

Welcome to the December 2017 Xmas Edition Issue of BIG IoT Newsletter



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Smart Traffic Management: the Barcelona Pilot



This BIG IoT pilot takes place in Barcelona, a smart city reference worldwide. Barcelona has more than 1.600.000 inhabitants (over 3 million in the Barcelona metropolitan area) and hosts relevant International IT events such as Smart City World Congress, Mobile World Congress or IOT Solutions World Congress. The Pilot activities will mainly involve L'Eixample (main Business District with 16% of total city population) and Les Corts district (an area where different innovative ICT solutions are available). Both of them are high-density urban areas challenging environmental problems caused by traffic. The use case clusters that will be addressed in the pilot are:

Smart Parking, to help citizens finding parking spaces in a more efficient way to reduce the volume of agitated traffic. This pilot contributes with 600 Parking spot sensors installed at Les Corts district for detecting currently available parking places. These sensors are provided by WorldSensing and accessed through the FastPrk 2 platform, which has been BIG-IoT enabled. Then, the SEAT ParkFinder application ([read about it in the previous newsletter](#)) has been also BIG-IoT enabled in order to consume data from those Barcelona's parking spots, Berlin parking spots and any future BIG-IoT parking spots available in the marketplace.

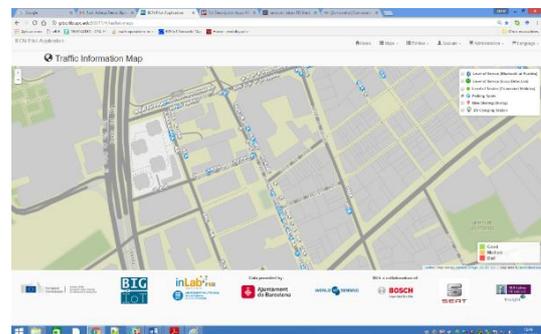
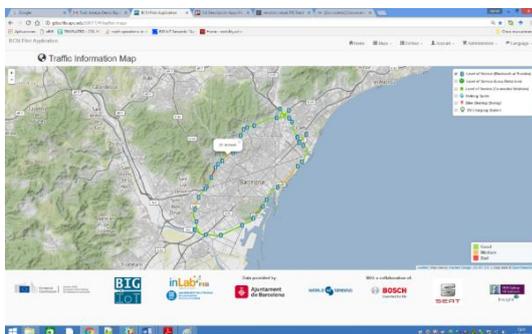
Smart Traffic Management, supporting traffic managers to efficiently use the information

elaborated from smart objects. For this use case, two applications have been developed, the Traffic Information Center Tool (TICT) and the BCN Traffic Info mobile App (BTI). On those applications, either the citizen or a traffic manager can visualize or interact with the city' status (maps, KPI's, alarms, recommendations, etc regarding the current traffic status). These data come from several smart objects, such as traffic detectors for speed or car count (3 magnetometers and 90 Bluetooth Wi-Fi antennas provided by WorldSensing). In addition, this use case integrates 4000 emulated connected cars and 126 emulated loop detectors. This emulated data is accessed through an OpenIoT Instance.

