Trends of Interactive TV
&
Triple Play

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93年3月9日

Technology trends

- 4C's convergence
- Improvement and standardization of the encoding technology
- The enhancement and cost effective of IP video streaming network components
- The maturity of IP video CPE's
- The improvement of broadband access network
- The capability of QOS

New business model

- Add new values to the existing Broadband service
- Fully utilization of the existing network
- Extend service scope from desk to sofa
- Customization and personalization of the video or non-video application services
- Open platform allow all kinds of service and service operator
- Retain the royalty of customers
- Provide quality service instead of price competition

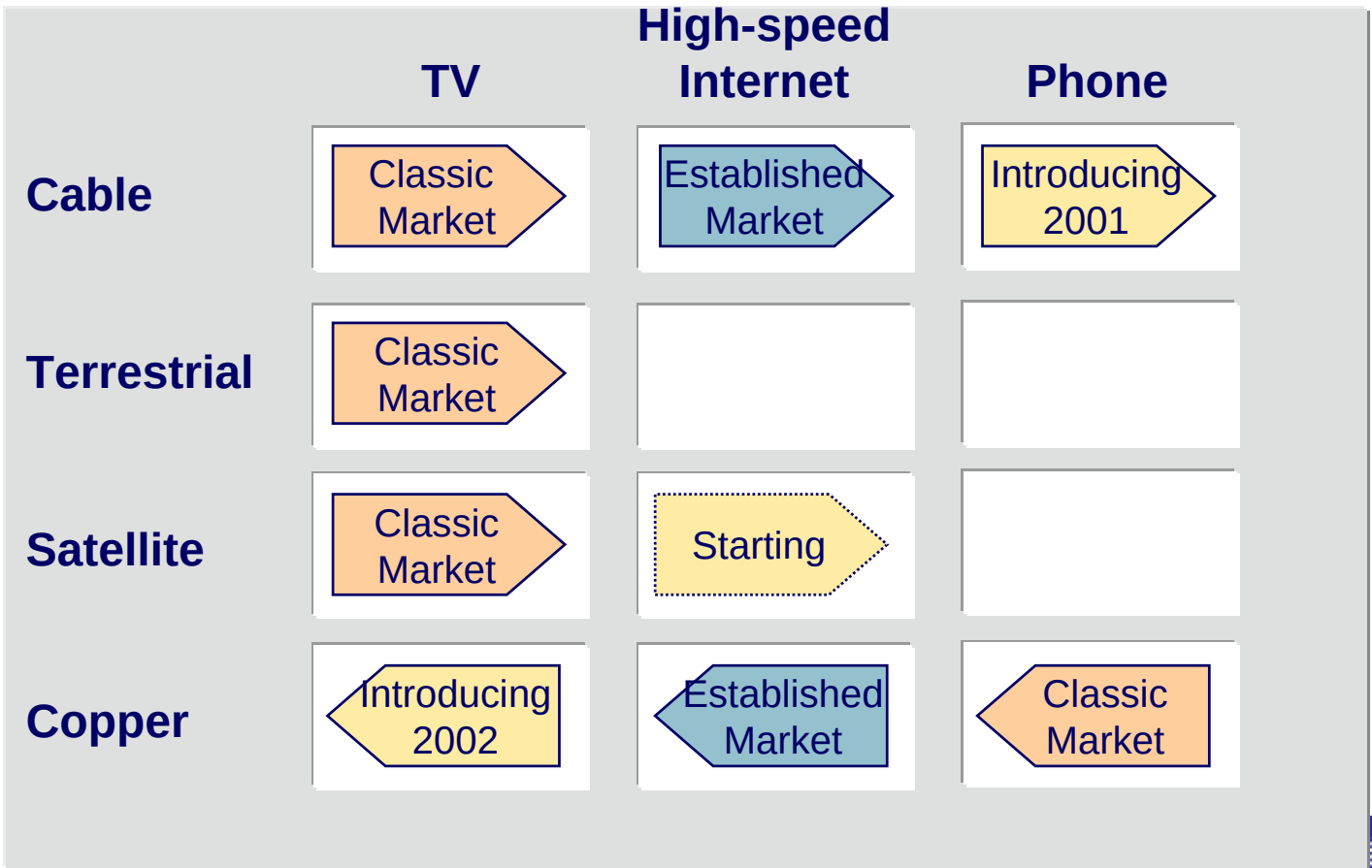
New business model

- Consumers are projected to spend more time and money on interactive services such as: pay-video and Internet media
- Increase revenue from premium services
- Extend service scope from desk to sofa
- Provide End-to-end management
- Build Platform for application services
- Generate more traffic and demand in core services

Business Challenge for Telco: the “Triple Play”

Phone Services	High-speed Internet Services	TV Services
		
♦ Call forwarding ♦ Voice box ♦ Call center ♦ Conferencing ♦ Number portability ♦ Additional phone lines with voice over DSL	♦ Classic web access ♦ e-mail, chat, newsgroups ♦ Short films, streaming ♦ Music and video files download ♦ Videoconferencing ♦ Online and offline gaming	♦ interative TV ♦ Video on demand ♦ Time shifted TV ♦ Gaming and gambling ♦ Web services on TV ♦ T-Commerce

The Race to “Triple Play”



Triple plays thru Telco

- Telco (ILEC or CLEC) operators start to deploy Video-on-Demand (VOD) services on broadband networks since 2001
- Some ISPs provide VOD services on PC with limited bandwidth and video screen
- Some broadband operators provide broadcasting TV channel service as well as VOD services on TV through Set-Top-Boxes
- Players: Fastweb, PCCW, Qwest, BB-Cable, CHT, Korea Telecom (expected April 2004), etc.

