

# SBTVD and Microsoft TV Technologies

Alisson Sol, Paulo Sérgio Pinto, Dennis Cronin

# Summary

- Who We Are
- TV Technology
- Media Convergence
- Microsoft TV Technologies
- Content Development Kit

# Who We Are

- Alisson Sol
  - Senior Development Lead
  - Microsoft Office Business Applications
  - Computer Science, M.Sc. - UFMG
- Paulo Sérgio Pinto
  - Technical Account Manager
  - Microsoft TV
  - Computational Chemistry, PhD – IME/PNNL
- Dennis Cronin
  - Product Unit Manager
  - Microsoft TV

# Disclaimer

- This presentation is intended for information and education only and is not guaranteed by Microsoft as to accuracy, completeness, nor any trading result.
- The views and opinions offered by individuals in this presentation do not necessarily represent the views of Microsoft.

# TV Coverage

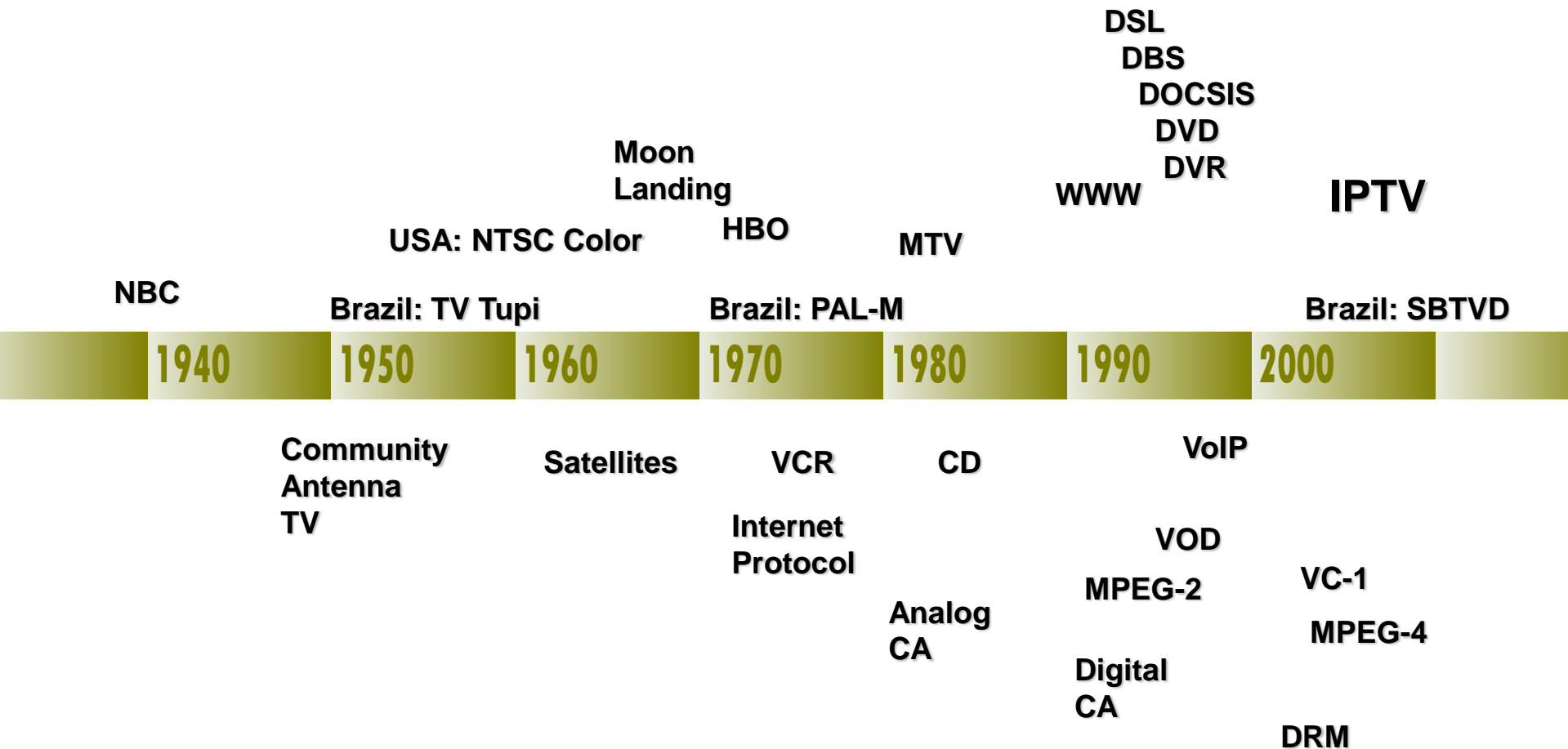
- Estimate: TV Sets Sold Worldwide – 1 Billion
- USA data (2000)
  - TV sets: 98%, Color: 99%, Remote: 95%
  - Multi-set: 76%, VCR: 85%, Wired cable: 68% (Paid: 32%)
  - Internet: 69%
- Brazil
  - TV sets: 89%
  - Computer: 13%, Internet: 7.5-9%

Sources: <http://www.tvhistory.tv/facts-stats.htm>, <http://www.telebrasil.org.br>,  
United Nations – Information Economy Report 2005

