



# Pedestrians With Reduced Mobility

## In Shared Spaces and Pedestrian Priority Environments

**Jean-François Bruneau**, Geo, M Sc,

PhD Candidate in Civil Engineering

Polytechnique Montréal

**Catherine Morency**, Eng, Ph D,

Full Professor,

Polytechnique Montréal

# Partners

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# Context

**Project:** Evaluate the potential of a « Street Code » (Code de la rue) and identify key issues and strategies to increase safety of soft modes (pedestrians, cyclists, ...)

- Literature review
- Case studies
- Focus-groups
- Questionnaire

**This presentation:** Evaluate the applicability of *Zone de Rencontre* (ZR), a European concept near to shared space in terms of design, taking into account the Canadian climate and our normative constraints

# Objectives

**Project** : Evaluate the potential of a « Street Code » (Code de la rue) and identify key issues and strategies to increase safety of soft modes

## **Specifically, in this presentation:**

- 1) Get expert and user opinions on road sharing, behavior and rule compliance, and on mixed-use of streets by mobility impaired, pedestrians, cyclists and car drivers
- 2) Evaluate the applicability of innovative mixed-use designs, considering Canadian climate and design standards



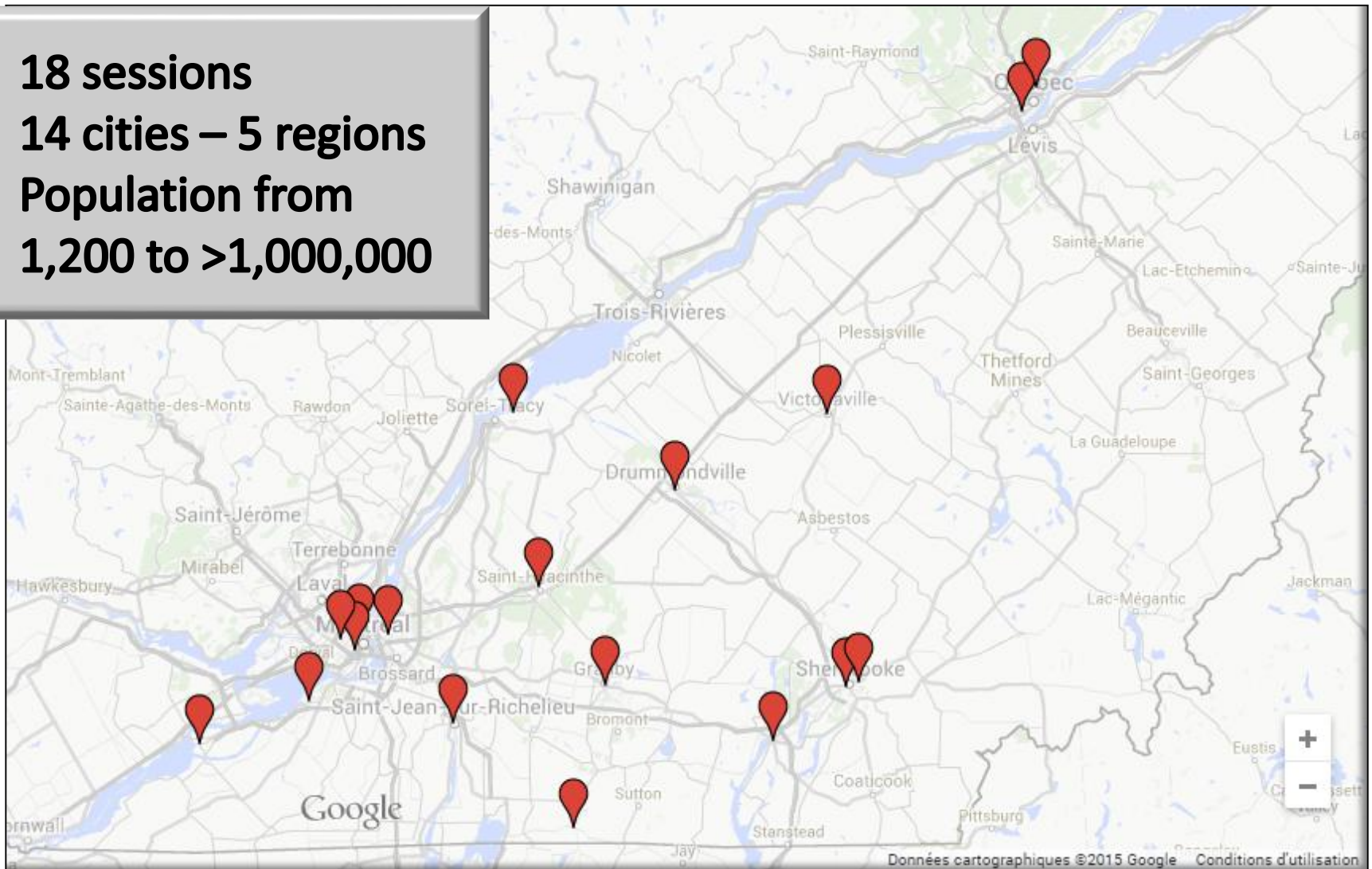
# Methodology

## »»» Focus-groups

- Literature + study tours: shared space, public places, *zones de rencontre* and other innovative solutions for pedestrians, with a focus on accessibility and safety for the mobility challenged users
- 18 focus-groups: study-cases presented to various users/experts in 14 Québec cities (n=350)

