



Turin Car trials

2nd EGNOS System Test Bed (ESTB) Workshop Nice, 12 November 2001



Summary

Introduction

EGNOS

Torino 2000 ITS Conference Trials CRF-ESA

Conclusions



INTRODUCTION

- The European Space Agency and the Centro Ricerche Fiat (CRF) have conducted the first EGNOS land-mobile trials during the Turin ITS 2000 Conference (11/2000)
- The European Space Agency (ESA) is, together with the European Commission and EUROCONTROL, a member of the European Tripartite Group responsible for implementing the EGNOS system
- ESA is specifically responsible for the development, deployment, and technical validation of EGNOS
- The Centro Ricerche Fiat (CRF) is the research center of the FIAT group. Its industrial interest in GNSS applications comes from its expertise in the development of ADAS applications (Advanced Driver Assistance Systems) and Telematic Services for cars, trucks and other industrial vehicles



EGNOS

- EGNOS (European Geostationary Navigation Overlay Service) independently monitors the signals from GPS to determine correction and quality factors. These are broadcast to users from three civilian satellites
- EGNOS is interoperable with the American and Japanese systems, contributing to a truly global standard
- EGNOS is the first phase of the European Satellite Navigation Programme leading to Galileo
- Galileo will offer improved performance, providing further opportunities for innovation in the ITS industry



The trials were carried out at the Fiat Safety Centre near the CRF in Orbassano





An EGNOS receiver was installed in a car and linked to a PC running digital mapping software





> The car drove around the test-track, capturing data





- The accuracy of EGNOS is between 1 and 3 meters
- EGNOS guaranteed that the vehicle could be localized within each separate lane
- High accurate and reliable position could be used for road safety of life application (ADAS)
- Static trials were also carried out at ESA EGNOS project office for confirming the performance of EGNOS and GPS



Static accuracy plots from ESA's EGNOS Project Office in Toulouse indicate the variability of GPS





EGNOS performance is more consistent than GPS





Genoa 2000 Trials

These results agree with those from a trial carried out by ESA in Genoa in February 2000 before SA was turned off





Conclusions

- EGNOS provides an European-wide, standardized and qualityassured positioning system suitable for a diverse range of applications; interoperability with Japanese and US systems creates a global standard with access to global markets
- EGNOS is designed to support safety-related applications
- It is highly compatible with GPS, so a single antenna and receiver can process both the GPS and EGNOS data to deliver enhanced performance
- EGNOS adds three additional satellites to the GPS constellation
- It provides a free-of-charge "public service" DGPS broadcast without the need for an additional communications link
- Not only does it enhance accuracy, but it also improves quality and consistency, and provides health alerts within 6 seconds



Conclusions

- These first land-mobile tests present the reality of EGNOS using the current test signal and give a vision of the future based on EGNOS, Galileo and GPS providing important opportunities for innovation
- EGNOS augments GPS to improve accuracy and quality/consistency, and is a European solution for the European environment
- It provides a European-wide, standardized and quality-assured positioning system suitable for a diverse range of applications
- EGNOS brings best-practice aviation safety and quality in an affordable manner to the motorist
- It is the forerunner to Galileo in the European Satellite Navigation Programme
- Galileo will improve on the performance available from EGNOS opening up further opportunities for innovation in the ITS industry







http://www.crf.it http://www.esa.int

http://www.esa.int/export/esaCP/GGGYOR4UGEC_index_0.html http://www.esa.int/export/esaCP/GGGYOR4UGEC_index_2.html

http://www.spacer.com/news/gps-euro-00e.html