



# **OrientDB**

## **in practice**

**Aurelijus Banelis**

# About me

**Aurelijus Banelis**

**aurelijus@banelis.lt**  
**aurelijus.banelis.lt**

**Web developer at NFQ**

**3<sup>rd</sup> presentation at VilniusPHP**



# From practice

**WHY**

(problems, context)

**WHAT**

(unique in OrientDB /  
graph database)

**HOW**

(queries, in PHP,  
best practice)



# WHY: Dealing with data structures

## Available databases

**Relational**

**Transactional**

**Geo-replicated**

**Read only**

**Document based**

**Column based**

**Map reduce**

**Graph based**

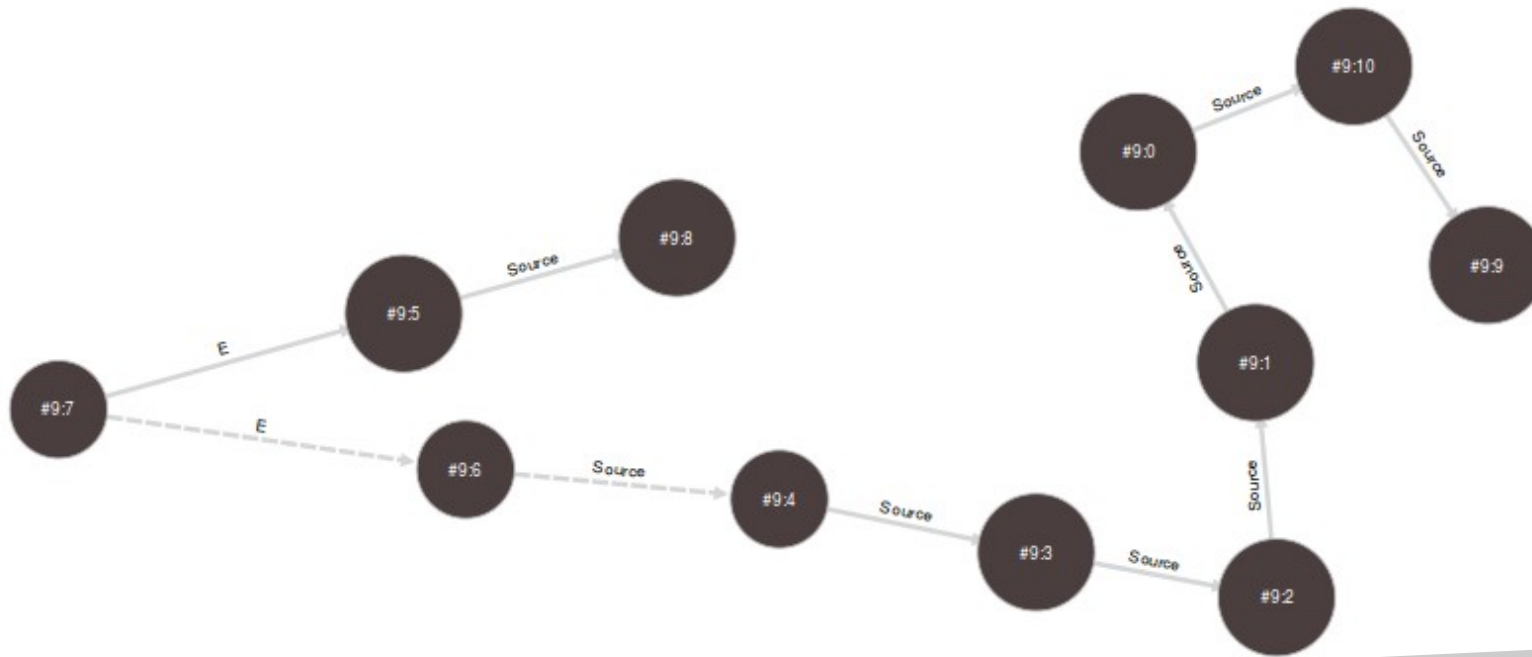
## Structures in use

**Tree**

**Table**

**Graph**

# WHY: Graph-like operations



## In relational

```
SELECT ... AS a1, ... AS a2, ... AS a19  
LEFT JOIN ...
```

```
LEFT JOIN ...  
LEFT JOIN ...  
LEFT JOIN ...  
LEFT JOIN ...  
LEFT JOIN ...
```

