

Accessibility services supported in NorDig Unified Requirements and NorDig Rules of Operation specifications ver. 3.2.1.

1. Introduction

The purpose of this document is to be a help in developing accessibility services by giving an overview of the different type of accessibility services supported by NorDig specifications and where to find the relevant information and description.

The document also includes some recommendations and implementation guidelines concerning accessibility services.

The requirements in the NorDig IRD specification support as minimum the requirements in the EU regulations about accessibility for consumer IRDs /TV receivers.

NorDig supports following types of accessibility services for broadcast TV & radio services:

- Audio Description (AD)
- Spoken Subtitles (SpS)
- Dialogue Enhancement (DE)
- Hard of Hearing Subtitles (HH)
- Audio Description subtitles (ADS)
- HbbTV accessibility services

Broadcasters may sometimes use one combined stream for several accessibility services (e.g. one common extra audio stream / PID for both AD and SpS, where for some program events it is used for AD and some others for SpS).

2. NorDig specifications

NorDig specifications consist of three main documents:

- **“NorDig IRD”** / consumer TV receivers, (NorDig Unified Requirements for Integrated Receiver Decoders for use in cable, satellite, terrestrial and managed IPTV based networks) – Specifies the minimum technical requirements for consumer IRD/TV receivers for manufactures and others, but also relevant for Broadcasters, Operators and others to understand expected behaviour and requirements on the NorDig IRDs.
- **“NorDig RoO”** (NorDig Rules of Operation for NorDig Unified Receiver Network) – Specifies rules and guidelines for the transmission/broadcast side for Broadcasters, Operators and others among thing to minimise issues for viewers.
- **“NorDig Test Plan”** (NorDig Unified Test Plan for Integrated Receiver Decoders for use in cable, satellite, terrestrial and managed IPTV based networks) – Specifies how to fulfil and a common way for verification testing the NorDig IRD requirements for IRD manufacturers and others before IRD products are put into the market.

NorDig IRD and RoO specifications sections are as much as possible lined up with each other, in order to easier find corresponding parts between the two documents.

3. Accessibility services in NorDig specifications (IRD specification and RoO)

Accessibility services supported in NorDig specifications (NorDig Unified Requirements/IRD, and NorDig Rules of Operation/RoO) v. 3.2.1, list of where to find relevant chapters for the different kind of accessibility services.

NorDig terminology for accessibility audio:

- for non-NGA i.e. MPEG1 L.II (MP2), MPEG4 AAC (incl AAC-LC and HE-AAC), Dolby AC-3 & E-AC-3 (AC-3) - supplementary audio.
- for NGA (AC-4, MPEG-H audio) - accessibility audio/service.

Services / description	Spec.		Chapter	Notes
	IRD	RoO		
Audio Description (AD)				MP2/AAC/AC-3 and NGA/AC-4
Audio that includes a narration describing of the action of the scene. AD are targeted at users with visual or cognitive impairments.				
	x	x	6.1.2 Audio terminology	
	x	x	6.5.3 Audio PID/Stream Prioritisation for non-NGA streams 6.5.3.1 Audio PID/stream Prioritisation, Type (Normal or supplementary)	MP2/AAC/AC-3
	x	-	6.5.4 Signalling to be used for audio property	MP2/AAC/AC-3 and NGA/AC-4
	x	-	6.5.6 Audio Prioritisation inside the NGA Audio PID/stream	NGA/AC-4
	x	-	6.9 Dynamic Changes in the audio streams	
	x	-	6.11 Supplementary Audio	MP2/AAC/AC-3
	x	-	6.11.3.1 IRD user preference settings for Supplementary Audio	MP2/AAC/AC-3
	x	-	6.11.3.3 Audio priority for Supplementary Audio	MP2/AAC/AC-3
	x	-	6.11.4 Selection of audio streams	MP2/AAC/AC-3
	x	-	6.14 NGA Accessibility Services	NGA/AC-4
	x	-	6.14.2 Display of available NGA Accessibility Services	NGA/AC-4
	x	-	6.14.4 NGA Preselection with Audio Description over headphones output	NGA/AC-4
	x	-	8.7.5 User Control, basic functions	
	x	x	12.1.8 Country and Language Codes within PSI/SI	
	x	x	12.6.4 ISO 639 language descriptor	MP2/AAC/AC-3 and NGA/AC-4
	x	x	12.6.5 AC-3 descriptor	AC-3
	x	x	12.6.6 Enhanced AC-3 descriptor	E-AC-3
	x	x	12.6.7 AAC descriptor	AAC/HE-AAC
	x	x	12.6.8 Supplementary_audio_descriptor	MP2/AAC/AC-3 (and NGA/AC-4)

