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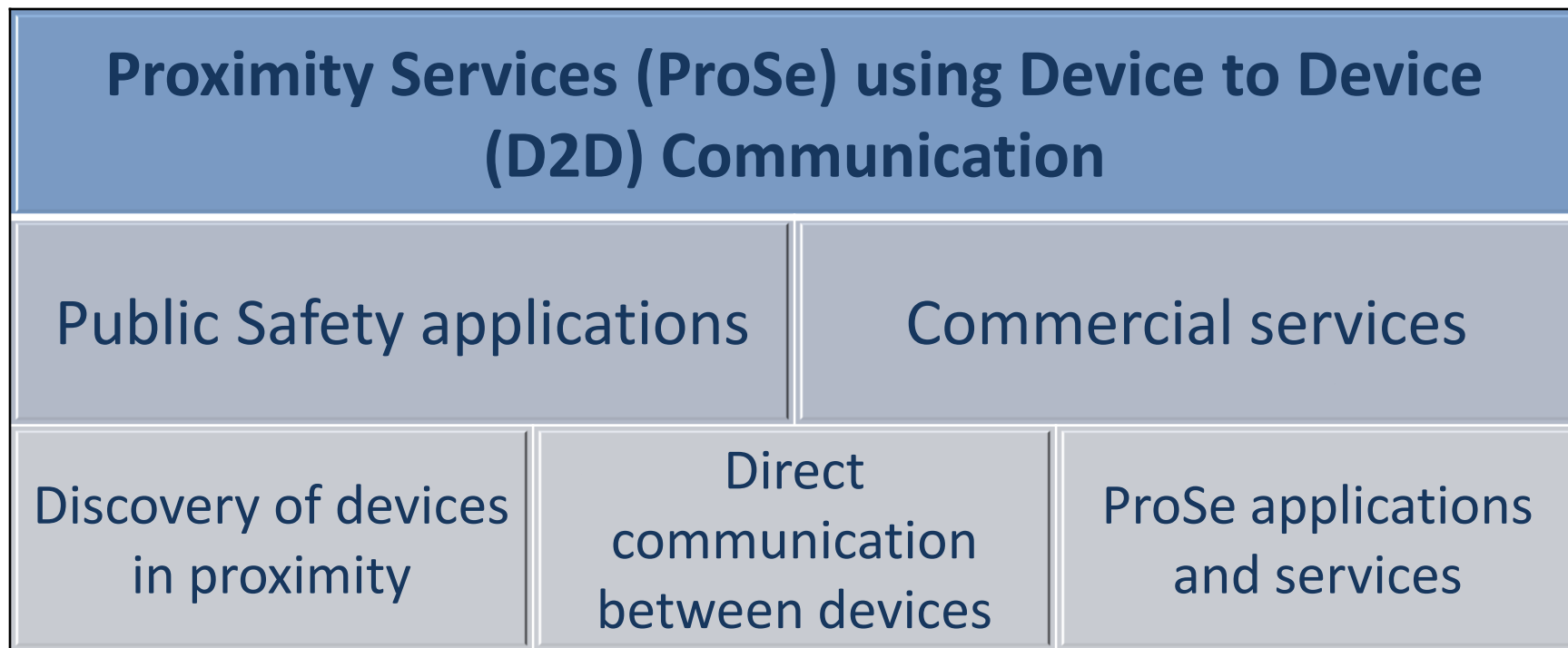13-14th March 2014 • New Delhi, INDIA

