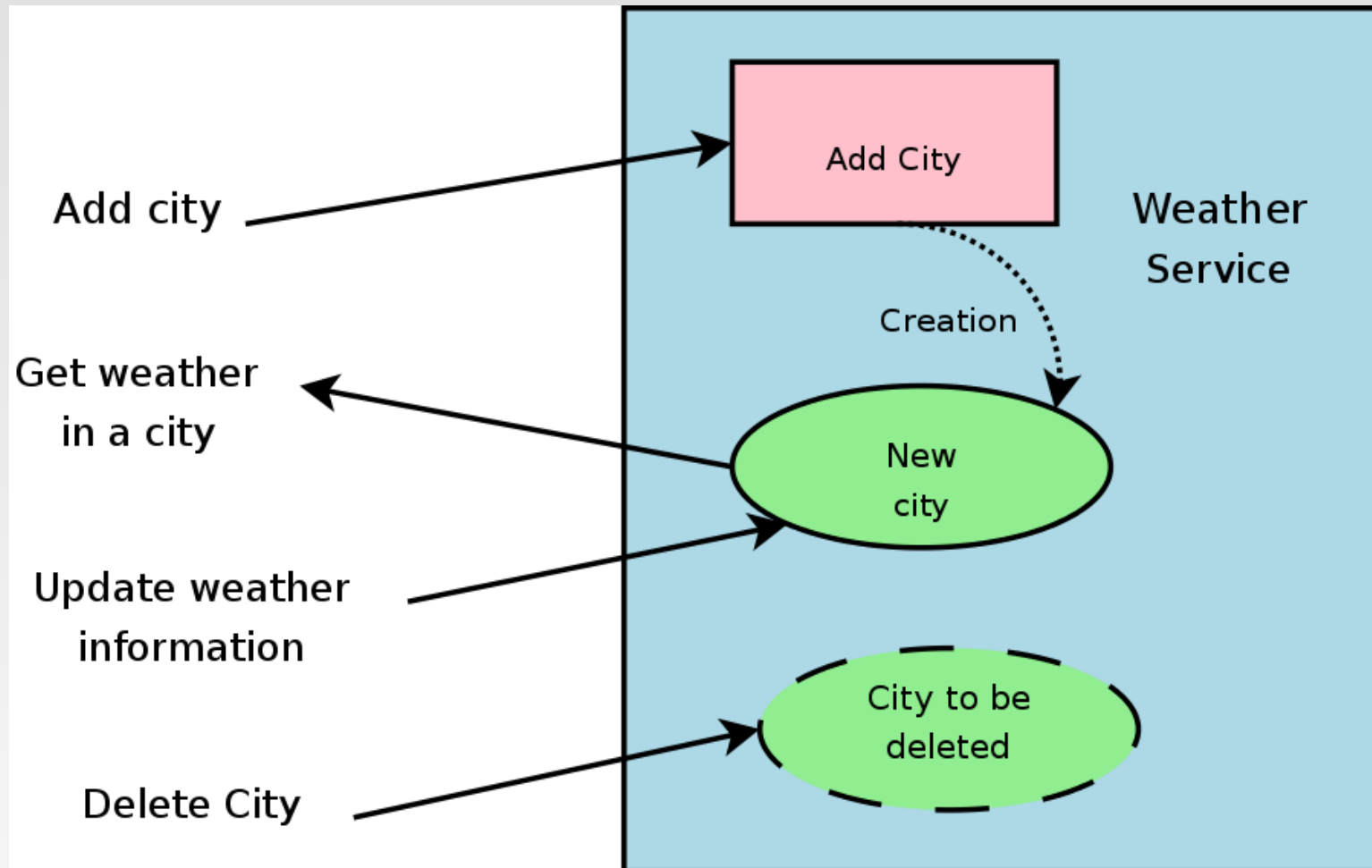


Designing RESTful Services



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CaseySoftware, LLC

Overview

- Intro to RESTful Web Services
- REST Best Practices
- REST Examples / Demo



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So who is this guy?

- D. Keith Casey, Jr. -
 - CaseySoftware, LLC
 - Java developer who saw the light...
 - Former core contributor to dotProject, founding member of web2project
 - Former CTO of WhyGoSolo, entirely RESTful
 - Specialize in refactoring existing codebases
 - Have utilized these tools and concepts to support sites for a cable news network, dP installs for 1200+ users, and *“involvement in the SMS system for a live musical performance show”*



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So why listen to me?

