



Broadband Services

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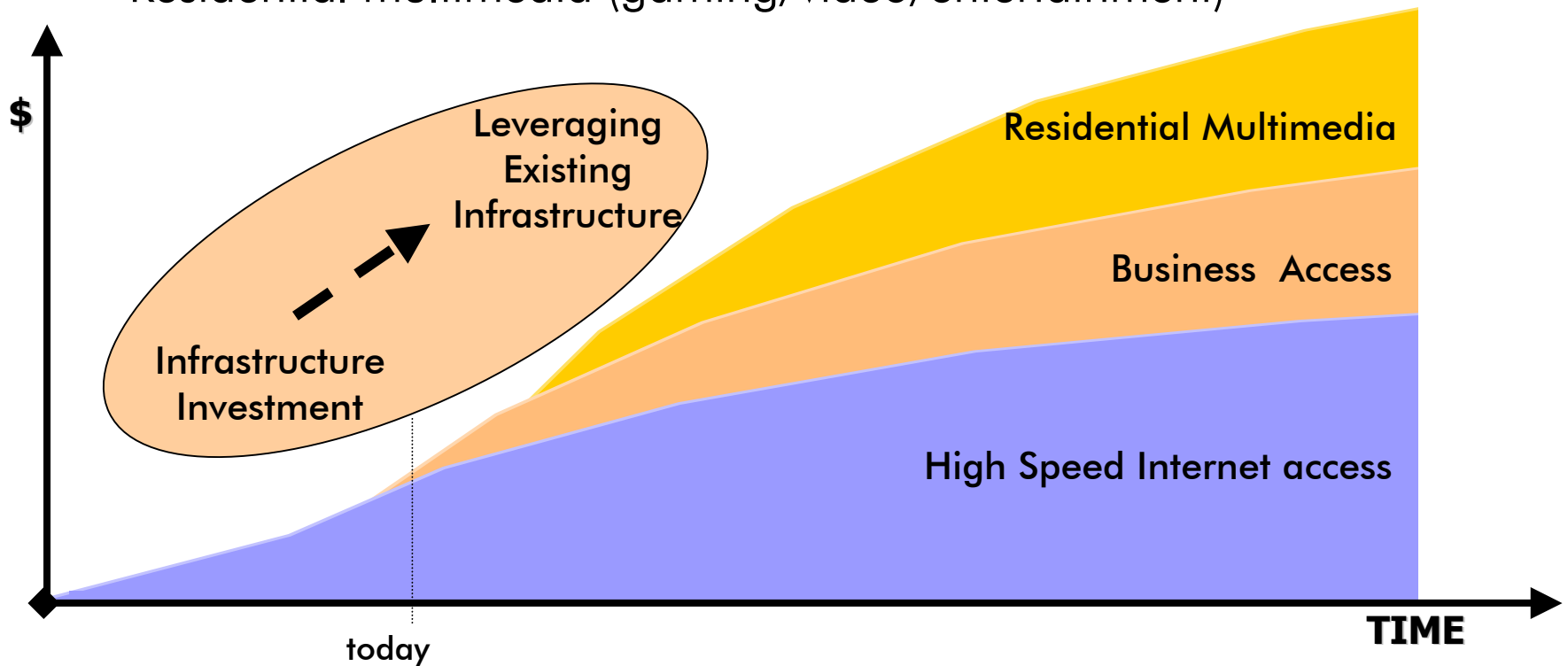
Main broadband application areas

- > High Speed Internet (HSI) for Business and Residential
- > Virtual Private Networks and Broadband Access for SME's
- > Teleworking
- > E-Government
- > E-Health
- > E-Learning
- > E-Home with Infotainment and Telematics

