

# THE RISE OF SINGLE-PAGE APPLICATIONS

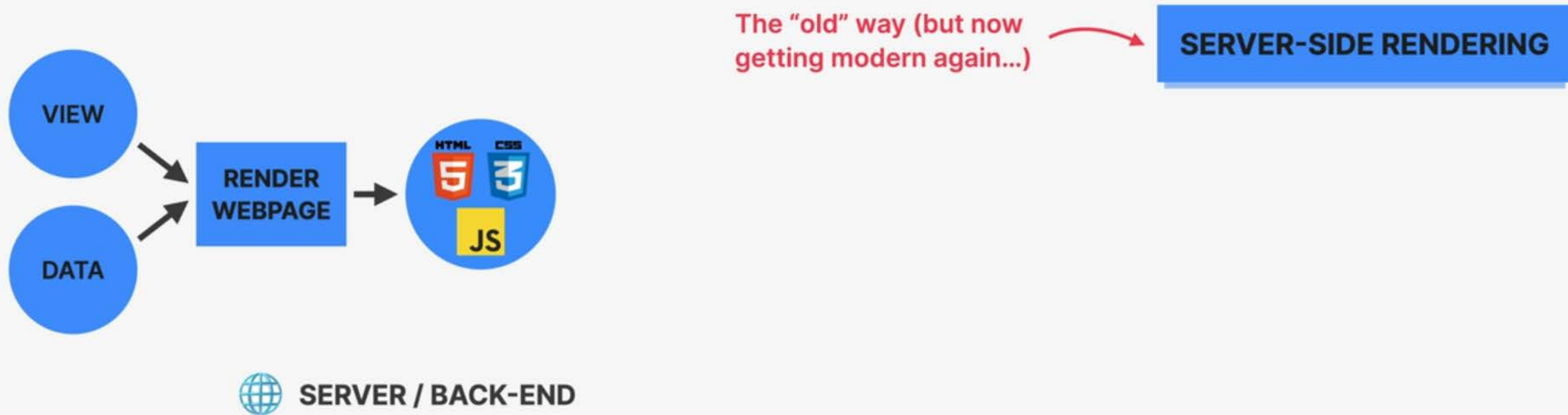
# THE RISE OF SINGLE-PAGE APPLICATIONS

The "old" way (but now  
getting modern again...)

