

CHALLENGE

Today's urban mobility systems (UMS) result from about two centuries of global developments, culminating in diverse challenges for people and planet. Significant, systemic, and timely transformation is needed to meet the multi-faceted demands of future generations and to stay within planetary boundaries of today.

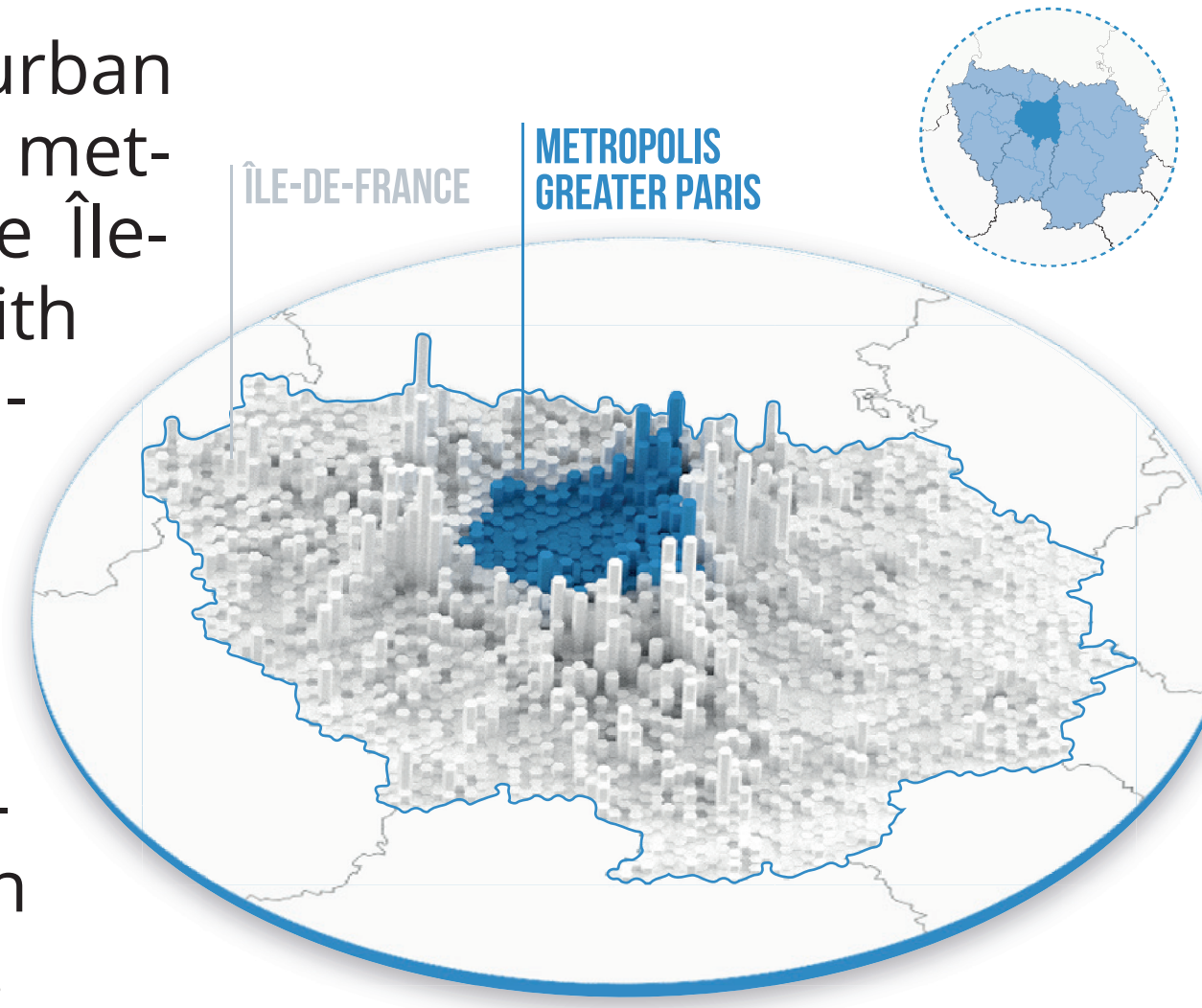
Transport contributes up to **1/4** to global GHG

1.3M people die each year on roads

87% of women have been harassed in Paris' public transport

GEOGRAPHICAL CONTEXT

We are studying the urban mobility system at the metropolitan scale of the Île-de-France region, with focus on the Communauté d'Agglomération Paris-Saclay (CPS), its 27 communes, and comparable peripheral areas. A focus lies on functional coherence.



