

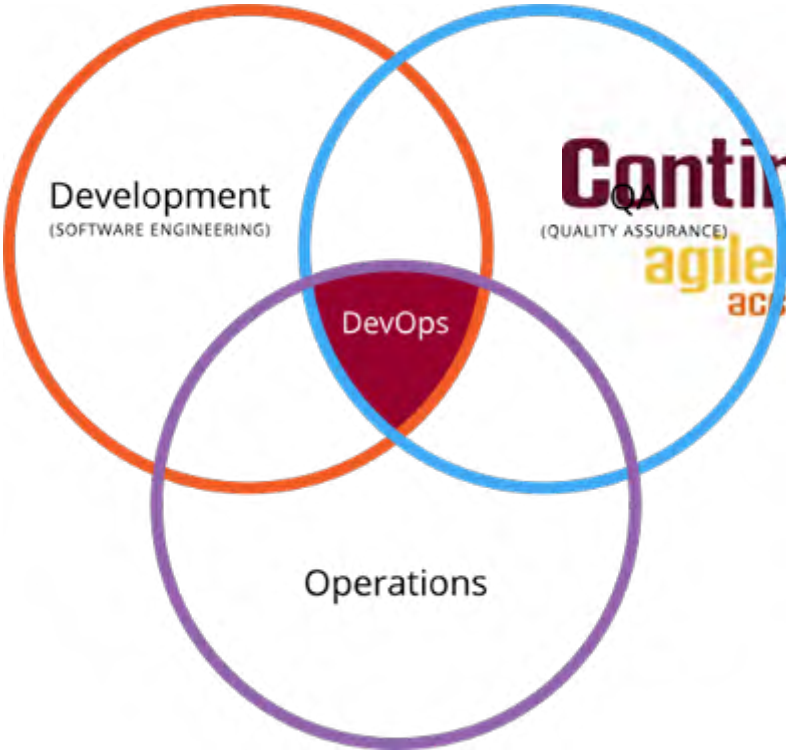
Devops Practices on google cloud

Jeff Liu
Google

Jeff Liu

- SWE / Devops Google
- SRE - Twitter
- Devops - Splunk
- SRE - Dell

Devops Evolution



quick changes leading
Continuous Delivery development cycles
Programmers
QA
(QUALITY ASSURANCE)
agile methods
accelerated releases
DevOps flexible
Sprint Agile System Administrators
enabling

