gesda

USE THE FUTURE TO BUILD THE PRESENT

Progress report
15 July 2020

GENEVA
SCIENCE & DIPLOMACY
ANTICIPATOR

15 July 2020
Progress report

The Geneva Science and Diplomacy Anticipator launches its First anticipatory mapping of science frontier issues and reveals its "Situation Room" methodology

Meeting online on 7 July 2020 for its second reunion, the Geneva Science and Diplomacy Anticipator (GESDA) Foundation Board of Directors approved the outcomes of the last six months of operations, keeping the Foundation on track of its 2020-2022 Implementation Roadmap. President of EPF Lausanne Martin Vetterli has been welcomed as co-chair of the Academic Forum; scientific emerging topics of the four GESDA thematic platforms have been prioritized, and filtered through a respectively 5, 10, and 25 years' horizon; the approved GESDA methodology (called "Situation Room") will be tested and enriched over the next 20 months; the priorities for the next seven months have been set. The latter include the completion of the work on anticipatory scientific frontier issues, preliminary scouting of impactful solutions with the GESDA communities, an evaluation of possible partnerships, and outreach actions in International Geneva, now that GESDA has established its offices at Campus Biotech, the new hub of info-nano-bio-cogno convergence and renewed science diplomacy.

As the Board of Directors under the presidency of Peter Brabeck-Letmathe highlighted, humanity is facing more than ever global challenges (with regards to the COVID-19 crisis), putting people and the planet under stress and in great uncertainty. Simultaneously, the world is experiencing breakthroughs in science and technology at an unprecedented, sometimes hard to grasp, pace. Anticipation is therefore key to build the future with the aim to make the best use of this scientific potential for well-being and inclusive development for all. GESDA's ambition is first to anticipate and identify these cutting-edge science and technology advances, and second, based on them, to develop effective and socially inclusive solutions to emerging challenges by including actors of various professional origins and mindsets (science, diplomacy, philanthropy, industry, citizens) upfront in that process.

A First anticipatory mapping of science frontier issues

On 20 June in Bern, following four preparatory meetings, the Academic Forum chaired by Joël Mesot (President of ETHZ) and joined by **newly elected co-chair Martin Vetterli** (president of EPF Lausanne) kicked-off the work of **the four Platforms** designed in December 2019, on four science frontier issues:

1. Quantum revolution & advanced artificial intelligence
2. Human augmentation
3. Eco-regeneration & geo-engineering
4. Science & Diplomacy.

In this framework, high-level scientists from both national and international top institutions were asked to moderate those platforms. These **Moderators** include: Matthias Troyer (formerly at ETHZ and now Distinguished scientist and Director of Quantum computer solutions, Microsoft, Seattle), Rüdiger Urbanke (Professor for Communication Theory, EPFL), Olaf Blanke (Bertarelli Chair in Cognitive Theory, EPFL at Campus Biotech Geneva), Gerald Haug (President of the German Academy of Sciences Leopoldina and Professor for Climate Geochemistry, ETHZ), Berend Smit (Professor of Chemical Engineering, EPFL Valais/Wallis in Sion), Dirk Helbing (Professor for Computational Social Science, ETHZ), Jean-Pierre Danthine (Professor EPFL, Managing Director of the Enterprise for Society Center (E4S), President of PSE – Ecole d'économie de Paris, former Vice-President of the Swiss National Bank). Effy Vayena (Professor of bioethics, ETHZ) agreed to accompany this work.

Their task was to identify and select **research topics** that will most probably deliver major advances over a **time horizon** (first filter) of:

- **5 years**
- **10 years**
- **25 years**

They then appraised them with the **three GESDA overarching questions** (second filter):

1. **Who are we?** What does it mean to be human in the era of robots, gene editing and augmented reality?
2. **How will we be living together?** Which deployment of technology can help reduce inequality and foster inclusive development and well-being?
3. **How can we assure mankind's well-being through the sustainable health of our planet Earth?** How can we supply the world population the necessary food and energy and regenerate the planet?

