Cable Modem

A necessity for tomorrow

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Gallery- Cable Modem

What is a Cable Modem?

A cable modem allows your computer to communicate with the Internet through a cable TV network (CATV) rather than through a telephone wire. i.e. **it operates on CATV**.

It delivers convenient solution as a device in Digital Video Computing (DVC) and Distance education.

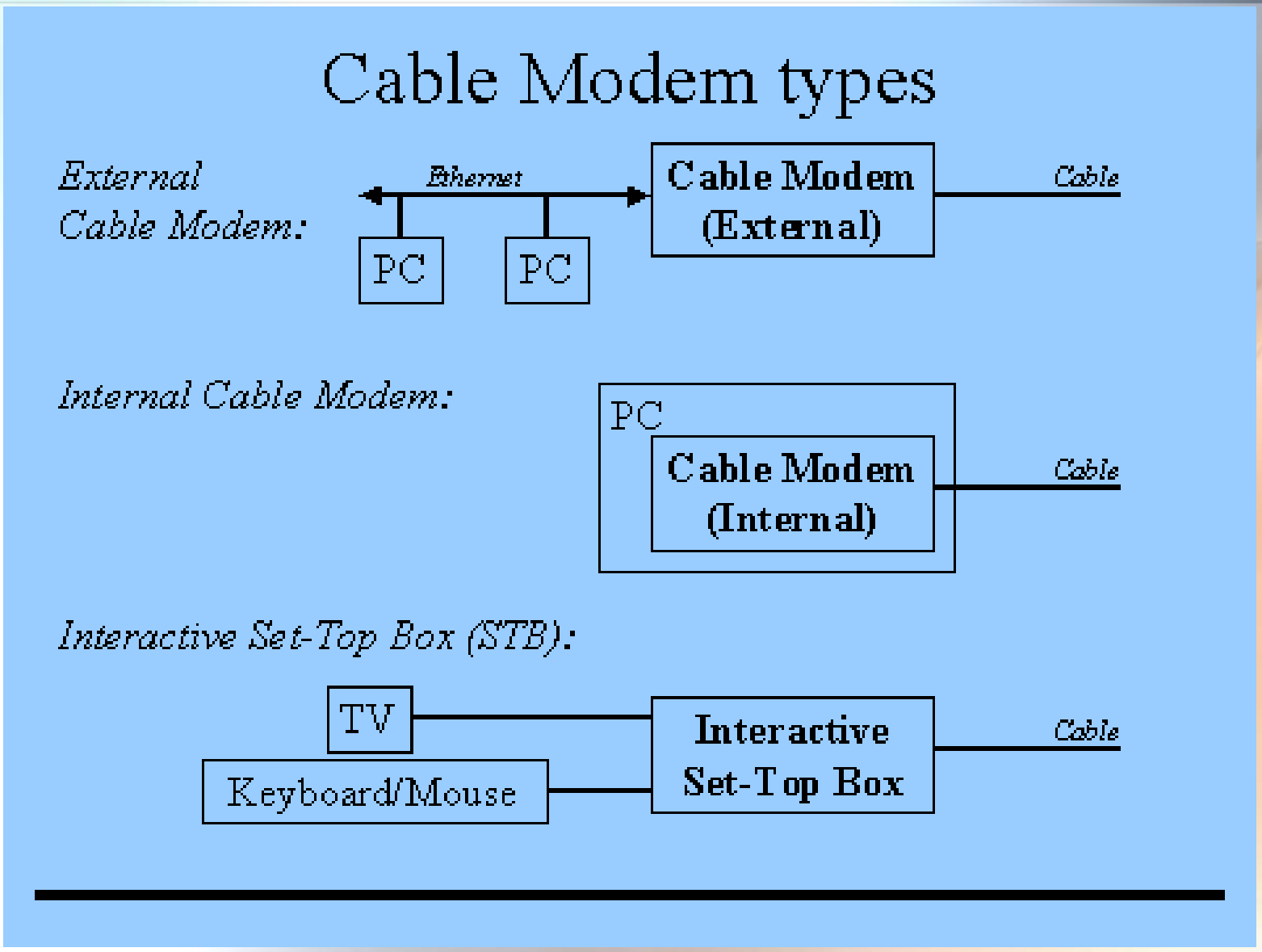
A Cable Modem works more like a **Broadband Local Area Network (LAN)** interface than as a modem.

