



SWARM @ WEB STANDARD DAYS

реактивная синхронизация данных
для веб- и мобильных приложений

Киев
6 декабря 2014

НАУКА И ТЕХНИКА

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Referencing within evolving hypertext

Victor Grishchenko, J. A. Pouwelse, and Henk Sips

Delft University of Technology
Mekelweg 4, 2628CD
Delft, The Netherlands
victor.grishchenko@gmail.com

Abstract. The classic hypertext model omits the process of text growth, evolution and synthesis. With hypertext creation becoming increasingly collaborative and change timescales becoming shorter, explicitly addressing text evolution is the key to the next stage of hypertext development. Uniform Resource Identifier (URI) is a proven general concept that enabled the Web. In application to versioned deep hypertext, expressive power of a classical hyperlink becomes insufficient.

Based on the Causal Trees model, we introduce a minimalistic but powerful query language of *specifiers* that provides us great flexibility of referencing within a changing hypertext. Specifiers capture the state of the text, point at changes, expose authorship or blend branches. Being a part of an URI, a specifier puts advanced distributed revision control techniques within reach of a regular web user.

1 Introduction

In the WWW/HTML model and, generally, in “chunked hypertext” systems the main addressable unit is a “page” which might optionally also have addressable “anchors” inside it. That is generally sufficient as long as we deal with static texts, albeit the requirement that a page author must pre-provision anchors is limiting. However, if we follow the general vision of a text as an evolving entity (the “wiki model”), then the expressive power of a classical hyperlink is insufficient. Since the addressed text is continuously changing, anchors might disappear, and the content that is actually addressed by the link might be re-edited or its surroundings may change. Similarly, there is no standard way of pointing at particular statements and passages in the text. For collaboratively created texts, such a possibility is desirable. Also, there is no semantics in place to address co-existing versions of a text (named “branches” in the version control parlance). Those might be drafts, reeditions, alternative versions. Thus, our mission is to explore possible approaches and conventions of referencing particular parts of text, its particular versions, or both. We want to measure, mark and cut text in breadth and depth!

This paper is structured as follows. First, we consider relevant existing models and their limitations in Section 2. Section 3 briefly describes the Causal Trees (ct) model of text versioning and the basic primitives available for text/ version

