

Introduction to “Sync on the Web”



1st July, 2025
Kensaku KOMATSU
NTT docomo Business

Agenda for Today's talk

- Brief introduction to “Sync on the Web”
- Use case study – “Immersive Interactive Live Viewing”

Japanese English !!

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- About
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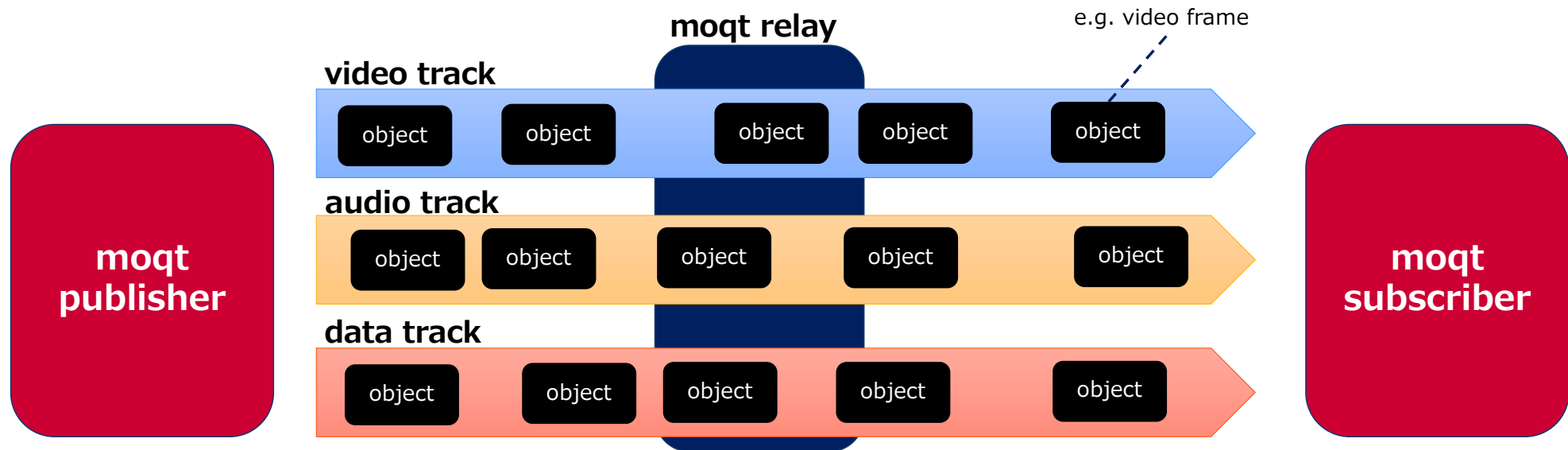
WG	Name	Media Over QUIC
	Acronym	moq
	Area	Web and Internet Transport (wit)
	State	Active
	Charter	charter-ietf-moq-01 Approved
	Document dependencies	Show
	Additional resources	GitHub Repository Zulip stream
Personnel	Chairs	Magnus Westerlund , Martin Duke
	Area Director	Mike Bishop
	Tech Advisor	Zaheduzzaman Sarker
Mailing list	Address	moq@ietf.org
	To subscribe	https://www.ietf.org/mailman/listinfo/moq
	Archive	https://mailarchive.ietf.org/arch/browse/moq/
Chat	Room address	https://zulip.ietf.org/#narrow/stream/moq

Charter for Working Group

<https://datatracker.ietf.org/group/moq/about/>

moqt – Media over QUIC Transport

- Track
 - For each media and arbitrary data
 - e.g. hd-video, sd-video, audio, dmx
- Object
 - For short period of data in the track
 - e.g. video frame

