



NorDig Excom – report back to NorDig T

NorDig Excom meeting 20th May 2014

NorDig T (Per Tullstedt) extra report back from NorDig Excom meeting, not the official NorDig Excom report, mainly NorDig T related issues.

NorDig ExCom 20th May 2014 (Stockholm, Sweden)

- 1. Agenda and report from previous meeting**
- 2. Organisational matters**
 - 2.1 Nomination of ExCom officials.
 - 2.2 Membership status.
- 3. Report from NorDig/T (see coming slides with Excom feedback)**
- 4. Report from Industry**
 - 4.1 Report from Common Testing.
 - 4.2 Report from Nordic Product Manager meeting.
 - 4.3 Report from industry members.
- 5. Reports from members, DVB and other organisations**
- 6. Invited presentations**
 - 6.1 At the horizon, special topic presentation on Audio.
- 7. NorDig future and current plans**
- 8. Any other business**
- 9. Date and place for next meeting – Sept 2014 meeting moved to Oslo/Gardemoen**



Our ever young NorDig Excom secretary Anders Nyberg is leaving us after more than 13yr (and more in technical group), last meeting before he retire. Per Björkman (Excom chairman) thanks Anders with flowers and a special NorDig glass plaque. MANY MANY THANKS Anders, we will miss you, good luck in the future!



NorDig Excom – report back to NorDig T

NorDig Excom meeting 20th May 2014

2. Organisational matters

2.1 Nomination of ExCom officials.

NorDig Excom secretary: new Anders Appelqvist (Elektronikbranchen) replacing Anders Nyberg (SVT) who is retiring.

NorDig Commercial Ad-Hoc group chair: new Per-Martin Öhman (Sharp) replacing Juha Vesaoja (YLE) who is retiring.

6. Invited presentations

6.1 At the horizon, special topic presentation on Audio (Johan Lindroos)

NorDig Excom has asked NorDig T to give special presentation at Excom meeting about future technologies , invite NorDig T subgroups, at this meeting Audio. Johan Lindroos (chair audio group) presented short about future audio:

- Dialogue Enhancement
- Dolby AC4 – new audio codec , better encoding efficiency and with more adv metadata
- MPEG4 part 3: 3D Audio and Object based Audio

7. NorDig future and current plans – from the list of proposed ideas, continue previous meeting:

- Track technical development, continue develop new specifications and add new techn when needed – agreed (prev meeting)
- Make NorDig international (via using Associated membership) - agreed (prev meeting)
- Network as an open forum – agreed (prev meeting)
- IPTV – postponed (prev meeting)
- CA/DRM/Device Control (agree upon common requirement) – not incl (OK work w common scrambling, monitor market etc)
- What is TV in the future – postponed (prev meeting)
- Common testing – not incl/postponed (too difficult to get members to agree, especially Telenor Cable operator)
- WebTV/Smart TV/Connected TV – HbbTV incl, rest mainly keep monitoring
- Radio issues (start DAB IRD spec inside NorDig or new group, similar as our NorDig DVB IRD spec) - not part of NorDig, limited interest, Teracom and RTÉ shown interest, NRK low interest, DR has no interest and DR view is that this shall be outside NorDig₂



NorDig T report back from Excom

NorDig Excom meeting 20th May 2014 Stockholm, Sweden

Blue Text is inputs/feedback/comments from NorDig Excom 20 May meeting

3. Report from NorDig Technical group:

- Ongoing work and info from members & relevant other standards
 - *NorDig T and subgroups work & planning*
 - *Info (basic) relevant standards*
- Specifications – status and progress new specifications
 - *Unified IRD specification v2.5 (planned June 2014 ~~March 2014, end of 2013~~, delay 3 6 Month)*
 - *list of proposals/issues needing Excom guidance/decision*
 - *Test specification v2.4.x (v2.4.0 ready to publish if approved by Excom)*
 - *Rules of Operation v2.x (planned final draft end of 2013)*
- Specific issues (NorDig T subgroups)
 - *Audio presentation – future codecs, functions etc (Johan Lindroos)*
 - *TV Recorder*



