WEB DAY 2021

04 MARZO • ONLINE CONFERENCE

A TALE OF FINANCE AND GRAPHQL

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Credimi

- Italian startup based in Milan born in 2016
- Leader digital lender in continental Europe
- 1.5B € loans

Highlights

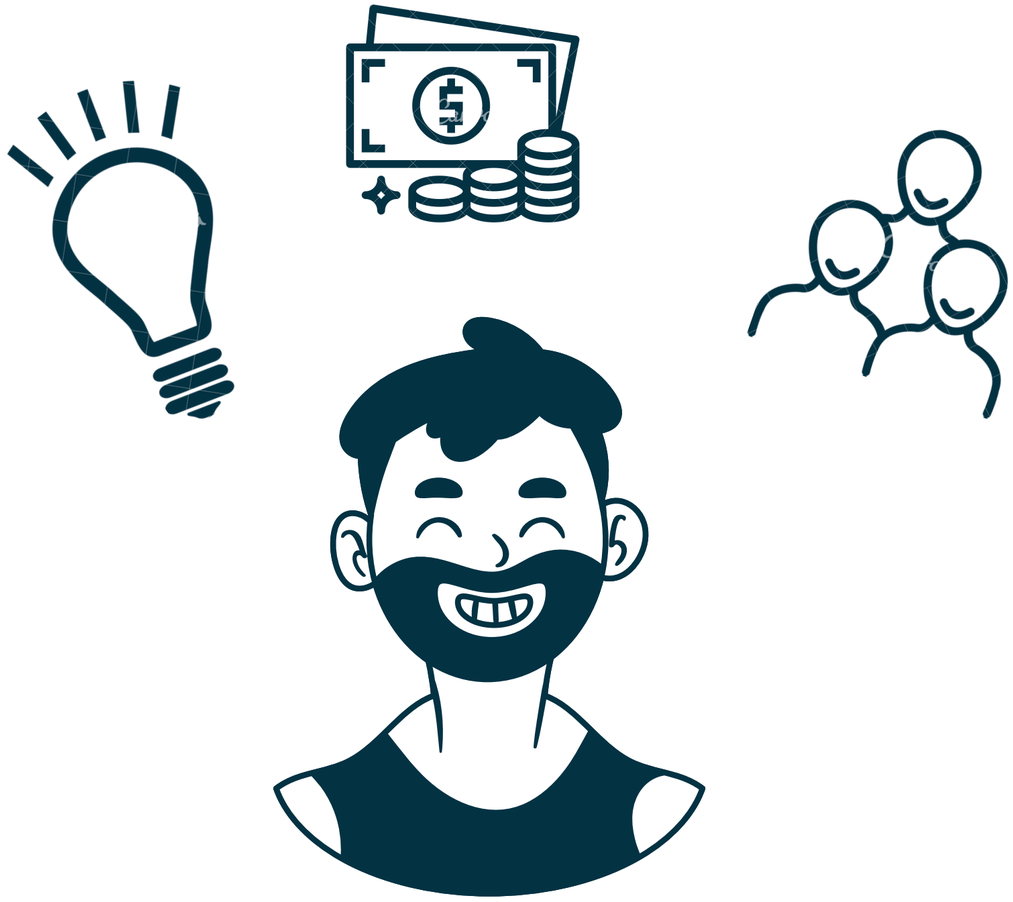
Time to market for new features decreases

Developers focus on delivering business value

What we got wrong

What we want to improve

Once upon a time...



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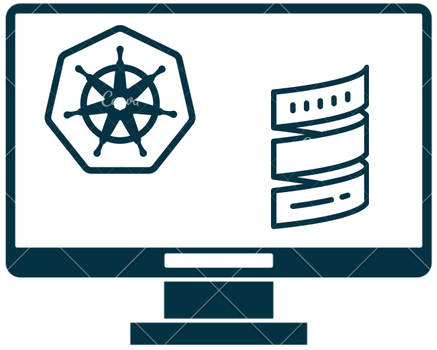

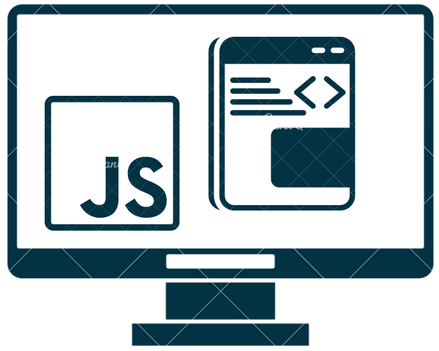

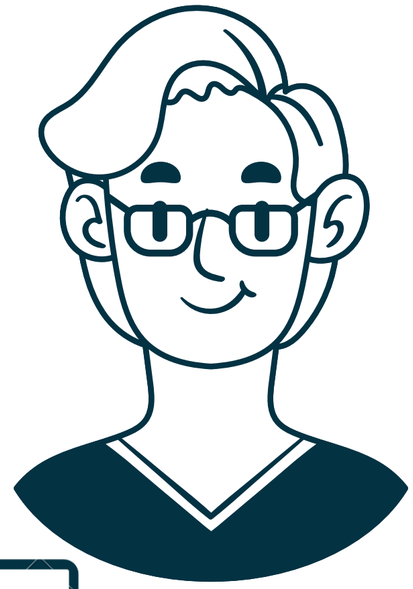

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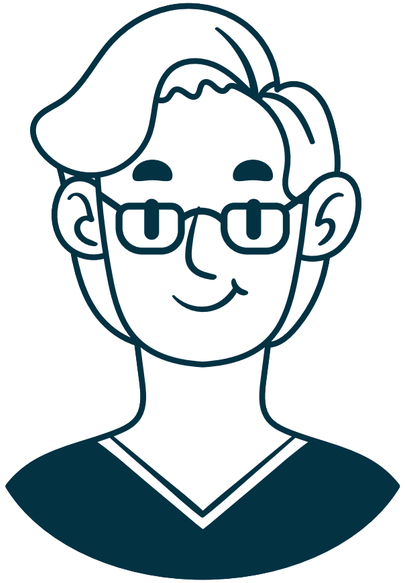

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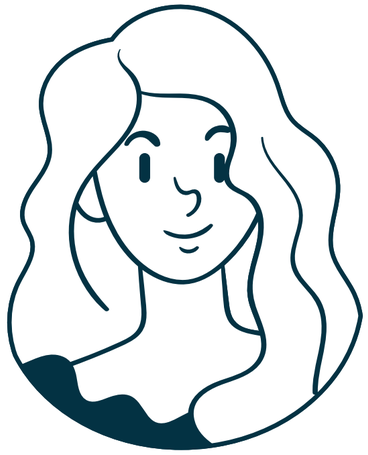


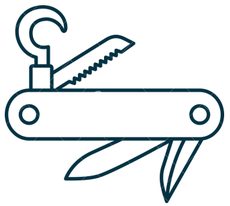
Should we run away as far as possible?

