



# SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

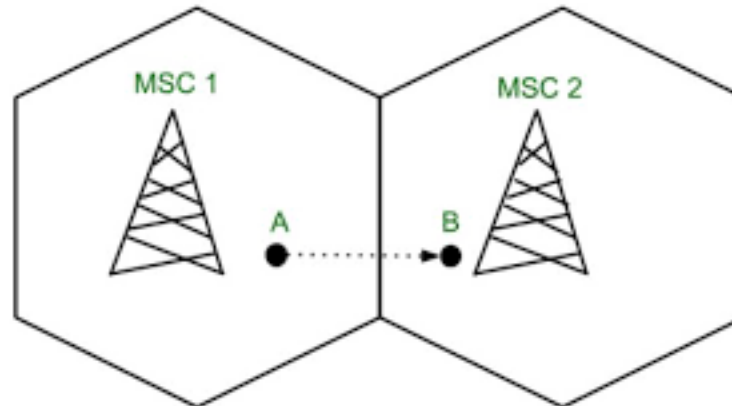


## 19EC601 – Wireless Communication

### Unit -1

### Fundamentals of Wireless Communication

## Handoff Strategies



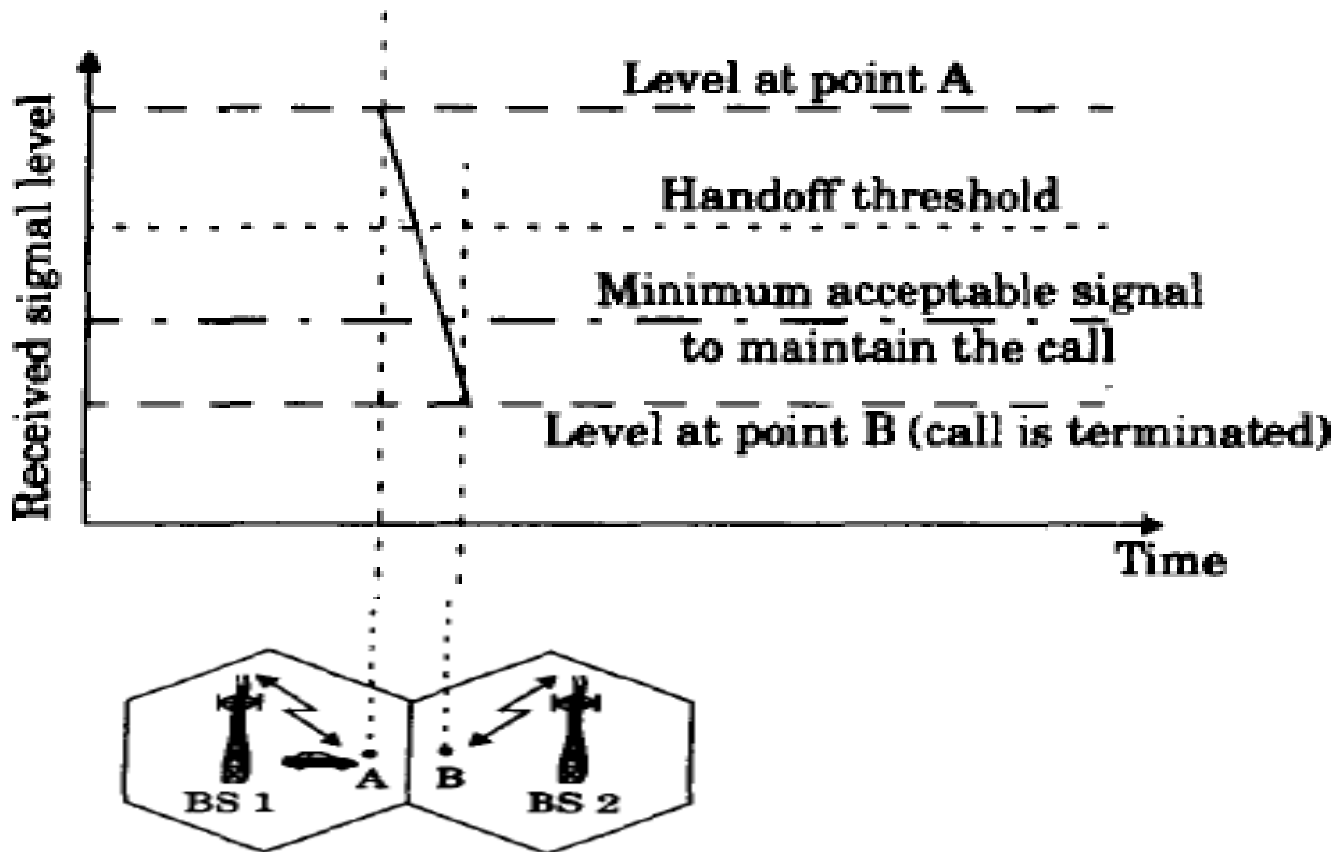


# Handoff Strategies

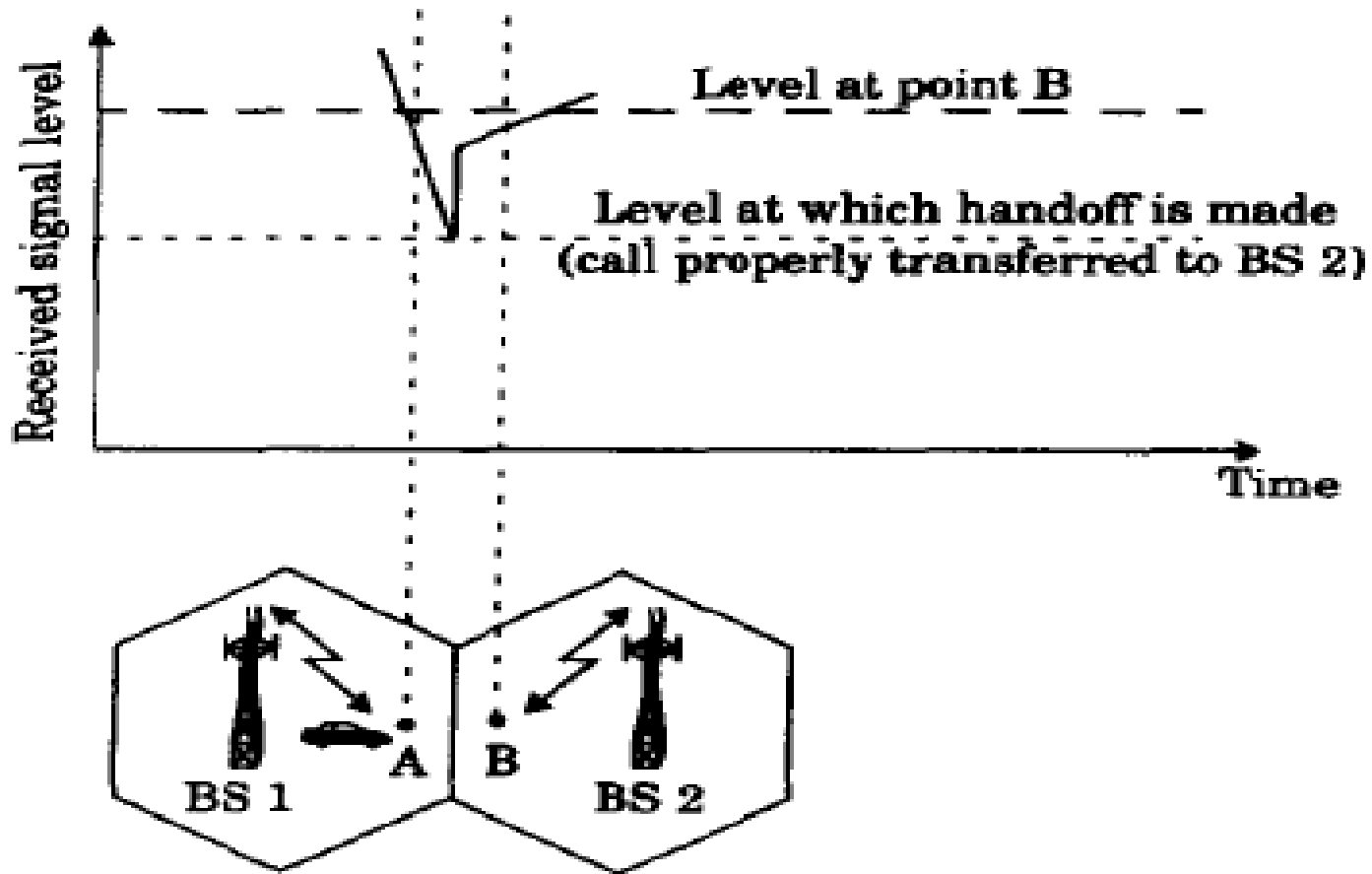
- When a mobile moves from one cell to the next during a call the MSC automatically transfers the call to a new channel belonging to the next cell. This operation is called HANDOFF
- Handoff is similar to an initial call request
- The handoff has the priority over a new call to avoid call cut off in the mid conversation

