Master in Urban Systems

Master Info Days 2025
27.02.2025

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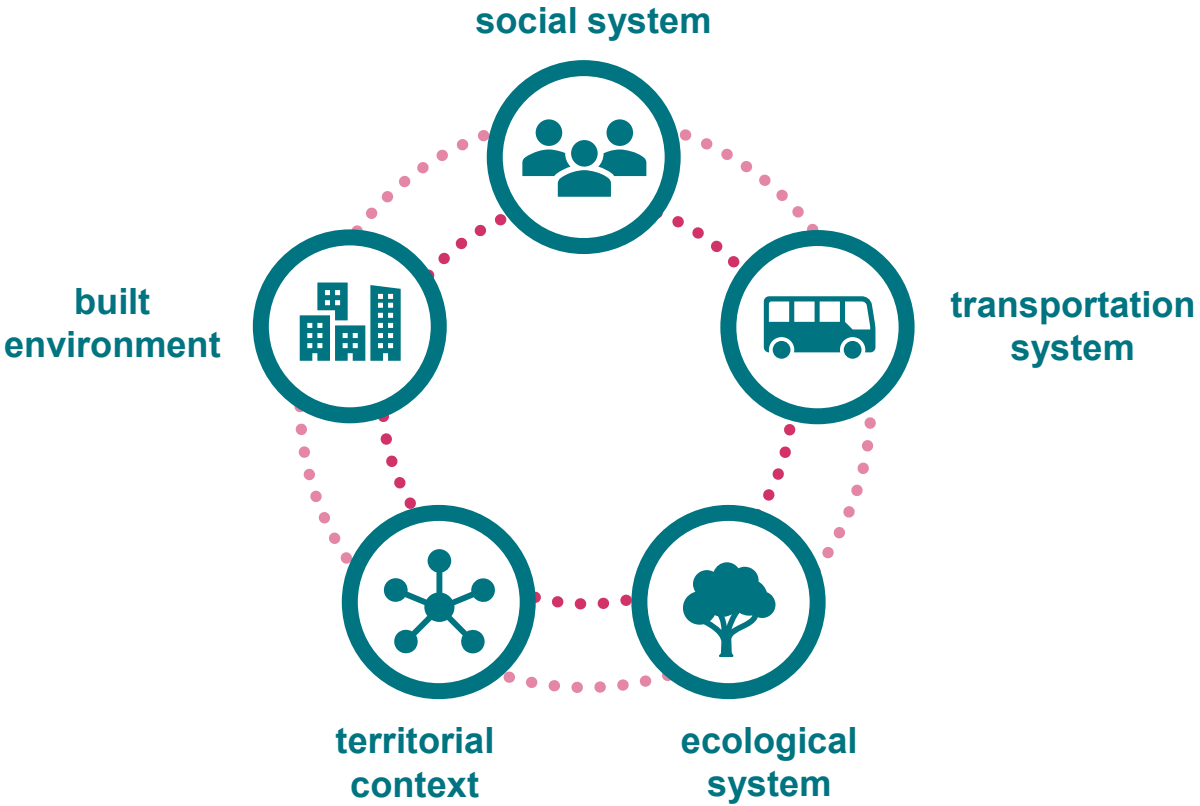
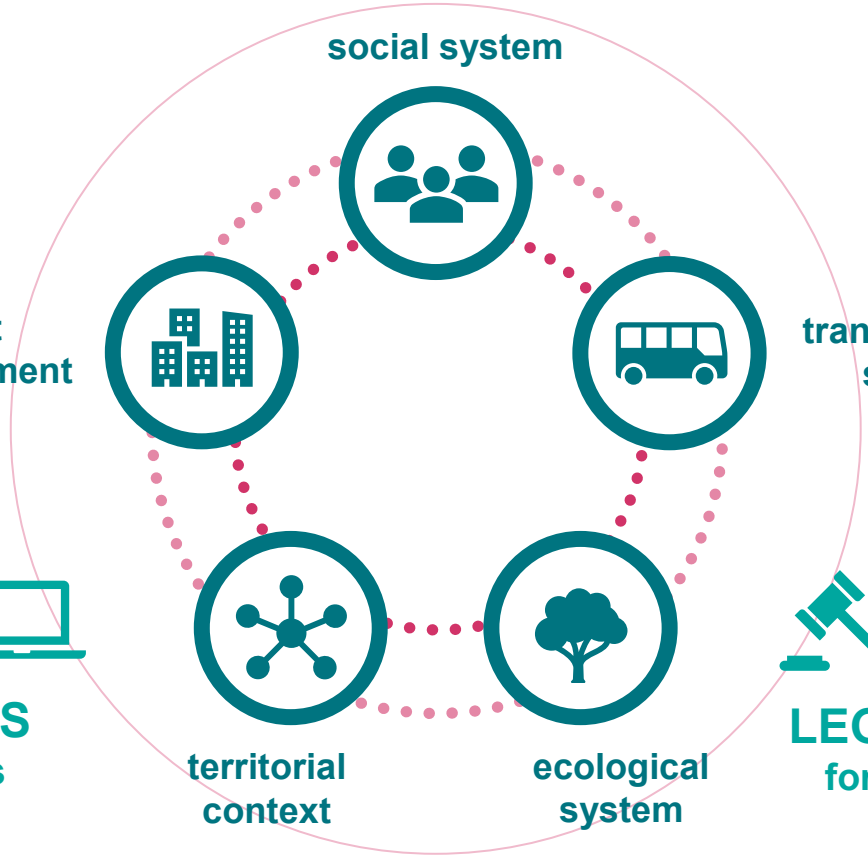
École
polytechnique
fédérale
de Lausanne