Triple plays thru cables

- Cable TV operators are rapidly increasing the availability of Video-on-Demand (VOD) services
- Experimenting with different ways of packaging and promoting the service include VOIP and HSI.
- As of mid-2003, approximately 40% of all US cable TV systems were offering VOD
- Almost 4 million cable TV subscribers were regularly using the service to watch movies, packaged premium programming, and even free shows and events

iTV Right time to go

- ***Network Infrastructure***
  - ✓ ***IP Network with Quality of Service guarantee***
  - ✓ ***Broadband access network***
    - ***xDSL***
    - ***Ethernet***
    - ***WLAN, etc.***
- ***Business Model***
  - ✓ ***Content Provider participation***
  - ✓ ***Revenue share model***
- ***More players -- Cost transition from early adopter to mass production***
  - ✓ ***STB cost (less than US$200)***
  - ✓ ***Video stream (US$200 per Mpeg 2 stream)***

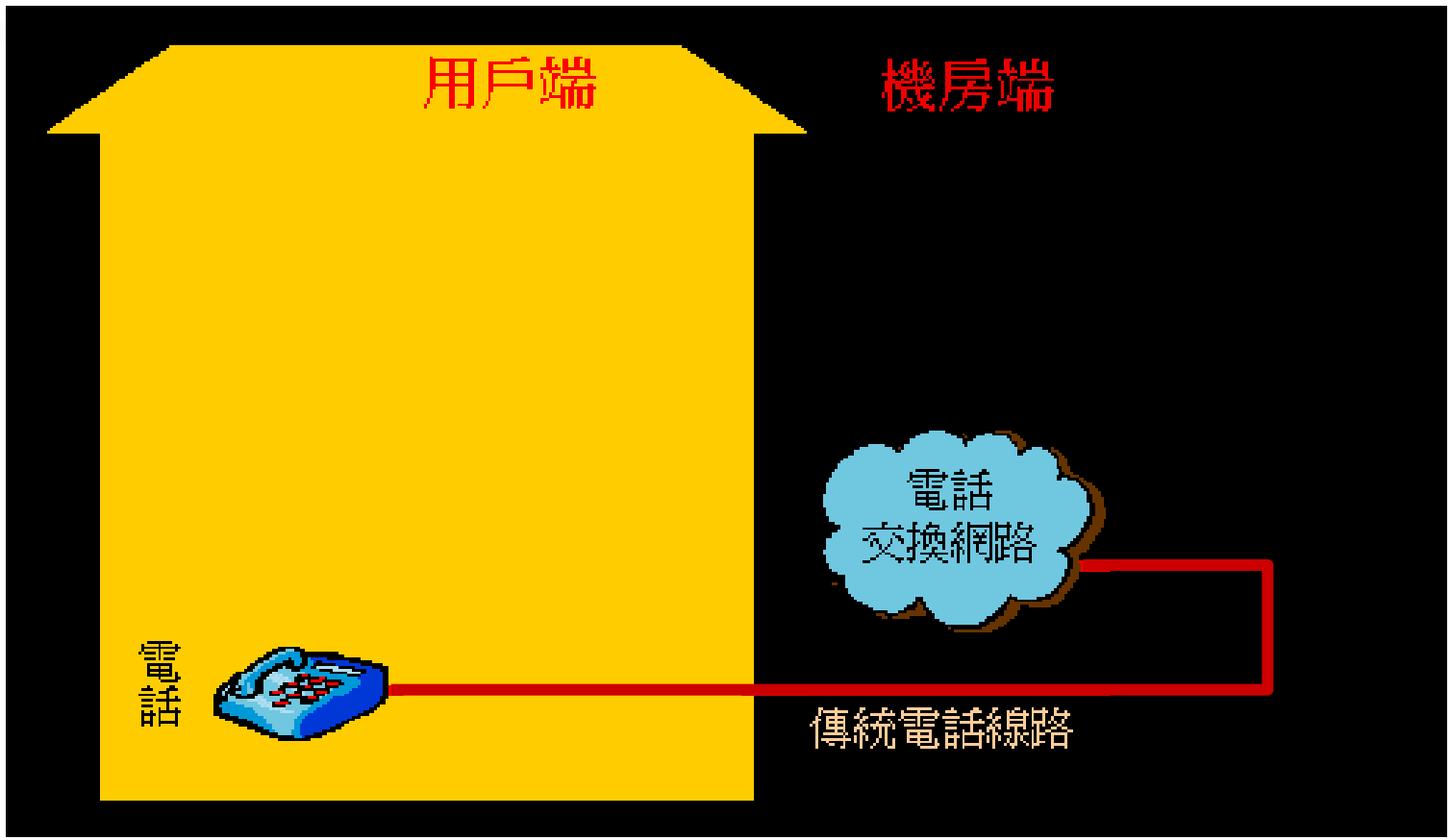
iTV Business model

- *Subscription based model*
  - ✓ *Learning, Travel, Game, Music…etc.*
  - ✓ *Channel program on demand (HBO on demand)*
- *On demand model*
  - ✓ *Movie titles*
  - ✓ *Performance*
  - ✓ *Documentary*
- *Advertising*
  - ✓ *Through portal*
  - ✓ *Advertising area*
- *Services Provider model*
  - ✓ *Co-located model: E-commerce. Learning, stock quotes, etc.*

