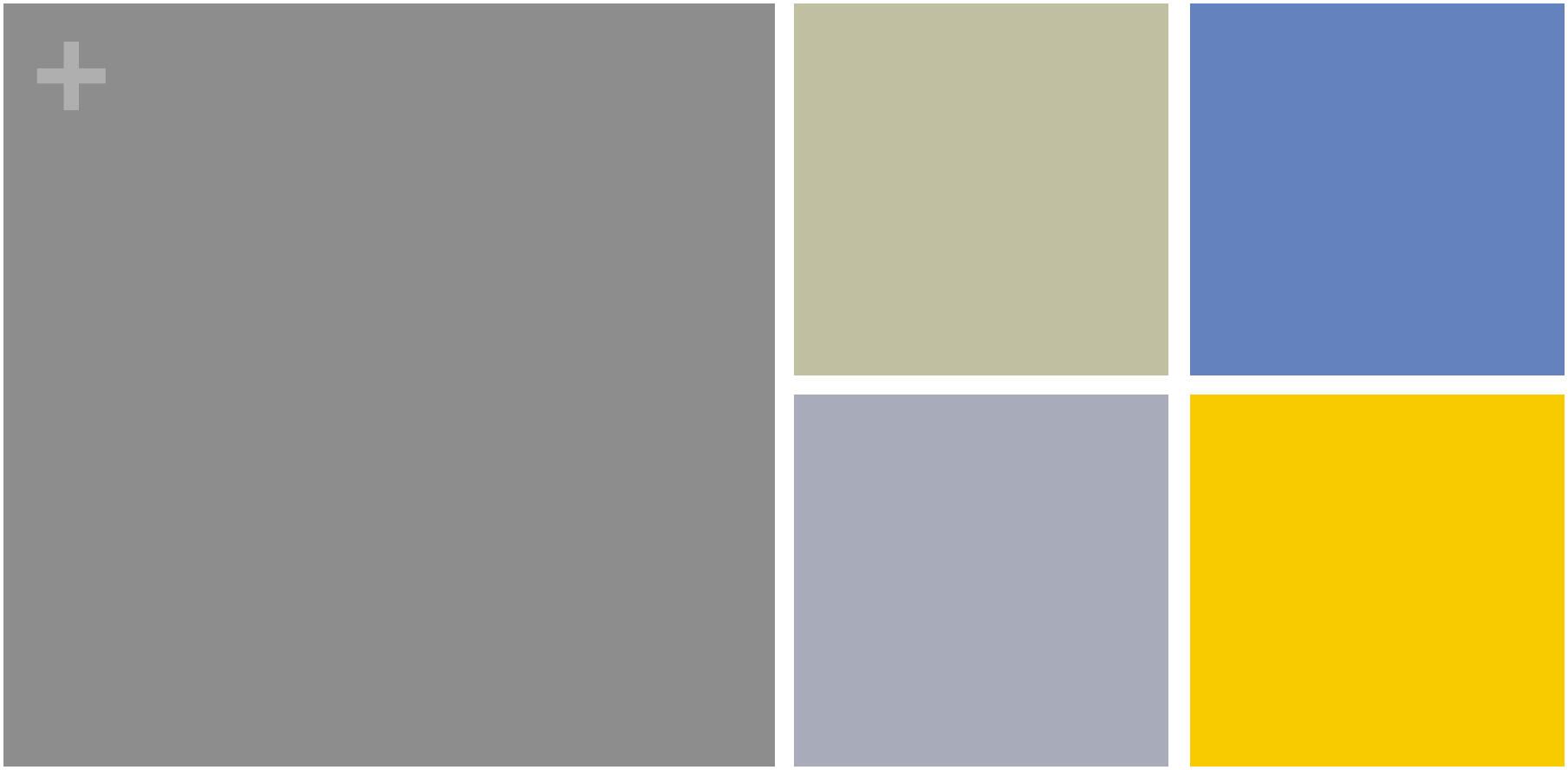


Javascript as a data processing language & htlm5 integration

Qcon London 2013 – Quentin ADAM

Who I am ?

- Quentin ADAM
- @waxzce on twitter
- CEO of Clever Cloud, the most powerful PaaS in Europe ;-)

clever cloud

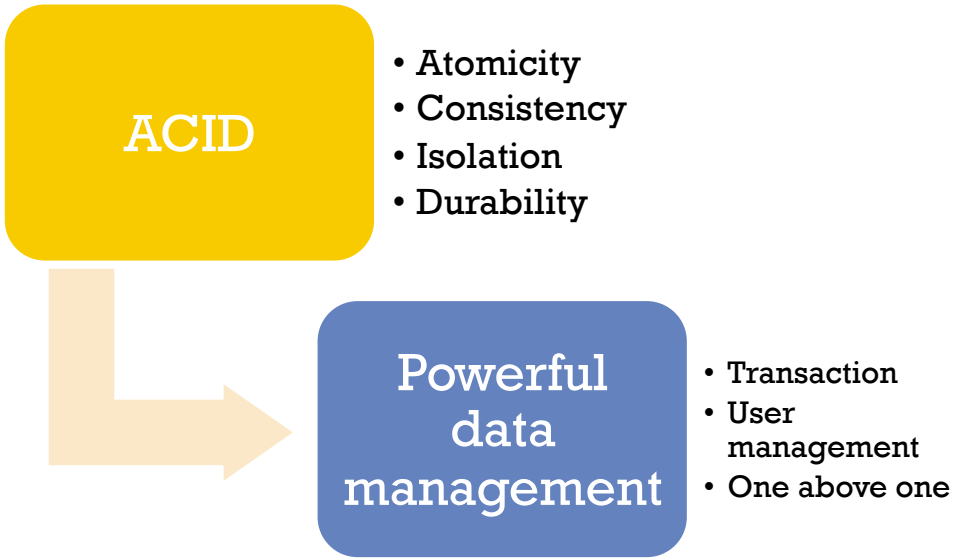
Why we have to talk about data processing ?

