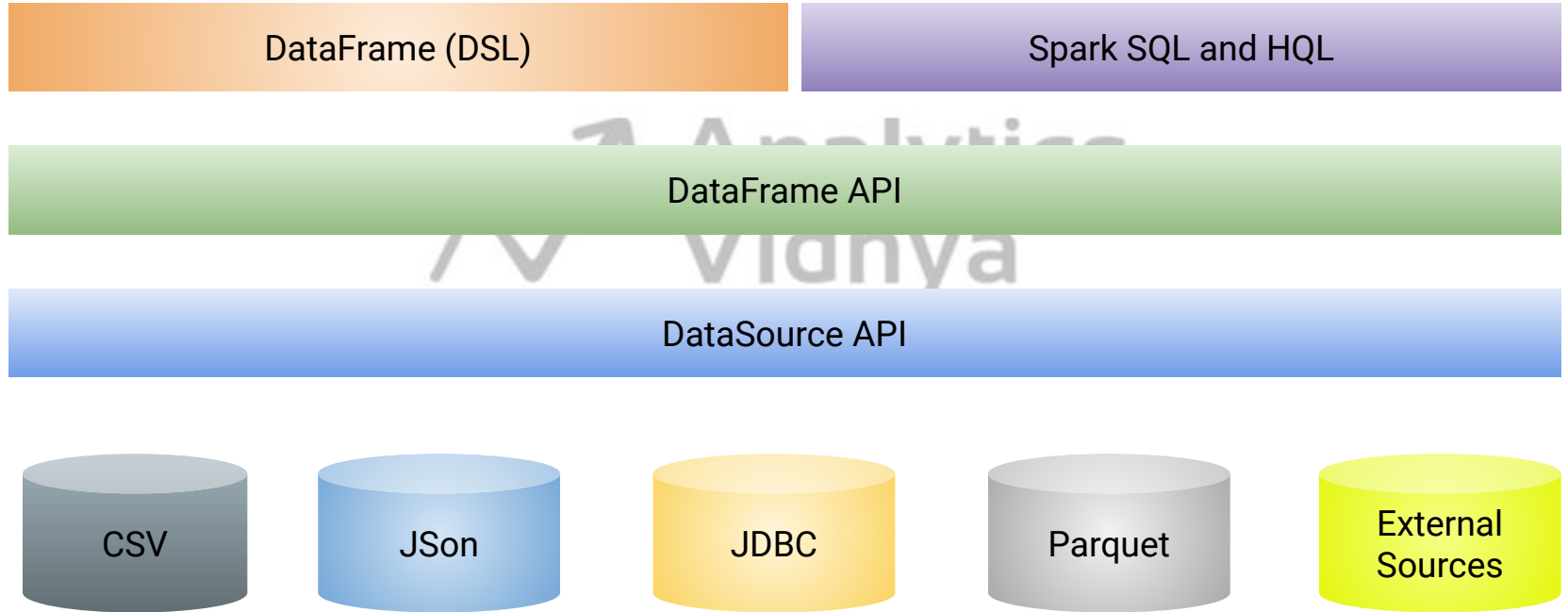# Spark SQL

Spark SQL

- Spark API for structured data processing.

- Contains information about structure of data and computation being performed.

- Spark SQL uses internal optimizations.

