

Reference Software Architectures for Mobile Computing

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Lesson Outline

- Future applications
- Nokia Mobile Internet Technical Architecture
- Wireless World Research Forum Reference Architecture
- Kimmo's Architectural Framework

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Software Architecture

- **Fundamental Challenge:**
 - To get the software architecture right:
 - Not too detailed: prevents innovation
 - Not too summary: interoperability nightmare
 - Conceptually sound
- **Targets:**
 - long life time (+5 years)
 - modularity allowing exchanges
 - any block of software/hardware can be replaced
 - new “hardware” technologies can be incorporated
 - clarify thinking: architecture is a design tool
 - not to mix apples and oranges

Future Mobile Applications

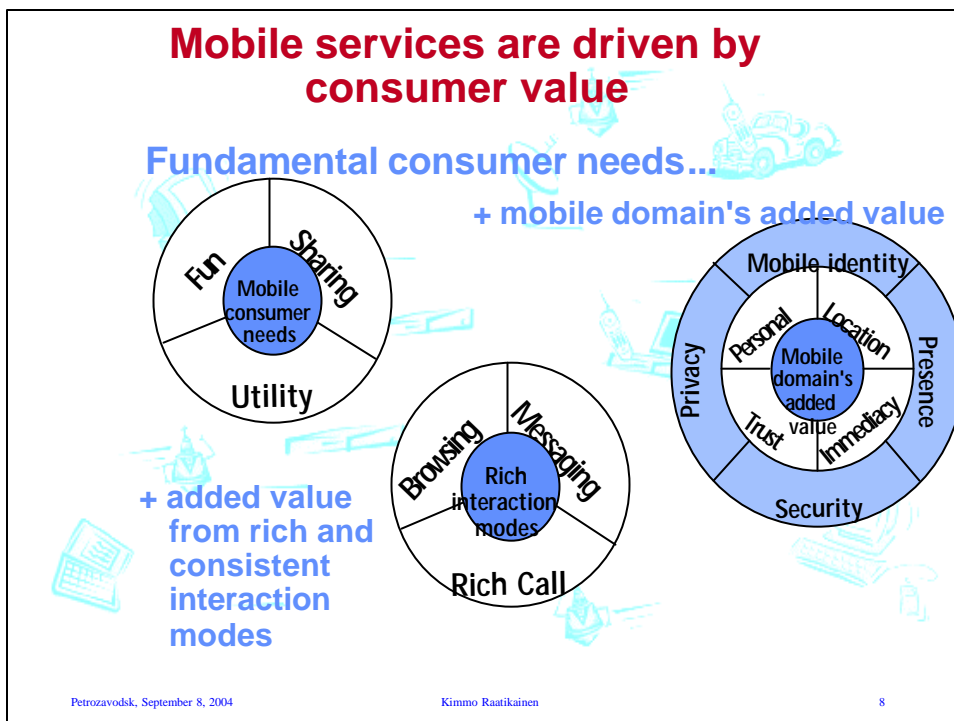
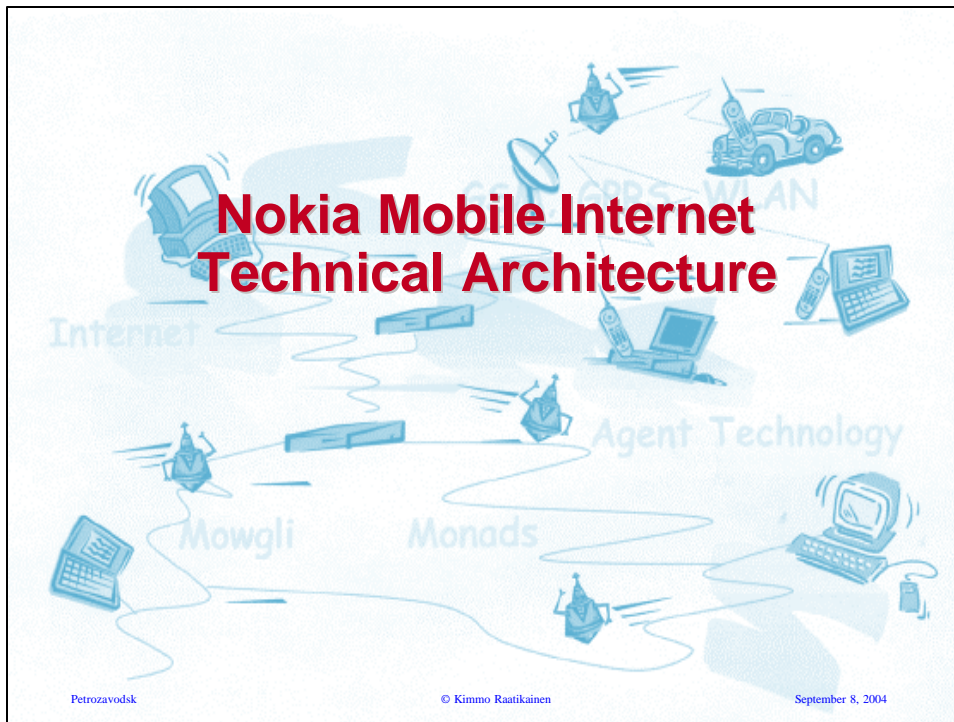
- **communication characteristics**
 - The most significant feature will be diversity
 - All kinds of applications will be in use.
 - QoS requirements and communication patterns will be numerous
 - Some applications will also adjust their behaviour according to the properties of connectivity
 - Future mobile terminals will have a few applications simultaneously active.
 - Some terminals will also be able to use different access technologies either simultaneously or one at a time.

