CHEF™

Cheffing your DevOps

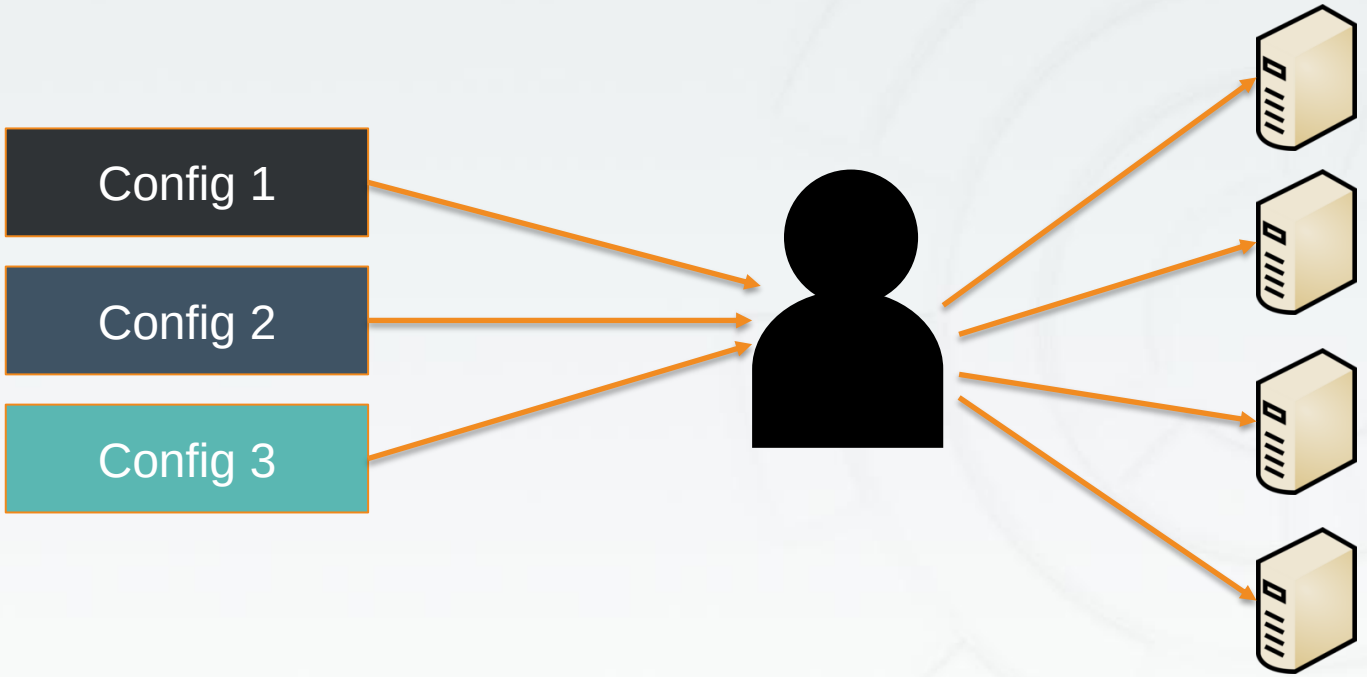
Michael Ducy - Chef - @mfdii

CHEF

What is Chef?

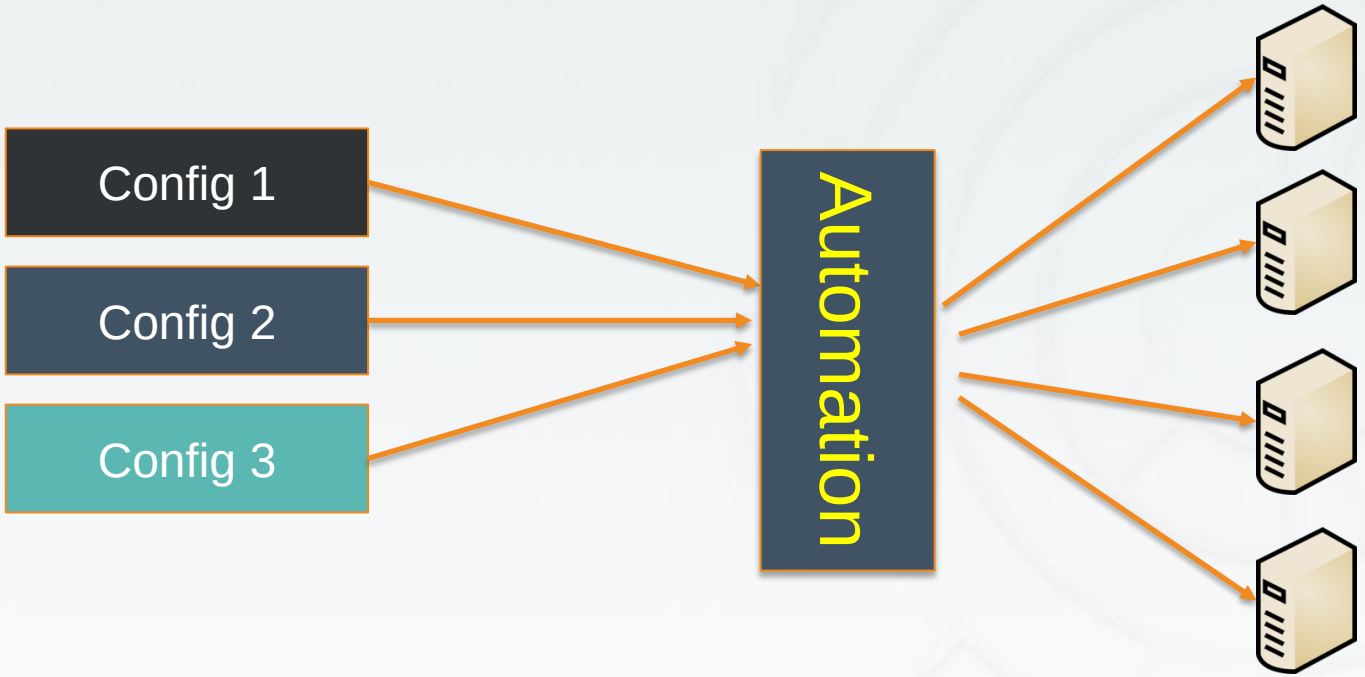
Short Answer: An Automation Framework
for automating infrastructure and applications

