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# STREAMING DATA ANALYSIS WITH KUBERNETES

## Great Indian Developer Summit

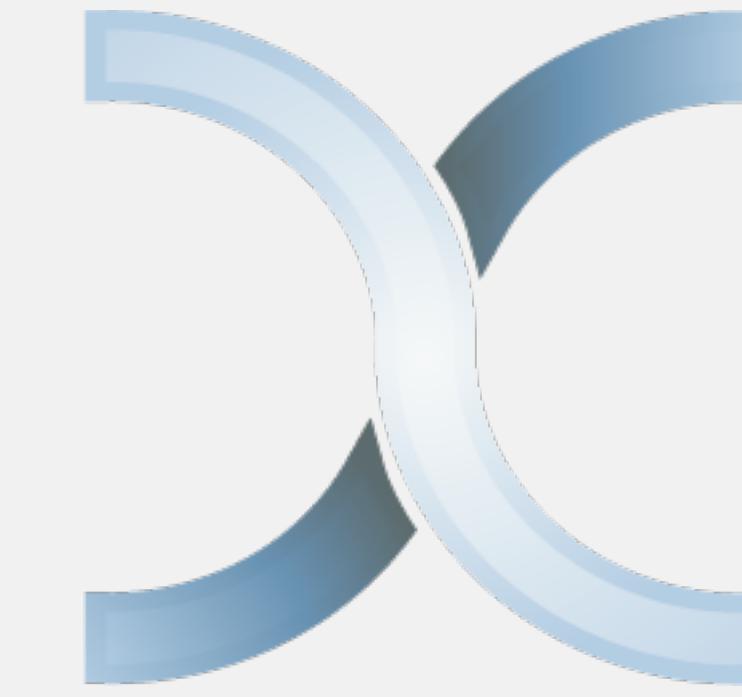
Galder Zamarreño Arrizabalaga  
@galderz  
26th April 2018

@galderz



ENGINEER

Since 2006



INFINISPAN  
CO-FOUNDER (2009)

Community Lead and  
Core Developer



MUDKIP ROCKS! 😎

# BUILD STREAMING DATA ANALYSIS APPLICATION ON TOP OF A KUBERNETES PLATFORM

# THE PROBLEM

## REAL-TIME STREAMING DATA PROCESSING IS CHALLENGING

Delays can have a big impact

## EXPONENTIAL DATA GROWTH YEAR ON YEAR

Smartphones, IOT devices, trillions of internet  
connected devices...

ZZZ... NO!



# THE PLATFORM

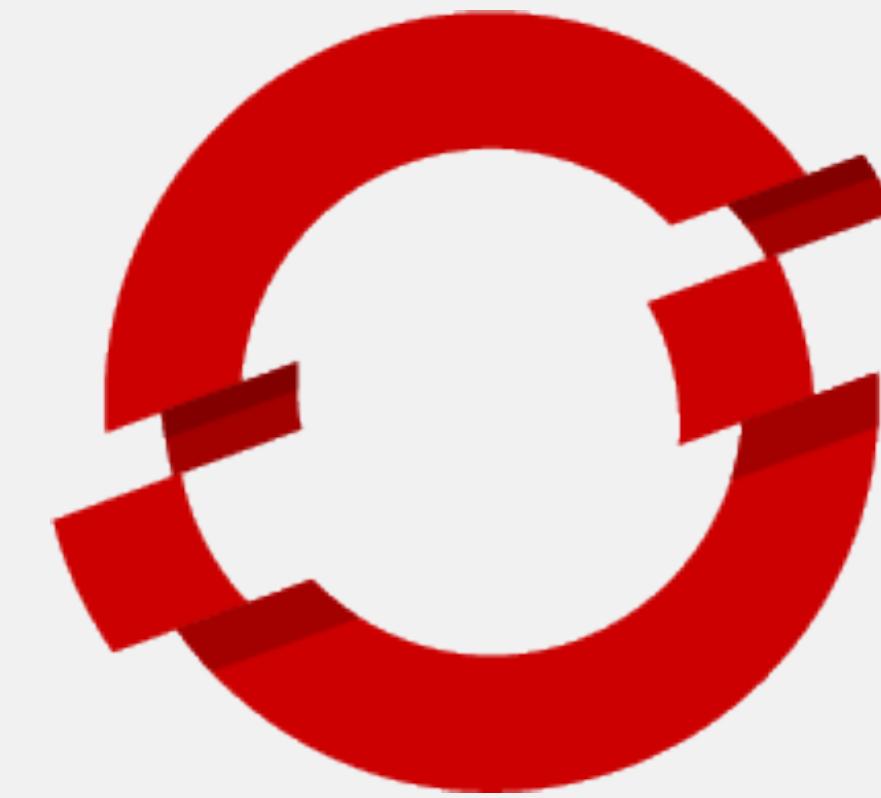
Platform-as-a-Service (PaaS)



