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<http://bit.ly/ansible-slide>



安裝 NGINX 的 101 種方法 /

Ansible 簡介

A Gentle Introduction to Ansible

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Architect @



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ANSIBLE

安裝 NGINX 的 101 種方法 /

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葉秉哲

Architect @



NGINX

Associl

ANSIBLE

101 種方法

簡介

101 ways to install

NGINX

Ubuntu 14.04:

```
$ apt-get install nginx
```

???

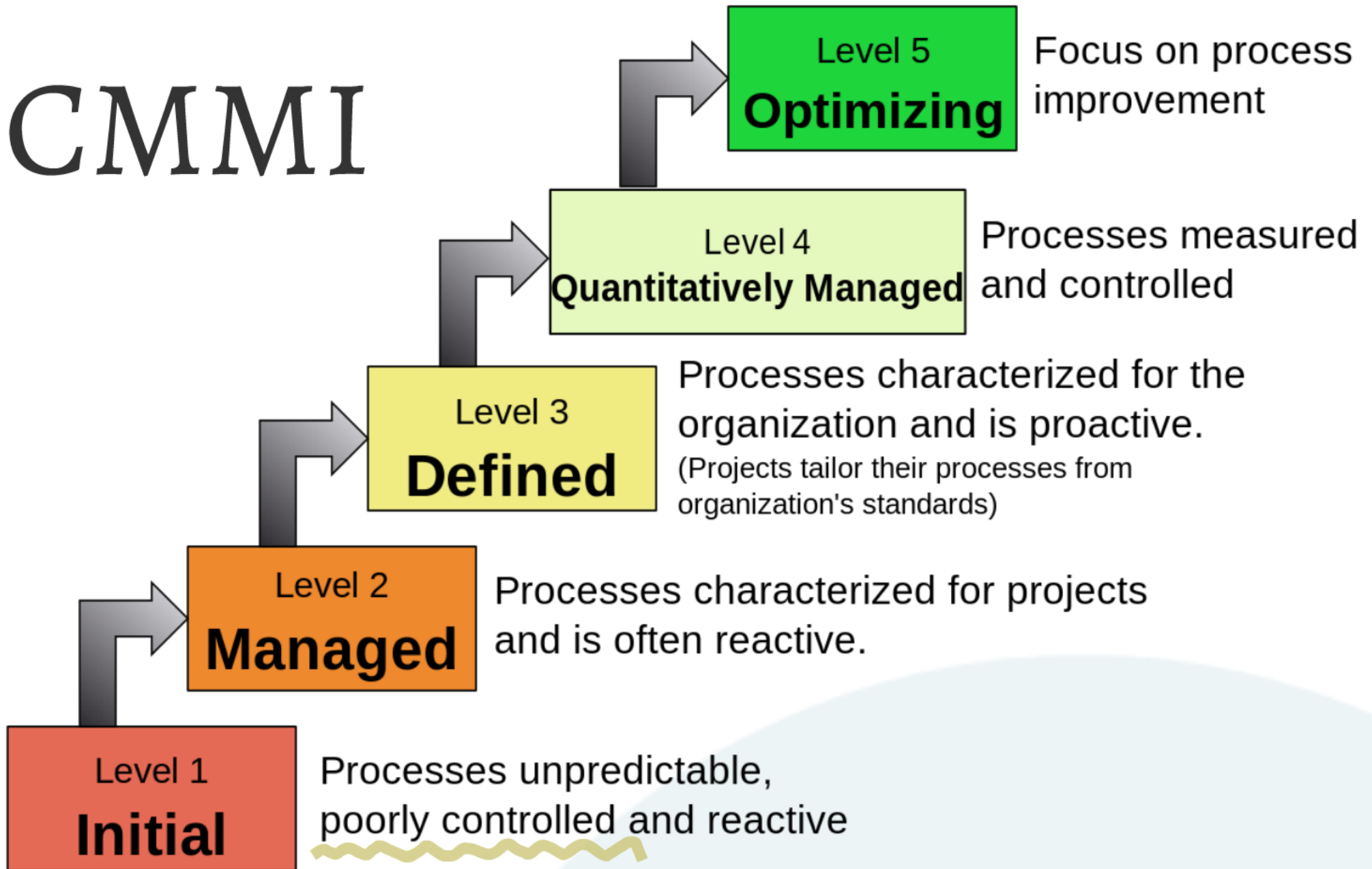
Managed

and is often reactive.

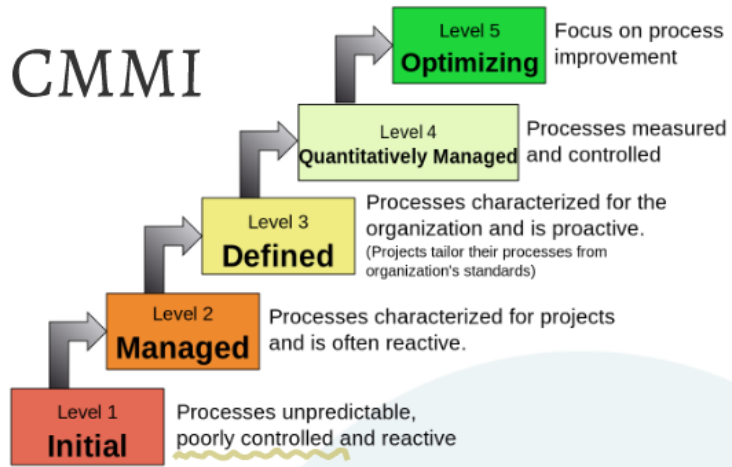
Processes unpredictable,
poorly controlled and reactive

le:Characteristics_of_Capability_Maturity_Model.svg

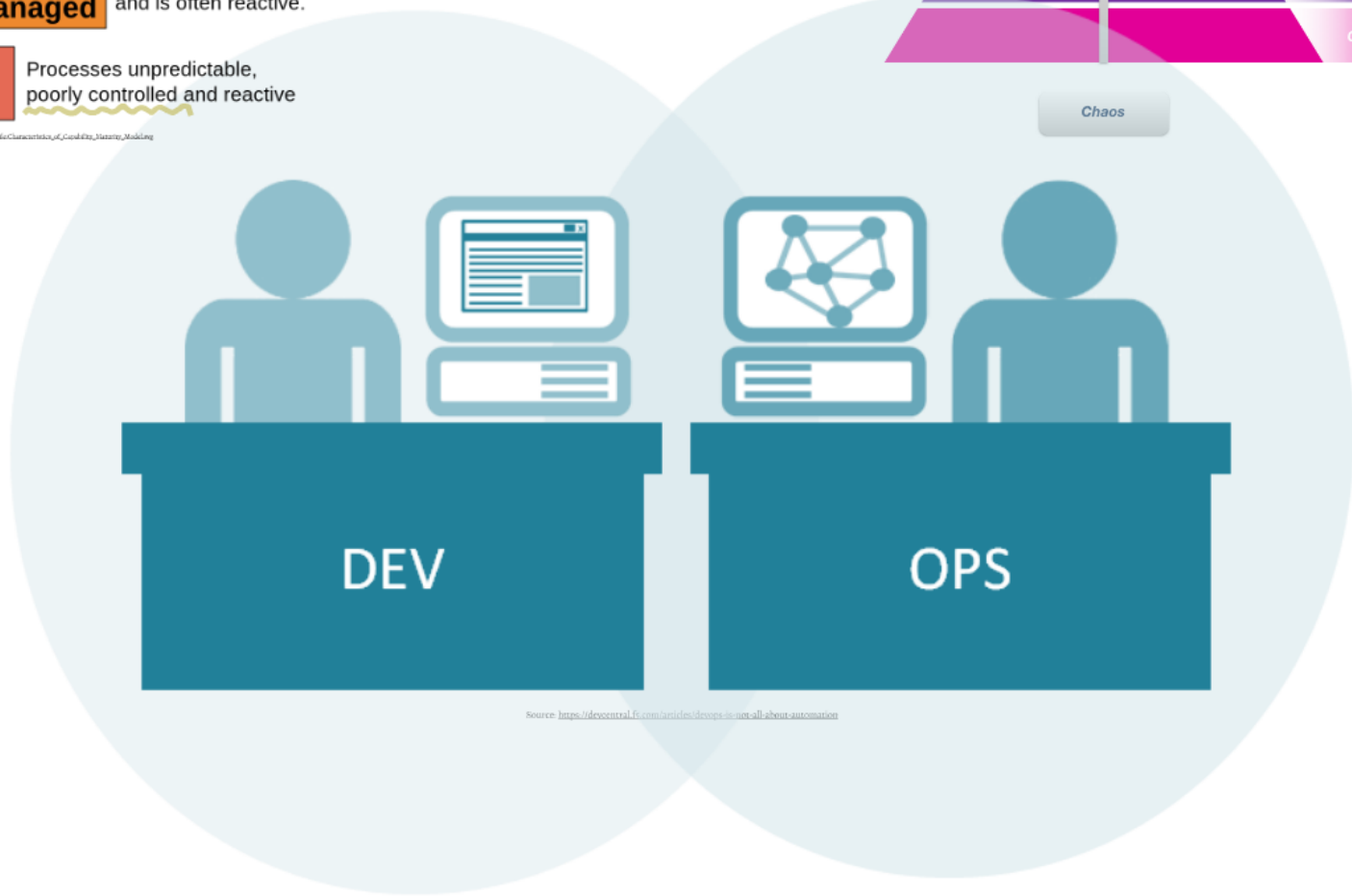
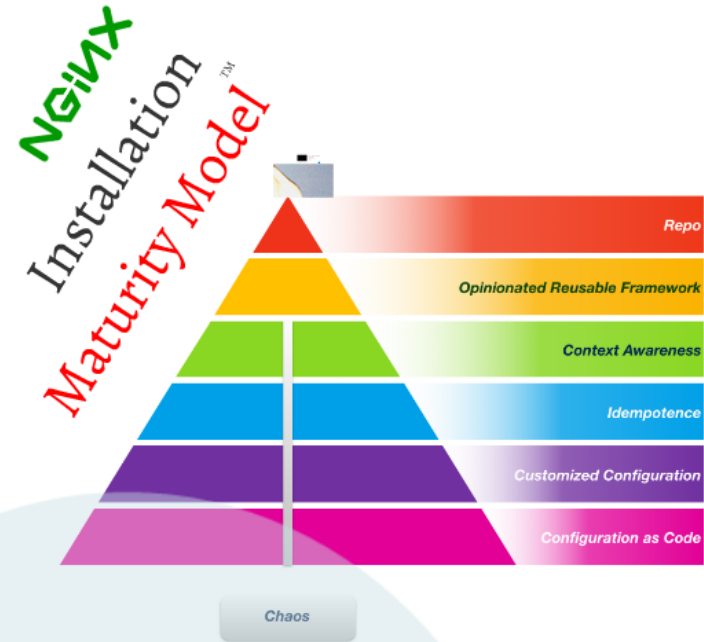
CMMI



