

Closing the Loop on Planning and Analysis

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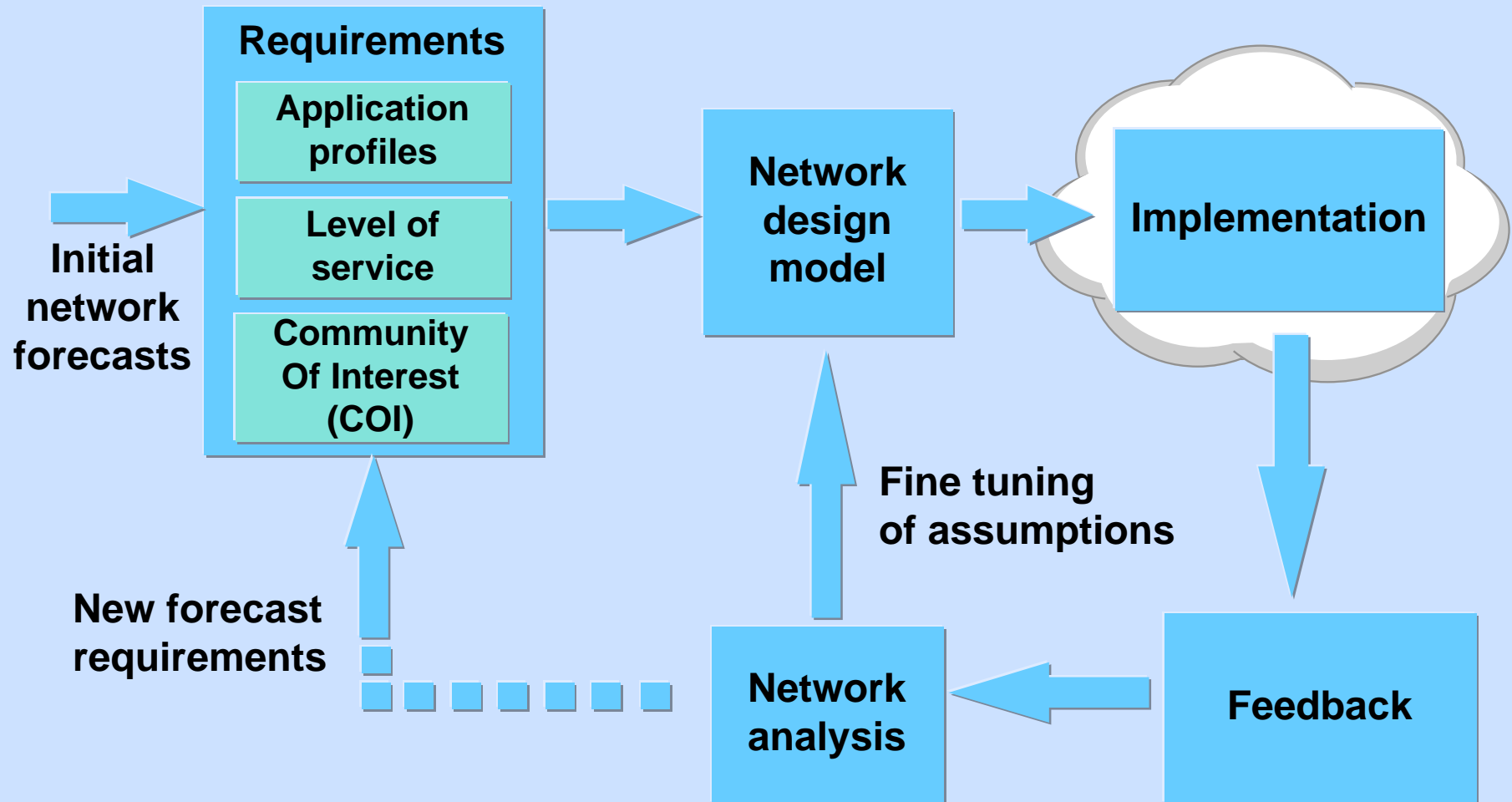
Agenda

- **Overview of planning process**
- **Nortel solution set...**
 - X-PLOER
 - Magellan data collection
 - X-AMINER
- **Customer case study**
- **Summary**

