



Telephone Operations  
*Pricing and Tariffs Department*

# Incremental Cost Methodology and Models

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# Marginal Vs. Incremental



*MARGINAL COST* measures the change in costs associated with the production of one more unit of output, holding constant the production levels of all other product and service outputs offered by the company.

*INCREMENTAL COST* measures the change in costs associated with the production of an incremental unit of output, holding constant the production levels of all other product and service outputs offered by the company.

*INCREMENTAL COST* can be thought of as the real-world approximation to the concept of marginal cost.

# Long Run Vs. Short Run



*LONG RUN* refers to a situation such that all inputs utilized by the company in producing its outputs can be adjusted.

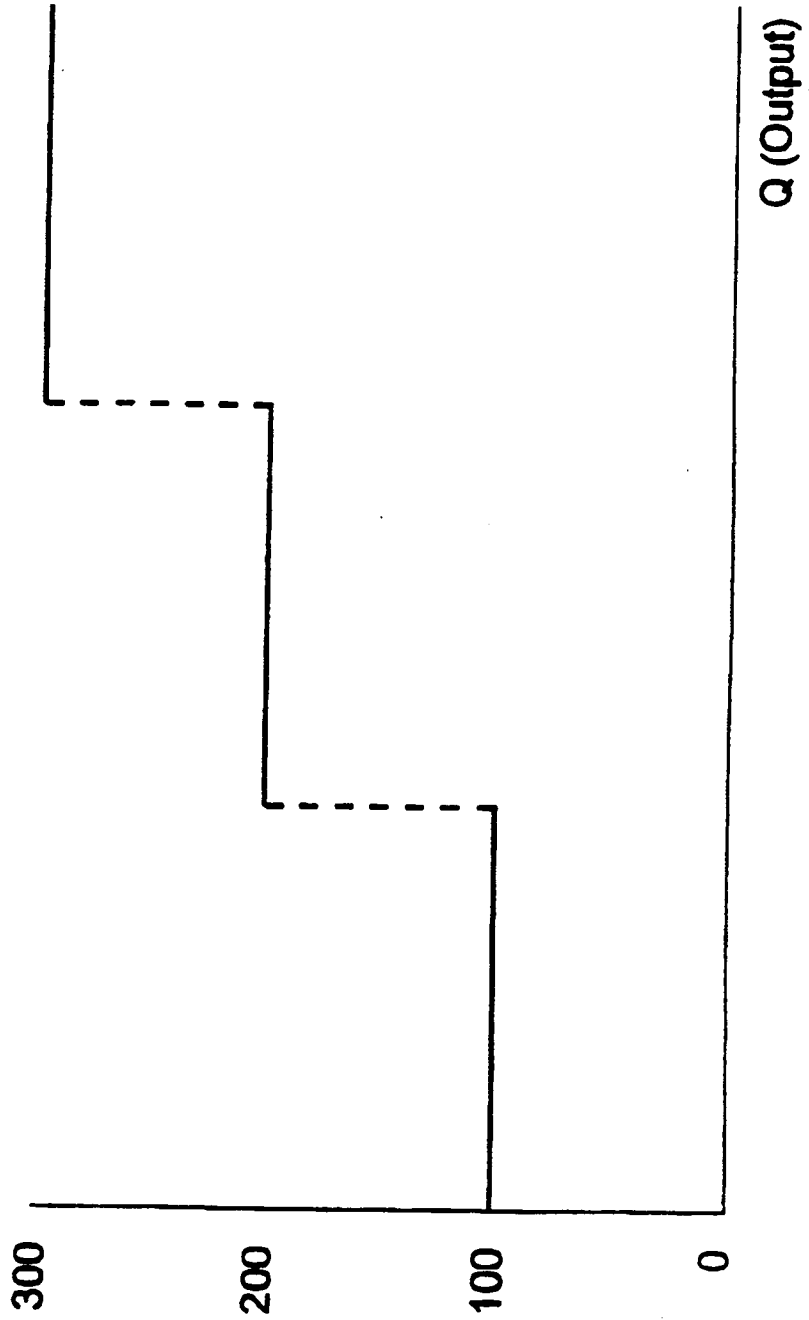
*SHORT RUN* refers to a situation such that one or more inputs utilized by the company in producing its outputs cannot be adjusted.

# Lumpy Investment



- The smallest manageable incremental change in output for telecommunications is typically larger than one unit.
- Network switching and transport capacity is purchased from vendors in increments or blocks which are usually greater than one unit of output for a product or service offered under tariff.

