

Co-funded by the EC  
Contract Number: IST-2001-34227

Time frame of the GAWAIN project:  
January 2004 till October 2006

The GAWAIN consortium consists of the following companies and institutes:



**ifEN GmbH** (Coordinator)  
Alte Gruber Strasse 6  
D-85586 Poing / Germany  
Fone: +49 (8121) 2238-10  
Fax: +49 (8121) 2238-11  
<http://www.ifen.com>



**Infineon Technologies AG**  
Kastenbauerstrasse 2  
D-81677 Munich / Germany  
Fone: +49 (89) 234-202 46  
Fax: +49 (89) 234-813 85  
<http://www.infineon.com>



**DICE GmbH & Co KG**  
Freistädter Strasse 315  
A-4040 Linz / Austria  
Fone: +43 (732) 2468-7180  
Fax: +43 (732) 2468-7124  
<http://www.dice.at>



**Johannes Kepler University Linz**  
Altenberger Strasse 69  
A-4040 Linz / Austria  
<http://www.jku.at>



**Institute for Communications and Information Engineering**  
Fone: +43 (732) 2468-9711  
Fax: +43 (732) 2468-9712  
<http://www.icie.uni-linz.ac.at>



**Research Institute for Integrated Circuits**  
<http://www.riic.at>

For more information please visit our Homepage:

[www.gawain-receivers.com](http://www.gawain-receivers.com)

E-Mail: [gawain@gawain-receivers.com](mailto:gawain@gawain-receivers.com)



## GAWAIN

...is a project partially funded by the European Commission within the IST (Information Society Technology) 5<sup>th</sup> Frame Programme.

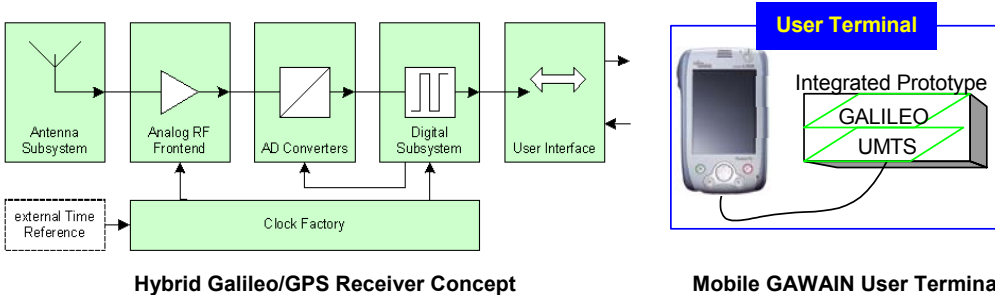
### Background

In the upcoming years the localization of mobile phones or PDAs will become the main market driver in the area of personal navigation applications. These trends converge in the U.S. Federal Communications Commission's E-911 mandate and the E-112 initiative of the European Commission that requires network carriers to provide location or geo-coding of emergency callers who are using wireless handsets. Taken all this into account, an important step into the market for Galileo is the in-time availability of hybrid Galileo/GPS receivers in combination with cellular network positioning capability for consumer applications. This is the main idea behind the GAWAIN project – the development of an **integrated GNSS/UMTS receiver**, which provides **seamless indoor/outdoor navigation and communication capability**, using **GPS/Galileo and 3G/UMTS** for mass market applications.

### Objectives

The core technical objectives of GAWAIN are:

- ▶ Development of an **integrated GALILEO/GPS mass market prototype receiver**
- ▶ Development of an **UMTS prototype transceiver** (with UMTS based positioning, provision of A-GNSS data), according to latest 3GPP (Third Generation Partnership Project) release
- ▶ Development of **hybridized navigation solutions** combining GNSS with UMTS navigation capability, also considering other systems like **WLAN**
- ▶ Development of **innovative transportation & tourism applications**, using the integrated mobile GALILEO/GPS/UMTS prototype in combination with Location-Based-Service data and maps



### Development Approach

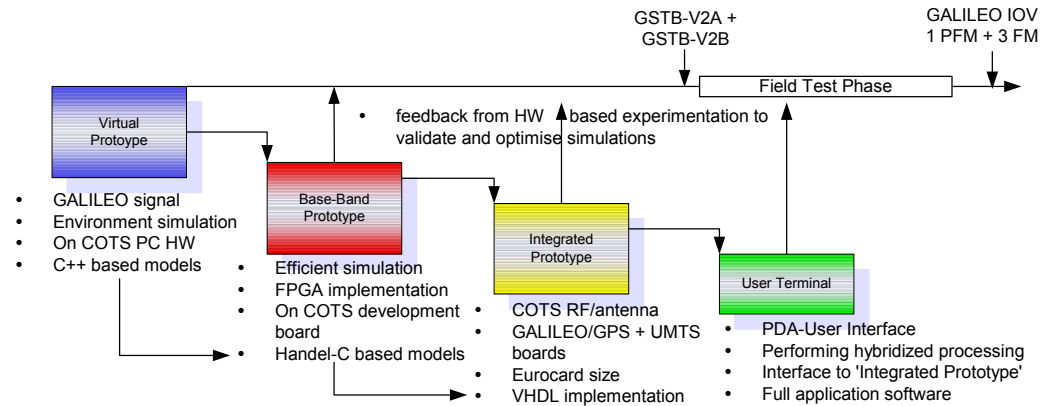
As these developments are clearly ahead the current state-of-the-art, a four-step development process is being followed as shown in the figure below, thus minimizing the development risks.

**Step 1:** Software-Prototype (called Virtual Prototype), enabling end-to-end simulations and high flexibility in algorithmic design for different signal structures

**Step 2:** Baseband-Prototype, with implemented Galileo/GPS/UMTS signal processing algorithms on a real signal processing device (FPGA)

**Step 3:** Integrated-Prototype: GALILEO/GPS+UMTS including procured and suited RF-Front-ends and antennas

**Step 4:** User Terminal combining the Integrated Prototype with a suited PDA as a demonstrator of a future mobile terminal



GAWAIN 4-Step-Design Approach

### Fields of Application

The efficient integration of the different navigation services with communication services for indoor and outdoor applications will enable new improved services.

Within the GAWAIN project two dedicated application areas are targeted, notably the 'Intelligent Transport' and the 'Ubiquitous Tourism'. The final prototypes will be tested and demonstrated based on two different appropriate scenarios.

Besides these two wide fields of application, there are also many further areas that will benefit from the usage of such a solution, e.g. considering individuals in need of positioning and communication capabilities like rescue services, police, forest industry, military etc. This includes also new approaches on solutions for handicapped people, for instance the electronic "blind man's dog".

The results of GAWAIN will help to improve the accuracy and the capabilities of mobile positioning and localization both, indoors and outdoors.