SCTE ISBE CABLE-TEC EXPO '16

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Viability of COAM devices as the primary screen

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SCTE Society of Cable Telecommunications Engineers

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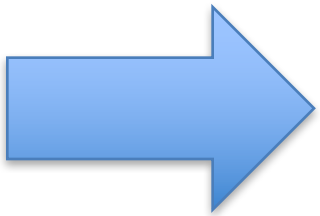
#CableTecExpo

Essential Knowledge for Cable Professionals™

Customer Owned And Managed (COAM) as the primary screen – an introduction

Traditional video business model threats

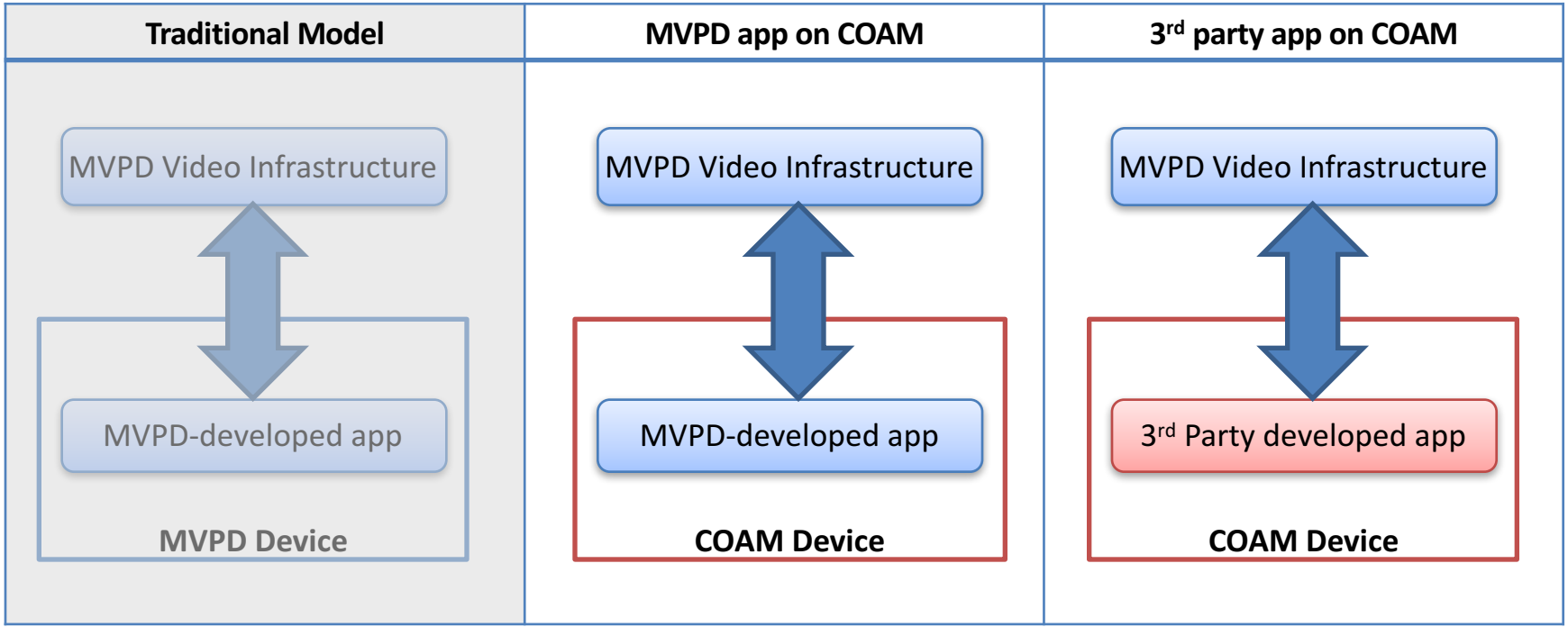
- OTT competition
- Viewership fragmentation
- Programming costs
- Legacy STB prices
- FCC mandate for “unlock the box”



