OSCON 2009

Jonathan Lloyd (majrmovies)

Who am I?

- I have been programming Perl for ~ 4 years
- I work for a small business (~ 30 employees) in Irvine, CA that does e-commerce and distribution.
- I do primarily web programming with Perl, mod_perl2, CGI and JavaScript. Including lots of web service communications like SOAP, XML, and JSON.

The Presentations

- **Perl 6 Update & Perl 6: What? Why? How?** - *Larry Wall & Damian Conway*
- **Distributed Applications with CouchDB** - *J Chris Anderson*
- **Open Source Language Roundtable**
- **Transparent Sharing of Complex Data with YAML** - *Ingy döt Net*
- **Zen and the Art of Abstraction Maintenance** - *Alex Martelli*
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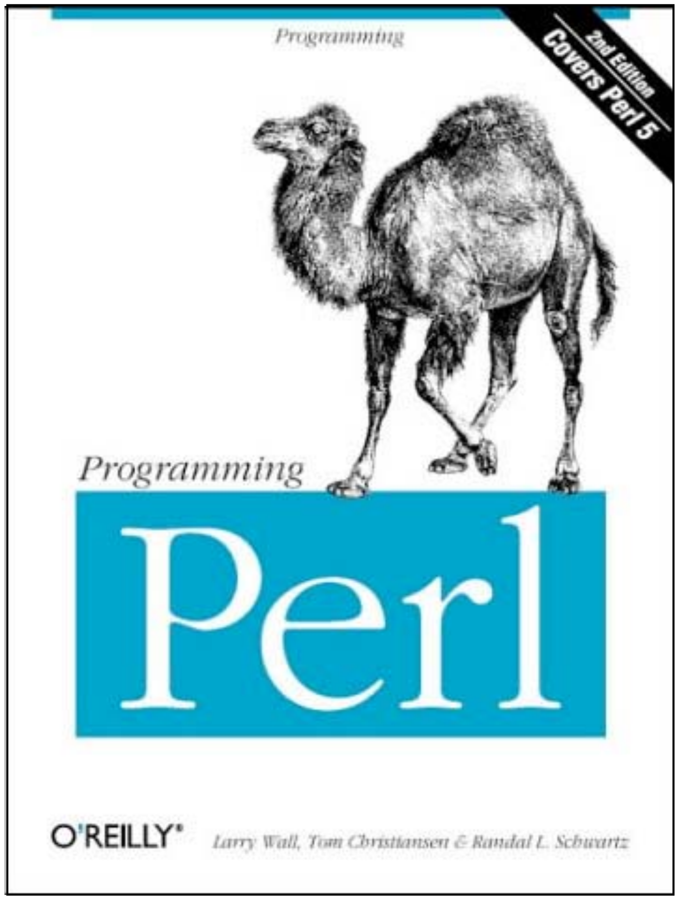
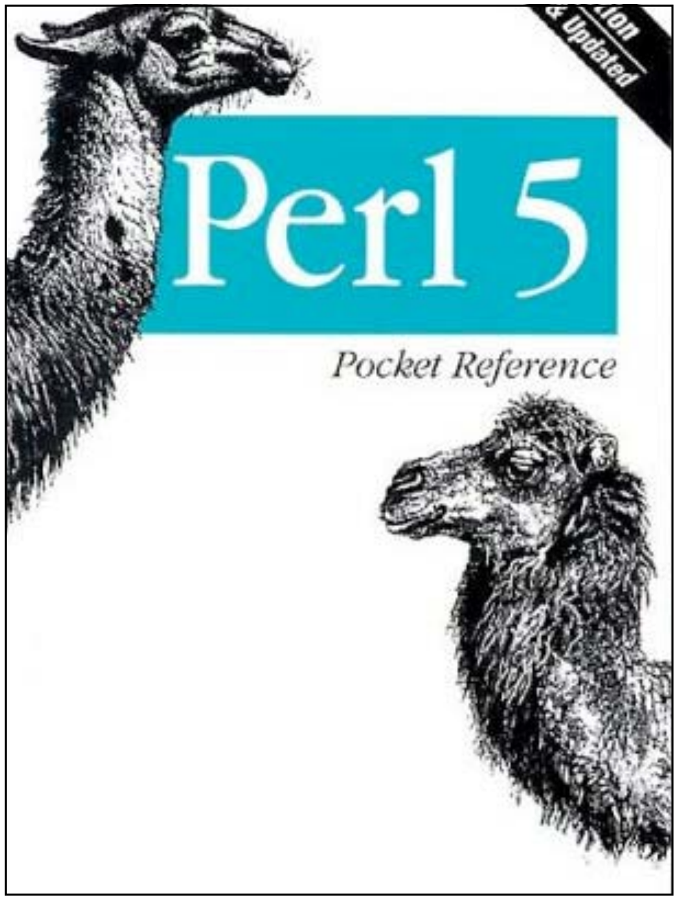
Perl: The Metrics

- Perl is 21 year's old.



Perl: The Metrics

- Perl is 21 year's old.
- Perl 5 is 14 years old.



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- Perl is 21 year’s old.
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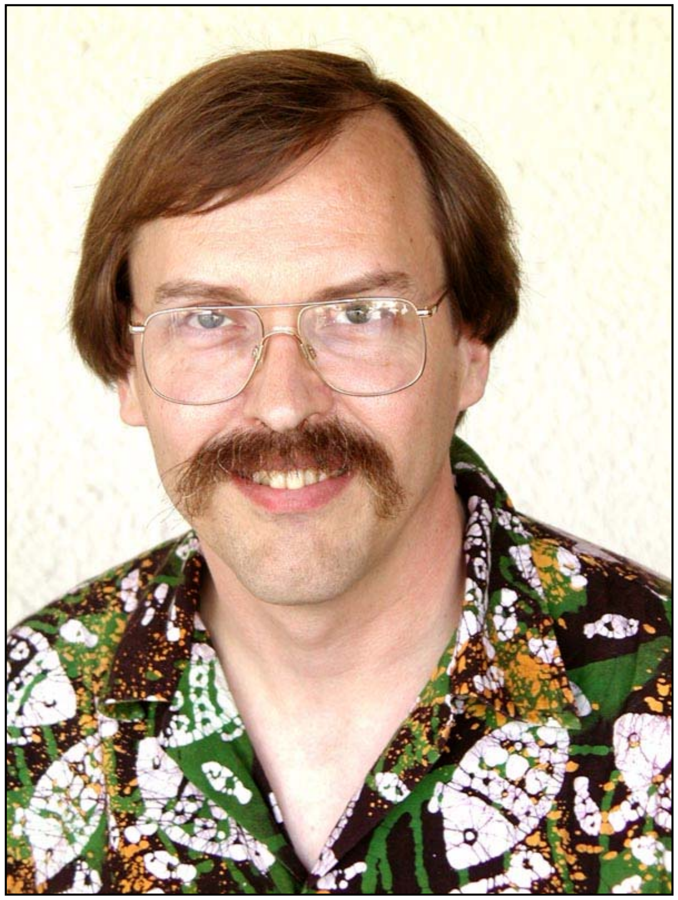
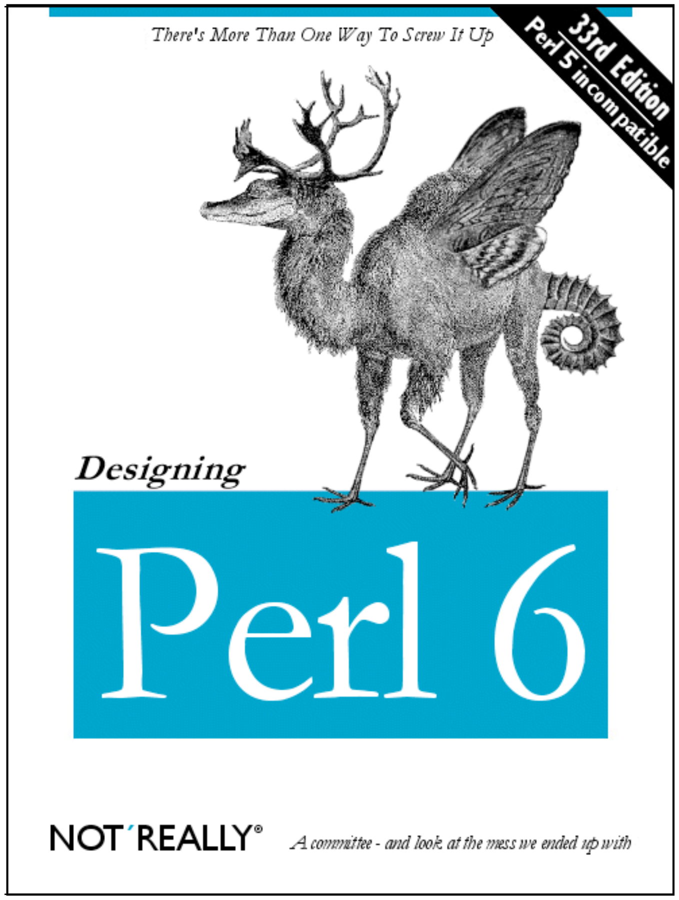
- Larry Wall is 55 years old.



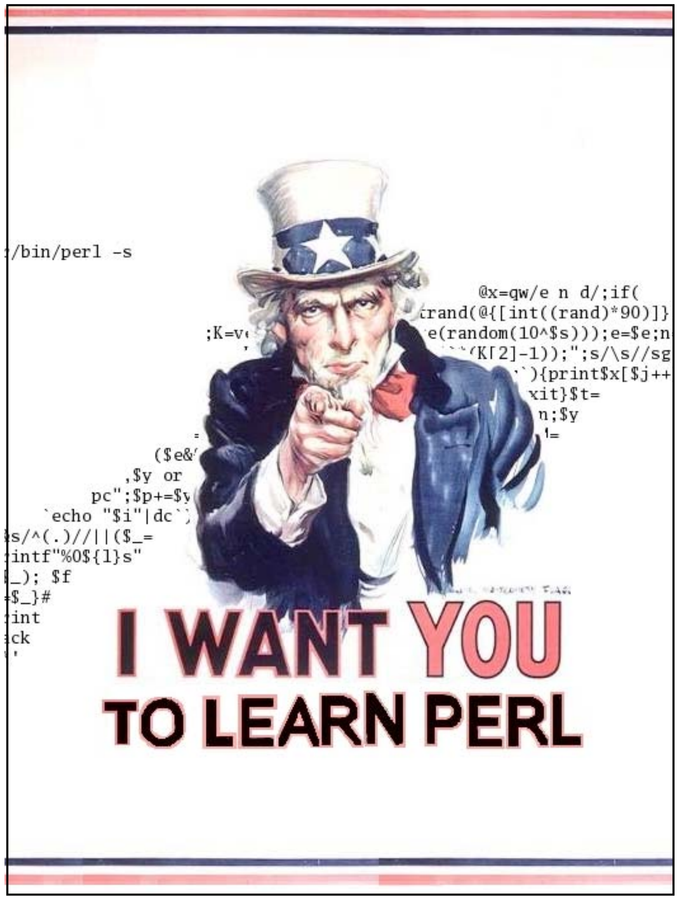
Perl: The Metrics

- Perl is 21 year's old.
- Perl 5 is 14 years old.
- Larry Wall is 55 years old.
- The idea of Perl 6 was introduced to the community on October 24th, 2000.


There's More Than One Way To Screw It Up
33rd Edition
Perl 5 incompatible
Designing
Perl 6
NOT REALLY®
A committee - and look at the mess we ended up with

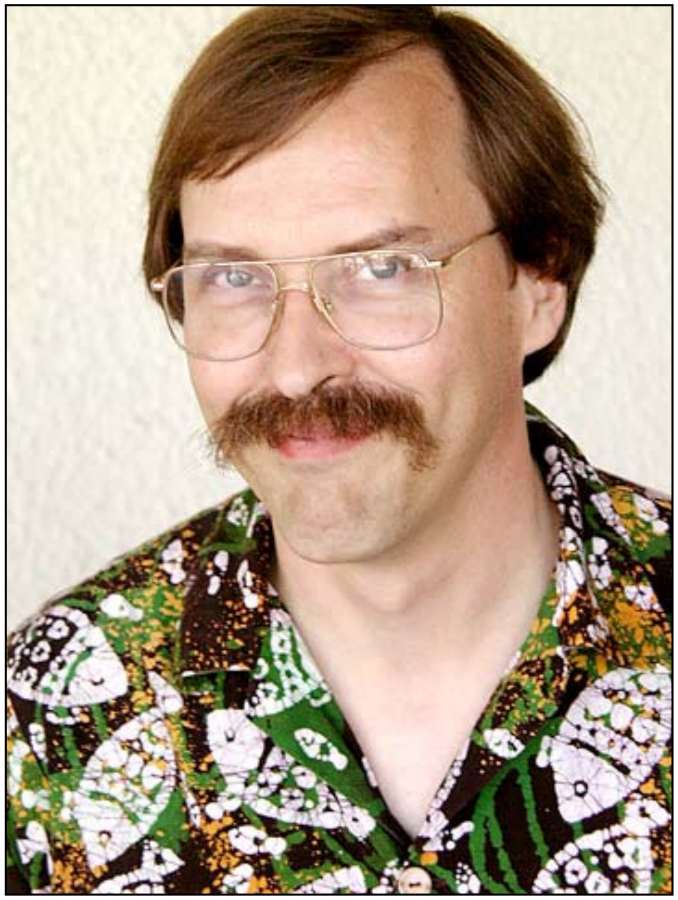
Perl 6: Why?

