Airflow & Zeppelin: Better together

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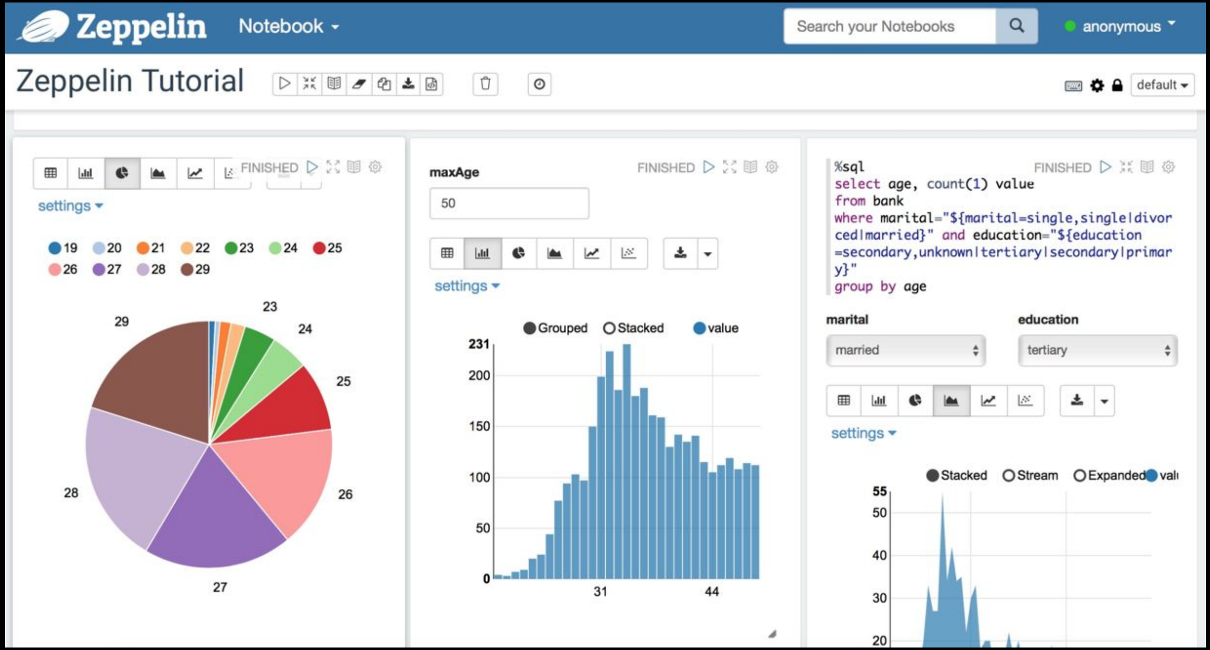
Agenda

- What is Zeppelin
- Why Airflow + Zeppelin
- Demo

What is Zeppelin

Web-based notebook that enables data-driven, interactive data analytics and collaborative documents with SQL, Scala, Python and more.



