WLAN in Disaster and Emergency Response - WIDER

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Ericsson Response

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Ericsson Response – our corporate social responsibility

- The Programme focus is on Disaster Response, Research and Development and Advocacy

- We use Volunteers (ERVs) and Equipment Modules (ERUs)

- We partner with Intergovernmental organizations and NGOs with Public and Private sector

WIDER - Background

- Currently, most organisations are installing their own communication infrastructure in disaster areas

- Organisations working within disaster and emergency response could benefit from a shared communication infrastructure

- Provide the same access to tools at the disaster site as in the head office

WIDER Overview

- WIDER – WLAN In Disaster and Emergency Response
- Vision

  create an easy to set up, reliable, secure, highly available and flexible system for essential communications services at a disaster site.
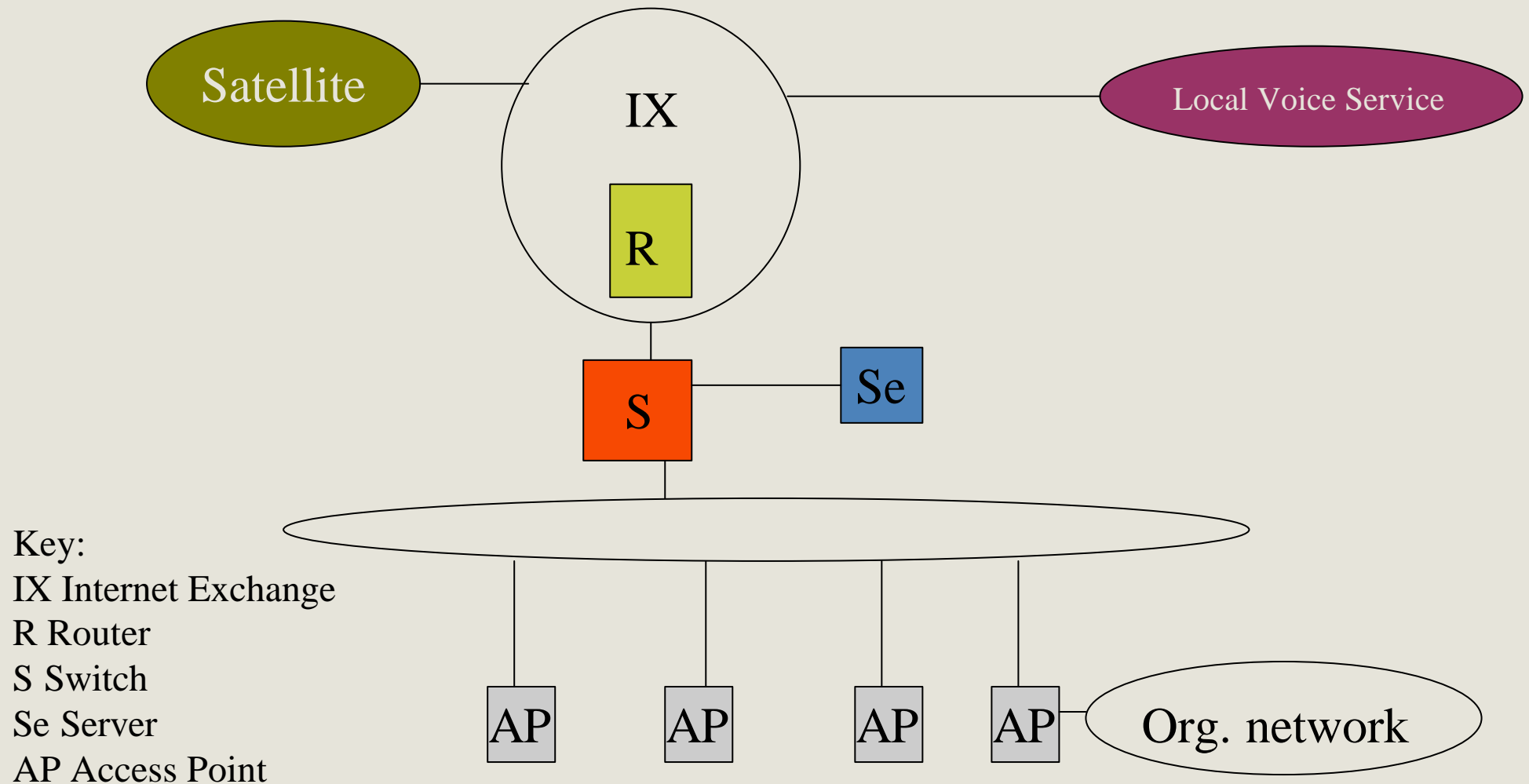
- Instantiation

  Design and implement an Ericsson Response Unit (ERU) that provides a home office data communication infrastructure to organizations in the field, enabling them to communicate with other organizations and the outside world in a cost effective manner.