Devops Evolution



Devops Evolution

- Cloud / Platform
- Microservices
- Big data
- Machine Learning

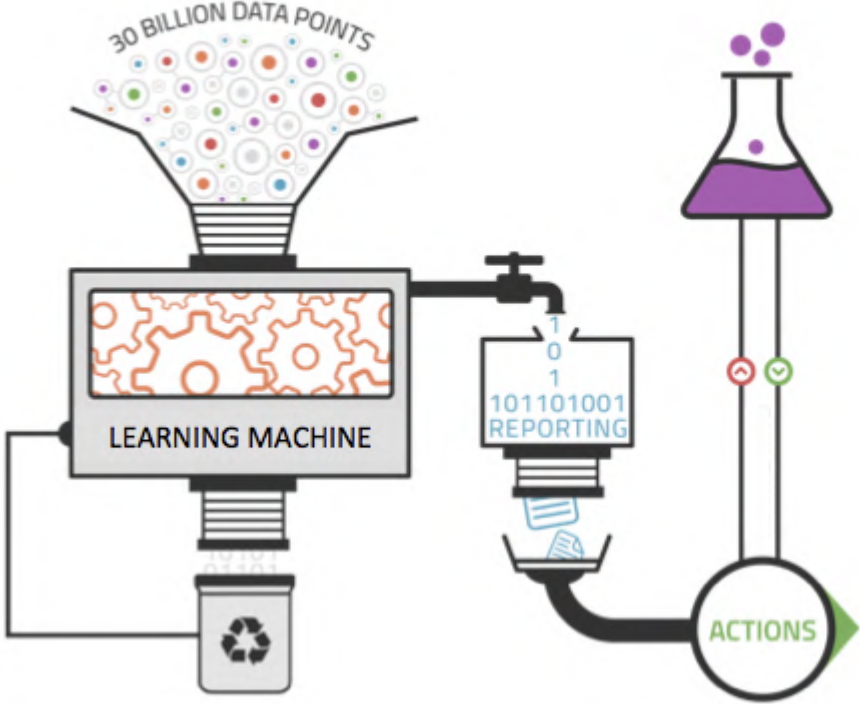
Cloud and Platforms



Microservices



Big Data and Machine Learning



Devops

DevOps (a clipped compound of "development" and "operations") is a **software development process** that emphasizes communication and collaboration between product management, software development, and operations professionals.

--- Wiki

“DevOps is the combination of **cultural philosophies, practices, and tools** that increases an organization’s ability to deliver applications and services at high velocity.”

--- AWS

“DevOps is where any **application starts.**”