Citrea and Swarm: partially ordered op logs in the browser

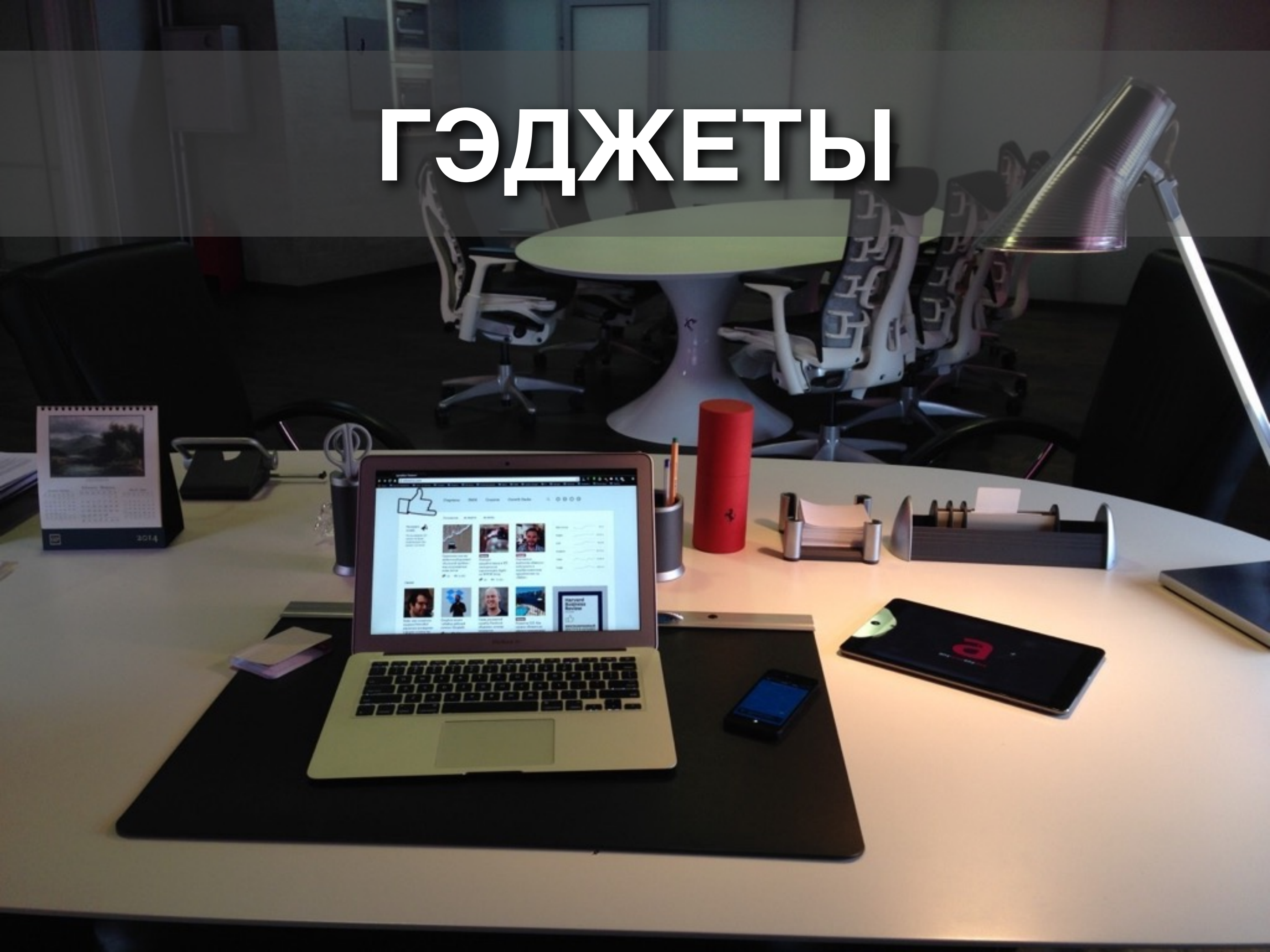
Victor Grishchenko
Citrea LLC
victor.grishchenko@gmail.com

25 March 2014

Abstract

Principles of eventual consistency are normally applied in large-scale distributed systems. I report experiences applying EC in Web app development. Citrea is a collaborative rich text editor employing the Causal Trees[4] technology of concurrency/version control (note: CT is *not* an OT flavor). CT employs symbol ids and trees and, generally, belongs to the same family as WOOT, Logoot or Treedoc [1, 3, 2]. CT makes the ids-and-trees approach production-practical by limiting itself to simple and lightweight algorithms and data structures. Swarm is a JavaScript object sync library that works in the browser, in real time. Swarm fully employs client-side storage and works well under intermittent connectivity. Swarm employs “pure” op-based model. Our top finding is a *specifier*: a serialized event description format that

ГЭДЖЕТЫ



er
markt

NUERNBERG

FREIBURG

INGOLSTADT

MUENCHEN

STUTTGART

MITTENWALD

СКОРОСТЬ

ВАЙ-ФАЙ ОТДЫХАЙ



ПРОШУ ВСЕХ ВСТАТЬ



ВЕБ ЕСТ



СИНХРОНИЗАЦИЯ

~~С~~АР



ЛИНЕАРИЗАЦИЯ



oplog, log

AP

CouchDB, LWW, CRDT

LWWs, Meteor, Derby



Firestore

PubNub[®]

