HD+ Integrated in TV Sets
HbbTV Operator Application – Best practice report by HD+

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HD+ & SES

A short reminder
The SES Video challenge:

DTH needs to stay competitive concerning attractiveness for the end consumer
Astronaut und Satellit
Satellit und Fernsehen
Fernsehen und HD+
Es gibt Dinge, die gehören einfach zusammen.

Erlebe jetzt mit HD+ alle Rennen der Formel 1 auf RTL UHD
Why launching a HD+ HbbTV Operator App
We believe it’s GAME CHANGING.

PROVIDE a persistent and consistent USER JOURNEY on TV

ACTIVATE the unutilized COOPERATION POTENTIAL between Operator and TV Manufacturer
HD+ integrated TV

WHAT it means.

- no additional hardware required → no hurdles
- seamless installation and „App convenience“

BEST POSSIBLE USER EXPERIENCE

to VIEWERS

- no additional hardware required
- seamless installation and „App convenience“

to OPERATORS

LIVING PRODUCT

- easy updating and upgrading process of Apps
- no additional hardware → no additional marketing effort
- HD+ OpApp permanent active on screen

REDUCED EFFORT

to TV MANUFACTURERS

- based on open industry standard
- TV suitable CA
- OpApp provided by HD+
HD+ Integrated TV

The product ingredients

- Linear Content Rights (HD/UHD)
- EPG
- Search
- On-Demand Rights
- Restart
- Catch-up TV
- Event Pop-ups

User Experience
HD+ Integrated
Product
The HD+ Product

The best HD+ of all time: HD+ Integrated in TVs

What we had already!
- 24 of the largest private broadcasters in HD quality
- 2 exclusive channels in UHD quality such as RTL UHD
- Free 6-month trial of HD+ without registration

The new functions integrated in the HD+ Op App!
- Integrated CA → no extra hardware
- HD+ "Komfort-Funktion" at no extra charge
  - Instant Restart ("Neustart")
  - Catchup ("Mediatheken")
  - integrated EPG ("TV-Guide")
Integrated Conditional Access System

Rational

Integrating a CA system

- CA system essential to maintain the business model
- “STB in a TV approach”: no additional hardware: same must apply for the CA system
- Same functionality as a Smart Card based Set-Top-Box or a CI+ Module, but Internet access is required
- The integrated CA system needs an Op App to work and vice versa

Lessons learned

- Using standard APIs (like “sendDRMMMessage” or “onDRMSystemMessage”)
- Communication APIs candidate for deprecation
User experience with HD+ integration
First Time Installation
HD+ integrated in TVs – Installation

TV First Time Installation

“Two clicks”

Installation of HD+ after internet setup and channel search

1. First hint for HD+ when selecting the reception method

2. Option for installation after channel search

3. Activation of HD+ after first time installation

4. Starting of the six month free period

Webinar: HbbTV OpApp – Best practice report of HD+
HD+ integrated in TVs – Installation

Later Installation via Home-Bar or App Store

1. Later installation via Home Bar and App Store

2. Installation after overview about advantages

3. Activation

4. Starting of the six month of free period
Installation of Operator Application

Details

Technical background
- Download and discovery according to specification (via URI_linkage_descriptor in BAT with FQDN)

Challenges
- Distribution of certain app versions for dedicated models based on own release/distribution system
- Based on User Agent String (UAS)

Out of the specification
- Agreement with manufacturer where/how in first time installation the Operator Application is offered
- Agreement with Manufacturer where/how a later installation of Operator Application is offered
- The prominent offering of the Operator Application is essential for good installation rates
HD+ Integrated
User Experience
UI/UX Overview

EPG
UI/UX Overview

Search
UI/UX Overview

SI Banner
UI/UX Overview

Home Bar
“HD+ Komfort-Funktion” – Product
Switch to UHD version at UHD parallel broadcast

- If a programme is broadcasted in parallel in UHD quality, a popup message is displayed that programme is available in UHD quality.

- TV viewer can switch to UHD version by simply pressing OK button.
Electronic Programme Guide and SI Banner

- Replacing the native TV UI elements
- Information source:
  - Internet database (aggregated HD+)
  - DVB-SI (EIT) as fall-back

Recordings

- Scheduling of recordings via EPG

Search

- Search over all contents (future, now, restart, on-demand)
- Backend driven

Conclusion

- No big issues on specification side
- Implementing of recordings scheduling quite complex

<table>
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<th>Main UI elements of the Op App</th>
<th>Replacing</th>
<th>New</th>
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<tbody>
<tr>
<td>EPG</td>
<td>X</td>
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<tr>
<td>Channel list</td>
<td>X</td>
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<tr>
<td>SI banner</td>
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<td>App settings</td>
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<td>X</td>
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## Channel List Management

### A Challenge…

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<th>Case 2</th>
<th>Case 3</th>
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<td><strong>Problem</strong></td>
<td><strong>Problem</strong></td>
<td><strong>Problem</strong></td>
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<tr>
<td>User deselects “encrypted channels” in first time installation</td>
<td>A new channel is added by the operator</td>
<td>User wants to reorder the channel list</td>
</tr>
<tr>
<td><strong>Result</strong></td>
<td><strong>Result</strong></td>
<td><strong>Result</strong></td>
</tr>
</tbody>
</table>
| Channels are missing in Operator Application  
No “easy” way to add them | Channel is missing in the channel list  
No “easy” way to add the channel | Inconsistency between native list and operator’s list or  
“Broken” UX (reordering via native TV UI) |
Playback of OTT content

Working quite good out of the box

On-demand content is needed to enrich the broadcast product!

<table>
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<th>Linking approach</th>
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<td>For public broadcasters: linking approach</td>
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<td>For channels of the HD+ channel package: streams by HD+</td>
<td>For public broadcasters: linking approach</td>
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<td>Deep link to the content detail page</td>
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<td><strong>Learnings</strong></td>
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<td>DRM &amp; MPEG-DASH worked quite well “out of the box”</td>
<td>“Broken” UX (no back journey)</td>
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<tr>
<td>Lifecycle management</td>
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<td>Own player UI/UX</td>
<td></td>
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</tbody>
</table>
HD+ Operator Application

Conclusions

The HbbTV Operator Application is a great success for HD+
- The HbbTV Operator App is definitely a great success for HD+ and **stable in daily operation**!
- HbbTV Operator App specification is comprehensible and well thought through

Nevertheless there are challenges:
- The integration of an Operator Application is still a challenges for both, the manufacturer and the operator
- Deprecations of APIs need to be considered carefully in the future
- Channel List Management is “a challenge”
- User journey for linking from the Operator Application to other HbbTV applications
HD+ integrated TV

WHAT happens NEXT in the German TV market.

April 2019 – market launch
Panasonic UHD and OLED TVs include **INTEGRATED HD+**

August 2019 – market launch
Samsung UHD and QLED TVs include **INTEGRATED HD+**

2020/2021 ff. –
**HD+ Product enrichments and innovative end consumer solutions…**

2020/2021 ff. –
**Market launch of further TV manufacturers and major TV brands…**

Stay tuned!