--- Google

Google Cloud Platform

Compute



App Engine

Compute Engine

Container Engine

Storage



Bigtable

Cloud Storage

Cloud SQL

Cloud Datastore

Big Data



Big Query

Pub/Sub

Dataflow

Dataproc

Datalab

Machine Learning



Vision API

Machine Learning

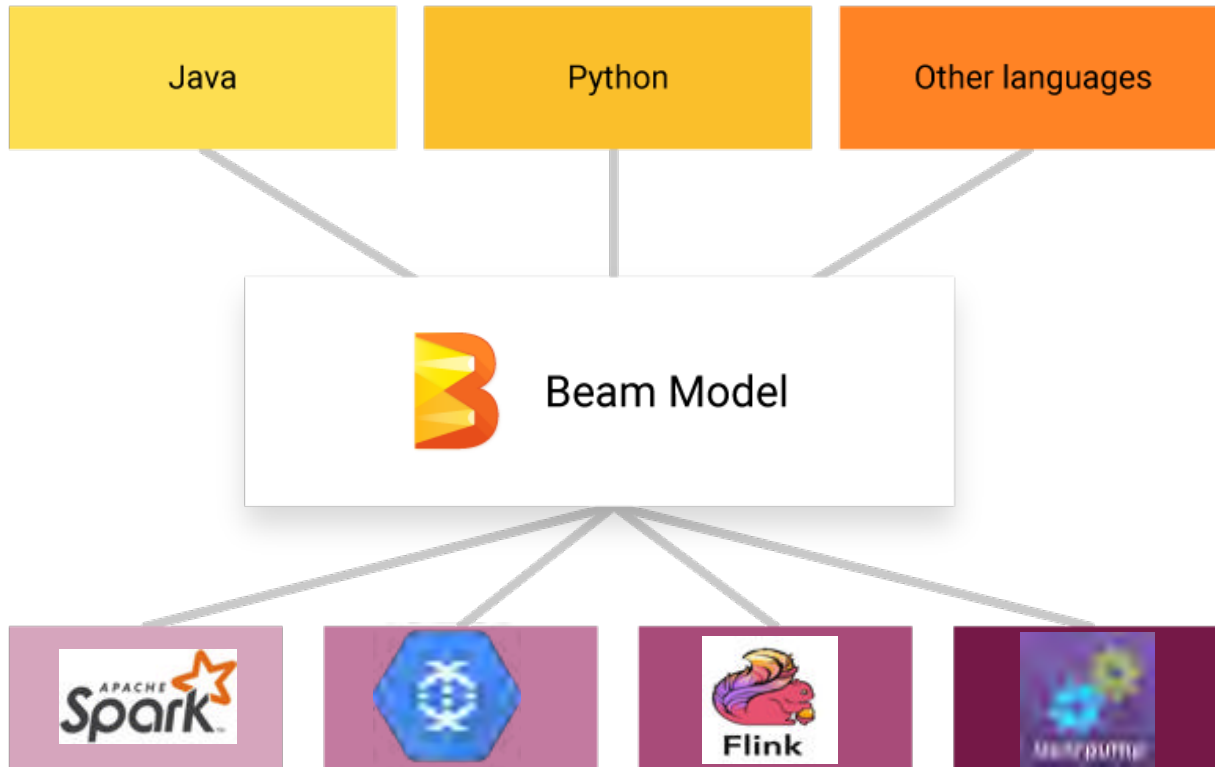
Speech API

Translate API

Dataflow evolution



Choose your language...



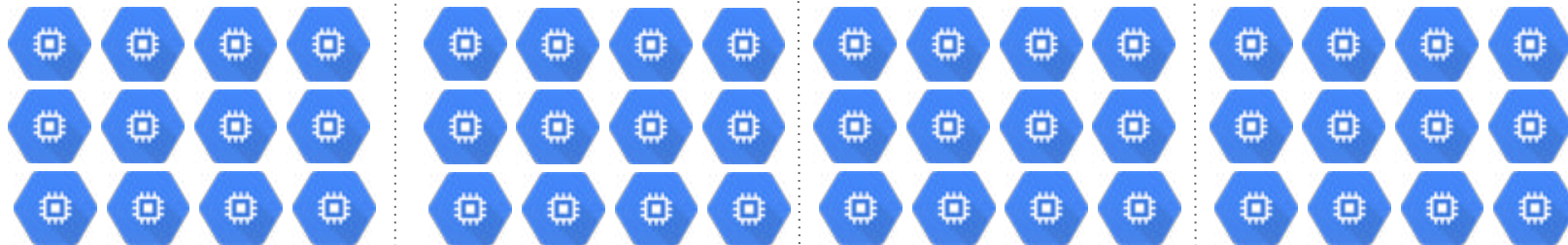
...and your runtime.

