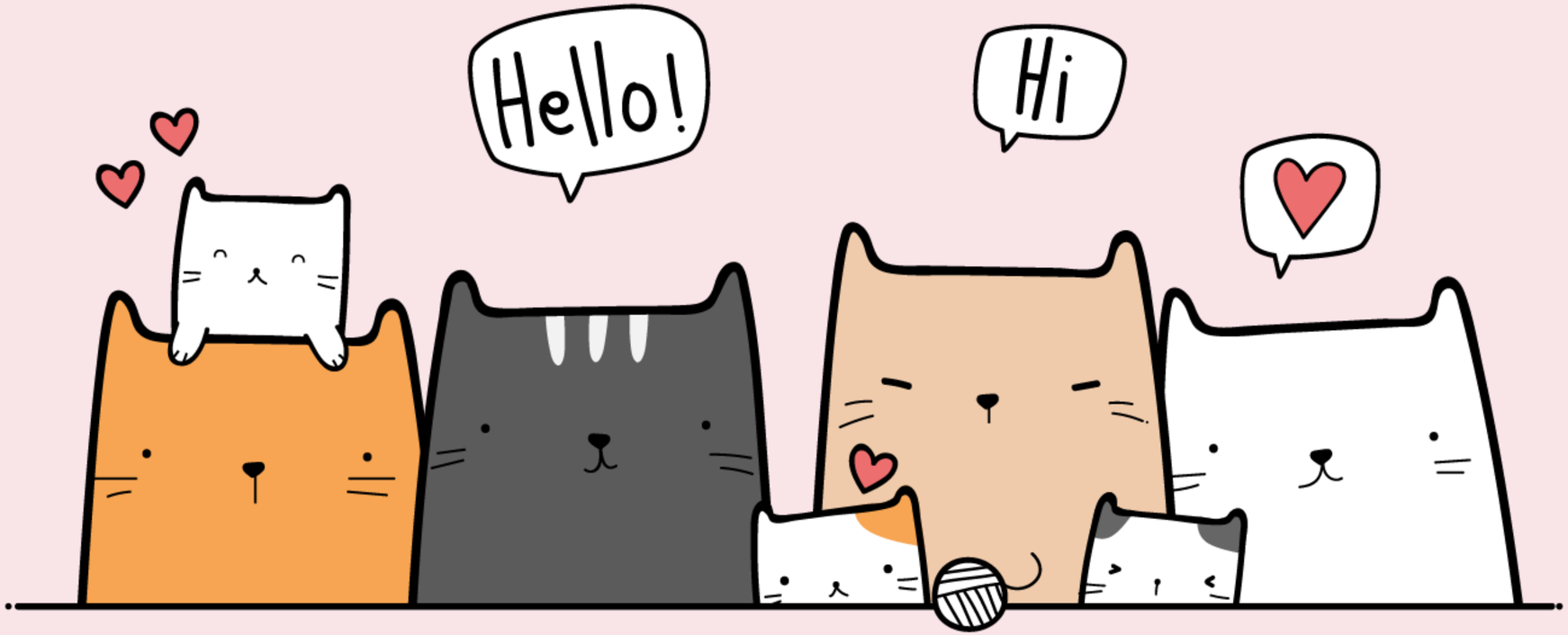
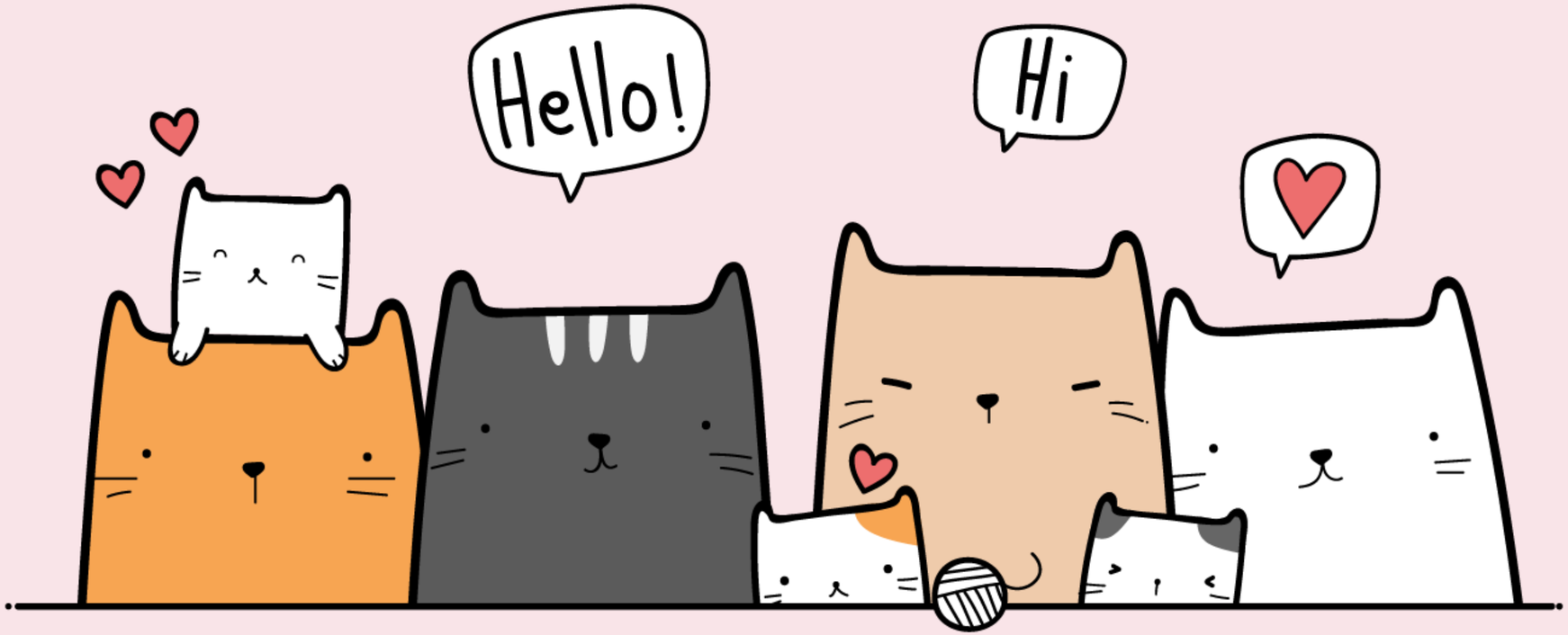


Reduce, Reuse, Recycle

by Aaron Bassett



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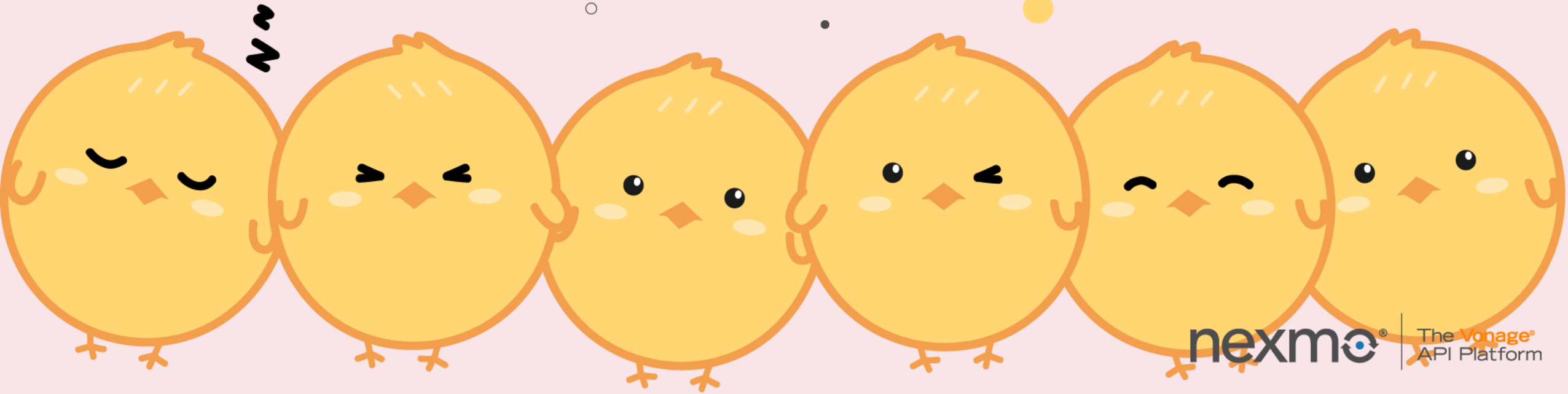
@aaronbassett