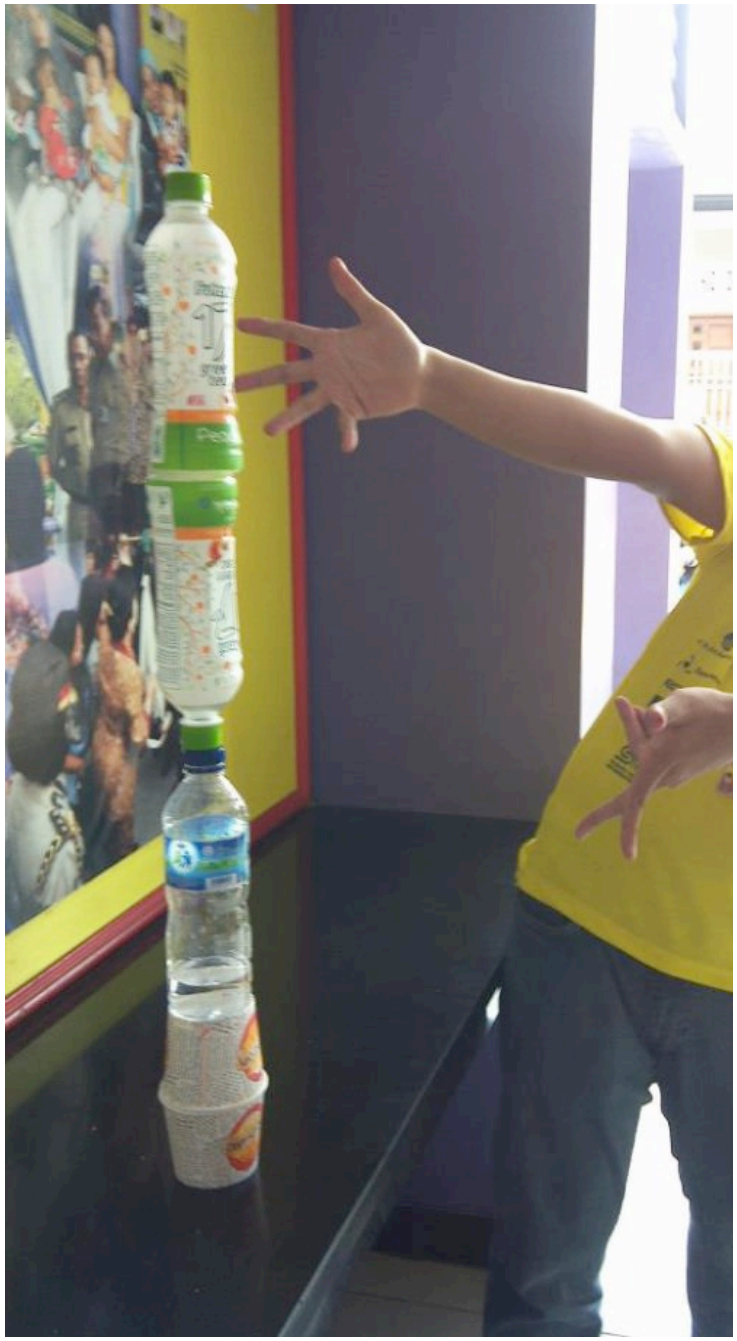
Big change in software industry

Yesteday	Now
One instance	One instance (distributed)
One organization	Multiple organization + a lot of users
One data repository	One data repository

