



**INSTITUT
POLYTECHNIQUE
DE PARIS**

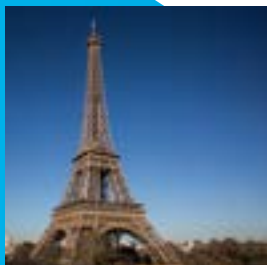


Annual Report

2021-2022

Shape a better future

ip-paris.fr



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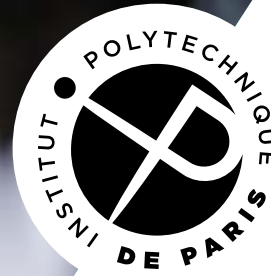
Institut Polytechnique de Paris (IP Paris) is a public higher education and research institution that brings together five major French engineering schools: **École Polytechnique, ENSTA Paris, ENSAE Paris, Télécom Paris and Télécom SudParis.**



Under the umbrella of the Institute, these schools combine two centuries of expertise in the pursuit of three major goals: excellence in education, cutting-edge research, and promotion of innovation.

8,000 students are enrolled at IP Paris and 1,000 faculty members work within its 30 laboratories. Building on the strength of its five founding institutions, Institut Polytechnique de Paris has established itself as a leading education and research institution in France and internationally





Dear readers,

For three years now, Institut Polytechnique de Paris has been growing, driven by the commitment of its five member schools. This second annual report for 2021-2022 and the progress accomplished demonstrate the consolidation of IP Paris as a world-class Institute of science and technology, despite a prolonged health crisis.

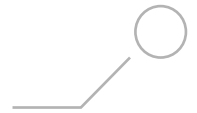
On one hand, the Institute has established itself in international rankings as one of the **world's leading institutions of higher education, research and innovation**, ranking in the top 50 of the QS WUR and 12th in the world in the QS Employability Ranking.

IP Paris is also proud to have a growing number of academic programs. We continue to attract talents from around the world, with an academic offer that now includes 12 PhD Track programs and 14 Master's degrees.

IP Paris research center has grown significantly and is gradually strengthening its attractiveness. Five interdisciplinary centers on societal issues have been launched in the span of three years. Our first center, Energy For Climate (E4C), has published its white paper, and Hi! PARIS has awarded its first fellowships, three-year grants to conduct large-scale research on AI for the economy and society, including four faculty members of IP Paris Schools. In 2021, the CIEDS was created with the French Ministry of Armed Forces and the AID (French Defense and Innovation Agency), with the ambition of ensuring the technological sovereignty of our country by

“In 3 years, IP Paris has established itself in the international rankings”

“Strengthening the Institute’s position as a major player in higher education, research and innovation”



developing better tools and technologies for the armed forces. Two other centers are already coming up in 2022.

Cooperation is always at the heart of our strategy. We therefore continue our actions to develop new partnerships, such as the one with Orange, with an objective to conduct joint projects for secure, responsible and inclusive technologies. Some other partnerships include, the one between our chair ‘Technology for Change’ and Accenture, and the creation of the Paris Saclay Cancer Cluster with Gustave Roussy, Sanofi, INSERM and the University of Paris Saclay, which brings together major private and public players in oncology to help our country achieve therapeutic sovereignty and establish itself as a leader in personalized cancer medicine.

IP Paris is gradually building a rich ecosystem of innovation and entrepreneurship. For the first time, we participated in Viva Technology in 2021, with 21 start-ups from our ecosystem. I am proud to see innovation within the Institute gaining recognition, while keeping its primary ambition of creating societal impact.

I am delighted to see that the Institute, united by a common interest for sciences, carry out projects that promote our outstanding research and its players.

On the occasion of the annual French ‘Fête de la science’, IP Paris brought together the laboratories

of its five schools for the first time, in partnership with Inria, welcoming more than 1000 visitors on its campus. In line with our ambition to raise the profile of IP Paris, we launched *Polytechnique Insights*, a bilingual digital magazine presenting original content on the latest scientific advances and technological innovations that are revolutionizing the economy and our societies.

To conclude, this year has seen great progress in the construction of IP Paris, by developing a 5-year strategy for the Institute, in line with that of each of its member schools. IP Paris’ first Contract of Objectives and Performance, signed with the French Ministry of Armed Forces and the Ministry of Economy, Finance and Recovery, sets eight strategic objectives to strengthen the Institute’s position as a major player in higher education, research and innovation.

Building on our successes in 2021, I am confident for the years to come. While reading this report, I hope that you will be equally convinced of the immense potential that the Institut Polytechnique de Paris offers.

Yours sincerely,

Eric LABAYE

*President of Institut Polytechnique de Paris,
and President of École Polytechnique*



IP Paris Strategy

COP 2022-2026: 8 objectives

On April 22, the French Minister of Economy, Finance and Recovery and the President of the Institut Polytechnique de Paris (IP Paris) signed IP Paris' first Contract of Objectives and Performance (COP) with the French Ministry of Armed Forces. This contract aims to consolidate the Institute's position as a major player in higher education, research and entrepreneurship on a global scale over the next ten years.



IP Paris' ambition is fully in line with the major investment plan for the future, "France 2030" announced by the French President in October 2021, to meet the challenges of building the France of tomorrow, so that the country can regain its environmental, industrial, technological, health and cultural independence and take a lead in these strategic sectors. This is a key opportunity to boost the transformation of IP Paris into a world-class Institute of science and technology, **The IP Paris' COP presents 8 strategic objectives for the upcoming 5 years:**

- 1. Strengthen the number of students and doctoral students**
by maintaining high standards and reputation of IP Paris and its schools in the field of science higher education. **IP Paris aims to exceed the 10,000 student mark by 2030, a growth representing 1,500 additional students.**
- 2. Bring IP Paris' research center to the highest level worldwide**
by developing an ambitious faculty policy, in particular by setting up **Tenure Track contracts** for promising young researchers, by strengthening the role of disciplinary departments and by continuing to **develop interdisciplinary centers on societal issues** as well as an ambitious faculty recruitment policy
- 3. Build strategic partnerships**
within the framework of **joint laboratories and interdisciplinary centers**, with the ONRs and other ESR institutions and companies.

