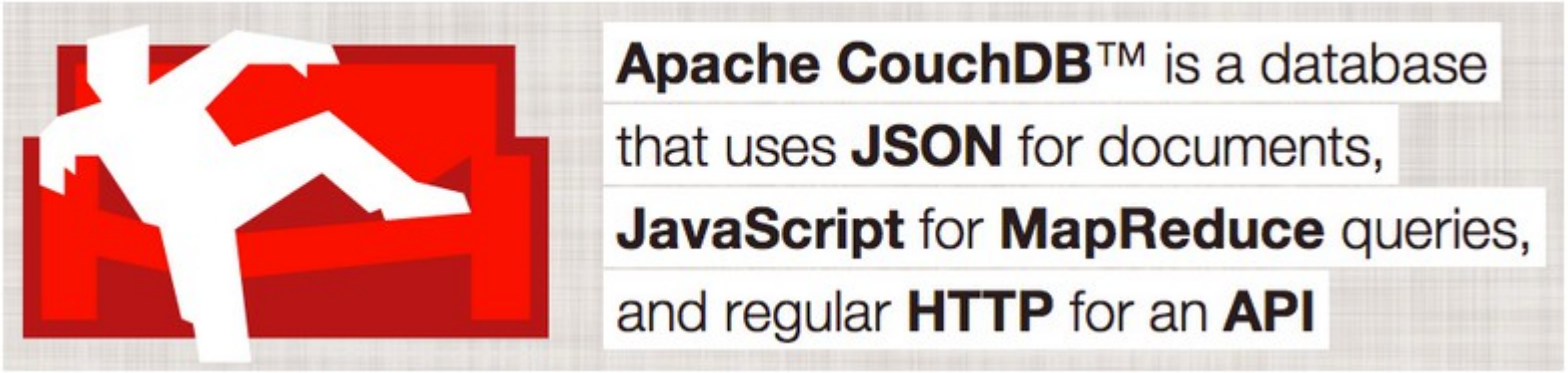


CouchDB – overview

Sebastian Rothbucher @sebredhh
with lots of help from @awenkhh

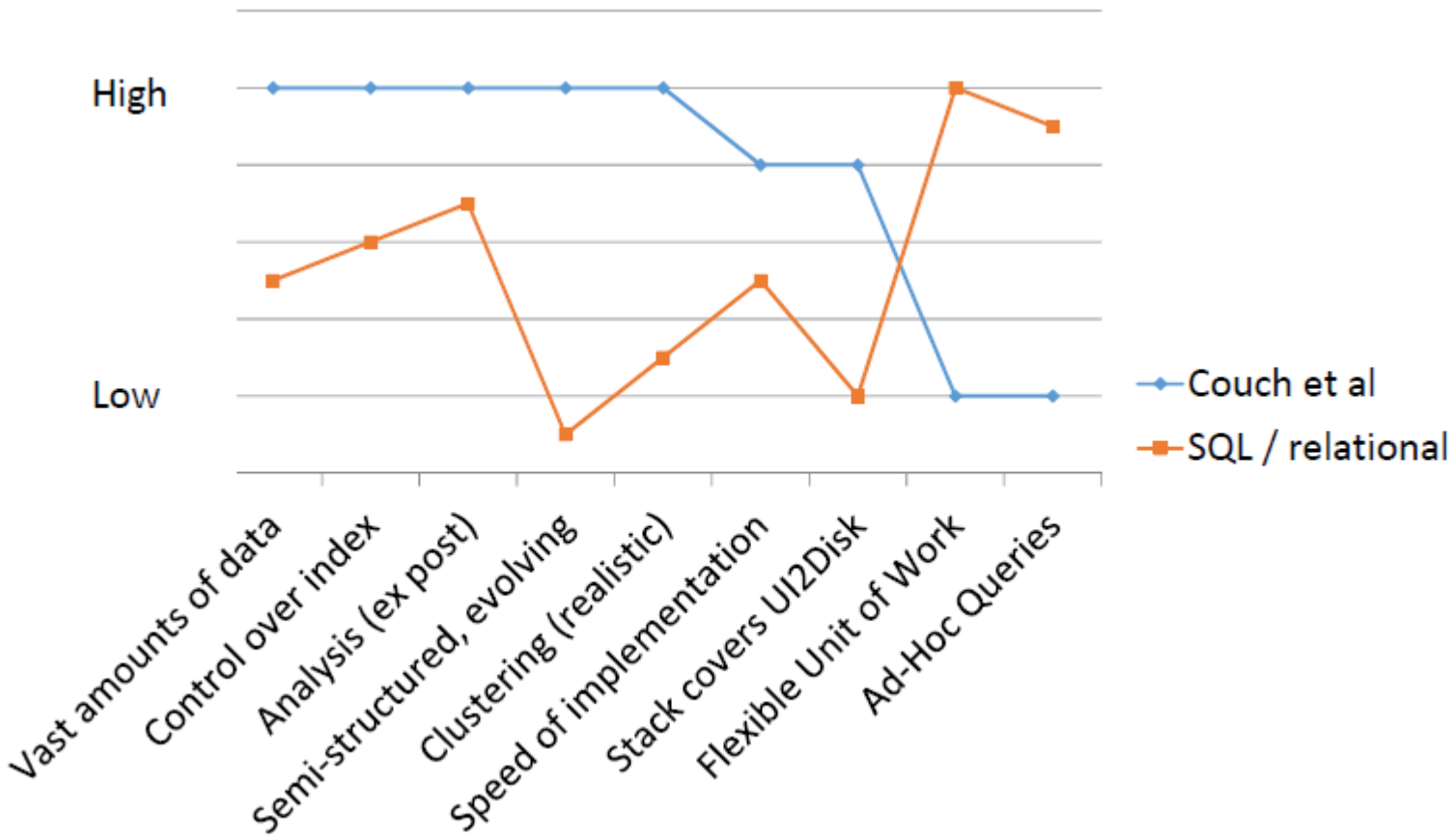
What is it - @all?

