Mobile TV over 3G

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Overview

- Mobile TV is not the future – it is the reality today
- 3G HSPA capacity for Mobile TV – better than you think
- Unicast-Broadcast integration in 3G

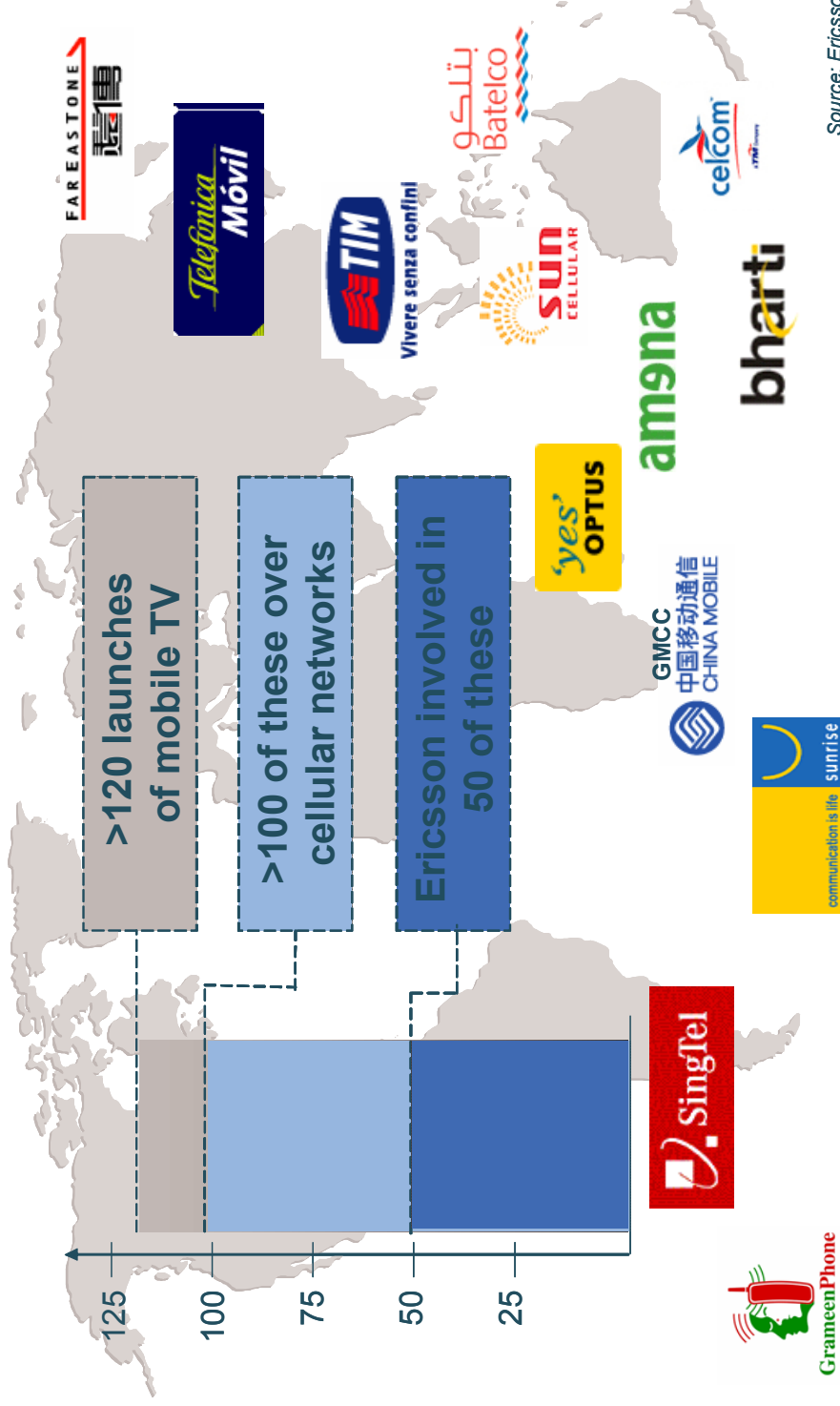ERICSSON

Mobile TV in your pocket - today

Vodafone Germany

Vodafone live!

| Start | Music | Videos | Logos & Töne | Games | Magazin | Community | My |

Powered by Google

Suchen   ● Seiten auf Deutsch   ○ Se

Fernsehen fürs Handy

Volles Programm auf über 30 Kanälen

Vodafone MobileTV ist Fernsehen für Ihr UMTS-Handy, rund um die Uhr und täglich aktuell. Auf verschiedenen Kanälen erleben Sie die Highlights aus Sport, Musik, News und Unterhaltung.

Bundesliga: Alle Spiele live

Für Sport-Fa
die Bundes
Spiele der B
Zusätzlich g
Spieltags u
League.

E-Mail

Login
Handynr.
Kennwort...

Login
→ Internet-Kennwort vergessen?
→ Erstanmeldung

Chat-Besucher: 1767   1840

LIVE im MobileTV

T-Mobile Germany

Fernsehen auf dem Handy - so funktioniert es

Nichts zu lachen für die Konkurrenz:

Die Bundesliga live und kostenlos auf Ihrem Handy - mit MobileTV!

