

# Hands on Design

## Guided Setup for Cloud Assembly

Peter Shepherd  
January 2019

# Project Tango

## VMware Cloud Automation Services



**Cloud Assembly**

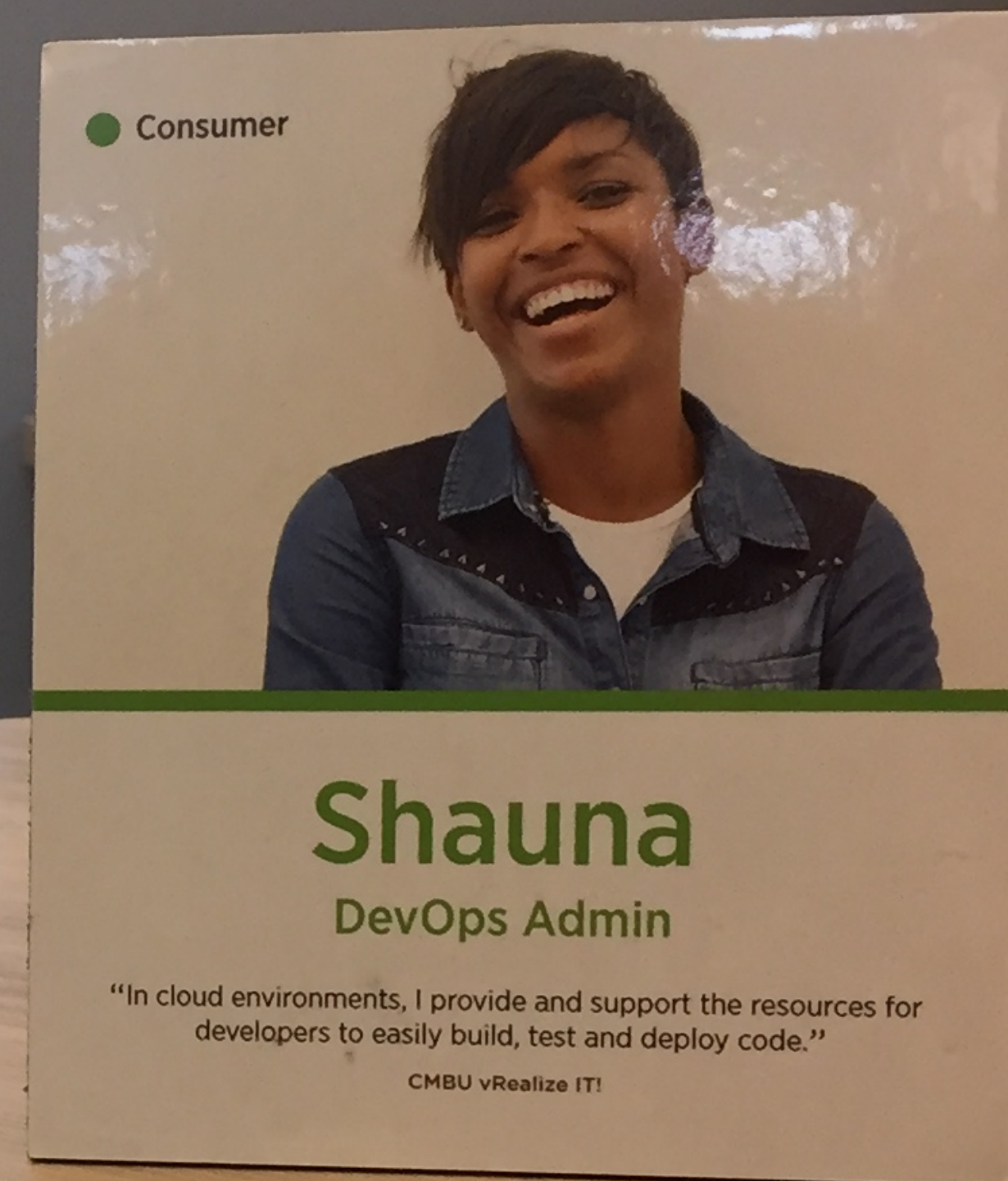


**Service Broker**



**Code Stream**





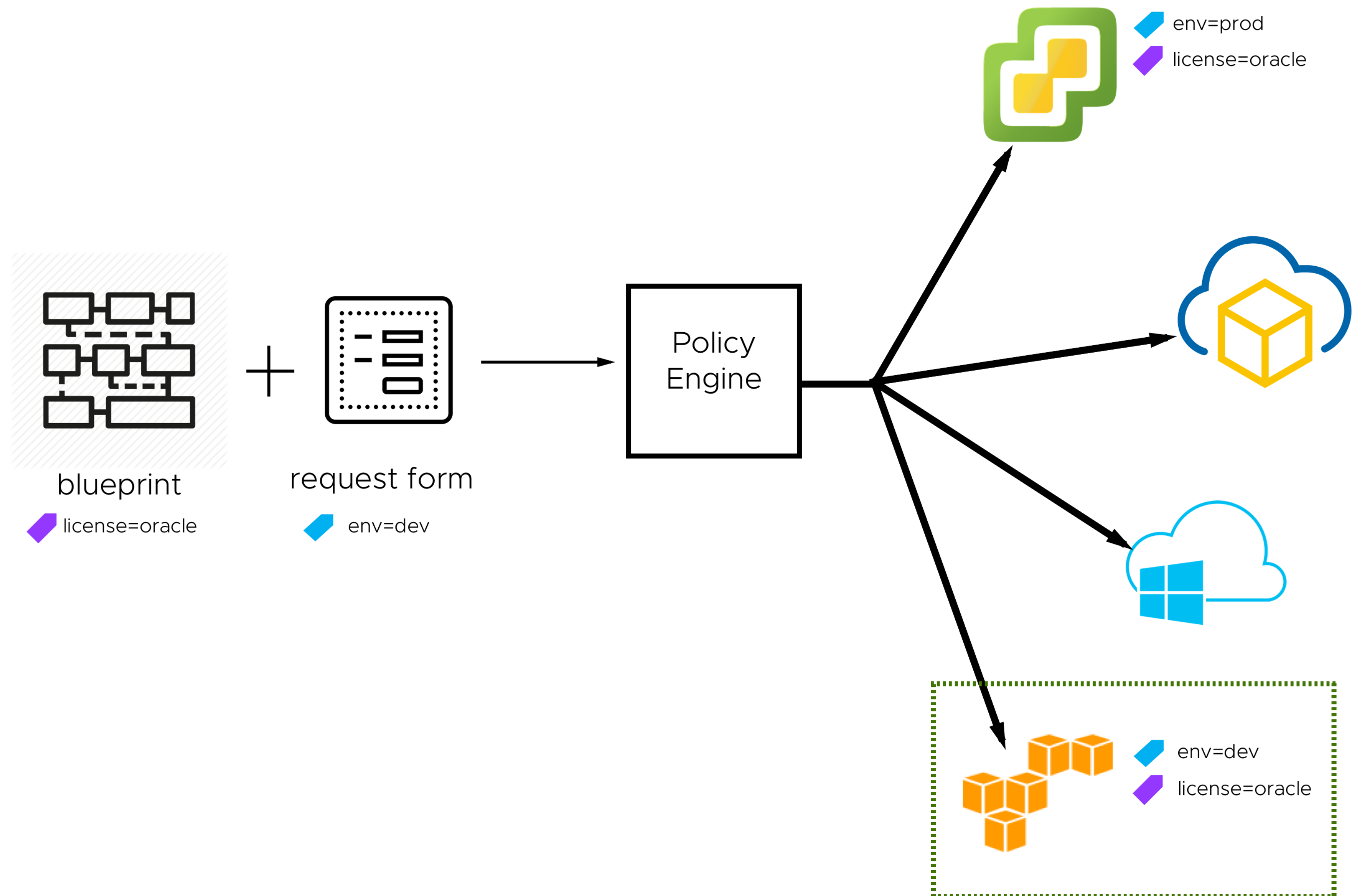
Our Primary Personas for Cloud Automation Based on Customer Research

Cloud Admin provides cloud application infrastructure to development teams



# Core Concept of Cloud Automation - Write Once, Deploy to Multiple Clouds

- Cloud Admin expresses component requirements with tags in a blueprint
- Placement policy engine matches these tags with capability tags on resources
- Matching determines which private or public cloud the cloud app infrastructure is deployed to
- To enable this late binding Cloud Admin must set up and tag the infrastructure stack beforehand





# Core Concept of Cloud Automation - Infrastructure as Code

- Cloud Admin defines cloud app infrastructure in a blueprint
- Drag n drops components onto canvas and connects them
- Specifies component properties in YAML code pane
- Infrastructure as code enables using source control and diffs

The screenshot displays the Cloud Assembly interface for managing infrastructure blueprints. The top navigation bar includes the 'vm Cloud Assembly' logo, a user profile for 'Peter Shepherd' from 'Tango Burlington', and a grid icon. Below the navigation bar, the 'Blueprints' tab is selected, showing the 'Fraud Detector' blueprint with sub-tabs for 'SETTINGS', 'VERSION HISTORY', and 'ACTIONS'.