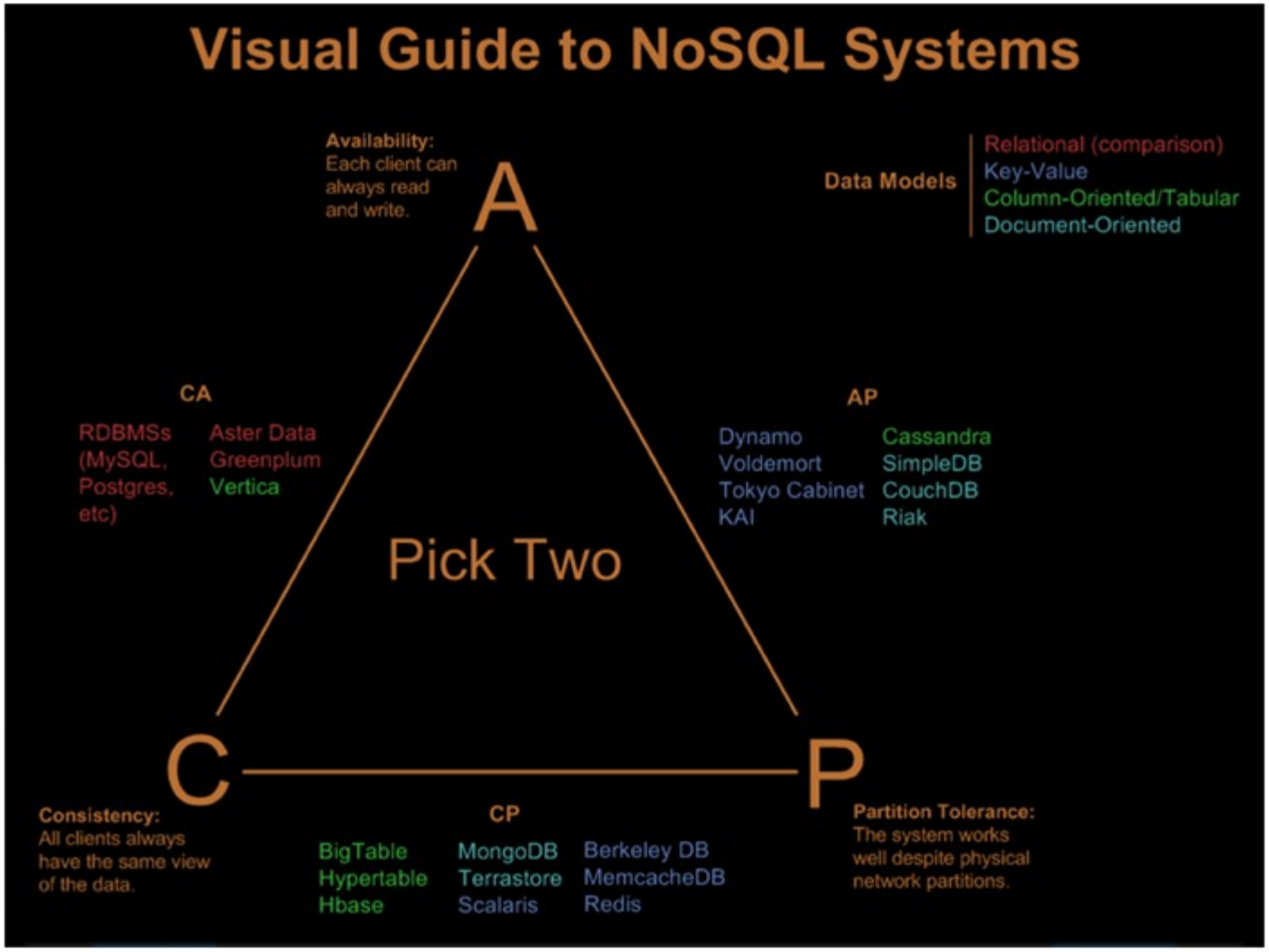
- Cluster of unreliable commodity hardware
- Map-Reduce & Document-oriented Database (no-SQL, no-schema)
- „Brainchild“ of a former senior IBM Lotus Domino Developer
- Web to the core (HTTP, JSON, JavaScript)
- Document = versioned JSON = unit of work = many roles
- Web-interface (and curl)
- Stable and scalable (Erlang-based foundation)

What you'll hear

- NoSQL database overview
- What is CouchDB?
- Querying CouchDB with http
- Fauxton
- Retrieving data with Map/Reduce
- MVCC
- _changes *magic*

How does it differ?





http://www.eecs.berkeley.edu/~brewer/cs262b-2004/PODC-keynote.pdf / http://blog.beany.co.kr/archives/275

Web, web, web

```
curl -X PUT -d …
```

Create DB & docs

Add attachment & serve infos

Futon > Fauxton & Docs

Map-Reduce („closures“)

Map (produce index)

- „Explode“ document base
- No-schema – hence check docs
- Produce keys/values (0-n)
- key, docid, value
- Sorted (B+Tree)
- Highly efficient & (somewhat) parallel
- (map-only possible)

Default: _all_docs (key = docid)

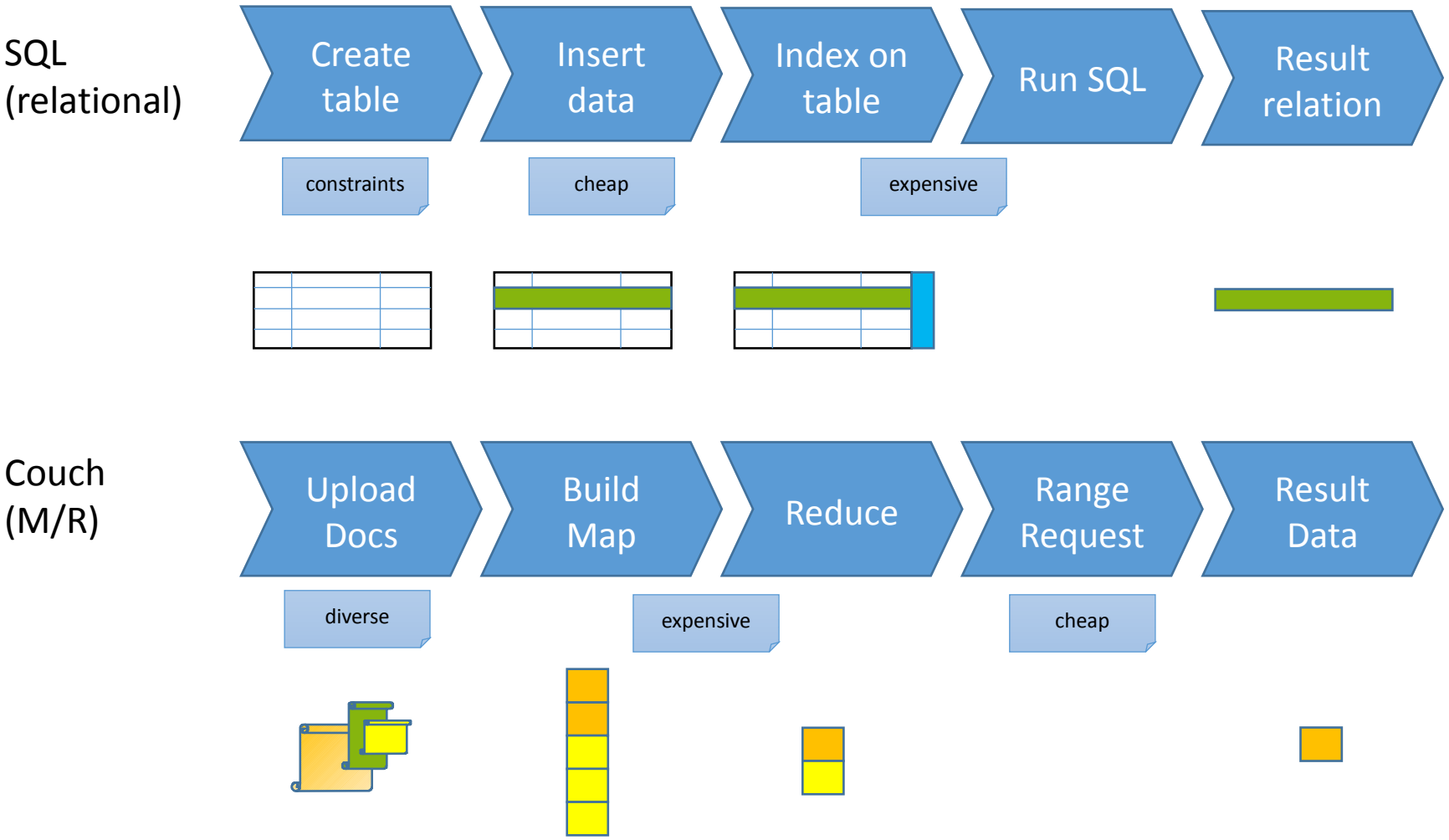
➔ Analyzed set is not base set
(query on index ONLY != SQL: on table)

