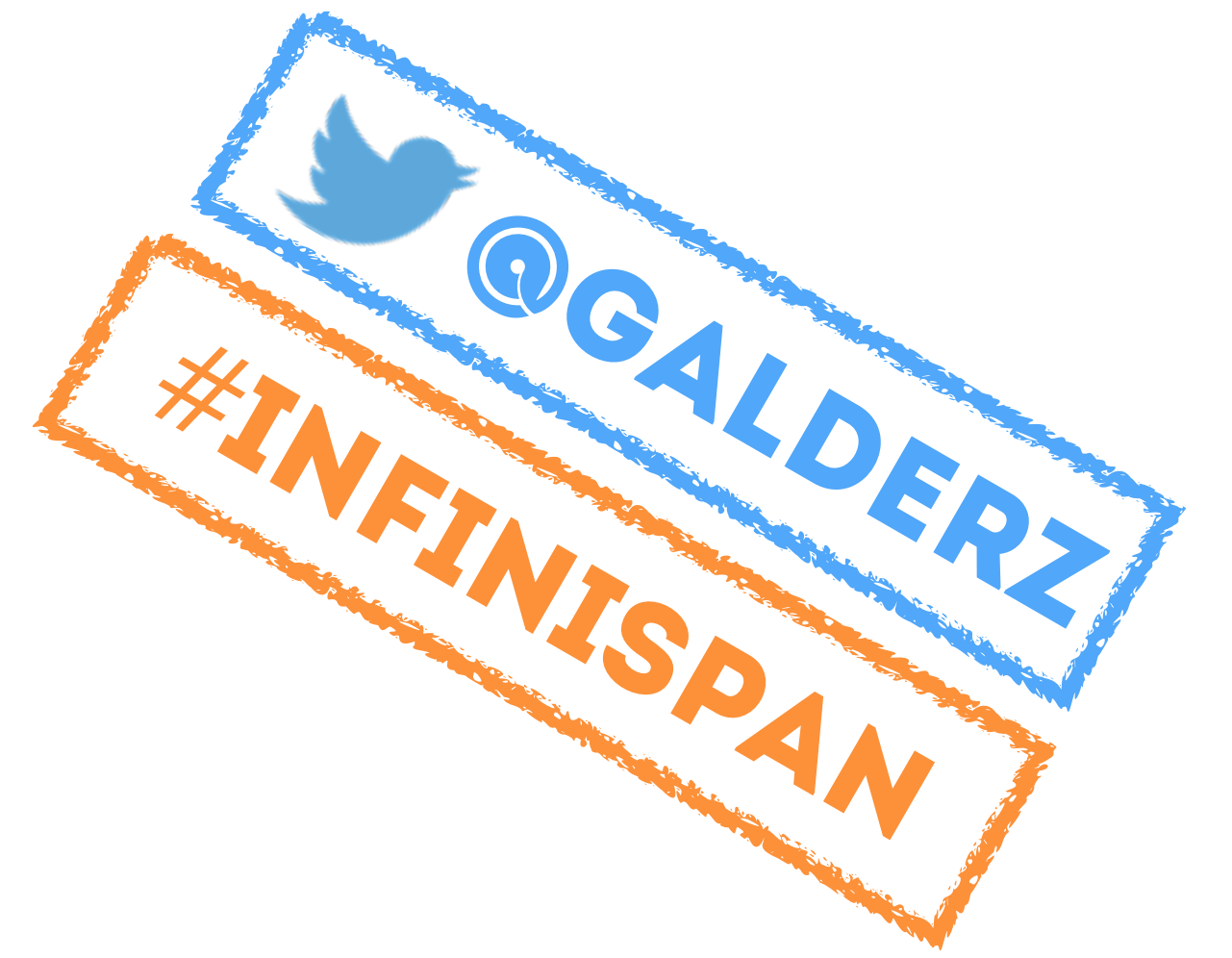


BIG DATA IN ACTION WITH INFINISPAN

Galder Zamarreño Arrizabalaga
13th June 2017



MOI



-  @  redhat.
- **Infinispan developer & co-founder**
- **Lead client/server architecture**
- **Functional programming** 

**Build Infinispan based infrastructure
to store, search and process
near real-time data and
calculate analytics**

REAL-TIME DATA

Real-time data is challenging

Delays can have big impact

DATA GROWTH

**Exponential data growth
(smartphone, IoT...etc)**

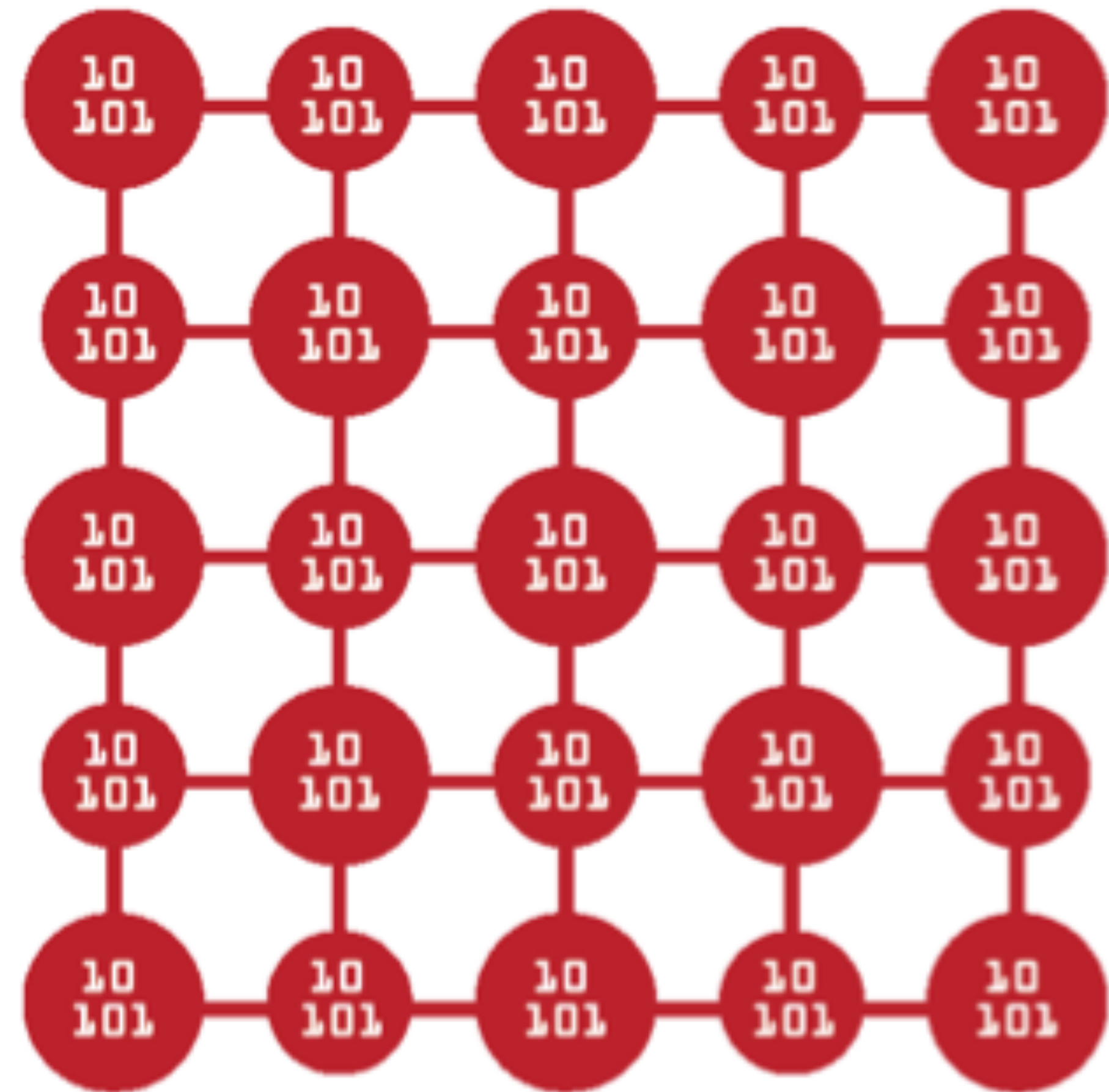
How to analyse it?