I'm lazy.

REST Defined

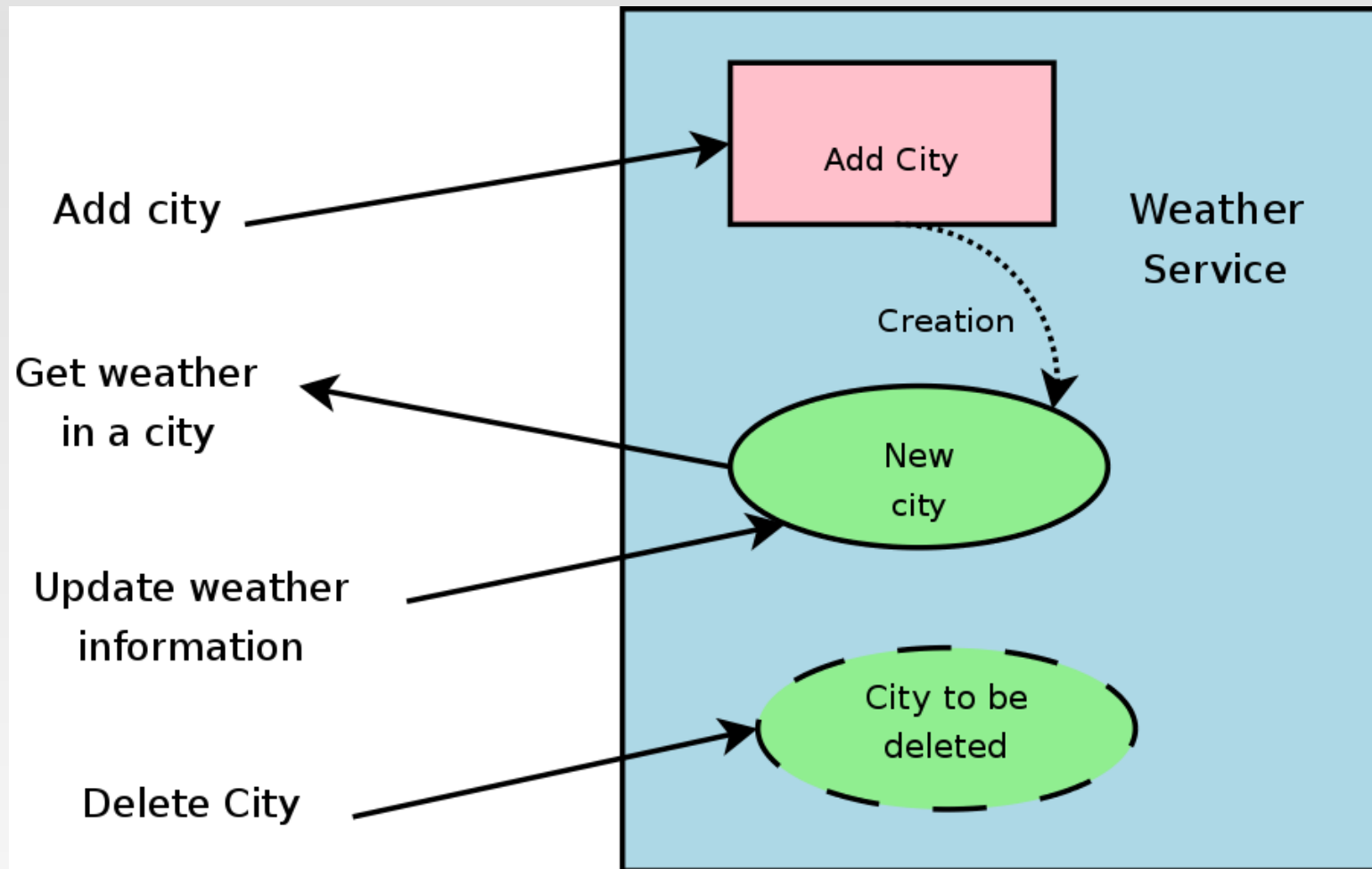
- *Representational State Transfer is intended to evoke an image of how a well-designed Web application behaves: a network of web pages (a virtual state-machine), where the user progresses through an application by selecting links (state transitions), resulting in the next page (representing the next state of the application) being transferred to the user and rendered for their use.*
 - Coined by Roy T. Fielding - <http://roy.gbiv.com/>



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... or to put it another way.



