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Tarek Chouaki-
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Tjark Gall
PhD Candidate



Laura Mariana
Reyes
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Yue Sue
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Shaohua YU
PhD Candidate

Research

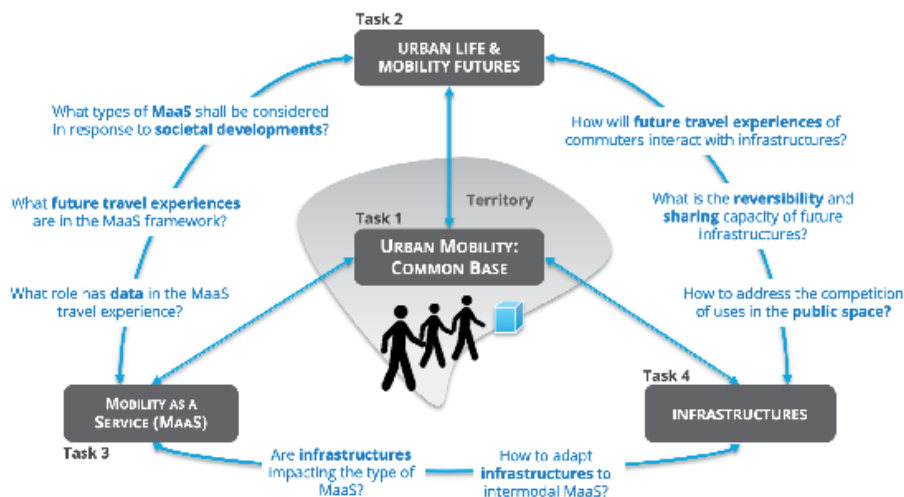
The Anthropolis Chair is constructing a vision of mobility futures by focusing on major challenges of urban life such as reducing carbon emissions and improving quality of life in cities. The Chair develops fundamental methods to design mobility systems and services with a human-centred approach. We explore the following three complementary topics: urban life and mobility futures, mobility as a service, and future infrastructures. The main research area is the Saclay Plateau, while other French and European cities are considered for comparative studies. We are collaborating with Centrale Casablanca (joint PhD supervision) and Centrale Pékin (Future Cities Lab) to enlarge our vision towards non-European cities.

Indicators for 2020

- 4 ongoing Phd theses
- 1 completed PhD thesis
- 6 journals
- 4 conferences
- 2 research seminar

In 2020 was the first full year of the second cycle of the Anthropolis Chair. Over the course of the year, four PhD candidates joined the team. Yue Sue and Tarek Chouaki started just at the end of 2019 with the respective topics of pickup and delivery problem with electric vehicles, as well as stochastic optimisation and reinforcement learning for the design of an on-demand mobility service by simulation, contributing to the research on future infrastructures. In autumn 2020, Tjark Gall and Mariana Reyes joined the chair, working on human-centred urban mobility futures, as well as mobility as a service respectively.

Various scientific contributions were published and disseminated across virtual events and workshops. In November 2020, the Anthropolis Chair and Future Cities Lab in Beijing initiated a research seminar series which aims at exchanging knowledge and ideas on the ongoing projects within the Chair and Lab and its affiliated and collaborators, as well as at communicating the research progress to external stakeholders. In 2020, two seminars were organized, with ten more scheduled for the first half of 2021.



Publications

Flore Vallet, Jakob Puchinger, Alexandra Millonig, Guillaume Lamé, Isabelle Nicolaï (2020) Tangible futures: Combining scenario thinking and personas—A pilot study on urban mobility. *Futures*, Elsevier, 117, 10.1016/j.futures.

Tarek Chouaki, Jakob Puchinger (Sep 2020) Agent based simulation for the design of a mobility service in the Paris-Saclay area. 23rd EURO Working Group on Transportation Meeting (EWGT), Paphos, Cyprus.

Shaohua Yu, Jakob Puchinger, Shudong Sun (2020) Two-echelon urban deliveries using autonomous vehicles. *Transportation Research Part E: Logistics and Transportation Review*, Elsevier, 141, 10.1016/j.tre.

Future Cities Lab

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Indicators for 2020

- 1 post-doctoral researcher
- 3 new master students (2 in China, 1 in Paris)
- 3 research seminars
- 3 local and international collaborations (Nokia Bell Labs, LGI, Université Laval- Canada)

Research

The Future Cities Lab. is a multi-national joint research initiative between Ecole Centrale Pekin, Beihang University in China and CentraleSupélec in France. The Future Cities Lab is co-financed by the “Région Ile-de-France” and the City of Beijing and is co-directed by Prof. Hai-Jun Huang and Prof. Jakob Puchinger. The aim of the research conducted within the Future Cities Lab. is to address the challenges related to planning, operating and managing increasingly complex future urban systems, in particular with respect to the interdependence between critical infrastructure systems, such as the transportation, the energy and the healthcare systems. In addition, through the joint collaborations, the Future Cities Lab. seeks to act as a foundation to advance knowledge related to these complex challenges as well as a platform for exchange between researchers both from China and France.

In 2020, two research-master students in China joined the Future Cities Lab. to study the challenges related to the integration of electric mobility and its impact on power grids. The respective topics cover, for the case of Beijing

-The techno-economic modelling and assessment of the potential for shared autonomous electric vehicles to provide power grid services;

-The resilience assessment of electric based autonomous mobility systems and power distribution grid;

In addition, a research-master student joined on the French side by fall 2020 to investigate a similar topic focused on Ile-de-France with the aim of facilitating a comparison between the two major urban areas and potentially arriving to significant observations.

Several research collaborations have, also, been initiated; in particular with colleagues from other LGI teams (Economics, Risk and Resilience), as well as a research collaboration on the topic of accessibility in future urban mobility with researchers from Nokia Bell Labs, France and Université Laval, Canada.

The Future Cities Lab. is also participating in animating the research seminar series initiative in collaboration with the Anthropolis Chair.