Traditional Systems Management



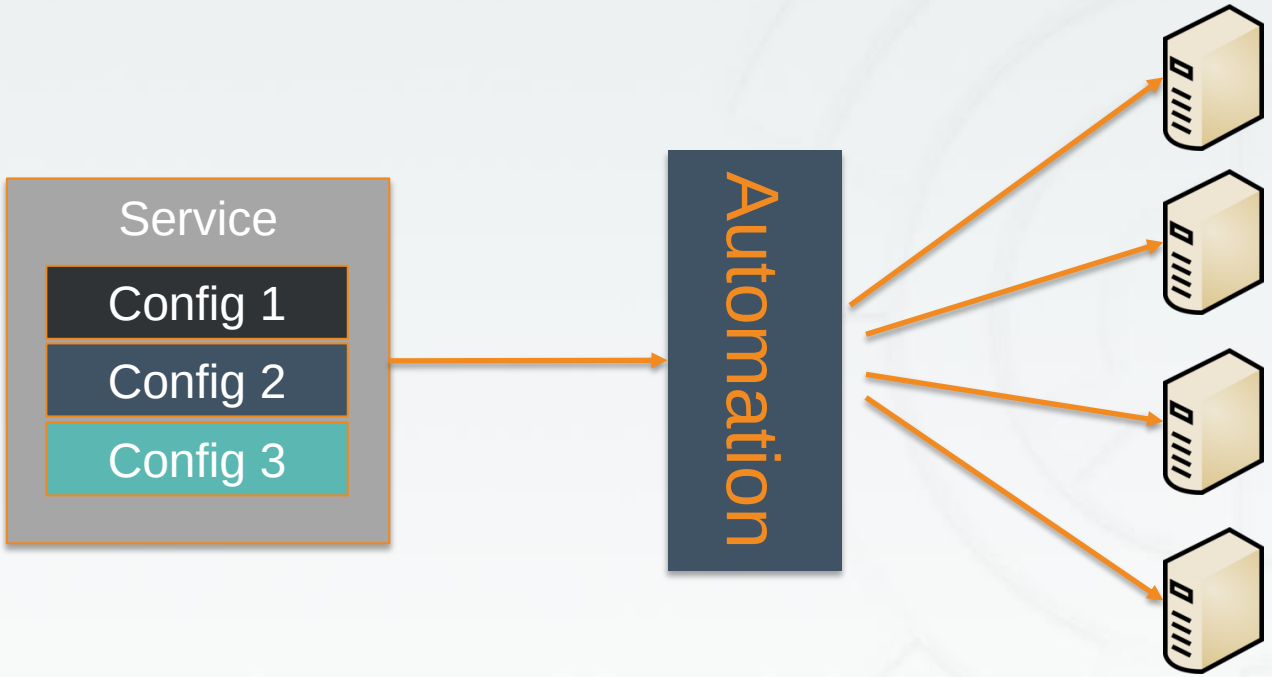
CHEF

Traditional Systems Management



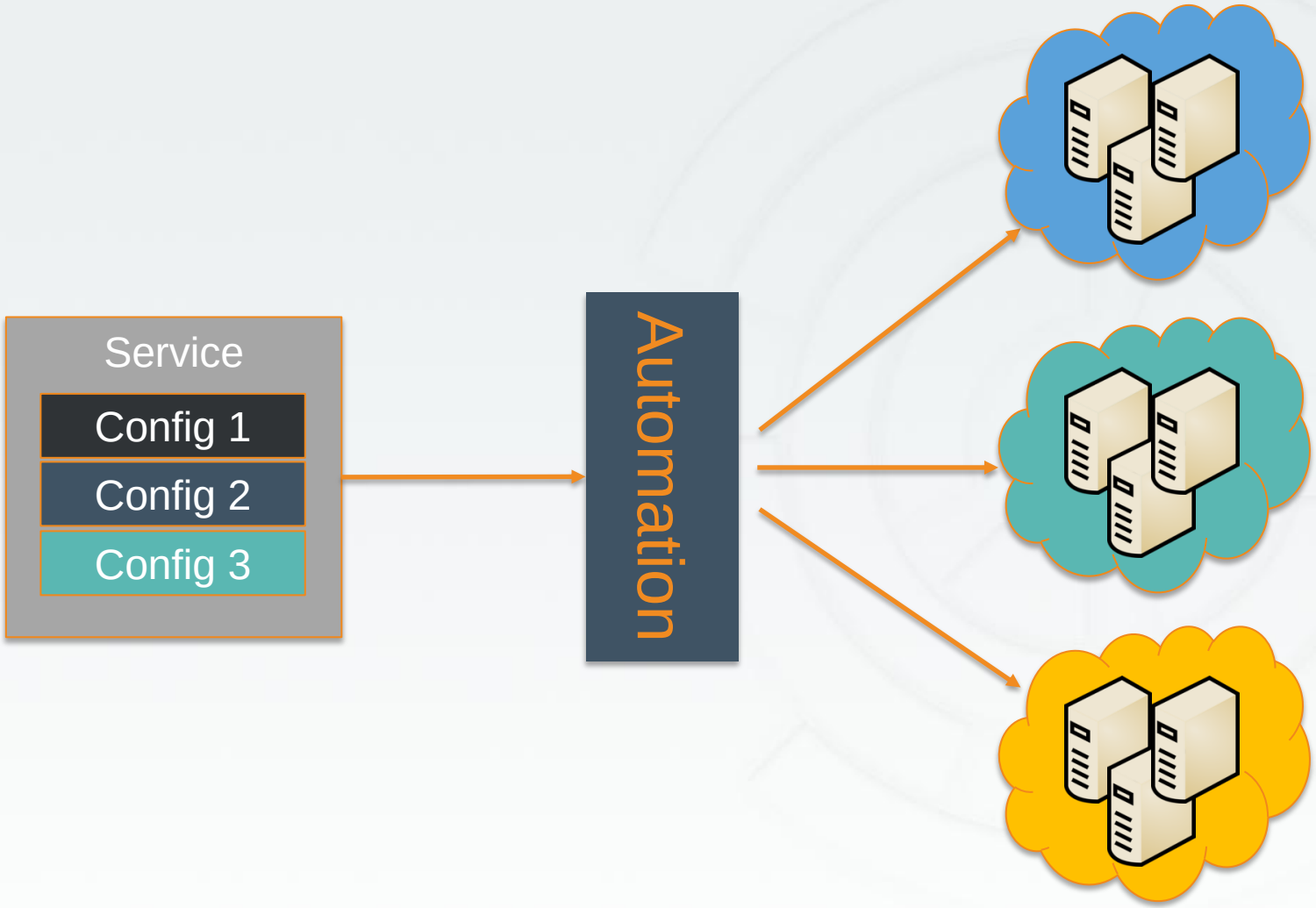
CHEF

Idea of Services



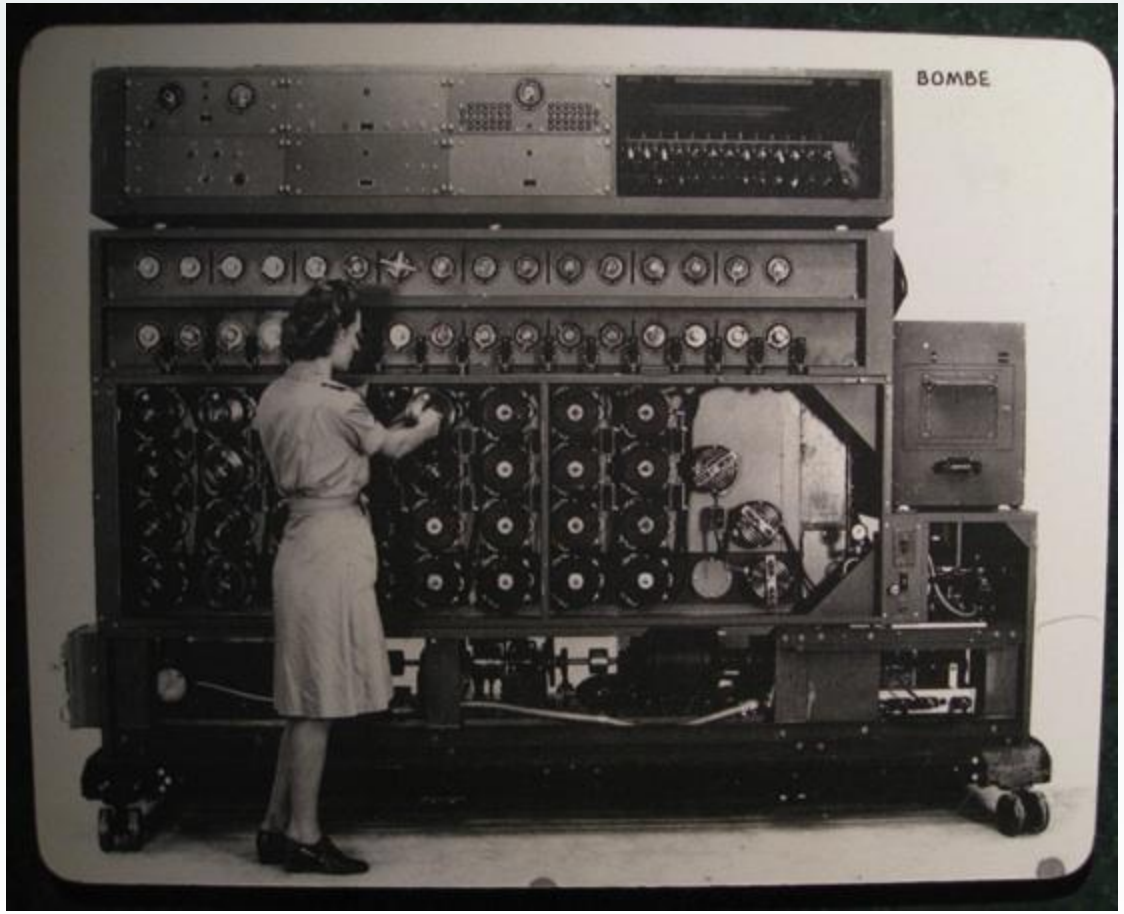
CHEF

Abstraction of Services



CHEF

Chef is Infrastructure as Code

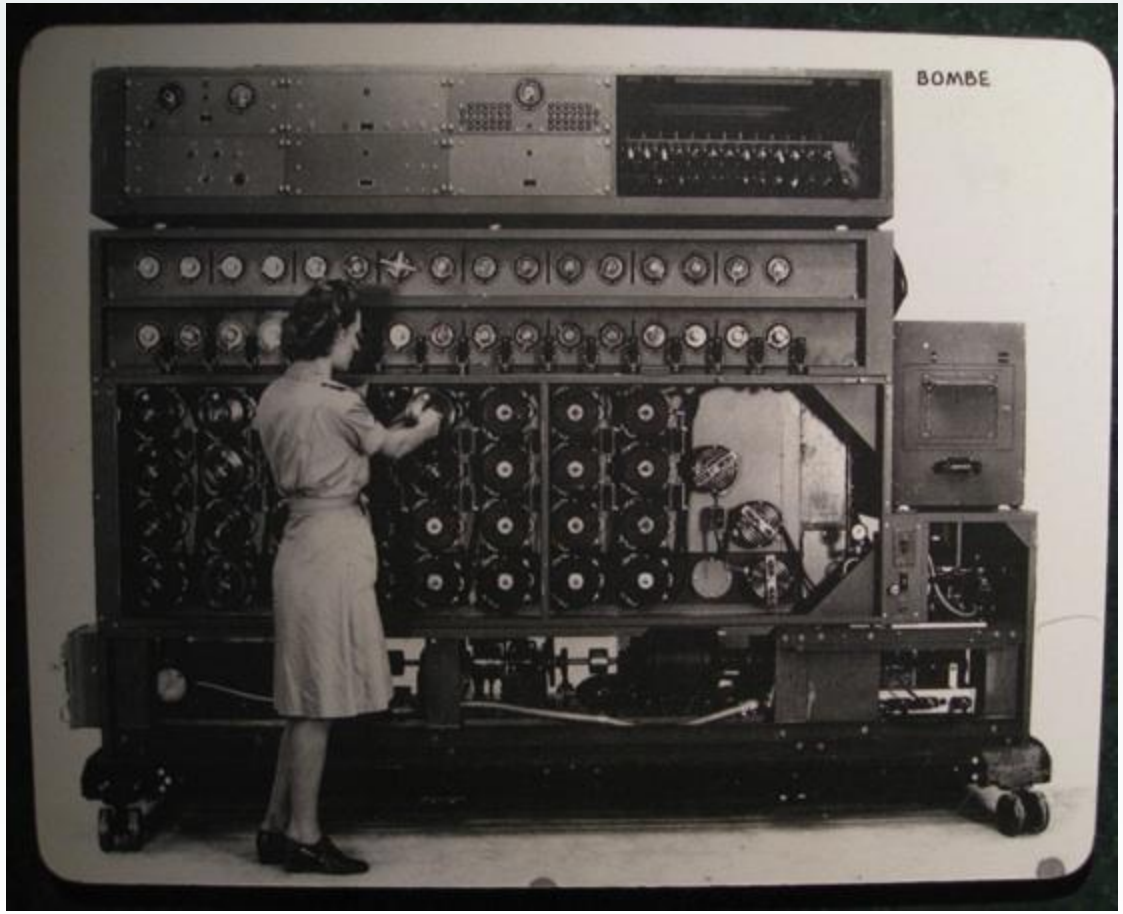


http://www.flickr.com/photos/louisb/4555295187/

