Targeted Advertising for HbbTV

12-2021

HbbTV Adoptation Map

In Operation

- Australia
- Austria
- Bosnia-Herzegovina
- Bulgaria
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Hungary
- Iran
- Italy
- Luxembourg
- Malaysia
- Mauritius
- Namibia
- The Netherlands
- New Zealand
- Poland

- Russia
- Singapore
- Slovakia
- Spain
- Switzerland
- Turkey
- United Kingdom

Consideration/Trial

- South Africa
- Indonesia
- India
- Ireland
- Liethuania
- Norway
- Sweden
- Vietnam
- And many more...

Sofia Digital HbbTV cases in
more than 10 countries

HbbTV 10th ANNIVERSARY 2010-2020

HbbTV-TA

HbbTV ADB

HbbTV OpApp

2020

HbbTV 2.0.3

2019

HbbTV 2.0.1

2018

2017

HbbTV 2.0.2

HbbTV 2.0

2016

HbbTV 1.5

2015

2012

HbbTV 1.0

2010

First services

2009

2007

Initial work by some market participants

Founding
HbbTV Association

OIPF — OPEN IPTV FORUM

Smart TV Alliance
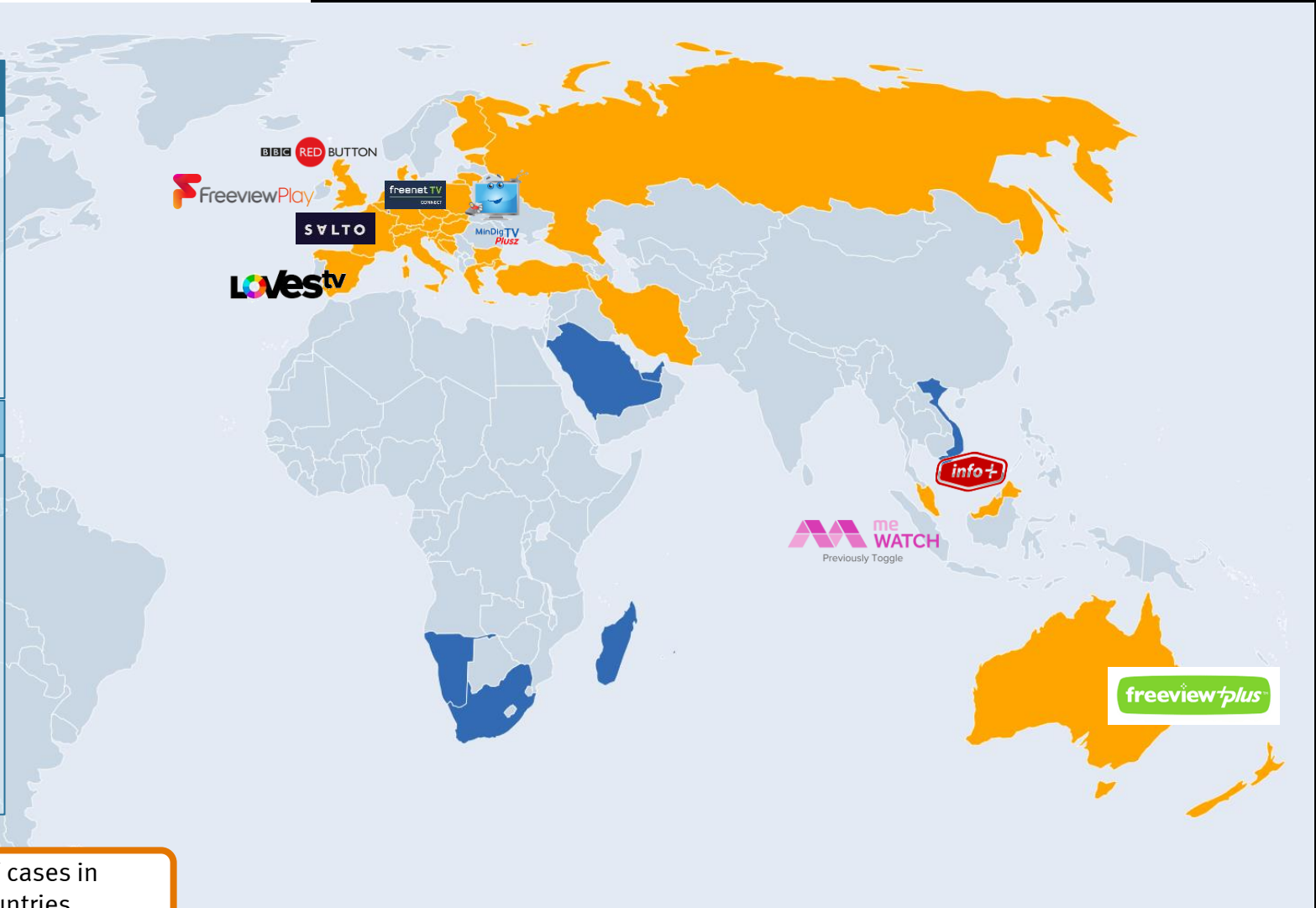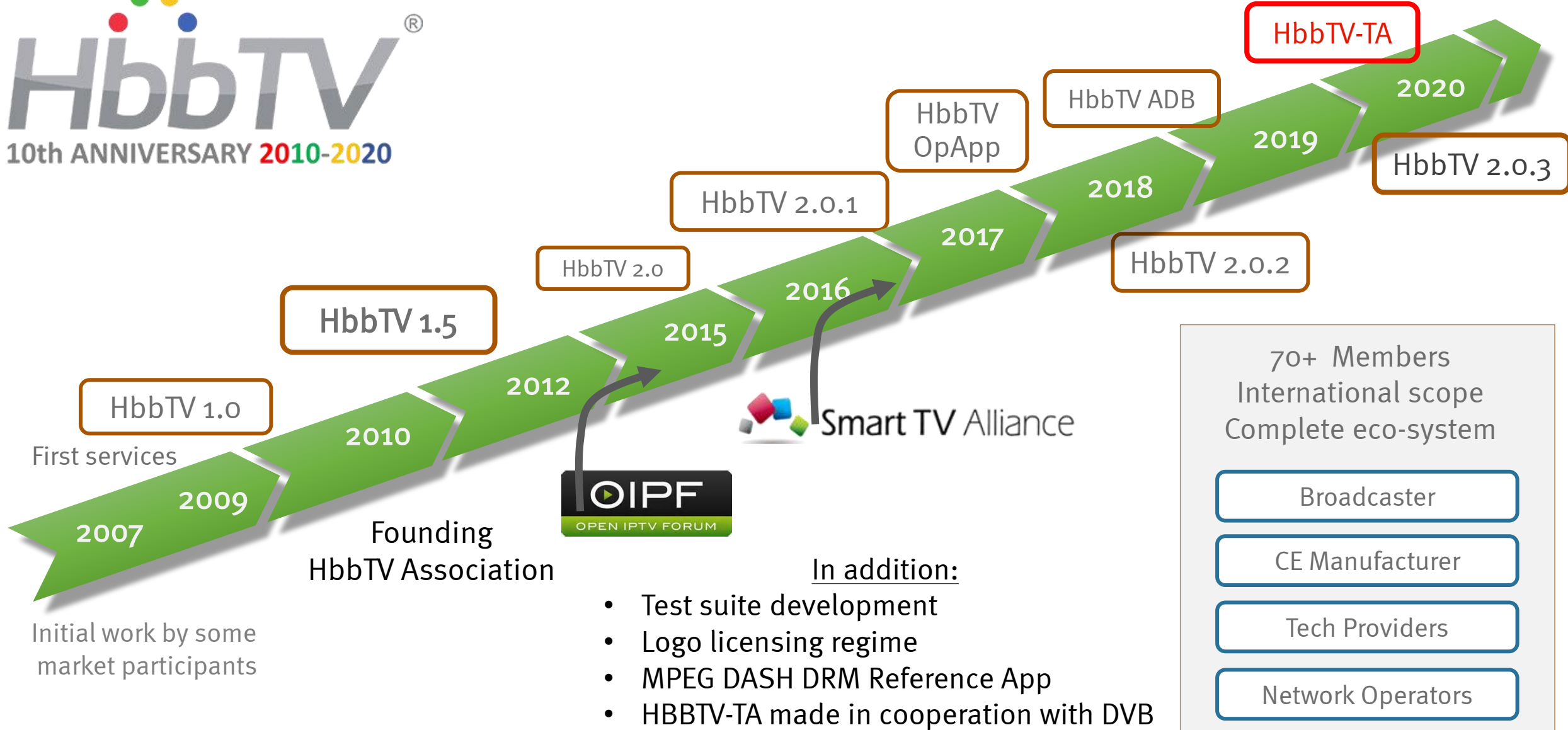
In addition:
- Test suite development
- Logo licensing regime
- MPEG DASH DRM Reference App
- HBBTV-TA made in cooperation with DVB
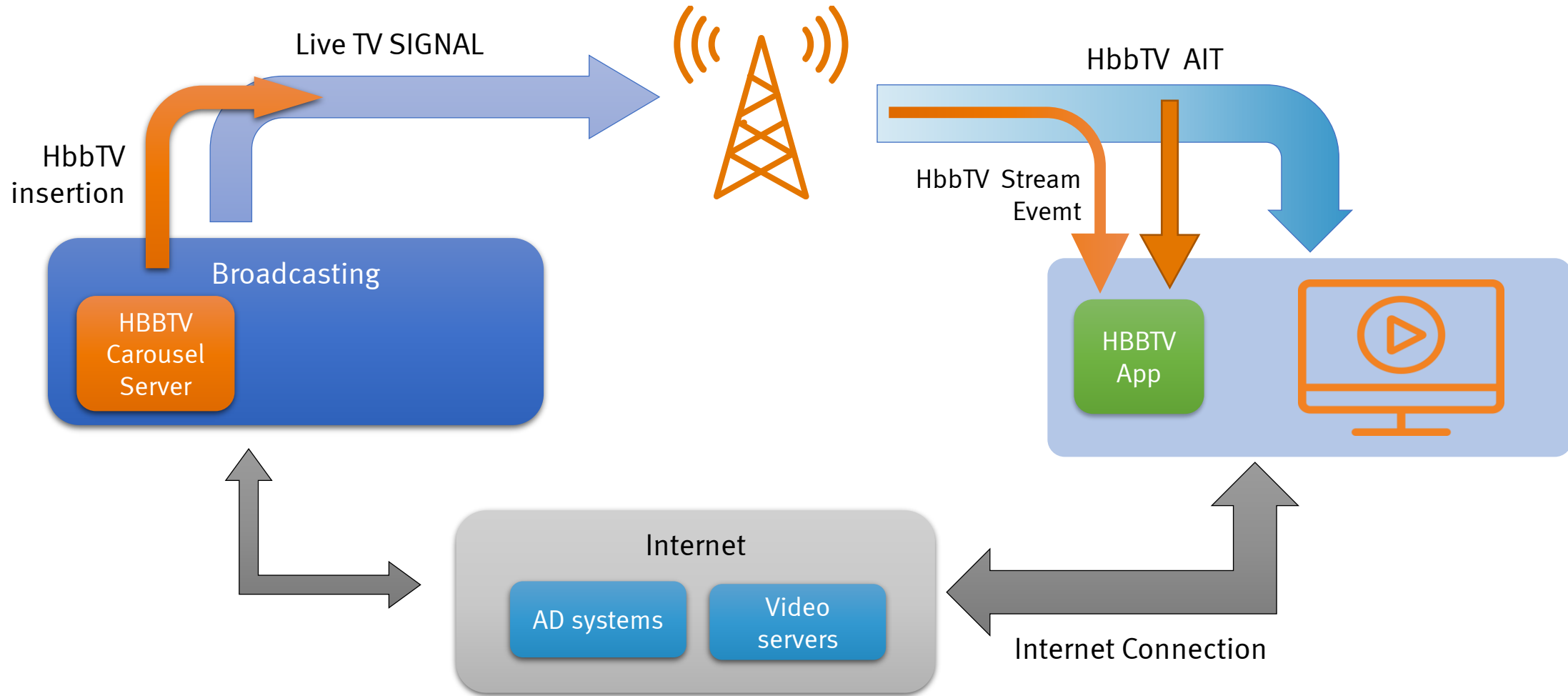
70+ Members
International scope
Complete eco-system