What is a Cable Modem?

This is a **two-way communication methodology** & thus requires the cable companies to upgrade their existing cable network to a two-way capability, as TV networks originally only provide One-way communication.

Basically you just connect the **Cable Modem (CM)** to the TV outlet for your cable TV, and the cable TV operator connects a **Cable Modem Termination System (CMTS)** in his end (the Head-End).

Cable Modem types



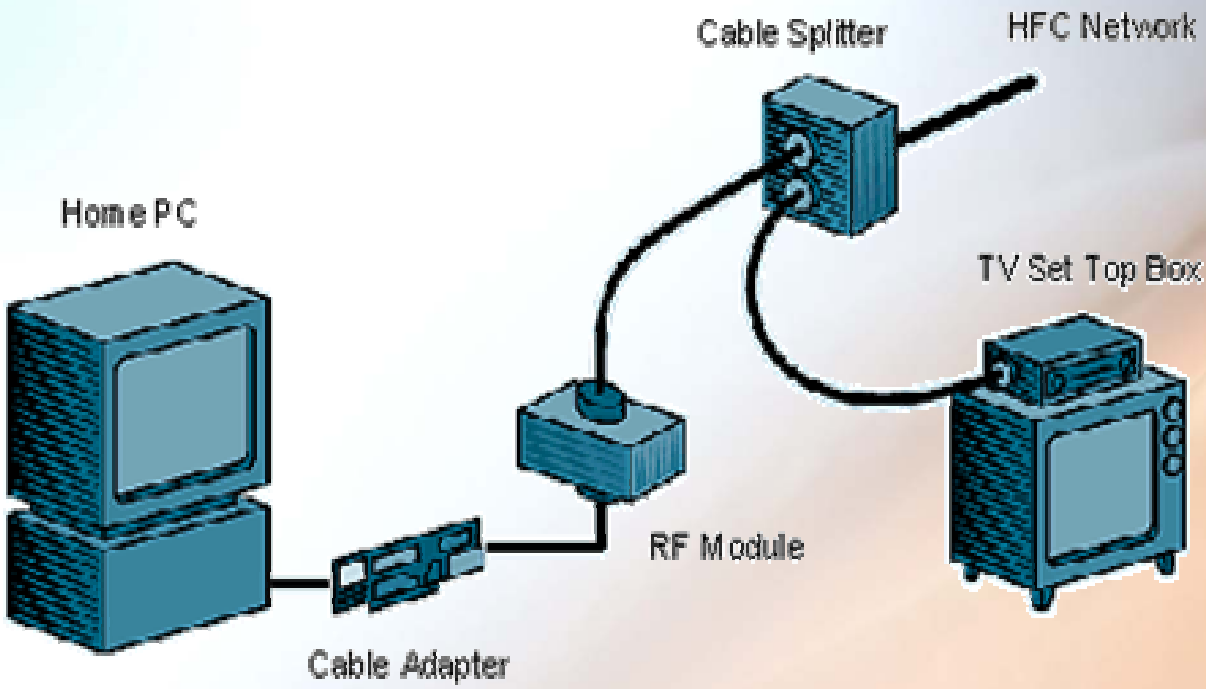
How the Technology Works

Using a signal splitter, the coaxial cable hosts the modem on the PC side of the connection.

The cable modem is connected to an Ethernet card that resides on the user's PC.

