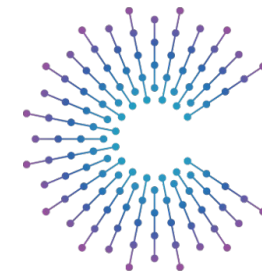




**Video Initiative  
Ideation  
5th Feb 2024**



**COVESA**

# Goal

Reducing access barriers for video content providers by standardizing the technical implementation in the car.

# Why it's important?

Automotive has a potential to become the new (relevant) content distribution platform, if we take lessons from Smart TV evolution, standardize and open up auto-grade features.



- User Experience
- Content Discovery
- Connectivity
- Personalization
- Data monetization
- Safety & Privacy
- Innovation

# Agenda

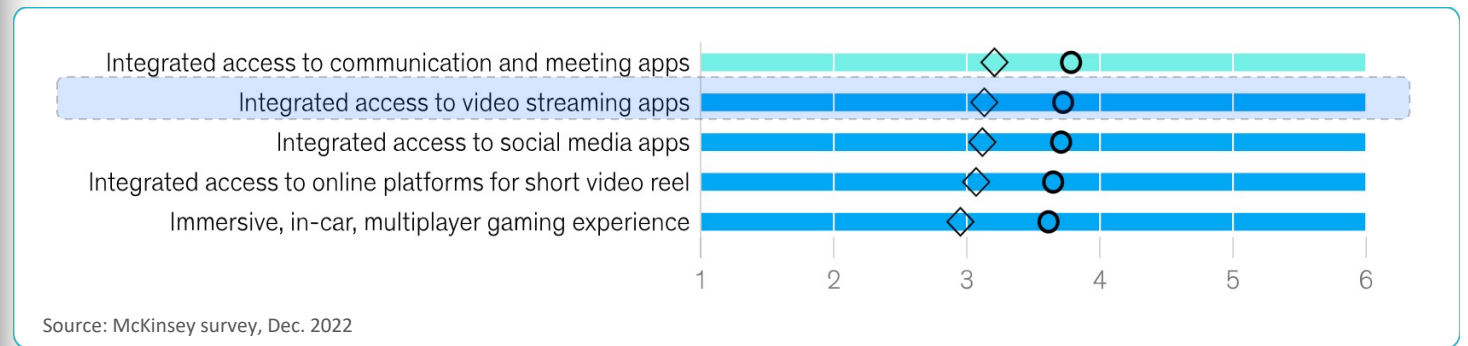
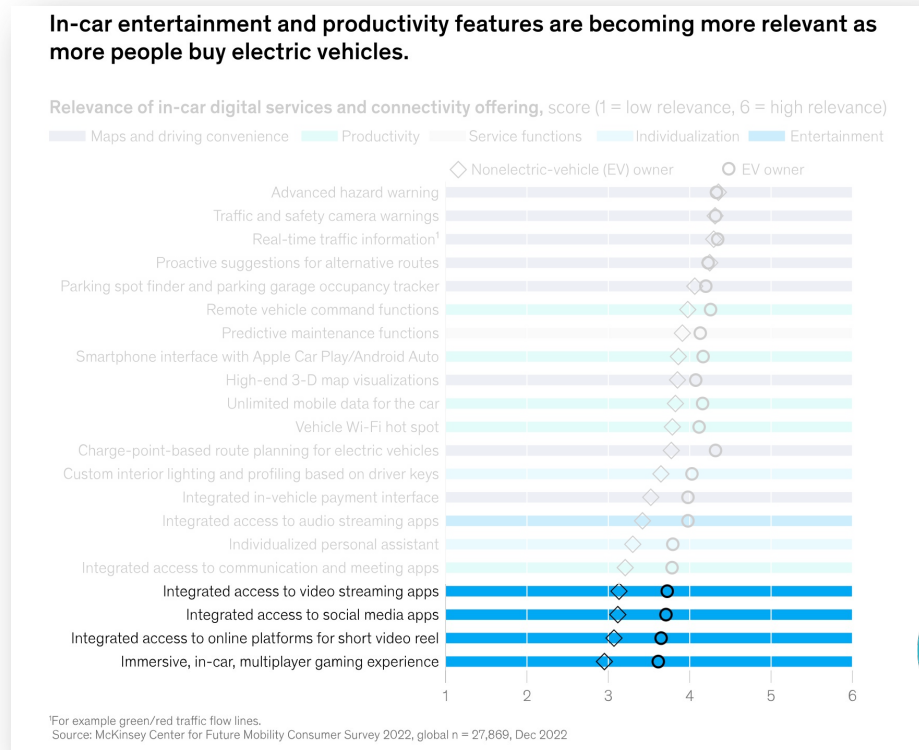
- Video streaming landscape
- Key challenges to solve
- Questions & Next steps



