THE CODE BEHIND COLLABORATION COMPONENTS

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10x Microsoft MVP
Developer Advocate @ SuperViz

@vt_norton

VITOR NORTON

Passionate about connecting people
Highly dependent of my productivity tools
Love the idea of working anywhere in the world

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COLLABORATION COMPONENTS

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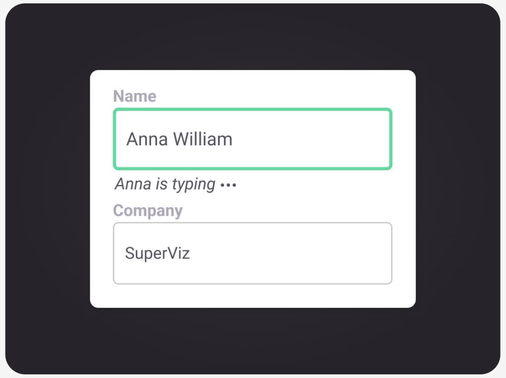
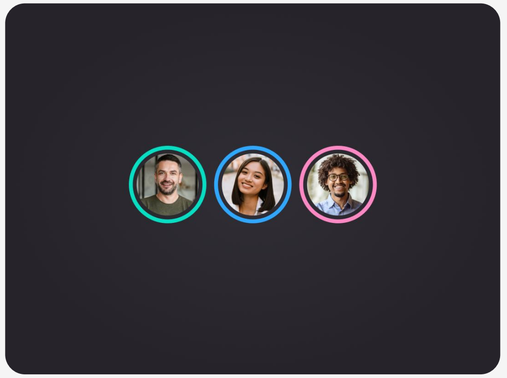


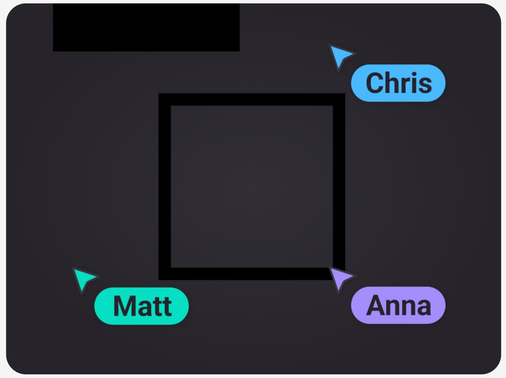
FORMS ELEMENTS

Enables real-time sync of form elements, such as input fields, checkboxes, among participants in the same room.



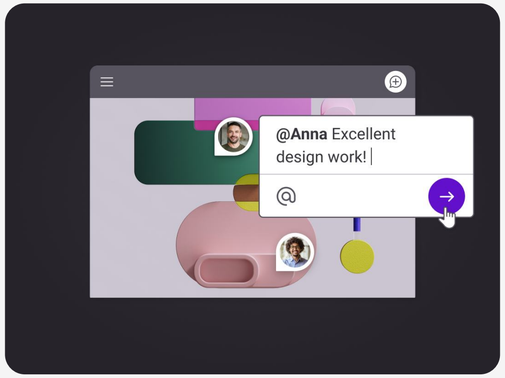
WHO-IS-ONLINE

The Who-is-On-line component allows you to see all the participants who are connected in a room.



MOUSE POINTERS

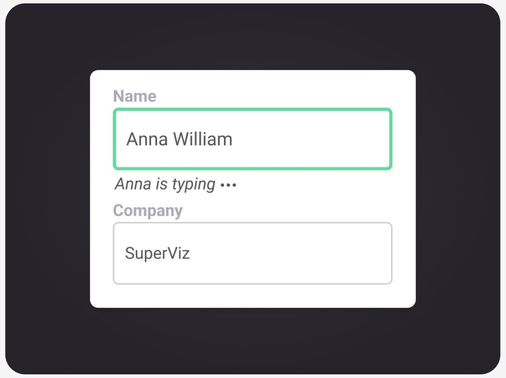
It enables real-time tracking of participants' cursor movements, allowing seamless collaboration within the same room.



CONTEXTUAL COMMENTS

It embeds a customizable commenting experience into your page to enable people to collaborate.

COLLABORATION COMPONENTS



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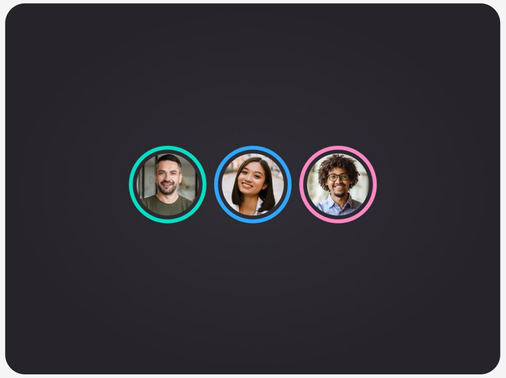