- We have 20 years of experience with the language.



Perl 6: Why?

- We have 20 years of experience with the language.
- We have a much better Larry.



Perl 6: Why?

- We have 20 years of experience with the language.
- We have a much better Larry.
- We have Damian Conway

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- "It's time to steal all the good ideas from other languages."

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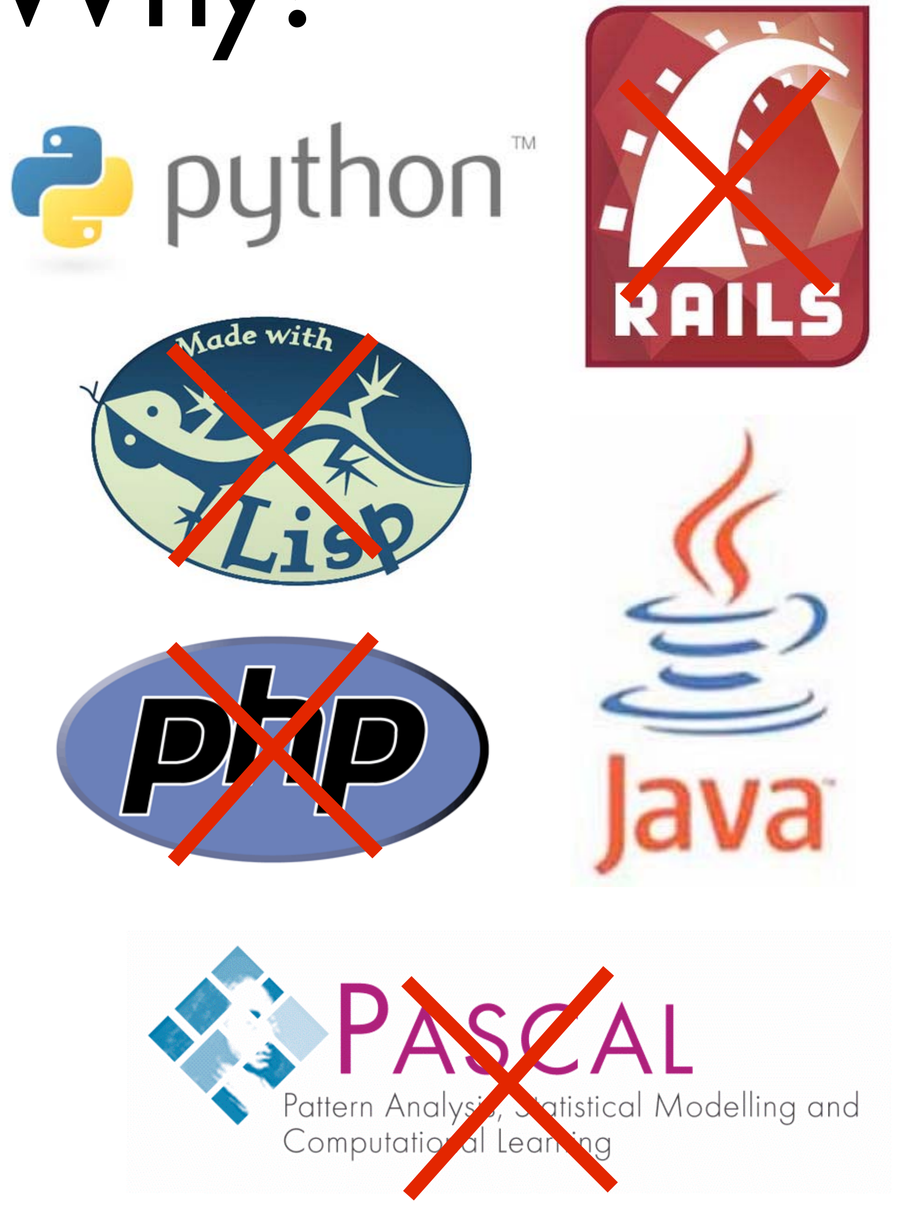
python™
RAILS
Made with Lisp
php
Java
PASCAL
Pattern Analysis, Statistical Modelling and Computational Learning

Perl 6: Why?

- We have 20 years of experience with the language.
- We have a much better Larry.
- We have Damian Conway
- "It's time to steal all the **good ideas** from other languages."

python™
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Perl 6: Seriously?

Comments are inline-able

use v5;

```
my $x
# This is a comment to the end of the line
  = 1;
```

use v6;

```
my $y #{ Need a better var name!} = 2;
```

Perl 6: Seriously?

String lists

use v5;

```
# throw some strings in to an array
my @names = qw(Jonathan David Lloyd);

# throw variables and strings -- no more qw!
my @meals = ($breakfast, ‘Lunch’, ‘Dinner’);
```

use v6;

```
# The qw list constructor gets prettier
my @names = < Jonathan David Lloyd >;

# Interpolates variables or strings
my @meals = << $breakfast Lunch Dinner >>;

my @names = <<
  Jonathan # This is my first name
>>
```

Perl 6: Seriously?

Everything is an object

use v5;

```
say keys %hash;
say values %hash;

join(‘-’, $year, $month, $day);
for (sort keys %hash) { say; }
```

use v6;

```
%hash.keys.say;

%hash.keys.sort.join(‘ | ‘);
%hash.keys.reverse.join(‘-’).say;

.say for %hash.keys.sort;
```

Perl 6: Seriously?

Variable declarations

use v5;

```
my $variable = “String”;
my $variable = 10;
my $variable = new CGI;

my @array = (‘String’, 10, $object);
```

use v6;

```
my Str $variable = ‘a scalar’;
my Int $variable = 10;

my Str @array = < Jonathan David Lloyd >;
my Int @array = 1..10;
```

Perl 6: Seriously?

Junctions

use v5;

```
my @odds = qw(1 3 5 7 9);
my @nums = qw(0 1 2 3 4 5 6 7 8 9);

for my $num (@nums) {
  if (grep $_ eq $num, @odds) {
    say “$num is odd”; ...
```

use v6;

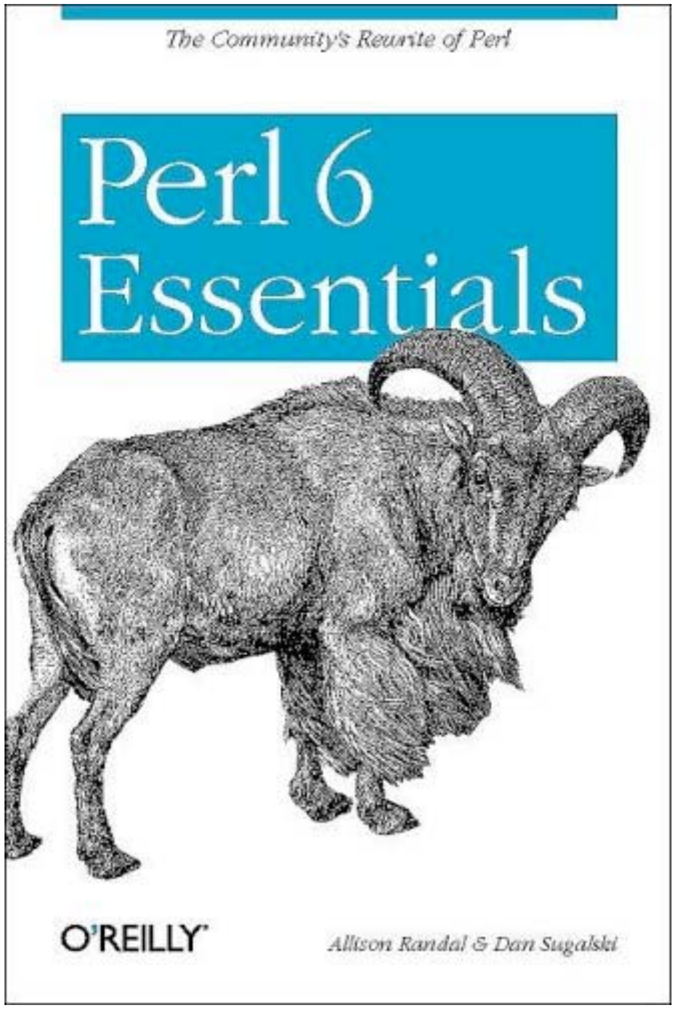
```
for (@nums) {
  say “$_ is odd”  if $_ == any (@odds);
  say “$_ in even” if $_ == none (@odds);
}

# The comparisons are performed in parallel!
```

Perl 6: Seriously?

1. Strictures and warnings on by default
2. Comments are inline-able
3. Big revamp of POD
4. Identifiers
5. String lists
6. Sigils sanitized
7. Everything is an object
8. Variable declarations
9. State variables
10. Constants
11. Lists
12. Generators
13. Pairs
14. Smarter string interpolations
15. Heredocs fixed
16. Junctions
17. Array indexing
18. Multidimensional arrays
19. Hash features
20. Data-preserving hash transformations
21. Operator revamp
22. DWIMier comparisons
23. DWIMier matching
24. Switch statements and switch loops
25. Defaulting operators
26. IO
27. Sort has been fixed
28. Revamped loops
29. Nested postfix control statements
30. Error variables
31. Subroutines
32. Named parameters
33. Parameter types and return types
34. Captures
35. "Slurpy" parameters
36. The MAIN subroutine
37. Classes
38. Inheritance
39. Constructors and destructors
40. Multiple dispatch
41. Roles
42. Regular Expressions
43. Named regexes
44. Match-time variable interpolation
45. Named regexes and grammars

Perl 6: How?

- Download "Rakudo"
- *It won't hurt your current distribution/system*
- Use modules built for Perl5 that are similar to Perl6::*


The Community's Rewrite of Perl
Perl 6 Essentials
O'REILLY
Allison Randal & Dan Sugalski

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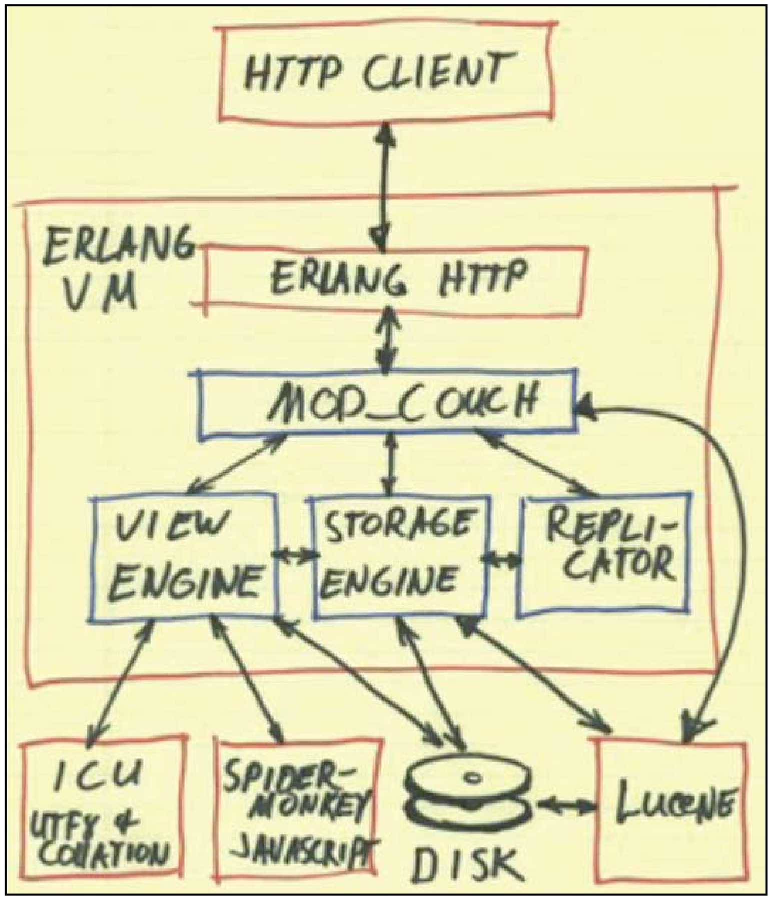
Distributed Applications with CouchDB relax

- **Document-oriented,** not *relational* database.
- Schema-Free (JSON)
- RESTful HTTP API
- JavaScript Powered Map/ Reduce Views
- N-Master Replication, Highly Concurrent, Robust Storage, Buzz word, Buzz word, Buzz word.