# Video streaming landscape

# Growing importance of entertainment part of IVI

According to different surveys, 45 – 75% of car users rate the importance of Infotainment / Entertainment and integrated access to video streaming as "particularly important".

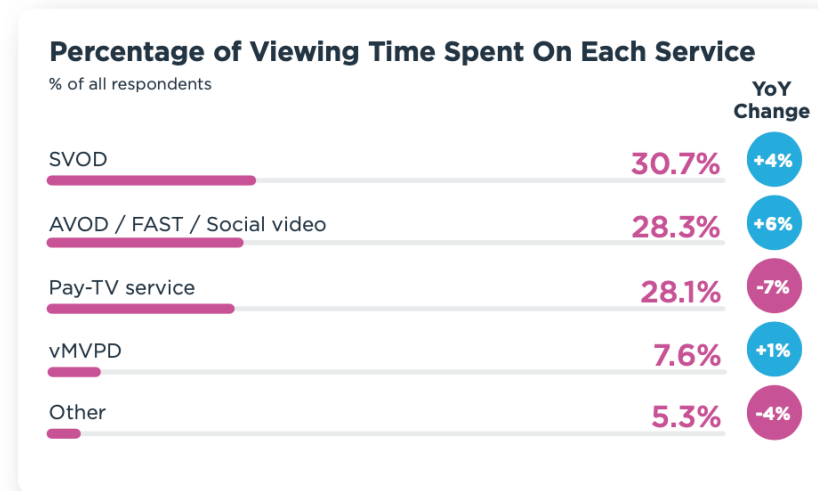


# What are the viewing patterns?

# 4.7h

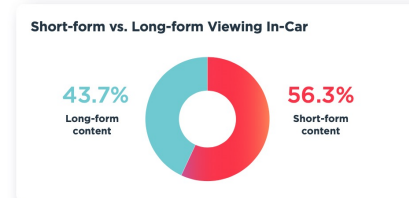
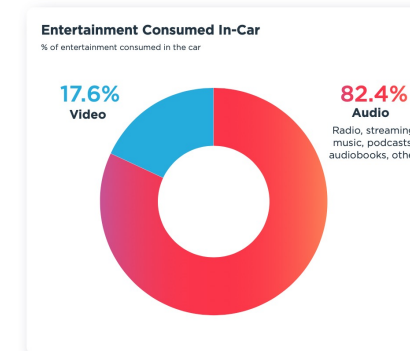
Time watching video content per day (vs. 4.3h Q2'22)

## Overall



## Car

Of those who watch video in the car, over 80% do so at least a few times a month.



59% of responders still think that local content is somewhat or very important in their entertainment mix

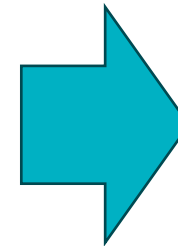
# Key state as for today for Content Partners

Different Services with different business models have different interests:

**AVOD, FAST, etc.:** Generate revenue through advertisement. The higher the reach, the bigger the monetization opportunities. Generally interested in automotive as it would increase reach.