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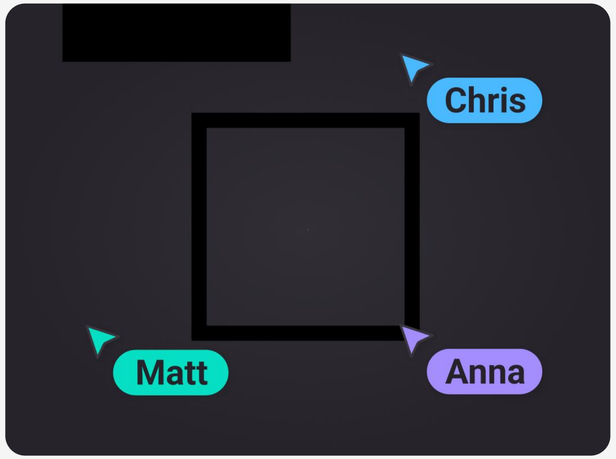

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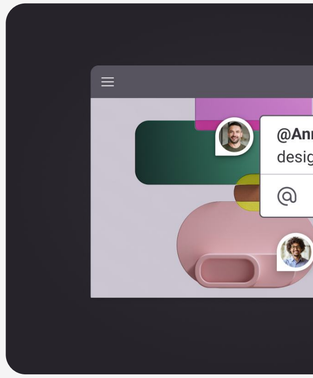
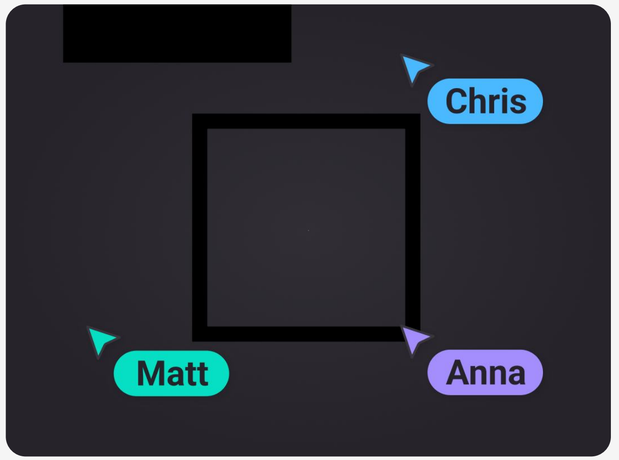


CONTEXT COMME

It embeds a cust commenting exper your page to enable collaborat

LET'S BREAK IT DOWN

Go to definition F12



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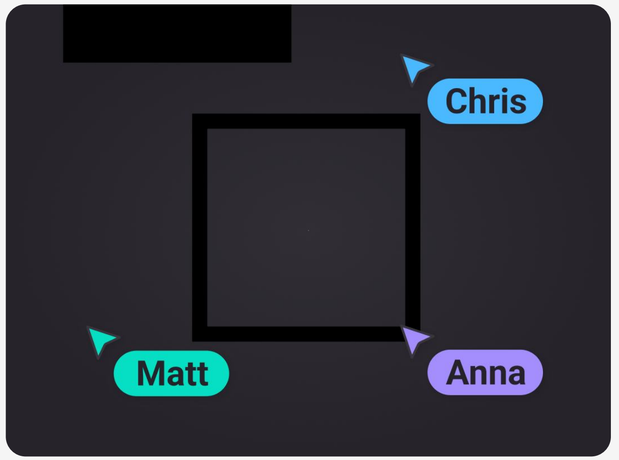

MOUSE POINTERS

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LET'S BREAK IT DOWN

Go to definition F12

```
1 <MousePointers elementId="element-id" />
2 <div id="element-id" />
```

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2 <div id="element-id" />
```

LET'S BREAK IT DOWN

Go to definition F12

```
const room = await SuperVizRoom(DEVELOPER_KEY,
  {
    roomId: groupId,
    group: {
      id: groupId,
      name: groupName,
    },
    participant: {
      id: userId,
      name: userName,
    },
  }
);

const mousePointers = new MousePointers("element-id");

room.addComponent(mousePointers);

return room;
```

LET'S BREAK IT DOWN

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NEW MOUSEPOINTER()

See when someone moves their mouse

Get information about the position of other’s participants mouse pointers.

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Let the other participants know the position of your pointer.

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Let the other participants know the position of your pointer.

Make it really fast and smooth

Update it in a 30fps (frames per second) so it doesn't seem laggy.

NEW MOUSEPOINTER()

See when someone moves their mouse

Get information about the position of other's participants mouse pointers.

```
1 const [mousePosition, setMousePosition] = useState({
2     x: 0,
3     y: 0
4   });
5
6 channel.subscribe("mouse.moved", onMouseMove);
7
8 function onMouseMove(message: RealtimeMessage) {
9   setMousePosition({
10    x: message.data.x,
11    y: message.data.y,
12  });
13 }
```

NEW MOUSEPOINTER()

Update your position to everyone

Let the other participants know the position of your pointer.

```
1 document.addEventListener("mousemove", onMouseMove);
2
3 function onMouseMove(event) {
4   const position = {
5     x: event.clientX,
6     y: event.clientY,
7   };
8
9   channel.publish("mouse.moved", position);
10 }
```

NEW MOUSEPOINTER()

Make it really fast and smooth

Update it in a 30fps (frames per second) so it doesn't seem laggy.

