Report back from NorDig Excom
Marked as "Excom" in blue text is outcome from this Excom meeting *(decision, comments, tasks, feedback etc)*

NorDig T (Per Tullstedt) extra report back from NorDig Excom meeting, mainly NorDig T related issues, not the official NorDig Excom report *(which will come from our Excom secretary)*

Report from NorDig T to Excom

NorDig Excom Agenda 29th September 2015:
Place: Arlanda Hotel, Arlanda in Stockholm, Time: 10:00 to approx. 16:00

1. Agenda and report from previous meeting
2. Organizational matters
    Membership situation
    Finance matters
3. Report from NorDig/T
    Specification and work status
    Special issues, HEVC questionnaire
4. Report from Industry
    Report from Nordic Product Manager meeting
    Report from industry members
5. Invited presentation: DVB > IP home streaming, Erik Stare, Teracom
6. Reports from members, DVB and other organizations
7. Any other business

Overview NorDig T specification work :

- Rules of Operation
  - v2.x target: Q3 2016
    - Draft 22 presented inside NorDig T group

- Unified IRD specification
  - *v2.5.1 has been published July/Aug 2014 (v2.5 and then correction to v2.5.1)*
  - New version target "v2.6" mid/end 2016 (corrections/debugging and some new)
    - *HEVC and related other parts, waiting Excom decision before starting work inside NorDig T*

- Test Plan
  - Test Plan v2.5.0 published (28 Jan 2016)
  - Addendum to Test Plan v2.5.0 for HbbTV (NorDig Hybrids) planned for Q1.2016 (originally Nov/Dec 2015)

- HbbTV
  - Maintenance of NorDig's HbbTV test cases (NorDig contribution to HbbTV organization for HbbTV test specs, Sofia Digital consulting for maintaining/updating our NorDig HbbTV test cases).

- Website and admin
  - Work with new structure *(work not yet started)*
    - Alt: Continue hosted by Labwise or use external host (WorldPress CMS, Content Management System)
  - Templates, meeting calendar, mail reflector etc *(ongoing and preparing)*

Overview

NorDig T – *active*

NorDig T subgroups – status

- HEVC/Video – *active* (questionnaire HEVC interest/need, prepare CR for HEVC IRDs)

- Audio – *active* (audio related for IRD, Test Plan and RoO. Working together w Accessiblity group)

- Test – *active* (Test Plan)

- RoO – *active* (RoO spec)

- Accessibility – *active* (accessibility related for IRD, Test Plan and RoO)

- API/PVR – *active* (HbbTV testing, API+PVR related for IRD, Test Plan and RoO)

- *EPG/Event metadata – active* (common NorDig format for exchange EPG metadata for broadcast and OTT)

- *SSU – planned to restart Q1.2016 (add sending notifications to IRDs with very large SW size)*

- CA/CI+/Sec – *dormant* (CI+ v1.4/v2.x…)

Organisation and status

NorDig T – *Per Tullstedt, Teracom*

NorDig T subgroups – status

- HEVC/Video – *"no" chair (Per Tullstedt)*

- Audio – *Johan Lindroos, SVT,*

- Test – *Pasi Toiva, Labwise,*

- RoO – *Des Mac Giolla an Chloig, RTÉNL,*

- Accessibility – *Kjell Norberg, NRK,*

- PVR/API – *Erik Vold, NRK,*

- EPG/Event metadata – *Peter Mølsted (consultant NorDig tech secretary),*

- SSU – *Per Tullstedt, Teracom*

- CA/CI+/Sec – *dormant (CI+ v1.3, CI+ v1.4)*

NorDig T (main group) meeting calendar 2016:

- 2nd February 2016, webinar, 10:00-15:00 CET

  Informative: NorDig Excom 18 Feb

- 15th March 2016, physical Oslo NRK , 10:00-16:00 CET

  Informative: NAB 16-21 April

- 26th April 2016, webinar, 10:00-15:00 CET

- 14th June 2016, webinar, 10:00-12:00 CET

- 25th August 2016, webinar, 10:00-14:00 CET

  Informative: IBC 8-12 Sep

- 16th Sep 2016, webinar, 10:00-15:00 CET

  Informative: NorDig Excom ~~29 Sep~~ postponed to 13 Oct

- 18th October 2016, physical TBD, 10:00-16:00 CET

- 8th December 2016, webinar, 10:00-12:00 CET

NorDig T, proposed consultancy and costs 2016 – input to budget:

- **Technical secretary** – *Peter Mølsted, shared w Labwise 350kSEK/~38kEUR*

  Updated workplan 2016 (from 2015), continue work as 2015 with following update of mission:

  (a) Maintaining and running the NorDig.org web site

  > *- Remake of NorDig Website, design+impl new structure, e-mail reflector, member groups, calendar, templates for NorDig T, contact with external companies for hosting and impl.*

  (b) Acting as the main editor for the NorDig Specifications, initially mainly referring to Unified IRD and companion Rules of Operation (RoO)

  (c) Maintaining and release management of the NorDig Specifications (Unified IRD and RoO specifications).

  > *- RoO, common NorDig EPG metadata interchange format, API help w mix broadcast & OTT, support Test group.*

  (d) Support and compile result from NorDig/T investigations and questionnaires among NorDig members and others.