ANTHROPOLIS CHAIR

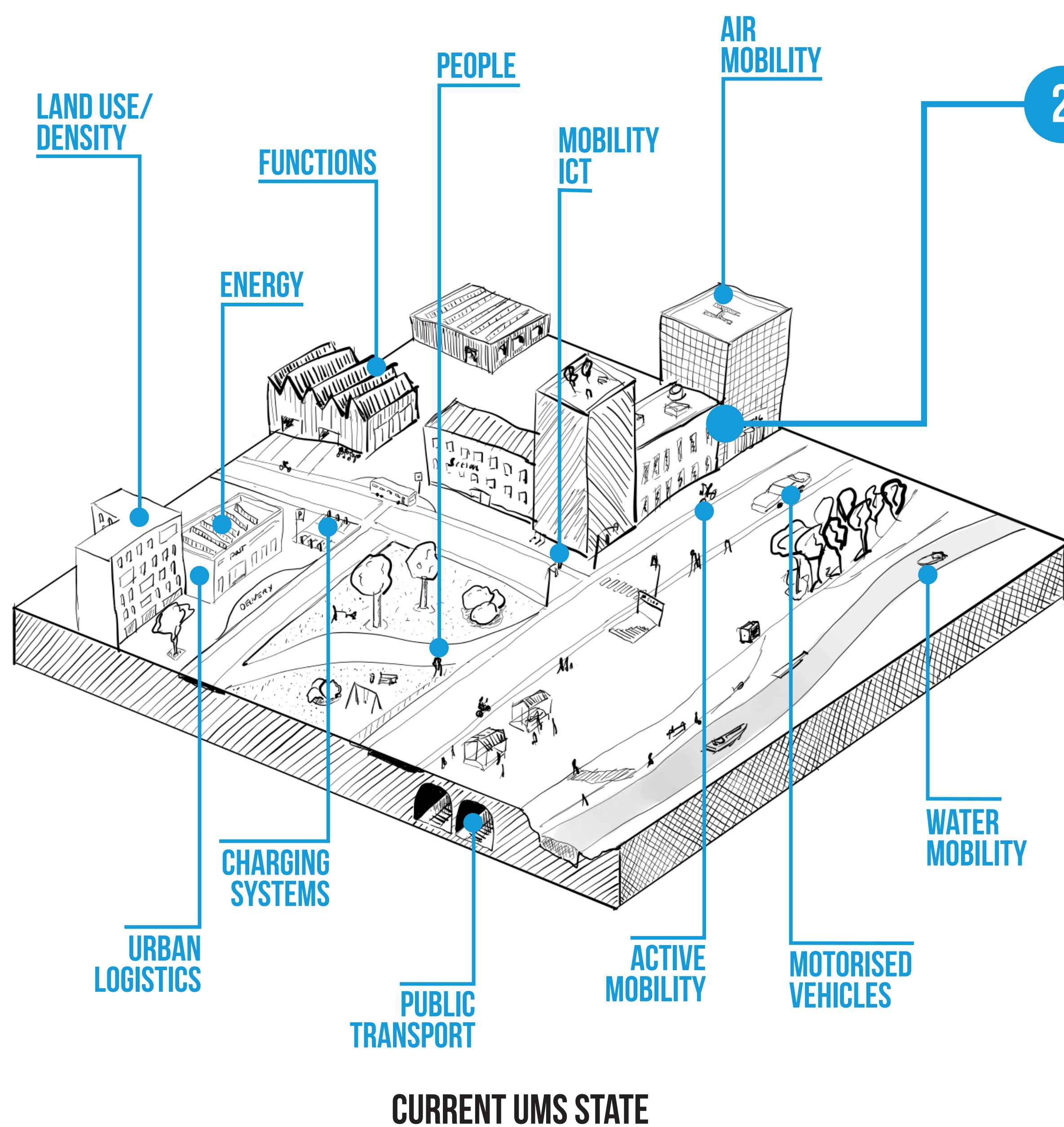
The doctoral project started in October 2020 at the Chair Anthropolis, a joint institution of IRT SystemX and the Laboratoire Génie Industriel, CentraleSupélec, supported by the project partners EDF, Engie, Groupe Renault, CPS, and Nokia Bell Labs. The project is conducted at the interface of system engineering, design engineering, design science, and the topically related domains; foremost urban, mobility, mobilities, transportation, and futures studies.