- Programmatically provision and configure components

CHEF

Chef is Infrastructure as Code

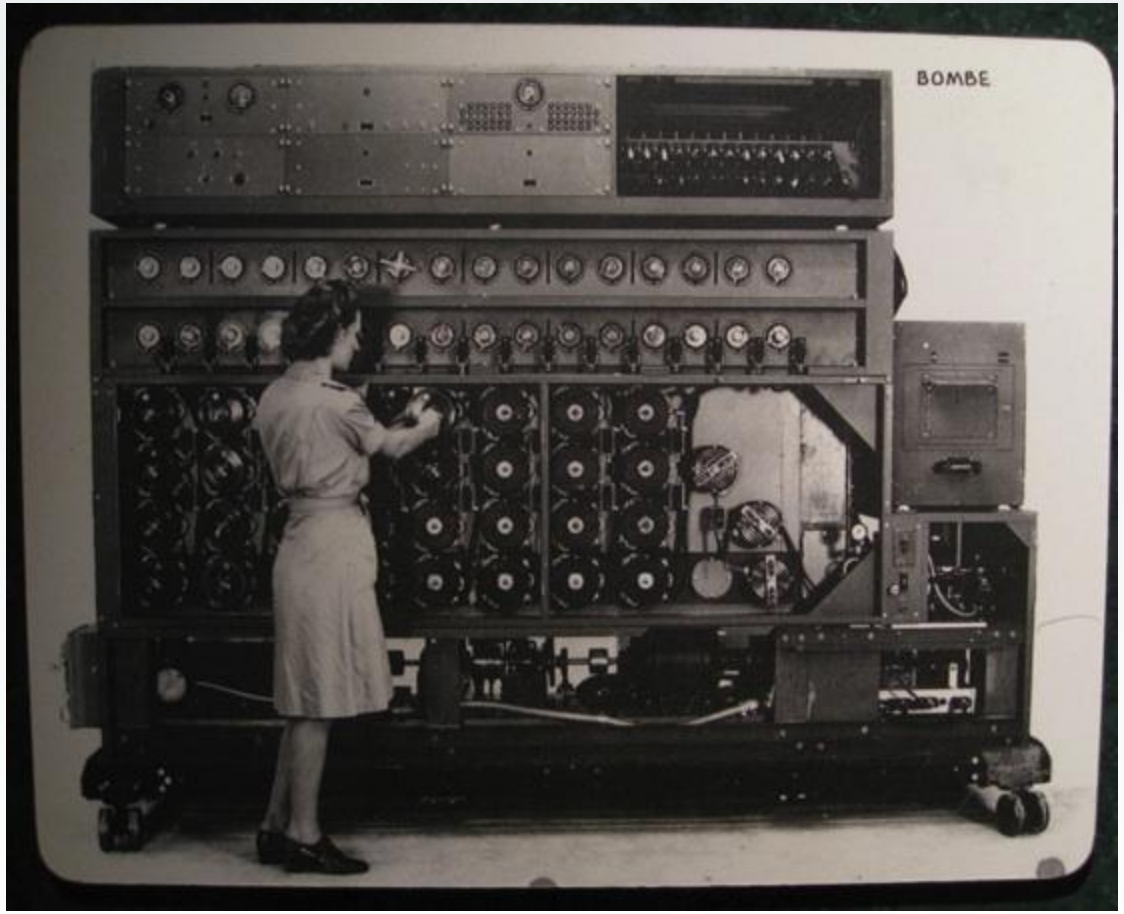


http://www.flickr.com/photos/louisb/4555295187/

- Treat like any other code base

CHEF

Chef is Infrastructure as Code

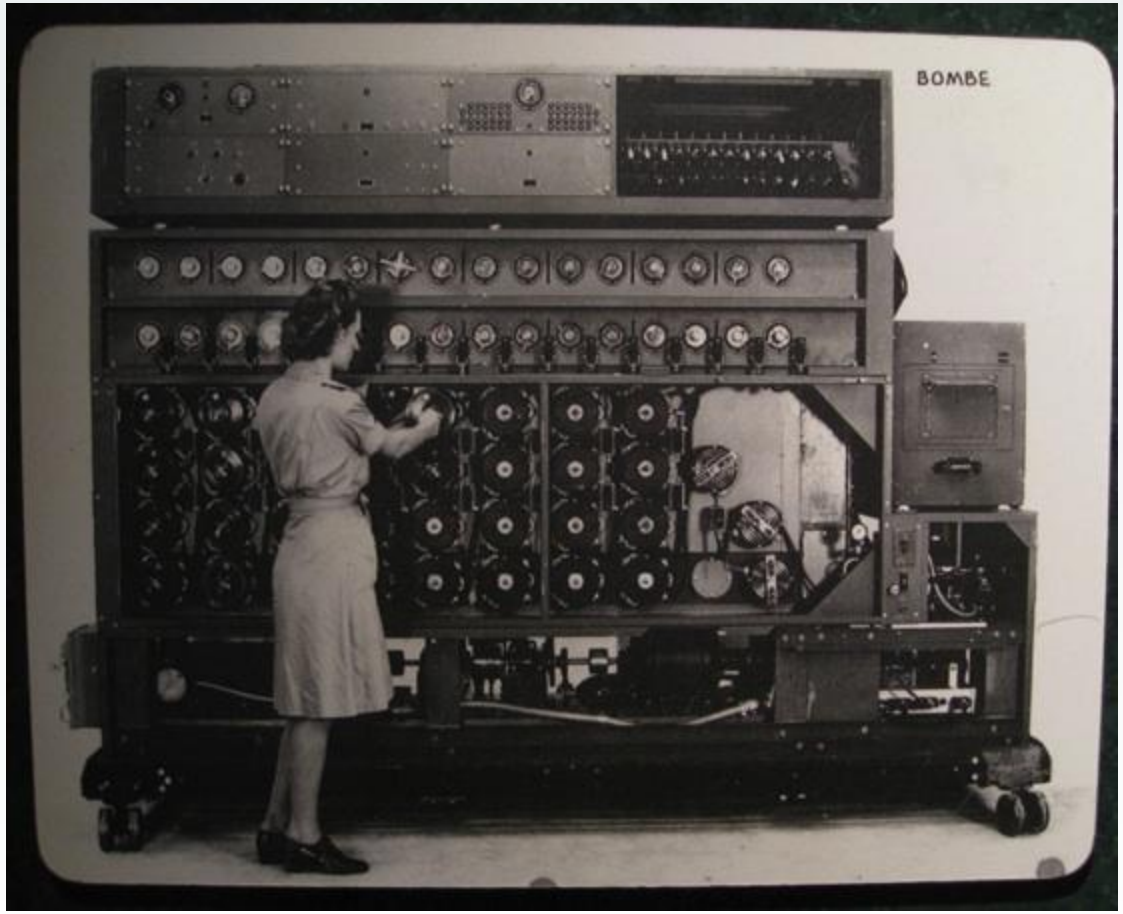


http://www.flickr.com/photos/louisb/4555295187/

