NATIONAL MEDIA AND INFOCOMMUNICATIONS AUTHORITY•HUNGARY

Dr. Laszlo Pados

Implementation of digital broadcasting and digital dividend in Hungary

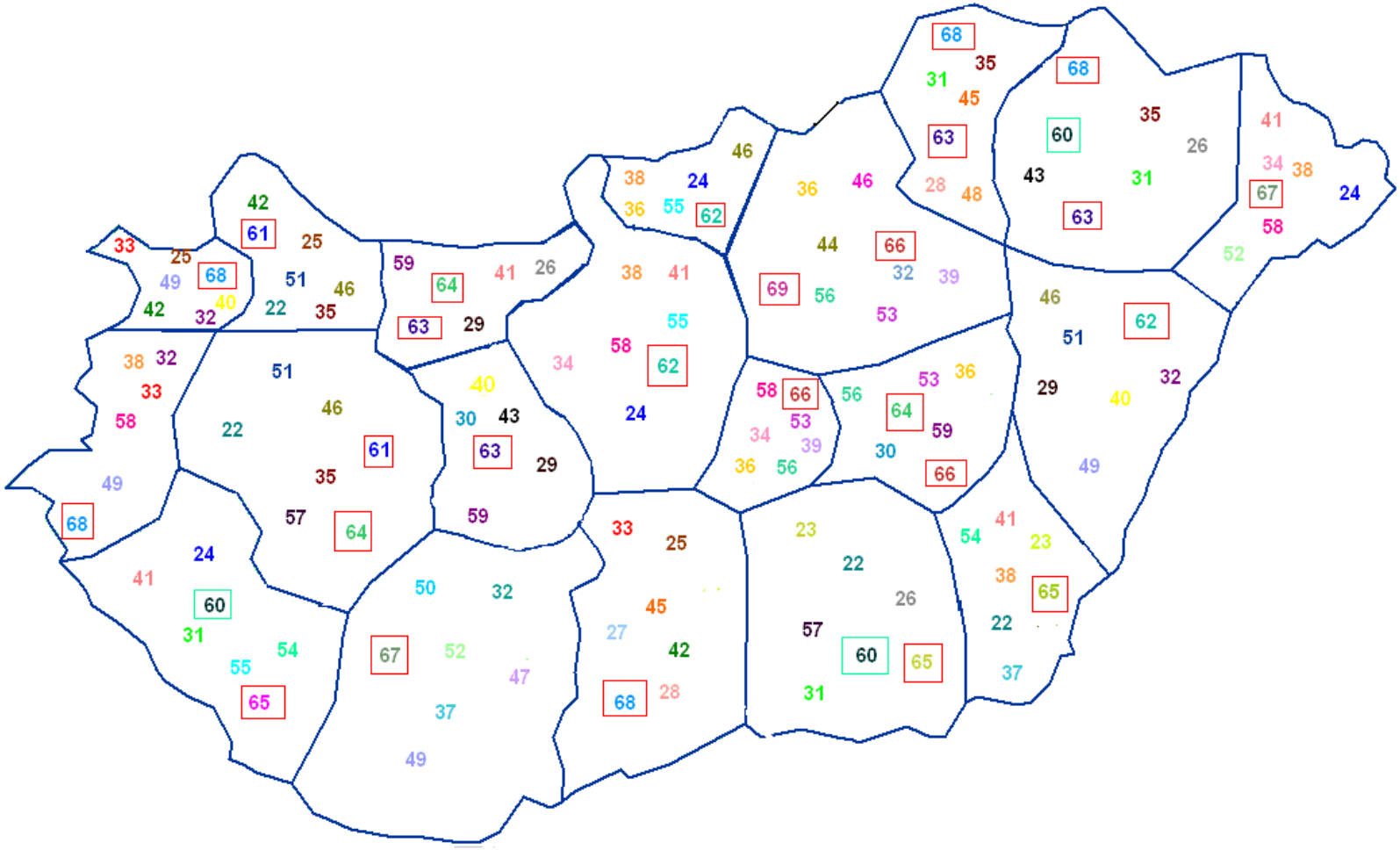
GE’06 Plan

The GE’06 Plan has been **highly optimised** to provide a **balanced allocation** in the 470-862 MHz band to all countries based on the principle of equitable access to the spectrum

