

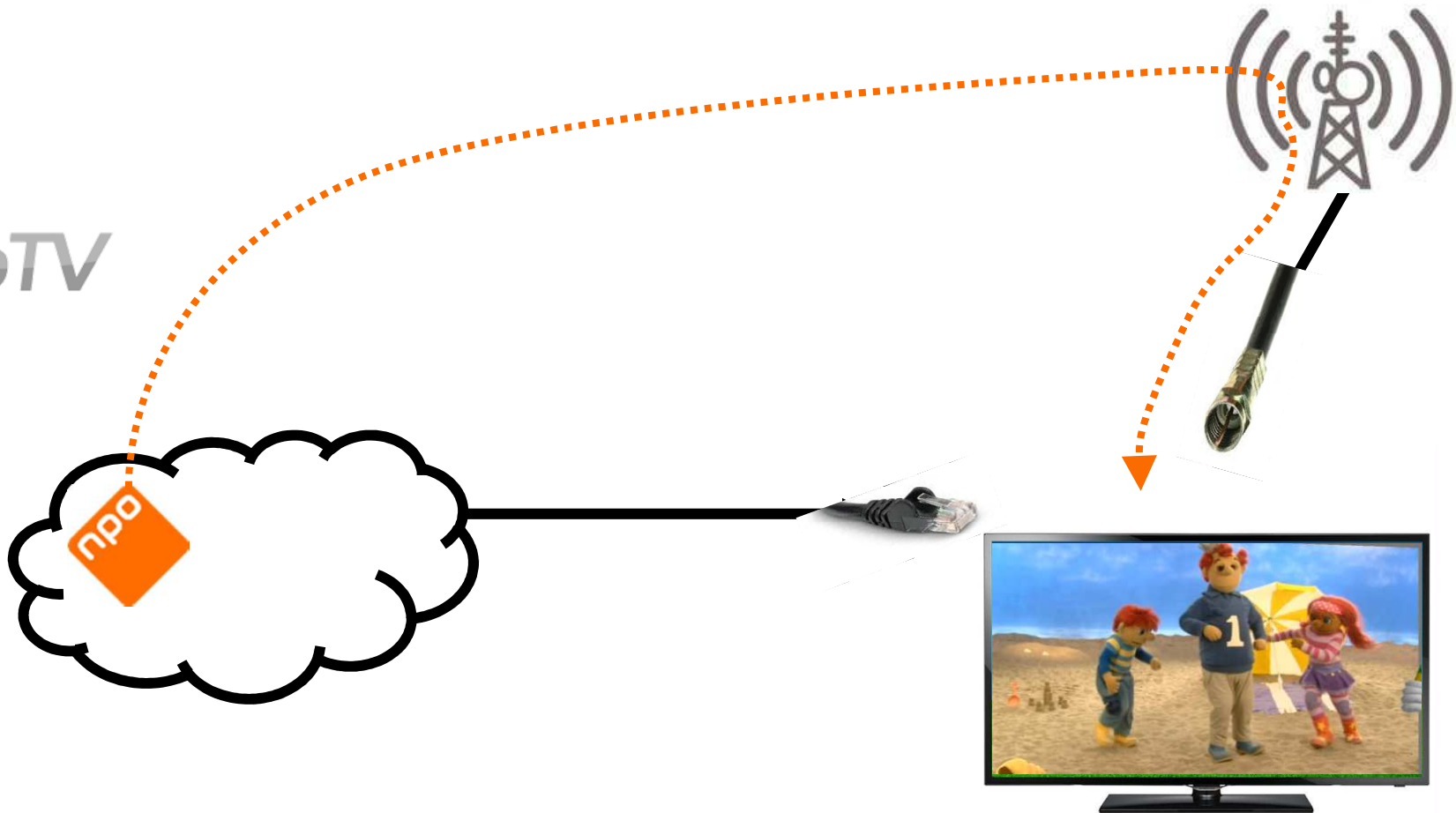
# Independent App Discovery for HbbTV

*What is it & Why do we need it?*

