

# STOA

## Panel for the Future of Science and Technology

**STOA Panel Meeting**  
**Thursday, 20 January 2022, 09:30 – 11:00**  
**Room CHURCHILL 200, Strasbourg, and remotely via Interactio**

### Minutes

- The meeting started at 09:40 with Eva KAILI, VP and STOA Chair, in the chair.
- 1. Adoption of the draft agenda (PE 697.214)**
  - The Chair informed Members that, due to COVID-19-related restrictions, this was a hybrid meeting via the Interactio teleconferencing tool and it was being webstreamed, while physically based in Strasbourg. Interpretation was available in English, French and German.
  - She then announced that the draft agenda was in the dossier and, as there were no requests for changes or additions, it was deemed adopted.
- 2. Approval of draft minutes – STOA Panel meeting of 16 December 2021 (PE 697.211)**
  - The Chair announced that the draft minutes of the Panel meeting of 16 December 2021 were in the dossier and, as there were no requests for changes, they were deemed approved (as in the file).
- 3. Presentation of STOA projects and other activities**
  - The Chair informed Members that the tables of ongoing projects and forthcoming events were in the dossier. She further informed them about the following forthcoming events:
    - ‘STOA meets experts’: ‘Coping with the pandemic: psychosocial consequences of the corona crisis’, 25 January 2022, 15:00 – 16:00; chaired by STOA Chair Eva KAILI; online via WebEx Meetings.
    - ‘STOA meets experts’: ‘Use of lump sum funding in the EU’s research programmes’, 1 February 2022, 10:30 - 12:00; chaired by STOA First Vice-Chair Christian EHLER; online via WebEx Meetings.
    - STOA workshop: ‘Ethical issues in the COVID-19 pandemic: The case of digital health applications’, including a presentation of the STOA study on ‘Artificial Intelligence in healthcare: Applications, risks, ethical and societal impacts’, 11 February 2022, a.m.; chaired by Eva KAILI, STOA Chair, and Anna-Michelle ASIMAKOPOULOU, STOA Panel member; online via WebEx Events.
  - Then the Chair updated the Panel on the latest activities of the European Science-Media Hub (ESMH):
    - On 15 December 2021, the ESMH published an interview with Meera SELVA, co-founder of the Oxford Climate Journalism Network, on how to move climate up the news agenda.
    - On 12 January 2022, the ESMH published an article on threats and attacks against scientists who communicate publicly about the pandemic.
    - The ESMH had produced a video about the STOA Annual Lecture 2021 on ‘Facing the challenges of emerging critical technologies’.
  - The Panel took note of the above activities and endorsed their continuation.
- 4. Visits and external activities**
  - The Chair reported that authorisation for delegations to take place in the first half of 2022 had been duly requested by letters she addressed to the President at the end of 2021. The requests would be discussed by the EP Bureau on 26 January (within the EU) and by the Conference of Presidents on 20 January (outside the EU).
  - Given the proximity of the missions to the Munich Security Conference (18-20 February) and MWC (Mobile World Congress) Barcelona (28 February - 3 March), Panel members who were interested in participating in them were invited to inform the Secretariat via the STOA functional mailbox as soon as possible.

- Mr EHLER commented on the tendency for missions to be denied to STOA on the grounds that STOA Members could join committee delegations, or that the events had a commercial character.
- The Chair agreed that such decisions should be challenged, as previous invitations to attend conferences organised by the private sector had resulted in very informative and useful visits in the past.
- The Panel took note of the state-of-play and Panel members interested in participating in the imminent missions were invited to declare their interest as soon as possible.

##### **5. Presentation of the preliminary outcomes of the study ‘The challenges of the upcoming technological storm: blending AI, the IoT, blockchain and 5G technologies?’**

