AI for Good Global Summit, May 2018: Conception of AI for Health Group

- Second AI for Good Global Summit: session on AI for health
- Need for partnership on AI for health, combining expertise in Health (WHO) and ICT (ITU)
- Idea for the Focus Group on AI for Health (FG-AI4H) is born
- ITU in corporation with WHO creates FG-AI4H in July 2018

Opening keynote by DG of WHO (Dr. Tedros)

ITU/WHO Focus Group on Artificial Intelligence for Health

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ITU/WHO Focus Group on AI for Health

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In collaboration with WHO

- Artificial Intelligence for Health (AI4H) offers substantial improvements for public and clinical health; e.g., early detection, diagnosis, and risk identification; treatment decision support; self-management; improved outcomes; …
- For worldwide adoption, need evaluation standards on effective AI for Health
- Focus Group on AI for Health (FG-AI4H) created July 2018; open platform
- FG-AI4H goals: standardized framework for benchmarking and evaluation of AI solutions

AI for Histopathology: Diagnostic Support for Breast Cancer

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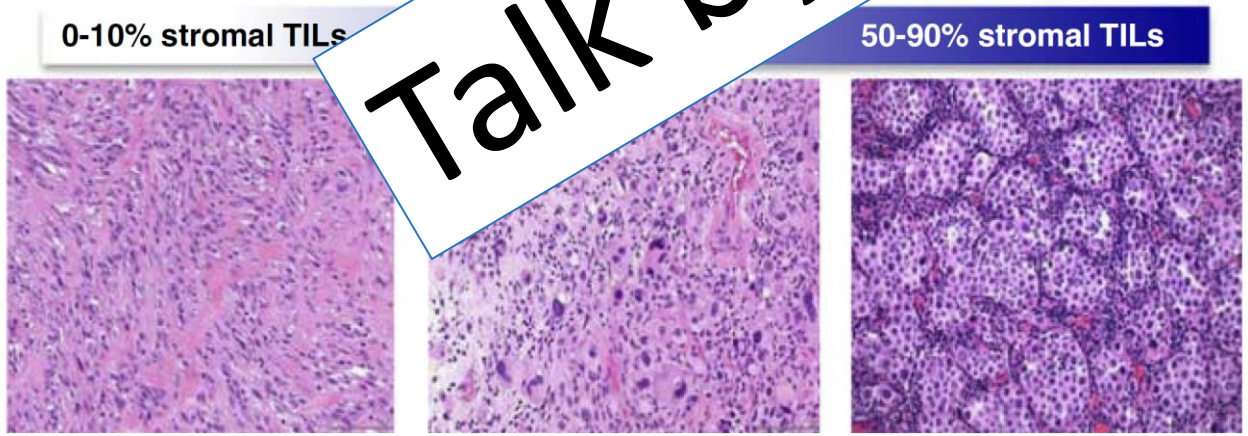
- Tumor infiltrating lymphocytes (TILs) are implica… …g tumor cells
- Quantification of TILs relevant for patient … …ation and therapy selection
- Replace “eye-balling” by pathol… …ine Learning method for TIL quantification
- Focus Group: specify … …d generation and evaluate accuracy of Machine Learnin…

Talk by Prof. Klauschen



Source: Hendry, S., Salgado, R., Gevaert, T., Russell, P. A., John, T., Thapa, B., ... & Sanders, M. (2017). Assessing Tumor-Infiltrating Lymphocytes in Solid Tumors: A Practical Review for Pathologists and Proposal for a Standardized Method from the International Immuno-Oncology Biomarkers Working Group Part 2 (…). Advances in anatomic pathology, 24(6), 311-335.

Leadership

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Chair

- Thomas Wiegand, TU Berlin/Fraunhofer HHI, Germany

Vice-Chairs:

- Stephen Ibaraki, ACM, Canada
- Ramesh Krishnamurthy, World Health Organization
- Naomi Lee, The Lancet, United Kingdom
- Sameer Pujari, World Health Organization
- Shan Xu, CAICT, China

WG: “Regulatory Considerations”

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Chair

- Naomi Lee, The Lancet, United Kingdom

Vice-Chairs are representatives of:

- Khair ElZarrad, FDA, USA
- Paolo Alcini, EMA, Europe
- Peng Liang, HPMA, China
- Wolfgang Lauer, BfArM, Germany

