



DATEN EXPONIEREN

eXtreme (schnell und einfach) Programmiert?

AGENDA

- Daten befreien?
- Daten befreien!
- Daten befreit?!

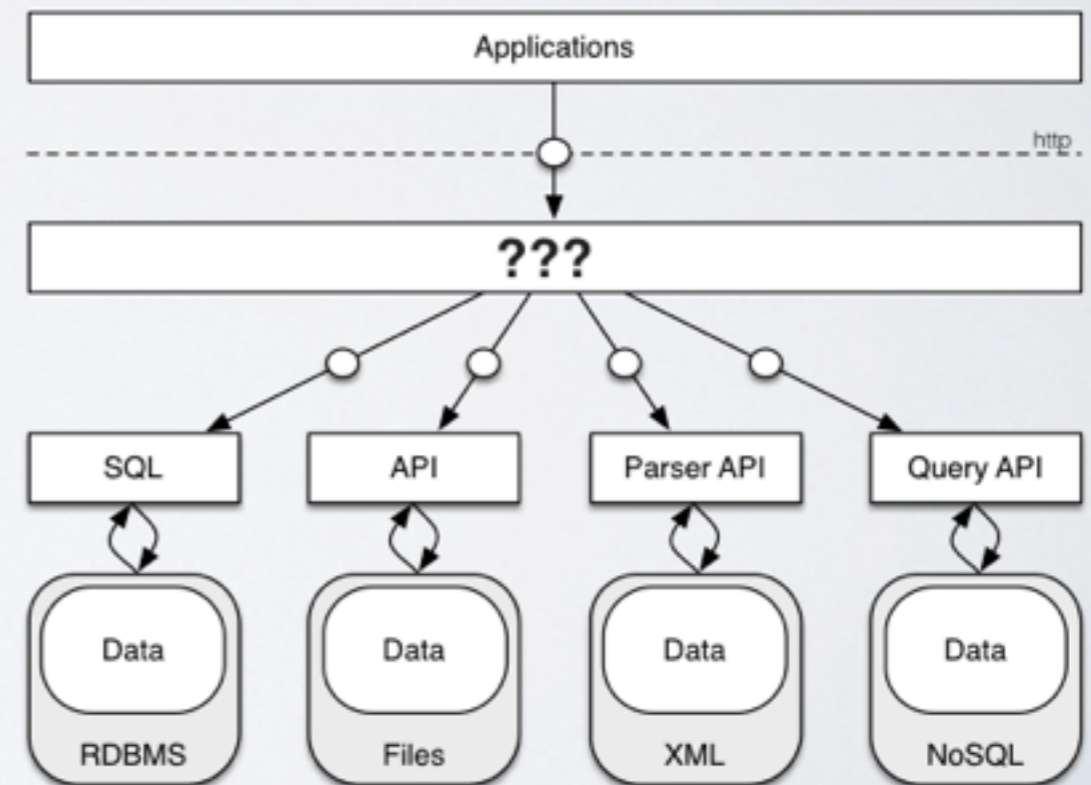


<http://olingo.apache.org>

DATEN BEFREIEN?

Unterschiedlichste Datenformate
Proprietäre APIs
Transport per Internet funktioniert
nicht immer (so einfach)

Internet ist HTTP
REST als Paradigma
SQL als Abfrageansatz
Spezifiziertes Datenformat



DATEN BEFREIEN!



ACME Fahrzeuge x ACME Fahrzeuge x ACME Fahrzeuge x

localhost:8080/acme/car.jsf

Hersteller Fahrzeuge Fahrer Start

Fahrzeug anlegen

Kein Hersteller angegeben
=> [Zur Herstellerverwaltung](#)

Alle Fahrzeuge

Alle Fahrzeuge anzeigen

Model	Model Year	Preis	Hersteller
F1 W02	2011	167189.0	Star Powered Racing
F1 W04	2013	242189.99	Star Powered Racing
FF2013	2013	199189.11	Horse Powered Racing
FF2014	2014	299189.11	Horse Powered Racing

acme-data-store version 0.1.0-SNAPSHOT build at

ACME Fahrzeuge x ACME Fahrzeuge x ACME Fahrzeuge x

localhost:8080/acme/manufacturers.jsf

Hersteller Fahrzeuge Fahrer Start

Hersteller

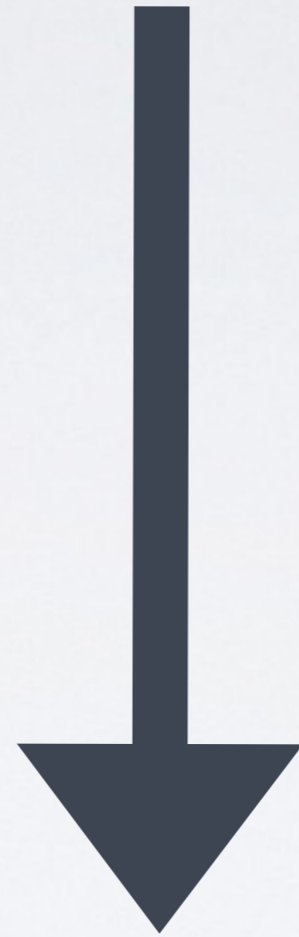
Name	Adresse	
Star Powered Racing	Star Street 137 70173 Stuttgart Germany	Fahrzeug hinzufügen
Horse Powered Racing	Horse Street 1 41053 Maranello Italy	Fahrzeug hinzufügen