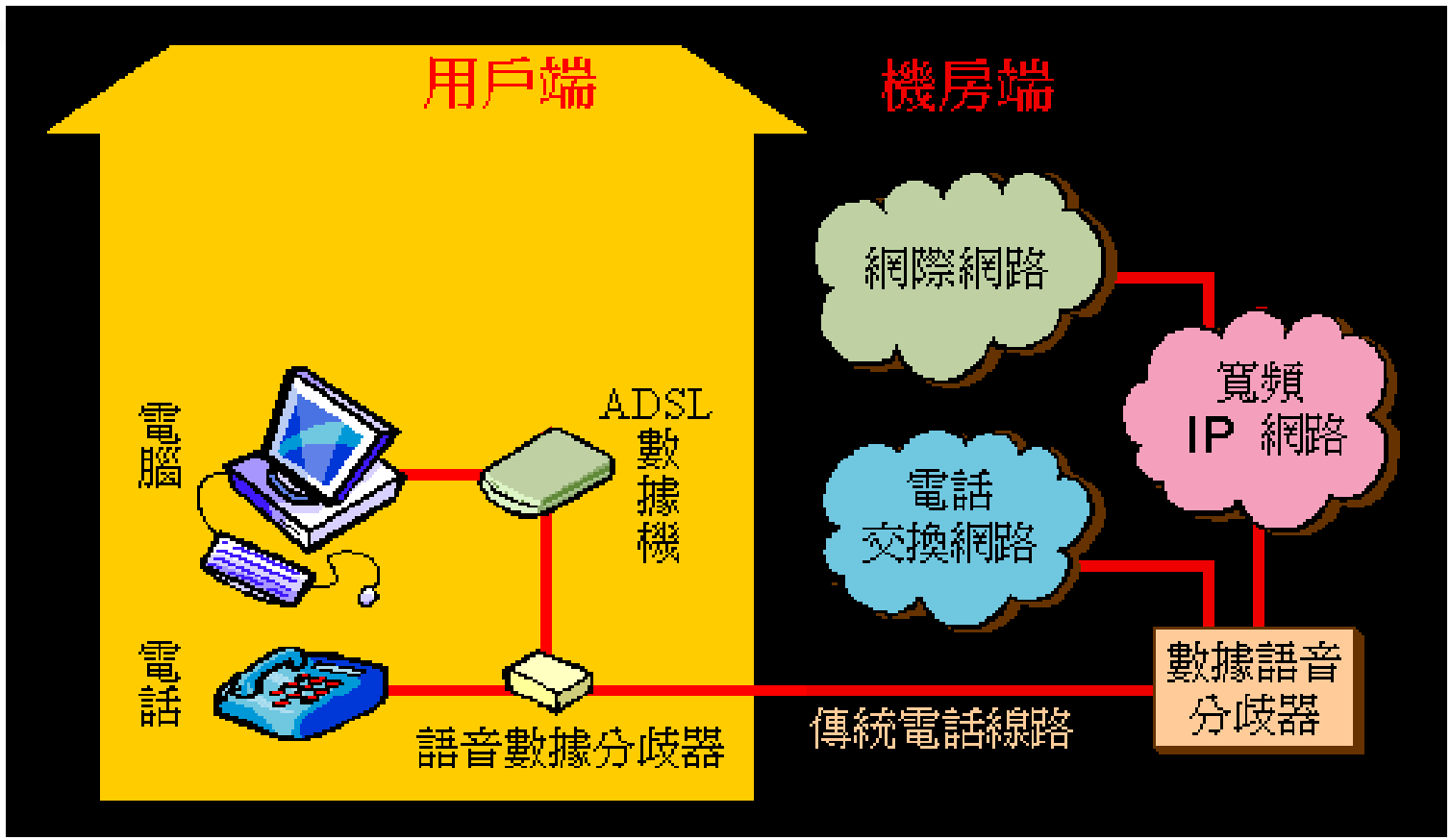
CHT MOD

- CHT Multimedia on demand is a brand new telecom service
- Take advantage of the broadband switching network based on the new telecom technologies, such as ATM, IP switching, and ADSL
- Broaden the existing bandwidth of the local loop
- Provide the interactive multimedia environment of economy, convenience, and high bandwidth
- To react in time to meet the requirement of the revolutionary change of the traditional telecom services.

