ITU / BDT- COE workshop

Nairobi, Kenya,

7 – 11 October 2002

Network Planning

Lecture NP- 4.5

Specific Network Planning

BDT - COE workshop on Network Planning

Module 1: Introduction and Experiences in the Region

Module 2
Role of Network Planning in the current Telecom scenario

Module 3
Integrated Planning Process

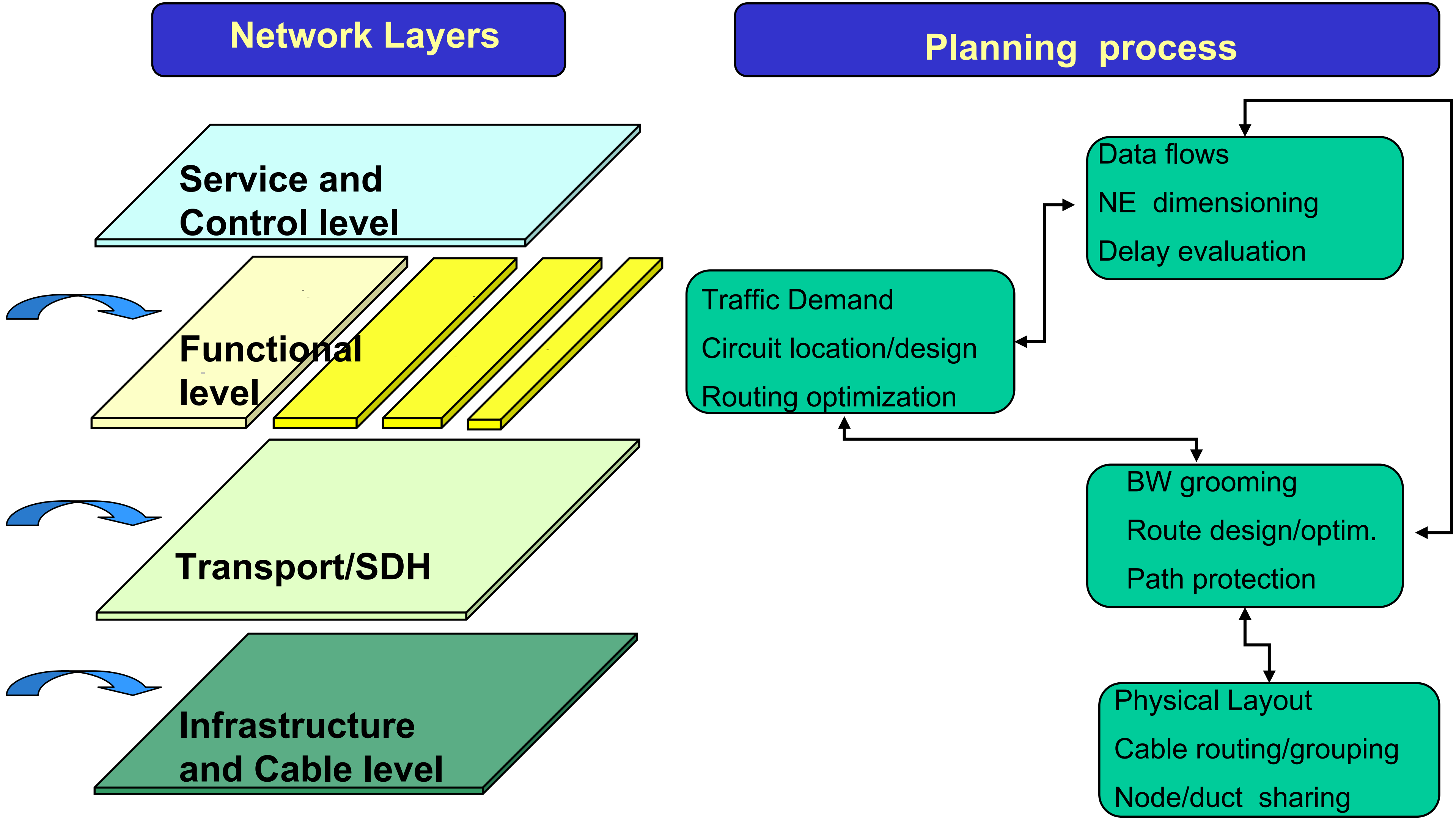
Module 4
Specific Network Planning per Layer

Module 5
Supporting Network Planning Tools

Content Chapter 4.5

- Examples of case studies
- Typical benefits from planning methods

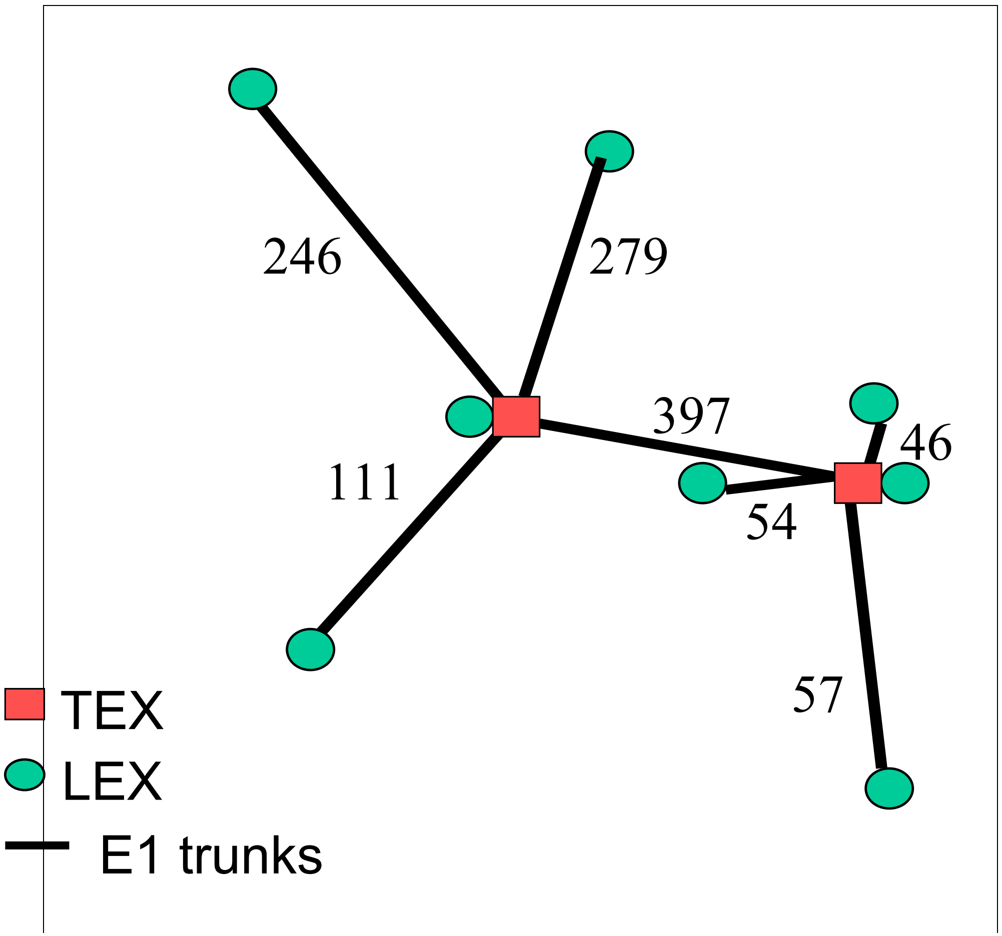
Planning Methodology: Multilayer planning sequence



Network Planning
Case study for number of nodes (A)