Future Mobile Applications

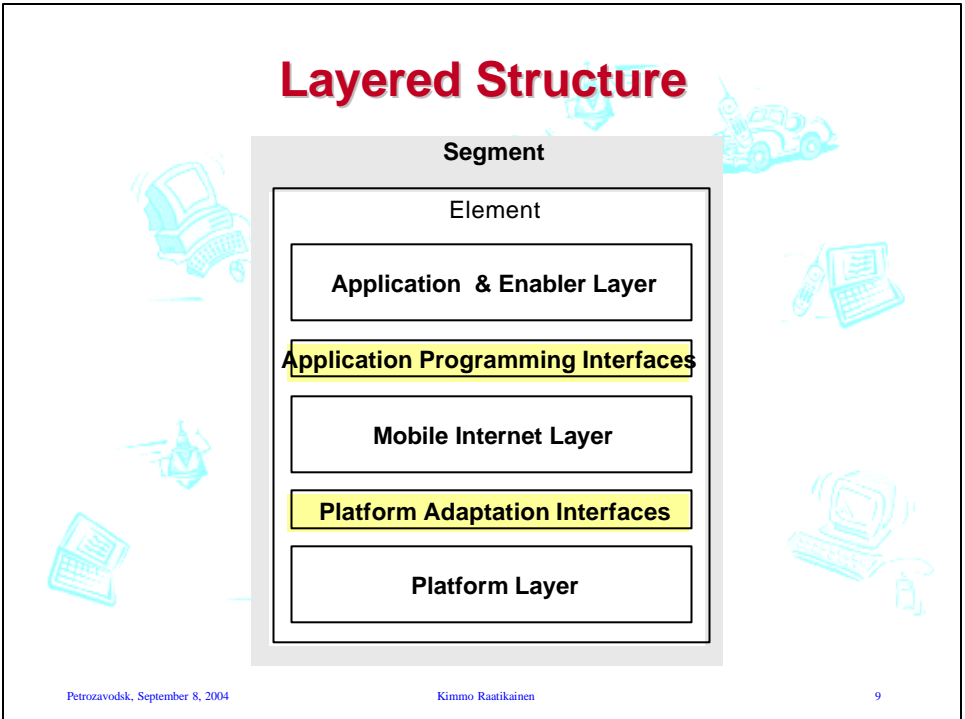
- Communication types:
 - Human end-user
 - Messaging
 - Interactive content retrieval
 - Rich call
 - Machine-to-machine
 - Control and command
 - Management