Definitively

Developers Needs

Go fast

Quick release cycles to bring features to our customers

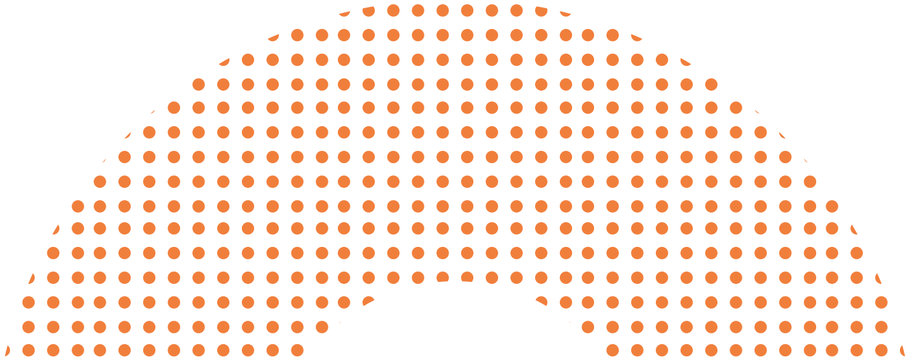


Versatility

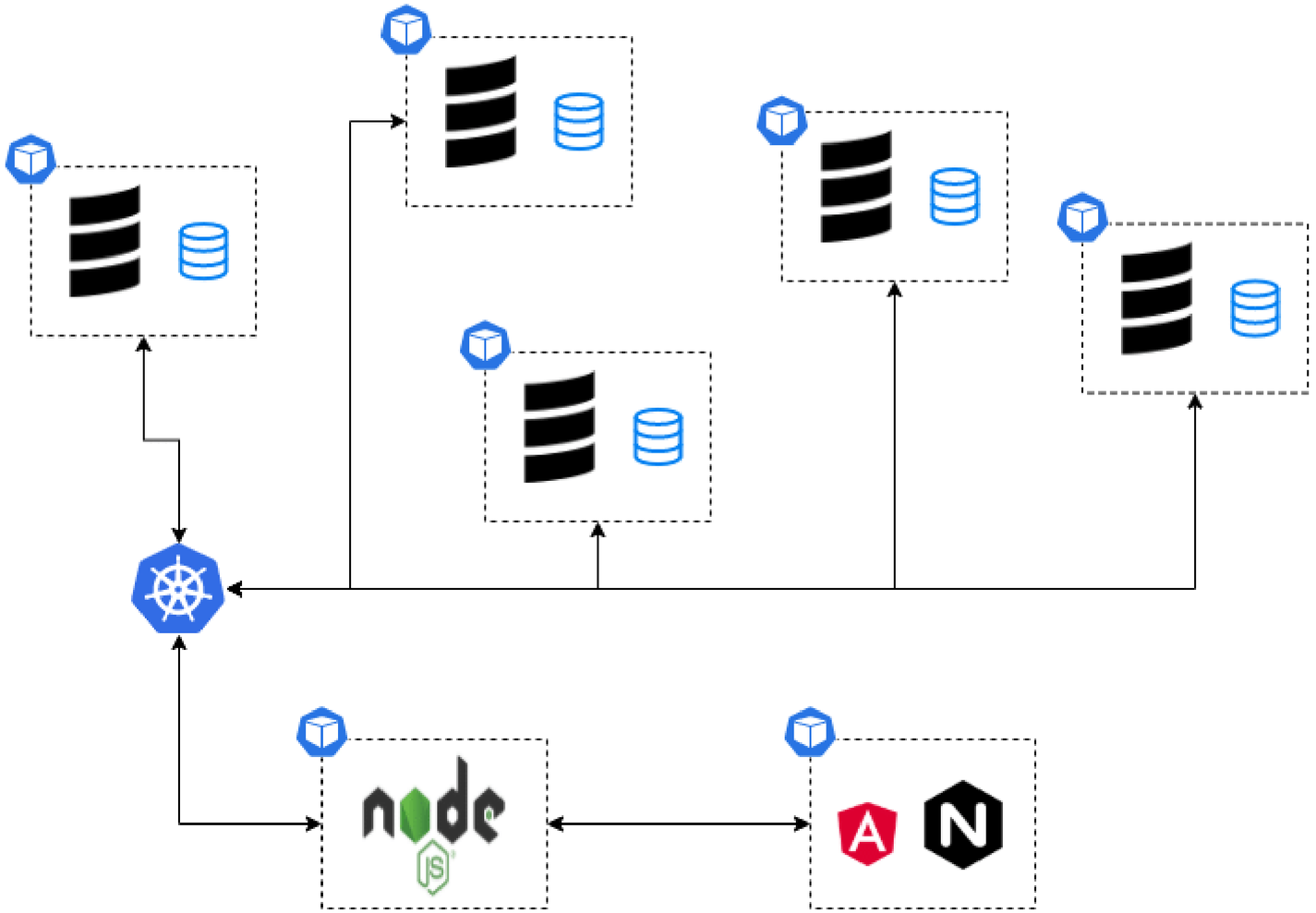
Bringing a new feature live should be easy

Focus on value

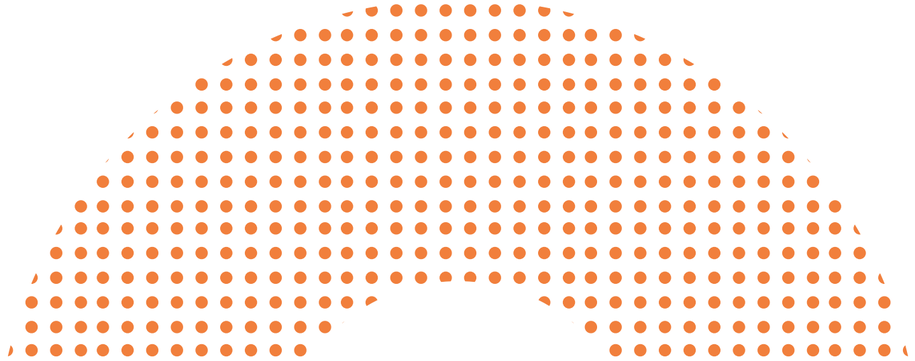
Developers should focus on core features, not boilerplate