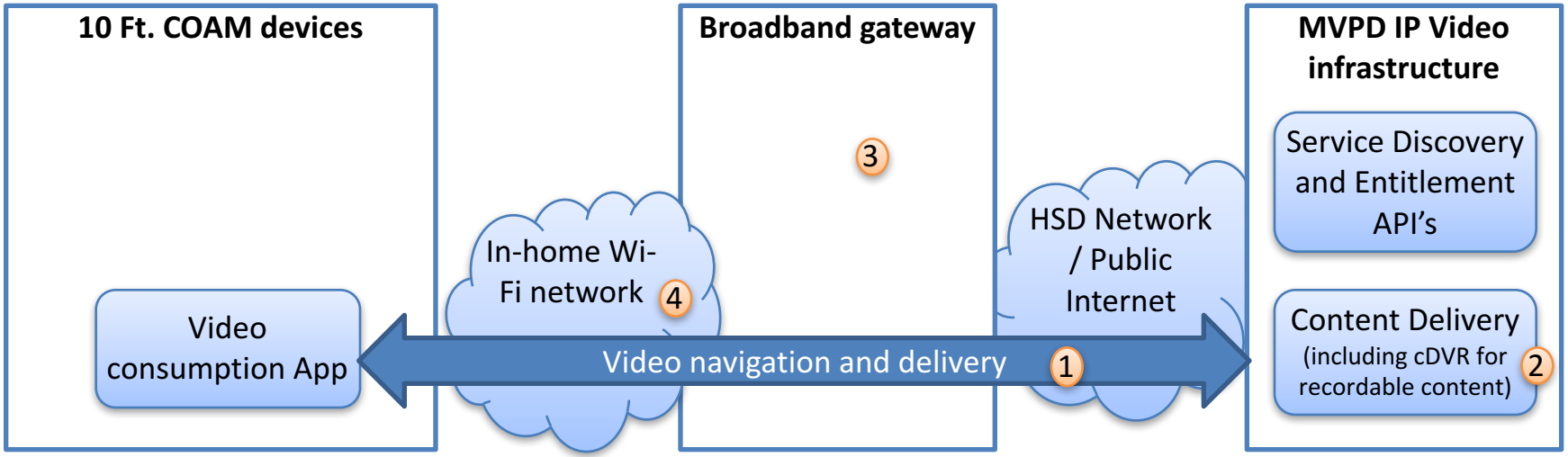
COAM device opportunity

- OTT
- Retail based
- Ecosystems with developer scale
- 10 foot UI

Three scenarios considered



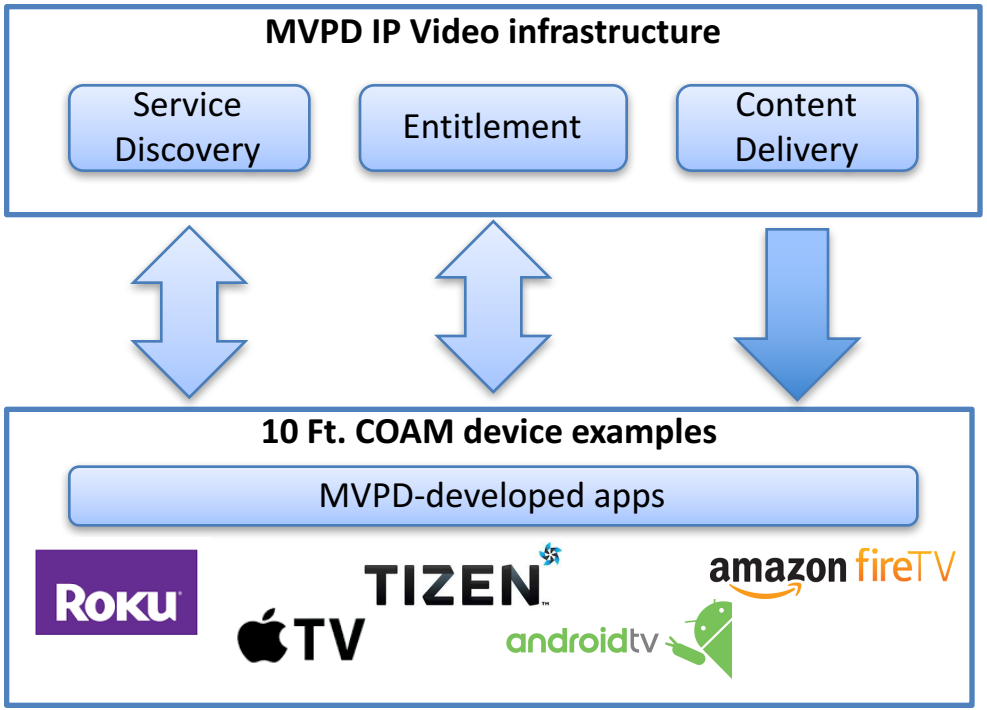
Assumed architecture for analysis



1) The end to end video path is "unmanaged" IP video
2) Recordable content is supported, but only in the form of cDVR
3) The gateway is HSD only – there are no video adaptation functions
4) Home LAN connectivity is Wi-Fi

MVPD-developed app for COAM

COAM apps



Considerations

- Development
- Deployment
- Operations

Many MVPD's have already started this journey with 2nd screen …

MVPD-developed app for COAM

Scope of analysis

COAM lifecycle considerations

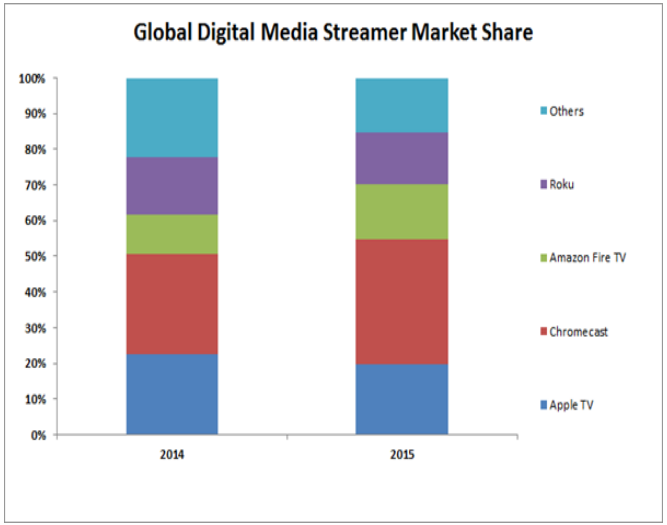
- Apps
- Players & DRM
- Firmware
- API's / services
- Cloud / video infrastructure

