Topic: Section Advanced Organizer
Storyboard number: 07-05-00-000C
Screen type: Content

Layout: 5
Level:

What content does this section cover?

The section Implementation covers:

- What forces are at work in ISDN implementation
- What upgrades Telcos need to perform to implement ISDN
- What ISDN Islands are and how they impede ISDN implementation
- How product manufacturing effects ISDN implementation
- Who needs to know how to implement ISDN

Icon

Screen graphics for 07-05-00-000C:

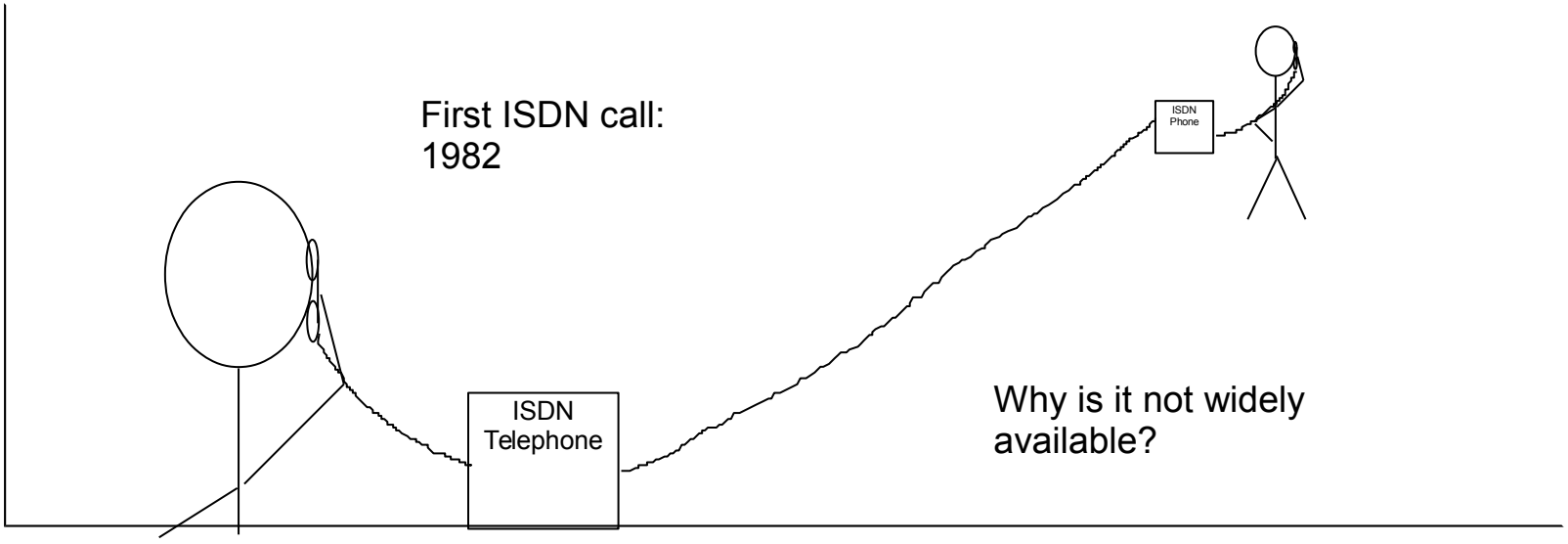
Component	Library	Description/notes	Clickable/ caption
Icon, Large		Section 5 Icon	If a graphic is clickable, there will be a notation in this column. Otherwise, graphics are not clickable.
			If there is a caption to go with a graphic, it will be shown on the storyboard screen template and referenced in this column.

Topic: Introduction
Storyboard number: 07-05-01-000C
Screen type: Content

Layout: 1
Level:

What is the ISDN implementation process?

The first **ISDN** telephone call in the US was made in 1982. So, why is this new technology not on everyone's desk and in every home around the world?



Screen graphics for 07-05-01-000C:

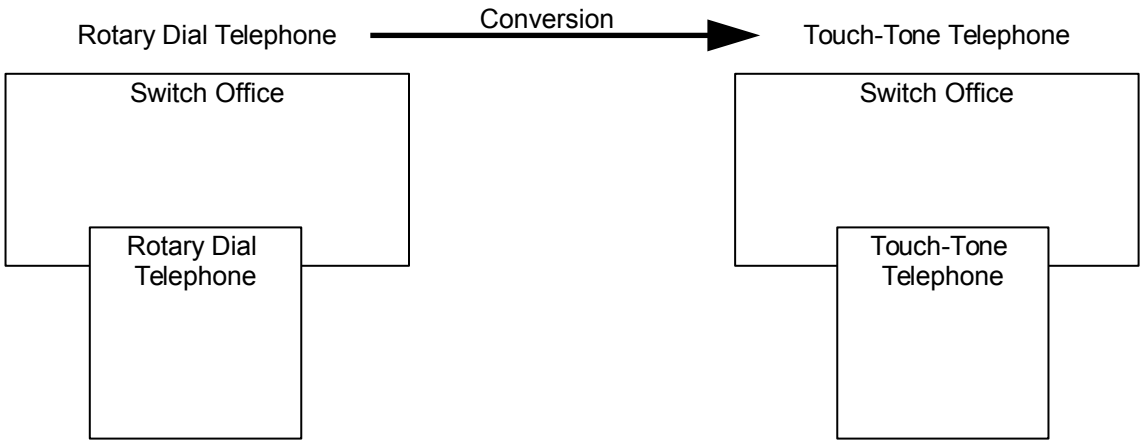
Component	Library	Description/notes	Clickable/ caption
Figure, large		Figure holding handset. Left.	
Figure, small		Figure holding handset. Right.	
ISDN Telephone Medium		ISDN telephone. Left.	
ISDN Telephone Small		ISDN telephone. Right.	
Wire		Connects two telephones. Center.	
Hot text		ISDN	Clickable

Topic: Introduction
Storyboard number: 07-05-01-005C
Screen type: Content

Layout: 1
Level:

What technology implementations have come before ISDN?

Here's a good example. In the early 1960's, telephone companies began converting existing rotary dial technology with **DTMF** technology. AT&T coined the phrase "Touch-tone" dialing for this technology.



Screen graphics for 07-05-01-005C:

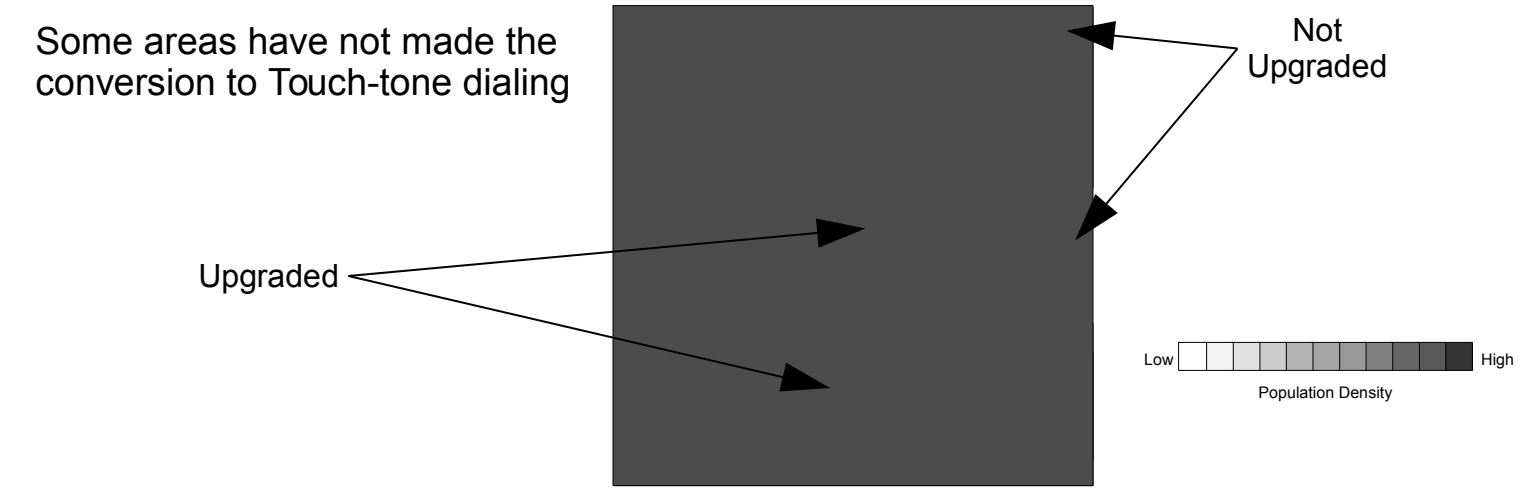
Component	Library	Description/notes	Clickable/ caption
Switch Office Medium		Two identical switch offices. One screen left, one screen right.	Captions
Rotary Dial Telephone Meduim		Rotary Dial Telephone. Directly below switch office on screen left.	
Touch-tone Telephone Meduim		Touch-tone Telephone. Directly below switch office on screen right.	
Arrow, Large		Arrow. Center top.	Caption
Hot text		DTFM	Clickable

Topic: Introduction
Storyboard number: 07-05-01-010C
Screen type: Content

Layout: 1
Level:

What sort of factors affect an implementation process?

There are some small **telcos** in lightly populated areas around the United States which still have not upgraded to **DTMF** technology. Those communities may not have the need or economic ability to make the change.



Screen graphics for 07-05-01-015C:

Component	Library	Description/notes	Clickable/ caption
Map, Large		**Color coded map with legend. This will be used throughout the section with slight modifications. Center.**	**Captions**
Hot Text Hot Text		DTFM telcos	Clickable Clickable

Topic: Introduction
Storyboard number: 07-05-01-020C
Screen type: Content

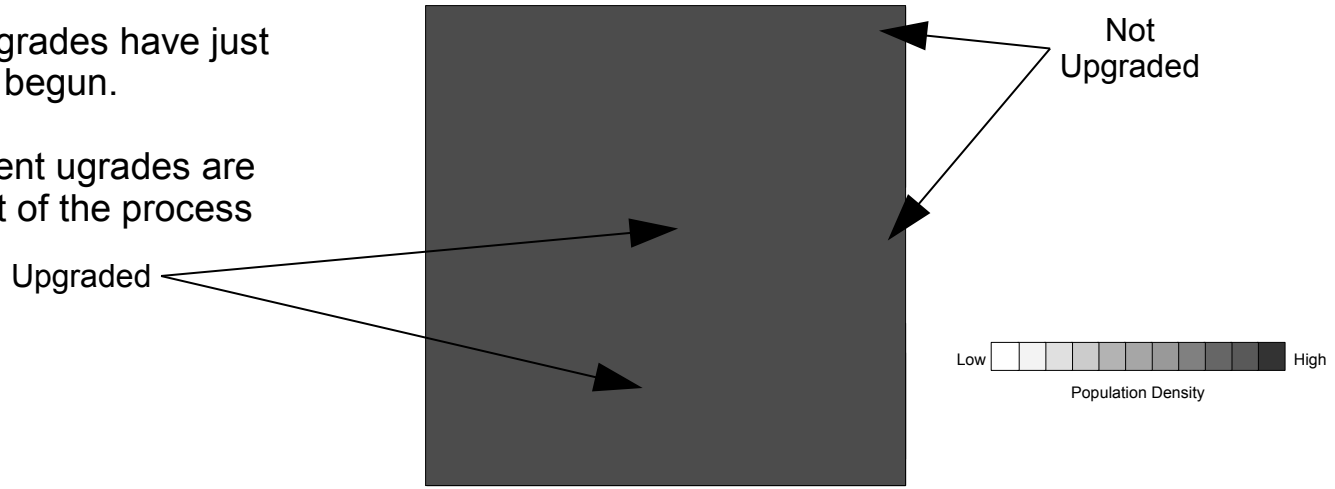
Layout: 1
Level:

What more does implementing ISDN involve?

