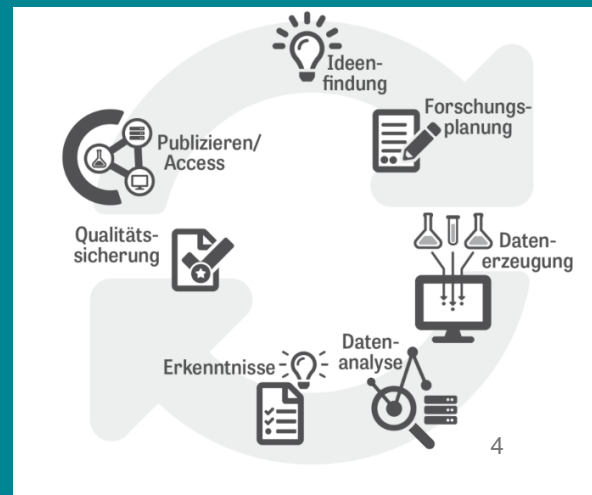# Role of software in data-driven scientific processes

Michael Goedicke

Leyla Jael Castro

What a claim!

Raw Data

No Data Without Software

Consider
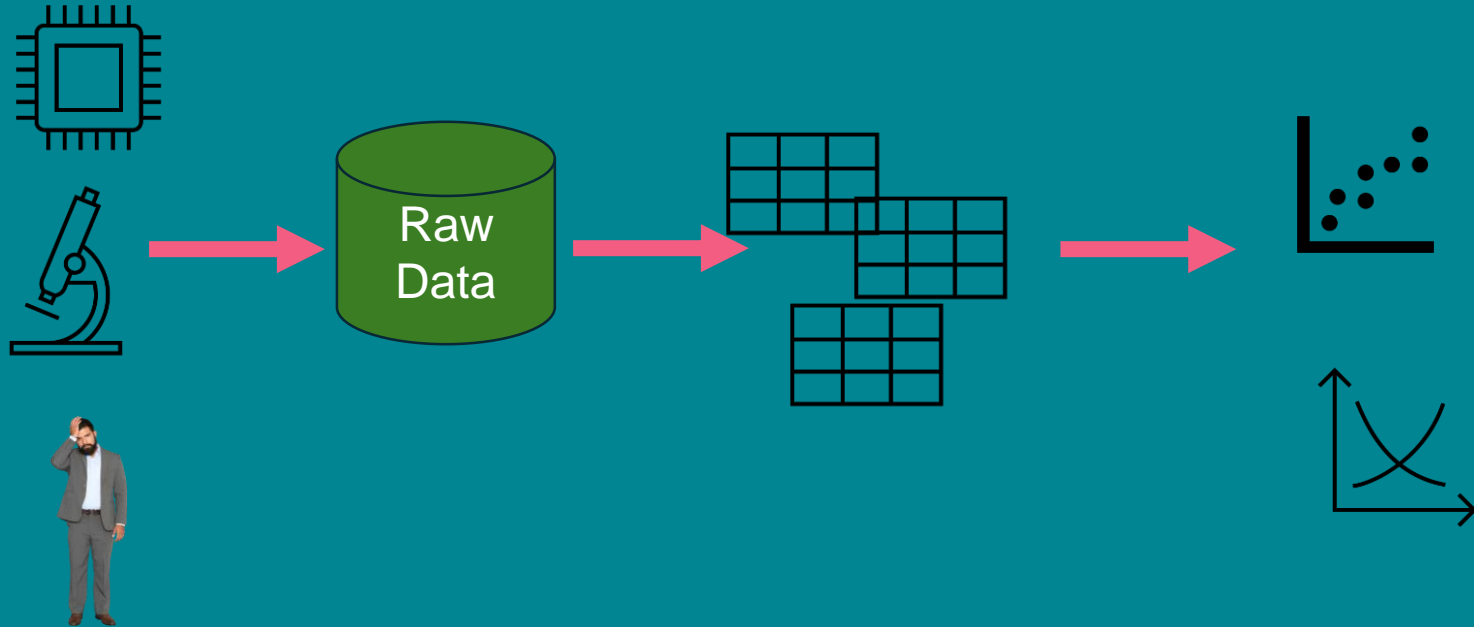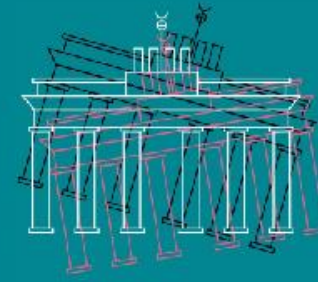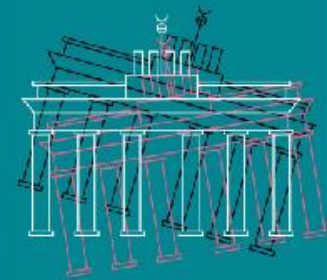
Cluster failure: Why fMRI inferences of spatial extent have inflated false-positive rates

https://doi.org/10.1073/pnas.1602413113

see also a summary at ars technica
https://arstechnica.com/science/2016/07/algorithms-used-to-study-brain-activity-may-be-exaggerating-results/

est. 40k publications have used the software packages mentioned

No Data Without Software

Role of structured metadata

- Quick overview of elements related to FAIR, provenance, good practices and quality → identifiers, authors, documentation
- Connection to other research artifacts → comprehensive view
- Machine-actionable → metadata-based tools with new insights for new research