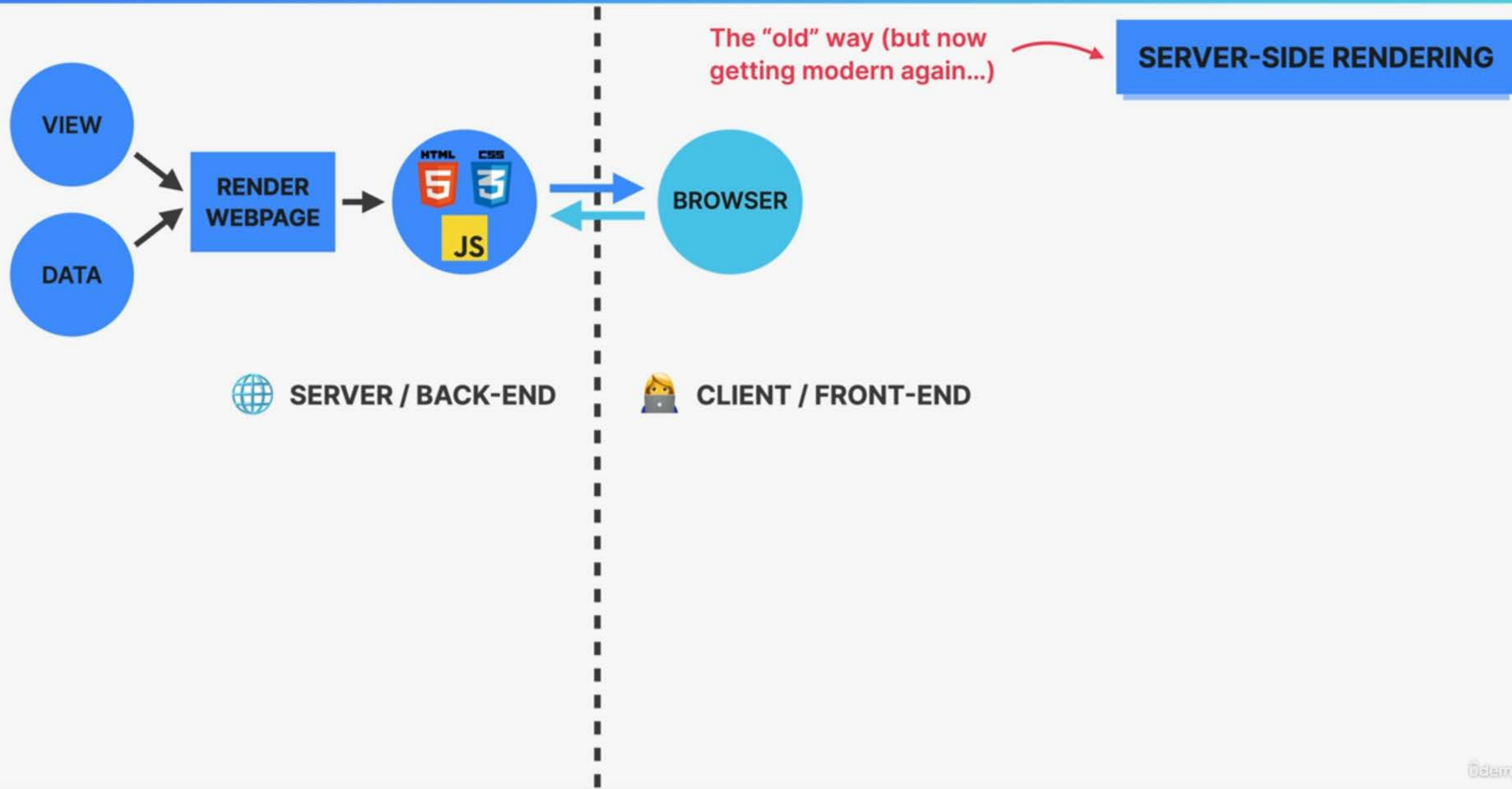


**SERVER-SIDE RENDERING**

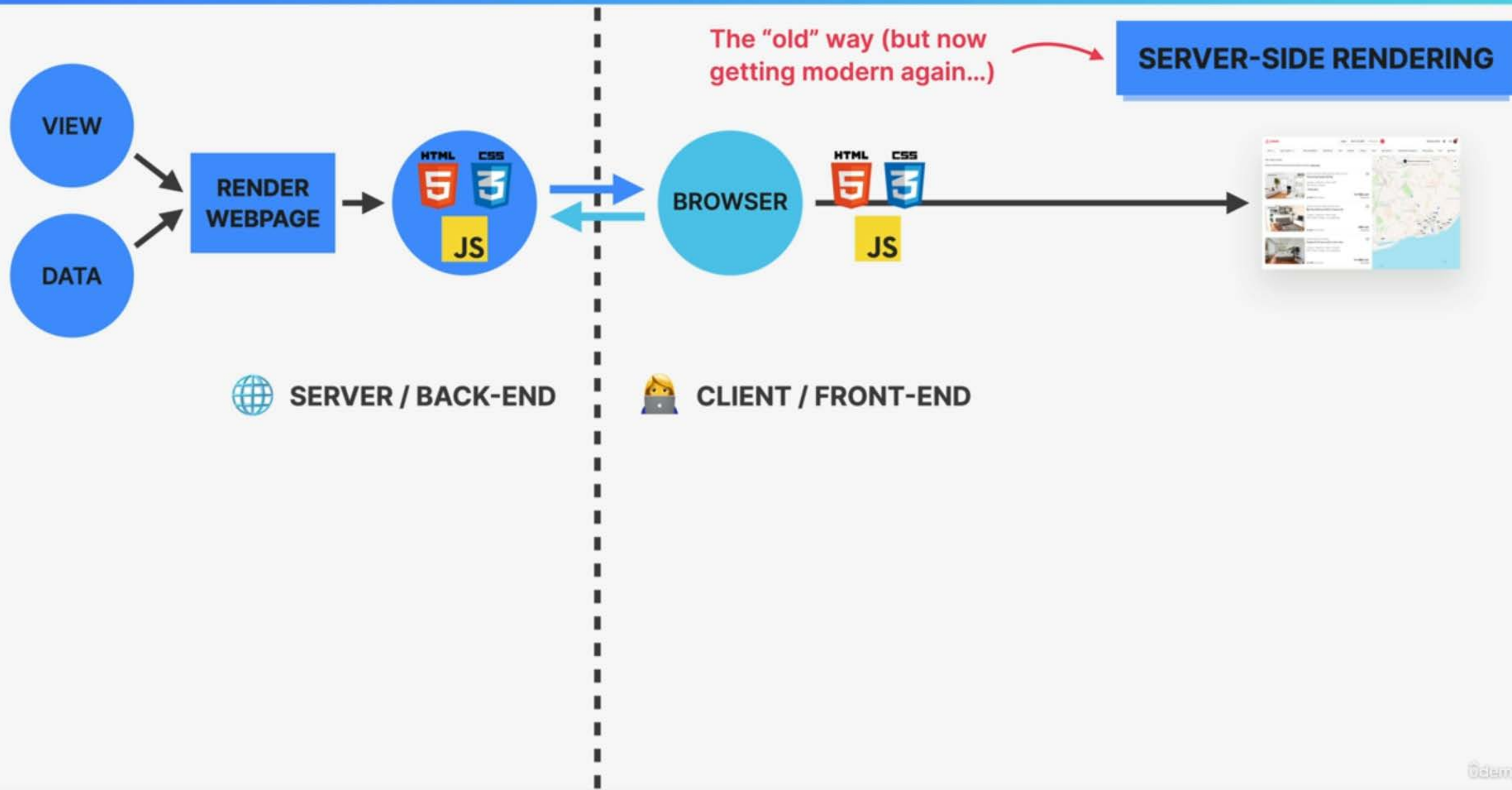
# THE RISE OF SINGLE-PAGE APPLICATIONS



# THE RISE OF SINGLE-PAGE APPLICATIONS

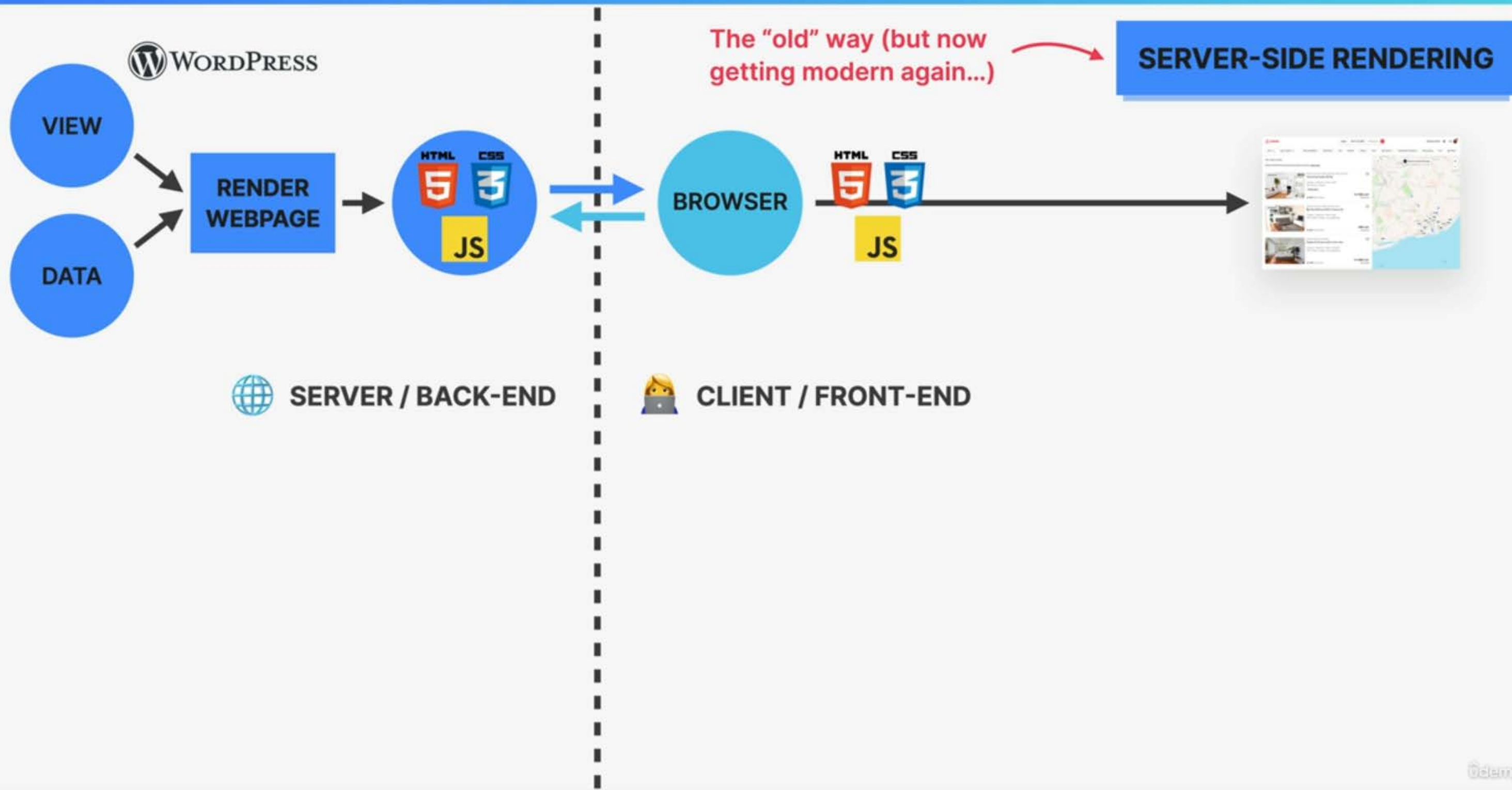


# THE RISE OF SINGLE-PAGE APPLICATIONS

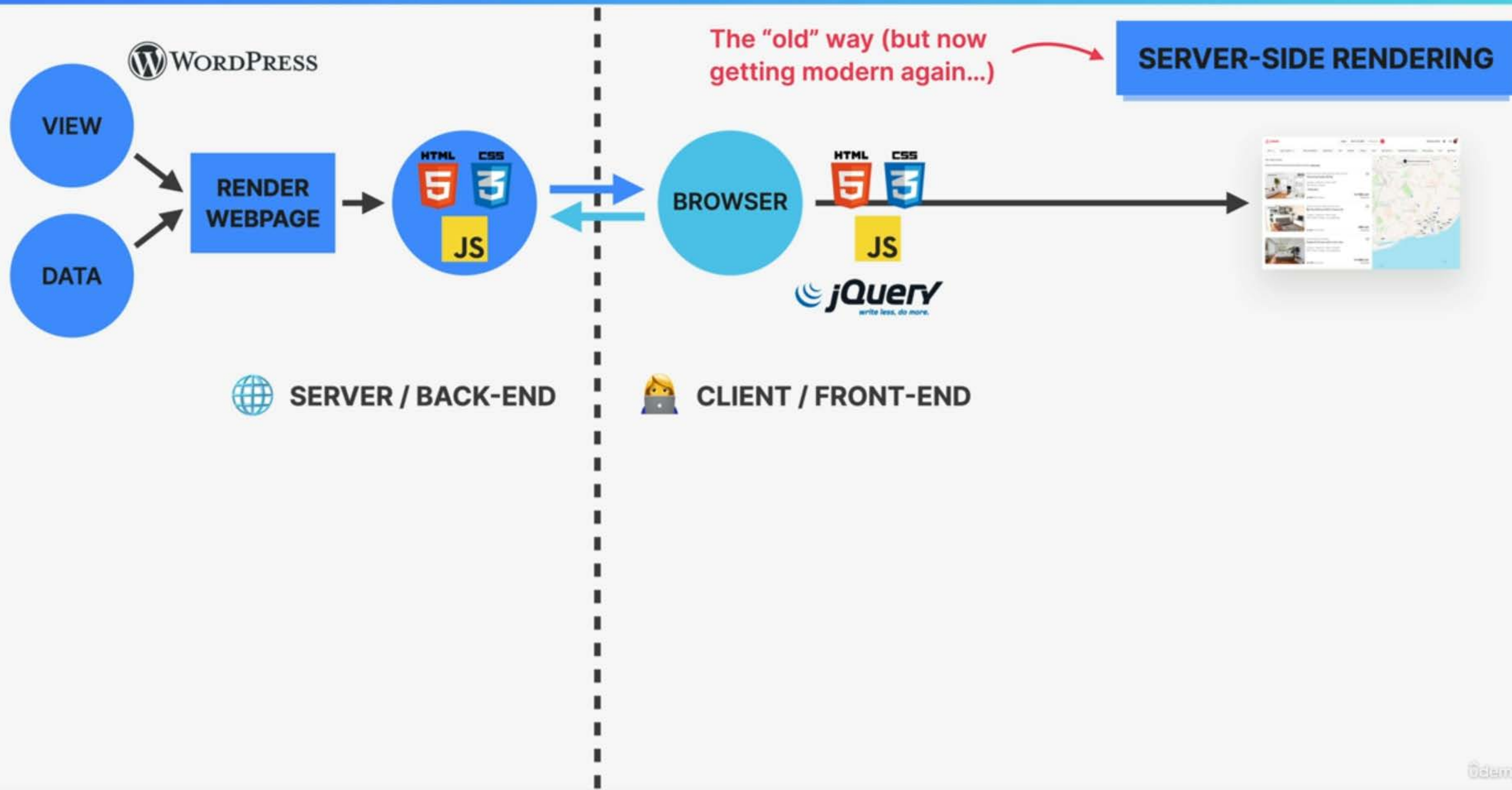