# Lumpy Investment



# LRIC (Long Run Incremental Cost)



- GTE's costing standard
- Captures the long run advancement or delay of future costs – Changes in demand may not necessarily cause immediate changes in costs
- Appropriate for evaluating price changes to existing services and the introduction of new services

# LRIC Conceptual Framework



*VOLUME - SENSITIVE COSTS* are costs that vary with output.

*VOLUME - INSENSITIVE COSTS* are costs that do not vary with output (also referred to as fixed costs).

*GROUP RELATED VOLUME - INSENSITIVE COSTS* are costs that do not vary with output, common to a group of services.

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# Cross Subsidization



*CROSS SUBSIDIZATION* is defined as the pricing of some services above their incremental costs in order to allow other services offered by the company to be priced below their incremental costs of production



# Test for Cross Subsidization



## *TWO-STEP PROCESS:*

1. The price for the service must cover its volume sensitive costs.
2. The revenues for the service must cover its volume sensitive and volume insensitive costs.

# Relevant Technologies for Measuring LRIC



- Forward looking
- Known technologies currently being deployed
- Certain embedded technologies not relevant (e.g., analog switching)

# Forward Looking Technology



## TYPICAL ASSESSMENT

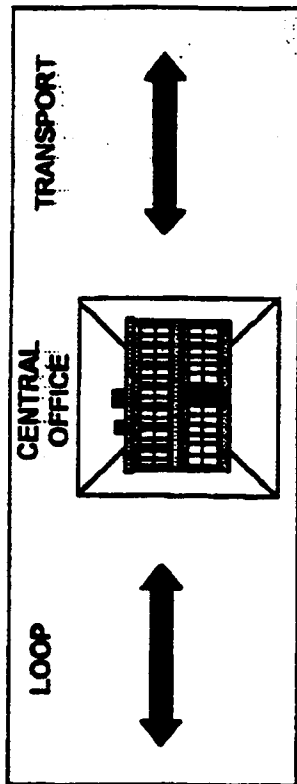
<b>BASIC LOOPS</b>	<b>Mix of copper and pair-gain</b>
<b>DS-1 LOOPS</b>	<b>Mix of copper and fiber</b>
<b>DS-3 LOOPS</b>	<b>Fiber</b>
<b>SWITCHING</b>	<b>Digital</b>
<b>TRANSPORT</b>	<b>Fiber</b>

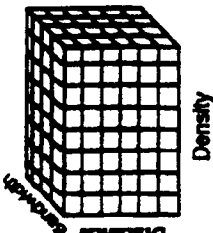
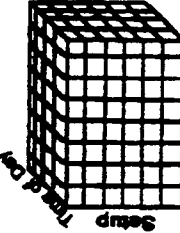
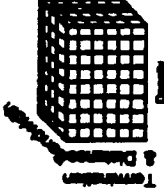
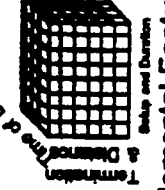
# Capacity Cost Calculation



- Provides a reasonable and efficient means of determining LRIC
- Used to identify the volume sensitive costs
- Capacity cost calculation essentially smooths the lumpy investment to account for the advancement or delay of future costs

# Basic Network Functions



<p><b>Loop Components</b></p> <p>A. Loop</p>  <p>B. Supplemental Features</p>	<p><b>Switching Components</b></p> <p>A. Terminations (by type) B. Switched Usage (by type, by office size)</p>  <p>C. Switching Features</p>	<p><b>Transport Components</b></p> <p>A. Dedicated (by system/office size)</p>  <p>B. Switched Transport (by system/office size)</p>  <p>C. Supplemental Features</p>
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# COSTMOD SYSTEM