Functional Requirements

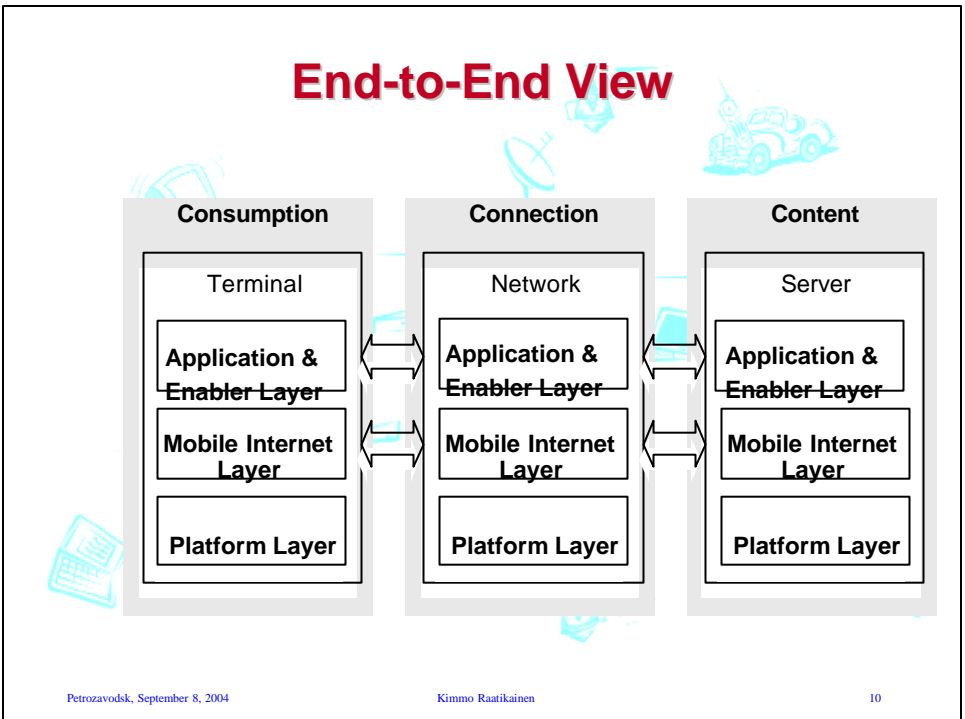
- Adaptability
- Efficient wireless communication
- Reconfigurable end-user systems
- Context-awareness
- Personalization
- Open standards