Instance for one Organization

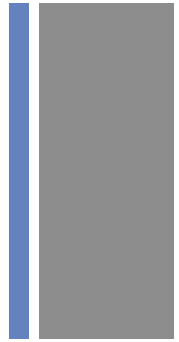
Take advantage of ACID database



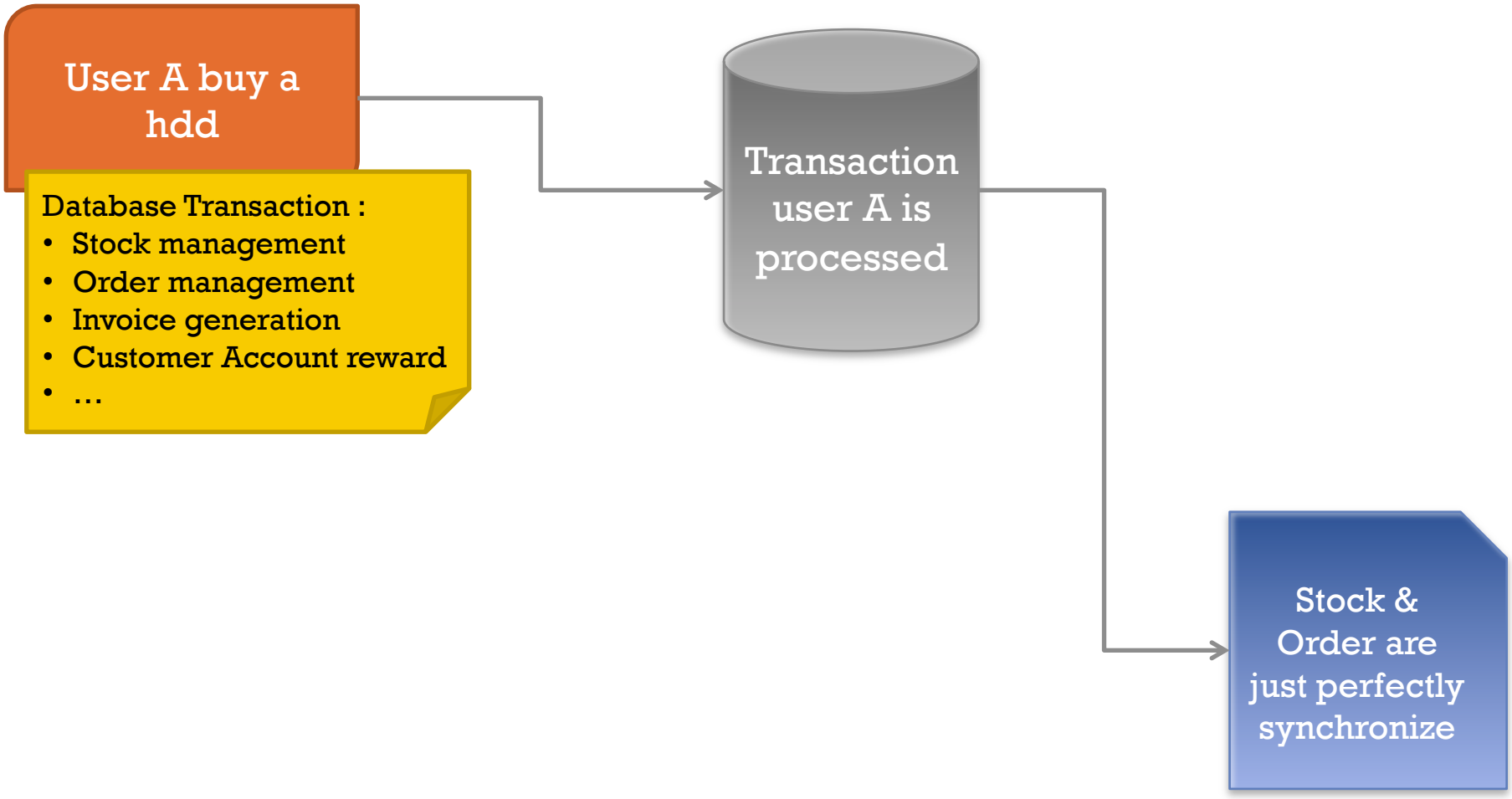


+ But it designs a bottleneck

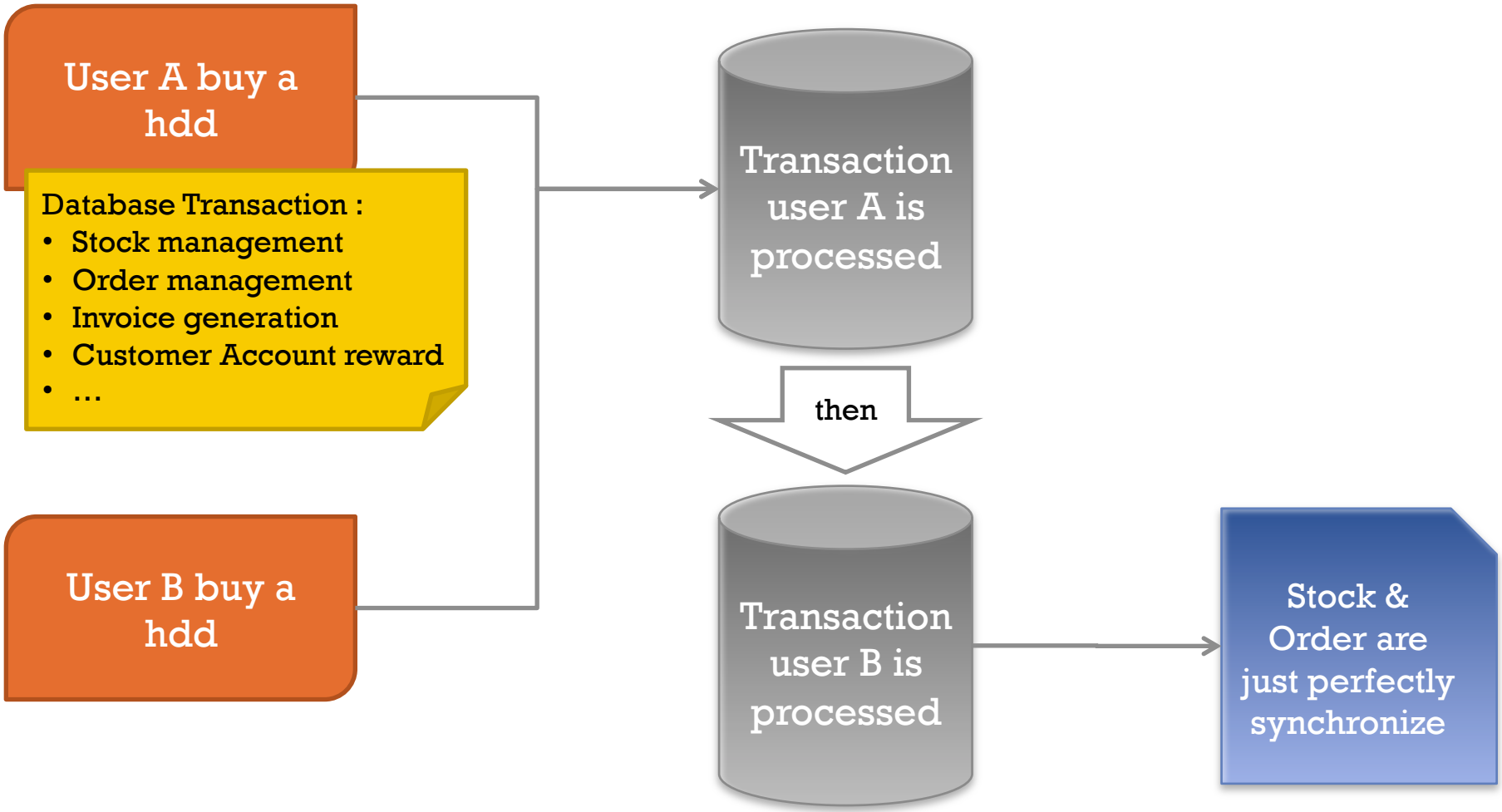
Example : e-shop on classic mode



Example : e-shop on classic mode