- E2E testing
- App store releases
- Firmware releases

- Self-care
- Customer care
- Field / tech ops
- Home network troubleshooting
- Authentication & provisioning troubleshooting

MVPD-developed app for COAM

Ecosystems evaluated



Source = Strategy analytics

Ecosystems we investigated

- Roku
- Android and Android TV*
- iOS / AppleTV*
- Amazon Fire
- HTML5 / Other

Feasibility for HTML5 support within native apps through Web Views

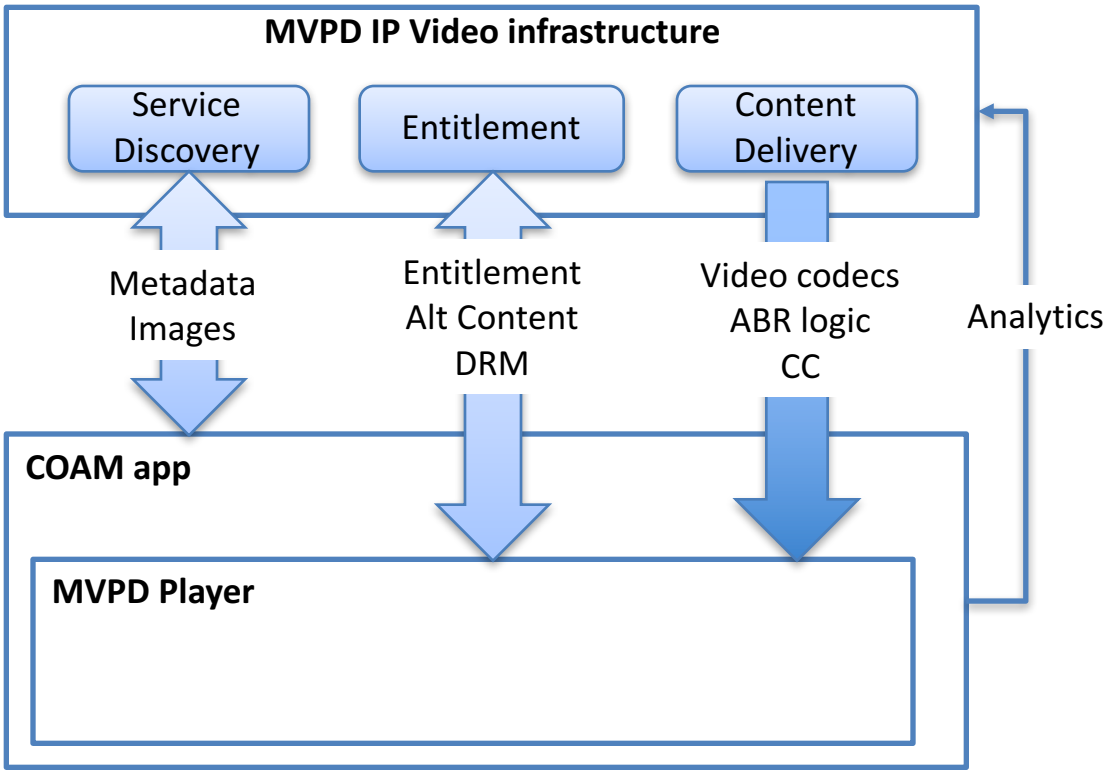
*iOS and Android assumed as dominant ecosystems used by Chromecast or other Wi-Fi dongles

MVPD-developed app for COAM

Player abstraction

Why player abstraction

- ✓ Common video playback experience
- ✓ Code re-use across COAM ecosystems
- ✓ Future proofing against FCC mandate (more on this in a bit ☺)



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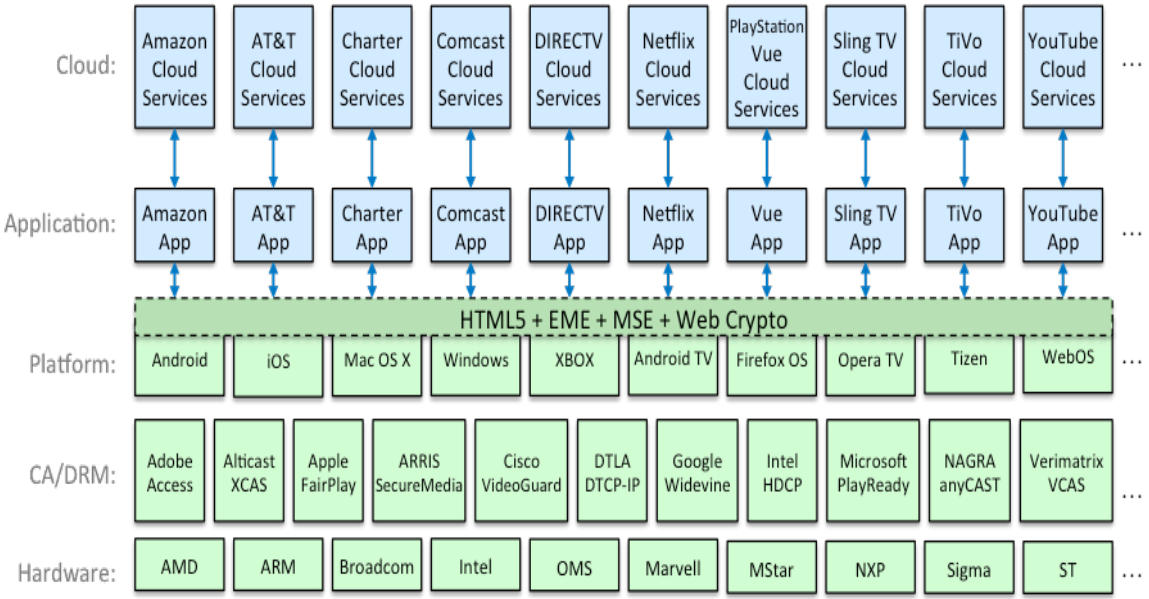
Can industry coalesce around a common HTML5 player standard?



