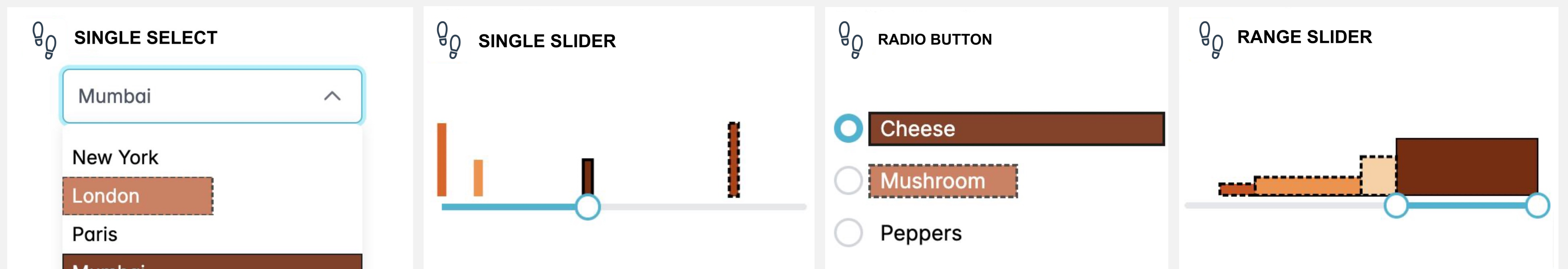


SuperProvenanceWidgets: Tracking and Visualizing Analytic Provenance *Across* UI Control Elements

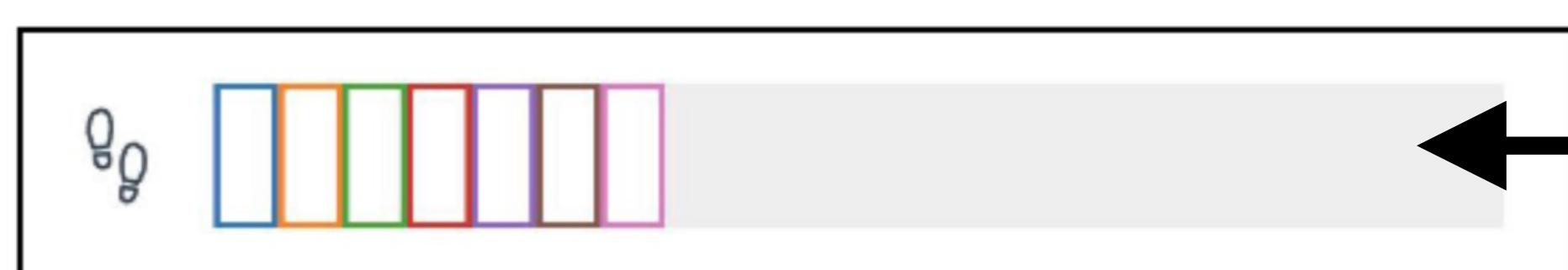
Background – **ProvenanceWidgets** is an existing JavaScript library of UI controls that tracks & overlays analytic provenance, i.e., **frequency** (size) & **recency** (color) of user interactions:



Problem – Currently **there is no way to analyze user interactions across UI controls (a.k.a. super-provenance)**. For example, which controls were active together, when, & for how long?

SuperWidget – We introduce a **multi-widget UI control that aggregates and visualizes this super-provenance**, revealing temporal sequences, interaction durations, & usage patterns that show how users orchestrate multiple UI controls during analysis. **Check it out!**