WIDER Participants

- WIDER is a co-operation between Ericsson Response, KTH (Royal Institute of Technology), the private sector and international relief organisations.

- Ericsson provides a reference group of experts for technology and equipment.

- Organisations will provide a reality check of the system and assist with field trials

WIDER Technical Overview

Satellite

IX

Local Voice Service

R

S

Se

AP   AP   AP   AP

Org. network

Key:
IX Internet Exchange
R Router
S Switch
Se Server
AP Access Point

WIDER – 3 connection scenarios

- WLAN
- GSM (GPRS/UMTS)
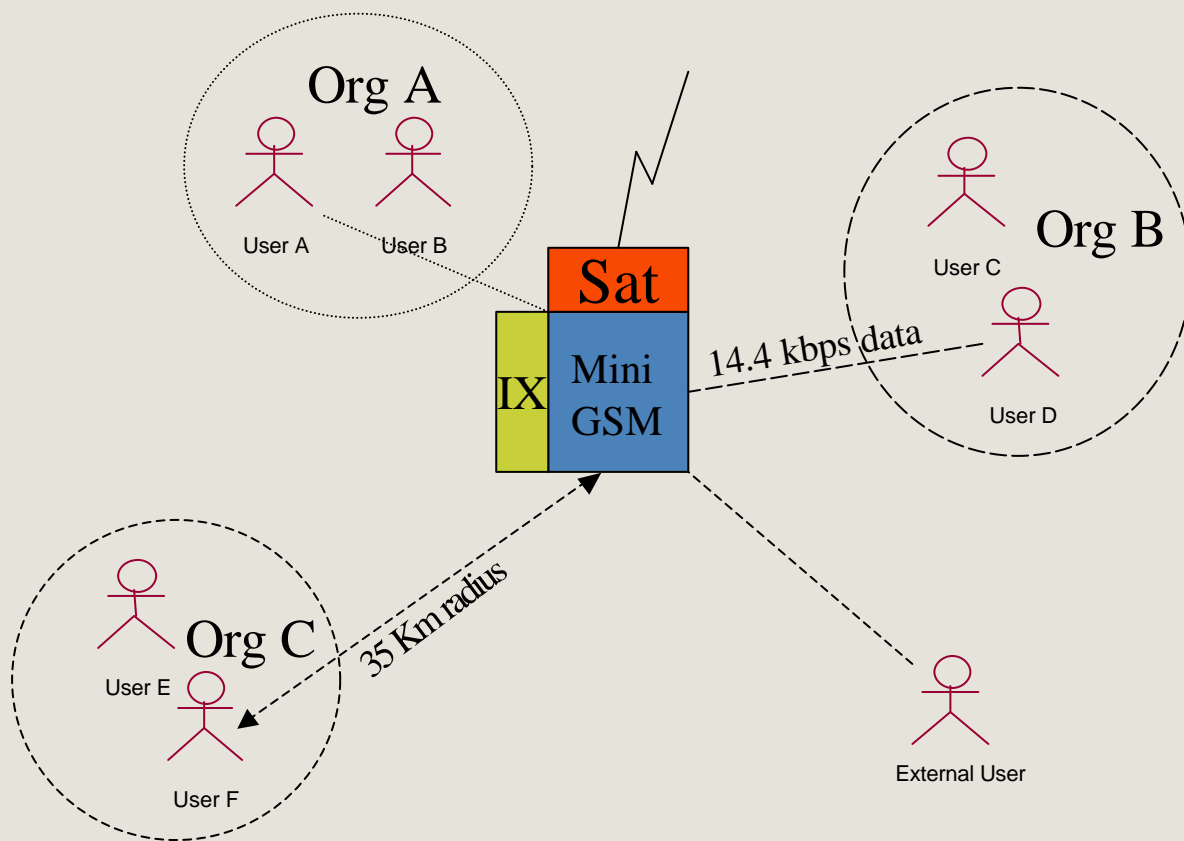- Microwave

ERICSSON

WLAN Hotspots

- WLAN as office connectivity tool inside the organisations
  - Fast to set up
  - Easy to maintain
- Every organisation can create their network independently from one another but that network is seen as an extension of the local infrastructure.
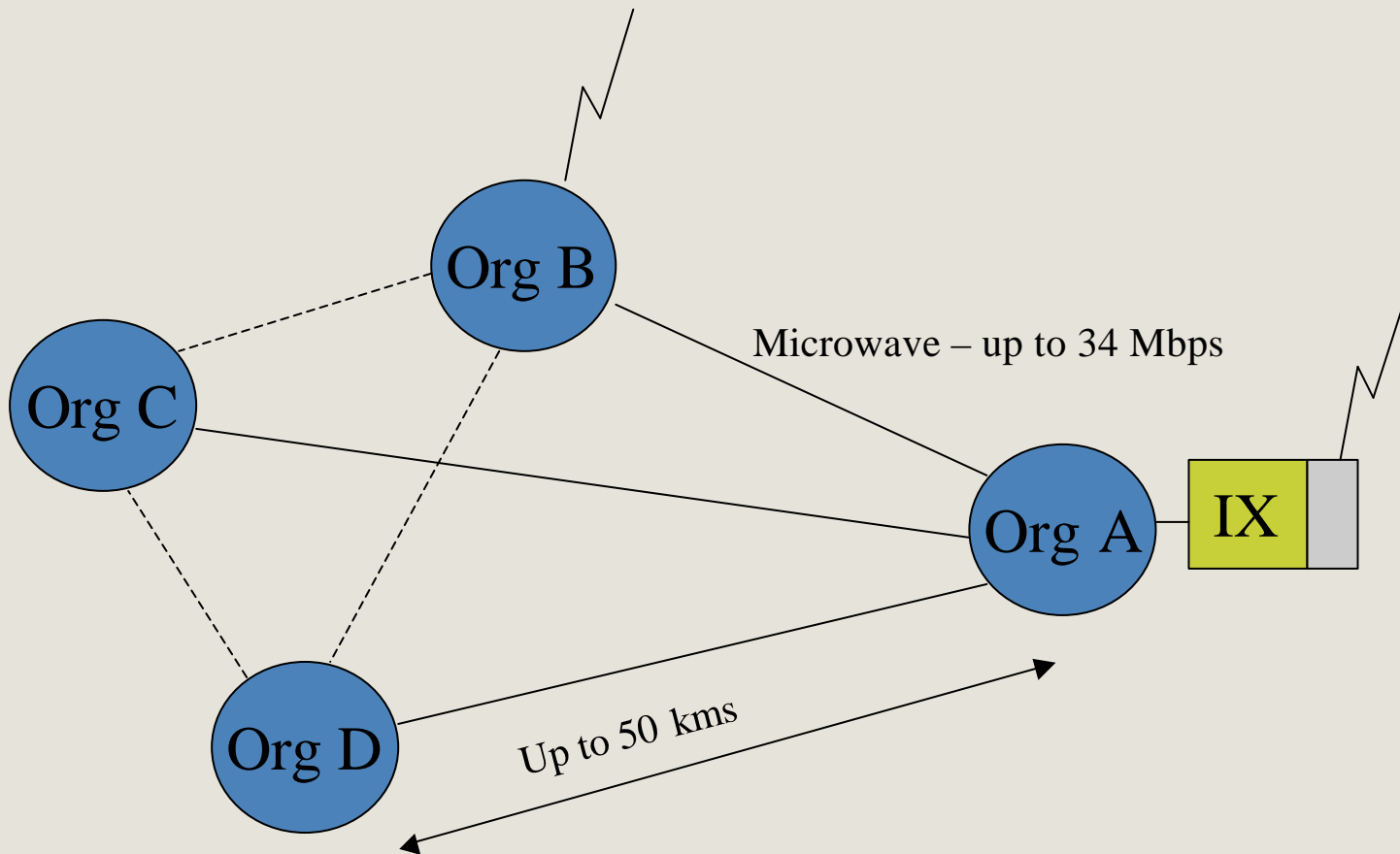- Up to 11 Mbps inside the organisational networks

