



ACTIVITY REPORT
2021/2022





SCAI brings together a strategic range of modern artificial intelligence fields. Its ambition is to contribute significantly to the excellence of interdisciplinary research and education in artificial intelligence, by promoting exchanges between academic researchers, partner researchers, students and industrial partners.



The Sorbonne Center for Artificial Intelligence (SCAI) is a pillar of interdisciplinary excellence, illuminating the path to a brighter future through cutting-edge research and training. Established in 2019, this dynamic institute brings together the brightest minds from diverse fields, including Arts, Humanities, Science, Engineering, and Medicine, to drive advancements in the field of artificial intelligence.

In the year 2021-2022, SCAI blazed a trail of achievement, launching numerous pioneering research and training projects that have propelled the center to the forefront of the regional, national, and international AI community. This unwavering dedication to fulfilling its mission of supporting Sorbonne University's strategic plan has enabled SCAI to become a vital force in driving forward the French government's efforts to accelerate its strategy in AI in the coming years.

As the AI landscape continues to evolve at an unprecedented pace, SCAI is poised to play a central role in shaping the future. With its unparalleled combination of intellectual firepower and interdisciplinary collaboration, SCAI is a beacon of inspiration, leading the way towards a more intelligent tomorrow.

Nathalie Drach-Temam, *President of Sorbonne University*

2021-2022 - Key Figures

150

researchers working
in the field of AI

3

key projects:
SOUND.AI
AI4IDF
SORBONNE.AI

10

PhD grants funded
by SCAI in 2022

16

collaborators
at SCAI Paris
and Abu Dhabi

20K+

visitors to the SCAI website

80+

events
organized this year

20+

laboratories

1

GPU cluster

1 regional project: DIM AI4IDF

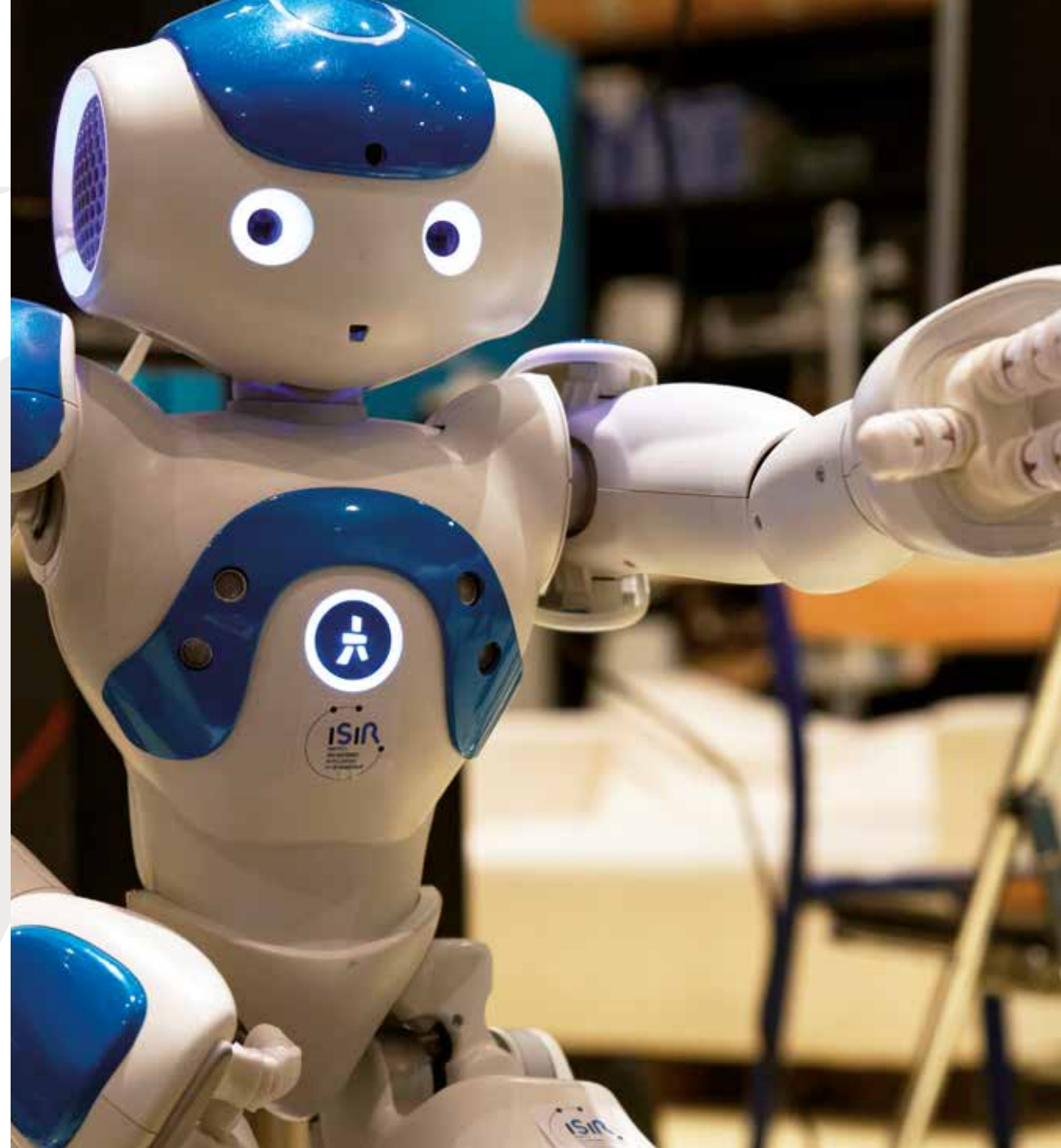
THE FOUR MAIN AI INSTITUTES IN ÎLE-DE-FRANCE