What makes up an urban system ?



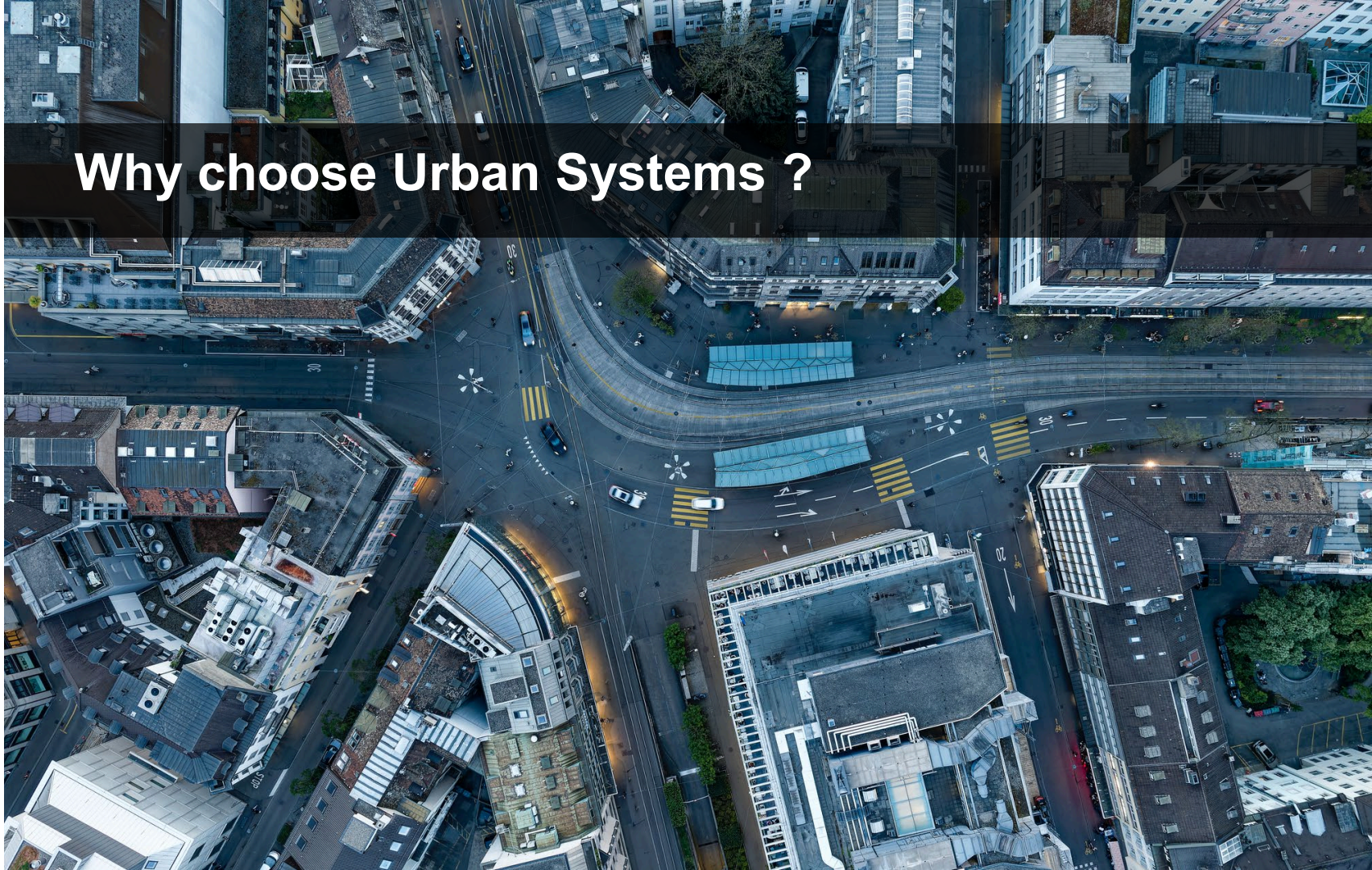
What tools do we have to develop and implement sustainable agendas in urban development?