Since that first ISDN phone call, telcos have steadily upgraded their facilities. Although, upgrades are just a portion of the enormous job required to implement ISDN service.

ISDN upgrades have just begun.

Equipment ugrades are one part of the process



Screen graphics for 07-05-01-020C:

Component	Library	Description/notes	Clickable/ caption
Map, Large		Same graphic as on previous frame. Center.	Captions

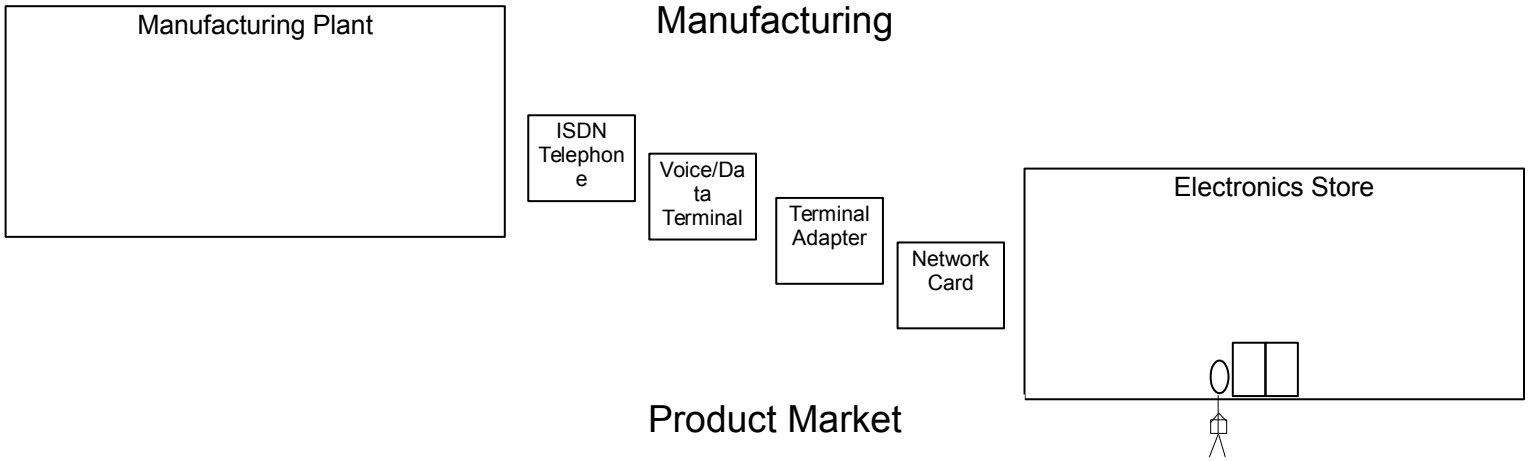
*** New Graphic**

Topic: Introduction
Storyboard number: 07-05-01-025C
Screen type: Content

Layout: 1
Level:

What more does implementing ISDN involve?

A manufacturing base had to develop, and a market for the products the manufacturers would create also had to develop.



Screen graphics for 07-05-01-025C:

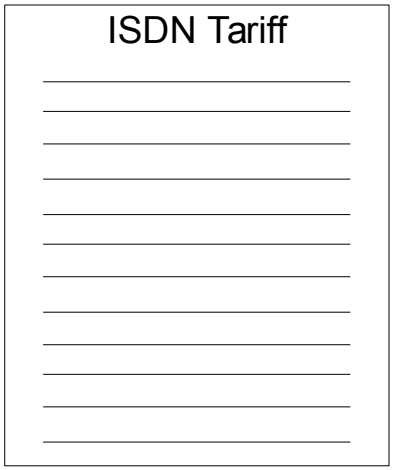
Component	Library	Description/notes	Clickable/ caption
Manufacturing Plant, medium		**Plain building with "Manufactuing Plant" on front**	
Electronics Store medium		**Plain building with "Electronics Store" on front with doors and a customer exiting carrying a package.**	
ISDN phone Small		ISDN Telephone. This was used in Setion 3. Center.	
Voice data terminal Small		Voice data terminal. This was used in Setion 3. Center.	
Terminal Adapter Small		Terminal Adapter. This was used in Setion 3. Center.	
Network Card Small		Network Card. This was used in Setion 3. Center.	

Topic: Introduction
Storyboard number: 07-05-01-030C
Screen type: Content

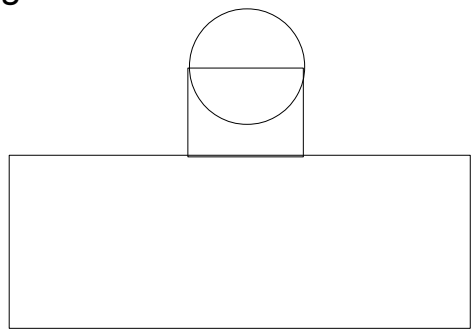
Layout: 1
Level:

What more does implementing ISDN involve?

Telcos and state departments, such as Public Utility Commissions, needed to create a pricing structure for the cost of ISDN services and implementation.



Service Pricing



Screen graphics for 07-05-01-030C:

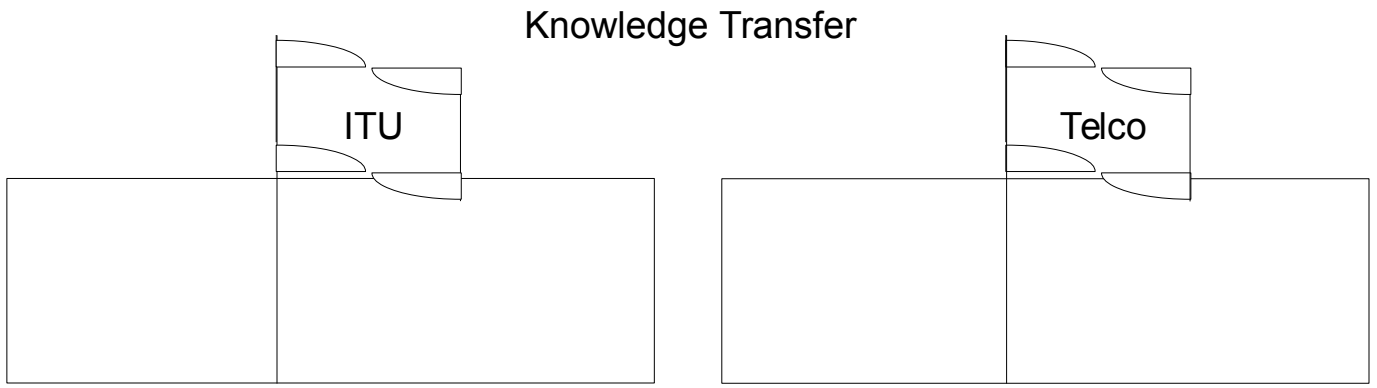
Component	Library	Description/notes	Clickable/ caption
Gov't Building Large		**Generic building with a raised dome on top. Right.**	
Document Large		**Document with "ISDN Tariff" text at top. Left.**	

Topic: Introduction
Storyboard number: 07-05-01-035C
Screen type: Content

Layout: 1
Level:

What more does implementing ISDN involve?

The knowledge of ISDN implementation needs to transfer from those who created the technology to those who work directly with the customer and make ISDN operate in the real world.



Screen graphics for 07-05-01-035C:

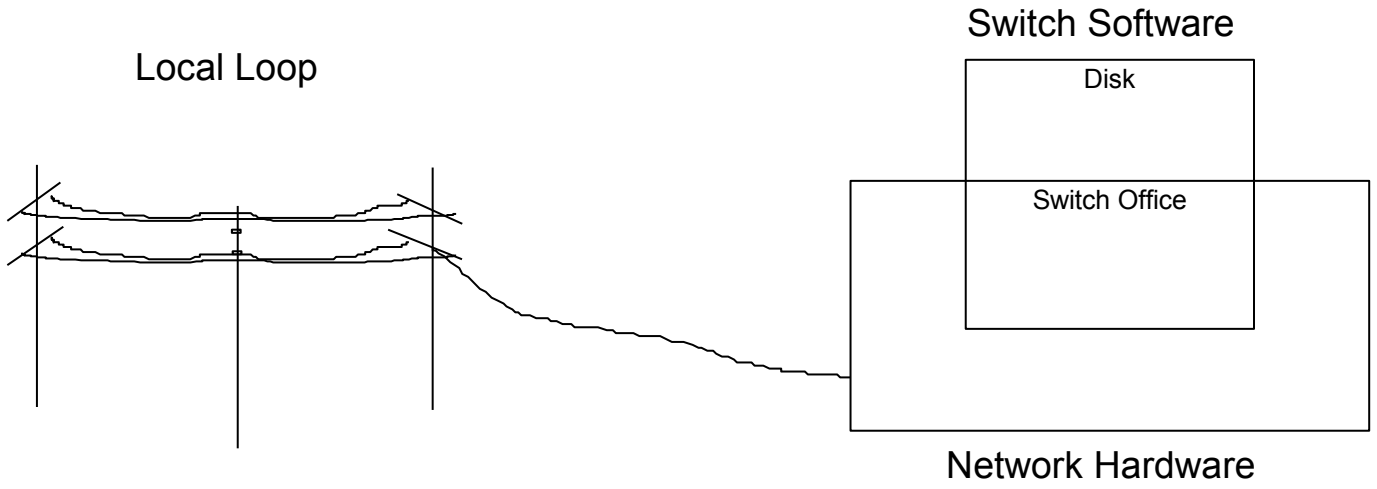
Component	Library	Description/notes	Clickable/ caption
		We should have buildings like these already. They were used in Section 2. Flags have “ITU” and “Telco” text on them.	
Building, Large Building, Large		Buliding with “ITU” flag. Left. Buliding with “Telco” flag. Right.	

Topic: Introduction
Storyboard number: 07-05-01-040C
Screen type: Content

Layout: 1
Level:

What is involved in facility upgrades to ISDN?

These are the steps telcos need to take before they can implement ISDN service. The first of these steps is upgrading network facilities to ISDN standards.



Screen graphics for 07-05-01-040C:

Component	Library	Description/notes	Clickable/ caption
Telephone poles (3), medium		Telephone poles in a semi-circle. From section 3. Left.	Caption
Switch Office, medium		Right	Caption
Computer Disk, medium		From baseline graphics request submitted 3/6/97. Right, behind switch office.	Caption

Topic: Introduction
Storyboard number: 07-05-01-045E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

Why does everyone world-wide not have ISDN on their desks and in their homes?

- ISDN implementation hasn't even begun yet
- Telcos are still testing ISDN in select areas of the country
- The demand and resources to implement ISDN are not available
- Equipment doesn't yet exist for implementing ISDN

Correct answer: The demand and resources to implement ISDN are not available.

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: The law of supply and demand plays a part. Please try again.	Incorrect. The demand and resources to implement ISDN are not available.	That's right. The demand and resources to implement ISDN are not available.