DSL business have significant Revenue Streams

> Three revenue streams in DSL deployment

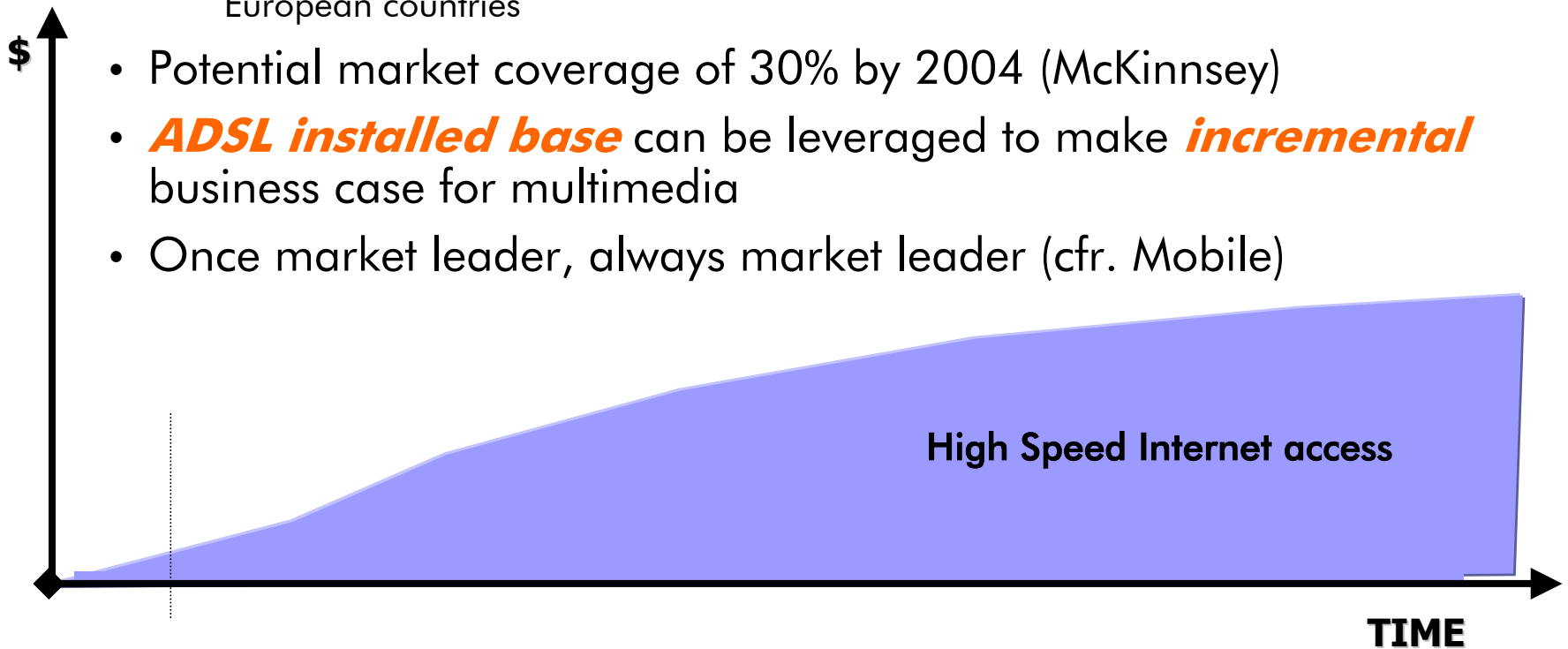
- High speed Internet access (limited by # of on-line households)
- Business access (SOHO/SME)
- Residential multimedia (gaming/video/entertainment)