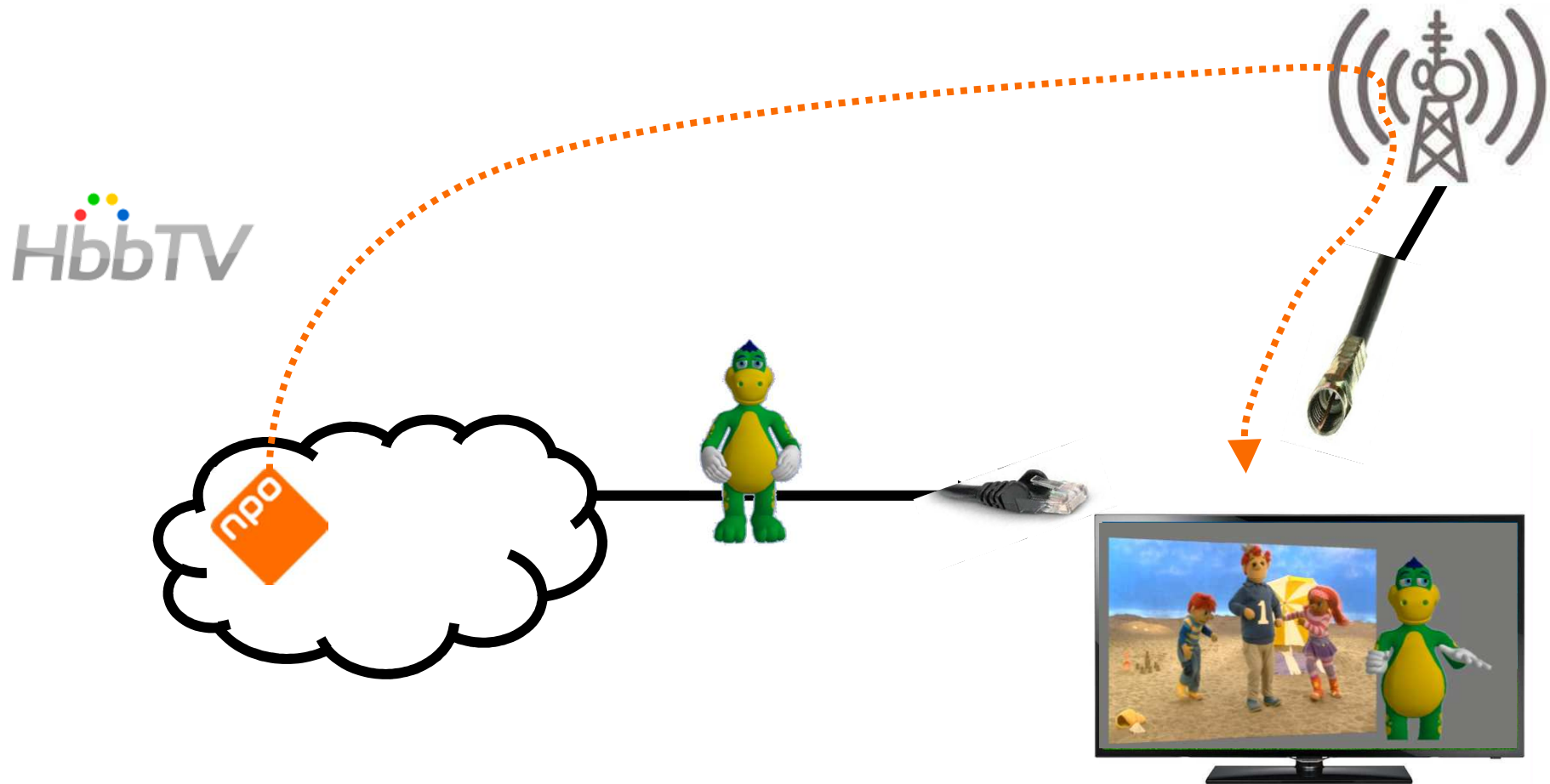
Project sponsored by NPO, the Dutch Public Broadcasting Organisation



