
In-Train Positioning System

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Abstract (public)

Abstract	Design and implement a multi-input positioning system for use in trains.
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1. Introduction

1.1. Scope

The system provides position estimates in moving trains. It will use various technologies for deriving positioning information. The main benefit of this system is to replace an older one, that only produced inertial and gyro data in a raw format, instead of calculating the current position.

The system consists of a portable computer, an executable software component, and the necessary hardware. The system will be portable by a single person and be mountable on a trolley.

2. Overall description

2.1. Product perspective

The system will be used, when positioning information in trains is needed . It is intended to replace an older, existing system in a measurement application. The existing system is mostly used in the IC2000 cars of the SBB.



Illustration 1: IC2000 cars of the SBB

All system inputs, except the GUI, of the system are self-contained. Some technologies for providing the position estimates are required to be used and thus specified as to use.

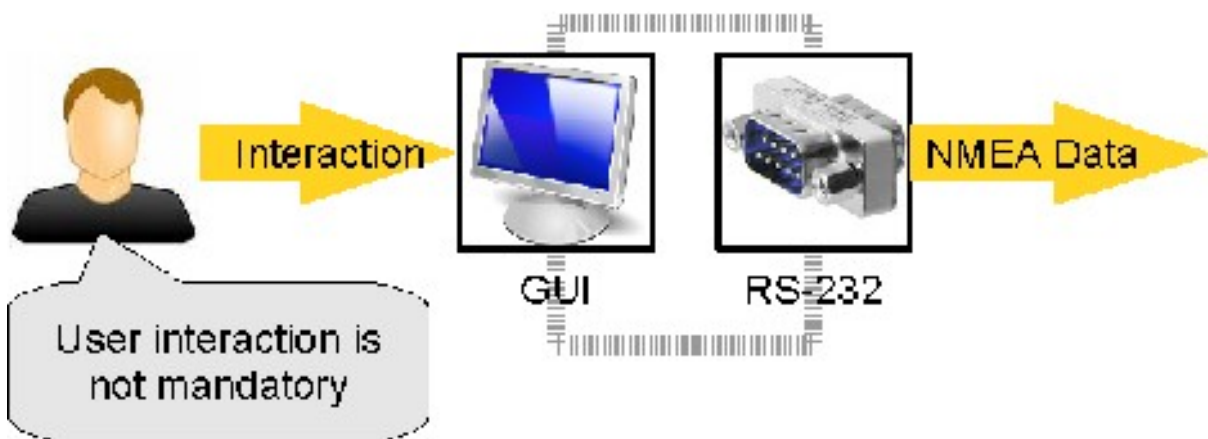


Illustration 2: Overview of interfaces

The system replaces an existing one. An overview over that system is given in Appendix A.

shows a possible high-level diagram of the positioning data flow in the new system. This is not necessarily exactly the diagram that will get designed and implemented.

The data of the input devices, called position providers, gets directly processed in the system itself. The system outputs the resulting position estimates via an RS-232 serial connection in the well known NMEA format. Any attached device may use the position estimates as input.

Overall description

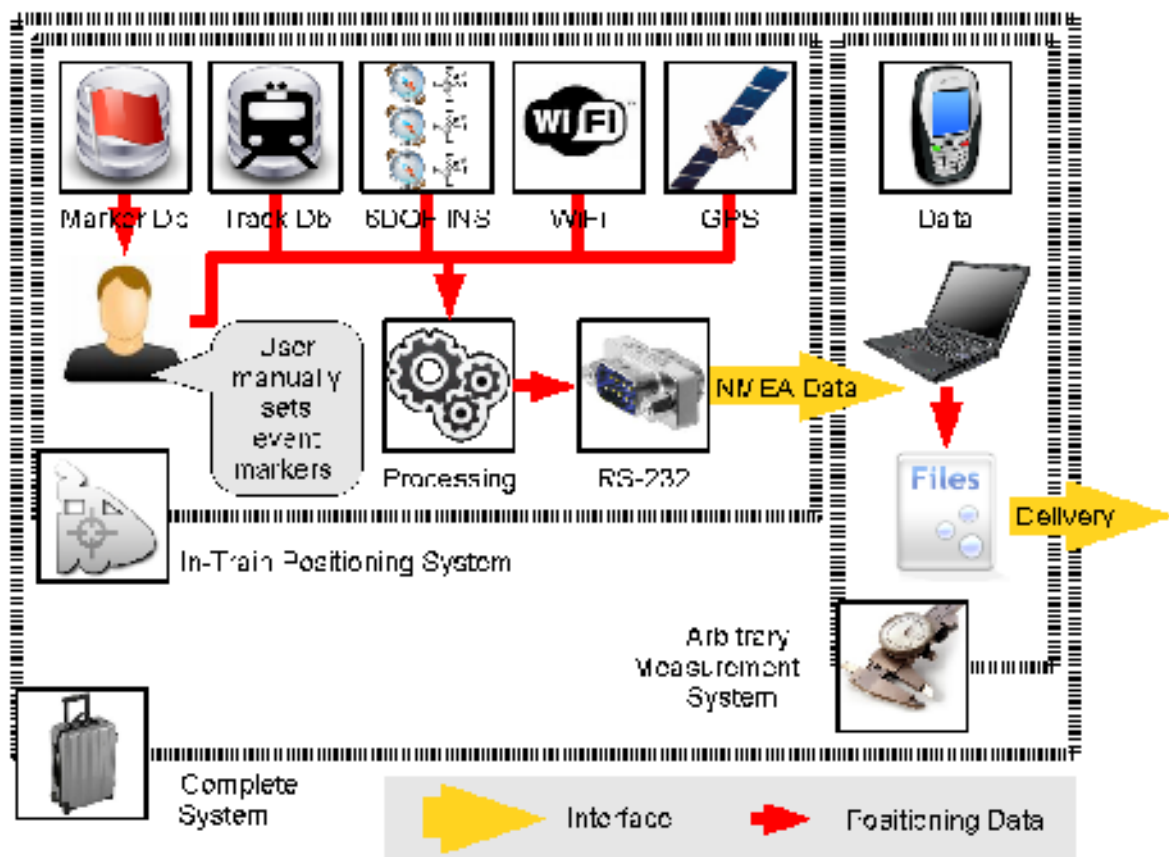


Illustration 3: Positioning data flow in the new system

The positioning system and the attached device (here, a measurement system) are entirely separated, making them completely replaceable, as long as the data interface is maintained.