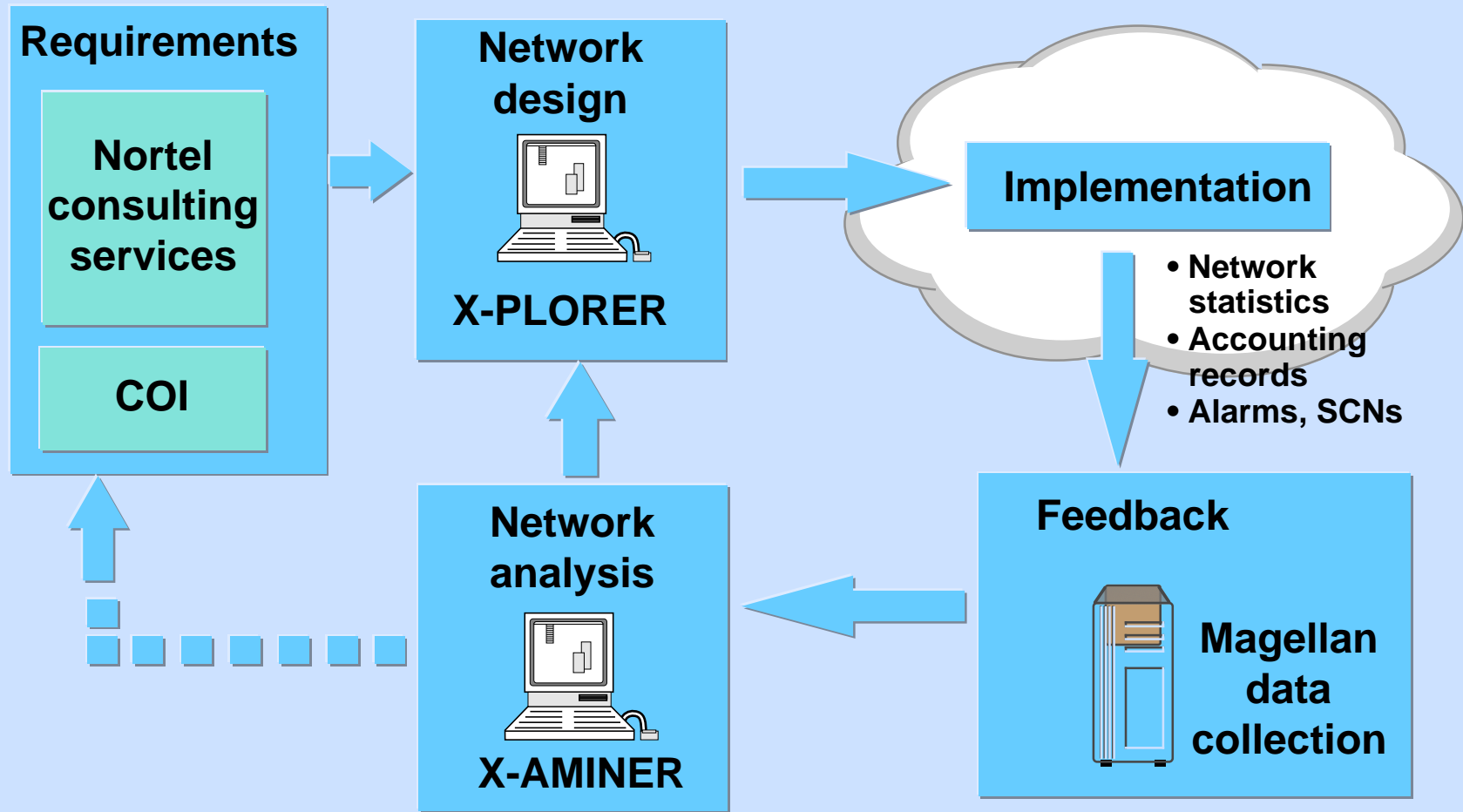
Why is Engineering Important?

- **Today's networks are...**
 - becoming larger
 - increasing in services (frame relay, ATM, etc)
 - increasingly complex
 - real money to the organization
- **Therefore...**
 - the need to properly engineer and fine tune the network is crucial