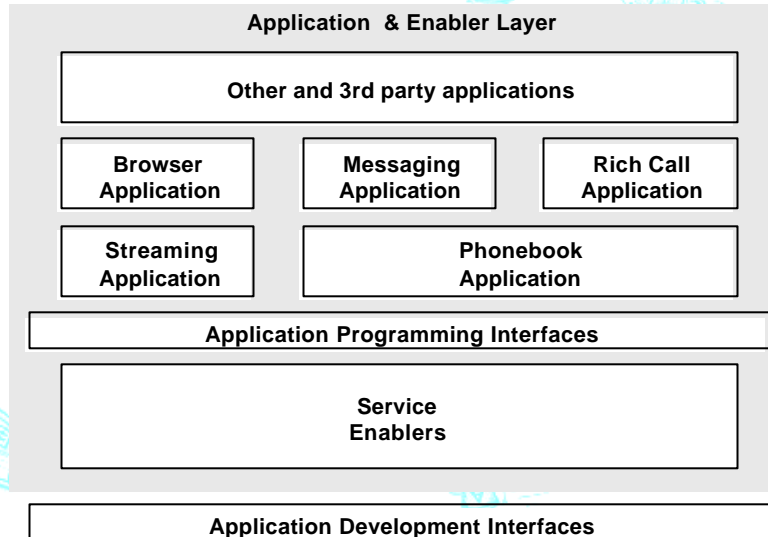
Layered Structure



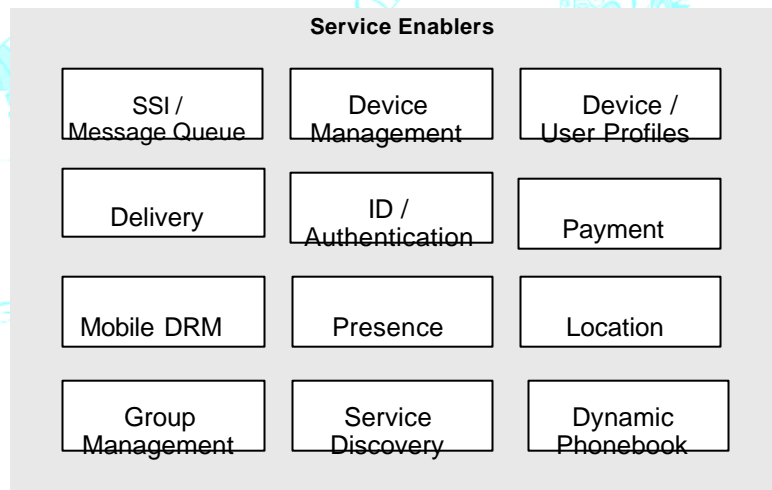
End-to-End View



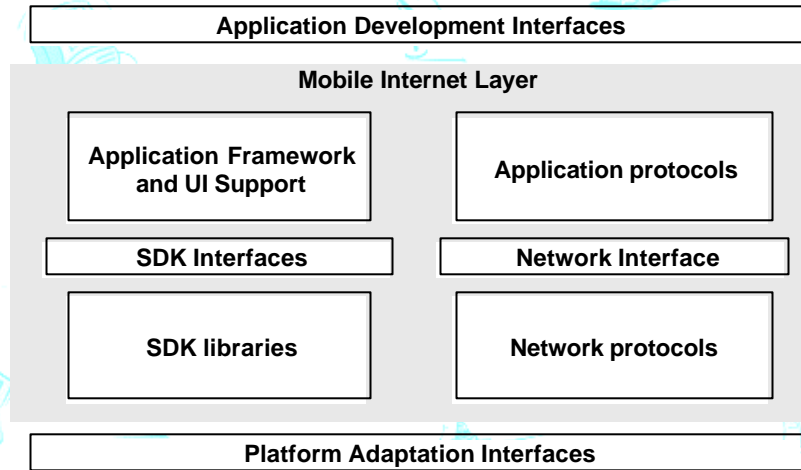
Application & Enabler Layer



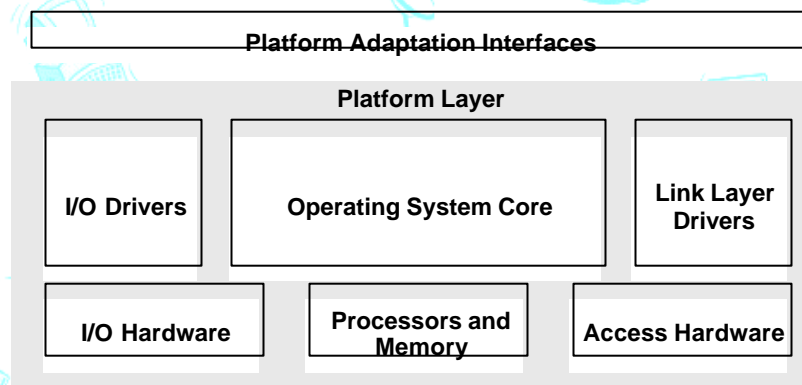
Service Enablers



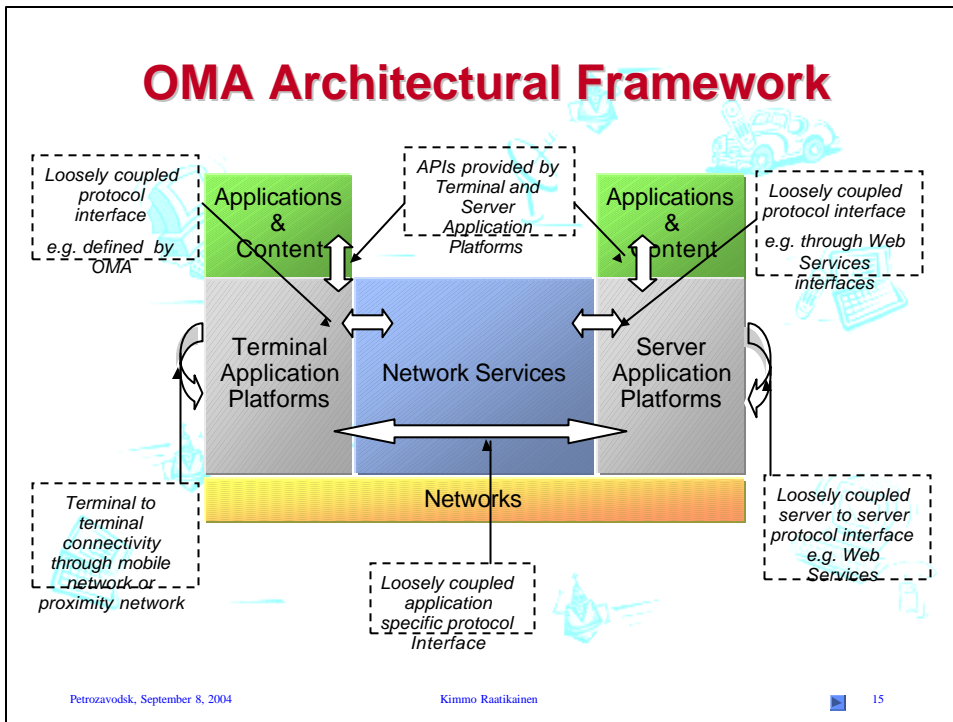
