Inverting client-server architecture

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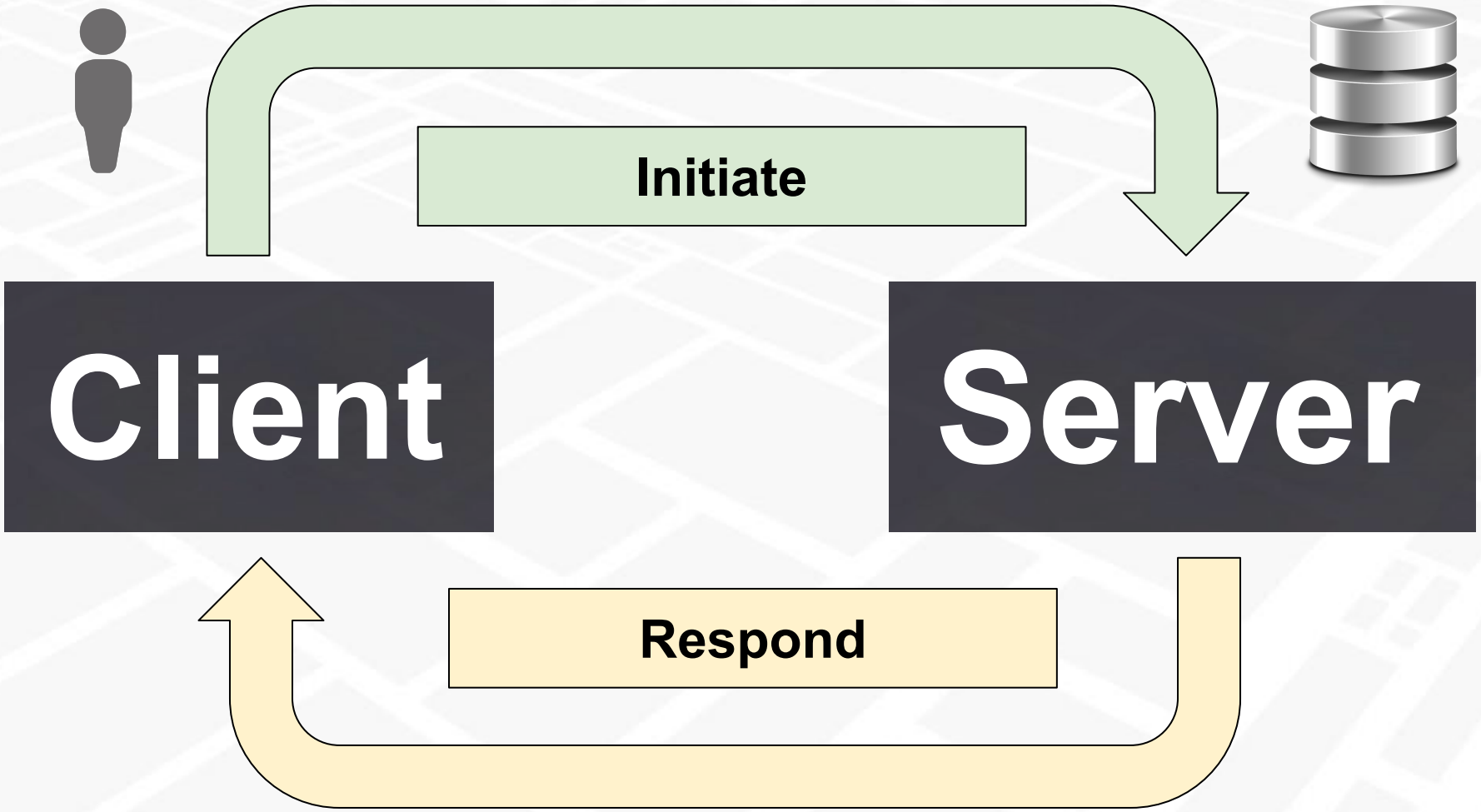
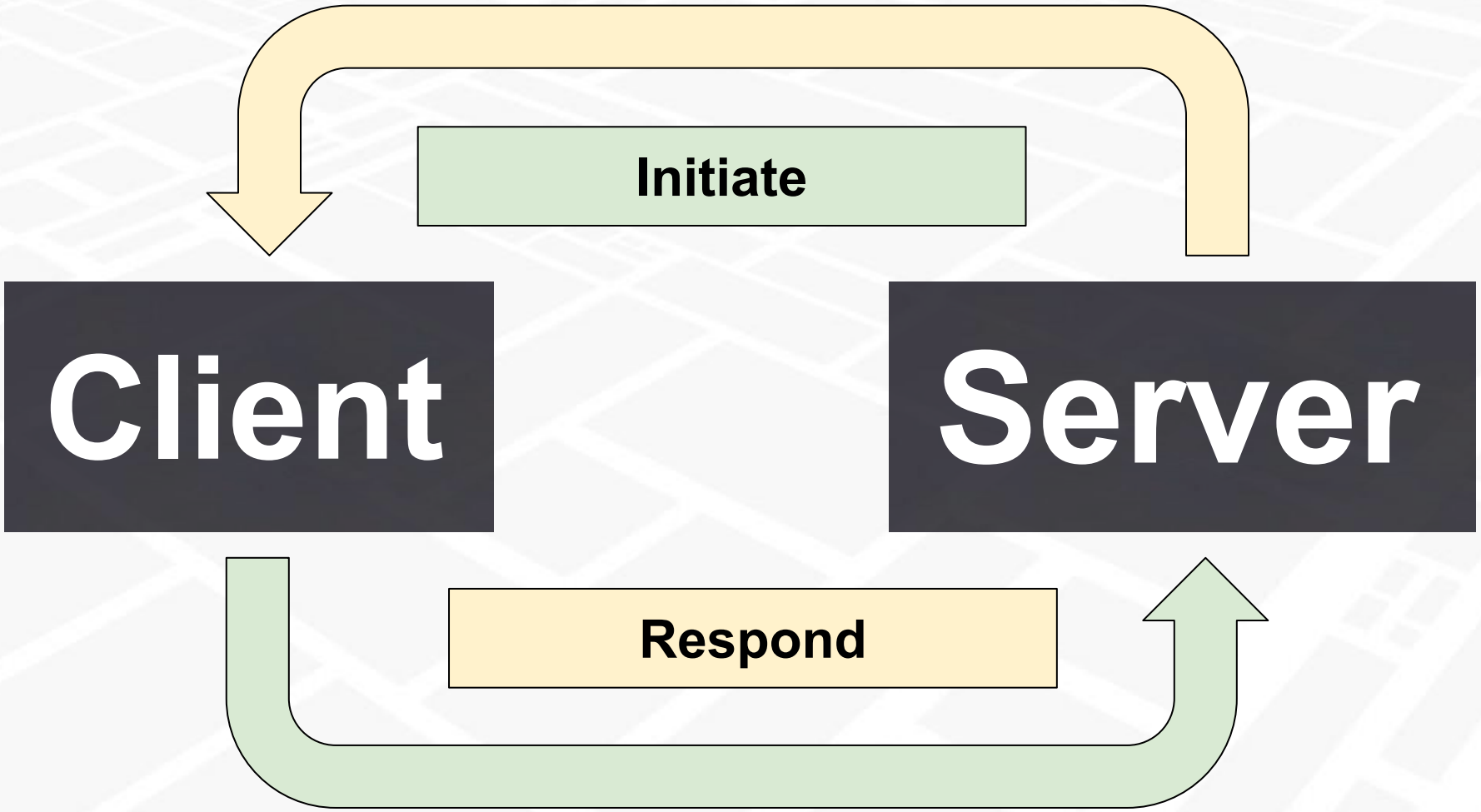
Common practice