Topic: Introduction
Storyboard number: 07-05-01-050E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What besides manufacturing, facility upgrades, and knowledge transfer is required for ISDN implementation?

- A list of service features
- A pricing structure
- DTFM Technology
- A utility commission

Correct answer: A pricing structure

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: Telcos and state commission develop a tariff for this. Please try again.	Incorrect, the correct answer is a pricing structure. Telcos and state departments, such as Public Utility Commissions, develop tariffs to determine a pricing structure for providing ISDN service to customers.	That's right. Telcos and state departments, such as Public Utility Commissions, develop tariffs to determine a pricing structure for providing ISDN service to customers.

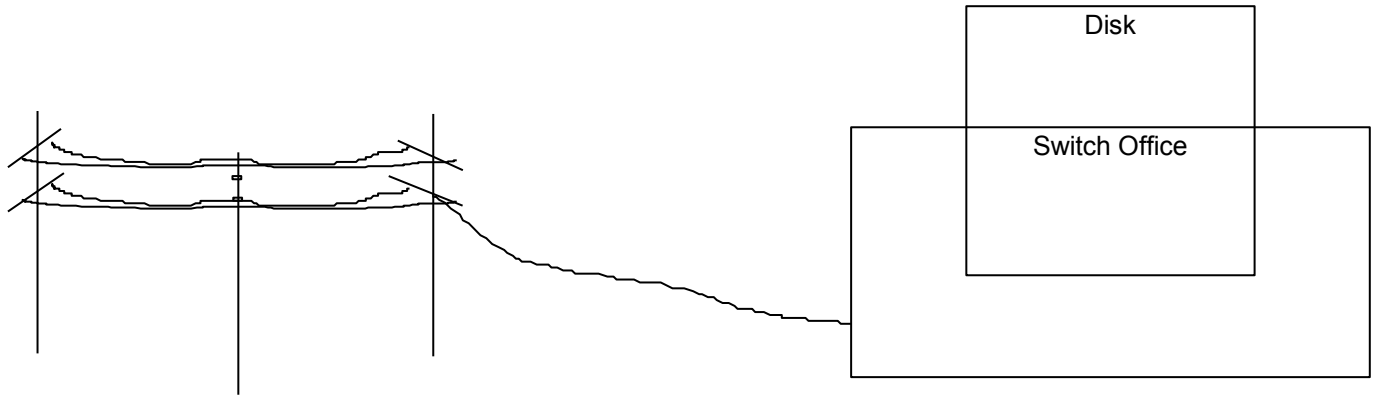
Topic: Digital Upgrades
Storyboard number: 07-05-02-000C
Screen type: Content

Layout: 1
Level:

What is involved in facility upgrades to ISDN?

The first step in ISDN implementation is to upgrade each telco's switch office and the local loops they service.

Switch Office and Local Loop Upgrade



Screen graphics for 07-05-02-000C:

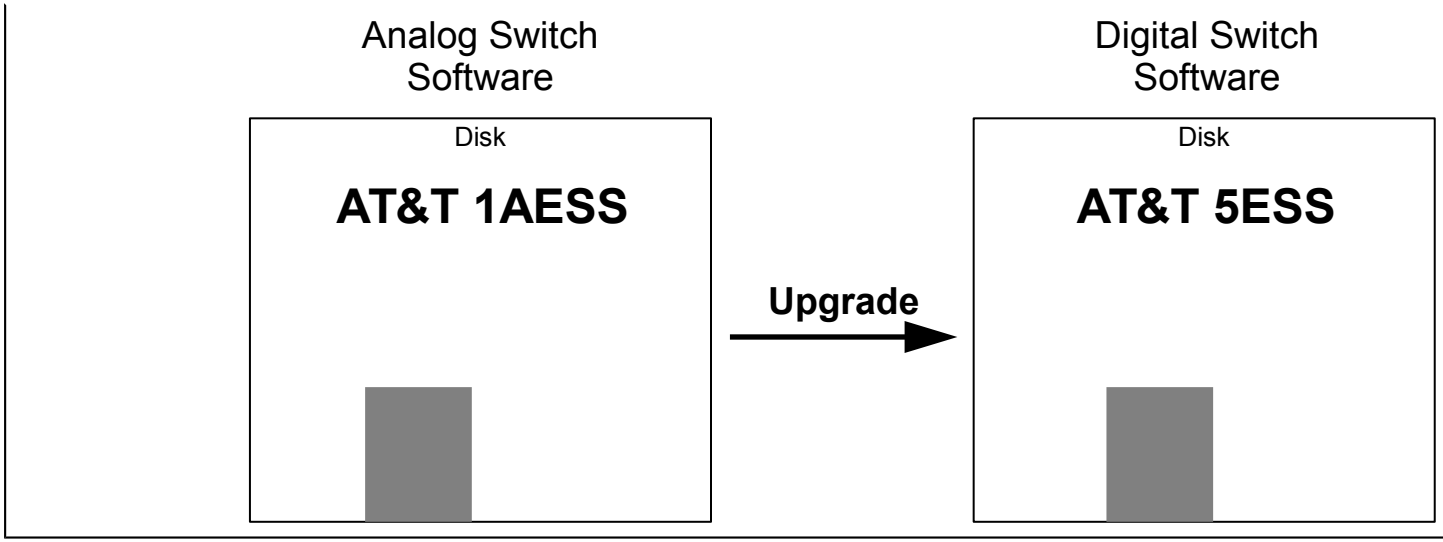
Component	Library	Description/notes	Clickable/ caption
Telephone poles (3), medium		Telephone poles in a semi-circle. From section 3. Left.	
Switch Office, medium **Computer Disk, meduim**		Right. **From baseline graphics request submitted 3/6/97. Right, behind switch office.**	

Topic: Digital Upgrades
Storyboard number: 07-05-02-010C
Screen type: Content

Layout: 1
Level:

What switch office software components need upgrading?

The **switch** is computer software that handles calls. Telcos have to replace the **analog** switch with software capable of handling **digital** calls.



Screen graphics for 07-05-02-010C:

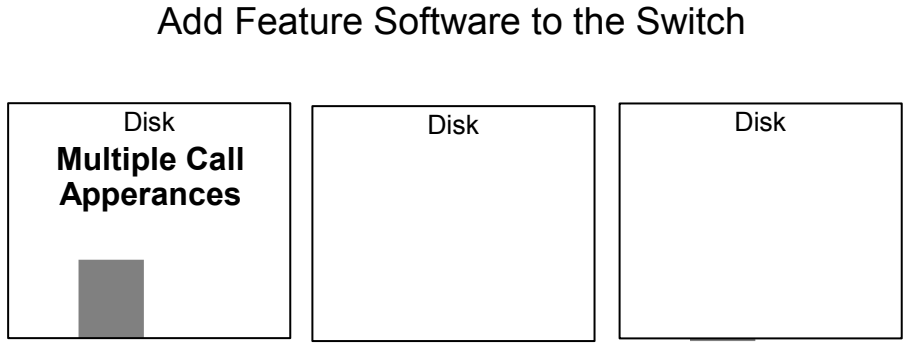
Component	Library	Description/notes	Clickable/ caption
Computer Disk, Large		**Computer disk labeled AT&T 1AESS. Left.**	**Caption**
Computer Disk, Large		**Computer disk labeled AT&T 5ESS. Right.**	**Caption**
Arrow, small			Caption
Hot text		Switch	Clickable
Hot text		Digital	Clickable
Hot text		Analog	Clickable

Topic: Digital Upgrades
Storyboard number: 07-05-02-015C
Screen type: Content

Layout: 1
Level:

What switch office software components need upgrading?

ISDN supports a large variety of features, such multiple call appearances, circuit switched data at 64kbps, packet switched data and others. Telcos need to add the software for these features to their switch office.



Screen graphics for 07-05-02-015C:

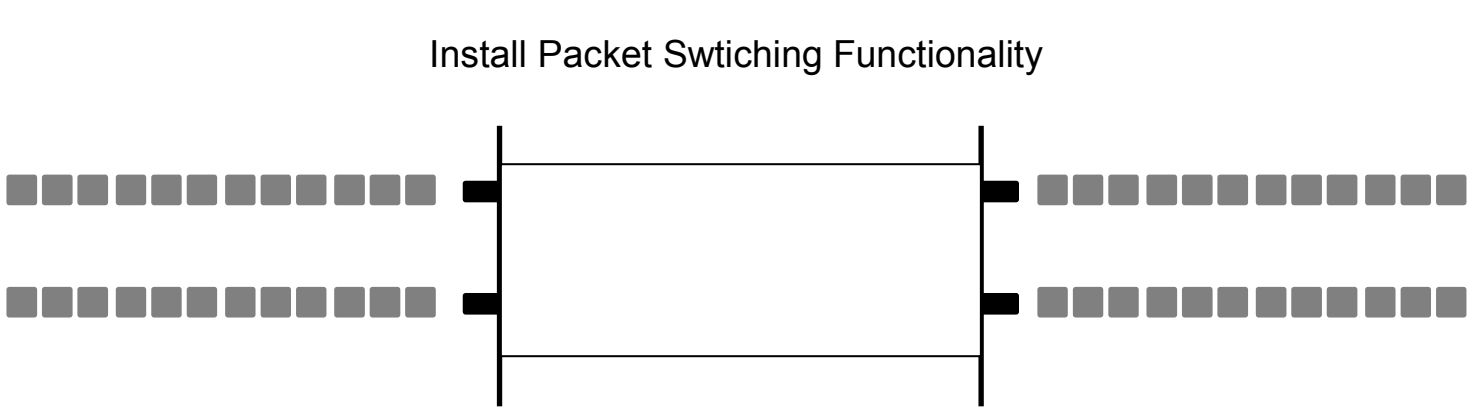
Component	Library	Description/notes	Clickable/ caption
Computer Disk, Medium		Computer disk labeled Mulitiple Call Appearences. Left.	
Computer Disk, Medium		Computer disk labeled Circuit Switched Data. Center.	
Computer Disk, Medium		Computer disk labeled Packet Switched Data. Right.	

Topic: Digital Upgrades
Storyboard number: 07-05-02-020C
Screen type: Content

Layout: 1
Level:

What switch office hardware components need upgrading?

ISDN requires switch offices to have packet switching capability. Telcos need to install special hardware into their networks to provide this functionality.



Screen graphics for 07-05-02-020C:

Component	Library	Description/notes	Clickable/ caption
Packet Switched Hardware. Large		Printed circuit board as used in section 3. Center.	