Mobile Internet Layer



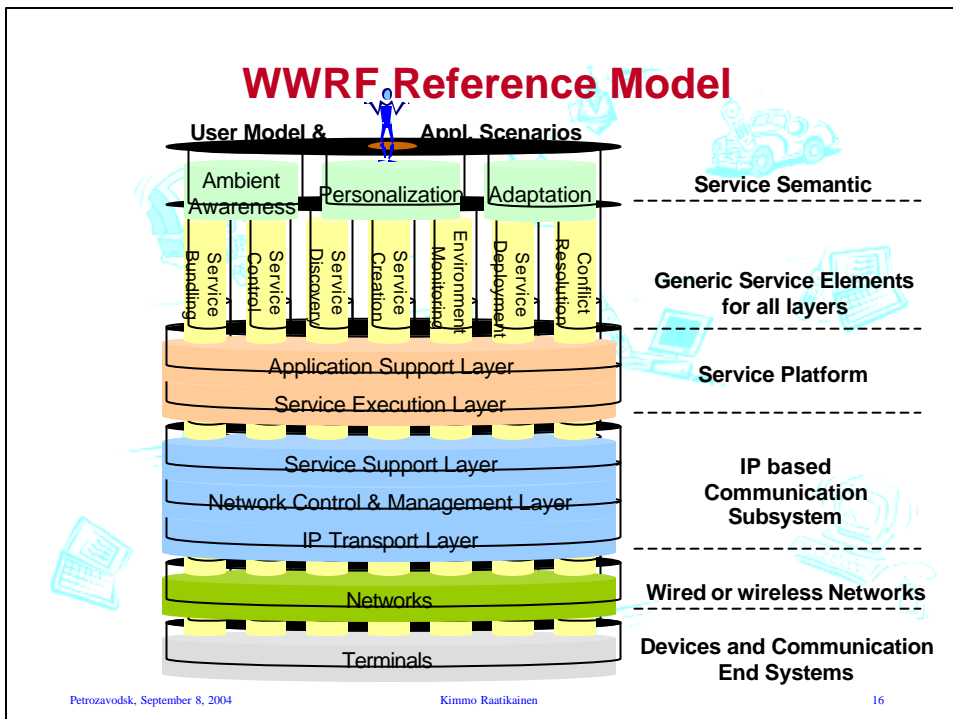
Platform Layer



OMA Architectural Framework

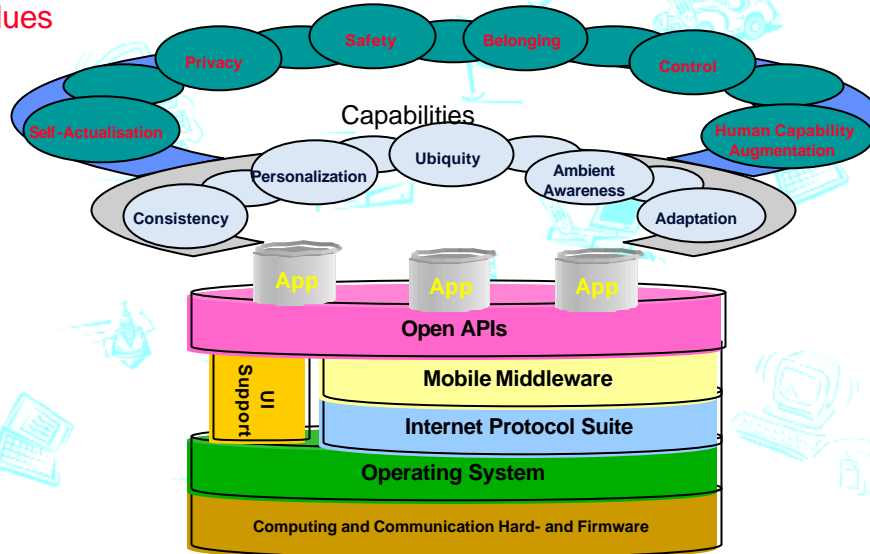


WWRF Reference Model



Kimmo's Reference Model

Values

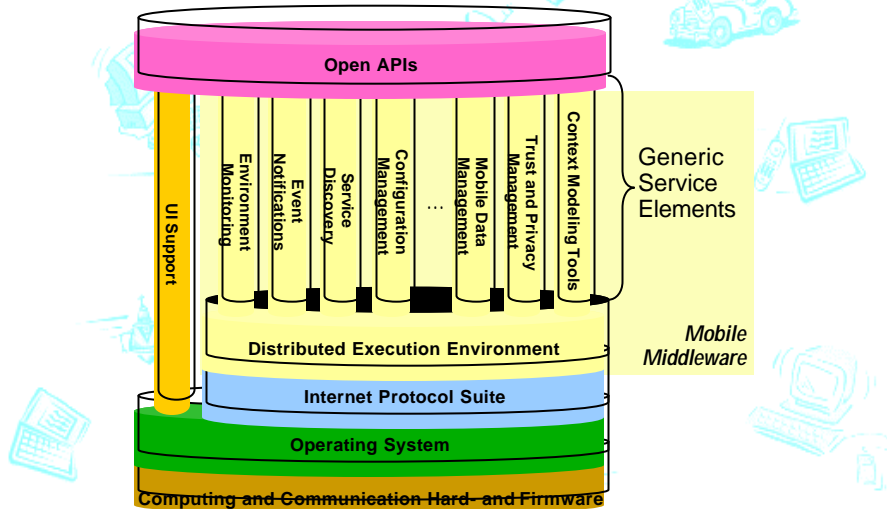


