



# What's video like in year 2020

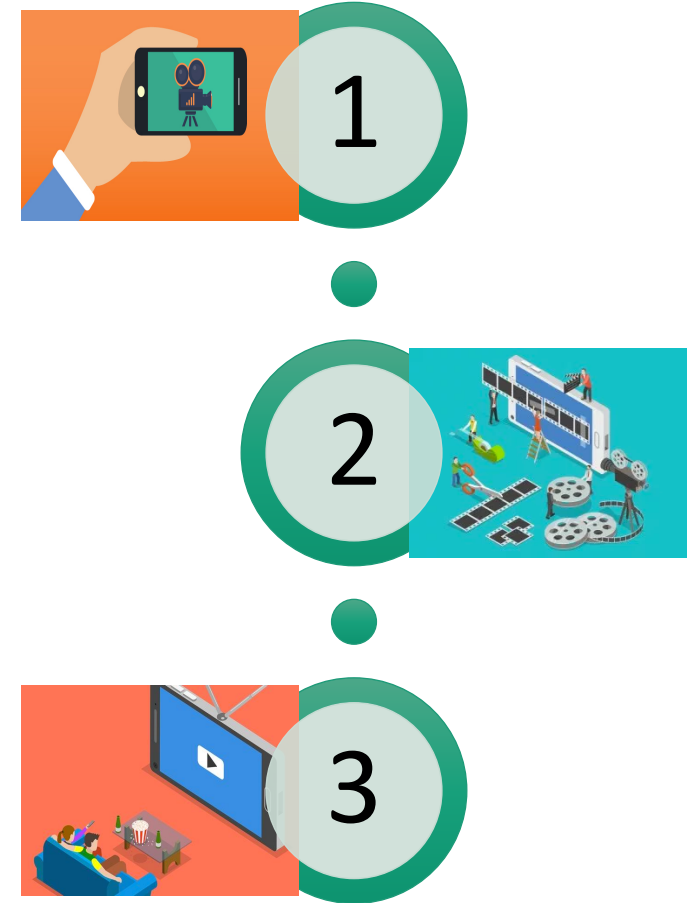


MP20 workshop  
Oct 28, 2017

Keith Huang  
PCCW Media


# Video in 2020

1. Video creation & protection
2. Video coding & distribution
3. Video consumption



# (1) Video creation & protection

















- Facilitate Collaboration and distributed content production
- Democratizing the video production and everyone can tell Great Story!



AT&T 2017  
DEVELOPER  
SUMMIT

## Wanna work on something?

Find a Creative Challenge...

 Writing	 Screenwriting	 Re-Writing	 Poetry	 Illustration	 Graphic Design	 Photography	 Acting
 Cinematography	 Editing	 Animation	 Vocals	 Music	 Voice Acting	 Video Q&As	 Curation

Challenges are sorta like personal ads for creative collaboration.  
The contributions to these bite-sized tasks can add up to larger projects and productions.

# (1) Video creation & protection

- Using Block Chain for video creation and value attribution:

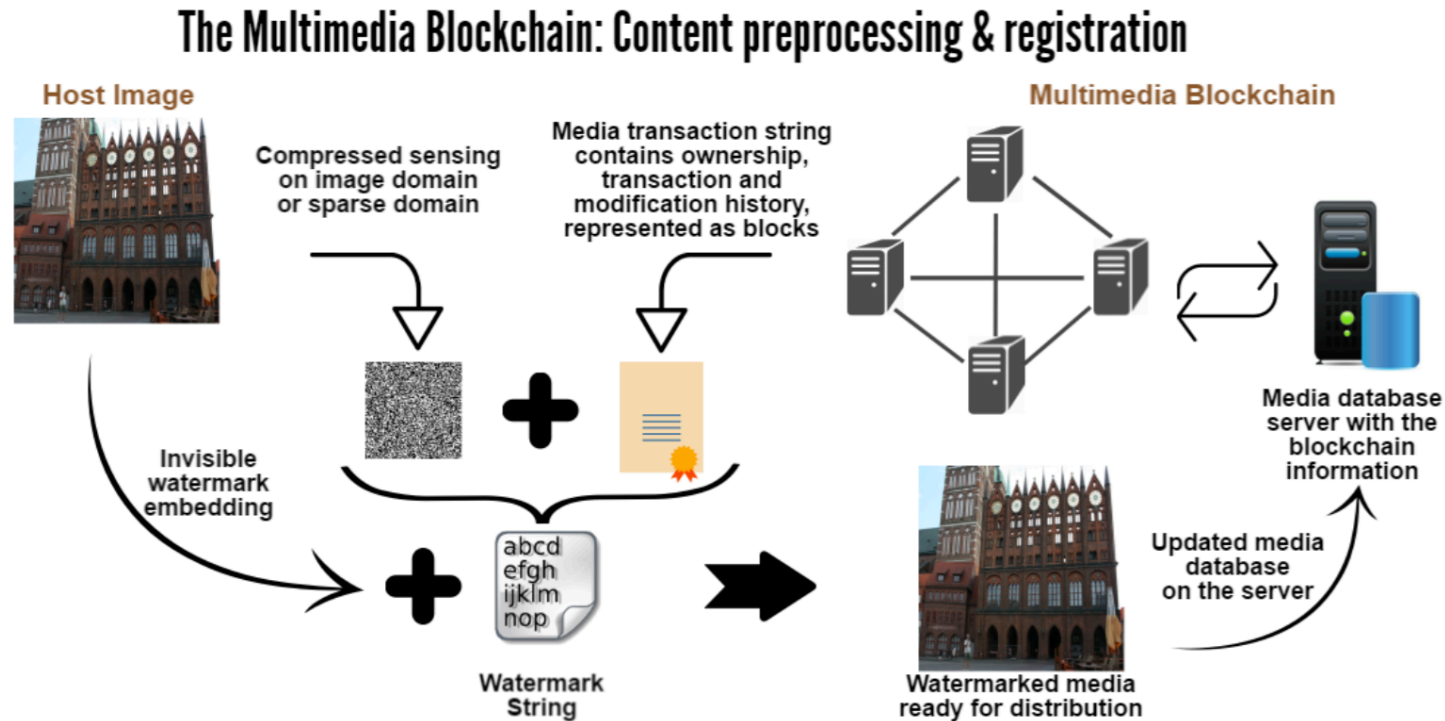
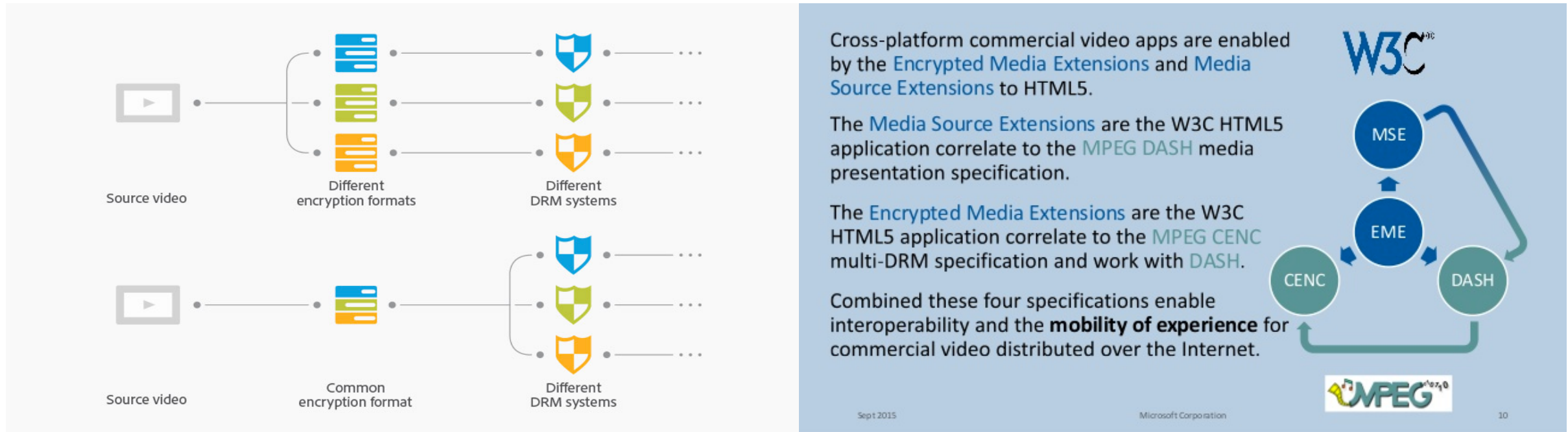


Fig. 2. Overview of the proposed multimedia blockchain framework: content processing and transaction.



