

PRESS RELEASE

Data communication with light – Fraunhofer HHI provides VLC technology for a conference room on Mainau Island (Lake Constance)

Mainau Island, 20 May 2015: The Fraunhofer Heinrich Hertz Institute HHI is providing the necessary Visible Light Communication (VLC) technology in order to implement an optical WiFi environment in a conference room on Mainau Island (Lake Constance). This will replace the existing radio-based WiFi solution. The upgrade is planned to take place in several stages and provide insights for practice-oriented optimization of system parameters. The project is sponsored by the Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg. The Initiative BodenseeMobilfunk (Lake Constance wireless initiative) is committed to reducing radio emissions and provided the idea for the project on Mainau Island.



The project partners (l-r): Günter Dolak (BodenseeMobilfunk), Dr. Thomas Weimer (Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg), Dr. Andrea Leute (BodenseeMobilfunk), Dr. Anja Schmolke (Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg), Heinrich Straub (Mainau GmbH), Dr. Anagnostis Paraskevopoulos (Fraunhofer Heinrich Hertz Institute HHI), Dr. Stefan Zbornik (BodenseeMobilfunk), Bettina Gräfin Bernadotte (Mainau GmbH) and Prof. Dr. Wolfgang Skupin (Hochschule Konstanz, University of Applied Sciences).

The use of an optical (RF-free) WiFi transmission based on visible light communication (VLC) in the conference room has several advantages. Fraunhofer HHI project manager Dr. Anagnostis Paraskevopoulos: "The VLC technology is a very interesting alternative approach with which the increasing exposure to radio frequency emissions can be avoided without having to waive the mobile, i.e. wireless, exchange of high data volumes. Testing the technology in a real-world environment is very important to the Fraunhofer HHI. The insights obtained in this way can lead to user-oriented optimization of the system parameters as well as to accelerated preliminary development efforts. In this way, time-to-the-market for respective innovative products in conjunction with potential industry partners, for example in the lighting industry, will be significantly reduced.

For the botanical garden on Mainau Island, the focus is on the qualified environmentally friendly orientation of the organization and the associated perception of the visitors. The project is important because it is intended to demonstrate that the alternative - optical instead of radio based data transmission - doesn't exist only as a research concept but can also work in real-world environments. "I support the research into low-radiation mobile communication because of my personal convictions, and we, as Mainau Island, are delighted that we can contribute to further deployment of the new technology", Countess Bettina Bernadotte, Director at Mainau GmbH, tells us.

The BodenseeMobilfunk initiative which was founded in 2007 and which counts the Ärzteinitiative Mobilfunk Allgäu-Bodensee-Oberschwaben among its members is also involved in the project. "Due to the rapidly increasing radiation exposure, a new approach to mobile communication is urgently required. Promoting and developing innovative concepts and technology solutions to minimize the radiation load is therefore important to us", Dr. Andrea Leute tells us. Dr. Stefan Zbornik, co-initiator of the BodenseeMobilfunk: "We are proud to say that in conjunction with our project partners, we have been able to initiate the first pilot project of its kind in Europe in an application-based context."

The VLC technology

The demand for wireless communication networks within buildings will continue to increase in the coming years. Visible light communication offers an alternative which uses LED-based light sources for data transmission purposes. Therefore, the technology achieves a significant increase of the network capacity while retaining the mobility which users want. Visible light communication avoids all electromagnetic interference with radio-based wireless networks and is by definition RF-free.

Data rates of one gigabit per second (1 Gbit/s) and more can be achieved with conventional LEDs, thus even allowing for the flawless transmission of video data in HD and 4K quality. Just a few additional components are needed to turn a conventional LED light into a powerful optical WiFi transmitter. A special modulator turns the LED on and off very quickly, thus transmitting the digital information.

More information about the VLC technology is available at: www.hhi.fraunhofer.de/vlc
More information about the VLC technology for Mainau Island is available at: www.hhi.fraunhofer.de/vlc-mainau

The **Fraunhofer Heinrich Hertz Institute** is a world leader in the development of mobile and fixed broadband communication networks and multimedia systems. From photonic components and systems through fiber optic sensor systems to video coding and transmission, the Fraunhofer HHI works together with its international partners from research and industry. www.hhi.fraunhofer.de Press Contact: Anne Rommel, anne.rommel@hhi.fraunhofer.de, Telefon: +49 30 31002 353. Department Contact: Anagnostis Paraskevopoulos, anagnostis.paraskevopoulos@hhi.fraunhofer.de, Telefon: +49 30 31002 527.

The **Initiative Bodensee-Mobilfunk** was established in 2007 by around 30 groups and organizations in all four states of the Lake Constance region. In addition to the current light communication project on Mainau Island, various other projects to minimize RF emissions have already been carried out in the past or are in the planning stages. The co-initiators are members of the Ärzteinitiative Allgäu-Bodensee-Oberschwaben, the Bürgerinitiative für humanen Mobilfunk in Constance and the Verein strahlungsfreies Kreuzlingen. Press Contact: Günter Dolak, Kornblumenweg 25, 78465 Konstanz, bi.humaner_mobilfunk@web.de, Phone: +49 7531 44 192.

Mainau Island with around 1.2 million visitors per year is currently one of the largest tourism enterprises on Lake Constance. It was founded by a member of the Swiss royal family, Count Lennart Bernadotte († 2004), who turned the former summer residence of his great-grandfather Grand Duke Friedrich I. of Baden into a paradisiacal flower garden. The park and gardens are open all year. Attractions: Peak blossom times which change throughout the seasons, Butterfly House, Palm House, adventure playgrounds. www.mainau.de Press Contact: Florian Heitzmann, florian.heitzmann@mainau.de, Phone: +49 7531 303 138.