Can reverse scenario be useful?



Commonly used practice

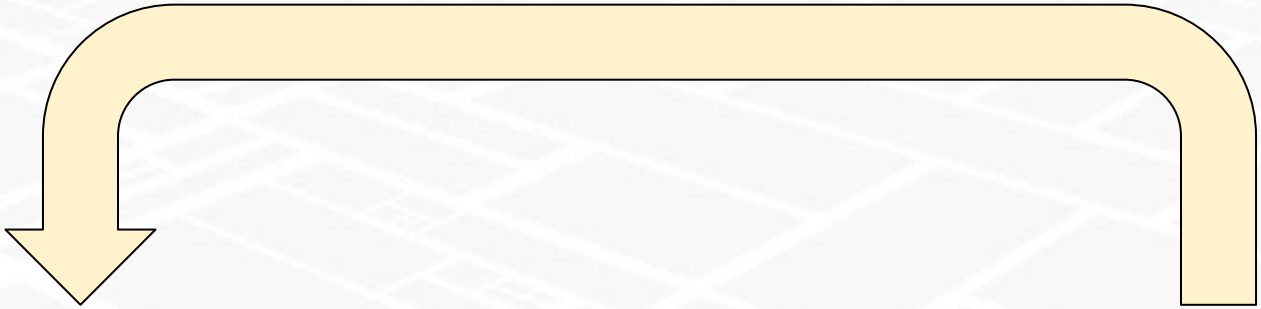
Client

Server

Client-side
API

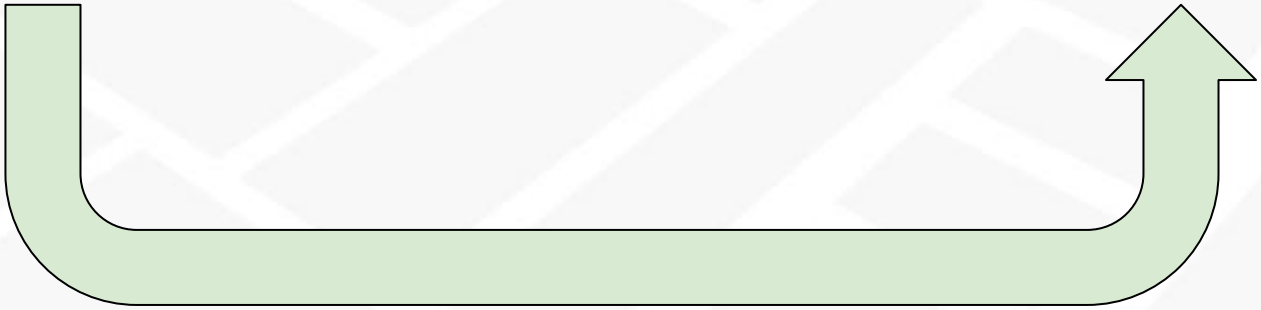
2 examples

Server-side
Google analytics



Client

Server



Server-side Google Analytics

Server-side Google analytics

WHY	**Privacy, loading time**
WHAT	**(Not)Getting**
HOW	**Examples, tips**

WHY

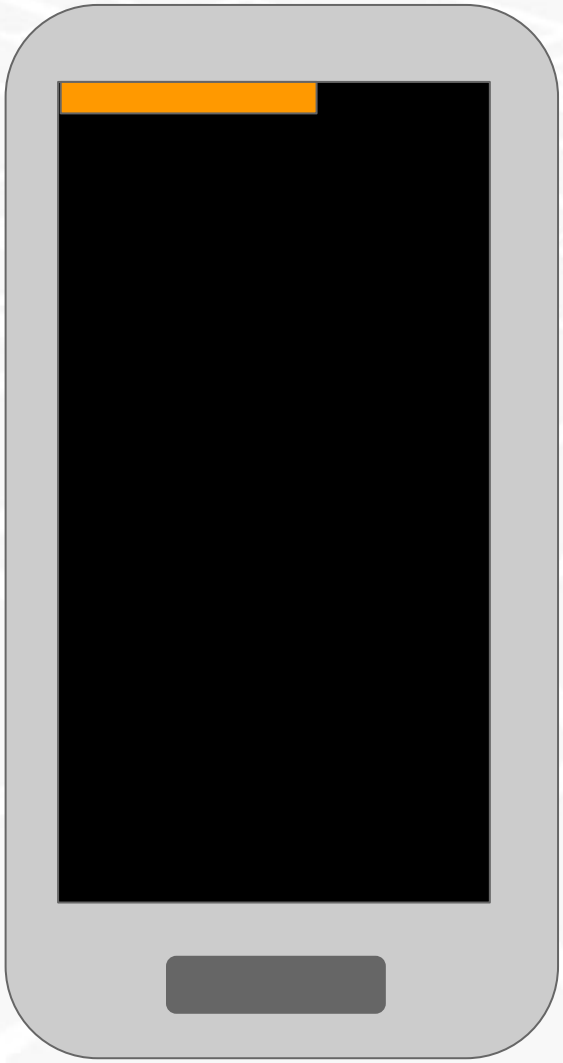
WHAT

HOW

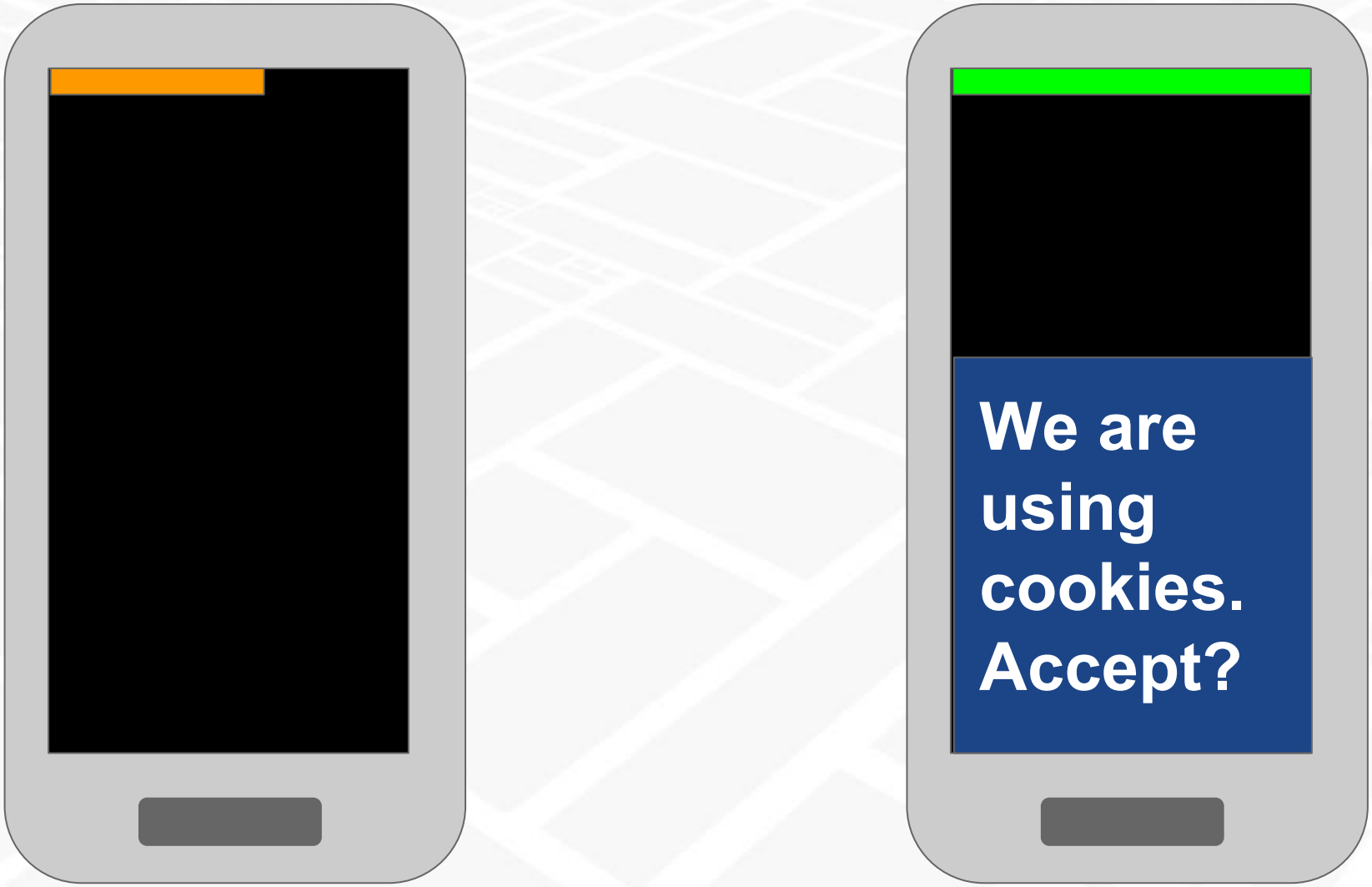
While in party

Can you show your project?

Loading...



EU law



WHY

WHAT

HOW

Customer wanted

Can you show your project?