IN-MEMORY DATA GRIDS

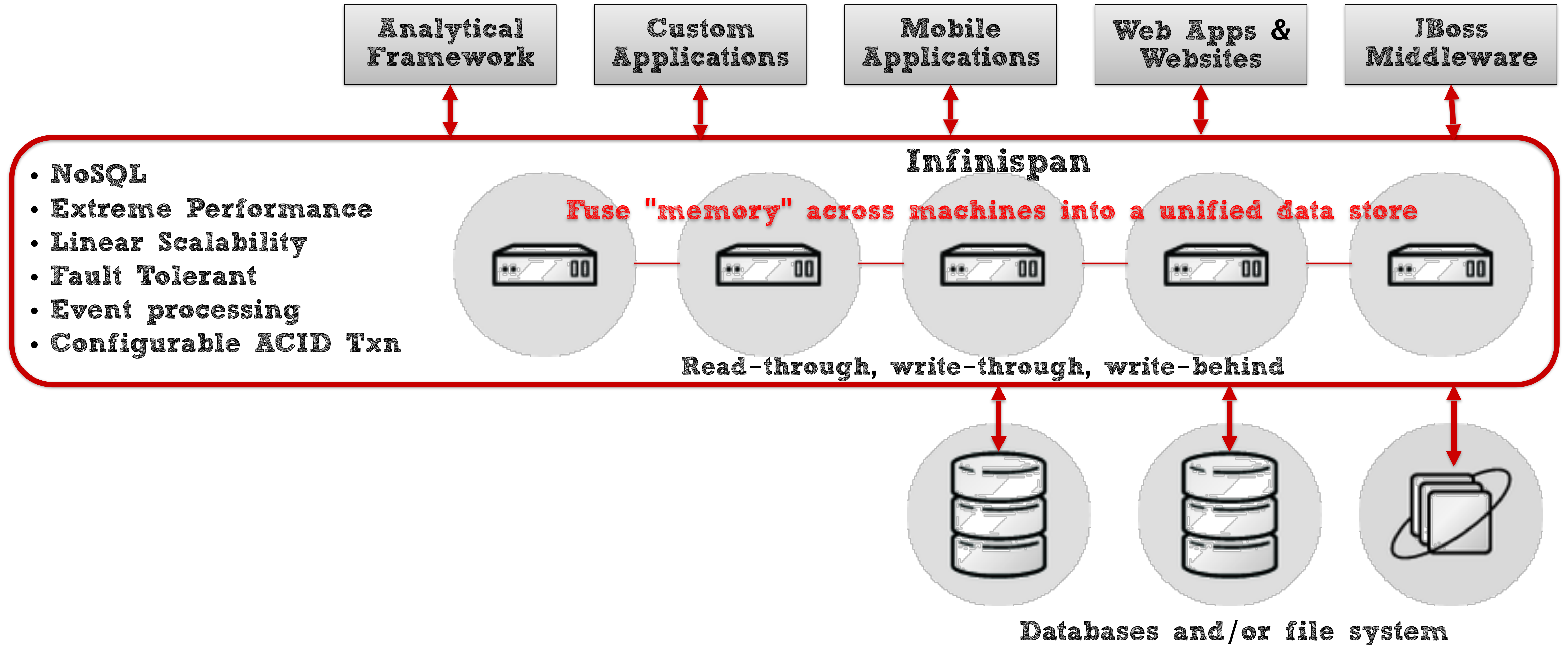
IMDG

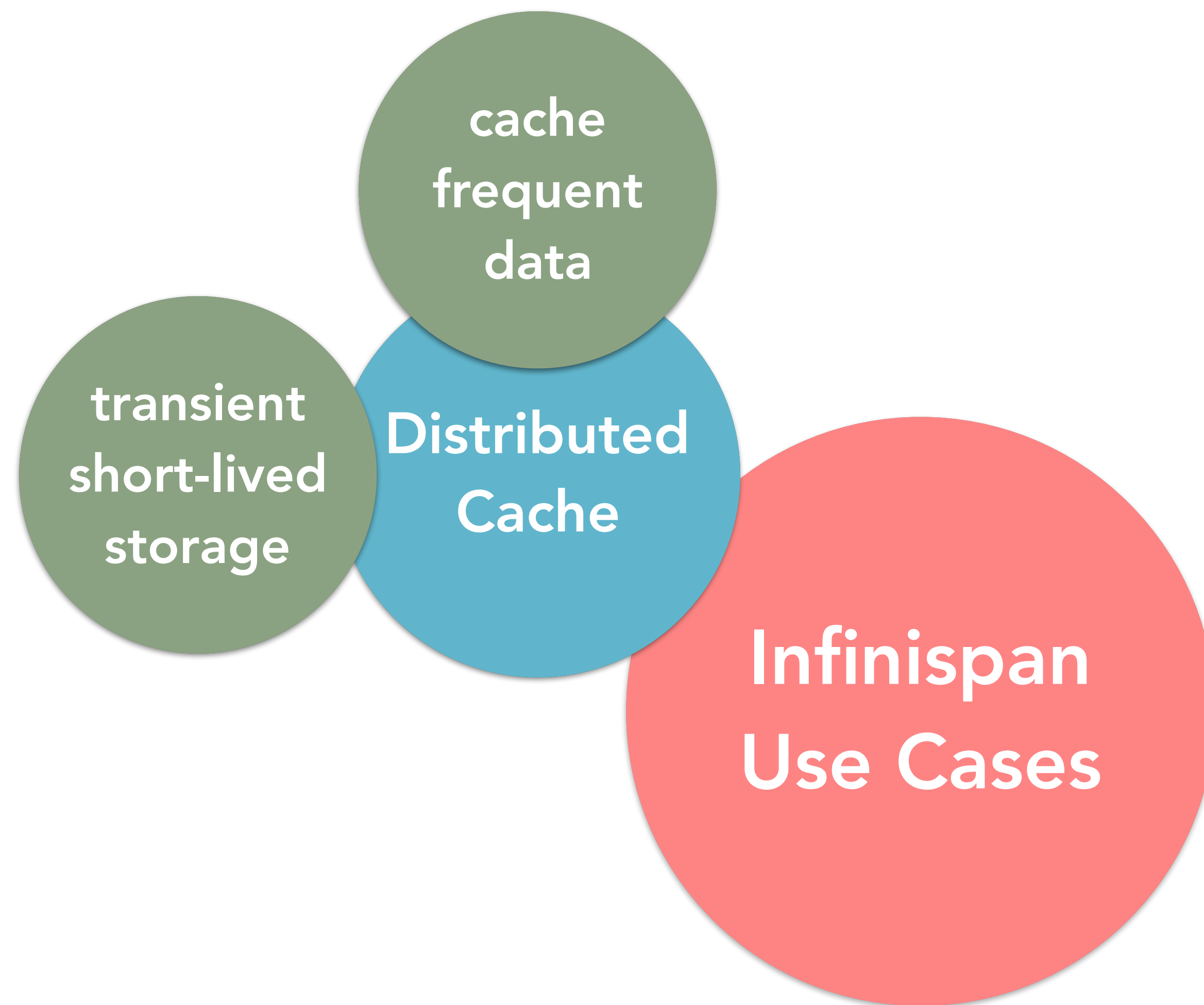
WHAT IS A IMDG?