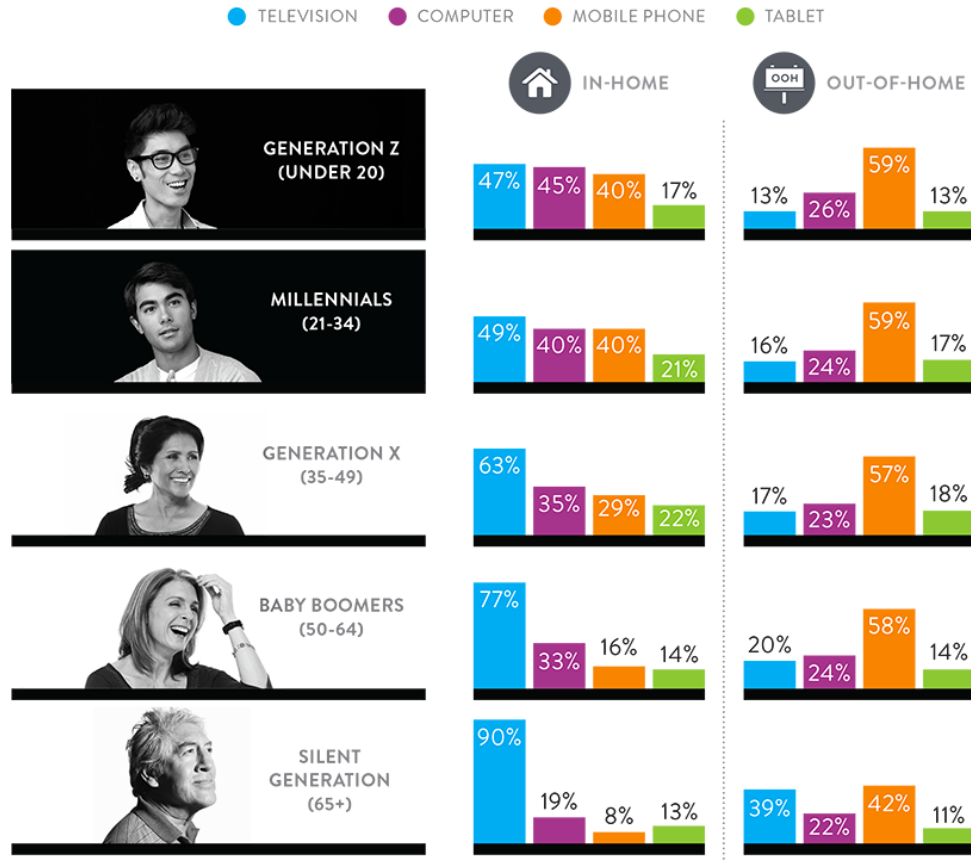
# (1) Video creation & protection

- From Different Encryption to Common Encryption: MPEG-CENC, W3C EME
- But there're still multiple DRMs. Can it become One DRM?



# YOUNGEST CONSUMERS ARE HEAVIEST MOBILE USERS, REGARDLESS OF LOCATION

Average percentage who say they use device to watch video programming in selected location\*