Fully-managed

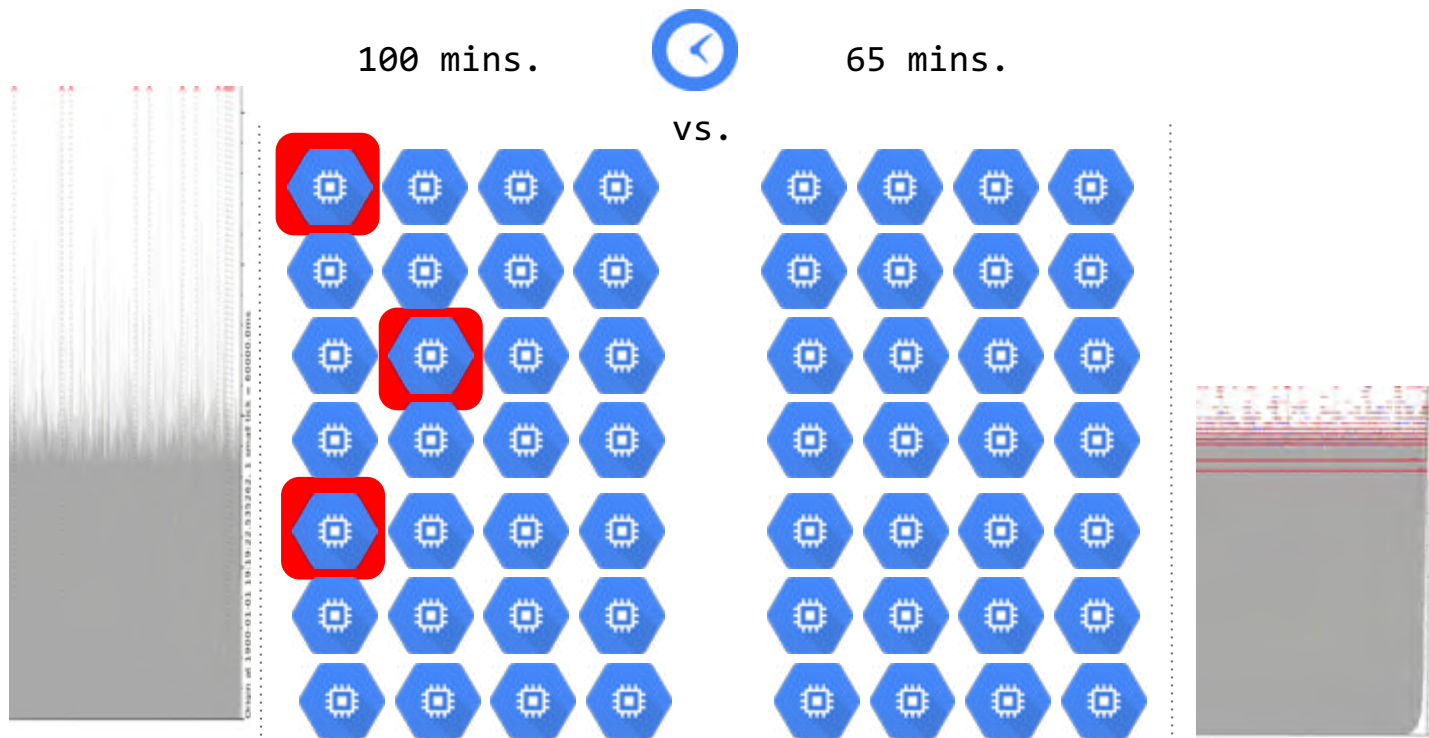


Deploy

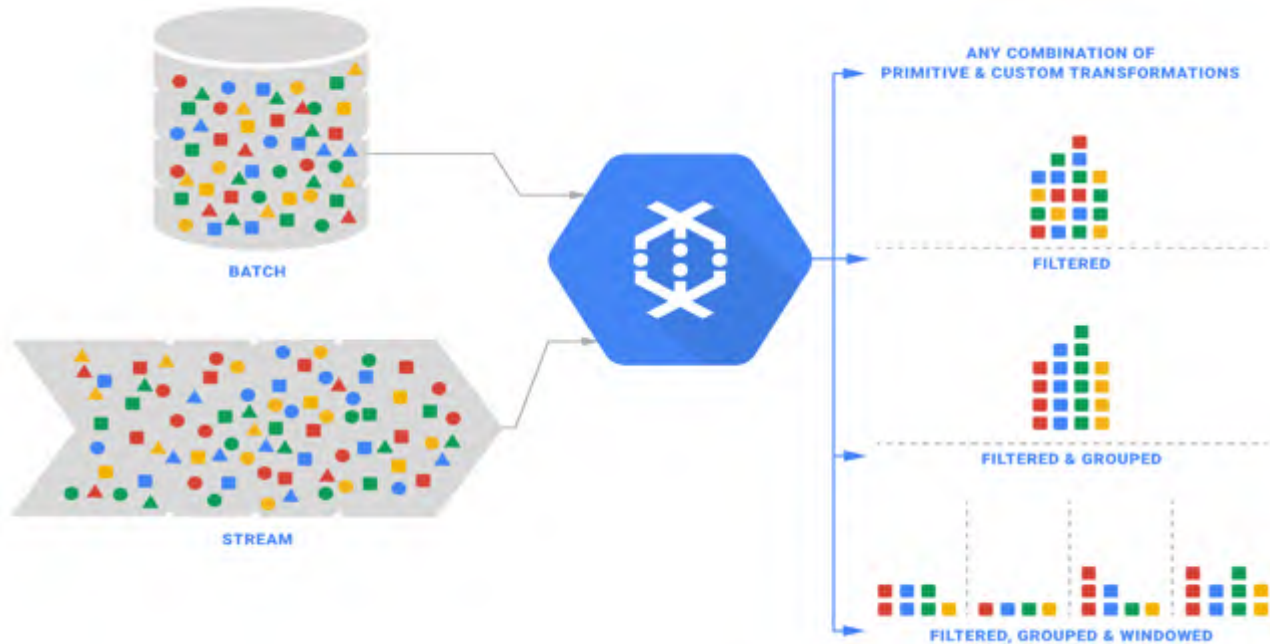
Tear Down



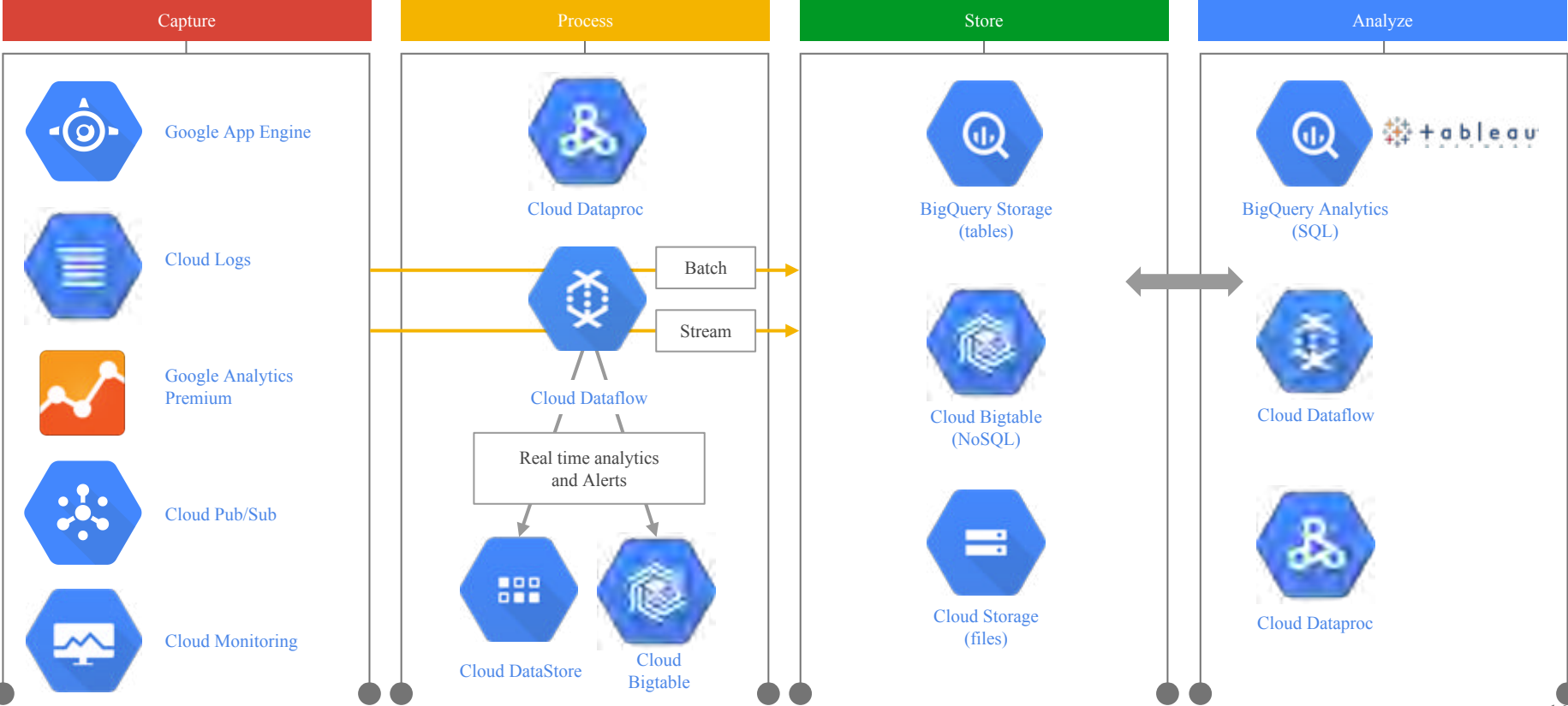
Dynamic Work Rebalancing



Unified programming model



Dataflow - Integrated



Dataflow

```
public static void main(String[] args) throws IOException {  
    ...  
    Pipeline pipeline = Pipeline.create(options);  
    pipeline  
        .apply(PubsubIO.Read.topic(options.getPubsubTopic()))  
        .apply(ParDo.of(new ExtractWords()))  
        .apply(ParDo.of(new Uppercase()))  
        .apply(ParDo.of(new StringToRowConverter()))  
        .apply(BigQueryIO.Write.to(tableSpec)  
            .withSchema(StringToRowConverter.getSchema()));  
  
    PipelineResult result = pipeline.run();  
}
```


Dataflow

```
java -cp ./
  -Dexec.mainClass=com.example.WordCount \