NorDig T report - Work and subgroups

NorDig Excom meeting 20th May 2014

Overview

NorDig T – *active*

NorDig T subgroups – status

- Video – *dormant*
- Audio – *active* (audio related for IRD, Test Plan and RoO)
- Test – *active* (Test Plan)
- RoO – *active* (RoO spec)
- Accessibility – *active* (accessibility related for IRD, Test Plan and RoO)
- PVR/API – *active* (HbbTV testing (cases+setup), API+PVR related for IRD, Test Plan and RoO)
- CA/CI+/Sec – *dormant* (CI+ v1.3, CI+ v1.4)
- SSU – *active* SSU (accessibility related for IRD)



NorDig T report - **Work and subgroups**

NorDig Excom meeting 20th May 2014

Organisation and status

NorDig T – *Per Tullstedt, Teracom*

NorDig T subgroups – status

- Video – *dormant*
- Audio – *Johan Lindroos, SVT, preparing proposals related to audio for IRD, RoO and Test specs*
- Test – *Pasi Toiva, Labwise, drafting NorDig Test Plan*
- RoO – *Des Mac Giolla an Chloig, RTÉNL, drafting RoO spec*
- Accessibility – *Kjell Norberg, NRK, preparing proposals related to accessibility (audio, video, subtitling, menus...) for IRD, RoO and Test specs*
- PVR/API – *Erik Vold, NRK, preparing proposals related to PVR and API (HbbTV) for IRD, RoO and Test specs. Investigations DRM alt, test model/process. Creating complementing HbbTV Test streams*
- CA/CI+/Sec – *dormant (CI+ v1.3, CI+ v1.4)*
- SSU – *Per Tullstedt, Teracom, reviewing SSU requirements for IRD spec v2.5*



NorDig T report - Work and subgroups

NorDig Excom meeting 20th May 2014

Summary activities during 2014

NorDig T — ~12-14 *active participants/members (mix of members+observers, ~25-30 total incl passive)*, 4 meetings 2014, main activity: *NorDig IRD, Test and RoO spec update, test process, NorDig HbbTV setup, general info exchange.*

NorDig T subgroups – status

- **Video** — *dormant, monitored by NorDig T*
- **Audio** — ~15 *participants/members (mix of members+observers)*, 2-3 meetings 2014 (but working together w *Accessibility*), main activity: *prepare proposals related to audio for IRD, RoO and Test specs*
- **Test** — ~Y *participants/members*, 0 meetings 2014 (also getting inputs *HbbTV testing* from API group), main activity: *drafting Test plan v2.5.0*
- **RoO** — ~15 *participants/members (mix of members+observers)*, 0 meetings 2014 (but getting inputs from other subgroups), main activity: *updating/drafting RoO spec*
- **Accessibility** — ~16 *participants/members (mix of members+observers)*, 0-1 meetings 2014, main activity: *prepare proposals related to accessibility (audio, video, subtitling, menus...) for IRD, RoO and Test specs*
- **PVR/API** — ~22 *participants/members (mix of members+observers)*, ~10 meetings 2014, main activity: *prepare proposals HbbTV requirements and TV Recorder (“lite PVR”) for IRD, RoO and Test specs. Investigations DRM alt, test model/process. Creating complementing HbbTV Test streams. Started a smaller “expert subgroup” inside the subgroup for creating test cases, another 5-6 meetings so far.*
- **CA/CI+/Sec** — *dormant, monitored by NorDig T (CI+ v1.3, CI+ v1.4)*
- **SSU** — ~9 *participants/members (mix of members+observers)*, 8 (telco) meetings 2014, main activity: *prepare proposal for update/review SSU requirements for IRD spec*



NorDig T report - mandates from Excom

NorDig Excom meeting 20th May 2014

NorDig T – mandates from Excom

- Current mandates from Excom are from early 2013
- Last (smaller) updated Excom meeting Jan 2014
- New mandates from Excom? New mandate planned for next NorDig Excom Sept 2014, NorDig T to also propose ideas.