acme-data-store version 0.1.0-SNAPSHOT build at

ACME - WEB - CLIENT

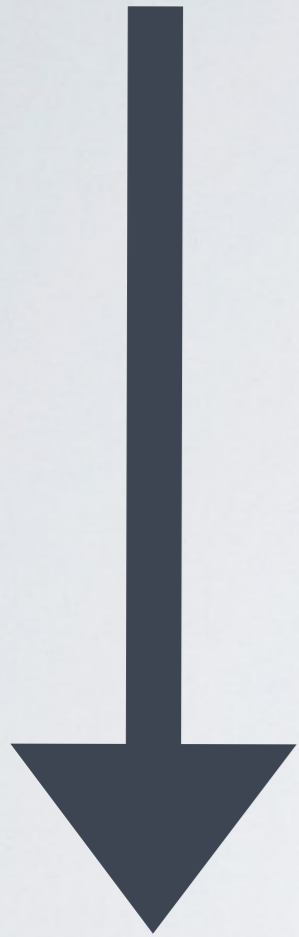
WIE?
WOMIT?

EINFACH?
SCHNELL?



ACME - OPEN - DATA

ACME - WEB - CLIENT



WEB-SERVICE?

REST?

ODATA MIT OLINGO?

ACME - OPEN - DATA

DEMO

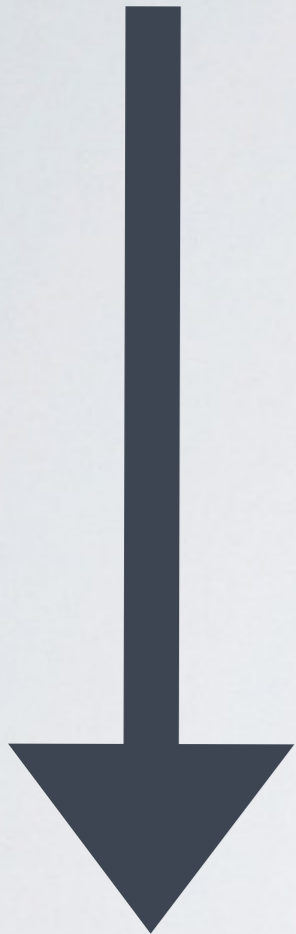
ACME - WEB - CLIENT

~~WEB SERVICE~~

(REST)

