

# MesosCon

ASIA

NOVEMBER 18-19, 2016 | HANGZHOU, CHINA

## **Embracing modern workloads without losing “IT”**

**- Combining Mesos+Kubernetes+Spark**

Yonggang Hu, Distinguished Engineer, IBM Spectrum Computing

# Spectrum Computing – Why we love Mesos

We share a fundamental belief with the Mesos community:

Two-level scheduling supports

- performance
- scalability
- application service level agreements (SLAs)

## Our solution:

HPC cluster with millions of cores



A grid that runs billions of tasks

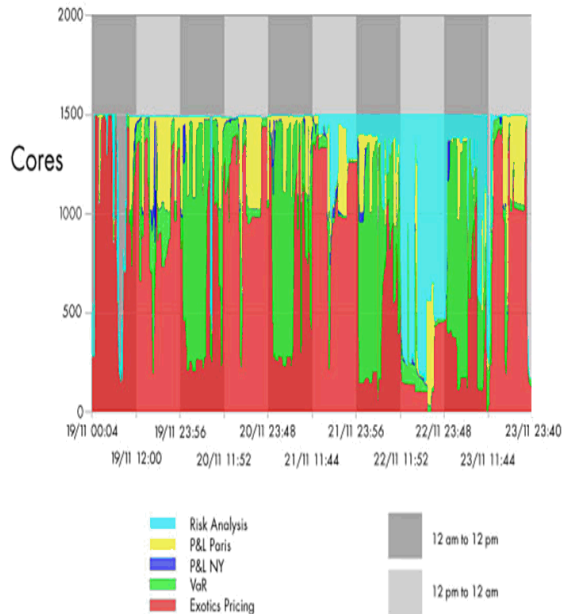


Spark cloud service  
architected for millions of  
users



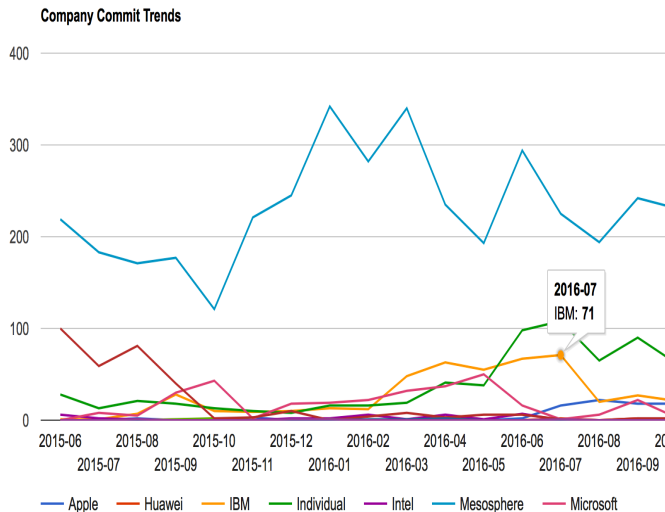
# Limited resources – unlimited demand

- Need to run your workload efficiently and economically, whether in cluster, grid or cloud
- Workload Management + Resource management is the key

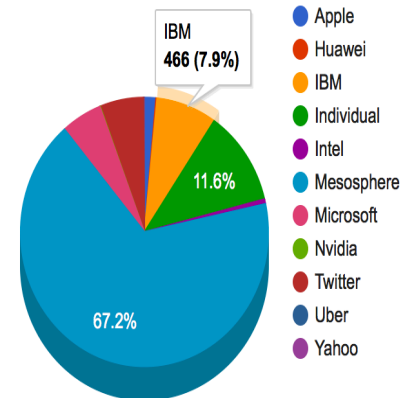


# We contribute to Mesos

- 11 IBM Developers (2 committers)
- 466+ commits
- Leading or participating in several work streams: POWER Support, Optimistic Offers, Unified Containerizer, CNI isolator, Volume isolator, GPU Support, Swarm and Kubernetes integration



