Campus Aivancity

Renovation of ENS Cachan to house an innovative artificial intelligence school - “The School for Technology, Business & Society Paris-Cachan”.

CLIENT

SCI Aivancity Patrimoine
Bart I Patriarche (Project owner)

TEAM

Patriarche (Architecture, Interior architecture, MEP Engineering, EBQ, Cost, BIM, Landscape, Narrative design, Signage, Communication)
Autumn | Patriarche (Main contractor)
February | Patriarche (Digital services)
Myah | Patriarche (Main interior fit-out contractor)
Partners:
Mobius Réemploi
Credits:
Photos: ©Nicolas Gromond

KEYPOINTS

Reuse of materials.
Circular economy.
Project focused on innovation in use and digital technology.

SUSTAINABILITY

Energy renovation.

The Aivancity School for Technology, Business & Society is a private higher education institution with the ambitious objective of offering training for careers in Artificial Intelligence and to invent the technology of tomorrow.
Built around the three pillars of Artificial Intelligence, Business and Ethics, this innovative hybrid school project will help to make Île-de-France the AI capital of Europe. Cachan Campus is being redeveloped with new teaching facilities in existing renovated buildings. It will also include housing and services, in addition to the existing residences and facilities of CROUS, the Centre Regional des Oeuvres Universitaires et Scolaires (Regional Centre for University and Scholarly Works).
An overall urban redevelopment of the entire campus will, in the long term, include opening it up to the city with new access and crossed by pathways designed for ‘soft’ modes of transport.

Refurbished buildings will house teaching rooms, an amphitheatre, a coworking space, a FabLab, rooms designed as flexible spaces, and offices, and the architecture of the reception, exchange and meeting spaces will be enhanced. It incorporates the changing capabilities of the school, extends to outdoor spaces in the garden to extend the working environment and the benefits of nature in the city, and finally, encourages interaction between learners and between the school and its surroundings.
We worked hard to optimise the thermal, visual and acoustic comfort levels of the interior through the use of computer simulations (Design Builder software). The aim was to make a precise analysis of the existing facades and their solar and bioclimatic impact on the interior. As part of the design of the thermal regulation systems, we were able to assess the need for solar protection on the south facade and to fine tune the access of natural light and the balance of heat and cold inside.