  (e) Participation to the NorDig/T and relevant sub-group meetings

- **Editor & Test Plan** – *Labwise (Pasi Toiva), shared w Peter M 350kSEK/~38kEUR*

  – Test group, test plan, editor etc

- **HbbTV test cases**, maintenance – *SofiaDigital,* 70kSEK/~7kEUR

  – Continue update & correction of our NorDig created HbbTV test cases

- **Website upgrade** (according to 2015 proposal)

  – Alt 1: hosted by Labwise (as today)

  – Alt 2: hosted by external professional CMS: *WorldPress* 50kSEK/~5kEUR and then yearly costs of 280EUR/year (porting and basic setup by ST Digital 3.35kEUR, WorldPress CMS hosting 2016: 0.28 kEUR/year, any other related 1.5kEUR, text content and daily updates included in Peter Mølsted assignment/costs above for 2016)

- ***Excom - OK***

NorDig T, technical consultancy 2016 (Peter M, Pasi T/Labwise, Juha/Sofia/Digital):

NorDig T owner/contact Per Tullstedt (Erik Vold for HbbTV test cases)

- Specification editor: IRD spec, RoO spec etc (Peter M)
- EPG metadata (Peter M)
- API help w mix broadcast & OTT (Peter M)
- Test plan (Pasi T)
- Test plan HbbTV addendum (Pasi T, inputs from API group/Juha)
- HbbTV Test case maintenance (update and corrections) (Juha)
- Test group admin (Pasi T, some support from Peter M, meetings and contact w industry)
- Admin (Peter M)
  - Templates & guidelines for writing (word doc for minutes, reports, specs…) (Peter M)
  - Mail reflectors and mail contact list for NorDig T and subgroups (Peter M)
  - Calender (Peter M)
  - Techn secretary (Peter M)
  - Mail response (Pasi T, Per T, Peter M, chairmen…)
- Website (Peter M supported by Pasi T)
  - Website: Labwise or WorldPress > decided for WorldPress (Peter M)
  - Pasi package all current files, put on "Dropbox", input to new website (Pasi T)
  - "Porting" from current website to new design (documents/files, text) (Peter M)
  - Redesign incl file sharing, mail reflector, mailing list (Peter M)
  - Regular "daily" update (Peter M)

Excom - OK

NorDig T mandates:

- Mandates established for 2015-2016 (Excom approved Jan 2015)
  - See Annex for details
- Minor updates related to API (Excom approved Sep 2015)
  - Removal of tasks regarding
    - Portable devices and
    - Guidelines on Operators and broadcasters use of HbbTV
- HEVC monitoring status & separate slides (questionnaire)
  - waiting Excom decision
- Status today – no proposal from NorDig T for changing mandates that is waiting on Excom decision.

Excom – OK (no change of mandates)

Rules of Operation – status report

- v2.x target: Q2/Q3 2016
- New draft (#22) presented inside NorDig T 27 Jan 2016, to all broadcasters/operators
  - "60%" ready
  - Audio and video part some remaining parts
  - Asking all for comments/inputs to this draft
  - Re-broadcast in cable networks of DTT and DTH signal, might be something for future RoO

Excom - OK

Test Plan

- Test Plan v2.5.0 published (28 Jan 2016)

- Test Plan v2.5.0 addendum - NorDig HbbTV test requirement,
  - still drafting, coming soon (originally plan Nov/Dec 2015) .
  - Proposal: approval by Excom via e-mail (Feb/March), otherwise next Excom (Sep'16)

- After Test Plan v2.5.0 - debugging/corrections, make tests more efficient to test etc, review audio test cases ("no" new missing test cases planned for IRD spec v2.5.1).

- Future, goal is to publish IRD and Test specs at the same time or at least Test Plan short after new IRD spec.

Excom – OK, Excom can approve Test Plan addendum for HbbTV via e-mail, if final draft ready during spring 2016 (otherwise Excom September meeting)

Note: NorDig HbbTV test requirements intended to describe that HbbTV testing based on HbbTV organisation test suits, describe which tests are mandatory, describe NorDig specific test cases are mandatory and maybe incl 1-2 NorDig classical test cases. Similar as already described in IRD spec but more detailed.
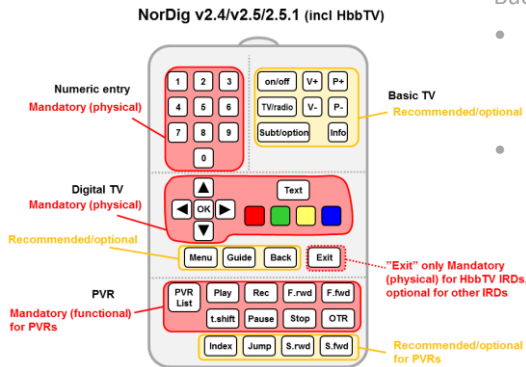
Accessibility status report

- Remote Control (RC)
  - Review/update old text (see separate slide)
  - Checked with all NorDig T members if OK to change from mandating RC keys to instead mandate functions, a basic proposal for an updated chapter has been sent out 18 Dec:
    - No disagreement for changing to functions (responses from RTENL, LG, Sony, TP/Vision, Samsung and Teracom).
    - Some comments related to mandatory functions.
    - E.g. Color keys (basic IRD used for Teletext) change from mandatory to optional?
    - Separate IRD between STB and iDTV.
  - Excom view? OK to continue draft from key to functions?
  - RC for accessibility settings (if possible collect all accessibility settings: HoH subtitling, AD audio etc)

Excom – OK to continue drafting

Background

- Review Remote Control (very old text 1997/1998, some text unclear, update recommended):
  - Accessibility, to make it easier for these viewer to access these settings.
  - Requirements today for physical keys (arrows, numeric, OK etc...).
- NorDig Excom 26 May 2015: Needs more inputs from members and investigation

NorDig v2.4/v2.5/2.5.1 (incl HbbTV)

Numeric entry
Mandatory (physical)

Basic TV
Recommended/optional

Digital TV
Mandatory (physical)

Recommended/optional

"Exit" only Mandatory (physical) for HbbTV IRDs, optional for other IRDs

PVR
Mandatory (functional) for PVRs

Recommended/optional for PVRs

VOICE CONTROL   MOTION CONTROL

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HbbTV and PVR - status report

- HbbTV 2.0 NorDig survey
  - Prepare a survey to get NorDig members interest & need for HbbTV 2.0 features
- HbbTV test cases
  - Maintenance now ongoing
- RoO input related to HbbTV made
- Test Plan addendum - HbbTV test cases
- PVR Lite / TV Recorder – no input proposal from industry, closed (OK?)
- *Helping accessibility group with Remote Control (related to HbbTV and PVR)*

Excom – OK

NorDig Unified IRD spec

- No major updates or new requirement foreseen, **proposal v2.6 mid 2016**

- Maintain and update current requirements for NorDig (22 items on bugzilla list).

