NorDig T report back from Excom

NorDig Excom meeting 10th October 2019 Stockholm, Sweden

Early/preliminary 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)

NorDig ExCom agenda 10th October 2019:
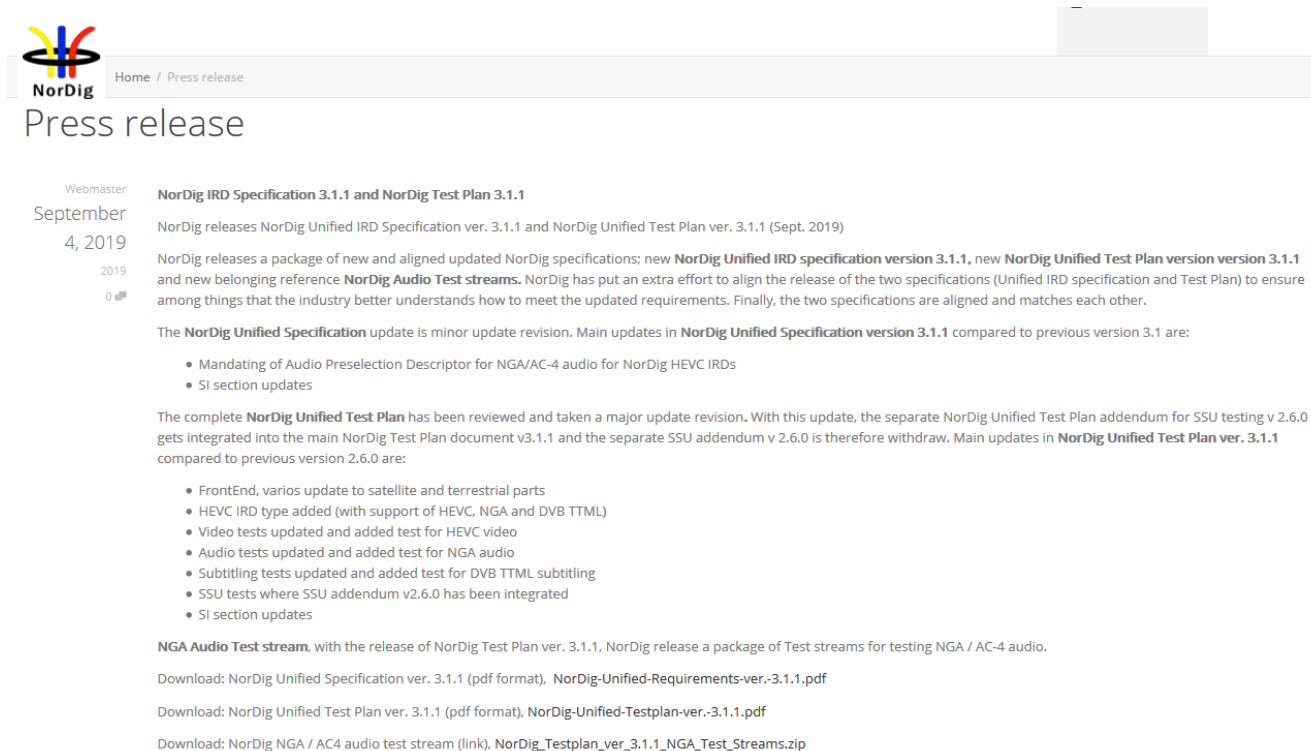*Place: Clarion hotel, Arlanda in Stockholm*

1. Agenda and report from previous meeting
2. Organizational matters
  2.1. Membership situation
  2.2. Finance matters
  2.3. Organizational matters

3. Report from NorDig/T (Per T/NorDig T)
  3.1. NorDig/T status & planning
  3.2. dynamic metadata HDR updated status report

4. Report from Industry
5. Reports from members, DVB and other
  5.1 dHDR update, interest from broadcasters (Olli S/NorDig Excom)
6. Any other business
7. Date and place for the meetings in 2019, next 7th Oct 2019

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Overview NorDig T specification work :

- Rules of Operation
    - Latest published: RoO v2.5 (published October 2016)
    - Update of RoO to v3.1, focus for 2019 but first TestPlan v3.1. Excom (Oct 2018) asked for changing layout to same as IRD spec, most important content for RoO shall be items necessary to avoid misbehavior in IRDs.
        - Work now started

- Unified IRD specification
    - Latest published: IRD spec v3.1.1 (published September 2019)
        - Minor update

- Test Plan
    - Latest: Test Plan v3.1.1 (published September 2019, incl Test addendum for SSU)
        - Huge work, 28 meetings and MAJOR review most of the test cases
    - NorDig Test streams, 12 streams for testing NGA/AC-4 + old LTE interference stream, to be used together with new Test Plan v3.1.1

- Video – potential HEVC extension: dynamic HDR
    - investigating report to Excom - see separate slides

- EPG/EIT exchange file format
    - Workshop May 2019 and plan new Nov 2019.

