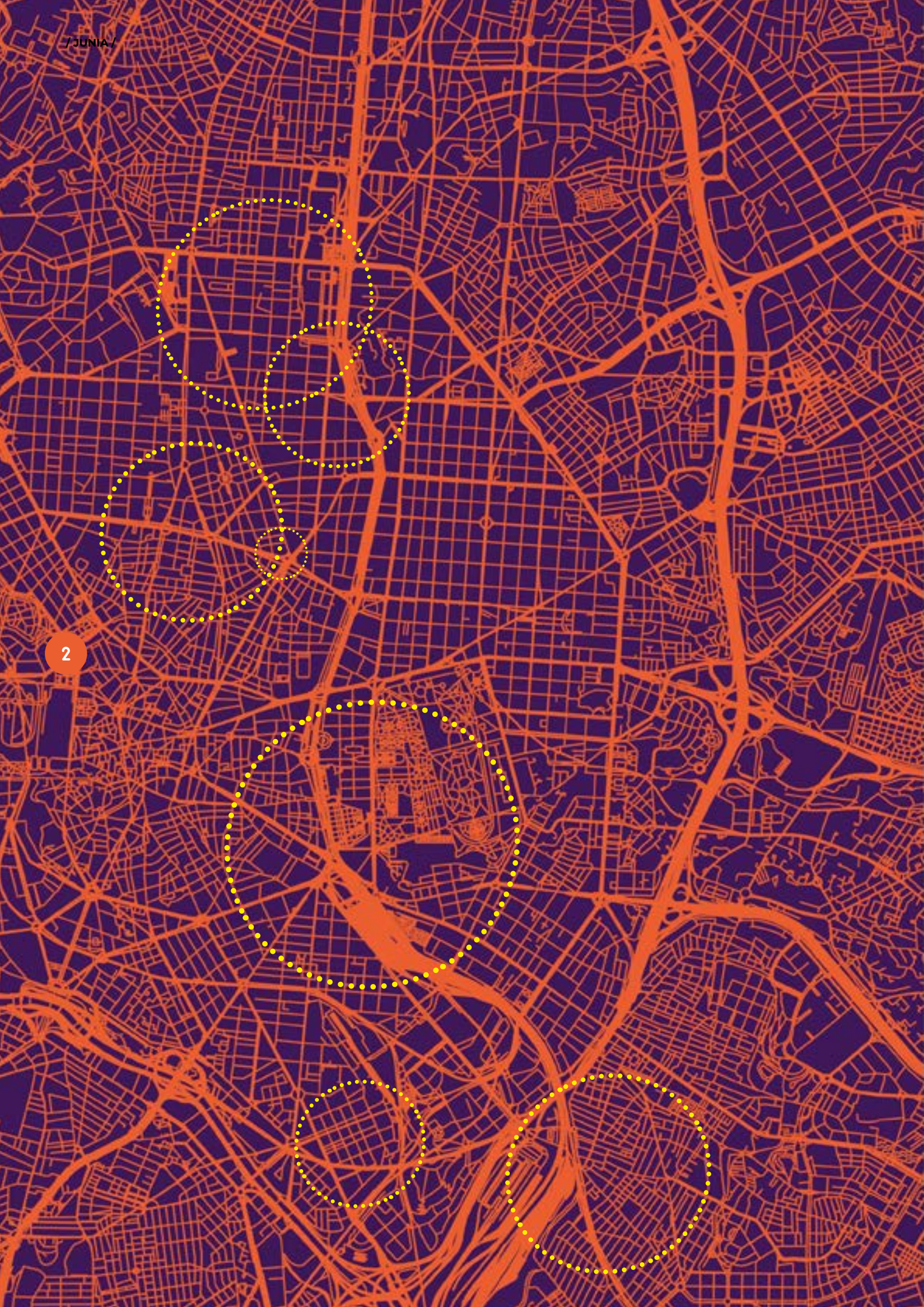


Smart & resilient cities for an innovative society

Smart & resilient cities
Master of Science (MSc)

Welcome
to an immersive
experience....