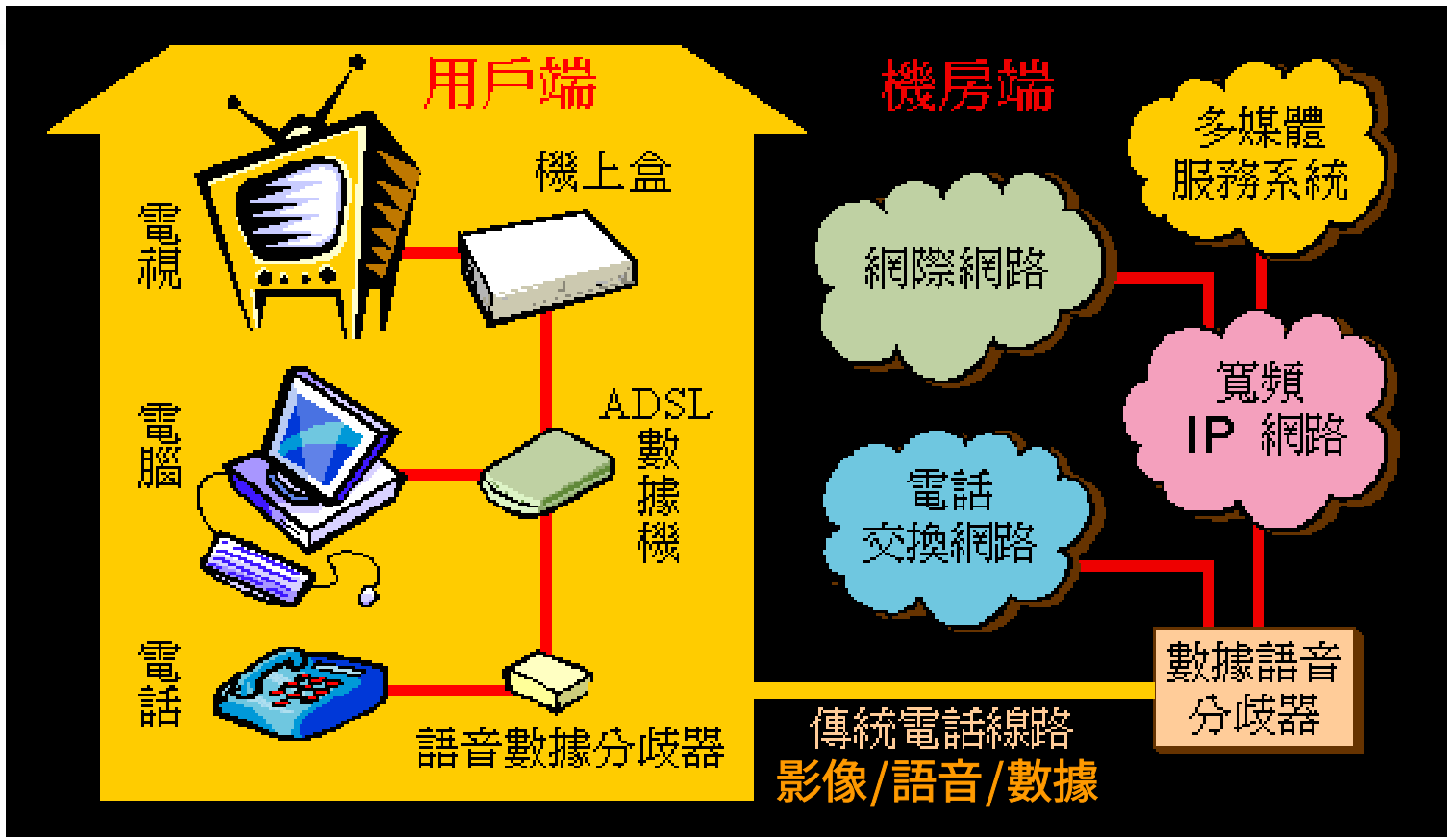
ADSL載送MOD架構



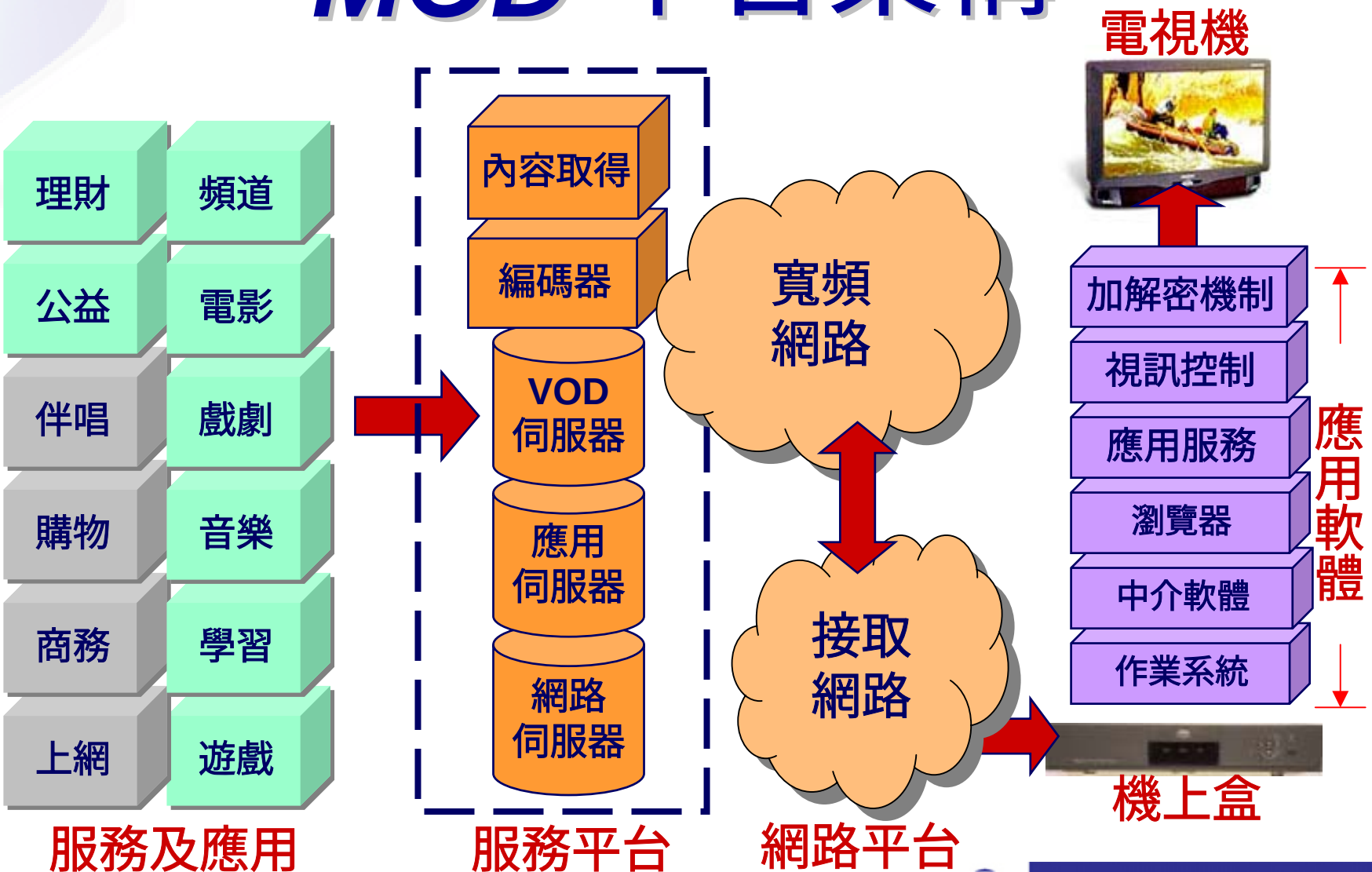
ADSL載送MOD架構