```
let isAnimationFrameRequested = false;
let lastMouseEvent: MouseEvent | null = null;

document.addEventListener("mousemove", (event) => {
  lastMouseEvent = event;
  if (!isAnimationFrameRequested) {
    isAnimationFrameRequested = true;
    requestAnimationFrame(onMouseMove);
  }
});

function onMouseMove() {
  if (lastMouseEvent) {
    const position = {
      x: lastMouseEvent.clientX,
      y: lastMouseEvent.clientY,
    };

    channel.publish("mouse.moved", position);
  }
  isAnimationFrameRequested = false;
}
```

CONST CHANNEL

What is this channel you've been using?

I know, it's ridiculous of me not to show what is this `channel` const, but it is actually implementing an event broker, which plays a crucial role in our system architecture.

```
room = await SuperVizRoom(DEVELOPER_KEY, {
  roomId: groupId,
  participant: {
    id: participant,
    name: "John " + participant,
  },
});

const realtime = new Realtime();

channel = await realtime.connect('mouse.handler');

room.addComponent(realtime);
```

CONST CHANNEL

What is this channel you've been using?

I know, it's ridiculous of me not to show what is this `channel` const, but it is actually implementing an event broker, which plays a crucial role in our system architecture.

Go to definition F12

```
export declare class Channel {
  static events = {};
  subscribe: (
    event: string,
    callback: (data: any) => void)
    => void;
  publish: (
    event: string,
    data?: unknown)
    => void;
}
```

NEW REALTIME()

How dows Pub Sub works?

Let's delve into the functionality of the Publisher and Subscriber methods to gain a comprehensive understanding of how they operate.

CONST CHANNEL

The subscribe method

Go to definition F12

```
1 function subscribe(eventName, callback) {
2   // If the event doesn't exist yet,
3   // initialize it as an empty array
4   if (!this.events[eventName]) {
5     this.events[eventName] = [];
6   }
7
8   // Push the callback function into the
9   // array of callbacks for the given event
10  this.events[eventName].push(callback);
11 }
```

CONST CHANNEL

The subscribe method

Go to definition F12

```
1 function subscribe('mouse.moved', callback) {
2   // If the event doesn't exist yet,
3   // initialize it as an empty array
4   if (!this.events['mouse.moved']) {
5     this.events['mouse.moved'] = [];
6   }
7
8   // Push the callback function into the
9   // array of callbacks for the given event
10  this.events['mouse.moved'].push(callback);
11 }
```

The publish method

Go to definition F12

```
// The publish method takes an event name and data
function publish(event, data) {

  // For each subscriber of this event,
  // call the callback function with the provided data
  this.events[event].forEach((callback) => {
      callback(data);
  });
}
```

CONST CHANNEL

The publish method

Go to definition F12