Welcome to Junia

Junia, a transitional school, is contributing towards major issues such as helping to feed the planet, developing the digital and industrial transformation, accelerating the energy and urban transitions process, and improving technology for health and well-being.

This engineering school has 7 preparatory cycles, 3 engineering diplomas: HEI, ISA and ISEN Lille, research activities and business services.

Junia has 5,000 students (including 530 apprentices) and 450 employees. There are 4 campuses: Lille (since 1885), Bordeaux, Châteauroux and Rabat.

Its programmes are approved by the French Government and it has been awarded the EESPIG certification (private higher education institution of general interest) and CTI (Commission des titres d'ingénieur).

Junia is a member of the Catholic University of Lille.

JUNIA is also member of the CGE (Conférence des Grandes Ecoles)

Junia was founded in Lille in 1885 by the Industrial Leaders of Northern France. Junia has since extended its activities to the training of multi-disciplinary engineers who share a curiosity for the world and its people, and managers with a future-facing, international mindset.

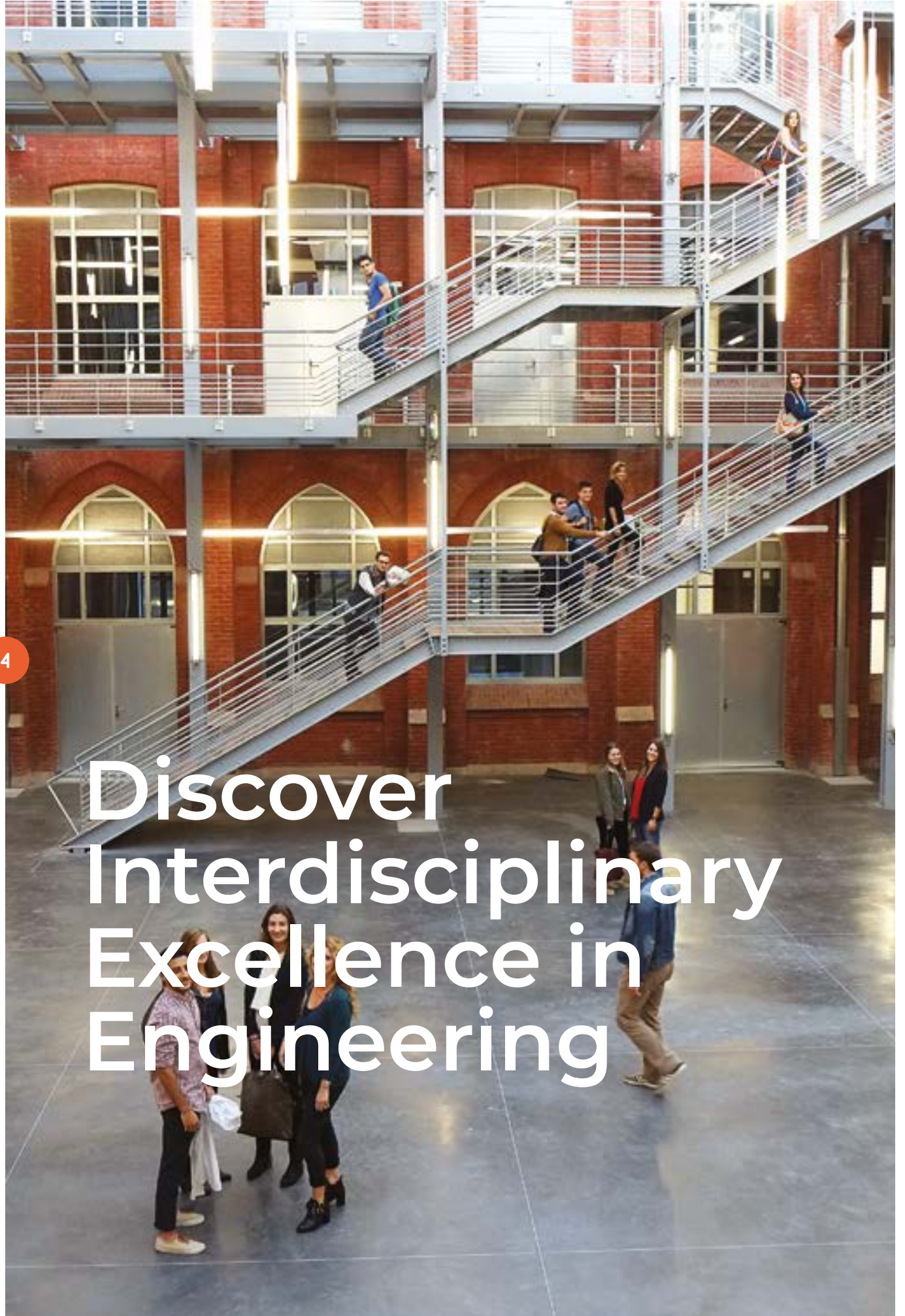
Junia's close collaboration with private business and industry enables the applied knowledge and creativity of students to create competitive advantages for themselves and the businesses they work for by fostering innovation and developing competency at all levels.