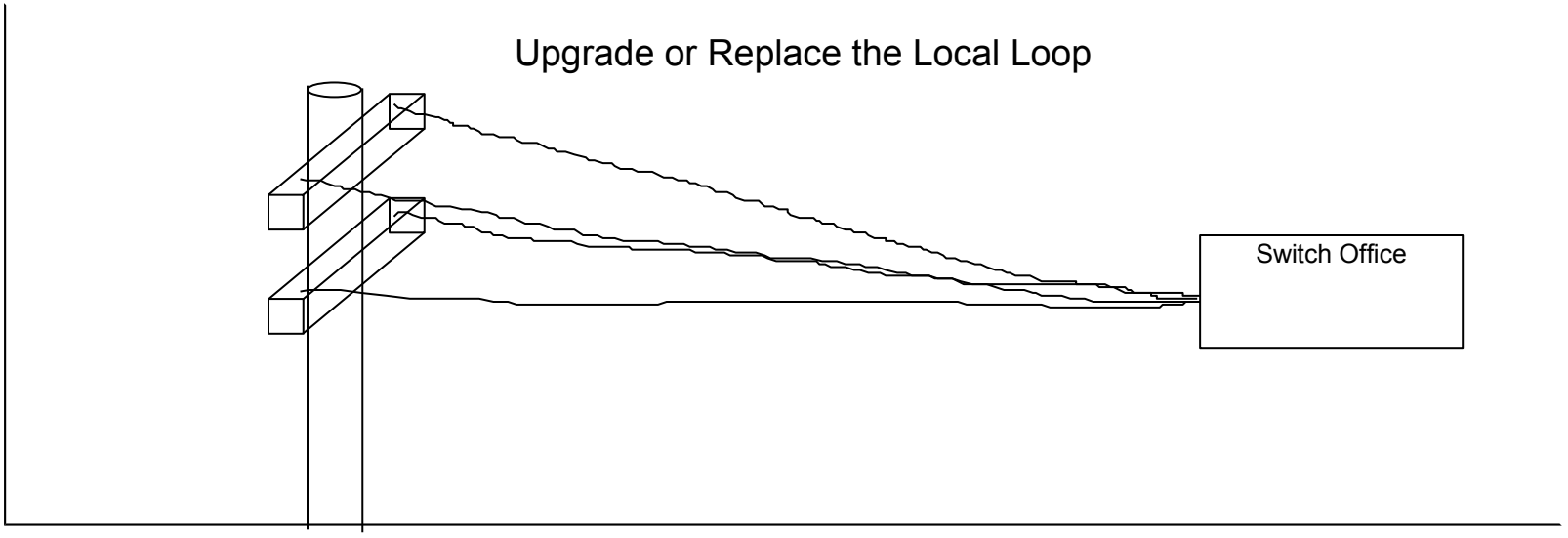
*** New Graphic**

Topic: Digital Upgrades
Storyboard number: 07-05-02-025C
Screen type: Content

Layout: 1
Level:

What local loop components need upgrading?

In addition to upgrading their switches, telcos need to upgrade, or possibly even replace, each local loop served by a switch office.



Screen graphics for 07-05-02-025C:

Component	Library	Description/notes	Clickable/ caption
Switch Office, medium		Right.	
Telephone pole (1), Large		Left. As used on sections 3 and 4	

Topic: Digital Upgrades
Storyboard number: 07-05-02-030E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What is a switch?

- Computer sofware
- An electrical connector
- An exchange
- A trade

Correct answer: Computer software

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: It handles calls in a switch office. Please try again.	Incorrect, the correct answer is computer software.	That's right. A switch is computer software.

Topic: Digital Upgrades
Storyboard number: 07-05-02-035E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What other kinds of software do telcos add to the switch to meet ISDN standards?

- Analog software
- Features software
- Special software
- High speed software

Correct answer: Feature software

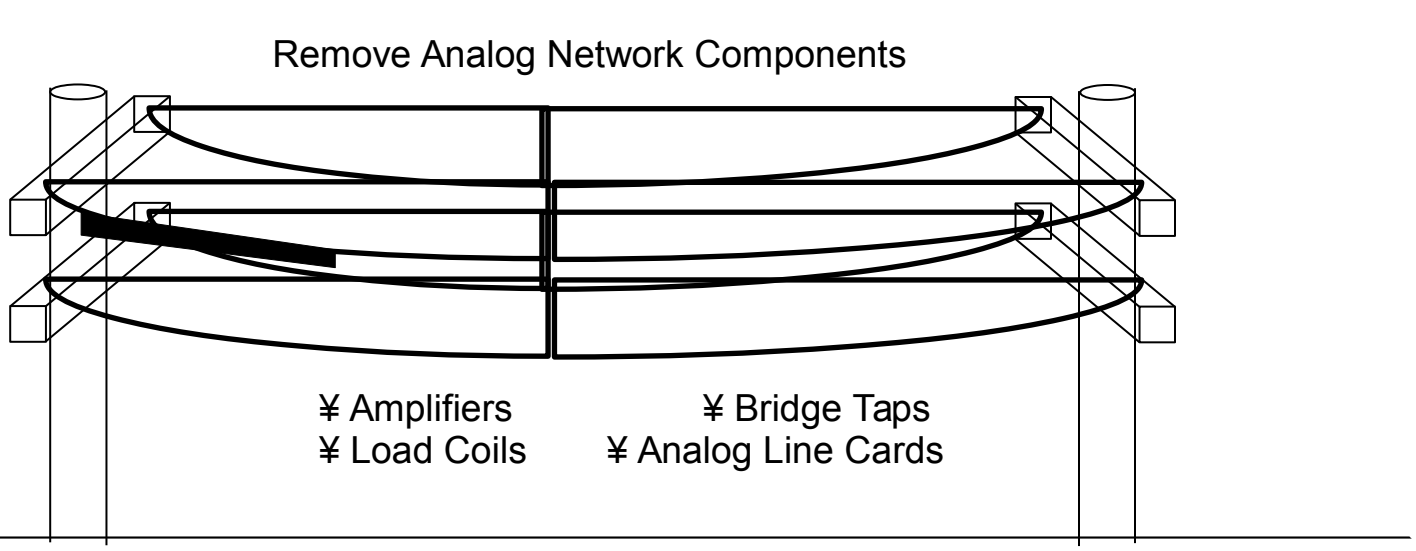
Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: It adds functionality to the switch. Please try again.	Incorrect, the correct answer is feature software. Feature software adds functionality to the switch that ISDN standards requires.	That's right. Feature software adds functionality to the switch that ISDN standards requires.

Topic: Digital Upgrades
Storyboard number: 07-05-02-040C
Screen type: Content

Layout: 1
Level:

What local loop components need to be removed?

Telcos built local loops originally for analog transmission only. Most local loops contain **amplifiers** and other network components. Telcos have to remove these components, so the local loop can support digital data.



Screen graphics for 07-05-02-040C:

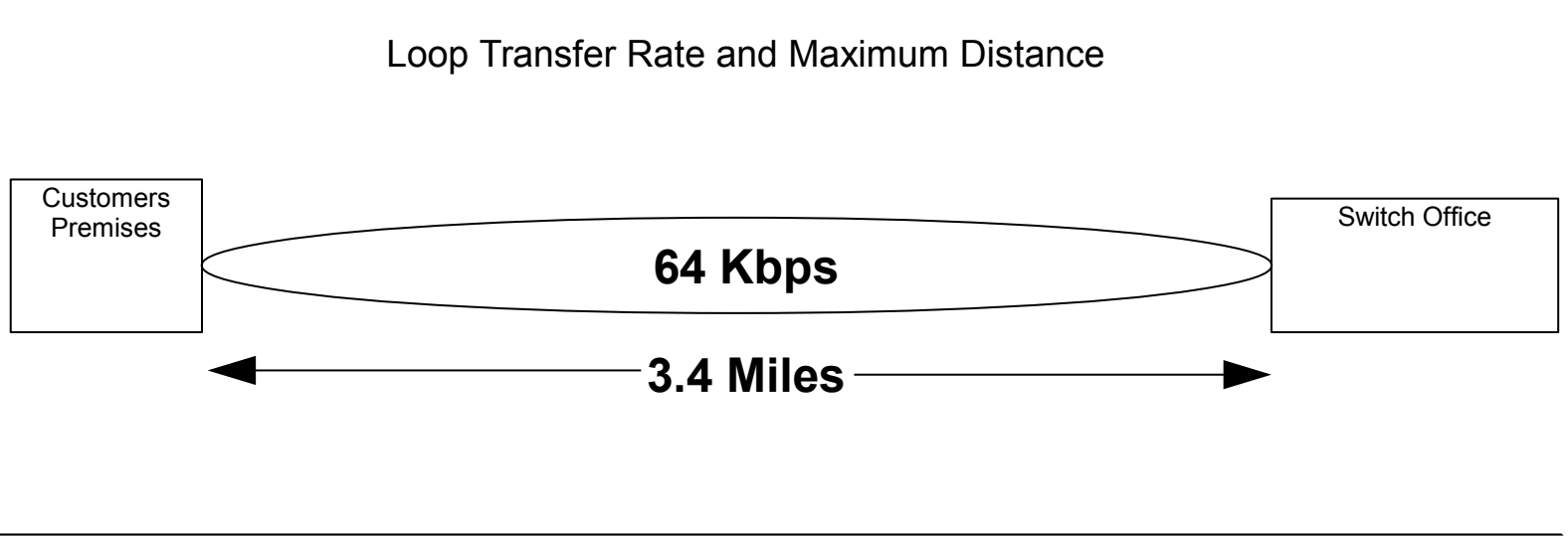
Component	Library	Description/notes	Clickable/ caption
Telephone poles(2). Large		Telephone poles connected wires showing an analog amplifier Used in sections 2 and 4. Center.	
Hot Text		Amplifier	Clickable

Topic: Digital Upgrades
Storyboard number: 07-05-02-045C
Screen type: Content

Layout: 1
Level:

What specifications must the local loop meet for ISDN standards compliance?

Each local loop must support 64 **Kbps** digital data transfer rate. This means the cable pair must be free of amplification or load coils. ISDN standards also restricts the local loop to a maximum distance from the switch to ensure this data transfer rate.



Screen graphics for 07-05-02-045C:

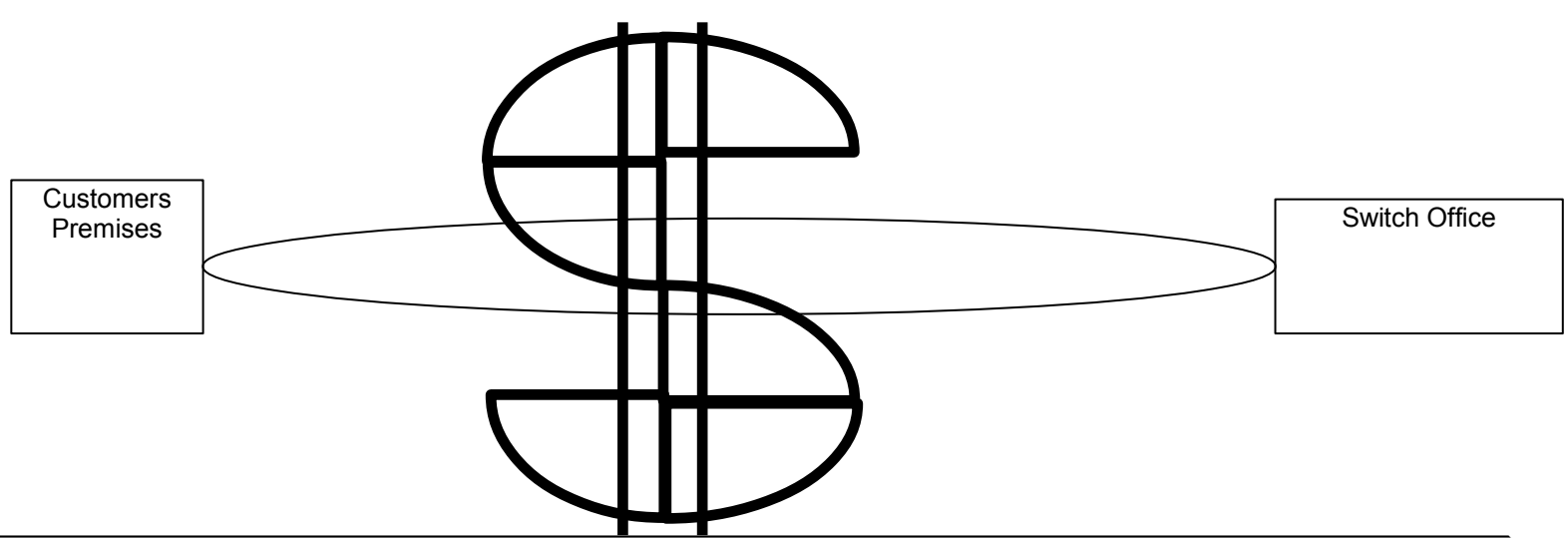
Component	Library	Description/notes	Clickable/ caption
Local loop, Large		Used in section 2. Center.	Captions
Hot Text		Kbps	Clickable

Topic: Digital Upgrades
Storyboard number: 07-05-02-050C
Screen type: Content

Layout: 1
Level:

What restrictions impede ISDN implementation?