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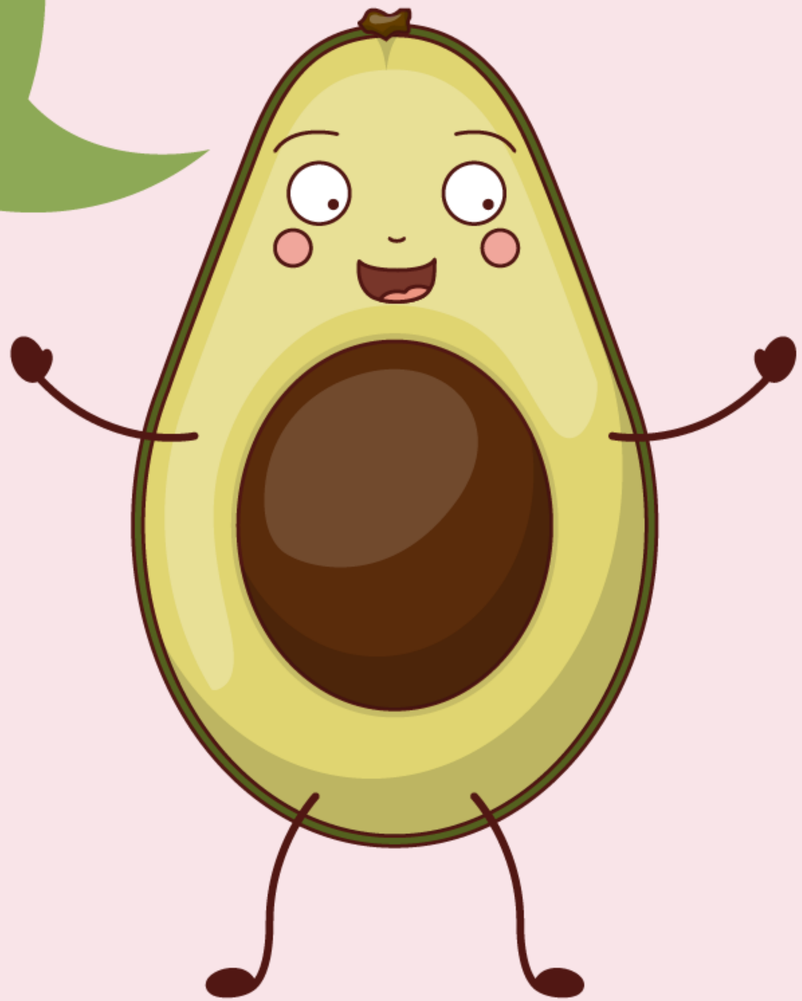
I'm not in Sales or Marketing



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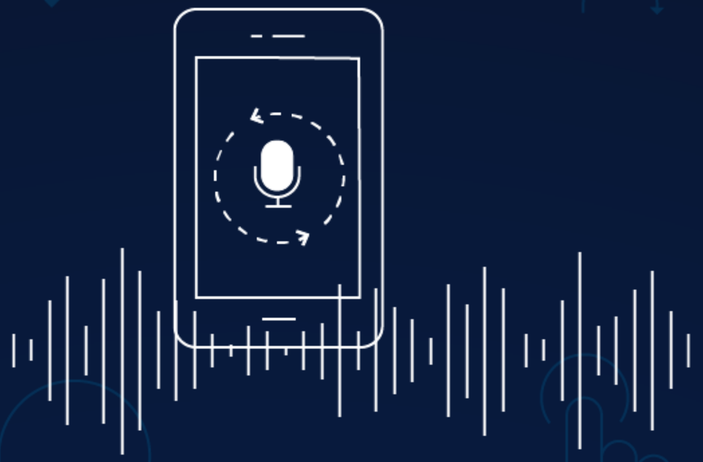

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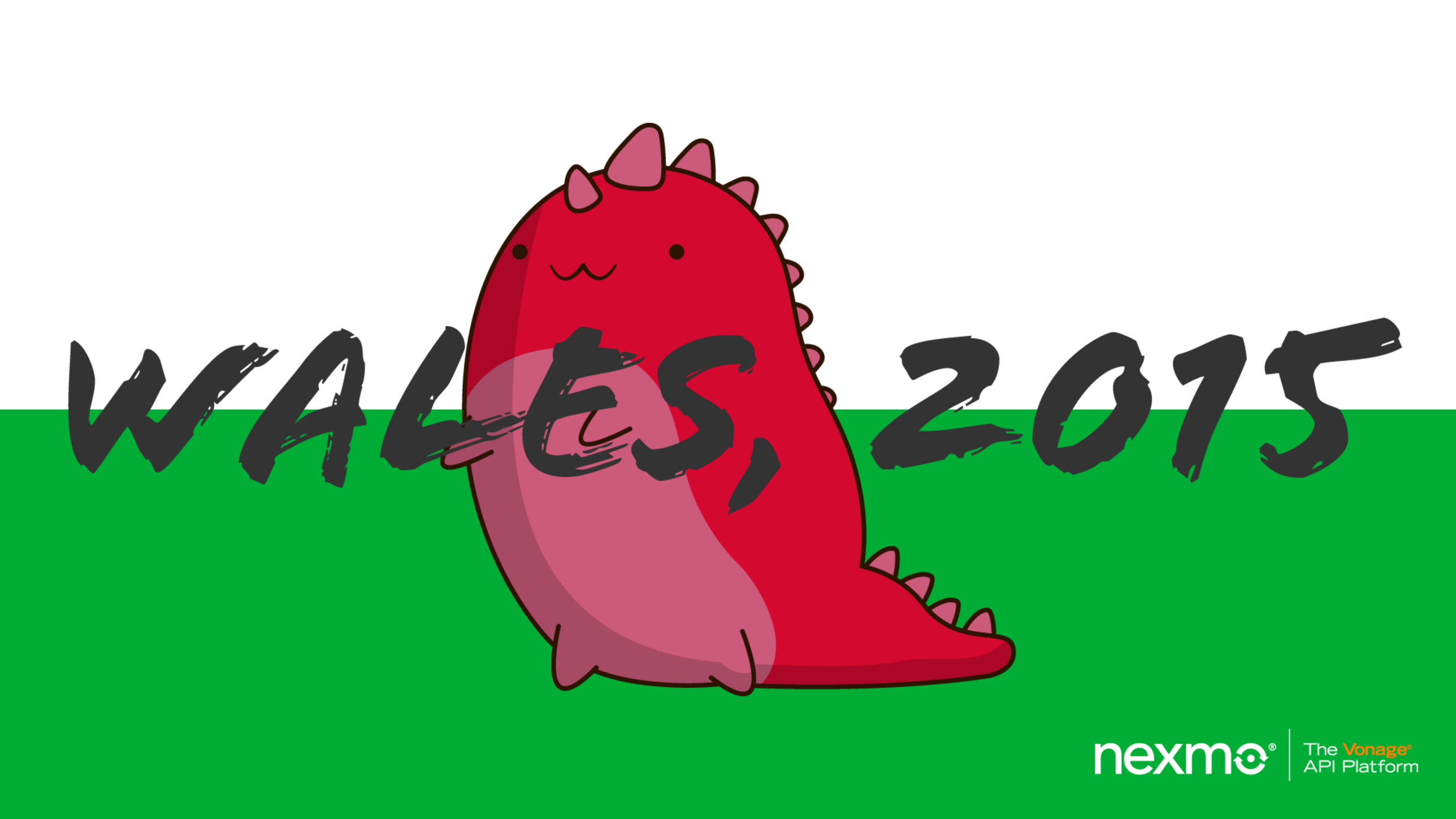