# Methods – Where?

- 18 sessions
- 14 cities – 5 regions
- Population from 1,200 to >1,000,000



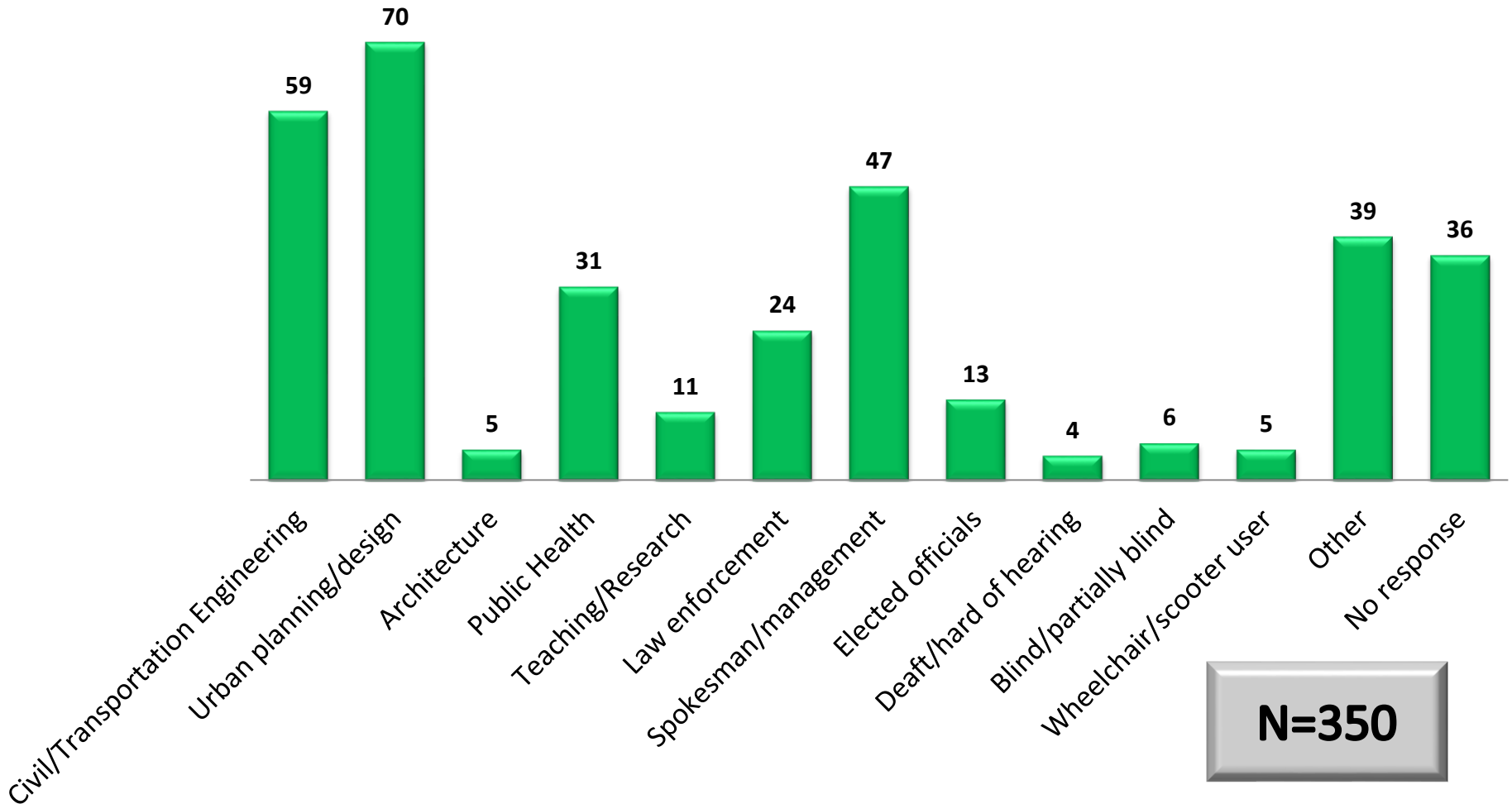


# Methods – When?



- January to March 2014
- September to October 2014
- February 2015

# Methods – Who?



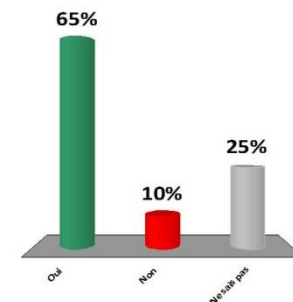
# Methods – How and What?

- Interactive response cards
- Explanation of ZR characteristics
- 10 questions on applicability (BEFORE)
- Discussion (2h) with open questions + 6 detailed case studies (group response shown)
- 10 questions on applicability (AFTER)
- Follow-up: Web survey



Le concept de refuge central développé à Ulm, que vous venez de visionner, est-il applicable au Québec ?

- A. Oui  
B. Non  
C. Ne sais pas





# What is a “Zone de rencontre”?

Sign entering/leaving  
the zone

Berne

Photo : J.-F. Bruneau, 2013.

Photo : J.-F. Bruneau, 2013.

# What is a “Zone de rencontre”?

**No markings, no signalization,  
except for parking places**



## Duisburg

Photo : J.-F. Bruneau, 2013.



# What is a *Zone de rencontre* ?

No traffic controls  
(stop signs, lights)

