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Somkiat Puisungnoen

Somkiat Puisungnoen

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When did you attend Ubon Ratchathani University? X

... 14 Pending Items

Intro

Software Craftsmanship

- Software Practitioner at สยามช่างนาญกิจ พ.ศ. 2556
- Agile Practitioner and Technical at SPRINT3r
- Software analyst at TARAD.com
- Software Developer at True Corporation
- Former Software Engineer at Opendream

Status Photo/Video Live Video Life Event

What's on your mind?

Public Post

Somkiat Puisungnoen 1 hr · Twitter · ▼

พรุ่งนี้ไป share เรื่อง NoSQL ที่มหาวิทยาลัย

Like Comment Share

Nuttachot Dusitanont, Chitpong Few Wuttanan and 50 others

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Personal Blog

Page Tips

See All

 What's a Boosted Post?

A boosted post is the easiest way to reach more people on Facebook.





# buzz·word

/'bəz,wərd/ 🔊

*noun informal*

a word or phrase, often an item of jargon, that is fashionable at a particular time or in a particular context.



# “NoSQL”

# “Big Data”



## Big Data Landscape (Version 2.0)



© Matt Turck (@mattturck) and ShivonZilis (@shivonz) Bloomberg Ventures



# Database คืออะไร ?



# Database = RDBMS ?



# RDBMS คืออะไร ?



# **Relational DataBase Management System ?**



# Relational DataBase Management System ?



ทุกคนจึงคิดว่า

Database = RDBMS



# ทุกระบบจึงใช้งาน RDBMS เพียงอย่างเดียว



# เป็นเรื่องปกติ ที่ไม่ปกติ !!



แต่  
RDBMS คือ  
Database model ชนิดหนึ่ง !!



# แสดงว่ามี model อื่น ๆ อีก ?



แต่ยังก่อน ...



# ACID คืออะไร ?



# Atomicity ?



# Consistency ?



# Durability ?



# Isolation ?



# เรารู้จักกัน ในชื่อ Transaction



# SQL ?



# Structure Query Language



```
SELECT *
FROM SOME_TABLE
WHERE 1=1
HAVING ...
GROUP BY ...
```



# RDBMS ทำงานได้เป็นอย่างดี



# มากกว่า 20 ปี



# แล้วไงต่อ ?



# มาเรียนรู้ปrowaveติศาสตร์กันหน่อย



1980

1990

2000

2010

RDBMS



1980

1990

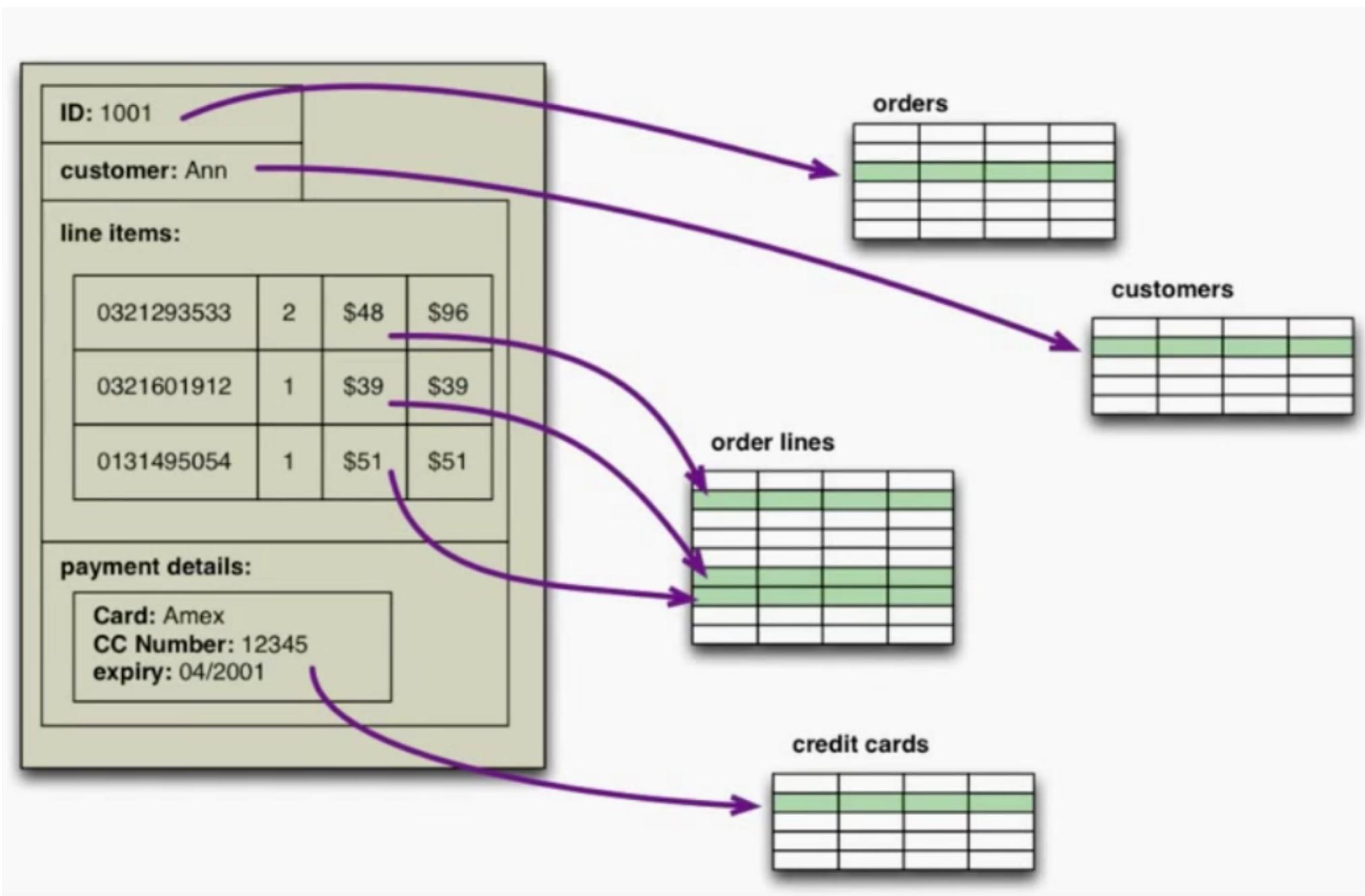
2000

2010

RDBMS

Persistence  
Integration  
SQL  
Transaction





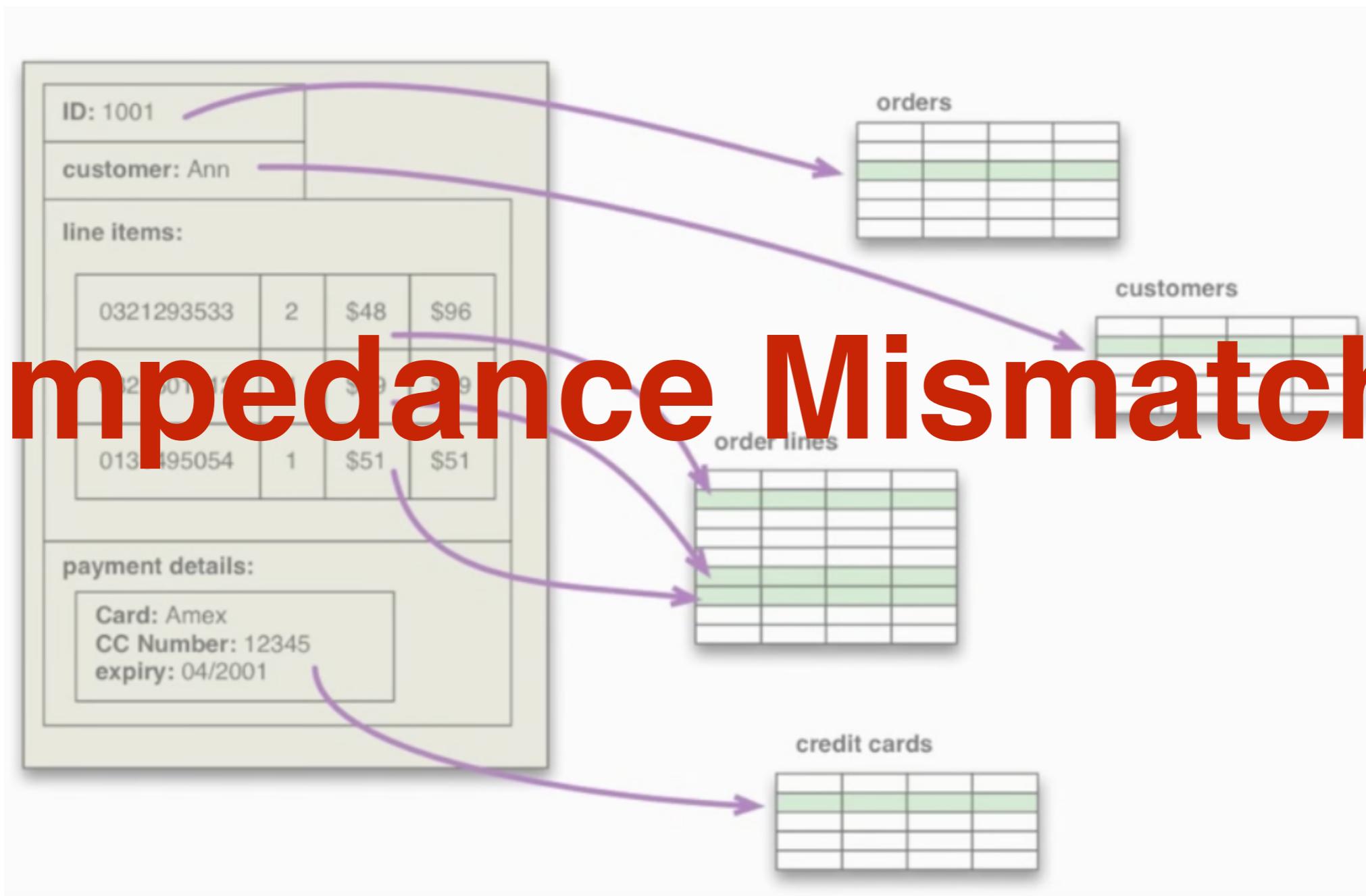
[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)



# เมื่อ OOP ได้รับความนิยม



# Impedance Mismatch



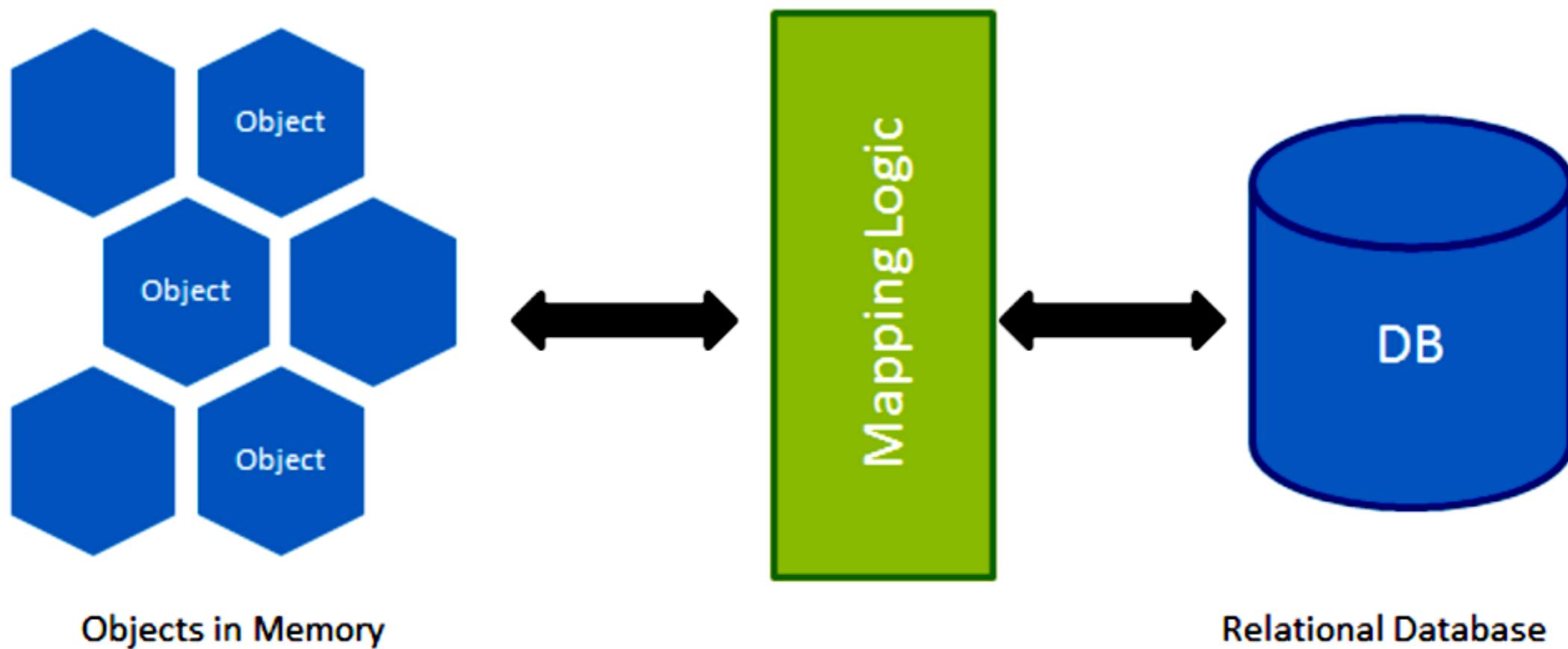
# เคยได้ยิน ORM ไหม ?



# ORM ย่อมาจาก Object Relational Mapping



## O/R Mapping



<http://www.agile-code.com/blog/microsoft-net-or-mapper-choose-your-own/>



# เห็นปัญหากันใหม่ ?



1980

1990

2000

2010



# Object Database

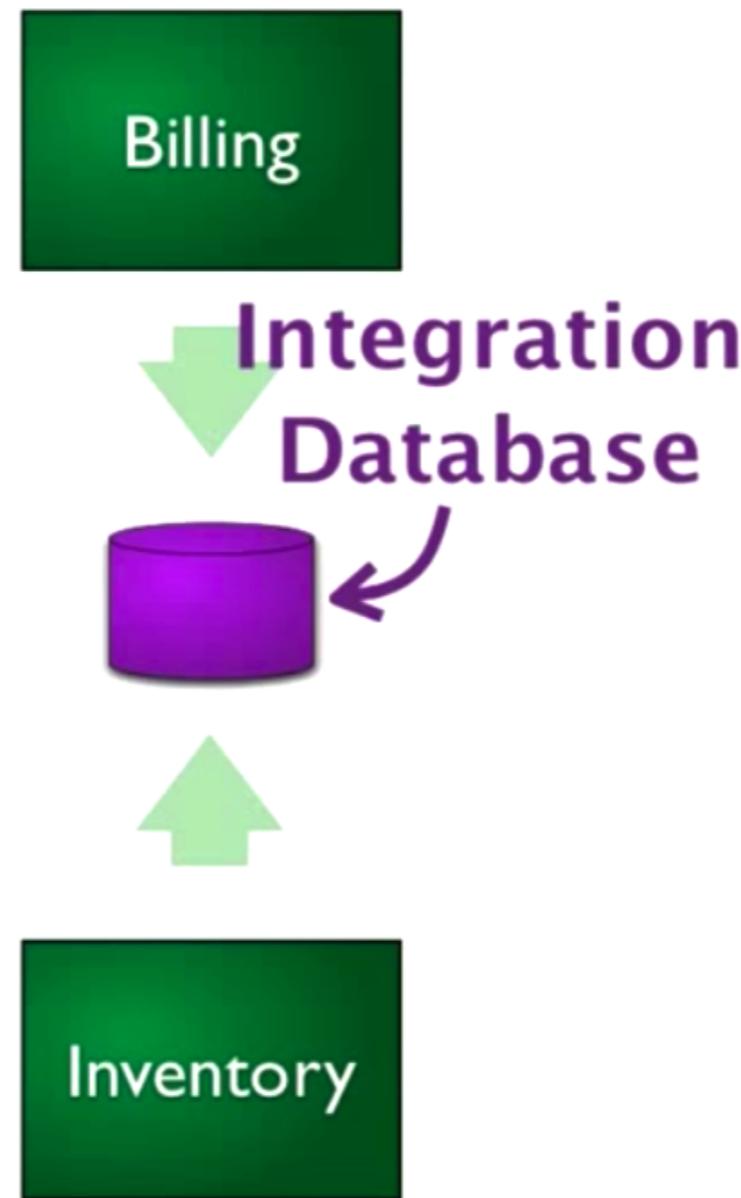


# แต่ไม่ได้รับความนิยม !!



# เพราะว่าอะไร ?





[https://www.youtube.com/watch?v=qL\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qL_g07C_Q5I)



# RDBMS ได้รับความนิยมมา 20 ปี



■ ■ ■ ■



1980

1990

2000

2010



Problem !!



