



Geneva Science and Diplomacy Anticipator (GESDA)

**Special Briefing
United Nations Office at Geneva**

Tuesday February 1st, 2022

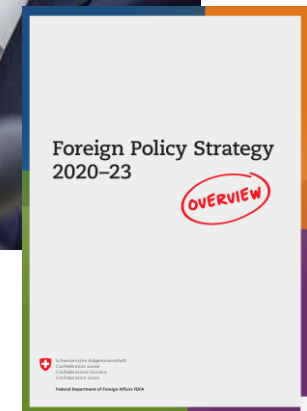
Introduction

Michael Møller

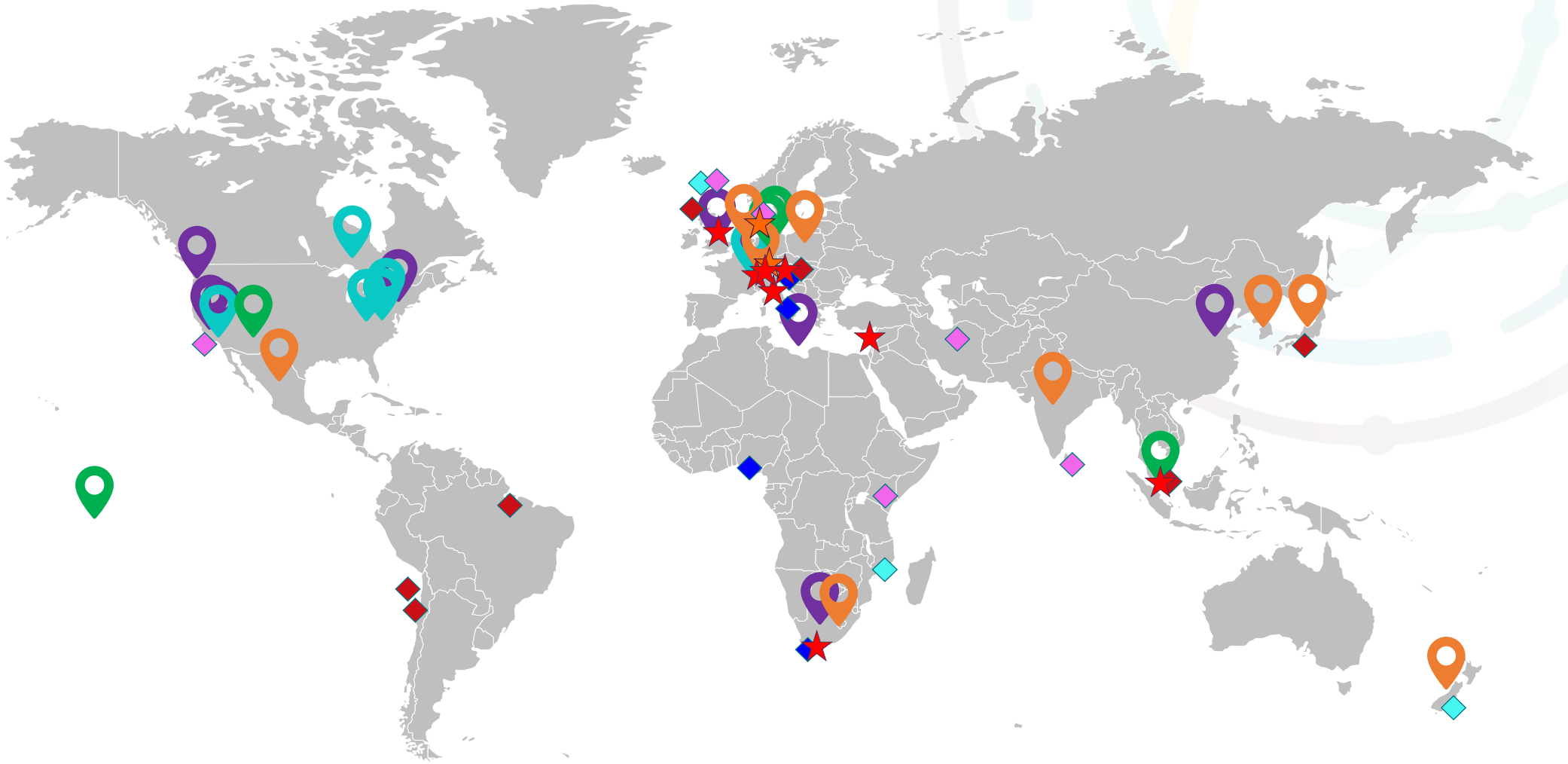
*Chairman
Diplomacy Forum*

*Geneva Science and Diplomacy Anticipator
(GESDA)*

A Swiss-led,
Geneva-based,
global initiative



A Global mission



GESDA GLOBAL COMMUNITY
BoD, Academic Forum, Diplomacy Forum



Scientific Frontier Issues	Emerging topics
Quantum revolution & advanced Artificial Intelligence	<ul style="list-style-type: none"> • Future of machine learning and artificial intelligence • Future quantum technologies
Human augmentation	<ul style="list-style-type: none"> • Memory enhancement and cognitive engineering • The future of human genome editing
Eco-regeneration and geo-engineering	<ul style="list-style-type: none"> • Decarbonising the global economy and society Eco-Planetary health and global resources • Socio-ecological foresight - Integrated Digital Ecosystem Avatars
Science and Diplomacy	<ul style="list-style-type: none"> • Social enhancement • An economic compass for a resilient, sustainable and inclusive local – global - multilateral world • Negotiation Engineering and Computational Diplomacy • Science Diplomacy • Ethics of Anticipation

... putting
People, Society
and Planet at
the center

by addressing 3 fundamental questions:

WHO ARE WE?

What does it mean to be human at the age of robots, gene editing and augmented reality?

HOW ARE WE GOING TO LIVE TOGETHER?

Which technologies can be deployed to help reduce inequality and foster inclusive development and well-being?

HOW CAN WE ENSURE THE WELL-BEING OF HUMANKIND AND THE SUSTAINABLE HEALTH OF OUR PLANET?

How can we supply the world population with the necessary food and energy while regenerating our planet?

Guided by...



- ❖ Ethics
- ❖ Equity
- ❖ Governance
- ❖ Future of multilateralism

Article 27 al. 1 of the **Universal Declaration of Human Rights** : « *Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits* ».