- Reconstruct business from **code repository**, **data backup**, and compute resources

CHEF

Chef is Infrastructure as Code

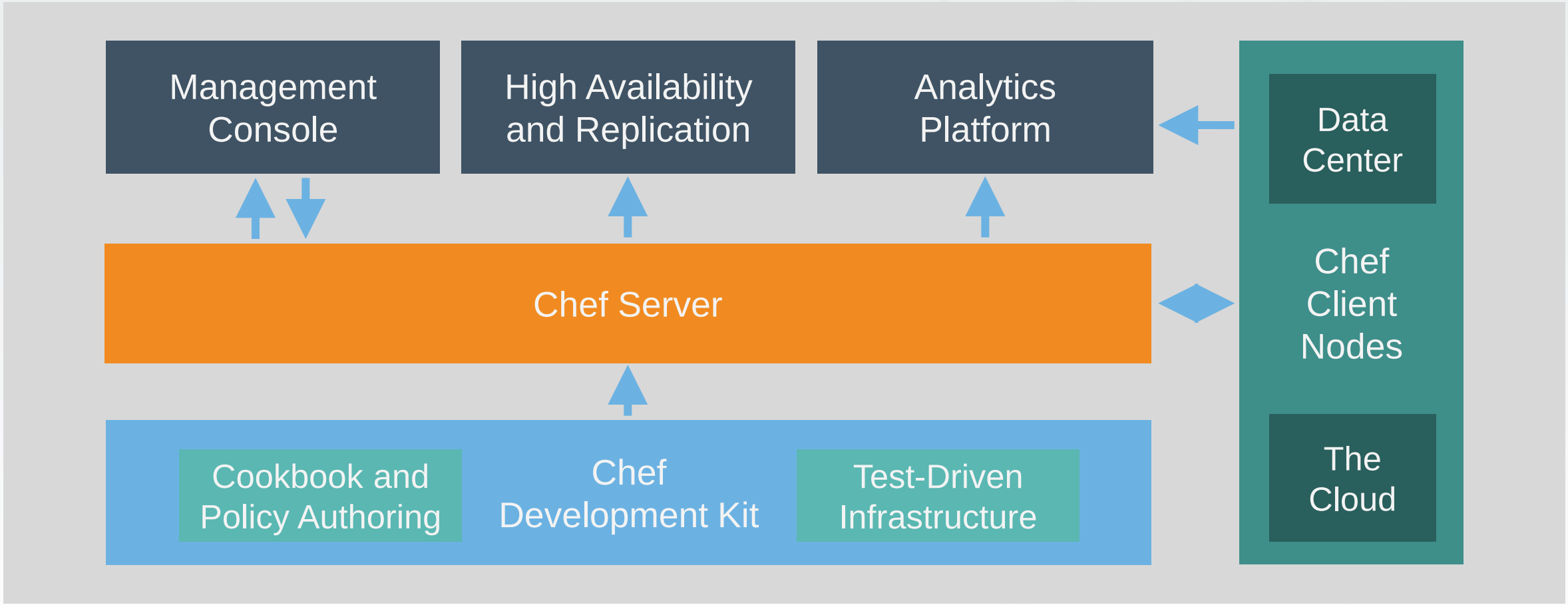


http://www.flickr.com/photos/louisb/4555295187/

- Programmatically provision and configure components
- Treat like any other code base
- Reconstruct business from **code repository**, **data backup**, and compute resources

