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| **ITU-T Focus Group on AI for Health** | |
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| **Source:** | | CAICT (China), PAHO | | |
| **Title:** | | Proposal to set up an ad-hoc working group on AI for COVID-19 | | |
| **Purpose:** | | Discussion | | |
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| **Abstract:** | This document describes the diverse nature of addressing a pandemic such as COVID-19 and proposes to set up an ad-hoc working group on COVID-19 to improve the pandemic prevention and control. This group could act as a response from FG-AI4H on many global calls for action to leverage artificial intelligence (AI) and other digital technologies in combating COVID-19. This ad-hoc WG on COVID-19 health emergency (WG-HE) would provide collaboration mechanism for various stakeholders to build global dialogues and cooperation on digital projects on COVID-19. Outputs will serve as reference for the World Health Organization (WHO) and International Telecommunication Union (ITU). This document gives an initial framework and a work plan. |

# Introduction

Since the onset of the outbreak of unknown pneumonia in Wuhan, Hubei Province, China in December 2019, spread of the virus - later named COVID-19 - has become fierce. While on Dec 31 there were only 27 cases reported, injust one month on Jan 31, the total confirmed cases had increased to 11,791. Considering the importance on global prevention and early warning, the World Health Organization (WHO) announced COVID-19 as a Public Health Emergency of International Concern (PHEIC) on Jan 31[[1]](#footnote-1). Currently, the entire world consists of a huge “laboratory” for the epidemic control. Everyone is actively involved in finding effective ways to combat the virus, but the pandemic continues to be a major public health threat worldwide. According to the statistical data[[2]](#footnote-2) on Apr 28, there were 3,035,177 confirmed cases and 210,804 deaths globally, and the numbers are still growing. At this critical moment when facing a common enemy, what is essential is a credible cooperation mechanism between various levels and organizations.

Digital technologies play a critical role in supporting health professionals and protecting human lives in this event. The great potential of digital technologies has been recognized to contribute to the fight against COVID-19, including rapid screening early symptoms, identifying risk via chatbots, assist diagnosis with suggestions/reference, monitoring patients’ vital signs, facilitating remote care, supporting treatments and vaccines, predicting the evolution and potential mutations of viruses, optimizing hospital operations and providing information to the public in a rapid and widespread manner, etc. All digital means at our disposal, and artificial intelligence (AI) in particular, are expected to be used to accelerate progress in prevention and control in a safe, reliable and evidence-based way.

# Rationale

Based on the common consensus on the crucial role of digital technologies to strengthen and accelerate our collective response to the COVID-19 pandemic and enhance the ability to prevent and mitigate future crises, many international organizations are calling for actions on digital health projects and collaborations. For example, WHO proposed a collection on anonymized COVID-19 clinical data and built a data platform for COVID-19 clinical data[[3]](#footnote-3); ITU-WHO released a Joint Statement on unleashing information technology to defeat COVID-19[[4]](#footnote-4); the World Bank, the International Telecommunication Union (ITU), GSMA and the World Economic Forum launched COVID-19 Crisis Response: Digital Development Joint Action Plan and Call for Action[[5]](#footnote-5), etc.

In response to these calls on combating COVID-19, as well as taking full advantage of cross-domain expertise in the FG-AI4H, setting up an ad-hoc working group on the use of AI and other digital technologies in combating the COVID-19 health emergency would be instrumental to improve pandemic situations such as the current one. The outputs of this ad-hoc WG might serve as framework for future pandemic preparedness schemes.

# Scope

This ad-hoc working group on COVID-19 health emergency (WG-HE) is aimed at covering the entire cycle of an epidemic emergency, encompassing the following: prevention and preparedness, outbreak early detection, surveillance and response, recovery, rehabilitation, mitigation, etc[[6]](#footnote-6). In the short-term, this group will collect effective ways and cases on AI and other digital technologies to combat COVID-19 at the above stages. In the future, this work could contribute to a general experience on the analytics and scenario setting as a continuous exercise during the emergency cycle feeding each stage, and evolve towards a more generalizable mechanism on the health emergency continuum, eventually applicable to other pandemics.

The work will be progressed within this new WG-HE by volunteer experts drawn from the larger FG-AI4H network of active and interested experts.

# Specific issues

Specific issues to be addressed by the WG-HE include:

1. Targeted to COVID-19: With the urgency on fighting against COVID-19 worldwide, this ad-hoc WG focuses on the COVID-19 pandemic. Digital technologies or use cases using AI will be collected, analysed and shared within the, as a global reference on COVID-19.
2. No conflicts with TG-Outbreak nor with TG-Symptom: The TG-Outbreak focuses on AI solutions on early detection of outbreaks, and this group plans to cover the many stages of epidemic emergency. The outputs of TG-Outbreak will be crucial for the early stages of the health emergency cycle. TG-Symptom focuses on AI solutions to identify possible pathologies based on syndromic description by patients. The outputs of TG-Symptoms will be extremely valuable to the ad-hoc WG since global syndromic surveillance through AI-driven technologies might be an essential disease early warning or pre-triage tool. This ad-hoc WG will collaborate, reuse and share mid or final outputs with the applicable FG-AI4H TGs.
3. Further research in the future: Collection and collaboration on COVID-19 digital cases are not the only activities of this ad-hoc WG. Further research such as risk assessment, monitoring and evaluation, analytics and scenario setting as a continuous exercise during the above emergency cycle will be conducted. We expect a generalized experience extracted from this COVID-19 work, eventually applicable to other health emergencies.

