

# Piggybacking your WebVR/AR experiences with React

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# Who am I ?

- Global Co- Chair for (WebXR) Industry Committee at VRAR Association
- HCI Researcher at IIT Kanpur.
- Contributor and Developer for WebXR API and WebVR 2.0 at W3C.
- I majorly use Oculus Go for VR purposes.



# Overview

WebVR

React 360

Example/Demo

Popular  
Frameworks

Social VR around  
React360

Aframe

AR with React

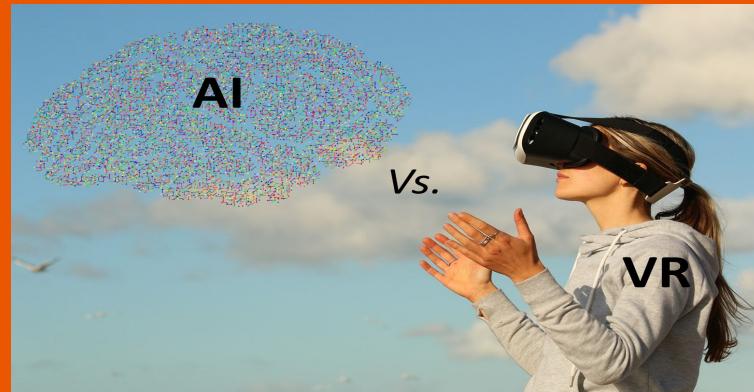


# What I am excited about in 2018 ?



XR Projects

Artificial Intelligence in VR



Data  
Visualisation



Augmented Reality





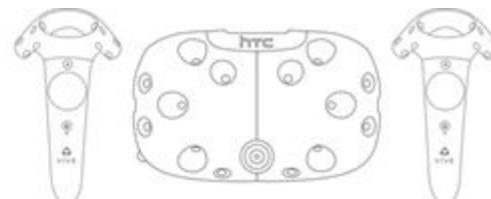
# Understanding WebVR/AR

# WebVR

WebVR

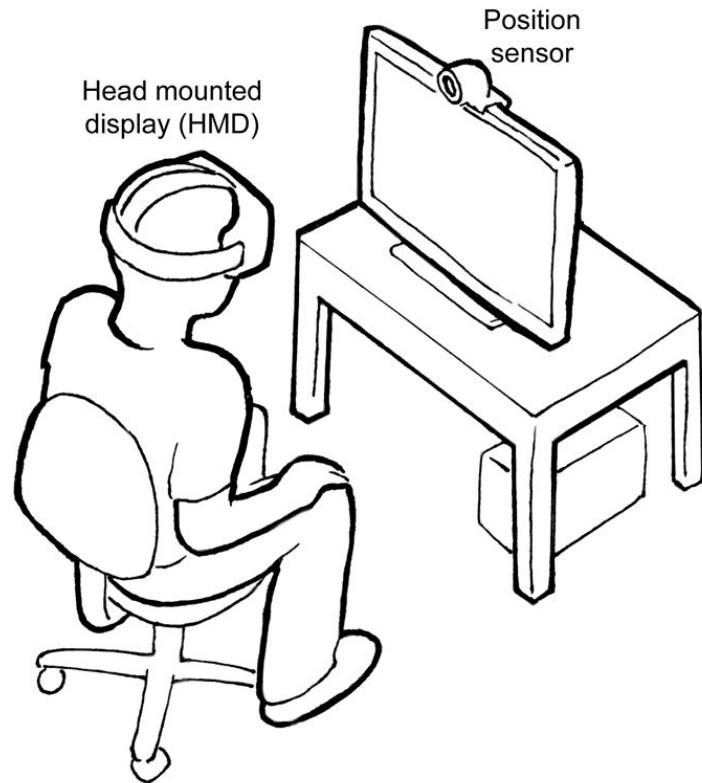


**WebVR** is a *JavaScript API* for creating immersive 3D, *Virtual Reality* experiences in your *browser*. It provides access to VR devices.



# How does this work?

- `Navigator.getVRDisplays()`
- `VRDisplay.requestPresent()`
- `VRDisplay.requestAnimationFrame()`
- Inside the rendering loop, you grab the data required to display the current frame (`VRDisplay.getFrameData()`), draw the displayed scene twice — once for the view in each eye, then submit the rendered view to the display to show to the user (`VRDisplay.submitFrame()`).