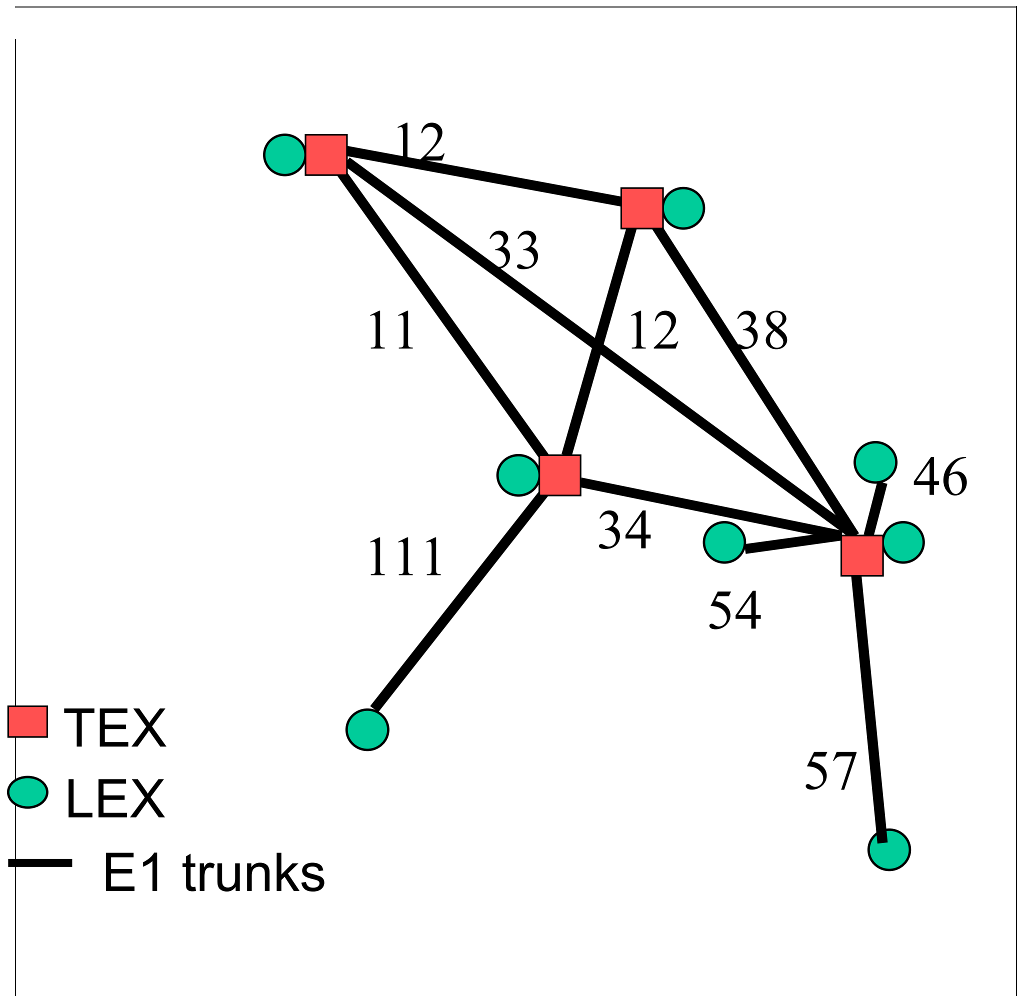
- Analysis of Network Architecture and related number of Nodes at core and access
  - Initial status
    - Medium size network with many hierarchical layers
    - Heterogeneous collection of systems
    - Routing scheme based on add-on per installation
  - Target
    - Modern consolidated network
    - Optimized hierarchy, routing and number of nodes
    - High call completion rate

Network Planning
Case study for Architecture



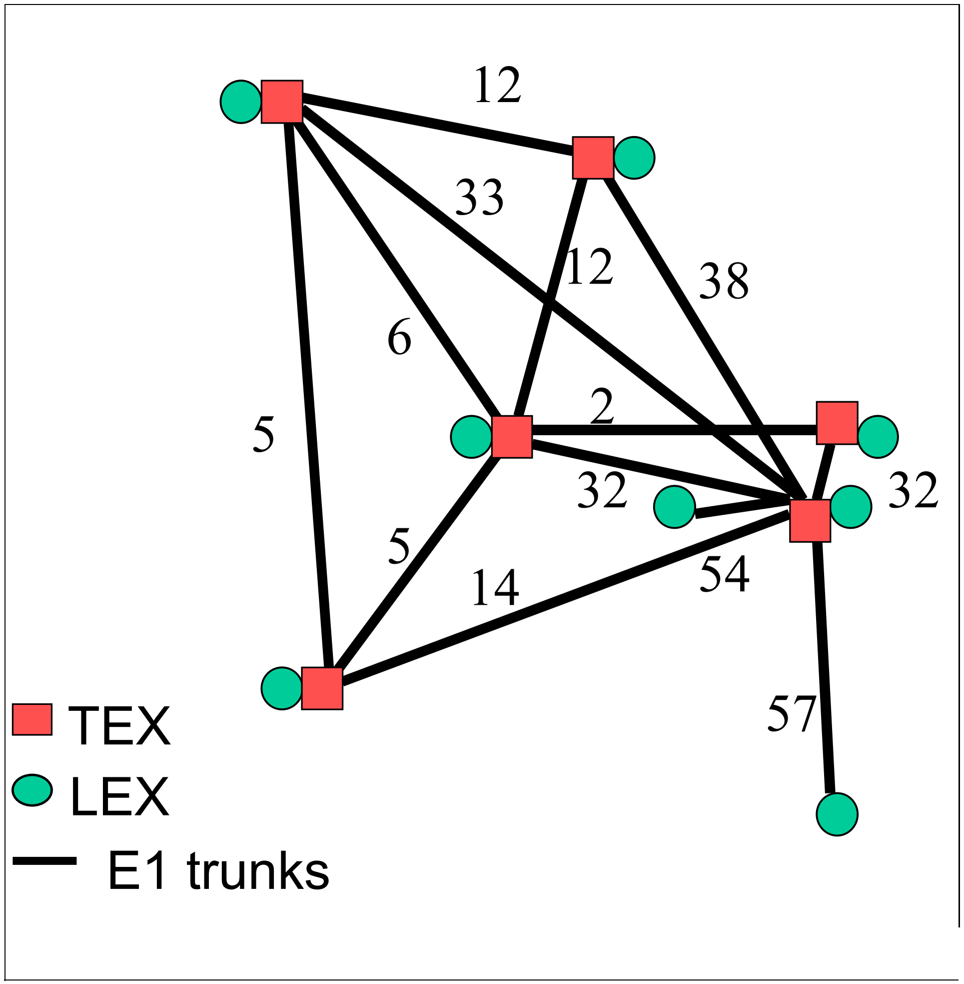
- **2 Transit Nodes (TEX)**
- 1190 E1 channels
- 415.440 E1-Km
- 56.6 monetary units
  - 40.4 transmission
  - 16.2 Switching

Network Planning
Case study forArchitecture



- **4 Transit Nodes (TEX)**
- 408 E1 channels
- 143.700 E1-Km
- 35.5 monetary units
  - 13.9 Transmission
  - 21.6 Switching

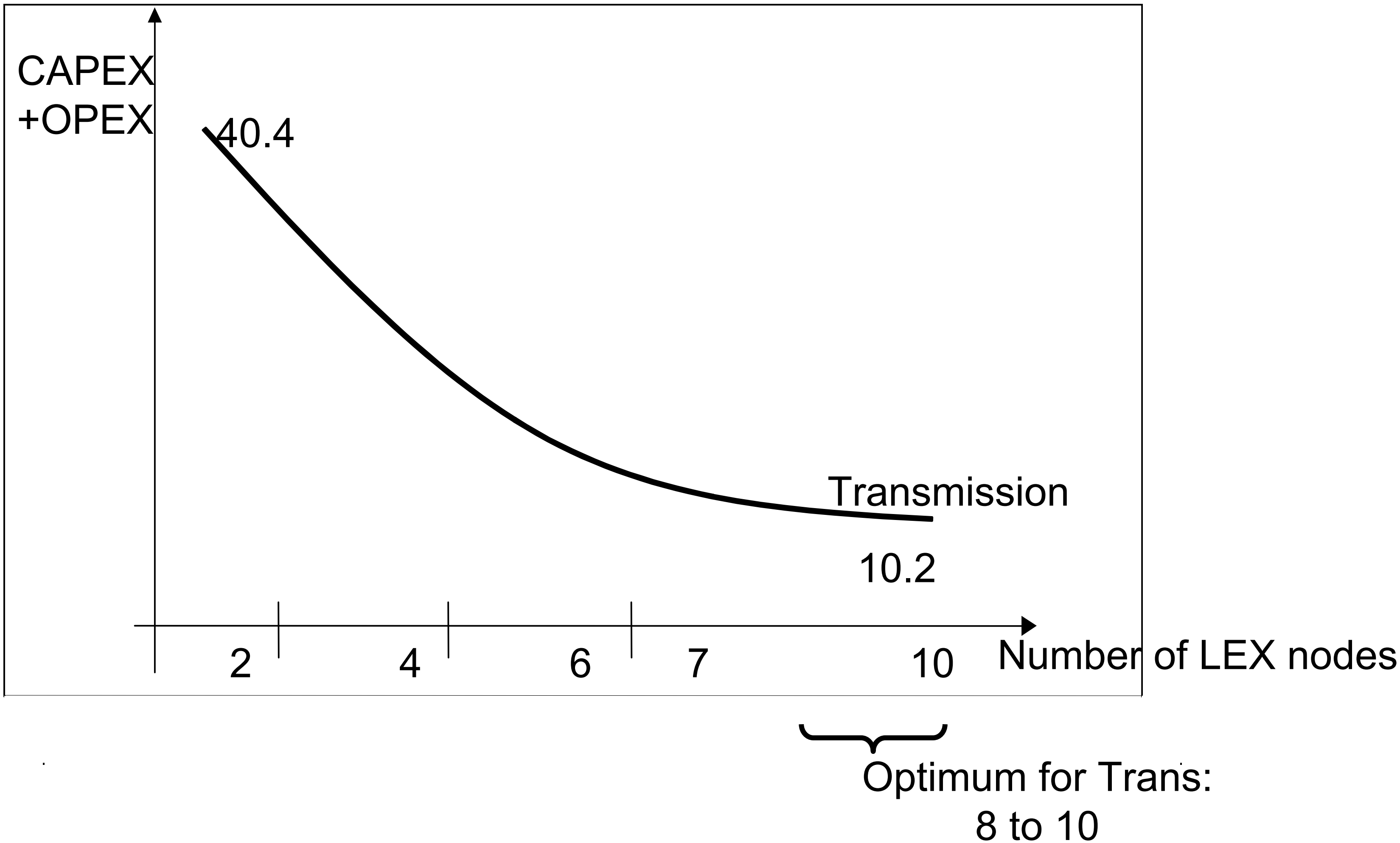
Network Planning
Case study for ASrchitecture



