ITU / BDT workshop

Warsaw, Poland,

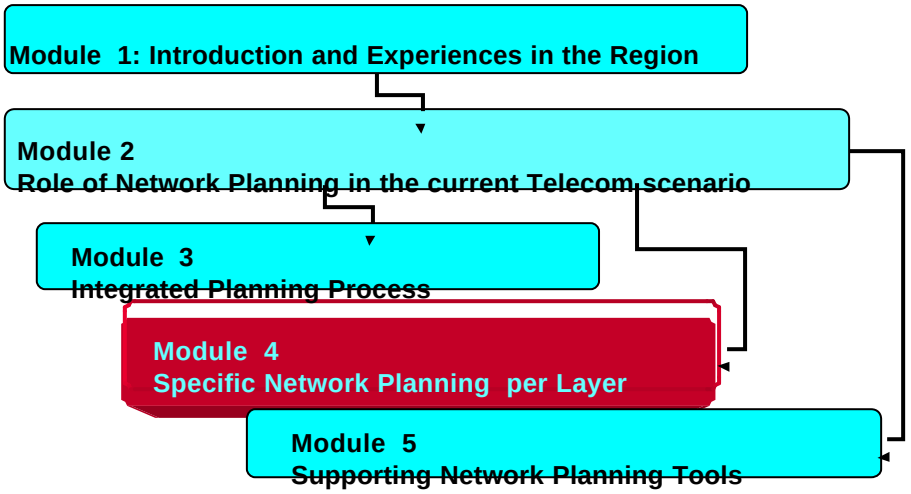
6-10 October 2003

Network Planning

Lecture NP- 4.6

Specific Network Planning

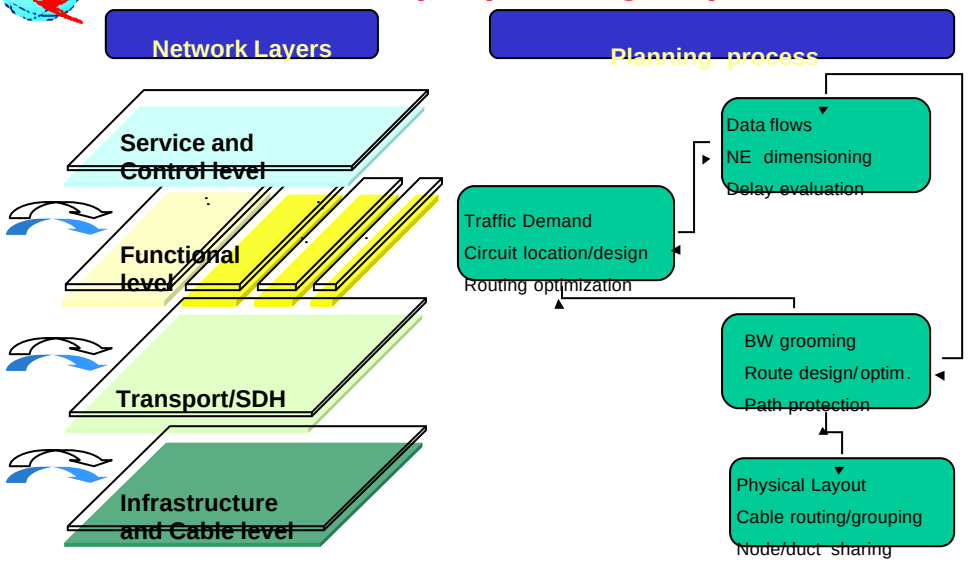
BDT workshop on Network Planning



Content Chapter 4.6

- Examples of case studies
- Typical benefits from planning methods

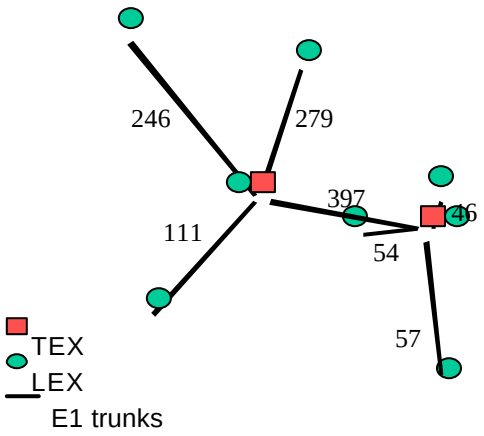
Planning Methodology: Multilayer planning sequence



Network Planning
Case study for consolidated architecture (A)