WHY

WHAT

HOW

Customer wanted

WHY

WHAT

HOW

Slow tracking pixels

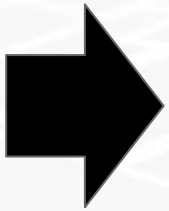
Cookies and privacy

WHY

WHAT

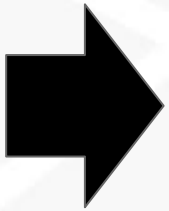
HOW

Slow tracking pixels



Move to backend

Cookies and privacy

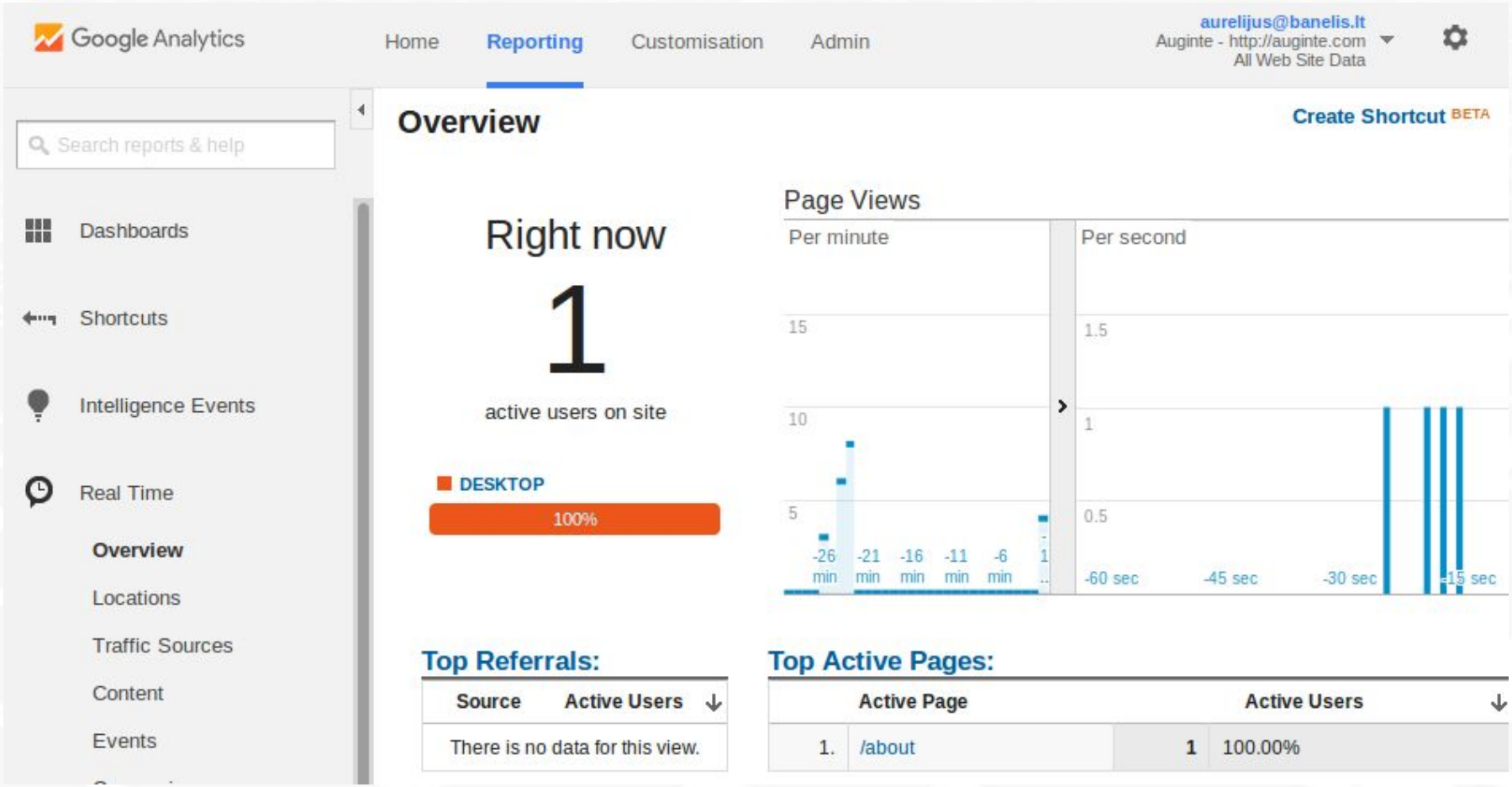


Track less fields

WHY

WHAT

HOW



Who does not like Google Analytics?

Alternative: Create your own - NO!

Analytics Measurement Protocol

WHY

WHAT

HOW

```
POST /collect HTTP/1.1
Host: www.google-analytics.com
User-Agent: spray-can/1.3.3
Content-Type: application/x-www-form-urlencoded; charset=UTF-8
Content-Length: 223