We believe the world needs responsible innovators, who know how to combine science and humanism. Our heritage is built on over a century of scientific training excellence such that, each day, we think out of the box and invent transdisciplinary solutions for the future.

We want to make you proud to be part of our extended family. Welcome to Junia, welcome to HEI!

Thierry Occre
Managing Director of Junia.





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Discover Interdisciplinary Excellence in Engineering

Smart & resilient cities, an immersive experience...



In the Smart & Resilient Cities Masters degree, you will focus on tomorrow's cities from multiple viewpoints, as you will discover in the following pages. This master has the CGE (Conférence des Grandes Ecoles) accreditation.

Future stakeholders of city planning must first experience and practice new collaboration tools before they can successfully integrate the professional world. They need new skills, new ways of working, the ability to take into consideration other perspectives and to step out of their comfort zone.

The Smart & Resilient Cities Masters' degree embodies JUNIA's desire to prepare students to become open-minded and well-rounded professionals with a realistic and inspired approach to technology and its' environmental, ethical and societal challenges.

After JUNIA, not only are all of our students prepared to take on projects and manage teams of experts, but they also benefit from the emphasis we place on the soft skills needed to take on the complex challenges of the workplace.

Our modern and pragmatic study program, combining architecture and engineering, personal development and technical expertise, trains professionals who are able to produce these collaborative results.

Several trends are emerging in the context of urban design, from 'optimistic technological visions' to 'ecological resilience'. We believe that whatever the scenario, the next generation of proposals will have to address and blend together these technological and social parameters.

Junia is delighted to be able to offer the international, innovative and inspiring courses of the Smart & Resilient Cities Masters degree with the excellence of French Tech, and hope to welcome you on this programm very soon.