- Website and admin

NorDig IRD, Test Plan and Test streams v3.1.1 work:

- Drafting work was originally expected to take 2 month from Excom meeting in March and be released before summer break.

- Work was significant bigger than expected (for example Test group had 28 meetings since Aug 2018 to June 2019) and group thought is was better to finalise all items instead to rest point list for future revisions

- Final version was sent to Excom for silent approval 15July to 25Aug, published **4 Sep 2019**
    - IRD spec ~235pages, Test Plan ~580pages

- Excom: many thanks to all who contributed into all this work!

Home / Press release

Press release

Webmaster
September
4, 2019
2019
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NorDig IRD Specification 3.1.1 and NorDig Test Plan 3.1.1

NorDig releases NorDig Unified IRD Specification ver. 3.1.1 and NorDig Unified Test Plan ver. 3.1.1 (Sept. 2019)

NorDig releases a package of new and aligned updated NorDig specifications; new **NorDig Unified IRD specification version 3.1.1**, new **NorDig Unified Test Plan version version 3.1.1** and new belonging reference **NorDig Audio Test streams**. NorDig has put an extra effort to align the release of the two specifications (Unified IRD specification and Test Plan) to ensure among things that the industry better understands how to meet the updated requirements. Finally, the two specifications are aligned and matches each other.

The **NorDig Unified Specification** update is minor update revision. Main updates in **NorDig Unified Specification version 3.1.1** compared to previous version 3.1 are:

- Mandating of Audio Preselection Descriptor for NGA/AC-4 audio for NorDig HEVC IRDs
- SI section updates

The complete **NorDig Unified Test Plan** has been reviewed and taken a major update revision. With this update, the separate NorDig Unified Test Plan addendum for SSU testing v 2.6.0 gets integrated into the main NorDig Test Plan document v3.1.1 and the separate SSU addendum v 2.6.0 is therefore withdraw. Main updates in **NorDig Unified Test Plan ver. 3.1.1** compared to previous version 2.6.0 are:

- FrontEnd, varios update to satellite and terrestrial parts
- HEVC IRD type added (with support of HEVC, NGA and DVB TTML)
- Video tests updated and added test for HEVC video
- Audio tests updated and added test for NGA audio
- Subtitling tests updated and added test for DVB TTML subtitling
- SSU tests where SSU addendum v2.6.0 has been integrated
- SI section updates

NGA Audio Test stream, with the release of NorDig Test Plan ver. 3.1.1, NorDig release a package of Test streams for testing NGA / AC-4 audio.

Download: NorDig Unified Specification ver. 3.1.1 (pdf format), NorDig-Unified-Requirements-ver.-3.1.1.pdf

Download: NorDig Unified Test Plan ver. 3.1.1 (pdf format), NorDig-Unified-Testplan-ver.-3.1.1.pdf

Download: NorDig NGA / AC4 audio test stream (link), NorDig_Testplan_ver_3.1.1_NGA_Test_Streams.zip

The new NorDigT RoO subgroup have now started up

Members of RoO Group: David Woolgar TP Vision, Kari Eriksson Sony, Richard Moreton Samsung, Andrew Lipscombe Samsung, Johan Lindross SVT, Jonas Roden Dolby, Per Tullstedt Teracom, Juha Joki SofiaDigital and Peter Mølsted Chairman (deputy for Des Mac Giolla an Chloig). *(Des Mac Giolla an Chloig, chair, fully occupied with regular work 2019, update of DTT during clearance 700MHz band)*

**Startup meeting have been held Friday 4 October.**

The new RoO specification from ver. 2.5 to ver. 3.1.1 will be a major update to be in line with IRD spec. v. 3.1.1. (4x IRD spec. versions)

- Work on simplify the specification format and make it more in line with the IRD spec. design

- Workplan for updating the different sections in the RoO spec.

- The group recommends that more representatives from distributors/network operators and broadcasters to join the group so that group can ensure that RoO meet their needs as the users of RoO!

Question to Excom from the working group:

- Are there things in the current RoO specification that we can omit in the new version (e.g. the PVR section)?