- 4. Establish a key ecosystem for entrepreneurship and technological innovation**
 by developing the attractiveness of IP Paris to entrepreneurs and industrial groups, by encouraging the **emergence of ambitious student startups** aligned with market needs, by stimulating the **creation of Deeptech startups**, and by **strengthening IP Paris' incubator ecosystem**.
- 5. Bring our campus up to the highest international standards, exemplary in terms of sustainable development**
 to provide an **attractive experience for all students and staff** and to offer capacity in line with enrollment growth.
- 6. Develop an international, responsible and inclusive Institute of Science and Technology**
 to rank within the next 10 years among the world's top 40 universities and **build a socially responsible institute to meet current and future scientific, economic and social needs**.
- 7. Implement a shared HR policy offering attractive career prospects**
 gradually **harmonizing the respective policies of the member schools in terms of employment and skills management**.
- 8. Strengthen the rapid development of resources and secure their sustainability**
 by capitalizing on the strengths of the member-schools and building on their complementarities in order to reach the critical mass needed in certain disciplinary fields in terms of students and faculty members to change scale in terms of financing and ensuring a strong increase in own resources (sponsorship or calls for French or European projects) and with the implementation of, on an experimental basis for the duration of the COP, the principle of matching funds - €1 of exceptional SCSP for €3 of increased private own resources - **allowing an increase in recurrent public credits granted to IP Paris**.

[To learn more, read the full version of the COP 2022-2026 \(in French\)](#)



“In a changing and increasingly complex world, Institut Polytechnique de Paris has a key role in training tomorrow's global players, and in the development of research and innovation for society. The objectives and actions defined in the COP 2022-2026 will provide our students with the expertise that the job market needs, will enable the development of large-scale research projects in key areas such as sustainable energy, AI or even biomedical engineering, and will promote initiatives that create bridges between research and innovation.”

Eric LABAYE, President of Institut Polytechnique de Paris



3 PILLARS



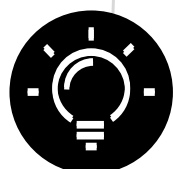
Education

Develop world-class academic programs and continue to attract more and more talent from around the world.



Research

Shared, collaborative cutting-edge research to contribute to scientific discoveries and major technological revolutions.



Innovation

To take up the major economic, societal and environmental challenges that lie ahead.



Education

AN ENRICHED OFFER TO TRAIN THE YOUNG GENERATIONS FOR TOMORROW'S CHALLENGES



Two new PhD Tracks to train engineers in quantum and advanced materials

IP Paris and its 5 schools have launched 2 new PhD tracks to train students in cutting edge technologies and thus meet the emerging needs of many industrial sectors. **Quantum technologies** have undergone spectacular development in recent years. The «Quantum Science and Technologies» program aims to provide students with a high-level education on the state of the art of quantum physics and quantum information processing with cutting-edge research in all these fields and its technological applications.

The PhD Track on «**Advanced Materials**» provides students with a fundamental understanding of the properties of matter and how macroscopic properties emerge from microscopic properties at the atomic or molecular scale, skills in

materials synthesis and solid state chemistry, mastery of experimental characterization techniques, advanced skills in materials modeling and simulation techniques, and first hand experience in materials development and device integration.



“In this program, the student is accompanied by a tutor who guides in the choice of courses and in the research part. I am lucky to have a great tutor! It is very interesting to work with Sébastien Corde, I like the projects he proposes, I appreciate his follow-up and his support. I am very grateful to him, he even helped me with the administrative procedures, which is not easy for a foreign student.”

Viktoria ZAKHAROVA,
PhD track student in Plasma Physics

INTERNATIONAL RECRUITMENT FOR THE ENGINEER PROGRAMS OF IP PARIS' SCHOOLS

The five Schools of Institut Polytechnique de Paris have welcomed international students recruited under one umbrella in each of their engineering cycles in September 2021. In 2020, the five schools of IP Paris have in fact launched a joint campaign to recruit international students. They have been selected from nine targeted countries, for which collaborative relationships have been developed with the best local institutions: China, Vietnam, Cambodia, Singapore, Russia, Brazil, Colombia, Argentina and Chile.



IP PARIS Education in figures

8 000 students

39 % international students

95 % of the students have a job
within 4 months after their graduation





Research



IP PARIS

Research in figures

30

laboratories

1 000

faculty members

74

chairs and sponsorships in higher education

1 000

PhD students

230

post-doctoral fellows

25 %

startups co-founded, managed or incubated in IP Paris' incubators are listed in the Next40 and the Frenchtech120

SCIENCE FOR ALL

The year 2021 has seen a return to near normalcy for the research laboratories, encouraging meetings to take new steps in the construction of Institut Polytechnique de Paris. These exchanges within and between communities have strengthened the strategic orientations of an integrated IP Paris research in several fields (materials, quantum, lasers, mathematics, etc.), and have also encouraged interdisciplinary exchanges. The Interdisciplinary Center for Defense and Security Studies (CIEDS) was created with the support of the Defense Innovation Agency of the French Ministry of Armed Forces, to conduct cutting-edge scientific research in areas of interest to the Defense. The Institute's researchers are also working on the creation of two new interdisciplinary centers related to health engineering as well as arts and science.

First election of IP Paris' heads of departments

Disciplinary research and education are organized into **10 disciplinary departments** that rely on the expertise of the founding schools of Institut Polytechnique de Paris. **The first elections of IP Paris' heads of departments took place on July 9, 2021.** The members by right of a department, permanent resident researchers and permanent faculty members who have a primary claim to it, forming the electoral college were able to participate in the election of the department head.