Ana Ruiz-Bowen
Program Director



JUNIA KEY FIGURES



Almost **5,000**
students and
apprentices



28,000
graduates

5

3 engineering
diplomas 



40 areas of
professional
training

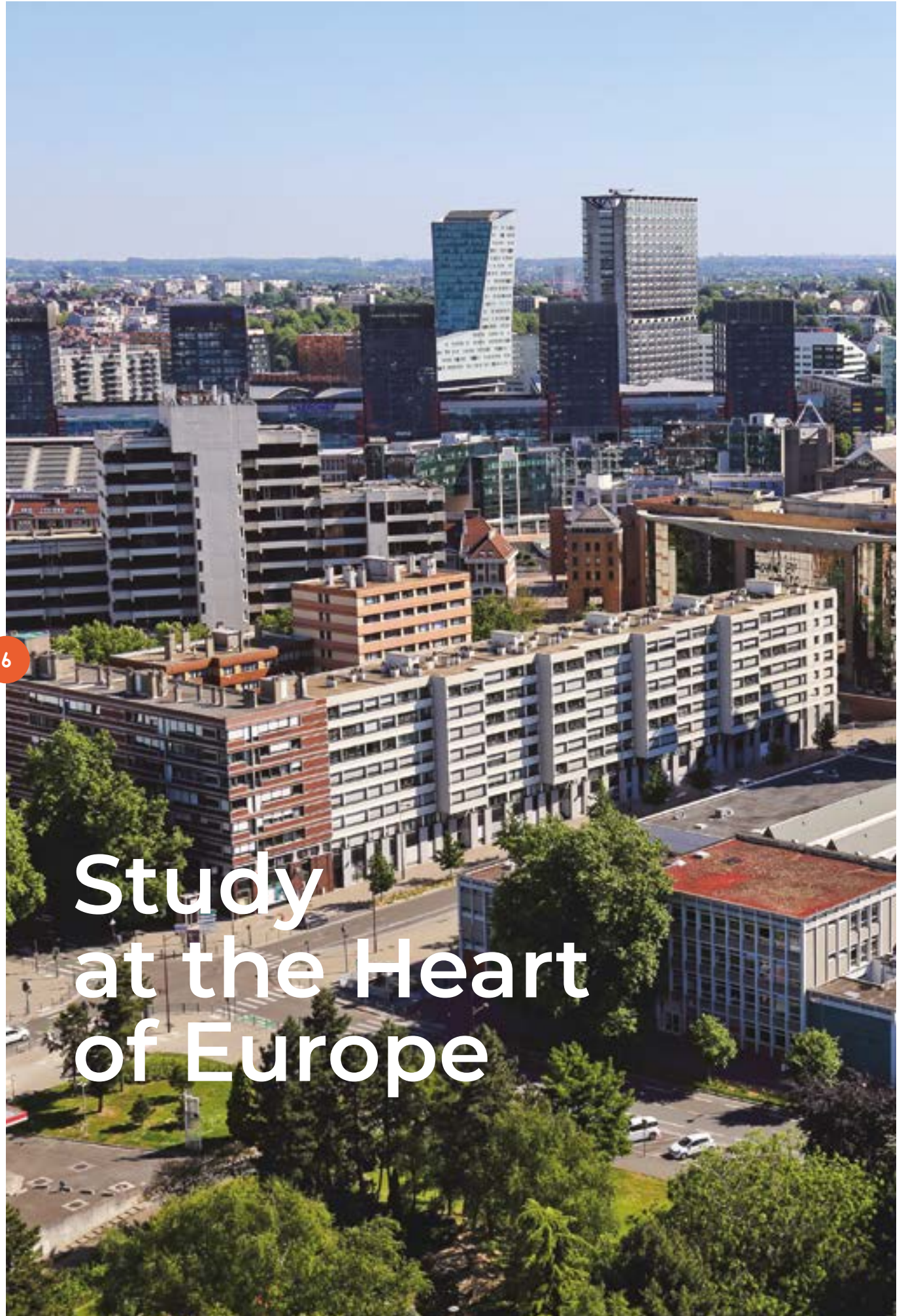
23 research teams,
co-trustee for **4**
research laboratories
of the region's Grandes
Ecoles and universities
and the **CNRS**



Almost **265**
international
partner
universities

450
permanent
employees





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Study at the Heart of Europe

Lille : a city lab at scale 1

Lille's rich industrial past and central situation in Europe (MAP) has put it at the heart of a rich web of transport links and some of today's most dense post-industrial development challenges.

The Métropole Européenne de Lille leads an ambitious environmental policy which combines energy efficiency and the development of renewable energies. Our region, a leader in the digital domain, wants to become one of the main digital hubs in France by obtaining the French government's 'French Tech' label.

