|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITU Logo | INTERNATIONAL TELECOMMUNICATION UNION  **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2017-2020 | | FG-AI4H-E-101-R01 | |
| **ITU-T Focus Group on AI for Health** | |
| **Original: English** | |
| **WG(s):** | | Plenary | Geneva, 30 May – 1 June 2019 | |
| **DOCUMENT** | | | | |
| **Source:** | | FG-AI4H Chairman | | |
| **Title:** | | Report of the fifth meeting ("Meeting E") of the Focus Group on Artificial Intelligence for Health (FG-AI4H) | | |
| **Purpose:** | | Admin | | |
| **Contact:** | | Thomas Wiegand Fraunhofer Heinrich-Hertz-Institut, Germany | | E-mail: [thomas.wiegand@hhi.fraunhofer.de](mailto:thomas.wiegand@hhi.fraunhofer.de) |
| **Contact:** | | Secretariat / TSB | | Tel: +41-22-730-6805 Fax: +41-22-730-5853 E-mail: [tsbfgai4h@itu.int](mailto:tsbfgai4h@itu.int) |

|  |  |
| --- | --- |
| **Abstract:** | This document contains the report of the fifth meeting of the ITU-T Focus Group on Artificial Intelligence for Health (FG-AI4H). R01 corrects cross reference errors in Annex A as well as affiliation mistakes, and adds missing information to the executive summary. |

Executive summary

The fifth meeting of the Focus Group on Artificial Intelligence for Health (FG-AI4H) was held in Geneva, Switzerland, at the International Telecommunication Union (ITU) from 30-31 May 2019. This meeting was preceded by the fifth ITU-WHO Workshop on Artificial Intelligence for Health, held in the form of a [breakthrough session](https://aiforgood.itu.int/programme/day-2/) on "Good Health and Well Being" on 29 May 2019, during the [AI for Global Good Summit](https://aiforgood.itu.int/). Around 60 participants attended the meeting, and about 300 participants from the AI for Global Good Summit attending the breakthrough session.

The FG reviewed 30 input documents and the following were the main results from the fifth meeting. All ad-hoc groups were dissolved during the meeting and their work would henceforth be addressed by the Working Groups or at the Focus Group plenary level.

During the meeting, the Call for Topic Group Participation (CfTGP) along with the Topic Description Document (TDD) updates for the various topic groups were submitted and subsequently presented. One new Topic Group on "Outbreak detection" was created.

The meeting also supported the idea to create expert groups to assist guiding the work of the various topic groups. The criteria would be discussed by the FG management in the interim and submitted for consideration of the FG at its next meeting.

The meeting agreed to disband all ad hoc groups and instead use the working group mechanism to progress horizontal work. Accordingly, two new working groups were created:

* WG on data and AI solution quality assessment
* WG on data and AI solution handling

The idea to create two other WGs was supported, but creation was deferred, pending refinements:

* WG on ethics
* WG on public health

The Focus Group created the following new topic group:

* TG-Outbreaks on outbreak detection led initially by [Martina Fischer](mailto:FischerMa@rki.de) (Robert Koch Institute, Germany)

The Focus Group issued the following output documents:

* [FG-AI4H-E-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-101.docx): Report of the fifth meeting ("Meeting E") of the Focus Group on Artificial Intelligence for Health (FG-AI4H)
* [FGAI4H-E-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-102.docx): Updated Call for Proposals: Use Cases, Benchmarking and Data

The meeting also improved its online working methods by defining procedures for electronic approval of documents and for organizing e-meetings.

The next meeting of the Focus Group will take place in Zanzibar, Tanzania from 3-5 September 2019, preceded by the sixth ITU/WHO Workshop on Artificial Intelligence for Health on 2 September 2019.

CONTENTS

1 General 5

2 Approval of Agenda 5

3 Documentation and allocation 5

4 IPR 5

5 Management update 5

5.1 Overview of FG working methods and goals 5

5.2 Vice-chairs 5

5.3 WGs 5

6 Approval of Meeting D outcomes and updates 5

7 Outcome of the workshop (AI4G Breakout) 6

8 Ad hoc group updates 6

8.1 AHG on thematic classification scheme 6

8.2 AHG on data handling and data acceptance policy (AHG-DAH) 6

8.3 AHG on working methods for online collaborations 6

8.4 AHG on test data set assessment 6

8.5 AHG on a benchmarking platform (AHG-BP) 6

8.6 AHG AI for health device security and robustness benchmarking (AHG-AI4HDS) 7

9 Horizontal and strategic topics 7

10 Updates to TGs and new proposals 9

10.1 Template updates: TDDs and CfTGPs 9

10.2 TG-Cardio (Cardiovascular Risk Prediction) 9

10.3 TG-Cogni (Neurocognitive diseases) 10

10.4 TG-Derma (Dermatology) 10

10.5 TG-DiagnosticCT (Volumetric chest computed tomography) 10

10.6 TG-Falls (Falls among the elderly) 11

10.7 TG-Histo (Histopathology) 11

10.8 TG-Ophthalmo (Ophthalmology) 12

10.9 TG-Psy (Psychiatry) 12

10.10 TG-Radiotherapy (Radiotherapy) 12

10.11 TG-Snake (Snakebite and snake identification) 13

10.12 TG-Symptom (Symptom assessment) 13

10.13 TG-TB (Tuberculosis) 14

10.14 TG-Growth (Child growth monitoring) 14

10.15 Proposals for new topic areas 14

10.15.1 Outbreak detection 14

11 Review of previous output documents 15

12 Outcomes of this meeting 15

12.1 Ad-hoc groups 15

12.2 Working groups 15

12.2.1 Future WG on ethics 15

12.2.2 Future WG on public health 16

12.2.3 New WG on data and AI solution quality assessment 16

12.2.4 New WG on data and AI solution handling 16

12.3 Call for proposals 17

12.4 Call for topic group participation (CfTGP) 17

13 Working methods 17

13.1 General 17

13.2 Decision making by correspondence 18

13.3 Organizing interim electronic meetings 18

13.4 Mailing lists 18

14 Future work 19

14.1 Schedule of future FG meetings and workshops 19

14.2 Interim activities (online) 19

15 Funding and partnerships 19

16 Promotion and outreach 19

17 Any other business 20

18 Closing 20

Annex A Agenda 21

Annex B Documentation 24

Annex C List of participants 26

Annex D Summary of discussions on FG next steps 29

D.1 Health topics 29

D.2 New and transitioned working groups 29

D.3 AIcrowd benchmaking software platform 30

D.4 Expert groups 30

D.5 Operational aspects 31

# General

The FG-AI4H Chairman, Mr Thomas Wiegand (Fraunhofer HHI, Germany), welcomed the participants to the fifth meeting that was held at ITU HQs in Geneva, 30-31 May 2019.

The meeting was preceded on 29 May 2019 by the 5th ITU/WHO workshop on AI for health, held as the health breakthrough session of the AI for Global Good Summit (see §7). Initially planned until 1 June, the meeting completed its deliberations and was adjourned on 31 May.

# Approval of Agenda

The agenda was slightly amended as per the availability of the proponents of a few of the contributions.

Following this, the agenda was approved as in [E-001-R2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-001-R02.docx?d=w77af2732ac6540528ba81953f7bd23ca).

# Documentation and allocation

The initial list of documents and their allocation in [E-001-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-001-R1.docx?d=w8d4c728e70ca4428a911c7bb7b09c514) was reviewed and approved, and updated as needed during the course of the meeting, as found in its latest revision, [R2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-001-R02.docx?d=w77af2732ac6540528ba81953f7bd23ca).

# IPR

The IPR statement as per WTSA Resolution 1 was read (E-001-R1 Annex C) and no affirmative replies were received.

# Management update

## Overview of FG working methods and goals

[E-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-028.pptx) - FG-AI4H – Overview

Through this presentation, the Chairman provided an overview of the current work and operations of the Focus Group.

During the discussion, queries were raised on the ethical perspective needed when employing AI-based technologies for healthcare. In view of this and the need for more specific guidelines in this area, the Chairman proposed the creation of an ethics working group. The ToR for this proposed working group would need to be finalized at the upcoming meeting. See §12.2.1 for further information.

## Vice-chairs

No updates were proposed to the vice-chairs of the Focus Group at this meeting.

## WGs

The Focus Group was informed that, as per the procedure agreed at the Shanghai meeting, Mr [Wolfgang Lauer](mailto:Wolfgang.Lauer@bfarm.de), from the Federal Institute for Drugs and Medical Devices, Germany, was welcomed as a new vice-chair of the WG-RC.