- *Codecs (separate issue: MPEG-H HEVC video, MPEG-H audio, Dolby AC4 etc)* - **questionnaire**

- Update guidelines wordings in GUI and translations (mainly related Accessibility and Audio)

- Review and improve IRD's auto update for network changes

- FE (DVB-T/-T2) review if 800MHz scanning can be removed (NRK) and add optional requirements for 700MHz LTE immunity (hopefully via reference to ITU/ETSI) **- started**

- IPTV – ComHem launching IPTV and has some interest to updated current IPTV IRD requirement.

- IRD surveillance (like using TR069), some interest to investigate this more.

- SSU, add alternative for broadcasting SSU notification in accordance with new DVB SSU spec 2015 for IRDs with very large file size – **(DTG D-book v8 has incl this)**

- Recommendation Remote Control related to accessibility settings, check if possible to get a RC key for changing Accessibility setting or modify current requirements and recommendations. (Ensure RC can be via Smartphones etc) **- started**

- HbbTV – investigate and prepare update IRD spec for latest HbbTV v1.5 (i.e. latest errata) **- started**

- TV recorder – closed. No need to define TV Recorder (PVR lite) unless someone volunteer to come with a more concrete text proposal – (Vestel and Samsung interested – no input/proposals – **closed (OK?)**

- Mix of broadcast and OTT (ideal/intension one common channel list of broadcast and broadband/OTT services for hybrid receivers, viewers should ideal not notice zapping diff between zapping among broadcast or OTT services)

Excom – OK

Informative:

- Teracom has 13 May 2015 presented inside NorDig T first draft proposal for DTT IRD requirements for immunity against 700MHz LTE interference signals, based on extending existing 800MHz LTE immunity requirements.
- Requirements are "sanity check" level to stop poor IRD impl, requirements reasonable easy to pass
- 18 ~~Jan~~ Feb 2016 status: Teracom has now got approval to use same reference test signal as ETSI spec (EU RED directive) from "owner" and Teracom will now, spring 2016, propose details requirements for IRD and Test Plan (for next releases och specs)
- Industry (some TV manufacture) asking NorDig to remove requirement, since (almost) covered by the mandatory EU RED / ETSI specification. (ETSI requirements are lower than NorDig, but new updated ETSI will incl new requirements not (yet) incl I NorDig.
- Discussion ongoing in NorDig T

	NorDig	ETSI
Sensitivity	X	X
Adjacent ch	X (whole freq)	X
Receiver Blocking		X (coming)
Overloading		X (coming)
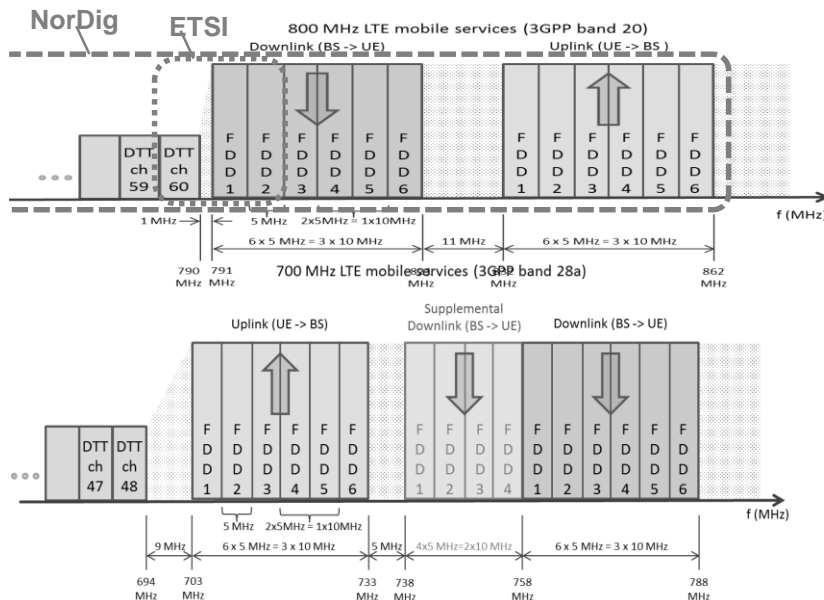
- New EU Radio Equipment Directive 2014/53/EU (RED) states: "*Radio equipment shall be so constructed that it both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference*".
- ETSI has drafted a harmonised standard that incl IRD requirements, test cases and test signals to be used (partly based on NorDig).
- ETSI requirement only for first adjacent channel interference and closest LTE FDD (2x)block
- ETSI level quite low (but higher than current NorDig)

Teracom proposal:
- Keep NorDig 800MHz LTE requirements + add 700MHz
- Keep requirements for the IRD's whole freq range and for all LTE blocks (both 700 and 800MHz)
- First align (raise) levels to ETSI now and from 2017/2018 raise again resulting in slightly stricter than ETSI.
- Test cases and test signal still under preparation

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- DVB standardise CI+ v1.4 (PCMCIA), Sep 2013 *(cook book for "all" possible solutions)*
  - More than 1 input: watch & record
  - Input: DVB + IP/OTT, Output: to decoder + to IP/LAN streaming
  - I/O: still PCMCIA