# Concepts behind VR Apps

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- Stereoscopic vision
- Head tracking
- Framerate ( Frames per second / FPS )
- Interpupillary distance ( IPD )
- Cone of focus
- 3D Positional Audio



# WebVR Infrastructure



# Why WebVR?

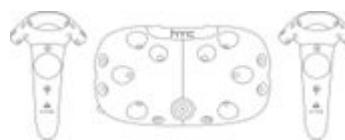
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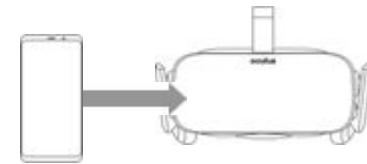
Google VR SDK  
(iOS/Android/Unity)



Oculus Mobile SDK



Viveport SDK  
(Android/Windows)



WebVR

Widest **delivery** network in existence: the **Web**



Cost of entry for simple experiences for consumers translates to access to a browser in a device.



# Popular Frameworks in WebVR/AR



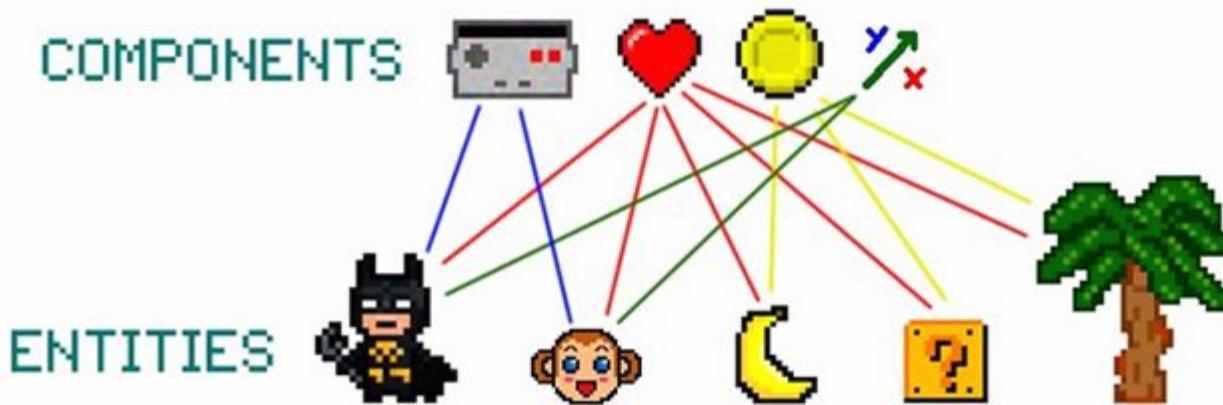
## Players in Market

PWA



# Aframe : The Top-Dog of WebVR





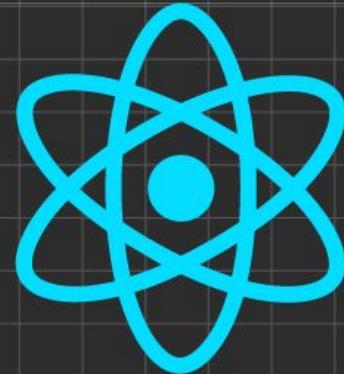
# Entity-Component System





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# React Ecosystem for VR/AR



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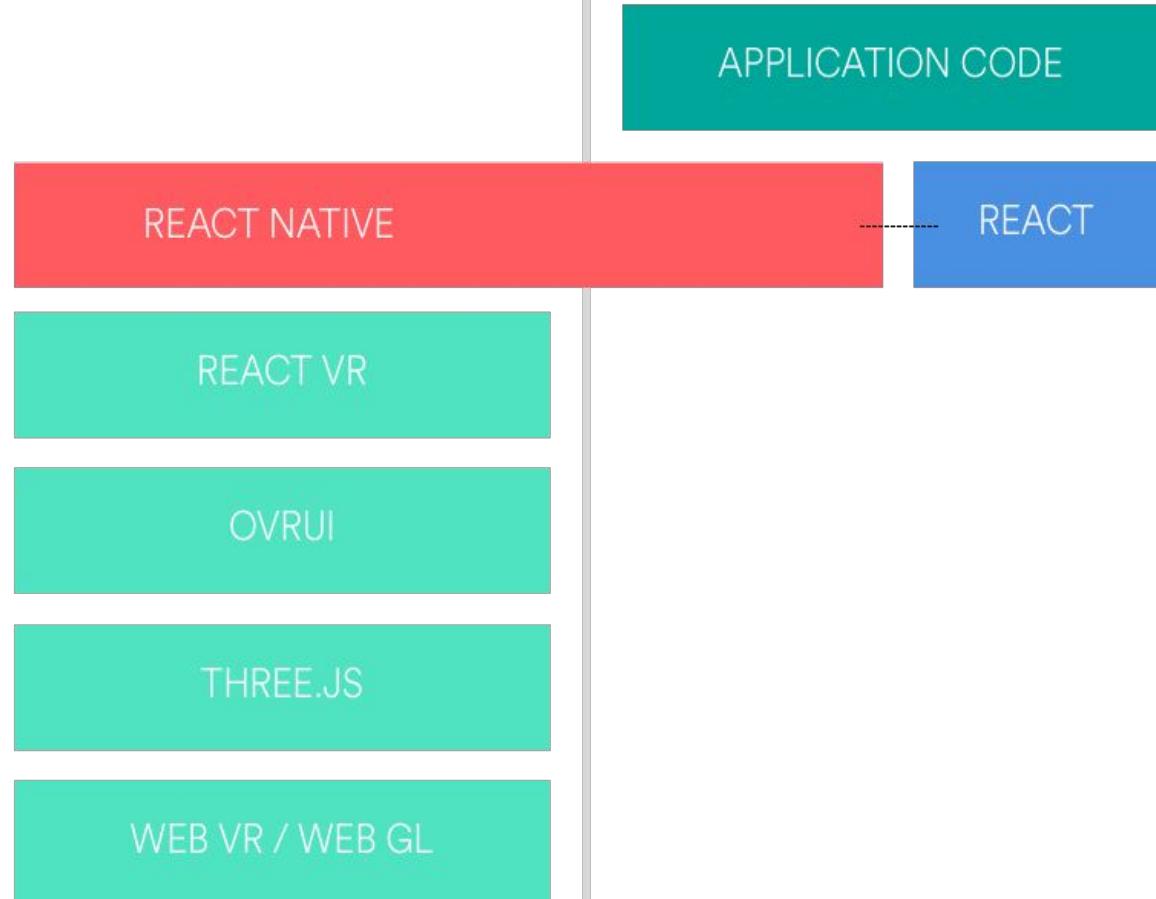
# React 360 : Facebook's own WebVR Framework

# How ReactVR?

- Based on Three.js library
- OVRUI : Oculus VR UI
- React Native Elements:  
**View, Image, Text, etc**
- React VR adds : **Pano, Mesh, Pointlight & others**
- Getting started is easy-peasy.