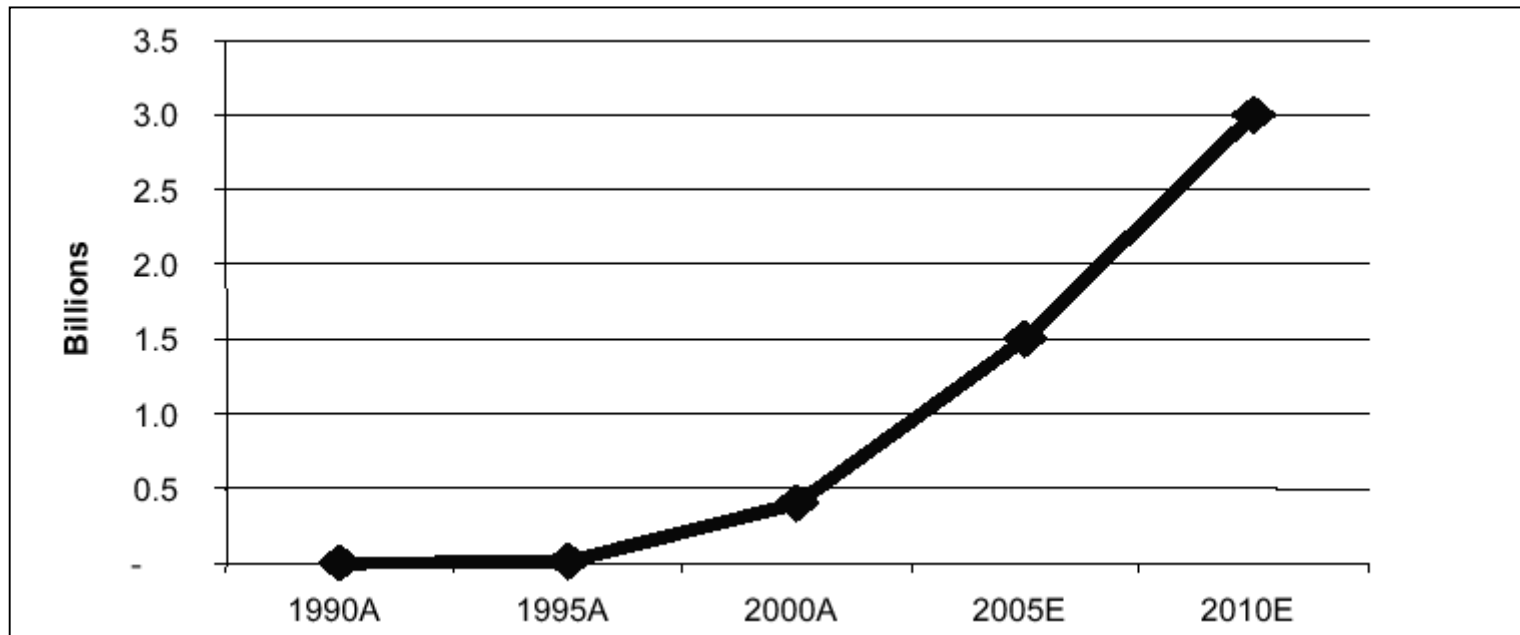
STEP 1: Expand on high speed internet access

> WHY

- Internet access is greenfield for all players, low step-in barriers
- Able to build on existing voice client base
 - **ADSL** can reach **more than 70%** of the voice customer base of most Western European countries
- Potential market coverage of 30% by 2004 (McKinsey)
- **ADSL installed base** can be leveraged to make **incremental** business case for multimedia
- Once market leader, always market leader (cfr. Mobile)



