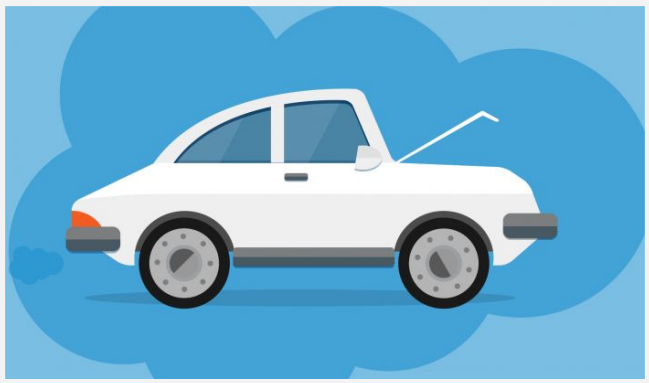


ITER IDEA's cloud solutions

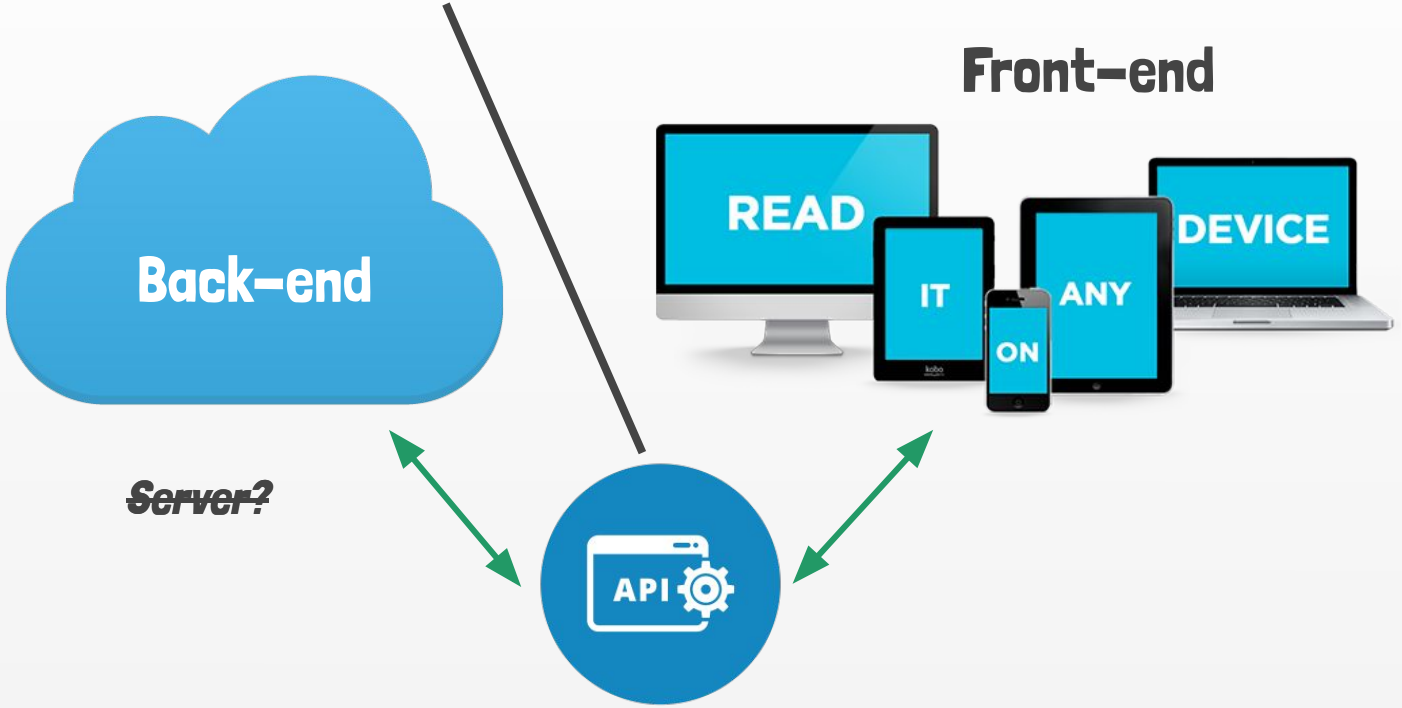
What's under the hood – Overview

In ITER IDEA,

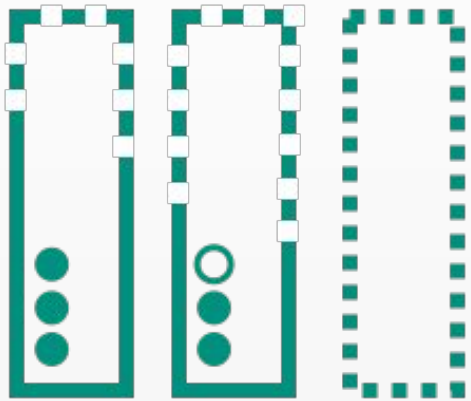
we support companies and organizations developing business **in the cloud**, through applications and serverless solutions: innovative, cost-effective and usable from any device (iOS, Android, Web).

Architecture, high-level

Architecture: independent **back-end** and **front-end**



Buzzword: serverless cloud



Back-end

amazon web services™

Gartner®

Magic Quadrant for Cloud Infrastructure and Platform Services 2022

- Analytics
- Application Integration
- AR & VR
- AWS Cost Management
- Blockchain
- Business Applications