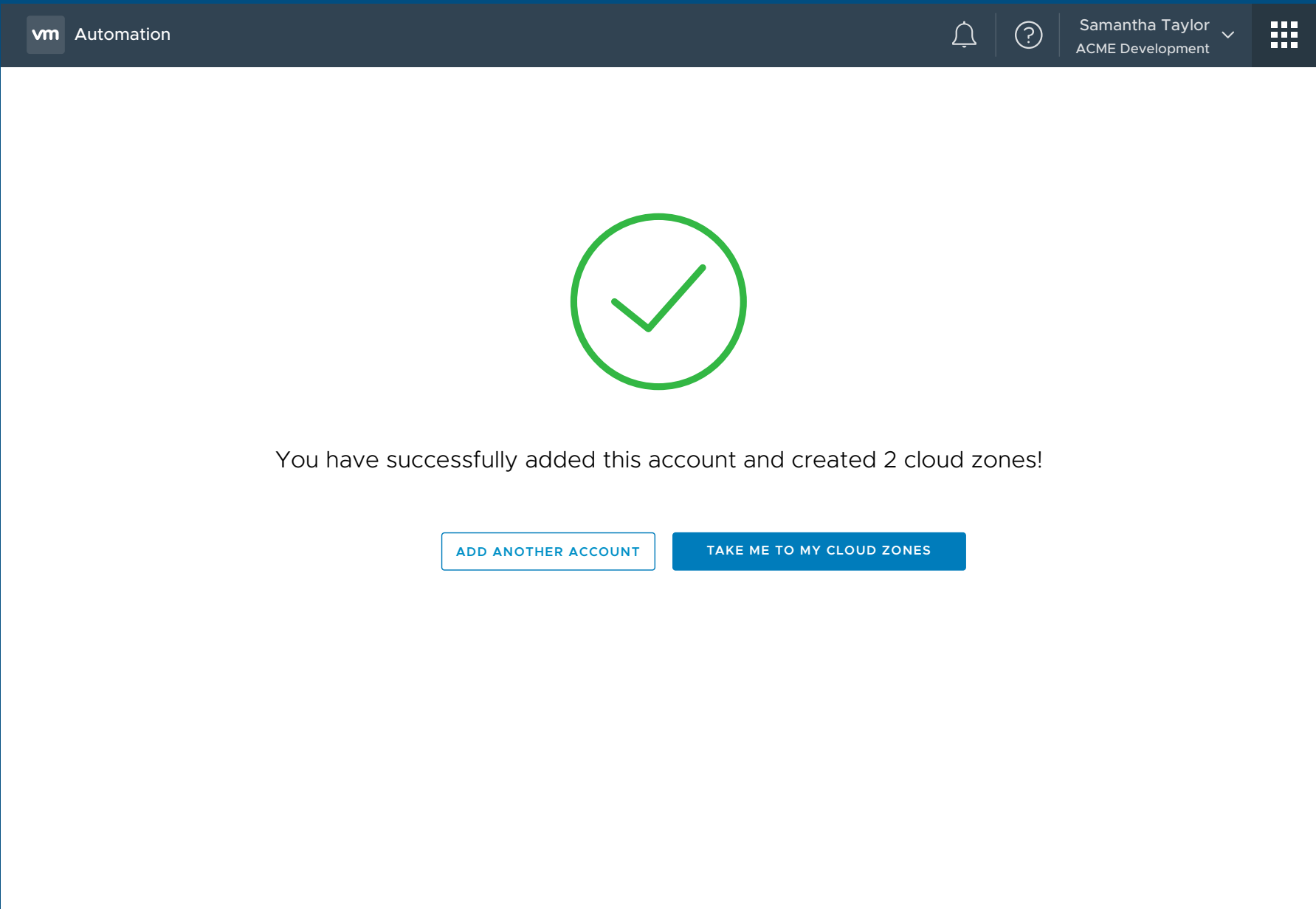
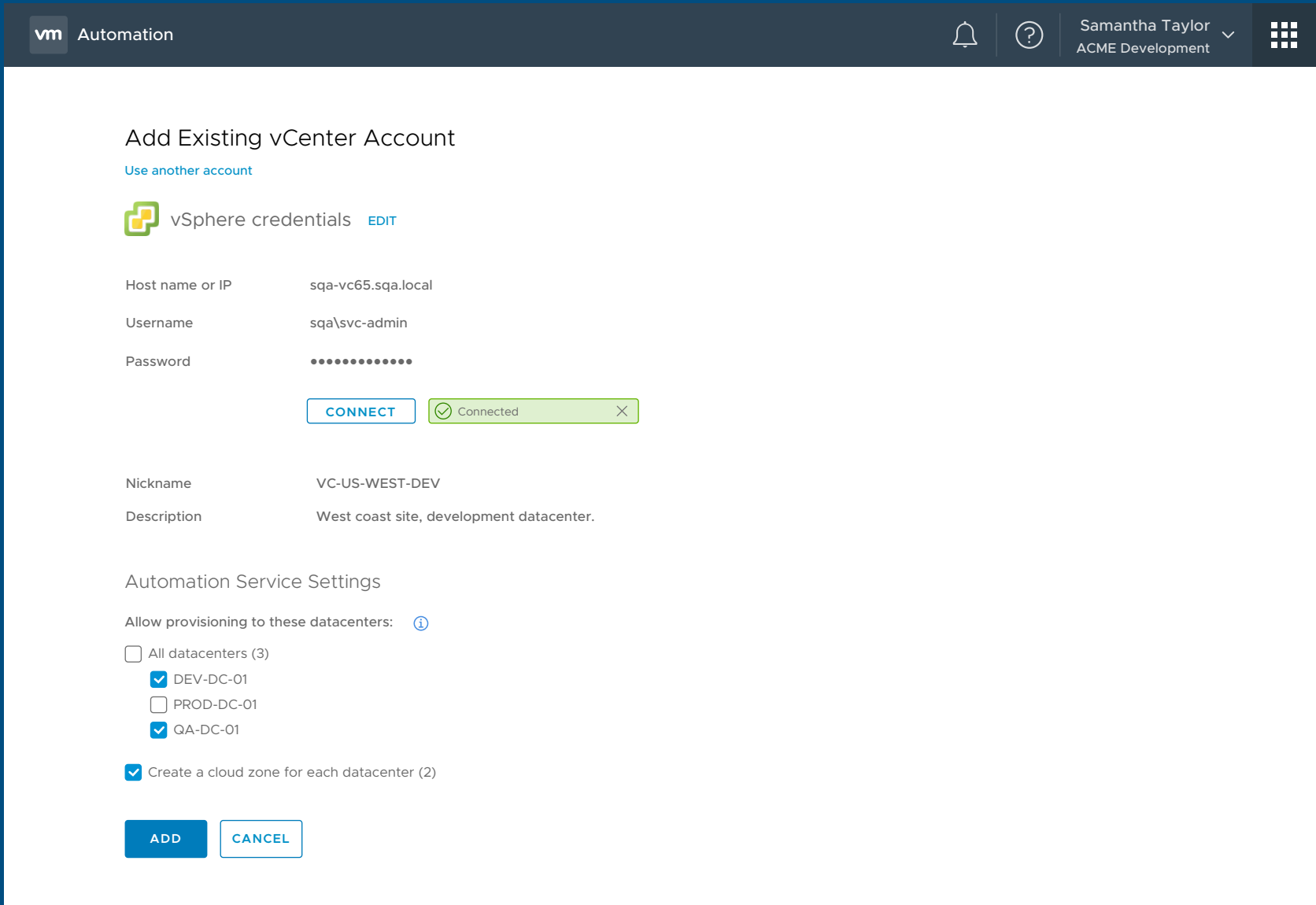
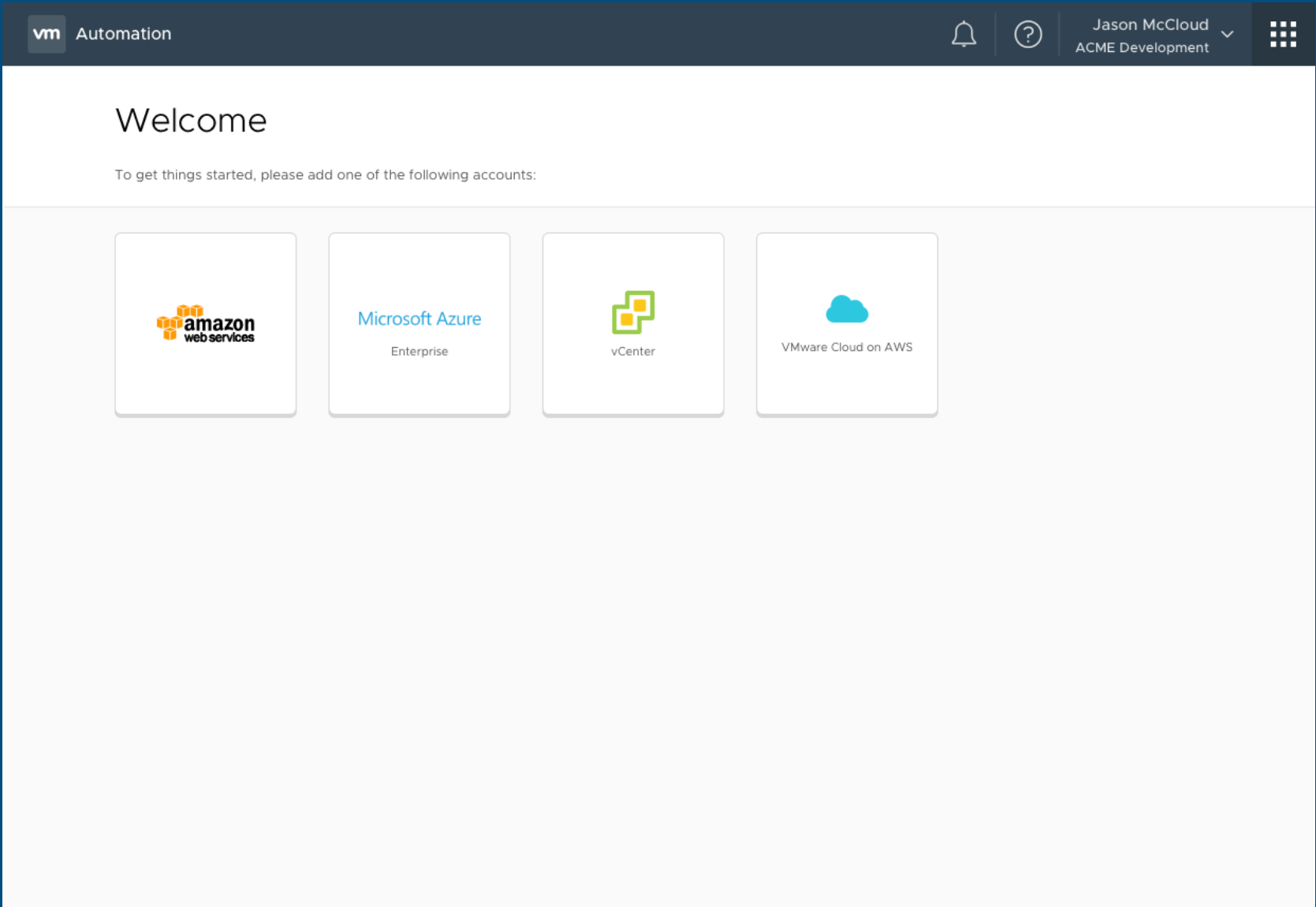
The main workspace is divided into three sections:

- Component Catalog (Left):** A sidebar with a search bar and a list of components categorized by cloud provider (Cloud Agnostic, vSphere, AWS). The 'Cloud Agnostic' category is expanded, showing 'Machine', 'Network', 'Load Balancer', and 'Volume'. The 'AWS' category is also expanded, showing 'Instance', 'Volume', and 'Kinesis'.
- Canvas (Center):** A drag-and-drop workspace for building the blueprint. It contains a diagram with three main components: 'WP-Network' (a network icon), 'DBTier' (a database icon), and 'WebTier' (a web icon). The 'DBTier' and 'WebTier' components are connected to the 'WP-Network' component via lines. Each component has a 'tag: \${in...}' property field.
- YAML Code Pane (Right):** A text editor showing the YAML configuration for the 'UIBasicUC2' blueprint. The configuration includes fields for 'name', 'iteration', 'description', 'inputs', 'env', 'size', 'username', 'userpassword', and 'databaseDiskSize'.

At the bottom of the interface, there are three buttons: 'DEPLOY', 'VERSION', and 'CLOSE'. A status message indicates 'Last saved a few seconds ago'. A chat icon is visible in the bottom right corner.



# First User Experience August 2017 - After a Few Screens, Admin is On Their Own





# No Guidance in Creating and Tagging Blueprint Components with Requirements

vmCloud Assembly

?

Peter Shepherd  
Tango Burlington

Infrastructure

Blueprints

Deployments

Extensibility [Beta]

Marketplace

Test Machine

SETTINGS

VERSION HISTORY

ACTIONS

<<

Search components

Cloud Agnostic

Machine

Network

Load Balancer

Volume

vSphere

Machine

Network

Disk

AWS

Instance

Volume

Kinesis

Kinesis Firehose

Kinesis Stream

Cloud\_VM\_1

Cloud\_Net\_1

Cloud\_VM\_1

Cloud\_Net\_1

1 inputs: {}  
2 resources:  
3 Cloud\_VM\_1:  
4 type: Cloud.Machine  
5 properties:  
6 image: ubuntu-clone  
7 flavor: ''  
8 networks:  
9 - name: '\${Cloud\_Net\_1.name}'  
10 Cloud\_Net\_1:  
11 type: Cloud.Network  
12 properties:  
13 name: ''  
14 networkType: existing  
15  
16

DEPLOY

VERSION

CLOSE

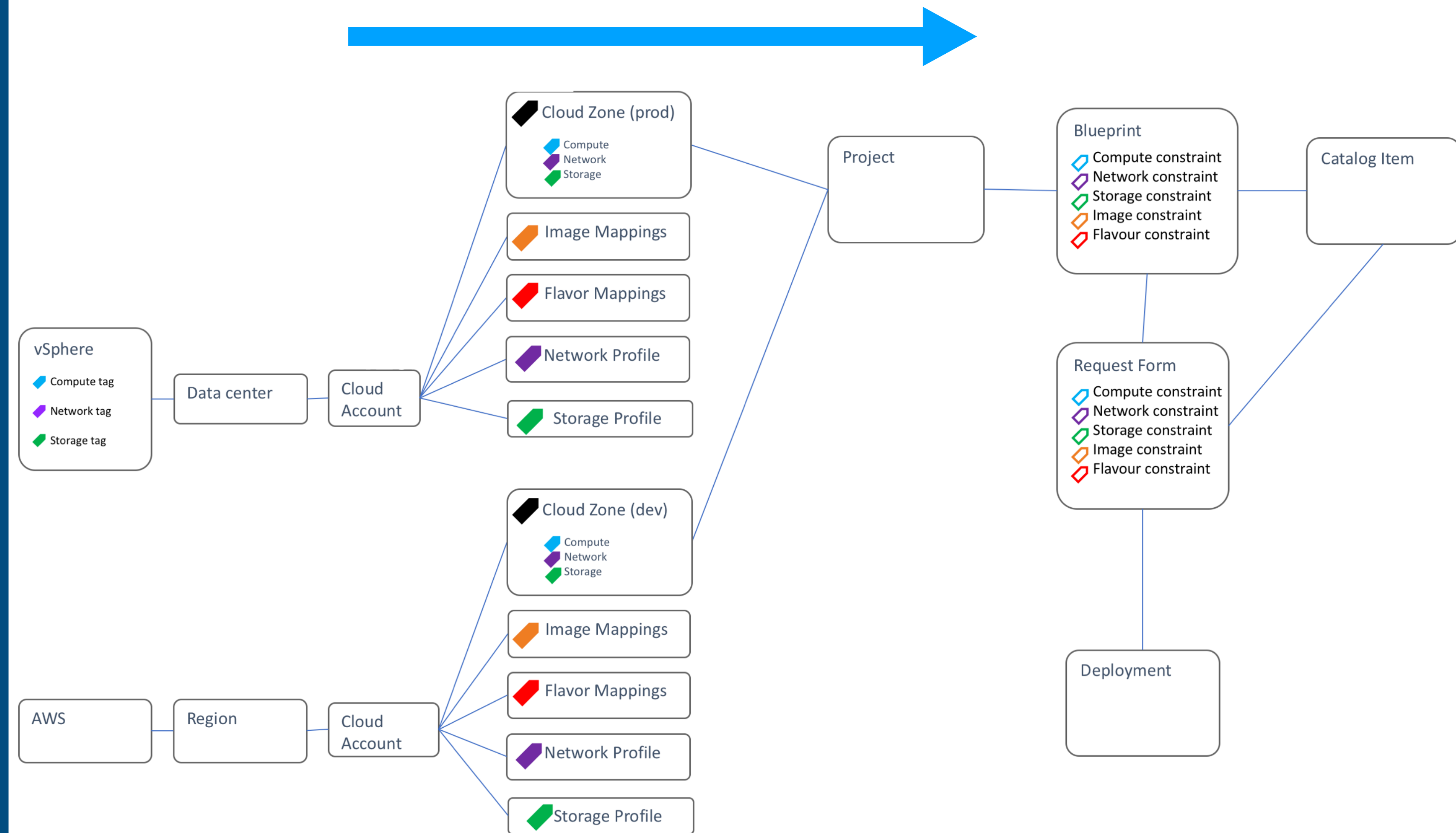
Last saved a few seconds ago



# User Onboarding Design Challenge - August 2017

- Educate Cloud Admins about Cloud Assembly
- Provide in-service experience
- Create, configure, tag infrastructure stack
- Create and deploy applications described by blueprints with tags