## In document based



**License:** Apache 2 (free + for commercial)

**Structures:** Schema-hybrid, with extend

**Scalability:** Sharding, replication, WAL

**Used by:** Cisco, Ericsson

**API:** JavaLib, binary, REST

**Query languages:**  
WEB, SQL, Gremlin

**Results:**  
Synchronous, asynchronous

**Storage:**  
File, memory, remote

**Documentation:**  
Tutorials, groups, source

**Text search:**  
Lucene full text index

**Transactions:**  
ACID, MVCC

**Attributes:**  
Read-only, metadata

# WHAT: graph database

## References: Directly to file system

rid	data	Parent
#12:0	0 0	#12:1
#12:1	0 0	
#12:2	3 2	#12:1
#12:3	0 2	#12:1

Save reference  
on update

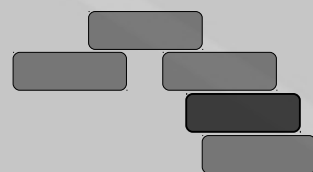
rid	data
#12:0	0 0
#12:1	0 0
#12:2	3 2

Use calculated reference  
on read

### In relational

x	y	text
78	44	Vienas
53	70	Du
61	41	Trys

Compare  
on read



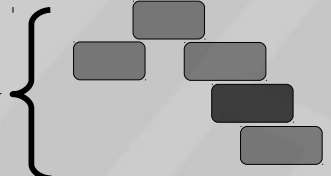
text	d1
Vienas	2
Trys	2
Keturi	2

### In document based

Hash-based  
sharding



Compare  
on read



# HOW: queries in OrientDB

```
SELECT content, x, y  
FROM Plain
```

```
WHERE out_Reffer.domain = 'auginte.com'
```



```
SELECT
```

```
@rid, x, y, scale, $path,  
traversedVertex(-2).@class
```

```
FROM (
```

```
TRAVERSE out_View, in_Parent, in_Inside
```

```
FROM Camera
```

```
WHILE $depth < 10
```

```
) WHERE @this instanceof 'Representation'
```





# HOW: in PHP world

**Official**  
PHP >=5.4

**PhpOrient**  
OrientDB >=1.7.4

```
"require": {  
  "ostico/phporient": "1.1.*"  
}
```

**First/old OrientDB-PHP**  
PHP >=5.3 API getting outdated

**OrientDB-PHP**

```
"require": {  
  "orientdb-php/orientdb-php": "dev-master"  
}
```

## Not recommend

No complex results = no graph

**Doctrine**  
**Symfony**  
PHP >=5.3

**OrientDB ODM**  
On top of OrientDB-PHP

```
"require": {  
  "sqpatil/orientdb-odm": "dev-master"  
},  
"require": {  
  "concept-it/orient-db-bundle": "dev-master"  
}
```

**Slower**

**REST/HTTP API**

<http://0.0.0.0:2480>

# HOW: PhpOrient

```
/** @var Record[] $results */  
$results = $client->query(  
    'SELECT FROM Testas WHERE c.d.e = 132'  
);  
foreach ($results as $res) {  
    print "{$res->getRid()} {$res['c']['d']['f']}";  
}
```

```
/** @var Bag $inParent */ /** @var ID $id */  
$inParent = $res['in_Parent'];  
foreach ($inParent as $id) {  
    $child = $client->recordLoad($id);  
}
```

# **(My) Best practice**

**Light edges**

**Cold start**

**Integration tests**

# Questions?

**WHY**

(problems, context)

**WHAT**

(unique in OrientDB /  
graph database)

**HOW**

(queries, in PHP,  
best practice)



# References and useful links

- <http://www.orienttechnologies.com>
- <https://github.com/orientechnologies/orientdb/wiki/SQL-Functions>
- <https://github.com/orientechnologies/orientdb/wiki/SQL-Traversal>
- <http://www.orienttechnologies.com/docs/latest/orientdb.wiki/Programming-Language-Bindings.html>
- <https://github.com/orientechnologies/orientdb/wiki/Document-Database#prepared-query>
- <https://github.com/orientechnologies/orientdb/wiki/Fetching-Strategies>