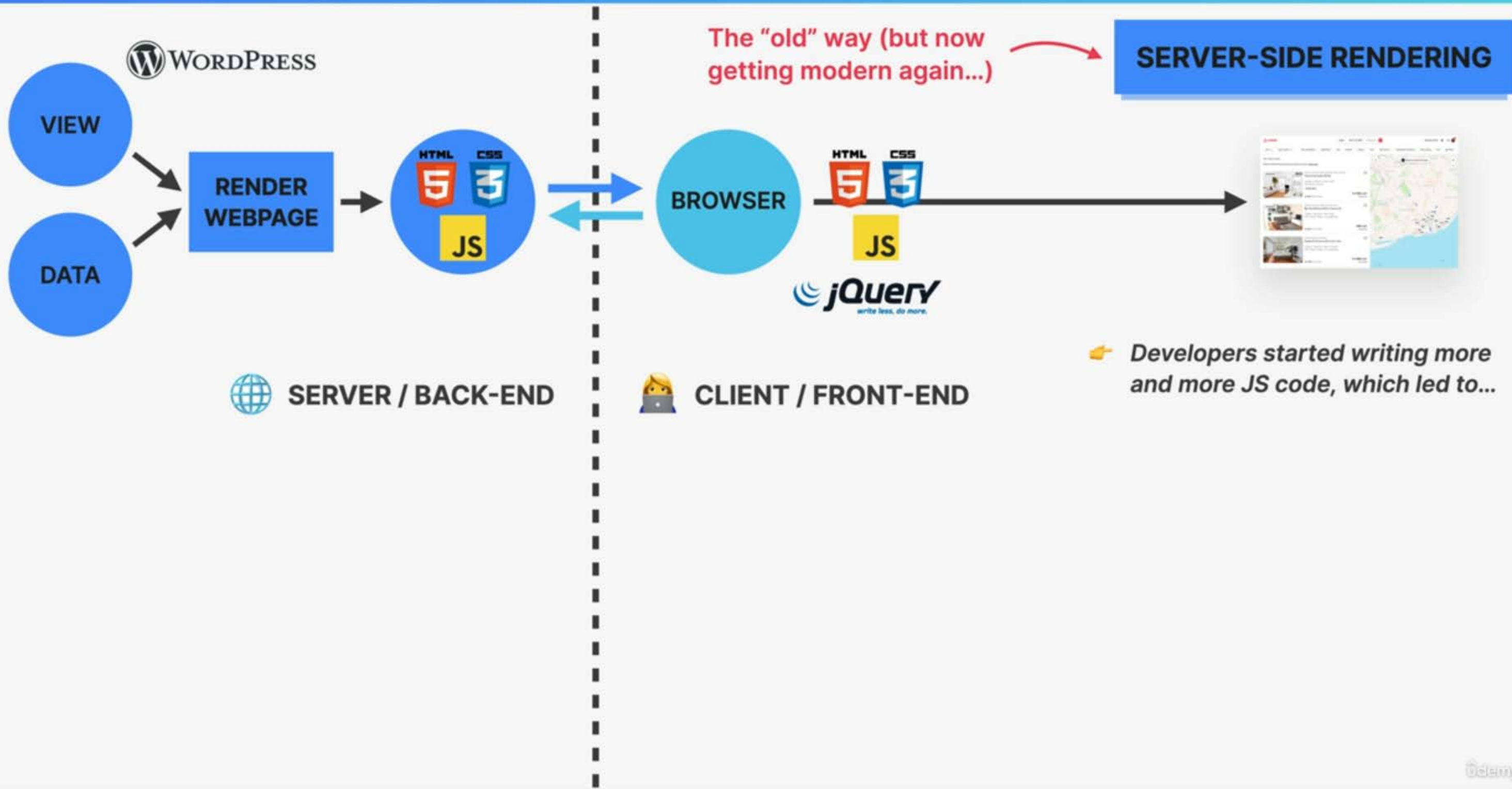
# THE RISE OF SINGLE-PAGE APPLICATIONS



# THE RISE OF SINGLE-PAGE APPLICATIONS

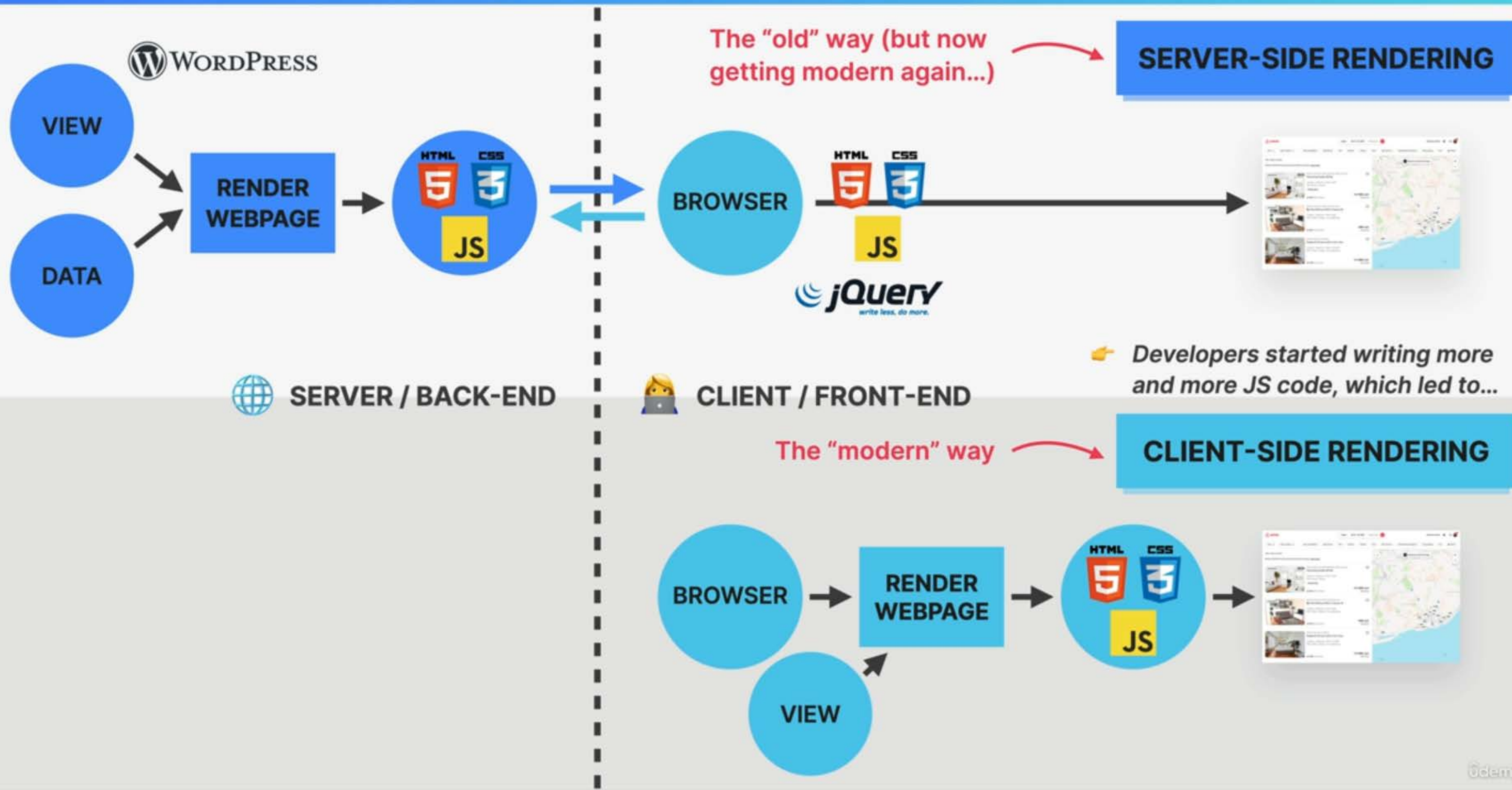


# THE RISE OF SINGLE-PAGE APPLICATIONS

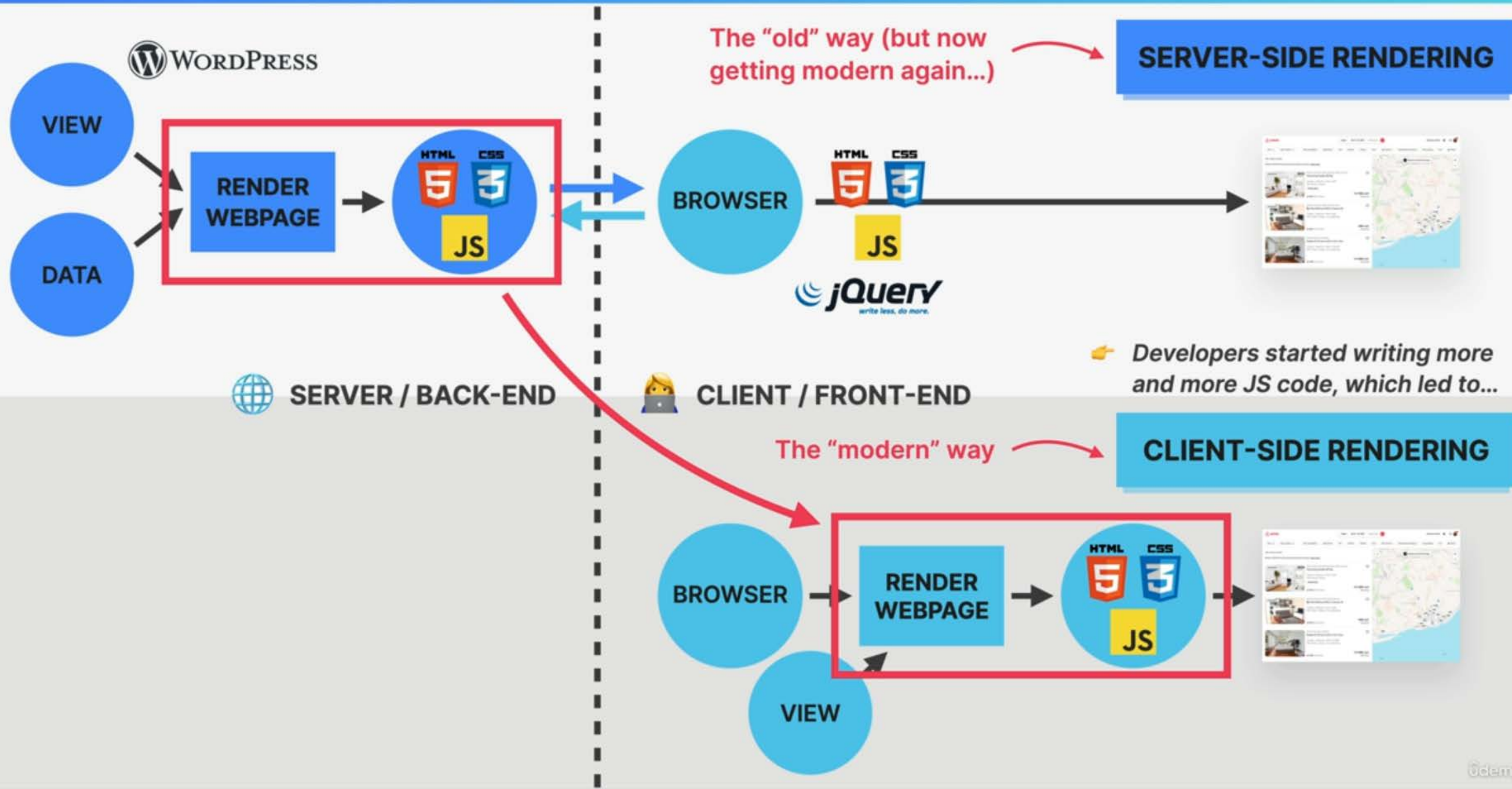




# THE RISE OF SINGLE-PAGE APPLICATIONS

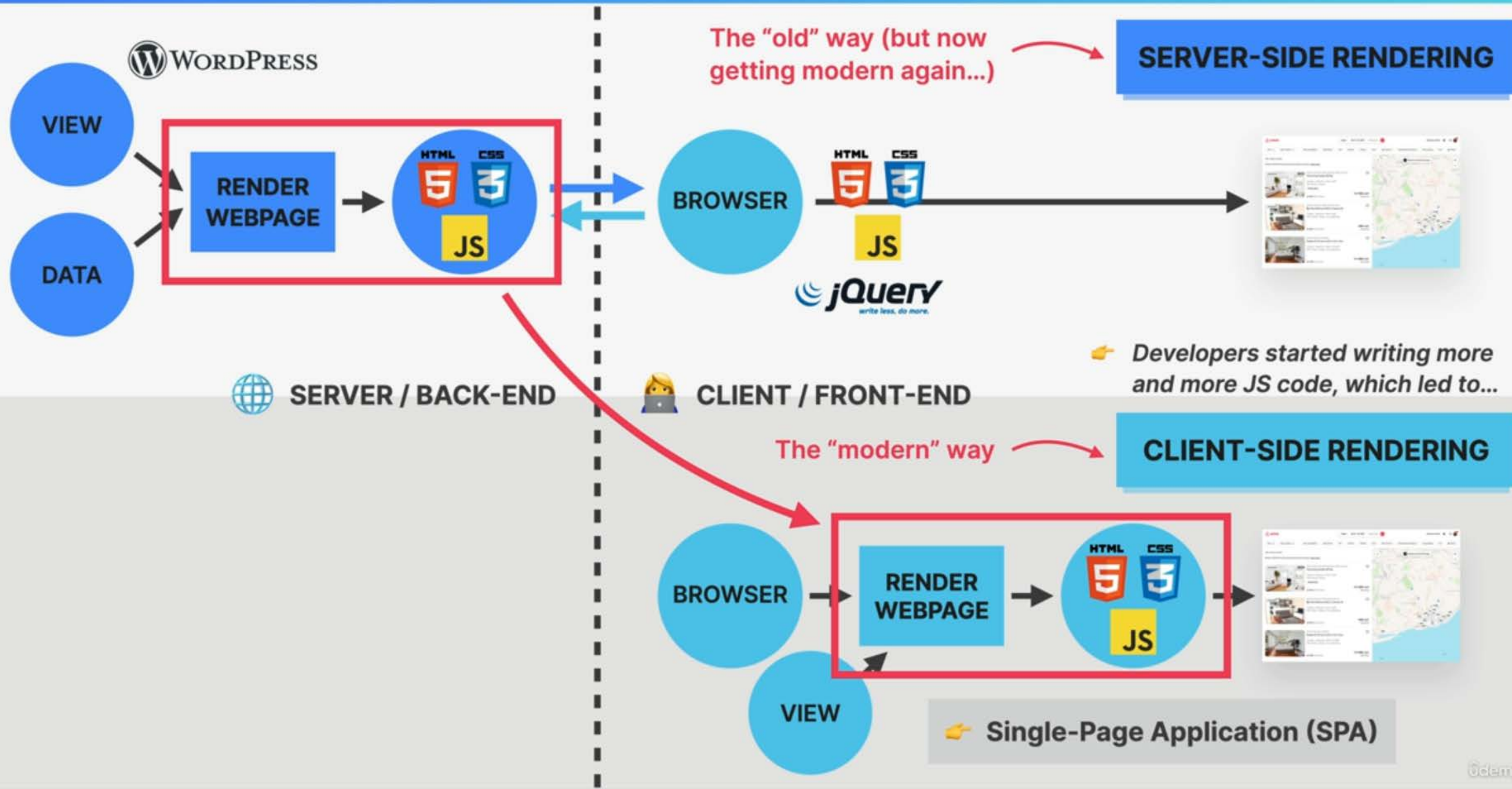


