An adaptable analysis pipeline makes cortical wave phenomena comparable across heterogeneous datasets

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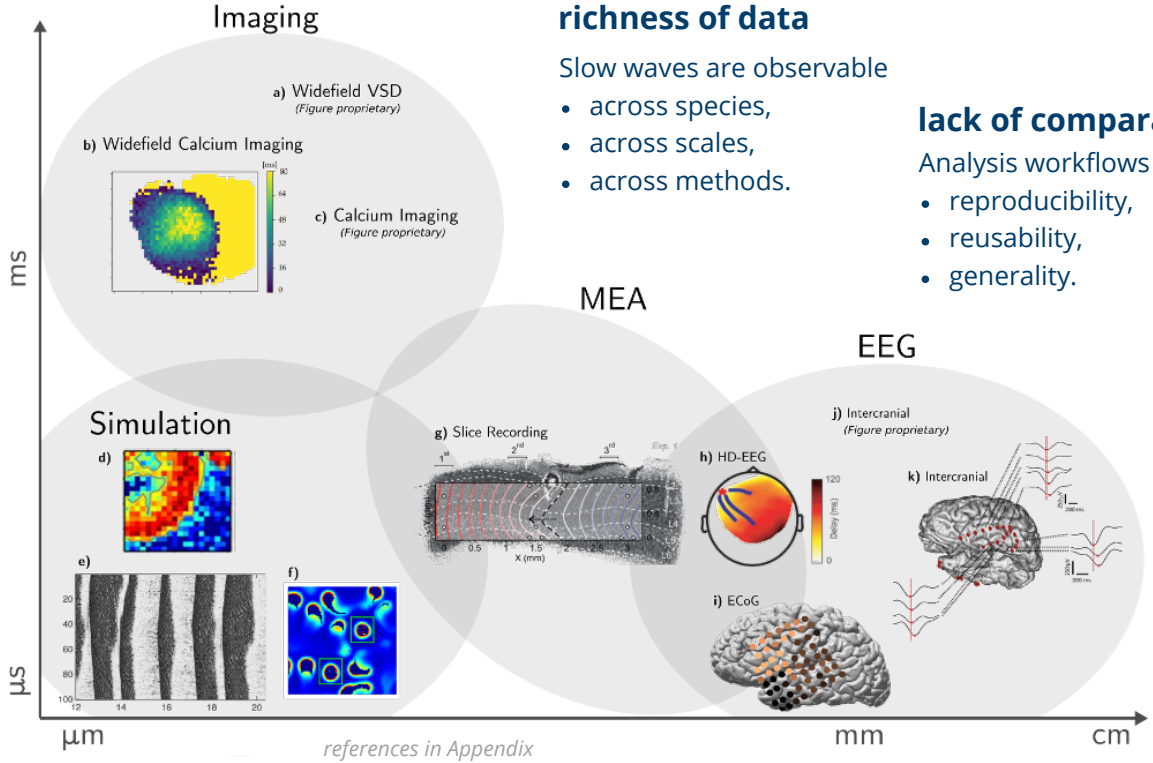
Motivation: Slow Cortical Waves



richness of data

Slow waves are observable

- across species,
- across scales,
- across methods.

lack of comparability

Analysis workflows often lack

- reproducibility,
- reusability,
- generality.