- **Distributed in-memory data**
- **Server "mesh"**
- **Peer-to-peer (P2P)**
- **No master/slaves**
- **No single bottleneck**
- **No single point failure**
- **Commodity hardware**



INFINISPAN IS A IMDG



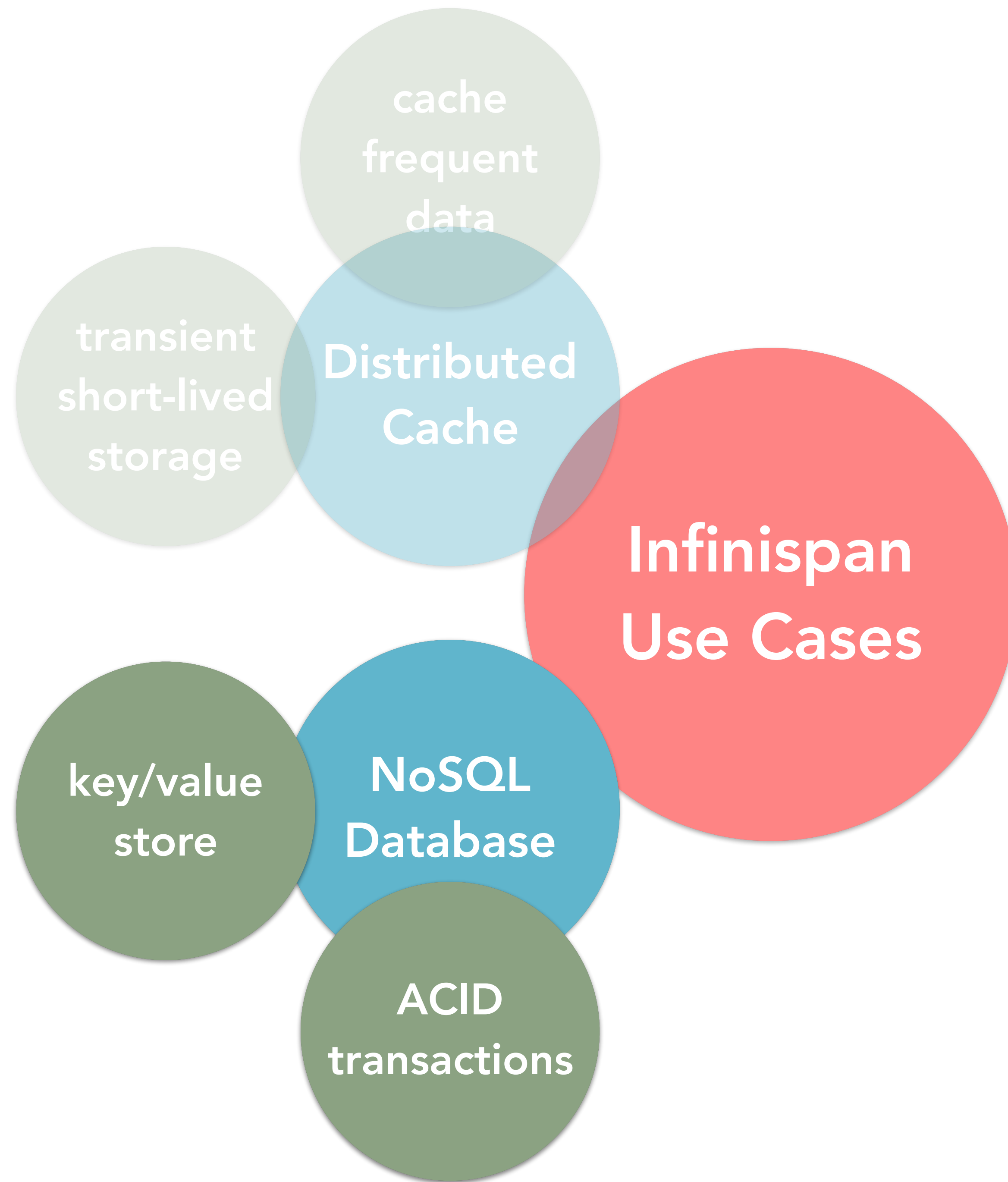


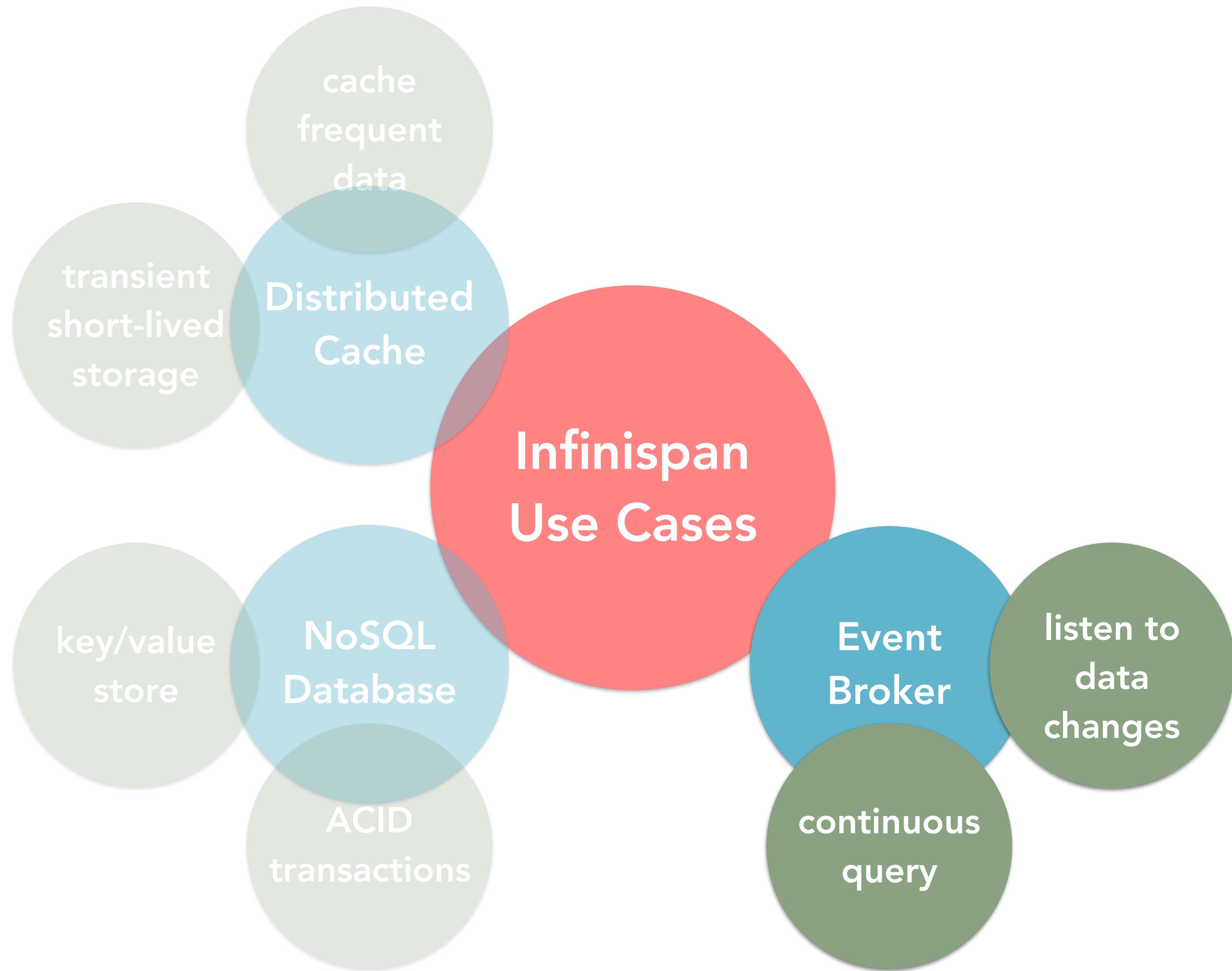
cache
frequent
data

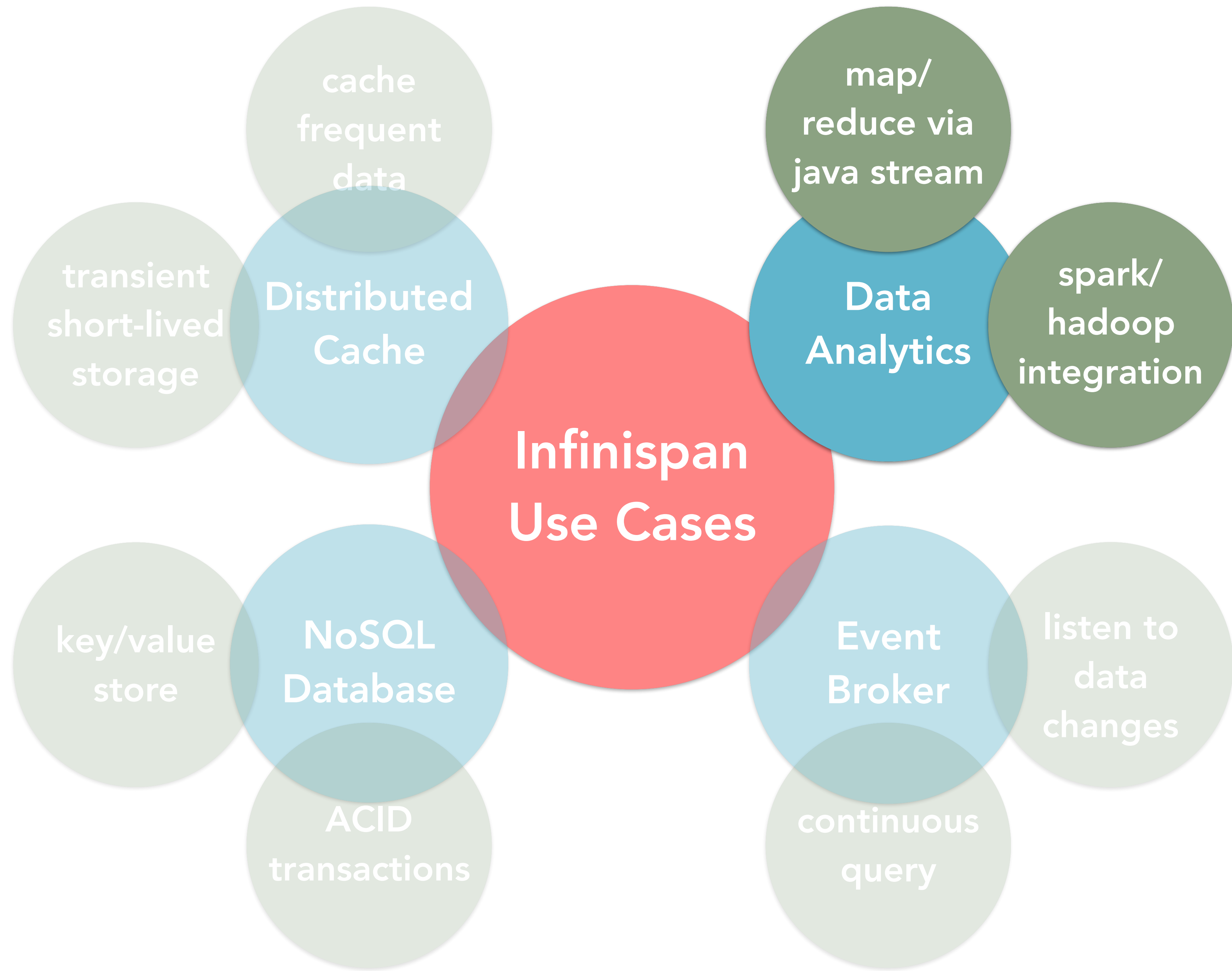
transient
short-lived
storage

Distributed
Cache

Infinispan
Use Cases







Infinispan Use Cases

cache frequent data

transient short-lived storage

Distributed Cache