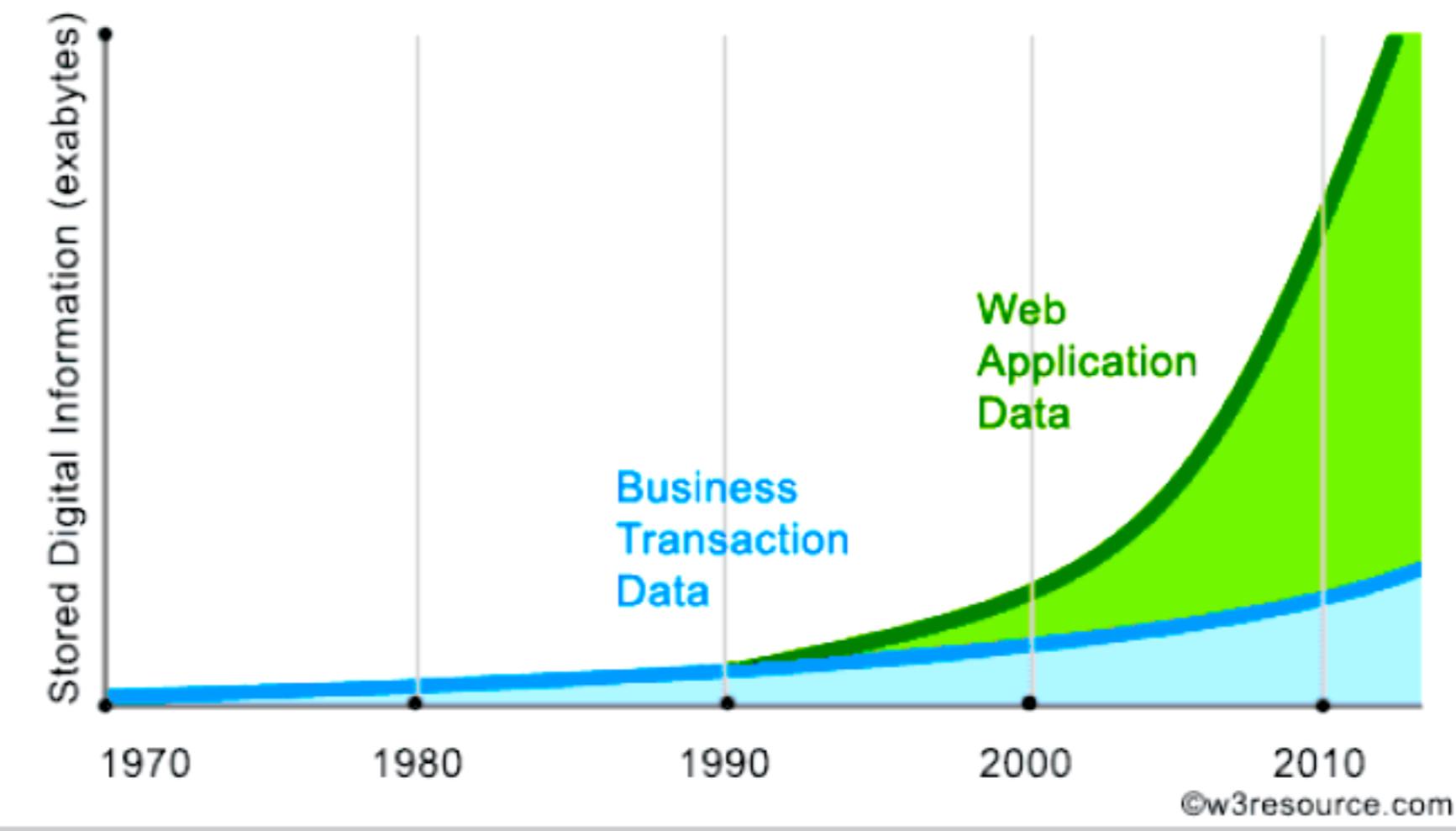
# เมื่อ Internet ได้รับความนิยม



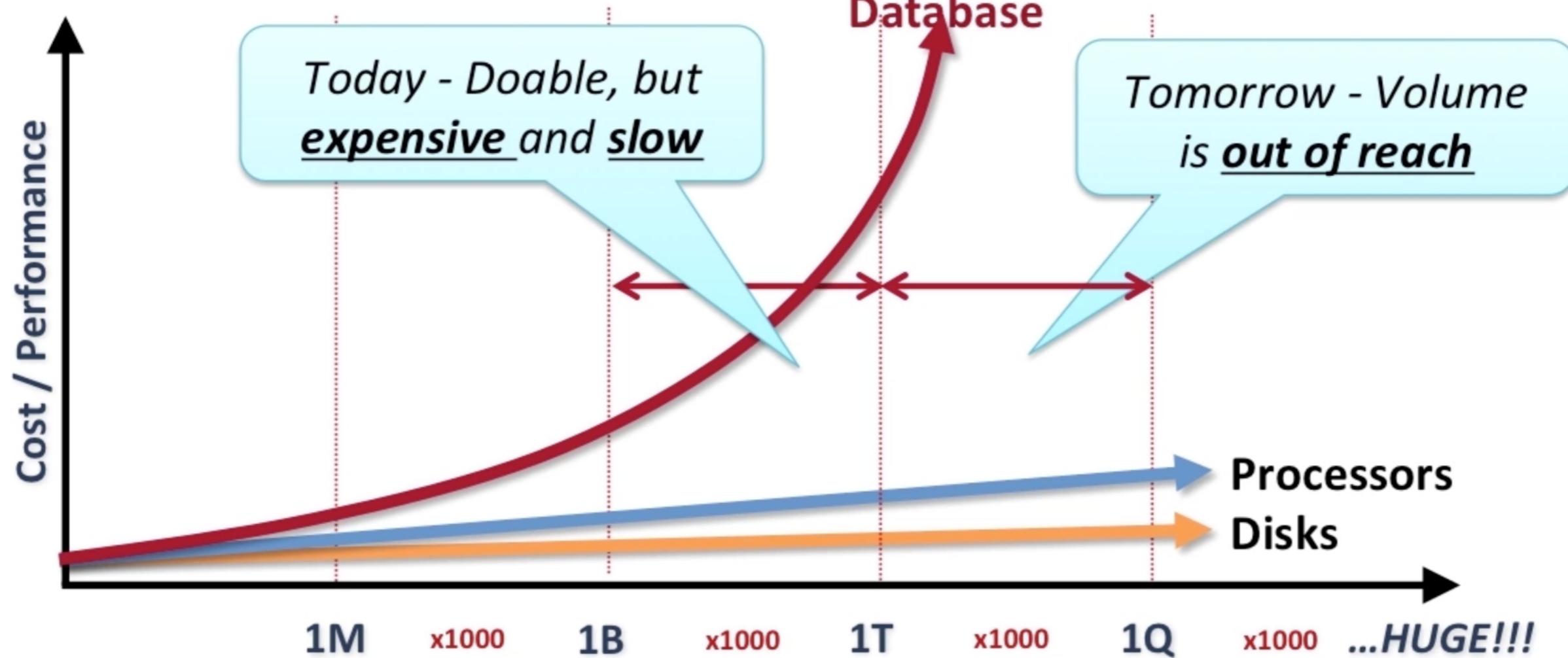
# จำนวนข้อมูลเยอะมาก ๆ



## Web Applications Driving Data Growth



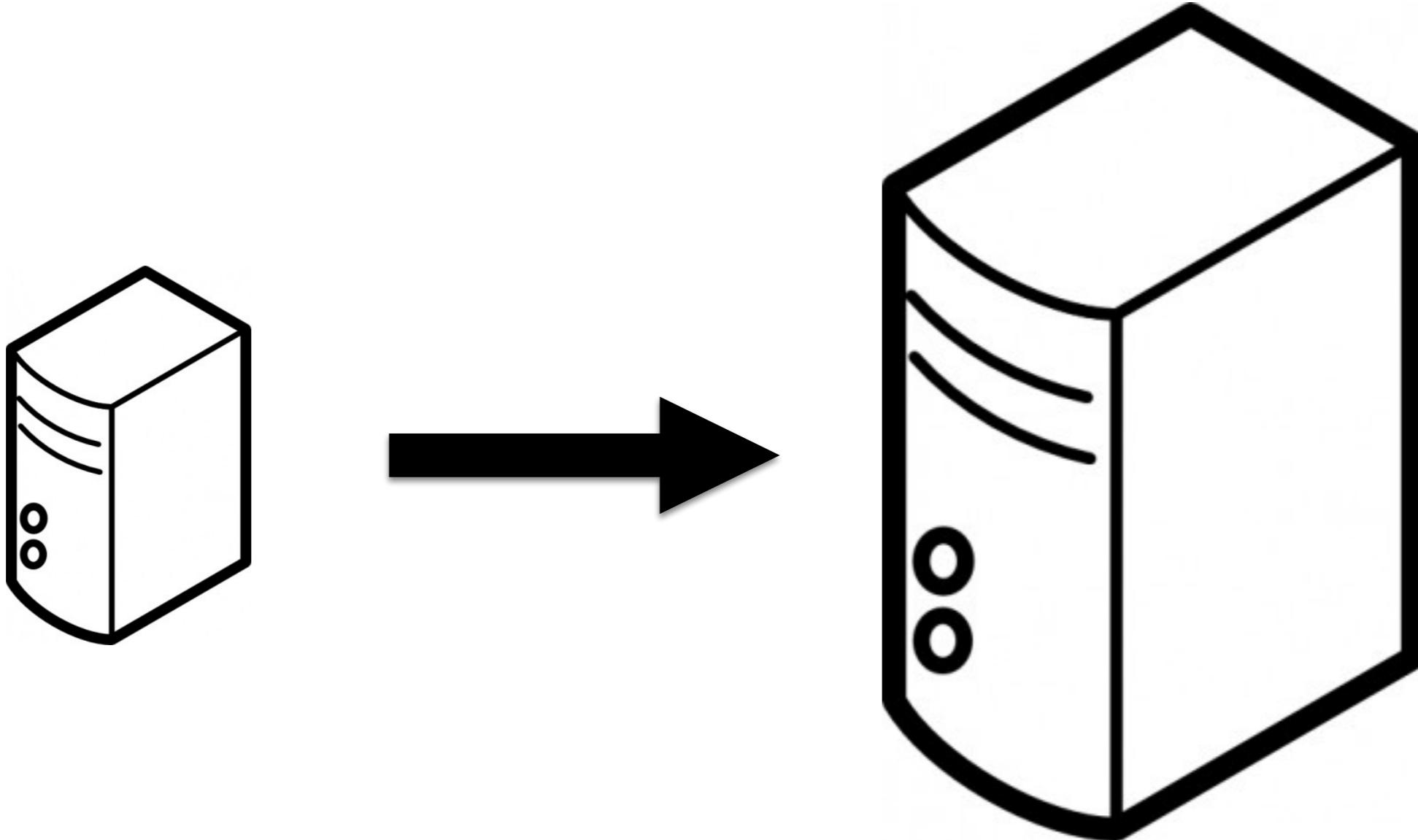
# NOSQL IMPACT



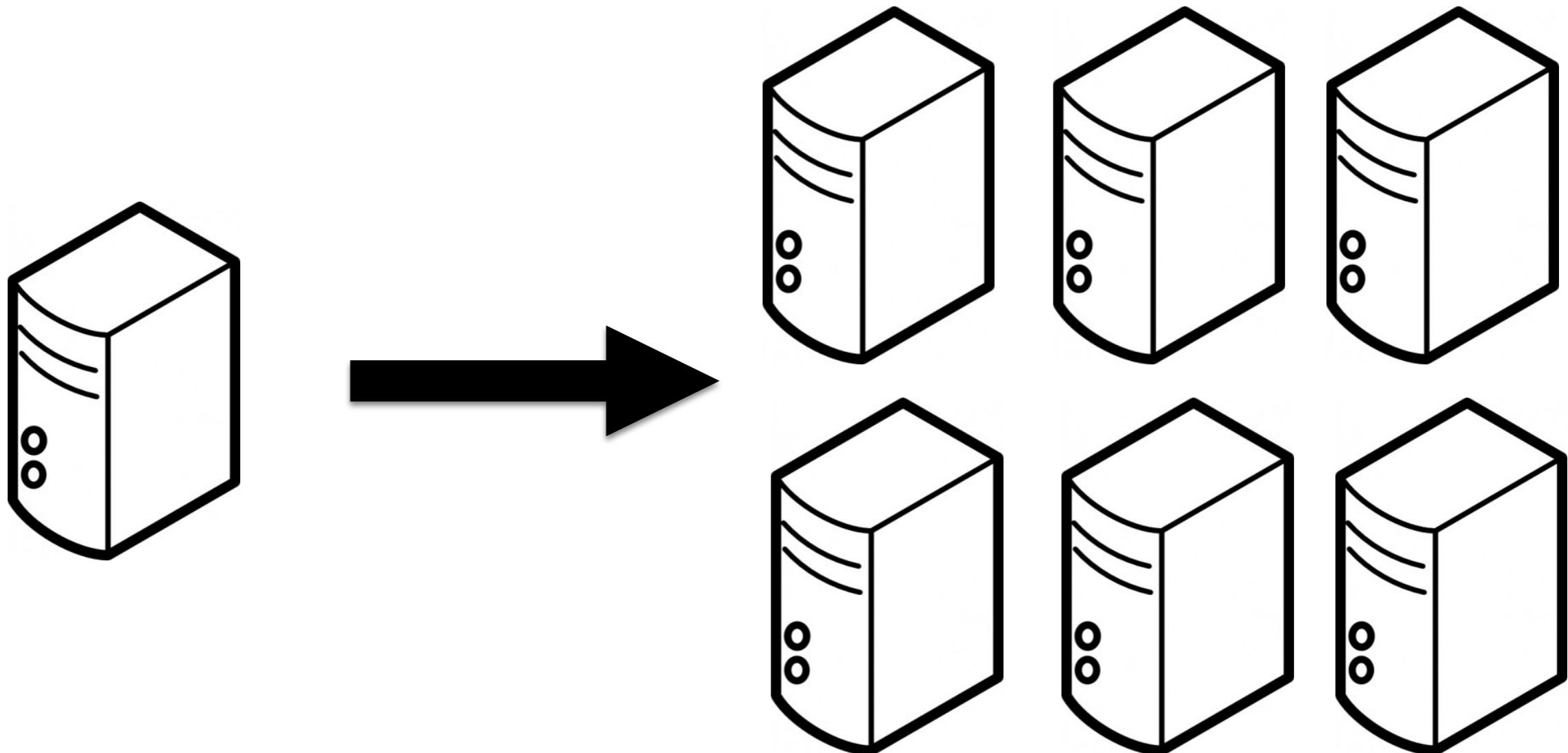
# จัดการข้อมูลอย่างไรดี ?