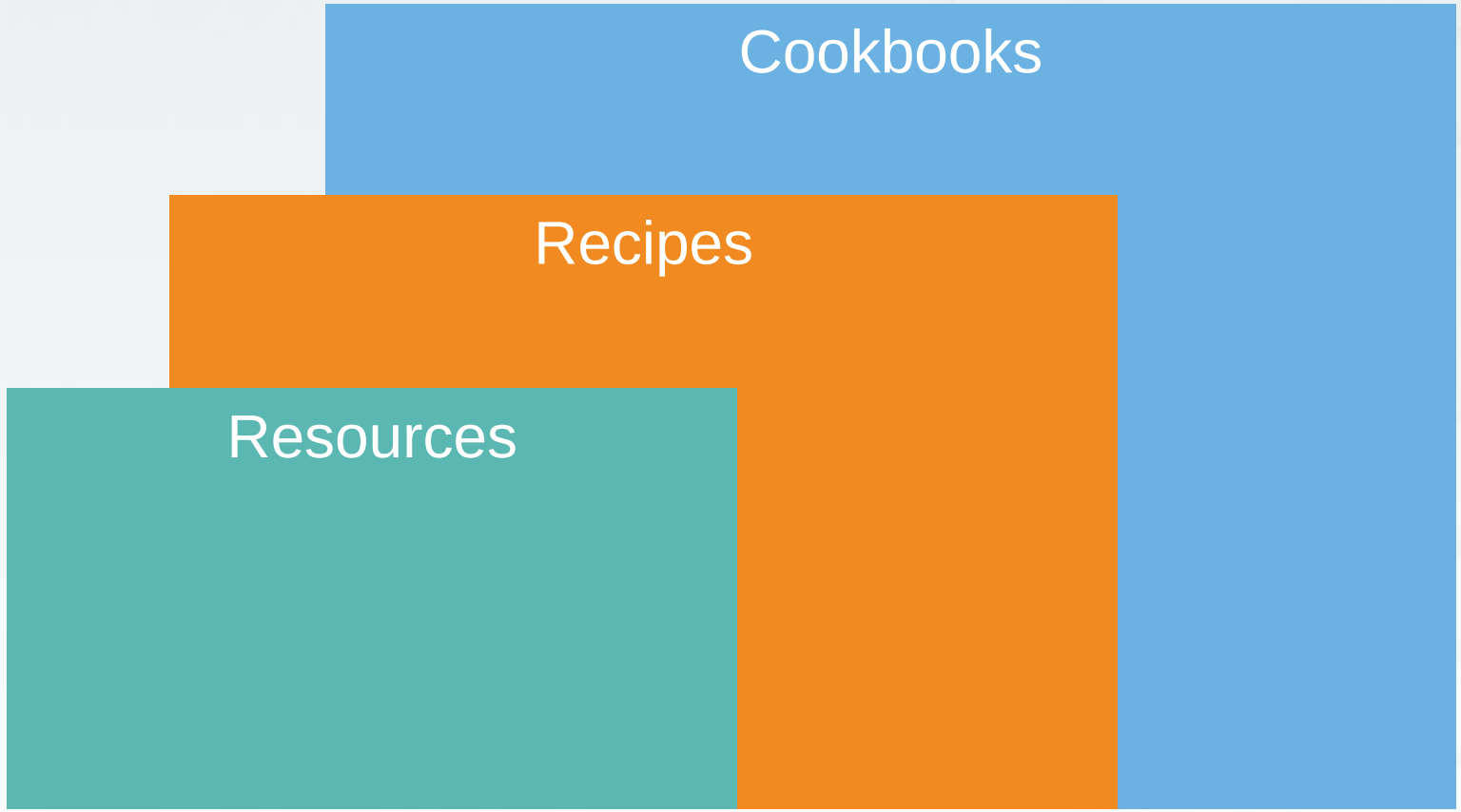
CHEF

The Chef Software Platform



CHEF

Building Blocks



CHEF

Building Blocks: What is a Resource?

- A Resource is a system state you define

  Example: Package installed, state of a service, configuration file existing

- You declare what state you want the resource in.

  Chef automatically determines HOW that state is achieved

On Linux based OSes:

```
1 package "apache" do
2   action :install
3 end
4
```

On Windows based OSes:

```
1 windows_feature 'IIS-WebServerRole' do
2   action :install
3 end
4
5 windows_feature 'IIS-ASPNET' do
6   action :install
7 end
```

CHEF

Resource Example

```
#windows
dsc_resource 'webserver' do
    resource :windowsfeature
    property :name, 'Web-Server'
    property :ensure, 'Present’
end
```

Resource Example

```
#linux
package "httpd" do
    action :install
end
```


CHEF

Building Blocks: What is a Recipe?

- An abstraction of a Service that consists of a set of Resources to deliver that Service
- Resources are executed in the order they are listed.

Recipe Example

```
#linux
package "httpd" do
     action :install
end

include_recipe "apache::fwrules”

service "httpd" do
     action [ :enable, :start ]
end
```

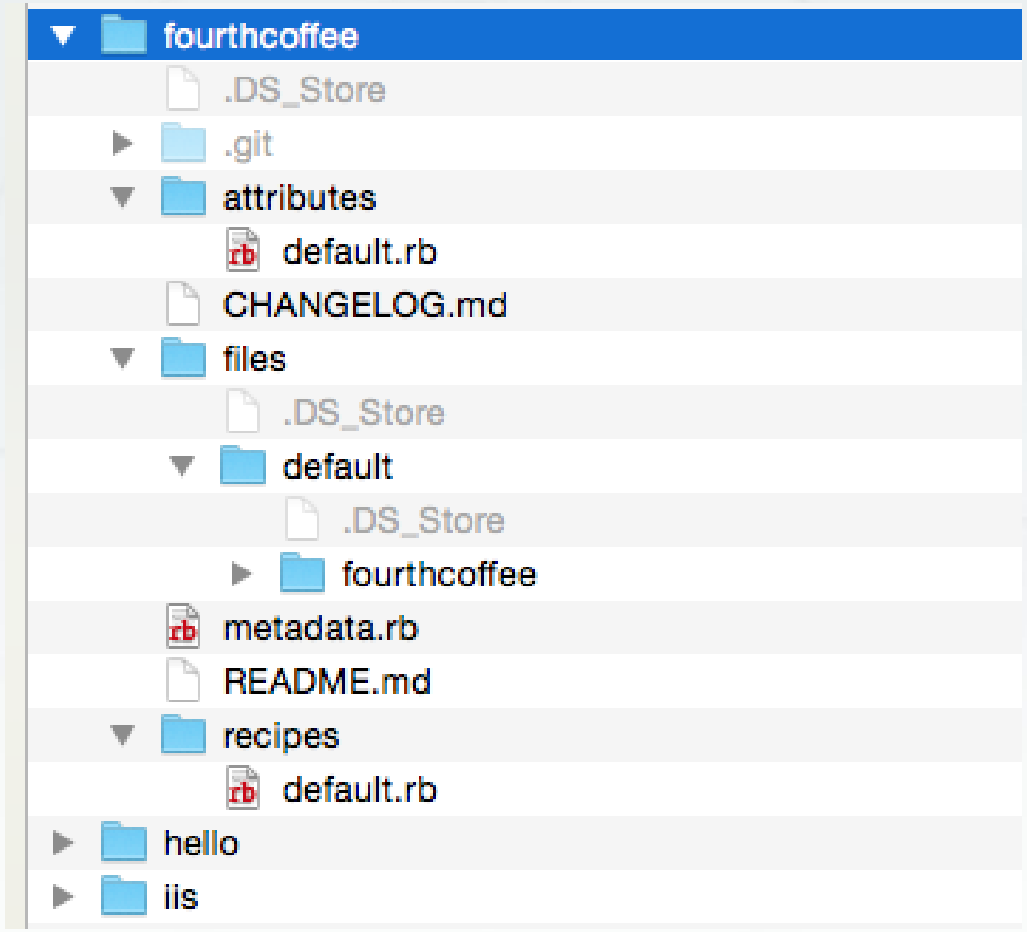
Recipe Example

```
#windows
include_recipe "fourthcoffee::dsc”
include_recipe "iis::remove_default_site”
remote_directory node['fourthcoffee']['install_path'] do
         source 'fourthcoffee’
         action :create
end
iis_pool 'FourthCoffee' do
         runtime_version "4.0"
         action :add
end
iis_site 'FourthCoffee' do
         protocol :http
         port 80
         path node['fourthcoffee']['install_path']
         application_pool 'FourthCoffee'
         action [:add,:start]
end
```

