



TOD-IS-RUR has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No 956030.



Transit Oriented Development for Inclusive and Sustainable Rural-Urban Regions  
MSCA-ITN-H2020

## **The Metropolis inside/out**

### **Learning from Greater Paris Region**



Alice Diop, *Nous*, 2021

### **First Studio**

**Paris, Marne-La-Vallée, Seine-Saint-Denis, Val-d'Oise**

**19 – 22 April 2022**



# **The Metropolis inside/out**

## **Learning from Greater Paris Region**

The TOD-IS-RUR Innovative Training Network (ITN) sets up an interdisciplinary, international and intersectoral network to make significant research contributions to the scientific and societal challenge of countering sprawl in Europe. With its 9 beneficiaries and 12 partner organizations, it creates a unique platform for 10 Early Stage Researchers (ESRs), providing cutting-edge training to analyze rural-urban place-making and develop novel, context-based planning schemes for rural-urban regions (RURs). The network aims to extend the concept of Transit-Oriented Development (TOD) to RURs with a context-based approach, in which interactions between mobility and urbanization are studied in relation to social and environmental qualities.

Studio Paris will be a four-day event dedicated to both build the TOD-IS-RUR network and work on ESR's projects. It aims to specify, discuss and understand the research questions in their context. The Greater Paris case study will be an example through which we will work on the interactions between transport infrastructures/services, places, access and mobilities in RURs in a way that better integrates sustainability and justice issues. ESR's workshops will be devoted to a collective/reflective work around the question: what do the Paris Studio activities bring up to the thesis projects? They will discuss approaches, methods, data and materials but also cross- research topics, issues, fields and reflect on singularities.

While walking on the Northern Greater Paris, the field visits will provide an opportunity to discover, observe and grasp different aspects of the Greater Paris Region. The observations and analyses will call upon unconventional methods, photography and fictional writing. The perception induced by these methods is part of the critical method that the TOD-IS-RUR network engages with the "TOD model". In particular, we expect these methods to bring to light in a sensitive way dimensions that are not often addressed by more normative and formal planning approaches: atmospheres, uses of space, bodies, living environments, etc.

Two full group seminars, the first with IPR and the second at APUR, will focus on practice-research relationships around specific themes/issues. Panels of practitioners and researchers will present both the activities of partners and the discussions of ESRs and researchers. Finally, Friday afternoon at AREP will be devoted to the presentation of the studio's outcomes in relation to the progress of the thesis works. The contents of the studio's activities will be part of a written and visual production, the studio book, whose aim is to keep traces of the work and exchanges, to formalize a collective reflection, and to open perspectives for further works.

We wish you a fruitful studio in Paris.

Caroline Gallez and Nathalie Roseau

# Organization

## Research Labs

Founded in 1986 as a multidisciplinary center for social science research, education and expertise, **LATTS (Laboratory Technics, Territories and Societies)** is a joint research unit that brings together researchers from the CNRS (French National Centre for Scientific Research), École des Ponts ParisTech and Université Gustave Eiffel. Its research straddles a number of different disciplines, including planning, geography, history, political science and sociology. Through a focus on technical worlds, instruments and infrastructures, LATTS analyzes some of the major ongoing changes to society, including urban transformations, environmental crises, energy transitions and digital evolutions. LATTS is structured around four main research axes: 1. Governance, Organization, Work; 2. Politics, Markets and Urban Worlds; 3. Urban and Environmental Risks; 4. Knowledge, Technical Cultures, Territories.

Founded in 2003, **LVMT (Laboratory City, Mobility and Transport)** is a joint research unit that brings together researchers from the École des Ponts ParisTech and Université Gustave Eiffel. LVMT develops multidisciplinary research on the interactions between territorial dynamics, mobility and transport systems. Combining approaches from the social sciences (geography, planning and urban development, sociology, anthropology) and economic and engineering sciences (economics of networks and services, traffic engineering, urban modelling), the LVMT's work is organised into four main topics: 1. Mobility practices and urban imaginaries; 2. Space and policy; 3. Spatial and urban design; 4. Services and users. Laboratory's researchers have many years of experience and practice in interdisciplinary research projects related to mobility and its interaction with space, transport networks and politics.

### Scientific organization

Caroline Gallez (LVMT, Uni. Eiffel), Nathalie Roseau (LATTS, ENPC)  
Maya El Khawand (LVMT, Uni. Eiffel), Mariana Reis Santos (LATTS, ENPC)

Contacts: [caroline.gallez@univ-eiffel.fr](mailto:caroline.gallez@univ-eiffel.fr); [nathalie.roseau@enpc.fr](mailto:nathalie.roseau@enpc.fr)

Big thanks to Rachida Atmani (LVMT), Sandrine Fournials (LVMT), Nathalie Maugée (LATTS)

## Partner Organizations

**APUR (Atelier Parisien d'URbanisme)** was created on 3rd July 1967 by Paris City Council. Apur's mission is to document, analyze and develop forward looking strategies which address the urban and societal evolution of Paris and Greater Paris (Métropole du Grand Paris).

