



**We are your competitive edge**

*Independent Assessment • Certification • Expert Opinion*

## Your perfect partner for successful GNSS applications

The innovative services from NavCert increase the marketability of your products and services. NavCert is deeply involved in research and standardization activities to identify resulting requirements already in early stages and to validate the compliance with appropriate test programs.

### INDEPENDENT ASSESSMENT



As a DAkkS (Deutsche Akkreditierungsstelle) accredited test laboratory we perform independent assessments in different fields.

### CERTIFICATION



As a cooperation partner of TÜV SÜD we offer certifications in the non-regulated area

### EXPERT OPINION



As Notified Body (NB2603) we provide an Expert Opinion based on the EU-Directive 2004/52/EC (European Electronic Toll Service - EETS).

# We sharpen your competitive edge



## INDEPENDENT ASSESSMENT



You profit from our know-how and experience during all process steps. As accredited GNSS laboratory NavCert offers independent assessments, formal verification and testing of GNSS components, products, solutions and services. As member of relevant standardisation committees we assure that our range of services reflects the current status of development. The measurement and analytical services supplement our comprehensive offer and are available for you from the planning phase to the point of the assessment of your product. Identification of deviations to requirements already at an early stage results in reduced development costs.

## EXPERT OPINION



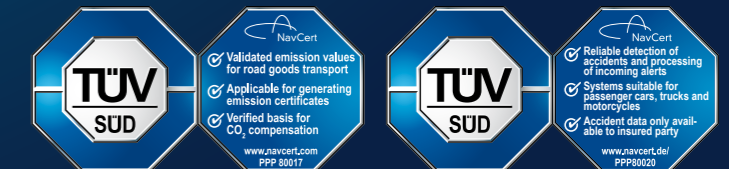
As Notified Body (NB2603) we provide an Expert Opinion based on the EU-Directive 2004/52/EC (EETS - European Electronic Toll Service) and as such we are contact partner for toll chargers as well as toll service providers. We issue a certificate of type examination.

## CERTIFICATION



An exclusive cooperation with TÜV SÜD Product Service GmbH enables NavCert to offer certifications in the non-regulated area issuing the double octagon certification mark with the TÜV SÜD logo. The certification mark can be used as marketing tool on data sheets, product packaging, at exhibitions or on your web page. The certification provided by NavCert leads to a clear added value which will have a positive impact on the final purchase decision of potential customers. The

continuous monitoring by NavCert optimises the complete value chain additionally results in higher customer satisfaction. Furthermore, liability risks will be minimized since the certification mark is classified as prima facie evidence and reverses the burden of proof.



Examples of certification marks issued for a Method to determine emission values of road transport (left) and eCall system (right)

# We add value to your products

NavCert assists you during the whole development process of applications concerning all areas of satellite navigation systems. From the first idea to a marketable product, NavCert will be by your side.

## GNSS ENABLED APPLICATIONS

GNSS based Location Systems are at the core of any GNSS enabled application. Reliable performance figures, for normal operation as well as challenging environments, are inevitable for the design of the application. Standards like ETSI TS 103 246-3 "GNSS based location systems performance requirements" and EN 16803-3 "Assessment field tests for security performances of GNSS-based positioning terminals" (under development) are the foundation for a thorough assessment.

**NavCert supports** your development process already during specification ensuring that the final GNSS application will provide the anticipated performance in terms of accuracy and robustness. Following the development process, NavCert assists in component and integration testing and provides a well-known and trusted certification mark certifying the measured performance level.

## eCALL

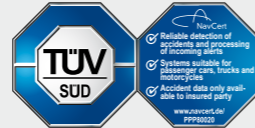
The eCall system is an automatic emergency call system for motor vehicles based on the emergency call number 112. In case of an accident or upon manual activation an eCall will be initiated transmitting the minimum set of data (position of the vehicle and vehicle identification number), to the nearest Public Safety Answering Point (PSAP) followed by a direct voice communication between the PSAP operator and the passengers in the vehicle. The eCall

in-vehicle system conformity assessment as part of the vehicle type approval process is subject to Regulation (EU) 2017/79 which establishes detailed technical requirements and test procedures (with Annex VI that lays down the technical requirements for the positioning services).