- Compute
- Containers
- Customer Enablement
- Database
- Developer Tools
- End User Computing
- Front-end Web & Mobile
- Game Development
- Internet of Things
- Machine Learning
- Management & Governance
- Media Services
- Migration & Transfer
- Networking & Content Delivery
- Quantum Technologies
- Robotics
- Satellite
- Security, Identity, & Compliance
- Storage

(Some of the) **Amazon Web Services**;

*preferred ones: **managed**, **serverless***

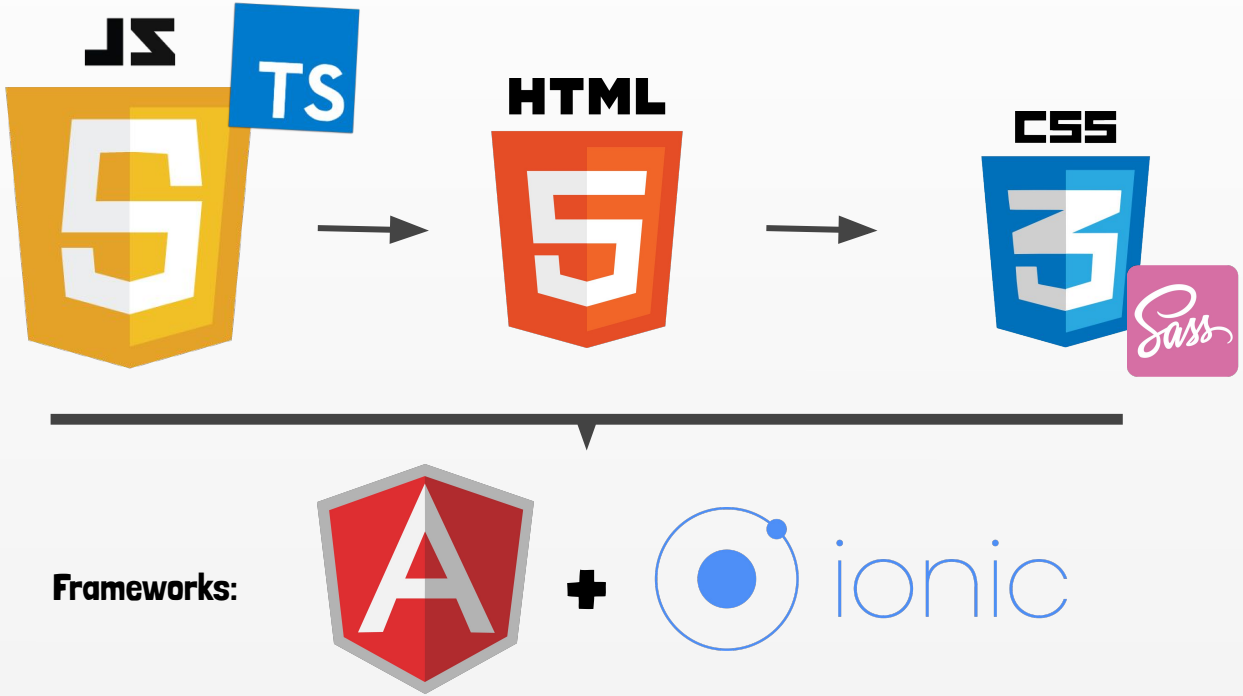
AWS Global Infrastructure Map

The AWS Cloud spans 99 Availability Zones within 31 geographic regions around the world, with announced plans for 12 more Availability Zones and 4 more AWS Regions in Canada, Israel, New Zealand, and Thailand.

