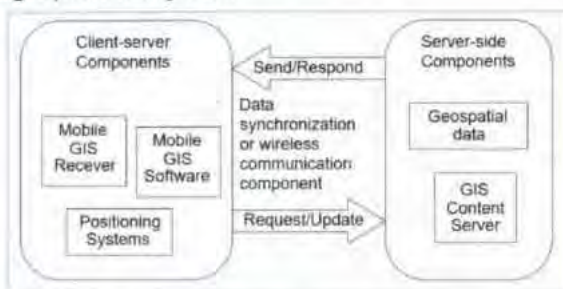


# Development of a Mobile GIS for surveying measurements

## Introduction

The classical GIS implementation is based on capturing and managing spatial data. The Mobile GIS is the most sufficient solution when comes to fast and portable way of working with spatial data, as it provides workflow anytime and anywhere. The spatial data can be characterized with its accuracy and the surveying is irreplaceable way of determining spatial objects with accuracy in centimeter diapason. In order to reduce the effort in spatial data collecting a native Mobile GIS application was developed. The application uses geodetic methods to determine coordinates of real geographical objects.



Generic Mobile GIS architecture. (Tsou, 2003)

The Mobile GIS architecture is based on client side and server side. In the developed solution the server side is taken from ArcGIS online as it stores spatial data. The client side is taken from the developed application. As positioning system is used GNSS, and more specific – Real Time Kinematic.

## Tools

For development and tests the following tools were used:

- Appstudio for ArcGIS and Qt Creator
- ArcMap
- ArcGIS runtime SDK for Qt (JavaScript and QML)
- ArcGIS online
- GNSS receiver

Hochschule Karlsruhe – Technik und Wirtschaft  
Fakultät IMM • Studiengang Geoinformationsmanagement  
www.hs-karlsruhe.de

Bearbeiter: Zlatoslav Iliev Marchev  
E-Mail-Adresse: zlatoslav.marchev@gmail.com  
Betreuer: Prof. Dr.- Ing. Heinz Saler  
Betreuer: Dipl.- Ing. Christian Stern

## Final product – MGIS

The developed software uses internet connection in order to access to a pre-determined dataset, which is stored on a server. The software supports two workflows – internet (server) connected and not connected, as it can generate local geodatabase. The UI consists in three main pages.



Main UI pages of the developed application

The software can be used for a small areas of Earth's surface and it does not depend on the local coordinate system, as can perform real-time transformation with the measured coordinates. There are two methods used for determining the position of geographical objects – direct and indirect, as both are using geodetic approaches for calculating coordinates. After determining the position and assigning attributes, the objects are stored in feature layer.

## Conclusion

The application can be used for spatial data capturing as it provides fast and reliable way of measurements. The main capabilities are: open data model – the attributes of the features can be fixed before measurements, real-time result, anytime/anywhere usage, portable configuration, high accurate spatial data.