product's lifecycle - not just during the exciting phase of scaling up. For both hardware and data projects, we must consider upkeep, caretakers, and end-of-life procedures. This activity will help you think through these difficult questions, and reframe them as opportunities.
DISCUSSION READING [Addressing the Problem of Scale in Conservation](#)	It's easy to assume that if we design a technology well, it'll "scale itself" -- that organic demand will drive its dissemination. This article shows us that this is far from true; even simple technologies that are win-win solutions often struggle to scale.

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	Discuss: What does this article teach us about building technologies that can scale? What questions are you left with?
	Can you think of conservation technologies that have scaled successfully? What do you think drove their success?
	How can conservation solutions scale if they also need to be tailored to their specific context/environment?
	What would getting to scale look like for your chosen challenge or project? What needs to be true for your tech to scale?
VISUAL AID Scaling: Strategies and examples	There are many different ways to scale the impact of a technology intervention. Here, we'll look at some of the pathways you might take to scale, and what they involve.
ANALYSIS ACTIVITY Building communities to achieve massive scale	Examine and discuss some examples of organizations that scaled up in creative, thoughtful ways that are now much larger than the original technology. This discussion will invite you to think more creatively about scaling - not just making more pieces of your technology, but empowering others and building new systems for collaboration.
ACTIVITY Envisioning the future	This activity helps promote future-thinking, and more creative approaches to design for an emerging future that we don't fully understand.
ACTIVITY Tech Roadmap	Map out how you imagine your tech might grow over time, starting with your first working prototype through to a solution that has scaled. Then, critique in pairs using the given questions.
ASSIGNMENT Pitch your tech	Practice presenting your intervention, in order to get early buy-in (and feedback) from the people that will be involved with the project.

Curious to learn more? There are additional resources in the Explore More Section.

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