IN THE FRAMEWORK OF

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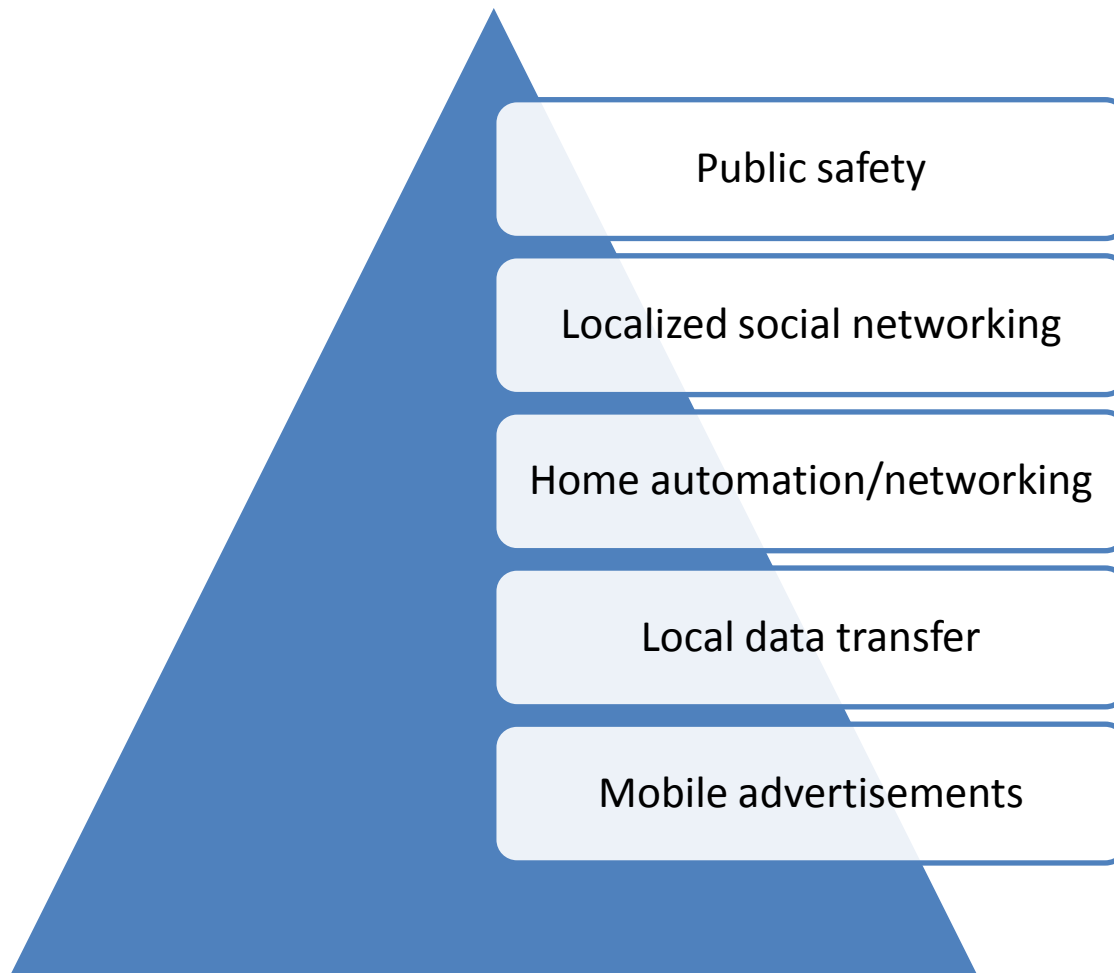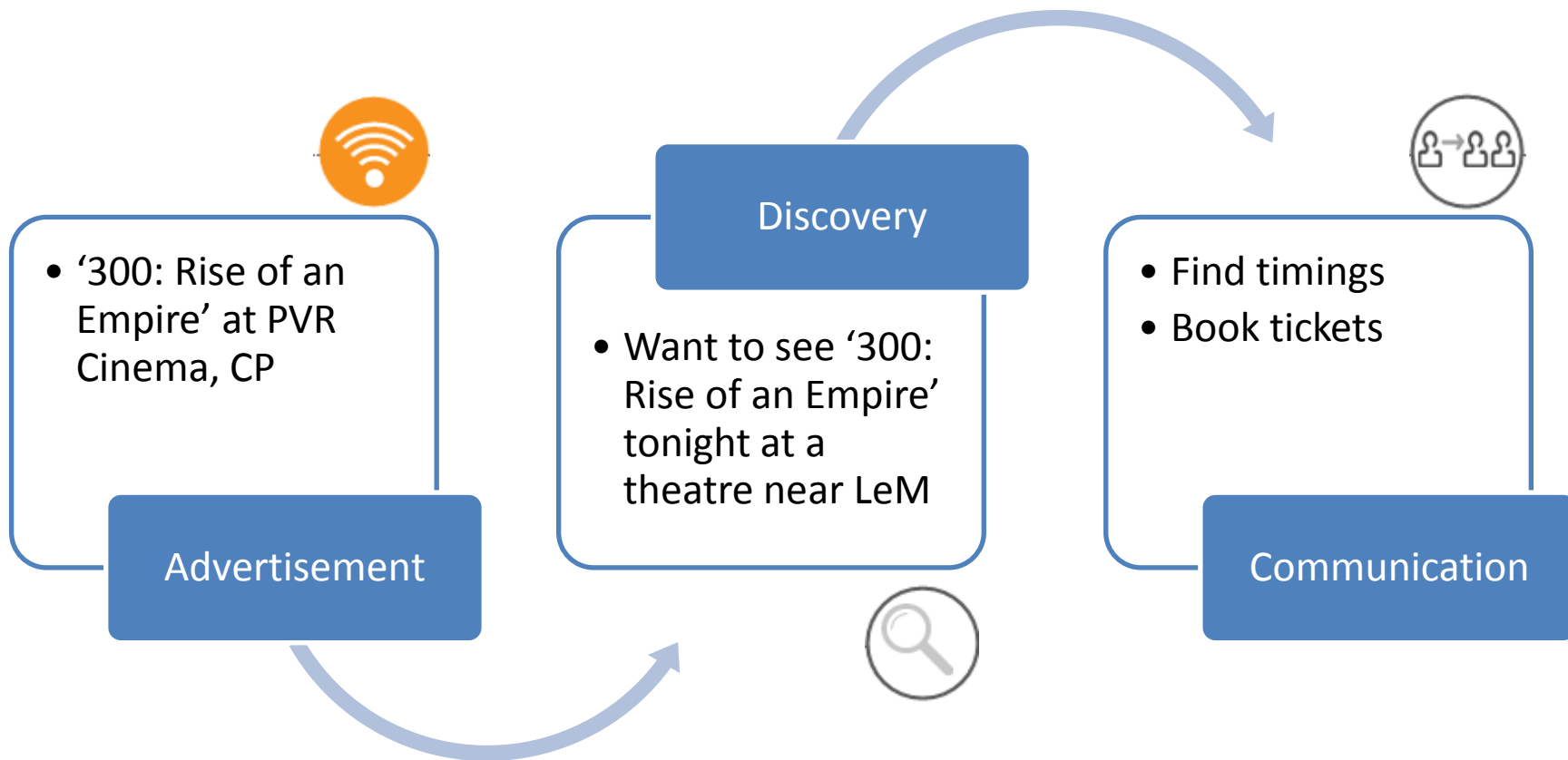http://eustandards.in/