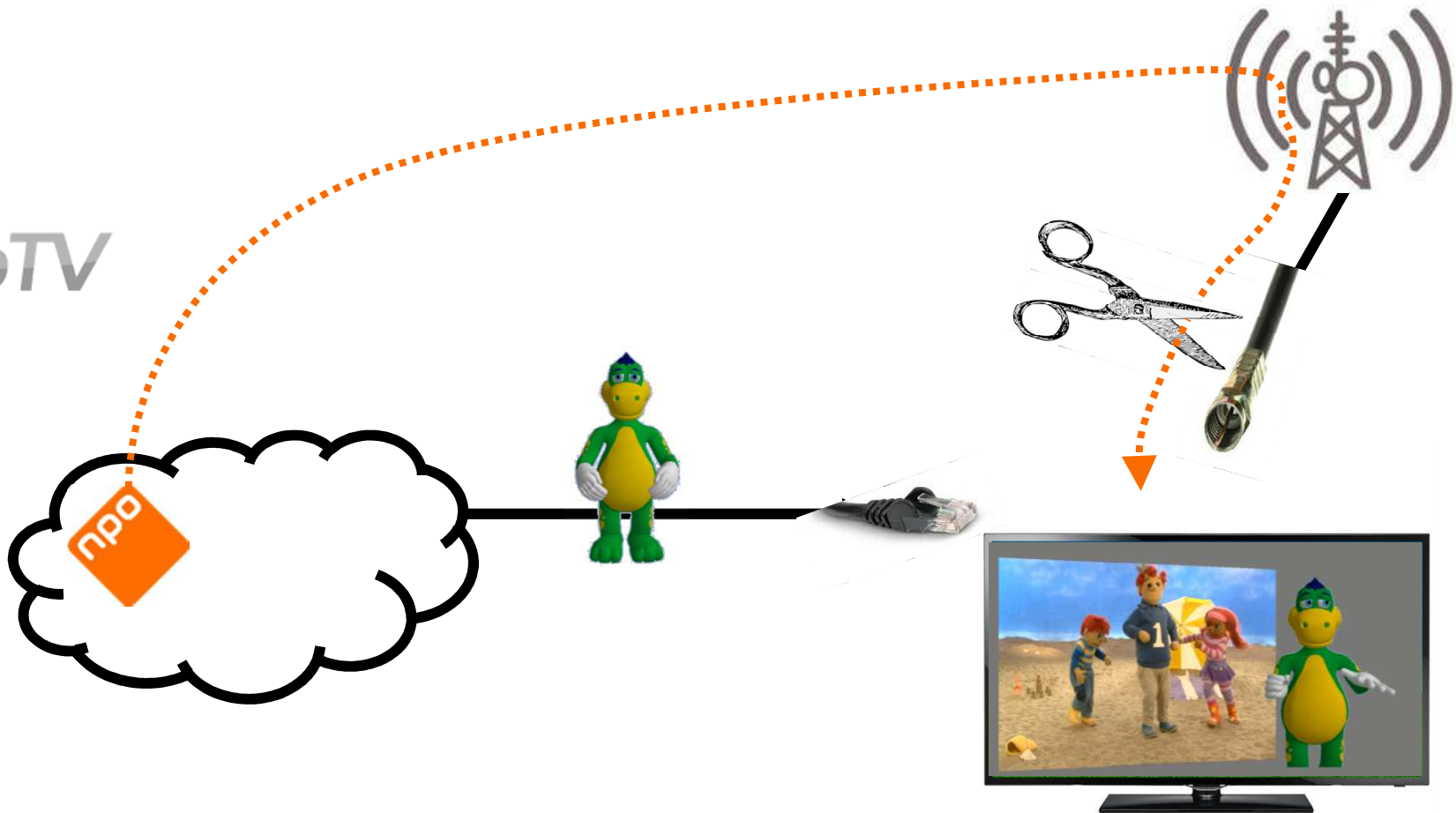
# Independent App Discovery



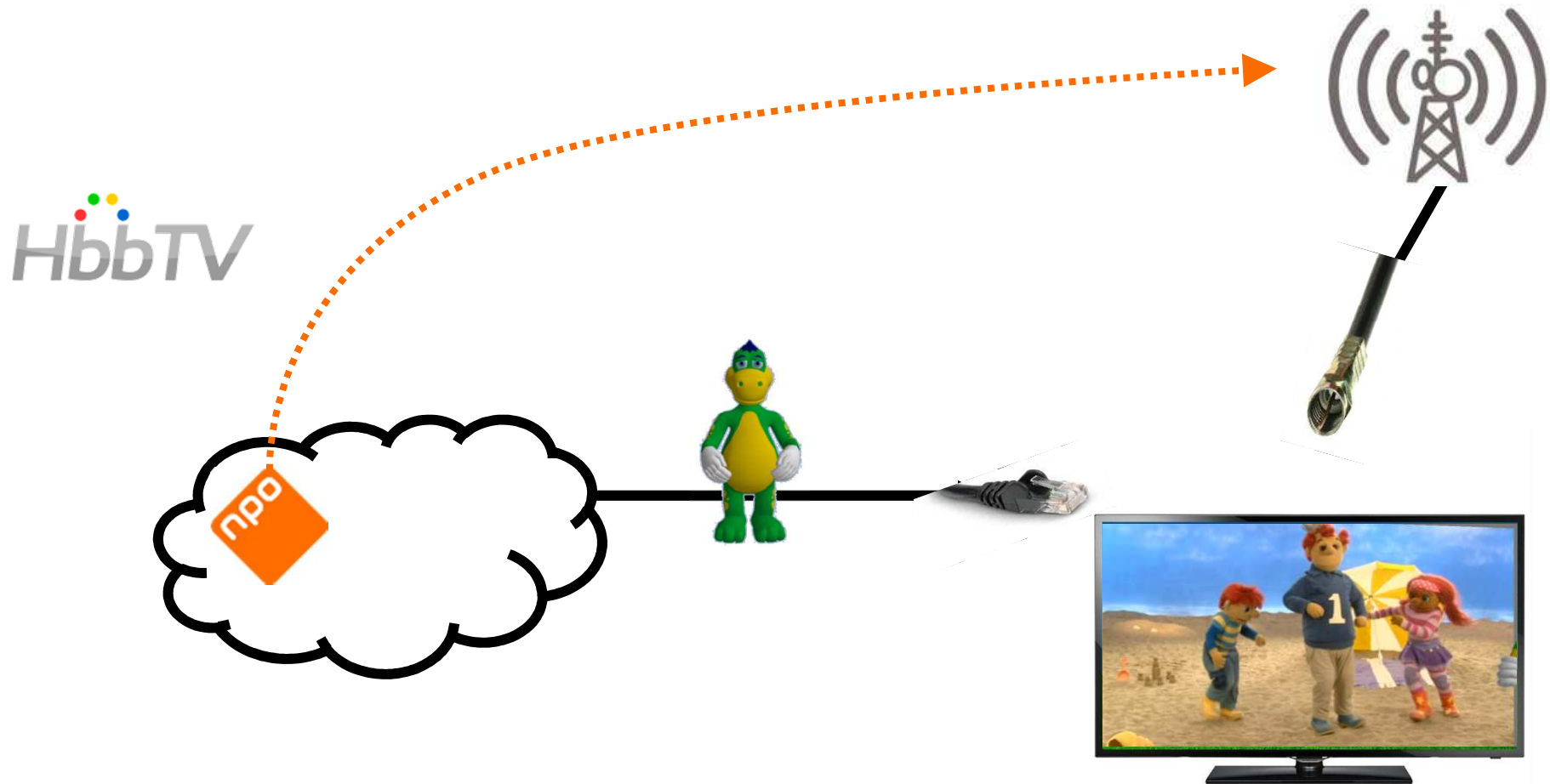
# Independent App Discovery



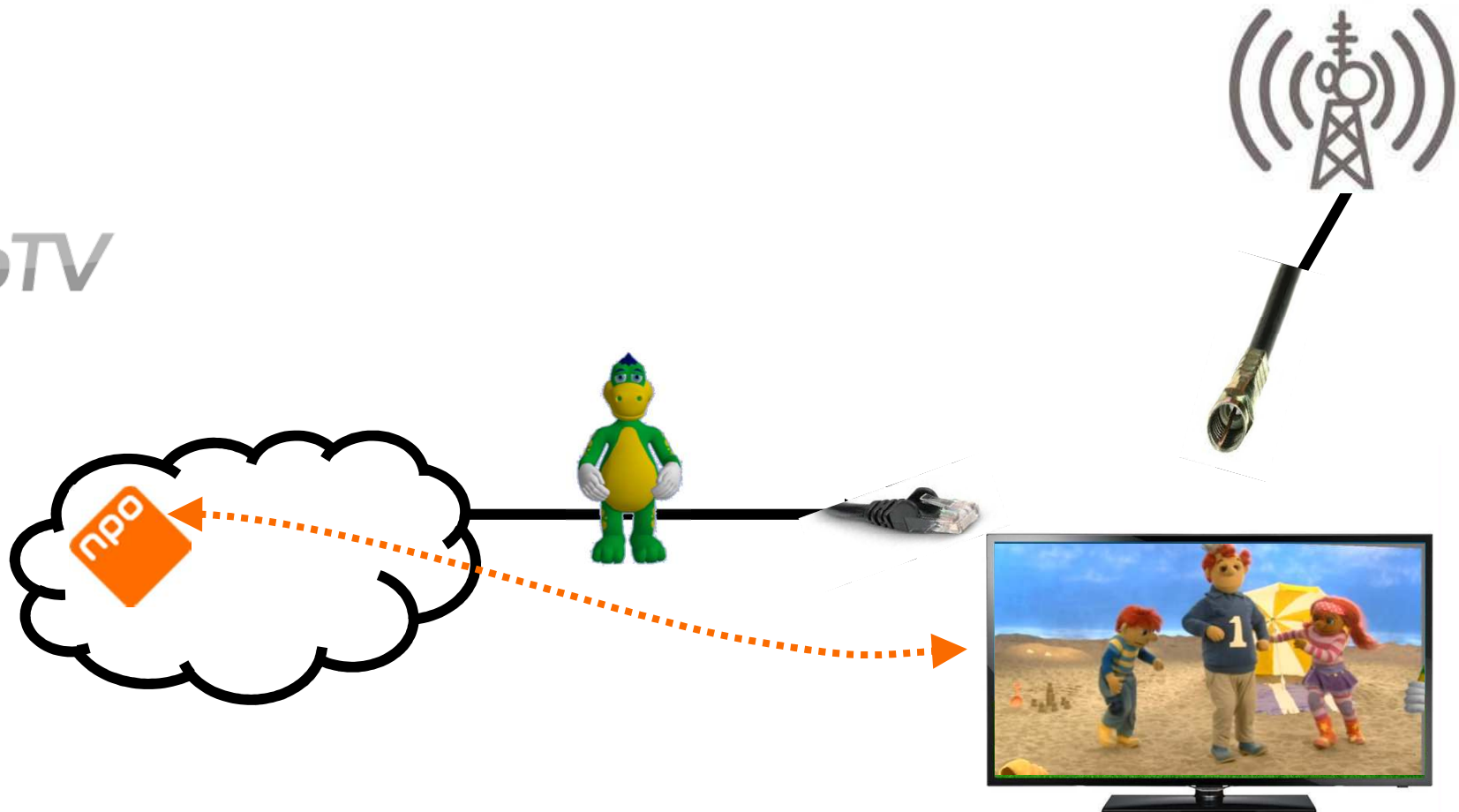
# Independent App Discovery



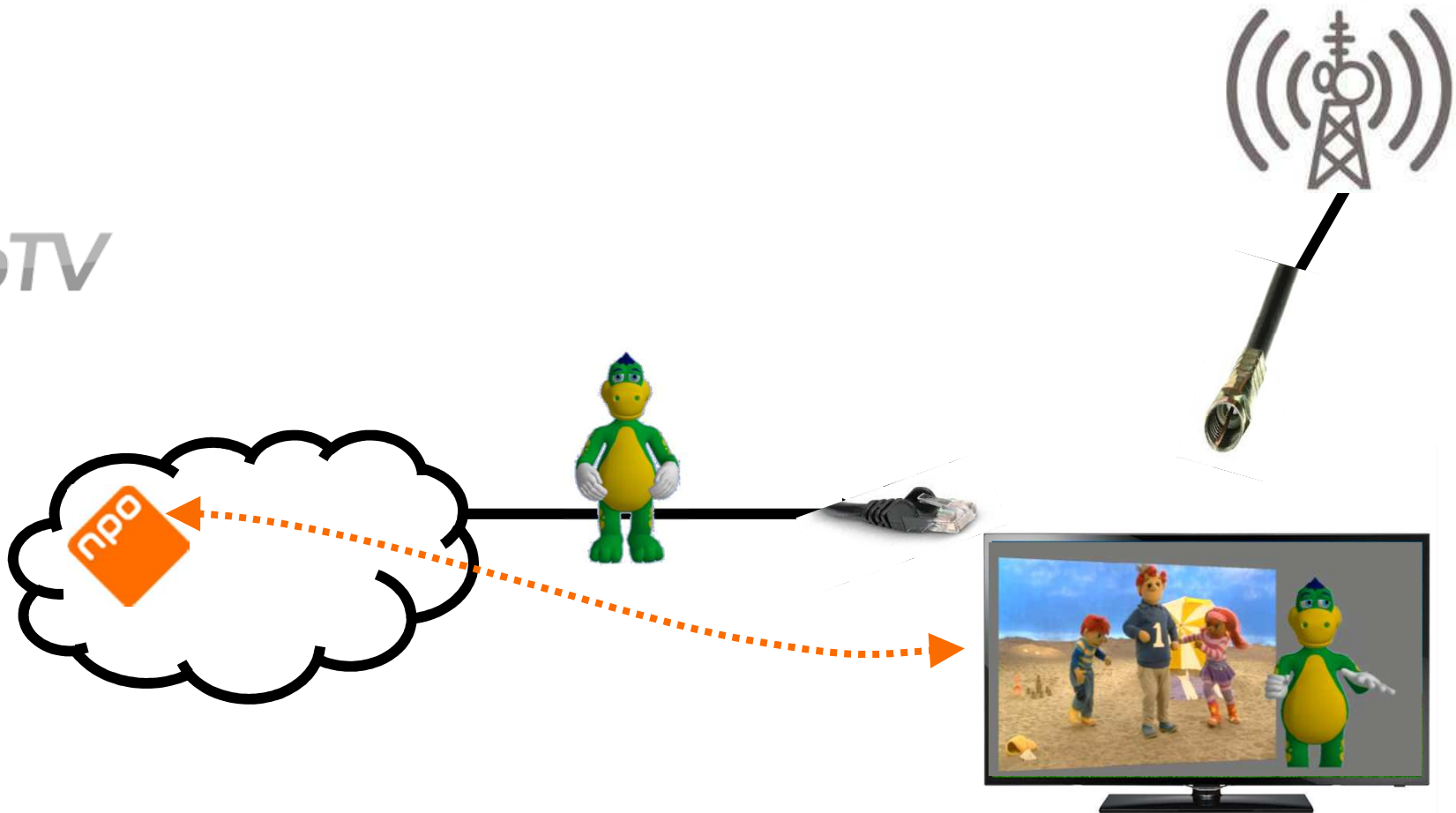