Founded in 1997, **AREP** is a subsidiary of SNCF Gares & Connexions. Its mission is to invent a post-carbon future. AREP operates and innovates in all the fields that are essential to the renewal of architecture and places, covering everything from architectural, urban and landscape design to engineering, including design, programming consulting services and project management.

In 1960, a Government initiative gave rise to **L'Institut Paris Region (IPR)** in an effort to establish a master plan for the Paris Region. Since 1983, IPR has been affiliated to the Regional Council. With 60 years of experience in the development of the metropolis of Paris, it was progressively involved in a wide range of urban development and planning projects on an international scale.

## Unconventional methods

Raphaële Bertho (Photography) and Adèle Gascuel (Fictional writing)

Ambition of TOD-IS-RUR network is to transform urban, undifferentiated and model-based approach to TOD into a context-based, interdisciplinary rural-urban approach, fully integrating social and environmental issues of the relationships between mobility and urbanization. In this respect, off-beat and sensitive observation methods, crossing arts and research, are particularly fruitful to decentre and feed our visions and reflexions. We will experiment photography and fictional writing during two walks in the Northern peripheries of Paris.

The photo workshop will question the way photography can generate a singular experience of the territory. In the field, the shooting initiates a renewed attention to the characteristics of the territory. Afterwards, the photographs allow a thematic, sequential and possibly fictional rereading of the initial journey, highlighting continuities or, on the contrary, ruptures. The interest here is as much on the photograph considered as an act as on an image. It is a tool of representation, offering a reading of the territory, as well as a visual sampling through documentary strategies. The images thus produced will then be worked on individually, in series or as part of a montage. This diversity of perspectives will allow us to approach the possibilities, but also the limits, of this medium by asking the question of the complex links that photography has with reality, or more exactly with the realities that we perceive.

How to create a text based on the sensitive perception of a landscape? How to make of this sensitive perception the support of a narration that goes beyond the real? What are the possible futures contained in a landscape, and to what constructions of the world do they participate? From observations of inhabitants but also of buildings, of mobilities and immobilities, the writing workshop will progressively evolve from simple writing instructions to collective narratives.

# Tuesday 19th April

## WELCOME SESSION

### Onsite location

Cité Descartes, Marne-La-Vallée (RER A Noisy-Champs station)  
Bâtiment Bienvenüe, Room A421 (4<sup>th</sup> Floor)

### Online Zoom link

<https://zoom.us/j/94847423802?pwd=N1pHV3lxWjZ1aUFQWXY2WmRpd2dvUT09>

ID de réunion : [948 4742 3802](#)

Code secret : studioP

### 9h00

Welcome of participants

### 9h30-10h30

*Learning from Greater Paris Region, issues for TOD-IS-RUR research*

Caroline Gallez (Uni. Eiffel, Paris) and Nathalie Roseau (École des Ponts, Paris)

### 10h30-11h00

*From Seine-Saint Denis to Val d'Oise, an itinerary in the Northern Greater Paris region*

Maya El Khawand (ESR, Uni. Eiffel, Paris) and Mariana Reis Santos (ESR, École des Ponts, Paris)

### 11h00-12h00

*Photography and fictional writing: unconventional methods to understand the RURs*

Raphaële Bertho (room B017-B020) and Adèle Gascuel (room A016)

### 12h15-13h15

Lunch (room A221)

*RER trip from Noisy-Champs to Saint-Denis*

*(RER A from Noisy-Champs to Gare de Lyon – RER D from Gare de Lyon to Saint Denis)*

## FIRST WALK

### 14h30-17h30

*First field visit from Saint-Denis station to Stains (2 subgroups)*

### 17h30-19h00

Field visit debriefing

# Wednesday 20th April

## PRACTICE-RESEARCH SEMINAR WITH IPR

### Onsite location

Cité Descartes, Marne-La-Vallée (RER A Noisy-Champs station)  
Bâtiment Bienvenüe, Room A421 (4<sup>th</sup> Floor)

### Online Zoom link

<https://zoom.us/j/92541213046?pwd=bWQ1OGpTZ2NkeHFkeDFrK2xNR2k4Zz09>

ID de réunion : [925 4121 3046](#)

Code secret : studioP

### 8h45

Welcome of participants

### 9h00-9h15

Presentation of L'Institut Paris Région (IPR)

Brigitte Guigou, IPR

### 9h15-10h45

*Intensifying urbanization around transit stations: insights from Ile-de-France Master Plan and its implementation*

