Playing headlessly with GraphQL capabilities in AEM!

Evgeny Tugarev, Adobe.

Headless, a new trend?

Headless capabilities in AEM

- Headless, what is it?

- AEM provide different APIs to headlessly deliver content:

  - Core Components/Sling Exporter, Assets, …
  - Content Fragments

Content Fragments & GraphQL

- **Content Fragment**
  - Rely on a model definition
  - One model - multiple content fragments (1:many)
  - Presentation-agnostic, intended for multi channel use
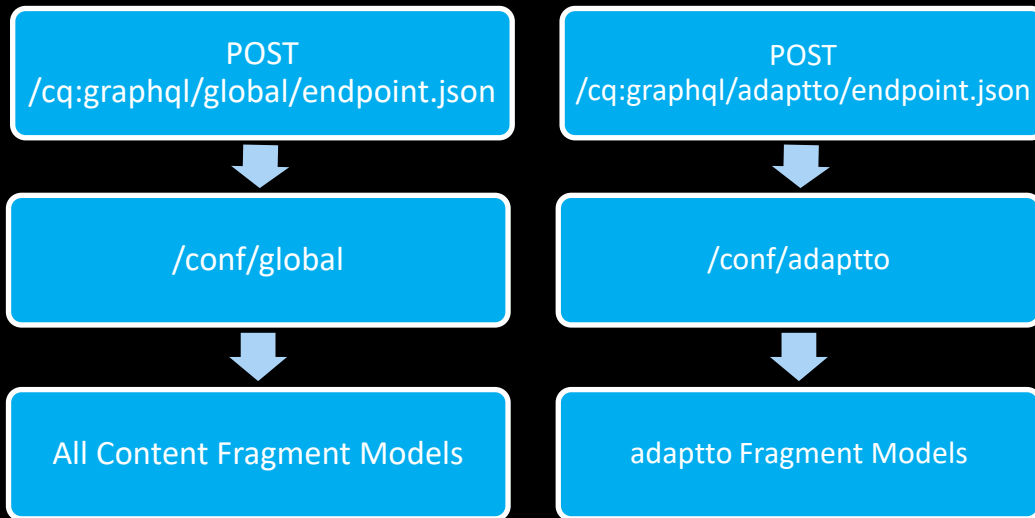 - Strongly typed, well suited for GraphQL

- Strongly typed, schema based
- Solves over/under fetch problem, you get what you asked for
- Not a rival to REST

Sling GraphQL support in AEM

- Per Sling GraphQL API contract we have to provide implementation for
  - SlingSchemaServlet, SlingTypeResolver, SlingDataFetcher
- Supported features
  - Aliases, Arguments, Fragments, Input types, Introspection, Meta fields, Nested fragments, Union types, Variables
- Mutations
  - Assets HTTP API
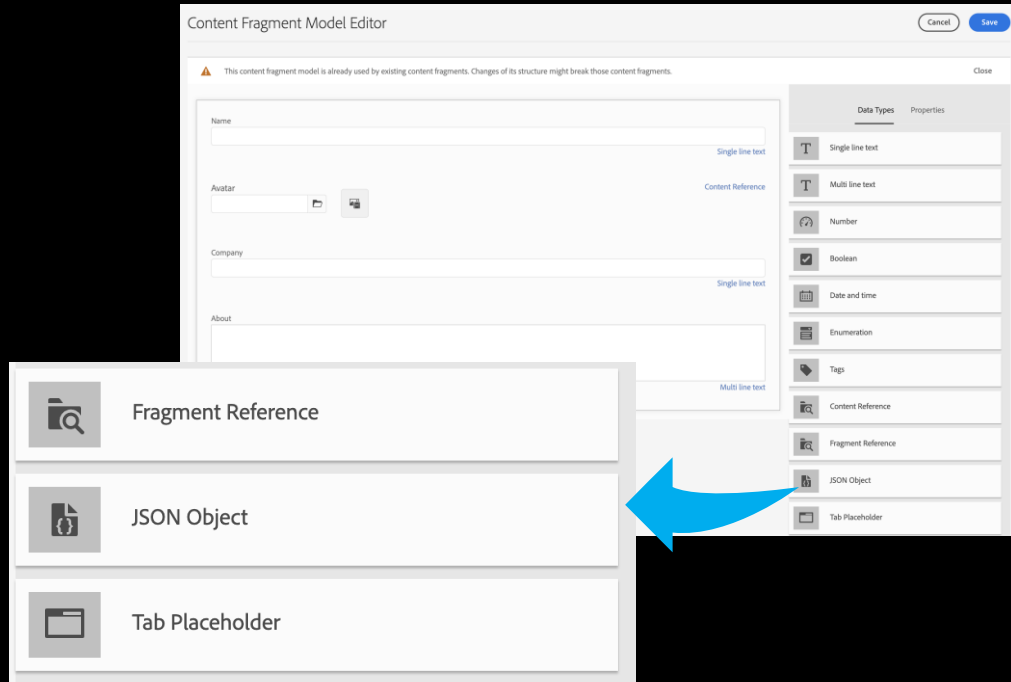
GraphQL Endpoints & configurations