The Engineering Cycle



Nortel Solution Set

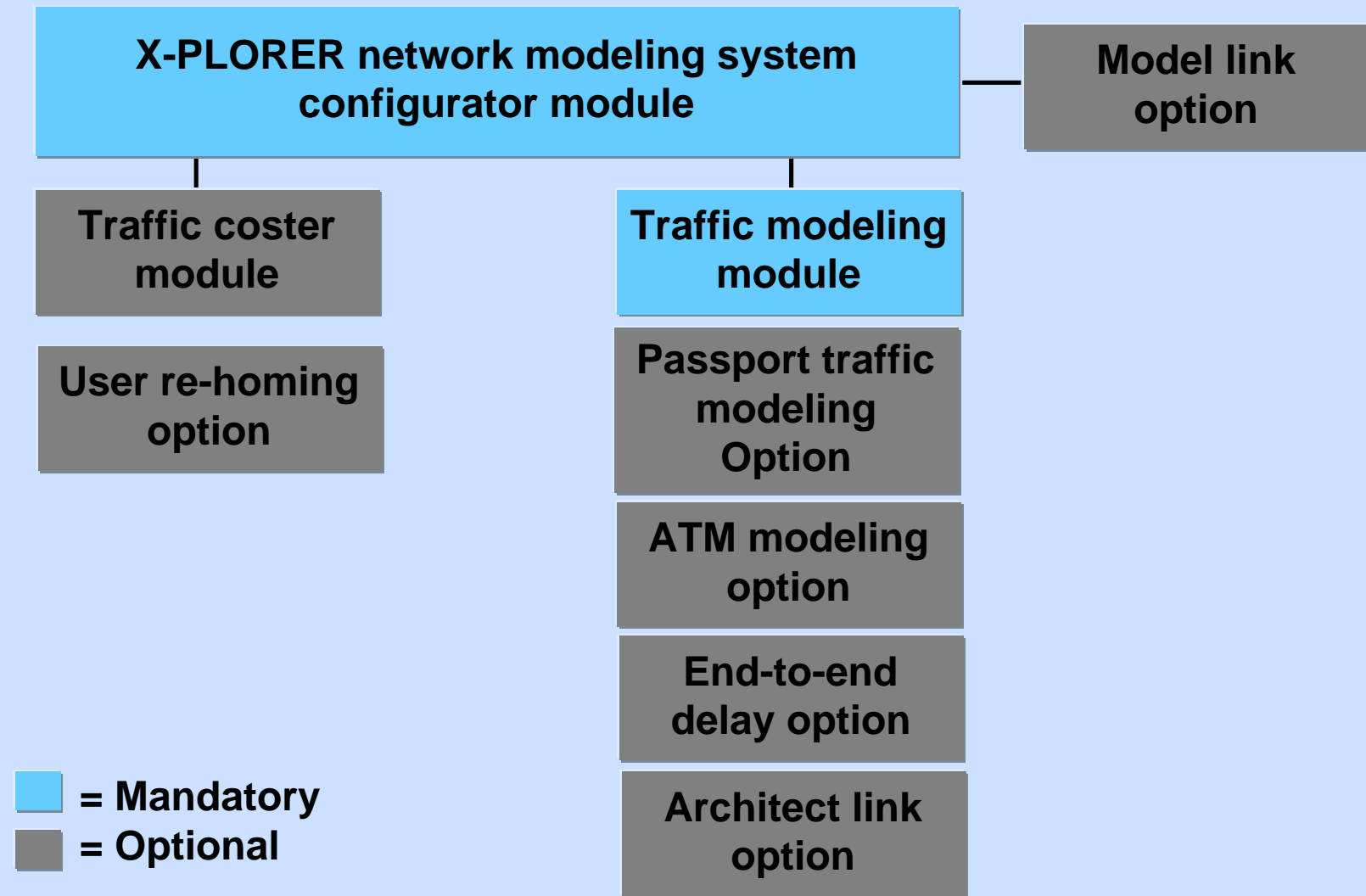


Nortel offers the complete solution set for network optimization

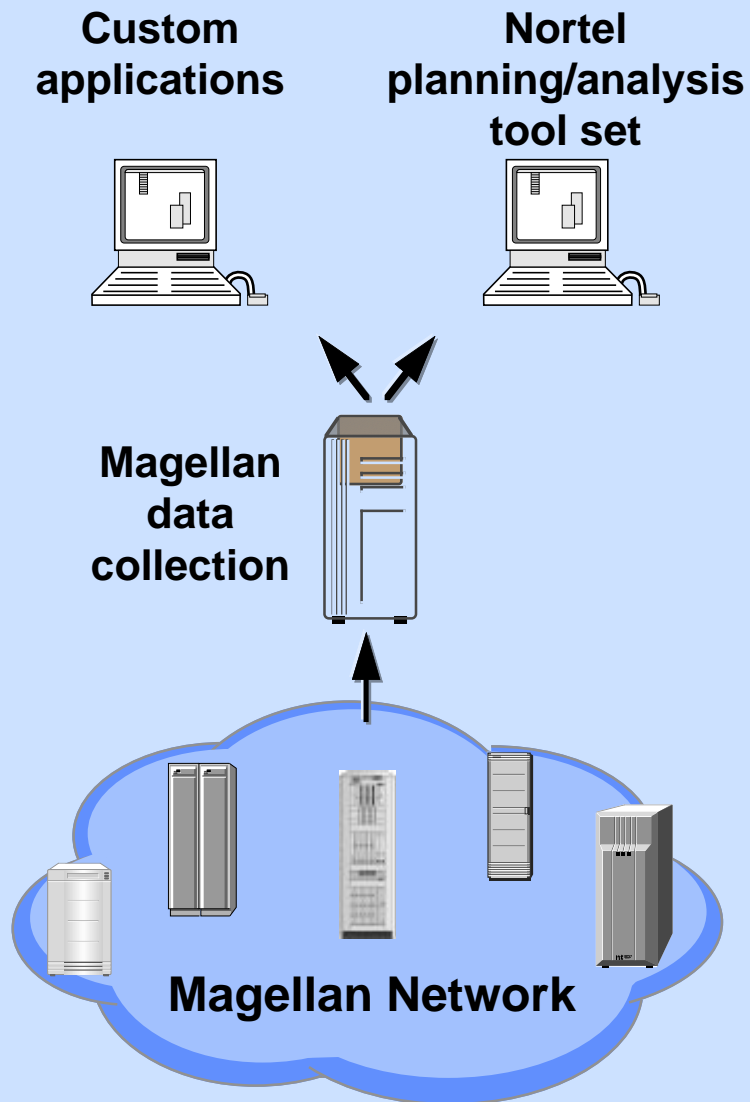
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X-PLOER for Network Design