Dominique Riou, IPR

Respondents: Flore Guichot (ESR, Ecole Polytechnique Fédérale de Lausanne), Sandra La Rota (ESR, University of Antwerp)

General Discussion

Pause

### 11h00-12h15

*The notion of "node-place", interests, uses and limits for planners*

Benoît Cornut, Gianluca Marzelli, IPR

Respondents: Luca Bertolini (University of Amsterdam), Carla Cruz (ESR, Sveriges lantbruksuniversitet, Uppsala), Andre Klaassen (ESR, University of Antwerp)

General discussion

### 12h30-13h30

Lunch (room A221)

*RER trip from Noisy-Champs to Stains*

*(RER A from Noisy-Champs to Gare de Lyon – RER D from Gare de Lyon to Pierrefitte-Stains)*

## SECOND WALK

### 14h30-17h30

*Second field visit from Stains to Bonneuil-en-France (2 subgroups)*

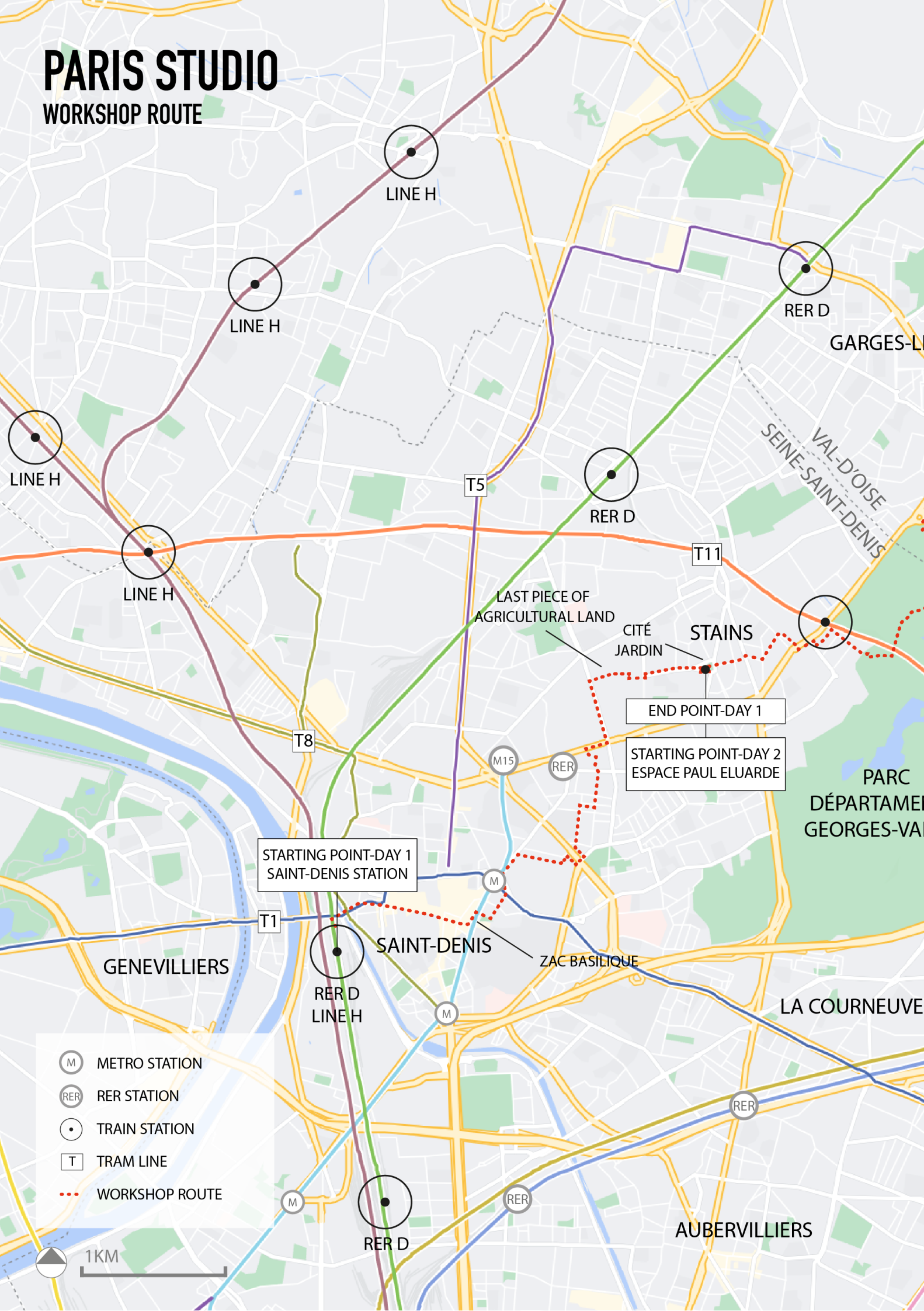
### 17h30-19h00

Field visit debriefing



# PARIS STUDIO

## WORKSHOP ROUTE





## FROM SAINT-DENIS TO BONNEUIL-EN-FRANCE

Leaving the Saint-Denis RER station, we enter 'République', a street known for its numerous clothing stores. We shortly arrive at the Basilique Cathédrale Saint-Denis, where many French royal figures are buried. Surrounding the area, we find the 'ZAC Basilique', a large urban renewal project dating from the 1980s.