Services / description	Spec.		Chapter	Notes
	IRD	RoO		
	x	x	12.6.11 Audio Preselection Descriptor (NGA services only)	NGA (AC-4, MPEG-H)
	x	x	12.6.12 AC-4 Descriptor	AC-4
	x	x	13.5.1 UI for Audio information	All
	x	-	16.2.3 Audio User Preference Settings	All
	x	-	16.2.3.1 Additional User Preference Settings for Supplementary Audio	All
	x	-	16.4 Reset to factory mode	All
	x	-	Annex F: Recommendation for menu wordings and translations / Accessibility	
	x	-	Annex I: Examples of Signalling to be used for audio property	All
Spoken Subtitles (SpS)				MP2/AAC/AC-3 and NGA/AC-4
Audio that includes a spoken rendition of the subtitles and is targeted at users with visual or cognitive impairments.				
	x	x	6.1.2 Audio terminology	
	x	x	6.5.3 Audio PID/Stream Prioritisation for non-NGA streams 6.5.3.1 Audio PID/stream Prioritisation, Type (Normal or supplementary)	MP2/AAC/AC-3
	x	-	6.5.4 Signalling to be used for audio property	MP2/AAC/AC-3 and NGA/AC-4
	x	-	6.5.6 Audio Prioritisation inside the NGA Audio PID/stream	
	x	-	6.11 Supplementary Audio	MP2/AAC/AC-3
	x	-	6.11.4 Selection of audio streams	MP2/AAC/AC-3
	x	-	6.14 NGA Accessibility Services	NGA/AC-4
	x	-	6.14.2 Display of available NGA Accessibility Services	NGA/AC-4
	x	-	8.7.5 User Control, basic functions	
	x	x	12.6.4 ISO 639 language descriptor	MP2/AAC/AC-3 and NGA/AC-4
	x	x	12.6.5 AC-3 descriptor	AC-3
	x	x	12.6.6 Enhanced AC-3 descriptor	E-AC-3
	x	x	12.6.7 AAC descriptor	AAC/HE-AAC
	x	x	12.6.8 Supplementary_audio_descriptor	MP2/AAC/AC-3 (and NGA/AC-4)
	x	x	12.6.11 Audio Preselection Descriptor (NGA services only)	NGA (AC-4, MPEG-H)
	x	x	12.6.12 AC-4 Descriptor	AC-4
	x	-	13.5.1 UI for Audio information	All
	x	-	16.2.3 Audio User Preference Settings	All
	x	-	16.2.3.1 Additional User Preference Settings for Supplementary Audio	All
	x	-	16.4 Reset to factory mode	All

Services / description	Spec.		Chapter	Notes
	IRD	RoO		
	x	-	Annex F: Recommendation for menu wordings and translations / Accessibility	
	x	-	Annex I: Examples of Signalling to be used for audio property	All
	x	-	Annex K: Comparison of NorDig profiles / 2 Legend	
Dialogue Enhancement (DE)				NGA/AC-4
Functionality that provides improved speech intelligibility. It is targeted at users with hearing impairments but can as well serve as improvement for listening in noisy environments				
	x	x	6.1.2 Audio terminology	NGA/AC-4
	x	-	6.10 Dialogue enhancement	NGA/AC-4
	x	-	6.14 NGA Accessibility Services	NGA/AC-4
	x	-	6.14.2 Display of available NGA Accessibility Services	NGA/AC-4
	x	-	8.7.3 Accessibility	NGA/AC-4
	x	x	12.6.11 Audio Preselection Descriptor (NGA services only)	NGA/AC-4
	x	-	13.5.1 UI for Audio information	NGA/AC-4
	x	-	16.2.3 Audio User Preference Settings	NGA/AC-4
	x	-	16.2.3.1 Additional User Preference Settings for Supplementary Audio	NGA/AC-4
	x	-	16.4 Reset to factory mode	NGA/AC-4
	x	-	Annex F: Recommendation for menu wordings and translations / Accessibility	NGA/AC-4
Hard of Hearing (HH) Subtitles				TXT, DVB subt, TTML
Subtitles that include descriptions of non-dialogue sounds. (e.g. gun fire, explosion, lions roar).				
	x	x	7.1.1 Wordings and definitions for subtitles	TXT, DVB subt, TTML
	x	x	7.1.2 Subtitling user preferences	TXT, DVB subt, TTML
	x	x	7.1.5 Subtitling mode (Normal and Hard of hearing subtitling)	TXT, DVB subt, TTML
	x	-	8.7.5 User Control, basic functions	TXT, DVB subt, TTML
	x	-	13.5.2 UI for Subtitling information	TXT, DVB subt, TTML
	x	-	16.4 Reset to factory mode	TXT, DVB subt, TTML
	x	-	Annex F: Recommendation for menu wordings and translations / Accessibility	TXT, DVB subt, TTML
Audio Description subtitles				
Subtitles that include description of the visual				

Services / description	Spec.		Chapter	Notes
	IRD	RoO		
scene. (e.g. “a lion lies in the sun.”). Intended for text-to-speech.				
	x	x	7.1.1 Wordings and definitions for subtitles	TXT, DVB subt, TTML
	x	x	7.1.2 Subtitling user preferences	TXT, DVB subt, TTML
	x	x	7.1.5 Subtitling mode (Normal and Hard of hearing subtitling)	TXT, DVB subt, TTML
	x	-	8.7.5 User Control, basic functions	TXT, DVB subt, TTML
	x	-	13.5.2 UI for Subtitling information	TXT, DVB subt, TTML
	x	-	16.4 Reset to factory mode	TXT, DVB subt, TTML
	x	-	Annex F: Recommendation for menu wordings and translations / Accessibility	TXT, DVB subt, TTML

4. Implementation guidelines and recommendations

Guidelines and recommendations for implementation of accessibility services is included in the relevant chapters for the different type of accessibility services NorDig RoO specifications, see the list above.

5. Accessibility services based on HbbTV

NorDig IRDs supports HbbTV enabling the possibility to handle accessibility services based on HbbTV.

HbbTV gives the possibility to develop and distribute advanced accessibility services cross platforms so the accessibility services will look and function in the same way on any NorDig IRDs supporting HbbTV, which can be a great advantage for users of accessibility services with special needs.

For more information see separate NorDig document “Accessibility services based on HbbTV”. This document “Accessibility services based on HbbTV” includes information about recommendations and implementation guidelines concerning accessibility services based on HbbTV, and where to find more knowledge about accessibility services based on HbbTV.