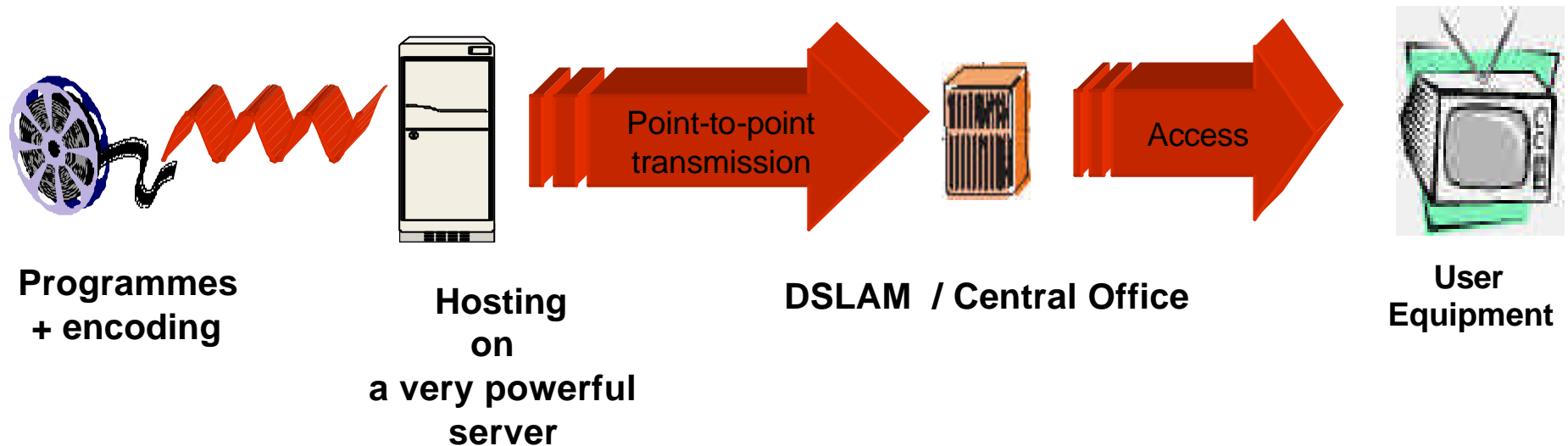# S-DMB : THE MISSING LINK IN 3G MOBILE NETWORKS

ITU   9-11 December, Geneva
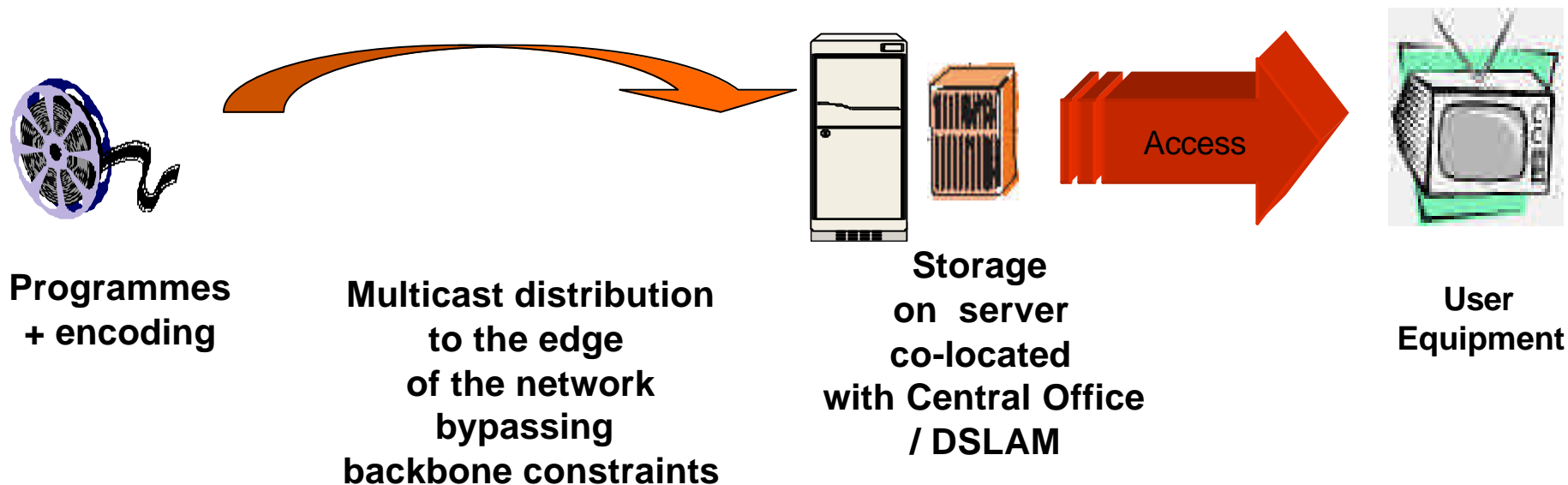
Christophe Nussli,
Business Development
Alcatel Space

