

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

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

Cost
4.7 M€

Status
Delivery 2021

Surface
3 600 m²

Location
Cachan, France

Allocation method
Design and build

Intentions - Our Approach

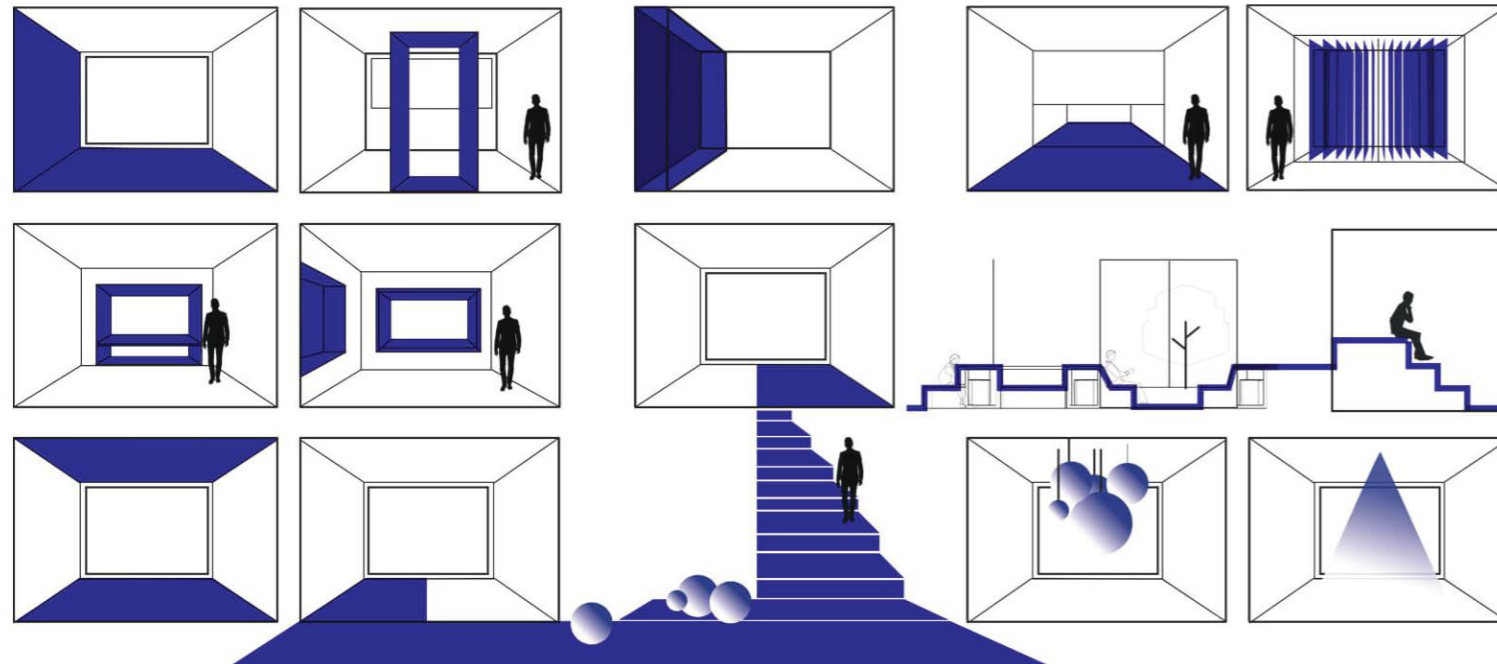
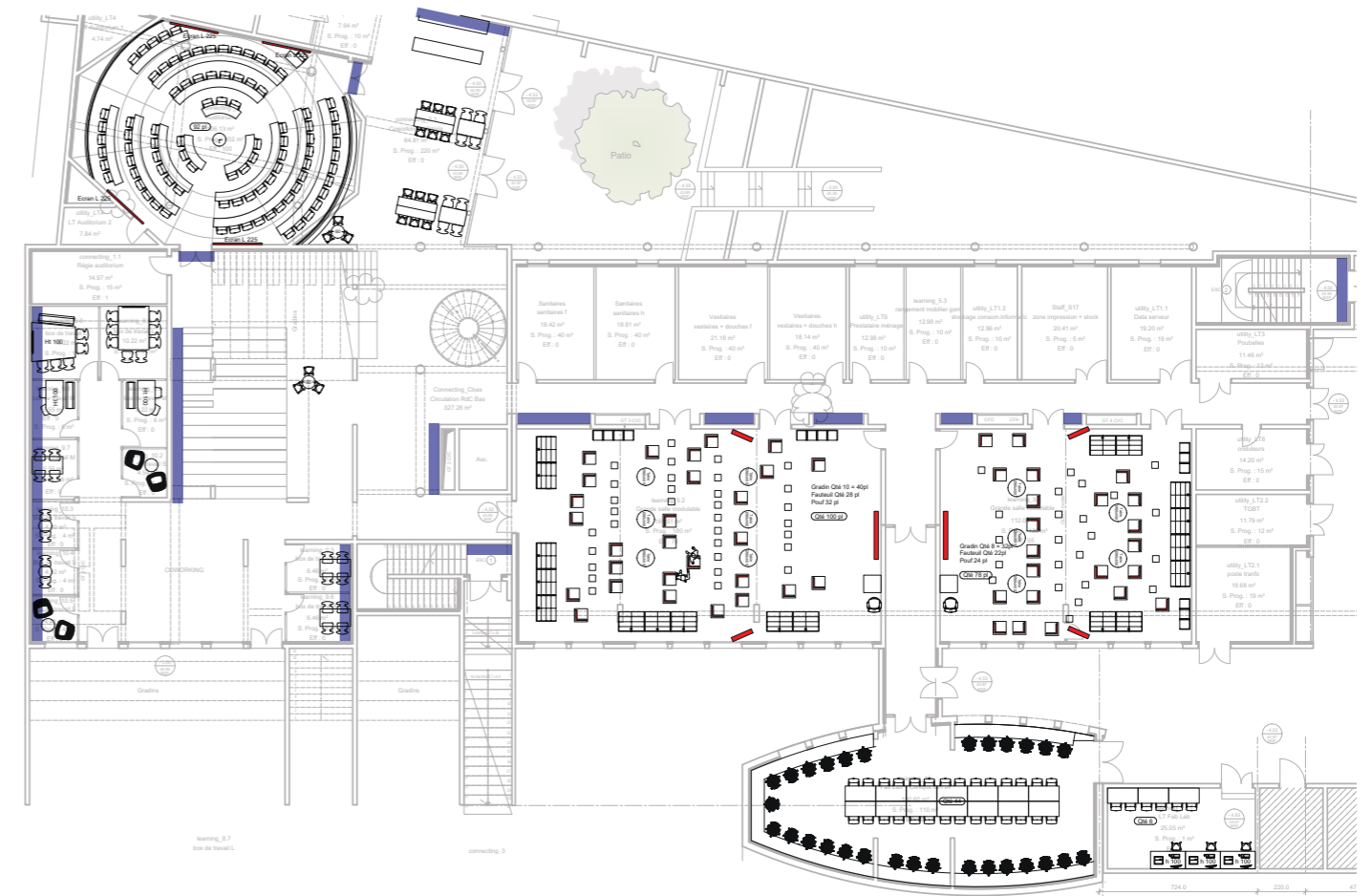
The narrative concept tells the story of Aivancity's raison d'être and mission. It affirms its identity: a hybrid school built around the triptych of Artificial Intelligence (AI), Business and Ethics, with the ambition of training for AI professions and inventing the technology of tomorrow. Our teams developed the idea of a pathway through the campus, marked out by a blue ribbon, as a route to follow for training. The blue ribbon marks and identifies the pathways. It defines the spaces to be lived in, the functions, dresses up what already exists and creates a space where AI and society can meet.