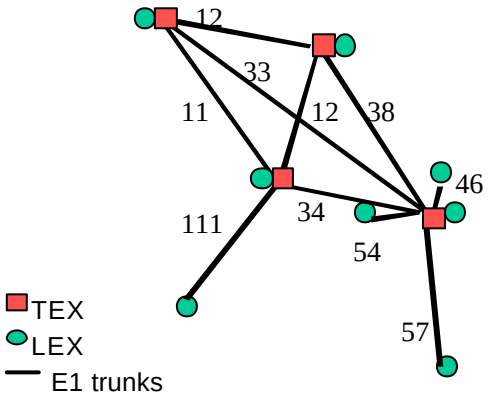
- Network Consolidation: Analysis of Network Architecture and related number of Nodes at core and access
  - Initial status
    - Medium size network with many hierarchical layers
    - Heterogeneous collection of systems
    - Routing scheme based on add-on per installation
  - Target
    - Modern consolidated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

Network Planning
Case study for Consolidated Architecture



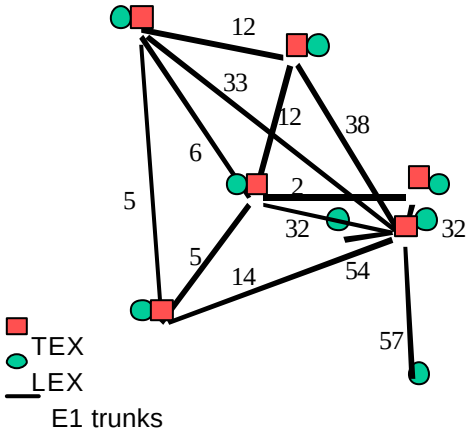
- **2 Transit Nodes (TEX)**
- 1190 E1 channels
- 415.440 E1-Km
- 56.6 monetary units
  - 40.4 transmission
  - 16.2 Switching

Network Planning
Case study for Consolidated Architecture



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

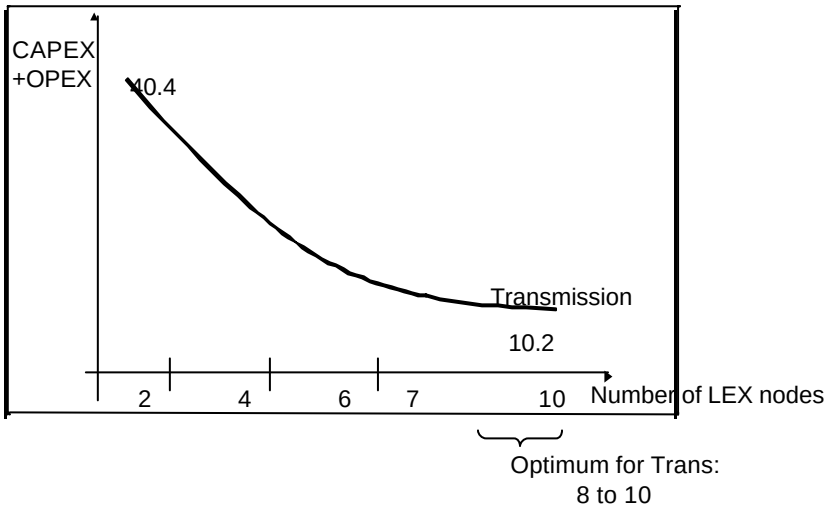
Network Planning
Case study for Consolidated Architecture



