Human Organ Atlas Hub (HOAHub)

Terms of Reference

Table of Contents

1. Scope

- Studies in HOAHub should focus on Human Organs.
    - There is no restriction on types of human organs.
    - Animal organs may be included for validation, comparison, or other scientific or biomedical reasons, but must comprise a minority of the scan time.
- Studies in HOAHub should ideally be hierarchical in nature (e.g. large whole organ scans with localised zooms) to take advantage of HiP-CT technology.
- Studies should aim at adding greatest benefits to HOAHub (e.g. adding data to Human Organ Atlas, making the whole of consortium greater than sum of the parts).
- Primary samples need to be greater than ca. 3cm in all dimensions. (Biopsy or small portions for zooms can be included for hierarchical studies, but must comprise a minority of the scan time. (Note, smaller samples may be scanned at other beamlines, e.g. SLS TOMCAT, DLS I13, APS 2-BM, or responsive mode proposals to ESRF BM05).
- Studies involving significant developments such as dynamic imaging such as flow, mechanics and electrical should be done via responsive or LTP modes, and only considered for the HOAHub once more established.
- Please get in touch via hoahubesrf@gmail.com if you have any questions.

2. Overview of Governance and Management

The governance model of the HOAHub is set out below. The model aims to provide an effective and agile decision making core, (Executive Committee, EC), with scientific and technical input from the group of members (Members' Committee, MC). The objective performance of the HOAHub is ensured by an International Advisory Board (IAB). European Synchrotron Radiation Facility (ESRF) will act as Observers and provide factual information but will not participate in governance through voting.

The HOAHub is supported by a beamline scientist and portions of an organ technician, optics technician, algorithms developer and data engineer at ESRF. These staff are key to the success of the hub, and are currently funded by a Chan Zuckerberg Initiative-University College London-ESRF-University Hospital Aachen (CZI-UCL-ESRF-Aachen) grant. All members are committed to trying to find funding to sustain these roles, as appropriate, for continued HOAHub operation.

The HOAHub Director will act as a co-ordinator of the scientific activities that are decided upon through the Members' and Executive Committees. A lead CZI-funded Postdoctoral Research Fellow based at ESRF will work with the Beamline Scientist, both helping the Director to coordinate science.

A Project Manager will support the Co-Chairs and Director.

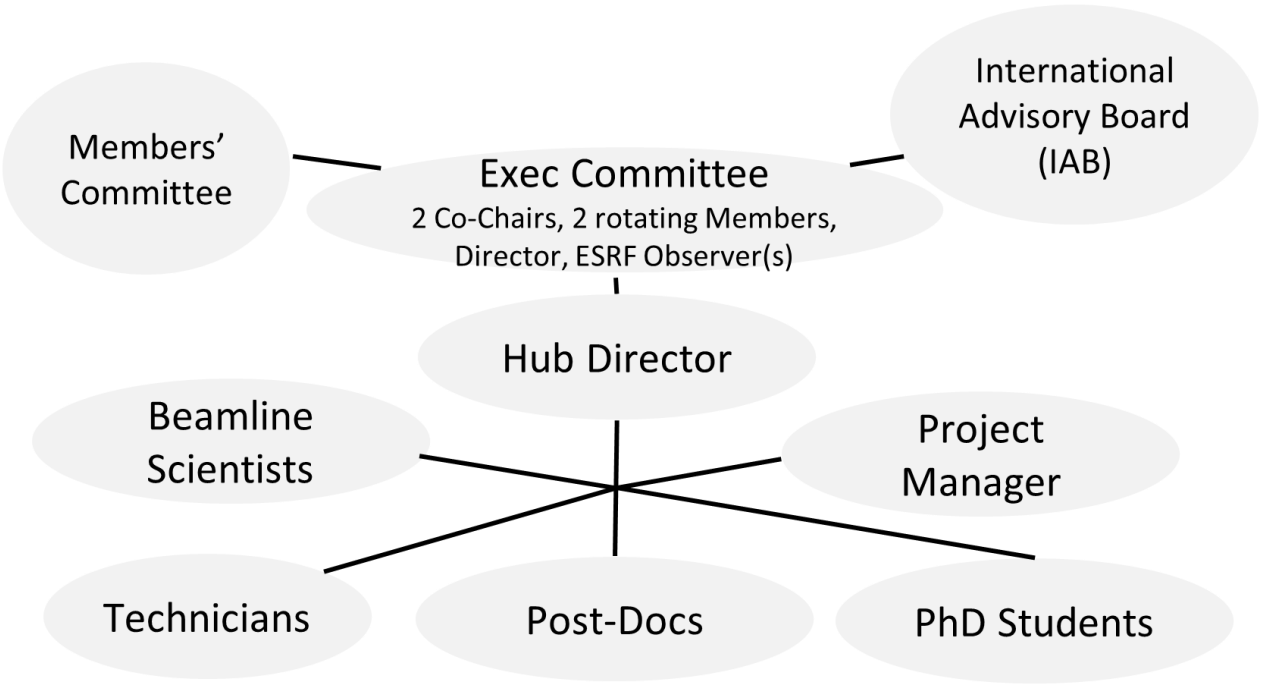

Figure 1. HOAHub governance model.