- **6 Transit Nodes (TEX)**
- 334 E1 channels
- 112.450 E1-Km
- 35.8 monetary units
  - •11.2 Transmission
  - •24.6 Switching

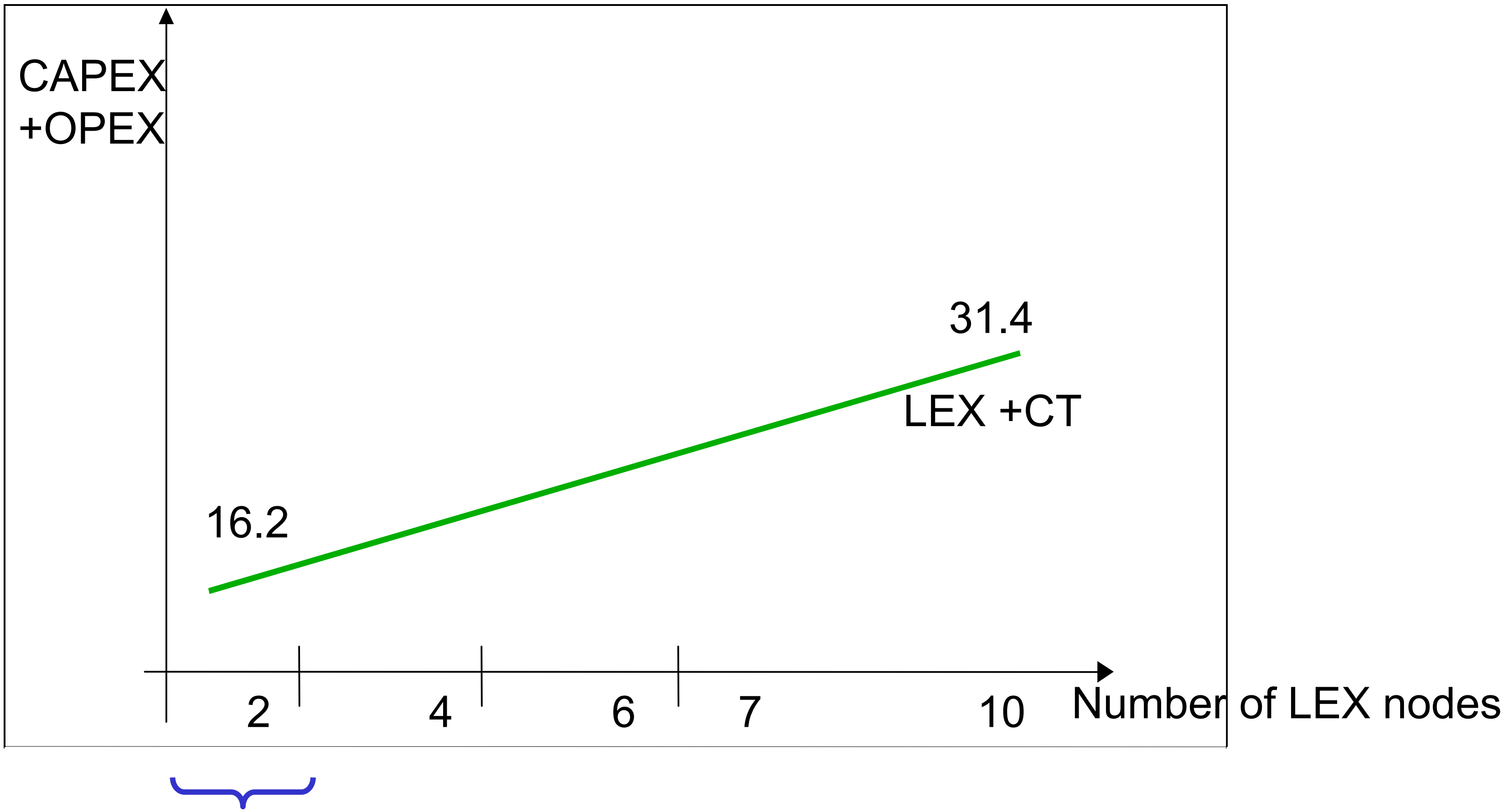
Network Planning
Business impacts

Case A : Architecture for transmission and switching layers



Network Planning
Business impacts

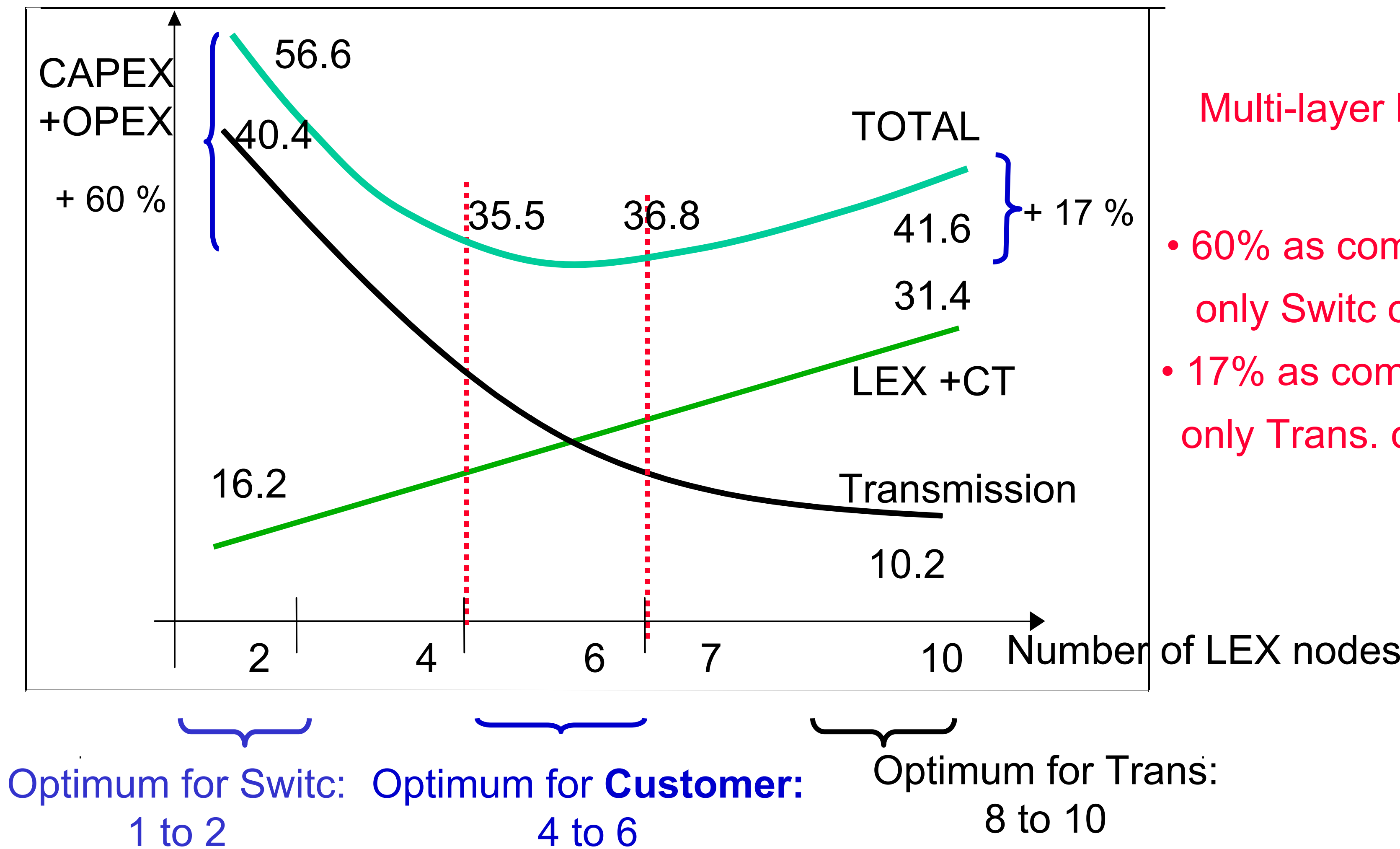
Case A :Architecture for transmission and switching layers



