

# PROJECT / Soft HandOver for Wi-fi networks SHOWNet

## Main Objective:

This proposal aims at decreasing the disruption of the active sessions running during the handover by the use of network coding. In our approach, network coding will be the key enabler towards ensuring soft handover, providing the correct delivery of all packets in the running session without duplicating the packets in both networks. In our approach, the idea is to use network coding to send additional coded packets, i.e., linear combination of the original packets, towards the mobile terminal performing handover, to i) enhance information transmission before the handover, when the channel quality for both data and feedback is severely degraded, and 2) improve the probability of correct reception of the information after the handover, when the exact knowledge of the status of the terminals is unknown. These two steps shall be instrumental in achieving a seamless handover. The choice of the number of coded packets to be sent before and after the handover needs to take into account several issues, such as the mobility pattern of the mobile terminal, signal variation in both the previous and the new access networks, handover time and the expected performance degradation while handover is taking place. Moreover, the decision of handover with network coding needs also to be addressed, since it is required to evaluate the cost of handover (in terms of signaling and performance decrease) and the additional cost of introducing coding, both in the extra amount of information delivered and its delay in real-time communications. In this approach, we will target Wi-Fi networks and the handover of smart phones between different Wi-Fi access points. The evaluation of our approach will be performed through simulation in the network simulator and on a seamless mobility platform previously developed between IT and PTInovação.

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