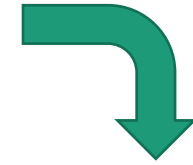


Source: Nielsen Global Digital Landscape Survey, Q3 2014

\* Among those who watch video programming in a selected location



Digital Native, Target Audience



## Global Mobile Data Traffic Drivers

Mobile Momentum Metrics



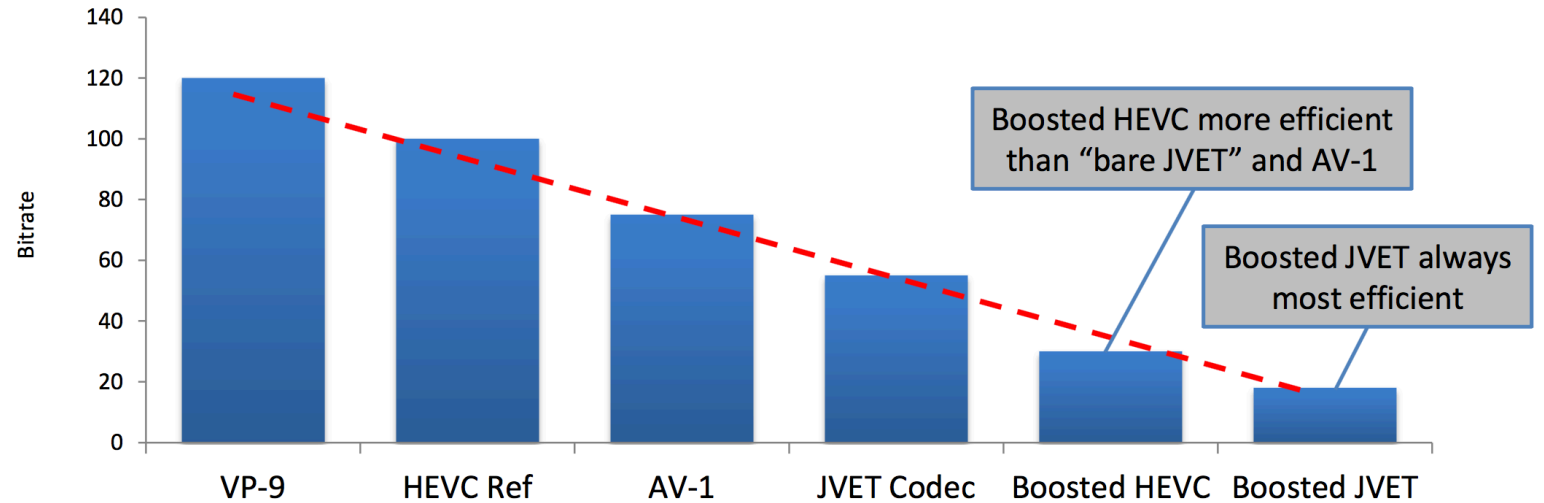
		2015	2020
More Mobile Users		4.8 Billion	5.5 Billion
More Mobile Connections		7.9 Billion	11.6 Billion
Faster Mobile Speeds		2.0 Mbps	6.5 Mbps
More Mobile Video		55% of Traffic	75% of Traffic

Source: Cisco VNI Global Mobile Data Traffic Forecast, 2015–2020

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## (2) Video Coding & Distribution Challenge

- Higher quality = UHD video to mobile screen
- Transmit 20Mbps within 6.5Mbps
- 70% efficiency gain required over HEVC today => JVET