Broadcaster

CE Manufacturer

Tech Providers

Network Operators

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3

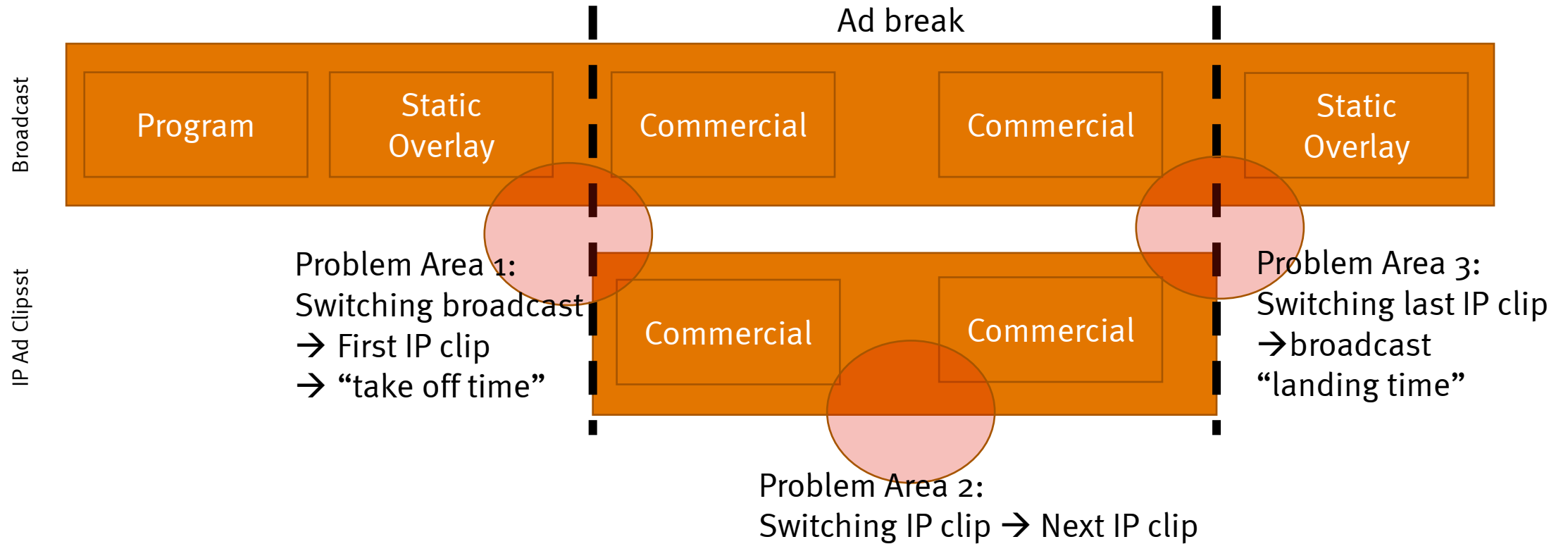# Targeted Advertising Solution Overview From Sofia Digital

- Sofia Digital's offering for HbbTV
  - Sofia Digital has solution for HbbTV AD Spot replacement
  - Solution covering both DVB-transmission and client-side application (including the player)
  - Client-side Dynamic Ad Insertion (DAI) with VAST
  - Support for advertising systems backend including integration with Ad system (Synamedia Iris, Invidi, Google, Freewheel)
  - Sofia Digital support also for DVB and HbbTV TA specific standards (when HbbTV-TA compatible receivers comes available)

- Sofia Digital TV Laboratory of over 100 devices
  - All major smart televisions models in Nordic in last 5 years
  - Client side code optimized on different TVs based on a whitelist with parameters

Seamless User Experience Sofia Digital	**Measurable** Ad platform vendor
Personalized Ad platform vendor	**Interactive** Sofia Digital