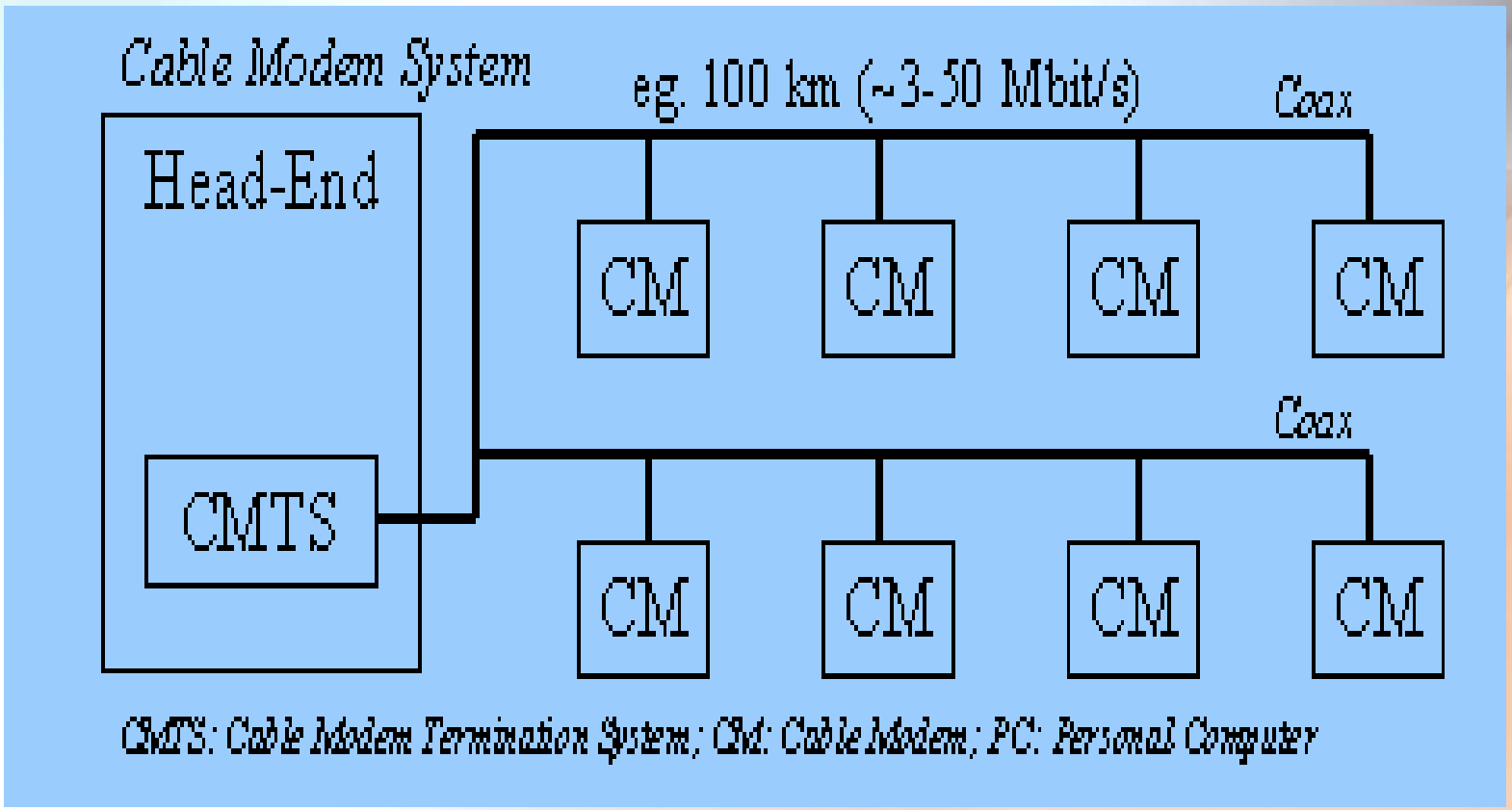
The cable modem is located between the RF module and the Ethernet card in the so that Internet and other data communications traffic can be managed separately from the video signals.