**SVOD:** Revenue made through subscriptions. Interested in increasing the subs. Do not see automotive as major factor for that as they expect people use their existing subs in the car.

**TVOD:** Revenues created through content being bought via the service. Generally interested, if it will increase the sale of their movies, still do not believe that movies is main content consumption in the car.



If the revenue opportunities are higher than the cost of implementation and maintaining the service in the car, all of them are interested.

**BUT:** There is no proof of evidence that automotive either increases the number of subscribers, more content is bought or additional advertisement revenues have been created.

All Content Providers currently have to rely on assumptions and predictions.



# Video Streaming Landscape / Top providers (EU & US)

Video streaming is not only Netflix, Prime Video, YouTube, Disney+, Max etc.

It's much more complex & diverse. It's a mix of global, regional and local services.



Services	DE	UK	FR	IT	ES	SE	NL	BE	AT	CH	Count
Youtube											10
Netflix											10
Prime Video											10
Disney+											10
discovery+											6
Pluto											6
Paramount+											6
Apple TV+											6
HBO Max											4
DAZN											3
Viaplay											2
SkyShowtime											2
Now											2
WOW											2
Joyn											2

One country only	DE	UK	FR	IT	ES	SE	NL	BE	AT	CH
ARD Mediathek	BBC iPlayer	France.tv	RAI	rtve	SVT	NPO Plus	vrt max	ORF Tvthek	SF	
ZDF Mediathek	iTVx	TF1	Mediaset Infinity	Moviestar+		NLZiet	Streamz	Servus.tv	Play Suisse	
RTL+	Sky Go	Canal+	TIM Vision	Atresmedia		Videoland			Zattoo	
Samsung TVPlus	All4	Molotov				Talpa TV			Blue+	
waipu.tv	My5	OCS							Sky Switzerland	



Services	Biz Mod	Content type
Netflix		
Hulu		
Prime Video		
Disney+		
Max		
Paramount+		
Peacock	Paid	General Entertainment
Starz		
Apple TV+		
AMC+		
AcornTV		
Mubi		
Vudu		

Services	Biz Mod	Content type
ESPN		
NBA		
NFL	Freemium	
MLB		Sport
NHL		
DAZN	Paid	
Red Bull	Free	
World Surf League	Free	
Crunchyroll	Paid	Anime