## TECHNOLOGY MODULE

## APPLICATION MODULE

Loop (Voice Grade)  
 Copper (DS-1)  
 GTD-5 Switching  
 SS7  
 Fiber Optic



Usage (i.e., Calls & Minutes)  
 GTD-5 Switching Features

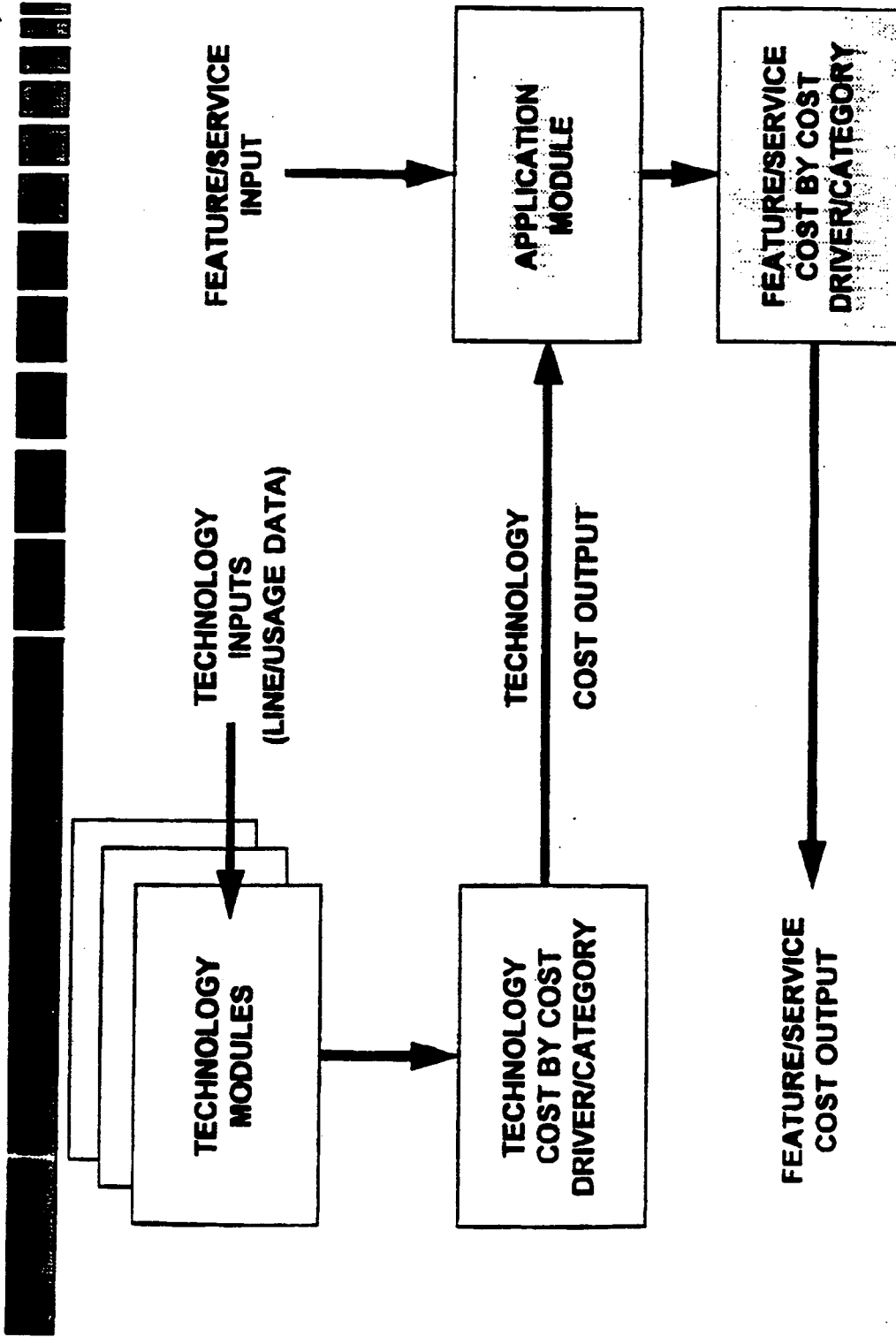
DMS Switching  
 5 ESS Switching

DMS Switching Features  
 5 ESS Switching Features

**SCIS**

# COS<sub>1</sub>MOD SYSTEM

(Costs for Network Services)



# COSTMOD SYSTEM

## (Costs for Usage Services)



### TECHNOLOGY MODULE

<ul style="list-style-type: none"> <li>Loop (Voice Grade)</li> <li>Copper (DS-1)</li> <li>✓ GTD-5 Switching</li> <li>✓ SS7</li> <li>✓ Fiber Optic</li> </ul>	<ul style="list-style-type: none"> <li>✓ DMS Switching</li> <li>✓ 5 ESS Switching</li> </ul>
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### APPLICATION MODULE

<ul style="list-style-type: none"> <li>✓ Usage (i.e., Calls &amp; Min.)</li> <li>GTD-5 Switching Features</li> </ul>	<ul style="list-style-type: none"> <li>DMS Switching Feat.</li> <li>5 ESS Switching Features</li> </ul>
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**SCIS**

✓ = Indicates relevant modules



# Summary



- LRIC is our standard
- Captures volume sensitive and volume insensitive costs
- Provides sufficient cost information for evaluating price changes to existing services and the introduction of new services
- Forward-looking technologies

# Summary (cont'd)



- The Capacity Cost Calculation
- Cost Drivers and Basic Network Functions
- The COSTMOD SYSTEM -- Combining Technology Modules and Application Modules to determine the costs for network services