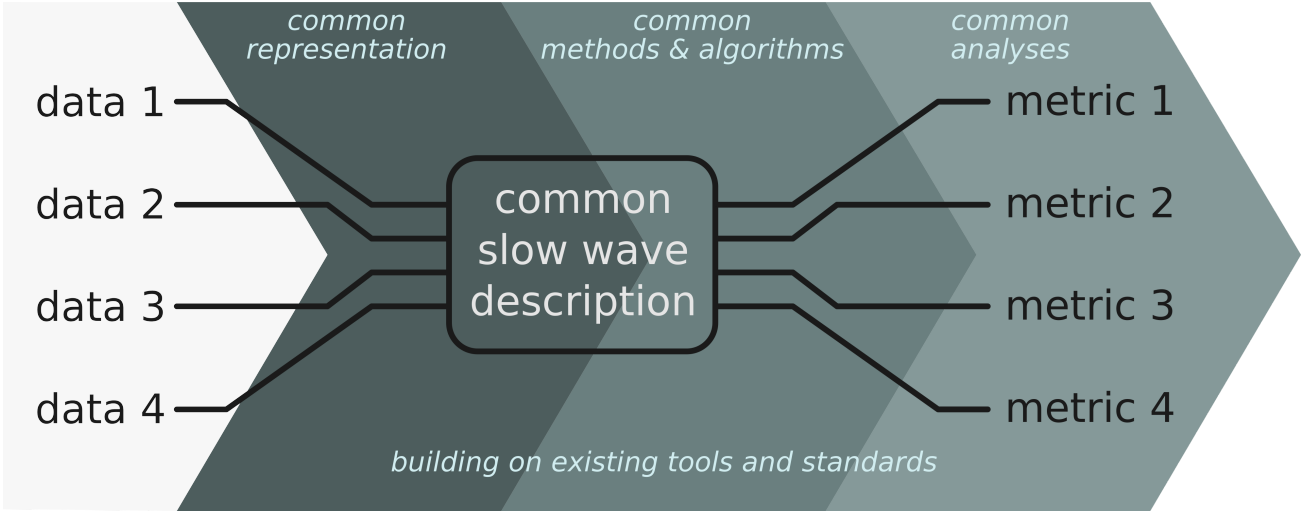
cross-domain comparison

Comparabilty is needed for

- integration of data sources,
- model calibration & validation,
- quantifying experimental variability.

references in Appendix

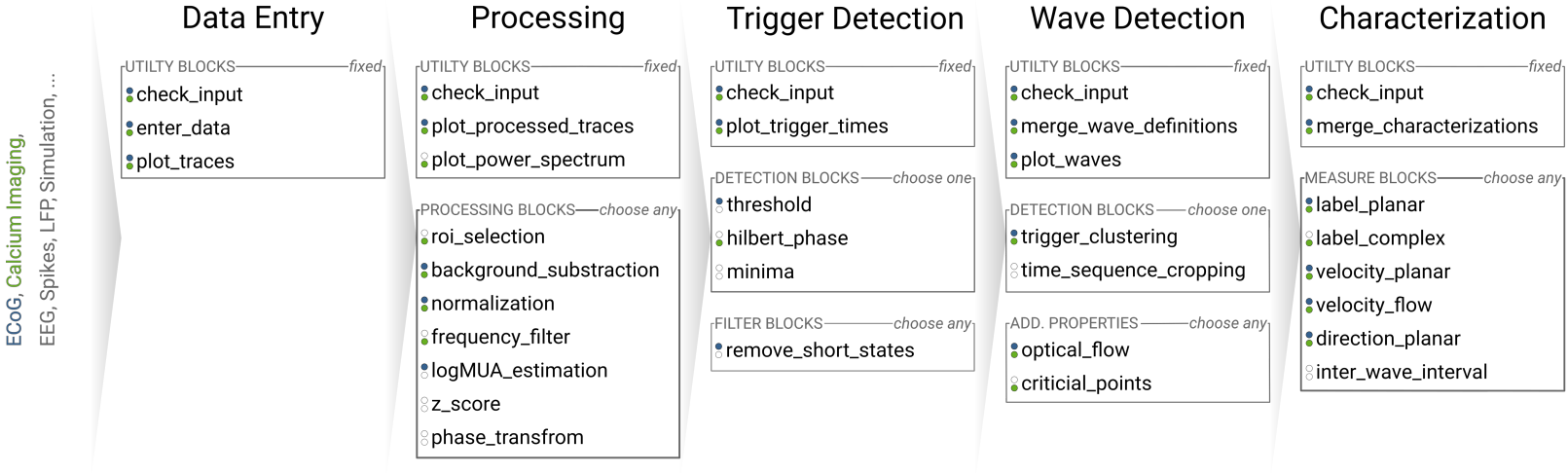
Modular Analysis Pipeline Approach



cross-domain comparison

The Slow Wave Analysis Pipeline

organizes the analysis steps in sequential stages
of combineable blocks.