No crosswalks

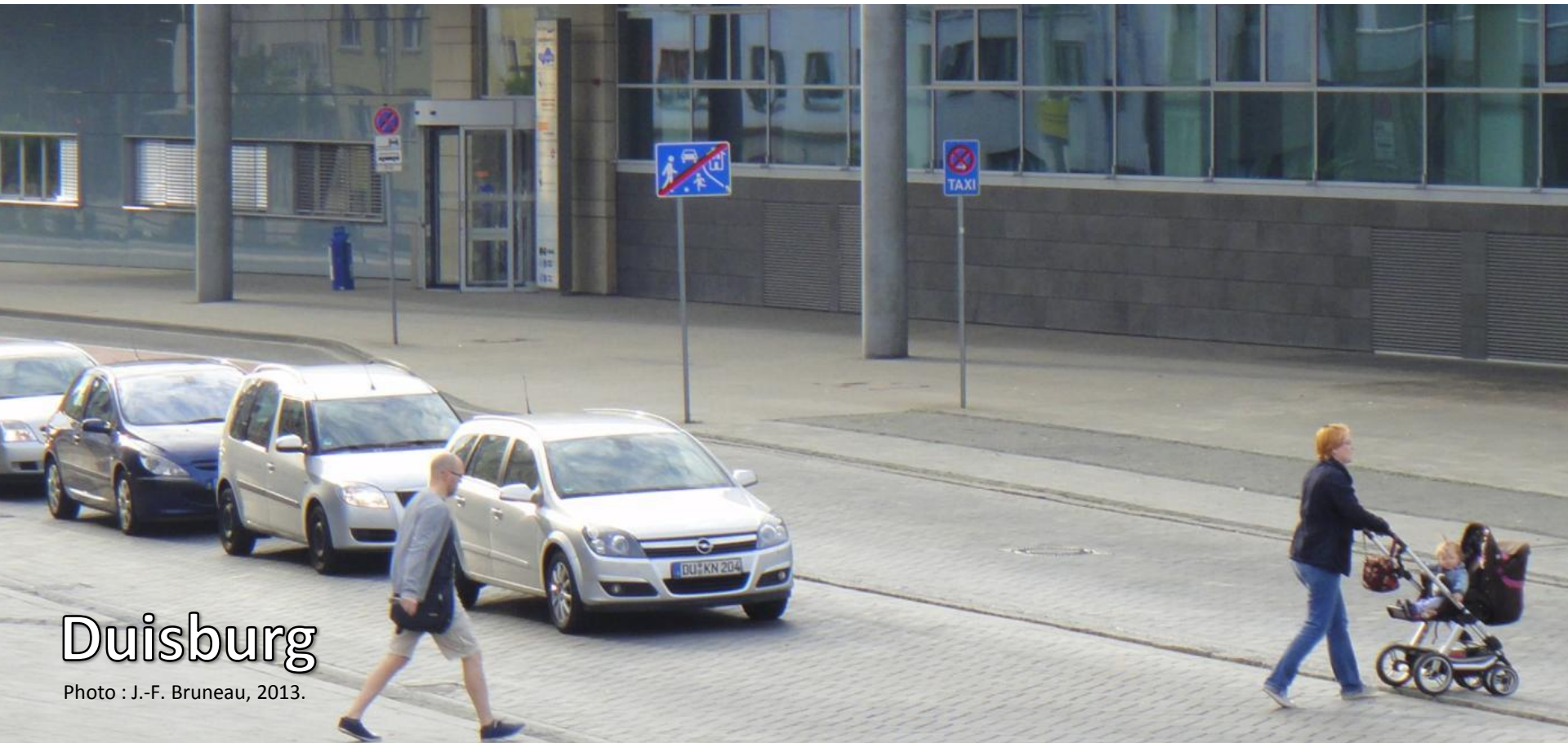
A 20 km/h speed limit



Geneva

Photo : J.-F. Bruneau, 2014.

# What is a “Zone de rencontre”?



Duisburg

Photo : J.-F. Bruneau, 2013.