Proximity Services in LTE Networks

Presented by Nadeem Akhtar
Centre of Excellence in Wireless Technology (CEWiT)

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Proximity Services

Proximity Services (ProSe) using Device to Device (D2D) Communication		
Public Safety applications		Commercial services
Discovery of devices in proximity	Direct communication between devices	ProSe applications and services

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ProSe Applications

Public safety

Localized social networking

Home automation/networking

Local data transfer

Mobile advertisements

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ProSe Example

Advertisement
- '300: Rise of an Empire' at PVR Cinema, CP

Discovery
- Want to see '300: Rise of an Empire' tonight at a theatre near LeM

Communication
- Find timings
- Book tickets

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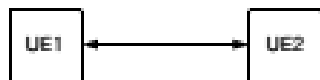CEWiT
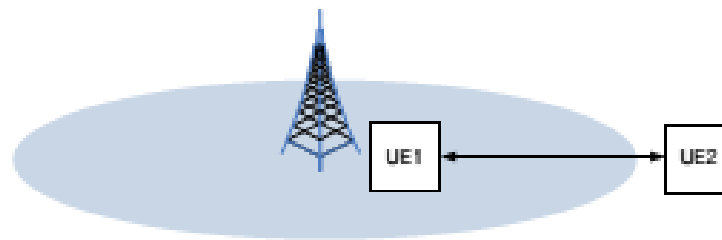INDIA