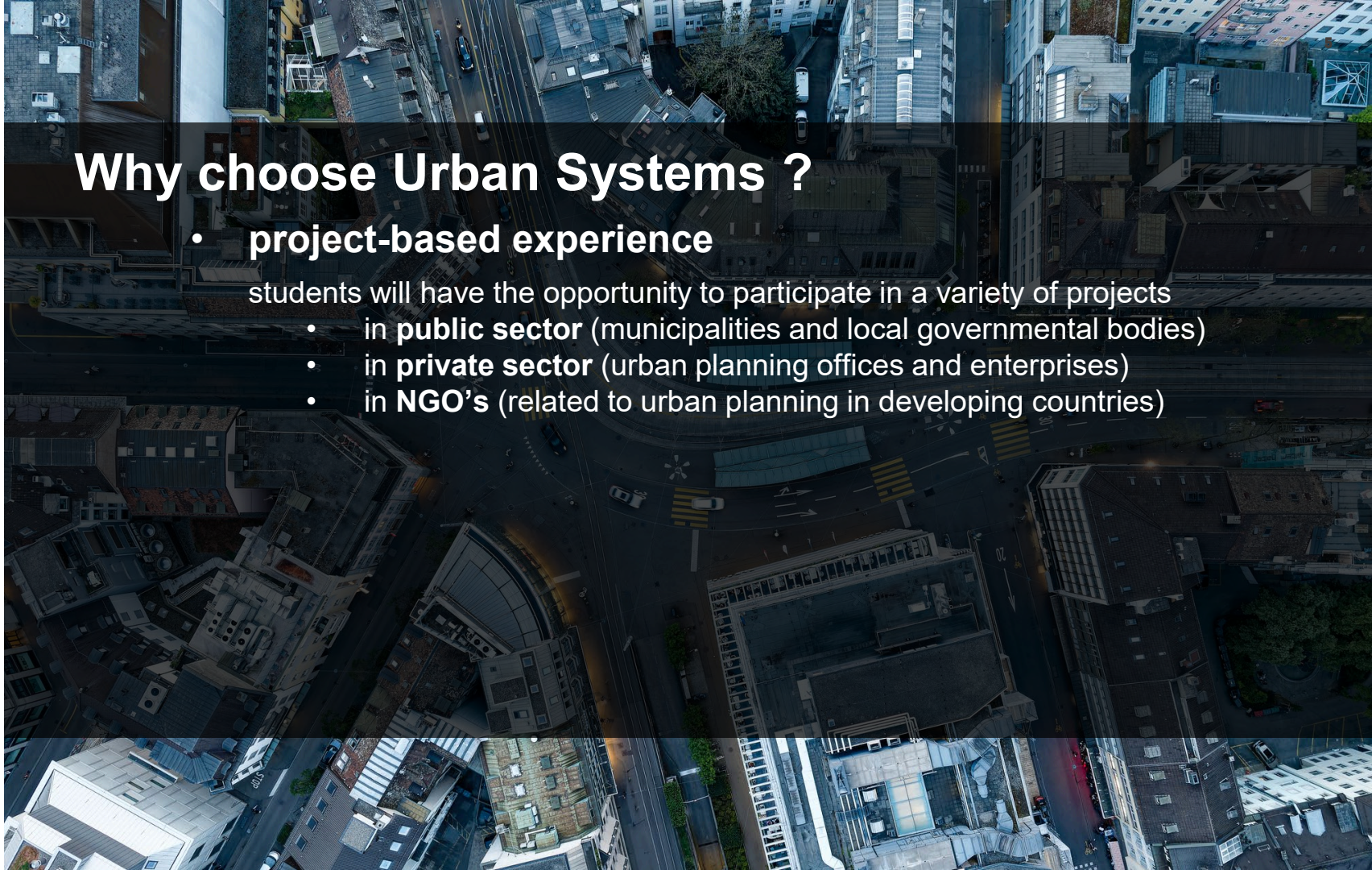
DIGITAL TOOLS
for urban analysis

LEGAL TOOLS
for governance