**Absolute priority to pedestrians: allowed to cross everywhere (cannot obstruct standing still)**



# What is a “Zone de rencontre”?



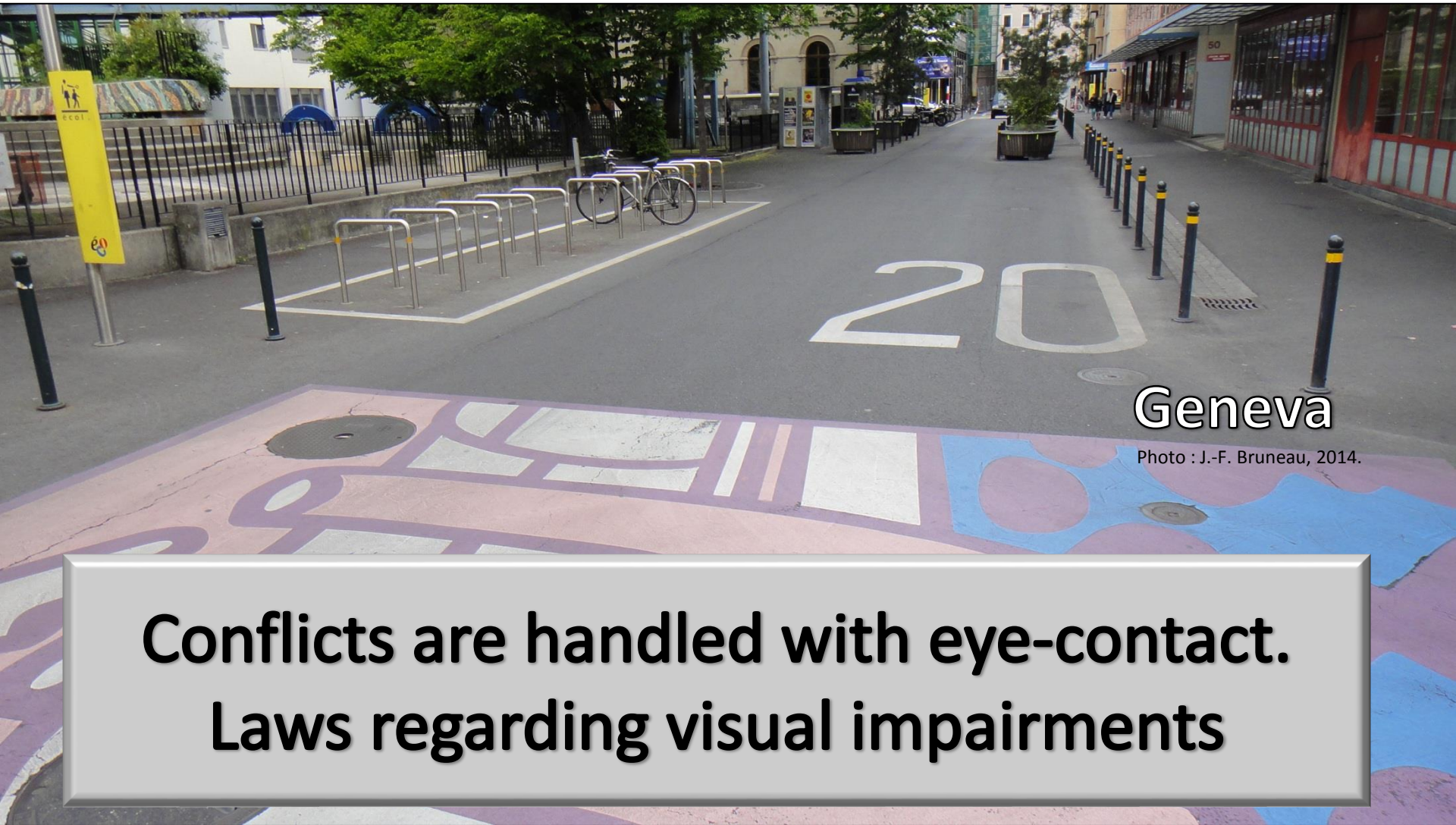
Geneva

Photo : J.-F. Bruneau, 2014.

**Priority to vehicles  
coming from the right**



# What is a “Zone de rencontre”?



**Conflicts are handled with eye-contact.  
Laws regarding visual impairments**



# What is a “Zone de rencontre”?

A “vehicle-free” corridor  
preserved for pedestrians



Geneva

Photo : J.-F. Bruneau, 2014.



# What is a “Zone de rencontre”?

Two types of areas:

- 1) Residential areas
- 2) Busy areas with high pedestrian/vehicle ratio

Berne

Photo : J.-F. Bruneau, 2013.



# Applicability of ZR – Results from focus-groups

Regarding the <i>zone de rencontre</i> concept, would you eventually judge applicable:	Participants believing in applicability (%)			T-Test p < 0.05
	N	Avant	Après	
<u>The concept, in general?</u>	315	<u>71.8</u>	<u>92.5</u>	0.01
An absolute pedestrian priority?	325	81.2	89.4	0.01
Pedestrians on full width + cross wherever?	307	47.6	73.2	0.01
Conflicts solved by courtesy + eye contact?	306	59.8	73.0	0.01
Observed actual speeds lowered at 20 km/h?	325	70.2	84.4	0.01
No signage/markings?	289	53.6	63.0	0.03
