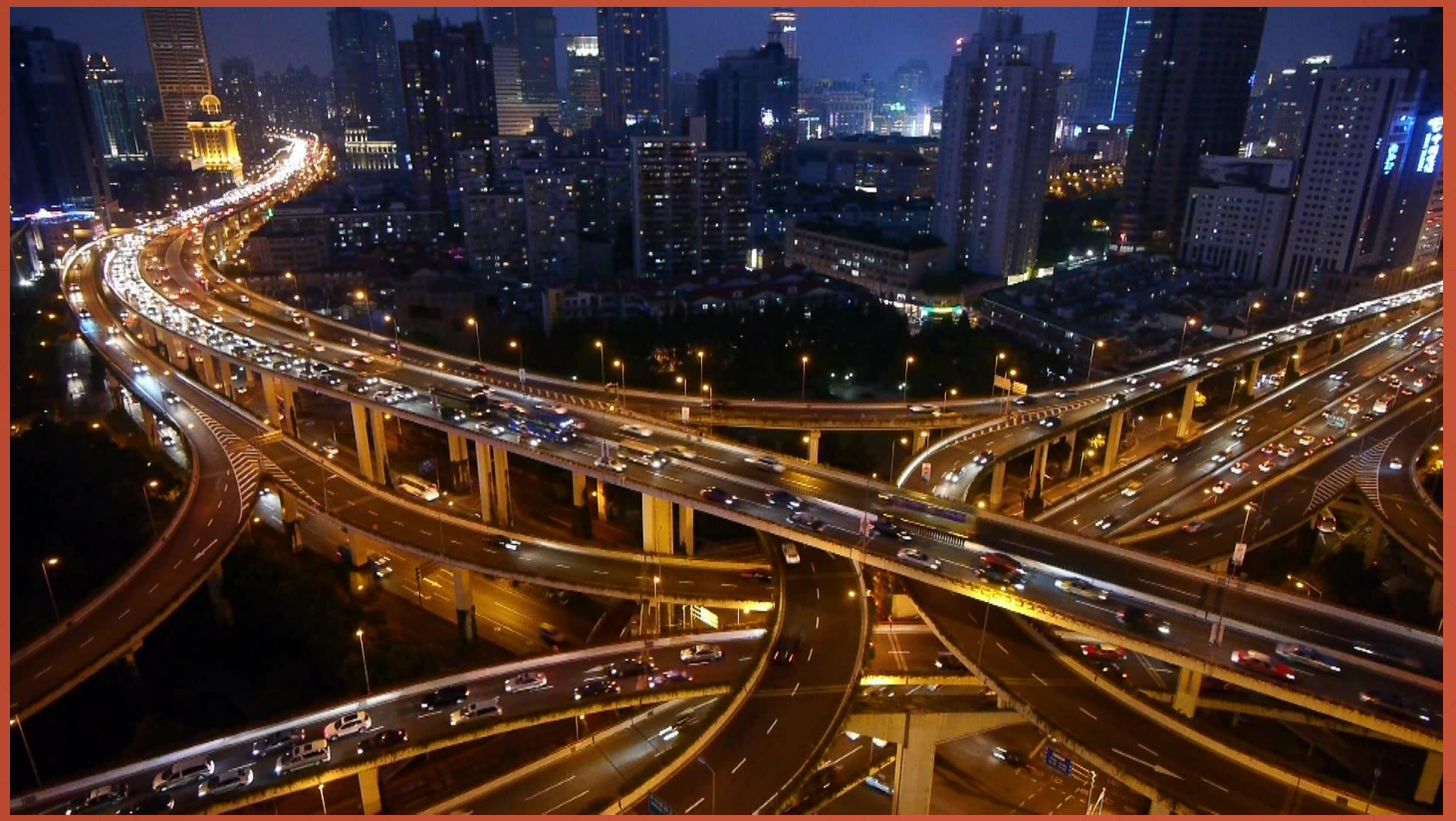

Intelligent Transportation Systems

Rolland Vida, BME TMIT

Lecturers

- Csaba Simon, PhD
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  IE324

- Rolland Vida, PhD
  associate professor,
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  IE325