```
1 // The publish method takes an event name and data
2 function publish('mouse.moved', data) {
3
4   // For each subscriber of this event,
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6   this.events['mouse.moved'].forEach((callback) => {
7       callback(data);
8   });
9 }
```

Well, it is this... but

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one more thing

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web sockets

web sockets

PubSub works locally,
until you add a
websocket to it

web sockets

WebSockets provide a protocol that allows for a continuous, two-way communication channel between a client and server, enabling real-time data exchange over a single, persistent connection without the need for repeated HTTP requests.

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PERSISTENT CONNECTIONS

Stays open for continuous data exchange

LOW LATENCY

Ideal for real-time applications like chat, gaming, and live updates

BIDIRECTIONAL

Both client and server can send messages independently

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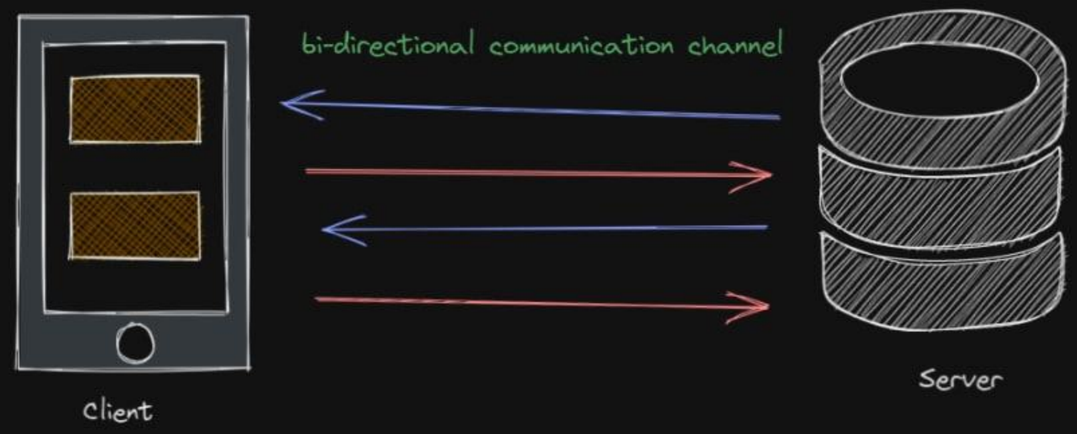