Excom: no feedbacks on current RoO (waiting proposal from NorDig T/RoO)
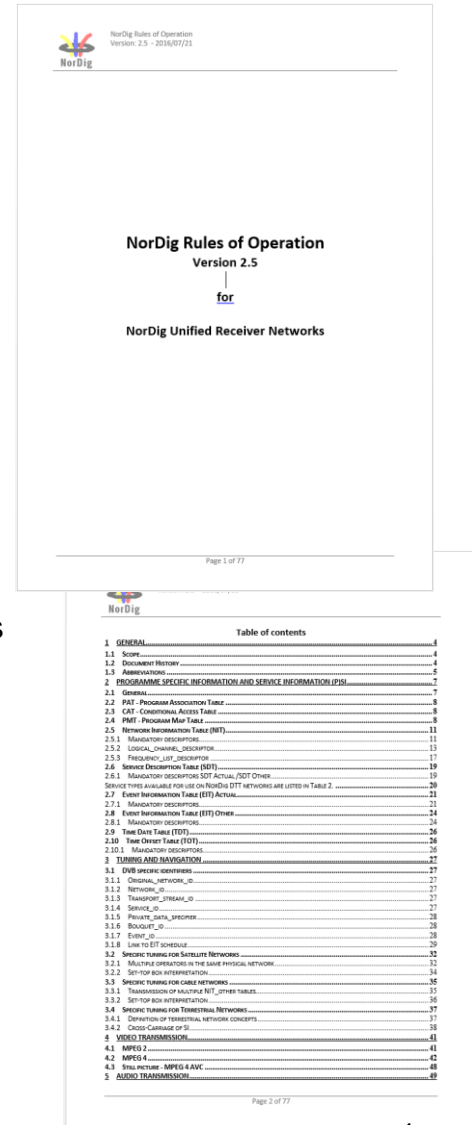
Overview - informative

group – status - chairman

NorDig T – *active* – *Per Tullstedt, Teracom*

NorDig T subgroups – status

- Audio – *active* – *Johan Lindroos, SVT*

- Test – *active* – (*Pasi Toiva, Labwise*) *Per T and Peter M has co-chaired in absence of Pasi during autumn 2018 - 2019*

- RoO – *Des Mac Giolla an Chloig, RTÉNL and Peter Mølsted consultant (NorDig tech secretary)*

- Accessibility – *active* – *Kjell Norberg, NRK*

- API/PVR – *active* – *Erik Vold, NRK*

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

- *SSU – within NorDig T*

- *CA/CI+/Sec – within NorDig T*

- *Video – within NorDig T (been active for v3.1.1 now dormant)*

NorDig T (main group) meeting calendar 2019:

meetings 2019 are booked as shorter (typically 2-3h/meeting) compared to 2018 (5-6h/meeting)