# TV Presence



# Modern History of Television

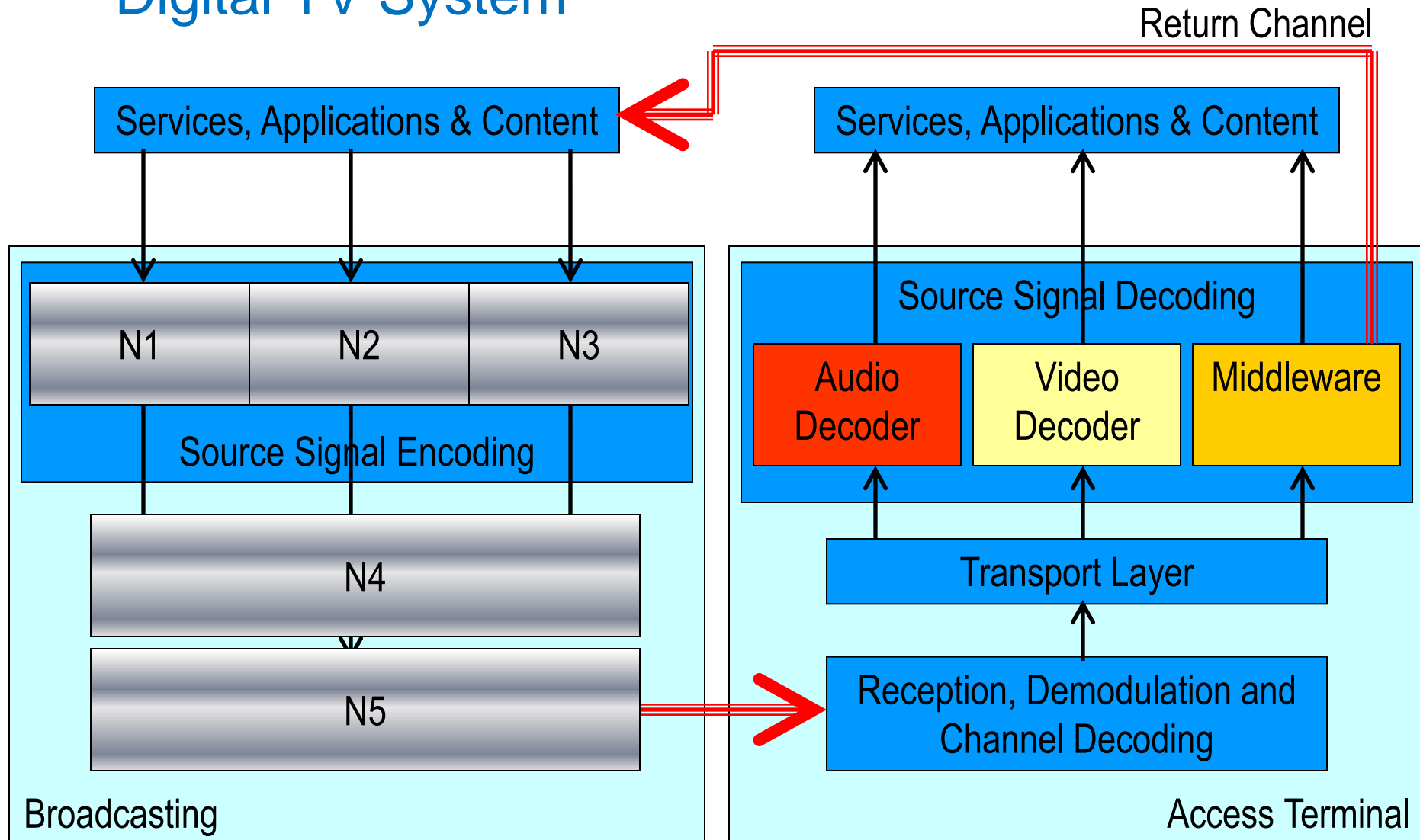


# SBTVD

- “Sistema Brasileiro de Televisão Digital”
  - Study groups created in 2003 to propose reference model for digital terrestrial TV (DTT)
  - Law 5.820/2006: ISDB-T (Integrated Services Digital Broadcasting Terrestrial)
- Recent News
  - First digital broadcasting: Dec/03/2007
  - All capitals with digital broadcasting: Dec/31/2009
  - All cities with digital broadcasting: Dec/31/2013
  - Turn off analog system: Jun/29/2016



# Digital TV System



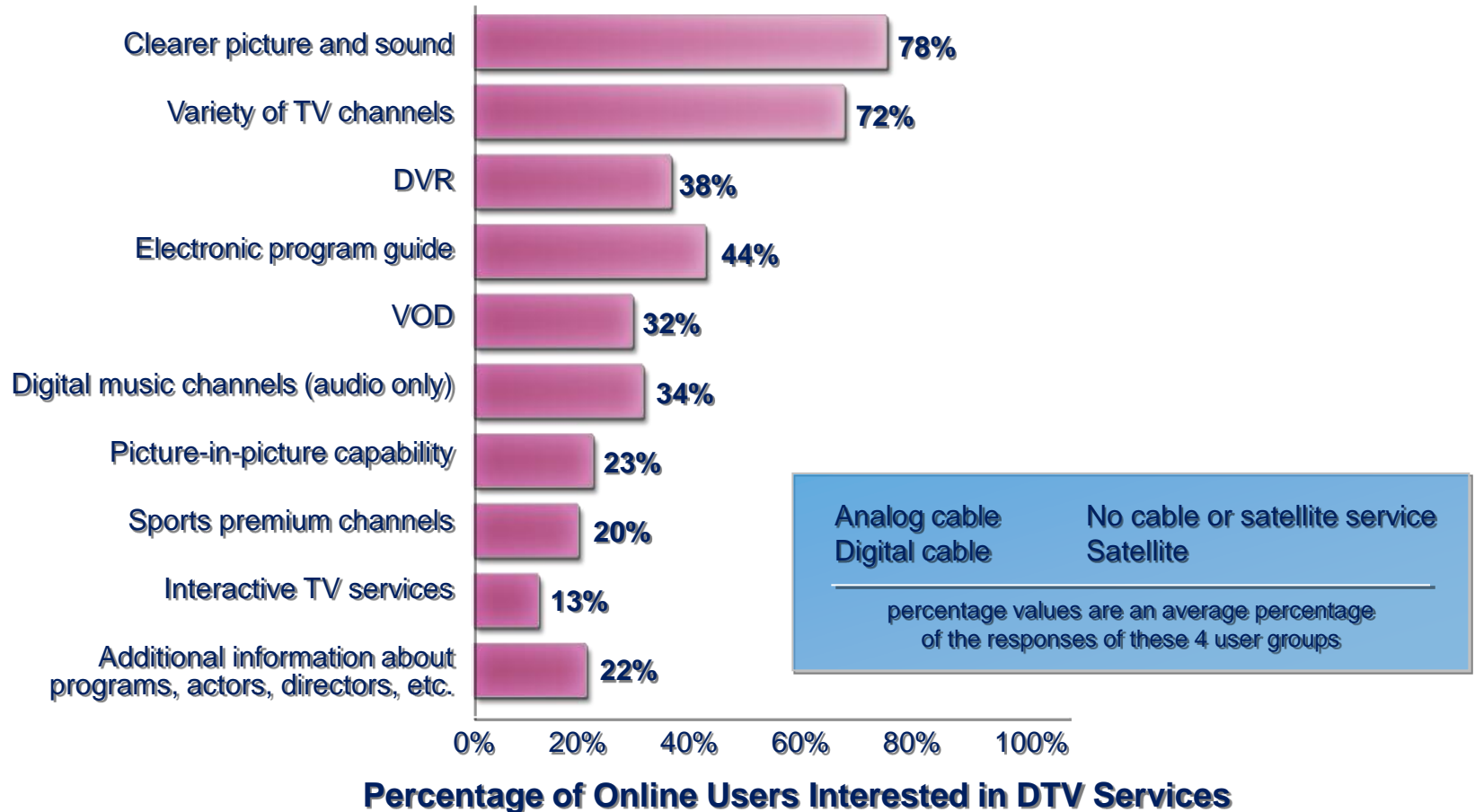
# Technology Options (SBTVD Reference Model)

