FiberClay: Sculpting Three Dimensional Trajectories to Reveal Structural Insights

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Microsoft Research

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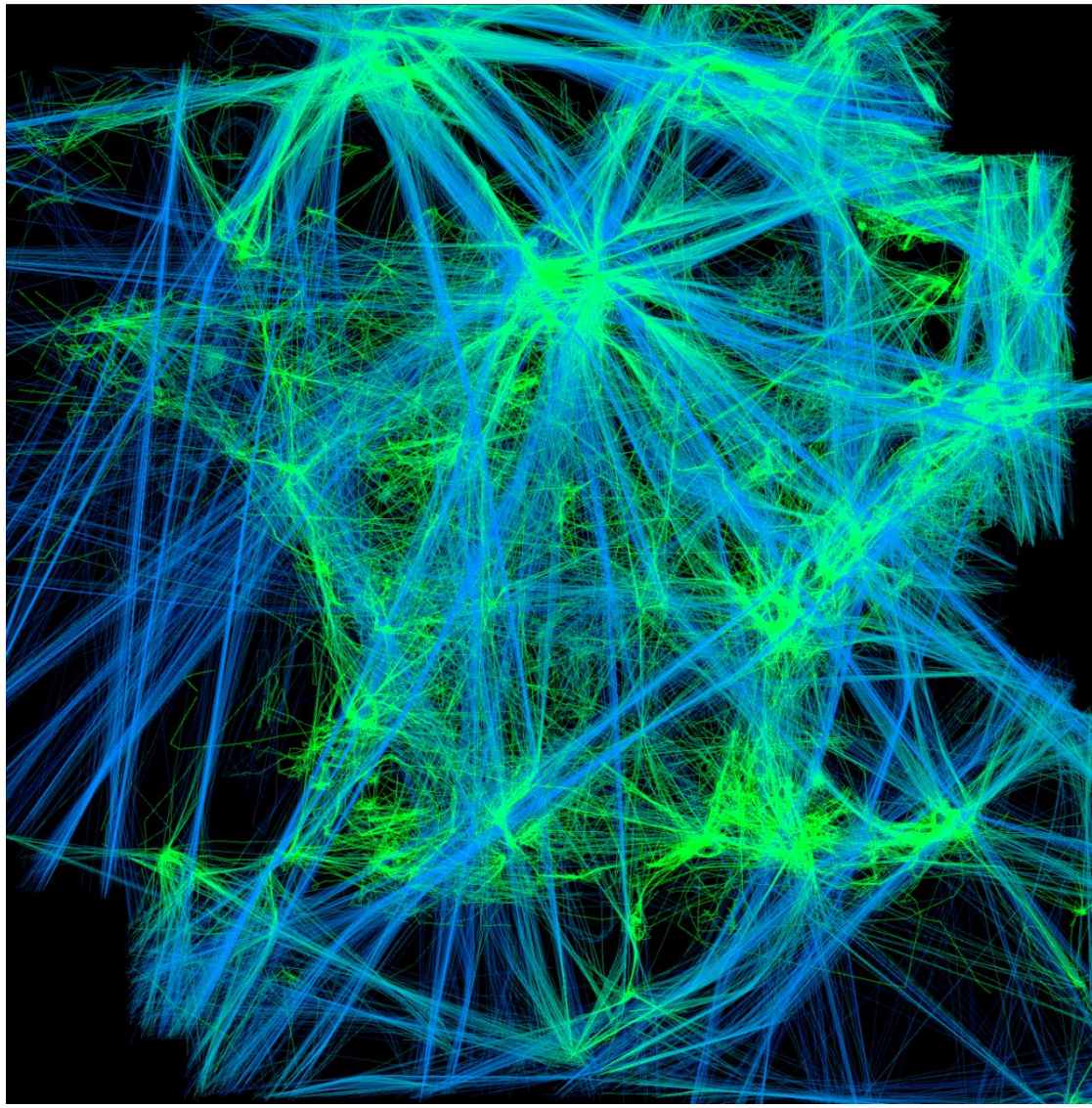
ÉCOLE CENTRALE LYON