Reduce (aggregate index)

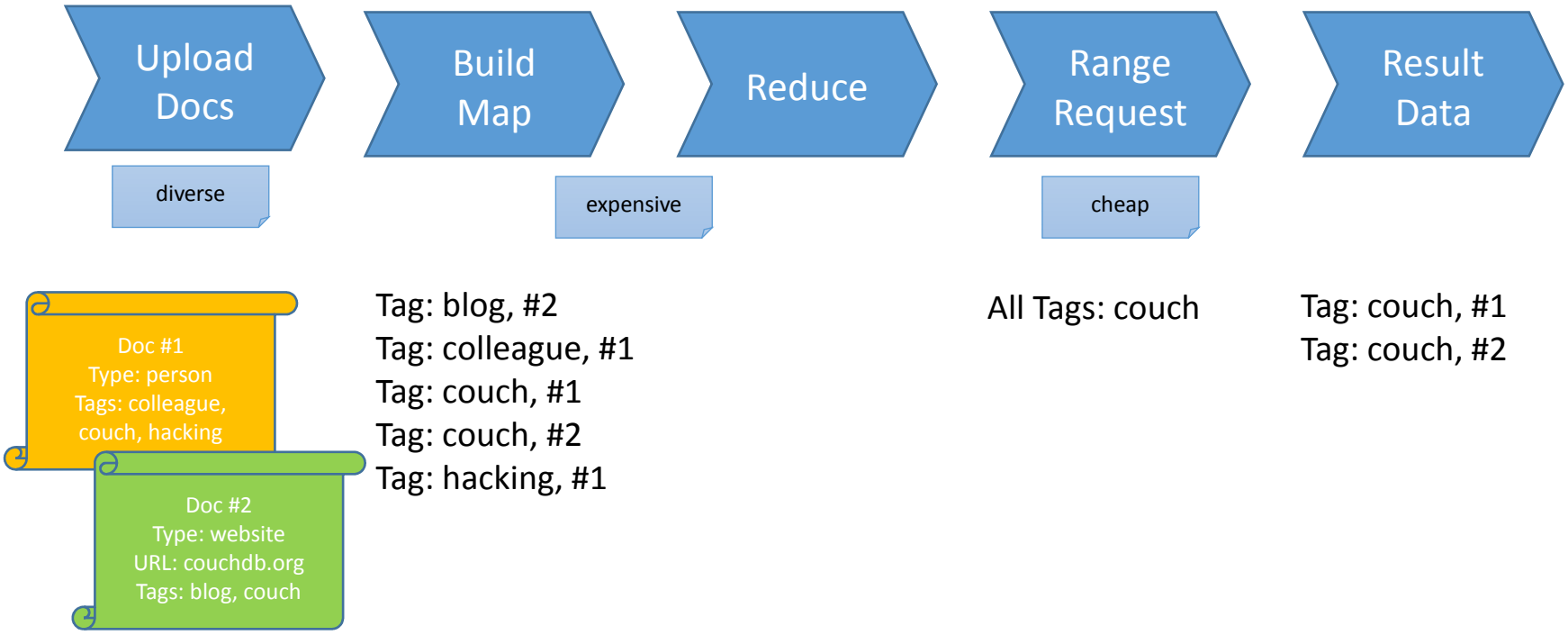
- Collated set (one key)
- Produce one output from several
- „Collapse“ Info
- Sum, Count, Stats
- (Complex (Correlation, max. one „join“, …))

➔ Huge indices on one key

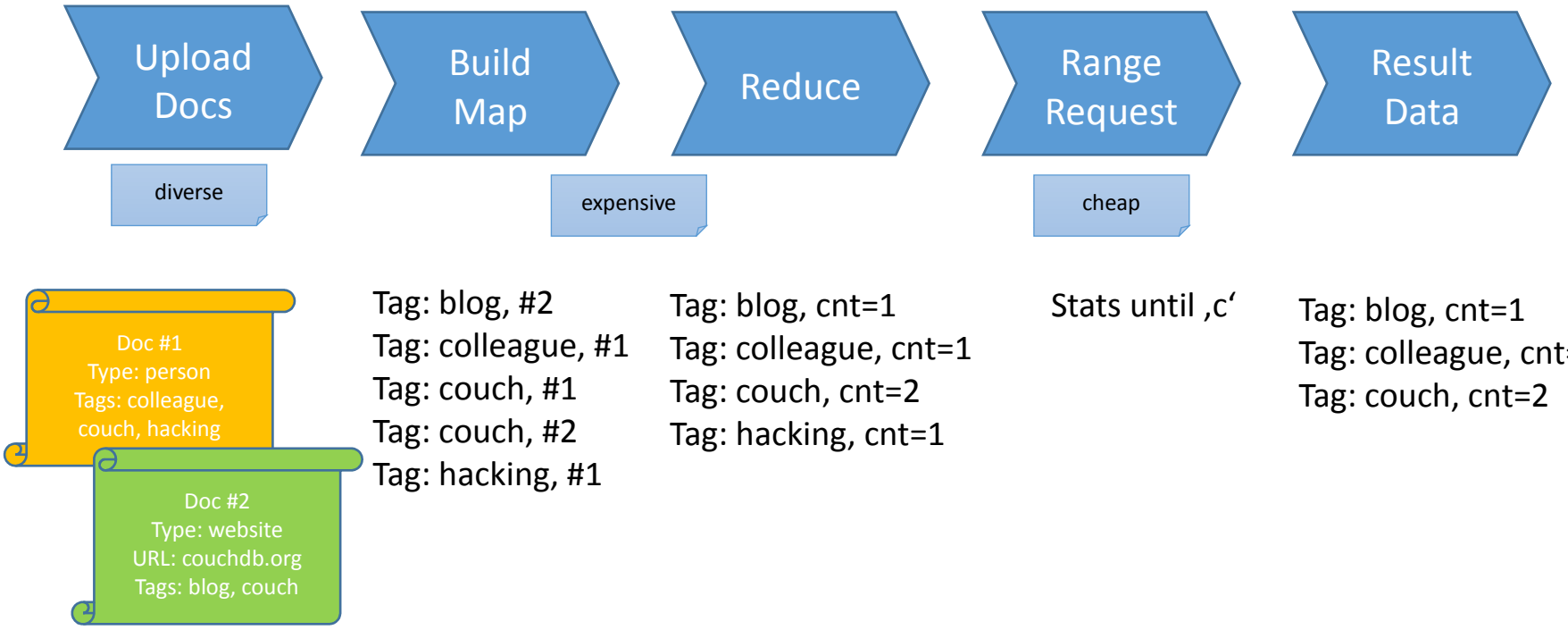
How does it fit together?



