**MOBILE COMPUTING PRESENTATION 20PW17**

***Architecture of GSM System* KARTHIKEYAN R**

**GSM Architecture**

Subsystems

* RSS (radio subsystem)
* NSS (network and switching subsystem)
* OSS (operation subsystem)

**Network and switching subsystem**

* NSS is the main component of the public mobile network GSM
* switching, mobility management, interconnection to other networks,

system control

* Components
  + Mobile Services Switching Center (MSC) controls all connections via a separated network to/from a mobile terminal within the domain of the MSC - several BSC can belong to a MSC
  + Databases (important: scalability, high capacity, low delay):
    - **Home Location Register (HLR)** central master database containing user data, permanent and semi-permanent data of all subscribers assigned to the HLR (one provider can have several HLRs)
    - **Visitor Location Register (VLR)** local database for a subset of user data - data about all users currently visiting in the domain of the VLR

**Mobile Services Switching Center**

MSC acts as a control center of a Network Switching Subsystem (NSS). The MSC connects calls between subscribers by switching the digital voice packets between network paths. It also provides information needed to support mobile service subscribers. Based on the size of the mobile operator, multiple MSC can be implemented.

The MSC (mobile switching center) plays a central role in GSM:

* switching functions
* additional functions for mobility support
* management of network resources
* interworking functions via Gateway MSC (GMSC)
* integration of several databases

Functions of a MSC

* specific functions for paging and call forwarding
* mobility specific signalling
* location registration and forwarding of location information
* provision of new services (fax, data calls)
* support of short message service (SMS)
* generation and forwarding of accounting and billing information

**Operation subsystem**

The OSS (Operation Subsystem) enables centralized operation, management, and maintenance of all GSM subsystems

Components:

Authentication Center (AUC)

* generates user specific authentication parameters on request of a VLR
* authentication parameters used for authentication of mobile terminals and encryption of user data on the air interface within the GSM system

Equipment Identity Register (EIR)

* registers GSM mobile stations and user rights υ stolen or malfunctioning mobile stations can be locked and sometimes even localized

Operation and Maintenance Center (OMC)

* different control capabilities for the radio subsystem and the network subsystem