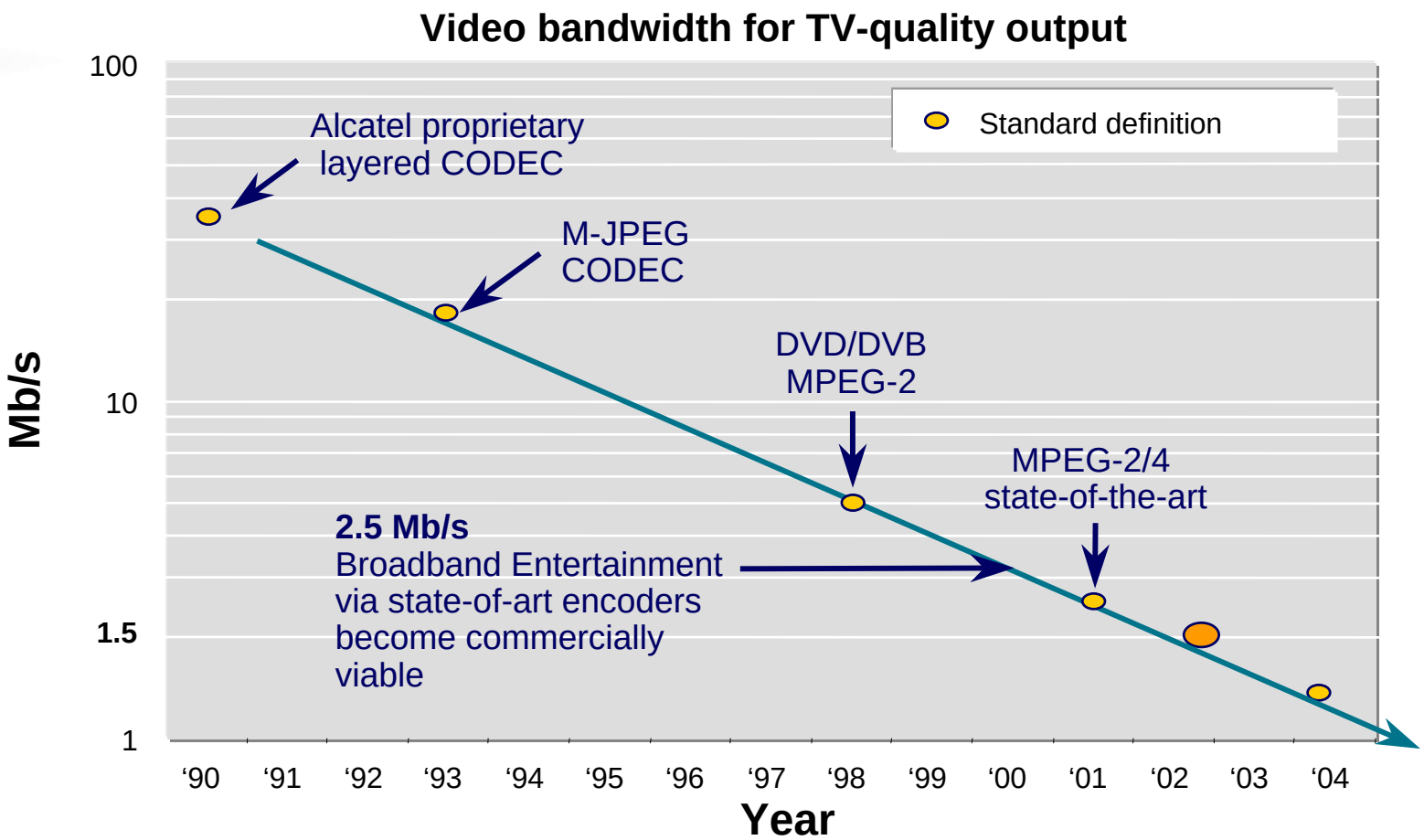
ADSL載送MOD架構



MOD 平台架構

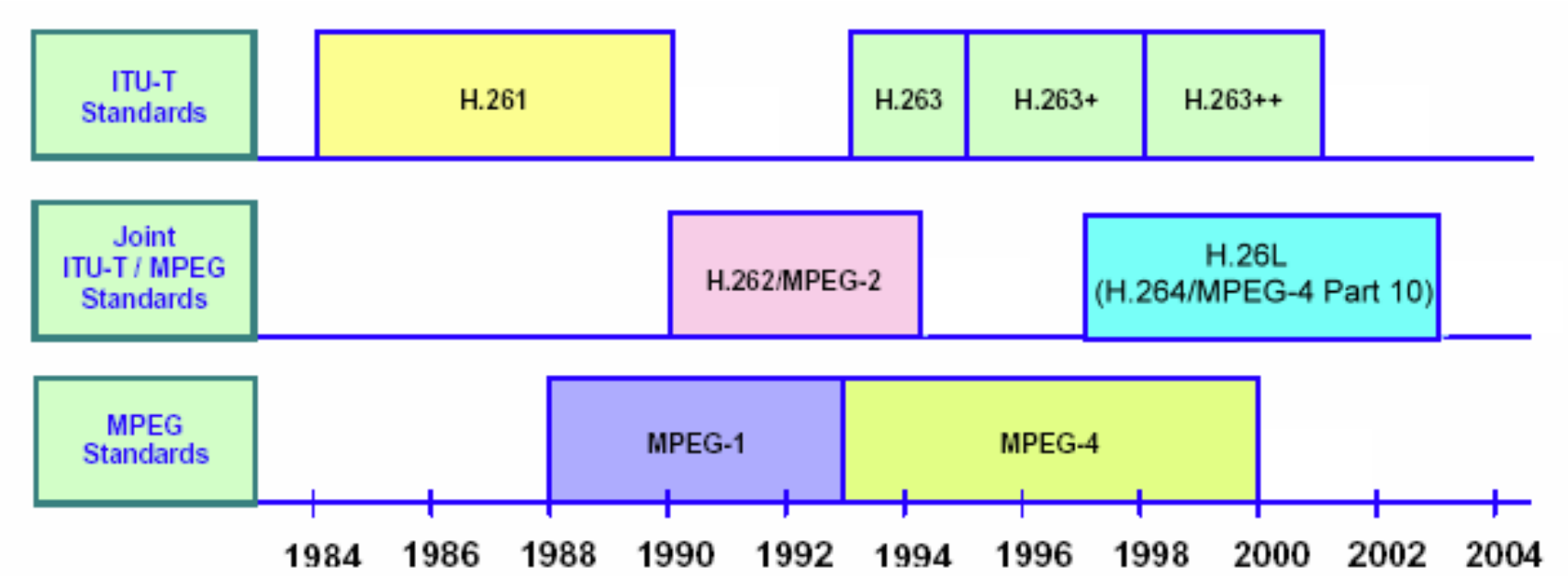

電視機
理財
頻道
公益
電影
伴唱
戲劇
購物
音樂
商務
學習
上網
遊戲
內容取得
編碼器
VOD
伺服器
應用
伺服器
網路
伺服器
寬頻
網路
接取
網路
加解密機制
視訊控制
應用服務
瀏覽器
中介軟體
作業系統
應用軟體
機上盒
服務及應用
服務平台
網路平台