How does it fit together? (example)



How does it fit together? (example cont.)



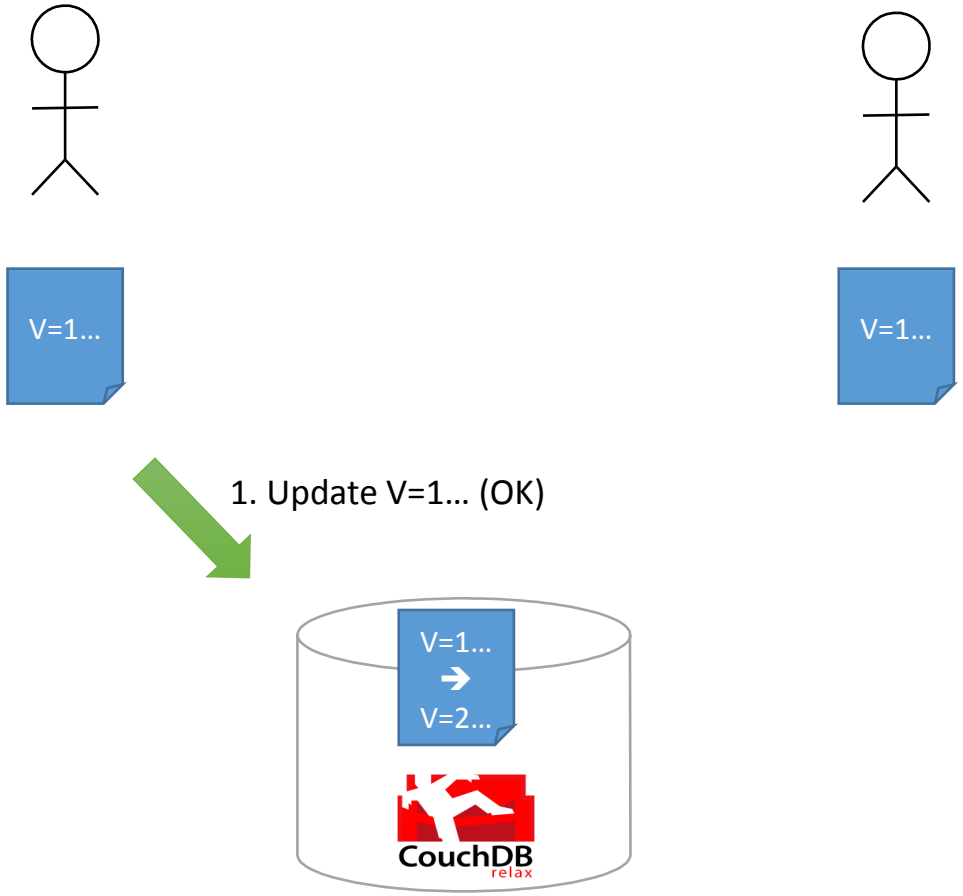
Creating a view

Querying a view & paging

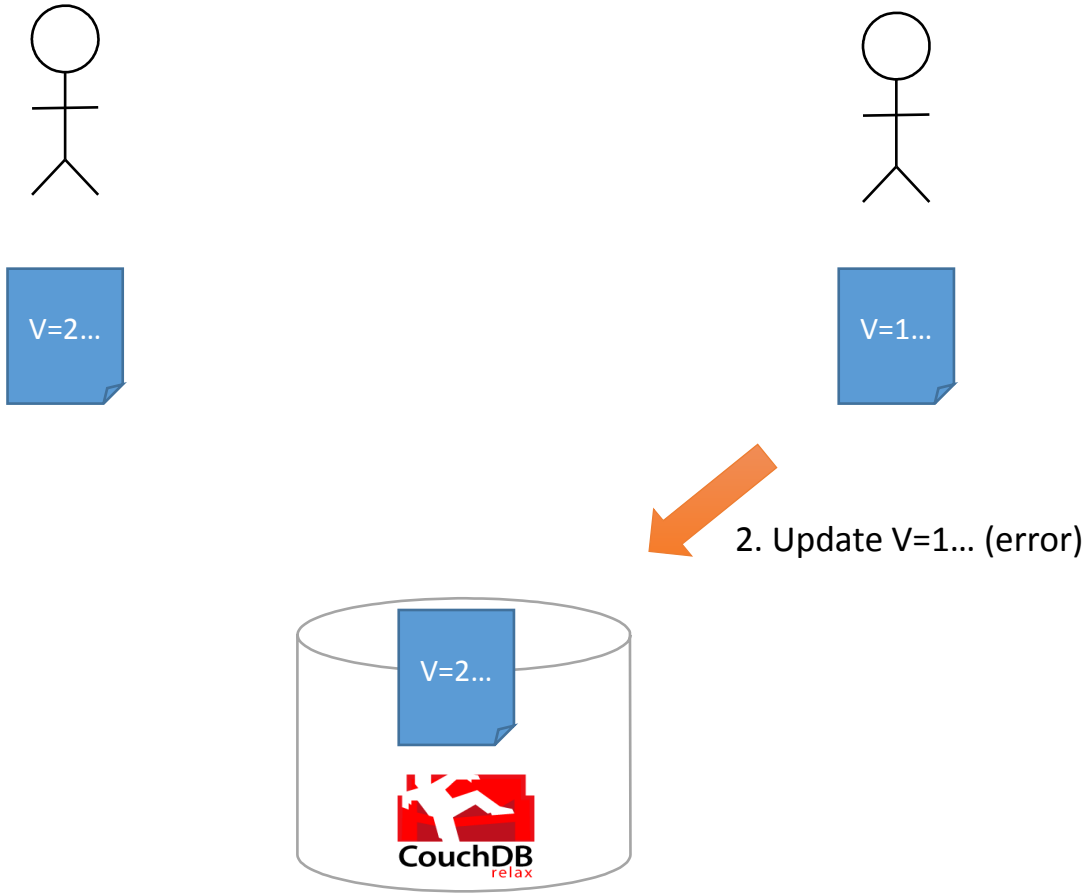
More curl magic (?)

