February 24, 1966

The 1966 coup

While Nkrumah is in China, army stages widely popular coup. National Liberation Council (NLC), led by General Joseph Ankrah, comes to power. Russian and Chinese technicians expelled.

At the press conference after mounting the 1966 coup that overthrew Kvarme Nkrumah. On the far right is Lieut. Gen J.A. Ankrah.
ALL DATA BASED
DATA

VS

INFORMATION
DATA
Data is raw, unorganized facts that need to be processed. Data can be something simple and seemingly random and useless until it is organized.

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When data is processed, organized, structured or presented in a given context so as to make it useful
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TYPES OF DATA FORMATS
CSV

Comma Separated Values. File with numbers and text in a tabular format (columns and rows)
1. **Plain text**

2. **Consists of records (typically one record per line)**

3. **Records divided into fields separated by delimiters (comma, tab, semicolon)**

4. **Every record has the same sequence of fields**
1. **PLAIN TEXT**

2. CONSISTS OF RECORDS (TYPICALLY ONE RECORD PER LINE)

3. RECORDS DIVIDED INTO FIELDS SEPARATED BY DELIMITERS (COMMA, TAB, SEMICOLON)

4. EVERY RECORD HAS THE SAME SEQUENCE OF FIELDS
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Consists of records (typically one record per line)

Every record has the same sequence of fields

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1. **Plain Text**

2. Consists of records (typically one record per line)

3. Records divided into fields separated by delimiters (comma, tab, semicolon)

4. Every record has the same sequence of fields
XML

Extensible Markup Language, a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.
<NDS:dateOfBirth>1955-06-01Z</NDS:dateOfBirth>
<NDS:gender>F</NDS:gender>
</NDS:PatientKinetics>
- <NDS:Drug xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:NDC>00574082001</NDS:NDC>
  <NDS:prescribedDate>2010-06-14Z</NDS:prescribedDate>
  <NDS:daysSupplied>66</NDS:daysSupplied>
</NDS:Drug>
- <NDS:Drug xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:NDC>00007447120</NDS:NDC>
  <NDS:prescribedDate>2010-06-07Z</NDS:prescribedDate>
  <NDS:daysSupplied>66</NDS:daysSupplied>
</NDS:Drug>
- <NDS:Drug xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:NDC>63459050430</NDS:NDC>
  <NDS:prescribedDate>2010-06-07Z</NDS:prescribedDate>
  <NDS:daysSupplied>30</NDS:daysSupplied>
</NDS:Drug>
- <NDS:Drug xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:NDC>63459050430</NDS:NDC>
  <NDS:prescribedDate>2010-06-07Z</NDS:prescribedDate>
  <NDS:daysSupplied>30</NDS:daysSupplied>
</NDS:Drug>
- <NDS:Drug xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:NDC>65628002101</NDS:NDC>
  <NDS:prescribedDate>2010-04-23Z</NDS:prescribedDate>
  <NDS:daysSupplied>30</NDS:daysSupplied>
</NDS:Drug>
- <NDS:Diagnosis xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:ICD9>401</NDS:ICD9>
  <NDS:ICD9Type>D</NDS:ICD9Type>
  <NDS:diagnosisDate>2010-06-07Z</NDS:diagnosisDate>
</NDS:Diagnosis>
- <NDS:Diagnosis xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:ICD9>250</NDS:ICD9>
  <NDS:ICD9Type>D</NDS:ICD9Type>
  <NDS:diagnosisDate>2010-06-07Z</NDS:diagnosisDate>
</NDS:Diagnosis>
- <NDS:Diagnosis xmlns:n3="http://anvita.com/types/4.0/safety">
  <NDS:ICD9>410</NDS:ICD9>
  <NDS:ICD9Type>D</NDS:ICD9Type>
  <NDS:diagnosisDate>2010-06-07Z</NDS:diagnosisDate>
</NDS:Diagnosis>
</NDS:SafetyRequest>
<NDS:suppressDetail>false</NDS:suppressDetail>
XML SCHEMA

Grammar for XML documents. Rules that constrain the set of elements that may be used in a document, which attributes may be applied to them, the order in which they may appear.
MACHINE READABLE?
MACHINE READABLE

Data (or metadata) that is specifically designed (and formatted) to be understood by a computer (or program)
1. Human readable data that is marked up

