

An Introduction to GraphQL

Tutorial at ISWC 2019, October 27, 2019

1. Introduction

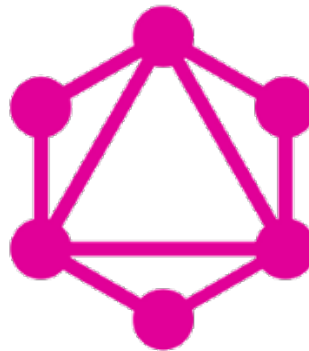
Olaf Hartig^a, Ruben Taelman^b

(a) Dept. of Computer and Information Science, Linköping University, Sweden

(b) Ghent University – imec – IDLab, Belgium

What is GraphQL?

- Framework that introduces a new type of *Web-based data access interfaces* for Web applications and mobile apps
- Alternative to the notion of REST APIs

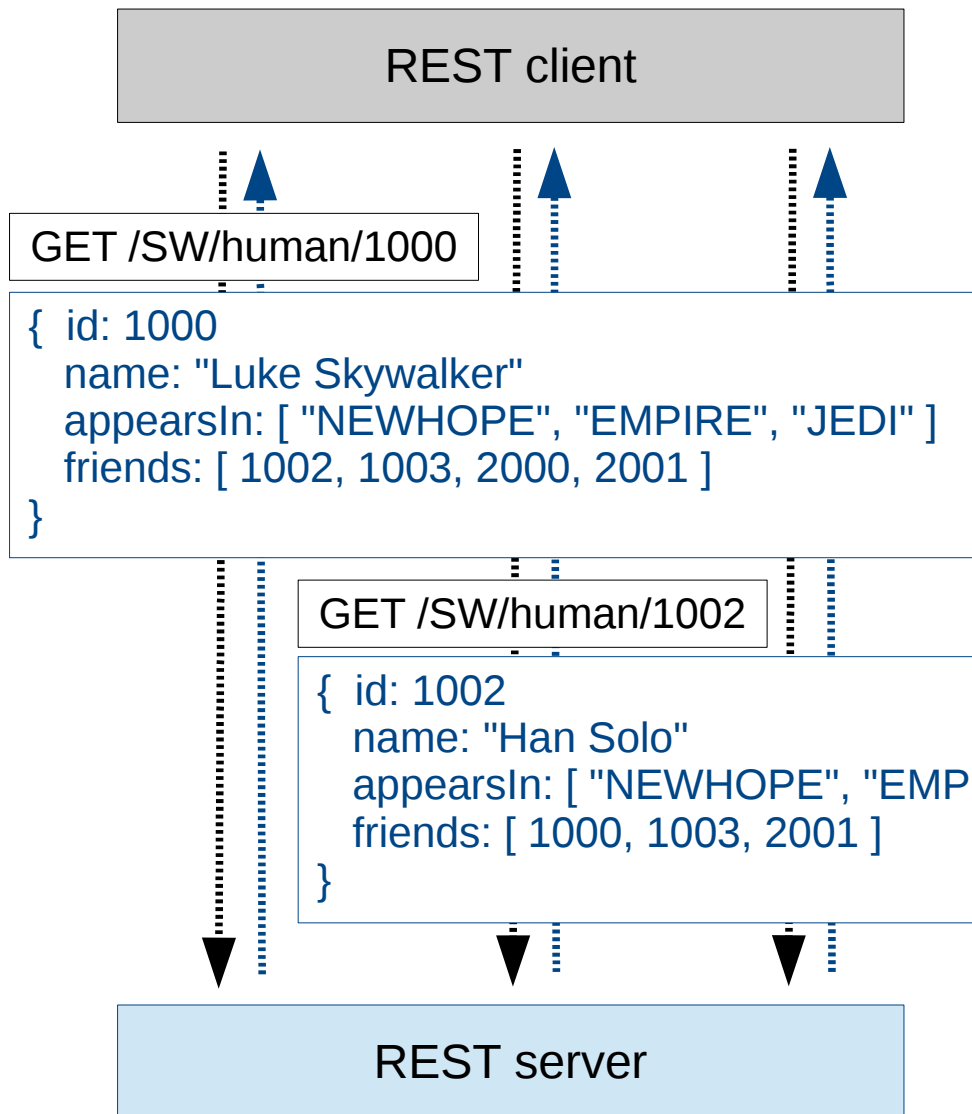


GraphQL

GraphQL Example (in Comparison to REST)

- Assume you have a database about the Star Wars movies
- Want to build a Web or mobile application using this data
- This app contains a page that shows info about a selected character, *including a list of the names of his/her friends*

