

Mobile Computing

- Mobile Hardware (Devices & components)
- Mobile Software (Operating system)
- Mobile Communication (services for data transfer)

Characteristics of Mobile Computing

- ① Ubiquity
- ② Location Awareness
- ③ Adaptation
- ④ Broadcast
- ⑤ Personalization

Challenges in Mobile Computing

- ① Disconnection
- ② Bandwidth variation
- ③ Heterogeneous Network
- ④ Security Risk
- ⑤ Low Bandwidth
- ⑥ Resource poor Mobile Element
- ⑦ Technical constraint

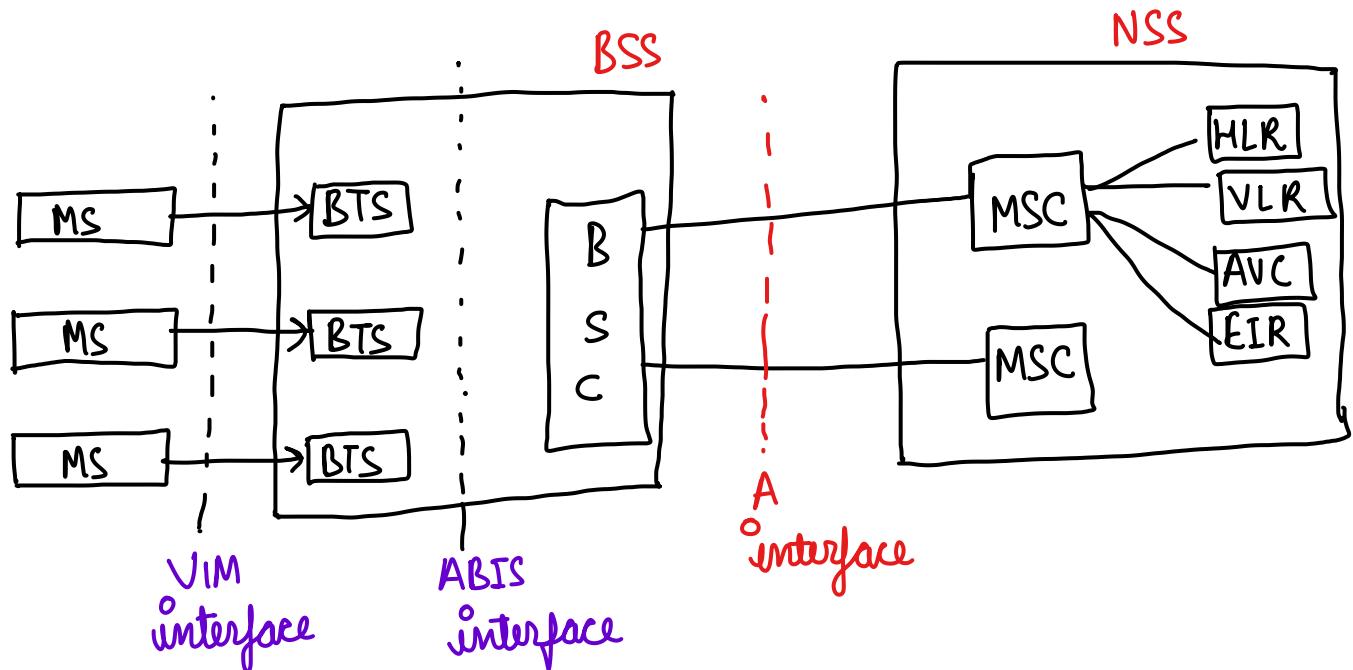
Application of Mobile Computing

- ① Vehicles
- ② Emergency
- ③ Business
- ④ Credit & Verification
- ⑤ Replacement of wired network

