Open Data for Open Science

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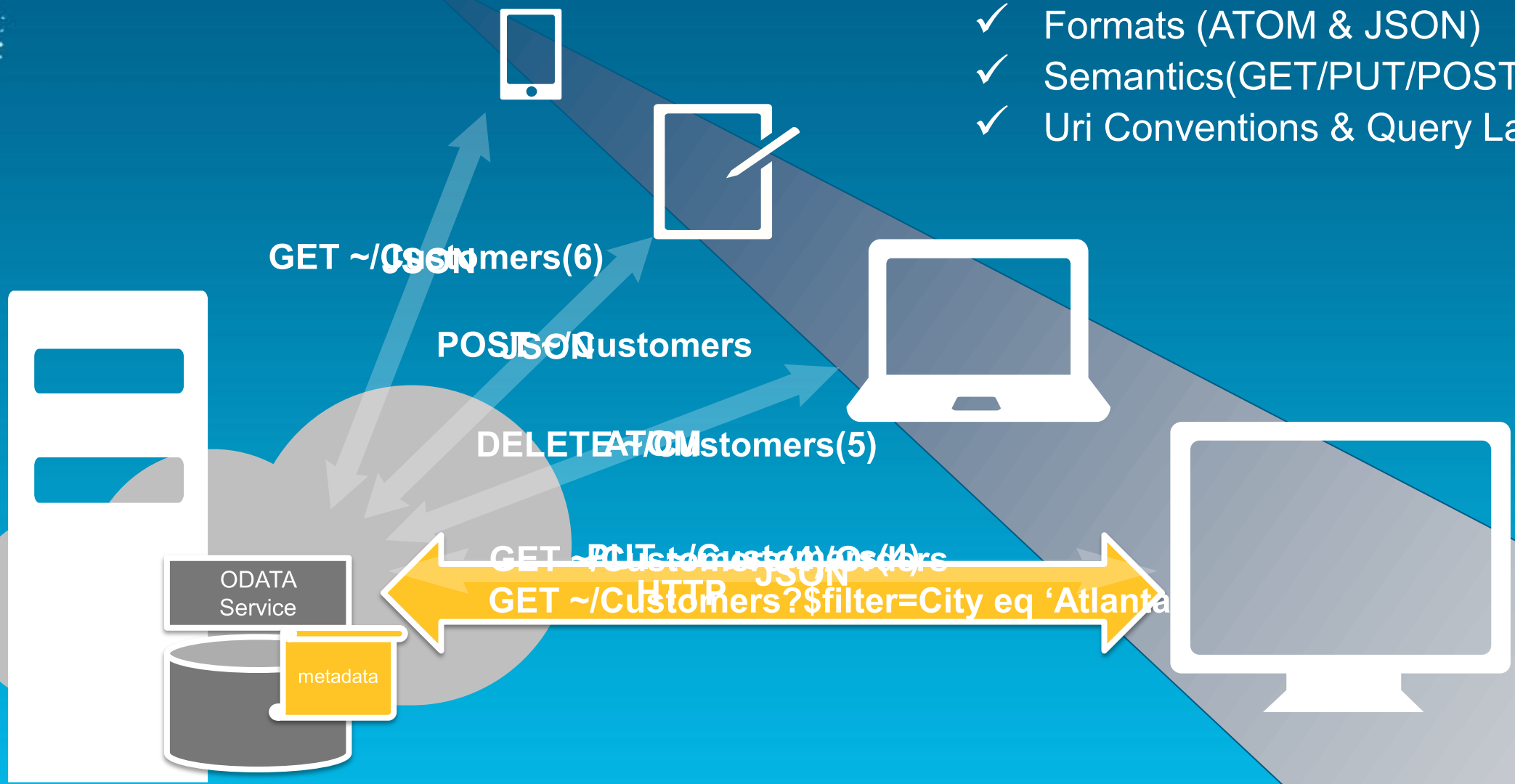
What is OData?