Why choose Urban Systems ?



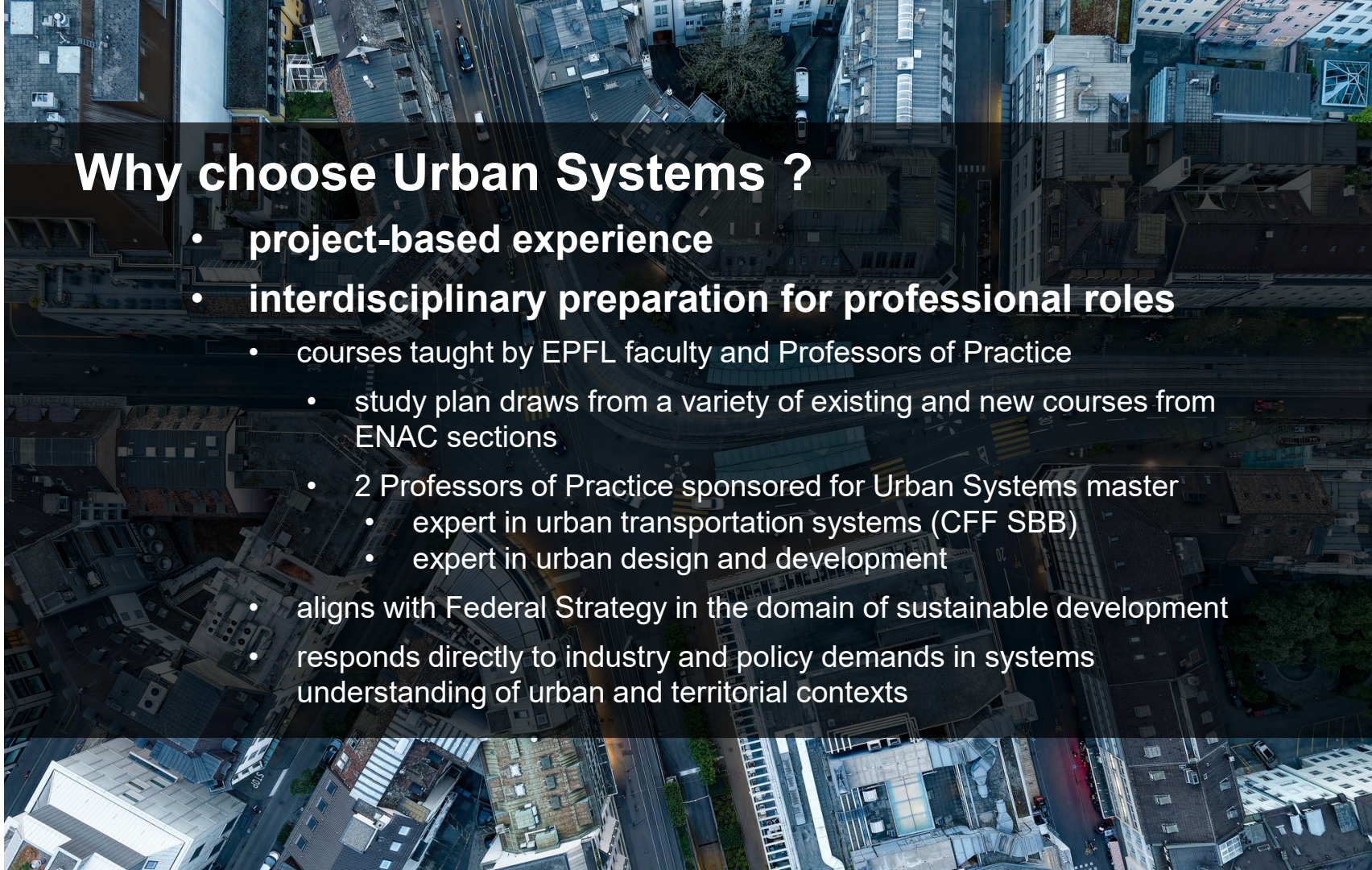
MSc in Urban Systems



Why choose Urban Systems ?

