From comfort to wellness:
sources of comfort/discomfort in autonomous and shared vehicles

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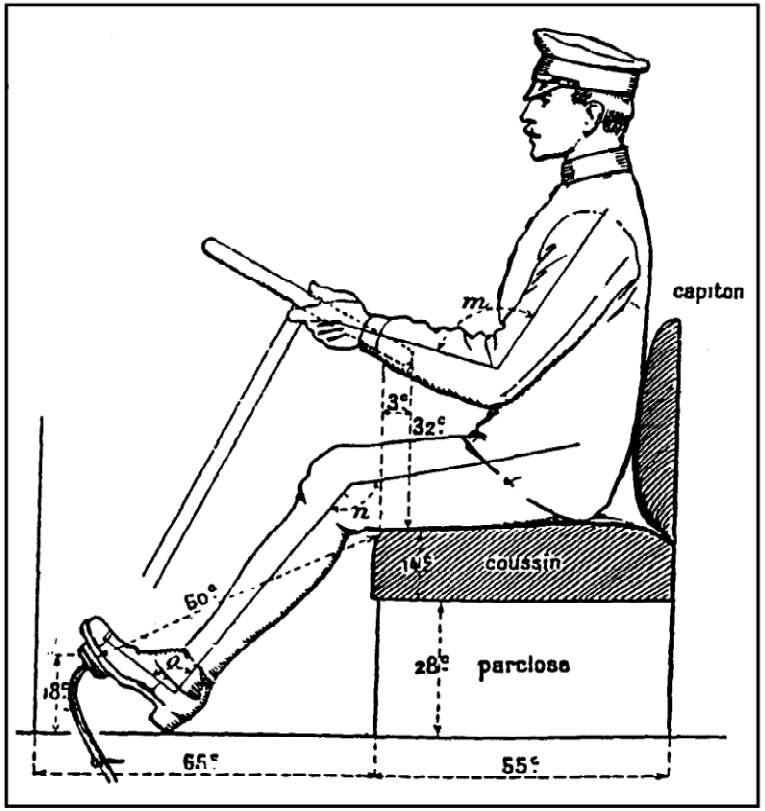
Samuel BAUDU – Master Expert Comfort

« A chauffeur seated correctly… »



from BAUDRY DE SAUNIER

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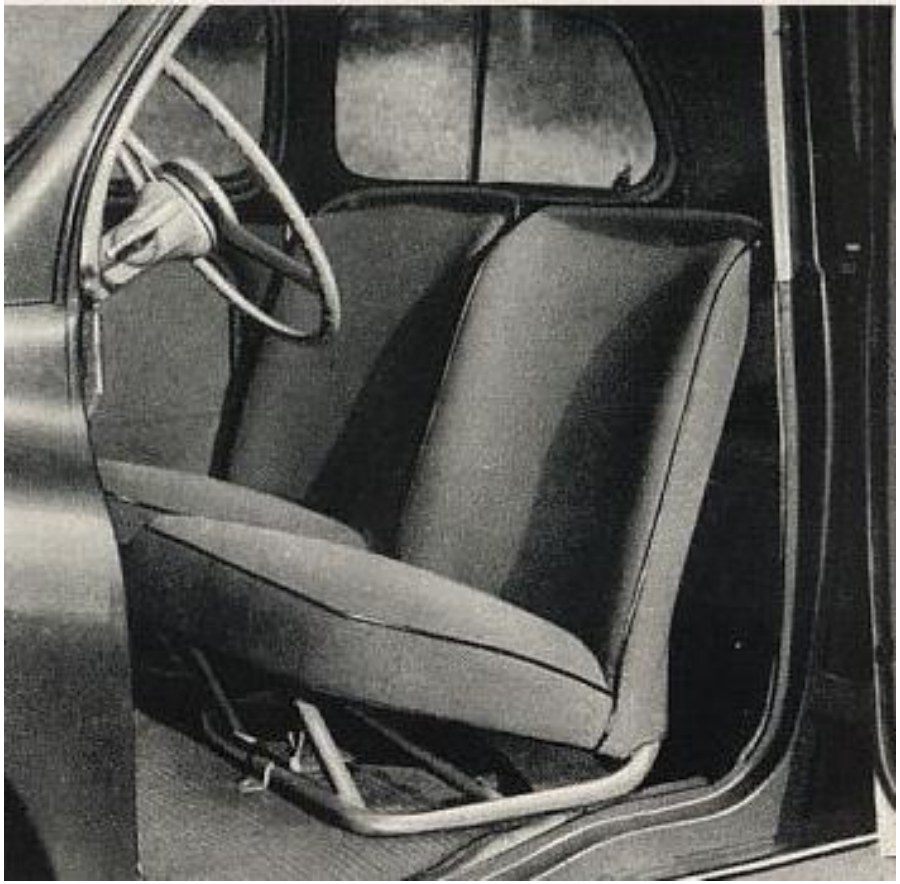