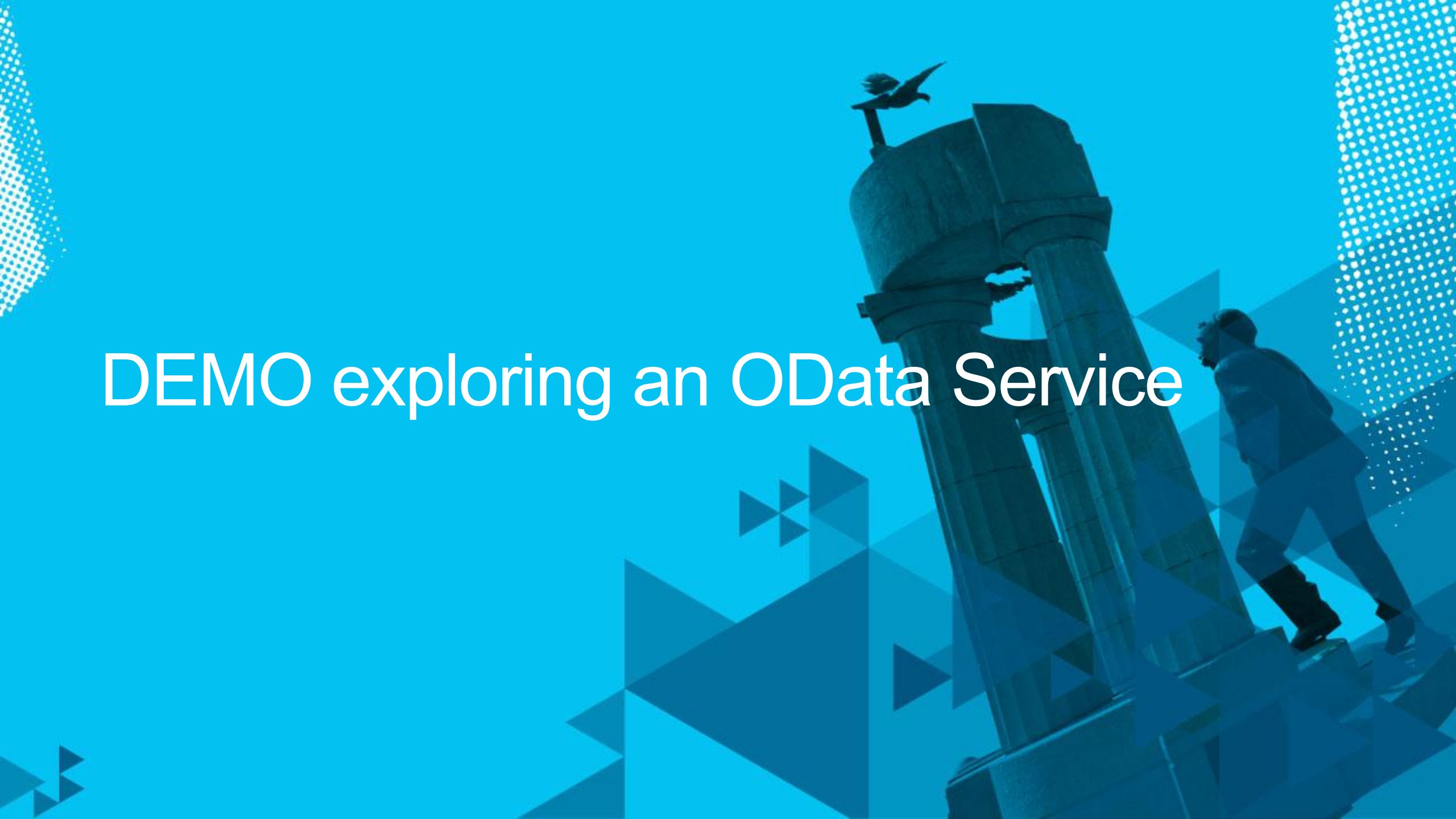
- ✓ HTTP
- ✓ Reach (devices and platforms)
- ✓ Metadata
- ✓ Formats (ATOM & JSON)
- ✓ Semantics(GET/PUT/POST/DELETE)
- ✓ Uri Conventions & Query Language



Why OData?

- HTTP
- Suitable for devices
- Simple
- Powerful
- Eco-system
  - Platforms: Javascript, PHP, Java, .NET, Silverlight, Ruby, iOS etc
  - Producers: SharePoint, DataMarket, CRM, StackOverflow, Netflix etc.
  - Consumers: Excel, Tableau, SharePoint

DEMO exploring an OData Service



Features

- Multiple Formats – via Content Type Negotiation
- Query Language
  - $filter
  - $select
  - $orderby
  - $skip, $top
- Clearly defined semantics for CUD
- Server Driven Paging - $skiptoken

Principles for new features…

- Not having a lot of features is a great feature
- Simple scenarios must remain simple
- Manage bar of entry for both clients and servers

Coming in V3

- Spatial Types and Queries
- Any / All support
- Multi-value properties
- Named (or Multiple) Streams
- Better inheritance support
- Efficient Format
- Extensibility