# Approval of Meeting D outcomes and updates

The report of the FG-AI4H meeting D in Shanghai, 2-5 April 2019 in [D-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-101.docx?d=w7de9c02960114437a10f8aa526134875) was approved.

The meeting noted the published outcome documents from meeting D:

* [D-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-102.docx): Updated call for Proposals: use cases, benchmarking, and data
* [D-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-103.docx): Updated FG-AI4H data acceptance and handling policy

The group also noted the updated call for proposals in [E-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-004.docx), prepared by the WG-O Chairman based on the discussions during Meeting D. It was also agreed that this document would be updated on a regular basis before each upcoming meeting.

# Outcome of the workshop (AI4G Breakout)

The meeting noted [E-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-002.pptx) containing the outcomes of the FG-AI4H workshop that was organized during the AI for Good 2019 Summit, as its [Breakthrough "Good Health and Well Being"](https://aiforgood.itu.int/programme/bt-2/) session on 29 May 2019.

During the workshop, the Chairman had also delivered the presentation contained in [E-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-028.pptx?d=wf8d7d1d3be7344fcab1129355217d993) in order to give new participants an insight into the objective, functioning and working methods of the Focus Group.

# Ad hoc group updates

The available updates from the six-existing ad hoc groups were reviewed during the meeting.

In view of the evolution and increased maturity of the working methods of the FG, the existing ad-hoc groups were dissolved at the meeting and their activities, where it was deemed that further work is necessary, are to be continued under the existing or new WGs. See §12.1 and 12.2 for further details.

## AHG on thematic classification scheme

The AHG chair is Ramesh Krishnamurthy. No interim activities were held, hence the latest version of the thematic classification found in [C-104](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-C-104.docx) remains in force.

## AHG on data handling and data acceptance policy (AHG-DAH)

The AHG co-chairs are Benjamin Muthambi, Daidi Zhong and Marc Lecoultre. There were no interim activities, although this is recognized as an essential topic for the FG. See §12.2.4 concerning the continuation of this work.

## AHG on working methods for online collaborations

The AHG chair is Benjamin Muthambi. No discussions were held during the interim period. The AHG chair noted that he was waiting for a collaboration platform to be provided so he could have started the discussions, while the Chairman's expectation was that a policy / working method that include online collaboration would be developed within this ad-hoc group. It was agreed that, instead of a dedicated group, TG-Cardio would be used to experiment different methods and derive a proposal for the FG.

## AHG on test data set assessment

The AHG co-chairs are Messrs Arun Schroff and Wojciech Samek. No interim activities were held, and the co-chairs noted that they needed more community support to advance on the work assigned to this ad-hoc group. It was noted that there was one contribution at this meeting that could potentially contribute to clarifying the test data assessment issue.

It was highlighted that a key role of group leaders is to catalyse the discussions on a topic, not necessarily develop it themselves.

## AHG on a benchmarking platform (AHG-BP)

The AHG chair is Mr Markus Wenzel. The progress report for this AHG is found in [E-008](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-008.docx).

The FG wants to assess AI models outside sample data. It is pertinent to note that the data being used for the work of this FG does no harm. There were certain limitations observed as a part of the tests. It was difficult to make it run based on the instructions provided. The front end was managed by Bastiaan Quast (ITU), however, the backend is still to be addressed.

It was noted that the AIcrowd platform does not appear to have use cases with high-dimensional evaluation metrics.

## AHG AI for health device security and robustness benchmarking (AHG-AI4HDS)

The AHG co-chairs are Messrs Ziyi Yang and Kai Fu. Even though the progress report in [E-007](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-007.docx) was prepared, no one was present to introduce the report. The Chairman went through the report briefly and suggested that the participants read through the report too.

# Horizontal and strategic topics

[E-021](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-021.docx) (Identifying Regulatory Challenges and Opportunities of AI in Health) [India]

This contribution highlighted the growth in the AI domain owing to the big data and machine learning techniques. It further underscored that despite AI-based tools being used for health-care and medical research, there are limited regulatory frameworks to pave future work in this area as countries are finding it increasingly difficult to develop and implement regulatory and ethical guidelines that will be acceptable to everyone. Accordingly, this contribution proposed to conduct a study on the challenges and opportunities of AI in health (in line with the Working Group on "regulatory consideration of AI on health").

[E-023](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-023.docx) (Proposal to create an AI for health expert group) [Chairs WG-O, FG]

This contribution presented by the Chairman, proposed the idea of creating a list of experts across the board that would be tasked to scrutinize different topic groups from creation to structuring from various angles, priority/relevance, ethical, feasibility, etc. For creating this pool of experts, it was considered prudent to tap into existing expert panels on relevant topics including (but not limited to) regulatory issues on health and artificial intelligence.

This contribution also proposed the creation of "a system of checks and balances" through which Rapporteurs (from the expert pool) would be assigned for every topic group.

It was noted that a list of partners had already been identified for this purpose from medical, academic and engineering/data science background (academia and governments)

Keeping in mind the fast-paced work of the topic groups, these experts would mostly be engaged through online collaboration.

As a part of the vetting processing for the experts, it was suggested that the profile of the proposed expert is posted online for three months in order to gather comments before their inclusion in the expert pool.

While selecting experts, the following aspects would need to be taken into consideration:

* Inclusion of medical experts from different geographical regions
* Maintenance of gender balance
* Declaration of conflict of interest (if any)

As a part of their supervisory duties, the pool of experts would be involved in:

* developing the work plan; and
* reviewing deliverables for each TG to ensure that the work is not biased towards a particular AI solution

Further clarification was also sought on the interaction between topic groups and the choice of topics which will in the future be explored by the Focus Group. There is consensus that the structure and interactions between the topic groups could be created on a case-by-case basis.

There was general support for the creation of experts' panels, with the meeting considering it appropriate to establish a process for their selection. The FG management would work through a proposal to be reviewed at the next meeting.

[E-025](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-025.docx) (Robustness/Safety & reliability in AI4H applications) [Fraunhofer HHI]

This contribution was presented by Luis Oala based on the slides contained in [E-025-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-025-A01.pdf).

It explored the types of requirements when evaluating AI systems in terms of availability and reliability with the final goal of creating safe and reliable AI systems

Through this presentation, this contribution also proposed a working definition for the term "robustness" which was as follows:

"Robustness is a desideratum we place on an AI system to not commit any gross, unexpected errors under slight changes of the environment Φ or to at least handle them benignly, e.g. by letting a human AI system operator know that something unusual has happened".

This definition was derived from the work of Peter J. Huber, Thomas G. Dietterich and Stuart Russell.

The basic life cycle of AI system was given as follows: define, train, validate, deploy. It was noted that OECD had also came up with a similar cycle.

It was highlighted that each stage of the AI system life cycle has a specific robustness assessment task. With reference to this, the areas of action were given as follows:

1. Data fidelity: This could encompass normalization, quality control and audit;
2. Robust training: If changes can occur during deployment phase, model needs to be prepared. This does not include modifying the training procedure;
3. Robustness validation: This involves targeting the vulnerability of the model and employing granular examination along with hypothesis testing;
4. Alarm system (benign error handling): This includes the "bells and whistles" a model should have when it is being trained and validated. This could employ different tools-outlier tests, intuition methods and uncertainty quantification (mainly predictive uncertainties related to how much should the output be relied on).

During the discussion, it was noted that this contribution was a productive channel to combine efforts within FG and enrich data fidelity action areas. However, there were certain queries on whether tampering with the datasets (manual perturbations) would fall under robust training in the above scenario.

Another point of discussion was related to the notion of implementing tools across verticals (black box) and how these should be looked at on a case-by-case basis, overlooking which this proposed activity could be unfeasible. The Chairman clarified that it is possible to create a category of health problems, which could eventually share tools and open source packages.

Furthermore, during the discussion, it was noted that "robust training" was not in the scope of the FG. However, a document with best practices for the same could be created.

Towards the end of the discussion it was decided to create an ad hoc group on *testing robustness of AI4H solutions* to create a set of practical documents on the four areas elaborated on by the contribution. However, with the dismantling of all the ad-hoc groups later in the meeting, this work was transferred to the newly created Working Group on Data handling. See §12.2.4.

[E-022](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-022.docx) (Unified mathematical framework and data mining algorithms) [Syria]

As the proponent was not present, this contribution was noted and the Chairman encouraged the participants to read the contribution, with the expectation that the author could present it at a future meeting.

