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| The International Teleocmmunication Union - Connecting the World. | **International telecommunication union****Telecommunication Standardization Bureau** |  |
|  | Geneva, 21 August 2019 |
| Ref: | **TSB Circular 191** | **To:**- Administrations of Member States ofthe Union;- ITU-T Sector Members;- ITU-T Associates;- ITU Academia |
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| E-mail: | tsbfgai4ee@itu.int | **Copy to:**- The Chairmen and Vice-Chairmen of Study Groups;- The Director of the Telecommunication Development Bureau;- The Director of the Radiocommunication Bureau |
| **Subject:** | **Creation of a new ITU-T Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies (FG-AI4EE) and its first meeting, Vienna, Austria, 15 October 2019** |

Dear Sir/Madam,

1 Further to the agreement by ITU-T Study Group 5 at its meeting in Geneva (13-22 May 2019), I am pleased to announce the establishment of the ITU-T Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies (FG-AI4EE), with Mr Paolo Gemma (Huawei Technologies Co., Ltd., China) as Acting chairman and Mmes Barbara Kolm (Austrian Economics Center & Austrian National Bank), Kari Eik (Organization for International Economic Relations (OiER)), Lucy Lombardi (Digital & Ecosystem Innovation, TIM) and Messrs Neil Sahota (Technossus, IBM & University of California), Joel Alexander Mills (AugmentCity AS), Mats Pellbäck Scharp (Ericsson) and Peter Ulanga (Universal Communications Service Access Fund, United Republic of Tanzania) as Vice-chairmen.

2 The Focus Group will identify the standardization gaps related to the environmental performance of AI and other emerging technologies including automation, augmented reality, virtual reality, extended reality, smart manufacturing, industry 5.0, cloud/edge computing, nanotechnology and 5G, among others. The Focus Group will develop technical reports and technical specifications to address the environmental efficiency, as well as water and energy consumption of emerging technologies.

3 Participation in FG-AI4EE is free of charge and open to all individuals from a Member State, including representatives of vertical industries, regulators, policy makers, researchers, engineers, practitioners, entrepreneurs, services providers, platform providers, network operators, international organizations, industry forums and consortia – to share knowledge, best practices and lessons learned in the field. Anyone interested in updates and announcements related to this group is invited to subscribe to the FG‑AI4EE mailing list. Details on how to subscribe can be found on the FG-AI4EE homepage: <https://itu.int/go/fgai4ee>.

4 The Focus Group’s lifetime is set for two years from the first meeting but is extendable if necessary by decision of the parent group. It will operate under the procedures set out in [Recommendation ITU‑T A.7](http://www.itu.int/rec/T-REC-A.7) and within the agreed Terms of Reference reproduced in **Annex 1**.

5 The **first meeting of FG-AI4EE** will be held in Vienna, Austria, on **15 October 2019**, kindly hosted by the Federal Ministry of Transport, Innovation and Technology, Republic of Austria. Information relating to this meeting, including the exact venue, draft programme and practical information, will be available on the FG-AI4EE homepage: <https://itu.int/go/fgai4ee>. This website will be updated regularly as new or modified information becomes available. Participants are requested to check periodically for new updates.

The **objectives** of the first meeting include:

– Discussion on environmental efficiency for Artificial Intelligence and other emerging technologies: use cases, requirements, applications, interfaces, protocols, architectures, security, etc.;

– Appointment of FG-AI4EE management, including additional Vice-chairs;

– Agreement on the FG-AI4EE working structure, including establishment of working groups (WGs) on specific topics and appointment of relevant WG Chairs;

– Agreement on a FG-AI4EE roadmap of expected deliverables, identifying timelines, scopes and editors and assigning responsibilities to the various WGs;

– Agreement on FG-AI4EE working methods, using as a base ITU-T A.7;

– Agreement on FG-AI4EE future meeting plans, including frequency of meetings.

6 In line with the terms of reference set out in **Annex 1, written contributions are invited** for the first meeting of the Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies to address the objectives highlighted above and especially to foster an initial development plan of deliverables.