ua=Mozilla%2F5.0+%28X11%3B+Ubuntu%3B+Linux+x86_64%3B+rv%3A44.0%29
+Gecko%2F20100101+Firefox%2F44.0&t=pageview&ul=en-
US&ds=web&v=1&dl=http%3A%2F%2F0%3A0%3A0%3A0%
2F&cid=35009a79-
&dr=&tid=UA-452371-14HTTP/1.1 200 OK
Access-Control-Allow-Origin: *
Date: Tue, 02 Feb 2016 19:07:28 GMT
Pragma: no-cache
Expires: Fri, 01 Jan 1990 00:00:00 GMT
Cache-Control: no-cache, no-store, must-revalidate
Last-Modified: Sun, 17 May 1998 03:00:00 GMT
X-Content-Type-Options: nosniff
Content-Type: image/gif
Server: Golfe2
Content-Length: 35

GIF89a.............,...........D..;POST /collect HTTP/1.1
```

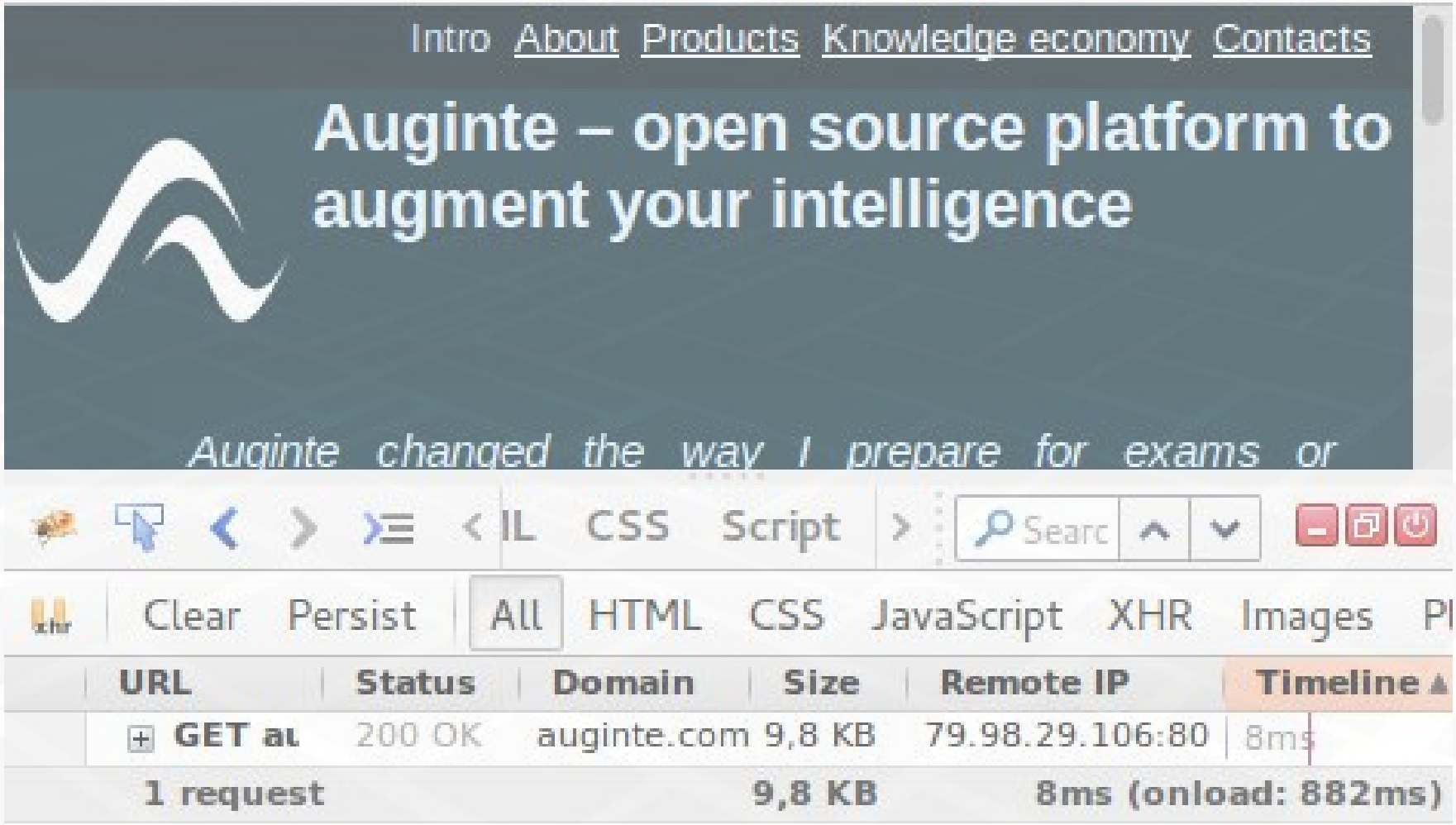
As simple as **Post to** google-analycs.com