# THE RISE OF SINGLE-PAGE APPLICATIONS

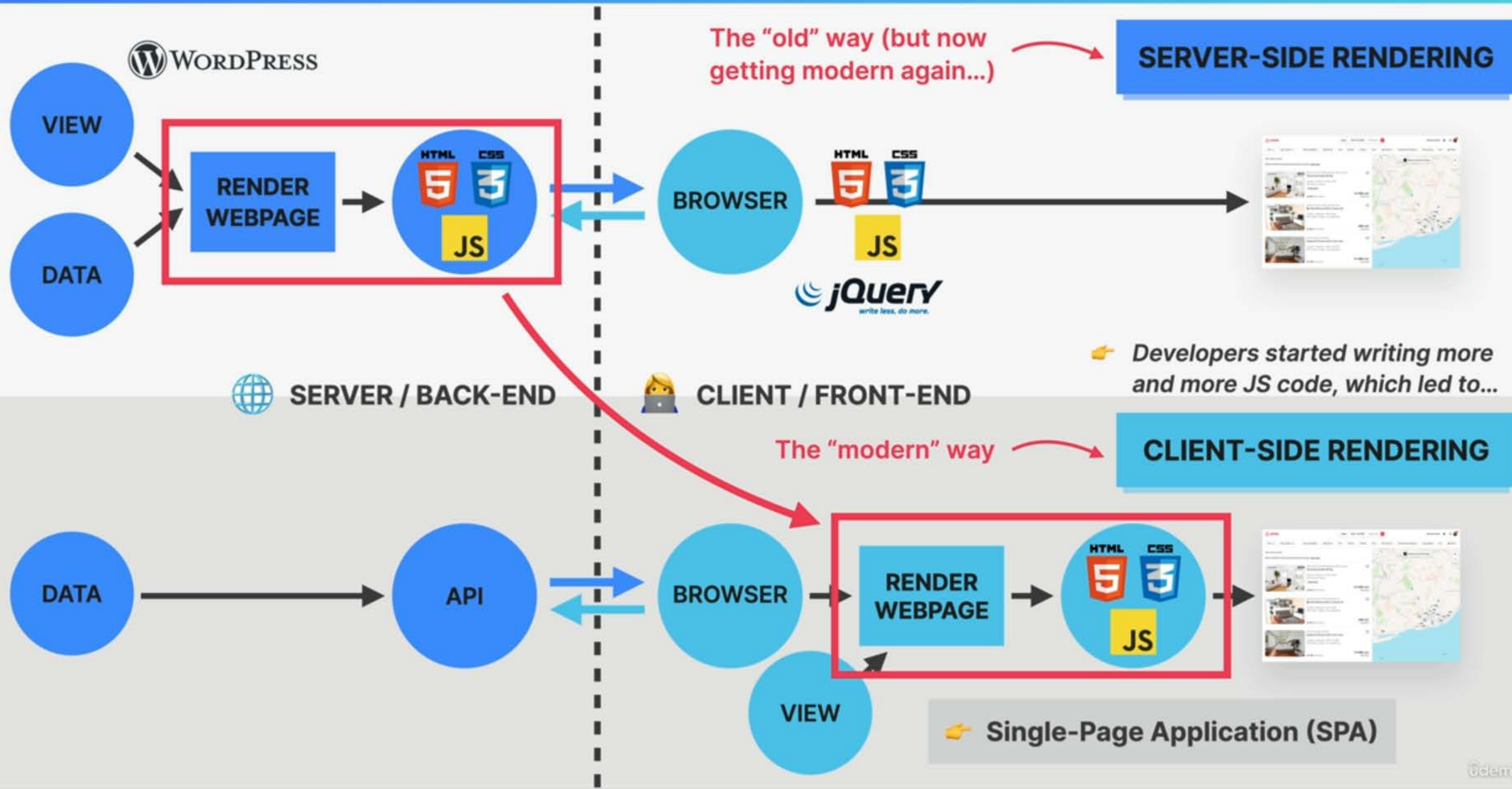




# THE RISE OF SINGLE-PAGE APPLICATIONS

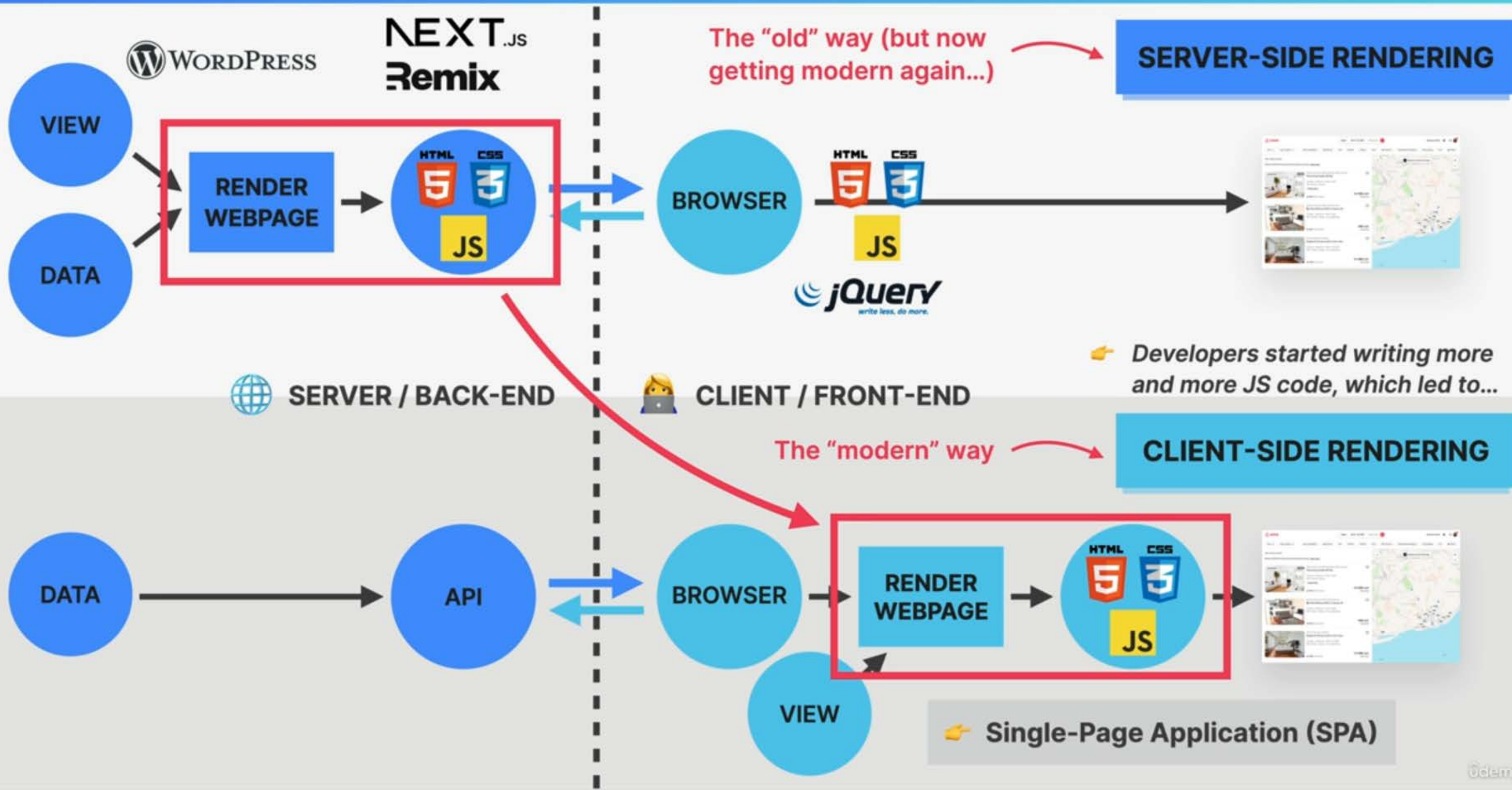


# THE RISE OF SINGLE-PAGE APPLICATIONS





# THE RISE OF SINGLE-PAGE APPLICATIONS





# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 *Front-end web applications are all about...*