[E-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-029.docx) (Contradictory terminology) [Philips]

This contribution highlighted that the use of the term "artificial intelligence" in different domains could have conflicting terminologies and definitions. As the core work of the Focus Group is directed at AI, it is essential that participants are aware of the differences in definitions and the fact that it cannot be corrected. Certain examples were provided with reference to validation: good bias vs bad bias; supervised learning vs unsupervised learning; etc.

During the discussions, it was noted that WHO has a taxonomy for digital health, which could be used as a reference point for the work of the Focus Group along with other WHO evidence-based standards.

As a part of a study conducted by Pat Baird (Phillips) at another SDO, an existing collection of conflicting terminology could be provided to the Focus Group for its future work.

Towards the end of the discussion of this contribution, the following was agreed upon:

* Listing of conflicting terminologies with columns on each term and what they might mean in different fields. In case there is conflict on the use of a certain term, this to be highlighted to the FG for its work
* Glossary of definitions used by other groups is being prepared and will be submitted (in its current form) by Philips.

# Updates to TGs and new proposals

## Template updates: TDDs and CfTGPs

No updates were prepared for the TDD and CfTGP templates at this meeting. If needed, updates can be approved by correspondence.

## TG-Cardio (Cardiovascular Risk Prediction)

The topic driver is [Benjamin Muthambi](mailto:brm5@caa.columbia.edu). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A01.docx)
* TDD Update: document E-009 was reserved but not submitted
* Contributions: none

The updated CfTGP contained in [E-005-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A01.docx) included several subtopics to be considered and elaborated on within the Topic group. The planning process for the overall sub-topics and sub-groups from the conceptualization to the project planning have also been provided in the CfTGP.

It was noted that the main challenge related to different projects using algorithms and datasets (with differing variables) is still relevant for this TG. With reference to this statement, during the discussion, it was highlighted that AI models in healthcare are complex. In countries like Colombia, data is very fragmented and therefore, it is difficult to prioritize and ensure quality of data. However, predictive models can serve as the basis for future work.

The meeting appreciated the work of the Topic driver and noted that as the plan has been well etched out, it will be able to draw in experts in this domain who are interested in the work of the TG.

## TG-Cogni (Neurocognitive diseases)

The topic driver is [Marc Lecoultre](mailto:ml@bigps.ch). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A02.docx)
* TDD Update: [E-010](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-010.docx) - Presentation: [E-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-010-A01.pptx)
* Contributions: [E-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-027.docx)

The updated TDD was provided as contained in [E-010](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-010.docx). As was highlighted during the previous meeting, this TG aims at establishing the empirical basis for testing the clinical validity of machine learning-based diagnostics for Alzheimer's disease and other neurocognitive disorders.

During the discussion, it was noted that directory of data sets and people, are classified using different data sets. Hence, data would have a geographical basis, which is essential to be considered for the work of this TG.

The contribution related to this TG is contained in [E-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-027.docx), which underscored the willingness of the Laboratory for Research in Neuroimaging in sharing a representative sample data set which includes both real world patient's data and data collected from research cohorts.

However, it was noted that the issue of how to partition the data into private/public has not been addressed yet. Hence, this discussion was considered more prudent for the ad hoc group on data policy or its successor WG (with the dissolution of the ad-hoc groups; see §12.2.4).

## TG-Derma (Dermatology)

The topic driver is [Maria Vasconcelos](mailto:maria.vasconcelos@fraunhofer.pt). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A03.docx)
* TDD Update: [E-011](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-011.docx)
* Contributions: None

The updated CfTGP for this Topic Group is contained in [E-005-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A03.docx)  along with the TDD update in [E-011](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-011.docx) . The TDD mentioned the use of several public data sets which would be used for the work of this TG. Some of these public data sets being considered include:

* The Interactive Atlas of Dermoscopy (EDRA)
* International Skin Imaging Collaboration (ISIC) Archive
* Dermofit Image Library: The images on the library are not available publicly but can be purchased for use.

3Derm expressed their interest in joining the activities of the TG. In order to boost the number of experts participating in this TG and balance, the geographical diversity of participation, it was suggested that all TG Drivers have a meeting. WHO offered to facilitate connections.

## TG-DiagnosticCT (Volumetric chest computed tomography)

The topic driver is [Kuan Chen](mailto:ckuan@infervision.com). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A04](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A04.docx)
* TDD Update: [E-019](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-019.docx)
* Contributions: none.

These documents were presented by the topic driver. During the presentation, it was highlighted that lung cancer if detected earlier could lower the risk of mortality. It was also mentioned that AI could play a major role in diagnosis of lung cancer. The topic driver mentioned that the variability for the training and test data in dermatology could be quite high. Even when dealing with the same physician and same patient (within 24 hours), there can be varying results. Additionally, it was suggested to avoid the use of any public data sets in initial training. So far, there is no gold standard for using AI in lung cancer detection. To cope with this variability, one of the approaches employed by researchers is to expand the existing data to cover multiple areas.

A multi-reader and multi-use-case approach is being used for this TG with the proposed inclusion of professionals with more than ten years of experience.

It was noted during the discussion that major brands of scanners (used for lung cancer detection) should be included as a variable for the work of this TG as the data they provide may differ and accordingly, the efficacy of the algorithms can vary significantly if trained with data from a certain manufacturer and then tested with images from another one.

It was also highlighted that the issue of robustness of data and solutions needs to be addressed in the data policy document.

## TG-Falls (Falls among the elderly)

The topic driver is [Inês Sousa](mailto:ines.sousa@fraunhofer.pt). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A05](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A05.docx)
* TDD Update: [E-012](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-012.docx)
* Contributions: None

These updated documents were briefly presented by the topic driver. It was noted during the presentation that this TG was still seeking additional data and expertise to further its work. WHO highlighted that there is keen interest on this topic and therefore the FG should continue to pursue it and look into acquiring more data.

## TG-Histo (Histopathology)

The topic driver is [Frederick Klauschen](mailto:frederick.klauschen@charite.de). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A06](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A06.docx)
* TDD Update: [E-013](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-013.docx)
* Contributions: None.

These documents were presented remotely by the topic group driver. During the presentation, it was reiterated that AI can make diagnostics conducted through histopathology more robust and reliable. The data provided so far for this has been considered acceptable for research. The digitized images utilized by the TG are anonymous. Hence, there is no possibility of extracting DNA information. This TG is working on having 3 independent annotations. With reference to ethical considerations, there were no immediate concerns as approval was already sought to use these images for research (including FG work) and the images had been anonymised (as opposed to actual slices, the image cannot be used for DNA extraction). The TG also noted that physical resolution can bring about a bias, hence scaling would be required for its data.

The scores and metrics for this TG would focus on local classification accuracy and benchmarking along with the ability to identify cancer cells and tumour-infiltrating lymphocytes (TILs). Clinical data may also be included in benchmarking effort

The data for the TG will be hosted on the ITU server. Accordingly, 90 images will be moved to this server out of which ten will be made public.

It was also noted that the TG ran a first benchmarking experiment on HHI infrastructure with a submission from Singapore that was tested on Charité Berlin data.

## TG-Ophthalmo (Ophthalmology)

The topic driver is [Arun Shroff](mailto:arunshroff@gmail.com). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A07](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A07.docx)
* TDD Update: [E-014](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-014.docx) – Presentation in [E-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-014-A01.pptx)
* Contributions: None.

These documents were presented by the topic driver who mentioned that the call for participation has been updated since Meeting D. It was mentioned during the presentation that EyePACS had been approached but no official conversations were held yet to check whether they can provide undisclosed data sets. The topic driver would follow up on the potential collaboration with EyePACS and provide a report at the next meeting.

Further collaboration for this TG was highlighted during the presentation were as follows:

* Potential pilot project discussion with Senegal
* Developing AI-algorithms-UK Biobank (retinal images)
* Potential collaboration with FG and MIT to be explored-

Next steps for this Topic Group included the completion of the TDD with the help of other members and the gathering of data sets from India on-site operations.

## TG-Psy (Psychiatry)

The topic driver is [Nicholas Langer](mailto:n.langer@psychologie.uzh.ch). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A08](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A08.docx)
* TDD Update: [E-015](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-015.docx) – Presentation in [E-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-015-A01.pdf)
* Contributions: None.

The documents were presented by the topic driver. During the presentation, it was highlighted that psychiatric disorders are common and their onset is usually before the age of 24. However, the diagnosis of psychiatric disorders involves long interviews and this process can be costly. It was also noted that the diagnosis could often be subjective. In this scenario, AI could help overcome subjectivity while helping lower the cost.