Chair partners:



RESEARCH QUESTION: HOW DOES CO-CREATING URBAN MOBILITY FUTURES CONTRIBUTE TO PLACE-BASED TRANSITION DESIGN?

1 URBAN MOBILITY SYSTEM



2 UMS PROBLEM

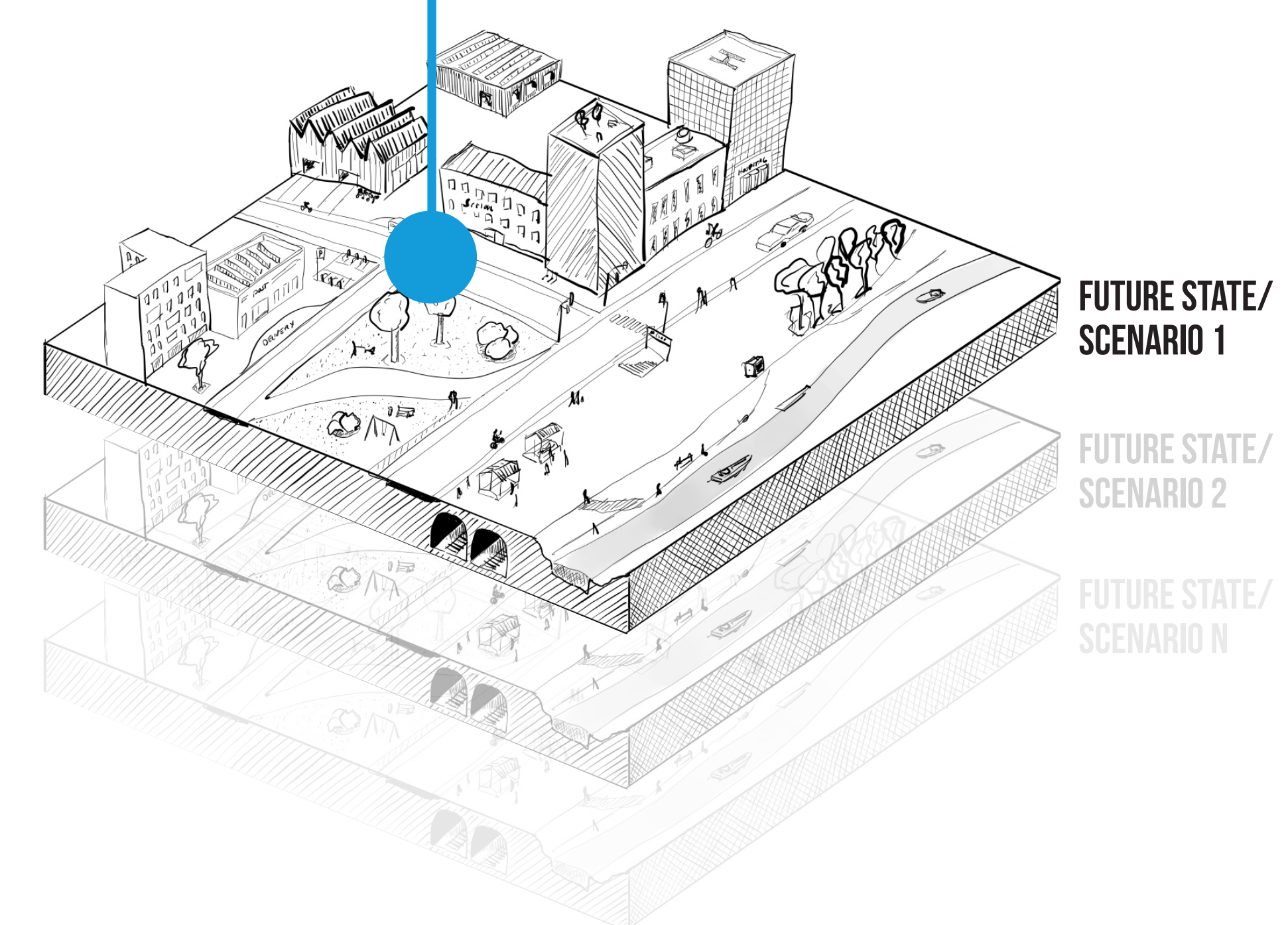
E.g., increasing affordable access for disadvantaged residents in district x.