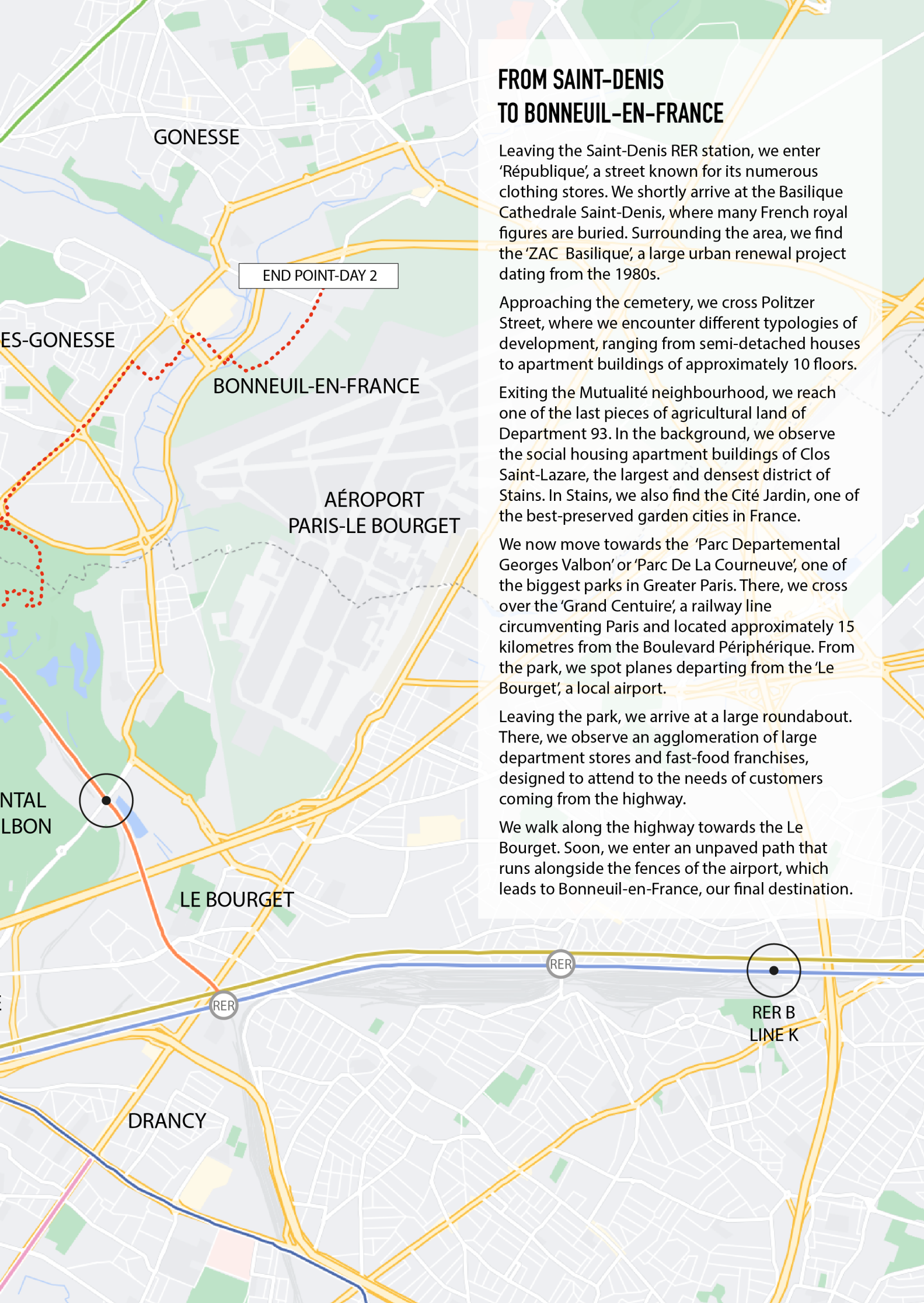
Approaching the cemetery, we cross Politzer Street, where we encounter different typologies of development, ranging from semi-detached houses to apartment buildings of approximately 10 floors.