## Cloud Admin builds infrastructure stack “bottom up”

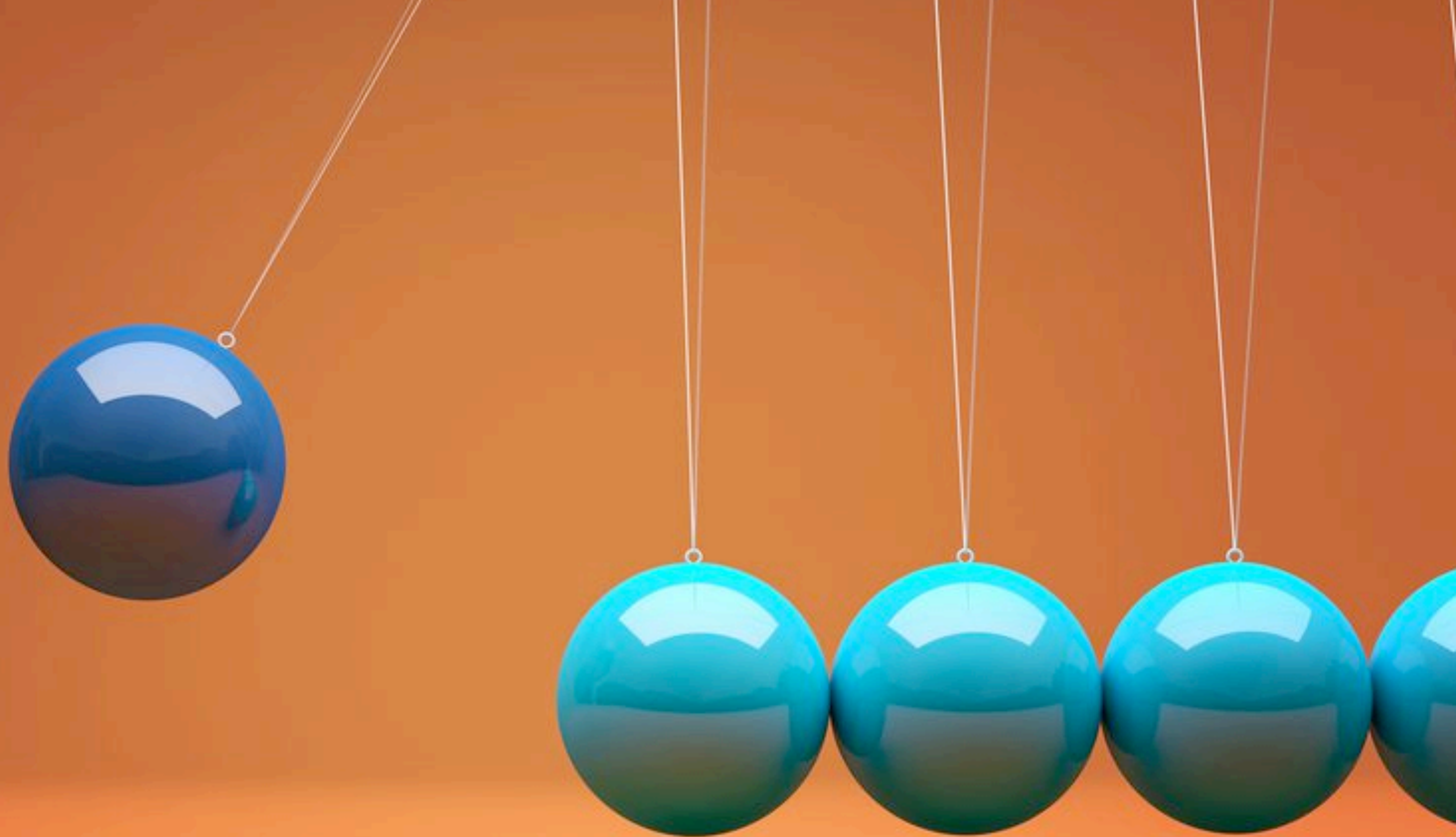




My Design Philosophy  
Establish the arc or vision of the experience





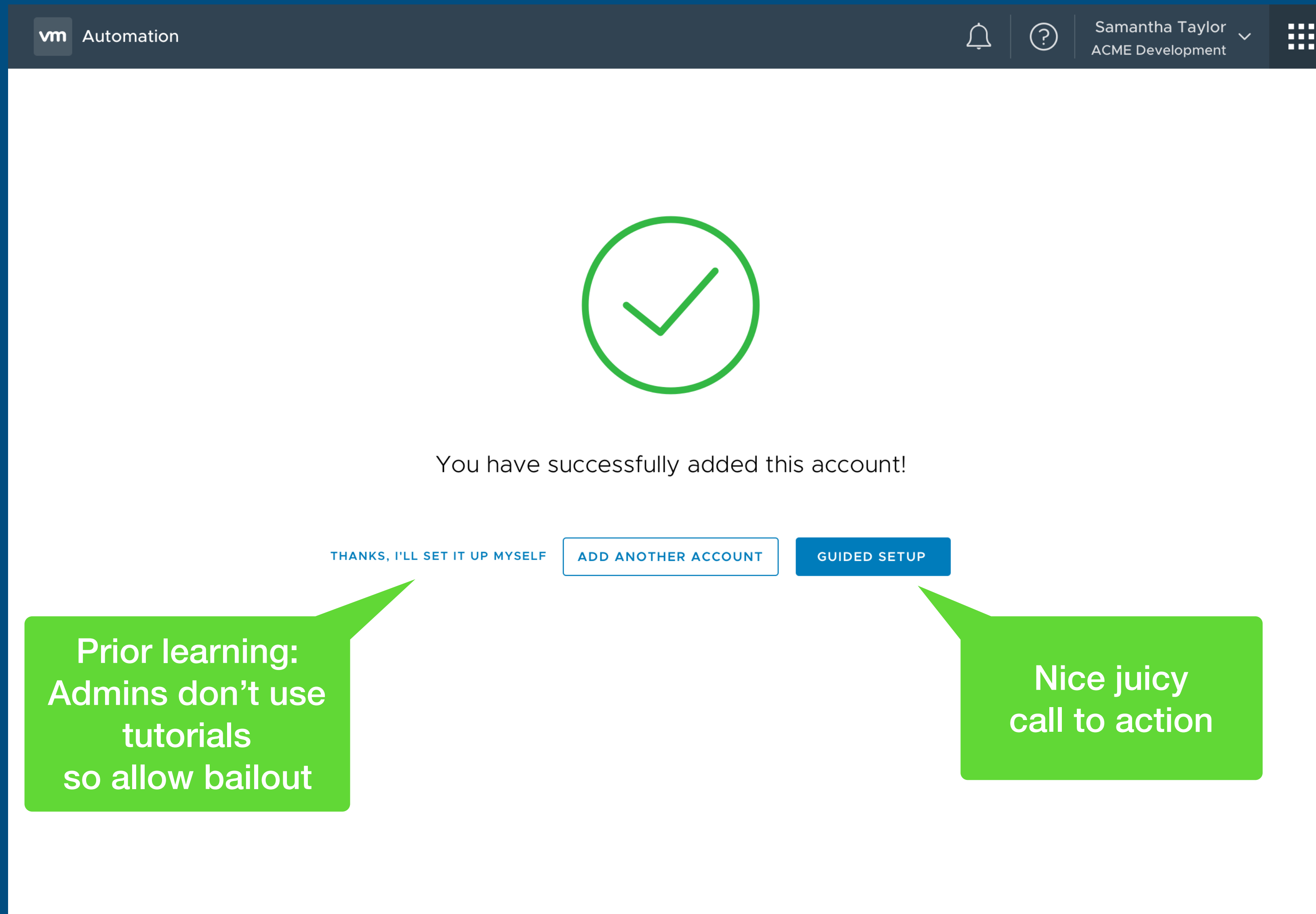


My Design Philosophy

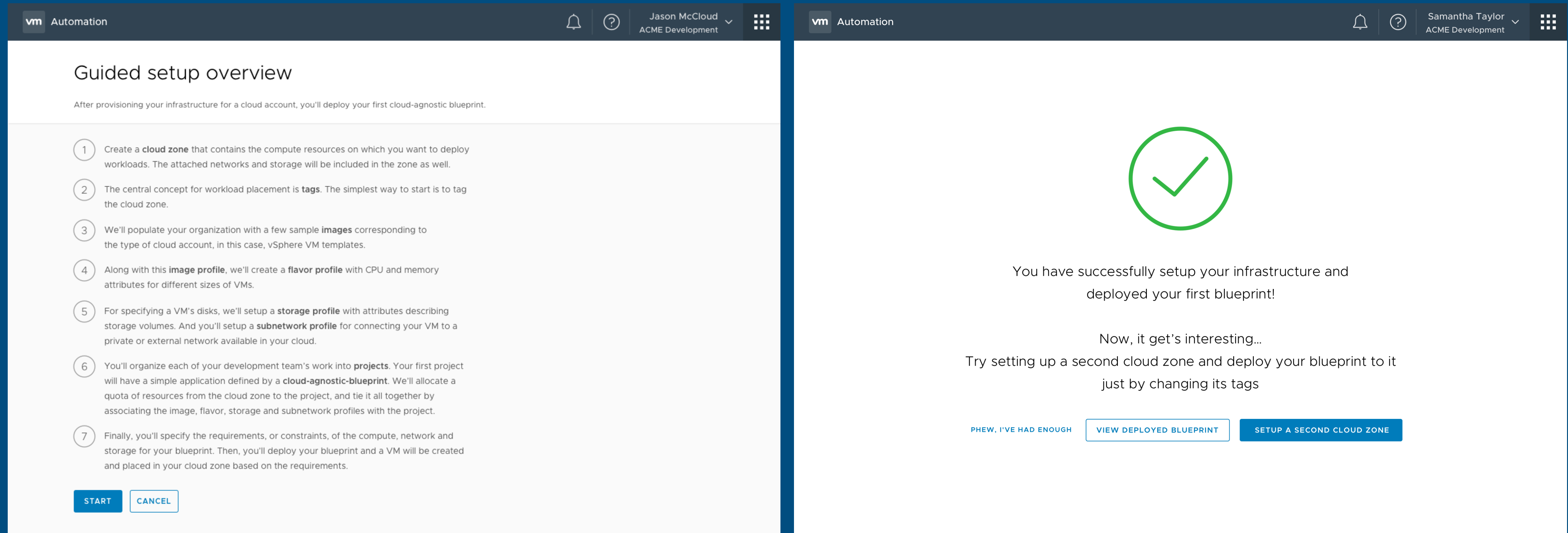
Big swings: create very different alternatives and iterate



# First Swing - Tie-in Onboarding, Guided Setup, on Congrats Page



# First Swing - Wizard-like Experience



My fellow designers and I weren't happy with it, but you have to start somewhere...  
We did like using a more conversational tone



# 2nd Swing - Collaborated with our Intern - Step-by-Step Guidance

The screenshot shows the 'New Cloud Zone' form in the vm Automation interface. The form is divided into several sections: 'Name\*' (Cloud Zone 1), 'Description', 'Cloud Account\*' (VC-US-WEST), 'Capability Tags' (Add tag...), and 'Zone Definition\*'. The 'Zone Definition\*' section includes a table with columns for Name, Cloud, Type, and Tags. The table contains five rows of data, each with a unique name and a set of tags. At the bottom of the form are 'CREATE' and 'CANCEL' buttons.

Name	Cloud	Type	Tags
PRD A	SQA vc-65	Cluster	env = prod, compute = HA
DEV B	SQA vc-65	Cluster	env = dev
PRD B	SQA vc-65	Cluster	env = prod, owner = ecommerce, compute = fast
DEV_ORA A	SQA vc-65	Cluster	env = dev, license = oracle, loc = bur
PRD-ORA B	SQA vc-65	Cluster	env = prod, license = oracle, loc = dc

The screenshot shows the 'Cloud Zones' overview page in the vm Automation interface. The page displays a list of cloud zones, including 'Development' and 'Test'. Each zone has a 'NEW ZONE' button and a summary of its resources. The 'Development' zone has 0 Projects, 2 Resources, and 0 Machines. The 'Test' zone has 0 Projects, 3 Resources, and 0 Machines. Below the resource summary, there are progress bars for CPU, Memory, and Storage usage. At the bottom of the page are 'NEXT' and 'CLOSE' buttons.

Zone	Projects	Resources	Machines	CPU	Memory	Storage
Development	0	2	0	86%	44%	55%
Test	0	3	0	33%	44%	55%

Sidebar with steps drives the admin through the pages they'll use daily rather than having a separate initial configuration wizard: provides an *effective experience*.

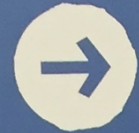


VMworld  
US & Europe  
Paused the  
Onboarding  
Work





vmworld 2017



## **CUSTOMER STORYTELLING**

Palm E

## **VMWORLD UX DESIGN STUDIO**

Palm H

## **MOTHER'S ROOM**

Palm G

vmware

September 2017  
Key Early UX Research  
3 months into Tango  
that would influence onboarding

## VMworld UX Design Studio

- Entire VMware Design Team runs it
- 2017 was 2nd year running it, this year it became part of VMworld sessions
- Great “sandbox” for listening to users and seeing a lot of people in a short time
- Customers really appreciate giving feedback and having an influence on direction

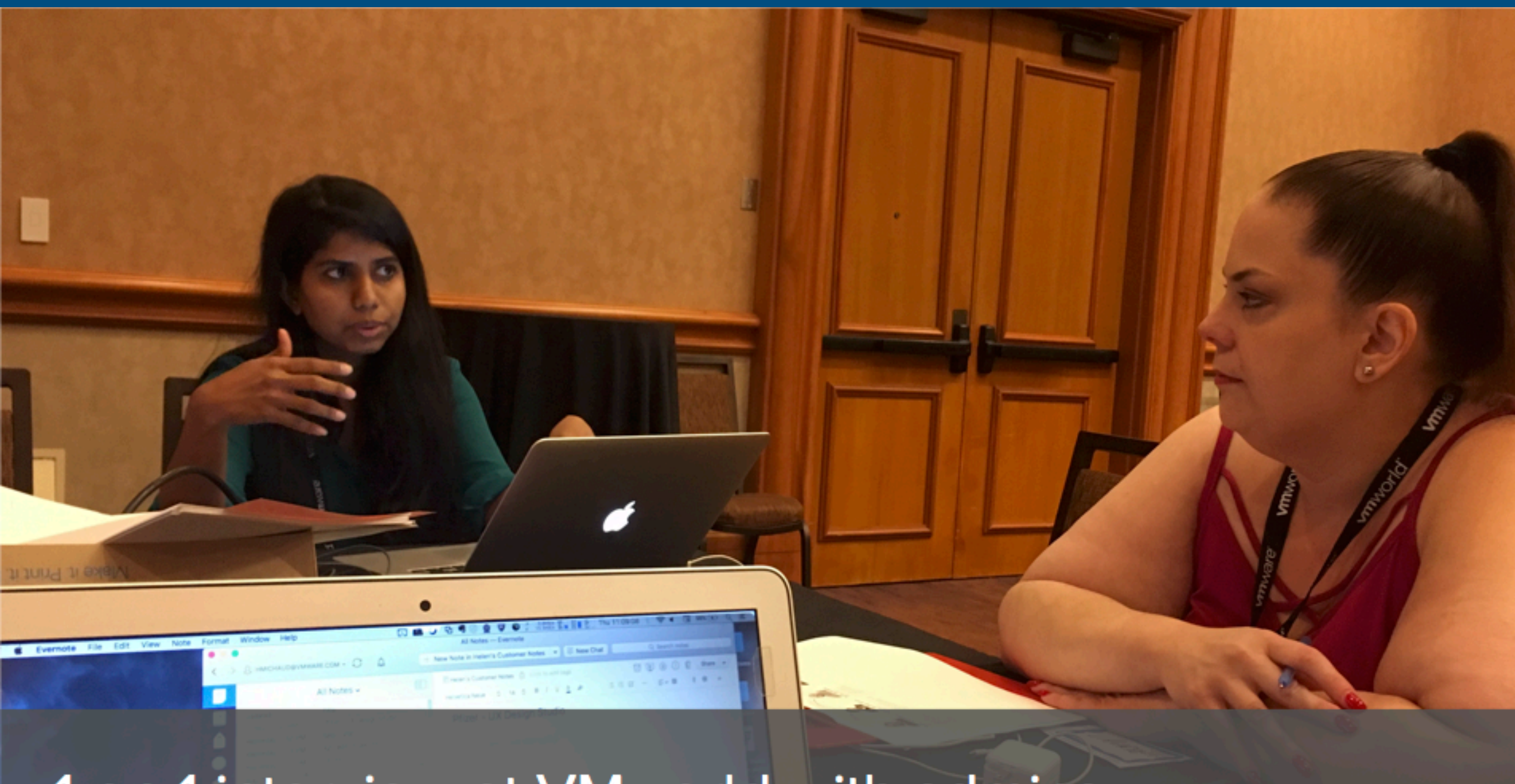


# Tango UX Design Studio Sessions

21 participants from 14 companies in Las Vegas and Barcelona



Focus group at VMworld with admins



1-on-1 interview at VMworld with admins

UX

PM

- Sessions bonded UX and PM
- Product team had never done early UX research
- From then on, UX always had a seat at the customer table