Optimum for Switching
1 to 2

Network Planning
Business impacts

Case A :Architecture for transmission and switching layers



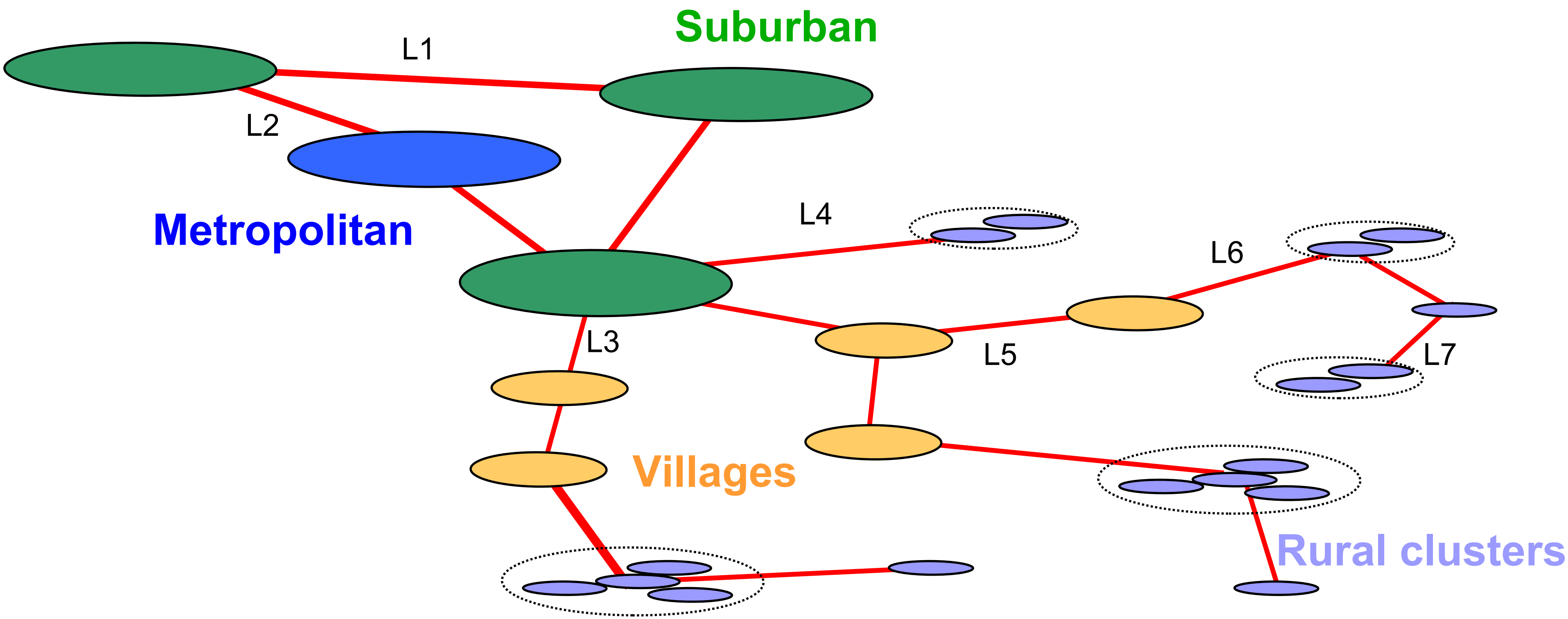
Multi-layer benefit:

- 60% as compared to only Switc optimum
- 17% as compared to only Trans. optimum

Network Planning
Case study for access solutions (B)

- Analysis of Network Architecture and solutions for access in a region
  - Initial status
    - Network with low deployment level
    - Heterogeneous areas with varying customer densities
    - Demand of PSTN and data services in Metro and suburban
    - Basically POTS demand in rural areas
  - Target
    - Network infrastructure grow at high rate
    - Most economical solutions per scenario
    - Optimized architecture per area

Case study for access structure (B) Geo scenario



L1: distance between suburban

L2: suburban - metropolitan distance

L3: Suburban - village distance

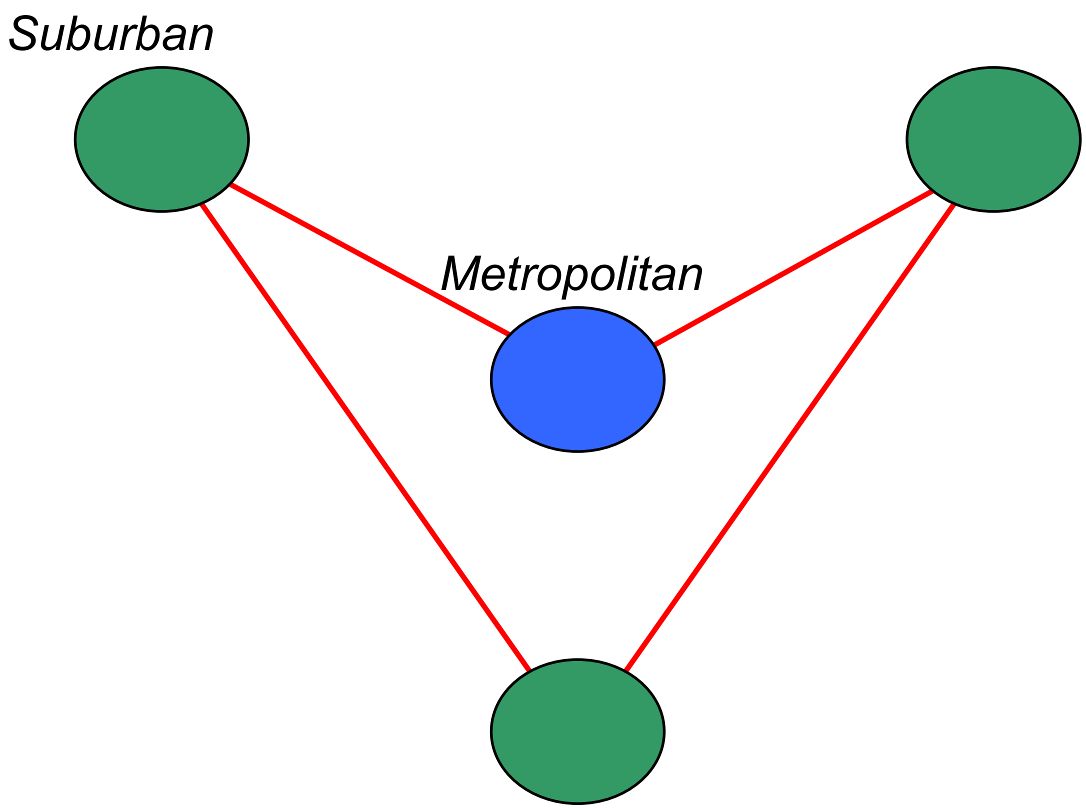
L4: Suburban - rural distance

L5: distance between villages

L6: Villages - rural distance

L7: distance between rural

Case study for access structure (B) Core network



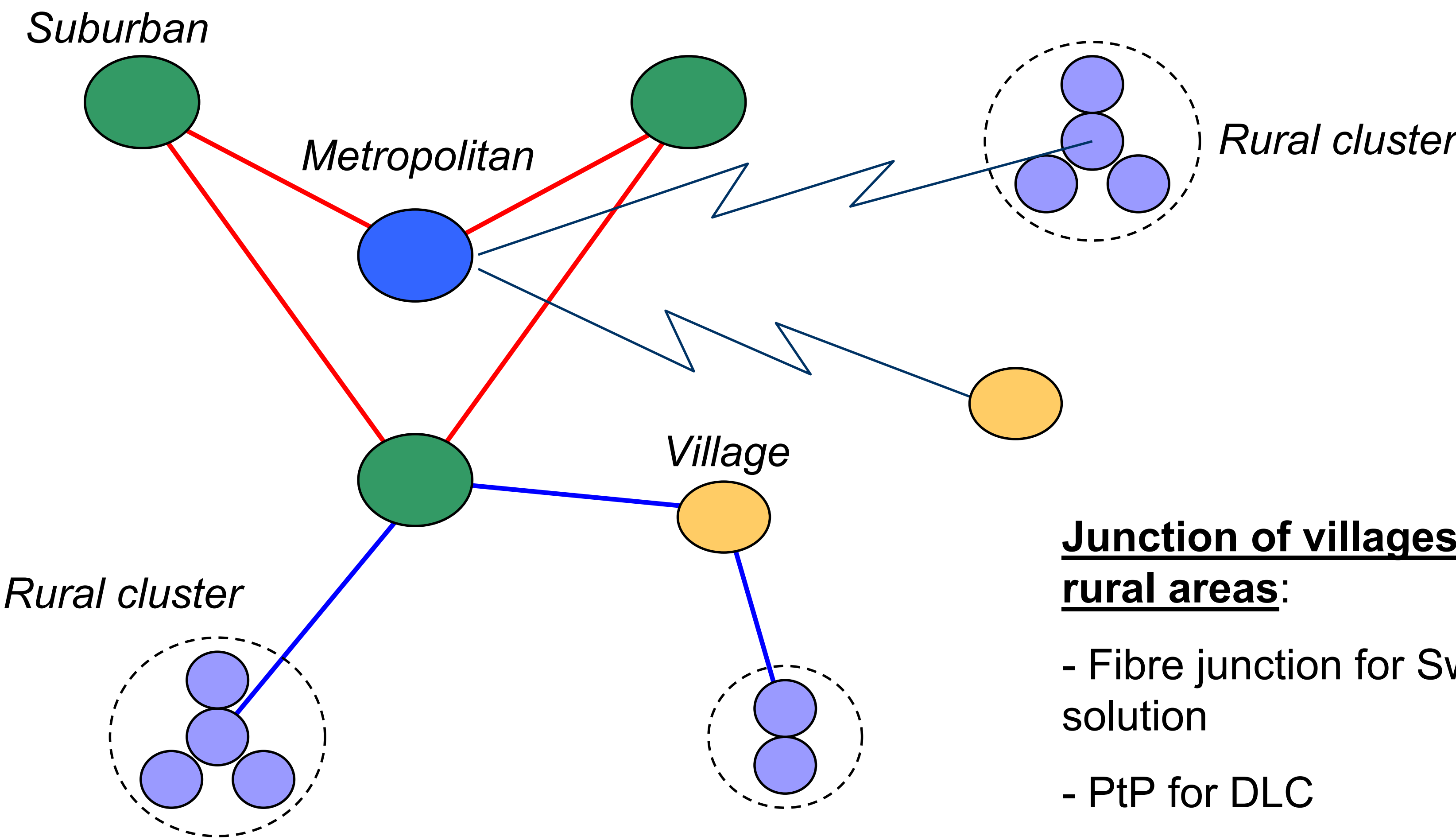
Junction Ring:

- between suburban and metropolitan areas

- STM-16 ring

- Duct fibre

Case study for access structure (B) Areas interconnection



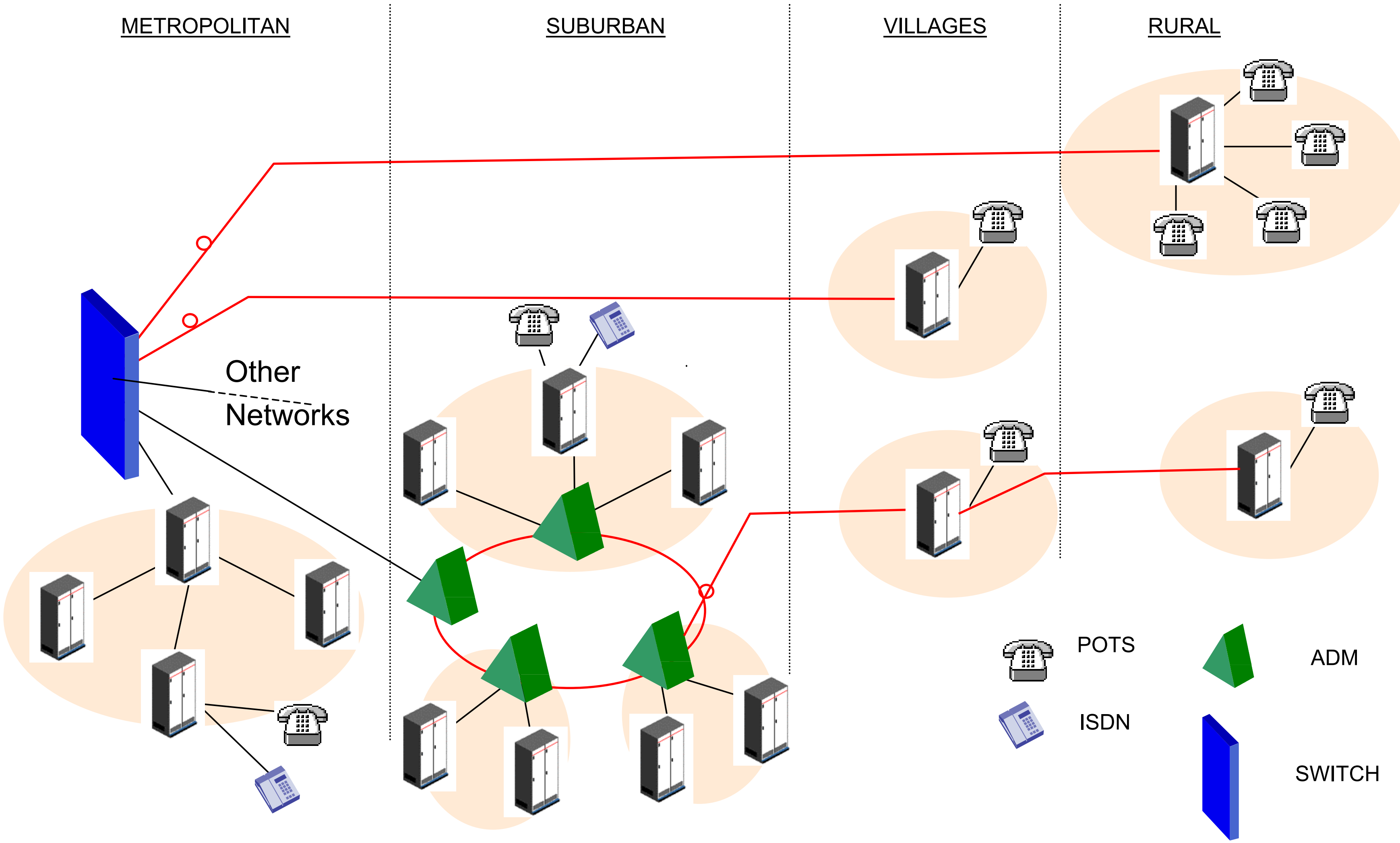
<u>Junction of villages and rural areas</u>:

- Fibre junction for Switching solution

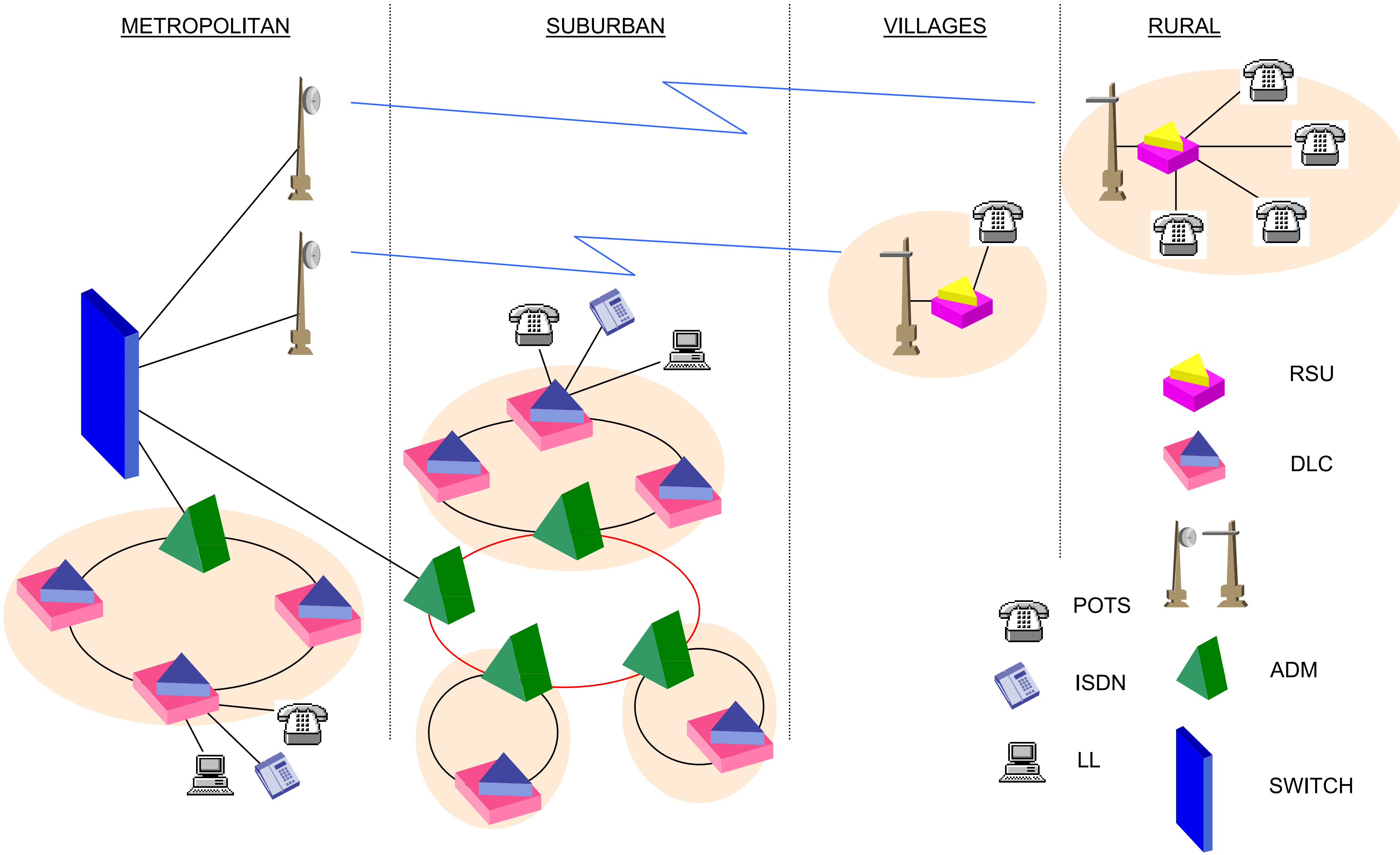
- PtP for DLC

- PMP for WLL

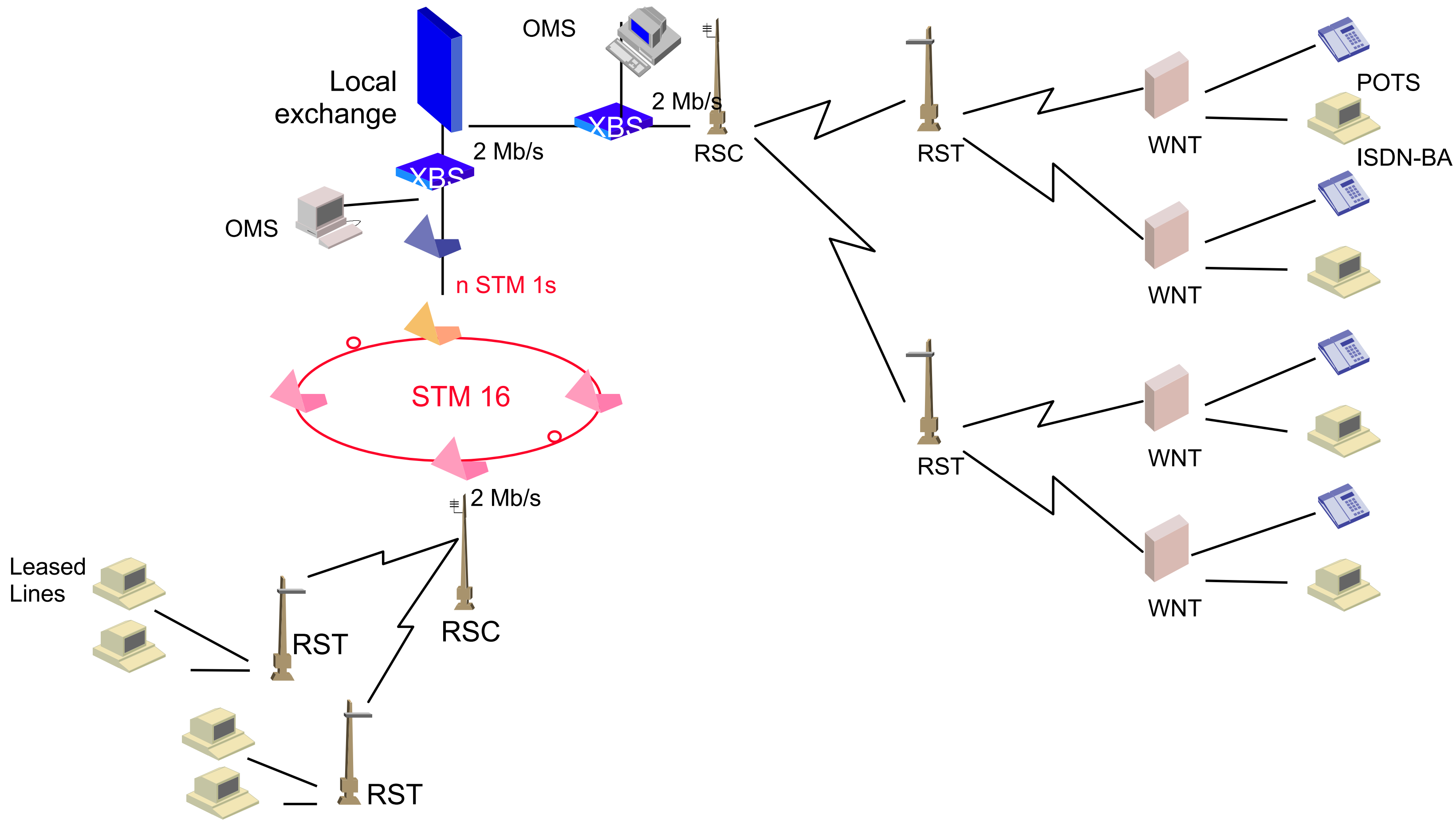
Case study for access structure (B)
Classical Switching based solution



