

# Developing for 360° video on the web

Kalle Kabell

@kkabell

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# Agenda



001  
360 video?



002  
Live coding!



003  
Lessons learned

# 001 360 video?

## What is it?

- Video recorded with views in all directions
- The viewer is usually in charge of viewing angle during playback
- Some common ground with virtual reality / augmented reality
- With and with-out VR headset

## Why care about it?

- Facebook and YouTube are pushing for it
- Increasing interest from users and businesses for use in marketing and online communications in general
- The technology is developing very quickly  
Hardware getting better and cheaper

Ricoh Theta (1080p), Samsung GearVR (4K)

## Why care about it?

- Is it becoming the new default?
- 360 video vs “regular” video
- Video vs text and images
- For a developer, it’s good fun.

002

Live coding!



## What's the approach?

- Equirectangular video as starting point  
-> feed from 360 camera “rolled out” as a flat image feed

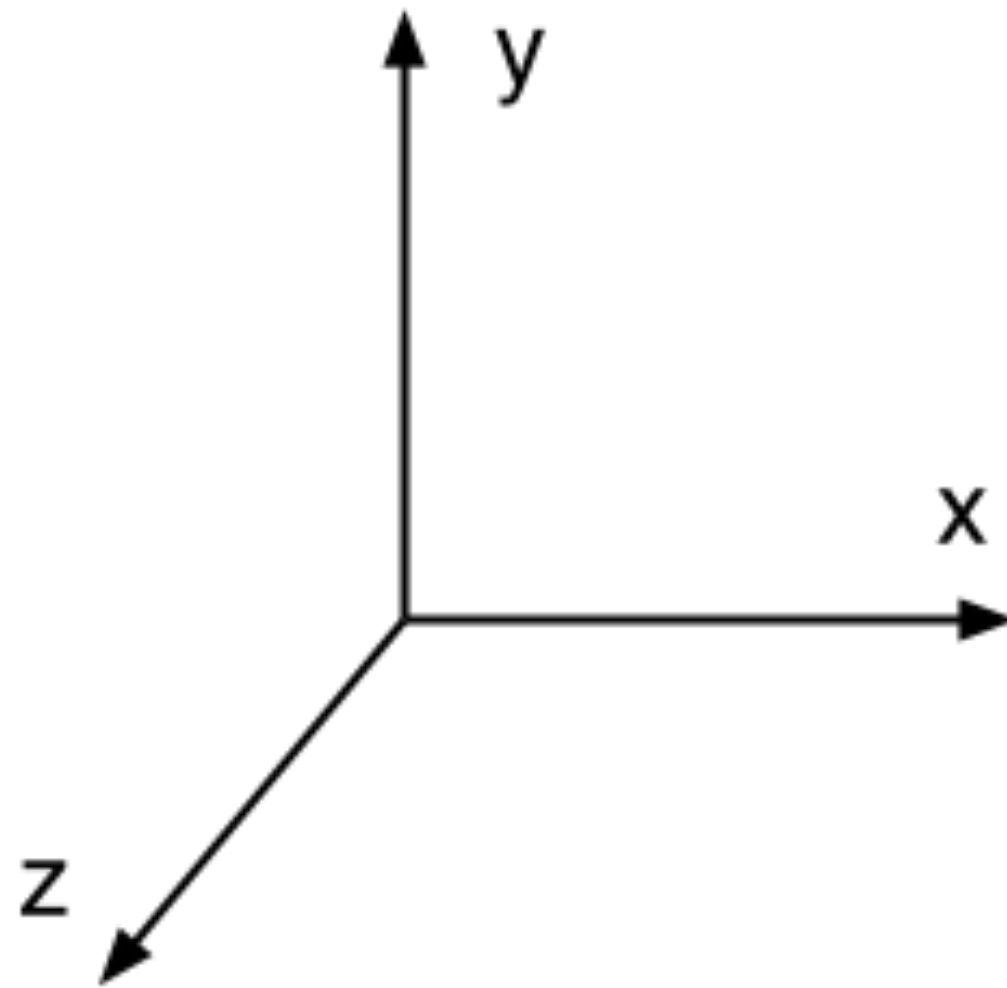




## What's the approach?

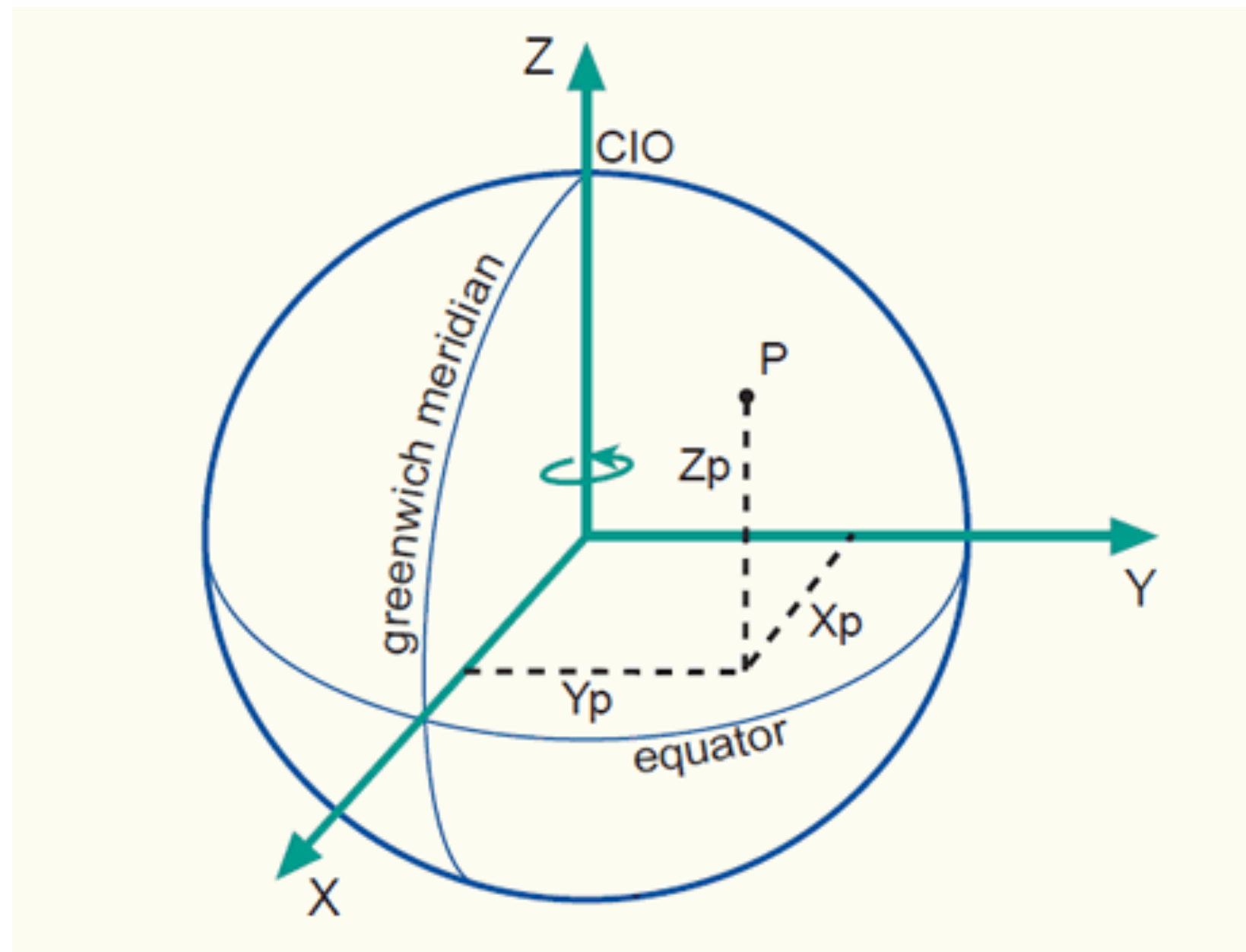
- Create a 3D sphere and wrap the video around it
- Place the viewer (the camera) inside the sphere and let them navigate the viewing angle
- Use three.js ([threejs.org](https://threejs.org))