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HbbTV System Diagram

Live TV SIGNAL

HbbTV AIT

HbbTV insertion

HbbTV Stream Evemt

Broadcasting

HBBTV Carousel Server

HBBTV App

Internet

AD systems

Video servers

Internet Connection

Problem Areas in Spot Replacement

Ad break

Broadcast

| Program | Static Overlay | Commercial | Commercial | Static Overlay |

IP Ad Clipsst

| Commercial | Commercial |

Problem Area 1:
Switching broadcast
→ First IP clip
→ "take off time"

Problem Area 2:
Switching IP clip → Next IP clip

Problem Area 3:
Switching last IP clip
→broadcast
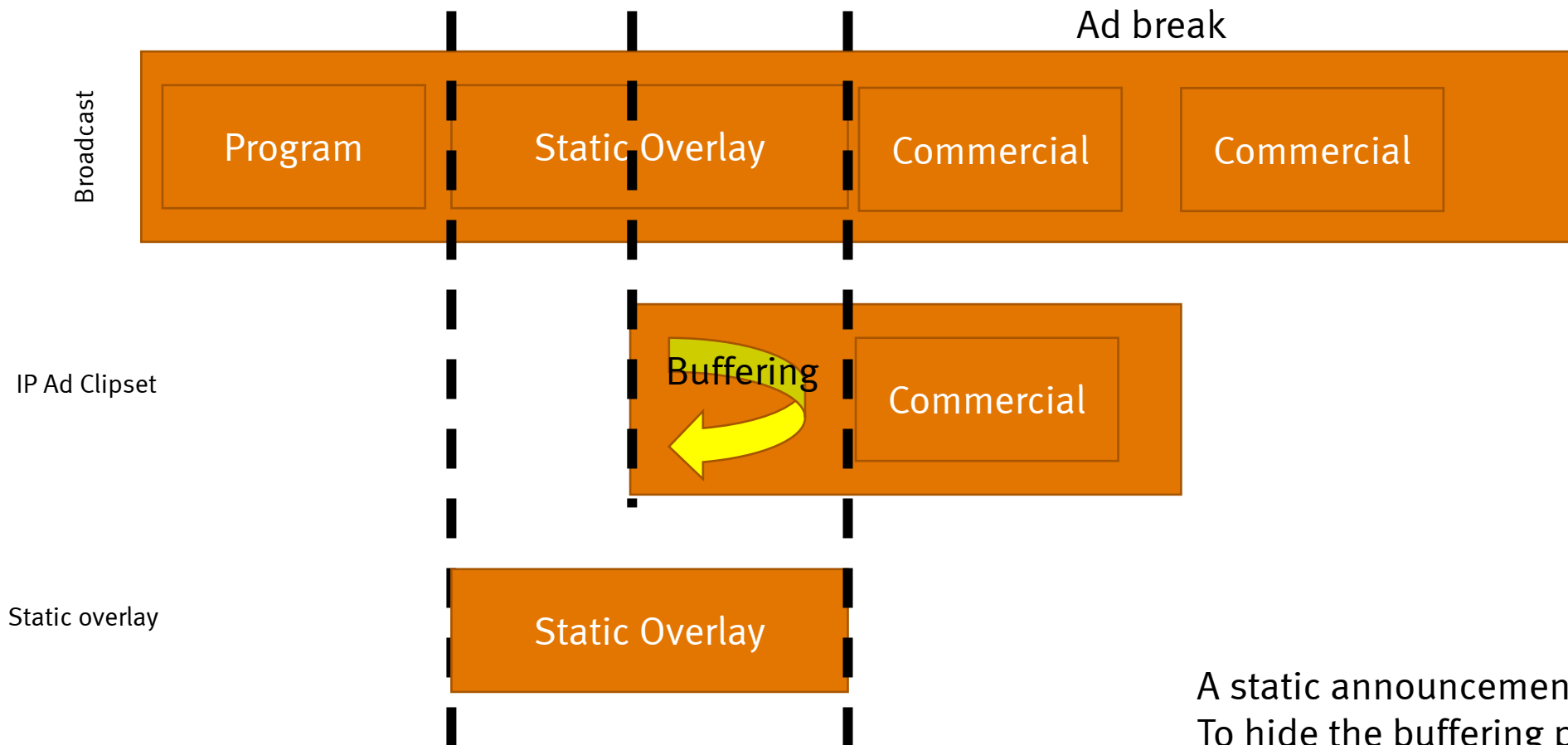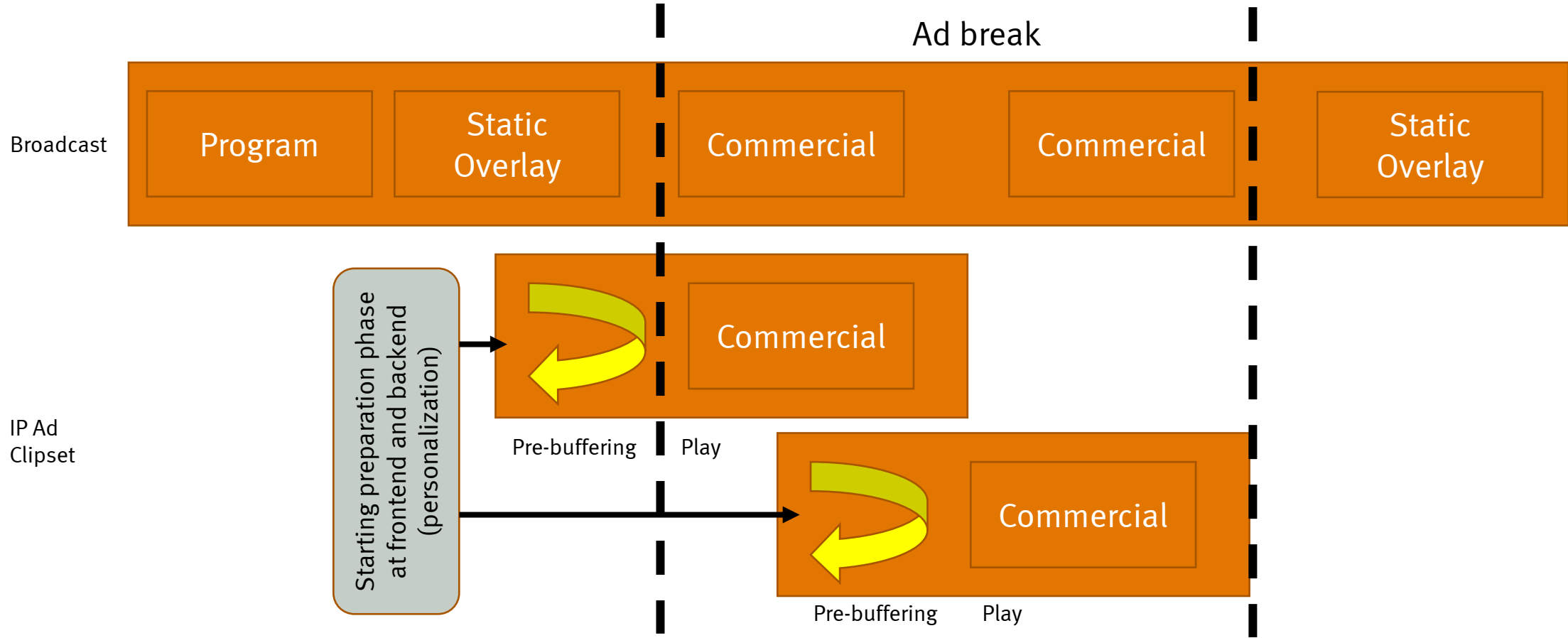"landing time"