maxAge

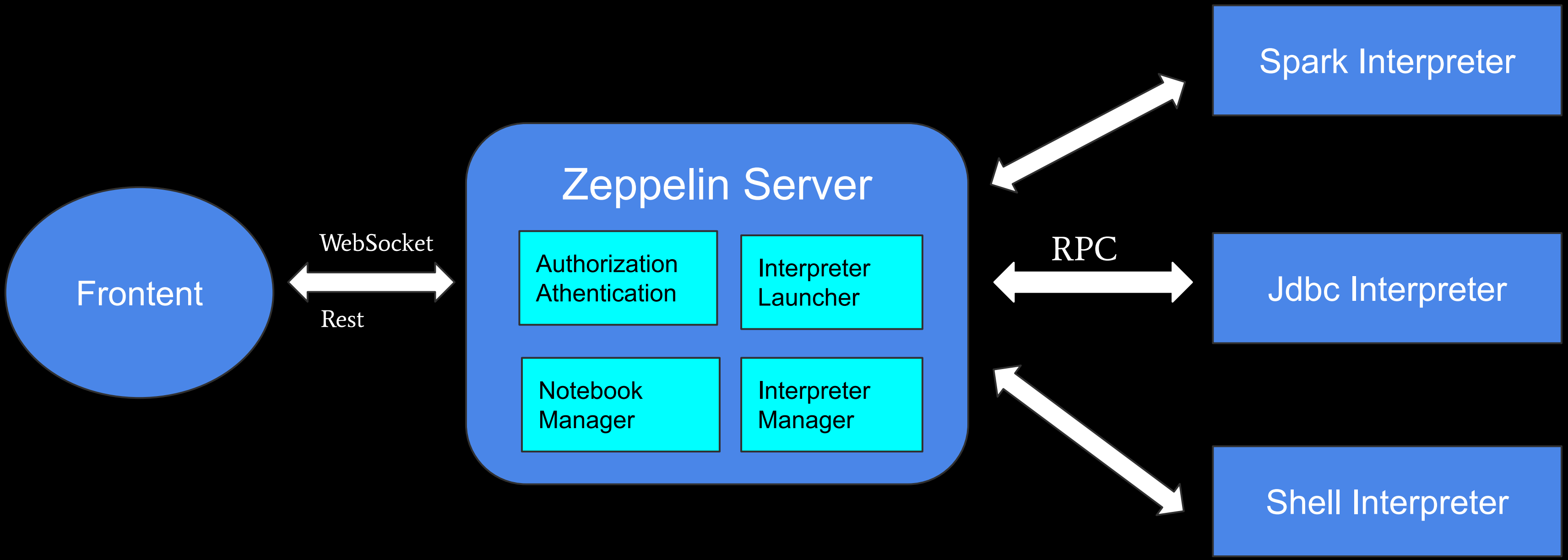
50

```
%sql
select age, count(1) value
from bank
where marital="${marital=single,single|divor
ced|married}" and education="${education
=secondary,unknown|tertiary|secondary|primar
y}"
group by age
```

marital: married

education: tertiary

Zeppelin Architecture



Supported Interpreters

- Spark (Scala/PySpark/SparkR/Sql)
- Flink (Scala/PyFlink/Sql)
- Jdbc (Mysql, Hive, Presto and etc.)
- Python
- R
- Cassandra
- Shell
- Markdown
- ....

Why Zeppelin（Alternative to Jupyter）

- Better Support of Big Data
- Built-in Visualization
- Easy Configuration
- Self-Contained

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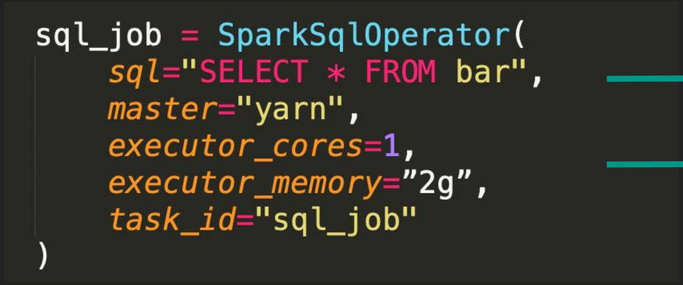
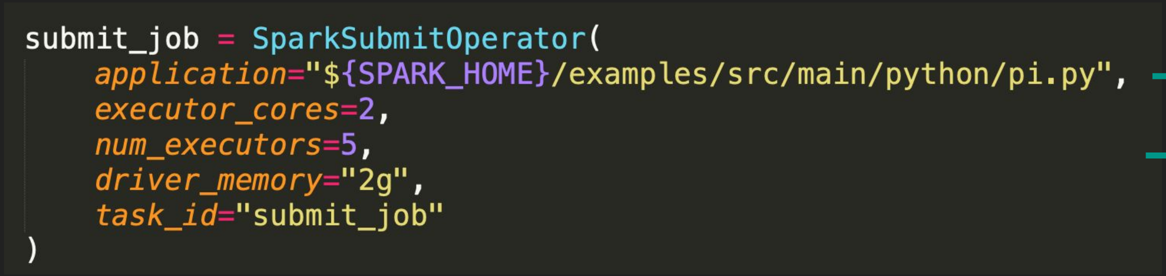
Move Spark Job to Production



```
sql_job = SparkSqlOperator(
    sql="SELECT * FROM bar",
    master="yarn",
    executor_cores=1,
    executor_memory=”2g”,
    task_id="sql_job"
)
```