map/reduce via java stream

Data Analytics

spark/hadoop integration

key/value store

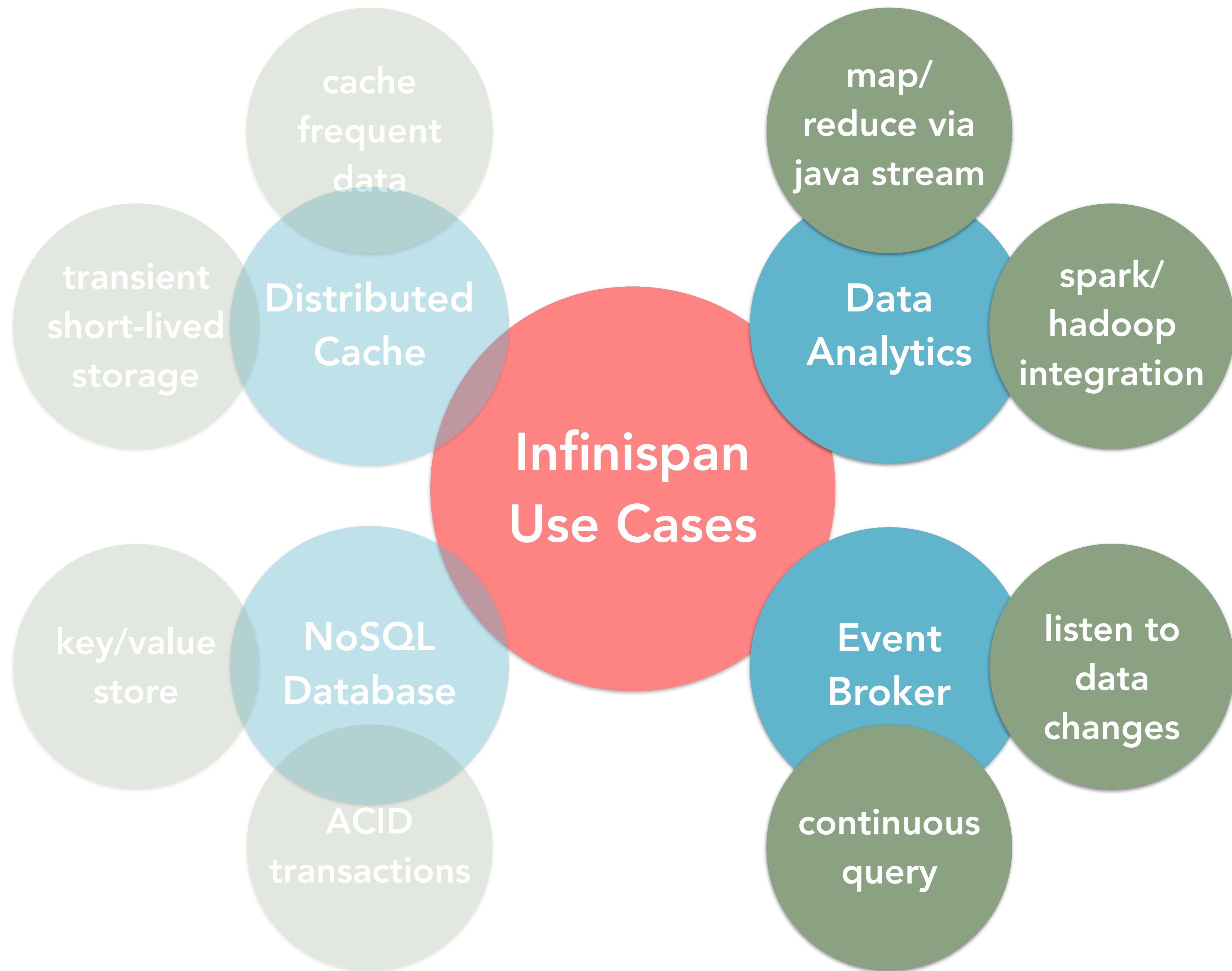
NoSQL Database

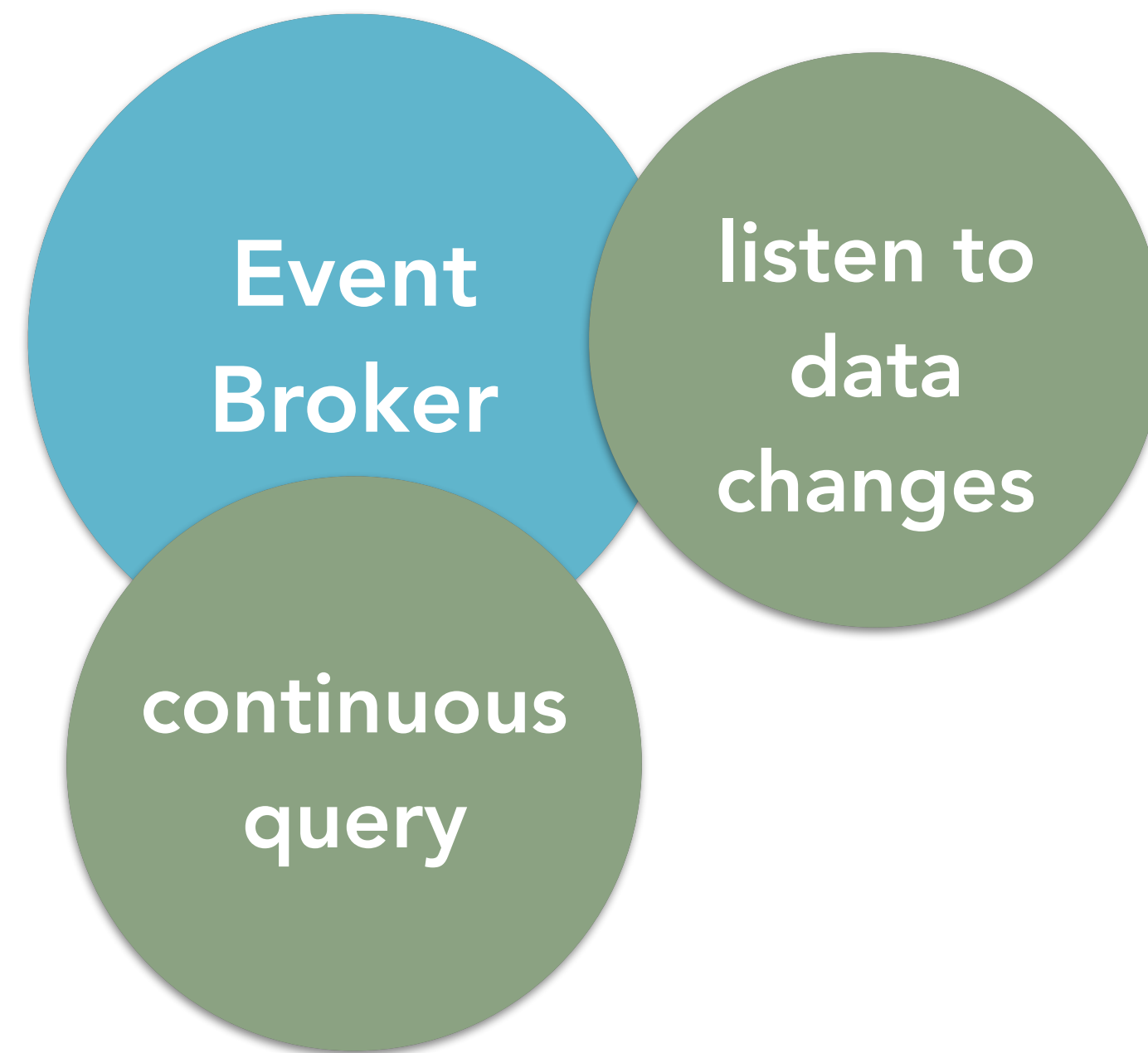
Event Broker

listen to data changes

ACID transactions

continuous query





Event
Broker

listen to
data
changes

continuous
query

CONTINUOUS QUERY

Continuous Query combines
complex querying with reactive
data changes

DEMO DOMAIN

TRAIN



STATION BOARD

Abfahrt Départ Partenza ·

	Nach	Gleis	Hinweis
S1	08.20 MuttENZ Pratteln Sallna Raurica Frick	4 A	
TER	08.21 St-Louis Mulhouse Colmar Strasbourg	31	
IC	08.31 Olten Bern Thun SplEZ Visp Brig	7	
S3	08.31 MuttENZ Pratteln Liestal Olten	17 C	
IC	08.33 Zürich HB Sargans Landquart Chur	8	
TGV	08.34 Mulhouse Paris-Gare de Lyon	9 CD	
Abfahrt ab Schweizer Bahnhof - Reservation obligatorisch			
S3	08.34 Dreispitz Delémont Porrentruy	16	
S6	08.34 Bad Bf Zell (Wiesental)	2 B	
RE	08.36 Bad Bf Weil a/R Haltingen Offenburg	1	
IR	08.37 Rheinfelden Zürich HB Flughafen	12	
TER	08.39 St. Johann St-Louis Mulhouse-Ville	33	