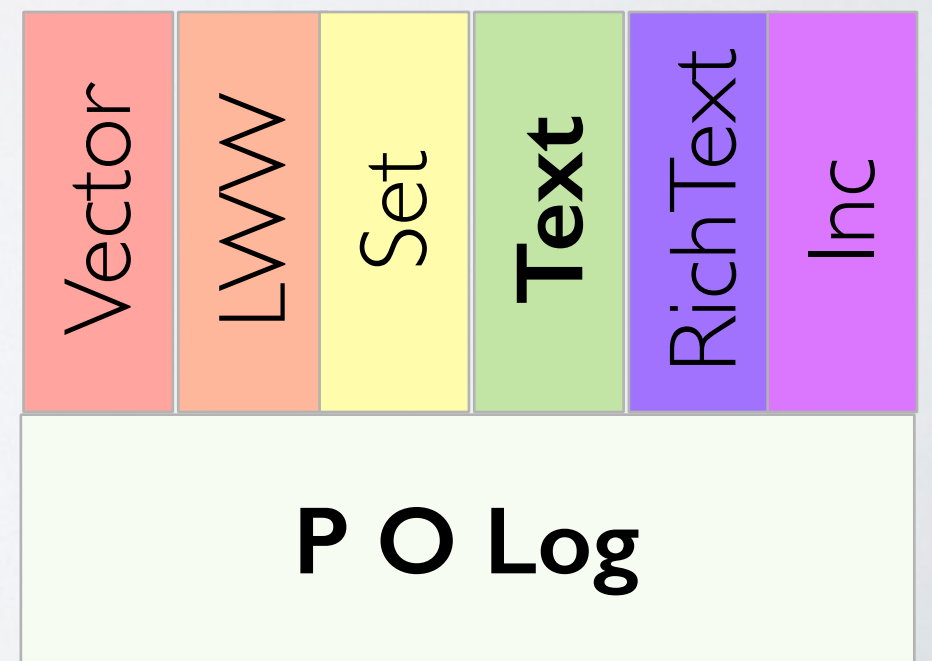


METEOR

CRDT

- Convergent...
- Commutative...
- Conflict-free...
- Cloud...