- NorDig T, #1, Thu 31st January 2019, webinar, 10:00-12:30 CET
- NorDig T, #2, Tue 26th February 2019, webinar, 10:00-14:00 CET
  - *Informative: Excom 7th March*
- NorDig T, #3, Tue 2nd April 2019, webinar, 10:00-12:30 CET
- NorDig T, #4, Tue 14th May 2019, TBD physical/webinar, 10:00-15:00 CET,
- NorDig T, #5, Tue 18th June 2019, webinar, placeholder, 10:00-12:30 CET
- NorDig T, #6, Tue 27th August 2019, webinar, 10:00-14:00 CET
- NorDig T, #7, Tue 24th Sep 2019, webinar, 10:00-16:00 CET.
  - *Informative: Excom 10th October (target RoO v3.2/3.1, IRD spec v3.2, Test Plan 3.2)*
- NorDig T, #8, Thu 17th October 2019, webinar, 10:00-14:00 CET
- NorDig T, #9, Tue 3rd December 2019, webinar, placeholder, 10:00-12:00 CET.
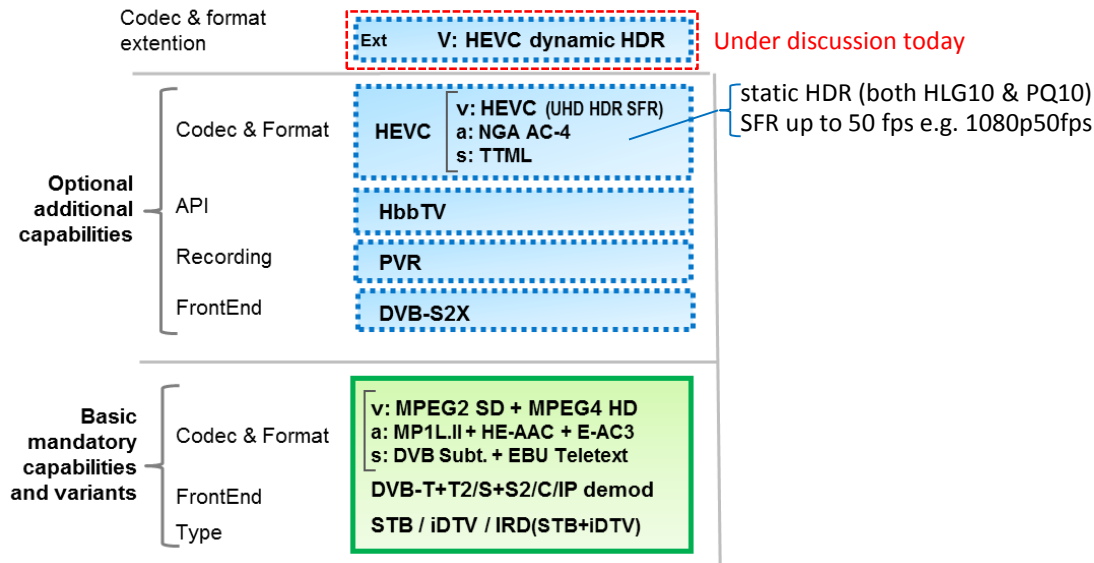
List of Countries using NorDig specifications (outside NorDig members), Nothing new to report, same as last meeting (same as previous report).
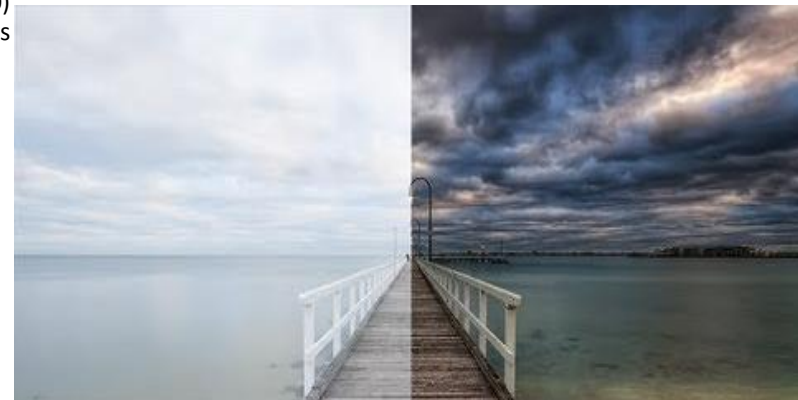
Several IRD manufactures and other mentions that several other territories and DVB networks refers or uses NorDig as basis for their IRD specs (especially "newer" networks). Among reasons seems open spec and content (T2, HbbTV, subtitling etc).

Country / Network	Status
Turkey DTT	Confirmed via Vestel
Several eastern Europe countries	Indications, not confirmed
Malaysia *(blue copy)*	Digita
German DTT (Media broadcast/TDF)	Based on/reference to NorDig IRD
Georgia DTT	Based on/reference to NorDig IRD (v2.2)
French DTT/FAVN ??	Based on/reference to NorDig IRD v??
Italien DTT + Satellite	Partly based on/reference to NorDig IRD (v2.5, RF), partly own requirements (e.g. SI)
Poland DTT	Might be based on/reference to NorDig IRD

- Background: Dynamic metadata HighDynamicRange (dHDR) and HighFrameRate (HFR):
  - As earlier NorDig based upon DVB spec, only variants inside coming DVB specs is relevant here.
  - *Excom meeting March2019:*
    - *HFR: low interest right now to introduce -> postponed*
    - *dHDR: interest but Excom to investigate members concrete interest and demands,*
    - *dHDR: technical group* study more, too early to start drafting, commercial requirement should be updated (old commercial requirements used for HEVC&NGA)

Codec & format extention

| Ext | V: HEVC dynamic HDR | Under discussion today |

Optional additional capabilities

Codec & Format	HEVC	v: HEVC (UHD HDR SFR) a: NGA AC-4 s: TTML	static HDR (both HLG10 & PQ10) SFR up to 50 fps e.g. 1080p50fps
API	HbbTV		
Recording	PVR		
FrontEnd	DVB-S2X		

Basic mandatory capabilities and variants

Codec & Format	v: MPEG2 SD + MPEG4 HD a: MP1L.II + HE-AAC + E-AC3 s: DVB Subt. + EBU Teletext
FrontEnd	DVB-T+T2/S+S2/C/IP demod
Type	STB / iDTV / IRD(STB+iDTV)

dHDR

Dynamic metadata HDR (dHDR)