- > DATAIA
- > HI! PARIS
- > PRAIRIE
- > SCAI

have joined forces within the Île-de-France DIM program "AI4IDF": Human-centered artificial intelligence.

It aims to structure and animate the community, and offer industrial and international partners a unified vision of the strengths in AI in our region.

Find out more: <https://scai.sorbonne-universite.fr/public/projects>



Doctoral program in AI

SCAI is managing a doctoral program within the Sorbonne University Alliance.

The program selects candidates and projects within the framework of the institute's scientific policy.

To this end, it benefits from **strong support from Sorbonne University's Faculty of Science and Engineering, Inria, the MNHN, the UTC, and the Labex SMART**, all of which have financed or co-financed certain projects.

The selection of candidates is made in two stages, with a double evaluation of the applications received, followed by an interview with the applicants.

4

calls organized

48

PhD candidates selected since 2019

14

doctoral schools involved



2022 PHD RESEARCH TOPICS

GraphologIA : Acting on mega-graphs of data in machine learning dataflows

Are deep CNNs faithful models of the visual system?

Detection and identification of elements of interest in microscopic images of blood smears

The use of social robots in healthcare: what are the ethical issues?

Online boosting

Speeding-up quantum chemistry: Fast evaluation of two-electron integrals with machine learning

Deep learning for the prediction of the effects of mutations in proteins and protein-protein interactions

Inferring the history of human populations from polymorphism data of ancient and modern genomes by approximate bayesian computation and machine learning methods

Machine learning experimental and modelling approaches for exotic phases of matter (MARGARET)

Fighting high dimensionality in bayesian optimization for applications in mechanical design

CHANGING SOCIETIES, LANGUAGES AND CULTURES



A GLOBAL APPROACH TO HEALTH



RESOURCES FOR A SUSTAINABLE PLANET



SOUND•AI
SORBONNE UNIVERSITY FOR A NEW
DEAL ON ARTIFICIAL INTELLIGENCE



Co-funded by
the European Union

The **MSCA COFUND SOUND.AI** Program aims to provide excellence in training, mobility and career development for doctoral students in the field of artificial intelligence. It focuses on using AI to address societal transitions, as well as improving healthcare through integrative care. It also addresses the need for progress in climate science and ecological understanding in order to address important issues related to the sustainability of the planet.

Find out more: <https://soundai.sorbonne-universite.fr>


Partnerships

40+
industrial & institutional partners

1 SPEED DATING EVENT BETWEEN 100 MASTER STUDENTS LOOKING FOR AN INTERNSHIP & 13 COMPANIES



2 INDUSTRIAL RESEARCH CHAIRS DEVELOPED ON THE SORBONNE ABU DHABI AND PARIS CAMPUSES



TotalEnergies

SCAI ABU DHABI & TOTALENERGIES
With P. Gallinari (ISIR) & A. Hadid (SCAI-SUAD), in collaboration with Total-Energies.

The project's goal is to radically enhance the simulation of flow through porous media. This will enable better forecasting capabilities, which will increase oil recovery and production.

Two PhD candidates are working on modeling physical dynamics for the Chair: Lena Sasal is focusing on the use of transformers while Zakaria Elabid is exploring informed deep learning.