... Replicated
Data
Types

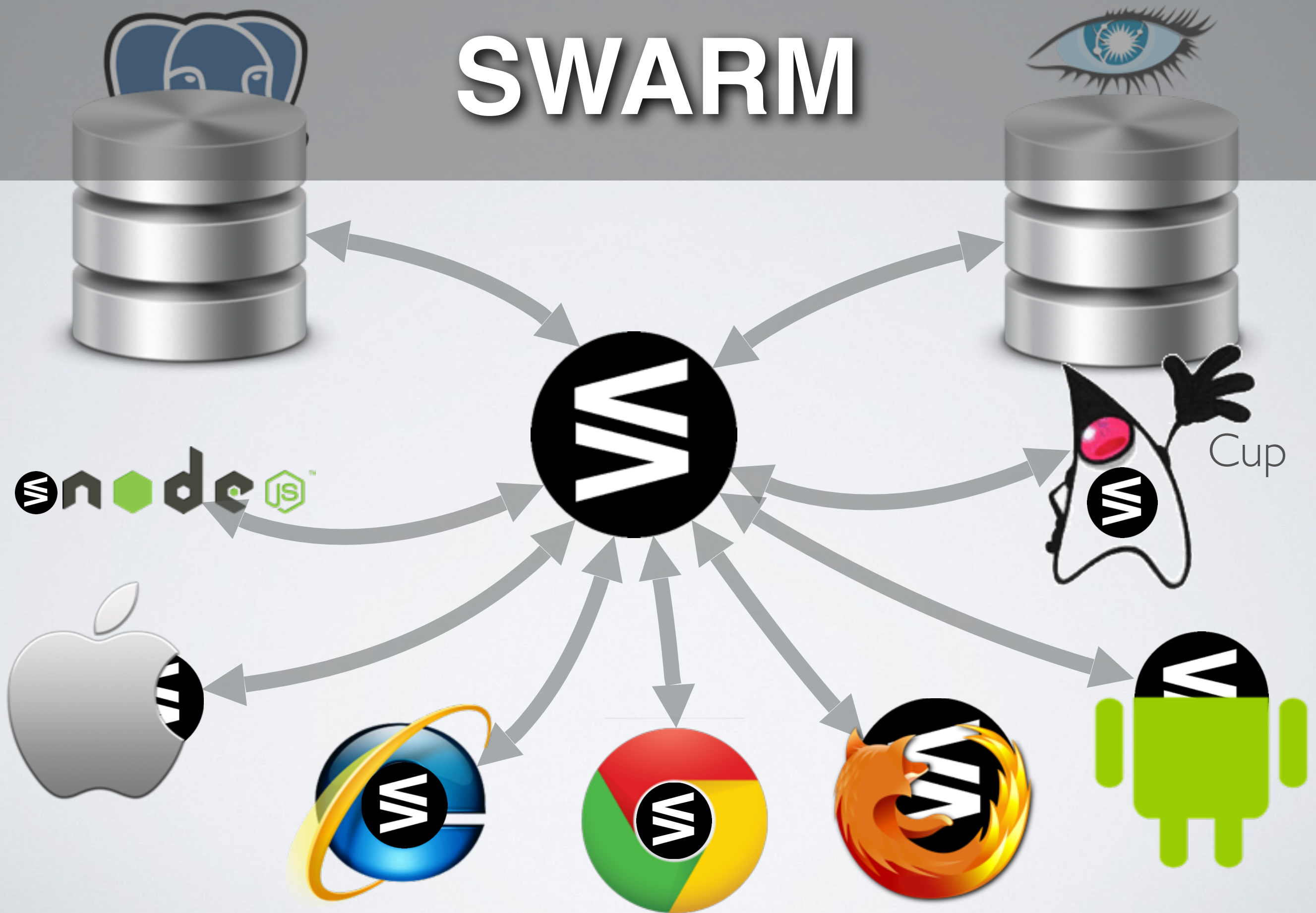


АБСТРАКЦИЯ