- N1: Video (3)
  - MPEG-2, MPEG-2 + HD, H.264
- N2: Áudio (10)
  - MPEG-1 L I/II/III, MPEG-2 L I/II/III, MPEG AAC, MPEG AAC LC/Main/HE, AC-3, EAC-3, DTS, OggOrbis
- N3: Middleware (4)
  - BML/ACAP-X/MHEG-5, MAESTRO, ARIB-23/ACAP-J/MHP, FLEX-TV
- N4: Transport (1)
  - MPEG-2
- N5: Transmission
  - Main signal (5): ATSC, DVB-T, ISDB-T, ISDB-T\*, ISDB-T\*\*
  - Portable (4): ISDB-Tn, T-DMB, DVB-H, FLO

# Digital TV – ISDB-T

- Transmission Efficiency
  - 4 digital channels or 1 HDTV channel per current analog channel + mobile phone channel
  - Can transmit/receive on moving vehicles
- Interactive Services
  - Data broadcasting + possibility of return channel
- Interfaces and Encryption
  - Allow top-set box functionality and conditional access

# What Consumers Like About TV?






Question: Which of the following features of digital television service (DTV) are most appealing to you?

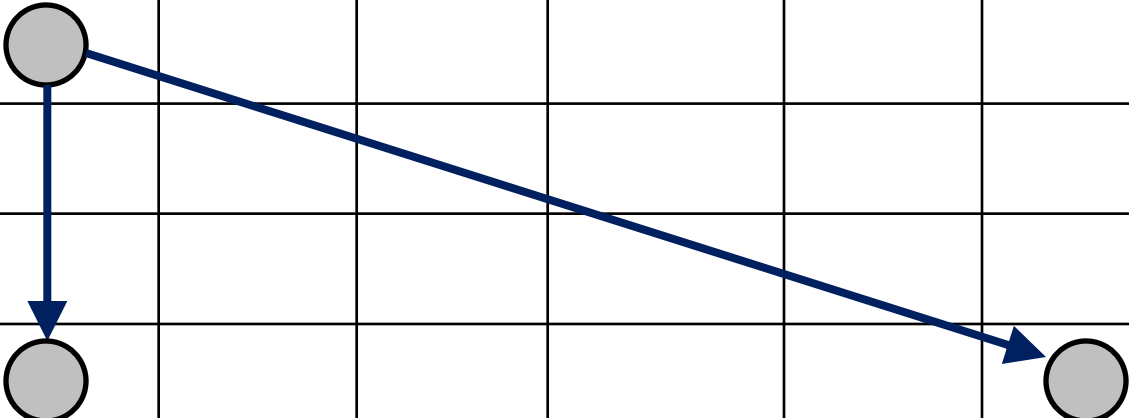
Source: JupiterResearch/Ipsos-Insight Consumer Survey (9/04), n = 449 (analog cable subscribers interested in DTV, US only); n = 440 (no cable, US only); n = 534 (digital cable users interested in DTV, US only); n = 423 (satellite users interested in DTV, US only)

# Learning From Customers

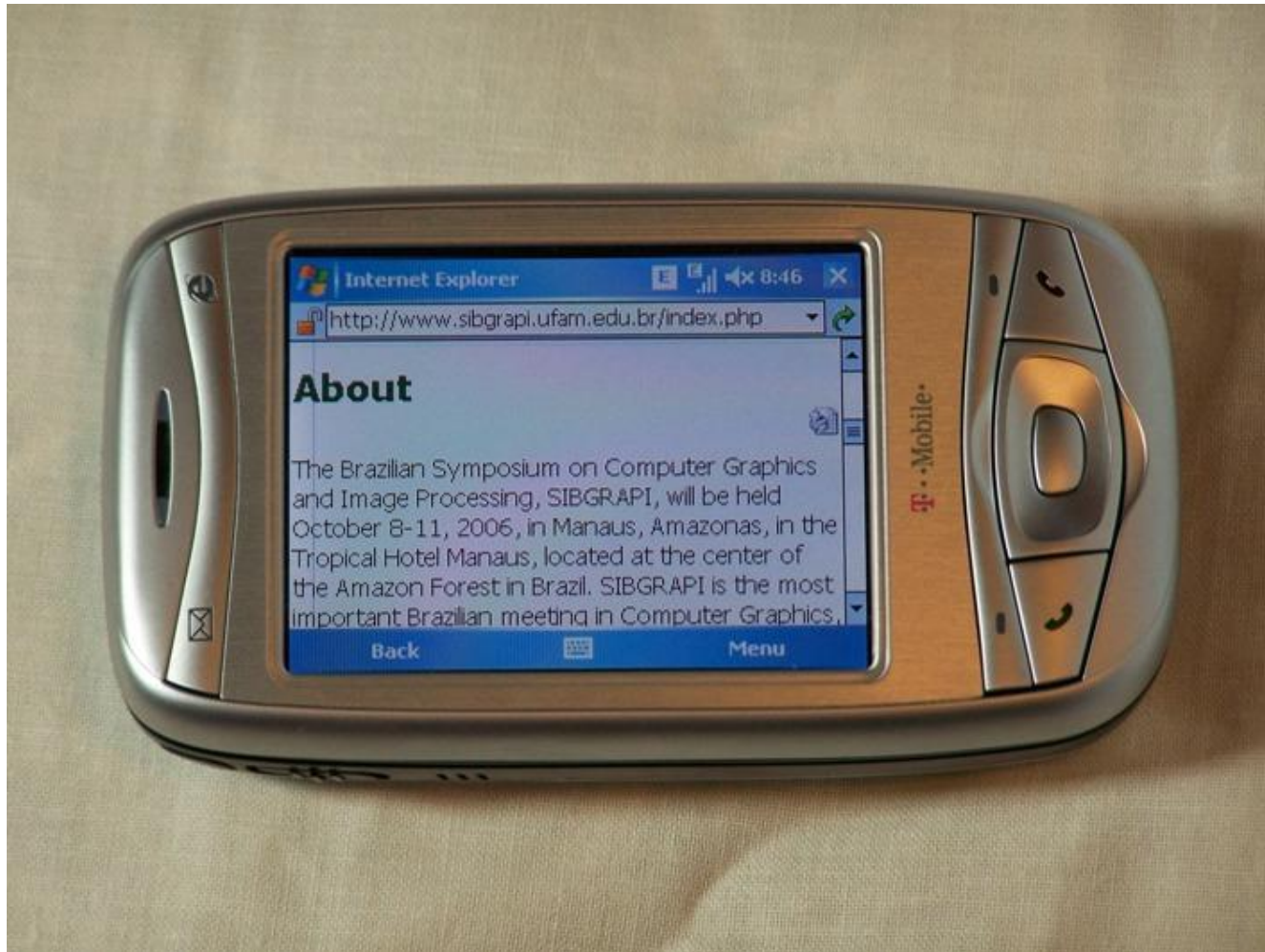
- Computer: “*Do what I want!*”
- Television: “*Entertain me!*”
- Distance
  - Computer: 2 feet (~0.6m)
  - Television: 10 feet (3m)