BUNDES LIGA

NOKIA

MobileTV | Demo | MobileTV Software | Bundesliga | Radsport

Das volle Programm bei MobileTV

Mobile TV is happening worldwide
Mainly in cellular networks

>120 launches of mobile TV

>100 of these over cellular networks

Ericsson involved in 50 of these

125
100
75
50
25

FAR EASTONE

Telefónica Móvil

TIM Vivere senza confini

Batelco

celcom

SUN CELLULAR

am9na

bharti

'yes' OPTUS

GMCC 中国移动通信 CHINA MOBILE

sunrise communication is life

SingTel

GrameenPhone

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Mobile TV using Unicast streaming
Building on successful deployments

- Mobile TV discussion focused on broadcasting technologies
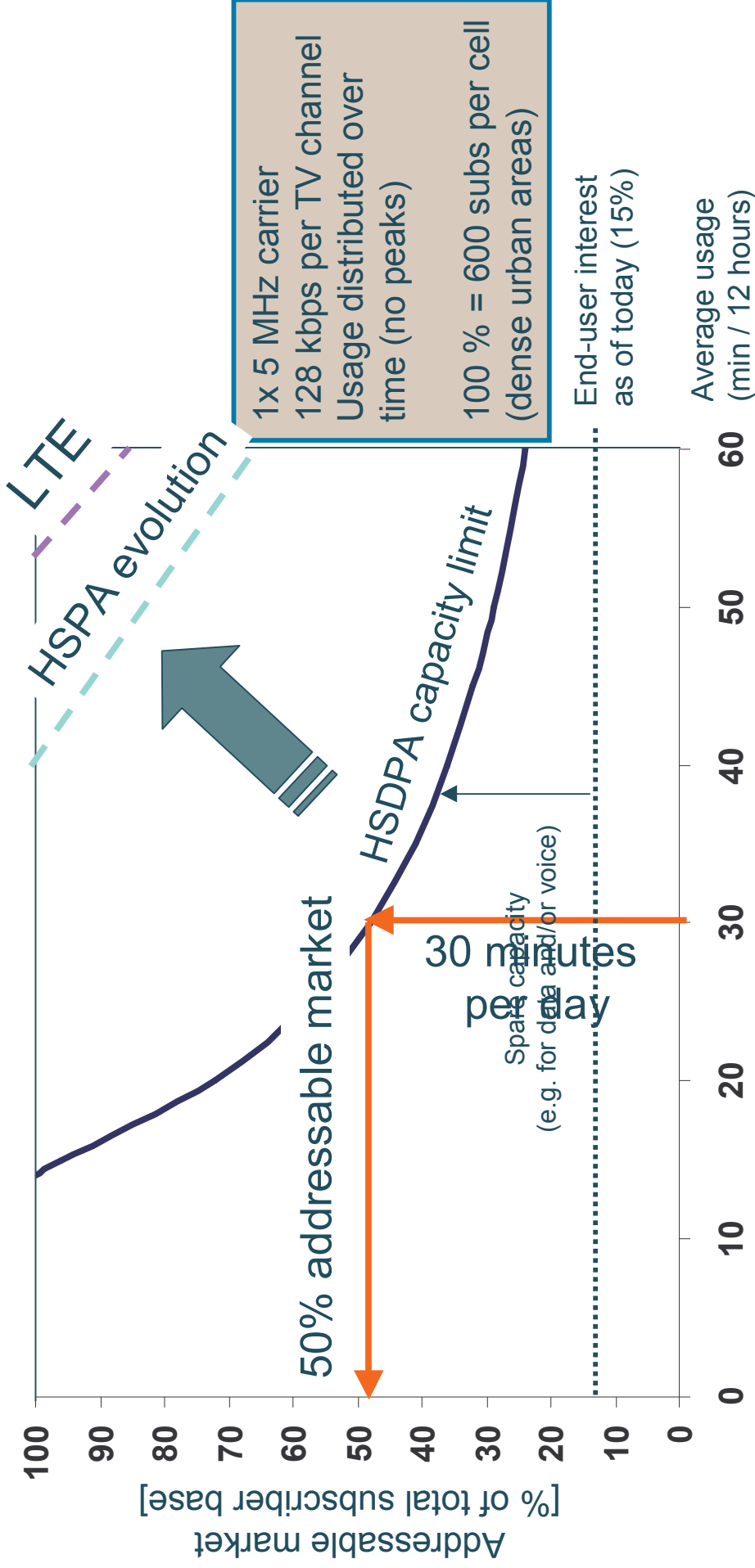
  BUT

- Cellular streaming
  – will continue to dominate the coming years
  – is being enhanced with 3GPP R6 features (bitrate adaptation and QoE)
  – benefits from cellular bearer evolution (HSDPA, eHSPA, LTE)
  – with client based solutions will offer a user friendly and TV-like experience

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Addressable Mobile TV market today

Typical 3G unicast (HSDPA) mobile network deployment scenario

LTE

HSPA evolution

HSDPA capacity limit

50% addressable market

30 minutes per day

Spare capacity
(e.g. for data and/or voice)

Addressable market
[% of total subscriber base]

- 1x 5 MHz carrier
- 128 kbps per TV channel
- Usage distributed over time (no peaks)
- 100 % = 600 subs per cell (dense urban areas)

End-user interest as of today (15%)

Average usage (min / 12 hours)

