

GENERIC CELLULAR SYSTEM CONFIGURATION

A generic cellular system configuration is shown in Figure 1.1. It consists of the basic system blocks of the cellular network namely the Public Switched Telephone Network (PSTN), Mobile Telephone Switching Office (MTSO), cell site and the mobile.

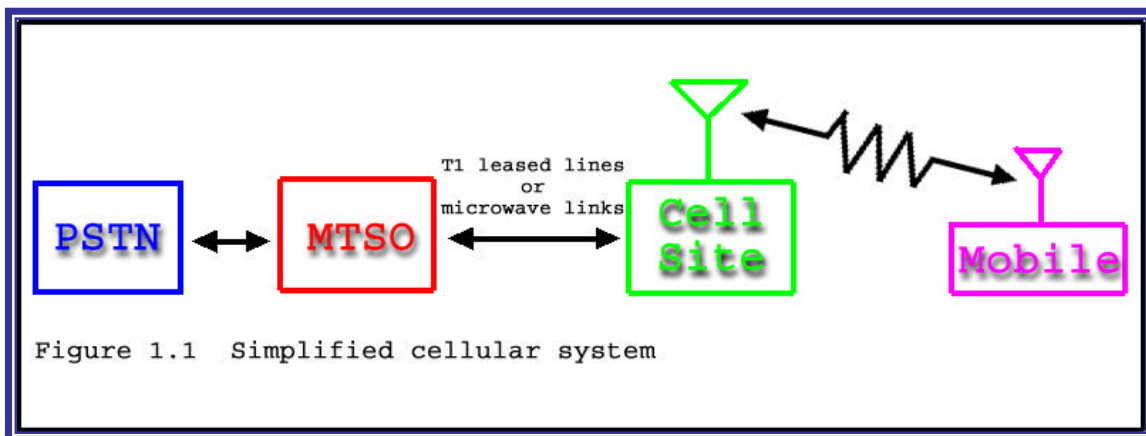
In Figure 1.1, the mobile talks with the cell site through the use of a full duplex radio transmission using a separate transmit and receive frequency to communicate with each other. The cell site transmits on the frequency the mobile is tuned to and the mobile transmits to the frequency the cell site receiver is tuned to. The cell sites in a system connect to the MTSO, which in turn connects to the standard landline telephone system or PSTN. The MTSO is connected to the cell site either by T1 leased lines or a microwave system.

The mobile is a radiotelephone that may be used whenever “cell” coverage is provided. The term "mobile phone" has been used generically to include several forms of wireless communication. This term represents fully portable cellular and digital phones in addition to hand-held and hands-free car phones.

The cell site is a transceiver facility that provides the cell coverage. The cell provided by a cell site can be from one mile to twenty miles in diameter, depending on terrain and transmission power. Several coordinated cell sites are called a cellular network.

The MTSO is the central switch that controls the entire operation of a cellular system. It is a sophisticated computer that monitors all cellular calls, tracks the location of all cellular-equipped vehicles traveling in the system, arranges handoffs, call routing, keeps track of billing information, etc.

The PSTN refers to the world's collection of interconnected voice-oriented public telephone networks, both commercial and government-owned. It's also referred to as the Plain Old Telephone Service (POTS).



References:

1. Clint Smith, P.E and Curt Gervelis, “Cellular System Design and Optimization”, pp. 3-4, 1996.
2. www.whatis.com 1996-2000