Second ISAB meeting

On April 7 and 8, 2021, the second meeting of the International Scientific Advisory Board (ISAB) of Institut Polytechnique de Paris was held. The ISAB is an advisory body responsible for providing recommendations and strategic orientations to IP Paris and includes 15 internationally recognized experts. Due to the health crisis, this meeting was held entirely remotely. The first day was dedicated to the presentation of the progress of the project and the follow-up of the ISAB recommendations in 2020. Several topics were discussed, including an education and research strategy. Regarding scientific facilities, the development of cooperation with Saclay, particularly in the field of quantum physics, was welcomed. In addition, the ISAB was informed of the progress made on the campus development plan.

The first part of the second day was devoted to prospective discussions on the challenges of education after the end of the health crisis and on the opportunities to be seized to be innovative, proactive and to adapt to a post-COVID-19 world and the second part was dedicated to discussions on HII Paris, laser strategy and continuing education.

The ISAB report highlighted the strengths of IP Paris and the tremendous progress already made. ISAB's main recommendations focused on strengthening the integration of the governance structure, increasing the budget base by 3-5% per year until 2030 and the recruitment process to attract young academic talent. Other discussions focused on the development of the Graduate School and the positioning of the PhD program, as well as on the development of the Campus and the financing of associated investments.

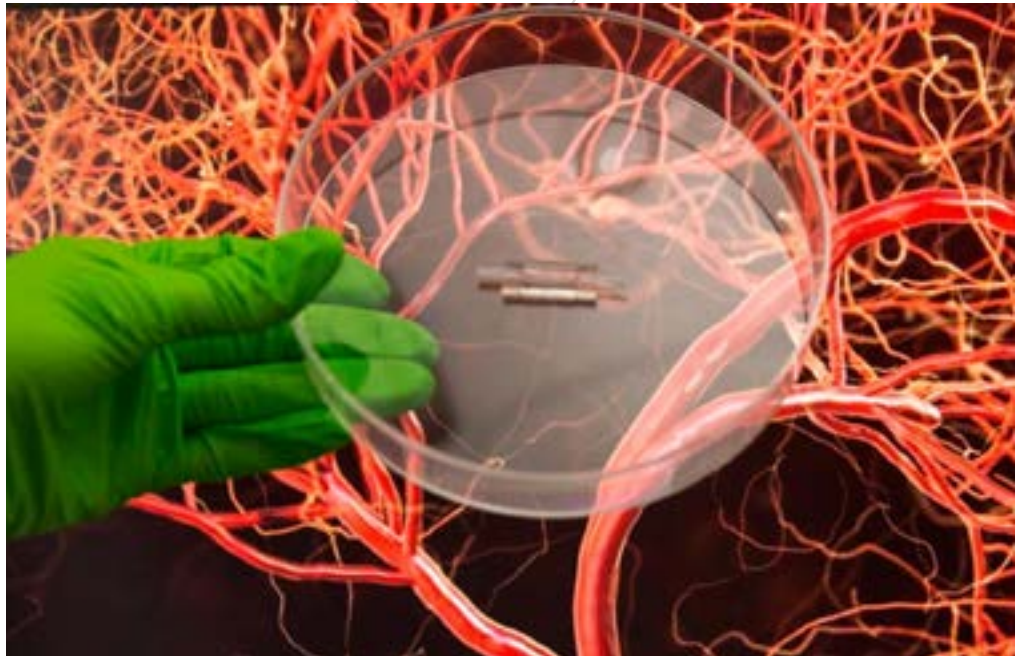


First IP Paris Scientific Day on site

On October 21, 2021, the onsite Scientific Day of Institut Polytechnique de Paris was held at Télécom Paris. The objective of this day was to bring together the ten research and academic departments in order to share the outstanding diversity of sciences produced at Institut Polytechnique de Paris. 30 researchers from IP Paris presented their research, 30 PhD students presented posters, and many discussions took place between the different sessions of this day.

Biomedical Engineering Symposium

A catalyst for exchanges between doctors and researchers, the second symposium on biomedical engineering took place on Friday, June 11, 2021. This event was an opportunity to discover the research currently being carried out at Institut Polytechnique de Paris to meet the current challenges in medicine. The second biomedical engineering symposium brought together experts from IP Paris to strengthen interactions between doctors and researchers. It allows the development of joint research in order to respond effectively to the current challenges faced by practitioners. The symposium also allowed researchers from Ecole Polytechnique, ENSTA Paris, Télécom Paris, Télécom SudParis, Inria and Université Paris-Saclay to present their projects. This day was an opportunity to demonstrate the success of biomedical engineering projects at IP Paris level, which is also reflected in the establishment of the BERTIP University Research School. The convergence of efforts in this field of research underscores the upcoming establishment of the Institute's biomedical engineering center. The event was also the occasion to unveil the winners of the 2020 call for projects of the «Biomedical Engineering Seed Grant Program».



[Know more](#)

Technology For change Chair

Considering the fact that climate change is causing the alteration of ecosystems and is leading to the use of more environmentally harmful solutions and technologies, and that global warming is generating more poverty, IP Paris launched a new «Technology for Change» Chair in the framework of its partnership with Accenture. This chair aims to contribute to the training of engineers in this field and to develop new technological solutions while promoting existing ones.

First IP Paris «Fête de la science»

