

Modern Data Services

Neil Rae, BDUK

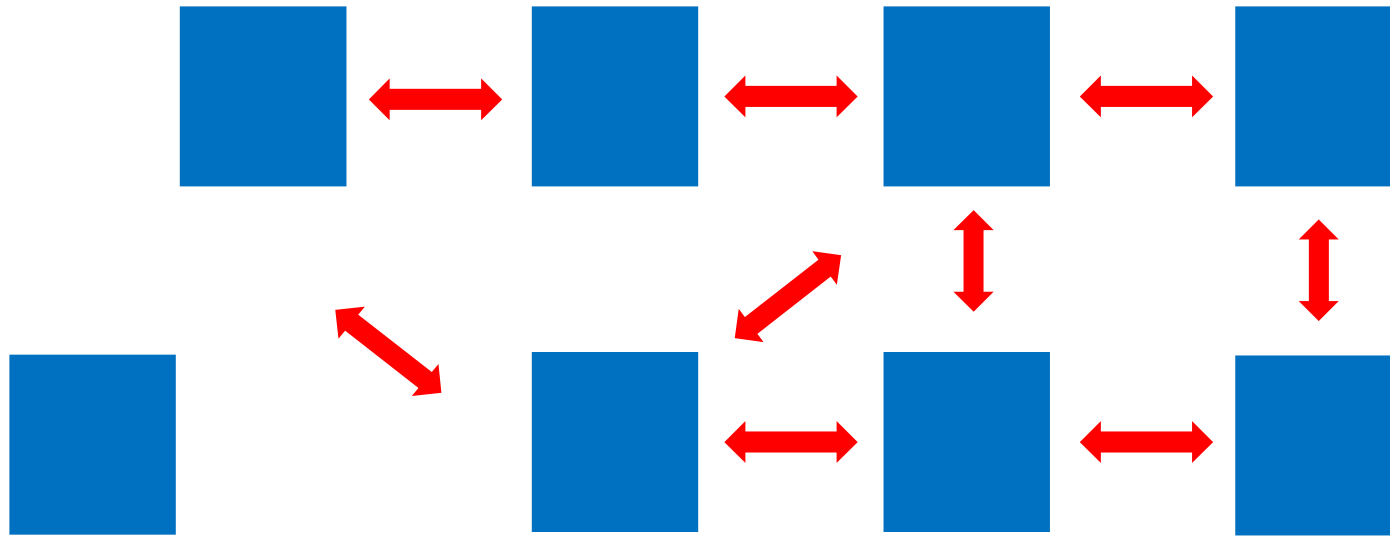
Agenda

- Historic Approach to Data Integration
- Semantic Web
- Graph Data
- Data Formats
- Web Services
- Innovation
- Defence

Aim

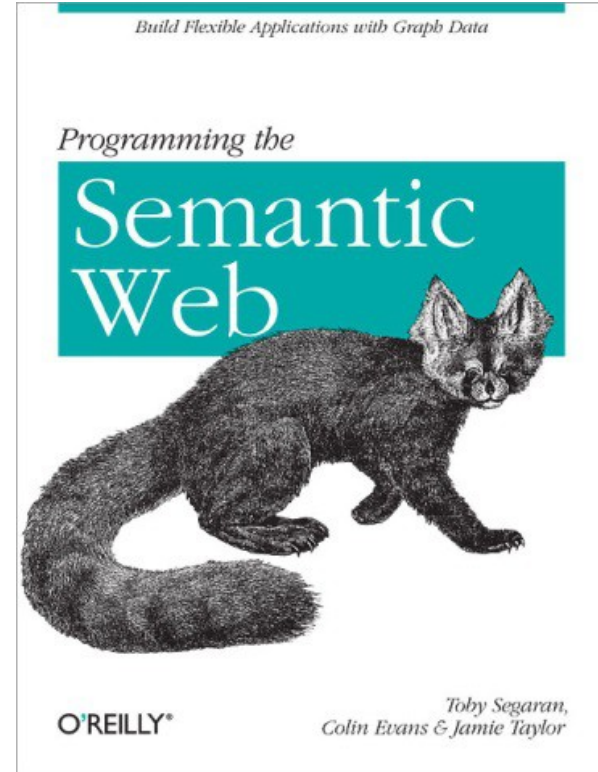
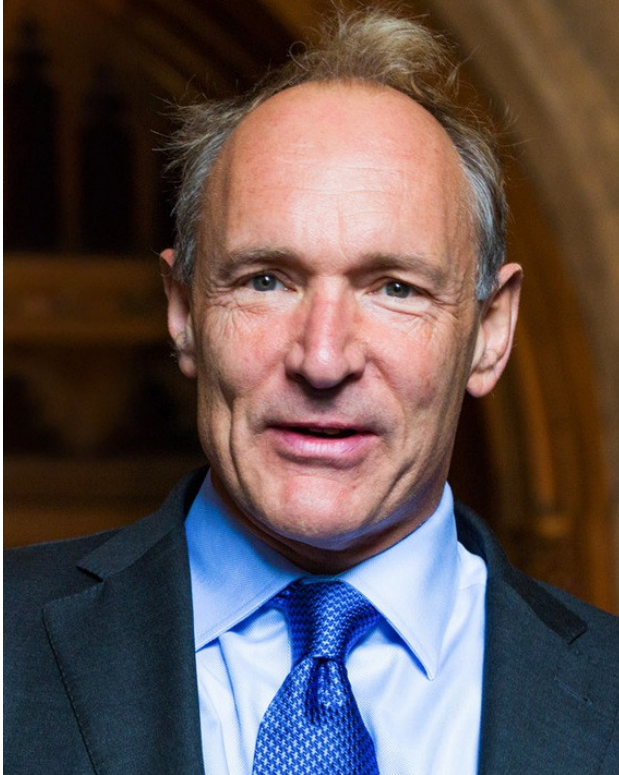
*Provoke thought and informed conversation
about data integration,
particularly in a Defence context*

