



Most-Influential Paper of VISSOFT 2013:

Live Trace Visualization for Comprehending Large Software Landscapes: The ExplorViz Approach

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Presented by Alexander Krause-Glau @ VISSOFT 2023



Kiel University
Christian-Albrechts-Universität zu Kiel

ExplorViz

VISSOFT Contributions

VISSOFT 2013:

- “Live Trace Visualization for Comprehending Large Software Landscapes: The ExplorViz Approach”
 - Inaugural paper on ExplorViz [Fittkau et al. 2013a]
 - Today’s MIP paper

VISSOFT 2015:

- “Hierarchical Software Landscape Visualization for System Comprehension: A Controlled Experiment”
 - Best Paper Award [Fittkau et al. 2015b]
- “Exploring Software Cities in Virtual Reality”
 - 138 citations, so far [Fittkau et al. 2015c]
- “Research Perspective on Supporting Software Engineering via Physical 3D Models”
 - Presented negative experiment results, 3D print not helpful [Fittkau et al. 2015d]

VISSOFT 2021:

- “Live Visualization of Dynamic Software Cities with Heat Map Overlays”
 - Via augmented reality [Krause et al. 2021]

VISSOFT 2022:

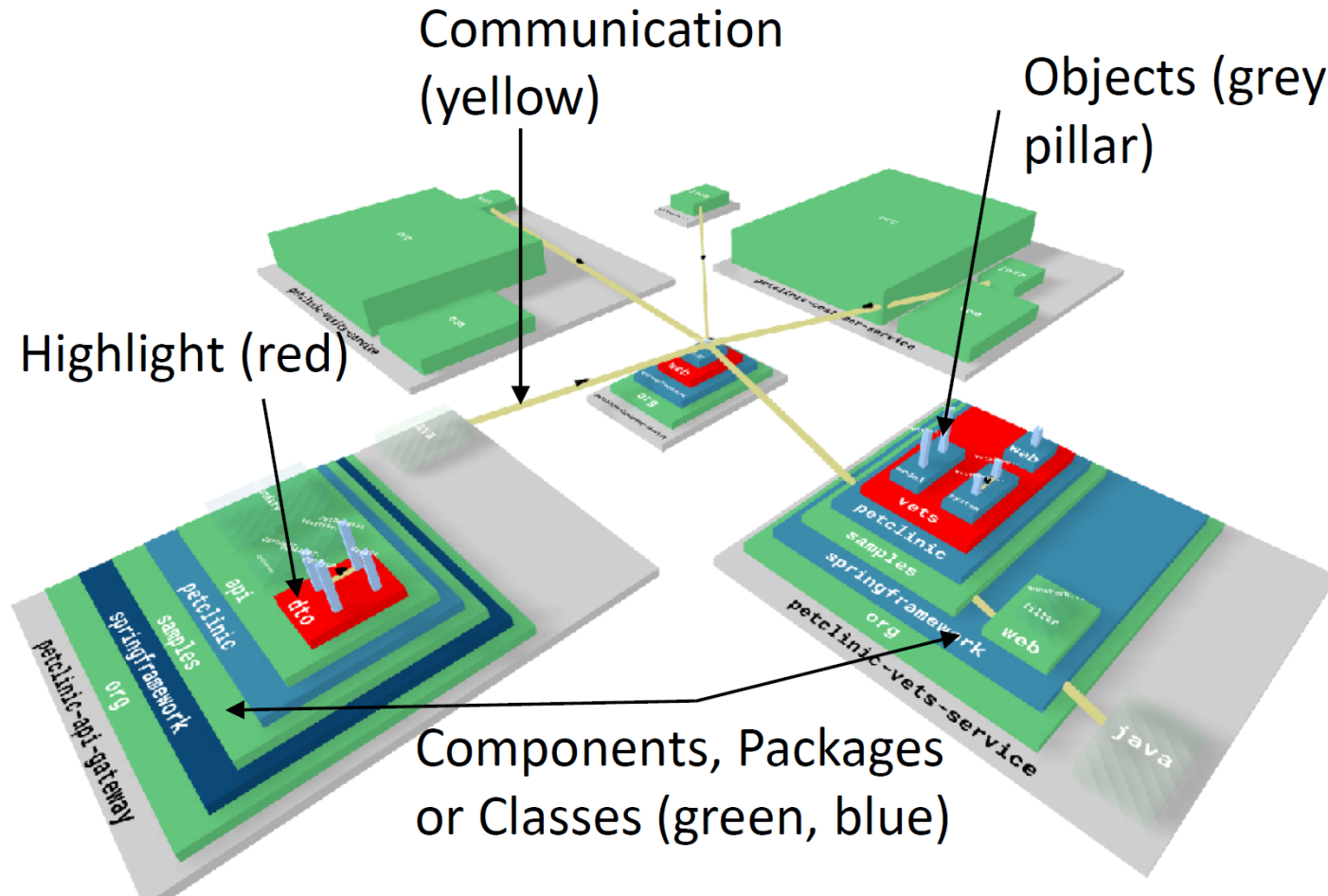
- “Collaborative Software Visualization for Program Comprehension”
 - Focus on multi-user collaboration [Krause et al. 2022]

