

iTETRIS Newsletter

December 2008

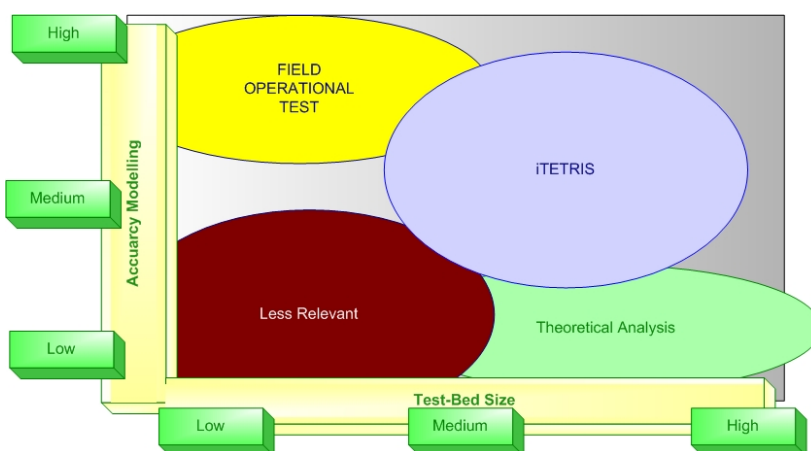
Welcome to the first issue of the iTETRIS newsletter. This new project supported by FP7 Cooperation Work Programme ICT is intending to provide an integrated wireless and traffic simulation platform for real-time road traffic management solutions. This first issue of the iTETRIS newsletter presents to the general public the main objectives of the project and shares with the interested reader the benefits provided by such technology. The last section of the newsletter presents the first results of the preliminary study on the iTETRIS approach and highlights the characteristics of the simulation platform, the traffic management policies that will be investigated and the dynamic vehicular communication protocols that partners will propose.

Large Scale Simulation for Next Generation Vehicular Communications

iTETRIS' vision is to create a global, sustainable and open vehicular communication and traffic simulation platform. It is designed to facilitate a large scale, accurate and multidimensional evaluation of cooperative ICT solutions for mobility management. At the same time, it is to increase European industry's competitiveness and economic, social and environmental wealth of Europe.

Main Project Objectives

Wireless vehicular cooperative systems have been identified as an attractive solution to improve road traffic management, thus contributing to the European goal of safer, cleaner, and more efficient and environmentally friendly traffic solutions.



Scope and novelty of iTETRIS (© iTETRIS Consortium)

“to get the first insights into the benefits and problems faced in the development of wireless vehicular cooperative Systems, there is yet the need to evaluate them in the long term and large dimension”

Indeed, real-time exchange of information among vehicles (V2V Communications) and with road infrastructure (V2I Communications) has the potential to improve traffic management. Nevertheless, routing and data distribution policies suited to the operational characteristics of the vehicular wireless environment need to be designed and optimized. It is also of great importance to investigate the adequate combination of V2V and V2I technologies to ensure the continuous and cost-efficient operation of traffic management systems based on these wireless vehicular cooperative solutions. However, to adequately design and optimize these communication protocols adequate test-beds must be available and Field Operational Tests (FOT) need to be conducted.

Despite the potential of FOT to get first insights into the benefits and problems faced in the development of wireless vehicular cooperative systems, there is yet the need to evaluate them in the long term and at large scale. To this aim, iTETRIS is devoted to the development of advanced tools, integrating traffic and wireless communication simulators.

Such tools will enable large scale computing analysis of adequate protocols and algorithms. Hence, they will overcome the limitations of current data distribution and routing proposals, generally characterized by over simplistic wireless conditions not reflecting a realistic operational environment.

*V2x Cooperative
Communications*

*Advanced Traffic
Management*



*Large Scale
Scenarios*

*Open-source
Platform*

Expected Impact

The benefits of a V2V & V2I specific communication and traffic simulation platform are to improve the relevance and the performance of traffic information dissemination and, at the same time, to satisfy the application and system requirements.

Optimised communication protocol design will not only improve the QoS levels provided by cooperative systems but also allow European ICT industry to gain a competitive advantage in the networking community as to cooperative systems.

iTETRIS is targeting to become the de-facto platform for protocol evaluation at CC2CC (Car-To-Car Communication Consortium) and ETSI (European Telecommunications Standards Institute) levels, which are addressing standardisation of the interoperable V2V/V2I technologies.

Technical Approach

iTETRIS is aimed at producing the necessary building blocks and interfaces to conduct large-scale (i.e. city level) simulations.

iTETRIS will provide a standardized, open-source integrated communication and traffic simulation platform characterised by:

- Large scale scenario simulation
- Consideration of low V2V penetration scenarios
- Inclusion of new energy and environmental parameters and
- More accurate wireless transmission modelling.

iTETRIS will investigate new, self-configuring, granular, real-time, traffic management policies, such as

- Hybrid traffic management policies
- V2V autonomous traffic monitoring schemes and
- Traffic management policies for low density V2V-V2I scenarios.

iTETRIS will propose and evaluate a set of reliable & contextually dynamic vehicular communication protocols:

- Systemic-Driven data distribution and routing protocols
- DTN information buffering
- Geo-unicast, geo-anycast and geo-broadcast communication protocols.

Through the use of wireless vehicular communications, cooperative systems will be able to assist the driver in the driving functions providing dynamic, ubiquitous and real-time traffic information that will reduce congestions, optimise travel journey's and reduce energy consumption and therefore environmental solution.

Despite the obvious advantages, currently only a fraction of the potential of such support systems is being utilized. To move such support to new levels, it is necessary to address systemic challenges from various knowledge fields. iTETRIS addresses the challenges in the context of SUMO and NS-2/NS-3 platforms to support accurate V2x wireless communication systems.

iTETRIS Information

Project Duration:

July 2008 – December 2010

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