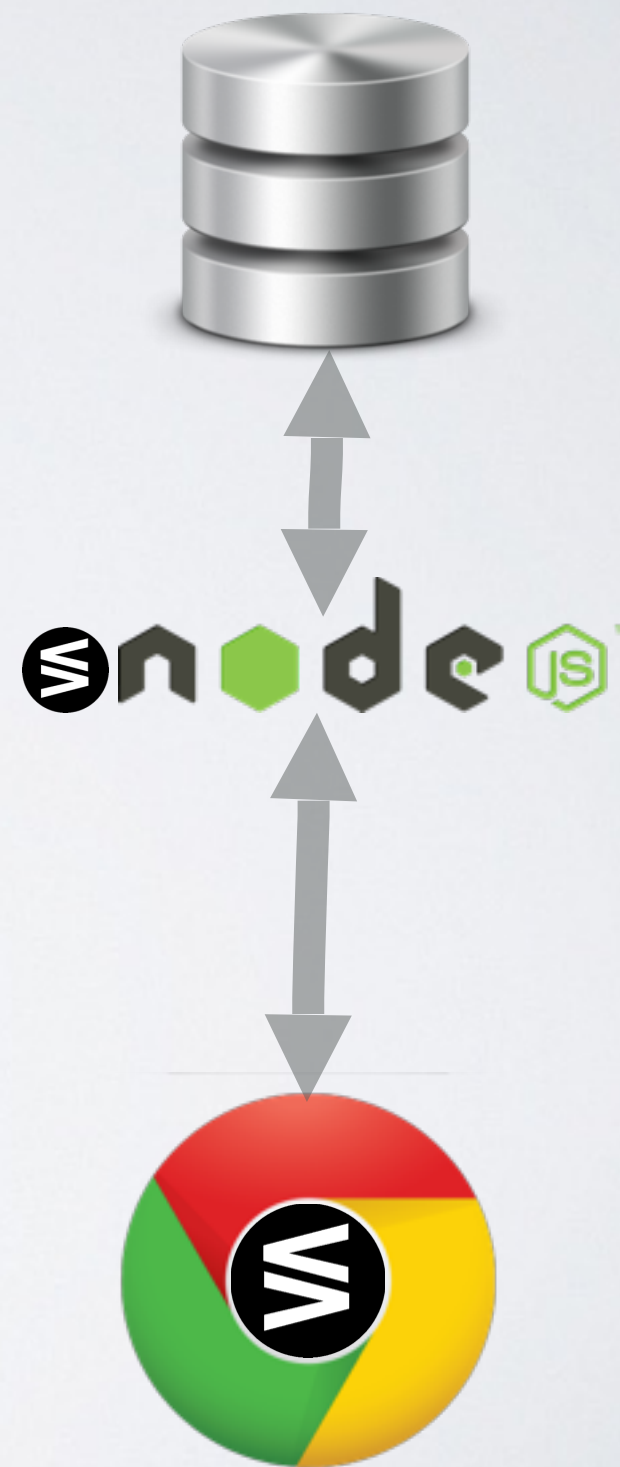
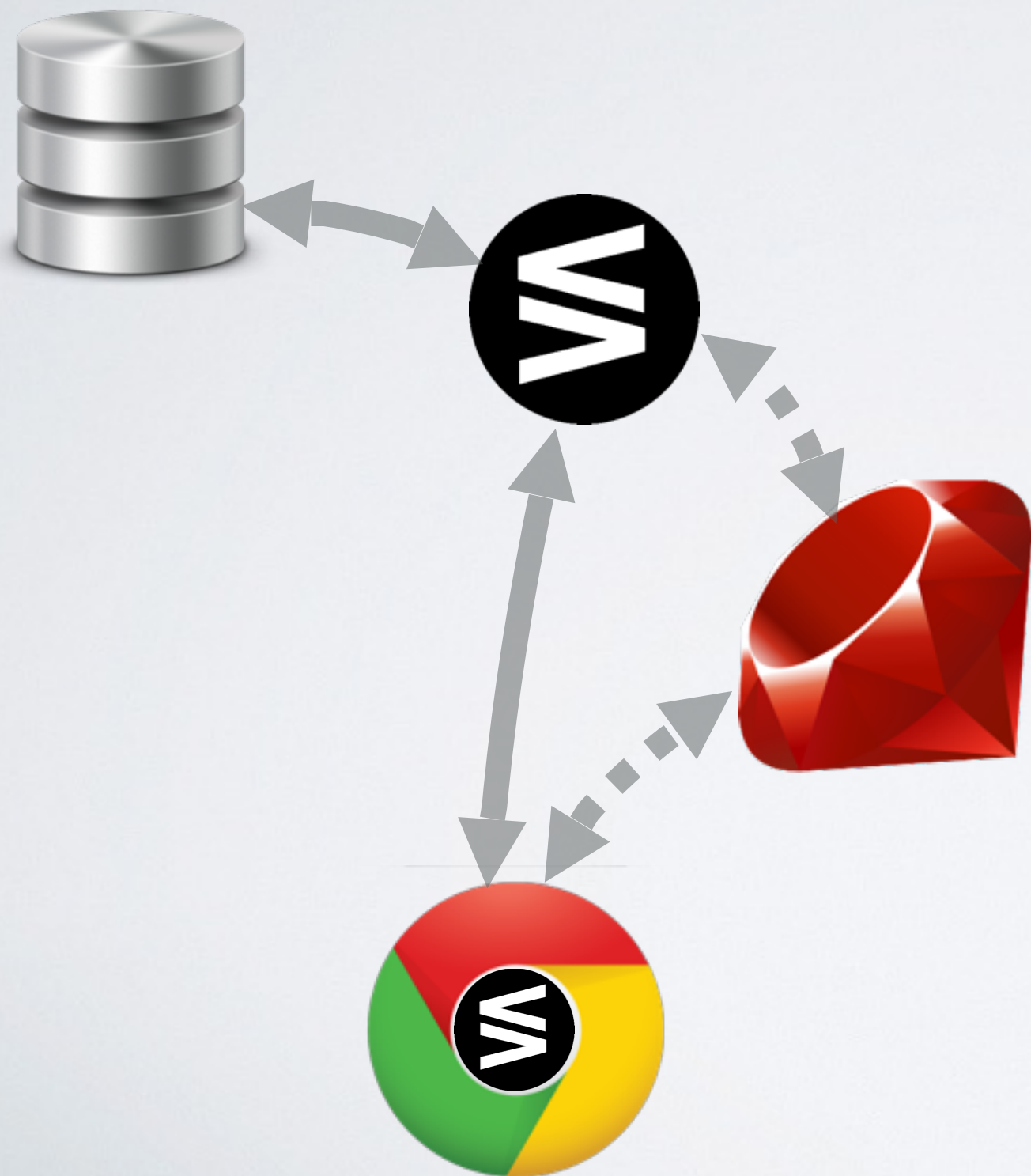