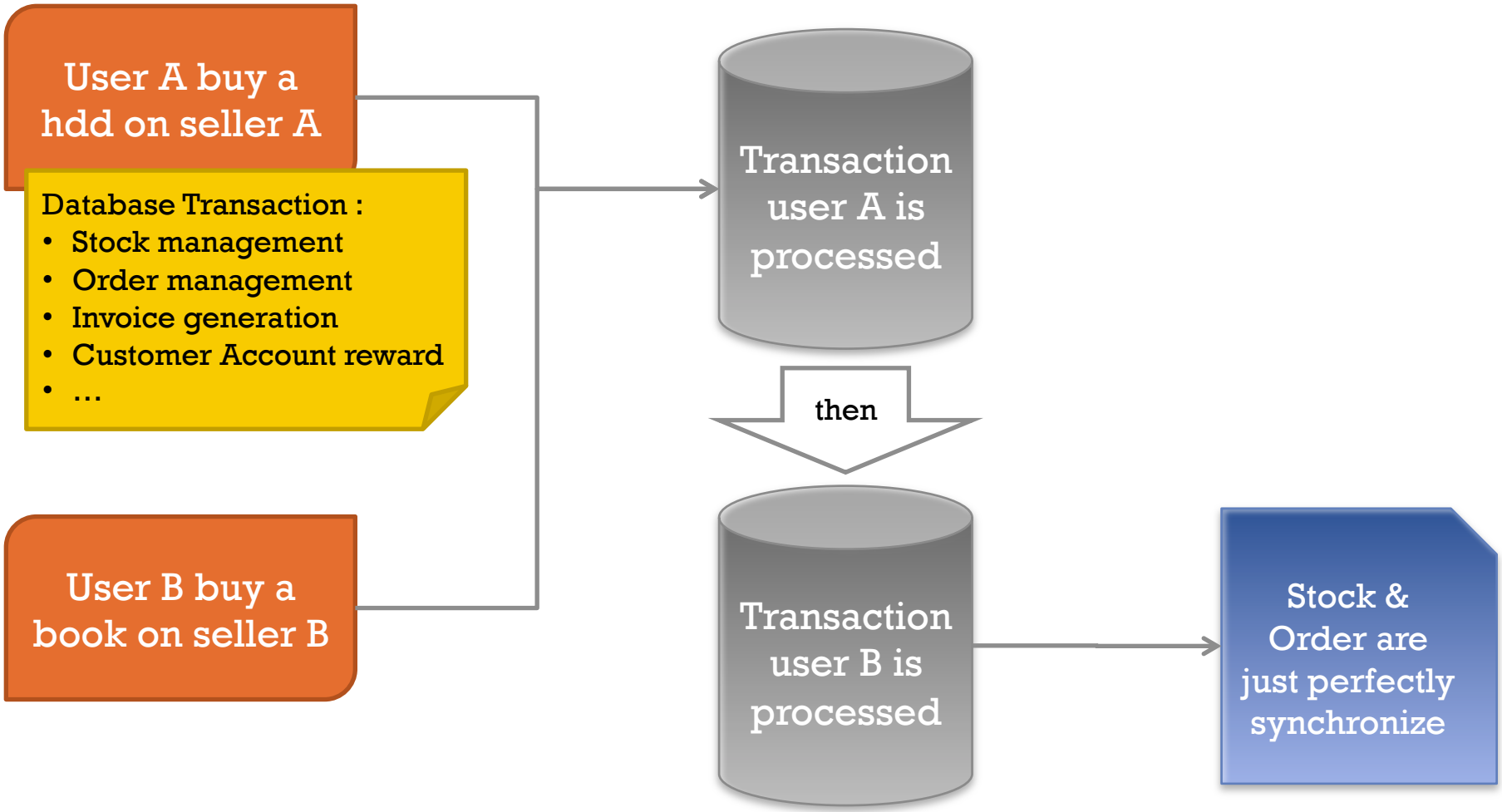
Example : e-shop on classic mode

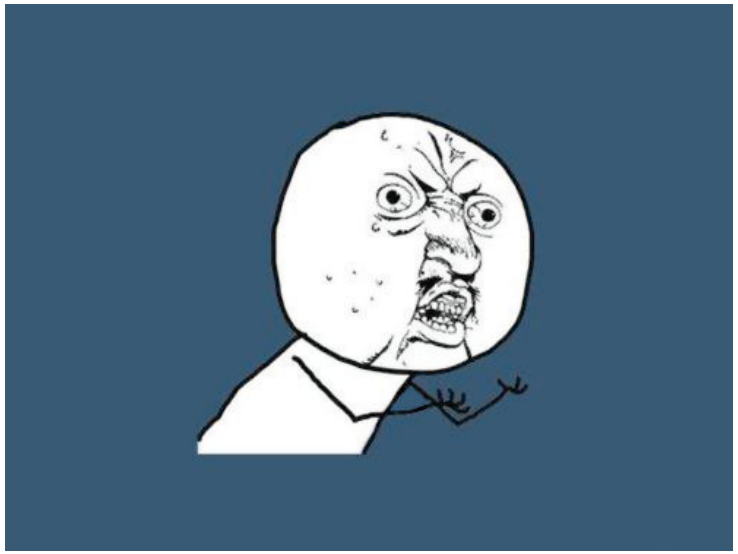


Example : e-shop on multi-tenant mode

- i.e. : Multiple shop of various sellers on the same instance

Example : e-shop on multi-tenant mode





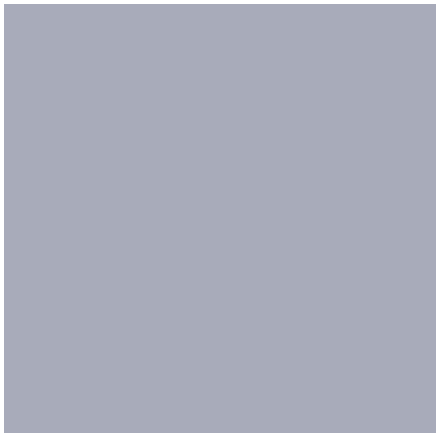
