



ITU / BDT- COE workshop

Bangkok, Thailand,

11 – 15 November 2002

Network Planning

Lecture NP- 4.4

Specific Network Planning

November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 1



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

November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 2

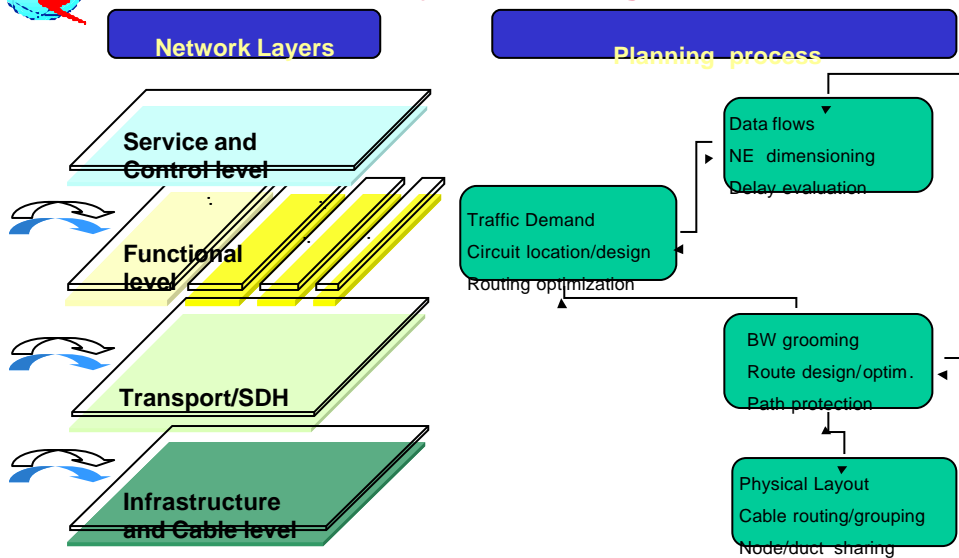


Content Chapter 4.6

- 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

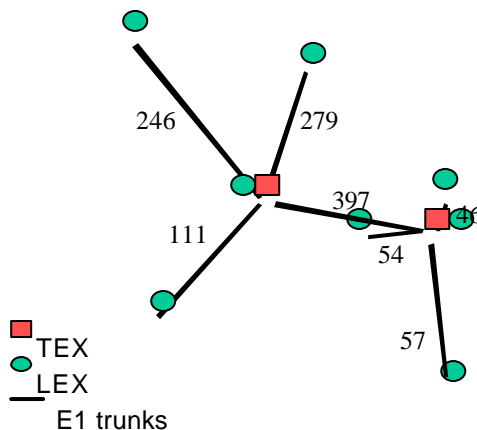
- Medium size network with many hierarchical layers
- Heterogeneous collection of systems
- Routing scheme based on add-on per installation

• Target

- Modern consolidated network
- Optimized hierarchy, routing and number of nodes
- High call completion rate



Network Planning Case study for Consolidated Architecture

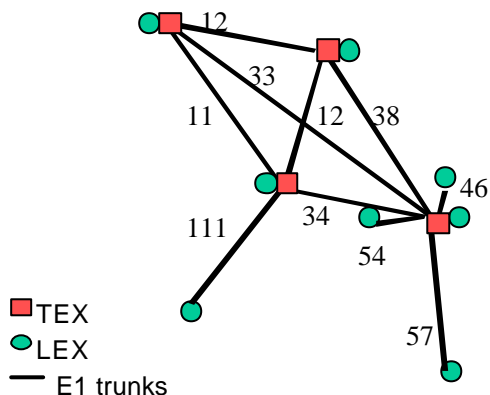


• 2 Transit Nodes (TEX)

- 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

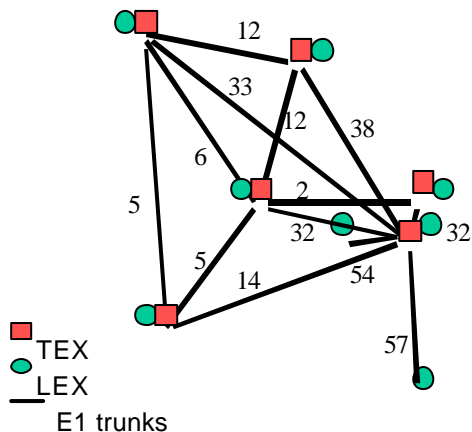
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 7