Bauarbeiten Basel - Mulhouse 10.4. - 28.7.17 / Travaux Basel - Mulhouse 10.4. - 28.7.17. Geänderte Fahrpläne / Horaires adaptés: www.ter.sncf.com/alsace

STATION



STOP

TGV 08.34 Mulhouse Paris-Gare de Lyon

9 CD

OPENSSHIFT



Platform-as-a-Service (PaaS)

Public or private

Polyglot

Based on Docker & Kubernetes

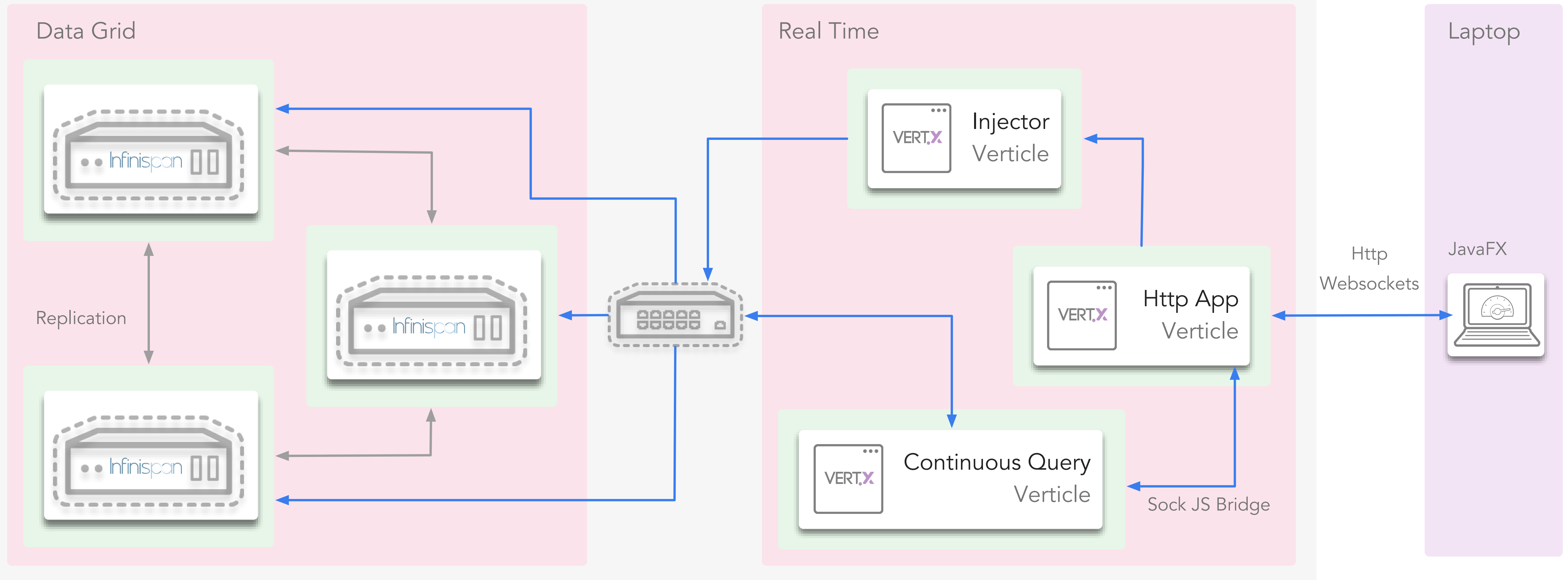
VERT.X

**Tool-kit for building reactive
applications on the JVM**

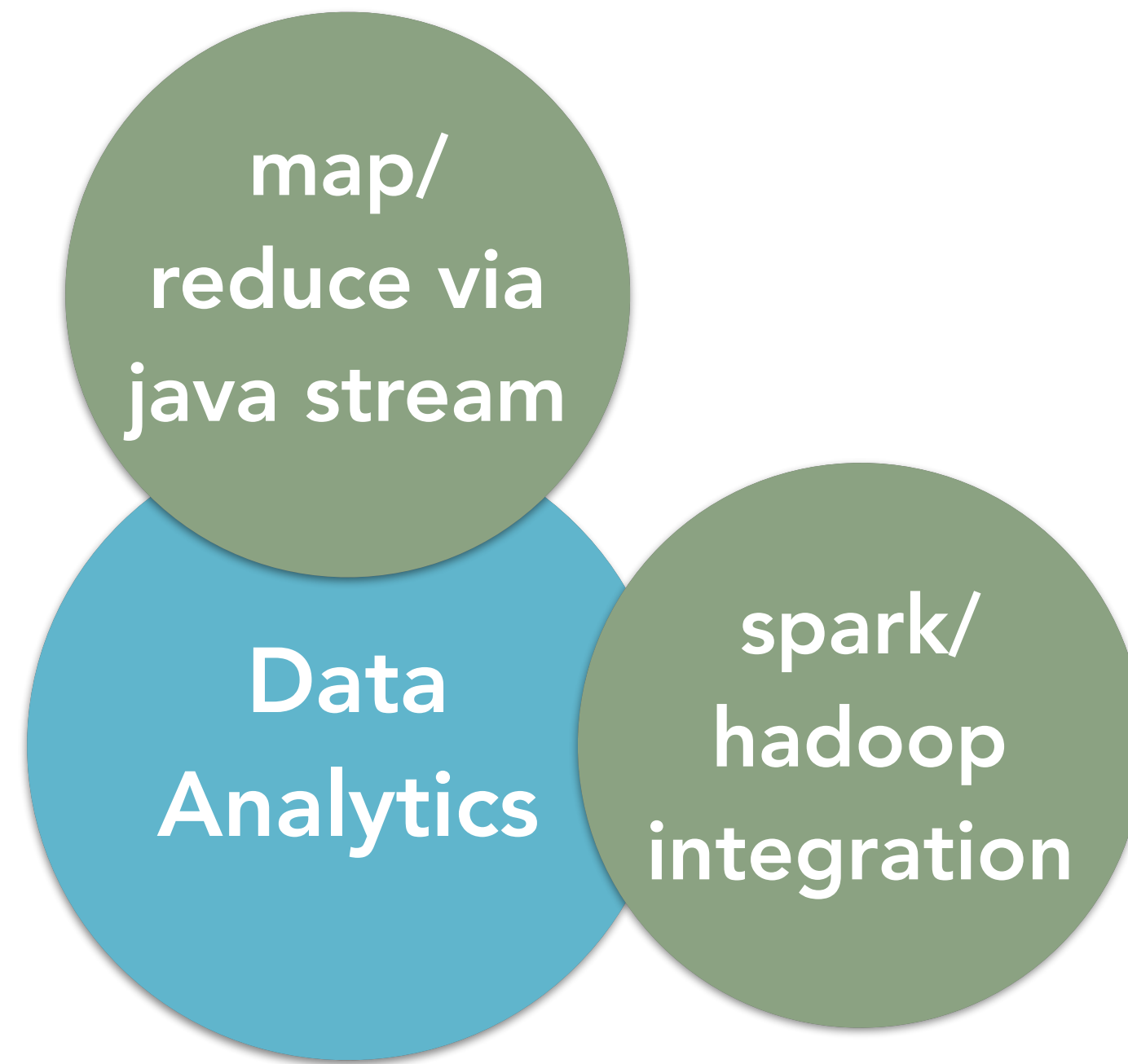
Event-Driven & Non-Blocking

Polyglot

REAL-TIME DEMO



DEMO REAL-TIME



SPARK - HADOOP

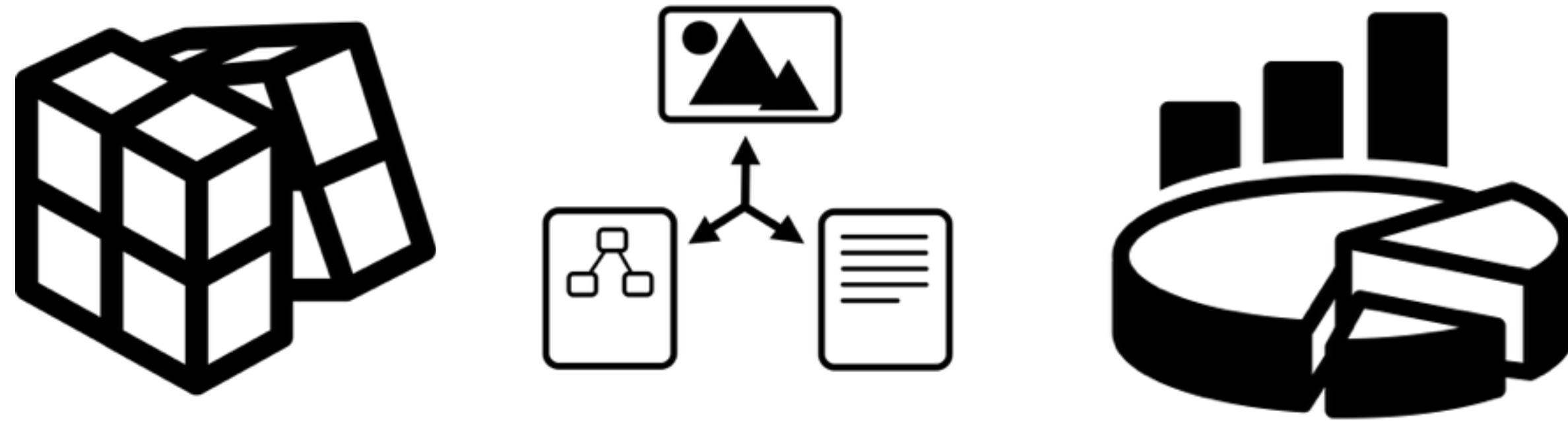
Powerful analytics APIs

Combo with Infinispan backend

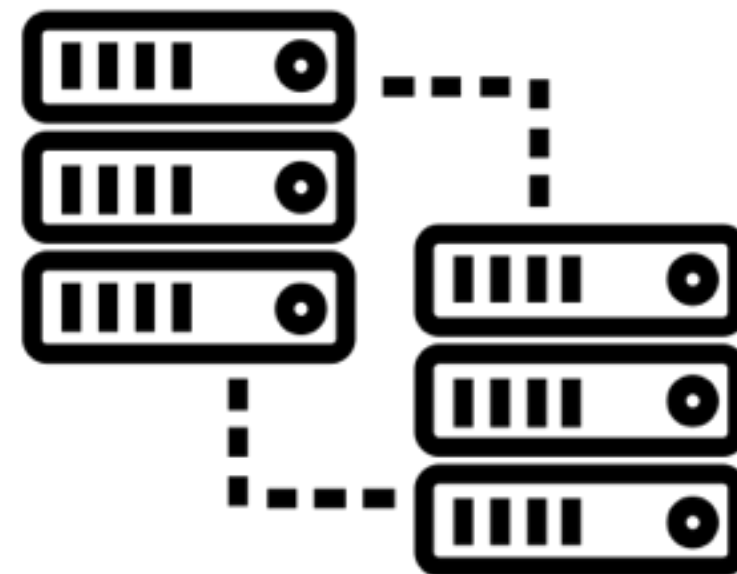
Separate process management

DISTRIBUTED JAVA STREAMS

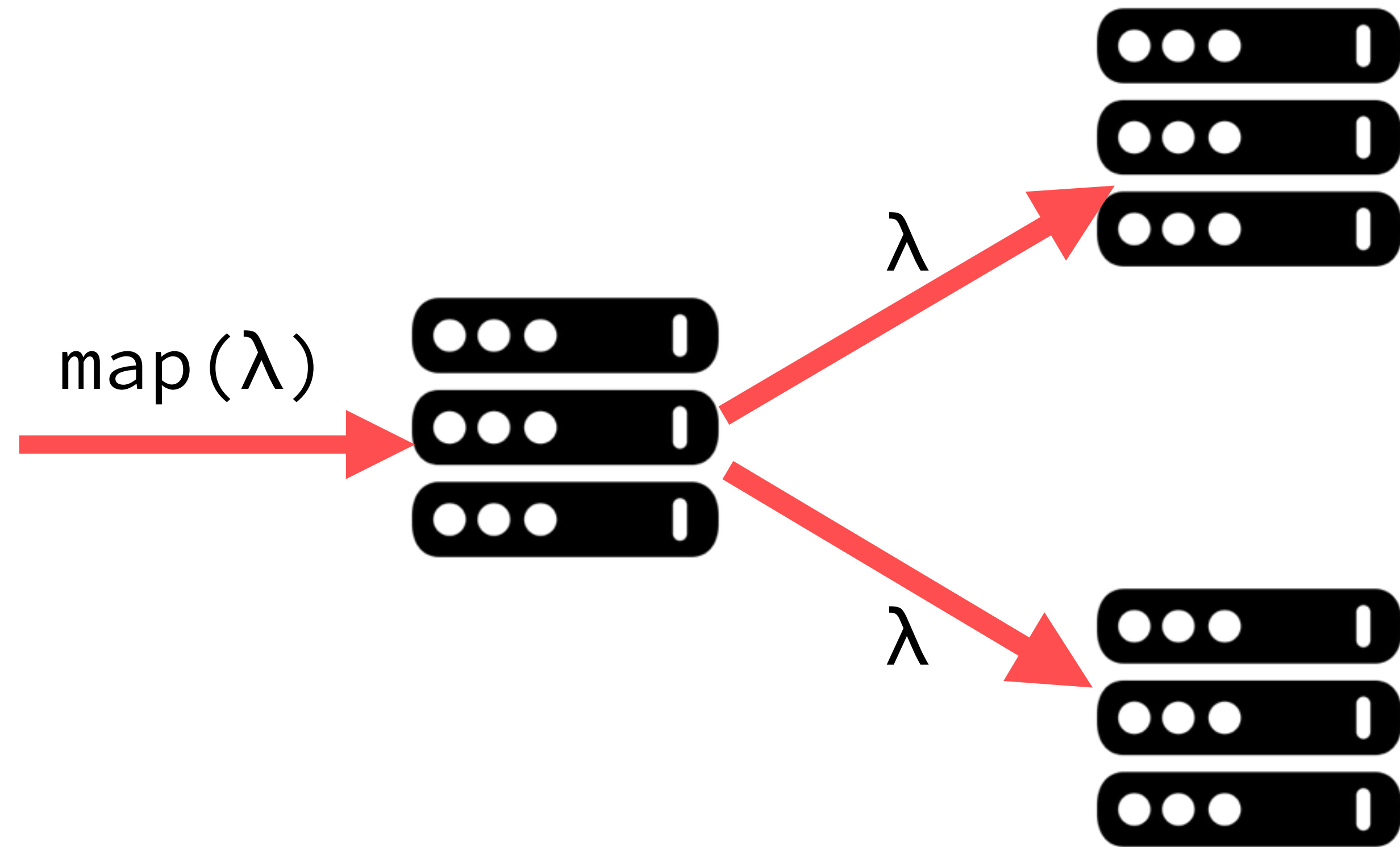