Job Code

Job Configuration

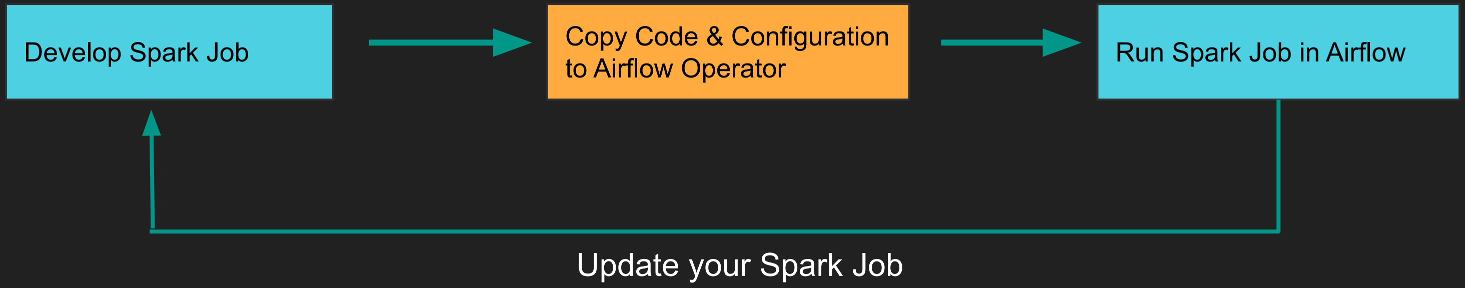


```
submit_job = SparkSubmitOperator(
    application="${SPARK_HOME}/examples/src/main/python/pi.py",
    executor_cores=2,
    num_executors=5,
    driver_memory="2g",
    task_id="submit_job"
)
```