Advanced: view collation (?)

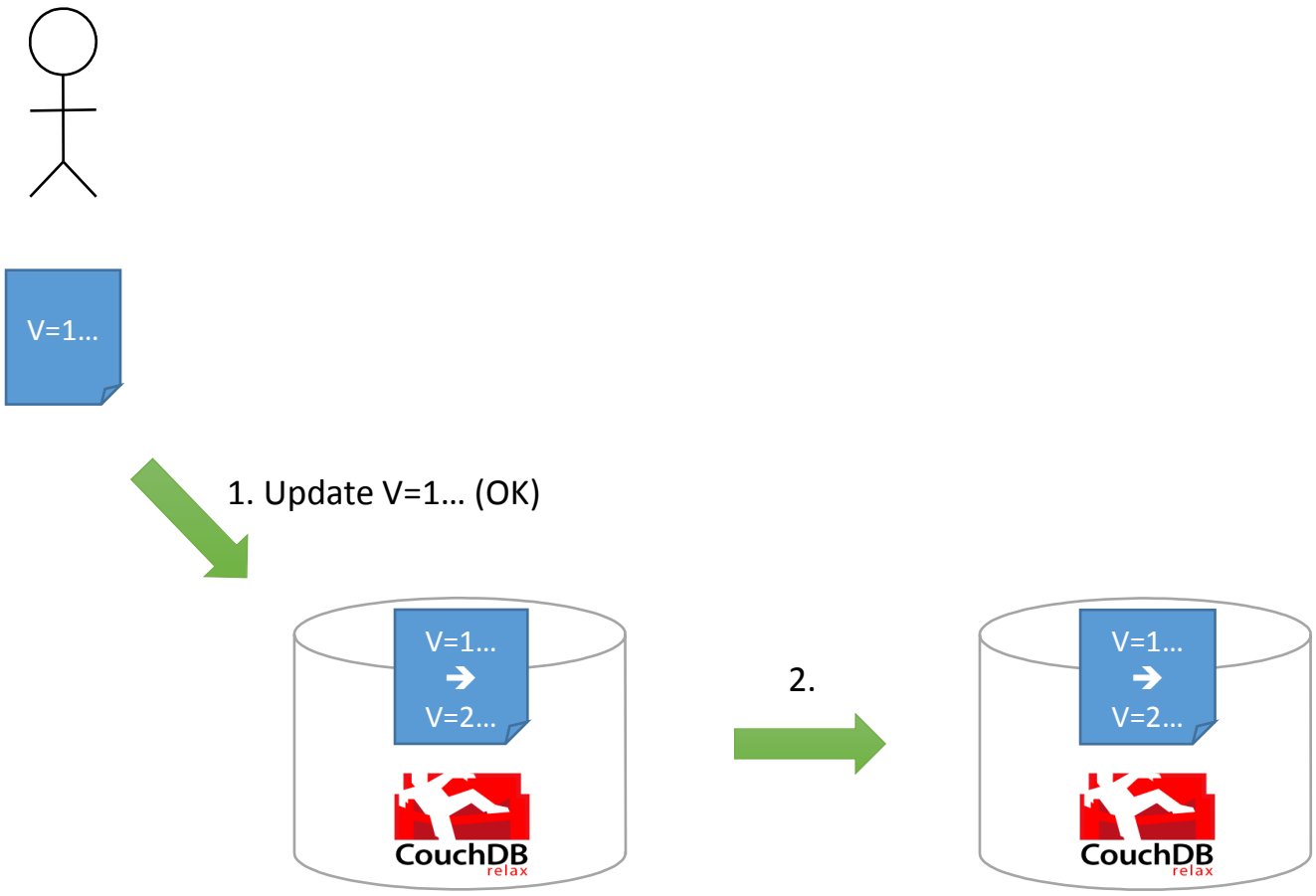
MVCC



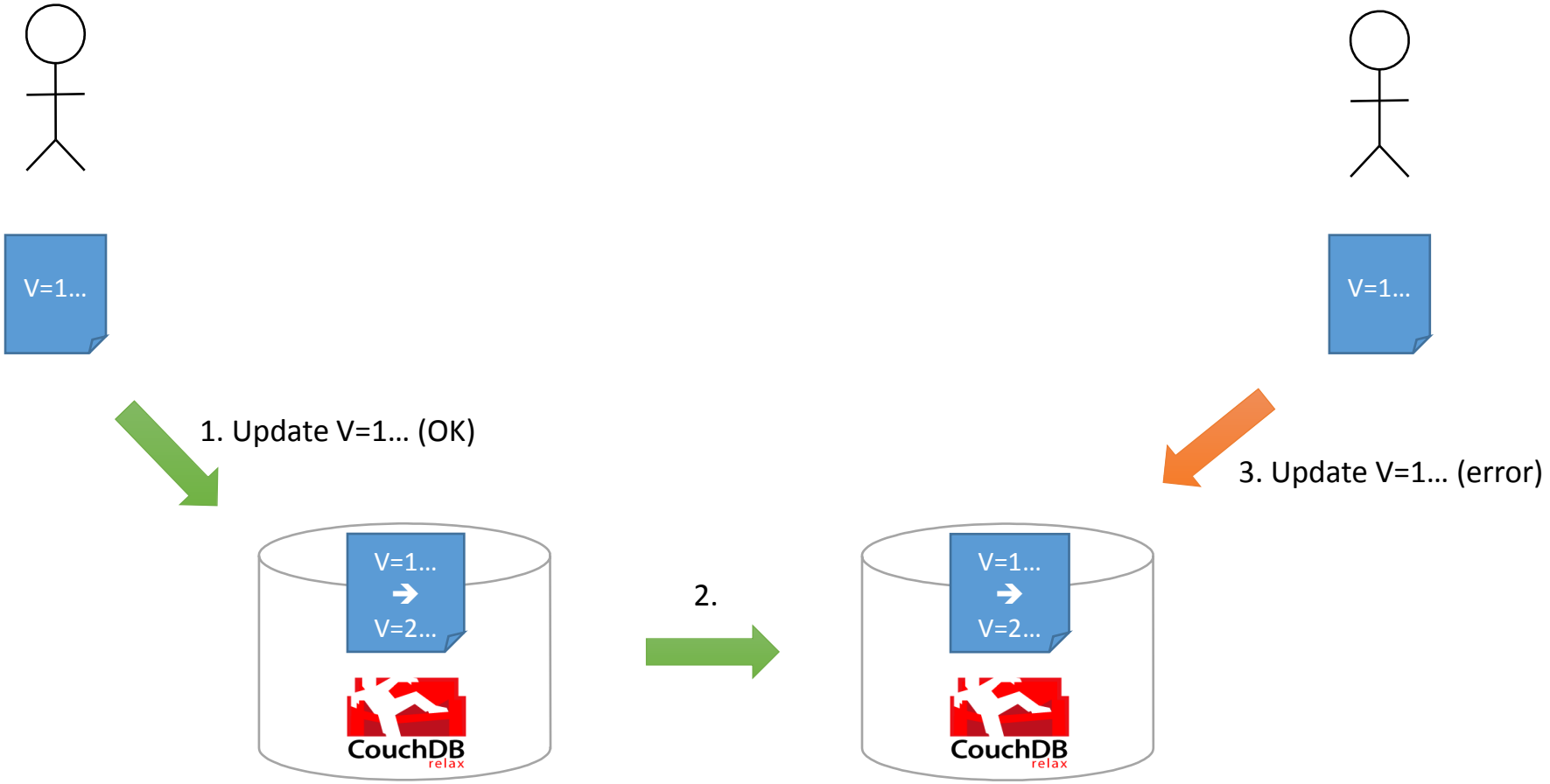
MVCC (cont.)