## BROWSER MAIN THREAD

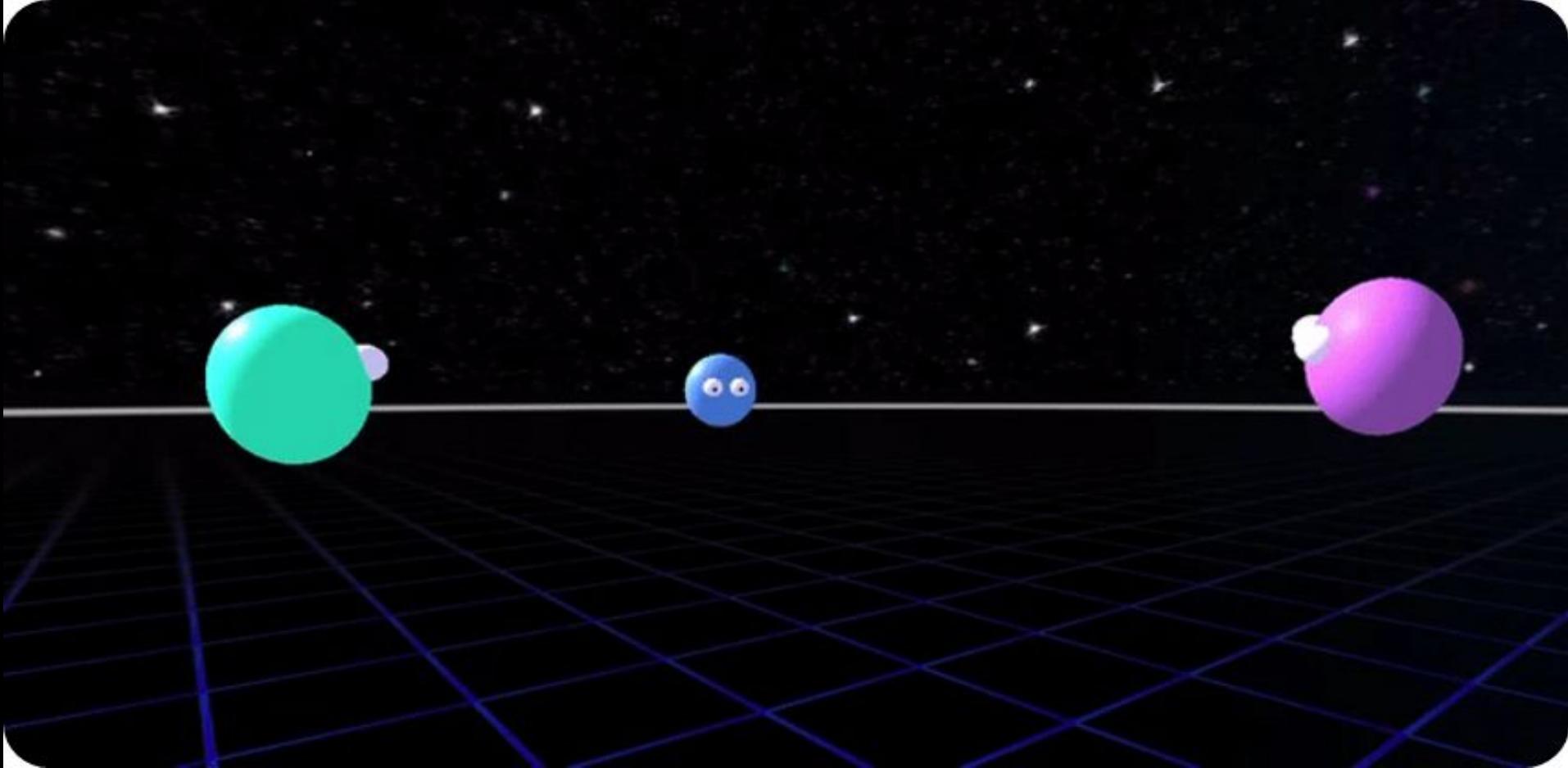
## WEB WORKER



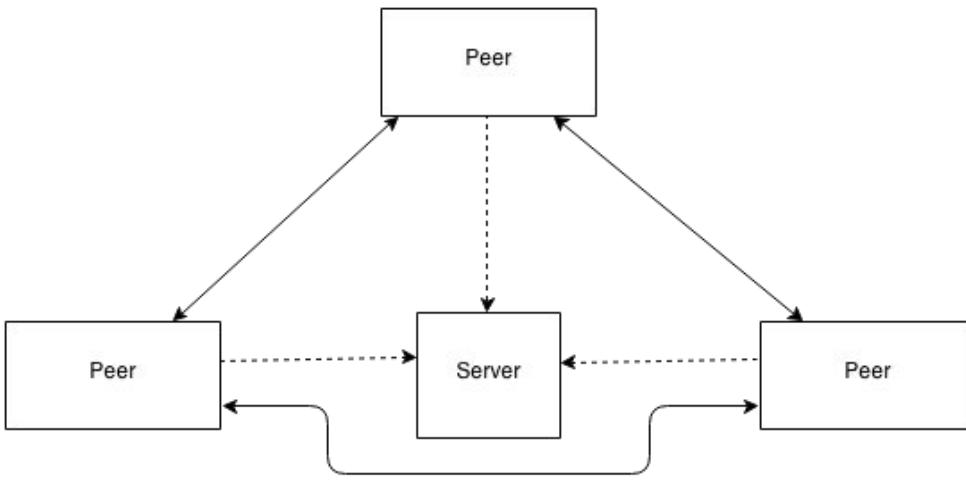


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# Social VR with ReactVR



# How does it work?



Uses a 'networked-scene' system for the scene identifying sessions by 'app' and 'room'.

Uses a 'networked' component on entities to sync them.

Utilizes templates to represent the networked entity.

It can broadcast messages to connected peers.

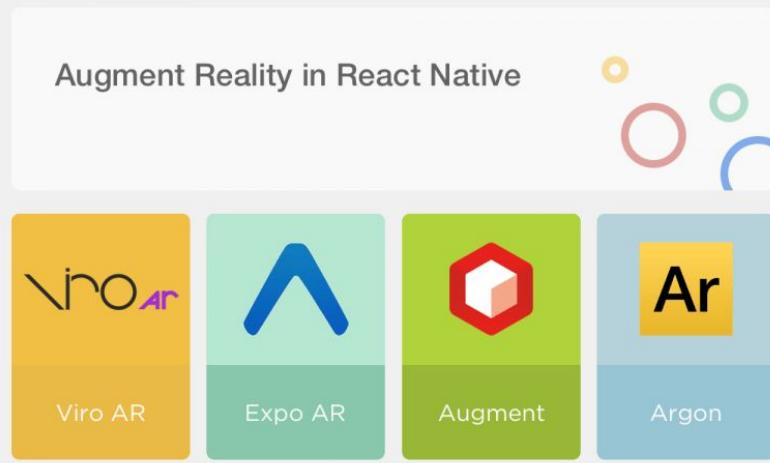
Based in WebRTC / WebSockets and PEER.js



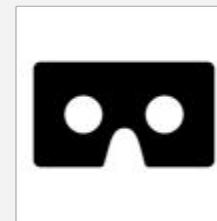
# Prototyping Tools



## React based WebAR



# React-Web-AR



Augmented Reality on web with React

# ViroReact / ViroAR



## Features

### Cross Platform Development

Write once, run anywhere across all mobile AR (ARKit, ARCore) and VR (Cardboard iOS/Android, GearVR, Daydream)



### React Native Framework

Create apps using React Native, making it easy for web developers to get started.