Even HbbTV 2 does NOT provide any truly frame accurate frame switching
BUT: New DVB and HbbTV standards provide a number of tools to address the problem areas

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Switching Broadcast -> First Clip For HbbTV 1.5

Ad break

Broadcast

| Program | Static Overlay | Commercial | Commercial |

IP Ad Clipset

Buffering

Commercial

Static overlay

Static Overlay

A static announcement overlay can be used
To hide the buffering phase

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Sofia Digital Ltd.

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Improving Switching Performance Using HbbTV 2

Ad break

Broadcast

| Program | Static Overlay | Commercial | Commercial | Static Overlay |

IP Ad Clipset

Starting preparation phase at frontend and backend (personalization)

Commercial

Pre-buffering   Play

Commercial

Pre-buffering   Play

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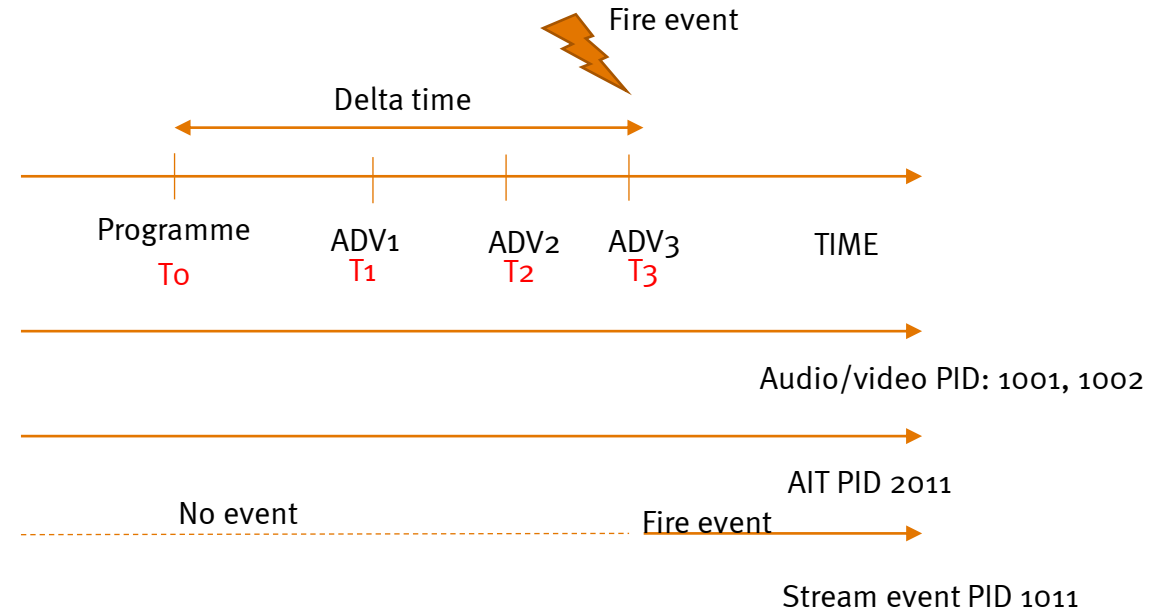Powering Smart Screens

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Production Workflow (SCTE35) With Optional Playout Manager
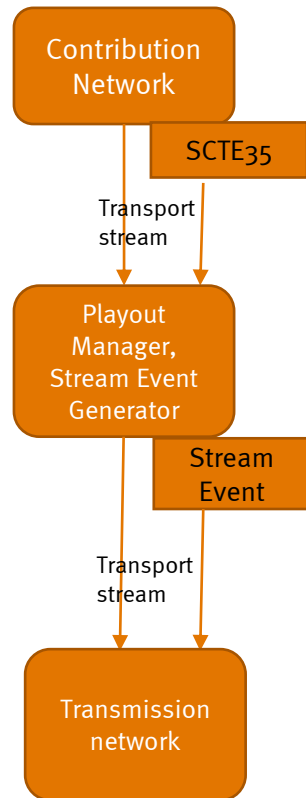
- SCTE104 used to signal substitution opportunities.

- Use existing support in many broadcast encoders to convert SCTE104 to SCTE35 messages.

- Introduce new downstream device (Sofia Backstage® Playout Manager) that reads the SCTE35 cue payload (including the PTS SpliceTime) and generates a single cueing Stream Event that includes the PTS of the splicing point.

- HbbTV application receives this single cueing stream event long before the substitution point, and uses it to both:
    1) Trigger decisioning and pre-load
    2) Later trigger the switch at the PTS SpliceTime specified in the event.