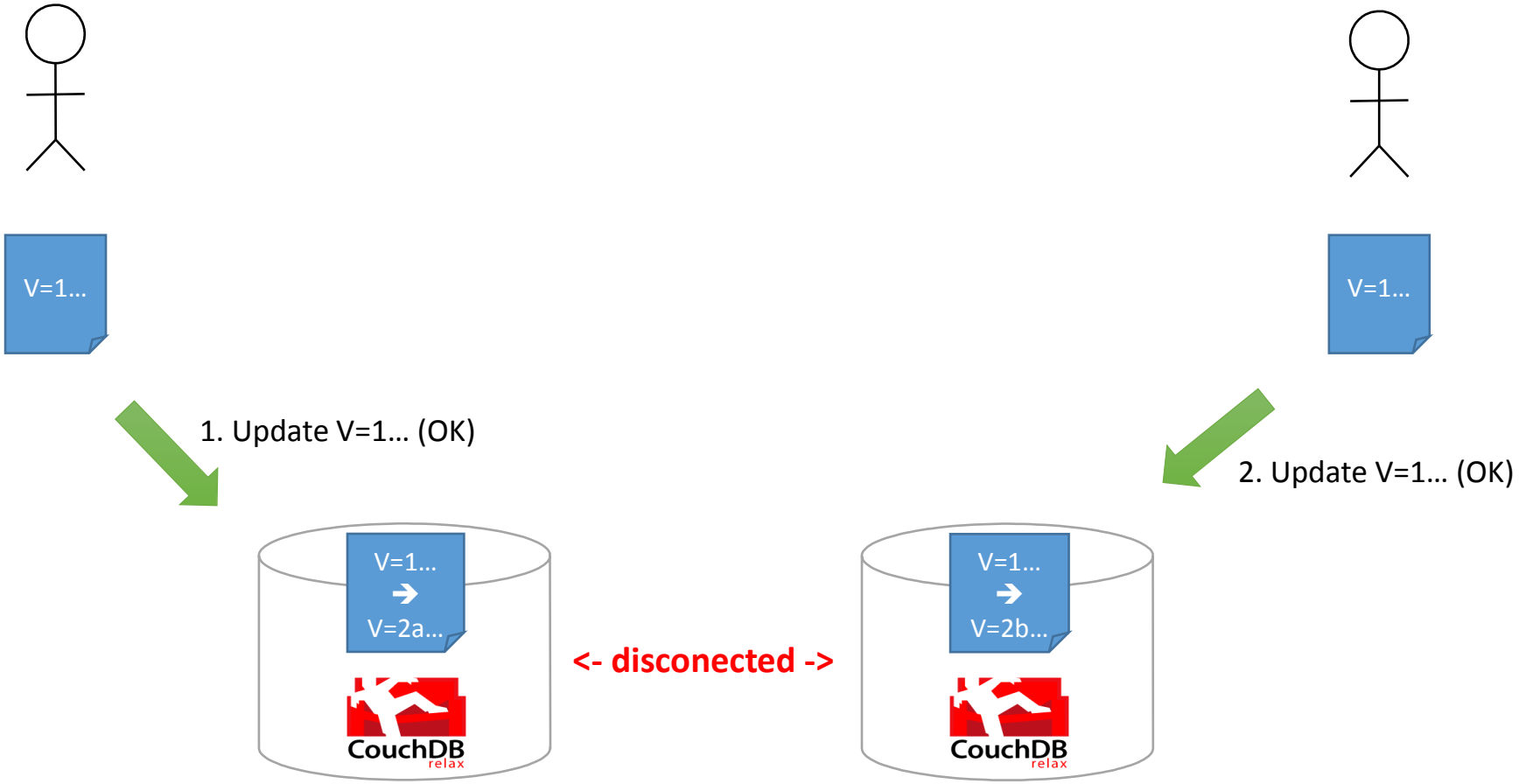
Replication



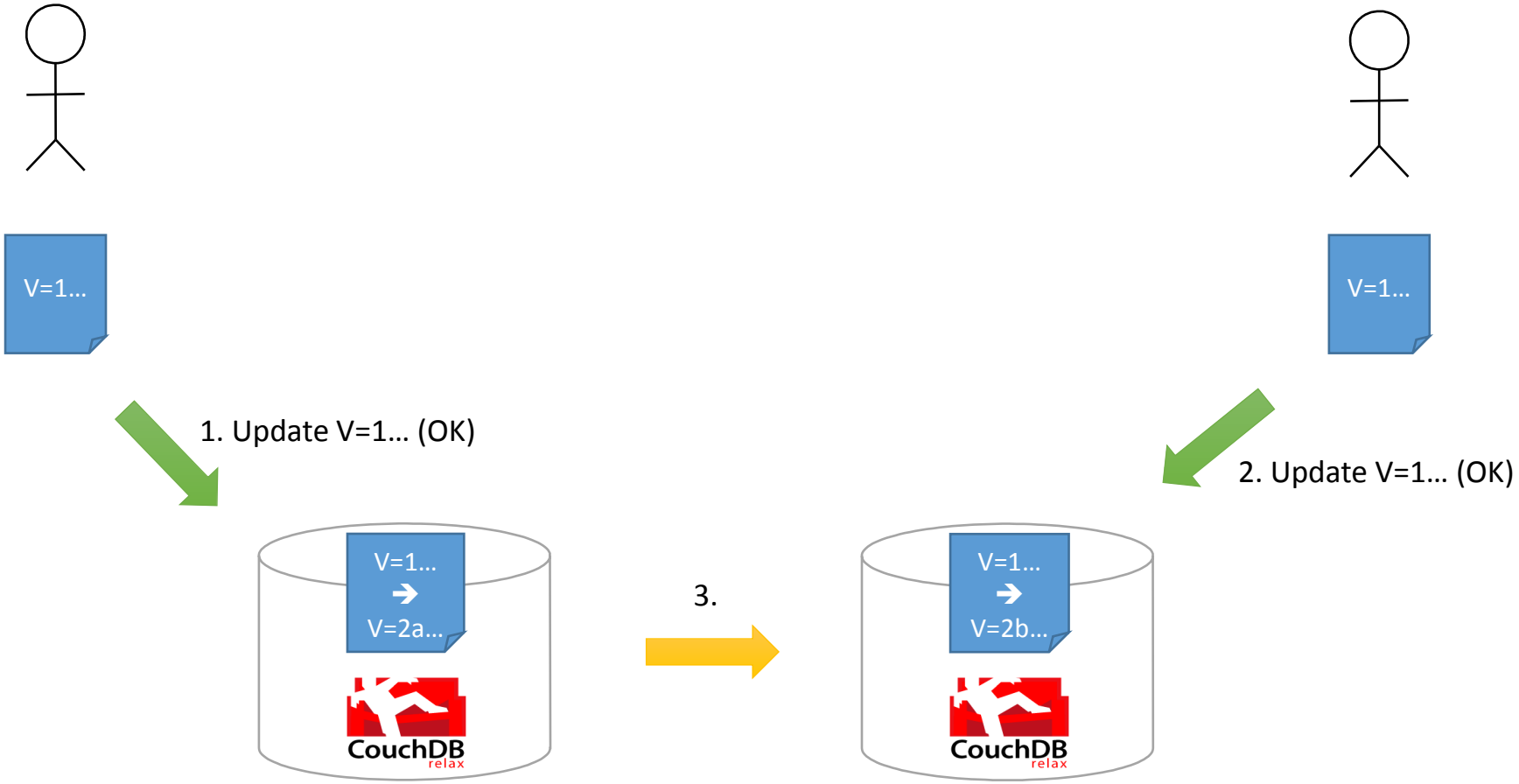
Replication (cont.)



