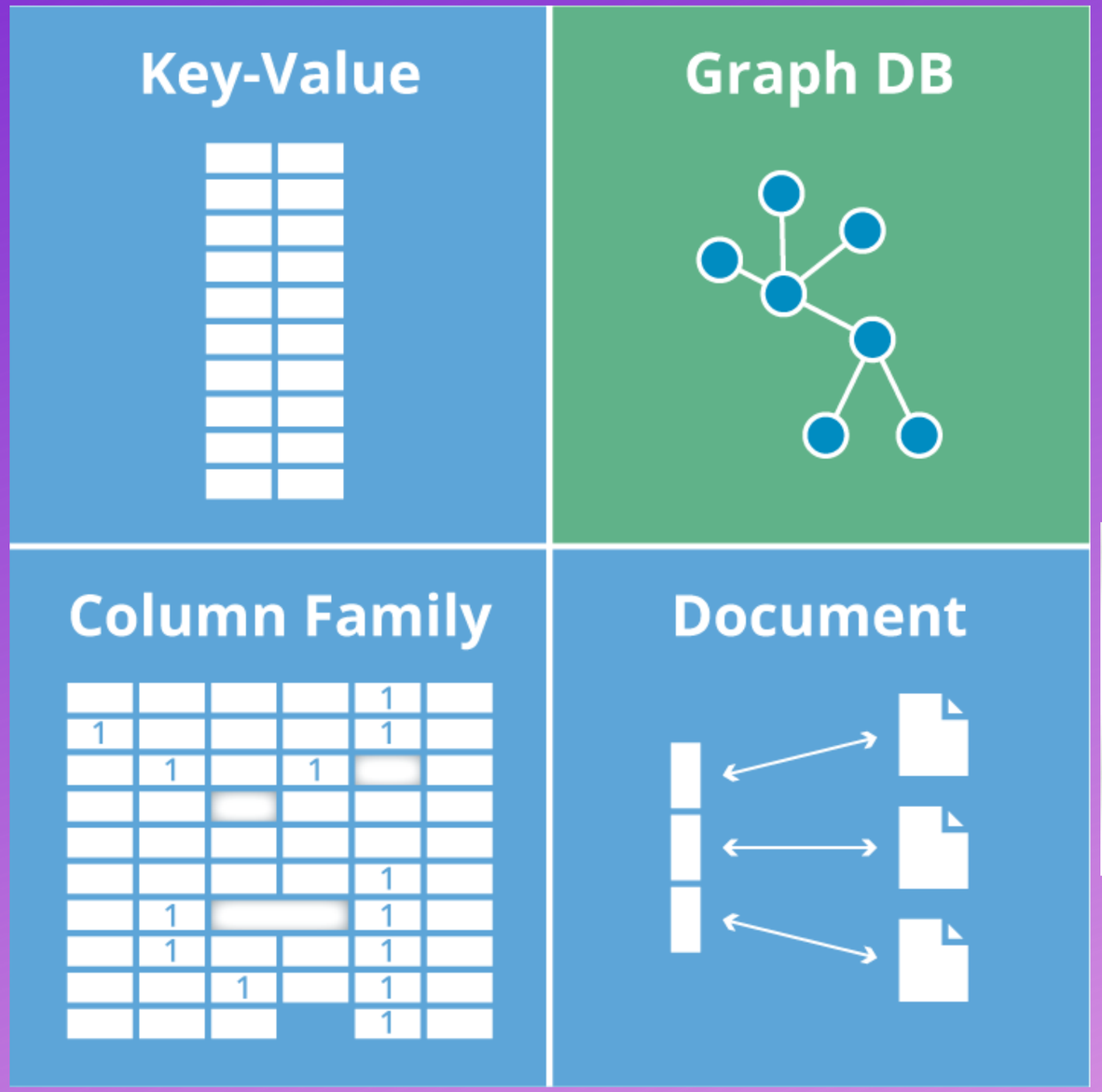
Les bases de données NoSQL

NOUVELLE TENDANCE ?