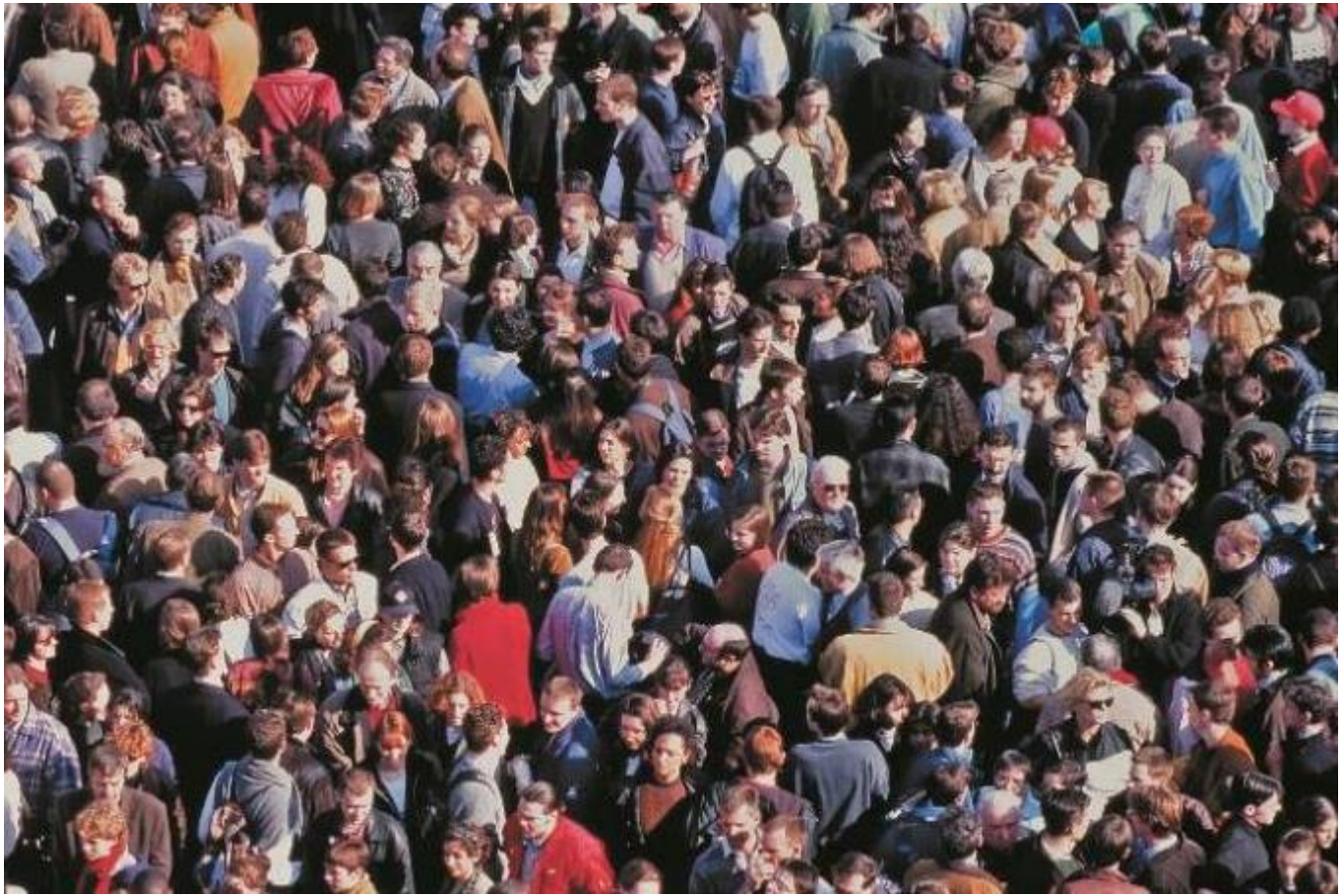

A classical design process

1.

Human diversity

2.

Product for accommodation

3.

Accommodation measurement

