Mobile Computing

→ Mobile Hardware (Devices & components)
→ Mobile Software (operating system)
→ Mobile Communication (services for data transfer)

Characterstics 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
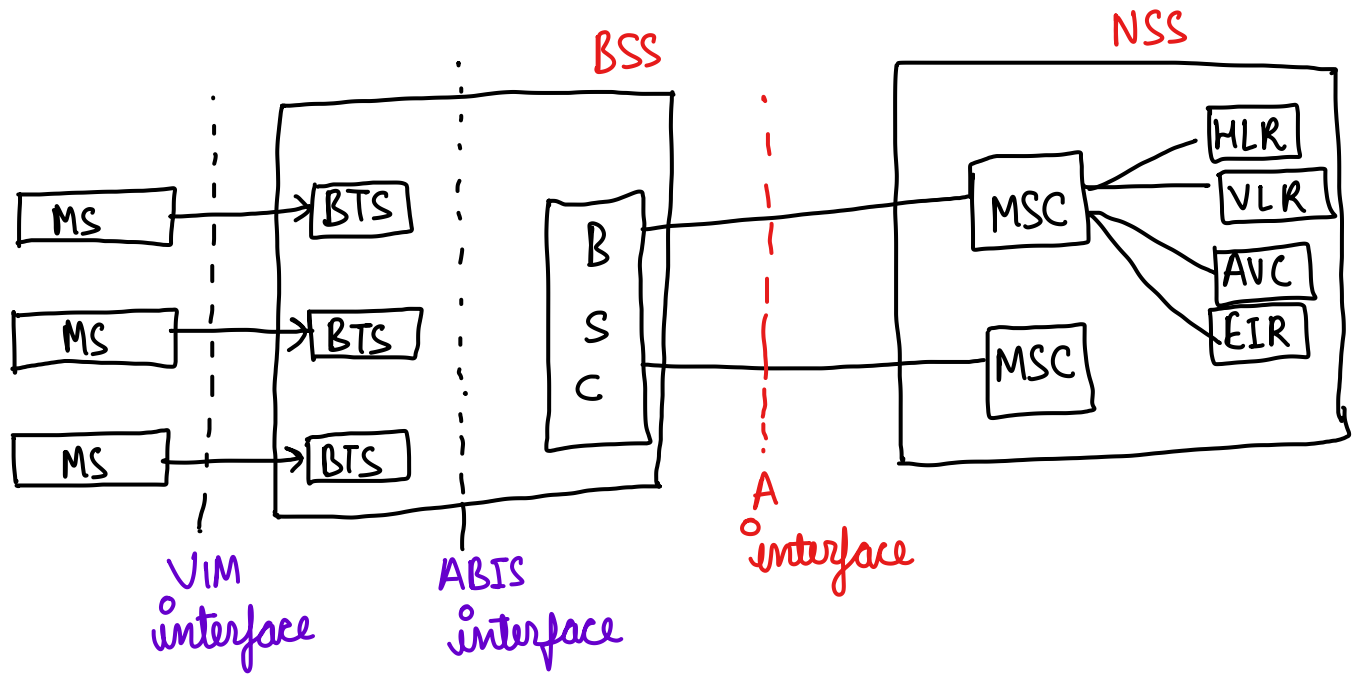⑥ Resource poor Mobile Element
⑦ Technical constraint

Application of Mobile Computing

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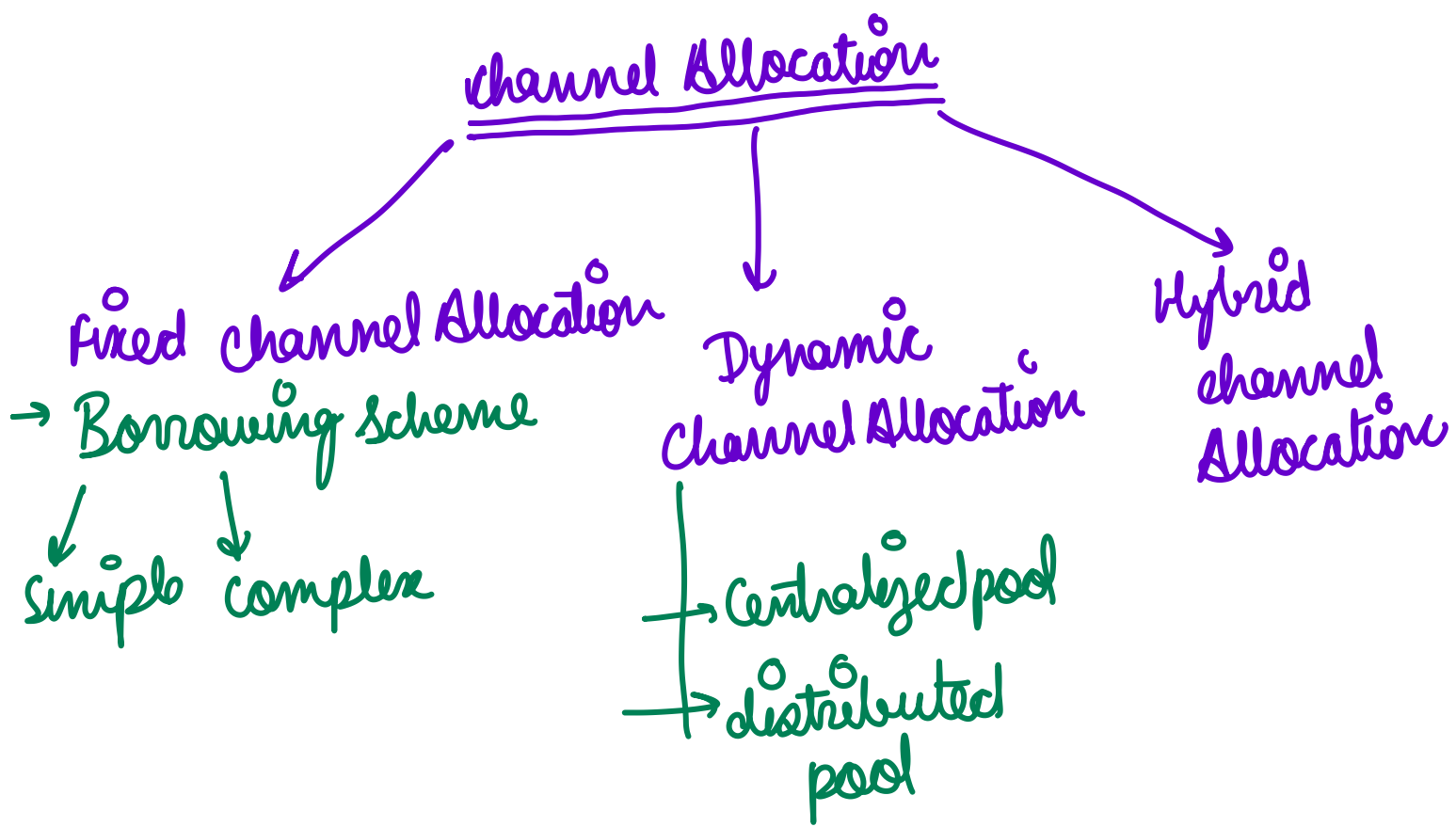④ Credit & Verification
⑤ Replacement of wired network