Compression Technology Evolution

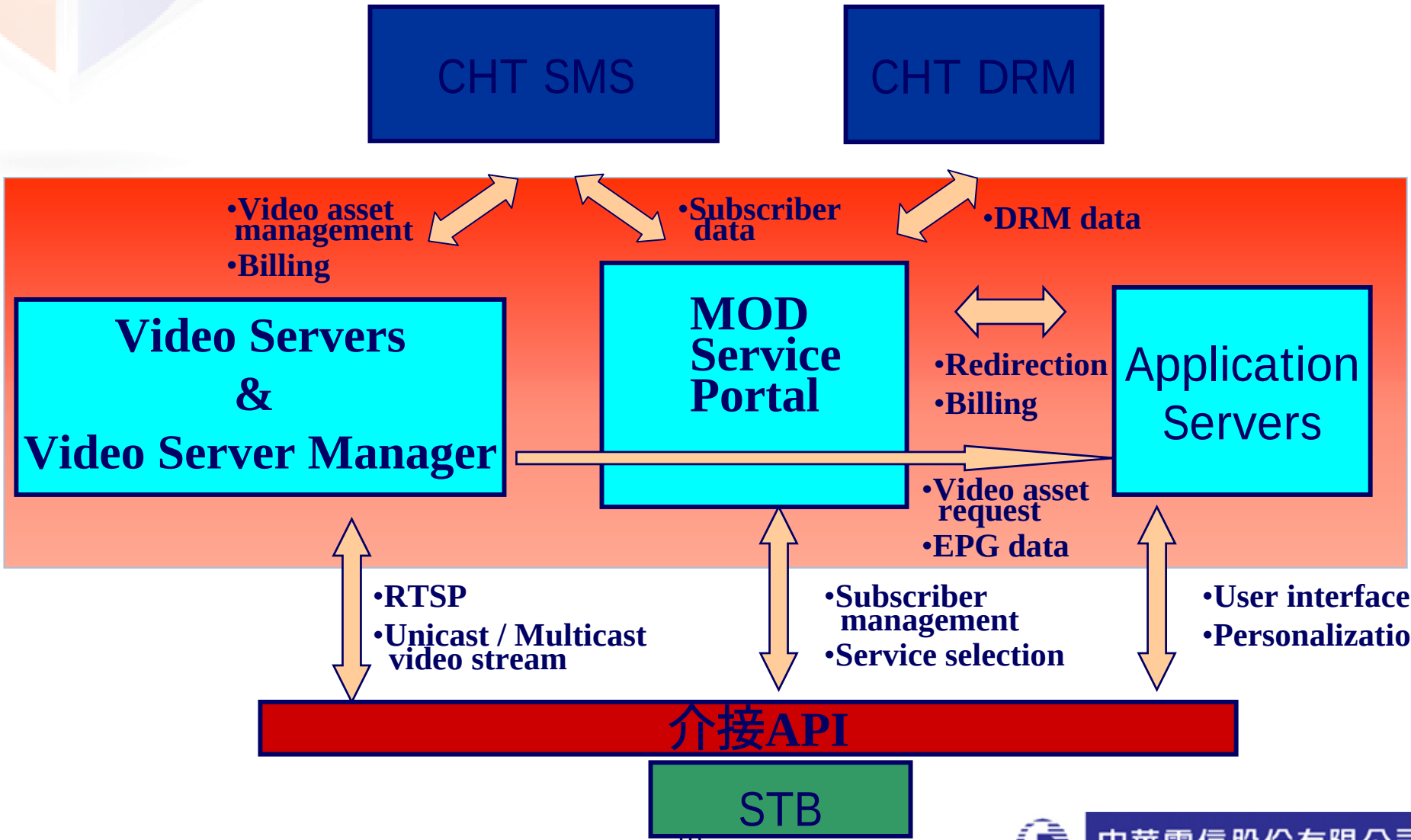


Video Coding Standards

- Two families of standards
  - ITU-T: H.26x (e.g.,H.261, H.262, H.263, and H.26L)
  - ISO/IEC JTC1: MPEG-x (e.g., MPEG-1, MEPG-2, and MPEG-4)
- Progression of video coding standards



Architecture of Service Platform



Platform consideration(1/2)

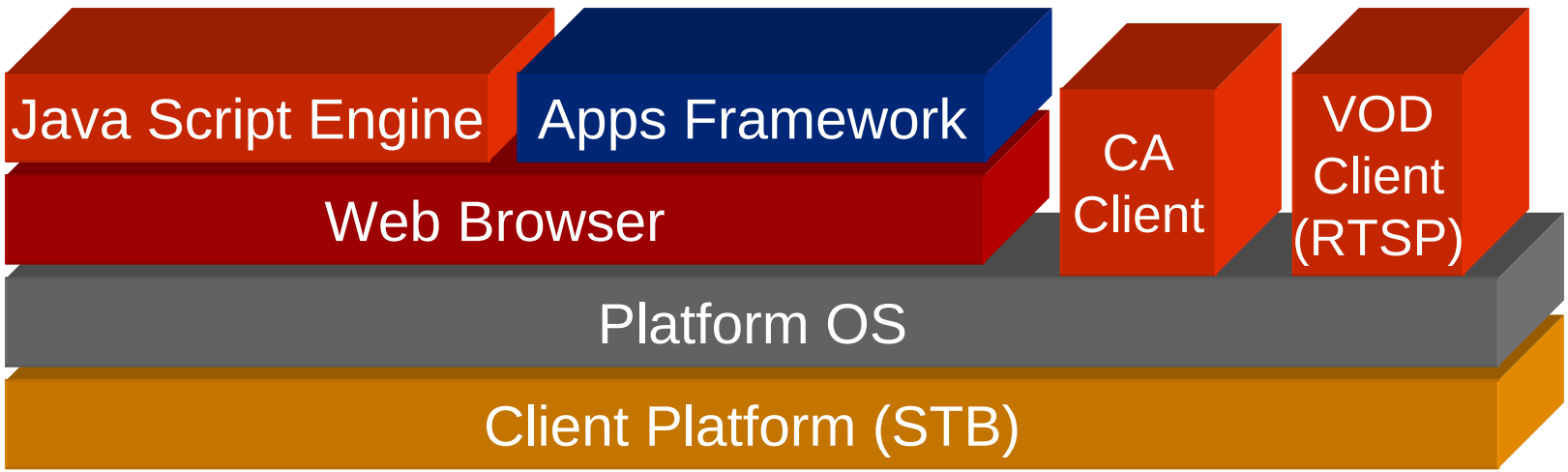
- **Distributed Video Server Architecture**
  - ✓ **Efficiency to network and HE devices.**
    - **Almost 80 % content request streamed locally**
    - **As close as possible between media server and the users**
    - **Content caching**
    - **Predictive caching**
    - **Dynamic caching based on runtime usage characteristic**
    - **Streaming while fetching**
    - **Storage efficiency**
  - ✓ **Expanding service area easily**
    - **Automatic content propagation**
  - ✓ **Much more reliable system**

Platform consideration(2/2)

