National Research Data Infrastructure for the Neurosciences

http://www.nfdi-neuro.de

**NFDI Neuroscience**

Neuroscience

- Heterogeneous field with many subfields but common research questions
- Knowledge integration across spatial and temporal scales requires cross-domain questions and multidisciplinary methodological and conceptual approaches
- Computational neuroscience as bridging discipline
- Inherent need of data sharing and re-use
- Overlap and close links to neighbouring research areas

Complex data and metadata flow in an electrophysiology setup
modified from *Zehl et al 2016*
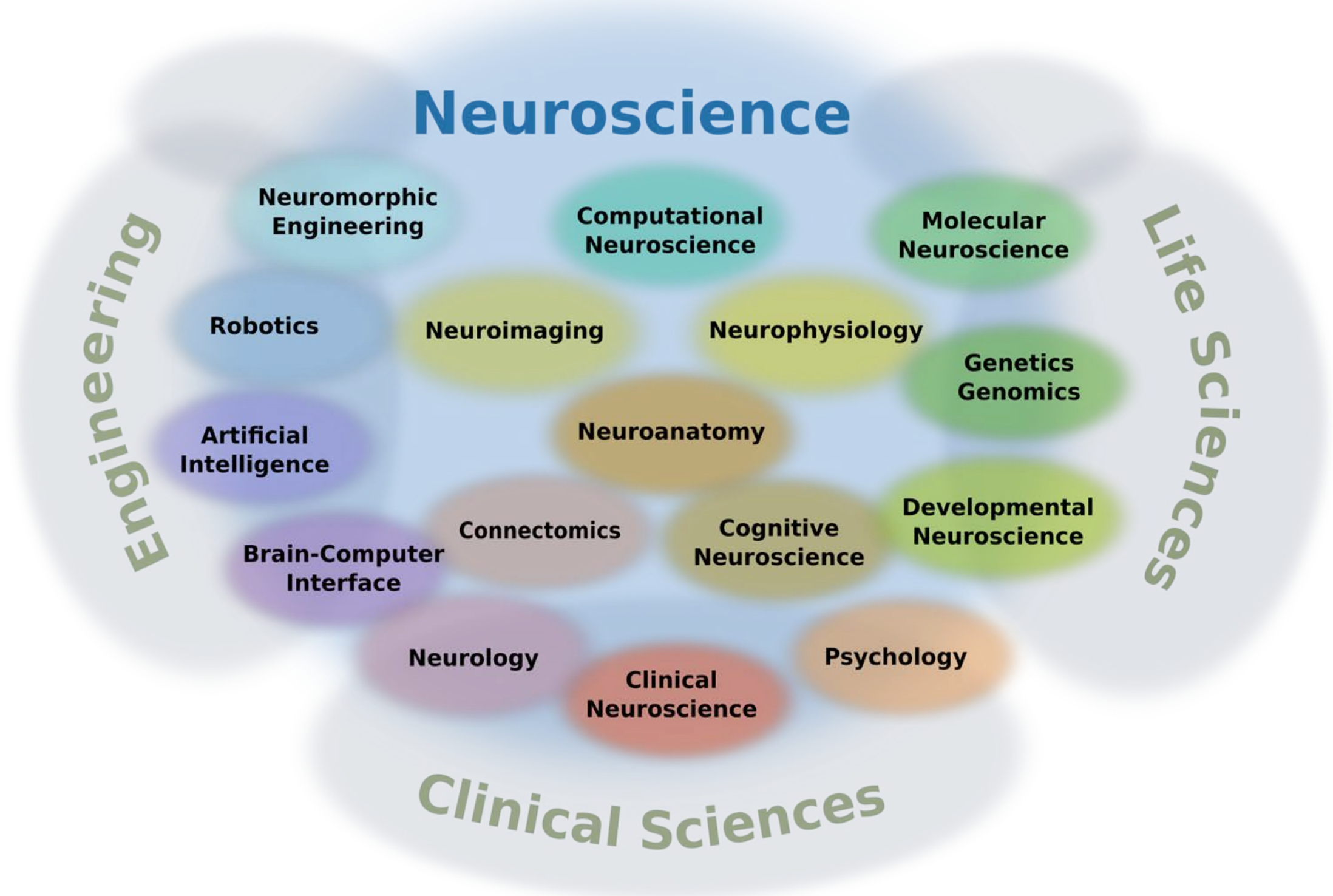
Research Data Management in Neuroscience

- High diversity of approaches, model systems, experimental methods, signal types, acquisition systems, data formats, analysis methods, ...
- High-dimensional, heterogeneous data streams require efficient data management and new concepts for analysis
- Lack of standardization
- Need for innovative concepts addressing established lab data workflows
- Emerging solutions (e.g. NWB, NIX, odML, Neo, Elephant, DataLad, GIN), particularly in neuroimaging (e.g. BIDS, NDM, XNAT, MRIQC, MeVisLab)
- Need for further development and support of community adoption