**Handling data + displaying**  
data in a user interface

# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 *Front-end web applications are all about...*

**Handling** data + **displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 *Front-end web applications are all about...*

**Handling data + displaying**  
data in a user interface




User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



# KEEPING UI IN SYNC WITH DATA




LisbonOct 9 – 16, 2023Add guests

Become a Host

PriceType of placeFree cancellationBeachfrontWifiKitchenWasherPoolSelf check-inDedicated workspaceFree parkingIronFilters

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)



SUPERHOST

Entire rental unit in São Cristóvão e São Lourenço

**Charming Castle Hill Flat**


3 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer

Rare find

4.92 (264 reviews)

€60 **€55** night  
€384 total



SUPERHOST

Entire rental unit in São Vicente de Fora


**Feel Alfama at BCA | Cascao 18**

2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

4.92 (252 reviews)

€48 night  
€333 total



Entire rental unit in Alfama

**Duplex & Terrace with a river view**

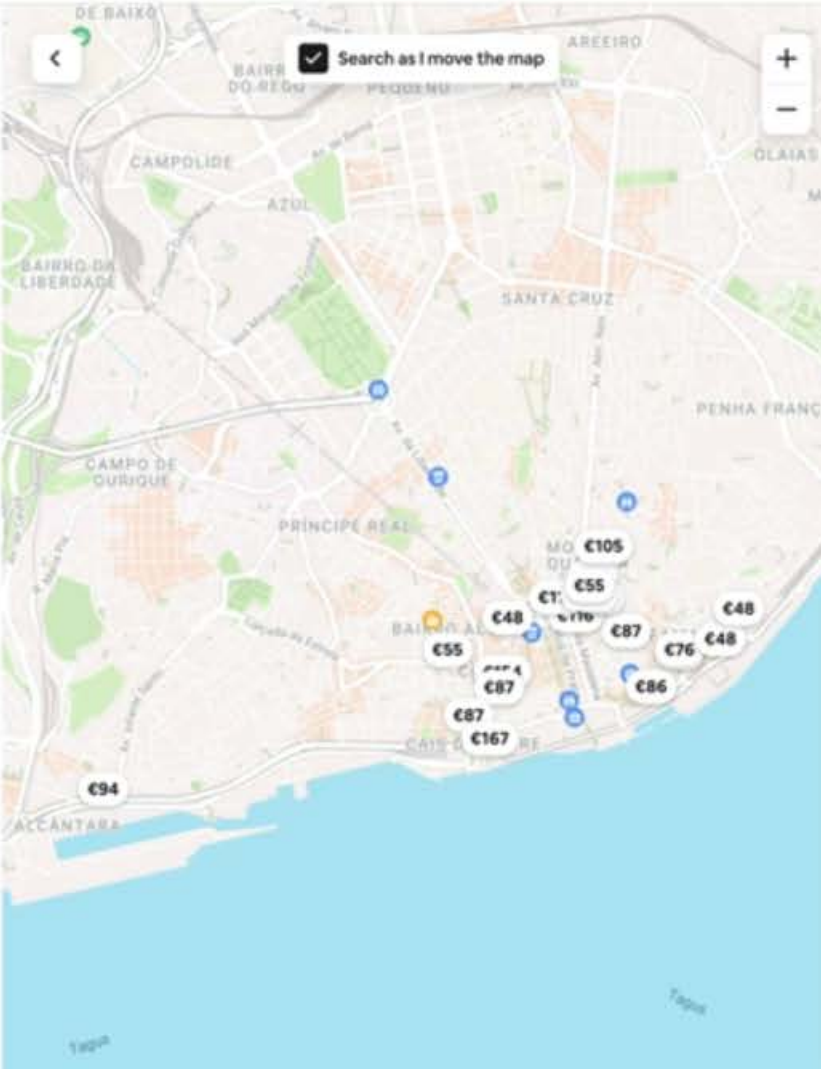
4 guests · 1 bedroom · 2 beds · 1.5 baths

Wifi · Kitchen · Washer · Air conditioning

4.98 (44 reviews)


€93 **€86** night  
€597 total

Search as I move the map





# KEEPING UI IN SYNC WITH DATA



LisbonOct 9 - 16, 2023Add guests


Become a Host

PriceType of placeFree cancellationBeachfrontWifiKitchenWasherPoolSelf check-inDedicated workspaceFree parkingIronFilters

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)

SUPERHOST



Entire rental unit in São Cristóvão e São Lourenço

Charming Castle Hill Flat

3 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer

Rare find


4.92 (264 reviews)

€60

€55 night

€384 total

SUPERHOST



Entire rental unit in São Vicente de Fora

Feel Alfama at BCA | Cascao 18


2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

4.92 (252 reviews)

€48 night

€333 total



Entire rental unit in Alfama

Duplex & Terrace with a river view

4 guests · 1 bedroom · 2 beds · 1.5 baths

Wifi · Kitchen · Washer · Air conditioning

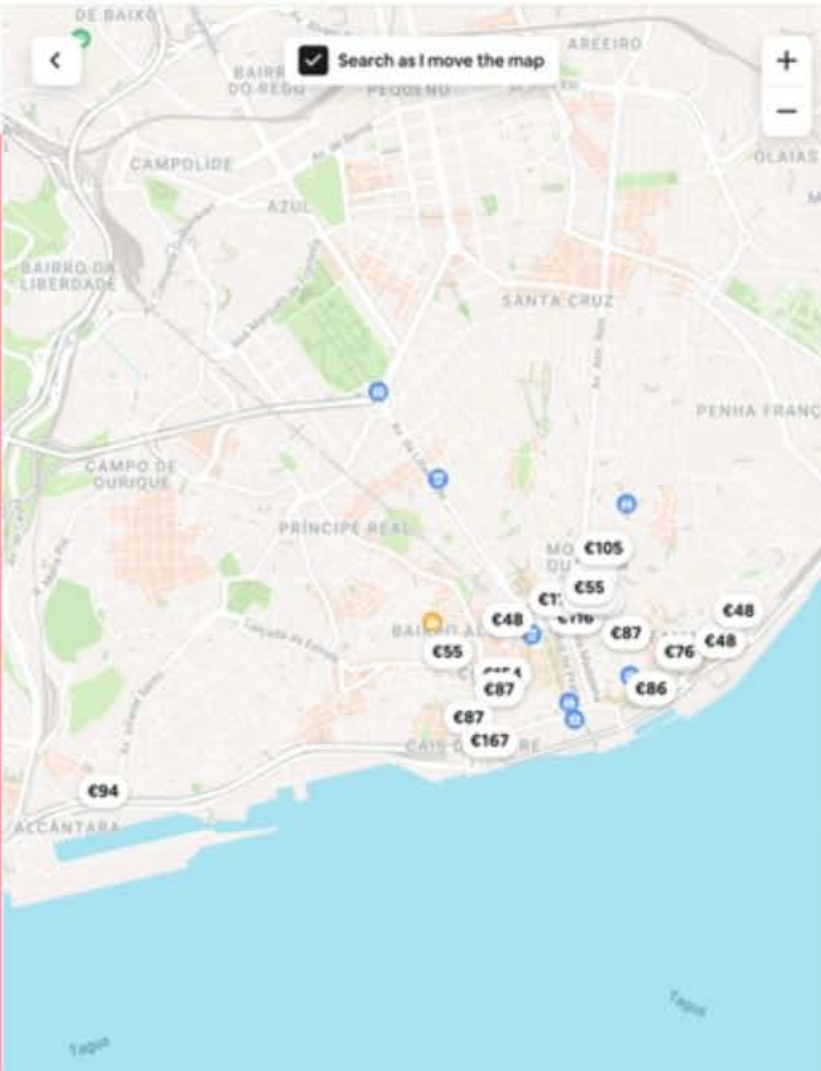
4.98 (44 reviews)

€93

€86 night

€597 total

Search as I move the map




DATA

Udemy



# KEEPING UI IN SYNC WITH DATA

## DATA




LisbonOct 9 - 16, 2023Add guests

Become a Host

PriceType of placeFree cancellationBeachfrontWifiKitchenWasherPoolSelf check-inDedicated workspaceFree parkingIronFilters

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)



SUPERHOST

Entire rental unit in São Cristóvão e São Lourenço

**Charming Castle Hill Flat**


3 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer

Rare find

4.92 (264 reviews)

€60 **€55** night  
€384 total



SUPERHOST

Entire rental unit in São Vicente de Fora


**Feel Alfama at BCA | Cascao 18**

2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

4.92 (252 reviews)