# Evolution Of TV Transmission

		Open			Closed (paid)		
		Terrestrial	Satellite	IPTV	Terrestrial	Satellite	IPTV
Analog	Normal						
	HD						
Digital	Normal						
	HD						



# Digital Convergence

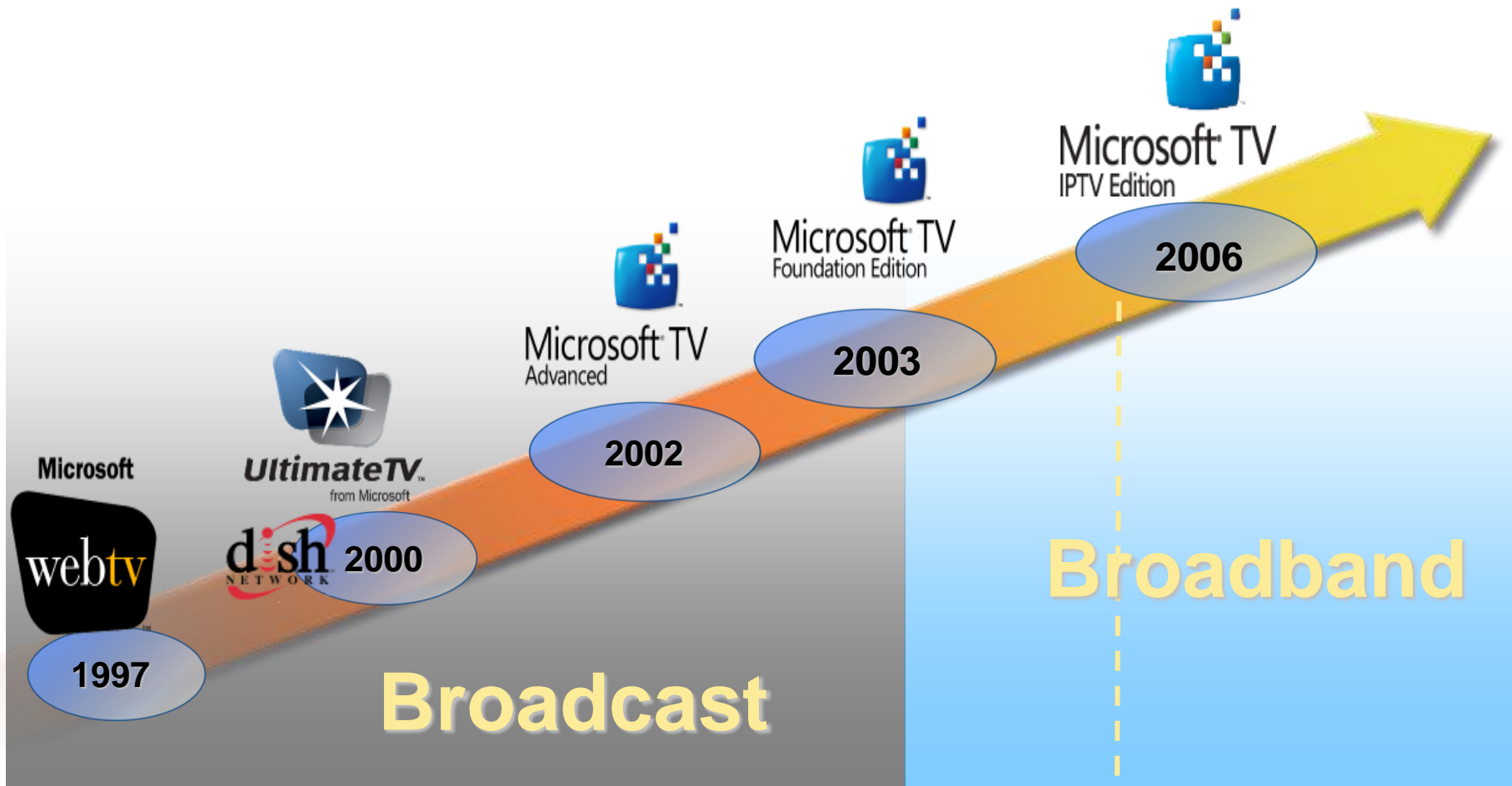


# Demo

- Digital TV



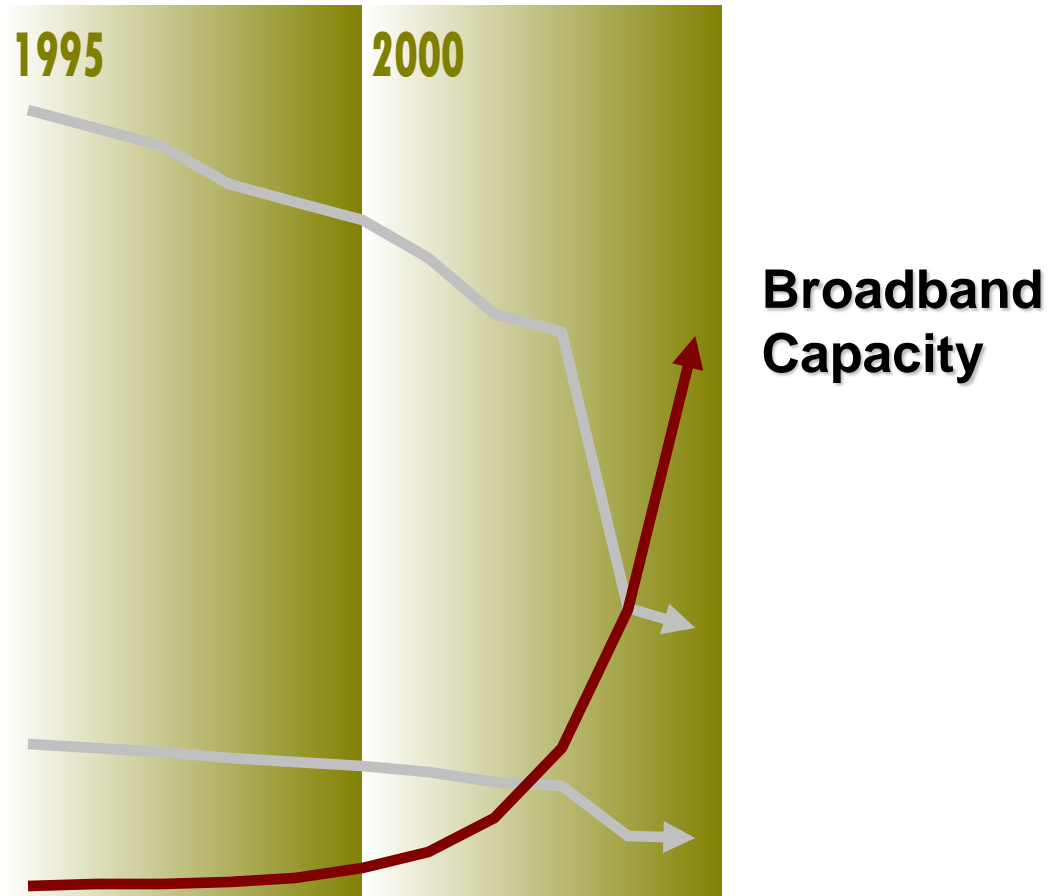
# Microsoft TV



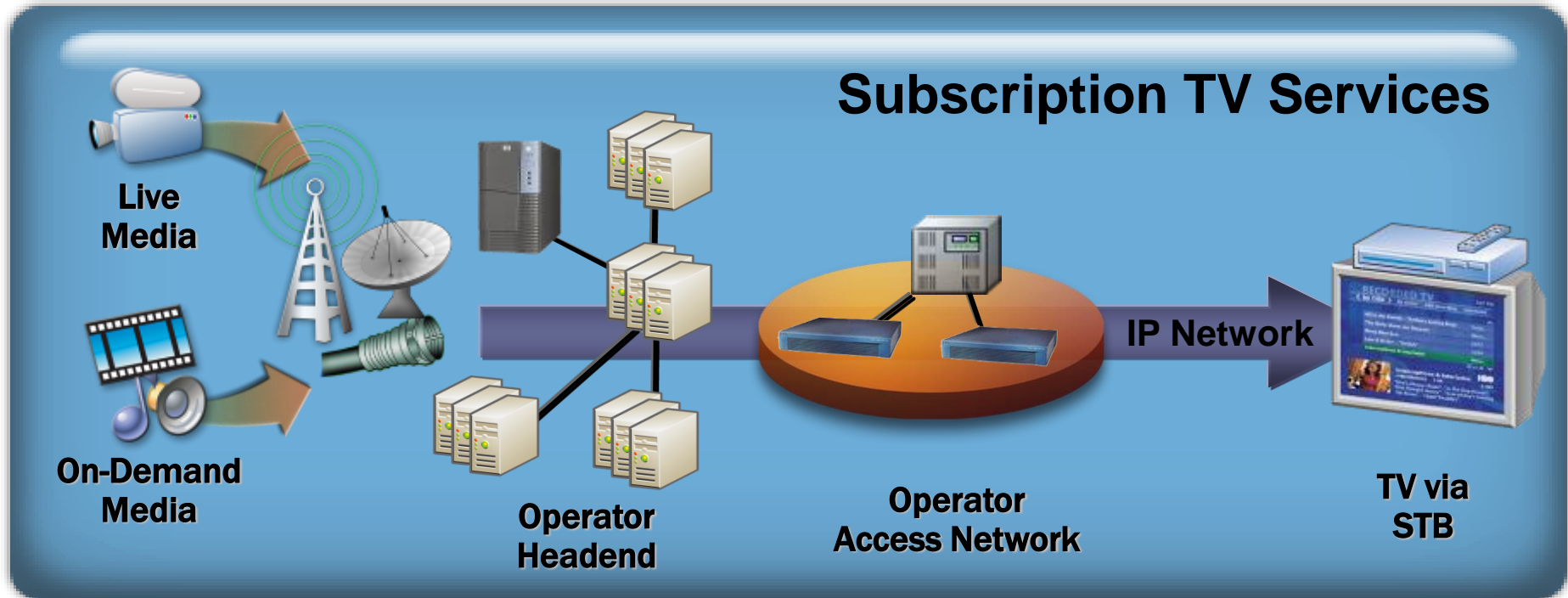
# What is IPTV?