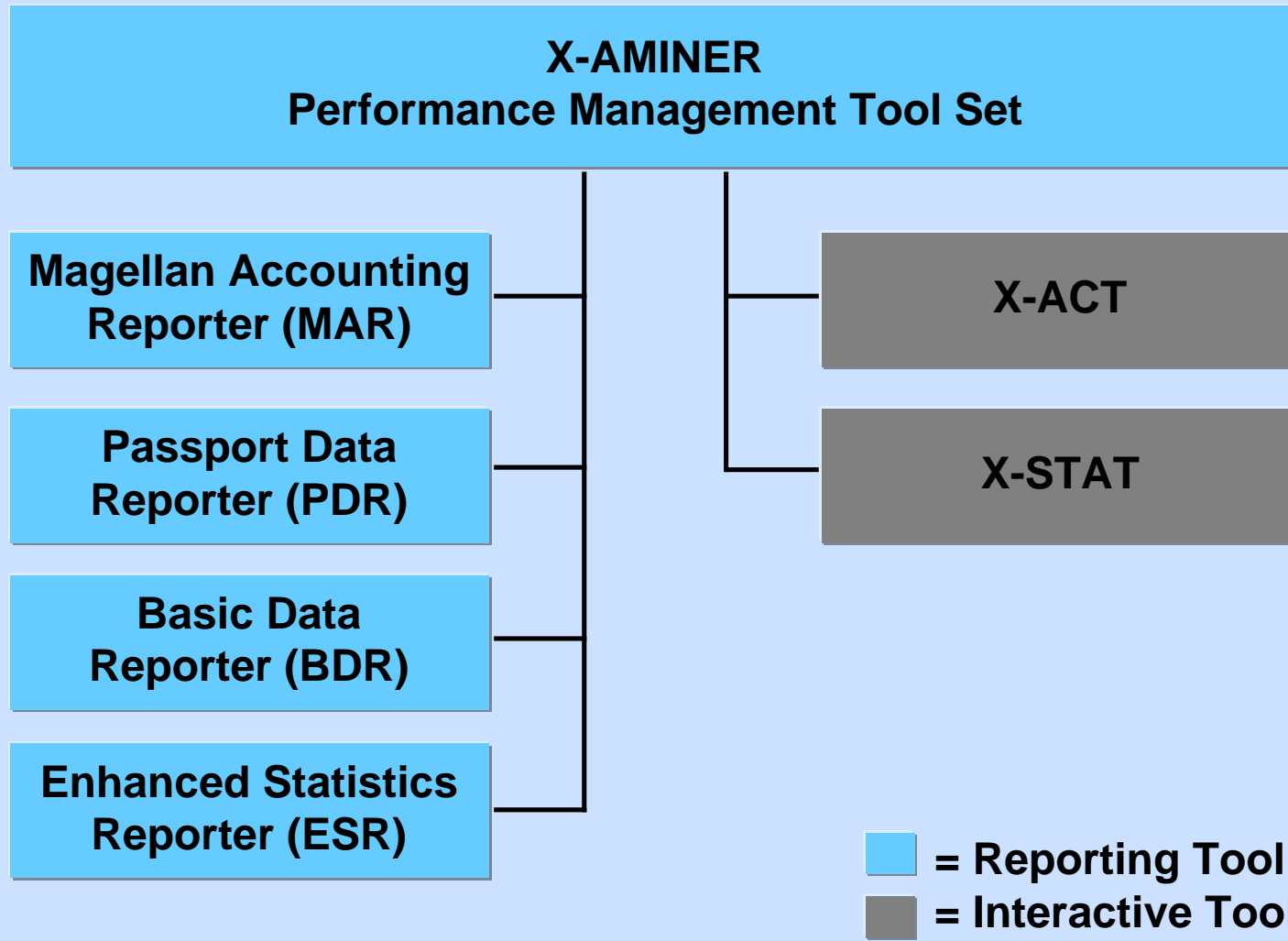


Magellan Data Collection for Feedback



- **Historical data collection enables:**
 - pro-active planning
 - post analysis of network
 - usage-based billing
 - customer network management
 - availability analysis
- **Magellan data collection**
 - scalability through distributed architecture
 - reliability through local collection and backup capabilities
 - ease operational fit through customizable interfaces
 - extensive network and service level information