As a Smart City 'Lab', the city of Lille already boasts modern and innovative development projects and a booming network of international companies whose success creates a range of complex engineering challenges locally.

Thanks to the unique geographical position of Lille, exploration trips are made possible to inspire and understand the bigger picture, and to gain insights from other parts of Europe.

These projects, both in Lille and beyond, enable students to work on real sites as teams, with other professions and other cultures, during their degree.



THE CAMPLUS

Junia is undergoing a radical and future-proofing transformation which will see many new features appear on the campus of the Catholic University of Lille by 2024. The new campus is set to become a cutting-edge hub of teaching, innovation, research and demonstration, which integrates the landmarks of the historic campus into forward looking redesign.

« Demonstration » is the connection between a functional space and a community of users, whether they are researchers, students, businesses or neighbours. By sharing this space, their ideas will meet and lead to new, better solutions. In these living labs, concepts will be developed, projects refined, products prototyped, tested, incubated... in realistic conditions.

The campus will turn entire buildings into research and experimentation spaces, dedicated to collaborations between students, researchers and partner businesses and include:

- an urban greenhouse
- a smart house
- a factory of the future
- a fab lab



FACTS ABOUT LILLE EUROPEAN METROPOLITAN AREA

90 towns
200000 M2 urban space in transformation

over a **1 000 000** residents across a urban and rural region, composed of large cities and villages.

Crossroad of Europe
110 km from Brussels
225 km from PARIS
280 km from London
300 km from Amsterdam





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Design tomorrow's Cities

Learn to lead change

Cities are in a constant transformation process and adapt continuously to new paradigms. We are currently living in the fastest ever-changing context ever recorded, and it is universal. Technological, social and economic upheavals are happening day after day. Several trends are emerging in the context of urban design, from 'optimistic technological visions' to 'ecological resilience'.

We believe that whatever the scenario, the next generation of proposals will have to address and blend together technological and social parameters. The designers of tomorrow's cities, the engineers of tomorrow, need to keep their minds open to the world, and to everything which affects the way we live.

This master's degree prepares students to develop urban areas by integrating energy usage and efficiency, the use of new energies and technologies, and environmental planning into their thinking. The course also enables future professionals to be involved in the conception of complex and multi-disciplinary projects.

That is why the Smart & Resilient Cities program is so unique: it prepares engineers, architectes and urban planners to think of the world they are designing for, not just what they are designing. The MSc - Smart & Resilient Cities, entirely in English, equips international students with the skills and competencies needed to succeed in our changing world.



A Multidisciplinary program



+ **Develop** analytical and planning skills within the context of an eco-neighbourhood.

+ **Learn** how to contribute to an urban project from an environmental point of view.

+ **Understand** the holistic approach and codesign to resource management.

+ **Deepen** your understanding of energy, water, and transportation and the stakes involved.

+ **Enrich** the applications in buildings.

+ **Integrate** production and distribution of renewable energies and digital tools.



*«Everything is Smart in the Smart & Resilient Cities: smart economy, smart people, smart government, smart mobility and smart environment...
The Junia Smart & Resilient Cities Master is a smart higher education program that consolidates entrepreneurship spirit and personal enrichment to question our future.»*

Catherine Chardon
Managing Director, RATP Dev, London.



Redefine Your Boundaries

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[. . .]

Teaching & learning methodologies

Creativity and collaboration are your new normal

Today a single discipline cannot meet all the emerging technical, social and economic needs of a city. Therefore, Smart & Resilient Cities require the combination of multiple skills from a variety of stakeholders, who must learn to cooperate and work together. New collaborative and innovative working methods and spaces are employed in order to confront the reality of smart cities.

Test your abilities in context

The program includes completion of a full-time team project and professional internships with a company or laboratory in France or abroad.