This scouting and filtering exercise ended up in a GESDA-defined "**First anticipatory mapping of scientific frontier issues**" (including 10 work packages on e.g. quantum internet, neural interfaces, human genome management, negative emissions technologies, future of global governance). Encompassing GESDA vice-president Patrick Aebischer's vision, this first mapping will evolve and be enriched in the coming months.

Out of those work packages, the objective is to produce, with the collaboration of worldwide science experts selected by the Moderators, reports entitled **"Scientific Anticipatory Briefs" (SABs)**, summing up in details the scientific advances. Those SABs will be reviewed during the next Board meeting this fall.

An anticipatory scanning of emerging challenges with the Diplomacy Community

In order to build a common understanding and consensus with the "users and operators" of what cutting-edge science and technologies can bring, and assess their potential to help tackle emerging and future challenges, the Diplomacy Forum, chaired by former Director-General of the UN Office at Geneva Michael Møller, engaged many **discussions with leaders of multilateral diplomacy**. Geneva being host to the largest number of (governmental and non-governmental) organizations focusing on global issues – such as inclusive economic development, global trading, inequality, peace-making, public health, hunger, migration, resources, climate impact, etc. – greatly facilitates the direct interactions with key actors seeking global solutions. Anticipating what these challenges will look like in 5, 10, and 25 years, is crucial to ensure alignment of the emerging science with the foreseen needs.

A Methodology to be tested: the "Situation Room" process

To be translated from the lab into impactful and sustainable solutions to emerging challenges, the SABs will be further developed in the **"Situation Room" process**, an innovative methodology developed by GESDA. It is designed to facilitate the interactions and collective participation, very early on, of actors from various communities broader than science only (citizens, international and intergovernmental organizations, diplomats, NGO, business, philanthropy, artists, media, youth associations, etc.).

Through a multi-step development mechanism, from ideation of the output to its global implementation, the Situation Room must ensure the broad translation of science into exploratory projects for the benefit of humanity. Such solutions can vary, depending on the scientific field and the challenges to be addressed – whether a straightforward technology, a research center (e.g. a "CERN for quantum"), a global framework agreement (e.g. on the use of natural resources), or other programs of concrete actions on the ground.

This Situation Room process has been validated by the Board of Directors as a blueprint to be enriched. It will be tested during GESDA's pilot phase, with the first solutions schemes to be developed through creative coalitions in spring 2021 and evaluated in summer 2021. If successful and reproduceable this process could become a renewed methodology for multilateralism, showing how an initiative born in Switzerland and anchored in International Geneva can bring together the brightest and most influential people from different global circles, and transform their interactions into a greater impact for the world's people.

Transversal projects in the field of "Science and Diplomacy"

To broadly accompany this whole endeavor over the long-run and allow GESDA to amplify its scope of activities, related transversal projects in the field of "Science and Diplomacy", and for which GESDA plays a role of developer or facilitator, have been addressed by the Board of Directors:

- A cross-disciplinary academic proposal led by Board member Samantha Besson (Professor for International Institutions' Law at Collège de France, and part-time professor of Public International Law and European Law at University of Fribourg) has been endorsed. Called "**International institutionalization of scientific anticipation**", this initiative focuses on the access to science as a basic human right, on the possible evolutions of international regulations due to scientific progresses and on "Science and Diplomacy" as an emerging discipline in human, social and policy sciences. It will contribute to deepen GESDA's vision: "Use the future to build the present".

- A **Context analysis** has been carried out internally. Such an evaluation is key for a clear positioning of the Foundation and, as such, for the success of a starting initiative to become global and sustainable. By benchmarking GESDA's Mission Statement ("Anticipate, accelerate, translate") with other worldwide similar initiatives, it allowed: 1) To underline the single and unique selling proposition of GESDA, in terms of both anticipating the scientific topics responding to emerging challenges and adding impact in society thanks to various actors included very early on in the development of innovative solutions; 2) To selectively identify strategic partners to learn from and collaborate with. A more in-depth analysis shall be undertaken in the coming months to come to a final selection of GESDA's privileged partners.