HSDPA: 30 minutes TV usage per day for 50% of the addressable market

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6

Unicast / Broadcast
Pros and Cons

Unicast

IP Network

3G MobileTV today
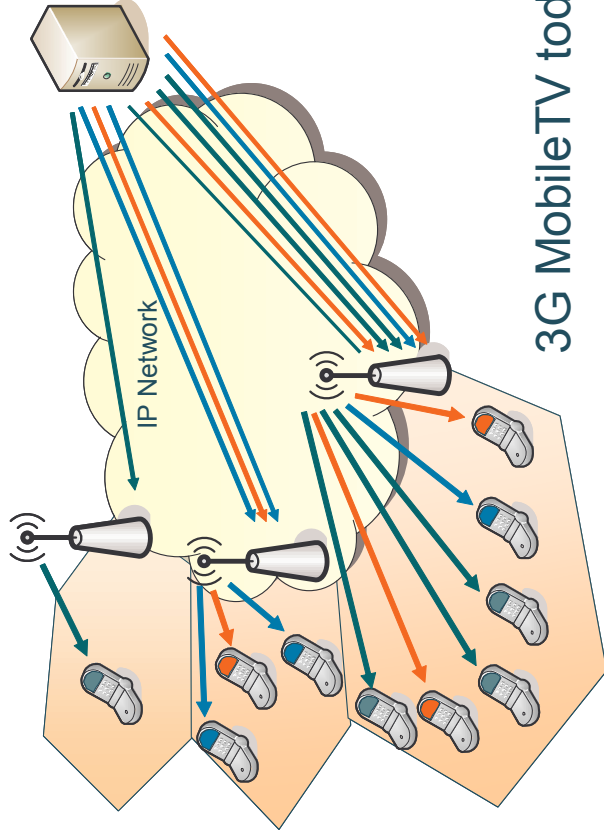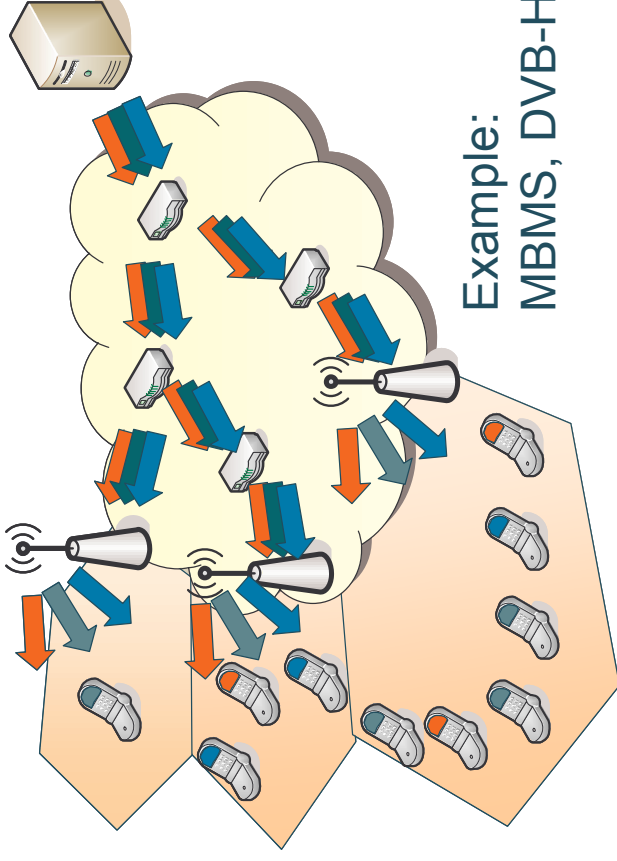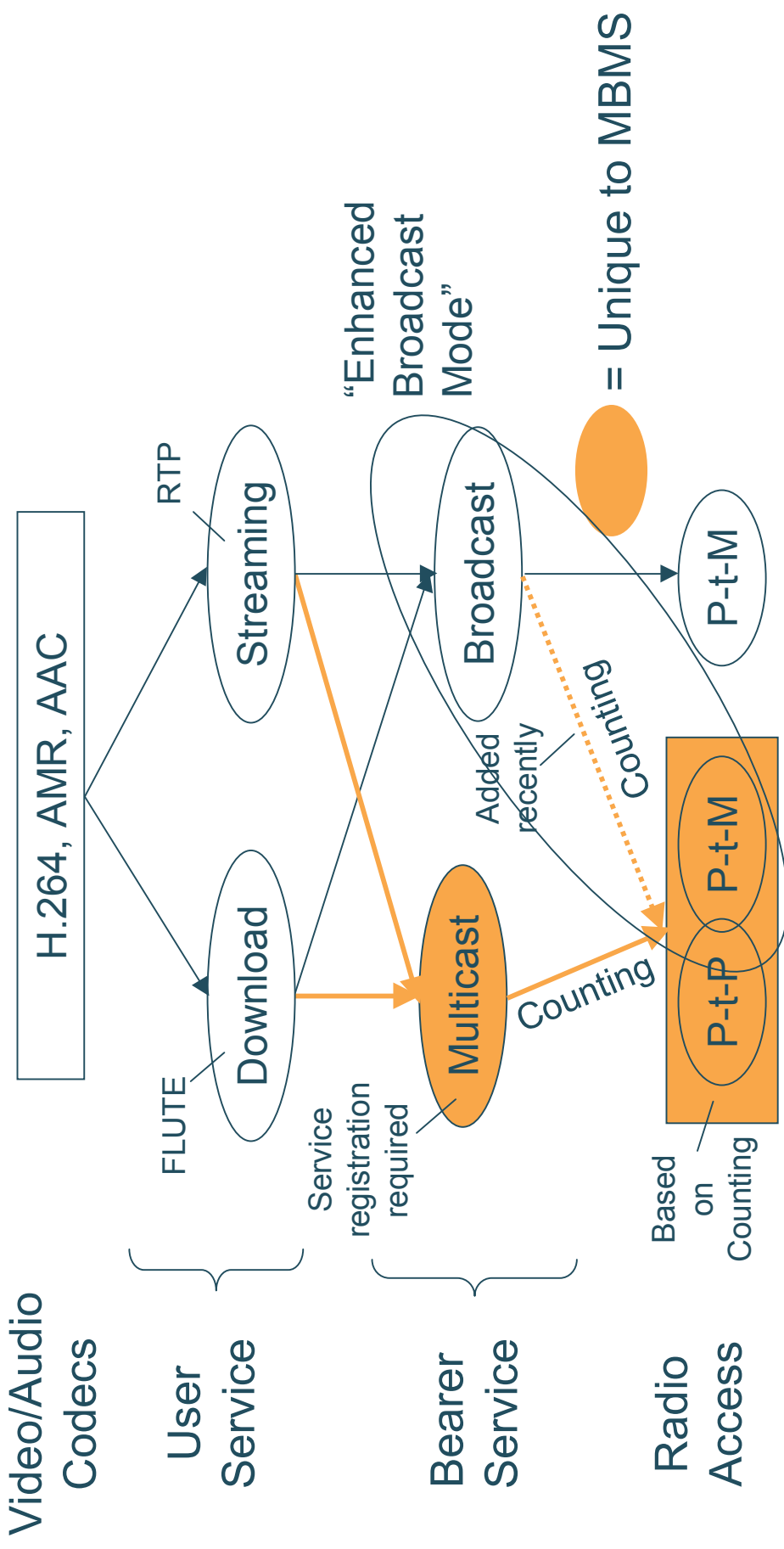
- Only active users consume transmission resources
- Unlimited channels
- Interactivity for free
- Limited number of simultaneously active users

