

# OpenAPV

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Samsung Electronics, Co., Ltd.

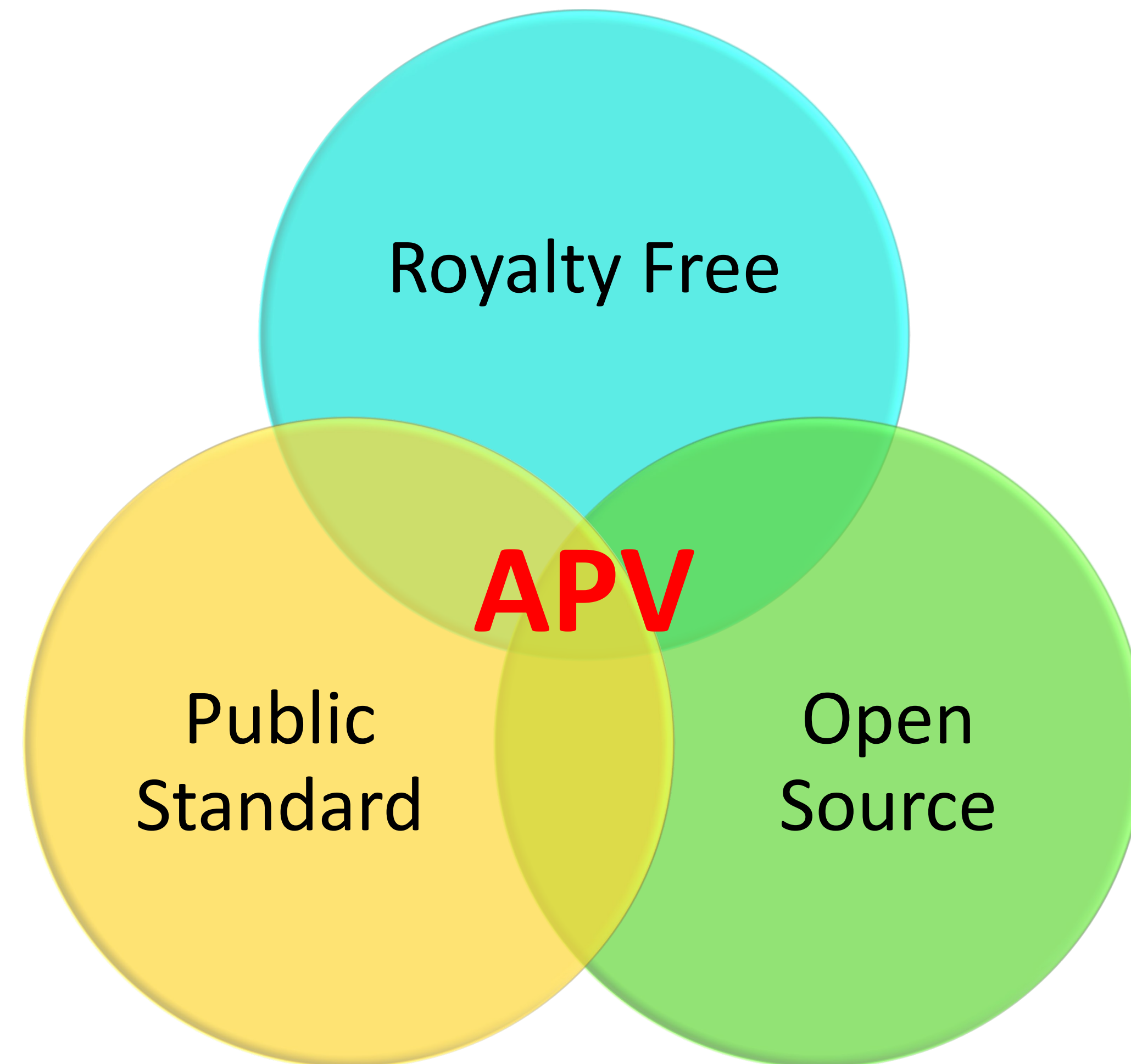
# Motivation

- Improvement of smartphone cameras  
(e.g. multiple lenses, 100x zoom, 200M pixel, RAW formats)
- Increasing demands on beyond consumer quality video with smartphone
  - Smartphones are much easier to carry and convenient to set-up
  - Content creators targeting SNS platform uses smartphone
  - Cloud-based post-production tools are getting popular
- Conventional video codecs such as AVC, HEVC, VVC or AV1 are not suitable for professional use as they have been designed for lossy compression of video for mass distribution

	professional video codec	conventional video codec
main purpose	Capturing video for post production (multiple rounds of various type of editing)	Encoding video for mass distribution
coding tools	Intra frame coding only	Intra & Inter frame coding
target quality	Visually lossless	Lossy
target bitrate	200 Mbps ~ 2 Gbps	1Mbps ~ 50Mbps