The cost of all these upgrades is high. No telco has the resources available to upgrade all of its facilities at one time.



Screen graphics for 07-05-02-050C:

Component	Library	Description/notes	Clickable/ caption
Local Loop		Use same graphic as previous screen without screen text. Show a large dollar sign over local loop. Center.	
Dollar sign, Large		Center.	

Topic: Digital Upgrades
Storyboard number: 07-05-02-055C
Screen type: Content

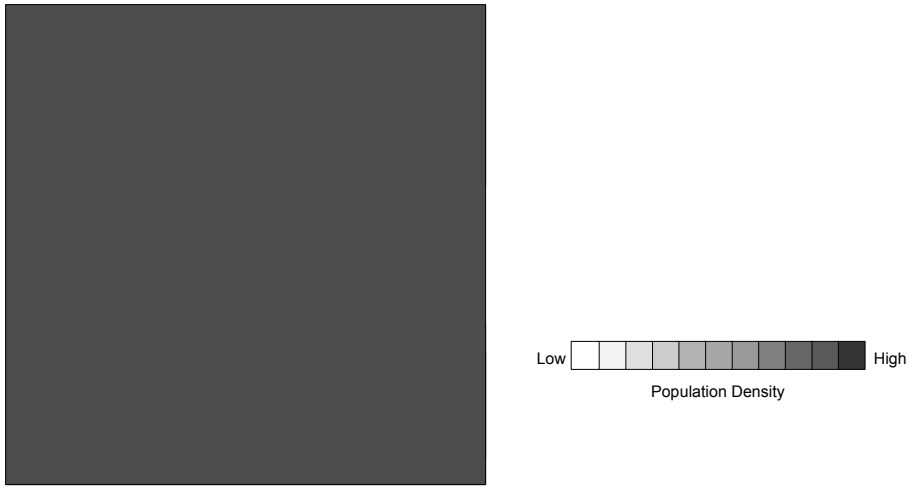
Layout: 1
Level:

What do telcos base their income on?

Telcos base their income on population per mile of cable. Where population is dense, the serving telco may have a greater amount of resources available to put towards ISDN upgrades. Where population is light, the pace of upgrading facilities to ISDN standards may be very slow.

Income is based on population per cable mile.

Low population means fewer resources for upgrades.



Screen graphics for 07-05-02-055C:

Component	Library	Description/notes	Clickable/ caption
Area map, Large		Center. *Notice the legend has changed to population density.*	

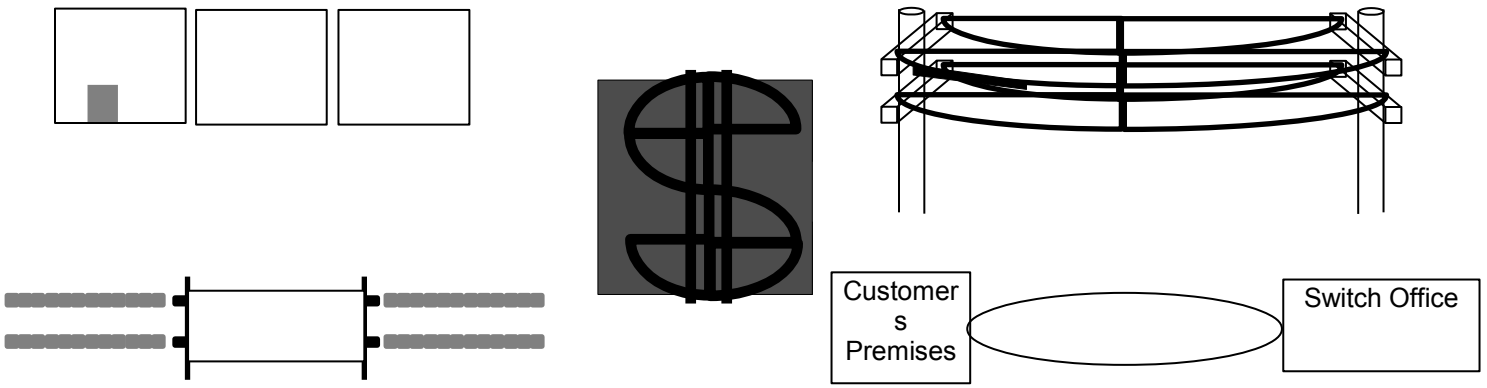
*** New Graphic**

Topic: Digital Upgrades
Storyboard number: 07-05-02-060C
Screen type: Content

Layout: 1
Level:

What effect does cost restriction have on ISDN implementation?

The cost and resources available for upgrades means a gradual movement towards ISDN upgrades. This gradual upgrade process presents an obstacle for ISDN implementation.



Screen graphics for 07-05-02-060C:

Component	Library	Description/notes	Clickable/ caption
Disks (3), small		Top left.	
Packet switch hardware, small		Bottom left.	
Area Map, small		Center.	
Dollar sign, small		Center.	
Telephone poles (2), small		Top right.	
Local loop, small		Bottom right.	

Topic: Digital Upgrades
Storyboard number: 07-05-02-065E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What was the local loop originally designed to do?

- Providing electricity to homes
- Rotary dial telephone service
- A public address system
- Transmit analog voice communication

Correct answer: Transmit analog voice communication

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: It was always meant for speaking to each other. Please try again.	Incorrect. The local loop was originally designed for transmitting analog voice communication.	That's right. The local loop was originally designed for transmitting analog voice communication.

Topic: Digital Upgrades
Storyboard number: 07-05-02-070E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

How does a telco's income effect the upgrade process?

Telcos schedule upgrades monthly
Areas with low populations have less to upgrade
Areas with higher populations have greater finiacial resources

Correct answer: Areas with higher populations have greater finiacial resources.

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
Please try again.__ _____ _____ _____.	Incorrect, the correct answer is _____ _____.	That's right. _____ _____ _____.

Topic: ISDN Islands
Storyboard number: 07-05-03-000C
Screen type: Content

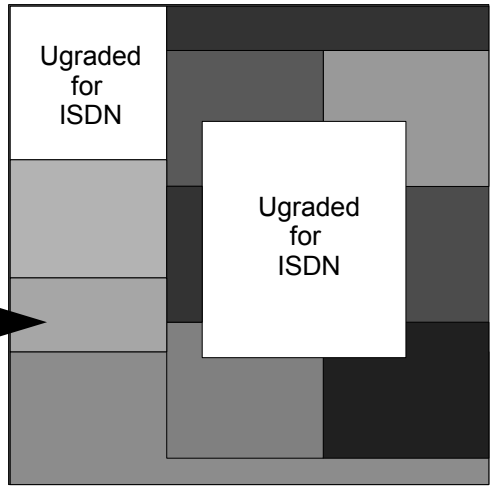
Layout: 1
Level:

What is an ISDN island?

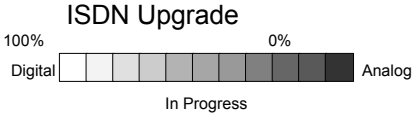
An ISDN island is an isolated area where a telco has made all necessary upgrades to the local loop and switch to support 64 Kbps circuit switched and packet switched digital data. Customers can make end-to-end digital connections within the island but not outside of the island.

ISDN Islands:
Ready for service

Upgrade is in progress
but not complete



No Digital connections
outside of the ISDN Island



Screen graphics for 07-05-03-000C:

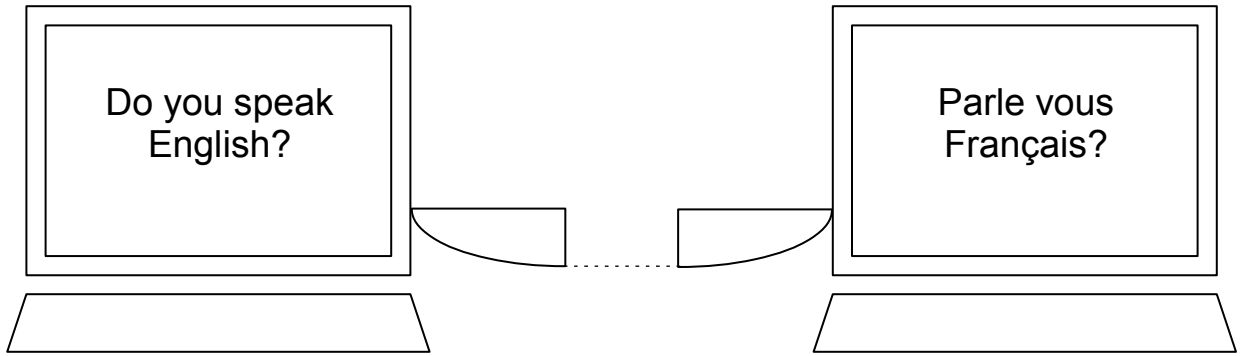
Component	Library	Description/notes	Clickable/ caption
Area map, large		Center. *Notice changed legend to indicate ISDN upgrade progress. There is a new "Upgraded for ISDN" area.*	
ISDN Upgrade area, medium		**Overlay on above graphic. Make a patch graphic to add to the Area Map. It's a duplicate of the "Upgraded for ISDN" show on the original graphic.**	

Topic: ISDN Islands
Storyboard number: 07-05-03-010C
Screen type: Content

Layout: 1
Level:

What is an ISDN island?

Terminal devices and the network between them all need to conform to ISDN standards. The network and terminal devices also need to be compatible with each other to implement successfully ISDN service to the customer.



Screen graphics for 07-05-03-010C:

Component	Library	Description/notes	Clickable/ caption
Computer Terminal, medium		Computer terminal with screen text, “Do you speak English?” Left.	
Computer Terminal, medium		Computer terminal with screen text, “Parle vous Français?” Right.	

Topic: ISDN Islands
Storyboard number: 07-05-03-015E
Screen type: Exercise

Layout: 1
Level:

MasteryPOINT
Click on the correct answer.

You can make a 64 kbps packet switched data connection to a neighboring office but not a remote office. Where are you?