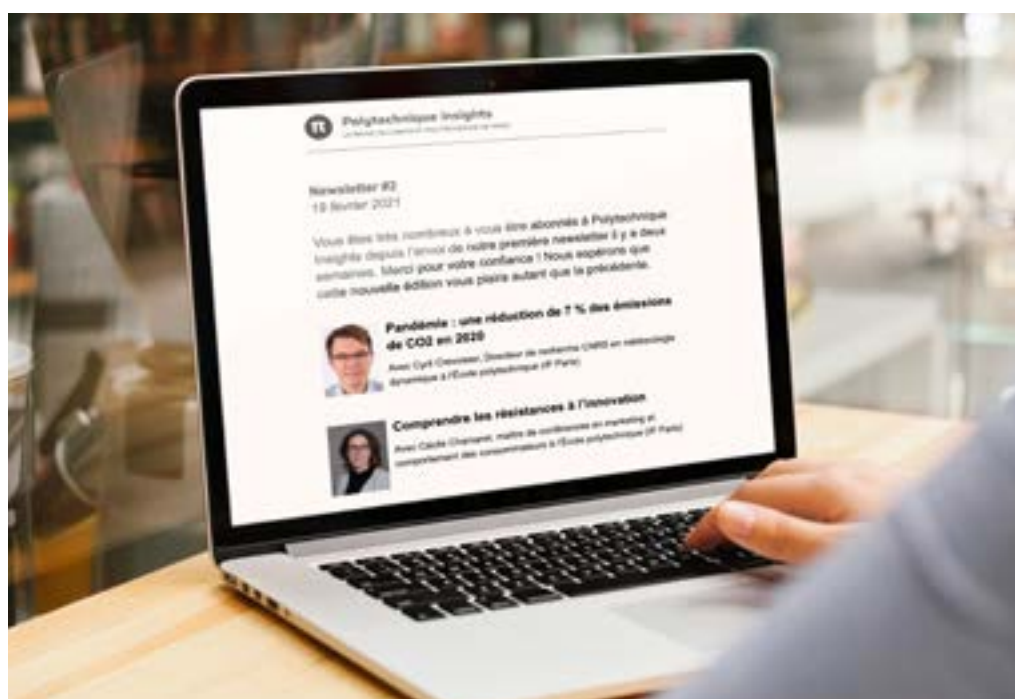
On Friday, October 8 and Saturday, October 9, Institut Polytechnique de Paris participated in the 30th edition of the national science festival, bringing together for the first time the laboratories of its five schools in partnership with Inria. Thanks to the mobilization of 200 researchers, doctoral students and laboratory staff, the event welcomed 480 middle and high school students on Friday, and 650 family visitors on Saturday. The program included a science village with 20 stands, lectures by researchers, visits to laboratories and visit to the museum of Ecole Polytechnique showcasing scientific instruments.



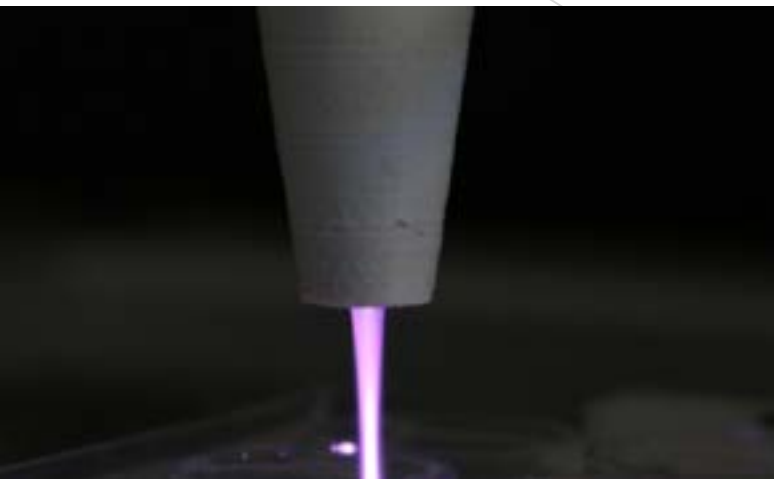
Launch of Polytechnique insights

In 2021, Institut Polytechnique de Paris launched Polytechnique Insights, an online magazine dedicated to understand the challenges of research and innovation in science and technology-related fields. Supported by the disciplinary and interdisciplinary research ecosystem of Institut Polytechnique de Paris, Polytechnique Insights covers a broad spectrum of fundamental and applied research topics. The open forums and in-depth reports selected by the editorial committee aim to discover and put into perspective the work of researchers who are experts in their field in order to shed light on the major contemporary issues, particularly socio-economic and environmental.

www.polytechnique-insights.com



PHD STUDENTS AT THE HEART OF OUR TECHNOLOGICAL INNOVATION

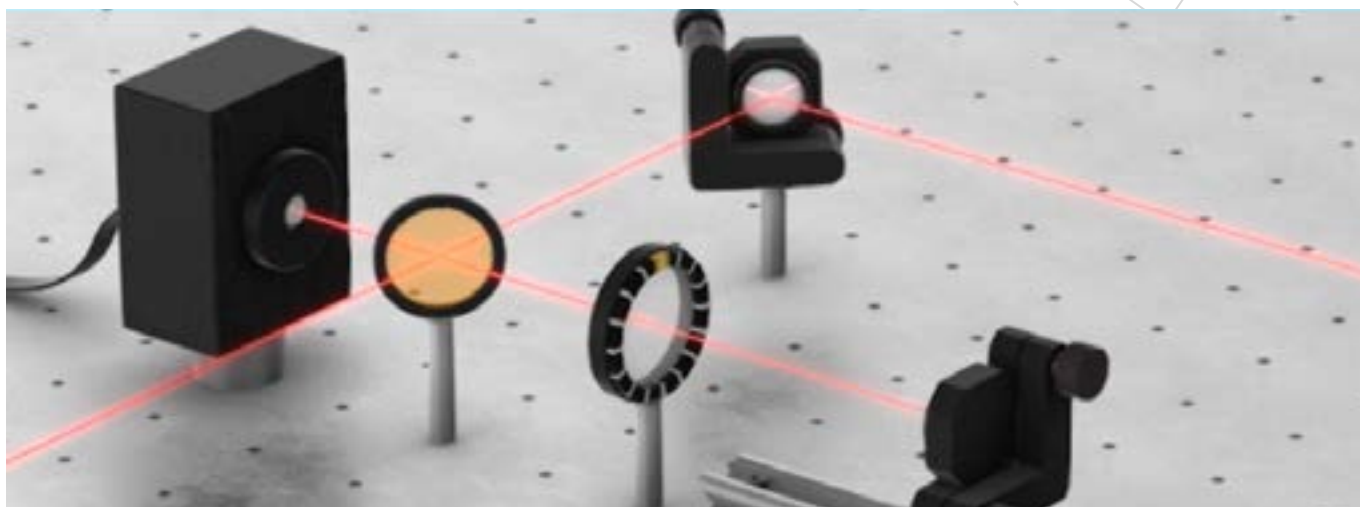


Three theses awarded by Institut Polytechnique de Paris

The doctoral work of Clémence Tricaud in economics, Ambre Bouillant in fluid physics and Boris Muzellec in mathematics have been awarded the Institut Polytechnique de Paris thesis prize. During the first doctoral graduation ceremony held online on June 17. Distinctions were also given to Jaouad Mourtada, Guillaume Graciani, Vincent Corlay and Emile Parolin. This is the first edition of this distinction.