X-AMINER for Network Analysis



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Customer Case Study

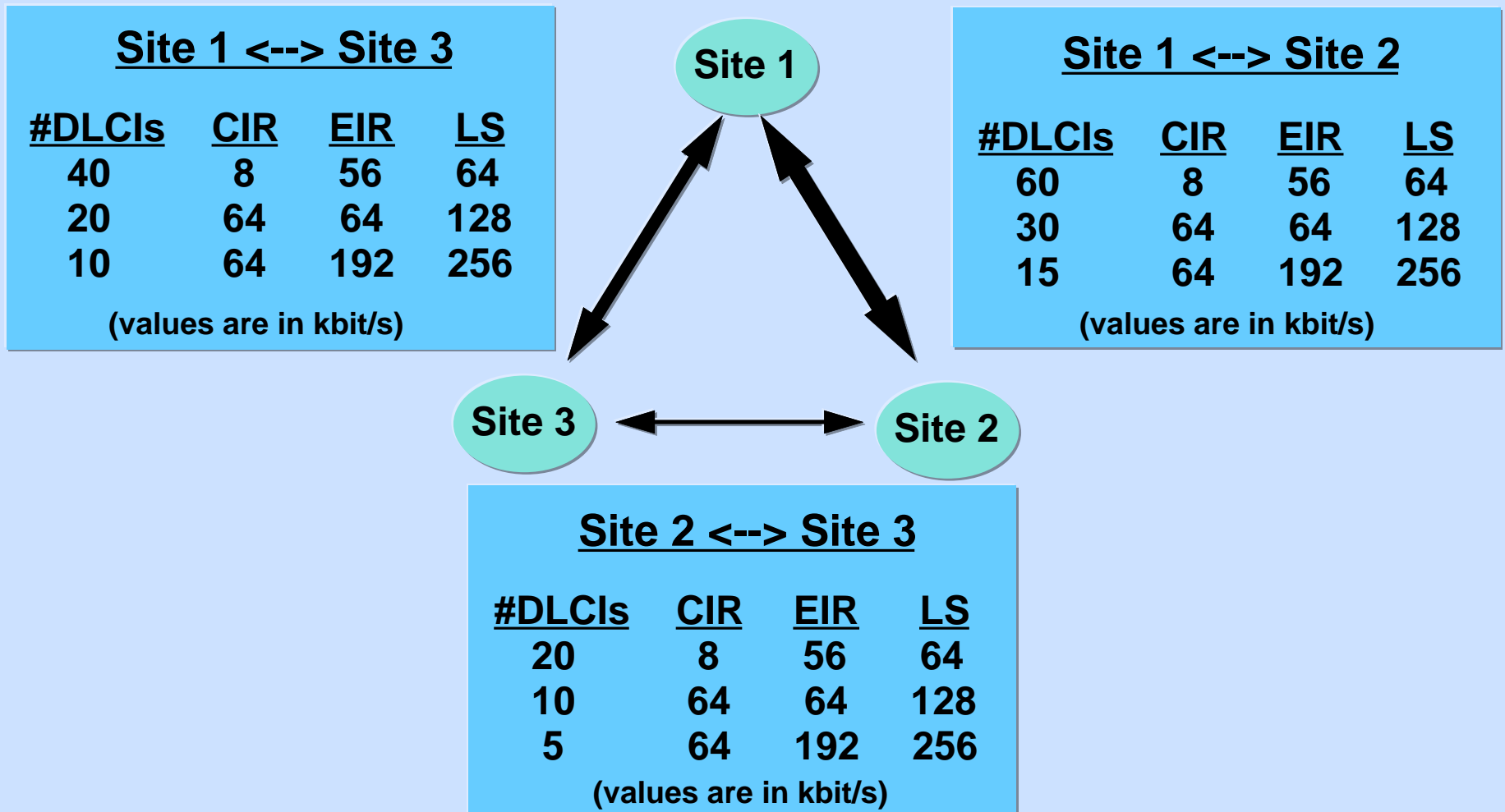
Customer environment

- 3 major sites
- Longest hop = 700 km
- Expensive local tariffs
- Single tariff structure
- Very high level of service expected