NorDig T report - Meeting calendar 2014

NorDig Excom meeting 20th May 2014

NorDig T meeting calendar 2014:

- Tue 14 Jan 2014 – *telco*
NorDig Excom 28 Jan
- Wee 19 Mar 2014 – *phycial*
- extra Thu 24 April 2014 – *shorter telco 14:00-16:00 CET, drafting IRD v2.5*
- Tue 13 May 2014 – *telco*
NorDig Excom 20 May
- extra Tue 3 June 2014 – *shorter telco 10:00-12:00 CET, walk-through final draft IRD v2.5*
- Tue 17 June 2014 – *telco*
- Thu 4 Sep 2014 – *Sweden, Stockholm, at Teracom or SVT*
IFA 5-10 Sept, Berlin
IBC (11) 12-16 Sept Amsterdam
NorDig Excom 30 Sep, Oslo (Gardemoen)
- Tue 28 Oct 2014 – *Proposal Turkey, at Vestel*
- Tue 2 Dec 2014 – *Denmark, Copenhagen, at DR*



NorDig T report - short info standards

NorDig Excom meeting 20th May 2014

Short info about news/progress relevant Standards –

Front Ends (NorDig IRD DVB-S/-S2, -C, -T/-T2, some for “-IP”)

- US ATSC 3.0 reviewing complete spec, DVB propose DVB techn (updated version of DVB-T2)

Video & Audio (NorDig IRD v2.5: MPEG2 + MPEG4)

- MPEG-H HEVC, UHDTV and Dolby AC4 (DVB finalizing subset & additional signaling details)
- DVB Subtitling under review
- MPEG-H Audio (3D Audio) still very early

CA, CI+, DRM (NorDig IRD v2.4 CI+v1.2 → v2.5 CI+v1.3, scrambling DVB CSA, no CA, no DRM)

- CI+ v1.4 (2xTS in/out, IPTV), DVB final Oct 2013, ETSI approved March 2014
- CI+ LLP (Limited Liability Partnership) still working on what and how CI+ v1.4 will be required (guess approx. 18 month from now)
- DRM - NorDig just observers and reports

HbbTV (NorDig IRD v2.4 HbbTV v1.5 aka ETSI TS 102796 v1.2.1)

- HbbTV v2.0 late 2014 w first impl early 2016, likely incl HTML5, sync devices etc
- HbbTV Test suits v1.5 late 2014 (NorDig contribute/propose)
- HbbTV Logo licensing (Aug 2013)

I/O interfaces etc (NorDig IRD HDMI v1.4, IRD spec v2.5 SCART becomes optional)

- HDMI v2.0 for UHDTV (4k, 10bit, 50/60Hz, but old colors and dynamics, Sep 2013)

Accessibility (NorDig IRD accessibility for audio & subtitling)

- ITU (Focus group) specification basics for Talking TV set (recommendation in NorDig IRD v2.5)



NorDig T report - (Techn) Info from members

NorDig Excom meeting 20th May 2014

(Technical) Information from NorDig members:

- NRK & TV2 **together**: HbbTV plan to launch in “all” distr platforms (interesting in both play/catch-up + stream events, NRK removed EBU Teletext (HoH) Subt (now only DVB Subt) in some platforms. **Pushing operators to support HbbTV also in their STB (high STB penetration in Norway)**
- DR: HbbTV launch **1** June 2014 in “all” distr platforms for all DR services (catch-up + OnDemand), **no DASH yet, no DRM, HbbTV 1.0**
- **SVT has started investigating HbbTV, no concrete plan for launch, but plan test/pilot end2014/beg2015**
- ComHem: launched Tivo end of 2013, added Netflix spring 2014
- (Stofa have planned analogue switch off in cable beg 2014? Analogue bouquet now digital “FTA”)
- DTT 700 MHz spectrum
 - Finland has earlier decided to clear 700MHz spectrum from DTT 2017, to be used for Mobile networks. **Finland now started looking into 600MHz band.**
 - Sweden, Government decided March 2014 to clear 700MHz spectrum from DTT 2017, to be used for Mobile broadband networks
 - **Norway freq regulator started investigating impact, but DTT has license until 2 june 2021**
- Digita involved in Malaysia DTT roll-out (based on NorDig)



NorDig T report - Overview specification work

NorDig Excom meeting 20th May 2014

Overview NorDig T drafting specification work :

- Rules of Operation v2.x (target: ~~End 2013~~, ~~delayed May 2014~~, delayed end 2014) – Excom OK
- Unified IRD specification v2.5 (target: ~~End 2013~~, ~~April 2014~~, delayed June 2014) – Excom OK
- Test Plan (prev named Test Spec) – Excom OK
 - v2.5 work started (incl test for PVR crids, HbbTV etc)
 - V2.4.1 might propose a debug version of todays v2.4.0
- HbbTV – Excom OK
 - Test cases (both NorDig and HbbTV test specs), under progress, NRK supervising, Sofia Digital consulting for writing test cases (partly paid by NorDig and partly by NRK) (target ~~March 2014~~ end of 2014 to match HbbTV test spec v1.5 end of 2014)
 - Test model proposal (based on HbbTV standard + NorDig additions), to be stated in NorDig IRD v2.5 and Test spec
 - Logo + marketing: no NorDig specific, no other than HbbTV standard
 - DRM: no NorDig DRMs specified for IRDs (NorDig T still monitor and report DRM to Excom)