**Bandwidth required  
for High Definition Video**

**Bandwidth required  
for Standard Definition Video**



# IPTV: Future of Television



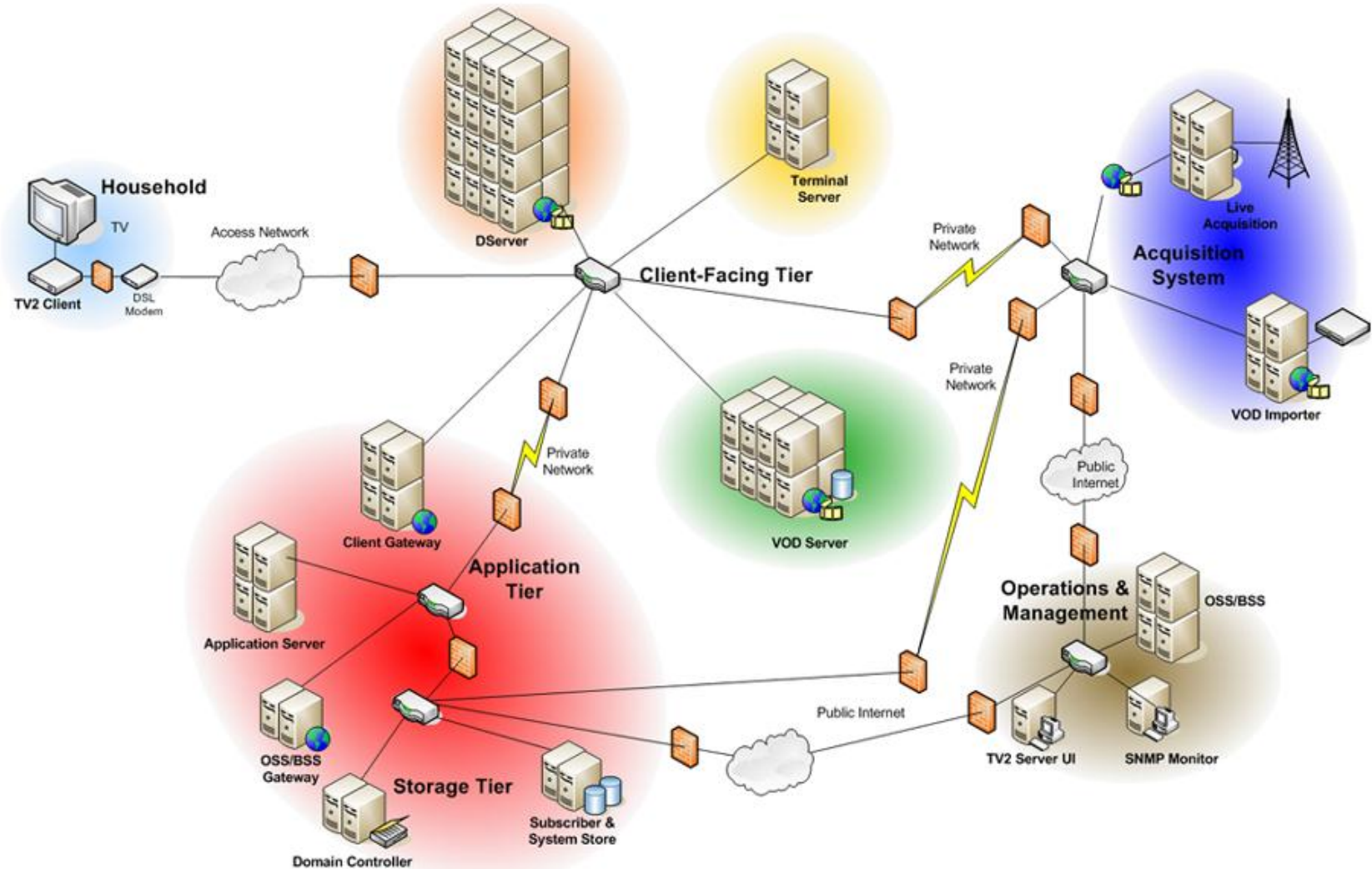
- **What IPTV is not:**

- Video streaming over the Internet
- Watching TV on your PC
- Best-efforts video services
- Based on unproven business models

- **What IPTV is:**

- Competitive TV services over managed IP networks
- Broadcast television
- All forms of on-demand
- Electronic program guide
- Connected entertainment