Two IP Paris PhD students receive the DGA thesis award

Two IP Paris doctoral students have been awarded a thesis prize from the French Defence Procurement Agency (DGA). On one hand, Constance Duchesne was awarded a thesis prize for her work on cold plasma treatment for the healing and disinfection of skin burns. On the other hand, Olivier Spitz was awarded a thesis prize for his work on the use of quantum cascade lasers for secure communications by chaos.



OUR 3 INTERDISCIPLINARY CENTERS

1 • Energy4Climate Center



Energy4Climate Center (E4C) : E4C white paper

In response to the latest developments in the fight against climate change, and in particular the findings of the latest report of the Intergovernmental Panel on Climate Change (IPCC), the interdisciplinary Energy4Climate Center (E4C) of Institut Polytechnique de Paris, co-founded with École des Ponts ParisTech, has published its first white paper. The E4C research teams have been working together to develop projects that will reduce greenhouse gas emissions, decrease energy consumption, increase the deployment of renewable energy and develop appropriate energy policies.

First E4C Summer Schools

The Energy4Climate Interdisciplinary Center (E4C) is involved in the energy transition, through research, education and innovation. From July 5 to 9, 2021, the first summer school of the E4C Interdisciplinary Center welcomed Master and PhD students from all disciplines, in France and internationally, to address systemic issues around smart buildings and smart cities. The lectures were given by experts from the scientific and industrial world.



Second E4C Challenge

Launched in 2019, the E4C student challenge offers inter-institutional, international and, above all, interdisciplinary teams the opportunity to combine their expertise in science and technology, economics and social sciences, and management in order to design a project with a high social impact, while gaining interdisciplinary teamwork experience. The second challenge, launched in October 2020, challenges students on the theme «Objective carbon neutrality 2050: local declinations». The award ceremony for the winners took place at the beginning of the 2021 school year. The winner was the Emission project, which proposes to capture CO₂ from power plants through a chemical reaction that turns them into aggregates. These can be reused in the construction industry to produce roads or cement. The winning team that proposed this project represented HEC Paris, Sciences Po, Columbia University, Ecole Polytechnique and Institut Polytechnique de Paris.

2 • Hi! PARIS Center



Hi! PARIS is the new Center on Data Analytics and Artificial Intelligence (AI) for Science, Business and Society created in September 2020 by Institut Polytechnique de Paris and HEC Paris and joined in July 2021 by Inria (Institut national de recherche en sciences et technologies du numérique, Centre INRIA d'IP Paris). The center was launched in September 2020 with the support of five corporate donors: L'Oréal, Capgemini, TotalEnergies, Rexel and Kering. The Center's ambition is to become a catalyst for conducting disruptive, multidisciplinary research on AI, data science, business and society and for developing new educational programs on these topics. Ultimately, the Center's ambition is to be a European champion in science, technology and business to compete with the very best institutions in the world, drawing on the academic strength and reputation of our schools in France and abroad, as well as our ability to attract and select the most talented students.

The center is organised in three pillars that are: RESEARCH, EDUCATION AND INNOVATION.

Pillar 1 : RESEARCH

Research is a fundamental pillar: it is through the research of our current faculty members and those recruited thanks to the Center and through their publications that Hi! PARIS will become a reference in this field. This research pillar naturally reinforces the other two.



CHAIRS – FACULTY RECRUITMENTS

The Hi! PARIS Center intends to conduct groundbreaking, multidisciplinary research on AI and data science, while developing new academic programs. In addition to mobilizing faculty members from its six member schools, the Center funds faculty recruitments, in the form of

Hi! PARIS Chairs at 2 levels: Junior (assistant and associate professors) and Senior (full professors). In 2021, 10 chairholders have been recruited on in various fields such as AI and finance, AI and marketing, AI and health, or reinforcement learning applied to Energy.





INTERNAL RESEARCH FELLOWSHIPS

The Center offers three-year research grants to researchers from IP Paris and HEC Paris. The winners of this call, called Fellows, receive a flexible annual budget (salary supplement, research budget, organization of scientific events and funding of doctoral students). The objective of these fellowships is to retain existing researchers and increase the resources available to them for their research projects.



PHD THESES

The Center offers partial or full funding over 3 years for PhD theses in one of the research laboratories of IP Paris or HEC Paris. Since September 2021, 15 PhD theses are funded by the Center. AI is at the heart of the research conducted by PhD students whose thesis projects have been selected for their scientifically innovative and ambitious character.

COLLABORATIVE ACADEMIC AND SCIENTIFIC PROJECTS

The Center provides support for collaborative projects between researchers from two or more Alliance schools. Since September 2021, 5 collaborative academic and scientific projects have been funded through Hi! PARIS (data collection, collaborative projects, guest researchers, conference organization, etc.).





Pillar 2 : EDUCATION

The education pillar aims to enable the world's most talented students to develop unique joint expertise around AI and data science that is highly relevant to companies in all sectors.

HI!CKATHON – HACKATHON DATA CHALLENGE

In March 2021, the Hi! PARIS Center organized the Hi!ckathon, the center's first-ever AI and data science challenge on the topic of AI for energy efficiency. 187 students from the five schools of the Institut Polytechnique de Paris (Ecole Polytechnique, ENSTA Paris, ENSAE Paris, Telecom Paris and Telecom SudParis) and HEC Paris formed 35 interdisciplinary teams to compete for prizes sponsored by the Center's founding corporate donors («Business Pitch Award» by L'Oréal; «Scientific Approach Award» by Capgemini; «Technical Excellence Award» by TotalEnergies; «Interdisciplinarity Award» by Kering; and «Innovation Award» by Rexel). The Hi!ckathon brought together students from a variety of schools, programs, and disciplines for a 48-hour data challenge, collaboration, and brainstorming, with a single goal: to discover the solution that best optimizes energy consumption while reducing carbon emissions and cost. This goal, fueled by applications of artificial intelligence, machine learning, and data science, is a critical step toward a more innovative and energy-efficient approach to fight global climate change.