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

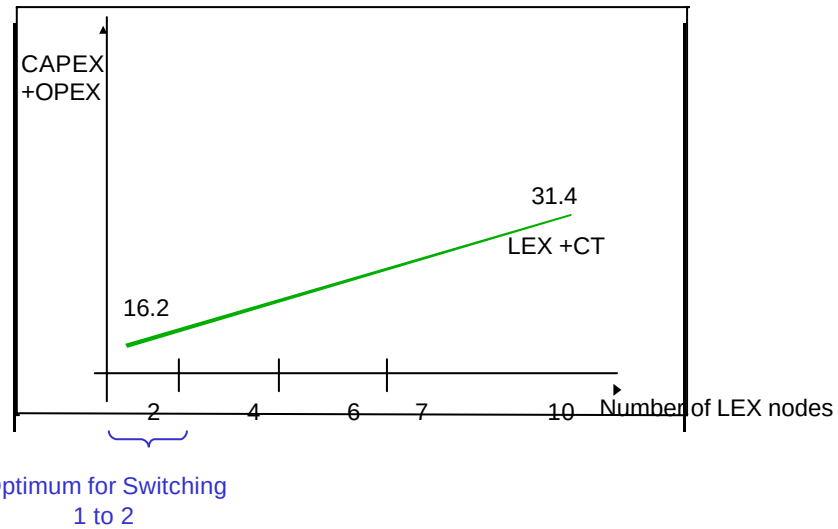
Network Planning: Business impacts

Case A : Architecture for transmission and switching layers



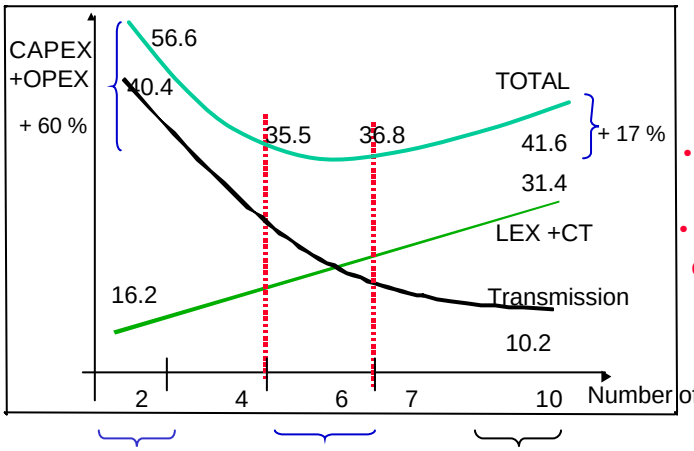
Network Planning: Business impacts

Case A :Architecture for transmission and switching layers



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

Optimum for Switc: 1 to 2

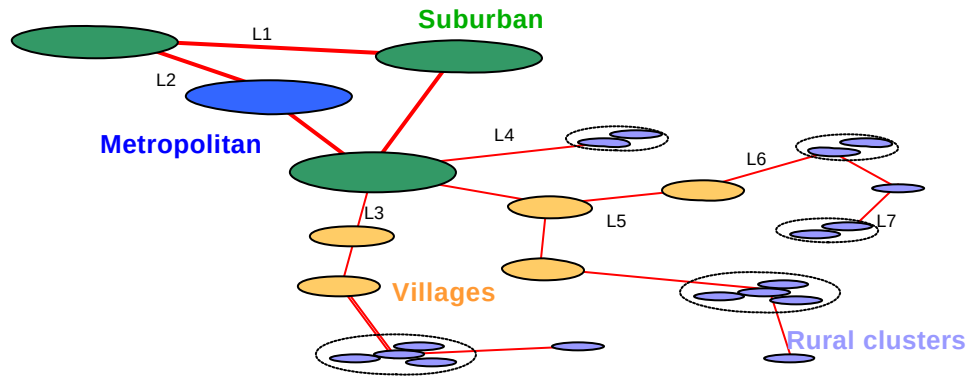
Optimum for **Customer:** 4 to 6

Optimum for Trans: 8 to 10

Network Planning
Case study for access solutions (B)

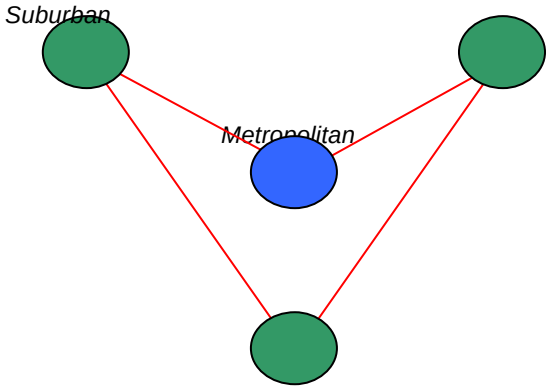
- Analysis of Network Architecture and solutions for access in a region
  - Initial status
    - Network with low deployment level
    - Heterogeneous areas with varying customer densities
    - Demand of PSTN and data services in Metro and suburban
    - Basically POTS demand in rural areas
  - Target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

Case study for access structure
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