It is a signature blue, present in the establishment's logo and offering itself as a surface for expression. It is found in the furniture, signage and materials, as well as in the play of light, evoking a digital identity that pulses across the city and spreads.

The spaces

Our teams redesigned the following spaces:

- Teaching rooms.
- An amphitheatre and tiered areas.
- A FabLab for creating and experimenting.
- Modular rooms for learning in a different way.
- Offices for administrative and teaching staff.
- A coworking space for learning about collaborative working.
- Outdoor spaces to extend the working environment and encourage interaction between students, the school and its surroundings.



Thank you Patriarche for the creativity and professionalism of your team. Thanks to your collaboration, we're going to make this campus a fine example of innovative teaching facilities and openness to the city.

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



Furniture

A blue ribbon: A landscape to wander through and find your own way.

The furniture plays a key role in the narrative concept, punctuating the pathway marked out by the blue ribbon.

Selected for its modularity in collaborative spaces, the furniture is designed to adapt to all configurations and encourage discussion and creativity.

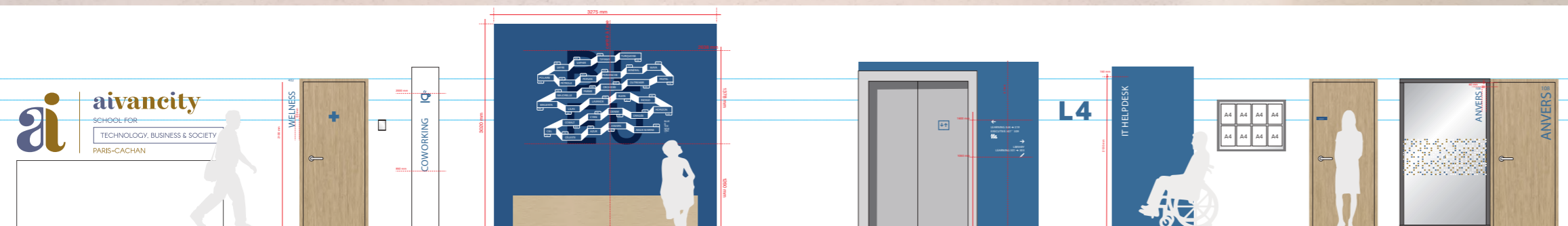


Signage

The blue ribbon as common thread through the campus.



Our signage brief stemmed from the narrative concept imagined and developed by our creative team: the blue ribbon. A blue that guided the design of the site's directional elements and signs.



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.



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

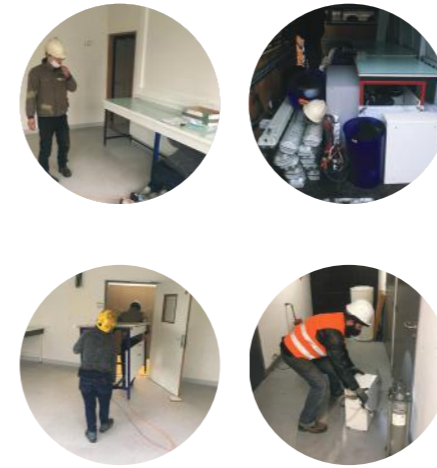


Reuse - Environmental and social benefits

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
Patriarche.



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

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

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

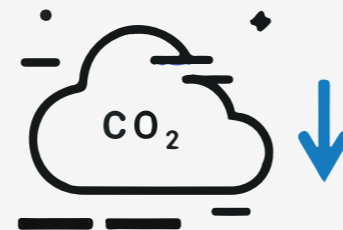
AMT lot
15 benches
3 laboratory hoods
6 storage units