4 UMS TRANSITION

E.g., new shuttles, applications, or other services/products/policies to enable the transition.

3 PLACE-BASED UMS SOLUTION

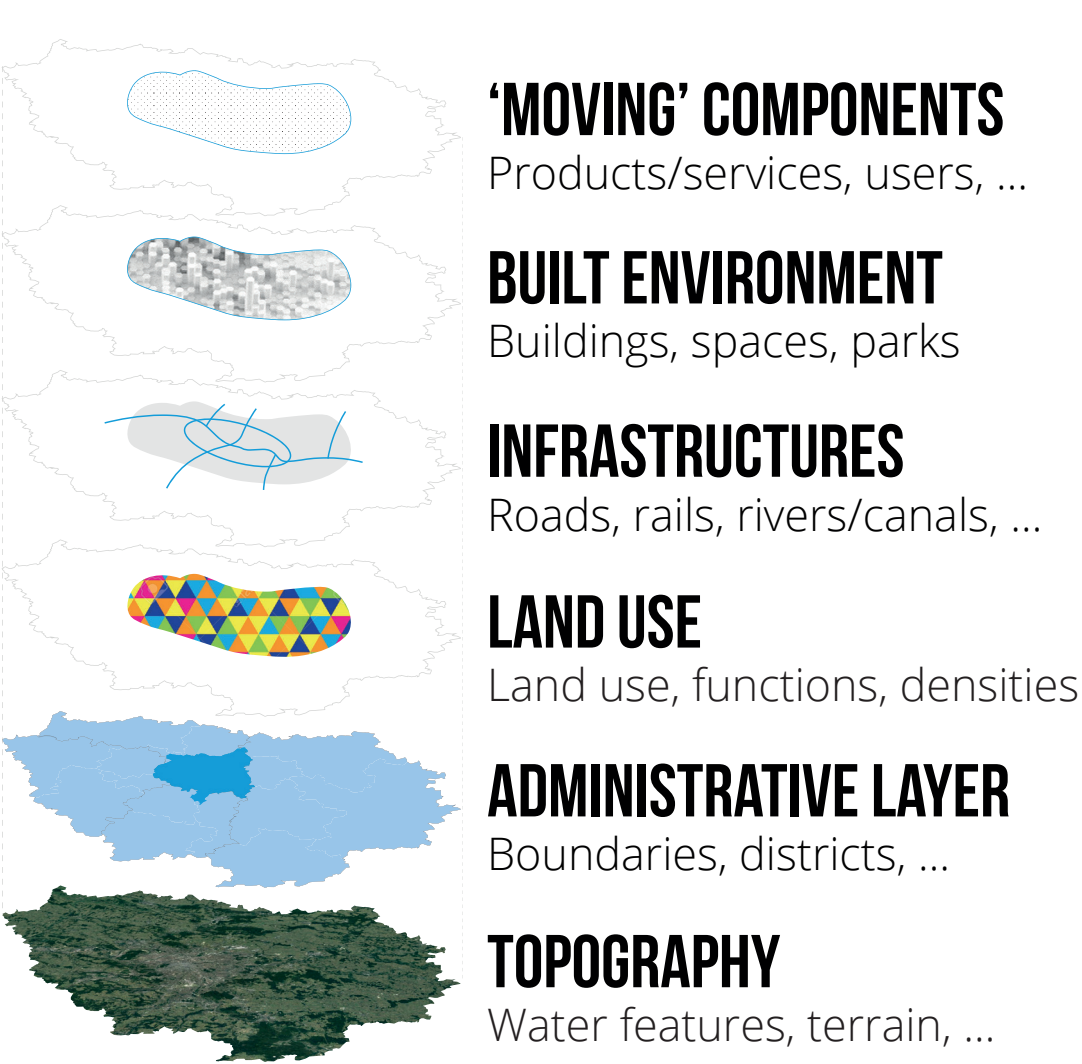
E.g., subsidised public transportation adaptation in district x with flexible, adapted, and on-demand schedule.