€48 night  
€333 total



Entire rental unit in Alfama

**Duplex & Terrace with a river view**

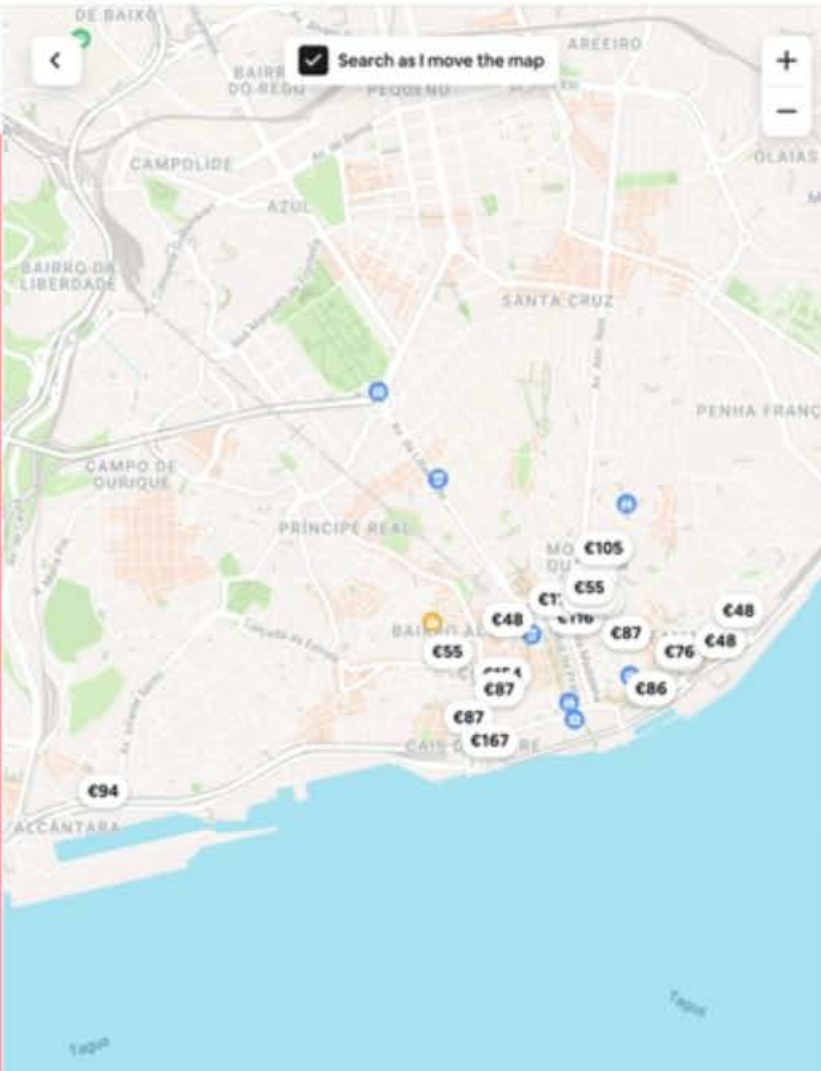
4 guests · 1 bedroom · 2 beds · 1.5 baths

Wifi · Kitchen · Washer · Air conditioning

4.98 (44 reviews)


€93 **€86** night  
€597 total


Search as I move the map







# KEEPING UI IN SYNC WITH DATA

## DATA

 **DATA**

Lisbon Oct 9 - 16, 2023 Add guests 


Become a Host   

Price ▾ Type of place ▾ Free cancellation Beachfront Wifi Kitchen Washer Pool Self check-in Dedicated workspace Free parking Iron  Filters

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)

### DATA




**SUPERHOST**

Entire rental unit in São Cristóvão e São Lourenço

**Charming Castle Hill Flat**


3 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer

 Rare find

★ 4.92 (264 reviews)

€60 **€55** night  
€384 total



**SUPERHOST**

Entire rental unit in São Vicente de Fora


**Feel Alfama at BCA | Cascao 18**

2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

★ 4.92 (252 reviews)

€48 night  
€333 total



Entire rental unit in Alfama

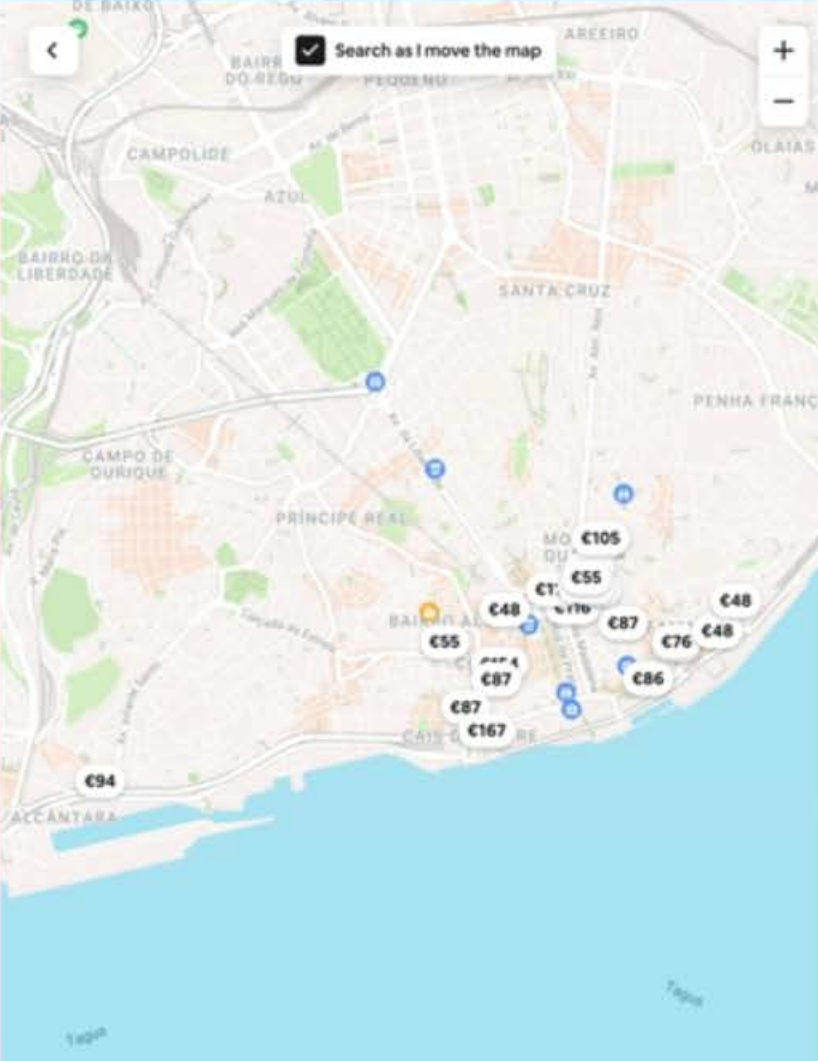
**Duplex & Terrace with a river view**

4 guests · 1 bedroom · 2 beds · 1.5 baths

Wifi · Kitchen · Washer · Air conditioning

★ 4.98 (44 reviews)

€93 **€86** night  
€592 total





Map of Lisbon showing property locations with price tags. The map includes labels for various neighborhoods like BAIRO DO REGO, CAMPOLIDE, AZUL, BAIRO DA LIBERDADE, SANTA CRUZ, PENHA FRANCA, CAMPO DE OURIQUE, PRÍNCIPE REAL, MOQUIM, BAIRO ALTO, CAYES, and ACCANTARA. Price tags are displayed for several properties: €105, €55, €48, €170, €87, €76, €48, €86, €87, €167, €94, and €99.







# KEEPING UI IN SYNC WITH DATA

DATA

 **DATA**


Lisbon Oct 9 - 16, 2023 Add guests 

Become a Host   

Price ▾ Type of place ▾ Free cancellation Beachfront Wifi Kitchen Washer Pool Self check-in Dedicated workspace Free parking Iron 

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)




**SUPERHOST**

Entire rental unit in São Cristóvão e São Lourenço

**Charming Castle Hill Flat**

3 guests · 1 bedroom · 1 bed · 1 bath


Wifi · Kitchen · Washer

 Rare find

★ 4.92 (264 reviews)

€60 **€55** night

€384 total



**SUPERHOST**

Entire rental unit in São Vicente de Fora

**Feel Alfama at BCA | Cascao 18**


2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

★ 4.92 (252 reviews)

€48 night

€333 total



Entire rental unit in Alfama

**Duplex & Terrace with a river view**

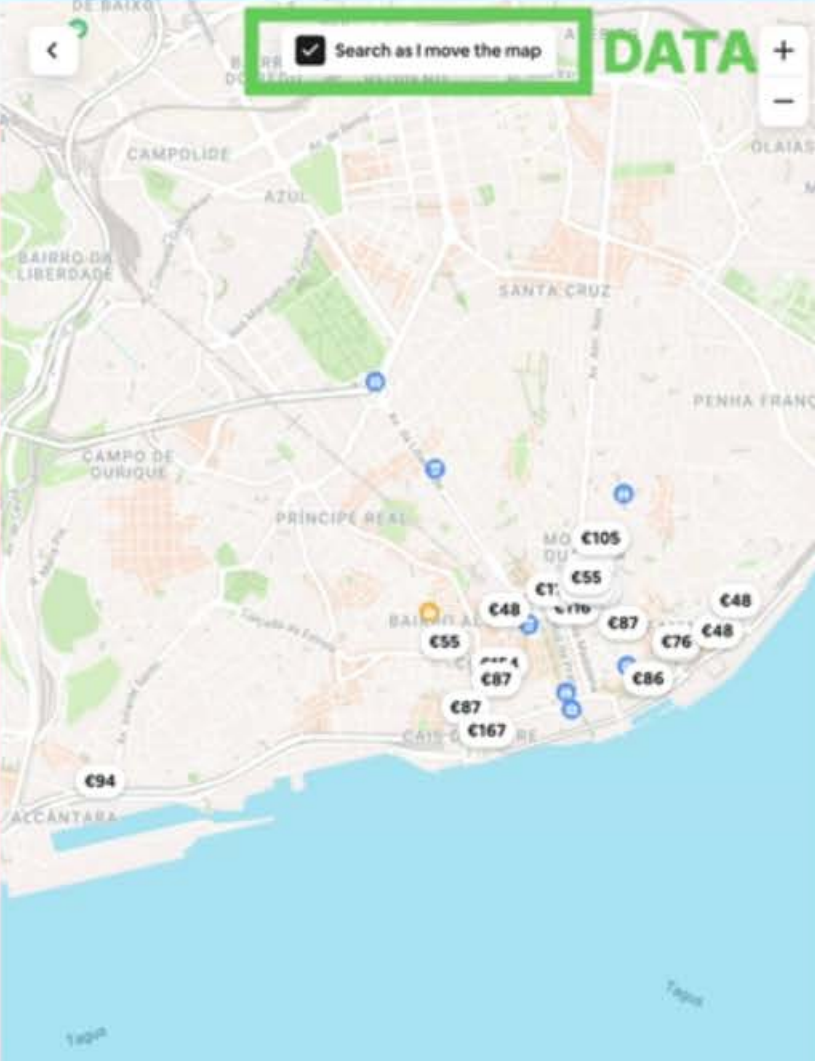
4 guests · 1 bedroom · 2 beds · 1.5 baths



