

Virtual Radio Networks – A Framework for Configurable Radio Networks on Shared Infrastructure

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The radio network is one of the largest cost components for providing ubiquitous wireless access to the end user. This large investment results in long lead times and high entry barriers for new wireless transmission concepts before being introduced into deployed networks. In this talk we propose a new approach of virtual radio networks with the objective of increasing the flexibility of providing wireless networking services at reduced costs.

Network virtualization has recently been proposed for the development of large scale experimental networks, but also as design principle for a Future Internet. We present radio virtualization, which extends network virtualization into the wireless domain. Different virtual radio networks can operate on a common shared infrastructure and share the same physical radio resources. We present how this radio resource sharing can be performed in an efficient way without interference between the different virtual radio networks. For the customization of radio transmission functionality a configurable network infrastructure is required. Virtual radio networks are built on the paradigms of infrastructure sharing combined with node configurability; this provides the flexibility for fast technology evolution at low deployment costs and with smooth migration.