

3.1 Publishable summary

The GAPFILLER project aims at filling the gap between big manufacturers and SMEs by providing the researchers and developers' community with a unique, sustainable and extensible GNSS data pool enabling performances prediction and simulation of new GNSS based applications and algorithms.

The project started on 01/05/2012 and its duration is 24 months. The partners involved in this project are M3SYSTEMS, TELETEL, OKTAL-SE, BITGEAR and MILTECH.

The main project objectives are:

- To define user needs and market evolution from stakeholder interviews;
- To perform a state-of-the-art analysis of the existing GNSS web sites and data pools on the web and to look for potential technological innovations;
- To set up a GNSS data pool and a web portal including several services such as 3D emulation, performance analysis tools and services to positioning application developers;
- To populate the data pool with recordings from different locations in Europe using different kinds of recording kits (smartphones, enhanced GNSS receivers, etc.);
- To exploit the services and available data from the GAPFILLER portal to the benefit of the interested SMEs.

During the first project period (12 months), the consortium has analyzed the state-of-the-art on the field of GNSS data pools and web portals and gathered the user requirements from the identified stakeholders. From these user requirements, the consortium has defined the functionalities of the GAPFILLER data pool and designed its architecture.

The following modules were then specified:

- Web portal administration including user accounts management, user groups management, user rights management, user accounting and balance management;
- GNSS data upload module enabling a user to populate the datapool with GNSS or sensor recordings;
- GNSS data search module enabling a user to retrieve GNSS recordings according to several possible criteria;
- Community features such as Wiki module, forum and newsletter;
- Performance analysis tools including data extraction from GNSS recordings and conversion to displayable formats (KML or GPX), statistics computed from several recordings, cross comparison from a reference trajectory, hybridization between GNSS raw data and associated IMU raw data and recording enhancement with the use of DGPS post processing;
- GNSS data emulation from a 3D synthetic environment thanks to a dedicated server;
- 3D environment modelling builder tool.

A first version of the GAPFILLER data pool and web portal was implemented and set up as an accessible Internet server (<http://teletel-projects.net:8010/gapfiller/>). A validation plan was defined in order to:

- Set up measurement campaigns involving all partners. These campaigns will help populate the GAPFILLER data pool.

- Build validation tests, which cover all the specification requirements. These tests were performed during the integration of the initial GAPFILLER data pool and web portal.

Regarding dissemination activities, the GAPFILLER project has been presented for the first time during the user forum that was held by Oktal-SE in November 20th and 21st at “la cité de l’espace” in Toulouse. The International Symposium on Global Navigation Satellite Systems that will be held in Istanbul from the 22nd to the 25th of October 2013 has been selected as the first Project Workshop.

The Intellectual Property Rights and the ownership of the GAPFILLER data pool were also defined along with the initial exploitation plans of the foreseen implementations as well as the exploitable results of the GAPFILLER project.

The GAPFILLER data pool and web portal solution is mainly targeting SMEs and positioning application developers. The project will result in benefits that include but are not limited to:

- The development of an innovative use of a common GNSS database for performances assessment that will drastically reduce the cost of tests campaigns and certification process.
- The adaptation of the EGNOS aeronautical integrity concept to new application domains that will allow SMEs to gain the know-how for exploiting it and getting competitive advantage.
- The knowledge transfer between technology providers/data brokers and content providers (especially SMEs) boosting development speed of EGNOS and GALILEO services.

The GAPFILLER competitive advantages, which are not currently offered by any of the existing data pools are listed below:

- The GAPFILLER data pool will include trajectories (PVT) and associated GNSS data not only from highways, roads and streets but also from other areas as well including canyons, ports, rivers etc.
- The GAPFILLER trajectories will be available through a dedicated application and using an open API (NMEA standard), so as to be able to be used directly in positioning applications evaluation by the developers.
- The GAPFILLER portal will provide performance analysis tools, allowing for rapid validation of the functional behavior of positioning applications in different operational environments, using EGNOS or GALILEO.
- The GAPFILLER portal will provide simulation tools for predicting the strength of the GNSS signals in high demanding operational environments (high density urban canyons etc.).

<http://www.gnss-gapfiller.eu/>

Refer to:

- GAPFILLER Fact Sheet
- OKTAL-SE users group forum presentation
- GALLILEO Application store from SUNRISE project (GSA funded)