Broadcast

Example: MBMS, DVB-H

- Transmission resources allocated all the time
- Limited channels
- Interactivity requires integration with unicast
- unlimited number of users

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Multimedia Broadcast Multicast Service

Video/Audio Codecs

| H.264, AMR, AAC |

User Service

- FLUTE — Download
- RTP — Streaming

Service registration required

Bearer Service

- Multicast
- Broadcast — "Enhanced Broadcast Mode"
- Added recently

Counting

Radio Access

- Based on Counting
- P-t-P / P-t-M
- P-t-M

= Unique to MBMS

"Counting" a key distinguishing factor compared to DVB-H

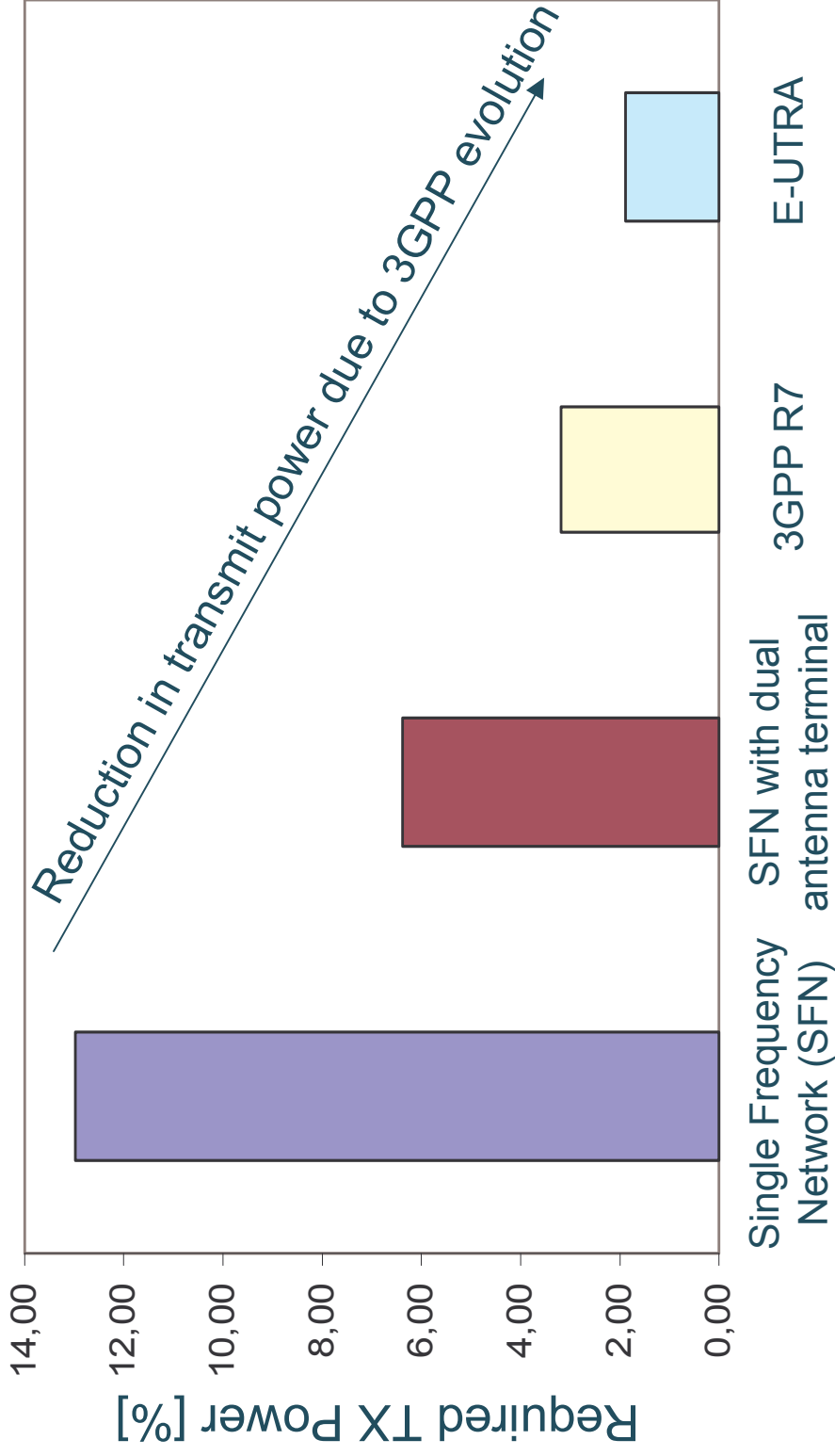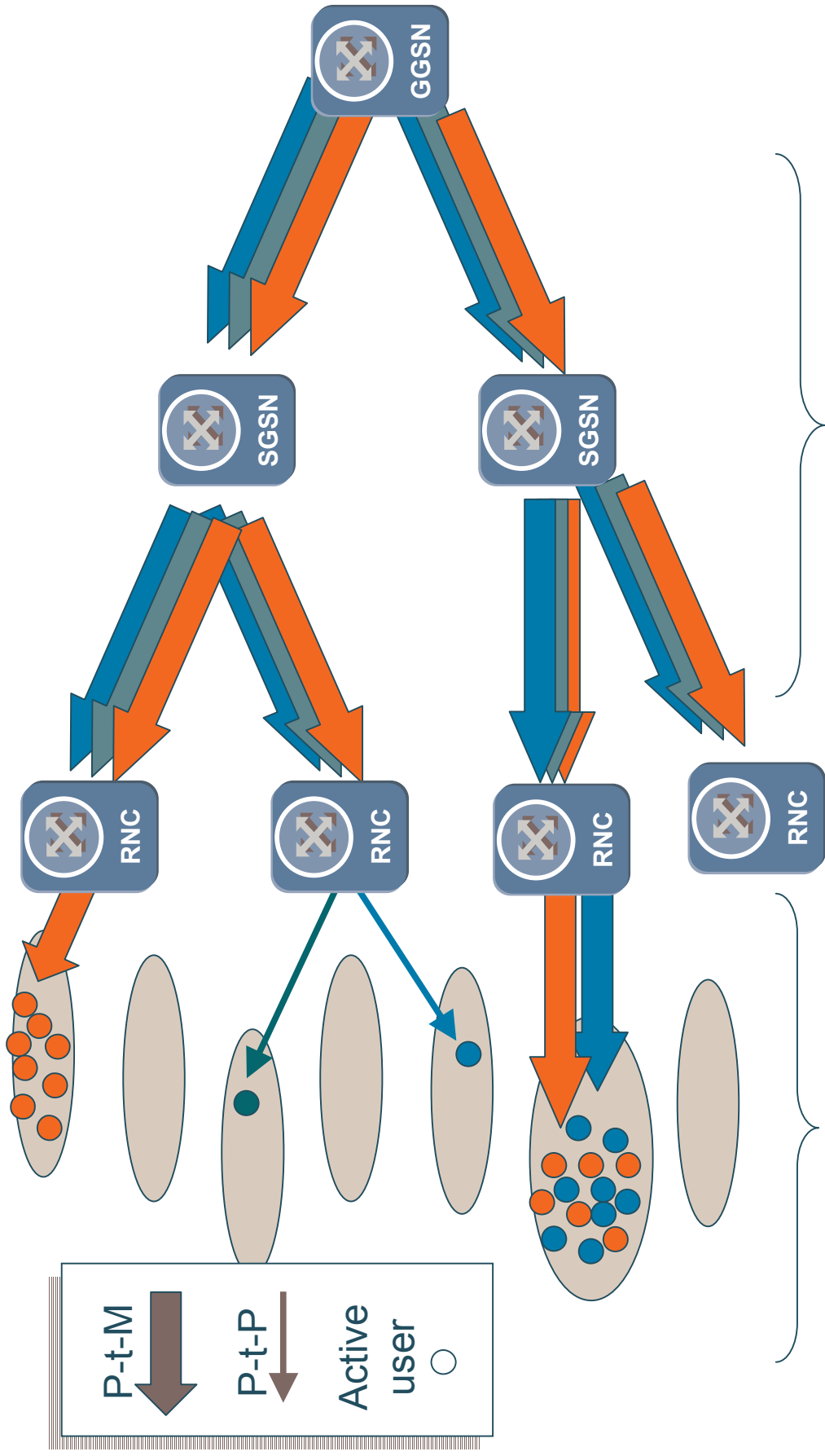ERICSSON

Multimedia Broadcast Multicast Service P-t-M ("broadcast") capacity

per 5 MHz carrier, broadcast taking 80% of transmit power

# of channels @ 128 kbps	6	12	24	40
# of channels @ 256 kbps	3	6	12	20

Reduction in transmit power due to 3GPP evolution

Required TX Power [%]

Single Frequency Network (SFN)

SFN with dual antenna terminal

3GPP R7

E-UTRA

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MBMS Enhanced Broadcast Mode

CN savings: 3 streams instead of n

RAN savings: efficient usage of available radio resource

Legend:
- P-t-M
- P-t-P
- Active user ○

TV traffic modeling for Enhanced Broadcast Mode

Assumption: long tail

Channel Popularity

(bar chart: Popularity vs Channel, channels 1–20)

- Given a certain traffic pattern, when is the capacity limit reached?