GE06 DVB-T Plan for HNG:

- 7 layers in the UHF band
- more than one layer **using channels 60+**
- **missing channels** in some allotments

Allotmen plan



Milestones

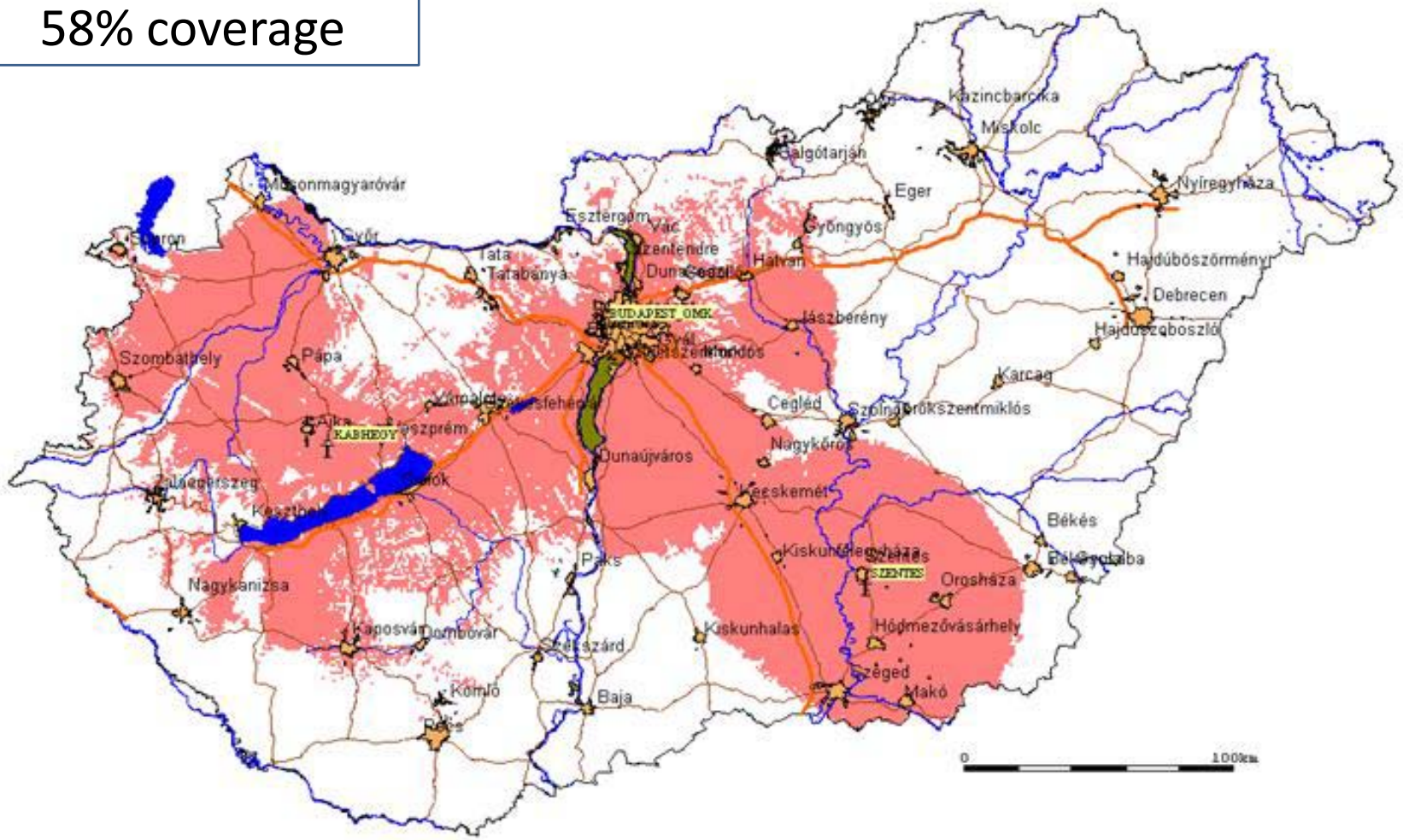
2005	2007	2008	2010-2011	2012
1021/2005. (III. 10.) Governmental Decree on Priorities of Governmental Tasks in relation to the transition to DTT	**1014/2007 (III. 13.)** Governmental Decree on the Strategy of Digital Switchover **2007. LXIIV. Act** on Digital Switchover	DTT, DAB+ tender authority contract	Implemen-tation of DTT networks	Analogues switchoff to be completed