  -Dexec.args="--project=<my-cloud-project> \
  --stagingLocation=gs://<my-wordcount-storage-bucket>/staging/ \
  --output=gs://<my-wordcount-storage-bucket>/output \
  --runner=BlockingDataflowPipelineRunner"
```



Cloud Dataflow

Jobs

Name	Type	Start time	Elapsed time	Status	ID
 wordcount	Batch	Mar 10, 2016, 1:55:47 PM	12 min 41 sec	Succeeded	2016-03-10_13_55_47-8540823045578098352

Dataflow

```
static class ExtractWords extends DoFn<String, String> {  
    @Override  
    public void processElement(ProcessContext c) {  
        String[] words = c.element().split("[^a-zA-Z']+");  
        for (String word : words) {  
            if (!word.isEmpty()) {  
                c.output(word);  
            }  
        }  
    }  
}
```

Stackdriver

```
import com.stackdriver.api.custommetrics.CustomMetricsPoster
```

Sending a custom metric value, not tied to an instance, collected now

```
CustomMetricsPoster(YOUR_API_KEY).sendMetricDataPoint(YOUR_METRIC_NAME, POINT_VALUE);
```

Sending multiple metrics, all collected now

```
CustomMetricsPoster(YOUR_API_KEY).sendMetricDataPoint(YOUR_METRIC_NAME,  
POINT_VALUE).sendMetricDataPoint(SECOND_METRIC_NAME, SECOND POINT VALUE);
```

Dataflow

```
static class ExtractWords extends DoFn<String, String> {
```

```
  @Override
```

```
  public void processElement(ProcessContext c) {
```

```
    String[] words = c.element().split("[^a-zA-Z]+");
```

```
    for (String word : words) {
```

```
      if (!word.isEmpty()) {
```

```
        c.output(word);
```

```
        CustomMetricsPoster(YOUR_API_KEY).sendMetricDataPoint("Counting Word", 1);
```

```
      }
```