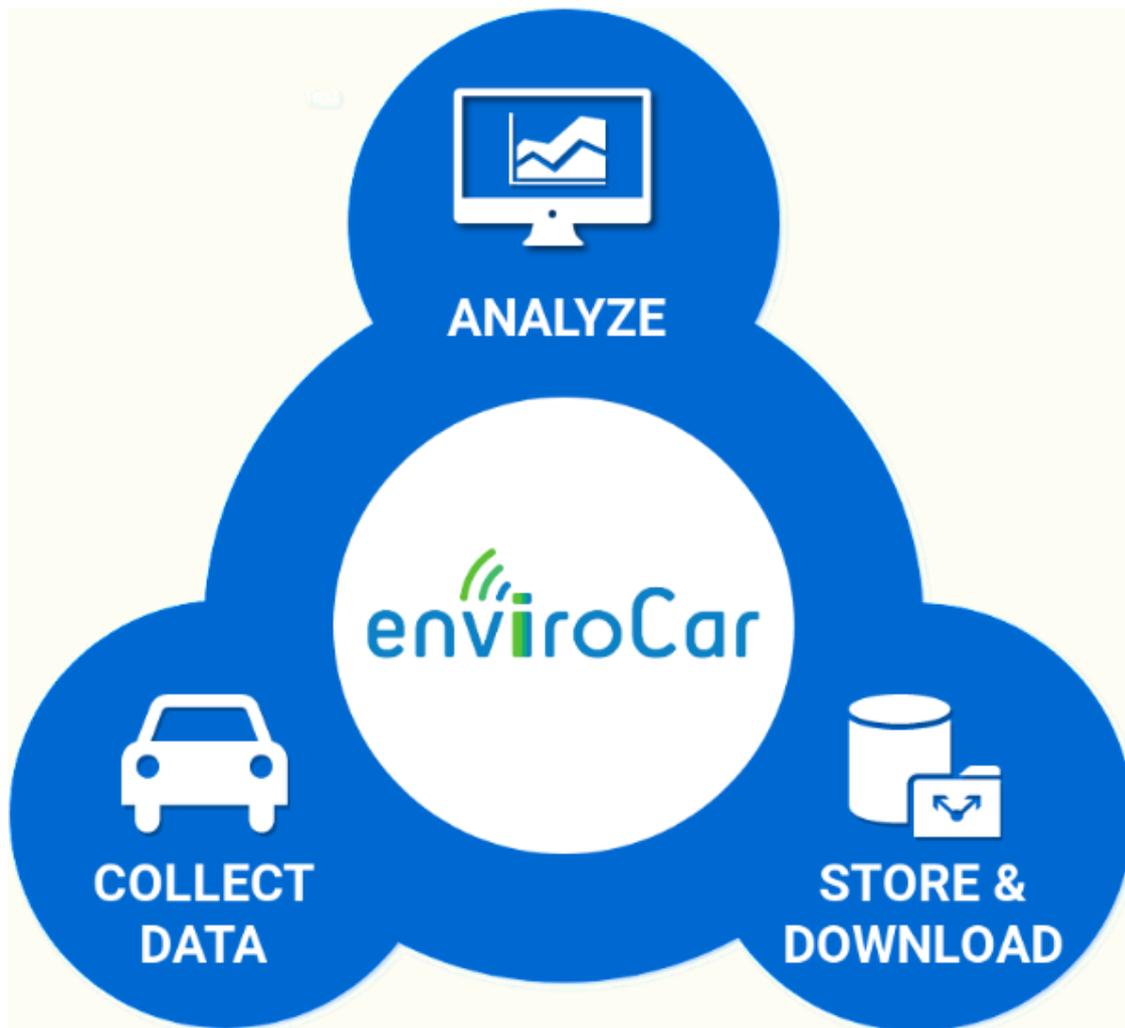
Incentive-Based Green Route Planning, to engage citizens to contribute in keeping city environment. Alarms and recommendations can be provided to the citizen in order to improve their mobility in a more eco-friendly way. Some smart objects are used for this use case: 2 SEAT connected cars sending position, air quality data sensors (CO, NO2), and real-time noise sensors by Barcelona City Council available through the Sentilo platform.

Public Transport Optimization, to contribute to the better usage of the public transportation systems. For this use case, the Metropolitan Transport of Barcelona (TMB) iBus service has been BIG-IoT enabled to know which are the next buses to arrive at a particular bus stop. Moreover, some sensors, provided by the AAU pilot, have been deployed in some of these buses. These sensors collect some KPI indicators of bus usage such as people counting and density for each bus and bus stop areas. In addition, the public bike sharing service Bicing has been BIG-IoTized to know real-time information about available bikes/spots in each bike sharing station.

Smart Charging, to contribute to the usage of green electric vehicles. Public Barcelona's charging stations (location and availability) are provided as a service. Then, this information is used in the Smart Parking use case.



ec4BIT: analyzing car driven tracks in BIG IoT



52° North is one the winner of the BIG IoT Open Call with ec4BIT project: to have a better idea of who they are and what do they do, we interviewed Christoph Stasch from 52° North.

What is the 52° North initiative?