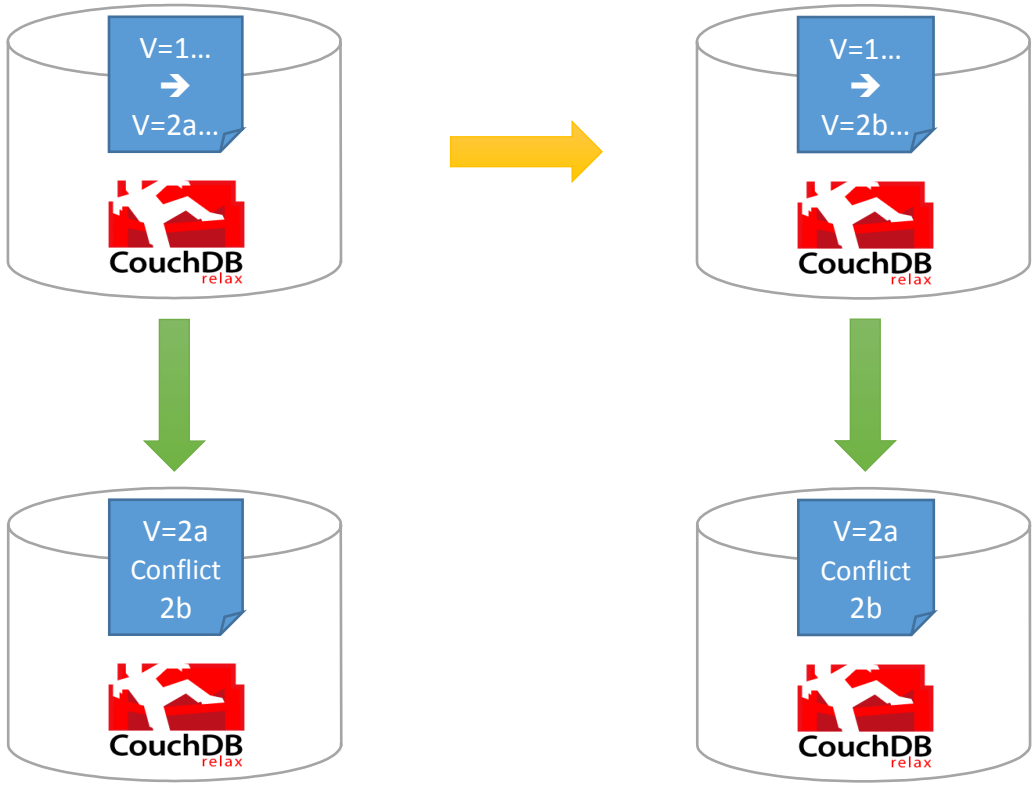
Replication (cont.)



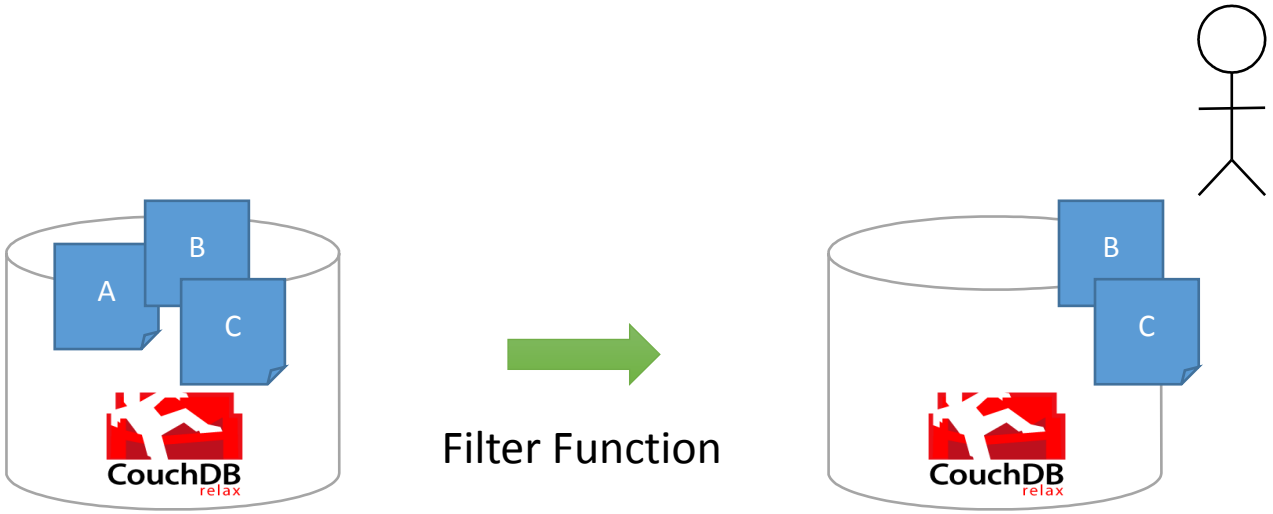
Replication (cont.)