3. Executive Committee

Objective

- The Executive Committee will hold executive power to make key decisions not requiring votes from Members Committee (e.g. feasibility study substitution, requests to use unpublished results by collaborators, writing letter of support, etc). If any decisions or issues are not amicably resolved, it will be put to Members Committee for vote and final say.
- The Executive Committee will ensure the HOAHub website is set up and maintained.

Membership

The membership will consist of two Co-Chairs, two rotating Members, the Director and ESRF Observer(s).

The Co-Chairs, together with the Director, will provide overall leadership. The Co-Chairs and Director will co-ordinate the different activities in the HOAHub, with the Director overseeing day-to-day operations. For key decisions the full Executive Committee will vote.

The two rotating Members will provide input and advice from their research areas. The tenure for the rotating members is 24 months, (alternating appointment for consistency), appointed by a vote of MC.

The ESRF observer(s) will provide factual information when required but will not vote.

The Executive Committee has the discretion to reserve 20% of the HOAHub beamtime for contingency, feasibility and development opportunities.

Meetings

The Executive Committee will meet on a bi-weekly basis to address any decisions not appropriate for the Director or Co-Chairs to immediately resolve.

4. Members' Committee

Objective

- The Member Committee will contribute to the core scientific vision and goals of the HOAHub through complementary expertise with the other Members.
- The Member Committee will contribute resource (person/funds/other), play a role in governance, and seek funding for the HOAHub and aligned research projects.
- The Member Committee will share all results, methods, and resource with other members immediately and put data and software in the Human Organ Atlas and open access repositories upon first publication (or within 3 years, whichever is shorter).
- The Member Committee will help organize and run training.
- The Member Committee will follow the standard ESRF rules (safety, sample declaration, GDPR, travel rules, data policy, ...).

Membership

The initial Members are the Co-Investigators from the HOAHub proposal.

Existing collaborators with complementary expertise and applications, and significant contribution to the HOAHub will be invited to join the HOAHub as a Member. A decision on new membership will be made annually, through a vote of the MC.

Meetings

The Members' Committee will meet on a semi-annual basis. The Members shall each be permitted to delegate their vote to a nominate representative.

5. Collaborators

Objective

- HOAHub beamtime awardees who are not a Member or Collaborator, will automatically become Collaborators. When awarded a HOAHub beamtime, the Collaborators will share data and relevant experimental methods immediately with the Members.
- The Collaborators must agree to the HOAHub data/publication rules and put data in the Human Organ Atlas and software in open access repositories upon first publication (or within 3 years, whichever is shorter).
- The Collaborators will follow the standard ESRF User and Policies and Rules (safety, sample declaration, GDPR, travel rules, data policy, ...).

Meetings

The Collaborators will join regular and ad hoc Working Group meetings.

Table 1. The difference in benefits and commitments between Members and Collaborators.

Benefit / Commitment	Member	Collaborator
Have complementary expertise	Yes	Not required
Participate in Governance	Yes	Not required
Provide (or at least seek) funding	Yes	Encouraged
Organise and help run training	Yes	Encouraged
Submit Hub Feasibility Scan Proposals	Yes	Yes
Put data into HOA on 1st Pub.	Yes	Yes
Lead Hub Biomedical Challenge Proposals	Yes	No
Access to shared data, techniques, methods from day 1	Yes	No

6. Working Groups

Objective:

- The Working Groups are directly correlated to the workpackages from the HOAHub proposal. They will provide key scientific, technical and medical contributions to the HOAHub.

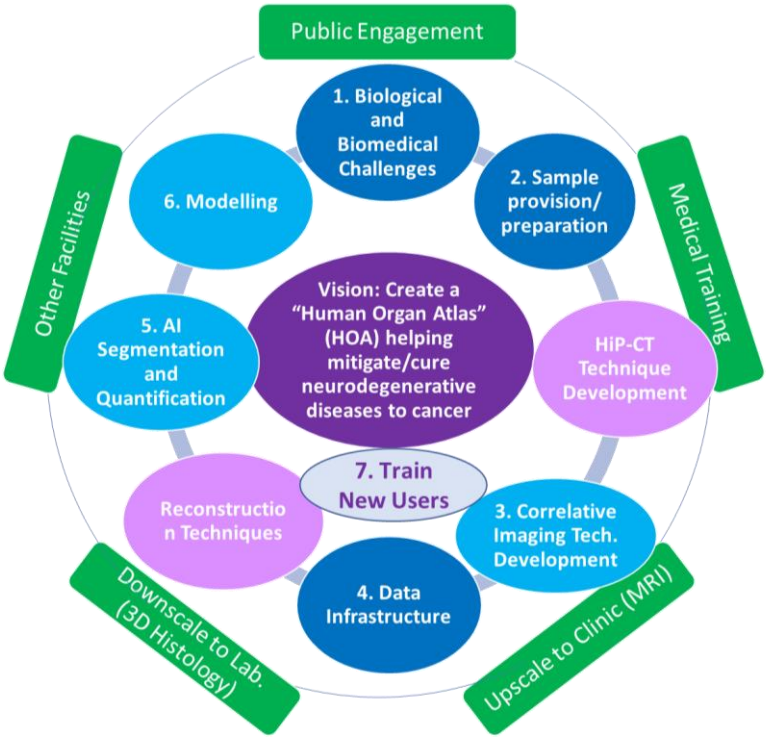

Figure 2. Working Groups in HOAHub.