- tid=UA-111111-11
- cid=some-valid-uuid
- t=pageview
- dl=http://some/page
- dr=http://referer
- ua=Real User Agent

WHY

WHAT

HOW

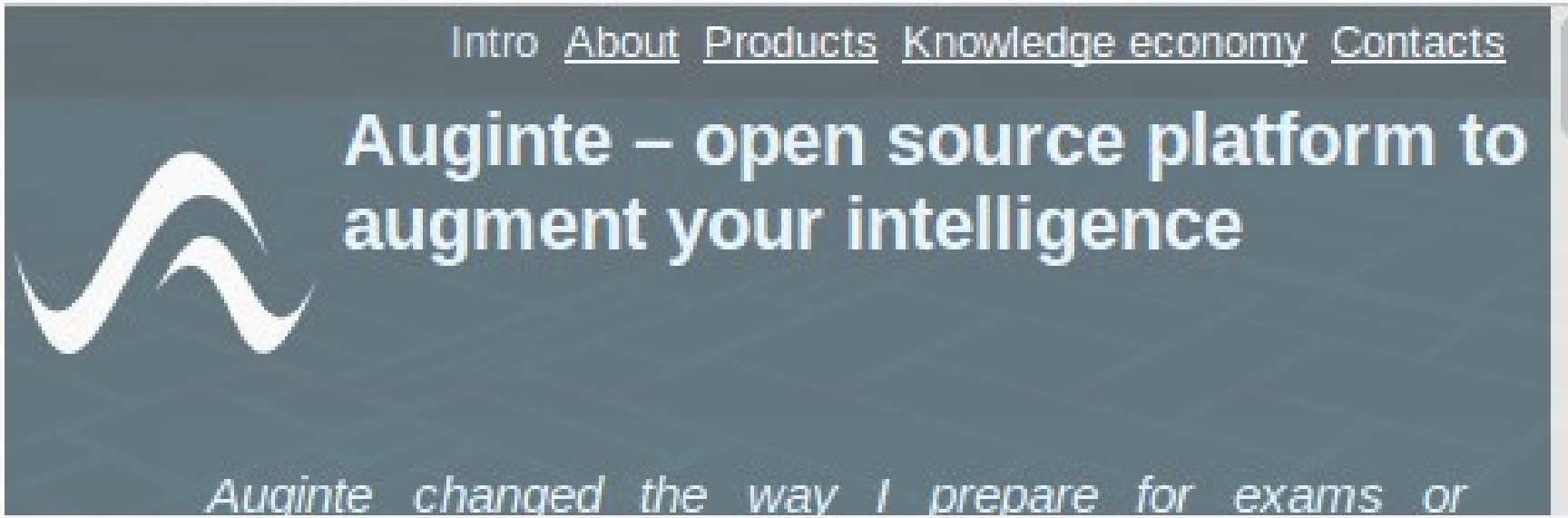


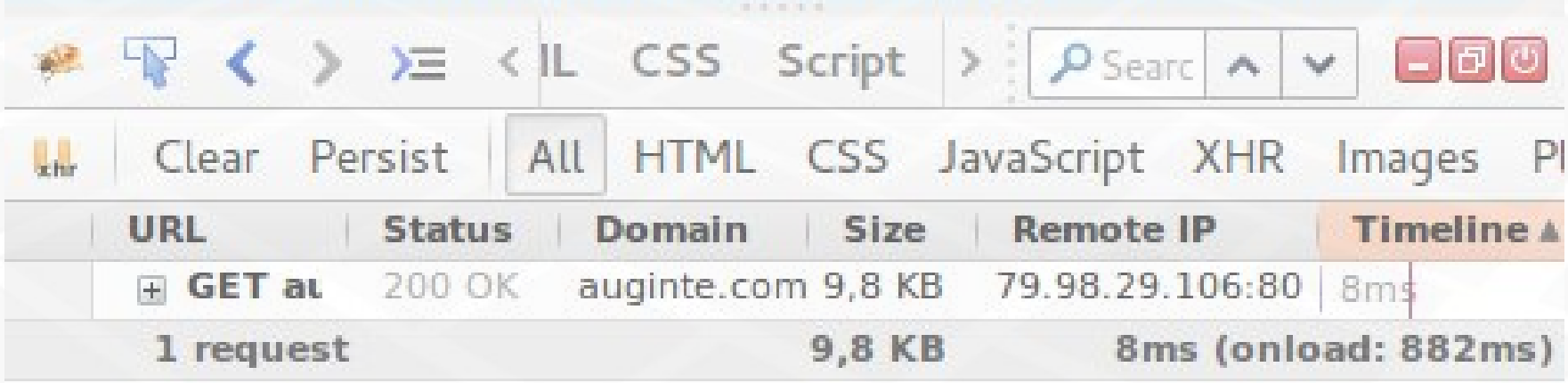
No cookies, no external JavaScript

WHY

WHAT

HOW





No cookies, no external JavaScript

Still tracking something, but not concrete users

```
// Doing real logic

ob_end_flush();
flush();

$h = curl_init("http://www.google-analytics.com/collect");
// Sending analytics
```

No cookies, no external JavaScript

WHY

WHAT

HOW

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// Doing real logic

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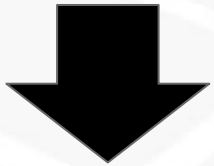
No cookies, no external JavaScript