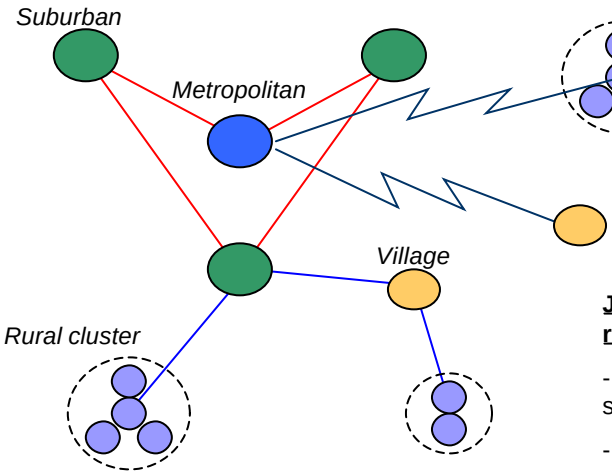
Case study for access structure
Core network



Junction Ring:

- between suburban and metropolitan areas
- STM-16 ring
- Duct fibre

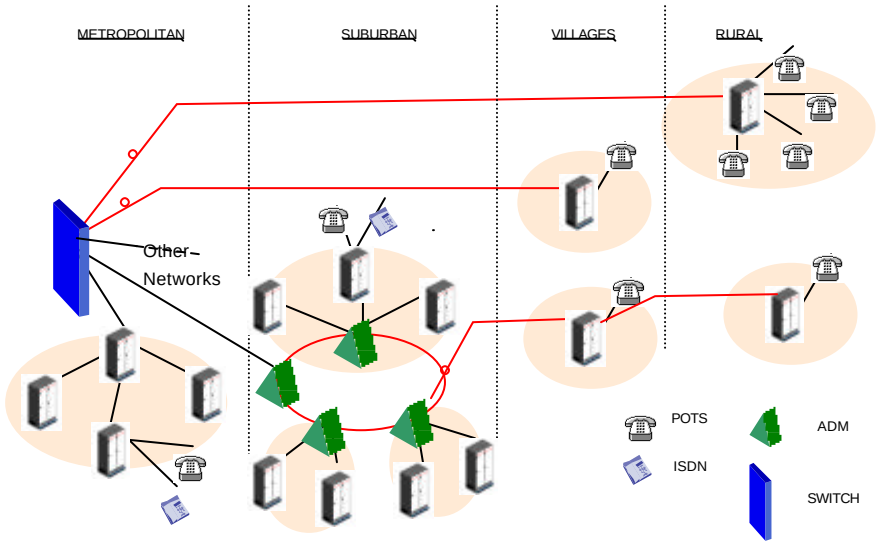
Case study for access structure
Areas interconnection



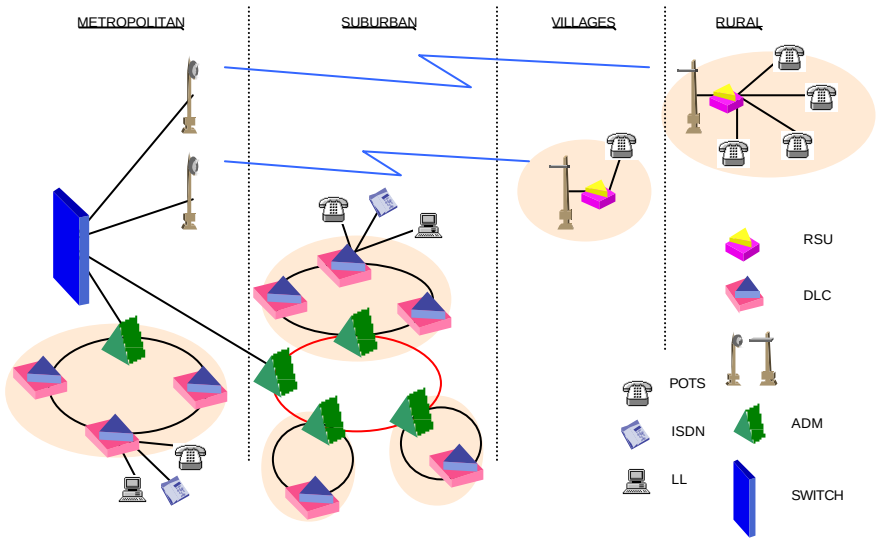
Junction of villages and rural areas:

- Fibre junction for Switching solution
- PtP for DLC
- PMP for WLL

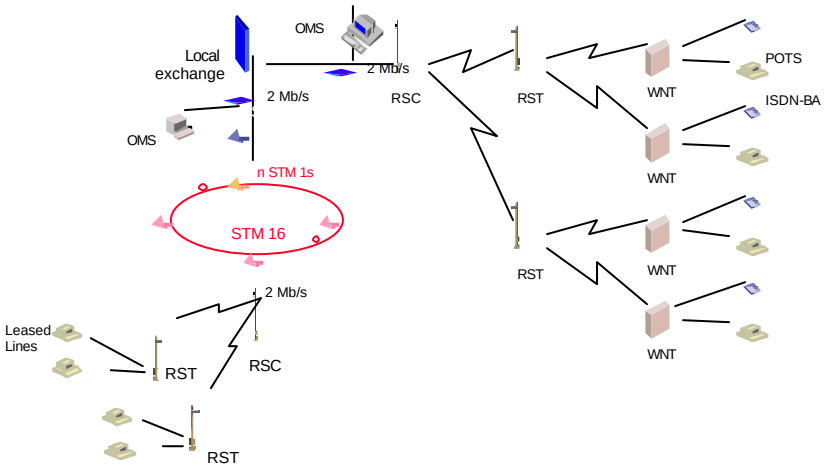
Case study for access structure
Classical Switching based solution



Case study for access structure
Switching - DLC based solution

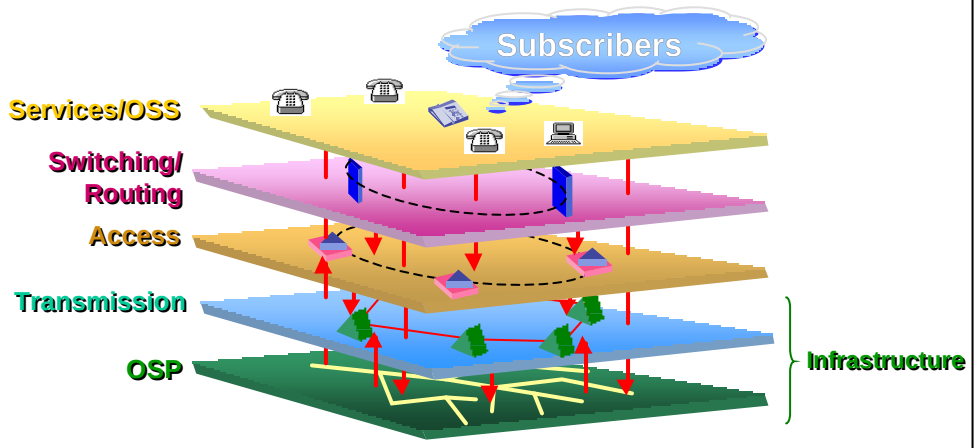


Case study for access structure
WLL based solution



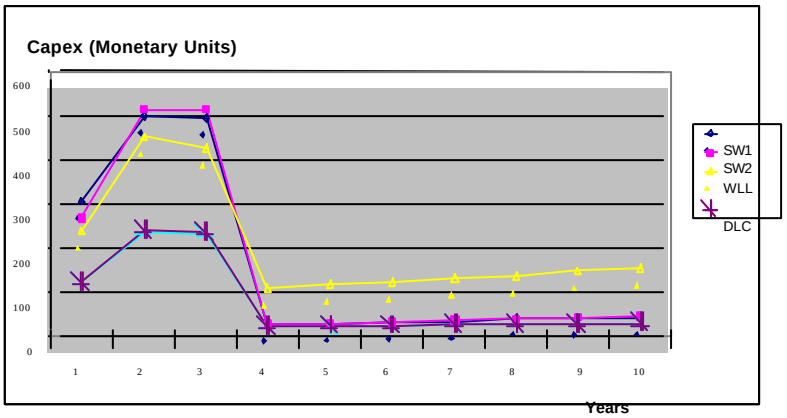
Case study for access structure
Multilayer modeling

Modeled Layers and Interrelation to ensure consistency of Dimensioning and Quoting



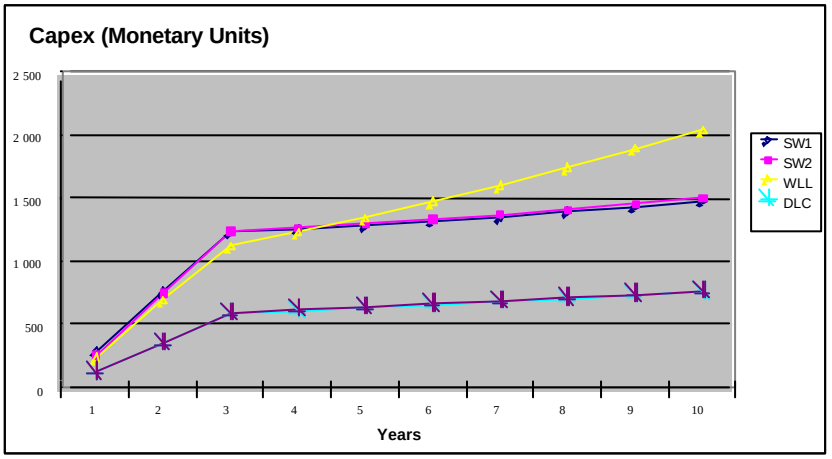
Case study for access structure
Comparison of investment per solution