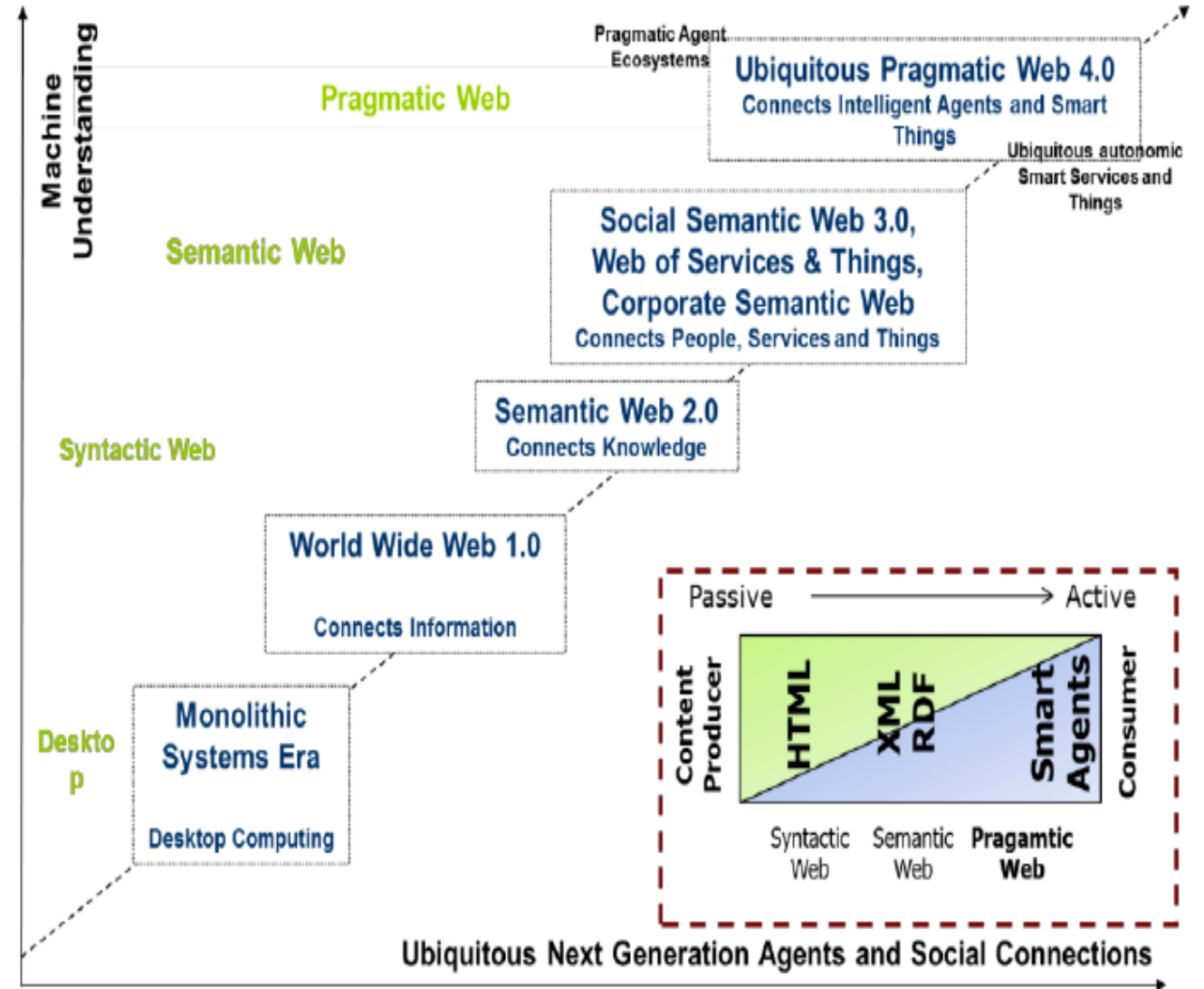
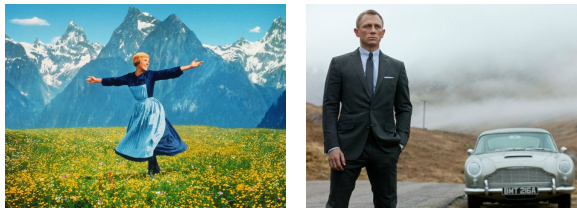
- Low latency transmission => for Live over OTT
- <2s for ABR vs Broadcast
- Stream server to device: latency using WebRTC or MPEG-DASH

## Future Bitrate Requirements

Format	Application	Transmitted Resolution	Codec	Bitrate* (Mbps)
VR Tiling HD	Streaming	1920 x 1080 x 60	HEVC	2.6
VR Tiling UHD-1	Streaming	2560 x 1440 x 60	HEVC	9.8
VR Tiling UHD-1 p120	Streaming	3840 x 2160 x 120	HEVC	13.1
UHD-1 p120	Streaming/Broadcast	3840 x 2160 x 120	HEVC	19.7
UHD-2 (8K)	Broadcast	7680 x 4320 x 120	HEVC	65.6
VR 6DoF	Download	undefined	HEVC	>1000

### (3) Video consumption

- Video asset in Web 3.0 (Semantic web)
  - Linked Data: semantic, tagging, metadata, branching, object recognition, context and relationship between video, objects, etc.
  - Making video searchable, more engaging and even actionable with rich meta-data & relationship
  - “where is this place”, find “spy action and adventure” movie