Still tracking something, but not concrete users



Be honest - do not track IPs

/etc/httpd/conf/httpd.conf

```
#CustomLog "logs/access_log" combined
```

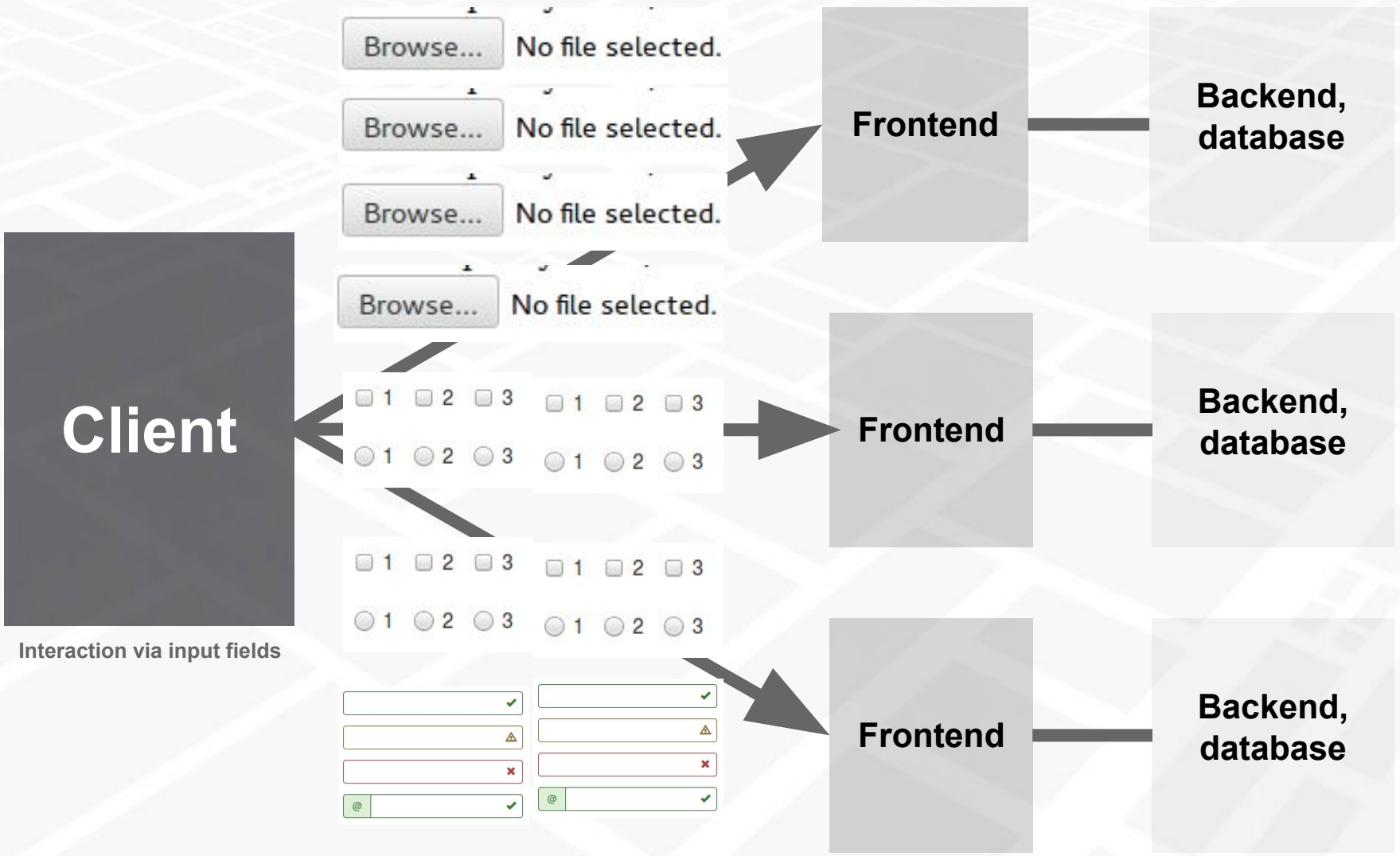
Server-side Google Analytics

Client-side API

Client-side API

WHY	**Common architecture, problems**
WHAT	**Server-client, advantages**
HOW	**Need to know, usage examples**

Client→server

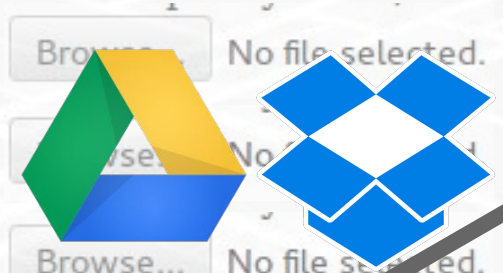


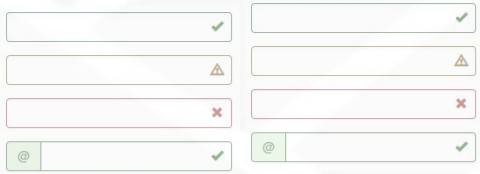
WHY

WHAT

HOW

Client→server





Client

Need to upload to 3rd party
to get added value.
All APIs are on their side.

