HD+ OpApp development

From takeoff to successful landing

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Introduction – TPV explained

TPV Products include various types of monitors, TVs, mobile
phones, tablet PCs and other Display products

~30,000 employees worldwide

OBM/ODM business :

TPVISION   Philips brand

- To develop an HbbTV Operator Application:
  - structural cooperation needed between the operator and the manufacturer
  - to make it a seemless experience, deeper user integration needed

  E.g. the installation of the OpApp on top of a native satellite list requires co-work between operator and manufacturer

→ All of the above is captured in the OpApp Bilateral agreement between the manufacturer and the operator

Introduction – HbbTv app vs HbbTv OpApp

Current HbbTV shows Broadcaster apps
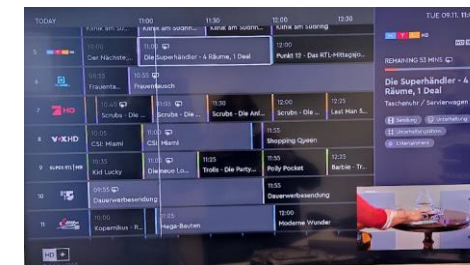
- shows broadcaster application

HbbTV OpApp spec
- **Allows operator UI on TV**
- **Requires authentication by TV manufacturer**

OK key starts Operator UI

Guide key shows Operator EPG

+/- shows Operator Zap Banner
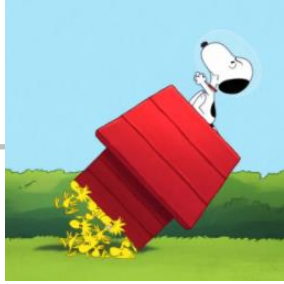
Company philosophy

- Horizontal market development, 1 serves all
  - Making use of open industry standards
  - No HW dependency with respect to DVB Conditional Access

- Platform development explained
  - TV ranges build-up using different platforms
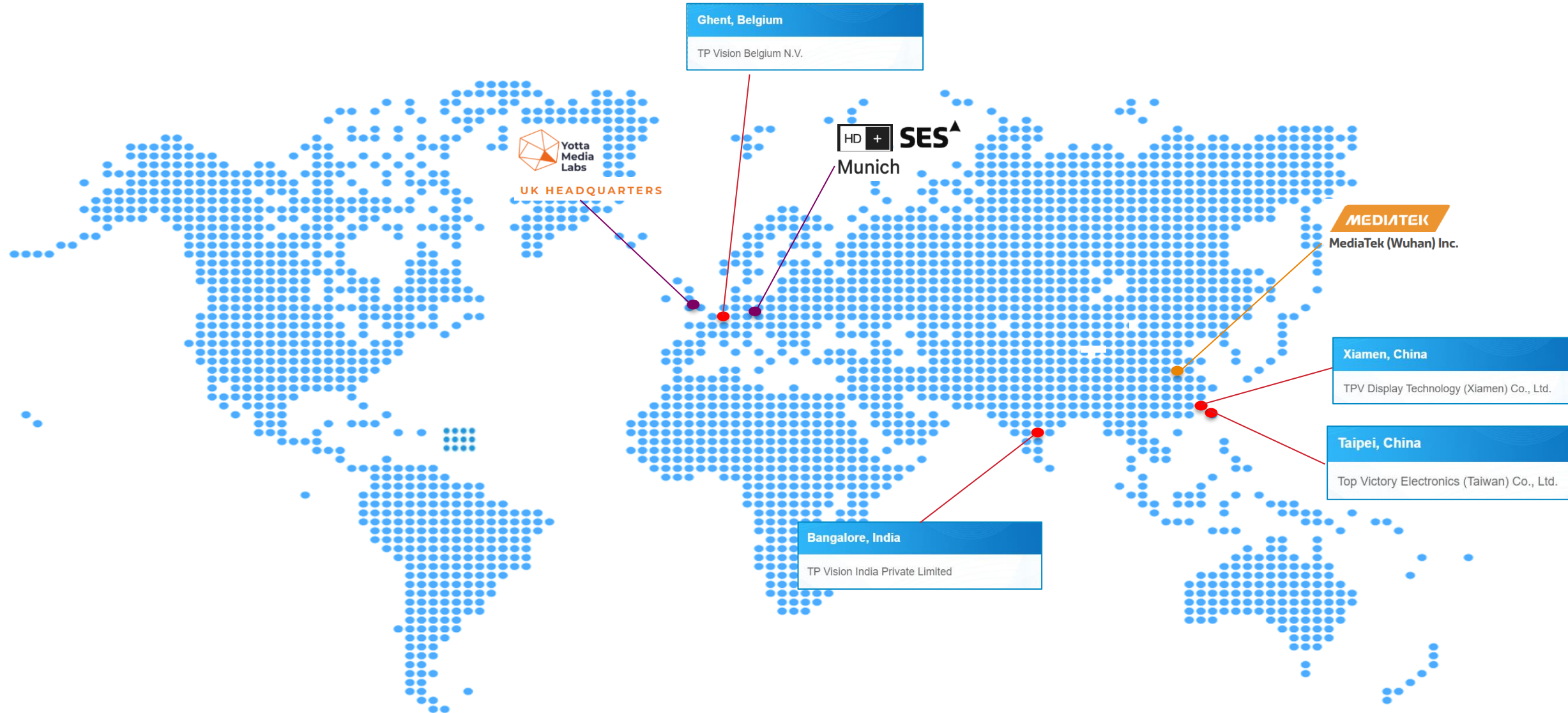   - Some Android based
    - Some linux based
 - Average platform development lead time: 9 to 12 months