Platform for developing and running applications

Public or private and multi-language

OpenShift is a Kubernetes distro with extras

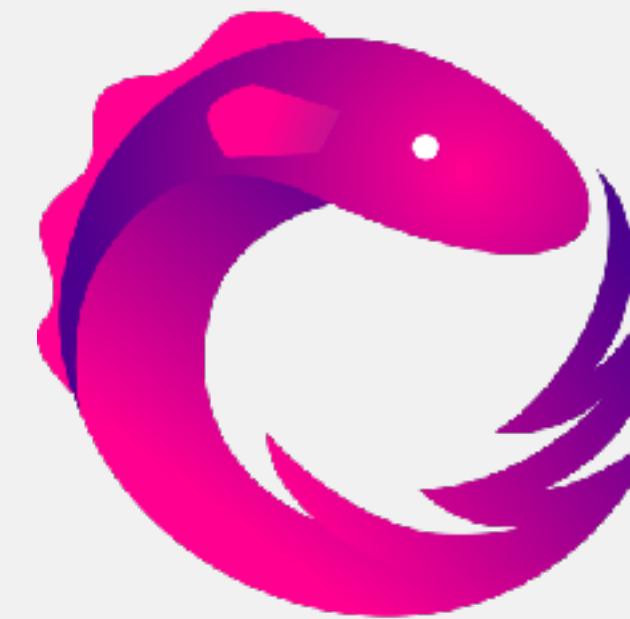


**RED HAT®  
OPENSHIFT**

IS



# THE GLUE

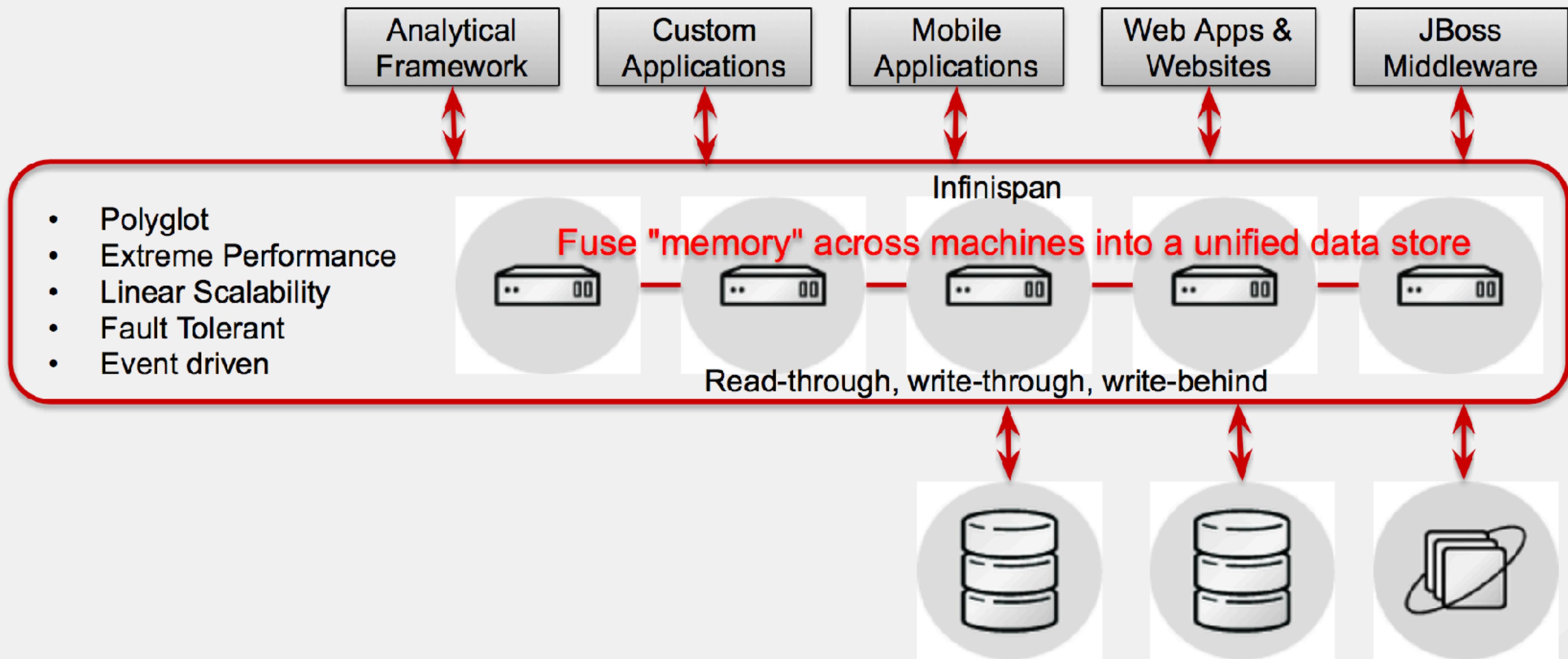