VISSOFT 2023:

- “Collaborative, Code-Proximal Dynamic Software Visualization within Code Editors”
 - Presented earlier today [Krause-Glau and Hasselbring 2023]



Program Comprehension and Dynamic Software Analysis with ExplorViz



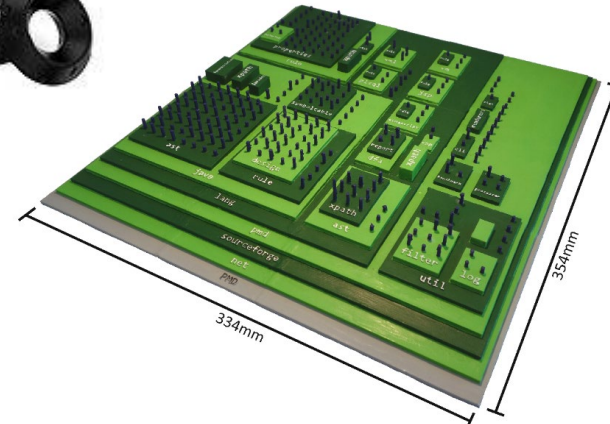
Experimentation with Hardware Devices

Virtual Reality



[Fittkau et al. 2015c]

3D Print



[Fittkau et al. 2015d]

Augmented Reality



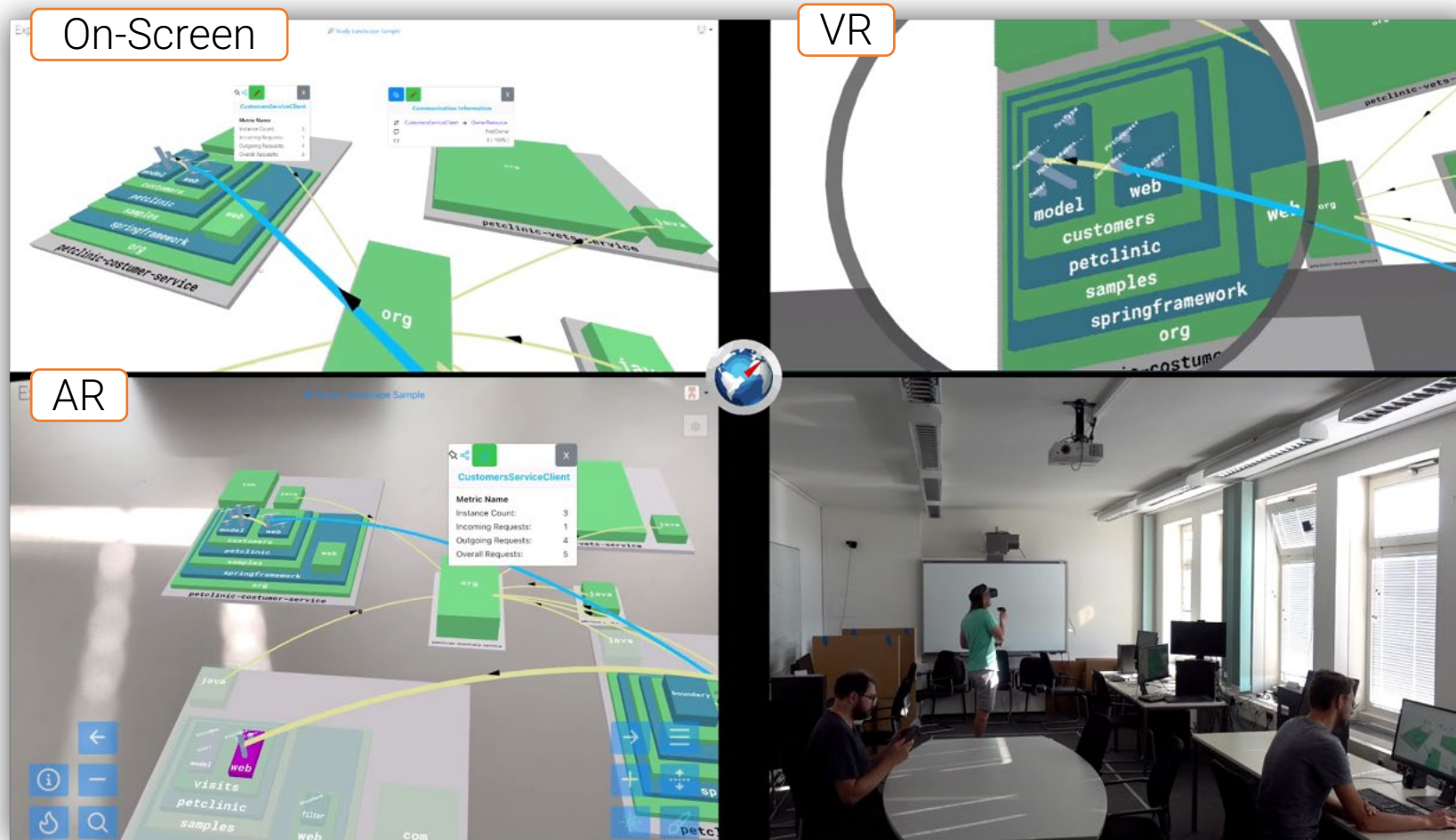
[Krause et al. 2021]