Case study for access structure (B) Switching - DLC based solution

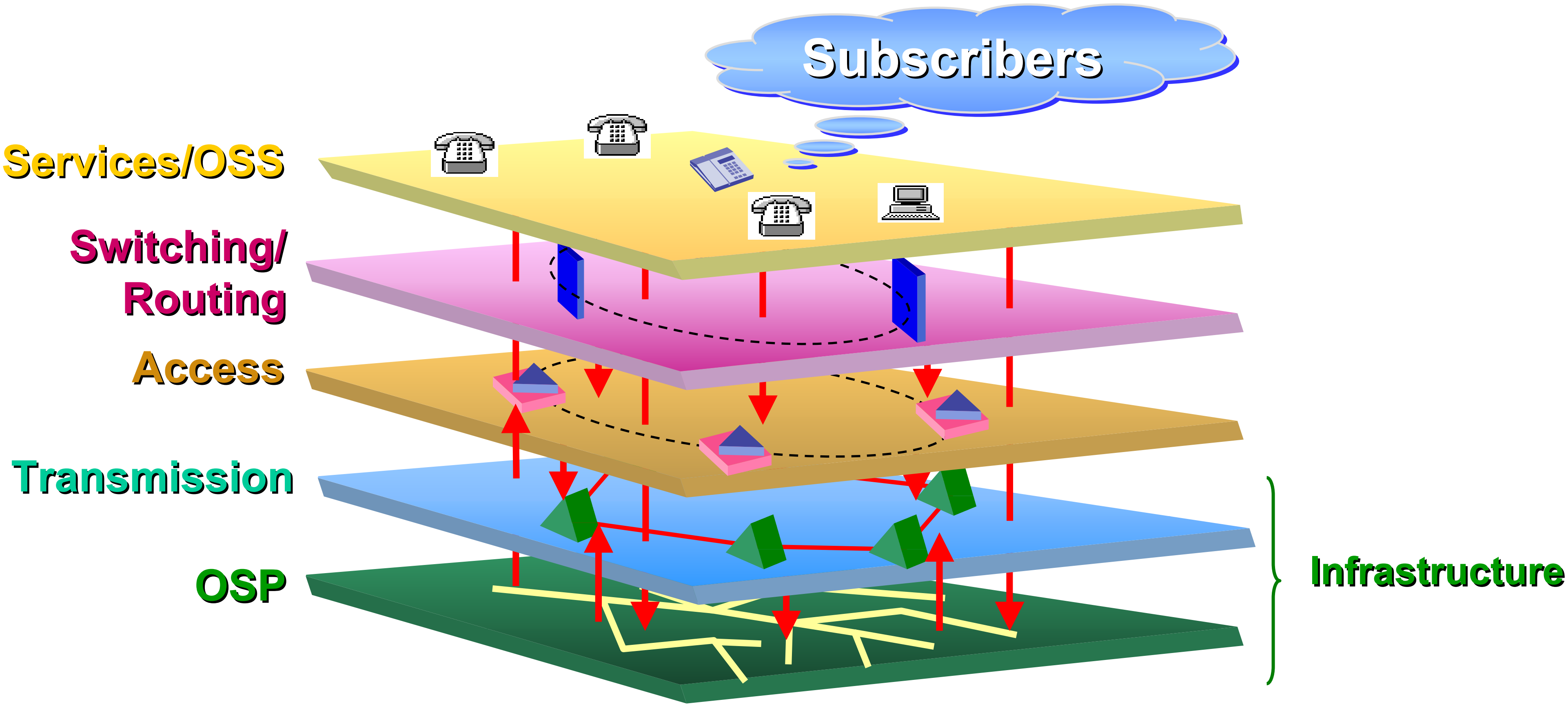


Case study for access structure (B) WLL based solution



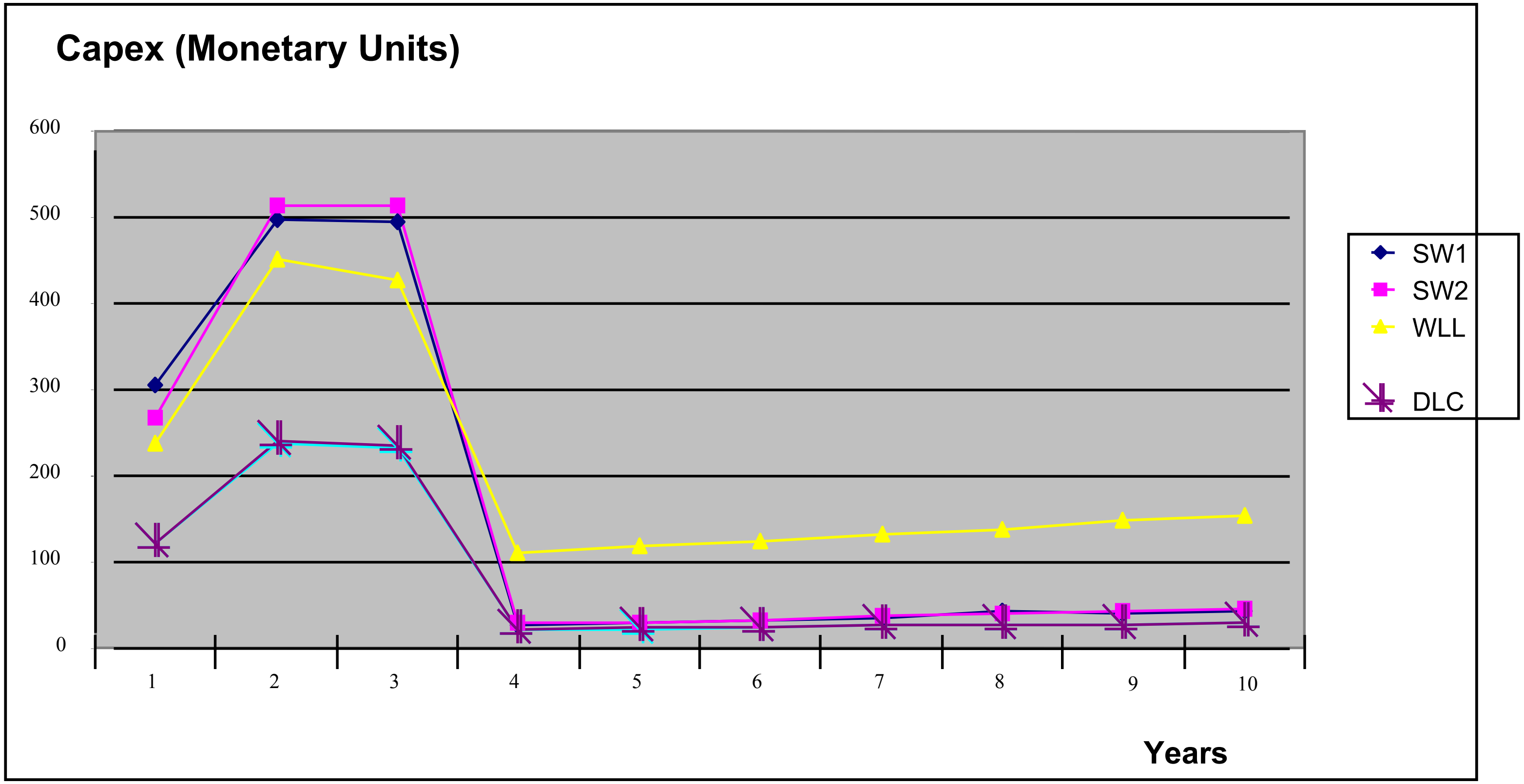
Case study for access structure (B) Multilayer modeling

Modeled Layers and Interrelation to ensure consistency of Dimensioning and Quoting



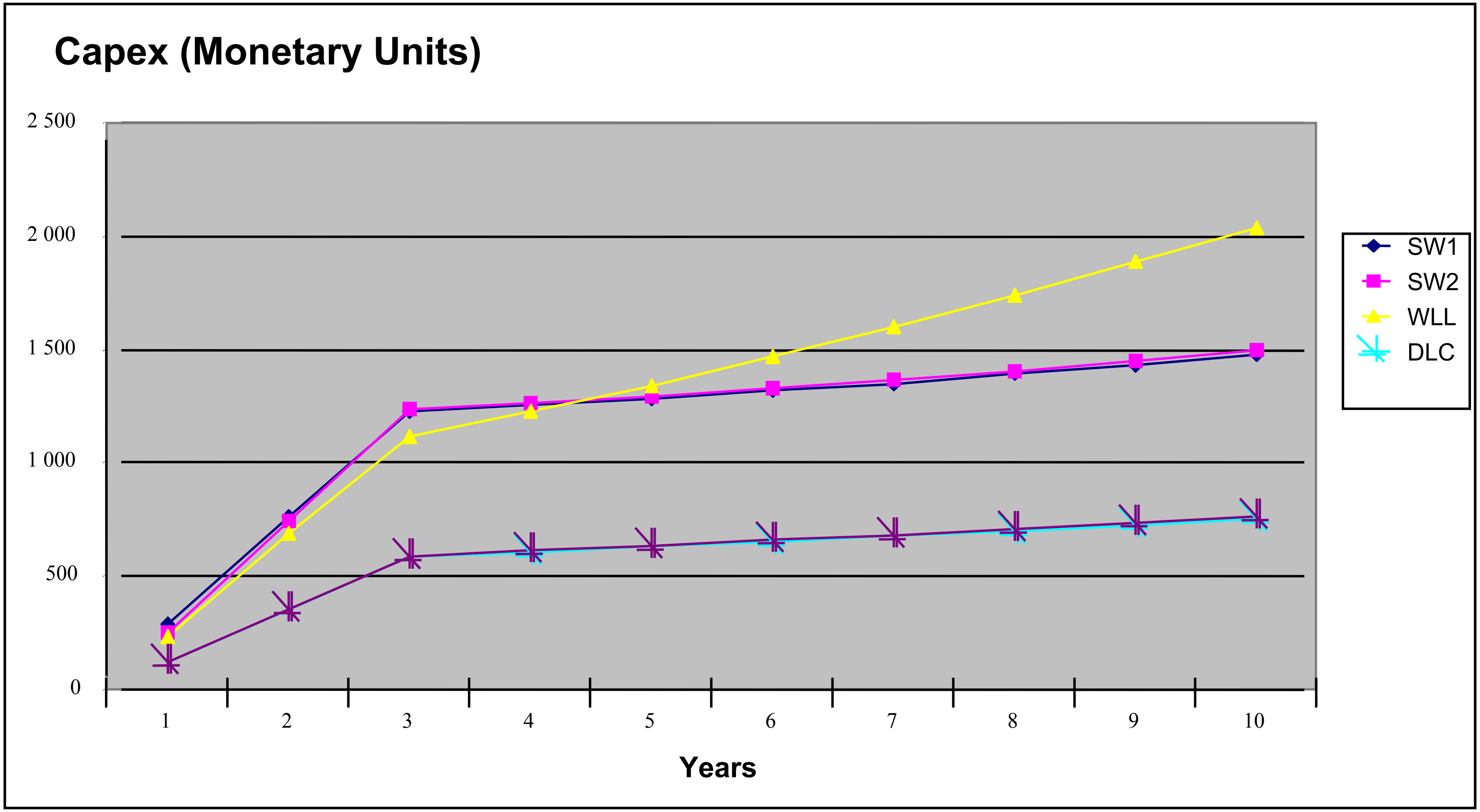
Case study for access structure (B) Comparison of investment per solution

Metropolitan investments (Ducts + Aerial - 1 switching node - 6% LL)



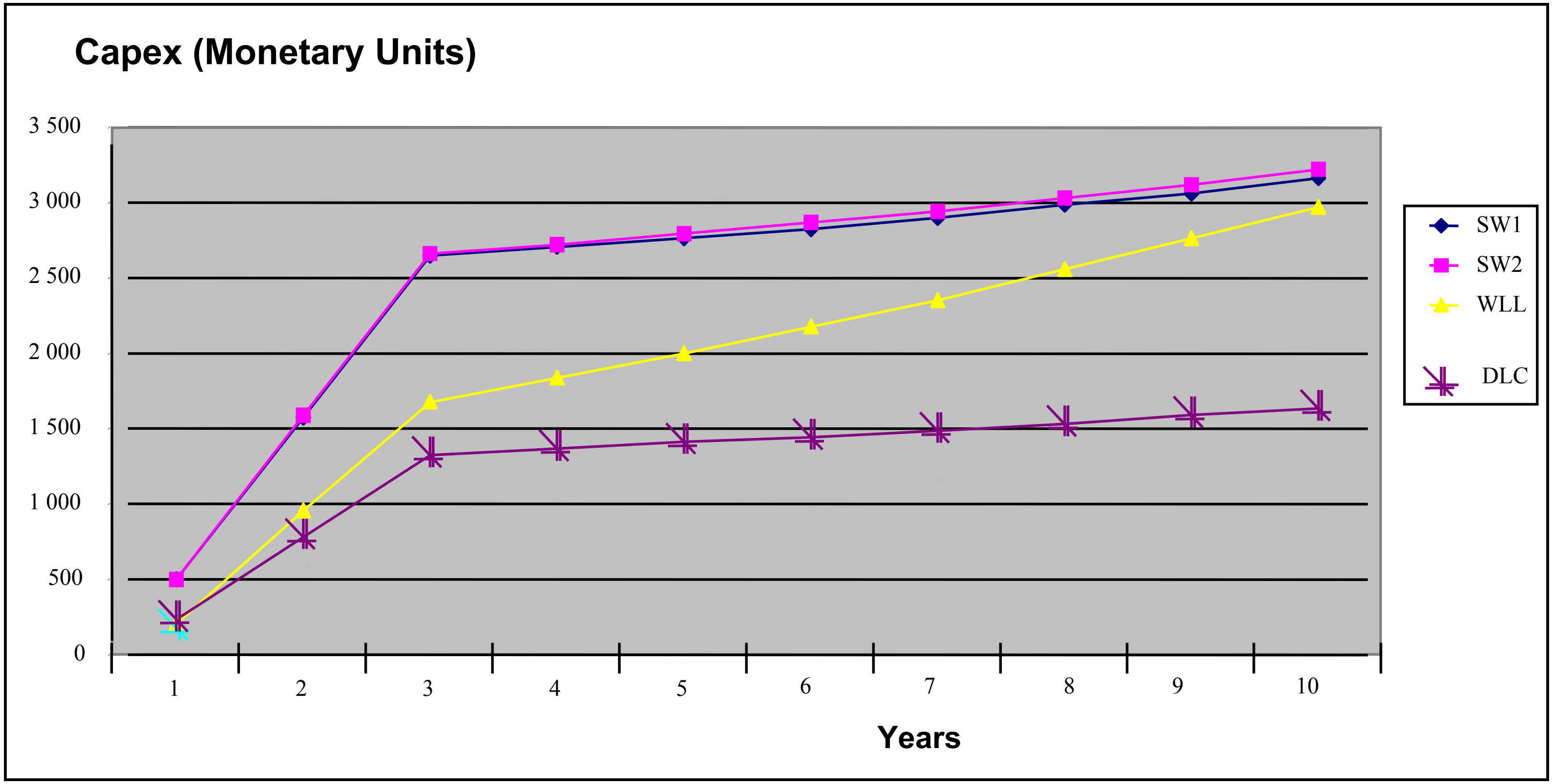
Case study for access structure (B) Comparison of investment per solution