Matthieu Meurant

redis

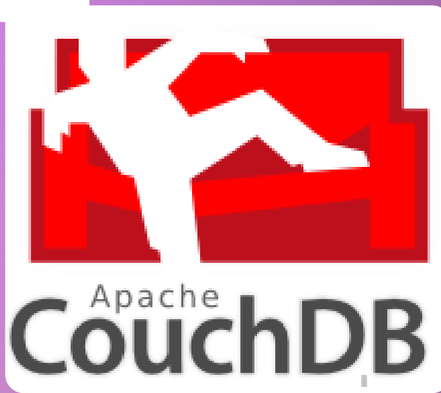

Key-Value
Graph DB
Column Family
Document

neo4j

cassandra

mongoDB

APACHE
HBASE


Apache
CouchDB

Key / Value

Key-Value Database
Table : Customers
Row ID : 10001
First Name : Sandip
Last Name : Shinde
Address : Pune, India
Total Purchase : $5400.00
Last Order : ORD10231001
Row ID : 10051
First Name : Manish
Last Name : Kaushik
Address 1 : 31, M. G. Road
Address 2 : Pune
State : Maharashtra
Total Purchase : $15000.00
Last Order : ORD50231201
Table : Orders
Row ID : 54311101
Order ID : ORD10231001
Discount : $50.00
Amount : $1500.00
Item Code 1 : I54002
Item Code 2 : I54101
Row ID : 54311101
Order ID : ORD50231201
Amount : $700.00
Item Code 1 : I53007
Key
Value