+ Who care the synchronization of vendor A & B ?

+ Destroy the bottle neck and switch to another storage system

This is why the noSQL movement start.

noSQL = not only SQL

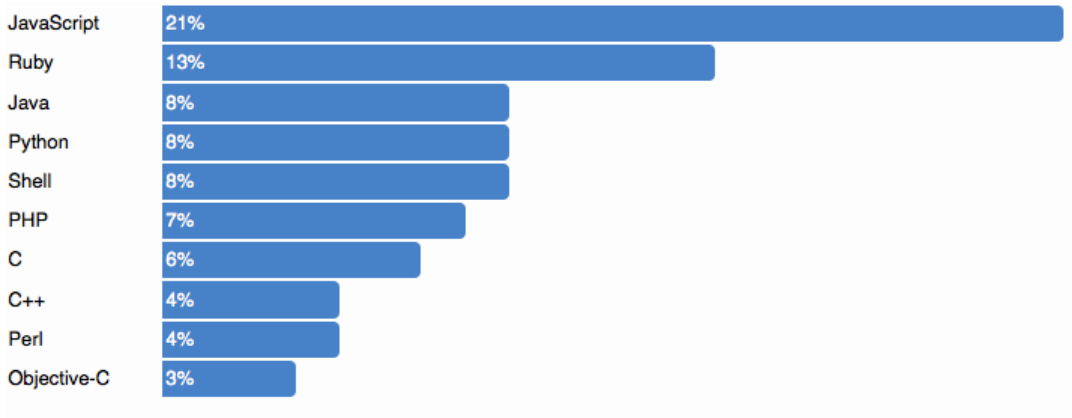
+ Now talking about how to get data from storage



+ SQL don’t solve all the data processing expression.

