



Webinar: DVB-I & Sofia Backstage®

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Webinar Team @ Sofia Digital



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DVB-I basics and
The DVB-I reference
application



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Introduction of
Sofia Backstage®
Guide Manager
now supporting DVB-I

Outline

- DVB-I (by Juha Joki)
 - What is it?
 - Specification
 - Reference Application
- **Sofia Backstage® Guide Manager** (by Mika Kanerva)
 - Basics & functionality
 - Introducing DVB-I support



THE **NEW** GOLDEN AGE OF TELEVISION

Streaming video services, smart TV, mobile and companion devices and other new technologies were supposed to spell doom for traditional broadcasted TV. But instead, they have created a new, better, more available and more personal enriched TV. The best of TV, linear content and Internet together.

They brought **the new Golden Age of television**



DVB-I (“I” for Internet)

Goal:
Making linear television over the Internet as user-friendly and robust as traditional broadcast television.

DVB already has DVB-T for terrestrial, DVB-C for cable and DVB-S for satellite broadcast.

DVB-I aims to offer the same level of experience for Internet content



Smart-TV/ HbbTV / Android



DVB-I – why was a new specification needed?

- *The Internet has transformed how we access TV content*
- New services are deployed as apps – while this has allowed innovative services to develop there were drawbacks
- **Consumers**
 - Content is segregated into independent apps, broadcast and IP content are separated
 - Not all apps are on all platforms
- **Broadcasters**
 - Apps need to be provided and maintained for multiple platforms
 - How to get your app noticed?
- **Manufacturers**
 - Many apps to support and certify
 - Hard to provide a consistent user experience
 - Multiple solutions to same problem

Who Benefits?

- Consumer devices can present an integrated list of services and content, combining broadband and broadcast services, giving **consumers** the best of both worlds.
- **Broadcasters** can deploy common services across a wide range of devices.
- **Manufacturers** can create a single consistent user experience for all video services.
- **OTT providers** can increase their offer's visibility and audience reach.

What is DVB-I?

Area of applicability	<ul style="list-style-type: none"> • Any connected devices <i>even without a RF tuner</i> • OTT or IP managed network • Can be received by a downloaded app
Service Types	<ul style="list-style-type: none"> • Broadcast-like : linear TV, pay and free TV, parental controls, subtitles, accessibility • Specific to IP only, for example VOD content
User Experience	<ul style="list-style-type: none"> • <i>Similar to DVB-T/C/S</i> • Navigation possible via channel lists and EPG • Zapping time similar between broadcast and broadband
Service discovery and trust	<ul style="list-style-type: none"> • Discovering relevant services and service lists • Grouping of services • Curated service lists

Ecosystem of DVB-I:

- *A177 – DVB-I Service Discovery and Programme Information*
 - The “internet channel scan” and EPG
- A168 – DVB-DASH with Low Latency
 - Media format for linear broadband television services (On Demand also)
- A176 – Multicast ABR (DVB-mABR)
 - Efficient delivery of DVB DASH over IP networks
- A178 – Targeted Advertising (DVB-TA)
 - Personalizing advertisements for television services

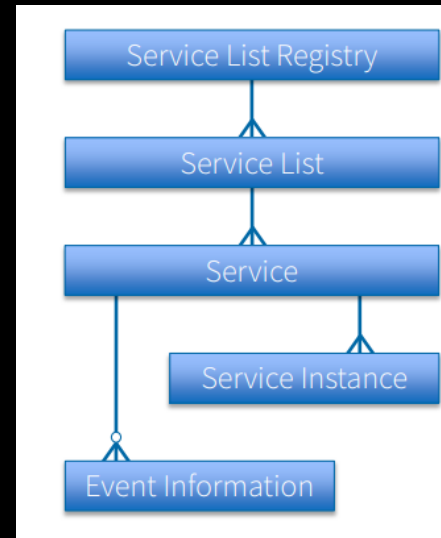
DVB-I Overview

In November 2019, DVB published the first DVB-I specification, available as BlueBook A177.

The specification defines

1. DVB-I Service Lists, for television services that may be delivered through broadband and/or broadcast mechanisms.
2. The methods to retrieve electronic programme data for those services.
3. Internet content delivery format based on *DVB-DASH* with *Multicast Adaptive Bit Rate* and *Low Latency* support.

DVB-I Information model



1. Service list Registry: A queryable network function for discovery of providers of service lists
2. Service list: Curated collection of services including ordering and target regions
3. Service: Editorial representation of a linear television service
4. Service Instance: Network specific delivery parameters, including availability windows
5. Event information: Program information for channel change banner and electronic program guide

DVB-I service lists and registries

- Service list is published by service list provider
- Service List Provider curates and manages the Service List and provides service ordering and numbering information *for ease of selection by users*
- Service List can be targeted at
 - a particular platform or brand
 - A geographical region
 - language or other market segment

Service List Discovery:

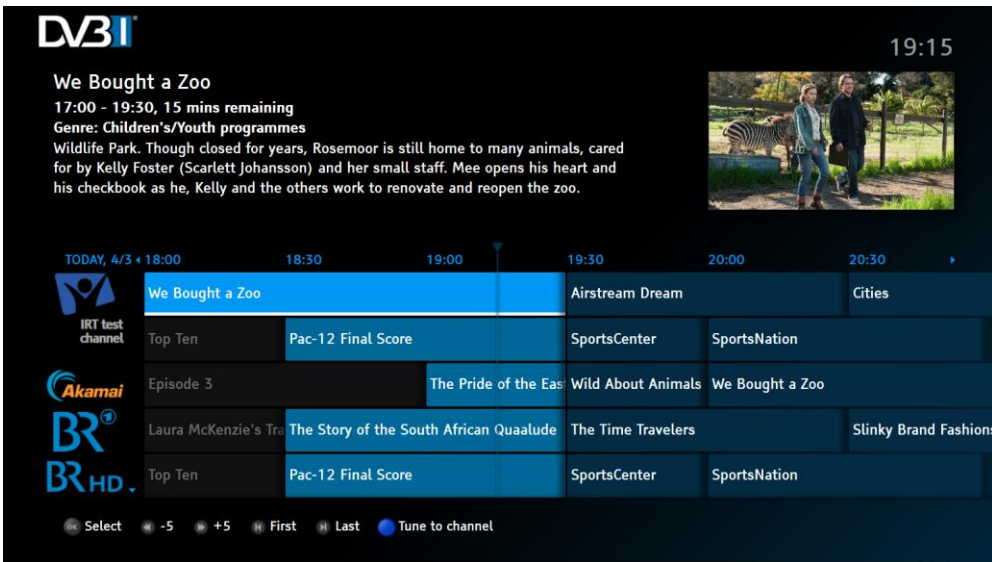
- built-in or privately provisioned (hard-coded) Service List URLs for the specific Service List(s) in the client
- Discovery via DVB-SI signaling in NIT/BAT URI Linkage descriptor
- Using Service List Registry (see next point)