**NavCert is engaged** in eCall since more than 8 years. We have huge experience in evaluating conformity to all parts of the eCall chain: vehicle, mobile network, PSAP. NavCert is member of the respective work-group CEN TC278 WG15. NavCert offers pretesting and in cooperation with TÜV type approval for Annex 1 to 8 of Delegated Regulation 2017/79.

NavCert has experience in evaluating mobile networks on conformity to requirements of EN16072 on behalf of national telecommunication agencies. Navcert developed and submitted a conformity assessment procedure on European level accepted by the European Accreditation (EA) association.

Example of a certification mark



## VEHICULAR COMMUNICATION (V2X)

The reliability and trustworthiness of GNSS position and time reference are of utmost importance for Vehicular Communication use cases. Requirements are under development with ETSI TS 102 890-2 "Position and time facility specification". The European strategy on Cooperative Intelligent Transport Systems (European Commission COM(2016) 766) has been adopted. This is a milestone towards cooperative, connected and automated mobility. Target is a fully-fledged compliance assessment process for Day 1 C-ITS services and the adoption of the appropriate legal framework at EU level by 2018.

**NavCert closely follows** the development of V2X compliance assessment processes as well as the respective legal framework and supports your head start for market entry.

## AUTOMATED DRIVING

Automated driving levels where a human driver as a fall-back option is replaced by an advanced system require a transition of the system design from fail-safe to fail-operational. Thus the localisation system function needs to be designed according to safety standards such as ISO 26262 series "Road vehicles – Functional safety", ISO/AWI PAS 21448 "Road vehicles -- Safety of the intended functionality" (under development) and ISO/SAE 21434 series "Road vehicles – Cyber-security engineering" (under development).

**NavCert supports** product development combining experience in functional safety and cyber security with leading edge GNSS expertise including Galileo Navigation Message Authentication and Galileo Commercial Service Authentication (CS-Auth) therefore fostering business development.





## EUROPEAN ELECTRONIC TOLL SERVICE

EETS (European Electronic Toll Service) enables usage of toll roads across Europe similar to the usage of mobile phones: one contract with a service provider charging all activities on European toll roads. The payment of tolls is regulated by contract with a toll service provider in combination with an installed on-board unit (OBU)

in the vehicle. More than 20 million users are already registered for a national or regional electronic toll service in the European Union. However, today a dedicated OBU is required per toll charger and member state. The big advantage of EETS is that it assures the interoperability of all toll systems in the EU enabling usage of a standardized OBU for all roads.

**NavCert provides** expert opinion as Notified Body for EETS according to the EU-Directive 2004/52/EC and is therefore contact partner for toll chargers as well as toll service providers. NavCert issues the certificate of type examination for the interoperability components. NavCert chairs the expert group of Notified Bodies for EETS.



## REFERENCE SERVICES

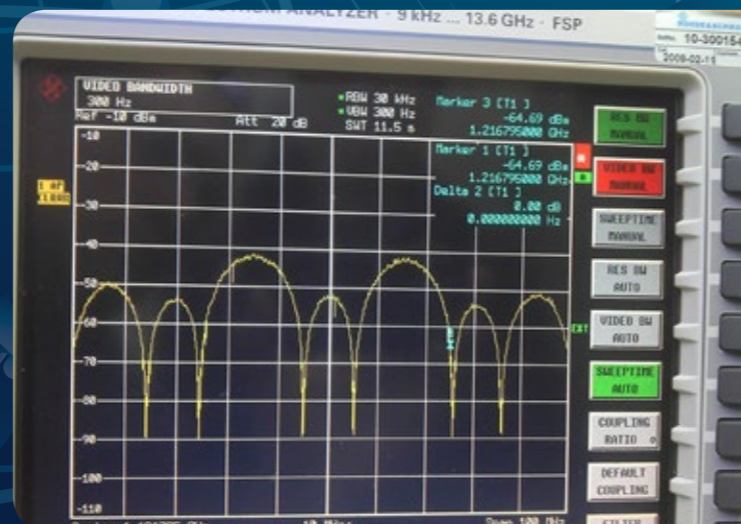
Reference services for satellite navigation are essential for GNSS applications that require high accuracy as well as good availability.

