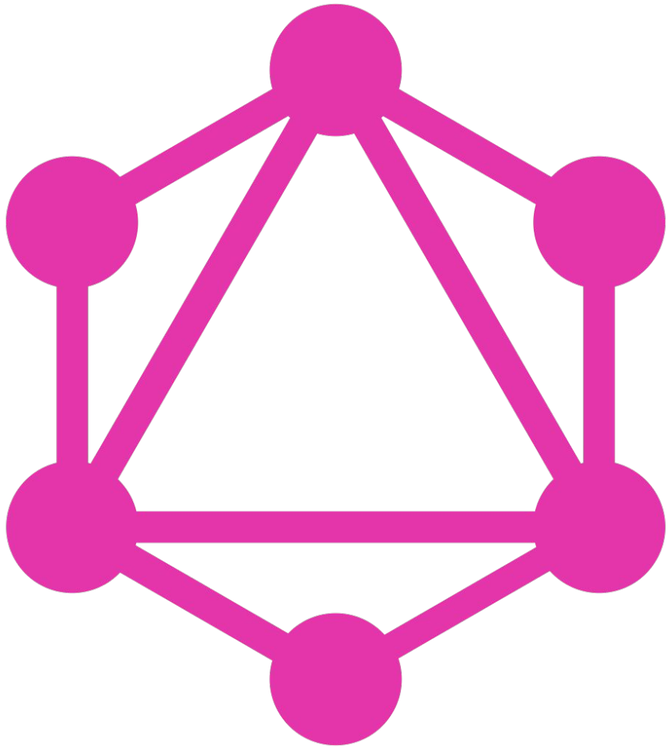


GraphQL 101

by R. Apú

June, 2023

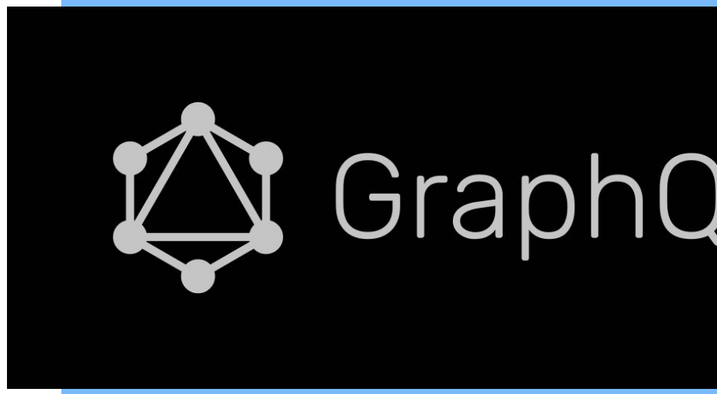
1 **What?**

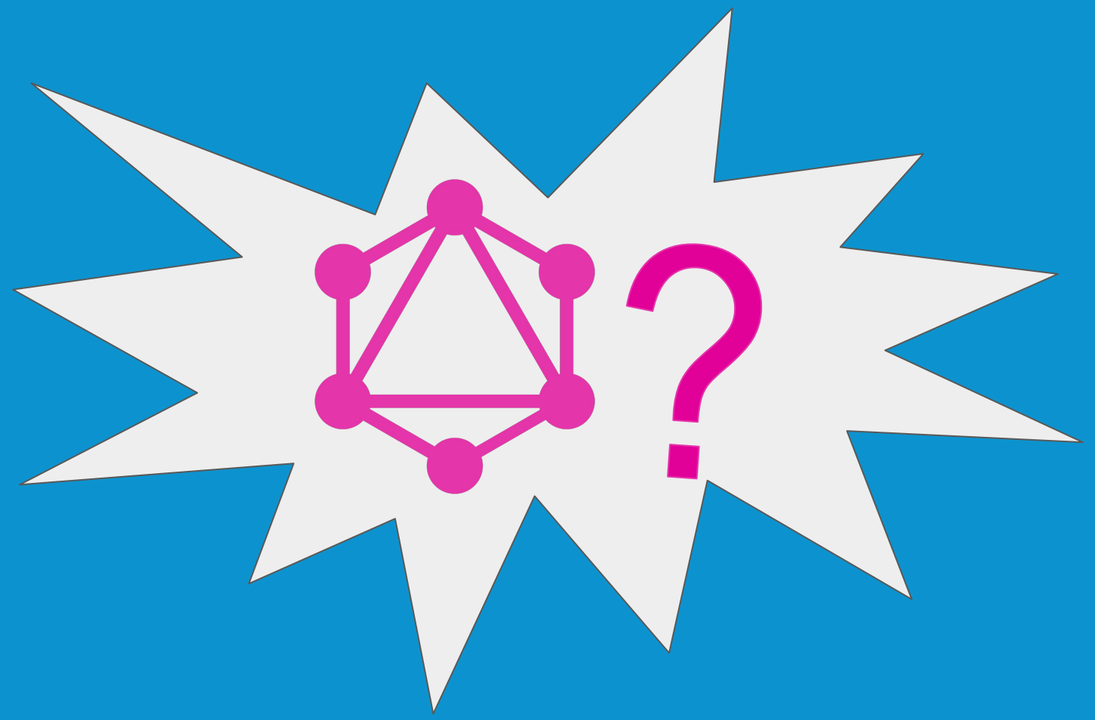
2 **Why?**

GraphQL vs REST

3 **How?**

Architecture Examples





What is GraphQL?

“a query language and execution engine originally created at Facebook in 2012 for describing the capabilities and requirements of data models for client-server applications.”