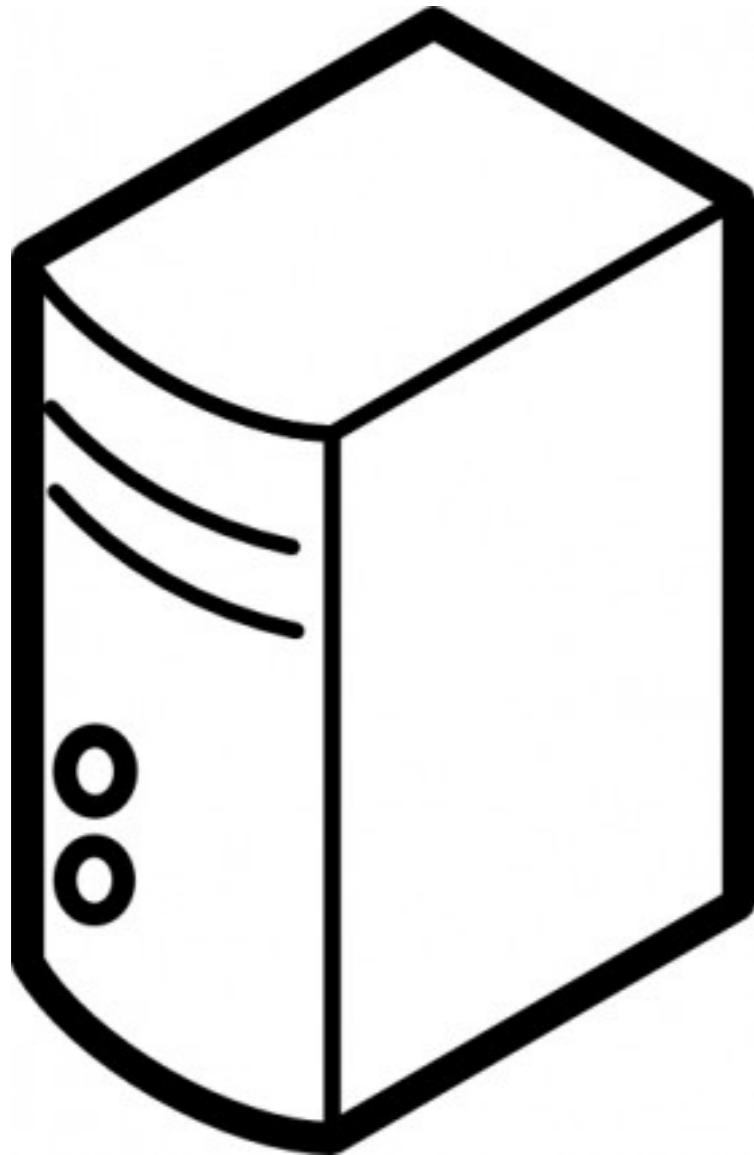


# ขยายเครื่องให้ใหญ่ขึ้น

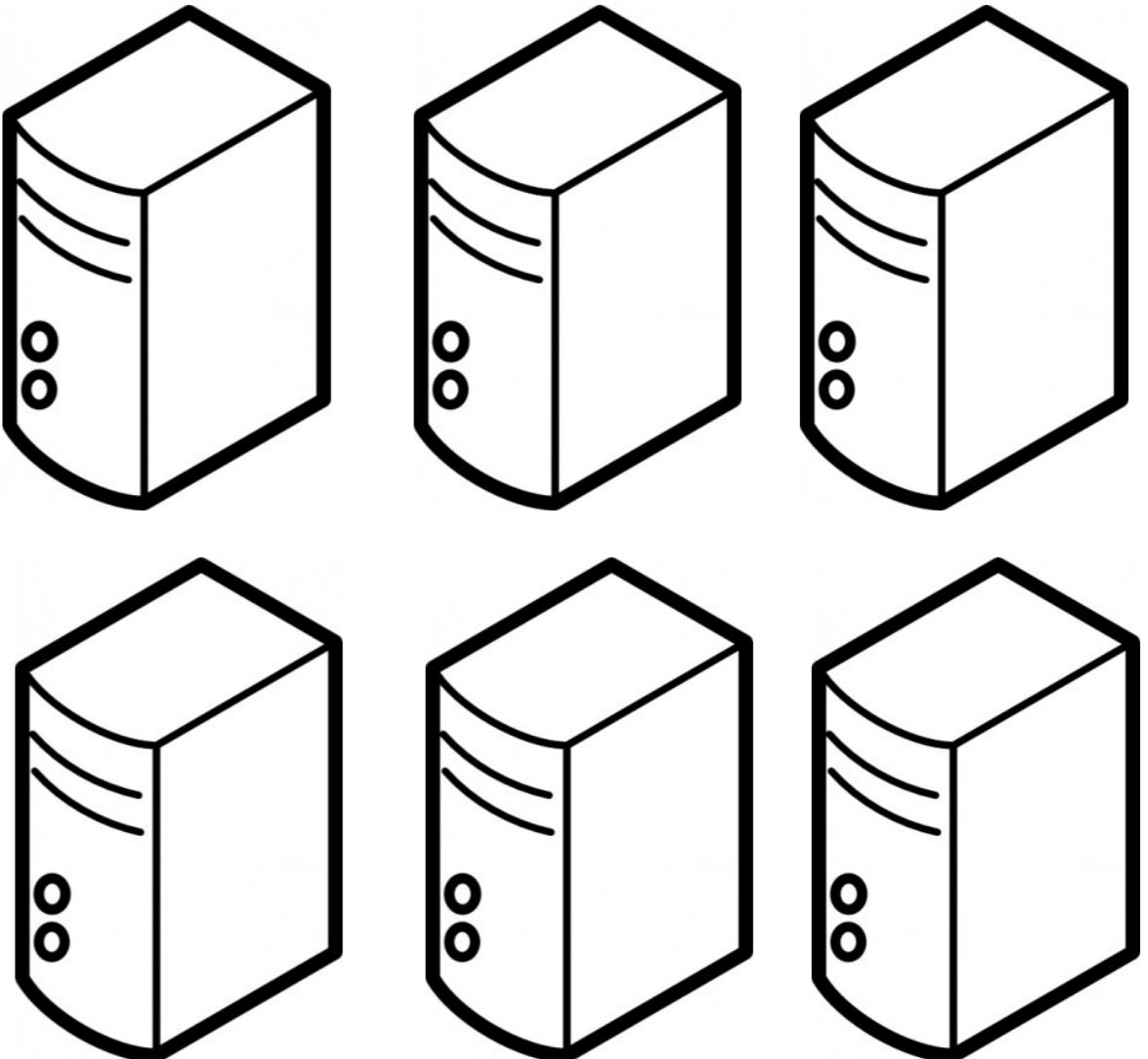


# เพิ่มจำนวนเครื่องให้มากขึ้น

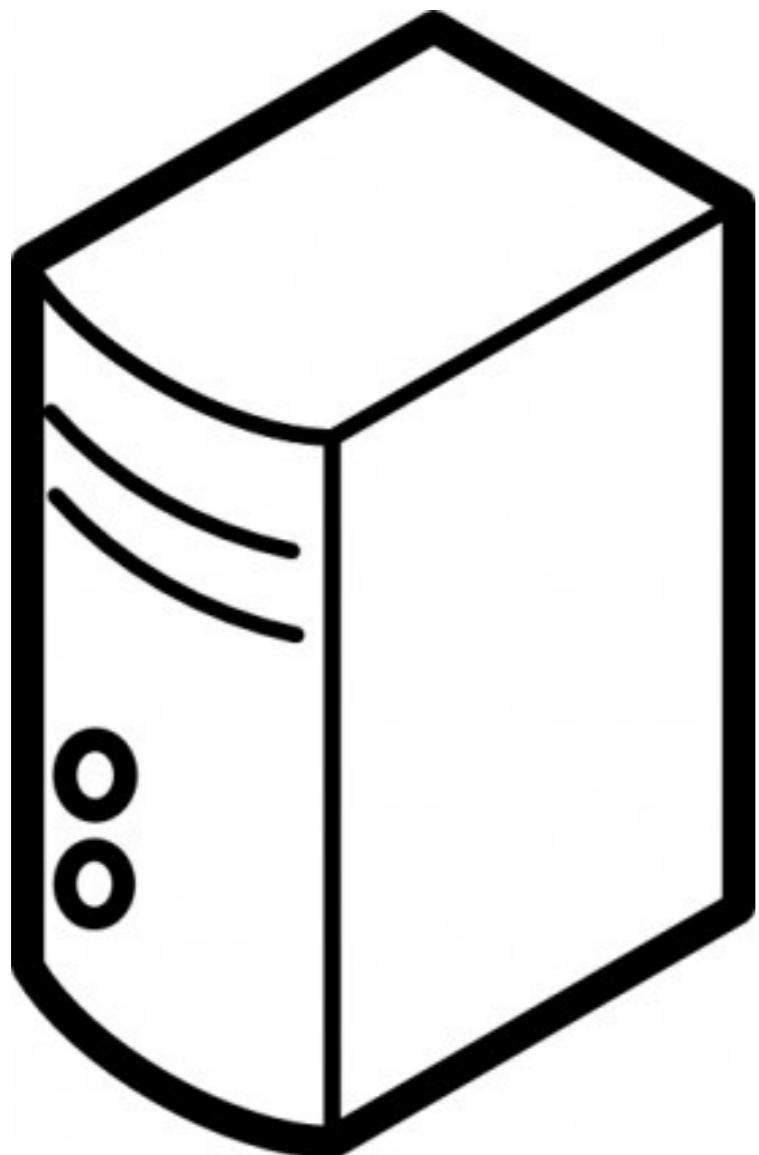




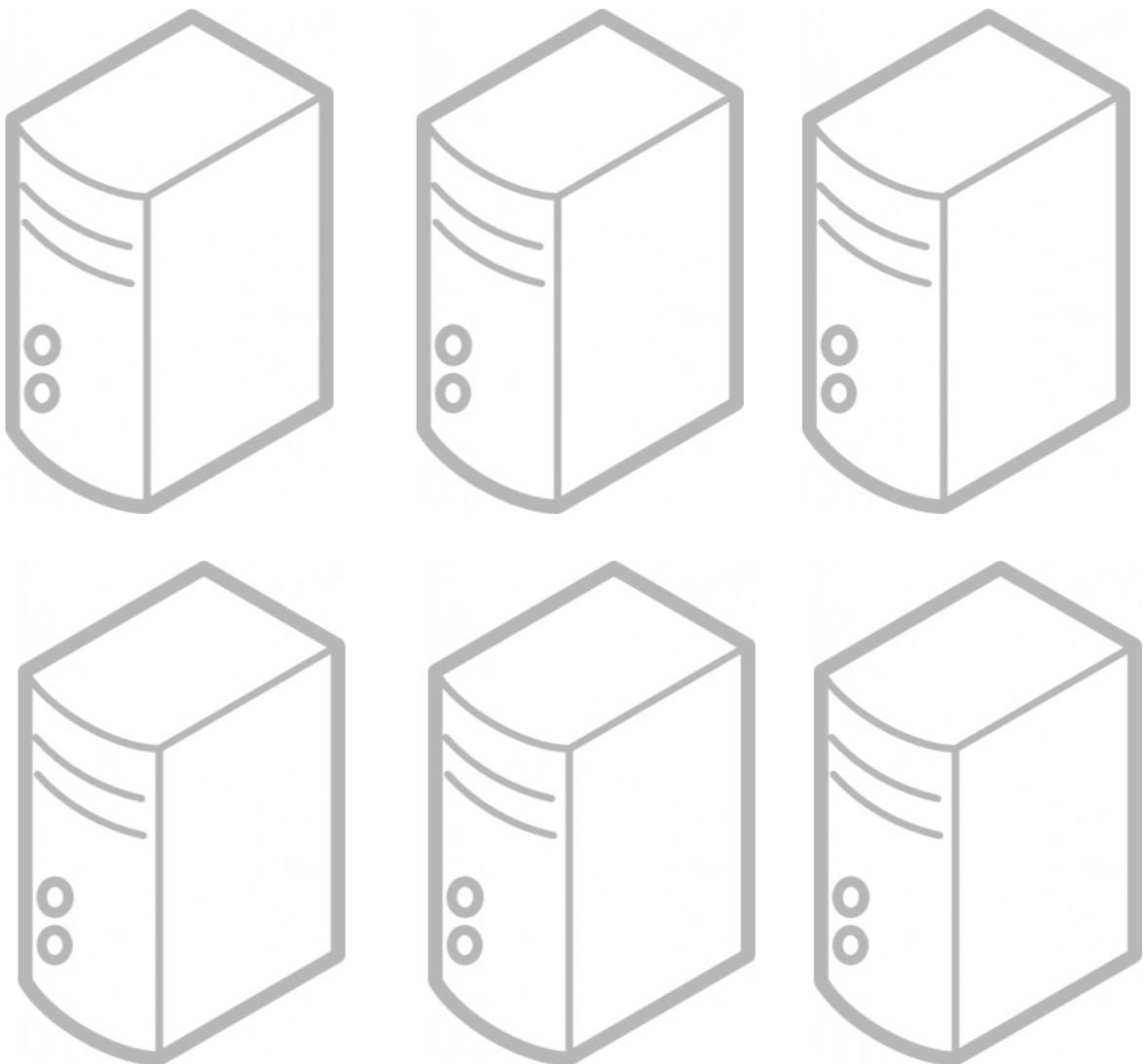
VS



# RDBMS ทำงานได้ดี



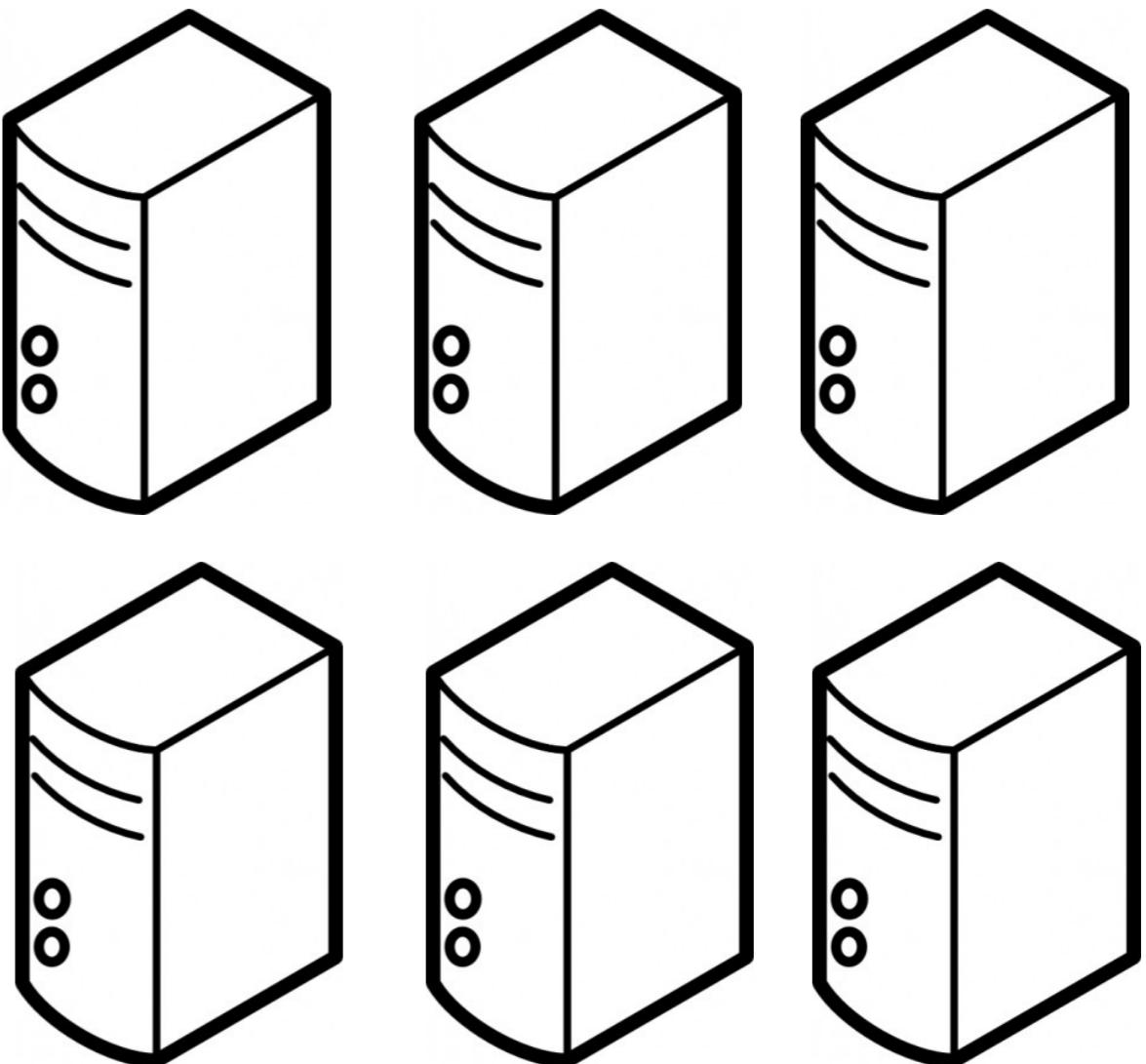
VS

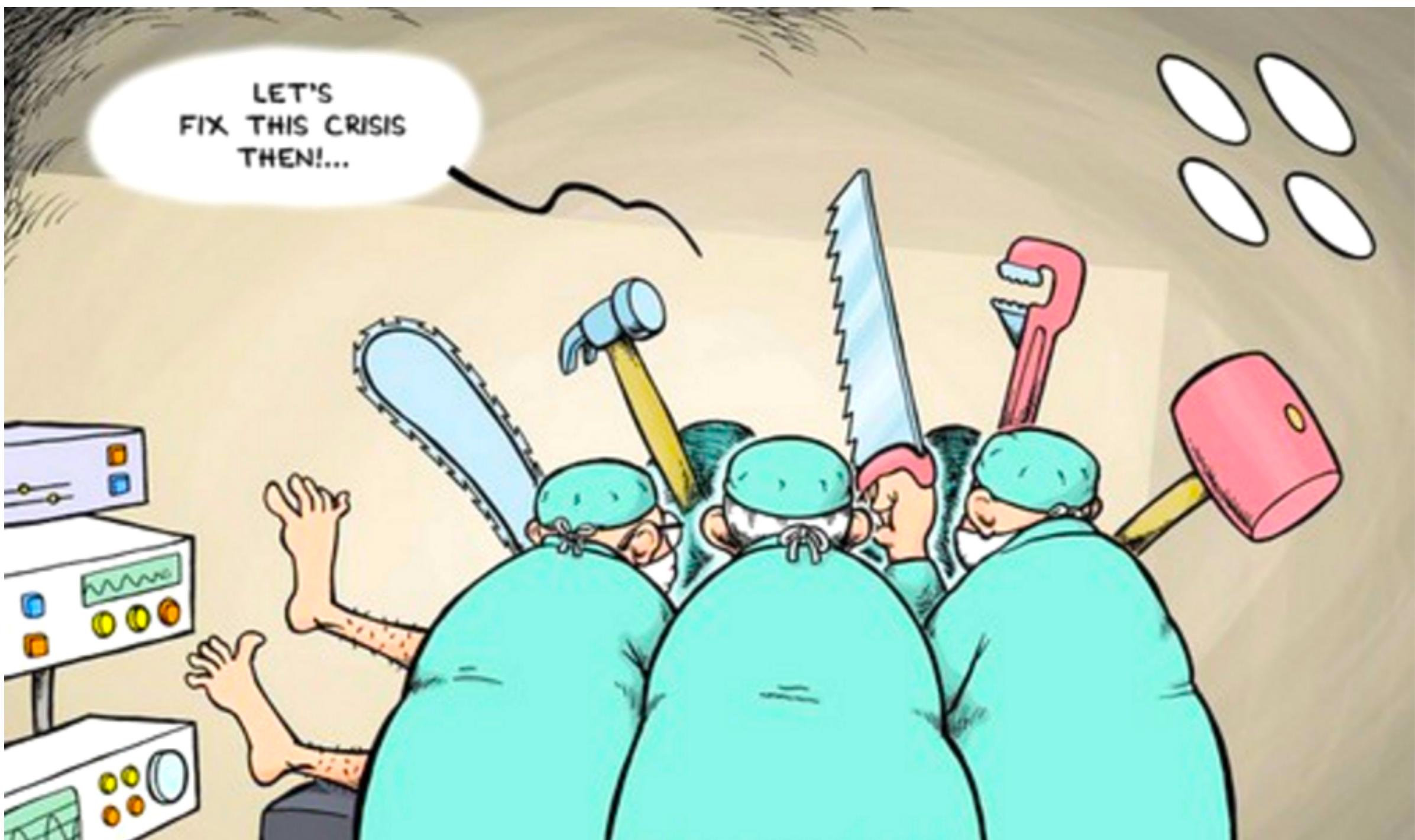


# RDBMS ทำงานได้ແຍ່ !!



VS







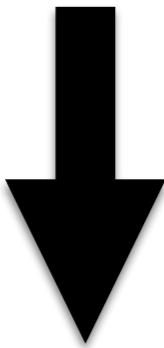
สร้าง Database model ขึ้นมาใหม่



# ต้องการสิ่งที่แตกต่างไปจากเดิม

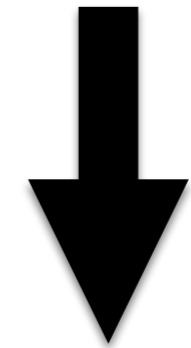


**Google**



**Bigtable**

**amazon**



**Dynamo**

1980

1990

2000

2010



NoSQL



# ชื่อ NoSQL มาจากไหน ?



# มาจัก meetup



# ต้องการพูดคุยกับเรื่อง Non-relational database



# ต้องการพูดคุยกับเรื่อง Distributed database



# ต้องการซื้อ hashtag ใน twitter ?



# #nosql





⌚ This event has ended

## NOSQL meetup

Last.fm

Thursday, June 11, 2009 from 10:00 AM to 5:00 PM (PDT)  
San Francisco, CA

### Ticket Information

TYPE	REMAINING	END	QUANTITY
Free ticket	Sold Out	Ended	Free <b>Sold Out</b>

### Share NOSQL meetup



Share



Tweet



Like

Be the first of your friends to like this.

<http://www.eventbrite.com/e/nosql-meetup-tickets-341739151>



# คนที่เข้าร่วมมิไซรบ้าง ?



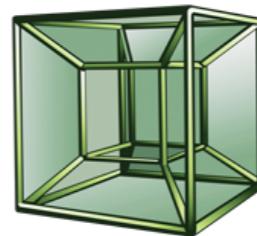


**Project Voldemort**  
*A distributed database*



**Dynomite**

**HYPERTABLE<sup>INC</sup>**



# ผลจาก meetup มีอะไรบ้าง ?



# NoSQL คืออะไร ?



# NoSQL คืออะไร ?

No SQL

No No SQL

No No No SQL

Not Only SQL

Non-relational



# คุณลักษณะของ NoSQL ?



# คุณลักษณะของ NoSQL

**Non-relational**



# คุณลักษณะของ NoSQL

Non-relational  
Open-source



# คุณลักษณะของ NoSQL

Non-relational  
Open-source  
**Cluster-friendly**



# คุณลักษณะของ NoSQL

Non-relational  
Open-source  
Cluster-friendly  
**Schema-less**



# คุณลักษณะของ NoSQL

Non-relational  
Open-source  
Cluster-friendly  
Schema-less  
**For new web app**



# แบ่งกลุ่มตาม Data Model ?





**Cassandra**

APACHE  
**HBASE**



**Couchbase**



**Neo4j**  
the graph database



**Project Voldemort**  
*A distributed database.*



**redis**

 **riak**





APACHE  
**HBASE**

**Column Family**



**Couchbase**



**mongoDB**

**Document**



**Graph**



**Project Voldemort**  
*A distributed database.*

**Key-Value**



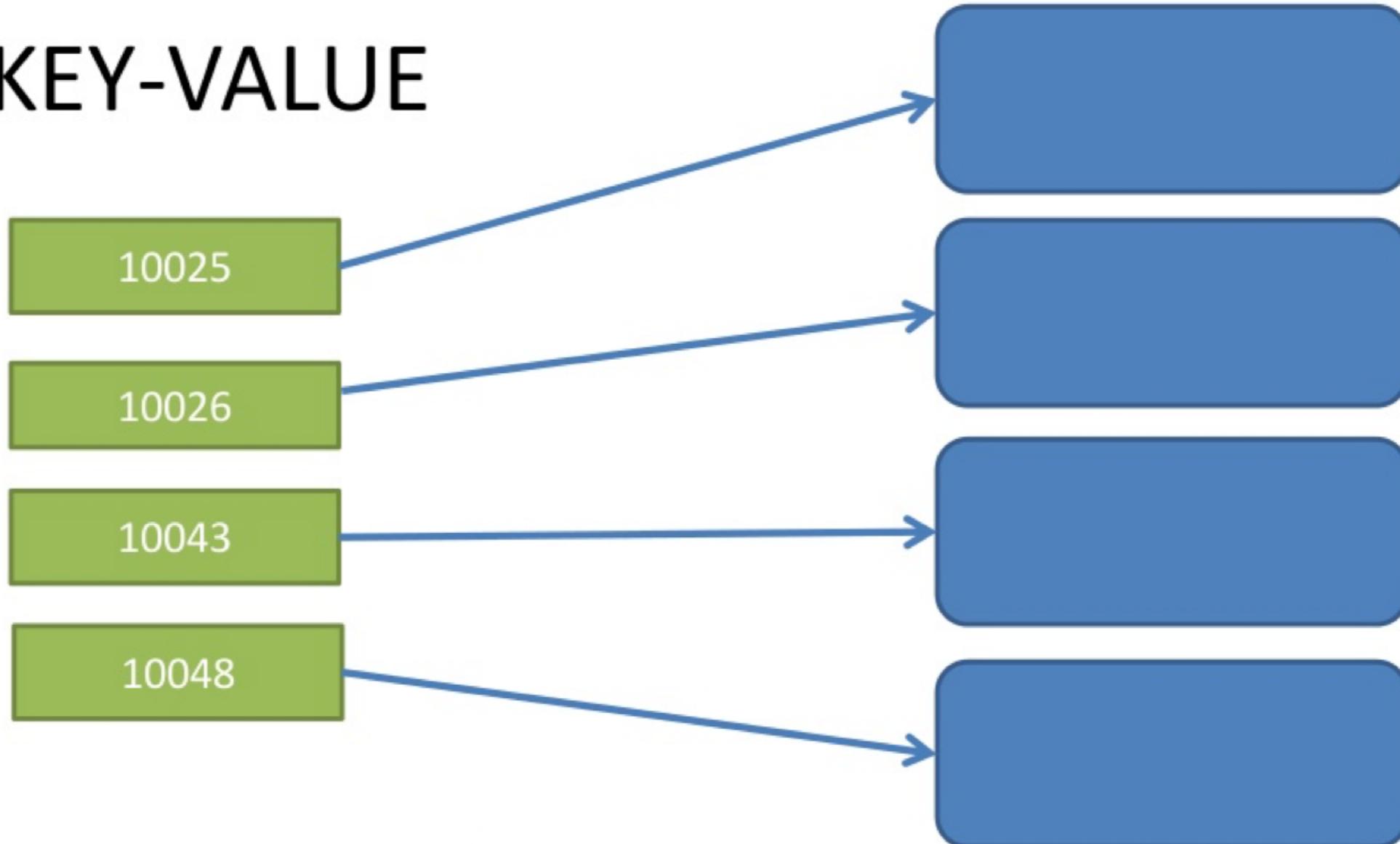
**redis**

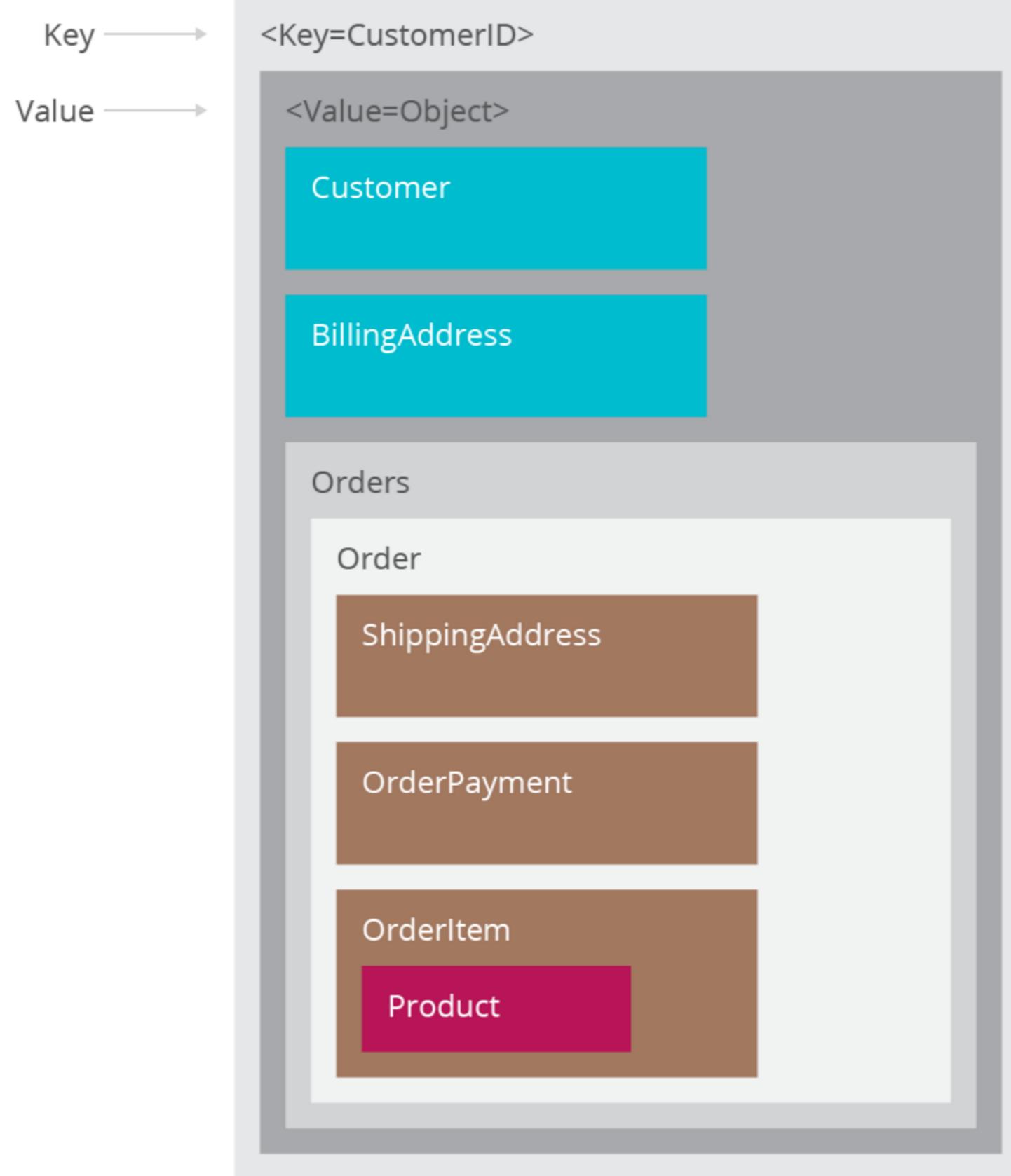
**riak**



# Key-Value

## KEY-VALUE





<https://www.thoughtworks.com/insights/blog/nosql-databases-overview>



# Document

```
<Key=CustomerID>
```

```
{  
    "customerId": "fc986e48ca6" ← Key  
    "customer":  
    {  
        "firstname": "Pramod",  
        "lastname": "Sadalage",  
        "company": "ThoughtWorks",  
        "likes": [ "Biking", "Photography" ]  
    }  
    "billingaddress":  
    { "state": "AK",  
      "city": "DILLINGHAM",  
      "type": "R"  
    }  
}
```