Networking requirements

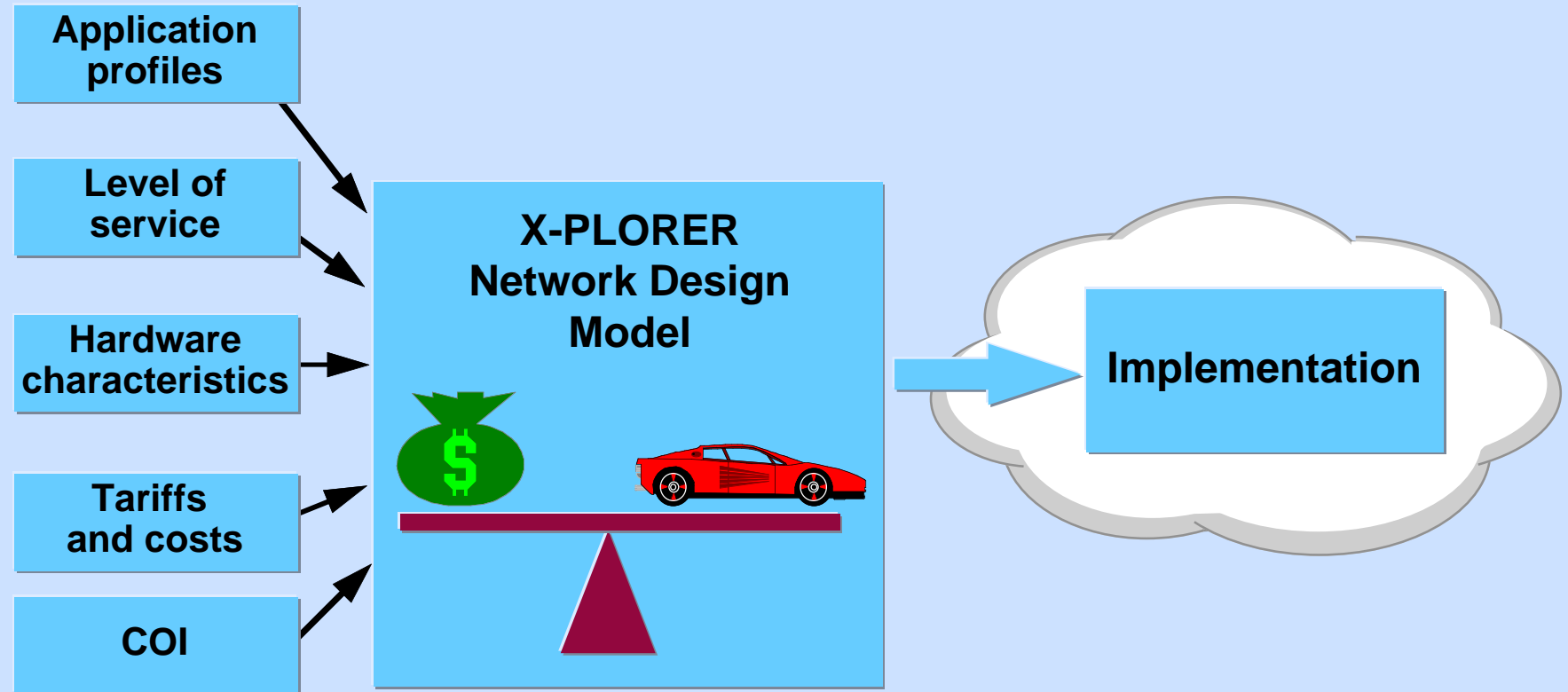
- Community of Interest (COI) estimates
 - see next slide
- Level of service
 - end-to-end delay < 40 ms
- Application profiles
 - router access 64K - 128K
 - frame relay (connectionless)
- Engineering guidelines
 - trunking = E1
 - max = 85%, avg = 60%
 - 2:1 oversubscription factor

Requirements: COI Estimates



Nortel will work with you to establish traffic forecasts

Network Design and Implementation



Balancing of cost and performance

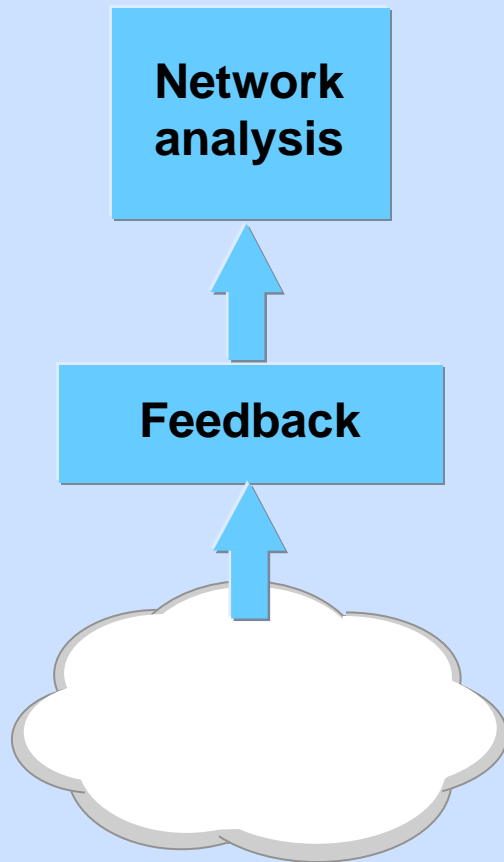
Network Design and Implementation

The screenshot displays the X-PLORER 2.3.0 Network Configurator interface. The main window shows a network diagram on a grid background. The diagram features three primary nodes: PP1, PP2, and PP3, connected by thick green lines. PP1 and PP3 are connected horizontally, while PP1 and PP2 are connected vertically. PP2 and PP3 are also connected vertically. Each of these primary nodes is connected to several secondary nodes: PP1 connects to VOICEUG1, FRUG1, and HTDSUG1; PP2 connects to VOICEUG2, HTDSUG2, and FRUG2; PP3 connects to VOICEUG3, FRUG3, and HTDSUG3. The nodes are represented by small green circles with labels in pink boxes. A smaller version of the same diagram is visible in a window titled 'Call List' at the bottom left.