- The Chair announced that the presentation would highlight the preliminary findings of the study; the authors would make a 15-minute presentation and then answer questions.
- The Chair, in her capacity as Lead Panel Member for this study, introduced the subject: Artificial intelligence (AI), the Internet of Things (IoT), blockchain and 5G interacted with and reinforce each other, and they represented a ‘perfect technological storm’ as well as a potent opportunity for value creation. The study would review the current potential for such blending of technologies, its possible application areas and the requirements that had to be fulfilled for its deployment to achieve an optimal benefit for society and the economy. The study would then develop clear policy options for tackling all identified challenges.
- The Chair welcomed and introduced Professor Ibo VAN DE POEL and Dr Tristan DE WILDT, from Delft University of Technology, lead authors of the study, and gave them the floor for the presentation.
- Mr VAN DE POEL started his presentation by stating the main technologies studied: AI, IoT, 5G/6G, and blockchain. There were also other related technologies such as edge computing, robotics, virtual and augmented reality, voice recognition, face recognition, digital twins, and nanotechnology. There were some applications which combined such technologies such as the metaverse, voice assistants, smart cities, and internet of bodies.
- He underlined that the key questions of this study were: (i) are we prepared for the convergence of technologies? (ii) can we expect new societal and ethical challenges? (iii) are there policy gaps we should start to address? The methodology followed included expert interviews, literature review and text mining of: techno-scientific literature, news media, ethics literature, and legal and policy documents.
- He noted that the first challenge that technology presented was the blurring of social spheres, since everything was now connected. The second challenge was the opacity of the systems and the cognitive overload of the users, since these systems might be hard to understand. The third challenge related to energy use and sustainability, since these technologies required a lot of energy. The fourth challenge was the new cyber-physical risks, as dangerous infrastructures could become part of IoT and be used maliciously. The fifth challenge was the concentration of techno-economic power, with a few players monopolising the technology landscape.
- Mr VAN DE POEL outlined the study methodology. Text mining was used for gaps in how values were addressed. The datasets included newspaper articles from 2015 to 2019, scientific articles from ethics-related journals, scientific articles related to each technology, and AI-related EU regulations. The frequency the following topics were mentioned was calculated: justice and fairness, privacy, cyber-security, environmental sustainability, transparency, accountability, autonomy, democracy, reliability, trust, well-being and inclusiveness. Most values seemed well-addressed in policy and regulatory documents. The news primarily focused on democracy, cybersecurity, and justice and fairness. While cybersecurity was addressed in the technical literature, democracy, and justice and fairness hardly were. Transparency and autonomy were important in the ethics literature, but were addressed far less in the news and technological literature. Most of the ethics literature (and legislation) focused on AI, while technologies like IoT raised as many value concerns as AI.
- He then mentioned that some of the gaps observed in the merger of technologies included the increasing pace of technological development, and the unpredictability of social and ethical impacts. The detection of ethical issues was slow, because ethics research still focused on AI and not on merger of technologies. For the new values taken up in technological research and design, there was slow process since some values mentioned in the legislation or discussed in the news and ethics literature were still hardly taken on in technological research.
- He then provided policy options based on two general frameworks: (i) responsible research and innovation, which was an on-going process of aligning research and innovation to the values, needs and expectations of society, and (ii) the design for values, which was the systematic approach for integrating social and moral values in technological design. The study related each challenge and gap to policy options.

- As he explained, the blurring of social spheres created a need for protection of the personal sphere beyond privacy. The opacity and limited human cognitive capabilities led to the need for digital literacy. Energy labels for digital technology were required to address energy use and sustainability. IoT, seen as a digital commons, was not just an application or enabling technology, but an infrastructure which enabled systems of systems, and it might be hard to regulate due to its world-wide distributed character. Therefore, it might need to be treated politically and regulatorily like other infrastructures such as transport, communication and internet. This could happen in two basic ways: public ownership or public minimal rules. This was relevant for the current discussions about DMA (Digital Markets Act) and DSA (Digital Services Act).
- He added another policy option, namely the need of an early warning system. The new ethical and social issues raised by the technological storm were partly unpredictable. There was a need for a system of early detection of such issues. The gap analysis suggested that such a system was not in place yet. Concrete measures could include: (i) stimulate research into ethical and social issues of the upcoming technological storm, (ii) an EU observatory, (iii) living labs, and (iv) an EU high-level expert group on the upcoming technological storm.
- He finally discussed the policy options referring to design for values. Privacy-by-design and ethics-by-design were already part of the General Data Protection Regulation (GDPR) and the proposed AI regulation. Still, gap analysis suggested that some values were insufficiently addressed in technical research and innovation. There was a need for further institutionalisation of design for values. Concrete measures could include: (i) stimulating related training programmes, (ii) making responsible innovation and design for values part of obligatory Corporate Social Responsibility reporting for tech companies, and (iii) certification and standardisation.
- The Chair thanked the speaker and gave the floor to Mr EHLER.
- Mr EHLER asked whether the media was describing properly the new technologies and their challenges so citizens could fully understand their associated complexities.
- Mr DE WILDT answered that the news focused on cybersecurity, as it was a more attractive topic to discuss, while this topic was less discussed in technological literature. This might lead to the public being disinformed.
- Mr EHLER questioned how accelerated the current technological development was, compared to the past.
- Mr VAN DE POEL answered that, while technologies advanced fast, there was still a slow feedback loop regarding the impact of technologies and that this should be accelerated.
- Mr EHLER wondered if policy-makers had the right understanding of technologies to regulate them.
- Mr VAN DE POEL noted that there were always uncertainties in technology development, which made them hard to regulate; that was why an early warning system would be useful to identify and address new challenges.
- Maria-Manuel LEITÃO-MARQUES, MEP and STOA Panel member, raised her concerns about the concept of internet of bodies, health data and their vulnerability to cyberattacks, and the need to ensure informed consent. She then asked how one could better promote multidisciplinary research teams to address technology in a holistic way and how international cooperation would work.
- Mr VAN DE POEL replied that the study did not provide conclusions regarding these issues. An observatory could be an ideal way to promote these multidisciplinary teams and international cooperation.
- Ivars IJABS, MEP and STOA Second Vice-Chair, asked about limitations of a methodology using text mining.
- Mr DE WILDT mentioned that they employed a tool called ‘topic modelling’, which used distributions of words instead of keywords, which in turn made it possible to capture the idea of each keyword.
- Mr VAN DE POEL added that they also conducted qualitative research to complement topic modelling.
- Susana SOLÍS PÉREZ, MEP and STOA Panel member, asked about neuro-rights and about protecting the privacy of the personal sphere.
- Mr VAN DE POEL argued that, while they did not address neuro-rights specifically, with the internet of bodies they include the regulation of privacy. He added that they shared the idea of the importance of well-being, and wanted to further investigate in this direction.
- The Chair enquired if there was a methodology applicable to all technological systems to use values-by-design.
- Mr VAN DE POEL agreed that values should be considered by design and in the future one could require to have a certificate that proved that these values had been considered in the design.
- The Chair thanked the speakers and announced that, if there were no objections, the execution of the study would continue along the lines presented, taking into account the comments made by the Members.