NorDig T report - **planning coming period**

NorDig Excom meeting 20th May 2014

Overview NorDig T group planning 2014 (incl subgroups):

- No new planned activities for 2014 (yet), i.e. no planning yet for IRD v2.6 etc
- First finalizing specifications (2014):
 - IRD v2.5
 - RoO v2.4/2.5
 - Test v2.5
 - HbbTV test cases
- Inputs from Excom(?) - **OK**



NorDig T report - Unified IRD v2.5 (1/4)

NorDig Excom meeting 20th May 2014

NorDig Unified IRD specification v2.5 - Target: ~~March/April 2014~~ June 2014. Highlight proposed content/changes:

- Target: ~~March/April 2014~~ June 2014.
- Still under development, today “90%” ready, draft 007
 - General debug, corrections, common - proposal ready
 - FE – still some few minor issues remaining
 - **Audio** – still drafting, separate document, now close to final proposal within subgroup
 - Teletext & Subtitling – proposal ready, one question for Excom
 - Interfaces – proposal ready,
 - CA (CI+) – proposal ready,
 - **SSU** – still drafting, separate document, a couple of week remaining
 - Performance – still drafting, smaller text changes remaining, need to agree upon zapping time
 - SI & Navigator/Menu - proposal almost ready, need to decide about Sami
 - PVR – proposal ready,
 - API – still drafting, smaller text changes remaining
 - User preferences – proposal ready,
 - Annexes – one new Annex still drafting (recommendation wordings and translations)
- Basic presentation 20 May for Excom: Draft 007 and indicating main changes in content in Audio and SSU
- Target to have final draft within NorDig T beginning June 2014, to be sent to Excom for final approval
- **Excom: If NorDig can provide final draft latest 16 June, then Excom can if no major comments (except editorial) to this final draft approve this before summer holidays. Otherwise or if major comments then the approval process will be postponed until Excom’s September meeting.**



NorDig T report - Unified IRD v2.5 (2/4)

NorDig Excom meeting 20th May 2014

NorDig Unified IRD specification v2.5 - Target: ~~March/April 2014~~ June 2014. Overview (based on draft007):

- General maintain and update
 - Removal of a number of passed grace periods
 - define grace period
 - some restructure and collecting similar requirements into same section and dividing sections into smaller subsections
- Front-End
 - DVB-S/-S2: correction for left handle circular
 - DVB-C and -T/-T2: update of specification for RF connector (old withdrawn)
 - *DVB-T2: removed mandate -T2 for all terrestrial IRDs (was OK for Sweden, Norway, Ireland and Finland but DR disagree)*
 - DVB-T/-T2: T2 Lite (Teracom/Boxer for Denmark, some interest from Digita for Finland)
 - DVB-T/-T2: remove PAL (immunity against analogue PAL signals)
 - DVB-T/-T2: scanning (800MHz), Excom conclusion was to follow DTG D-book and Digital Europe E-book, D-book v7 still require up to c69.
 - *IPTV postponed (no concrete proposal yet)*
- Audio – *still under development*
 - Audio prio proposed change to suit Finland: old 1. Lang 2. Type (normal/supplem)... new 1. Type (normal/supplem) 2. Lang...
 - Loudness, sample freq, default metadata, HE.AAC over HDMI/SPDIF
 - Dynamic language signalled in PSI/SI (Finland YLE case)
 - Long time lip sync
- Teletext and Subtitling
 - Clarification Subtitling, only present subtitling if language matching user preferences
 - Clarification Subtitling, temporary settings shall not be de-activated due to EIT changes
 - Simultaneous HbbTV “Superteletext” app and EBU Teletext pages
 - Text key toggling: 1. HbbTV “Superteletext”, 2. EBU Teletext, 3. return to TV viewing. HbbTV define behavior but is optional, NorDig refer to HbbTV behavior but propose to mandate, Industry not willing, **Excom: OK with shall but should if industry refuses or it would delay publication of new IRD v2.5 (DR, Lis-Grete, have no plan to use Text function).**



NorDig T report - Unified IRD v2.5 (3/4)

NorDig Excom meeting 20th May 2014

- Interfaces:
 - SCART output for STB changed from mandatory to optional (no comments to proposal)
 - Remote Control – Text key opens HbbTV “superteletext” &/or EBU Teletext
- CA/Security
 - CI+ change minimum from CI+ v1.2 to v1.3 (no comments to proposal)
- SSU – *still under development*
 - Complete restructure to collect similar requirements into same section
 - Add manual search for new SW (has not be defined earlier, but most IRD has this already)
 - *Postponed Handling of very large SSU files (too large for normally using broadcast), mainly SmartTV sets, main idea has been to be able to reach all viewers to use broadcast to send notification and let user use USB memory or Ethernet return channel for actual download – postponed, plan to cooperate with DTG and to let DVB review SSU spec and this delayed (DVB GBS group focus right no on defining SI for HEVC, AC3, UHD...)*
- Performance
 - Zapping time, update of old requirements, still not fully agree upon average zapping time for iDTVs (with CAM), 3.5s (ComHem) and 5s (Industry), [NorDig Excom: “keep” 3.5s](#)
- SI
 - Target region descriptor – still no text proposal, postpone if no proposal within 1 week
 - Logical Channel Descriptor v1, go back to mandatory
 - Sami – only NRK request, other cautious/waiting, not willing extra complexity. Not sure if proposal would be only Sami as language for streams (audio, subtitling) or if EIT (e.g. nor + sami) shall be incl and if IRD menu language (complex), Sami seems to be language family, [NorDig Excom: Sami only applicable here for \(audio &/or subt\) stream language, not needed for EIT or IRD menu language.](#)



NorDig T report - Unified IRD v2.5 (4/4)

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- Navigator/Menu
 - 1week EPG/ESG (EITsch) mandate for all IRD (earlier inconsistency ch12 mandatory ch13 optional for basic IRDs), no comments from Industry, standard grace period but “all” IRDs seems support this today maybe no grace period, [Excom: OK w grace period](#)
 - ESG/EPG handling of time slots with no EIT data (gap in sch), allow informative text like “No event information”, [Excom: OK](#)
 - User Info Audio and Subtitling, IRD to collect settings in menu for Accessibility and Talking menus, new sections
- HbbTV – *still under development*
 - NorDig’s requirements for verifying HbbTV impl, refer to HbbTV standard test suits + NorDig additions, NorDig member shall be able to see test protocol to verify test been conducted successfully
 - DRM not incl, refer to Operators (NorDig T API only report status around members interest and general market trends around DRM)
- PVR - TV recorder or not – *still under investigation, no common view what should be incl yet*
 - TV Recorder (“PVR Lite” for iDTVs), “single tuner” (record and view same service).
 - Excom Jan 2014, investigate interest for TV Recorder, investigate for a super-lite profile what members expect to be included. First questionnaire sent out in Dec/Jan, only 4 replies, New questionnaire sent out yesterday
 - Industry/several observers has complained about complexity (TVA crids) and asks for a “super-lite PVR”, should we lower TV Recorder even more
 - *Future CI+ v1.4 with multiple MPEG-2 TS in/out, could enable iDTV to become a full PVR and with external HDD (USB)*
 - [Excom – postpone \(not delay new IRD v2.5\)](#)
- Customer Support - postponed
 - Common/similar support menu, Surveillance of connected IRDs (e.g. via TR69 or similar), postponed no input proposal yet
- Guidelines wordings and translations (new proposed annex) – *still under development*
 - Not mandatory, only guidelines to help IRD manufactures

See detail list of points for v2.5 in separate word document NorDig v2.5 draft 007



NorDig T report – Test plan

NorDig Excom meeting 20th May 2014

Test specification (*subgroup active*)

approx 1 step/yr behind IRD spec

- Some question of IRD spec should be put on hold and publish same time as a new Test Plan that covers new IRD requirements – Excom: keep as today, OK to publish IRD spec before Test Plan to give industry time to impl, try find NorDig standard solution for IRD manufacture who impl according to new IRD spec requirements while Test Plan is still not updated and describes according to old IRD spec.
- Test spec v2.4.1 (based on IRD spec v2.4) – investigate if needed, otherwise wait until v2.5
 - Debugging
- Test spec v2.5
 - Target: end 2014/beg 2015(?)
 - Test cases for new in IRD v2.5
 - Plan for the future to make test setup for several test cases where possible same or more similar to make it easier to test
 - Consider to “minimize” some of the RF test cases
 - PVR crids, broadcast record list
 - HbbTV test cases and procedure (refer to HbbTV standard test suits)
 - Missing audio/video test cases (e.g. metadata, video crop etc.) to be considered