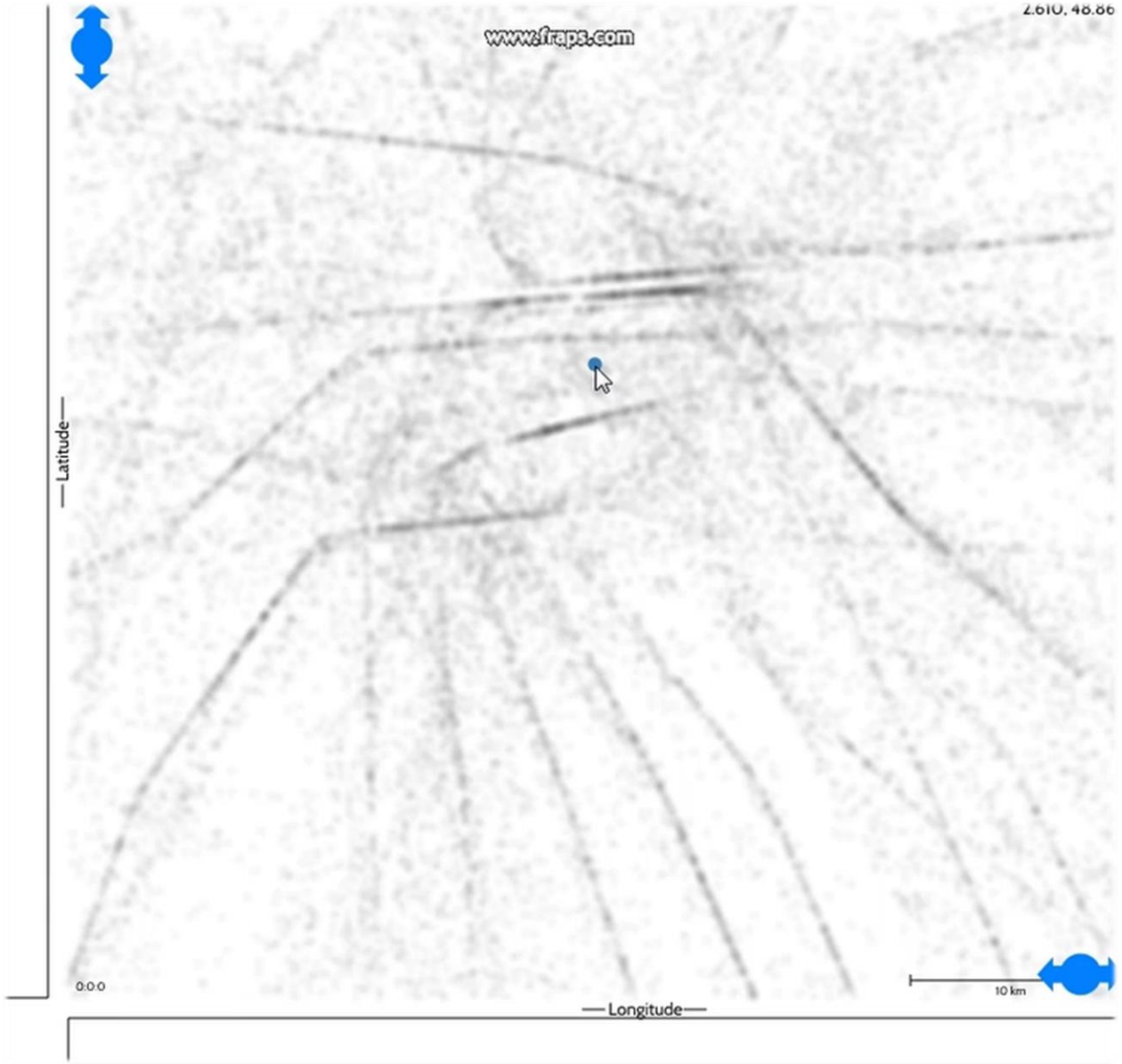
Traffic Analysis

from Data to Display

C. Hurter, B. Tissoires, S. Conversy.
FromDaDy: spreading data across views to support iterative exploration of aircraft trajectories.
(TVCG, InfoVis 2009) Visualization and Computer Graphics , IEEE Transactions on , vol.15, no.6, pp.1017,1024, Nov.-Dec. 2009

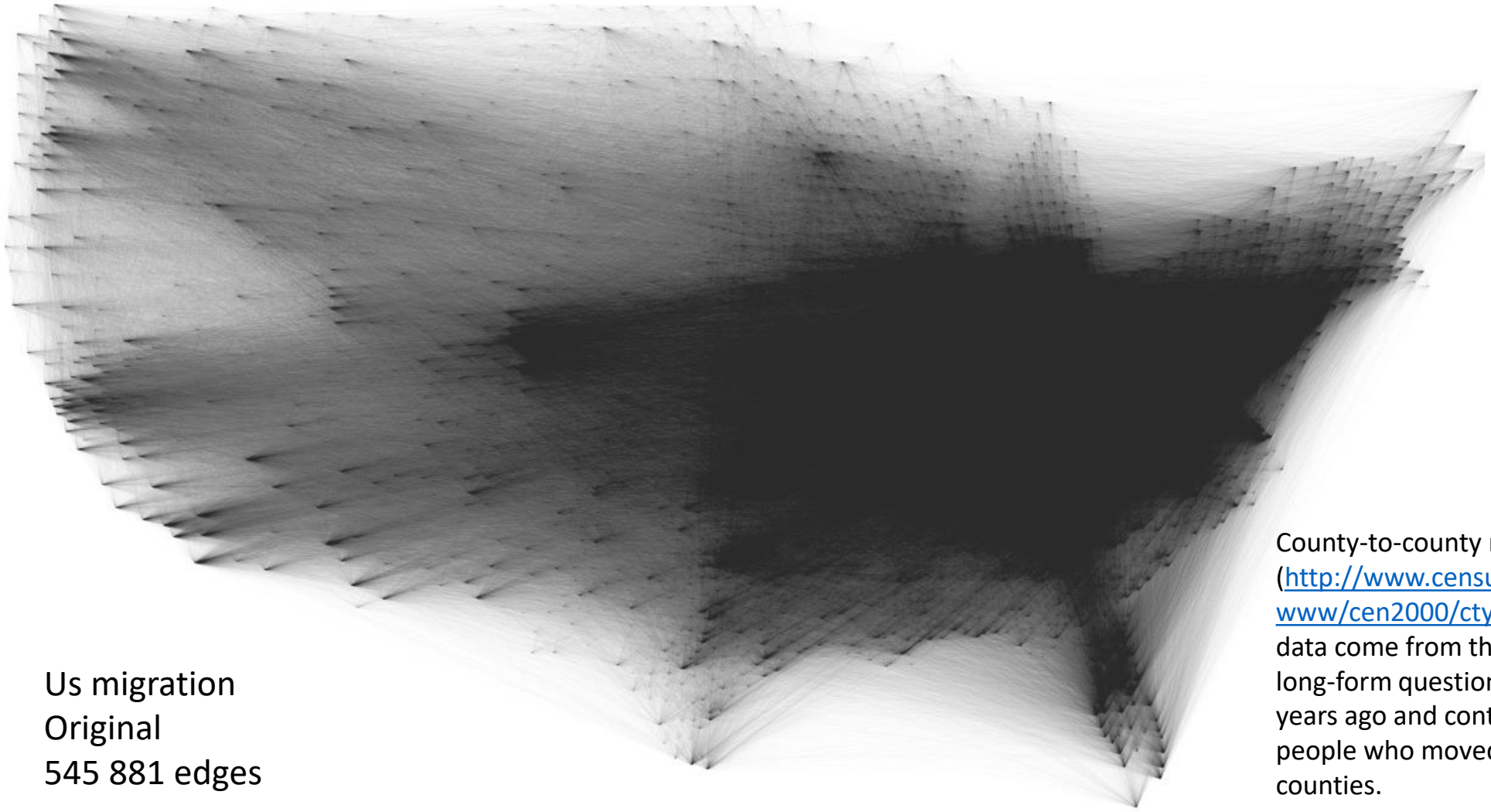


Traffic Dynamics



R. Scheepens, C. Hurter, H. Van de Wetering, J. Van Wijk.
Visualization, Selection, and Analysis of Traffic Flows.
in *IEEE Transactions on Visualization and Computer Graphics* , Institute of Electrical and Electronics Engineers, 2015, PP (99)

