

SmartMaut

Masterstudium:
Software Engineering & Internet Computing

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PROBLEM

- Current toll charging systems usually are expert systems that cause very high investments for infrastructure and also for the continuous operation for the system provider.
- Due to the first point, there are only a few providers all over the world.
- In most cases, the acquisition of the right to use toll charged roads (vignette, On Board Unit (=OBU) etc.) is complicated for customers.
- Although desirable, interoperability among European toll charging systems still needs to be solved satisfactorily.

SOLUTION APPROACH

- To overcome these issues, it is evaluated if the functionality of current toll charging systems can be implemented in an application for smart devices (i.e. smart phones, tablets,..) that will enable ad-hoc deployment for any interested (European) country.
- No additional infrastructure is needed.
- Sensors built into smart devices can be used.
- People will be able to bring their own device for toll payment. This reduces costs and enhances convenience.

TYPES OF TOLL CHARGING SYSTEMS

- Location based system:
Users have to pay for each kilometre that has been driven on the toll charged infrastructure.
- Time based system:
Users obtain the permission to use the toll charged infrastructure for a specified amount of time, upon payment. It does not matter how many kilometres are driven during that time.

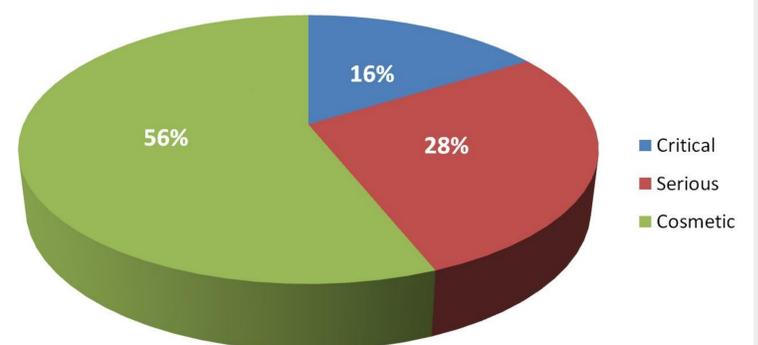
IMPLEMENTATION

- A mobile application for the Android platform.
- The application supports toll collection for a location based system.
- Device sensors (for example for the Global Positioning System) are used to obtain the whereabouts of users.
- The user interface aims at being self-explanatory and easy to use.



USABILITY TESTS AND RESULTS

Identified Problems



REFERENCES

- [1] ARBÖ – "Mautgebühren in Europa 2013".
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- [2] Android API Guide.
<http://developer.android.com/guide/index.html>. Accessed December 2014.
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- Very good suggestions for improving the system have been made.
- Most of the identified problems might be solved by improving the appearance of the graphical user interface.
- Overall, people liked the application and found navigating through the menus logical and easy.
- All participants would use the application.