The open source software initiative 52°North is an open international network of partners from research, industry and public administration. We foster innovation in Geoinformatics through a collaborative R&D process. Within our network, we develop new concepts and technologies e.g. for managing spatiotemporal measurement data and sharing geoprocessing technologies over the web. We evaluate new macro trends, such as the Internet of Things, the Semantic Web or Linked Open Data, and pave the way for unfolding their use in practice. All software developed within the 52N R&D process is published under an open source license.

52°North – Initiative for Geospatial Open Source Software GmbH is a private research organization, which is the legal body and service centre of the 52°North R&D network. The company serves as initiator and contributor in many of the network's activities. We are

acknowledged as a *non-profit organization within the European Commission's Horizon 2020* program. Our team of geo-information scientists and skilled IT professionals contributes to *the network's research activities and provides professional services such as consulting and* software development. We maintain the 52°North software projects, manage the intellectual property rights (IPR) and software licensing and provide our contributors with an extensive IT and communication infrastructure to support the collaborative software development process. All software contributions are published under a Free and Open Source Software License. This gives potential users maximum degrees of freedom to use, adapt and redistribute the software and derivative works in any combination with other software.

What is the ec4BIT project, and how does it relate to BIG IoT? **enviroCar** is an open platform for collecting and analyzing car driven tracks. The collected tracks consist of GPS positions enriched with additional sensor information by utilizing the *vehicle's inertial diagnostic* capabilities. Based on the sensor information, fuel consumption and CO2 emissions are estimated for petrol cars. Users have full control over their collected tracks and can share them in an anonymized fashion via an open API. Various analysis tools support the exploration of the data, e.g. in map-based views or time-series charts. In the ec4BIT project, we aim to design and implement a bridge between enviroCar and the BIG IoT marketplace to create offerings of data gathered in enviroCar. The offerings may consist of raw track data subsetted by certain criteria or of derived information preprocessed in enviroCar. As an example of a raw data offering, tracks gathered in a dedicated evaluation campaign in a city may be advertised as an offering in the BIG IoT marketplace. The offering can be used to reproduce evaluation results or to enrich other traffic services for a more detailed overview. An example for an offering with derived information is the provision of track statistics like the number of stops on a certain segment along the major traffic axis. Therefore, the measurements of the tracks are previously matched to the traffic axis and statistics are computed for the matched measurements. Others can easily discover the track statistics and utilize them in their applications by means of the BIG IoT marketplace.

What do you expect from the BIG IoT ecosystem? First of all, we expect that joining the BIG IoT ecosystem will increase the visibility of enviroCar and also support to enlarge the enviroCar community. In turn, we think that BIG IoT will benefit from an interesting platform that provides complementary information to both focus topics, i.e. smart mobility and environmental monitoring. Thereby, the possibility to provide offerings from enviroCar in the BIG IoT marketplace will be an additional incentive to participate in enviroCar since the raw data or derived information can be provided to a broad audience.

From our perspective, the integration of enviroCar also allows generating interesting novel or enhanced services. Once enviroCar data is available using the BIG IoT API, the data can be easily fused with other datasets also provided in the BIG IoT marketplace. As an example, *traffic flow* evaluations may be enriched with enviroCar for capturing individual driving behaviour. The evaluations already implemented with enviroCar may also benefit from additional information available in the BIG IoT marketplace. *One of 52°North's focus is on evaluating and improving existing standards for spatial information infrastructures* as defined, for example, by the Open Geospatial Consortium (OGC). Thereby, 52°North is actively contributing to the standardization of geospatial information technologies in OGC, ISO and other standardization bodies. With the ec4BIT project, we also expect to become more experienced about the W3C Web of Things and related technologies and standards and how to combine the WoT standards with existing geospatial standards and tools.

If you want more information about 52° North and all their projects, you can visit <http://52north.org/>

Second BIG IoT Open Call is coming!!



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The new Open call will be published within January 2018 and will focus on new ideas to enrich BIG IoT offerings and exploitation, fostering the use of the project's core infrastructure through the development of new services and applications. We are planning to have webinars for interested participants to provide informations and clarifications for the application submission.

Stay tuned on BIG IoT website and news letter for further information!

BIG IoT is a member of the [IoT-European Platforms Initiative \(IoT-EPI\)](#)





From BIG IoT with love



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