- DVB standardise CI+ v2.x (USB)
  - still drafting

- CI+ LLP organization *(approve impl, CI+ logo, certificate, providing cert)*
  - New CI+ v1.4 "implementation requirements", minimum (8 dec 2015)
  - Latest from 1 July 2017 all IRDs with CI has to support CI+LLP's minimum CI+ v1.4 impl requirements.
  - IRD (TV manufactures); still investigating, no comments yet
  - IRD (TV manufactures); no comments/protest (yet) if NorDig would follow CI+ LLP ("it would be redundant if NorDig would

Excom – check espec with PayTV operator members, but OK to draft CI+ v1.4 with same dates for mandatory as CI+ LLP

Extract from Jon Piesing (TP Vision) presentation DVB TM-MIS:

- TV/broadcast (chain) has normally very high trust at viewers
- Several demos on attacks at TV broadcast
  - In the demos, the hacker delivered an exploit for an opens source library (ffmpeg) used by a particular IRD. This gave the hacker "root" access on successfully attacked devices. This is more serious than just delivering a different image or different HbbTV website.
  - Today not very difficult to make modifications to original broadcast signal, e.g. HbbTV signaling/autostart interactive apps (*e.g. simple demod+mod for a couple of 100EURs, using Raspberry Pi or similar to mod MPEG stream before re-transmit*).
- DVB has id & work on protecting IRDs against Attacks on broadcast signal
  - DVB & HbbTV has defined requirements for interactive services (espec hyperlinks)
  - DVB working on the solution for this

Examples on cases manipulating broadcast signals
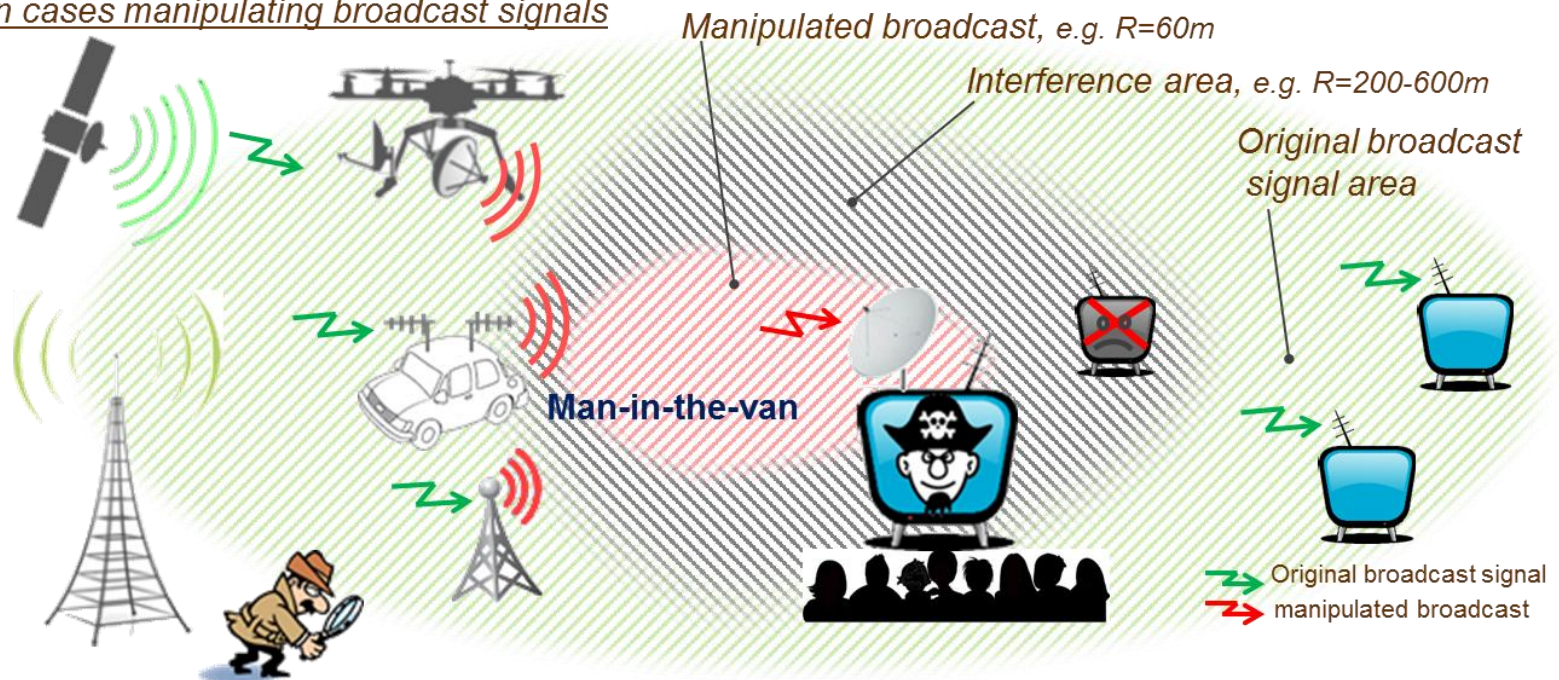
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Extract from Jon Piesing (TP Vision) presentation DVB TM-MIS:

- DVB has id & work on protecting IRDs against Attacks on broadcast signal:
  - Made estimate of how many people might be effected.
    - Example: London (5900 people/km^2), man-in-the-van attack, 60m attack radius (i.e. 29 households), statistic that TV is on, tuned to attacked service/channel, HbbTV/MHP IRD etc, 10s attacks/every 30s at 4.5h/day -> ~14 victims/households
  - DVB draft proposal (first step incl interactive apps/MPEG sections)
    - Add authentication message in broadcast that incl hash of AIT &/or sections + Signature to validate hash values (same or separate PID)
    - IRDs cache and match hash with AIT &/or section data
    - How to establish trust (which certificates to trust), DVB still working on this
      - E.g. broadcaster(s) issue certificates and IRD trust over time
      - E.g. platform/network operator are trusted and issue certificates for broadcasters
  - DVB solution more a insurance policy, impl will have some cost
  - DVB will not test, up to HbbTV, NorDig, DTG and others