Internet penetration worldwide

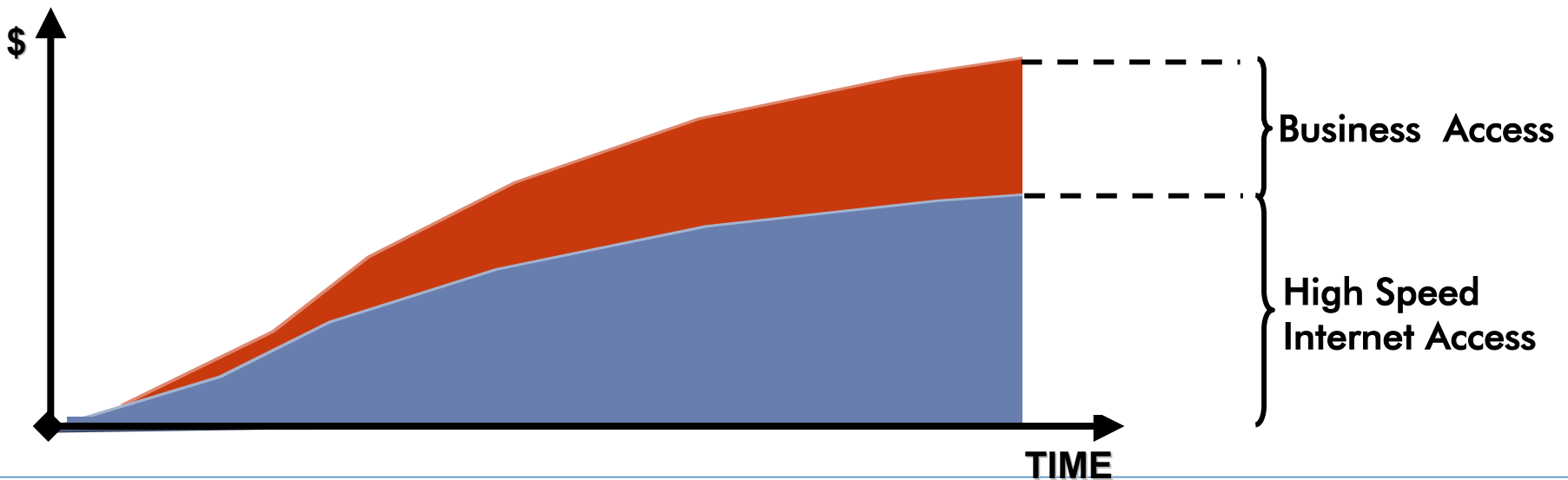


Source WestLB Panmure Estimates

“By 2005, an estimated 1.5 billion people (25% of the world’s population) are expected to be online, compared to 7 % currently.”

STEP 2: Create Margins on Business Access Services

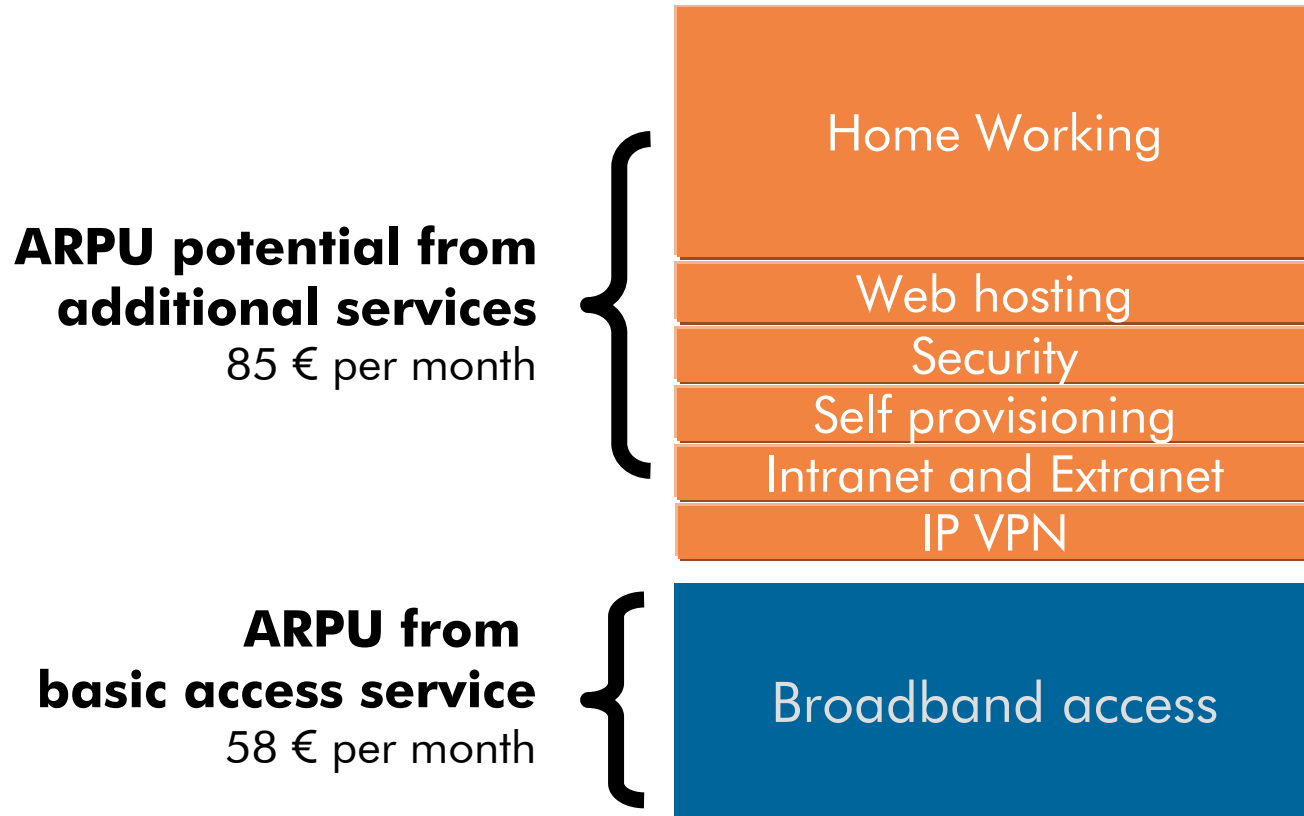
- > Business Access ADSL is ideal to address underserved SME market
 - Incremental cost on residential ADSL installed base is small
 - Major revenue opportunity with limited investments
 - Same footprint provides increased ARPU



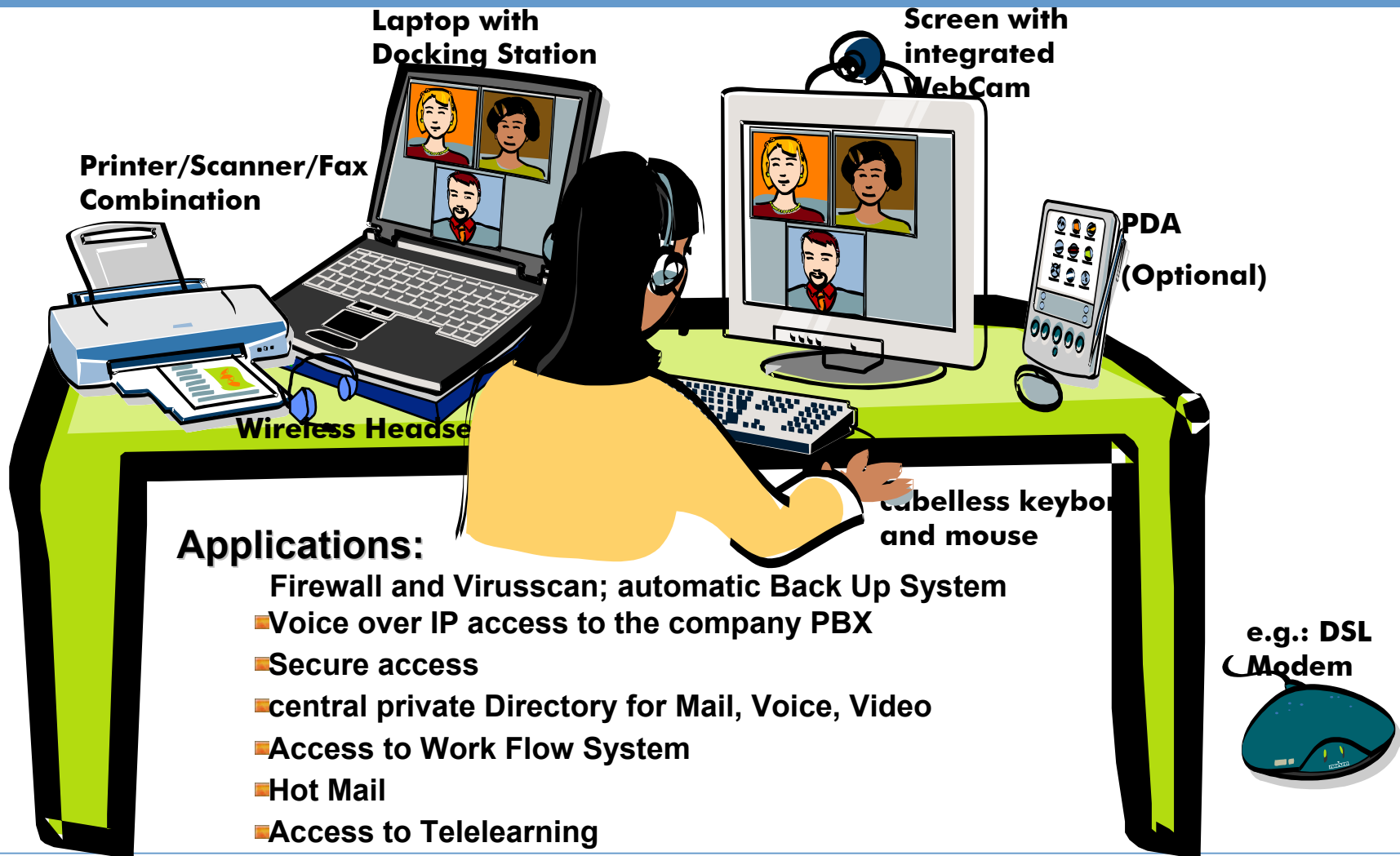
SME/SOHO: A Unique Opportunity to Increase Service Offering

Willingness to pay for broadband access and services

(Customer survey in USA and Italy)



Teleworker Environment



Applications:

- Firewall and Virusscan; automatic Back Up System
- Voice over IP access to the company PBX
- Secure access
- central private Directory for Mail, Voice, Video
- Access to Work Flow System
- Hot Mail
- Access to Telelearning

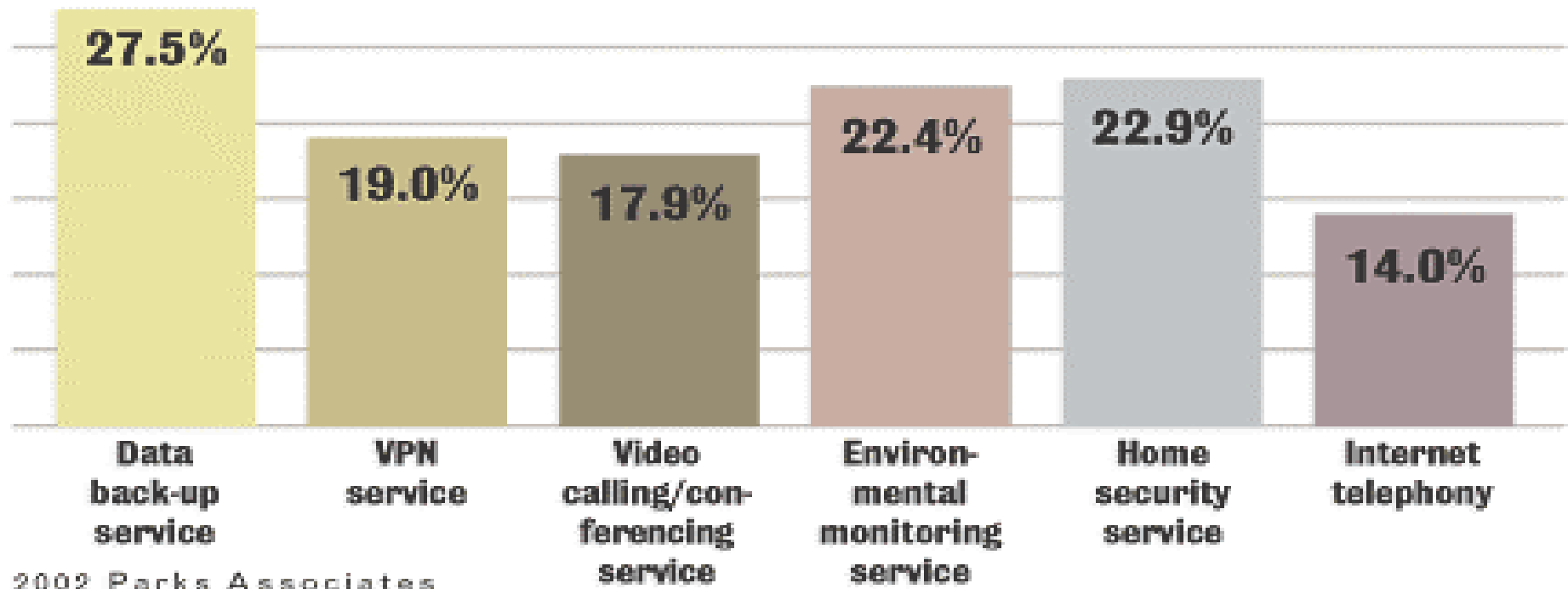
e.g.: DSL Modem



Teleworkers as pacemakers for payed content

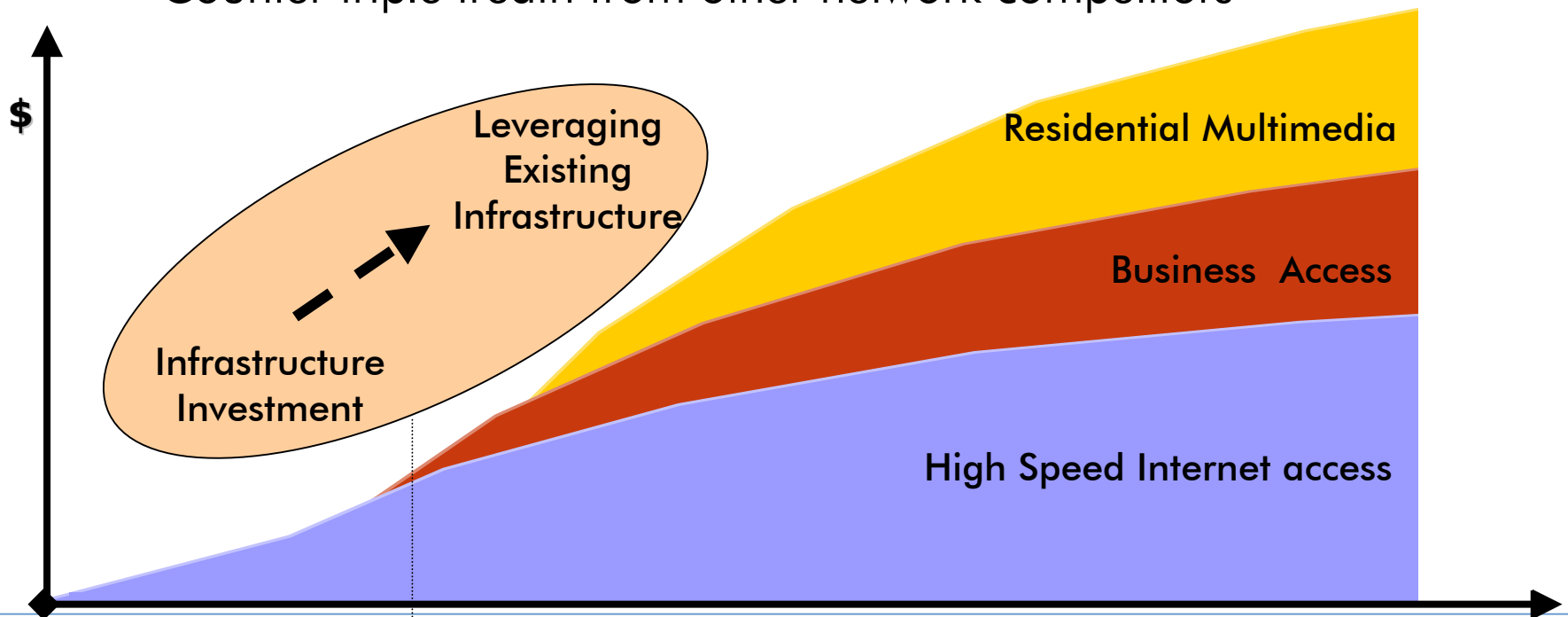
Leaders of the pack

A greater percentage of teleworkers than traditional consumers are willing to pay for broadband services, according to forthcoming Parks Associates research. The chart shows the percentage difference between them in six areas.