Lessons learned from the deployment of Home Entertainment Services on fixed network

> Initial video on demand services were based on centralised architectures

Programmes + encoding
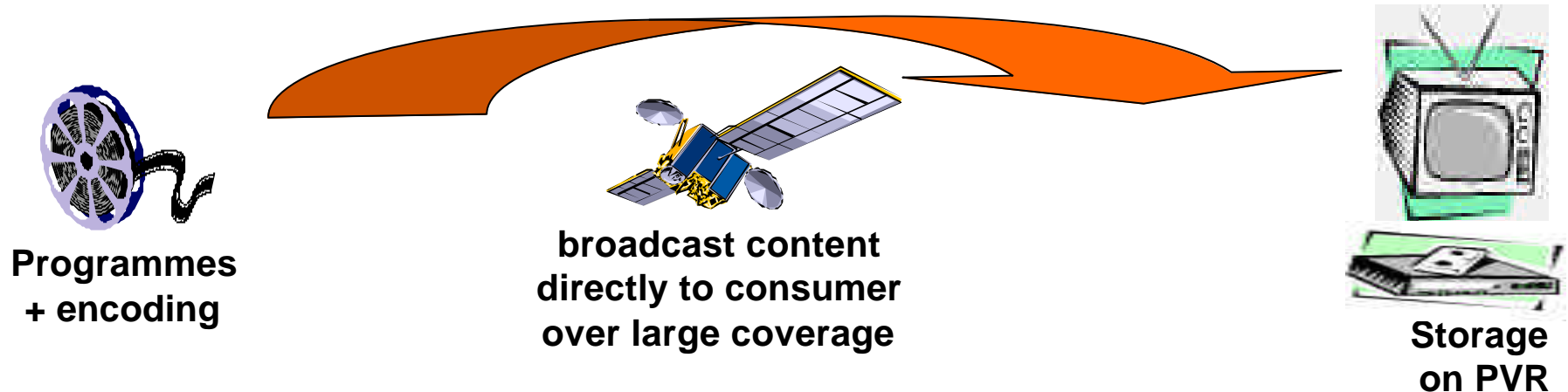
Hosting on a very powerful server

Point-to-point transmission

DSLAM / Central Office

Access

User Equipment

➔ Business model proved to be unreliable, due to transmission costs and quality issues of IP networks

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Then network architectures evolved toward edge delivery and local storage close to the end user …