Case Example

- The time to launch the stream event may fluctuate depending on the program schedule alterations (delta time change)

- The transport stream contains SCTE35, which is used to generate stream event in synchronization with the program schedule

- The stream event launches the advertisement at the right time

Fire event

Delta time

Programme T_0 ADV1 T_1 ADV2 T_2 ADV3 T_3 TIME

Audio/video PID: 1001, 1002

AIT PID 2011

No event   Fire event

Stream event PID 1011

Television Laboratory

- Sofia Digital has delivered many sophisticated HbbTV applications to Mediacorp in Singapore, RTM and Mediaprima in Malaysia, MTV, Nelonen and Digita in Finland, Levira in Estonia, TRT in Turkey, Cellnex in Spain and many more around the globe.

- All applications have been tested extensively in Sofia Digital's receiver laboratory with over 100 televisions, which includes various receiver models from every major manufacturer. This ever-expanding collection includes older models since the year 2012 and all major Smart TV models from 2015 onwards as well as the latest models still to be introduced to the market.

- Working with Sofia Digital means that the customer does not need to build their own receiver zoo. Sofia Digital provides dedicated testing personnel familiar with and experienced in HbbTV related testing.

- Testing services are directed by Mr. Juha Joki, who has overseen Sofia Digital's testing services for over 10 years (since 2007).

HbbTV + OTT products available from Sofia Digital

- **Sofia Backstage® Playout Manager for HbbTV**
    - AIT insertion and datacasting with data-carousel
    - Installed at the operator/broadcaster head-end
    - IP and ASI configurations available for connect to any MUX
    - Can be upgraded for full DVB PSI-SI management

- **Sofia Backstage® VOD Manager**
    - Video-on demand metadata management

- **Sofia Backstage® EPG / Guide Manager**
    - Linear content metadata management
    - HbbTV+OTT channel list management

- **Sofia Backstage® Author**
    - Easy-to-use HbbTV content creation tool

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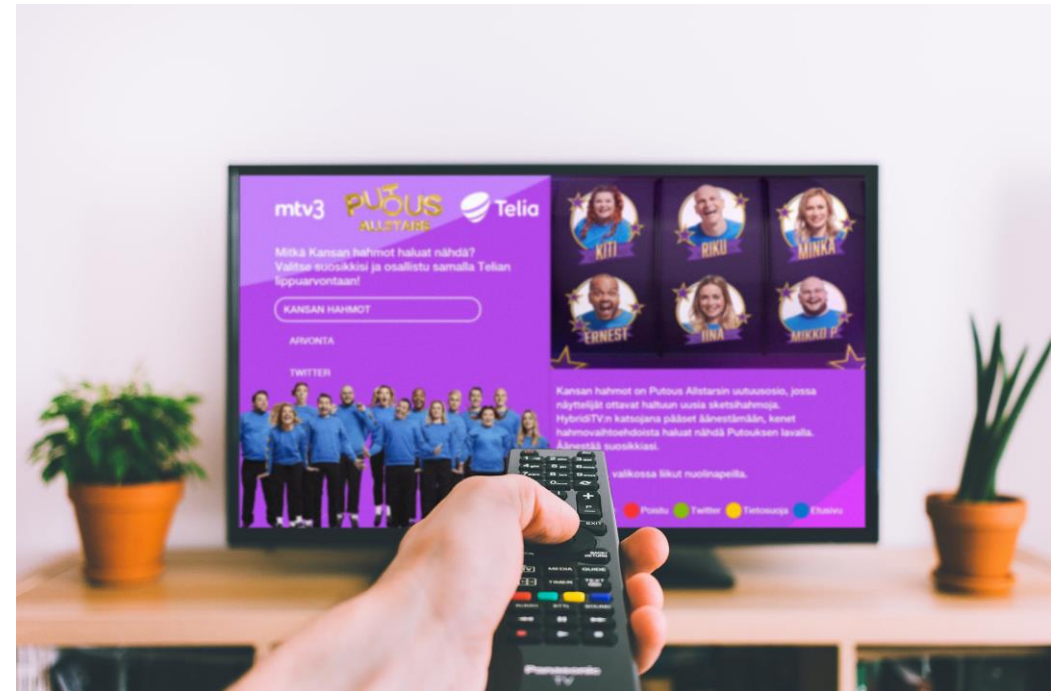
company/sofia-digital

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