How the Technology Works

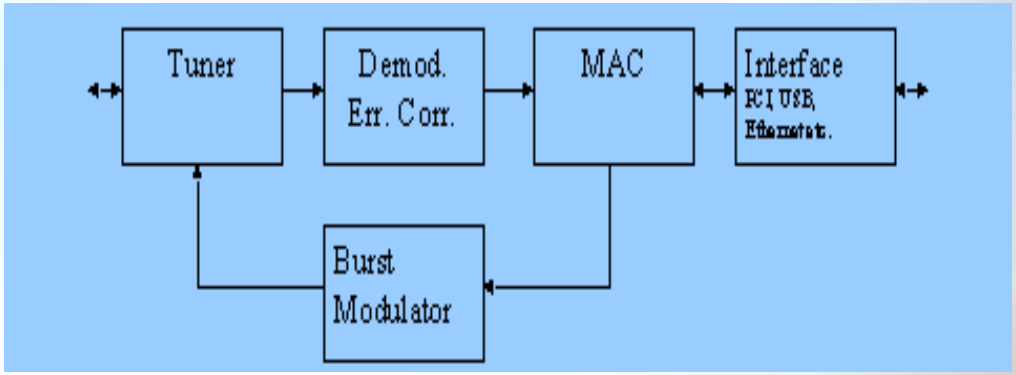


This picture shows graphically how the cable modem fits into the home cable set-up.

Cable Modem Diagram



Inside the Cable Modem



- **Tuner** converts TV channel to a fixed lower frequency (6-40 MHZ)
- **Demodulator** performs A/ D, demodulation, error detection and MPEG synchronization

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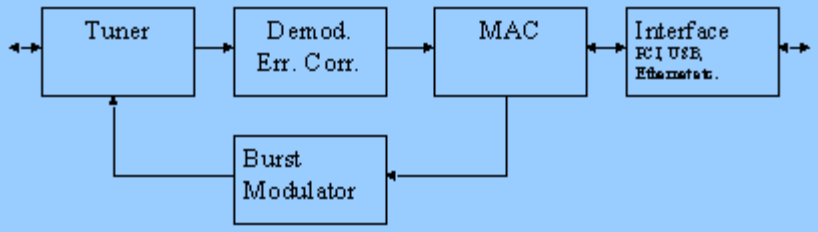

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- Demodulator performs A/D, demodulation, error correction and MPEG synchronization
- MAC extracts data from MPEG frames, filters data for other Cable Modems, runs the protocol, times transmission of upstream bursts etc.
- Burst modulator performs R-S encoding, modulation, frequency conversion, D/A conversion etc.
- Interface can be PCI bus, Universal Serial Bus, Ethernet or other?

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Methodology

As these Broadband LANs cover large distances therefore they need Amplifiers at regular intervals to strengthen the signal. These Amplifiers can transmit signals in only one direction.