Visual Simplification

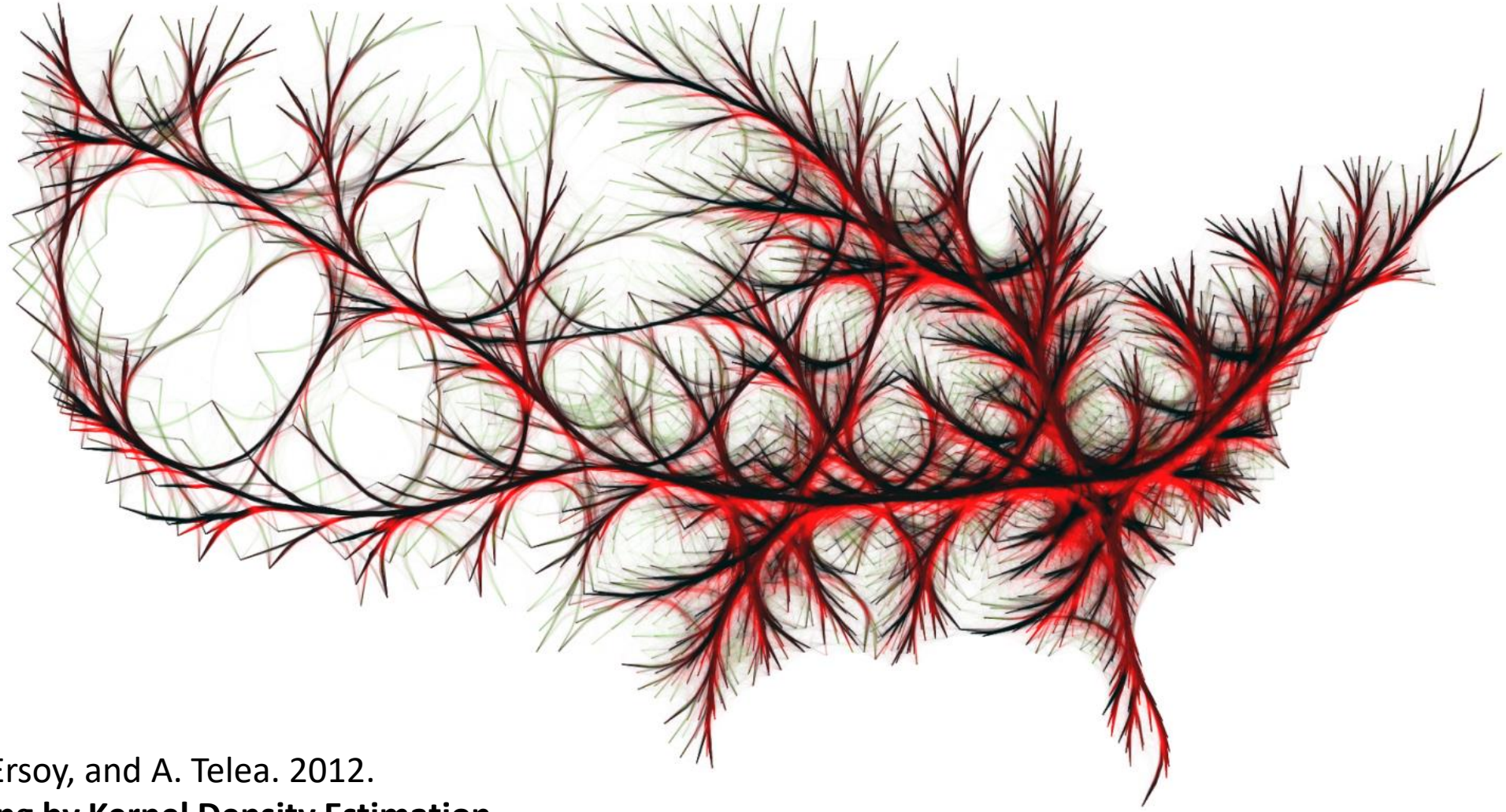


Us migration
Original
545 881 edges

County-to-county migration flow files (http://www.census.gov/population/www/cen2000/ctytoctyflow/). These data come from the Census 2000 long-form question on residence 5 years ago and contain the number of people who moved between counties.