Submit real proposals from year one

Studio workshops are proposed on a real site with the associated actors (1 studio/year). The students will propose and design eco-districts and buildings, taking into account environmental issues, integration and context (social, economic, landscape), and architectural quality in a broad sense.

Broaden your view of the world

Students will participate in an intensive international learning trip to discover innovative ecosystems in cities such as Montreal, Barcelona, Nice... From its' ideal location at the heart of European the Smart & Resilient Cities Program will integrate exploration trips from Lille to other European cities.



**EXPERIMENTAL
APPROACH**



WORKSHOPS



**LEARNING
EXPEDITIONS**



FIELD TRIPS



CONFERENCES



Step into a new learning experience

YEAR 1

Laying the ground for Smart & Resilient Cities

Join us

SEMESTER 1

Discover the full range of classes, facilities and experiences.

STUDIO 1

1st major project begins

Experience seminars, creativity and means of expression, innovation & Collaborative project.

Lille World Forum Congress

Get started on your professional project, step into:

- Fundamentals of energy and renewable energies,
- Transport and mobility issues: economy, impacts, policies and uses.

Architecture & urbanism field trips

Discover other European cities
Learn about

- European towns and sustainable mobility
- Architecture, sustainable design & new spaces

Meet companies & start networking.

DELIVER FIRST ASSIGNMENTS

SEMESTER 2

Build on your technical knowledge with a cycle of conferences about major urban challenges.

Discover philosophy for engineers:

- ethics, meaning, city,
- circular Economy.

STUDIO 2

2nd major project begins.

Participate in a learning expedition

& an international seminar: «Future cities: smart, inclusive and sustainable»

Study technical subject in detail

- Urban project management
- Ubiquity and the internet of things
- Dynamical thermal simulation and HVAC
- Building management systems and home automation
- BIM.

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YEAR 2

experience the full picture of Smart & Resilient Cities

SEMESTER 3

STUDIO 3

Start your 3rd major project.

Environnemental engineering :

- Water Management, Landscaping and green spaces
- Certification and environmental footprint.

Town planning :

- Socio-political approach of the city
- Smart Grid, and energy management at bulding scale
- Urban environment principles.

Learning expedition

discover about other approaches in different contexts and cities.



Sustainable urbanism

Understand the sociology of urban development, protocols and accords. Urban Planning and land use, Environemental urban design, Smart & Sustainable mobility. History of urban development, dynamic and multidisciplinary approach of eco-districts.



Building sciences

Understand bioclimatic architectural design of building envelopes; develop knowledge of smart building and home automation, domotics, and the sustainable habitat. Develop skills to perform building energy audits, diagnostics, climatic engineering, and modelization, energy requirements and building renovation.

Program Overview

Studio

Innovation & the city

Green building & new spaces

Environmental Urban design

Smart & sustainable Mobility

Communication & corporated tools

Smart energy

Connected city

Major Urban Challenges

Governability &
New Business model for the city

Low carbon & Sustainable city

Project YES Innovation



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SEMESTER 4

success

YES project:

a collaborative inter-school work focusing on research and/or companies issues.

PROFESSIONAL EXPERIENCE

Final internship: 4 to 6 months.
Ready to start



Innovation in an urban context

Master the tools, concepts, advantages and limits of projectmanagement and implementation, collective intelligence, collaborative projects. Governability & New business model for the city.



Tools for engineering management

Emphasis on the soft skills needed to take on the complex challenges of the workplace as : Corporate social responsibility, Professional and Personal project, visual communication, Corporate social responsibility, Intercultural communication.



and dedicated facilities

Meet our exceptionnal Staff

Invited Speakers Coming From Education And Practice

Our cross-disciplinary faculty, illustrious guest speakers and different immersive learning methods will stimulate creativity and the necessary problem-solving skills for designing cities in a world perpetually in motion.