2. Data that is generated and consumed by programs
<person>
    <firstName>John</firstName>
    <lastName>Smith</lastName>
    <age>25</age>
    <address>
        <streetAddress>21 2nd Street</streetAddress>
        <city>New York</city>
        <state>NY</state>
        <postalCode>10021</postalCode>
    </address>
    <phoneNumbers>
        <phoneNumber type="home">212 555-1234</phoneNumber>
        <phoneNumber type="fax">646 555-4567</phoneNumber>
    </phoneNumbers>
</person>
{ "name": "map-1",
  "title": "Pleiades Map 1",
  "boundingBox": [-12.0, 32.0, 40.0, 58.0],
  "srs": "EPSG:4326",
  "layers": [
    { "name": "dphysio",
      "title": "Demis Physiography",
      "layers": "Bathymetry, Topography, Rivers, Waterbodies",
      "styles": "",
      "onlineResource": "http:\/\/www2.demis.nl\/mapserver\/request.asp",
      "srs": "EPSG:4326"
    }
  ]
}
STRUCTURED DATA?
STRUCTURED DATA

Data that resides in fixed fields within a record or file. Data that is tagged or marked up in such a way that it is consistently recognizable (mostly for the benefit of computers)
<person>
  <firstName>John</firstName>
  <lastName>Smith</lastName>
  <age>25</age>
  <address>
    <streetAddress>21 2nd Street</streetAddress>
    <city>New York</city>
    <state>NY</state>
    <postalCode>10021</postalCode>
  </address>
  <phoneNumber type="home">212 555-1234</phoneNumber>
  <phoneNumber type="fax">646 555-4567</phoneNumber>
</person>
UNSTRUCTURED DATA

Data that does not reside in fixed locations or is marked up in such a way that it is consistently recognizable.
Chorus of Han-Congo singing-girls is one of extra good voice — who thrusts in, now and again, an improvisation. This figure, so tall and straight, is a Yaloff. You see it in her almost Hindu features, and hear it in the plaintive melody of music. Now the chorus is more piercing than ever. The women clap their hands in time, or standing with arms akimbo, receive with faint courtesies and head-liftings the low bows of the men, who deliver them swinging this way and that.

See! Yonder brisk and sinewy fellow has taken one short, swervy step into the ring, chanting with rising energy. Now takes another, and stands and sings and looks here and there, sinking upon his broad toes and rising again, with that wonderful lightness! How tall and lithe he is. Now his brawn shining through his rags. He too is a candio, for the three long rays of tattooing on each side of his face
**JSON**

JavaScript Object Notation. Text-based, open data-interchange format designed to represent simple data structures. It is derived from the JavaScript scripting language.
{
    "firstName": "John",
    "lastName": "Smith",
    "address": {
        "streetAddress": "21 2nd Street",
        "city": "New York",
        "state": "NY",
        "postalCode": 10021
    },
    "phoneNumbers": [
        "212 555-1234",
        "646 555-4567"
    ]
}
GEOJSON

Variant of JSON designed specifically to encode and represent geographical data.
{
  "type": "Feature",
  "id": "OpenLayers.Feature.Vector_314",
  "properties": {},
  "geometry": {
    "type": "Point",
    "coordinates": [
      97.03125,
      39.7265625
    ]
  },
  "crs": {
    "type": "name",
    "properties": {
      "name": "urn:ogc:def:crs:OGC:1.3:CRS84"
    }
  }
}
HOW?
DYNAMIC