Distributed Applications with CouchDB

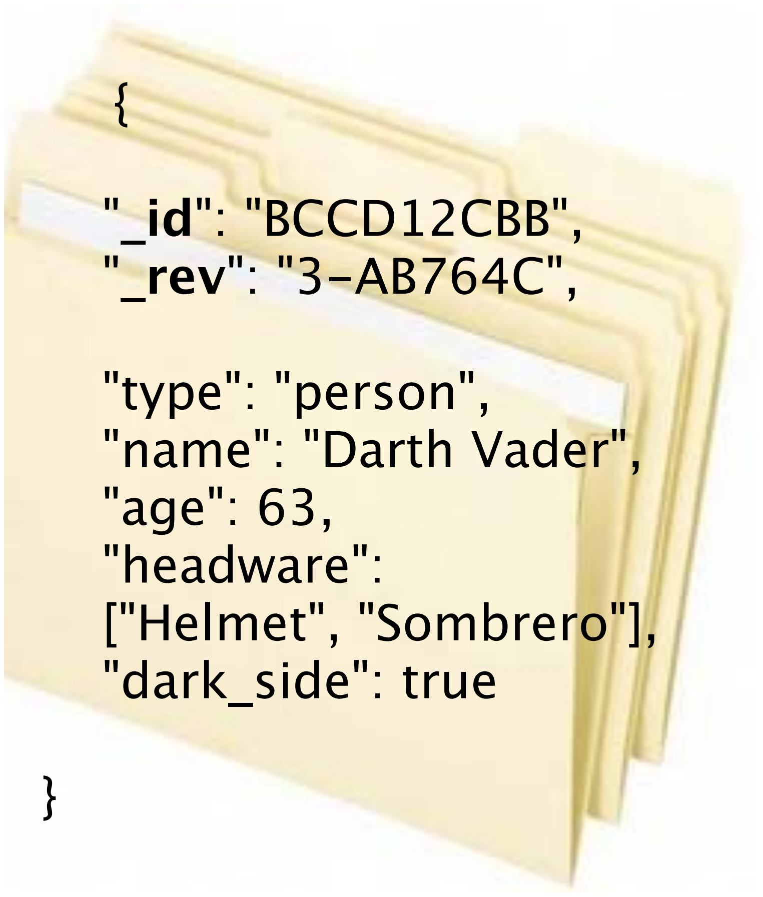
- **Document-oriented**, not relational database.

- **Documents in the Real World**
  - Bills, letters, tax forms ..
  - Same type != same structure
  - Can be out of date
  - No references
- **Natural Data Behavior**

Distributed Applications with CouchDB

relax

- **Schema-Free (JSON)**



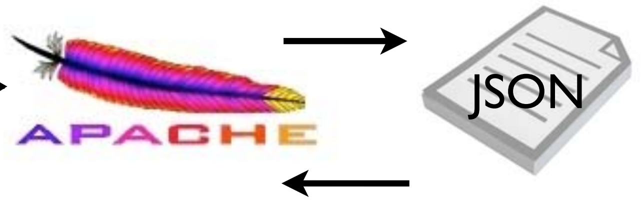
```
  {

  "_id": "BCCD12CBB",
  "_rev": "3-AB764C",

  "type": "person",
  "name": "Darth Vader",
  "age": 63,
  "headware":
  ["Helmet", "Sombrero"],
  "dark_side": true

}
```

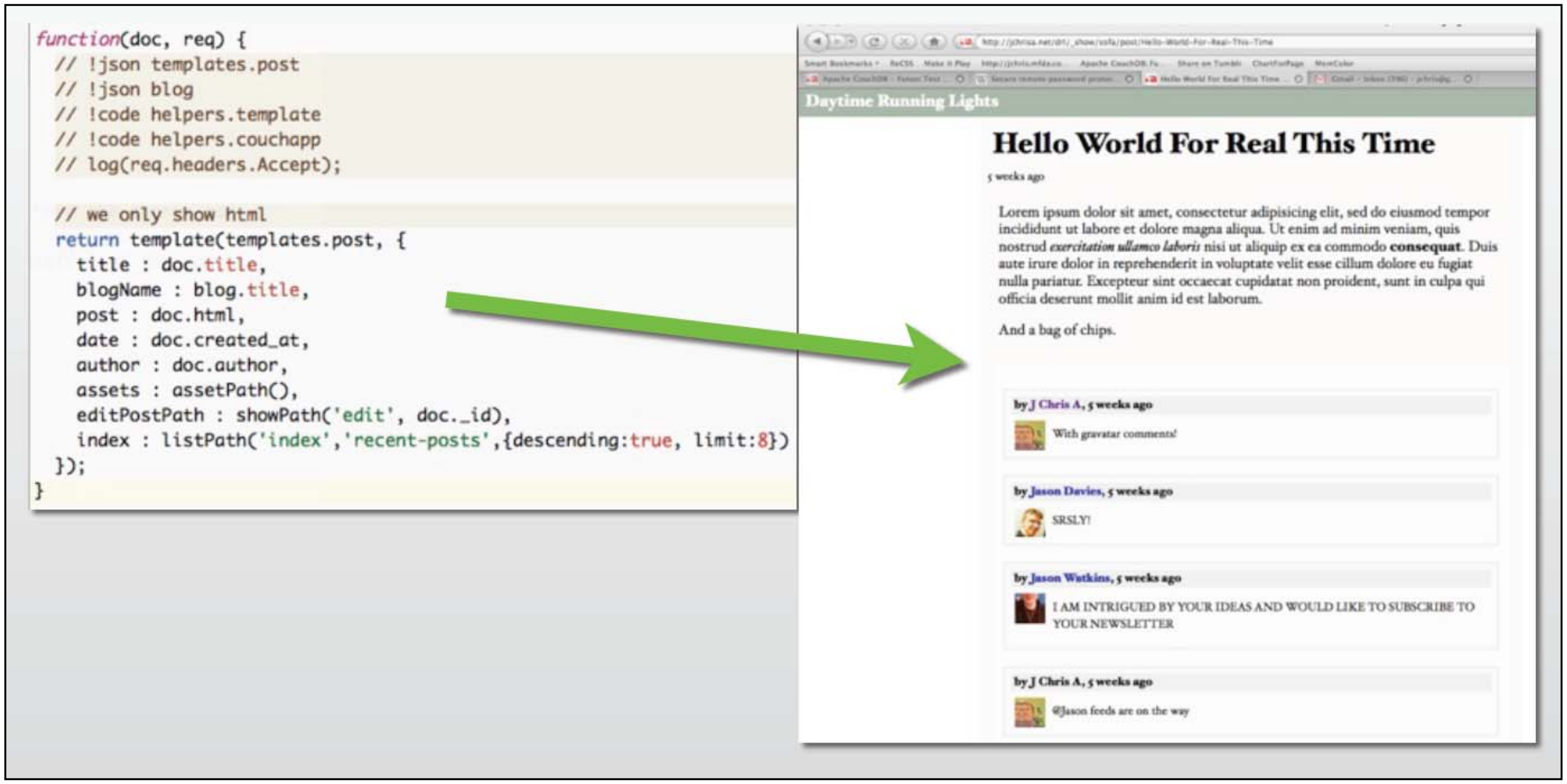
- Unique ID for each document
- Data structure can change on a per-document basis
- Limited only by the data structures available in JSON

Distributed Applications with CouchDB relax

- **RESTful HTTP API**

Create HTTP PUT /db/mydocid
Read HTTP GET /db/mydocid
Update HTTP PUT /db/mydocid
Delete HTTP DELETE /db/mydocid





```
function(doc, req) {
  // !json templates.post
  // !json blog
  // !code helpers.template
  // !code helpers.couchapp
  // log(req.headers.Accept);

  // we only show html
  return template(templates.post, {
    title : doc.title,
    blogName : blog.title,
    post : doc.html,
    date : doc.created_at,
    author : doc.author,
    assets : assetPath(),
    editPostPath : showPath('edit', doc._id),
    index : listPath('index','recent-posts',{descending:true, limit:8})
  });
}
```

http://jchrisa.net/drl/_show/sofa/post/Hello-World-For-Real-This-Time

Daytime Running Lights

Hello World For Real This Time

5 weeks ago

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud *exercitation ullamco laboris* nisi ut aliquip ex ea commodo **consequat**. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

And a bag of chips.

by J Chris A, 5 weeks ago
With gravatar comments!

by Jason Davies, 5 weeks ago
SRSLY!

by Jason Watkins, 5 weeks ago
I AM INTRIGUED BY YOUR IDEAS AND WOULD LIKE TO SUBSCRIBE TO YOUR NEWSLETTER

by J Chris A, 5 weeks ago
@Jason feeds are on the way

Distributed Applications with CouchDB relax

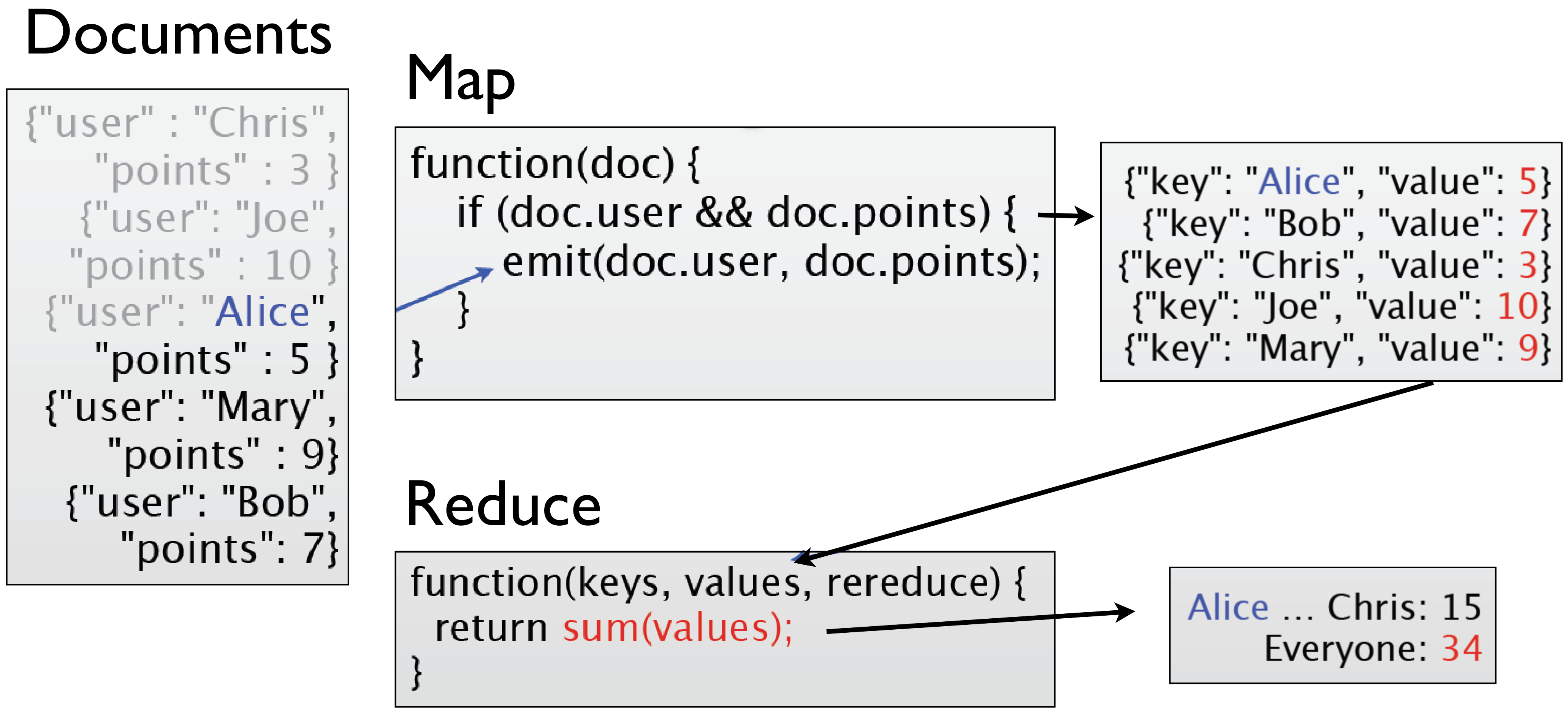
- **RESTful HTTP API**

```
use JSON;

require LWP::UserAgent;
my $ua = LWP::UserAgent->new;
$ua->timeout(10);
$ua->env_proxy;

my $response = $ua->get('http://localhost/db/mydocid');
if ($response->is_success) {
    my $document = from_json( $response->content );
}
else {
    die $response->status_line;
}
```

```
use DBI;
my $dbh = DBI->connect or die $DBI::errstr;

my $sth = $dbh->prepare('SELECT * FROM db WHERE id = ?');
$sth->execute(1);

my $item = $sth->fetchrow_hashref;
```

Distributed Applications with CouchDB relax

- **Javascript-Powered** Map/Reduce Functions



Documents

```
{"user" : "Chris",
   "points" : 3 }
{"user": "Joe",
   "points" : 10 }
{"user": "Alice",
   "points" : 5 }
{"user": "Mary",
   "points" : 9}
{"user": "Bob",
   "points": 7}
```

Map

```
function(doc) {
   if (doc.user && doc.points) {
      emit(doc.user, doc.points);
   }
}
```

```
{"key": "Alice", "value": 5}
{"key": "Bob", "value": 7}
{"key": "Chris", "value": 3}
{"key": "Joe", "value": 10}
{"key": "Mary", "value": 9}
```