# Strategy

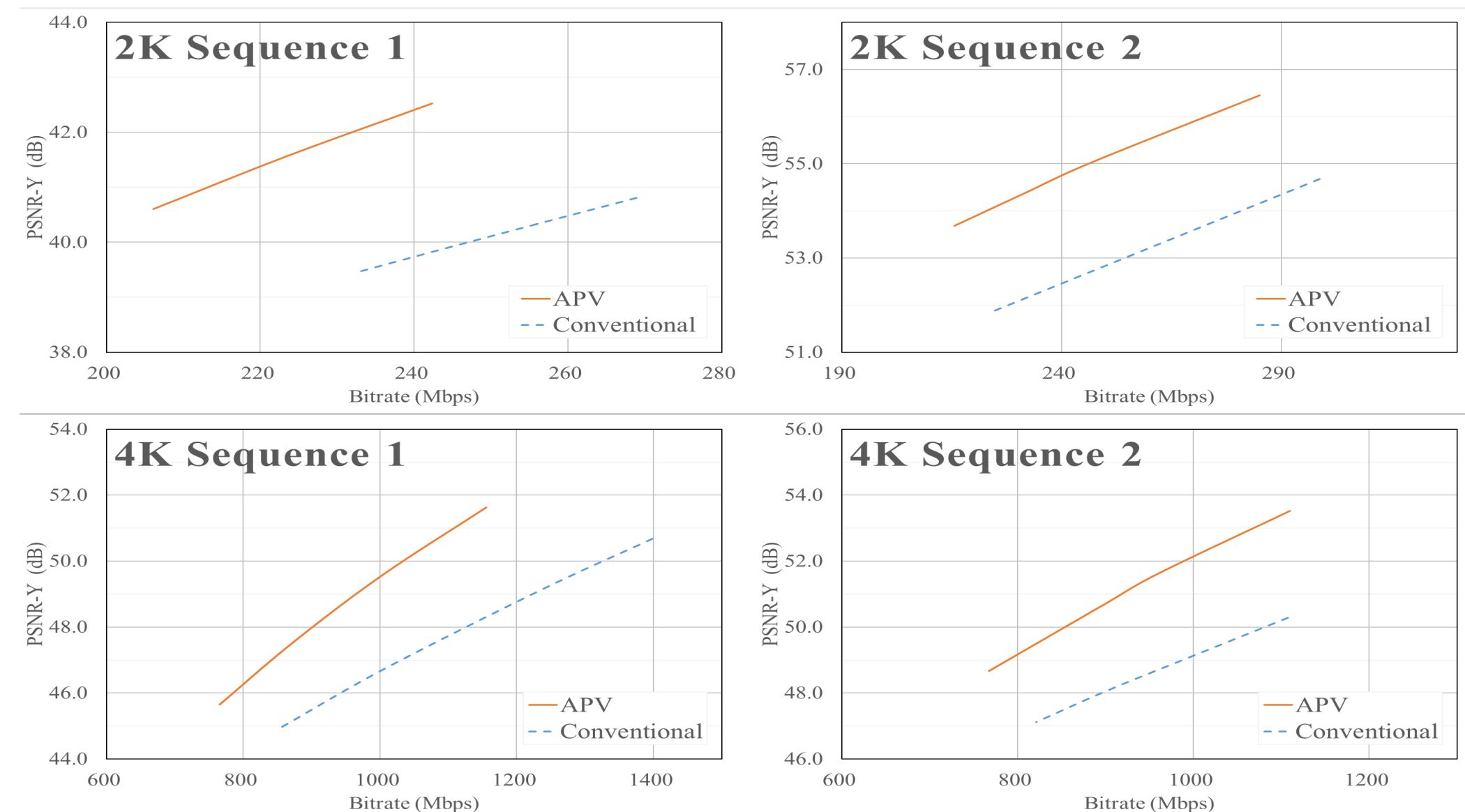
- Industry needs a free public open professional video codec
  - No professional video codecs available as open standard, open source SW, royalty free



# APV

## Advanced Professional Video

- Professional video codec designed for resource constrained devices
  - very low complexity (less than JPEG)
  - SW implementation on encoders on smartphones and desktop/laptop/cloud computers
- High throughput, high fidelity oriented
  - intra-only coding for supporting easy editing
  - tile structure coding for parallel processing
  - entropy coding for high-bitrate up to several Gbps
  - no loop/post filter to increase pixel precision
- Better compression efficiency than other professional video codec
  - around 20% better than well-known professional video codec for 2K, 4K video (4:2:2).