Some javascripts facts

- Run for server needs at the beginning
  - Netscape Server in 1996, and then in IIS
- Clearly a major language
  - Run on
    - Browser
    - Mobile
    - Servers
  - Easy to integrate
  - Most peoples know it
  - Most used language on github
- Event driven



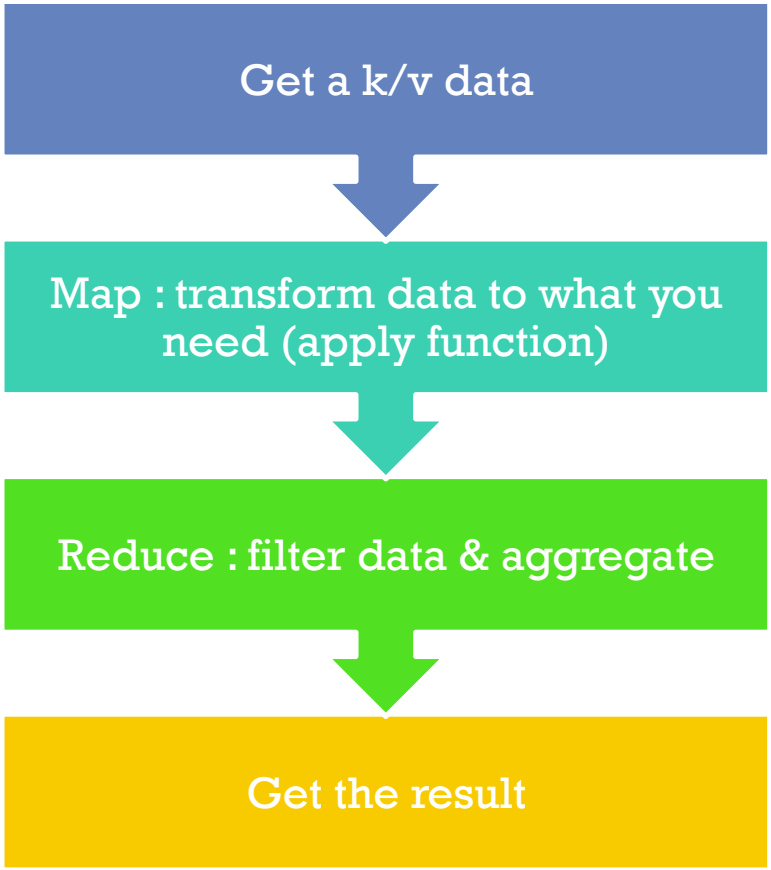
So, can we use javascript as a data processing language ?

Data processing is focus on

- Find
- Filter
- Manage collection
- CRUD order

Map / reduce => the big bang of new data processing

- Atomize the problem
- Easy to parallelize
- From the functional programing model



Do you wanna some functional programing ?

Javascript is so flexible than we can apply several patern on top of the language

```
var sum = _.reduce([1, 2, 3], function(memo, num){ return memo + num; }, 0);
=> 6

var evens = _.filter([1, 2, 3, 4, 5, 6], function(num){ return num % 2 == 0; });
=> [2, 4, 6]

_.map({one : 1, two : 2, three : 3}, function(num, key){ return num * 3; });
=> [3, 6, 9]
```

UNDERSCORE.JS

And map/reduce ?

```
_.reduce(
   _.map(
      {
         one : 1,
         two : 2,
         three : 3,
         four : 4,
         five : 5,
         six : 6
      },
       function(num, key){
          return {'key':key,
                  'num':num % 3};
       }),
   function(memo, o){
      if(o.num == 0){
         memo.push(o.key);
      }
      return memo;
   },
   []);
=> ["three", "six"]
```

NoSQL we can considerate for example

- Object Store

- Key/Value with documents capacities

- Pure Document

- Column based

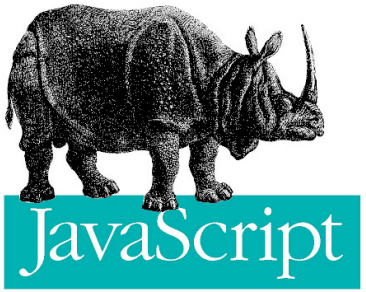
NoSQL we can considerate for example

- Object Store

- Key/Value with documents capacities

- Pure Document

- Column based



And one more !

With localStorage features

JSON domination

- Store

- Processing
- Access

Example with riak

- Key/Value
- http REST & protobuff data API
- Store JSON data on a URL
- Very good distribution
- Good performances

```
$ curl -XPUT -H "content-type: text/plain" \
    http://localhost:8098/riak/alice/p1 --data-binary @-<<\EOF
Alice was beginning to get very tired of sitting by her sister on the
bank, and of having nothing to do: once or twice she had peeped into the
book her sister was reading, but it had no pictures or conversations in
it, 'and what is the use of a book,' thought Alice 'without pictures or
conversation?'
EOF

$ curl -XPUT -H "content-type: text/plain" \
    http://localhost:8098/riak/alice/p2 --data-binary @-<<\EOF
So she was considering in her own mind (as well as she could, for the
hot day made her feel very sleepy and stupid), whether the pleasure
of making a daisy-chain would be worth the trouble of getting up and
picking the daisies, when suddenly a White Rabbit with pink eyes ran
close by her.
EOF

$ curl -XPUT -H "content-type: text/plain" \
    http://localhost:8098/riak/alice/p5 --data-binary @-<<\EOF
The rabbit-hole went straight on like a tunnel for some way, and then
dipped suddenly down, so suddenly that Alice had not a moment to think
about stopping herself before she found herself falling down a very deep
well.
EOF
```