Key

<https://www.thoughtworks.com/insights/blog/nosql-databases-overview>



# Column-family

## Column Family

Row

Row KeyX

Column1

name1:value1

Column2

name2:value2

ColumnN

nameN:valueN

Row

Row KeyY

Column1

name1:value1

Column9

name9:value9

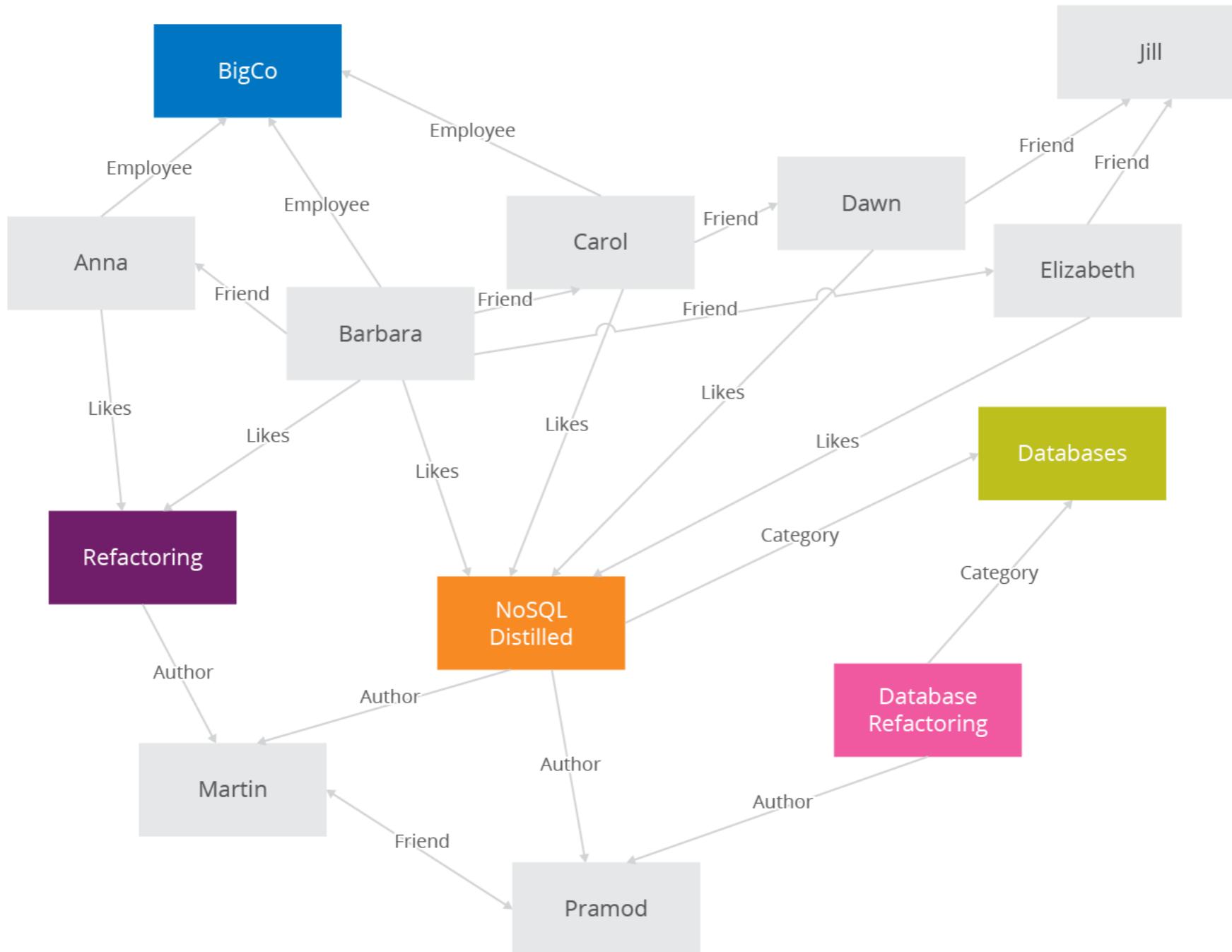
ColumnN

nameN:valueN

<https://www.thoughtworks.com/insights/blog/nosql-databases-overview>

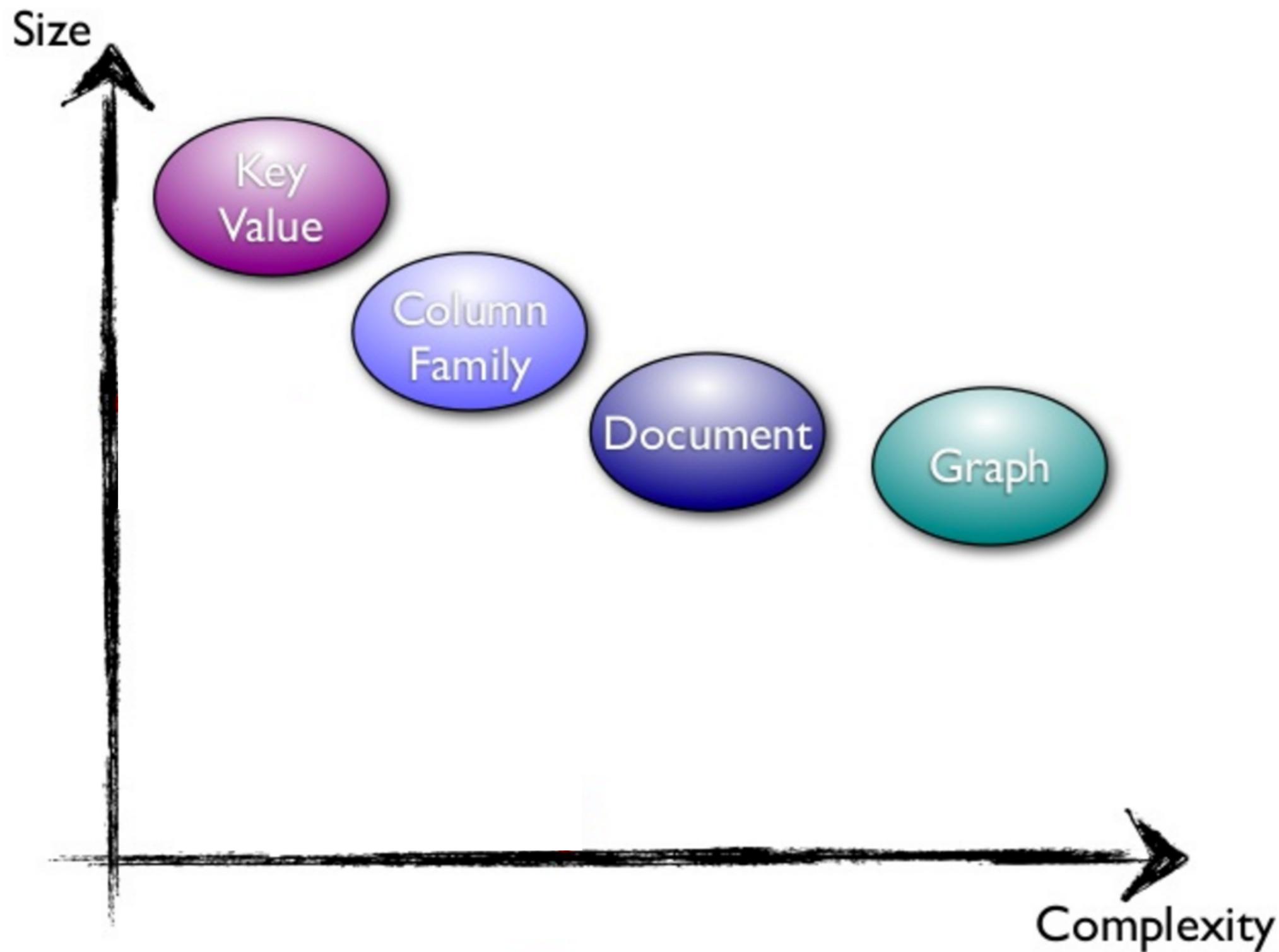


# Graph



<https://www.thoughtworks.com/insights/blog/nosql-databases-overview>





# ในตอนนี้มี NoSQL ให้ใช้เยอะมาก ๆ





**Cassandra**

APACHE  
**HBASE**



**Couchbase**



**Neo4j**  
the graph database



**Project Voldemort**  
*A distributed database.*



**redis**

 **riak**

# NoSQL กับเรื่อง Consistency



**RDBMS => ACID**

**NoSQL => BASE**



# BASE คืออะไร ?



# **Basic Availability ?**



# Soft state ?

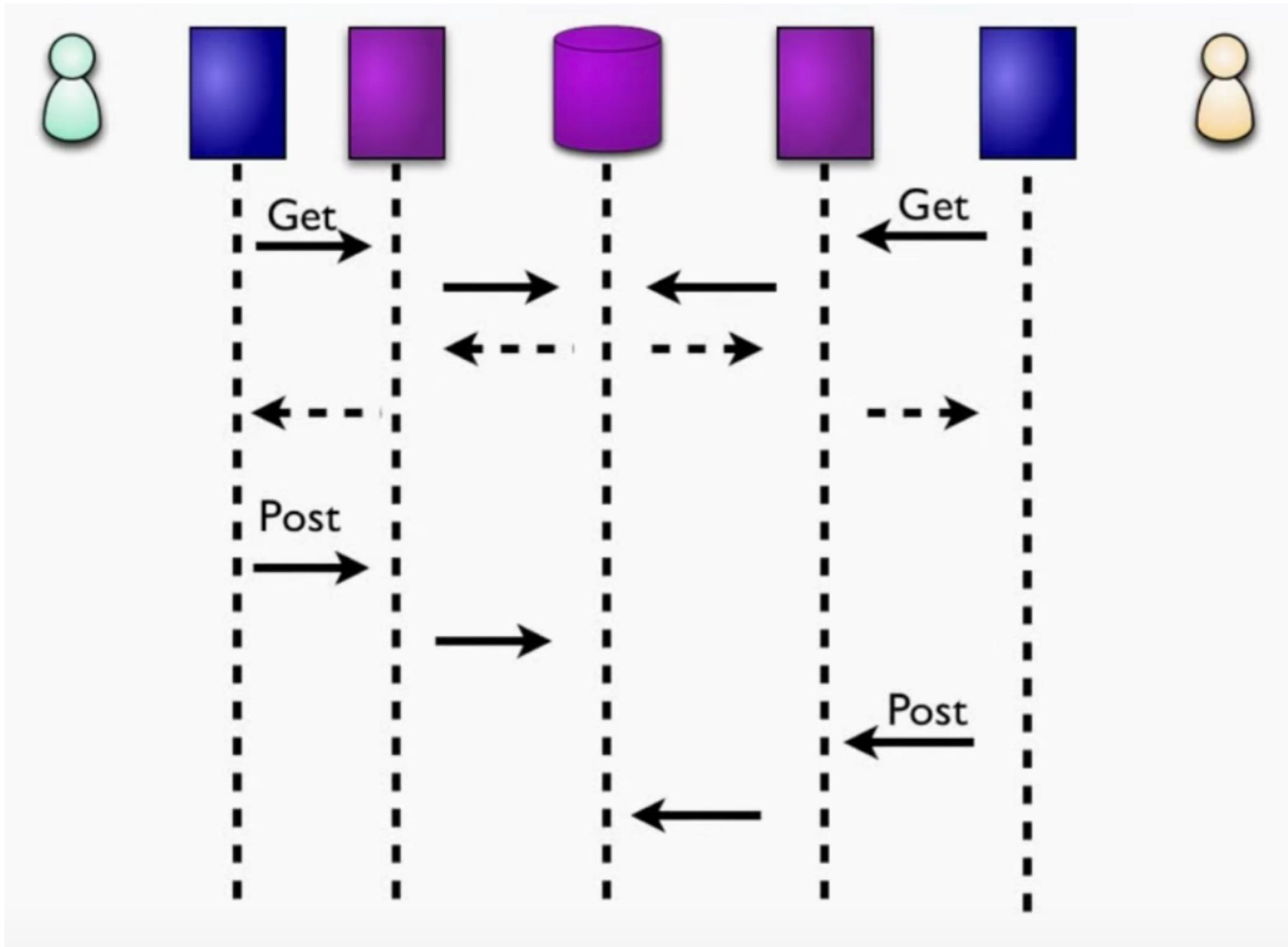


# **E**ventual consistency ?



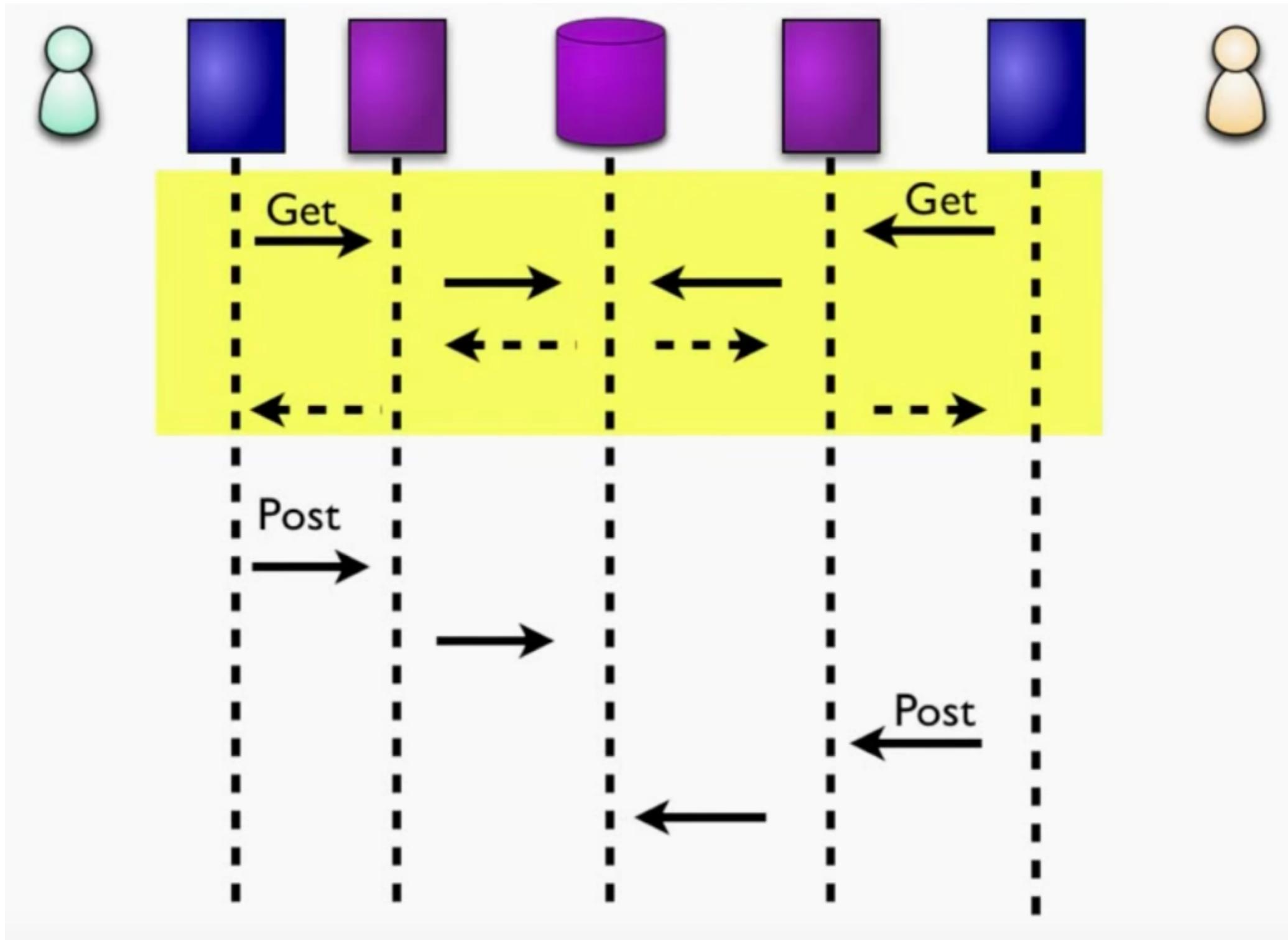
# เริ่มด้วยเรื่อง Consistency





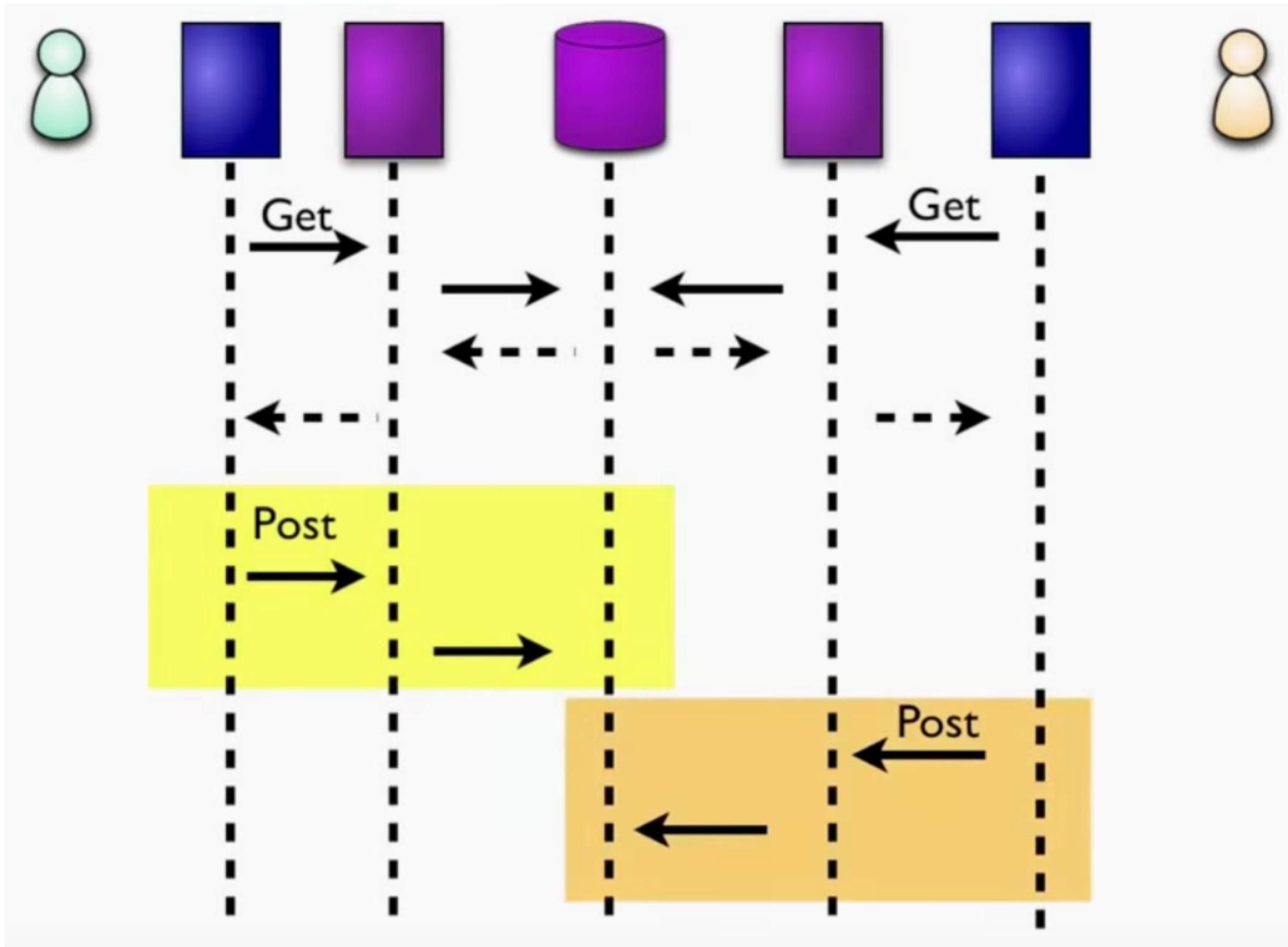
[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)