Credimi 1.0



Problems with Credimi 1.0



Boilerplate

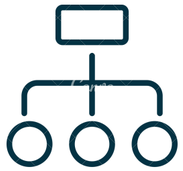
At API and Nginx layer

Authorization

Field level authorization not easy to achieve

Heavy APIs

Representation of some resources required heavy computations on the backend



No schema

No easy way for frontend and backend to share schema

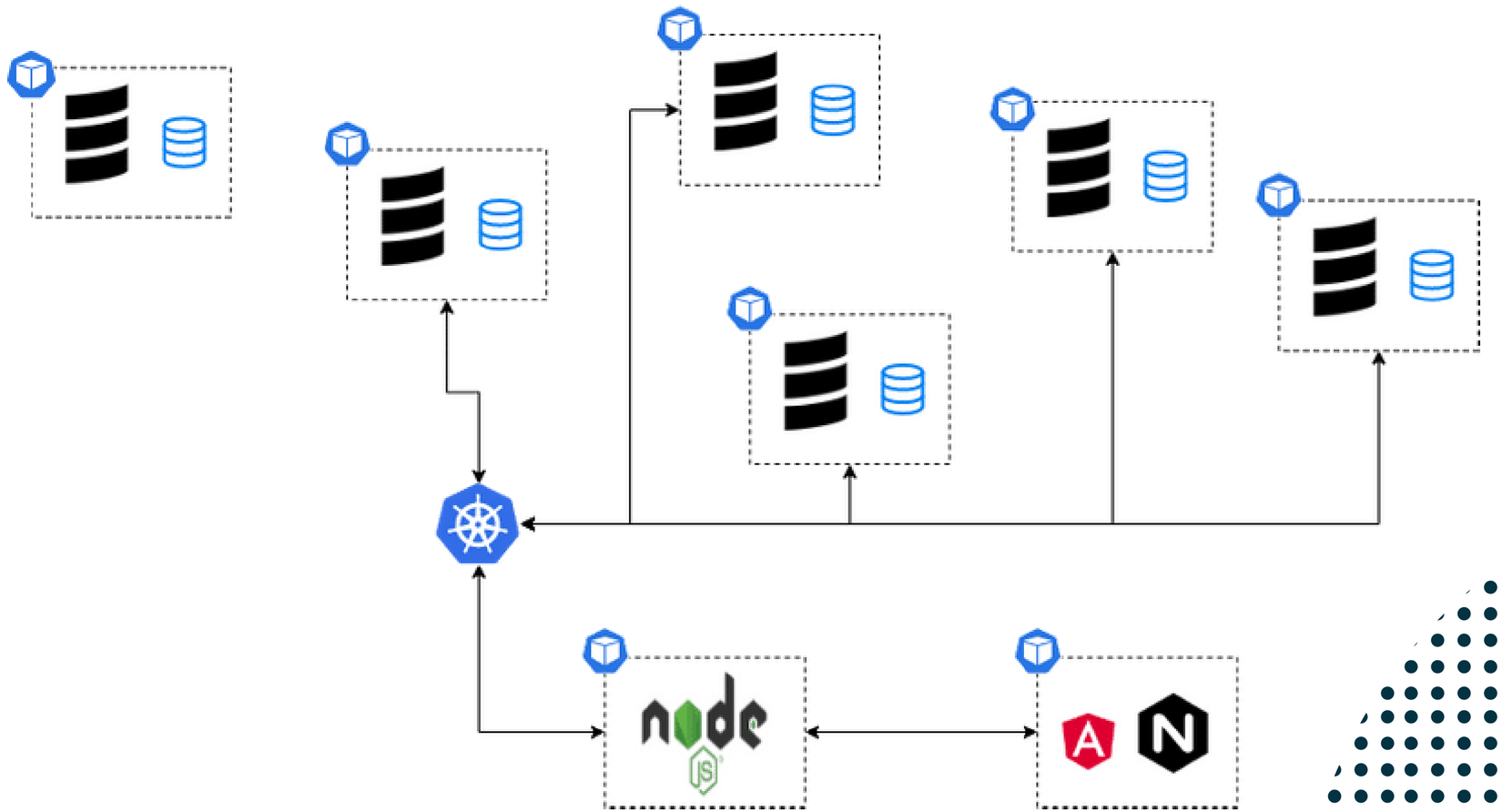
Frontend stack maintainability

Suffers of a low developer experience and so maintainability

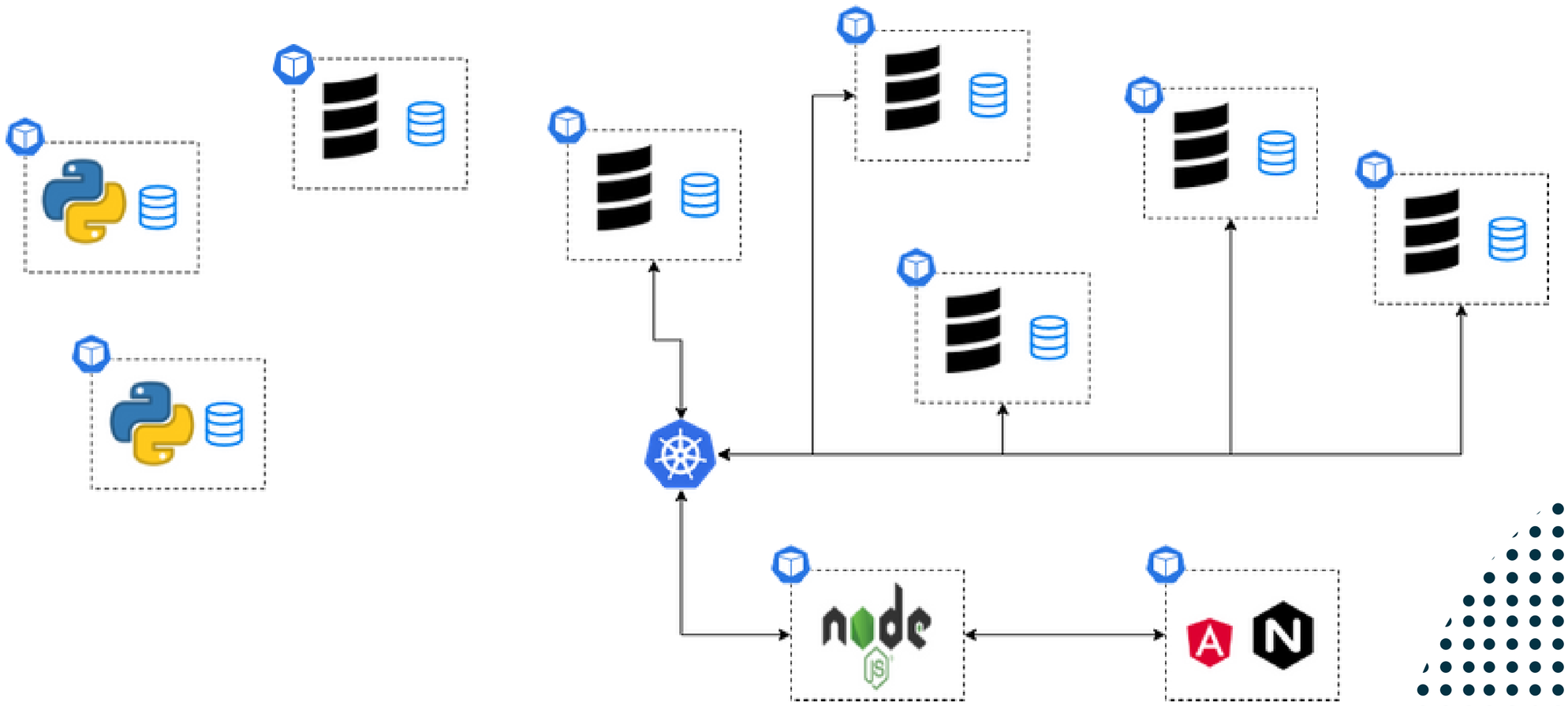
In the meanwile...