vs

STATIC
STATIC

The data being represented/used does not change - stays fixed through use

DYNAMIC

Data being represented/used changes (grows, shrinks, added to) throughout its use - either through human intervention or programatic means
DYNAMIC VS STATIC
API
Application Programming Interface. is made up of a set of defined methods that someone can use to communicate with a software system, and get back responses in a way that a computer (and, with some practice, a human) can understand.
HOW?
REQUEST
REQUEST
(RESTFUL)
http://api.dp.la/v2/items?q=yodeling+AND+llamas&api_key=
RESPONSE
null
CLOSED  API KEY  OPEN
http://api.dp.la/v2/items?q=yodeling+AND+llamas&api_key=
LINKED OPEN DATA
DYNAMIC VS STATIC
API
REQUEST
SCRAPING
<table>
<thead>
<tr>
<th>Name</th>
<th>Photo</th>
<th>Location</th>
<th>Date formed</th>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acadia</td>
<td><img src="image" alt="Acadia" /></td>
<td>Maine 44.35°N 68.21°W</td>
<td>February 26, 1919</td>
<td>47,389.67 acres (191.8 km²)</td>
<td>Covering most of Mount Desert Island and other coastal islands, Acadia features the tallest mountain on the Atlantic coast, granite peaks, ocean shoreline, woodlands, and lakes. There are freshwater, estuary, forest, and intertidal habitats.</td>
</tr>
<tr>
<td>American Samoa</td>
<td><img src="image" alt="American Samoa" /></td>
<td>American Samoa 14.25°S 170.68°W</td>
<td>October 31, 1988</td>
<td>9,000.00 acres (36.4 km²)</td>
<td>The southernmost national park is on three Samoan islands and protects coral reefs, rainforests, volcanic mountains, and white beaches. The area is also home to flying foxes, brown boobies, sea turtles, and 900 species of fish.</td>
</tr>
<tr>
<td>Arches</td>
<td><img src="image" alt="Arches" /></td>
<td>Utah 38.68°N 109.57°W</td>
<td>November 12, 1971</td>
<td>76,518.98 acres (309.7 km²)</td>
<td>This site features more than 2,000 natural sandstone arches, including the Delicate Arch. In a desert climate millions of years of erosion have led to these structures, and the arid ground has life-sustaining soil crust and potholes, natural water-collecting basins. Other geologic formations are stone columns, spires, fins, and towers.</td>
</tr>
<tr>
<td>Badlands</td>
<td><img src="image" alt="Badlands" /></td>
<td>South Dakota 43.75°N 102.50°W</td>
<td>November 10, 1978</td>
<td>242,755.94 acres (982.4 km²)</td>
<td>The Badlands are a collection of buttes, pinnacles, spires, and grass prairies. It has the world's richest fossil beds from the Oligocene epoch, and there is wildlife including bison, bighorn sheep, black-footed ferrets, and swift foxes.</td>
</tr>
<tr>
<td>Big Bend</td>
<td><img src="image" alt="Big Bend" /></td>
<td>Texas 29.25°N 103.25°W</td>
<td>June 12, 1944</td>
<td>801,163.21 acres (3,242.2 km²)</td>
<td>Named for the Bend of the Rio Grande along the US–Mexico border, this park includes a part of the Chihuahuan Desert. A wide variety of Cretaceous and Tertiary fossils as well as cultural artifacts of Native Americans exist within its borders.</td>
</tr>
<tr>
<td>Biscayne</td>
<td><img src="image" alt="Biscayne" /></td>
<td>Florida 25.65°N 80.08°W</td>
<td>June 28, 1980</td>
<td>172,924.07 acres (699.8 km²)</td>
<td>Located in Biscayne Bay, this park at the north end of the Florida Keys has four interrelated marine ecosystems: mangrove forest, the Bay, the Keys, and coral reefs. Threatened animals include the West Indian Manatee, American crocodile, various sea turtles, and peregrine falcon.</td>
</tr>
<tr>
<td>Black Canyon of the Gunnison</td>
<td><img src="image" alt="Black Canyon of the Gunnison" /></td>
<td>Colorado 38.57°N 107.72°W</td>
<td>October 21, 1999</td>
<td>32,950.03 acres (133.3 km²)</td>
<td>The park protects a quarter of the Gunnison River, which has dark canyon walls from the Precambrian era. The canyon has very steep descents, and it is a site for river rafting and rock climbing. The narrow, steep canyon, made of gneiss and schist, is often in shadow, appearing black.</td>
</tr>
<tr>
<td>Bryce</td>
<td><img src="image" alt="Bryce" /></td>
<td>Utah 39.37°N 111.43°W</td>
<td>February 5, 1923</td>
<td>35,835.08 acres (143.9 km²)</td>
<td>Bryce Canyon is a giant natural amphitheatre along the Paunsaugunt Plateau. The unique area has hundreds</td>
</tr>
</tbody>
</table>
COMBINE & RECOMBINE
WHERE?
LICENSING
DATA LICENSE

A method by which a data creator controls (and place limitations on) how they want other people to use their data.
DATA LICENSES

VS

API LIMITATIONS
THE END