ODATA MIT OLINGO

ACME - OPEN - DATA

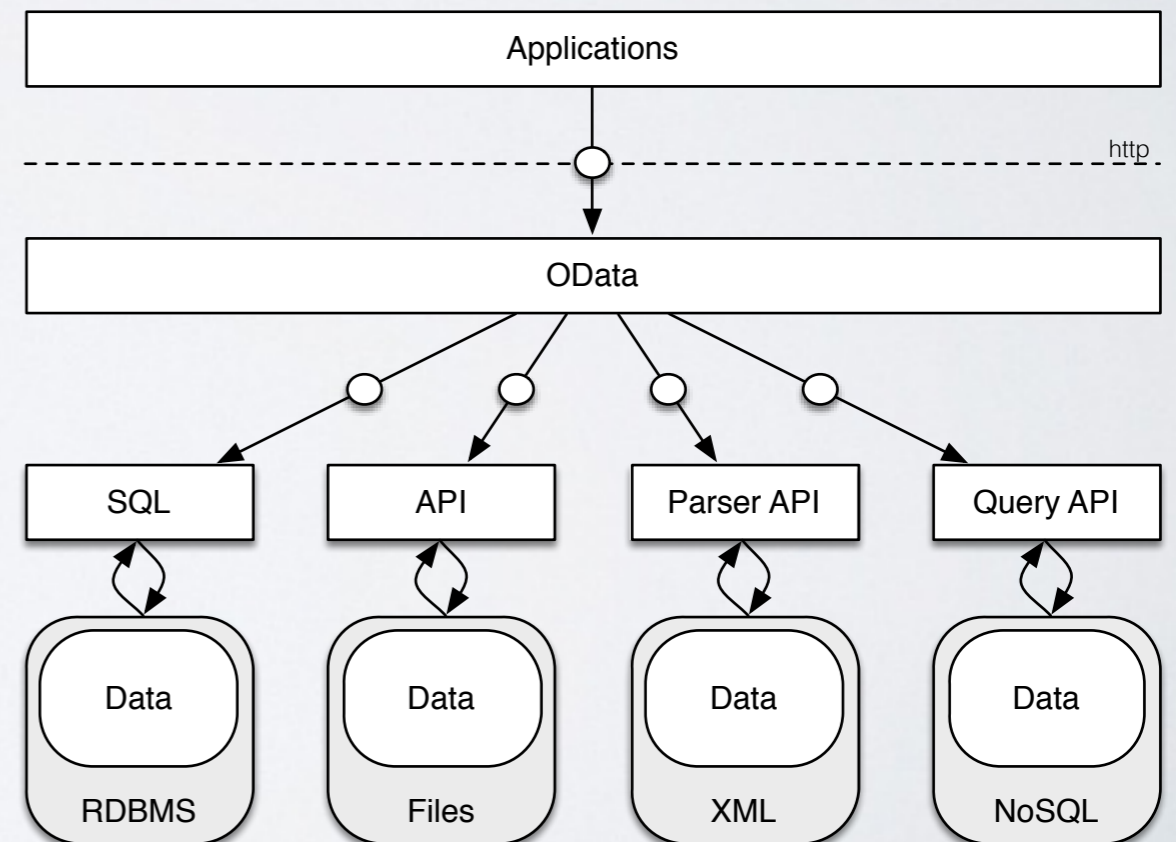


DATEN BEFREIT?!

Unterschiedlichste Datenformate
Proprietäre APIs
Transport per Internet funktioniert
nicht immer (so einfach)

Internet ist HTTP
REST als Paradigma
SQL als Abfrageansatz
Spezifiziertes Datenformat

HTTP + REST + SQL = OData





ODATA PROTOCOL

Client

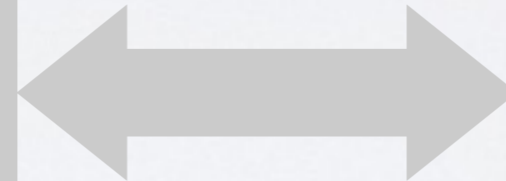
.NET, iOS,
JavaScript, Java, Ruby



Excel, Tableau, LINQPad,
PowerShell, OData Explorer

Consumer

REST
HTTP
GET
PUT
...
DELETE



ATOM
JSON

Server

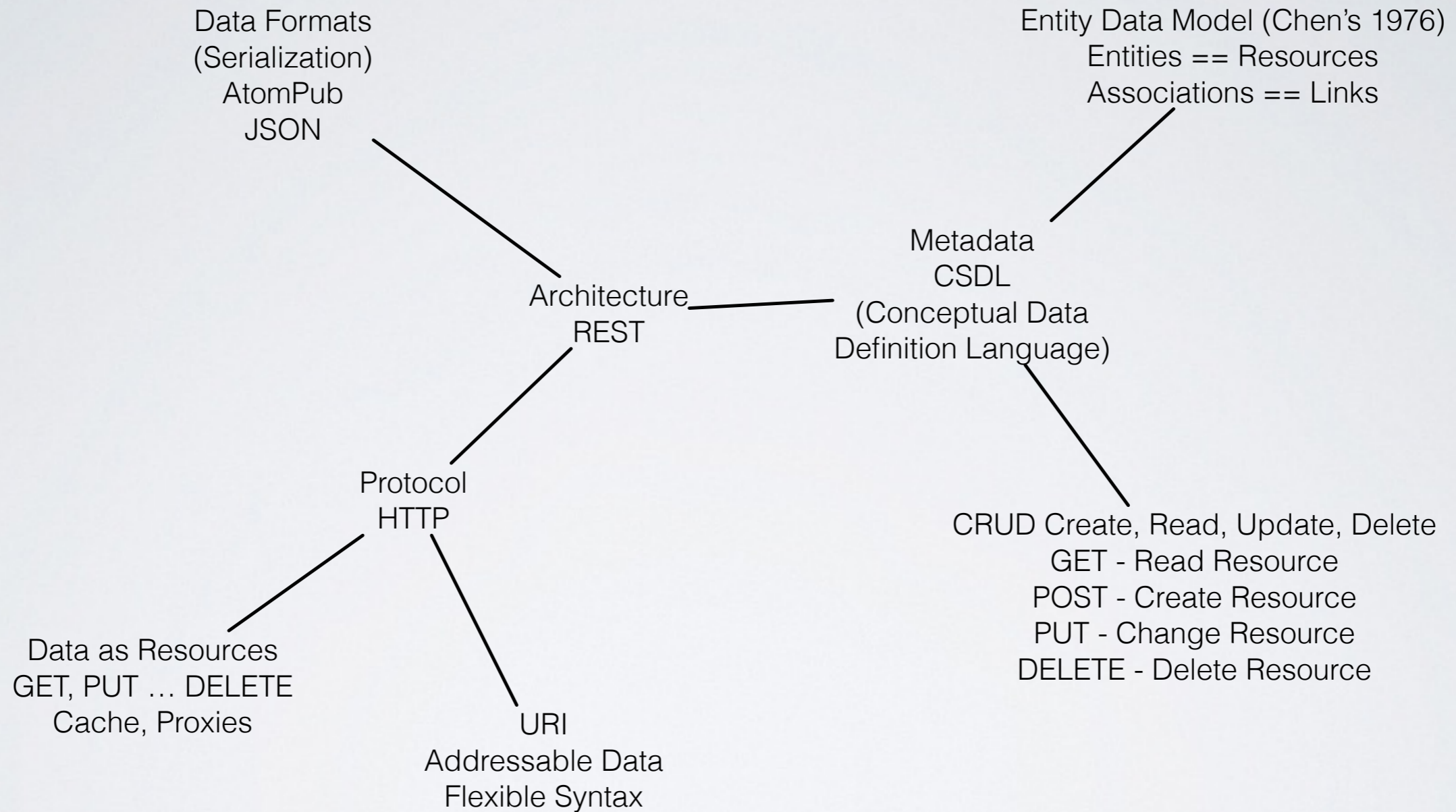
.NET, Java,
Ruby, PHP ...