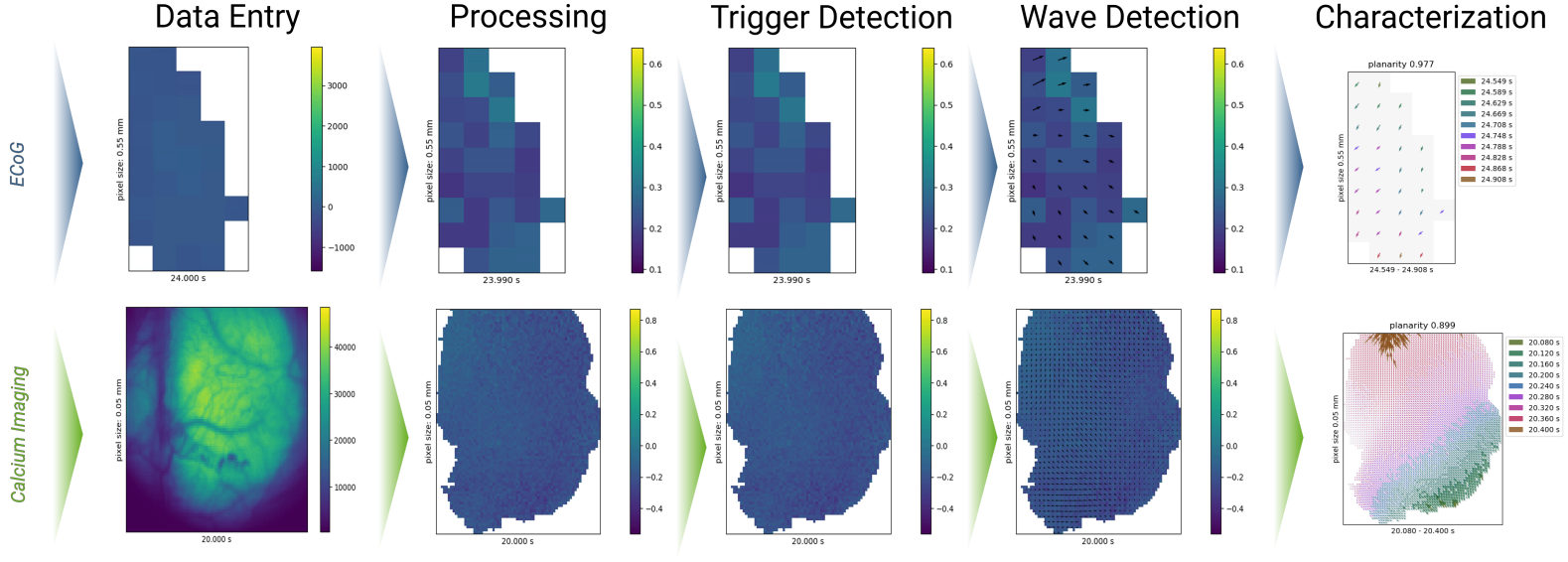


The Slow Wave Analysis Pipeline

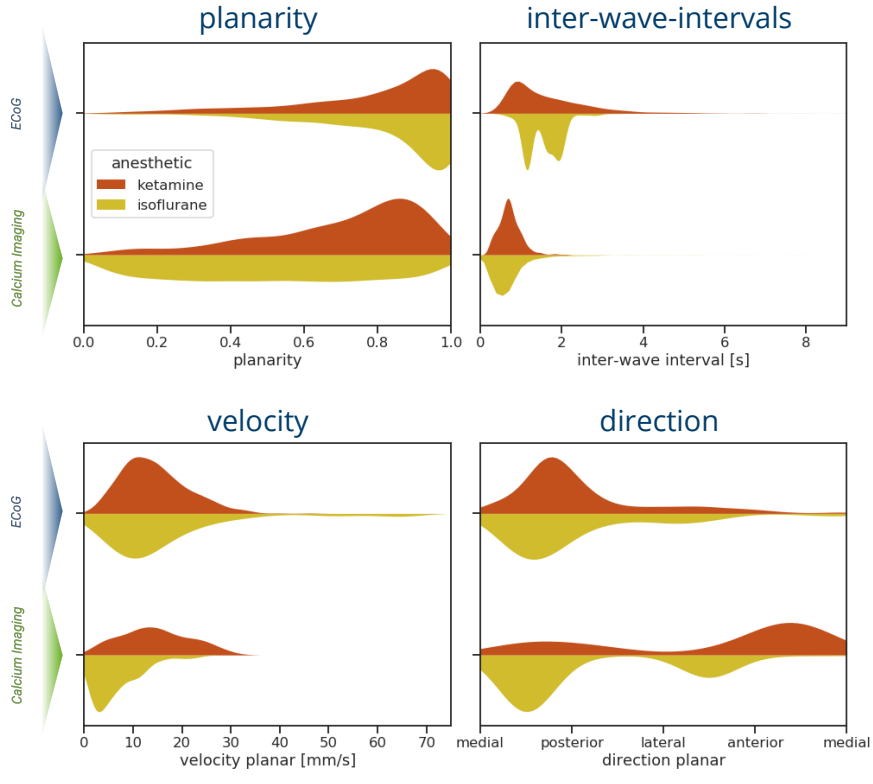
enables meta-studies,