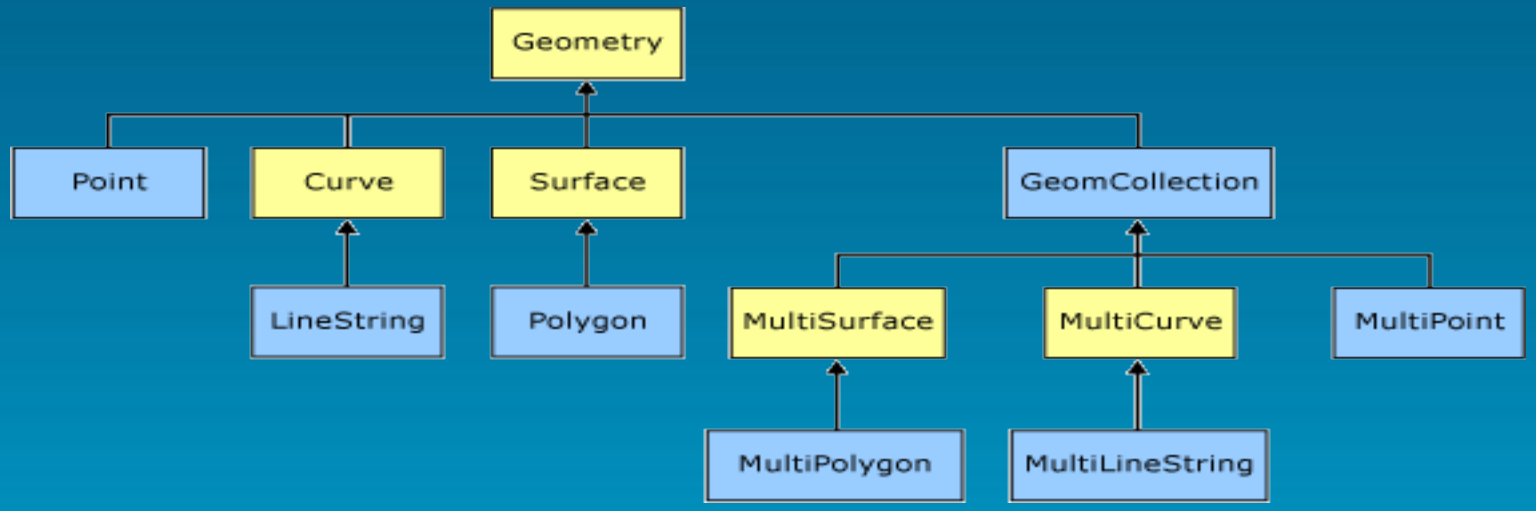
Examples

- Any / All
  - GET ~/Sensors/?$filter=Readings/any(r: r/Type eq ‘temperature’ AND r/VariationFromMean gt 20.0M)
- Multi-Value
  - GET ~/Satelites(6)/Frequencies
- Named Streams
  - GET ~/Satelites(6)/Video/HiDef/$value
  - GET ~/Satelites(6)/Video/MedDef/$value

Geospatial Data Support

- Entity properties can have geospatial data values.
- Supports full OGC Simple Features type hierarchy.
- Supports both flat-earth and round-earth topologies.
- Supports distance, length, and intersects query functions.
- All the oil rigs in the gulf that have had an accident in the last year, ordered from north to south:
  - /Oilrigs?$filter=geo.intersects(Location, /Areas('Gulf of Mexico')/Region) and DaysSinceAccident lt 365&$orderby geo.distance(Location, Point(90,-80))
- My nearest 3 friends, right now:
  - /People?$filter=Friends/any(f: f/Name eq 'Alex.James')&$orderby=geo.distance(LastKnownLocation, Point(45.2435, -127.23434))$top=3

Type Hierarchy



- Plus similar for Geography (round-earth)
- Blue types are instantiable
- OData uses the base type + the blue types

Spatial Extensibility

- Protocol defines how to add support for more query functions.
- High-end geospatial services will do so.
- Can support additional types after the OGC standardizes them.

Recap & Questions

LINKS

- OData.org
  - Mailing List – http://odata.org/mailing-list
  - Blog – http://odata.org/blog
  - Consumers
  - Producers
  - Sample Services <- good for demos
  - OData SDK
- Data Frameworks - http://msdn.microsoft.com/en-us/data/default.aspx
- Astoria Team Blog – http://blogs.msdn.com/astoriateam
- Contact Me:
  - My Blog – http://blogs.msdn.com/alexj
  - Twitter - @adjames
  - Email – alexj@microsoft.com