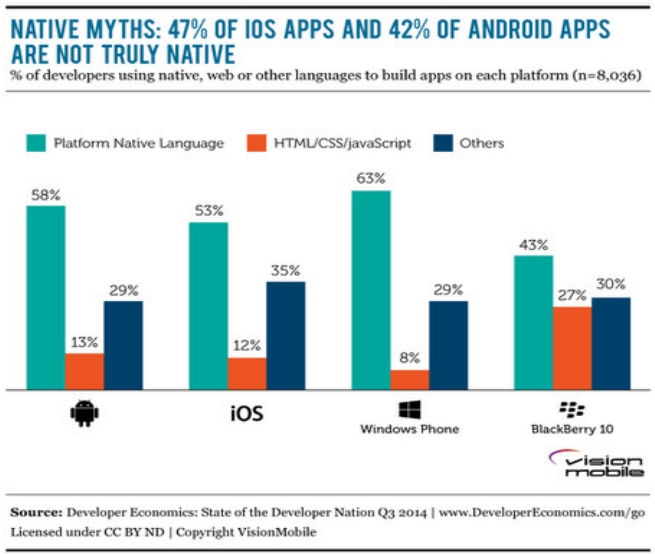
Source: DSTAC proposal

MVPD-developed app for COAM

HTML5 player coalescence

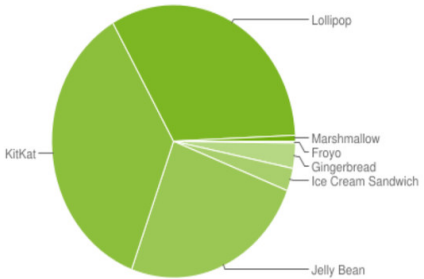
Soon, but not quite yet

Hybrid apps gaining traction, but purely native development is still prominent



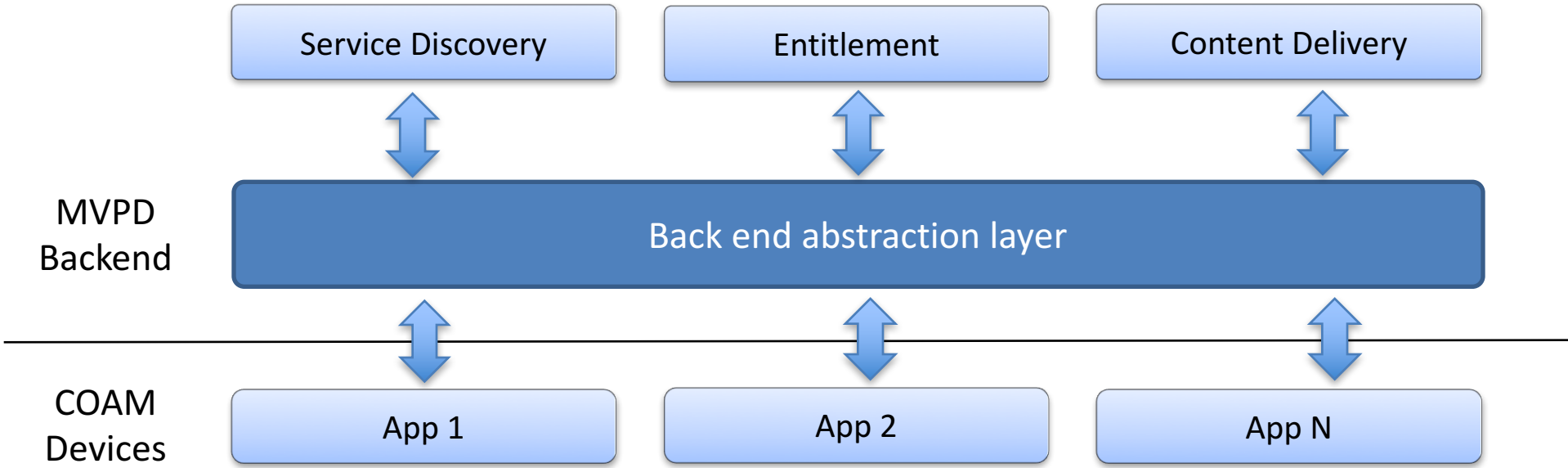
Older Android and iOS OS's are still out there and have weaker support and stability for HTML5 web views