Column

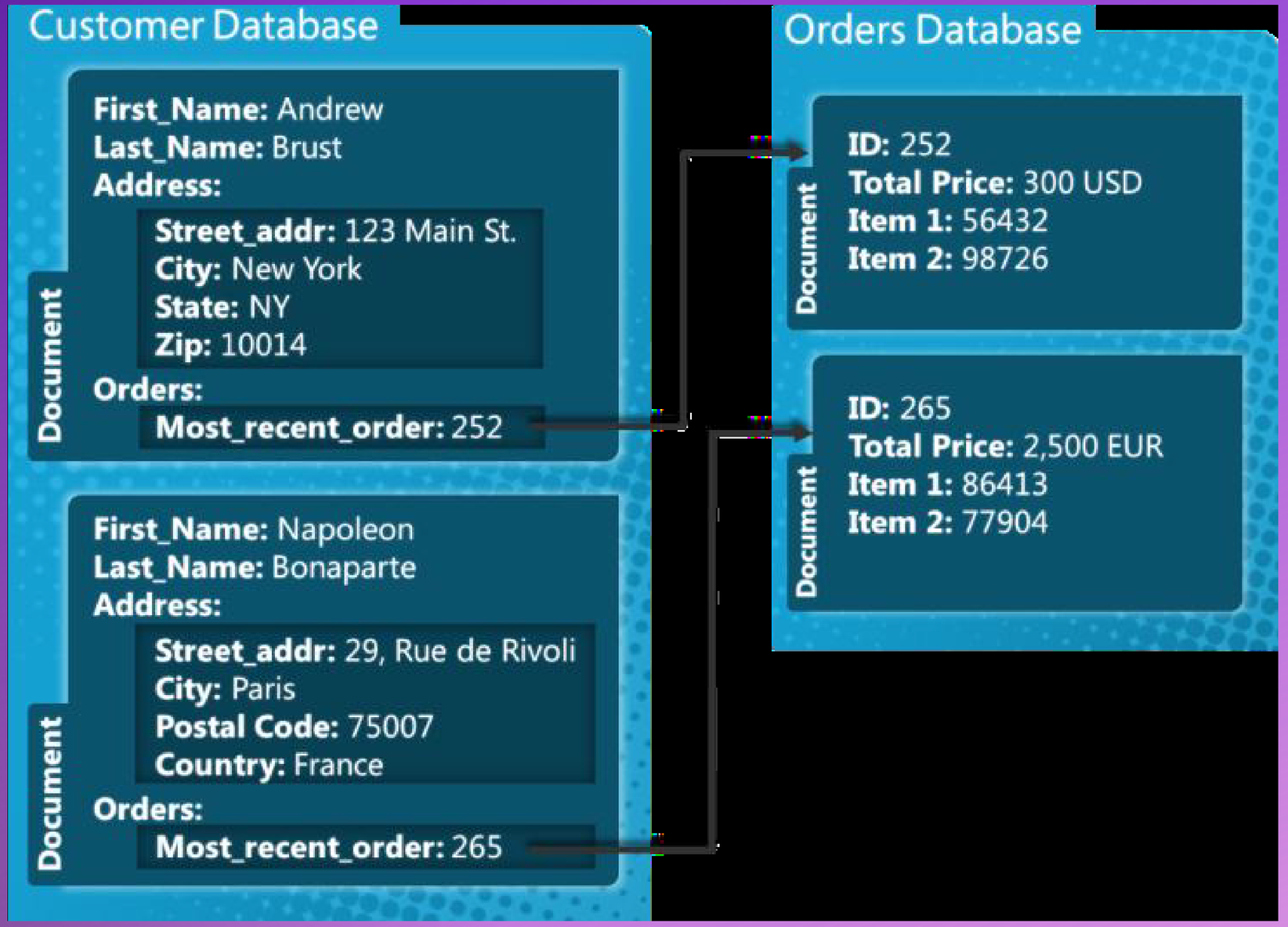
Relationnel

	Nom	Fixe	Mobile
1	Patrick	0102030405	*NULL*
2	Farid	*NULL*	0601020304
3	Tim	*NULL*	*NULL*

Colonnes

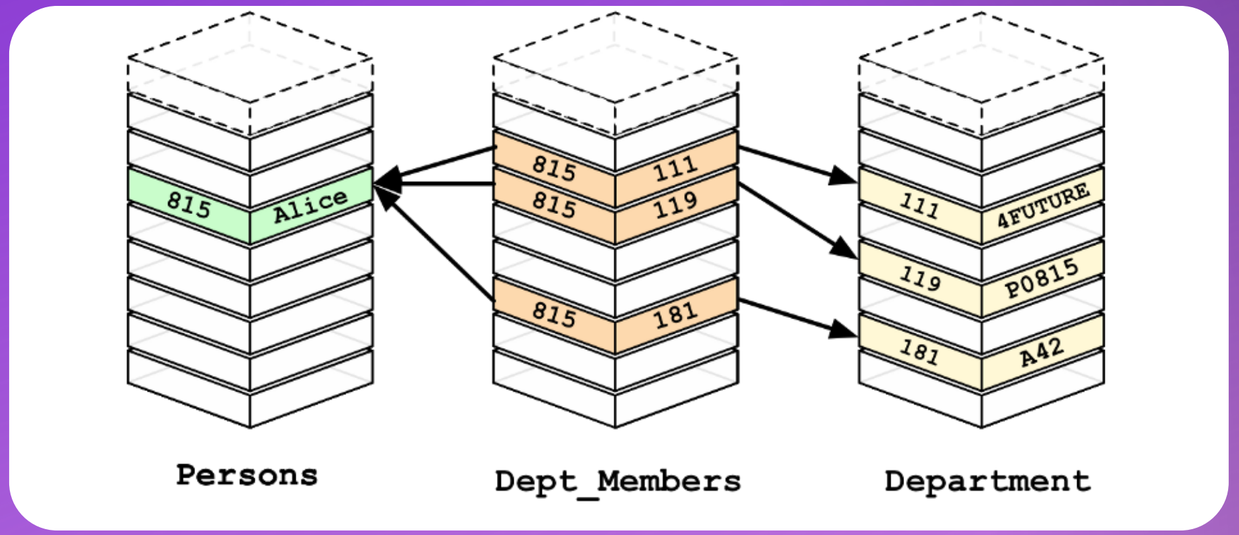
1	**Nom**	**Fixe**
	Patrick	0102030405
2	**Nom**	**Mobile**
	Farid	0601020304
3	**Nom**	
	Tim	