Commits per company



# We use Mesos



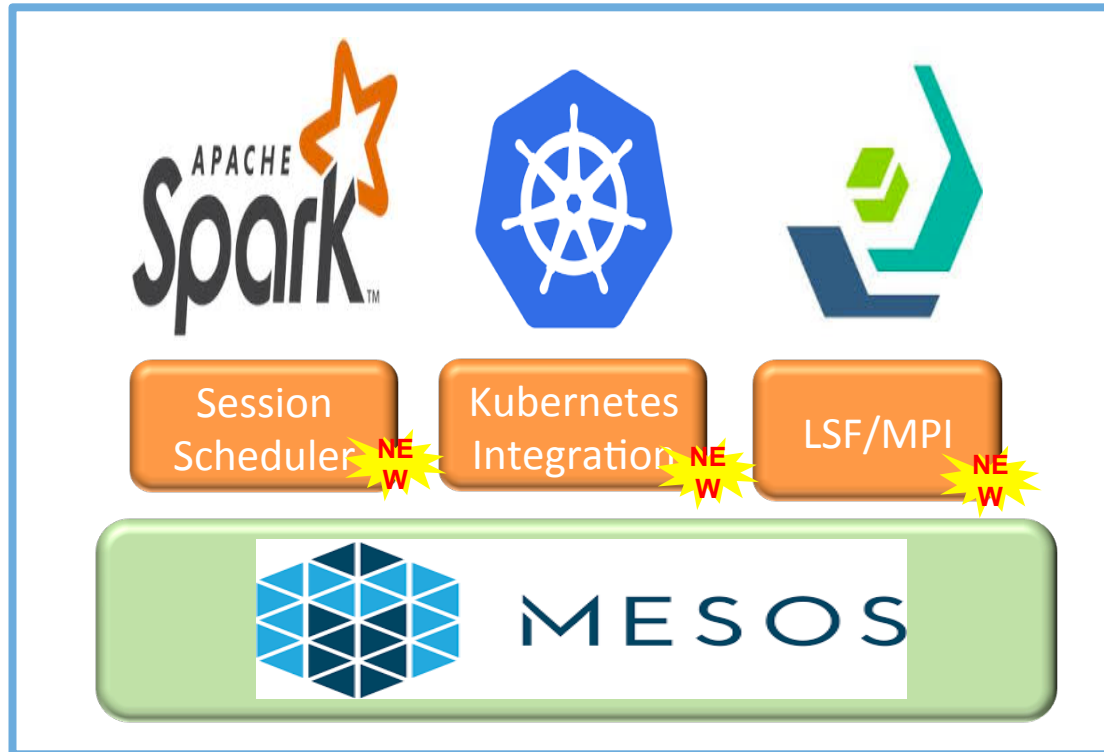
IBM Spectrum Computing

The screenshot displays the IBM Bluemix Catalog interface. At the top, there is a navigation bar with a hamburger menu, the "IBM Bluemix Catalog" text, a "252" badge, and links for "Catalog", "Support", and "Account". On the left side, a sidebar lists categories: "Boilerplates", "Cloud Foundry Apps", "Containers", "OpenWhisk", "Mobile", "Services", "Data & Analytics", "Watson" (highlighted with a right arrow), "Internet of Things", "APIs", "Network", "Storage", "Security", "DevOps", "Application Services", and "Integrate". The main content area displays a grid of Watson services, each with an icon, a title, a description, and an "IBM" badge. Some services have a "Deprecated" badge in red.

Service	Description	Status
AlchemyAPI	An AlchemyAPI service that analyzes your unstructured text	IBM
Conversation	Add a natural language interface to your application to automate	IBM
Document Conversion	Converts a HTML, PDF, or Microsoft Word™ document into	IBM
Language Translation	Translate text from one language to another for specific domains.	IBM, Deprecated
Language Translator	Translate text from one language to another for specific domains.	IBM
Natural Language Classifier	Natural Language Classifier performs natural language	IBM
Personality Insights	The Watson Personality Insights derives insights from transaction	IBM
Retrieve and Rank	Add machine learning enhanced search capabilities to your	IBM
Speech to Text	Low-latency, streaming transcription	IBM
Text to Speech	Synthesizes natural-sounding speech from text.	
Tone Analyzer	Tone Analyzer uses linguistic analysis to detect three types of	
Tradeoff Analytics	Helps make better choices under multiple conflicting goals.	