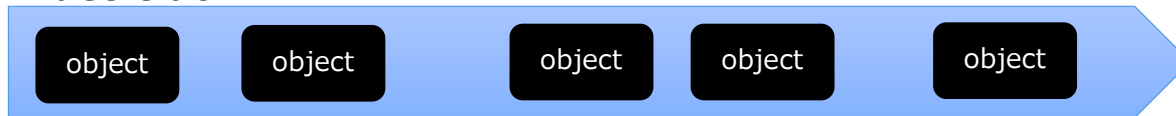


The Idea of “Sync on the Web”

- Each object can contain “meta data”
 - Including captured timestamp
- With timestamp, subscriber can synchronize audio, video and arbitrary data
 - In other words, time-alignment

Time alignment, using timestamp

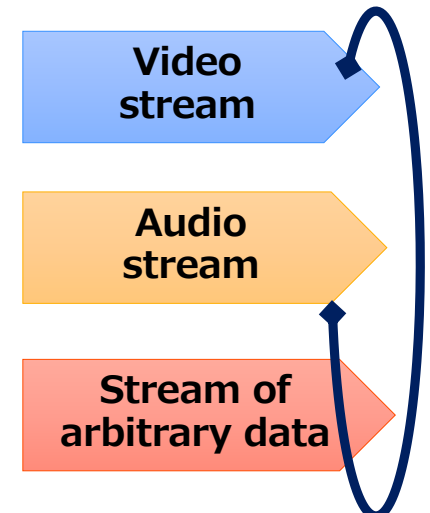
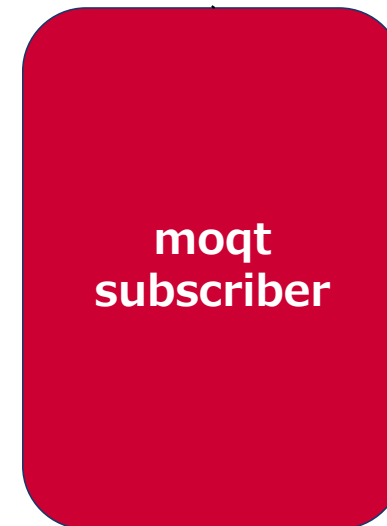
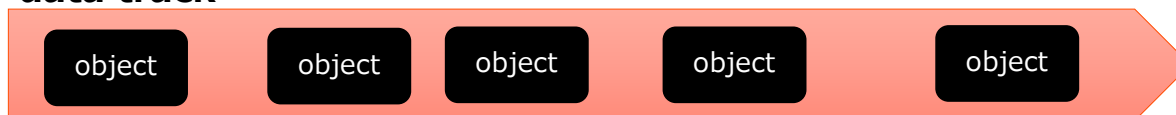
video track



audio track



data track



synchronized

Demo – “sync” w/ Media over QUIC

Receiver side avatar
rendering by motion data.
Playing music and drawing
effects by MIDI.

sender



Error::info::no subscriber found

receiver



Received messages

Sync on the Web CG

Believing that, for real-time web, “Sync” is one of the important topic.

Current work.

- Use case study
- Gap analytics
- Collaborate w/ related groups.

<https://www.w3.org/community/sync-on-the-web/>

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The screenshot shows the W3C Community & Business Groups page for the 'Sync on the Web' community group. The page has a dark blue header with the W3C logo and the text 'COMMUNITY & BUSINESS GROUPS'. Below the header, there are three main navigation links: 'CURRENT GROUPS', 'REPORTS', and 'ABOUT'. The main content area is titled 'SYNC ON THE WEB COMMUNITY GROUP' and includes a 'Background' section with text about the utilization of data from locally connected devices. To the right of the main content, there is a 'Tools for this group' section with links for 'Mailing List', 'IRC', 'RSS', and 'Contact This Group'. Below that is a 'Get involved' section with a 'JOIN OR LEAVE THIS GROUP' button. At the bottom right, there is a profile picture of Kensaku KOMATSU and a handwritten note 'Chairs' with an arrow pointing to the 'JOIN OR LEAVE THIS GROUP' button.

つなごう。驚きを。幸せを。

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CURRENT GROUPS REPORTS ABOUT

Home / Sync on the Web Community Grou...

