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Title	Resource Optimization in Cellular Networks
Abstract	<p>Existing cellular networks are dimensioned to accommodate the largest number of concurrent users predicted by the planning engineers. These networks are inefficient when underutilized and impotent when faced with more users than predicted. Dynamic adjustment and redistribution of network resources has been suggested as a means to mitigate this problem so that target areas get all and only the resources they require.</p> <p>At a lower level of abstraction, cellular communication is packet based. Individual packets are required concurrently to serve several users each with their own requirements and situated radio environment. The challenge is to choose for each user the most efficient encoding scheme in the presence of noise so as to minimize resource usage and maximize the overall packing density without exceeding the acceptable rate of transmission error.</p> <p>My research at Vodafone is concerned with finding efficient solutions to these problems for existing and forthcoming network technologies.</p>