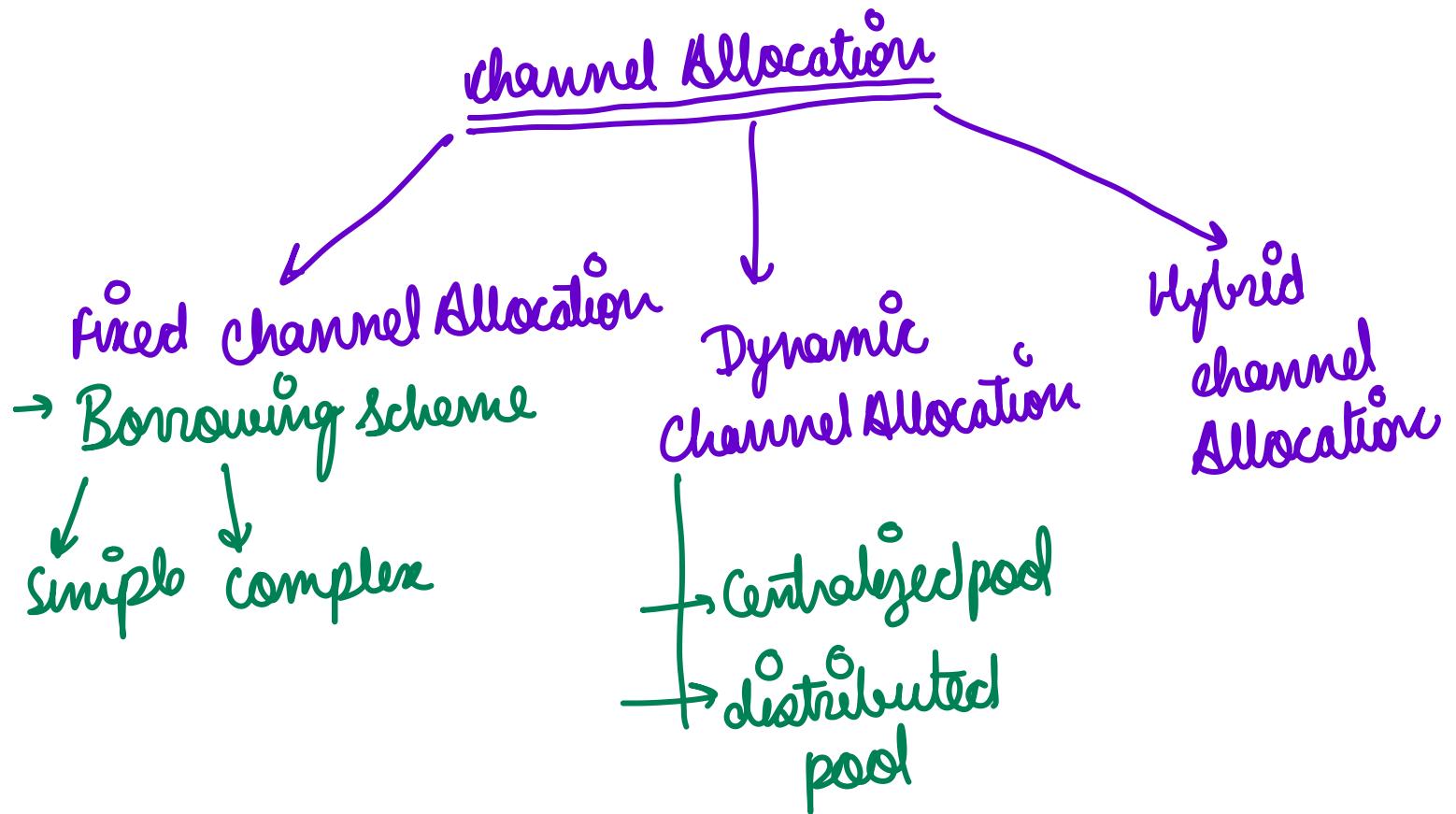
Advantages of Mobile Computing

- ① Large geographical area
- ② Large # users
- ③ Reduce interference from other signal
- ④ Reuse Radio frequency

Cellular Network architecture



wireless Multiple Access Control (WMAC)