Credimi was in continue evolution

Credimi 1.1



Credimi 1.1



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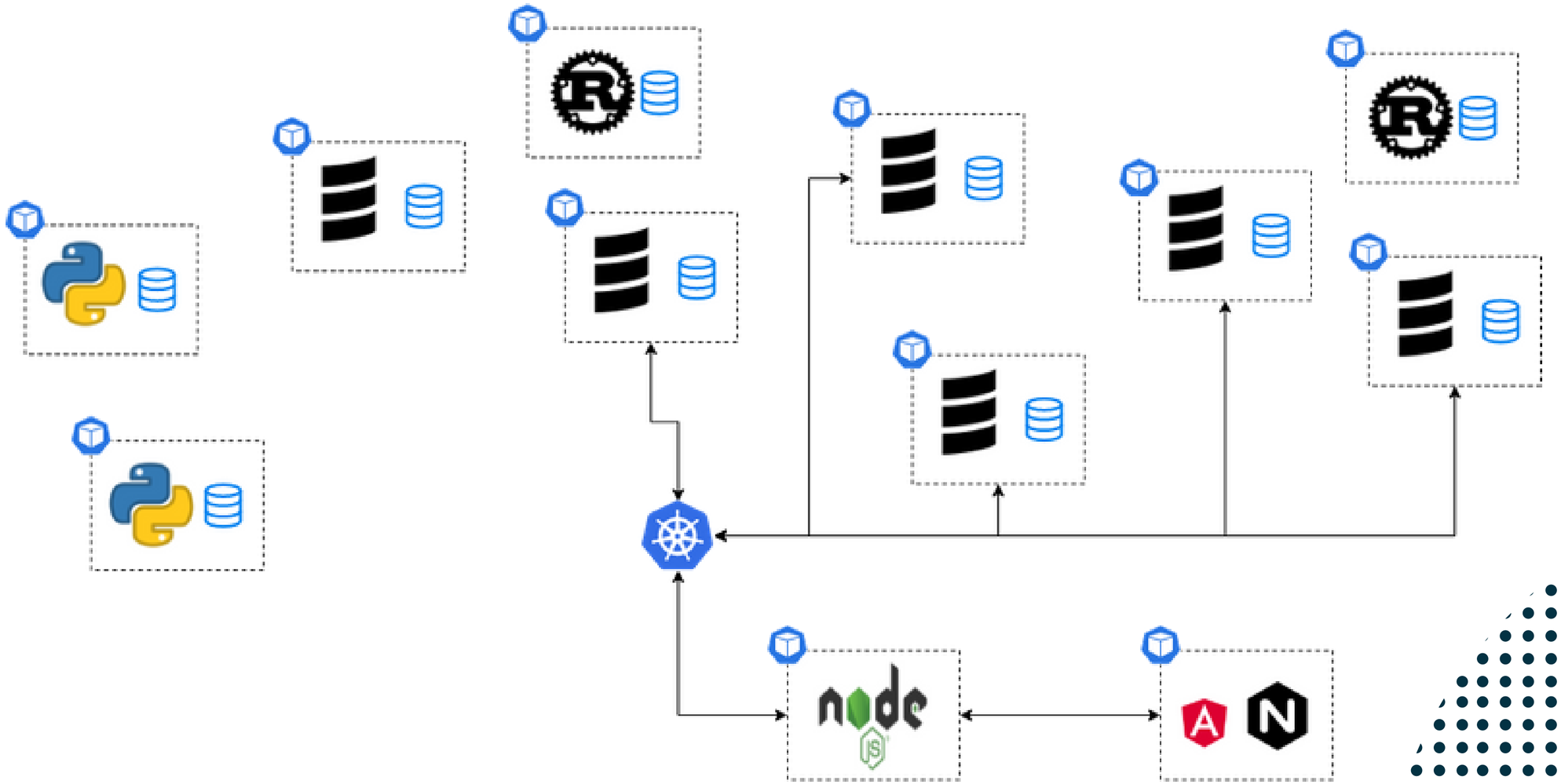
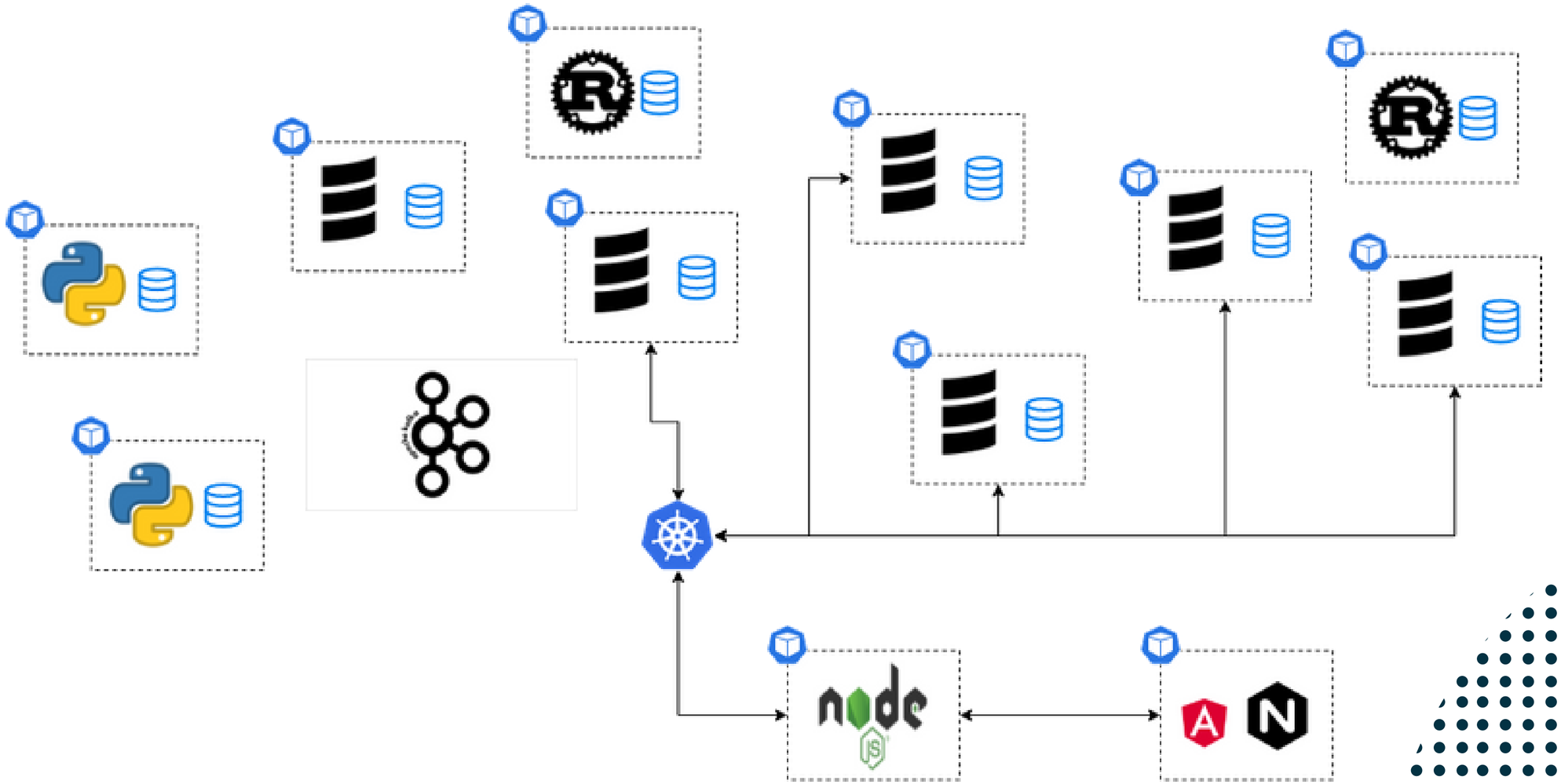
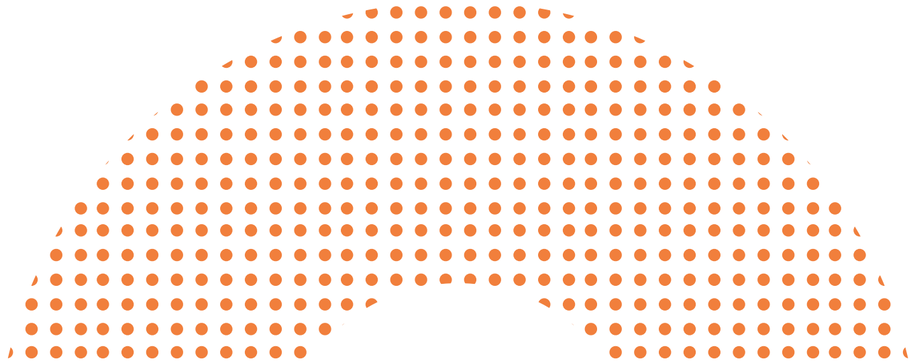
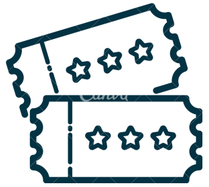