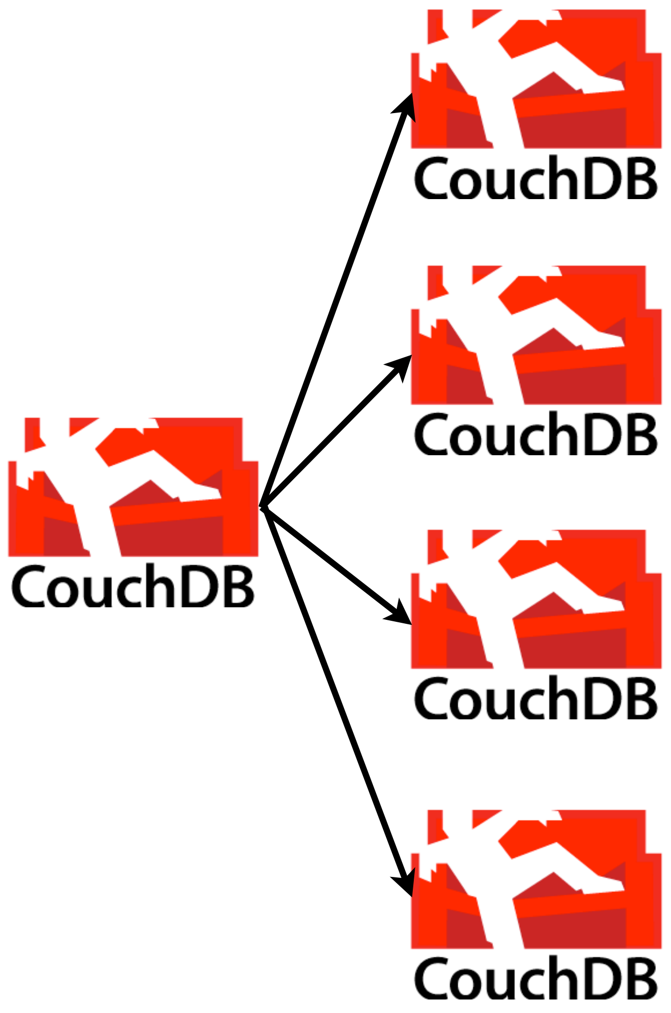
Reduce

```
function(keys, values, rereduce) {
  return sum(values);
}
```

```
Alice ... Chris: 15
      Everyone: 34
```

Distributed Applications with CouchDB

- N-Master Replication, Highly Concurrent, Robust Storage ..



Pull

```
-d '{
        "source":"http://server/db",
        "target":"db-replica"
}'
```

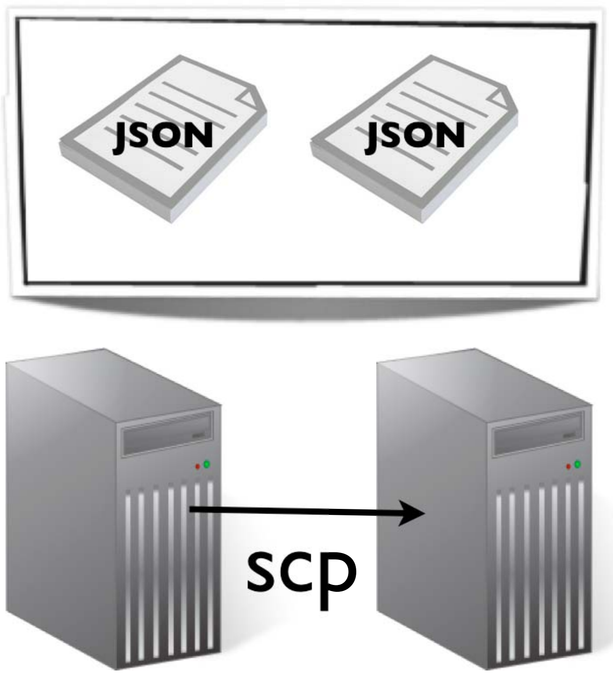
Push

```
-d '{
        "source":"db-replica",
        "target":"http://server/db"
}'
```

Remote

```
-d '{
        "source":"http://server-one/db",
        "target":"http://server-two/db"
}'
```

Server



Distributed Applications with CouchDB relax

Pros

- **Terrific Idea**
- Leverage Apache for its strength -- distributing documents
- Use client-side JavaScript to manage and display documents
- Replication across multiple servers, or being downloadable to offline applications is very simple

Cons

- **Security** (HTTP DELETE /db -- Oops!)
- Using Perl would require a DBD::CouchDB plugin for sanity
- Writing queries/views is not practical in a small shop
- No direct interface -- runs as a daemon that is simply killed
- Very JavaScript oriented

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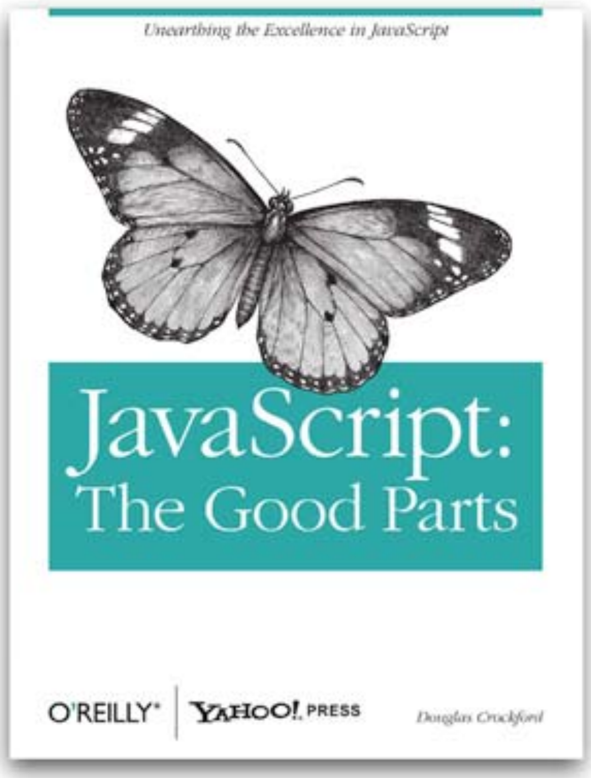
Open Source Language Roundtable

Java: Rod Johnson (SpringSource)
Perl: Jim Brandt (Perl Foundation)
PHP: Laura Thomason (Mozilla)
Python: Alex Martelli (Google)
Ruby: Brian Ford (Engine Yard)

- Most dynamic programming languages are inherently the same. **Don't hate.**
  - *Perl is the best for shell scripting*
- **JavaScript** is a dynamic language completely undervalued, but hugely important in web development (i.e. Google)
  - Runs on the client-side
  - AJAX has enabled more dynamic communication with the server
  - Frameworks like Prototype, Dojo, Moo Tools, and jQuery make it easy


Unearthing the Excellence in JavaScript
JavaScript: The Good Parts
O'REILLY
YAHOO! PRESS
Douglas Crockford

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Transparent Sharing of Complex Data with YAML

by Ingy döt Net (Hackers, Inc)

- YAML (YAML Ain't Markup Language)
- JSON == YAML
- YAML =!~ JSON
- YAML can store *objects*
- YAML can be *streamed*
- YAML has implementations in 8 different languages -- more to come ...

```
---
name: ingy
age: old
weight: heavy
# I should comment that I also
# like pink, but don't tell anybody.
favorite colors:
    - red
    - green
    - blue
---
- Clark Evans
- Oren Ben-Kiki
- Ingy döt Net
...
```

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Zen and the Art of Abstraction Maintenance

by Alex Martelli (Google)

- Everything is built on something.
- You build layers of abstraction (Perl modules)
- All layers of abstraction **leak**.
- Understand the layers surrounding your code.

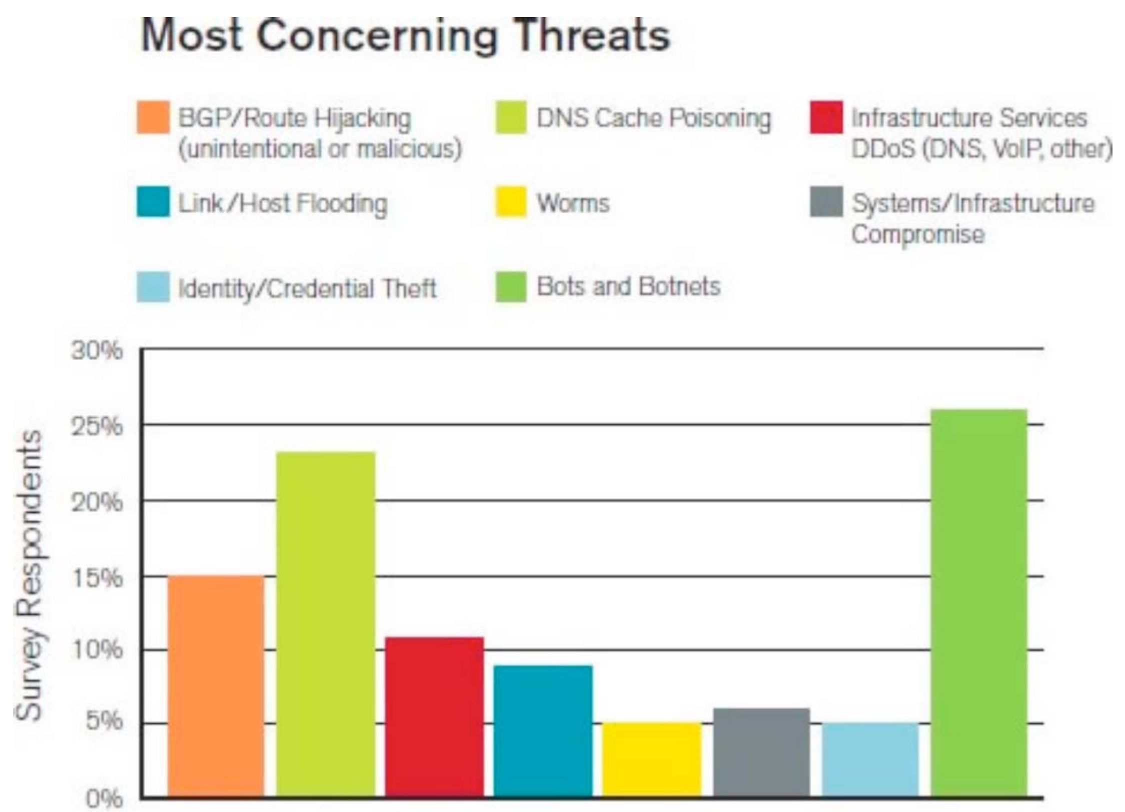

Figure 4: Most Concerning Threats

Source: Arbor Networks, Inc.

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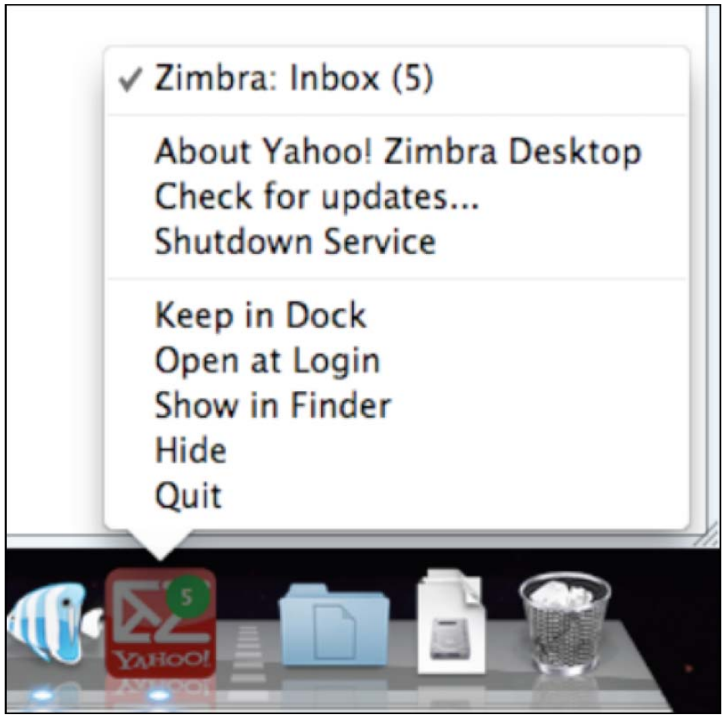
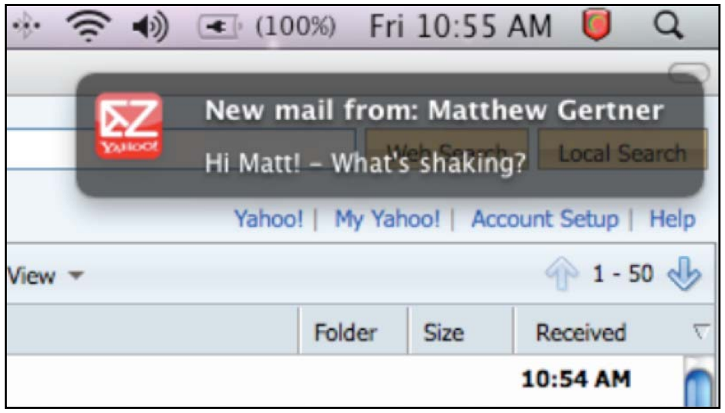
mozilla Labs Prism

Bringing Web Applications to the Desktop

by Matthew Gertner

- The browser wasn't designed for running applications -- but it is being used that way
- **HTML5** is furthering this effort
  - Offline Operation
  - Local Data
  - Worker Threads
- **Prism** allows you to spin a process (separate from the browser) and interact with the OS using JavaScript calls to the API





New mail from: Matthew Gertner

Hi Matt! – What's shaking?

