Title: "GREEN IPTV: A Resource and Energy Efficient Network for IPTV"

In this module we will explore the usual route taken to make good computer science research, observing at the same time how simple computer science ideas can be used to improve the efficiency of a real network. The route to follow is comprised of essentially six steps: (-1-) looking for an opportunity, (-2-) identifying a problem, (-3-) analysing the state of the art, (-4-) proposing a solution, (-5-) evaluating it and finally (-6-) assessing its relevance.

Very recently IP network operators started to offer a new service over their network: IPTV, a cable-like TV service (-1-). The IP network was not designed for the specificities of this service, and for this reason its use today presents many inefficiencies. Specifically, there is plenty of bandwidth (and arguably energy) waste, while at the same time there are also important quality of service issues, the most important of these being the high zapping delay (-2-).

In this module, after analysing some of the drawbacks of the existing solutions to these problems (-3-), when they exist, we will propose simple computer science ideas (-4-) to a) improve the efficiency of an IPTV network and b) reduce IPTV zapping delay. These ideas are evaluated (-5-) by means of trace-driven simulations using a huge dataset from a nationwide IPTV operator. We also analyse the relevance of each of the proposed solutions (-6-) and discuss its possible use.

On completion of this module students should:

1. Understand how computer science knowledge can be used in novel and practical ways;

2. See the importance of building realistic scenarios to evaluate an idea;

3. Accept that any technical solution has certain limitations and that these should not be concealed;

4. Be aware that a solution to a problem is only relevant if the benefits clearly outweigh the disadvantages.