Exiting the Mutualité neighbourhood, we reach one of the last pieces of agricultural land of Department 93. In the background, we observe the social housing apartment buildings of Clos Saint-Lazare, the largest and densest district of Stains. In Stains, we also find the Cité Jardin, one of the best-preserved garden cities in France.

We now move towards the 'Parc Départemental Georges Valbon' or 'Parc De La Courneuve', one of the biggest parks in Greater Paris. There, we cross over the 'Grand Centuire', a railway line circumventing Paris and located approximately 15 kilometres from the Boulevard Périphérique. From the park, we spot planes departing from the 'Le Bourget', a local airport.

Leaving the park, we arrive at a large roundabout. There, we observe an agglomeration of large department stores and fast-food franchises, designed to attend to the needs of customers coming from the highway.

We walk along the highway towards the Le Bourget. Soon, we enter an unpaved path that runs alongside the fences of the airport, which leads to Bonneuil-en-France, our final destination.



# Thursday 21st April

## FIRST THESIS WORKSHOP

### Location

Co-working Wojo Rooms, 25-27 rue de Tolbiac, 75013 Paris

### 9h00-11h30

*What do field visits bring to the thesis works?*  
ESR's workshops

### 11h30-12h30

WP1/WP2/WP3 meetings

## PRACTICE-RESEARCH SEMINAR WITH APUR

### Onsite location

APUR, 15 rue Jean-Baptiste Berlier, 75013 Paris, 4th floor

### Online Zoom link

<https://zoom.us/j/99303517848?pwd=R3FZTnlLWGRJNHN2eWl6Q0Z6bExEdz09>

ID de réunion : [993 0351 7848](#)

Code secret : studioP

### 12h45-14h00

Lunch (APUR, adresse room)

### 14h00-14h15

Presentation of the Atelier Parisien d'URbanisme (APUR)  
Dominique Alba, Director of APUR

### 14h15-15h45

*Grand Paris Express: From genesis to operations, how did the Atelier position itself on the project?*  
Patricia Pelloux, APUR

Respondents: Lisa Buldeo Rai (ESR, University of Amsterdam), Harriet Dunn (ESR, KTH Royal Institute of Technology, Stockholm)

General discussion

Pause

### 16h00-17h30

*Outside of major projects, accessibility issues at the scale of the "metropolis" and the "suburban and rural areas"*

Dominique Alba, APUR

Respondents: Greet de Block (University of Antwerp), Krzysztof Janko (ESR, Technische Universität Berlin), Leon Vauterin (ESR, Eindhoven University of Technology)

General Discussion

## COLLECTIVE DINNER

### 19h00

Dinner at restaurant « Le temps des cerises », 18-20 rue de la Butte aux Cailles, Paris 13ème

# Friday 22nd April

## Onsite location

AREP, 16 avenue d'Ivry, Paris 13ème

## SECOND THESIS WORKSHOP

### 8h30-11h30

*What do practice-research seminars bring to thesis works?*  
ESR's workshops

### 11h30-12h30

*Why did 800 plus academic articles not lead to national policies? The transport research- transport policy interface on transport poverty (or social exclusion via transport)*

Hans Jeekel, Eindhoven University of Technology

<https://zoom.us/j/92911415980?pwd=NUQrNTQySGUwNE11U1J3bGFYc0ppQT09>

ID de réunion : [929 1141 5980](https://zoom.us/j/92911415980?pwd=NUQrNTQySGUwNE11U1J3bGFYc0ppQT09)

Code secret : studioP

## FINAL SEMINAR WITH AREP

### Online Zoom link

<https://zoom.us/j/95381187645?pwd=T20zK1FScDFFaGRoME5JangycE51UT09>

ID de réunion : [953 8118 7645](https://zoom.us/j/95381187645?pwd=T20zK1FScDFFaGRoME5JangycE51UT09)

Code secret : studioP

### 12h45-14h00

Lunch

### 14h00-14h30

Presentation of AREP

Raphaël Ménard, president of AREP

### 14H30-15h30

*Reflecting on inclusivity and environmental issues through Seine-Saint-Denis Val-d'Oise' landscapes: crossed views of photography and fictional writing*

Presentation of groups of ESRs

General discussion

Pause

### 15h45-16h45

*Debating the transfers and crossed-fertilization between practice and research: learning from the experience of APUR, IPR and AREP*

Presentation of groups of ESRs

General discussion

### 16h45-17h30

Final debate

Pauline Heron-Detavernier (AREP), Greet de Block, Caroline Gallez, Nathalie Roseau

