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Flight Inspection of GNSS

SCAT1 GBAS RNAV

2001

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The Development and Implementation of a System for Flight Inspection of SCAT-1 RNAV, GBAS

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Basic Design Requirements and Philosophy

- The SCAT-1 inspection system should be implemented as an ILS look-alike system
- SCAT-1 functionality should be transparent to the NFIS operator
- Implemented in the existing Graphical User Interface (GUI)
- Based upon proven ILS calculations

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Basic Design Requirements and Philosophy

Selectable reference sources:
Theodolite
APRS
GPS/Theodolite
Laser Tracker
Analogue Theodolite
ILS as a comparison source
GNSS Postprocessing

Selectable heading sources:
GPS
FMS

Selectable altitude sources:
Precision Altimeter
Encoding Altimeter
GPS
FMS
Air Data Computer

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Basic Design Requirements and Philosophy

- All data in real time and at a 10 Hz sampling frequency
- Generate ASCII data run files for further analysis
- Performance to meet local (CAA Norway) and FAA requirements.

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Implementation of the Flight Inspection of GNSS system

Aircraft Avionics

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Implementation of the Flight Inspection SLS system

VHF Data Link (VDL)

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Graphical User Interface (GUI)

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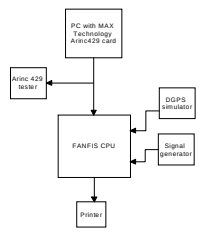
Testing the Flight Inspection SCAT-1 Functionality



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Implementation and Flight Testing

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Conclusions for SCAT-1

- The implementation of GNSS testing capability in the NFIS system itself proved to be successful.
- The system are capable of flight inspecting the RNP boundaries.
- The system were used to collect data for the certification of the SCAT-1 in Norway.

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Normarc has implemented a SCAT-1 verification tool in the NFIS, which gave the NCAA a tool for further investigation of how to test and verify an SCAT-1 procedure according to their own requirements.

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Developments for RNAV

- Combine RNAV Enroute, Approach and MAP design tools with the NFIS system.
- Integrates the tools for procedure design with NFIS for easy validation.
- Delivery to customer in June 2002

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GBAS/LAAS

Now with SCAT-1 in place the GBAS / LAAS is implemented by changing some of the hardware components.

GBAS solutions are being prototyped by our partners in Norway.

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The road ahead...

Combining..

- Conventional navaids FIS System..
- SCAT-1 => GBAS / LAAS..
- RNAV..
- Procdure constrution tools

giving..

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Normarc Airspace Inspection Tool.

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