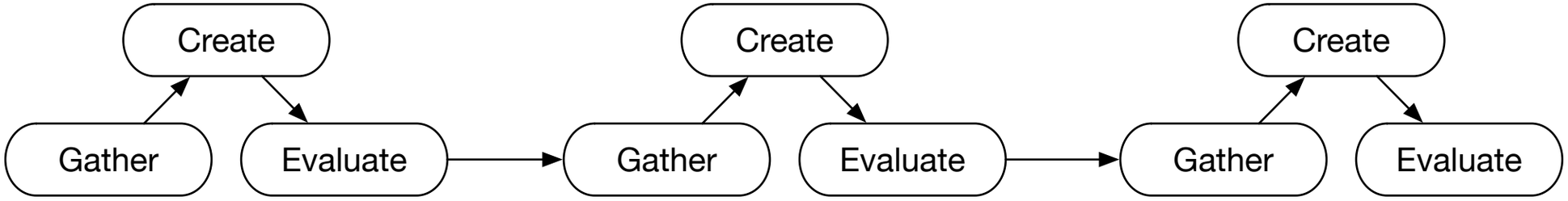
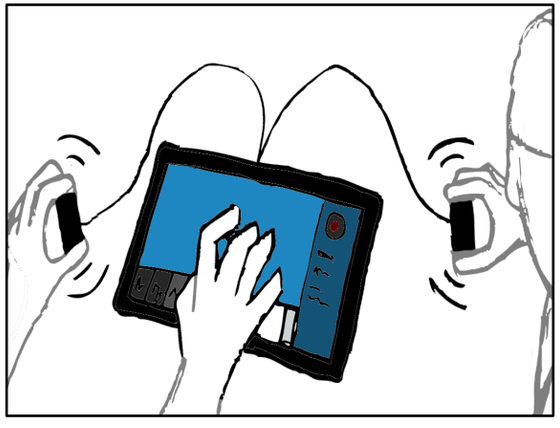
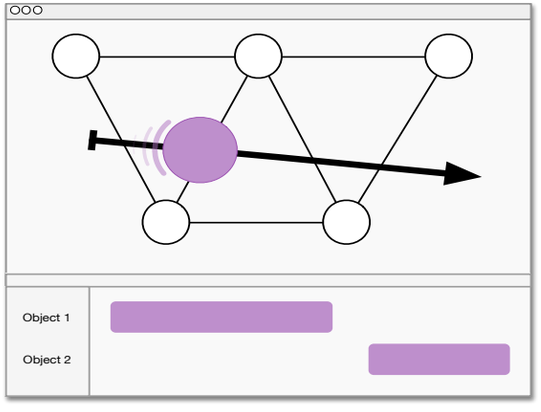
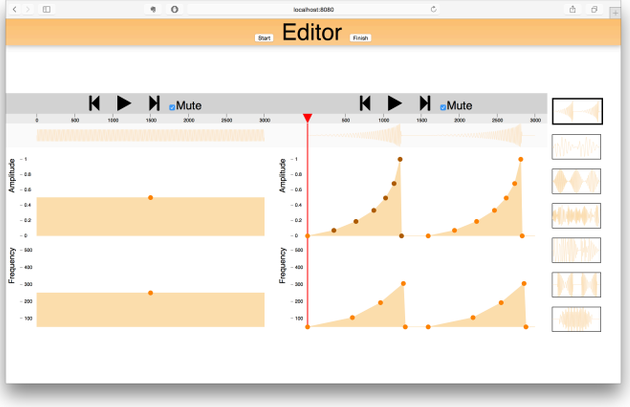




Improvise: Haptic Instrument



Manipulate: Tactile Animation



Combine: Macaron

	Improvise: Haptic Instrument	Manipulate: Tactile Animation	Combine: Macaron
Who	Haptic Designer-Proxies *(researchers with some haptics experience)*	Animators *(visual designers who would be haptic designers)*	End-users *(people with and without basic media editor experience)*
What	Dual Haptuators	Spatial Vibrotactile Pad	Wrist-worn C2 Actuator
How	Real-time, collaborative parameter control	Direct space/time manipulation of animation object	Example-based interaction techniques, logged user actions
Discovery	Good for ad-hoc exploration, collaboration; bad for refinement	Real-time manipulation valuable; animators drew from examples	Open examples directly facilitate design and indirectly scaffold learning for VT design
Platform	Mobile (Android)	Desktop (Python)	Web (JavaScript)