Lect 1

Wireless and Mobile Networks

Definition:

- A Group of interconnected nodes that exchange information and share resources through a wireless transmission medium.

A Mobile Wireless Network is an hardware and software infrastructure allowing to connect wirelessly IT elements.

Why Mobile and wireless networking?

- Largest SW/HW/networked system
- Largest number of subscribers
- Mobile devices dominate the Internet
- Mobile applications dominate Internet usage

Examples:

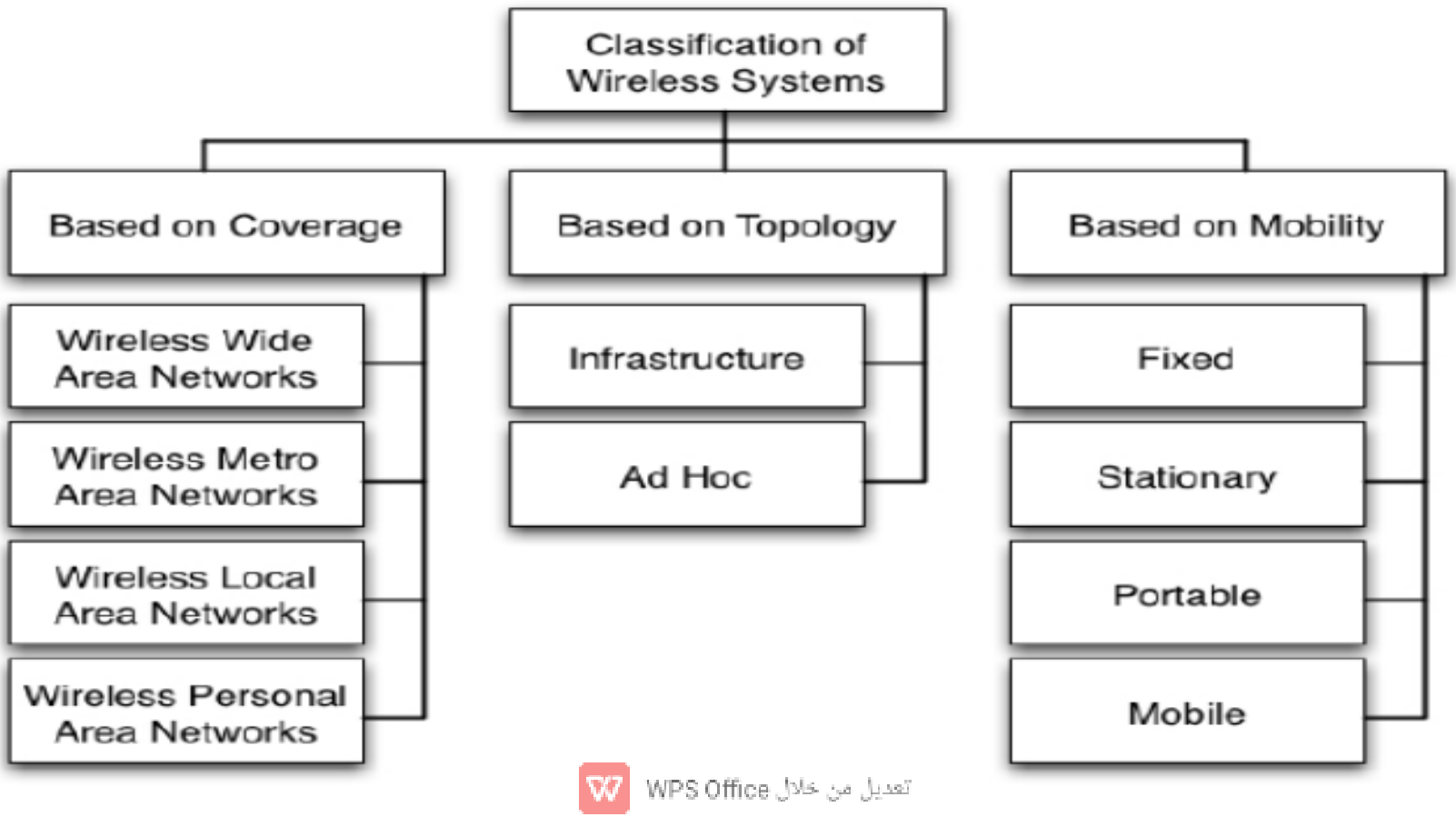
- Examples:
  - Cell phone, sonar, ground penetrating radar
  - Broadcast: (one way)
    - Radio, TV, pagers, satellite TV
  - Two Way:
    - Walkie talkie, cell phones, satellite phones, WiFi, Bluetooth

