

user

percept transformation

visualization system

percept



integration

visual
mental model



decoding
+ insight
formation

information



physical
presentation

rendering



visual
presentation

presentation
mapping



abstract
visual form

visual
mapping



processed
data

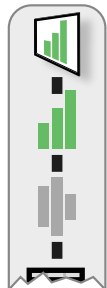
data
transformation



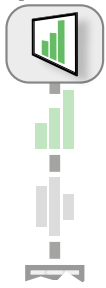
raw data



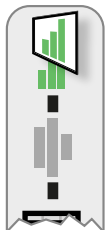
Concrete Pipeline



Conceptual Pipeline



Faithful Rendering



Branches



Propagation

repeated



automatic



semi-automatic



manual



one-shot



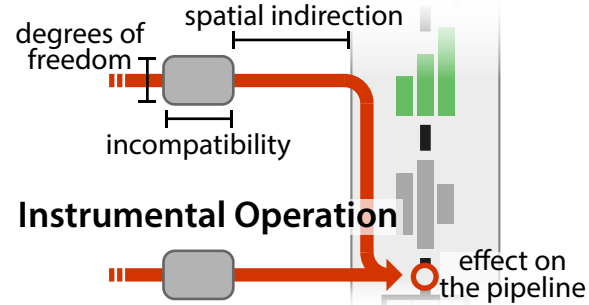
Interaction