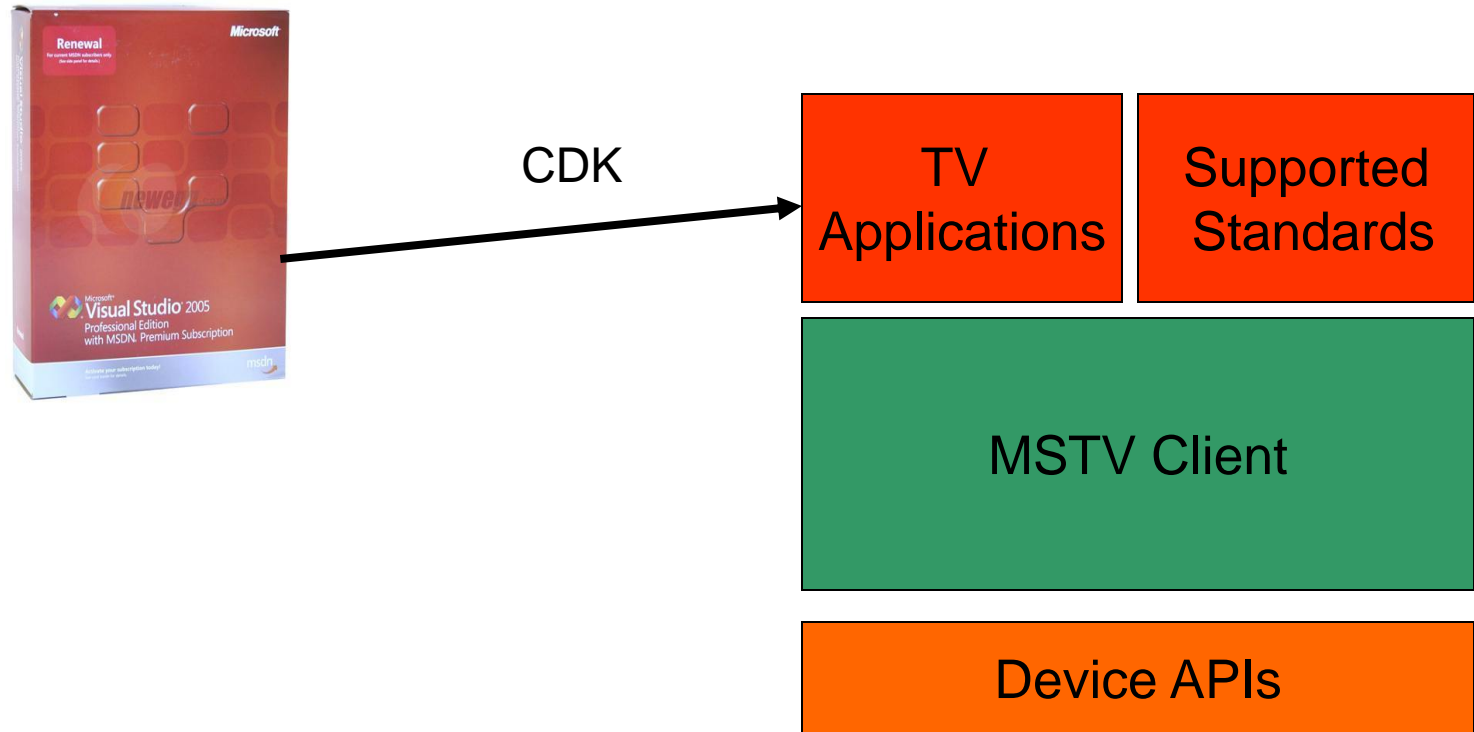
# IPTV Edition – Deployment Layout



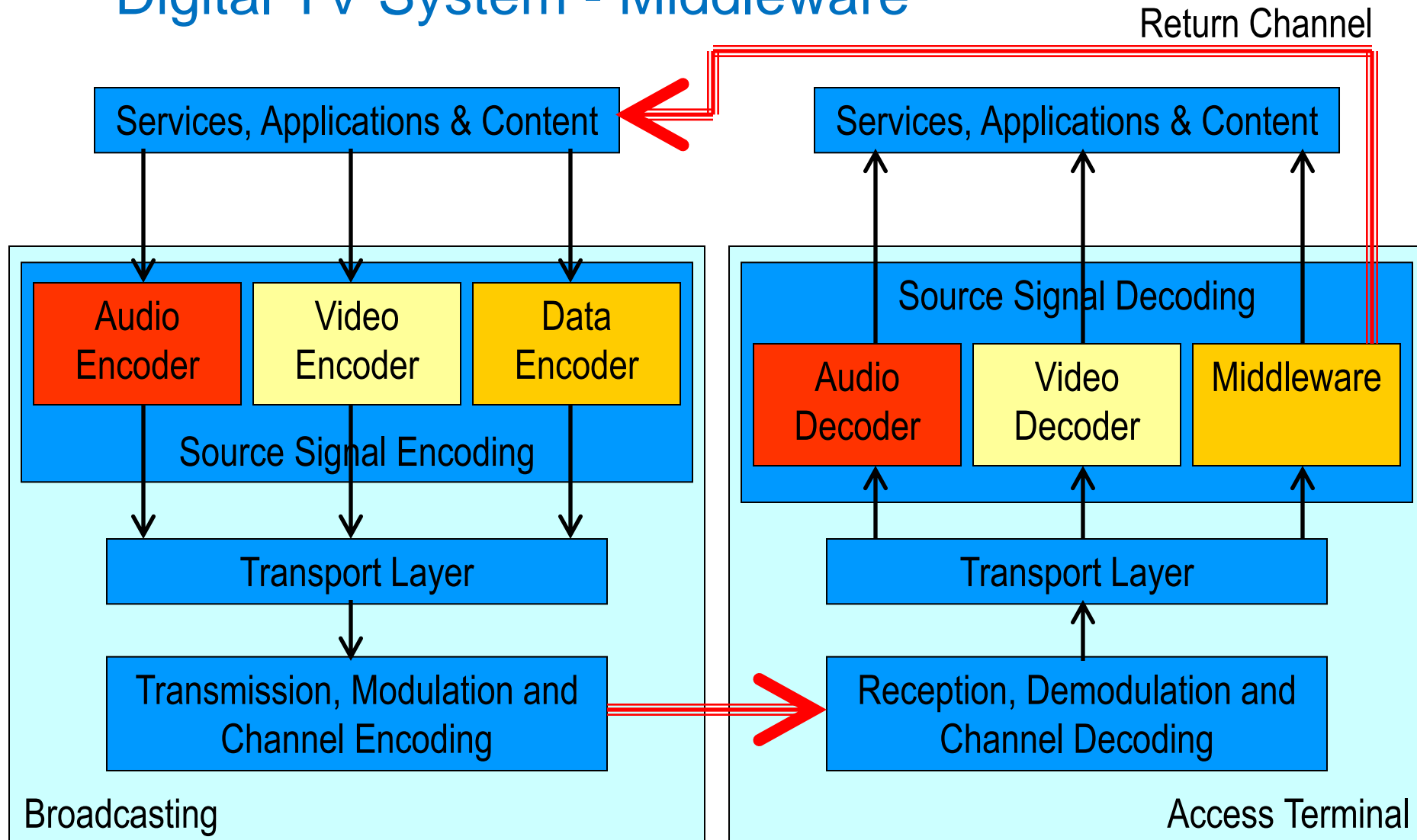
# Deployment “Know-How”

- Hardware
  - Server-side
  - Top-set box
- Middleware
  - Updates (downtime)
- Application
  - Deployment
  - Updates
- Customer Experience
  - Billing and support (How to connect the cables?)