ITER IDEA

Languages and frameworks

Business logic, structure and presentation:
the languages involved in the **front-end**



Structure, presentation and logic: an example (1/2)

ITER IDEA

HTML

```
<input type="email" name="email" placeholder="Email">
<input type="password" name="pwd" placeholder="Password">
<button onclick="doLogin(email, pwd)">Login</button>
```

CSS

```
body {
  text-align: center;
  margin-top: 50px;
}
input {
  padding: 10px;
}
button {
  padding: 12px;
  background-color: #555;
  color: white;
  border: none;
}
```

JS

```
function doLogin(email, pwd) {
  // ...
}
```

Actual sign-in

Structure, presentation and logic: an example (2/2)

```
<ul>
  <li>Lunedì</li>
  <li>Martedì</li>
  <li>Mercoledì</li>
  <li>Giovedì</li>
  <li>Venerdì</li>
  <li>Sabato</li>
  <li>Domenica</li>
</ul>
```

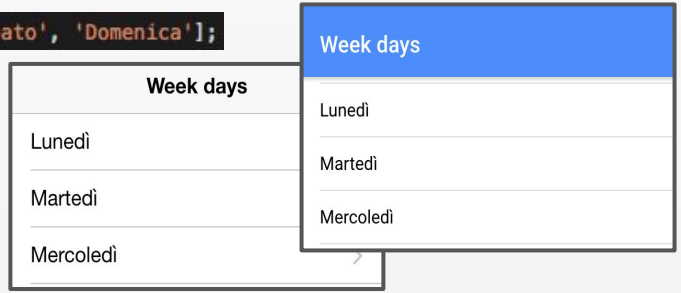
- Lunedì
- Martedì
- Mercoledì
- Giovedì
- Venerdì
- Sabato
- Domenica

```
let weekDays = ['Lunedì', 'Martedì', 'Mercoledì', 'Giovedì', 'Venerdì', 'Sabato', 'Domenica'];
```

```
<ul>
  <li *ngFor="let day of weekDays">{{ day }}</li>
</ul>
```

```
let weekDays = ['Lunedì', 'Martedì', 'Mercoledì', 'Giovedì', 'Venerdì', 'Sabato', 'Domenica'];
```

```
<ion-list>
  <ion-item *ngFor="let day of weekDays">{{ day }}</ion-item>
</ion-list>
```



Back-end languages & frameworks

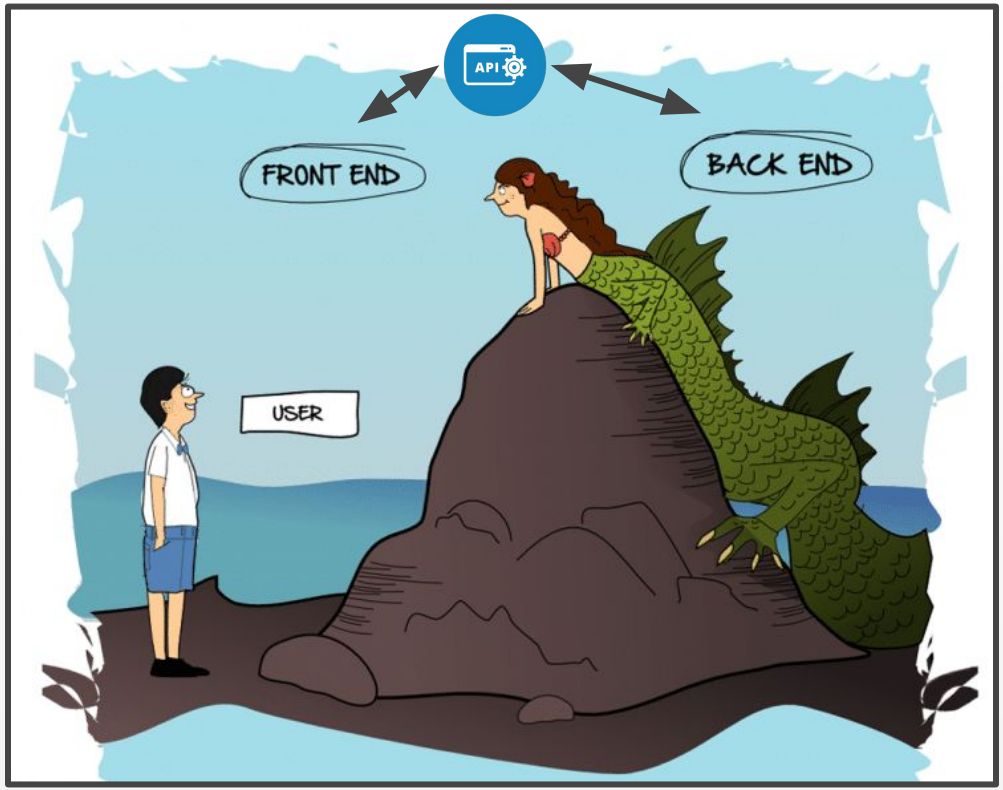
... **in the back-end too**,
thanks to the framework...