No stops/traffic lights?	309	54.7	78.2	0.01
No crosswalks?	300	67.1	78.1	0.01
<b>No pavements + at-grade infrastructure</b>	<b>304</b>	<b>73.8</b>	<b>79.1</b>	<b>NS</b>



# Evidence, but...

***Shared spaces and vast public spaces*** are gaining interest, create animated and lively areas suitable for a ***majority*** of cyclists and pedestrians, but are they adapted for **all**?

Is it possible to design for everyone, applying a **universal technique**?





# Previous research on guidance measures

## »»» Tested environments

- Conventional or controlled: ≠ shared space/street with cognitive complexity given by real-life crossings allowing pedestrian priority
- **PAMELA** Pedestrian Accessibility Movement and Environment Laboratory, London, May 2007
- **GUIDE DOGS** Group opposition: necessary to consult groups, to test and validate technical measures before they are implemented (R.-U.)
- **GAMAH** Groupe d'Action pour une Meilleure Accessibilité aux personnes Handicapées, Belgium, 2007
- **SWITZERLAND** Zurich
- **INLB** Institut Nazareth Louis-Braille

# Limitations are different

## ➡ Visual = unsafe to cross

- Stop signs
- Traffic lights (if not audible or fully protected)
- Pedestrian crossings
- Residential streets or street without pavements