Programmes + encoding

Multicast distribution to the edge of the network bypassing backbone constraints

Storage on server co-located with Central Office / DSLAM
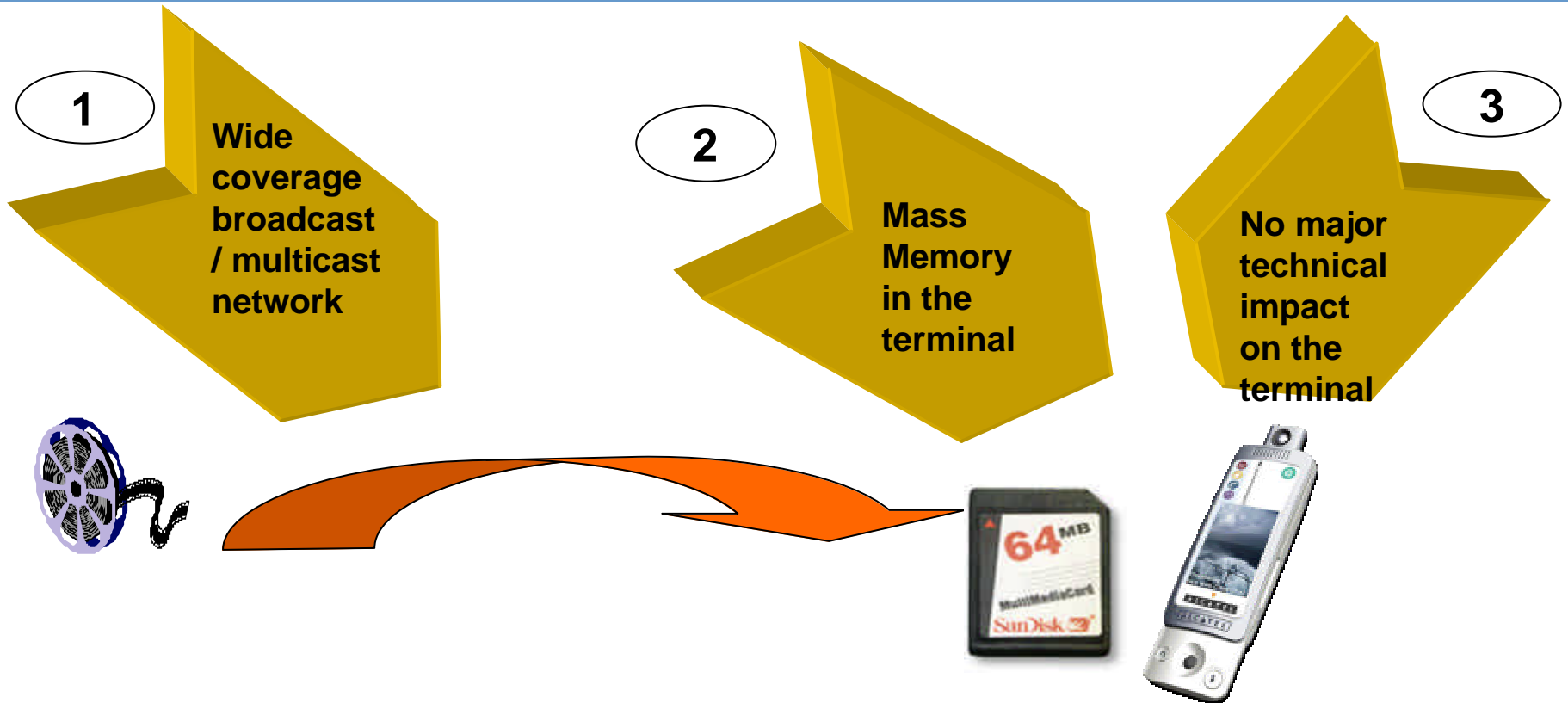
Access

User Equipment

➔ Induces significant Capex

➔ Does not solve the last mile issue

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At the end, storage capability in Video Set Top Box makes direct delivery of content a way to bypass both backbone and last mile bottlenecks

Programmes + encoding

broadcast content directly to consumer over large coverage

Storage on PVR

➔ Personal Video Recorder is now an essential item for TV bouquet operators to address consumer interactive video services

➔ More than 60 Movies permanently available is perceived by consumer as an acceptable trade off between cost and diversity

➔ Latest market survey show that PVR users spent 40 % of TV time on recorded programs (Sky Digital, May 2002)

➔ Latest Sony PVR product with 160 GB hard drive

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Business opportunity for a direct to mobile content delivery system over mobile networks

