

Femtocells: Opportunities and Challenges

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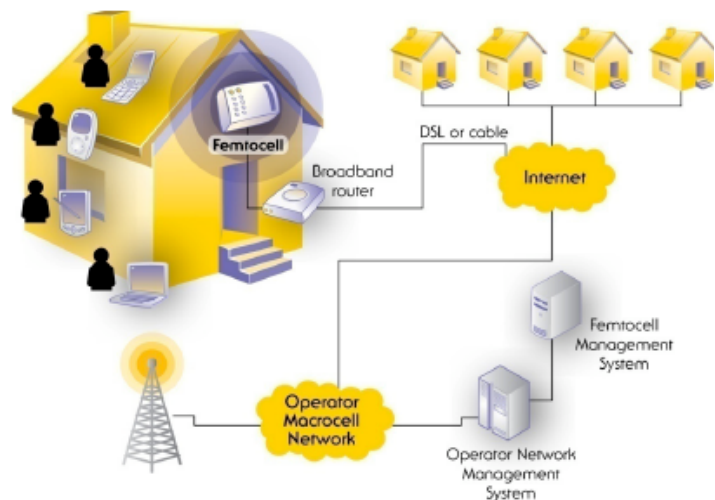
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Tutorial Abstract

Femtocells are low-power wireless access points that operate in licensed spectrum to connect standard mobile devices to a mobile operator's network using residential DSL or cable broadband connections. Femtocells have the ability to enable a much lower cost wireless deployment architecture providing massive increases in overall data throughput. The WCDMA femtocell market alone is expected to grow to approximately 20 million additions in 2013 where the key market drivers are:- Improved Indoor Coverage, Increases in Capacity, Reduction in operational and capital costs, and Reduced User Churn.

This course offers an in-depth introduction to femtocells, the network architecture, the market, and the technical challenges associated with deploying the technology. The presentation will describe details of the players and the opportunity as well as real-world insights into the challenges associated with network operations and management and the radio air interface interference problems. A discussion on alternative fixed mobile convergence solutions and the cost-benefit trade-off will be performed as well as details of enterprise femtocells and the advantages of such a deployment.



Biography:

Dr. Mark Reed is a leading researcher and engineer in the area of WCDMA receiver design, he is currently an Adjunct Assoc. Prof. at the Australian National University and a Principal Researcher and Project leader at NICTA where he leads a team of engineers and researchers on a research inspired commercial project. Mark pioneered the area of iterative detection techniques for WCDMA base station receivers and has more than 50 publications and eight patent applications. Mark has a mix of real-world industrial experience as well as research experience where he continues to put his techniques into practice. Mark has previously performed research and developed real-time world-first Satellite-UMTS and mobile WiMAX demonstration systems. Recently Mark has lead a team to realize a real-time WCDMA Femtocell modem working at RF and tested against independent equipment. This realization contains world-first advanced receiver techniques that significantly improve the uplink throughput and range. More information can be found at:

http://nicta.com.au/research/research_themes/networked_systems/interferex,

<http://users.rsise.anu.edu.au/~mreed/>