Credimi 2.0



Opportunity





Event sourcing

Exploit Kafka as event collector to create a read side database

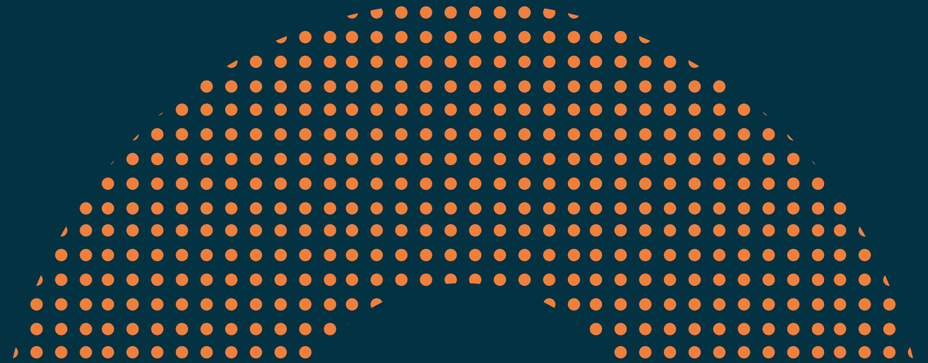
CQRS

Clearly separate concerns while obtaining potentially different read models for each use case

Modernize the stack

Take advantage of GraphQL to solve our issues with boilerplate, authorization, heavy queries

Opportunity



Modernize the stack

Takes advantages of React community and Apollo ecosystem to improve maintanability

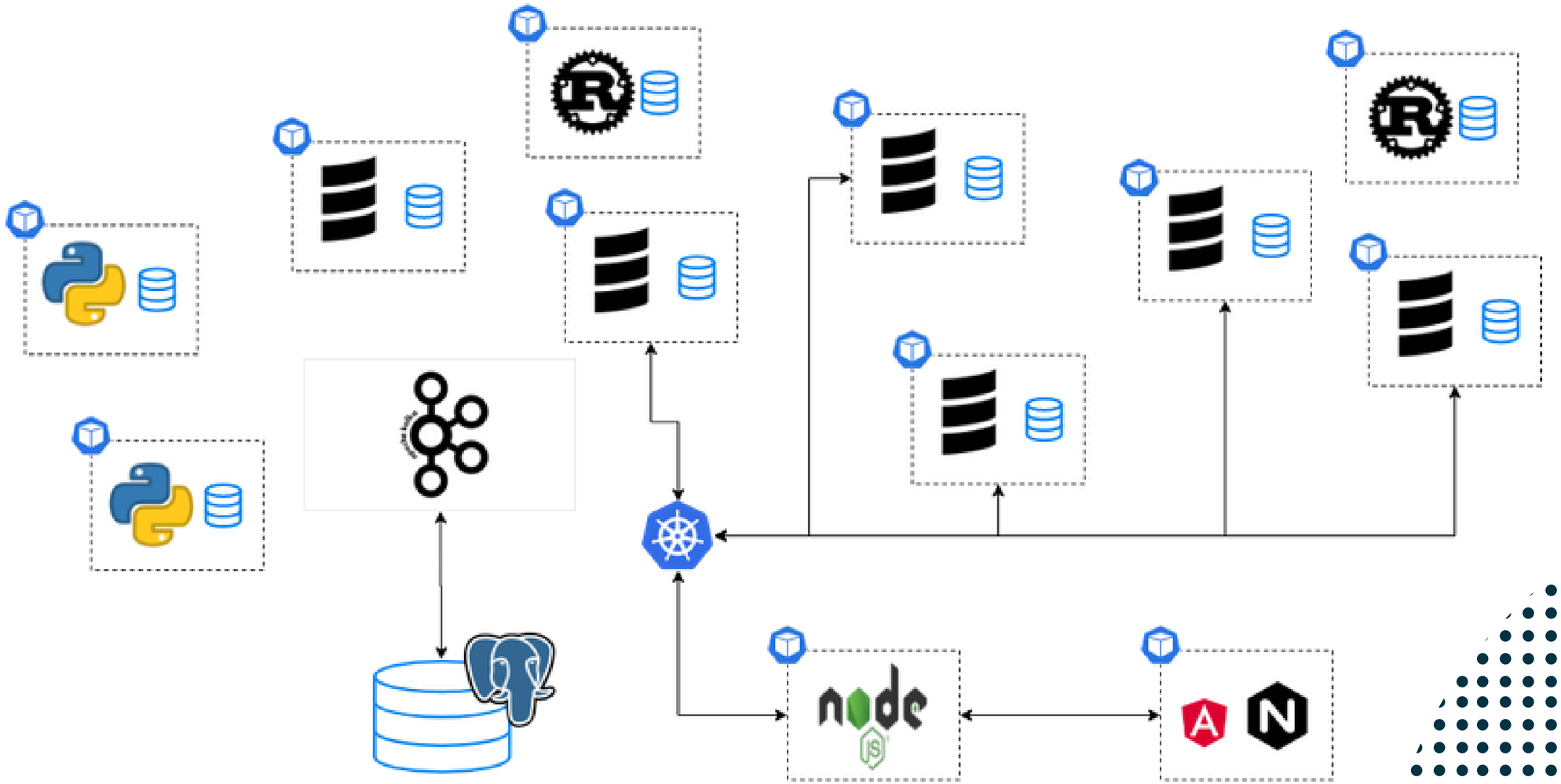
Aggregated data sources

One place to get the data the frontend needs (read side, legacy api, external datasources)