Surrounding the main window are several property panels:

- Properties - Call Profiles Data:** Includes fields for Call Name (PP3FR), Destination (User, Hunt Group), Caller to Call, Peak Chars per S (4750.00), Data Packet 1, Local (128.00), Net (128), Remote (128.00), and a Call List containing PP3FR.
- Properties - PR Inter Switch Link Groups:** Includes an 'Edit Virtual Links' section.
- Properties - PR IS Link:** Includes a table with columns: Select, User Group, PR IS Link, Zoom, IS Link Gr., PR Acc. Link, and Node, Acc. Link Gr.

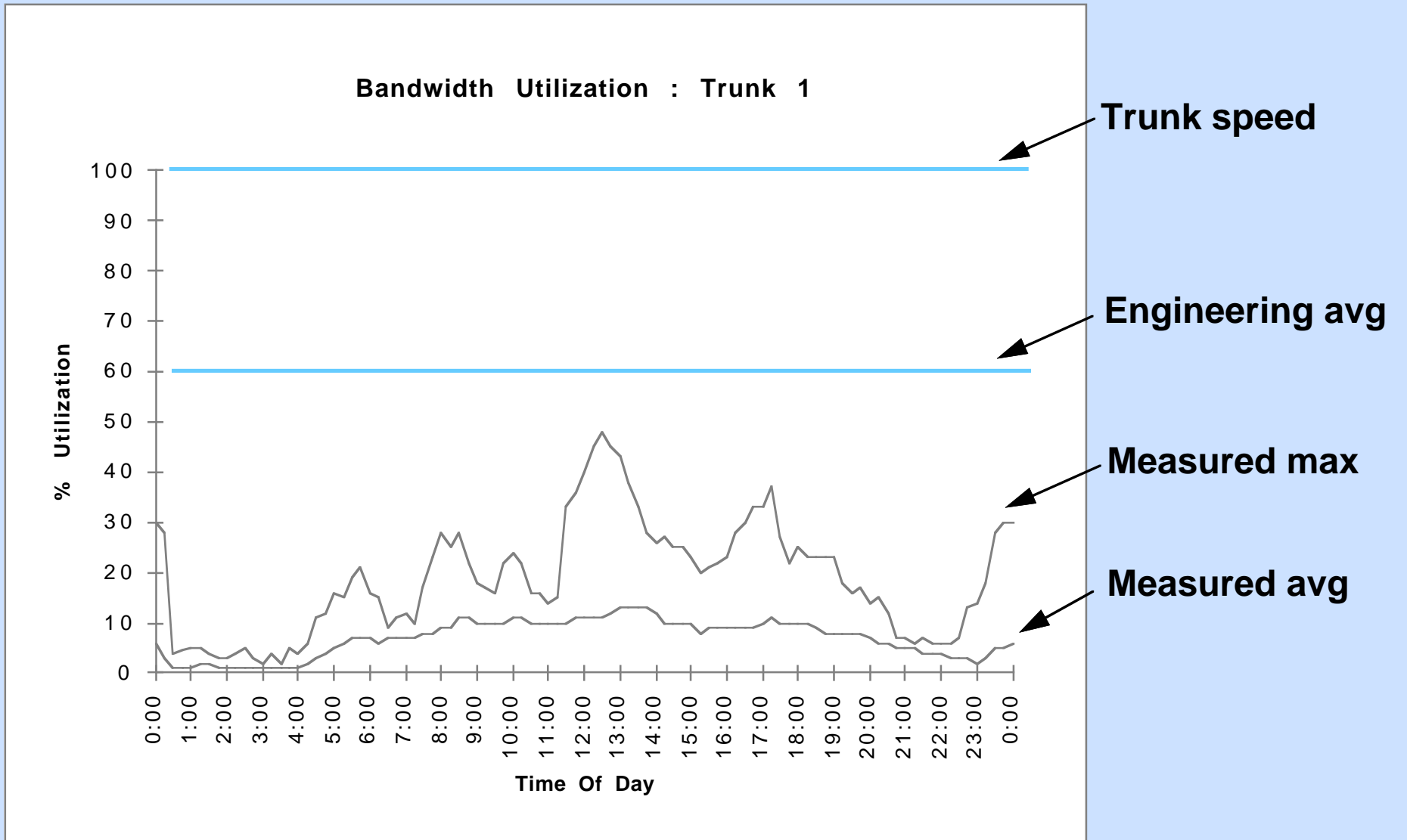
Feedback and Network Analysis



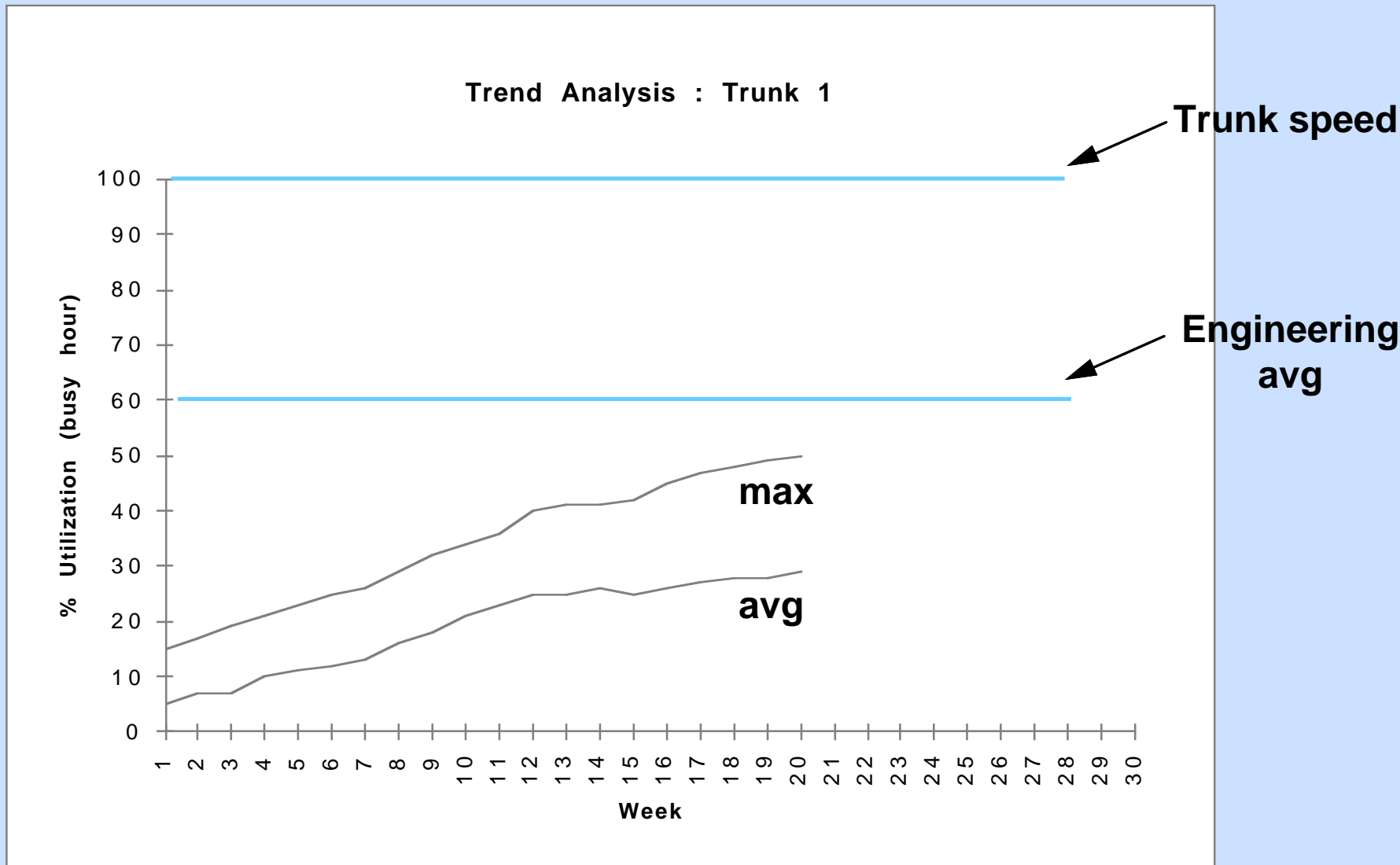
- **Feedback data is periodically collected...**
 - network statistics
 - network alarms
 - service accounting
- **Network analysis...**
 - resource utilization
 - threshold analysis
 - growth forecast

First step in closing the loop

Network Analysis: Resource Utilization



Network Analysis: Growth Trends



Closing the Loop - Fine Tuning

Analysis has proven that 2:1 oversubscription factor is conservative

- **Action: Engineering decision on implementing a more aggressive factor (4:1)**

Analysis has shown that the network is growing

- **Action: “Date for a date”...estimate when forecast should be re-visited**

Closing the Loop - New Forecasts

- **Network growth trend**
 - additional bandwidth is required
- **New services/applications**
 - introduction of voice/ATM/etc., on Magellan network

Summary

- **Effective planning saves \$**
 - optimizing network resources
- **Nortel provides the tools and the expertise to optimize your network**
 - network tuning is an art

Making your network powerful

Targeted Product Rollout