## ➡ Obstacles

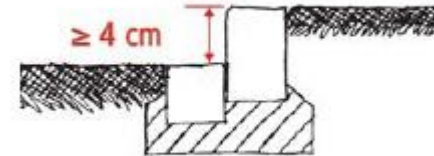
- Posts, poles, other vertical:
  - undetectables
  - dangerous



# What is not relevant or effective:

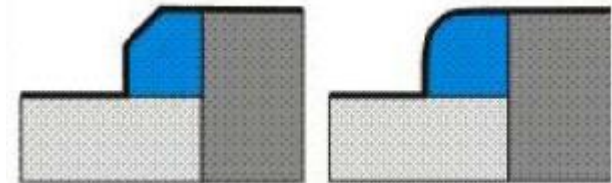
## **High height difference (4 to 7 cm):**

Well appreciated when having visual constraints, difficult to cross with limited traction, do not fit the shared street concept



## **Low height difference (rounded or chamfered):**

Risk on pedestrian side, difficult to cross



## **Guid strips:**

Easy to loose contact when moving forward with longitudinal strips, difficult when having very limited traction

Source: Cerema, 2014 (France)



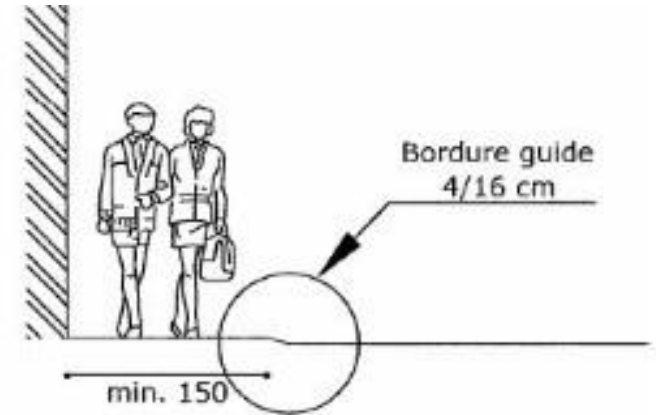
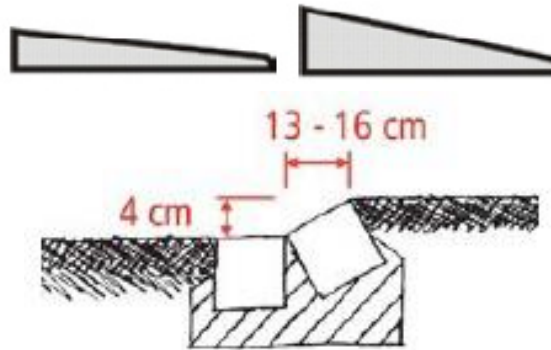
Photos : Guide Dogs, 2008



# What could work:

Low chamfered or  
inclined height  
difference

4:16



Trapezoidal separator  
(2 cm high, 15 cm base)



Source : GAMAH, 2009 (Belgique)  
Cerema, 2014 (France)





Chamfered 5:16



Chamfered 5:16  
(too abrupt for  
wheelchair/scooter  
users)