- **Abdenour HADID** is a dynamic and experienced researcher with a demonstrated history of working in research at national, EU and international levels for more than 30 years. He has a strong background and interest in artificial intelligence, computer vision, HCI, deep learning, biometrics and security, personalized healthcare, and the Internet of things.



SCAI ABU DHABI & THALES
With A. El Fallah Seghrouchni (LIP6) & R. Abu Zitar (SCAI-SUAD), in collaboration with Thales, Aveillant UK and Cambridge University.

This joint program is developing advanced expertise in the field of hybrid AI as applied to sensors and their use within the design and implementation of drone detection and tracking in complex environments. To conduct this research, SCAI is sponsoring 2 PhD candidates: Maxence De Rouchechouart & Esra Al Hadrhrami, and 10 six-month internships. The project will utilize Intelligent agents and multiagent systems, machine learning and cognitive radars.

- **Raed ABU ZITAR**, Senior Research Scientist, Thales Endowed Chair of Excellence, Sorbonne Center of Artificial Intelligence, SCAI – Sorbonne University, Abu Dhabi, UAE. His specialisation is in machine learning and intelligent systems. Current collaborations are with Thales, Aveillant, Khalifa University-UAE and MBZUAI-UAE in the fields of object tracking and recognition.

Find out more: <https://scai.sorbonne-universite.fr/public/projects>

International Partnerships



UNIVERSITÉ LAVAL

SCAI has been collaborating with two entities at Université Laval: The International Observatory on the Social Impacts of AI and Digital Technology (OBVIA) and the Institute of Intelligence and Data (IID).

ACTIVITIES WITH SCAI

- Aug 2021: the first virtual French-Canadian summer school on responsible AI.
- Dec 2021: Conference on “The regulation of AI in Europe”, associating professors from both universities.



SÈMÈ CITY, BENIN

International City of Innovation and Knowledge, Sèmè City aims to provide a stimulating framework for meeting the skills needed in African markets through training, research and entrepreneurship.

ACTIVITIES WITH SCAI

The training course in artificial intelligence at Sèmè City is a highly certified course that is aimed at employees in the financial sector. It runs from October 2022 to April 2023 and includes 80 hours of classes, tutored projects and personal work. The course is taught in a hybrid format, combining online and in-person components, and includes practical projects. Assessment is based on continuous evaluation of knowledge in each module and the completion of a project presentation before a Sorbonne University jury, which will take place during a three-day trip to Paris at the end of the course.



THE 4EU+ ALLIANCE

The 4EU+ European University Alliance brings together seven comprehensive, research-intensive, public universities from four regions of Europe to strengthen the European vision of deepened cooperation and mutual enrichment by developing a new quality of cooperation in teaching, education, research and administration, leading to the creation of a truly integrated European University System.

ACTIVITIES WITH SCAI

- Promotion of joint activities in digitisation, modelling and transformation.
- Coordination of the Thinking AI project: A series of online lessons focusing on the social impact of AI, launched in April 2022 via the SCAI Education Moodle Platform.
- Ongoing development of a joint master's program in AI at the European level.

Community

COMPUTING POWER FOR THE COMMUNITY

Modern artificial intelligence requires computing power to test deep-learning algorithms and deploy them over large amounts of data. The GPU cluster, dedicated to research and teaching, has served 91 users since January 1, 2022 (81 SU, 10 SUAD), for a total of 20,282 calculations launched.



TECHNICAL DETAILS:
2 AMD Rome 7742 CPUs
for a total of 256 cores,
System memory 1 TB,
Storage 15 TB (4x 3.84 TB),
8 NVIDIA
A100-SXM4-40GB cards

SCIENTIFIC EVENTS

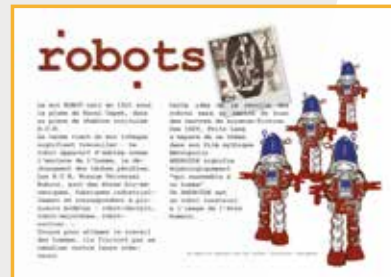
In 2022, **SCAI** engaged with the community—in-person and online—through workshops, scientific days, doctoral conferences, symposia and international conferences. The center strives to offer everyone—researchers, students and the general public—quality activities on the topic of artificial intelligence.



Scientific outreach

NATIONAL SCIENCE FESTIVAL

AI Village in partnership with Inria and with the support of ISIR - Institute for Intelligent Systems and Robotics (CNRS, Sorbonne University). **More than 150 students from CP to CM1 classes** around the Thymio robot and the Apprentice Illustrator (computer vision). **Exhibition** entitled "Robots and mechanical bodies in Japanese animation", about the representation of robots and women, between women-objects and feminism.