Source: [http://www.w3.org/2005/Talks/1115-hh-k-ecows/#\(23\)](http://www.w3.org/2005/Talks/1115-hh-k-ecows/#(23))



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Web Services : Benefits

- XML-based
 - Human readable (mostly)
 - Flexible in implementation technology
- Vendor-independence
 - Based on “open” standards
 - Easier to add additional partners
- “Many parts, loosely joined”
 - Promotes reuse/commoditization of components
 - Increased collaboration



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Web Services: Drawbacks

- XML-based
 - Human readable (mostly)
 - Vendor mis-implementations
- Different design paradigm
 - Bypasses the “planned” user interfaces
 - Different security model
 - Dependency management
- REST
 - “No standards” - Nouns & Verbs



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Best Practices

- Design, design design -
 - It's a deliberate, not an accidental process.
 - Figure out your Nouns (Verbs are fixed)
 - Projects, Tasks, Accounts, Monkeys?
 - Determine read-only -vs- updatable
 - Enforce the distinction
- Stateless -
 - Whenever possible, forget it, ignore it, etc.
 - Scaling, reliability, sleep



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Best Practices (cont)

- Security -
 - Alright, how?
 - No auth?
 - Shared certificates?
 - HTTP Auth?
 - Cookies?
 - URL-embedded parameters?
 - SSL?
 - Selected domains / IP restricted?



Best Practices (cont) (cont)

- Addressable -
 - It's not just a concept, it's a url!
 - <http://domain/app/project/list>
- Uniformity / Flow -
 - <http://domain/app/project/list>
 - <http://domain/app/company/list>



Best Practices (cont^3)

- Versioning
 - Identification
 - Migration
 - Deprecation
- Know your HTTP Response Codes
 - 2xx = success
 - 3xx = redirect
 - 4xx = client/request error
 - 5xx = server/response error



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Amazon S3

- Nouns
 - Bucket, Object
- Verbs
 - GET, HEAD, PUT, DELETE
- PHP 4 and PHP 5 Versions available



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Amazon S3 Howto...

```
require_once("s3.class.php");  
$object_id = "l_2024";  
$filePath = "path/to/my/file";  
$bucket = "my_bucket";  
$transfer = new s3();  
$data = $transfer->getObject($object_id, $bucket);  
header("content-type: ".$transfer->getResponseContentType());  
echo $data;
```

Source: <http://neurofuzzy.net/2006/03/17/amazon-s3-php-class/>



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Amazon S3 Howto... (cont)

```
require_once("s3.class.php");
$object_id = "l_2024";
$filePath = "path/to/my/file";
$bucket = "my_bucket";
// PUT OBJECT
if ($data = file_get_contents($filePath)) {
    $transfer = new s3();
    echo $transfer->putObject($object_id, $bucket);
    echo("done");
} else {
    echo("error.");
}
```



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More Examples...

- Delicious... del.iciou.s... deli.cio.us..
 - <http://del.icio.us/help/api/>
- Twitter PHP Class
 - <http://technosailor.com/2008/05/29/for-php-devs-a-twitter-php-class/>
- Flickr
 - <http://www.flickr.com/services/api/>



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Further info, etc

- Resources:

- “How I Explained REST to My Wife”
 - <http://naeblis.cx/articles/2004/12/12/rest-to-my-wife>
- RESTful Web Services, Richardson & Ruby, O’Reilly
 - “<http://roadmap.cbdiforum.com/reports/roi/>”
- “A RESTful Web service, an example”
 - <http://www.peej.co.uk/articles/restfully-delicious.html>
- Amazon S3 PHP Class
 - <http://neurofuzzy.net/2006/03/17/amazon-s3-php-class/>
- Twitter PHP Class (php4, ew!)
 - <http://technosailor.com/2008/05/29/for-php-devs-a-twitter-php-class/>



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Questions / Comments ?

Designing RESTful Web Services

Slides available:

[http://CaseySoftware.com/events/
keith@caseysoftware.com](http://CaseySoftware.com/events/keith@caseysoftware.com)

*Most code samples are from Open Source projects and
subject to their licensing, etc.*



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