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

November 13th

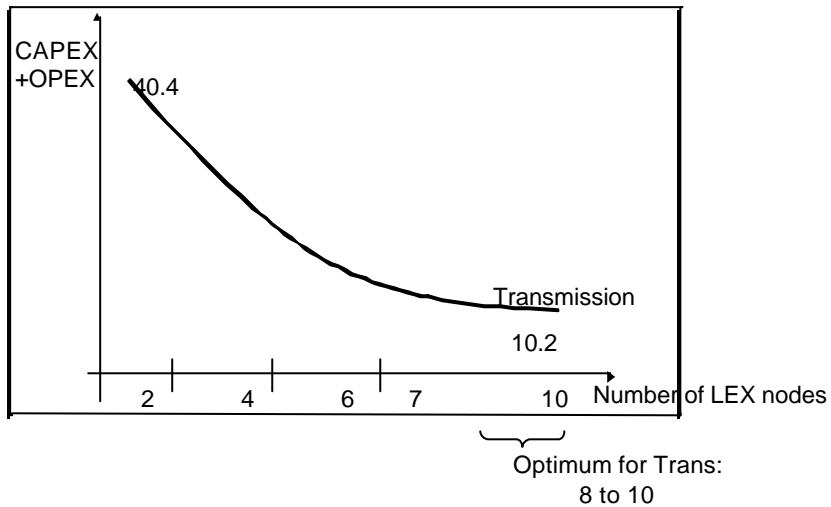
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 8



Network Planning: Business impacts

Case A : Architecture for transmission and switching layers



November 13th

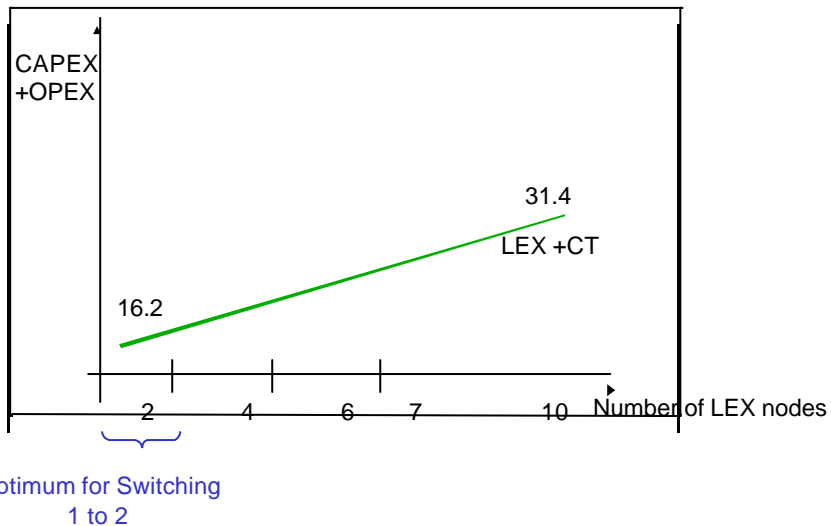
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 9