CMMI



Source: http://www.cmmi.com/cmmi/Info/About/Characteristics_of_Capability_Maturity_Modeling



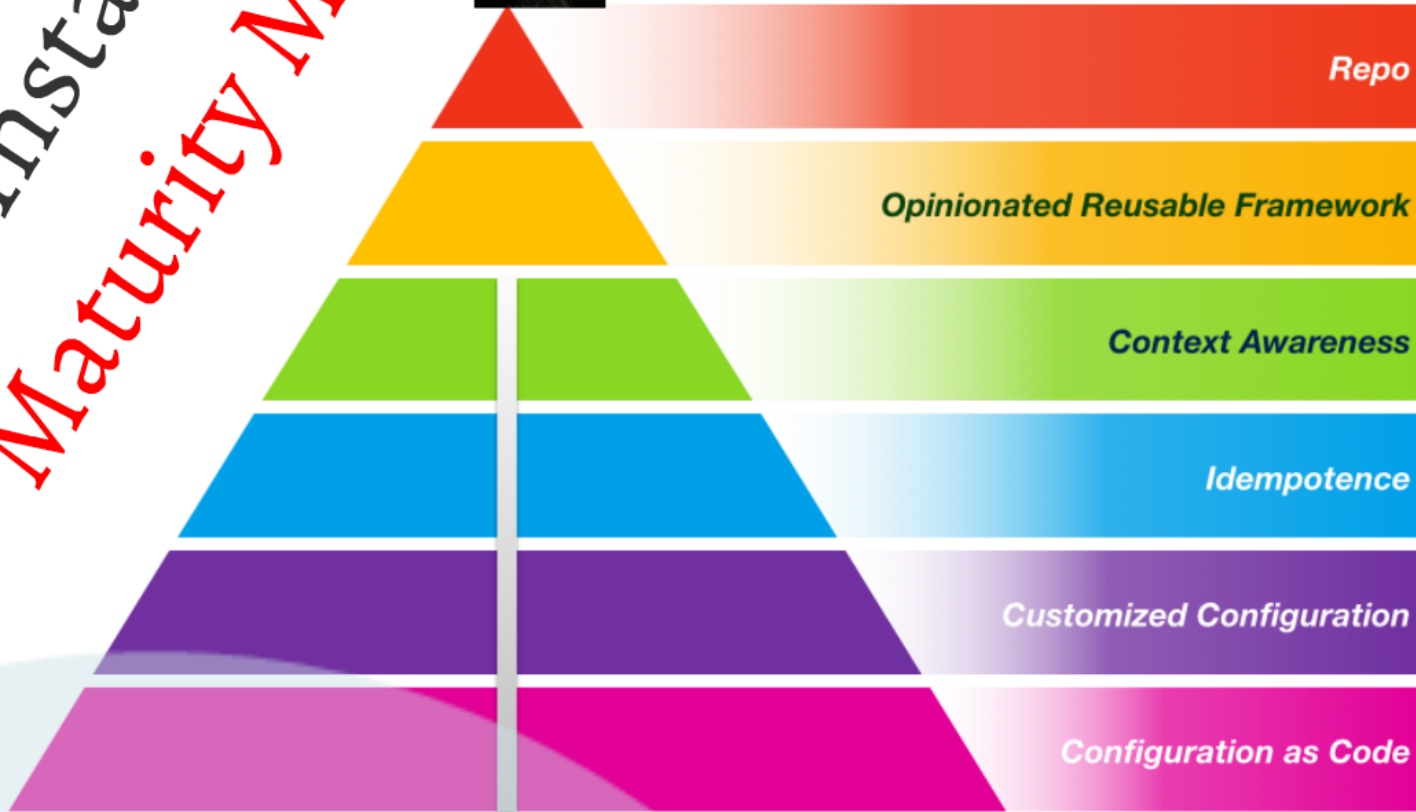
Source: <https://devcentral.f5.com/articles/devops-is-not-all-about-automation>

NGINX

Installation

Maturity ModelTM

NGINX
Installation
Maturity Model™



Repo

Opinionated Reusable Framework

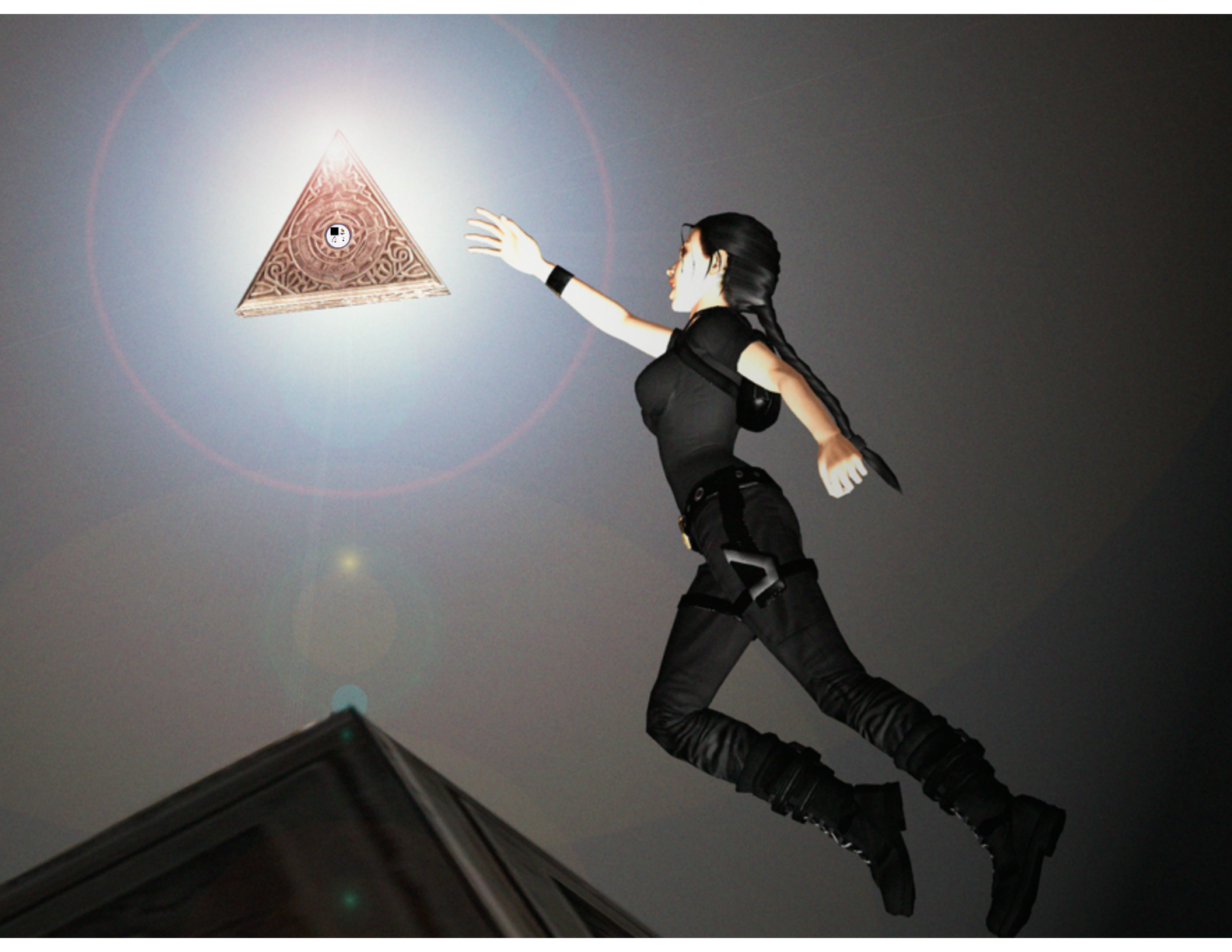
Context Awareness

Idempotence

Customized Configuration

Configuration as Code

Chaos





ANSIBLE



CHEF™



puppet
labs®



SALTSTACK


```
.
|-- templates
|   |-- app.nginx.conf.j2
|   `-- app.sysvinit.sh.j2
|-- playbook.yml
`-- requirements.yml

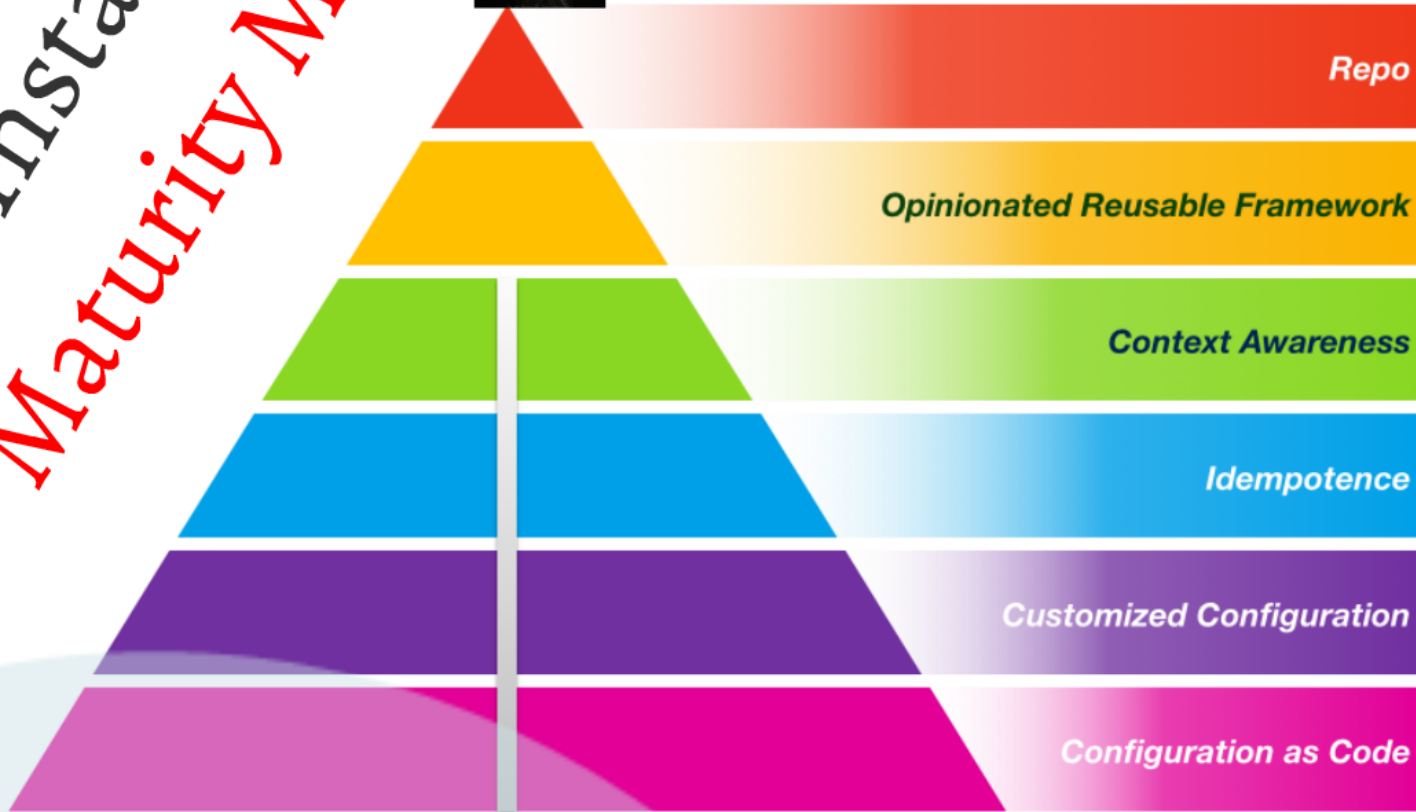
1 directory, 4 files
```

```
ansible-galaxy install -f -r requirements.yml
```

```
ansible-playbook \
  --private-key=$HOME/.ssh/xxx.pem \
  -i host_list \
  playbook.yml
```