Wifi · Kitchen · Washer · Air conditioning

★ 4.98 (44 reviews)

€93 **€86** night

€592 total



 Search as I move the map **DATA** 

04:53

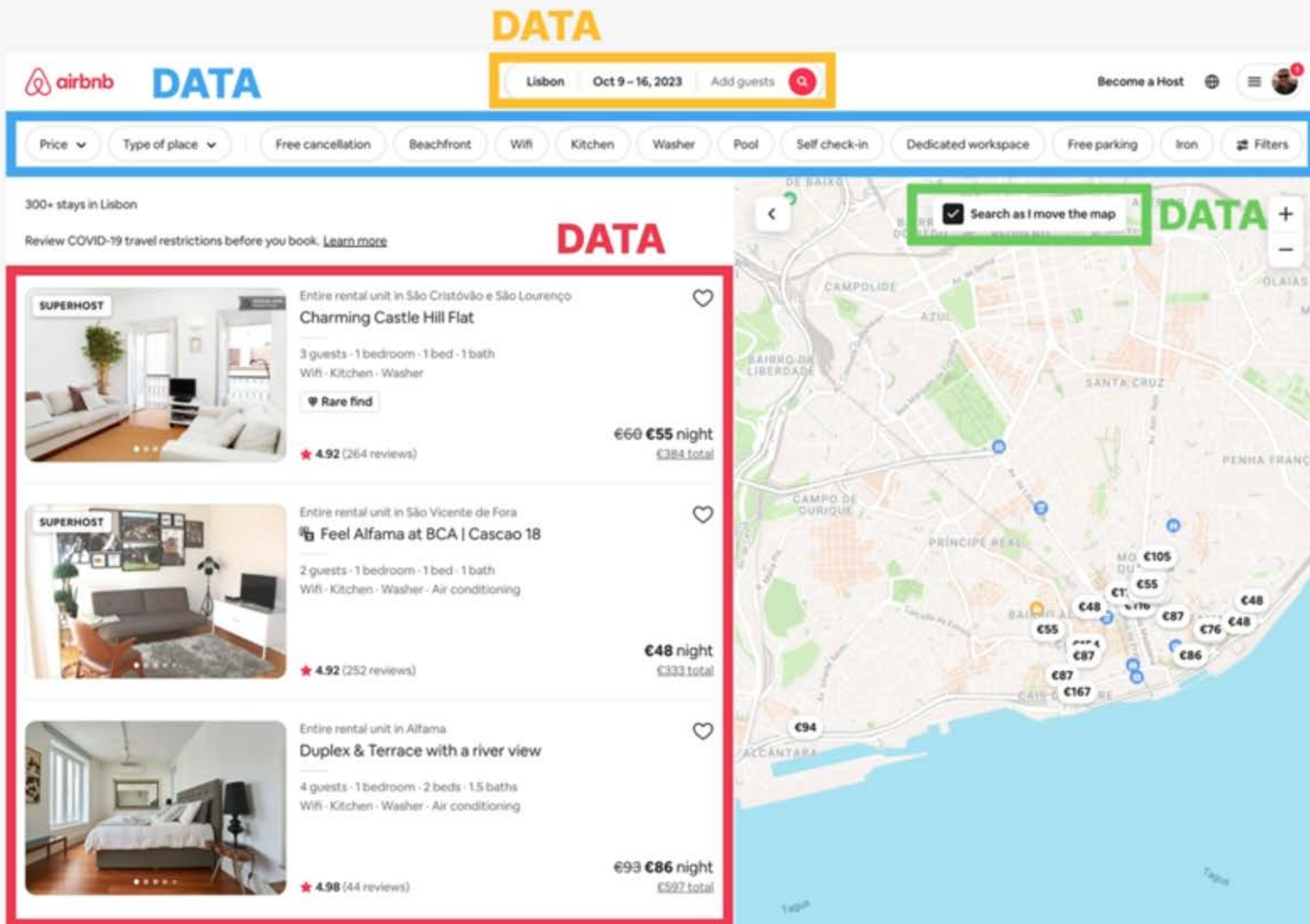


-05:34



-05:34/10:27

## KEEPING UI IN SYNC WITH DATA

[illegible]



## KEEPING UI IN SYNC WITH DATA

**DATA**

airbnb **DATA**

Lisbon Oct 9 - 16, 2023 Add guests

Become a Host

Price Type of place Free cancellation Beachfront Wifi Kitchen Washer Pool Self check-in Dedicated workspace Free parking Iron Filters

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)

**DATA**

**SUPERHOST**

Entire rental unit in São Cristóvão e São Lourenço

**Charming Castle Hill Flat**

3 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer

**Rare find**

★ 4.92 (264 reviews)

€60 **€55 night**  
€384 total

**SUPERHOST**

Entire rental unit in São Vicente de Fora

**Feel Alfama at BCA | Cascao 18**

2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

★ 4.92 (252 reviews)

€48 night  
€333 total

**SUPERHOST**

Entire rental unit in Alfama

**Duplex & Terrace with a river view**

4 guests · 1 bedroom · 2 beds · 1.5 baths

Wifi · Kitchen · Washer · Air conditioning

★ 4.98 (44 reviews)

€93 **€86 night**  
€592 total

**DATA**

Search as I move the map

Map showing various neighborhoods in Lisbon and price markers (e.g., €105, €55, €48, €87, €76, €48, €86, €167, €94, €105).

[illegible]



## KEEPING UI IN SYNC WITH DATA

The screenshot displays the Airbnb search results for Lisbon. The search bar at the top shows 'Lisbon' and dates 'Oct 9 - 16, 2023'. A hand cursor points to the search bar. Below the search bar are filters like 'Price', 'Type of place', 'Free cancellation', etc. The main content area shows three rental listings with photos, descriptions, and prices. A map on the right shows the location of the listings in Lisbon. Annotations include 'DATA' in red and green, and arrows pointing to the search bar and the map.

**DATA**

airbnb **DATA**

Lisbon Oct 9 - 16, 2023 Add guests

Become a Host

Price Type of place Free cancellation Beachfront Wifi Kitchen Washer Pool Self check-in Dedicated workspace Free parking Iron Filters

300+ stays in Lisbon

Review COVID-19 travel restrictions before you book. [Learn more](#)

**DATA**

**SUPERHOST**

Entire rental unit in São Cristóvão e São Lourenço

**Charming Castle Hill Flat**

3 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer

**Rare find**

★ 4.92 (264 reviews)

€60 **€55 night**  
€384 total

**SUPERHOST**

Entire rental unit in São Vicente de Fora

**Feel Alfama at BCA | Cascao 18**

2 guests · 1 bedroom · 1 bed · 1 bath

Wifi · Kitchen · Washer · Air conditioning

★ 4.92 (252 reviews)

€48 night  
€333 total

Entire rental unit in Alfama

**Duplex & Terrace with a river view**

4 guests · 1 bedroom · 2 beds · 1.5 baths

Wifi · Kitchen · Washer · Air conditioning

★ 4.98 (44 reviews)

€93 **€86 night**  
€592 total

**DATA**

Search as I move the map

Map showing location of listings in Lisbon.

[illegible]

## KEEPING UI IN SYNC WITH DATA

The screenshot displays the Airbnb search interface for Lisbon. At the top, the search bar shows 'Lisbon' and dates 'Oct 9 - 16, 2023'. Below the search bar, various filters are available, including 'Price', 'Type of place', 'Free cancellation', 'Beachfront', 'Wifi', 'Kitchen', 'Washer', 'Pool', 'Self check-in', 'Dedicated workspace', 'Free parking', 'Iron', and 'Filters'. On the right, there are links for 'Become a Host' and a user profile icon.

On the left side, there are three property listings, each with a 'SUPERHOST' badge:

- Charming Castle Hill Flat**: Entire rental unit in São Cristóvão e São Lourenço. 3 guests · 1 bedroom · 1 bed · 1 bath. Wifi · Kitchen · Washer. **€60 €55 night** (€384 total). 4.92 (264 reviews).
- Feel Alfama at BCA | Cascao 18**: Entire rental unit in São Vicente de Fora. 2 guests · 1 bedroom · 1 bed · 1 bath. Wifi · Kitchen · Washer · Air conditioning. **€48 night** (€333 total). 4.92 (252 reviews).
- Duplex & Terrace with a river view**: Entire rental unit in Alfama. 4 guests · 1 bedroom · 2 beds · 1.5 baths. Wifi · Kitchen · Washer · Air conditioning. **€93 €86 night** (€592 total). 4.98 (44 reviews).

On the right side, a map of Lisbon is shown. A green box highlights a checkbox labeled 'Search as I move the map'. A hand cursor is shown clicking on this checkbox. Green arrows point from the search bar area to the map, and a green question mark is placed on the map. The map shows various neighborhoods and price markers (e.g., €105, €55, €48, €87, €76, €48, €86, €167, €94, €99).

[illegible]



## KEEPING UI IN SYNC WITH DATA

The screenshot displays the Airbnb search results page for Lisbon, Portugal, for the dates Oct 9 - 16, 2023. The page is annotated with red and green boxes and arrows to highlight specific data points for analysis.

**Red Annotations (Left Side):**

- Search Bar:** A red box highlights the search bar containing "Lisbon" and the dates "Oct 9 - 16, 2023". A red arrow points from this box to the "DATA" label.
- Filters:** A red box highlights the filter bar at the top, including options like "Price", "Type of place", "Free cancellation", "Eachfront", "Wifi", "Kitchen", "Washer", "Pool", "Self check-in", "Dedicated workspace", "Free parking", "Iron", and "Filters".
- Property Listings:** A red box highlights the first three property listings on the left side of the page. Each listing includes a thumbnail image, a title, location, amenities, a "Rare find" badge, a rating (4.92), and a price per night.

**Green Annotations (Right Side):**

- Map:** A green box highlights the map on the right side of the page. A green arrow points from the search bar to the map, indicating the location of the search results. Another green arrow points from the "Rare find" badge in the first listing to the map, indicating the location of the property.
- Map Controls:** A green box highlights the map controls, including the "Search as I move the map" checkbox and the "DATA" label.