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



182 MWh primary energy saved



2,7 tons of waste avoided



12t eq. CO₂ emissions avoided

A landscape to discover across the whole campus

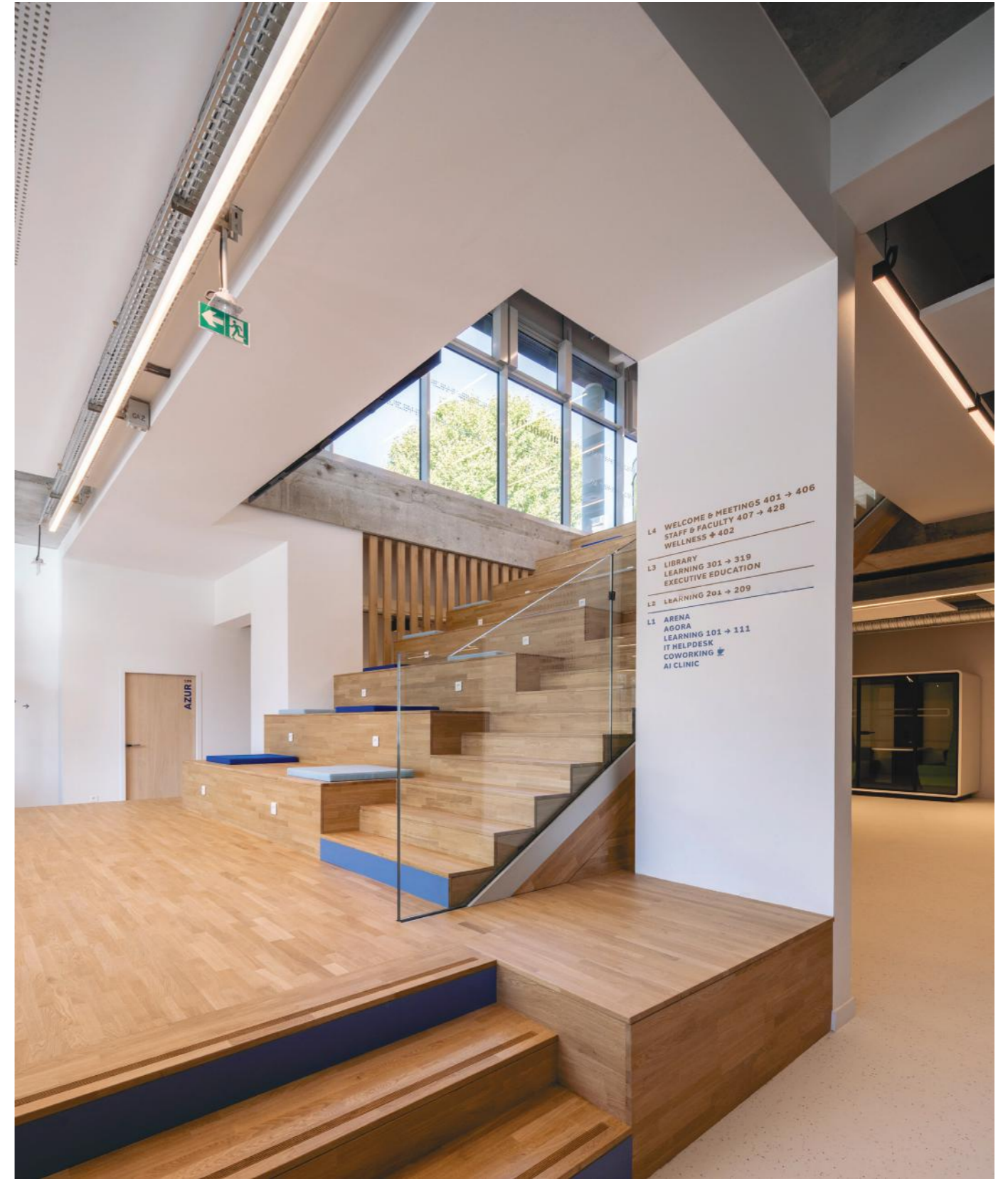
The challenge, both for the external spaces and for the renovation of the building, is to transform the existing building to provide an optimal setting for teaching based on the potential of new technologies and innovations linked to artificial intelligence.

As the site slopes somewhat, the building has two ground floor levels. The redevelopment of the outdoor spaces is based on the existing main forecourt and lower patio. On the other hand, they have been completely reconfigured to the south, with the creation of an outdoor amphitheatre connected to the lower level and the development of a vast wooded meadow providing a multi-purpose space.

A game on the blue colour, applied to the floors, furniture and even in the form of lighting, makes it possible to identify places of intensity and routes, like a signage system integrated to the architecture, interior fittings and exterior landscapes.

Integrate the building's ability to evolve from the outside, extend the working environment and encouraging interaction, while taking advantage of the nature.





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