[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)



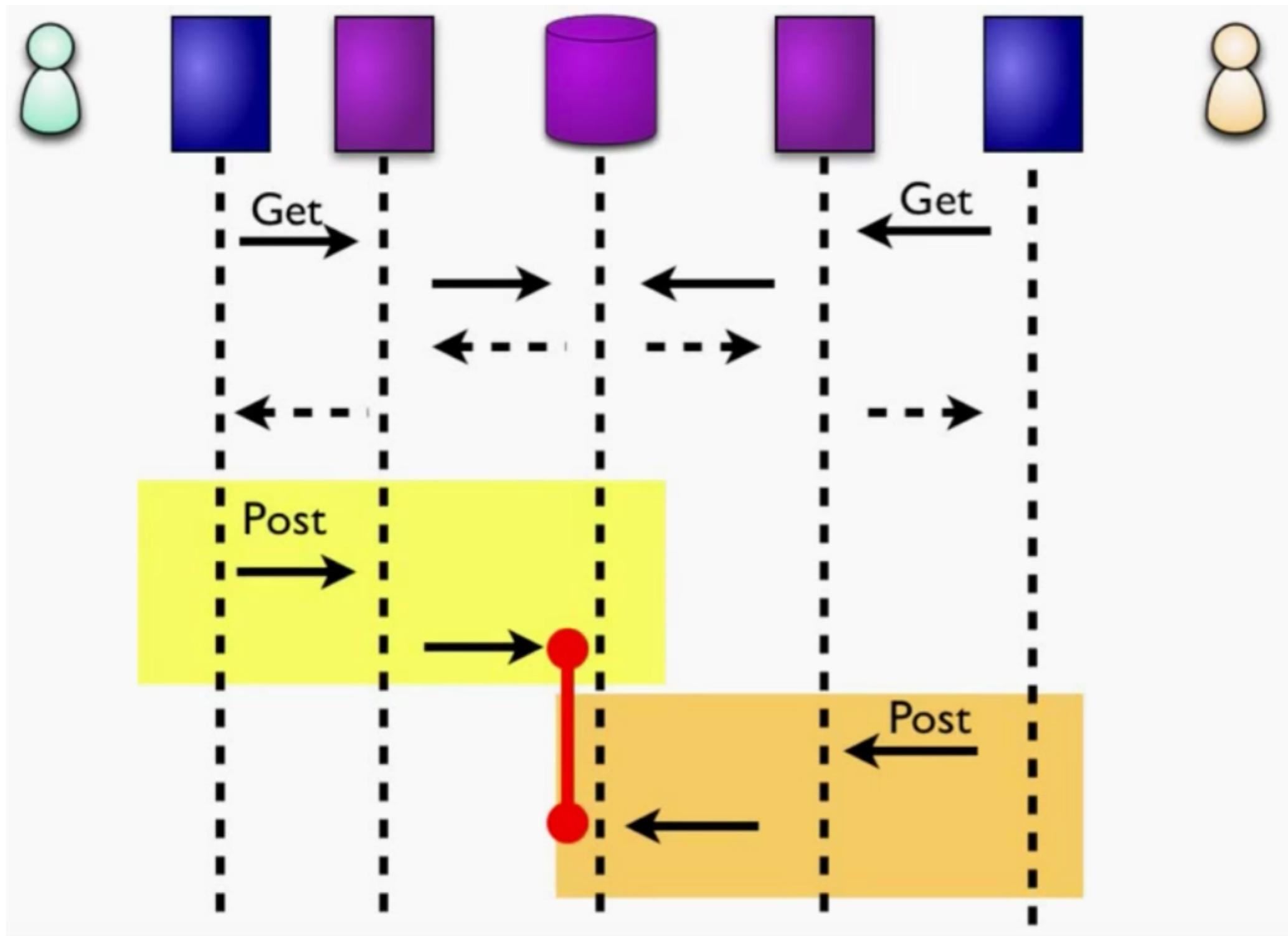


[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)



# เกิดปัญหาขึ้นมา ?





[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)

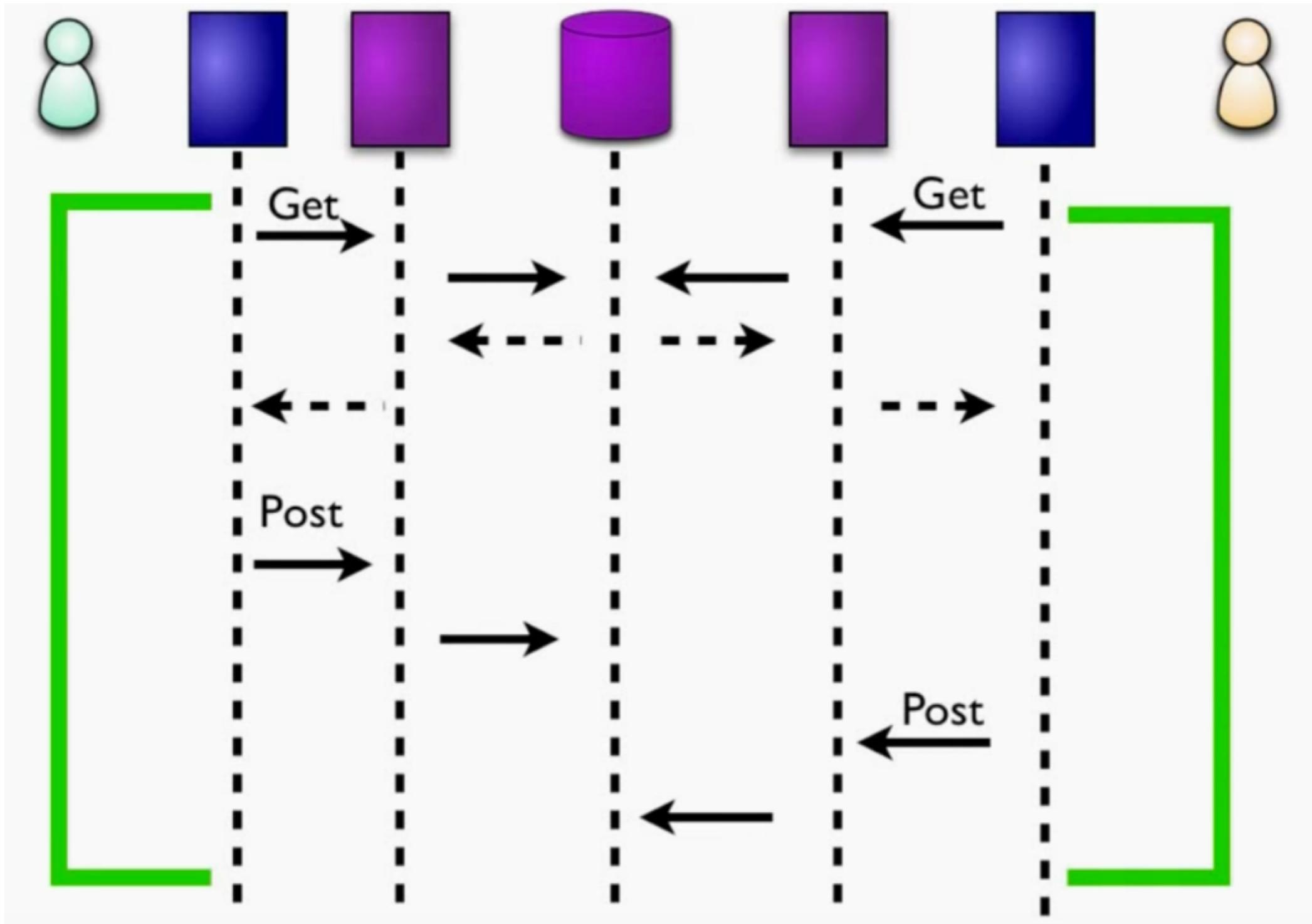


# แก้ไขอย่างไร ?



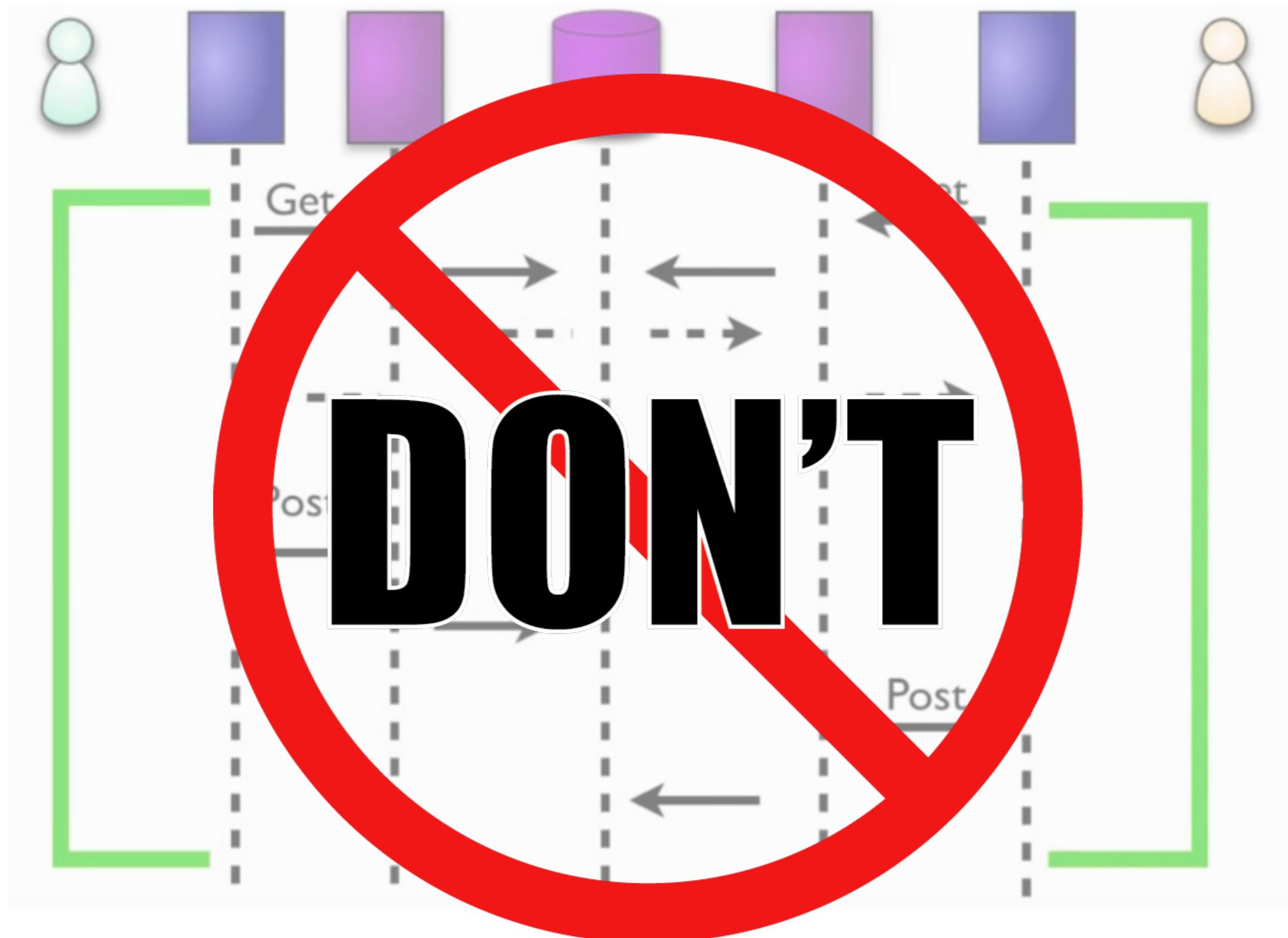
# ໃช້ງານ Transaction ໃໃຫ້ໄໝ ?

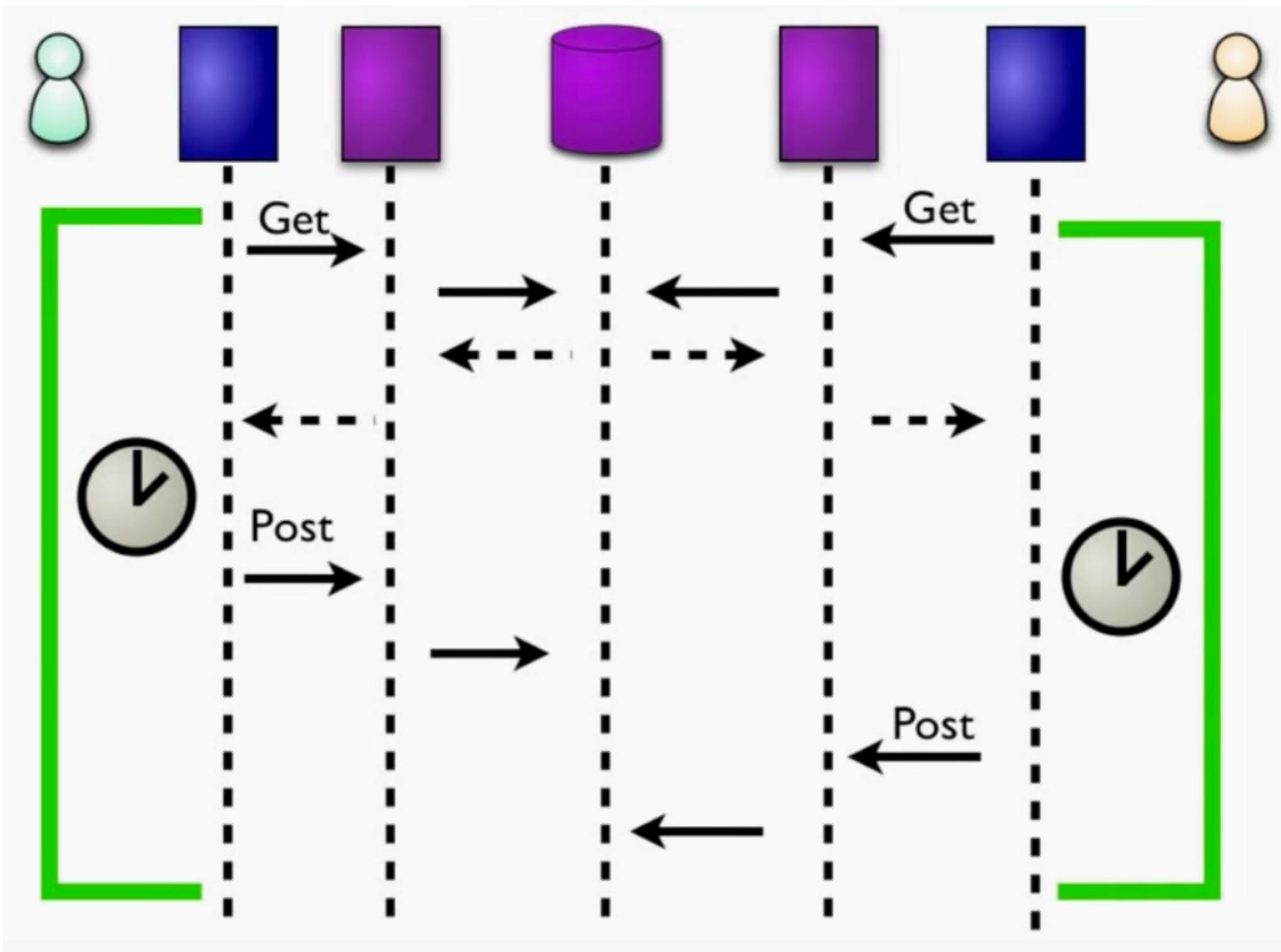




[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)





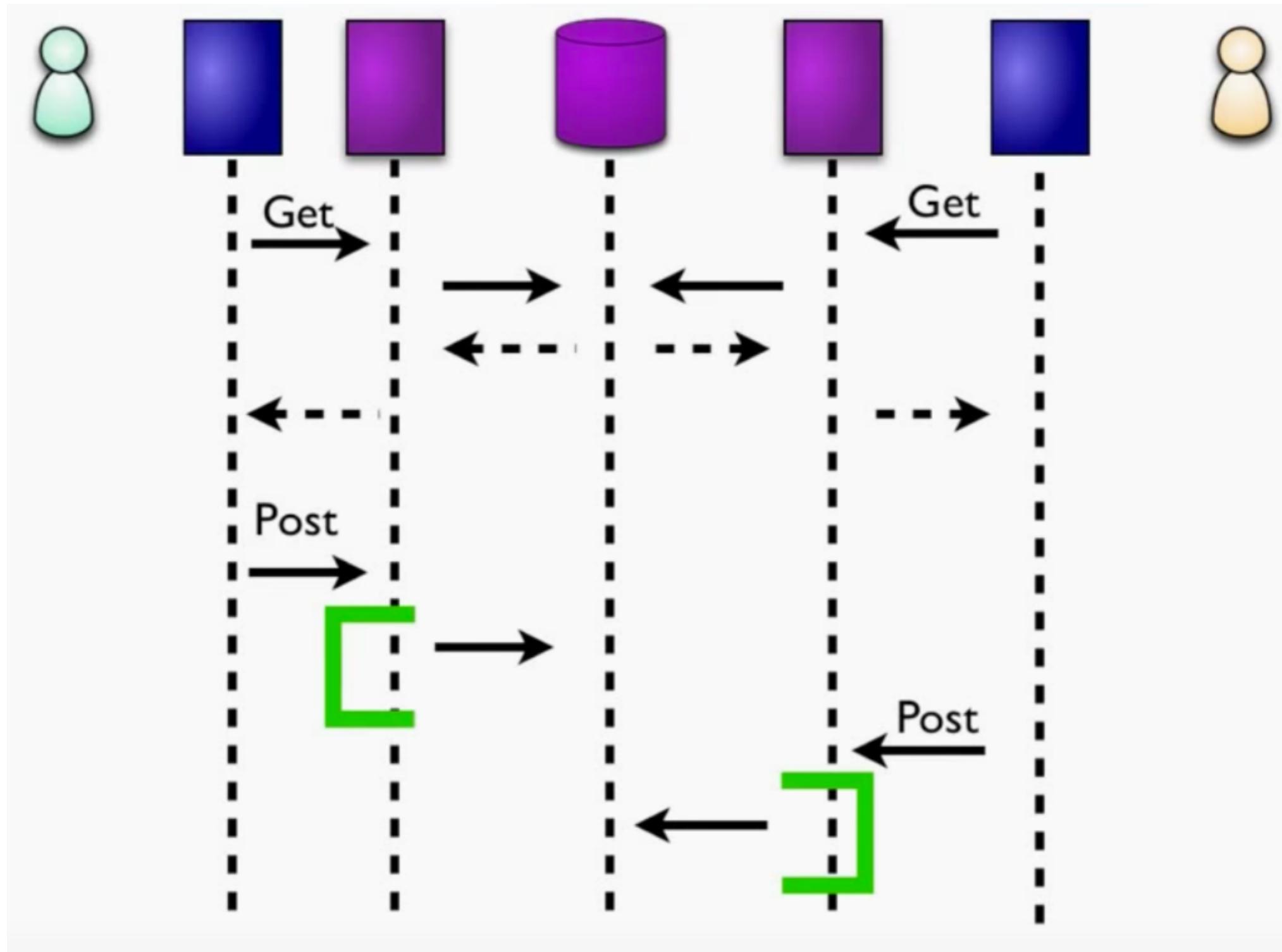


[https://www.youtube.com/watch?v=ql\\_g07C\\_Q5I](https://www.youtube.com/watch?v=ql_g07C_Q5I)