SYNC ON THE WEB COMMUNITY GROUP

Background

The utilization of data from locally connected devices has nearly become a reality, thanks to remarkable advancements over the past decade. For instance, the Web MIDI API enables bi-directional communication of MIDI messages between MIDI devices and web browser applications. Now, with the emergence of new real-time protocols like Media over QUIC, real-time utilization of data from locally connected devices is extending beyond local clients to reach remote clients across the network. This evolution makes such data usage increasingly common on the web. These protocol advancements enable the web to deliver orchestrated, immersive experiences that seamlessly integrate virtual and real-world elements in real time. To fully leverage these opportunities and ensure precise reproduction of such experiences on client devices, our current focus is on timing synchronization at the sender's side, particularly synchronizing data from locally connected devices.

Statement

The Sync on the Web Community Group defines its mission as follows:

1. Define the use cases that require "Sync on the Web."
2. Identify the conditions and criteria necessary to achieve "Sync on the Web."
3. Collaborate with related working groups to explore potential solutions for "Sync on the Web," including reviewing

Tools for this group

- Mailing List
- IRC
- RSS
- Contact This Group

Get involved

Anyone may join this Community Group. All participants in this group have signed the [W3C Community Contributor License Agreement](#).

JOIN OR LEAVE THIS GROUP

Kensaku KOMATSU

Chairs

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Japanese English !!

What's Live Viewing?

I asked to "ChatGPT" ;)

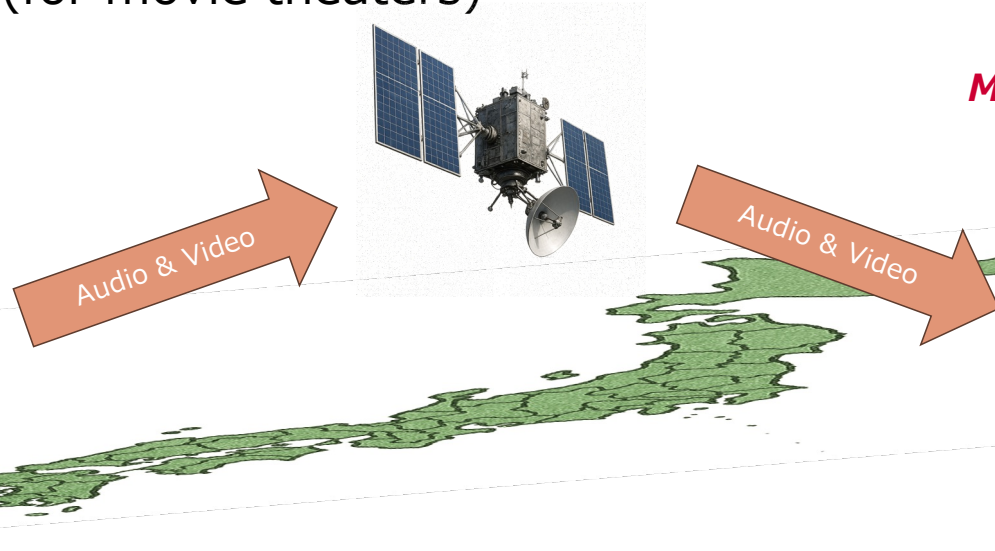
Is "Live Viewing" Japanese English?

Yes, "**Live Viewing**" is considered **Japanese English (和製英語)** — a term that sounds like English but is mainly used in Japan with a specific meaning not commonly understood the same way by native English speakers.

In natural English:

- **Live screening** (for movie theaters)

Stadium, Arena etc.



Movie theaters



“GPAP over MoQ”

To realize “Immersive Interactive Live Viewing”

- **GPAP (General Purpose Audio Protocol)**

- Handle all live stage data. Audio, Lighting (DMX), … , into .wav data
- Relies on Dante. Developed by YAMAHA.