Service list registry:

- an HTTP(S) endpoint made available at a URL that can return a list of Service Lists and their Service List URLs.
- May be operated by various kinds of organization:
 - A DVB-I client manufacturer, serving only their own clients
 - A national or regional regulator, providing information for the benefit of clients operating within the relevant nation or region.
 - An operator or platform brand serving only their own clients.
 - A central registry, operated for the benefit of all DVB-I clients, providing information on a wide set of Service Lists known to that registry.

DVB-I service lists and EPG data

- EPG content format is based on TV-Anytime XML format
- Supports “Related Material” descriptor (i.e. interactive HbbTV applications or other HTML5 based services)
- Supports “Linked application” reference for f.ex. external video playback application, GDPR notice, etc.
- Content protection support for registered CA and DRM Systems
 - (Marlin, Playready, Widevine)



```

<ServiceList version="1" xsi:schemaLocation="urn:dvb:metadata:servicediscovery:2019 ../dvbi_v1.0.xsd">
  <Name>DVB-I example service list</Name>
  <ProviderName>DVB</ProviderName>
  <RegionList version="1">
    <Region regionID="FIN" countryCodes="FIN"/>
  </RegionList>
  <LCNTableList>
    <LCNTable>
      <TargetRegion>FIN</TargetRegion>
      <LCN channelNumber="647" serviceRef="tag:sofiadigital.com,2019:sid1"/>
      <LCN channelNumber="11" serviceRef="tag:sofiadigital.com,2019:sid2"/>
    </LCNTable>
  </LCNTableList>
  <Service version="1">
    <UniqueIdentifier>tag:sofiadigital.com,2019:sid1</UniqueIdentifier>
    <ServiceInstance priority="1">
      <SourceType>urn:dvb:metadata:source:dvb-t</SourceType>
      <DVBTDeliveryParameters>
        <DVBTriplet origNetId="8916" tsId="4097" serviceId="74"/>
        <TargetCountry>FIN</TargetCountry>
      </DVBTDeliveryParameters>
    </ServiceInstance>
    <ServiceInstance priority="2">
      <SourceType>urn:dvb:metadata:source:dvb-s</SourceType>
      <DVBSDeliveryParameters>
        <DVBTriplet origNetId="1" tsId="4097" serviceId="74"/>
        <OrbitalPosition>19.2</OrbitalPosition>
        <Frequency>1173900</Frequency>
        <Polarization>horizontal</Polarization>
      </DVBSDeliveryParameters>
    </ServiceInstance>
    <ServiceName>Channel 1</ServiceName>
    <ProviderName>DVB</ProviderName>
    <ContentGuideServiceRef>cgsid_1</ContentGuideServiceRef>
  </Service>
  <Service version="1">
    <UniqueIdentifier>tag:sofiadigital.com,2019:sid2</UniqueIdentifier>
    <ServiceInstance priority="1">
      <SourceType>urn:dvb:metadata:source:dvb-t</SourceType>
      <DVBTDeliveryParameters>
        <DVBTriplet origNetId="8916" tsId="4097" serviceId="62"/>
        <TargetCountry>FIN</TargetCountry>
      </DVBTDeliveryParameters>
    </ServiceInstance>
    <ServiceInstance priority="2">
      <SourceType>urn:dvb:metadata:source:dvb-dash</SourceType>
      <DASHDeliveryParameters>
        <UriBasedLocation contentType="application/dash+xml">
          <URI>https://link-to-mpd</URI>
        </UriBasedLocation>
      </DASHDeliveryParameters>
    </ServiceInstance>
    <ServiceName>Channel 2</ServiceName>
    <ProviderName>DVB</ProviderName>
    <ContentGuideServiceRef>cgsid_2</ContentGuideServiceRef>
  </Service>
</ServiceList>