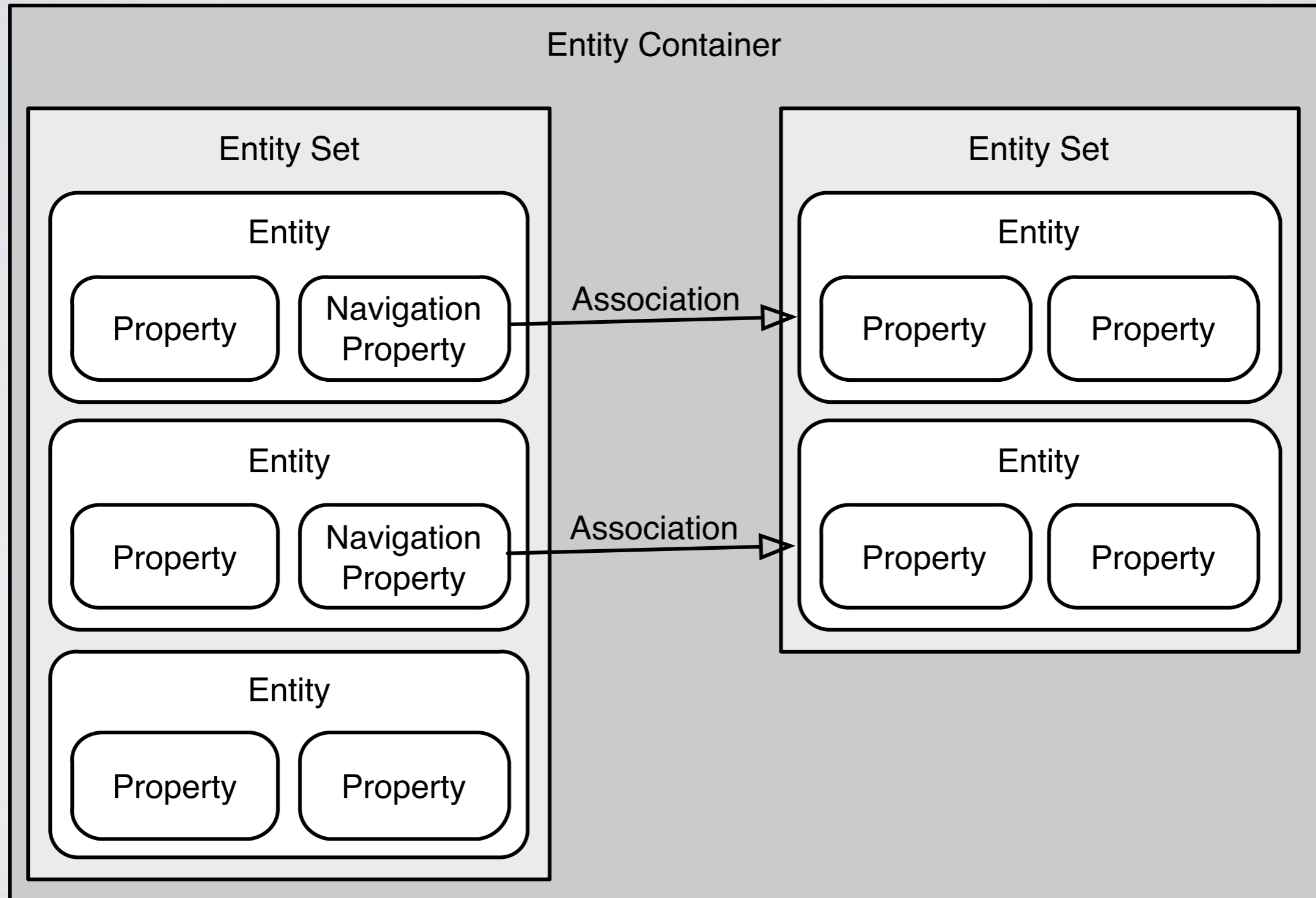
Azure, MySQL, AppEngine,
SAP, IBM, Oracle