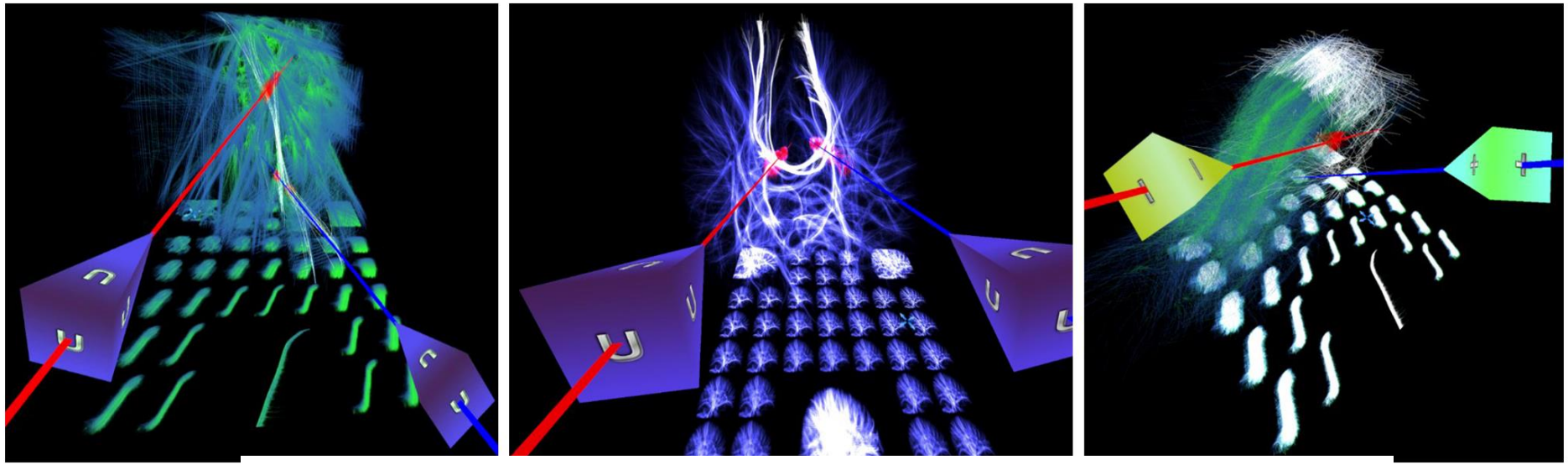
Bundling

Us migration
Kernel Density Based Edge Bundling
22 million vertexes

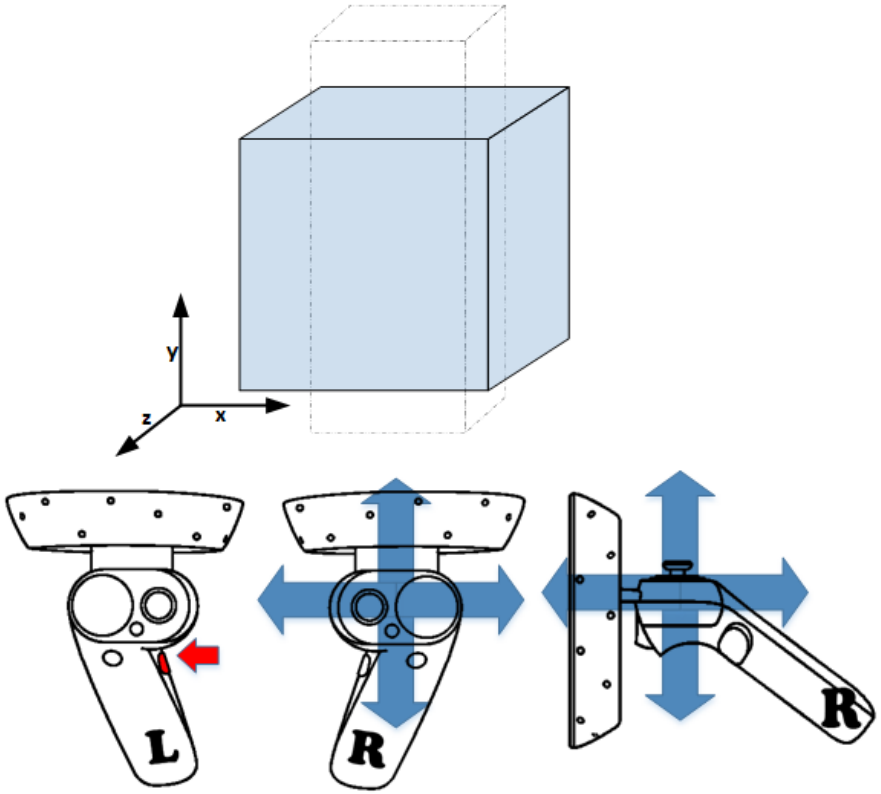


C. Hurter, O. Ersoy, and A. Telea. 2012.
Graph Bundling by Kernel Density Estimation.
Comp. Graph. Forum 31, 3pt1 (June 2012), 865-874.