- An initiative jointly led by University of Geneva (Unige) and ETH Zurich to promote "**Science in Diplomacy**" in the field of conflict modelling, digital diplomacy and negotiation engineering, has been assessed internally. This assessment concludes that there is a clear convergence in principle between the vision and objectives of this Unige-ETHZ initiative and GESDA's thematic Platform 4 (on "Science and Diplomacy"). It also recommends that a more detailed analysis should be carried out to address: the scale-up potential of the partnership as a strengthening landmark for International Geneva; the blending potential of social and human sciences with deep and hard sciences in order to better address anticipatory frontier issues at the heart of GESDA; the strategic positioning and unique value of the joint initiative when benchmarked globally. Decision has been taken to pursue GESDA's engagement with the initiative in order to design the best possible interface between both entities and other partners, be it in Geneva, elsewhere in Switzerland, or abroad.

- A scientific **evaluation of the I-DAIR (Digital Health & AI Research Collaborative) project** was carried out by GESDA under the chairmanship of GESDA's Board member Matthias Egger, President of the National Research Council of the Swiss National Science Foundation, in close coordination with Prof. Marcel Tanner, Member of the Board of the Botnar Foundation in Basel. It mobilized 15 global scientific experts with different scientific backgrounds (health systems, e-health, bioethics, health economics, computer sciences, epidemiology, data governance) as well as a high-level review committee representing the Swiss scientific Community. This committee included Lothar Thiele (Professor at ETHZ, associate Vice-President for Information Systems), Pierre Vandergheynst (Professor at EPFL, Vice-President for Education), and Jocelyne Bloch (Medical doctor and Associate Professor at the University Hospital of Lausanne CHUV and University of Lausanne). It concluded that, thanks to high-level consultations, the management of the project, led by Indian Ambassador Amandeep Gill (from the Graduate Institute Geneva, IHEID), drafted a promising, concrete and professional blueprint for the next phase aiming to develop in the coming 20 months a full-fledged action-plan. GESDA will continue exploiting synergies with the I-DAIR project.

Integration of GESDA in International Geneva

Strategic partnerships establishment goes along with developing the integration of GESDA inside International Geneva. Over the coming months, **communication activities and media collaborations** to position GESDA's specificity with the general public as well as with the academic and inter-governmental landscape will be undertaken. A selective review of quality articles from the world press related to GESDA's thematic platforms and activities will soon be distributed to inform and enrich GESDA's work on all levels of action.

The Foundation also takes full advantage of its newly set up **offices** at the Campus Biotech Geneva in May 2020, which is home to two major initiatives linked to the digital world: the **CyberPeace Institute (CPI)** and the **Swiss Digital Initiative (SDI),** and which already hosts several laboratories of the University of Geneva and EPFL as well as start-ups and institutes (in the fields of bio- and neuroengineering, vaccines, genetics, digital education, digital epidemiology, affective neurosciences, brain simulation, global health, engineering). The collaboration between the three aforementioned entities (CPI, SDI, GESDA) will contribute to leveraging Campus Biotech, situated nearby the Campus de la Paix and the Graduate Institute Geneva (IHEID) and forming the heart of International Geneva, as a hub of info-nano-bio-cogno convergence and renewed science diplomacy.

Peter Brabeck-Letmathe,
Chairman of the Board of Directors of GESDA

About GESDA

Anticipating which frontier science and technologies are emerging and which global challenges these scientific breakthroughs may help tackle is a prerequisite to better serve humanity. Doing so is not obvious in our highly global, specialized and compartmentalized world as science and technology is going faster and faster. GESDA's purpose is to achieve this by bringing together from the onset different actors from science, society, diplomacy, governmental and intergovernmental organizations, industry and philanthropy.

GESDA's vision

"Use the future to build the present."