Producer

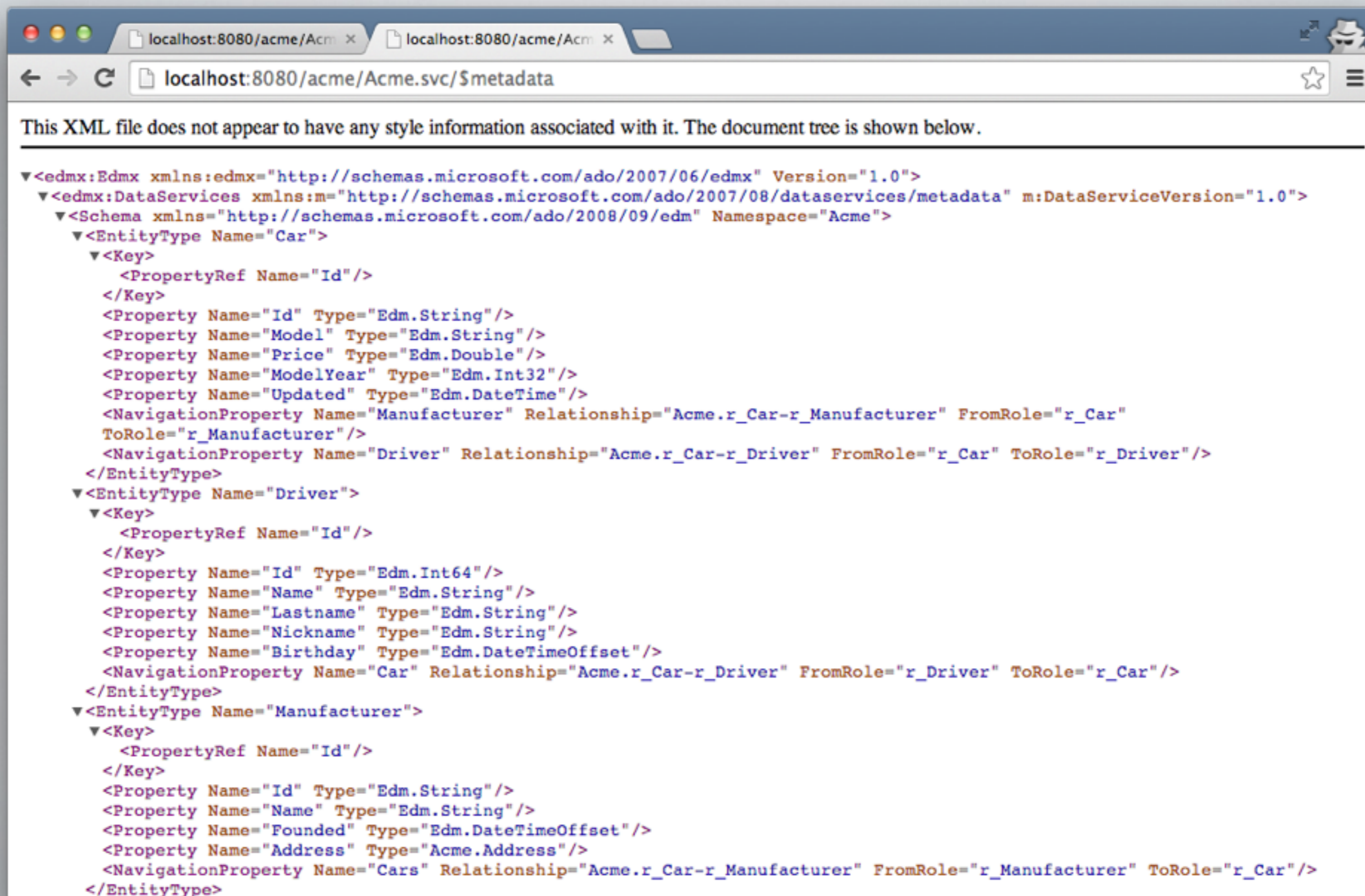
STRUKTUR VON ODATA



ENTITY DATA MODEL (EDM)