Projection Dome



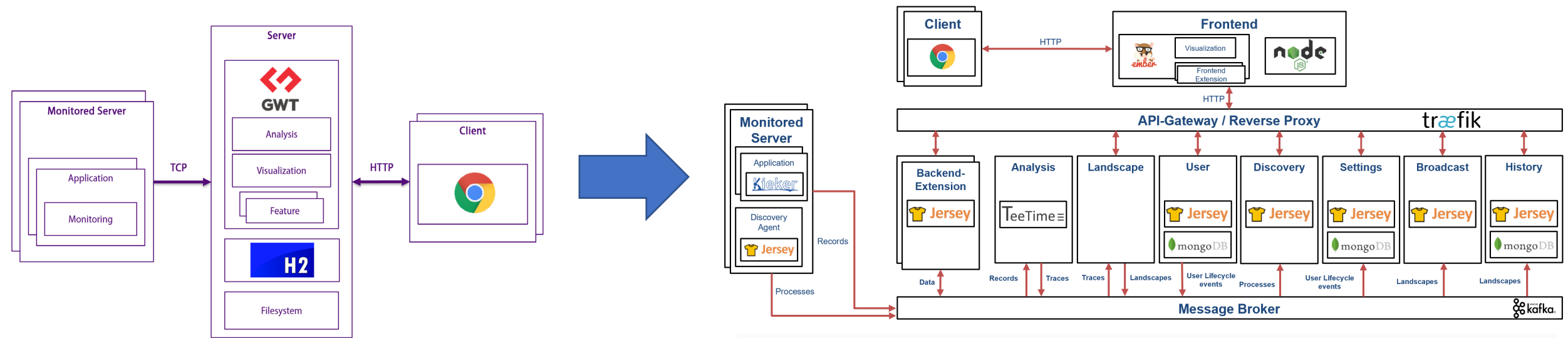
[Bielfeldt 2023]