see @aphyr

SWARM



АРХИТЕКТУРЫ



КОД

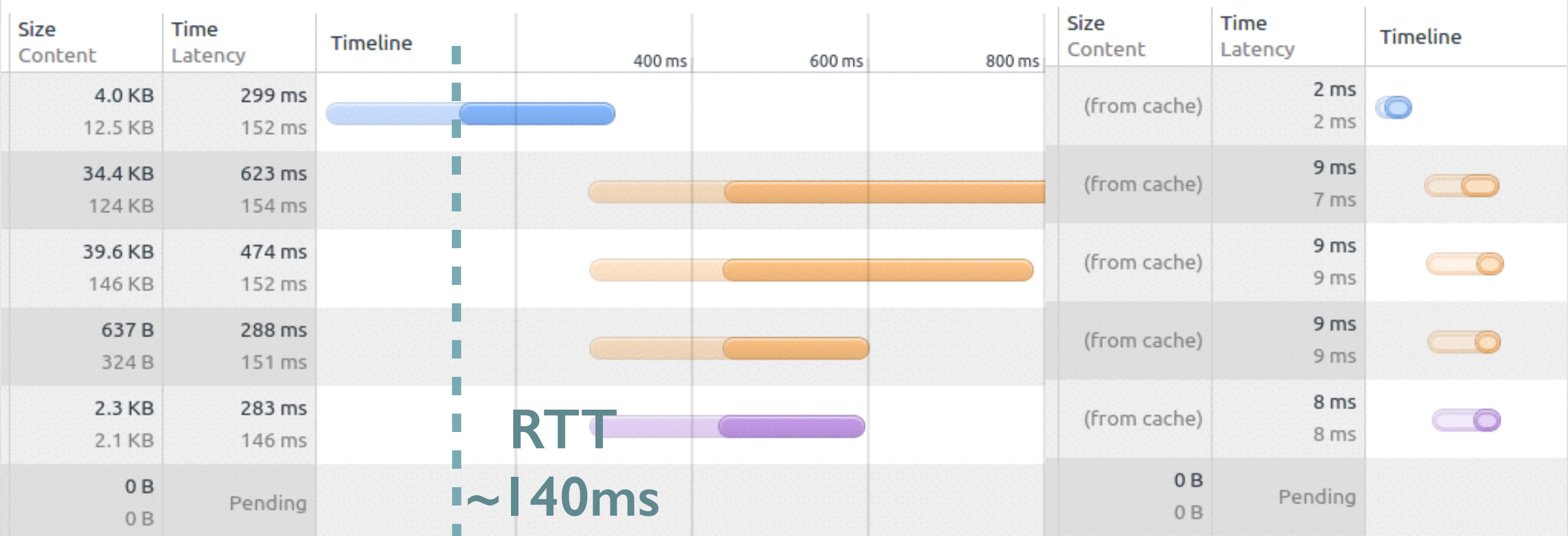
```
var host = new Swarm.Host( 'user~ssn' );  
  
host.connect( 'ws://localhost:8000' );  
  
var someMouse = new Mouse();  
  
var mickey = host.get( '/Mouse#Mickey',  
    function(s, v, mickey){  
        mickey.set({  
            x:100,  
            y:100  
        });  
    });
```


ИЗОМОРФНО!