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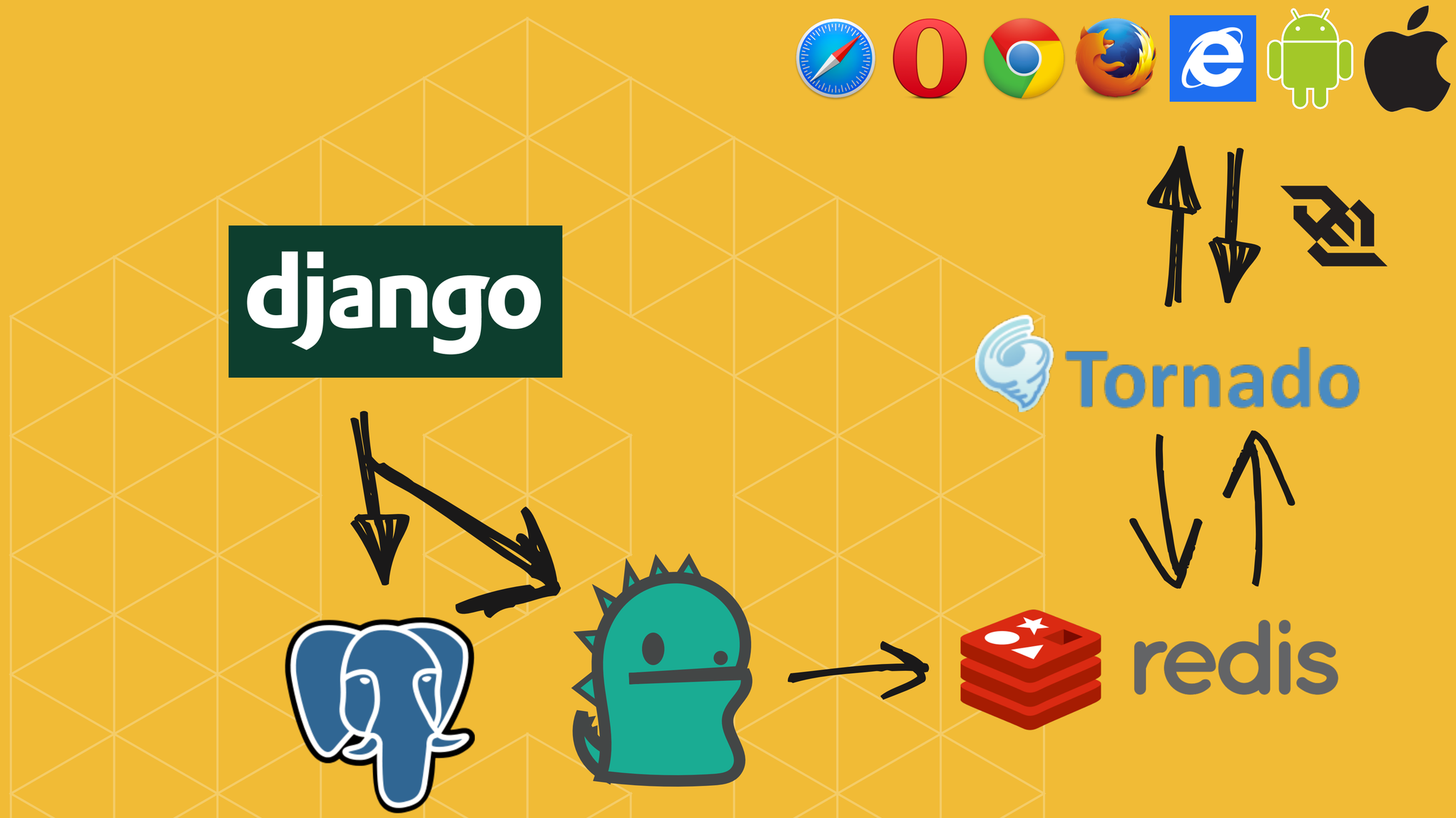
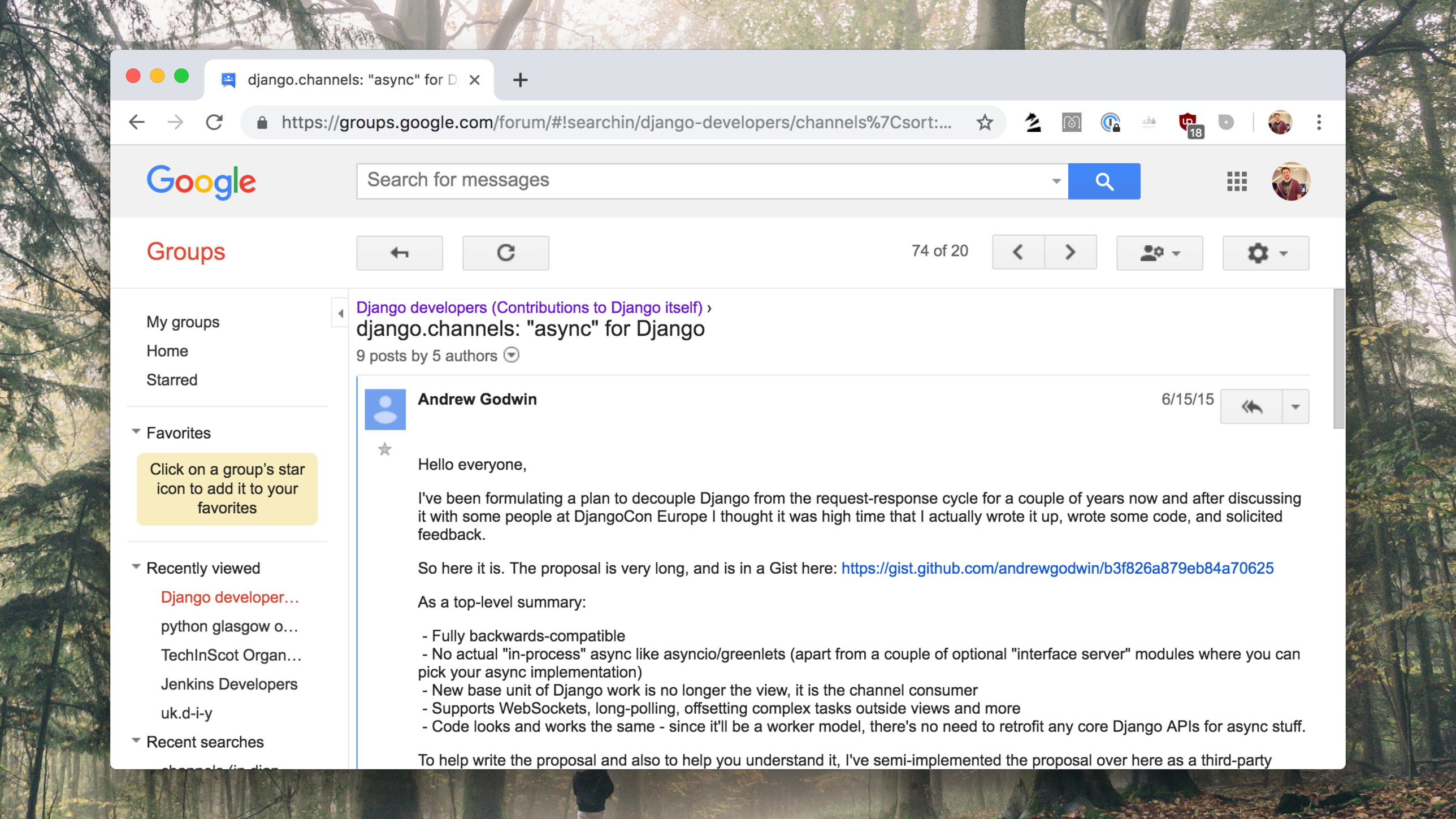
Effortless real time apps in Django