Stakeholders & *Cooperations*

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- **WHO – World Health Organization**
- **ITU – International Telecommunication Union**
- *IANPHI – International Association of National Public Health Institutes*
- *Regulators (per country or via WHO)*
- *IAP – Interacademy Partnership*
- *AI4Good – AI for Good Global Summit*
- *WHS – World Health Summit*
- *Philanthropic Foundations*

Focus Group Operation

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Process steps:

A) **Community: Creating and extending a community around a health topic**

B) **Proposals: Solicitation of specific AI4H proposals**

C) **Evaluation: Setting up evaluation criteria including reference data sets and metrics**

D) **Report: Publishing reports about the evaluation and the results**

E) **Dissemination: Deployment of AI for health solution in practice**

Process Steps

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Step A) Community: Creating and extending a community around a health topic

- Require multiple experts to guide discussions: expert panels
- Experts should be independent person(s) with unquestionable record in the respective health topic and/or AI
- Experts would be appointed on temporal basis (e.g., 2 years)
- Use partner mechanisms through WHO, ITU, regulators, IAP, IANPHI, … to create expert panels
- Community is further extended by publication and events (AI4Good, WHS, etc.)

Process Steps

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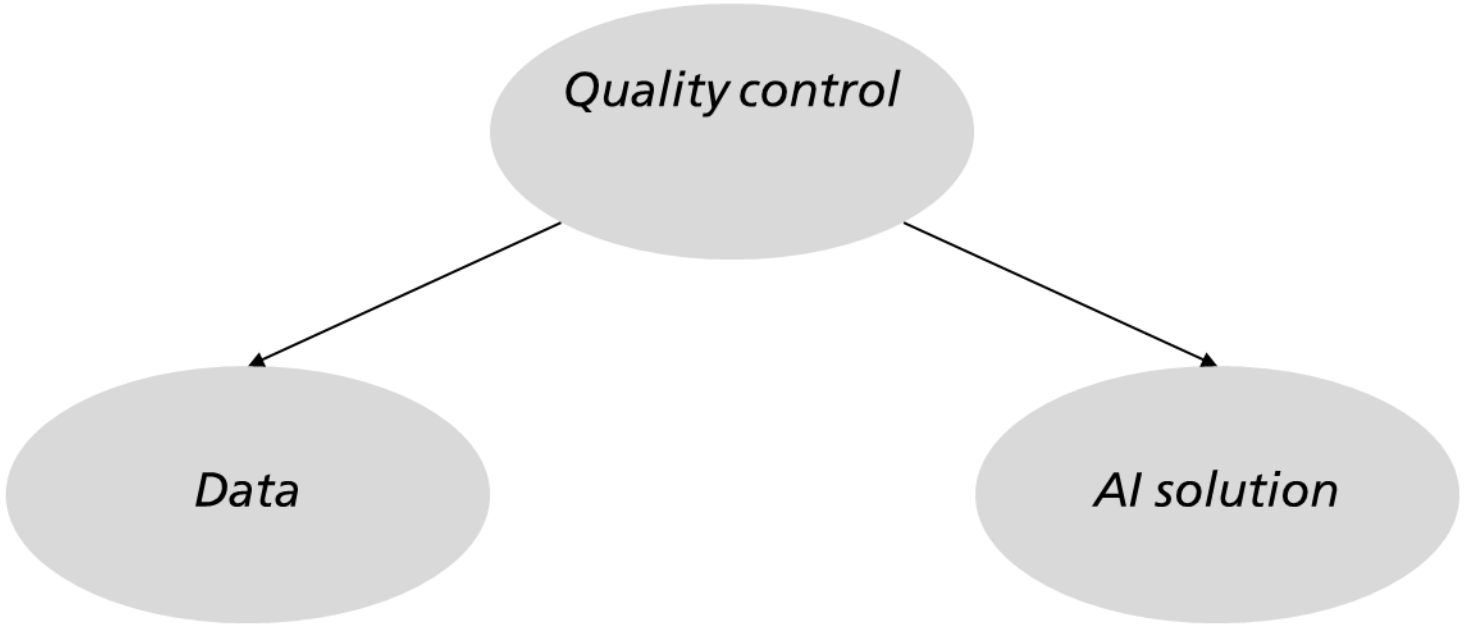
Step B) Proposals: Solicitation of specific AI4H proposals

- One or more of the following criteria may be considered when choosing a specific health subject:
  - Global impact: Problems must be of global interest. In particular, non-participating countries must be able to benefit
  - Concept: Clear goals and strategies should be formulated
  - Evidence: Pre-studies/Results should demonstrate potential and give some evidence regarding feasibility
  - Causal effects: Positive and negative effects (including interaction with others) should be determined
  - The specific subject should be described to a specific detail level in order to enable active participation in the next step: evaluation

Process Steps

Step C) Evaluation: Setting up evaluation criteria including data sets and metrics. Requires quality control of data and AI solution.