Spark SQL Architecture

Spark SQL Use cases

- Banking: Credit card fraud detection

- Real time analysis of stock market data

- Genomic sequencing: Determining the sequence of DNA of an organism

- And more

```python
In [4]: #import findspark
        #findspark.init()
        from pyspark import SparkContext, SparkConf
        from pyspark.sql import SparkSession
        conf=SparkConf()

        spark = SparkSession.builder.config(conf=conf).appName('DataValidation').getOrCreate()
```
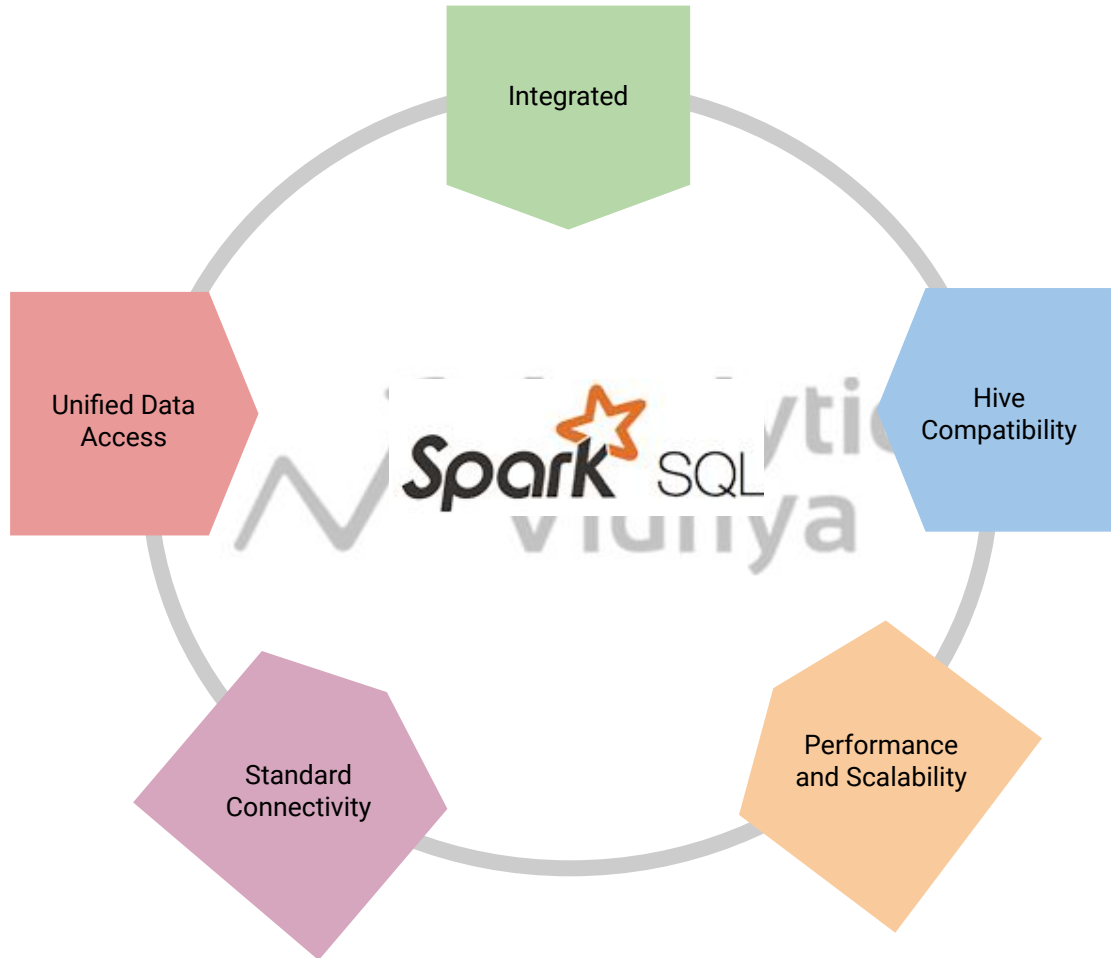
```python
In [5]: df=spark.read.format("csv").option("header",True).load("/home/siddharth/Documents/CDP/Datasets/African_Mobile_Data.c
```

```python
In [6]: df.createOrReplaceTempView("mobile")
```

```python
In [8]: spark.sql("select * from mobile limit 10").show()
```

```
+------+-----------------+-------------+---------+-----------+---------+---------+
|  Date|          Country|         City|   Region|    Segment|    Sales|   Profit|
+------+-----------------+-------------+---------+-----------+---------+---------+
|1/1/13|    Cote d'Ivoire|      Abidjan|  Western| Commercial| $656.96 |  $6.57  |
|1/1/13|       Madagascar| Antananarivo|  Eastern|     Public| $875.94 | $-70.08 |
|1/1/13|           Rwanda|       Kigali|  Eastern|     Public| $258.35 |  $18.08 |
|1/1/13|         Zimbabwe|       Harare|  Eastern|Residential| $875.62 | $-35.02 |
|1/2/13|         Ethiopia|  Addis Ababa|  Eastern|Residential| $509.93 |  $10.20 |
|1/3/13|             Chad|    N'Djamena|   Middle| Commercial| $443.13 |  $4.43  |
|1/3/13|           Malawi|     Blantyre|  Eastern|Residential| $651.78 |  $19.55 |
|1/3/13|        Mauritius|   Port Louis|  Eastern|     Public| $896.64 | $-62.76 |
|1/4/13|Sao Tome and Prin...|   Sao Tome|   Middle| Commercial| $226.92 |  $13.62 |
|1/5/13|          Burundi|    Bujumbura|  Eastern| Commercial| $928.07 |  $74.25 |
+------+-----------------+-------------+---------+-----------+---------+---------+
```

Thank You!!