# We learned new things about our users and their work: it improved our personas



**Bob - OS Admin**

Manages images



**Jason - Cloud Admin**

Manages infrastructure  
Creates governance policies  
Manages flavours  
Manages images

Convergence  
↔



**Shauna - DevOps admin**

Creates blueprints  
Creates blueprint building blocks  
Shares blueprints with developers  
Uses UI  
Manages images  
Uses CLI



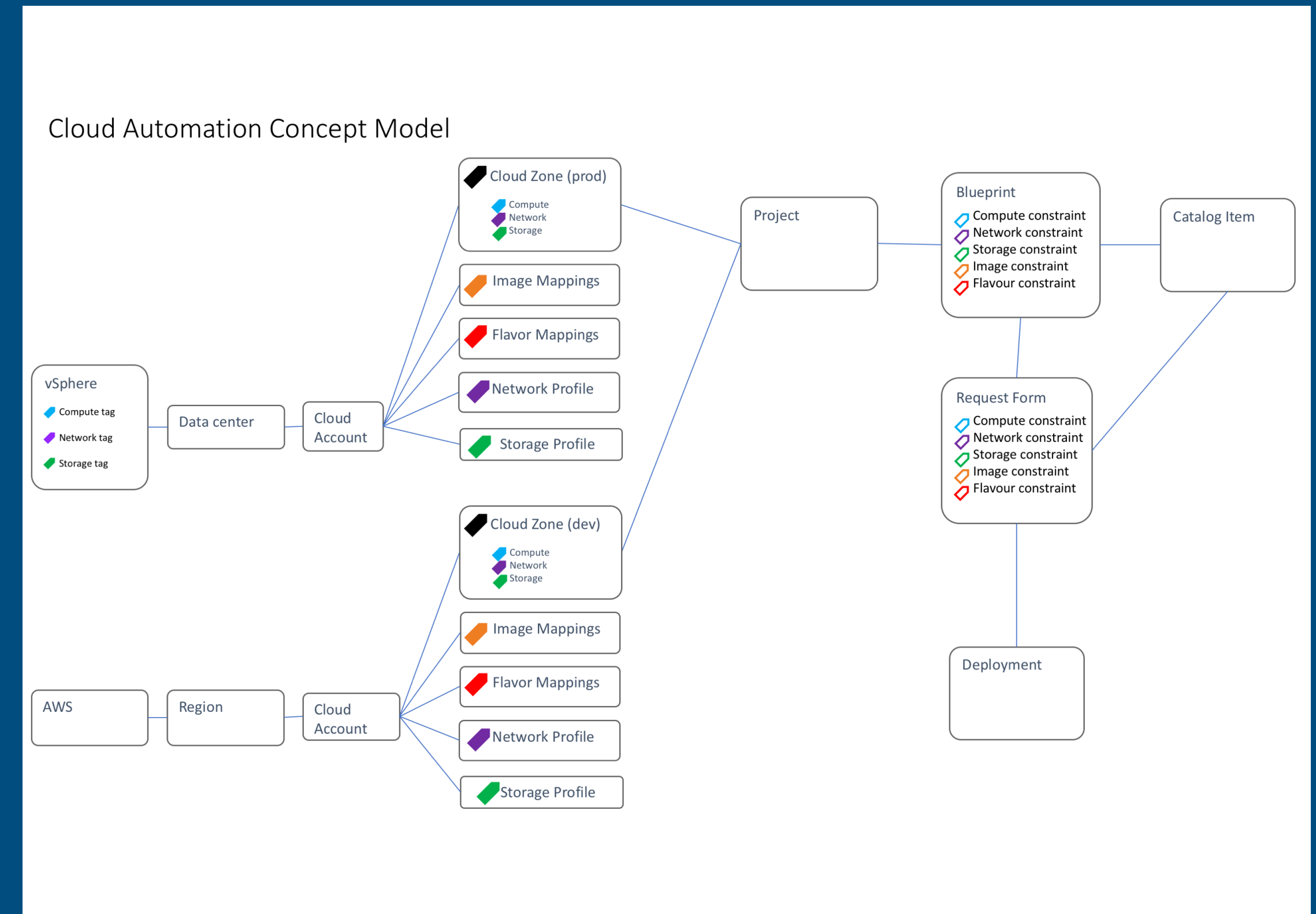
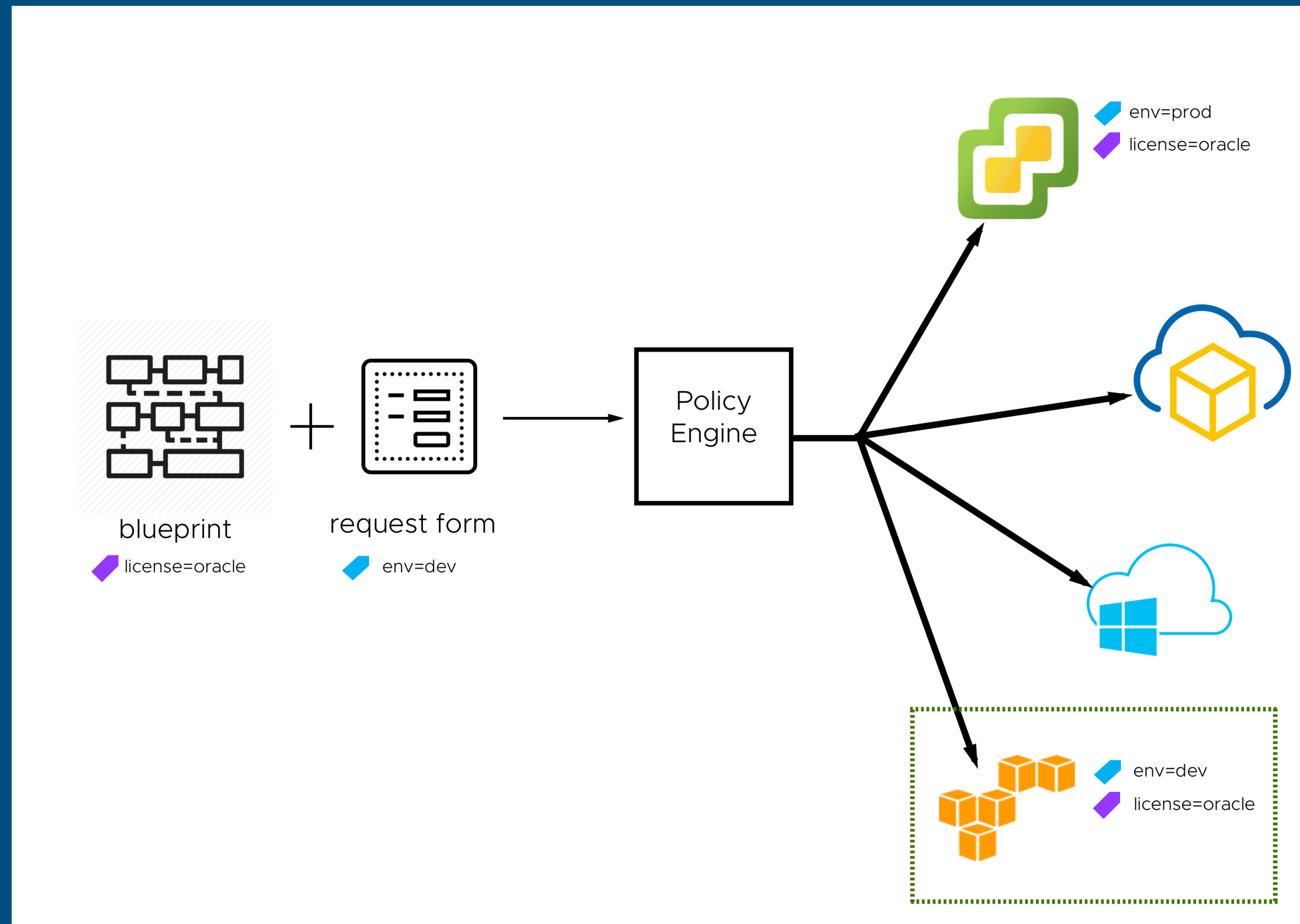
**Scott - Developer**

Develops applications  
Deploys blueprint  
Doesn't create blueprint  
Uses CLI

Customers have a wide range of personas / roles and it doesn't exactly map with our personas. Hence, the system needs to be fluid for adaptation.

*Source: VMworld, Tango Beta UX workshop*

# We shared with them concept diagrams and a few mockups



- “Write once, deploy to multiple clouds” and “infrastructure as code” resonated well
- They found Tango to be **simpler** than its progenitor VMware vRealize Automation



# After VMworlds Planned 3rd Swing of Onboarding

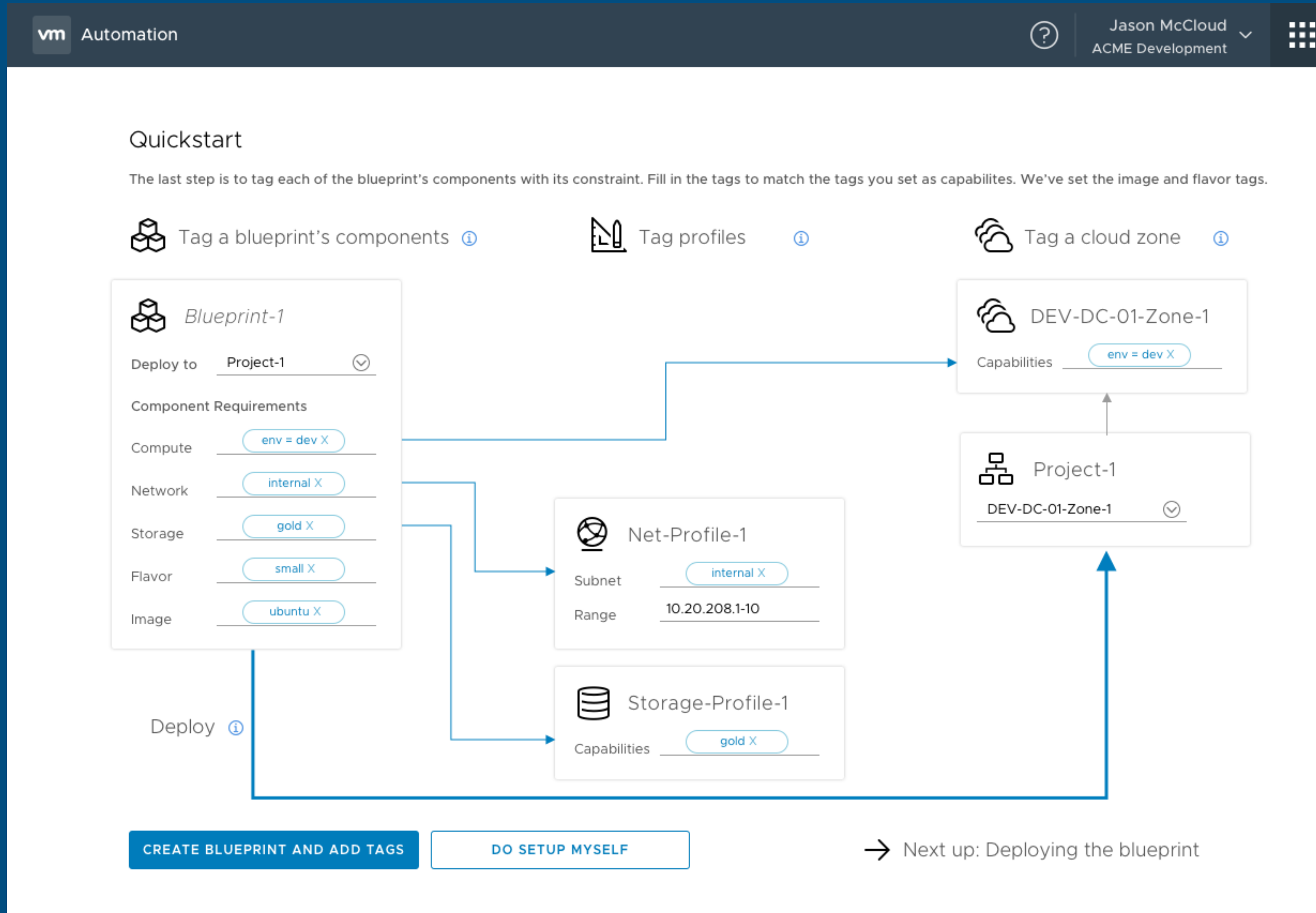
- Recognized how effective diagrams were with users
- So, center onboarding with diagram of Workflow + Model
- Go for a **BIG** swing and try something new: User fills in diagram step-by-step



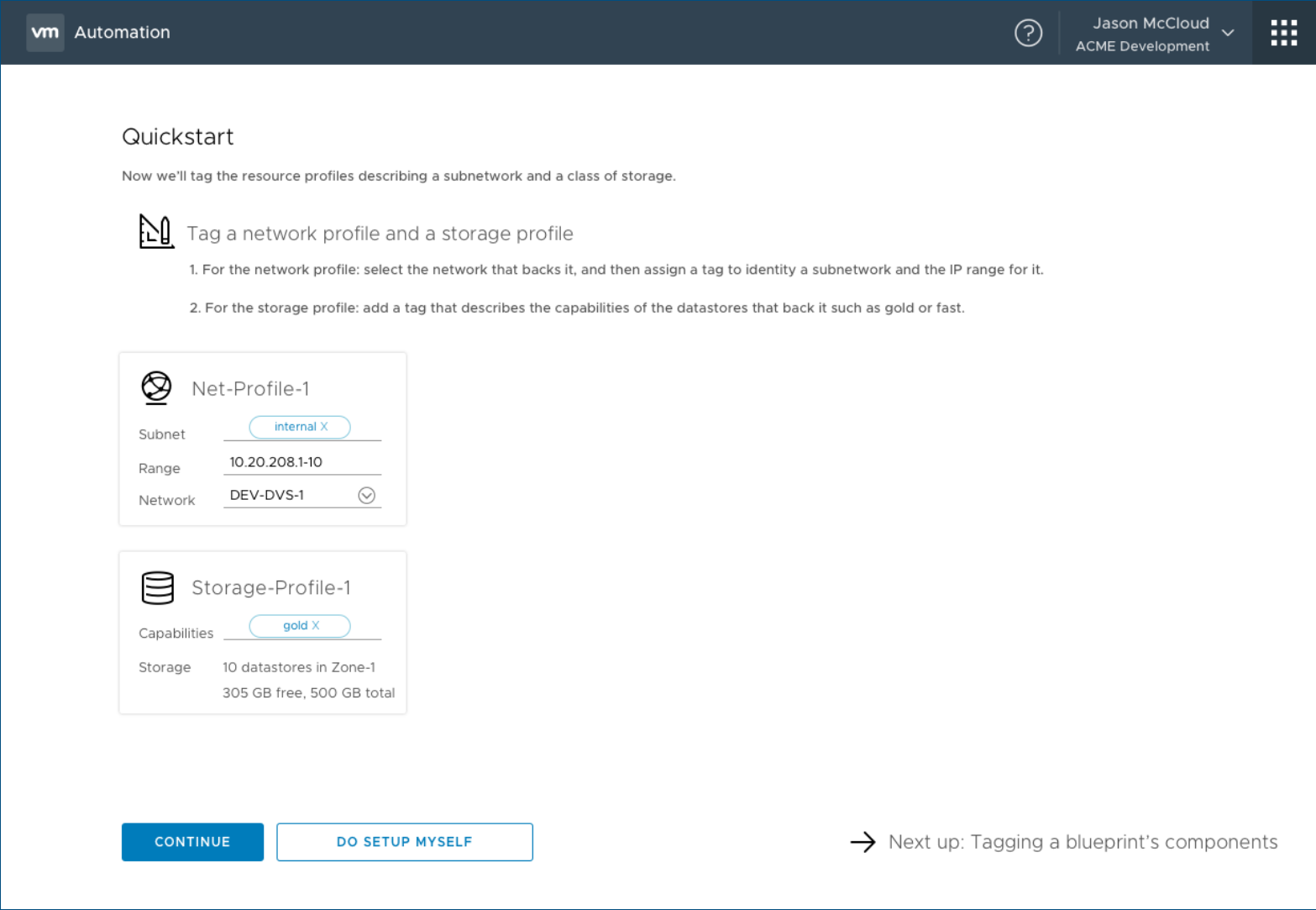
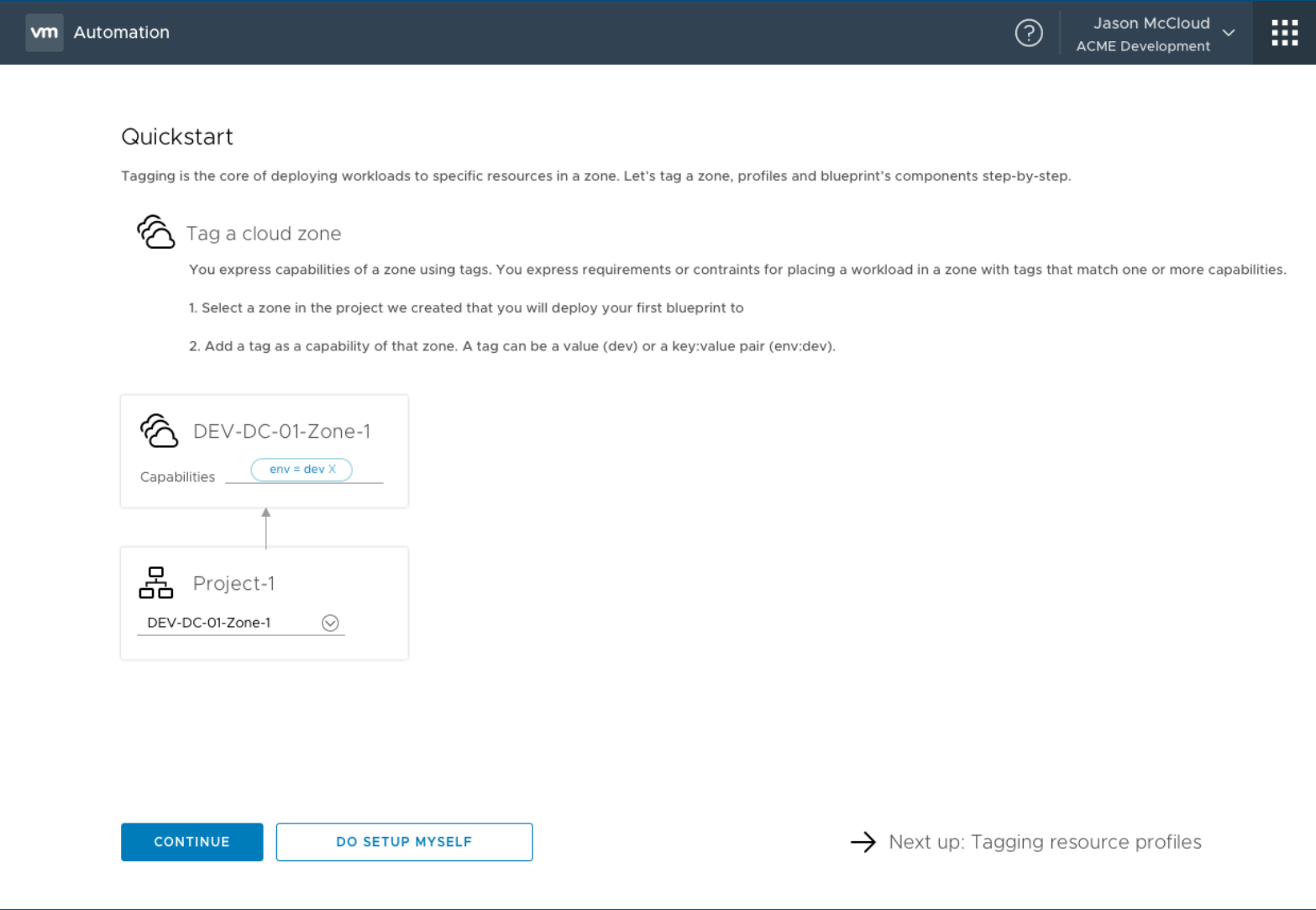
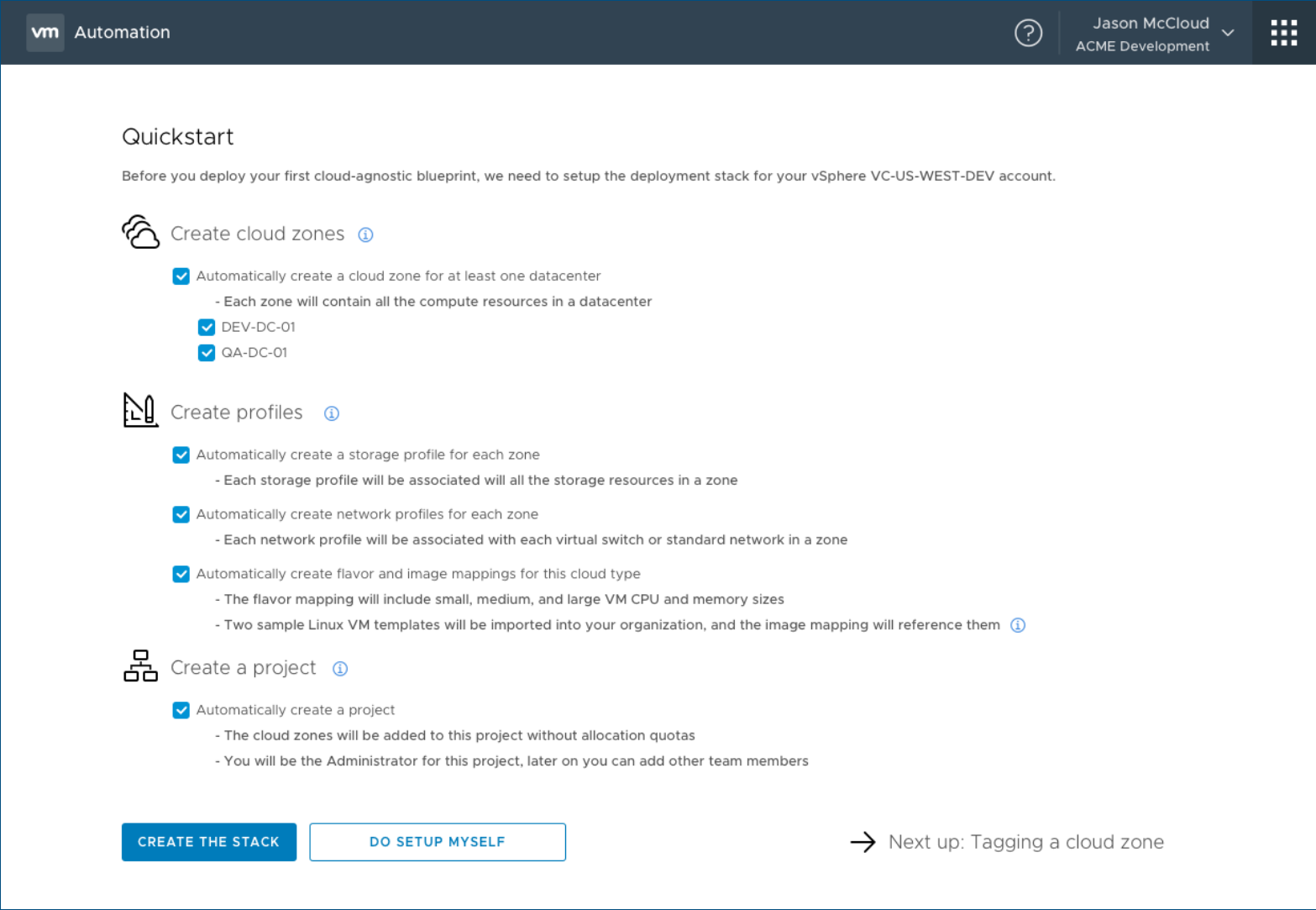


# 3rd Swing - Workflow + Model Diagram

## Highlights Tag Constraints/Capabilities Matching

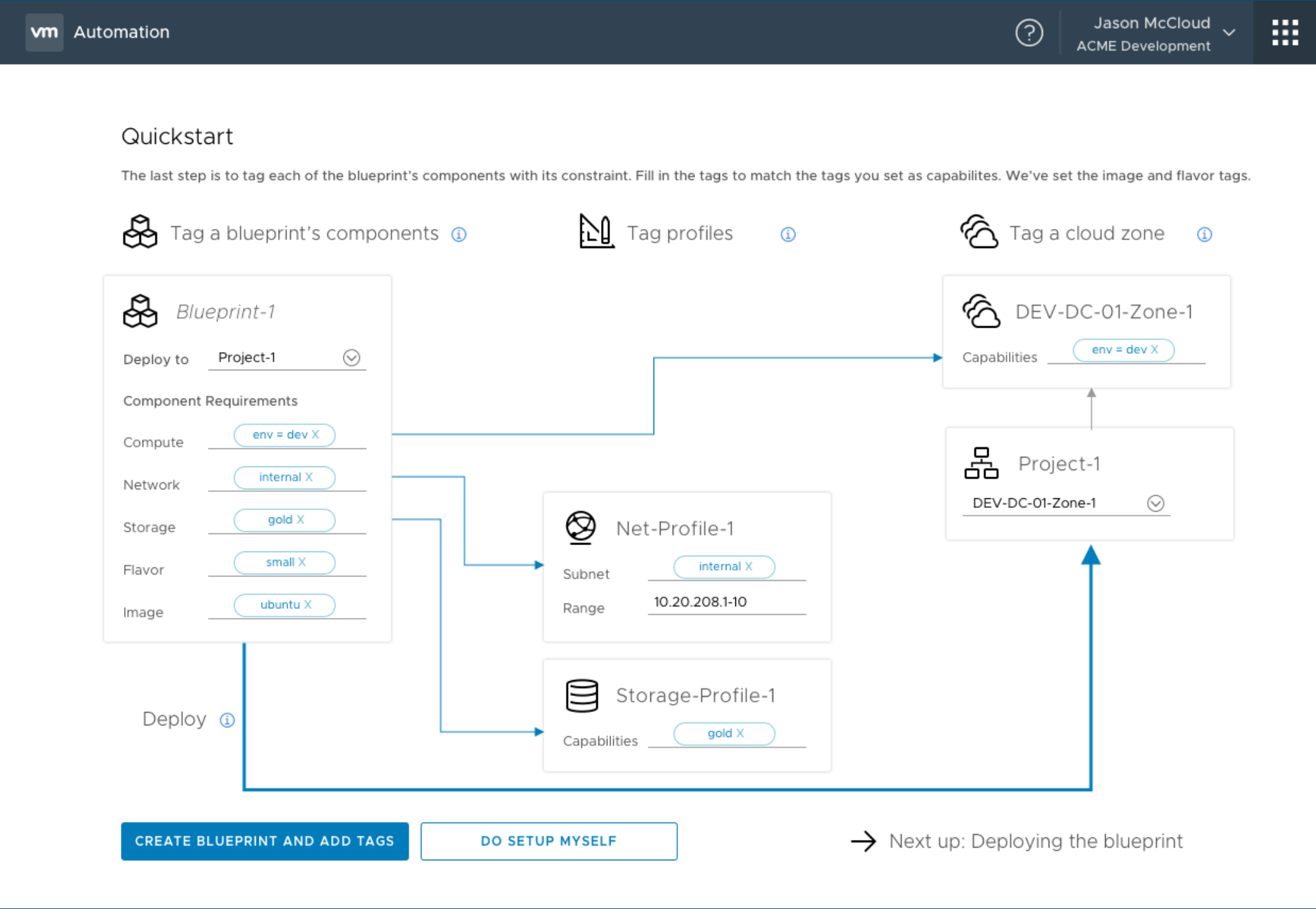






- Build the diagram with step-by-step flow

- Along the way, system creates objects using the tags & parameters the user fills in



- Reveal the entire diagram as the last step, animate tag matching as user fills in blueprint component tags



# Then Launch the Blueprint Editor and Shift to DIY

The screenshot displays the VMware Automation Blueprint Editor. The main canvas shows a visual representation of infrastructure components: a 'Compute-1' component (represented by a cube icon) and a 'Network-1' component (represented by a globe icon). They are connected by a line, indicating a dependency or relationship. The left sidebar provides a navigation menu with categories: 'Infrastructure blocks' (Compute, Network, Storage, Load balancer), 'Favorites', 'Software' (OracleDB, NodeJS, Puppet), and 'Blueprints'. The top bar includes the 'vm' logo, 'Automation' text, and user information 'Jason McCloud' and 'ACME Development'. The right sidebar, titled 'Blueprint Editor', contains a 'Guided Setup' sidebar with three numbered steps: 1. Drag and drop or write code, 2. Select and set properties, and 3. Deploy to a project. Each step includes sub-points explaining the process.

**Guided Setup sidebar shows user how to do the next steps themselves**

- 1 Drag and drop or write code**
  - It's your choice
  - The canvas and code panes stay in sync
- 2 Select and set properties**
  - **Component and properties list**
  - Select one or more components
  - Check out the generated code
- 3 Deploy to a project**
  - The blueprint will be validated
  - You'll select the project to deploy to
  - For properties you've set with multiple values, you can select the value

- Guided Setup sidebar shows user how to do the next steps themselves

*We met with PMs and Devs they really liked it, but clearly expensive to build*

*Then things moved along very quickly...*



# Keys to Success

## Collaboration

October 2 2017 - UX / PM Hatched Onboarding Plan

## Constraints

**Goal:** User deploys 1st blueprint in < 10 minutes

**Timeline:** Want onboarding **live** by on-site Beta 1

**November 5 2017 - 1 Month to design + implement**

## Listening to Users

### Approach:

- Diagram
- Opt-in + user can bail out at anytime
- Step-by-step guidance

## Creativity

## Reduce Risk

### Principle:

- Start Small+Simple
- Get it into users' hands —> Get feedback —> Iterate

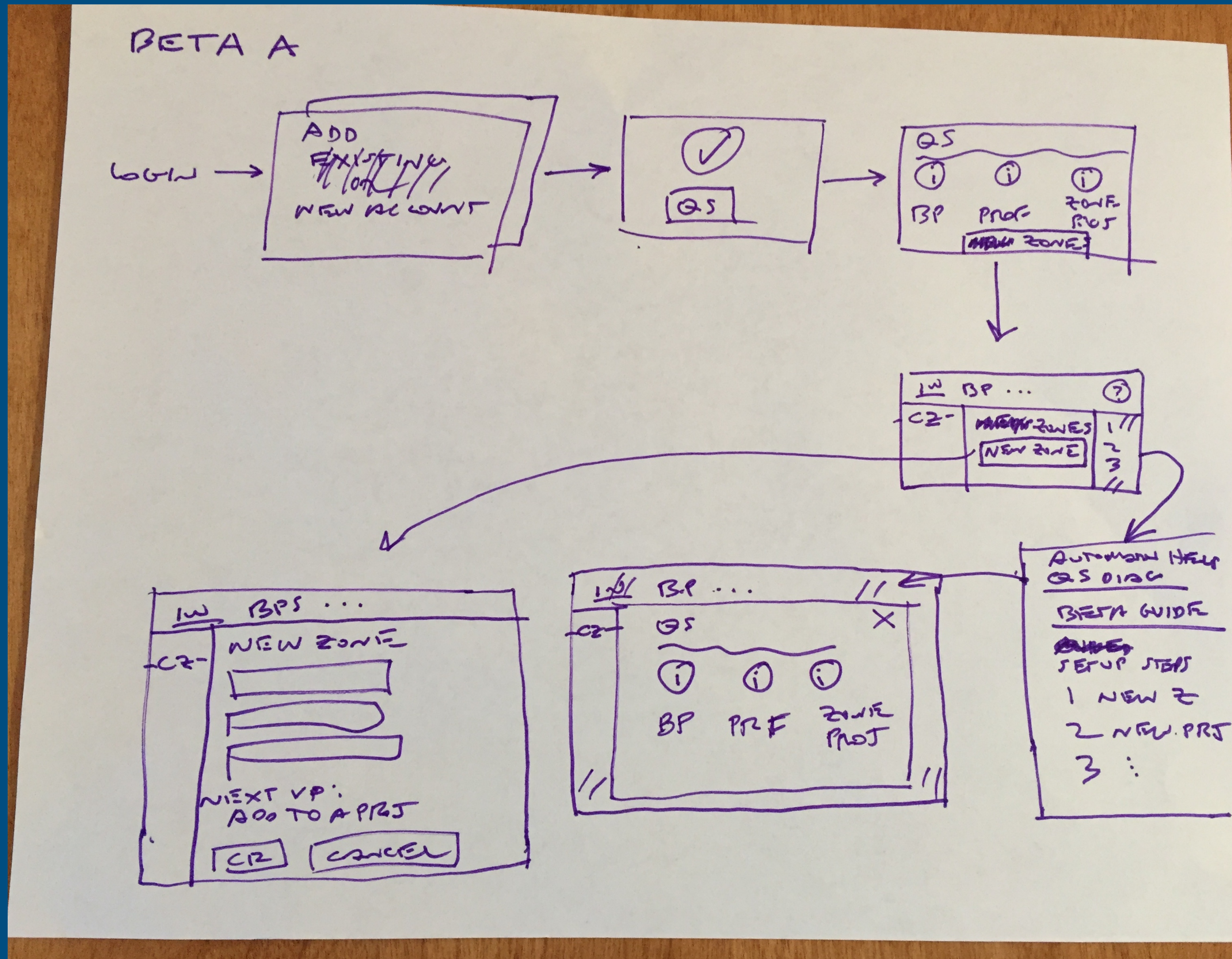


# Onboarding Beta1 Small+Simple

*When you need to go fast,  
you go lo-fi...*

*Here's my "purple pen" of the  
core ideas that I bounced off  
a fellow designer and our PM*

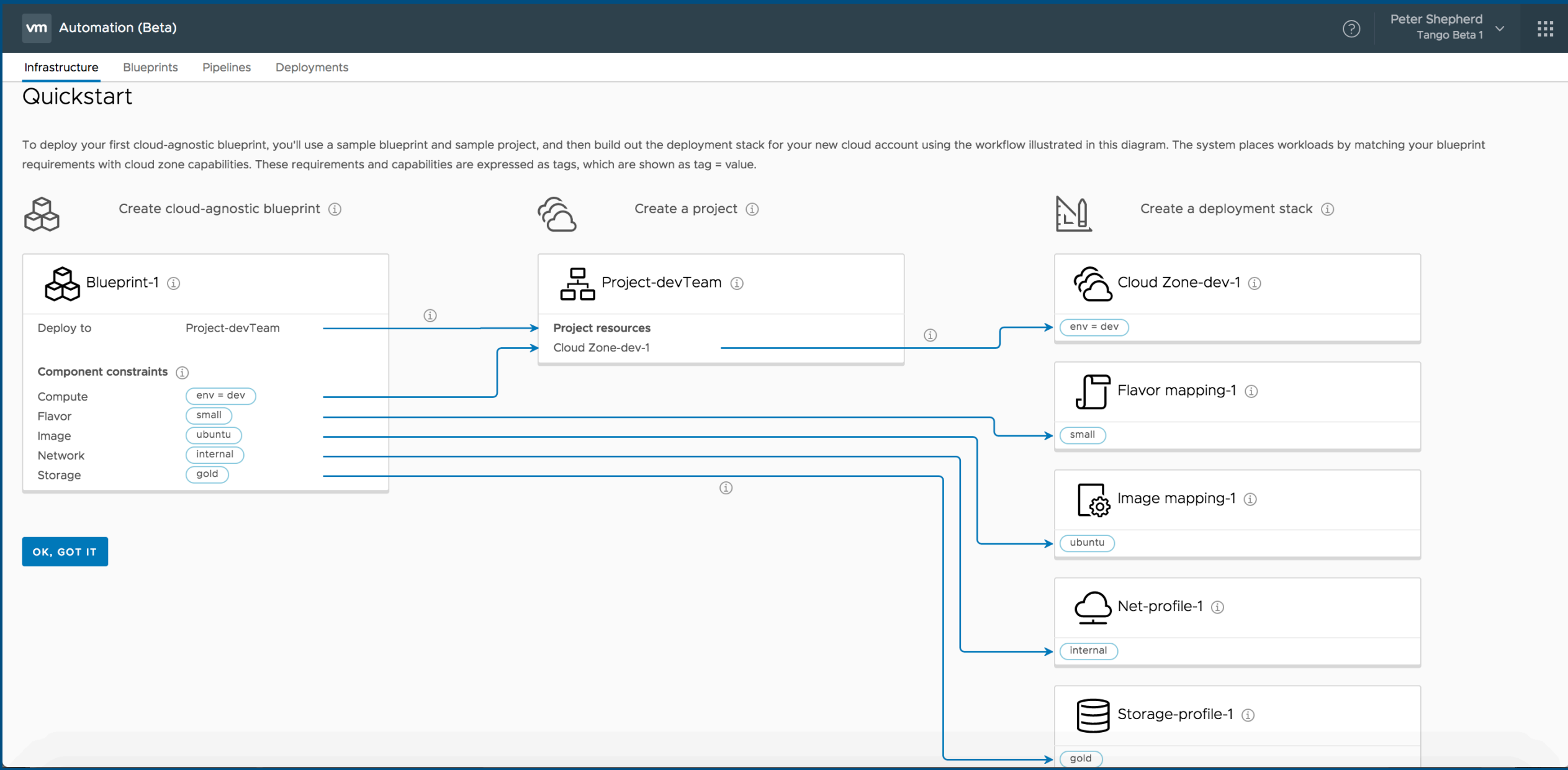
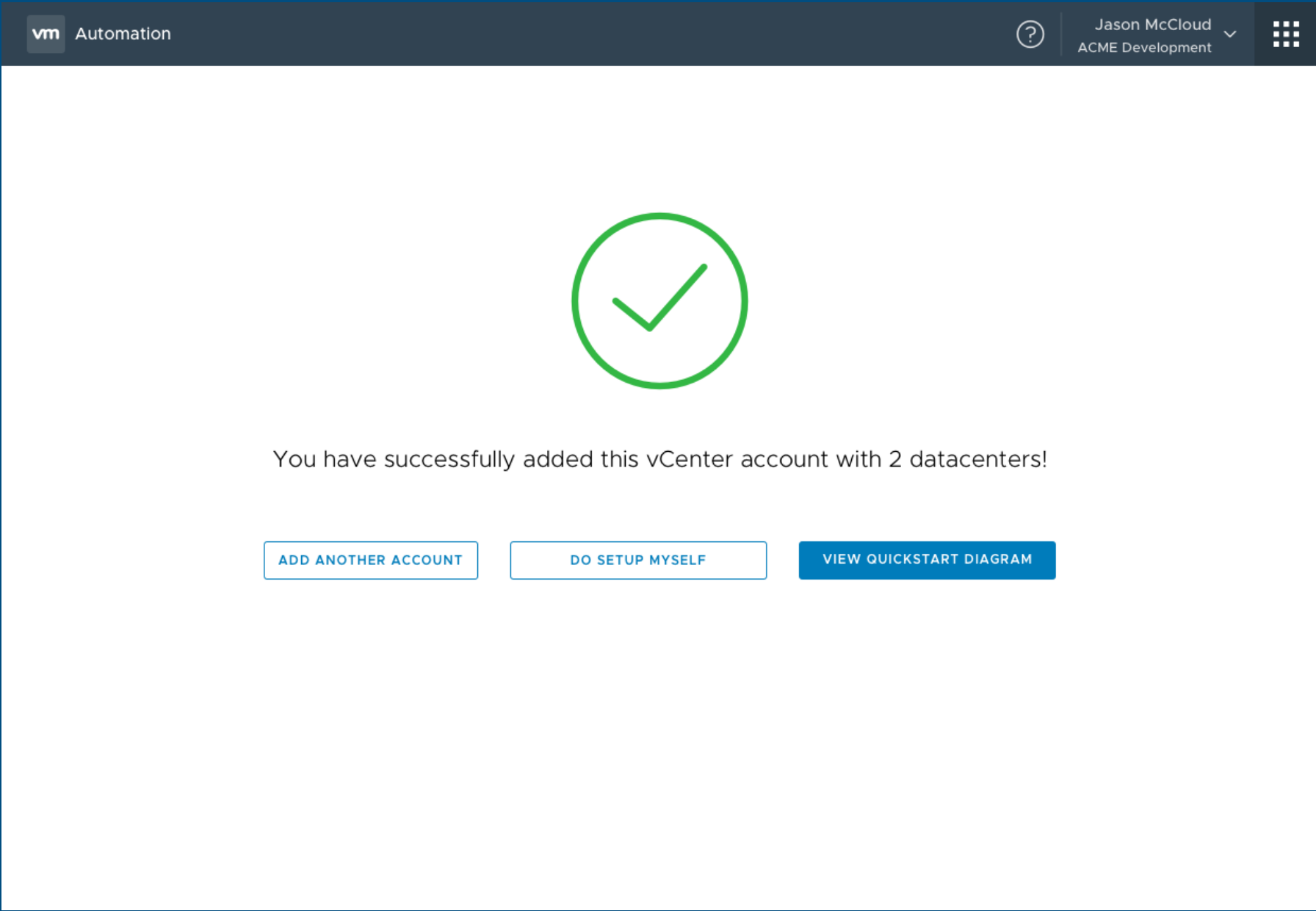
- Tie in on congrats page after user creates 1st cloud account
- Show Diagram
- Sidebar with steps/links



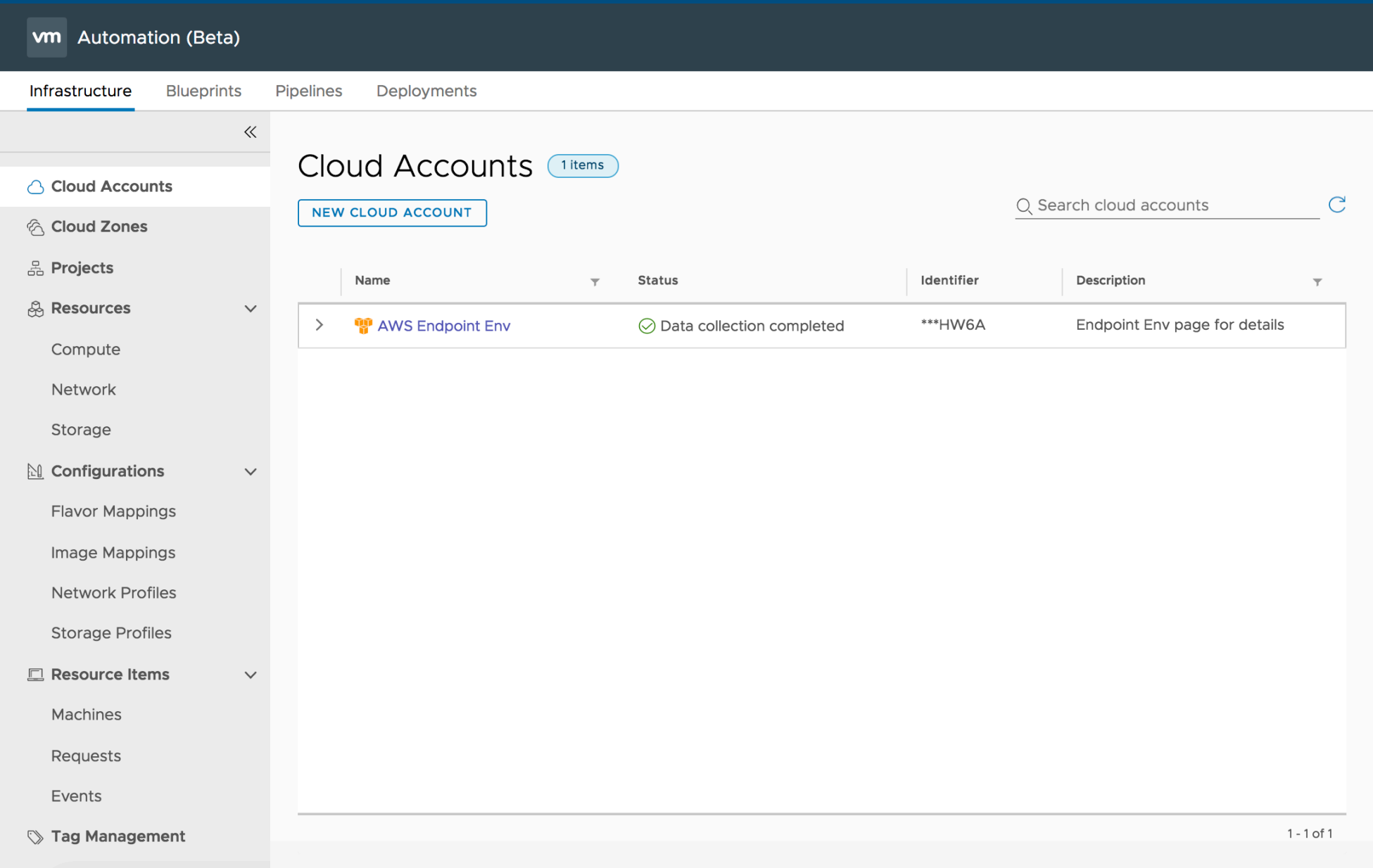


Yay, we made it!

With lots of collaboration: 2 PMs, 3 Designers, 1 Developer, 2 Writers



Early User Feedback was Positive



HELP

Automation Guided Setup

Quickstart diagram

Follow these simple steps to create your deployment stack and start deploying blueprints.

1

Create cloud zone

2

Create project

3

Create flavor mapping

4

Create image mapping

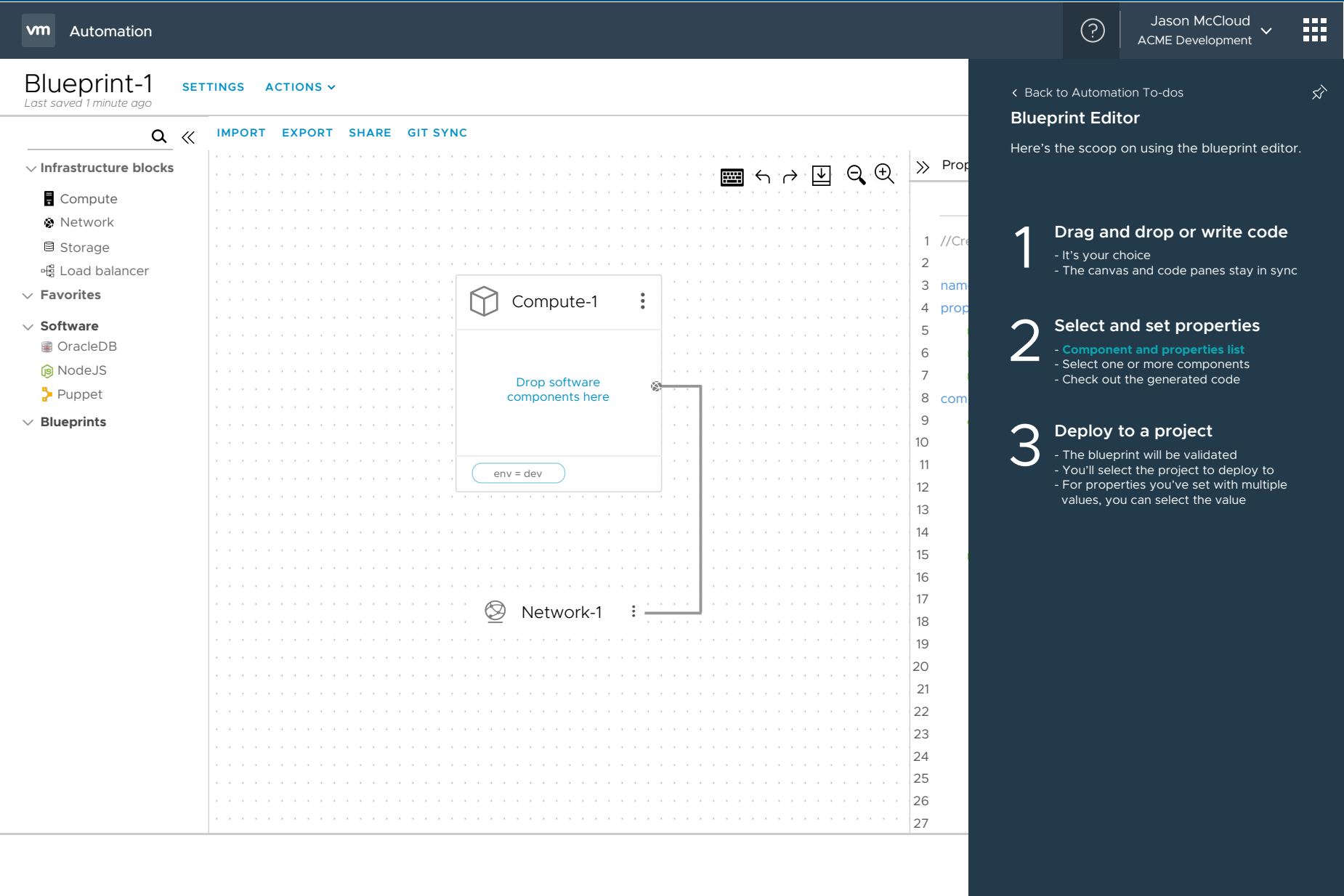
5

Create and deploy blueprint

VMware Docs

Legal

Need help? Contact your organization owner or call 1-877-4VMWARE





# April 2018 - On-site Beta 2 - Evolved Guided Setup - Refined Diagram, Other Tweaks

vm Cloud Assembly

?

Peter Shepherd  
Tango Beta

Infrastructure

Blueprints

Deployments

Extensibility [Beta]

Marketplace

Guided Setup Diagram

Guided setup steps you through building the infrastructure stack shown in this diagram. The diagram illustrates the placement process when you deploy your blueprint.

Blueprints

Define constraints

Blueprint ⓘ

Deploy to project

dev\_basic ⓘ

Component constraints ⓘ

Compute

dev ⓘ

Flavor

StdSma... ⓘ

Image

ubuntu-16 ⓘ

Infrastructure

Deploy to project

dev\_basic ⓘ

Project resources ⓘ

Cloud Zone

Users

Match to capabilities

Cloud Zone ⓘ

dev ⓘ

Flavor Mapping ⓘ

StdSmall\_1\_2 ⓘ

Image Mapping ⓘ

ubuntu-16 ⓘ

Deployments

Manage deployment

Dev compute

Deployment ⓘ

StdSmall\_1\_2 ⓘ

ubuntu-16 ⓘ

CONTINUE

Find this diagram later in the ⓘ menu.



# April 2018 - On-site Beta 2 - Added Guided Setup to 2nd Service: Code Stream

vm

Code Stream

?

Peter Shepherd  
Tango Burlington

HELP

Search

Guided Setup

Guided setup diagram

1 Add Endpoints

2 Create Pipelines

3 Execute Pipelines

4 View Dashboards

VMware Docs

Legal & Terms of Service

Cookie Usage

Guided Setup Diagram

These steps can help you understand how to create, run, and manage pipelines to model your software release process. Run the pipelines to test, update, and release software applications from your development and test environments to production