RxJava

Vert.x is a toolkit for building reactive apps  
On JVM, event-driven and non-blocking

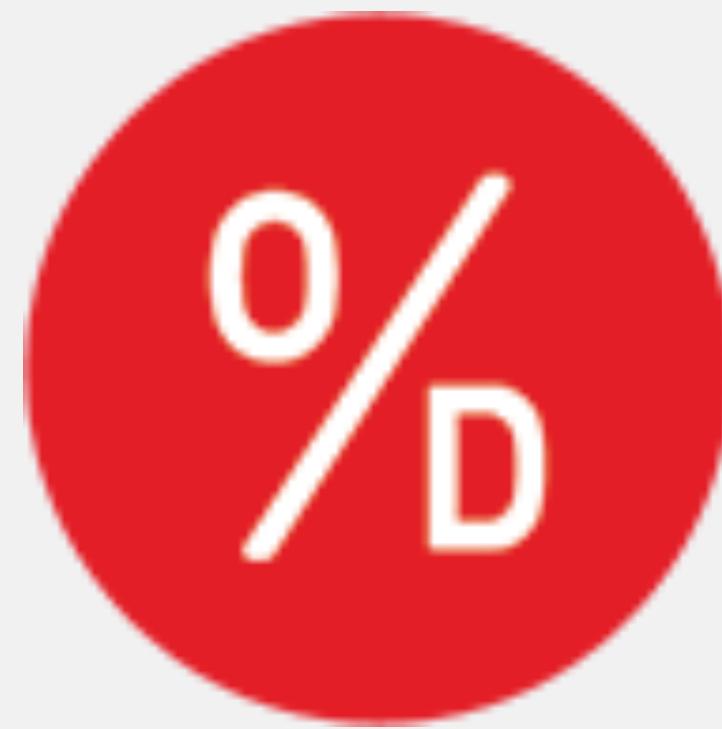
RxJava integrates with Vert.x  
Great at event transform and coordination  
Works best with many source of events (modern apps!)

