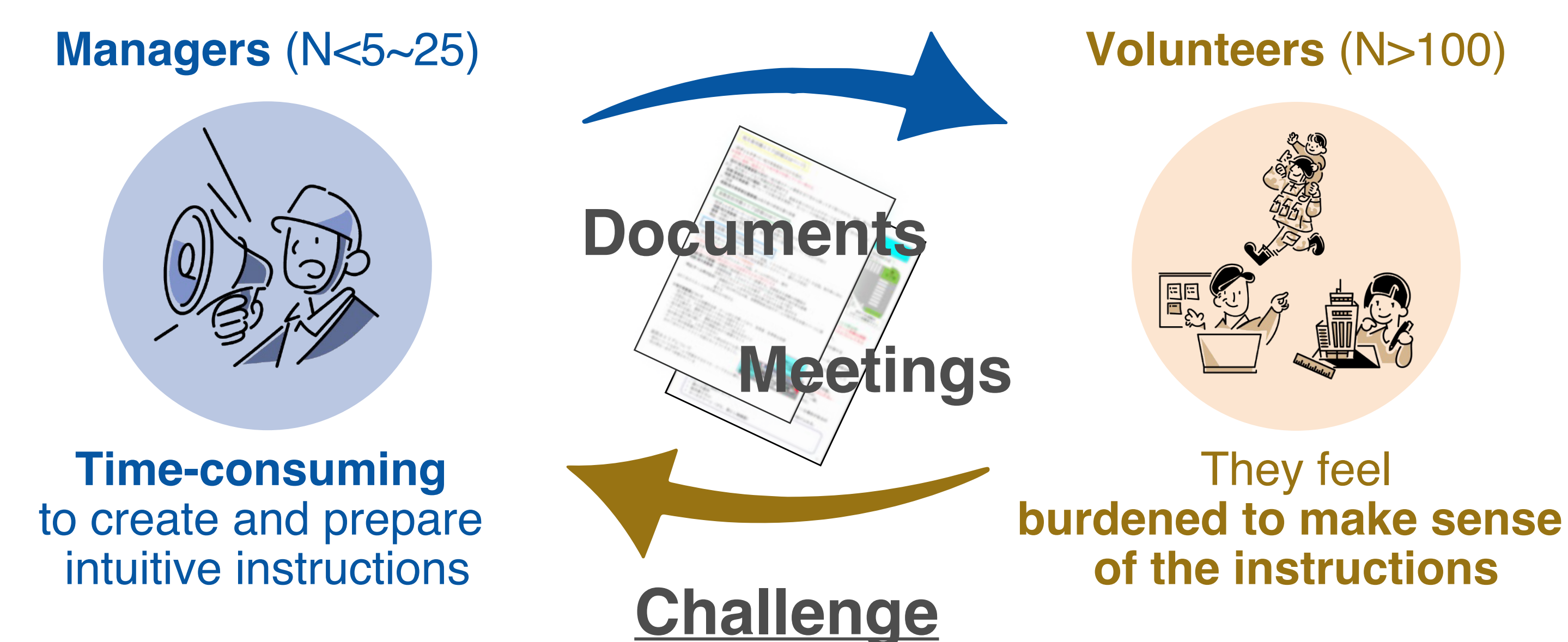


MOTIVATION

Supporting consensus-building in student festival management teams. The current process is time-consuming for the team members (Fig. 1).

Prior works designed visual collaboration tools to this end for dedicated teams (e.g., designers/rescuers) or intimate groups (e.g., friends), but it is still unclear how to make them effective for hobby- and volunteer-driven teams like student festival management teams.



DESIGN PROCESS

Working with three student festival management teams (Fig. 2) and identified the following Design Considerations (DCs).

DC1: Facilitate visual annotations (e.g., sketches on venue)

DC2: Display these instructions interactively

DC3: Improve smartphone accessibility

DC4: Enable asynchronous instruction



Fig. 3. Design process over eight months



Developing Temaneki, a map-based authoring tool for asynchronous, visual, and interactive instruction in student festival management teams.



Managers can annotate venue maps (DC1) and share these annotated maps accompanied by detailed step-by-step instructions.



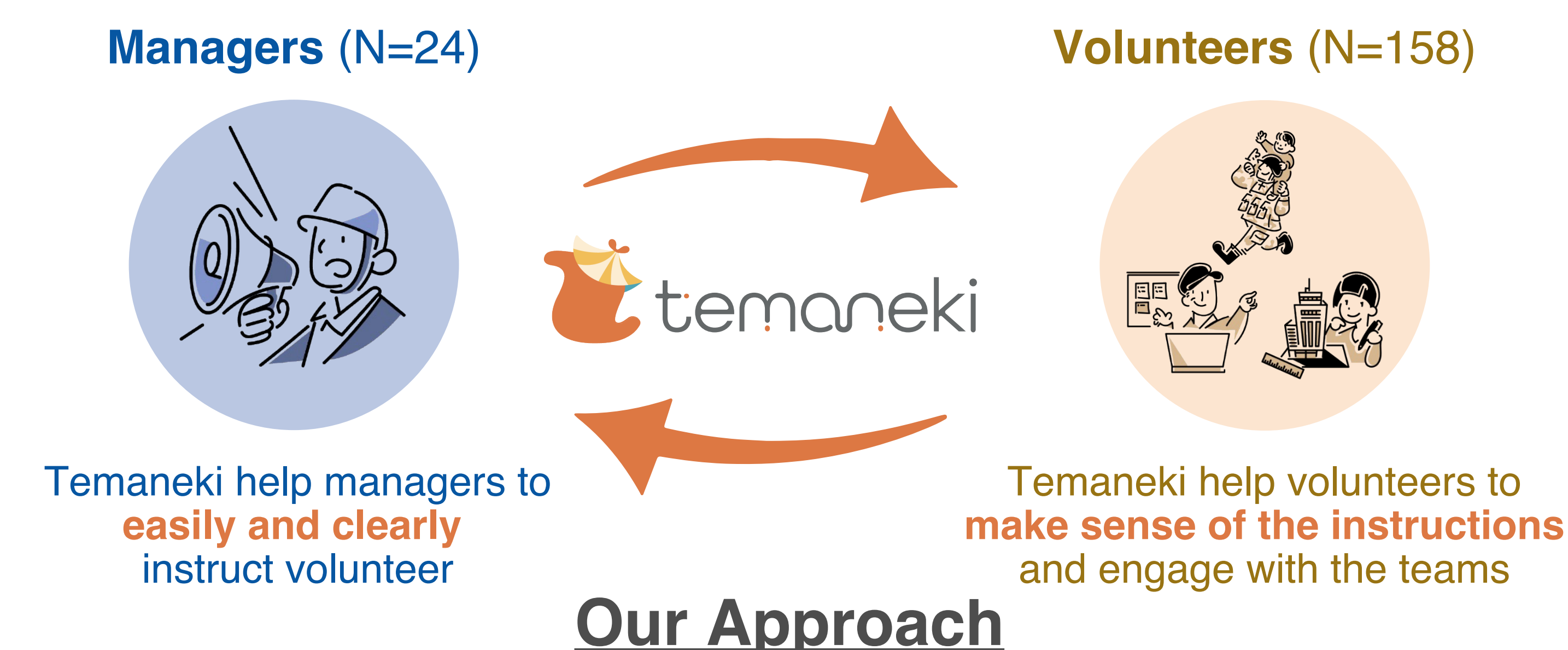
Volunteers can access the instructions through smartphone (DC3). They transition to a focused step and annotated map, allowing an interactive annotation display (DC2) in asynchronous access (DC4).









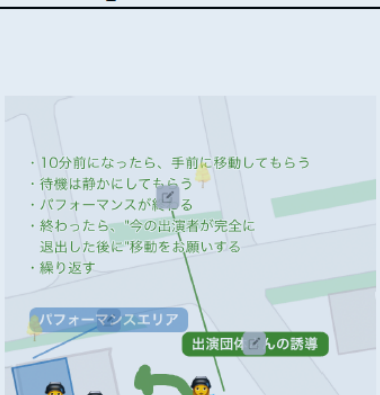

DEPLOYMENT RESULT

Deploying Temaneki with a Light-up Festival management teams comprising 24 student managers and 158 volunteers for five weeks.

The result showed **Temaneki help managers clearly and easily instruct volunteer, which also increasing volunteers engagement with the team** (Fig. 3).



Categorizing the annotation usages based on its purpose (Tab. 1). Interestingly, the annotations on map contained not only geographic information but also **non-geographic reference** and **decorations** as below.

Tab. 1. Annotation usages in the deployment study					
Purpose	Instruction			Engagement	
Category	(a) Referencing part of the venue (N = 95)	(b) Using canvas (N = 28)	(c) Threaded textual details (N = 20)	(d) Making decorations (N = 8)	
Example-1					Some details, such as item and rules, that were not suitable to explain through geo-references. They were threaded through textual bullet points on maps.
Conveying	Places to assign and regions to work	Tips about tent with images	Kitchen-workflow in bullet points	Enjoyable atmosphere with emojis	
Example-2					Manager decorated maps to make instructions engaging and enjoyable for volunteers. One manager said: <i>"Managing this festival is not work! I want the volunteers to enjoy collaboration."</i>
Conveying	Stream flow of visitors with sketching	Features of Managers jacket with the image	Rules and brings with list	Past moving picture with emojis	

LESSONS LEARNED

We consider Tab.1 showed the **design opportunities of efficient and enjoyable collaboration tools**. While many tools focus on one or the other, there are also design opportunities to blend them toward efficient and enjoyable collaboration for dedicated and hobbyist teams as in the student festival management teams.