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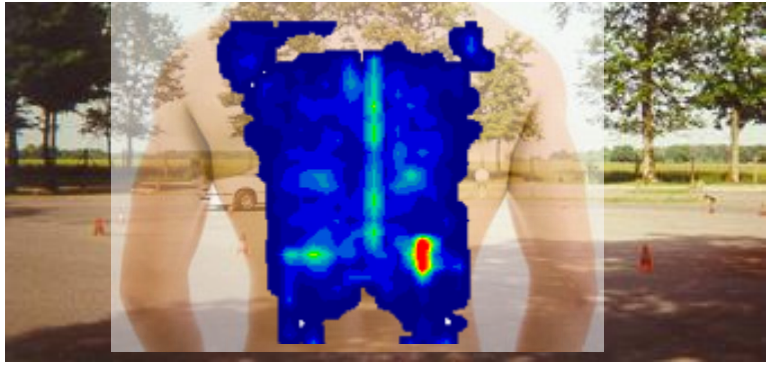
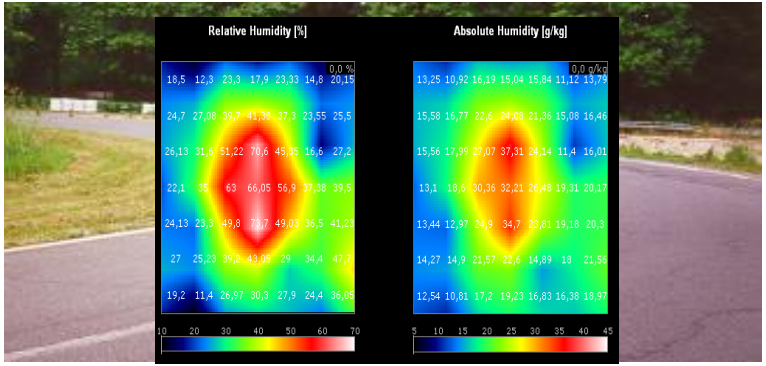
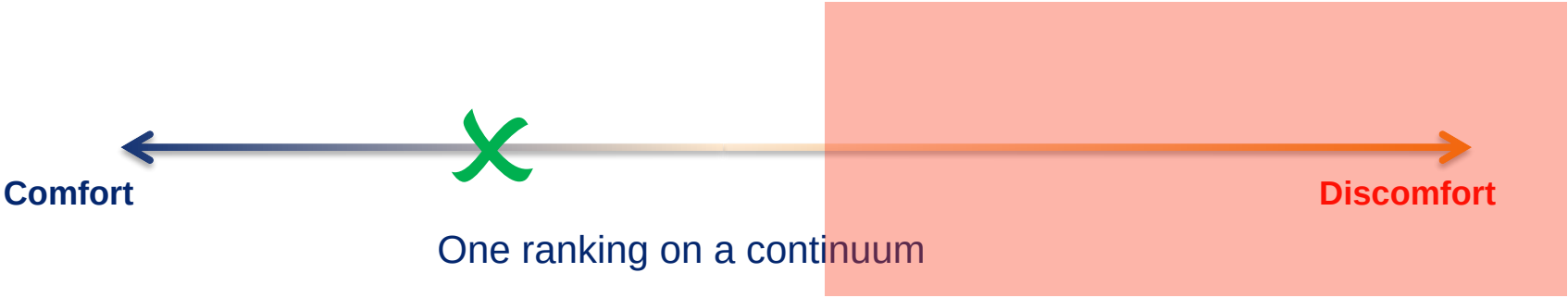
Objective



