

Broadband Internet

The sky is the limit or not?

Presentation for ABD/BVD

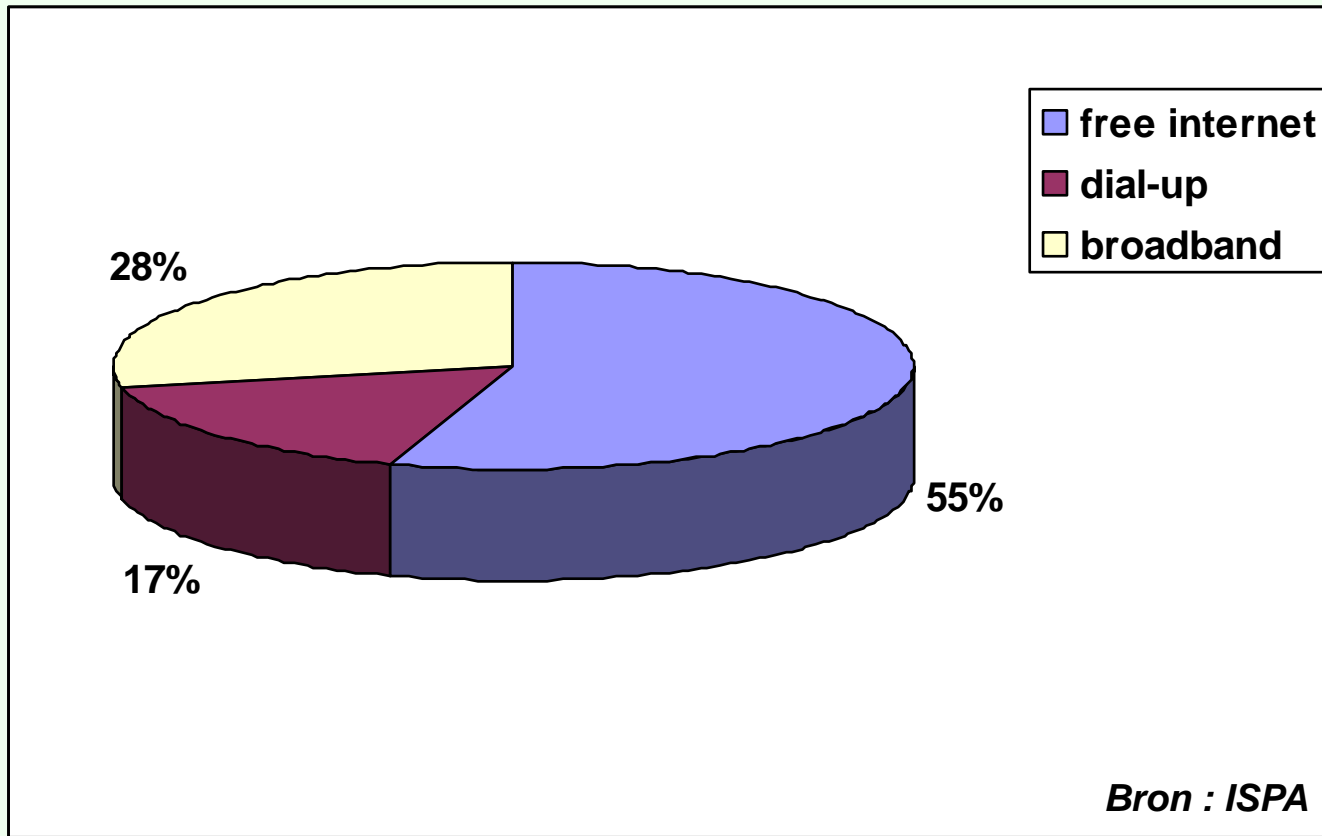
19/03/02

- Internet market in Belgium
- Dial-up versus broadband internet
- DSL versus Cable
- Tips
- What will the future bring us?
- Questions & Answers