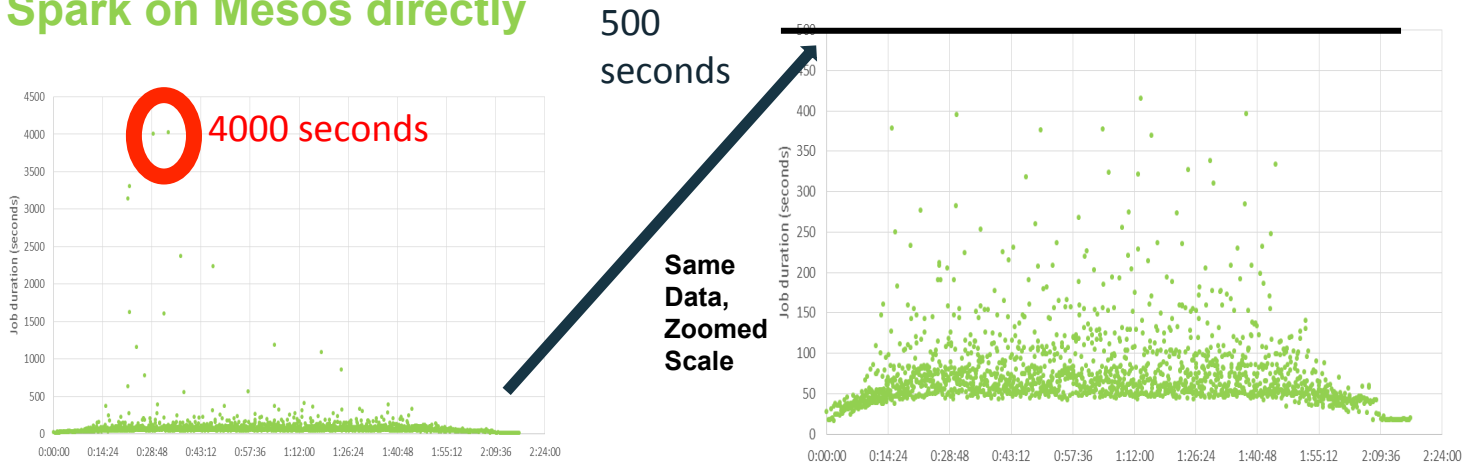
# We support the Mesos ecosystem...

Expanding the multi-framework potential of Mesos for the enterprise



# Make Mesos the best open platform for Spark

## Spark on Mesos directly

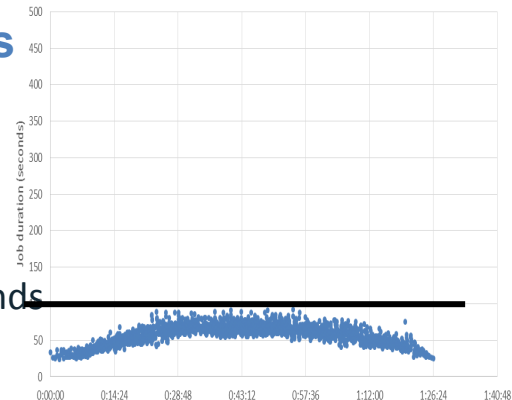


## Spark Session Scheduler on Mesos

The power of workload scheduling:

- 57% improved performance
- Significantly more consistent job execution

100 seconds



## Session scheduler also supports interactive workloads! *Even better!*

```
%sql
select buildingID, date, targettemp, (targettemp - actualtemp) as temp_diff
from hvac
where targettemp > "${Temp} = 65,65|75|85"
```

