Project Proposal: Make parking convenient and reduce bustle

Team 12

Initial proposal

- Make a parking app with helpful features ->
  - displaying amount of free parking spaces in a parking lot (centre)
  - displaying price and different tariff zones
  - GPS implementation to closest parking from desired sight, spot.
- Deliverables ->
  - Dashboard (explanation of algorithms and how we based our decisions)
  - App prototype (With most of the features displayed)
  - Machine learning algorithm (Dynamic pricing -> reduction of bustle)

easyPARK

Parking. Made easy.

Features: GPS

- GPS ->

  Map built in the app will have most of the sights, interesting spots for tourists and other visitors of Breda with multiple filtering options (categories)

  Map would also contain highlighted parking spots, parking lots

  In the app you could choose your final destination (or set it yourself) and based on the selected destination app would provide location + route to the closest parking spot to the destination.

Features: Dynamic pricing

- Dynamic pricing ->

  Peak and off-peak hours would have to be taken into consideration.

  Amount of people in the city centre varies by time, day, week, month and not negligibly - season. (In summer there is more tourists and visiotrs than in winter)

  Prices could vary -> they could be lower, and also higher, depending on demand.

  Two ways of defining what the price should be – Real-time data or past trends (or both)

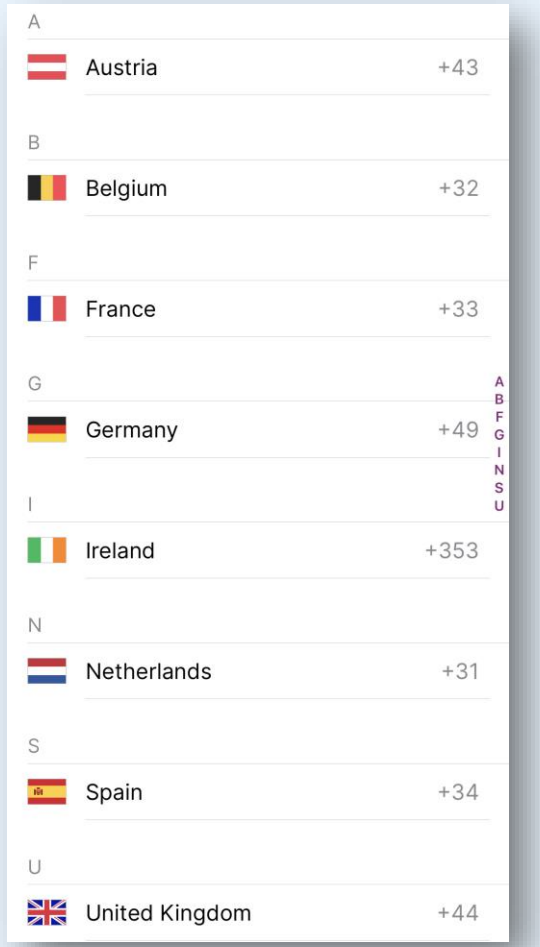
  Dynamic pricing could help spread out visitors coming to Breda not in waves, that cause overcrowding and congestions, but in a more spread out manner. This would be achieved by reducing parking fee at off-peak times and also increasing parking fee at peak times.

Features: Diversification!

- Diversification! ->

  One of the biggest missing features of easypark is that it doesn't allow user to register and therefore purchase a ticket without having phone number from one of these countries.

  Since Breda is one of the most popular student cities in Netherlands, all nationalities should be able to use these services and therefore adding more countries, based on data research, that can register and freely use the app.



Features: Parking reservation (VRN)

- Parking reservation ->

  Propose to implement new tracking system, where all major parking lots would be tracking and producing real time data about available spots in the parking lot.
  One way of achieving this is by installing more sensors that recognize if the spot is taken (like some garages already do).
  Then it would be possible to purchase a parking ticket via the app for certain amount of time.

  Vehicle Registration Number (VRN) would be entered in the app and sent to the system, after buying a ticket it would be possible to enter a parking lot with your vehicle and entered VRN would be recognized by the camera at the entrance and would let the vehicle automatically in. (Timer of parking would then start, after leaving it would finish.)
  If a person stays in the parking lot longer, they would be charged the extra amount after leaving a parking lot.

Data

- Dynamic Pricing ->
  - Peak hours
  - Parking occupancy
  - Real-time parking data (optional, either based on real-time or on past trends)
  - Tarifs
  - Events
- Diversification! ->
  - Most represented nationalities in Netherlands, Breda, North Brabant
  - Owner of cars in Netherlands – Nationalities (optional – for more precise evaluation)
- GPS ->
  - Most popular sights, malls, or any POI locations.
  - Parking lot locations
  - Parking occupancy

Potential issues

- Not enough resources ->

  Although every part of this project is feasible, deployment part will rely and depend on municipality. There are multiple things such as sensor installation, camera installation and development of the system needed prior to actually providing the application for public.

- No agreement on dynamic prices ->

  Dynamic prices may be the most dubious part of the proposal because it actually concerns the prices and changes in the city. There would have to be many adjustments made from the side of municipality to be able to deploy the algorithm and try to make the best use of dynamic prices.

Thank you for your attention!