## Bibliographical references

### A few scientific readings

- Avide, E., "The birth of Mass transit system or the imperative of technology: a look back at the design of suburban train stations in the 1970s," *Planning Perspectives*, 2019, pp.1081-1095.  
<https://doi.org/10.1080/02665433.2019.1695223>
- Beaucire, F., Drevelle, M., « 'Grand Paris Express' : Un projet su service de la réduction des inégalités d'accessibilité entre l'Ouest et l'Est de la région urbaine de Paris ? », *Revue d'économie régionale et urbaine*, 2013, p.437-460. <https://www.cairn.info/revue-d-economie-regionale-et-urbaine-2013-3-page-437.htm>
- Bellanger E., « La traversée historique du Grand Paris », *Mouvements*, 2013/2 n° 74, p. 52-62.  
<https://www.cairn.info/revue-mouvements-2013-2-page-52.htm>.
- Bertho R., « L'année 1994, une décennie de missions photographiques au sein des institutions de l'aménagement du territoire », in Frédéric Pousin, *Photopaysage, Débattre du projet de paysage par la photographie*, Les productions du Effa, 2018, pp.36-51.
- Cohen J.L et Lortie A., *Des Fortifs au périif*, Paris, Éditions du Pavillon de l'Arsenal, 2021
- Enright, T., 2013, "Mass Transportation in the Neoliberal City: The mobilizing myths of the Grand Paris Express", *Environment and Planning A: Economy and Space*, 2013. <https://doi.org/10.1068/a459>
- Faure, A., « A l'aube des transports de masse. L'exemple des 'trains ouvriers' de la banlieue de Paris (1883-1914) », *Revue d'Histoire moderne et contemporaine*, 1993. [http://www.persee.fr/doc/rhmc\\_0048-8003\\_1993\\_num\\_40\\_2\\_1670](http://www.persee.fr/doc/rhmc_0048-8003_1993_num_40_2_1670)
- Gallez, C., "Contrats de développement territorial in the Grand Paris project: towards negotiated networked development?", *The Town Planning Review*, Vol.85/2, 2014, pp.273-286.  
<https://www.jstor.org/stable/24579238>
- Maspero, F., Photographs A. Frantz, *Roissy Express, A journey through the Paris suburbs*. London: Verso. (Introduction and Chapter X), 1994.
- Roseau, N., *Le futur des métropoles, Temps et infrastructure*, Genève, Metispresses, 2022, p. 99-167.  
<https://fr.calameo.com/read/004309853100e9df78af2?authid=gMmtBLCKAwWd>
- Inventing Grand Paris/Entangled History of Metropolitan Areas*  
<https://www.inventerlegrandparis.fr/?lang=en>
- "Inventing *Grand Paris*" is a research project that aims to investigate the history of Grand Paris – the Greater Paris region – as a metropolitan concept over the long term, using a comparative international perspective.

### A few professional readings

APUR

- [https://www.apur.org/sites/default/files/evolution\\_mobilites\\_grand\\_paris.pdf?token=uM1LFlmo](https://www.apur.org/sites/default/files/evolution_mobilites_grand_paris.pdf?token=uM1LFlmo)
- [https://www.apur.org/sites/default/files/documents/publication/etudes/apur\\_quartiers\\_gares\\_internet\\_v2.pdf](https://www.apur.org/sites/default/files/documents/publication/etudes/apur_quartiers_gares_internet_v2.pdf)
- [https://www.apur.org/sites/default/files/20p196\\_mutations\\_68\\_quartiers\\_gare\\_gpe\\_2021.pdf](https://www.apur.org/sites/default/files/20p196_mutations_68_quartiers_gare_gpe_2021.pdf)

IPR

- [https://www.institutparisregion.fr/fileadmin/NewEtudes/Etude\\_1420/NR\\_762\\_web.pdf](https://www.institutparisregion.fr/fileadmin/NewEtudes/Etude_1420/NR_762_web.pdf)
- [https://www.institutparisregion.fr/fileadmin/NewEtudes/000pack2/Etude\\_2671/NR\\_912\\_web.pdf](https://www.institutparisregion.fr/fileadmin/NewEtudes/000pack2/Etude_2671/NR_912_web.pdf)
- [https://www.institutparisregion.fr/fileadmin/NewEtudes/Etude\\_1746/Synthese\\_40ansdAmenagementGare\\_13dec2018.pdf](https://www.institutparisregion.fr/fileadmin/NewEtudes/Etude_1746/Synthese_40ansdAmenagementGare_13dec2018.pdf)

### Films-Photo

- J'ai aimé vivre là*, Régis Sauder, 2020
- Nous (We)*, Alice Diop. 2020
- L'Île au trésor*, Guillaume Brac, 2018
- Le bois dont les rêves sont faits*, Claire Simon, 2015
- Bird people*, Pascale Ferran, 2014
- Regards du Grand Paris. <https://www.ateliersmedicis.fr/agenda/regards-du-grand-paris-25121>