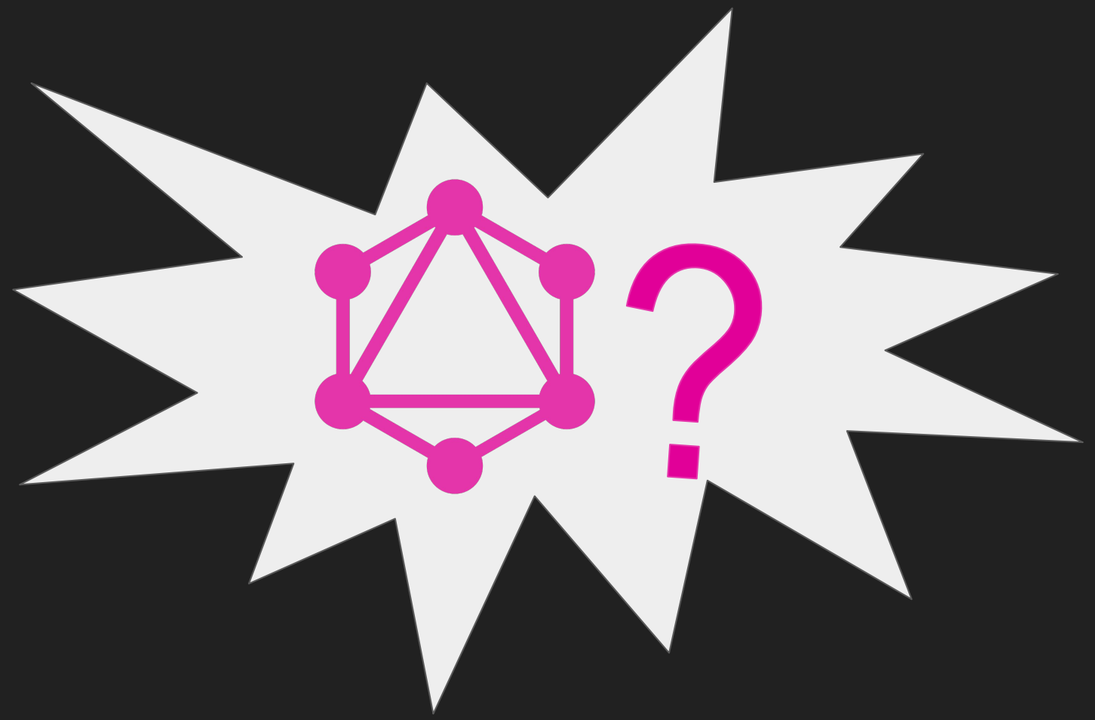
GraphQL Spec (October, 2021)

GraphQL is...

- ... a standard of a language to communicate between clients and servers.
- ... self documented once an engine is deployed
- ... data source agnostic
- ... used in gateways in microservices archs.
- ... declarative
- ... used for both queries and data manipulation

GraphQL *isn't*...

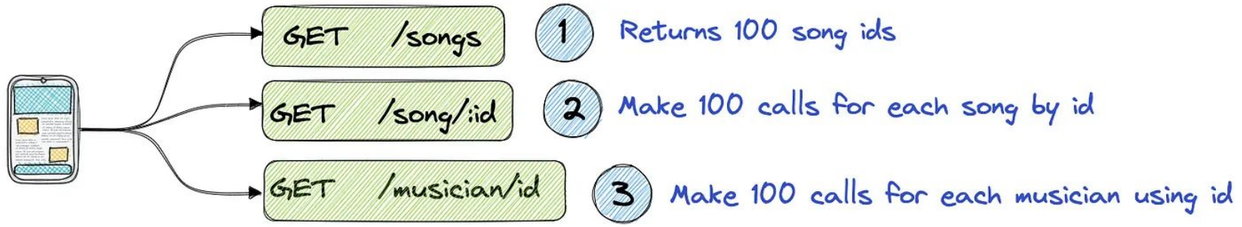
- ...a programming language
- ... a relational database management language like SQL.
- ... implemented in a central repository.



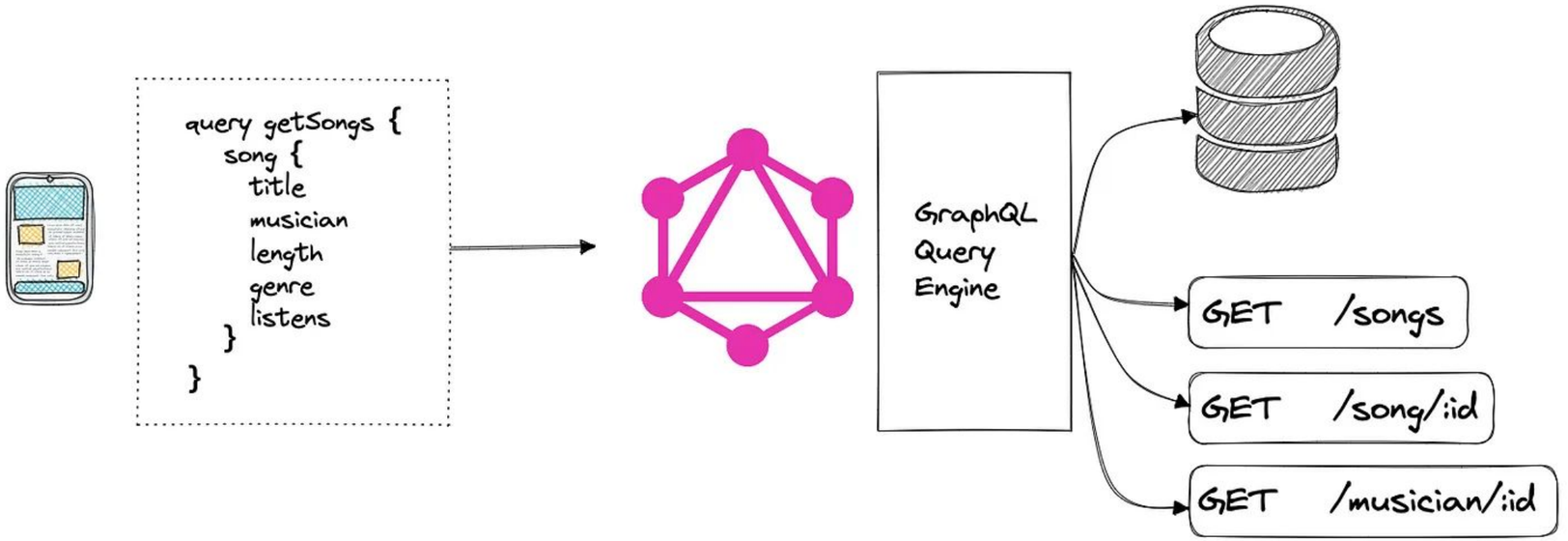
Why use GraphQL?

1. Reduces over fetching

- **FE sends as many RESTful requests as needed**



- **FE sends declarative queries, i.e. gets *only* and *exactly* what it asks for**



2. Strongly typed schemas

- Language specifies:
  - types,
  - interfaces,
  - unions,
  - enums,
  - field arguments,
  - polymorphism,

```
type Query {
    books: [Book!]!
}
query GetBooks
{   books {
        title
        author
    }
}
```

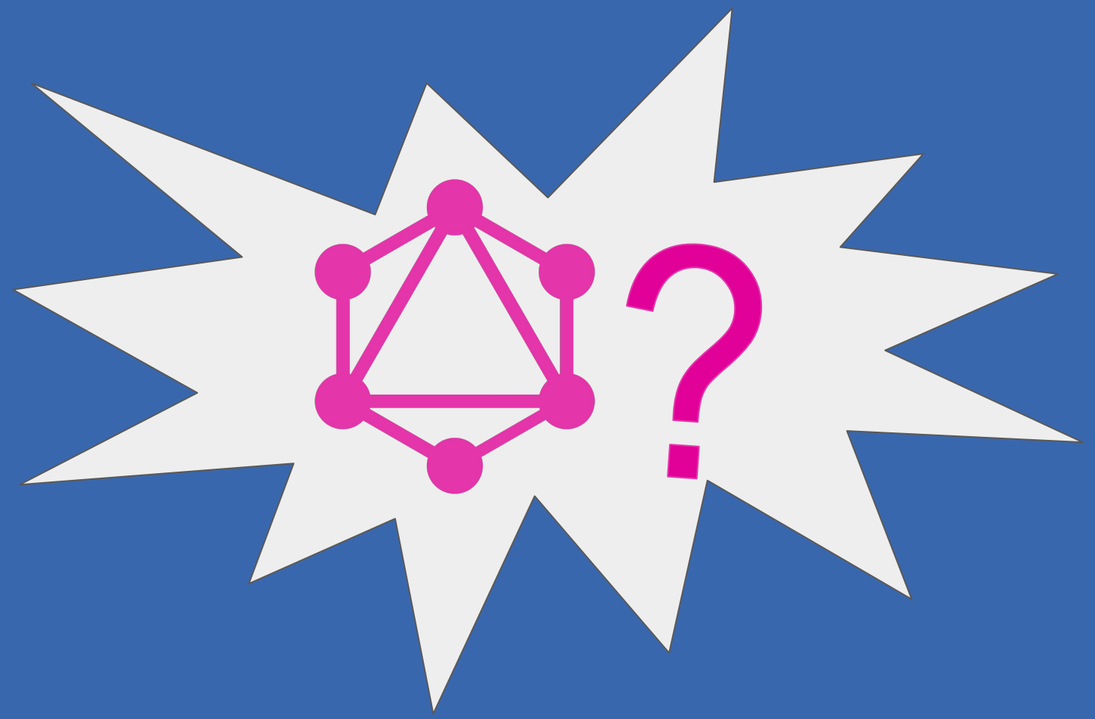
3. Easier caching

- Each field has its own resolver function

4. Self documented through introspection

- **FE sends as many RESTful requests as needed**

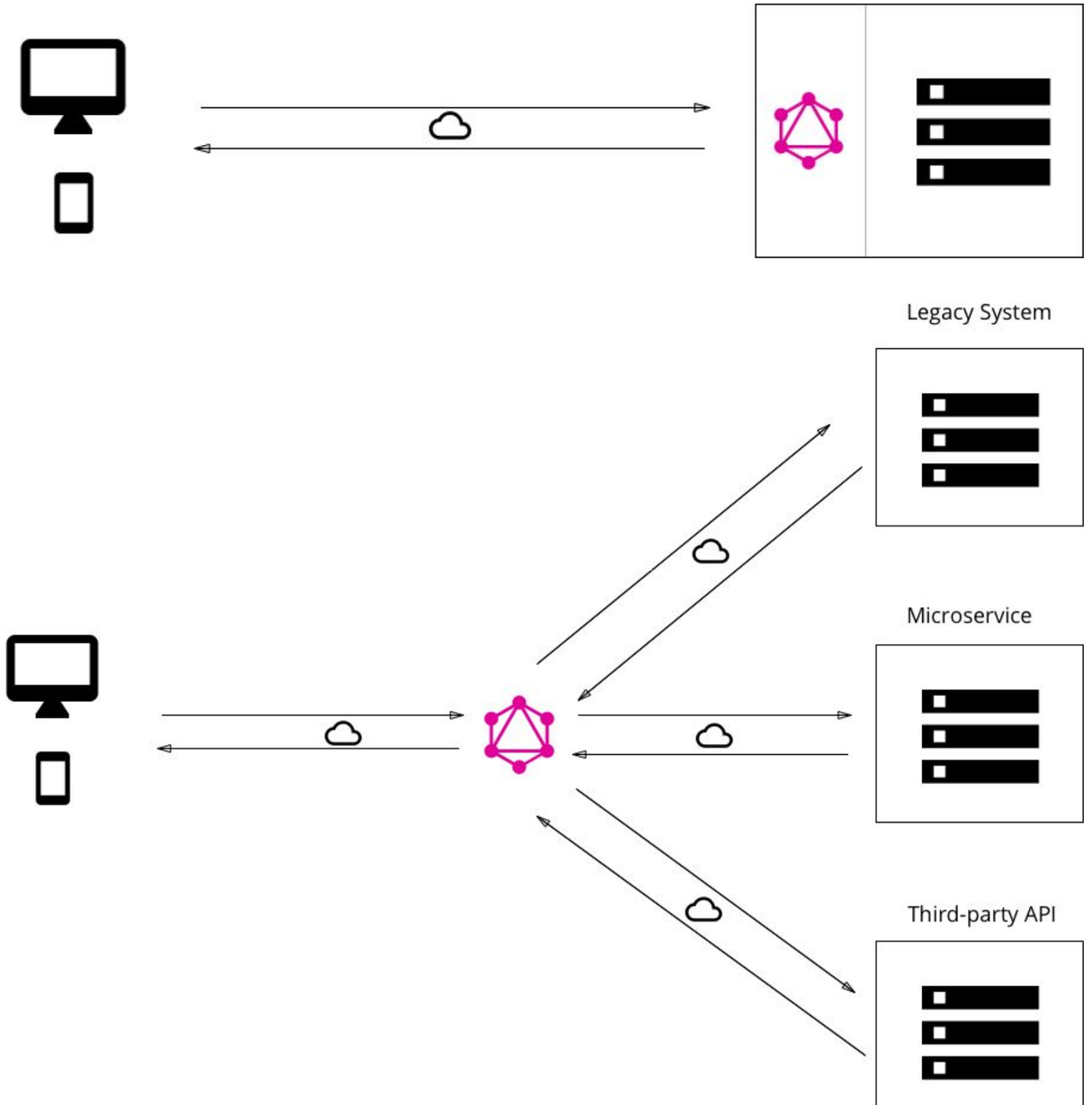
5. Self documented through introspection



How does GraphQL Work?

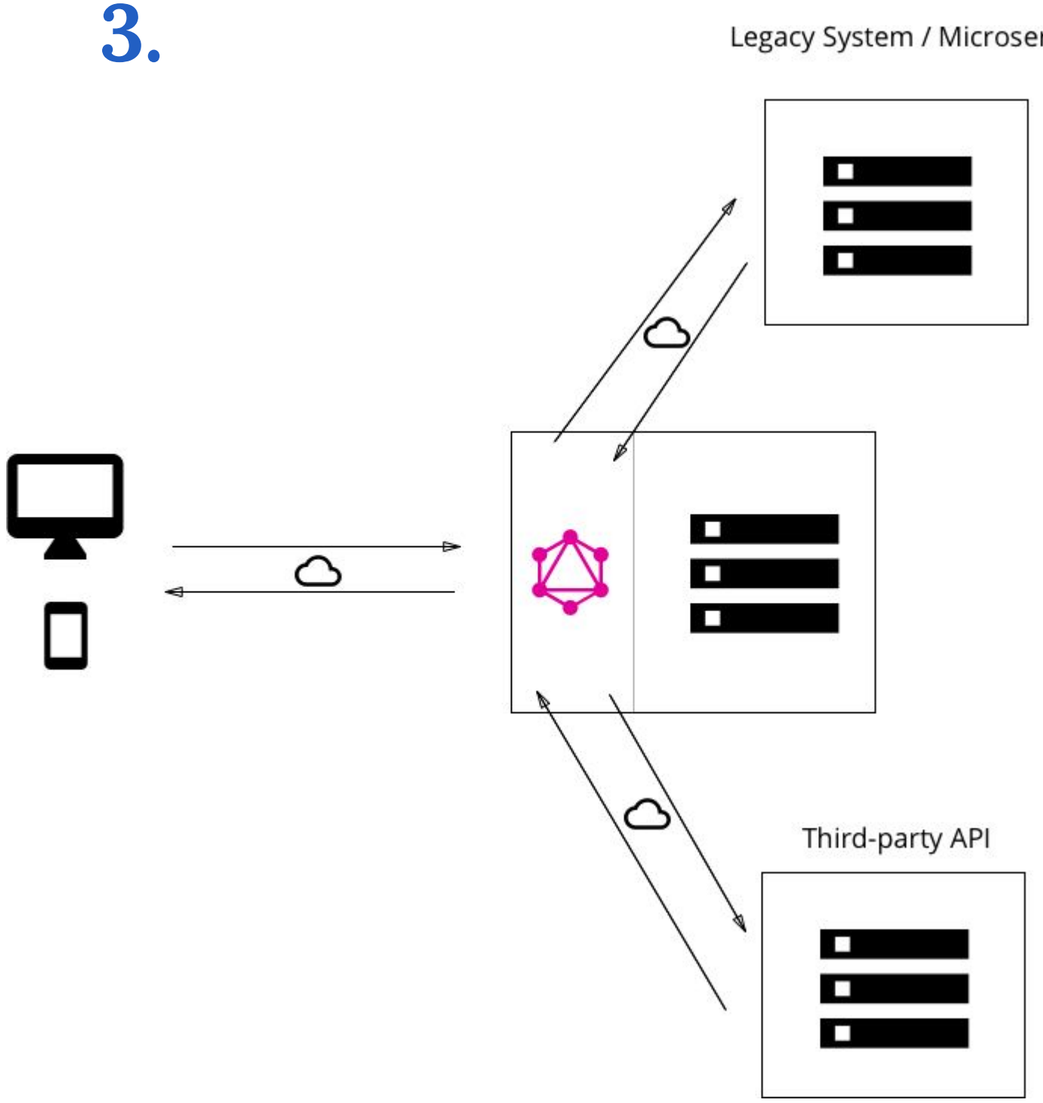
Architecture examples (6)

