



## NorDig T report

NorDig Excom meeting 20<sup>th</sup> May 2014 Stockholm, Sweden

### 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 @ 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*

1



## NorDig T report - Work and subgroups

NorDig Excom meeting 20<sup>th</sup> 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)*

2



## NorDig T report - Work and subgroups

NorDig Excom meeting 20<sup>th</sup> May 2014

### Organisation and status

NorDig T – *Per Tullstedt, Teracom*

### NorDig T subgroups – status

- Video – *dormant*
- Audio – *Johan Lindraos, 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*

3



## NorDig T report - Work and subgroups

NorDig Excom meeting 20<sup>th</sup> 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*

4



## NorDig T report - mandates from Excom

NorDig Excom meeting 20<sup>th</sup> 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?**

5



## NorDig T report - Meeting calendar 2014

NorDig Excom meeting 20<sup>th</sup> May 2014

### NorDig T meeting calendar 2014:

- Tue 14 Jan 2014 – *telco*  
NorDig Excom 28 Jan
- Wee 19 Mar 2014 – *physcial*
- 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
- Tue 28 Oct 2014 – *Proposal Turkey, at Vestel*
- Tue 2 Dec 2014 – *Denmark, Copenhagen, at DR*

6



## NorDig T report - short info standards NorDig Excom meeting 20<sup>th</sup> May 2014

### Short info about news/progress relevant Standards – NorDig members interest?

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)

7



## NorDig T report - (Techn) Info from members NorDig Excom meeting 20<sup>th</sup> May 2014

(Technical) Information from NorDig members:

- NRK: HbbTV plan to launch “all” distr platforms (interesting in both play/catch-up + stream events, removed EBU Teletext (HoH) Subt (now only DVB Subt))
- DR: HbbTV launch 2 June 2014 “all” distr platforms for all DR services (catch-up + OnDemand)
- 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
  - Sweden, Government decided March 2014 to clear 700MHz spectrum from DTT 2017, to be used for Mobile broadband networks
- Digita involved in Malaysia DTT roll-out (?) (based on NorDig)

8



## NorDig T report - Overview specification work

NorDig Excom meeting 20<sup>th</sup> May 2014

### Overview NorDig T drafting specification work :

- Rules of Operation v2.x (target: ~~End 2013~~, ~~delayed May 2014~~, **delayed end 2014**)
- Unified IRD specification v2.5 (target: ~~End 2013~~, ~~delayed April 2014~~, **delayed June 2014**)
- Test Plan (prev named Test Spec)
  - v2.5 work started (incl test for PVR crids, HbbTV etc )
  - V2.4.1 might propose a debug version of today's v2.4.0
- HbbTV
  - 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)

9



## NorDig T report - planning coming period

NorDig Excom meeting 20<sup>th</sup> 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(?)

10



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

NorDig Excom meeting 20<sup>th</sup> 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 input on content and time plan**

11



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

NorDig Excom meeting 20<sup>th</sup> May 2014

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

- **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 Lte (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 signalised 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, **need of Excom decision**

12



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

NorDig Excom meeting 20<sup>th</sup> 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 been 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?](#)
- 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 view \(postpone or\)?](#)

13



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

NorDig Excom meeting 20<sup>th</sup> May 2014

- 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?](#)
  - ESG/EPG handling of time slots with no EIT data (gap in sch), allow informative text like “No event information”, [Excom?](#)
  - 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 - what to do](#)
- 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](#)

14



## NorDig T report – Test plan

NorDig Excom meeting 20<sup>th</sup> 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?**
- 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

15



## NorDig T report – RoO specification

NorDig Excom meeting 20<sup>th</sup> 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

16





## NorDig T report – API HbbTV NorDig Excom meeting 20<sup>th</sup> 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...)

17



## TV Recorder: ~~lite~~ or superlite requirements? NorDig Excom meeting 20<sup>th</sup> 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?**