**Property Listings (Left Side):**

Property Name	Location	Amenities	Rating	Price per Night	Total Price
Charming Castle Hill Flat	Entire rental unit in São Cristóvão e São Lourenço	3 guests · 1 bedroom · 1 bed · 1 bath Wifi · Kitchen · Washer	4.92 (264 reviews)	€55 night	€384 total
Feel Alfama at BCA   Cascao 18	Entire rental unit in São Vicente de Fora	2 guests · 1 bedroom · 1 bed · 1 bath Wifi · Kitchen · Washer · Air conditioning	4.92 (252 reviews)	€48 night	€333 total
Duplex & Terrace with a river view	Entire rental unit in Alfama	4 guests · 1 bedroom · 2 beds · 1.5 baths Wifi · Kitchen · Washer · Air conditioning	4.98 (44 reviews)	€86 night	€597 total

**Piece of data  
=  
Piece of *state***

[illegible]

## KEEPING UI IN SYNC WITH DATA

The screenshot displays the Airbnb search results page for Lisbon, Portugal, for the dates Oct 9 - 16, 2023. The search bar at the top is highlighted with a yellow box, and a hand icon points to the search button. Below the search bar, a row of filters is visible, including Price, Type of place, Free cancellation, Eachfront, Wifi, Kitchen, Washer, Pool, Self check-in, Dedicated workspace, Free parking, Iron, and Filters. A yellow arrow points from the search bar to the first listing.

The first listing is a "Charming Castle Hill Flat" in São Cristóvão e São Lourenço, featuring 3 guests, 1 bedroom, 1 bed, 1 bath, and amenities like Wifi, Kitchen, and Washer. It has a 4.92 rating (264 reviews) and is priced at €60 per night (€55 total). A hand icon points to the "Search as I move the map" checkbox on the map.

The second listing is a "Feel Alfama at BCA | Cascao 18" in São Vicente de Fora, featuring 2 guests, 1 bedroom, 1 bed, 1 bath, and amenities like Wifi, Kitchen, Washer, and Air conditioning. It has a 4.92 rating (252 reviews) and is priced at €48 per night (€333 total). A hand icon points to the map.

The third listing is a "Duplex & Terrace with a river view" in Alfama, featuring 4 guests, 1 bedroom, 2 beds, 1.5 baths, and amenities like Wifi, Kitchen, Washer, and Air conditioning. It has a 4.98 rating (44 reviews) and is priced at €93 per night (€86 total). A hand icon points to the map.

The map on the right shows the location of the listings in Lisbon, with a green box highlighting the "Search as I move the map" checkbox and a hand icon pointing to it. Green arrows indicate the movement of the map and the location of the listings. The word "DATA" is written in large green letters on the map.

👉 Keeping UI  
and data in sync  
would be **virtually  
impossible with  
just vanilla  
JavaScript**

**Piece of data**  
=  
**Piece of state**

[illegible]



# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 *Front-end web applications are all about...*

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



PROBLEMS WITH





# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and  
**traversing** (*imperative*) 👉 "Spaghetti code" 🍝

# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



## PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and **traversing** (*imperative*) 👉 "Spaghetti code" 🍝

```
const guestsEl = document.querySelector('.guests');
const guestsPickerEl = document.querySelector('.picker');

guestsEl.addEventListener('click', function () {
  guestsEl.classList.toggle('inactive');
  guestsEl.classList.toggle('active');

  if (guestsPickerEl.style.display === 'block') {
    guestsPickerEl.style.display = 'none';
    guestsEl.firstChild.textContent = 'Add guests';
  } else {
    guestsPickerEl.style.display = 'block';
    guestsEl.firstChild.textContent = '';
  }
});
```

# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



## PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and **traversing** (*imperative*) 👉 "Spaghetti code" 🍝

```
const guestsEl = document.querySelector('.guests');
const guestsPickerEl = document.querySelector('.picker');

guestsEl.addEventListener('click', function () {
  guestsEl.classList.toggle('inactive');
  guestsEl.classList.toggle('active');

  if (guestsPickerEl.style.display === 'block') {
    guestsPickerEl.style.display = 'none';
    guestsEl.firstChild.textContent = 'Add guests';
  } else {
    guestsPickerEl.style.display = 'block';
    guestsEl.firstChild.textContent = '';
  }
});
```



# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



## PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and **traversing** (*imperative*) 👉 "Spaghetti code" 🍝

```
const guestsEl = document.querySelector('.guests');
const guestsPickerEl = document.querySelector('.picker');

guestsEl.addEventListener('click', function () {
  guestsEl.classList.toggle('inactive');
  guestsEl.classList.toggle('active');

  if (guestsPickerEl.style.display === 'block') {
    guestsPickerEl.style.display = 'none';
    guestsEl.firstChild.textContent = 'Add guests';
  } else {
    guestsPickerEl.style.display = 'block';
    guestsEl.firstChild.textContent = '';
  }
});
```

# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



## PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and **traversing** (*imperative*) 👉 "Spaghetti code" 🍝

```
const guestsEl = document.querySelector('.guests');
const guestsPickerEl = document.querySelector('.picker');

guestsEl.addEventListener('click', function () {
  guestsEl.classList.toggle('inactive');
  guestsEl.classList.toggle('active');

  if (guestsPickerEl.style.display === 'block') {
    guestsPickerEl.style.display = 'none';
    guestsEl.firstChild.textContent = 'Add guests';
  } else {
    guestsPickerEl.style.display = 'block';
    guestsEl.firstChild.textContent = '';
  }
});
```



# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



## PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and **traversing** (*imperative*) 👉 "Spaghetti code" 🍝

```
const guestsEl = document.querySelector('.guests');
const guestsPickerEl = document.querySelector('.picker');

guestsEl.addEventListener('click', function () {
  guestsEl.classList.toggle('inactive');
  guestsEl.classList.toggle('active');

  if (guestsPickerEl.style.display === 'block') {
    guestsPickerEl.style.display = 'none';
    guestsEl.firstChild.textContent = 'Add guests';
  } else {
    guestsPickerEl.style.display = 'block';
    guestsEl.firstChild.textContent = '';
  }
});
```



# SINGLE-PAGE APPLICATIONS WITH VANILLA JAVASCRIPT?

👉 Front-end web applications are all about...

**Handling data + displaying**  
data in a user interface



User interface needs to  
**stay in sync** with data



**Very hard problem to solve!**



## PROBLEMS WITH



1

Requires lots of direct **DOM manipulation** and **traversing** (*imperative*) 👉 "Spaghetti code" 🐛

```
const guestsEl = document.querySelector('.guests');
const guestsPickerEl = document.querySelector('.picker');

guestsEl.addEventListener('click', function () {
  guestsEl.classList.toggle('inactive');
  guestsEl.classList.toggle('active');

  if (guestsPickerEl.style.display === 'block') {
    guestsPickerEl.style.display = 'none';
    guestsEl.firstChild.textContent = 'Add guests';
  } else {
    guestsPickerEl.style.display = 'block';
    guestsEl.firstChild.textContent = '';
  }
});
```

2

Data (state) is usually **stored in the DOM**, shared across entire app 👉 Hard to reason + bugs 🐛

# WHY DO FRONT-END FRAMEWORKS **EXIST**?

# WHY DO FRONT-END FRAMEWORKS EXIST?

1

JavaScript front-end frameworks exist because...

**KEEPING A USER INTERFACE IN SYNC WITH DATA  
IS REALLY HARD AND A LOT OF WORK**

Front-end frameworks **solve this problem** and take hard work away from developers 🐛



# WHY DO FRONT-END FRAMEWORKS EXIST?

1

JavaScript front-end frameworks exist because...

KEEPING A USER INTERFACE IN SYNC WITH DATA  
IS REALLY HARD AND A LOT OF WORK

Front-end frameworks **solve this problem** and take hard work away from developers 🎉

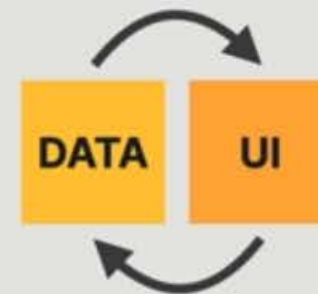


# WHY DO FRONT-END FRAMEWORKS EXIST?

1

JavaScript front-end frameworks exist because...

KEEPING A USER INTERFACE IN SYNC WITH DATA  
IS REALLY HARD AND A LOT OF WORK



Front-end frameworks **solve this problem** and take hard work away from developers 🥳



# WHY DO FRONT-END FRAMEWORKS EXIST?

1

JavaScript front-end frameworks exist because...

KEEPING A USER INTERFACE IN SYNC WITH DATA  
IS REALLY HARD AND A LOT OF WORK



Front-end frameworks **solve this problem** and take hard work away from developers 🐣



Different approaches, same goal

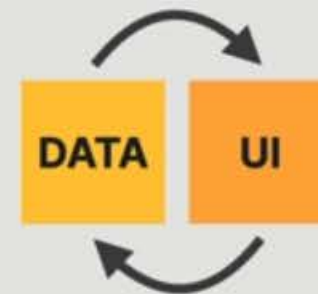


# WHY DO FRONT-END FRAMEWORKS EXIST?

1

JavaScript front-end frameworks exist because...

KEEPING A USER INTERFACE IN SYNC WITH DATA  
IS REALLY HARD AND A LOT OF WORK



Front-end frameworks **solve this problem** and take hard work away from developers 🎉



Different approaches, same goal

2

They enforce a “**correct**” way of structuring and writing code (therefore contributing to solving the problem of “spaghetti code” 🍝)

# WHY DO FRONT-END FRAMEWORKS EXIST?

1

JavaScript front-end frameworks exist because...

KEEPING A USER INTERFACE IN SYNC WITH DATA  
IS REALLY HARD AND A LOT OF WORK



Front-end frameworks **solve this problem** and take hard work away from developers 🎉



Different approaches, same goal

2

They enforce a “**correct**” way of structuring and writing code (therefore contributing to solving the problem of “spaghetti code” 🍝)

3

They give developers and teams a **consistent** way of building front-end applications