## 6. Any other business

- The Chair reported that the present STOA framework contract was expiring in mid-2022. The framework contract was an indispensable means for conducting large-scale studies and addressing sensitive and controversial subjects requiring a wider consultation of experts. The preparatory administrative work for launching a procedure to establish a new multiple framework service contract for the next four years was ongoing.
- The Chair recalled that, according to the STOA Rules, Article 5(2): *“In compliance with the Financial Regulation and the internal rules on the implementation of the European Parliament’s budget, technology assessment and scientific foresight studies may be carried out by one or more external contractors with which the competent authorizing officer shall conclude, at the request of the STOA Panel, a framework contract following a public invitation to tender”*.
- Ms LEITÃO-MARQUES asked how the procurement of new studies was organised. In her reply, the Chair suggested coming back to this issue at a future meeting.
- The Panel endorsed the launch of the procedure for establishing a new multiple framework service contract for the next 4 years, with the understanding that the incoming Panel would be called upon to confirm this decision.
- The Chair asked if there were any other issues Members would like to raise or discuss, but there were none.

## 7. Date and place of next meeting

- The Chair reminded Members that, until the next constituent meeting, the Panel was functioning, as in similar mid-term periods in the past, in a ‘care-taker’ mode. During this period, any proposals for substantive decisions would have to be confirmed by the newly constituted Panel before they were implemented.
- In this context, the next Panel meeting would take place on Thursday, 17 February 2022, 09:30-11:00, Room WEISS N1.3 in Strasbourg, and remotely via Interactio. This meeting would feature a presentation of the outcomes of the study on ‘Pollution and the spread of COVID-19’.

The meeting ended at 11:03.

## ANNEX List of participants

### STOA Panel members

Ms Kaili, Mr Ehler, Mr Ijabs, Ms Alieva-Veli, Ms D’Amato, Mr Dorfmann, Ms Gálvez Muñoz, Ms Leitão-Marques, Ms Solís Pérez.

### Scientific Foresight Unit (STOA)

Mr Karapiperis, Mr Pataki, Ms Tanova, Ms Antunes, Mr Boucher, Ms Crivello, Ms Fáy, Mr García Higuera, Ms Nijenhuis, Mr Hubar, Ms Manirambona, Ms Bandeira, Ms Delgado Callico, Ms Hrytsai, Mr McNamara.

### Other participants

Mr Hiller (Director EPRS), Mr van de Poel and Mr de Wildt (speakers, TU Delft), Ms Oosterlaken (TU Delft), Ms Naik (TU Delft), Mr Aguilar (Assistant to Ms Kaili), Mr Katsikogiannis (Assistant to Ms Kaili), Mr Vinkelis (Assistant to Mr Ijabs), Ms Salieva (Assistant to Ms Alieva-Veli), Ms Mico (Assistant to Ms Donato), Ms Molina Delgado (Assistant to Ms Gálvez Muñoz), Ms Rupprecht (Assistant to Mr Karas), Mr Feio (Assistant to Ms Leitão-Marques), Mr Balog de Manko Buck Sancho (Assistant to Ms Solís Pérez), Ms Exenberger (Assistant to Ms Thaler), Mr Cavara (DG IPOL), Ms Chircop (DG IPOL), Mr Scheuren (DG IPOL), Ms Björkvall (Renew), Ms Martinengo (INAB), Mr Salvaggio (INAB), Mr Hajiyev (Council of Europe).