```

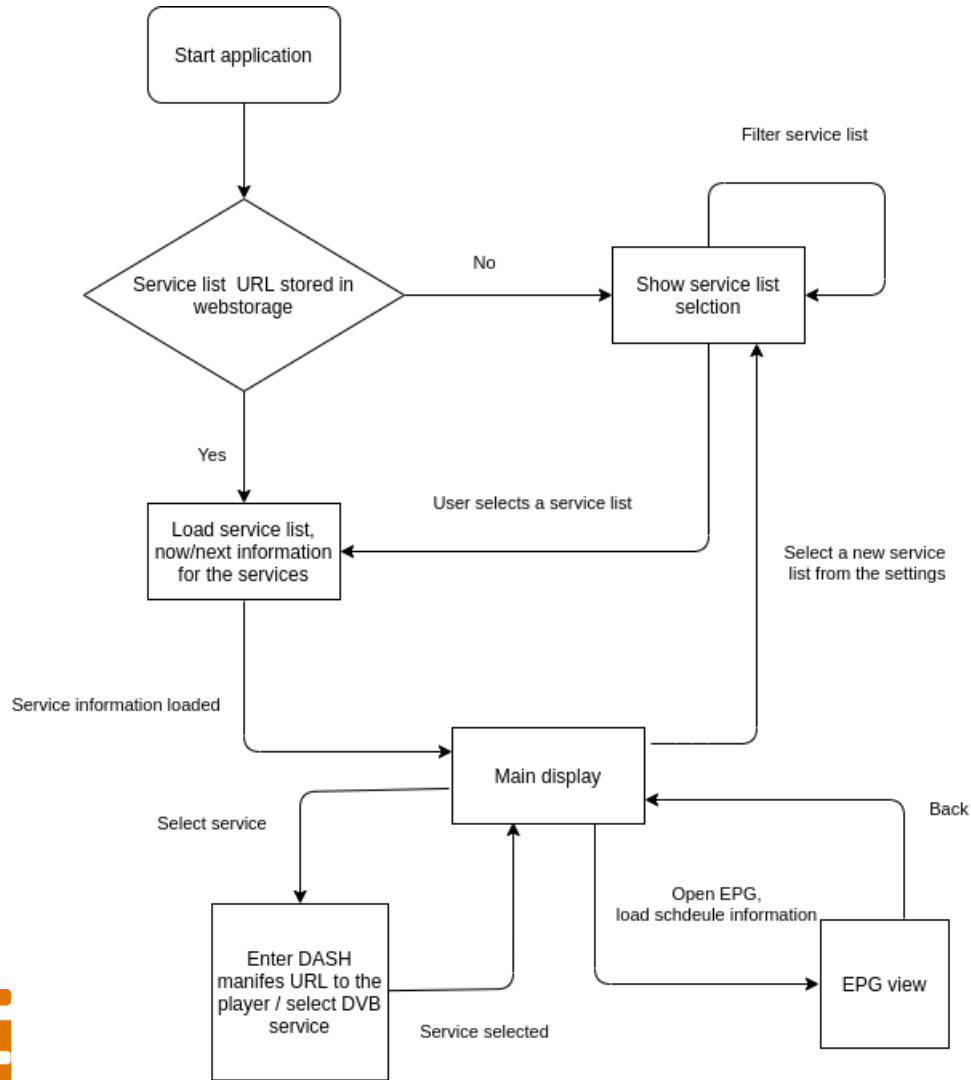
Reference application of DVB-I

Development of the open source reference Application for Android mobile phones, tablets and HbbTV TV sets by **Sofia Digital**



- DVB-I is the first major specification to benefit from DVB's new **Verification and Validation activity** that aims at accelerating the implementation of its technologies in the marketplace.
- Following the publication of an RFP, **Sofia Digital** was selected by the DVB Project to deliver a DVB-I reference application.
- The DVB-I Reference Application consists of both **backend** and **frontend** elements.

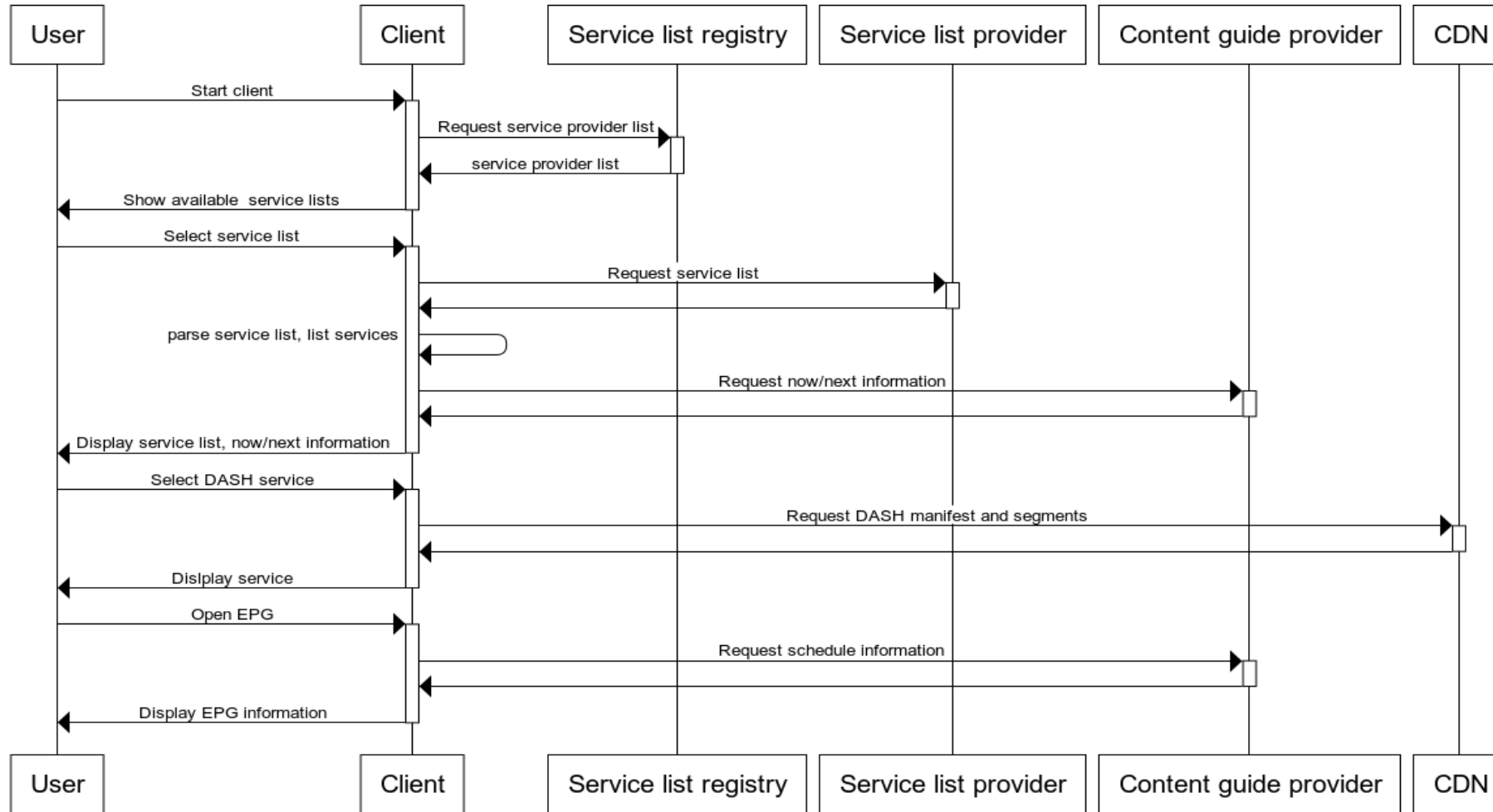
Application workflow diagram



1. Application is loaded
2. Checking for pre-selected service list is performed
3. Service list selected/parsed
4. Main display is shown
5. User can select another service list / open EPG / select or tune to a DVB-DASH or broadcast service



Sequence example



Backend and Service List creation



DVB-I Reference Application



Edit Service list

Subtitle

Service list version

Service list name

Service list provider

LCN List Target Region

Content Guide ID

Content Guide Schedule Endpoint

Content Guide Provider

Add Service

Save servicelist

Service list title

Save Servicelist

Generate XML

Generate XML

Servicelist

Subtitle

- [backup.xml](#)
- [example.xml](#)
- [list1.xml](#)
- [list2.xml](#)
- [list3.xml](#)

Documentation

[DVB-I Specification](#)

Service name

Service Unique Identifier

Service version

Service provider

LCN

Content Guide Service Reference

Service logo URI

Add service instance **Remove service**

Priority

Source Type

DASH manifest URI
Remove instance

-
-
- DVB-DASH**
- DVB-T
- DVB-S
- DVB-C
- DVB-IPTV
- Application

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28.5.2020

Get involved with DVB-I specification work

- The DVB-I Reference Application is freely available under an open source license (MIT)
- Includes documentation showing how broadcasters and network or platform operators may re-use all or part of the code in their own applications and how they may extend it

All code is published in GitHub under DVB account

DVB contact points:

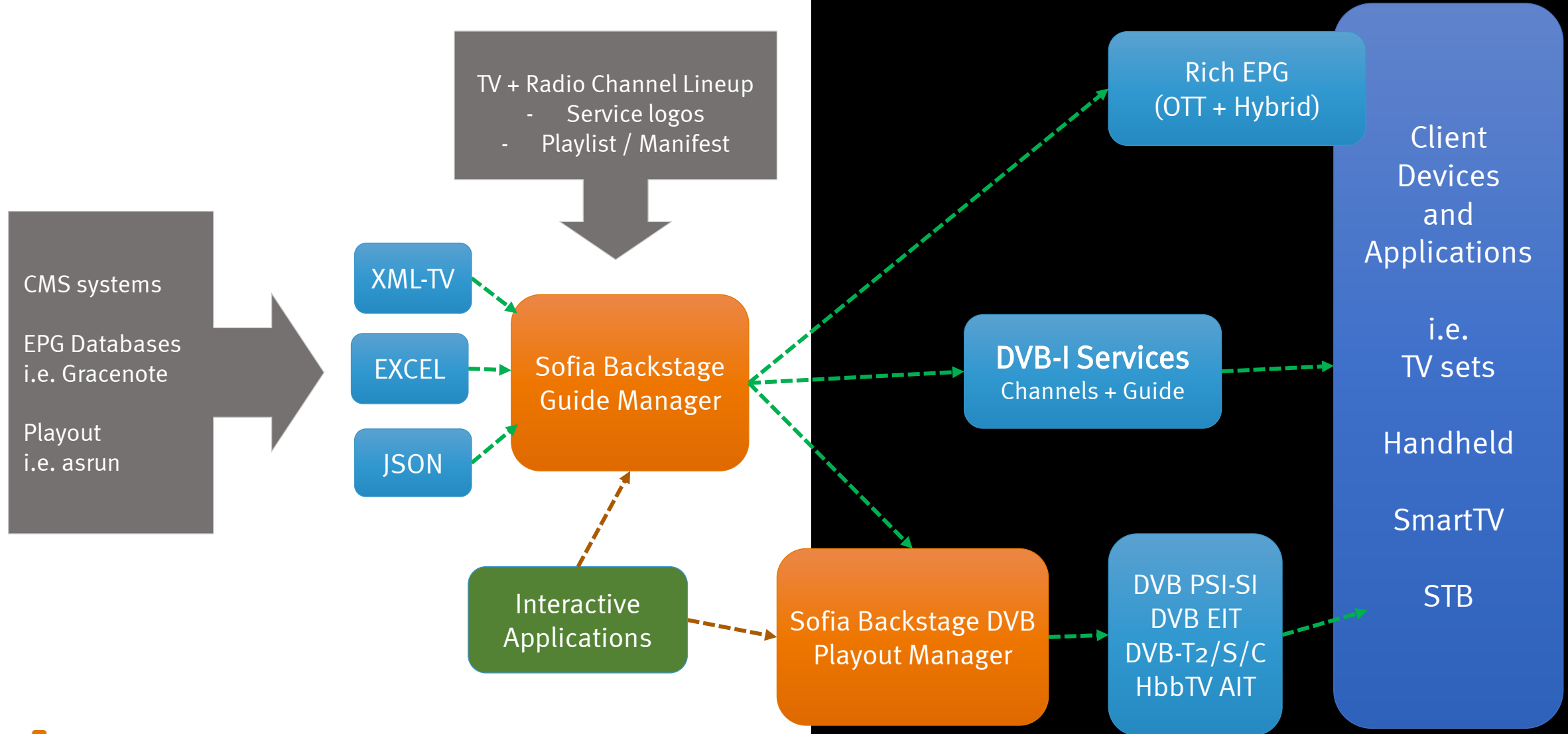
- DVB Members can follow the work via the TM-I group
- If you'd like to discuss making your service available via DVB-I for demonstration purposes, contact Emily Dubs, DVB Head of Technology (dubs@dvb.org)



Resources

- GitHub repository: <https://github.com/DVBproject/DVB-I-Reference-Client>
- HbbTV Frontend demo <https://stage.sofiadigital.fi/dvb/dvb-i-reference-application/frontend/hbbtv/launcher/>
- Android PWA installer <https://stage.sofiadigital.fi/dvb/dvb-i-reference-application/frontend/android/>
- Android Player demo <https://stage.sofiadigital.fi/dvb/dvb-i-reference-application/frontend/android/player.html>
- Backend demo for Service list generation <https://stage.sofiadigital.fi/dvb/dvb-i-reference-application/backend/>
- Specifications <https://dvb.org/?standard=service-discovery-and-programme-metadata-for-dvb-i-services>
- Additional webinars: <https://dvb.org/webinar/webinar-dvb-i-clients/>
- Sofia Digital www.sofiadigital.com

