

# SMART PARKING

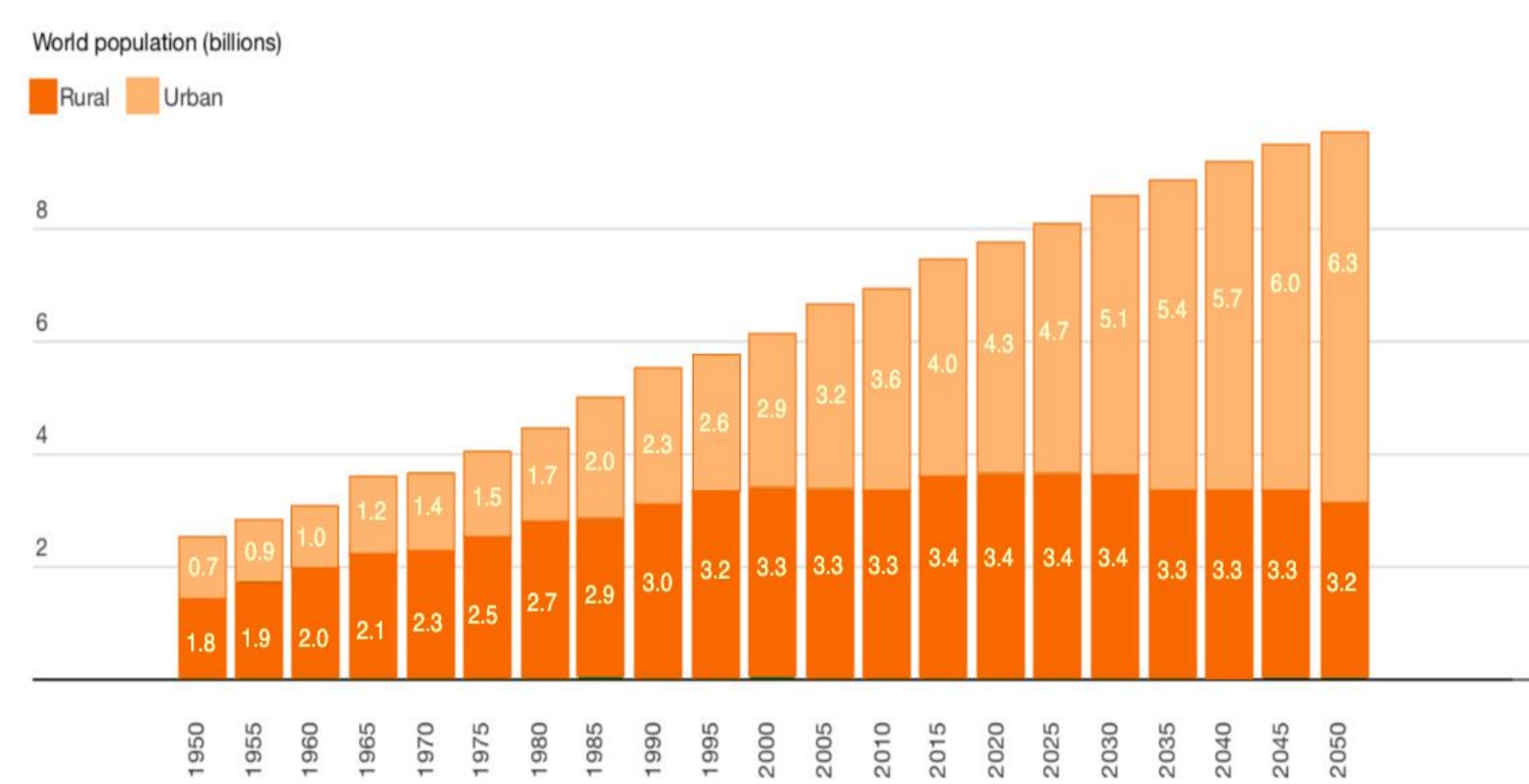
Manlu Xu, manlxu@fotonik.dtu.dk

# INTRODUCTION

# Parking in a smart future.

Smart parking is an intelligent transportation system to fulfill a safe and green mobility in the urban cities. By improving air quality, reducing greenhouse gas emission, relieving congestion and providing potential incidents notification to the citizens. Which be used to define a sustainable future.