- **project-based experience**

  students will have the opportunity to participate in a variety of projects
  - in **public sector** (municipalities and local governmental bodies)
  - in **private sector** (urban planning offices and enterprises)
  - in **NGO's** (related to urban planning in developing countries)



Why choose Urban Systems ?

- **project-based experience**
- **interdisciplinary preparation for professional roles**
  - courses taught by EPFL faculty and Professors of Practice
    - study plan draws from a variety of existing and new courses from ENAC sections
    - 2 Professors of Practice sponsored for Urban Systems master
      - expert in urban transportation systems (CFF SBB)
      - expert in urban design and development
  - aligns with Federal Strategy in the domain of sustainable development
  - responds directly to industry and policy demands in systems understanding of urban and territorial contexts

Professional prospects

- Managers of **sustainable urban and territorial planning** at all levels
- Developers of **public policies** and strategic development plans at local, cantonal, and federal levels
- Project managers in large-scale **urban transition projects**
- Consultants in transportation and mobility operators and **urban infrastructure** providers
- Consultants in **medical institutions** focused on health and urban environments
- Careers in **NGOs** focused on sustainable urban practices and transitions
- Careers in **research and development**, either at a research institution or university

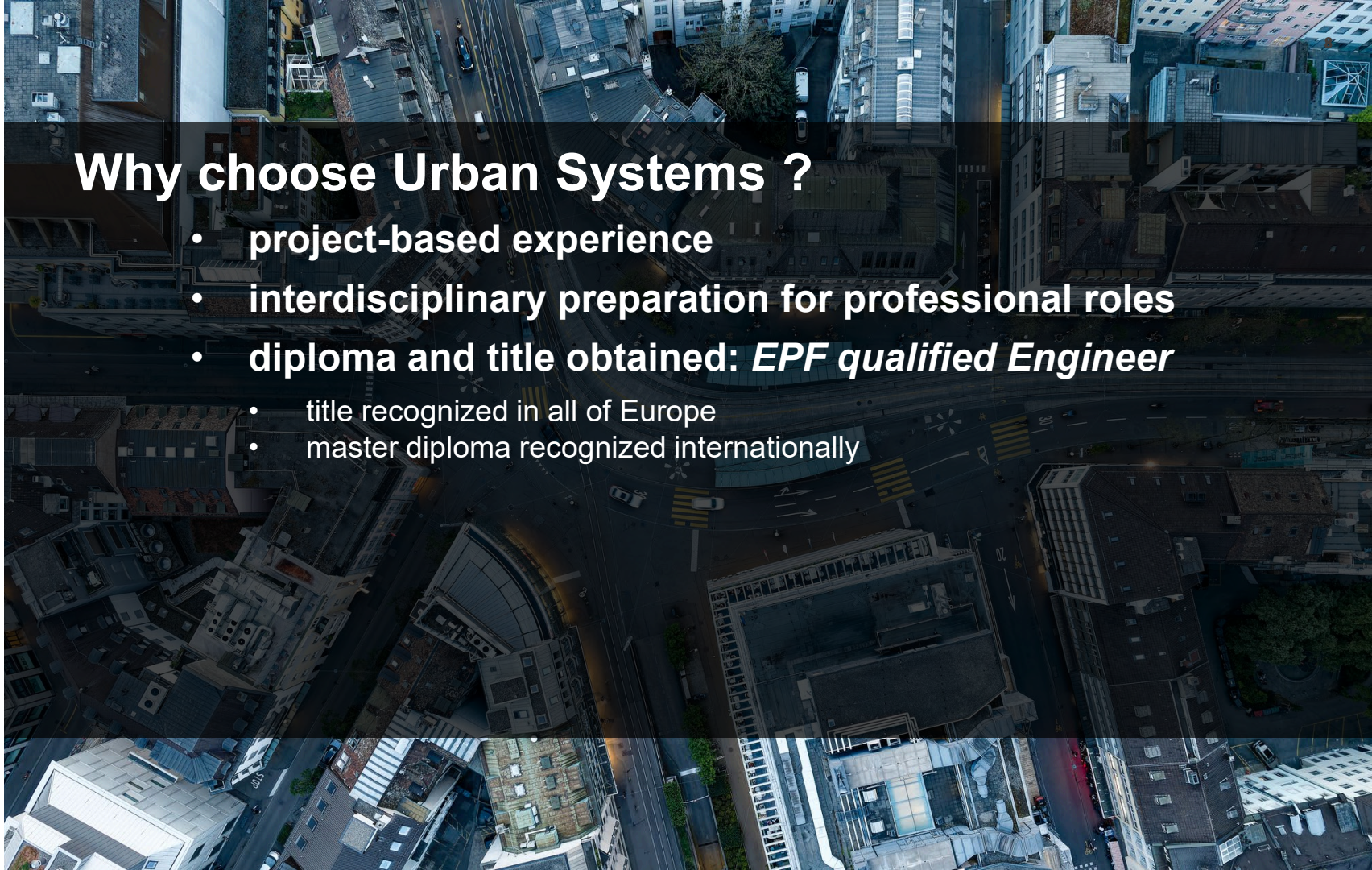
The program was developed in collaboration with professional associations and governmental offices who emphasized the need for this type of systems-based formation, including:

SBB CFF FFS

unisanté

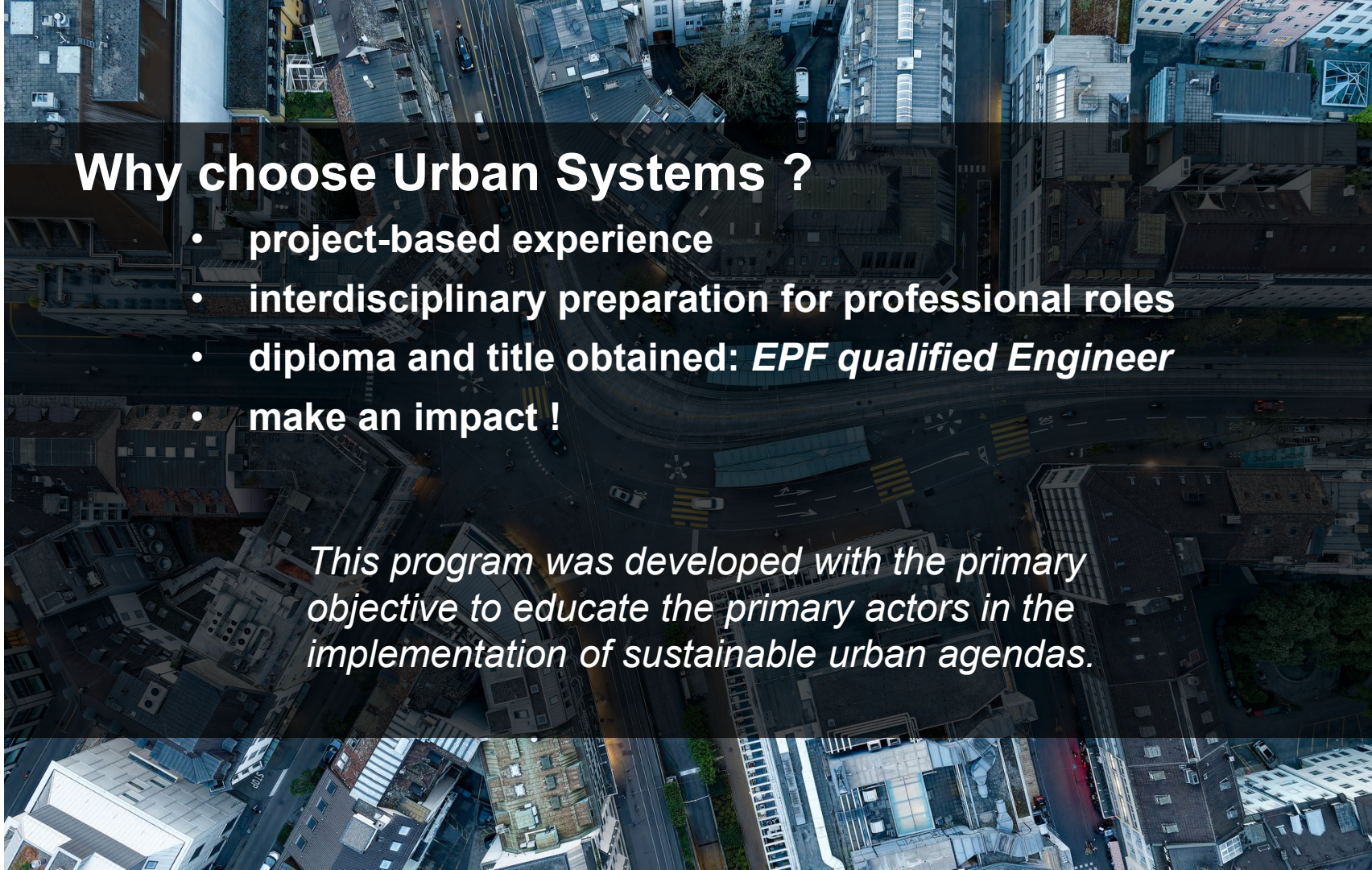
SWISSRAIL Industry Association

sia
schweizerischer ingenieur- und architektenverein
société suisse des ingénieurs et des architectes
società svizzera degli ingegneri e degli architetti
swiss society of engineers and architects



Why choose Urban Systems ?

