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| **Abstract:** | This document contains the report of the 12th meeting of the ITU-T Focus Group on Artificial Intelligence for Health (FG-AI4H), held as E-meeting, 19-21 May 2021. |

Executive summary

The 12th meeting of the FG-AI4H took place online, 19-21 May 2021 to review updates to its 24 deliverables and sub-deliverables, to review the progress of the existing topic groups and to consider proposals for new topic groups.

There were no updates in the FG-AI4H **leadership** at this meeting.

**Topic group** updates:

* New Topic Group on AI for human reproduction and fertility (TG-Fertility). Topic drivers: Susanna Brandi (susanna.brandi@merckgroup.com) and Eleonora Lippolis (eleonora.lippolis@merckgroup.com), Merck KGaA, Darmstadt, Germany. Collaboration site: <https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/tg/SitePages/TG-Fertility.aspx>
* New Topic Group on AI in sanitation for public health (TG-Sanitation). Topic drivers: Khahlil Louisy (klouisy@hks.harvard.edu; Institute for Technology & Global Health, ITGH, US) and Alexander Radunsky ([aradunsky@mail.harvard.edu](mailto:aradunsky@mail.harvard.edu)), ITGH, US. Collaboration site: <https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/tg/SitePages/TG-Sanitation.aspx>
* New Topic Group on AI for point-of care diagnostics (TG-POC). Topic driver: Nina Linder (nina.linder@helsinki.fi), University of Helsinki, Finland. Collaboration site: <https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/tg/SitePages/TG-POC.aspx>
* The drivers for TG-MSK are now Peter Grinbergs (EQL, UK) and Yura Perov (UK), who can be contacted by a common e-mail address, [tgmskorg@googlegroups.com](mailto:tgmskorg@googlegroups.com).

**Data annotation:** The FG-AI4H agreed to support the initiative for a dataset extension and annotation website, which will initially focus on histopathology data. The leader of the activity is Frederick Klauschen, LMU Munich, Germany. Specific procedures and details will be discussed initially under TG-Histo.

**Deliverables** update:

* Updates to the deliverables were reviewed, their latest version is found in the [FG-AI4H collaboration site](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/SitePages/Deliverables.aspx).

The following updated **output documents** were agreed:

* [L-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-102.docx): Updated call for proposals: use cases, benchmarking, and data (to be issued when the dates of the next meeting are defined)
* [L-200](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-200.docx): Updated list of FG-AI4H deliverables
* The meeting agreed to submit an updated version of the guide originally submitted in J-040 "*Artificial intelligence for dental image analysis: A guide for authors and reviewers*" for approval by correspondence after Meeting L.

The following documents were reconfirmed:

* [F-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-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
* [F-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-105.docx): ToRs for the WG-Experts and call for experts
* [F-106](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-106.docx): Guidelines on FG-AI4H online collaboration tools
* [K-107](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-107.docx): FG-AI4H Onboarding document
* [FG-AI4H Whitepaper](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Documents/FG-AI4H_Whitepaper.pdf) ([K-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-002.docx))
* [J-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-105.docx): TDD Template
* [J-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-103.docx): CfTGP template

The meeting had 111 participants over the various days and reviewed 53 documents (not counting attachments).

Two [outgoing liaison statements](https://www.itu.int/net/itu-t/ls/ols.aspx?from=7952&after=2021-05-18&before=2021-05-22) were prepared:

* [FGAI4H-LS5](https://www.itu.int/ifa/t/2017/ls/fg-ai4h/sp16-fg-ai4h-oLS-00005.docx): LS/r on invitation to review artificial intelligence standardization roadmap and provide missing or updated information (SG13-LS196) [to ITU-T SG13]
* [FGAI4H-LS6](https://www.itu.int/ifa/t/2017/ls/fg-ai4h/sp16-fg-ai4h-oLS-00006.docx): LS/r on invitation to provide inputs to the roadmap of AI activities for natural disaster management (FG-AI4NDM-LS001) [to FG-AI4NDM]

A list of the five decisions taken at the meeting is found in [Annex E](#AnnexE) of the report.

The next meeting of the FG-AI4H will most likely be in held virtually in September 2021. Confirmation will be communicated in the FG-AI4H webpage and mailing list.

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# Opening

The meeting was opened by the FG-AI4H chairman, Mr Thomas Wiegand (Fraunhofer HHI, Germany), who welcomed the participants. He presented an overview of the FG-AI4H work, as found in [L-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-002.pptx).

# Approval of agenda

The agenda in [L-001](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001.docx) (Agenda) was approved. Various updates were issued during the meeting, the final version being found in [L-001-R03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001-R03.docx) (cf. [Annex A](#AnnexA)).

The time allocation for the presentation of meeting documents was maintained live though the link: <https://docs.google.com/spreadsheets/d/14gj_SFkoaKHj0c8gv5m_hpKhtF4yAGcrx8RGdCjInJs/edit?usp=sharing>

# Documentation and allocation

The initial list of documents and allocation in [L-001](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001.docx) were adopted. The final list is found in [Annex B](#AnnexB).

# IPR

The text in [L-001](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001.docx) Annex A was read and no declarations were made at the meeting.

It was highlighted that the IPR question should be asked periodically under the various TG (e‑)meetings, since many of participants in those may not be attending the FG-AI4H Plenary meetings.

# Management updates

There were no updates to the FG-AI4H leadership team at this meeting.

# Approval of Meeting J outcomes and updates

The report of virtual Meeting K (online, 27 – 29 January 2021) in [K-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-101.docx) was **approved** without comments.

The following documents from Meeting K were **noted** by the meeting:

* [K-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-102.docx): Updated call for proposals: use cases, benchmarking, and data
* [K-107](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-107.docx): Updated FG-AI4H onboarding document
* [K-200-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-200-R01.docx): Updated list of FG-AI4H deliverables

No comments were made.

The meeting also **noted** the report to the SG16 meeting, as found in [L-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-028.docx) "*FG-AI4H Progress Report to ITU-T SG16 (July 2020 to April 2021)*" [FG-AI4H Chairman]

1. The report of the virtual meeting held 27 – 29 January 2021 found in [K-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-101.docx) was approved without comments and its three output documents were noted ([K-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-102.docx), [K-107](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-107.docx), and [K-200-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-200-R01.docx)).

# Review of incoming liaison statements

## ITU-T SG13

[FGAI4H-L-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027-A01.docx) – LS on invitation to review artificial intelligence standardization roadmap and provide missing or updated information [from ITU-T SG13]

**Abstract:** This liaison invites to review the latest version of Supplement on Artificial Intelligence standardization roadmap and to provide missing/updated information to the ITU-T SG13.

Agreed that FGAI4H to reply to SG13, providing the list of deliverables. A reply was prepared in [L-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-049.pptx), reviewed and approved at the final session of the meeting (§‎17.3).

## ITU-T FG-AI4EE

[FGAI4H-L-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-029.docx" \t "_blank) – LS on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information (reply to SG13-LS174) [from FG-AI4EE to SG13]

**Abstract:** This liaison statement informs ITU-T SG13 on the work being carried in FG‑AI4EE.

This is a reply to [L-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027.docx) above. The LS was noted, since FGAI4H has currently no does not work addressing energy/environment efficiency aspects.

## ITU-T FG-AI4NDM

[FGAI4H-L-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-030.docx) – LS on invitation to provide inputs to the roadmap of AI activities for natural disaster management [from FG-AI4NDM]

**Abstract:** This Liaison Statement informs about the opportunity to contribute to a roadmap on AI activities (in the context of data, modelling, and communication technologies) in natural disaster management.

The document was initially noted. However, the chairman of the FG-AI4NDM, Ms Monique Kuglitsch (Fraunhofer HHI, Germany) requested in the chat whether they could get feedback on any activities that could be perceived as related to biologic hazards (e.g., pandemics). The Chairs/driver of AHG-DT4HE, TG-Outbreaks, and TG-Malaria were asked to fill in the form in the Annex of the LS.

A reply was prepared as found in [L-053](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-053.docx), and it was reviewed and approved by the meeting (§‎17.3).

## ITU-T FG-AI4EE

[FGAI4H-L-031](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-031.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-031-A01.zip) – LS on six deliverables of ITU-T FG-AI4EE [from FG-AI4EE to SG5]

**Abstract:** This liaison statement informs ITU-T SG5, all ITU-T SGs and all ITU-T FGs about the first set of deliverables which were completed and agreed by FG-AI4EE at its third meeting on 08 April 2021.

This LS was noted.

## ITU-T SG9

[FGAI4H-L-032](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-032.docx) – LS on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information (reply to SG13-LS196) [from ITU-T SG9 to SG13]

**Abstract:** This liaison is a reply to [FGAI4H-L-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027.docx) above on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information.

This LS was noted.

# Information on AI-related activities

The meeting was reminded that a series of webinars took place and ITU AI4H challenge is in preparation. The idea is that the webinars on horizontal and vertical themes would happen every two weeks and be organized within the context of the AI for Good online events.

# Horizontal and strategic topics

No topic group documents were submitted for this meeting.

# Working Group updates

## Data and AI solution assessment methods (WG-DAISAM)

The WG is chaired by [Pat Baird](mailto:pat.baird@philips.com) (Philips, USA), assisted by vice-chair, [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

[L-043](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-043.docx): Call for participation in DAISAM-survey on transparent model reporting for trustworthy ML4H [WG-DAISAM]

Jana Fehr (HPI, Germany) introduced L043 with a call for participation on a survey about transparent, trustworthy audit reporting for machine learning for health. DAISAM developed a comprehensive questionnaire that guides reporting which data and sampling strategies were used for training and testing these algorithms. This information is important to detect potential risks of bias. An e-mail was also sent to the FG-AI4H general mailing list. Feedback from the TGs is requested by e-mail to [tmr.daisam.fgai4h@aiaudit.org](mailto:tmr.daisam.fgai4h@aiaudit.org) concerning relevant use-cases.

There were no further specific updates on DAISAM, as the main activities were reported under the OCI progress reports.

## Data and AI solution handling (WG-DASH)

WG-DASH has [Marc Lecoultre](mailto:ml@mllab.ai) (ML Lab, Switzerland) and chair and [Ferath Kherif](mailto:Ferath.kherif@chuv.ch) (CHUV, Switzerland) as Vice-chair.

No particular reports were provided specifically for WG-DASH. All the focus of the work has been in the Open Code Initiative, see §‎11.

## Operations (WG-O)

The WG on operations (WG-O) is co-chaired by [Markus Wenzel](mailto:markus.wenzel@hhi.fraunhofer.de) and [Eva Weicken](mailto:eva.weicken@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

There was not specific report at this meeting. Attention is drawn to the deliverable peer review process discussion in §‎12.1

## Ethical considerations on AI for health (WG-Ethics)

The chair of the FG-AI4H WG-Ethics, [Andreas Reis](mailto:reisa@who.int) (WHO), presented a progress report in [L-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-048.pptx) concerning the ethics work in WHO and the relationships with the FG-AI4H interests.

[L-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-048.pptx): Ethics & Governance of Artificial Intelligence (AI) for Health: Update on WHO Guidance and next steps

Andreas reminded the group of the WHO expert group on ethics that was created in 2019. It has now over 20 ethics experts worldwide and is chaired by Partha Majmuder (India) and Effy Vayena (Switzerland). The group has so far focused on the draft WHO guidance document on ethics and governance of artificial intelligence for health. The group has also addressed genetics and, in the context of the COVID pandemic, contact tracing and vaccination certificate.

Andreas asked the group which areas could be explored in further collaboration.

It was pointed out that guidance on what could be done, rather than what should not, would be useful for implementers – beyond aspects that are bound by regulations. What is "good enough" (noting that 100% compliance is very difficult to achieve)? For example, would bias in a system be acceptable or desirable if it is beneficial for the target population (e.g., an expert service for a specific population).

Other aspects noted included governance frameworks and what other documents that could be helpful.

Note the discussion on the *WHO Guidelines on Ethics and governance of artificial intelligence for health* in §‎12.5.

## Regulatory considerations on AI for health (WG-RC)

The chair of the WG-RC, [Naomi Lee](mailto:naomi.lee@lancet.com) (Lancet, UK).

No specific report was made for the WG-RC, as the focus of the work has been in the preparation of DEL2. See §‎12.6.

## Clinical Evaluation (WG-CE)

The co-chairs of the WG-CE are [Naomi Lee](mailto:naomi.lee@lancet.com) (The Lancet, UK), [Shubhanan Upadhyay](mailto:shubs.upadhyay@ada.com) (ADA Health, Germany), and [Eva Weicken](mailto:eva.weicken@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

The objectives of the WG-CE are to:

* Build a **community of collaboration** around clinical evaluation of AI for health
* Guidance for current **best practice evaluation**, **principles of evaluation** to ensure it is generally relevant across all countries
* Used by **researchers, clinicians, patients, developers, civil-society, policy-makers**
* Give special consideration of clinical evaluation in **LMIC settings**
* Take tasks that are applicable for **FG-AI4H**

No specific report was made for the WG-CE, as the focus of the work has been in the preparation of DEL7.4. See §‎12.11.4.

## Ad-hoc group on digital technologies for COVID health emergency (AHG-DT4HE)

The co‑chairs of the FG-AI4H ad hoc group on AHG on digital technologies for COVID health emergency (AHG-DT4HE) are [Shan Xu](mailto:xushan@caict.ac.cn) (CAICT, China) and [Ana Rivière-Cinnamond](mailto:rivierea@paho.org) (PAHO/WHO).

Due to the unavailability of the co-chairs, no progress report was presented at this meeting. If interested in contributing, experts are invited to contact the co-chairs and visit the groups home page at <https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/dt4he.aspx>.

# FG-AI4H Open Code Initiative

The FG-AI4H open code initiative is chaired by [Marc Lecoultre](mailto:ml@mllab.ai) (ML Lab, Switzerland).

[L-041](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-041.pptx): Open Code Project Status Update [Chair]

Marc Lecoultre introduced the slides in [L-041](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-041.pptx).

* Develop software tools (e.g., data acquisition, data storage, annotation, prediction, evaluation, and reporting packages)
* Involve developers, regulators, and medical professionals
* Targeted towards a universal tool applicable across borders
* Usable by multiple stakeholders such as notified bodies and doctors

Marc started the presentation of [L-041](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-041.pptx) with an overview. The platform is an end-to-end solution that focusses on the assessment of AI for health. It is not software to be used in a product, but rather to assess it, and provide guidance to implementers developing their own applications. It contains various packages:

* Core package – Marc presented. This package provisions the common services to all packages: Authentication and authorization to access resources, storage. FHIR used in the implementation to facilitate secure patient data transfer. Next steps: Integrate all packages; uniformize SSO usage.
* DAS package – Marc presented. This package is responsible for data ingestion, storage and management.
* Evaluation (audit) package (based on eval.ai) – Oala Luis and Elora Schörverth (Fraunhofer HHI, Germany) presented. An achievement is community building: <https://aiaudit.org/contributors/>. Another achievement is integration of ML flow tool in the AWS environment.

Elora made a demo of the platform via <https://healthaiaudit.org> using the diabetic retinopathy use case as example.

* Reporting package – Pradeep Balachandran (Technical e-health consultant, India) presented and reviewed the background for the various reports and described the generation process, which were shown in Elora's demo. He thanked package leads, invited participants to join forces.
* Data annotation package – Marc presented. This package is in the conceptual analysis phase. Two annotation package providers (for 2D image segmentation) were interviewed for a gap analysis. They found that an underlying process is missing to guarantee that annotation is well and consistently done (e.g., quality / consistency from different annotators). One approach could be to provide an API to core annotation processes.

It was noted that no IEC standards exist for annotation. For compliance purposes, implementors should be encouraged to list which standards they conform to in the documentation of their implementations (e.g., annotation package). There is currently a lack of specifications for many aspects used in AI4H applications.

Call for more participants in the various tasks; links provided in presentation:

* Requirement document: <https://docs.google.com/document/d/1eksm8dm7MYuNjtThRp-zmwlxvFXUrjSjDnkpuMwZNJ4/edit#heading=h.z6ne0og04bp5>
* Azure DevOps: <https://dev.azure.com/mllabai/FG-AI4H%20Assessment%20Platform>
* Slack: assessmentpla-m174974.slack.com
* Contact: [Mark Lecoultre](mailto:ml@mllab.ai)

Follow up is needed on a security certificate and domain name for the software platform, as well as identification of funding for the computational resources that will be needed to run the platform when operational (e.g., computational and storage credits).

Luis noted that other initiatives are happening and the effort the FG-AI4H is putting to develop this unique platform should be more visible, quicker; otherwise, the effort may be lost. For that, TGs involvement is needed by assigning a person focusing on assessment for the TG matter in the platform. Volunteer basis ok for documents or to set up the initials, with software it is more difficult. Need to have people from TGs to be responsible for managing the evaluation processes in the platform (the OCI platform developers can help set it up, but detailed flow implementation, testing and operations requires specific knowledge and dedication/‌time availability). Need funding for people that would work continuously / focus on this.

One concern expressed was that the roll out of the OCI platform may slow down when we get to the implementation of specific TG use cases. Other initiatives (e.g., challenges) are happening and the effort the FG-AI4H is putting to develop this unique platform should be more visible, quicker; otherwise, the effort may be lost. To avoid this, we need consistent support in the implementation and operation of the assessment workflows and tasks for each of the topic groups using the platform.

A volunteer from each TG should be identified to be responsible for managing the evaluation processes in the platform (the OCI platform developers can help set it up, but detailed flow implementation, testing and operations requires specific knowledge and dedication/‌time availability). It was also suggested that, complementarily, funding for an expert would enable this might be needed to provide this service. Discussions will continue offline.

The group acknowledged the excellent progress of the FG-AI4H Open Code Initiative and thanked Marc Lecoultre leading efficiently the work. The FG-AI4H looks forward to the next planned steps and reporting at the next FG-AI4H meeting.