Excom – keep monitoring if applicable for incl in NorDig specs

*More info: DVB document CM-SEG2116: MITM-Security-Threat-Study-V1.0 (also known as CM1629 and SB2338)*

Man-in-the-van

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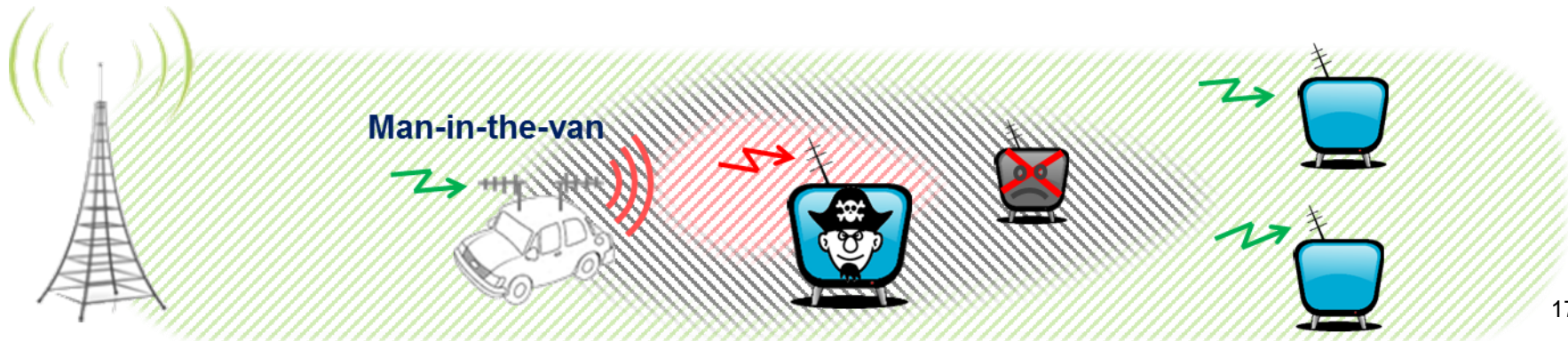
- **NorDig SSU** today requires support for broadcast SSU ("over-the-air" download).
- SSU SW/image size has grown, some TV sets today around 1 GB size, too much normally for using broadcast for download.
- DVB updated SSU spec (after inputs from DTG and NorDig) to enable sending info/notification over broadcast that new SW is available (too reach all IRDs also connectable IRDs that for some reasons are not connected, >50%) but actual SSU download via broadband/Internet.
- DTG plans now (spring 2016) change requirements to:
  - SSU OTA download &/or
  - *(new)* SSU OTA notification (option for IRDs with SSU file/image size >100MB)
- Some TV manufactures ask for removing "OTA" requirement as only option (incl any coming OTA notification) and ask for allowing using only "over-the-Internet". download. (SSU OTA download for TV set very seldom used, but is as a insurance for the broadcaster/operators to reach all IRDs of a certain model for important update).
- Proposal NorDig (Excom to decide):
  - Add alternative SSU "OTA" notification (similar as coming DTG)
  - Keep SSU "OTA" as mandatory but allow complete OTA download and/or just OTA notification for IRDs with SSU file size >100MB (or even for all Internet connectable IRDs)?

Excom – OK to draft SSU notification as additional alternative. NorDig T to propose for which IRD models this is acceptable for.

Broadcast

1. SSU ~1GB ☹

2. Notification SSU ☺

Broadband

Internet

2. SSU ~1GB ☺
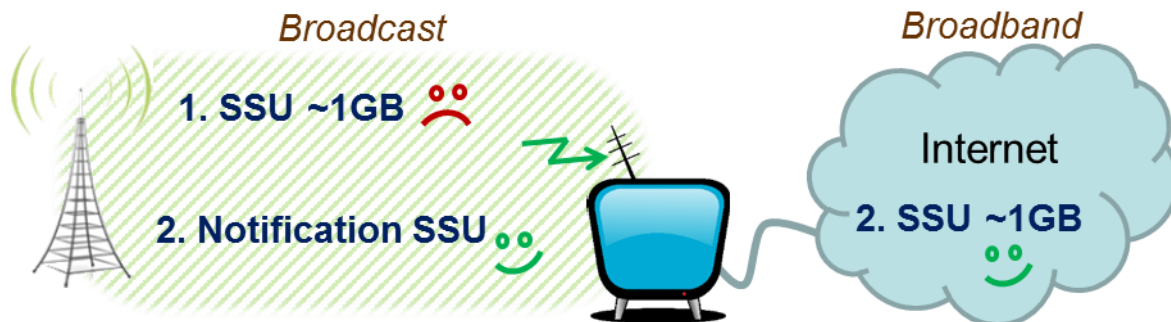
SSU: System Software Update, DVB standard for updating/upgrading IRDs.
OTA: Over The Air, here refer to sending SSU over the broadcast channel (satellite, terrestrial, cable, IPTV)

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Common EPG/Event interchange delivery file format

- Started (4 meetings so far)

- subgroup inside NorDig T, chaired by Peter Molsted (supported by the API subgroup)

- Big interest so far work, invited/participants also external (Nordic and Irish) broadcasters and operators (Viasat, Telia, SBS, TV4, June etc).

- Study current used formats (no intension to re-invent the wheel if not needed) study to see if any current format can meet our NorDig requirements/need (e.g. Swedish 'Public Schedule' format seems reasonable frequent used). NorDig format could be (still very early):

  - based an existing file (XML) format with some updates, push/pull between studio and network operator/platform or

  - API (more adv solution)

- Some interest around unique program ids.