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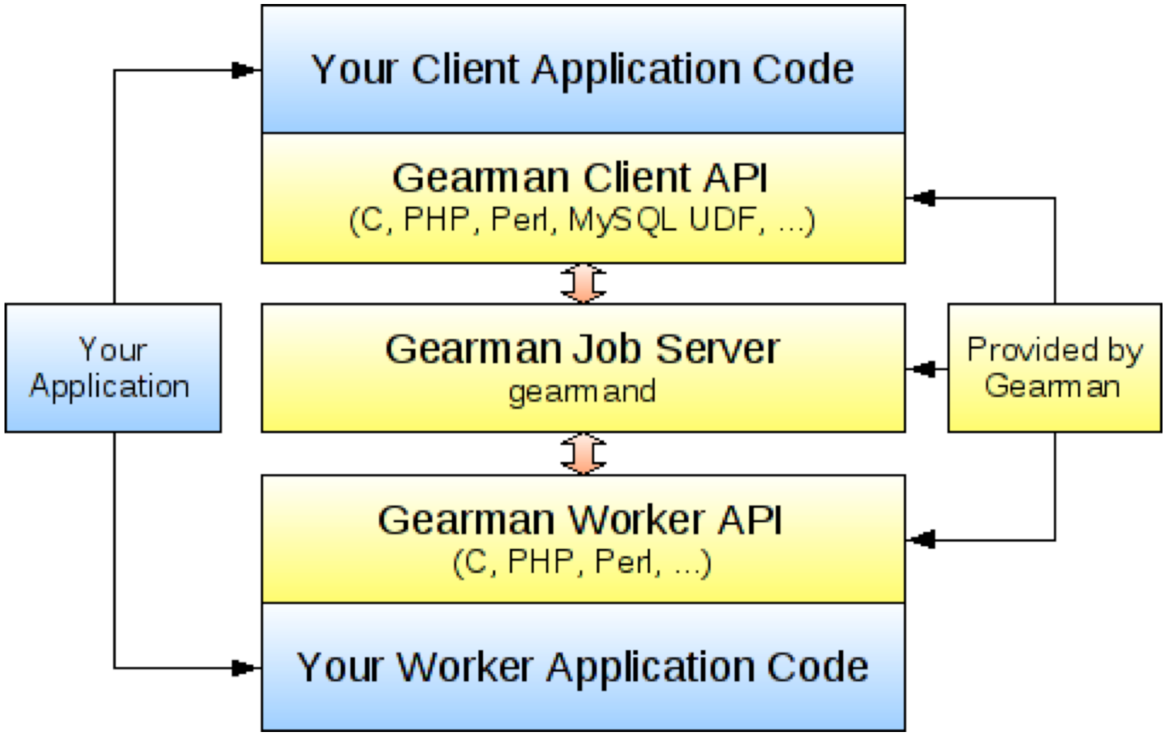
Gearman

Build Your Own Distributed Platform in 3 Hours

- Gearman provides a distributed application **framework**
    - **Clients** - Create jobs to be run and sends them to a job server.
    - **Workers** - Register with a job server and grab jobs to run.
    - **Job Server** - Coordinate the assignment from the client to the works, handle restarts.
- "Gearman, **like managers**, assign the tasks but do none of the work."



Gearman

Build Your Own Distributed Platform in 3 Hours

- **Not everything needs immediate attention**
  - E-mail notifications
  - Certain DB updates
  - RSS indexing
  - Search indexing

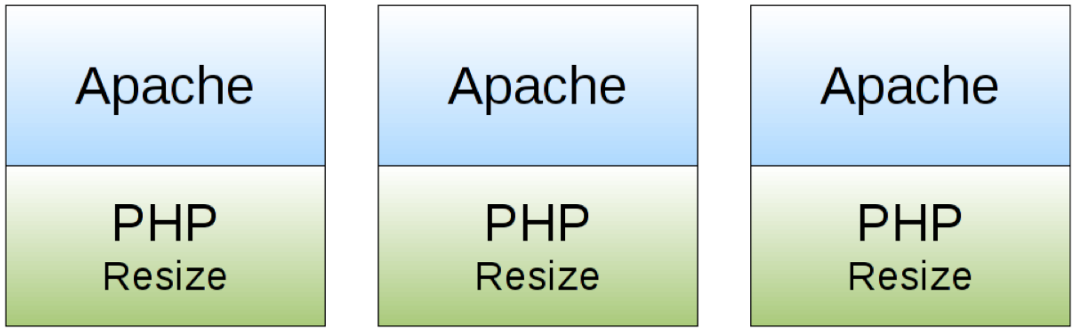
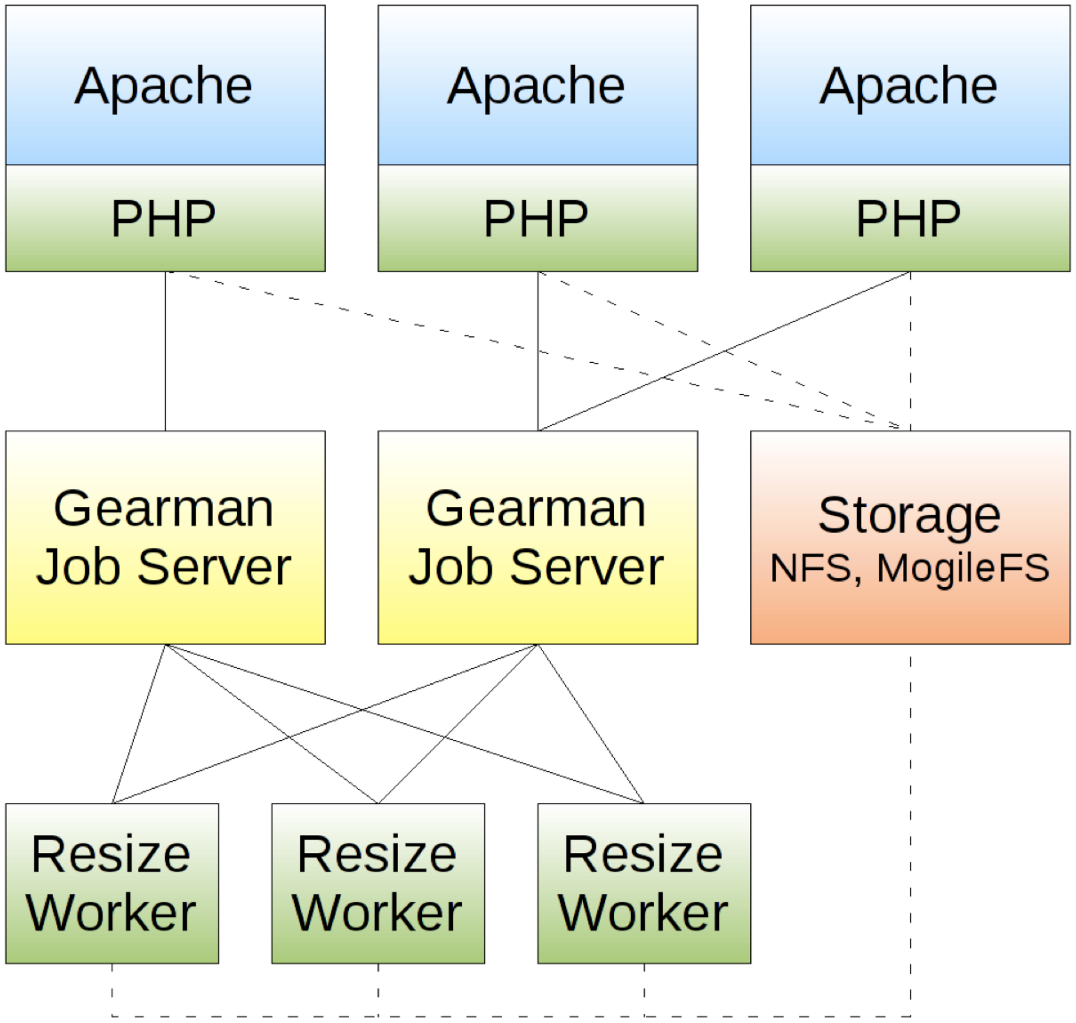


Image Processing

Gearman

Build Your Own Distributed Platform in 3 Hours

- Background tasks
- Foreground tasks
- Asynchronous tasks
- No single point of failure (multiple job servers, multiple workers)
- Workers can be specific to certain jobs



Gearman

Build Your Own Distributed Platform in 3 Hours

Pros

- Written in C
- Perl API on CPAN (**Gearman::XS**)
- Command line tool
- Multi-language - mix client and workers
- Synchronous and Asynchronous queues
- Runs as a daemon (gearmand)
- Developing improved monitoring (statistics, configuration management, etc.)

Cons

- Only accepts a single string / file handle from Client to Worker
- Failure by worker -- not enough configuration (would rather it be function specific)

The Presentations

- **Perl 6 Update & Perl 6: What? Why? How?** - *Larry Wall & Damian Conway*
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- **Zen and the Art of Abstraction Maintenance** - *Alex Martelli*
- **Prism, Bringing Web Applications to the Desktop** - *Matthew Gertner*
- **Gearman: Building a Distributed Platform** - *Eric Day and Brian Aker*
- **7 Principles of Better API Design** - *Damian Conway*
- **Situation Normal, Everything Must Change** - *Simon Wardley*

7 Principles of Better API Design

by Damian Conway

1. Do one thing **really well**

```
# read a file in to a variable
my $text = do { local (@ARGV, $/) = filename; <> };

use Perl6::Slurp;

my $text = slurp $fh;
my $text2 = slurp ‘filename’;
```

7 Principles of Better API Design

by Damian Conway

2. Design by **coding** *(work backwards)*

```
# regex for floating point integer
my $input =~
  /([+-]?(?:\d+[.]?\d*|[.]\d+(?:[eE][+-]?\d+)?)/;

use Regexp::Common;
my $input =~ /($RE{num}{real})/;
my $input2 =~ /($RE{num}{int})/;
my $input3 =~ /($RE{num})/;
```

7 Principles of Better API Design

by Damian Conway

3. Evolve by **Subtraction**

```
use IO::Prompt;
while (prompt “next: “, -bool, -chomped) {
    print “You said ‘$_’\n”;
}

while (prompt “next: “) { # autodetect, autochomp
    print “You said ‘$_’\n”;
}
```

7 Principles of Better API Design
by Damian Conway

4. Declarative beats imperative

```
use Getopt::Euclid;

for my $x (0 .. $ARGV{-size}{h} - 1) {
    for my $y (0 .. $ARGV{-size}{w} - 1) {
        do_something_with($x, $y);
    }
}

__END__

= item -s[ize]=<h>x<w>

Specify size of simulation

=for Euclid:
  h.type:    int > 0
  h.default: 24
  w.type:    int >= 10
  w.default: 80
```

7 Principles of Better API Design
by Damian Conway

5. Preserve the metadata

```
use Config::Std;

read_config $file_name => my %config;
# update %config here
write_config %config => $file_name;

read_config $file_name => my %config;
# update %config here
write_config %config;


bash> cd /home/jlloyd
bash> ls
bash> cd docs/
bash> ls
bash> cd modules/
bash> ls
You have typed the commands “cd [path] ls” 3 times, would you
like to create an alias? [y|n]
```

7 Principles of Better API Design

by Damian Conway

6. Leverage the familiar

```
use Log::Log4perl;
Log::Log4perl->init($log_config_file);

my $logger = Log::Log4perl->get_logger(__PACKAGE__);

$logger->debug(‘this is a debug message’);
$logger->info(‘this is an info message’);
$logger->warn(‘this is a warning message’);
$logger->error(‘this is an error message’);
$logger->fatal(‘this is a fatal message’);

use Log::StdLog { file => $log_file };
print STDLOG debug => ‘this is a debug message’;
print STDLOG info => ‘this is an info message’;
print STDLOG warn => ‘this is a warning message’;
print STDLOG error => ‘this is an error message’;
print STDLOG fatal => ‘this is a fatal message’;
```

7 Principles of Better API Design
by Damian Conway

7. The best code is no code at all

```
my $obj = MyClass->new('data');
print $obj;
```

```
MyClass=HASH[0x12a8f2];
```

```
my $obj = MyClass->new('data');

use Object::Dumper;
print $obj;
```