2030 Agenda for Sustainable Development : «*Leave no one behind*»



- ✓ Help the **world benefit faster** from the advances of science and technology
- ✓ Contribute to **inclusive development** by reducing poverty and inequality, and encouraging the development of emerging economies (UN 2030 Agenda)
- ✓ Leverage **Switzerland and Geneva's** centrality in this effort as the operational hub of the international system

Leadership

The nine members of the Foundation Board of Directors are currently:



Peter Brabeck-Letmathe,
Chairman, appointed by the Swiss Federal Council. Vice Chairman of the Board of Trustees of the World Economic Forum (WEF); Chairman Emeritus of Nestlé SA.



Patrick Aebischer,
Vice Chairman, appointed by the Swiss Federal Council. Professor of Neuroscience; former President of Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.



Samantha Besson,
Professor at Collège de France in Paris (holder of the Chair in International Law of Institutions) and Professor of Public International Law and European Law at the University of Fribourg, Switzerland.



Micheline Calmy-Rey,
Professor at the Global Studies Institute (GSI) at the University of Geneva, Switzerland. Former President of the Swiss Confederation and former Swiss Minister of Foreign Affairs. Designated by the Geneva Authorities.



Matthias Egger,
President of the Research Council of the Swiss National Research Foundation, and Professor of Epidemiology and Public Health at the University of Bern, Switzerland. Designated by the Swiss Minister of Foreign Affairs.



Sir Jeremy Farrar,
Director of the Wellcome Trust, London, UK.



Fabiola Gianotti,
Director General of CERN (European Organization for Nuclear Research), Geneva, and Professor of Particle Physics.



Mamokghethi Phakeng,
Vice Chancellor (President) of the University of Cape Town, South Africa and Professor of Mathematics Education.



Chorh Chuan Tan,
Singapore's Chief Health Scientist. Former President of the National University of Singapore (NUS) and of the World Economic Forum's Global University Leaders Forum (GULF).