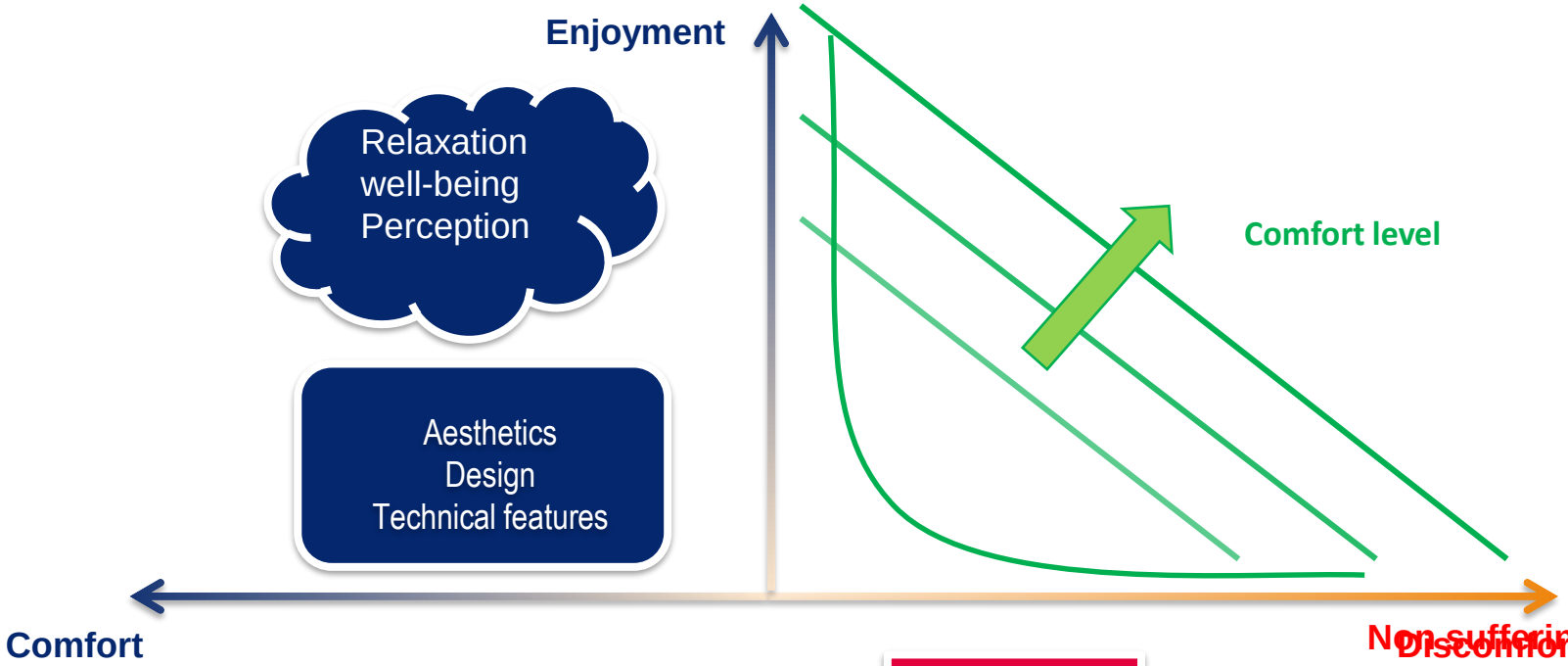


Subjective



One ranking on a continuum

Adapted from Richards (1980)



