Analogue to digital TV transition in Croatia (HRV)
GE’06 digital plan

- “Stockholm 1961”, Agreement containing frequency Plan and regulatory – technical framework for analogue broadcasting stations

Zagreb, 31 March 2009
GE’06 digital plan

- 118 countries, ITU Regions 1 i 3
- 174-230 MHz, VHF B.III
- 470-862 MHz, UHF B.IV/V

- Based on allotment / assignement plan entries
- Equitable access to the radio spectrum between neighbouring countries

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HRV GE’06 VHF digital plan

174-230 MHz, VHF B.III

<table>
<thead>
<tr>
<th>DA0</th>
<th>DB0</th>
<th>DC0</th>
<th>DD0</th>
<th>DE0</th>
<th>DF0</th>
<th>DG0</th>
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<td>6</td>
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HRV GE’06 UHF digital plan

470-862 MHz, UHF B.IV/V
Relevant legislation

- Law on electronic communications (OG 73/08, 26/06/08)
- Analogue to Digital Television Broadcasting Switchover Strategy for the Republic of Croatia (31/07/08)
- Ordinance on radiofrequency spectrum allocation (OG 136/08, 24/11/08)
- Ordinance on radiofrequency spectrum assignment and usage (OG 136/08, 24/11/08)
- Ordinance on Analogue to Digital Radio and Television Broadcasting Switchover and Access to Multiplex Positions in Terrestrial Digital Broadcasting (OG 148/08, 19/12/08)
TV platform shares in Croatia

- Analogni TV: 78.9%
- Kućanstva bez televizije: 1%
- CATV: 9%
- Sat TV: 7.8%
- IPTV: 3.3%
Switchover strategy

HRV Government adopted ATV → DTV strategy in July ‘08

Basic guidelines of strategy:

- transition starts on Jan 1st 2009;
- full digital TV in 2011;
- encoding: SDTV – MPEG-2, HDTV – MPEG-4 Part 10 (H.264/AVC);
- conditions for preserving free universal service of public BCTV, services of other BCTV on all levels of coverage;
- ensure technical – technological preconditions by optimal use of transmission capabilities to meet public interests;
- access conditions for independent content providers;
- development of content pluralism, open services market;

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DTV license invitation

HAKOM published invitation for:

- 2 DTV MUX for national coverage
- spectrum licence duration 10 years
- required network coverage of 95% population
- MPEG-2, SDTV
- has to ensure multiplexing service
- must carry obligation for existing analogue programs
- deadline for applications - 30 March 2009
  - two applications received
- decision date by the end of April 2009

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HRV transition process

First phase
- starts with operation of two national MUX
- MUX - 5 TV programs in each MUX
- content - national public free to air content
- transition on region by region basis (9 regions)
- each region 6 – 11 months simulcast

Second Phase – commercial content
- commercial operation of regional MUX (regional content)
- operation of additional national MUX (HDTV)
- commercial operation of mobile TV MUX (DVB-H)
- operation of additional regional/national MUX
HRV transition process

First phase activities for each region

- ensuring frequencies in transition period
- distribution of subsidy vouchers
- promoting campaign and informing the public
- commencement of digital broadcasting A & B MUX
- ensuring 95% of households coverage
- ensuring households digital receiver penetration
- ensuring frequencies for phase 2
- switching-off analogue transmitters to ensure frequencies for phase 2

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HRV transition process

First phase - difficulties

- demanding geography for coverage
- different transition timeframes
- interference from un-coordinated stations on channels for 1’st and 2’nd phase
- intellectual & content rights
- households digital receiver penetration
DTV transmissions in operation

First phase transition transmissions:
- transmission of MUX A & B– national public and commercial content - FTA

Test transmissions current in operation:
- HDTV – promo content
- DVB-H– mobile operator
- T-DAB (VHF)– national public radio content
DTV transmissions in operation

MUX A & B coverage

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Digital dividend is the spectrum made available over and above the required spectrum to accommodate the existing analogue television services in a digital form in VHF and UHF.
Digital dividend

Digital dividend available AFTER:
ATV → DTV transition
DTV full operation
Analogue switch-off

<table>
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<tr>
<th>channel</th>
<th>21</th>
<th>56</th>
<th>56</th>
<th>60</th>
<th>61</th>
<th>59/79</th>
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<tbody>
<tr>
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<td>750MHz</td>
<td>790MHz</td>
<td>800MHz</td>
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<tr>
<td>service</td>
<td>DVB-T/H</td>
<td>DVB-T</td>
<td>IMT / DVB-T</td>
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<tr>
<td>MUX A - national</td>
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<td></td>
<td>5 SDTV programs</td>
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<tr>
<td>MUX B - national</td>
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<td></td>
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<td></td>
<td></td>
<td>5 SDTV programs</td>
</tr>
<tr>
<td>MUX C - national</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2-3 HDTV programs</td>
</tr>
<tr>
<td>MUX D - regional national</td>
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<td></td>
<td></td>
<td>5 SDTV programs</td>
</tr>
<tr>
<td>MUX E - national</td>
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<td></td>
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<td></td>
<td>DVB-H: additionally available ~30 TV programs or ~60 radio programs</td>
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<tr>
<td>MUX F - national regional</td>
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<td></td>
<td></td>
<td></td>
<td>additionally available: DVB-T, DVB-H</td>
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<tr>
<td>MUX G - regional national</td>
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<td>additionally available: DVB-T, DVB-H</td>
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<tr>
<td>MUX H - regional</td>
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<td>additionally available: DVB-T, DVB-H</td>
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</tbody>
</table>

Zagreb, 31 March 2009
Thank you for your patience …