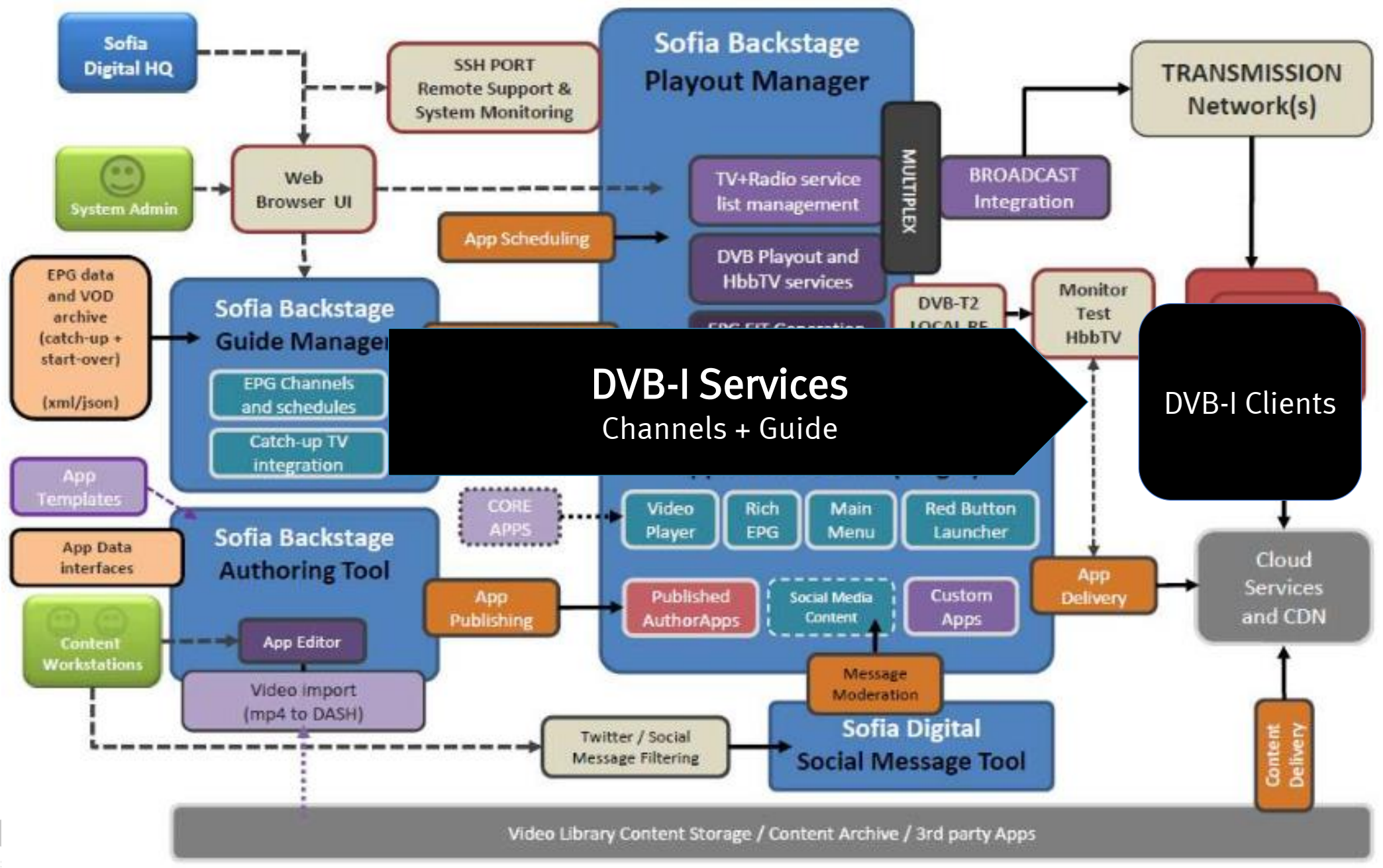
PART 2: What is Sofia Backstage ?