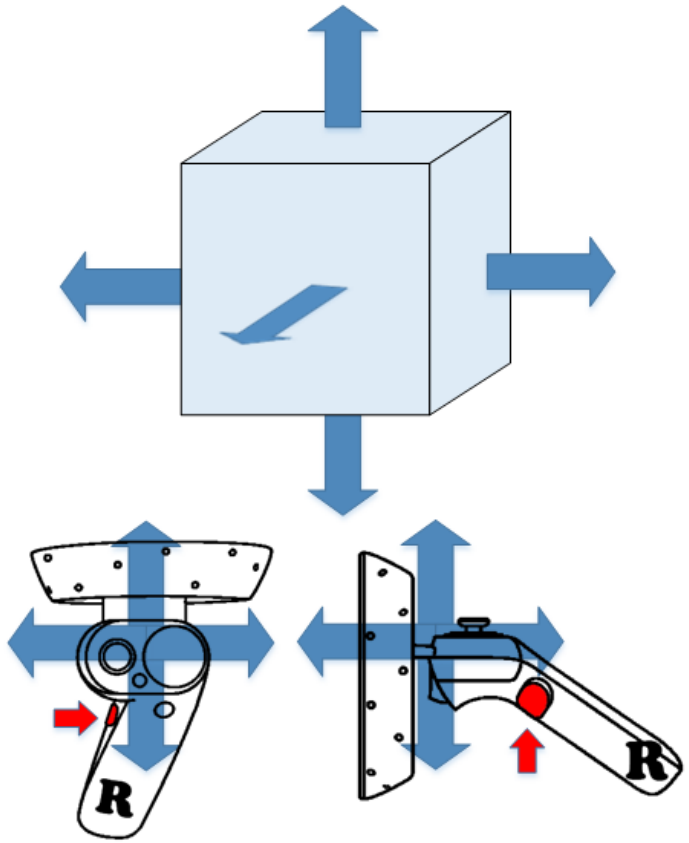
Immersive Analytics



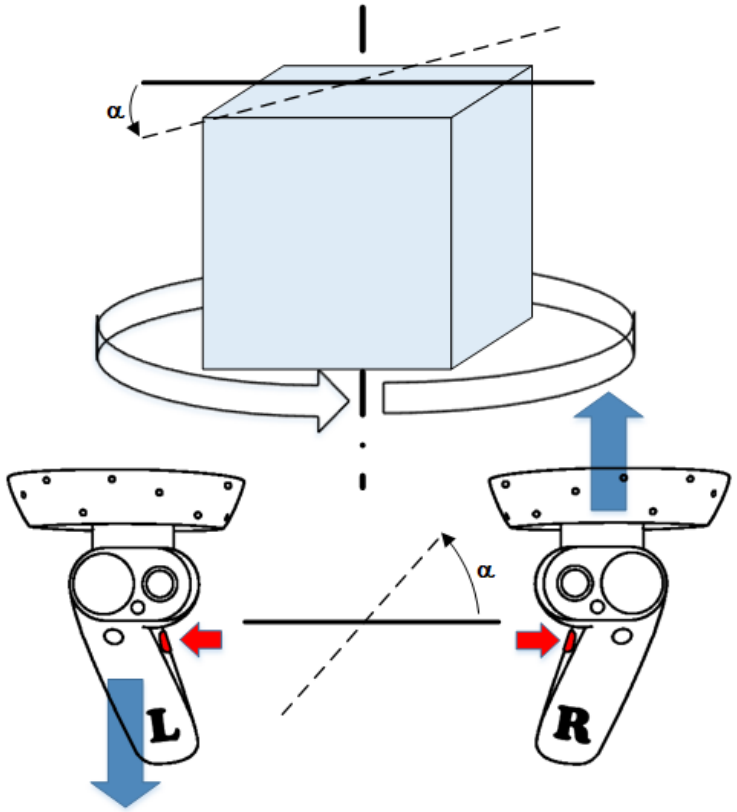
Interaction techniques



Scale

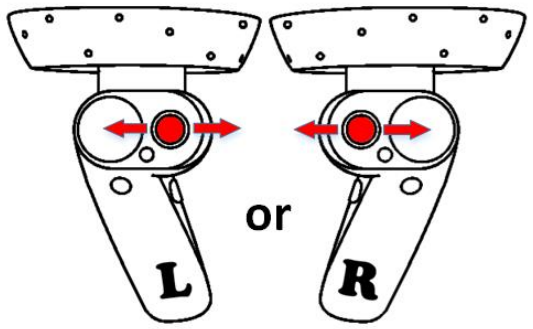


Pan/Data grasp

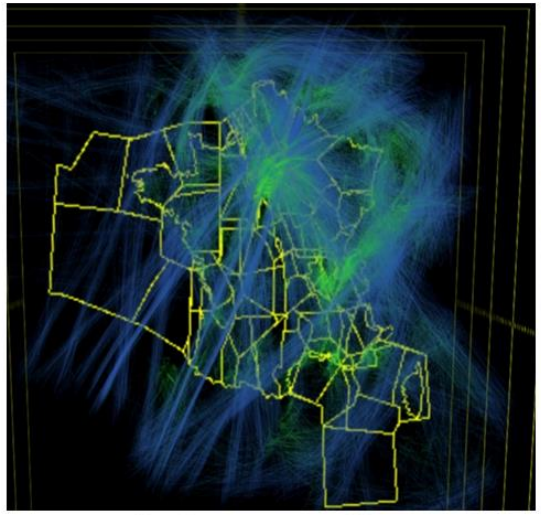


Rotation

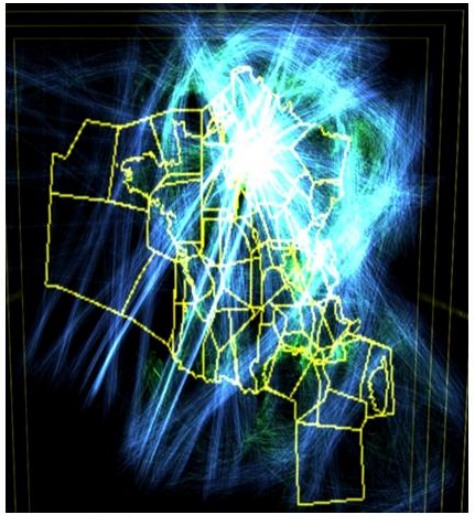
Rendering modes



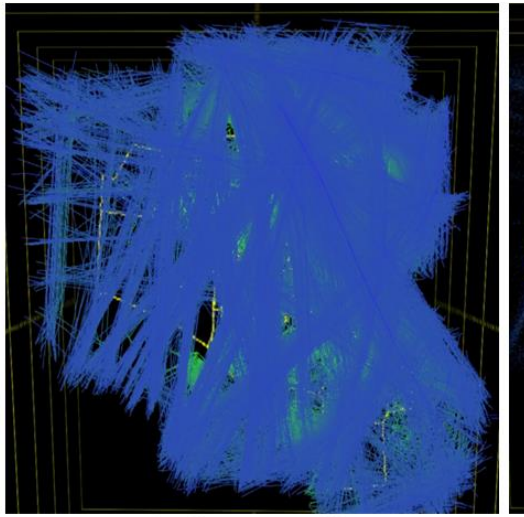
Rendering Mods