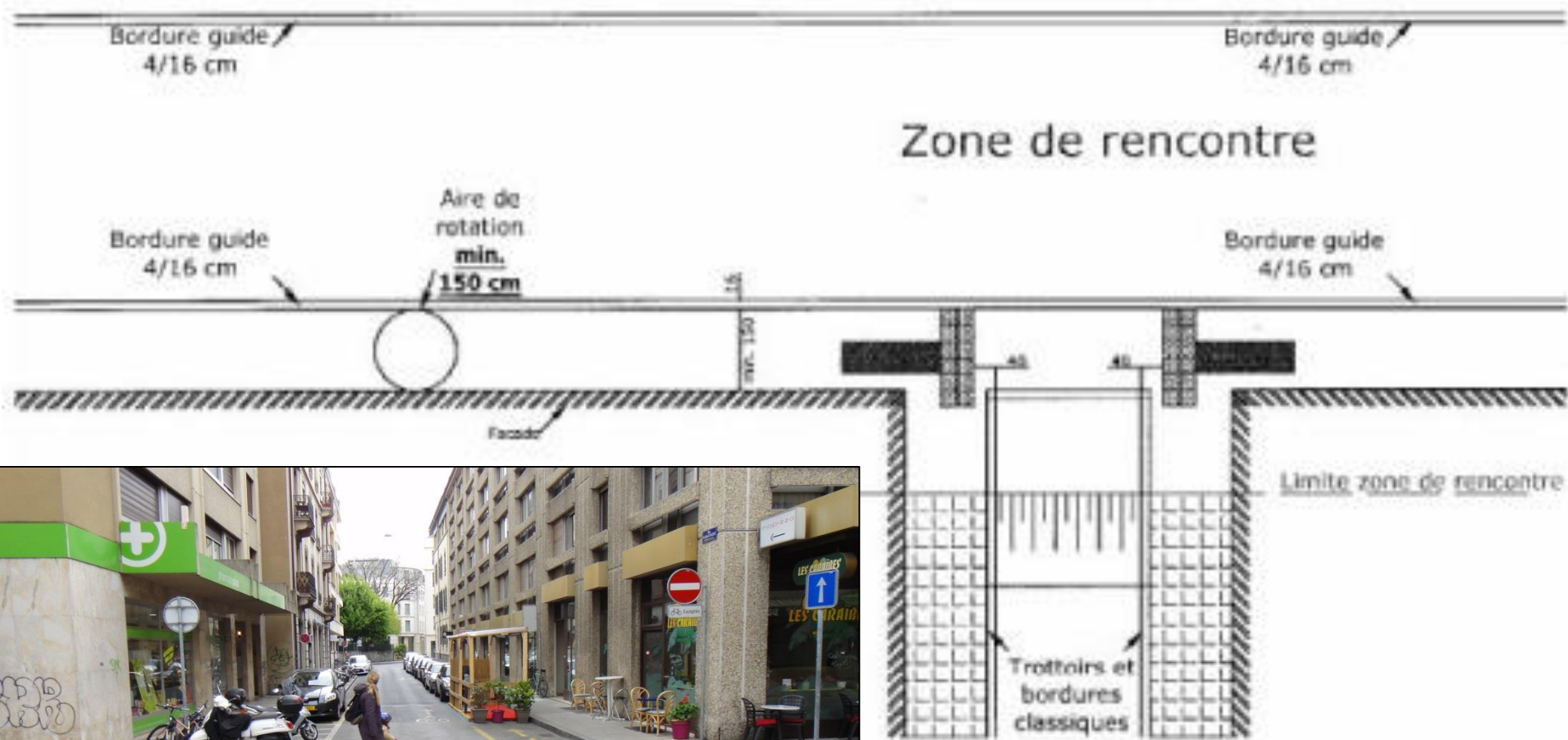


# Chamfered 4:16









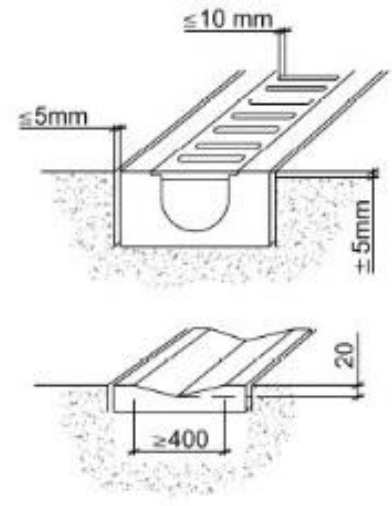
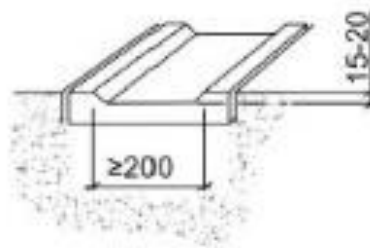
Source : GAMAH, 2009 (Belgique)



## Being evaluated:

Double slope or chamfered gutter and covered gutter

Caniveau à « double pente »



Source : SURAKU, 2012 (Finland)