- Some interest also for Shared metadata/EPG repository: Shared metadata repository to which everyone could send their data and from which it can be made available to third parties, only Nordig members or all globally.

Excom – OK (no comments)

Harmonise NorDig Unified IRD spec and DTG D-book spec

- DTG (CTO Simon Gauntlett) shown interest to harmonise with NorDig. Propose regular meetings to identify and share information/work.
- One meeting so far (startup), chairmen NorDig T & subgroups
- Both NorDig and DTG will benefit corporation, examples from past
  - DTG > NorDig: PVR, SSU
  - NorDig > DTG: FrontEnd
  - Simultaneous: MPEG4, SSU
- DTG (due to their financial model) can only share chapter-by-chapter (after DTG board approval)

- Proposal is to continue
  - General – on regular basis (e.g. 2-3 times/y), chairmen NorDig T
  - Specific topic/case – directly contact with NorDig subgroup(s)

Excom – OK to continue

NorDig website update and mail reflectors (inputs from Peter Molsted)

- As presented to Excom 26 May 2015 and accepted by Excom to modernize the NorDig website.
  (see Annex slides of plan for new structure for website from May 2015)

- Status: "not started"
- Delayed due to Labwise's subcontractor (Peter M was ready to start from April/May 2015)

- Originally plan: NorDig website hosted by Labwise
- Alternative: use web hotel/external CMS, WorldPress (approx 3350 EUR one time + 280EUR/y + Peter's time). Estimate 3-4w (2w for port + 1-2w new)

Excom – OK (OK for both alternative: original plan or external CMS host, TBD by NorDig T/"webmaster")

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 *(blue copy)*	Digita
Germany DTT (Media broadcast/TDF)	Based on/reference to NorDig IRD
Georgia DTT	Based on/reference to NorDig IRD (v2.2)

HEVC and TV format: investigation and commercial requirements

- Questionnaire among NorDig members and observers (manufactures etc)
  - *Intention as input to NorDig's Commercial Requirements for HEVC IRDs*
  - Done, 18 (17) replies (see separate slides summary and in annex full report)
  - **Interest for HEVC, interest for phase2, interest to combine HEVC with other thing at the same time.**

  Comments so far inside subgroup:
  - (SVT etc) DVB much still remains for phase 2, difficult for NorDig to start drafting (espec video details)
  - General similar view, but (DR) there are some differences in view/interest for HEVC inside NorDig

- Basic frame for Commercial Requirement for NorDig HEVC IRDs (not started)
  - Video: TV format, Video codecs,
  - Other related: Audio codecs, HDMI, FE, security (HDCP), PSI/SI signaling, CA/DRM, FE

- DVB (and MPEG) still working UHD phase 2 (HDR, higher frame rate, "better pixels"…)
  - DVB/MPEG has still multiple proposals for HDR&WGC (Philips, Technicolor(Thomson), BBC, Dolby…)
  - Scare scenario: DVB specifies multiple toolbox and let NorDig, DTG… select which that shall be used for each markets.

- Future work inside NorDig
  - NorDig T expects quite long time to draft NorDig HEVC IRD profile, ~12 months (if nothing is prepared inside NorDig before DVB finalise specs for phase 2).
  - Some work could probably be started now in NorDig (CR, phase 2 and/or 1, identifications of which part of spec need update for NorDig HEVC IRD profile)
  - Some work difficult to start before DVB finalise (phase 2) (video, audio and codec details)
  - Excom view? Wait w all work, discuss profiles (phase1 &/or 2), prepare CR….

- ***Excom – NorDig T prepare HEVC related that is not depending on DVB finalizing UHD/HEVC phase 2 specs, like NorDig HEVC IRD commercial requirements, id what part of IRD spec needs to be modified for a HEVC IRD profile (subtitling, SI etc) e, but wait with video and audio details.*** 23
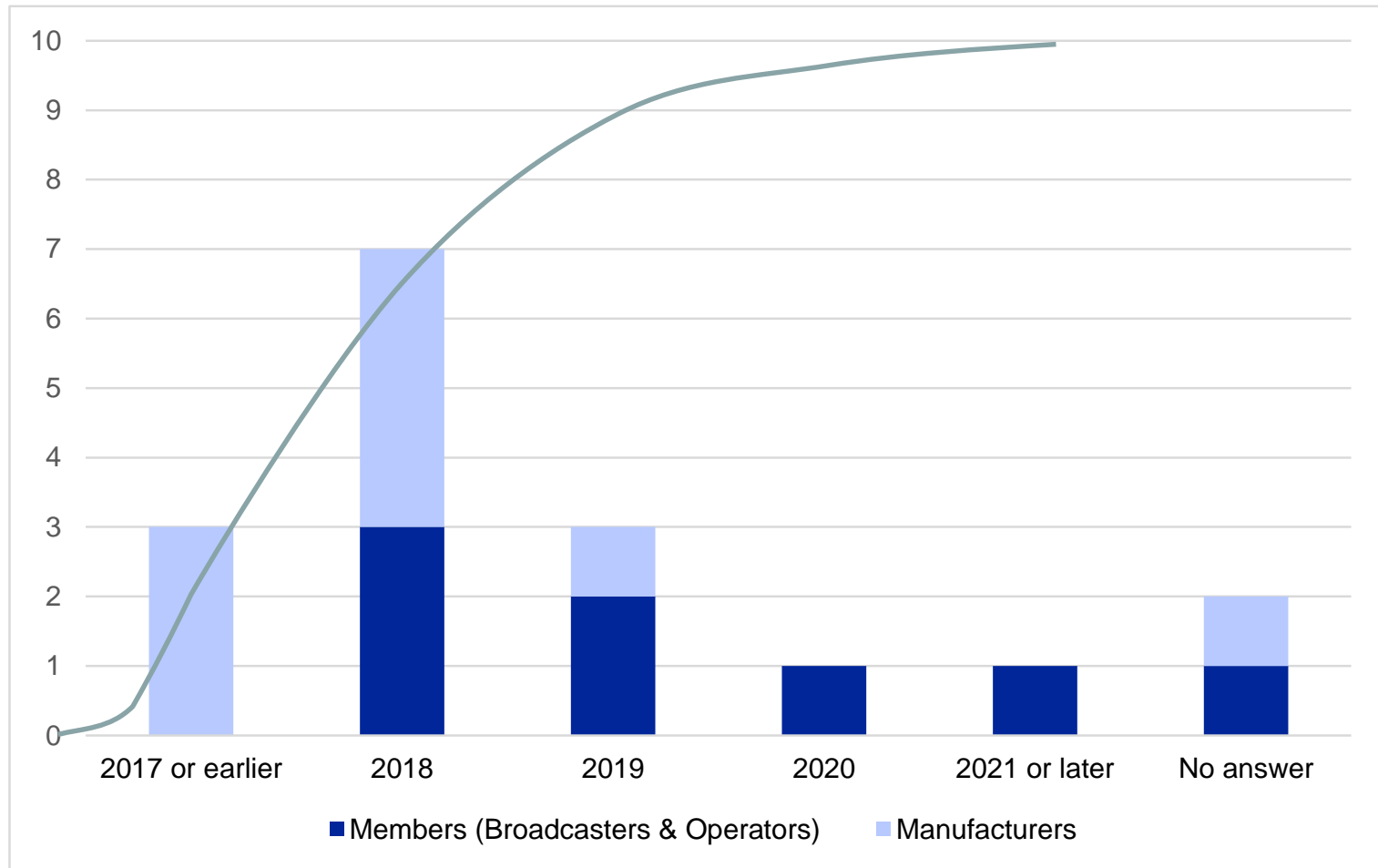
NorDig HEVC Questionnaire – summary (full result at the end of the presentation, annex)