Data Management Issues

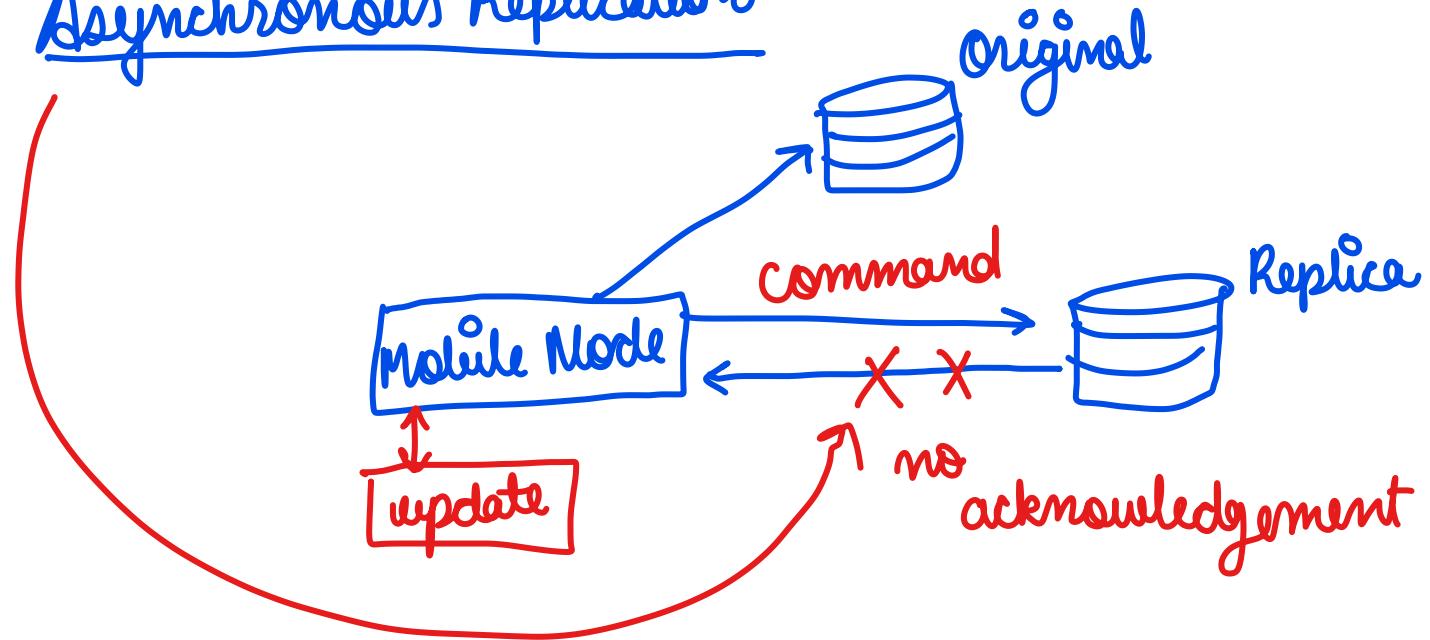
- ① Mobile Database design
- ② Security
- ③ Data Distribution & Replication
- ④ Mobility Management
- ⑤ Wireless Medium
- ⑥ Portability

Methods of Replication

② Synchronous

① Asynchronous

Asynchronous Replication



Replication Schemes

- ① full Replication Scheme
- ② Low Replication Scheme
- ③ Partial Replication Scheme

Issues in Location Management

- ① Accuracy and Precision
- ② Privacy concern
- ③ Energy Efficiency
- ④ Context Awareness
- ⑤ Indoor Positioning

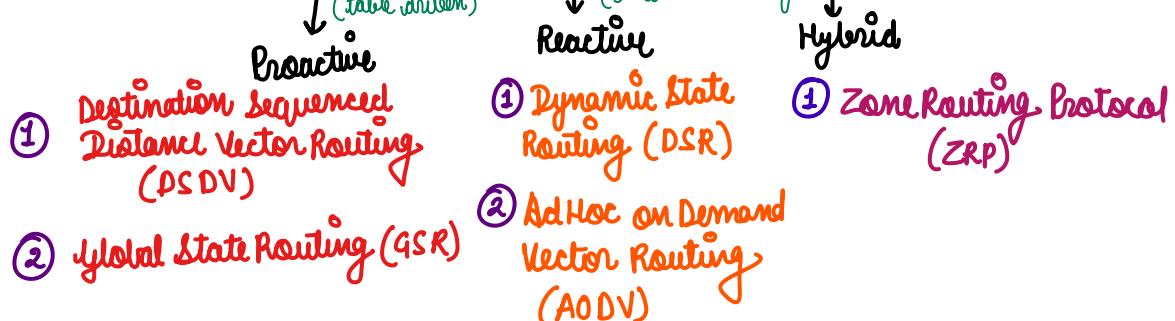
Future Directions

- ① Hybrid Positioning Technologies
- ② Edge Computing for Location Processing
- ③ Improved location based services
- ④ Privacy preserving location services
- ⑤ Integration with IoT & Smart Environments

Mobile IP

- ① Agent Discovery
- ② Agent Registration
- ③ Tunnelling

MANET Routing Protocols



Multiple Access Protocols

Random Access Protocols

- ① ALOHA
- ② CSMA
- ③ CSMA/CD
- ④ CSMA/CA

Controlled Access Protocols

- ① Reservation
- ② Polling
- ③ Token Passing

Channelization protocols

- ① FDMA
 - ② CDMA
 - ③ TDMA
 - ④ SDMA
- Freq
Code
Time
Space