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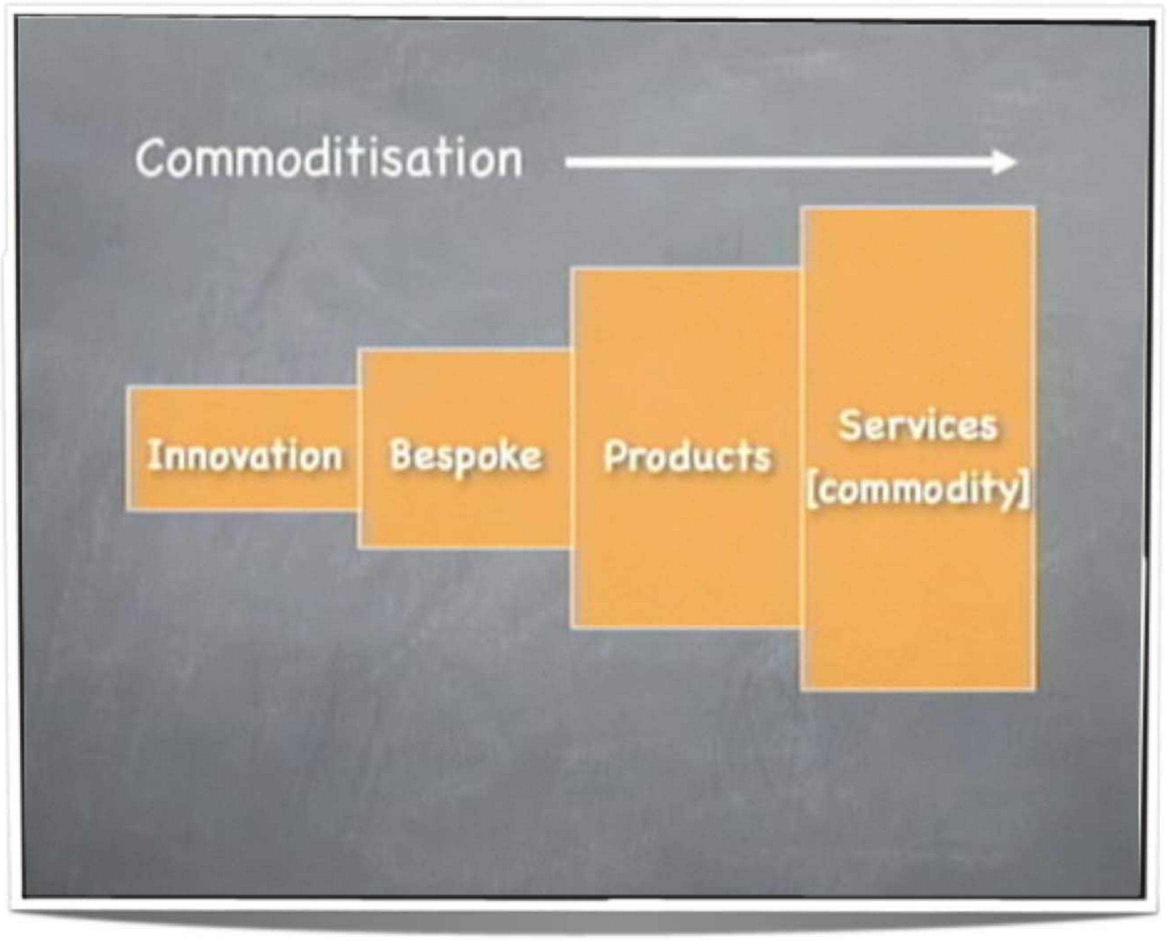
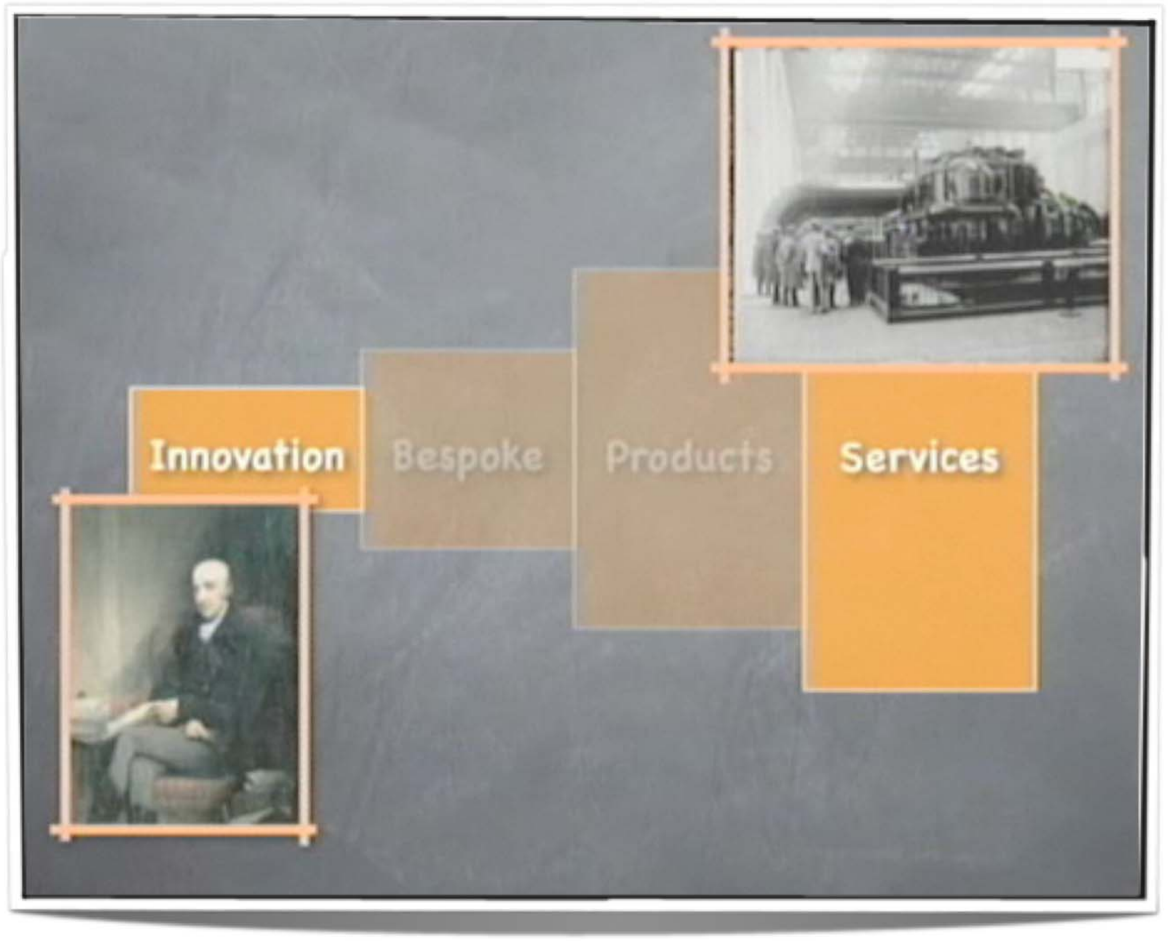
Situation Normal, Everything Must Change
by Simon Wardley

- All good innovations undergo a process of commoditization



Situation Normal, Everything Must Change
by Simon Wardley

- All good innovations undergo a process of commoditization (i.e. Electricity)



Situation Normal, Everything Must Change
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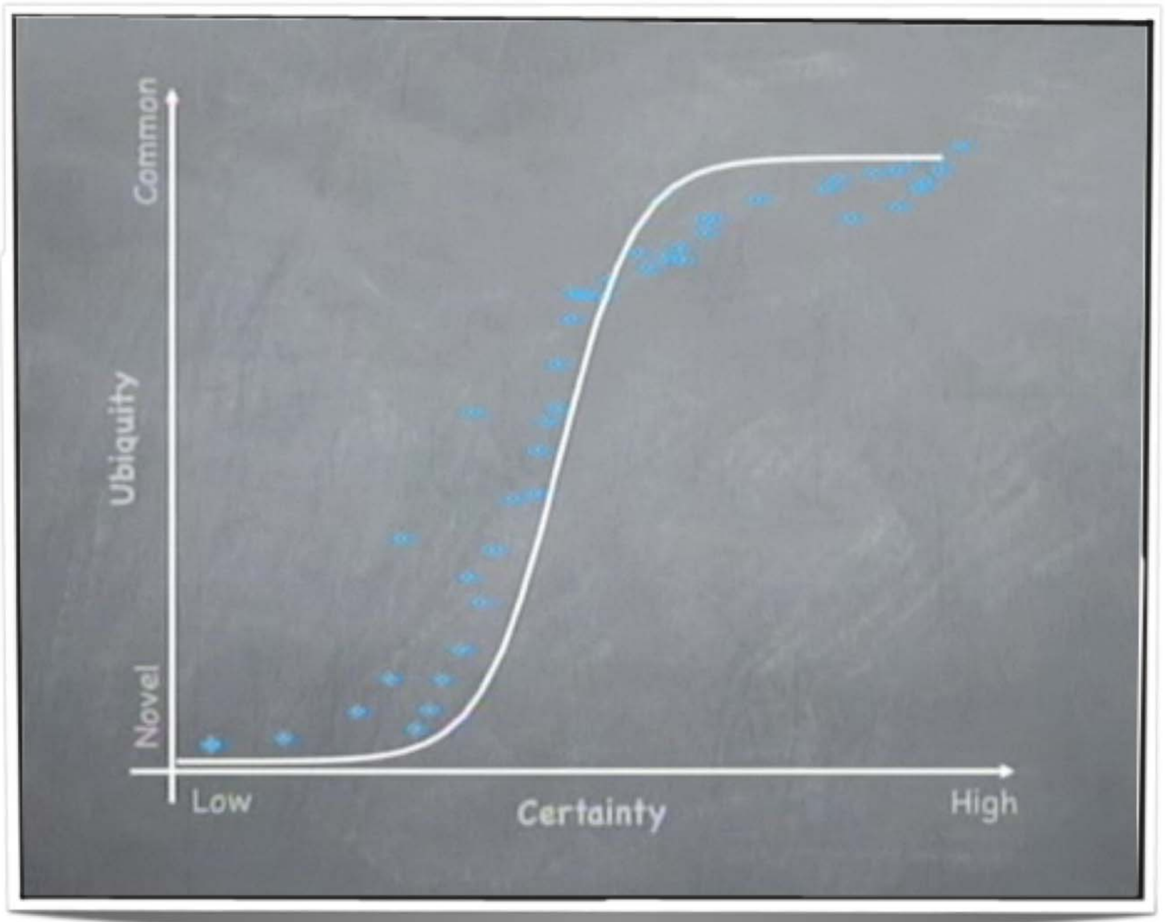
- All good innovations undergo a process of commoditization (i.e. Electricity)
- This trend can be mapped and seen in the market



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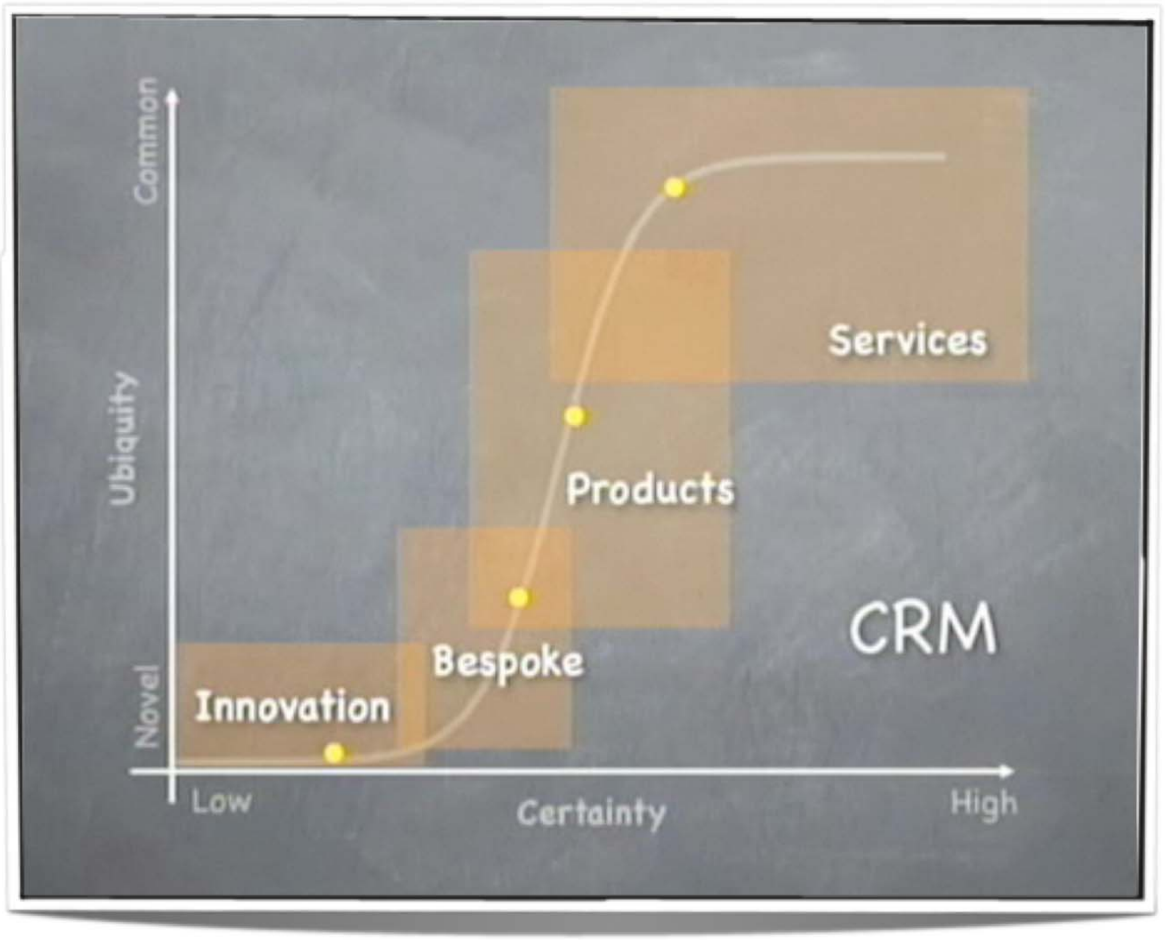

