RFieldBus

Wireless

Multimedia

Interoperability

Security

Real-Time

Project Partners

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RFieldBus

High Performance Wireless Fieldbus in Industrial Related Multi-Media Environment

IST 11316

ist information society technologies

RFieldBus

Objectives

Fieldbus systems are optimized to interconnect devices using twisted pair cable technology. The introduction of fieldbus systems resulted in big savings for running cables and increased flexibility of installations in case of reconstructions. However, as cables still provide the connections between the devices, they are not appropriate for mobile applications, where wireless connections are a must. Furthermore non-mobile applications can also benefit from wireless radio technologies due to less cable-related costs and an increased flexibility of the network deployment. So there is a potential big market for radio based wireless technologies in industrial automation.

There is a wide range of radio technologies already available for use in different fields of telecommunications. However, they are not designed for industrial applications and no attempt was successful to integrate them appropriately into state of the art industrial communication architectures. These architectures are dominated by fieldbus systems (i.e. CENELEC Fieldbus Standards of EN 50170).

RFieldbus aims at enhancing existing fieldbus systems (demonstrated for the PROFIBUS example) by adding radio-based wireless technologies and by providing multimedia capabilities, thus fulfilling the following requirements:

- Real-time Behaviour
- Reliability
- Security
- Flexibility and Interoperability

Wireless

Wireless transmissions of data and video images are performed by a radio modem based on RAKE spread spectrum technology. This technology allows to take advantage of propagation phenomena such as multiple paths. Radio transmission between mobile devices and fixed points are thus guaranteed in environments with high density of obstacles like industrial areas.

Multimedia

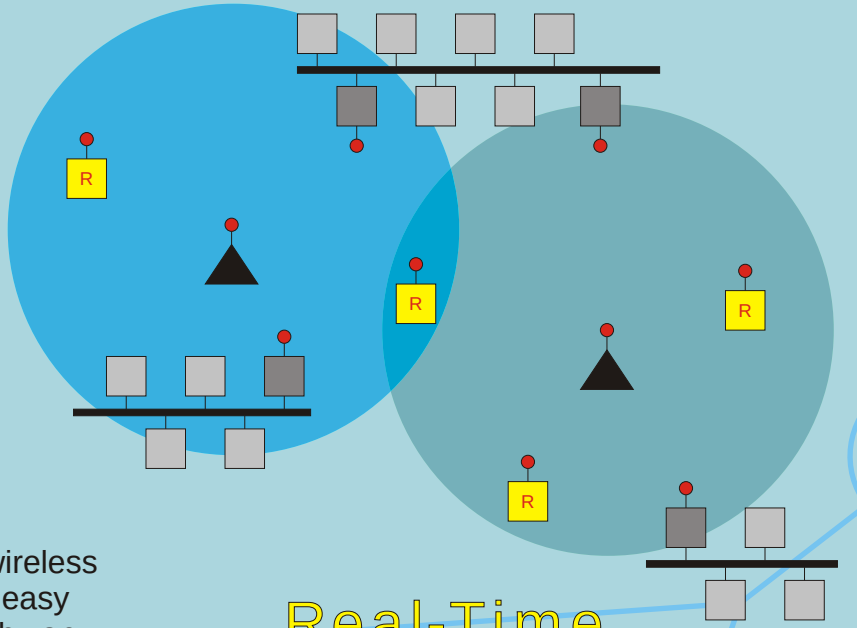
With the integration of the TCP/IP protocol stack into the PROFIBUS communication stack, control data and multimedia data can be efficiently supported by the same network infrastructure.

Security

Due to the public nature of a wireless shared medium all information transmitted in a wireless RFieldbus segment could be easy consumed and manipulated by any wireless device even if it is not involved in this segment. Therefore, in order to supplement the authentication mechanism of the PROFIBUS, the RFieldbus offers an option to encrypt data to be transmitted.

Interoperability

RFieldbus is an extension of the well established fieldbus system PROFIBUS. Consequently interoperability and compatibility with the communication infrastructure in industrial areas are highly supported. Both types of devices, PROFIBUS devices and RFieldbus devices are able to communicate wireless and wired in one system.



Real-Time

RFieldbus provides the adequate Quality of Service to the supported TCP/IP (multimedia) applications, while guaranteeing that the timing requirements of the control-related traffic are always satisfied.

www.rfieldbus.de