From Khalil et al. (2006)

Comfort

Wellbeing

4 MegaTrends disrupting the automotive industry

CONNECTED

New electronic architecture and new technology players

AUTONOMOUS

experiences

RIDE-SHARING

and new actors

ELECTRIFIED

electrification

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The passenger experience will be central in the design of new mobility solutions

Driver Experience

Private individual vehicle

Passenger experience

Shared and autonomous vehicle

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From Confort to Wellbeing

Sensory environment	Aesthetics	Social Image	Physical Space
Security feeling	Situation control	Social interaction	Time control

8 dimensions of Wellness

Automated and shared vehicles working group
Objectives et Participants

What are the comfort/discomfort factors for autonomous and shared mobility?

- Véronique Berthault , RATP
- Béatrice Cahour, CNRS Télécom Paris Tech
- Stéphanie Coeugnet-Chevrier, Vedecom
- Jean-Francois Forzy, Renault
- Luciano Ojeda, Robert Thai, PSA
- Anna Rossi, Samuel Baudu, Faurecia

A teenager girl returning home after a party using a shared Robotaxi

Autonomous vehicle for urban mobility

Source Renault: EZ-GO concept car

A teenager girl returning home after a party

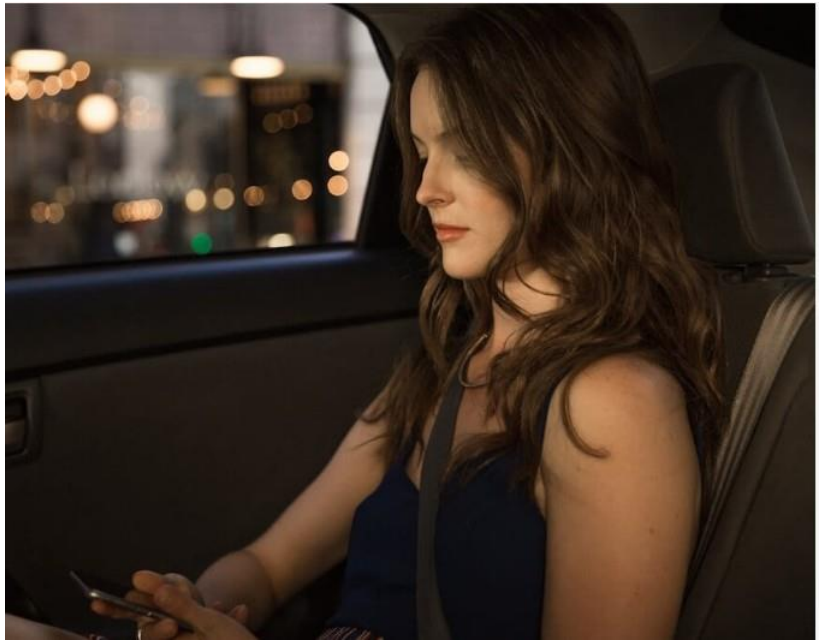
A teenager girl returning home after a party

Odette is a high school student, <18 years old

Her parents accompanied her to a party at <20 kms from her home on a Saturday night

Around midnight, Odette returns home with a robot taxi in pool mode

At the end of the party, Odette is tired and does not want to be sociable with the other passengers



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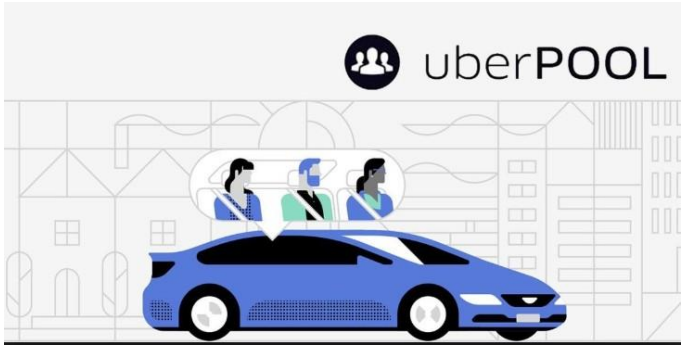
What happens if there is no driver anymore?