# FG-AI4H deliverables

## Process for assessing quality of draft FG-AI4H deliverables

To ensure that the WHO/ITU FG-AI4H deliverables—a key contribution of our activities—achieve the maximum level of quality and offer value for stakeholders, a draft description of the peer review process for FG-AI4H deliverables was prepared and presented last meeting (see [K-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-029.docx)). At this meeting, no updates were provided. The FG-AI4H management will continue to review the matter and report in a future meeting.

## List of deliverables

[L-005](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-005.docx): Updated list of FG-AI4H deliverables (as of 2021-05-18) [TSB]

Abstract: This document summarizes the current status of the planned deliverables for the ITU-T Focus Group on AI for health (FG-AI4H), based on the output list from the virtual meeting held 27-29 January 2021 and subsequent updates by the secretariat, based on feedback from editors. This summary is also available as DEL00S in the FG-AI4H Deliverables page, although it is not itself a deliverable. This document is based on [K-200-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-200-R01.docx).

The document was noted, and it would be updated after the meeting according to the discussions affecting deliverables as shown in Table 1 hereinafter, also issued as [L-200](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-200.docx) out of this meeting.

The meeting reviewed progress for the various deliverables and highlights are provided in the next sub-sections of this report.

A progress report was presented for the following deliverables, but an updated deliverable document was not provided:

* DEL1
* DEL2.1
* DEL4
* DEL5, DEL5.1 to DEL5.5
* DEL7.1 to DEL7.3
* DEL8 (no initial draft)
* DEL9.1, DEL9.2

No updates were provided during the meeting for the following documents:

* DEL2.1
* DEL5.1, DEL5.2, DEL5.3
* DEL6
* DEL7.1
* DEL8
* DEL9.1, DEL9.2

The latest version of the deliverables can always be found in the FG-AI4H collaboration site at <https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/SitePages/Deliverables.aspx>.

Table 1 – Updated list of deliverables (L-005 plus updates)

| No. | Deliverable | Updated initial draft editor | Availability\* |
| --- | --- | --- | --- |
| 0 | Overview of the FG-AI4H deliverables | [Shan Xu](mailto:xushan@caict.ac.cn) (CAICT, China) | [L-039](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-039.docx) |
| 1 | AI4H ethics considerations | [Andreas Reis](mailto:reisa@who.int) (WHO) | [K-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-028.docx) ([K-028-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-028-A01.pptx)) |
| 2 | AI4H regulatory best practices | [Jackie Ma](mailto:jackie.ma@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Khair ElZarrad](mailto:mohammed.elzarrad@fda.hhs.gov) & [Rose Purcell](mailto:Rosemarie.Purcell@fda.hhs.gov) (FDA, USA) | [L-047](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047.docx) |
| 2.1 | Mapping of IMDRF essential principles to AI for health software | [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (Technical e-health consultant, India), [Pat Baird](mailto:pat.baird@philips.com) (Philips, USA), [Thomas Wiegand](mailto:thomas.wiegand@hhi.fraunhofer.de) (Fraunhofer HHI, Germany) | [G-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-038.docx),  [G-038-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-038-A01.xlsx) |
| 2.2 | Good practices for health applications of machine learning: Considerations for manufacturers and regulators | [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (India) and [Christian Johner](mailto:christian.johner@johner-institut.de) (Johner Institut, Germany) | [L-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037.docx) |
| 3 | AI4H requirement specifications | [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (India) | [L-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038.docx) |
| 4 | AI software life cycle specification | [Pat Baird](mailto:pat.baird@philips.com) (Philips, USA) | [J-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-033.docx) ([L-046](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-046.pptx)) |
| 5 | Data specification | [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland) | [G-205](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-205.docx" \t "_blank) |
| 5.1 | Data requirements | [[Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland)]\*\* | [I-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-044.docx) |
| 5.2 | Data acquisition | [Rajaraman (Giri) Subramanian](mailto:kinnal@hotmail.com) (Calligo Tech, India), [Vishnu Ram](mailto:vishnu.n@ieee.org) (India) | [G-205-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-205-A02.docx) |
| 5.3 | Data annotation specification | [Shan Xu](mailto:xushan@caict.ac.cn) (CAICT, China), [Harpreet Singh](mailto:hsingh@bmi.icmr.org.in) (ICMR, India), [Sebastian Bosse](mailto:sebastian.bosse@hhi.fraunhofer.de) (Fraunhofer HHI, Germany) | [K-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-048.docx) |
| 5.4 | Training and test data specification | [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (India) | [I-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-034.docx) ([L-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-045.pptx)) |
| 5.5 | Data handling | [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland) | [I-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-045.docx) |
| 5.6 | Data sharing practices | [Ferath Kherif](mailto:Ferath.Kherif@chuv.ch) (CHUV, Switzerland), [Banusri Velpandian](mailto:banusrir@gmail.com) (ICMR, India), WHO Data Team | [L-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044.pptx) |
| 6 | AI training best practices specification | [Xin Ming Sim](mailto:xinming@aisingapore.org) and [Stefan Winkler](mailto:stefan@aisingapore.org) (AI Singapore) | [K-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-037.docx" \t "_blank) |
| 7 | AI for health evaluation considerations | [Markus Wenzel](mailto:markus.wenzel@hhi.fraunhofer.de) (Fraunhofer HHI, Germany) | [L-036](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036.docx) |
| 7.1 | AI4H evaluation process description | [Sheng Wu](mailto:wus@who.int) (WHO) | [G-207-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-207-A01.docx) |
| 7.2 | AI technical test specification | [Auss Abbood](mailto:abbooda@rki.de) (Robert Koch Institute, Germany) | [I-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-027.docx" \t "_blank) ([L-051](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-051.pptx)) |
| 7.3 | Data and artificial intelligence assessment methods (DAISAM) reference | [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany) | [K-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-045.docx) ([L-052](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-052.pptx)) |
| 7.4 | Clinical evaluation of AI for health | [Naomi Lee](mailto:naomi.lee@lancet.com) (Lancet, UK), [Eva Weicken](mailto:eva.weicken@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Shubhanan Upadhyay](mailto:shubs.upadhyay@ada.com) (ADA Health, Germany) | [L-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040.docx) |
| 8 | AI4H scale-up and adoption | [Sameer Pujari](mailto:pujaris@who.int) (WHO), Yu ZHAO and Javier Elkin [Previously: Robyn Whittaker (New Zealand)] | – ([K-052](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-052.pptx)) |
| 9 | AI4H applications and platforms | [Manjeet Chalga](mailto:chalgams.hq@icmr.gov.in) (ICMR, India), [Aveek De](mailto:aveek@cms-india.org) (CMS, India) | [L-050](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050.docx) |
| 9.1 | Mobile applications | [Khondaker Mamun](mailto:mamun@cse.uiu.ac.bd) (UIU, Bangladesh), [Manjeet Chalga](mailto:chalgams.hq@icmr.gov.in) (ICMR, India) | [I-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-048.docx) |
| 9.2 | Cloud-based AI applications | [Khondaker Mamun](mailto:mamun@cse.uiu.ac.bd) (UIU, Bangladesh) | [I-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-049.docx) |
| 10 | AI4H use cases: Topic description documents | [Eva Weicken](mailto:eva.weicken@hhi.fraunhofer.de) (Fraunhofer HHI, Germany) | [L-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004.docx) |
| 10.1 | Cardiovascular disease management (TG-Cardio) | [Benjamin Muthambi](mailto:brm5@caa.columbia.edu) (Watif Health, South Africa) | [L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx) |
| 10.2 | Dermatology (TG-Derma) | [Weihong Huang](mailto:whuangcn@qq.com) (Xiangya Hospital Central South University, China) NOTE – [Maria Vasconcelos](mailto:maria.vasconcelos@fraunhofer.pt) (Fraunhofer, Portugal) resigned from the role. | [L-007-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A01.docx) |
| 10.3 | Diagnosis of bacterial infection and anti-microbial resistance (TG-Bacteria) | [Nada Malou](mailto:nada.malou@paris.msf.org,nada_malou@yahoo.fr) (MSF, France) | [L-008-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A01.docx) |
| 10.4 | Falls among the elderly (TG-Falls) | [Pierpaolo Palumbo](mailto:pierpaolo.palumbo@unibo.it) (University of Bologna, Italy); [Inês Sousa](mailto:ines.sousa@fraunhofer.pt) (Fraunhofer Portugal) | [L-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A01.docx) |
| 10.5 | Histopathology (TG-Histo) | [Frederick Klauschen](mailto:f.klauschen@lmu.de) (LMU Munich & Charité Berlin, Germany) | [L-013-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A01.docx) |
| 10.6 | Malaria detection (TG-Malaria) | [Rose Nakasi](mailto:g.nakasi.rose@gmail.com) (Makerere University, Uganda) | [L-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A01.docx) |
| 10.7 | Maternal and child health (TG-MCH) | [Raghu Dharmaraju](mailto:rdharmaraju@gmail.com) (Wadhwani AI, India) and [Alexandre Chiavegatto Filho](mailto:alexdiasporto@usp.br) (University of São Paulo, Brazil) | [L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx) |
| 10.8 | Neurological disorders (TG-Neuro) | [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland) | [L-016-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A01.docx) |
| 10.9 | Ophthalmology (TG-Ophthalmo) | [Arun Shroff](mailto:arunshroff@gmail.com) (MedIndia) | [L-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A01.docx) |
| 10.10 | Outbreak detection (TG-Outbreaks) | [Auss Abbood](mailto:abbooda@rki.de) (Robert Koch Institute, Germany) and [Stéphane Ghozzi](mailto:stephane.ghozzi@helmholtz-hzi.de) (HZI, Germany) | [L-018-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A01.docx) |
| 10.11 | Psychiatry (TG-Psy) | [Nicolas Langer](mailto:n.langer@psychologie.uzh.ch) (ETH Zurich, Switzerland) | [L-019-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A01.docx) |
| 10.12 | AI for radiology (TG-Radiology) | [Darlington Ahiale Akogo](mailto:darlington@gudra-studio.com) (minoHealth AI Labs, Ghana) | [L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) |
| 10.13 | Snakebite and snake identification (TG-Snake) | [Rafael Ruiz de Castaneda](mailto:Rafael.RuizDeCastaneda@unige.ch) (UniGE, Switzerland) | [L-020-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A01.docx) |
| 10.14 | Symptom assessment (TG-Symptom) | [Henry Hoffmann](mailto:henry.hoffmann@ada.com) (Ada Health, Germany) | [L-021-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A01.docx) |
| 10.15 | Tuberculosis (TG-TB) | [Manjula Singh](mailto:singhmanjula.hq@icmr.gov.in) (ICMR, India) | [L-022-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A01.docx) |
| 10.16 | Volumetric chest CT (TG-DiagnosticCT) | [Kuan Chen](mailto:ckuan@infervision.com) (Infervision, China) | [L-009-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A01.docx) |
| 10.17 | Dental diagnostics and digital dentistry (TG-Dental) | [Falk Schwendicke](mailto:falk.schwendicke@charite.de) and [Joachim Krois](mailto:Joachim.krois@charite.de) (Charité Berlin, Germany); [Tarry Singh](mailto:tarry.singh@deepkapha.ai) (deepkapha.ai, Netherlands) | [L-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A01.docx) |
| 10.18 | Falsified Medicine (TG-FakeMed) | [Franck Verzefé](mailto:fverzefe@gmail.com) (TrueSpec-Africa, DRC) | [L-011-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A01.docx) |
| 10.19 | Primary and secondary diabetes prediction (TG-Diabetes) | [Andrés Valdivieso](mailto:avaldivieso@anastasia.ai) (Anastasia.ai, Chile) | [L-024-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A01.docx) |
| 10.20 | AI for endoscopy (TG-Endoscopy) | [Jianrong Wu](mailto:edwinjrwu@tencent.com) (Tencent Healthcare, China) | [L-025-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A01.docx) |
| 10.21 | AI for Musculoskeletal medicine (TG-MSK) | [Peter Grinbergs (EQL, UK), Yura Perov (UK)](file:///D:/Usr/Campos/FG-AI4H/2105-L-Virtual4(19-21)/Report/tgmskorg@googlegroups.com) | [L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx) |
| 10.22 | AI for human reproduction and fertility (TG-Fertility) | [Susanna Brandi](mailto:susanna.brandi@merckgroup.com), [Eleonora Lippolis](mailto:eleonora.lippolis@merckgroup.com), (Merck KGaA, Darmstadt, Germany) | Proposal: [L034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034.docx) (Merck KGaA, Darmstadt, Germany) |
| 10.23 | AI in sanitation for public health (TG-Sanitation) | [Khahlil Louisy](mailto:klouisy@hks.harvard.edu) (Institute for Technology & Global Health, ITGH, US), [Alexander Radunsky](mailto:aradunsky@mail.harvard.edu) (ITGH, US) | Proposal: [L‑035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx) (ITGI, US) |
| 10.24 | AI for point-of care diagnostics (TG-POC) | [Nina Linder](mailto:nina.linder@helsinki.fi), University of Helsinki, Finland | Proposal: [L‑033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) (Helsinki Univ., Finland) |

NOTES

\* The document numbers indicated reflect the status as of the end of the e-meeting J. Colour codes indicate deliverable drafting status (as of the issuance of this document) as "*active*" (green) and "*unclear whether active*" (blue). Some links provided are to slide sets; these slide sets are not meant to be the deliverable documents, but rather a status update concerning progress of the respective deliverable. Documents in parenthesis are status updates, not a deliverable text.

\*\* Acting editor

## New deliverable proposals

There were no proposals for new deliverables at this meeting. In previous meetings, the following future deliverables were identified:

| No. | Deliverable | Updated initial draft editor | Reference |
| --- | --- | --- | --- |
| – | Open Code Initiative reference software implementation | [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland) | [K-043](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-043.docx) |
| – | Guidance on digital technologies for COVID health emergency | [Shan Xu](mailto:xushan@caict.ac.cn) (CAICT, China), [Ana Riviere-Cinnamond](mailto:rivierea@paho.org) (PAHO) | [K-042](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-042.docx) |
| – | Risk management in AI for health | [Pat Baird](mailto:pat.baird@philips.com) (Philips, USA) | [K-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-034.pptx) |

## DEL00: Overview of the FG-AI4H deliverables

[L-039](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-039.docx): Updated DEL00: Overview of the FG-AI4H deliverables [Editor]

**Abstract:** This deliverable provides an overview of the various FG-AI4H deliverables. To establish a standardized assessment framework for the evaluation of AI-based methods for health, a series of deliverables is planned, including nine generalized specifications on ethics, regulatory, requirement, data, training, evaluation, application, etc., and 21 topic description documents on specific use cases with corresponding AI/ML tasks. This document is to give a comprehensive understanding and overview on the structure, relationship, progress, and corresponding scopes on those deliverables, and improve possible collaborations. This version is based on the update of K-047, the updates were only in Table 1 and Figure 1.

This document was noted, as the editor, Shan Xu (CAICT, China) is currently on maternity leave.

The update to [DEL00](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL00.docx) as found in [L-039](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-039.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

NOTE – Document needs an update to include the three new TGs agreed at this meeting, see §‎14.

## DEL01: AI4H ethics considerations

The editor of this deliverable is [Andreas Reis](mailto:reisa@who.int) (WHO). There was no update to [DEL01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL01.docx) at this meeting, as the deliverable is expected to be based on the WHO Ethics for AI in Health guidelines document, which is close to finalization and expected to be published in the May/June 2021 timeframe.

As Andreas reported when presenting [L-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-048.pptx), the current draft includes 47 recommendations from different stakeholders and had participation of 20 commenters. (The FG-AI4H was consulted on its content, refer to [K-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-028.docx) from the January 2021 meeting.) It remains to be determined what contents the deliverable for the FG-AI4H could have.

Refer also to the complementary discussion in §‎10.4.

## DEL02: AI4H regulatory best practices

The editors of [DEL2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL02.docx) are [Jackie Ma](mailto:jackie.ma@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Khair ElZarrad](mailto:mohammed.elzarrad@fda.hhs.gov) and [Rose Purcell](mailto:Rosemarie.Purcell@fda.hhs.gov) (FDA, USA).

[L-047](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047-A01.pptx): DEL02: Draft 2.1 of the Overview of Regulatory Considerations on Artificial Intelligence for Health

Shada Alsalamah (WHO) introduced draft 2.1 of DEL2 "Overview of regulatory considerations on artificial intelligence for health" in [L-047](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047.docx) using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047-A01.pptx).

The deliverable addresses high level overview of key regulatory considerations for the use of AI in health, covering:

1. Documentation and transparency
2. Risk management and lifecycle approach
   1. Medical devices developing and deployment process
   2. AI medical device product lifecycle
   3. Holistic risk management
3. Data quality – key challenges
   1. Data set management
   2. Data inconsistency
   3. Dataset selection and curation
   4. Data set management
   5. Data inconsistency
   6. Dataset selection and curation
   7. Data usability
   8. Data integrity & data labelling
   9. Model training
   10. Documentation and transparency
   11. Human factors
4. Analytical and clinical validation
5. Engagement and collaboration
6. Privacy and data protection

It is noted that the deliverable is not intended as guidance policy or regulations, but rather a resource that can be considered by *regulators*, *developers*, and other stakeholders.

Timelines:

| Timeline | Planned Milestones/ Deliverables |
| --- | --- |
| May | * Address reviewers' comments on DEL02 draft v2.0 (since April) * Present WG-RC progress at FG AI4H Meeting L * Create DEL02 draft v3.0 for WG-RC contributors' review (3rd round) |
| June | * Present WG-RC as part of the FG AI4H work at World Health Assembly * Organize the 3rd WG-RC Meeting to report progress and publication plans * Address reviewers' comments on DEL02 draft v3.0 * Submit DEL02 draft v4.0 to WHO editors |
| July | * Create DEL02 draft v5.0 after receiving an updated version from WHO editors * Receive final approval from WG-RC contributors after an internal check with their organizations * Publish DEL02 final version |

Asked how to synchronize contents for the TDDs. Shada will work with Eva to make sure there is coordination across the TGs as well as with other WGs, WG-CE in particular.