# DATA GRID



# THE DATA

<http://transport.opendata.ch>



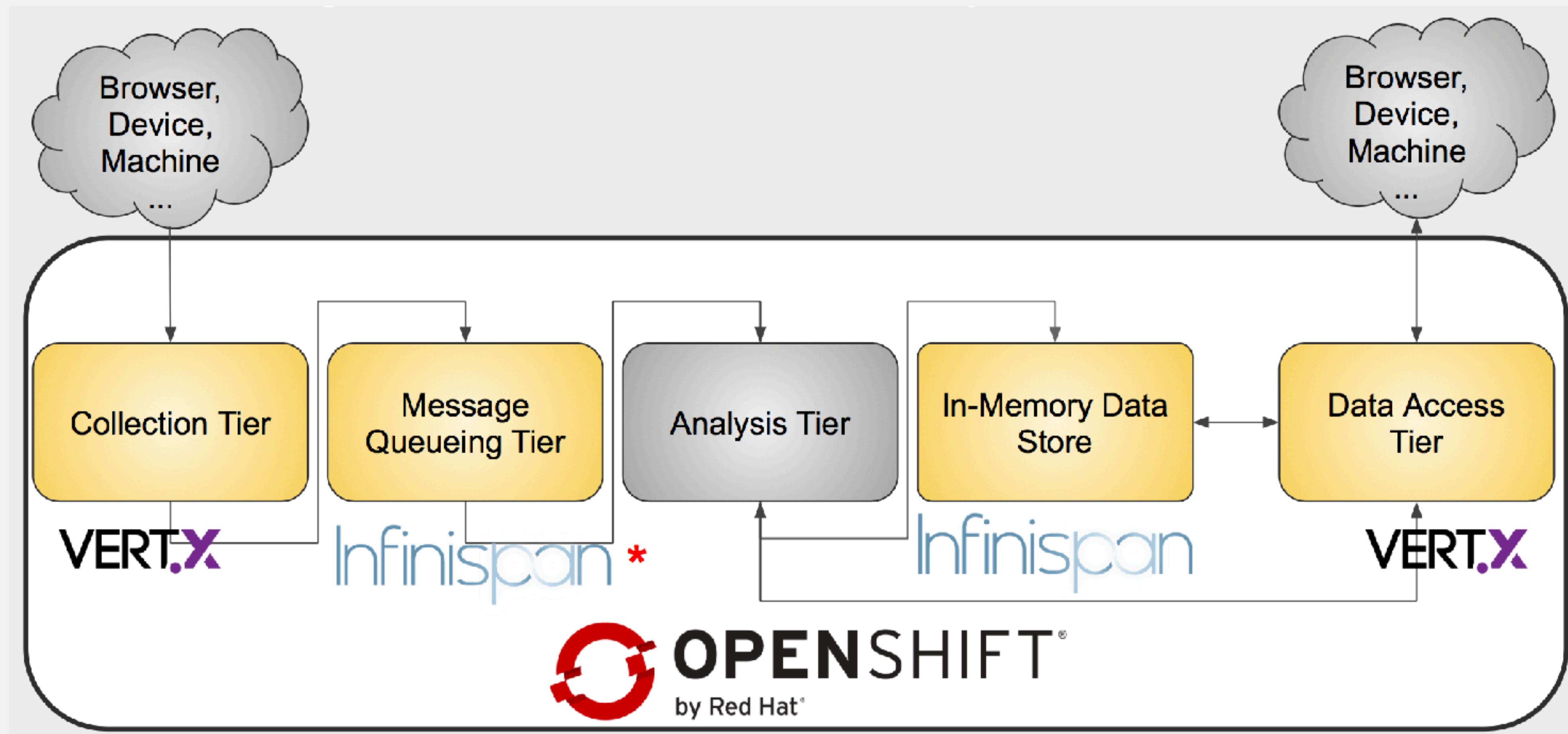
# SAMPLE DATA - OPENDATA

```
{"stop": {"station": {"id": "8500301", "name": "Rheinfelden", "score": null, "coordinate": {"type": "WGS84", "x": 47.55121, "y": 7.792155}, "distance": null}, "arrival": null, "arrivalTimestamp": null, "departure": "2016-02-29T17:34:00+0100", "departureTimestamp": 1456763640, "delay": 3, "platform": "4", "prognosis": {"platform": "4", "arrival": null, "departure": "2016-02-29T17:37:00+0100", "capacity1st": 1, "capacity2nd": 1}, "realtimeAvailability": null, "location": {"id": "8500301", "name": "Rheinfelden", "score": null, "coordinate": {"type": "WGS84", "x": 47.55121, "y": 7.792155}, "distance": null}, "name": "IR 1978", "category": "IR", "categoryCode": 2, "number": "1978", "operator": "SBB", "to": "Basel SBB", "capacity1st": null, "capacity2nd": null, "subcategory": "IR", "timeStamp": 1456761753983, "nextStation": {"station": {"id": "8500301", "name": "Rheinfelden", "score": null, "coordinate": {"type": "WGS84", "x": 47.55121, "y": 7.792155}, "distance": null}, "arrival": "2016-02-29T17:34:00+0100", "arrivalTimestamp": 1456763640, "departure": null, "departureTimestamp": null, "delay": null, "platform": "", "prognosis": {"platform": null, "arrival": null, "departure": null, "capacity1st": null, "capacity2nd": null}, "realtimeAvailability": null, "location": {"id": "8500301", "name": "Rheinfelden", "score": null, "coordinate": {"type": "WGS84", "x": 47.55121, "y": 7.792155}, "distance": null}}, "@version": "1", "@timestamp": "2016-02-29T16:02:34.781Z"}
```