NorDig T report – RoO specification

NorDig Excom meeting 20th May 2014

Rules of Operation (same as Sept 2013 meeting)

- RoO spec v2.4
 - Target: ~~final draft end of 2013~~ ~~March~~ ~~May~~ End of 2014
 - Plan to have same structure to be same as IRD spec
 - Inputs all subgroups (video, audio, PVR/API, accessibility)
 - Guidelines (complementing DVB guidelines)
 - Recommend broadcast settings (to reduce differences between NorDig networks)
 - Recommend broadcast levels (video, audio etc)
 - examples
 - Specific info related to different NorDig members networks/platforms



NorDig T report – API HbbTV

NorDig Excom meeting 20th May 2014

API - HbbTV (same info as Jan 2014):

- HbbTV organisation has 20 Aug 2013 released a Logo Licensing To Consumer Devices
 - Approx fee 3kEUR one time and 1kEUR/yr (similar as HD Ready)
 - IRD has to fulfil current spec and current available test suit (which today refers to HbbTV v1.0)
 - NorDig do not require/mention any HbbTV Logo (similar as DVB and CI+), as Excom Sept 2013.
- Test cases for the NorDig HbbTV additions – goal is to incl as many as possible in HbbTV standard test suits (some few most likely NorDig has to incl in NorDig Test spec)
 - Sofia Digital consulting to NRK/NorDig for the main writing
- NorDig Testing/approval model proposal
 - base it on HbbTV Test Suits,
 - Manufacture shall/should be able to present test report/results if not HbbTV certificate/logo (?)
 - Should NorDig require tests has to be performed within a HbbTV Registered Test Centers?
- DRM
 - No NorDig DRM
 - If DRM, only proposal: Marlin & Microsoft PlayReady (same as FRA, GER, ESP...)



TV Recorder: ~~lite~~ or superlite requirements? NorDig Excom meeting 20th May 2014

NorDig T: TV Recorder questionnaire: Answers (only 4 answers so far, 3x iDTV manufactures + 1x Member)
NorDig T Members and manufactures view of minimum requirements for NorDig “TV Recorder”

- Do you see interest for a *TV Recorder* profile? **NO, not so much, some, OK, Telenor interest at last Excom (Jan 2014)**

If NorDig should introduce TV Recorder, should then a *TV recorder* be:

- “lite” PVR? **NO, NO, “NO”, ?**
- “Superlite” PVR? **YES, YES, YES, ?**

If NorDig *TV Recorder* should be a smaller subset, i.e. “super-lite”:

- Which NorDig PVR features/requirements should then be included as mandatory?
- One example of Superlite requirements compared to full PVR requirements are listed in coming slides (see one page overview list of functions or a 3-pages of more detailed list of functions)
- Please comment/change according to your view what then shall/needs to be included in this “Superlite” version of TV recorder! (By purpose I have in this list incl some question marks where at least I found it is of extra interest to get your view)
- if TV Recorder requirements is reduced to a *superlite* version, could/should then it become mandatory for all IRDs with some recording functions? Ie otherwise they have to de-activate this function. **NO, NO, NO (low cost IRD full service recording etc too complex), depends on IRD/chipset manufactures possibilities**
- **Q to Excom, Should we continue with TV Recorder or? If so guidelines what should be incl?**

Excom: Postponed



NorDig T report – NorDig countries/networks

NorDig Excom meeting 20th May 2014

List of Countries using NorDig specifications (outside NorDig members), Several IRD manufactures and other mentions that several other territories and DVB networks refers or uses NorDig as basis for their IRD specs (especially “newer” networks). Among reasons seems open spec and content (T2, HbbTV, subtitling etc).

First list:

Country / Network	Status
Turkey DTT	Confirmed via Vestel
Several eastern Europe countries	Indications, not confirmed
Malaysia (?)	Digita



END presentation

NorDig-T report

After here some detailed informative slides