Architecture, in practice

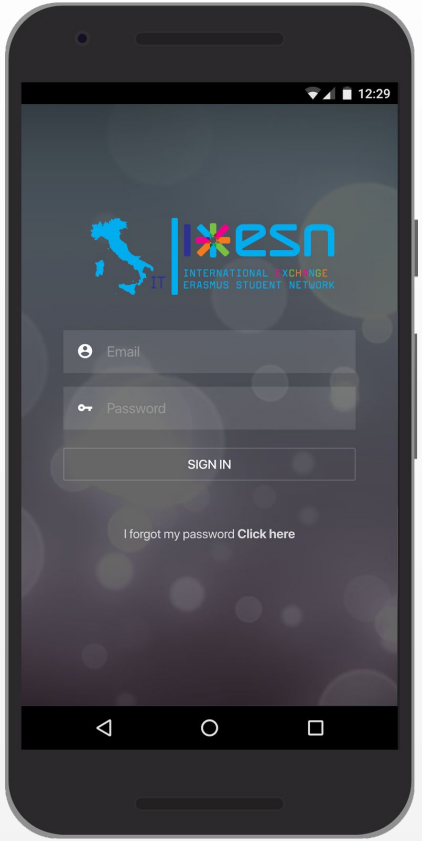
(... in the next presentation)

Architecture, in practice

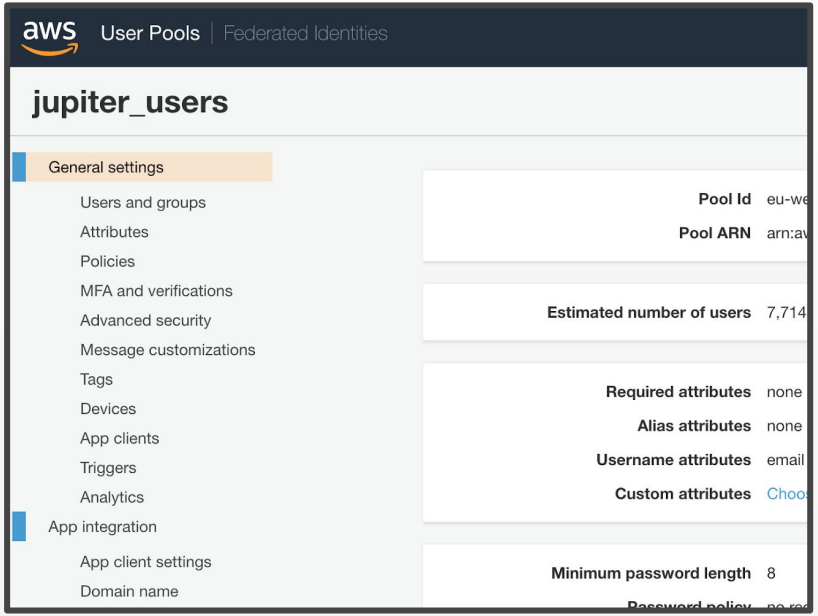
Front-end, back-end & API: end-user perspective