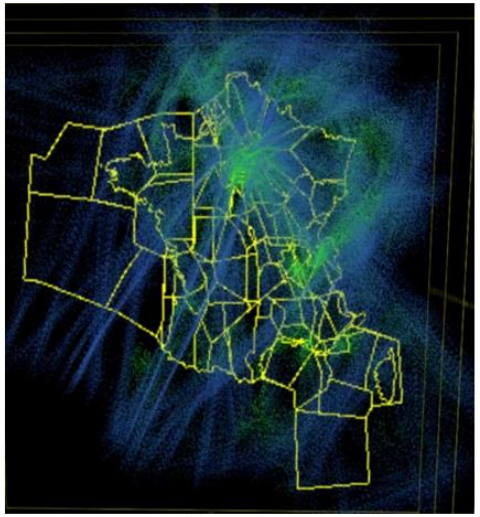
Alpha Bendling



Additive Bendling

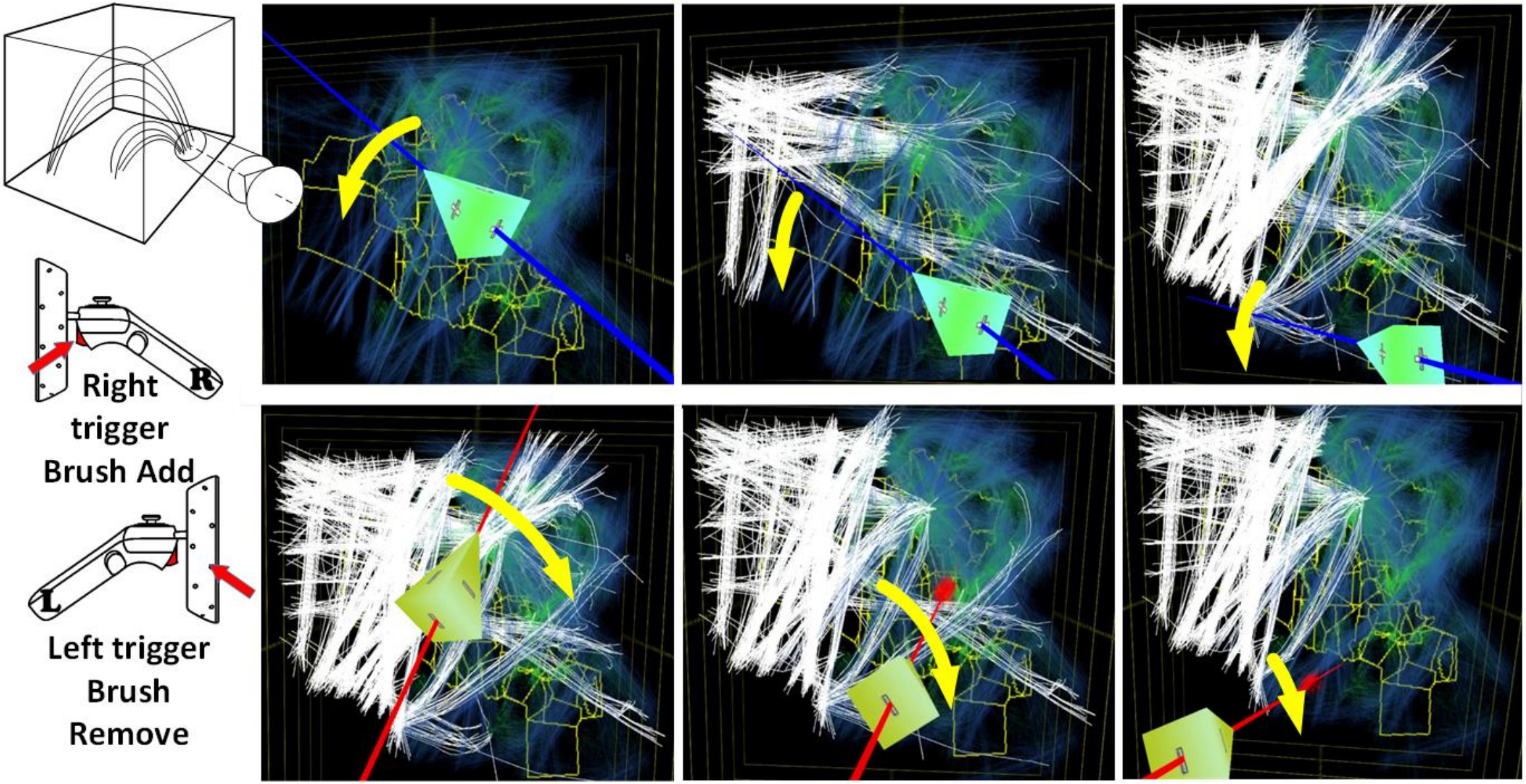


Solid Bendling

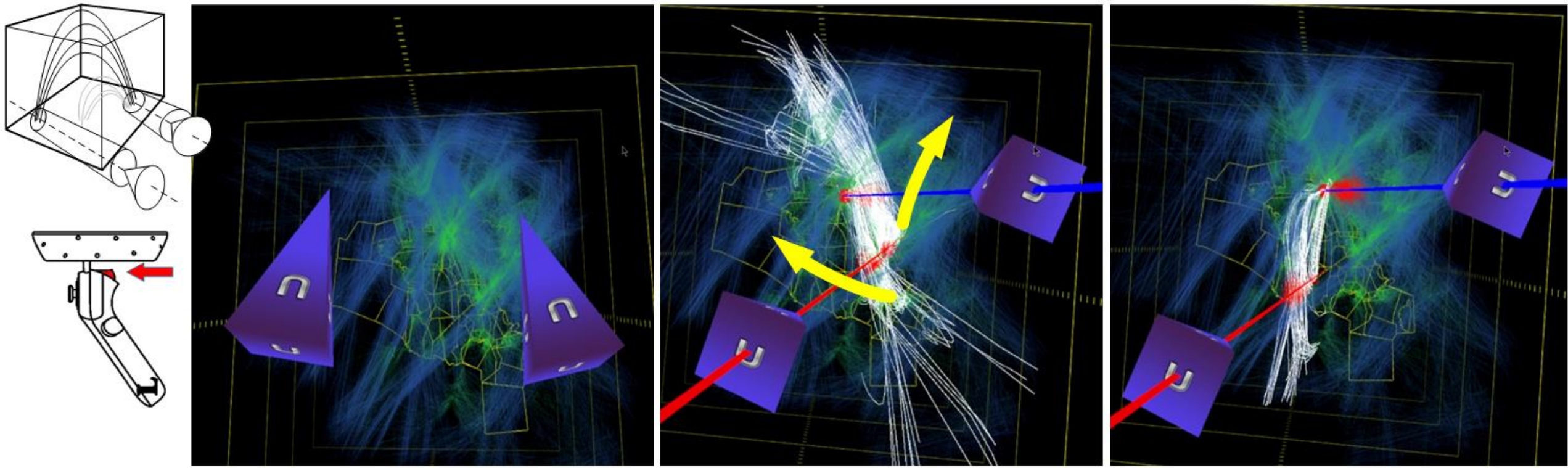


Points/ Animated Particule System

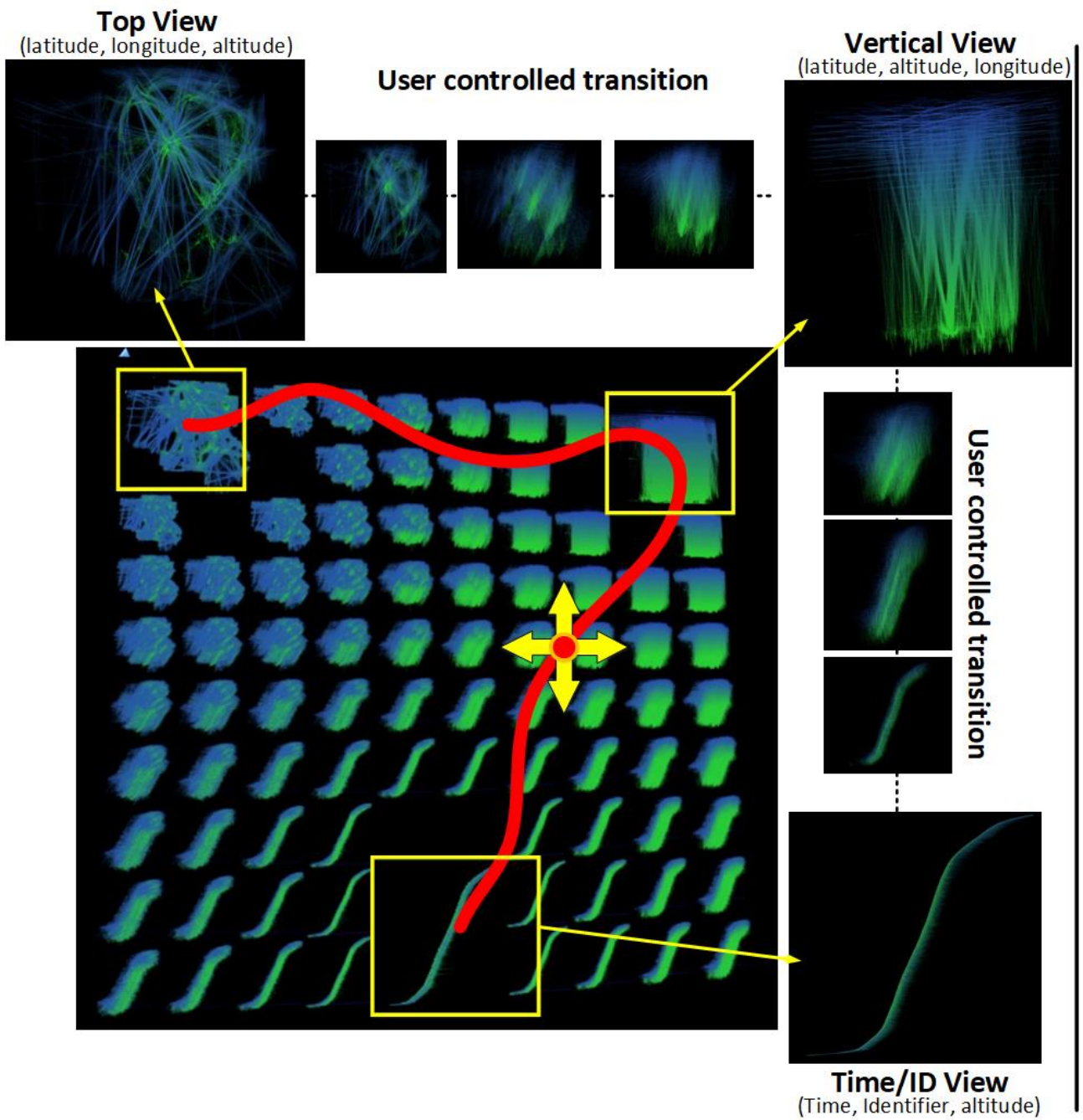
Brush Plus / Minus

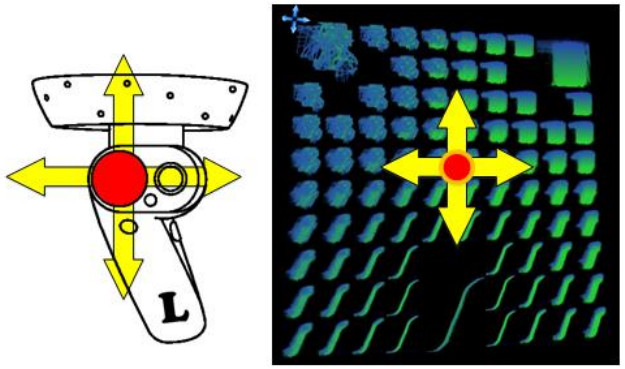


Brush Union

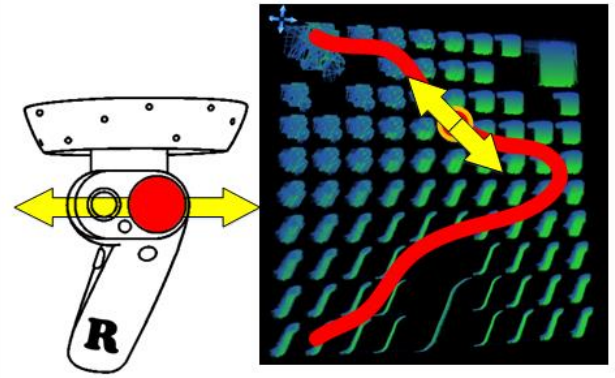