Network Planning: Business impacts

Case A : Architecture for transmission and switching layers



November 13th

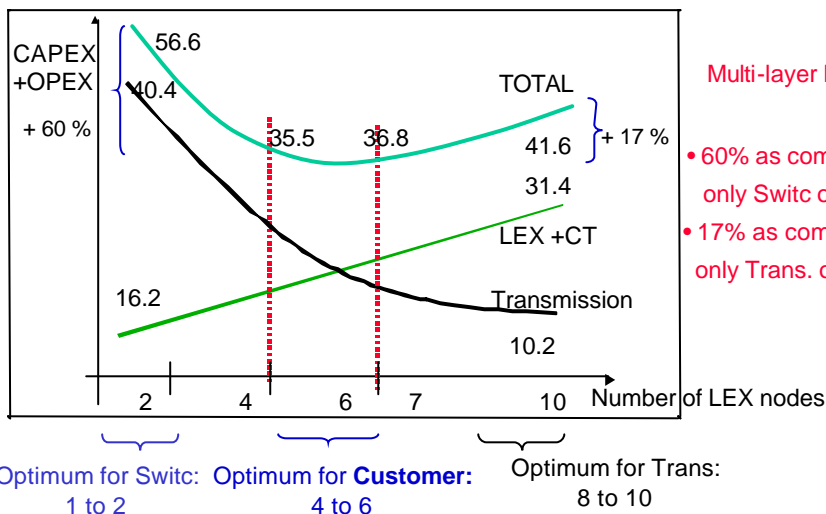
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 10



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

November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 11



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

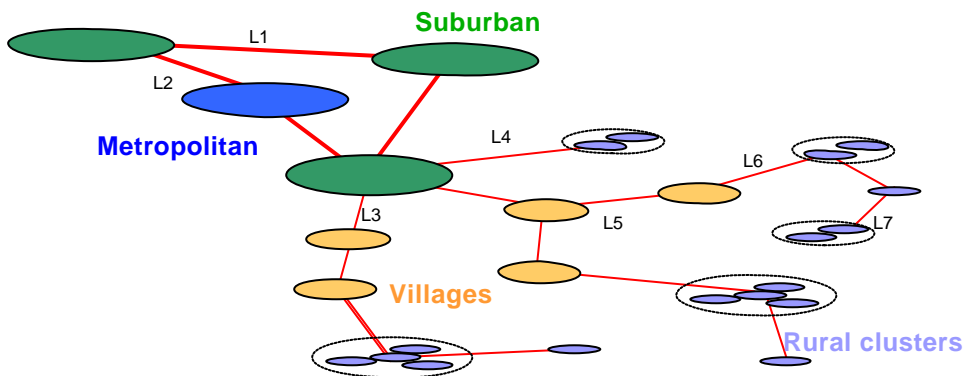
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 12



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

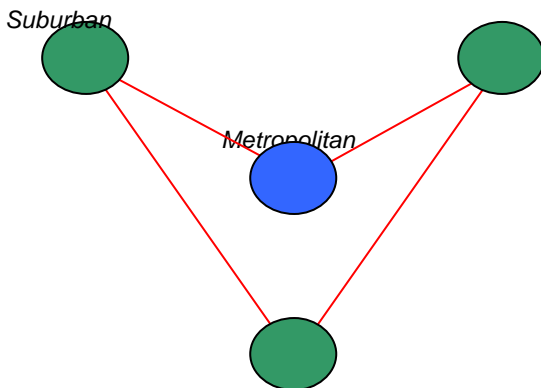
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 13



Case study for access structure Core network



Junction Ring:

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

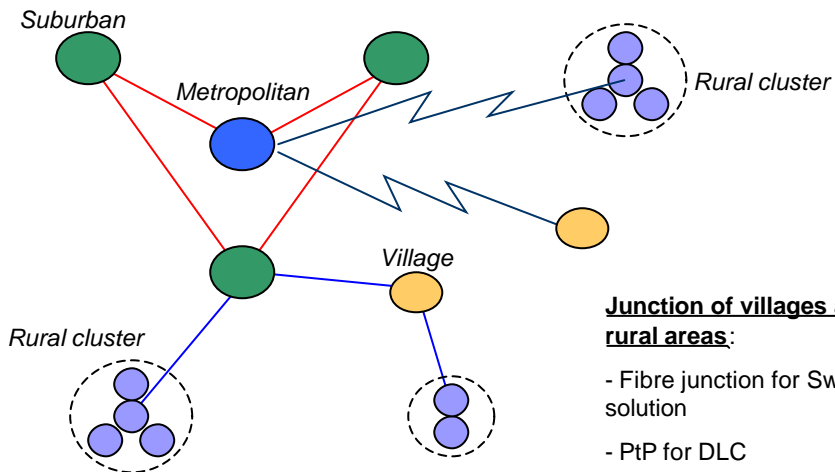
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 14



Case study for access structure Areas interconnection



Junction of villages and rural areas:

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

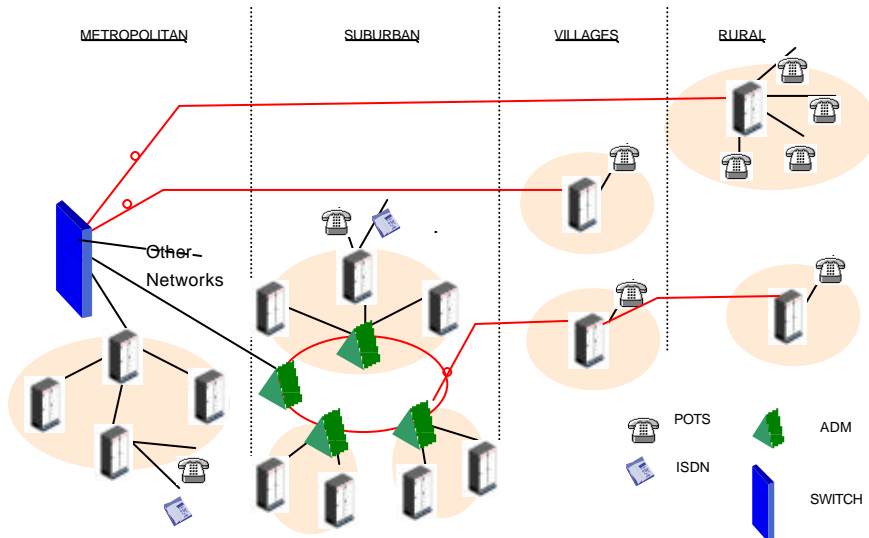
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 15



Case study for access structure Classical Switching based solution



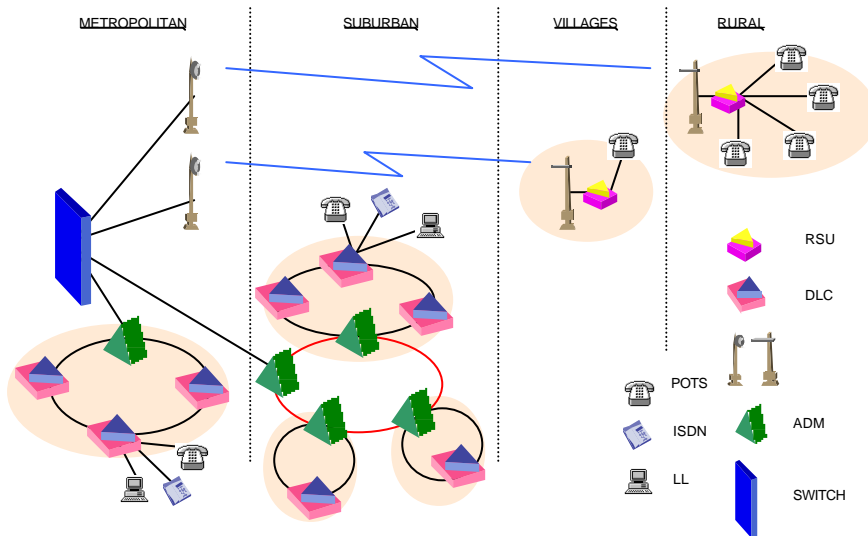
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 16



Case study for access structure Switching - DLC based solution



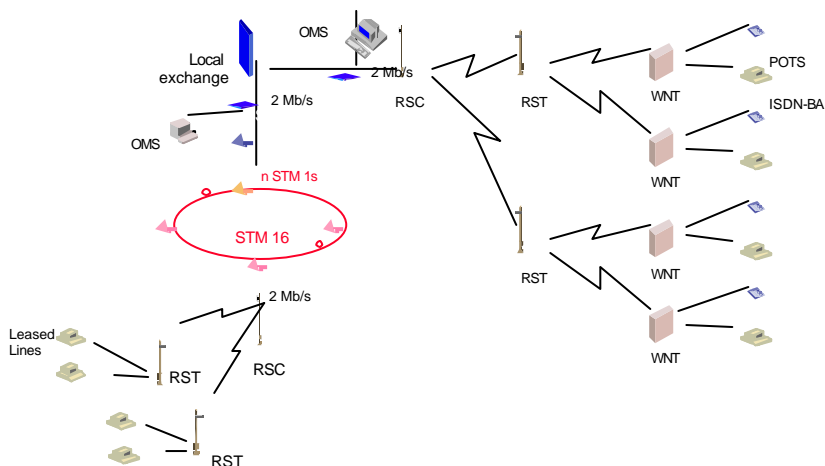
November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 17