Document

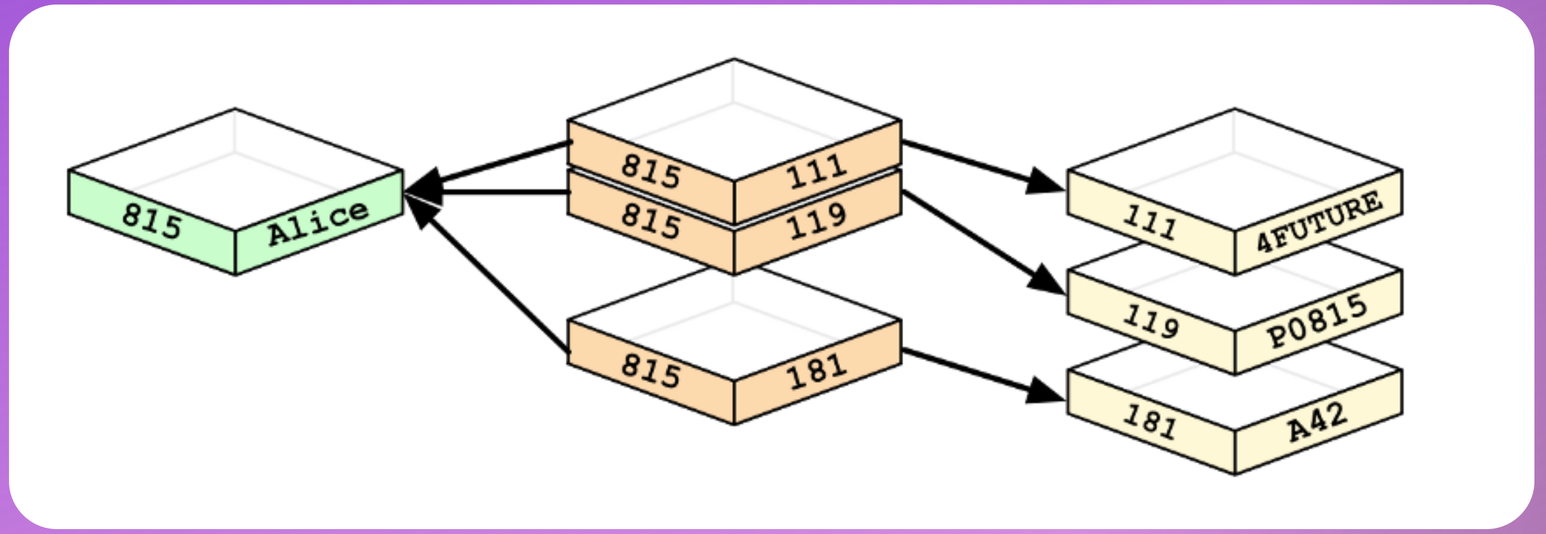

Customer Database
First_Name: Andrew
Last_Name: Brust
Address:
Street_addr: 123 Main St.
City: New York
State: NY
Zip: 10014
Orders:
Most_recent_order: 252
Document
First_Name: Napoleon
Last_Name: Bonaparte
Address:
Street_addr: 29, Rue de Rivoli
City: Paris
Postal Code: 75007
Country: France
Orders:
Most_recent_order: 265
Document
Orders Database
ID: 252
Total Price: 300 USD
Item 1: 56432
Item 2: 98726
Document
ID: 265
Total Price: 2,500 EUR
Item 1: 86413
Item 2: 77904
Document

