

{JSON}

The “new” data structure
in modern web applications

Esteban J. G. Gabancho
@egabanch - github.com/egabanch

What is JSON?

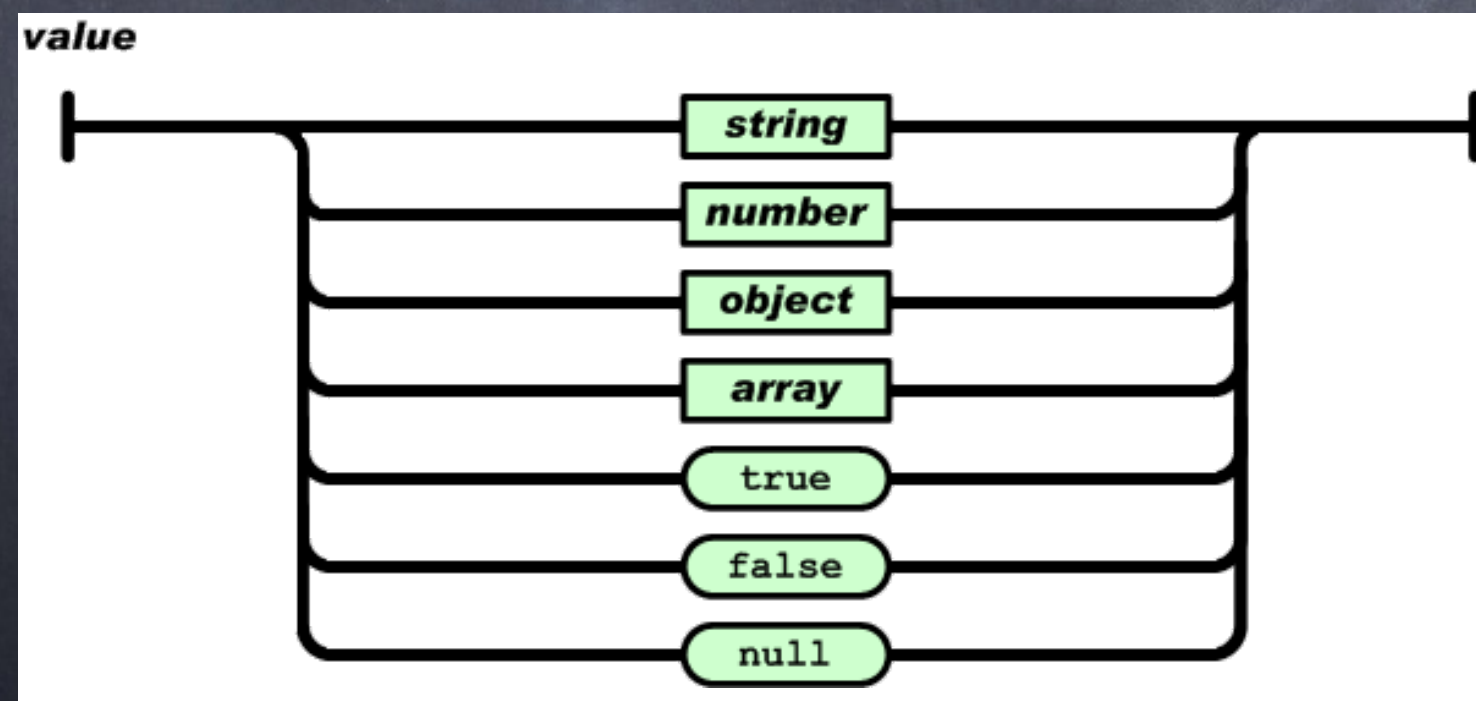
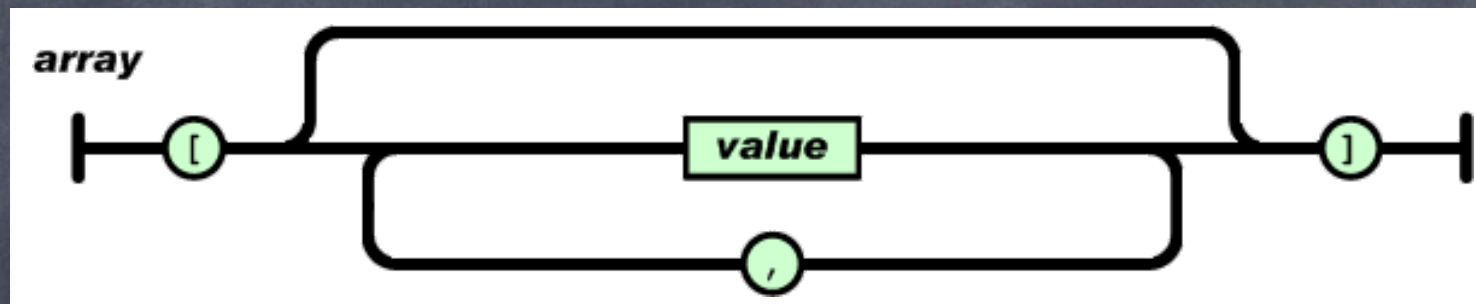
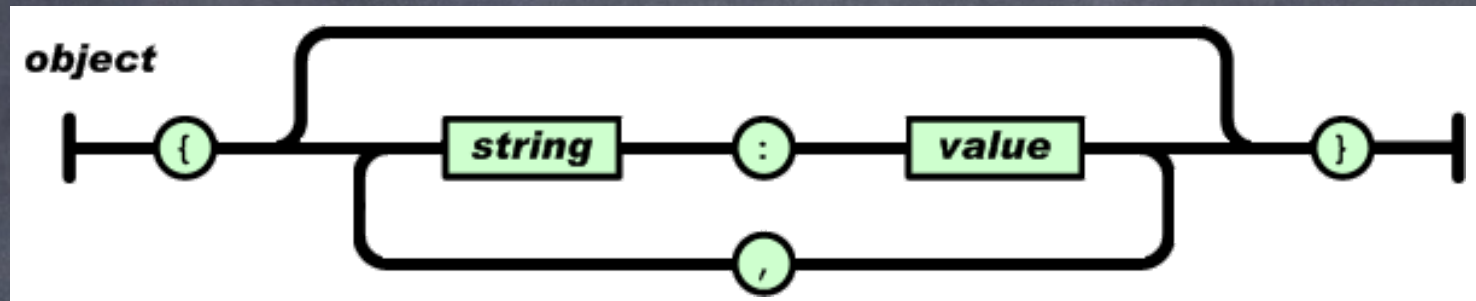
JavaScript Object Notation