Membership

Five working groups:

Working group	Chair
1. Biological and Biomedical Challenges & Translation to Medical Training, Education etc	Bernadette S de Bakker
2. Sample provision and preparation	Alexandre Bellier
3. Correlative Imaging Technique Development	Anastasia Yendiki
4. Data Infrastructure & AI Segmentation and Quantification	Anders Dahl
5. Modelling	Peter D. Lee

Chairs will be decided by a vote of WG members (an initial chair will be appointed at first MC). Both Members and Collaborators can join the working group.

Meetings

The Working Group meetings will be held regularly e.g. semi-annually.

7. International Advisory Board

Objective

- The International Advisory Board (IAB) will evaluate the performance of the HOAHub against its aim to "To create a synergistic interdisciplinary group exchanging ideas, best practice, physical and software resources making a highly efficient pipeline for HiP-CT, from autopsy to biomedical impact, solving some of the most relevant and important global biomedical questions".
- The IAB will comment on the quality and breadth of the research carried out in the HOAHub.
- The IAB will advise the Co-Chairs and Director on the future strategy for the HOAHub.
- The IAB will report its findings to the ESRF.

Membership

The membership will consist of

- 5 members, including:
    - At least one representative scientist to cover each of: life sciences, medicine, data sciences, and synchrotron imaging
    - Ex-officio members to include the Co-Chairs, Director, and HOAHub Members as required
- Membership will normally be for 3 years (5 max), with 1/3 replaced starting 3 years after being formed.
- Chair of the IAB is responsible for leading the IAB and reporting the findings.

Meetings

- IAB will attend one annual meeting.

8. Use of HOAHub and HiP-CT data and publication rules

We are making HiP-CT and associated data from Human Organ Atlas Hub (HOAHub) beamtime MD-1389 (and associated beamtimes, e.g. MD-1290) available for the purposes of collaborative research. If appropriate, a collaboration agreement will be entered into to cover the full terms under which the data are made available. By agreeing to this, you are agreeing to standard academic confidentiality terms, including not publishing the data without checking with use, and following the rules & data policies of ESRF (see www.esrf.fr/datapolicy) as well as our funding conditions from CZI (see chanzuckerberg.com/rfa/deep-tissue-imaging/), specifically:

- Arising Intellectual property should be made freely available for all academic and non-commercial use.
- Any datasets either curated or generated using the HiP-CT data shall be made publicly available and easily accessible online under an Open Definition-Conformant License.
- Any publications and research findings arising from using this data should made public availability without conditions or restrictions on academic and publication freedom. All publications of research findings need to be made open access.
- In acknowledgement, please include "This project has been made possible in part by grant number 2020-225394 and 2022-316777 from the Chan Zuckerberg Initiative DAF, an advised fund of Silicon Valley Community Foundation, CZIF2021-006424 from the Chan Zuckerberg Initiative Foundation, and the European Synchrotron Radiation Facility beamtime MD-1389 (or MD-1290, as appropriate), led by PD Lee, P Tafforeau, CL Walsh, et al."
- Please also cite the Nature Method Paper (DOI: 10.1038/s41592-021-01317-x) in any publication using HiP-CT generated data, and any other appropriate papers (see the list of publications here https://mecheng.ucl.ac.uk/hip-ct/publications/) and any resources you use (e.g. Google Neuroglancer, Siemens Healthineers).
- While the experiment A Form automatically grants access to view others' data on the data repository, it is important to note that users are not authorized to access and use others' data without their explicit consent. Please consult with one of the HOAHub Executive Committee members (i.e. PD Lee peter.lee@ucl.ac.uk) if you have any questions or concerns.
- Please check with one of the HOAHub Executive Committee (i.e. PD Lee peter.lee@ucl.ac.uk) before publication to make ensure no conflict of interest with other collaborators (or to resolve any conflict).
- Please provide one of the HOAHub Executive Committee (i.e. PD Lee peter.lee@ucl.ac.uk) a pdf copy after publication.

For the avoidance of doubt, the data are only to be accessed by you and your research group on a need-to-know basis and only for the purposes of complementary and/or collaborative research, including publication and dissemination.

Your continued use of HOAHub/HiP-CT data implies your acceptance of the aforementioned rules.

Ideally data will be shared via Dropbox or neuroglancer.

Once the data is placed on the human-organ-atlas.esrf.eu it is freely available, but we'd still appreciate your following the above if at all possible.