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Mobile Middleware

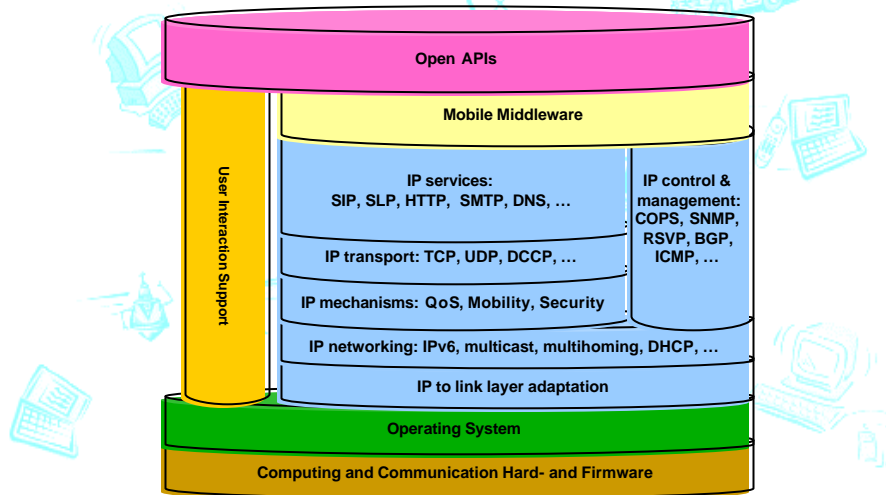


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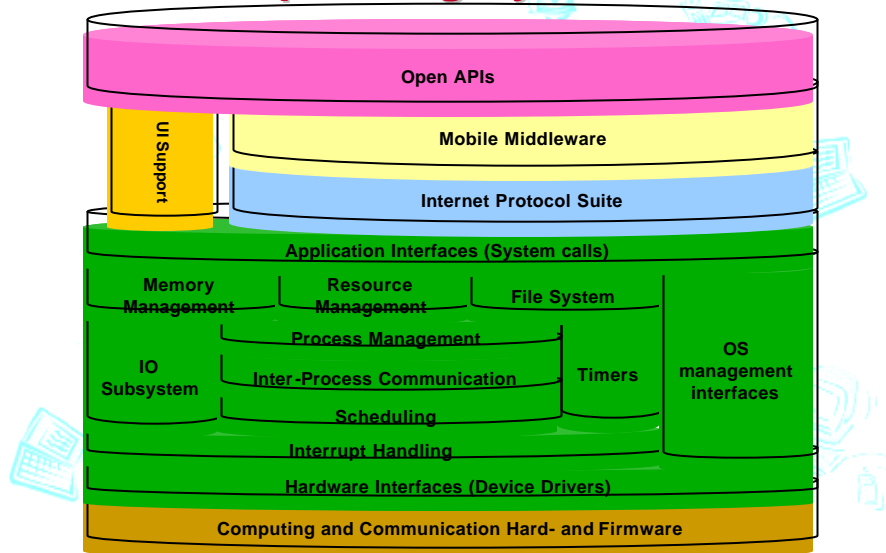
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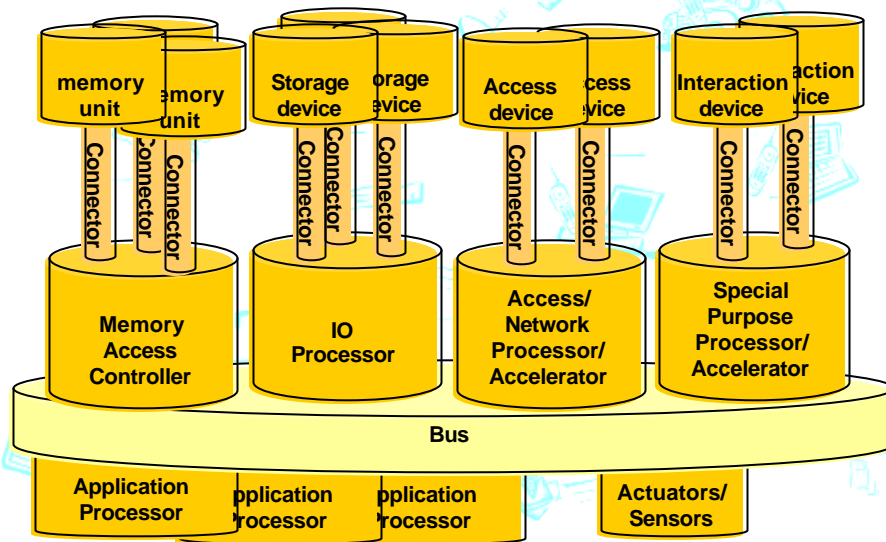