ProSe Reference Architecture Model
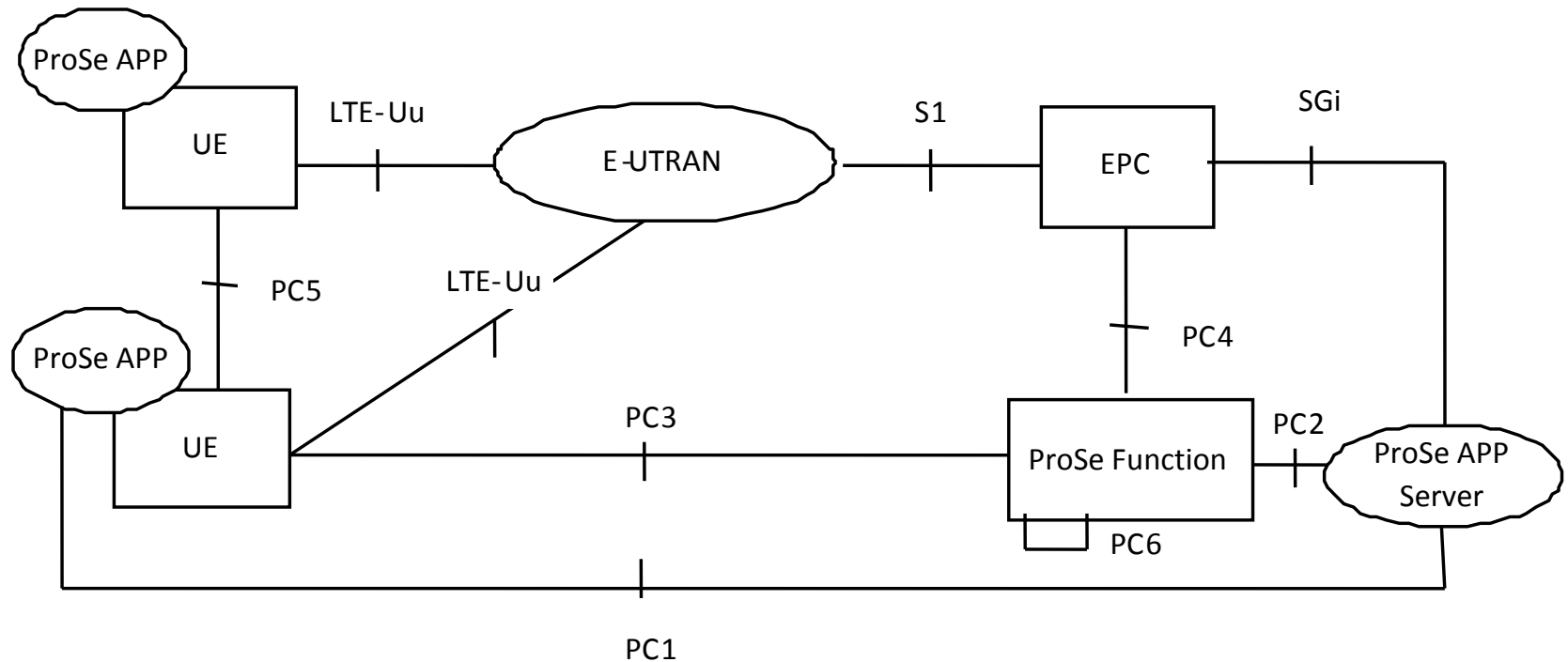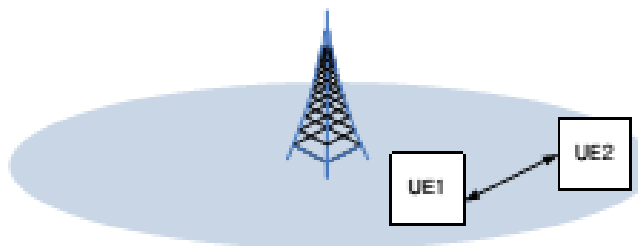

Source: 3GPP TR23.703
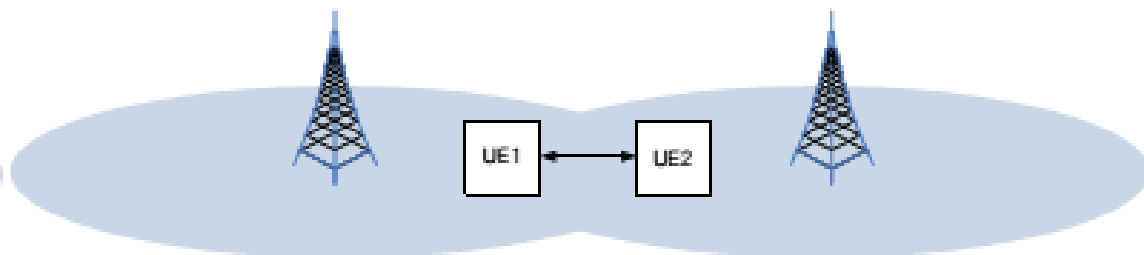
D2D Communication Scenarios