HI! PARIS SUMMER SCHOOL

The first Hi! PARIS summer school focused on AI and data analysis for science, business and society. It was held at Télécom Paris in hybrid mode from July 8 to 10, 2021. For this 3-day event, the program offered 2 round tables (one bringing together the 5 sponsors and the other around 4 renowned researchers), 2 plenary conferences, 8 tutorials, 1 presentation session by thesis students. The summer school attracted 182 participants: students (PhD students, Master 2 students, PhD-track), post-docs, researchers, engineers from IP Paris, HEC, and the Center's corporate sponsors.



HI! PARIS DATA BOOTCAMP - A WEEK OF INTENSIVE DISCOVERY

The goal of the bootcamp is to raise the interest of the youngest students of our schools in AI and Data Science so that some of them can overcome preconceived ideas and take this field into consideration in their future choice of specialization. The first «Hi! PARIS Data Bootcamp» was held from August 23 to September 3, 2021 in hybrid mode (at Télécom Paris and online). This pre-entry seminar was offered in the form of two one-week iterations of intensive courses in AI and data science. It integrated theoretical sessions, practical applications and group coaching. This first Data Bootcamp 2021 attracted 103 students in total and will be repeated in August 2022.



HI! PARIS – COURSE CATALOG

Constituted in 2021, the Hi! PARIS course catalog in AI and data science presents all the educational activities of IP Paris and HEC Paris where artificial intelligence and/or data science play a key role. The main objectives of this catalog are to clarify the means and identify the different opportunities for corporate sponsors to get involved in the different academic programs of HEC Paris and IP Paris. It lists 72 courses in more than 20 different programs, as well as challenges, AI and Data science projects with specific information on the duration and schedule in the year, the number of students involved, the level of the course (Bachelor, Master, etc.). It also includes information on potential needs expressed by faculty to corporate sponsors, such as use-case presentations, data sets, or topics for student projects.



Pillar 3 : INNOVATION

In terms of innovation, Hi! PARIS aims to develop AI entrepreneurship (launching of an AI startup program, attracting the best startups) and to foster synergies between our entrepreneurial ecosystems (focused on AI) and corporate patrons.

IN 2021, HI! PARIS CENTER WAS FORTUNATE TO:

- **support and enable the creation of a first HFactory start-up** that launched packaged services to organize data challenges and hackathons, as well as a Learning Content Management System (LCMS) dedicated to data science and AI education ;
- **setting up the Hi! PARIS Engineering Team** to support of IP PARIS and HEC Paris researchers in AI and Data Science. This is an opportunity for our researchers to execute their projects better and faster. The team provides support, help and advice at all stages of a project, from idea, data acquisition, coding, optimization, open source sharing, etc.



Events to build the Hi! PARIS community

The Center is a space for networking, maturation and exchange between business and research. In 2021, it organized several scientific webinars in order to create a dialogue between its researchers, external experts and business representatives on hot topics : AI bias & Data Privacy ; AI for Healthcare AI for sustainability - 01/10/21. Hi! PARIS has also launched technical reading groups to encourage interaction between Data & AI teams of donors and researchers on topics of interest.

3 • International Centre for Defence and Security Studies (CIEDS)

In a world where new technologies play a predominant role, Institut Polytechnique de Paris has created the International Center for Defense and Security Studies in 2021 to imagine and develop answers to the technological needs of the Defense sector. The CIEDS is supported by the French Ministry of Defence and the Defence Innovation Agency. It operates in the key scientific fields of IP Paris in terms of research, training and innovation to promote a broad consideration of defence-related issues. The founding ambitions of the CIEDS concern research, training and development:

- To carry out cutting-edge scientific research in fields of interest to Defense;
- To target scientific and technological devices that are not accessible to our forces and that have a high added value in operations;
- Capture as soon as possible these scientific and technological breakthroughs, ensure their scaling up and transfer to the Defence Industrial and Technological Base - DITB - or to deep-tech spin-offs;
- Implement or adapt the courses offered by IP Paris to better take into account the needs of Defense;
- Connecting the communities of researchers, students, personnel of the Ministry of Armed Forces and partners - national research organizations, funding agencies, companies - around Defense issues.





Innovation

IP PARIS, A LEADING PLAYER IN ENTREPRENEURSHIP AND INNOVATION



IP PARIS Innovation in figures

110
incubated projects every year

25 %
startups co-founded, managed
or incubated in IP Paris'
incubators are listed in the
Next40 and the Frenchtech120

VIVATECHNOLOGY 2021 : SOLUTIONS FOR INDUSTRY AND SOCIETY

Through its 3 incubators, IP Paris is a leading player in entrepreneurship and innovation. 21 start-ups from its ecosystem were present at VivaTech fair that took place from June 16 to 19, 2021. They presented innovative solutions to meet current economic and societal challenges, including a new deeptech to extend the preservation of fruits and vegetables in order to fight against food waste, a carbon-neutral power system for data centers, automatic drones to monitor industrial sites, and software to facilitate corporate compliance with the GDPR.