Version	Codename	API	Distribution
2.2	Froyo	8	0.2%
2.3.3 - 2.3.7	Gingerbread	10	3.0%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	2.7%
4.1.x	Jelly Bean	16	9.0%
4.2.x		17	12.2%
4.3		18	3.5%
4.4	KitKat	19	36.1%
5.0	Lollipop	21	16.9%
5.1		22	15.7%
6.0	Marshmallow	23	0.7%



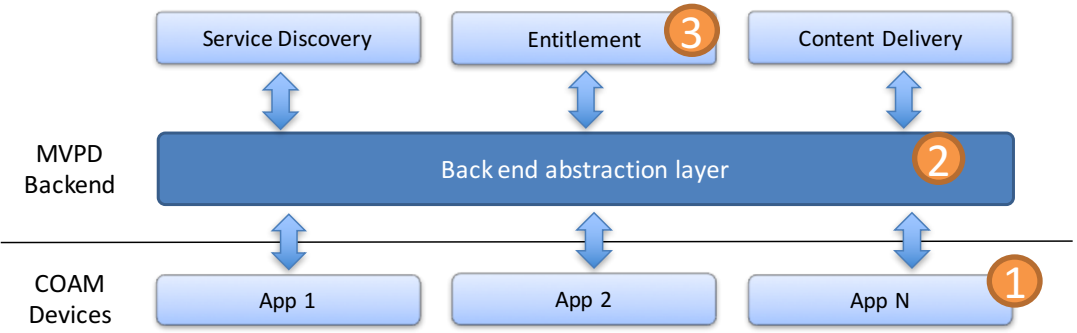
MVPD-developed app for COAM

Multi screen abstraction layer…



MVPD-developed app for COAM

…is not a silver bullet



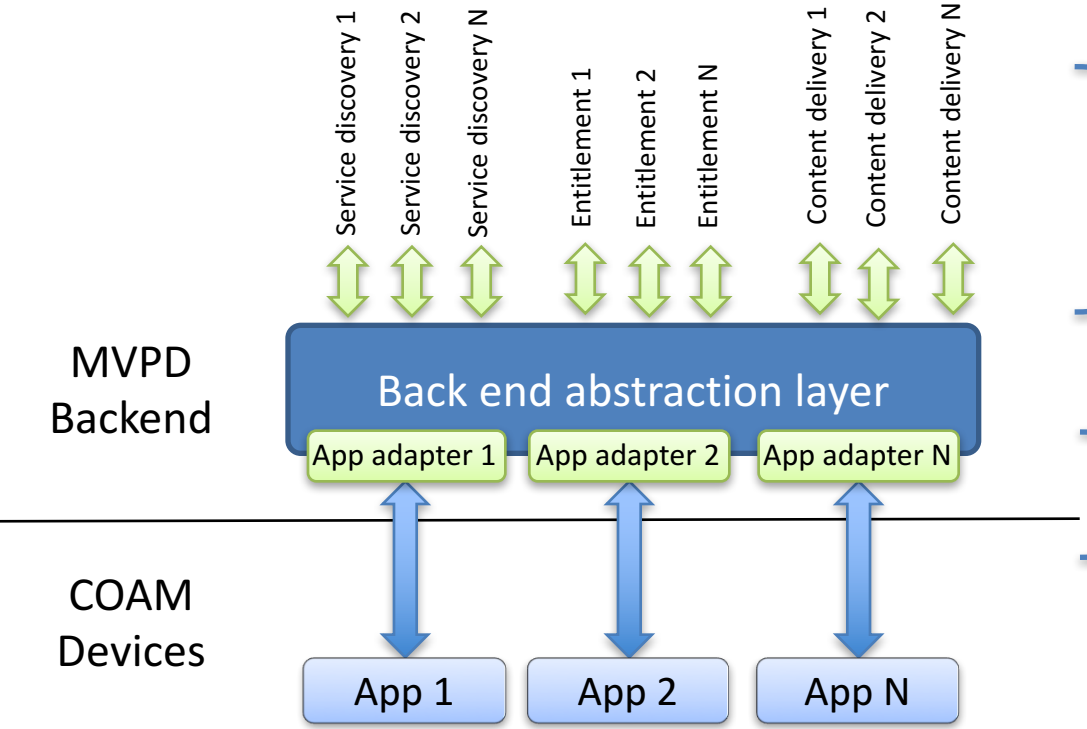
Three issues

1. Code re-use not absolute across clients – each ecosystem will have unique needs and pace of change

2. Abstraction layer can become development bottleneck and/or single point of failure

3. Monolithic systems can slow down pace of innovation and also jeopardize reliability

Cloud enablers for scaling COAM



Micro-services architecture obfuscating complexity of back end systems and providing multiple layers of resiliency

Server side client scripting (e.g. Groovy) to meet unique needs of COAM ecosystems