ERICSSON
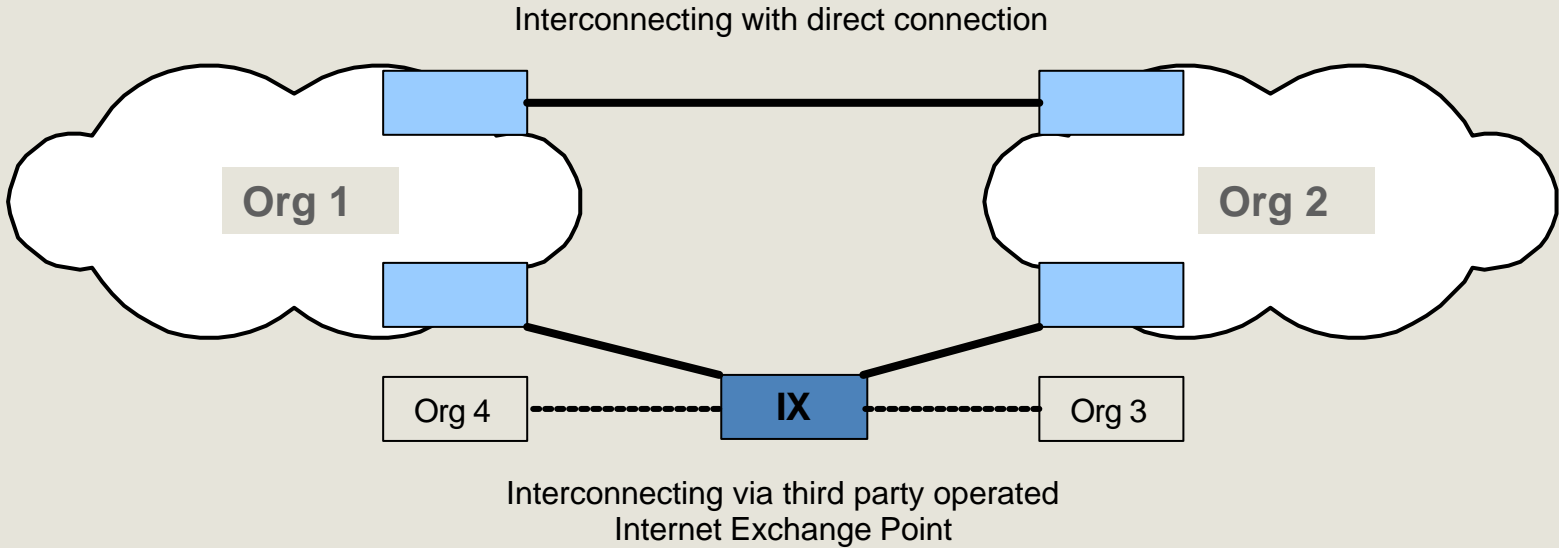
Scenario 1 - WLAN
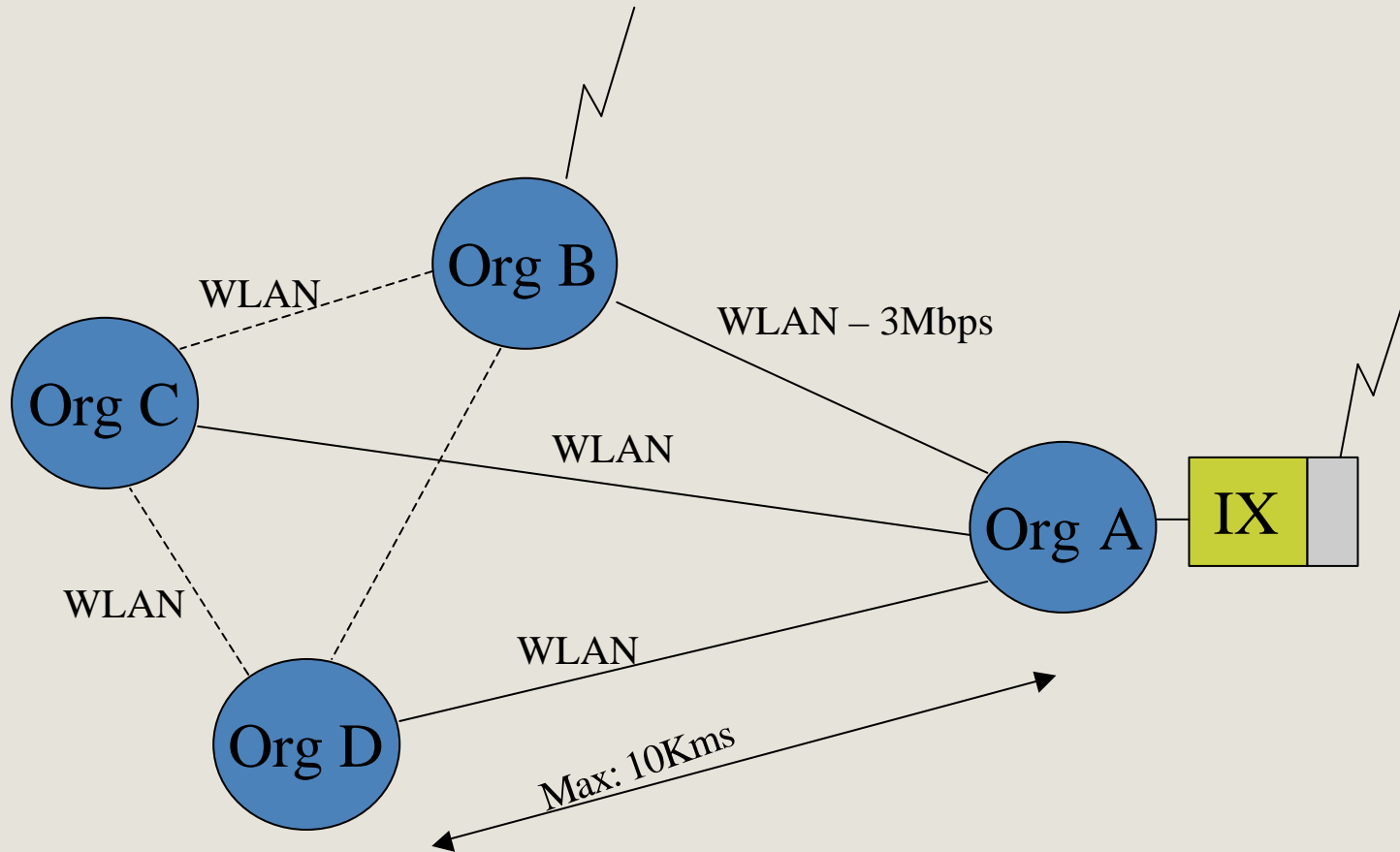
Scenario 2 – Mini GSM