NGINX
Installation
Maturity Model™



Repo

Opinionated Reusable Framework

Context Awareness

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- Add and sign nginx repository

```
$ echo "deb http://nginx.org/packages/ubuntu/ trusty nginx" \  
| sudo tee /etc/apt/sources.list.d/nginx.list  
  
$ echo "deb-src http://nginx.org/packages/ubuntu/ trusty nginx" \  
| sudo tee -a /etc/apt/sources.list.d/nginx.list  
  
$ curl -sSL http://nginx.org/keys/nginx_signing.key \  
| sudo apt-key add -
```


- Install!

```
$ sudo apt-get update  
  
$ sudo apt-get install -y nginx
```



有些伺服器還跑著 N 年前的 Ubuntu OS 和很舊的 Perl modules，**已經沒有人記得當初是怎麼架設這些伺服器的**，但是也沒辦法關機來拷貝硬碟，因為會造成 downtime.

大家討論如果重新用最新的 Ubuntu 14.04 版本重新架設，也會因為**變動過大，需要大量的測試、更改、再測試、再更改**，時間上根本來不及。

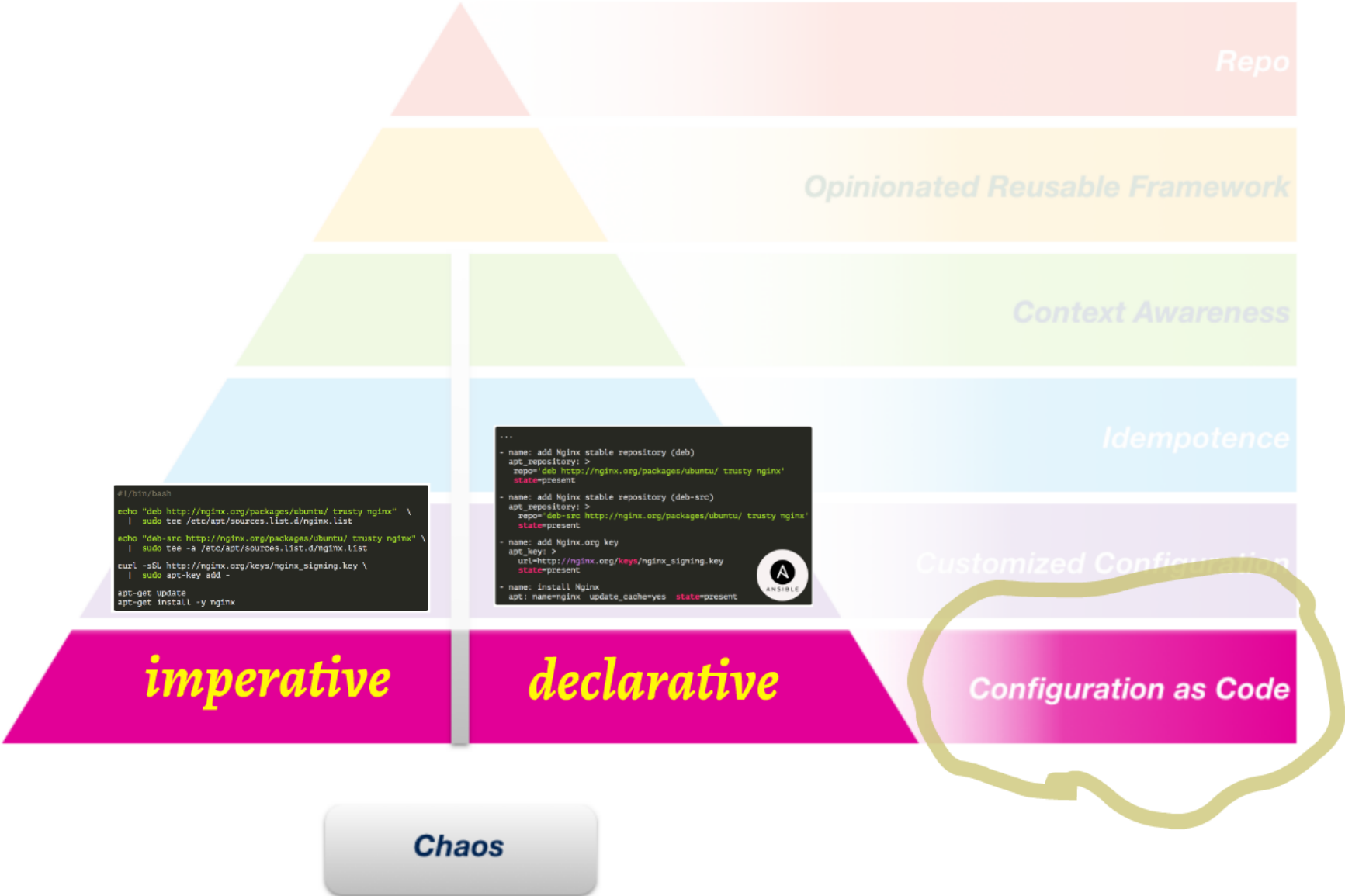




Interactive Commands

Chaos

```
1 #!/usr/bin/perl
2 use strict;
3 use warnings;
4 use Data::Dumper;
5 use Getopt::Std;
6 use File::Copy;
7 use File::Glob;
8 use File::Find;
9 use File::Stat;
10 use File::Glob;
11 use File::Find;
12 use File::Stat;
13 use File::Glob;
14 use File::Find;
15 use File::Stat;
16 use File::Glob;
17 use File::Find;
18 use File::Stat;
19 use File::Glob;
20 use File::Find;
21 use File::Stat;
22 use File::Glob;
23 use File::Find;
24 use File::Stat;
25 use File::Glob;
26 use File::Find;
27 use File::Stat;
28 use File::Glob;
29 use File::Find;
30 use File::Stat;
31 use File::Glob;
32 use File::Find;
33 use File::Stat;
34 use File::Glob;
35 use File::Find;
36 use File::Stat;
37 use File::Glob;
38 use File::Find;
39 use File::Stat;
40 use File::Glob;
41 use File::Find;
42 use File::Stat;
43 use File::Glob;
44 use File::Find;
45 use File::Stat;
46 use File::Glob;
47 use File::Find;
48 use File::Stat;
49 use File::Glob;
50 use File::Find;
51 use File::Stat;
52 use File::Glob;
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54 use File::Stat;
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76 use File::Glob;
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82 use File::Glob;
83 use File::Find;
84 use File::Stat;
85 use File::Glob;
86 use File::Find;
87 use File::Stat;
88 use File::Glob;
89 use File::Find;
90 use File::Stat;
91 use File::Glob;
92 use File::Find;
93 use File::Stat;
94 use File::Glob;
95 use File::Find;
96 use File::Stat;
97 use File::Glob;
98 use File::Find;
99 use File::Stat;
100 use File::Glob;
```



Customized Configuration

Configuration as Code



```
#!/bin/bash

echo "deb http://nginx.org/packages/ubuntu/ trusty nginx" \
| sudo tee /etc/apt/sources.list.d/nginx.list

echo "deb-src http://nginx.org/packages/ubuntu/ trusty nginx" \
| sudo tee -a /etc/apt/sources.list.d/nginx.list

curl -sSL http://nginx.org/keys/nginx_signing.key \
| sudo apt-key add -

apt-get update
apt-get install -y nginx
```

imperative

```
- name: add Nginx stable repository (deb)
  apt_repository: >
    repo='deb http://nginx.org/packages/ubuntu/ trusty nginx'
    state=present

- name: add Nginx stable repository (deb-src)
  apt_repository: >
    repo='deb-src http://nginx.org/packages/ubuntu/ trusty nginx'
    state=present

- name: add Nginx.org key
  apt_key: >
    url=http://nginx.org/keys/nginx_signing.key
    state=present

- name: install Nginx
  apt: name=nginx update_cache=yes state=present
```