GESDA's mission statement

Reflecting GESDA's vision, the mission statement is based on three main activities:

- **Anticipate** (the possible use of cutting-edge science for inclusive development for all throughout the world, relying on effective scouting of what is "cooking in the labs" that can impact us positively and beneficently at 5, 10, and 25 years)
- **Accelerate** (the development of inclusive solutions to tackle the emerging challenges that people, society and the planet are facing, by mobilizing "creative coalitions")
- **Translate** (those solutions into sustainable projects to be implemented within the communities, with early contributions of various actors from different professional origins and mindsets).

GESDA's outcomes

They are intended to be threefold:

- **Help the world benefit faster** from the advances of science and technology (Universal Declaration of Human Rights)
- **Contribute to inclusive development** by reducing poverty and inequality and encouraging the development of emerging economies (UN 2030 Agenda)
- **Leverage the assets of Switzerland and International Geneva** in order to contribute to this effort.

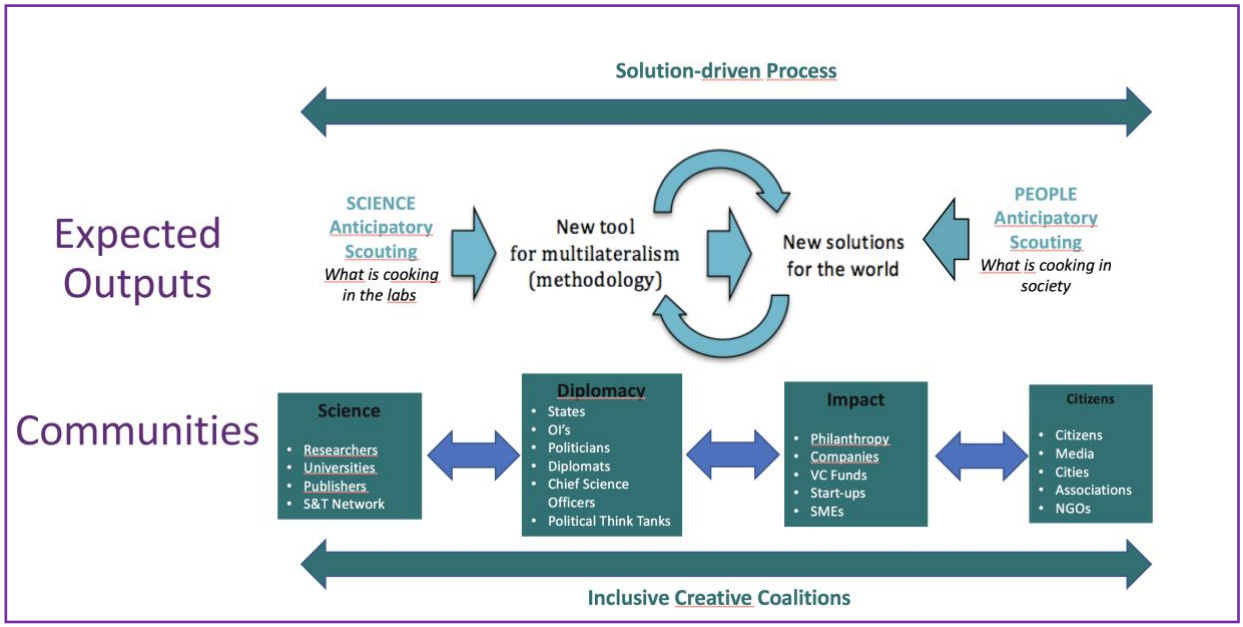
GESDA's three "fundamental questions"

Scientific frontier issues and the related emerging challenges will be analysed by GESDA through the following questions about the **people, society and the planet**:

1. **Who are we?**
   What does it mean to be human in the era of robots, gene editing and augmented reality?
2. **How will we be living together?**
   Which deployment of technology can help reduce inequality and foster inclusive development and well-being?
3. **How can we assure mankind's well-being with the sustainable health of our planet Earth?**
   How can we supply the world population with the necessary food and energy and regenerate our planet?