Process Steps

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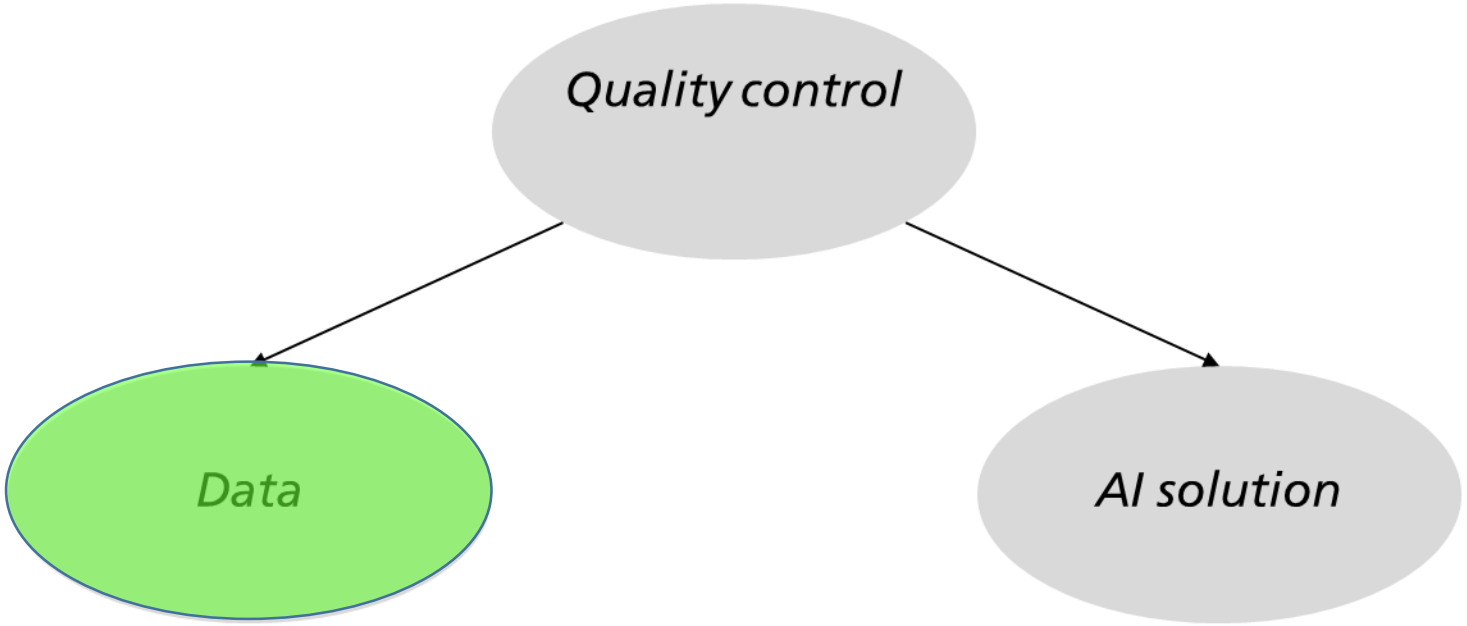


