{JSON}

The "new" data structure
in modern web applications

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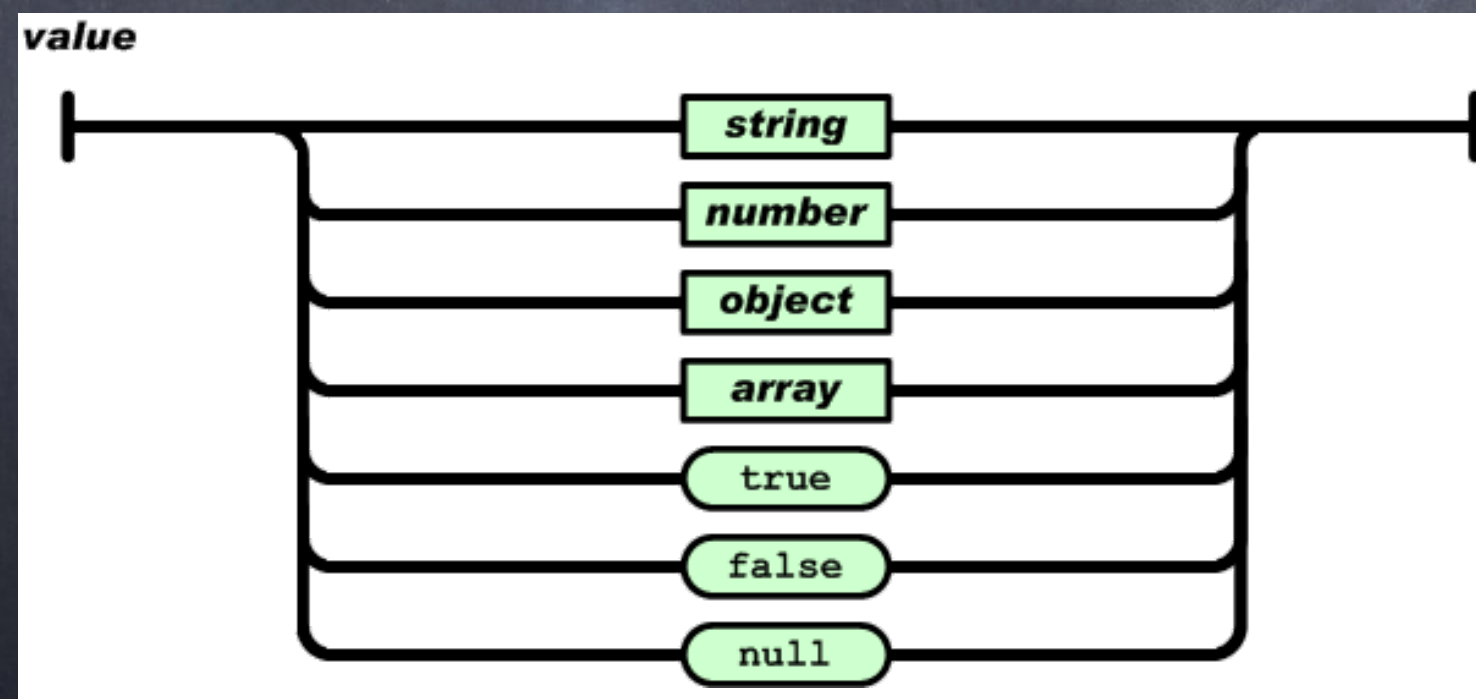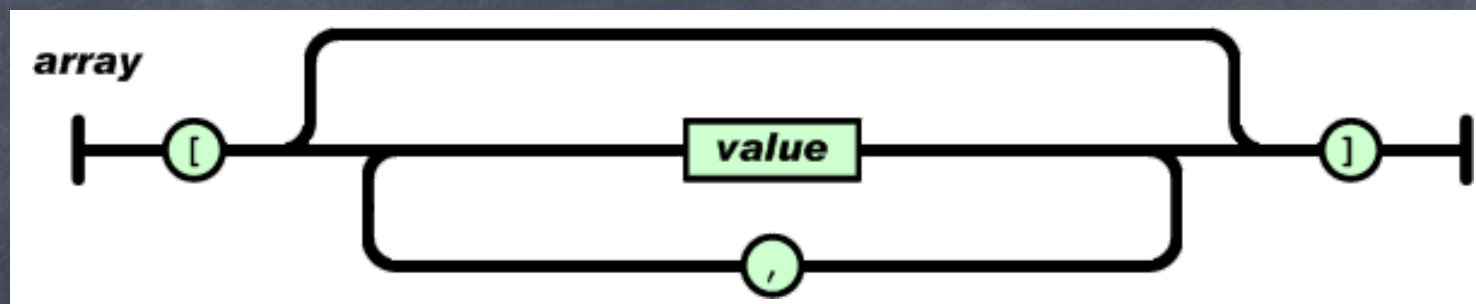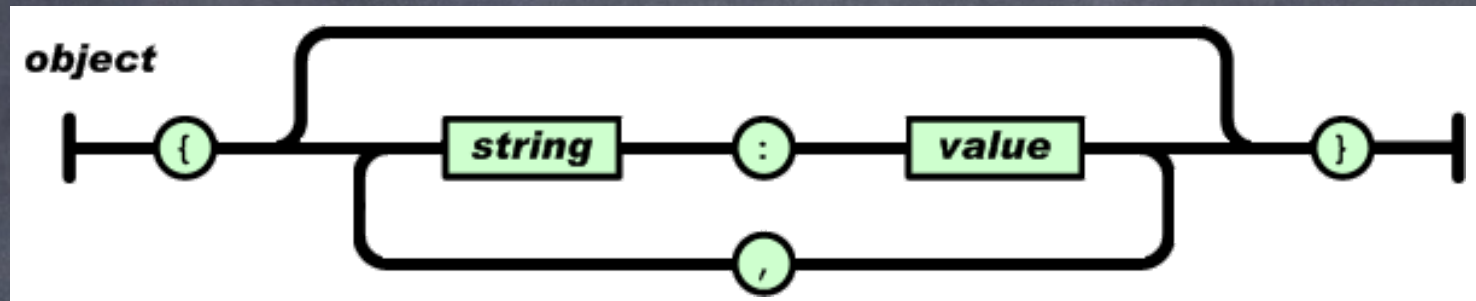# What is JSON?