Act

- Authority shall **publish a call for application**
- The application procedure shall be **supervised** by an ad-hoc committee setup by Parliament
- The **license** will provide the right to operate digital broadcasting multiplexes **for a 12 year period** (5 DDT, 1 audio)
- **STB** may be **subsidised** during the 3 month period
- **Digital switchover** shall be implemented by 31 December 2011 (modified)
- At least **94% of population shall be reached** by public service programs,and **devices** suitable for receiving digital broadcasting service **are available** for them

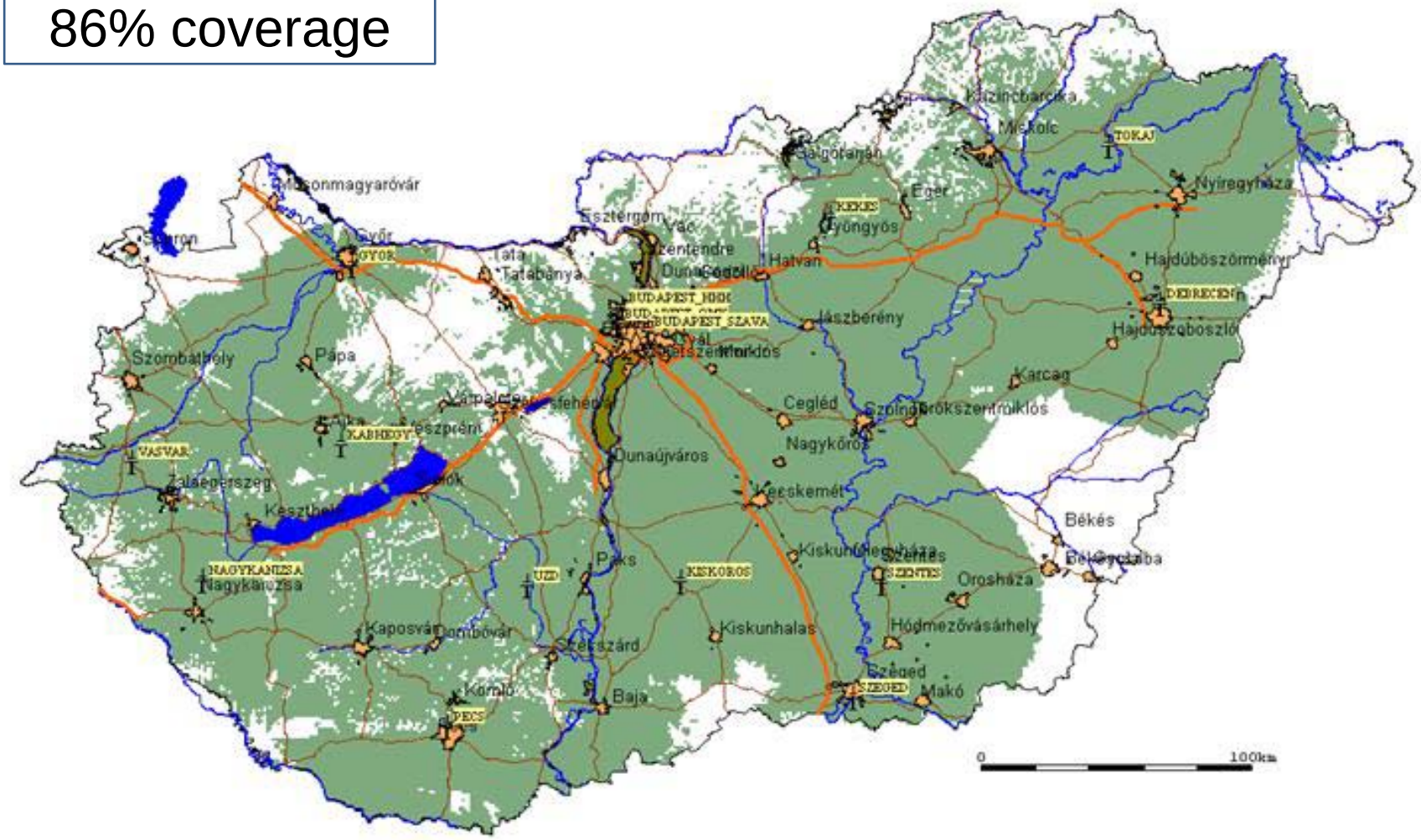
2008 December

3 transmitters
58% coverage



2009 December

13 transmitters
86% coverage



2010 December

29 transmitters
95% coverage

Available programs

Free TV and radio channels:

m1 HD, m2 HD, DUNA HD, DUNA, RTL KLUB, tv2.hu, euronews, neo FM, Kossuth mr1, PETŐFI mr2, Bartók mr3