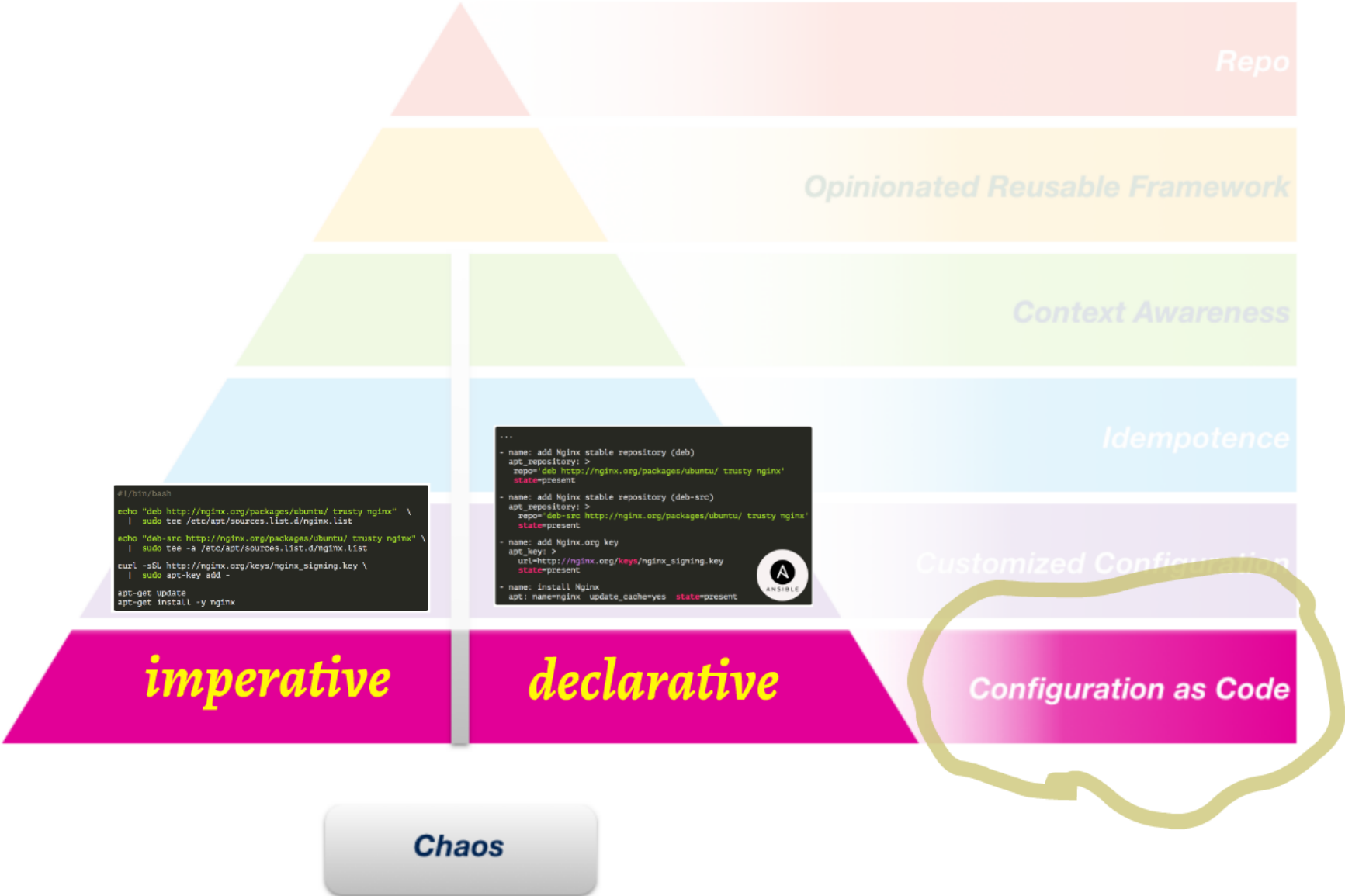
declarative

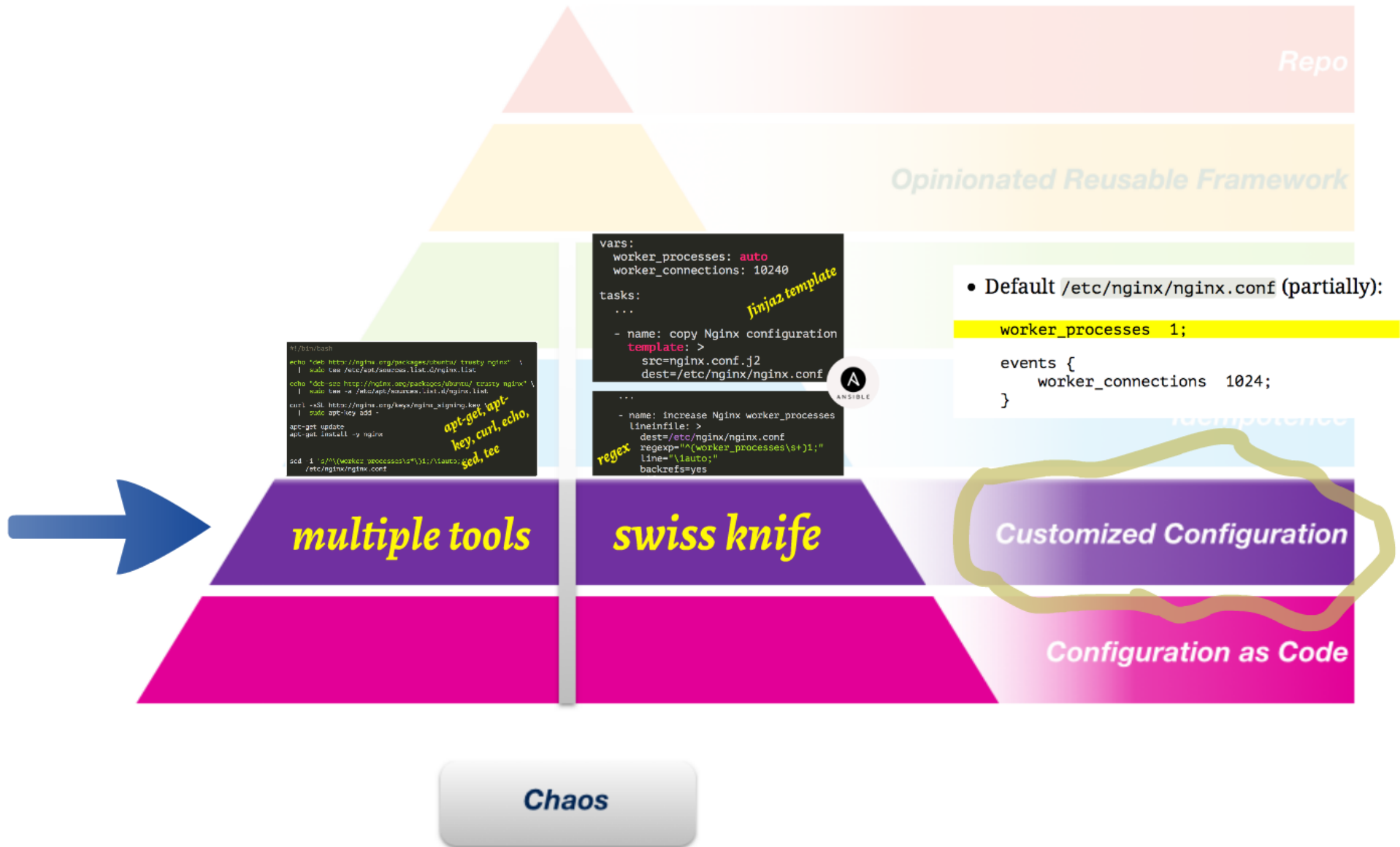

```
/bash
deb http://nginx.org/packages/ubuntu/ trusty nginx" \
do tee /etc/apt/sources.list.d/nginx.list
deb-src http://nginx.org/packages/ubuntu/ trusty nginx" \
do tee -a /etc/apt/sources.list.d/nginx.list
SSL http://nginx.org/keys/nginx_signing.key \
do apt-key add -
c update
c install -y nginx
```

```
...
- name: add Nginx stable repository (deb)
  apt_repository: >
  repo='deb http://nginx.org/packages/ubuntu/ trusty nginx'
  state=present
- name: add Nginx stable repository (deb-src)
  apt_repository: >
  repo='deb-src http://nginx.org/packages/ubuntu/ trusty nginx'
  state=present
- name: add Nginx.org key
  apt_key: >
  url=http://nginx.org/keys/nginx_signing.key
  state=present
- name: install Nginx
  apt: name=nginx update_cache=yes state=present
```

imperative

declarative





Repo

Opinionated Reusable Framework

```
#!/bin/bash
echo "deb http://nginx.org/packages/ubuntu/ trusty nginx" >
| sudo tee /etc/apt/sources.list.d/nginx.list
echo "deb-src http://nginx.org/packages/ubuntu/ trusty nginx" >
| sudo tee -a /etc/apt/sources.list.d/nginx.list
curl -sL http://nginx.org/keys/nginx_signing.key
| sudo apt-key add -
apt-get update
apt-get install -y nginx
sed -i 's/worker_processes/1;/g' /etc/nginx/nginx.conf
```

apt-get, apt-key, curl, echo, sed, tee

```
vars:
  worker_processes: auto
  worker_connections: 10240
tasks:
  ...
  - name: copy Nginx configuration
    template: >
      src=nginx.conf.j2
      dest=/etc/nginx/nginx.conf
```

jinja2 template

```
...
- name: increase Nginx worker_processes
  lineinfile: >
    dest=/etc/nginx/nginx.conf
    regexp="^(worker_processes)\d+;"
    line="\1auto;"
    backrefs=yes
```

regex



• Default /etc/nginx/nginx.conf (partially):

```
worker_processes 1;

events {
  worker_connections 1024;
}
```

multiple tools

swiss knife

Customized Configuration

Configuration as Code

Chaos

- Default `/etc/nginx/nginx.conf` (partially):

```
worker_processes 1;
```

```
events {  
    worker_connections 1024;  
}
```

Customized Configuration

```
#!/bin/bash

echo "deb http://nginx.org/packages/ubuntu/ trusty nginx" \
| sudo tee /etc/apt/sources.list.d/nginx.list

echo "deb-src http://nginx.org/packages/ubuntu/ trusty nginx" \
| sudo tee -a /etc/apt/sources.list.d/nginx.list

curl -sSL http://nginx.org/keys/nginx_signing.key \
| sudo apt-key add -

apt-get update
apt-get install -y nginx

sed -i 's/^\(worker_processes\s*\)1;/\1auto;/'
/etc/nginx/nginx.conf
```

*apt-get, apt-
key, curl, echo,
sed, tee*

multiple tools


```
#!/bin/bash
echo "deb http://nginx.org/packages/ubuntu/ trusty nginx" \
| sudo tee /etc/apt/sources.list.d/nginx.list
echo "deb-src http://nginx.org/packages/ubuntu/ trusty nginx" \
| sudo tee -a /etc/apt/sources.list.d/nginx.list
curl -sSL http://nginx.org/keys/nginx_signing.key \
| sudo apt-key add -
apt-get update
apt-get install -y nginx

sed -i 's/^(worker_processes\s*)1;/\1auto;/g'
/etc/nginx/nginx.conf
```

apt-get, apt-key, curl, echo, sed, tee

```
vars:
  worker_processes: auto
  worker_connections: 10240

tasks:
  ...

- name: copy Nginx configuration
  template: >
    src=nginx.conf.j2
    dest=/etc/nginx/nginx.conf
```

Jinja2 template

```
...

- name: increase Nginx worker_processes
  lineinfile: >
    dest=/etc/nginx/nginx.conf
    regexp="^(worker_processes\s+);"
    line="\1auto;"
    backrefs=yes
```

regex



ANSIBLE

multiple tools

swiss knife

```
vars:
  worker_processes: auto
  worker_connections: 10240

tasks:
  ...

- name: copy Nginx configuration
  template: >
    src=nginx.conf.j2
    dest=/etc/nginx/nginx.conf
```