ART AND SCIENCE

Recently chosen to join the Sorbonne University artist residency, Kaspar Ravel is a creator who enjoys using new technologies in the service of art. He will work at **SCAI** to offer a first exhibition of his work. He will collaborate with Ircam researchers on a project titled "Code Poem", which will develop a minimal AI code that transforms into a poetic format.

Artist

Kaspar Ravel in residence at Sorbonne University

"We can create stories that speak of the current world and find other narrative patterns through a scientific approach."



Education

SORBONNE.AI

SCAI supports the development of academic programs, including courses on AI, at Sorbonne University and abroad, in all scientific disciplines and at all levels.

INITIAL TRAINING

AT THE BACHELOR'S LEVEL - A minor in data science and AI

This transdisciplinary minor offers solid training in data science and AI to accompany any major in the bachelor's program. This minor course covers the three years of the bachelor's degree. It will include courses dedicated to the fundamentals in computer science and mathematics and the scientific issues related to data analysis.

AT THE MASTER'S LEVEL

The Faculty of Science and Engineering currently offers nine Master's programs in mathematics, computer science and robotics, which SCAI helps to promote and develop.

AT THE PHD LEVEL

SCAI is home to more than 100 PhD supervisors in AI, working in more than 20 laboratories, from statistics to social sciences.

This work has benefited from government support managed by the National Research Agency under the **France 2030 program** with the reference ANR-22-CMAS-0006.

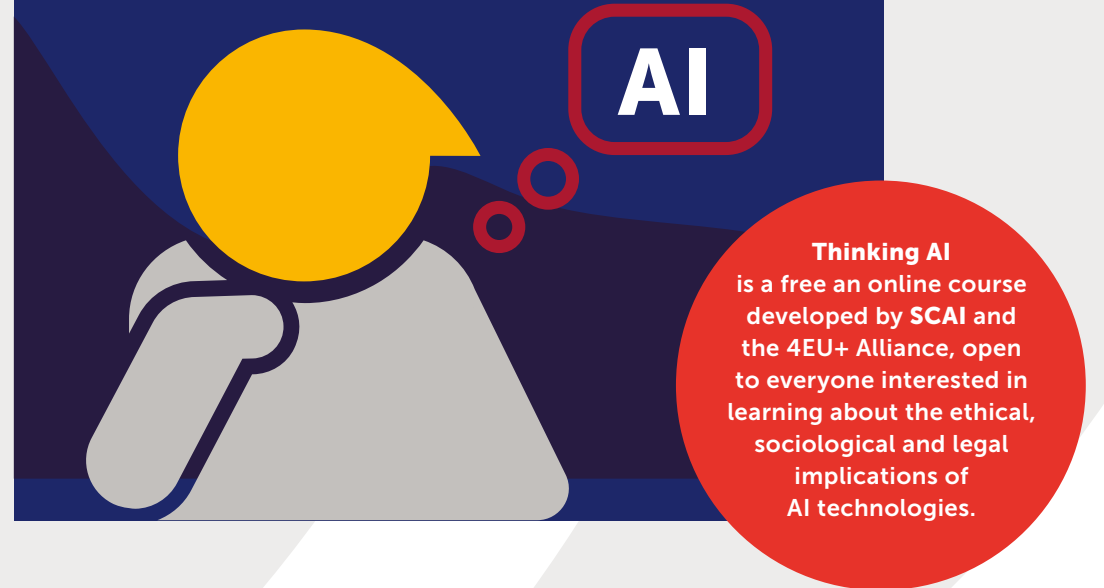


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CONTINUING EDUCATION

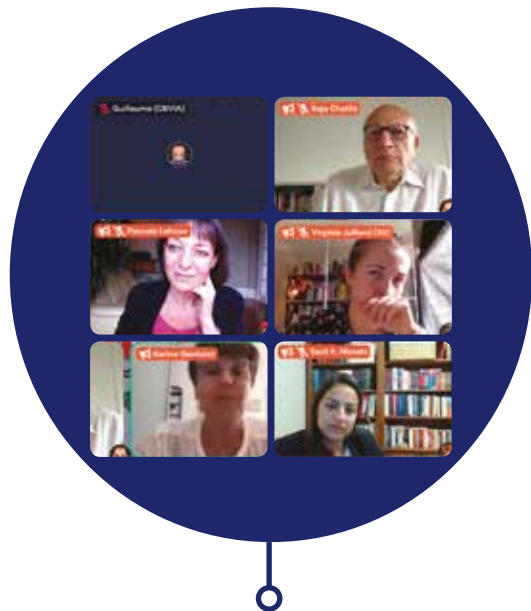
SCAI Education platform

Together, the Sorbonne University Alliance and the Open Classrooms website offer online modules, in English and French, for amateurs and professionals to understand artificial intelligence, and learn its different uses and methods by themselves. Participants will be able to acquire skills while obtaining ECTS credits.