The Chairs of the commissions are:

Academic Forum



Joël Mesot, Co-Chair,
President of the Swiss Federal Institute of Technology in Zurich (ETHZ), Switzerland; Professor of Physics (Dynamics of Strongly Correlated Materials and Nuclear Magnetic Resonance).



Martin Vetterli, Co-Chair,
President of Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. Professor of Electrical Engineering and Computer Science.

Diplomacy Forum



Michael Møller, Chair,
Former Director General of the UN Office in Geneva and former Under-Secretary-General of the United Nations.

The Executive Team is:



Stéphane Decoutère,
Secretary General (since 1 June 2019)



Martin Müller,
Executive Director of the Academic Forum (since 1 September 2019)



Sandro Giuliani,
Executive Director of the Impact Forum/Fund (since 1 April 2020)



Olivier Dessibourg,
Executive Director of Science Communication and Outreach (since 15 May 2020)



Gérard Escher,
Senior Advisor to the Board of Directors (since 1 January 2020)



Daria Robinson,
Executive Director of the Diplomacy Forum (since 1 November 2019)



Marieke Hood,
Executive Director of Corporate Affairs (since 1 May 2020)



Laurianne Trimoulla,
Office and Communications Manager (since 15 August 2020)

Switzerland and GESDA

Alexandre Fasel

*Ambassador
Special Representative for Science
Diplomacy*

*Federal Department of Foreign Affairs
(FDFA)
Switzerland*

GESDA's activities

Daria Robinson

*Executive Director
Diplomacy Forum*

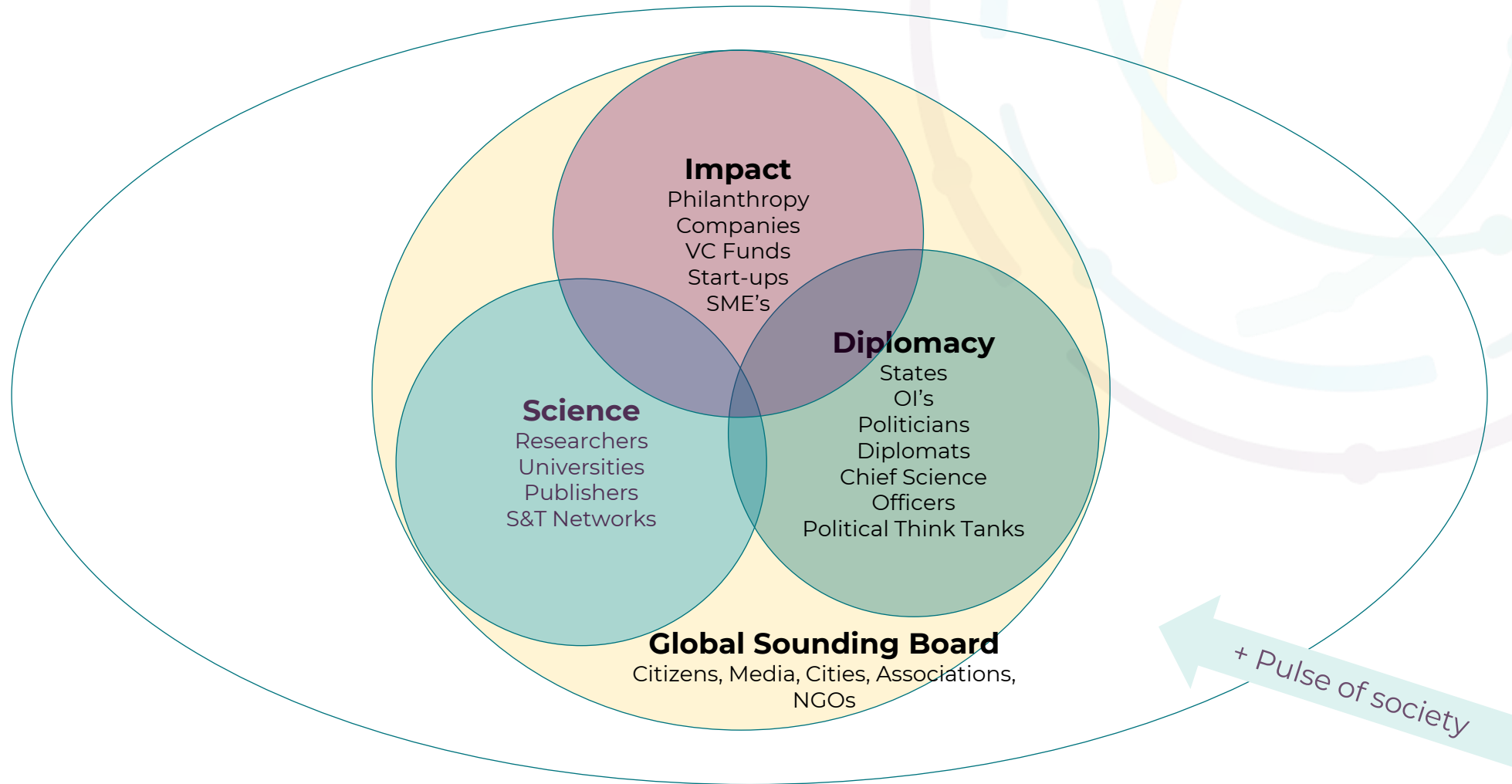
*Geneva Science and Diplomacy Anticipator
(GESDA)*