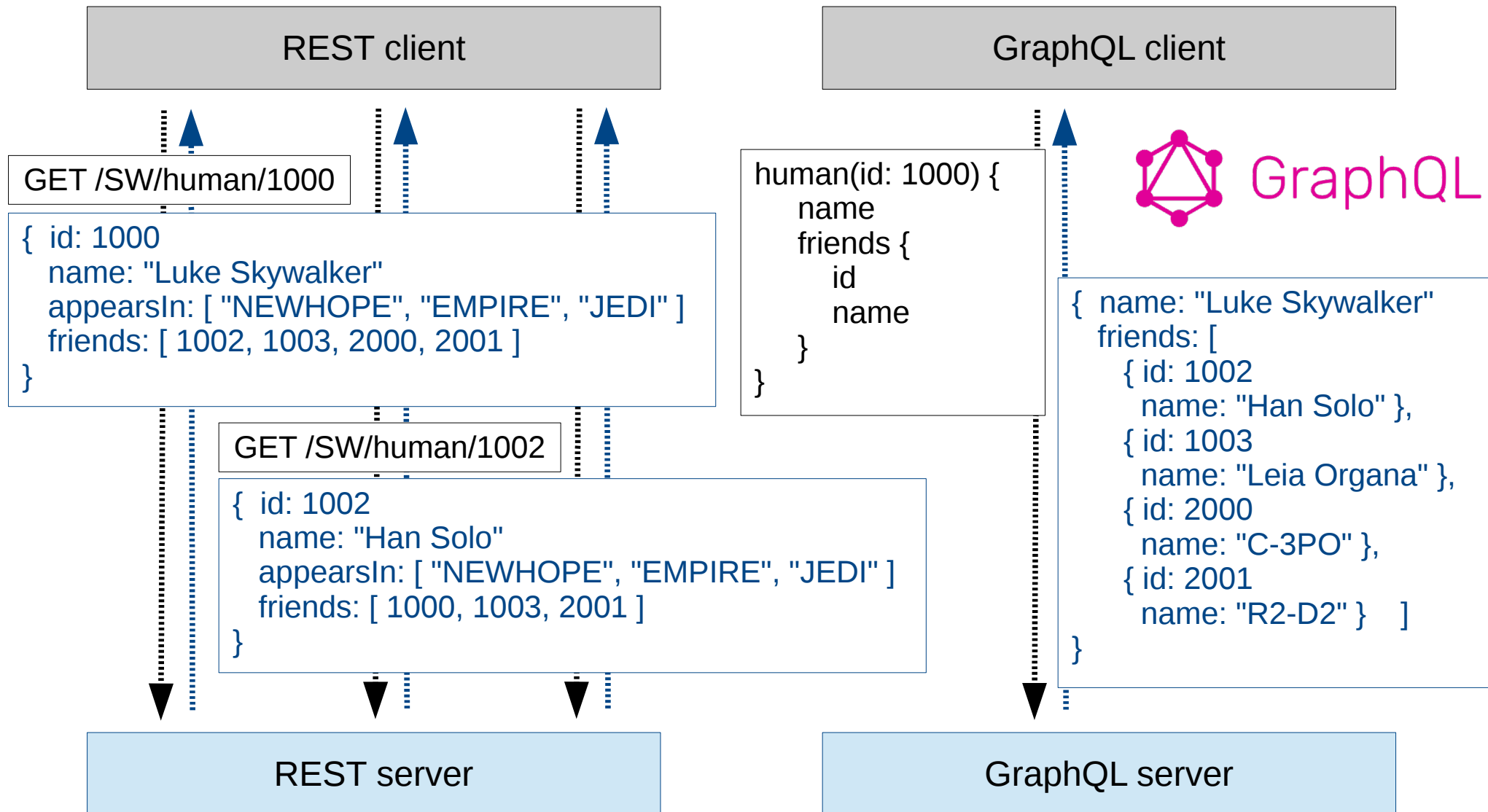
GraphQL Example (in Comparison to REST)



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- Problems:
 - “underfetching”
 - “overfetching”

GraphQL Example (in Comparison to REST)



GraphQL History

- Developed and used by Facebook since 2012
- Made available to the public (open source) in 2015
 - Spec and reference implementation
- Heavily adopted since then



... and many others. See: <http://graphql.org/users/>

Huge Community

GRAPHQL SUMMIT

October 26th, 2016

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Over 350 developers attended the world's first-ever GraphQL conference!

Announced by Facebook in early 2015, GraphQL is a data query language that lets developers efficiently fetch nested data dependencies of modern web applications. GraphQL with any language or platform as well-defined, graph-based schema.



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June 15th, 2018

LOCATION
nHow Hotel, Berlin

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2016 Highlights

Why a Tutorial in ISWC?

- Many aspects of GraphQL are conceptually similar to parts of the Semantic Web stack
 - graph-based view of data
 - notion of a query language for accessing to such data
 - notion of schema
- Relationships between these technologies are yet to be understood
- How can the Semantic Web community leverage and learn from the popularity of GraphQL?
- What can Semantic Web techniques bring to the emerging GraphQL landscape?

Overall Goals

- Deliver a basis for closing these knowledge gaps
 - by providing you with an in-depth understanding of the GraphQL approach and the related ecosystem
- Enable you to assess how GraphQL relates to your own work and perhaps to identify new opportunities for Semantic Web related research

Presenters

- Olaf Hartig (Linköping University, Sweden) @olafhartig
 - Associate Professor in Computer Science
 - Research on data *on* the Web and graph data, problems in which the data is distributed over multiple autonomous / heterogeneous sources
 - Various GraphQL-related research, including the very first scientific work on GraphQL which focused on the semantics and the complexity of the query language
- Ruben Taelman (Ghent University, Belgium) @rubensworks
 - Finishing PhD student in Computer Science
 - Research on querying Linked Data
 - Developer of the GraphQL_{LD} approach to query RDF data using the GraphQL query language



Outline

9:20 - 9:30 Introduction

9:30 - 10:05 GraphQL schemas & the GraphQL query language

10:05 - 10:20 Hands-on

10:20 - 10:30 Fundamental properties of the query language

10:30 - 10:40 Emerging trends

Break

11:20 - 11:45 Setting up a GraphQL interface

11:45 - 12:05 Client-side GraphQL

12:05 - 12:25 GraphQL over RDF

12:25 - 12:40 Discussion: GraphQL and the Semantic Web

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