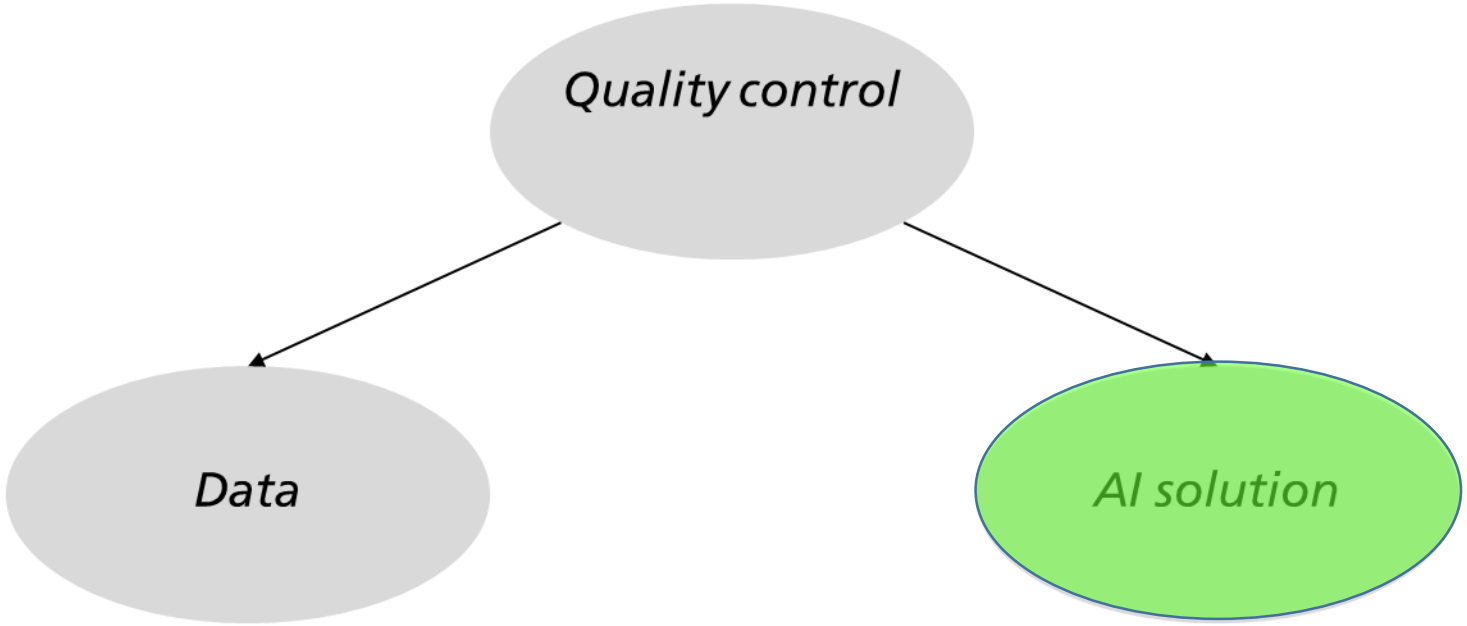
Quality control:
Reference and training data

Considerations:

1. Collection of training data
2. Reproducibility of training data
3. Statistical properties of training data
4. Generation of reference data through experts
5. Evaluation of data for machine learning systems
6. …

Process Steps

Step C) Evaluation: Setting up evaluation criteria including data sets and metrics. Requires quality control of data and AI solution.



Quality control: AI solution

Quality indicators:

1. Performance measurement
2. Robustness
3. Uncertainty
4. Explainability
5. Generalizability
6. …

Activities Chromium 28 May 15:08 en 100 %

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Challenges Success Stories Blog Admin •••

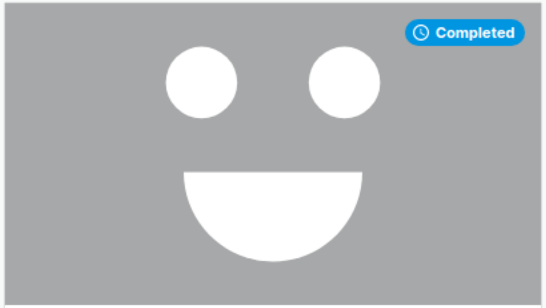
Benchmarking AI for Health

The Focus Group on AI for Health (FG-AI4H) is a partnership between the World Health Organization and the International Telecommunication Union, the United Nations specialized agencies for health and for ICTs respectively

Propose a use case

FEATURED BENCHMARKS

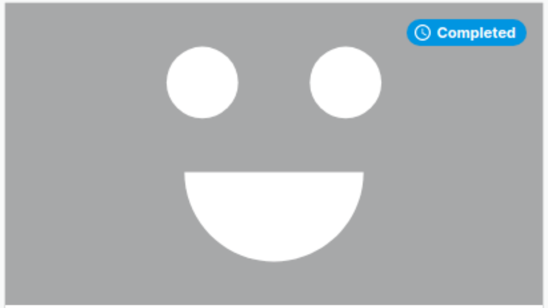
See all



TEST:2 Programmer Schedule Optimisation Challenge

Optimizing my schedules

$1 Billion USD Prize Money
10 Authorship/Co-Authorship



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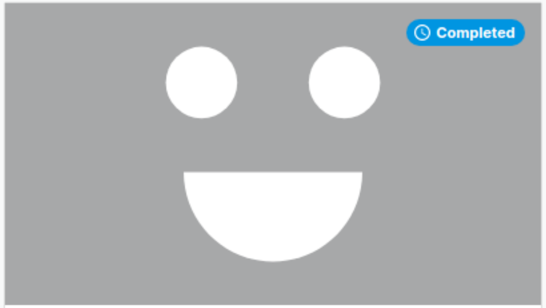