MVPD-developed app for COAM

Deployment considerations

Legacy comparison

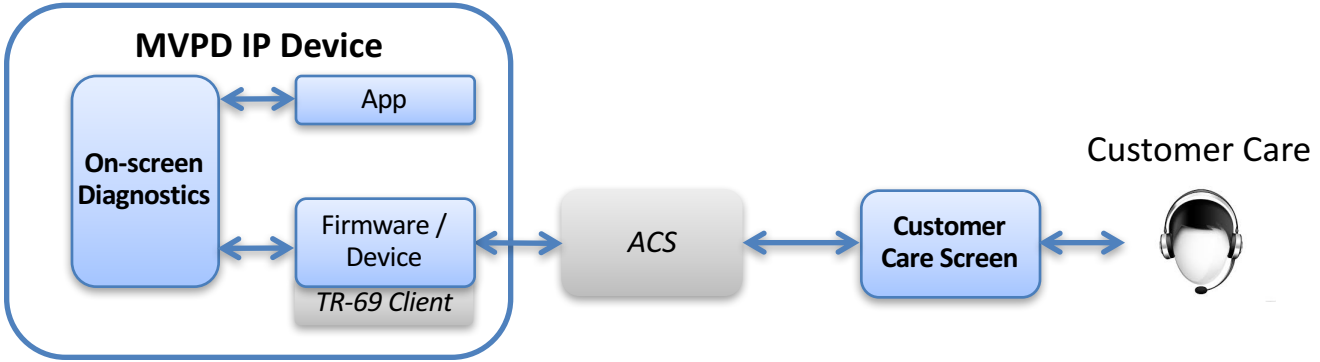
	End-to-end testing	App Certification & Publishing	Firmware / OS Update Schedule
MVPD guide on the MVPD STB	MVPD	MVPD	MVPD
COAM app*	MVPD	3rd party app ecosystem	COAM device 3rd party
Impact	Additive	Different but substitutive	