CHEF

Cookbooks

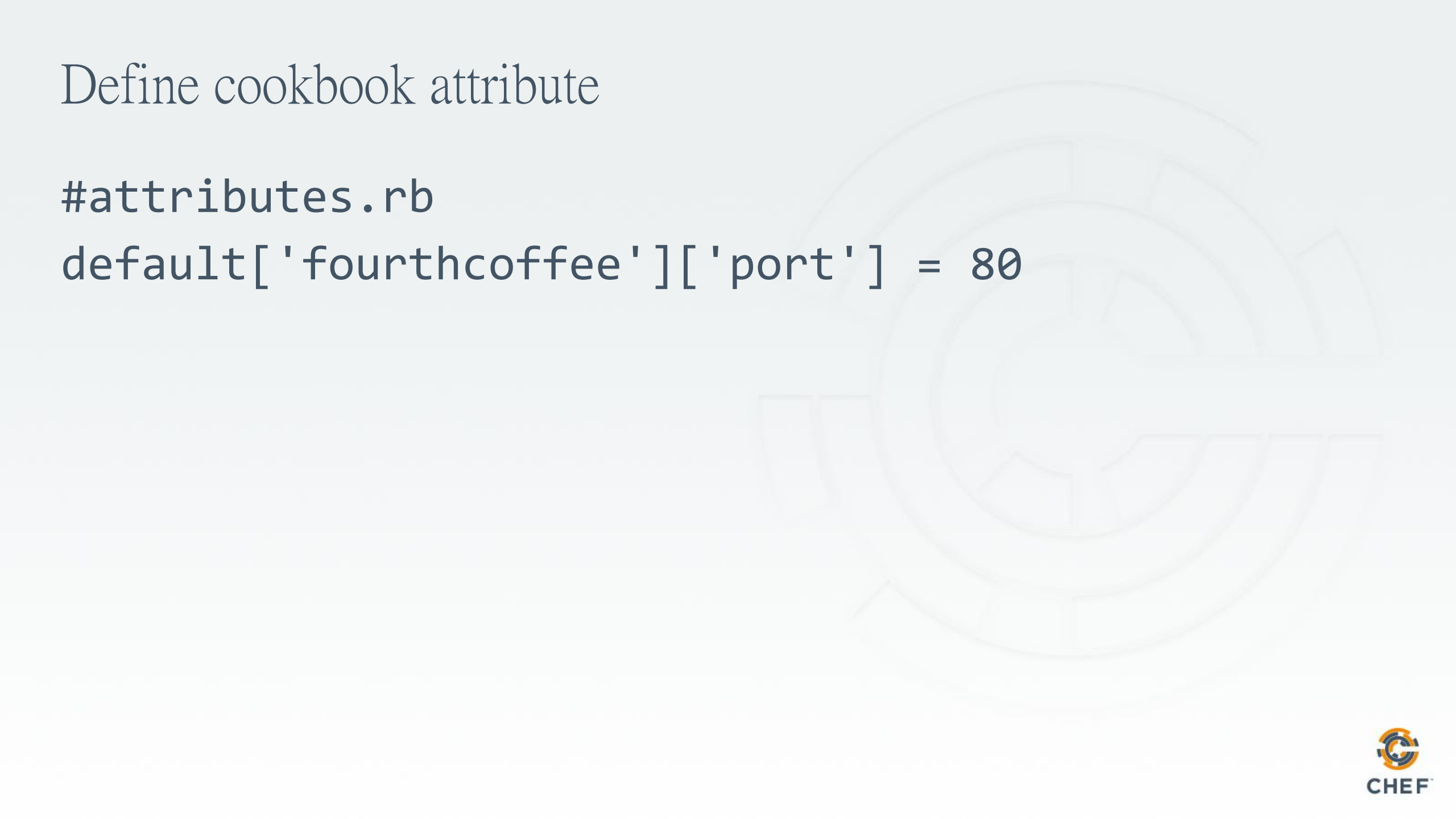
- A Higher Level Abstraction of a Service
- A set of Recipes and Data Attributes required to deliver one or multiple Services



CHEF

Define cookbook attribute

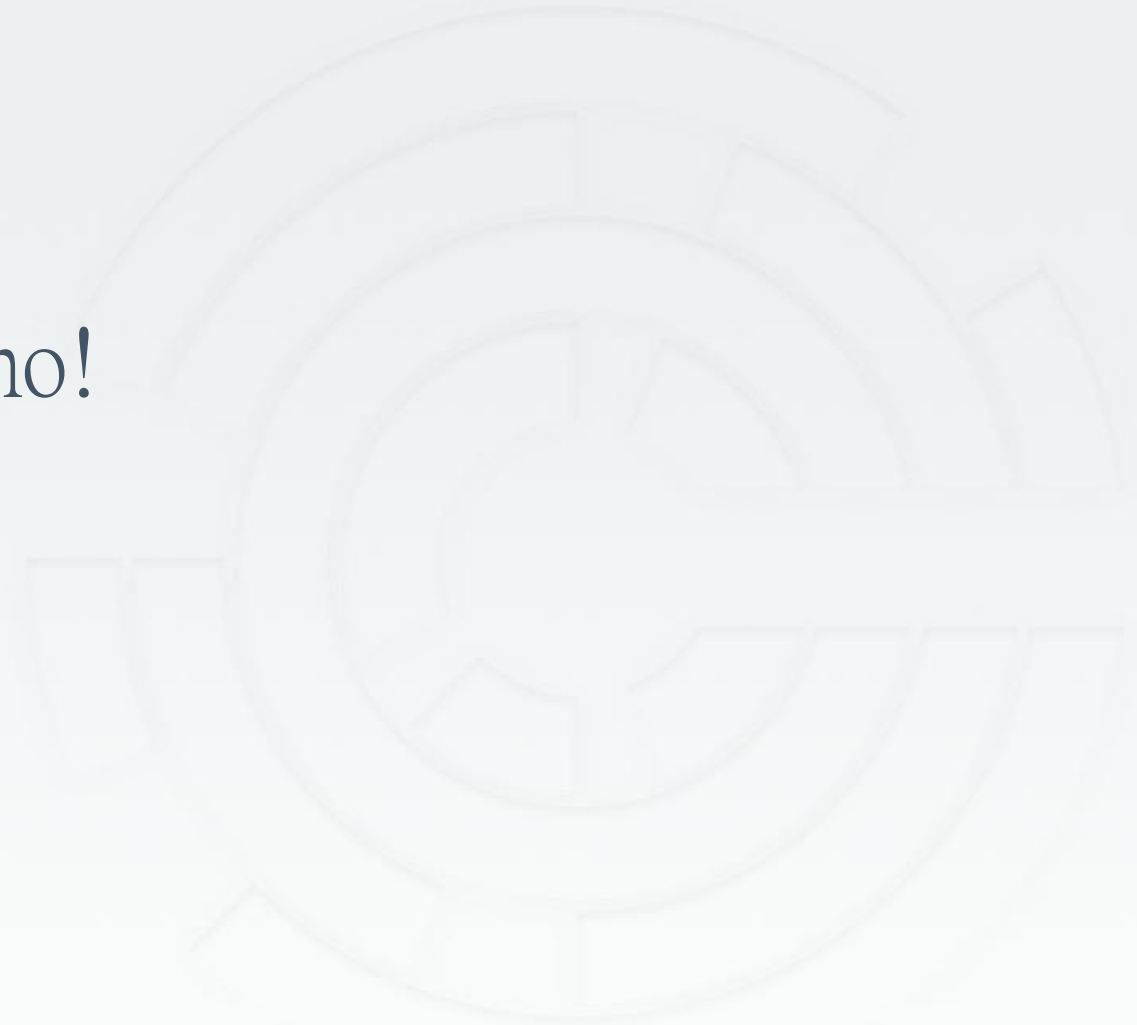
```
#attributes.rb
default['fourthcoffee']['port'] = 80
```



Consume cookbook attribute

```
iis_site 'FourthCoffee' do
    protocol :http
    port node['fourthcoffee']['port']
    path node['fourthcoffee']['install_path']
    application_pool 'FourthCoffee'
    action [:add,:start]
end
```

Demo!



CHEF

Yes!