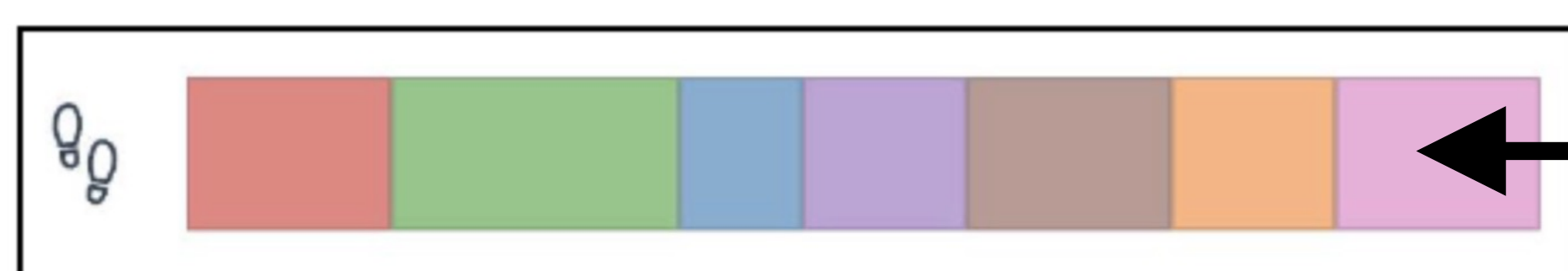
DEFAULT VIEW



Interaction Status

Unfilled boxes → not interacted

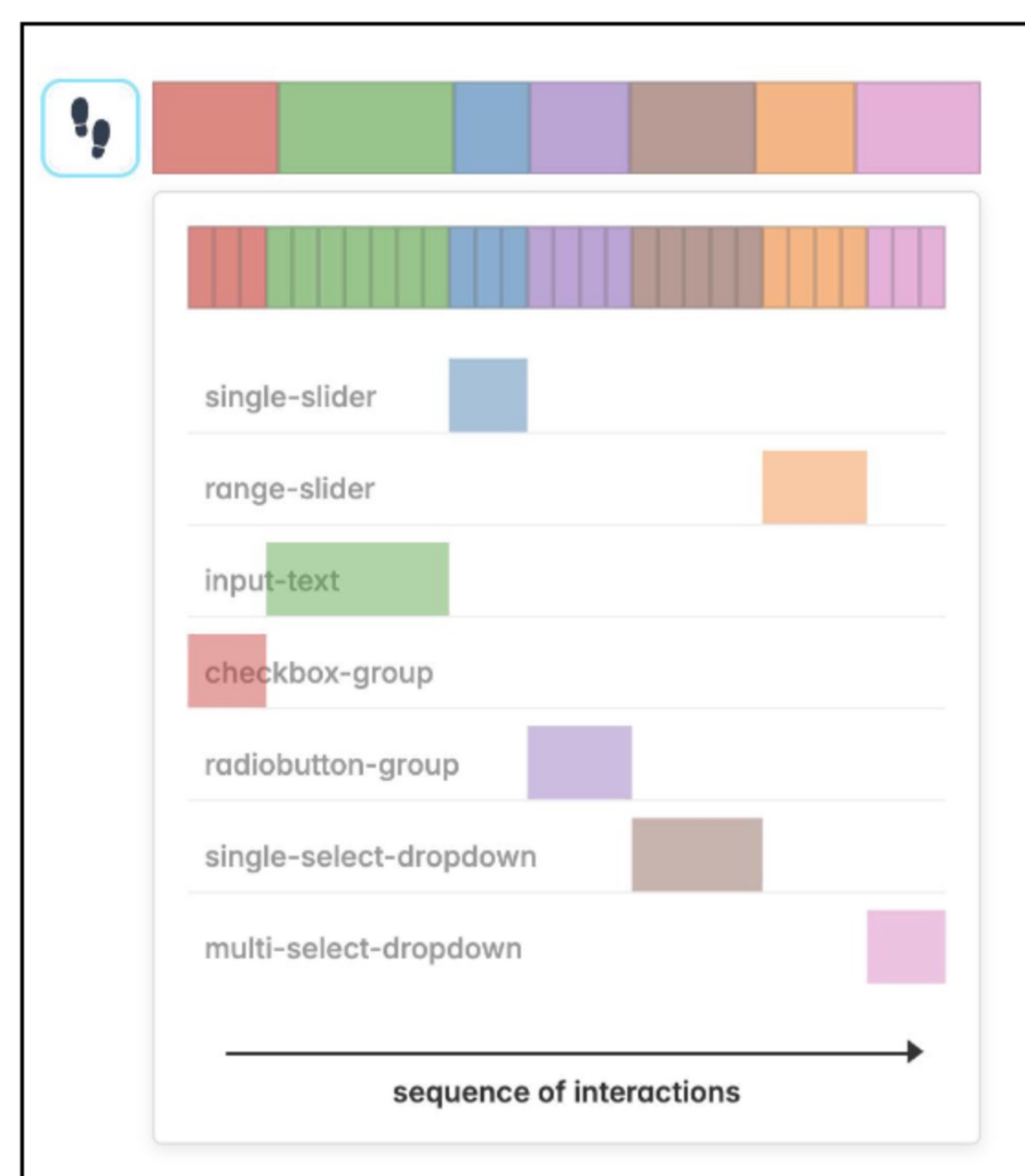
AGGREGATE VIEW



Size of Interactions

Big boxes → interacted more

TEMPORAL VIEW

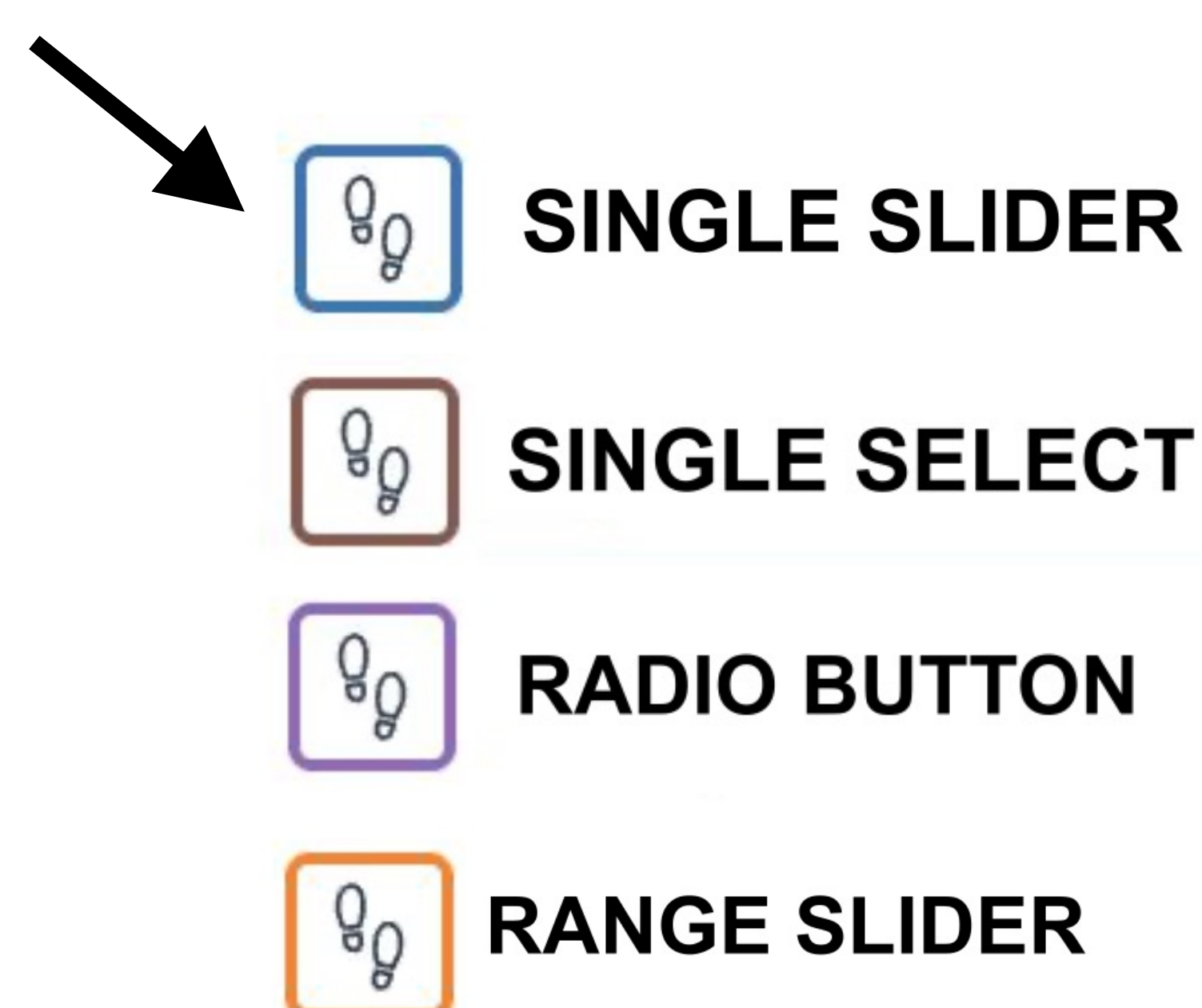


Usage Order