- Determine the stakeholders : internally and externally

- Finding the right vehicle to enable takeoff :
  – Timeline of OpApp integration needs to match the platform development timeline
  – Match found in our Android upmarket platform

- Bilateral agreement with operator :
  – Commercial : icon positioning, contract, when/how to introduce, marketing
  – Technical aspects : Requirements discussions, performance expectations, security aspects,…

Takeoff - Stakeholders

Ghent, Belgium
TP Vision Belgium N.V.

Yotta Media Labs
UK HEADQUARTERS

HD + SES
Munich

MEDIATEK
MediaTek (Wuhan) Inc.

Xiamen, China
TPV Display Technology (Xiamen) Co., Ltd.

Taipei, China
Top Victory Electronics (Taiwan) Co., Ltd.

Bangalore, India
TP Vision India Private Limited

- Business terms :

  – **Quality assurance:** How to ensure the OpApp and Tv behave as expected

     → Testing organization is crucial in this :

      o Multi-site setup : who tests what, how to test,…

      o Test case coverage to handle both functional, integration, stability as performance requirements

  – **Software updates :** How to handle SW updates of both the OpApp and Tv → all should remain functional at any time for the end user

  – **Branding :** How to represent the OpApp to the end user

- Application provision and framework :

  - **Application provision :** describes the preconditions for the OpApp to run e.g. size, discovery mechanism, network required

  - **Application framework :** describes the behavior of the OpApp

    - Description of first time installation

    - Launch of the OpApp : which keys are entry points, which page to display

    - Error handling in case something goes wrong
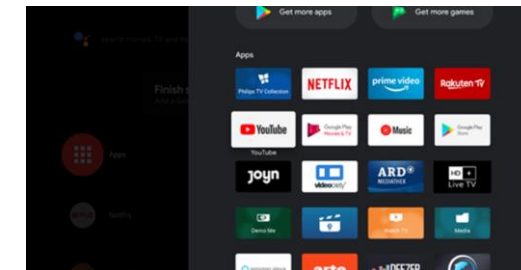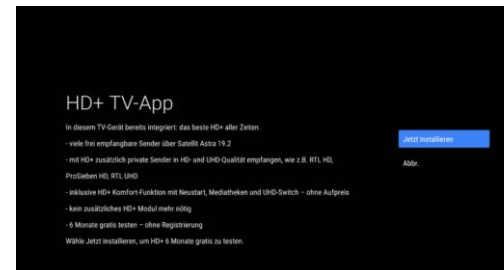
- **Security** :
  - How to handle authentication of the OpApp
  - How to exchange and manage the certificates

- **Scope** of Operator Application
  - Describe the UI interaction : where to replace the TV UI by OpApp UI
  - Key handling : which keys are handled by the OpApp

- **Terminal capabilities** :
  - Describes the channel list management and potential use of optional APIs

Turbulance along the way

- Impact of COVID
  - Project timing: Q4 2020 – Q3 2021
  - No onsite workshops, no F2F meetings
  - Workaround using regular telco's and virtual one roofs
  - Work multi-site based on same environment : embedded CA test app, test bed
  - →Time loss in establishing requirements baseline and debug of system issues (needing stakeholders from different sites/timezones to debug)

Turbulence along the way

- ## First time OpApp development
  - → Requirements baseline is essential component of the bilateral agreement
    - Expectations from operator and manufacturer must match : feature usability, messages shown to user,…
    - Allows the preparation of test material
    - Covers handling of security aspects like certificate handling

- ## First time embedded CA system
  - – SOC supplier co work with CAS supplier (Nagra)

The landing

- Staged introduction to the field of OpApp capable TV SW

- First TVs launched in June, HD+ OpApp introduced in October

- Different means used to control the staging of TV SW :

  - IP Pull : Enable HD+ OpApp for customers actively 'looking' to update the SW of their TV set

  - IP Push : Enable HD+ OpApp for all customers who have enabled automatic SW update

  - Production : Introducing HD+ OpApp enabled SW into production

- ## We stayed close to the HbbTv standard (avoid proprietary fixes)
  - Gain for manufacturer : allows easier integration of other OpApps
  - Gain for the operator : allows easier integration of other brands

- ## Open and direct Communication
  - supported by tooling : Slack, Confluence and Jira
  - this feeds into the trust relationship between manufacturer and operator

- ## Clever setup of the test environments
  - Access to live recordings for all development teams : most stakeholders not in EU hence outside of the satellite footprint
  - Automation of stream capturing and deployment across the globe (India, China)

- First time development effort done in spite of Covid

- Looking for new engagements