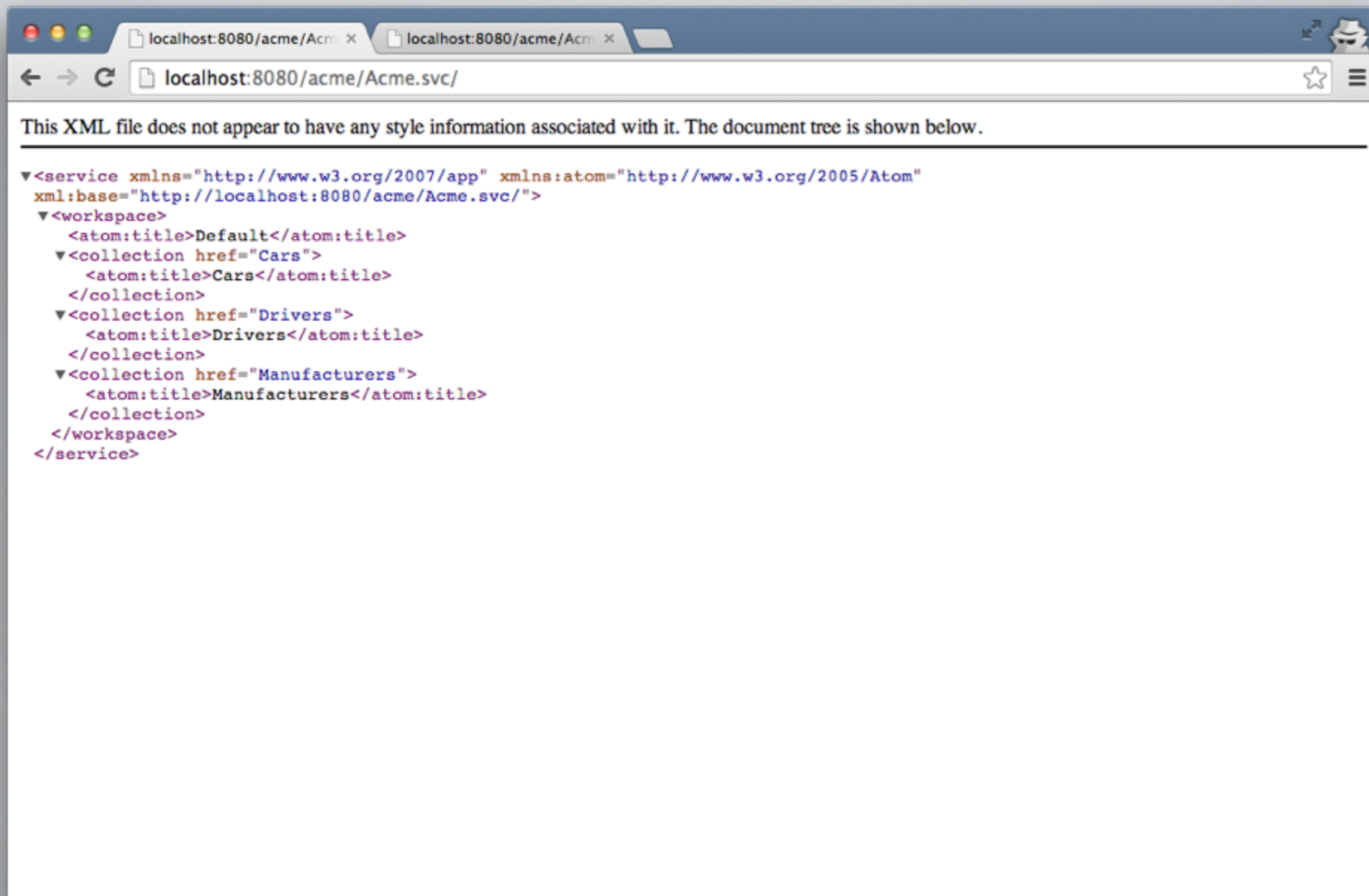
METADATA DOCUMENT



This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<?xml version="1.0" encoding="utf-8" />
<edmx:Edmx xmlns:edmx="http://schemas.microsoft.com/ado/2007/06/edmx" Version="1.0">
  <edmx:DataServices xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata" m:DataServiceVersion="1.0">
    <Schema xmlns="http://schemas.microsoft.com/ado/2008/09/edm" Namespace="Acme">
      <EntityType Name="Car">
        <Key>
          <PropertyRef Name="Id" />
        </Key>
        <Property Name="Id" Type="Edm.String" />
        <Property Name="Model" Type="Edm.String" />
        <Property Name="Price" Type="Edm.Double" />
        <Property Name="ModelYear" Type="Edm.Int32" />
        <Property Name="Updated" Type="Edm.DateTime" />
        <NavigationProperty Name="Manufacturer" Relationship="Acme.r_Car-r_Manufacturer" FromRole="r_Car" ToRole="r_Manufacturer" />
        <NavigationProperty Name="Driver" Relationship="Acme.r_Car-r_Driver" FromRole="r_Car" ToRole="r_Driver" />
      </EntityType>
      <EntityType Name="Driver">
        <Key>
          <PropertyRef Name="Id" />
        </Key>
        <Property Name="Id" Type="Edm.Int64" />
        <Property Name="Name" Type="Edm.String" />
        <Property Name="Lastname" Type="Edm.String" />
        <Property Name="Nickname" Type="Edm.String" />
        <Property Name="Birthday" Type="Edm.DateTimeOffset" />
        <NavigationProperty Name="Car" Relationship="Acme.r_Car-r_Driver" FromRole="r_Driver" ToRole="r_Car" />
      </EntityType>
      <EntityType Name="Manufacturer">
        <Key>
          <PropertyRef Name="Id" />
        </Key>
        <Property Name="Id" Type="Edm.String" />
        <Property Name="Name" Type="Edm.String" />
        <Property Name="Founded" Type="Edm.DateTimeOffset" />
        <Property Name="Address" Type="Acme.Address" />
        <NavigationProperty Name="Cars" Relationship="Acme.r_Car-r_Manufacturer" FromRole="r_Manufacturer" ToRole="r_Car" />
      </EntityType>
    </Schema>
  </DataServices>
</edmx:Edmx>
```

SERVICE DOCUMENT



The image shows a web browser window with two tabs. The active tab is titled 'localhost:8080/acme/Acme.svc/'. The address bar shows the URL 'localhost:8080/acme/Acme.svc/'. Below the address bar, a message states: 'This XML file does not appear to have any style information associated with it. The document tree is shown below.' The XML document tree is displayed as follows:

```
<service xmlns="http://www.w3.org/2007/app" xmlns:atom="http://www.w3.org/2005/Atom"
xml:base="http://localhost:8080/acme/Acme.svc/">
  <workspace>
    <atom:title>Default</atom:title>
    <collection href="Cars">
      <atom:title>Cars</atom:title>
    </collection>
    <collection href="Drivers">
      <atom:title>Drivers</atom:title>
    </collection>
    <collection href="Manufacturers">
      <atom:title>Manufacturers</atom:title>
    </collection>
  </workspace>
</service>
```

ODATA URI CONVENTIONS

`http://services.odata.org/OData/OData.svc/Category(1)/Products?$top=2&$orderby=name`

`_____ / _____ / _____ /`
| | |
service root URI resource path query options

Root	<code>http://services.odata.org/OData/OData.svc/</code>
Resource Path	<code>/Products</code>
Query Options	<code>\$filter=price lt 3.5</code>
Entity Set	<code>/Products</code>
Single Entity	<code>/Products(3)</code>
Member Access	<code>/Products(3)/Price</code>
Link Traversal	<code>/Products(3)/Supplier</code>

HISTORIE VON ODATA



OData 2.0
(Microsoft Open
Specification Promise)

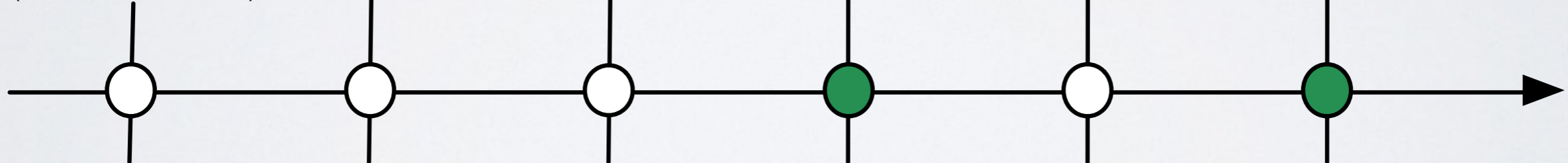
OData 4.0
(OASIS TC)

WCF Data Services
(Microsoft)

OData 3.0
(public)

ADO.NET Data Services
(Microsoft)

Project Astoria
(Microsoft internal)



APACHE OLINGO

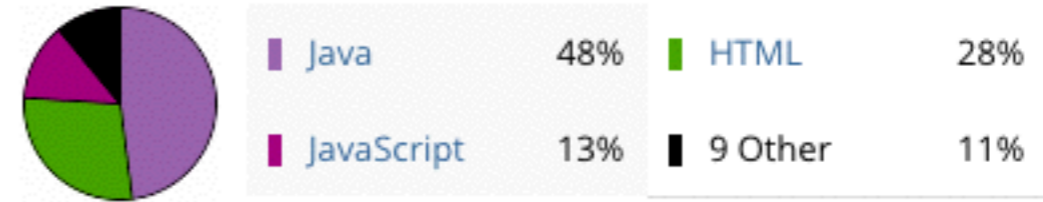
- (vormals) SAP eigene OData Java Bibliothek
 - mit OData 2.0 Client und Server Bibliothek
- Übergeben an Apache Software Foundation
 - als Incubator Projekt (August 2013)
 - zum Apache Top Level Project entwickelt (April 2014)