Typology
Education, Offices, Refurbishment

Surface
3 600 m²

Cost
4.7 M€

Location
Cachan, France

Status
Delivery 2021

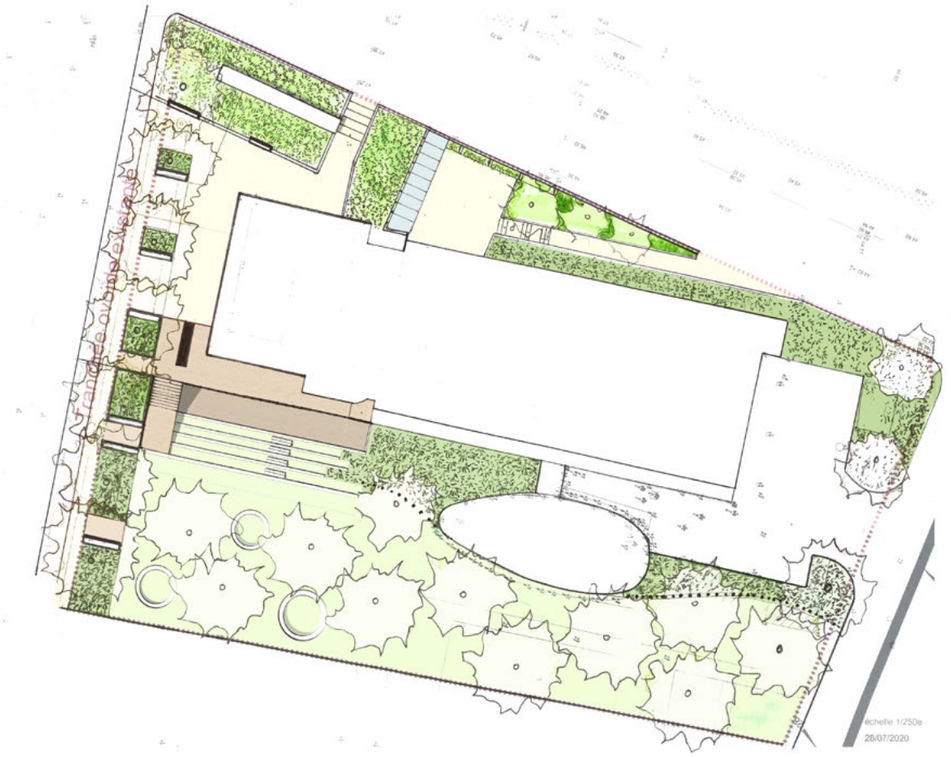
Allocation method
Design and build

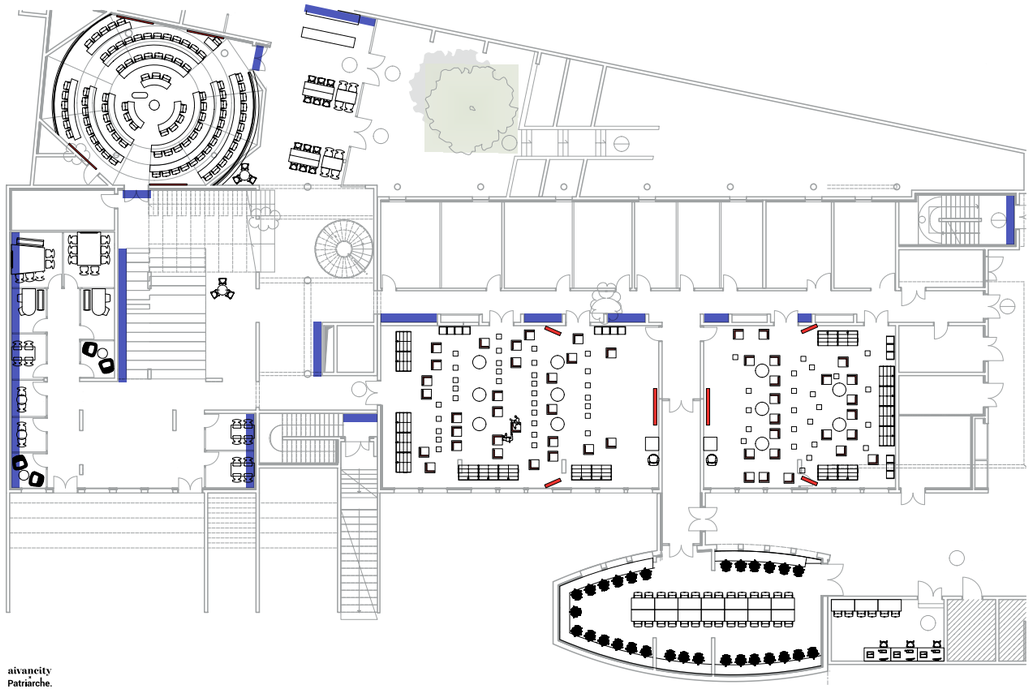
Architectural intentions

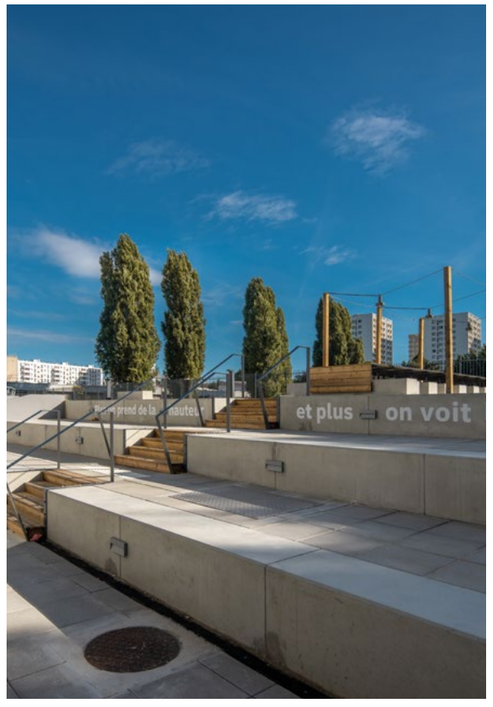
For this rehabilitation project, our teams have reimagined the design of the following spaces:

- Teaching rooms
- An auditorium and tiered seating areas
- A FabLab for creation and experimentation
- Modular classrooms to support alternative learning methods
- Offices for administrative staff and faculty
- A shared workspace to foster collaborative work
- Outdoor areas to extend the learning environment and encourage interaction between students, the school, and its surroundings.

The architectural approach aims to enhance welcoming, exchange, and meeting spaces, in order to promote interaction between learners, the school, and their environment.
This agile design is conceived to accommodate the institution's future developments, particularly in terms of capacity.





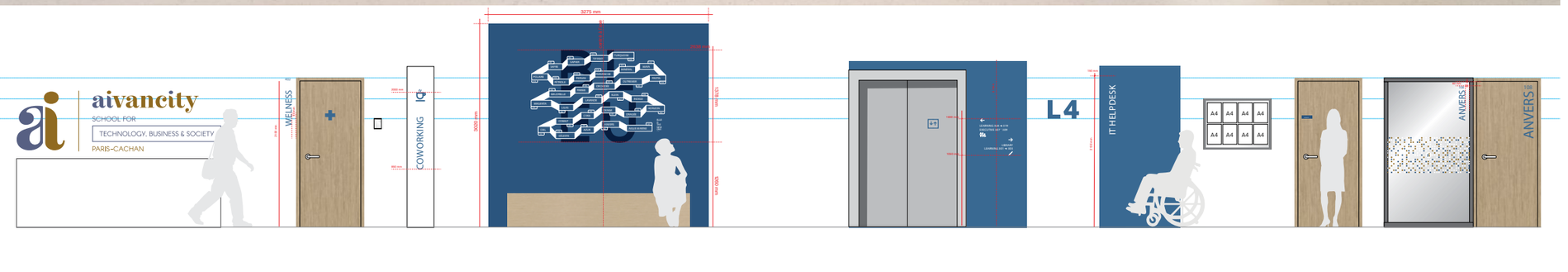


A Reimagined Landscape as a Place for Living and Sharing

As with the interior rehabilitation of the building, the challenge for the outdoor spaces was to transform the existing environment and bring it back to life. The reconfiguration of the landscaped areas extends the architectural ambitions initiated within the site.
The expansion of the outdoor working environment offers an ideal setting for teaching, learning, and sharing—allowing users to enjoy the benefits of nature within an urban context.
The various zones that make up the landscaped space—such as the service and cafeteria courtyards, the forecourt, the meadow, and the southern tiered seating—have been redesigned with new plantings and furniture. These new installations, designed for comfort and practicality, aim to unlock the full potential of these previously underused areas.

The site's unique topography—with its slope and constraints due to underground cables—encouraged the creation of large prefabricated concrete steps, clad in wood and topped with benches. A large metal and wood table completes this communal space, forming the ideal break area—perfect for outdoor study or hosting events.
The design of these various living spaces aspires to make the entire site a vibrant, open, and dynamic place, where school life thrives both indoors and outdoors.

Narrative Concept and Furnishings: A Campus with a Strong Identity



The Blue Ribbon as the Campus's Guiding Thread

The narrative concept tells the story of Aivancity's purpose and mission: a school built around the triptych of Artificial Intelligence (AI), Business, and Ethics, with the ambition to train future professionals in AI and to invent tomorrow's technologies.

To express this identity, our teams developed the idea of a journey through the campus, symbolized by a blue ribbon. Like a path to be followed in the learning process, it highlights and defines circulation routes, identifies key living spaces and their functions, while also enhancing the existing architecture.