This TG will be using MATLAB data files and benchmarking for predicting disorders across the demographic. A scoring system will also be allocated for this purpose as multiple disorders can exist. The TG will also utilize diagnoses of the DSM5 *Diagnostic and Statistical Manual of Mental Disorders*.

It was noted that continuous prediction and monitoring for psychiatric disorder will remain a challenge. However, new data will be included as the work progresses and each new data submission will have a timestamp which will help track progress.

## TG-Radiotherapy (Radiotherapy)

The topic driver is [Zhenzhou (Joe) WU](mailto:joe.wu@biomind.ai). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A09](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A09.docx)
* TDD Update: document E-020 was reserved but not submitted
* Contributions: None

The TG driver did not participate to brief the group on progress achieved in the interim period. The group was reminded that TGs that did not progress across two meetings are subject to discontinuation.

## TG-Snake (Snakebite and snake identification)

The topic driver is [Rafael Ruiz](mailto:rafael.ruizdecastaneda@unige.ch). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A10](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A10.docx)
* TDD Update: [E-016](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-016.docx)
* Contributions: None

The documents were presented by the topic driver. As was mentioned in the preceding meetings, the issue of snakebites remains a constant problem in developing countries like India as venomous bites could cause death or disabilities.

During the presentation, it was highlighted that the WHO snakebite envenoming campaign was launched, which received strong interest from countries like India and Nigeria

The topic driver noted the shortcomings faced by the TG including (but not limited to) the following:

* No single anti-venom is available
* Limited availability of anti-venom in hospitals
* While Snake id is a core part of the process, it is also complex to use
* Clinicians may not be experts in snake biology

Currently, over 350,000 training data images were available for the work of the TG. Additionally, collaborations/events are being formalized with the following groups to receive additional images for this TG:

* Museum of natural history (in Michigan) covering 900 species of snakes.
* HerpMapper, a biodiversity platform that also covers other animals. This partnership could bring 50,000 images to the database.

The TG driver also proposed the organization of a "Snakathon" to identify snakes

It was also noted that Conference on Computer Vision and Pattern Recognition (CVPR) had accepted the proposal on this topic sent by UNIGE-Health.

While this TG has made significant process, the work was still based on evidentiary based diagnosis with hotspots of snake-bite occurrence was still noted to be missing.

## TG-Symptom (Symptom assessment)

The topic driver is [Henry Hoffmann](mailto:henry.hoffmann@ada.com). The following documents were available at this meeting for this TG:

* E-meetings: [E-006](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-006.docx)
* CfTGP: [E-005-A11](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A11.docx)
* TDD Update: [E-017](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-017.docx) – Presentation [E-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-017-A01.pptx)
* Contributions: None.

The documents were presented by the topic driver. The main data inputs for this TG includes gender, age, etc. The main output will be:

* Classification of whether the situation is an emergency or not
* Differential diagnosis
* Calling for additional tests to study the symptoms reported

It was noted that this TG faces the daunting task of combining different datasets, with labelling remaining to be a major challenge. To overcome this, the work of the TG has been divided into "self-assessment" and "clinical system assessment". With the added difficulty of acquiring real patient data, the idea of using synthetic data for this TG is to be further explored. If successful, then it would be ideal to extend this idea to all topic groups.

On the logistics front, the Focus Group Counsellor highlighted that an e-mail reflector has been created for this TG and the call for the participation has been designed.

## TG-TB (Tuberculosis)

The topic driver is [Manjula Singh](mailto:drmanjulasb@gmail.com) (ICMR, India). The following documents were available at this meeting for this TG:

* CfTGP: [E-005-A12](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A12.docx)
* TDD Update: document E-018 was reserved but not submitted
* Contributions: None

No progress report was provided for the interim period.

The group was reminded that TGs that did not progress across two meetings are subject to discontinuation.

## TG-Growth (Child growth monitoring)

The position of topic driver for this TG is currently vacant and no documentation was available for this group. The meeting was reminded that TGs that did not progress across two meetings are subject to discontinuation.

## Proposals for new topic areas

### Outbreak detection

[E-026](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-026.docx) New topic area: Outbreak detection (Robert Koch Institute)

[E-026](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-026.docx) proposes the creation of a new topic area in FG-AI4H addressing outbreak detection.

As infectious disease outbreaks pose a major risk to public health, it is essential that their early detection can prompt fast interventions to limit spread of the disease or even prevent an outbreak altogether. According to the German infection protection law, cases of notifiable pathogen are reported and collected via a mandatory reporting system at the RKI. The available data set contains a collection of 8 million reported infectious disease cases within Germany. The data holds expert labels relating cases to specific disease outbreaks. The aim of outbreak surveillance is to detect changes and conspicuous events within the case data in a fast and automatic manner. Both classic statistical methods and supervised learning methods have been applied for signal detection on the reported case data. To this, AI algorithms can increase the timeliness and accuracy of outbreak detection and improve the understanding of the warnings. It can particularly do so by incorporating multiple data streams with diverse properties. To achieve earlier and more comprehensive detection of notifiable and non-notifiable pathogens, the integration of real-time-surveillance data with data from the reporting system is crucial. For this task, internal syndromic surveillance sources are available and valuable external data sources (google trends, health apps) are present.

With reference to the data and analysis for this proposed TG, the following was suggested:

* Benchmarking for outbreaks can be done using R package surveillance.
* Data cases will be allocated weekly
* Supervised learning can form the basis for outbreak detection

During the discussion, it was noted that it is essential to link a specific outbreak with the data. However, there was not much clarity on the process being followed in other parts of the world. As the algorithms are quite general, they could be applied elsewhere.

On the privacy front, only aggregated data is available. Any data that is not anonymized will not be utilized for the TG.

After discussions, it was agreed to adopt outbreak detection as a new topic area for the FG-AI4H. The topic driver will be provided by the Robert Koch Institute and [Martina Fischer](mailto:FischerMa@rki.de) will serve as the topic driver in the initial phase. In the meantime, she will also lead the development of a CfTGP as well as a TDD for this new TG.

# Review of previous output documents

There are three output documents agreed at previous meetings that were considered for validity at this meeting.

It was agreed to editorially update [D-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-102.docx) with the updated call for proposals: use cases, benchmarking, and data, in preparation for meeting F. This is found in [E-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-102.docx?d=w3b8b1ac35b51487aba101694269cf9f0).

The following two documents were reconfirmed:

* [D-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-103.docx): Updated FG-AI4H data acceptance and handling policy
* [C-104](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-C-104.docx): Thematic classification scheme

# Outcomes of this meeting

## Ad-hoc groups

During the course of the meeting, it was decided that the existing ad hoc groups would be dissolved and their activities would be continued either under the working groups or at the Focus Group plenary level.

## Working groups

The meeting explored the creation of four working groups based on the discussion during this meeting as given in [E-030-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/_layouts/15/WopiFrame.aspx?sourcedoc=%7bEE8FF80E-5DE0-41FE-9AA2-1C07E2B60E52%7d&file=FGAI4H-E-030-A01.pptx&action=default). Creation for two were agreed, while two others require further refinement.

### Future WG on ethics

As the ethical dimension was brought up several times while discussing new contributions as well as existing TGs, it was deemed appropriate by the meeting to create a new WG on ethics at the next meeting. The activities of this new working group will revolve around:

* Ethical Assessment on every healthcare topic explored by the FG
* Data sourcing and labelling
* AI-based prediction quality/uncertainty/explainability
* Data handling policies
* Sessions/Workshops to be held (as well as online consultations)

For the developing the ToR for this WG, it was agreed that discussions would be held during the interim period. The leadership for this WG will also be formally announced at the next meeting.

### Future WG on public health

There were views expressed supporting the creation of a WG on public health. However, it was agreed to defer its possible creation to a next meeting to ensure the right set of participants can be identified to get adequate diversity. An online FG meeting could also be held to discuss further.

### New WG on data and AI solution quality assessment

The FG agreed to create a WG on the assessment of data and AI solution quality, chaired by Pat Baird (Philips, USA) and with Luis Oala (Fraunhofer HHI, Germany) as vice-chair.