Historic Integration Approach



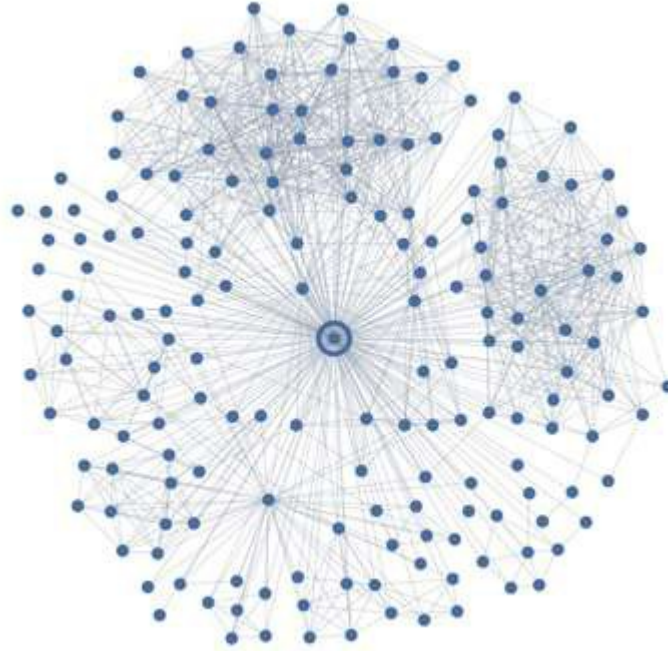
- Data embedded deep in application databases
- Point to point
- Translation between schemas

Semantic Web



- ‘a web of data that can be processed by machines—that is, one in which much of the meaning is machine-readable’
- Metadata

Graph Data



- Resource Description Framework (RDF)

Subject : Object : Predicate

- Friend of a Friend (FoaF)
- Dublin Core
- Schema.org

Data Formats

- XML

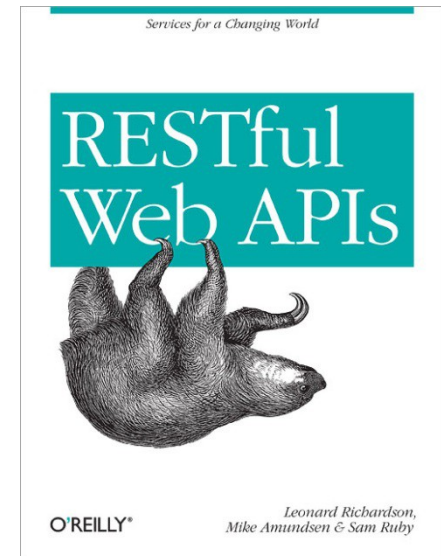
```
<?xml version="1.0" encoding="UTF-8"?>
<note>
<to>Tove</to>
<from>Jani</from>
<heading>Reminder</heading>
<body>Don't forget me this weekend!</body>
</note>
```

- JSON

```
{
  "note": {
    "to": "Tove",
    "from": "Jani",
    "heading": "Reminder",
    "body": "Don't forget me this weekend!"
  }
}
```

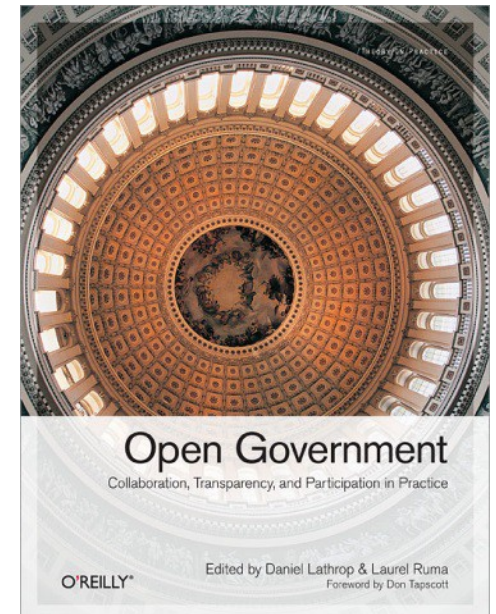
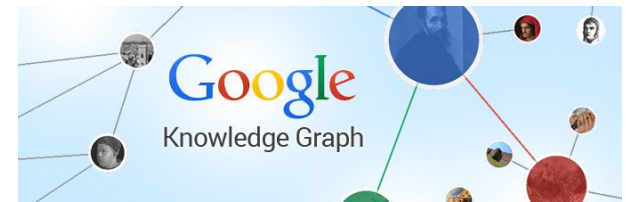
Web Services

- Web Services Description Language (WSDL)
 - Verb / Function based
 - XML format
- REpresentational State Transfer (REST)
 - Resource based
 - uses HTTP verbs (GET, PUT, POST, DELETE)
 - XML or JSON format
- Graph Query Language (GraphQL)
 - Developed by Facebook
 - JSON-like format



Innovation

- MIT
- Facebook
- LinkedIn
- Google Knowledge Graph
- Amazon
- Open Government
- Open Data / Linked Data
- Data journalism



Defence

- Defence as a Platform
- Service based approach:
 - Make use of open standards
 - Use cloud first
 - Make things secure
 - Make privacy integral
 - Share and reuse technology
 - Integrate and adapt technology
 - Make better use of data
- Interoperability: OAGIS; PLCS



Summary

- Point to Point Data Integration
- Semantic Web – RDF & Graph Data Stores
- Web Services – REST, JSON, GraphQL
- Innovation – Large companies investing
- Defence – DaaP implications

Questions