(a) Scenario 1A

(b) Scenario 1B

(c) Scenario 1C

(d) Scenario 1D

Source: 3GPP TR23.703

Radio Access Network Requirements

Potential large number of concurrently participating ProSe-enabled UEs

Minimization of negative impact on the ability of the operator to provide E-UTRAN services

Continuous network control and adaptive resource allocation between ProSe and other E-UTRAN services

System capability of monitoring communication characteristics

Control, by Radio Access Network, of the radio resources associated with Prose E-UTRA Communication path

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D2D Communication

❖ D2D communication will use uplink spectrum (FDD) or uplink sub frames (TDD)

    ❖ D2D ProSe communications use SC-FDMA

❖ D2D ProSe UE operates in half-duplex mode

❖ Cellular and D2D transmissions are multiplexed using TDM from an individual UE perspective on a given carrier

❖ Modes of communication

    ❖ Unicast, Groupcast, Broadcast, Relay

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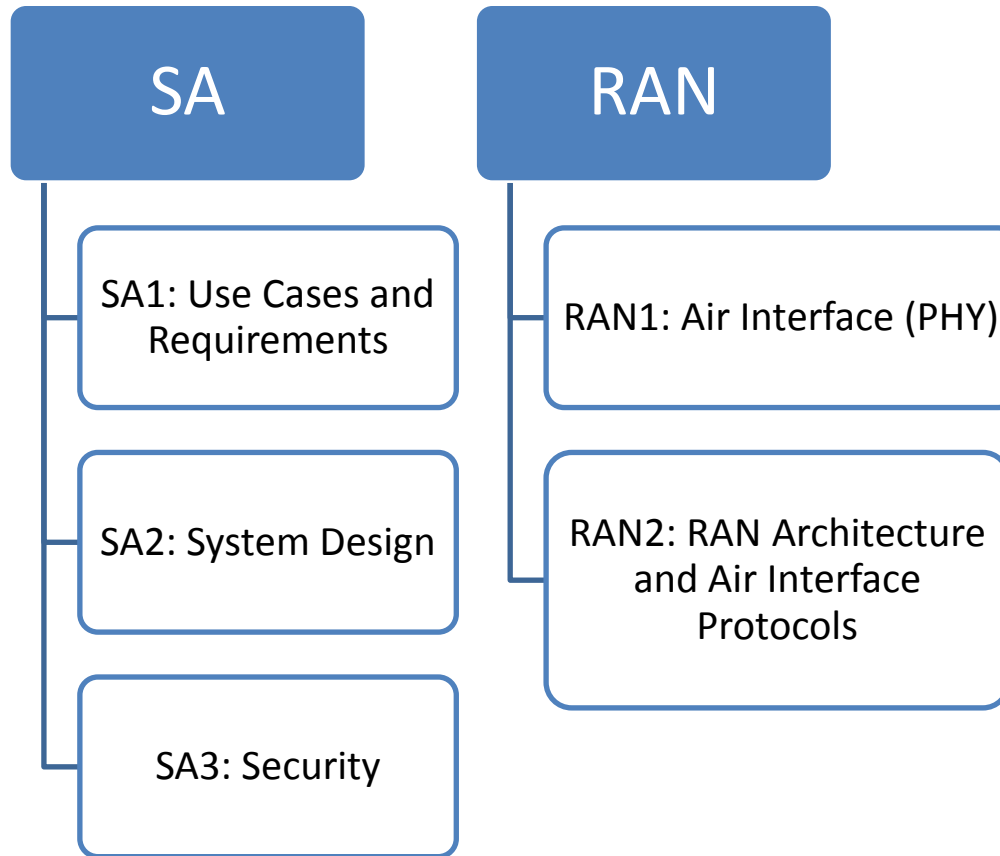13-14th March 2014 · New Delhi, INDIA

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Technical Challenges

❖ Synchronization

❖ Discovery

❖ Resource Allocation

❖ Co-existence

❖ Accounting and billing

❖ Lawful Interception

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D2D in 3GPP

SA

- SA1: Use Cases and Requirements
- SA2: System Design
- SA3: Security

RAN

- RAN1: Air Interface (PHY)
- RAN2: RAN Architecture and Air Interface Protocols

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Is D2D a 5G technology?

I don't know!

Do you?

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