Introduction to WG1 (Chris):

1. First draft document have been created.
2. A google document will be made available and everyone whom signs up is allowed to comment/edit the document.
3. Suggestion of Task Forces (sequences, patient preps etc.) and Roles is assigned as people sign up.
4. Leads/co-authors from WG3 reviews will be asked to join the writing process of their respective areas.
5. Andreas Pholmann (andreas.pohlmann@mdc-berlin.de), will interact with the appropriate persons for the pre-clinical book on renal MRI.

Introduction to biomarkers and standardization (Pim):

1. What is a QIB (Quantitative Imaging Biomarker)
    a. to be considered a QIB, the measurand (an underlying quantity of interest) **must be a ratio or interval variable**
    b. **Ratio variable**: clear definition of zero and for which the ratio of two values can be meaningfully interpreted.
    example: Tumor volume (0 = no tumor, 5 mm^3 vs 10mm^3 = twice as big)
    c. **Interval variable**: Measures for which the difference between two values is meaningful but the ratio of two values is not and for which the scales do not have a "meaningful zero"
    example: temperature scale in Celcius (in contrast to Kelvin)
    CT Hounsfield scale. By definition, zero in the Hounsfield scale is the density of water, so substances that measure zero in Hounsfield units do have some density.
2. Discussion of the lessons learned in neuroimaging.
    a. The (QIB) must be precisely defined, applicable to individual persons, neuroscientifically (physiologically) plausible and interpretable.
    b. These modeling (QIB) efforts go hand in hand with increasingly systematic assessment of the diagnostic value of brain markers across diverse samples.
    c. Models (QIB) should be generalizable in multiple ways: across individuals, assessment methods, experimental settings and populations.
    d. Testing a model's (QIB's) diagnostic value and generalizability is an open-ended process that requires participation from multiple laboratories. Therefore, the models (QIB methods) themselves must be easily deployable and shareable.
3. Literature:
    a. Sullivan DC *et al.* (2015) 'Metrology Standards for Quantitative Imaging Biomarkers', *Radiology*, 277(3), pp. 813–25.
    b. Woo CW *et al.* (2017) 'Building better biomarkers : brain models in translational neuroimaging', *Nature Neuroscience* 20(3), pp. 365–377.
    c. Suggested by Clemens Bos: Hunter DJ et al (2010) A Pathway and Approach to Biomarker Validation and Qualification for Osteoarthritis, *Clinical Trials Curr Drug Targets*, 11(5), pp. 536–545.

General discussion on scope of consensus

1. Next funding period, could incorporate more ambitious consensus areas, including phantoms, more advanced sequences/methods, reconstruction and analysis etc.
2. We could consider a survey to help consensus in the next funding period.