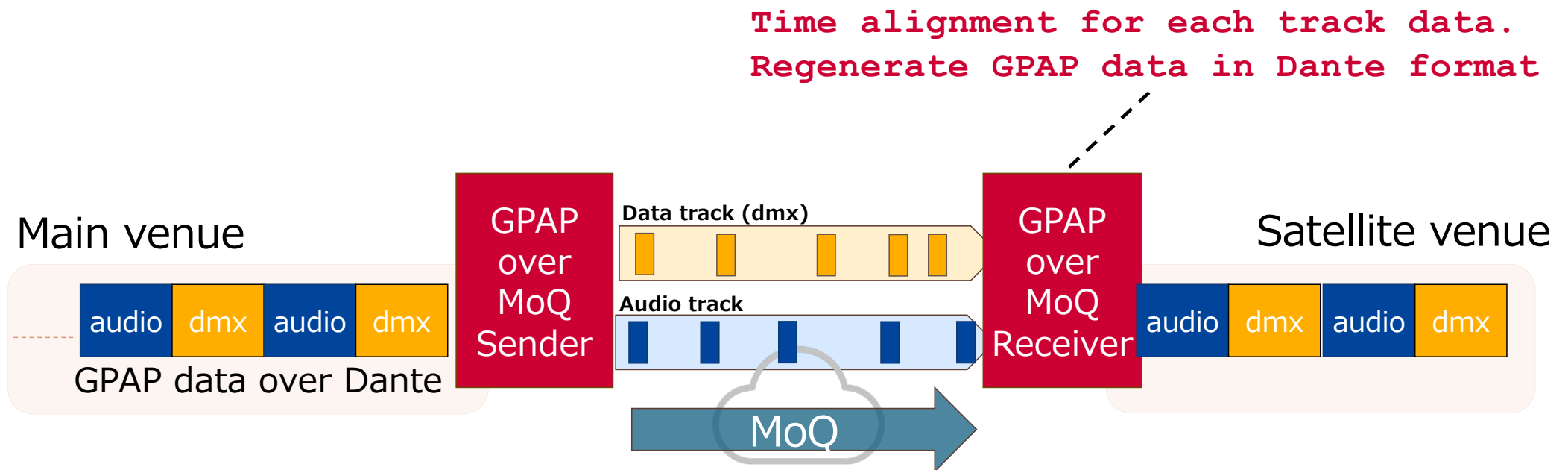
- **GPAP over MoQ**

- Transport GPAP data using MoQ (minimum latency: about 0.1sec).
- Assign tracks for each GPAP data.
- Developed by NTT docomo Business

GPAP : Gneral Purpose Audio Protocol
<https://youtu.be/ZjByd7BeOXY?si=h7EuGQMpv4xC8bYy>



Diagram of “GPAP over MoQ”



For more detail (article in English):

<https://www.tvbeurope.com/media-delivery/ntt-com-partners-with-yamaha-to-trial-interactive-live-viewing-technology>

Digest video (Youtube in Japanese) :

https://youtu.be/2T4kg8VlhOU?si=54bFi_BjEfzIF3M7

つながる。驚きを。幸せを。

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Gaps for “Sync on the Web”

- Dante from browser
 - In windows : cannot handle (due to ASIO)
 - In Mac : handle 2 channels only



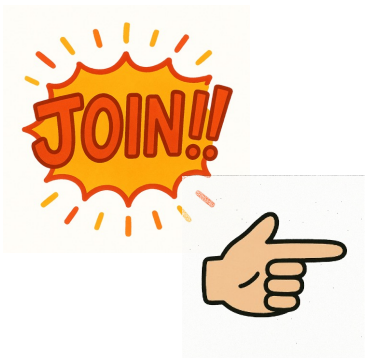
Additional Announcement :

- Planning to held meetup at Kobe w/ local community on 9th Nov (Day before TPAC!!)

つながろう。驚きを。幸せを。



Thank you!



<https://www.w3.org/community/sync-on-the-web/>