Montserrat Pareja Eastaway

Professor of Economics
at University of Barcelona,

Didier Larue

Landscape Planner consultant
at AtelierLD,

Damir Hatic

Associate Professor at VIA
University, Denmark

Victor Jumez

Environmental engineer and
Founder of Symoe,

Francois Laurent Touzain

Engineer, Business Developer and
Founder of 360°,

Oliver Page

Architect and International
Development director at SCAU,

Grahame Baker

Principal Lecturer
University of Greenwich,

Ouafia Djebar

Architect and Partner of L'Agence
Française d'Architecture

Collette Saba

International Development
Consultant,

Syrine Ismaili Bastien

Environmental Law Consultant,

Thomas Batorie

Environmental engineer at
Fédération Française du Bâtiment,

Philippe Tostain

Ecomobility Consultant.

Rania Wehbi

Associate Professor at JUNIA

Program Director

Ana Ruiz Bowen
Junia

Coordinator

Vedrana IKALOVIC
Junia

Stéphane BALY
Junia

Administrative

Véronique Bonte

A DEDICATED STUDIO FOR THE MASTER'S

Within the main HEI building, our Master's has a dedicated studio which enables learning experiences to be shared and developed collectively.

A CO-DESIGN CENTRE

The co-design centre enables students to experience experimental and user-centric methodologies for innovation management, in the 'Euratechnologie' area (Lille's official innovation and digital excellence cluster).

A FAB-LAB

Junia's 250 m² Fab-lab (fabrication laboratory) offers (personal) digital fabrication. The facility is at the heart of the campus and offers a range of rapid prototyping tools (3D printer, laser engraver, laser cutting, printed circuit board engraving machines, etc.) and a 'tech-library'.





Share the power of connection



Develop your own network

The Smart & Resilient Cities master has an outstanding faculty and regularly provides lectures from best professionals in the field – as well as many opportunities to interact with important companies and be noticed by them.

There's always a lot of activity going on at the Junia Campus and strong relationships are built with the «real» world. During your master you are very likely to encounter a large range of professionals from the following companies:

Aérocentre | Atos | Bion | Bonduelle | Bouygues Construction | Bouygues Energies | Capgemini | Castorama | CGI | Colas | CSO Energy | Décathlon | Eiffage Construction | Eiffage Energies | Eurovia | Groupe Fayat | Léon Grosse | Rabot Dutilleul | RTE | Sopra Group | Sylvagreg | Syntec | Technord | Toyota | Vinci Construction | Vinci Energies | and more...

BS NODES SG - Industrial Chair



At the heart of Catholic University of Lille, is hosted the SBnodesSG (Smart Buildings as nodes of Smart Grids) Industrial Chair. Launched by Junia and 10 actors from the economic sphere, with MEL support. The vocation of the SBnodesSG chair is to improve user comfort and energy efficiencies by incorporating

connected objects and big data in the intelligent management of buildings and energy networks. The project aims to explore the potential for intelligent buildings as Smart Nodes within intelligent energy networks or Smart Grids.



Stay in touch with the Alumni network

The JUNIA Alumni network is an independent entity dedicated to supporting students both during and after their studies.

JUNIA Alumni's purpose is to lead a solidarity network (of nearly 23059 Alumni!), to help you with your career, to strengthen links between Junia and companies, and to give guidance on your professional project.

Some companies where our Alumni work

SINTEO

Sustainable building and CSR engineer

TRACTEBEL - ENGIE GROUP

Business Developer & Sales Engineer - Urban

ARP-AASTRANCE

Smart buildings design manager - Co-founder of campus market, a circular economy business

VINCI IMMOBILIER

Deputy Development Manager

EIFFAGE ENERGIE SYSTÈMES

Business engineer,

LEGENRE UK LIMITED

Site manager

SOLENER

Project manager (sustainable building)