# Client



# Digital TV System - Middleware



# Middleware

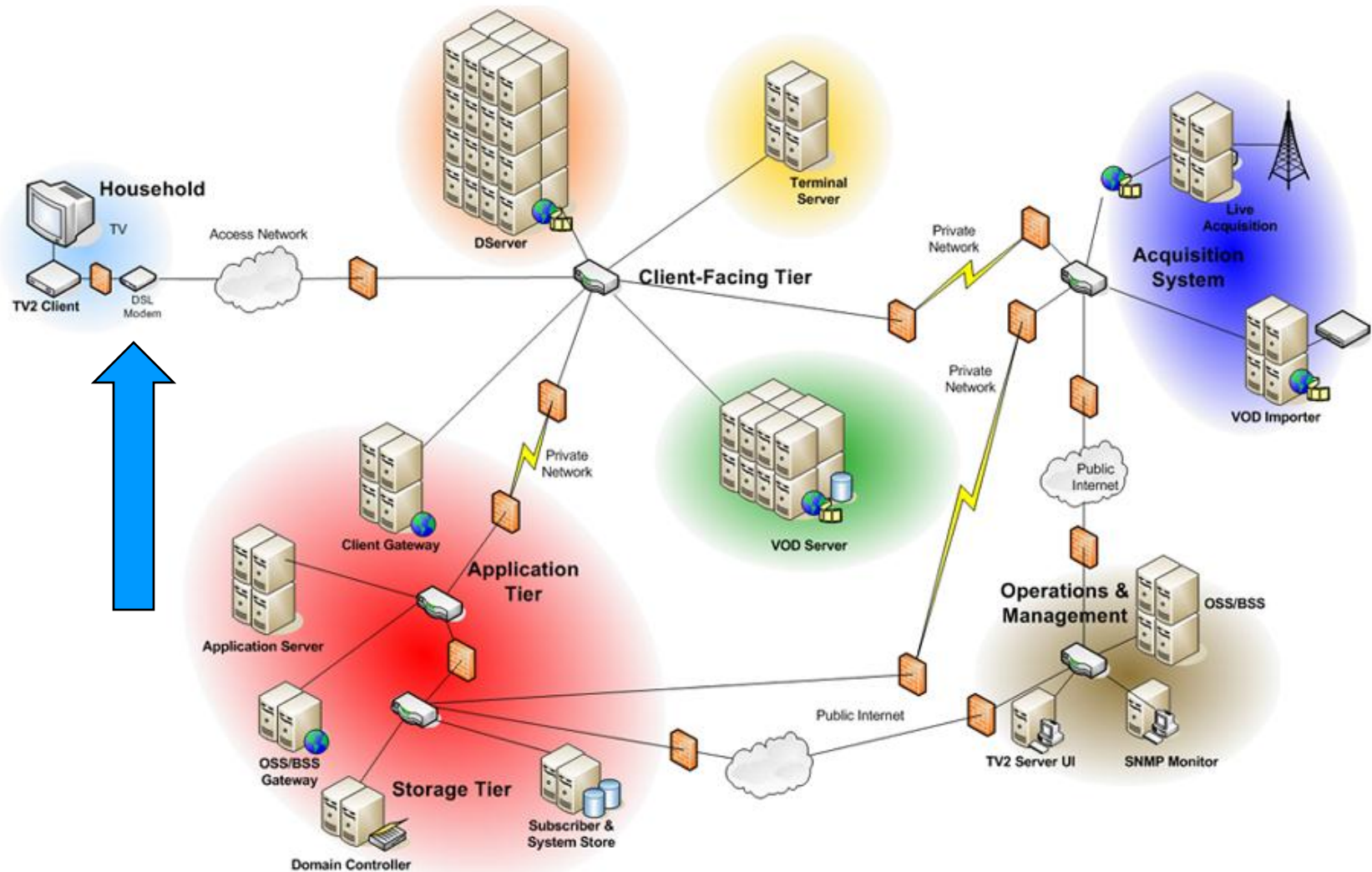
- Set-Top Box “Resident Application”
  - A.k.a. IRD – Integrate Receiver Decoder (In Portuguese: URD – Unidade Receptora Decodificadora)
- Virtual Machine
  - Execution of applications (usually AV decoders implemented in hardware)
- Return Channel
  - (In Portuguese: CI – Canal de Interatividade)