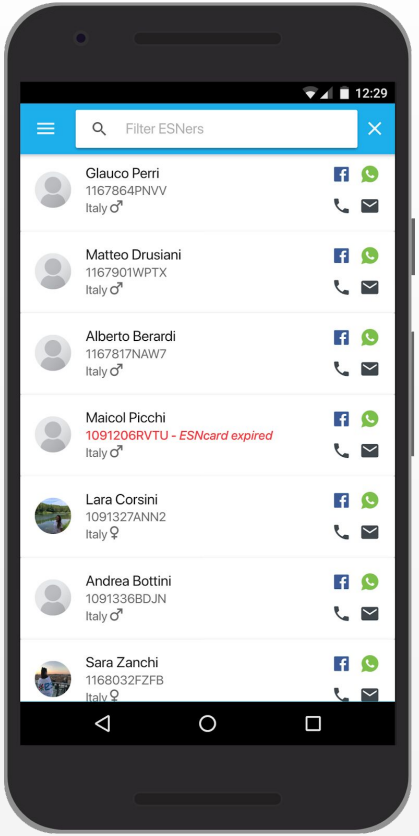
Authentication. Sign–in, forgot password, etc.



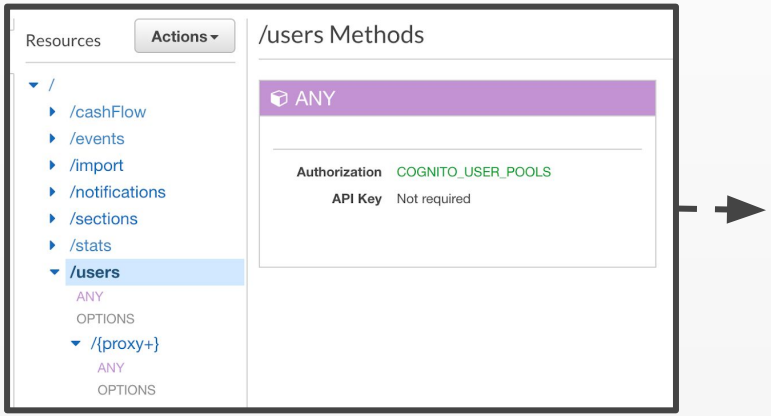
AWS Cognito:
authentication



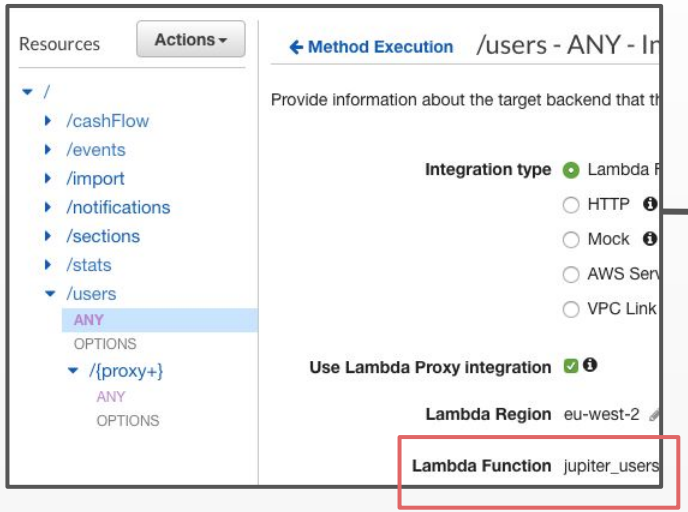
Get users list. API request and data retrieval (1/3)



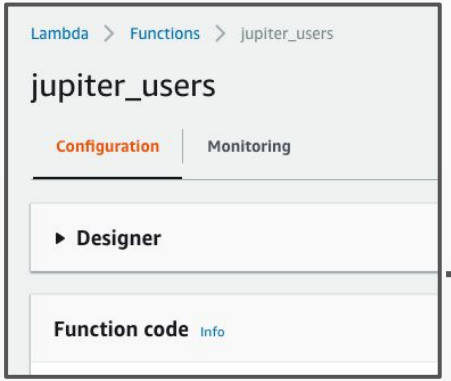
AWS API Gateway:
API management, resources and methods