Paid TV channels:

AXN, Film+, NATIONAL GEOGRAPHIC, SPORTKLUB, PRIVATE spice, atv, hírTV, Disney Channel, FEM3, HBO

Current situation 1

- **3 multiplexes are already in operation**, 2 DVB-T (MUX A, C), 1 DVB-H (MUX B). MPEG-4 compression standard used in DVB-T.
- Frequencies for another 2 multiplexes: **after transition** period
- Channels **above 60 are used**.
- The 2 multiplexes provided on DVB-T platform contain free to air **HD and SD services** and services based on **pre-paid card.**
- The DVB-H service is provided only in Budapest area.
- Analogue **switch-off** is set to be completed by **31 December 2012.**
- Switch off: station by station

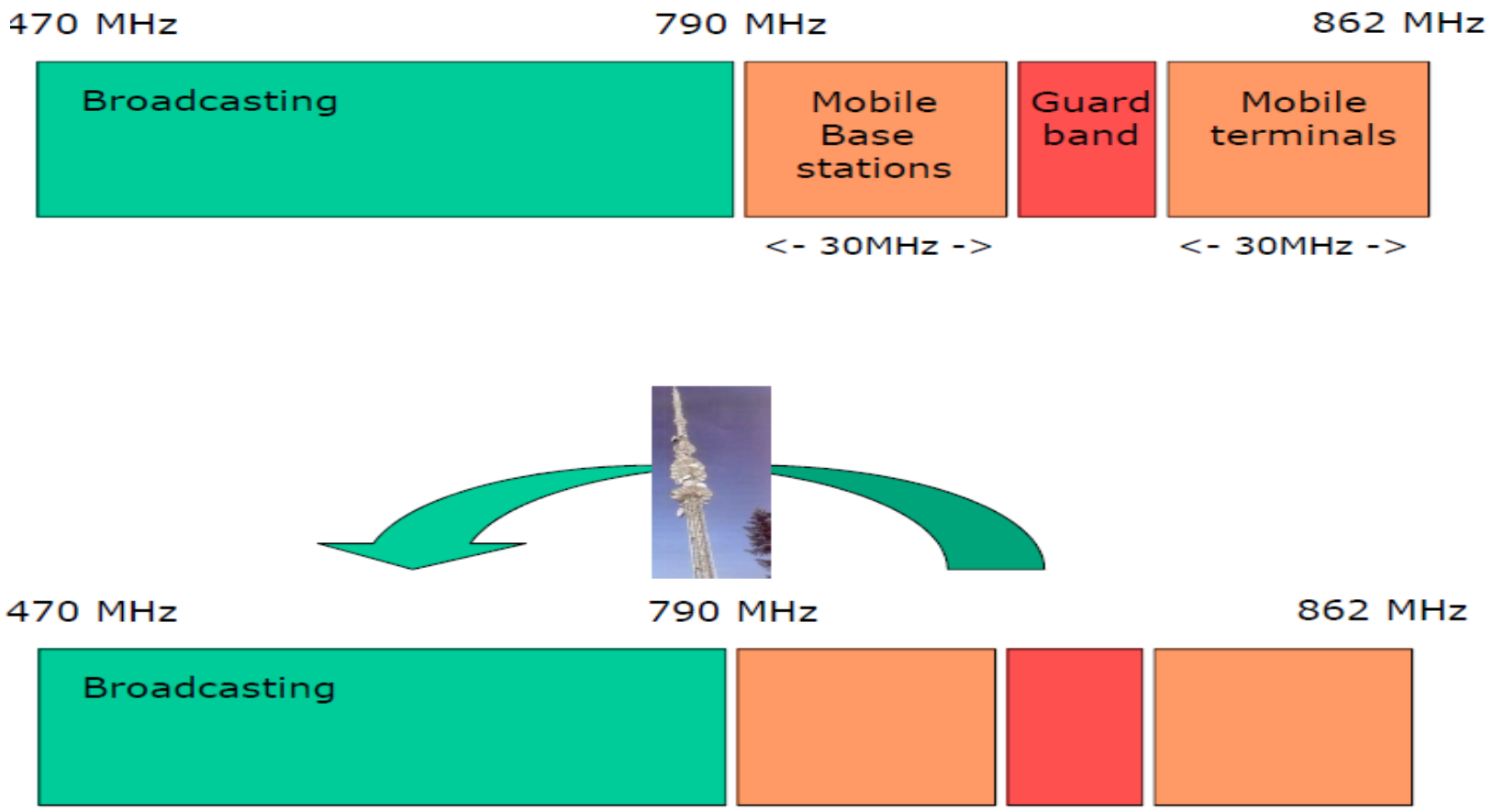
Current situation 2

- **Content: the most popular public and commercial channels** available: 7 free-to-air channels, including 3 in HD quality, 4 radio channels.
- **Network: the population coverage will grew up to 95% by the** end of the 2010. Even better reception conditions in the big cities through lifting up power restrictions and through the implementation of additional transmitters.
- **Equipment: wide range of set-top-boxes** and IDTV's are available in more than 600 shops.
- **Communication: several successful campaigns were** executed, the awareness of digital TV service grew up to 65%.

Main tasks for successful ASO

- **~ 800 thousand households (~ 2 million people) affected**
  - including many from the rural parts, low income, elderly
  -they spend time watching television above average
- **for the majority of the current terrestrial viewers, the free-to-air digital service will be the only way to get free access to the public service (and to the most popular commercial) channels**
- **more actions required to prepare and help them:**
  - clear ASO indicators with appropriate monitoring;
  - national communication campaign adapted to the target groups;
  - a viable scheme for the set-top-box subsidies, covering all angles (target, budget, channels, logistics, control, etc.).

New frequency allocation plan



Digital dividend

