[CLASS 10]
Transportation, New Mobility & HCI

Driving is one of the interactive behaviors

First Cars (1880s)

- No dashboard (no vehicle information, no HCI)
- No safety supports
- No traffic lights (no interaction between cars)

What happened next?

https://www.detroitnews.com/story/news/local/michigan-history/2015/04/26/auto-traffic-history-detroit/26312107/

Problems (1900-1930)

- The number of cars suddenly increase too much
- But, no systematic rules regarding car-to-car communication (unavailable to interact between cars)

Beginning of Human-Vehicle Interactions

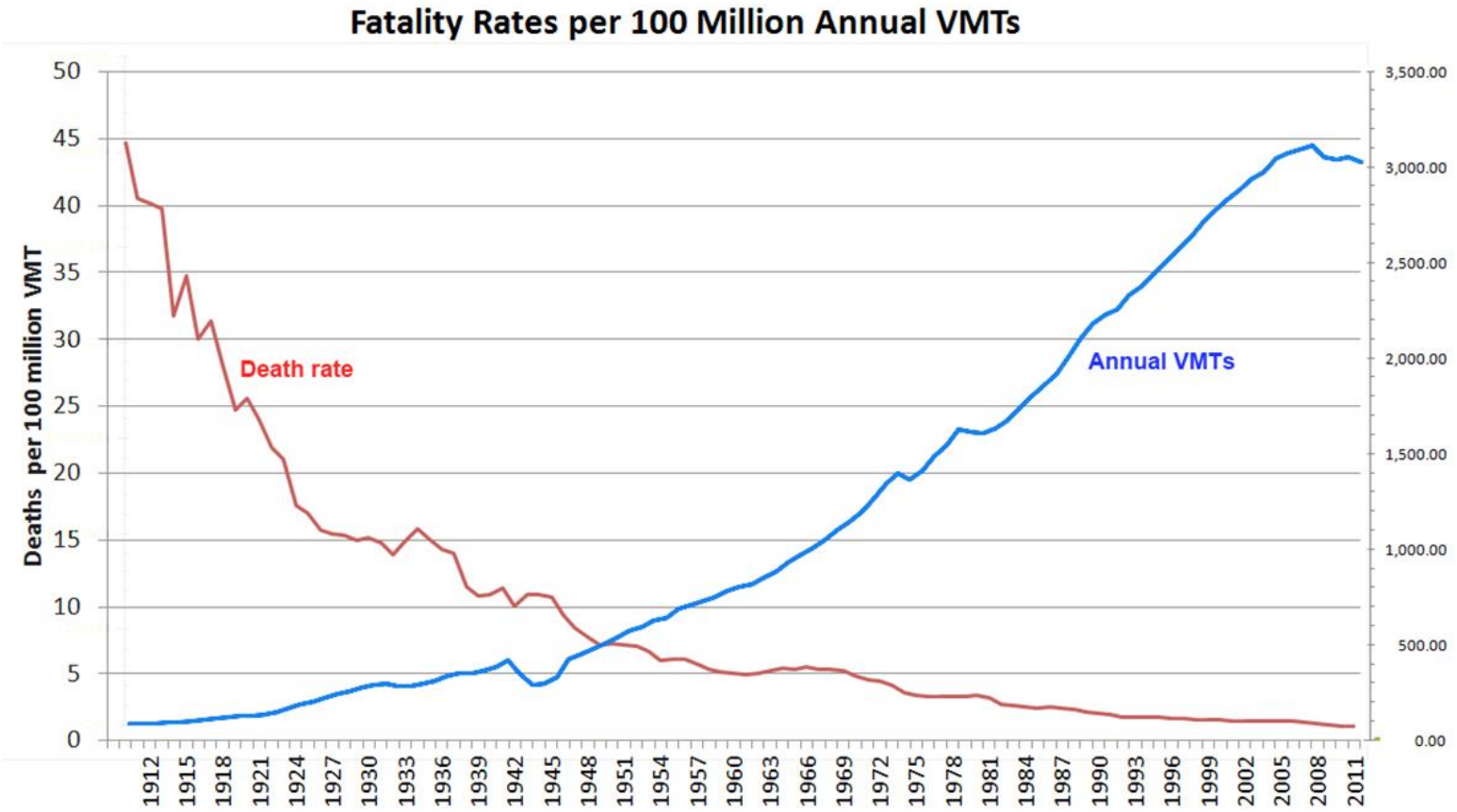
- Started road sign system (man → light)
- Started traffic education
- Three colored-lights became world standard

Modern Traffic System for Car-to-Car Interaction

- Well developed with thousands of specific rules
- No accidents on the complex roads
  while the driver follows the traffic system appropriately.