Extended Java 8 Stream API to



data stored in

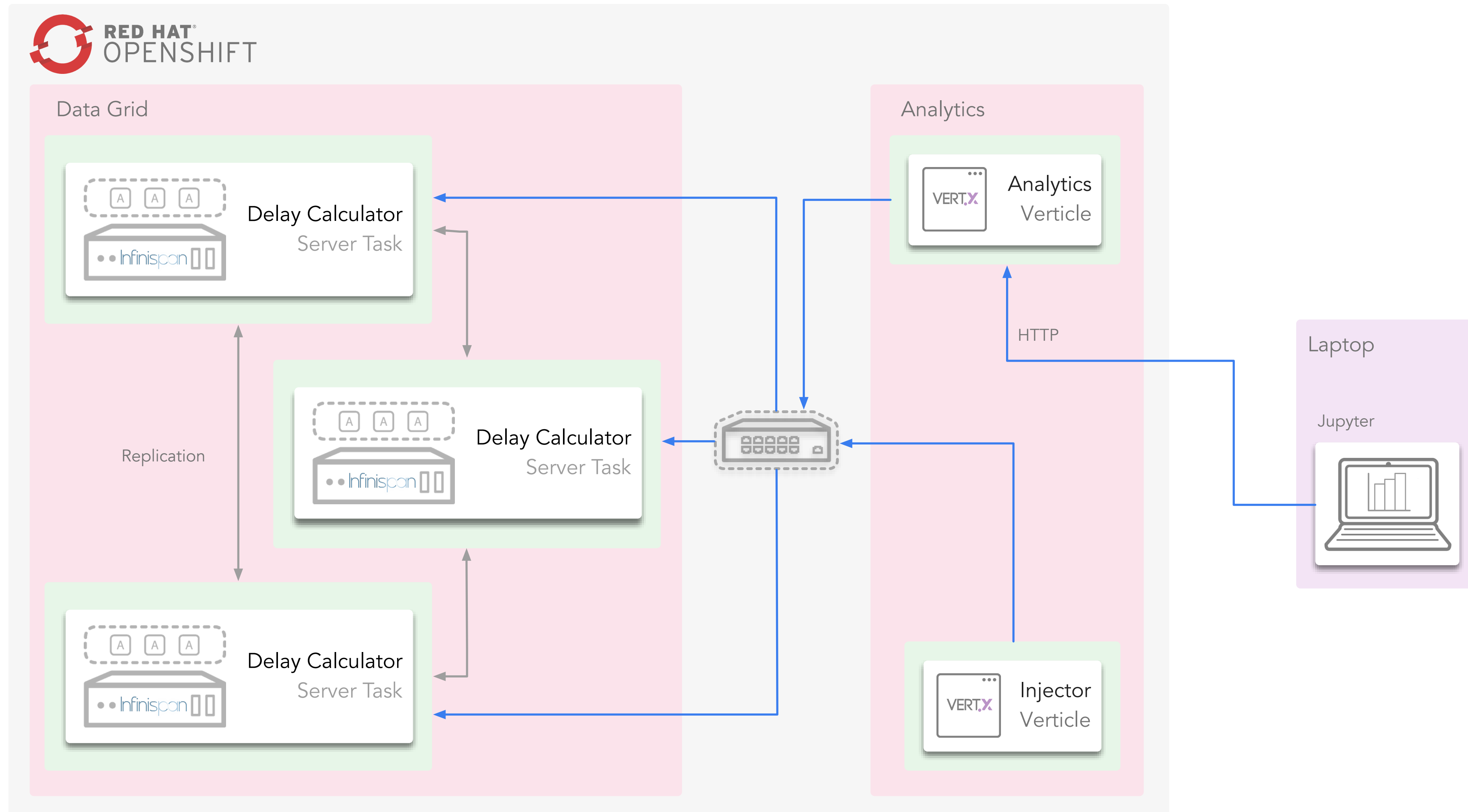


DISTRIBUTED STREAMS



**What is the time of the day
when there is the biggest
ratio of delayed trains?**

ANALYTICS DEMO



DEMO ANALYTICS

**Build Infinispan based infrastructure
to store, search and process
near real-time data and
calculate analytics**



real-time
data
challenge

**Build Infinispan based infrastructure
to store, search and process
near real-time data and
calculate analytics**

real-time
data
challenge

data growth
problem

**Build Infinispan based infrastructure
to store, search and process
near real-time data and
calculate analytics**

real-time
data
challenge

data growth
problem

continuous
query for
real-time

**Build Infinispan based infrastructure
to store, search and process