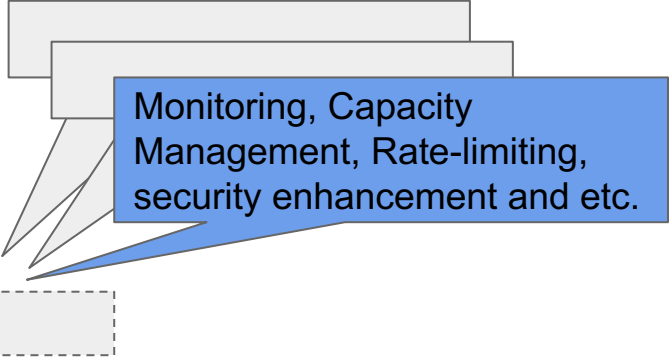
```
    }
```

```
  }
```

```
}
```

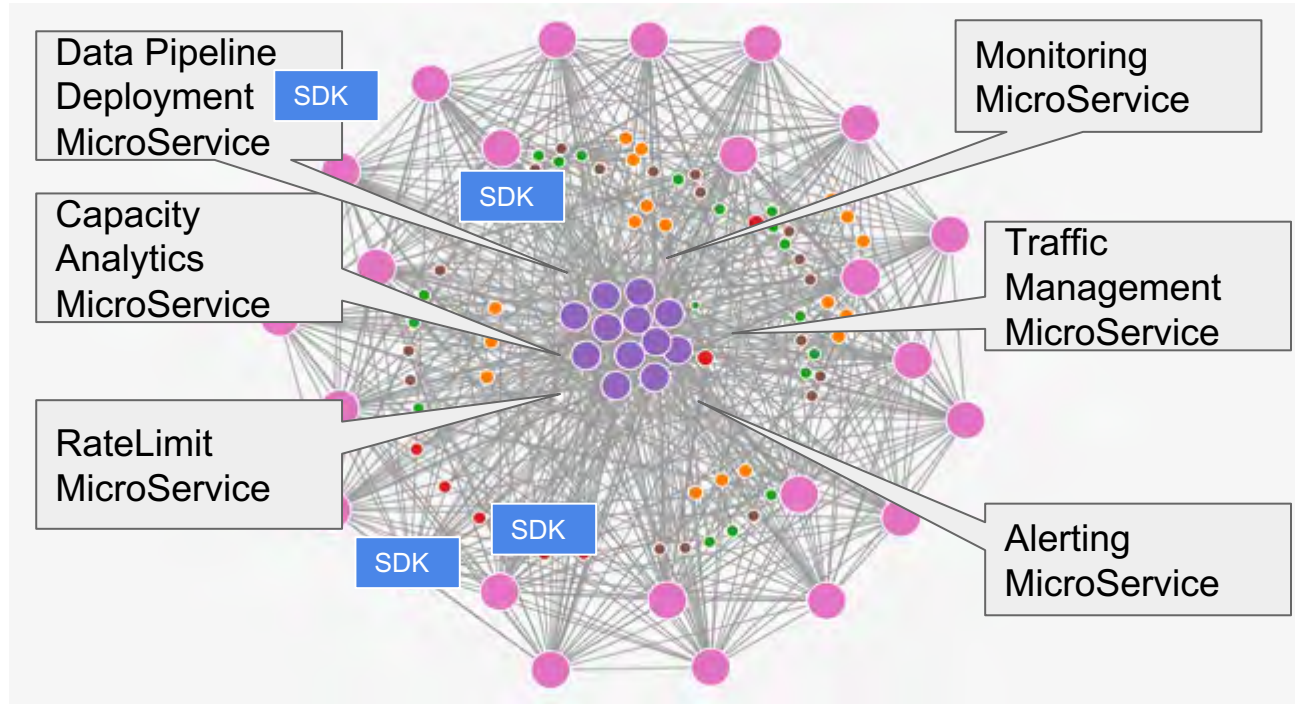
Dataflow

```
static class ExtractWords extends DoFn<String, String> {  
    @Override  
    public void processElement(ProcessContext c) {  
        String[] words = c.element().split("[^a-zA-Z]+");  
        for (String word : words) {  
            if (!word.isEmpty()) {  
                c.output(word);  
                .....  
            }  
        }  
    }  
}
```



Monitoring, Capacity Management, Rate-limiting, security enhancement and etc.

Operations as-a-Service



Operations as-a-Service



“We choose because they are hard”

*“We choose to go to the moon in this decade and do the other things, not because they are easy, **but because they are hard**, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, **and one which we intend to win**, and the others, too.”*

----- J.F.K, September 12, 1962



高效运维社区
GreatOPS Community



会议

- 8月18日 DevOpsDays 上海
- 全年 DevOps China 巡回沙龙
- 11月17日 DevOps金融上海

培训

- EXIN DevOps Master 认证培训
- DevOps 企业内训
- DevOps 公开课
- 互联网运维培训

咨询

- 企业DevOps 实践咨询
- 企业运维咨询



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