Effects of Traffic Systems

- Number of cars and travel hours ⇑
- But, death rate ⇓



Present Vehicle Information System

- Issue: Car has more and more functions
  → more complex interfaces
  → need more attention to find what/how to control
  → more chances of human error & accident ??
  → more advanced driving support system

Autonomous Driving Cars Can Solve All the Problems?

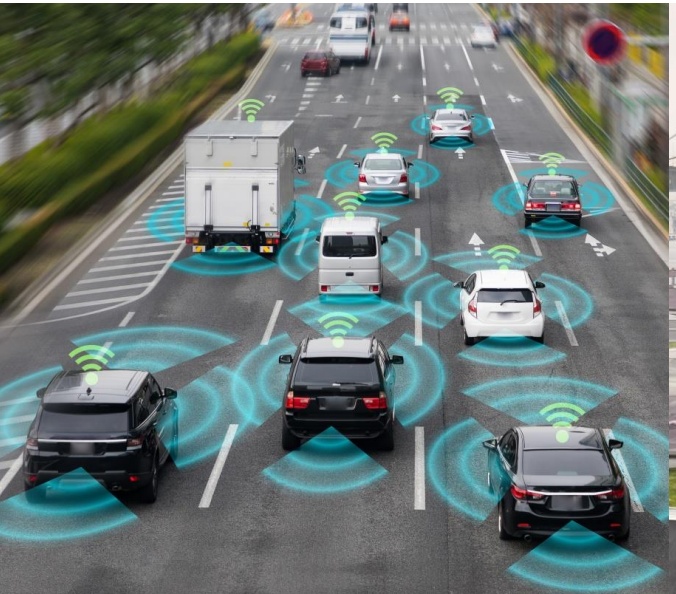
- Then, what happens if the driver's primary task (= driving) is taken by the computer?
- Drivers don't need to focus on driving. There will be no driver in the car, but only passengers.
- If all the vehicles in the city are controlled by the computer, then what will happen?

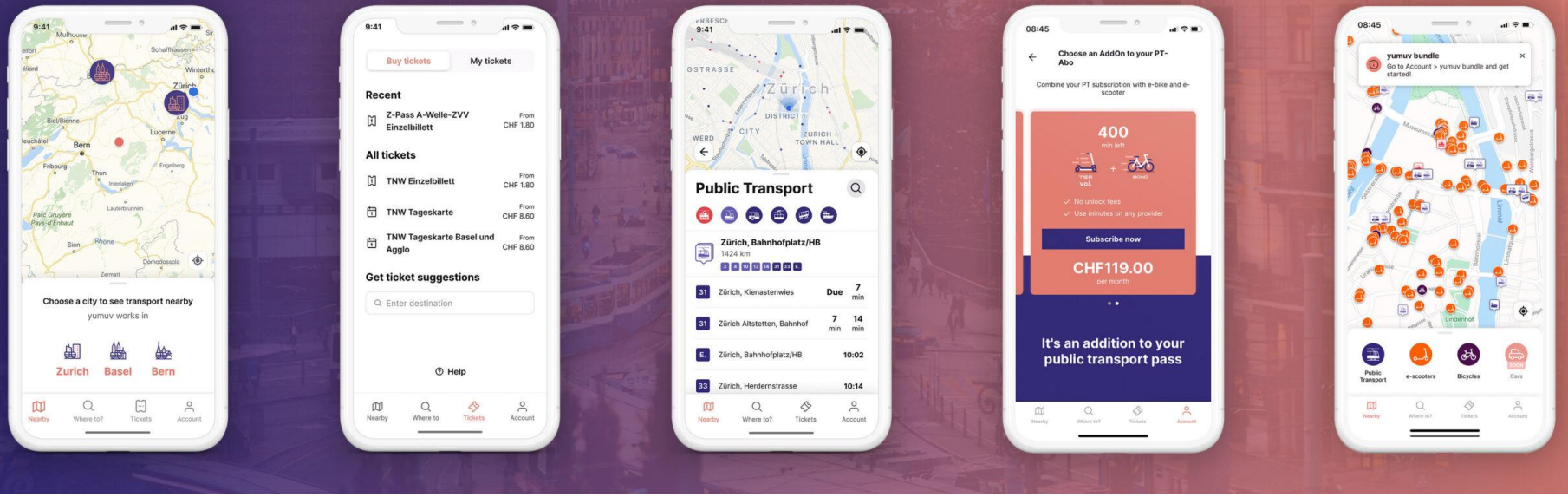
Future of Transportation

- No more ‘driving by human drivers’
- Car = extended space or living or work (e.g., home, room, office, …)
- What are vehicle-related HCIs you may expect in near future?