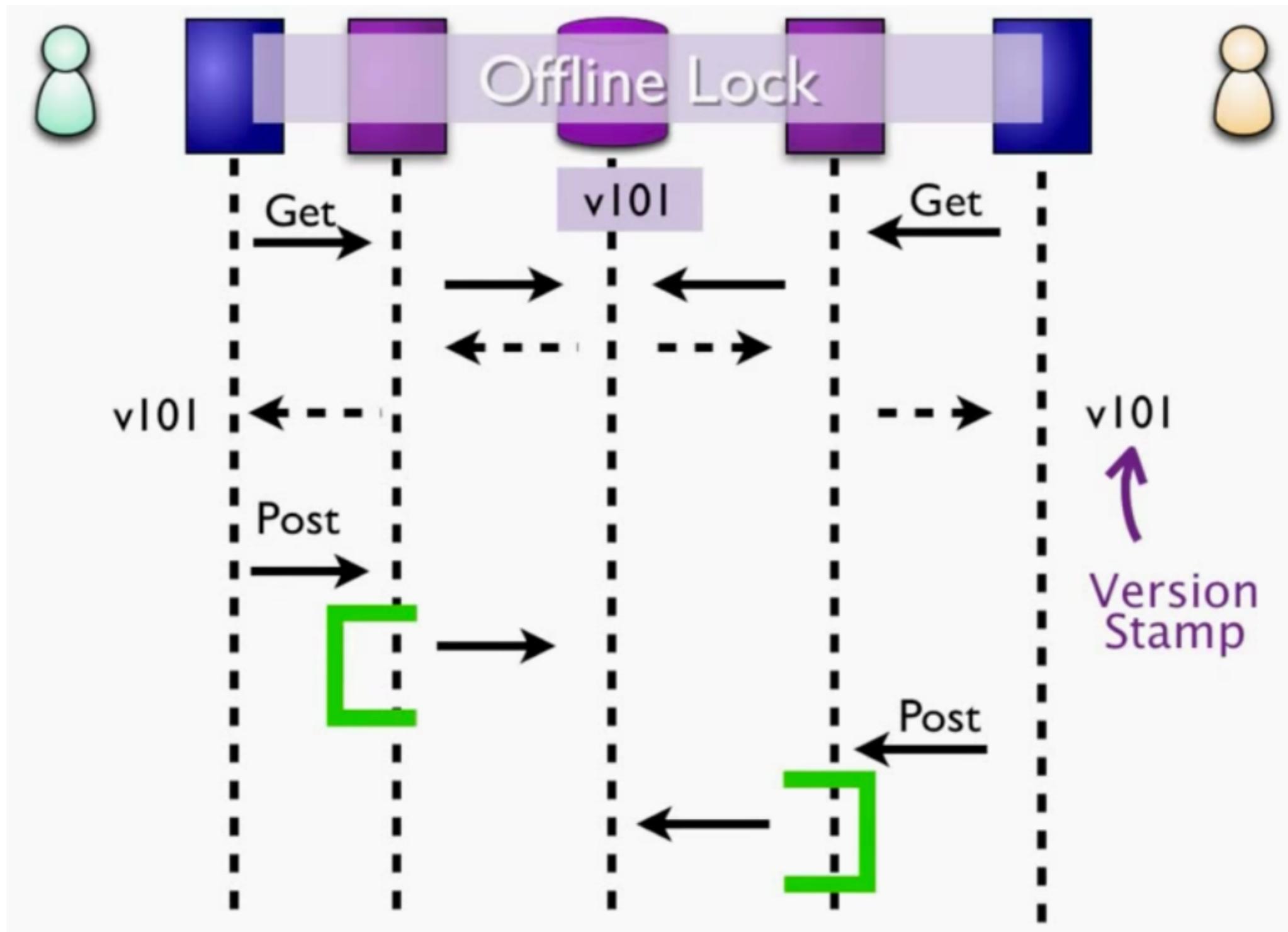
# แล้วทำอย่างไรดีล่ะ ?





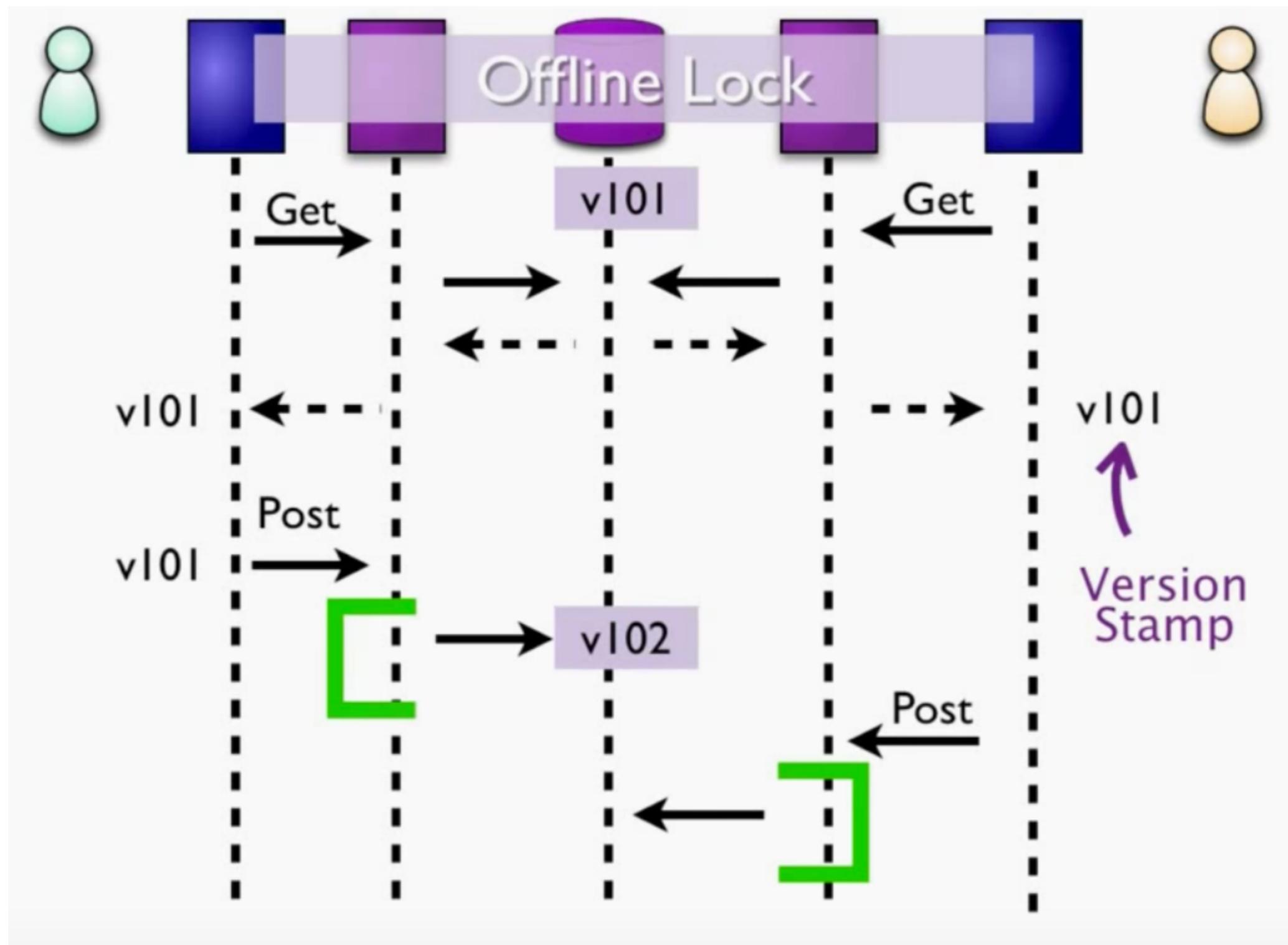
[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)





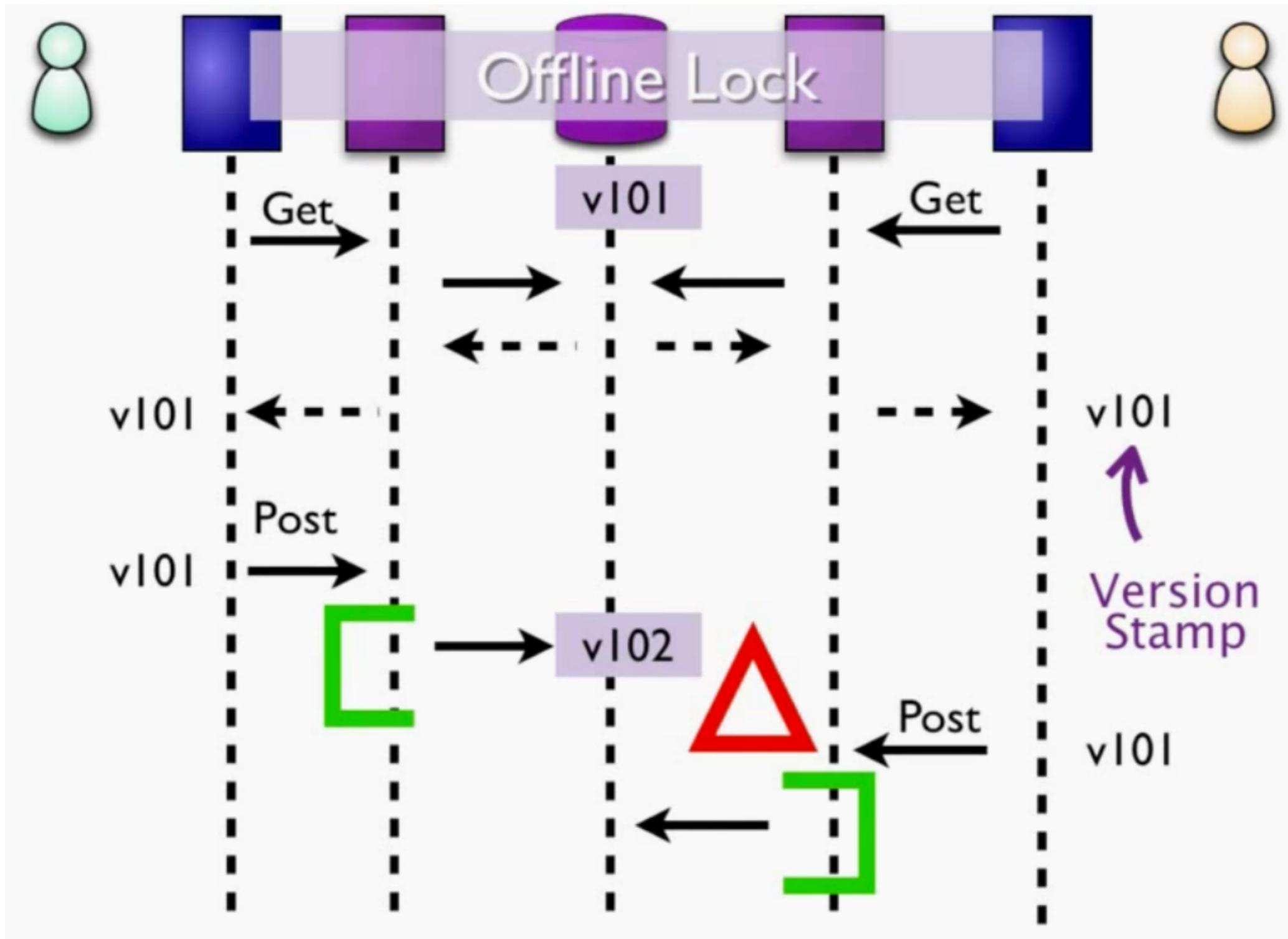
[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)





[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)





[https://www.youtube.com/watch?v=qI\\_g07C\\_Q5I](https://www.youtube.com/watch?v=qI_g07C_Q5I)



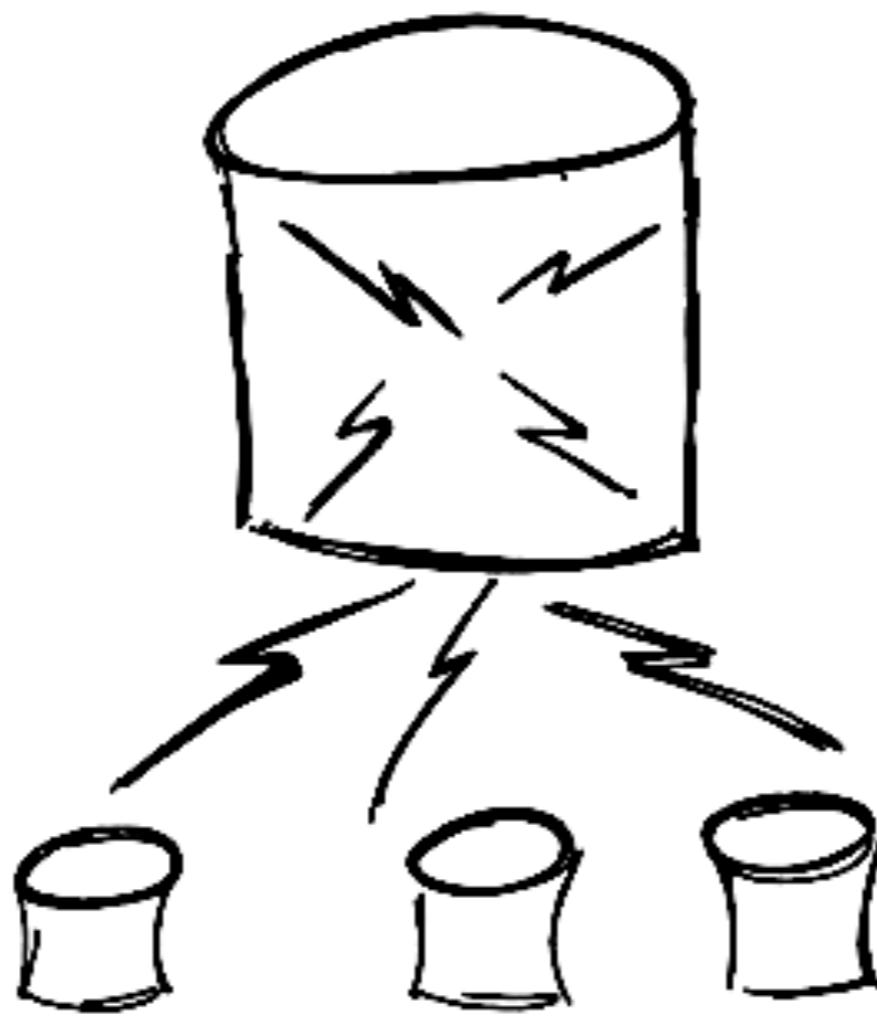
# Consistency ใน NoSQL มี 2 แบบ

1. Logical (Sharding)
2. Replication



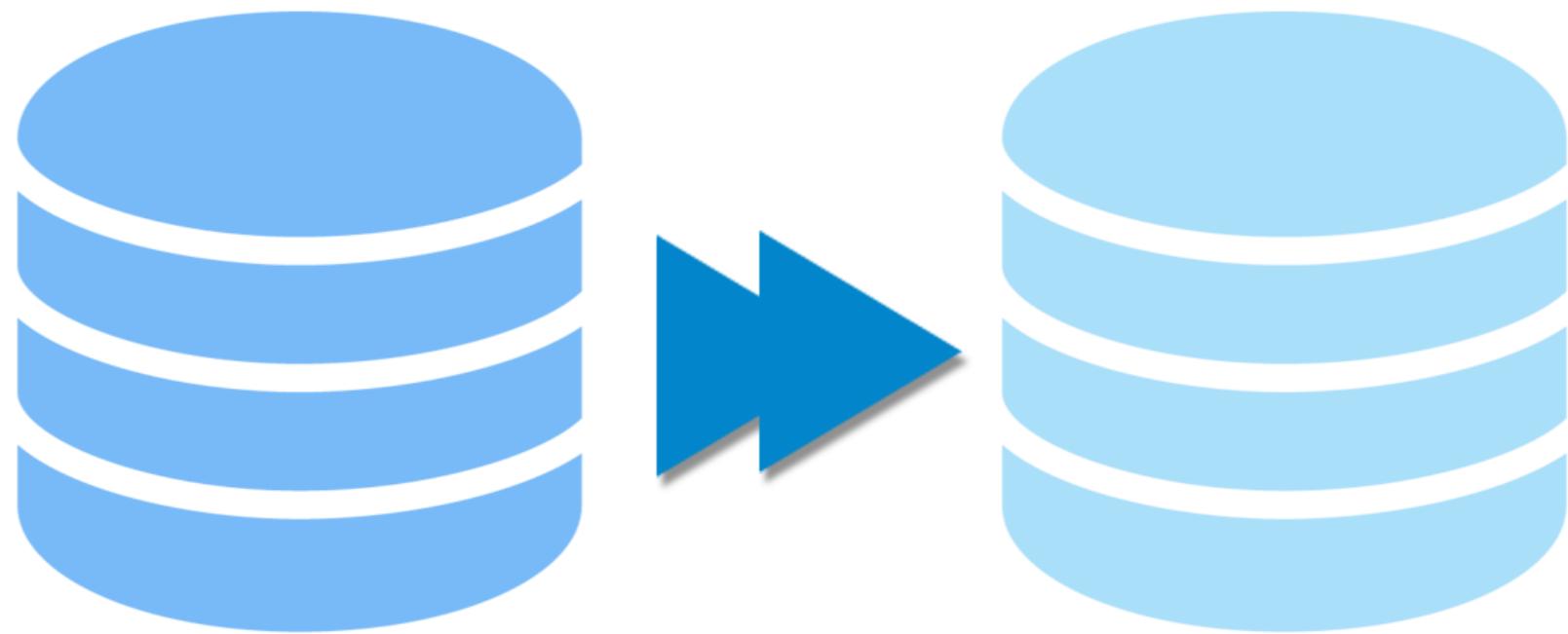
# Sharding คืออะไร ?