1 Add Endpoints ⓘ

My Git

My Kubernetes

2 Create Pipelines ⓘ

My App Build

My App Deploy

3 Run Pipelines ⓘ

My App Build #1

My App Build #2

My App Deploy #1

My App Deploy #2

4 Manage Executions ⓘ

Deploy approval

5 View Dashboards ⓘ

My App Build

My Apps Dashboard

My Dashboard

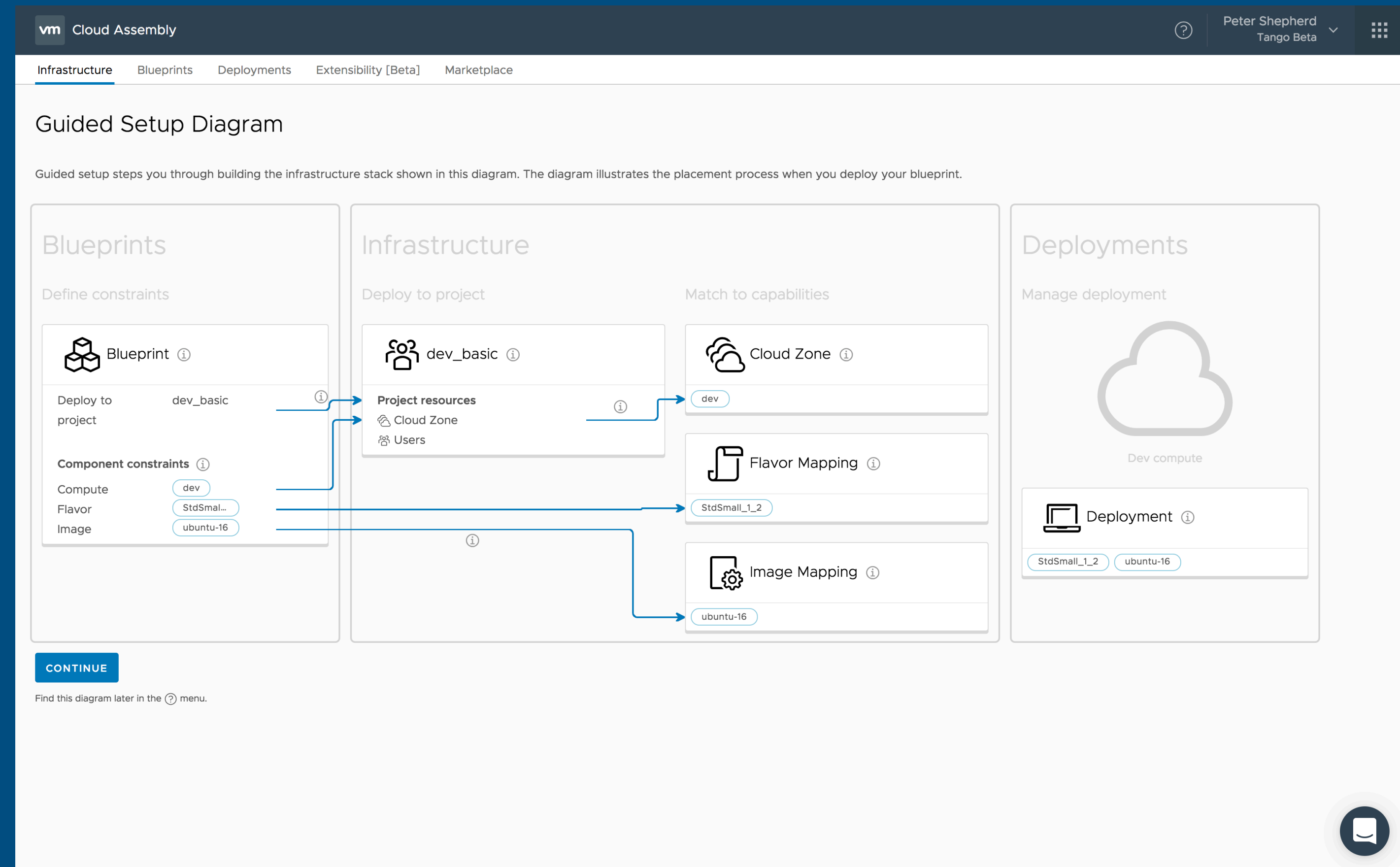
CONTINUE

Find this diagram later in the help (?) menu in the header bar



# April 2018 - On-site Beta 2 - Conducted Usability Test with 3 Customers

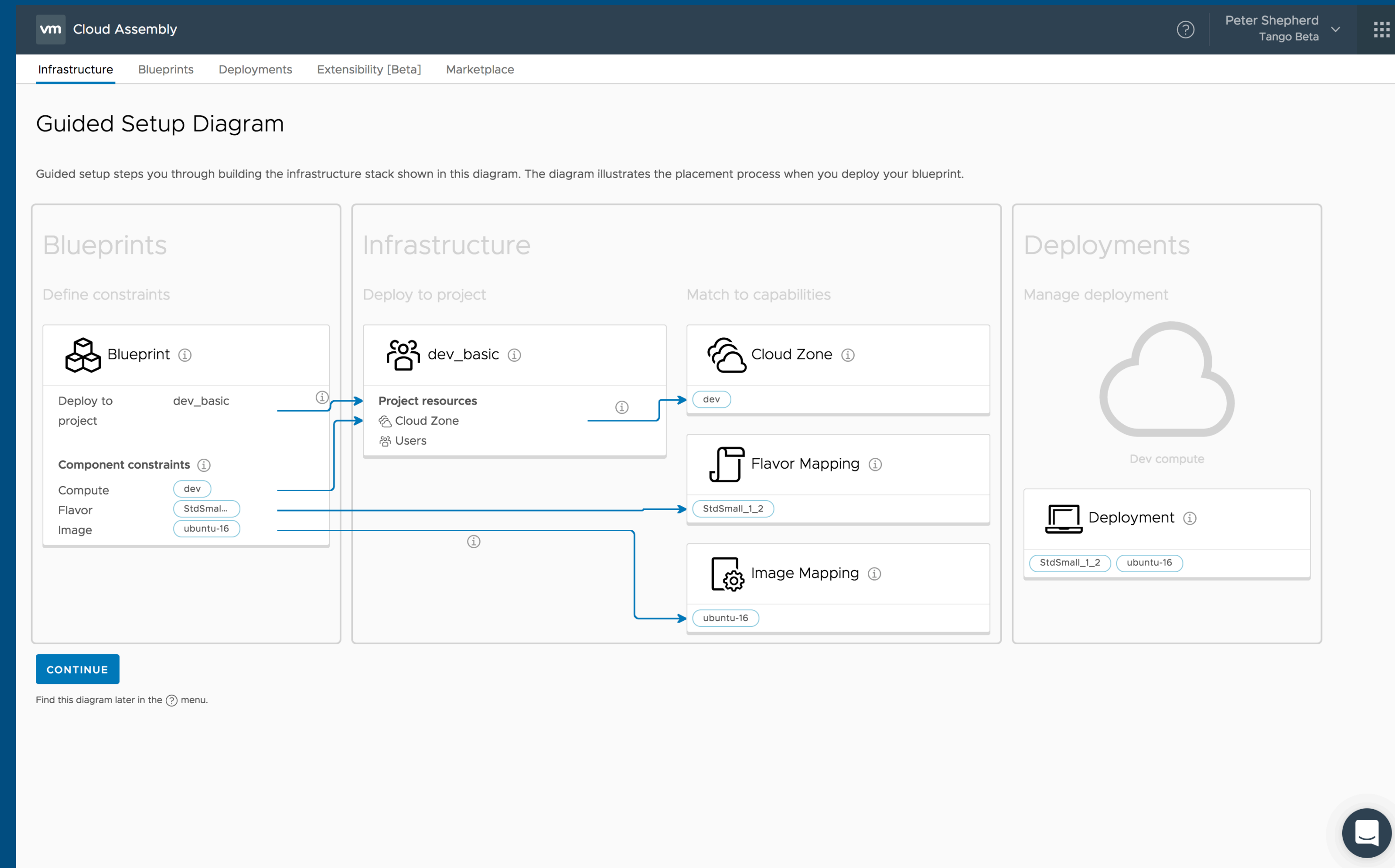
- Sequestered 3 Users and gave them 1 task w/o instructions
- *Deploy a blueprint with 1 machine to a given AWS account*
- Time to deploy for the 3 users:
  - 5 min | 12 min | 25 min





# April 2018 - On-site Beta 2 - Surprising Admin Feedback

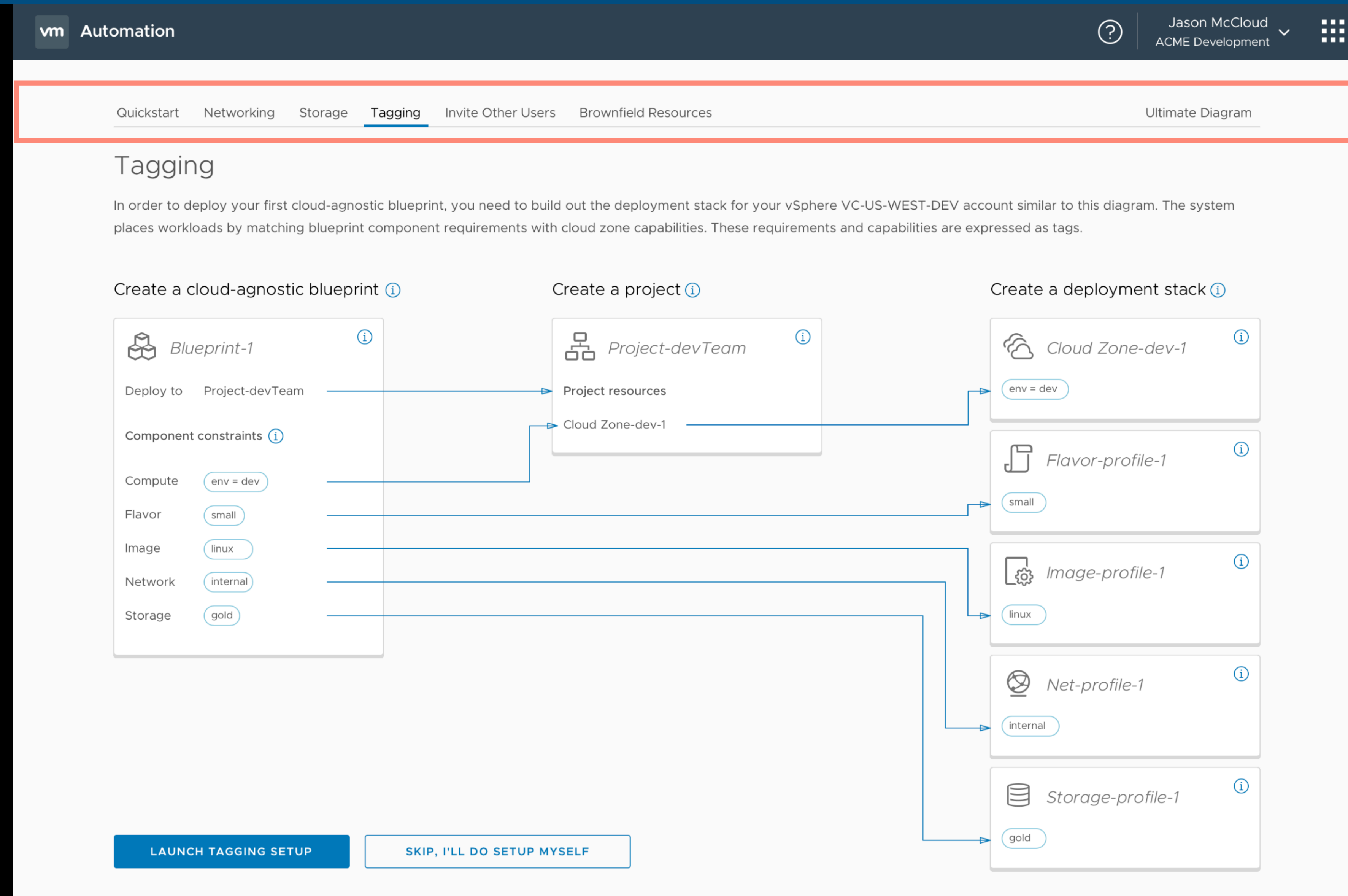
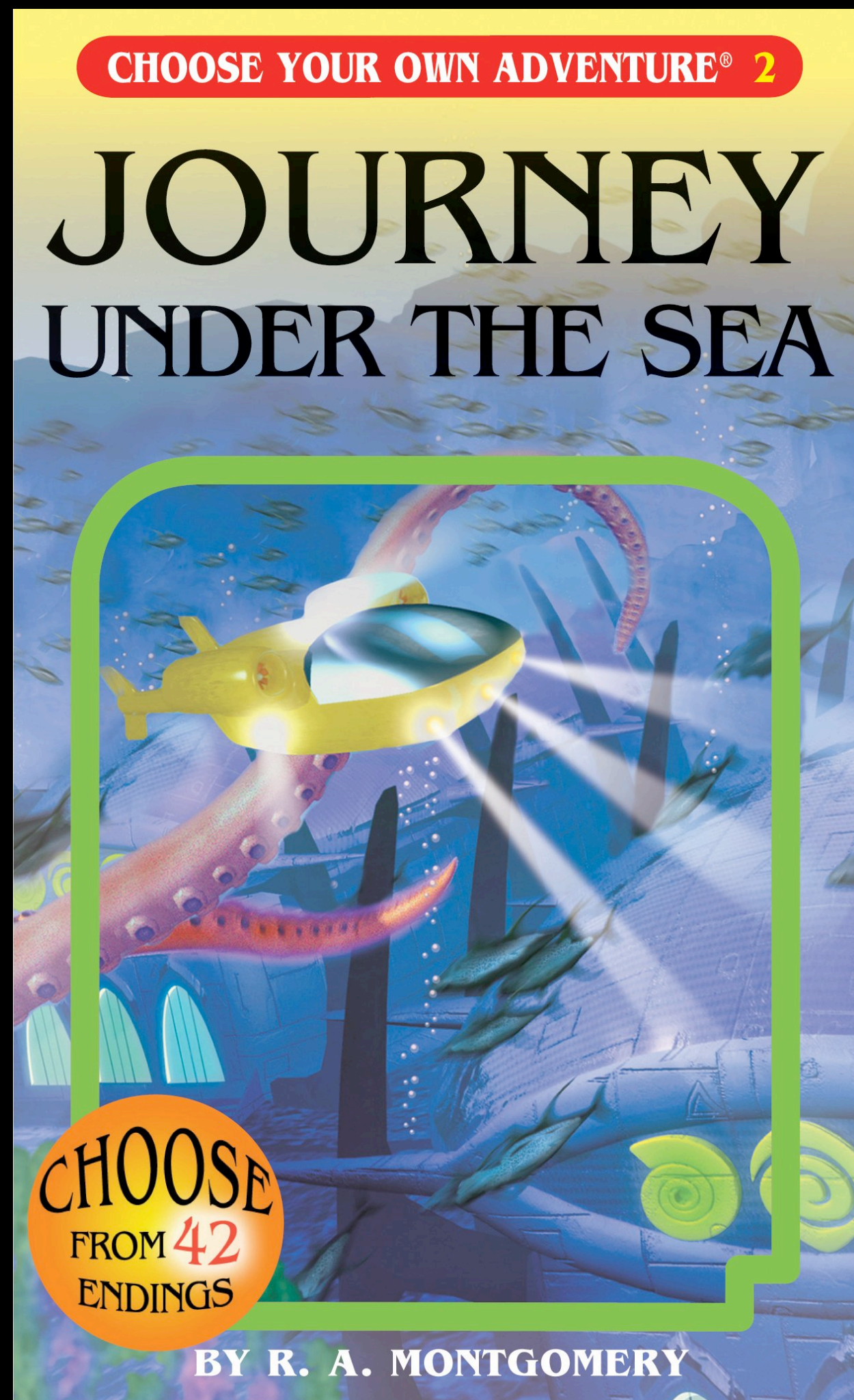
- “*Guided Setup is so important, put it first and don’t let me opt-out*”
- So we did what they asked, when the user logs in for the 1st time, system shows Guided Setup
- Only choice is CONTINUE
  - reveals the guided setup sidebar
- Went live in January
  - Will monitor telemetry
  - *Do users use Guided Setup?*





# UX/PM collaboration generated another direction for Guided Setup

## *Choose Your Own Adventure* - Multiple Guided Setups





A long-exposure photograph of a night sky. A bright, thick, yellow-orange arc curves from the bottom left towards the top right. A thinner, blue arc is visible in the upper right quadrant. The background is a dark, deep blue sky with some faint clouds. The horizon is visible at the bottom, showing a dark silhouette of land and some distant lights.

My Design Philosophy  
Great to have multiple arcs and users influence the arcs