How this document will be processed by the IMDRF? This has not been assessed yet, as the focus has been in preparing the content. There are other institutes involved.

### DEL02.1: Mapping of IMDRF essential principles to AI for health software

The editors of [DEL2.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL02_1.docx) are [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (Technical e-health consultant, India), [Pat Baird](mailto:pat.baird@philips.com) (Philips, USA), [Thomas Wiegand](mailto:thomas.wiegand@hhi.fraunhofer.de) (Fraunhofer HHI, Germany)

Also at this meeting, there was no update to DEL2.1 and the most recent version (G-038 at Meeting G) is found in the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL02.2: Good practices for health applications of machine learning: Considerations for manufacturers and regulators

The editors of [DEL2.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL02_2.docx) are [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (Technical e-health consultant, India) and [Christian Johner](mailto:christian.johner@johner-institut.de) (Johner Institut, Germany)

[L-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037.docx" \t "_blank):Updated DEL2.2: Good practices for health applications of machine learning: Considerations for manufacturers and regulators [Editors]

**Abstract:** This document contains the latest draft of the FG-AI4H deliverable DEL02.2 "Good practices for health applications of machine learning: Considerations for manufacturers and regulators". This deliverable defines a set of guidelines intended to serve the AI solution developers/manufacturers on how to do conduct a comprehensive requirements analysis and to streamline the conformity assessment procedures to ensure regulatory compliance for the AI based Medical Devices (AI/ML-MD). This version was also issued as document L-037 at the FG-AI4H e-meeting L, 19 to 21 May 2021.

Christian Johner introduced the document using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037-A01.pdf). The document and related activities are well on track.

The update to DEL2.2 as found in [L-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

## DEL03: AI4H requirements specifications

The editor of [DEL3](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL03.docx) is [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (Technical e-health consultant, India).

[L-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038-A01.pptx): Updated DEL03: AI4H requirement specifications [Editors]

**Abstract:** This document represents the latest version of the project deliverable FG-AI4H DEL03 "AI4H requirement specification" and supersedes the previous version of the document (FG-AI4H-K-040). The purpose of DEL3 is to define the System Requirement Specifications (SyRS) that explains the informational, functional, behavioural and operational aspects a generic AI for health (AI4H) system. SyRS serves as the basis and helps to create system design, system verification and validation plans and procedures; while system requirements analysis methodology follows a collaborative team-oriented approach, involving all the working groups and topic groups of AI4GH FG, to help the project team identify, control and track various requirements and changes to those requirements during the AI4H system development lifecycle.

Pradeep presented the document using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038-A01.pptx), explaining its purpose and giving examples of application relating to some of the FG-AI4H topic groups. The deliverable was reconfigured into a "requirements traceability matrix", which is a mapping of the TDD technical topics into AI4N assessment platform requirements, as part of reflecting the experience gained with the OCI. He mentioned extended utility of using a requirements traceability matrix: to enable "custom mode" of reporting service under the AI4H assessment platform (OCI); and to provide reference inputs for "Test Plan Creation" to aid " AI4H quality auditing" under the AI4H OCI.

AutoML (<http://automl.org/>) and AutoAi ([https://dataplatform.cloud.ibm.com/docs/content/wsj/‌analyze-data/autoai-overview.html](https://dataplatform.cloud.ibm.com/docs/content/wsj/analyze-data/autoai-overview.html)) were mentioned as possibly useful.

The update to DEL3 as found in [L-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

## DEL04: AI software life cycle specification

The editor of [DEL4](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL04.docx) is [Pat Baird](mailto:pat.baird@philips.com) (Philips, USA).

There have been no updates on this deliverable, as the editor is waiting for feedback from the FG-AI4H members. He repeated the presentation from the January meeting, made available at this meeting as [L-046](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-046.pptx) for easier reference.

Feedback is particularly requested on the issue of risk management (see notes in the report of the previous meeting, K-101 §12.8). The additional objectives as it concerns risk management are to compile an inventory of failure modes and approaches to mitigate them, as well as to analyse whether there is a deliverable where this could fit, or then propose a new deliverable.

The last update of the text of DEL4 was prepared for meeting J, as found in the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

## DEL05: Data specification

The editor of [DEL05](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05.docx) is [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland). The latest update was reviewed at Meeting G, as found in [G-205](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-205.docx). Discussions at this meeting focused on progressing the various sub-deliverables, as described next.

There was no update to DEL5 and the most recent version is found in the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL05.1: Data requirements

The acting editor for [DEL5.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_1.docx) deliverable is [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland).

There was no update to DEL5.1. The most recent draft was prepared by Marc Lecoultre (who oversees the parent Deliverable 5), as found in [I-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-044.docx) (Meeting I). We are still looking for new editors to take over this Deliverable.

### DEL05.2: Data acquisition

[Rajaraman (Giri) Subramanian](mailto:kinnal@hotmail.com) (Calligo Tech, India) and [Vishnu Ram](mailto:vishnu.n@ieee.org) (India) are the editors. No updates were provided at this meeting and the editors did not join the meeting. The latest draft of [DEL05.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_2.docx) found in the deliverables folder was developed at meeting G ([G-205-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-205-A02.docx), New Delhi), which tries to address the lack of widely-accepted, standardized ways to acquire medical data.

It had been noted at the previous meeting that DEL5.2 needs to be focused on data acquisition, while the more general considerations should be added in DEL5 itself. Some of the aspects in G‑205-A02 are already addressed in other deliverables; removing these repetition elements would simplify the task of preparing this deliverable.

### DEL05.3: Data annotation specification

The editors of [DEL5.3](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_3.docx) are [Shan Xu](mailto:xushan@caict.ac.cn) (CAICT, China), [Harpreet Singh](mailto:hsingh@bmi.icmr.org.in) (ICMR, India), [Sebastian Bosse](mailto:sebastian.bosse@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

No updates were provided to DEL5.3 at this meeting, the latest update having being done at meeting K, as available from the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL05.4: Training and test data specification

The editors of [DEL5.4](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_4.docx) are [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany), [Pradeep Balachandran](mailto:pbn.tvm@gmail.com) (Technical e-health consultant, India).

Luis presented the slides in [L-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-045.pptx). No updates were done in DEL5.4 and DEL7.3 as focus is currently put into the various DAISAM workstreams within the Open Code Initiative. The experience gained in the OCI software will be used to improve the deliverables. Luis also showed how auditing can be done in the software platform.

The latest version is available from the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL05.5: Data handling

The editor of [DEL05.5](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_5.docx) is [Marc Lecoultre](mailto:ml@mllab.ai) (MLlab.AI, Switzerland). DEL5.5 describes the objectives and proposes an initial outline of the planned deliverable "Data Handling" to help seed future content. It was noted that DEL5.5 is very stable, as it is matches F-103 on the main page.

Similar to DEL5.4, there was no update to DEL05.5 at this meeting. The last update to [DEL05.5](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_5.docx) was in meeting I ([I-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-045.docx)).

### DEL05.6: Data sharing practices

The editors of [DEL5.6](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_6.docx) are [Ferath Kherif](mailto:Ferath.Kherif@chuv.ch) (CHUV, Switzerland), [Banusri Velpandian](mailto:banusrir@gmail.com) (ICMR, India), assisted by the WHO Data Team.

[L-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044.pptx)+ [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044-A01.pptx):Updated DEL5.6: Data sharing practices [Editors]

Ferath introduced the progress in the deliverable in [L-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044.pptx) with the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044-A01.pptx) concerning data sharing and data sourcing, and the respective implementation aspects in the OCI. A roadmap for a federated data catalogue is being developed.

There was a question on where data formats are specified. Ferath explained that this is a tricky issue and currently the group is gathering formats in a pragmatic way, identifying minimum requirements.

Would an overview of the standards for data formats exist out there? And what are the common elements, etc? Who specified them? Various mechanisms are used such as hit maps and LOINC, and they are very specific. The group is looking into metadata at a high level, i.e., what standard is used to represent the data. Currently, investigations are focused on neuro related specifications.

The following resource as noted, the WHO guidelines for standard implementation in digital health, see <https://www.thelancet.com/journals/landig/article/PIIS2589-7500(21)00038-8/fulltext>

The update to DEL5.6 as found in [L-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044.pptx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

## DEL06: AI Training best practices specification

The editors of [DEL6](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL06.docx) are [Xin Ming Sim](mailto:xinming@aisingapore.org) and [Stefan Winkler](mailto:stefan@aisingapore.org) (AI Singapore).

There was no update to DEL6 at this meeting, the latest update having being made at Meeting K ([K-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-037.docx)), as found in the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

## DEL07: AI for health evaluation considerations

The editor of [DEL7](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07.docx) is [Markus Wenzel](mailto:markus.wenzel@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

[L-036](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036-A01.pptx): Updated DEL07: AI for Health Evaluation Considerations [Editors]

**Abstract:** This introduction with considerations on the evaluation of AI for health sets the scene for the five related documents DEL07.1-5 that describe the evaluation process (DEL07.1), the technical tests (DEL07.2), the test metrics (DEL07.3), the clinical evaluation (DEL07.4), and an assessment platform (DEL07.5) in detail. In this document, an overview of the deliverables DEL7.1-5 is given, preliminary considerations on the evaluation process are being made, characteristics of health AI validation and evaluation that are novel are identified, and the concept of standardized model benchmarking is introduced. Moreover, requirements for a benchmarking platform are considered in detail and best practices for the health AI model assessment are collected from selected sources. This document was submitted as L-036 at the FG-AI4H meeting L (e-meeting), 19-21 May 2021.

Markus introduced the document using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036-A01.pptx). The draft is progressing well.

A key issue on the use of AI4H is whether models being developed are effective, safe, accurate (on new data), robust, plausible, and fair. The deliverables in the DEL7 AI4H Evaluation Considerations series aim to address these issues, by covering: AI4H evaluation process description, AI technical test specification, data and AI assessment methods reference, clinical evaluation, and assessment platform. Three testing environments are discussed: closed environment, via interfaces, and federated. For this meeting, text was improved, included new references, rearranged sections, and updated table. A key activity has been turning the vision for the AI4H benchmarking platform into practice via the OCI for the next steps, to update this intro DEL7.0 based on progress of DEL7.1-5 and collect feedback from deliverable editors, WGs, TGs, and OCI users.

The update to DEL7 as found in [L-036](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL07.1: AI4H evaluation process description

The editor of [DEL7.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_1.docx) is [Sheng Wu](mailto:wus@who.int) (WHO).

No updates were provided at this meeting; the latest update was provided in meeting G ([G-207-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-G-207-A01.docx)).

### DEL07.2: AI technical test specification

The editor is [Auss Abbood](mailto:abbooda@rki.de) (Robert Koch Institute, Germany).

[L-051](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-051.pptx): DEL7.2: AI software life cycle specification - Progress Review [Editor]

No updates were made to the deliverable document for this meeting, but Auss presented using the slides in [L-051](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-051.pptx). The document contains a background on software testing that is relevant for the context of AI/ML and AI4H. The goal is to include how to test benchmarks, as the following is normally not covered in functional software testing:

* Testing will mostly be black-box testing. What is the difference between a black box software and black-box AI?
* Testing should appreciate connection between data, software, hardware, and AI
* MLFlow, Docker, Sacred, etc. can help
* device-specific properties of produced data
* However, not all forms of input can be tested (see *General Principles of Software Validation; Final Guidance for Industry and FDA Staff*).

Other non-functional testing issues include:

* Many questions overlap with other deliverables (e.g., 5 or 7.3)
* Inadequate input does not necessarily break the AI. How do we test this?
* Testing should include tests for biases, data leakage, etc.
* Leaderboard probing
* Data aggregation or missing data
* Vulnerable metrics (some metrics are more vulnerable than others)

Help is needed for the following:

* More contributors and reviewers of the latest draft, as well as a co-editor for the deliverable.
* Contact with editors of other deliverables, and avoid overlap, e.g. testing aspects already covered in other deliverables.

The last update of the text of DEL7.2 was prepared for meeting I ([I-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-027.docx)), as found in the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL07.3: Data and artificial intelligence assessment methods (DAISAM) reference

The editor of [DEL 7.3](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_3.docx) is [Luis Oala](mailto:luis.oala@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

[L-052](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-052.pptx): DEL7.3: DAISAM reference - Progress review [Editor]

Luis presented the slides in L-052. The last update of the text of DEL7.2 was prepared for Meeting I but repeated for meeting K as [K-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-045.docx). The document is also found in the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL07.4: Clinical evaluation of AI for health

The editors of [DEL7.4](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_4.docx) are [Naomi Lee](mailto:naomi.lee@lancet.com), [Rupa Sarkar](mailto:rupa.sarkar@lancet.com) (Lancet, UK), together with [Eva Weicken](mailto:eva.weicken@hhi.fraunhofer.de) (Fraunhofer HHI, Germany) and [Shubs Upadhyay](mailto:shubs.upadhyay@ada.com) (ADA Health, Germany).

[L-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040-A01.pptx): Updated DEL7.4: Clinical evaluation of AI for health [Editors]

**Abstract:** This document provides an overview of the current challenges of *"Clinical Evaluation of AI for Health"*. It is part of the deliverable-series 7.1-7.4 that are outlined by deliverable No.7 "*AI for Health Evaluation considerations".*

Although the performance of AI models in health is often measured by their accuracy, establishing confidence among clinicians, patients, researchers and policy makers in the safety, efficacy, and cost-effectiveness of AI solutions in health requires a more comprehensive evaluation.

The purpose of the deliverable No.7.4 is to outline the current best practice, the principles and outstanding issues for further considerations related to clinical evaluation of AI models for health. It serves as the output document of the WHO/ITU Focus Group on AI for Health (FG-AI4H) Working group on Clinical Evaluation of AI for Health (WG-CE).

Eva, Shubs and Naomi presented jointly the update on the work on DEL7.4 using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040-A01.pptx).

Several phases of preparation of the draft were described. Aspects being covered include consideration on clinical studies, safety and efficacy as well as economic aspects of clinical evaluation, pace of implementation of algorithms and the need of ongoing monitoring. Several recommendations are provided.

1. Procurers of AI tools should be clearer about the economic evaluation for AI tools;
2. Priority setting for digital tools in all country settings requires a much more active role for health technology assessment, in addition to the role of regulators;
3. Benchmarking of AI tools either by local procurers or by national agencies - e.g., FG-AI4H open code initiative;
4. Longer term analysis of AI tools is required (Collaborative studies would accelerate progress and should be considered a priority);
5. Needs-based development of tools requires a dedicated effort to collect data in underrepresented populations and where AI may be effective, but datasets are poor;
6. All stakeholders must be encouraged to make clinical studies to be more open and accessible.

The next steps are:

* sharing with WG members for second round of feedback
* Available to view in the Deliverable documentation 7.4: welcome comments
* Organize follow-up meetings.
* Ensure the content is fit for purpose concerning the FG-AI4H, and in particular application/translation to topic groups.
* synchronization with other FG-AI4H WGs, for example language, model of life-cycle approach, and "overall" implementation.
* Promote wider external awareness and publication of the deliverable.

Timeline: end May to share with editors. The content is very complete, need to add graphics, improve glossary, go through the WHO editing process. Target to have a publishable version in two months (i.e., July-August 2021).

The update to DEL7.4 as found in [L-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

## DEL08: AI4H scale-up and adoption

The editor of [DEL8](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL08.docx) is [Sameer Pujari](mailto:pujaris@who.int) (WHO) with Yu Zhao and Javier Elkin.

No updates were provided.

## DEL09: AI4H applications and platforms

The editors of [DEL9](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL09.docx) are [Manjeet Chalga](mailto:chalgams.hq@icmr.gov.in) (ICMR, India), [Aveek De](mailto:aveek@cms-india.org) (CMS, India).

[L-050](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050-A01.pptx): Updated DEL09: AI4H applications and platforms [Editors]

**Abstract:** This document contains a discussion on development of AI tool for Health using Mobile Applications & Cloud-based AI applications. This document describes type of mobile applications and the development of App based system for disease surveillance in the health sector.

Manjeet presented the update to DEL9 using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050-A01.pptx).

The update to DEL9 as found in [L-050](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

### DEL09.1: Mobile Applications

The editor of [DEL09.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL09_1.docx) are [Khondaker Mamun](mailto:mamun@cse.uiu.ac.bd) (UIU, Bangladesh) and [Manjeet Chalga](mailto:chalgams.hq@icmr.gov.in) (ICMR, India).

No updates to the draft of DEL9.1 or presentation was provided at this meeting. The last update was made available in Meeting I ([I-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-I-048.docx)).

### DEL09.2: Cloud-based AI applications

The editor of [DEL 9.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL09_2.docx) is [Khondaker Mamun](mailto:mamun@cse.uiu.ac.bd) (UIU, Bangladesh).

No updates to the draft of DEL9.2 were provided at this meeting. The last update was made available in Meeting I ([I-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-049.docx)).

## Deliverable 10: AI4H use cases: Topic Description Documents

The editor of [DEL10](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL10.docx) is [Eva Weicken](mailto:eva.weicken@hhi.fraunhofer.de) (Fraunhofer HHI, Germany).

[L-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004-A01.docx): Updated DEL10: AI4H use cases: Topic Description Documents [Editor]

**Abstract:** This document provides an overview of the ITU/WHO Focus Group on AI for Health (FG-AI4H) "AI4H use cases: Topic Description Documents". Each use case is represented by a topic group that is dedicated to a specific health topic in the context of AI. The topic group proposes a procedure to benchmark AI models developed for a special task within this health topic. All members of a topic group create a topic description document (TDD) that contains information about the structure, operations, features, and considerations of the specific health topic. This document constitutes deliverable No. 10 (DEL.10\_0) and serves as an introduction to the topic groups and their topic description documents.

Eva introduced the deliverable using the slides in [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004-A01.docx). This Deliverable provides a summary of all TDDs, which are part of the documentation of each of the Topic Groups (see §‎13). The current version updates information as a result of the progress in the various TGs. She highlighted that several TGs updated their TDDs using the updated template in [J-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-105.docx) approved at the October 2020 FG-AI4H Meeting J. All TGs are requested to update their TDDs to the new TDD template.