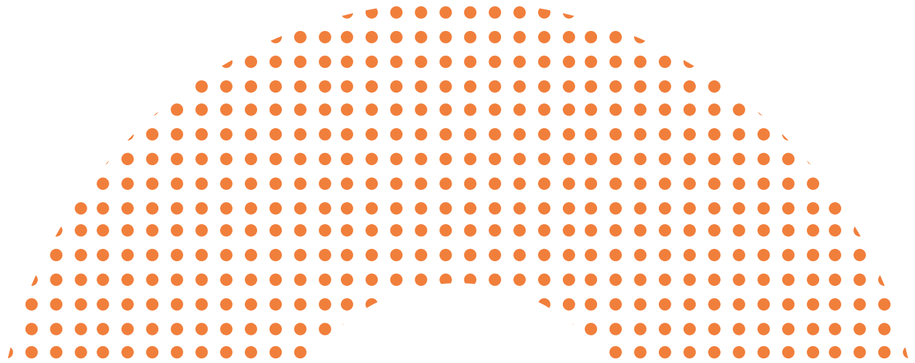
Code generation tools

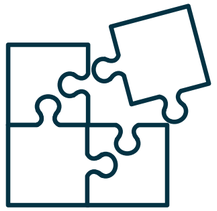
Exploits GraphQL schema to generate TypeScript types