7 Written contributions should be submitted to the secretariat (tsbfgai4ee@itu.int) in electronic format using the [template](https://staging.itu.int/en/ITU-T/focusgroups/ai4ee/Documents/FG-AI4EE-I-template-Vienna-Austria-October2019.docx) available from the FG-AI4EE homepage. **The deadline is
2 October 2019.**

8 The meeting will **start at 0930 hours** and participant registration will begin at 0830 hours. Practical meeting information is set out in **Annex 2**. The meeting agenda will be available from the FG-AI4EE homepage in advance of the meeting. The discussions will be held in English only, and will be supported by **remote participation**; details will be made available on the FG-AI4EE homepage.

9 We would remind you that citizens of some countries are required to obtain a visa in order to enter and spend any time in Austria. If required, visas must be requested before the date of arrival in Austria from the embassy or consulate representing Austria in your country or, if there is no such office in your country, from the one that is closest to the country of departure. Deadlines vary, so it is suggested to check directly with the appropriate representation and apply early.

Additional details and documentation needed for visa processing, if any, will be provided in the logistics document for the meeting that will be made available on the FG-AI4EE website.

10 To enable the host to make the necessary logistics arrangements, participants are required to **pre-register online** via the FG-AI4EE homepage as soon as possible, and no later than **2 October 2019**. Places are limited and registration will be handled on a first-come, first-served basis. Registration is required for remote participation as well as on-site participation. Please note that pre-registration of participants for the events is carried out exclusively online.

**Key deadlines:**

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| --- | --- |
| 16 September 2019 | - Submit requests for visa support letters (Additional details and documentation needed for visa processing, if any, will be provided in the logistics document for the meeting that will be made available on the FG-AI4EE website) |
| 2 October 2019 | - Pre-registration (online via the [FG-AI4EE homepage](https://www.itu.int/en/ITU-T/focusgroups/ai4ee/Pages/default.aspx))- Submit written contributions (by e-mail to tsbfgai4ee@itu.int)  |

I wish you a productive and enjoyable meeting.

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| --- | --- |
| Yours faithfully,*(signed)*Chaesub LeeDirector of the TelecommunicationStandardization Bureau | Latest meeting information |

**Annexes: 2**

ANNEX 1:

Terms of Reference:
ITU-T Focus Group on "Environmental Efficiency for Artificial Intelligence and other Emerging Technologies" (FG-AI4EE)

(Approved by ITU-T SG5 on 2019-05-22)

## 1. Rationale and scope

The fourth industrial revolution fundamentally changes the way we live, work and interact with each other[[1]](#footnote-2). It introduces a whole new range of opportunities for societal transformation, with breakthroughs in fields such as artificial intelligence, Internet of things (IoT), autonomous vehicles, and blockchain that are further embedding technology into our daily lives to improve how we function as a society.

Incorporating digital technology is essential for our society to accelerate the systemic shifts needed to create a circular economy. Utilizing technology may allow for greater knowledge sharing and collaboration, better use of assets and resources, and improved well-being for all, so we can achieve our economic, environmental and social development goals.

Artificial Intelligence (AI) and other emerging technologies have the ability to positively impact our society and everyday life. For example, AI is the underlying fabric that powers data-driven solutions and applications. Similarly, the immutable nature of blockchain is underpinning the development of cryptocurrency and has great potential in securing high volume of sensory devices. Other emerging technologies may include inter alia: automation, augmented reality, virtual reality, extended reality, 5G, smart manufacturing, industry 5.0[[2]](#footnote-3), cloud/edge computing, nanotechnology, among others.

However, some emerging technologies including AI may not take sustainability into consideration during their development. These technologies often consume a huge amount of energy when operating, leaving behind significant environmental footprints. For example, the current annual electricity consumption of Bitcoin mining can be comparable to the electricity consumption of Switzerland in one year[[3]](#footnote-4). It is important to understand how to reduce the environmental footprint of these technologies because it will contribute to the well-being of the market economy as well as improving the quality of life of citizens and the users of these technologies alike.

International standards and guidance on measuring the environmental efficiency and performance of these emerging technologies remain lacking. As more and more emerging technologies are being integrated into different aspects of our society and everyday life, it is vital to develop international standards and metrics that would support the implementation of AI and other emerging technologies in a sustainable manner.