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Process Steps

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Step D) Report: Publishing reports about the evaluation and the results

- Responses are evaluated and results are published
- Expert panel provides assessment
- Transparent documentation of process, results and findings

Step E) Dissemination: Deployment of AI for health solution in practice

- After results are published, AI4H solution to be deployed in the field
- The stakeholders (WHO, Regulators, IANPHI, NGOs) should ideally be involved in process for seamless transition into next steps for deployment (e.g., certification, clinical trials, etc.)

Discussion of Process Steps

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- The number of health topic communities will be very large
- Health topic discussions need to be moderated and chaired by impartial health/ai experts for fair and transparent process
- Monitoring and documenting by ITU or WHO official/staff is necessary for a structured process
- Process should mainly be conducted via online-cooperation and virtual meetings
- Once a solution is deployed, the data and results should be brought back and the process should be repeated
- For AI4H solutions that learn/change during deployment, a specific benchmarking process should be developed
- The process (A-E) will also be evaluated every cycle to continuously improve the process.

Current Example Health Topic Groups

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Topic groups:

1. Cardiovascular disease risk prediction (TG-Cardio)
2. Classifying autism through analysis of brain imagery (TG-Autism)
3. Dermatology (TG-Derma)
4. Falls among the elderly (TG-Falls)
5. Histopathology (TG-Histo)
6. Neuro-cognitive diseases (TG-Cogni)
7. Ophthalmology (TG-Ophthalmo)
8. Psychiatry (TG-Psy)
9. Snakebite and snake identification (TG-Snake)
10. Symptom assessment (TG-Symptom)
11. Tuberculosis (TG-TB)

Suggested medical use cases

- Diagnostics:
  Discrete measurements or monitoring (via MRI, ECG, US, images, omics, laboratory tests, …)
- Public health:
  Outbreaks of viruses, nutrition, chronic illnesses, …
- Treatments and therapies:
  Recommendations, actions, surgery, …
- Clinical processes (planning the operating room, digitizing the operating room …)
- …

Additional applications

- Diagnostics:
  Medical equipment and support for medical practitioners (certification, medical tests)
- Public health:
  Precautionary measures, recommendations, and responses to events
- Treatments and therapies:
  Support for medical practitioners (planning, monitoring) and medications
- Clinical processes:
  Support for medical practitioners (planning, monitoring)
- …