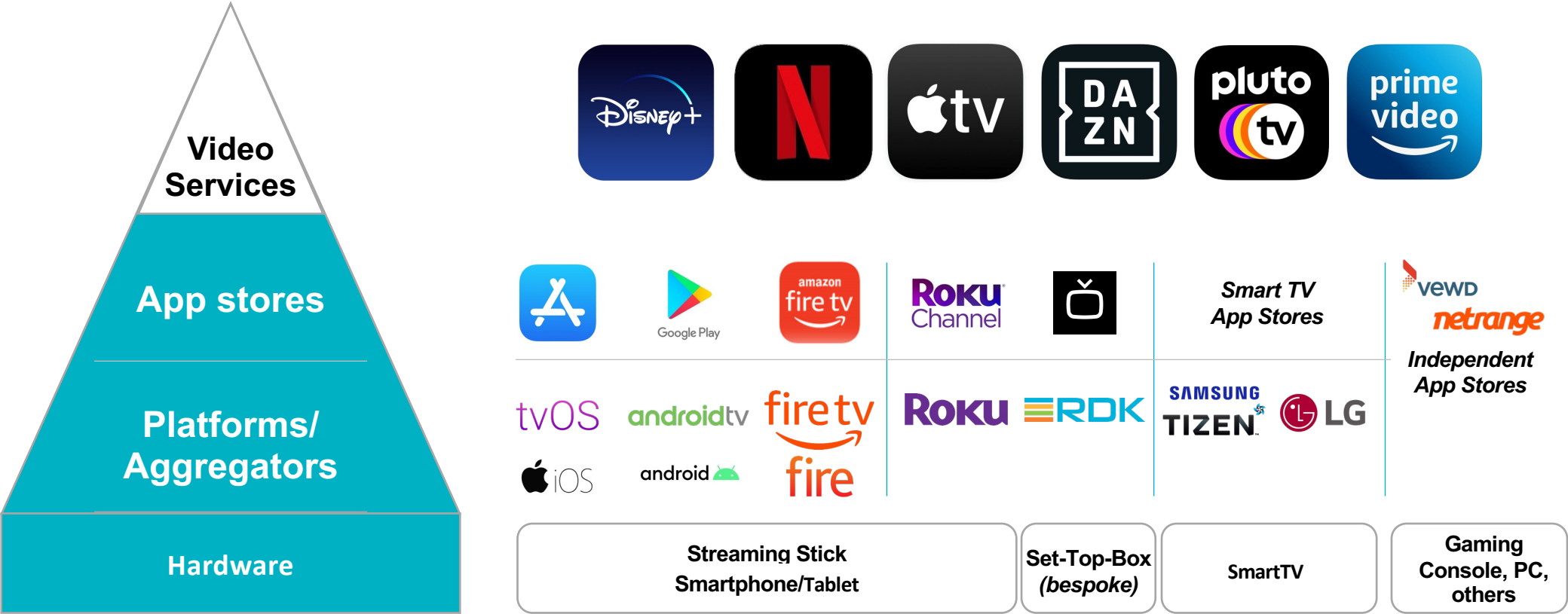
Services	Biz Mod	Content type
YouTube	Freemium	
Pluto	Free	
Tiktok	Free	General Entertainment
tubi	Free	
freevee	Free	
Crackle	Free	
Plex	Free	
Twitch	Free	Gaming
YouTube TV	Paid	vMVPD
sling	Paid	vMVPD
fubo	Paid	vMVPD (Sport)

Paid: Subscription or transaction required  
 Freemium: Free and ad-supported use possible + upsell to subscription packages  
 Free: Free and ad-supported use

General Entertainment: Combining various types of content genres  
 Sport: Sport focus of service  
 vMVPD: Aggregation of linear channels