CHEF

That’ s cool but…

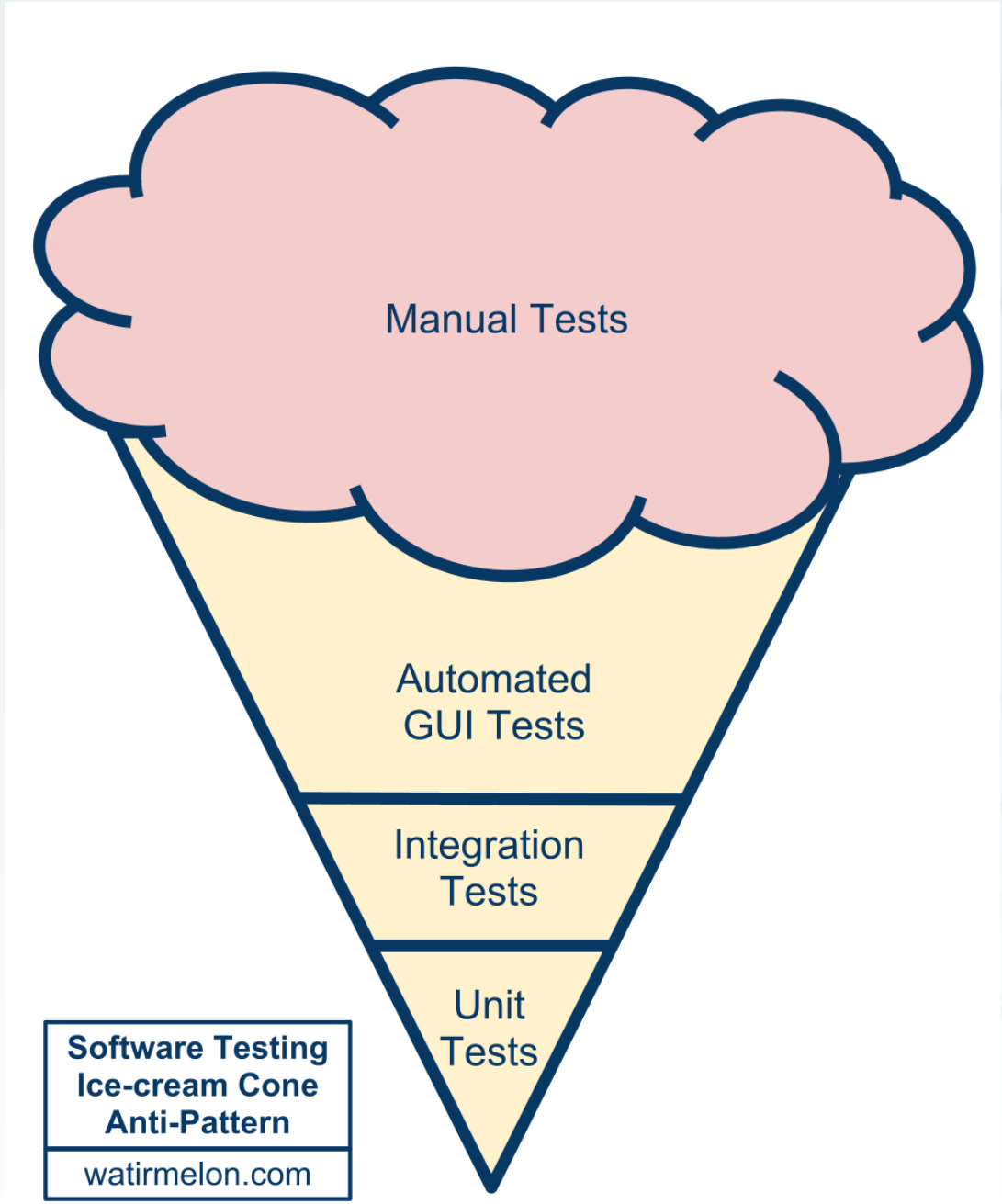
- Things break
- Chef is a language (based on Ruby)
- How can you rapidly develop recipes and cookbooks?

Let’ s step back…

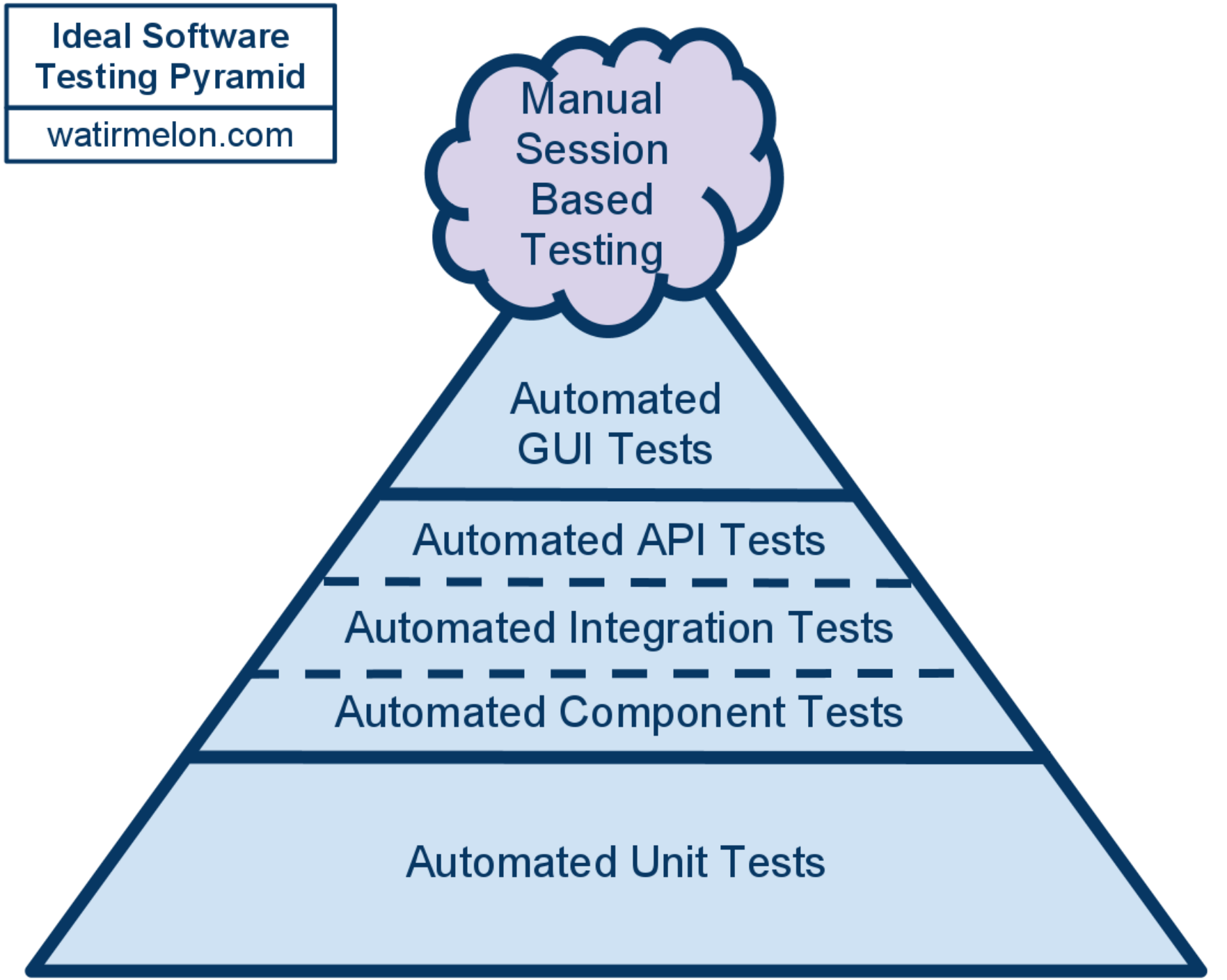
CHEF

Automation Patterns

CHEF


Manual Tests
Automated
GUI Tests
Integration
Tests
Unit
Tests
Software Testing
Ice-cream Cone
Anti-Pattern
watirmelon.com

CHEF


Ideal Software Testing Pyramid
watirmelon.com
Manual Session Based Testing
Automated GUI Tests
Automated API Tests
Automated Integration Tests
Automated Component Tests
Automated Unit Tests