Timeline

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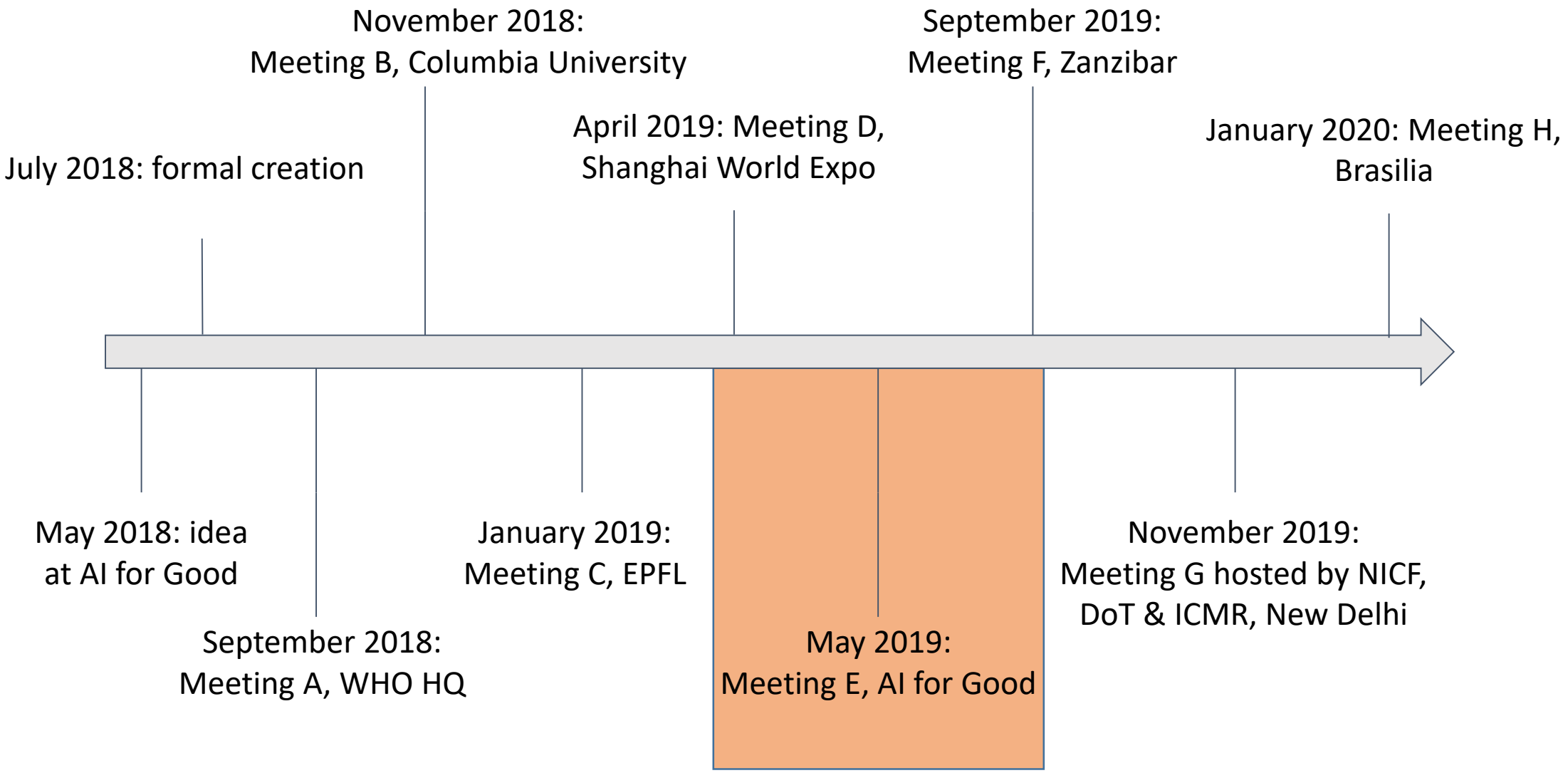

More Information:
ITU/WHO Focus Group on AI for Health

- Search: use “AI4H” as string
- Website: https://itu.int/go/fgai4h
- Next meetings:
  - 2-5 September 2019
    Zanzibar, Tanzania
  - November 2019
    New Delhi, India
  - January 2020
    Brasilia, Brazil

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Focus Group on "Artificial Intelligence for Health"

Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies

Focus Group on Artificial Intelligence for Health

Focus Group on Vehicular Multimedia

Focus Group on Technologies for Network 2030

Focus Group on Machine Learning for Future Networks including 5G

Focus Group on Application of Distributed Ledger Technology

Focus Group on Digital Currency including Digital Fiat Currency

Focus Group on Data Processing and Management

Concluded Focus Groups

Automatic Translation: English عربي 中文 Español Français Русский

FG-AI4H

The ITU-T Focus Group on artificial intelligence for health (AI4H) was established by ITU-T Study Group 16 at its meeting in Ljubljana, Slovenia, 9-20 July 2018. The Focus Group will work in partnership with the World Health Organization (WHO) to establish a standardized assessment framework for the evaluation of AI-based methods for health, diagnosis, triage or treatment decisions. Participation in the FG-AI4H is free of charge and open to all.

The scope and general process of the focus group are described in a commentary in The Lancet and a white paper. The documentation of all previous meetings can be found on the collaboration site (free ITU account needed).

Terms of reference >

Parent group > ITU-T Study Group 16

Topic areas:

- Dermatology (TG-Derma)
- Falls among the elderly (TG-Falls)
- Histopathology (TG-Histo)

Meetings and Related Events | Focus Group News | Focus Group Videos

Geneva, Switzerland, 29 May - 1 June 2019

Breakthrough on artificial intelligence for health @ "AI for Good" Global Summit (29 May) and **5th meeting of FG-AI4H** (30 May - 1 June) (Announcement | Logistics)

Please register for both events below.

Breakthrough on AI4H (29 May)

- The workshop will be *part of* the "A.I. for Good" Global Summit 2019.
- Please register here Registration is *separate* from the FG meeting itself)

FG Meeting (30 May - 1 June)

- Register here (see instructions for help)
- Documents for this meeting
- Submit written proposals by e-mail to tsbfgai4h@itu.int before the deadline (22 May 2019 @ 23:59 CEST). [Use this template - Please do NOT submit as PDF]
- Remote participation via Zoom