Frontend

Backend,
database

API

Frontend

Backend,
database

API

Frontend

Backend,
database

API

WHY

WHAT

HOW

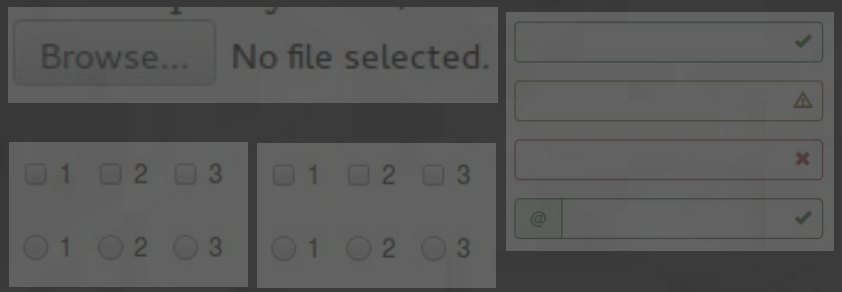
Problems

Repeated, lots of fields/formats

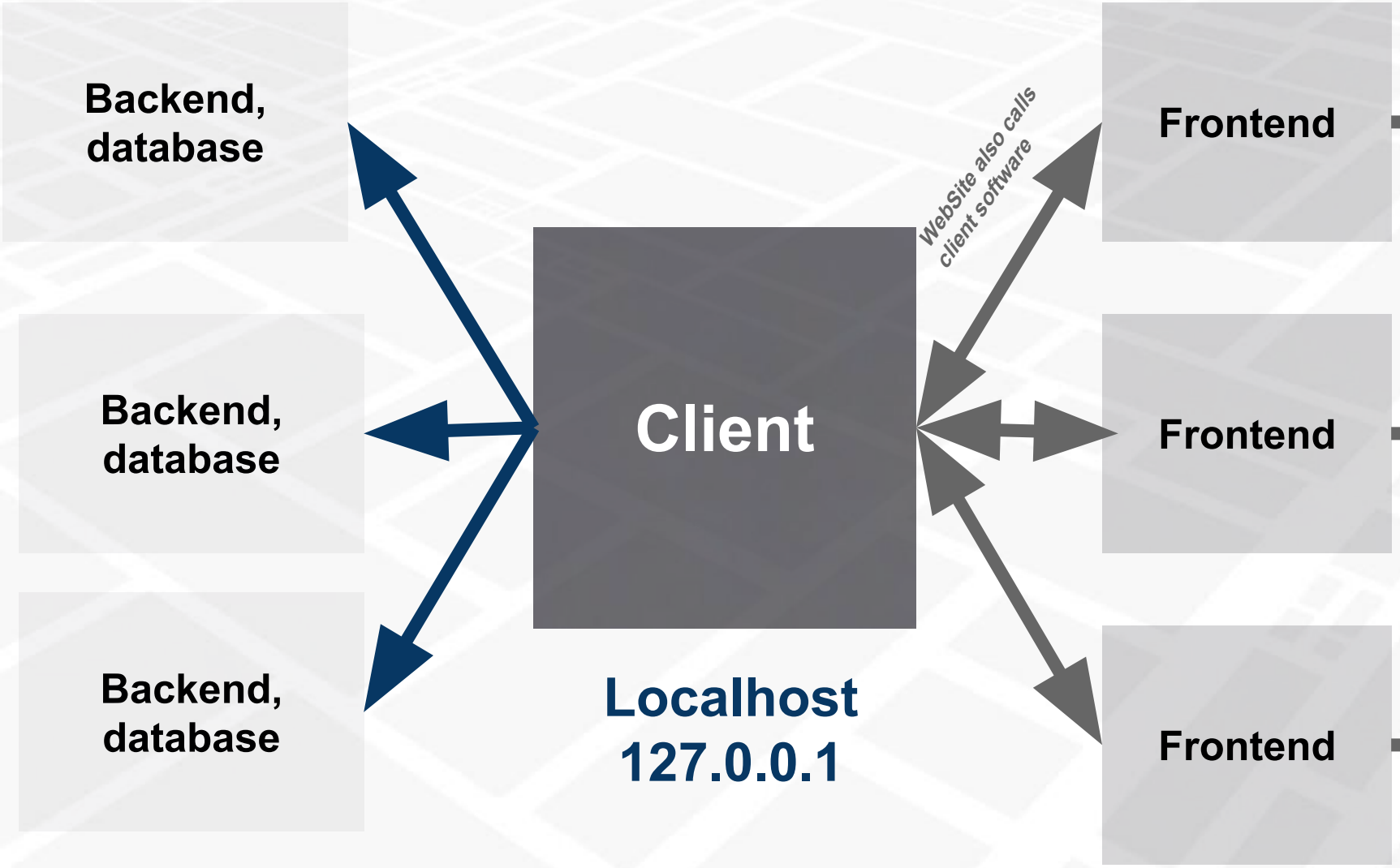
Size, cost of storage

Manual input

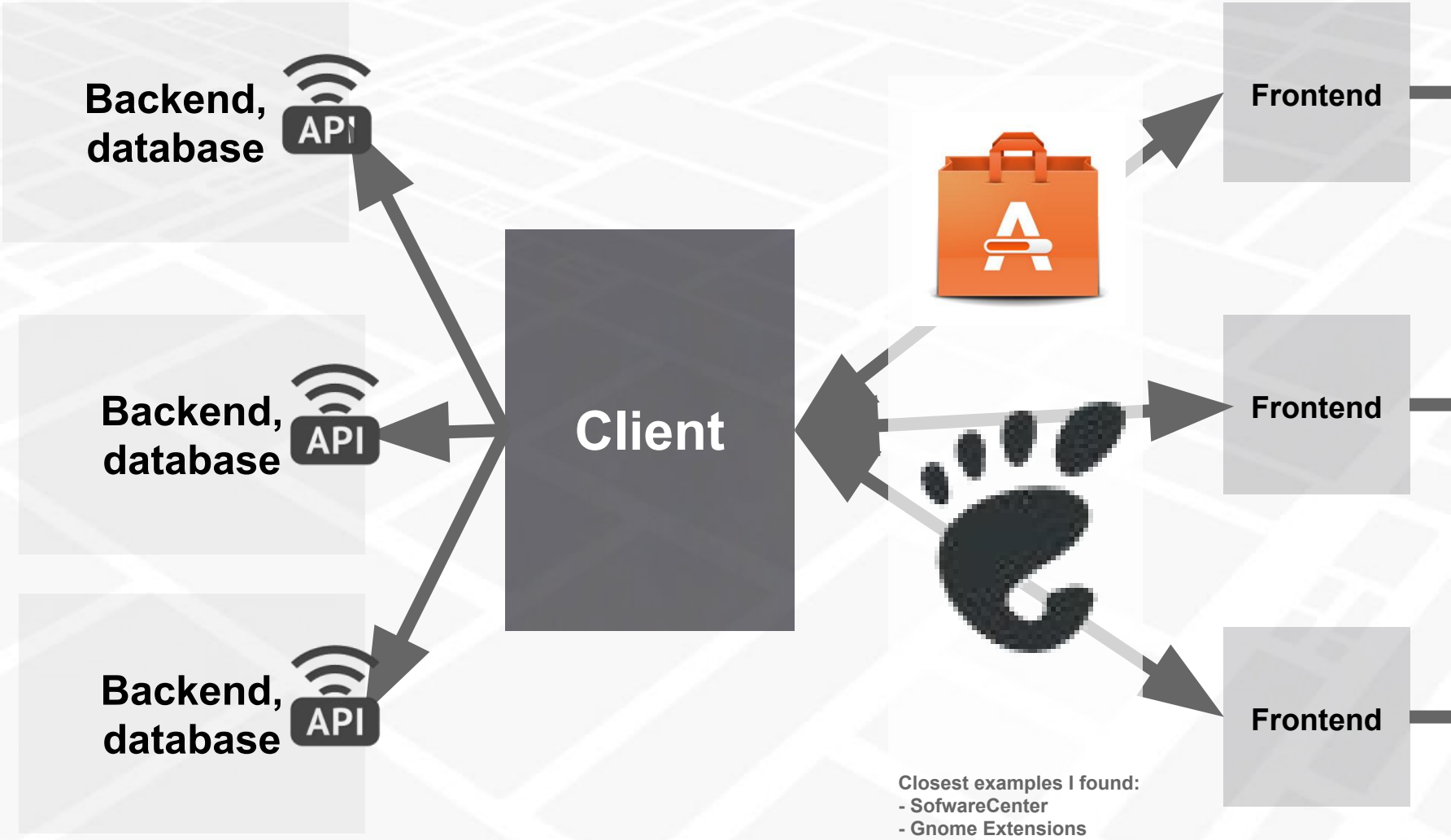
Upload everything



Server → client



Server → client



WHY

WHAT

HOW

Result: Fully distributed

Main advantage of server-client

3rd party scripts

3rd party data

Storing my own data, scripts

Implementing: Server → Client

Cross-origin resource sharing

Working Example (see link)

```php
<?php
header('Access-Control-Allow-Origin: *');
echo $_GET['a'] + $_GET['b'];
```

```
php -S localhost:12345 localhost-server.php
```

https://gist.github.com/aurelijusb/443892f81221ff3b61fc

Usage example 1

```
http://127.0.0.1:12345/auth
```

```
{"need":["timesheet"]}
```

Usage example 1

```
http://127.0.0.1:12345/auth
```

```
{"need":["timesheet"]}
```

Do you trust example.com?