- DVB dHDR status: spec finalized, DVB/ETSI spec published, DVB prepare reference streams f dHDR
- (OTT) DASH dHDR status: under publication prel w 3 month ETSI spec
- DVB has included 3 dHDR technologies/formats, all HDR **PQ10** based:
    - Technicolor/Philips SL-HDR2 (ETSI TS 103 433-2, SMPTE ST 2094-20 Philips & 2094-30 Technicolor formats)
    - Samsung HDR10+ (SMPTE ST 2094-40)
    - Dolby Vision (ETSI TS 103 572, SMPTE ST 2094-10)
        (Note: all three dHDR candidates been present in NorDig-T/video subgroup meetings)
- All 3 dHDR formats are backward compatible for static HDR/PQ10 IRDs to receive and display (up to broadcaster/colourist to ensure performance for static HDR HEVC IRDs).
- Work ongoing in ETSI (JTC broadcast group) led by Technicolor/Philips to add dynamic metadata with HLG (SL-HDR3). Dolby mention already support but not promoted (since DVB so far been for PQ).
- dHDR bandwidth
    - All formats has low extra capacity (in magnitude of 100kbps or less, could be as low as 10-15kbps per format)
    - supports of "simulcast" several dHDR metadata formats for one and the same video stream in (DVB requirement, so far not yet tested)
- Conversion possible from HLG to PQ dHDR within same format
- Conversion from one dHDR format to another, could harm "artistic intension" from colourist, content owner/broadcasters may not allow this, no "approved" method today -> "risk" that Broadcasters (often part of its content is external from different content owners) will broadcast different formats depending on content origin

Dynamic metadata HDR (dHDR)

- NorDig-T/video group has not (yet) compared the 3 formats (pros&cons, relative efficiency, IPR costs…).

- Service plans in Europe dHDR
    - already used in some OTT/Online streaming services and available in some TV sets, even if it might not yet implemented as DVB signalling for dHDRs.

    - OTT: already on-air (including Netflix, Amazon, AppleTV+, Disney+)
    - Broadcast: no info, several considering, live broadcast trials been made in France, Spain, FIFA World Cup
    - PayTV: several operators (e.g. Orange, Canal+, SFR) for VOD/OTT
    - French DTT discuss to draft optional dHDR (all 3 formats) and IRD shall not be disturb by format not supported
    - (DTG no discussion/action/planning yet around broadcast HEVC nor dHDR)
    - (SVT tests HDR for OTT/SVT Play: "SVT Testbild" at SVT Play)

    Note, we can not expect that current dHDR impl on TV sets will work for broadcast usage or DVB DASH streaming.

From NorDig 2017 work, HEVC

new tools w HEVC: NorDig broadcasters interest (2017 NorDig work)

Figure: data from NorDig T/video HEVC study 2017 and questionnaire.

Note about FullHD, refers to as sub-resolution UHD BT2020

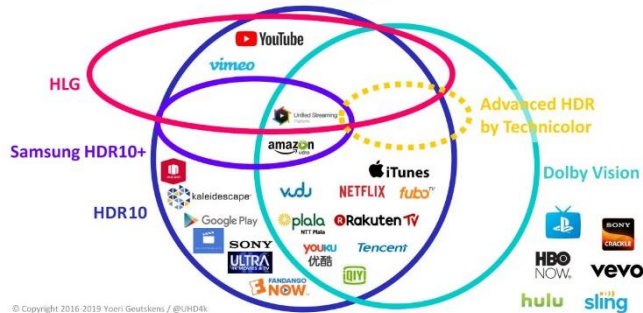10bits HDR WCG dHDR HFR FullHD 1080p UHD 2160p
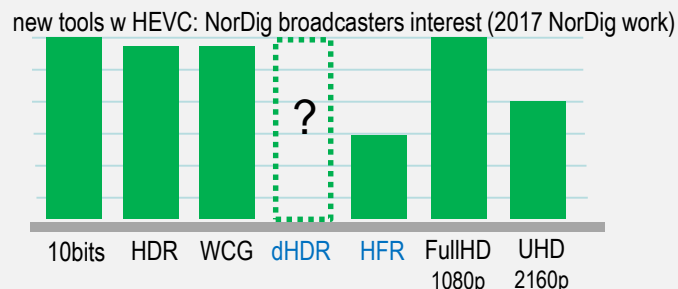
- Members view (broadcasters and operators)
  - SVT, DR & NRK:
    - dHDR, right now more interest than HFR and UHD,
    - dHDR could make big difference espec for drama production,
    - dHDR roll-out could for example be first via OTT streaming and later within broadcast,
    - dHDR too early today to select one of the formats,
    - dHDR could accept that this would be optional tool for IRD (initially), (but big interest among broadcasters for dHDR than NorDig should mandate dHDR w grace period)
    - HFR_{100fps} could accept wait and revisit topic later, a bit challenging to produce right now
    - backward compatibility is of interest.
    - interesting TV format: 1080p50fps dHDR
    - SVT/Lars typical future production could be: drama 2160p25fps dHDR and sports/general 1080p100fps SDR/HDR.
  - DR:
    - Difficult for PSB to choose exclude viewers due to only select one dHDR tech
    - As DR understand it today: Static HDR not as big step for viewers to SDR compared to dHDR, (main interest is for 1080p50, than UHD and HFR/100fps)
  - Test streams: some interest to collect test streams
  - TDC: follow broadcasters, CD: some interest depends upon broadcasters
  - Preferebly if Nordic & Irish broadcasters could agree upon a common dHDR format (for production). Propose to make a study around dHDR to find a common dHDR among broadcasters.
  - If dHDR format, then the decision of which dHDR format should be done productions side and not on the IRD side