# Independent App Discovery



# Independent App Discovery



# Independent App Discovery



## Why?

- › HbbTV is triggered by the AIT (Application Information Table) that is carried in the DVB signal of the broadcaster.
  
- › Virtually all new TVs are now HbbTV compliant, but the user may still not be able to use the service, because:
  1. The trigger may not be carried by the operator, or
  2. The TV is connected to an STB using HDMI or SCART, while
    - a) There is no AIT in the broadcast
    - b) There *is* an AIT in the broadcast, but the STB does not support HbbTV



## Requirements

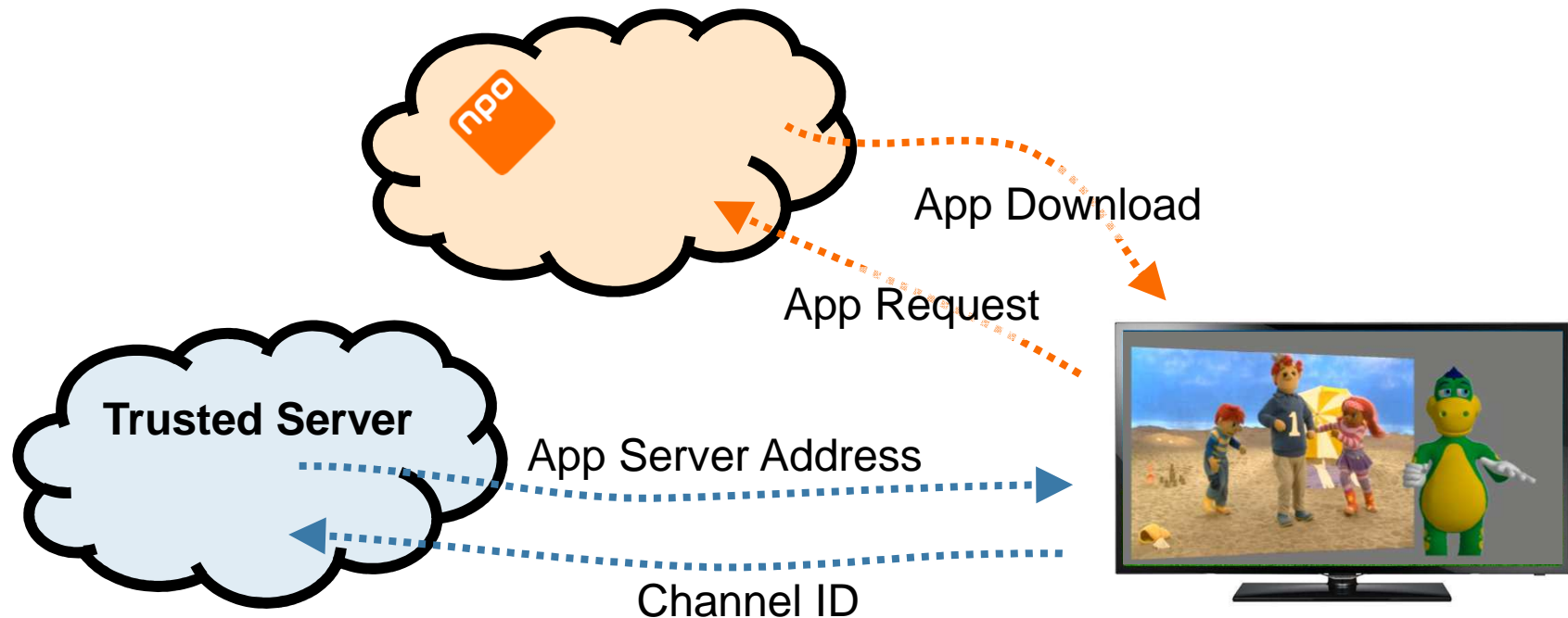
- › Backward compatible
- › Don't rely on regulatory regimes
  - › Can rely on some sort of net neutrality though
- › Terminal should know when to invoke the new discovery method
- › Secure and respecting of privacy
- › Specify App Lifecycle
- › Provide updates (“should”)