### Powerful Renderer

Create stunning scenes with PBR, HDR, Realtime Lighting, Physics, Particles, and more.



### Rapid Iteration

Use the free Viro Testbed app to view your app and see your changes quickly. No need to wait for recompile. It's like refreshing a browser.



### Documentation

We provide you with extensive developer support and documentation.



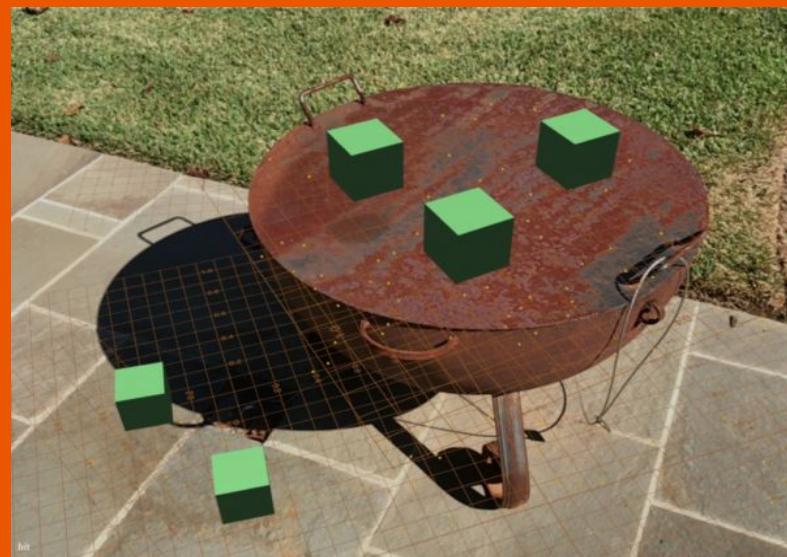
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# Example ;)

**Google Musical Forest Experiment Clone**

For more experiments on WebVR check : [experiments.withgoogle.com/webvr](http://experiments.withgoogle.com/webvr)

# WebXR: A combined framework

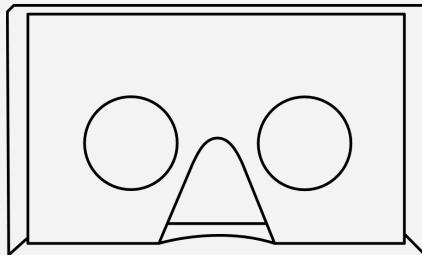
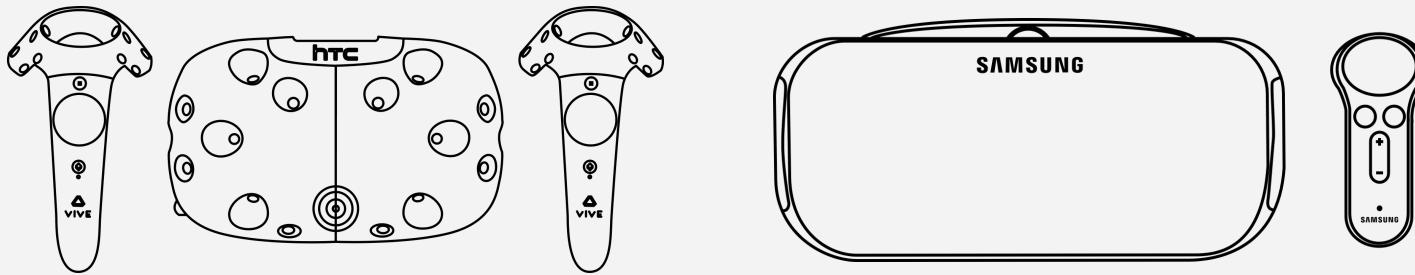


## Proposing a WebXR API

We have created a [draft WebXR API proposal](#) for providing access to both augmented and virtual reality devices.

The WebXR API formalizes the different ways these technologies expose views of reality around the user, and it exposes concepts common in AR platforms such as the Anchors found in Hololens, ARKit, and ARCore.

# Cross Device Support for VR/AR/MR





# Questions?

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# Ciao!!