Presets navigation

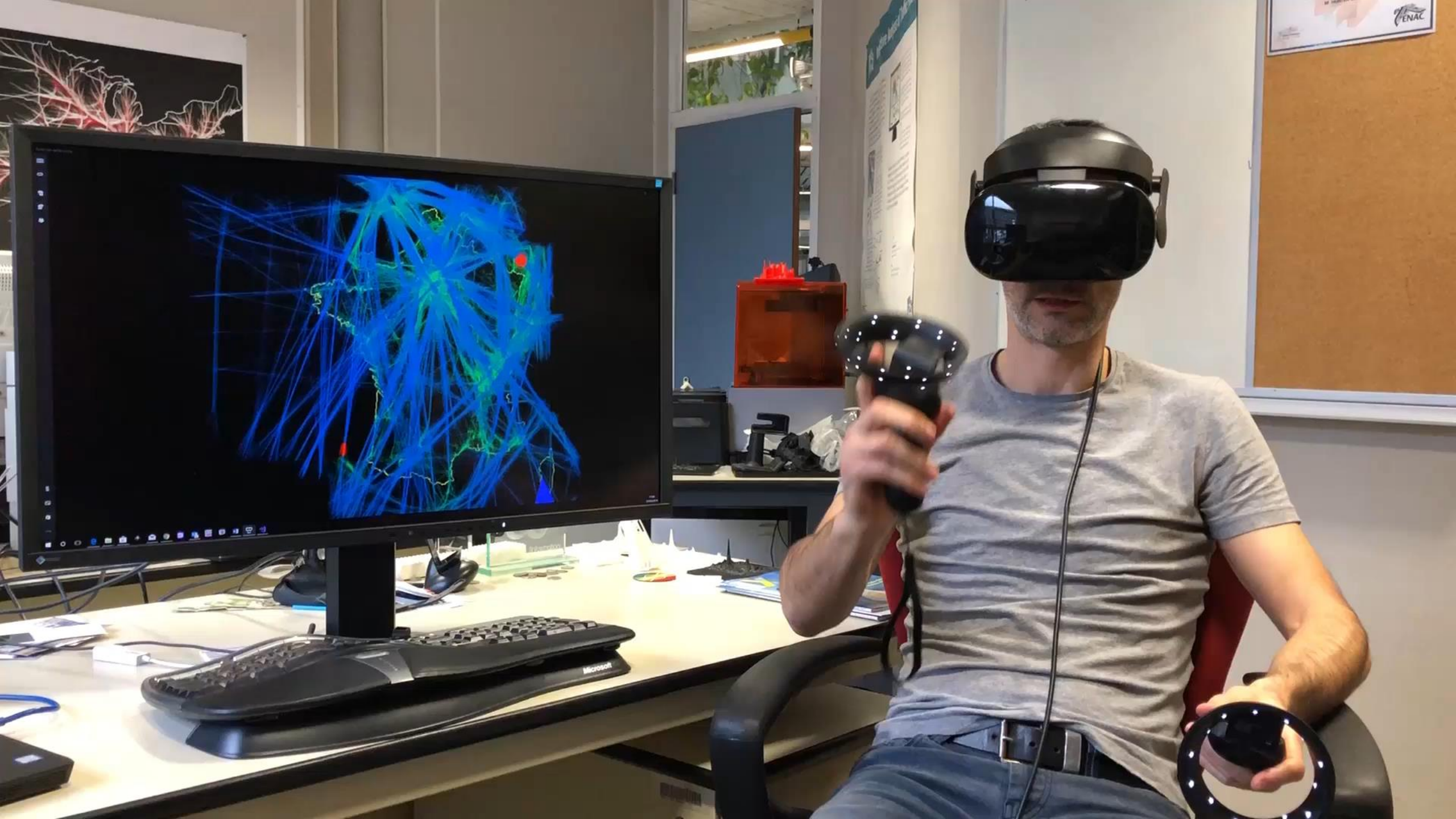




User free navigation between the visual configurations



User constrained navigation along the last path recorded by the left controller



Conclusion

- Fiberclay is a fexible scalable Immersive Analytic system
- Take advantage of Immersive technology and multimodal interactions