The update to DEL10 as found in [K-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-004.docx) was adopted to be uploaded to the [deliverables website](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/).

# Updates and new proposals for existing TGs

The following TGs received no updates at this meeting:

* TG-Derma (Dermatology)  
  Last updates: Meeting E. Proposed at meeting B.
* TG-FakeMed (AI-based detection of falsified medicine)  
  Last updates: TDD: Meeting J; CfTGP: Meeting H. Proposed at Meeting F.
* TG-Diabetes  
  Last updates: TDD: Meeting J; CfTGP: Not yet available. Proposed at Meeting H.
* TG-Endoscopy  
  Last updates: TDD at meeting J. CfTGP at meeting J. Proposed at meeting I.

Various groups have not shown or reported progress and that is counter-productive towards the FG-AI4H meeting its deadlines.

1. It was agreed to remind TG Drivers that an update of their activities is expected at each FG meeting.

Further observations concerning TGs with subtopics:

* TG-Cardio: Needs TDD content for subtopic on cardiac image analysis. Current version only covers the cardiovascular risk prevention.
* TG-Neuro: Needs update for subtopic Parkinson's Disease
* TG-Outbreaks: Needs update for subtopic Dengue Surveillance

## Template updates: TDD, CfTGP

None at this meeting.

Drivers for the new topic groups are requested to submit at the next meeting a topic description document and call for topic group participation using the current templates:

* [J-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-105.docx) (TDD)
* [J-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-103.docx) (CfTGP)

Various of the existing TGs should also update their TDDs and CfTGP based on the new templates.

During the TG-Malaria discussions, it was found useful to develop a specific template for a call for participation in challenges.

1. TG-O is requested to prepare a draft template for a call for participation in challenges.

## TG-Cardio (Use of AI in Cardiovascular Disease Management)

[Benjamin Muthambi](mailto:brm5@caa.columbia.edu) is the driver for the main topic as well as for sub-topic 1 (CVD Risk Prediction using AI). The latest documentation available is as follows:

TDD: [L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx)  
CfTGP: [L-006-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A02.docx) (Same as Meeting H)  
Contributions: N/A

The Topic Driver submitted the updated TDD in [L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx), but was unable to join the meeting. The TDD was noted without introduction and in the Deliverables folder was updated with [L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx).

## TG-Derma (Dermatology)

The Topic Driver is Weihong Huang (Xiangya Hosp. Central S. University, China; [whuangcn@qq.com](mailto:whuangcn@qq.com)). The latest documentation available is as follows:

TDD: [L-007-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A01.docx) (Same as Meeting E)  
CfTGP: [L-007-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A02.docx) (Same as Meeting E)  
Contributions: N/A

No progress report was presented.

## TG-Bacteria (Diagnoses of bacterial infection and anti-microbial resistance, AMR)

The Topic Driver is [Nada Malou](mailto:nada.malou@paris.msf.org,nada_malou@yahoo.fr). The latest documentation available is as follows:

TDD: [L-008-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A01.docx) – [L-008-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A03.pptx)  
CfTGP: N/A  
Contributions: N/A

The TG Driver Nada presented excuses for the delay in progressing the topic, due to the COVID pandemic. She provided a brief introduction on the MSF Foundation, a recap on antimicrobial resistance problematic, the purposes of the TG and introduced the plans for the TG. Petri dish image contains many antibiotics identified by a disk. Around it there are zones with specific growth patterns. Lab technicians are kept involved by asking to confirm what features are observed. AI is used to recognize about 50 labels. The results show a 99.97% test accuracy. Main current limitation is that the model was trained only on two of the multiple pellet brands; currently, they are training two other types. Accuracy for D-zone is 99.7% and for synergy it is 98%. The accuracy would be different, and it would be more complicated at a larger level scale, with different settings and in different countries.

MSF has developed an open source Android app called Antibiogo to help with the interpretation of a bacteria culture image and provide a diagnostic (video demo: <https://youtu.be/y3oxQLLsNhs>).

The meeting welcomed the update and recent progress and hopes that the TG can make good progress and present updates at the next meeting. The Deliverables folder was updated with the updated TDD in [L-008-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A01.docx).

## TG-DiagnosticCT (Volumetric chest computed tomography)

The Topic Driver is [Kuan Chen](mailto:ckuan@infervision.com). The latest documentation available is as follows:

TDD: [L-009-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A01.docx) (Same as meeting J) – [L-009-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A03.pptx)  
CfTGP: [L-009-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A02.docx) (Same as Meeting H)  
Contributions: N/A

The presentation in [L-009-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A03.pptx) was introduced by [Ms Bingshu Chen](mailto:cbingshu@infervision.com) on behalf of the TG Driver and provided an overview of the TG and an update on new contributors to the group.

Bingshu shared the progress of AI application in combatting COVID-19 in China.

Some CT scan AI products approved for use in China to support doctors' evaluation in COVID-19 diagnostic decision. Three national standards have been published in China and Infervision plans to submitted related standardization projects to SG16. The first one is already translated in English, while the other two are only in Chinese. Bingshu will share the documents with Luis.

Manjula: suggest coordinating between clinical findings vs CT findings.

The TDD was last updated in meeting J, which is reproduced in [L-009-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A01.docx) for easier reference. Bingshu agreed to update TDD for next meeting.

## TG-Dental (Dental diagnostics and digital dentistry)

The Topic Drivers are [Falk Schwendicke](mailto:falk.schwendicke@charite.de), [Joachim Krois](mailto:Joachim.krois@charite.de) (Charité Berlin, DE) and [Tarry Singh](mailto:tarry.singh@deepkapha.ai) (deepkapha.ai, Netherlands). The latest available documentation is as follows:

TDD: [L-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A01.docx) – [L-010-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A03.pptx)  
CfTGP: [L-010-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A02.docx)  
Contributions: N/A

Falk presented the progress report in [L-010-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A03.pptx). The TDD document was updated for this meeting.

A number of sub-topics were documented in the TDD for different aspects that are being worked in the TG. They will be prioritized as the resources are limited. Observing more experts interested in the dual track of data sciences and dentistry. Contributor base expanded also geographically, e.g., with experts from Chile and Iran.

Completed a review of the state of art research: most focus on image analysis shallow ML for data description. Largest risk is that of bias. Studies are difficult to compare due to differences in accuracy estimates. It was observed that reporting quality has improved.

The driver noted that the structure of the new TDD template can be complex when a TG has many subtopics by design. The TG is open to suggestions on how to better structure the document.

The meeting was informed that the document "Artificial intelligence for dental image analysis: A guide for authors and reviewers" prepared by TG co-drivers and presented in Meeting J ([J-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-040.docx)) is ready for publication. There was a suggestion that the guide be issued as an output from the meeting, after a consultation via the mailing list. Falk agreed to send the preprint version.

Thomas: data annotation website initiative is being launched under the initiative of TG-Histo, but open to other TGs. TG-Dental is invited; Joachim agreed to consider it as it would be a nice synergy as they already started to consider the annotation matters.

The Deliverables folder was updated with the updated TDD in [L-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A01.docx).

1. The meeting agreed to submit an updated version of the guide originally submitted in [J-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-040.docx) "Artificial intelligence for dental image analysis: A guide for authors and reviewers" for approval by correspondence after Meeting L.

## TG-FakeMed: AI-based detection of falsified medicine

The Topic Driver is [Franck Verzefé](mailto:fverzefe@gmail.com). The latest documentation available is as follows:

TDD: [L-011-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A01.docx) (Same as meeting J)  
CfTGP: [L-011-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A02.docx) (Same as Meeting H)  
Contributions: N/A

No progress report was presented.

## TG-Falls (Falls amongst the elderly)

[Pierpaolo Palumbo](mailto:pierpaolo.palumbo@unibo.it) (University of Bologna, Italy) replaces [Inês Sousa](mailto:ines.sousa@fraunhofer.pt) (Fraunhofer Portugal) as interim Topic Driver until September 2021. The latest documentation available is as follows:

TDD: [L-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A01.docx) – [L-012-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A03.pptx)  
CfTGP: [L-012-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A02.docx) (Same as Meeting H)  
Contributions: N/A

Pierpaolo presented an overview and update of the TG-Falls work using the slides in [L-012-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A03.pptx). The TDD document was updated for this meeting.

The current goal is to show the risks through the TG work, as there are different interventions related to multiple risk factors to avoid the fall.

The TG decided to keep one sub-topic on fall prediction, and traditional tools and AI models (with both clinical and sensor variables) are described. The co-drivers have applied for access to new datasets, but it is slowly progressing as they need to provide details how the data will be used in the application forms.

Nest steps include increasing intra-TG collaboration, collaboration with WGs, complete the TDD, apply for data access, and create harmonization scripts for data cleanup. The TG also plans on participating in the EU Falls Festival (4-5 April 2022).

The Deliverables folder was updated with the updated TDD in [L-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A01.docx).

## TG-Histo (Histopathology)

The Topic Driver is [Frederick Klauschen](mailto:f.klauschen@lmu.de). The latest documentation available is as follows:

TDD: [L-013-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A01.docx) (Same as Meeting I) – [L-013-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A03.pdf)  
CfTGP: [L-013-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A02.docx) (Same as Meeting E)  
Contributions: N/A

The TG driver informed of a change of affiliation, with the Department of Pathology in LMU Munich, in addition to Charité Berlin. Although his old email address still works, the new address is: [f.klauschen@lmu.de](mailto:f.klauschen@lmu.de).

The TG driver presented the slides in [L-013-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A03.pdf). The last update to the TDD was in Meeting I. After a brief overview, he highlighted the recent advances in the work, and highlighted the creation of a website to extend datasets and promote annotation their annotation, initially focused on histopathology slides (website planned <https://annotation.network>; not yet functional as of the preparation of this report). The TG driver wishes to expand the activity through the ITU FG-AI4H, adding the link to the website on the FG-AI4H website as well as to show that the website is affiliated with the FG-AI4H work. It was recommended that the website be set it up in a generic way, that could be extended to annotation of other data types, so while it starts now with the histology branch, others could be added later. One area of concern is how to avoid data trolls. The current plan is that access would be by invitation, e.g., an expert could ask the FG secretariat for access and then FG experts would assess their qualifications of the candidates. Another issue is that while datasets are to be kept secret (private), annotators must see the images. How to avoid cheating? Just show a small set? Do a trial marking? This needs some further thinking to define a reliable vetting procedure.

What image standards are used? DICOM and other packs are considered but, different from radiology, currently there are no standards widely adopted in histology.

Luis: it would be interesting to have annotation of other data modalities supported in the site. How is image storage currently? Their own server is used. Environment in ITU AWS to store can be considered. Want to make a dataset that is truly private. Discussions are needed to define the best approaches to achieve this.

The meeting agreed with prospect to create an annotation website, starting with histopathology, and extendable to other use cases. Some thought is needed on resources, to discuss – networking power of ITU/WHO sponsored activity would be a good platform. As next step, it was suggested to make an open call to get the activity organized. Markus and Eva to help organize similar annotation initiatives. TG-Dental is also interested.

1. The FG-AI4H agreed to support the initiative for a dataset extension and annotation website (planned <https://annotation.network>, not yet operational), which will initially focus on histopathology data. The leader of the activity is [Frederick Klauschen](mailto:f.klauschen@lmu.de), LMU Munich & Charité Berlin, Germany. Specific procedures and details will be discussed initially under TG-Histo.

[L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A01.pdf) + [A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A02.pptx): TG-Histo: Point-of-care cancer diagnostics using AI and mobile digital microscopy [University of Helsinki, Finland]

The proposal in [L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) on a new TG on point-of-care cancer diagnostics using AI and mobile digital microscopy was also reviewed in the context of TG-Histo and it was found to be complementary in scope, as L-033 focuses on devices, not the medical problem datasets. See the detailed discussion under §‎14.4.

## TG-Malaria: Malaria detection

The Topic Driver is [Rose Nakasi](mailto:g.nakasirose@gmail.com). The latest documentation available is as follows:

TDD: [L-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A01.docx) – [L-014-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A03.pptx)  
CfTGP: [L-014-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A02.docx)  
Contributions: N/A

A progress report was presented by the Topic Driver with the slides in [L-014-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A03.pptx). The TDD document was updated for this meeting. The TDD has been restructured to the new template. The TG is holding biweekly online meetings and progress is well on track.

Collaboration with the OCI has continued and a 2nd challenge is planned, with beta-testing of the assessment platform and launching the challenge. The outcomes were discussed and a paper was prepared and submitted to a conference. Discussions are ongoing on how to iterate the use case in the FG evaluation platform. The improved benchmarking platform will use a new public dataset of thin blood smear and add support for deep learning and increase the time window for submission. Adding possibility to upload datasets in support of data crowdsourcing.

There were only a few participants in the first challenge and assistance was requested to increase outreach for the next one. On the technical side, the TG aims to expand from classification towards object detection, to iterate with other versions for benchmarking AI solutions and to gain insights for the FG-EvalAI (OCI) platform.

Currently, description of the challenge is embedded in the TDD. The TG Driver was encouraged to prepare a concise document forming a call for challenge participation, which could be used in ITU and other channels to promote the challenge. This could be the basis for a challenge CfP template that could be prepared for use of the various TGs.

## TG-MCH: Maternal and child health

The Topic Drivers are [Raghu Dharmaraju](mailto:rdharmaraju@gmail.com) (Wadhwani AI, India) and [Alexandre Chiavegatto](mailto:alexdiasporto@usp.br) (University of São Paulo, Brazil).The latest documentation available is as follows:

TDD: [L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx) – [L-015-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A03.pptx)  
CfTGP: [L-015-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A02.docx) (Same as Meeting H)  
Contributions: N/A

The co-driver Alexandre Chiavegatto introduced the TG-MCH work and updates using the slides in [L-015-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A03.pptx). An update to the TDD was presented as found in [L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx).

He started by asking more people to join the TG, in particular women. He noted that machine learning has a role in helping reduce rates of death and complication at birth, which in many cases can greatly benefit from simple, low-cost interventions, if early enough warnings are provided.

Algorithms need to use routinely available variables. If algorithms use expensive exams, it will be difficult to significantly improve the current situation.

A thorough study was done on the mapping of neonatal deaths in Sao Paulo city between 2012 and 2017 and applied machine learning to it. Obtained 90% accuracy, high calibration. Trained from the past and tested in the future. It has a great potential to be used for public policy planning. Next step is to start clinical trials in São Paulo city.

They suspect that models would be highly localized, not robust, so not readily extensible in different settings (e.g., outside São Paulo or in other countries). This is being studied. The Driver noted that he has observed dangerous trend of apps claiming to work everywhere. A randomized clinical trial should be a pre-requisite.

The goal is to predict the risk of neonatal mortality using only data routinely available from birth records in the largest city of the Americas

The TG is already collaborating with WG-CE, to propagate the work on a safe way.

It was agreed to upload the updated TDD in [L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx) to the Deliverables repository.

## TG-Neuro: Neurological disorders

The Topic Driver is [Marc Lecoultre](mailto:ml@mllab.ai) (ML Labs, Switzerland). The latest documentation available is as follows:

TDD: [L-016-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A01.docx) – [L-016-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A03.pptx)  
CfTGP: [L-016-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A02.docx) (Same as Meeting E)  
Contributions: N/A

A progress report was presented by [Ferath Kherif](mailto:Ferath.Kherif@chuv.ch) (CHUV, Switzerland) using the slides in [L-016-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A03.pptx) and progress is well on track.

A pilot study was implemented and found that in 20% of cases clinicians reported that the additional information did not change their initial DC. In 36% and in 29% of cases, they felt "somewhat" or "slightly" impacted, respectively. In 15% of cases, they significantly changed their initial belief. This was expected.

Next steps: integrate larger datasets (1400 individuals, age 30-90 years, 700 never suffered depression, 700 suffered major depressive disorder), explore other brain features (morphemic workflows: grey matter volume vs myelin white matter fiber track), reduce hardware costs, work on prediction of depression cases also linked to dementia (brain age as biomarker) and delta-age.

The TG also plans to link to EU and worldwide initiative (established research contract with Fundação Cruz (Fiocruz, Brazil), list and connect to other partners/platforms (e.g., AD workbench), complete the data catalogue; MVP data catalogue, federated algorithms & hybrid cloud infrastructure.

It was agreed to upload the updated TDD in [L-016-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A01.docx) to the Deliverables repository.

## TG-Ophthalmo (Ophthalmology)

The Topic Driver is [Arun Shroff](mailto:arunshroff@gmail.com). The latest documentation available is as follows:

TDD: [L-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A01.docx) – [L-017-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A03.pptx)  
CfTGP: [L-017-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A02.docx)  
Contributions: N/A

Arun Shroff presented an overview and update of the activities in the TG-Ophthalmo using the slides in [L-017-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A03.pptx). The TDD document was updated for this meeting.

The updated TDD was presented by the topic driver and progress is well on track. Help was requested to find more contributors.

Since last meeting, various organizations were contacted for datasets for benchmarking (EYEPACS, USA; NHS Moorfields Eye Hospital, UK; INSIGHT UK: Health Data Research Hub for Eye Health, UK). The latter one offers large, anonymized sets of patient data for research; they require certain criteria to be met, application process and formal review are ongoing. Arun indicated that ITU and WHO could help in getting clearances from some of the data providers indicated above.

Arun mentioned he is working with Marc and Bastiaan for a challenge using the OCI platform. Currently, the main issue, to get test data. Some data was provided by Arun to configure and test the system, but for the actual benchmarking, undisclosed data is required.

As for next steps, updates will be made to the TDD (new TDD Template; complete sections on ethics, benchmarking, reporting; and to split themes into subtopics). Further work will be done with DAISAM to setup benchmarking challenge. Another further task is outreach and community building to increase engagement from members and to get more experts on board and involved.

It was agreed to upload the updated TDD in [L-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A01.docx) to the Deliverables repository.

