CELULAR NETWORK

In a rare occurrence, the light current class of 2016 in the Department of Electrical and Information Engineering got a chance to visit Safaricom's Base Transceiver Station (BTS) situated near the School of Engineering block.

An initiative of Doctor Akuon, this class got an opportunity to interact and learn from experts from Safaricom and consequently appreciate the electromagnetic and telecommunication theory learnt in the lecture room. Besides the technical terminologies and acronyms used in the communication industry, the interconnection of the various components of the cellular network and in particular, the role of the BTS in the whole wireless communication structure was discussed.

In a nutshell, an overall cellular network contains a number of different elements from the mobile station (MS) to a network of BTSs connected to a base station controller (BSC). Apart from call routing and controlling the handover between BTSs among other roles, the BSC is the interface between the various cells and the mobile switching center (MSC). The MSC contains the location registers (HLR and VLR) as well as providing a link to the public switched telephone network (PSTN). Though difficult to notice, this is pretty much the path a typical phone call has to go through from the caller to the receiver.

Of the units within the cellular network, the BTS provides the direct communication with the mobile phones. A small number of base stations are linked to a base station controller, of course after making all considerations not to overload the BSC which may result in interference and loss of signal strength. This unit, BSC, makes some decisions about which of the base station is best suited to a particular call. The links between the BTS and the BSC may use either fibre optic cable or microwave links. In the latter technology, the BTS antenna towers will have a small microwave dish antenna to provide the link to the BSC. The BSC is often co-located with a BTS.

The BSC interfaces with the mobile switching center (MSC). This makes more widespread choices about the routing of calls and interfaces to the land line based PSTN as well as the HLR (home location register) and VLR (visitor location register).