- Industry view
    - dHDR, most TV manufacture prefer dHDR is optional feature in NorDig.
    - dHDR, if NorDig would add dHDR (as mandatory), than most manufactures request only one dHDR format and not require all 3 formats, similar NGA
    - Samsung, TP Vision prefer markets decide themselves (i.e. not specified a single dHDR technology in NorDig, e.g. that NorDig add IRD not to be disturb by dHDR not supported)

    - dHDR already in some TV sets, already used for some services, smaller step than HFR

    - dHDR, manufactures asks for service plans/roll-out plans from broadcaster to consider this.
    - NorDig should collect from members/broadcasters and regular present/provide service plans and intensions to the Industry.
    - (Sony) With all improvement in video processing and display in new modern TV sets, reduces the diff betw sHDR and dHDR

    - DVB during IBC https://www.ibc.org/tech-advances/dvb-unveils-new-specification-for-hdr-dynamic-mapping/4092.article

- dHDR formats taken from https://www.flatpanelshd.com/focus.php?subaction=showfull&id=1559638820
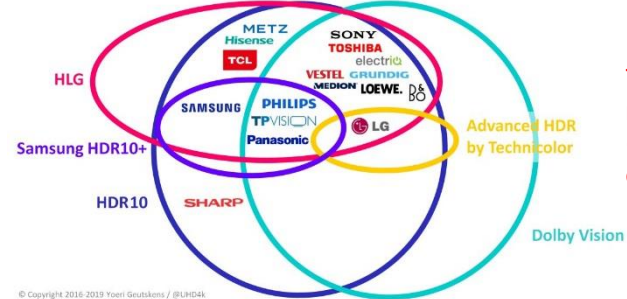

NorDig/Per T note:
TV sets today in general do not impl all 3 formats
(some impl two, some other one format)
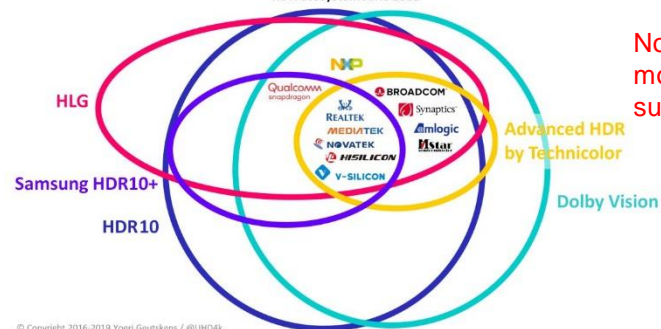
NorDig/Per T note:
most chipset seems to support all flavours
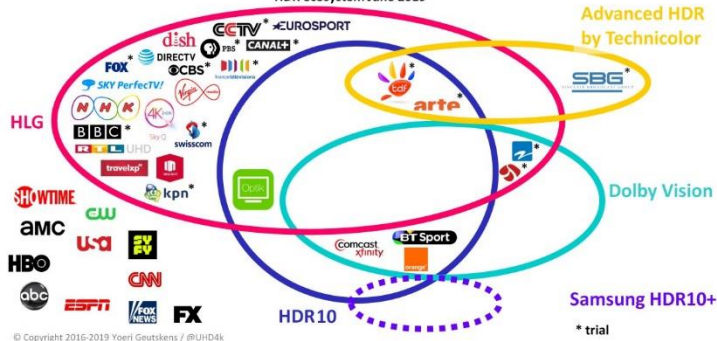
Source: https://www.flatpanelshd.com/focus.php?subaction=showfull&id=1559638820