@aaronbassett – rawtech.io


django
Tornado
redis


django.channels: "async" for D
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Search for messages
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74 of 20
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python glasgow o…
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Jenkins Developers
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Recent searches
Django developers (Contributions to Django itself) ›
django.channels: "async" for Django
9 posts by 5 authors
Andrew Godwin
6/15/15
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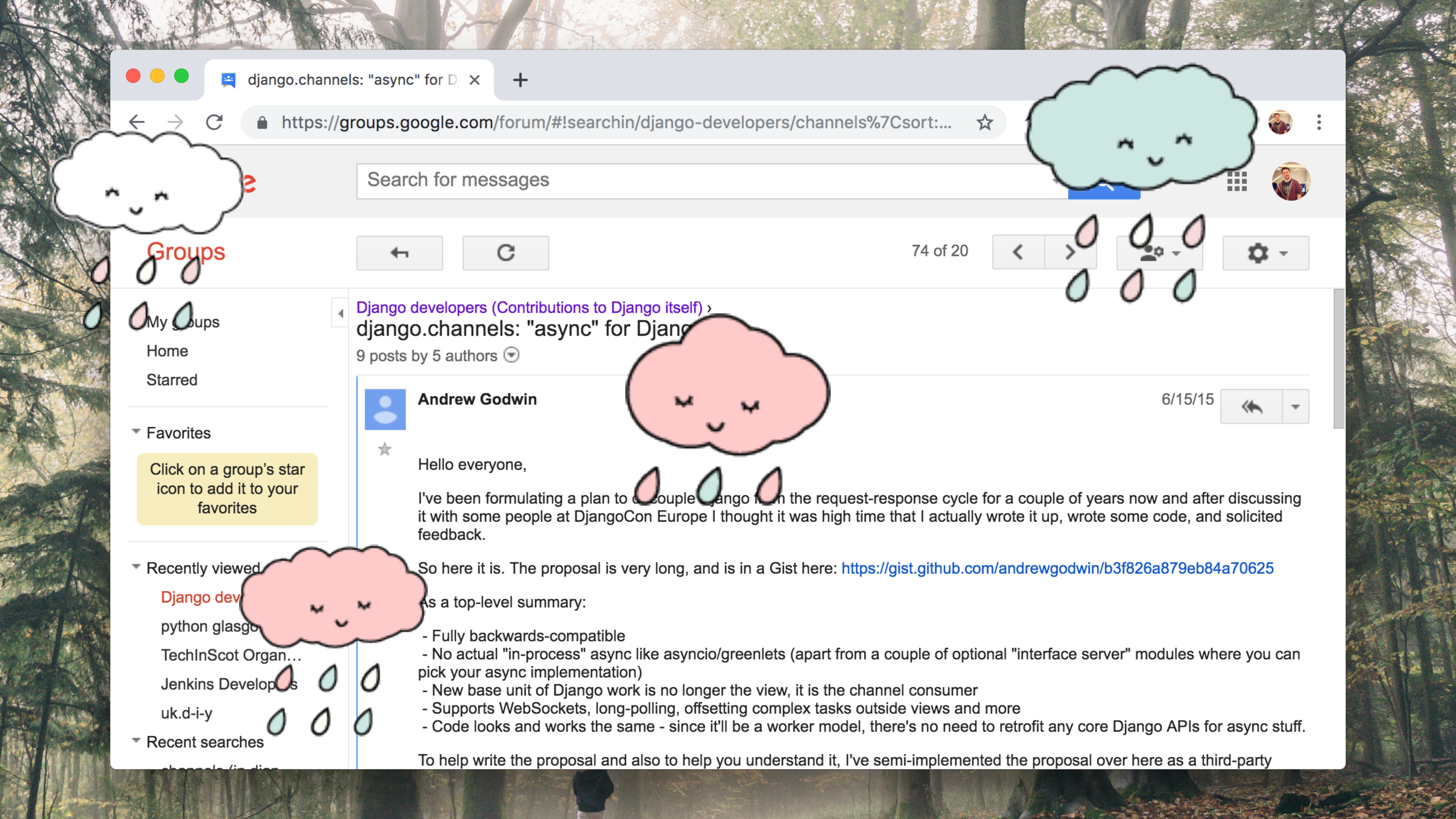
So here it is. The proposal is very long, and is in a Gist here: https://gist.github.com/andrewgodwin/b3f826a879eb84a70625
As a top-level summary:
- Fully backwards-compatible
- No actual "in-process" async like asyncio/greenlets (apart from a couple of optional "interface server" modules where you can pick your async implementation)
- New base unit of Django work is no longer the view, it is the channel consumer
- Supports WebSockets, long-polling, offsetting complex tasks outside views and more
- Code looks and works the same - since it'll be a worker model, there's no need to retrofit any core Django APIs for async stuff.
To help write the proposal and also to help you understand it, I've semi-implemented the proposal over here as a third-party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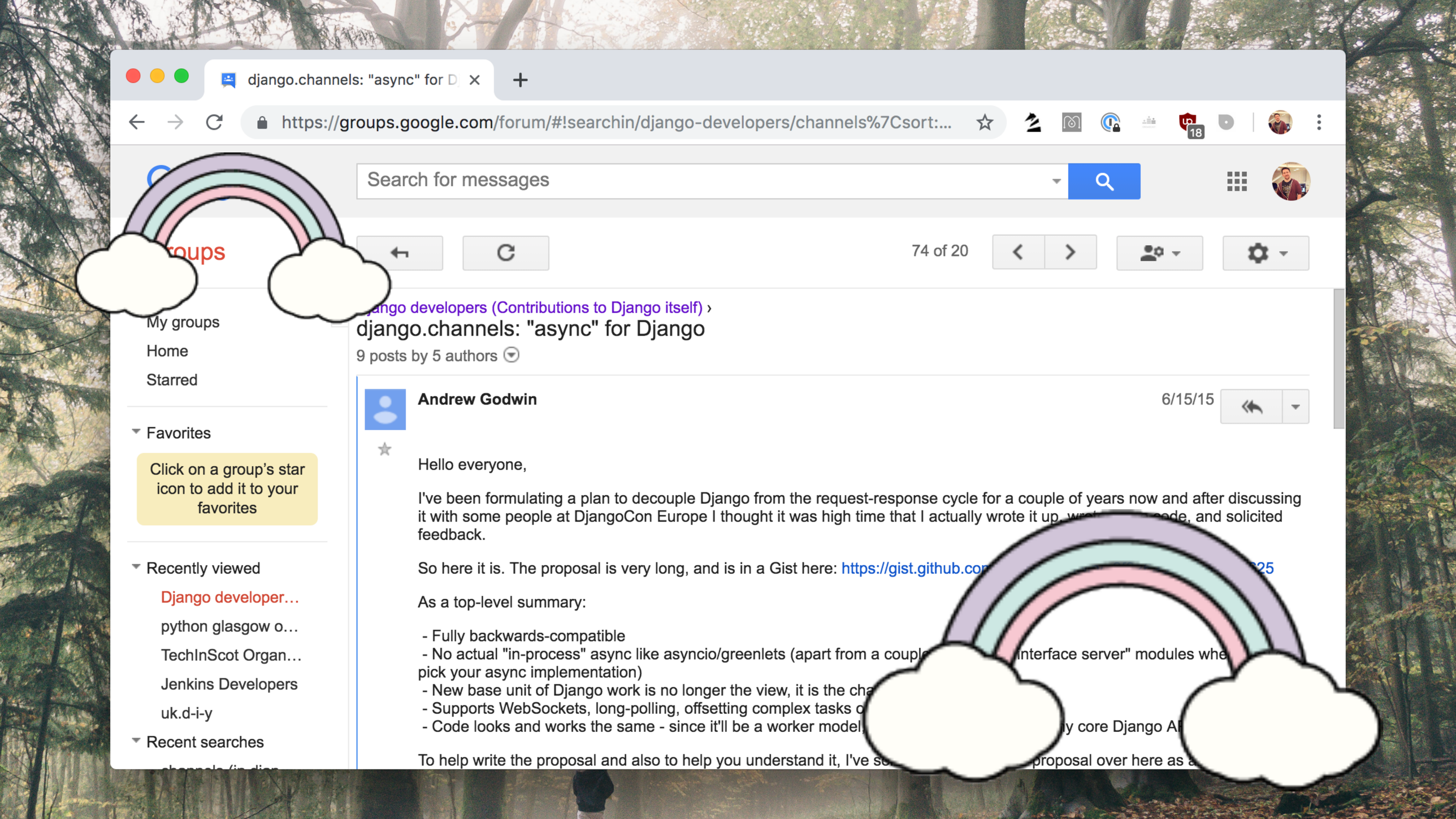
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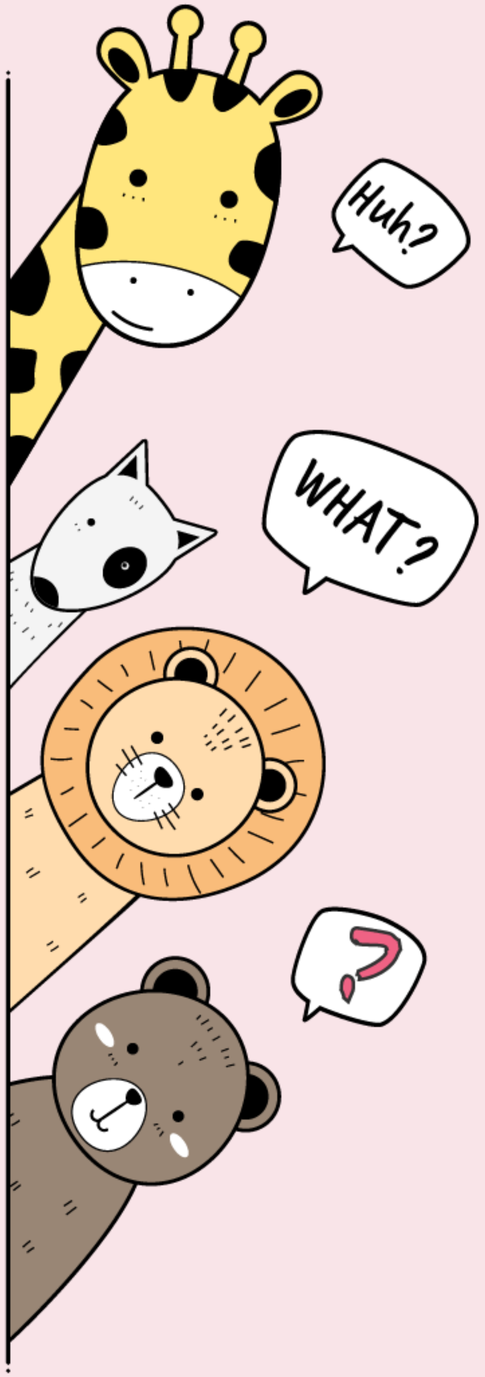
What are WebSockets?