- **Open Platform Architecture**
  - ✓ **Open API to un-bundle AP from platform**
  - ✓ **Open protocol to allow multi-STB vendors**
  - ✓ **Standards STB and AP to simplify Aps development**
  - ✓ **Ensure operator fully control the SMS such as billing, provisioning, customer management.**
  - ✓ **Free UI from middleware**
  - ✓ **Free from DRM system**
- **Backend Management Platform**
  - ✓ **Asset management**
  - ✓ **Program management**
  - ✓ **Content delivery system**
  - ✓ **Operation and maintenance requirement**

STB架構(1/2)

- STB將以Thin-Client 之 架構設計，以快速開發多樣化互動電視服務。



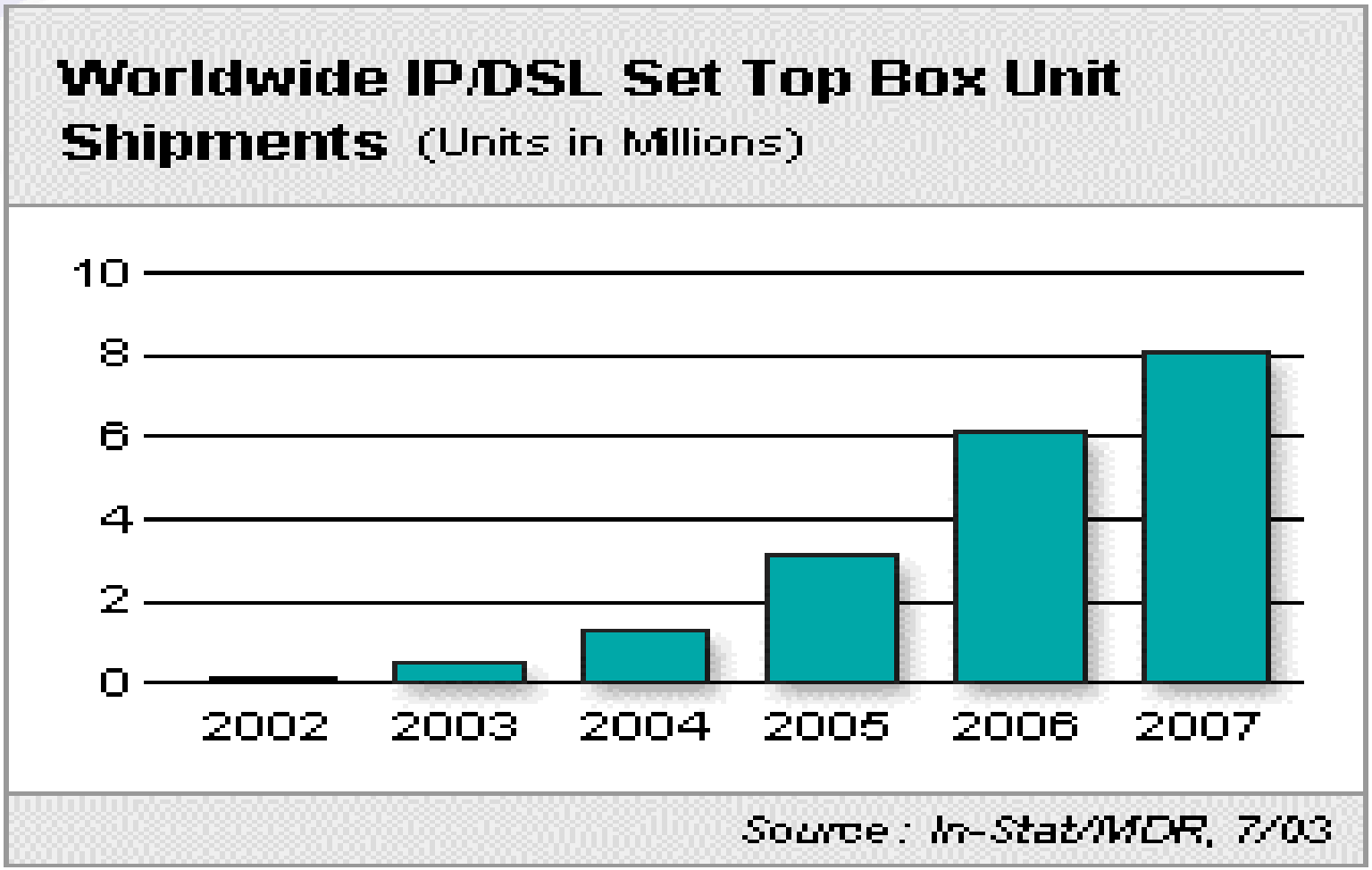
IP Set-Top-Box

- IP set-top boxes present new opportunities for network service providers to deliver revenue-generating home entertainment services
- Users can consume videos and music, browse the Internet, play games, and use e-mail services—all through a single television interface provided by an IP set-top box
- IP set-top boxes can deliver much of the same cable or satellite set-top box functionality
- The bi-directional IP infrastructure enables inherent support for a broader range of applications and interactive services

IP Set-top-box

- **Worldwide opportunity for IP set-top boxes will reach 8 million units per year by 2007.**
- **The average growth rate is almost 200 percent per year for the next three years** ***(In-Stat, "Telco Video Delivery: Pockets of Activity Emerge," April 2003, Michelle Abraham, Group: Converging Markets & Technologies, Report No. IN030572MB)***

IP Set-top-box shipments



Summary

- The trends of 4C's convergence lead to more and more competition.
- Cable, ILEC and CLEC operators all toward providing triple play service.
- The choice of standards and formats is a critical challenge to operators.
- To ensure the investment, flexibility is still important to this market.

敬請指教