**NavCert offers** providers of GNSS reference services to validate static and dynamic accuracies as well as area coverage.

## INFRASTRUCTURE AND TEST EQUIPMENT

Situation awareness on the GNSS interference environment and usage of jamming, meaconing and spoofing devices is very crucial for many liability and business critical GNSS applications. Current commercial solutions for spectrum monitoring as well as systems developed within research projects are isolated systems that do not allow integration within other applications.

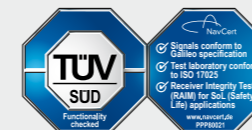
**NavCert supports** the development of open and inter-operable interference monitoring and data exchange. Based on regular measurement campaigns we provide up to date information that is valuable for the development of GNSS based location system specifications and test programs.



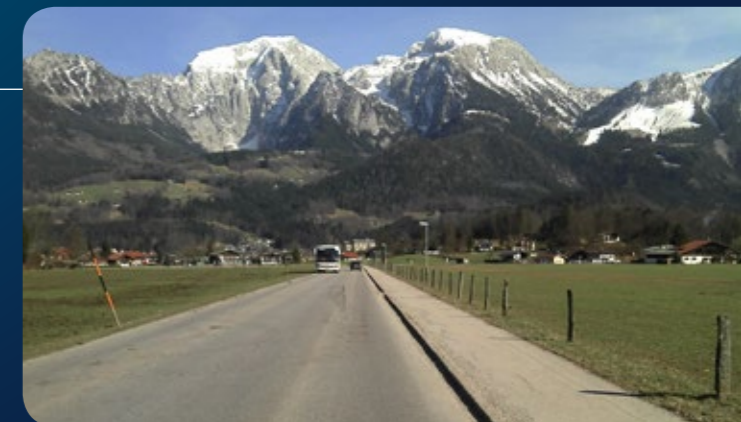
## TESTBEDS

Testbeds are an important resource to regularly examine equipment and devices in regard to their usability. NavCert increases the trust among users of V2X as well as GNSS testbeds in the proper implementation of the respective interfaces and performance specifications. Functionality may be validated and underlying quality processes can be reviewed.

**NavCert provides** conformity assessment to specifications, performance, reproducibility and repeatability of measurement results.



Example of certification mark issued for the Galileo Testbed – GATE



GNSS testing area, testbed GATE in the region of Berchtesgaden (Germany)

# We support your research and development activities

Our commitment to support open-source development



## FOSTER ITS

Within the Foster ITS project the „First Operational, Secured and Trusted galileo Receiver for ITS“ application is developed. It will support Galileo OS Authentication and offers robustness due to algorithms and integrated hardware to achieve an utmost level of security. Our focus is the identification of required standards assuring marketability in the automotive context like ISO 26262. In addition NavCert develops a test program for validation and prototypical certification for the receiver.

## ROBUST EGNSS TIMING SERVICE

Main objective of the project “Robust EGNSS Timing Service” is to propose concepts that improve the robustness of GNSS-based timing using Galileo and EGNOS. The first step is the definition of a proper, robust Timing Service, including performance figures and requirements. Several concepts to improve robustness are developed and tested, including receiver level Timing-Received Autonomous Integrity Monitoring (T-RAIM) processing techniques. Finally, a concept for a synchronisation service which is based on the precise time generated by Galileo is developed for users requiring the accurate synchronization of remote devices. Standardisation by NavCert will facilitate the manufacturing of timing receivers providing a commonly accepted reference. NavCert therefore develops a standardisation road -map with an associated certification scheme assisting the uptake of timing applications exploiting the Robust Timing Service.