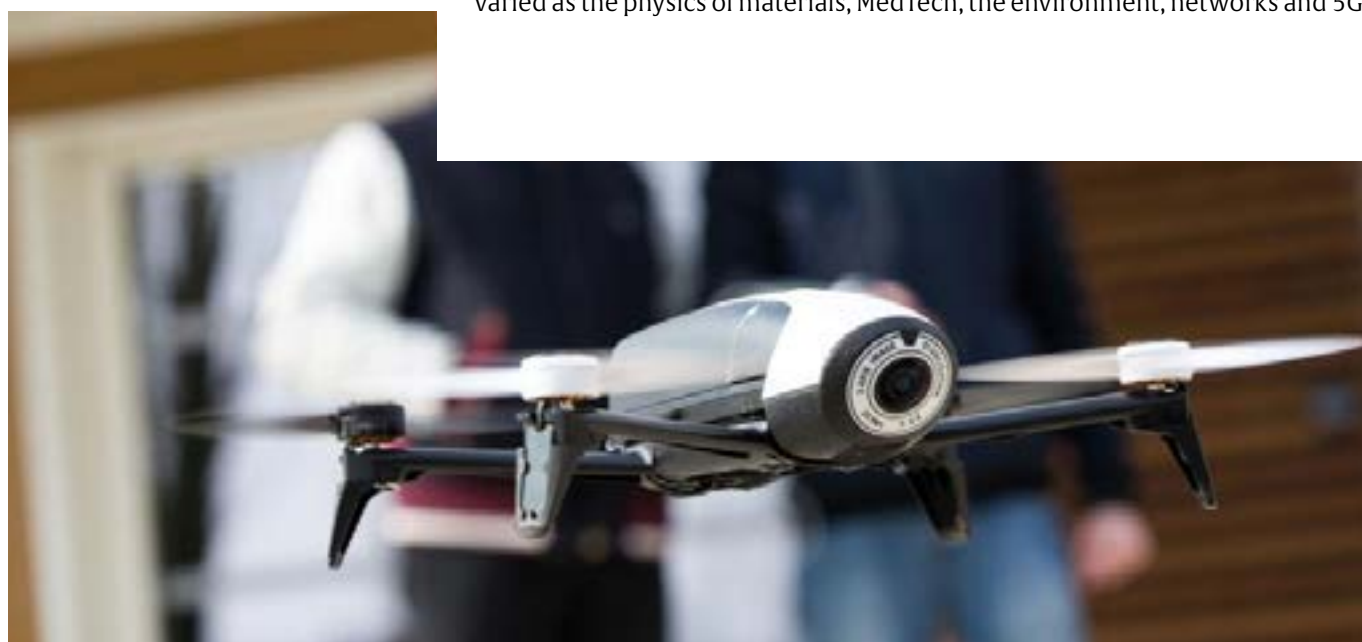


IP Paris partner of SPRING 2021

Institut Polytechnique de Paris was a partner of the 2021 edition of Paris-Saclay SPRING event which took place on May 20 and 21 digitally. The Institute presented a dozen start-ups from its incubators. Organized by EPAPS, this event highlights the innovation and research ecosystem of the Paris-Saclay cluster to investors and major groups. On May 20, a TV show was held, bringing together representatives of the Saclay hub ecosystem to discuss various topics. The virtual exhibition was held over the 2 days and featured start-ups from the Paris-Saclay cluster.

Launch of the 3rd Innovation Call for projects

Institut Polytechnique de Paris is developing an ambitious innovation policy in order to increase its societal impact. In this context, IP Paris launched a call for projects in 2020 to detect and support innovative projects from its laboratories. An invention is generally associated with research results (technical solutions, software, materials, processes, molecules, devices, software, databases, etc.). These results need to be confronted with the expectations and needs expressed by the market. This call for projects aims to build the invention-market fit and to achieve a first proof of concept. As part of the selection process, 11 projects were selected for a total of 840,000 euros funding. These projects cover fields as varied as the physics of materials, MedTech, the environment, networks and 5G.





Winning partnerships, *to go further, together*



IP PARIS COMMITTED TO RESEARCH AGAINST CANCER: [Paris Saclay Cancer Cluster](#)

IP Paris, along with Sanofi, the Institut Gustave Roussy, Inserm and the University of Paris-Saclay, is a stakeholder in the Paris Saclay Cancer Cluster, a project of unprecedented scope in Europe, which brings together the best scientific, human and technological expertise to shape the future of personalized medicine and accelerate the discovery of new, customized cancer treatments.



INSTITUT POLYTECHNIQUE DE PARIS JOINS THE BOARD OF DIRECTORS OF [SystemX](#)

Created in 2012 as part of the future investment program, the SystemX Institute of Technological Research (IRT) is a booster for the digital transformation of industry, services and territories. Institut Polytechnique de Paris has become a founding member of its board of directors. The Institute will be represented by Bruno Cat-tan, Head of the Innovation and Entrepreneurship Committee of IP Paris. This integration, which is part of a long-standing partnership between SystemX and the two institutions, demonstrates a reinforced dynamism on the Saclay plateau.



NEW INSTITUTIONAL PARTNERSHIP WITH [ETH Zurich](#)

As part of its internationalization, the Dual Master's Program in High Energy Physics will allow students to benefit from academic instruction at both partner institutions and to acquire research practice during the two-year program. Students enrolled in this two-year program spend the first year at their home institution and the second year at the partner institution. The specialized master's program is run by the physics departments of both partner institutions. The majority of the graduates of this highly research-oriented Master's program go on to pursue a PhD at Institut Polytechnique de Paris, ETHZ or other prestigious universities around the world.

IP PARIS
Know more about our partnerships



IP Paris strengthens its presence on the **international scene**



Excellence acknowledged by international rankings

IP Paris ranked in the Top 50 since its entry into the 2022 ranking of the world's best universities published by QS, ranking 49th worldwide out of 1,300 institutions and second among 32 French institutions. The Institute ranked 12th worldwide and 1st in France in the QS Graduate Employability Rankings 2022. IP Paris was also listed in the world's Top 100 among 1,662 institutions in THE World University Rankings and ranked 3rd in France.