Multi-User Collaboration



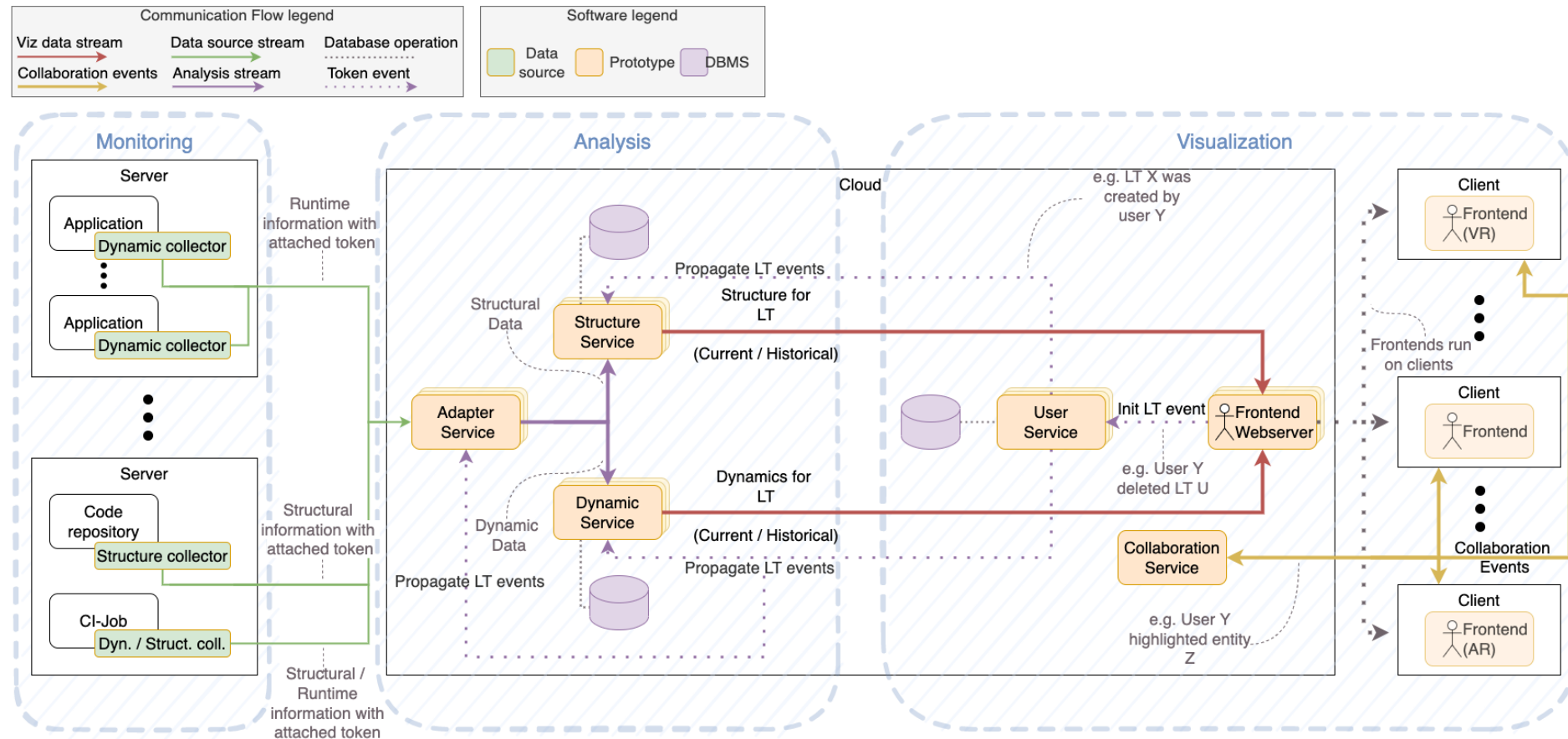
[Krause et al. 2022, Krause-Glau et al. 2022, Krause-Glau and Hasselbring 2022, 2023]

Re-Engineering ExplorViz toward a Microservice Architecture



[Zirkelbach et al. 2018, 2019, 2020]

Scalable, Cloud-Native Trace Data Processing for Live Visualization of Large Software Landscapes



[Fittkau et al. 2013b, Fittkau and Hasselbring 2015, Zirkelbach and Adolf 2016, Krause et al. 2018, Krause-Glau and Hasselbring 2022]

Application to Industrial Software Systems

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- Paetsch, T. (2021) Migration einer bankfachlichen Anwendung in die Cloud. MSc Thesis, Kiel University
- Wegert, J. (2018) Visualizing Software Architecture Comparison of a Web-based Financial Application in ExplorViz. MSc Thesis, Kiel University

adesso

- Hansen, M. (2021) Collaborative Program Comprehension based on Augmented Reality. MSc Thesis, Kiel University [Krause et al. 2021]
- Lenga, S. (2019) Modernization of Monolithic Legacy Applications towards a Microservice Architecture with ExplorViz. (Masterarbeit), Kiel University [Krause et al. 2020]
- Eichhorst, F. (2017) Analyse der Microservices eines digitalen Marktplatzes mittels ExplorViz. MSc Thesis, Kiel University

Summary and Outlook

- ExplorViz started as a Ph.D project in 2012
- Open Source from the beginning (Apache License, Version 2.0)
 - <https://github.com/ExplorViz>
- Continuously extended over the years
 - Two completed PhD theses so far (Florian Fittkau, Christian Zirkelbach)
 - Two completed PhD theses in our related project Kieker [Hasselbring and van Hoorn 2020] by co-authors of today's MIP paper (Jan Waller, Christian Wulf)
 - Two PhD theses in progress (Alexander Krause-Glau, Malte Hansen)
 - 14 MSc Theses
 - Bader, Hansen, Paetsch, Reck, Lenga, Müller, Hackel, Krause, Wegert, Eichhorst, Kandsorra, Zirkelbach, Finke, Weißenfels
 - 27 BSc Theses
 - Bielfeldt, Giv, Ideler, Pleines, Straßburg, Stücker, Brück, Petersen, Krippner, Lotz, Öksüz, Teut, Hansen, König, Häsemeyer, Möller, Witzany, Gill, Krause, Mannstedt, Michaelis, Simolka, Barbie, Barzel, Stelzer, Kopenhagen, Kosche
- If you're interested in more:
 - [Krause-Glau et al. 2022, Hasselbring et al. 2020, Fittkau et al. 2017, Fittkau et al. 2015a]
 - <https://explorviz.dev>

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