Find out more: <https://scai-education.sorbonne-universite.fr>

4 Summer schools



FRENCH-CANADIAN SUMMER SCHOOL ON RESPONSIBLE AI

Virtual summer school on the theme of responsible AI, sustainable health and climate change.

Online, from August 30 to September 3, 2021



ADIA SUMMER CAMP ON DATA SCIENCE AND AI

In the framework of ADIA's Early Preparation Program for young UAE Nationals.

Abu Dhabi, from July 2 to 8, 2022



ARTIFICIAL INTELLIGENCE FOR BIOLOGISTS

Summer school organized for young researchers in biology and bioinformatics aiming to integrate the latest artificial intelligence techniques in their research.

Banyuls-sur-Mer, from July 25 to 29, 2022



ML4OCEANS SUMMER SCHOOL

Transdisciplinary school focusing on the use of artificial intelligence for environmental and climate issues, applied specifically to oceanography.

Paris, from August 29 to September 2, 2022

Contacts



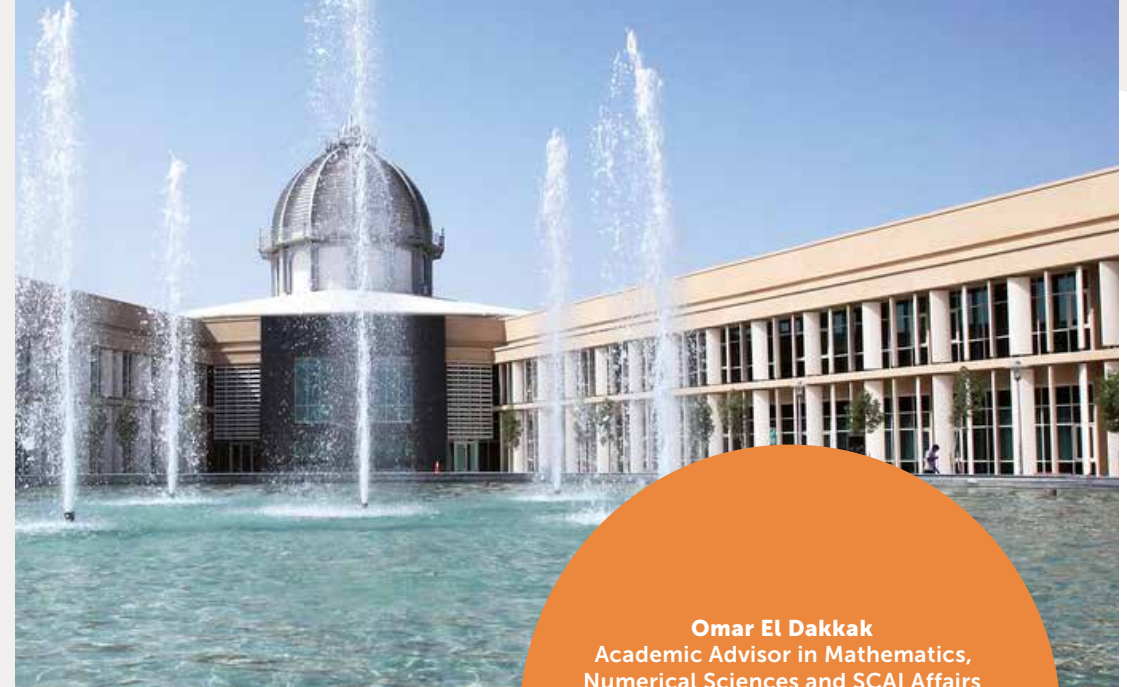
IN PARIS



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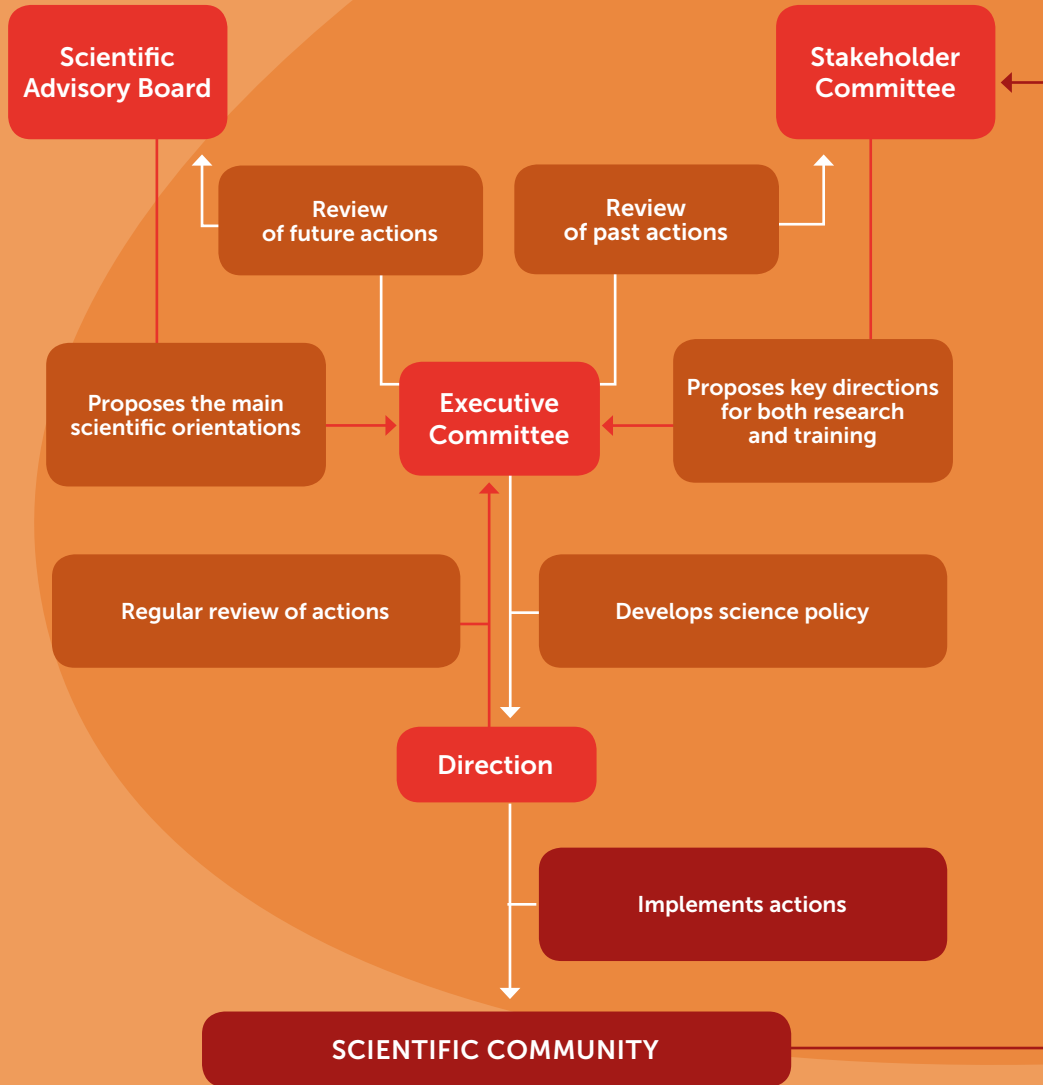
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Organization



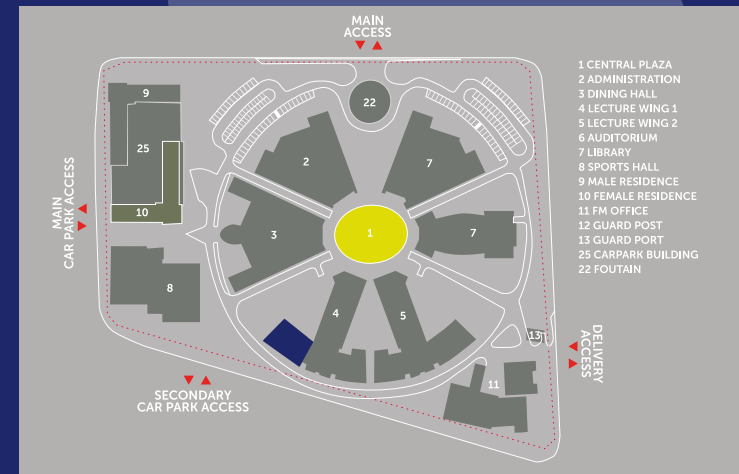
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