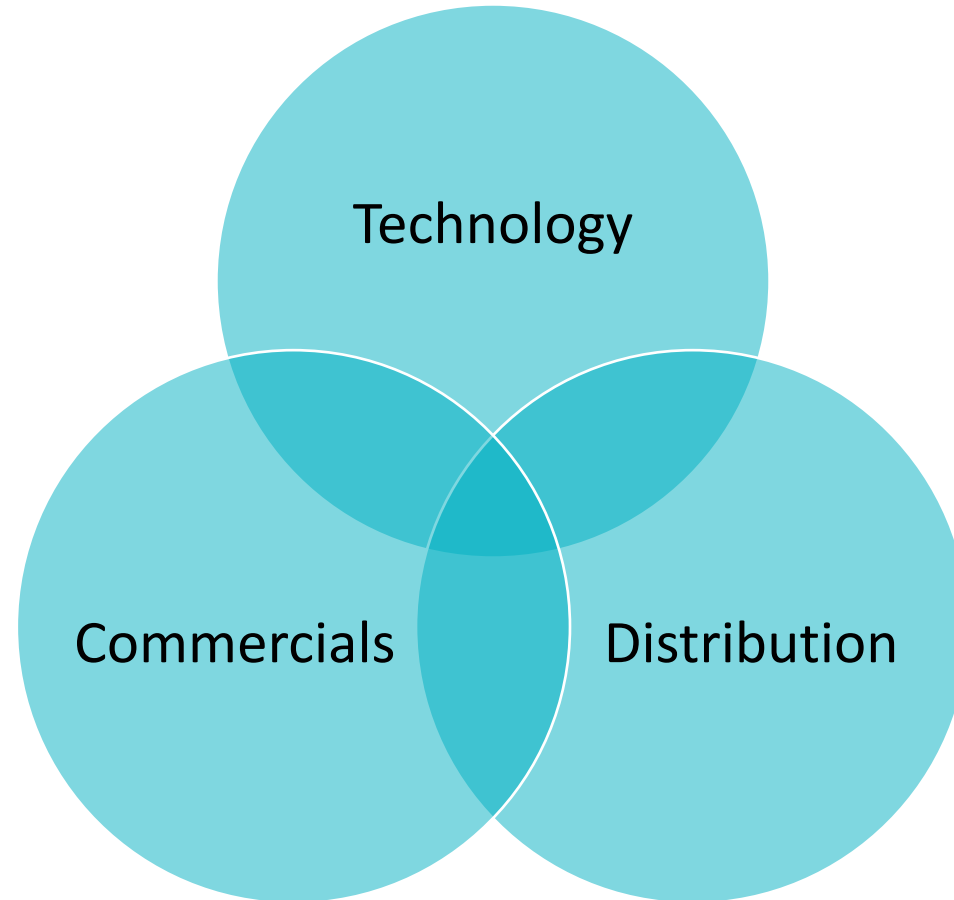
# Entertainment Ecosystem

Content Partners already deal with complex and broad distribution channels (apart from automotive)