- In another country
- On an oceanline at sea
- In an enterprise zone
- On an ISDN island

Correct answer: On an ISDN island

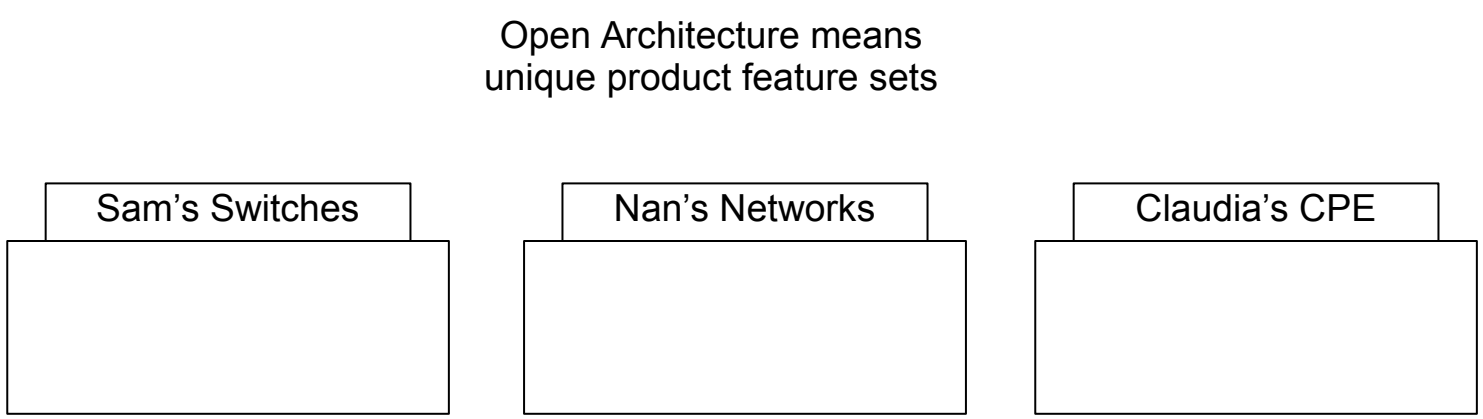
Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: An isolated area not yet fully upgraded. Please try again.	Incorrect, the correct answer is on an ISDN island.	That's right.

Topic: Manufacturers
Storyboard number: 07-05-04-000C
Screen type: Content

Layout: 1
Level:

What are some types of products manufactured for ISDN?

Networks, switching equipment, and **CPE** are the three types of products manufactured for digital telecommunications. ISDN's **open architecture** allows these manufacturers to design products with combinations of features that meet the needs of their market's customers.



Screen graphics for 07-05-04-000C:

Component	Library	Description/notes	Clickable/ caption
		I chose to use signs over the top of each building, but if you want to use the flags again, that's fine with me.	
Building, medium Building, medium Building, medium		Building with flag or sign with text, "Sam's Switches." Left. Building with flag or sign with text, "Nan's Networks." Center. Building with flag or sign with text, "Claudia's CPE." Right.	
Hot Text Hot Text		Open architecture CPE	Clickable Clickable

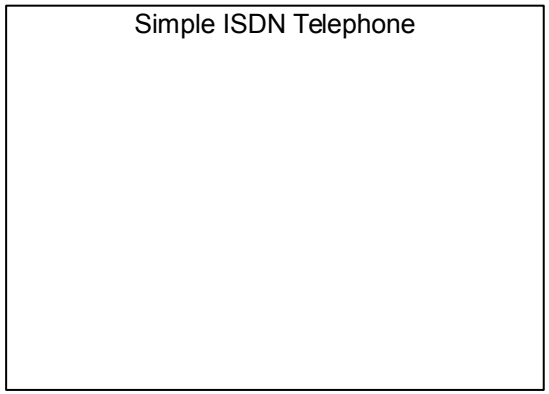
Topic: Manufacturers
Storyboard number: 07-05-04-005C
Screen type: Content

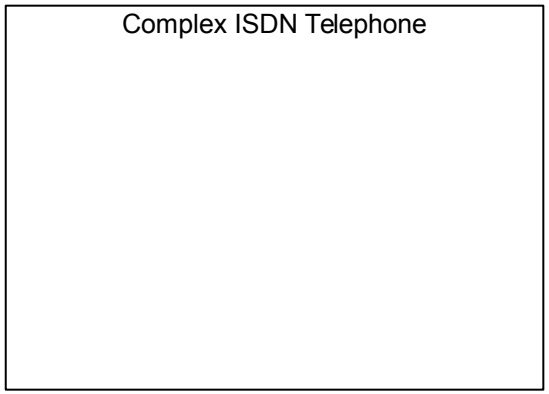
Layout: 1
Level:

What adverse impact does open architecture have on ISDN implementation?

Open architecture also allows ISDN equipment manufacturers to create products that may not be compatible. This industry is young and innovative. It can create functions and features for which standards do not exist, causing compatibility issues between CPE, networks, and switches.

Innovative and unique designs may mean equipment compatibility issues





Screen graphics for 07-05-04-005C:

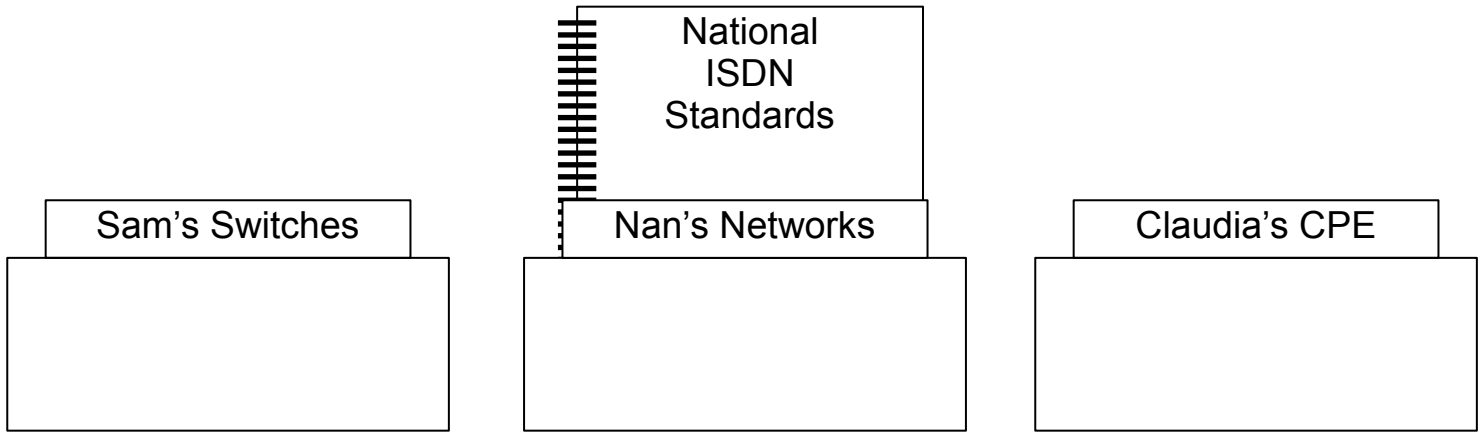
Component	Library	Description/notes	Clickable/ caption
		Show two different types/brands of ISDN telephone. I really want some contrast between the two phones. One should appear to be simple to use, the other complex.	
ISDN Telephone ISDN Telephone		A simple ISDN telephone. Left A complex ISDN telephone with lots of buttons. Right	

Topic: Manufacturers
Storyboard number: 07-05-04-010C
Screen type: Content

Layout: 1
Level:

How do National ISDN standards address ISDN implementation?

National ISDN standards addresses these compatibility issues. It defines standards for new and existing functions and features. National ISDN standards eases some of the growing pains of this new industry.



Screen graphics for 07-05-04-010C:

Component	Library	Description/notes	Clickable/ caption
Building, medium Building, medium Building, medium ISDN Manual, medium		Building with flag or sign with text, “Sam’s Switches.” Left.. Building with flag or sign with text, “Nan’s Networks.” Center. Building with flag or sign with text, “Claudia’s CPE.” Right.. From section 2. Use text “National ISDN Standards.” Center, behind Nan’s Networks.	
Hot Text		National ISDN Standards	Clickable

Topic: Manufacturers
Storyboard number: 07-05-04-015E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What aspect of ISDN works both for and against product manufacturing?

- Call features
- Open architecture
- Packet switching
- Circuit switching

Correct answer: Open architecture

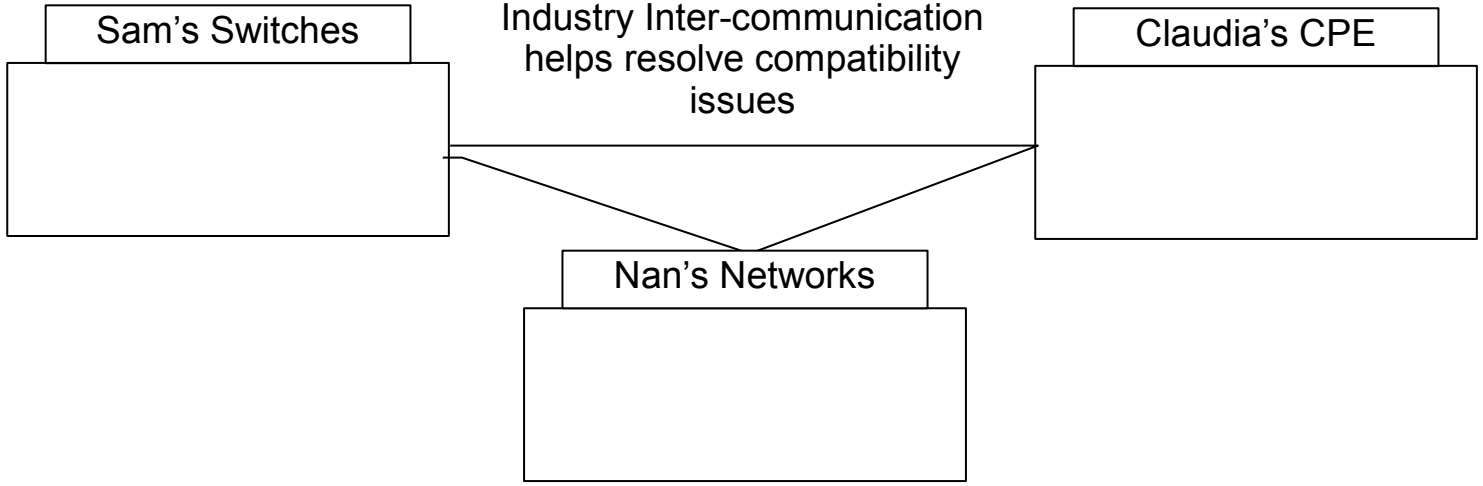
Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: It gives manufacturers flexibility in design. Please try again.	Incorrect, the correct answer is open architecture. Open architecture allows manufacturers to design feature for which there may not be standards.	That's right. Open architecture allows manufacturers to design feature for which there may not be standards.

Topic: Manufacturers
Storyboard number: 07-05-04-020C
Screen type: Content

Layout: 1
Level:

What can the manufacturing industry do to assist ISDN implementation?

This manufacturing industry also must to develop a system of inter-communication and learn about each other's product requirements. Sharing product knowledge will allow manufacturers to design with each other's requirements in mind, reducing compatibility issues even further.



Screen graphics for 07-05-04-020C:

Component	Library	Description/notes	Clickable/ caption
Building, medium		Building with flag or sign with text, “Sam’s Switches.” top Left..	
Building, medium		Building with flag or sign with text, “Nan’s Networks.” bottom Center.	
Building, medium		Building with flag or sign with text, “Claudia’s CPE.” top Right..	
Line, medium		Connects all three buildings.	