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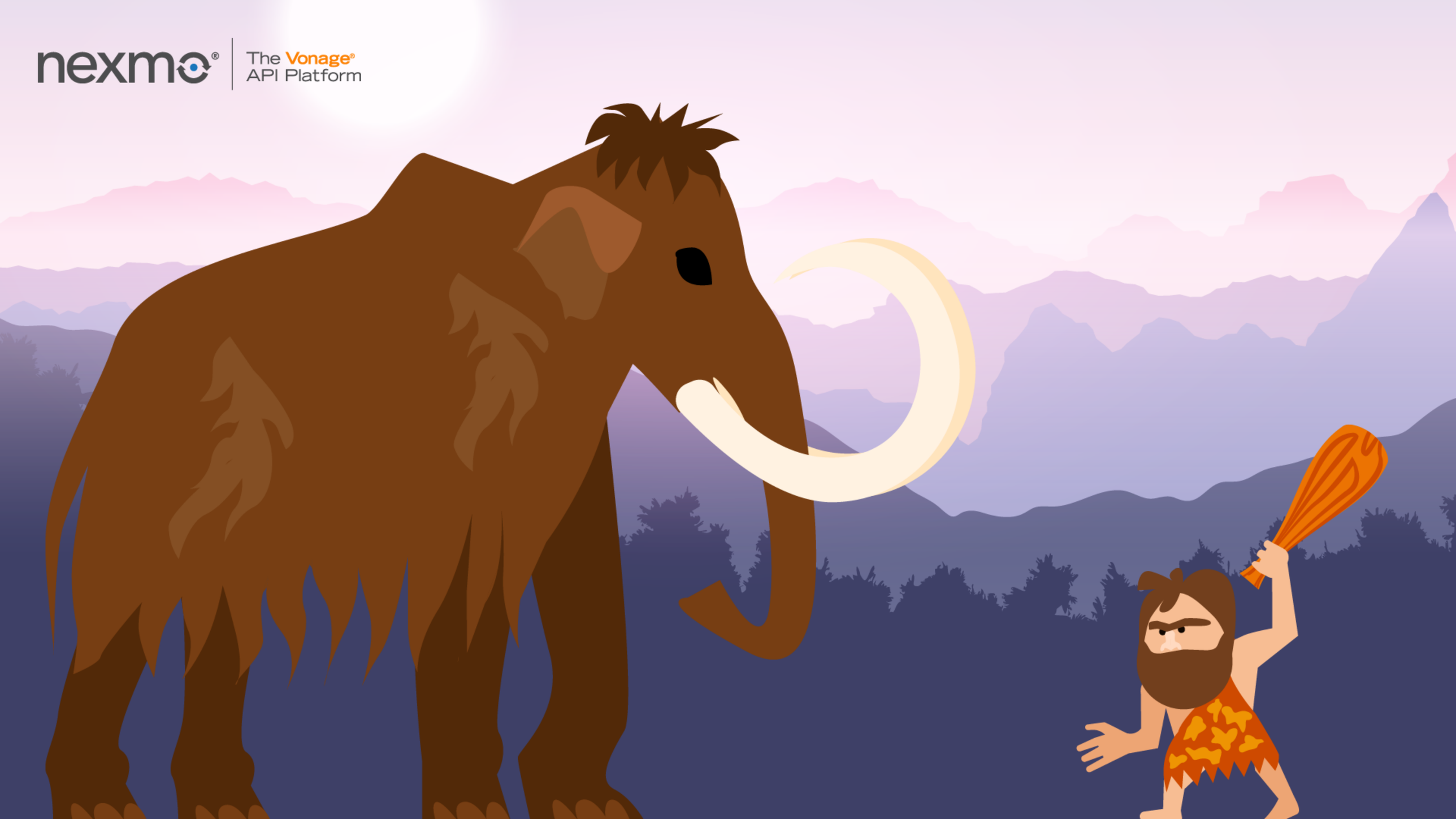
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"My kids are always on AOL Instant Messenger our website should have it's own chat too!"
<iframe>

```
HTTP/1.1 200 OK
  Content-Type: text/html; charset=iso-8859-1
  Transfer-Encoding: chunked
```

```
HTTP/1.1 200 OK
  Content-Type: text/html; charset=iso-8859-1
  Transfer-Encoding: chunked
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```
33
<script>
  doSomething();
</script>
33
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  doSomething();
</script>
33
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  doSomething();
</script>
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33
<script>
  doSomething();
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  doSomething();
</script>
33
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</script>
```


Comet
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```
(function poll() {
    new Ajax.Request('/api/', {
        method: 'get',
        timeout: 60000,
        onSuccess: function() {
            // Do something
            poll();
        },
        onFailure: function() {
            // Do something else
            poll();
        }
    });
}());
```

```
GET / HTTP/1.1
  Host: 2019.djangocon.eu
  Connection: keep-alive
  Upgrade-insecure-requests: 1
  Dnt: 1
  User-agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_13_2) AppleWebKit/
537.36 (KHTML, like Gecko) Chrome/73.0.3683.86 Safari/537.36
  Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/
webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3
  Referer: https://www.google.com/
  Accept-encoding: gzip, deflate, br
  Accept-language: en-GB,en;q=0.9,en-US;q=0.8
```

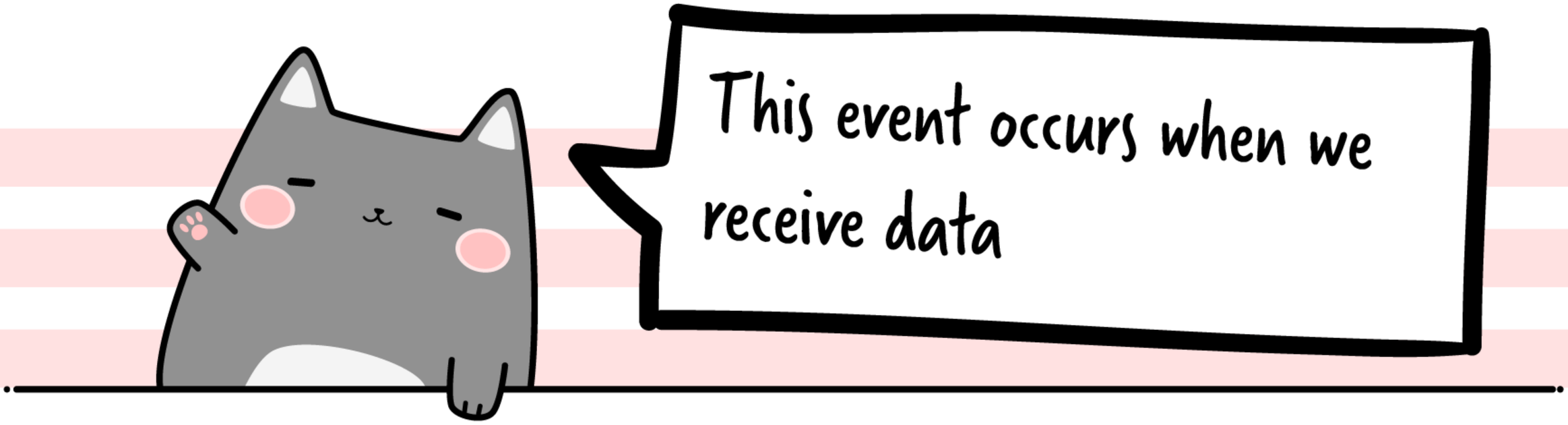
```
HTTP/1.1 200 OK
  Server: nginx/1.14.0 (Ubuntu)
  Date: Wed, 10 Apr 2019 17:18:50 GMT
  Content-Type: text/html
  Last-Modified: Wed, 10 Apr 2019 12:14:03 GMT
  Connection: keep-alive
  ETag: W/"5cadde0b-4c01"
  Strict-Transport-Security: max-age=31536000;
  X-Content-Type-Options: nosniff
  X-Frame-Options: SAMEORIGIN
  Content-Encoding: gzip
```

```
GET / HTTP/1.1
  Upgrade: WebSocket
  Connection: Upgrade
  Host: www.websocket.org
```

```
HTTP/1.1 101 WebSocket Protocol Handshake
  Upgrade: WebSocket
  Connection: Upgrade
```

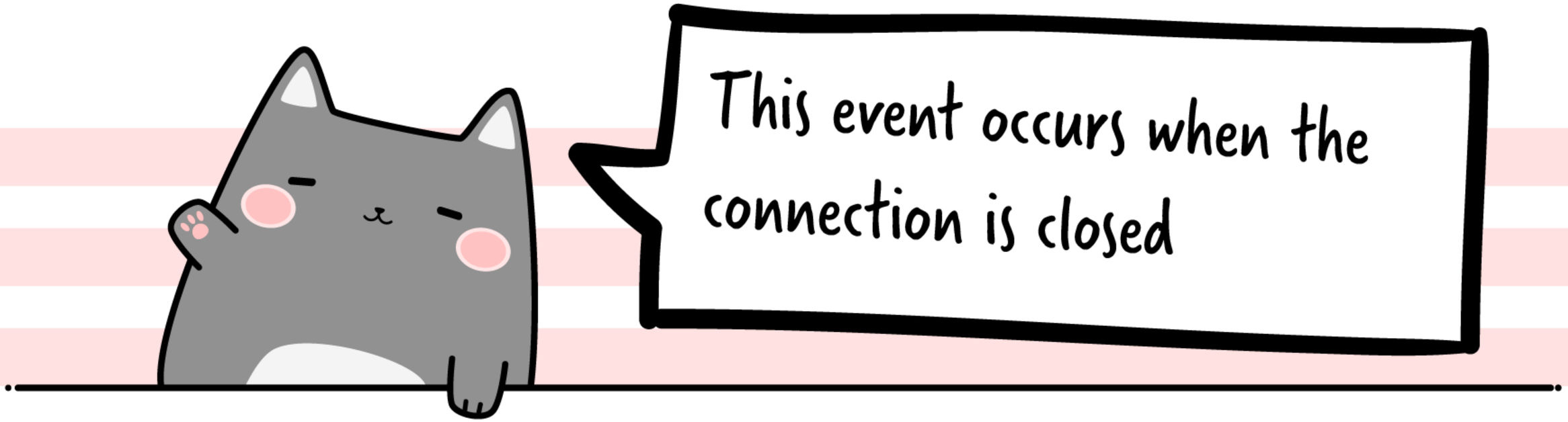

Bidirectional

Socket.onopen



Socket.onmessage

Socket.onerror



Socket.onclose

The send(data) method
transmits data using the connection

Socket.send()

The close() method would be used to terminate any existing connection

Socket.close()

```python
class CountConsumer(AsyncWebsocketConsumer):
    async def connect(self):
        self.room_name = ???
        self.room_group_name = ???
        self.redis_client = redis.Redis(???)

        self.redis_client.incr('connections')
        self.redis_client.set('updated', time.time())

        await self.channel_layer.group_add(
            self.room_group_name,
            self.channel_name
        )

        await self.channel_layer.group_send(
            self.room_group_name,
            {
                'type': 'connection_message',
                'updated': ???,
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        await self.accept()
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        'connections': ???
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async def disconnect(self, close_code):
    self.redis_client = redis.Redis(???)
    self.redis_client.decr('connections')

    await self.channel_layer.group_discard(
        self.room_group_name,
        self.channel_name
    )

    await self.channel_layer.group_send(
        self.room_group_name,
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```
<script>
  var chatSocket = new WebSocket(URL)

  chatSocket.onmessage = function(e) {
      var data = JSON.parse(e.data)
      var totalConnections = data['connections']
      var lastUpdated = data['updated']

      document.querySelector('#count').textContent = totalConnections
      document.querySelector('#updated').textContent = lastUpdated
  }

  chatSocket.onclose = function(e) {
      console.error('Chat socket closed unexpectedly');
  }

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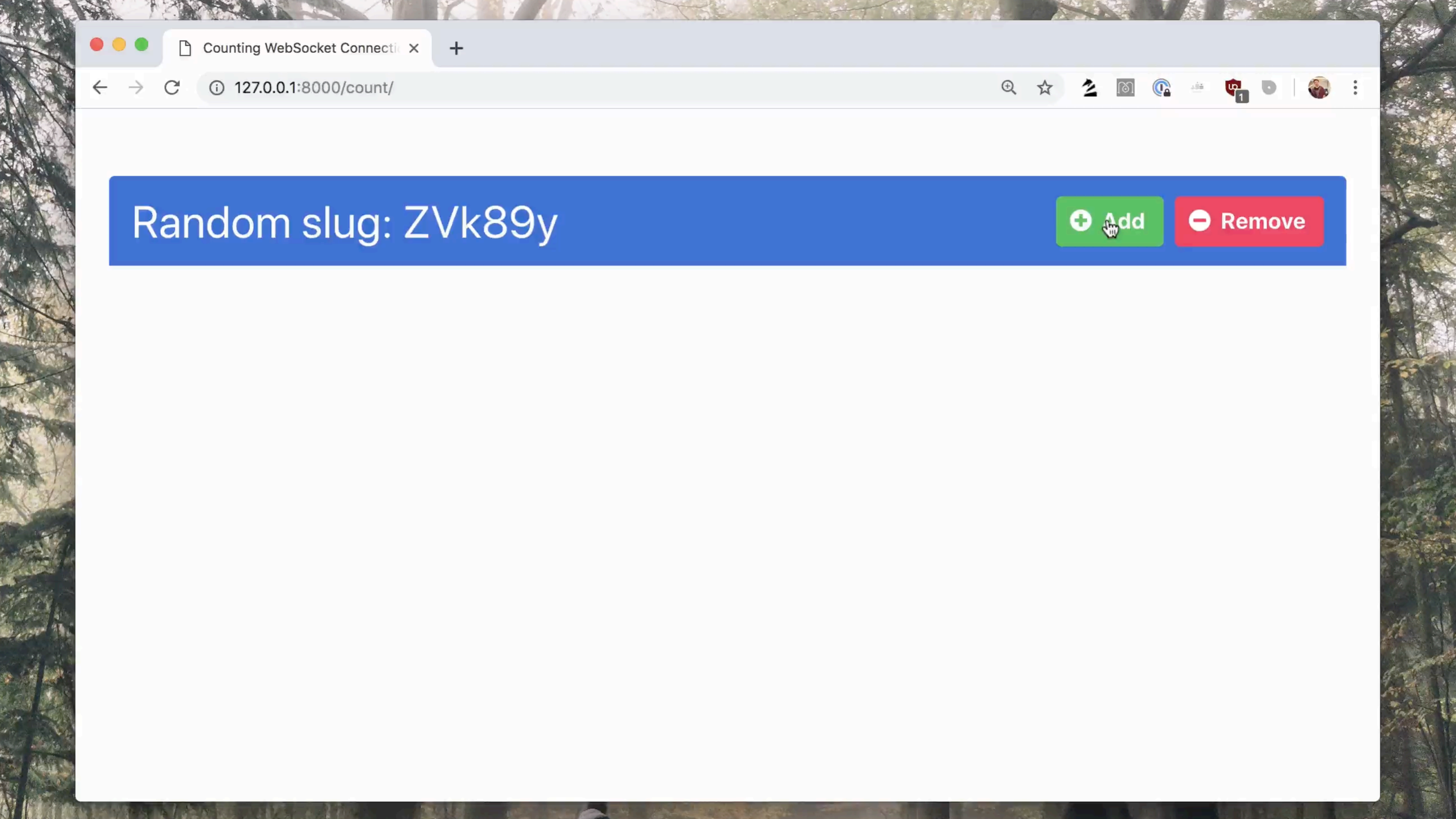
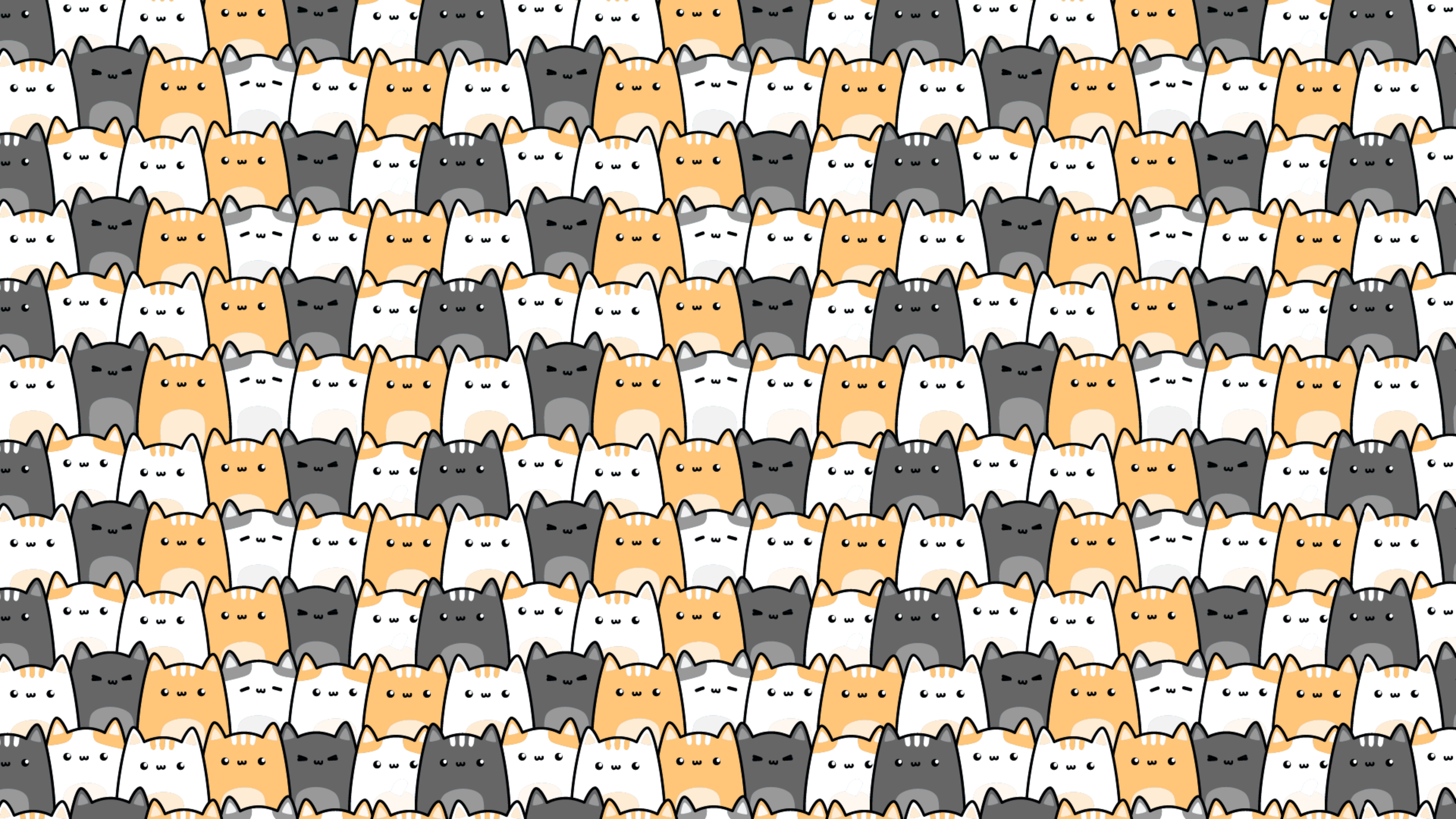
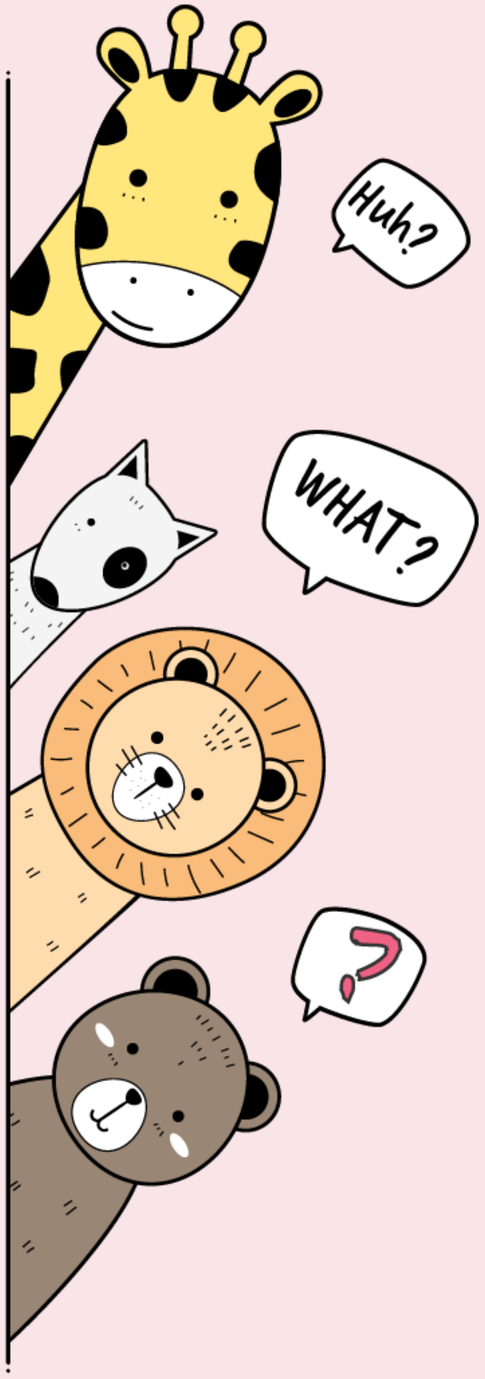