# OpenAPV

- Advanced Professional Video Codec has been developed with the technologies more than 20-year-old only to be royalty (risk) free
- Specification of APV will be published as IETF RFCs for free public access
  - <https://datatracker.ietf.org/doc/draft-lim-apv/>
  - <https://datatracker.ietf.org/doc/draft-lim-rtp-apv/>
- OpenAPV project to develop/distribute open source SW of APV
  - Preferred license type is BSD 3-Clause (no concerns about the patents)
  - Samsung is ready to contribute the complete encoder/decoder implementation to kick start the project

A Project to be proposed

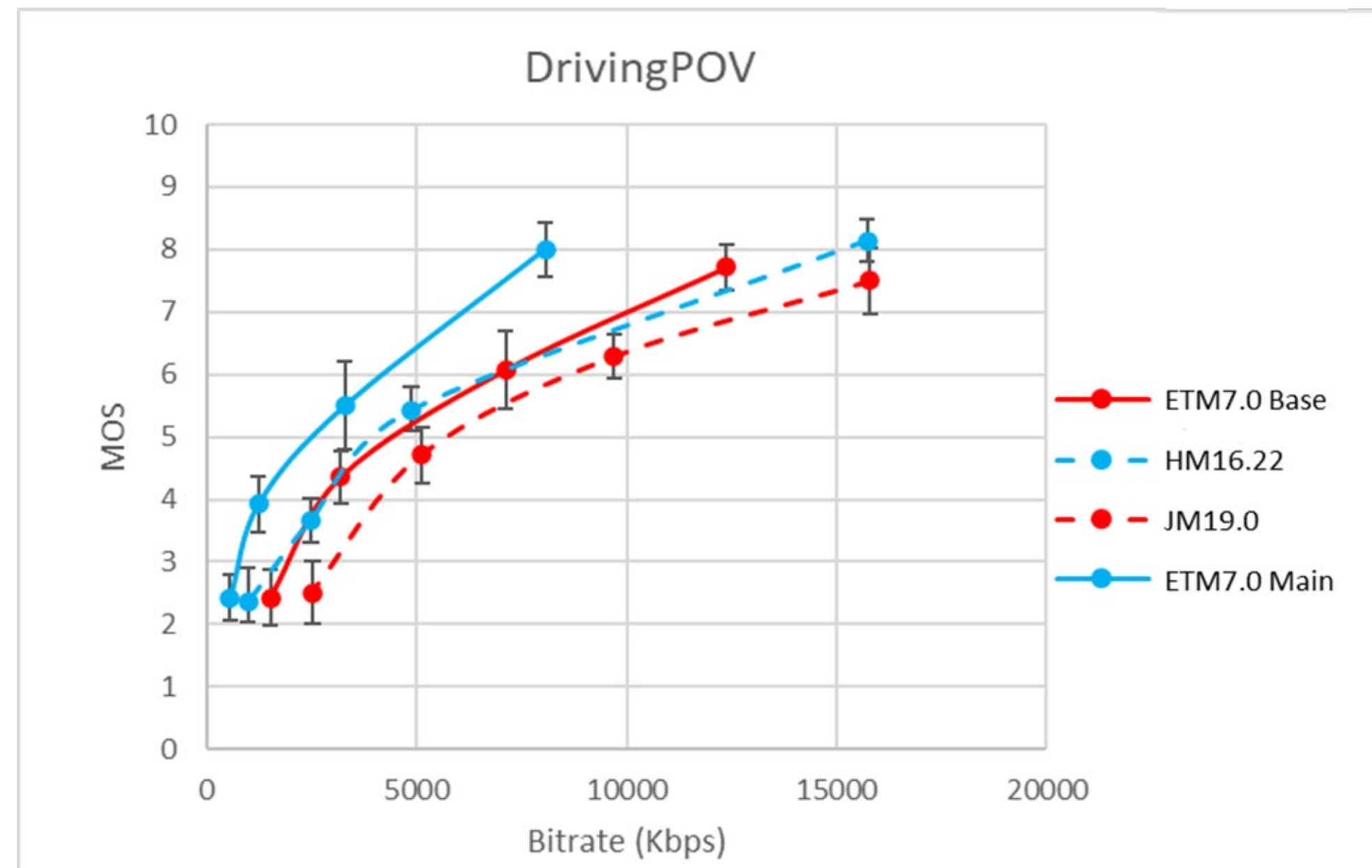


# EVC

## Essential Video Codec

- Royalty (risk) free video codec for general contents distribution
  - Baseline profile is built with more than 20 year old technologies
  - Standardized as ISO/IEC 23094-1 (MPEG-5 Part 1)
  
- Compression efficiency of baseline profile is comparable to HEVC and encoding complexity is about half.
  
- To be proposed as an open source project soon.

*EVC compression performance comparison with HEVC*



*EVC complexity comparison with HEVC*

	EncT	DecT
Tango2	42%	102%
FoodMarket4	47%	101%
CatRobot1	50%	107%
DaylightRoad2	41%	98%
ParkRunning3	40%	101%
MarketPlace	34%	97%
RitualDance	37%	105%
Cactus	40%	114%
BasketballDrive	37%	103%
BQTerrace	39%	97%
<b>Overall</b>	<b>40%</b>	<b>102%</b>

Thank you!