Job Code

Job Configuration

Move Spark Job to Production



Develop Spark Job

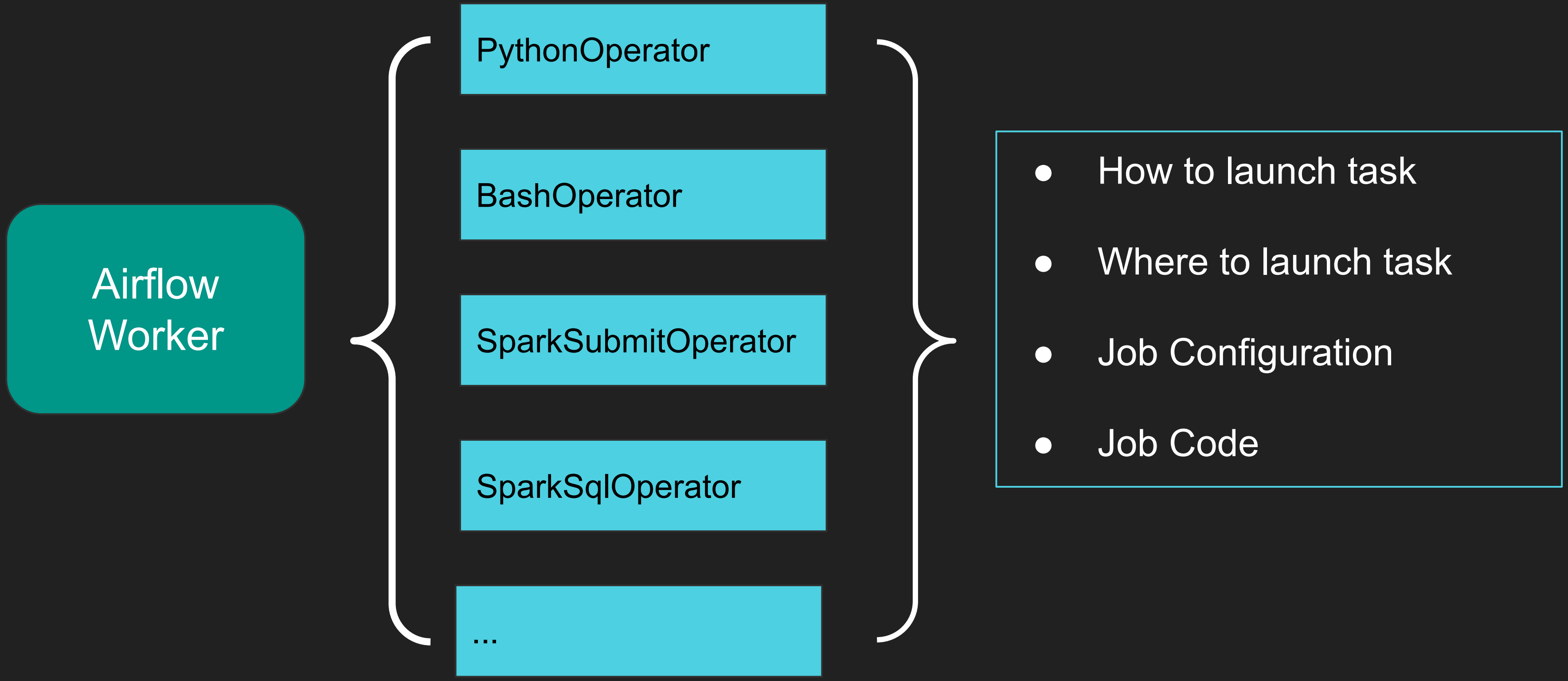
Copy Code & Configuration to Airflow Operator

Run Spark Job in Airflow

Update your Spark Job

- The second step is error prone and inefficient
- Enviroment in development stage is different from that in productiaon stage