Advantages of Mobile Computing

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

Cellular Network architecture

Cellular Network architecture diagram showing MS → BTS → BSC → MSC → NSS (HLR, VLR, AVC, EIR). VIM interface, ABIS interface, A interface, BSS, NSS labeled.

Wireless Multiple Access Control (WMAC)

channel Allocation

- **Fixed channel Allocation**
  - → Borrowing scheme
    - ↓ Simple
    - ↓ complex

- **Dynamic channel Allocation**
  - → Centralized pool
  - → distributed pool
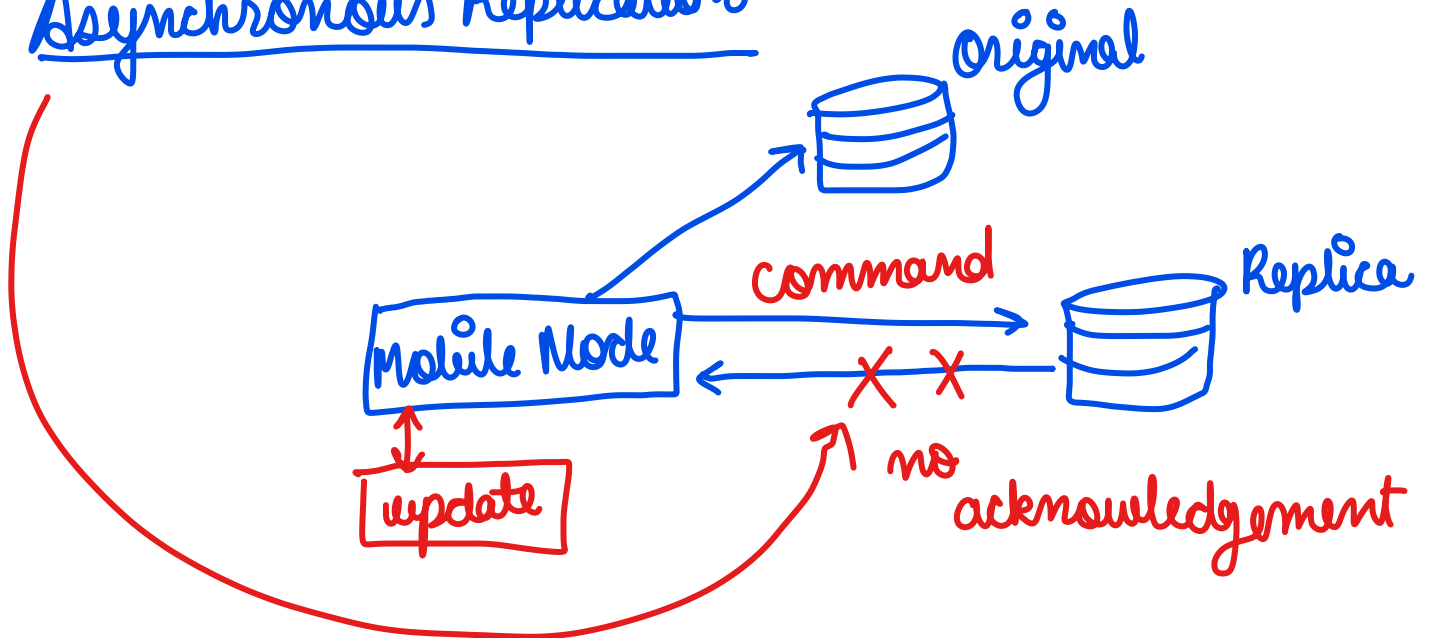
- **Hybrid channel Allocation**

Data Management Issues

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

Methods of Replication

① Asynchronous   ② Synchronous

Asynchronous Replication

original

Mobile Node

command → Replica

✗ ✗ no acknowledgement

update

Replication Schemes

① Full Replication Scheme
② Low Replication Scheme
③ Partial Replication Scheme