Institut Polytechnique de Paris in the rankings



QS WUR 2023

**48th worldwide
and 2nd in France**
in the QS World Universities
Rankings

TIMES HIGHER EDUCATION MOST INTERNATIONAL UNIVERSITIES 2022

**43th worldwide
and 1st in France**
in THE most international
universities rankings

CWUR 2021

**43th worldwide
and 4th in France**

SHANGHAI BY SUBJECT 2021

31st worldwide in
mathematics (5th in France)
42th worldwide in
physics (6th in France)
50th worldwide in
statistics (3rd in France)

QS EMPLOYABILITY 2022

**12th worldwide and
1st in France**

for the employer reputation of its
graduates

QS BY SUBJECT 2022 (Worldwide/France)

14th/2nd in mathematics

21th/1st in engineering and
technology

22th/4th in natural sciences

24th/2nd in statistics and
operational research

31th/1st in computer science
and information
systems

40th/1st in engineering/
mechanics

40th/3rd in physics and
astronomy

49th/2nd in engineering/
electrical
and electronics

65th/2nd in economics and
econometrics

From vision to implementation

Building a world-class campus



Providing a coherent urban development plan



With the globalization of the high-level university system, and in order to be visible on a global scale, IP Paris has undertaken a strong scientific development process by welcoming other higher education, research and innovative organizations on its campus.

Today, the creation of Institut Polytechnique de Paris, which attaches great importance to providing a coherent urban development plan to build a leading French education and research center with international visibility, and the rapid development of the Ecole Polytechnique district, require the elaboration of a common urban project for the campus under construction in order to improve the working and living environment of current and future faculty members, researchers, students and employees.



[Discover the campus in video](#)

A collective work with multiple players

Throughout the third quarter of 2019, the EPA Paris-Saclay, Institut Polytechnique de Paris and its schools, and the local authorities worked together to define a partnership development strategy for the campus based on the following principles:

A campus that fits into its environment

From ENSTA Paris to Télécom Paris, a major East/West axis linking the other districts and facilitating exchanges with neighboring institutions.

An organized campus through the structuring of spaces: neighborhoods/poles with coherent activities, the emblematic East/West axis linking activities and those who practice them. Life hubs and a heart of the campus that increase interactions: creation of alleys, malls with pedestrian and bicycle paths that lead to the facilities, buildings, and services associated with campus life. Signage to facilitate circulation.



An exemplary campus that will serve as a model for ecological and energy transition

A car-free campus with soft circulation integrating sustainable development issues. Parking in the basement and on the outskirts.

A campus that is attractive because of its innovative character, the desire to be there, to live there and to work there together

Environments adapted to new teaching methods, stimulating the creativity of researchers, facilitating the integration of international students, encouraging interaction and the practice of sports.



A world-class campus in terms of facilities

Academic buildings, research laboratories, Researchers' Hall, Student House, sports facilities, shops, services, exhibition and conference center, etc., benefiting from and promoting the research work carried out in the laboratories of IP Paris and its partners.

This strategy was validated by the board of directors of Institut Polytechnique de Paris in December 2019. EPA Paris-Saclay and Institut Polytechnique de Paris have jointly agreed to continue the work by the urban and landscape project management of the ZAC of Ecole Polytechnique district. Institut Polytechnique de Paris is co-financing 50% of these studies.

This first phase of the project was followed up and detailed in a master plan, which was supported by consultations within the five schools and with partners. This plan specifies the programming and the urban, architectural and landscape recommendations for structuring the urban layout.

Students driving the campus life



Creation of IP Paris BDE

In September 2021, IP Paris BDE was created with its Board of Directors. Committed to developing student life, the BDE's ambition is to create and animate an IP Paris student community, including students from all the schools' programs. Many activities are proposed to help new students when they arrive on campus. The BDE also organizes events, parties and excursions.

The BDE Bureau is mainly composed of international students who wanted to help new students when they arrive on campus. The «Buddy program» for IP Paris masters and PhD Tracks was launched with this objective.

It brings together former students (Buddlunteer) and newly admitted students (Buddies).



A second academic year on the campus

At the beginning of the 2021 academic year, more than 700 new students joined IP Paris for a Master or a PhD Track. For two years, they followed one of the 73 programs in the 14 fields of study offered. In the PhD Track, they have had the opportunity to familiarize themselves with the world of research to prepare them for thesis and join IP Paris Doctoral School. They will then integrate one of the 30 research laboratories to develop innovation in science and technology.

With the return to the classroom, all the students were able to take advantage of the rich associative and sporting life on campus through various events set up thanks to funding from the calls for projects.



IP Paris call for student life projects 2021, 19 projects selected

Once again this year, the call for student projects resulted in numerous applications. The diversity of the proposed projects is in line with the federative and creative spirit of the student community, covering fields from art to sports, through innovation and awareness of technical and social issues. Among the 28 projects proposed, the funding committee has selected 19 projects between which a sum of €125,000 has been distributed.



Health in focus

The year 2021 has shown the importance of physical and mental health of each of us. Institut Polytechnique de Paris has set up various health services for students.

Thus, IP Paris health center was created during the summer of 2021. New health professionals have been able to move in. A recruitment phase is underway to offer consultations to specialists who are not available near the campus.

To publicize the implementation of this new service for students from all schools, a Health and Prevention Day was organized on September 29, 2021.

This day dedicated to health and risk prevention brought together nearly 20 partners in 4 thematic villages. It was an opportunity to make contact with potential partners of the IP Paris health center who could offer regular consultations to students and staff of the Palaiseau campus.

With the health crisis that France has gone through, IP Paris has given itself every opportunity to help students with their mental health. In 2021, an English speaking psychologist has been recruited to support PhD students.



IP Paris Welcome Days

In September 2021, a welcome day was organized for all newly arrived Master and PhD Track students.

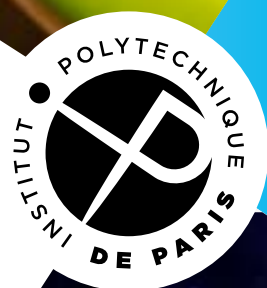
The objective of this day was twofold: to meet the key people but also to discover the Palaiseau campus and the 5 founding schools of the Institute. This day brought together nearly 80 students.



«In a changing and increasingly complex world, Institut Polytechnique de Paris plays a key role in training tomorrow's global players, and in the development of research and innovation to serve society.»

Eric LABAYE

*President of Institut Polytechnique de Paris,
and President of Ecole Polytechnique*



PRODUCTION

IP Paris Communication Department

Graphic design: Caroline Prouvost

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