for which, we analysed 5 open-access datasets

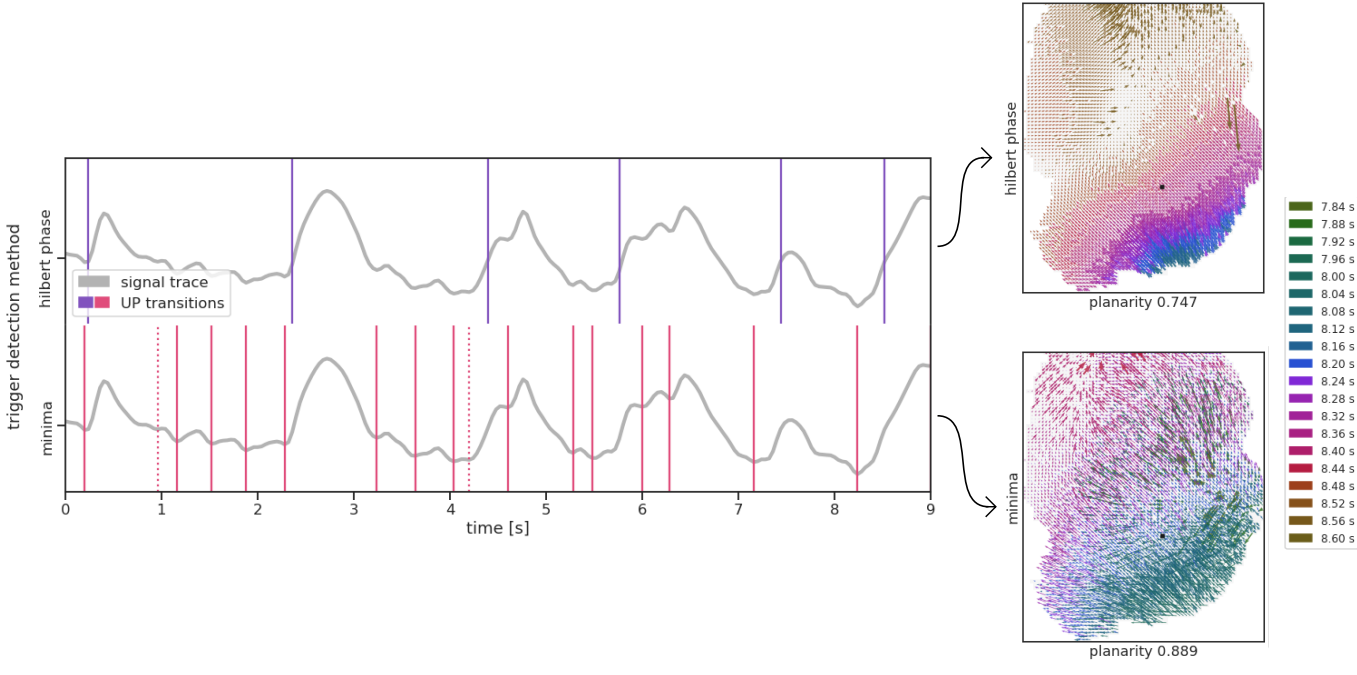
of 60 ECoG and calcium imaging recordings.