Case study for access structure WLL based solution



November 13th

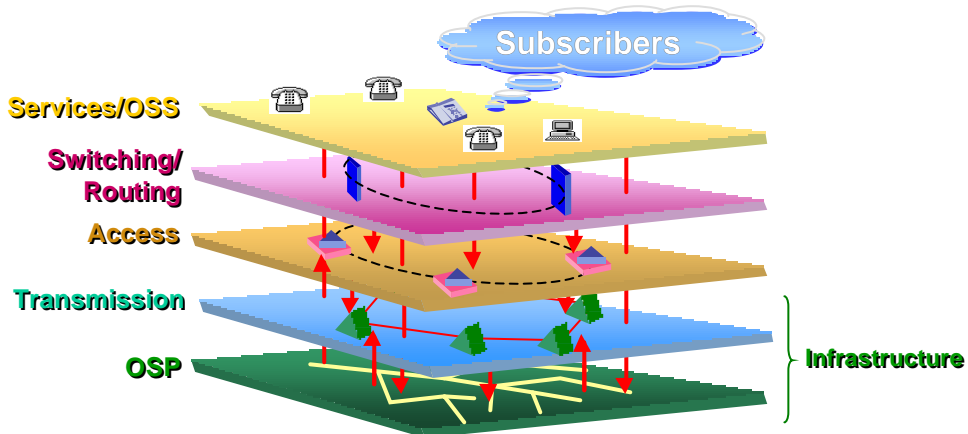
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 18



Case study for access structure Multilayer modeling

Modeled Layers and Interrelation to ensure consistency of
Dimensioning and Quoting



November 13th

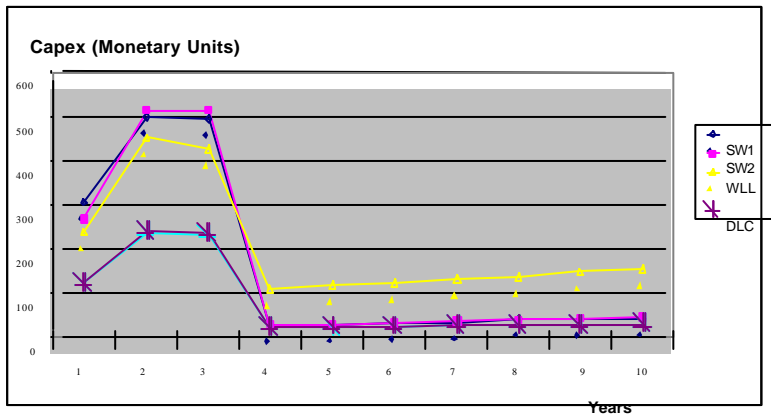
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 19



Case study for access structure Comparison of investment per solution

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



November 13th

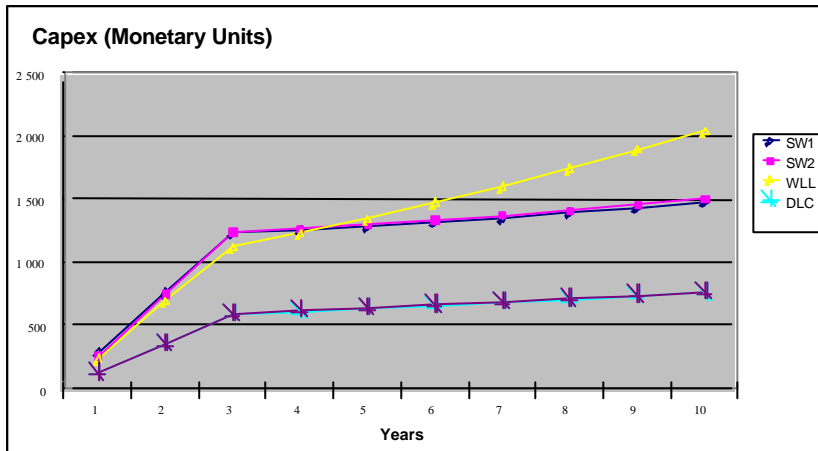
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 20