## Robust EGNSS Timing Service

## EMYNOS



The EMYNOS project designs and develops a common Next Generation emergency management platform that can manage both extreme emergency situations such as natural disasters and terrorist attacks as well as usual emergency situations such as calls to ambulance and police. NavCert focuses on all aspects that are necessary to transfer the pan European eCall from circuit switched GSM networks to packet switched next gen networks like 5G. This will reduce not only the limit amount of emergency data to be sent but also the restrictions on real time updates.

## ANIKA

ANIKA was concerned with upgrading the communication of emergency telephones at motorways to vehicles: V2I Communication. The challenge was thereby the combination of existing infrastructure with innovative V2X technologies. Through the synergy arising from the two systems it may be possible that the new V2X technology will quickly come into operation. Focus of NavCert was the identification of applicable standards as guidance for development and final validation.



# Value from Project Management Office

We offer Project Management expertise for your Smart Mobility projects



## YOUR CHALLENGES

A smart mobility project sometimes requires skills that the project's contributors don't possess.

Goals are not clearly identified. It is impossible for the team to meet them. Since upper management cannot agree to or support undefined goals, the project in question has little chance to succeed.

## WE OFFER

Project Managers with years of expertise in Smart Mobility Projects can assess your current project portfolio management processes and, in collaboration with you, identify your current capabilities and provide the road map for improvements

Project recovery experts review the project's current state to identify the areas in jeopardy. We will present our assessment to the senior leadership team recognizing the Smart Mobility project's accomplishments to date, while calling out the major issues that caused it to veer off track. A corrective plan is provided as part of the presentation.



## YOUR BENEFITS

Whenever you get a project done on time and under budget, the client walks away happy. And a happy client is one you'll see again. But it's necessary to provide a red flag at the right time.

Perhaps one of the greatest benefits of project management is that it allows flexibility for the organization.

Quality Management over the complete life cycle is a strong signal of quality and brings confidence internally as well as for your customers.



## NAV CERT EXPERTS PROVIDE ...

project management office (PMO) services and thus ensure communication between all stakeholders. Relevant processes are supported and controlled.

NavCert experts perform planning in close cooperation with your in-house specialists. The fundamental parameters budget and schedule are aligned with the project goals. The NavCert expertise in planning stabilizes project preparations.

NavCert experts conduct the Smart Mobility Project initialization and create the premises that affect the future project progression and final project success.

We take over responsibility and get personally involved in managing and controlling your Smart Mobility Project implementation.

# Get in touch with us



## CONTACT

### **Braunschweig**

NavCert GmbH  
Hermann-Blenk-Straße 22 a  
38108 Braunschweig  
Germany

T +49 - 531 - 354 79 - 490  
F +49 - 531 - 354 79 - 491

### **Via E-Mail**

[info@navcert.de](mailto:info@navcert.de)

### **Munich**

NavCert GmbH  
Tal 26  
80331 München  
Germany

T +49 - 89 - 46 22 9570  
F +49 - 89 - 46 22 9844

#### **Picture Credits:**

title: Olivier Le Moal/shutterstock.com  
page 2-5, Services: Independent Assessment - Dusit/shutterstock.com, Certification - Alexander Supertramp/shutterstock.com, Expert Opinion - pichetw/shutterstock.com  
page 7, Vehicular Communication (V2X): chombosan/shutterstock.com  
page 7, Automated Driving: riopatuca/shutterstock.com  
page 8, EETS: DW art/shutterstock.com  
page 12, challenges: Chombosan/shutterstock.com, We offer - FakeStocker/shutterstock.com,  
page 13, benefits - Natali\_Mis/shutterstock.com  
page 14, contact - Laety79/pixabay.com

# Quality you can trust



© March 2018