Paris studio program (2022, April 19 to 22)

	Tuesday, April 19	Wednesday, April 20	Thursday April 21	Friday April 22
<b>Morning</b>	<p>Cité Descartes, building Bienvenüe, room B017-B020 (ground floor)</p> <p>9:00-9:30 – Welcome</p> <p>9:30-10:30 – Learning from Paris <b>Greater Paris region</b> <i>Full group (hybrid)</i></p> <p>10:30-11:00 – Walking as a method of urban knowledge <i>Full group (hybrid)</i></p> <p>11:00-12:00 – Photo/Fiction presentation <i>Photo and Fiction subgroups</i></p>	<p>Cité Descartes, building Bienvenüe, room B017-B020 (ground floor)</p> <p>8:45-9:00 – Welcome</p> <p>9:00-12:15 – Practice-research seminar with IPR <i>Full group (hybrid)</i></p> <p>9:00-9:15 – Presentation of IPR</p> <p>9:15-10:30 – Node-place: interests, uses, limits for planners</p> <p>10:30-10:45 – Pause</p> <p>10:45-12:15 – Intensifying urbanization around the railway stations?</p>	<p>Wojo Tolbiac coworking spaces 25-27 rue de Tolbiac – Paris 13</p> <p>9:00-11:30 – Thesis workshop: what do field visits bring our works? <i>ESRs + on site (co)supervisors</i></p> <p>11:30-12:30 – WP 1/WP2/WP3 meetings <i>Adhoc subgroups</i></p>	<p>AREP 16 avenue d'Ivry – Paris 13</p> <p>8:30-11:30 – Thesis workshop: what do P&amp;R seminars bring to our works? <i>ESRs + on site (co)supervisors</i></p> <p>11:30-12:30 – Lecture by Hans Jeekel, Eindhoven University of Technology <i>Full group (hybrid)</i></p>
<b>Afternoon</b>	<p>12:15-1:15 - Lunch</p> <p>2:30-5:30 - First walk: <b>From Saint-Denis to Stains</b> <i>ESRs, on site (co)supervisors welcome (2 subgroups)</i></p> <p>5:30-7.00 - Field visit debriefing <i>Walk participants, 2 subgroups</i></p>	<p>12:30-1:30 - Lunch</p> <p>2:30-5:30 – Second walk: From Stains to Bonneuil-en-France <i>ESRs, on site (co)supervisors welcome (2 subgroups)</i></p> <p>5:30-7.00 - Field visit debriefing <i>Walk participants, 2 subgroups</i></p>	<p>APUR, 15 rue JB Berlier Paris 13 12:45-2:00 – Lunch</p> <p>2:00-5:30 – Practice-research seminar with APUR <i>Full group (hybrid)</i></p> <p>2:00-2:15 – Presentation of APUR</p> <p>2:15-3:45 – Grand Paris Express, how did APUR position itself? 3:45-4:00 – Pause</p> <p>4:00-5:30 – Outside of major projects, how to tackle accessibility issues?</p>	<p>12:45-2:00 - Lunch</p> <p>2:00-5:30 – Final review <i>Full group (hybrid)</i></p> <p>2:00-2:30 – Presentation of AREP</p> <p>2:30-3:30 – Learning from urban walks, crossed views from photography and fictional writing 3:30-3:45 – Pause</p> <p>3:45-4:45 – Learning from P&amp;R seminars 4:45-5:30 – Final debate</p>
	<b>Free dinner</b>	<b>Free dinner</b>	<b>7:00 - Collective dinner</b> Le Temps des Cerises, 18-20 rue de la Butte-aux-Cailles, Paris 13	



# Places

## Cité Descartes, Marne-La-Vallée

Bâtiment Bienvenüe (École des Ponts ParisTech, Université Gustave Eiffel)

14/20 Boulevard Newton – Rooms A421 (4th Floor)