## TG-Outbreaks (AI for Outbreak Detection)

The Topic Driver are [Auss Abbood](mailto:abbooda@rki.de) (Robert Koch Institute, Germany) and [Stéphane Ghozzi](mailto:stephane.ghozzi@helmholtz-hzi.de) (HZI, Germany). The latest documentation available is as follows:

TDD: [L-018-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A01.docx) (Same as Meeting K) – [L-018-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A03.pptx)  
CfTGP: [L-018-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A02.docx) (Same as Meeting I)  
Contributions: [L-035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035-A01.pdf)

No updates were made to the TDD, which was last updated for Meeting K. The TG Driver Auss Abbood provided and overview of the TG work with the slides in [L-018-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A03.pptx). The principle is to observe spatio-temporal data series and detect aberrant case numbers, which could flag potential outbreak events. Several experts were consulted, wrote an extensive review on methods and metrics in outbreak detection, and did a survey to identify gaps and most important use cases. They found that existing metrics cannot cover all relevant algorithm families alike (e.g., SaTScan and Farrington flexible) and formulated a solution to compare performance regardless of data stratification and algorithm type. Currently, the group is working on fine tuning part the conceptual model.

The topic driver described a "toy example" of how such an algorithm would work. Data distributions of events perceived over time and different locations are converted to probability distributions, and then these are reflected into the probability of a particular outbreak. The framework can compute statistics other than confusion matrices, like RMS error. These can be used for different tasks.

[L-035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035-A01.pdf): TG-Outbreaks: Technology, Economics, & Policy: AI for Sanitation and Public Health [Institute for Technology & Global Health, ITGH]

In the context of TG-Outbreaks, the proposal for a new TG on the use of AI in sanitation for public health in L-035 was assessed whether it should be a separate TG or a sub-topic in TG-Outbreaks. After discussion, it was agreed that the best for now would be for a TG-Sanitation to start now as a separate TG, that would have synergies with TG-Outbreaks in the future. See more details in the discussion of L-035 in §‎14.

## TG-Psy (Psychiatry)

The Topic Driver is [Nicholas Langer](mailto:n.langer@psychologie.uzh.ch). The latest documentation available is as follows:

TDD: [L-019-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A01.docx) (Same as Meeting K) – [L-019-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A03.pptx)  
CfTGP: [L-019-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A02.docx) (Same as Meeting H)  
Contributions: N/A

Nicholas Langer presented briefly the overview of the TG work and recent updates using the slides in [L-019-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A03.pptx). The last version of the TDD is from Meeting K.

The topic driver focused on recent progress. A full overview of the activity will be presented at the next FG AI4H meeting.

Participated at a Kaggle competition at Datathon 2021, <https://www.kaggle.com/c/datathon21-eeg/overview> . Next steps will be:

* Work on bringing the TDD to the new template (J-105)
* Quantifying uncertainty (PhD student Maurice Weber, ETH)
* Submit paper to Neuroimage
* Set up a framework for automated benchmarking for new algorithm submission (EvalAI, AIcrowd, crowdai.org, kaggle.com or ramp.studio), but will need help.

Planned collaboration on evaluation platform with Bastiaan, Alix and Elora

## TG-Snake (Snakebite and snake identification)

The Topic Driver is [Rafael Ruiz](mailto:rafael.ruizdecastaneda@unige.ch). The latest documentation available is as follows:

TDD: [L-020-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A01.docx) (Same as Meeting I) – [L-020-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A03.pdf)  
CfTGP: [L-020-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A02.docx) (Same as Meeting G)  
Contributions: N/A

The TDD was last updated for meeting I. The TG driver Rafael Ruiz gave an overview of the work on snakebite and snake identification using the slides in [L-020-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A03.pdf). Most victims of snakebites see the snake and can give a description of the animal, sometimes they try to kill, capture or take a picture of it. Some people use social media to try to identify the snake, so the idea of the group was born, to create an app using AI to help on identifying a snake species from a phot of it or its snakebite. A dataset was built through a collaborative effort and a paper has been recently submitted. Challenges have been launched in the AICrowd platform. Another paper with results from an original model was published.

Have been focusing on the AI aspect. Building community of professional herpetologists and amateurs/non-experts. Also, the challenges have an educational aspect, as less trained persons can learn through the challenge process and provide service in their communities. There is a geographical component, as identification of species depends on the local fauna. Developing experiments to understand how crowdsourcing and AI work together. Started exploring extension of the approach to other venomous species.

A list of publications is available in the slides in [L-020-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A03.pdf).

Where is the data sitting? Annotated? Rafael clarified that they are not hosting data themselves, they sit on various external platforms, most data are publicly available. FG AI4H's suggestion would be to collaborate in data specification, and in Open Code Initiative, if data can be centralized.

Rafael mentioned the idea of using "semi-secret data" – last fraction of public being made available; on which model developers would not have had time to train.

## TG-Symptom (Symptom assessment)

The Topic Driver is [Henry Hoffmann](mailto:henry.hoffmann@ada.com). The latest documentation available is as follows:

TDD: [L-021-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A01.docx) – [L-021-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A03.pptx)  
CfTGP: [L-021-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A02.docx)  
Contributions: N/A

A progress report (including a general overview of the activity) in [L-021-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A03.pptx) was presented by the Topic Driver and progress is well on track. The TDD document now has about 120 pages, which is not quite complete. The regulatory consideration part needs to be added based on the recent draft of DEL2.

Main tasks ahead are to continue ontology work, improve the TDD and do outreach.

Is there validation data for the tools? They have been focusing on aspects that are specific to the use case and the group will use the OCI platform for the assessment tasks.

Manjula suggested to spotlight two or three diseases that could be fully profiled. Shubs noted that there are already some are 11 conditions covered: some are common, some are rarer, a few are critical; and the group plans on extend the number of conditions covered. For the urgent tools, benchmarking should be done. The TG driver will discuss further offline with Manjula for the specific suggestion.

It was agreed to upload the updated TDD in [L-021-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A01.docx) to the Deliverables repository.

## TG-TB (Tuberculosis)

The Topic Driver is [Manjula Singh](mailto:drmanjulasb@gmail.com). The latest documentation available is as follows:

TDD: [L-022-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A01.docx) – [L-022-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A03.pptx)  
CfTGP: [L-022-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A02.docx) (Same as Meeting E)  
Contributions: N/A

The TG Driver presented an overview and update for the TG-TB using the slides in [L-022-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A03.pptx). The TDD document was updated for this meeting.

ICMR is developing a model TB screening tool that can work offline. Currently they are doing an additional validation because while specificity was high, sensitivity was low.

Mr Manika Sharrma provided details on the tool developed, it uses DeepCXR. Python, Tensorflow and object detection. It also assesses cough sounds for screening COVID infected patients, and currently they are extending it for remote screening of TB. <https://covid19.ipr.res.in/app_Login/>.

The group welcomed the good progress and looks forward to seeing the dataset collection expanded.

It was agreed to upload the updated TDD in [L-022-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A01.docx) to the Deliverables repository.

## TG-Radiology (Radiology)

The Topic Driver is [Darlington Ahiale Akogo](mailto:darlington@gudra-studio.com) (minoHealth AI Labs, Ghana). The latest documentation available is as follows:

TDD: [L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) – [L-023-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A03.pptx)  
CfTGP: [L-023-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A02.docx) (Same as Meeting H)  
Contributions: N/A

The TG driver presented the progress report in [L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) with an overview and update for the TG-Radiology. Currently with 26 participants from five continents and from 11 organizations. Onboarding new members, discussed open workstreams within the TG. The TDD document was updated for this meeting. Progress is well on track.

The TDD covers 22 metric scores, 11 imaging modalities, and various image compression formats.

Image compression considerations were experimented, and updates were made on additional compression ratio and comparison to PNG. PNG is lossless, but it takes a toll on speed and storage requirements.

Seven research papers on benchmarking work were identified. NHS AI Lab benchmark platform: must register, provide data and evidence, business model of developer, etc, before one is allowed to submit model for their system. Uses AWS, but AI developers do not have access to the test data. AI developers are not charged. The benchmarking report can be used as part of the application for official certification. Contacted them but they are waiting to hear back from NHS AI Lab. The TG driver asked if ITU could help.

It was agreed to upload the updated TDD in [L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) to the Deliverables repository.

## TG-Diabetes

The Topic Driver is [Andrés Valdivieso](mailto:avaldivieso@anastasia.ai) (Anastasia.ai, Chile) The latest documentation available is as follows:

TDD: [L-024-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A01.docx) (same as Meeting K)   
CfTGP: [L-024-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A02.docx)  
Contributions: N/A

A first draft of the CfTGP was prepared by the secretariat as found in [L-024-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A02.docx), based on the previous TDD (see [K-024-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-024-A01.docx)).

No progress report was presented.

## TG-Endoscopy

The Topic Driver is [Jianrong Wu](mailto:edwinjrwu@tencent.com) (Tencent Healthcare, China). The latest documentation available is as follows:

TDD: [L-025-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A01.docx) (Same as meeting K)  
CfTGP: [L-025-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A02.docx) (Same as Meeting J)  
Contributions: N/A

No updates were presented at this meeting. The TDD from meeting [K](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-025-A01.docx) is the latest version.

## TG-MSK

The Focus Group welcomed Peter Grinbergs (EQL, UK) as a co-driver for TG-MSK and noted the change in affiliation for Yura Perov, who continues as TG-MSK co-driver. Both can be reached through a common e-mail address, [tgmskorg@googlegroups.com](mailto:tgmskorg@googlegroups.com). The latest documentation available is as follows:

TDD: [L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx) – [L-026-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A03.pptx)  
CfTGP: [L-026-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A02.docx)  
Contributions: N/A

The Topic Driver delivered a progress report on the activities of this new TG as found in [L-026-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A03.pptx). The updated version of the TDD is available in [L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx). Two AI tasks were added to the TDD.

Seven members in the TG and three meetings of the TG were held since the last FG AI4H meeting. They identified three types AI/ML tasks for MSK medicine (self-management; prediction and prevention of MSK conditions; motion capture, pose recognition, posture and gait analysis). Next steps: Continue the work on the tasks and benchmarks; grow the TG; identify particular use cases for the objectives of the TG.

Robert Pawinski (Pfizer, UK) mentioned the funding model where the EC matched industry funding and agreed to contribute to the TG for identifying possible funding sources.

It was agreed to upload the updated TDD in [L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx) to the Deliverables repository.

1. The Focus Group agreed have Peter Grinbergs (EQL, UK) and Yura Perov (UK) as co-drivers for TG-MSK. Both can be reached through a common e-mail address, [tgmskorg@googlegroups.com](mailto:tgmskorg@googlegroups.com).

# Proposals for new topic areas

## AI for human reproduction and fertility

[L-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034-A01.pdf): New topic group proposal: AI for Human Reproduction and Fertility [Merck KGaA, Darmstadt, Germany]

**Abstract:** We propose hereby a new topic group for the "Artificial Intelligence for Health" project. The topic group will focus on the identification and diagnosis of infertility as well as treatment associated steps of Assisted Reproductive Technologies with the applications of artificial intelligence and machine learning. It is estimated that 9% of the global population of reproductive age is infertile [1]. While infertility affects one in six couples in the U.S. [2], in developing countries it is estimated that one in four couples face reproductive difficulties [3]. Applications of AI and technology have the potential to improve patient identification, diagnosis, and treatment journey for patients in need of IVF treatment worldwide.

Susanna Brandi (embryologist) and Eleonora Lippolis (data scientist) introduced the proposal. Infertility affects 1 in 6 couples and treatment is unique, complex and divided in different phases. AI and advanced analytics enable the creation of new products and services that improve treatment outcomes and efficiency. Two major challenges are: on the data side (too heterogenous/lack of harmonization, noise, bias, partial evidence; data quality and data size) and on the validation side (validation on hold out data and lack of benchmarks; lack of clinical evidence/validation).

Practical example of what they propose to do? Currently, work being done in silos, would like 1st to have a common framework and create a community, also involving different parts of the process chain, like labs, practitioners, etc. Define quality benchmarks, then define tools used for that, and then data sharing practices, etc. Treatment has many choices and a workflow to select the best treatment options.

Define a TDD, identify sub-topics for the treatment steps, finding data, creating tasks, benchmarks goals.

Eva: relevant topic. What kind of data? Demographics (age, diseases and other medical conditions, past trial outcomes, etc.). Have various partners, they are scattered across the globe. Lack of harmonization on the approaches for applying AI to the fertility topic.

Luis: ethical aspect. Aid in embryo selection? Yes, it already happens today. Issues of bias are already happening in the real world, lawsuits, etc., so processes are being put into place to reduce the issues.

After discussions, it was agreed to create a new TG on AI for human reproduction and fertility (TG-Fertility) with Susanna Brandi ([susanna.brandi@merckgroup.com](mailto:susanna.brandi@merckgroup.com)) and Eleonora Lippolis ([eleonora.lippolis@merckgroup.com](mailto:eleonora.lippolis@merckgroup.com)), Merck KGaA, Darmstadt, Germany, as topic drivers.

1. The FG-AI4H agreed to create new Topic Group on AI for human reproduction and fertility (TG-Fertility) with Susanna Brandi ([susanna.brandi@merckgroup.com](mailto:susanna.brandi@merckgroup.com)) and Eleonora Lippolis ([eleonora.lippolis@merckgroup.com](mailto:eleonora.lippolis@merckgroup.com)), Merck KGaA, Darmstadt, Germany, as topic drivers based on the proposal in [L-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034.docx).

## AI for sanitation and public health

[L-035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035-A01.pdf): TG-Outbreaks: Technology, Economics, & Policy: AI for Sanitation and Public Health [Institute for Technology & Global Health, ITGH]

**Abstract:** Sanitation is a major global health issue, which has a significant toll on human lives and economic output. About 50,000 litres of untreated sewage is released every second in South Africa and the country has one of the world's highest rates of mortality for children under the age of five, with about 10% of those deaths resulting from diarrhoea. This proposal reflects details for an "AI for Sanitation" project to address the issue of poor sanitation as a public health threat and how it can be mitigated using advanced technologies such as Artificial Intelligence systems. The project will utilize terrestrial sensors in sewage systems combined with space technology from the European Space Agency (ESA), to collect and analyse data which will inform health workers of potential outbreaks as a result of disease-causing pathogens in excreta. The data collected will then be used to develop predictive models and train algorithms to detect the presence of pathogens in faecal waste. Outcomes from this study will be used to benchmark against manual approaches to testing for disease in sewage, associated costs, and potential economic benefits.

Khahlil Louisy introduced the document. Combination of a public health topic with AI. Using sensor (IoT & satellite) and geo-imaging with demographics data. Floating labs in septic tanks do analysis for pathogens. A one-year pilot implementation is being negotiated with South-Africa, in the meantime need to develop the assessment framework. This is a large project, doing initially with a single country. Data collected will be used for modelling.

TG-Outbreaks: currently in a theoretical stage, developing metrics, so there is not too much overlap currently. Maybe as the group evolves, this could be reassessed or at least synergies could be explored.

After this, the group agreed to create a new topic group on AI in sanitation for public health (TG-Sanitation) with Khahlil Louisy ([klouisy@hks.harvard.edu](mailto:klouisy@hks.harvard.edu); Institute for Technology & Global Health, ITGH, US) and Alexander Radunsky ([mailto:](http://mailto:)[aradunsky@mail.harvard.edu](mailto:aradunsky@mail.harvard.edu)), ITGH, US, as topic drivers.

1. The FG-AI4H agreed with the creation of a new Topic Group on AI in sanitation for public health (TG-Sanitation) with Khahlil Louisy ([klouisy@hks.harvard.edu](mailto:klouisy@hks.harvard.edu); Institute for Technology & Global Health, ITGH, US) and Alexander Radunsky (<mailto:>[aradunsky@mail.harvard.edu](mailto:aradunsky@mail.harvard.edu)), ITGH, US, as topic drivers based on the proposal in [L035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx)

## Voice as a biomarker in preventing, predicting and monitoring disease

[L-042](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-042.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/_layouts/15/WopiFrame.aspx?sourcedoc=%7B027E4B11-4BBE-4822-A831-B1B523C4F12A%7D&file=FGAI4H-L-042-A01.pptx&action=default): Using voice as a biomarker in preventing, predicting and monitoring disease [TU Dresden, Germany]

**Abstract:** An AI-based solution can only be used with full certainty if it has been rigorously evaluated against a set of criteria. The goal of the TG is to use speech as a potential screening tool. Human voice may be used to evaluate health in a significant way. AI voice assistants can convert speech into a vital indicator, allowing for early assessment and prediction of upcoming health problems. Similarly, to how temperature indicates fever, voice biomarkers can offer a more complete view of our health. Consider how much precision and coordination of muscles and brain areas are required to generate voice, and how various disorders might impair one's voice and use of language gradually or acutely. There are a number of interesting firms in this field that are making advances in AI speech technology. The really interesting question is to establish algorithms which allow to draw interconnections between speech and other conditions by connecting national databases with a learning algorithm to sort the abundance of data we have access to.

Acoustic alterations of speech can point to changes in health. Studies exist on analysing voice for prediction of mood states and dementia. Exiting models draw upon voice as isolated biomarker in detecting early onsets of psychiatric conditions and monitoring them to prevent relapses (e.g., compliance), but voice is but one element that needs to be taken into consideration.

The author suggested a holistic approach: voice signals, imaging, health records, etc. used in context for clinical purposes. No need to reinvent the wheel but realigning it (e.g., structuring unstructured data).

Some issues raised included: language barriers, privacy and data protection, international standards on anonymization and pseudo-anonymization of data.

Manjula: need to work on it in a structured manner. Need to have data where voice pre-treatment, during treatment and post-treatment, then to compare to non-diseased persons and persons with other diseases. Should focus on frequency, tone, volume, even if language is different, they should be permanent. Dominik mentioned it would be interesting to try to have patient-doctor interactions recorded, for analysis.

Is there a specific use case to be explored within the FG? Not yet, open to suggestions and inspiration. Want to explore voice is a synergistic biomarker. Manjula agreed to assist.