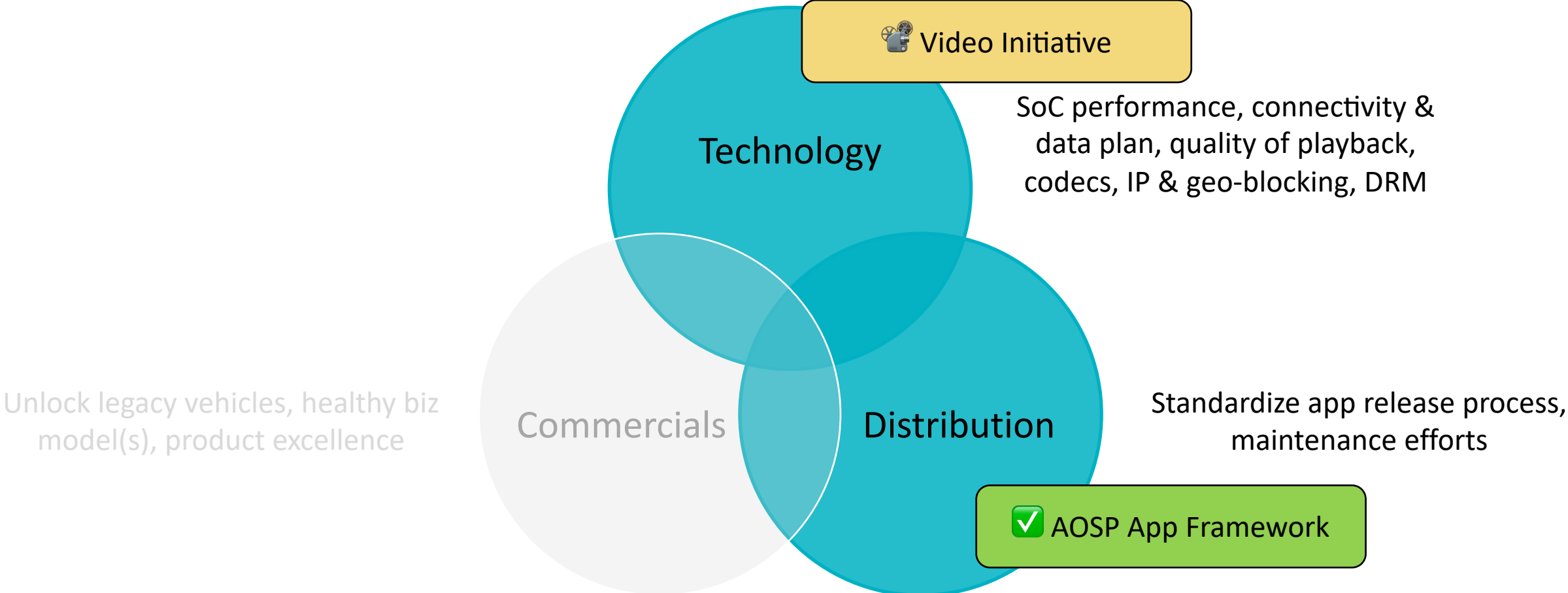
# Content Partner POV: Success factors

Reduce entry barriers to explore with in-vehicle video streaming.



# What can we impact within COVESA?

Reduce entry barriers to explore with in-vehicle video streaming.





## Key challenges to solve

# Key challenges identified (1/4)

Topic	Painpoint	Description	Hypothesis	Idea
DRM	Major streaming providers require L1 Widevine support	Android Automotive comes with default DRM L3 support. DRM L1 requires further development from Tier 1/2. The biggest challenge is to enable DRM L1 on the legacy hardware and other OS (Linux) → to make the business case bigger for content partner	If content provider knows that the HW is capable enough and support DRM L1, they are more “secured” to bring their service to the vehicles	Define clear process of enabling DRM L1 on AAOS. Go ahead with certification of the most used SoCs for Widevine L1 → make it public for content providers
Scale Google Play apps into other automotive app stores	Testing the app in the car	Proactive & reactive testing: Typically the app developers before the release need to test the app on the hardware. Additionally, they have automatic monitoring alerts to identify the drop of the service usage. Due to still small number of cars and rather high volatility of the usage in the car (vs. mobile), the app owner will be triggered with many monitoring alerts.	Making hardware available for the developers, will drive more innovation to the overall platform	Assess development efforts to bring native app to the automotive (vs. automotive Google Play or mobile/tablet) How app developers can test the app on the hardware? (after standard emulator) Introduce internal testing process on the automotive app store
Audio/Video codecs	Many codecs to support for various solutions	What audio and video codecs should be supported as standard, incorporating the availability within the streaming space and the future trends in that space → following entertainment industry	Defining few industry standards will reduce development complexity & maintenance for OEMs	Tracking list for needed audio/video codes Sharing trends in video streaming industry
Bandwidth savings	Not enough bandwidth to support full fledged video streaming experience	Connected data is expensive and in most cases extra charging the end-user. Need to guarantee max. app usage with existing data plans.	Smooth experience and instant loading of the video will drive more consumption	Create minimum standard for good user experience, efficient usage of available bandwidth and data plans, e.g. lower video quality with high level audio (example: SD Video with Dolby Atmos) Create a buffering standard, minimum requirements to secure fluid video streaming. Different bandwidth (low, med, high) to be incorporated

# Key challenges identified (2/4)

Topic	Painpoint	Description	Hypothesis	Idea
Payment / Subscription management	Paying safely from the car	In order to drive monetization topics for the OEMs, we need to define underlying technology supporting in-car payment	Having underlying standard payment technology will unblock monetization opportunities	How to assure a seamless experience for the users if they want to subscribe to a service or buy content (TVOD, SVOD) and which user data information can be shared within the token to authenticate payment?  How to incorporate OEM preferred payment services?
Data Privacy	Must comply fully to data privacy regulations	Legal perspective, how to incorporate GDPR etc. and assure that the users accept it		List of data privacy criteria(s) per region
100% App functionality	Apps do not match car environment and therefore limit the usability of either the app or the car functions	3rd party video streaming apps need to be 100% compliant with existing car HMI system. Avoiding overlaying existing and needed car functions (e.g. climate control) and assure a consistent user experience	Guidelines for App developers and a FAQ available for App developers, OEM and Software provider will reduce failure	Create standardized integration guidelines for app developers
Content discoverability	How can I be discovered in the car (content provider)	Popup / Push notifications - how push notifications can be used to notify customers about new content and apps to drive engagement	If we provide safe way to notify the user about what's new, it will increase the app usage	Define what is available from push notification or widget
Design guidelines (Button size, etc)	Make it easy to consume the content while stationary or driving	Each OEM has a different design language and approach towards safety standards. Identify the standards and share the best practices cross-OEMs regarding automotive UX	Clear guidelines will speed up app approval process on the app store	Creating a standard for button sizes that allows easy and fast usage of the in-vehicle entertainment
HCP - High Performance Computing	Enabling video streaming on legacy vehicles	Connected vehicles that are OTA-enabled give content providers much higher reach than new and more capable cars in coming to the market in 2-3 years.	If we publicly proof that vehicles are capable of a proper video streaming quality, it would make automotive attractive platform	Share the details of the test for video streaming on various HW and different bandwidth scenarios