1 — Wide coverage broadcast / multicast network

2 — Mass Memory in the terminal
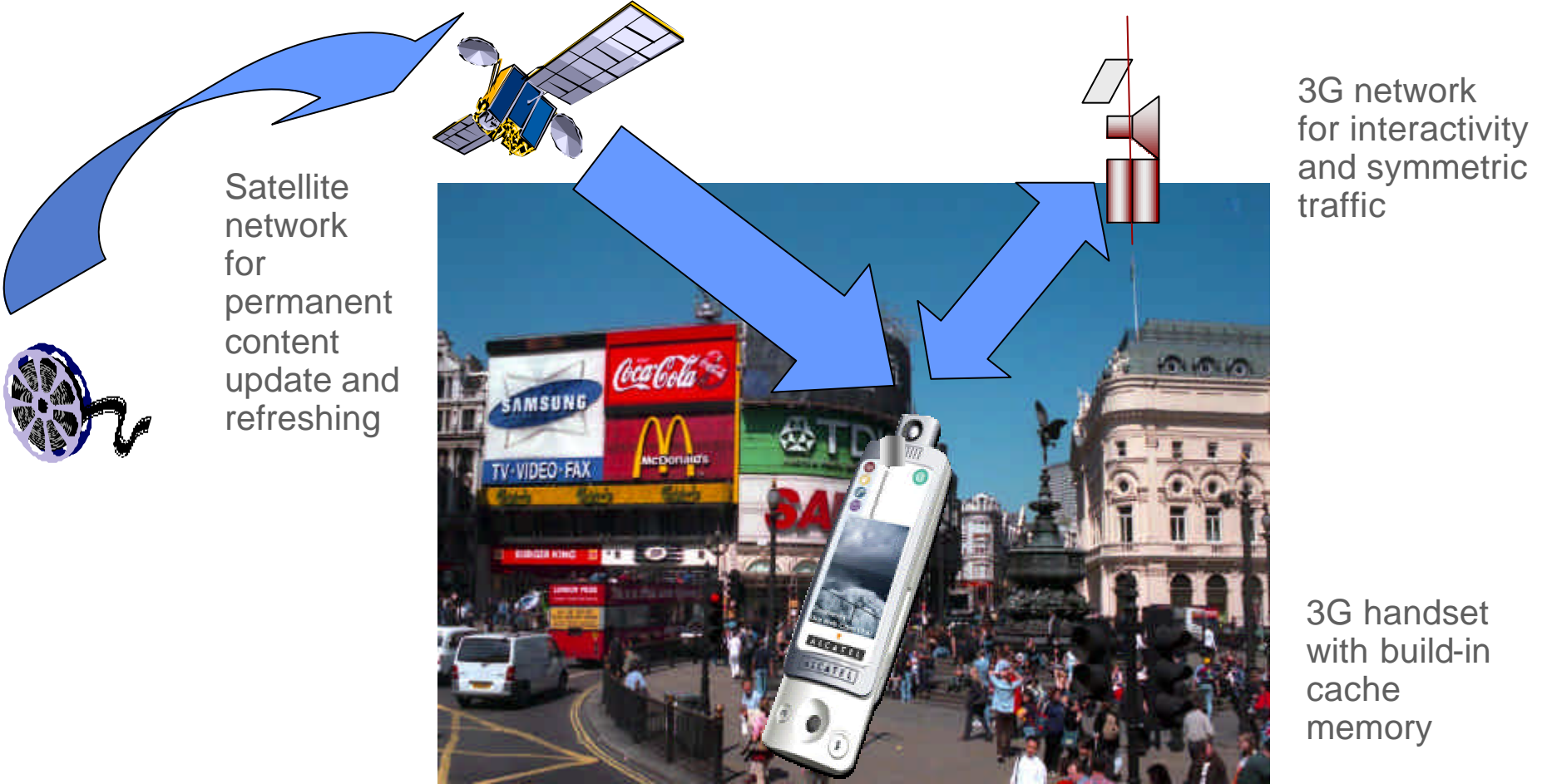
3 — No major technical impact on the terminal

➔ Providing a large choice of mobile multimedia content might then be achieved with a limited bitrate

➔ 1 Gbyte is able to store 16 hours of mobile video content

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Storage technologies should change the deal

> Integrating a 1 GByte flash in the User Terminal should not be an issue in mid term perspectives:

  - today prices of Flash EEPROM is around 0,4 $/MB
  - IDC forecasting Flash prices to go under 0.1 $ /Mbytes in 2006

> Based on present trends, a 1ç/ Mbyte could be reached in 2008 leading to Ex Factory Prices of 1 Gbyte card at 10$

