Building a Service Delivery Infrastructure
Paula Paul
@paulapaultweets
Thoughtworks
Technology Principal

Rosemary Wang
@joatmon08
Thoughtworks
Infrastructure Consultant
What is it?
business capability
delivered in
services & applications
business value

delivered by

business capability

delivered in

services & applications

delivered on

infrastructure
Literal “Delivery” Infrastructure
Given a record identifier associated with a customer, 

When I call an API endpoint 

Then I should get the customer’s name.

Deliver Me, “Hello Customer!”
Given a record identifier associated with a customer,

When I call an API endpoint

Then I should get the customer’s name.

Deliver Me, “Hello Customer!”
As a developer...
I WANT TO BE PRODUCTIVE.
Narratives

As a... I want to... So that...

More / less detail

Consider acceptance criteria
As a developer

I want to use CPU and memory resources

So that I can deliver some business capability.
As a developer

I want to securely and automatically manage my secrets

So that I can mitigate the exposure to sensitive strings such as passwords and keys.
As a developer

I want to have access control for my service endpoints

So that I can enforce authorized access and mitigate security risks.
Infrastructure as Software

Domain-Driven Design
Test-Driven Development
Thin Slicing
YAGNI
Pairing
Acceptance Criteria

Agile Infrastructure
As an infrastructure engineer...
I WANT TO RECLAIM NIGHTS & WEEKENDS.
“Expert Developer” or “Hero Operator”?

NEITHER!

Achieve a **ubiquitous language**.

Learn **infrastructure-as-code**.

Remember - you want to **deliver** “Hello, Customer!”.
As a [ developer | infrastructure engineer ]

I want to deliver my [ service | infrastructure ] in an automated way

So that it is secure, legally compliant, and ready for my user.
# Infrastructure Deployment Pipeline

<table>
<thead>
<tr>
<th>Unit</th>
<th>Build</th>
<th>Test</th>
<th>Secure</th>
<th>Monitor</th>
<th>Perform</th>
<th>Promote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Check</td>
<td>Automation</td>
<td>Integration Test</td>
<td></td>
<td>Conformance Tests (can run async)</td>
<td></td>
<td>Production Ready!</td>
</tr>
</tbody>
</table>

- **Unit**
  - Configuration Check
  - Terraform plan
  - Terraform apply

- **Build**
  - Automation

- **Test**
  - Integration Test
  - pytest
  - inspec-gcp
  - awspec
  - scout2
  - g-scout

- **Secure**
  - Conformance Tests (can run async)
  - scout2
  - g-scout

- **Monitor**
  - pytest

- **Perform**
  - pytest

- **Promote**
  - locust
  - pumba
As an [ developer | infrastructure engineer ]

I want to control how other services reach each other

So that I can minimize my threat surface.
exploratory

- unit
  - smoke
    - component
    - integration
    - e2e

- tests EVERYTHING
- tests multiple components not in our control
- tests component is configured
- signals that we can test further
- validates config/syntax

- cost
Network Policy Example

exploratory

e2e
integration
component
smoke
unit

Kubernetes Network Policy

All Pods & Dependencies
Labeled Pod & Dependency (Ingress & Egress)
Labeled Pod
kubetest

Datacenter Firewall

test-kitchen (multiple networks)
test-kitchen (VM on networks)
pytest
ansible-playbook (on virtual firewall)
ansible-playbook --check
As an architect...
I WANT TO CHAMPION PRODUCTIVITY & ARCHITECTURE “-ILITIES”.
Objective Metrics

security
0 high vulnerabilities

resiliency
< 1% deployment error rate

auditability
< 90 days since last audit

architectural fitness functions
business value

delivered by

business capability

delivered in

services & applications

delivered on

infrastructure
As a CxO...
The Balancing Act

- Autonomy
  - Vendor Lock-in
  - Cost
  - Vendor Management
- Evolvability
  - Build vs. Buy
  - Fixed vs. On-Demand Capacity
- Complexity
  - Compliance
  - Global vs. Regional
2019 IT Budgets

- Managed services: 14%
- Hosted/cloud-based services: 21%
- Software: 26%
- Hardware: 35%
- Don't know: 5%

The 2019 State of IT, spiceworks
Metrics

Evolvability

Mean Time to Resolution

Time to Market
business value

delivered by

business capability

delivered in

services & applications

delivered on

infrastructure
Where do we start?
As an organization...

Team Structure?  Capabilities Development?  Executive Buy-In?  Known Journey?
As an individual...

- remember your customer!
- experiment
- read examples
- join / build a community
Thank you!

Paula Paul  
@paulapaultweets

Rosemary Wang  
@joatmon08
Rate today’s session!

Effective enterprise architecture

Who is this presentation for?
- Architects of all kinds, leads, senior developers, and managers

Prerequisite knowledge
- Experience as a senior developer or architect working on software projects

What you’ll learn
- Learn a holistic approach to architecture that explains how to bring business architecture, information architecture, data architecture, application (software) architecture together to have the best chance for your system’s success
- Explore a practical set of architecture practices to create winning technical architectural guidance
- Understand how architecture works effectively with development teams, management, and product management teams through the value chain
- Get usable templates you can start incorporating into your teams immediately

Session page on oreillysacon.com/ny

O'Reilly Events App

O'REILLY®
Software Architecture

O'REILLY®
Software Architecture
February 3–6, 2019
New York, NY

Effective enterprise architecture

1:15 PM - 2:05 PM, Wed, Feb 6, 2019

Speakers
- Ellen Hewitt
  CTO
  Sabre

Grand Ballroom West
Ellen Hewitt shares a holistic approach to enterprise architecture that explains how to bring business architecture, information architecture, data architecture, application architecture, and infrastructure architecture together into a comprehensive design. You’ll also learn how to incorporate design thinking principles and work effectively with Agile teams.

SESSION EVALUATION
Track
Topic
50-minute session