## How?

- › Can the TV discover the HbbTV application independently from the broadcast trigger? Maybe ...
- › Possible approaches:
  1. Send the AIT directly in the broadcast (in a way that cannot be removed)
  2. Send a server address directly in the broadcast
  3. Let the (connected!) TV retrieve the application that belongs to the channel it's currently displaying.

## Example of 3<sup>rd</sup> case in previous slide **For the TV to retrieve the App ...**

- › It needs to know the channel it's watching
- › It needs to know which server goes with that channel



## Retrieving a unique ID when TV is connected to a digital broadcast

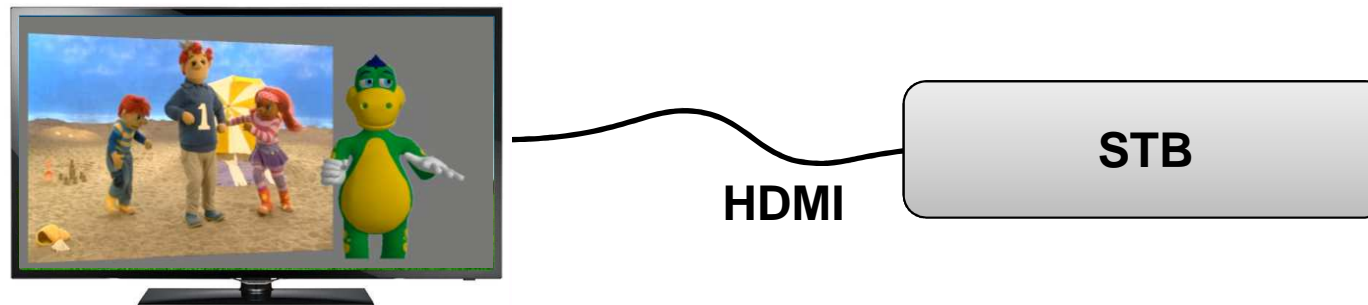
- › DVB Service Name / DVB Original Network ID
- › EPG
- › Some field in the Elementary Streams
- › Teletext: old but reliable
  - › Considered integral part of the broadcast signal
  - › Encode server address or ID in some page, or use the Country and Network Identification (CNI)



TELETEXT			
Staking Air France voorbij.....		125	
Traangas tegen betogers Hongkong		134	
Saudi-Arabië:nog jaren strijd...		126	
Al-Nusra roept op tot aanslagen.		127	
nieuws	101	sport	601
rtv	200 250	weer,verkeer	700
omroepen	300	voetbal	800
nos op 3	400	ondertiteling	888
financiee	501	disclaimer	393
copyright N O S 2014			
nieuws	sport	tv gids	weer

## Solutions when connected to HDMI or SCART

- › Need to use a form of Automatic Content Recognition:
  - › Take **fingerprint** and send to some server
    - › Requires many queries; TV doesn't know when channel changes ...
  - › Extract a **watermark** from audio or video
    - › Requires some sort of standardised watermark
    - › ATSC is looking into this for its ATSC 3.0 specification
    - › Could be a very simple watermark
    - › Could make HbbTV work even for recorded content ...



## Next steps

- › Our goal is to add this to the HbbTV specification
  - › Timing and form still t.b.d.
- › Requirements have already been drafted.

**Questions or suggestions?**