Therefore, the ITU-T Focus Group on “Environmental Efficiency for AI and other Emerging Technologies” (FG-AI4EE) will identify the standardization gaps related to the environmental performance of AI and other emerging technologies including automation, augmented reality, virtual reality, extended reality, 5G, smart manufacturing, industry 5.0, cloud/edge computing, nanotechnology, among others. The focus group will develop technical reports and technical specifications to address the environmental efficiency, as well as water and energy consumption of emerging technologies. The focus group will also identify the standardization needs to develop a sustainable approach to AI and other emerging technologies. This focus group will provide guidance to stakeholders on how to operate these technologies in a more environmentally efficient manner to meet the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals[[4]](#footnote-5).

The ITU-T Focus Group on “Environmental Efficiency for Artificial Intelligence and other Emerging Technologies (FG-AI4EE)” will be an open platform for relevant stakeholders – such as representatives of vertical industries, regulators, policy makers, researchers, engineers, practitioners, entrepreneurs, services providers, platform providers, network operators; international organizations, industry forums and consortia – to share knowledge, best practices and lessons learned in the field.

## 2. Goals and objectives of the FG-AI4EE

The key objectives of the FG-AI4EE may include the following:

* To identify and analyse the environmental impacts (negative and positive impacts) of deploying and implementing AI and other emerging technologies, such as blockchain.
* To be a platform for facilitating global dialogue and raising awareness on the environmental impacts of AI and other emerging technologies.
* To assist relevant stakeholders in minimizing the global environmental impacts of operating AI and other emerging technologies by developing technical reports and technical specifications as needed.
* To develop a framework and a standardization approach to adopting AI and other emerging technologies in an environmentally sound manner.
* To benchmark best practices and describe pathways that could lead to international standards, and serve as guidance for operating AI and other emerging technologies in the future.
* To collaborate with stakeholders, including policymakers, researchers, engineers, economists, developers, international and regional organizations, academia, in evaluating the sustainability of different emerging technologies. The results will describe strategic directions for future standardization efforts in tackling the environmental impacts of these technologies.
* To write a report(s) of the FG activities on how to support the implementation of AI and other emerging technologies in a sustainable manner after the FG finished its work.

## 3. Structure

The FG-AI4EE may establish sub-groups if needed.

## 4. Specific tasks and deliverables

Tasks and deliverables developed by the FG-AI4EE may include the following:

* To gather information on existing initiatives and standards regarding the environmental performance of AI and other emerging technologies.
* To draft technical reports and technical specifications that highlight the environmental performance of AI and other emerging technologies.
* To identify uses cases and best practices on implementing AI and other emerging technologies in an environmentally sound manner.
* To develop strategies/toolkits that will minimize the environmental footprint of emerging technologies while maximizing energy efficiency and unlock the potential of a circular economy for stakeholders.
* To draft technical reports and specifications for establishing a standardized framework for assessing the environmental aspects of deploying AI and other emerging technologies (e.g. a set of key performance indicators).
* To study the benefits brought by AI and other emerging technologies to achieve, inter alia, the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals objectives, the UNFCCC Paris Agreement and the protection of biodiversity.
* To liaise with relevant stakeholders such as the WEF and UNFCCC among others on how to improve environmental performance of AI and other emerging technologies as well as with UNECE-UN/CEFACT for semantic harmonization of data requirements.
* To organise thematic workshops and forums on environmental efficiency for AI and other emerging technologies, in order to bring together relevant stakeholders, promote the FG activities, and encourage both ITU members and non-ITU members to participate in its work.
* Send the final deliverables to the parent group, at least four calendar weeks before the parent group meeting.

## 5. Relationships

This Focus Group will work closely with relevant Study Groups in ITU (-R, -T and –D) including co-located meetings when possible. It will also establish and maintain task-appropriated collaboration arrangements with other groups in ITU.

Furthermore, the FG-AI4EE will collaborate (as required) with other relevant groups and entities, in accordance with Recommendation ITU-T A.7. These include governments, non-governmental organizations (NGOs), policy makers, SDOs, industry forums and consortia, companies, academic institutions, research institutions and other relevant organizations.