HOW IT WORKS

Client initiates a WebSocket handshake with the server.

Once established, messages can be sent in both directions without re-establishing the connection.



WHO IS USING THIS?

Ask ChatGPT

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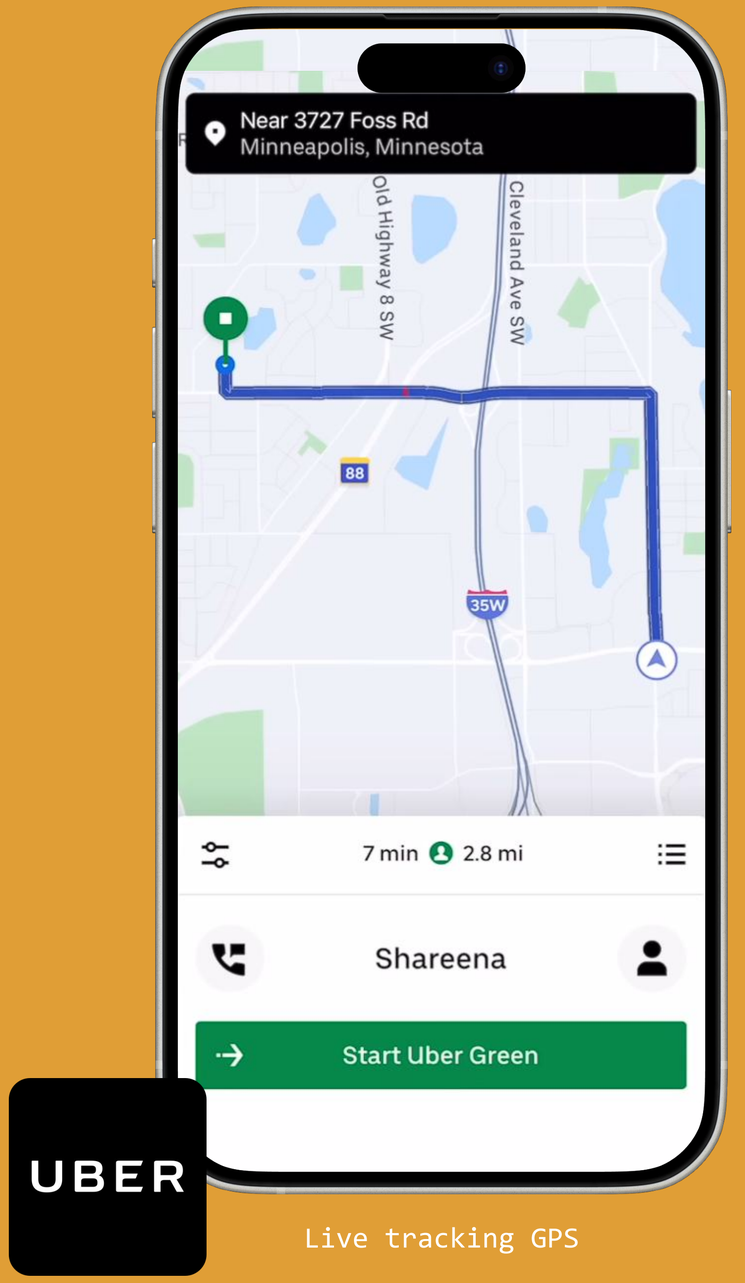
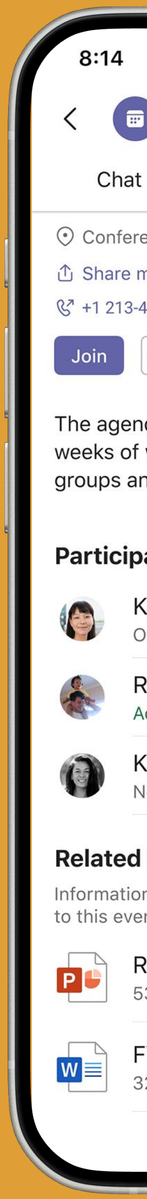


Live tracking GPS



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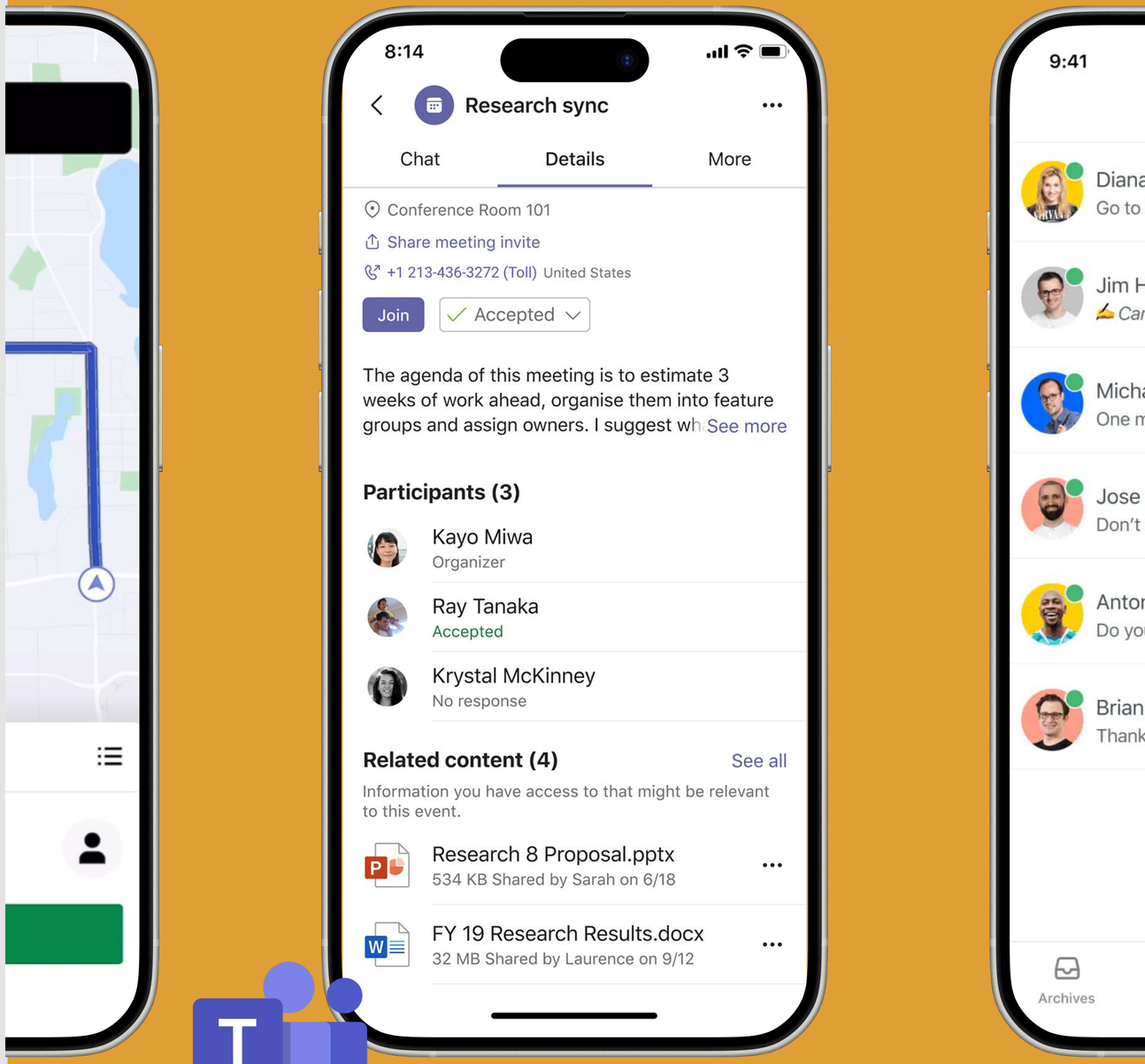

Updated info where it needs real-time

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WHO IS USING THIS?

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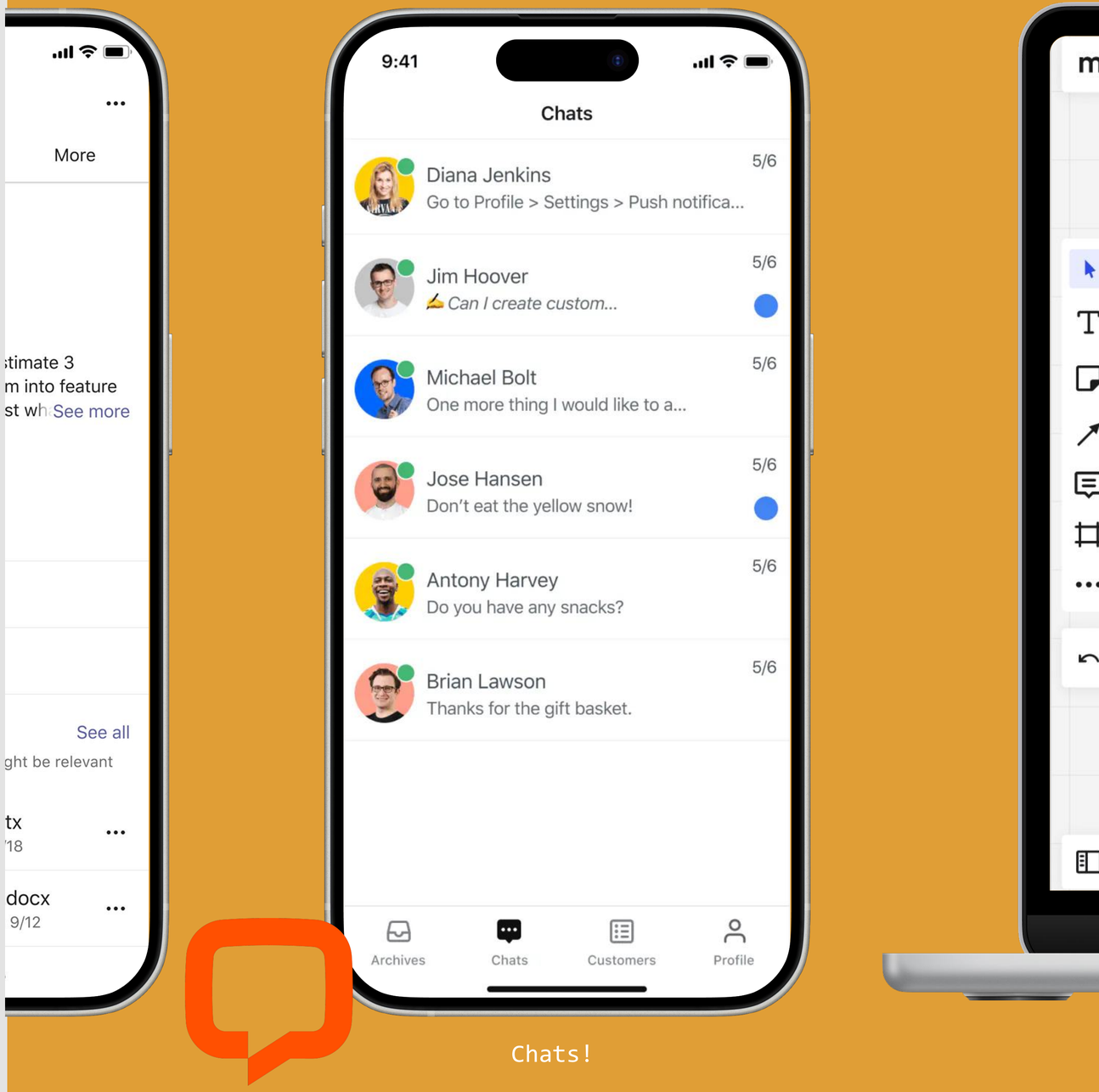

Chats!

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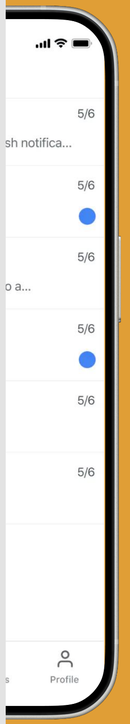

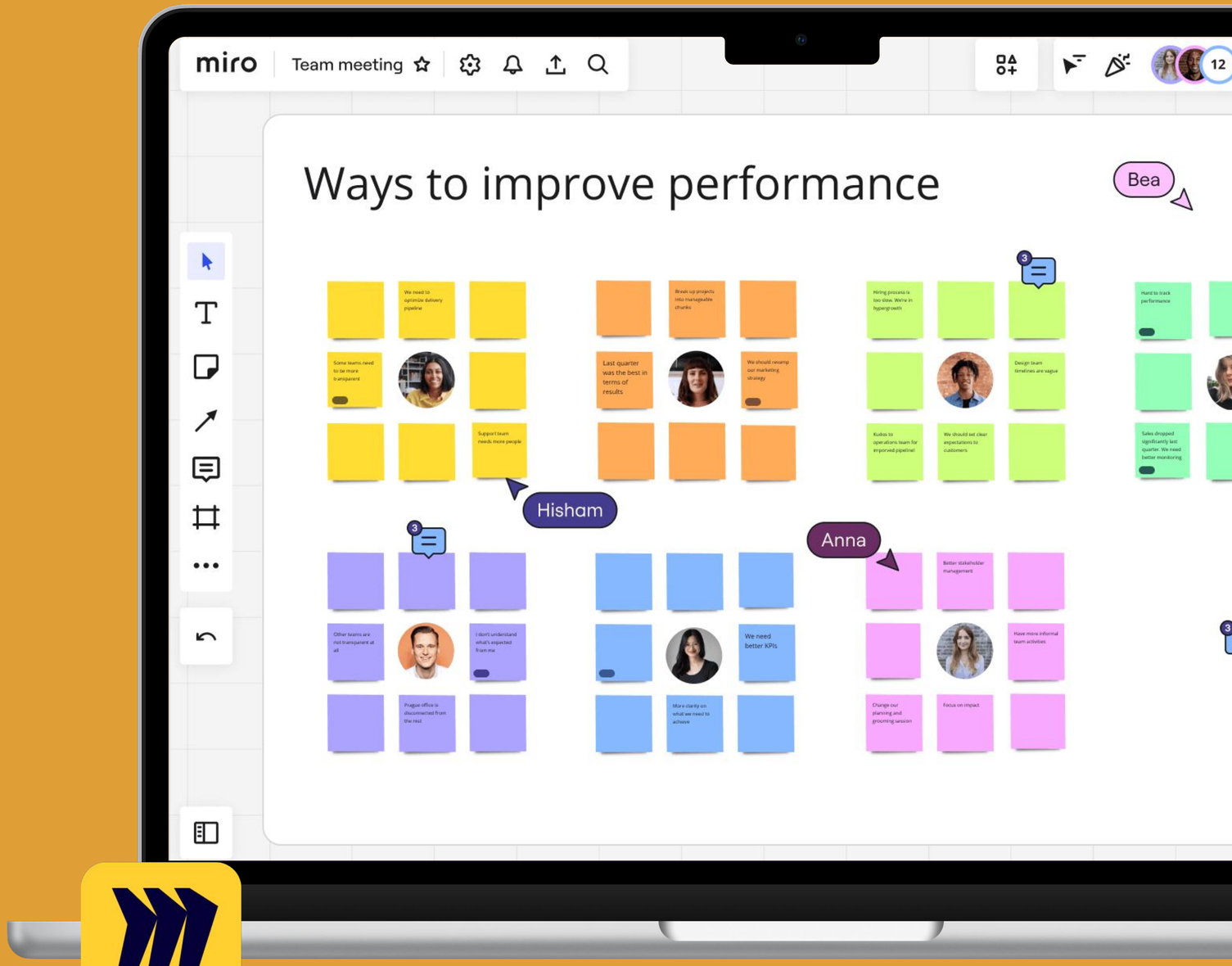

Collaborative Whiteboard

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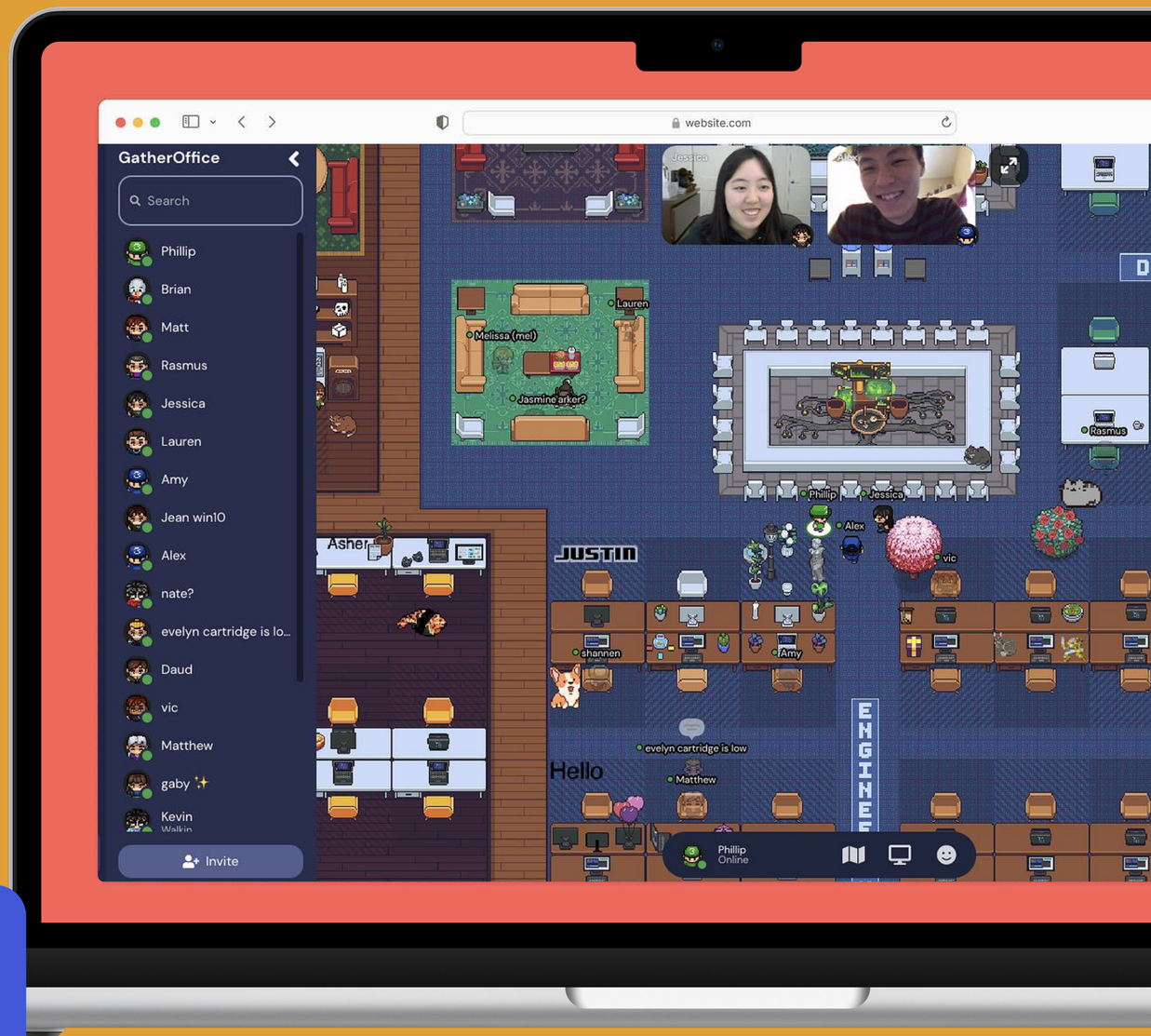

Interactive work place

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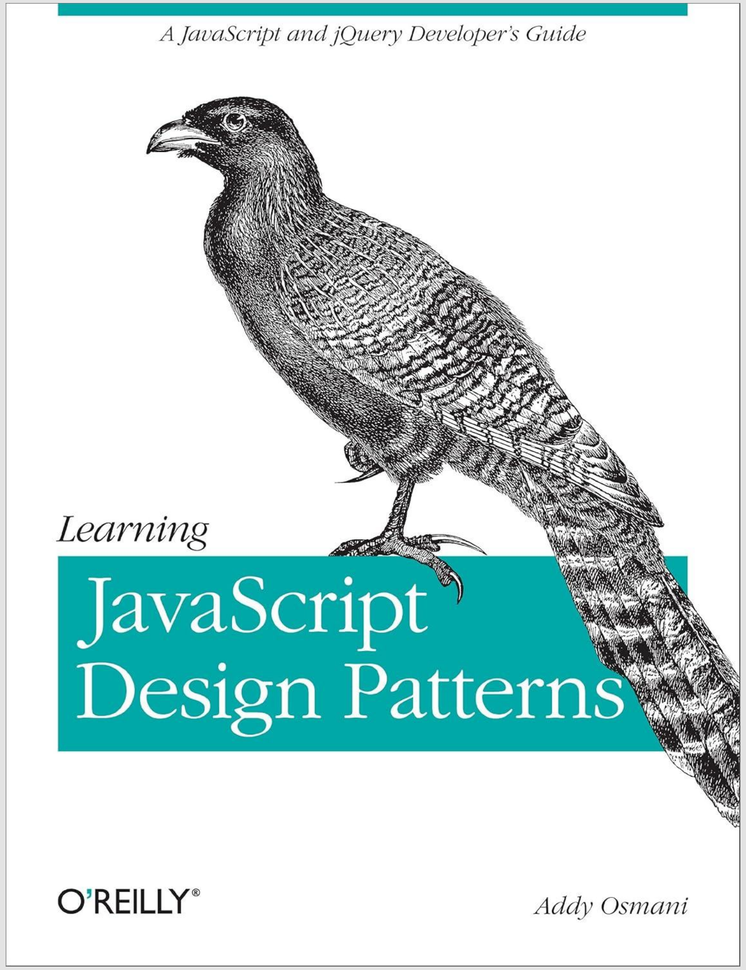
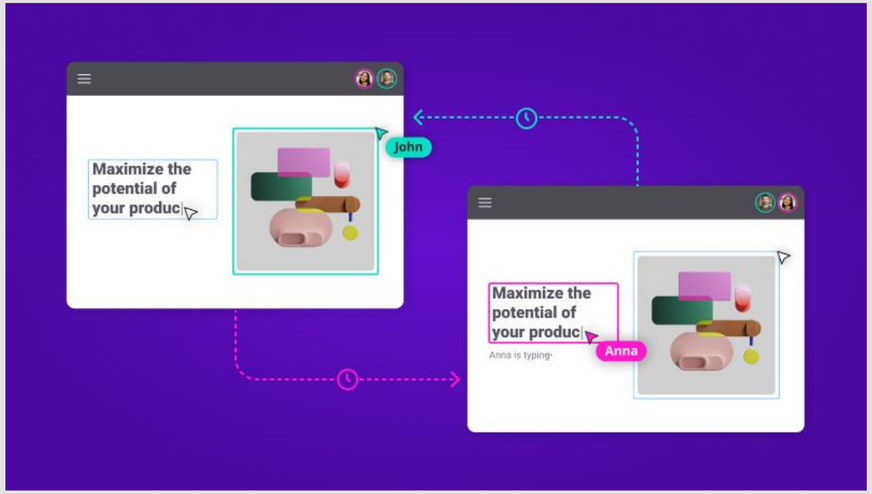