- Mobile
  - user can use network services while moving
    - w.r.t. point of attachment to network
    - Usually user is moving with his/her networking device
- Wireless
  - communications without using a wire
    - directly between two user nodes, or
    - (often) between user node and access point connected to the fixed (wired) network
- Networking
  - roughly, all architectures, protocols, and algorithms at the
    - link layer (mostly medium access control, MAC)
    - network layer, and
    - transport layer

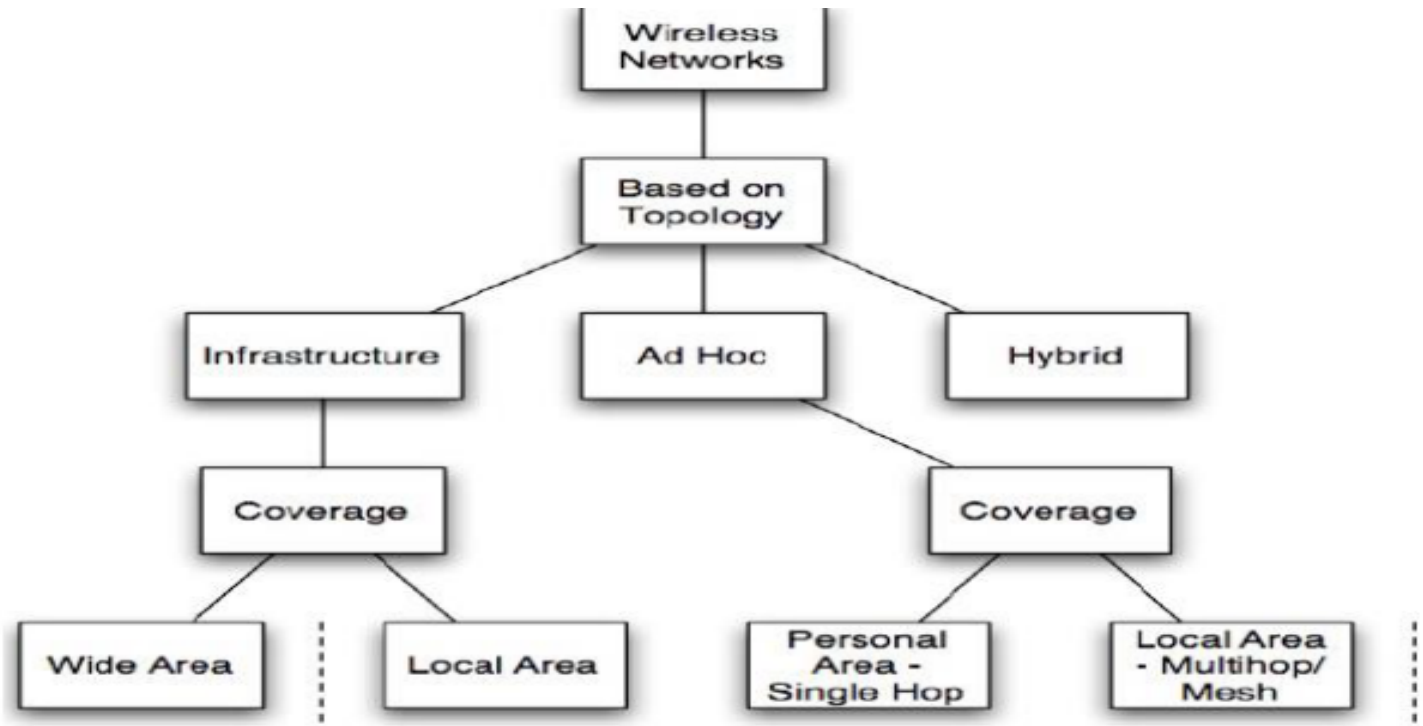
Comparison with Wired Network

- **Mobility** User move but what they want to access cannot move with them.
- **Ease and speed of deployment** Wireless infrastructure is easier to deploy and manage. In certain place it is even impossible to deploy a wired infrastructure.
- **Cost** Infrastructure is cheaper as there are only a few wires necessary. It is even possible to make direct connexions between buildings.
- **Flexibility** Wireless makes moving between offices a triviality. Extension is easy and most of the time not even necessary.
- Wireless networks allow remote operation
  - remote services
  - remote data operation

Classification of wireless network



Classification of wireless network based on Topology



Traditional Wired Networks