Credimi 2.1



Exposing the read side





Seamless integration

Dockerized tool easy to set up and to integrate with the existing architecture

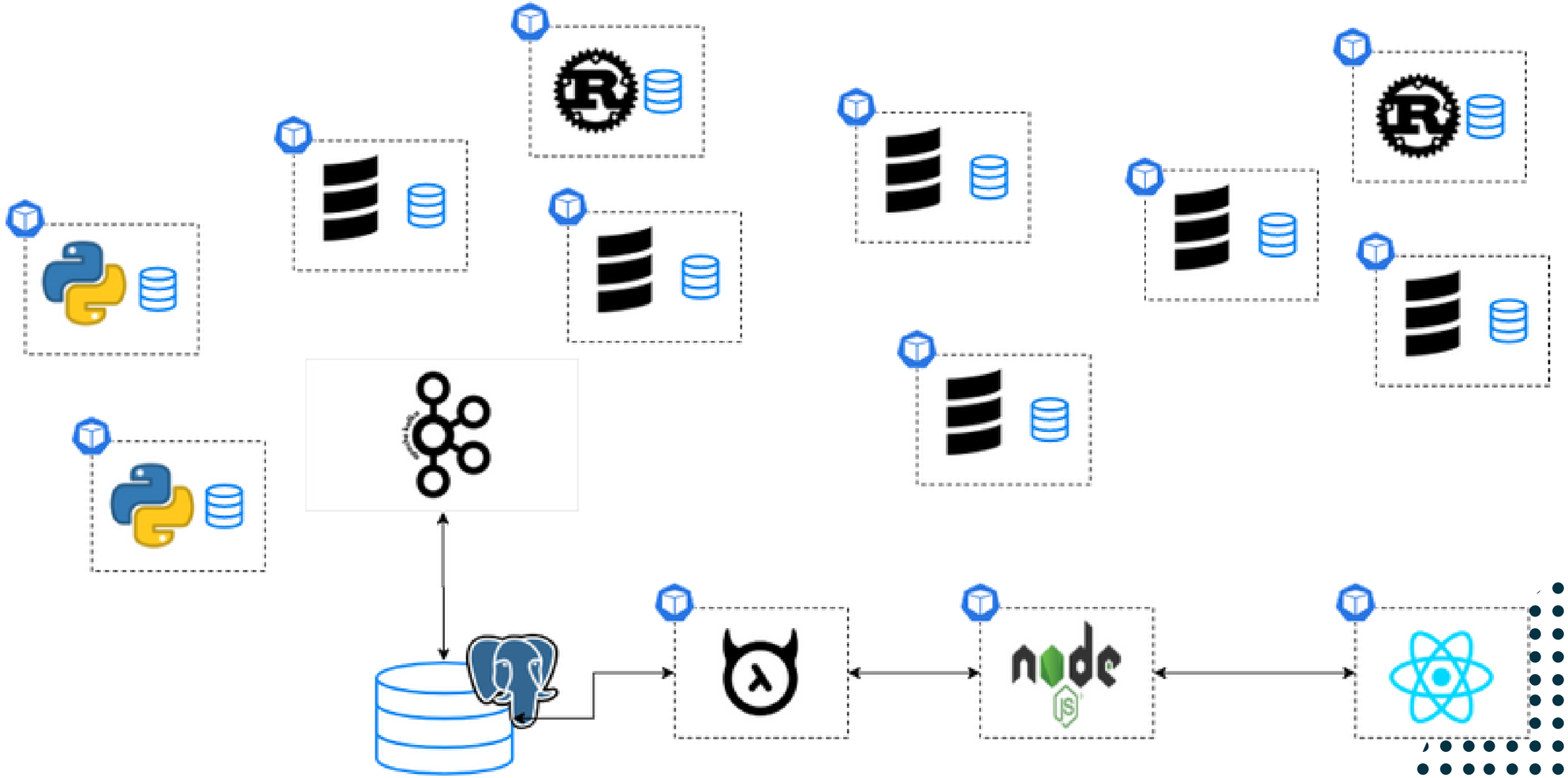
Easy to work with

For both backend and frontend

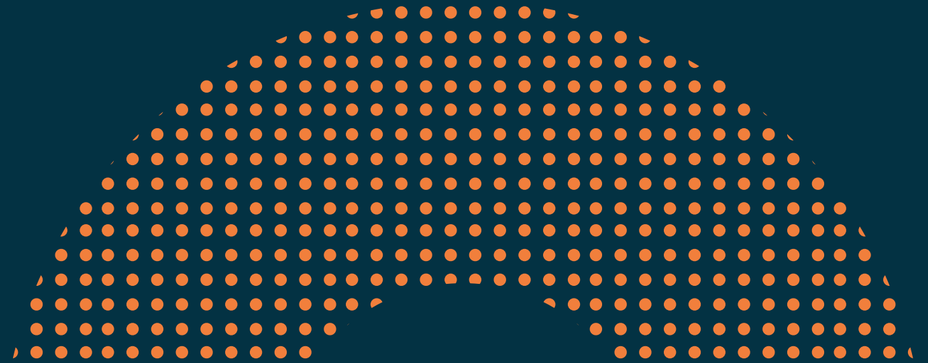
Great community

Transparency and easy to work with

Credimi 3.0



New frontend stack

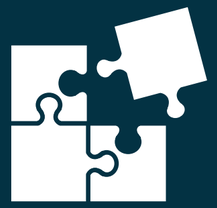


Integrated toolchain

Several toolchain available out of the box for every need

Smooth transition features

The old stack hosts the new one (with iframe) for a smooth transition



Graphql Gateway

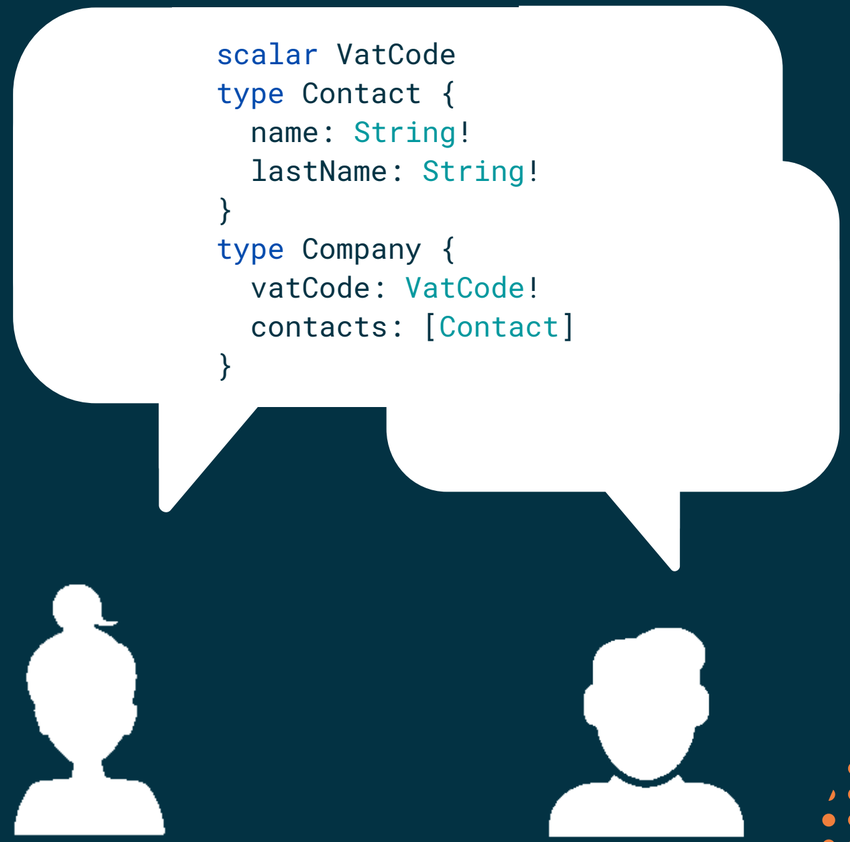
Using Apollo Server to stiching severals schema into one

Let's take a look
at the developer
experience now

Schema agreement

The developers agree on the resource Graph

- What are the involved entities
- Which properties are exposed
- Who can see those properties



Dev environment setup

The backend developer brings up a new environment

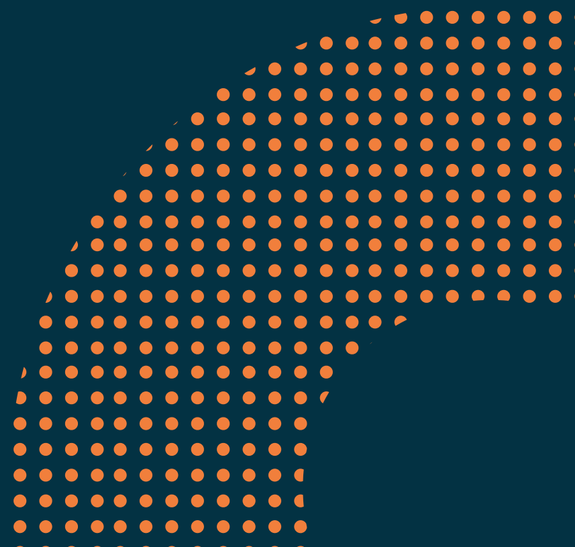
- A new namespace on k8s with all the needed microservices
- A dedicated PostgreSQL database
- A Hasura instance

Hasura insights

```
~/read-side » tree
.
├── deployment.yml
├── hasura
│   ├── Dockerfile
│   ├── hasura-migrations
│   │   └── metadata.json
│   └── tests
│       ├── Dockerfile
│       ├── local_build_and_run_env.sh
│       ├── Pipfile
│       ├── Pipfile.lock
│       └── test_authorization.py
└── migrations
    ├── migrations
    │   └── V1__Initial_setup.sql
    └── tests
        ├── Dockerfile
        ├── local_build_and_run_env.sh
        ├── Pipfile
        ├── Pipfile.lock
        └── test_migrations.py
```

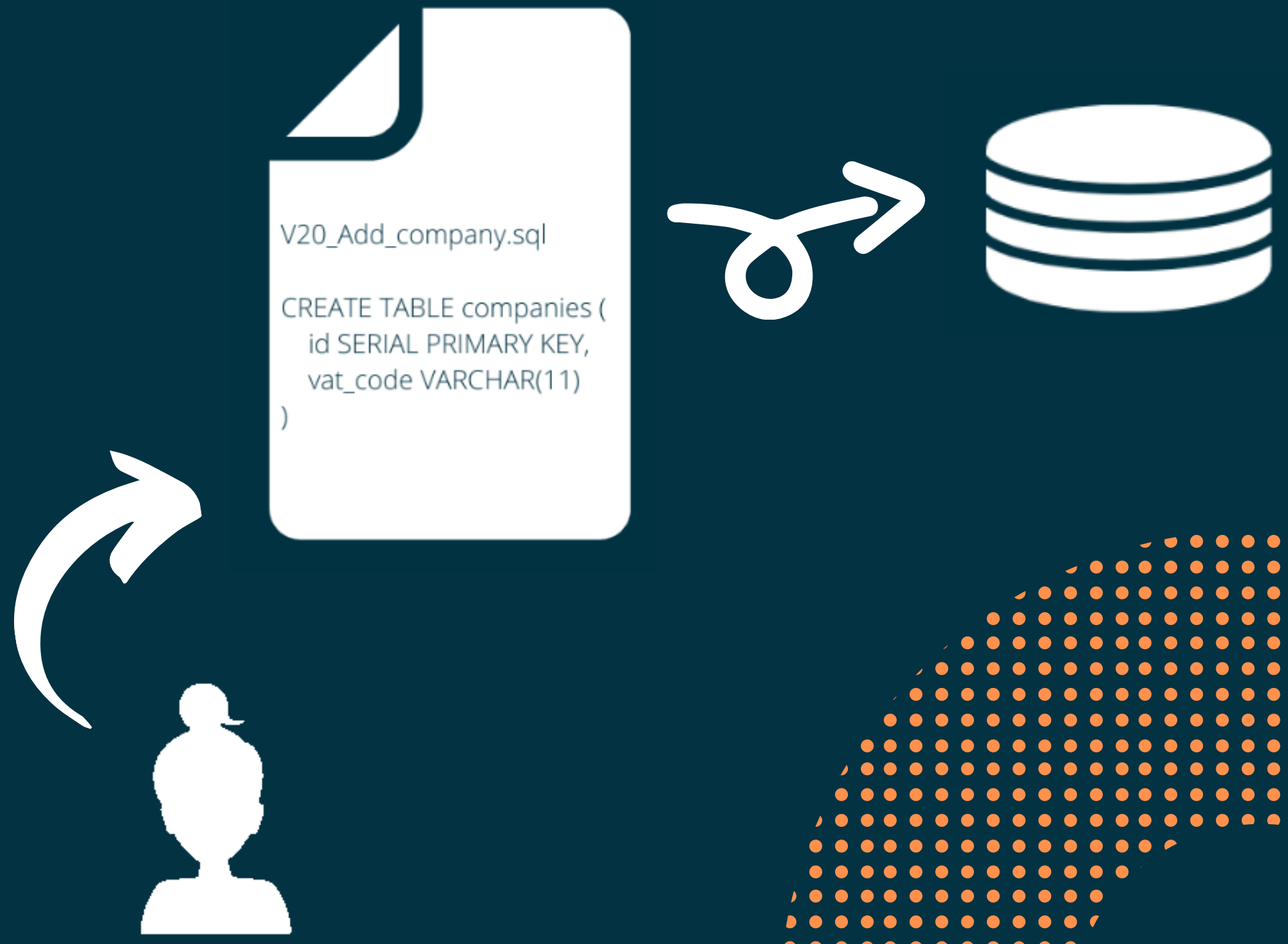
```
~/read-side » cat hasura/Dockerfile
FROM hasura/graphql-engine:v1.2.1.cli-migrations-v2

COPY hasura-migrations /hasura-migrations
```