- Input
  - Channel popularity and bitrate
  - Session length and zapping behaviour
  - Unicast capacity
  - Broadcast capacity

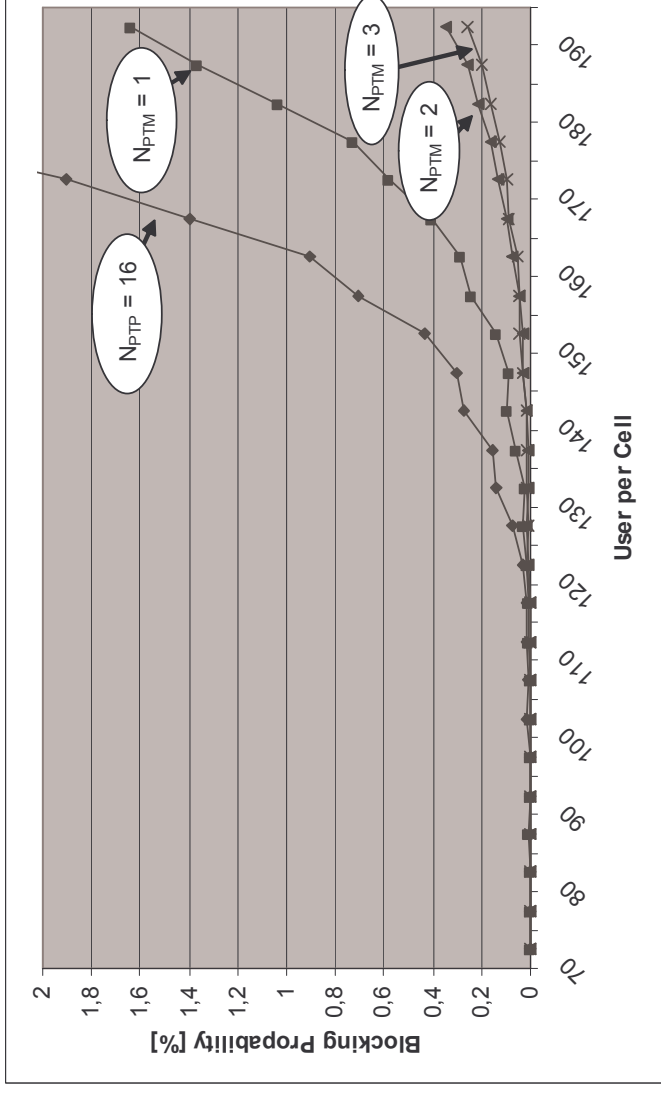- Outcome: blocking probability versus TV user density

(CDF chart: Channel Watch Length, TV Session Length; x-axis Session Length [min])
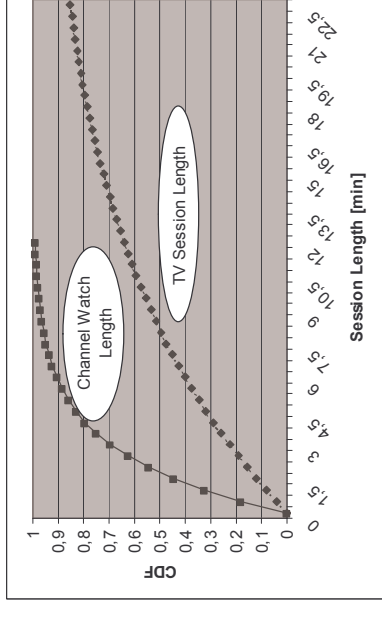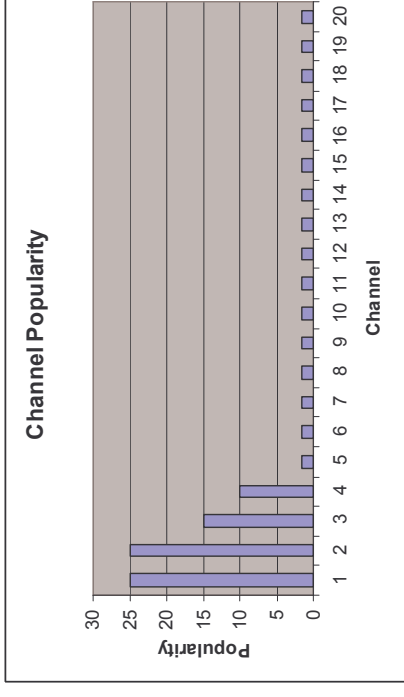
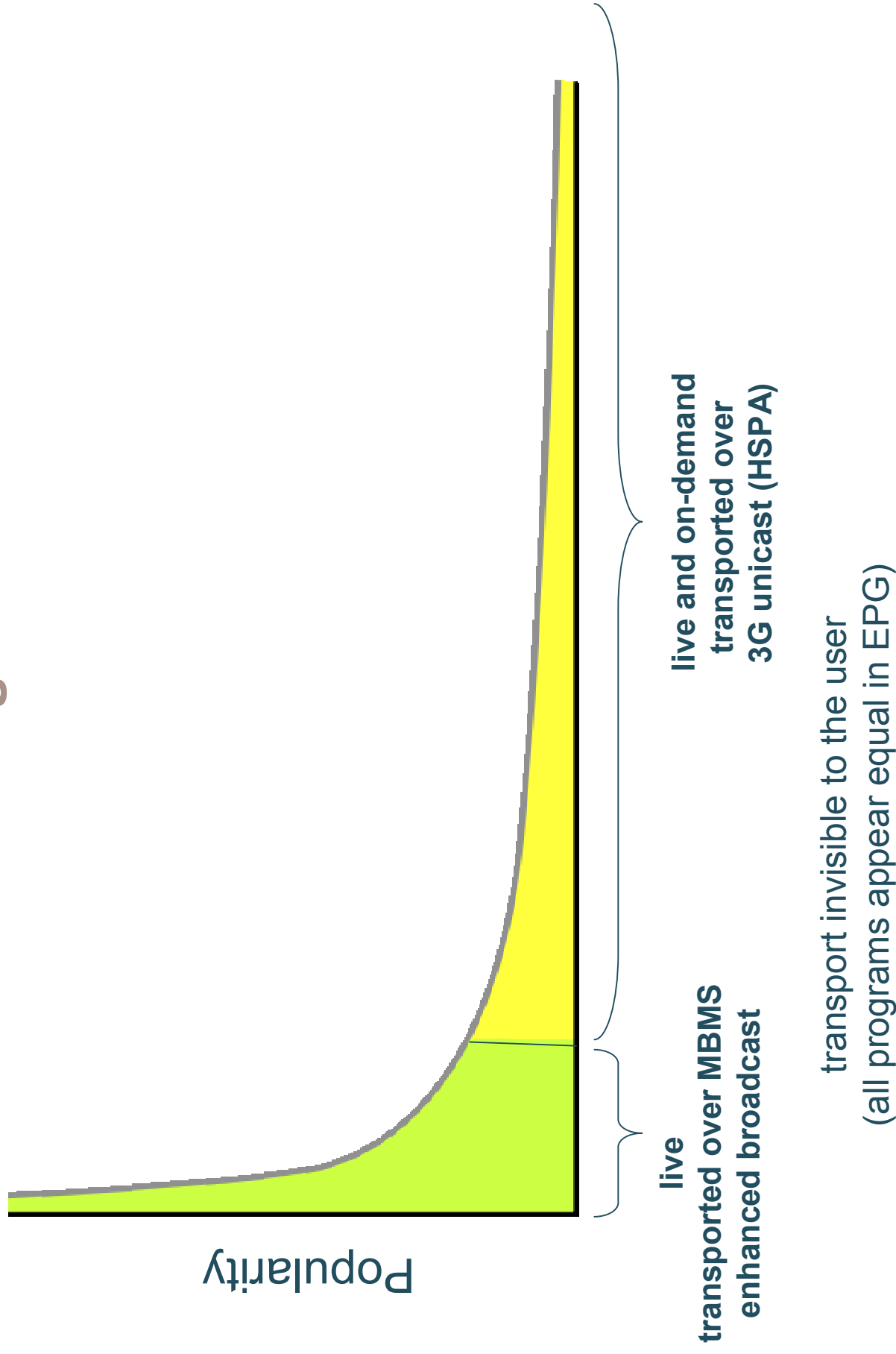_Assumption: session length distribution_

