XAMK
South-Eastern Finland University of Applied Sciences

Aikuiskoulutus
TAITAJA

KSAO
KOUVOLAN SEUDUN AMMATTIOPISTO

ETU "LETI"
1886
SAINT PETERSBURG ELECTROTECHNICAL UNIVERSITY

Automotive cluster ANW

Automotive innovation camp

Race4Scale

2021

Business case "Mobile application "Driver's assistant"

Saint Petersburg State University of Architecture and Civil Engineering (SPbGASU)

Expert board:

Chernyaev Igor, Head of the Department of Technical Operation of Vehicles

Torosyan Levan, Associate Professor of the Department of Technical Operation of Vehicles

Graevsky Igor, Assistant of the Department of Technical Operation of Vehicles

Age group: high school students; students of secondary professional education

СПбГАСУ
1832

Automotive cluster
ANW

General information about the business case

Development of the functionality of the "Driver's Assistant" mobile application

The current trend in the field of road transport is the development of operational monitoring systems. (This is a consequence of the increased availability of digital technologies and transport telematics.)

Examples: fuel consumption monitoring systems, route, and traffic monitoring systems, driving style monitoring systems, etc.

Drivers need an online assessment of the technical condition of the car, economy, and driving safety using standard available "gadgets"

Existing solutions in the field of vehicle monitoring are mainly aimed at the business segment. Mobile "driver assistants" are mainly for reference legal purposes.

There is also a need to improve methods for solving the problem of ensuring road safety.

The task of developing a mobile application for individual car owners, informing them about the economy, safety (style) of driving, and the technical condition of the car can be considered relevant

Existing examples of implementation

Partially similar functionality has:

- Commercial vehicle operation monitoring systems

- Driving rating systems used by insurance companies, car sharing

- On-board diagnostic (OBD) systems

- Mobile diagnostic applications using ELM327 adapters

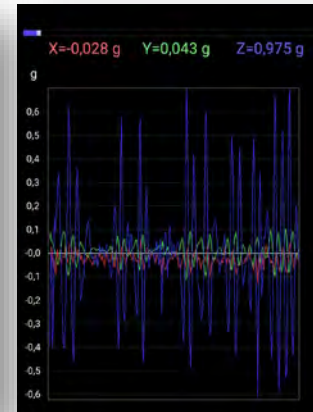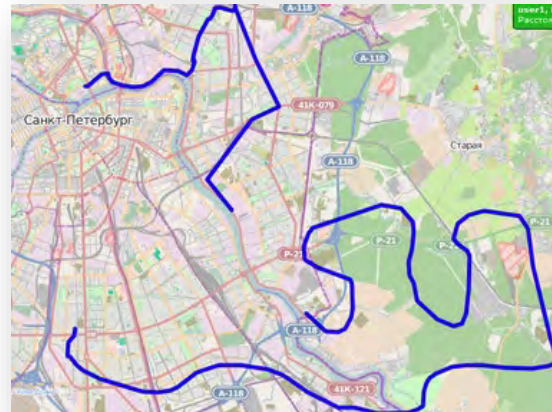- Mobile apps trackers

Not targeted at individual car owners

The required functionality is "scattered" in different applications.

Technical details

There are available sources of information about the parameters characterizing the operation of the car, which do not require additional equipment (or minimal additional equipment):

- GLONASS / GPS coordinates - information about the trajectory of movement, speed, and acceleration

- built-in accelerometers in many mobile phones - information on acceleration and deceleration intensities

- diagnostic adapters ELM327 - information on technical parameters (including fuel consumption, detected errors in the operation of vehicle systems)

Analysis scenario

Existing "car" applications do not track changes in indicators over time, which may be important for individual car owners. Such functionality is available in mobile applications of the fitness trackers and pedometers format.

The analysis of driving styles is carried out mainly based on the analysis of the intensities of acceleration and deceleration.

Statement of the problem

A task:

To develop proposals for the functionality of a mobile application for individual owners with the working title "Driver's Assistant".

The application must:

- provide information to the driver in a convenient and accessible form:

- do not require additional equipment of the vehicle for their work (except for diagnostic adapters);

- provide information on efficiency, the safety of driving (style), and technical condition;

- provide an analysis of the dynamics of indicators;

- encourage drivers to ensure road safety.

These requirements can be reasonably adjusted.

Problem-solving recommendations

- To substantiate information about the operation of the car, which is needed by individual car owners.

- Analyze existing mobile applications and their functionality, perhaps choose a prototype.

- Justify the indicators by which the information will be presented to the car owner.

- Justify the parameters that must be "monitored" to determine these indicators.

- Propose technical means for monitoring these parameters.

- Suggest a mobile app menu structure.

- Suggest a name for the application that would be associated with economy and/or safety.

Business case solution format

- 5-8 PowerPoint presentation slides.

- The total time for the presentation of the case should not exceed 10 minutes.