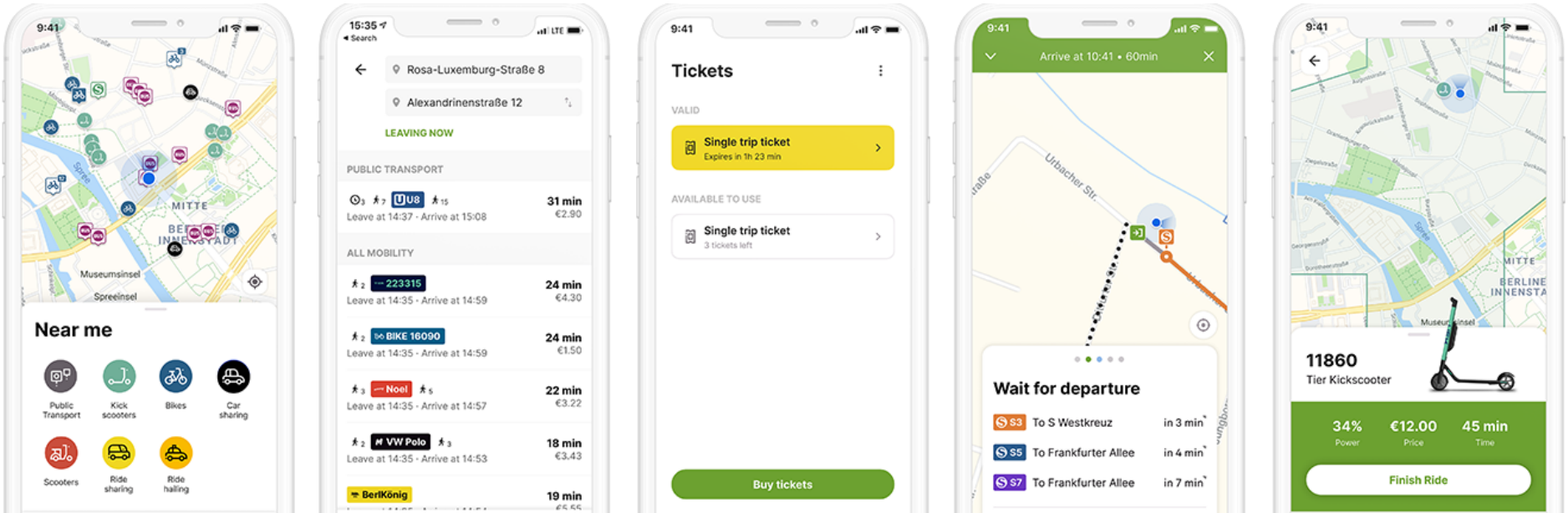
new culture and new life

new mobilities and new life





and all services require apps



Discussion & Practice

1. Find any problems/issues regarding car-related or mobility-related interactions in these categories

- Driver-Vehicle Interaction (e.g., controlling radio)
- Driver-Passengers Interaction (e.g., talk)
- Inter-Vehicle Interaction (e.g., blinkers)
- Driver-Road Interaction (e.g., traffic lights)
- Vehicle and Traffic System Interaction (e.g., Hi-Pass)
- Driving/parking/traffic-related problems
- Ticketing, travelling, rent a car, accident handling, …
- Future mobilities: drone taxi, space tour, hyper-tube, …
- …

Discussion & Practice

2. Find solutions

3. Describe a use case (or use scenario)

4. Propose detailed human-computer interactions
   (human action ⇔ computer action)

5. Draw necessary interface screens that explains the HCI idea

Summary

The transportation is getting advanced.

- Self-driving cars
  - No human drivers, no accident by human error
  - No need to concern safety issues when designing interfaces.
  - No traffic jam, efficient traveling
  - Work in the car (car = office), more comfortable travel
- Self-flying vehicles
  - Near future, we can easily see flying vehicles.
  - What interfaces, interactions, traffic systems should we consider for the future self-flying transportations?