Following the discussion on the creation of this new Working Group, it was decided that the Chair and Vice-Chair will provide the draft ToR as the starting point. The main elements covered by this Working Group would include:

* Preparing the metrics/characteristics for data quality
* Tools for assessing quality of data
* Public datasets study
* Focus of data acquisition/collection on health topics
* Liaise with WG-RC
* Recommendations on data collection for health topics
* Adaptation of AI solutions
* Data handling policies
* ToR for testing robustness
* Explainability and generalizability of data

The draft ToR prepared by the chair and vice-chair would be circulated to the mailing list for approval as per the procedure in §13.2.

### New WG on data and AI solution handling

The FG agreed to create a WG to define the best practices for handling data submission as well as submission of AI solutions, chaired by Marc Lecoultre (Business Investigation, Switzerland) and with Ferah Kherif (CHUV, Switzerland) as vice-chair.

The draft ToR for this new Working Group will be further refined by the chair and co-chair, keeping the following in mind:

* Data transfer
* Data encryption
* Data processing
* Benchmarking
* Solutions handling
* Data usage/right to use/ manipulation of data
* Data splitting
* Data aggregation
* Data provenance
* Normalization
* Data lifecycle
* Data ownership
* Data ownership
* Data storage

The updated draft ToR would be circulated to the mailing list for approval as per the procedure in §13.2.

## Call for proposals

As noted elsewhere in the report, it was agreed to update the following document:

* [E-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-102.docx): Updated call for proposals: use cases, benchmarking, and data

## Call for topic group participation (CfTGP)

No CfTGPs were updated at this meeting. The new TG-Outbreaks topic driver a.i. Martina Fischer will lead in the meantime the development of a CfTGP as well as a TDD.

# Working methods

## General

[FGAI4H-E-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030.docx?d=w72cb6adecf014a93a3138a677b7662c9) - Future FG processes discussion

[FGAI4H-E-030-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030-A01.pptx?d=wee8ff80e5de041fe9aa21c07e2b60e52&Source=https%3A%2F%2Fextranet%2Eitu%2Eint%2Fsites%2Fitu%2Dt%2Ffocusgroups%2Fai4h%2Fdocs%2FForms%2FAllItems%2Easpx) - Future FG processes discussion – Attachment 1: Annotated discussions

[E-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030.docx) was introduced by the FG-AI4H Chairman to drive a discussion on the next steps for various operating methods, structures, documentation and infrastructure for the FG operation. The slide set in [E-030-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030-A01.pptx?d=wee8ff80e5de041fe9aa21c07e2b60e52&Source=https%3A%2F%2Fextranet%2Eitu%2Eint%2Fsites%2Fitu%2Dt%2Ffocusgroups%2Fai4h%2Fdocs%2FForms%2FAllItems%2Easpx) is annotated with the outcome of the discussions. [Annex D](#AnnexD) hereinafter has a summarized list of items, similar to the content in [E-030-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030-R01.docx).

During the discussion on the future work process, it was also highlighted that the FG would strive to have a quarterly in-person meeting, with online collaboration driving the work in the interim periods.

The FG Chairman further mentioned that WGs could carry on work 24 hours a day, seven days of the week. Any e-meeting announcement for WGs must be made at least two weeks before; see §13.3. Physical meetings can also be held as deemed appropriate by the participants, however with a longer announcement lead time (not less than a month, to allow participant to economically arrange their travel).

The Chairman also provided the meeting the discretion to organize workshops on specific questions within AI and health, by keeping the main FG-AI4H management team involved and informed of any such developments. Suggestions and volunteers to organize them are being sought for the same. However, the Chairman stressed that no vague suggestions would be considered.

Instead of accepting just the incoming proposals, the Chairman also highlighted the importance of engaging other experts bilaterally in order to garner the required expertise to explore other health topics through the prism of AI.

To ensure that all participants are aware of the ongoing work of the Focus Group, the meeting requested for the availability of reports, agenda etc. to be announced through the main FG mailing list, [fgai4h@lists.itu.int](mailto:fgai4h@lists.itu.int).

As the list of topics covered by the FG is expanding, it was noted that the following are still to be addressed under the purview of the FG including the topics of:

* HIV/AIDs;
* Malaria.

## Decision making by correspondence

Decisions should preferably be taken in physical meetings of the FG. However, in order to allow the FG to work more efficiently, an online decision-making process would be useful.

The FG agreed to an online approval process for taking decisions (e.g. appointments and documentation). The initial procedure is as follows:

* Decisions are taken by consensus. (Note: consensus is declared by the chairman and it does *not* imply unanimity.)
* The general FG mailing list ([fgai4h@lists.itu.int](mailto:fgai4h@lists.itu.int)) is used to announce the decision being taken, provide links to relevant documents.
* Specify a commenting period, typically two weeks, for receiving comments with concerns. These comments should be addressed by email to the secretariat, [tsbfgai4h@itu.int](mailto:tsbfgai4h@itu.int). Absence of comments imply agreement to the proposed decision.
* If comments are received, they are discussed and resolved by the FG management in coordination with the commenters.
* If the amendment is minor, the chairman declares approval
* If the amendment is substantive, another consultation is started, or decision is postponed till the next meeting of the FG

## Organizing interim electronic meetings

The following procedure is to be applied for organizing interim meetings of the FG and its WGs:

* **Announcement** in the general FG email reflector ([fgai4h@lists.itu.int](mailto:fgai4h@lists.itu.int)) for date/time and objectives **two weeks prior**
* **Documents** uploaded to the appropriate repository

## Mailing lists

There are pros and cons on using specific mailing lists for the WGs and TGs.

The secretariat advises to use the general mailing list [fgai4h@lists.itu.int](mailto:fgai4h@lists.itu.int) while the traffic in a particular group is small and use tags to help subscribers filter the e-mails. A major counter-indication to the creation of mailing lists is that non-subscribers do not receive a bounce back when they send the message to the list, which can be counter-intuitive (this is a system configuration for all ITU mailing lists and cannot be customized). Another counter indication for mailing lists is, if the traffic is low or chairs do not use them effectively, there may be confusion as to which channels are actually being used by the experts to communicate.

Alternative methods for topic groups in particular is the use of discussion boards on the SharePoint pages being created for their work or external tools such as Slack or Microsoft Teams.

Nevertheless, mailing lists will be created for the groups that would prefer to use that method, named after the following template: *fgai4h{wg,tg}{acronym}@lists.itu.int*. As of Meeting E, the TG-Symptom has requested creation of a specific mailing list, [fgai4htgsymptom@lists.itu.int](mailto:fgai4htgsymptom@lists.itu.int).

Subscription to the FG-AI4H can be requested at the following link: <http://itu.int/go/fgai4h-lists>. Experts are reminded that a free ITU account is required (the same one used to register for meetings and to access the meeting documentation).

# Future work

## Schedule of future FG meetings and workshops

At this meeting, India DoT confirmed the invitation for the FG-AI4H to meeting in New Delhi, the week of 18-22 November 2019.

NOTE – after the meeting in Geneva when finalizing this report, the dates of the meeting in New Delhi were advanced by a week, so that the actual meeting dates are 11-15 November 2019.

The updated schedule is found in [E-003-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-003-R1.docx).

In addition, online FG meetings will be organized, as per §13.3 above.

| Meeting | Date | Venue | Notes |
| --- | --- | --- | --- |
| F | 2-5 September 2019 (NB: meeting may conclude before 5 Sep 2019) | Zanzibar, Tanzania | Hosted by Tanzania Communications Regulatory Authority |
| G | 11-15 November 2019 (5 days)\* | New Delhi, India | Hosted by NICF, DoT & ICMR |
| H | January 2020 | Brasilia, Brazil | Hosted by PAHO |

## Interim activities (online)

Interim activities online will be planned by the topic drivers and working group managements, as needed observing the process in §13.3 above.

# Funding and partnerships

The FG-AI4H Management team have currently established informal partnerships with the International Association of National Public Health Institutes (IANPHI) and some regulatory agencies and OECD. As the work of the FG expands, extension of the expert network to have a worldwide representation is also being strived for.

It was noted that Botnar Foundation has agreed to provide some funding. The development of the contract with Botnar Foundation is currently underway. Some of the funding will go into operations etc. but the major portion will be used for promoting diversity and inclusion.

The FG Chairman noted that FG work is based on voluntary participation and funding for participants should not be expected in general, except where a clear need is identified. To this effect, criteria would need to be defined for the offering of fellowships to experts, who are interested in contributing to the work of the FG-AI4H.

The meeting also noted the need to develop a process to apply for travel grants, which will allow interested experts to attend upcoming meetings (including Meeting F in Zanzibar), e.g. via a portal for application.