- ✓ Мелкие баги
- ✓ Инсталляция
- ✓ Лендинг
- ✓ Демонстрируемые фишки
- ✓ Приятные фишки
- ✓ Совместимость
- ✓ Чистота и порядок
- ✓ Производительность и скорость
- ✓ Тексты
- ✓
- ✓ ПОТОМ

- ✓ Скорость загрузки (bundle.js)
 - ✓ Префетч списков (через закладки?)
 - ✓ Скорость загрузки и смена в FF (до prefetch)
 - ✓ Убрать debug!!!
- 3 items left

<http://ppyr.us>




```
66 app.get(/[+/A-Za-z0-9_~]*/, function (req, res) {
67     var route = req.path;
68     var router = new TodoRouter();
69     res.header('Content-Type', 'text/html; charset=utf-8');
70     res.header('Cache-Control', 'private, max-age=0, no-cache');
71     res.write(htmlTemplate.head);
72     router.load(route, function (path) {
73         res.write(
74             React.renderComponentToString(
75                 TodoAppView({
76                     key: 'TodoApp',
77                     app: {path: path}
78                 })
79             )
80         );
81         res.write(htmlTemplate.tail);
82         res.end();
83     });
84 });
```


Изменения не синхронизированы. Выберите версии для сохранения.

☐	Изменено на [имя]
☐	Изменено на [имя]

Сегодня, 23:34

Изменено на [имя]

Сегодня, 23:34

Отменить

Оставить

РЕАЛЬНОЕ ВРЕМЯ



This presentation can't be opened right now.

Versions of the presentation are out of sync. As soon as the owner picks a version to keep, you'll be able to open it.

OK



1 note conflict during sync.