Another aspect to keep in mind is that voice / speech is used all day and time. Voice is transmitted, could be recorded, then misused. People could be screened and be subject to involuntary medical screening. Important signal connected to physiology, worth to explore it. TGs: different problem modalities, including signals, that could be explored. The activity should be targeted to specific use cases. Be careful to avoid potential of misuses in general. It is important to take speech signals as a part of medical framework of certain diagnosis tasks, so need to avoid conflict.

The meeting considered that, while this new TG proposal was appreciated, concrete application areas would need to be identified. It was suggested that the author consult with other TGs to identify use cases where adding voice as a signal could improve diagnostics.

## Point-of-care diagnostics using AI and mobile digital microscopy

[L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A01.pdf) + [A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A02.pptx): TG-Histo: Point-of-care cancer diagnostics using AI and mobile digital microscopy [University of Helsinki, Finland]

Abstract: We have developed and conducted proof-of-concept studies of a novel method that combines artificial intelligence (AI) and mobile digital microscopy for cell-based cervical cancer screening in resource-limited settings. The mobile microscopes are wirelessly connected via mobile networks for deep learning-based analysis and provide access to diagnostics where there is a lack of medical experts. We will scale up the use of the new diagnostic method in the form of a validation study in Tanzania with the aim of detecting premalignant changes for the purpose of cervical cancer screening/prevention. Suspected abnormal cells identified by the algorithm are verified by a pathologist and treated. In 2023-24 the method's diagnostic accuracy, technical feasibility, cost and time per test, and acceptance of the AI method is evaluated and compared to conventional diagnostics. Throughout the project, opportunities for larger scale implementation of the diagnostic platform in East Africa are evaluated, with the goal of achieving sustainable solutions for low-resource settings. The methods have great potential to improve equal and sustainable access to high-quality diagnostics for cervical cancer screening among women residing in low- and middle-income countries, carrying the highest cervical cancer burden globally. We propose a working group for digital diagnostics for cervical cancer in low- and middle-income countries.

Nina Linder presented the proposal in L-033 using the slides in A02.

Use of diagnostics from scanning images from low-cost slide microscopes to diagnostic cervical cancer in low resource settings. Annotated data is available and studies show promising results.

Nina Linder presented the proposal in [L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) using the slides in [A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A02.pptx).

Use of diagnostics from scanning images from low-cost slide microscopes to diagnostic cervical cancer in low resource settings. Annotated data is available, and studies show promising results.

Hand-held microscope device with integrated scanner and images are transmitted over 3G/4G, working to develop a low-cost version. Staring a 2nd validation phase. Manjula asked if it could be used for TB microscoping, this would be a good diagnostic test for TB, malaria and other diseases where the smears are made and microscopy is used.

Luis asked to share some of the field testing reports, Nina agreed to follow up.

Images are only lightly compressed. While quality is good for cervical cancer, it is not for malaria. How different levels of compression affects the performance of machine detection. Thomas noted that some compression can act as denoising.

The TG-Histo Driver noted that this can have some overlap with TG-Histo, but not significantly. TG-Histo works on datasets for histological assessments, while the suggested topic is around the system put into a flow including a device that end up at a diagnostic at a remote location. including a device. Nina noted that the emphasis would be on particular a diagnostic task via a device; a system put into a flow that allows for diagnostics at a remote location. Empower non specialist practitioners.

After the discussions, the meeting agreed with the creation of a new topic group to develop further the concept in [L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx). The new TG is expected to interact closely with a number of TGs, including malaria, tuberculosis, and symptom checker. The title is AI for point-of care diagnostics (TG-POC), led by Nina Linder ([nina.linder@helsinki.fi](mailto:nina.linder@helsinki.fi)), University of Helsinki, Institute for Molecular Medicine, Finland.

1. The FG-AI4H agreed to create a new Topic Group on AI for point-of care diagnostics (TG-POC) with Nina Linder ([nina.linder@helsinki.fi](mailto:nina.linder@helsinki.fi)), University of Helsinki, Finland, as the topic driver, as per the proposal in [L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx).

# Review / reconfirmation of previous output documents

The following documents are reconfirmed without any updates:

* [F-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-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
* [F-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-105.docx): ToRs for the WG-Experts and call for experts
* [F-106](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-106.docx): Guidelines on FG-AI4H online collaboration tools
* [K-107](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-107.docx): FG-AI4H Onboarding document
* [FG-AI4H Whitepaper](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Documents/FG-AI4H_Whitepaper.pdf) ([K-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-002.docx))

# Working methods

No changes were agreed to the working methods, and no new mailing lists were created.

NOTE – [Annex D](#AnnexD) hereinafter contains the agreed procedures for online approval of document as well as for organizing e-meetings.

# Outcomes of this meeting

## WG updates

There was no change in leadership at this FG-AI4H meeting:

## TG updates

New TG/sub-TG:

The following new TGs were approved.

* TG on AI for human reproduction and fertility (TG-Fertility) with Susanna Brandi ([susanna.brandi@merckgroup.com](mailto:susanna.brandi@merckgroup.com)) and Eleonora Lippolis ([eleonora.lippolis@merckgroup.com](mailto:eleonora.lippolis@merckgroup.com)), Merck KGaA, Darmstadt, Germany as co-drivers.
* TG on AI in sanitation for public health (TG-Sanitation) with Khahlil Louisy ([klouisy@hks.harvard.edu](mailto:klouisy@hks.harvard.edu)) and Alexander Radunsky (<mailto:>[aradunsky@mail.harvard.edu](mailto:aradunsky@mail.harvard.edu)), Institute for Technology & Global Health, ITGH, US, as co-drivers.
* TG on AI for point-of care diagnostics (TG-POC) with Nina Linder ([nina.linder@helsinki.fi](mailto:nina.linder@helsinki.fi)), Helsinki University, Finland, as driver.

Updates to leadership / scope of existing TGs:

* The drivers for TG-MSK are now Peter Grinbergs (EQL, UK) and Yura Perov (UK), who can be contacted by a common e-mail address, [tgmskorg@googlegroups.com](mailto:tgmskorg@googlegroups.com).

## Output liaison statements

The following outgoing liaison statements were prepared and approved.

* [L-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-049.pptx): LS/r on invitation to review artificial intelligence standardization roadmap and provide missing or updated information (SG13-LS196) [to ITU-T SG13]
* [L-053](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-053.pptx): LS/r on invitation to provide inputs to the roadmap of AI activities for natural disaster management (FG-AI4NDM-LS001) [to FG-AI4NDM]

These were prepared for [dispatch](https://www.itu.int/net/itu-t/ls/ols.aspx?from=7952&after=2021-05-18&before=2021-05-22) as [FGAI4H-LS5](https://www.itu.int/ifa/t/2017/ls/fg-ai4h/sp16-fg-ai4h-oLS-00005.docx) and [FGAI4H-LS6](https://www.itu.int/ifa/t/2017/ls/fg-ai4h/sp16-fg-ai4h-oLS-00006.docx), respectively.

## Output documents

It was agreed to process one document by the online approval process:

* TG-Dental: Artificial intelligence for dental image analysis: A guide for authors and reviewers

No new output documents were agreed. The following updated output documents were agreed:

* [L-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-102.docx): Updated call for proposals: use cases, benchmarking, and data (to be published once the final dates of the next FG-AI4H meeting are defined)
* [L-200](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-200.docx): Updated list of FG-AI4H deliverables

## Deliverables and parent group reporting

No new deliverables were agreed at this meeting. Future deliverables under consideration are:

* Open Code Initiative reference software implementation (Editor: [Marc Lecoultre](mailto:ml@mllab.ai), MLlab.AI, Switzerland). Initial reference: [K-043](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-043.docx)
* Guidance on digital technologies for COVID health emergency (Co-editors: [Shan Xu](mailto:xushan@caict.ac.cn), CAICT, China; [Ana Riviere-Cinnamond](mailto:rivierea@paho.org), PAHO). Initial reference: [K-042](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-042.docx)
* Risk management in AI for health (Editor: [Pat Baird](mailto:pat.baird@philips.com), Philips, USA). Initial references: [K-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-034.pptx).

No reports for the parent group were needed at this time.

# Future work

## Schedule of future FG meetings and workshops

The schedule of meetings in [L-003](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-003.docx) was reviewed; see Table 2 for easier reference. It is expected that the remainder of 2021, meeting format will depend on the evolution of travel restrictions related to the COVID-19 pandemic. For the time being, hybrid format will be explored for next meeting in September time frame, choose a venue with no cancellation cost, 6 weeks warning time.

Table 2– Schedule of future FG meetings (as of 2020-01-29)

| Meeting | Date | Venue | Notes |
| --- | --- | --- | --- |
| L | May 2021 | Online | This meeting. |
| M | August to September 2021 | Online | TBC |
| N | January to February 2022 | Online | TBC |

The following is a list of potential future meeting locations:

|  |  |  |
| --- | --- | --- |
| Asia:   1. Bangladesh 2. Philippines 3. Singapore 4. South Korea 5. Thailand   Middle-East   1. Oman 2. UAE | Africa   1. South Africa 2. Uganda 3. Kenya 4. Ghana 5. Rwanda 6. Nigeria   Europe   1. Berlin | Americas   1. Canada 2. US 3. Chile |

In addition to meetings, **topic-specific webinars** should be organized around horizontal deliverables (DEL01 to DEL09).

## Work plan and timeline

Update drafts of the deliverables in Table 1 (see §‎11) are expected to be available by two weeks before the next FG-AI4H plenary meeting (to be announced).

## Interim activities (online)

TGs and WGs will continue their activities between this and the next FG meeting. Communications on planned e-meetings will be announced in the TG-specific and/or general mailing lists (see [Annex D](#AnnexD)) with at least one-week notice.

# Promotion and outreach

The meeting was reminded that a series of webinars took place and ITU AI4H challenge is in preparation. The idea is that the webinars on horizontal and vertical themes would happen every two weeks and be organized within the context of the AI for Good online events. The first event in the new AI and Health series would take place two weeks after the FG-AI4G meeting:

* [Regina Barzilay (Prof. AI and Health at MIT dept. EE&CS) "Seeing the future: AI-based Risk Assessment Models"](https://aiforgood.itu.int/events/ai-and-health-regina-barzilay/), Wed 26 May 1600 Geneva time. Moderator: Naomi Lee, FG-AI4H VC.

A promotion plan should be designed for the ethics and regulatory consideration guidelines as they would become available.

Other activities noted:

* WG-RC presentation at WHA
* Webinars
* Challenges
* Call for participation in the network for annotation

# A.O.B.

None.

# Closing

The FG-AI4H chairman thanked all participants for having joined meeting, in particular those submitting contributions and engaged in the discussions. The chairman also thanked the vice-chairs, WG chairs/co-/vice-chairs, and topic drivers who joined the discussions. Finally, he expressed his appreciation for the essential work performed by the secretariat, in particular Simão Campos, Bastiaan Quast, Ayda Dabiri and Kaoru Mizuno.

The meeting was closed on Fri 21 May 2021 around 1600 hours (Geneva time).