STEP 3: Residential Multimedia: TRIPLE PLAY

- > Get full service coverage of residential market
 - Increase ARPU per residential customer
 - Expand addressable market
 - Counter triple threat from other network competitors

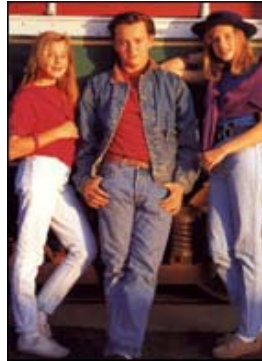


Living in the broadband world

What consumers expect from Broadband ...



lean back: interactive entertainment



teenagers: gaming & enhanced chat



lean forward: speed versus price



family: enhanced education communication with distant relatives



gamblers: gamble any Time, online bingo, lottery



Elderly: communicate with distant family

Services on PCs

Broadband access enables PC users to access rich content services

Classic web access



- > WWW access and email
- > Chat
- > Newsgroup

Short films / Narrow-band streaming



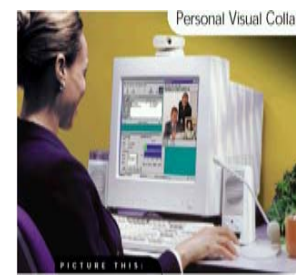
- > Trailers
- > Video/TV streaming <348kb/s
- > Radio Net
- > IP Telephony

Music & Video movies



- > MP3 download
- > Full length movies download
- > Movie streaming >348 kb/s

Video conferencing



- > Desktop video conferencing
- > WebCams

Games



- > Standalone games
- > Networked group games

Services on TVs

BTV & Electronic Program Guide (EPG)



- > Broadcast programming equivalent to cable or satellite offerings
 - News, sports, politics, economy, weather, etc.
- > EPG provides programming overview with 7-14 day preview
- > On demand information for TV content

Enhanced / Interactive TV



- > Selection of different camera angles
- > Replay of sequences and scenes
- > Highlights on request
- > Interactive and customized advertising
- > Time Shifted TV

Near VoD & Pay-Per-View



- > Pay Per View content accessed immediately with Parental control
- > Typically implemented as another broadcast channel
- > Event-driven buying

Personal Video Recorder (PVR)



- > Record and play broadcast content without video cassette
- > Stop, pause, rewind, fast forward previously recorded content

Video on Demand



- > Selection, download or streaming and individual billing of movies
- > Download VoD or real time streaming
- > VCR-like functionality

you cannot only connect to DSL, you can ...



watchDSL



playDSL



workDSL



talkDSL



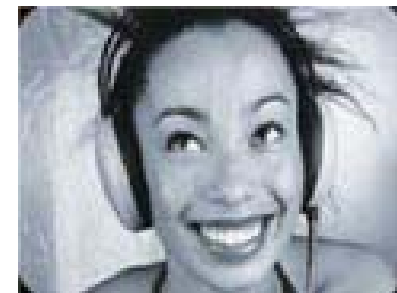
winDSL



learnDSL



meetDSL



hearDSL

Summary

- > Broadband is not just high speed internet: It will change the way we do business and communication
- > Broadband applications are key drivers for productivity and employability today and in the future
- > The available DSL technology , data aware DSLAM`s and transport layer functionality in the access networks allow for quick introduction of broadband in the mass market
- > The successful introduction of broadband in the market is defined by the three revenue streams:
 - 1: High Speed Internet (HSI)
 - 2: Business Access and Applications
 - 3: Residential Multi Media

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