NFDI Neuroscience Concept and Approach
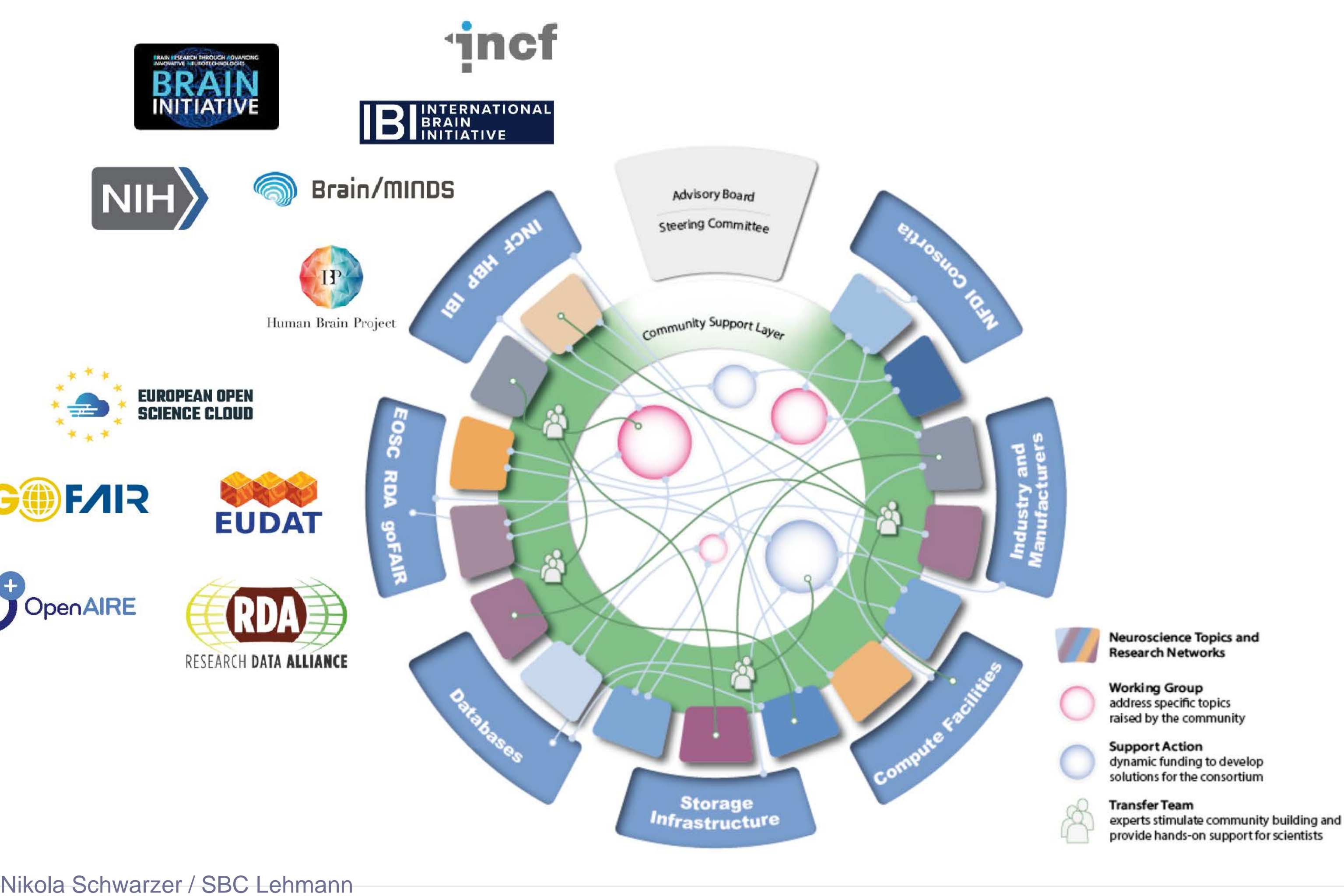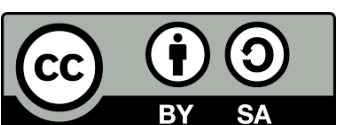

Nikola Schwarzer / SBC Lehmann

- Coordinated bottom-up process to build a community of scientists with skills and tools for competent research data management
- Community network of scientific labs, institutions and infrastructure providers covering the regional and topical diversity of neuroscience in Germany
- Development of practical solutions for identified needs for data management workflows from acquisition to publication
- Community process supported by coordinating transfer teams and working groups of users and providers
- Cross-discipline collaboration with complementary NFDI consortia on specific overarching topics, e.g. data protection
- Strong links to international neuroinformatics and neuroscience initiatives and infrastructures (e.g. INCF, HBP) ensuring interoperability and complementarity
- Teaching and training of scientists

NFDI Neuroscience Consortium

Coordination Group

- German Neuroinformatics Node: Thomas Wachtler
- Bernstein Coordination Site: Alexandra Stein
- Forschungszentrum Jülich: Michael Denker, Sonja Grün, Michael Hanke
- Bernstein Center Freiburg: Stefan Rotter
- German Primate Center: Hansjörg Scherberger
- Fraunhofer Institute for Digital Medicine: Jan Klein, Guido Prause
- Center for Behavioral and Brain Sciences, Magdeburg: Steffen Oeltze-Jafra, Frank Ohl, Oliver Speck, Constanze Seidenbecher, Yannic Waerzeggers

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