- Beteiligung von Microsoft durch den Beitrag von
 - data.js (JavaScript) und
 - OData 3.0 Java Client Library
- Aktuell in Entwicklung: OData 4.0
 - Java Server Bibliothek (SAP)
 - Java Client Bibliothek (Microsoft)
 - Java Commons (Microsoft + SAP)
 - JavaScript Client Bibliothek (Microsoft + SAP)



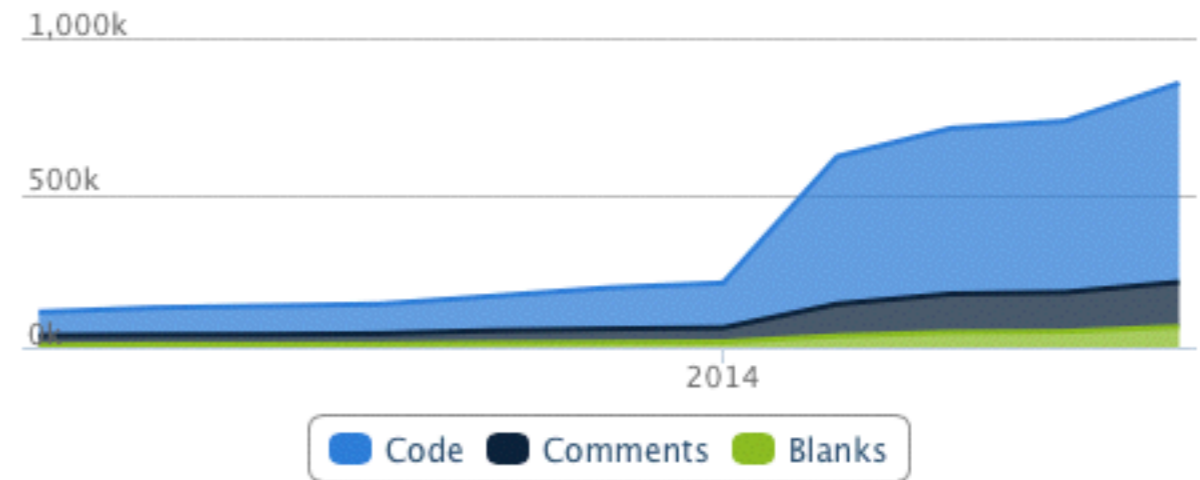
In a Nutshell, Apache Olingo - OData...

- ... has had **1,524 commits** made by **23 contributors** representing **638,853 lines of code**
- ... is **mostly written in Java** with an **average number of source code comments**
- ... has a **codebase with a very short history** maintained by a **large development team** with **stable Y-O-Y commits**
- ... took an estimated **171 years of effort** (COCOMO model) starting with its **first commit in July, 2013** ending with its **most recent commit about 20 hours ago**

Languages



Lines of Code



Activity

30 Day Summary

Apr 18 2014 — May 18 2014

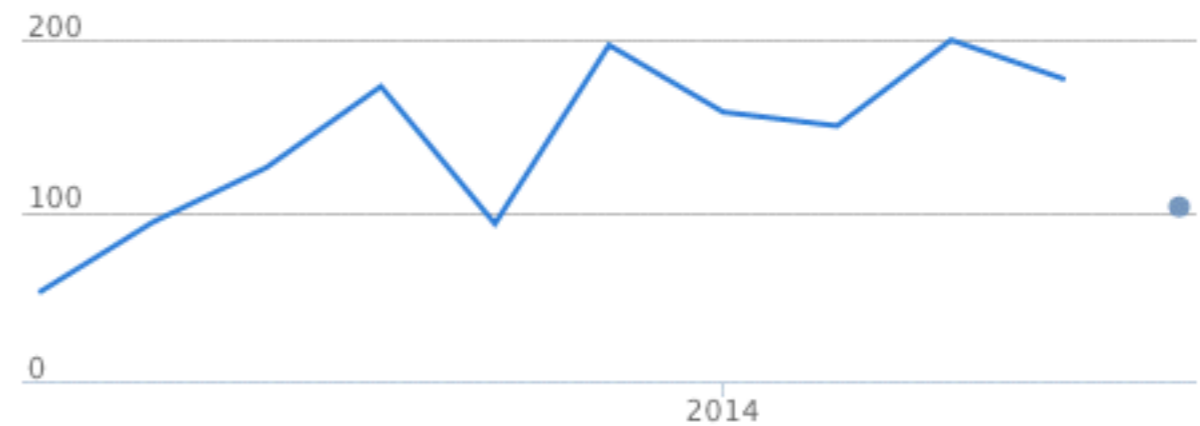
- 161 Commits**
- 13 Contributors**
including 1 new contributor
- 1 New Language :**
HTML added May 9

12 Month Summary

May 18 2013 — May 18 2014

- 1524 Commits**
This project is less than 12 months old.
- 23 Contributors**
This project is less than 12 months old.

Commits per Month



FRAGEN \Rightarrow ANTWORTEN

KONTAKT UND LINKS



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<http://olingo.apache.org>

[https://www.oasis-open.org/
committees/odata/](https://www.oasis-open.org/committees/odata/)



meet the SPEAKER @speakerlounge



1. OG DIREKT ÜBER DEM EMPFANG