- Miklós Máté
  technical assitant
  mate@tmit.bme.hu
  IE327/a

Intelligent transportation systems

- 13 lectures
  - No lecture on november 1
  - Invited speakers from industrial partners (in 2015 Waze, Commsignia, Inventure, BKK, NNG)
  - Presence is not mandatory, but advised
  - Slides on-line: https://www.tmit.bme.hu/vitmma10
- 7 practical works
  - Homework for the signature
    - 2nd week – presenting the topics, forming the teams
      - 6 teams of 3 people each
    - Mid-term report
    - 14th week – oral presentation, written report
      - One report per team, highlighting the contribution of every member

Tell us about yourself…

- Where do you come from?
- What specialisation?
- What is your background? How much do you know about networking?
- Why did you choose this course, what are your expectations?

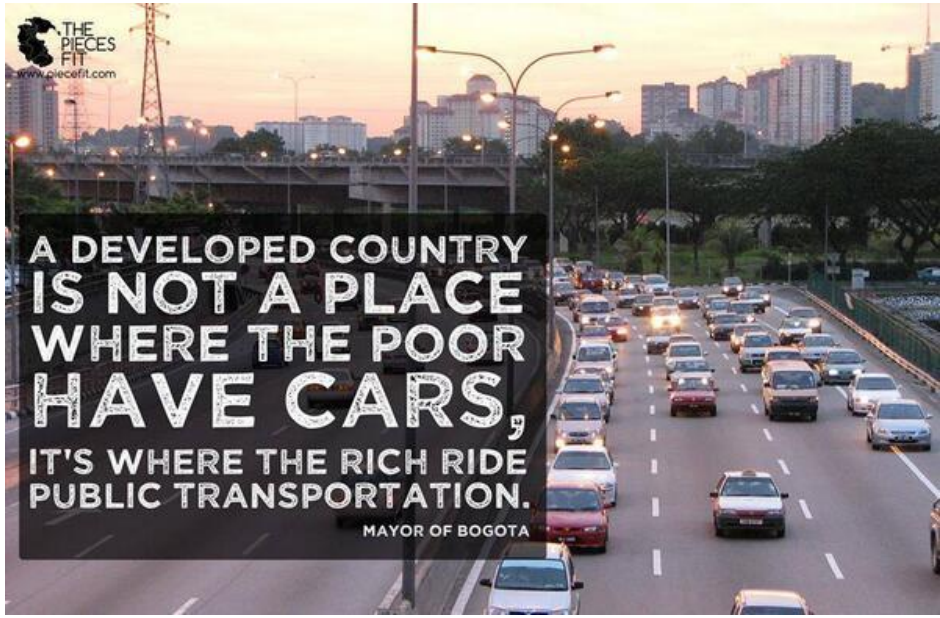
Intelligent transportation systems

Intelligent transportation systems

- Smart City
  - A place where people like to live, good quality of life
  - Low pollution, low energy consumption
  - Sustainability
- One of the basic components of a smart city is the intelligent transportation system
  - Too many people in traffic jams – stress, lost working hours
  - Too many people in cars – pollution, energy wastage
    - In Budapest each year + 20-30,000 cars on the roads, more than 3 million cars in total in Hungary
  - **Too many cars**
    - Cars stay parked, empty, for 22 hours per day in average
    - Occupy a parking lot, at home or at work
- **The use of personal cars in not sutainable on the long run**
  - 100 km long traffic jam for 9 days in China
  - https://www.youtube.com/watch?v=iKhsPO6yYko

    (don't belive your eyes, it is Photoshop ☺)