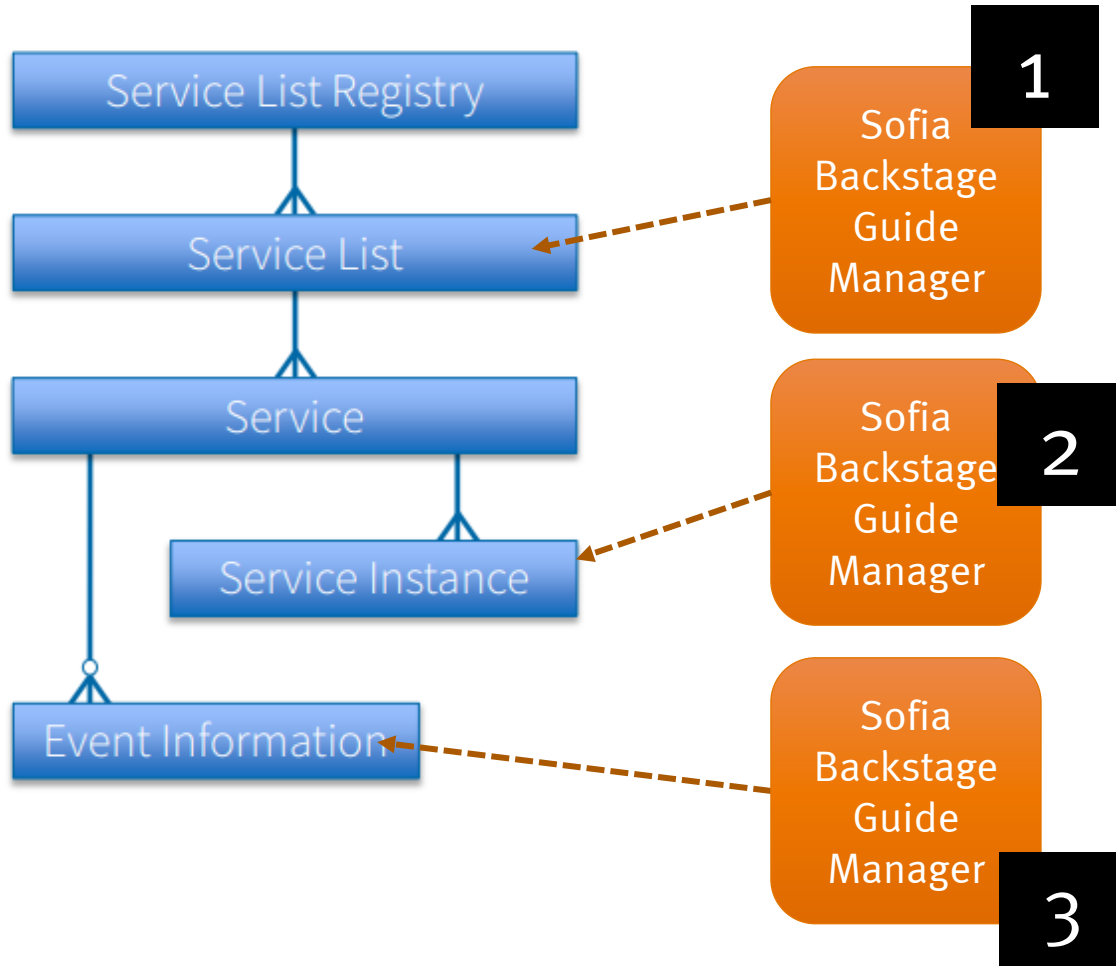
EPG DATA

Applications DATA

VOD DATA



DVB-I back-end and Sofia Backstage



Sofia Backstage Guide Manager for DVB-I

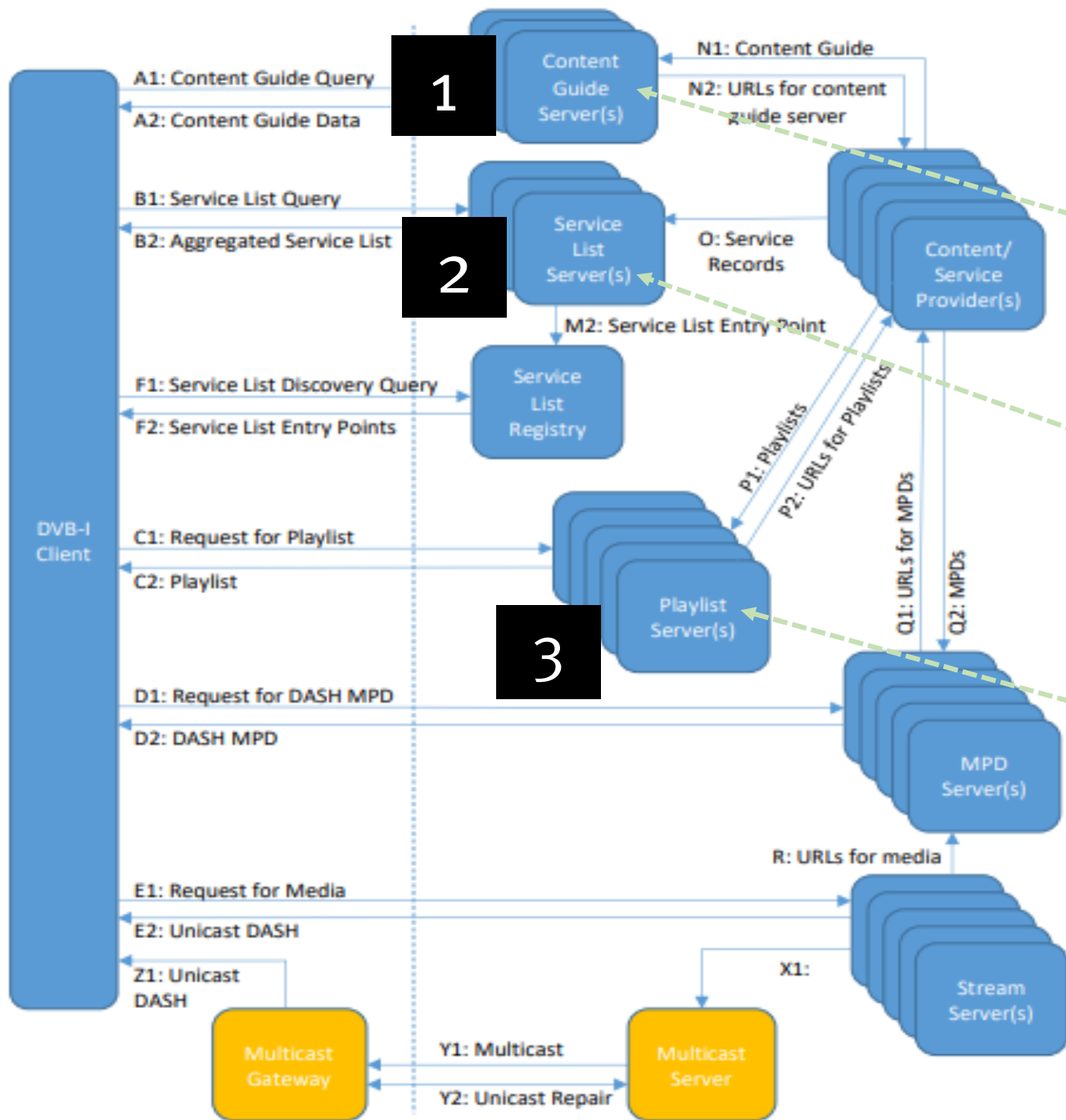
Provides unified TV/radio Channel Lineup management

To harmonize the Service and Guide data in all DVB and OTT “Apps”

EPG aggregation and distribution for DVB-T/S/C and HbbTV/SmartTV, OTT/Web

And now support for DVB-I service list and service guide output

DVB-I back-end and Sofia Backstage



Sofia Backstage Guide Manager

Sofia Backstage Guide Manager

Sofia Backstage Guide Manager

Backend example for DVB-I Service List

Servers / MYTV(DVB-I)

SERVER: MYTV(DVB-I)

