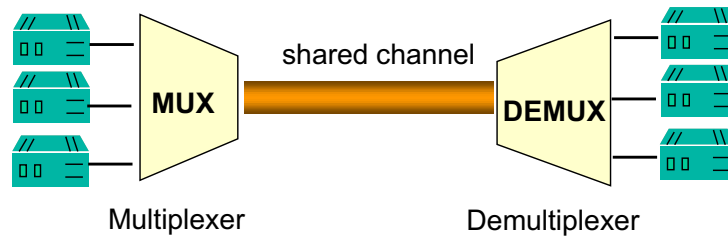


Multiplexing techniques

Surasak Sanguanpong
nguan@ku.ac.th
<http://www.cpe.ku.ac.th/~nguan>
Last updated: May 19, 1999

Why multiplexing

- share a use of common channel



Multiplexing provides a mechanism to share the use of a common channel or circuit by two or more devices. Multiplexing minimizes number of transmission lines required to connect communication devices.

Type of multiplexer

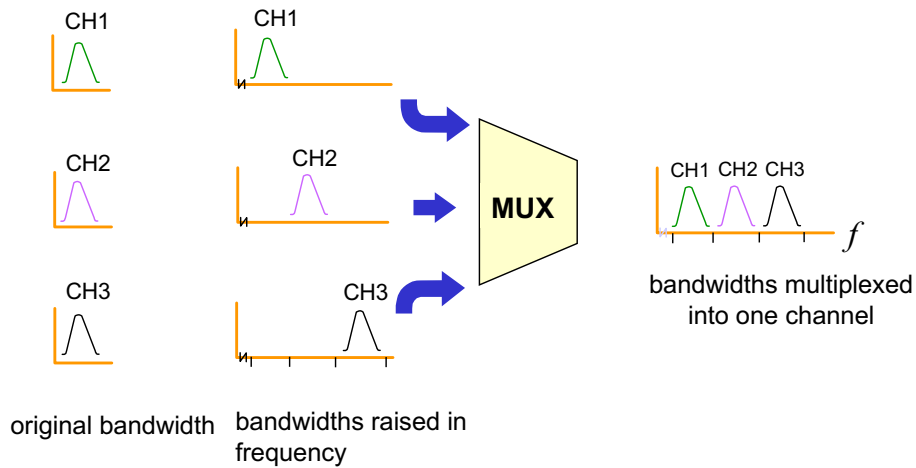
- **FDM (Frequency Division Multiplex)**

- **TDM (Time Division Multiplex)**

Major multiplex techniques can be categorized into two types:

- Frequency division multiplex
- Time Division Multiplex

Frequency Division Multiplex

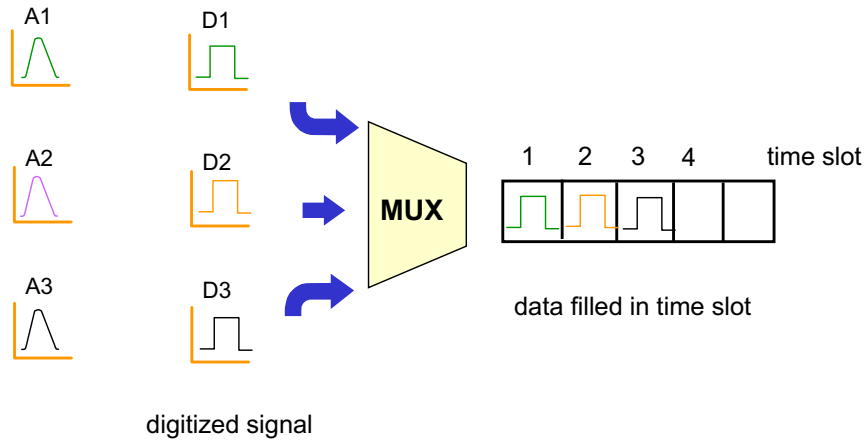


Applied Network Research Group

Department of Computer Engineering, Kasetsart University

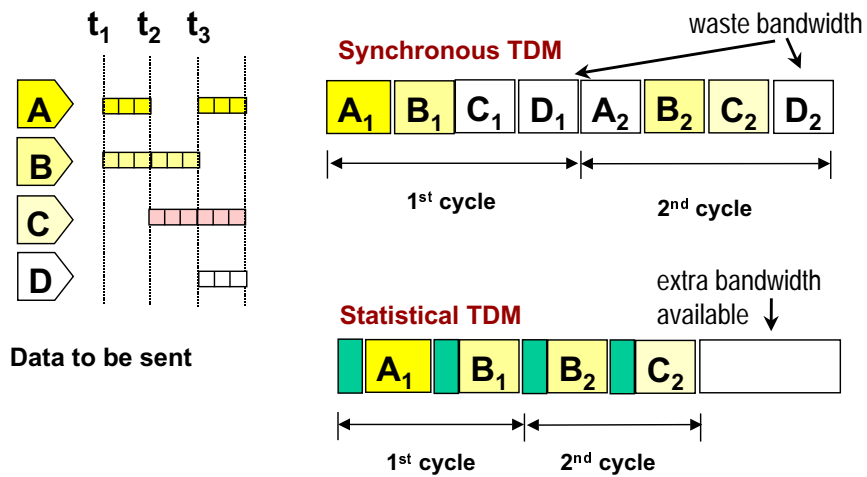
FDM is a broadband analog transmission technique. Each data signal is modulated onto a carrier with a different frequency and all signal travel simultaneously over a channel.

Time Division Multiplex



TDM is a baseband technique in individuals circuit are identified by their position in a stream. Analog inputs are digitized using PCM and the digitized information are insert into the fixed timing called *timed slot*.

Statistical TDM



Applied Network Research Group

Department of Computer Engineering, Kasetsart University

TDM uses preallocated and fixed time slot. Each time slot will be allocated even there is no data transfer.

Statistical TDM, also known as asynchronous TDM dynamically allocate time slots on demand. The statistical multiplexer does not send empty slots if there are any other data to send. [Stallings, p.219]