Timing – Regardless the motive you see for an introduction of HEVC based services in your market, when do you feel the need to have NorDig HEVC IRDs available?
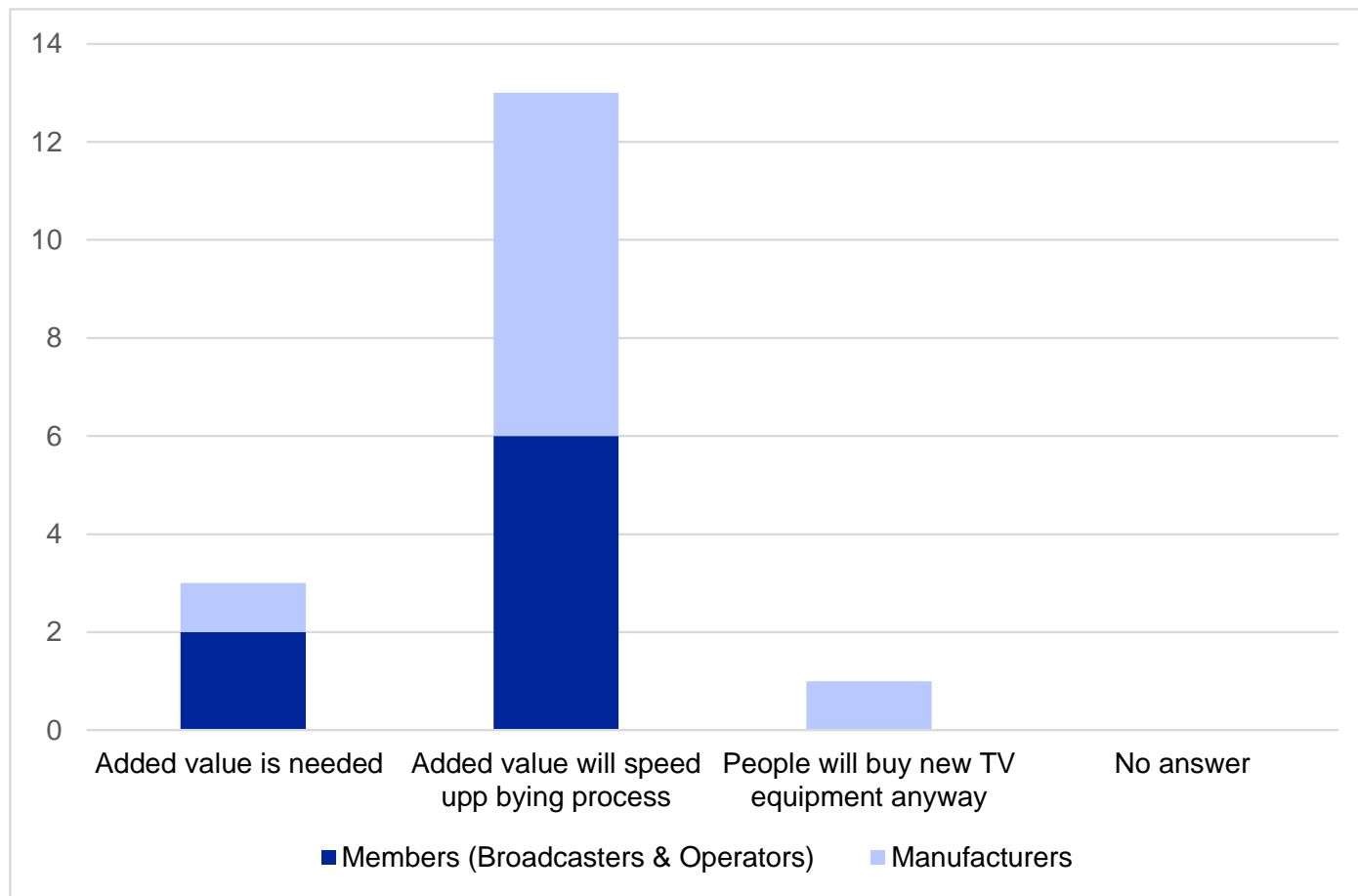

Legend: ■ Members (Broadcasters & Operators) ■ Manufacturers

NorDig HEVC Questionnaire – summary (full result at the end of the presentation, annex)

Viewer perspective – Is it possible to convince the viewers to invest in new HEVC capable receiver equipment without offering them some added value compared to existing TV services?