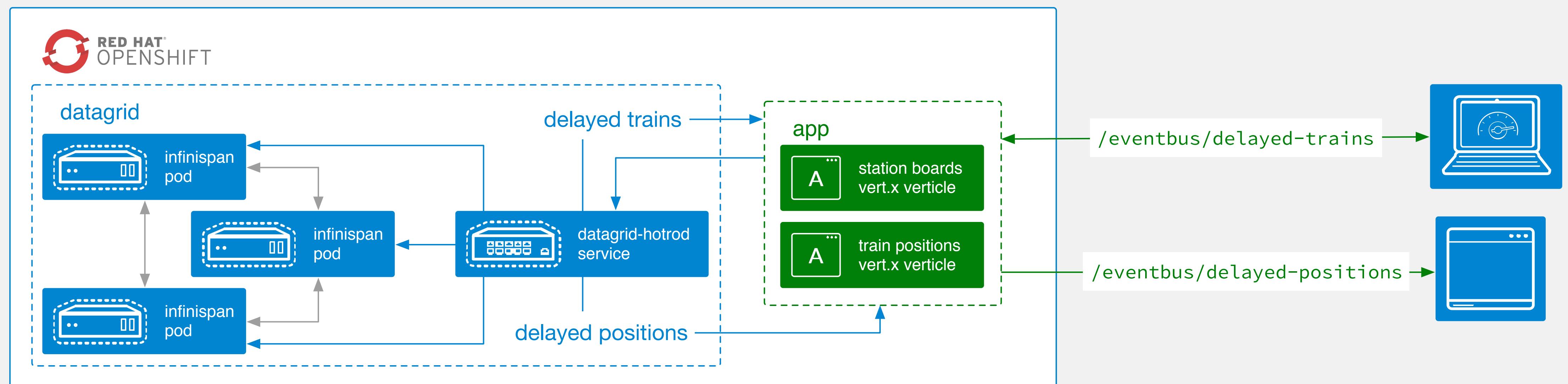
# SAMPLE DATA - SBB

```
{"x": "8290840", "y": "47483629", "name": "IR 1978",  
"trainrefdate": "29.02.16", "category": "IR", "trainid": "84/25934/18/24/95", "direction": "15",  
"prodclass": "4", "delay": "7", "passproc": "", "lststopname": "Basel SBB", "poly":  
[{"x": "8290840", "y": "47483629", "passproc": "", "msec": "0", "direction": "15"},  
{ "x": "8290193", "y": "47483647", "passproc": "", "msec": "2000", "direction": "15"},  
{ "x": "8289528", "y": "47483674", "passproc": "", "msec": "4000", "direction": "15"},  
{ "x": "8288863", "y": "47483701", "passproc": "", "msec": "6000", "direction": "15"},  
{ "x": "8288198", "y": "47483728", "passproc": "", "msec": "8000", "direction": "15"},  
{ "x": "8287532", "y": "47483755", "passproc": "", "msec": "10000", "direction": "15"},  
{ "x": "8286885", "y": "47483773", "passproc": "", ... }, "timeStamp":  
1456761728202, "@version": "1", "@timestamp": "2016-02-29T16:02:11.321Z"}
```

# HIGH LEVEL ARCHITECTURE



# COMPONENT ARCHITECTURE



# DEMO

# VERSATILITY OF INFINISPAN

Distributed Cache

Shared Memory

Event Broker

Analytics

 Embedded | Remote   Expiration  Eviction  Persistence

 Security

 Code execution

 Transactions

 Listeners

 Management and monitoring

 Cloud

 Querying

 Integrations

# BUILD STREAMING DATA ANALYSIS APPLICATION ON TOP OF A KUBERNETES PLATFORM



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# THANK YOU!

[github.com/infinispan-demos/streaming-data-kubernetes](https://github.com/infinispan-demos/streaming-data-kubernetes)

[infinispan.org](http://infinispan.org)

[redhat.com/en/technologies/jboss-middleware/data-grid](https://www.redhat.com/en/technologies/jboss-middleware/data-grid)

[openshift.com](https://openshift.com) | [vertx.io](https://vertx.io)

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