

Human Organ Atlas Hub (HOAHub)

Terms of Reference

Table of Contents

1.	<i>Scope</i>	2
2.	<i>Overview of Governance and Management</i>	2
3.	<i>Executive Committee</i>	3
	Objective.....	3
	Membership.....	3
	Meetings	3
4.	<i>Members' Committee</i>	4
	Objective.....	4
	Membership.....	4
	Meetings	4
5.	<i>Collaborators</i>	4
	Objective.....	4
	Meetings	4
6.	<i>Working Groups</i>	5
	Objective.....	5
	Membership.....	5
	Meetings	6
7.	<i>International Advisory Board</i>	7
	Objective.....	7
	Membership.....	7
	Meetings	7

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.

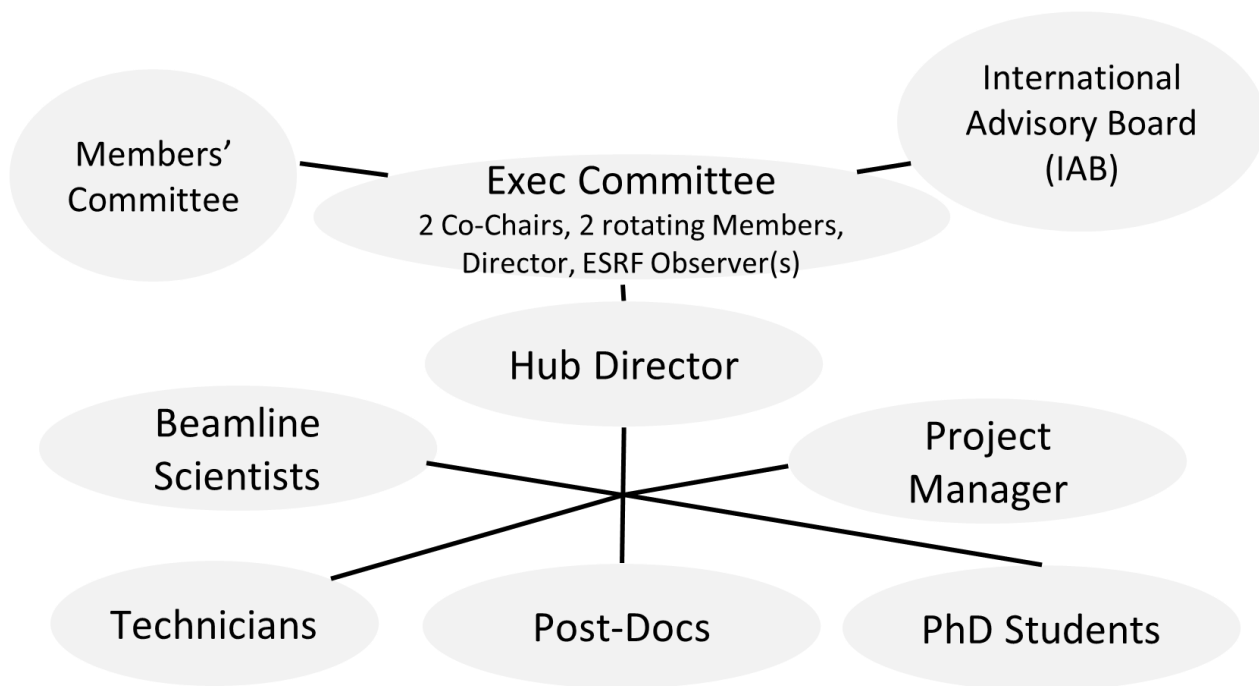


Figure 1. HOAHub governance model.

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 [Guidelines for Use of HOAHub and HiP-CT Data](#) 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 1 st 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 organised around organs. Each Working Group brings together researchers from across the disciplines represented in the HOAHub, including imaging technology development, artificial intelligence and segmentation, modelling, data infrastructure and clinical translation. This ensures every group has the full range of expertise while remaining focused on biologically and clinically coherent questions. They provide key scientific, technical and medical contributions to the HOAHub.
- The Working Groups are supported by the HOAHub Central Hub, which provides shared enabling functions: sample preparation, beamline staff and data handling. The Central Hub works continuously with each Working Group to align protocols, use beamtime efficiently, maintain consistent data standards, and give rapid feedback between acquisition, reconstruction and analysis.

Membership

Both Members and Collaborators can join a Working Group. New Working Groups will be added when a critical mass of researchers is reached.