Flash [30 - 50 ç] / MB in 2002

[10 - 50 ç] / MB

DRAM 15 ç / MB in June 2002

[0,5- 5 ç] / MB

Mbytes price in €

10
1
0,1
0,01
0,001

1995   2000   2005   2010

— Magnetic Storage

— Solid State Storage

— Fixed network transfer

— Mobile Network Transfer

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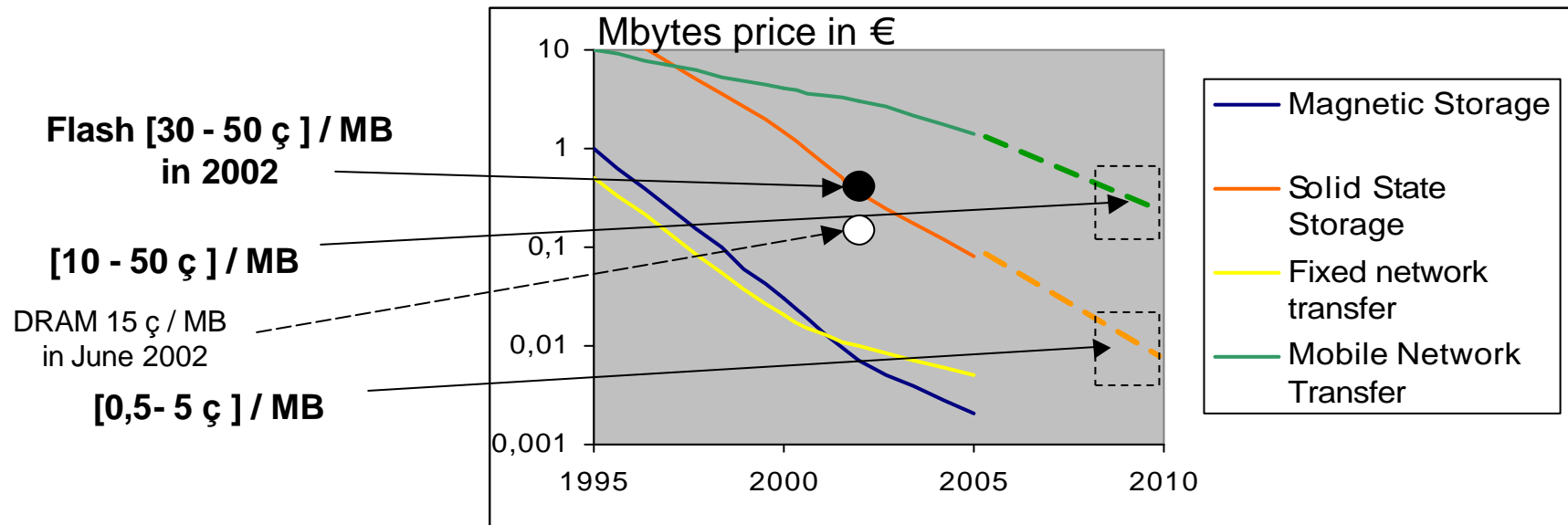
S-DMB technical concept: a satellite based multicast layer for 3G multimedia services