Annex A:  
Agenda

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | Related Documents |
| 1 | Opening | | | [L-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-002.pptx) (Introduction) |
| 2 | Approval of agenda | | | [L-001-R02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001-R02.docx) (Agenda);  Initial timing: [link](https://docs.google.com/spreadsheets/d/14gj_SFkoaKHj0c8gv5m_hpKhtF4yAGcrx8RGdCjInJs/edit?usp=sharing) |
| 3 | Documentation and allocation | | | [L-001-R02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001-R02.docx) (Allocation);  Annex B (Documentation) |
| 4 | IPR | | | Annex A |
| 5 | Management updates | | |  |
| a | | | Vice-chairs | * No updates |
| b | | | WGs | * No updates |
| c | | | TGs | * No updates |
| 6 | Approval of Meeting K outcomes and updates | | | [K-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-101.docx): Meeting Report [L-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-028.docx): FG-AI4H Progress Report to ITU-T SG16 (July 2020 to April 2021) [FG-AI4H Chairman]  [K-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-102.docx): Updated call for proposals: use cases, benchmarking, and data  [K-107](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-107.docx): Updated FG-AI4H onboarding document  [K-200-R1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-200-R01.docx): Updated list of FG-AI4H deliverables |
| 7 | Review of incoming LSs | | |  |
| a | | | LS on invitation to review artificial intelligence standardization roadmap and provide missing or updated information [from ITU-T SG13] | SG13 to multiple groups: [L-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027-A01.docx)  à *Discussion* |
| b | | | LS on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information (reply to SG13-LS174) [from FG-AI4EE to SG13] | FG-AI4EE to SG13: [L-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-029.docx) à *Note* |
| c | | | LS on invitation to provide inputs to the roadmap of AI activities for natural disaster management [from FG-AI4NDM] | FG-AI4NDM: [L-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-030.docx)  à *Discussion* |
| d | | | LS on six deliverables of ITU-T FG-AI4EE [from FG-AI4EE to SG5] | FG-AI4EE to SG5: [L-031](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-031.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-031-A01.zip)  à *Note* |
| e | | | LS on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information (reply to SG13-LS196) [from ITU-T SG9 to SG13] | SG9 to SG13: [L-032](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-032.docx)  à *Note* |
| f | | |  |  |
| 8 | Information on AI-related activities | | | Webinars; ITU AI4H challenge |
| 9 | Horizontal and strategic topics | | |  |
| 10 | Working Group updates | | |  |
| a | | | Data and AI solution assessment methods (WG-DAISAM) [Pat Baird; Luis Oala] - Metrics and Measures Paper Questionnaire [Alixandro Werneck] | [L-043](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-043.pptx): Call for participation in DAISAM-survey on Transparent Model Reporting for trustworthy ML4H [WG-DAISAM] |
| b | | | Data and AI solution handling (WG-DASH) [Marc Lecoultre; Ferath Kherif] |  |
| c | | | Ethics (WG-Ethics) [Andreas Reis] | [L-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-048.pptx): Ethics & Governance of Artificial Intelligence (AI) for Health: Update on WHO Guidance and next steps [Chair, WG-Ethics] |
| d | | | Operations (WG-O) [Markus Wenzel/ Eva Weicken] |  |
| e | | | Regulatory considerations (WG-RC) [Naomi Lee] |  |
| f | | | Clinical Evaluation (WG-CE) [Naomi Lee] |  |
| g | | | AI and other digital technologies for COVID-19 health emergency (AHG-DT4HE) [Shan Xu, Ana Rivière-Cinnamond] |  |
| 11 | Open Code Project [Marc Lecoultre] | | | [L-041](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-041.pptx): Status update [Coordinator] |
| 12 | FG-AI4H deliverables | | | Overview: [L-005](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-005.docx) (to note) |
| a | | | New deliverables: Any? |  |
| b | | | [DEL00](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL00.docx): Overview of deliverables | [L-039](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-039.docx): Updated DEL00 [Editor] |
| c | | | [DEL01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL01.docx): AI4H ethics considerations | [L-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-048.pptx): Ethics & Governance of Artificial Intelligence (AI) for Health: Update on WHO Guidance and next steps [WG-Ethics chair] |
| d | | | [DEL02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL02.docx): AI4H regulatory best practices | [L-047](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047-A01.pptx): DEL02: Draft 2.1 of the Overview of Regulatory Considerations on Artificial Intelligence for Health [Editors] |
| e | | | [DEL02.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL02_1.docx): Mapping of IMDRF essential principles to AI for health software |  |
| f | | | [DEL02.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL02_2.docx): Good practices for health applications of machine learning: Considerations for manufacturers and regulators | [L-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037-A01.pptx):Updated DEL2.2 [Editors] |
| g | | | [DEL03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL03.docx): AI4H requirements specifications | [L-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038-A01.pptx): Updated DEL03 [Editors] |
| h | | | [DEL04](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL04.docx): AI software life cycle specification | [L-046](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-046.pptx): Updated DEL04 [Editor] |
| i | | | [DEL05](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05.docx): Data specification |  |
| j | | | [DEL05.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_1.docx): Data requirements |  |
| k | | | [DEL05.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_2.docx): Data acquisition |  |
| l | | | [DEL05.3](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_3.docx): Data annotation specification |  |
| m | | | [DEL05.4](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_4.docx): Training and test data specification | [L-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-045.pptx): DEL5.4: Training and test data specification - Progress review [Editor] |
| n | | | [DEL05.5](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_5.docx): Data handling |  |
| o | | | [DEL05.6](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL05_6.docx): Data sharing practices | [L-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044-A01.pptx): Updated DEL5.6 [Editors] |
| p | | | [DEL06](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL06.docx): AI training best practices specification |  |
| q | | | [DEL07](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07.docx): AI for health evaluation considerations | [L-036](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036-A01.pptx): Updated DEL07 [Editors] |
| r | | | [DEL07.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_1.docx): AI4H evaluation process description |  |
| s | | | [DEL07.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_2.docx): AI technical test specification | [L-051](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-051.pptx): DEL7.2 Progress Review [Editor] |
| t | | | [DEL07.3](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_3.docx): Data and artificial intelligence assessment methods (DAISAM) reference | [L-052](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-052.pptx): DEL7.3: DAISAM reference - Progress review |
| u | | | [DEL07.4](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_4.docx): Clinical evaluation of AI for health | [L-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040-A01.pptx): Updated DEL7.4 [Editors] |
| v | | | [DEL07.5](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL07_5.docx): Assessment platform |  |
| w | | | DEL08: AI4H scale-up and adoption |  |
| x | | | [DEL09](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL09.docx): AI4H applications and platforms | [L-050](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050-A01.pptx): Updated DEL09 [Editor] |
| y | | | [DEL09.1](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL09_1.docx): Mobile applications,  [DEL09.2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL09_2.docx): Cloud-based AI applications |  |
| z | | | [DEL10.0](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/Deliverables/DEL10_0.docx): AI4H use cases: Topic Description Documents | [L-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004-A01.pptx): Updated DEL10: AI4H use cases: Topic Description Documents [Editor] |
| 13 | Updates to TGs and new proposals | | |  |
| a | | Template updates: TDD, CfTGP | | [J-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-105.docx): TDD template (to note)  [J-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-J-103.docx): CfTGP template (to note) |
| b | | TG-Cardio (Cardiovascular Risk Prediction)  [[Benjamin Muthambi](mailto:brm5@caa.columbia.edu)] | | TDD: [L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx) - [L-006-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-006-A03.pptx) CfTGP: [L-006-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A02.docx) Contributions: |
| c | | TG-Derma (Dermatology)  [[Weihong Huang](mailto:whuangcn@qq.com)] | | TDD: [L-007-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A01.docx) - [L-007-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A03.pptx) CfTGP: [L-007-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A02.docx)  Contributions: |
| d | | TG-Bacteria (Diagnoses of bacterial infection and anti-microbial resistance - AMR) [[Nada Malou](mailto:nada.malou@paris.msf.org)] | | TDD: [L-008-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A01.docx) - [L-008-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A03.pptx)  CfTGP: [L-008-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A02.docx)  Contributions: |
| e | | TG-DiagnosticCT (Volumetric chest computed tomography)  [[Kuan Chen](mailto:ckuan@infervision.com)] | | TDD: [L-009-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A01.docx) - [L-009-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A03.pptx) CfTGP: [L-009-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A02.docx)  Contributions: |
| f | | TG-Dental (Dental diagnostics and digital dentistry) [[Falk Schwendicke](mailto:falk.schwendicke@charite.de), [Joachim Krois](mailto:Joachim.krois@charite.de)] | | TDD: [L-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A01.docx) - [L-010-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A03.pptx) CfTGP: [L-010-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-010-A02.docx) Contributions: |
| g | | TG-FakeMed: AI-based detection of falsified medicine [[Franck Verzefé](mailto:fverzefe@gmail.com)] | | TDD: [L-011-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A01.docx) - [L-011-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-011-A03.pptx) CfTGP: [L-011-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-011-A02.docx) Contributions: |
| h | | TG-Falls (Falls among the elderly)  [[Pierpaolo Palumbo](mailto:pierpaolo.palumbo@unibo.it) for [Inês Sousa](mailto:ines.sousa@fraunhofer.pt)] | | TDD: [L-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A01.docx)- [L-012-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A03.pptx) CfTGP: [L-012-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A02.docx) Contributions: |
| i | | TG-Histo (Histopathology)  [[Frederick Klauschen](mailto:frederick.klauschen@charite.de)] | | TDD: [L-013-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A01.docx) - [L-013-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A03.pptx)  CfTGP: [L-013-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A02.docx)  Contributions: [L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A01.pdf) + [A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A02.pptx) [University of Helsinki, Finland] |
| j | | TG-Malaria: Malaria detection  [[Rose Nakasi](mailto:g.nakasirose@gmail.com)] | | TDD: [L-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A01.docx) - [L-014-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-014-A03.pptx) CfTGP: [L-014-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-014-A02.docx) Contributions: |
| k | | TG-MCH: Maternal and child health  [[Raghu Dharmaraju](mailto:rdharmaraju@gmail.com), [Alexandre Chiavegatto Filho](mailto:alexdiasporto@usp.br)] | | TDD: [L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx) - [L-015-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A03.pptx)  CfTGP: [L-015-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A02.docx)  Contributions: |
| l | | TG-Neuro: Neurological disorders  [[Marc Lecoultre](mailto:ml@mllab.ai)] | | TDD: [L-016-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A01.docx) - [L-016-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A03.pptx) CfTGP: [L-016-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A02.docx) Contributions: |
| m | | TG-Ophthalmo (Ophthalmology)  [[Arun Shroff](mailto:arunshroff@gmail.com)] | | TDD: [L-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A01.docx) - [L-017-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A03.pptx)  CfTGP: [L-017-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A02.docx) Contributions: |
| n | | TG-Outbreaks (AI for Outbreak Detection)  [[Stéphane Ghozzi](mailto:GhozziS@rki.de)] | | TDD: [L-018-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A01.docx) - [L-018-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A03.pptx) CfTGP: [L-018-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A02.docx) Contributions: [L-035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035-A01.pdf) [Institute for Technology & Global Health, ITGH] |
| o | | TG-Psy (Psychiatry)  [[Nicholas Langer](mailto:n.langer@psychologie.uzh.ch)] | | TDD: [L-019-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A01.docx) - [L-019-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A03.pptx) CfTGP: [L-019-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A02.docx)  Contributions: |
| p | | TG-Snake (Snakebite and snake identification)  [[Rafael Ruiz](mailto:rafael.ruizdecastaneda@unige.ch)] | | TDD: [L-020-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A01.docx) - [L-020-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A03.pptx) CfTGP: [L-020-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A02.docx)  Contributions: |
| q | | TG-Symptom (Symptom assessment)  [[Henry Hoffmann](mailto:henry.hoffmann@ada.com)] | | TDD: [L-021-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A01.docx) - [L-021-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-021-A03.pptx) CfTGP: [L-021-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-H-021-A02.docx) Contributions: |
| r | | TG-TB (Tuberculosis)  [[Manjula Singh](mailto:drmanjulasb@gmail.com)] | | TDD: [L-022-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A01.docx) - [L-022-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A03.pptx) CfTGP: [L-022-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A02.docx)  Contributions: |
| s | | TG-Radiology (Radiology)  [[Darlington Ahiale Akogo](mailto:darlington@gudra-studio.com)] | | TDD: [L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) - [L-023-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A03.pptx)  CfTGP: [L-023-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A02.docx)  Contributions: |
| t | | TG-Diabetes [[Andrés Valdivieso](mailto:avaldivieso@anastasia.ai)] | | TDD: [L-024-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A01.docx) - [L-024-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A03.pptx)  CfTGP: [L-024-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A02.docx) Contributions: |
| u | | TG-Endoscopy [[Jianrong Wu](mailto:edwinjrwu@tencent.com)] | | TDD: [L-025-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A01.docx) - [L-025-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A03.pptx) CfTGP: [L-025-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A02.docx) Contributions: |
| v | | TG-MSK (AI for Musculoskeletal medicine) [[Peter Grinbergs (EQL, UK), Yura Perov (UK)](mailto:tgmskorg@googlegroups.com)] | | TDD: [L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx) - [L-026-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A03.pptx) CfTGP: [L-026-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A02.docx)  Contributions: |
| 14 | Proposals for new topic areas | | |  |
| a | | AI for human reproduction and fertility [ Merck KGaA, Darmstadt, Germany] | | [L-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034-A01.pdf) |
| b | | Using voice as a biomarker in preventing, predicting and monitoring disease [TU Dresden, Germany] | | [L-042](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-042.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-042-A01.pptx) |
| 15 | Review / reconfirmation of previous output documents | | | [K-102](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-102.docx): Updated call for proposals: use cases, benchmarking, and data  [F-103](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-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  [F-105](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-105.docx): ToRs for the WG-Experts and call for experts  [F-106](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-106.docx): Guidelines on FG-AI4H online collaboration tools  [K-107](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-107.docx): Updated FG-AI4H onboarding document  [FG-AI4H Whitepaper](https://staging.itu.int/en/ITU-T/focusgroups/ai4h/Documents/FG-AI4H_Whitepaper.pdf) [[K-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-K-002.docx)] |
| 16 | Outcomes of this meeting | | | a) Outgoing liaison statements  - [L-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-049.docx): Reply to SG13 (AI roadmap)  - [L-053](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-053.docx): Reply to FG-AI4NDM (AI roadmap on natural disaster management)  b) Structure updates  New TG-Fertility, TG-Sanitation[, TG-Microscopy]  c) Call for proposals (L-102)  d) Output documents - …  e) Updated list of planned deliverables [[L-005](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-005.docx)àL-200] |
| 17 | Future work | | |  |
| a | | Schedule of future FG meetings and workshops | | [L-003](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-003.docx) |
| b | | Format of next meeting | |  |
| c | | Work plan and timeline | |  |
| d | | Interim activities (online) | |  |
| e | | Extension of the FG | |  |
| 18 | Promotion and outreach | | |  |
| a | | Promotional activities | |  |
| b | | Press communication | |  |
| c | | Funding and partnerships | |  |
| 19 | A.O.B. | | |  |
| 20 | Closing | | |  |

Annex B:  
Documentation reviewed at the meeting

| Name | Title | | | | Source |
| --- | --- | --- | --- | --- | --- |
| [FGAI4H-L-001-R03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-001-R03.docx) | Agenda of the 12th meeting (Meeting L) of the Focus Group on Artificial Intelligence for Health (FG-AI4H) | | | | Chairman FG-AI4H |
| [FGAI4H-L-002](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-002.pptx) | Introduction to ITU/WHO Focus Group on AI for Health (FG-AI4H) | | | | Chairman FG-AI4H |
| [FGAI4H-L-003](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-003.docx) | Schedule of future FG meetings (as of 2021-05-18) | | | | Chairman FG-AI4H |
| [FGAI4H-L-004](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-004-A01.pptx) | Updated DEL10: AI4H use cases: Topic Description Documents | | | | Editors |
| [FGAI4H-L-005](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-005.docx) | Updated list of FG-AI4H deliverables (as of 2021-05-18) | | | | TSB |
| [FGAI4H-L-006](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006.docx) | Updates for Cardiovascular disease risk prediction (TG-Cardio) | | | | TG-Cardio Topic Driver |
| [FGAI4H-L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx) | | | | Att.1 – TDD update (TG-Cardio) |  |
| [FGAI4H-L-006-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A02.docx) | | | | Att.2 – CfTGP (TG-Cardio) |  |
| [FGAI4H-L-006-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A03.pptx) | | | | Att.3 – Presentation (TG-Cardio) |  |
| [FGAI4H-L-007](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007.docx) | Updates for Dermatology (TG-Derma) | | | | TG-Derma Topic Driver |
| [FGAI4H-L-007-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A01.docx) | | | | Att.1 – TDD update (TG-Derma) |  |
| [FGAI4H-L-007-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A02.docx) | | | | Att.2 – CfTGP (TG-Derma) |  |
| [FGAI4H-L-007-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A03.pptx) | | | | Att.3 – Presentation (TG-Derma) |  |
| [FGAI4H-L-008](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008.docx) | Updates for Diagnosis of bacterial infection and anti-microbial resistance (TG-Bacteria) | | | | TG-Bacteria Topic Driver |
| [FGAI4H-L-008-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A01.docx) | | | | Att.1 – TDD update (TG-Bacteria) |  |
| [FGAI4H-L-008-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A02.docx) | | | | Att.2 – CfTGP (TG-Bacteria) |  |
| [FGAI4H-L-008-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A03.pptx) | | | | Att.3 – Presentation (TG- Bacteria) |  |
| [FGAI4H-L-009](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009.docx) | Updates for Volumetric chest CT (TG-DiagnosticCT) | | | | TG-DiagnosticCT Topic Driver |
| [FGAI4H-L-009-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A01.docx) | | | | Att.1 – TDD update (TG-DiagnosticCT) |  |
| [FGAI4H-L-009-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A02.docx) | | | | Att.2 – CfTGP (TG-DiagnosticCT) |  |
| [FGAI4H-L-009-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A03.pptx) | | | | Att.3 – Presentation (TG-DiagnosticCT) |  |
| [FGAI4H-L-010](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010.docx) | Updates for Dental diagnostics and digital dentistry (TG-Dental) | | | | TG-Dental Topic Driver |
| [FGAI4H-L-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A01.docx) | | | | Att.1 – TDD update (TG-Dental) |  |
| [FGAI4H-L-010-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A02.docx) | | | | Att.2 – CfTGP (TG-Dental) |  |
| [FGAI4H-L-010-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A03.pptx) | | | | Att.3 – Presentation (TG-Dental) |  |
| [FGAI4H-L-011](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011.docx) | Updates for falsified medicine (TG-FakeMed) | | | | TG-FakeMed Topic Driver |
| [FGAI4H-L-011-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A01.docx) | | | | Att.1 – TDD update (TG-FakeMed) |  |
| [FGAI4H-L-011-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A02.docx) | | | | Att.2 – CfTGP (TG-FakeMed) |  |
| [FGAI4H-L-011-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A03.pptx) | | | | Att.3 – Presentation (TG- FakeMed) |  |
| [FGAI4H-L-012](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012.docx) | Updates for Falls among the elderly (TG-Falls) | | | | TG-Falls Topic Driver |
| [FGAI4H-L-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A01.docx) | | | | Att.1 – TDD update (TG-Falls) |  |
| [FGAI4H-L-012-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A02.docx) | | | | Att.2 – CfTGP (TG-Falls) |  |
| [FGAI4H-L-012-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A03.pptx) | | | | Att.3 – Presentation (TG-Falls) |  |
| [FGAI4H-L-013](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013.docx) | Updates for Histopathology (TG-Histo) | | | | TG-Histo Topic Driver |
| [FGAI4H-L-013-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A01.docx) | | | | Att.1 – TDD update (TG-Histo) |  |
| [FGAI4H-L-013-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A02.docx) | | | | Att.2 – CfTGP (TG-Histo) |  |
| [FGAI4H-L-013-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A03.pptx) | | | | Att.3 – Presentation (TG-Histo) |  |
| [FGAI4H-L-014](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014.docx) | Updates for Malaria detection (TG-Malaria) | | | | TG-Malaria Topic Driver |
| [FGAI4H-L-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A01.docx) | | | | Att.1 – TDD update (TG-Malaria) |  |
| [FGAI4H-L-014-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A02.docx) | | | | Att.2 – CfTGP (TG-Malaria) |  |
| [FGAI4H-L-014-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A03.pptx) | | | | Att.3 – Presentation (TG-Malaria) |  |
| [FGAI4H-L-015](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015.docx) | Updates for Maternal and child health (TG-MCH) | | | | TG-MCH Topic Driver |
| [FGAI4H-L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx) | | | | Att.1 – TDD update (TG-MCH) |  |
| [FGAI4H-L-015-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A02.docx) | | | | Att.2 – CfTGP (TG-MCH) |  |
| [FGAI4H-L-015-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A03.pptx) | | | | Att.3 – Presentation (TG-MCH) |  |
| [FGAI4H-L-016](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016.docx) | Updates for Neurological disorders (TG-Neuro) | | | | TG-Neuro Topic Driver |
| [FGAI4H-L-016-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A01.docx) | | | | Att.1 – TDD update (TG-Neuro) |  |
| [FGAI4H-L-016-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A02.docx) | | | | Att.2 – CfTGP (TG-Neuro) |  |
| [FGAI4H-L-016-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A03.pptx) | | | | Att.3 – Presentation (TG-Neuro) |  |
| [FGAI4H-L-017](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017.docx) | Updates for Ophthalmology (TG-Ophthalmo) | | | | TG-Ophthalmo Topic Driver |
| [FGAI4H-L-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A01.docx) | | | | Att.1 – TDD update (TG-Ophthalmo) |  |
| [FGAI4H-L-017-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A02.docx) | | | | Att.2 – CfTGP (TG-Ophthalmo) |  |
| [FGAI4H-L-017-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A03.pptx) | | | | Att.3 – Presentation (TG-Ophthalmo) |  |
| [FGAI4H-L-018](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018.docx) | Updates for Outbreak detection (TG-Outbreaks) | | | | TG-Outbreaks Topic Driver |
| [FGAI4H-L-018-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A01.docx) | | | | Att.1 – TDD update (TG-Outbreaks) |  |
| [FGAI4H-L-018-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A02.docx) | | | | Att.2 – CfTGP (TG-Outbreaks) |  |
| [FGAI4H-L-018-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A03.pptx) | | | | Att.3 – Presentation (TG-Outbreaks) |  |
| [FGAI4H-L-019](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019.docx) | Updates for Psychiatry (TG-Psy) | | | | TG-Psy Topic Driver |
| [FGAI4H-L-019-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A01.docx) | | | | Att.1 – TDD update (TG-Psy) |  |
| [FGAI4H-L-019-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A02.docx) | | | | Att.2 – CfTGP (TG-Psy) |  |
| [FGAI4H-L-019-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A03.pptx) | | | | Att.3 – Presentation (TG-Psy) |  |
| [FGAI4H-L-020](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020.docx) | Updates for Snakebite and snake identification (TG-Snake) | | | | TG-Snake Topic Driver |
| [FGAI4H-L-020-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A01.docx) | | | | Att.1 – TDD update (TG-Snake) |  |
| [FGAI4H-L-020-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A02.docx) | | | | Att.2 – CfTGP (TG-Snake) |  |
| [FGAI4H-L-020-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A03.pptx) | | | | Att.3 – Presentation (TG- Snake) |  |
| [FGAI4H-L-021](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021.docx) | Updates for Symptom assessment (TG-Symptom) | | | | TG-Symptom Topic Driver |
| [FGAI4H-L-021-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A01.docx) | | | | Att.1 – TDD update (TG-Symptom) |  |
| [FGAI4H-L-021-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A02.docx) | | | | Att.2 – CfTGP (TG-Symptom) |  |
| [FGAI4H-L-021-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A03.pptx) | | | | Att.3 – Presentation (TG-Symptom) |  |
| [FGAI4H-L-022](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022.docx) | Updates for Tuberculosis (TG-TB) | | | | TG-TB Topic Driver |
| [FGAI4H-L-022-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A01.docx) | | | | Att.1 – TDD update (TG-TB) |  |
| [FGAI4H-L-022-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A02.docx) | | | | Att.2 – CfTGP (TG-TB) |  |
| [FGAI4H-L-022-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A03.pptx) | | | | Att.3 – Presentation (TG-TB) |  |
| [FGAI4H-L-023](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023.docx) | Updates for Radiology (TG-Radiology) | | | | TG-Radiology Topic Driver |
| [FGAI4H-L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) | | | | Att.1 – TDD update (TG-Radiotherapy) |  |
| [FGAI4H-L-023-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A02.docx) | | | | Att.2 – CfTGP (TG-Radiotherapy) |  |
| [FGAI4H-L-023-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A03.pptx) | | | | Att.3 – Presentation (TG-Radiotherapy) |  |
| [FGAI4H-L-024](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024.docx) | Updates for Primary and secondary diabetes prediction (TG-Diabetes) | | | | TG-Diabetes Topic Driver |
| [FGAI4H-L-024-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A01.docx) | | | | Att.1 – TDD update (TG-Diabetes) |  |
| [FGAI4H-L-024-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A02.docx) | | | | Att.2 – CfTGP (TG-Diabetes) |  |
| [FGAI4H-L-024-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A03.pptx) | | | | Att.3 – Presentation (TG-Diabetes) |  |
| [FGAI4H-L-025](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025.docx) | | Updates for Endoscopy (TG-Endoscopy) | | | TG-Endoscopy Topic Driver |
| [FGAI4H-L-025-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A01.docx) | | | | Att.1 – TDD update (TG-Endoscopy) |  |
| [FGAI4H-L-025-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A02.docx) | | | | Att.2 – CfTGP (TG-Endoscopy) |  |
| [FGAI4H-L-025-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A03.pptx) | | | | Att.3 – Presentation (TG-Endoscopy) |  |
| [FGAI4H-L-026](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026.docx) | Initial documents for AI for Musculoskeletal medicine (TG-MSK) | | | | TG-MSK Topic Driver |
| [FGAI4H-L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx) | | | Att.1 – TDD update (TG-MSK) | |  |
| [FGAI4H-L-026-A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A02.docx) | | | Att.2 – CfTGP (TG-MSK) | |  |
| [FGAI4H-L-026-A03](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A03.pptx) | | | Att.3 – Presentation (TG-MSK) | |  |
| [FGAI4H-L-027](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-027-A01.docx) | LS on invitation to review artificial intelligence standardization roadmap and provide missing or updated information [from ITU-T SG13] | | | | ITU-T SG13 |
| [FGAI4H-L-028](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-028.docx) | FG-AI4H Progress Report to ITU-T SG16 (July 2020 to April 2021) | | | | FG-AI4H Chairman |
| [FGAI4H-L-029](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-029.docx) | LS on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information (reply to SG13-LS174) [from FG-AI4EE to SG13] | | | | FG-AI4EE |
| [FGAI4H-L-030](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-030.docx) | LS on invitation to provide inputs to the roadmap of AI activities for natural disaster management [from FG-AI4NDM] | | | | FG-AI4NDM |
| [FGAI4H-L-031](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-031.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-031-A01.zip) | LS on six deliverables of ITU-T FG-AI4EE [from FG-AI4EE to SG5] | | | | FG-AI4EE |
| [FGAI4H-L-032](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-032.docx) | LS on invitation to review Artificial Intelligence Standardization Roadmap and provide missing or updated information (reply to SG13-LS196) [from ITU-T SG9 to SG13] | | | | ITU-T SG9 |
| [FGAI4H-L-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx" \t "_blank) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A01.pdf) + [A02](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033-A02.pptx) | Proposal for new topic group: Point-of-care cancer diagnostics using AI and mobile digital microscopy | | | | University of Helsinki, Finland |
| [FGAI4H-L-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034.docx" \t "_blank) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034-A01.pdf) | Proposal for new topic group: AI for Human Reproduction and Fertility | | | | Merck KGaA, Darmstadt, Germany |
| [FGAI4H-L-035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx" \t "_blank) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035-A01.pdf) | Technology, Economics, & Policy: AI for Sanitation and Public Health | | | | Institute for Technology & Global Health (ITGH) |
| [FGAI4H-L-036](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036.docx" \t "_blank) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-036-A01.pptx) | Updated DEL07: AI for health evaluation considerations | | | | Editors |
| [FGAI4H-L-037](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-037-A01.pptx) | Updated DEL2.2: Good practices for health applications of machine learning: Considerations for manufacturers and regulators | | | | Editors |
| [FGAI4H-L-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-038-A01.pptx) | Updated DEL03: AI4H requirement specifications | | | | Editors |
| [FGAI4H-L-039](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-039.docx) | Updated DEL00: Overview of the FG-AI4H deliverables | | | | Editor |
| [FGAI4H-L-040](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-040-A01.pptx) | Updated DEL7.4: Clinical evaluation of AI for health | | | | Editors |
| [FGAI4H-L-041](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-041.pptx) | Open Code Initiative - Status update | | | | Coordinator |
| [FGAI4H-L-042](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-042.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-042-A01.pptx) | New topic group proposal: Using voice as a biomarker in preventing, predicting and monitoring disease | | | | TU Dresden, Germany |
| [FGAI4H-L-043](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-043.pptx) | Call for participation in DAISAM-survey on Transparent Model Reporting for trustworthy ML4H | | | | WG-DAISAM |
| [FGAI4H-L-044](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-044-A01.pptx) | Updated DEL5.6: Data sharing practices | | | | Editors |
| [FGAI4H-L-045](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-045.pptx) | DEL5.4: AI training and test data specification - Progress review | | | | Editor |
| [FGAI4H-L-046](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-046.pptx) | DEL04: AI software lifecycle specification – Progress Review | | | | Editor |
| [FGAI4H-L-047](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-047-A01.pptx) | DEL02: Draft 2.1 of the Overview of Regulatory Considerations on Artificial Intelligence for Health | | | | Editors |
| [FGAI4H-L-048](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-048.pptx) | Ethics & Governance of Artificial Intelligence (AI) for Health: Update on WHO Guidance and next steps | | | | Chairman WG-Ethics |
| [FGAI4H-L-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-049.docx) | Draft reply LS on invitation to review artificial intelligence standardization roadmap and provide missing or updated information (SG13-LS196) [to ITU-T SG13] | | | | Chairman FG-AI4H |
| [FGAI4H-L-050](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050.docx) + [A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-050-A01.pptx) | Updated DEL09: AI4H applications and platforms | | | | Editor |
| [FGAI4H-L-051](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-051.pptx) | DEL7.2: AI Technical Test Specification - Progress Review | | | | Editor |
| [FGAI4H-L-052](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-052.pptx) | DEL7.3: DAISAM reference - Progress review | | | | Editor |
| [FGAI4H-L-053](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-053.docx) | Draft Reply LS on invitation to provide inputs to the roadmap of AI activities for natural disaster management (FG-AI4NDM-O-004) [to FG-AI4NDM] | | | | FG-AI4H |