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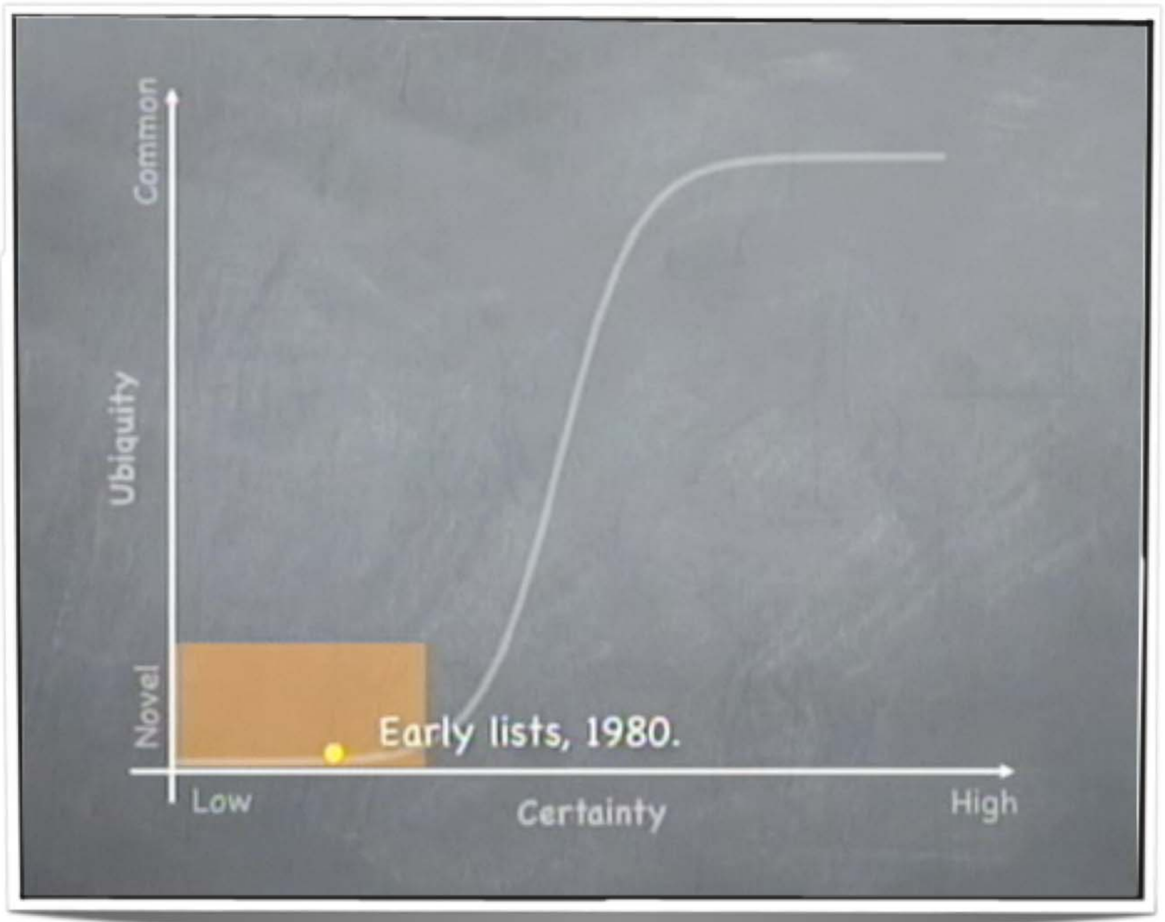

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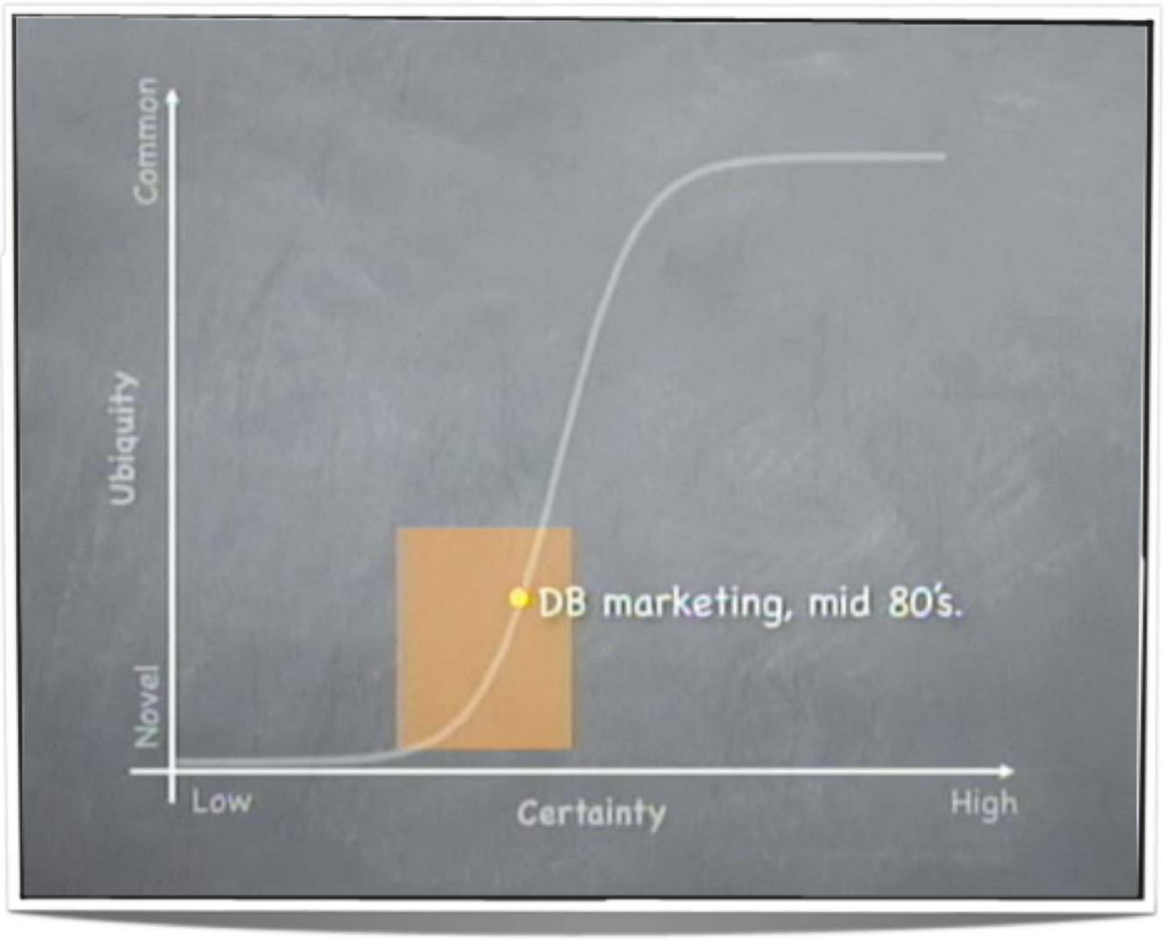

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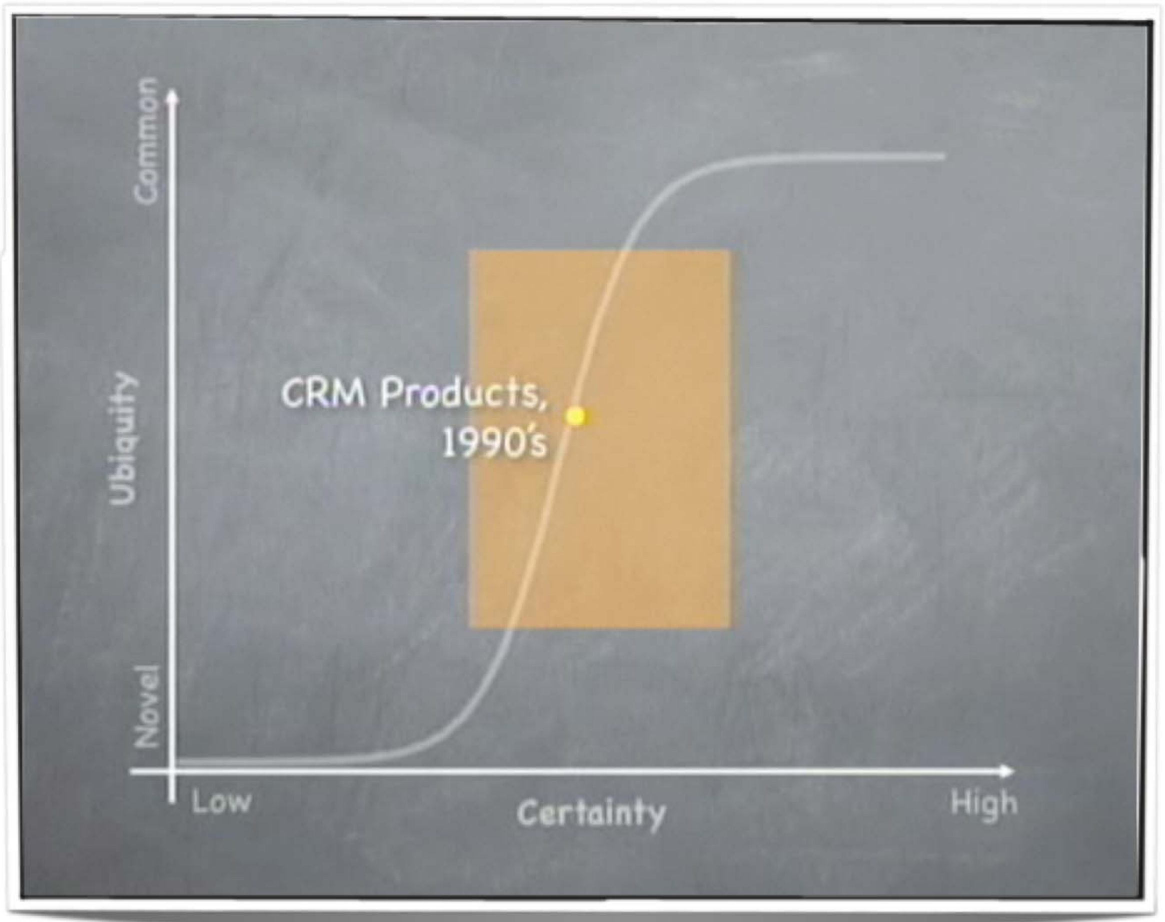

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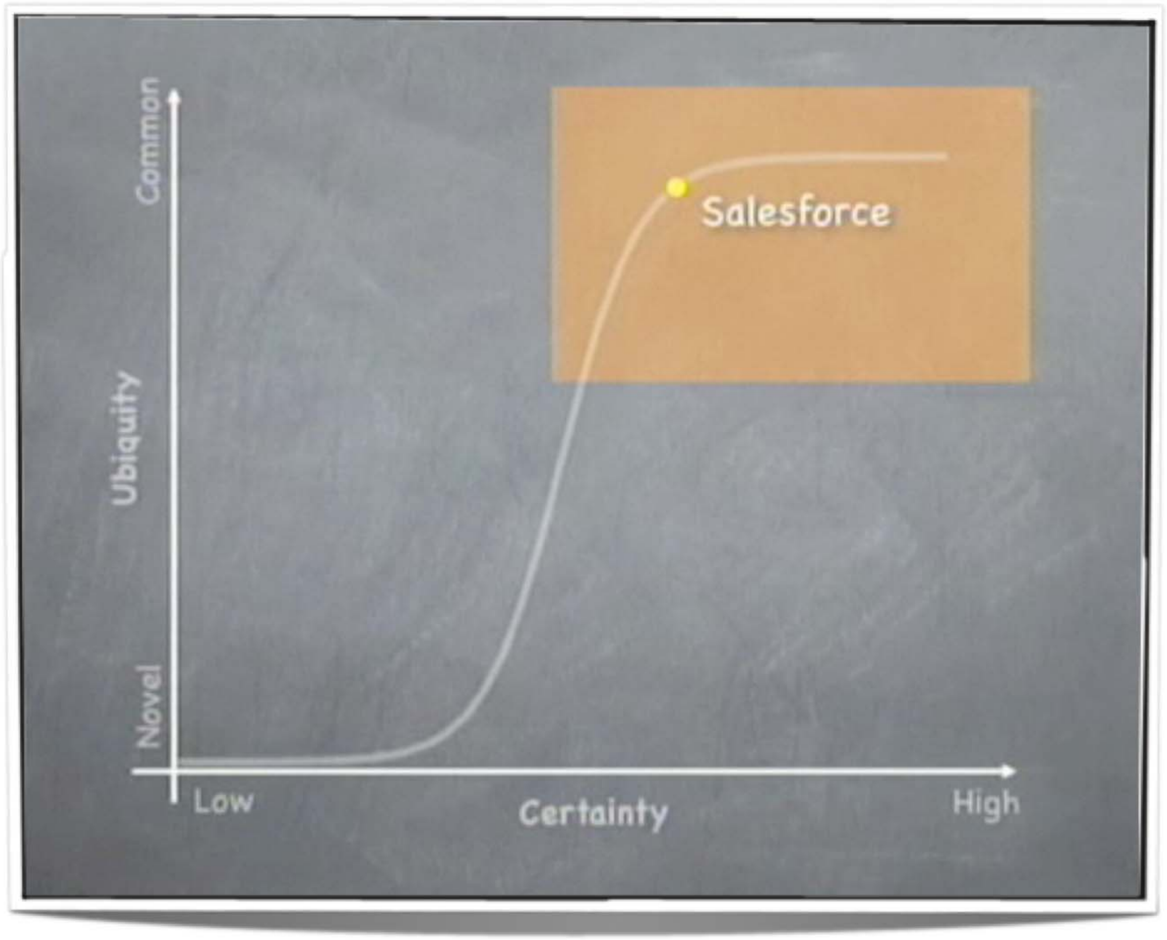