In the driver's absence the journey becomes similar to a long elevator trip with a stranger

The driver is the responsible element to make sure that everything goes well during the trip

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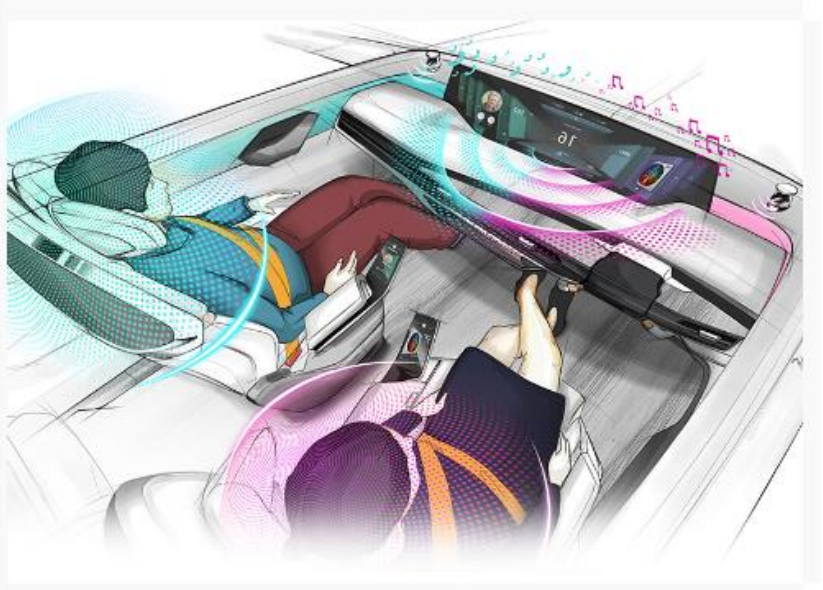
FEELING OF SECURITY/SOCIAL INTERACTION: User needs

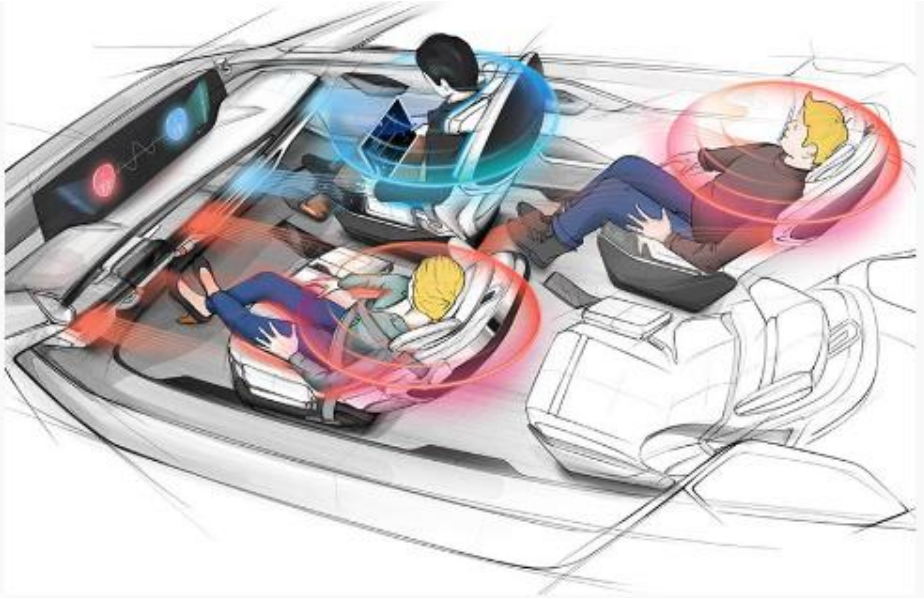
- Information about other passengers
- Easy cancellation if we have no confidence in the people we shared the vehicle with
- Be safe from potential assaults during travel
- Access to a human connection if needed
- Opportunity to express your feelings about security/social interaction