It is a data interchange format

Based on Javascript Objects

<http://json.org/>

How is JSON?



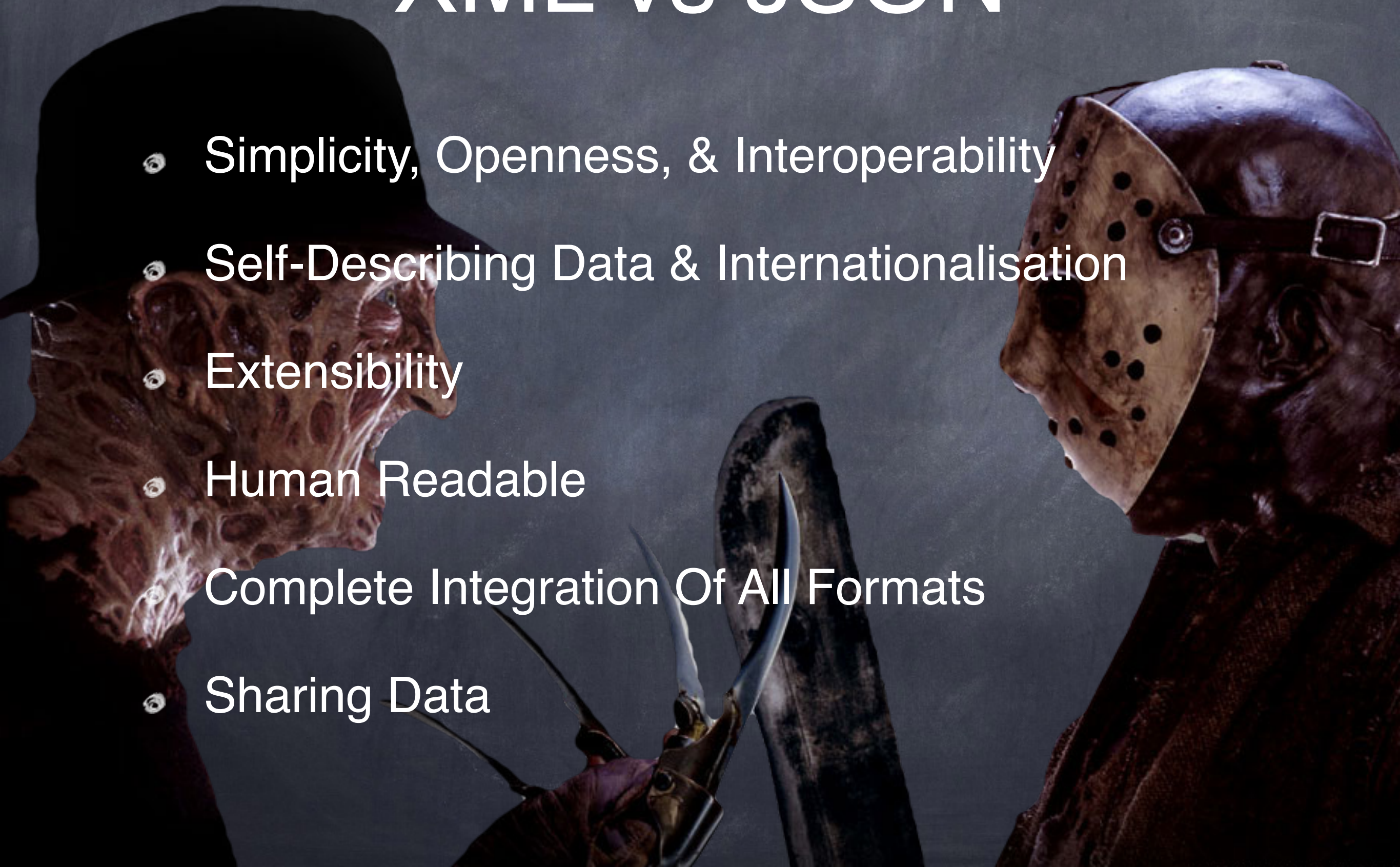
What does JSON look like?

```
{
  "menu": {
    "id": "file",
    "value": "File",
    "popup": {
      "menuitem": [
        {"value": "New", "onclick": "CreateNewDoc()"},
        {"value": "Open", "onclick": "OpenDoc()"},
        {"value": "Close", "onclick": "CloseDoc()"}
      ]
    }
  }
}
```