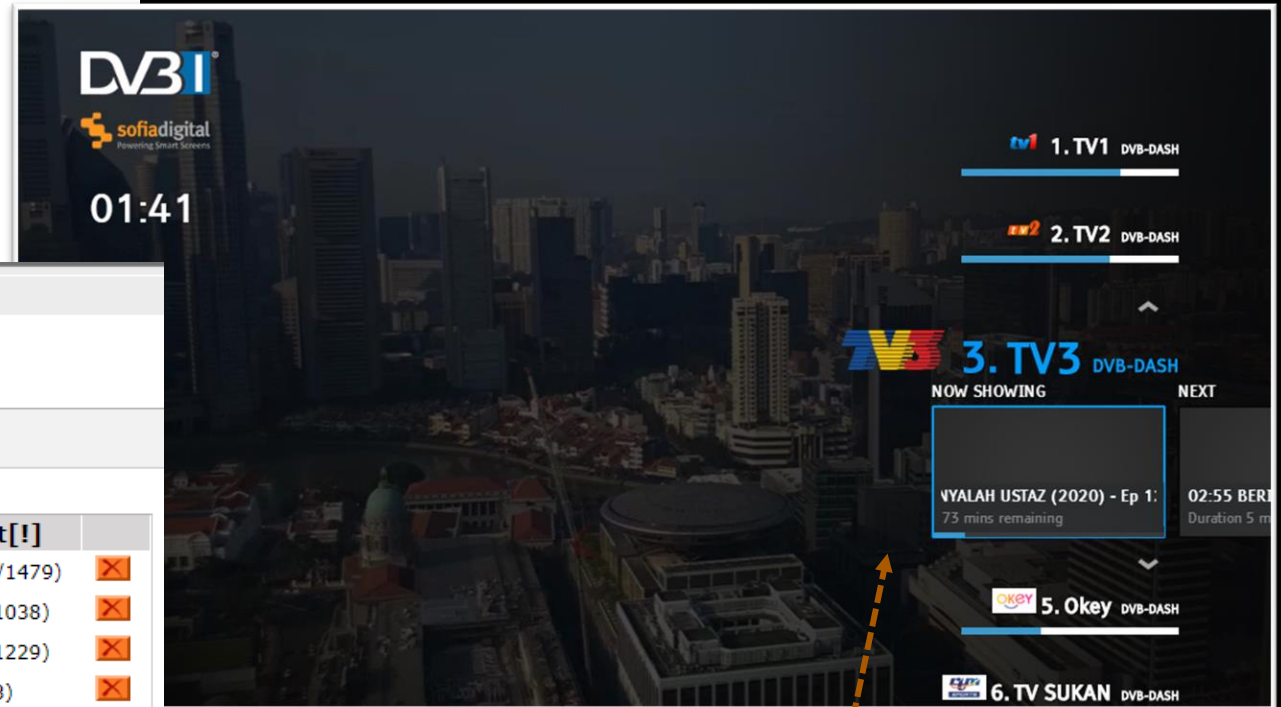
Content Server Log

Services (14)

List content

#	Name	Code	Number	SourceURL	Type	Enabled	Content[!]	
1	TV1	42	101		tv	Yes	EPG (190/1479)	✖
2	TV2	43	102		tv	Yes	EPG (32/1038)	✖
3	TV3	450	103		tv	Yes	EPG (58/1229)	✖
4	TVAH	361	104		tv	No	EPG (0/33)	✖
5	Okey	44	112		tv	Yes	EPG (102/1549)	✖
6	TV SUKAN	45	111		tv	Yes	EPG (180/208)	✖
7	NTV7	451	107		tv	Yes	EPG (45/738)	✖
8	8TV	453	108		tv	Yes	EPG (56/867)	✖
9	TV9	452	109		tv	Yes	EPG (68/1213)	✖
10	BERITA RTM	46	123		tv	Yes	EPG (255/1619)	✖
13	NasionalFM	48	215		radio	Yes	EPG (44/49)	✖
14	TraxxFM	50	217		radio	Yes	EPG (43/54)	✖
16	AiFM	52	219		radio	Yes	EPG (44/49)	✖
17	MinnalFM	56	223		radio	Yes	EPG (37/42)	✖

Add New



In client app

In Guide Manager

Channel line-up (DVB-I Service List)

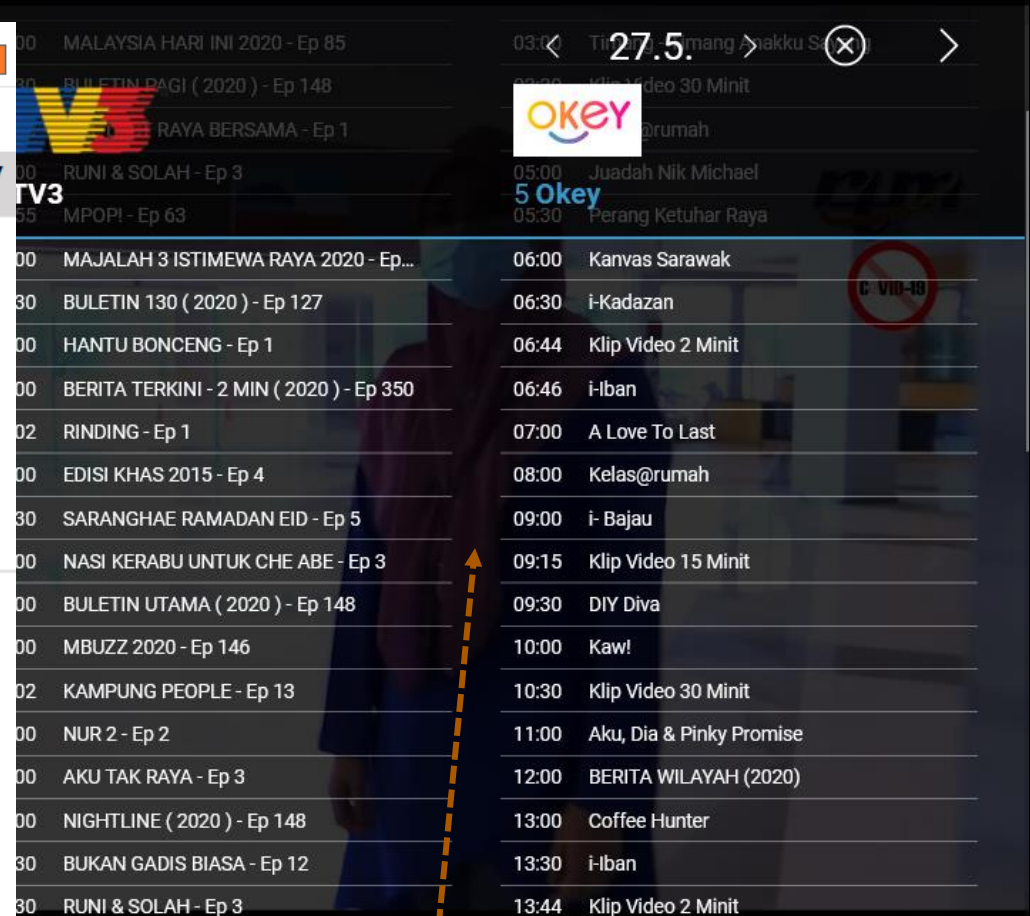
Backend example for DVB-I (EPG)