Satellite network for permanent content update and refreshing

3G network for interactivity and symmetric traffic

3G handset with build-in cache memory

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S-DMB terminal is for 3G mass market
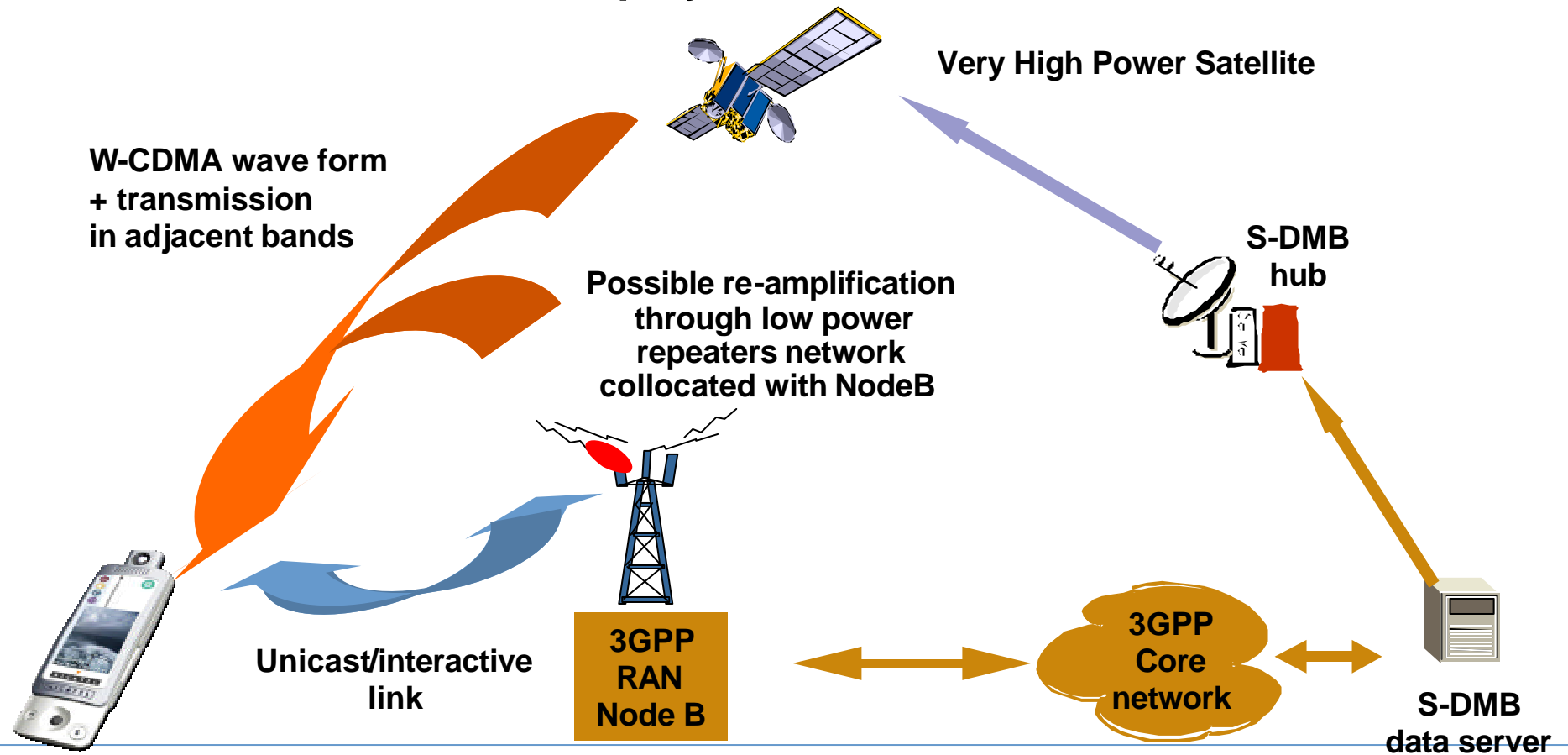
> Handset based on 3GPP standardised multi-mode (UMTS/GSM) handset
  – No need for dual tuner
  – No need for dual chipset

> very powerful transmission (satellite & repeater)
  – No need for dedicated satellite antenna design

> Identified Impacts:
  – Frequency agility extension to IMT-2000 satellite band adjacent to IMT2000 terrestrial bands
  – Implementation of "DMB enabled" 3GPP R6 MBMS & application software package
  – Local storage memory: natural trend of storage increase with multimedia service support in terrestrial handset

"DMB enabled"
3G Handset

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S-DMB multicast architecture is designed to go along with 3G networks deployment and evolution

Downlink capacity increase might go along with consumer demand and terrestrial network deployment

Very High Power Satellite

W-CDMA wave form + transmission in adjacent bands

S-DMB hub

Possible re-amplification through low power repeaters network collocated with NodeB

