



Felix Morgner

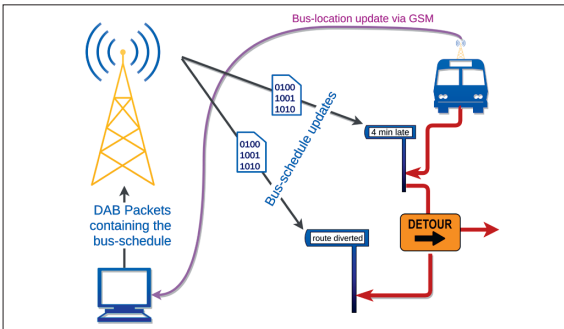


Tobias Stauber

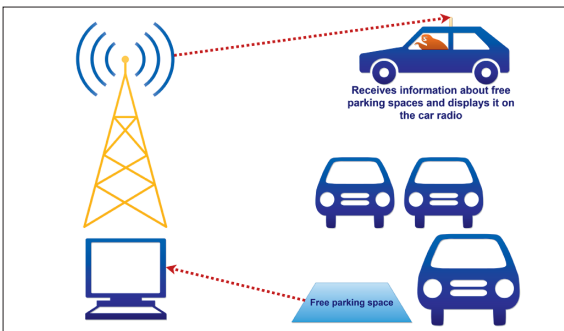
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## Data over DAB

### An open-source solution for transmitting and receiving arbitrary data over DAB or DAB+



Example Application 1: Economically updating bus schedules at remotely located bus stops.



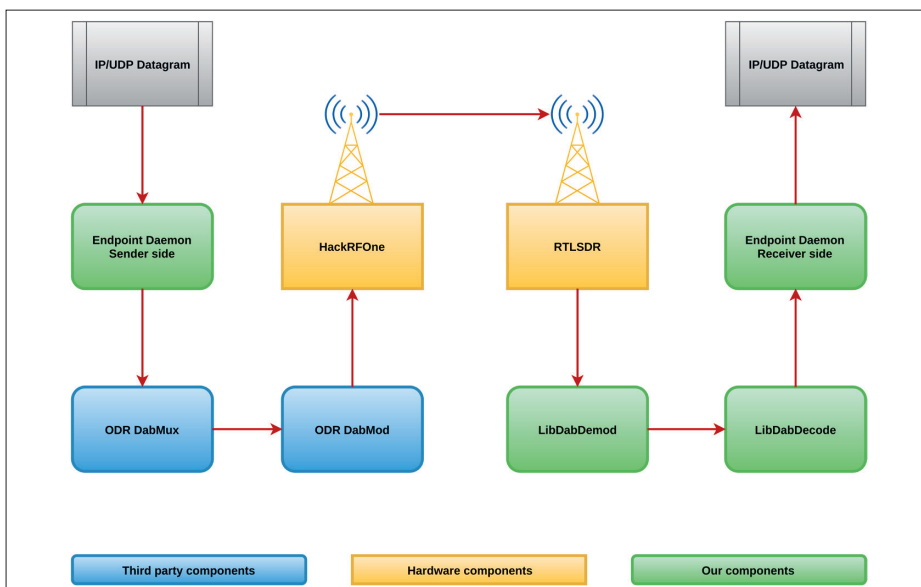
Example Application 2: Broadcasting information about free parking spaces at car parks.

**Introduction:** There are currently no solutions that allow the transmission and reception of arbitrary data over DAB or DAB+. Opendigitalradio therefore asked us to develop a viable way to do this in the scope of this thesis. The goals of the desired open-source solution were:

- The transmission and reception of arbitrary data over DAB must use existing protocol mechanisms.
- Being a broadcast medium, each receiver must be able to selectively receive data that is relevant for itself.
- Its interface must be easy to use for third-party applications.
- Its interface must be stable and compact.
- The software must be extendable, for instance to support encryption.

**Approach/Technologies:** A large part of the work done towards this thesis consisted of studying the voluminous DAB standard and analyzing existing applications in order to decide on the best way to achieve our goals. We then designed and implemented a solution that is highly modular and easily extendable.

**Result:** The result of this thesis is a detailed analysis on how the DAB protocol could be used to transmit and receive arbitrary data, as well as an open-source software solution that third-party applications can easily use to take advantage of this mode of communication. The software solution consists of endpoint daemons and several libraries that are programmed in C++. Composing these components in different ways allows for versatile and efficient handling of DAB packets. The delivery also includes a pre-built environment that couples the components to a ready-to-use setup. All that has to be done by the third-party application is to configure the IP addresses and the DAB parameters. The usability of the software solution has been demonstrated using a demo application.



A data flow diagram illustrating how UDP/IP datagrams are transported over DAB using the implemented solution.