Get users list. API request and data retrieval (2/3)



AWS Lambda function:
Request execution



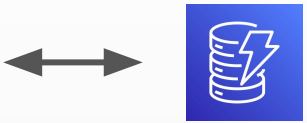
Method	Meaning
GET	Read data
POST	Insert data
PUT or PATCH	Update data, or insert if a new id
DELETE	Delete data

Following **REST logic**, there is a Lambda Function for each accessible resource

Get users list. API request and data retrieval (3/3)

```
async getResources(): Promise<User[]> {
  if (!this.requestingUser.permissions.canGetUsers) throw new Error('Unauthorized');

  return await this.dynamoDB.query({
    TableName: this.tables.users,
    KeyConditionExpression: 'sectionId = :sectionId',
    ExpressionAttributeValues: {':sectionId': this.requestingUser.sectionId }
  });
}
```

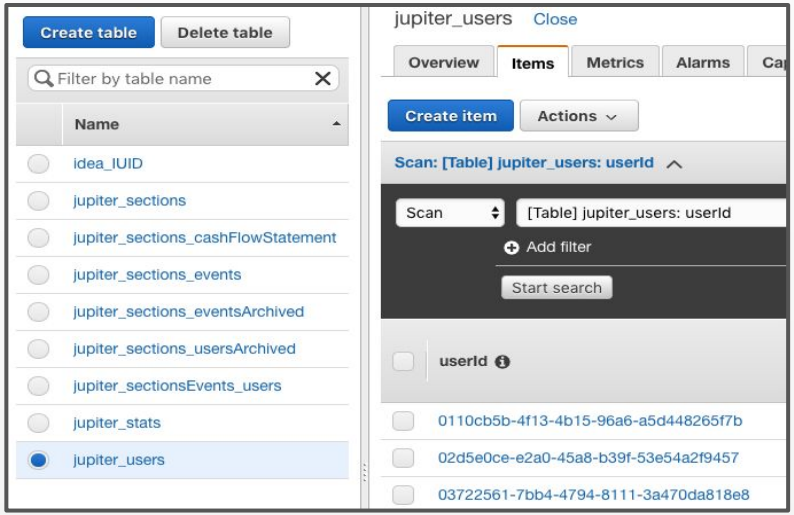


AWS DynamoDB:
Database (NoSQL)