Replication (cont.) – Conflict resolution

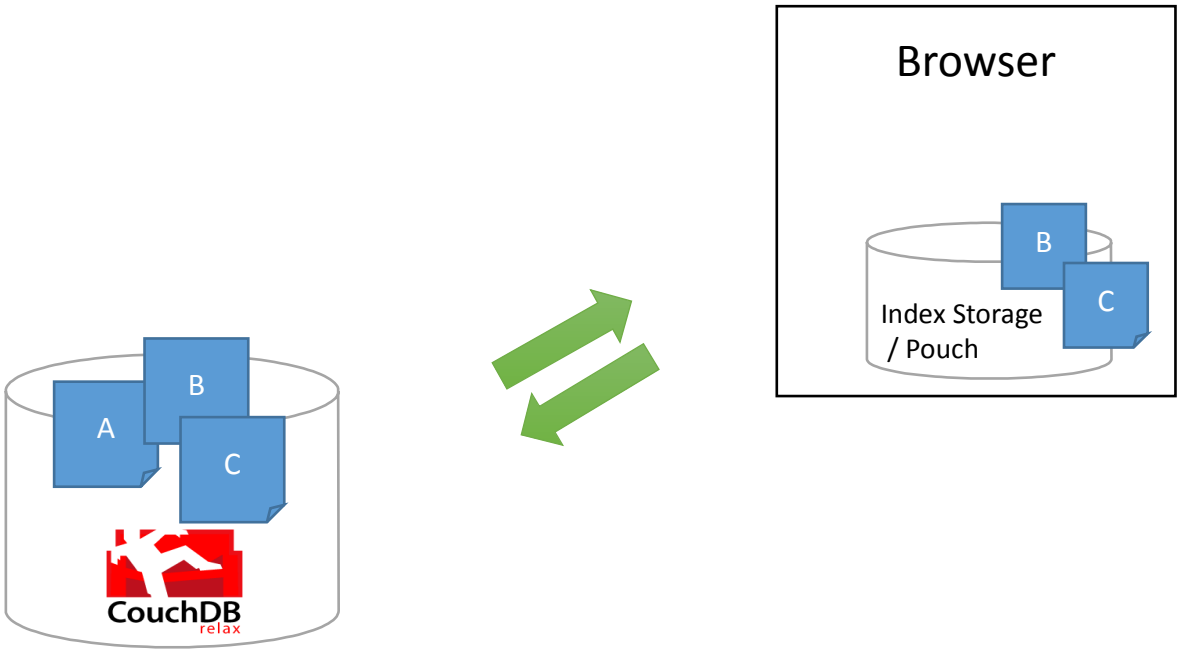


Replication - selective

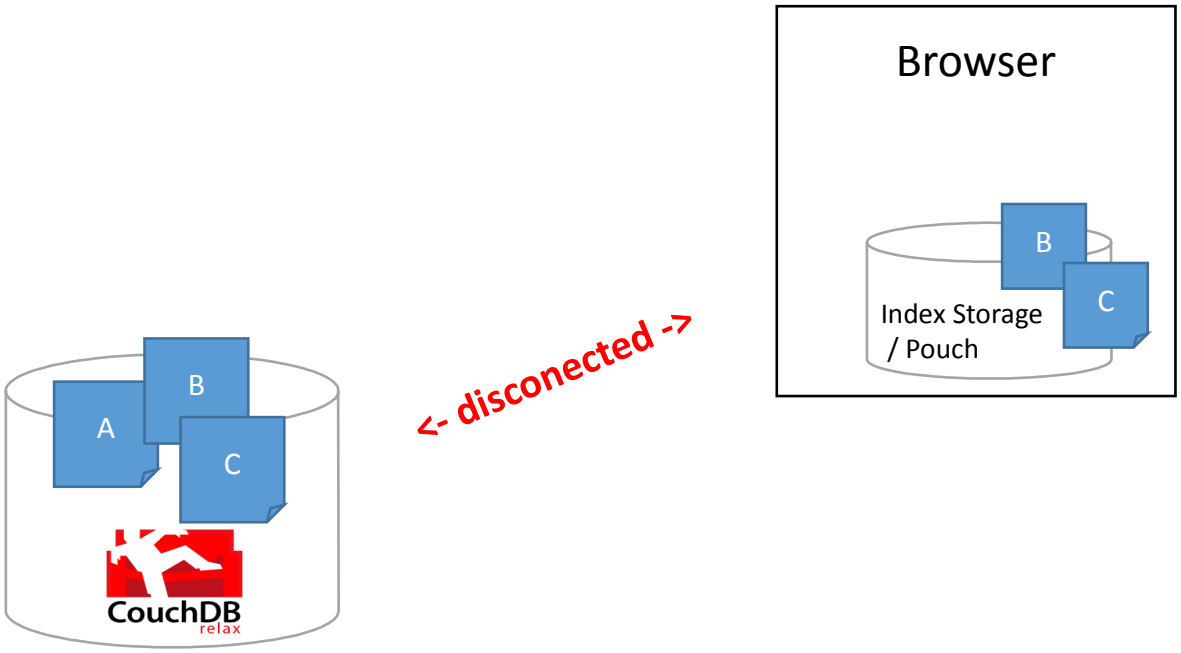


➔ Couch per user

Replication PouchDB



Replication PouchDB (cont.)



Doing some replication

The best is yet to come…

_changes

Links

- CouchDB Website: http://couchdb.apache.org/
- CouchDB day talks:
  http://blog.couchdb.org/2015/02/24/couchdb-day-2015-recap/
- CouchDB Manual: http://docs.couchdb.org/
- Joan‘s talk on MVCC et al: http://
  atypical.net/archive/2014/02/04/my-couchdb-conf-talk
- eHealth Africa – collected best practices:
  http://docs.ehealthafrica.org/couchdb-best-practices/
- Jan‘s intro into CouchDB:
  http://www.infoq.com/articles/apache-couchdb-the-definitive-introduction
- Cloudant Docs: https://docs.cloudant.com/

Summary & Wrap-Up

```
http://
        function map(doc)

emit(doc.tags[i], null)

  ?startkey=couch&limit=10

<script src="angular.js"

    _changes?feed=longpoll

{"couchdb":"Welcome"
```

JUST DO IT