Graph

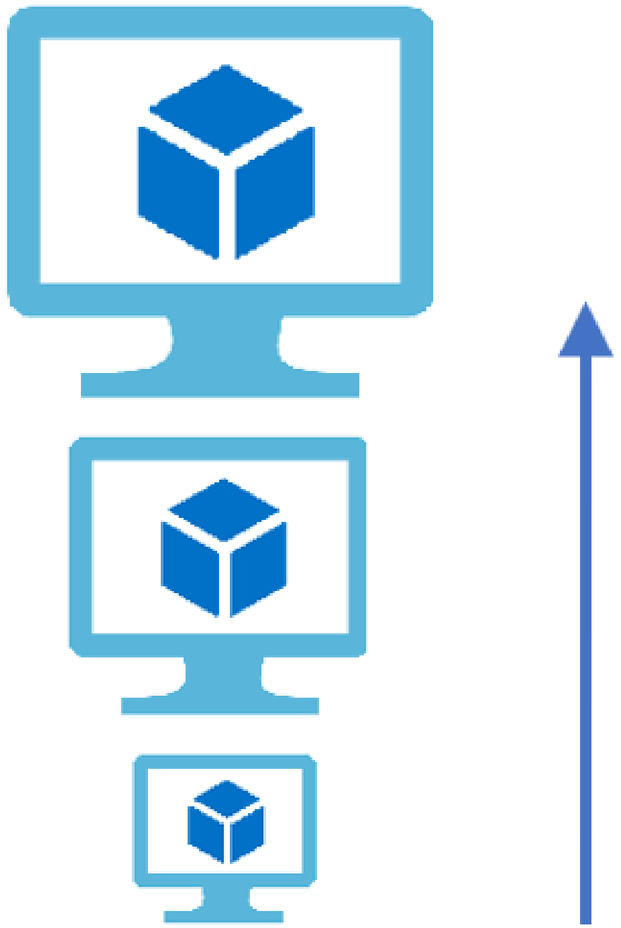
MySQL



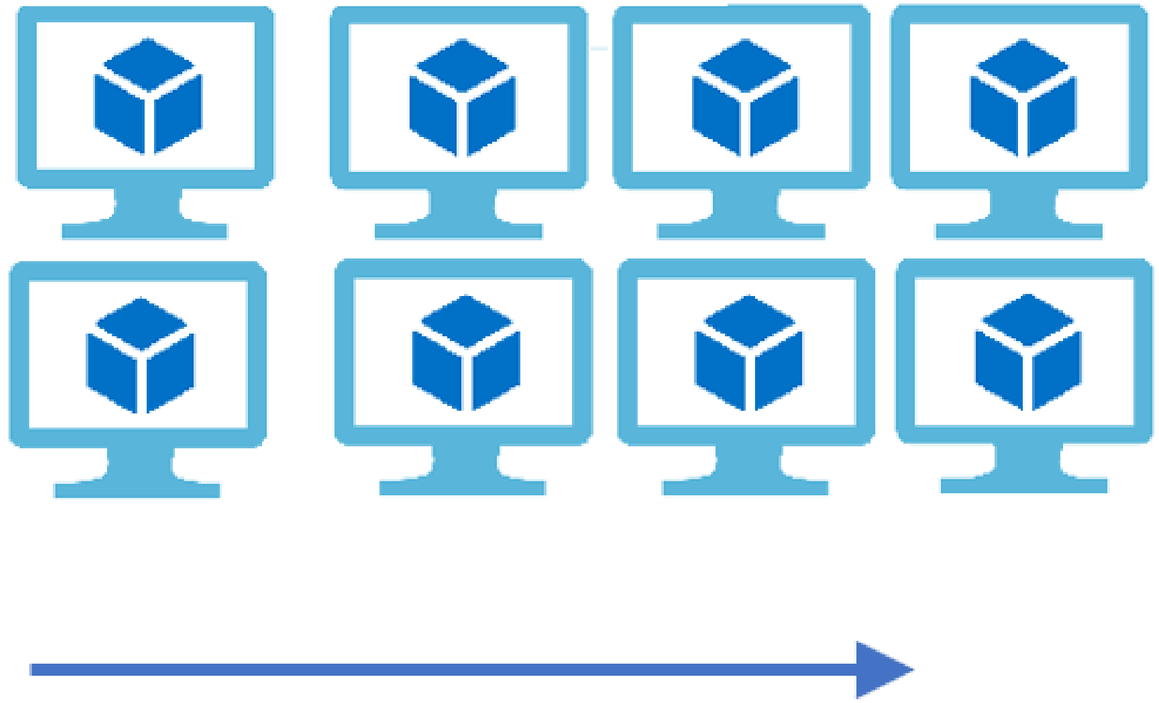
Graph



Vertical Scaling



Horizontal Scaling



A tomic

C onsistent

I solation

D urable

Top 4 NoSQL Databases

	MongoDB	Cassandra	Elasticsearch	Couchbase
Description	One of the most popular document stores	Wide-column store based on ideas of BigTable and DynamoDB	A modern search and analytics engine based on Apache Lucene	JSON-based document store derived from CouchDB with a Memcached-compatible interface
Database model	Document store	Wide Column store	Search engine	Document store
Developer	MongoDB, Inc.	Apache Software Foundation	Elastic	Couchbase, Inc.
Release	2009	2008	2010	2011
Language	C++	Java	Java	C, C+ + and Erlang
Server-side scripts	JavaScript	No	Yes	View functions in JavaScript
Replication methods	Master-slave replication	Selectable replication factor	Yes	Master-master replication, Master-slave replication
Best use	If you need dynamic queries. If you prefer to define indexes, not map and reduced functions. If you need good performance on a big DB and when your data changes too much	When data you need to store doesn't fit on server, but requires friendly familiar interface to it	When you have objects with flexible fields, and you need "advanced search" functionality	Any application that requires low-latency data access, high concurrency support and high availability

Sources:

- ***Wikipedia***

- ***Free code camp:***
  www.freecodecamp.org/news/the-basics-of-nosql-databases-and-why-we-need-them-5f6639ed9574/

- ***Talanlabs:***
  blog.talanlabs.com/etude-comparative-bdd-relationnelle-versus-nosql/: