Frequency Reuse

AIM :

To understand the cellular frequency reuse concept.

Objectives :

1. Finding the co-channel cells for a particular cell.
2. Finding the cell clusters within certain geographic area.

Frequency Reuse

- In mobile communication systems radio resource unit(Channel) is assigned to a user in order to support a call.
- In Mobile Communication System, we have limited spectrum. Thus the number of users who can be supported in a wireless system is highly limited.
- In order to supported a large no. of users within a limited spectrum in a region the concept of frequency re-use is used.
- In term of cellular systems, the same frequency can used by two base stations which an sufficient spaced apart. In this way the same frequency gets reused by two or more different base station different users simultaneously.

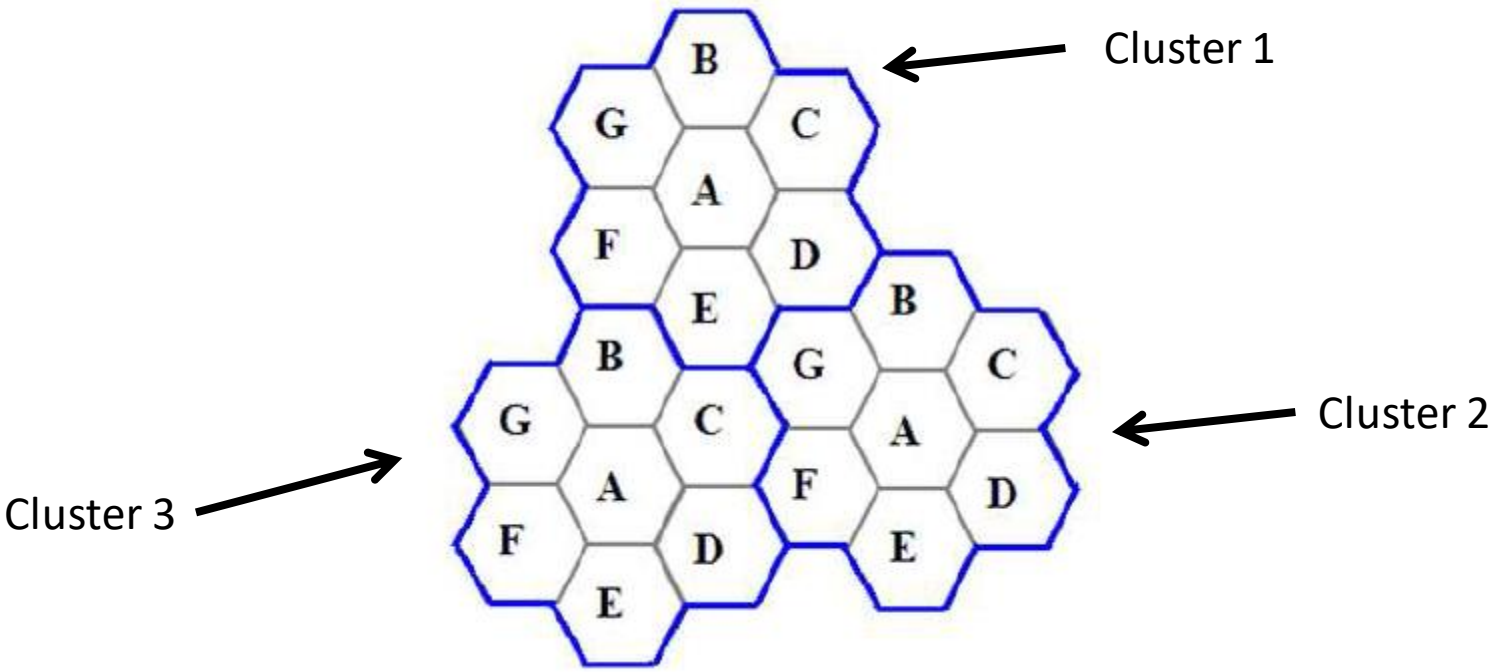
Frequency Reuse

- Now it is important to select the set of base stations which will use the same set of radio resources/ channel of frequencies or technically the co-channel cells.
- In this context the minimum adjacent set of cells which use different frequencies is called a **cluster.**

Cell Cluster

Considering a cellular system that has a total of S duplex radio channels. If each cell is allocated a group of k channels (k < S)and if the S channels are divided among N cells, then,

S = kN.



Co – Channel Cells

N = 19 (i.e., i = 3, j = 2)