13
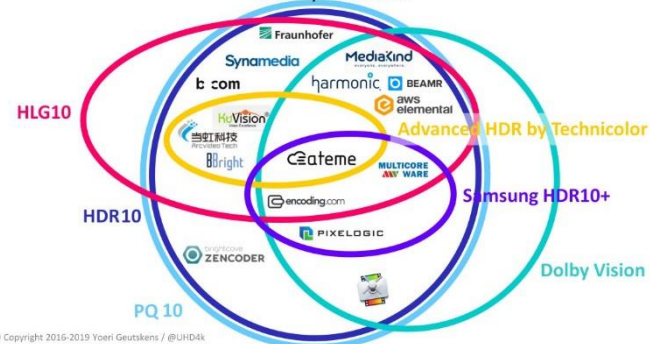
Summary mini-study and proposal NorDig HEVC extensions dynamic HDR:

- dHDR
    - DVB has specified three formats [Technicolor/Philips SL-HDR2, Samsung HDR10+, Dolby Vision]
    - no result f comparing, coming/already in several TV sets to some degree (not as DVB specified),
    - Service plans in Europe: OTT several, broadcast: some considering and trails
    - NorDig Broadcasters: high interest from broadcasters (for usage in some program events, like drama productions)
    - Broadcasters might need to deliver (broadcast and OTT) different dHDR for different content (due to restriction from content owners etc), therefore complex for NorDig to select only one format
    - NorDig specification today includes sHDR (HLG + PQ)
    - NorDig work around dHDR:
        - NorDig Excom will collect from members/broadcasters service plans and intensions and (regularly) present it the Industry /NorDig T (planned to be presented at Excom meeting 10th Oct 2019)
        - **NorDig T/video group study more, report back in Oct 2019 (waiting Excom decision before start drafting)**
        - **If NorDig is interested in adding dHDR:**
            - **Technical evaluation among 3 candidates is expected to be TOO difficult to achieve with "correct" conclusions within NorDig (too many dependencies) in order to select ONE.**
            - **IF one format is to be selected, NorDig T would only be able to make a technical info gathering similar as NGA work (e.g. collect tech info, licenses etc) AND would be very difficult to come with a recommendation for a single dHDR AND would need to establish well defined criteria before**
            - **Alternative for selecting ONE system could be to:**
                - **dHDR optional, where used dHDR signaling shall be as DVB specified and that IRD shall not be disturbed by formats not supported or**
                - **Not mention/recommend dHDR, BUT incl that IRD shall not be disturb by formats not supported**

Excom:
- At present time Public Service Broadcasters has no concrete plans and low interest for dHDR
- Excom decision to not mandate dHDR
- Excom decide to add into next NorDig IRD spec if dHDR is used then signaling shall be as DVB specified and IRDs shall not be disturbed by formats not supported. AP for NorDig T to prepare proposal, (however this item is not seen as important to trigger any immediate release of new spec, instead item to be incl whenever next release is released)

NorDig EPG group and Event exchange file format:

- Keep TV Anytime spec up to date

- Updated of guidelines

- Work to promote / help impl and use of NorDig EPG/event file format

- Open workshop May 2019 at TV2 Norway in Bergen

- Next open workshop Dec 2019 at TDC Denmark

- Status of implementation and use of NorDig common EPG/Event metadata exchange format, done or in process: NRK, TV2DK, TV2NO, DR, TDC, Red Be Media.

Excom: OK

NorDig Unified IRD spec future – "v3.2" proposals:

- General
    - Bug list - a few number of listed items,

- Video:
    - Dynamic metadata HDR low interest at present time and is postponed, only to be added is if used then according to DVB and IRD shall not be disturbed

- CA/CP/Security
    - CommonInterface v2 (USB), still monitoring status, Vestel reports that Turkey plans for using CI+v2/USB. Excom: **AP Per T/NorDig T** to check with PayTV operator members' interest & plans.

- Audio – none

- Subtitling – none

- HbbTV - none

- FrontEnd – none

- SSU - none

- PSI/SI, menus etc…

- Others?

- DVB CI v2 (USB)
  - DVB specs published Dec2018
  - CI+ LLP has not yet published test requirements/streams nor mandating this for CI+logo
  - IRD/TV set status: waiting CI+ LLP
- DVB-I
  - At IBC2019, DVB will present the world's first showcase of DVB-I, a new suite of specifications that is designed to improve OTT delivery, providing increased scalability and cost savings with the same user-friendliness and robustness as classical broadcast delivery solutions.
  - DVB-I enhances the viewer experience for hybrid and broadband television through advanced features like integrated channel lists, interactive content guides, and simple lean-back channel selection.
  - Low Latency DASH (LL-DASH)
  - Multicast Adaptive Bit Rate (mABR) still in delvelopment

END presentation
NorDig-T report

After here some detailed informative slides

ANNEX

– Annex A: NorDig T mandates 2019-2020

– Annex B:

– Annex C:

NorDig T – mandates & items for period 2019-2020 - *Excom approved March 2019*

- General: Keep IRD, RoO and Test Plan in line with each other

- RoO
  - Maintain and update NorDig RoO - focus for 2019 RoO v3.1.x
  - (Excom Oct 2018) changing layout to same as IRD spec, focus for RoO on items necessary to avoid misbehavior in IRDs.