# Replication คืออะไร ?





# ระบบงานต้อง Availability

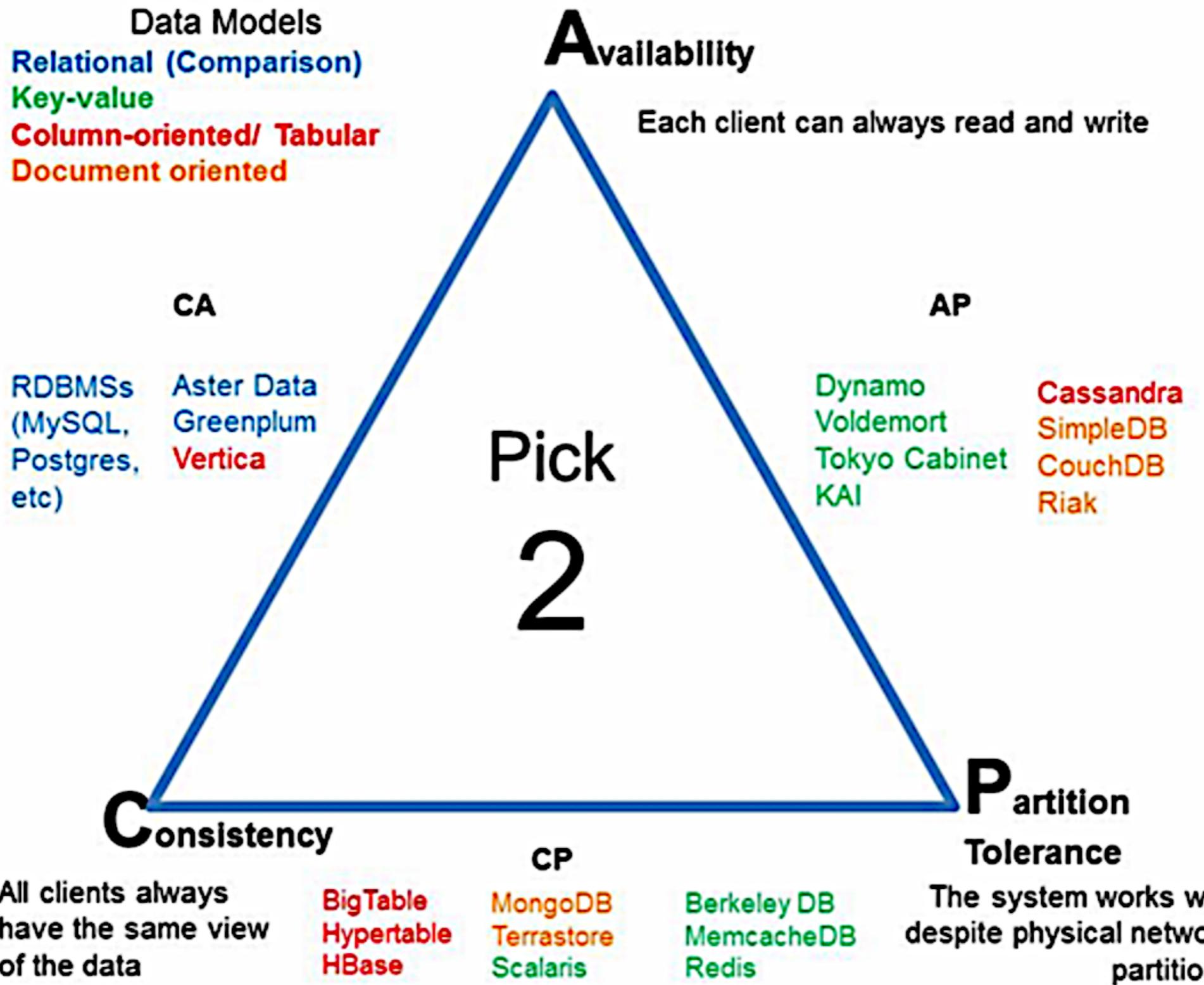


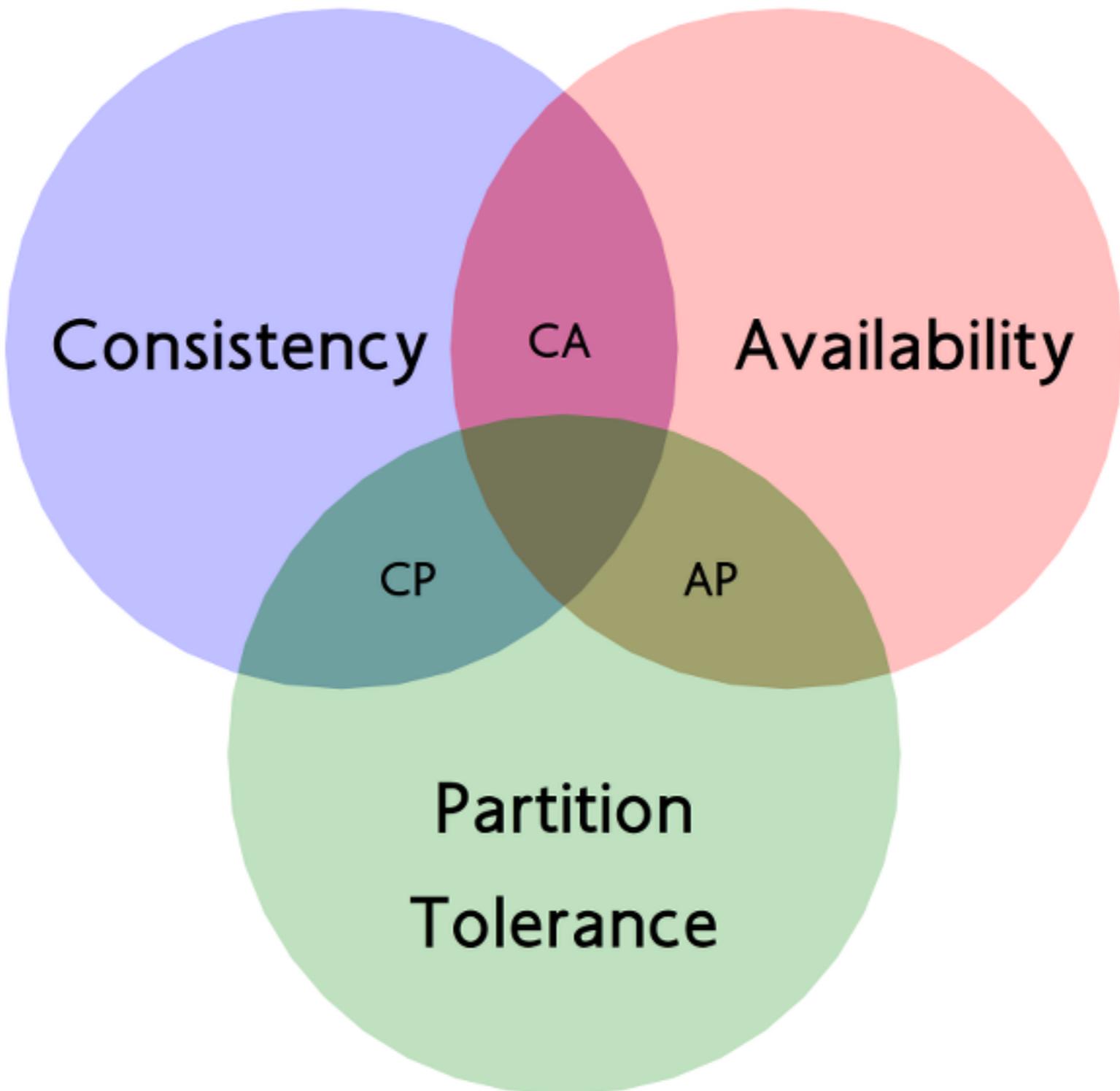
**C**onsistency  
**A**vailability  
**P**artition tolerance