18



## TV Recorder: Main functional overview

NorDig Excom meeting 20<sup>th</sup> May 2014

NorDig T: TV Recorder questionnaire: main feature to be incl

NorDig PVR feature requirements		Crids	PVR	TV Recorder		All IRDs	Comments
Profile – overall			O	Lite O	Super-lite M?	O	
General	EPG/ESG 8day guide		M	M	M		
General	Security/anti-piracy (local storage, interfaces...)		M*	M*	M*	M*	
Recording	Automatic conflict handling		M	M	M		
Recording	Basic requirement (30 Mbps, SD/HD/radio, via EPG, manual, full service)		M	M	M		
Recording	Accurate Recording		M	M	M		
Recording	Back-to-back recording		M	M	M?		
Recording	Timeshift recording		M	M	M?		
Recording	Split Recordings	crids	M	M	M?		
Recording	Simulcast (SD<->HD, regional versions)	crids	M	M	M?		
Recording	Series recording (TVA crids)	crids	M	M	O?		
Database	91 days of recordings and previous recordings	crids	M	M	O?		
Recording	<b>Simultaneous recording ("two tuners")</b>		M	O	O		
Recording	Alternative instance, Recommended events	crids	O	O	O		
Recording	Safe margins, Late Recording		O	O	O		
Xtra features	Trailer booking/Promotional Linking	crids	O	O	O		
Xtra features	NorDig Broadcast Record Lists	crids	O	O	O		
Playback	Playback – basic, trick, full service, lipsync)		M	M	M		
Playback	Simultaneous recording and playback		M	M	M		

*More detailed list functions and complete questionnaire at the end of this presentation*

19

\* NorDig standard security requirements, unless relevant network/operator specifies something else for that Network



## NorDig T report – NorDig countries/networks

NorDig Excom meeting 20<sup>th</sup> 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

20



## END presentation NorDig-T report

After here some detailed informative slides



## NorDig T: TV Recorder questionnaire



## TV Recorder: lite or superlite requirements? NorDig Excom meeting 20<sup>th</sup> May 2014

NorDig T: TV Recorder questionnaire (from January 2014 meeting) :

NorDig T Members and manufactures view of minimum requirements for NorDig "TV Recorder"

•Do you see interest for a *TV Recorder* profile (i.e. lite requirements than full PVR only for iDTVs) within NorDig?

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

•"Lite" PVR – support all NorDig PVR requirements except simultaneous recording (ie require two tuners)? (Several TV manufactures complained too heavy/complex)

•"Super-lite" PVR – support a smaller subset of NorDig, the most important? (TV Manufactures mainly complained about impl TV Anytime crids, Series recording etc, see compare list on next slides)

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 Super-lite 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 *super-lite* 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 *super-lite* version, could/should then it become mandatory for all IRDs with some recording functions? Ie otherwise they have to de-activate this function

23



## TV Recorder: background info NorDig Excom meeting 20<sup>th</sup> May 2014

NorDig "TV Recorder" info (from January 2014 meeting) :

•NorDig Excom (22 January 2013 meeting)

- Interest from industry that NorDig open for single tuner iDTV recorders, but current NorDig PVR requirements mandates "two tuners" (more precise watch one simultaneous record another) .
- NorDig Excom preliminary positive and gave NorDig T action to prepare proposal for NorDig Unified IRD spec v2.5 (planned end 2013)
- Wording "TV Recorder" or similar should be used for this single tuner iDTV recording capability (avoid use word "PVR Lite" in spec).
- Initial Excom mandate to NorDig T specification work: NorDig "TV Recorder" shall then support all possible mandatory NorDig PVR requirements for single tuner IRD (ie accurate recording , series recording etc).

24



## TV Recorder: background info NorDig Excom meeting 20<sup>th</sup> May 2014

NorDig "TV Recorder" info (from January 2014 meeting) :

- NorDig T group and API/PVR subgroup work under 2013:
  - First draft proposal as Excom mandate, i.e. only relaxing requirement for simultaneous recording (watch one simultaneous record another), all other requirements remained same as PVR.
  - Complains from several TV manufactures (NorDig observers) that this first *lite* version for TV Recorder was too heavy (crids, database, series recording...). Not so big interest from manufacture to impl this quite complex *lite* version of the TV Recorder.
  - Instead TV manufactures propose to reduce the requirements even more for this TV Recorder, like a *superlite* version of PVR.
  - TV manufactures comment was that a quite "heavy"/complex *lite* version (almost full PVR) might become obsolete fast whenever TV manufacture implement CI v1.4, which with one CAM potentially make its possible to watch one service and record another (unless Operator/CAS supplier has restrictions)
  - NorDig Excom and NorDig T (September/October 2013) noted this comments from industry, but wanted to get more details of exactly which functions/requirements are proposed to be removed into any *super-lite* version for the TV Recorder.
  - NorDig T decided to investigate deeper both options (*lite* and *super-lite* PVR requirements) for the TV Recorder, draft both options, get members and industry's view and finally let Excom decide for *lite* or *superlite* or skip TV Recorder.
  - **New question then**, if TV Recorder requirements is reduced to a *superlite* version, could then it become mandatory for all IRDs with some recording functions?
  - **New question**, if *TV Recorder* is for iDTV with one tuner. Do NorDig allow an iDTV with two tuners to be a TV Recorder or does it have to impl full PVR?
  - Question from the Industry if NorDig could collect all NorDig networks security demands for recording PayTV content (i.e. can NorDig operators allow storing the DVB scrambled signal without first descrambled (before applying any local scrambling)? Can NorDig Operators allow storing on external HDD (for example if this HDD is device<sub>25</sub> binded and local scrambling protected)?



## TV Recorder: Overview list of main PVR functions NorDig Excom meeting 20<sup>th</sup> May 2014

Overview list PVR main functional requirements for a TV recorder, "lite" or "superlite" and what should be incl in superlite?

NorDig PVR feature requirements	Crids	PVR		TV Recorder		All IRDs	Comments
		PVR	Lite	Lite	Super-lite		
<b>Profile – overall</b>		O	O	O	M?	O	
General EPG/ESG 8day guide		M	M	M		O?	
General Security/anti-piracy (local storage, interfaces...)		M*	M*	M*		M*	M
General Recording File System, Deletion of recordings, capacity		M	M	M		M	
Recording Automatic conflict handling		M	M	M		M	
Recording Basic requirement (30Mbps, SD/HD/radio, min length)		M	M	M		M	
Recording Programming via ESG/EPG		M	M	M		M	
Recording Manual recording		M	M	M		O	
Recording Full service recording		M	M	M		M	
Recording Accurate Recording		M	M	M		M	
Recording Back-to-back recording		M	M	M?		O	
Recording Timeshift recording		M	M	M?		O	
Recording TVA crids – basic usage (e.g. for re-scheduling)	crids	M	M	M?		O	
Recording Split Recordings	crids	M	M	M?		O	
Recording Simulcast (SD<->HD, regional versions)	crids	M	M	M?			
Recording Series recording (TVA crids)	crids	M	M	O?			
Database 91 days of recordings and previous recordings	crids	M	M	O?			
Recording <b>Simultaneous recording ("two tuners")</b>		M	O	O			
Recording Recommended events	crids	O	O	O			
Recording Alternative instance	crids	O	O	O			
Recording Recently removed recordings	crids	O	O	O			
Recording Late Recording ("continous timeshift buffer")		O	O	O			
Recording Safe margins		O	O	O			
Recording Trailer booking/Promotional Linking	crids	O	O	O			
Recording NorDig Broadcast Record Lists	crids	O	O	O			
Playback Playback – basic requirement (incl sync)		M	M	M			
Playback Playback – trick modes		M	M	M			
Playback Playback – Full service playback		M	M	M			
Playback Simultaneous recording and playback		M	M	M			

\* NorDig standard security requirements, unless relevant network/operator specifies something else for that Network



**TV Recorder: Detailed list of functions**  
**NorDig Excom meeting 20<sup>th</sup> May 2014**

Following pages incl more detailed list of PVR requirements and compare between lite or superlite TV recorder profile



**TV Recorder: Detailed list of functions (1/3)**  
**NorDig Excom meeting 20<sup>th</sup> May 2014**

	PVR	TV Recorder		All IRDs	Comment
		PVR	Lite		
14	NorDig PVR feature requirements				
14.1	Introduction - PVR	n/a	n/a	n/a	
14.2	General - PVR	M	M	M	
14.2.1	Recording File System	M	M	M	
14.2.2	Recording capacity	M	M	M	
14.2.3	Deletion of recordings	M	M	M	
14.2.4	Failed and incomplete recordings	M	M	M	
14.2.5	Save only the last number of episodes	O	O	O	
14.2.6	File system intact after update	M	M	M	
14.2.7	Limitations in local storage, interfaces, extraction and removable media for recordings (security)	M*	M*	M*	M*
14.2.8	Disk management / de-fragmentation	M	M	M	
14.2.9	Safe margins	O	O	O	
14.2.10	NorDig Record Lists functionality	O	O	O	
14.2.10.1	Recording capacity and disk management for Record Lists	O	O	O	
14.2.10.2	Broadcast Record List Entry Point	O	O	O	
14.2.10.3	Presentation of Broadcast Record Lists	O	O	O	
14.2.10.4	Broadcast Record List Subscription and Un-subscription	O	O	O	
14.2.10.5	Presentation of Future scheduled BRL Recordings	O	O	O	
14.2.10.6	Presentation of Acquired BRL Recordings	O	O	O	
14.2.10.7	Limitations for External Media	O	O	O	
14.2.10.8	Management of Embargoed Content	O	O	O	
14.2.10.9	Management of Content Expiry	O	O	O	
14.3	PVR Recording				
14.3.1	General PVR recording	M	M	M	
14.3.2	ESG/EPG recording programming	M	M	M	
14.3.3	Series recording	M	M	O	
14.3.3.1	Series, record all episodes	M	M	O	
14.3.3.2	Series, record limited number of episodes for a series	O	O	O	
14.3.3.3	Series, only one instance/copy of each episode	O	O	O	

\* NorDig standard security requirements, unless relevant network/operator specifies something else for that Network



## TV Recorder: Detailed list of functions (2/3)

NorDig Excom meeting 20<sup>th</sup> May 2014

		PVR	TV Recorder			All IRDs	Comment
			PVR	Lite	Super-lite		
14.3.4	Split recordings	M	M	M?			
14.3.5	Recommended events	O	O	O			
14.3.6	Alternative instance	O	O	O			
14.3.7	Accurate Recording	M	M	M			
14.3.8	Simultaneous recording ("view one + rec another", "two tuners")	M	O	O		Excom original mandate	
14.3.9	Full service recording	M	M	M			
14.3.10	Trailer booking/Promotional Linking (optional)	O	O	O			
14.3.10.1	General	O	O	O			
14.3.10.2	Icon activation and deactivation	O	O	O			
14.3.10.3	Default icon	O	O	O			
14.3.10.4	Image icon position	O	O	O			
14.3.10.5	Subtitling and display of image icon	O	O	O			
14.3.11	Back-to-back recording	M	M	M?			
14.3.12	Timeshift recording	M	M	M?			
14.3.13	Late Recording ("continous timeshift buffer")	O	O	O			
14.3.14	Manual recording	M	M	M			
14.3.15	One touch recording (OTR)	M	M	M?			
14.3.16	Automatic conflict handling	M	M	M			
14.3.16.1	Conflict during the time of programming a (individual, series or manual) recording	M	M	M			
14.3.16.2	Conflict occurring after the time of programming recording(s)	M	M	M			
14.3.17	Maximum length of recordings	M	M	M			
14.3.18	Recording of recently removed recordings	O	O	O			
14.3.19	Recording of parallel broadcast and simulcast (SD/HD, reg)	M	M	M?			

29



## TV Recorder: Detailed list of functions (3/3)

NorDig Excom meeting 20<sup>th</sup> May 2014

		PVR	TV Recorder			All IRDs	Comment
			Lite	Super-lite			
14.3.20	NorDig Record Lists recording functionality	O	O	O			
14.3.20.1	Management of Content Grouping	O	O	O			
14.3.20.2	Content Acquisition	O	O	O			
14.3.20.3	Recording List Hierarchies	O	O	O			
14.3.20.4	Management of Content Versioning	O	O	O			
14.3.20.5	Metadata Changes Post Broadcast	O	O	O			
14.3.20.6	Unresolvable PushDownloadPrograms	O	O	O			
14.3.20.7	Use of Program Information	O	O	O			
14.3.20.8	Recording Conflicts	O	O	O			
14.3.20.9	Broadcast Record List Removal	O	O	O			
14.3.20.10	Broadcast Record List Updates	O	O	O			
14.4	Playback						
14.4.1	General	M	M	M			
14.4.2	Replay/Playback – trick modes	M	M	M			
14.4.3	Relative Synchronisation	M	M	M			
14.4.4	Simultaneous recording and playback	M	M	M			
14.4.5	Full service playback	M	M	M			
14.4.6	Resume Playback	O	O	O			
14.4.7	NorDig Record Lists management and playback functionality	M*	M*	M*			
16.3	User Preferences, Reset to factory mode, PVR recording priority, SD vs HD: HD	O	O	O			
12 SI	TVA crids incl default authority (used for: unique id, alt instance, series, recommended, split rec, trailer...)	M	M	M or O?			
12 SI	Trailer booking (related content descr, related content table)	O	O	O			
12 SI	Broadcast Record List (metadata descr, metadata pointer descr, TVA XML model/stream for broadcast record list)	O	O	O			
13 EPG	PVR: 8day ESG/EPG (basic IRD min present/following)	M	M	M			

30