- **Configurations**
  - Content Fragment managed as assets
- **Endpoints**
  - Divide, conquer

POST /cq:graphql/global/endpoint.json	POST /cq:graphql/adaptto/endpoint.json
/conf/global	/conf/adaptto
All Content Fragment Models	adaptto Fragment Models

Designing and testing the API

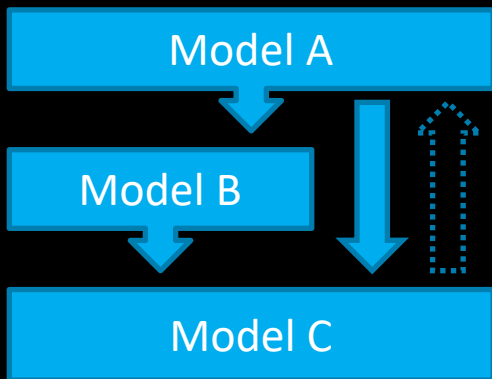# Content Fragment Model Editor, what's new?

- Types
  - Fragment Reference,
  - JSON
  - Child Fragment Reference
- Attributes
  - Unique, translatable

- Create graph structure
- Loop detection (link C-A)

```
Model A
Model B
Model C
```

```
a: {
    b : {
        c : {
            a : null
        }
    }
    c: {
    }
}
```

- **A scalar type**
  - No filtering
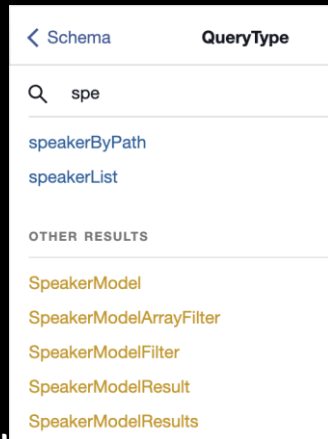 - Included in query output as is
  - Validated

Model A

info : Json

```
a: {
  info : {
    "prop1" : "value1"
    "prop2" : ["a", "b", "c"]
  }
}
```
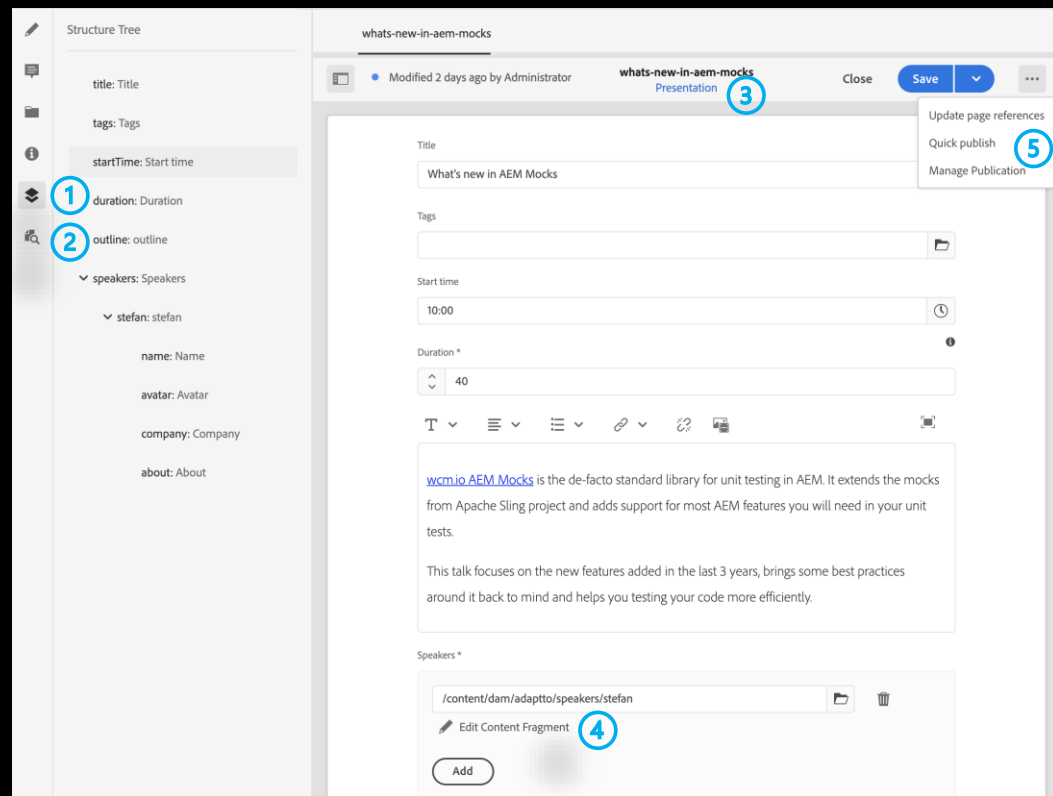
From models to GraphQL schema