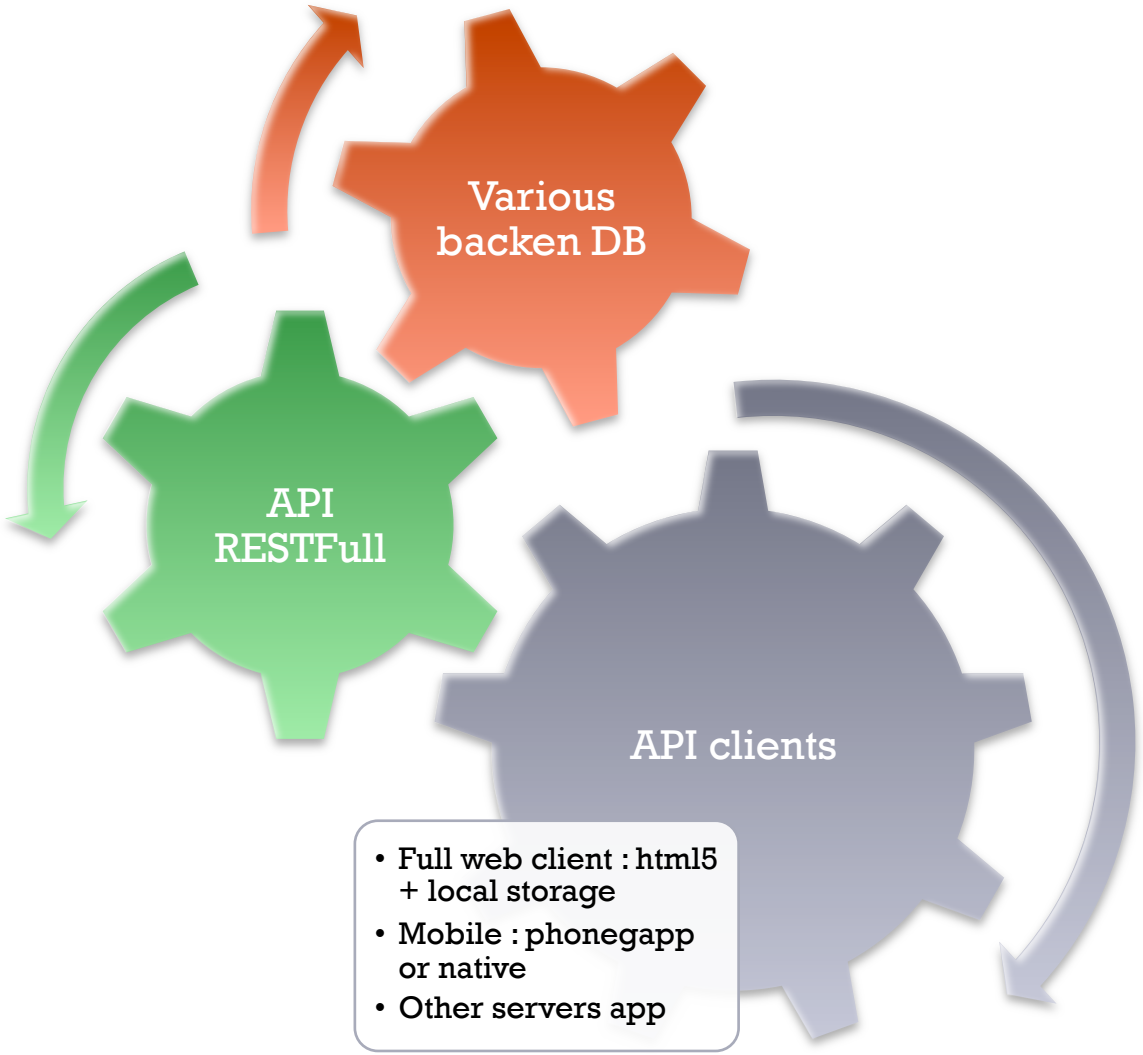
Example with riak map/reduce

```
$ curl -X POST -H "content-type: application/json" \
    http://localhost:8098/mapred --data @-<<\EOF
{"inputs":[["alice","p1"],["alice","p2"],["alice","p5"]]
,"query":[{"map":{"language":"javascript","source":"
function(v) {
  var m = v.values[0].data.toLowerCase().match(/\w*/g);
  var r = [];
  for(var i in m) {
    if(m[i] != '') {
      var o = {};
      o[m[i]] = 1;
      r.push(o);
    }
  }
  return r;
}
"}},{"reduce":{"language":"javascript","source":"
function(v) {
  var r = {};
  for(var i in v) {
    for(var w in v[i]) {
      if(w in r) r[w] += v[i][w];
      else r[w] = v[i][w];
    }
  }
  return [r];
}
"}}]}
EOF
```

Put some real time

- Lots lots of noSQL DB handle a _change_ pipe :
  - All datas and updates stream
- Bind it on a websocket : put some real time on your application