CURRENT UMS STATE

N FUTURE UMS STATES

TIME AXIS



1 URBAN MOBILITY SYSTEM

An Urban Mobility System (UMS) describes the multiscale and multi-disciplinary complex adaptive socio-technical system that defines personal mobility taking place in the primarily continuous daily territories of the residents and users of an urban or metropolitan area. It is constituted of **sub-systems, situated between urban and local scale, as well as social and technical elements**. It changes through internal and external dynamics, yet retains a continuously recognisable system state at all times.

2 UMS PROBLEM

An UMS problem constitutes a specific sub-component of a current or past UMS. It defines a certain lack, challenge, or assumed difficulty that shall be addressed.

3 UMS SOLUTION

An UMS solution defines a response to a specific UMS Problem or several. A place-based UMS Solution is a sub-set and refers to an connection with the location and context.

4 UMS TRANSITION

Transition from current to future UMS by addressing one or several problems of current UMS state through using/creating place-based UMS solutions.

RESEARCH DESIGN

We aim to contribute to the understanding of the role of co-creating UMS futures with different public and private stakeholders, and their impacts on UMS transition design.

KEY CONTRIBUTIONS

Models

URBAN MOBILITY SYSTEMS (UMS)
UMS PROBLEMS
PLACE-BASED UMS SOLUTIONS

UMS TRANSITION DESIGN
(INCL. FUTURES/CO-CREATION)

Overall Thematic Challenge

INTEGRATING PERIPHERAL
URBAN AREAS SUSTAINBLY AND
INCLUSIVELY IN THE UMS OF
A METROPOLITAN AREA

VALIDATION PROCESS

Illustrative sub-systems/cases

MODAL SUB-SYSTEM:
PUBLIC MASS TRANSIT

SERVICE SUB-SYSTEM:
MOBILITY-AS-A-SERVICE

METHODOLOGICAL SUB-SYSTEM:
SPATIAL PLANNING & DESIGN

Field research components

1) INITIAL SCOPING:
INTERVIEWS

2) VALIDATION:
ATELIERS/FOCUS GROUPS

3) EXPERIMENT:
CO-CREATING UMS FUTURES

Two key contributions are the development and validation of models of UMS and their components, as well as their transition process, focusing on co-creation.

To apply the models, a real world challenge is chosen, combining several acute challenges in the context of the Île-de-France, and other metropolitan areas.

Building on the challenge and the overall UMS, three sub-systems are chosen to represent different possible characteristics and analyse their specific behaviours.

Following the conceptual work of the first year, the second year will be defined by field research, starting with interviews, workshops, and focus groups.

Publications

Gall, T. (2021) Conceptualising multiple Future Scenarios: A Proposal for Expansions of the Futures Cones, AESOP YA Conference, online, 29 March – 2 April 2021 [Best Paper Award]
Gall, T., Vallet, F. and Yannou, B. (2021) Supporting the Representation of Futures Studies: A Revision of the Futures Cones. Submitted to journal on 13 July 2021, under revision.
Gall, T., Vallet, F., Douzou, S. and Yannou, B. (2021) Re-Defining the System Boundaries of Human-Centred Design, ICED21 Conference, online, 16-20 August 2021 [Reviewers' Favourite Recognition]
Gall, T., Vallet, F., Douzou, S. and Yannou, B. (2021) Anticipate, Adjust, Adapt: Managing Sustainability Transitions through multiple Scenarios of Urban Mobility Futures. 49th European Transport Conference, online, 13-15 September 2021.
Gall, T., Vallet, F. and Yannou, B. (2021) Co-Creating Sustainable Urban Futures: An Initial Taxonomy of Methods and Tools. 57th ISOCARP World Planning Congress, Doha, 8-12 November 2021.