- **project-based experience**
- **interdisciplinary preparation for professional roles**
- **diploma and title obtained: *EPF qualified Engineer***
  - title recognized in all of Europe
  - master diploma recognized internationally



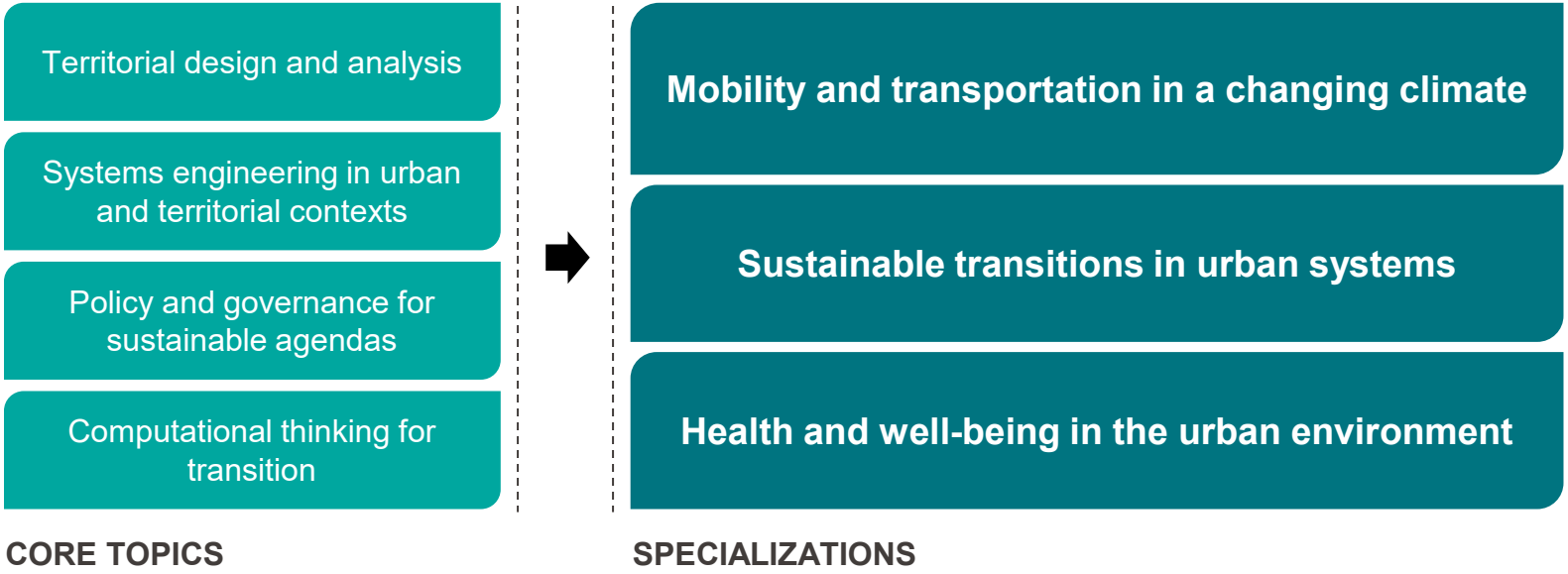
Why choose Urban Systems ?

