

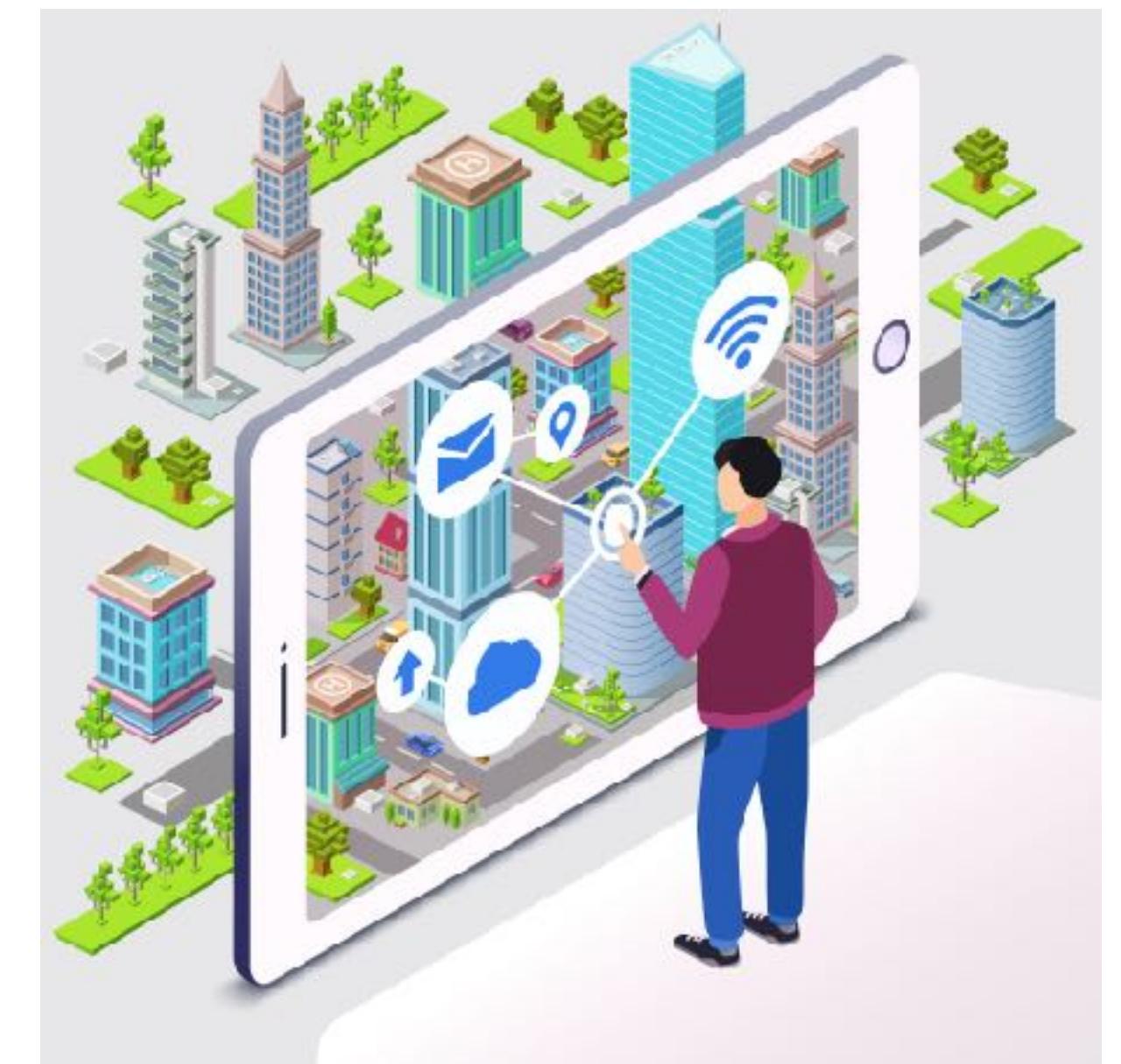
COeXISTENCE

**what happens in the future when intelligent machines
and humans share limited resources of urban mobility?**



**machine-dominated
dystopia**

or



**synergy of human-machine
COeXISTENCE**

Rafał Kucharski, Jagiellonian University

TechOn! Kraków, 2025

Innovative Cities – but what does that mean?