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



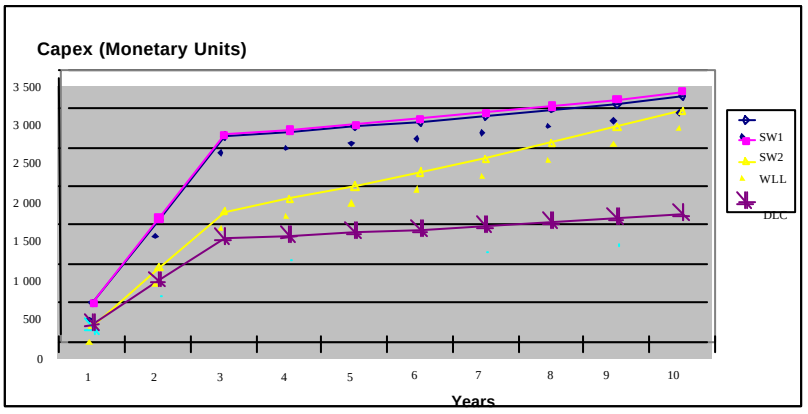
Case study for access structure
Comparison of investment per solution

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



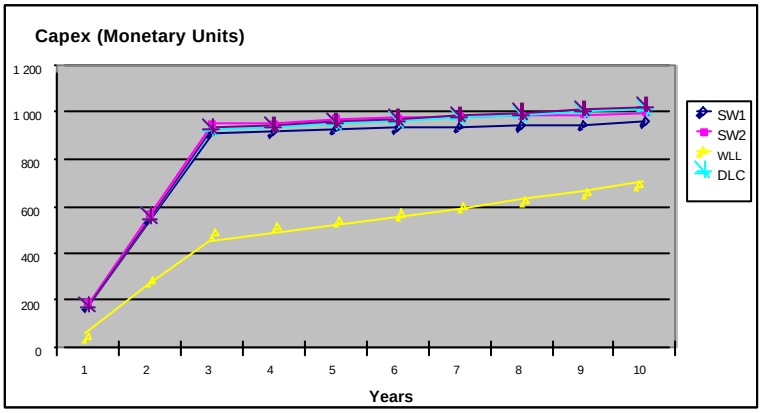
Case study for access structure
Comparison of investment per solution

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



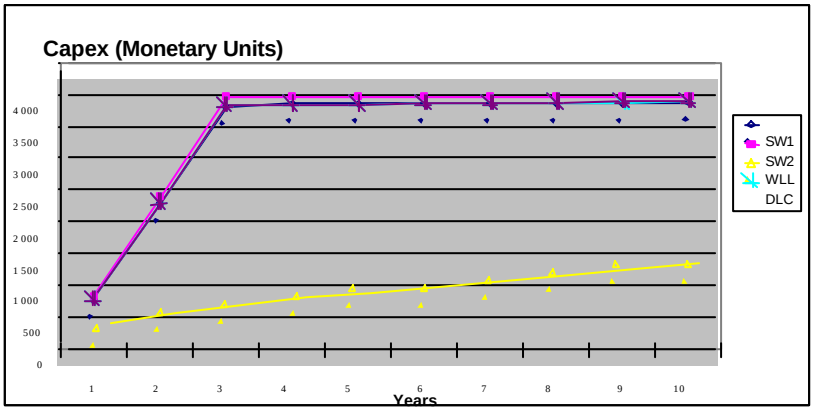
Case study for access structure
Comparison of investment per solution

Villages (Aerial - only POTS)



Case study for access structure
Comparison of investment per solution

Rural (Aerial - Only POTS)



Case study for access structure
Comparison of investment per solution

Comparison of CAPEX in global scenario: Best technology assignment per area versus single technology for the 4 scenario types (SW + DLC for Metropolitan, DLC for Suburban, WLL for Villages and Rural)