# Key challenges identified (3/4)

Topic	Painpoint	Description	Hypothesis	Idea
Multiscreen	Sharing the content with others in the car	In Android 14 (U), an experimental feature was added to allow full secondary users that are not the current foreground user to launch activities and have access to UI on the display they are assigned when they were started. This feature enables multiple concurrent users in Android Automotive OS, supporting in-car experiences that provide multiple passengers with a dedicated UI experience from a single Android instance.	Making it easier to share the content across the vehicle screen will increase content consumption	Launch the pilot project with automotive hardware to test the possibilities and identify the challenges
Video playback	Video player experience	What should be the standard video player, what's the most efficient one, does different OEM want to use different players, should there be a standard or recommended one?  What should be the standard features of video player?	If there is a standard player or at least a frame with standards, it will increase the acceptance of video consuming in the vehicle	Create standard features for automotive video player (media control, close button, minimalize, etc.)
Geo-fencing	What happens when the car moves abroad	DRM and geo-fencing are tidly bonded and required to understand by content providers to protect their IP and fulfill legal aggrements.	If content provider knows that there is a clear process for blocking the content outside supported regions, they can avoid bad customer reviews	Create what-if scenario to explain what happens to available apps/services after the car leaves their supported region/country
Immersive audio experience	Difficult to find video content with Dolby Atmos	It's hard to match the same sound experience in the living room vs. car. With over 10+ premium sound speakers, the perception is amazing. Currently we are only able to experience it with audio (TIDAL, etc.).	If there is easier to enable Dolby Atmos in the cars, content providers will be more willing to create car-dedicated Dolby Atmos content	Create a future proof standard to integrate premium sound systems (e.g. Dolby Atmos).  Enable Dolby Atmos through web browser



# Key challenges identified (4/4)

Topic	Painpoint	Description	Hypothesis	Idea
Semi-autonomous driving (+L3)	Watching movies while driving	What does the increase of level 3 approvals mean to extended usage of video streaming while car is in motion, are there limitations that needs to be considered?	Predefined video accessibility for each autonomous driving level could help to convince video streaming services to develop native AAOS apps as it unlocks the time available for streaming	Define what driving assistance datapoints are needed to unblock video streaming while driving
Casting	Want to watch movie from my phone using my vehicle display and premium sound system	Allow to project the content from the phone, using own data plan and stream in the content on vehicle display	Enabling BYOD should increase content consumption in the car	Make an industry standard to unblock content challenge in the automotive → custom build DLNA



# Next Steps

# Next Steps

1. Everybody who wants to contribute to the video streaming track – pls inform us via email
2. Kick-off meeting to be scheduled
3. During Kick-off, Challenges Overview to be reviewed and Top 5 to be finally defined together
4. Start solving the Issues one by one, beginning with the Top 5

## Contact Us



**Felix Walter**

Head of Automotive

[felix.walter@3ss.tv](mailto:felix.walter@3ss.tv)



**Tomasz Dzikowski**

Product Manager

[tomasz.dzikowski@3ss.tv](mailto:tomasz.dzikowski@3ss.tv)