Cité Descartes, Champs-sur-Marne

77447 Marne-la-Vallée

RER A - Noisy Champs, Sortie n°3 Cité Descartes

## Atelier Parisien d'Urbanisme (APUR)

15 rue Jean-Baptiste Berlier

75013 Paris

Metro line 14 - Bibliothèque Nationale de France, Tramway T3-Avenue de France

## AREP GROUP

16 avenue d'Ivry

75013 Paris

Metro line 7 - Porte d'Ivry

## Gare de Saint-Denis

93 200 Saint-Denis

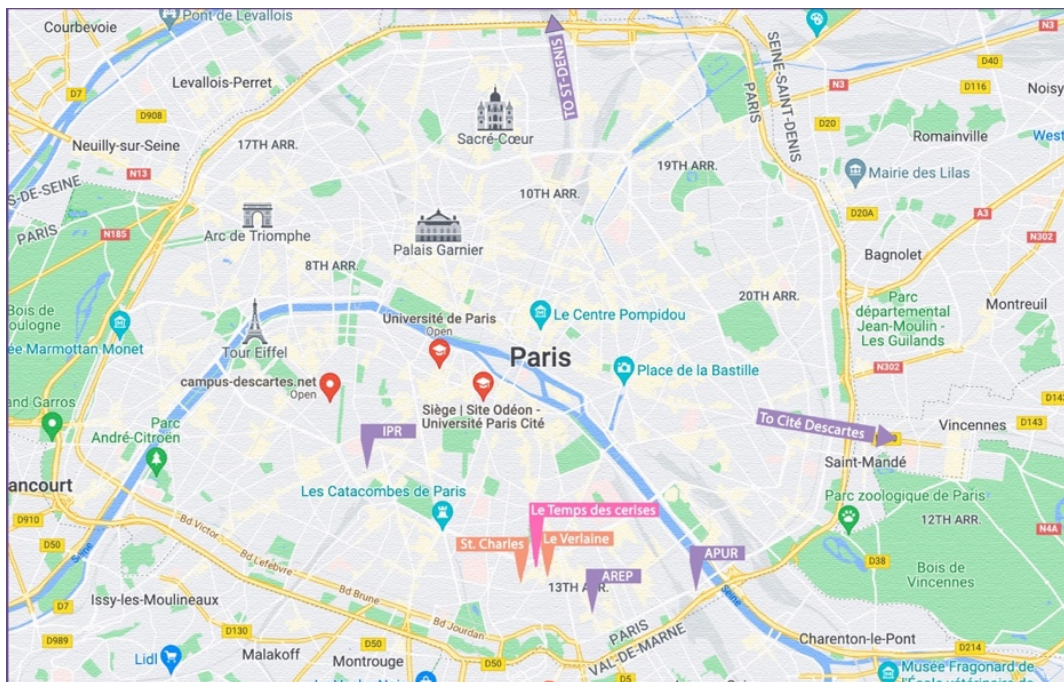
RER D, Transilien line H, Tramway T1, T8-Saint-Denis, Île Saint-Denis

## Restaurant Le temps des cerises

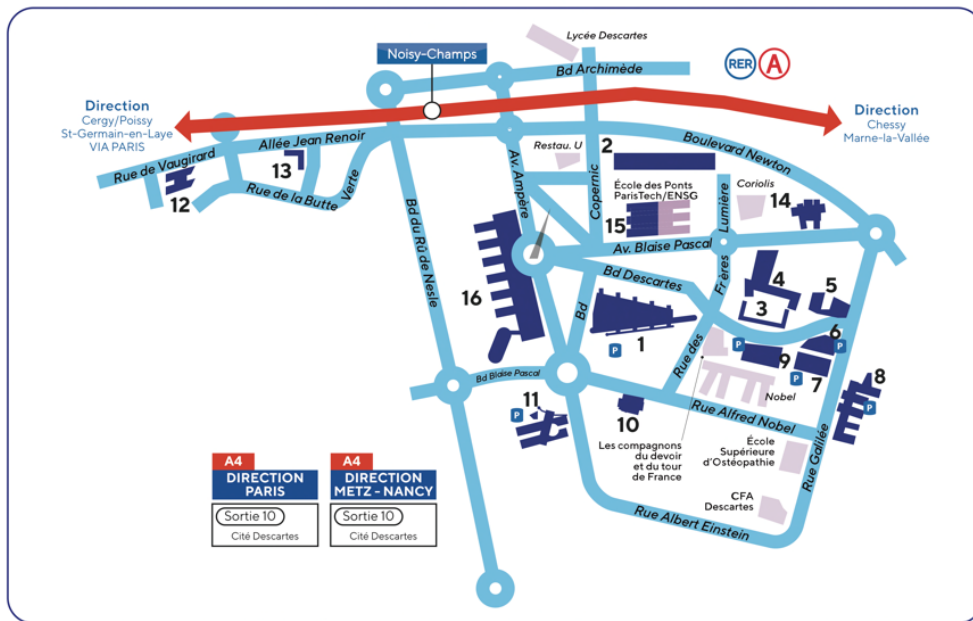
18-20 rue de la Butte aux Cailles

75013 Paris

Metro line 5, 6, 7 - Place d'Italie



# CITÉ DESCARTES



1. Bâtiment Copernic : 5, bd Descartes • Champs-sur-Marne
2. Bâtiment Bienvenüe : 14-20, bd Newton • Champs-sur-Marne







TOD-IS-RUR has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No 956030.



**LATTS**

LABORATOIRE TECHNIQUES  
TERRITOIRES ET SOCIÉTÉS

**LVMIT**

Laboratoire  
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