Conflicts

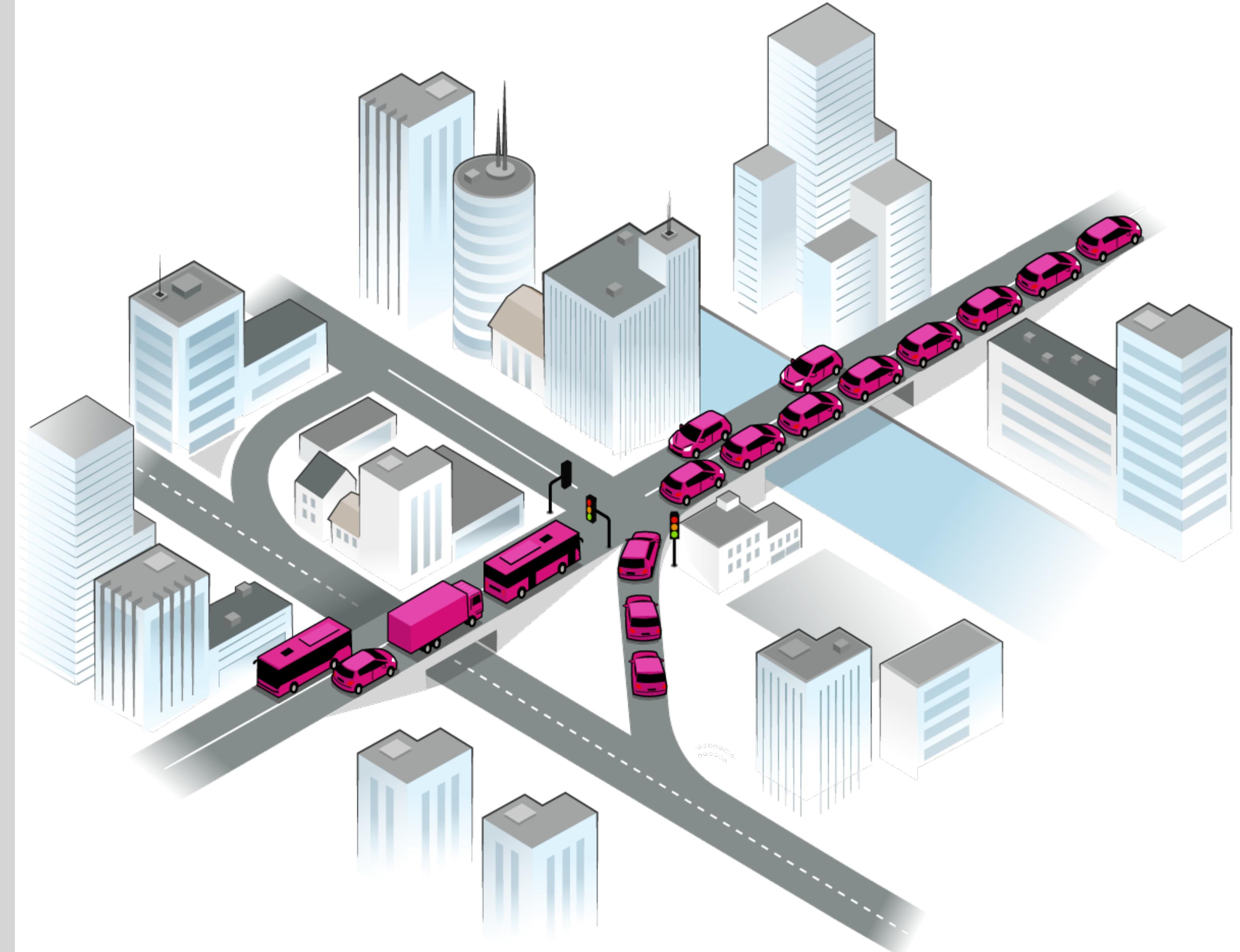
novel phenomena

congested bottleneck with limited capacity

we (humans) rationally optimize our decisions

and reach **user-equilibrium**:

- democratic
- egalitarian



Conflicts

new players

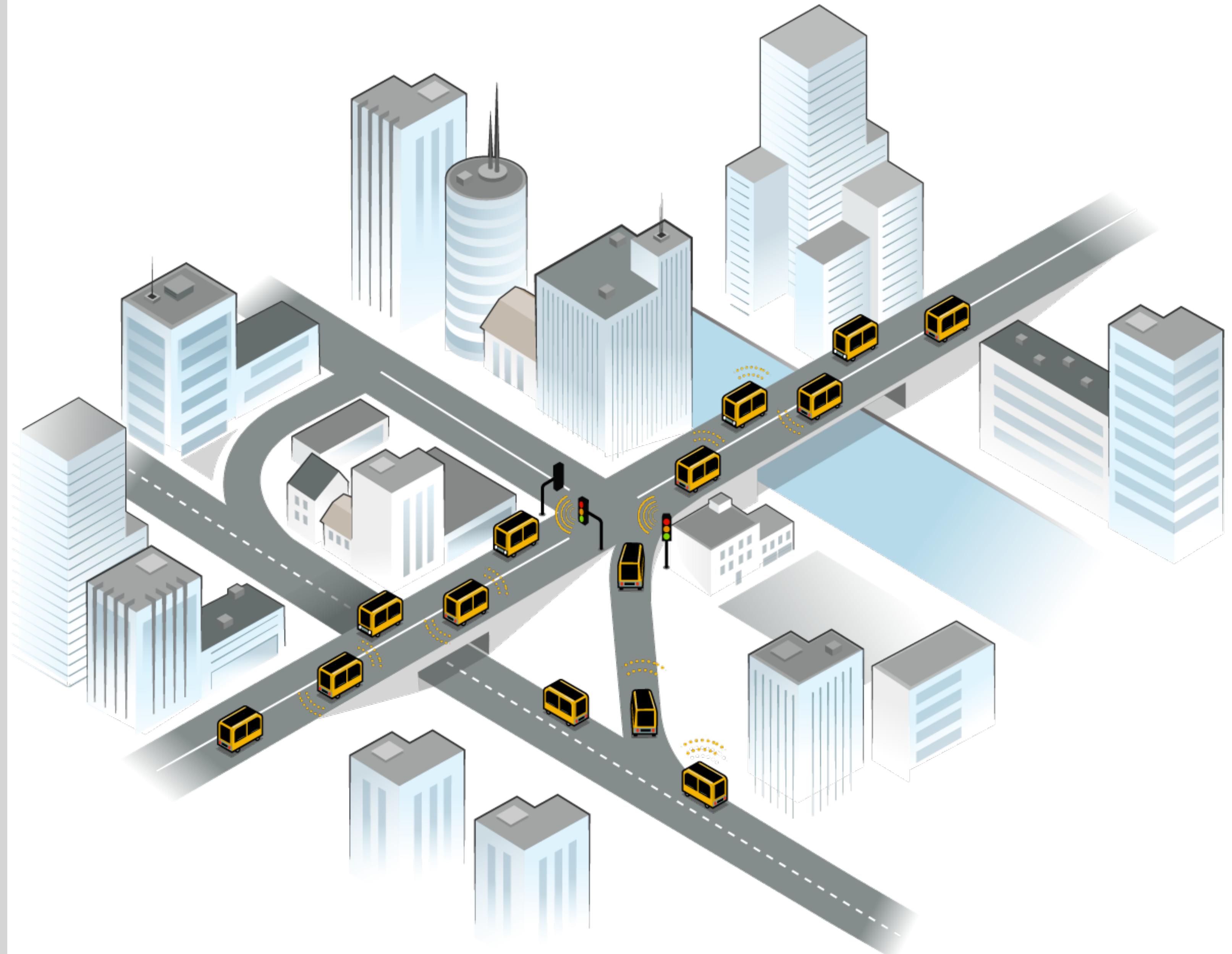
intelligent machines

change the rules of the game

better at:

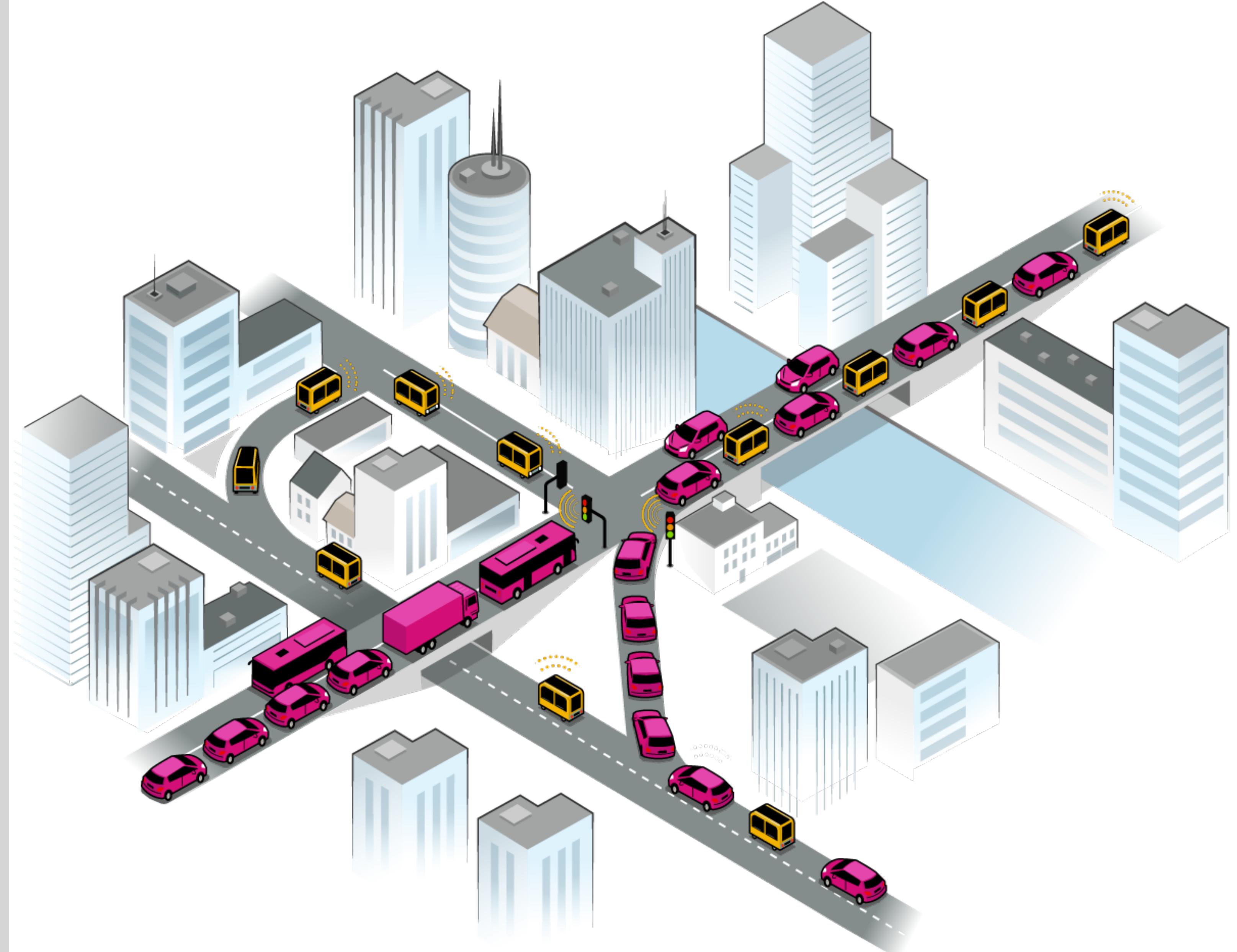
- calculations
- access to data
- controllable
- collaborative

designed to win



Conflicts by collaboration

- machines **trick**
the demand-actuated
traffic lights
- collaboratively reroute
- receive more green light
- pass the bottleneck faster
- humans queue longer



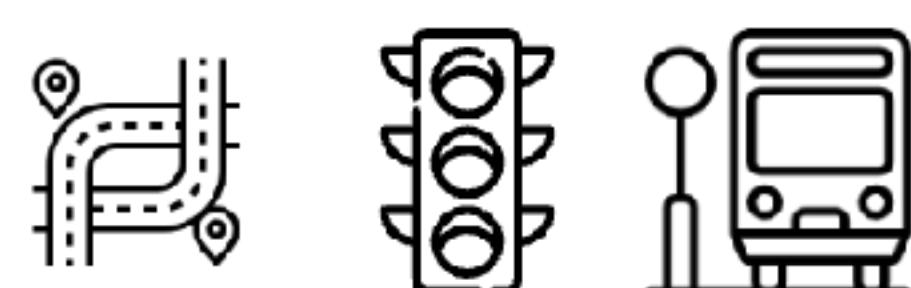
COeXISTENCE

framework to discover how machine intelligence may
take-over our urban mobility and how to avoid it

**URBAN
MOBILITY** = **SUPPLY** + **DEMAND**



sustainability
efficiency



infrastructure



people

COeXISTENCE

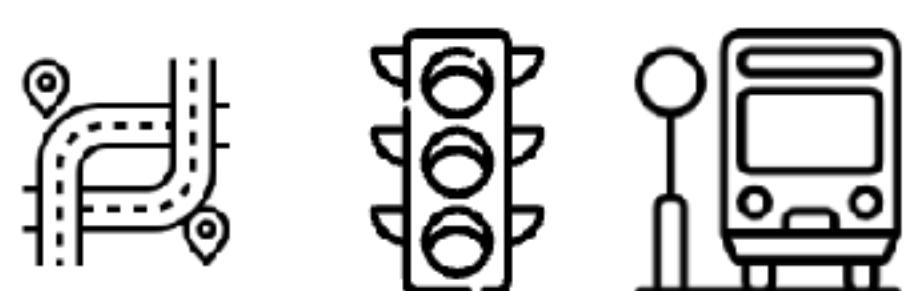
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sustainability
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people

**INTELLIGENT
MACHINES**



COeXISTENCE

anticipate
demonstrate
resolve

**paradigm shift in
urban mobility**

Findings

what do we know so far?



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IN KRAKÓW



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erc

Starting
Grants



Findings

what do we know so far?

○ Alarming:



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group of machine
gmum
learning research



Findings

what do we know so far?

- **Alarming:**
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