Counting WebSocket Connecti
127.0.0.1:8000/count/
Random slug: ZVk89y
Add
Remove



Shared WebWorkers!



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```
const connections = [];
var sharedWebSocket;

onconnect = function(e) {
  const port = e.ports[0];
  connections.push(port);
  port.start();

  if (!sharedWebSocket) {
    sharedWebSocket = new WebSocket(URL);

    sharedWebSocket.onmessage = function(e) {
      connections.forEach(function(connection) {
        let data = JSON.parse(e.data);
        connection.postMessage(data);
      });
    };
  }

  sharedWebSocket.send("PING");
};
```

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  const port = e.ports[0];
  connections.push(port);
  port.start();

  if (!sharedWebSocket) {
    sharedWebSocket = new WebSocket(URL);

    sharedWebSocket.onmessage = function(e) {
      connections.forEach(function(connection) {
        let data = JSON.parse(e.data);
        connection.postMessage(data);
      });
    };
  }

  sharedWebSocket.send("PING");
};
```

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  });
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```
const worker = new SharedWorker('js/shared-worker.js')

worker.port.onmessage = function(e) {
  var data = e.data
  var totalConnections = data['connections']
  var lastUpdated = data['updated']

  document.querySelector('#count').textContent = totalConnections
  document.querySelector('#updated').textContent = lastUpdated
}