LINKCITY Île-de-France

Urban projects manager

CONSTRUCTION 21

Innovation project officer - infrastructure and sustainable cities

BOUYGUES ENERGIES & SERVICES

Smart City project manager

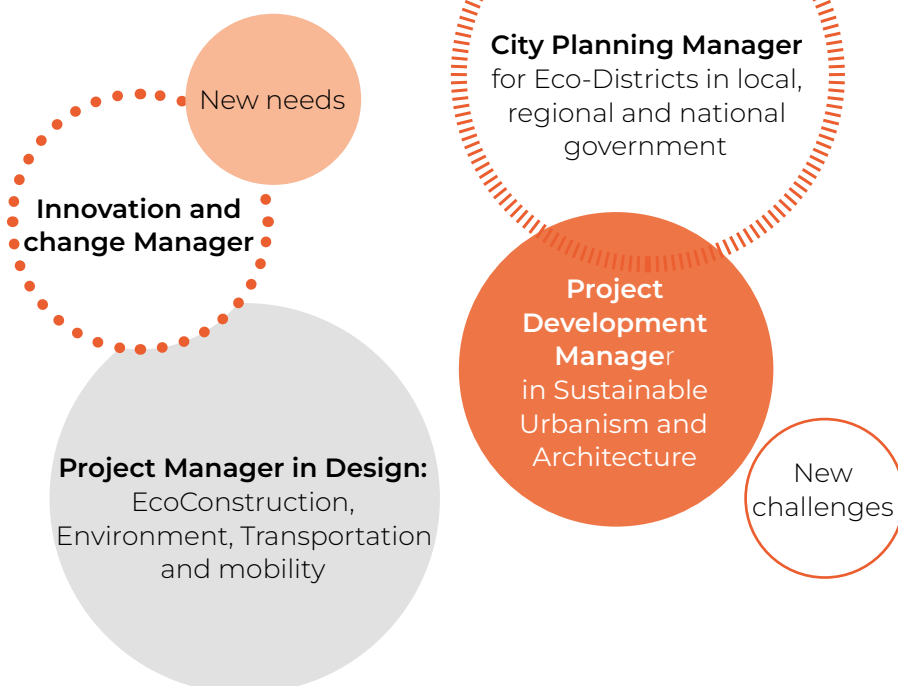
CALQ Architecture

Works supervision assistant

IES LTD

Urban Simulation Assistant

Some career ideas



"In this Master's, the pedagogic approach is completely different from a traditional engineering program because we are able to work on various innovative urban projects."

Gaëlle Thibault
SC student - HEI Lille

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Get ready to Apply

Sofiane EL KADAOUI
SC student - HEI Lille

« Our minds are opened to the society and environmental issues in cities thanks to inter-disciplinary classes and practical applications in innovative, life-sized projects »

Clement Chardon
SC student - HEI Lille

« I spent 2 amazing years in the Smart & Resilient Cities Master's at HEI. It taught me to learn differently : based on projects, we learned by ourselves and with others. We learned about energy, the internet of things, smart grids, the environment, urbanism, architecture, sociology and much more. Come and join us in this incredible master's, where we learn the future missions of the cities ! »

Admission process



APPLY NOW !

Submit an application on our online platform junia.force.com



INTERVIEW

Our team review your application and invite you to an interview (in-person or online)



ADMISSION

You will be notified of the final decision on your application

APPLY BEFORE MAY 15th



KEY COURSE INFO

Qualification awarded:

Master of Science (MSc-CGE)

Duration: 2 years (120 ECTS)

Language of instruction: English

Start date: September

Intake: 30 students

Program director:

Ana RUIZ BOWEN

Admissions information

admission.international@junia.com

ENTRY REQUIREMENTS

Bachelor's degree (or equivalent) in the field of Engineering, Architecture or urban planning.

English B2 level ie. BULATS 60, TOEIC 785, TOEFL 87.

TUITION FEES 2021-2022

UE Tuition Fees : 10500€



JUNIA

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France
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