What we do



GESDA aims at **anticipating** what will be coming out of the labs in 5, 10, 25 years, and, based on these forthcoming science advances, **accelerate** the development of tools for humanity by jointly building concrete solutions to address our global challenges.

GESDA is a
think tank
and a
do tank



International Organizations involved



Introductory Video (3:46 min)



The GESDA 2021 Science Breakthrough Radar[®]

Geneva Science and Diplomacy Anticipator's
Annual Report on Science Trends at 5, 10 and 25 years

In partnership with:  **Fondation pour Genève**
45 ans au service de la Genève internationale

Debates

Why does it matter?



Trends

What is cooking in the labs?



Opportunities

So... what can we do about it?

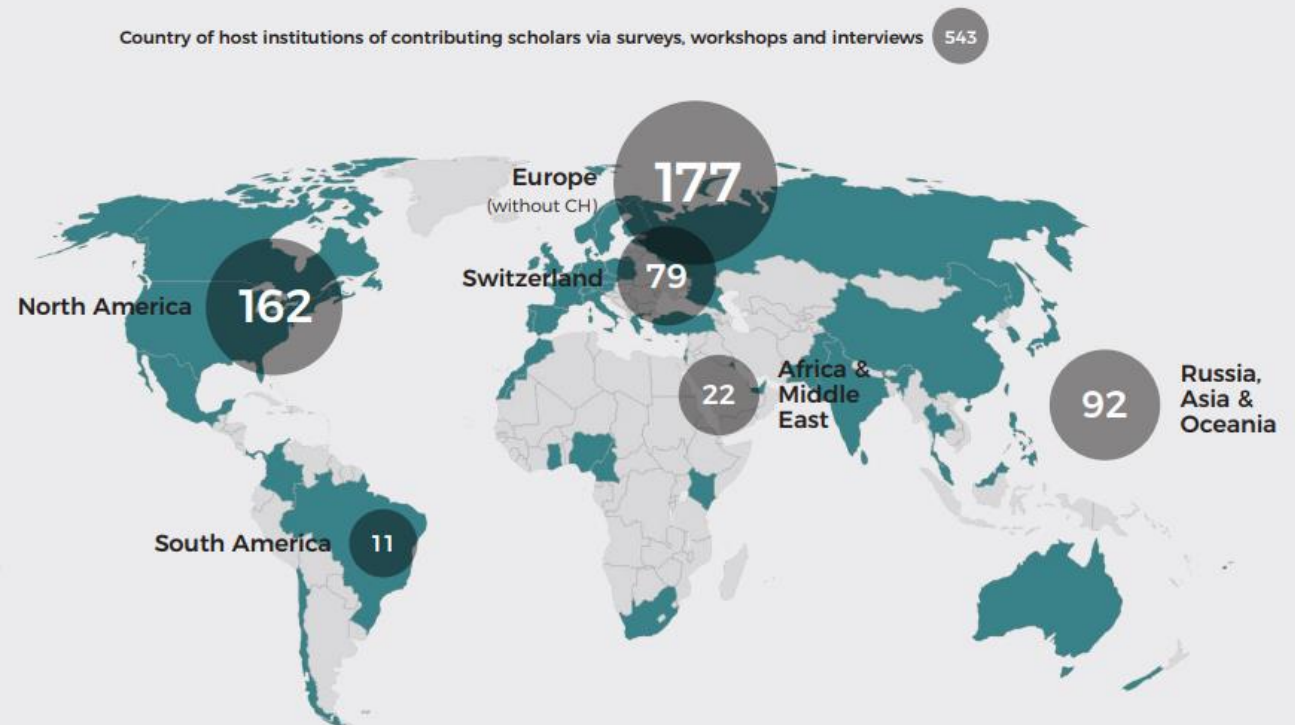


Demo by clicking

2021 GESDA Science Breakthrough Radar

some numbers

- **3** fundamental questions debated by 8 scholars from social sciences, the humanities and the arts.
- **4** scientific domains, **24** emerging issues and **216** breakthroughs at **5, 10** and **25** years.
- **543** scientists from 52 countries contributed through interviews, workshops and surveys.
- **34 workshops** to collect the perspectives from scientists from all over the world.



updated & expanded constantly

2022 GESDA Science Breakthrough Radar



GESDA 2022 Science Breakthrough Radar – Trends section	
Philosophical compass on the existential questions for humanity's future	
Compass on the evolution of science	
Geopolitical compass on trends in international relations	
Essays on Anticipatory Science Diplomacy, international law	
Economic compass on a future resilient and sustainable economy	
Knowledge Foundations	Quantum Revolution & Advanced AI
Emerging topics in the 2022 edition	
	1.1 Advanced AI 1.2 Quantum Technology 1.3 Brain-inspired Computing 1.4 Biological Computation



Radar 2022 - Long list of potential topics to consider (II/II)