worker.port.start()
```

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```
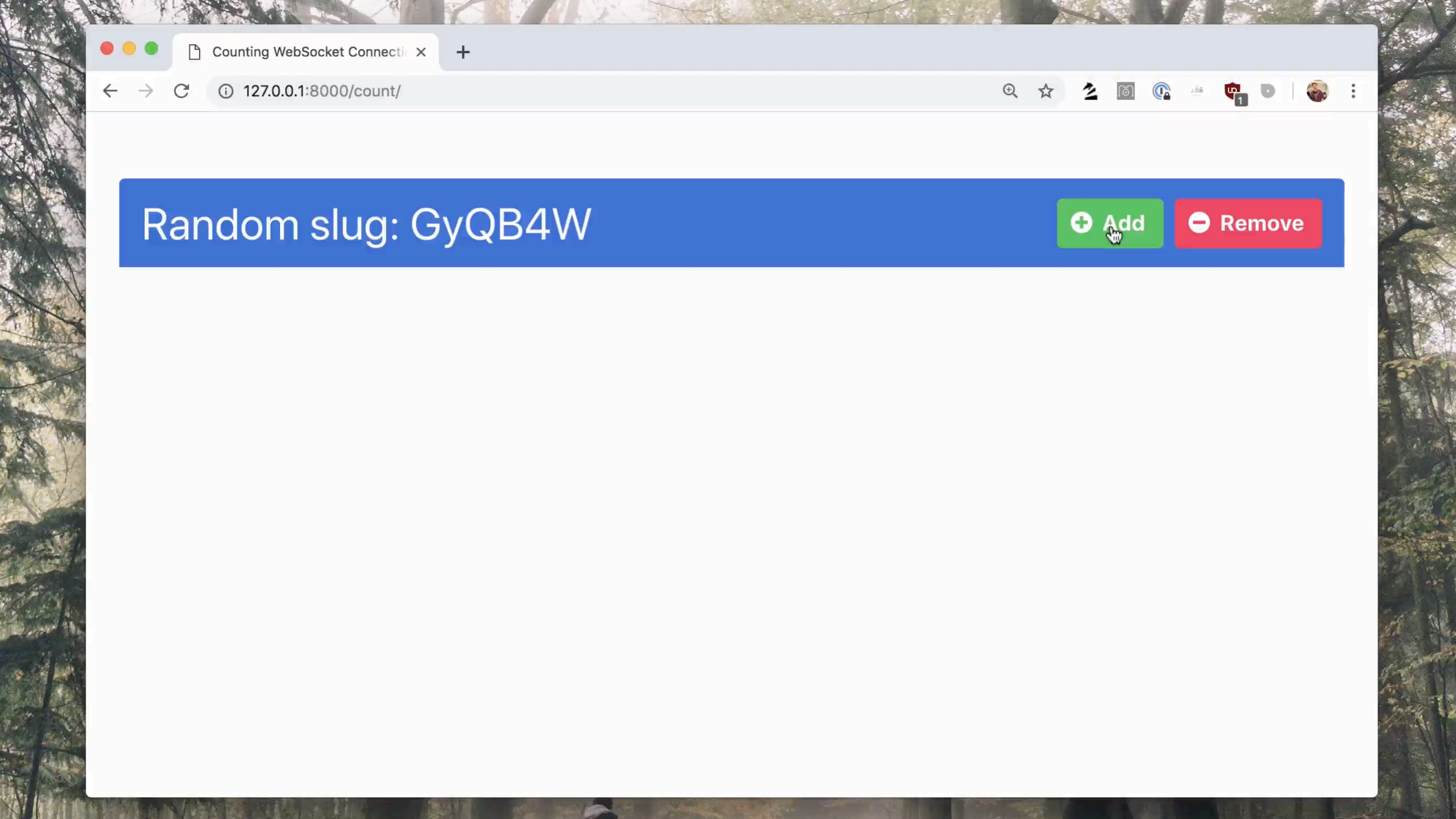
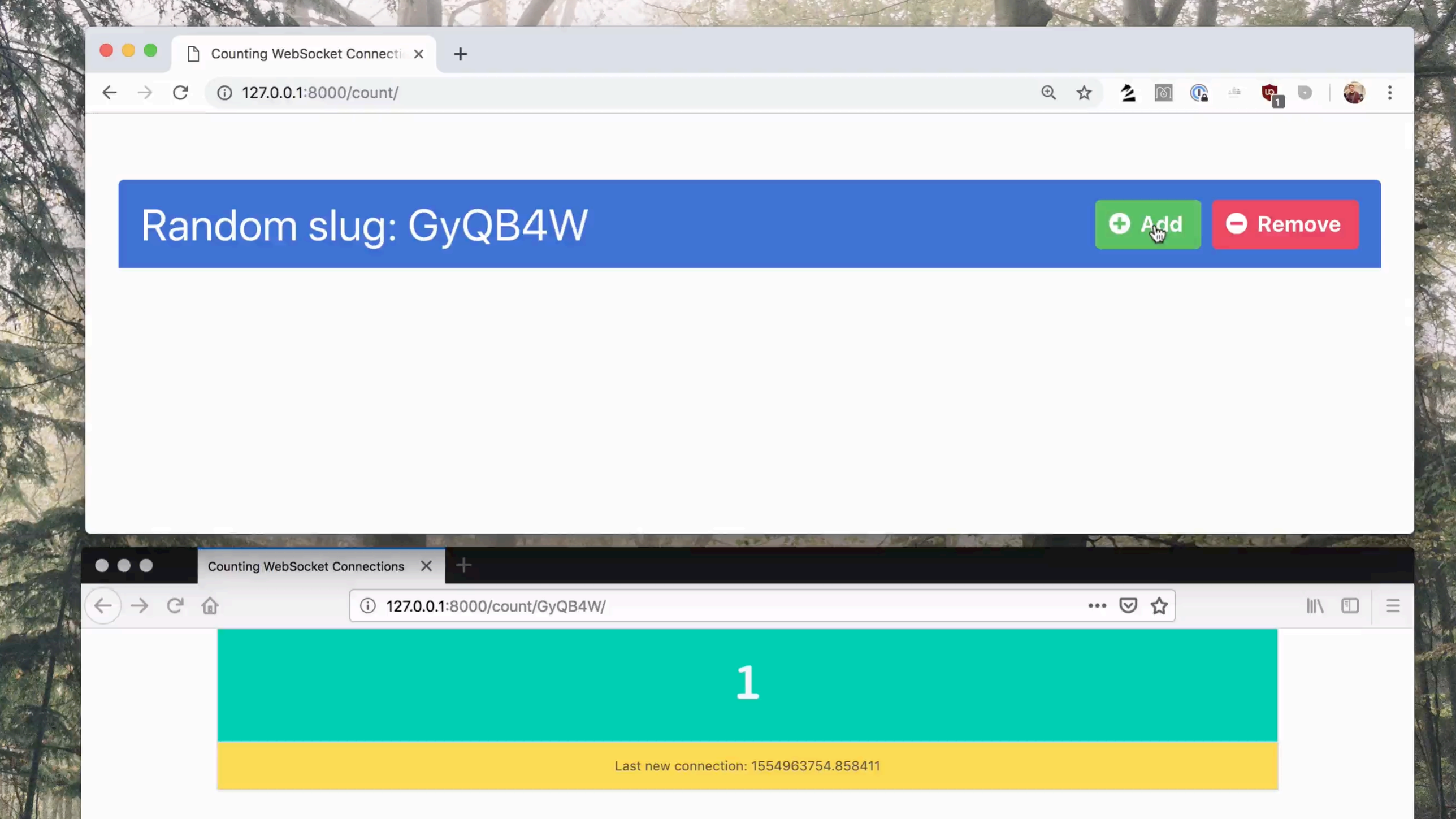


Counting WebSocket Connecti
127.0.0.1:8000/count/
Random slug: GyQB4W
Add
Remove


Counting WebSocket Connecti
127.0.0.1:8000/count/
Random slug: GyQB4W
Add
Remove
Counting WebSocket Connections
127.0.0.1:8000/count/GyQB4W/
1
Last new connection: 1554963754.858411

Shared Web Workers - LS

Usage % of all users ?

Global 42.1%

Method of allowing multiple scripts to communicate with a single web worker.

Current aligned | Usage relative | Date relative | Apply filters | Show all | ?

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Blackberry Browser	Opera Mobile *	Chrome for Android	Firefox for Android	IE M
				3.1-4		3.2-4.3							
		2-28		5-6	10.1	5-6.1							
6-10	12-17	29-65	4-72	6.1-12	11.5-57	7-11.4		2.1-4.4.4	7	12-12.1			1
11	18	66	73	12.1	58	12.1	all	67	10	46	71	64	1
		67-68	74-76	TP		12.2							

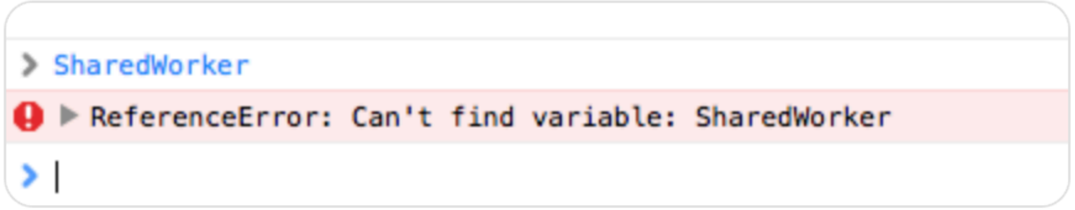
Notes | Known issues (0) | Resources (6) | Feedback

MS Edge status: Not currently planned

WebKit status: Removed

tregoning @tregoning · 6 Oct 2015

@xeenon do you think SharedWorkers might come back to WebKit at some point win the future?



1

Timothy Hatcher

@xeenon

Follow

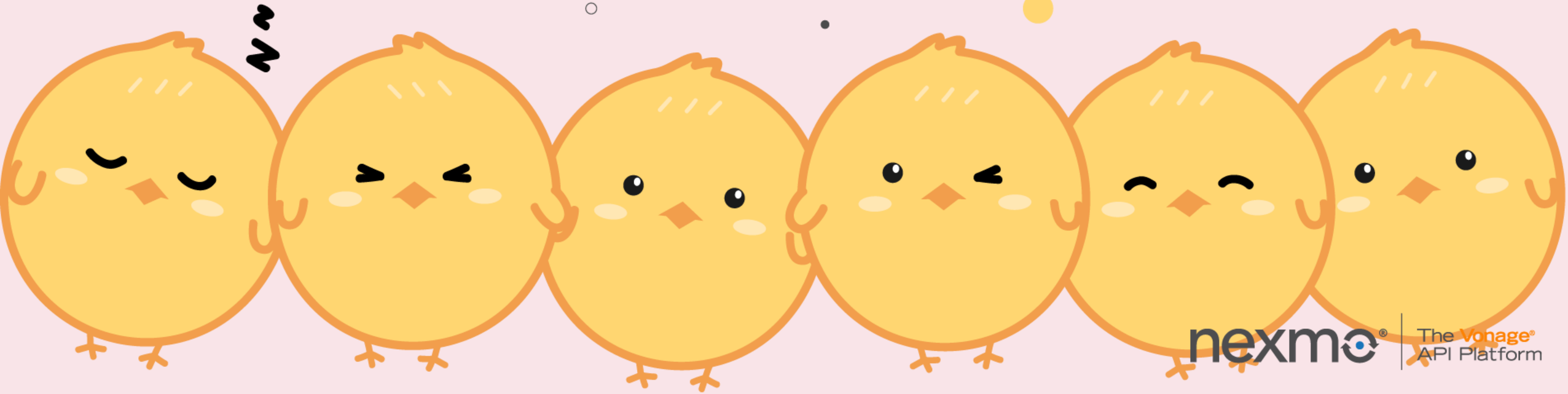
Replying to @tregoning

@tregoning The implementation of Shared Web Workers was imposing undesirable constraints on the engine. It never gained any adoption.

8:55 PM - 9 Oct 2015

1

@aaronbassett



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