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P-t-P / P-t-M delivery

Hybrid HSDPA / MBMS
TV service delivery for
20x 128 kbps channels

- Unicast works well for up to 170 TV subscribers per cell
  – Corresponds to almost 30% of the addressable market assuming a user density of 600 users per cell
- Significant drop in blocking probability from allocating just one p-t-m bearer
- No need to go beyond 2 p-t-m bearers

Chart: Blocking Probability [%] vs User per Cell

Series labels: N_PTP = 16, N_PTM = 1, N_PTM = 2, N_PTM = 3

X-axis (User per Cell): 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190

Y-axis (Blocking Probability [%]): 0, 0,2, 0,4, 0,6, 0,8, 1, 1,2, 1,4, 1,6, 1,8, 2

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Unicast / Broadcast integration

Popularity

live
transported over MBMS
enhanced broadcast

live and on-demand
transported over
3G unicast (HSPA)

transport invisible to the user
(all programs appear equal in EPG)

Unicast / Broadcast integration thought further

Popularity

live
transported over
DVB-H

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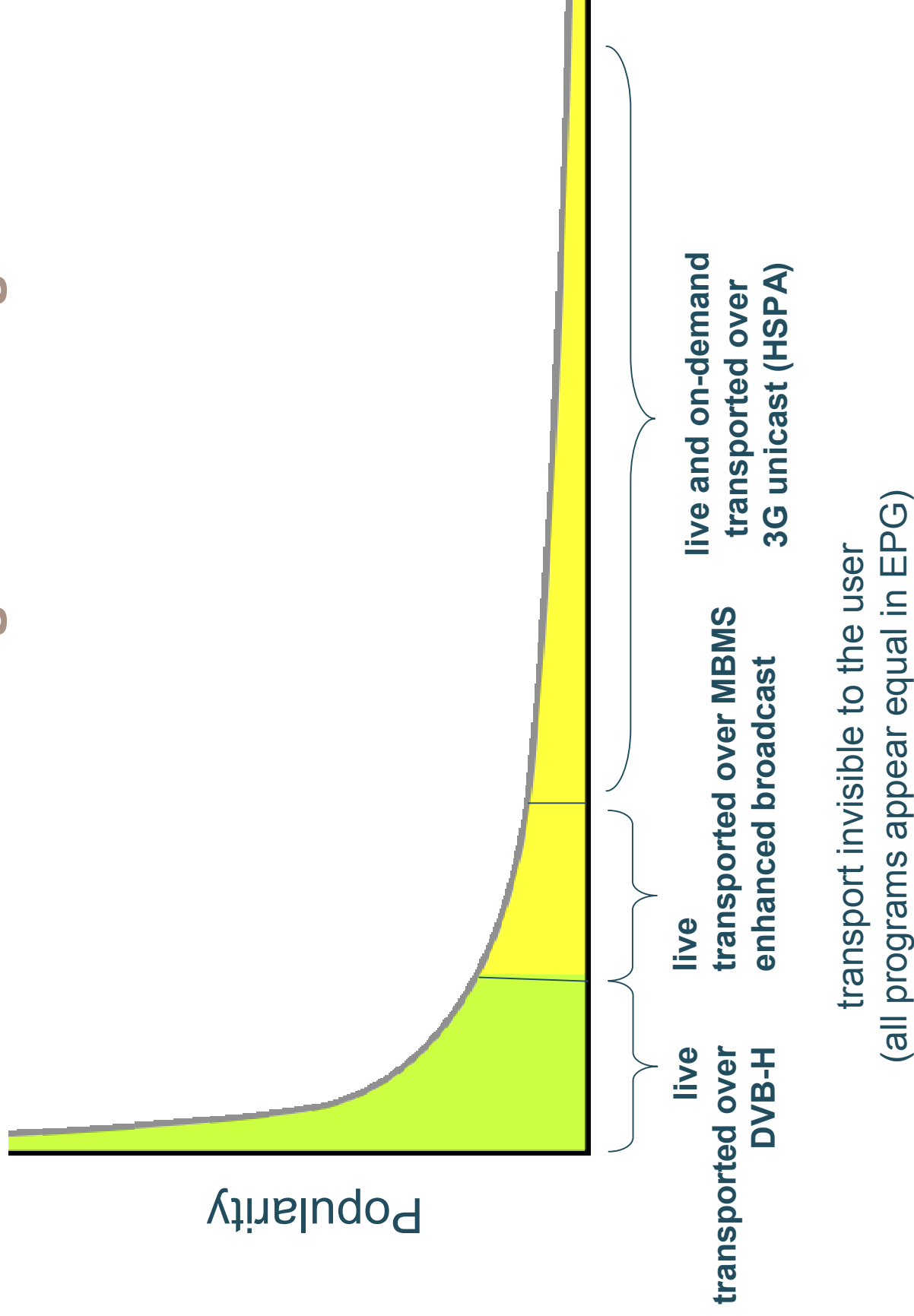
Unicast and broadcast are complementary