Furniture plays a key role in bringing this narrative concept to life, punctuating the path traced by the blue ribbon. Chosen for its modularity, the furniture is designed to adapt to various configurations, encouraging interaction and creativity.

> *Thank you to Patriarche for the creativity and professionalism of your teams. Thanks to your collaboration, we are about to turn this campus into a remarkable example of innovation in educational spaces and openness to the city.*

Tawhid CHTIOUI, Dean Aivancity School for Technology, Business & Society

Environmental quality and innovation

Improving the building's energy performance through bioclimatic optimization and more efficient technical systems.

Energy efficiency

Currently, the 2005 building (prior to RT 2012) has a D label in terms of energy consumption. Rehabilitation will improve the building's energy performance through bioclimatic optimization and more efficient systems.

Technical systems have been designed to ensure low energy consumption:

- For heat and cold production, we proposed an efficient multi-energy distribution system (using geothermal energy from the Cachan site, renewable solar thermal energy, preheating by heat recovery, etc.).
- For ventilation, installation of new heat-recovery dual-flow air handling units, with efficiencies of over 80%. For indoor classrooms and lecture theaters, airflow rates are controlled according to actual occupancy rates, with a view to reducing the energy consumption of ventilation motors.
- For lighting, selection of efficient equipment (presence-detected LED lighting, natural light control and dimming according to schedule and light intensity).

Installation of a Centralized Technical Management System (CTMS), with real time monitoring, enabling intelligent management and control of the PLCs and regulators of the technical batches, for the benefit of operating efficiency, according to programmed scenarios and adapting to incidents and faults.

All these factors help to keep energy consumption under control, while at the same time ensuring good thermal performance in terms of perceived ambience and the comfort of occupants and machines.

qebp

QEB Evaluation grid

ENERGY

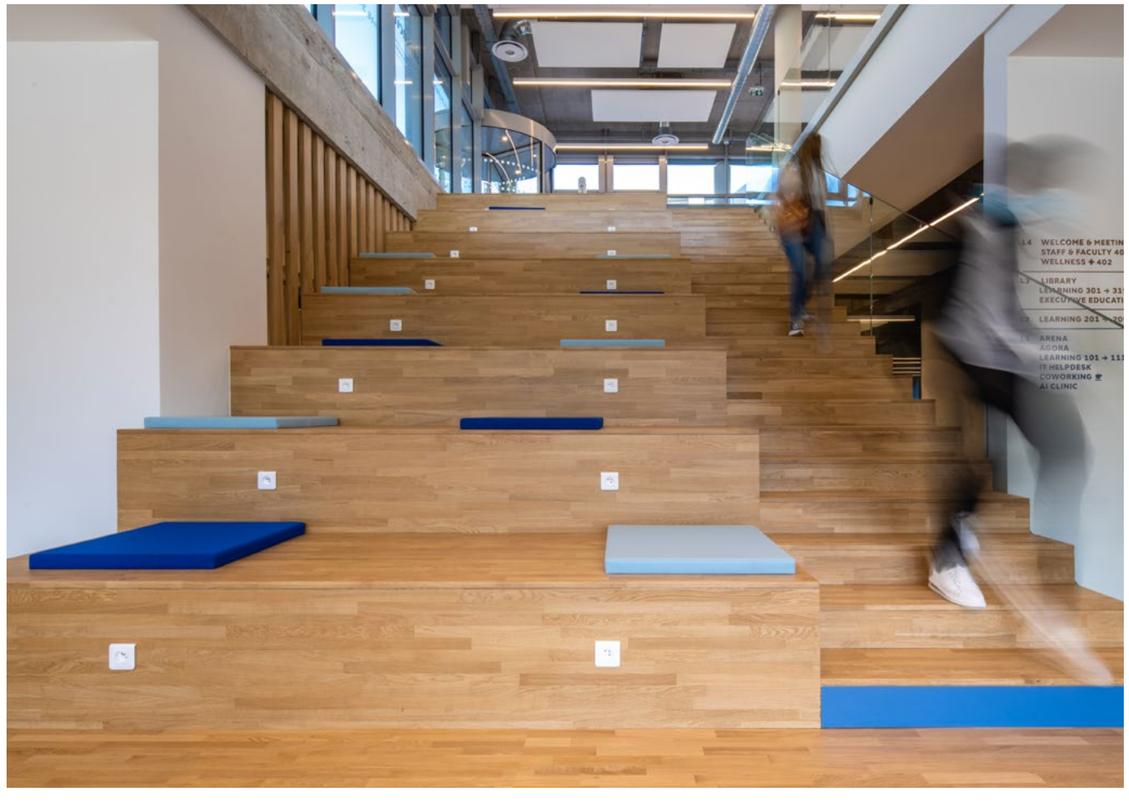
GENIUS LOCI	Context / Memory / Geography / Sociology / Local economic sectors
BIOCLIMATISM	Local climate / Winds / Irradiation /Treatment of facades / Solar optimisation / Natural ventilation
ENERGY EFFICIENCY	Scaling of the systems / Heat recovery / Presence detection / Gradation
WATER CONSERVATION	Water conservation equipment / Rainwater recovery / Reuse of rainwater