CHEF

Also known as…

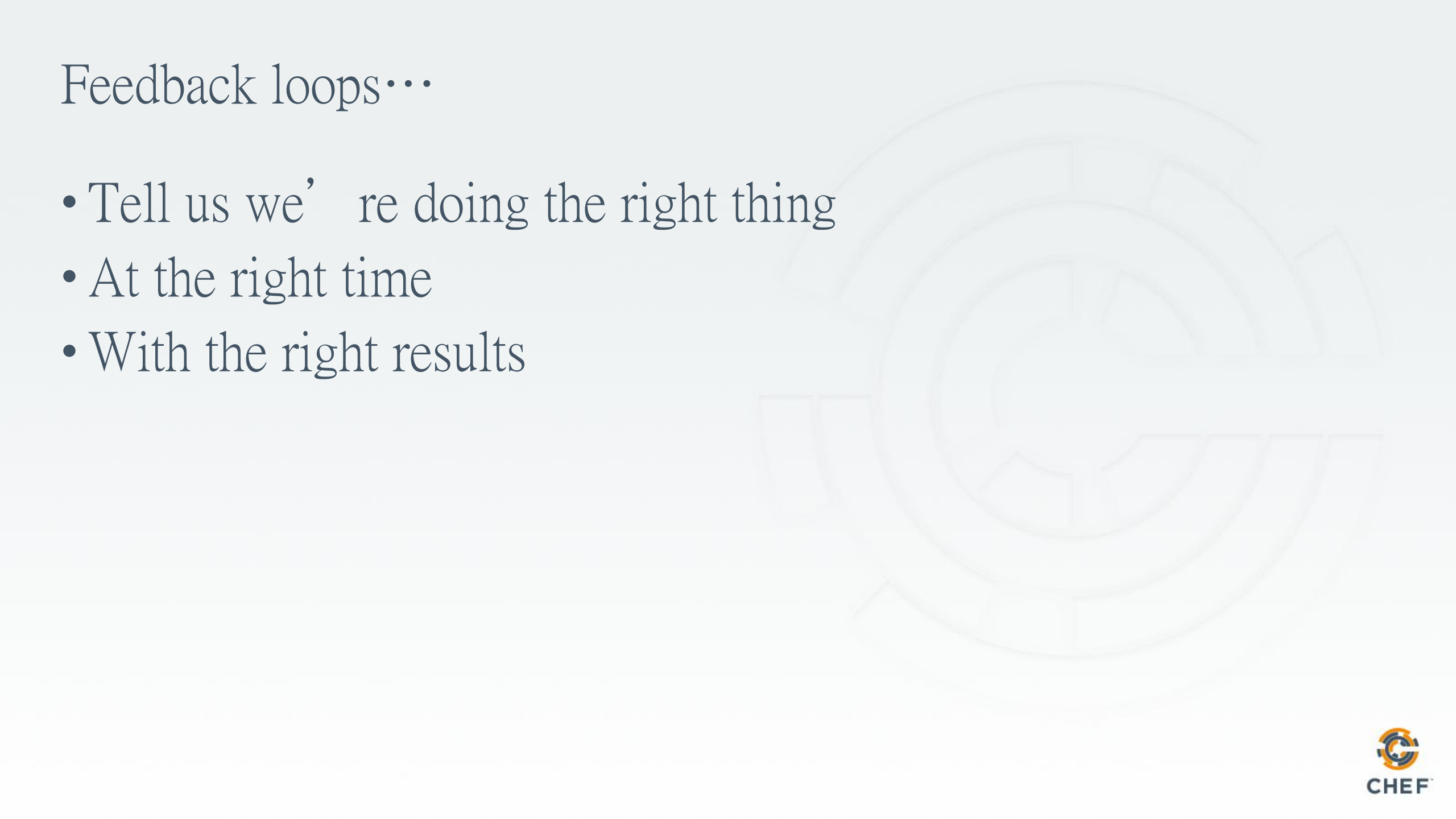
You'll never get to Continuous Deployment clicking a GUI

Theory of testing…

Testing builds safety

Feedback loops…

- Tell us we’ re doing the right thing
- At the right time
- With the right results



Feedback loops…

Measurements we take to ensure the “experiment” is behaving as expected

Tests are essentially feedback loops

Remember…

Chef is “Infrastructure as Code”

Remember…

"Infrastructure as Code" should be treated like ANY other codebase.

Treated Any Other Codebase…

- Stored in SCM
- Testing Coverage
- Part of your CI pipelines

CHEF

Testing in Chef

- Chef recipes need tested
  - Linting
  - Static Analysis
  - Unit Testing
  - Functional Testing

CHEF

Food Critic

Test Your "Chef Style"

- Flag problems that might cause your Chef cookbooks to fail on converge
  - FC010: Invalid search syntax
- Identify style/convention that has been adopted by the Chef community
  - FC004: Use a service resource to start and stop services
- Create custom rules for your own organization's compliance/standards
  - COMP001: Do not allow recipes to mount disk volumes

CHEF

Rubocop

RuboCop

- Identify potential Ruby errors
  - Unclosed strings, etc.
- Identify style/convention that helps write better code
  - Single quotes vs. double quotes
  - This is useful for new Chefs, and helps make the code more readable

CHEF

ChefSpec
Simulate Chef

- Did I send a properly formed piece of code to Chef?
- Especially important if there is mutability in your code
- Useful for regression testing – to make sure new changes don't break stuff that worked before.

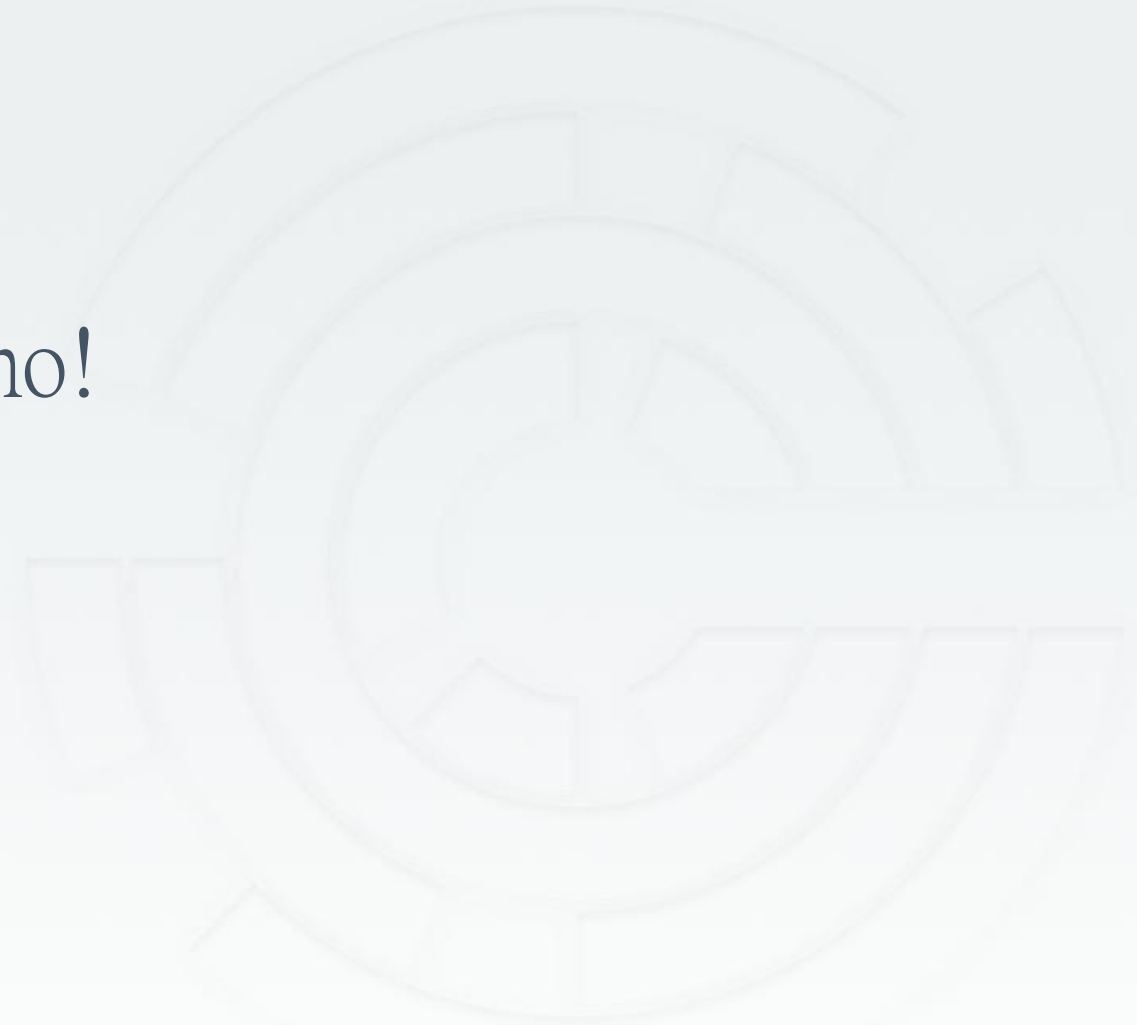
CHEF

Test Kitchen

Let’s do this (almost) for real

- “Executes your Chef code on an actual, factual node
- These nodes should be disposable (local virtualization, cloud instances, etc.)
- Use any number of testing products to ensure expected results
  - BATS
  - ServerSpec
  - Pester
- Can pull in other cookbook dependencies as well, and execute against a machine that looks the same as your standard image

Demo!



CHEF

Summary

- Chef is awesome
- Testing is important
- Feedback loops build safety
- Goal is to eliminate waste

CHEF

Questions?

Cheffing your DevOps

Michael Ducy - Chef - @mfdii