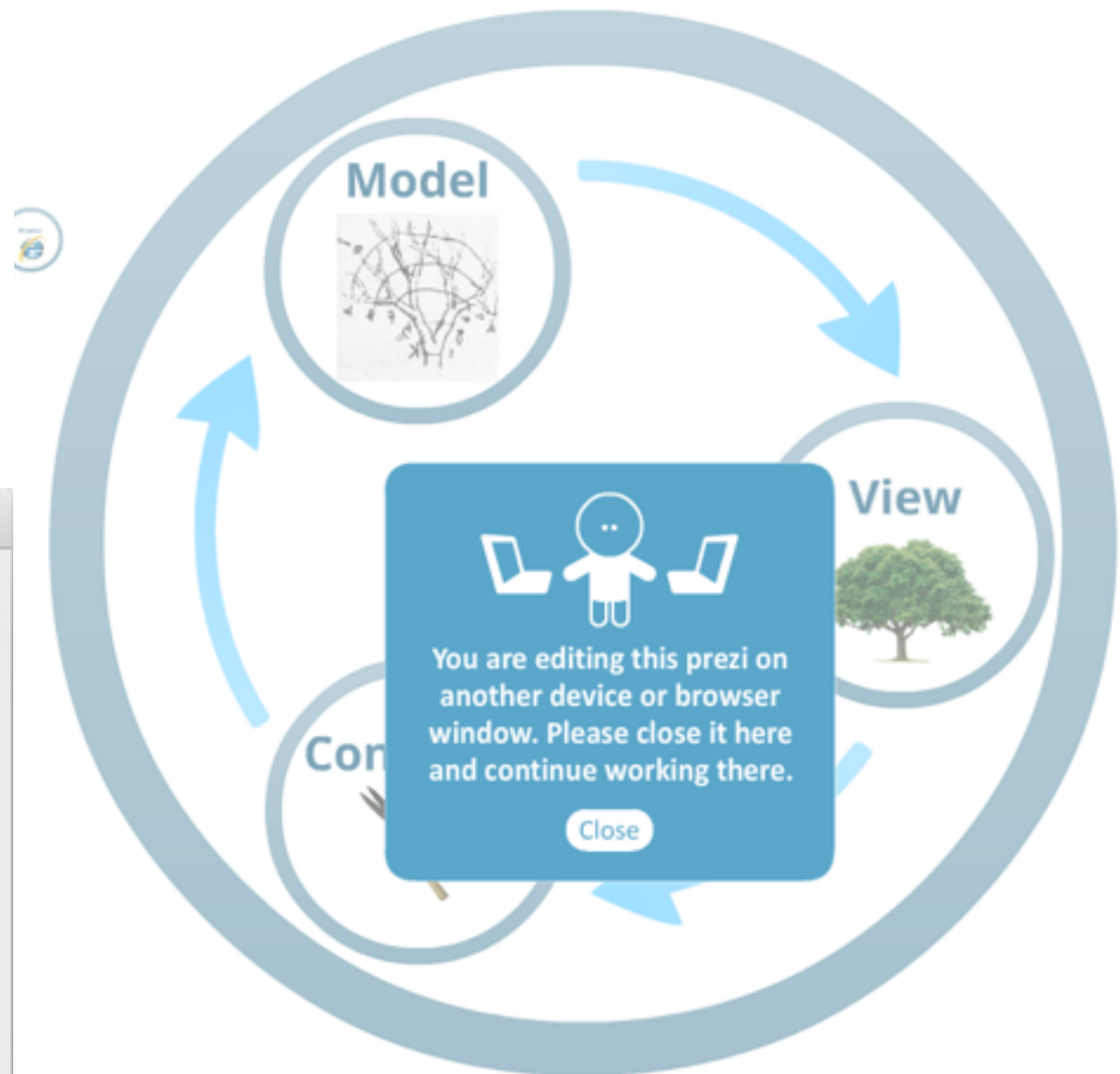
One of your notes was modified locally as well as on the Evernote service. The local version of the note has been placed in a new notebook titled: 'Conflicting Changes (2014-10-26 15:17:24 +0000)'

☐ Do not show this message again

Show Conflicting Note

OK

We've lost connection to prez.com. Trying to reconnect...



КАК ЛОКАЛЬНОЕ

```
47  TodoApp.prototype.initSwarm = function () {  
48      //this.storage = null;  
49      this.storage = new Swarm.SharedWebStorage('webst',{persistent:true});  
50      this.wsServerUri = 'ws://' + window.location.host;  
51      this.host = Swarm.env.localhost = new Swarm.Host(this.ssnid, '', this.storage);  
52      this.host.connect(this.wsServerUri, {delay: 50});  
53  };
```

host.connect(uri);

ОФФЛАЙН



Oops! Keynote went offline.

Before editing, make sure you're connected so all your changes are saved.

OK

There was a problem

We're sorry. The server encountered an error. Please press "OK" to refresh the sheet.

OK

Connection Lost

search request

1 CACHE MANIFEST

2 #2014-10-17 v0.0.7

3 МАНИФЕСТ

4 CACHE:

5 /dist/react.min.js

6 /dist/ToDoApp.app.js

7 /fake_auth_init.js

8 /css/base.css

9 /css/add.css

10 /css/bg.png

11

12 FALLBACK:

13 / /offline.html

ЧТО ДЕЛАТЬ?

<https://github.com/gritzko/swarm>

ССЫЛКИ

Demo: <http://ppyr.us>

Code: <https://github.com/gritzko/todomvc-swarm>

Swarm.js: <https://github.com/gritzko/swarm>

Blog: <http://swarmjs.github.io>

Twitter: http://twitter.com/swarm_js

Habr (ru): <http://habrahabr.ru/company/swarm/>

Slideshare: <https://github.com/gritzko/swarm>

Email: swarm.js@gmail.com

Twitter: [@swarm_js](https://twitter.com/swarm_js)