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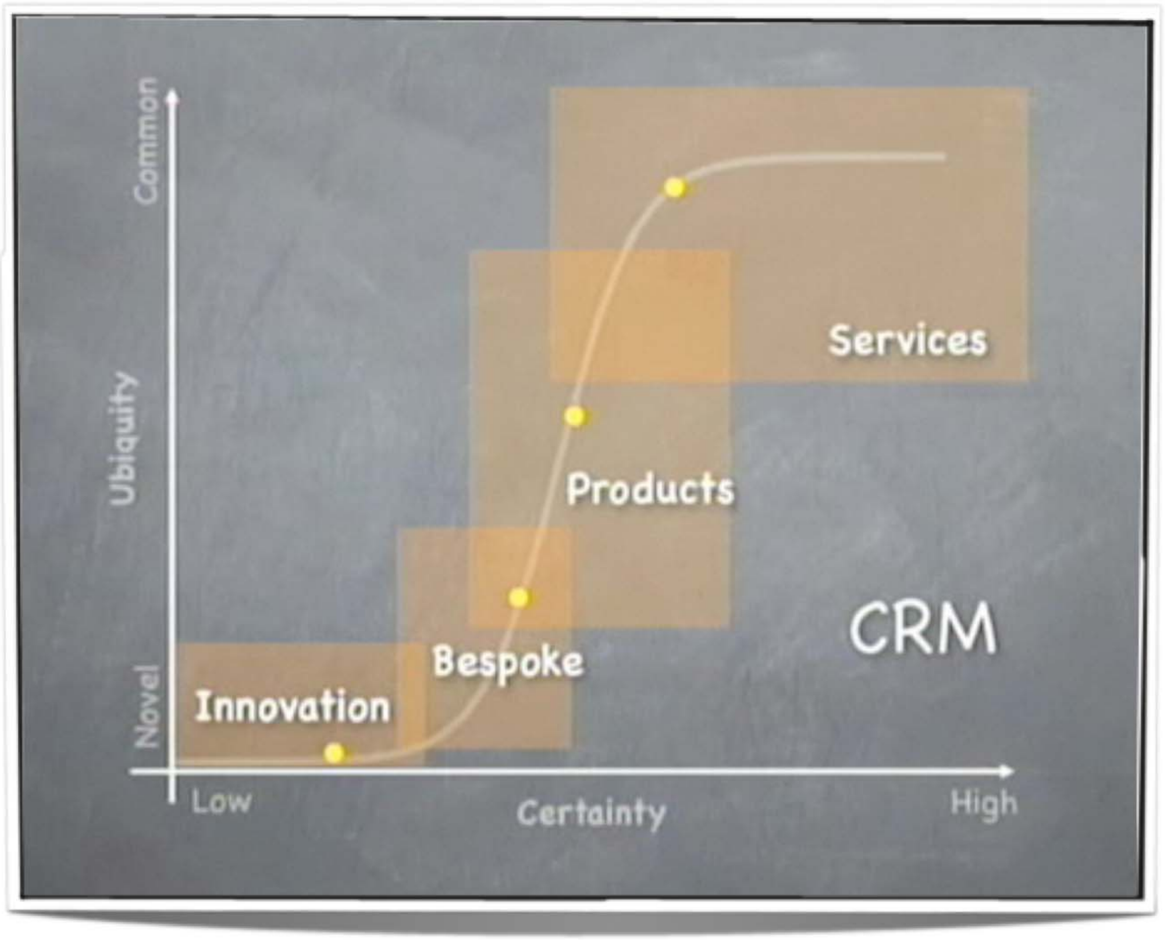

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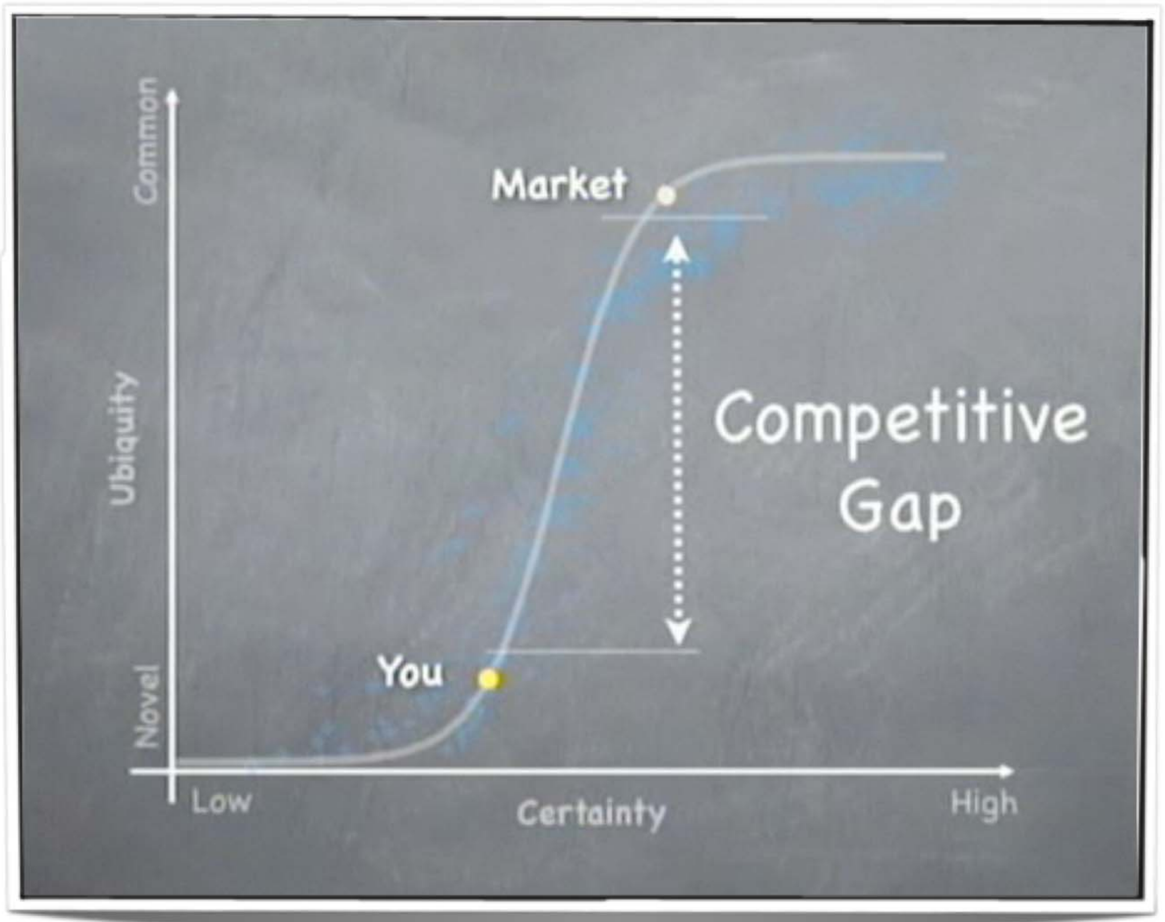
- All good innovations undergo a process of commoditization (i.e. Electricity)
- This trend can be mapped and seen in the market (i.e. CRM)
- Competitive disadvantage to companies that fail to follow the market



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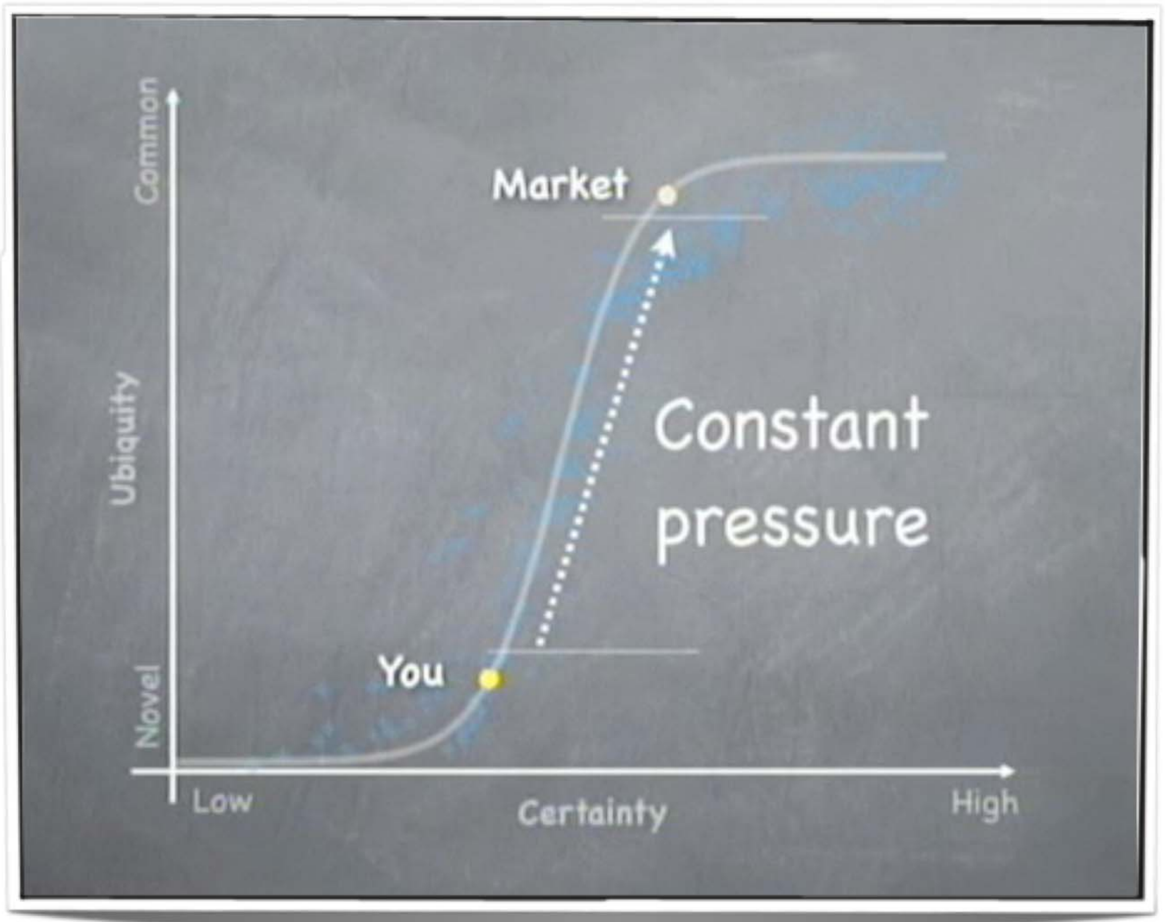

Situation Normal, Everything Must Change
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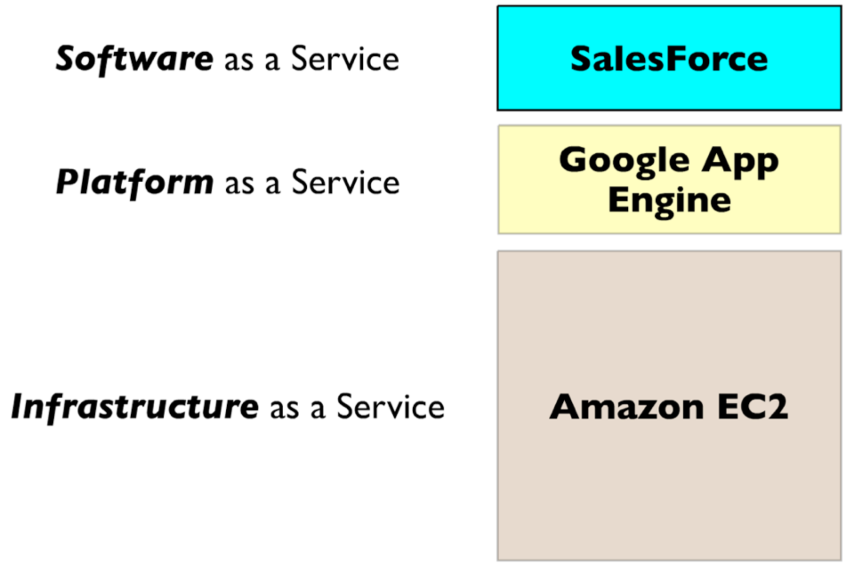
Pros

- Economies of scale
- Pay per use
- Speed to market
- Focus on core
- Price competition
- Not "locked-in"
- Secondary sourcing

Cons

- Management of data/ applications (different way of thinking/ designing)
- **Trust / Security**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Thanks!

Questions?