# Roadmap

In the short term, this ad-hoc WG will build a mechanism to collect effective experience on AI and other digital health technologies in combating COVID-19. Use cases, best practice reports and corresponding analysis to be given within the WG. Digital health collaboration, webinars, and project cooperation are encouraged within its network of experts.

In mid-/long-term, we expect a generalized experience extracted from this COVID-19 work, deliver a or a set of AI and digital health based approach that cover the entire cycle of an epidemic emergency, including prevention and preparedness, outbreak early detection, surveillance and response, recovery, rehabilitation, mitigation, etc. Eventually, it could evolve towards a more generalizable framework on the health emergency continuum, applicable to other health emergencies.

# Existing work

## General

CAICT (China) best practice reports on digital health cases in the prevention and control of COVID-19 in China: with more 200 digital cases were collected, AI, 5G, Internet, IoT, Virtual hospital, etc. are covered in the collection, and the series of reports started in January 2020 is regularly updated. A sample includes:

* <https://mp.weixin.qq.com/s/WxEbQkVHSVVW70xcdVFA9w>
* <http://www.caict.ac.cn/xwdt/hyxw/202003/t20200301_275471.htm>
* <http://www.caict.ac.cn/xwdt/hyxw/202003/t20200324_277621.htm>
* <https://mp.weixin.qq.com/s/KdOh7JqkEzAPmMQ_XwvFRQ>

CAICT, GSMA and 5GAIA jointly released a case collection on epidemic prevention and control, English version is as below.

* http://www.caict.ac.cn/kxyj/qwfb/ztbg/202004/P020200409493290974153.pdf

CAICT’s digital health demand and supply platform: Over 500 companies and enterprises are engaged and published their digital products and solutions on epidemic prevention and control. This platform is now supporting NHC on international supplies supporting for countries.

* <https://hrp-screen.3incloud.com/page/#/screen/2jpgp6atx2io>

Similar activities exist in other countries and the success cases of Singapore, Republic of Korea and Japan could be reviewed and incorporated in the deliberations of this WG.

## Digital contact tracing

Technologies for digital contact tracing are being used to monitor how efficiently social distancing measures are being applied across cities/countries. Different techniques have been explored and tools (such as apps) developed, e.g. Google or Waze metadata, Fitbit, Bluetooth and different social media platforms metada, covidApp etc. General concerns include privacy and confidentiality of data, which can be a factor in adoption. Some estimates indicate that digital contact tracing, to be effective, would require adoptions of 60% or more within a monitored population.

# Deliverables

* Nurture the creation of a network of experts that can be a reference group for addressing the use of AI and other digital technologies for tackling health emergencies such as the COVID-19 pandemic.
* Develop a collection of best practice or case collection that can be referenced globally that leverage AI and other digital technologies in combating COVID-19, build suitable mechanisms on sharing these experiences.
* Report on risk assessment, monitoring and evaluation of different digital interventions on COVID-19.
* Develop a framework to cover the entire cycle of an epidemic emergency and provide guidance on digital interventions feeding each stage.
* Provide, as appropriate and upon request, input to WHO development processes for guidelines on the use of AI and other digital technologies for tacking health emergencies.
* Providing guidance for public health considerations on the use of AI and other digital technologies for tackling health emergencies.
* Other possible collaboration output within the network (eg. With Ethics, with Outbreak, with Symptoms, with Xray solutions etc).

# Representations and interactions

* Chairs and experts of FG-AI4H
* WG and TG members with relevant expertise and interest
* ITU and WHO experts
* G20 and other international mechanisms
* Workshops to include participants from government agencies, academic institutions, NGOs and National Health Committees

# Declaration of Conflict of Interest

Participants in this ad-hoc WG will follow the procedure in Document FG-AI4H-F-105.

References

* [FG-AI4H F-105](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Documents/FGAI4H-F-105-WorkingGroupExperts.pdf) (Zanzibar, September 2019)), ToRs for the WG-Experts and call for experts and Annex A, [Application form](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-105-A01.docx); [Conflict of interest form](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-F-105-A02.docx)

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1. WHO Timeline - COVID-19: <https://www.who.int/news-room/detail/08-04-2020-who-timeline---covid-19> [↑](#footnote-ref-1)
2. <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6> [↑](#footnote-ref-2)
3. Global COVID-19 Clinical Characterization Case Record Form and new data platform for anonymized COVID-19 clinical data, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/patient-management> [↑](#footnote-ref-3)
4. ITU-WHO Joint Statement: Unleashing information technology to defeat COVID-19, <https://www.who.int/news-room/detail/20-04-2020-itu-who-joint-statement-unleashing-information-technology-to-defeat-covid-19> [↑](#footnote-ref-4)
5. COVID-19 Crisis Response: Digital Development Joint Action Plan and Call for Action: <http://pubdocs.worldbank.org/en/788991588006445890/Speedboat-Partners-COVID-19-Digital-Development-Joint-Action-Plan.pdf> [↑](#footnote-ref-5)
6. Emergency Risk Management/ Disaster Risk Reduction of the ERF Sendai Framework [↑](#footnote-ref-6)