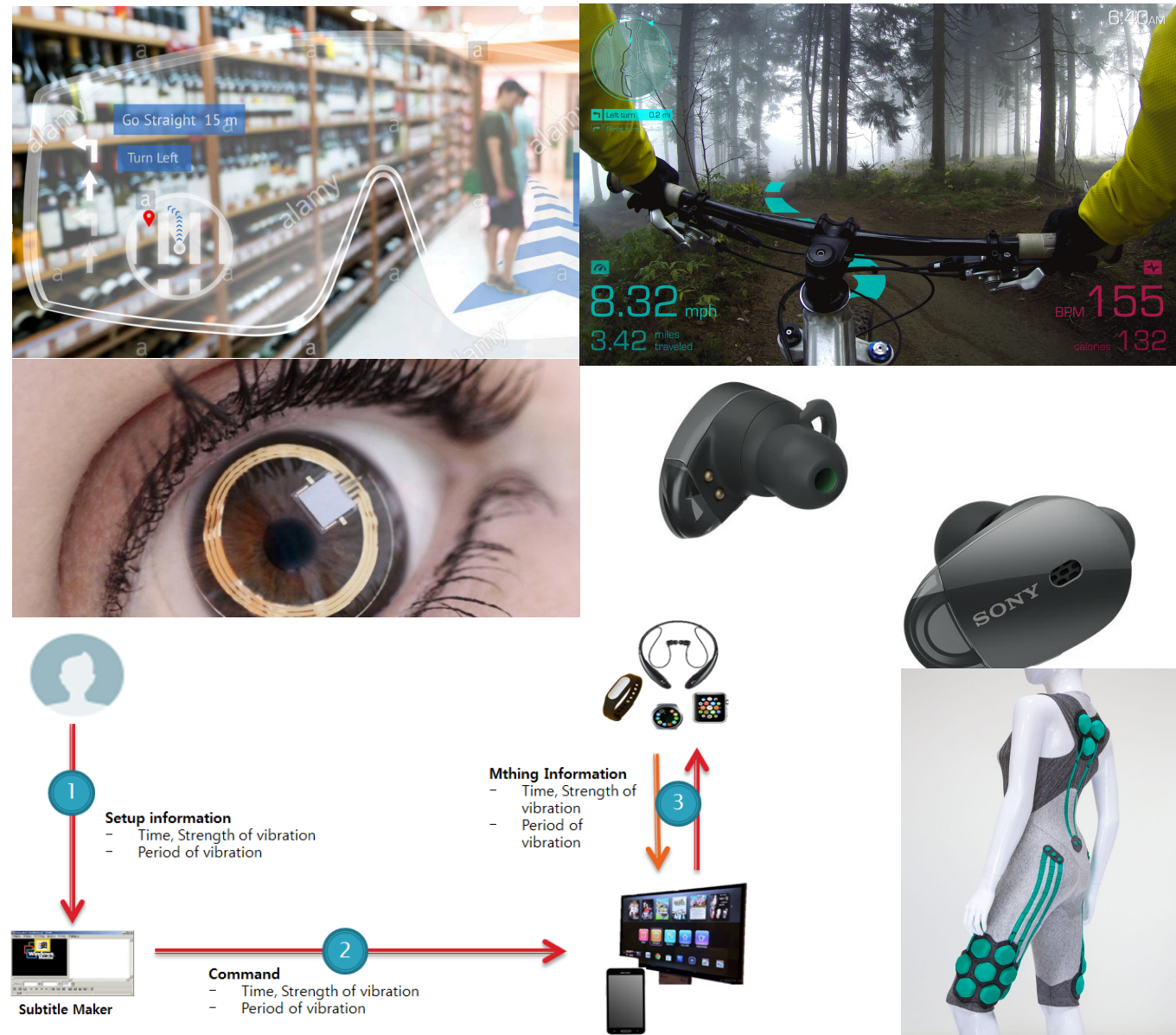




### (3) Upcoming Use cases: 5G + AR (enabled by Wearable Device Trends)

- *Smart grocery shopping*: set shopping goals for things like nutrition, couponing, and recipes and your AR system highlights what to buy as you move through the aisles and gives you a path to follow.
- *POV vlogging*: AR will make life-logging much more seamless. Broadcast what you're seeing as you're seeing it.
- *Personalization and targeting*: everyone sees unique AR ads directed to them, using their name, interests, emotional state, gaze, location, and more. One AR ad space can serve different ads to every person walking by.
- *Gamification of real life*: apply game dynamics to real-life activities and make anything a competition.
- *Holographic personal trainers*: instead of watching workout videos or following instructions on an app, project a virtual personal trainer in your workout space. Walk around this trainer to see how good exercise form looks from all angles. Work out alongside the trainer to stay on pace.
- *Immersive Experience*: Vibration Subtitle

=> 25-100Mbps and 1ms latency AR video



# Conclusion:

1. A collaboration framework to support video creation with common encryption and single DRM
2. UHD in 6Mbps for 6" Mobile Screen, < 2s latency between broadcast and ABR
3. Video for Semantic Web 3.0 (meta-data)
  - Contextual video, face and object recognitions, rich meta-data

## Next:

- Video through Intelligent Agent (Web 4.0)
  - "Show me what's happening in the White House now"
  - "Sing a song with Michael Jackson"





# Thank you!

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