CARBON

CONSTRUCTION METHOD	Prefabrication / Offsite / Wooden structure / Wood frame
MATERIALS	Biosourced Envelope and Isolation / Biosourced finishing work
CIRCULAR ECONOMY	Reuse / Local sector / Recyclability / Collection and Sorting

RESILIENCE

HEALTH AND WELL-BEING	Indoor air quality / Healthy materials / Acoustic / Environments / Views / Temperature / Hygrometry
RISKS	Climatic / Natural / Health / Technological
EVOLUTIONS	Modularity / Reversibility / Flexibility
BIODIVERSITY	Greening of facades / Greening of rooftops / Development of the plot

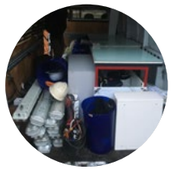


Reuse - Environmental and social benefits

For this renovation project, Autumn | Patriarche proposed to its client a voluntary approach to the reuse of building materials prior to demolition.

This approach was supported by its partner Mobius, involved in waste reduction and the intelligent consumption of material and energy resources, thus offering a new perspective on the act of building.

Autumn × mobius

Organization of «Collaborative collaborative drop-off» days

Distribution of the inventory to a network of partners (associations, artisans, marketplaces, etc.)

Production of methodologies for careful removal, packaging and storage

OPERATION REVIEW

During the Journées de dépose collaborative (collaborative drop-off days), dealers collected almost 250 items on site. These items were dropped off for re-use or recycling.

MINT lot
60 Cupboard doors
10 laboratory doors

CFO CFA lot
10 ceiling lights

RVT lot
40m² false ceiling tiles

PB HVAC lot
2 washbasins
6 urinals
13 sanitary fittings
4 radiators
9 BECS

AMT lot
15 benches
3 laboratory hoods
6 storage units

TECH lot
1 nitrogen gas generator
1 osmosis unit
1 softener
1 compressor

Waste reduction

Reducing raw material consumption

Reducing energy consumption and carbon production

THE APPROACH

The process is based on a tried and tested method, which had to be implemented on the Aivaincity project within a highly constrained «planning» window. It was the motivation and commitment of the Autumn | Patriarche teams to this theme that enabled them to transform the intention into success, despite this strong constraint.

Visit to identify the potential of existing buildings

2 collaborative drop-off days were organized and supervised by Mobius teams, with 9 associations collecting the equivalent of €21,000 worth of new materials.

This represents a saving in the production of equivalent new works, corresponding to 2.7 tonnes of waste avoided and 12 tonnes of CO2 eq., or the energy consumed by a city car travelling 20 times around the world.

x20 round-the-world trips in city cars avoided

primary energy saved

2,7 tons of waste avoided

12t eq. CO_2 emissions avoided

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