- **project-based experience**
- **interdisciplinary preparation for professional roles**
- **diploma and title obtained: *EPF qualified Engineer***
- **make an impact !**

This program was developed with the primary objective to educate the primary actors in the implementation of sustainable urban agendas.

Program overview

Academic title: MSc EPFL in Urban Systems, *EPF qualified engineer*
2 years / 120 ECTS
Admissions: consecutive for GC and SIE, specialized for SAR and others
Host section: Environmental sciences and engineering
Language: English



MSc Urban Systems study plan – structure

ADMISSIONS PREREQUISITES

- Admissions block for SAR (< 30 ECTS) and other non-consecutive applicants
- to be completed before start of or during masters cycle

MASTERS CYCLE

CORE BLOCK
FOUNDATIONS
19 ECTS

PRACTICAL BLOCK
26 ECTS
Core project / 10 ECTS
Specialization project / 10 ECTS
SHS project / 6 ECTS

CORE GROUP
OPTIONS
15 ECTS

SPECIALIZATION GROUP
30 ECTS

total: 90 ECTS

+

MASTERS PROJECT
30 ECTS
(internship credited with PDM)

total: 120 ECTS

MSc Urban Systems study plan – admissions block

- Prerequisites are selected from list of bachelor engineering and math courses, to ensure that the student is well prepared for the engineering components of the masters cycle. The selection will depend on the original profile of candidate as well as their specialization.

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MSc Urban Systems study plan – core block

- Fundamental courses, obligatory for all students, to provide a foundation for all 3 specializations as well as a qualitative and quantitative overview of systems thinking and governance in the urban and territorial context

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CORE BLOCK
FOUNDATIONS
19 ECTS

new	**Systems approaches to urban transitions** *(Binder/Hecher/Jessel/Montford)*	3 ECTS
CIVIL-534	**Computational systems thinking for sustainable engineering** *(Sonta)*	4 ECTS
new	**Digital urban twins** *(Kaplan)*	3 ECTS
new	**Social justice and transition in the urban context** *(Pattaroni)*	3 ECTS
new	**Urban governance** (Genoud)	3 ECTS

Foundation courses taught by ENAC faculty and sponsored professors of practice

MSc Urban Systems study plan – core options group

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Core courses with primarily engineering basis selected from a list of options

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MSc Urban Systems study plan – specialization

1. Mobility and transportation in a changing climate
2. Sustainable transitions in urban systems
3. Health and well-being in the urban environment

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Specializations

Mobility and transportation in a changing climate

This specialization aims to train specialists in the sustainable transition of transportation and mobility systems. Students will approach transport from different angles, including analytical methods, planning practice, infrastructure design and its impact on land use, and will discover new methodologies to foster the ecological transition of mobility.

Sustainable transitions in urban systems

Students will acquire the comprehensive transdisciplinary skills needed to shape the cities and territories of the future in the context of a changing climate. This specialization equips students with a comprehensive skillset in urban design and analysis that will enable them to implement sustainable solutions in urban and territorial development.

Health and well-being in urban environment

There is a growing recognition of the impact of the built environment on health and well-being, in particular in urban contexts. Students will explore this relationship by building an interdisciplinary knowledge base, learning about effective interventions in the built environment at a variety of scales and how new technologies in sensing and environmental analysis can aid in the pursuit of healthier environments.

MSc Urban Systems study plan – practical block

CORE PROJECT: atelier format, territorial scale
SPECIALIZATION PROJECT: with NGO, ENAC lab or international partner

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Project overview

The masters cycle includes 2 distinct project formats, leading up to the masters project in the final semester of the program.

CORE PROJECT 10 ECTS

- Atelier format project around territorial planning and design, reconfiguration of a particular system
- Introduces engineers to territorial scale

SPECIALIZATION PROJECT 10 ECTS

- In collaboration with NGO or external enterprise or
- In an ENAC research lab
- Thematic based on selected specialization

MASTERS PROJECT 30 ECTS

- In an ENAC research lab or
- With an external partner (industry or public sector)

Questions ?

Contact:

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urbansystems.info@epfl.ch