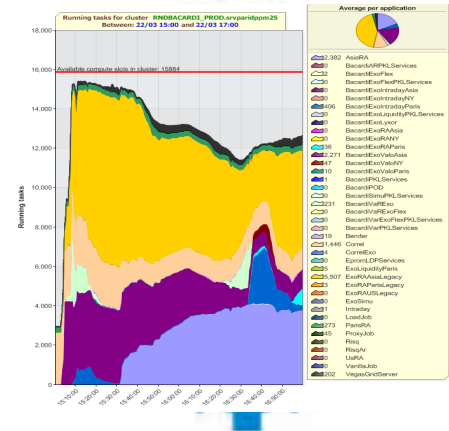
Temp 65



## Session Scheduler

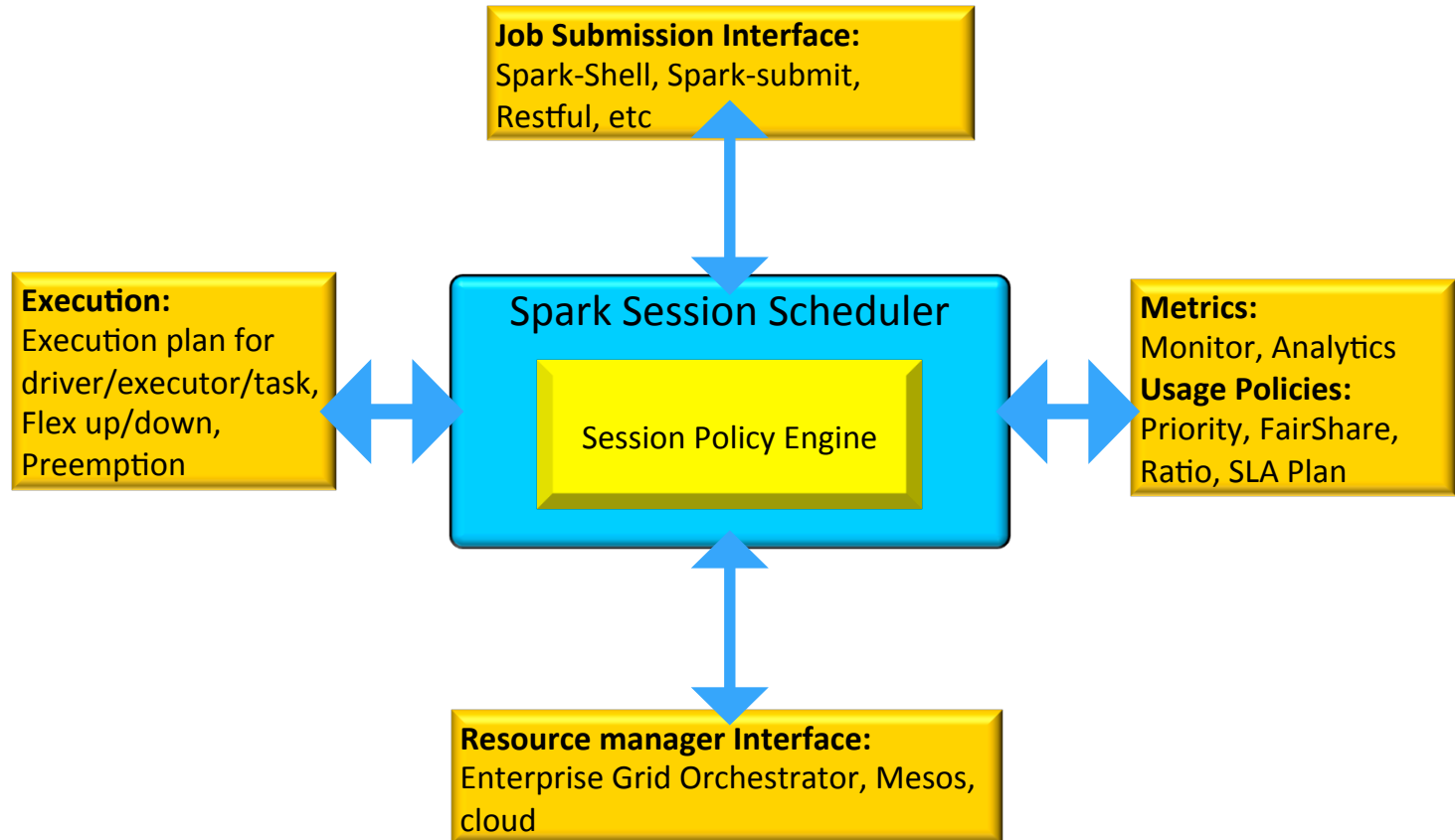
## How to run such SQL in notebook?