Internet market in Belgium

Residential internet connections

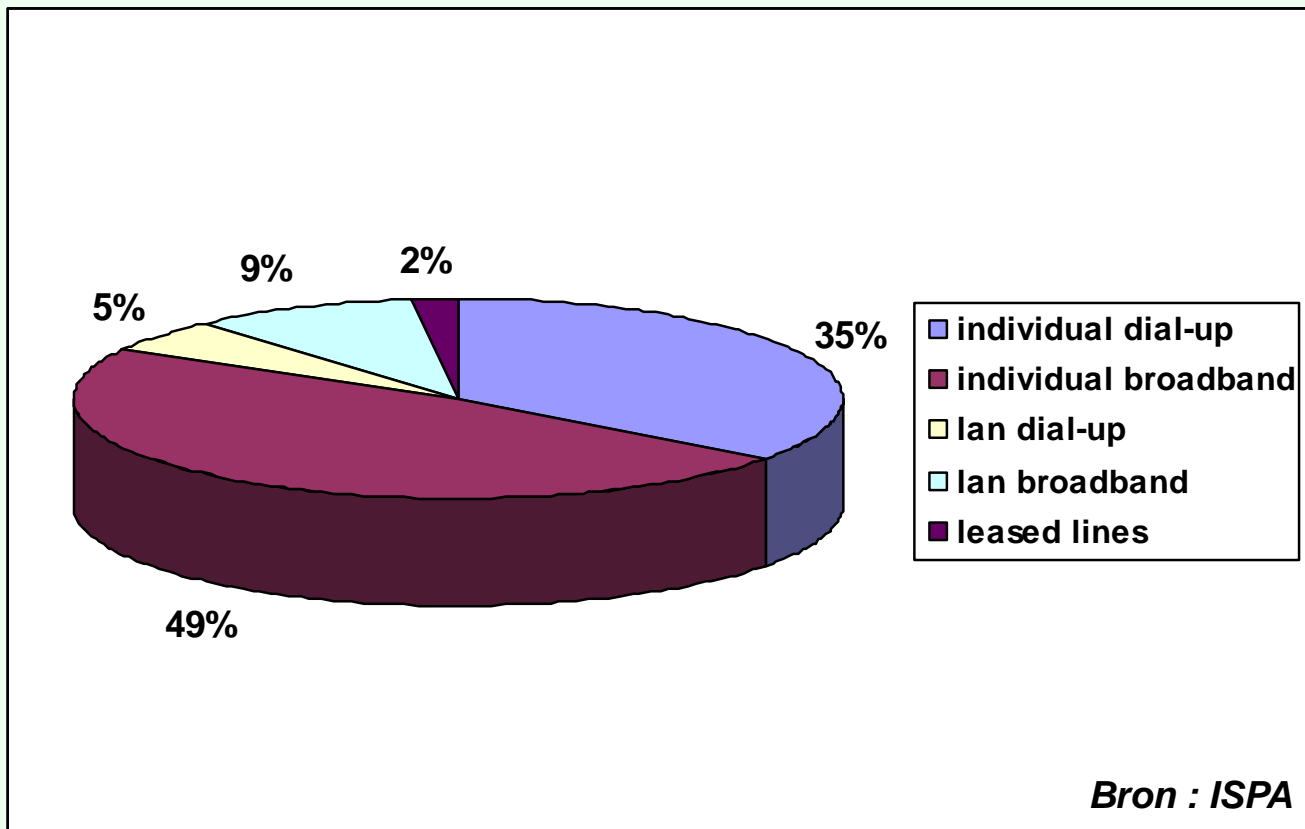
1.240k connections december 2001



Internet market in Belgium

Professional internet connections

184k connections december 2001



Evolution internet market

- 2000 ➔ succesful free internet model
- 2001 ➔ explosion of broadband internet
- 2002 ➔ broadband internet will continue to replace dial-up
unbundling local loop still an issue
applications will become the main driver
- Broadband already represents 1 out of 3 internet connections
- Belgium and Sweden are frontrunners in Europe!
- Jupiter expects 100% growth of European broadband market by end of 2002

Dial-up versus Broadband

- **Dial-up internet access**
 - each time your modem has to connect to POP
 - 1 € off peak and 2,5 € on peak per hour + connection cost
 - type of access is limited to PSTN & ISDN
 - line is blocked with PSTN
 - connection speed is low
 - long process to establish connection
 - no email notification
 - free internet doesn't exist!