Jinja2 template

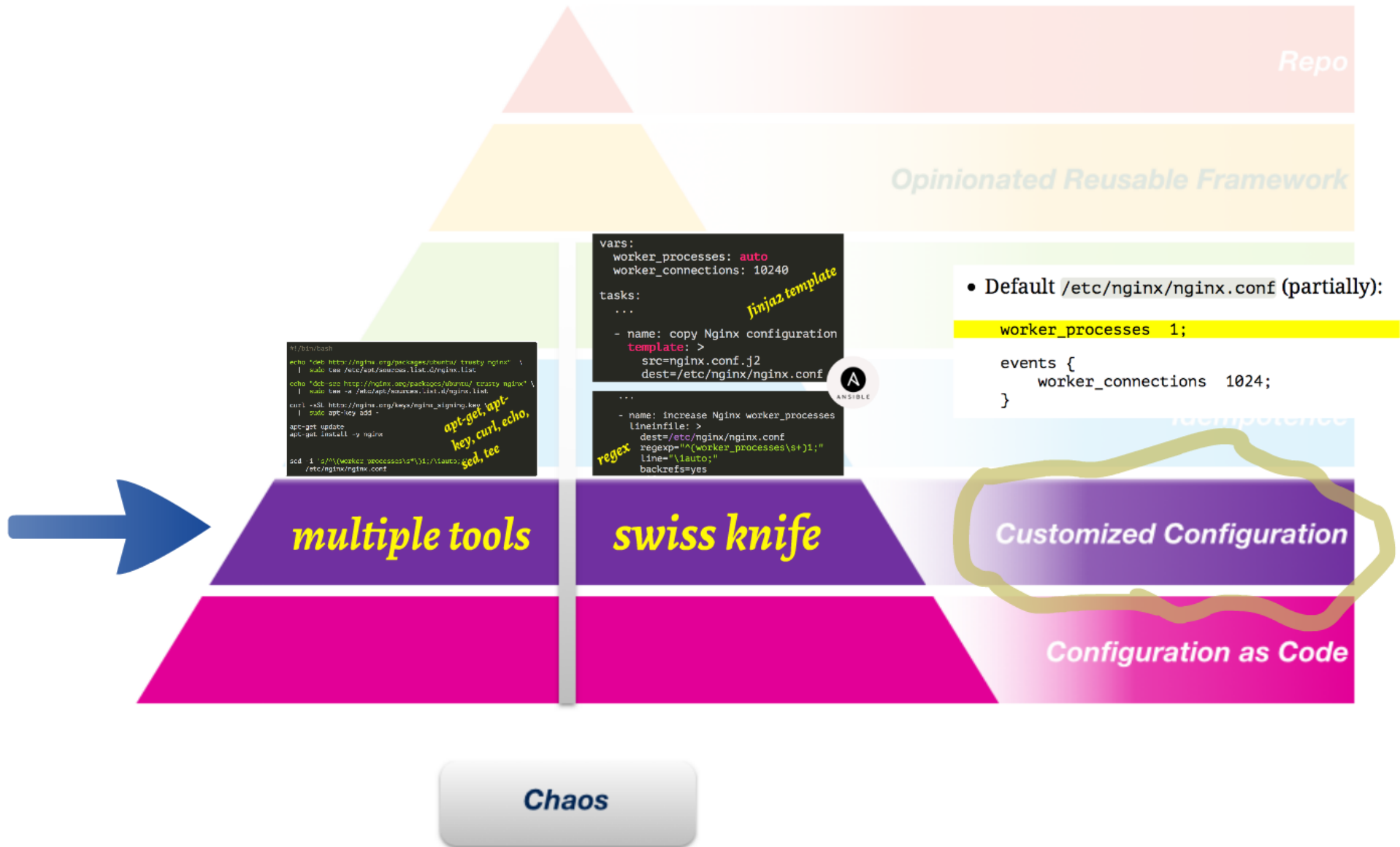
```
...

- name: increase Nginx worker_processes
  lineinfile: >
    dest=/etc/nginx/nginx.conf
    regex="^(worker_processes\s+)[0-9]+;"
    line="\1auto;"
    backrefs=yes
```

regex



ANSIBLE



Repo

Opinionated Reusable Framework

• Default /etc/nginx/nginx.conf (partially):

```
worker_processes 1;

events {
    worker_connections 1024;
}
```

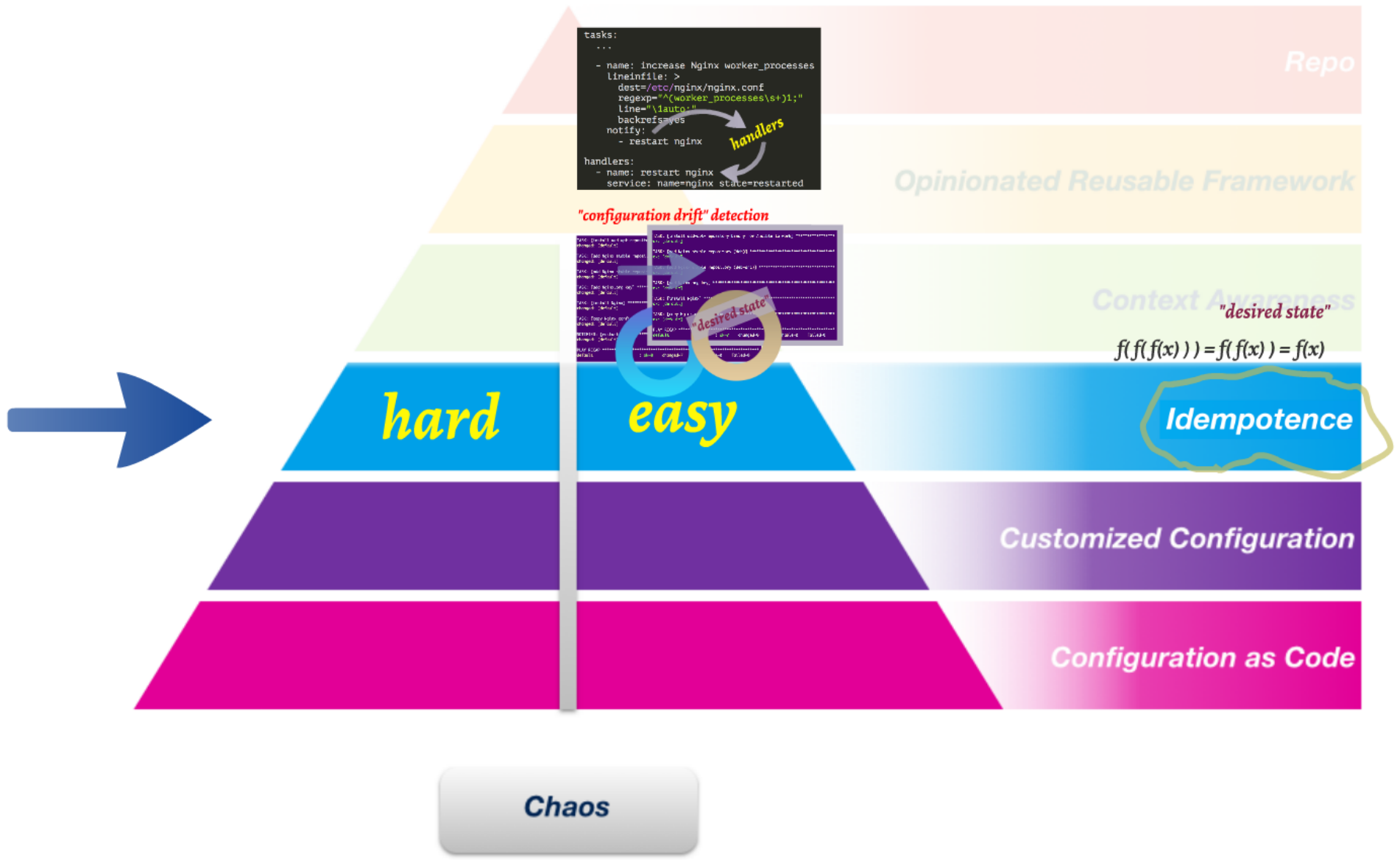
multiple tools

swiss knife

Customized Configuration

Configuration as Code

Chaos



```
tasks:  
  ...  
  - name: increase Nginx worker_processes  
    lineinfile: >  
      dest=/etc/nginx/nginx.conf  
      regexp="^(worker_processes\s+);1;"  
      line="worker_processes 1;"  
      backup: yes  
      notify: >  
        - restart nginx  
handlers:  
  - name: restart nginx  
    service: name=nginx state=restarted
```

Repo

Opinionated Reusable Framework

Context Awareness

$$f(f(f(x))) = f(f(x)) = f(x)$$

Idempotence

Customized Configuration

Configuration as Code

Chaos

hard

easy

handlers

"configuration drift" detection

"desired state"

Context Awareness

"desired state"

$$f(f(f(x))) = f(f(x)) = f(x)$$

Idempotence

"configuration drift" detection

```
TASK: [install add-apt-repository binary for Ansible to work] ***
changed: [default]
TASK: [add Nginx stable repository (deb)] *****
changed: [default]
TASK: [add Nginx stable repository (deb-src)] *****
changed: [default]
TASK: [add Nginx.org key] *****
changed: [default]
TASK: [install Nginx] *****
changed: [default]
TASK: [copy Nginx configuration] *****
changed: [default]
NOTIFIED: [restart Nginx] *****
changed: [default]
PLAY RECAP *****
default : ok=8  changed=7  failed=0
```

```
TASK: [install add-apt-repository binary for Ansible to work] ***
ok: [default]
TASK: [add Nginx stable repository (deb)] *****
ok: [default]
TASK: [add Nginx stable repository (deb-src)] *****
ok: [default]
TASK: [add Nginx.org key] *****
ok: [default]
TASK: [install Nginx] *****
ok: [default]
TASK: [copy Nginx configuration] *****
ok: [default]
PLAY RECAP *****
default : ok=7  changed=0  failed=0
```

"desired state"

tasks:

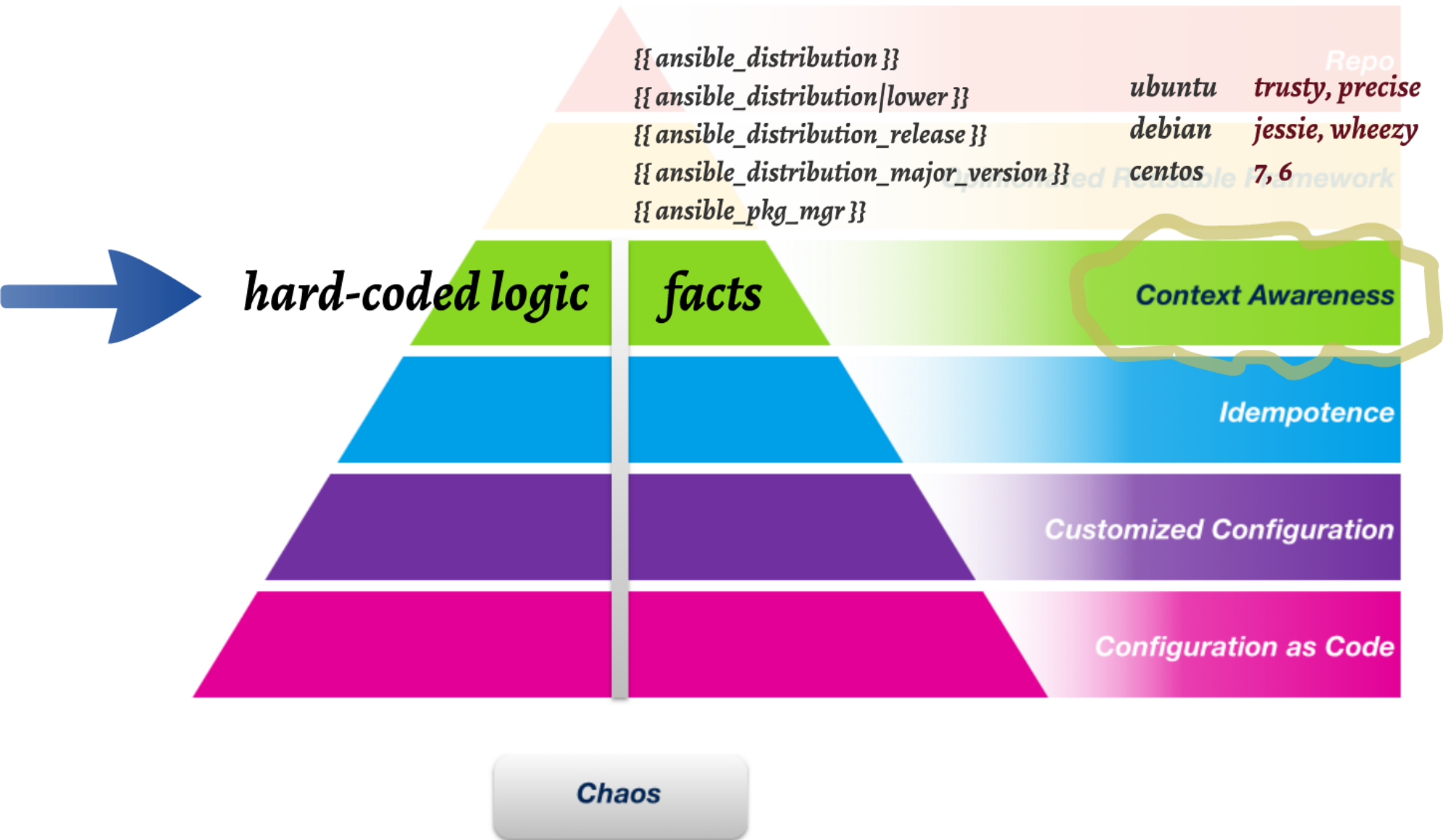
...

- name: increase Nginx worker_processes
lineinfile: >
 dest=/etc/nginx/nginx.conf
 regexp="^(worker_processes\s+)[1];"
 line="\1auto;"
 backrefs=yes
notify:
 - restart nginx

handlers:

- name: restart nginx
 service: name=nginx state=restarted

handlers



Repo

ubuntu *trusty, precise*

debian *jessie, wheezy*

centos *7, 6*

Context Awareness

`{{ ansible_distribution }}`

`{{ ansible_distribution|lower }}`

ubuntu

`{{ ansible_distribution_release }}`

debian

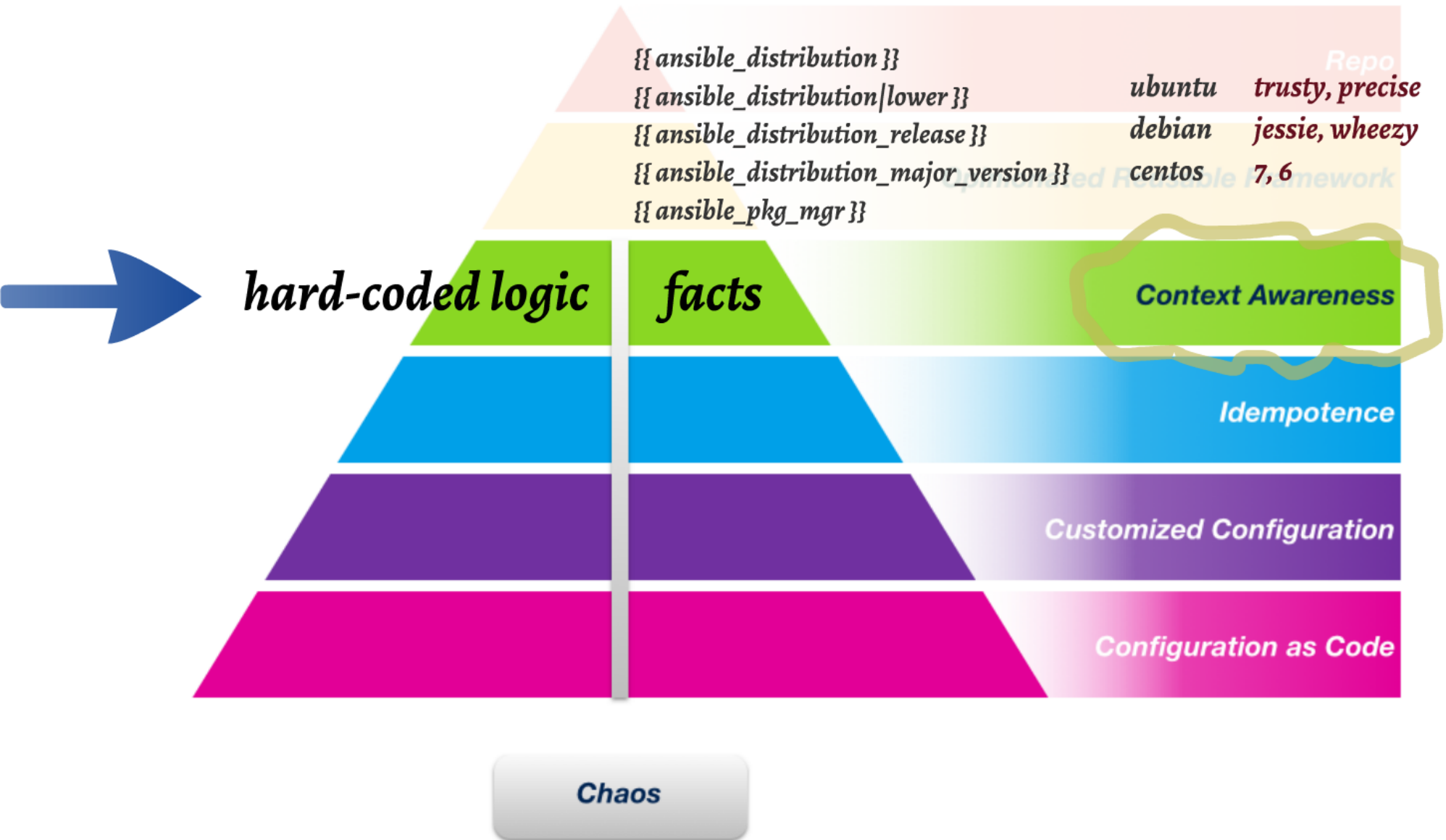
`{{ ansible_distribution_major_version }}`

centos

`{{ ansible_pkg_mgr }}`

facts

Context A




```
|-- nginx
|  |-- files
|  |   |-- nginx.repo.centos
|  |-- handlers
|  |   |-- main.yml
|  |-- tasks
|  |   |-- main.yml
|  |   |-- use-apt.yml
|  |   |-- use-yum.yml
|  |-- templates
|  |   |-- nginx.conf.j2
|-- playbook.yml
```

```
|-- files
|  |-- nginx.repo.centos
|-- handlers
|  |-- main.yml
|-- tasks
|  |-- main.yml
|  |-- use-apt.yml
|  |-- use-yum.yml
|-- templates
|  |-- nginx.conf.j2
|-- playbook.yml
```



Repo



roles

Opinionated Reusable Framework

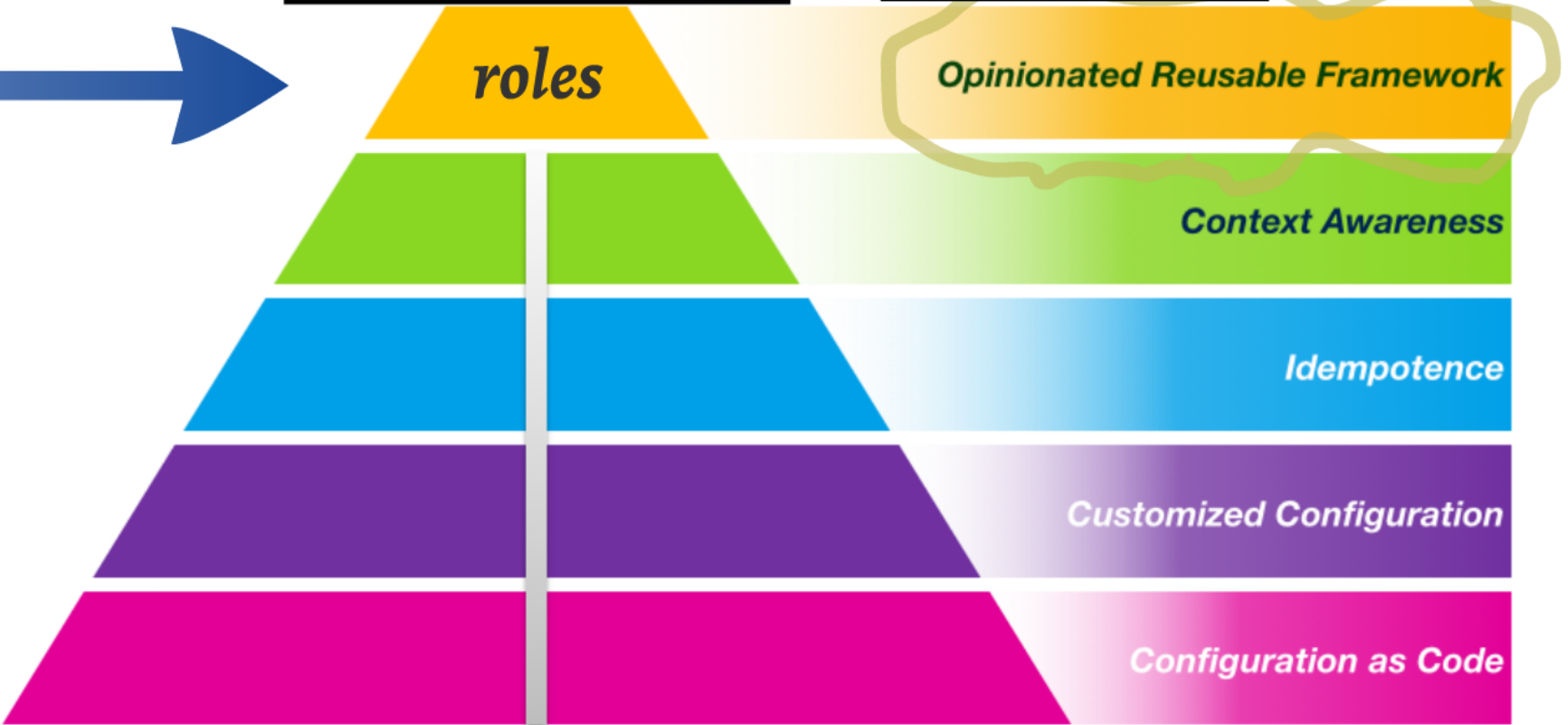
Context Awareness

Idempotence

Customized Configuration

Configuration as Code

Chaos



os


```
.
|-- files
|   `-- nginx.repo.centos
|-- handlers
|   `-- main.yml
|-- tasks
|   |-- main.yml
|   |-- use-apt.yml
|   `-- use-yum.yml
|-- templates
|   `-- nginx.conf.j2
|-- playbook.yml
```