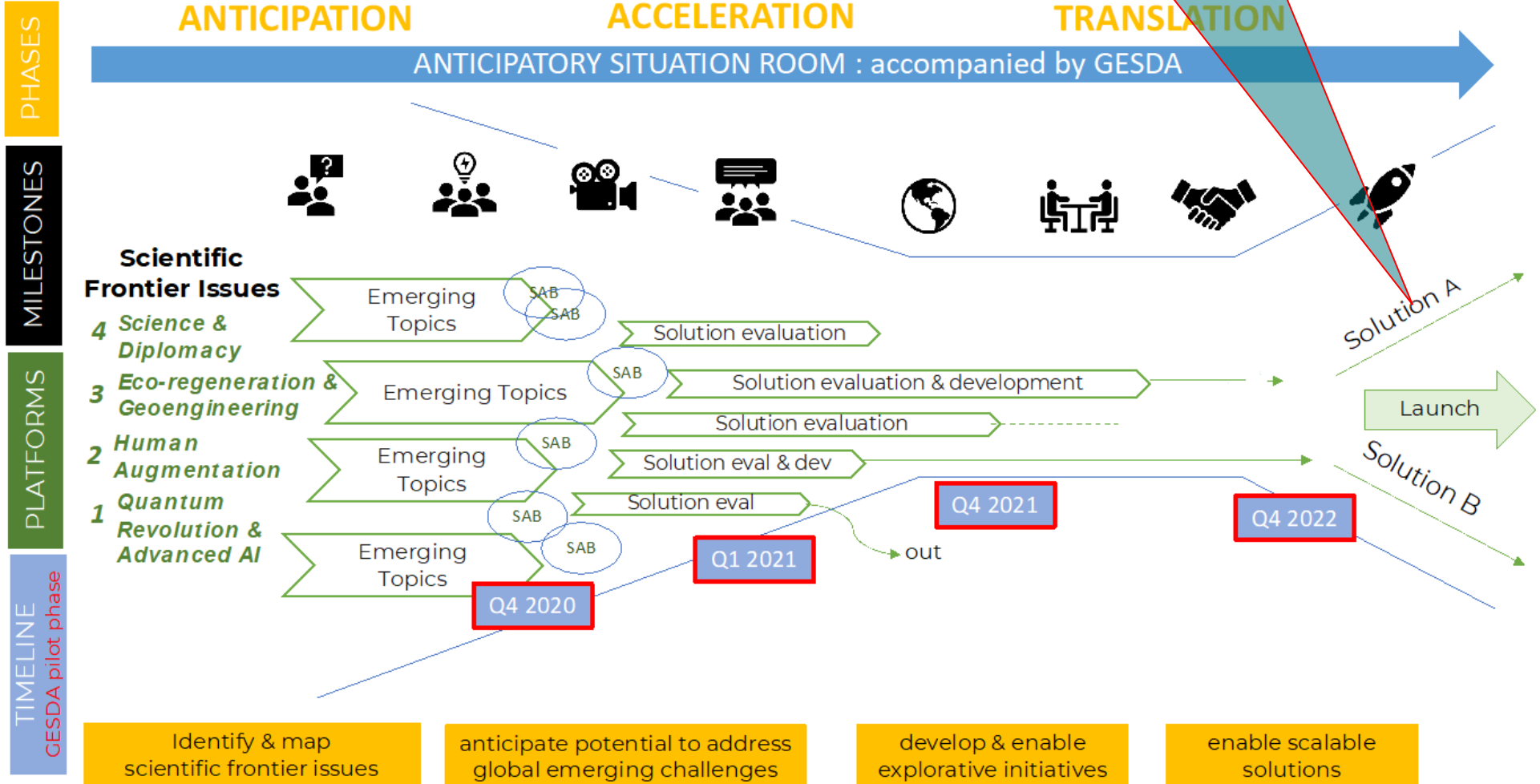
GESDA 2022 Science Breakthrough Radar – Trends section				
Knowledge Foundations	Quantum Revolution & Advanced AI	Human Augmentation	Eco-Regeneration & Geo-Engineering	Science and Diplomacy
Invited contributions in the 2021 edition that will be extended into full briefs				
0.1 Rationale, uncertainty and ethics of anticipation*			3.6 Solar Radiation Management	4.6 Digitalization of Conflicts
0.2 The Origins of Life			3.7 One Health* (incl. global resources, global precision health, ecosystem engineering)	4.7 Futures Literacy
New invited contributions to consider for the 2022 edition, potentially extended into full briefs				
0.3 Frontiers in mathematics	1.5 Augmented and virtual reality	2.5 Organoids (incl. synthetic embryology, chimeres, brainoids, 3D bio-printing)	3.8 Polar Resources	4.8 Financial Models for Multilateralism
0.4 Synthetic Biology	1.6 Digital humanities and arts	2.6 Bots (incl. xenobots, nanobots, 'food' bots...)	3.9 Coral and Ocean Renewal	4.9 Future of Globalization, the Nation State and Multilateralism
0.5 Evolutionary anthropology	1.7 Trust and Media			4.10 Demographics & Migration
0.6 Future of humans as social beings				4.11 Democracy-affirming technologies
0.7 Science of emotions and values				4.12 Cities

Now what?

GESDA Solutions are tools – **knowledge- governance- or innovation-driven** - allowing to unfold the best possible positive impact of scientific emerging topics **for the benefit of people, society and planet.**











Process funnel



- Academic Moderators kickoff
- Breakthrough Radar
- Science & Diplomacy Scenario Building
- Anticipatory Task Forces
- GESDA Summit
- Creative Coalitions
- High-level agreement
- Launch Solution(s)

GESDA Solutions Ideas (2021 status)



	Co-Chairs	Type of Solution			Anticipatory timeline	Sustainable Development Goals																				
		Governance	Knowledge	Innovation																						
 Co-development, access & use of advanced AI	Rüdiger L. Urbanke Daren Tang	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 Open Quantum Initiative	Matthias Troyer Anousheh Ansari	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	25 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 The evolution of neuro rights	Olaf Blanke Lidia Brito	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 Accelerating Decarbonization - A Moonshot	Gerald Haug Jim Hagemann Snabe	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 Future Materials for Decarbonization	Wendy L. Queen Sergio Mujica	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 Navigate the 21st Century with Digital Empowerment on all Levels and Scales	Dirk Helbing Sean Cleary	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	25 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 Geneva Coalition of Anticipatory Science & Diplomacy	Marga Gual Soler Martin Chungong	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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 Science: Norms and Principles	Samira Kiani Peter Maurer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10 years	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td></td><td></td><td></td><td></td></tr> </table>	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17				
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	Academic Diplomacy																									