# “CAP Theorem”



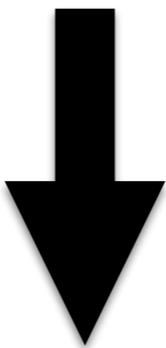




# สำหรับ NoSQL เลือกอะไรดี ?



# Partition



Consistency หรือ Availability



# เลือกที่สบายนิจ !!



# Trade-off !!



# Consistency มีผลต่อ Response time



# **“Business decision”**



# คำถ้าม



# RDBMS จะตายไปหรือไม่ ?



# NoSQL จะเข้ามาแทนที่หรือไม่ ?



1980

1990

2000

2010

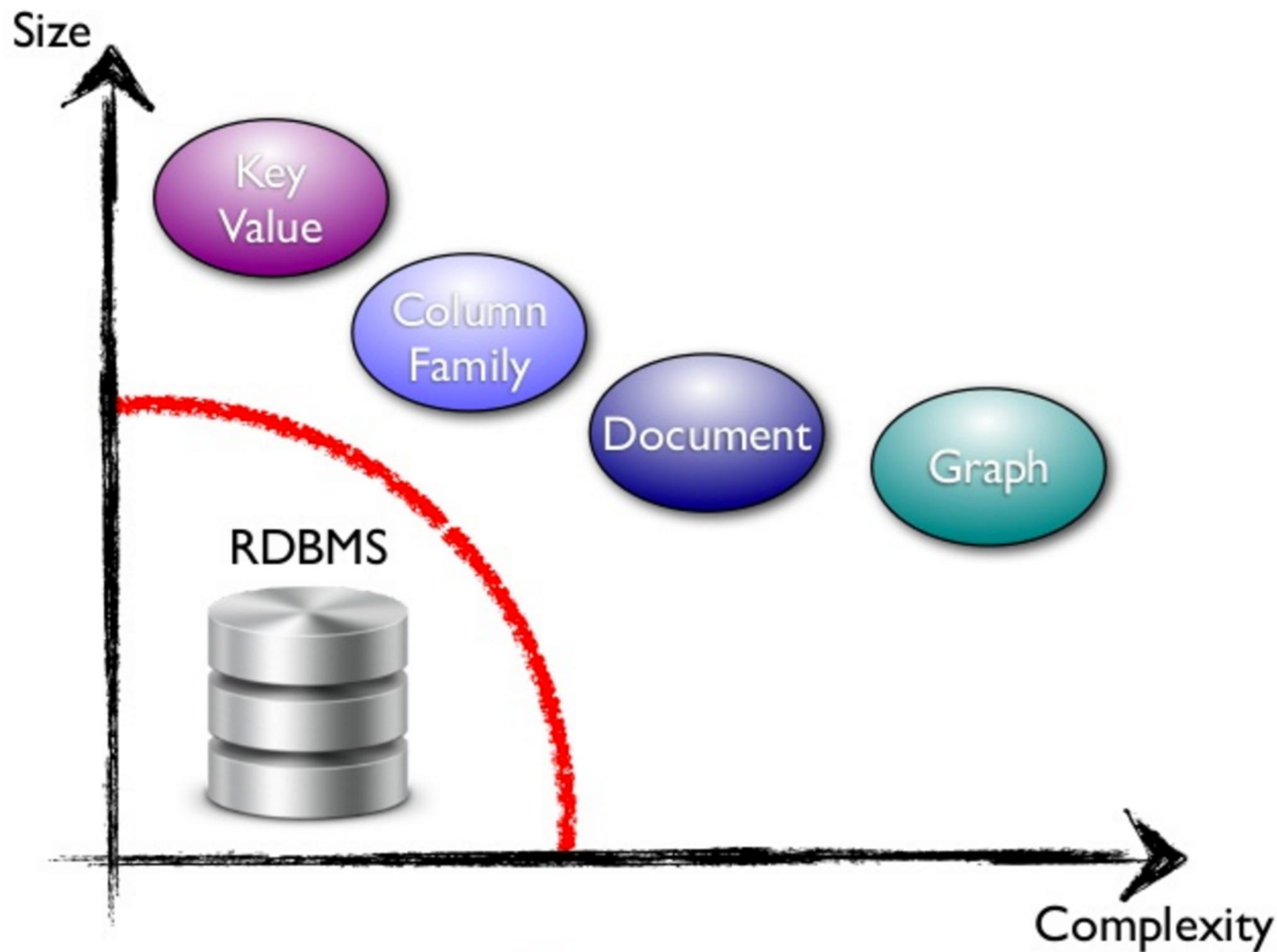


Polyglot persistence



# “Polyglot Persistence”



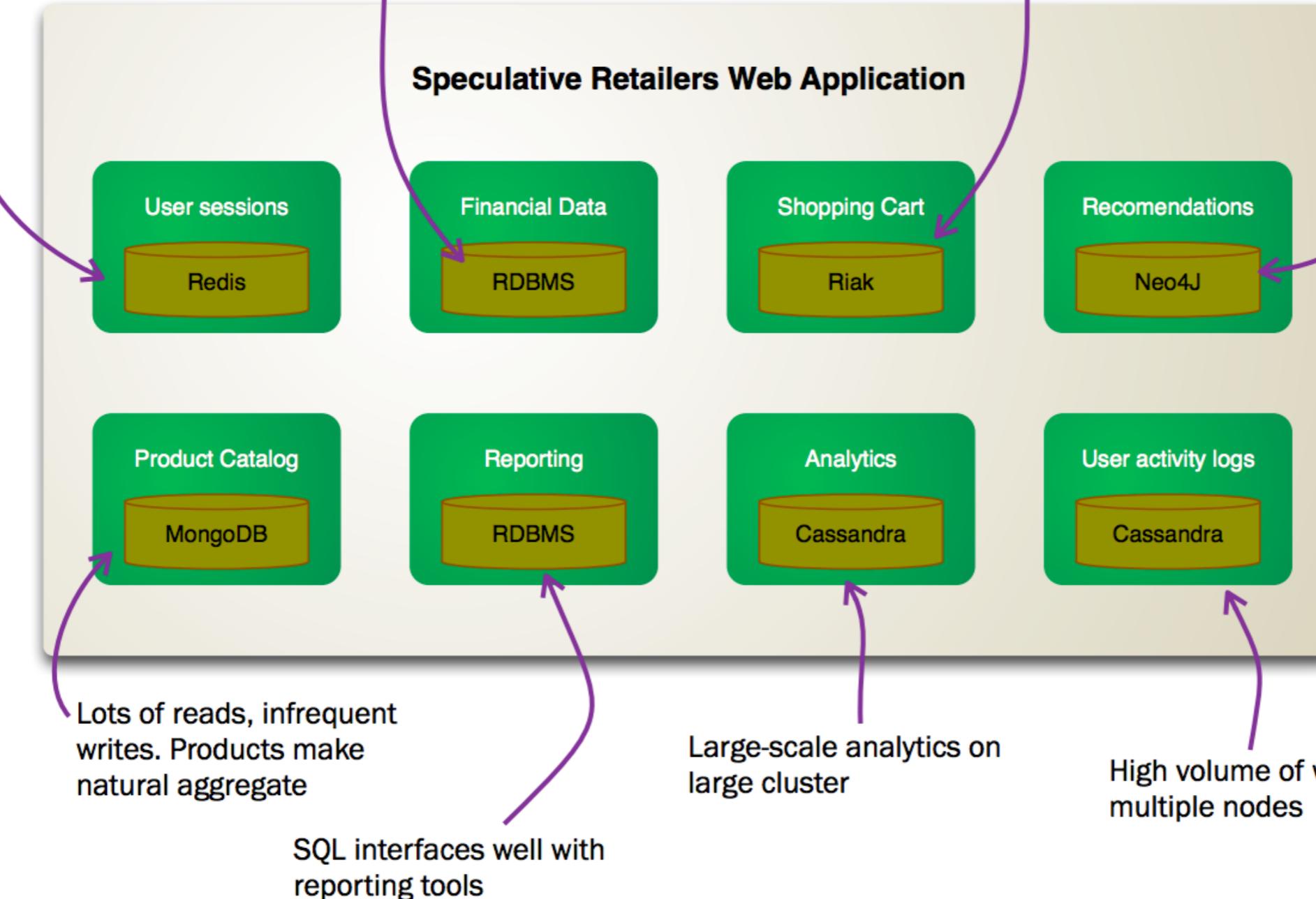


Rapid access for reads and writes. No need to be durable

Needs transactional updates. Tabular structure fits data

Needs high availability across multiple locations. Can merge inconsistent writes

Rapidly traverse links between friends, product purchases, and ratings



<http://martinfowler.com/bliki/PolyglotPersistence.html>





# เลือก ให้เหมาะสม กับข้อมูล !!



# โอกาส มาพร้อมกับปัญหาเสมอ !!



# ปัญหาของ Polyglot persistence

Decisions



# ปัญหาของ Polyglot persistence

Decisions  
Organizational change



# ปัญหาของ Polyglot persistence

Decisions

Organizational change

Immaturity



# ปัญหาของ Polyglot persistence

Decisions

Organizational change

Immaturity

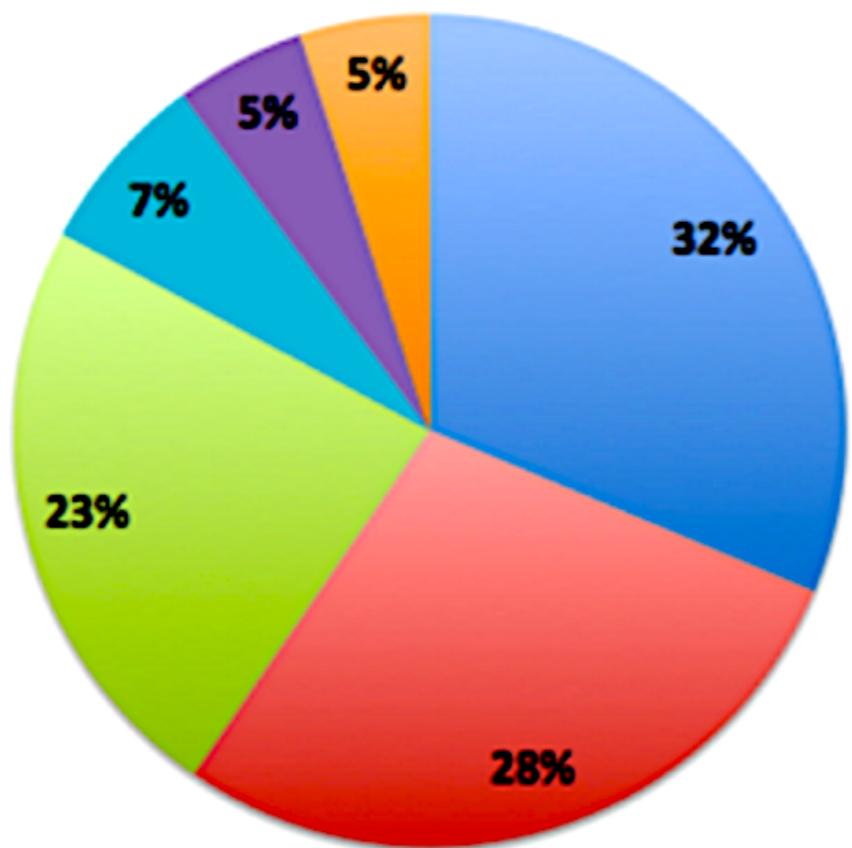
Dealing with Eventual Consistency



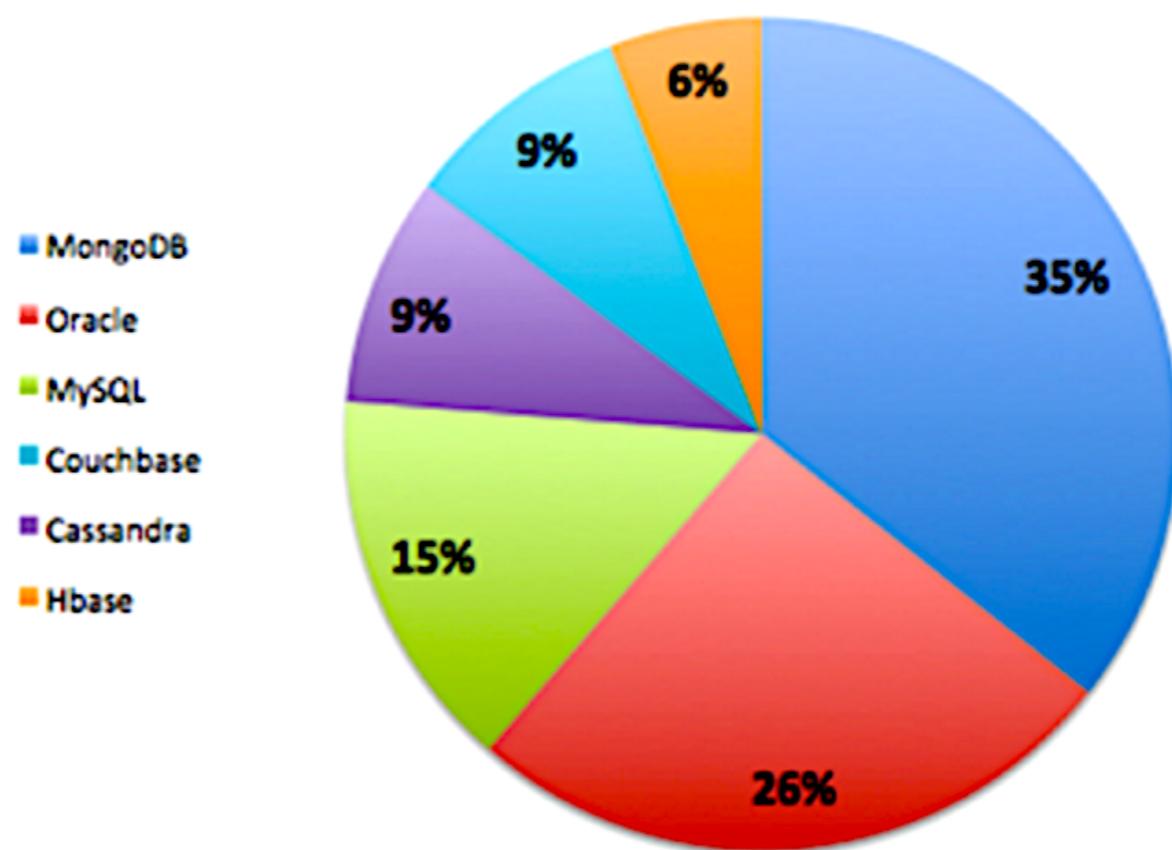
# มาดูความนิยมกันหน่อย



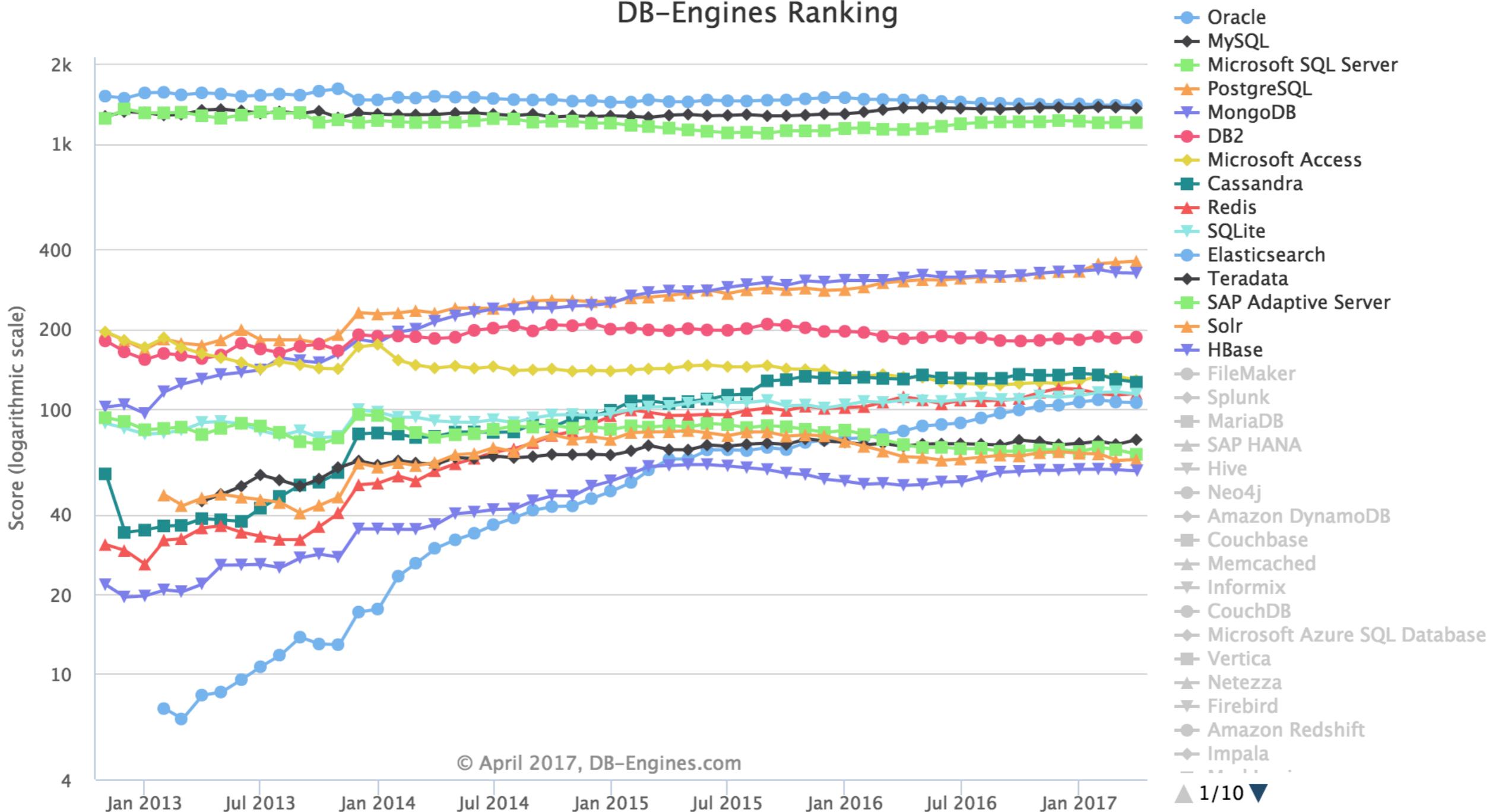
**Database Popularity**  
March 2013-2014



**Database Popularity**  
March 2014-2015



## DB-Engines Ranking



[http://db-engines.com/en/ranking\\_trend](http://db-engines.com/en/ranking_trend)



Rank			DBMS	Database Model	Score		
Apr 2017	Mar 2017	Apr 2016			Apr 2017	Mar 2017	Apr 2016
1.	1.	1.	Oracle 	Relational DBMS	1402.00	+2.50	-65.54
2.	2.	2.	MySQL 	Relational DBMS	1364.62	-11.46	-5.49
3.	3.	3.	Microsoft SQL Server 	Relational DBMS	1204.77	-2.72	+69.72
4.	4.	↑ 5.	PostgreSQL 	Relational DBMS	361.77	+4.14	+58.05
5.	5.	↓ 4.	MongoDB 	Document store	325.43	-1.51	+12.98
6.	6.	6.	DB2 	Relational DBMS	186.66	+1.74	+2.57
7.	7.	7.	Microsoft Access	Relational DBMS	128.18	-4.76	-3.79
8.	8.	8.	Cassandra 	Wide column store	126.18	-3.01	-3.49
9.	↑ 10.	9.	Redis 	Key-value store	114.36	+1.35	+3.12
10.	↓ 9.	10.	SQLite	Relational DBMS	113.80	-2.39	+5.83
11.	11.	11.	Elasticsearch 	Search engine	105.67	-0.56	+23.09
12.	12.	↑ 13.	Teradata	Relational DBMS	76.56	+3.02	+4.30
13.	13.	↓ 12.	SAP Adaptive Server	Relational DBMS	67.46	-2.67	-5.86
14.	14.	14.	Solr	Search engine	64.37	+0.38	-1.65
15.	15.	15.	HBase	Wide column store	58.47	-0.51	+6.98
16.	16.	↑ 17.	FileMaker	Relational DBMS	57.18	+2.61	+11.07
17.	17.	↑ 18.	Splunk	Search engine	55.50	+1.42	+13.15
18.	↑ 19.	↑ 21.	MariaDB 	Relational DBMS	48.72	+1.84	+17.14
19.	↓ 18.	19.	SAP HANA 	Relational DBMS	48.15	-1.91	+7.80
20.	20.	↓ 16.	Hive 	Relational DBMS	41.65	-2.97	-7.43

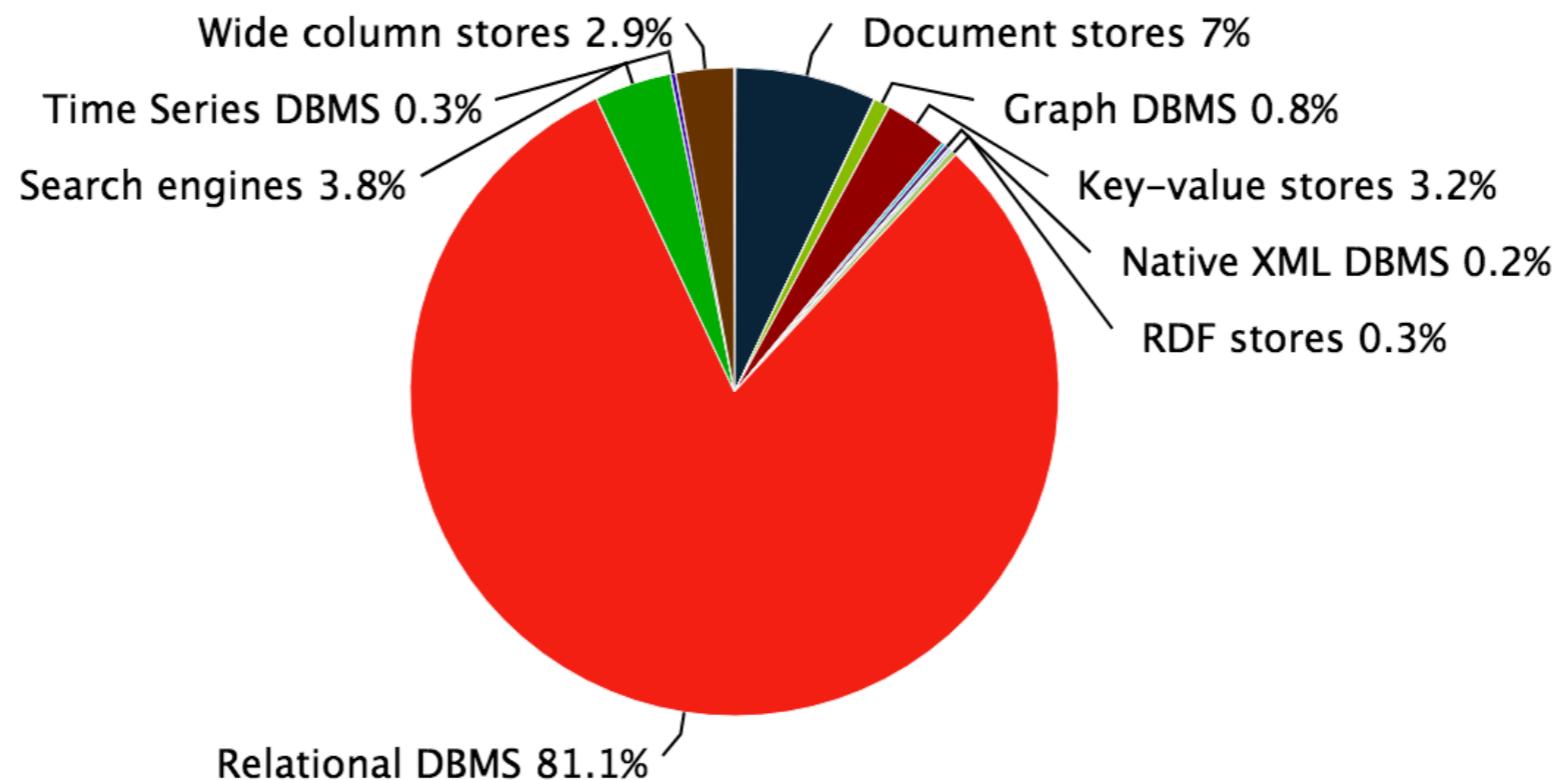
[http://db-engines.com/en/ranking\\_trend](http://db-engines.com/en/ranking_trend)

Rank			DBMS	Database Model	Score		
Apr 2017	Mar 2017	Apr 2016			Apr 2017	Mar 2017	Apr 2016
1.	1.	1.	Oracle +	Relational DBMS	1402.00	+2.50	-65.54
2.	2.	2.	MySQL +	Relational DBMS	1364.62	-11.46	-5.49
3.	3.	3.	Microsoft SQL Server +	Relational DBMS	1204.77	-2.72	+69.72
4.	4.	↑ 5.	PostgreSQL +	Relational DBMS	361.77	+4.14	+58.05
5.	5.	↓ 4.	MongoDB +	Document store	325.43	-1.51	+12.98
6.	6.	6.	DB2 +	Relational DBMS	186.66	+1.74	+2.57
7.	7.	7.	Microsoft Access	Relational DBMS	128.18	-4.76	-3.79
8.	8.	8.	Cassandra +	Wide column store	126.18	-3.01	-3.49
9.	↑ 10.	9.	Redis +	Key-value store	114.36	+1.35	+3.12
10.	↓ 9.	10.	SQLite	Relational DBMS	113.80	-2.39	+5.83
11.	11.	11.	Elasticsearch +	Search engine	105.67	-0.56	+23.09
12.	12.	↑ 13.	Teradata	Relational DBMS	76.56	+3.02	+4.30
13.	13.	↓ 12.	SAP Adaptive Server	Relational DBMS	67.46	-2.67	-5.86
14.	14.	14.	Solr	Search engine	64.37	+0.38	-1.65
15.	15.	15.	HBase	Wide column store	58.47	-0.51	+6.98
16.	16.	↑ 17.	FileMaker	Relational DBMS	57.18	+2.61	+11.07
17.	17.	↑ 18.	Splunk	Search engine	55.50	+1.42	+13.15
18.	↑ 19.	↑ 21.	MariaDB +	Relational DBMS	48.72	+1.84	+17.14
19.	↓ 18.	19.	SAP HANA +	Relational DBMS	48.15	-1.91	+7.80
20.	20.	↓ 16.	Hive +	Relational DBMS	41.65	-2.97	-7.43

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## Ranking scores per category in percent, April 2017

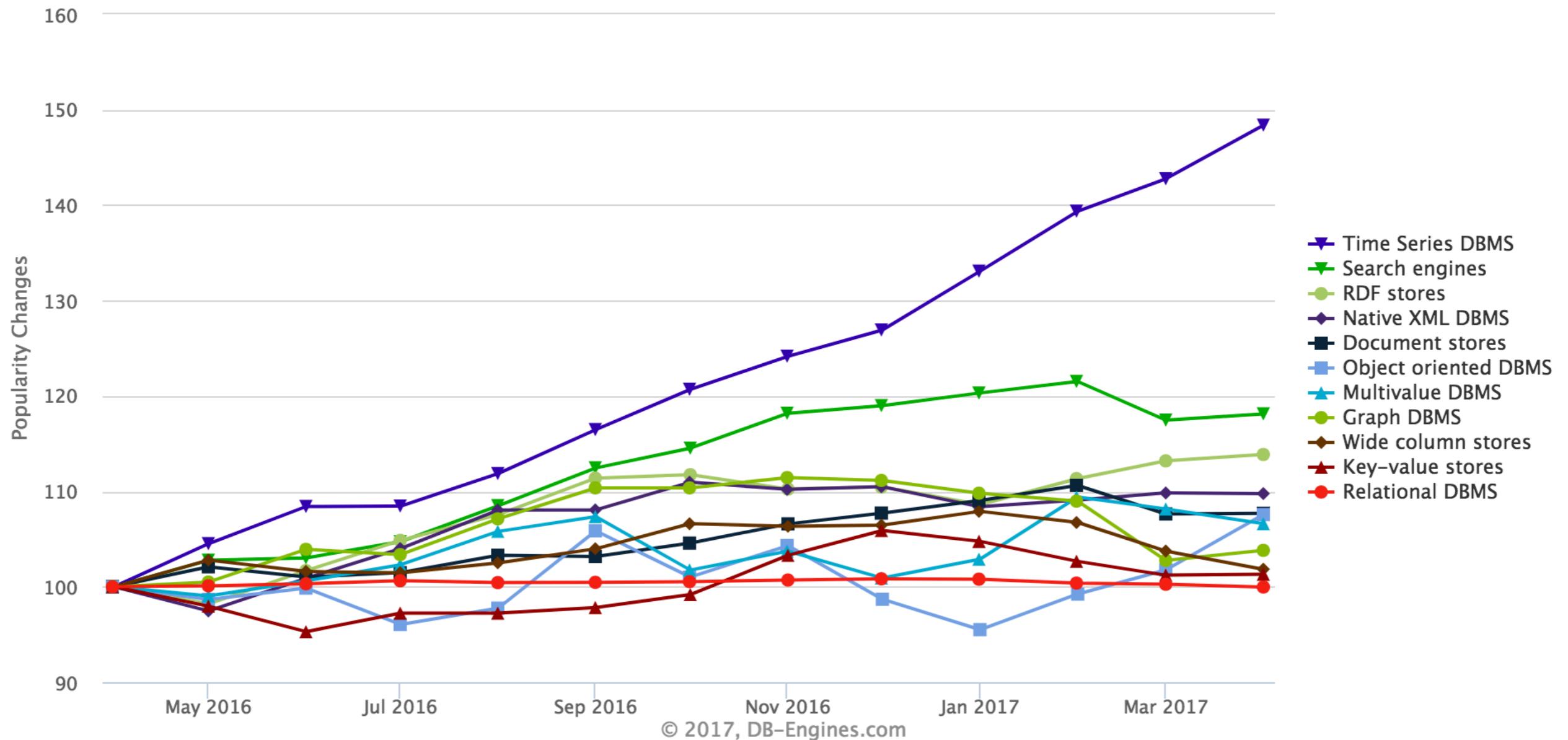


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## Trend of the last 12 months



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# ต่อจากนี้มีอะไรอีกใหม่ ?



# Real Time Big Data analytic



# เก็บข้อมูลหลัก ๆ ใน Memory มากขึ้น



# แก้ไขปัญหาระหว่าง RDBMS และ NoSQL





Tokutek™  
dbShards



SCHOONER

# NewSQL

JustOne<sub>DB</sub>



TRANS|ATTICE

VoltDB

NUODB



H-Store

xeround

GENIE DB®

Clustrix

<http://www.somkiat.cc/what-is-newsq/>



บริษัท สยามชานาณย์กิจ จำกัด และเพื่อนพ้องน้องพี่

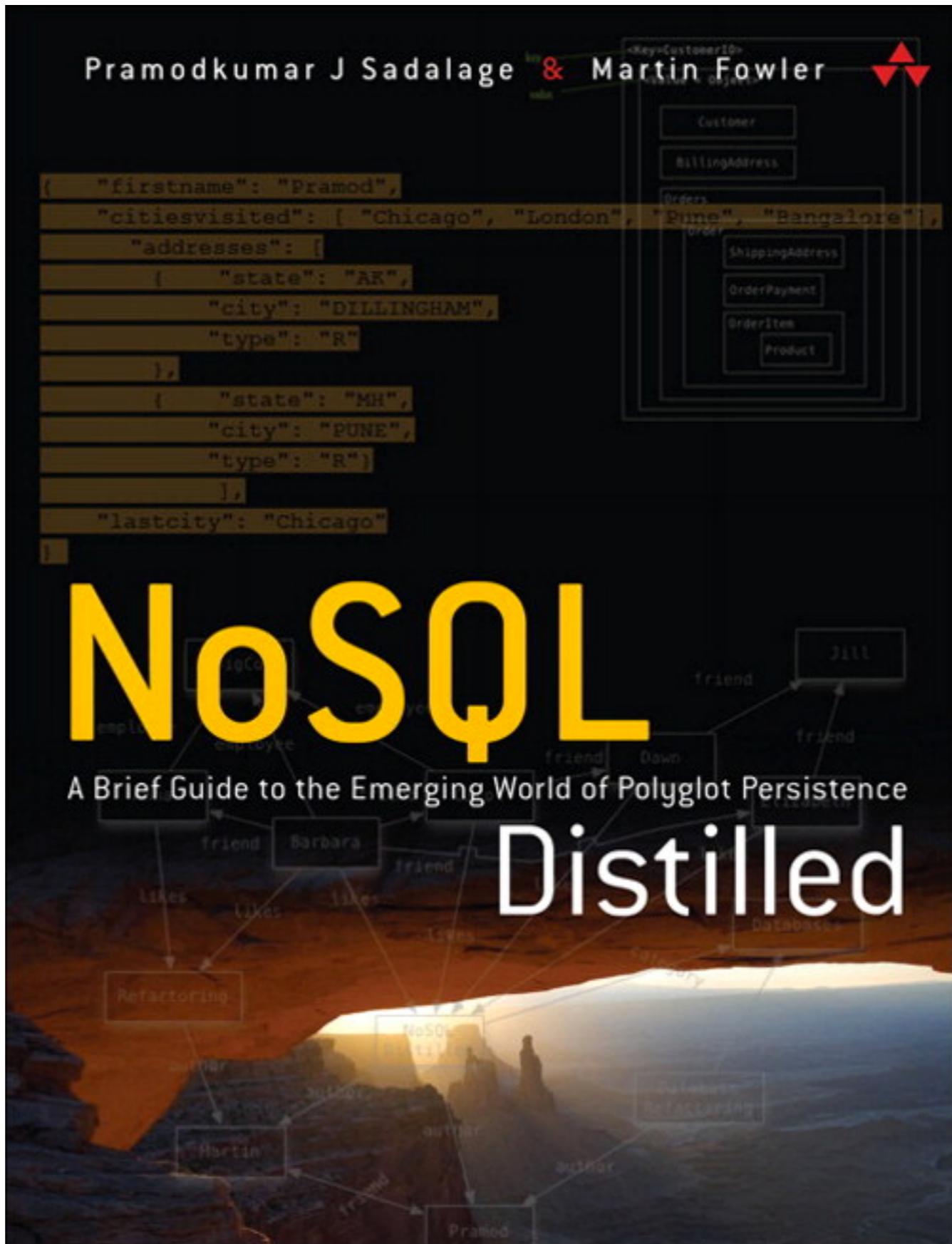


**KEEP  
CALM**

**AND**

**use the right tool  
for the right job**





# บริษัท สยามชานาญกิจ จำกัด และเพื่อนพ้องน้อง