- Make available the 790-862 MHz band for **electronic communication services (ECS**) other than broadcasting stations by 1 Jan 2013
- **Harmonise the technical conditions** for the availability and efficient use of the 790-862 MHz band.
- Elaborate **cross-border coordination agreements** with the aim of enabling the operation of other systems in the 790-862 MHz band.
- **Frequency migration** is necessary for DTV
- **No governmental use** in frequency band above 790 MHz in Hungary

Improvement of GE'06

- **Increased interference levels** would have to be accepted,
- Requirements would have **different shapes** and/or sizes compared with those taken to the Plan,
- **Implementation characteristics** would be different from those of the existing resources in the same region,
- An **iterative coordination process** may be needed,
- The coordination process should be based **on the principle of equitable access** to the spectrum,
- DVB-T2: 24 Mb/s → 40 Mb/s (Max.: 47,8 Mb/s)

DVB-T2

- Using DVB-T2 for HD/DTT services

	Typical DVB-T mode	DVB-T2 mode
Modulation	64QAM	256QAM
FFT size	2K	32K
Guard Interval	1/32	1/128
FEC	2/3	2/3
Capacity	**24.12 Mbps**	**40.21Mbps**

T2 adaptation

- Countries having started T2 services
  - UK
    - More than 50% population coverage (500 transmitters)
    - Many T2 STBs and IDTVs available
      - **£70 STB already available**
  - Italy
    - New Pay TV operator in VHF

- Countries planning/doing trials of T2
  - South Africa
  - Austria
  - Denmark
  - Germany
  - Ukraine
  - Czech Republic
  - ....

- Countries planning for T2 services
  - Sweden
  - Finland
  - Germany
  - India
  - Serbia (?)
  - .....

- Countries considering using T2
  - Australia
  - Singapore
  - ....

Open questions

- How much **spectrum** will broadcasters need, facing a grow **demand for HDTV** ?
- Will there be enough **spectrum** available to accommodate the „capacity tsunami” at the **mobil consumers** side**?**
- It is possible to predict **consumer behaviour** with regard to demand for content anytime and anywhere?
- What will be the **dominant type of content** requested?

Thank you for your attention

pados@nmhh.hu