Usage example 1

`http://127.0.0.1:12345/auth`

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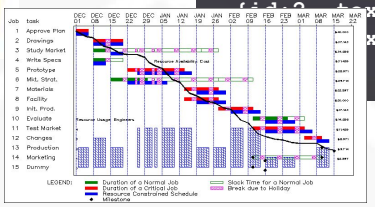
Do you trust example.com?

`http://127.0.0.1:12345/timesheet`



```
{data:[ {id:1, text:"Project #1", start_date:"01-04-2013", duration:18},
xt:"Task #1", start_date:"02-04-2013", duration:8, parent:1},
xt:"Task #2", start_date:"11-04-2013", duration:8, parent:1} ...
```

Usage example 2

`http://127.0.0.1:12345/currentRnD`

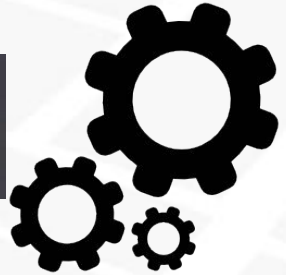
```
{"have":["pc","food"]}
```

Usage example 2

`http://127.0.0.1:12345/currentRnD`

```
{"have":["pc","food"]}
```

```
{"filter":["pc"]}
```

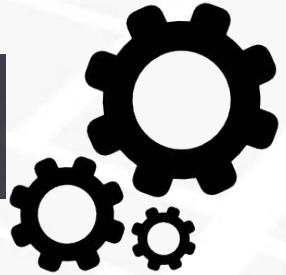


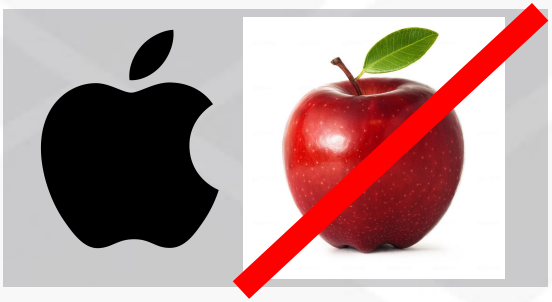
Usage example 2

`http://127.0.0.1:12345/currentRnD`

```
{"have":["pc","food"]}
```

```
{"filter":["pc"]}
```



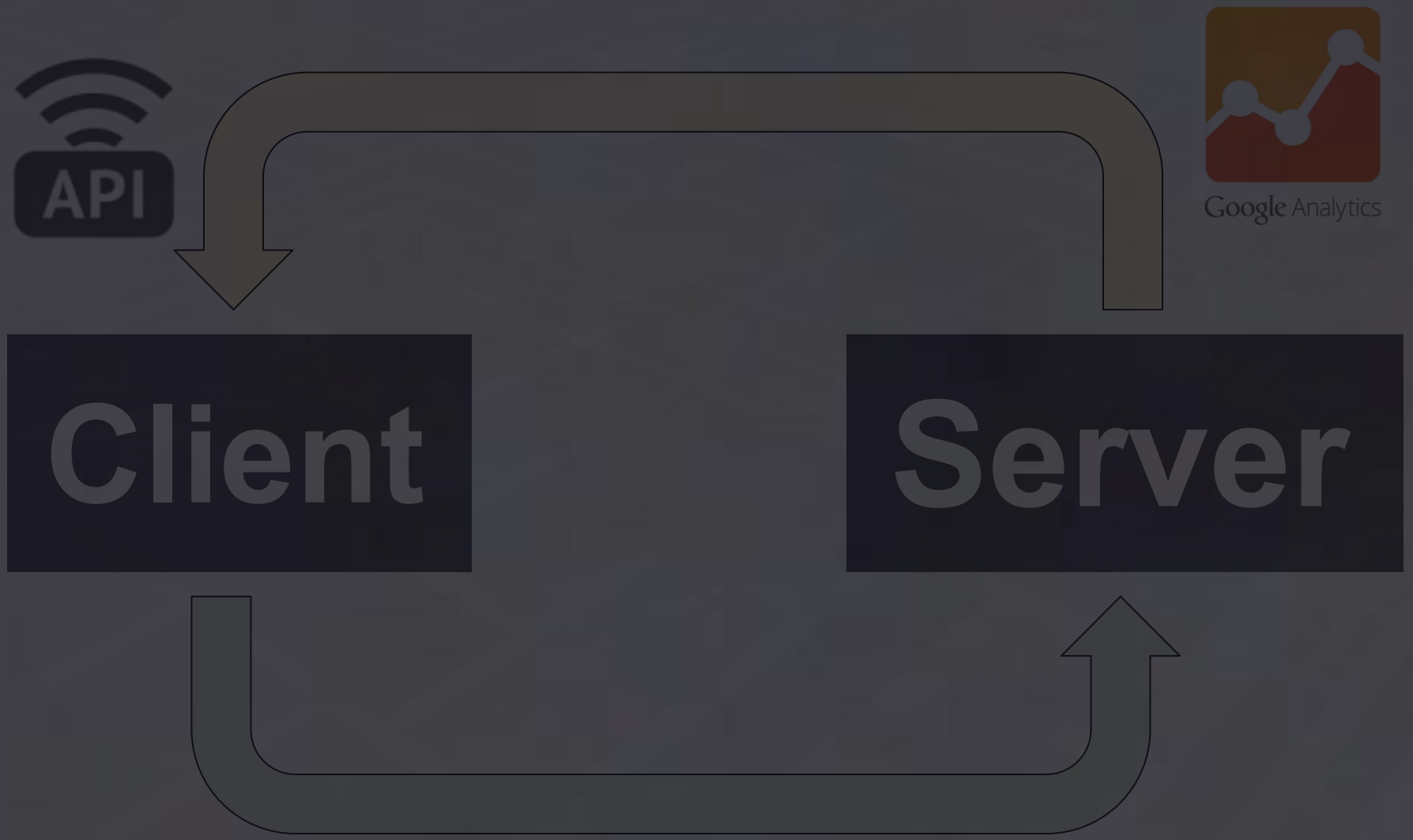


Client-side API

Be

open minded

Questions?



References and useful links

- http://stackoverflow.com/questions/138374/close-a-connection-early
- https://developers.google.com/analytics/devguides/collection/protocol/v1/?hl=en
-
- https://en.wikipedia.org/wiki/Cross-origin_resource_sharing
- https://en.wikipedia.org/wiki/Cross-site_scripting
- https://gist.github.com/aurelijusb/443892f81221ff3b61fc