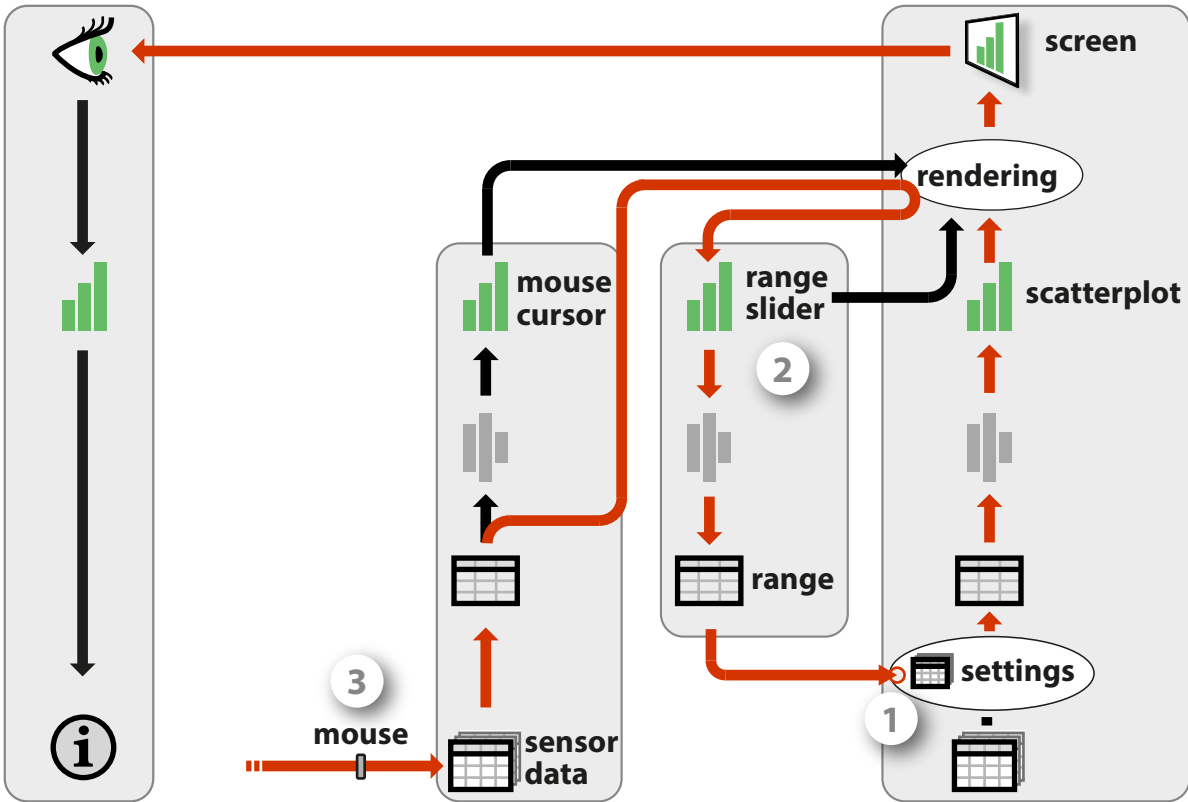


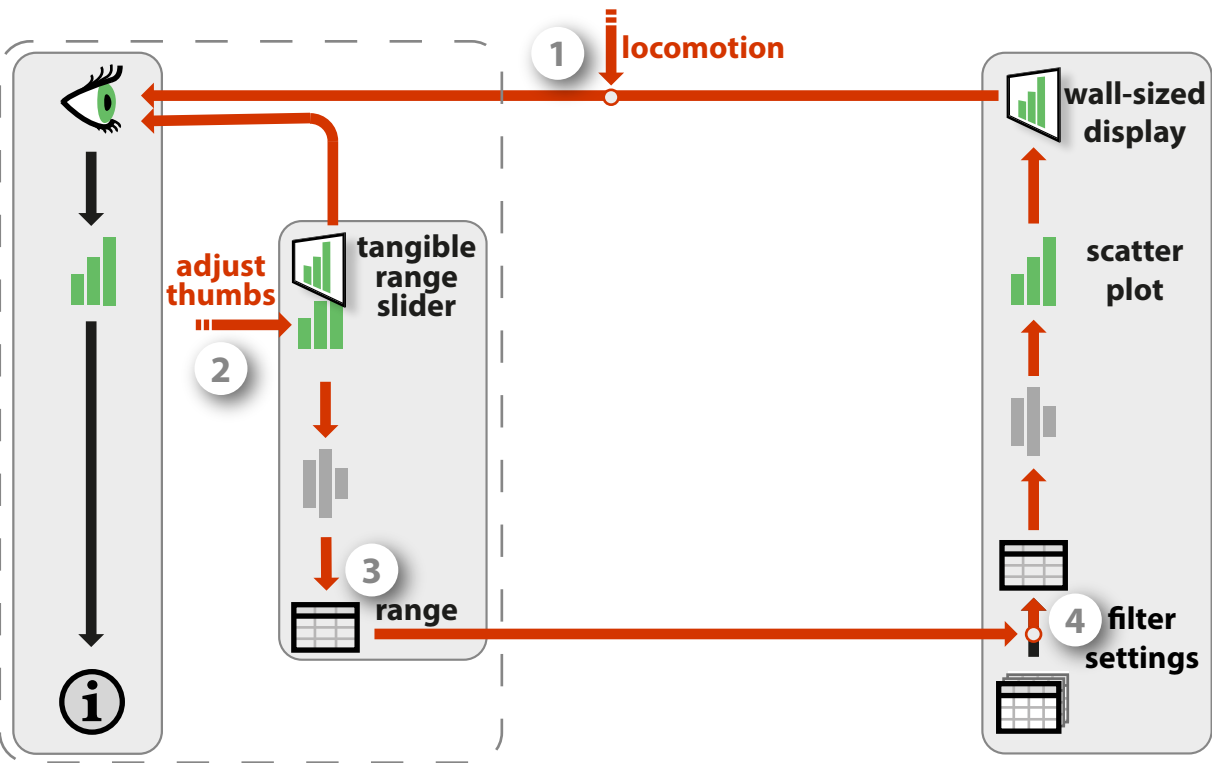
instrument

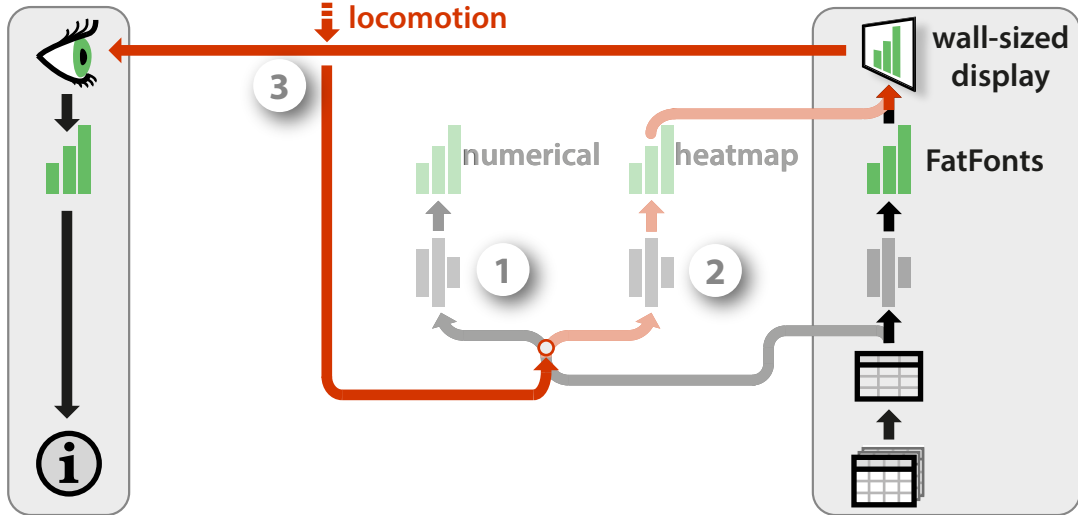


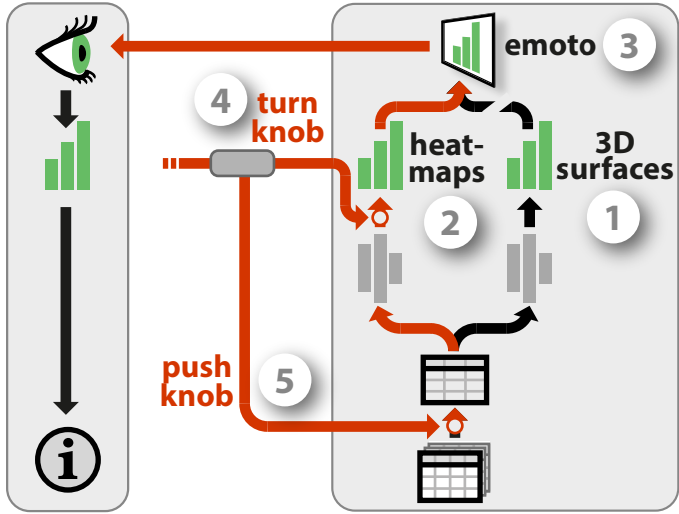
Instrumental Manipulation

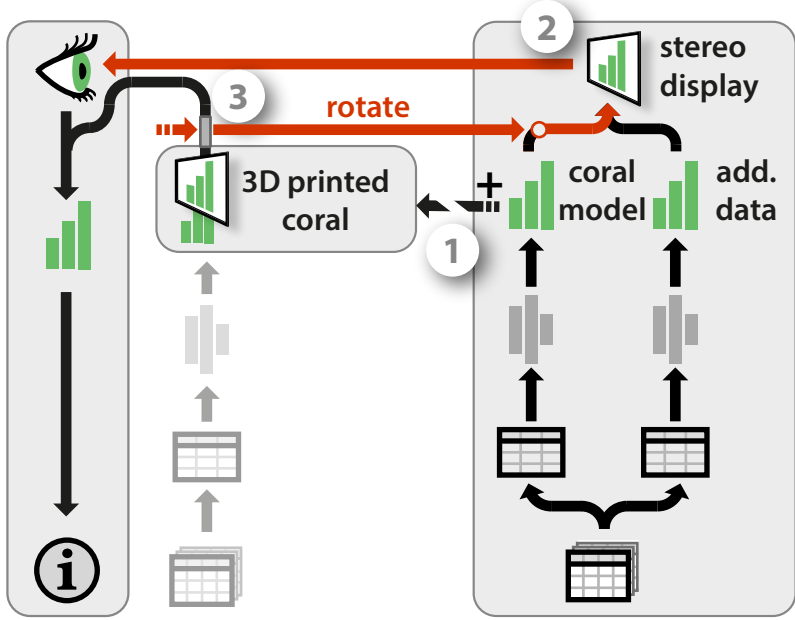












rotate & mark

1



**physical
3D chart**

**sort &
filter**



2