GESDA's four "thematic platforms"

GESDA focuses on four thematic platforms working as **"Situation rooms"** involving different communities with different mindsets: science, diplomacy (politicians, diplomats, policy experts), impact (philanthropists, investors, entrepreneurs), global community (citizens, artists, influencers, media, city mayors, local communities, etc.).



GESDA's initial **four platforms** launched on 20 June 2020 address **four science frontier issues**:

1. **Quantum revolution and advanced artificial intelligence** (next generation digitalisation, e.g. the challenges of privacy or superintelligence)
2. **Augmented Human** (e.g. the challenges of germline gene-editing or neuro-enhancement)
3. **Eco-regeneration and geo-engineering** (e.g. the challenges of using synthetic biology to address environmental problems, decarbonisation or agriculture needs, or the efficient use of global resources)
4. **Science and Diplomacy** (challenges such as conflict modelling, forecasting and prevention, access to science as a human right and the future of international law to develop a multilateralism adapted to the 21th century geopolitical evolutions).

GESDA's status

GESDA is a **Foundation** founded commonly by the Swiss Confederation and the Canton of Geneva with the City of Geneva. It is supported by other Foundations.

GESDA's organization

GESDA is organized around:

- A 9-member Foundation Board of Directors
- A Committee of the Board of Directors
- Specific Commissions, including (as of July 2020):
  - an Academic Forum
  - a Diplomacy Forum
  - an Impact Fund
- An Executive Team of seven Partners in charge of the design and operationalization of the GESDA Roadmap and providing the necessary support to the above-mentioned organs.

The members of **GESDA Foundation Board of Directors** are:

- **Peter Brabeck-Letmathe**, Chairman appointed by the Federal Council (Chairman Emeritus Nestlé SA, Vice-Chairman of the World Economic Forum WEF)
- **Patrick Aebischer**, Vice-President appointed by the Federal Council, former EPFL President, Partner in VC Fund ND Capital 3 in Lausanne and Silicon Valley, California
- **Matthias Egger**, President of the National Research Council of the Swiss National Science Foundation and of the Swiss Task Force on COVID-19; Representative of the Swiss Government
- **Micheline Calmy-Rey**, former Swiss Minister of Foreign Affairs (2002-2012) and President of the Swiss Confederation, Appointed Professor at the University of Geneva; Representative of the Canton of Geneva
- **Samantha Besson**, Professor of International Institutions' Law at the Collège de France in Paris and at the University of Fribourg
- **Sir Jeremy Farrar**, Director of the Wellcome Trust, London
- **Fabiola Gianotti**, Director General of CERN, Geneva
- **Mamokghethi Phakeng**, Vice Chancellor University Cape Town
- **Chorh Chuan Tan**, Chief Health Scientist of the Republic of Singapore, former President of National University of Singapore and of the Global University Leaders Forum of the WEF.

The Chairs of GESDA Fora are:

- Academic Forum (co-chairs): **Joël Mesot** (President ETHZ) and **Martin Vetterli** (President EPFL)
- Diplomacy Forum: **Michael Møller** (Former Director General of the United Nations Office at Geneva UNOG)

The Partners constituting GESDA **Executive Team** are:

- **Stéphane Decoutère**, Secretary General
- **Gérard Escher**, Senior Advisor to the Board of Directors
- **Marieke Hood**, Corporate Affairs
- **Martin Müller**, Science Lab
- **Daria Robinson**, Diplomacy Lab
- **Sandro Giuliani**, Impact Lab
- **Olivier Dessibourg**, Science Communication & Outreach Lab

For further information, please contact:
Olivier Dessibourg
Science communication and outreach Executive director, GESDA
Olivier.Dessibourg@gesda.global; Phone: +41 78 712 88 68

Please also visit GESDA's website to read the inaugural Press release from 9 December 2019:

- Website: www.gesda.gobal
- Inaugural Press release (9 December 2019)