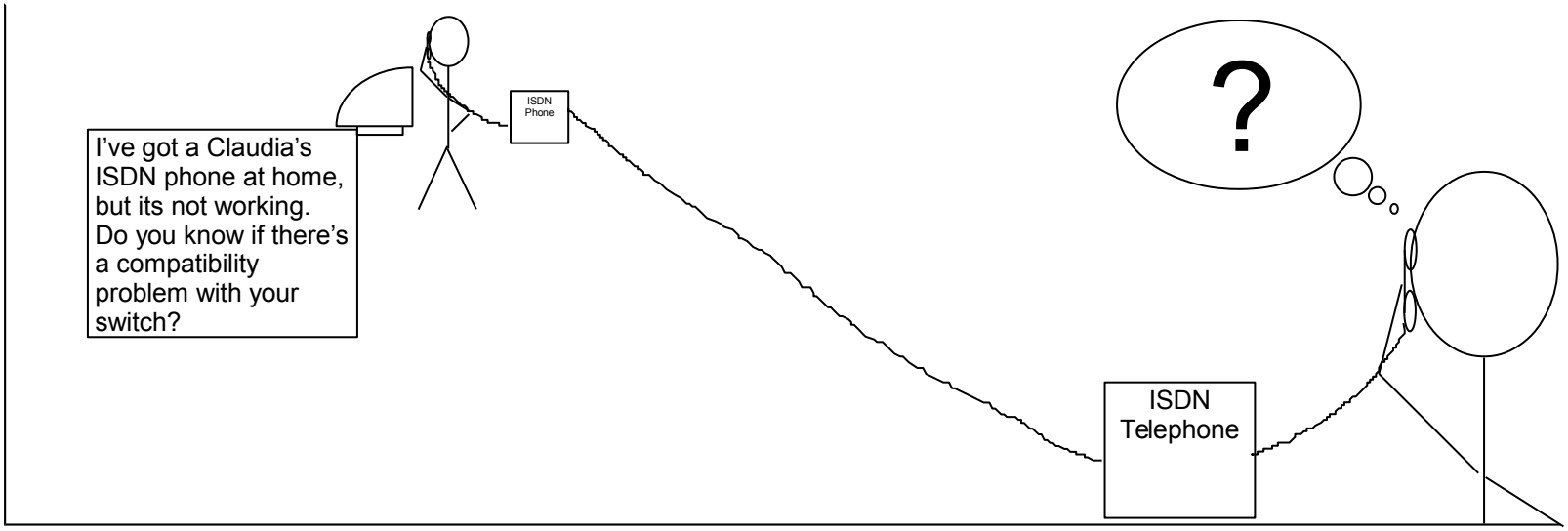
*** New Graphic**

Topic: Manufacturers
Storyboard number: 07-05-04-025C
Screen type: Content

Layout: 1
Level:

What knowledge should telephone company representative possess?

The upgrade status of switch offices and local loops and existing product compatibility issues are obstacles to ISDN implementation. They are also a part of the body of knowledge those involved in providing service to customers need to know.



Screen graphics for 07-05-04-025C:

Component	Library	Description/notes	Clickable/ caption
Figure, large		Figure holding handset. right.	
Figure, small		Figure holding handset. Left.	
ISDN Telephone Medium		ISDN telephone. Right.	
ISDN Telephone Small		ISDN telephone. Left.	
Wire		Connects two telephones. Center.	
Text bubble, large		Text bubble showing, "I've got a Claudia's ISDN phone at home, but its not working. Do you know if there's a compatibility problem with your switch?"	
Text bubble, medium		Text bubble showing, "?"	

Topic: Manufacturers
Storyboard number: 07-05-04-030E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What set of rules works to alieviate some equipment compatibilities issues?

- ISDN Standards
- Open architecture
- National ISDN Standards
- Design guidelines

Correct answer: National ISDN standards

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
Please try again.__ _____ _____ _____.	Incorrect, the correct answer is _____ _____.	That's right. _____ _____ _____.

Topic: Manufacturers
Storyboard number: 07-05-04-035E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What does the emerging manufacturing industry for ISDN products need to develop to help with compatibility issues?

- A refined design system for each type of product
- Communication between product manufacturers
- A more efficient system of production
- A single industry producing all ISDN products

Correct answer: Communication between product manufacturers

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: Everyone benefits from this. Please try again.	Incorrect. Manufacturers need to develop inter-communication and learn about each other's product requirements.	That's right. Manufacturers need to develop inter-communication and learn about each other's product requirements.

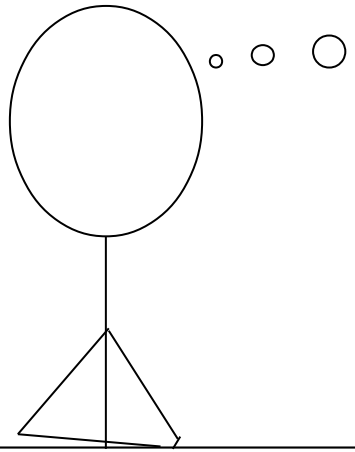
Topic: Knowledge Transfer
Storyboard number: 07-05-05-000C
Screen type: Content

Layout: 1
Level:

Who originally created ISDN?

Engineers are the mysterious and highly educated group of professional men and women who originally created ISDN. Their knowledge of ISDN passes to the manufacturer's product designers who develop the equipment which makes use of their creation.

ISDN: Created by Engineers but Used by Ordinary People!



$$\sqrt{\frac{2+a^2 \ / \ 90 * 88.3329847463}{c^2} \quad \frac{x4 * ab4 \ / \ 9943.33395 + 45.88432 - Ø}{z^{-10}}}$$

>3.222222 = value x*y/z rnd cos
Pick up lanudry and avacados at the store
Electrial impedence makes my watch run slow
It's 6:00 p.m. = Time for dinner

Screen graphics for 07-05-05-000C:

Component	Library	Description/notes	Clickable/ caption
Figure, large		**Engineer Geek. Left.**	
Text bubble, extra large		**Psycho-babble - however you would like to show a mixer of ethereal and mundane thoughts. Right.**	

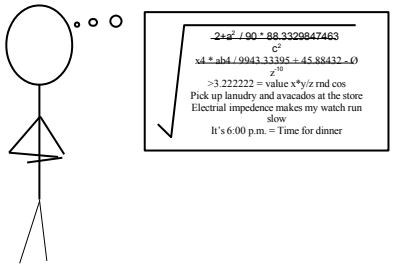
Topic: Knowledge Transfer
Storyboard number: 07-05-05-005C
Screen type: Content

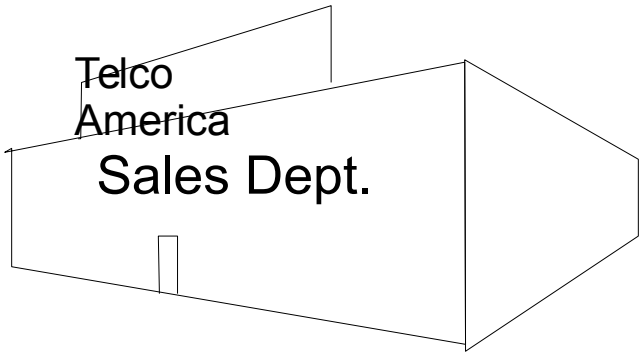
Layout: 1
Level:

Where does the burden of knowledge for ISDN implementation rest?

But, designers and engineers do not implement ISDN to customers. Telco representatives do. Until the knowledge they need to implement ISDN to customers transfers to them, the burden of knowledge for ISDN implementation rests with the customer.

Knowledge needs to transfer to the Telco Representative





Screen graphics for 07-05-05-005C:

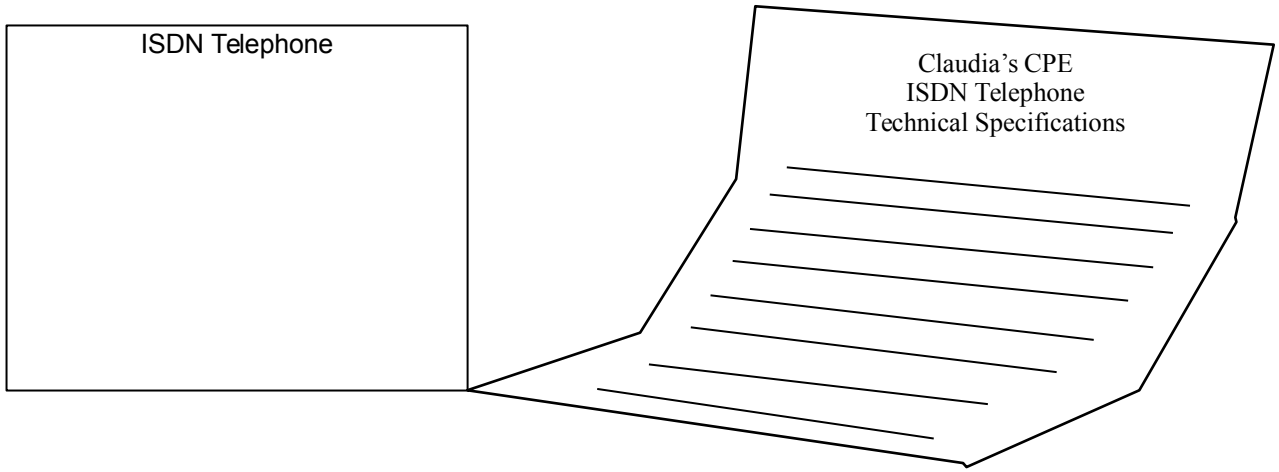
Component	Library	Description/notes	Clickable/ caption
Figure, small		Engineer Geek. Left.	
Balloon text, small Telco Building, medium		Balloon text showing same psycho-babble from previous frame. Right side of engineer geek. Building with signs on front. Sign at top of building reads, “Telco America.” Sign at center of building reads, “Sales Dept.” Left.	

Topic: Knowledge Transfer
Storyboard number: 07-05-05-010C
Screen type: Content

Layout: 1
Level:

What must customers know in order to obtain ISDN service?

Customers must know how to configure their equipment and about service and feature availability at their serving switch office. Customers also need to speak the language of ISDN to communicate accurately with the telco representative.



Screen graphics for 07-05-05-010C:

Component	Library	Description/notes	Clickable/ caption
ISDN telephone, medium		ISDN telephone. Left.	
Document, large		**Document with a header, "Claudia's CPE ISDN Telephone Technical Specifications." Right.**	

Topic: Knowledge Transfer
Storyboard number: 07-05-05-015C
Screen type: Content

Layout: 1
Level:

What must customers communicate to the telco rep in order to obtain ISDN service?

Customers must communicate what sort of services they need and what types of equipment they will use. Telco reps need to understand this information to program the switch, so the switch and CPE communicate properly.