Airflow Worker



Airflow Worker

PythonOperator

BashOperator

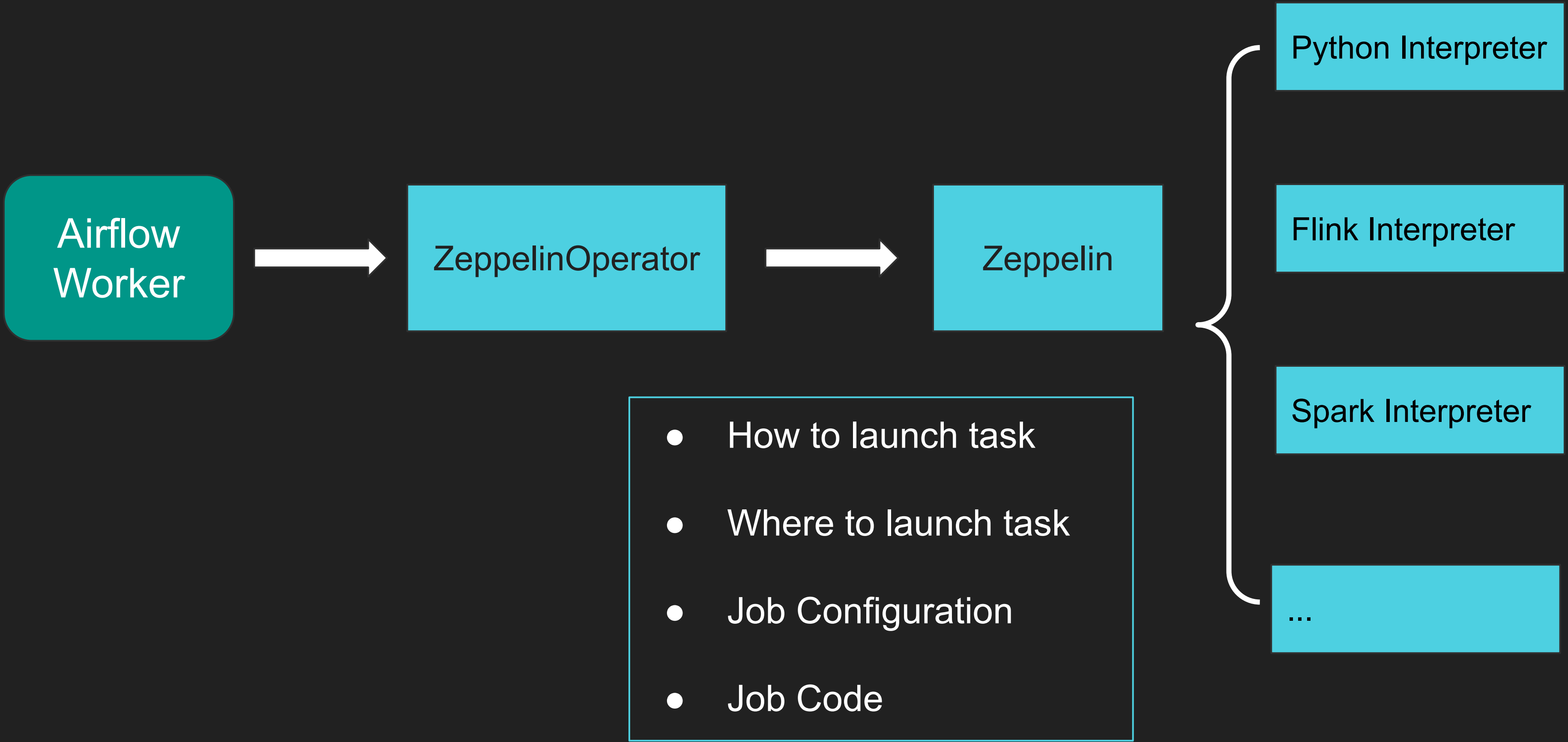
SparkSubmitOperator

SparkSqlOperator

...