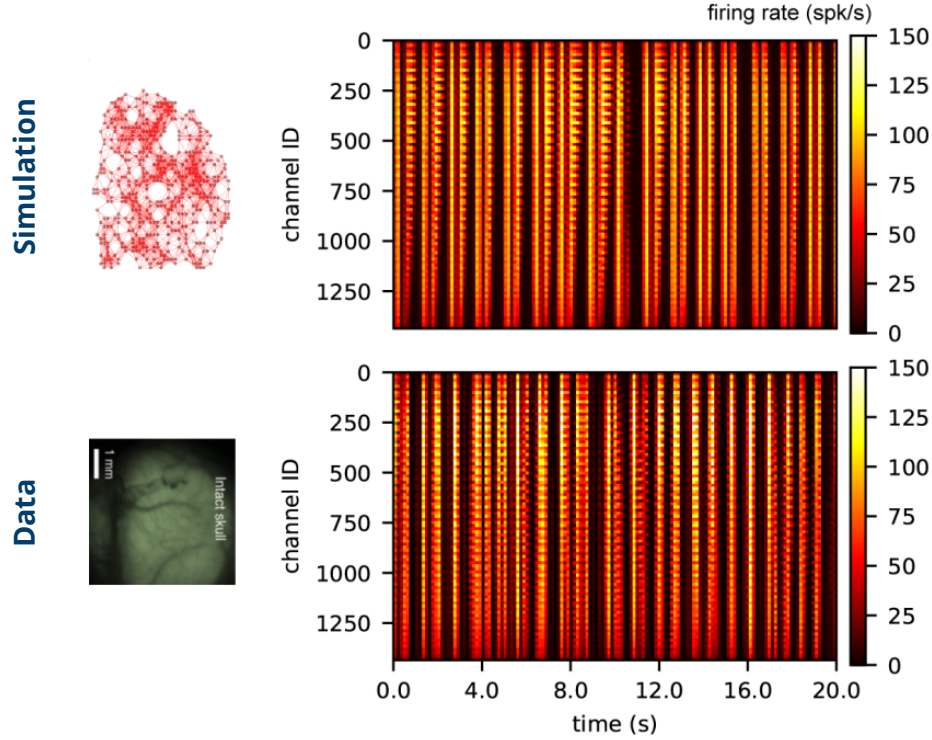
Comparing Heterogeneous Data



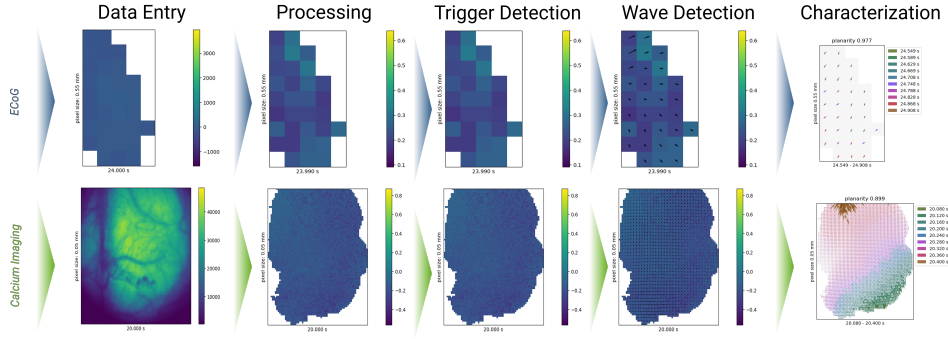
Comparing Methods on Same Data



Calibrating & Validating Models

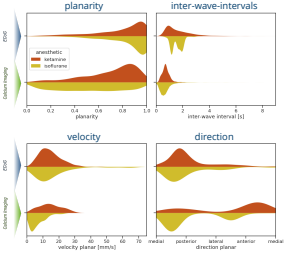


Capone et al. (2021) arxiv



Modular Wave Analysis Pipeline

Comparing Heterogeneous Data



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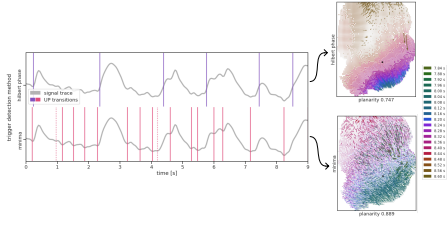
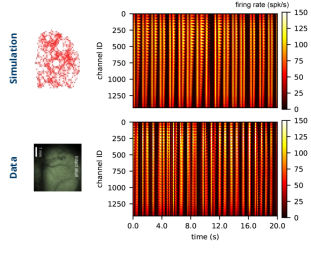


Calibrating & Validating Models



Capone et al. (2021) arxiv

Acknowledgments

for more information:

http://go.fzj.de/wave_analysis_pipeline

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Appendix

References for Figure on Slide 1

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- b) Celotto et al. (2020) doi:10.3390/mps3010014
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