# Promotion and outreach

No special promotional and press communication activities are planned beyond participation in events and the regular news communications prepared by ITU TSB.

# Any other business

TSB informed the meeting that the Kaleidoscope 2019 conference ("ICT for Health: Networks, standards and innovation") would take place in Atlanta, Georgia, USA, 3-5 December 2019 and that the deadline for papers was extended to 1 July 2019. All experts were invited to submit papers, see [https://itu.int/en/ITU-T/academia/kaleidoscope/2019](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2019).

# Closing

The meeting finished one day earlier as all documentation and agenda items that could be meaningfully addressed where exhausted on the close of Fri 31 May. The meeting closed at 1730 hours.

Annex A  
Agenda

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | Related Documents |
| 1 | Opening | | |  |
| 2 | Approval of agenda | | | [E-001](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-001.docx) (Agenda);  Initial timing: Annex [C](#AnnexC) |
| 3 | Documentation and allocation | | | [E-001](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-001.docx) (Agenda; Chair);  Annex [B](#AnnexB) (Documentation) |
| 4 | IPR | | | Annex [A](#AnnexA) |
| 5 | Management updates | | | [E-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-028.pptx) (FG goals and working methods) |
|  | | | Vice-chairs |  |
|  | | | WGs |  |
| 6 | Approval of Meeting D outcomes and updates | | | [D-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-101.docx): Meeting Report  [D-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-102.docx): Updated call for Proposals: use cases, benchmarking, and data  [D-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-103.docx): Updated FG-AI4H data acceptance and handling policy  [E-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-004.docx): Updated template for calls for proposals |
| 7 | Outcome of the workshop (AI4G Breakout) | | | [E-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-002.pptx) (Workshop Summary; Chair) |
| 8 | Ad hoc group updates | | |  |
|  | | | AHG Test data set assessment  [Arun Schroff, Wojciech Samek] |  |
|  | | | AHG Thematic classification scheme  [Ramesh Krishnamurthy] |  |
|  | | | AHG Benchmarking Platform (AHG-BP)  [Markus Wenzel] | [E-008](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-008.docx) |
|  | | | AHG AI for health device security and robustness benchmarking (AHG-AI4HDS) [Ziyi Yang, Kai Fu] | [E-007](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-007.docx) |
|  | | | AHG working group methods for online collaborations [Benjamin Muthambi] |  |
|  | | | AHG Data handling and data acceptance policy (AHG-DAH) [Benjamin Muthambi, Daidi Zhong, Marc Lecoultre] |  |
| 9 | Horizontal and strategic topics | | | [E-021](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-021.docx) (Identifying Regulatory Challenges and Opportunities of AI in Health) [India]  [E-023](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-023.docx) (Proposal to create an AI for health expert group) [Chairs WG-O, FG]  [E-025](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-025.docx) (Robustness/Safety & reliability in AI4H applications) [Fraunhofer HHI]  [E-022](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-022.docx) (Unified mathematical framework and data mining algorithms) [Syria]  [E-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-029.docx) (Conflicting terminology) [P.Baird]  [E-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030.docx) (Future FG processes discussion) |
| 10 | Updates to TGs and new proposals | | |  |
| a | | Template updates: TDD, CfTGP | |  |
|  | | TG-Cardio (Cardiovascular Risk Prediction)  [[Benjamin Muthambi](mailto:brm5@caa.columbia.edu)] | | CfTGP: [E-005-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A01.docx)  TDD Update: –  Contributions: None |
|  | | TG-Cogni (Neurocognitive diseases)  [[Marc Lecoultre](mailto:ml@bigps.ch)] | | CfTGP: [E-005-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A02.docx)  TDD Update: [E-010](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-010.docx)  Contributions: [E-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-027.docx) |
|  | | TG-Derma (Dermatology)  [[Maria Vasconcelos](mailto:maria.vasconcelos@fraunhofer.pt)] | | CfTGP: [E-005-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A03.docx)  TDD Update: [E-011](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-011.docx)  Contributions: None |
|  | | TG-DiagnosticCT (Volumetric chest computed tomography)  [[Kuan Chen](mailto:ckuan@infervision.com)] | | CfTGP: [E-005-A04](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A04.docx)  TDD Update: [E-019](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-019.docx)  Contributions: None |
|  | | TG-Falls (Falls among the elderly)  [[Inês Sousa](mailto:ines.sousa@fraunhofer.pt)] | | CfTGP: [E-005-A05](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A05.docx)  TDD Update: [E-012](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-012.docx)  Contributions: None |
|  | | TG-Histo (Histopathology)  [[Frederick Klauschen](mailto:frederick.klauschen@charite.de)] | | CfTGP: [E-005-A06](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A06.docx)  TDD Update: [E-013](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-013.docx)  Contributions: None |
|  | | TG-Ophthalmo (Ophthalmology)  [[Arun Shroff](mailto:arunshroff@gmail.com)] | | CfTGP: [E-005-A07](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A07.docx)  TDD Update: [E-014](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-014.docx)  Contributions: None |
|  | | TG-Psy (Psychiatry)  [[Nicholas Langer](mailto:n.langer@psychologie.uzh.ch)] | | CfTGP: [E-005-A08](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A08.docx)  TDD Update: [E-015](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-015.docx)  Contributions: None |
|  | | TG-Radiotherapy (Radiotherapy)  [[Zhenzhou (Joe) WU](mailto:joe.wu@biomind.ai)] | | CfTGP: [E-005-A09](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A09.docx)  TDD Update: –  Contributions: None |
|  | | TG-Snake (Snakebite and snake identification)  [[Rafael Ruiz](mailto:rafael.ruizdecastaneda@unige.ch)] | | CfTGP: [E-005-A10](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A10.docx)  TDD Update: [E-016](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-016.docx)  Contributions: None |
|  | | TG-Symptom (Symptom assessment)  [[Henry Hoffmann](mailto:henry.hoffmann@ada.com)] | | E-meetings: [E-006](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-006.docx)  CfTGP: [E-005-A11](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A11.docx)  TDD Update: [E-017](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-017.docx)  Contributions: None |
|  | | TG-TB (Tuberculosis)  [[Manjula Singh](mailto:drmanjulasb@gmail.com)] | | CfTGP: [E-005-A12](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A12.docx)  TDD Update: –  Contributions: None |
|  | | TG-Growth (Child growth monitoring)  [*Vacant*] | | None |
|  | | Proposals for new topic areas | | [E-026](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-026.docx): Outbreak detection (Koch Inst.) |
| 11 | Review of previous output documents | | | [D-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-102.docx): Updated call for proposals: use cases, benchmarking, and data  [D-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-D-103.docx): Updated FG-AI4H data acceptance and handling policy  [C-104](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-C-104.docx): Thematic classification scheme |
| 12 | Outcomes of this meeting | | | a) Ad-hoc groups  b) Call for proposals  c) Call for Topic Group participation  [d) Call for experts] |
| 13 | Future work | | |  |
|  | | Schedule of future FG meetings and workshops | | [E-003-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-003-R1.docx) |
|  | | Work plan and timeline | |  |
|  | | Interim activities (online) | |  |
| 14 | Promotion and outreach | | |  |
|  | | Promotional activities | |  |
|  | | Press communication | |  |
|  | | Funding and partnerships | |  |
| 15 | A.O.B. | | |  |
| 16 | Closing | | |  |