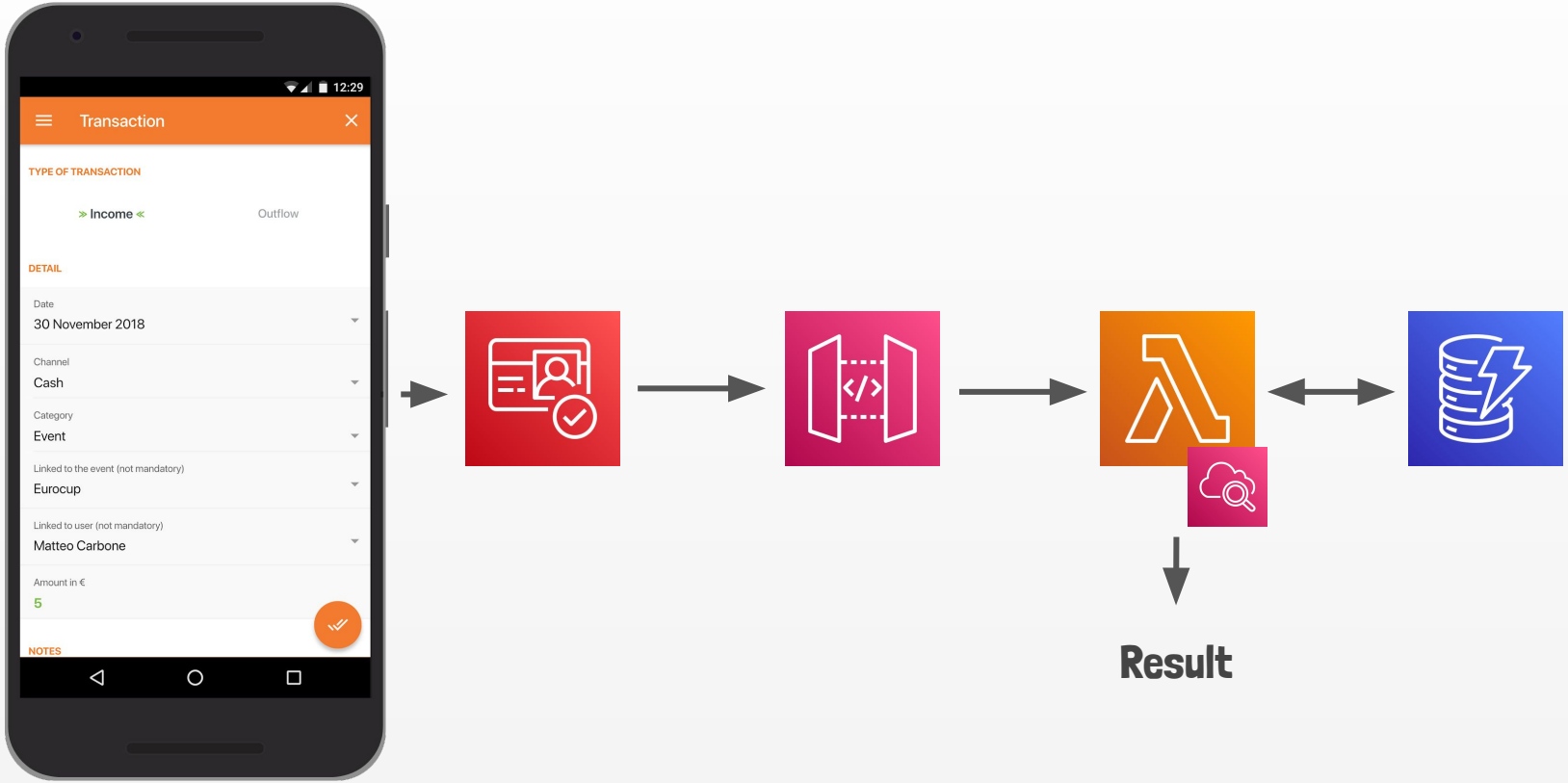
Results sent to the front-end

AWS CloudWatch:
Execution control

13:49:27	START RequestId: c11509c9-f4a6-11e8-807e-6d08083268c8 Version: 38
13:49:27	2018-11-30T13:49:27.600Z c11509c9-f4a6-11e8-807e-6d08083268c8 [START] { resource: '/users', path: '/
13:49:27	2018-11-30T13:49:27.623Z c11509c9-f4a6-11e8-807e-6d08083268c8 ..... GET jupiter_users » { Item: { do
13:49:27	2018-11-30T13:49:27.626Z c11509c9-f4a6-11e8-807e-6d08083268c8 [REQUEST] GET
13:49:28	2018-11-30T13:49:28.154Z c11509c9-f4a6-11e8-807e-6d08083268c8 ..... QUERY jupiter_users » 257
13:49:28	2018-11-30T13:49:28.154Z c11509c9-f4a6-11e8-807e-6d08083268c8 [DONE] [{ domicile: { city: null, coun
13:49:28	END RequestId: c11509c9-f4a6-11e8-807e-6d08083268c8



Post new financial transaction. Another example



Other useful services

AWS S3:
File storage

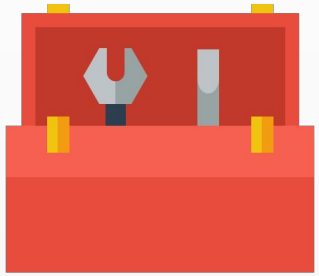
AWS IAM:
Permissions to access resources