Scenario 3 – Microwave technology

Org B

Org C

Microwave – up to 34 Mbps

Org A IX

Org D

Up to 50 kms

Internet eXchange - IX

- The use of an IX enables efficient interconnection between the Relief organisations
  - Bandwidth savings
  - Improved service quality
- Different general solutions when designing and IX:
  - *Layer 2 solution:*
    - *Switch as central traffic relaying device*
  - Layer 3 solution:
    - Router as central traffic relaying device

IX Example

Interconnecting with direct connection

Org 1　　Org 2

Org 4　　IX　　Org 3

Interconnecting via third party operated
Internet Exchange Point

Service Layer

- Connections to and downloads from systems like ReliefWeb and DMIS
- Policies on local level to prevent abuse of the satellite link
- Email, Web, VoIP demo, Maps, weather information
- Open section of network:
  - Bulletin boards
  - Press information
  - Security information
- Where applicable:
  - Connections to local emergency services eg Police/Army

External Links

- WIDER should have the flexibility to connect through the following technologies:
  - » VSAT
  - » Inmarsat
  - » Microwave
  - » Cable

- To :

  - » PSTN
  - » PLMN
  - » PABX
  - » ISP

Open Issues

- Connections to other private networks
- Priority handling of emergency traffic over, eg satellite link and public networks.
- Input from organisations with experience in disaster response regarding services that they would like to see on the network
- Packaging for emergency situations

Advantages & Disadvantages

Advantages

- Cost Efficiency:
  - WLAN
  - Local traffic prevented from traversing satellite connection
- Ease of installation
- Increased technical co-operation between Organisations
- Organisations can focus on "core business", rather than infrastructure
- COTS components

Disadvantages

- Shared infrastructure – one organisation will house the IX and main satellite link
- Billing mechanisms for shared infrastructure
- Temporary solution only

Evolution of WIDER

- Connect WIDER to PABX and private netw
- WIDER using QoS mechanisms availab IPv6
- Use of GPRS instead of GSM
- Use of UMTS networks - total coverage wherever the emergency crew are using up to 2 Mbps over mobile terminals

Abbreviations

- IX Internet eXchange
- WLAN Wireless Local Area Network (IEEE 802.11b)
- ERU: Ericsson Response Unit
- UMTS: Universal Mobile Telecommunications System
- GSM: Global System for Mobiles
- COTS: Commercially Off The Shelf
- GPRS: General Packet Radio Services
- DMIS: Disaster Management Information System
- ERV: Ericsson Response Volunteer
- QoS: Quality of Service

Thank You

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