# Middleware Platforms

- Microsoft
- OCAP (OpenCable Application Platform)
- JavaTV
- MHP (Multimedia Home Platform)
- MHEG-5 (Multimedia and Hypermedia information coding Expert Group)
- Ginga

# Return Channel (SBTVD RFP14)



# TV Application Scenarios



Games	Casual Extreme
Content Services	News/Info Services Portals/Start Page Mosaics
eTV Applications	Voting Hot Spots Ads Play Along
EPG Enhancements	UI Features UI Customizations
Convergence Applications	Video Conferencing Caller ID Media Sharing

# CDK Example: Mosaic Applications

TELCOViD

forward  
**PRESTON BOND**

1 goal  
1 yellow card





78:15

	<b>BRNA</b>	<b>0</b>
	<b>CHRT</b>	<b>3</b>









# CDK Example: Information Portal

 **Microsoft TV**

**LOCAL NEWSPAPER**

**Seattle, WA**  
Live Traffic Cams

**Seattle I-90 Bridge**

**Tacoma Narrows Bridge**

[more traffic cams ►](#)

**Your Local Traffic**

- Latest Incidents - updated daily
- Trouble Spots - road work update
- Transit - Metro, Sea-Tac, State Ferries
- Weather, River, Road - regional info
- Weekly Q & A - answers to your questions
- Miscellaneous - carpool FAQs, closures and more

**News**

**Weather**

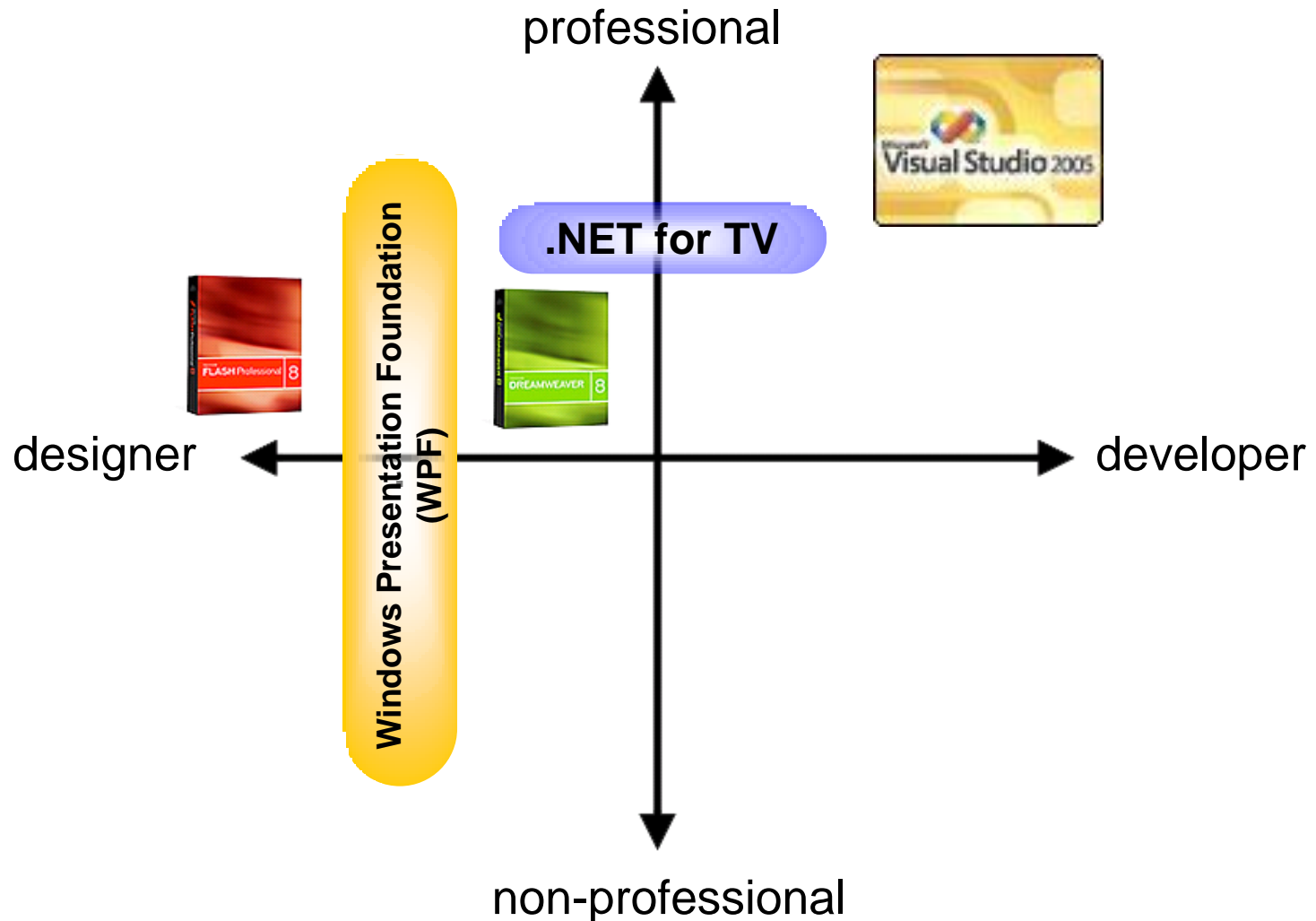
**Classifieds**

**Local Events**

**Traffic**

**Sports**

# Tools Landscape – The High Level View



# Content Development

- Visual Studio 2005
- Microsoft IPTV Content Development Kit

# Demo

- Application Development



# Thanks!

- Questions & Answers