Last updated: 26 January 22

The Solutions' journeys

Anticipation

Q4 2020

Platforms

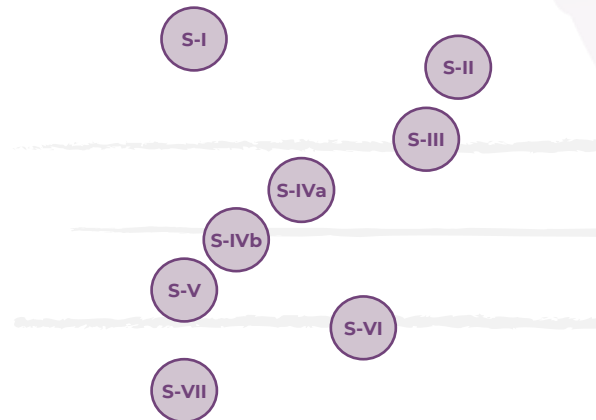
1. Quantum Revolution & Advanced AI
2. Human Augmentation
3. Eco-regeneration & Geoengineering
4. Science & Diplomacy



Acceleration

Q4 2021

We are here today

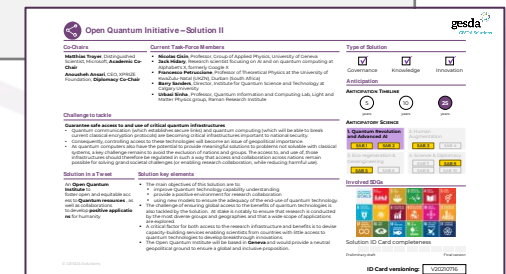


Translation

Q4 2022

GESDA supports the Task-Forces with a dedicated team to help them **achieve concrete results** in an efficient way.

The progress of the evaluation is recorded in **ID Cards**.



- **GESDA Fora** have **identified** some **emerging topics**, which were formalized into 10 **Scientific Anticipatory Briefs (SABs)**.
- The **SABs** are at the basis of the **GESDA Solutions**.

- For each proposed Solution, **representatives** of the **GESDA Fora** were invited to **lead their framing and shaping**.
- These champions, supported by **subject-matter experts** and a dedicated group of other **specialists** compose the **“Anticipatory Task-Force”**. They are defining the **scope** and **evaluating** each proposed Solution.

- After their evaluation, the Solutions that have the most **potential** for creating **benefits for people, society and the planet** move to the **Translation phase**.
- **Another dedicated group** (Creative Coalition) will develop the needed **“business model”** to ensure implementation and sustainability of the Solution.

Opening up the Situation Room

Summit 2021 - Proceedings



Yearly Summit

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Acknowledgments

Executive Summary

The Summit in Figures and Numbers

Speakers, Moderators and Panelists

Press conference and press review

Opening plenary Part-1

Welcome Address: Peter Brabeck Letmathe

Welcome Address: Ignazio Cassis

Welcome Address: Nathalie Fontane

Welcome Address: Yves Flückiger

Welcome Address: Martin Hirayama

Welcome Address: Tatiana Valovaya

GESDA's 2021 Vision "Using the Future to Build the Present"

GESDA's 2021 Flagship product: the Science Breakthrough Radar

Closing Address: Marc Pictet

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Proceedings of the
**2021 Geneva
Science and
Diplomacy
Anticipation
Summit**

See
GESDA
YouTube
Channel

What to expect in 2022

The GESDA 2022 Science Breakthrough Radar®



The evolution of neuro rights



Accelerating Decarbonization



Geneva Coalition of Anticipatory Science & Diplomacy



Open Quantum Initiative

XPRIZE & Geneva Science and Diplomacy Anticipator launch partnership to design a quantum computing competition and establish European headquarters

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The
Geneva Science & Diplomacy Anticipation Summit
Using the future to build the present!
by gesda
October 2022



Science: Norms and Principles - Court of Science



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