Data as a Service



Data as a Service

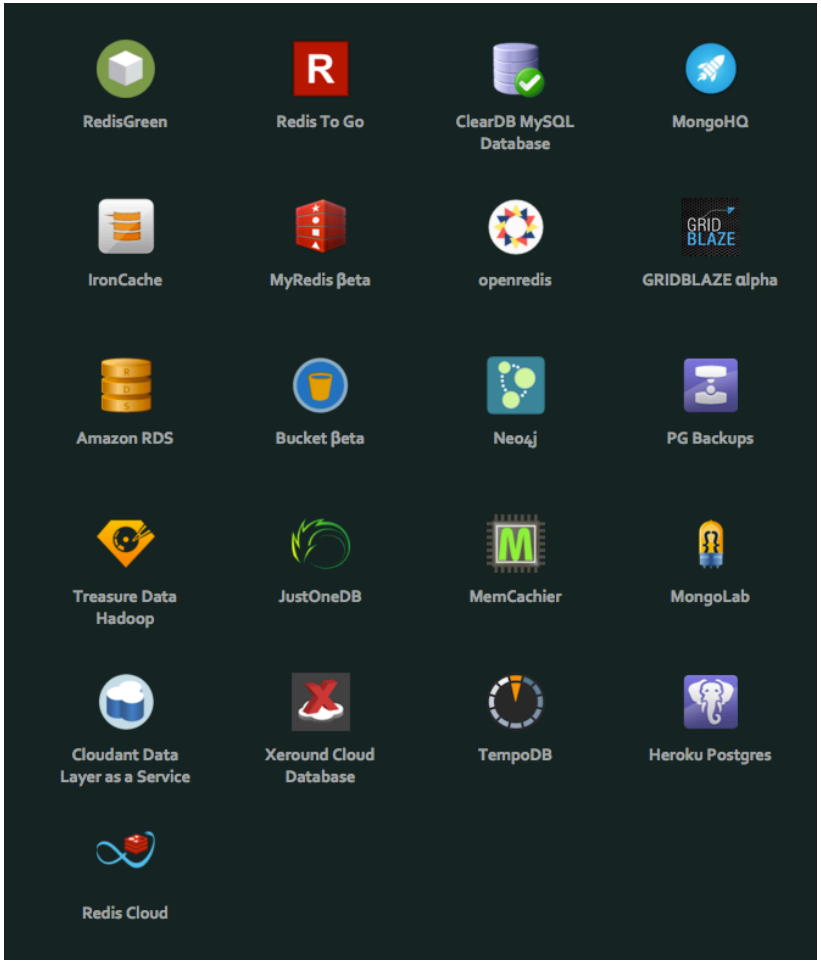
- Data as others service
- With the same language the application
- Build sync algorithm to start offline / online software

- Some protocol : atom, gdata, oData
- Some popular API : S3, twitter, EC2…
- Security and access layer : oauth…

DataBase as a Service

- Xeround
- Amazon dynamo
- Lots of heroku addon
- Kinvey

PaaS



Transparent data consumption

- Webkit JavaScriptCore
- REST / JSON
- Data Classes
  - auto-updatable
  - accessors
  - events
  - Methods
- Cool html5 IDE
- Best use case : work oriented app

Atomatic data access framework

Wakanda example

```
1  ds.Country.find('name == Brazil').companies
```

The result is a collection of Company Entities. The first 40 of the 4099 entities are shown.

See server stats

run on Wakanda

Model | **Graphic View** | JSON View

ID	name	revenues	
2	Key South Managem...	$312 062	Brazil
5	Channel English Step	$254 728	Brazil
10	Yankee Power Cat	$276 738	Brazil
19	Paper Cryptographic...	$28 782	Brazil
21	November Rocket L...	$228 279	Brazil
33	Beverage Year Weat...	$419 959	Brazil
48	Remote Graphic Yell...	$48 809	Brazil
55	Delta Laser Dark	$2 005	Brazil
59	Thai Rocket Ice	$88 633	Brazil
62	Video Foot Technics	$61 253	Brazil
81	Fake North Producti	$35 638	Brazil

4099 item(s)

```
ds.Employee.count()
ds.Employee.all()
ds.Employee.query('age < :1', 25)
ds.Employee.query('age < :1', 25).length
handler = guidedModel.Employee.age.onGet;
ds.Employee.all()[0]
ds.Employee.all().first()
ds.Employee.first()
ds.Employee.first().next()
ds.Employee(5)
ds.Employee(5).company
ds.Employee(5).company.country
ds.Employee(5).company.countryName
ds.Employee(5).company.country.companies.length
ds.Employee(5).manager
ds.Employee(5).company.manager
ds.Company.query('country.name == :1', 'Japan')
ds.Company.query('country.name == :1', 'Japan').man…
ds.Company(3).employees
ds.Company.query('countryName == USA').compute('rev…
ds.Country.find('name == Brazil')
ds.Country.find('name == Brazil').companies
```

http://play.wakanda.org/

How to start ?

Find a toy project

Use hosted services

- Less ops footprint
- No more instalation
- Quick learn curve
- Focus on your needs & values

+ Innovate & write kick ass apps

Thx for Listening & Q/A time

Thx to the QCon

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