Legend: ■ Members (Broadcasters & Operators) ■ Manufacturers

Categories: Added value is needed | Added value will speed upp bying process | People will buy new TV equipment anyway | No answer
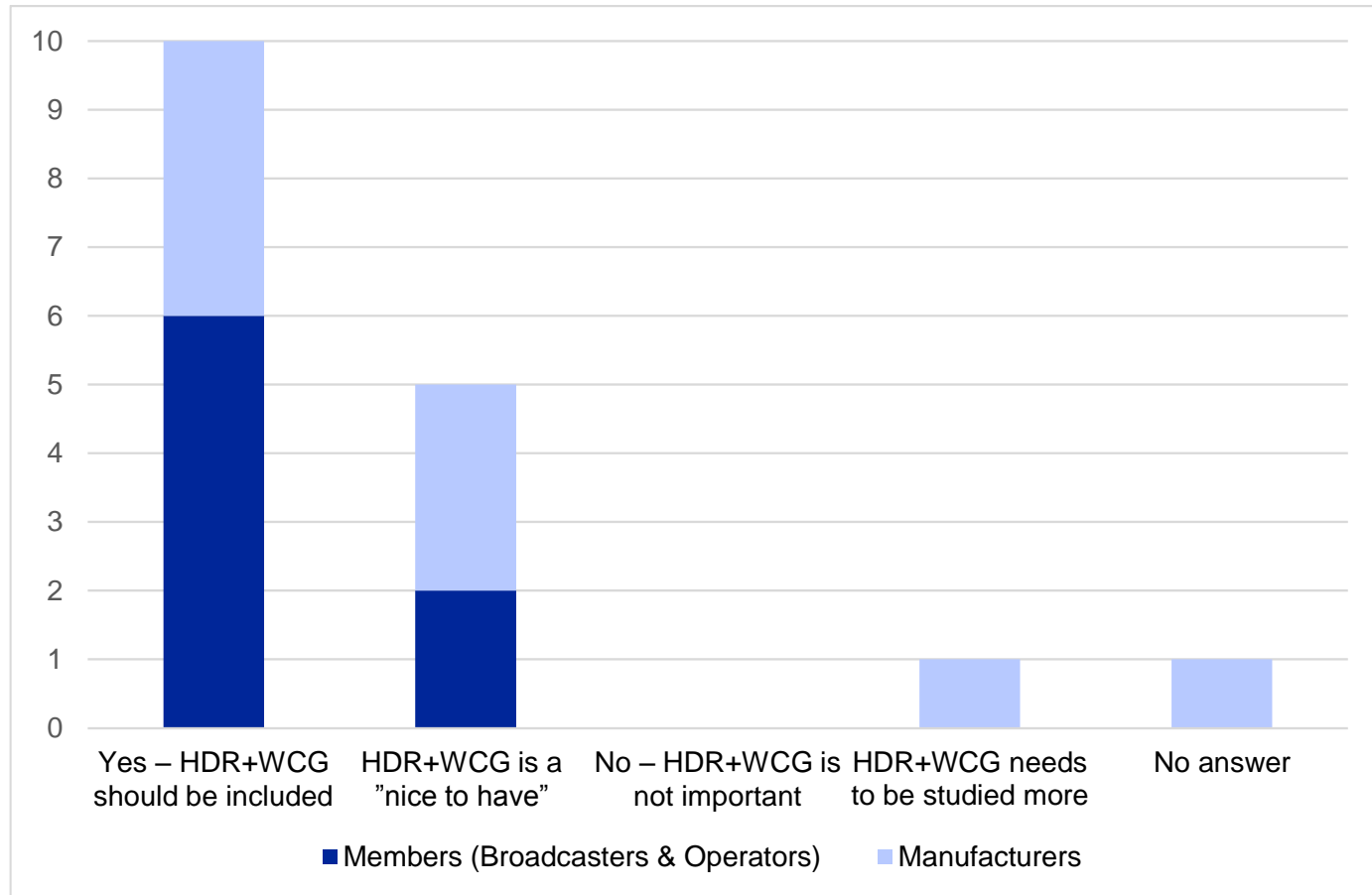
NorDig HEVC Questionnaire – summary (full result at the end of the presentation, annex)

High Dynamic Range (HDR) plus Wide Color Gamut (WCG) – Is it important to include High Dynamic Range accompanied by Wide Color Gamut in the NorDig HEVC IRD capabilities?

HDR+WCG
- new TV format
with
"better" pixels

Utilising High Dynamic Range video with Wide Colour Gamut would mean introducing an new TV format focused on delivering "better" pixels rather than just more pixels.
Tests has shown HDR+WGC is perceived as bigger improvement than just more pixels (4k)

Chart categories (x-axis):
- Yes – HDR+WCG should be included
- HDR+WCG is a "nice to have"
- No – HDR+WCG is not important
- HDR+WCG needs to be studied more
- No answer

Legend: ■ Members (Broadcasters & Operators) ■ Manufacturers

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END presentation
NorDig-T report

After here some detailed informative slides

ANNEX

- HEVC questionnaire (Feb 2016)
- NorDig T mandates 2015-2016 (Jan 2015)
- Website remake (May 2015)