Internet Protocol Suite



Operating System



Hardware – View 1

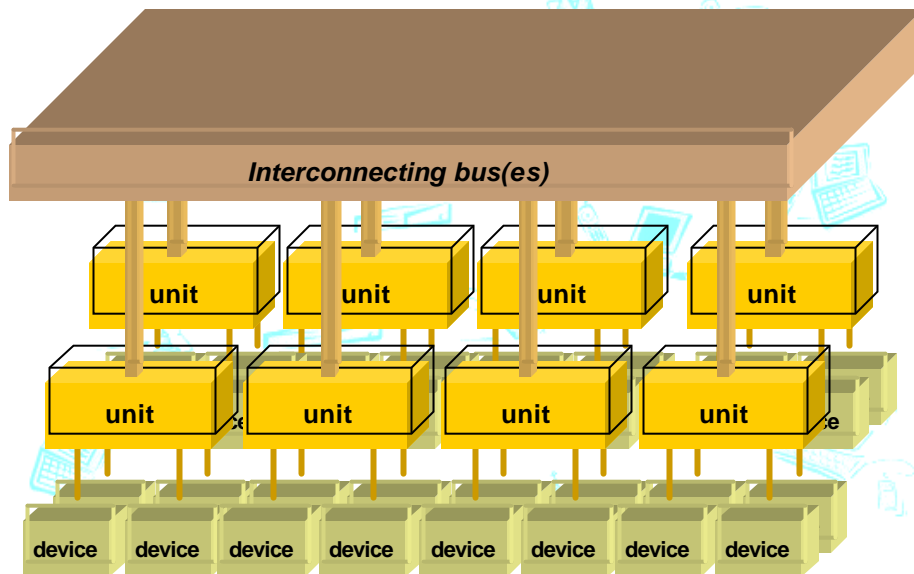


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Hardware – View 2



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Implementation View