## 6. Parent group

The parent group of the FG-AI4EE is **ITU-T Study Group 5** "Environment, climate change and circular economy".

ITU-T Study Group 5 leads ITU’s standardization work and study on topics related to environment, climate change and circular economy, including the coordination of related studies across the various ITU-T SGs.

## 7. Leadership

See clause 2.3 of Recommendation ITU-T A.7.

## 8. Participation

See clause 3 of Recommendation ITU-T A.7. A list of participants will be maintained for reference purposes and reported to the parent group.

It is important to mention that the participation in this Focus Group has to be based on contributions and active participation.

## 9. Administrative support

See clause 5 of Recommendation ITU-T A.7.

## 10. General financing

See clauses 4 and 10.2 of Recommendation ITU-T A.7.

## 11. Meetings

The Focus Group will conduct regular meetings. The frequency and locations of meetings will be determined by the Focus Group management. The overall meetings plan will be announced after the approval of the terms of reference.

The Focus Group will use remote collaboration tools to the maximum extent, and collocation with existing ITU Study Group(s) meetings is encouraged.

The meeting dates will be announced by electronic means (e.g., e-mail and website, etc.) at least four weeks in advance.

## 12. Technical contributions

See clause 8 of Recommendation ITU-T A.7.

## 13. Working language

The working language is English.

## 14. Approval of deliverables

Approval of deliverables shall be taken by consensus.

## 15. Working guidelines

Working procedures shall follow the procedures of Rapporteur group meetings.

The FG will exchange draft deliverables and other outcomes on a regular basis with its parent group, to ensure efficient transfer of deliverables to streamline future standardization (see ITU-T A.7 Appendix I).

No additional working guidelines are defined.

## 16. Progress reports

See clause 11 of Recommendation ITU-T A.7.

## 17. Announcement of Focus Group formation

The formation of the Focus Group will be announced via TSB Circular to all ITU membership, via the ITU-T Newslog, press releases and other means, including communication with the other involved organizations.

## 18. Milestones and duration of the Focus Group

The Focus Group lifetime is set for two years from the first meeting but extensible if necessary by decision of the parent group (see ITU-T A7, clause 2.2).

## 19. Patent policy

See clause 9 of Recommendation ITU-T A.7.

ANNEX 2

Practical meeting information for participants

**WORKING METHODS AND FACILITIES**

**DOCUMENT SUBMISSION AND ACCESS:** The meeting will be run paperless. Written contributions to the focus group meeting are encouraged and should be submitted by e-mail to tsbfgai4ee@itu.int by **2 October 2019** at the latest using the document [template](https://staging.itu.int/en/ITU-T/focusgroups/ai4ee/Documents/FG-AI4EE-I-template-Vienna-Austria-October2019.docx) available on the [FG-AI4EE homepage.](https://www.itu.int/en/ITU-T/focusgroups/ai4ee/Pages/default.aspx) Access to all input and output documents will be provided from the [collaboration site for FG‑AI4EE](https://extranet.itu.int/sites/itu-t/focusgroups/ai4ee/SitePages/Home.aspx) (a free [ITU user account](https://www.itu.int/en/ties-services/Pages/default.aspx) is required).

**WIRELESS LAN** facilities are available at the meeting venue.

**PRE-REGISTRATION**

**PRE-REGISTRATION:** Pre-registration for on-site or remote participation is to be done via the FG‑AI4EE homepage **no later than 2 October 2019.**

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1. <https://www.circle-economy.com/the-fourth-industrial-revolution-and-the-circular-economy/#.W5i4EiQzbIU> [↑](#footnote-ref-2)
2. Industry 5.0 is focused on combining human beings' creativity and craftsmanship with the speed, productivity and consistency of robots. Industry 5.0 means to better appreciate the cooperation between robotics and human beings by combining their diverging strengths, in order to create a more inclusive and human-centred future. [↑](#footnote-ref-3)
3. <https://www.forbes.com/sites/shermanlee/2018/04/19/bitcoins-energy-consumption-can-power-an-entire-country-but-eos-is-trying-to-fix-that/#69152d711bc8> [↑](#footnote-ref-4)
4. https://www.un.org/sustainabledevelopment/development-agenda/ [↑](#footnote-ref-5)