1. Embedded alongside the db engine and data.
2. Standalone gateway
3. Hybrid of 1 and 2
4. Analog of 3.
5. BFF
6. Authentication is important

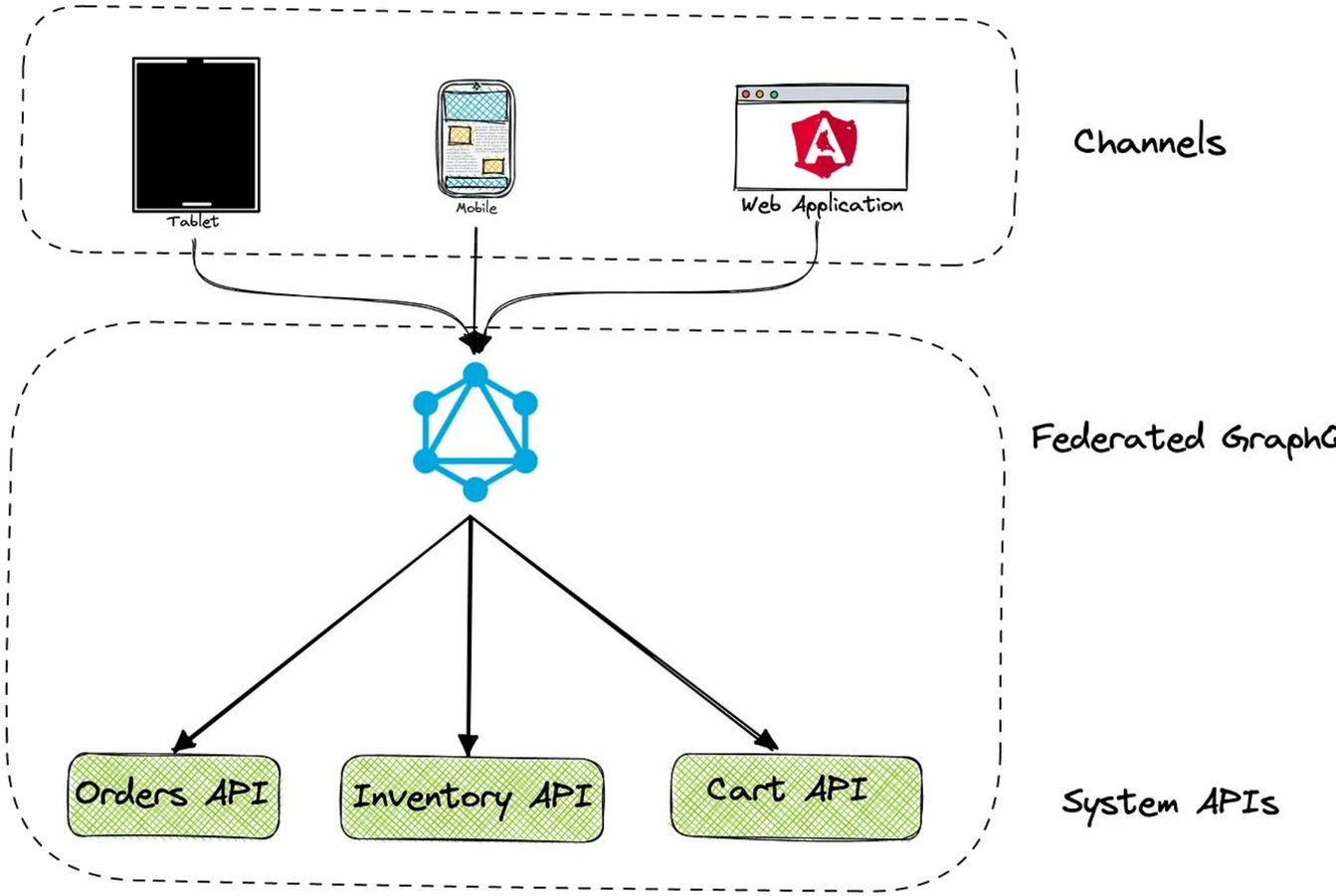


Hybrid approach

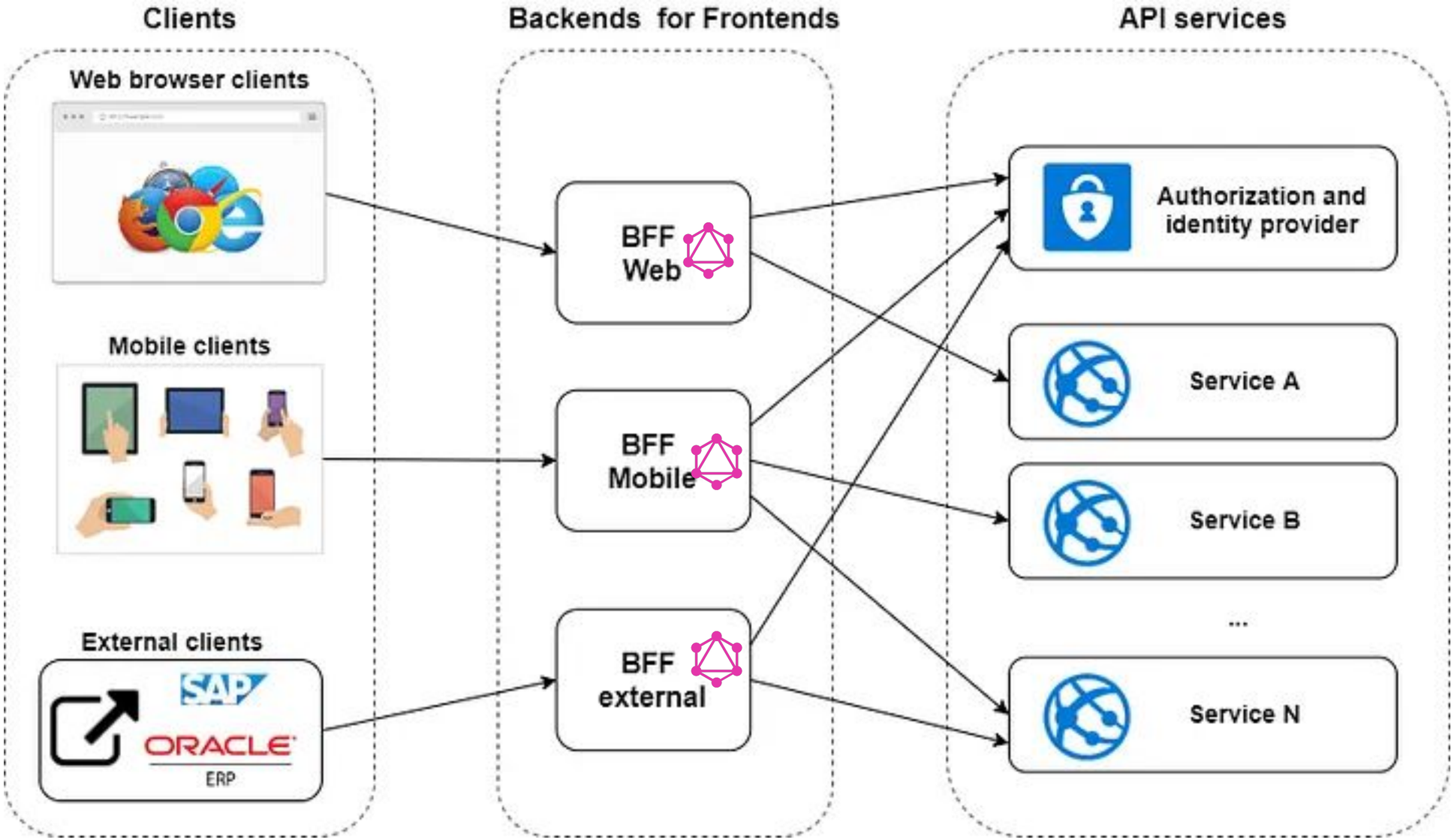
3.



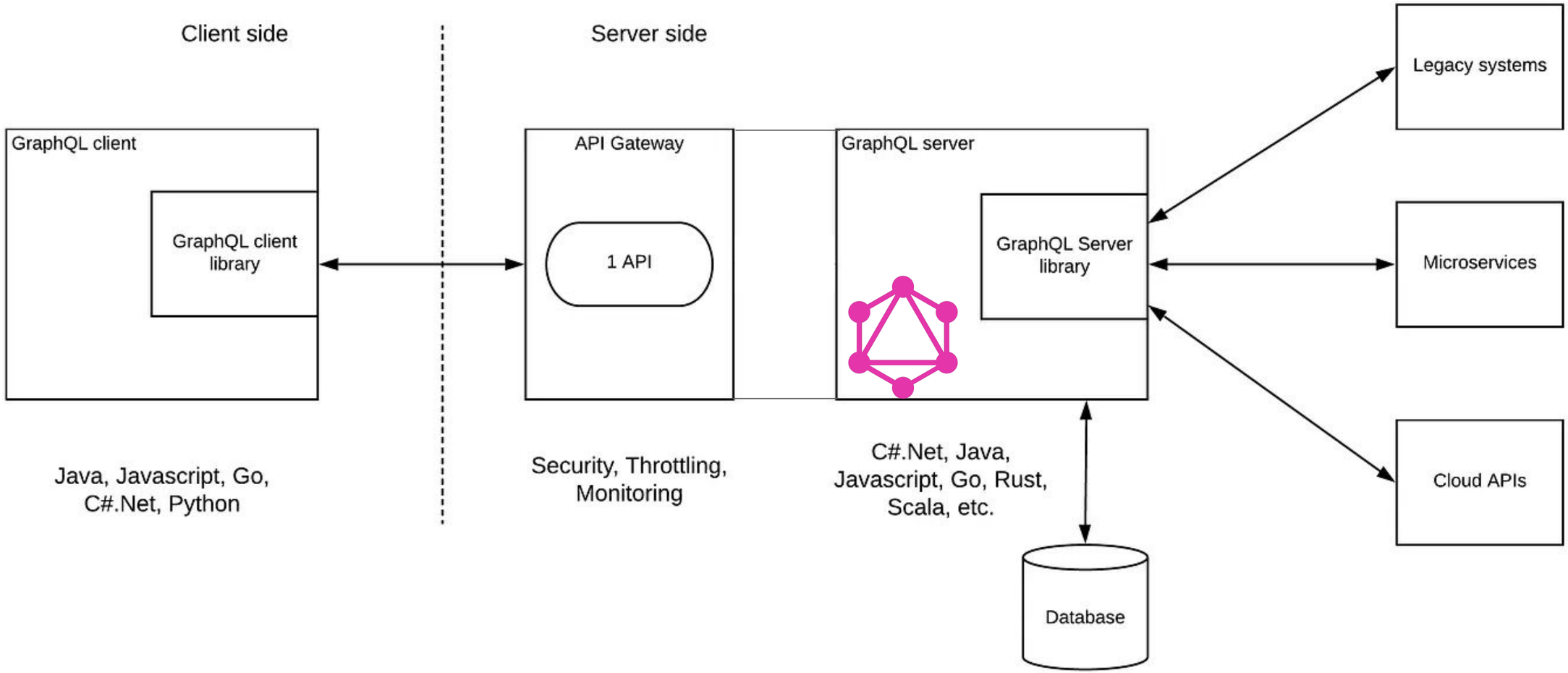
4.