Intelligent transportation systems



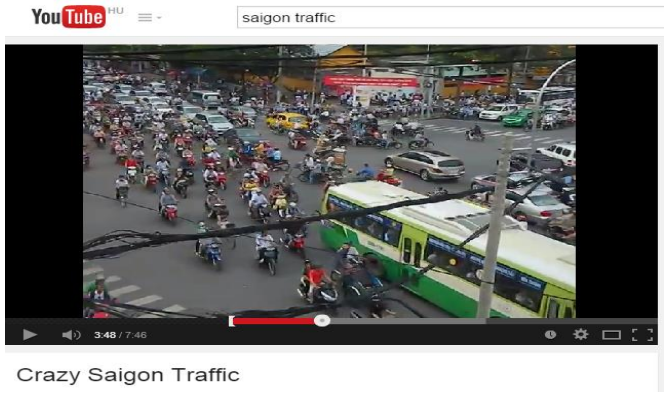
- Efficient public transportation
- Car sharing / Car pooling
- Connected car, C2C or V2V communication
- Intelligent road network, C2I or V2I communication
  - Today mostly static traffic signs, like 100 years ago

- Electric cars
- Autonomous cars

Intelligent public transportation

- Improving the efficiency and quality of public transportation is very important
  - Bad example from the metro in Beijing (2013)
  - https://www.youtube.com/watch?v=xG-meaGqg-M

- If too many people and bad public transportation – **be aware of the motrocycles**
  - **Total chaos in transportation** – see South-East Asia
    - Crossroad in Saigon
    - **http://www.youtube.com/watch?v=gKLWZjBu2iQ**



Advantages of public transportation

- **Much larger capacity**
  - 200 people – on 200 bikes, 1 tram, 3 buses

    or 177 cars

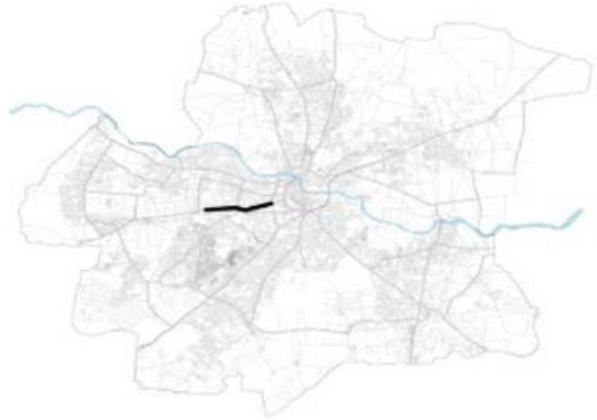
- **Realiability, predicatbility**
  - Real-time monitoring of vehicles (GPS), trajectory planning
  - Track-based solutions – underground, ground level or elevated

Advantages of public transportation

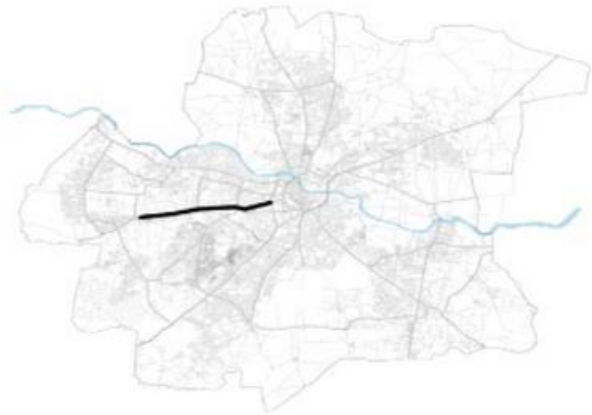
- **Reliability, predictability – BRT (Bus Rapid Transfer)**
  - Dedicated bus lane, possibly in themiddle of the road (easy turning)
  - Paying (by card) outside the vehicle, not at the driver – faster boarding
  - Green lights at crossroads

How much does it cost?

- The BRT is the cheapest solution, but cannot be applied everywhere
  - No space
  - Should not build to city for the cars, but for people
    - Building roads for buses is more acceptable than for cars



Underground metro: **2.5 km**



Elevated metro: **5.0 km**

Monorail: **6.7 km**

BRT: **67 km**

Bringing down some roads

Seoul, South-Korea

Portland, Oregon