Metropolitan (Ducts + Aerial - 1switching node - 6 % LL)



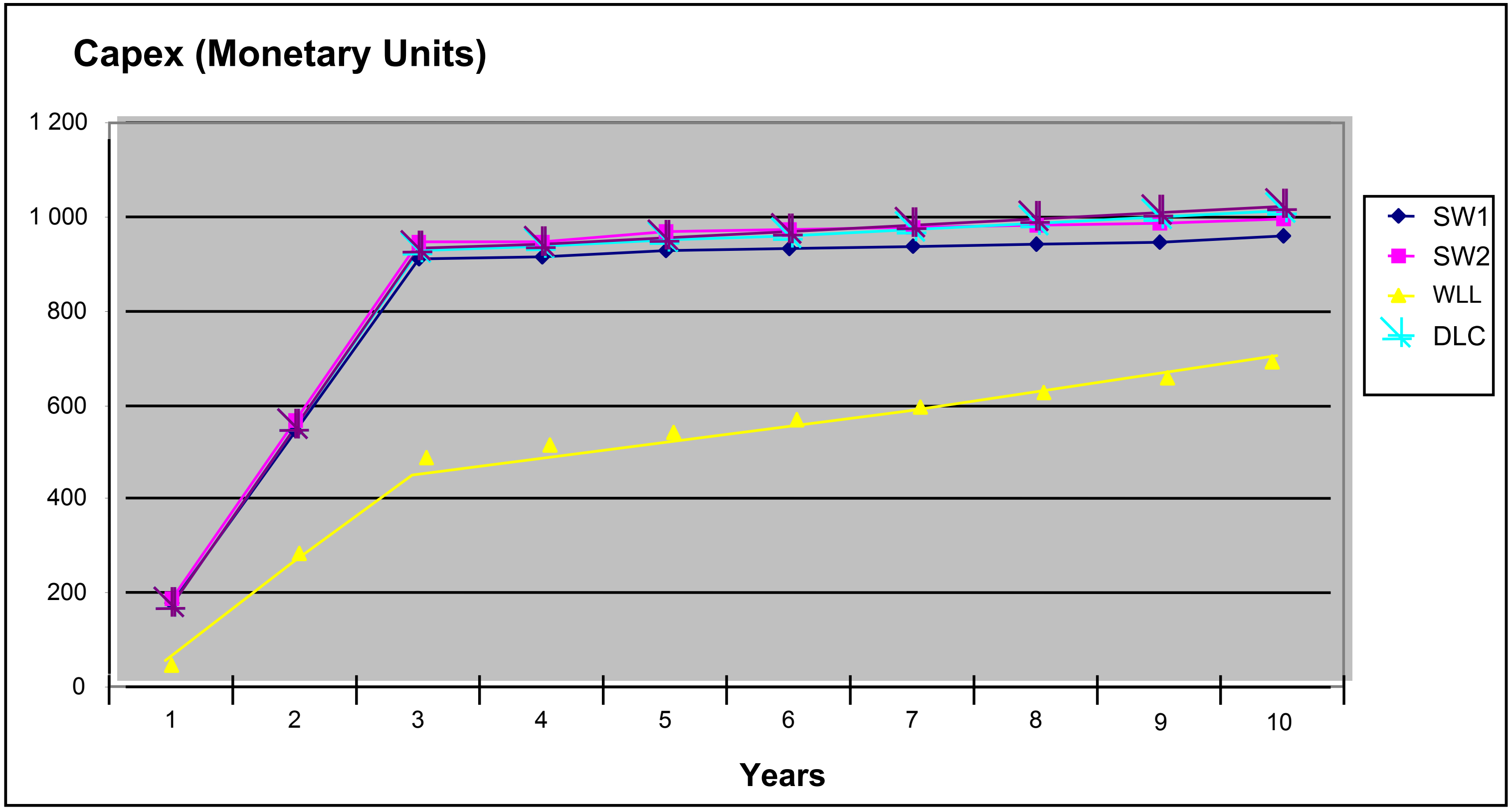
Case study for access structure (B) Comparison of investment per solution

Suburban (Ducts + Aerial - 3*1switcing nodes + 5% LL)



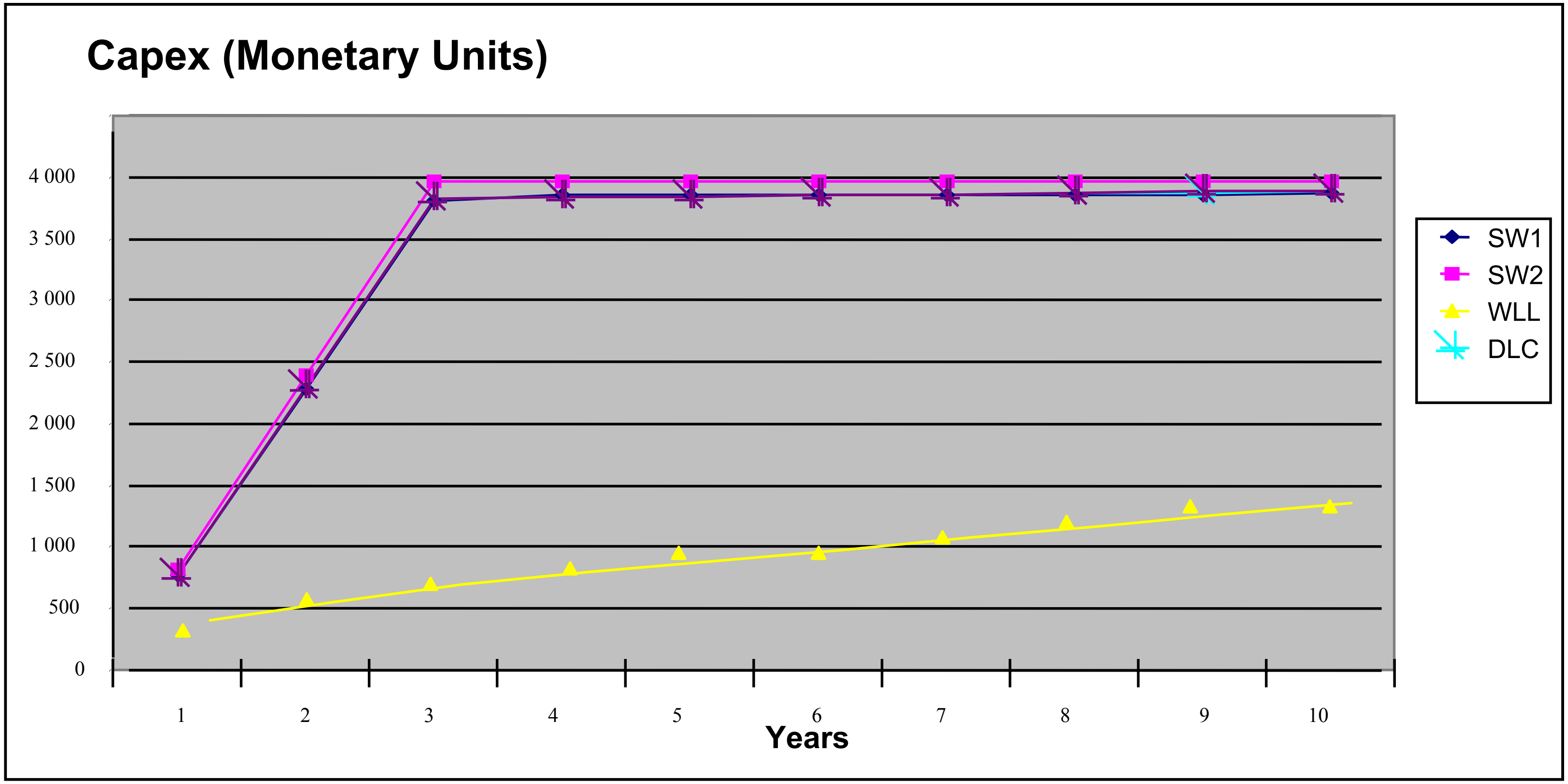
Case study for access structure (B) Comparison of investment per solution

Villages (Aerial - only POTS)



Case study for access structure (B) Comparison of investment per solution

Rural (Aerial - Only POTS)



Case study for access structure (B) Comparison of investment per solution

Comparison of CAPEX in global scenario: Best technology assignment per area versus single technology for the 4 area types