Dial-up versus Broadband

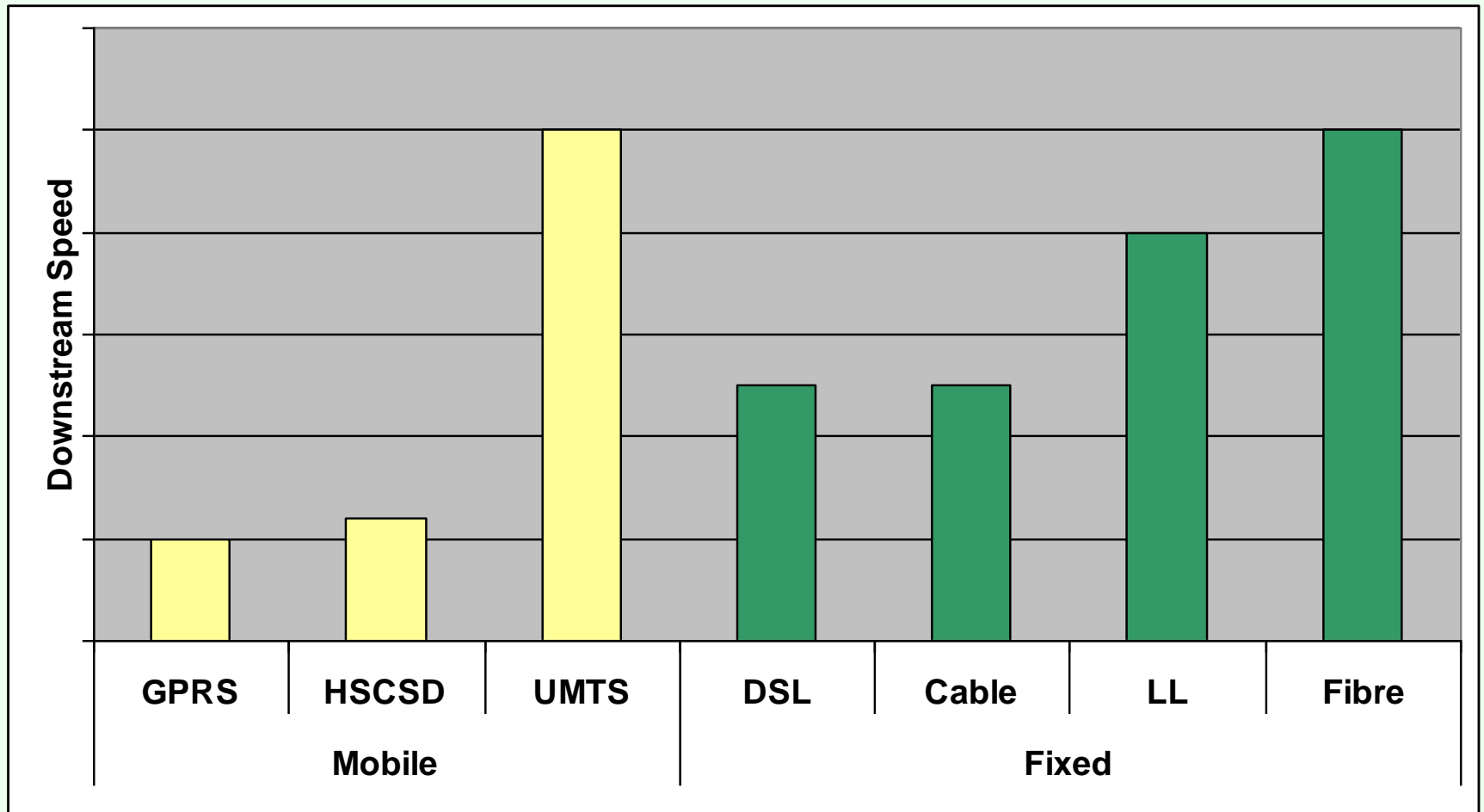
- **Broadband internet access**
 - always on, 24 hours a day and 7 days a week
 - flat fee for predefined volume, extra at volume based tariffs
 - several technologies and providers
 - surf and telephone simultaneously
 - connection speed is at least 30 times faster
 - instant access
 - email notification (no delays)
 - audio & video in real time
 - triggers teleworking in Belgium

Types of broadband access (1)

An extended range of technologies enables broadband internet

- Copper wire ADSL, SDSL, VDSL, LL
- Coax Cable
- Fiber Expensive, full redundancy, SLA
- Wireless Problems wireless local loop
- Mobile GPRS, HSCSD, UMTS
- Powerline Test phase

Types of broadband access (2)



Target group

Large Business

**Leased Line
Fibre**

SME

**ADSL-Cable
SDSL**

SOHO

**ADSL-Cable
Dial-up**

Residential

Downstream speed

- Difference between theory and reality!

	Theory	Reality
PSTN	56 Kbit/s	45 Kbit/s
ISDN	64 Kbit/s	64 Kbit/s
ADSL	1 Mbit/s	500 Kbit/s *
Cable	10 Mbit/s	4 Mbit/s *
LL	n x 64 Kbit/s	n x 64 Kbit/s
Fibre	n x 2 Mbit/s	n x 2 Mbit/s

* burstable speeds, no guaranteed bandwidth

Many factors can influence speed

- Technology : point-to-point or shared bandwidth
- Backbone bandwidth operators
- Bandwidth ISP towards the internet
- PC configuration end user
- Moment of the day
- Server capacity of hosted website
- Proxy services ISP

Speed is an issue but don't neglect service level agreements, product features, set-up costs, monthly fees, length of contract, support, financial situation of your supplier...

Focus on ADSL

Aynchronous ↑ bandwidth towards customer (downstream)
 ↓ bandwidth towards server (upstream)

Digital bits and bytes

Subscriber local loop

Line

Access network technology over copper wire (high frequencies)
Possible on PSTN, ISDN-2 and Twin

Positive

- Dedicated connection, no shared line
- Several installation methods (DIY, Telecom and Full)
- Several modem alternatives
- No extra cabling
- Upstream bandwidth is satisfying (80% of theoretical speed)
- Split billing possibility
- ADSL for internet access, teleworking, BiLAN acces, VPN over Internet

Negative

- No service level agreements
- 2 parties (ADSL operator and ISP)
- Cannot unbundle ADSL from telephony
- Belgacom covers 90% of Belgium but availability also depends on distance between customer and LEX
- No flat fee for dial-up users who cannot benefit from ADSL
- Many ISP's (Easynet, Wanadoo, Planet Internet, BT Ignite,...) offer ADSL but there is no product differentiation
- Unbundling of Local Loop is slow process (half a year delay!)
Versatel offers ADSL now but coverage is restricted

Positive

- One stop solution for telephony and fast internet access
- Independent tests show that cable is slightly faster than ADSL
- Cable enables digital TV
- Distance is not an issue
- Reliable technology
- Network separated from traditional telecom network

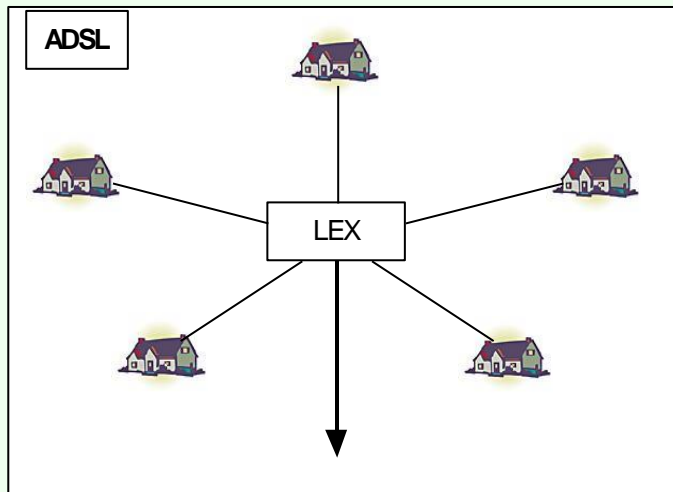
Negative

- No service level agreements
- No supplier offers national coverage
Telenet (Flanders); UPC (area Leuven); Brutélé (Bxl, Walloon)
- Number of suppliers is limited
- Shared bandwidth technology
- No fixed IP-address