# Solutions

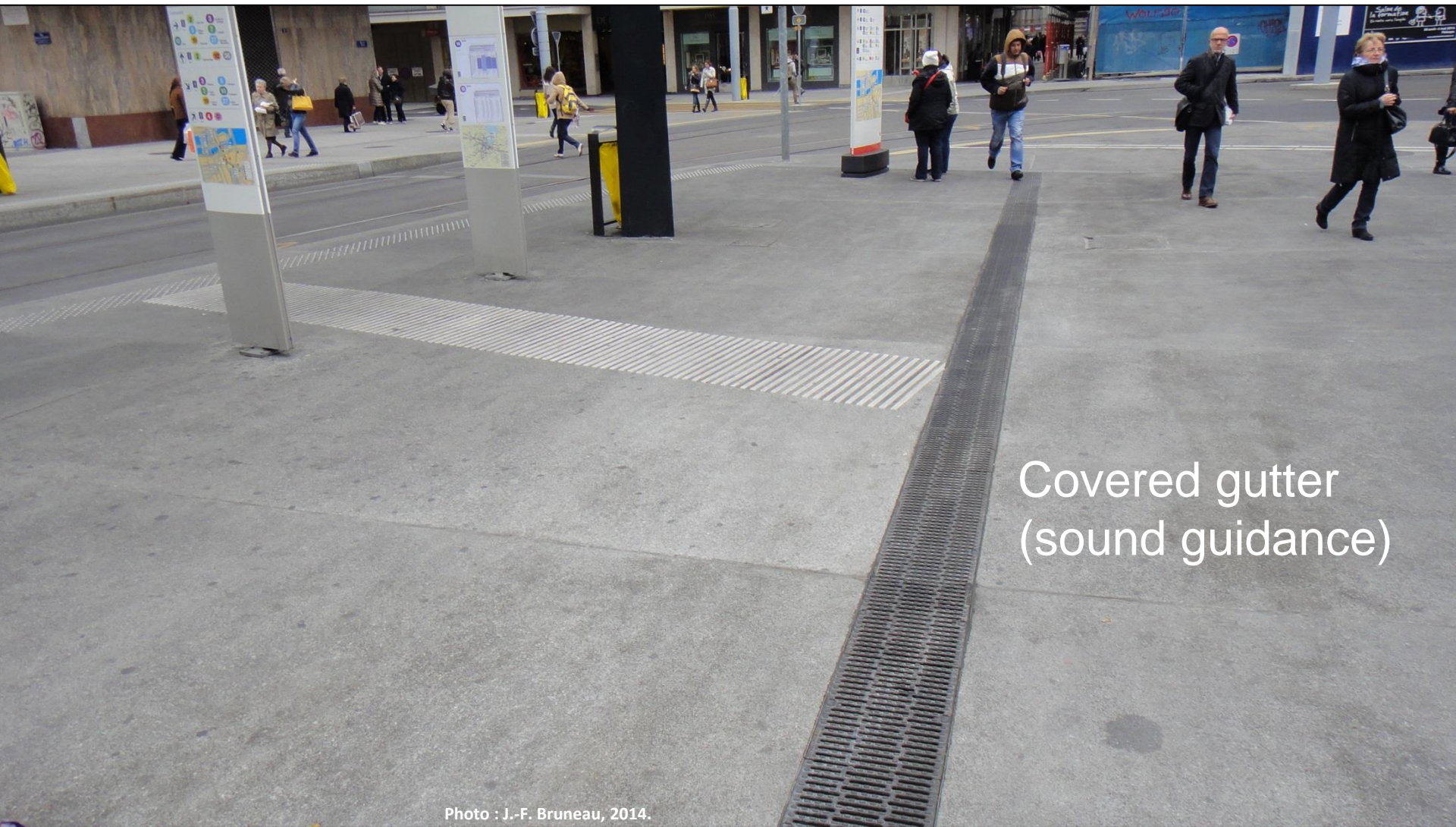


Double slope gutter

Photo : J.-F. Bruneau, 2014.



# Solutions



Covered gutter  
(sound guidance)

Photo : J.-F. Bruneau, 2014.



# Shared space



Photo : J.-F. Bruneau, 2013.



# Fietstraat



Slightly raised + textured

Photo : J.-F. Bruneau, 2014.





Contrast, texture (pedestrians only)

Photo : J.-F. Bruneau, 2014.

# Conclusion

- Shared space (zone de rencontre) seems applicable according to experts and representatives (93 %)
- A significant number of participants changed perception after a 3h focus-group (was 72 %)
- Consider each project as unique and different from others (context-sensitive solutions)
- Integrate on-site facilities for the mobility impaired is possible, but it needs consultation, testing, planning and validation



# Thank you!



[Jean-francois.bruneau@usherbrooke.ca](mailto:Jean-francois.bruneau@usherbrooke.ca)

Photo : J.-F. Bruneau, 2014.