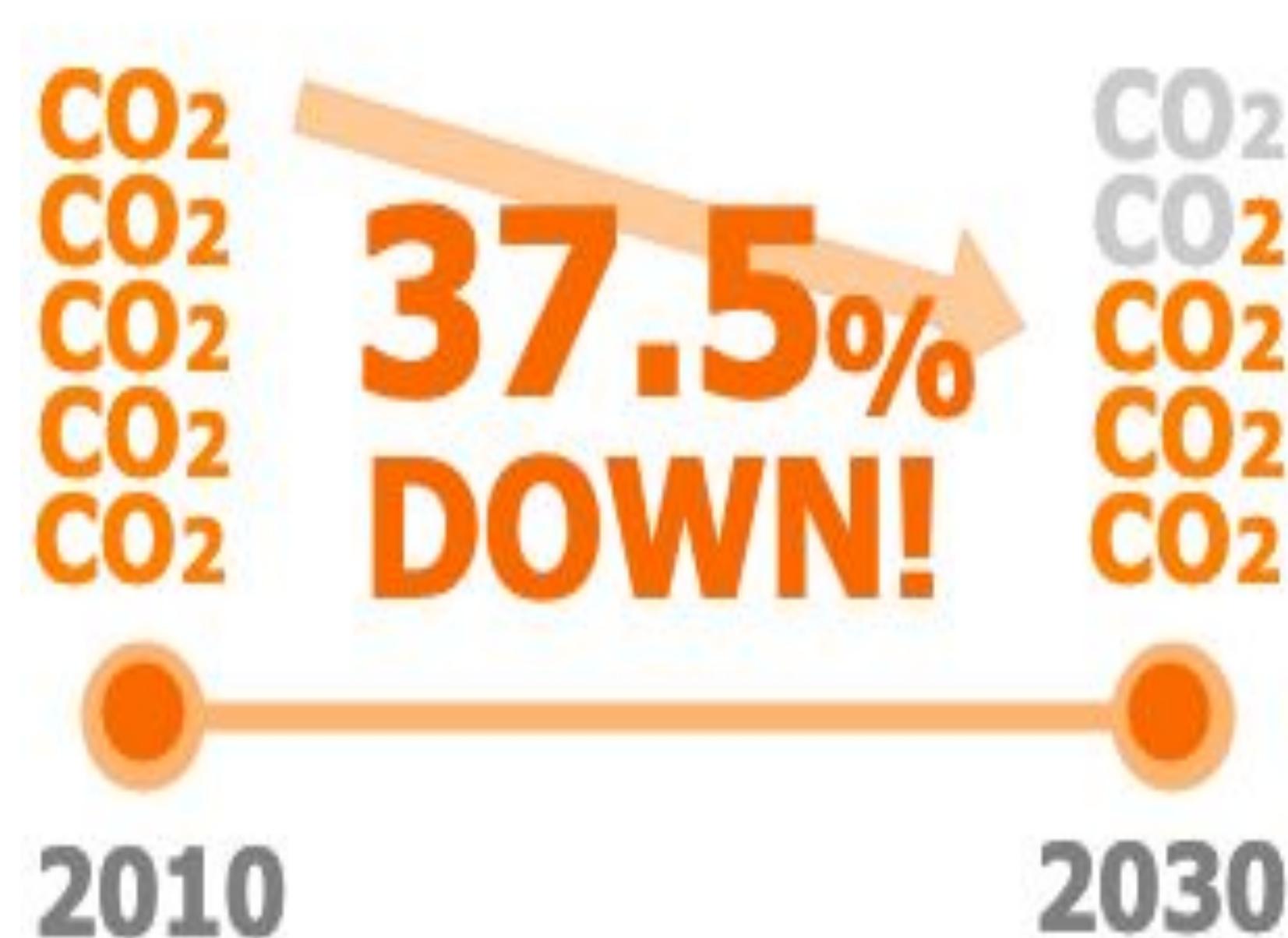
# PROBLEMS



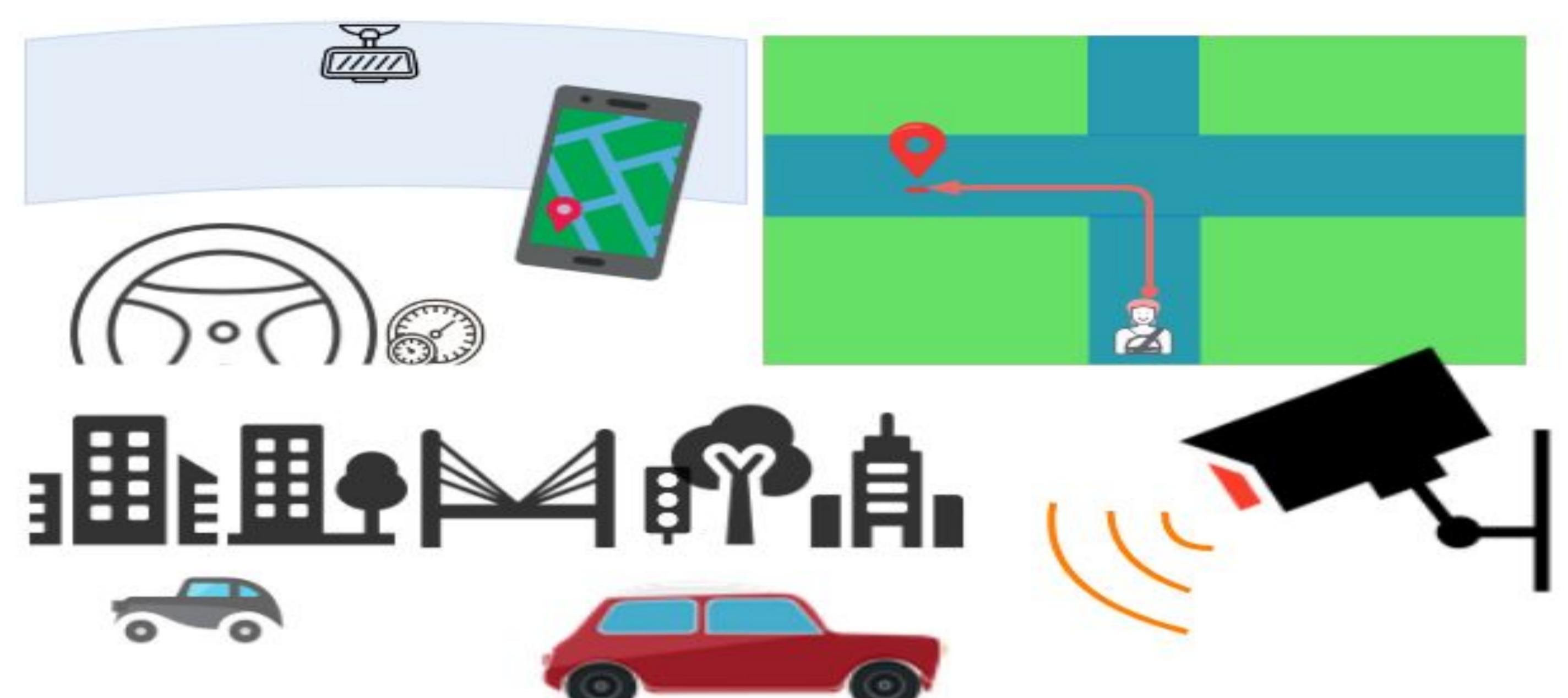
**By 2030, 60 percent of people will live in urban areas.**  
The world is changing fast, cities are growing and urban population is rising. The needs for transport people and goods are increasing, but so is congestion, air pollution, road accidents and climate change.