- How to launch task
- Where to launch task
- Job Configuration
- Job Code

Airflow + Zeppelin



- How to launch task
- Where to launch task
- Job Configuration
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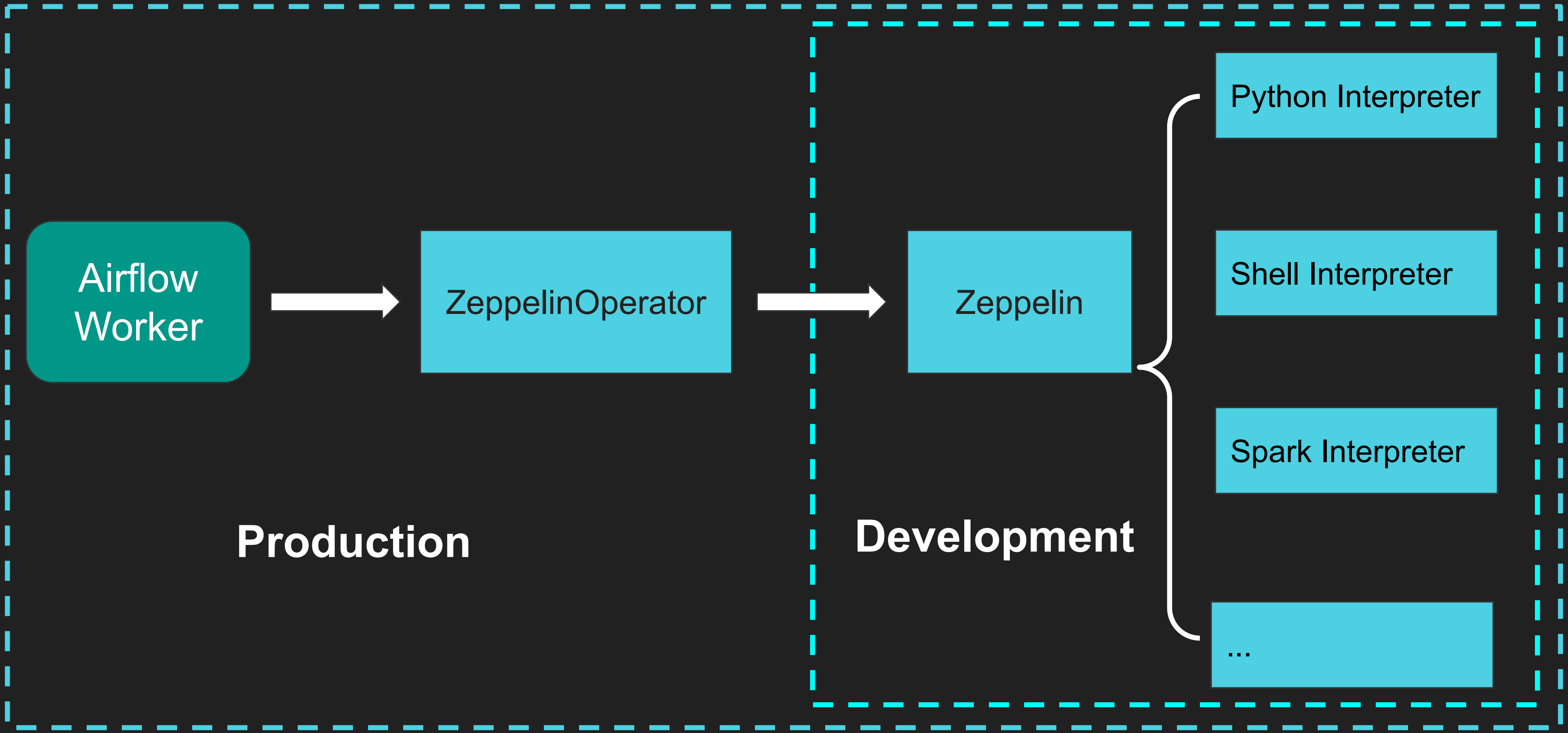
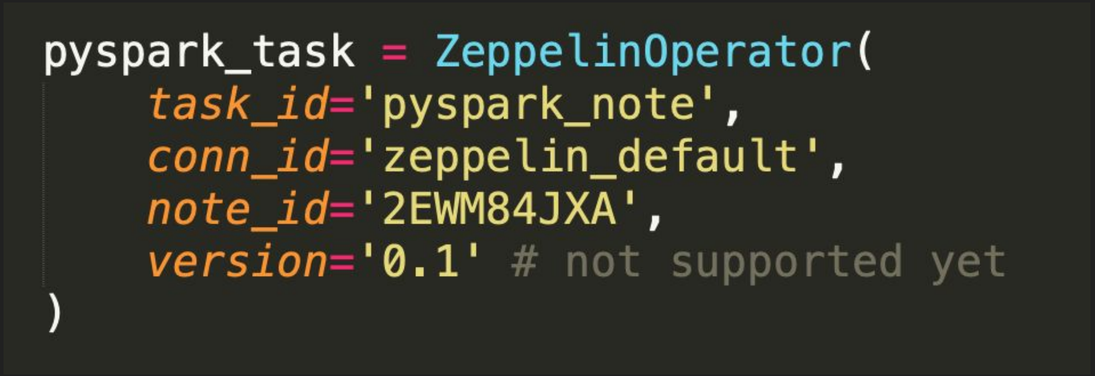
Airflow + Zeppelin



Zeppelin Operator



```
pyspark_task = ZeppelinOperator(
    task_id='pyspark_note',
    conn_id='zeppelin_default',
    note_id='2EWM84JXA',
    version='0.1' # not supported yet
)
```

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Future Work

- Git Integration
- K8s Support
- HA Support
- Integrate with other modern data stack (e.g. Greate Expectataion)

References

- http://zeppelin.apache.org/
- https://zeppelin.apache.org/docs/0.10.1/interpreter/spark.html
- https://zeppelin.apache.org/docs/0.10.1/interpreter/flink.html
- https://github.com/zjffdu/zeppelin_airflow (demo docker)

Thank You !