RESOURCES

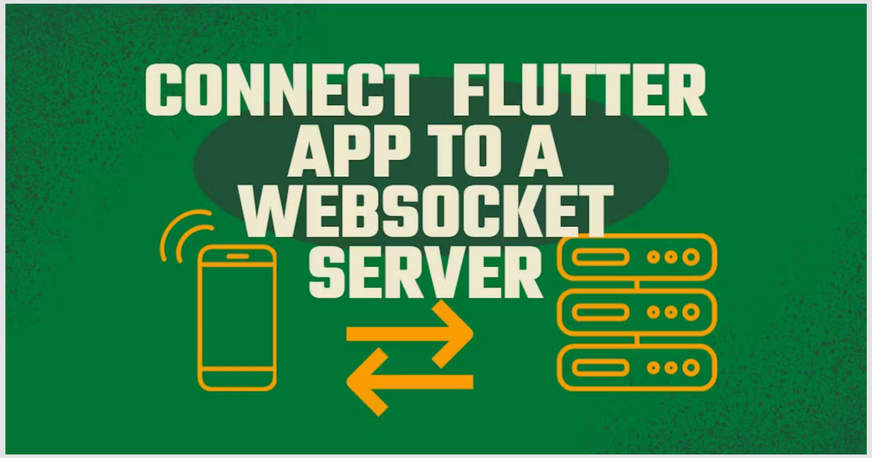
Learning JavaScript Design Patterns
Addy Osmani



How you can use WebSockets with Flutter
dev.to: Vibali Joshi
https://dev.to/vibalijoshi/how-you-can-use-websockets-with-flutter-ipn



Understanding and implementing Event-Driven Communication in Front-End Development
dev.to: Vitor Norton
https://dev.to/superviz/understanding-and-implementing-event-driven-communication-in-front-end-development-e75



THANKS ;)

LET'S BUILD SOMETHING GREAT

Vítor Norton
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