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Research
Papers
Teaching
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TELEFUNKEN RACOMS

WIGWAM — Wireless Gigabit With Advanced Mobility Support

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[Overview] — [Sub-Projects] — [TKN-Involvement] — [Publications] — [Press Releases]

Overview of the WIGWAMProject

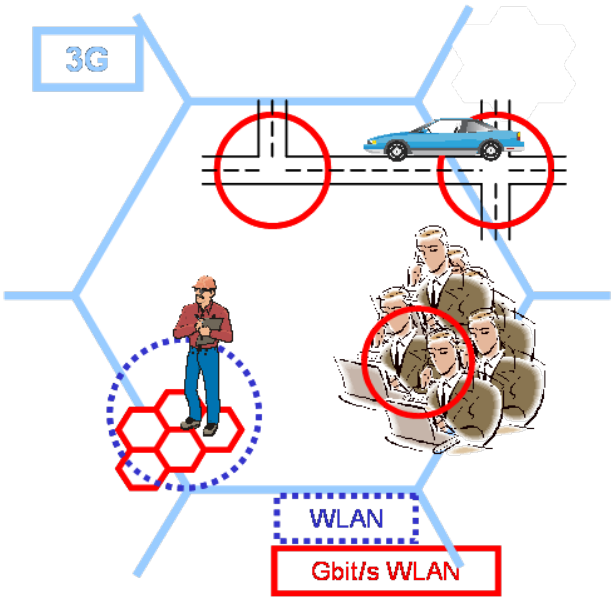
WIGWAM is part of the Central Innovation Program "Mobile Internet" which is funded by the German Ministry of Education and Research (BMBF). The objective of WIGWAM is the design of a complete system for wireless communication with a maximum transmission data rate of 1 Gbit/s.

The targeted spectrum is the 5 GHz band and the extension bands 17, 24, and 60 GHz. Depending on the mobility of the user, the data rate should be scalable.

The goal is a "1 Gbit/s component" of a heterogeneous future mobile communication system. All aspects of such a system will be investigated, from the hardware platform to the protocols, which are subject to very strong requirements given the extremely high data rate of 1 Gbit/s.

The main application area is the transmission of multimedia content in so-called hot-spots (see figure below), in home scenarios, and in large offices where an enormous data rate back-off is necessary, e.g. to supply the user with short-term high data rates, or to enable a true plug-and-play without any frequency

planning (particularly important in home scenarios). In order to be able to include such a high data rate air-interface into a future heterogeneous mobile communications system, also high mobility applications are covered.



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Defined Sub-Projects

The WIGWAM Project is devided into several sub-projects,namely:

- Integration of 1 Gb/s WLAN in cellular mobile networks
- Reconfigurable Multiband Technology (RekoMute)
- Design and Implementation of an Ultra High-Speed WLAN: Concept, SoC-Implementation and Demonstrator (WIGWAM-IHP)
- Architecture, implementation and technology evaluation of adaptive ultrahigh speed RF-Front Ends
- Radio Channel Measurement and Modeling for GBit WLAN

- PhyLayWIG
- Medium Access and Network Protocols for Self-Organizing Gigabit Multihop Systems
- High Speed Mobile Access for Wireless LANs
- Radio Links With Highest Data Rates on Fast Altering Radio Channels Based on WLAN Principles
- Wideband RF-Transmission by Base-band Calibration Techniques and Adaptive Base-band Techniques

each of them lead by one of the project partners. The TKN Group of TU Berlin is involved as a sub-contractor of Telefunken Racoms in the sub-project "Radio Links With Highest Data Rates on Fast Altering Radio Channels Based on WLAN Principles".

[Overview] — [Sub-Projects] — [TKN-Involvement] — [Publications] — [Press Releases]

TKN Involvement

The TKN Group at TU Berlin is involved in the sub-project "Radio Links With Highest Data Rates on Fast Altering Radio Channels Based on WLAN Principles". This sub-project will assure that the evolving system is suitable for communicaiton scenarios for high velocity trains and vehicles. The envisioned velocity is in between 500 km/h and 250 km/h for the latter two correspondingly. The concepts of this high-mobility support will be demonstrated using modified front-end transceiver (38 GHz) employing MIMO technology.

The focus of TU Berlin within this scope is to provide mechanisms for a seamless handover supporting QoS requirements. Special consideration is paid to the fact that the transition time of a mobile in between two adjacent radio cells (i.e. the time the mobile has connectivity to both base stations, the one it is currently connected to and the one is about to hand over its calls to) is extremely short. Thus, the provided solutions do not only apply to high-velocity scenarios with a reasonable size of the overlapping zone of two adjacent radio cells but also to and mobile communication scenario where the overlapping region of radio cells is neglectably small.

[Overview] — [Sub-Projects] — [TKN-Involvement] — [Publications] — [Press Releases]

Publications

- M. Emmelmann. Influence of Velocity on the Handover Delay associated with a Radio-Signal-Measurement-based Handover Decision. Proc. of IEEE 62nd Vehicular Technology Conference Fall 2005, Dallas, TX, USA, September 26--29, 2005. (PDF)
- M. Emmelmann. Influence of Velocity on the Handover Delay associated with a Radio-Signal-Measurement-based Handover Decision. TU Berlin, Berlin, Germany, Tech. Rep. TKN-05-003, April 2005. (PDF)
- M. Emmelmann. Velocity Effects on RSM-based Handover Decision. 802.11 TGt Wireless Performance Prediction Task Group Doc. 05/0233r1. IEEE 802.11 Plenary, Atlanta, USA, March 13 -- 18, 2005.

[Overview] — [Sub-Projects] — [TKN-Involvement] — [Publications] — [Press Releases]

Press Releases

- 802.11n: Already Too Slow?. Internetnews.com, July 8, 20005. [online]

Last Change: 2005-06-09
Source: Official WIGWAM Web Page (http://www.wigwam-project.de)

Questions? Contact webmaster.

Mit dem Urteil vom 12. Mai 1998- 312 O 85/98- "Haftung für Links" hat das Landgericht Hamburg entschieden, daß man durch die Anbringung eines Links, die Inhalte der gelinkten Seite ggf. mit zu verantworten hat. Dies kann nur dadurch verhindert werden, daß man sich ausdrücklich von diesen Inhalten distanziert.
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