near real-time data and
calculate analytics**

real-time
data
challenge

data growth
problem

continuous
query for
real-time

analysis
with java
streams

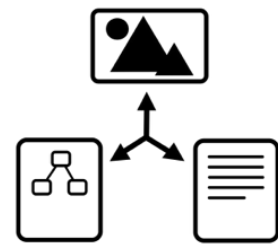
CREDITS



**Approve by Aha-Soft
from the Noun Project**



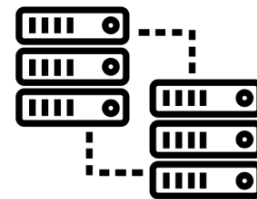
**engineer by Wilson Joseph
from the Noun Project**



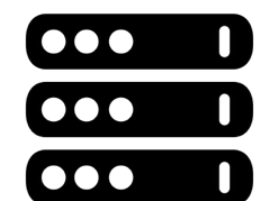
**transformation by Felipe Perucho
from the Noun Project**



**analytics by Roman Kovbasyuk
from the Noun Project**



**Database sharing by YuguDesign
from the Noun Project**



**Server by designify.me
from the Noun Project**

THANKS!

- github.com/infinispan-demos/swiss-transport-datagrid
 - Branch: [early17](#)
- infinispan.org
- openshift.com
- vertx.io