XML

XML vs JSON

- Simplicity, Openness, & Interoperability
- Self-Describing Data & Internationalisation
- Extensibility
- Human Readable
- Complete Integration Of All Formats
- Sharing Data




```
{u'authors': [{u'affiliation': u'Indiana University',
  u'first_name': u'Roger L',
  u'full_name': u'Burford, Roger L',
  u'last_name': u'Burford'}],
u'cited_by_count': None,
u'collections': [{u'primary': u'BOOK'}],
u'creation_date': u'2014-04-02T18:13:58.206004',
u'files': [],
u'imprint': {u'date': u'1968',
  u'place': u'Columbus, OH',
  u'publisher_name': u'Merrill'},
u'language': u'eng',
u'modification_date': u'2014-04-02T18:13:58.206936',
u'newer_version': [],
u'number_of_authors': 1,
u'number_of_comments': None,
u'number_of_reviews': None,
u'physical_description': {u'pagination': u'814 p'},
u'recid': 1,
u'title': {u'subtitle': u'a computer approach', u'title':
u'udc': [u'519.2', u'518.5:519.2'],
u'version_history': []}
```

```
<record>
  <datafield tag="041" ind1=" " ind2=" ">
    <subfield code="a">eng</subfield>
  </datafield>
  <datafield tag="080" ind1=" " ind2=" ">
    <subfield code="a">519.2</subfield>
  </datafield>
  <datafield tag="080" ind1=" " ind2=" ">
    <subfield code="a">518.5:519.2</subfield>
  </datafield>
  <datafield tag="100" ind1=" " ind2=" ">
    <subfield code="a">Burford, Roger L</subfield>
    <subfield code="u">Indiana University</subfield>
  </datafield>
  <datafield tag="245" ind1=" " ind2=" ">
    <subfield code="a">Statistics</subfield>
    <subfield code="b">a computer approach</subfield>
  </datafield>
  <datafield tag="260" ind1=" " ind2=" ">
    <subfield code="a">Columbus, OH</subfield>
    <subfield code="b">Merrill</subfield>
    <subfield code="c">1968</subfield>
  </datafield>
  <datafield tag="300" ind1=" " ind2=" ">
    <subfield code="a">814 p</subfield>
  </datafield>
  <datafield tag="909" ind1="C" ind2="0">
    <subfield code="y">1968</subfield>
  </datafield>
  <datafield tag="909" ind1="C" ind2="0">
    <subfield code="b">21</subfield>
  </datafield>
  <datafield tag="909" ind1="C" ind2="1">
    <subfield code="c">1990-01-27</subfield>
    <subfield code="l">00</subfield>
    <subfield code="m">2002-04-12</subfield>
    <subfield code="o">BATCH</subfield>
  </datafield>
  <datafield tag="909" ind1="C" ind2="S">
    <subfield code="s">m</subfield>
    <subfield code="w">198606</subfield>
  </datafield>
  <datafield tag="980" ind1=" " ind2=" ">
    <subfield code="a">BOOK</subfield>
  </datafield>
</record>
```


What can I use JSON for?

Configuration Files

Configuration Files

- Reacher than INIT files
- Easy to write and organise
- As valid as YAML
- Already used by some well know apps:
Transmission, npm,
bower, ...

```
{  
  'DataBase': {  
    'host': 'localhost',  
    'port': '3996',  
    'user': 'db',  
    'password': 'xxxxxx'  
  }  
  . . .  
}
```


APIs

APIs

- First class citizen of the web
- Important to share information and open services to more customers
- 80% of the online traffic
- REST APIs

REST APIs

- Representational State Transfer
- Architectural principle
- Resource-base (resources vs. actions)
- Twitter API

Big Data

Big Data

- There is not preferred data interchange format
- JSON is the option for NoSQL (and SQL) databases
 - MongoDB, CouchDB ... PostgreSQL
- Massive scalability
- No column/relational model data

Big Data

- Indexing is quite important too
- JSON is being used for this purposed
 - Solr and ElasticSearch

The Internet of Things

The Internet of Things

- A bunch of “things” connected to other “things”
- Devices (things) with limited capabilities
- Ideal candidate for integration into Web Mashups

Full-stack JavaScript

Full-stack JavaScript

- JavaScript is the new hotness and that probably won't change anytime soon.
- Web Development
- Server-side Development
- Mobile Development

JSON-LD

<http://json-ld.org/>



JSON-LD

- JavaScript Object Notation for Linked Data
- Lightweight Linked Data format
- Allows to encode RDF graphs in JSON
- It is easy for humans to read and write

JSON-LD

```
{
  "@context": {
    "name": "http://xmlns.com/foaf/spec/#term_name",
    "Person": "http://xmlns.com/foaf/spec/#term_Person",
    "dc": "http://purl.org/dc/dcmitype/",
    "knows": "http://xmlns.com/foaf/spec/#term_knows"
  },
  "@id": "http://example.com/JohnDoe",
  "@type": "Person",
  "name": {
    "@type": "dc:Text",
    "@value": "John Doe"
  },
  "knows": [
    {
      "@id": "http://example.com/JaneDoe",
      "@type": "Person",
      "name": {
        "@type": "dc:Text",
        "@value": "Jane Doe"
      }
    }
  ]
}
```


One way or another, the future is bright for JSON

Although there are other alternatives raising their voices like YAML (<http://www.yaml.org/>)