## Working in 3D space



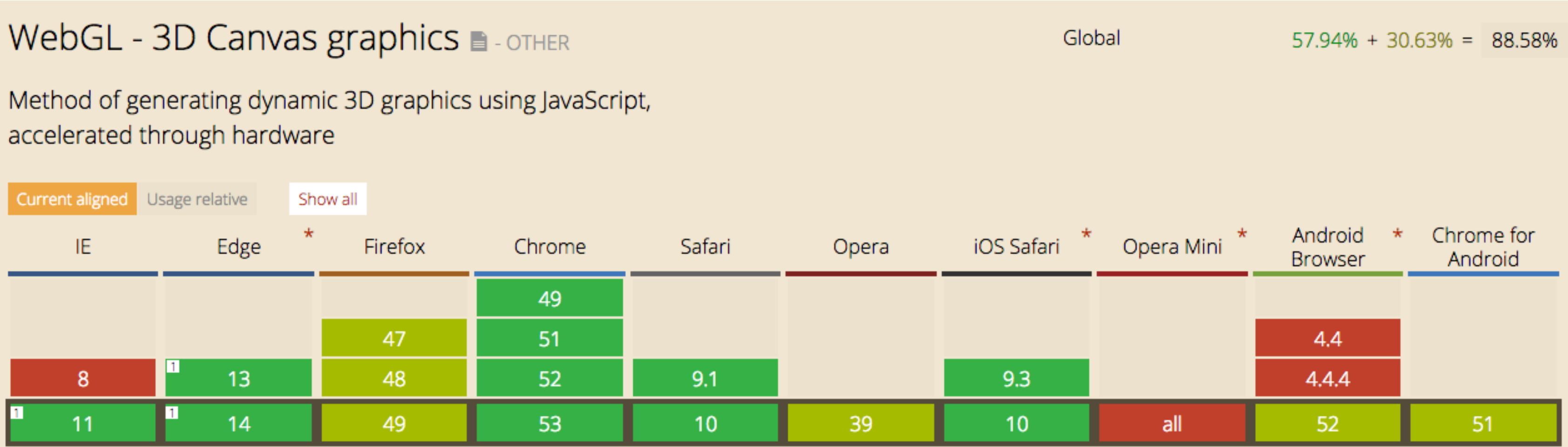
- The world is a coordinate system!

## Working in 3D space



- The world is a coordinate system!

# Can I use it?



Let's write some code..

003

Lessons learned



## Which level of abstraction?

- Aframe ([aframe.io](https://aframe.io))
- Three.js ([threejs.org](https://threejs.org))
- Hard mode -> Developing with the WebGL API

## Same origin policies

- Web page and video content should be served by the same origin
- CORS headers should allow for cross-domain, but it's quirky

## Browser support

- Chrome and Firefox paving the way
- Safari and Edge is catching up

## Live vs on-demand

- No real difference,  
If the `<video>`-element can play it, 360 projection is possible (a side from quirks with cross-origin)
- Hls.js ([github.com/dailymotion/hls.js](https://github.com/dailymotion/hls.js)) for html5 live streams in browsers without native HLS support
- Video quality is the real issue,  
ex. 1080p is not 1080p when rendered in 360°

## “Call-to-action”s / annotations

- A new world to explore  
Clickable 3D objects w. “cursors” & raycasting
- A new format for story-telling
- How to transition the user from VR view to regular web page?

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