- Generated queries
    - ByPath(…), List(…)

- Generated types
    - ModelResult, ModelResults, ModelFilter

- Considering a "Speaker" model
    - speakerByPath(_path : String!, _variation: String): SpeakerModelResult!
    - speakerList(filter: SpeakerModelFilter , _variation: String,

                                              _locale: String): SpeakerModelResults!

- Duplicated name resolution

‹ Schema   **QueryType**

🔍 spe

speakerByPath

speakerList

OTHER RESULTS

SpeakerModel
SpeakerModelArrayFilter
SpeakerModelFilter
SpeakerModelResult
SpeakerModelResults

Content Fragment Editor, what's new?

- **Improved UI**
  - **Structure tree** ①
  - **JSON preview** ②
  - **Access to model** ③
  - **Nested fragments editing** ④
  - **Direct publishing** ⑤

Developer workflow

- Craft your queries with GraphiQL (software distribution)
- Fragment Publishing
    - Underlying Model published
    - All linked Fragments / Models / Assets also published
- Postman
    - Dev token (dev console)

Persisted Queries & Performance

- Persisted queries overview
  - Why do we need them?
- Performance optimization
  - Structure your API
- Monitoring – Sling Metrics
  - aem.graphql

GraphQL Security

- Managing access to Content Fragments
    - Secure what needs to be secured
- Do not install dev tools on production!
- CORS, CSRF, Referrer Filters

Consuming output data

Headless API & WKND Project

- AEM Headless Client for Javascript
  - https://github.com/adobe/aem-headless-client-js
- AEM Headless Client for Java
  - https://github.com/adobe/aem-headless-client-java
- External application, WKND
  - https://github.com/adobe/aem-guides-wknd-graphql

A conference schedule application

- Development Plan
  - Use react command line tools to generate application skeleton
  - Add dependencies, create a Schedule component
  - Add styling and Presentation component (pre-built)
- Improvement Ideas
  - Add authors list
  - Use persisted queries! ☺
- Application Link
  - https://github.com/etugarev/adapt-to-schedule

What's next?

- Headless UI for Content Fragments
  - Completely new UI
  - React / GraphQL based
- Schema resilience
  - Content Model Locking

Resources

- https://graphql.org/

- https://one-inside.com/aem-headless-cms/

- https://www.veriday.com/blog/headless-cms-pros-cons-decoupling/

- https://adapt.to/2020/en/schedule/graphql-in-apache-sling-but-isnt-it-the-opposite-of-rest.html

- https://sling.apache.org/documentation/bundles/metrics.html

- https://www.udemy.com/course/react-the-complete-guide-incl-redux/

- https://www.youtube.com/watch?v=zepOmSsZUjE

- https://experienceleague.adobe.com/docs/experience-manager-cloud-service/headless-journey/developer/overview.html

Thank you! Q/A