Customers and Telcos have to communicate
so the equipment will communicate

Screen graphics for 07-05-05-015C:

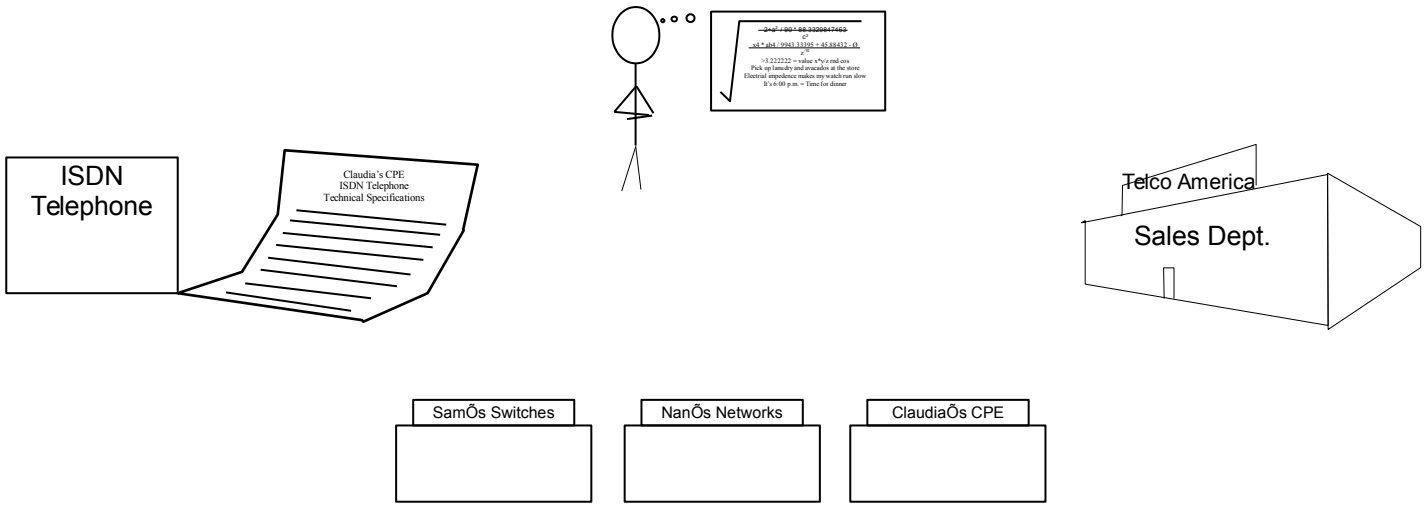
Component	Library	Description/notes	Clickable/ caption
ISDN Telephone, medium		ISDN telephone. Left.	
Switch Office, small		Switch office. Right.	

Topic: Knowledge Transfer
Storyboard number: 07-05-05-020C
Screen type: Content

Layout: 1
Level:

What do customers, telco reps, and manufacturers have in common?

Currently, most customers and telco reps do not have enough knowledge and experience to make the implementation process run smoothly. Add to this CPE manufacturers who do not fully understand switch and network requirements, and you have a serious obstacle to implementing ISDN service.



Screen graphics for 07-05-05-020C:

Component	Library	Description/notes	Clickable/ caption
Figure, small		Engineer Geek. Left.	
Balloon text, small		Balloon text showing same psycho-babble from previous frame. Right side of engineer geek.	
ISDN telephone, small		ISDN telephone. Left.	
Document, small		Document with a header, “Claudia’s CPE ISDN Telephone Technical Specifications.” Right of ISDN telephone.	
Building, small		Building with flag or sign with text, “Sam’s Switches.” Center, ot the left of Nan’s Networks.	
Building, small		Building with flag or sign with text, “Nan’s Networks.” Center, between Sam’s Switches and Claudia’s CPE.	
Building, small		Building with flag or sign with text, “Claudia’s CPE.” Center, to the right of Nan’s Networks.	
Telco Building, small		Building with signs on front. Sign at top of building reads, “Telco America.” Sign at center of building reads, “Sales Dept.” Right.	

Topic: Knowledge Transfer
Storyboard number: 07-05-05-025E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

Where did the knowledge of ISDN implementation originate?

- With the ITU
- With engineers
- With government leaders
- With business leaders

Correct answer: With engineers

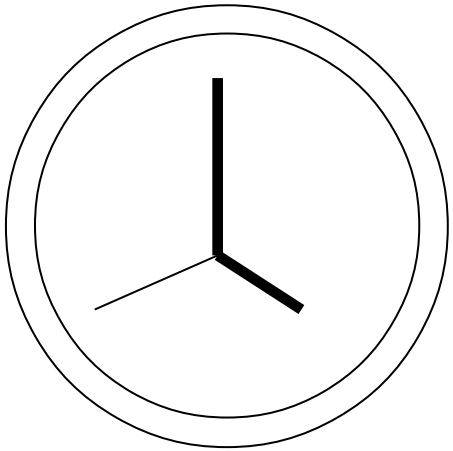
Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: They're referred to a mysterious and intelligent. Please try again.	Incorrect, the correct answer is engineers.	That's right.

Topic: Knowledge Transfer
Storyboard number: 07-05-05-050C
Screen type: Content

Layout: 1
Level:

What are the remedies to the knowledge transfer issue?

The number one remedy to knowledge transfer is time. In time, everyone involved in ISDN implementation will gain experience with the technology and terminology. This alone will support better service for the customer.



Time, knowledge and experience is the ultimate remedy to better ISDN implementation

Screen graphics for 07-05-05-030C:

Component	Library	Description/notes	Clickable/ caption
Clock, medium		**Plain old wall clock with a sweep second hand. Left.**	

Topic: Knowledge Transfer
Storyboard number: 07-05-05-035C
Screen type: Content

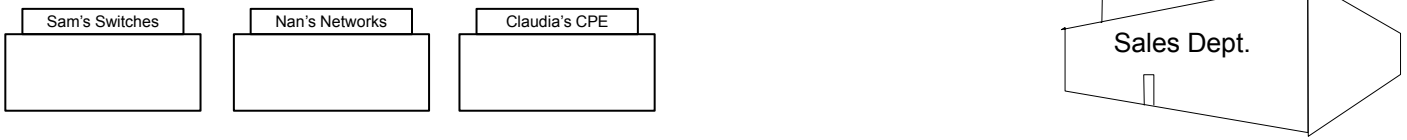
Layout: 2
Level:

What are the remedies to the knowledge transfer issue?

Telcos are also learning to market ISDN in ways which will facilitate implementation. Some telcos are working with manufacturers and offering ISDN connections with feature and equipment packages.

This type of implementation requires far less from the customer and makes the product more appealing.

Marketing ISDN products with **Capability Packages**
helps implementation and makes a more appealing product



Screen graphics for 07-05-05-035C:

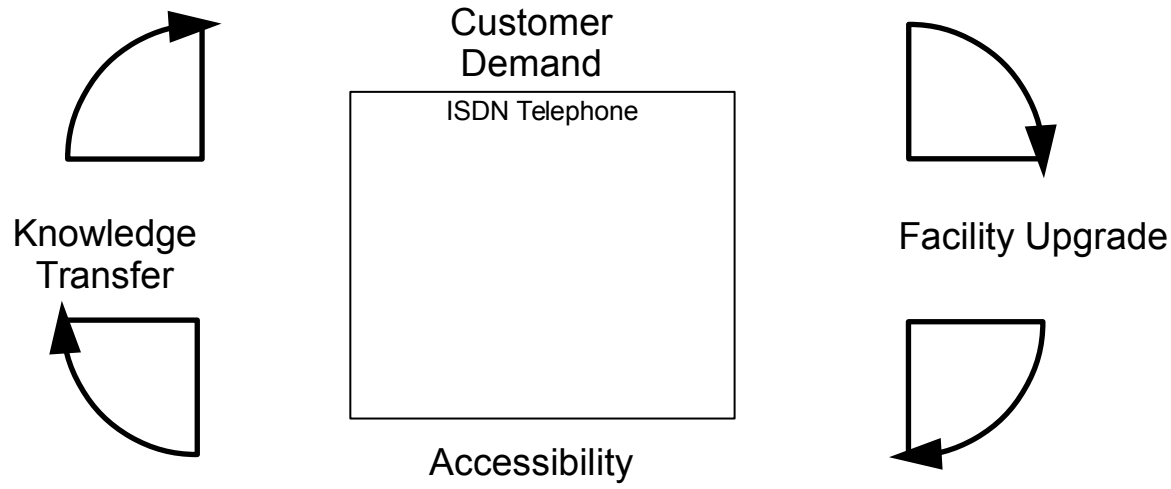
Component	Library	Description/notes	Clickable/ caption
Telco Building, small		Building with signs on front. Sign at top of building reads, “Telco America.” Sign at center of building reads, “Sales Dept.” Left.	
Building, small		Building with flag or sign with text, “Sam’s Switches.” Left, ot the left of Nan’s Networks.	
Building, small		Building with flag or sign with text, “Nan’s Networks.” Left, between Sam’s Switches and Claudia’s CPE.	
Building, small		Building with flag or sign with text, “Claudia’s CPE.” Left, to the right of Nan’s Networks.	
Hot Text		Capability Packages	Clickable

Topic: Knowledge Transfer
Storyboard number: 07-05-05-040C
Screen type: Content

Layout: 1
Level:

What are the remedies to the knowledge transfer issue?

As ISDN becomes more accessible and demand rises, ISDN will help generate the revenue required to upgrade facilities and provide training to the people involved in implementation.



Screen graphics for 07-05-05-040C:

Component	Library	Description/notes	Clickable/ caption
ISDN Telephone, large		Center.	
Arrows, medium		Four arrows with curved lines making a circle around the ISDN telephone each pointing to screen text.	

Topic: Knowledge Transfer
Storyboard number: 07-05-05-045E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

To whom does ISDN implementation knowledge need to transfer?

- To the customer
- To the telco representative
- To the manufacturer
- To the engineer

Correct answer: To the telco representative

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: The liason between the telco and the customer. Please try again.	Incorrect, the correct answer is the telco representative.	That's right.

Topic: Knowledge Transfer
Storyboard number: 07-05-05-055E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What do customers and telco representatives lack in regards to ISDN implementation?

- Communication skills
- A good relationship
- Time and experience
- A marketing plan

Correct answer: Knowledge and experience

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: It's something they will gain in time. Please try again.	Incorrect, the correct answer is knowledge and experience.	That's right.

Topic: Knowledge Transfer
Storyboard number: 07-05-05-060E
Screen type: Exercise

Layout: 2
Level:

MasteryPOINT
Click on the correct answer.

What sort of strategies can telcos work on to assist ISDN implementation?

Communication
Training
Marketing
Pricing

Correct answer: Marketing

Feedback for 1st incorrect answer:	Feedback for 2nd incorrect answer:	Feedback for correct answer:
HINT: It'll help make the product more appealing to the customer. Please try again.	Incorrect, the correct answer is marketing. Marketing ISDN service along with tested products may make ISDN implementation a smoother process for the telco and the customer.	That's right. Marketing ISDN service along with tested products may make ISDN implementation a smoother process for the telco and the customer.

Topic: Summary Screen **Level:**
Storyboard number: 07-05-00-000S
Screen type: Section summary

This completes the ISDN Implementation section. In this section you learned:

- What software and hardware telcos need to upgrade in their switch offices
- What upgrades telcos need to perform on the local loops
- How the cost of switch and local loop upgrades affect ISDN implementation
- What ISDN islands are and how they affect ISDN implementation
- What affects the manufacturing industry has on ISDN implementation
- How knowledge transfer affects ISDN implmentation

If you are ready to move on to another section in this module, click on the Sectoin Menu button.