- New interaction paradigms (Union Brushig, Small Multiple navigation)
- Demonstration of three use cases

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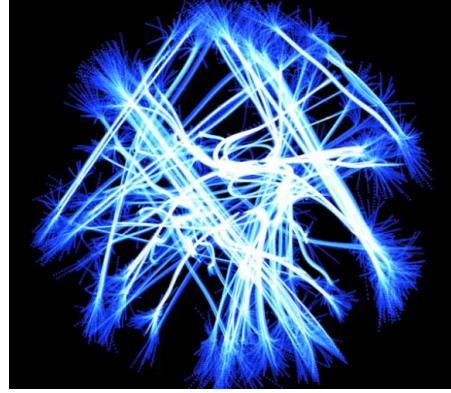
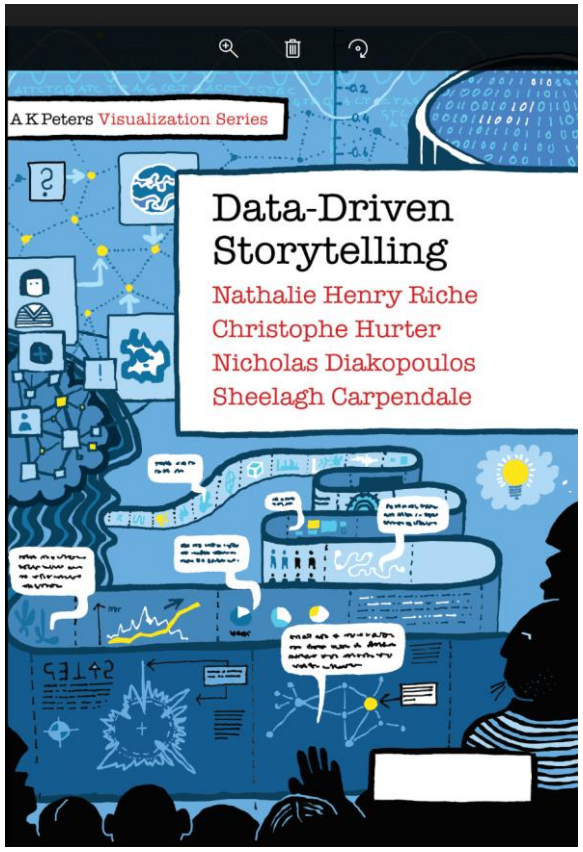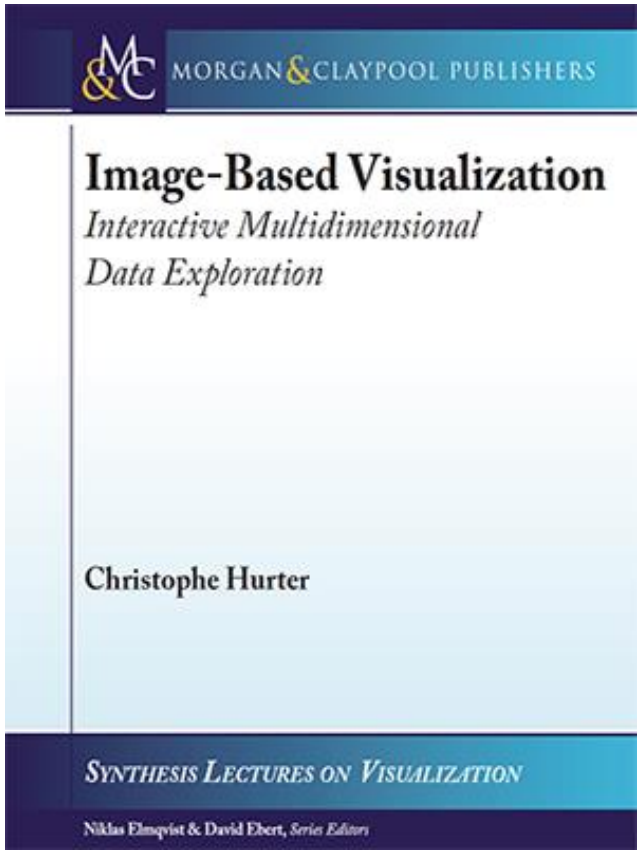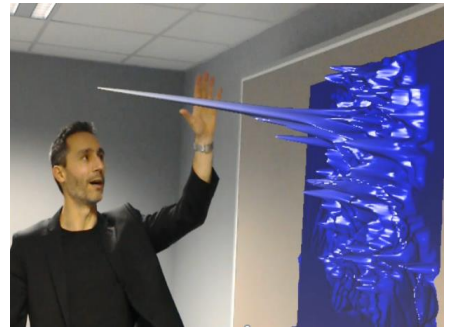
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