$$\text{margin is } \Delta = P_{\text{handoff}} - P_{\text{min}}$$

# Improper Handoff



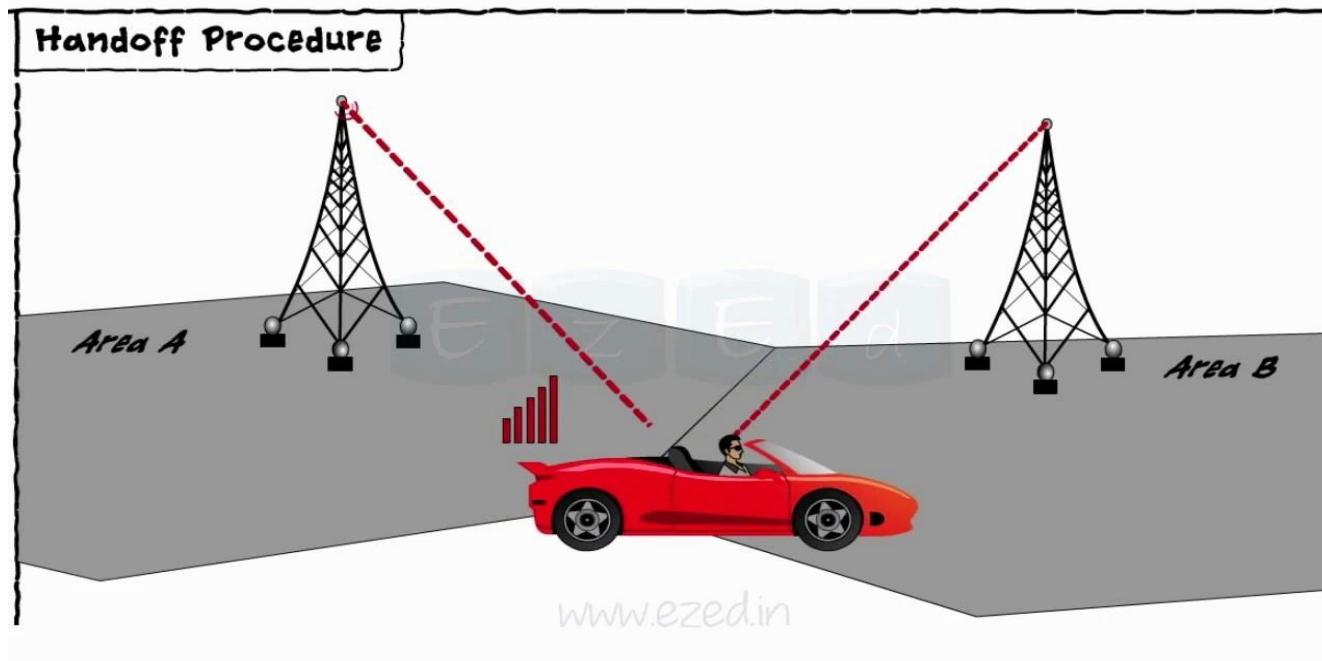
# Proper Handoff





## Handoff (cont)

- If the margin is too large there are too frequent and unnecessary handoffs which burden the MSC
- If the margin is too small, there may be not enough time to complete the handoff, particularly when the mobile moves fast
- The time a mobile spends in a cell without handoff is called *dwelling time*





- **Dwell time:**

The time over which a call may be maintained within a cell without handoff.