According to the UN, much of the 1 billion increase in urban population between now and 2030 will be in Asia and Africa, both of which are in the midst of transformations that will permanently change their economic, environmental, social, and political trajectories

# GOALS



# THE PARKING SYSTEM

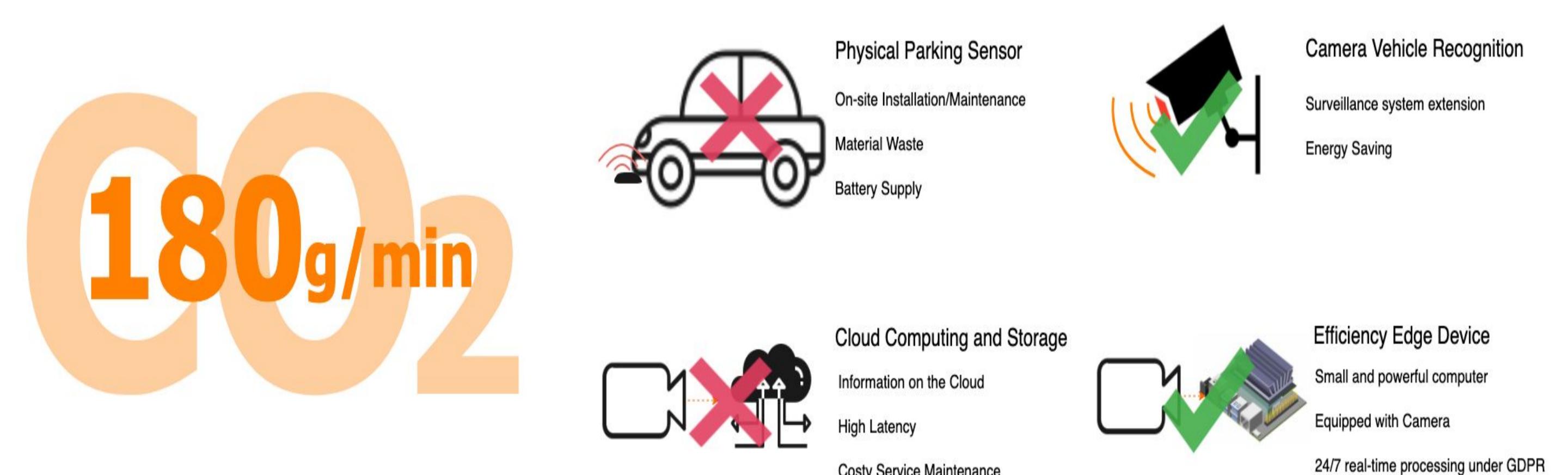


Manlu has a meeting in downtown, she knows where to find a parking spot in real time.

**Finding an optimal way to the parking spot.**

The system collected video stream captured by the camera installed in the parking space, using computer vision technology processing and extracting the information regarding space usage and counting the traffic flow. Also an app is used for guiding drivers to their destination.

# INNOVATION



**Intelligent algorithm applied on the efficient edge device.**  
Comparing to the traditional parking system using physical sensors, the smart parking applied the AI techniques to the powerful edge devices, which guaranteed a scalable and real-time system.

# THE BIG FUTURE

**The future is now, and we're ready.**





**DTU Fotonik**  
Department of Photonics Engineering

# SMART PARKING

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## INTRODUCTION

Parking in a smart future.

Smart parking is an intelligent transportation system to fulfill a green mobility in the urban cities. By improving air quality, reducing greenhouse gas emission, relieving congestion and providing potential incidents notification to the citizens. Which is to define a sustainable future.

## PROBLEMS

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**EU agrees on 37.5% CO<sub>2</sub> reduction for cars by 2030!**

According to an agreement reached by the European Parliament and the 28 EU member states on 17 December 2018, CO<sub>2</sub> emissions rules for cars will have to decrease by 37.5%.

## THE PARKING SYSTEM

Marks have a parking in downtown, one knows where to find a parking spot in real time.

Finding an optimal way to the parking spot.

The system collected video stream captured by the camera installed in the parking space, using computer vision technology processing and extracting the information regarding space usage and counting destination.

## INNOVATION

180g/min

- Physical Parking Sensor
- Cloud Interconnection
- Cloud Computing
- Cloud Computing and Storage
- Efficiency Edge Device
- Intelligent algorithm
- Camera Vehicle Recognition
- Intelligent system advance

Intelligent algorithm applied on the efficient edge device.

Comparing to the traditional parking system using physical sensors, the smart parking applied the AI techniques to the powerful edge devices, which guaranteed a scalable and real-time system.

## THE BIG FUTURE

The future is now, and we're ready.

2030