- Test and Test plan
  - Maintain and update NorDig Test plan to match IRD spec
    - Review and where possible combine similar test cases to make it easier and faster to test
    - "minimize" redundant test cases if possible without compromising with test quality, to speed up time for verification testing.
    - Update and improve test cases

- NorDig Unified IRD spec
  - Maintain and update NorDig IRD specification
    - debugging, references to international standards and specifications are up to date)
  - NorDig IRD spec update - ~~investigate HEVC dynamic HDR~~
  - Other items (listed since earlier):
    - Review and improve IRD's auto update for network changes?
    - Handle mix of broadcast and OTT in same channel list? (similar to or based upon DVB-I)

continue NorDig mandates & items for period 2019-2020

- Video, audio, subtitling
  - **Video**: maintain NorDig's subset of HEVC (DVB's UHD, HDR&WCG, SFR), incl video processing and I/O (HDMI).
  - ~~**New Video** codec: monitor/investigate issues with adding HEVC dHDR support, check with Industry, make proposal~~
  - ~~**New Video** codec: If Excom decide, propose tech requirements for dynamic HDR~~
  - **Video**: Secure good IRD implementation for mixing/blending of SDR content (HbbTV, menus, subtitling) on top of HDR video.
  - **Audio** NGA (Dolby AC-4), monitor DVB and Dolby specifications and recommendations
  - **Audio:** monitor evolution immersive audio and object based audio.
  - **Audio:** if it is possible supports with tests and trials of NGA audio (both basic NGA and more advanced NGA).
  - **Subtitling**: monitor DVB specifications (TXT subt, DVB Subt, TTML).
  - **HbbTV**: Investigate use and mandate of new codes (HEVC and NGA) for (HEVC) HbbTV/Hybrid IRDs.

continue NorDig mandates & items for period 2019-2020

- HbbTV
  - NorDig HbbTV test and test cases:
    - Maintain NorDig developed test cases. Propose new test cases to be developed if needed.
  - NorDig HbbTV IRD requirements:
    - Maintain and update HbbTV requirements
    - Monitor and report HbbTV spec development and usage.
  - Investigate additional HbbTV feature and requirements that are of interest for NorDig members (to be confirmed by –T and Excom before detailed proposal and any incl into IRD spec).
    - Investigate DVB-TA watermarking, impact V/A and possibility to use for STB solutions where STB do not support HbbTV (STB bypass)
  - HbbTV implementation:
    - Monitor and report HbbTV implementation in NorDig networks and other networks,
    - Monitor and report implementation status on IRD side
    - Monitor and discuss experience and issues/problems with launching HbbTV services
  - HbbTV DRM
    - Monitor HbbTV DRM
    - Review security requirements

continue NorDig mandates & items for period 2019-2020

- Accessibility
  - Work with harmonization of broadcast and better describe current broadcast for IRD manufactures
  - Subtitling, propose updates and new IRD requirements both for normal and hard-of-hearing subtitling.
  - Create document explaining the work of the group, (which ExCom members to pass this to their internal accessibility teams). Gather information from accessibility groups and broadcasters to understand what their pain points are.
  - Set up a best practice workshop with broadcasters, manufacturers and distributors
  - Investigate the implications for streaming services on accessibility
  - HbbTV for Accessibility services – investigate how HbbTV can be used for Accessibility and if needed propose changes to IRD and RoO requirements
  - Investigate benefits with NGA for accessibility.

- CA and CI
  - monitor and report CIplus LLP (CI+ v1.4 and v2.0) and DVB work (CI+ v2.0 etc) within these topics to NorDig Excom and Technical group.
  - Review security requirements

- EPG/Event exchange file format:
  - Promote use for NorDig members for example via open workshops to support promoting and implementation of NorDig TVA format.
  - Maintain NorDig specification of common EPG/Event exchange file format and Guidelines, to be inline with TA Anytime specs
  - Common solution and recommendations about unique program ID's.
  - Translation of genres between Nordic and Irich language and English.
  - Transform NorDig TVA XML schemas to JSON and developing guidelines for using TVA with JSON (on request from developers)