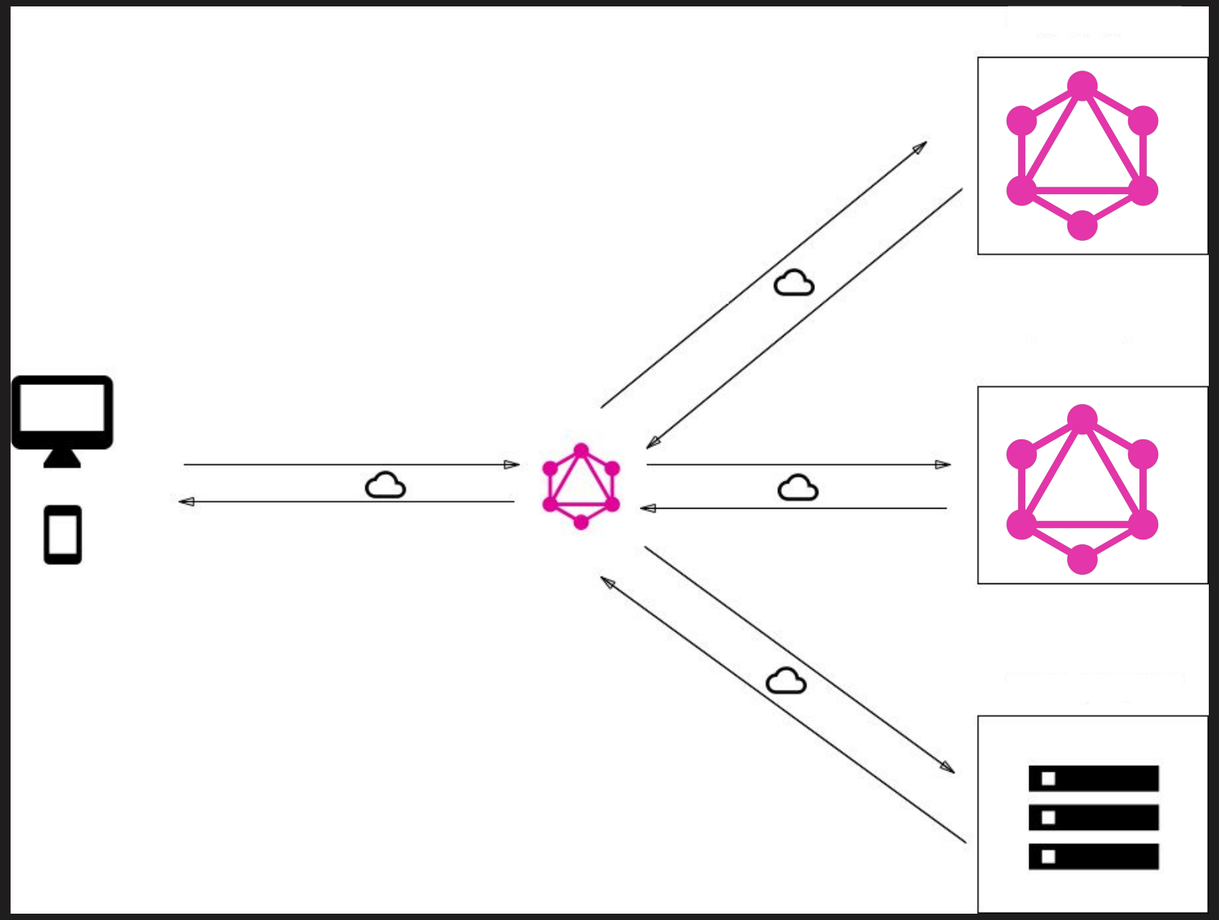


5. Backend for Frontend



6. A more secure example:

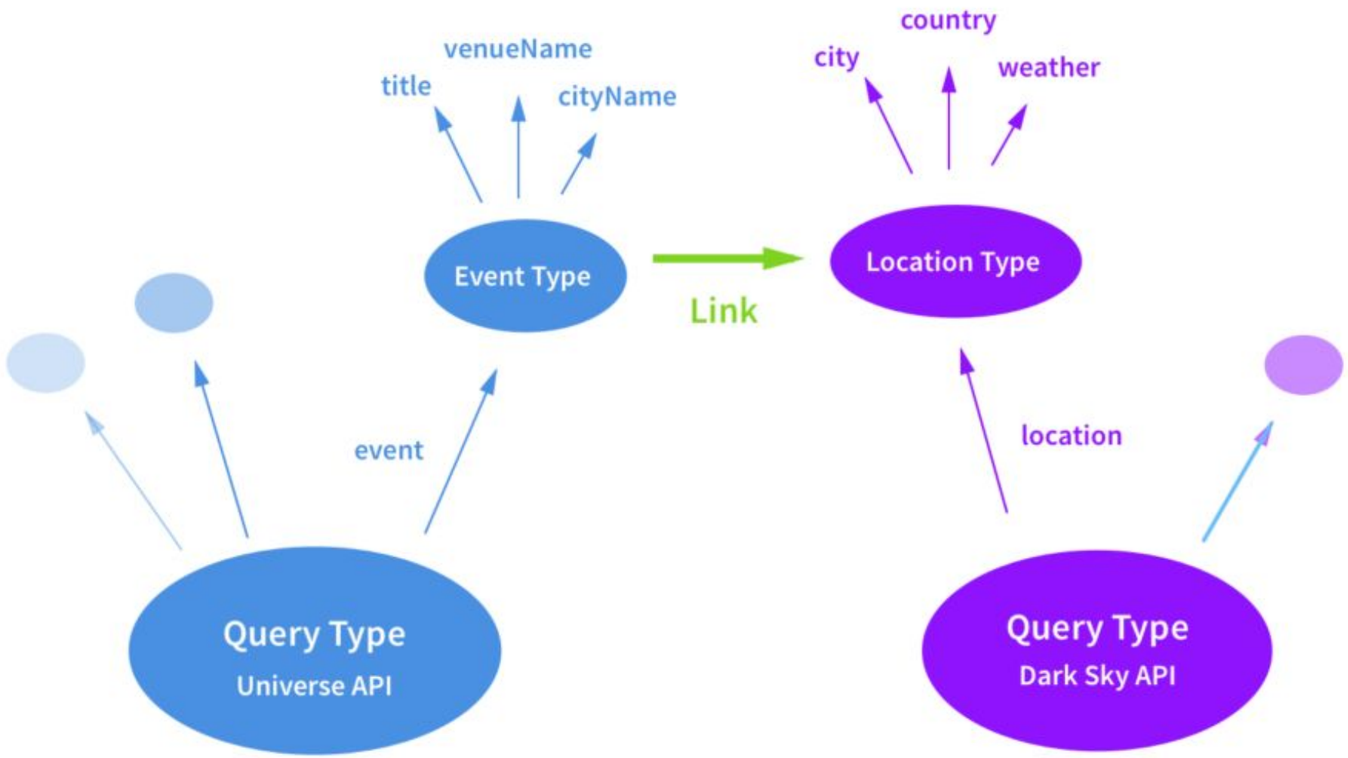




BONUS: Schema Stitching

Schema stitching (cont.)

- Related models in different APIs can be linked in a server environment to save resources in client machines
- graphql-tools by The Guild



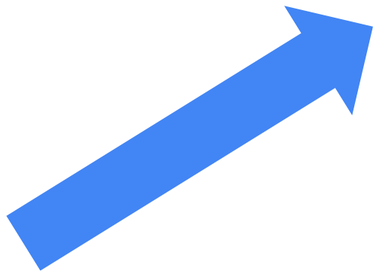

```
extend type Location {
    weather: Weather
}

extend type Event {
    location: Location
}
```

Schema stitching (cont.)

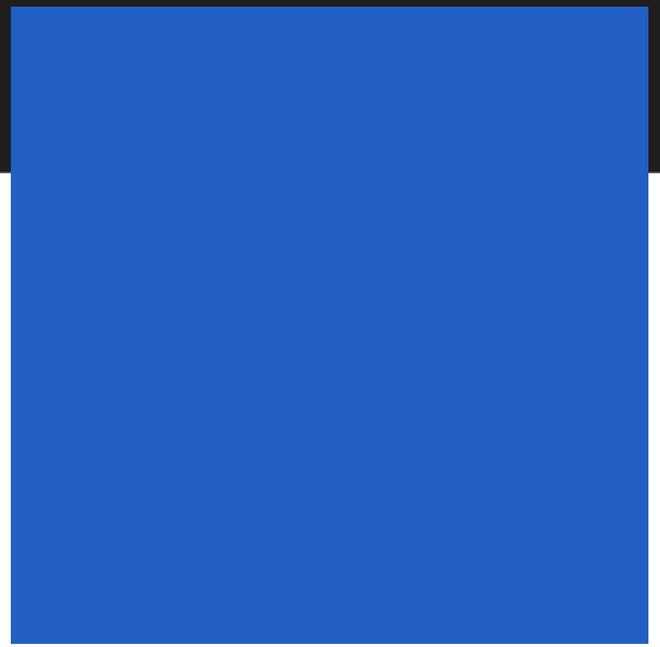
- Related models in different APIs can be linked in a server environment to save resources in client machines