Annex C:  
List of participants

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Annex D:  
Summary of FG-AI4H resources and electronic working methods

Working groups

| Working Group | Leadership |
| --- | --- |
| Clinical evaluation of AI for health (WG-CE) | Co-chairs: Naomi Lee (The Lancet, UK), Upadhyay Shubhanan (ADA Health, Germany), Eva Weicken (Fraunhofer HHI, Germany) |
| Data and AI solution assessment methods (WG-DAISAM) | Chair: Pat Baird (Philips) Vice-chair: Luis Oala (Fraunhofer HHI, DE) |
| Data and AI solution handling (WG-DASH) | Chair: Marc Lecoultre (MLlab.AI, CH) Vice chair: Ferhat Kerif (CHUV, CH) |
| Operations (WG-O) | Co-chairs: Markus Wenzel and Eva Weicken (Fraunhofer HHI, Germany) |
| Regulatory considerations on AI for health (WG-RC) | Chair: Naomi Lee (The Lancet, UK)  Vice-chairs:   * Paolo Alcini (European Medicines Agency, EU) * Chandrashekar Ranga (CDSCO, India) * Khair ElZarrad (FDA, USA) * Michael Berensmann and Seidel, Robin (Federal Institute for Drugs and Medical Devices, Germany) * Liang Hong (National Medical Products Administration, China) |
| Ethical considerations on AI for health (WG-RC) | Chair: Andreas Reis (WHO) |
| Digital Technologies for COVID Health Emergency (AHG-DT4HE) | Co-chairs: Ana Riviere-Cinnamond (PAHO) and Shan Xu (CAICT, China) |

Topic Groups

| Topic group | Acronym | Leader | References | Created |
| --- | --- | --- | --- | --- |
| 1. Cardiovascular disease risk prediction | TG-Cardio | [Benjamin Muthambi](mailto:brm5@caa.columbia.edu) (Watif Health, South Africa) | [L-006-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-006-A01.docx) | C |
| 1. Dermatology | TG-Derma | [Weihong Huang](mailto:whuangcn@qq.com) (Xiangya Hospital Central South University, China) | [L-007-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-007-A01.docx) | B |
| 1. Diagnosis of bacterial infection and anti-microbial resistance | TG-Bacteria | [Nada Malou](mailto:nada.malou@paris.msf.org) (MSF, France) | [L-008-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-008-A01.docx) | F |
| 1. Falls among the elderly | TG-Falls | [Pierpaolo Palumbo](mailto:pierpaolo.palumbo@unibo.it) (University of Bologna, Italy) a.i. [[Inês Sousa](mailto:ines.sousa@fraunhofer.pt) (Fraunhofer Portugal) on maternity leave, Sep 2021] | [L-012-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-012-A01.docx) | B |
| 1. Histopathology | TG-Histo | [Frederick Klauschen](mailto:frederick.klauschen@charite.de) (Charité Berlin, Germany) | [L-013-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-013-A01.docx) | B |
| 1. Malaria detection | TG-Malaria | [Rose Nakasi](mailto:g.nakasi.rose@gmail.com) (Makerere University, Uganda) | [L-014-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-014-A01.docx) | F |
| 1. Maternal and child health | TG-MCH | [Raghu Dharmaraju](mailto:rdharmaraju@gmail.com) (Wadhwani AI, India) and [Alexandre Chiavegatto Filho](mailto:alexdiasporto@usp.br) (University of São Paulo, Brazil) | [L-015-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-015-A01.docx) | D; G |
| 1. Neurological disorders | TG-Neuro | [Marc Lecoultre](mailto:ml@mllab.ai) (ML Labs, Switzerland) | [L-016-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-016-A01.docx) | B |
| 1. Ophthalmology | TG-Ophthalmo | [Arun Shroff](mailto:arunshroff@gmail.com) (MedIndia) | [L-017-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-017-A01.docx) | B |
| 1. Outbreak detection | TG-Outbreaks | [Auss Abbood](mailto:abbooda@rki.de) (Robert Koch Institute, Germany) and [Stéphane Ghozzi](mailto:stephane.ghozzi@helmholtz-hzi.de) (HZI, Germany) | [L-018-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-018-A01.docx) | E |
| 1. Psychiatry | TG-Psy | [Nicolas Langer](mailto:n.langer@psychologie.uzh.ch) (ETH Zurich, Switzerland) | [L-019-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-019-A01.docx) | C |
| 1. Radiology | TG-Radiology | [Darlington Ahiale Akogo](mailto:darlington@gudra-studio.com) (minoHealth AI Labs, Ghana) | [L-023-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-023-A01.docx) | D; H |
| 1. Snakebite and snake identification | TG-Snake | [Rafael Ruiz de Castaneda](mailto:Rafael.RuizDeCastaneda@unige.ch) (UniGE, Switzerland) | [L-020-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-020-A01.docx) | B |
| 1. Symptom assessment | TG-Symptom | [Henry Hoffmann](mailto:henry.hoffmann@ada.com) (Ada Health, Germany) | [L-021-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-021-A01.docx) | B |
| 1. Tuberculosis | TG-TB | [Manjula Singh](mailto:singhmanjula.hq@icmr.gov.in) (ICMR, India) | [L-022-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-022-A01.docx) | C |
| 1. Volumetric chest CT | TG-DiagnosticCT | [Kuan Chen](mailto:ckuan@infervision.com) (Infervision, China) | [L-009-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-009-A01.docx) | D |
| 1. Dental diagnostics and digital dentistry | TG-Dental | [Falk Schwendicke](mailto:falk.schwendicke@charite.de) and [Joachim Krois](mailto:Joachim.krois@charite.de) (Charité Berlin, Germany); [Tarry Singh](mailto:tarry.singh@deepkapha.ai) (deepkapha.ai, Netherlands) | [L-010-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-010-A01.docx) | G |
| 1. Falsified Medicine | TG-FakeMed | [Franck Verzefé](mailto:fverzefe@gmail.com) (TrueSpec-Africa, DRC) | [L-011-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-011-A01.docx) | F |
| 1. Primary and secondary diabetes prediction | TG-Diabetes | [Andrés Valdivieso](mailto:avaldivieso@anastasia.ai) (Anastasia.ai & Tecnigen, Chile) | [L-024-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-024-A01.docx) | H |
| 1. AI for endoscopy | TG-Endoscopy | [Jianrong Wu](mailto:edwinjrwu@tencent.com) (Tencent Healthcare, China) | [L-025-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-025-A01.docx) | I |
| 1. AI for musculoskeletal medicine | TG-MSK | [Peter Grinbergs (EQL, UK), Yura Perov (UK)](mailto:tgmskorg@googlegroups.com) | [L-026-A01](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-026-A01.docx) | J |
| 1. AI for human reproduction and fertility | TG-Fertility | [Susanna Brandi](mailto:susanna.brandi@merckgroup.com), [Eleonora Lippolis](mailto:eleonora.lippolis@merckgroup.com) (Merck KGaA, Darmstadt, Germany) | Proposal: [L-034](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-034.docx) (Merck KGaA, Darmstadt, Germany) | L |
| 1. AI in sanitation for public health | TG-Sanitation | [Khahlil Louisy](mailto:klouisy@hks.harvard.edu) (Institute for Technology & Global Health, ITGH, US), [Alexander Radunsky](mailto:aradunsky@mail.harvard.edu) (ITGH, US) | Proposal: [L‑035](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-035.docx) (ITGI, US) | L |
| 1. AI for point-of care diagnostics | TG-POC | [Nina Linder](mailto:nina.linder@helsinki.fi), University of Helsinki, Finland | Proposal: [L‑033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-L-033.docx) (University of Helsinki, Finland) | L |

Mailing lists

| Description | Mailing list | Archive |
| --- | --- | --- |
| General mailing list | [fgai4h@lists.itu.int](mailto:fgai4h@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4h> |
| TG-Cardio), specific discussions for sub-topic on clinical predictions | [fgai4htgcardiocp@lists.itu.int](mailto:fgai4htgcardiocp@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgcardiocp> |
| TG-Cardio), specific dis­cussions for sub-topic on cardiac image analyses | [fgai4htgcardiocia@lists.itu.int](mailto:fgai4htgcardiocia@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgcardiocia> |
| TG-Diabetes | [fgai4htgdiabetes@lists.itu.int](mailto:fgai4htgdiabetes@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgdiabetes> |
| TG-Falls | [fgai4htgfalls@lists.itu.int](mailto:fgai4htgfalls@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgfalls> |
| TG-Malaria | [fgai4htgmalaria@lists.itu.int](mailto:fgai4htgmalaria@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgmalaria> |
| TG-Ophthalmo | [fgai4htgophthalmo@lists.itu.int](mailto:fgai4htgophthalmo@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgophthalmo> |
| TG-Outbreaks | [fgai4htgoutbreaks@lists.itu.int](mailto:fgai4htgoutbreaks@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgoutbreaks> |
| TG-Symptoms | [fgai4htgsymptom@lists.itu.int](mailto:fgai4htgsymptom@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgsymptom> |
| TG-MSK | [fgai4htgmsk@lists.itu.int](mailto:fgai4htgmsk@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgmsk> |
| TG-Psy | [fgai4htgpsy@lists.itu.int](mailto:fgai4htgpsy@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4htgpsy> |
| AHG-DT4HE | [fgai4hahgdt4he@lists.itu.int](mailto:fgai4hahgdt4he@lists.itu.int) | <https://itu.int/ml/lists/arc/fgai4hahgdt4he> |

Working methods (Ref: [E-101](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-E-101.docx), report of Meeting E)

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

Annex E:  
Summary of decisions

This is a summary of the decisions taken at Meeting L (E-meeting, 19-21 May 2021):

[Dec-L-1. The report of the virtual meeting held 27 – 29 January 2021 found in K-101 was approved without comments and its three output documents were noted (K-102, K-107, and K-200-R1).](#_Toc79421542)

[Dec-L-2. It was agreed to remind TG Drivers that an update of their activities is expected at each FG meeting.](#_Toc79421543)

[Dec-L-3. TG-O is requested to prepare a draft template for a call for participation in challenges.](#_Toc79421544)

[Dec-L-4. The meeting agreed to submit an updated version of the guide originally submitted in J-040 "Artificial intelligence for dental image analysis: A guide for authors and reviewers" for approval by correspondence after Meeting L.](#_Toc79421545)

[Dec-L-5. The FG-AI4H agreed to support the initiative for a dataset extension and annotation website (planned https://annotation.network, not yet operational), which will initially focus on histopathology data. The leader of the activity is Frederick Klauschen, LMU Munich & Charité Berlin, Germany. Specific procedures and details will be discussed initially under TG-Histo.](#_Toc79421546)

[Dec-L-6. The Focus Group agreed have Peter Grinbergs (EQL, UK) and Yura Perov (UK) as co-drivers for TG-MSK. Both can be reached through a common e-mail address, tgmskorg@googlegroups.com.](#_Toc79421547)

[Dec-L-7. The FG-AI4H agreed to create new Topic Group on AI for human reproduction and fertility (TG-Fertility) with Susanna Brandi (susanna.brandi@merckgroup.com) and Eleonora Lippolis (eleonora.lippolis@merckgroup.com), Merck KGaA, Darmstadt, Germany, as topic drivers based on the proposal in L-034.](#_Toc79421548)

[Dec-L-8. The FG-AI4H agreed with the creation of a new Topic Group on AI in sanitation for public health (TG-Sanitation) with Khahlil Louisy (klouisy@hks.harvard.edu; Institute for Technology & Global Health, ITGH, US) and Alexander Radunsky (mailto:aradunsky@mail.harvard.edu), ITGH, US, as topic drivers based on the proposal in L035](#_Toc79421549)

[Dec-L-9. The FG-AI4H agreed to create a new Topic Group on AI for point-of care diagnostics (TG-POC) with Nina Linder (nina.linder@helsinki.fi), University of Helsinki, Finland, as the topic driver, as per the proposal in L-033.](#_Toc79421550)

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