Annex B  
Documentation

| Name | Title | | Source | Note |
| --- | --- | --- | --- | --- |
| [FGAI4H-E-001-R02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-001-R02.docx) | Agenda and documentation of the FG-AI4H meeting (Geneva, 30 May-1 June 2019) | | FG-AI4H Chairman |  |
| [FGAI4H-E-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-002.pptx) | Summary slides – Breakthrough session on AI and Well-being (Geneva, 29 May 2019) | | TSB |  |
| [FGAI4H-E-003-R01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-003-R01.docx) | Schedule of future FG meetings (as of 2019-06-01) | | FG-AI4H Chairman |  |
| [FGAI4H-E-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-004.docx) | Updated template for the call participation on topic groups | | FG-AI4H WG-O Chairman |  |
| [FGAI4H-E-005](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005.docx) | Updated calls for participation issued by the various TGs | | TSB |  |
| [FGAI4H-E-005-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A01.docx) | | Calls for Participation | TG-Cardio topic driver |  |
| [FGAI4H-E-005-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A02.docx) | | Call for Topic Group Participation: Standardized benchmarking of AI against neuro-cognitive diseases | TG-Cogni Driver |  |
| [FGAI4H-E-005-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A03.docx) | | Call for Topic Group Participation: AI for Dermatology | TG-Derma Topic Driver |  |
| [FGAI4H-E-005-A04](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A04.docx) | | Call for Topic Group Participation: AI for Volumetric Chest Computed Tomography | TG-DiagnosticCT |  |
| [FGAI4H-E-005-A05](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A05.docx) | | Call for Topic Group Participation: Standardized benchmarking of AI to prevent falls among the elderly | TG-Falls Driver |  |
| [FGAI4H-E-005-A06](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A06.docx) | | Call for Topic Group Participation: AI for Histopathology | TG-Histo topic driver |  |
| [FGAI4H-E-005-A07](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A07.docx) | | Call for Topic Group Participation: Standardized benchmarking of AI for Ophthalmology (Retinal Imaging Diagnostics) | TG-Ophtalmo Driver |  |
| [FGAI4H-E-005-A08](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A08.docx) | | Call for Topic Group Participation: Standardized benchmarking of AI in Psychiatry | TG-Psy Driver |  |
| [FGAI4H-E-005-A10](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A10.docx) | | Call for Topic Group Participation: Standardized benchmarking of “AI for Snakebite and Snake Identification” | TG-Snake Driver |  |
| [FGAI4H-E-005-A11](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A11.docx) | | Call for Topic Group Participation: Standardized benchmarking of "AI-based symptom assessment" | TG-Symptom Driver |  |
| [FGAI4H-E-005-A12](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-005-A12.docx) | | Call for Topic Group Participation: Standardized benchmarking of AI against Tuberculosis | TG-TB topic driver | Updated |
| [FGAI4H-E-006](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-006.docx) | Summary of TG-Symptom call (2019-05-08) | | TG-Symptom topic driver |  |
| [FGAI4H-E-007](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-007.docx) | Status report of the AHG on AI for health device security and robustness benchmarking | | AHG-AI4HDS |  |
| [FGAI4H-E-008](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-008.docx) | Status Report of the AHG on “Benchmarking Platform” | | AHG-BP |  |
| [FGAI4H-E-010](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-010.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-010-A01.pptx) - Presentation | TDD Update: TG-Cogni (Neuro-cognitive diseases) | | TG-Cogni topic driver |  |
| [FGAI4H-E-011](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-011.docx) | TDD update: TG-Derma (Dermatology) | |  |  |
| [FGAI4H-E-012](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-012.docx) | TDD Update: TG-Falls (Falls among the elderly) | | TG-Falls topic driver |  |
| [FGAI4H-E-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-012-A01.pptx) | TDD Update: TG-Falls (Falls among the elderly) - Att.1 - Presentation | | TG-Falls topic driver |  |
| [FGAI4H-E-013](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-013.docx) | TDD Update: TG-Histo (Histopathology) | | TG-Histo topic driver |  |
| [FGAI4H-E-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-014-A01.pptx) | TDD Update: TG-Ophthalmo (Ophthalmology) - Att.1: Presentation | | TG-Ophthalmo topic driver |  |
| [FGAI4H-E-014-R01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-014-R01.docx) | TDD Update: TG-Ophthalmo (Ophthalmology) | | TG-Ophthalmo Topic Driver |  |
| [FGAI4H-E-015](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-015.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-015-A01.pdf) - Presentation | TDD Update: TG-Psy (Psychiatry) | | TG-Psy topic driver |  |
| [FGAI4H-E-016](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-016.docx) | TDD update: TG-Snake (Snakebite and snake identification) | | TG-Snake topic driver |  |
| [FGAI4H-E-017](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-017.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-017-A01.pptx) - Presentation | TDD update: TG-Symptom (Symptom assessment) | | TG-Symptom topic driver |  |
| [FGAI4H-E-019](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-019.docx) | TDD update: TG-Diagnostic CT (Volumetric chest computed tomography) | | TG-DiagnosticCT topic driver |  |
| [FGAI4H-E-021](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-021.docx) | Study on “Identifying Regulatory Challenges and Opportunities of AI in Health.” | | NICF, DoT, ICMR (India) |  |
| [FGAI4H-E-022](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-022.docx) | Proposing a unified mathematical framework and data mining algorithms to conduct all types of imperfection in medical data | | Syria |  |
| [FGAI4H-E-023](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-023.docx) | Proposal to create an AI for health expert group | | Chairmen WG-O & FG-AI4H |  |
| [FGAI4H-E-024](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-024.docx) | TG-Falls: Benchmarking fall prediction AI algorithms: general thoughts and experience | | University of Bologna (Italy) |  |
| [FGAI4H-E-025](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-025.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-025-A01.pdf) - Presentation | Robustness - Safety and reliability in AI4H | | Fraunhofer HHI |  |
| [FGAI4H-E-026](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-026.docx) | New topic area: Outbreak detection | | Robert Koch Institute | Late |
| [FGAI4H-E-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-026-A01.pdf) | New topic area: Outbreak detection – Att.1 – Presentation slides | | Robert Koch Institute |  |
| [FGAI4H-E-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-027.docx) | TG-Cogni: Data submission | | CHUV (Switzerland) | Late |
| [FGAI4H-E-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-028.pptx) | FG-AI4H - Overview | | FG-AI4H Chairman |  |
| [FGAI4H-E-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-029.docx) | Conflicting terminology | | Pat Baird | Late |
| [FGAI4H-E-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030.docx) -  [R01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030-R01.docx) | Future FG processes discussion | | FG-AI4H Chairman | Updated |
| [FGAI4H-E-030-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030-A01.pptx) | Future FG processes discussion - Att.1 - Annotated next steps | | FG-AI4H Chairman |  |
| [FGAI4H-E-101-R01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-101-R01.docx) | Report of the fifth meeting ("Meeting E") of the Focus Group on Artificial Intelligence for Health (FG-AI4H) | | FG-AI4H | Output |
| [FGAI4H-E-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-102.docx) | Updated Call for Proposals: Use Cases, Benchmarking, and Data | | FG-AI4H | Output |