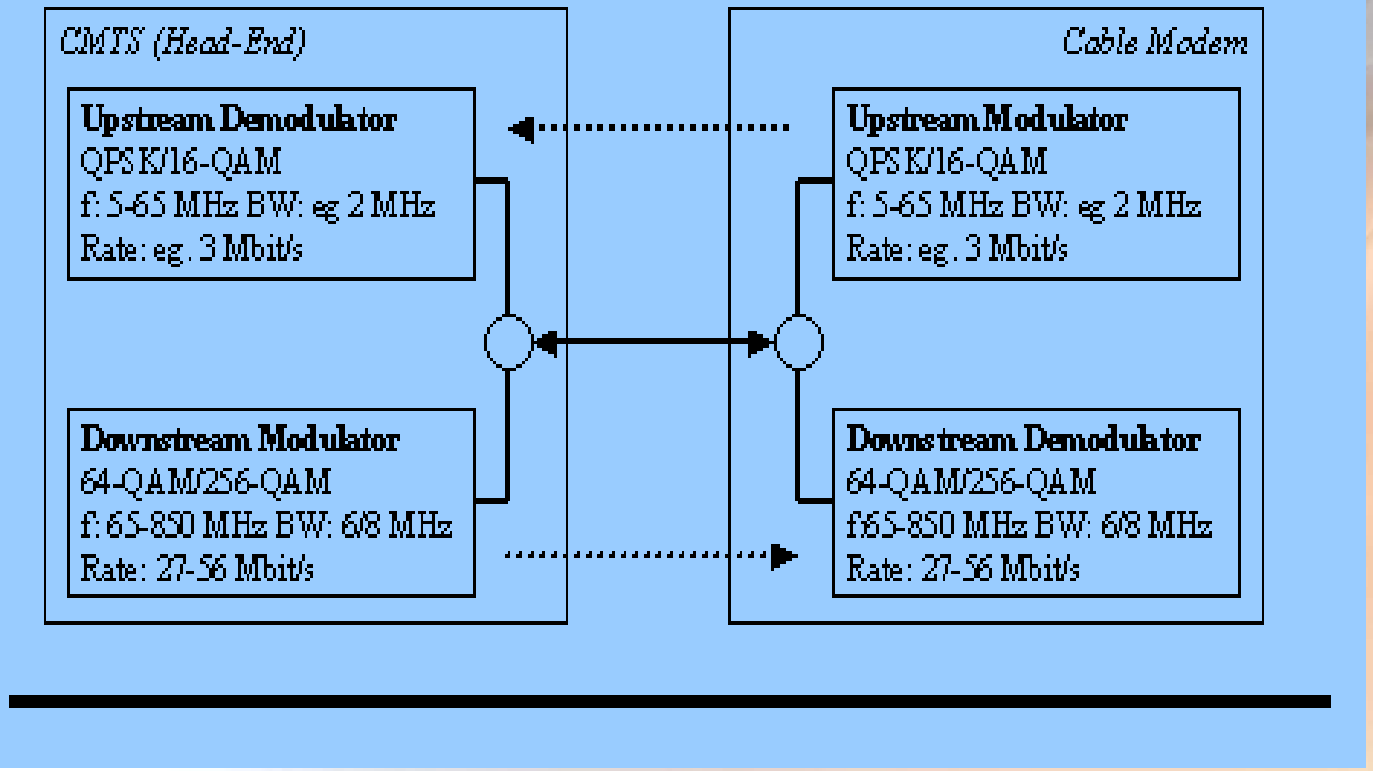
Thus there are 2 solutions: either **dual cable** or **single cable systems (which allocates different frequency bands** for inbound i.e. Upstream & outbound i.e. Downstream communication on a single cable).

Upstream: The data flowing from the CM to the CMTS & operates in **42/65-850 MHz** frequency range.

Downstream: The data flowing from the CMTS to the CM & operates in **5-65 MHz** frequency range

Methodology

- Actually more like a network adapter than a modem



Difference form Ordinary Modem

Benefits:

- Larger Bandwidth.
- Already in Place.
- Full Time Availability i.e. no dial up is required.
- Run your own Web Server

Disadvantages:

- Requires upgradation in existing CATV Network.
- Costly Affair i.e. Infrastructure needs to be developed.
- As the number of consumer grows it affects the speed of internet accessibility.

Market Scenario

The biggest drawback of this technology seems to be pricing.

Pricing both in terms of for consumers and for cable operators to rebuild the systems. Due to the high cost of rebuilding systems customer costs are high. At current pricing the technology is only practical to high-end Internet users that need access from their homes for work-related purposes.

In order for cable modems to make a large impact on the market, prices must fall and the demand for faster Internet access must continue to increase.

