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# Mobile-Controlled Handover in Wireless LAN

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## Outline

- Motivation, Goal
  - Basic Ideas
  - Requirements & Solution
  - Concept
  - Application
  - Conclusion
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## Motivation

- Mobility support on the
    - Link layer by IEEE 802.11
    - Network layer by Mobile IP
  - Mobile IP implementations follow the behavior of the WLAN hardware causing
    - Unwanted and unpredictable results
  - QoS applications rely on well timed transfer of network management information
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## Goal

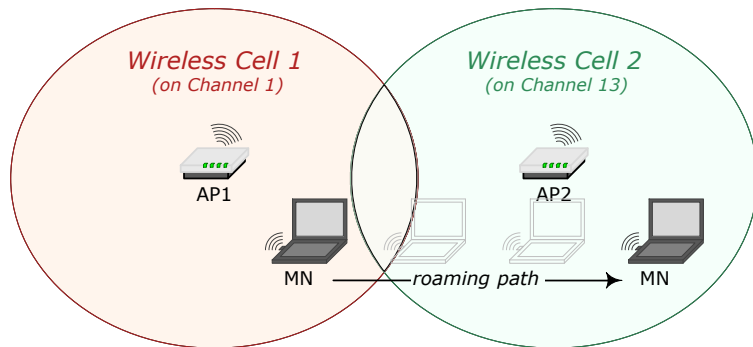
- Improve handover latency for QoS applications (DS bandwidth broker)
    - Allow synchronization between link and network layer handover process
    - Enable in time mapping of flows
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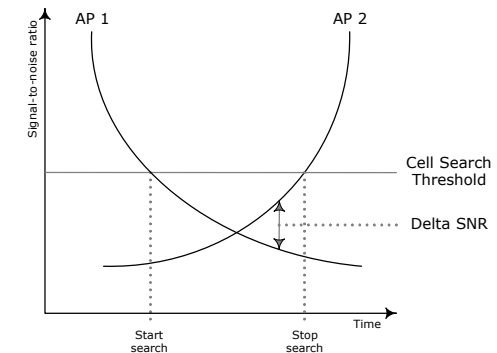
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## Basic Ideas (1)



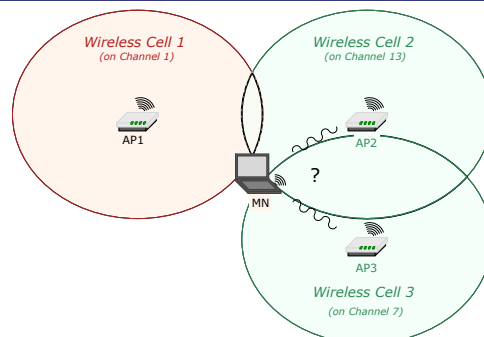
- Continuously monitor signal quality as movement indicator of the MN

## Basic Ideas (2)



- Alert concerned application upon falling below thresholds
  - Searching for a new cell

## Basic Ideas (3)



- Let application decide about time and destination of the handover
  - When to conduct a handover
  - To which AP to connect to

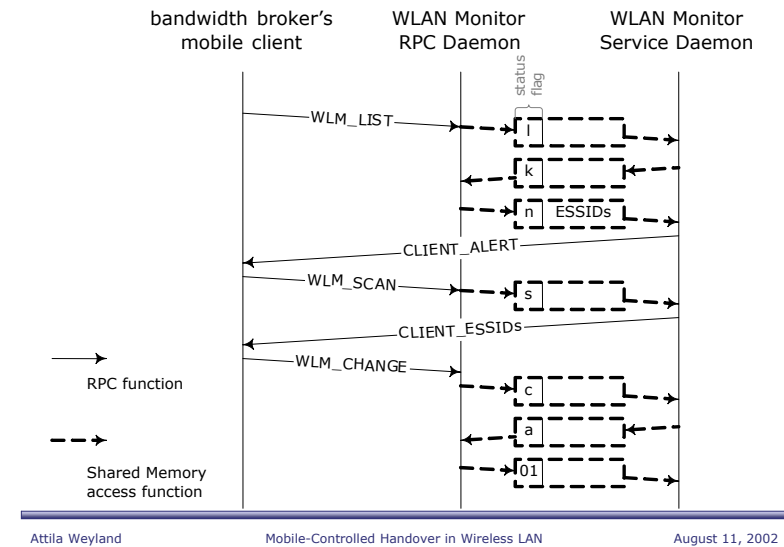
## Requirements & Solution

- Access to WLAN hardware
  - WLAN hardware Linux drivers (weak)
- Specification of thresholds
  - Measurements and validation
- Communication interface
  - RPC

## Concept - Assumptions

- To each AP a unique wireless cell name (i.e. ESSID) must be assigned (unpredictable firmware behavior)
- Switching ESSIDs on the MN to force a handover and to gather signal quality (missing driver functionality)
- Upon program initialization and later on demand, it must be informed about surrounding APs by transferring their ESSIDs

## Concept Operation



## Application

- Forced delay of ca. 200 ms between switching ESSIDs needed
  - Very long scan process for areas with high AP density

## Conclusions

- Concept of control over handover process supports Fast Handover
- Already existing information is used (SNR)
  - No extensions to Mobile IP necessary
- Slow scan process
- Lucent's driver reverse engineered
  - Original concept becomes feasible