Repo

Opinionated Reusable Framework

Context Awareness

```
.
|-- roles
|  |-- nginx
|     |-- files
|        |-- nginx.repo.centos
|     |-- handlers
|        |-- main.yml
|     |-- tasks
|        |-- main.yml
|        |-- use-apt.yml
|        |-- use-yum.yml
|     |-- templates
|        |-- nginx.conf.j2
|-- playbook.yml
```



```
.
|-- files
|  |-- nginx.repo.c
|-- handlers
|  |-- main.yml
|-- tasks
|  |-- main.yml
|  |-- use-apt.yml
|  |-- use-yum.yml
|-- templates
|  |-- nginx.conf.j
|-- playbook.yml
```



roles

Opinionated R

Main playbook after refactoring to roles

```
- hosts: all
  sudo: True

  roles:
    - nginx

  vars:
    worker_processes: auto
    worker_connections: 10240
```

```
|-- nginx
|  |-- files
|  |  |-- nginx.repo.centos
|  |-- handlers
|  |  |-- main.yml
|  |-- tasks
|  |  |-- main.yml
|  |  |-- use-apt.yml
|  |  |-- use-yum.yml
|  |-- templates
|  |  |-- nginx.conf.j2
|-- playbook.yml
```

```
|-- files
|  |-- nginx.repo.centos
|-- handlers
|  |-- main.yml
|-- tasks
|  |-- main.yml
|  |-- use-apt.yml
|  |-- use-yum.yml
|-- templates
|  |-- nginx.conf.j2
|-- playbook.yml
```



Repo



roles

Opinionated Reusable Framework

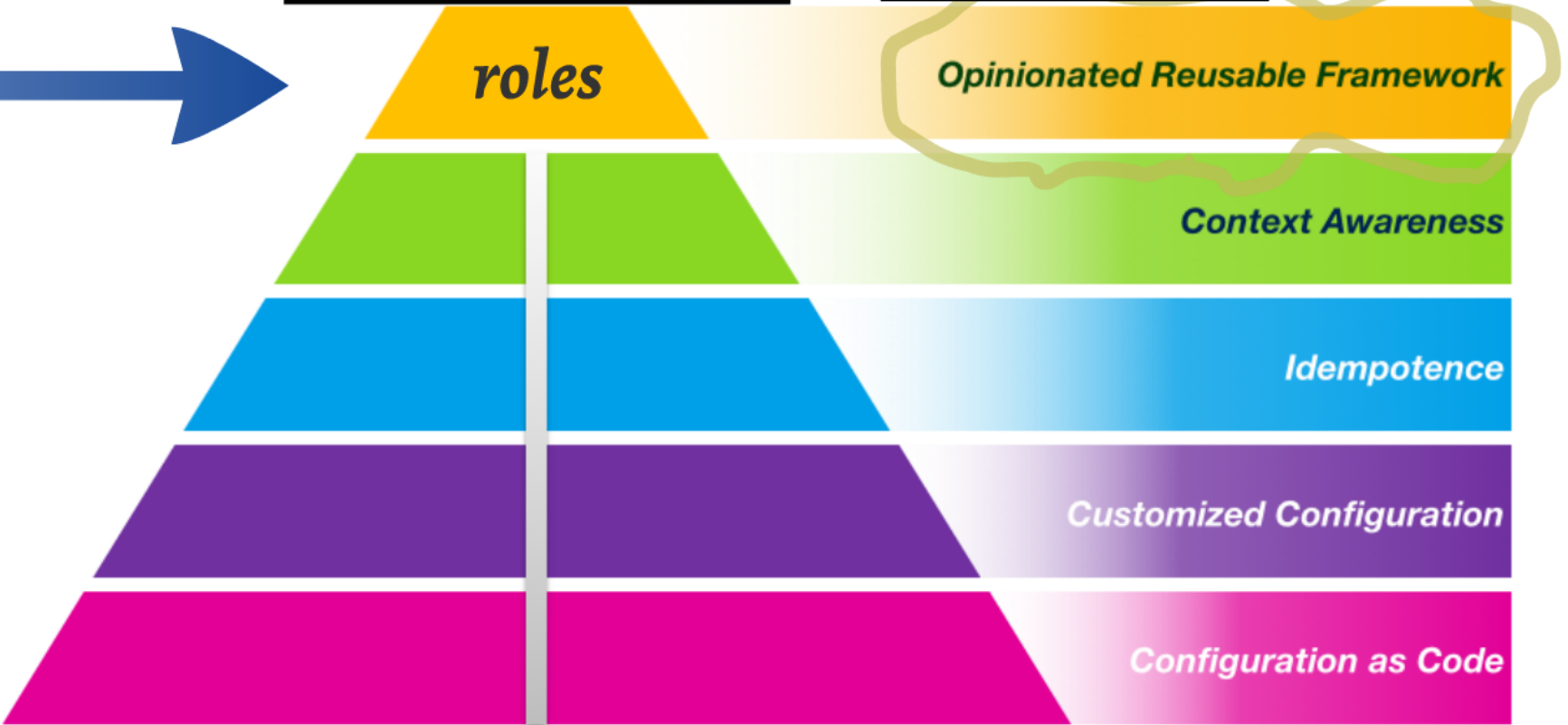
Context Awareness

Idempotence

Customized Configuration

Configuration as Code

Chaos



A X Y

and sharing

Repo

Reusable Framework

ANSIBLE GALAXY



Ansible Galaxy is your hub for finding, reusing, and sharing the best Ansible content.

Role Detail

nginx

Install and configure Nginx

<https://galaxy.ansible.com/list#/roles/2245>

[Github Repo](#)

[Issue Tracker](#)

[Add Review/Rating](#)

Supported Platforms

Debian wheezy

EL 6

EL 7

Ubuntu precise

Ubuntu trusty

Minimum Ansible Version: 1.7.1

Installation

```
ansible-galaxy install williamyeh.nginx
```

This Ansible role has the following features for Nginx:

- Install specific version.
- Handlers for restart/reload/stop events;
- Bare bone configuration (real configuration should be left to user's template files; see **Usage** section below).

Role Variables

Mandatory variables

None.

Optional variables

User-installable configuration files (by Ansible's template system):

```
# main conf template to be installed to "/etc/nginx/nginx.conf";
# relative to "playbook_dir"
nginx_conf_main

# other conf templates to be installed to "/etc/nginx/conf.d";
# dict fields:
# - key: memo for this conf
# - value:
#   - src: template file relative to "playbook_dir"
#   - dest: target file relative to "/etc/nginx/conf.d/"
nginx_conf_others
```

User-configurable defaults:

```
# Nginx version; e.g., "1.8.8"
# Will install the default (usually the latest stable) version, if not specified.
nginx_version

# uid of worker process;
# default: "nginx".
nginx_user

# for worker_rlimit_nofile in nginx.conf
nginx_ulimit: 51200
```

williamyeh.ngi

build

passing



docker

Summary

Role name in Ansible Galaxy: [williamyeh](#)

.travis.yml

20 lines (17 sloc) | 2.011 kb

Raw

install:

```
- curl -sLo - https://github.com/moul/travis-docker/raw/master/install.sh | sh -xe
```

script:

```
- echo "==> Building the main Docker image..."
- ./run 'docker build -f test/Dockerfile-ubuntu14.04 -t nginx_img . && docker run -d --name
- ./run 'docker build -f test/Dockerfile-ubuntu12.04 -t nginx_img . && docker run -d --name
- ./run 'docker build -f test/Dockerfile-debian8 -t nginx_img . && docker run -d --name
- ./run 'docker build -f test/Dockerfile-debian7 -t nginx_img . && docker run -d --name
- ./run 'docker build -f test/Dockerfile-centos7 -t nginx_img . && docker run -d --name
- ./run 'docker build -f test/Dockerfile-centos6 -t nginx_img . && docker run -d --name

- echo "==> Validating the test results..."
- grep '^Active connections' result-ubuntu14.04 || exit 1
- grep '^Active connections' result-ubuntu12.04 || exit 1
- grep '^Active connections' result-debian8 || exit 1
- grep '^Active connections' result-debian7 || exit 1
- grep '^Active connections' result-centos7 || exit 1
- grep '^Active connections' result-centos6 || exit 1
```

README

Ratinga (0)

williamyeh.nginx for Ansible

build passing



Summary

Role name in Ansible Galaxy: [williamyeh.nginx](#)

This Ansible role has the following features for Nginx:

- Install specific version.

