The GOLD Project developed self-optimization methods in order to enhance wireless networks capacity, coverage and service quality, while contributing to significant Operational Expenditure (OPEX) reduction. Although the developed algorithms are applicable to (2G/3G) networks, the project primarily concentrated on 3rd Generation Partnership Project (3GPP)’s LTE radio interface.

**GENERAL MOTIVATION AND OBJECTIVES**

The aim of the project was to develop self-optimization methods in order to enhance network capacity, coverage and service quality, while contributing to significant Operational Expenditure (OPEX) reduction. Although the developed algorithms are applicable to (2G/3G) networks, the project primarily concentrated on 3rd Generation Partnership Project (3GPP)’s LTE radio interface. In more detail, the main goals are the following:

1. To develop novel concepts, methods and algorithms for the efficient self-optimization of Long Term Evolution (LTE) wireless networks, optimizing the several Radio Resource Management (RRM) parameters to balance variations in the system operation, gathered traffic mobility and also radio propagation conditions. These focused parameters manage network operation and performance and include antenna parameters (remotely configurable antennas/tilts), neighbour lists, handover parameters scheduling parameters and power settings.

2. To draft the required input data for the self-optimization process, its statistical accuracy and the methods of information retrieval including the parsing interfaces. Several sources of information were used, such as Operation and Maintenance (O&M) performance measurements, system locational and QoE areas, geolocated O&M traces, as well as drive tests combining air interface measurements with location information.

3. To test and validate the developed concepts and methods for self-optimization through extensive simulation experiments, using a demonstrator (simulation platform), developed from scratch for the project.

**CHALLENGE**

The research group for this project included experts in the mobile communications field with different professional backgrounds, academic and also industrial oriented. The project challenge was in fact a group effort between Instituto de Telecomunicações and Ceifnet (Portuguese Telecom Consulting Firm), aiming to increase the competitiveness of national science and technology while promoting the transfer of scientific and technological innovation to the productive sector.

**PROJECT WEBPAGE URL**

**Main Project Team**

António Rodrigues  
Pedro Viana  
Manuela Queirós  
José Sanguino  
Ivo Sousa

**Indications**

Funding: 354k €  
Journal Papers: 1  
Conference Papers: 8  
Concluded PhD: 1  
Concluded MSc: 8

**Two Main Publications**