- [graphql-tools](#) by [The Guild](#)

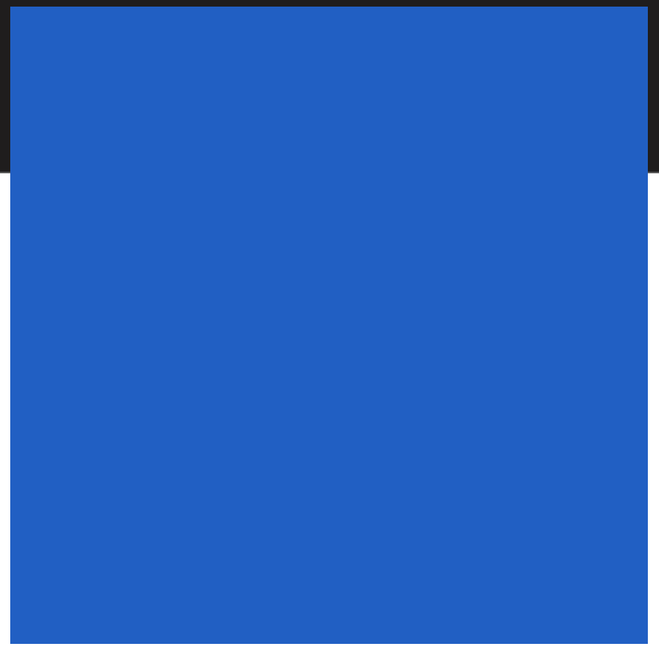
```
query {
    event(id: "f2123154245242133b") {
        title
        venueName
        cityName
    }
    location(city: "Bangaldesh") {
        city
        weather {
            summary
            temperature
        }
  }
}
```



```
query {
  event(id: "f2123154245242133b") {
    title
    description
    url
    location {
      city
      country
      weather {
        summary
        temperature
      }
    }
  }
}
```

Recap





Thank You!

Additional Resources