

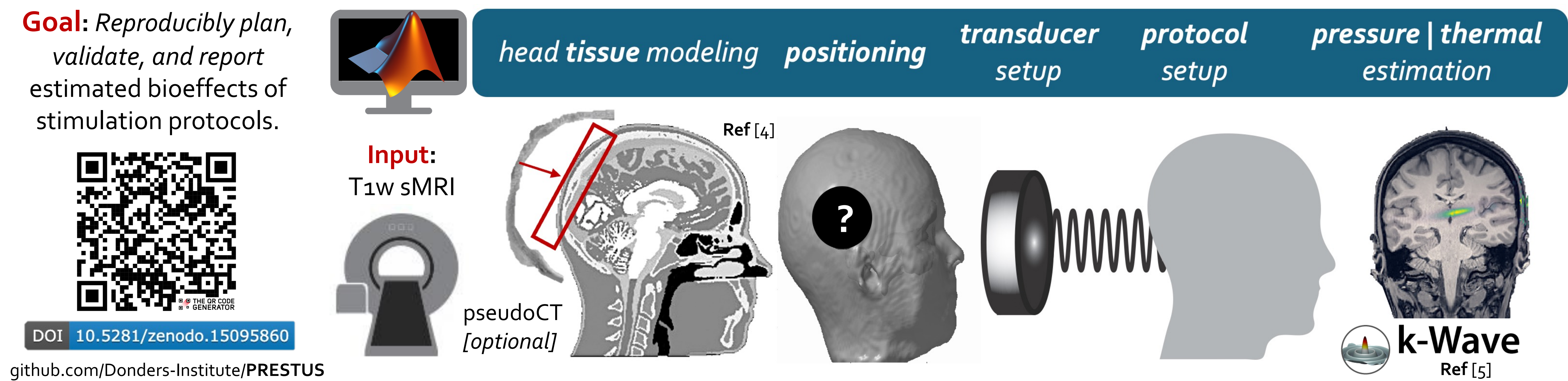
PRESTUS

An open-source toolbox for imaging-based ultrasound simulations

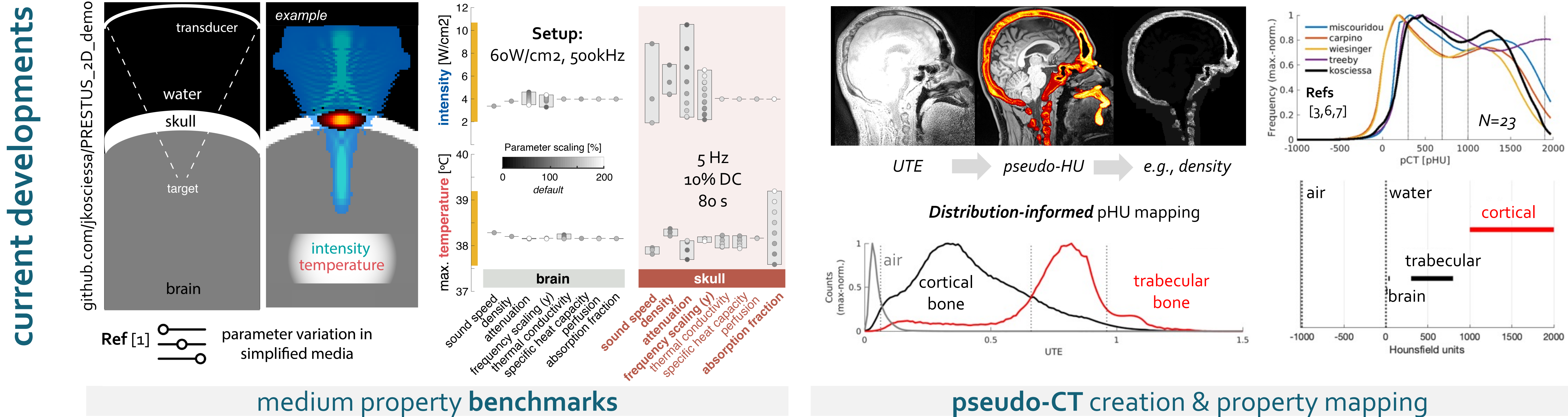
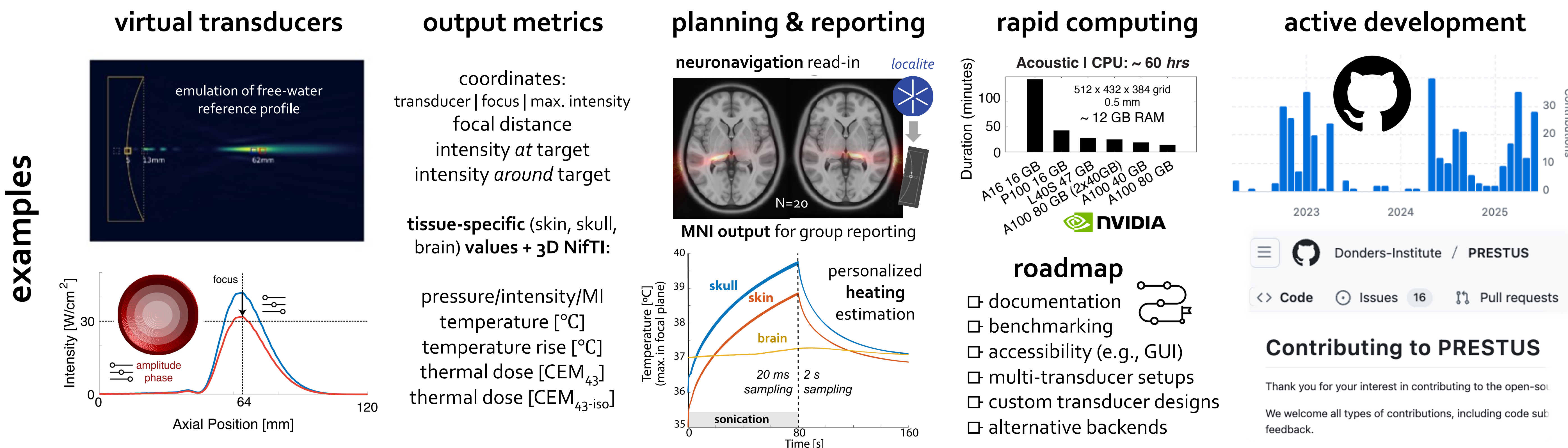
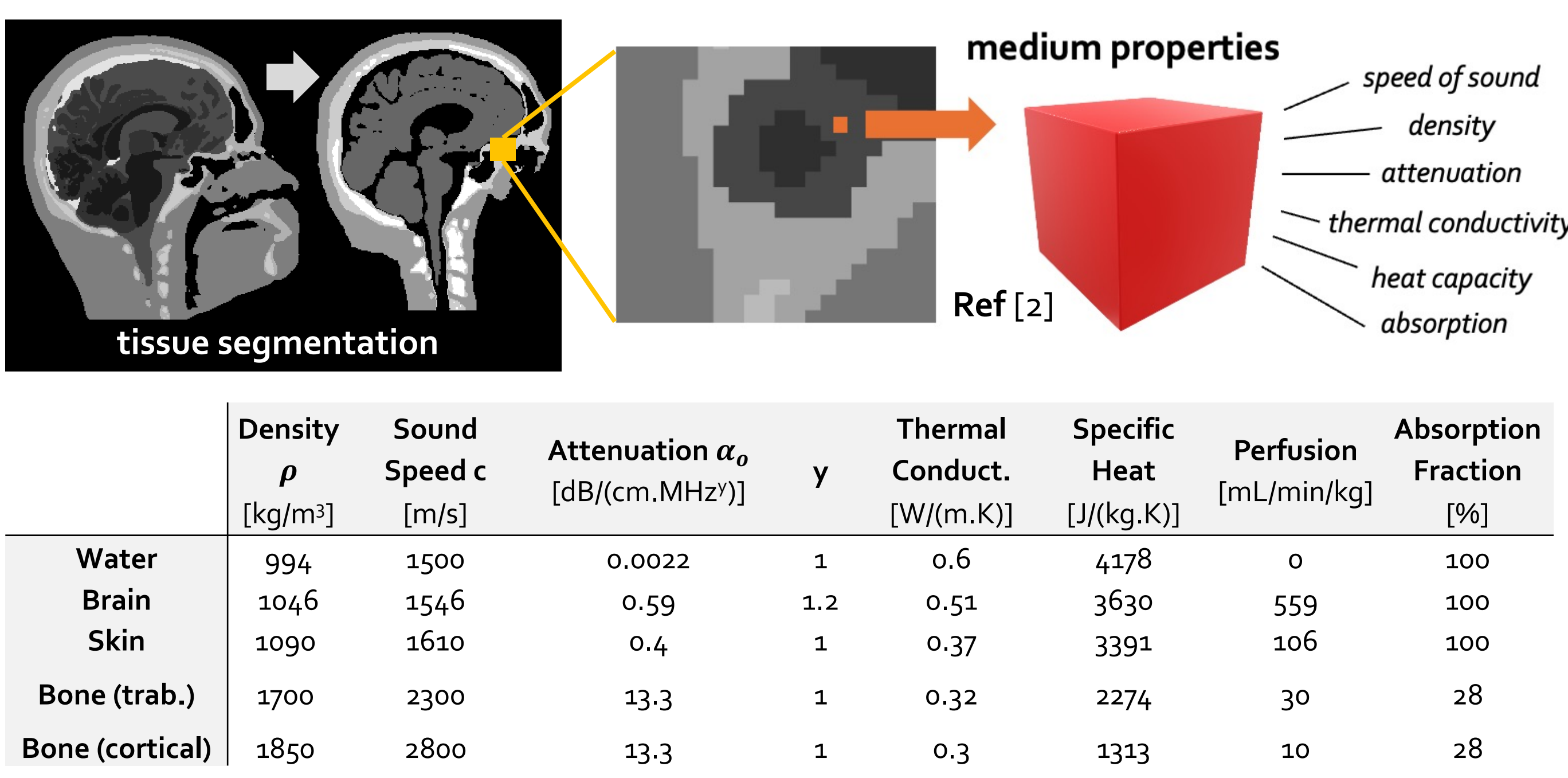
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Assessment of TUS safety and efficacy increasingly depend on the **realistic simulation** of acoustic energy deposition and tissue heating in individual participants. Physics engines are available, but the community also requires **end-to-end workflows** that allow to flexibly setup and run simulations through heterogeneous 3D head anatomy.



- Features:**
- MRI **segmentation** (SimNIBS 4 *charm*) & preprocessing.
  - 2D / 3D **grid** specification.
  - Multi-layer medium **property mapping**.
  - pseudo-CT for **continuous skull mapping**.
  - Virtual multi-element **transducer emulation**.
  - Estimation of **entry-target** coordinates.
  - Flexible **temporal protocol** specification (e.g., breaks).
  - Support for high-performance (**HPC**) and **GPU** computing.
  - 3D NifTI maps for **reporting** (subject- & MNI-space).



References  
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[5] Treeby & Cox (2010). J Biomed Opt. | [6] Treeby (2024). GitHub | [7] Wiesinger et al. (2018). MRM