Unicast/interactive link

3GPP RAN Node B

3GPP Core network

S-DMB data server

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S-DMB system main assets

> ## Low cost terminal

- Frequency band opportunity
- Waveform technology: compliance with 3GPP standard
- S-DMB terminal is for 3G mass market
- S-DMB is fully compatible with network management constraints
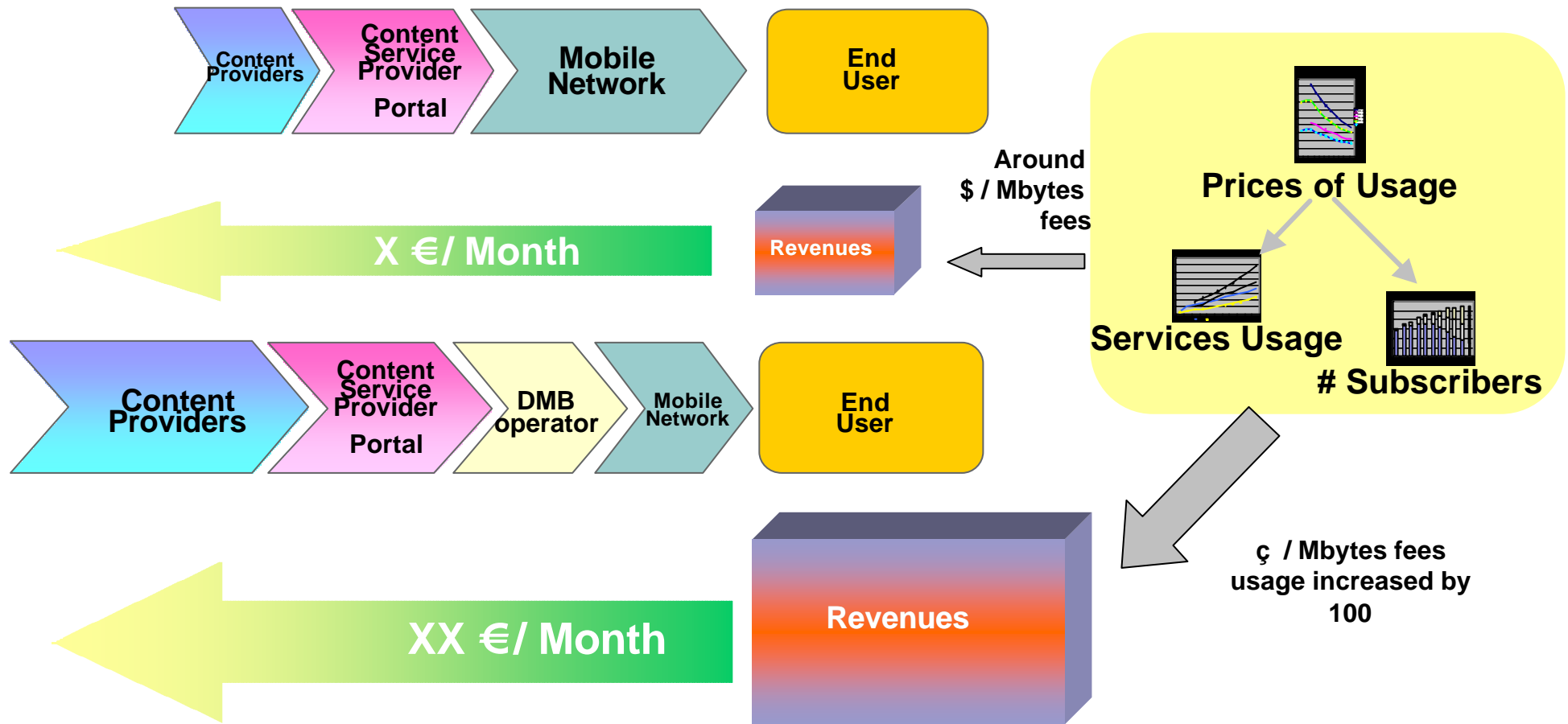- Limited impact on terminal autonomy

> ## Ensuring full coverage with high service availability

- High content delivery capacity
- Achieving indoor penetration

> ## Smooth integration of S-DMB in 3GPP architecture

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S-DMB is a major opportunity for the Mobile Operators

> S-DMB will provide exciting opportunities for consumer infotainment services market

- Capability to deliver more than 100 MB/Month of multimedia content for less than 4 $ of transport fee will open real mass market perspectives

> S-DMB will help mobile operators to reduce capex while improving market differentiation, service attractiveness and customer education

> S-DMB will create appropriate conditions for a real convergence between mobile and media environment

- Fair value chain
- Low cost terminal
- Global coverage
- "Unlimited" capacity

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Upgrading the mobile value chain to achieve global market viability

Content Providers → Content Service Provider Portal → Mobile Network → End User

X €/ Month

Revenues

Around $ / Mbytes fees

Prices of Usage

Services Usage

 # Subscribers

Content Providers → Content Service Provider Portal → DMB operator → Mobile Network → End User

XX €/ Month

Revenues

ç / Mbytes fees usage increased by 100

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S-DMB is under growing consideration by European authorities

As an highly effective crisis management tool

ALERT !

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IST project *MoDIS* (Mobile DIStribution) to deploy a pilot S-DMB network in Monaco

IST program with Alcatel, Monaco telecom, Daimler Chrysler, Agilent, Ercom, Udcast, TV files and european universities

Follow-up actions with Alcatel, Alenia, Rom Consulting, Telespazio

MoDiS network

Modis Terminal

GPRS signal

W-CDMA direct signal

W-CDMA Shadowed signal

"satellite"

ModiS Server

"Terrestrial repeater"

Hub

2.5G cellular network

ist — information society technologies

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