Seven organ-focused working groups:

1. Lung
2. Heart
3. Brain
4. Biomechanics
5. Kidney
6. Cancer
7. Women's health

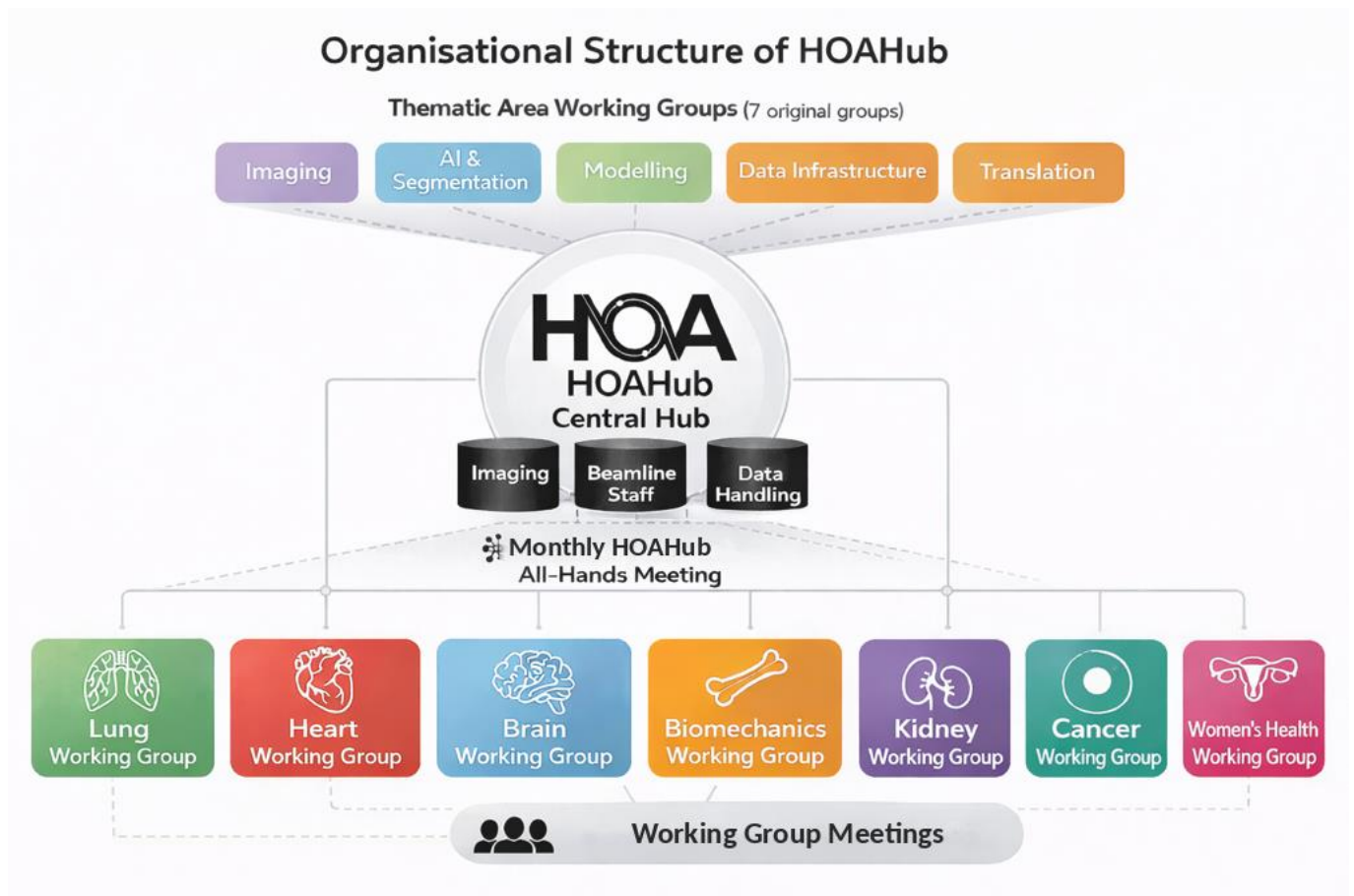


Figure 2. Working Groups in HOAHub.

Meetings

The Working Group meetings will be held regularly.

In addition, a monthly HOAHub all-hands meeting is open to all Members and Collaborators. Presentations rotate between the Working Groups and the Central Hub teams, so that technical, analytical and biological developments are shared across the whole Hub. Prospective new members present their biomedical challenge at this meeting, followed by an open discussion of whether HOAHub and HiP-CT are appropriate tools; these discussions often lead to a Feasibility and Training beamtime.

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.