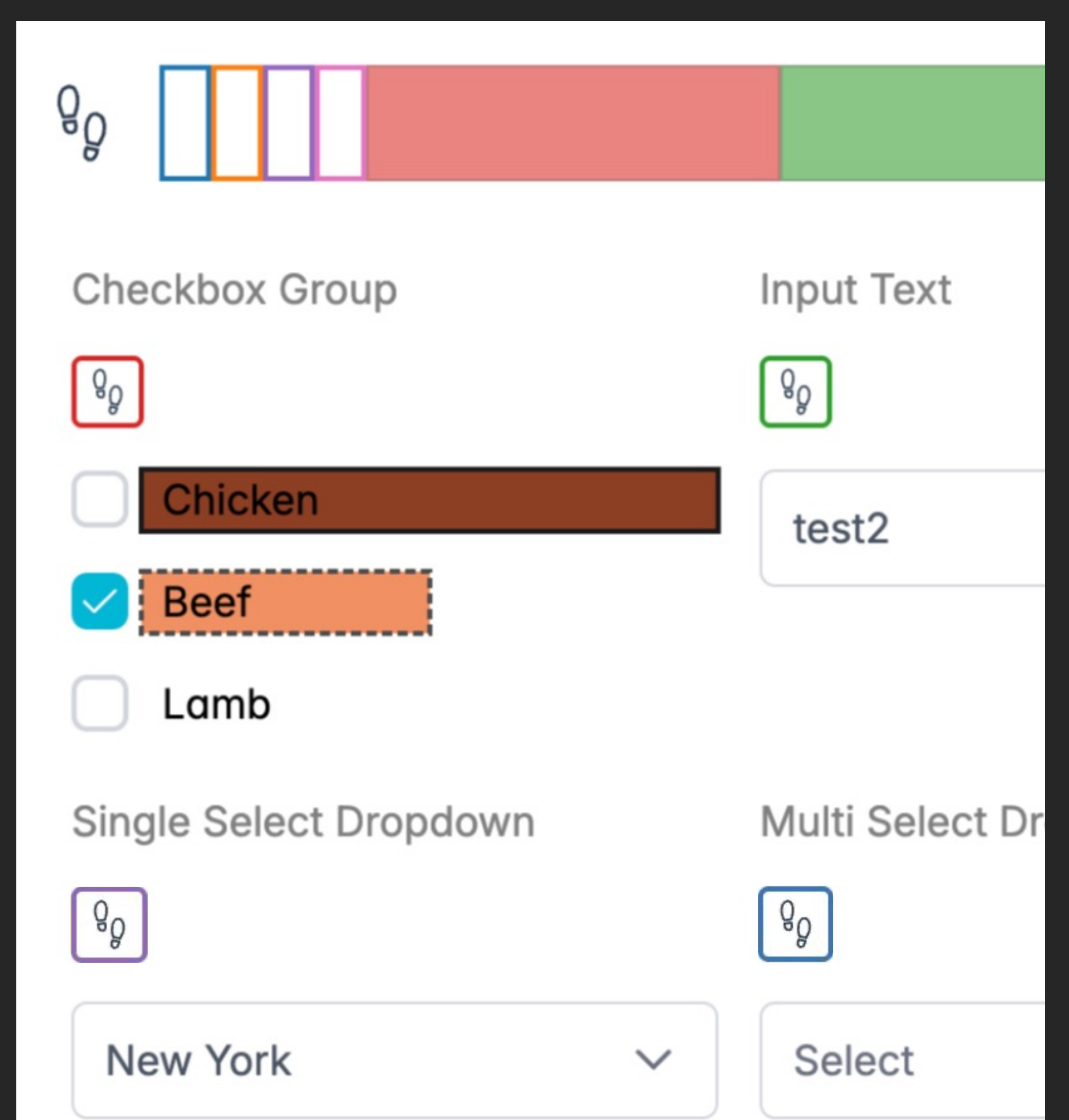
Left boxes → interacted earlier

Enhanced Control Icons

Colored icons to 'ID' controls



SuperProvenanceWidgets



❖ Checkbox Group (**Red**) has been interacted with more than the Input Text (**Green**).

❖ Single Select (**Purple**) and Multi Select (**Blue**) have not been interacted with, yet.

With **SuperProvenanceWidgets**, people can –

- ✓ **Surface & mitigate exploration biases:** E.g., flag users' (un)known fixation on some data.
- ✓ **Redesign & personalize UIs:** E.g., bring unused, far away UI controls into the viewport.