The Basics

The research-group "Institut für Telematik" of the department for computer-science at the University of Trier is a research and development-center formally administered by the Fraunhofer Society and was established on January 1, 1998 and has since then evolved into an ever-growing competence center that develops solutions for problems in the interfaces between telecommunications and information technology. Around 30 scientific staff members from various countries who are experts in different areas of science are currently with the institute.

The scope of the working group "Institut für Telematik" covers a wide spectrum: From application-oriented information technology and telecommunications research to the development of customized solutions and pilot systems for commerce, industry, medicine and administration. It is also focusing on new media training and continued education, which is offered to cooperation partners as well as employees of companies domiciled in the region and in other areas.

Project Partners

High tech businesses, as well as large and even small and medium sized companies support the institute as project partners. The partner firms implement the institute's scientific findings in practical applications. The focus of the work is on the development and utilization of new information and communications media for technical, medical and social applications.

Areas of Competency

The current research and development projects aim at the practical implementation of the latest scientific findings in the areas of electronic publishing, Internet/Intranet, tele-medicine, secure data transfer, system development and analysis. The Institut für Telematik focuses primarily on the following technological applications:

- Editor systems: Web-based information and knowledge management
- Navigation systems: Processing of information, data interfaces, EAI, data warehouse
- Database management: Innovative middleware on open standard basis, e.g., Smart Data Server (SDS)
- Open network security: Architecture, policies
- Network security: Firewalls, Lock-Keeper, Tiger Teams, CERT
- Content security: Public-Key-Infrastructures, digital signatures
- Mobile technologies and applications: Ubiquitous Computing, Mobile Security, ad hoc-Networks, Smart Cards
- Tele-medicine: Patient CD, DICOM-image management and compression,
- Consulting: Studies, evaluations, audits

Patent Protection has already been awarded to the institute for two of its solutions: <Lock-Keeper> – a security <sluice> between Internet and Intranet, that protects users more effectively against online attacks than firewalls – and <Dicomzip> an image compression process that reduces the transmission times of medical images from several hours to just a few seconds.

Universität-Trier

Institut für Telematik
Hightech-Forschung rund ums Internet

GPS-Supported Mileage Tracker for PalmOS Handheld

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Electronic PalmOS®-Handheld Mileage Tracking:
Via Satellite and Automatic

Keeping mileage records for company cars has always been a tedious, complex and time-consuming task. Numerous entries had to be made into the mileage tracking record manually. To reduce this annoying work to a minimum, the Institut für Telematik has now developed an electronically managed GPS-supported mileage tracker for PalmOS®-Handhelds. This mileage tracker analyses most of the data while you are driving – automatically. Consequently, the time spent on making mileage entries is reduced to a minimum.

The data is stored in the handheld and transmitted to the PC via a driver (also called conduit – included in the product package) during the handheld's next synchronization process (HotSync®). Once on the PC, the data can be viewed with the software, which is also part of the product package. The records can be printed out for presentation to the tax authorities/IRS. The desktop viewer software is Java-based and can thus be installed on any Java-enabled computer system.

Table.: Mileage Tracker Entries

Entries	electronic **mileage tracker** without GPS-receiver	electronic **mileage tracker** <u>with GPS-receiver</u>
Date and time trip started and ended	Automatic, time must be verified	Automatic, time must not be verified
KM/miles (start of trip)	Automatic entry of current kilometer/mileage status	Automatic entry of current kilometer/mileage status
KM/miles (end of trip)	Must be entered	**Automatic calculation**
Kilometers/miles driven	Automatic calculation	Automatic calculation
Driver name	Automatic transfer of last entry	Automatic transfer of last entry
Destination /trip route	Must be entered	**Automatic computation**
Expenses	Must be entered	Must be entered
Purpose of trip	Must be entered	Must be entered

The GPS mileage tracker can be used by multiple drivers. The system differentiates between personal and business trips. The system can also be operated without the GPS receiver.

Global Positioning System
The Global Positioning System (GPS) is based on a network of more than 24 non-stationary satellites. They are positioned in such a way that at least 12 of them are <visible> from any place on the surface of the earth at any time (see figure).

Fig.: Location of the GPS satellites
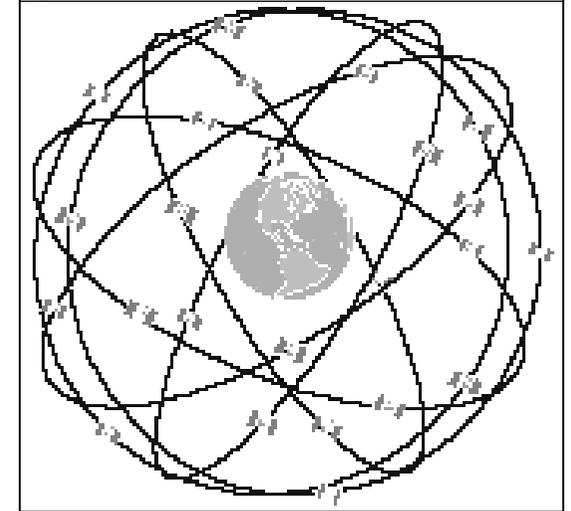
These satellites transmit their current position and the exact time to earth continuously. A GPS-receiver is set up to analyze these signals – provided it has a clear <view> of at least 3 satellites. Consequently, it can determine its own location data. If signals from 4 or more satellites are available, it can also calculate the current height.

Mobile Device Applications
The popularity of small mobile devices has increased considerably in recent years (cell phones, handhelds etc.). The Institut für Telematik develops various applications for these products to allow users to fully benefit from the advantages of these new technologies.