- Task, job, stage, cpu, memory?
- When?
- SLA?
- Bill by second, Watt, Flops?





# Session scheduler: a multi-user workload manager

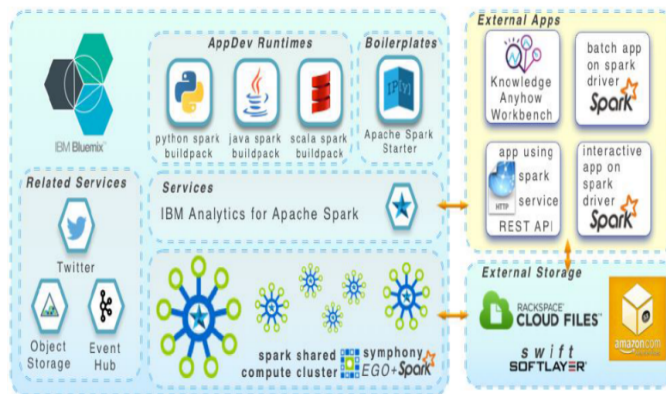


# Production-proven Spark session scheduler

## *Now available on Mesos*

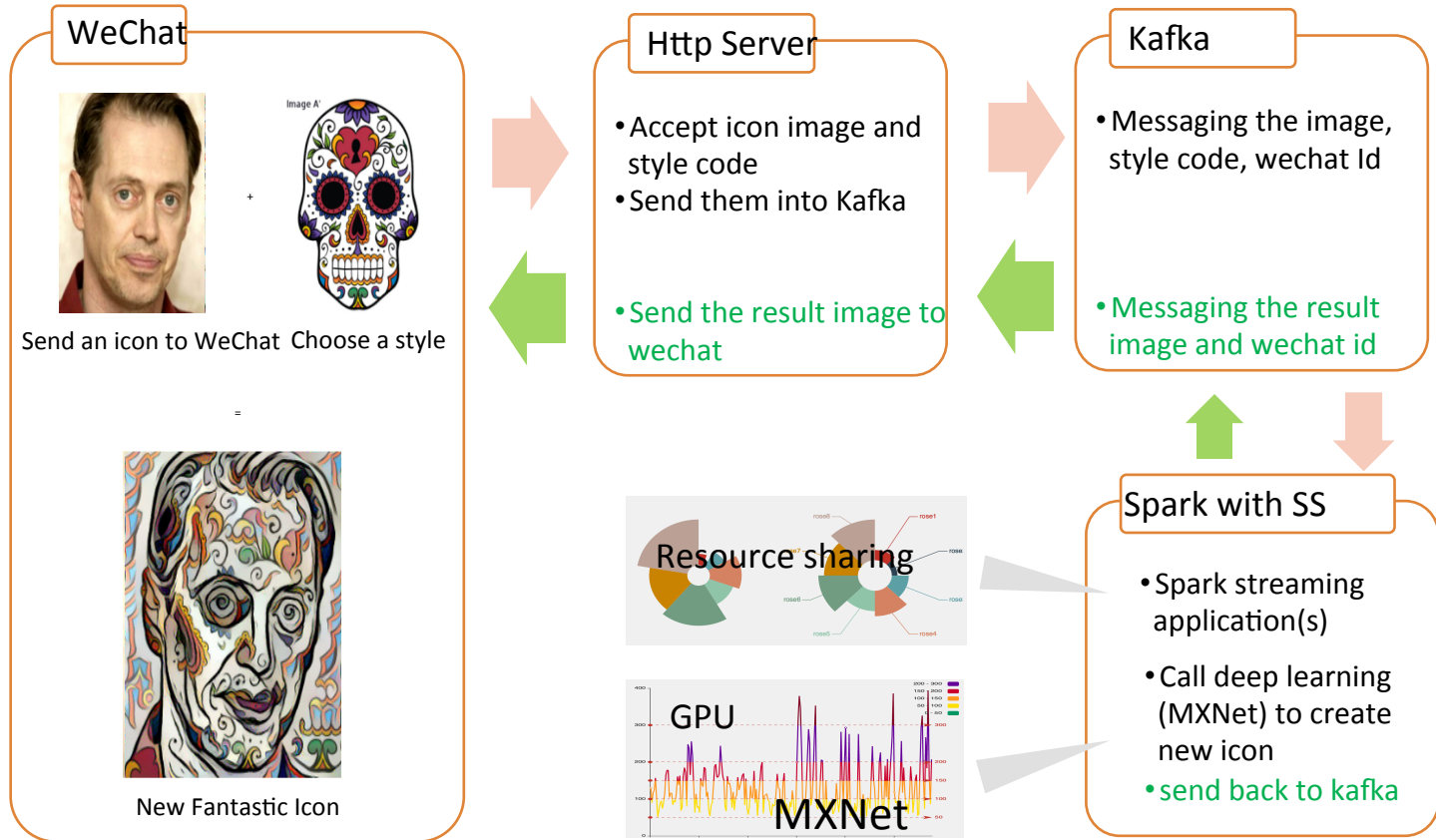
### Production employments of IBM Spark session scheduler include:

- IBM Bluemix Spark Cloud Service
- Customer deployments of IBM Spectrum Conductor with Spark

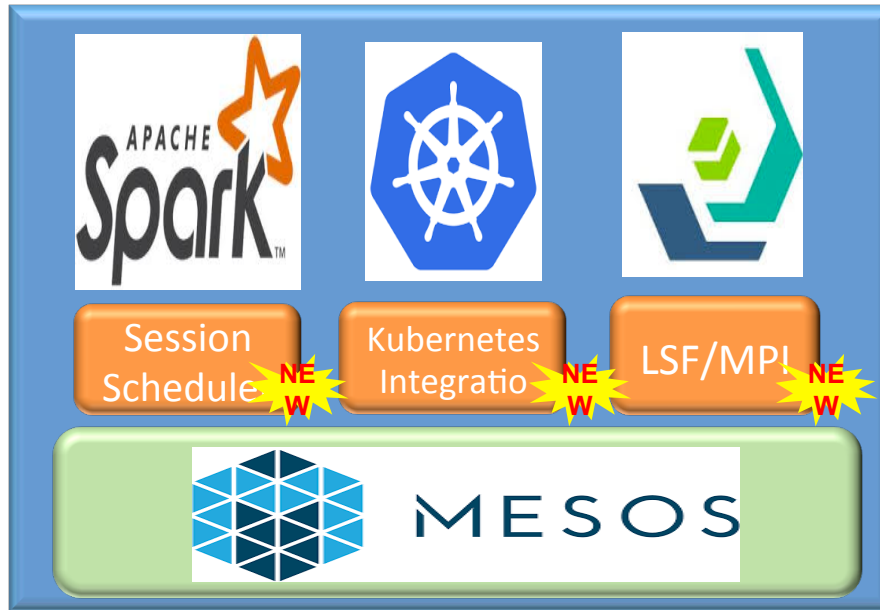


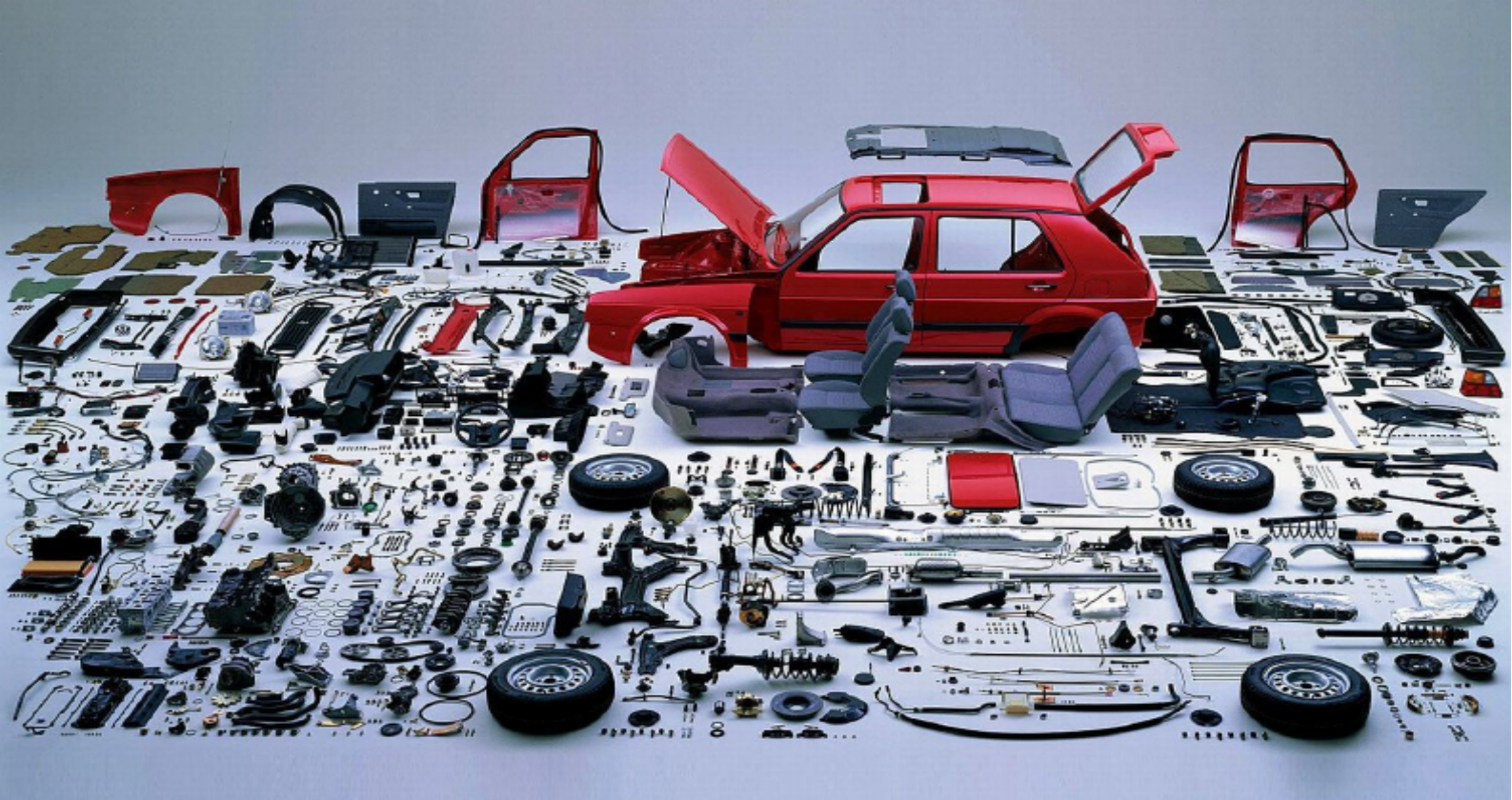
# Demonstration – Fantastic Icon Maker

## Interactive Spark Deep Learning as a service



# To be enterprise-usable – there are more to consider





Time to value matters

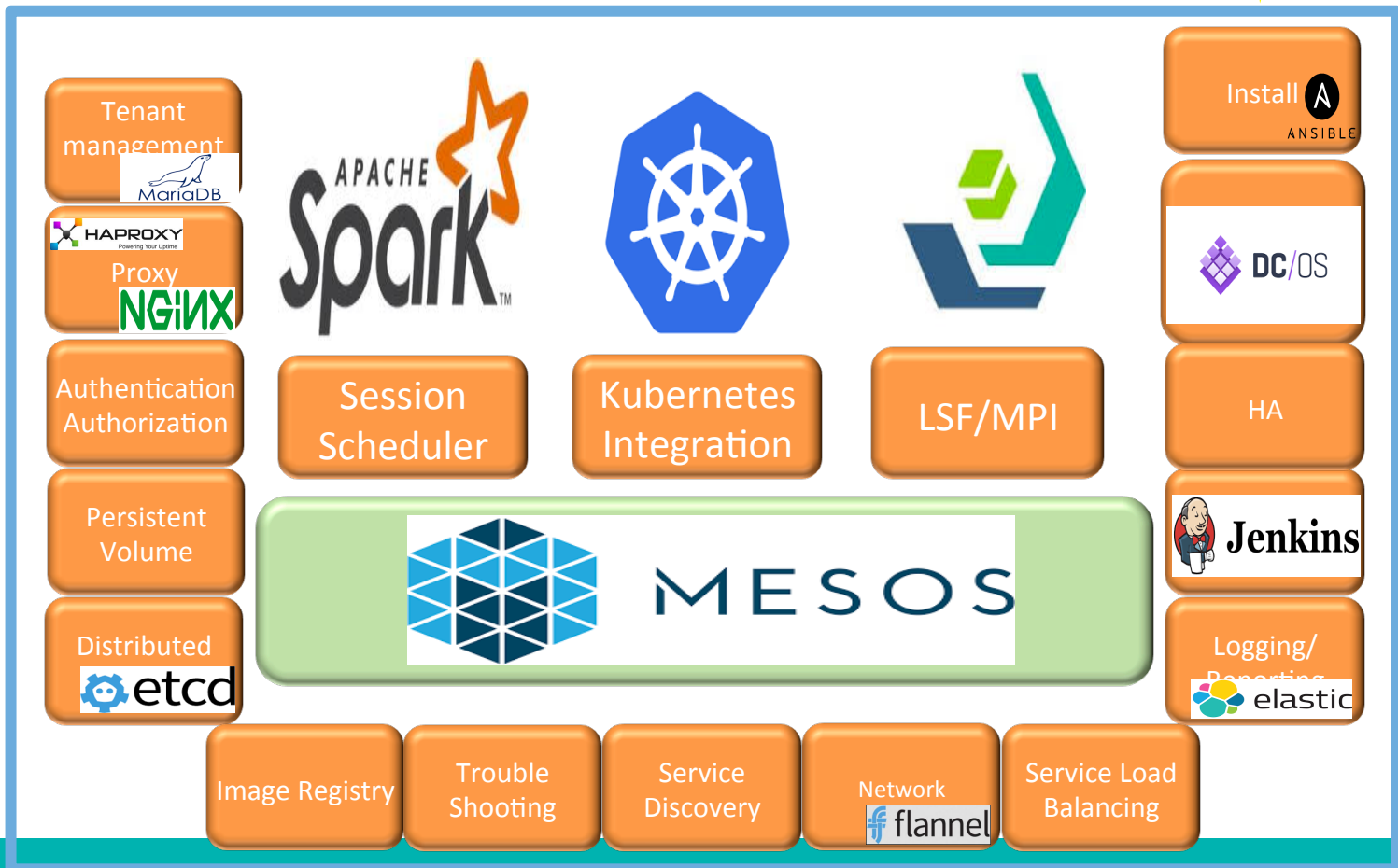
Just because you *can* build a container environment from scratch

doesn't mean you *should*!

# IBM Spectrum Conductor for Containers

NEW

*Open Source + Integration + Value Add*