Needed capacity

Broadcast
Used for few channels that many watch at the same time at the same place

Unicast
Used for all traditional TV channels as well as on-demand that many watch at different times and at different places

Broadcast

Unicast

Time
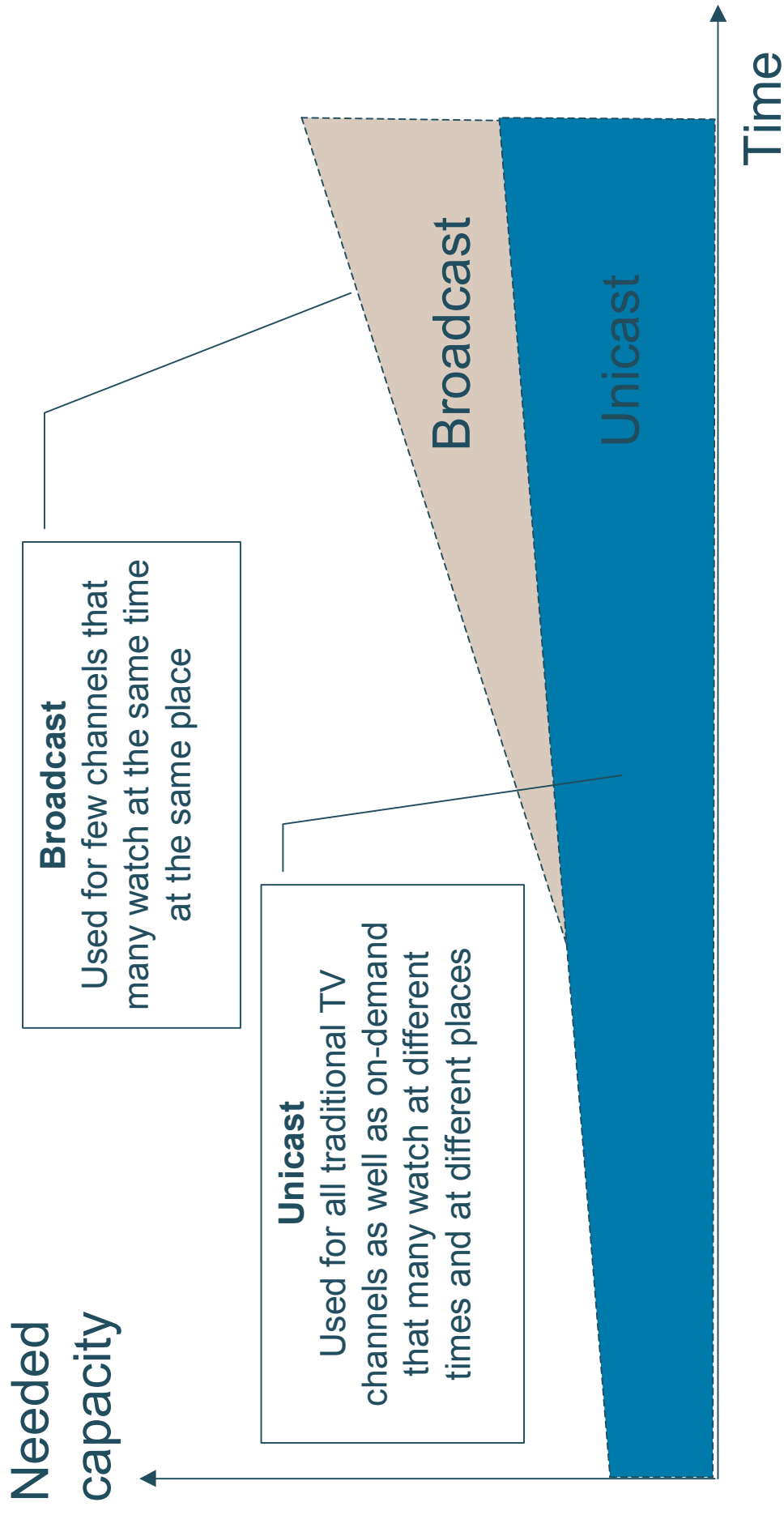
Conclusion

- Mobile TV is here today
- Live TV: less important than on-demand and long tail
- 3G unicast over HSPA has already reasonable capacity
- MBMS as capacity extension
- Enhanced broadcast: less complexity, more adaptivity
- Broadcast – unicast integration combines advantages
- Support for popular live channels, long tail and on demand

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