



Planning & Implementing WLANs

ดร. อนันต์ ผลเพิ่ม

Anan Phonphoem, Ph.D.
anan@cpe.ku.ac.th
Intelligent Wireless Network Group (IWING Lab)
<http://iwing.cpe.ku.ac.th>
Computer Engineering Department
Kasetsart University, Bangkok, Thailand

1



Planning

- Set Project Management Principles
- Planning a project
- Executing the project

2



Set Project Management Principles

- Clear goal / activities / communications
- Reduction of risks
- On time / within budget

3



Planning a project

- Define the project scope
- Develop a work plan / schedule
- Identify resources (team/materials)
- Develop a budget (labor/HW/SW/management)
- Define project operations (role/standard)
- Evaluation risks (cause of risks → adjust)

4



Executing the project

- Kick-off meeting (review project plan)
- Status check
- Technical meeting
- Progress report

5



Define WLAN requirements

- User profile & interface
- Functional (expected)
- Application
- Information Flow
- Performance (Reliability/Availability/BW/Delay)
- System Interface
- Environmental
- Department support
- Regulation (RF)
- Mobility
- Security
- Budget
- Schedule

6



Implementing a WLAN

- Design a WLAN
- Prepare for operational support
- Installation

7



Design Phase

- Define network elements
- Select products
- Site survey
- Verify the design
- Document the design
- Procure components

8



Defining Network Elements

- Identify the network elements
 - SW (Application / Communication)
 - OS
 - LAN /WAN (media / backbone)
 - Wireless connection (media / data rate)
 - Addressing
 - Network management
- Determining requirements
 - Choose standard (mature) technologies

9



Selecting Products

- Functionality
- Availability
- Support
- Price
- Standard compliance

10



Site Survey

- Determine coverage area (Cell)
- Determine number of cells needed
- Determine the Access Point location

11



Environmental Consideration

- Environment characteristics
 - Completed Open (empty floor, no desk)
 - Semi-Open (partitioning area)
 - Closed (Blocked room, high wall)
- Barriers
 - RF penetration
 - Attenuations

12

RF Barriers

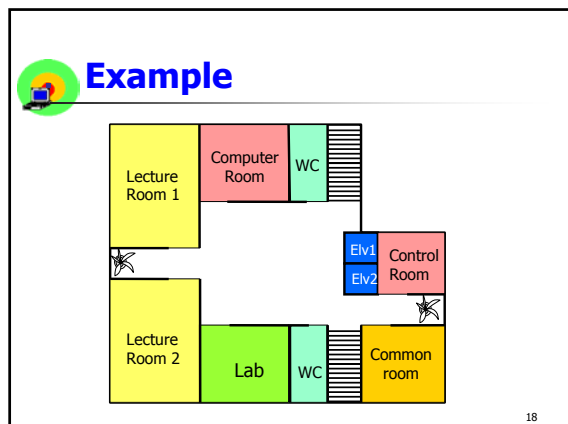
RF Barrier	Attenuation	Example
Air	minimum	
Wood	Low	Partitions
Plaster	Low	Office partitions
Synthetic Material	Low	Office partitions
Glass	Low	Windows
Water	Medium	Damp wood, aquarium
Bricks	Medium	Walls
Marble	Medium	Walls
Paper	High	Paper rolls
Concrete	High	Floors / Walls
Metal	Very High	Desk / partitions / elevator

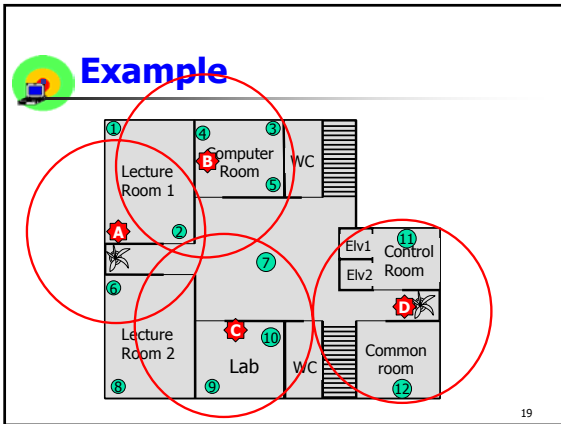
- ### Conducting Site Survey
- Preparation Phase
 - Execution Phase
 - Post survey Phase

- ### Preparation Phase
- Contact the authorized person
 - Blueprint / Floor plan
 - Access point / notebook / wireless card
 - Power cord extension / Walkie-Talkie

- ### Execution Phase
- Verify the blueprint
 - Mark permanent user locations
 - Mark permanent roaming area
 - Identify obstacles / interference sources
 - Identify preliminary of AP
 - Test and Record signal strength of selected locations
 - Adjust AP location

- ### Post Survey Phase
- Summarize the updated floor plan
 - Summarize locations of AP
 - Summarize / Draw the coverage area
 - Note on restrictions and suggestions





Example

AP	Pos	Com. Quality	Note
A	1		
	2		
	6		
B	1		
	2		
	3		
	4		
	5		
C	6		
	7		
	8		
	9		
	10		

20

Example

AP	Pos	Com. Quality	Note
A	1	Poor	
	2	V.good	
	6	Fair	
B	1	Poor	
	2	Poor	
	3	Good	
	4	V.good	
	5	Poor	
C	6	Poor	
	7	Poor	Near microwave oven
	8	Poor	
	9	Good	
	10	V.Good	

21

- ### Design Phase
- Define network elements
 - Select products
 - Site survey
 - Verify the design
 - Document the design
 - Procure components
- 22

- ### Implementing a WLAN
- Design a WLAN
 - Prepare for operational support
 - Training / Helpdesk
 - Admin / network monitoring
 - Installation
- 23

- ### Implementing a WLAN
- Design a WLAN
 - Prepare for operational support
 - Installation
 - Storage
 - HW Installation / power outlet
 - network connection point / wiring
 - testing
- 24