In client app

Service: 5. Okey Options... Go to this week

Week 22
25.5.2020 - 31.5.2020

Time	Monday 25.5	Tuesday 26.5	Wednesday 27.5	Thursday 28.5	Friday 29.5	Saturday 30.5
00:00	00:00 Extra Minda 00:30 Destinasi Dua... 01:00 Rona Nada Aid 02:00 Impak Aksi SR2 02:30 Ekstrem Walai 03:00 Spy Chef 03:30 Travel Beat Ro 04:00 Raya Cara Kita 04:30 Biscotti SR4 05:00 Alergi Mamat R +	00:00 Klip Video 30 M 00:30 Aksara Kasih A 01:00 Bujang Beraya 02:00 V-Siok 02:30 A-Z Aktif 03:00 Kisah Selebriti 03:30 Kembara Rasa 04:00 Kopi Kaw Kaw 04:30 Borneo Star 05:00 Alergi Mamat R +	00:00 Klip Video 30 M 00:30 Aksara Kasih A 01:00 Klik-Klik Asia 01:30 Sanggar 02:00 Kenyalang Tert 02:30 Dunia Roda 03:00 Busana Asia 03:30 Klik-Klik Asia 04:00 Fuh... Beratur 04:30 Kenyalang Tert 05:00 Alergi Mamat R +	00:00 Klip Video 30 M 00:30 Aksara Kasih A 01:00 Timang - Timan 01:30 Kaw! 02:00 Bukan Biasa-Bi 02:30 DIY Diva 03:00 Awal Kalam 03:30 Timang - Timan 04:00 Coffee Hunter 05:00 Alergi Mamat R +	00:00 Klip Video 30 M 00:30 Aksara Kasih A 01:00 Titik Perubahan 01:30 Siok Bah 02:00 Kaw! 02:30 Sanding 03:00 Ekspresi Tradis 03:30 Coffee Roaster 04:00 Faces & Places 04:30 Siok Bah 05:00 Alergi Mamat R +	
06:00	06:00 Klip Video 5 M 06:05 Kembara Rasa 06:30 V-Siok 07:00 BERITA PAGI 07:30 BERITA PAGI S 07:45 BERITA PAGI S 08:00 A-Z Aktif 08:30 Klip Video 30 M 09:00 Travelogue Bac 09:30 Mumbai Ke Lor 10:00 Juadah Nik Mic 10:30 Perang Ketuhai 11:00 Borneo Star 11:30 i-Kadazan 11:44 Klip Video 2 Mir 11:46 i-Iban +	06:00 Klip Video 5 M 06:05 Dunia Roda 06:30 Kenyalang Tert 07:00 BERITA PAGI 07:30 BERITA PAGI S 07:45 BERITA PAGI S 08:00 Klik-Klik Asia 08:30 Klip Video 30 M 09:00 3 Ke 5 Jerr 09:30 Dunia Roda 10:00 Juadah Nik Mic 10:30 Perang Ketuhai 11:00 Apa Tu? 11:30 i-Kadazan 11:44 Klip Video 2 Mir 11:46 i-Iban +	06:00 Klip Video 5 M 06:05 Sayau Kopusar 06:30 Bukan Biasa-Bi 07:00 BERITA PAGI 07:30 BERITA PAGI S 07:45 BERITA PAGI S 08:00 Timang - Timan 08:30 Klip Video 30 M 09:00 Kelas@rumah 10:00 Juadah Nik Mic 10:30 Perang Sarawa 11:30 i-Kadazan 11:44 Klip Video 2 Mir 11:46 i-Iban +	06:00 Klip Video 5 M 06:05 Awal Kalam 06:30 Kaw! 07:00 BERITA PAGI 07:30 BERITA PAGI S 07:45 BERITA PAGI S 08:00 Titik Perubahar 08:30 Klip Video 30 M 09:00 Kelas@rumah 10:00 Juadah Nik Mic 10:30 Perang Ketuhai 11:00 Siok Bah 11:30 i-Kadazan 11:44 Klip Video 2 Mir 11:46 i-Iban +		



In Guide Manager

TV-Guide
(DVB-I Service Guide)

Backend example for DVB-I (Service)

Edit Service 'Okey'

Name
Okey

Code 44 Number 112 Type tv ?

Enabled

Sort order [0 - 999]
5

EPG Source URL
http://localhost/feed/\${service_name}.json ?

Service Instances

https://rtmokeyhbbtv.secureswiftcontent.com/Origin02/ngpr:RTM2/manifest.m	dash	?
dvb://6814.15.203	dvb	
url	type	

[Add new instance](#)


Attributes

eng def

Description (eng)
TV Okey is RTM TV channel

Long Description (eng)

Service Logo(small)
https://myklik.rtm.gov.my/image/tvTVOKEYlogo.jpg



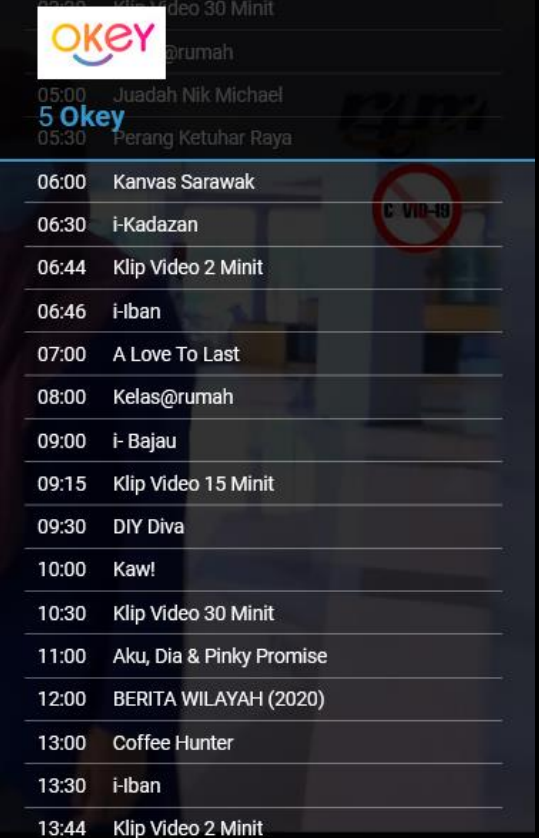
Services instances

Service Edit
In Guide Manager

TV-Guide
(DVB-I Service Guide)

Service Logos

Service In client app
DVB-T / OTT / HbbTV



05:00	Juadah Nik Michael
05:30	Perang Ketuhar Raya
06:00	Kanvas Sarawak
06:30	i-Kadazan
06:44	Klip Video 2 Minit
06:46	i-Iban
07:00	A Love To Last
08:00	Kelas@rumah
09:00	i- Bajau
09:15	Klip Video 15 Minit
09:30	DIY Diva
10:00	Kaw!
10:30	Klip Video 30 Minit
11:00	Aku, Dia & Pinky Promise
12:00	BERITA WILAYAH (2020)
13:00	Coffee Hunter
13:30	i-Iban
13:44	Klip Video 2 Minit

CONTACT US



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