AWS SES:
Send emails

*...and much **more**!*

IDEA's extra modules

idea-aws

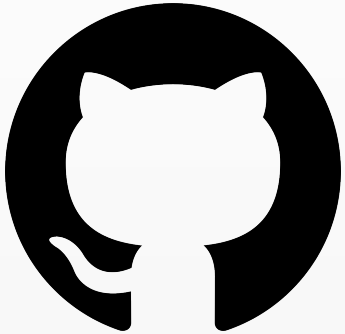


idea-toolbox

IDEA-Ionic-Extra

Our tools

Slack
Communication

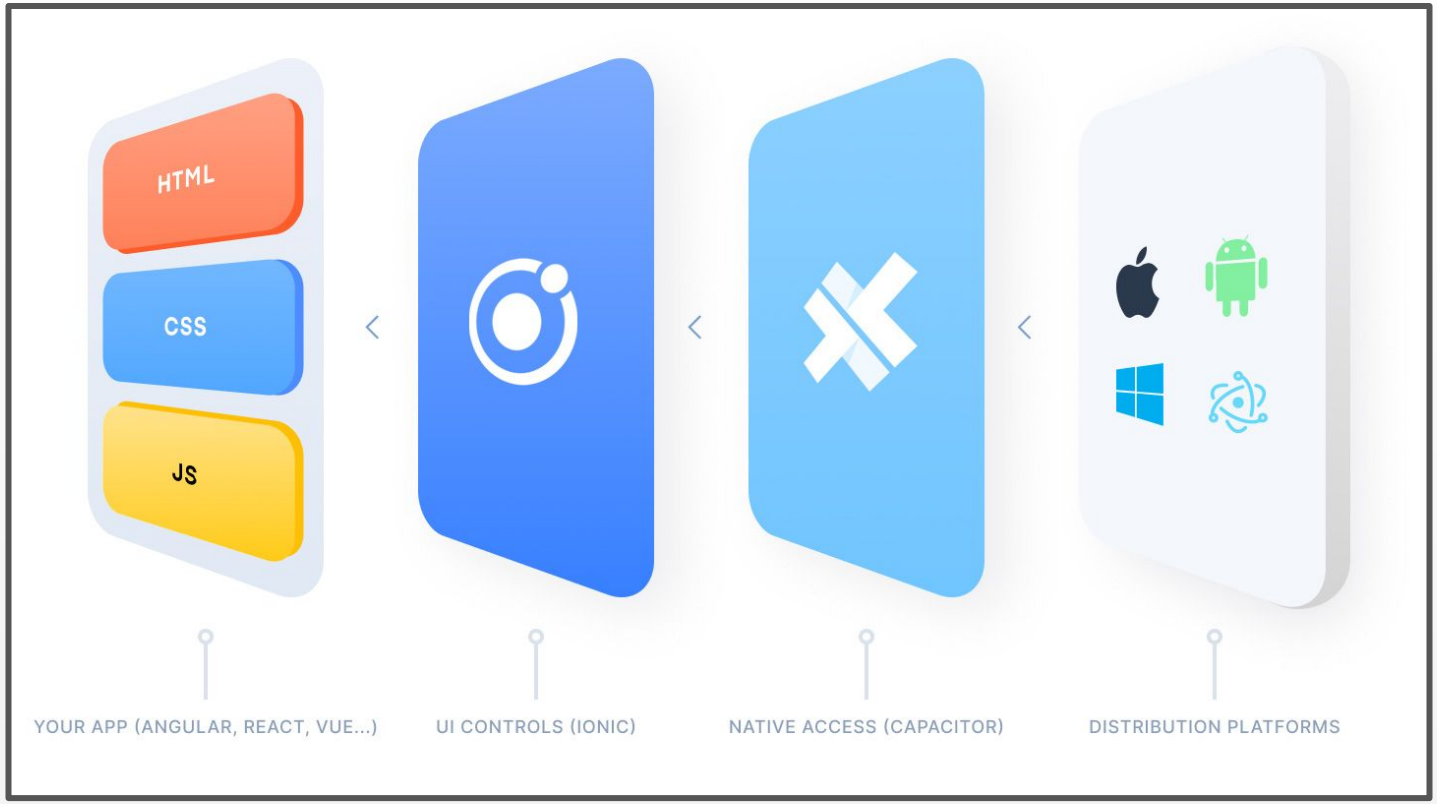


GitHub
Code repository

Visual Studio Code
IDE

From web to mobile stores

From web to mobile stores



tldr;

The **recipe**
for our cloud solutions

- Process: **IDEA –> product**
- **Front-end**, **back-end** (& API)
- **Cloud architecture** (**serverless**) on Amazon Web Services – *next presentation*
- **Languages** and **frameworks**
- **App** on mobile stores

ITER-IDEA.com/blog