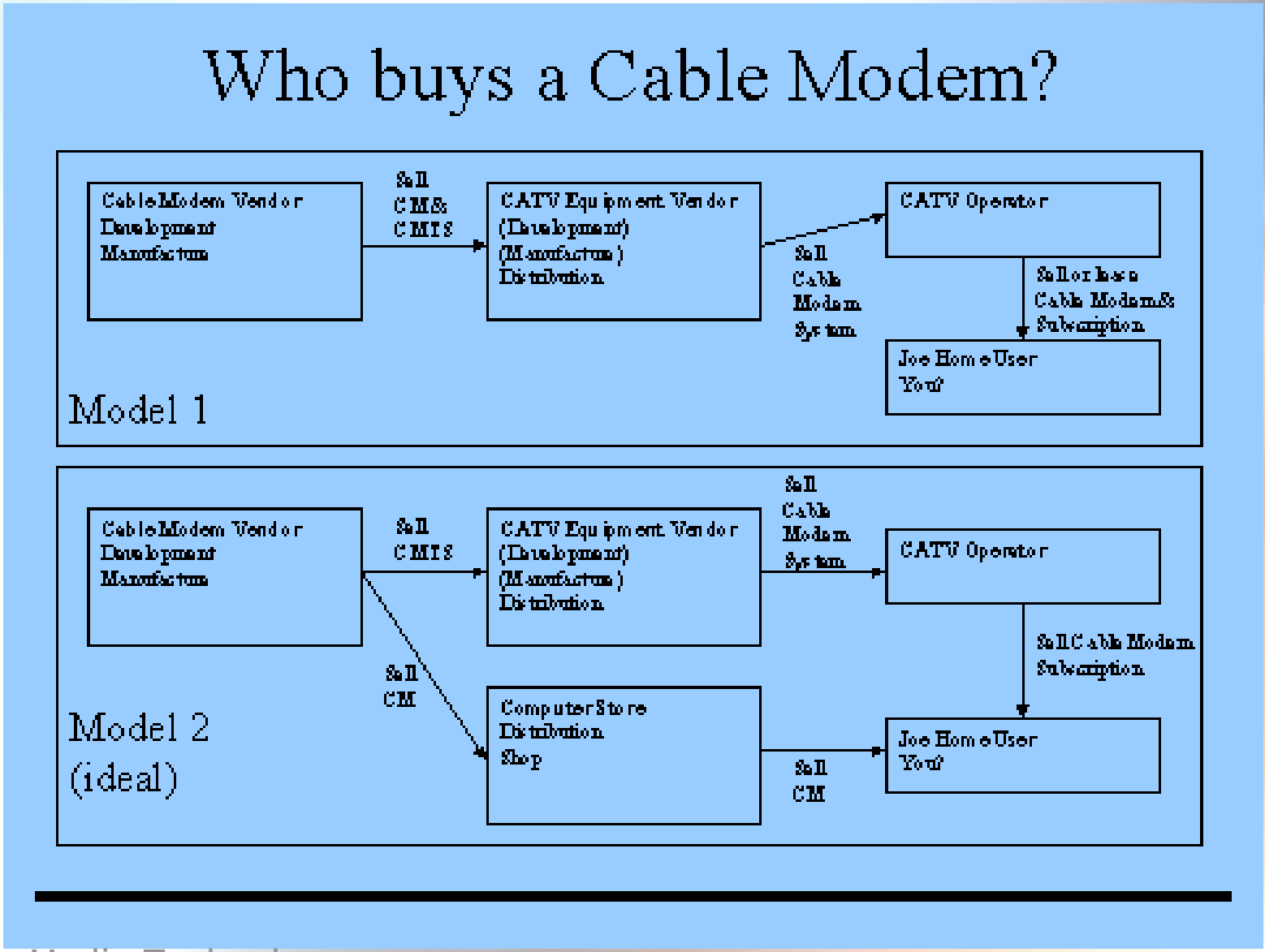
Future Prospects

Research Work is on in full swing so as to lower down the cost of infrastructure set up of Cable Modem technology in CATV.

Apart from this internet access is gaining momentum day by day in third world countries. As the market is growing this has prompted major players in the modem field to pump in more money for research purposes.

The day is not far off when its advantages will overlook its disadvantages.

Who buys a Cable Modem?



Why is this so cool?

Why is this so cool?

Speed, speed and speed

- Analog modem speed x100 to x1000
- ISDN speed x25 to x500
- Comparable to T1/E1 or better (~2 Mbit/s)
- Surf while you listen to high quality Real Audio

On-line full-time

- Who wants to be a part-time geek, when you can be full-time?
- No dial-up
- Get e-mail instantly
- Run your own web-server
- Game when you want

Is this cool or what?

Thank You Very Much