Main playbook after refactoring to roles

```
- hosts: all
  sudo: True

  roles:
    - nginx

  vars:
    worker_processes: auto
    worker_connections: 10240
```

requirements.yml

```
---
- src: williamyeh.nginx
  name: nginx
  path: roles/
```

ansible-galaxy install -f -r requirements.yml

Main playbo
refactoring to

```
•  
|-- playbook.yml  
`-- requirements.yml  
  
0 directories, 2 files
```



```
- hosts: all  
  sudo: True  
  
  roles:  
    - nginx  
  
  vars:  
    worker_pro  
    worker_conn
```

requirements

```
---  
  
- src: will  
  name: ngi  
  path: rol
```

ansible-galaxy i

```
.
|-- templates
|   |-- app.nginx.conf.j2
|   `-- app.sysvinit.sh.j2
|-- playbook.yml
`-- requirements.yml


1 directory, 4 files
```

```
.
|-- play
`-- requ

0 direct
```

requirements.yml

```
---  
  
- src: williamyeh.nginx  
  path: roles/  
  
- src: williamyeh.nodejs  
  path: roles/  
  
- src: geerlingguy.git  
  path: roles/  
  
- src: https://github.com/William-Yeh/ansible-project_deploy  
  name: project_deploy  
  path: roles/  
  
- src: williamyeh.init-installer  
  path: roles/
```



playbook.yml

```
roles:
  - ...

vars:
  project_root: "/opt/app"
  project_deploy_strategy: git
  project_git_repo: "https://github.com/ccoenraets/react-trader.git"
  project_has_npm: true

  nginx_conf_others:
    app_1:
      src: "templates/app.nginx.conf.j2"
      dest: "app.conf"

  init_sysv:
    app_1:
      src: "templates/app.sysvinit.sh.j2"
      dest: "app"

tasks:
  - name: start the app
    service: name=app state=started enabled=yes
```



playbook.yml

```
roles:
  - ...

vars:
  project_root: "/opt/app"
  project_deploy_strategy: git
  project_git_repo: "https://github.com/ccoenraets/react-trader.git"
  project_has_npm: true

  nginx_conf_others:
    app_1:
      src: "templates/app.nginx.conf.j2"
      dest: "app.conf"

  init_sysv:
    app_1:
      src: "templates/app.sysvinit.sh.j2"
      dest: "app"

tasks:
  - name: start the app
    service: name=app state=started enabled=yes
```



```
.
|-- templates
|   |-- app.nginx.conf.j2
|   `-- app.sysvinit.sh.j2
|-- playbook.yml
`-- requirements.yml

1 directory, 4 files
```

requirements.yml

```
---
- src: williamyeh.nginx
  path: roles/

- src: williamyeh.nodejs
  path: roles/

- src: geerlingguy.git
  path: roles/

- src: https://github.com/William-Yeh/ansible-project_deploy
  name: project_deploy
  path: roles/

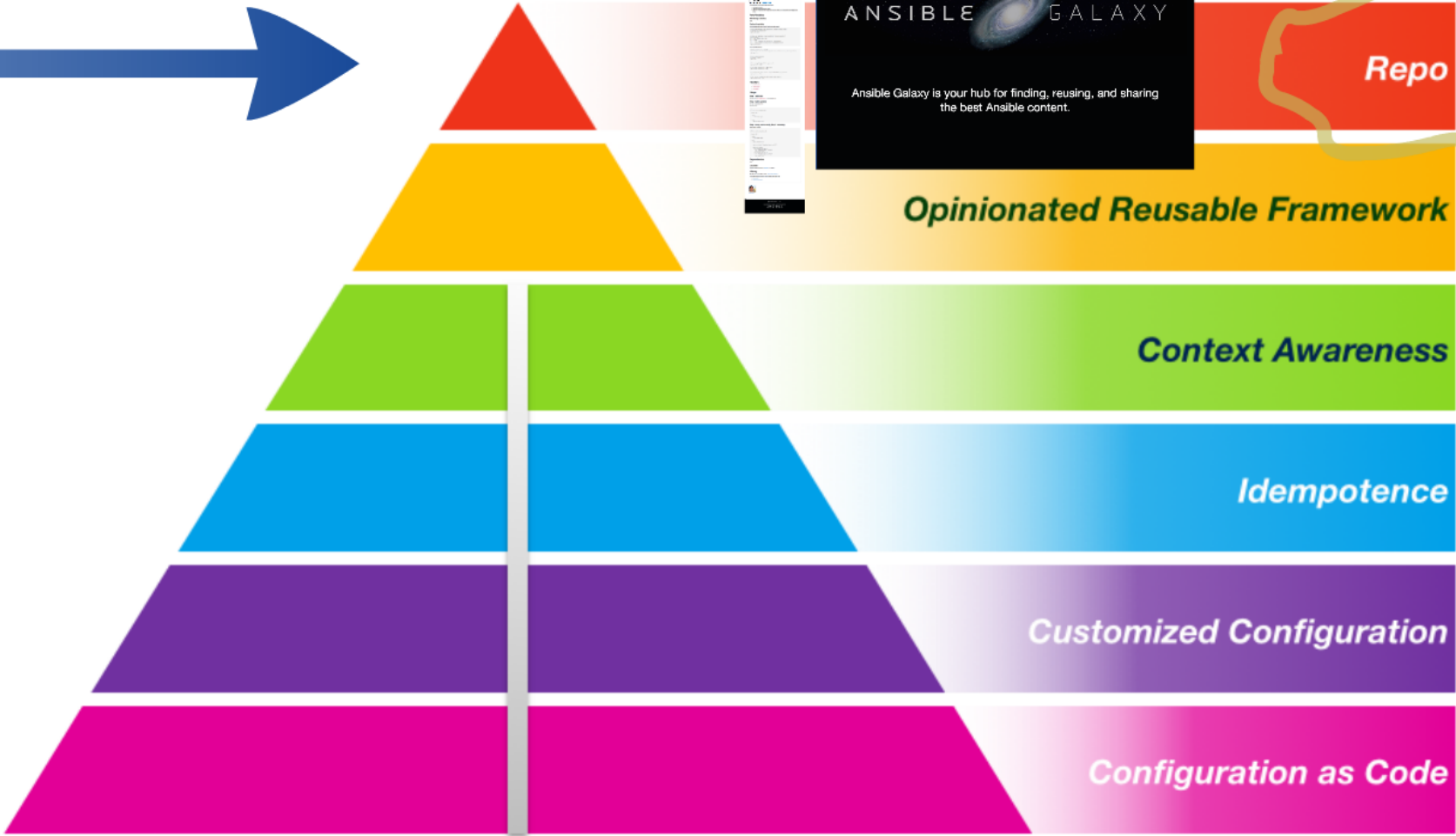
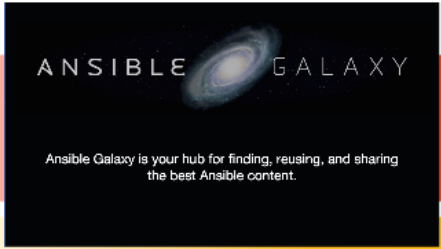
- src: williamyeh.init-installer
  path: roles/
```



```
requirements.yml
---
collections:
  - ansible.builtin
  - community.general
  - ansible.posix
  - ansible.netcommon
  - ansible.utils
  - ansible.windows
  - ansible.sanity
  - ansible.galaxy
  - ansible.legacy
  - ansible.clang
  - ansible.dns
  - ansible.git
  - ansible.mysql
  - ansible.postgresql
  - ansible.ssh
  - ansible.vault
  - ansible.vim
  - ansible.zabbix
  - ansible.zfs
  - ansible.zsh
```

```
requirements.yml
---
collections:
  - ansible.builtin
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  - ansible.netcommon
  - ansible.utils
  - ansible.windows
  - ansible.sanity
  - ansible.galaxy
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  - ansible.clang
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  - ansible.mysql
  - ansible.postgresql
  - ansible.ssh
  - ansible.vault
  - ansible.vim
  - ansible.zabbix
  - ansible.zfs
  - ansible.zsh
```

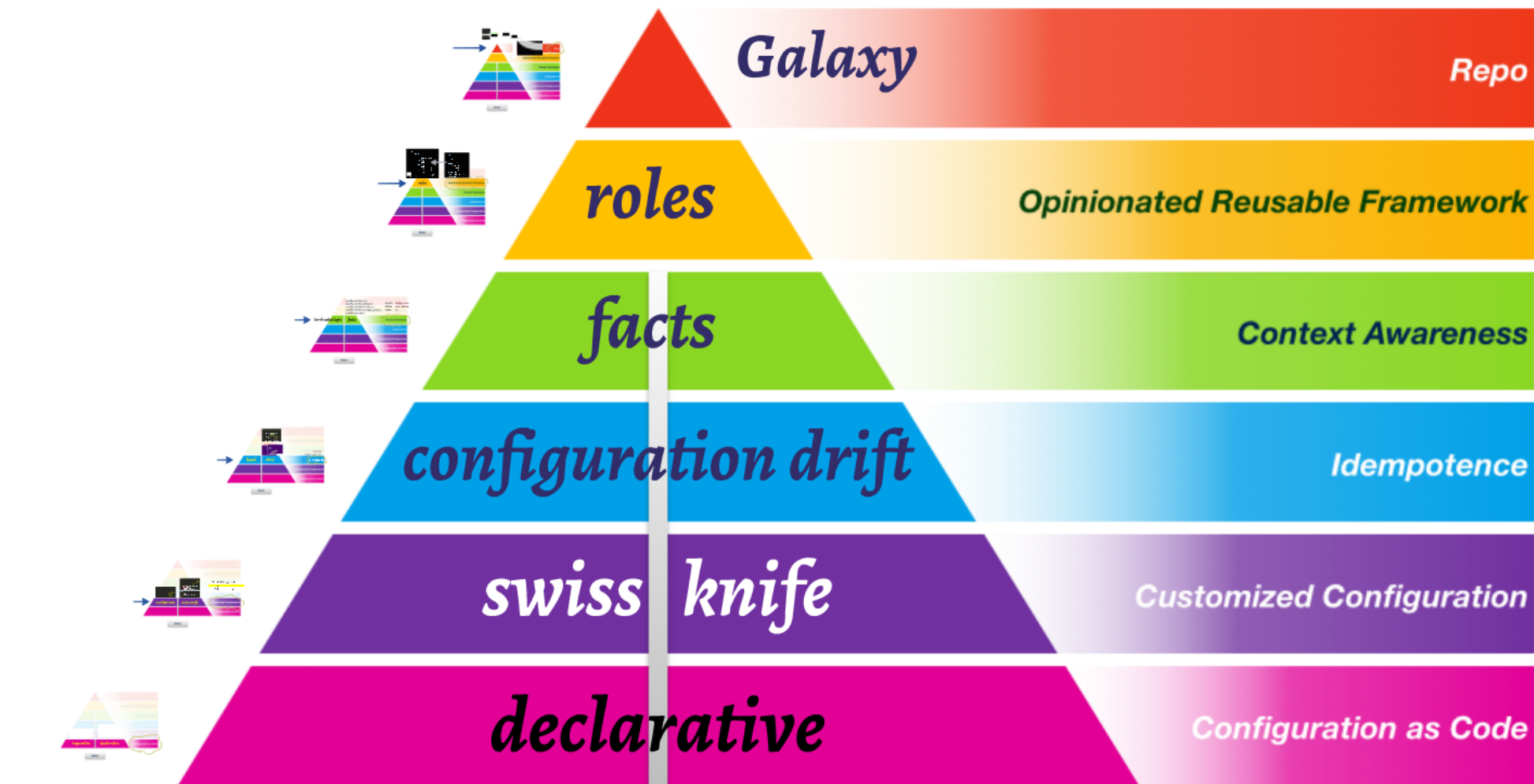
```
ansible-galaxy install -f -r requirements.yml
```



Chaos



ANSIBLE



Chaos







ANSIBLE

Galaxy

Repo

roles

Opinionated Reusable Framework

facts

Context Awareness

configuration drift

Idempotence

swiss knife

Customized Configuration

declarative

Configuration as Code

Chaos