Annex C  
List of participants

| Title | First Name | Last Name | Organization | Country | 30 May | 31 May |
| --- | --- | --- | --- | --- | --- | --- |
| Ms | Elizabeth | ASAI | 3Derm | United States | Present |  |
| Mr | Pat | BAIRD | Philips | United States | Present | Present |
| Mr | Pradeep | BALACHANDRAN | Consultant | India | Remote |  |
| Mr | Javier | BARRANCO | CHUV | Switzerland | Present |  |
| Mr | Thomas | BERTRAND | HealCo | France |  | Present |
| Mr | Antoine | BERTRAND | HealCo | France |  | Present |
| Ms | Isabelle | BOLON | University of Geneva | Switzerland | Present |  |
| Mr | Simão | CAMPOS | ITU | Switzerland | Present | Present |
| Mr | Jonathan | CARR-BROCO | Your. MD | United Kingdom | Present | Present |
| Mr. | Shih-Fang | CHANG | Industrial Technology Research Institute | China | Present |  |
| Mr | Kuan | CHEN | InferVision | China | Present | Present |
| Mr. | Ludovic | CLAUDE | CHUV | Switzerland | Present |  |
| Mr | Alexandre | CUENAT | Wellcome Trust | United Kingdom | Remote | Remote |
| Mr | Pasquale | DI CESARE | Inno Boost | Switzerland | Present |  |
| Mr | Shiqian | DING | InferVision | China | Present | Present |
| Ms. | Bianca | DSOUZA | LSE/LSHTM | United Kingdom | Present |  |
| Mr | Andrew | DURSO | University of Geneva | Switzerland | Present |  |
| Ms | Lobna | EL ANSARY | Ministry of Communications and Information Technology (MCIT) | Egypt | Remote |  |
| Mr | Khair | ELZARRAD | FDA | United States | Present |  |
| Mr | Stéphane | GHOZZI | WHO | Switzerland | Present | Present |
| Title | First Name | Last Name | Organization | Country | 30-May | 31-May |
| Dr | Christian | HAGGENMILLER | Global Health Security Alliance | Germany | Present |  |
| Mr | Clay | HAMILTON | WHO | Switzerland | Remote | Remote |
| Mr | Stefan | HAUFE | Charité | Germany | Present |  |
| Mr | Henry | HOFFMAN | Ada Health | Germany | Present | Present |
| Mr | Saurabh | JOHRI | Babylon Health | United Kingdom | Present |  |
| Mr | AT | JOTHEESWARAN | WHO | Switzerland | Present |  |
| Mr | Alain | JUNGER | CHUV | Switzerland | Present | Present |
| Ms | Rigveda | KADAM | FIND | Switzerland | Present |  |
| Mr | Tarek | KHORSHED | WHO | – | Remote |  |
| Mr | Ferath | KHERIF | CHUV | Switzerland | Present | Present |
| Mr | Frederick | KLAUSCHEN | Charité – Universitätsmedizin Berlin | Germany | Remote | Remote |
| Mr | Gunnar | KÖNIG | Ludwig-Maximilians Universität München | Germany | Remote |  |
| Ms | Monique | KUGLITSCH | Fraunhofer HHI | Germany | Present | Present |
| Mr | Sushil | KUMAR | DoT | India |  | Remote |
| Mr | Marc | LECOULTRE | EPFL | Switzerland | Present | Present |
| Ms | Naomi | LEE | The Lancet | United Kingdom | Present | Present |
| Ms. | Kate | LOVEYS | University of Auckland | Australia | Present | Present |
| Mr | Jackie | MA | Fraunhofer HHI | Germany | Present | Present |
| Mr | Om Parkash | MANHAS | DoT, India | India | Present | Present |
| Title | First Name | Last Name | Organization | Country | 30-May | 31 May |
| Mr | Detlev | MARPE | Fraunhofer HHI | Germany | Present |  |
| Mr | Kirmene | MARZOUKI | SPIKE-X | Tunisia | Present | Present |
| Mr | Jason | MAUCLE | Isabel Healthcare | United States | Present | Present |
| Ms | Mythili | MENON | ITU | Switzerland | Present | Present |
| Mr | Benjamin | MUTHAMBI | WatIf Health |  | Present | Present |
| Mr | Devendra Kumar | NIM | DoT, India | India | Present | Present |
| Ms | Luis | OALA | Fraunhofer HHI | Germany | Present | Present |
| Mr | Pierpaolo | PALUMBO | University of Bologna | Italy | Present | Present |
| Mr | Sameer | PUJARI | WHO | Switzerland | Present | Present |
| Mr | Bastiaan | QUAST | ITU | Switzerland | Present | Present |
| Mr | Javier Samir | REY RODRIGUEZ | DIREKTIO |  | Present |  |
| Mr | Rafael | RUIZ DE CASTAÑEDA | University of Geneva | Switzerland | Present | Present |
| Mr. | Bruno | SANGUINETTI | Dot Photon | Switzerland | Present | Present |
| Ms | Ye Seong | SHIN | ITU | Switzerland |  | Present |
| Mr | Arun | SHROFF | Xtend.AI | United States/India | Present | Present |
| Mr | Nao Normal | SIPULA | WatIf Health |  | Present | Present |
| Ms. | Inês | SOUSA | Fraunhofer Portugal | Portugal | Present |  |
| Mr | Brandon | ULRICH | B2i Healthcare | Hungary | Present |  |
| Mr | Shubs | UPADHYAY | Ada Health | Germany | Present | Present |
| Mr | Markus | WENZEL | Fraunhofer HHI | Germany | Present | Present |
| Mr | Thomas | WIEGAND | Fraunhofer HHI | Germany | Present | Present |
| Mr | Jia | Xiongwei | China Unicom | China | Remote |  |
| Mr | Daidi | ZHONG | Chongqing University | China | Present | Present |

A total of 64 participants attended the meeting.

Annex D  
Summary of discussions on FG next steps

The following is a list of issues and actions that arose from the discussions of [E-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-030.docx?d=w72cb6adecf014a93a3138a677b7662c9&Source=https%3A%2F%2Fextranet%2Eitu%2Eint%2Fsites%2Fitu%2Dt%2Ffocusgroups%2Fai4h%2Fdocs%2FForms%2FAllItems%2Easpx).

## D.1 Health topics

1. Soliciting **health topics** that meet our requirements (e.g., global impact, availability of data, and consideration of causal effects). Sameer will create a scoping document about the health topics in a broader context (using WHO format). Alternatively, could be structured as:
   1. Methods in medicine
      1. Diagnosis and detection
   2. Types of diseases or lifestyle choices
      1. Malaria
      2. HIV/AIDS
   3. Devices
      1. Self-health apps
   4. Pharmaceuticals
   5. Aging

## D.2 New and transitioned working groups

1. Creating (terms of reference for) **Working Group on Ethics** (chair and vice chair to be determined). Working Group should provide:
   1. Document on generic ethical considerations and requirements for handling data within the Focus Group (and consider *Data Handling Policy* document)
   2. Ethical assessment for each AI for health topic
      * 1. Data sourcing and labelling
        2. AI-based prediction quality, uncertainty, and explainability
        3. Implications of AI output
        4. Deployment (are AI methods based on individual? are patients aggregated?)
   3. Suggestions on how Focus Group activities could be more ethical
   4. Statements to be included in TDDs indicating that a given topic has been looked at from an ethical perspective
   5. Meetings, workshops, and online communications
   6. Outreach to share best practice
2. Creating (terms of reference for) **Working Group on** **Data and AI Solution Quality** (chair: Pat Baird; vice chair: Luis Oala). Working Group should address:
   1. Data quality
3. Determine metrics/characteristics for assessing data quality (and consider *Data Handling Policy* document)
4. Prepare a document and software tools to assess quality of data
5. Study available public datasets
6. Liaise with Working Group on Regulation
7. Provide recommendations on data collection for health topics
   1. AI solution quality
8. Solicit reports on how AI solutions are trained
9. Address how we will handle AI solutions that modify with time
10. Choose performance measurements/metrics
11. Select methods for quantifying robustness and uncertainty (and determine desired and/or acceptable levels)
12. Find methods for explainability and generalizability that serve our purposes
13. Organize workshops that address specific questions regarding AI and health
14. Creating (terms of reference for) **Working Group on Data Handling** (chair: Marc Lecoultre; vice chair: Ferhat Kerif). Working Group should address:
    1. Data transfer
    2. Data encryption
    3. Data usage (who can use and manipulate data)
    4. Data splitting
    5. Data aggregation
    6. Data provenance
    7. Data normalization
    8. Data lifecycle
    9. Data ownership
    10. Data storage
    11. Data processing
    12. Benchmarking
        1. Addressing issues with benchmarking software (AIcrowd)
           1. Accessing back-end of program
           2. Finding work-around for high-dimensional data
    13. AI solution submission
    14. …and other aspects listed in B-105

## D.3 AIcrowd benchmaking software platform

1. Addressing issues with **benchmarking software** (AIcrowd)
   1. Accessing back-end of program
   2. Finding a work-around for high-dimensional data

## D.4 Expert groups

1. Recruiting **experts** (rapporteurs, reviewers)
   1. Identifying experts in the fields of health, AI, statistics, social sciences, ethics, and governance to devote time to our activities and to compose expert panels
   2. Recruiting experts
      1. Advertising in journals, conferences, social media etc.
      2. Deploying our network of partners and extend to global participation
      3. Seeking equal representation (gender, race, seniority, geography, etc.)
      4. Developing a description of our expectations from the experts
      5. Producing an application form and portal
   3. Vetting experts
      1. Conflict of interest statement
      2. Resume/CV
      3. References
      4. Set up a review board
      5. Process for assignment to Topic Groups
   4. Collect glossary of terms

## D.5 Operational aspects

1. Facilitating **communication** within the FG-AI4H structure
   1. We need to ensure that all experts, topic group drivers, and topic group members have access to equipment and technology that will facilitation online cooperation (including document sharing) and virtual meetings; ITU seems equipped to address this
   2. We need to define our expectations with regard to the types of documentation that each topic group should prepare
   3. We need to modernize the Focus Group (and Topic Group) website(s) and ensure that it is (they are) continuously updated
   4. We need to circulate relevant documents (meeting reports, agendas, etc.) to the Focus Group mailing list so that all participants remain aware of developments
   5. Identify and raise awareness concerning **conflicting terminologies**
      1. Produce glossary of terminology indicating the varied use across different communities
2. Outsourcing creation of a document that facilitates **ITU online registration** for joining Focus Group. Document should:
   1. Show steps (screenshots) for creating new user account
   2. Indicate that participating in the Focus Group only requires an ITU user account
   3. Be prominent on Focus Group website
3. Creating documents with guidelines on **how to participate** in Topic Groups regarding:
   1. Data donation
   2. Health topics (in relation to scoping document; an adjustment of call for proposals document possibly using IRB format)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_