* developed by MVPD for the COAM primary screen device

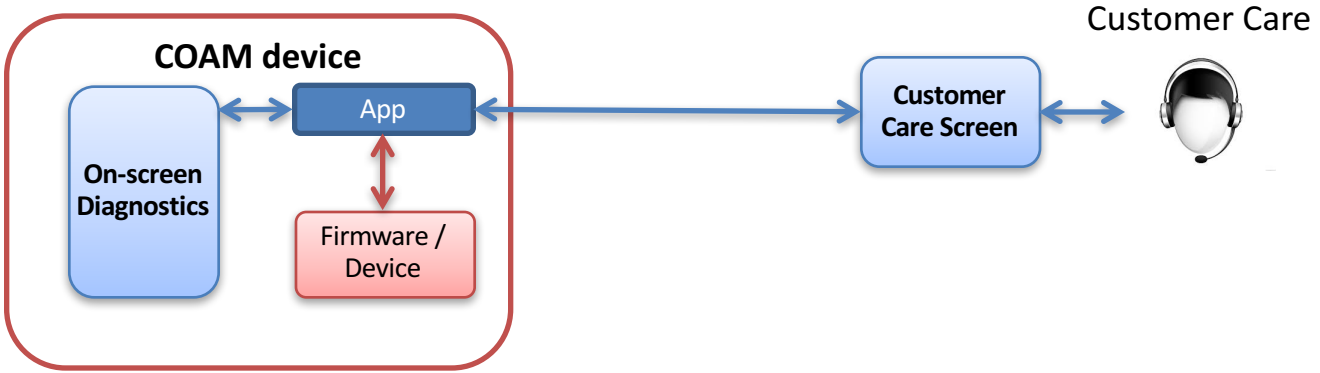
App-based COAM troubleshooting

MVPD-developed app for COAM

Traditional Model



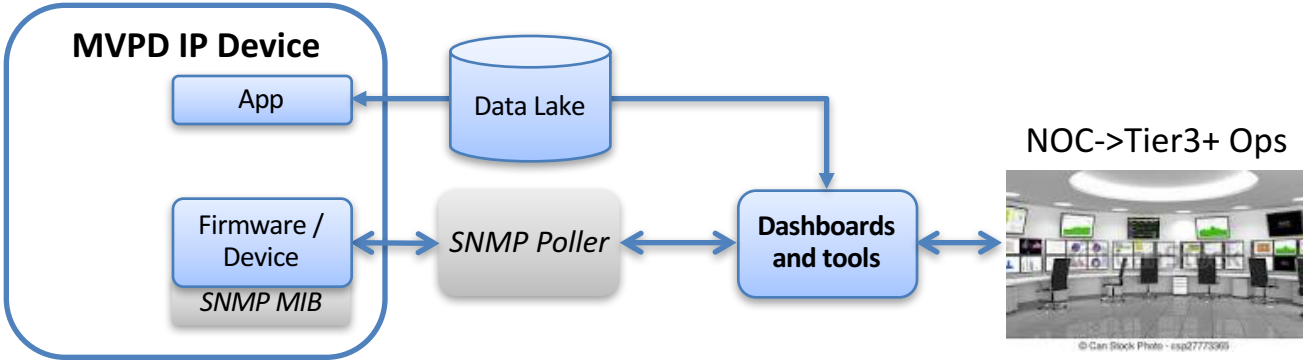
COAM Model



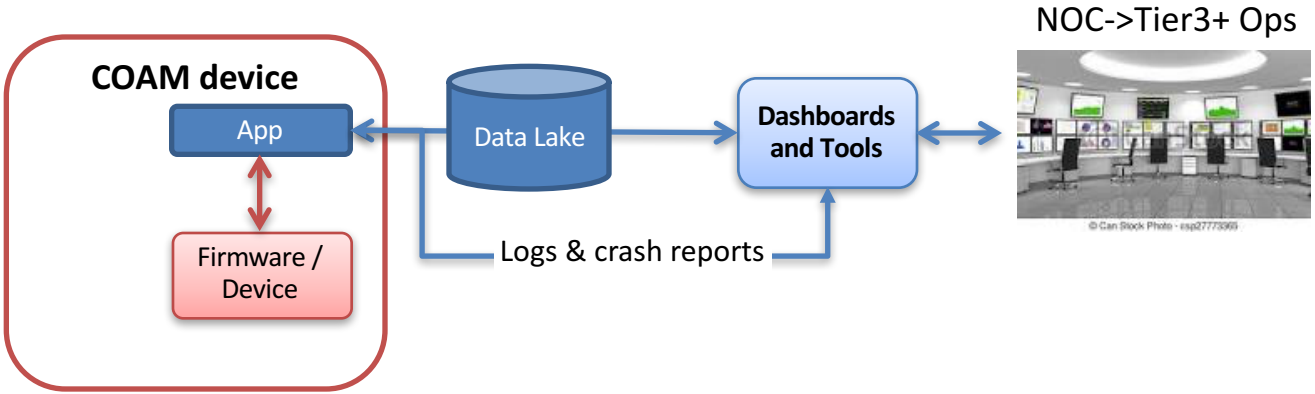
App-based COAM population monitoring

MVPD-developed app for COAM

Traditional Model



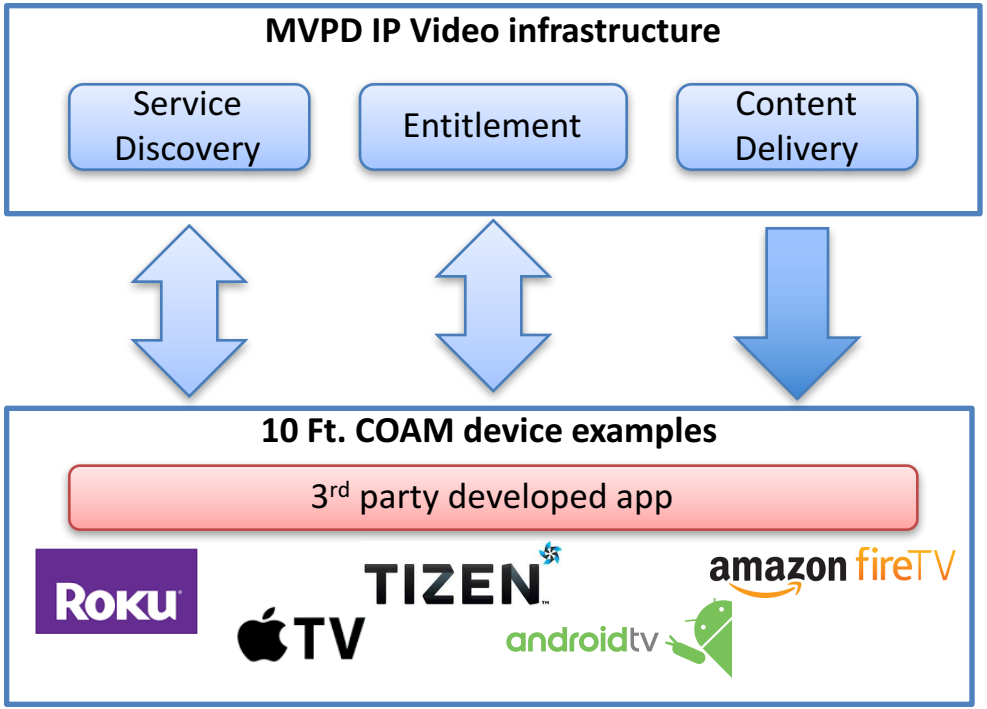
COAM Model



3rd Party COAM Apps

Per FCC “Unlock the box” mandate

3rd party apps



Considerations

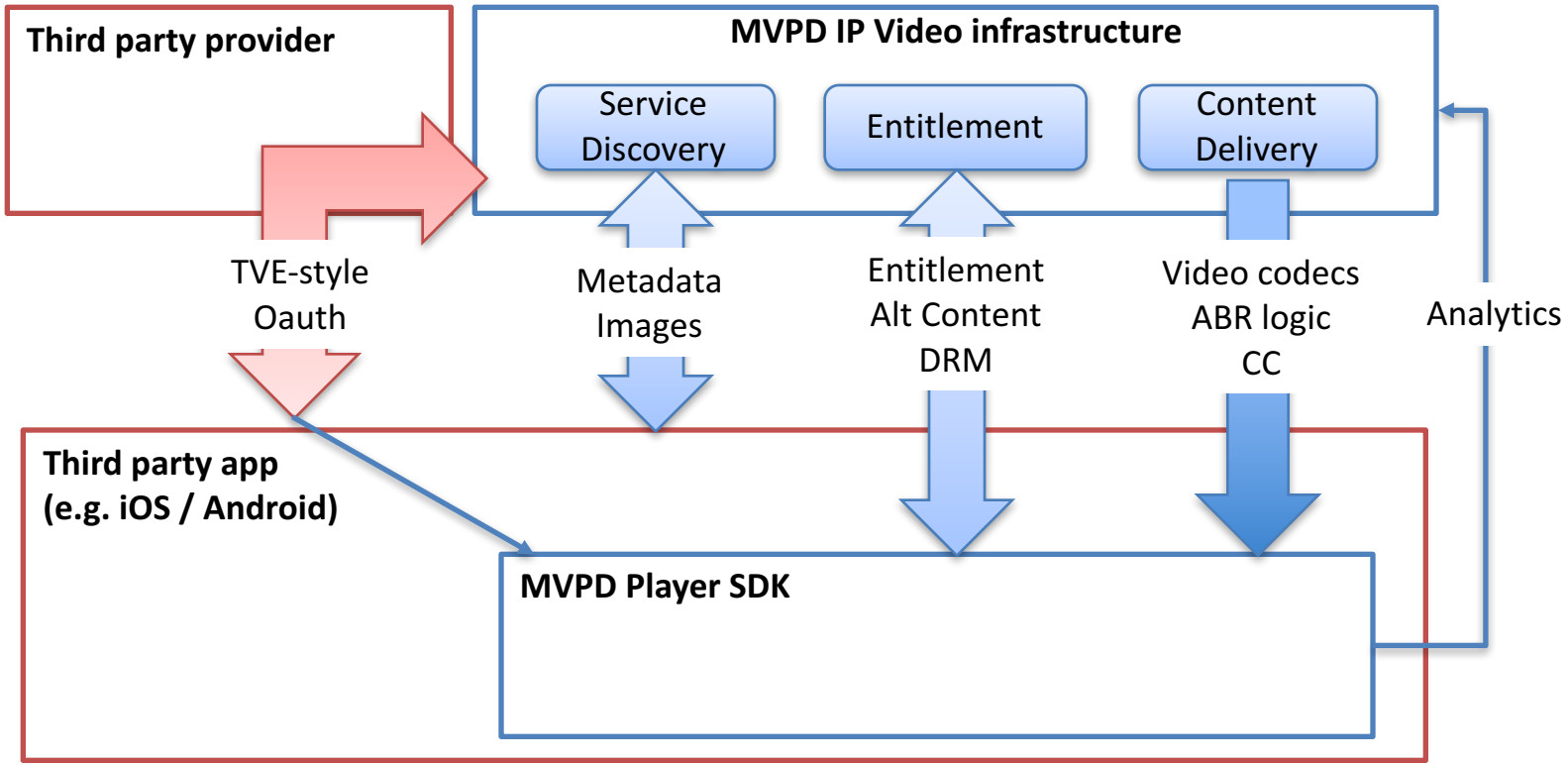
- Development
- Deployment
- Operations

Similar considerations, greater challenges

3rd party app for COAM

Player abstraction

Advisable for MVPD apps, mandatory for FCC model



3rd party app for COAM

Deployment consideration

	End-to-end testing	App Certification & Publishing	Firmware / OS Update Schedule
MVPD guide on the MVPD STB	MVPD	MVPD	MVPD
COAM app	MVPD	3rd party app ecosystem	COAM device 3rd party
3rd party app	3rd party app ecosystem	3rd party app ecosystem	COAM device 3rd party
MVPD Impact	*No involvement*		

3rd party app for COAM

Deployment consideration

	End-to-end testing	MVPD Certification	App Certification & Publishing	Firmware / OS Update Schedule
MVPD guide on the MVPD STB	MVPD	N/A	MVPD	MVPD
COAM app	MVPD	N/A	3rd party app ecosystem	COAM device 3rd party
3rd party app	3rd party app ecosystem	MVPD	3rd party app ecosystem	COAM device 3rd party
MVPD Impact	**N/A**		***N/A***	**N/A**

3rd party app for COAM

Difficult deployment requirements

Player SDK test harness

Onboarding process for 3rd parties

Certification process for 3rd party app iterations

SLA enforcement

3rd party app for COAM

Key operational challenges

Self care and Wi-Fi diagnostics

App and log data

Device registration

Theft of service prevention

Self care interfaces unavailable to implement for end users

Difficult to service customer care calls with remote troubleshooting

Possible to address through third party player SDK

Conclusions on COAM

	Develop	Deploy	Operate
MVPD apps	Drive for modularity • HTML5 standards • Player abstraction • Back end abstraction with Micro-services and dynamic scripting	• Test team and environment robustness • Communication / SLA for firmware releases	• Self care focus • In app Wi-Fi diagnostics • App instrumentation and log / CR access • Device registration • Protect theft of service
3rd party	• 3rd party player SDK	• *Standardized test validation suite* • *MVPD certification* • *3rd party onboarding* • *SLA enforcement*	• *Self care focus* • *In app Wi-Fi diagnostics* • *App instrumentation and log / CR access* • Device registration • Protect theft of service

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