**Dwell time depends on**

propagation

interference

distance

Speed



- **Soft Handoff:**

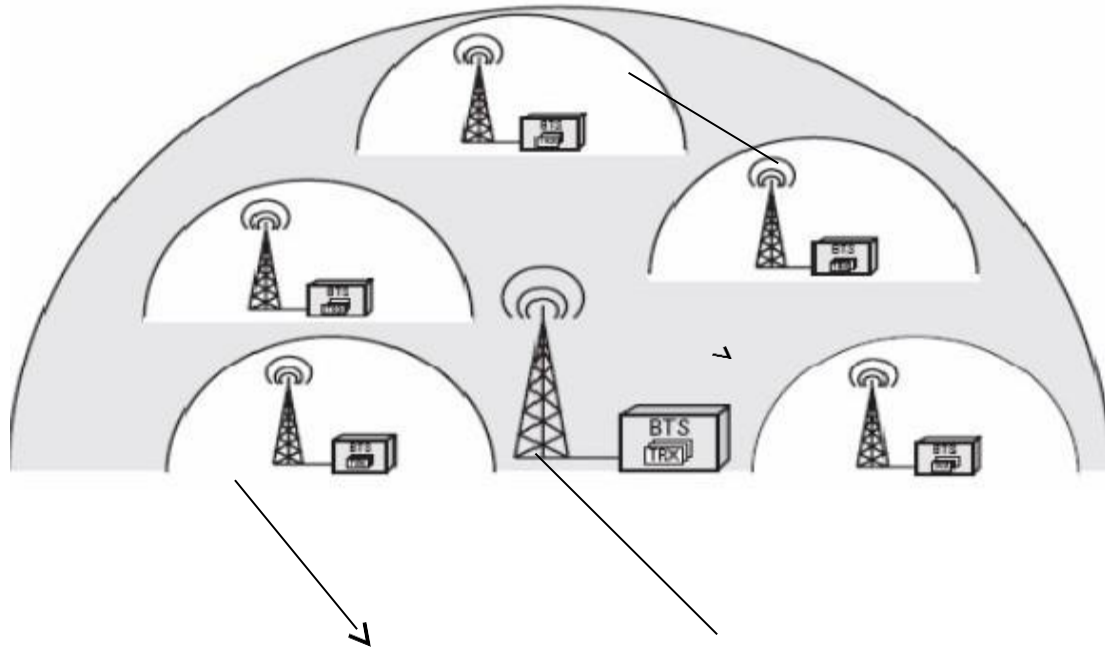
Mobile communicates with 2 or more cells at the same time and find which one is a strongest signal base station then it automatically transfers the cell to that base station is called “soft handoff”

- **Hard Handoff:**

If the MSC monitors the strongest signal base station and transfer the call to that base station than it is called “Hard handoff”



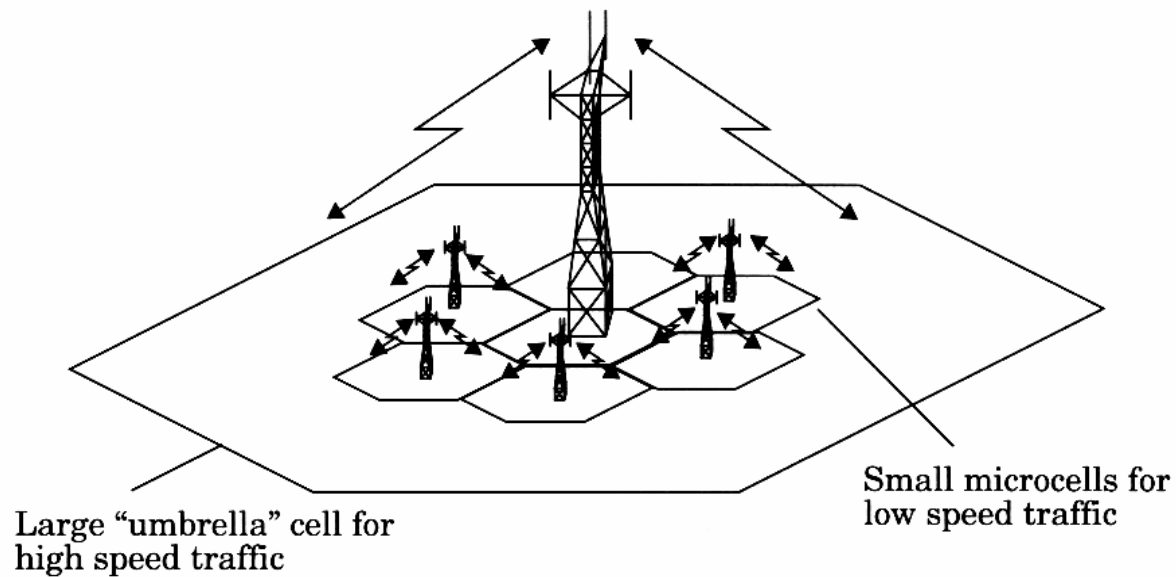
# Umbrella cell approach



Small micro cell  
for low speed traffic

Large “umbrella” cell for  
high speed traffic

# Umbrella cell approach



**Figure 3.4** The umbrella cell approach.



- For high speed mobiles, large umbrella cells with wide range are used
- For low speed mobile, microcells with small coverage area are used
- The speed is estimated by the BS or MSC from average signal strength





Thank  
you