JavaScript Object Notation

It is a data interchange format

Based on Javascript Objects

http://json.org/

How is JSON?

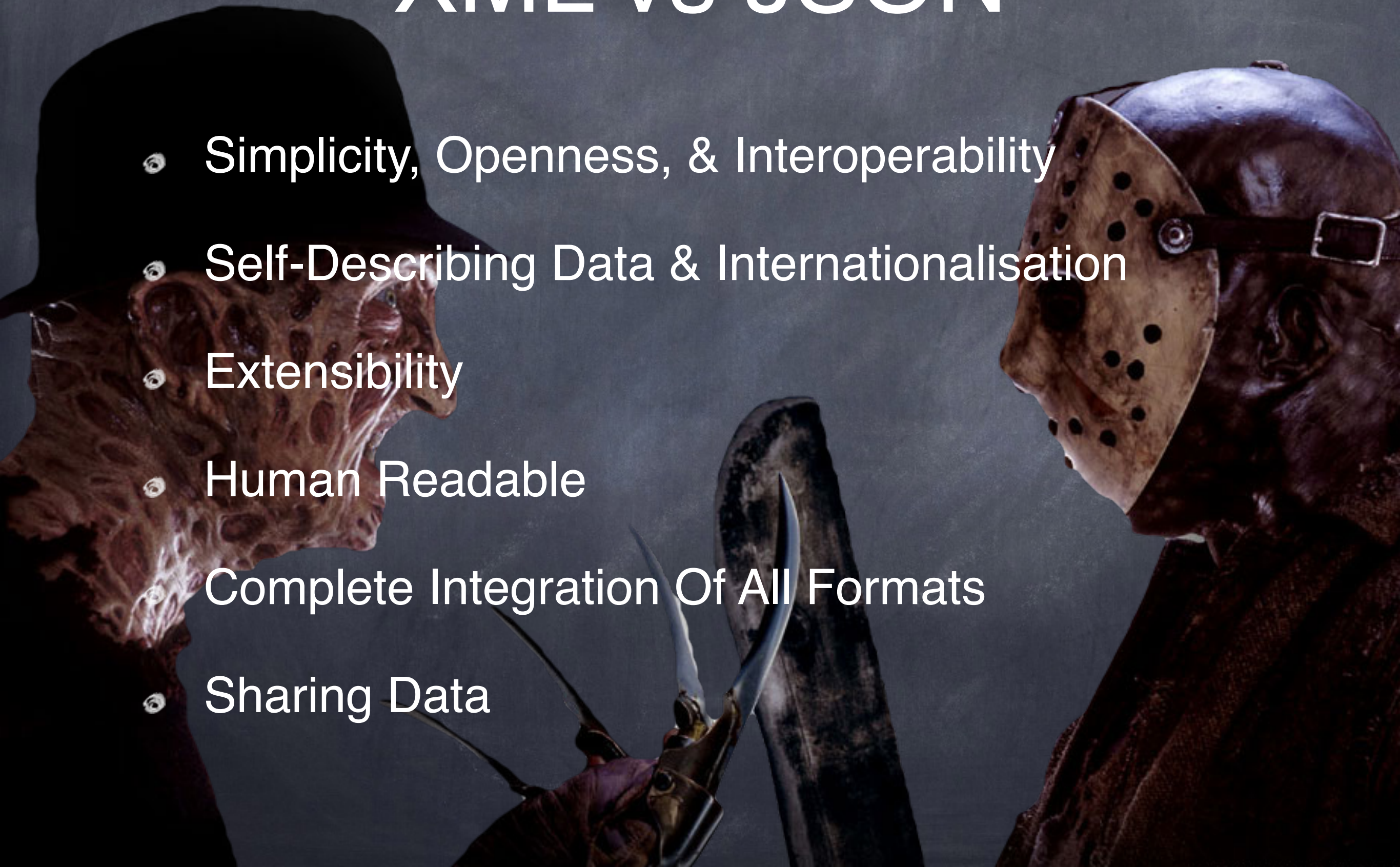# What does JSON look like?

```json
{
  "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': □}
```

```xml
<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 <u>YAML</u>

- Already used by some well know apps: Transmission, npm, grunt, ...

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

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

- 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

```json
{
    "@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/)