# IBM Conductor for Containers Community Edition

- **Community Edition v0.2 (Tech Preview) available now!**
- **Free to download and use as you wish**
- **We are looking for feedback for our roadmap**
- **Register on our community page:**  
<http://ibm.biz/ConductorForContainers>



# Visit our booth and attend our sessions!

Thank You!!!  
谢谢！！

Topic Name	IBM Presenter
External Volume Support in Mesos Using Docker Volume Isolator	Guangya Liu
Kubernetes on Mesos: Not Just Another Mesos Framework	Da Ma, Guangya Lu and Yong Feng
The Next-Generation of HPC/Cognitive Workflows on Mesos: From High Performance Computing to High Performance Insights	Yong Feng
Lessons Learned Running IBM Watson on Mesos in Production	Jason Adelman
Spark Session Scheduler: The Key to Guaranteed SLA of Spark Applications for Multiple Users on Mesos	Yong Feng / Xiaoming Bao
CNI: Onwards and Upwards	Qian Zhang
Mesos HA: Getting rid of ZooKeeper!	Jay Guo (CRL) + Mesosphere
Bringing Containers to Enterprise: Secure your Apps in Production	Jay Guo (CRL) + Mesosphere
Nvidia GPU Support on Mesos: Bridging Mesos Containerizer and Docker Containerizer	Yubo Li (CRL)



# Fantastic Icon Maker