Database setup

The backend developer applies to the database any migration if needed



Auth configuration

The backend developer configure field level authorization on Hasura

- The metadata are then exported and versioned
- Every new development can check the validity of both migrations and authorization

In the meanwhile...

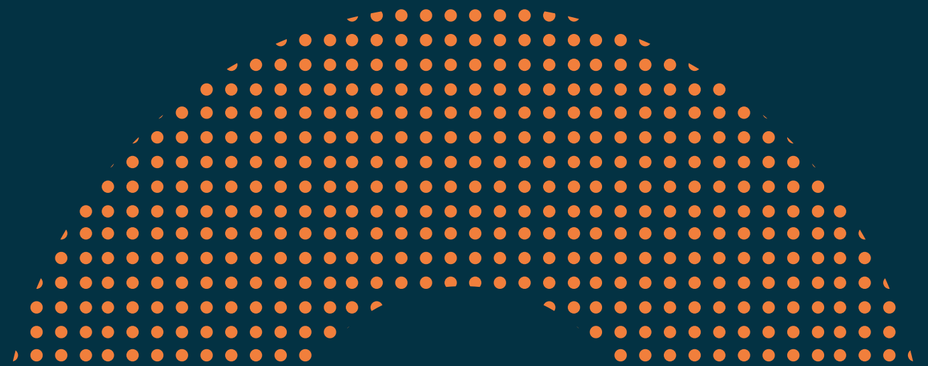
The frontend developer can start developing with mocks as soon as the schema from Hasura is ready

- We can plug Apollo to the running Hasura to fetch the schema
- We exploit Apollo mocks to get data based on the schema
- If anything needs to change they can act on Hasura UI and then put those changes under versioning

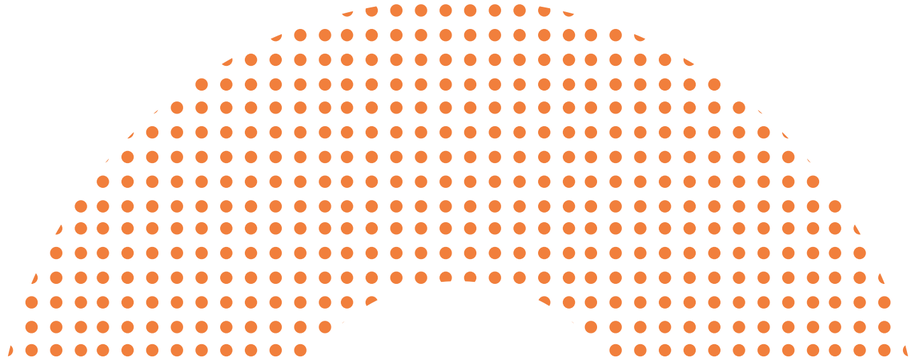
Aggregated data

```
export async function getApolloServer() {
  const originalSchema = await buildSchema()
  const schema = await getMocks(originalSchema)
  const asyncDataSources = await getAsyncDataSources()

  const apolloServer = new ApolloServer({
    introspection: process.env.APP_STAGE !== AppStage.production,
    debug: process.env.APP_STAGE !== AppStage.production,
    schema,
    extensions: [() => new Logger(formatErrorWithContext)],
    dataSources: () => ({ ...getDataSources(), ...asyncDataSources }),
```



Learnings



Better domain comprehension

The exercise of creation of the Graph has improved our big picture vision

More focus

No boilerplate, focus on delivering value

Time to market improved

Hours, not days, to ship features changes

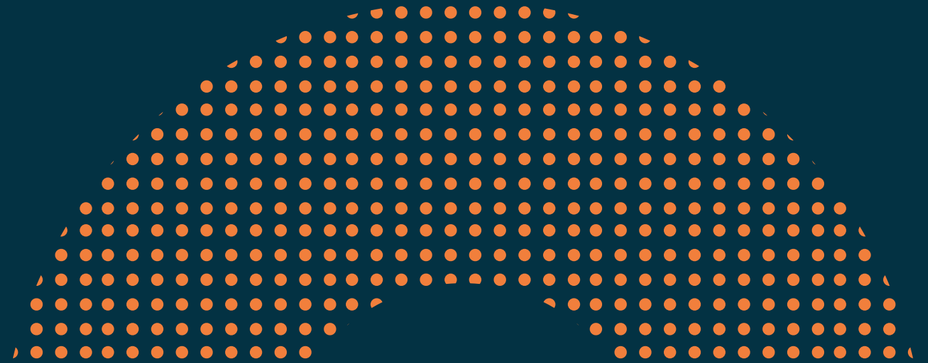
Performance improved

APIs responds in ms, not seconds

Authorization improved

Easy control on who can access what

What we got wrong



Apollo not on steroids

As a result of CQRS need of a more complex management of reads/write

Opinionated framework

Keeping workaround when the framework catches up

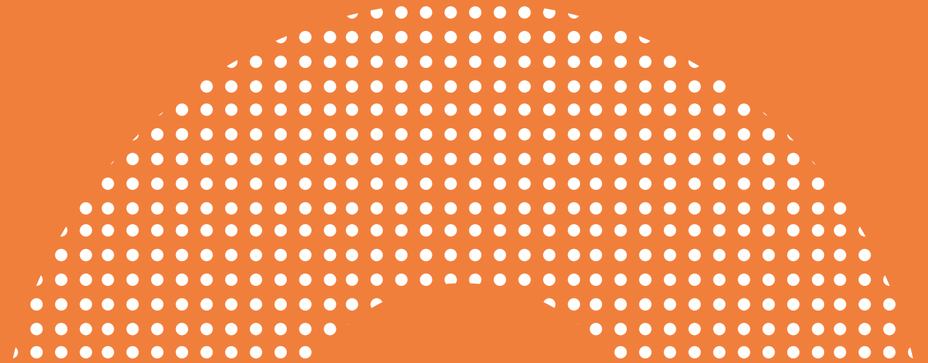
One model to rule them all

The Q in CQRS got a wrong twist

Unmanaged solution

Hasura keeps evolving, we are not

Next steps



Apollo as its best

Keeping exploiting optimistic UI

Anticorruption layer

Separating Hasura's models from the outside world

One model per use case

For real

Managed solution

Going Hasura cloud

Any questions?