Case study for access structure Comparison of investment per solution

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



November 13th

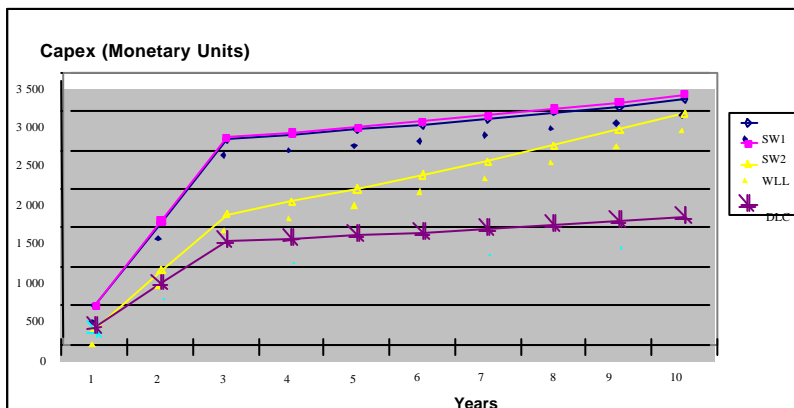
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 21



Case study for access structure Comparison of investment per solution

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



November 13th

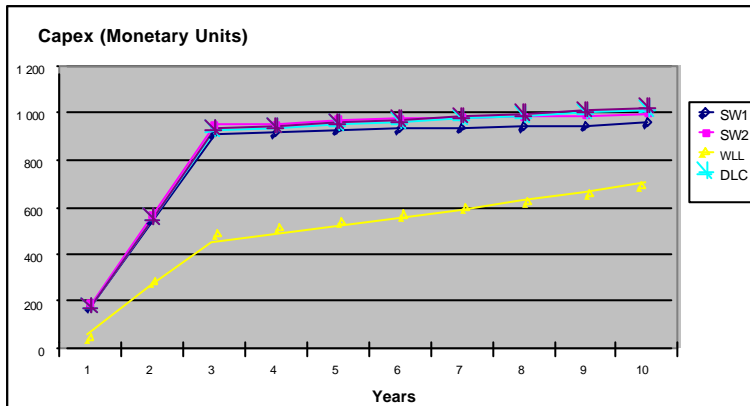
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 22



Case study for access structure Comparison of investment per solution

Villages (Aerial - only POTS)



November 13th

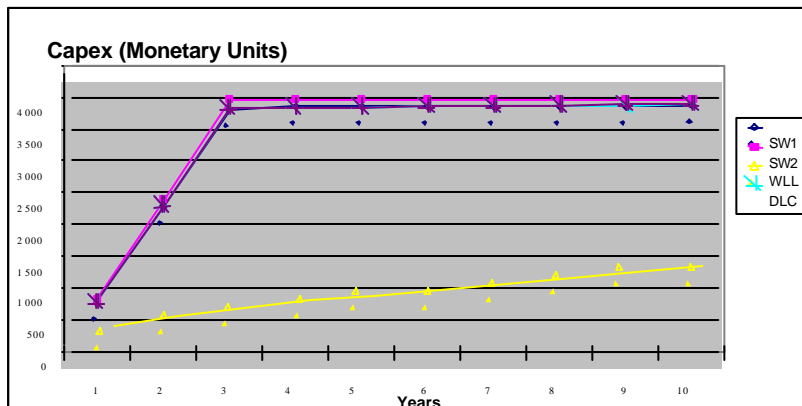
ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 23



Case study for access structure Comparison of investment per solution

Rural (Aerial - Only POTS)



November 13th

ITU/BDT-COE Network Planning/ Specific Planning - O.G.S.

Lecture NP - 4.4 - slide 24



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 area types