- Being able to choose the level of social interaction:
  - Interaction with friends
  - Rest
- Being able to clearly signal the need for privacy
- Individualized comfort (ex. thermal, acoustics…)

Bubbles of individual experience



Immersive sound experience



Climate Bubble

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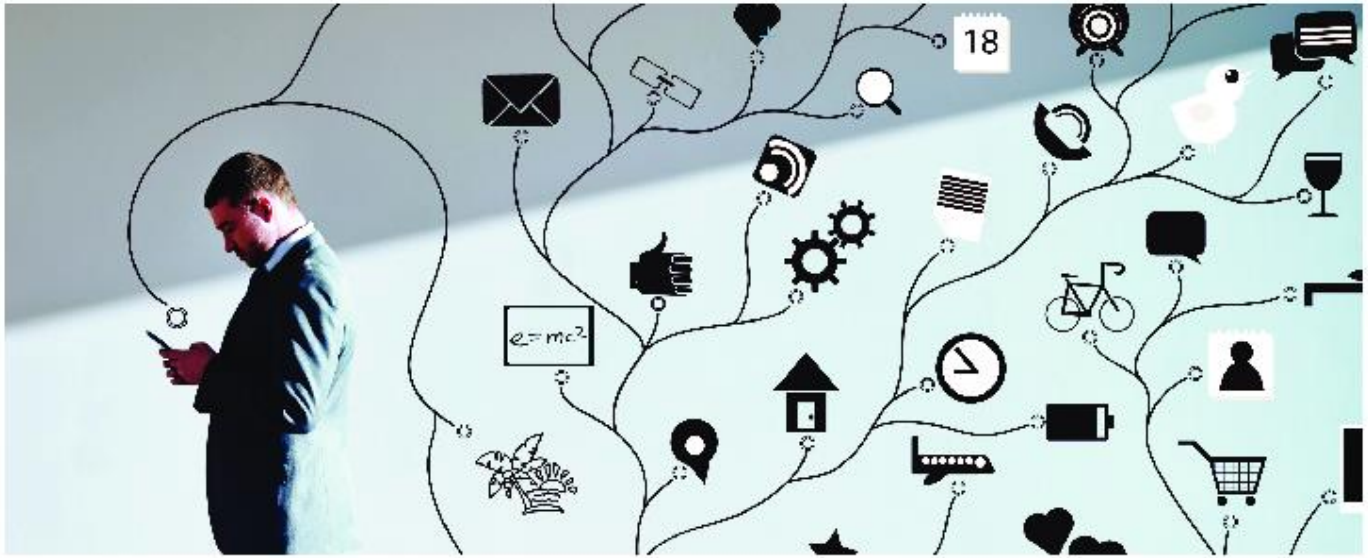
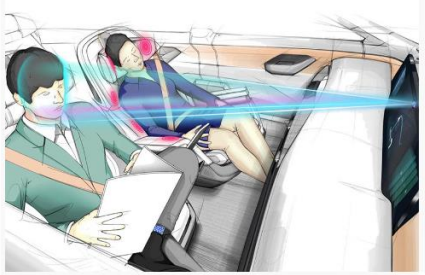
Personalization & real time

- Need to gather data about the occupant





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Next steps: experimental investigation to generalize the results of the study

Uber-pool user population that we will lead to project into a "driverless" Uber-pool service

1) Ask the participant about their Uber-pool service practice
2) Present them the characteristics of the autonomous robot taxi service
3) Lead the participant in the Guided Imaginary Projection
4) Ask the participant about the sources of comfort/discomfort

Post-doc Telecom Paris

THANKS FOR YOUR ATTENTION