Technology = differentiator

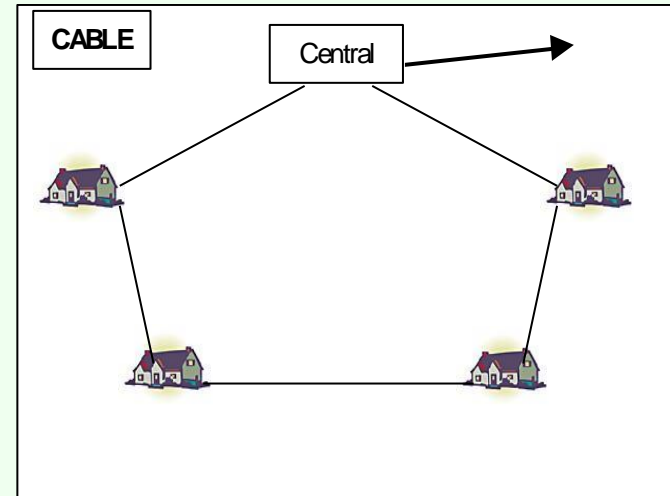
ADSL

1 line per user connected to public switch



Cable

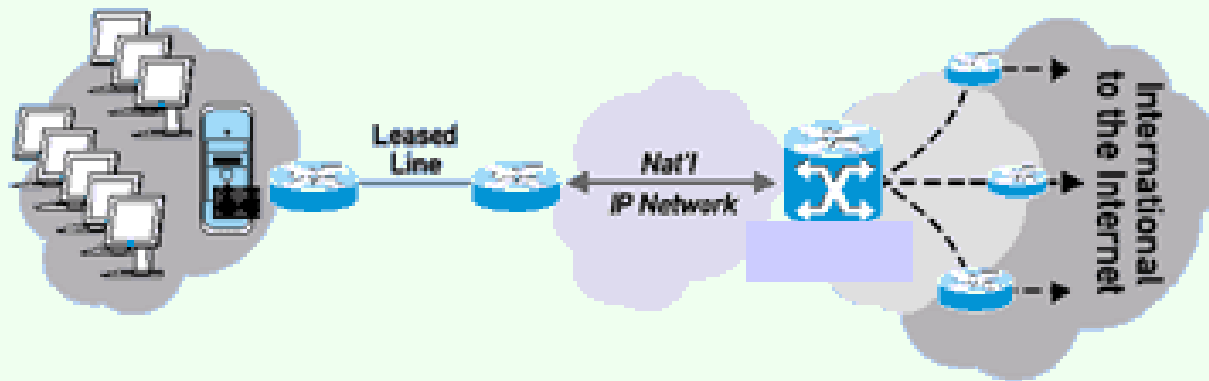
1 ring through different homes connected to 1 public switch



- Symmetric : downstream = upstream capacity
- No splitters needed to divide voice from data
- In theorie up to 2 à 3 Mbit/s
- Speed heavily depending on distance to LEX
- High bandwidth over copper lines
- Do your business applications require symmetric bandwidth?
- Colt and Versatel offer SDSL in Belgium
- Belgacom will follow soon

Focus on Leased Line

- Permanent connection of your LAN to the internet
- Guaranteed bandwidth (64 Kbit/s – 2 Mbit/s)
- High availability through pro-active monitoring (at least 99,8%)
- Solution with service level agreements
- Line statistics for the customer (incoming-outgoing traffic)
- Interesting for customers requiring one-stop-solution
- Interesting for customers located close to POP



Broadband internet tips (1)

- Check on your invoices if analogue or digital lines generate an extended amount of dial-up traffic
- Check first whether cable or DSL is available (also include a distance check)
- Type of broadband access (cable, DSL versus leased line) depends on:
 - # users and configuration (stand alone, LAN)
 - type of configuration (centralised internet gateway(s) or not?)
 - # of homeworkers
 - type of data you want to transfer over IP
 - ...
- Do not subscribe contracts > 1 year
- Secure DSL and Cable access (firewall and virus scanner)
- Ask references in your activity field and contact them

Teleworking tips (2)

- Teleworking will be boosted by broadband internet
- Make a proper assessment first before implementing TW
 - access to file server, internet and e-mail?
 - device (desktop, laptop, palmtop, GSM,...)
 - homeworking from home or anytime, anywhere?
 - type of connection : PSTN/ISDN/Internet?

PSTN-ISDN

RACS (modem pool)
Secure (modem rings back)
High accessibility
Only e-mail, small files
Slow connection
Low set-up cost
Communication costs

Internet

Affects your local loop
Not secure
Moderate accessibility
All type of files
Faster connection
Higher set-up cost
Flat fee

What will future bring us?

- SDSL will be launched in march-april
- Voice over IP on DSL
- Application service providing (ASP) eg. online accounting
- Need for bandwidth will grow
- Wireless broadband can make an impact in the long run
- New technologies, more alternatives for expensive leased lines
- The sky seems to be the limit; we're only starting with broadband internet...

Who is Tam Tam Consulting?

- A group of independent telecom and marketing experts
- Tam Tam Consulting has a meaning

Telecom and Management

Neutral and professional advice with regard to fixed telephony, mobile telephony, data communication and infrastructure

Telecom and Marketing

Telecommunication as a tool to manage and optimize customer relationships

How can you contact us?

- Tam Tam Consulting nv
Santvoortbeeklaan 2
2100 Deurne
www.tamtamconsulting.be



Jürgen Grosemans

0473 98 18 94

jurgen.grosemans@tamtamconsulting.be

Ludo Claes

0476 44 76 63

ludo.claes@tamtamconsulting.be

Question & Answers

