ALX305

From VUI to QA: Building a Voice-Based Adventure Game for Alexa

Anatomy of "The Magic Door"

Andy Huntwork

Paul Cutsinger

December 2, 2016

What to Expect from the Session

- What are Amazon Alexa and Alexa skills?
- What is Magic Door?
- Key aspects of an engaging skill
- Tooling for testing, analytics, and continuous deployment

Utterances, Slots, and Intents

Alexa, ask Skill Master what are skills?

| wake word | launch | skill name | utterance | slot value |

Utterances, Slots, and Intents

Alexa, ask Skill Master what are skills?

wake word   launch   skill name   utterance   slot value

Tell me more about what skills are.

utterance   slot value

Utterances, Slots, and Intents

Alexa, ask Skill Master what are skills?

wake word	launch	skill name	utterance	slot value

Tell me more about what skills are.

utterance	slot value

DefinitionIntent {value: "skills"}

intent	slot value

The Magic Door

Huntwork.net, Inc.

★★★★☆ **63**

Disable Skill

> *"Alexa, open the magic door"*

About this Skill

Description

Update: The Magic Door has a new story. Survive a dragon encounter and find the tools you'll need to save the wizard. Now with hundreds of scenes and thousands of paths!

The Magic Door is an Alexa-powered interactive adventure with original stories. You can tell Alexa what choices to make as you navigate a forest, a garden, or an ancient temple. You can find hidden items, solve riddles, and help magical creatures. You can also find magical items to get a prize!
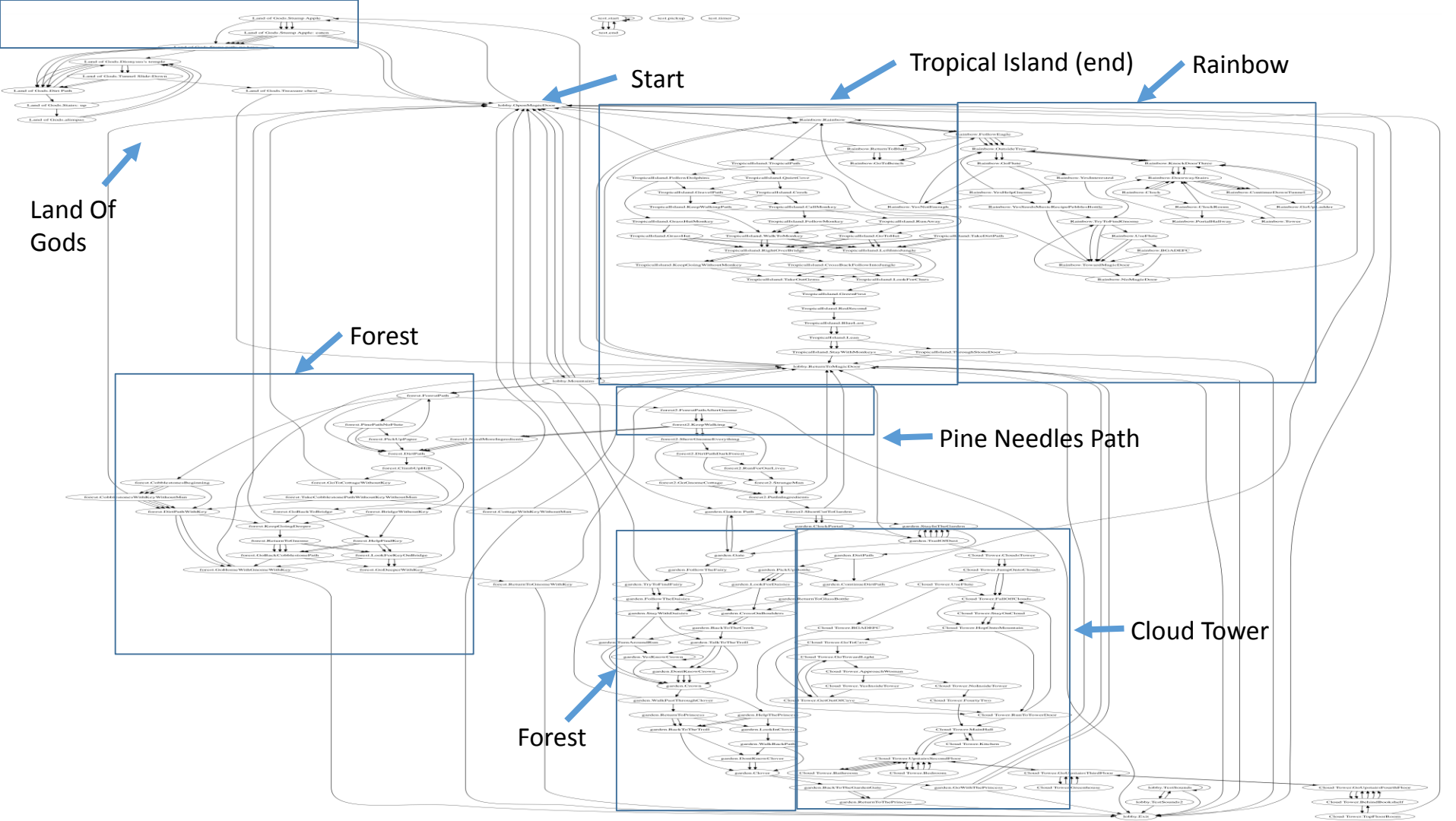
Demo

Demo

Start

Tropical Island (end)

Rainbow

Land Of Gods

Forest

Pine Needles Path

Cloud Tower

Forest

Statistics

- Development started: 11/14/2015
- Launched: 2/9/2016
- 100+ production code changes
- 11 certified versions published

Statistics

- 3MM utterances

- 80,000 customers

- 60,000 completed adventures

- 60,000 items picked up

- ⭐⭐⭐⭐☆ 144

- 627 Facebook likes

⭐⭐⭐⭐⭐ **Love it!**

By on 16 November 2016

Brilliant, I love this. It reminds me of a book I had as a child. I hope the skill will continue to be developed and more adventures added.

⭐⭐⭐⭐⭐ **Best Alexa Skill**
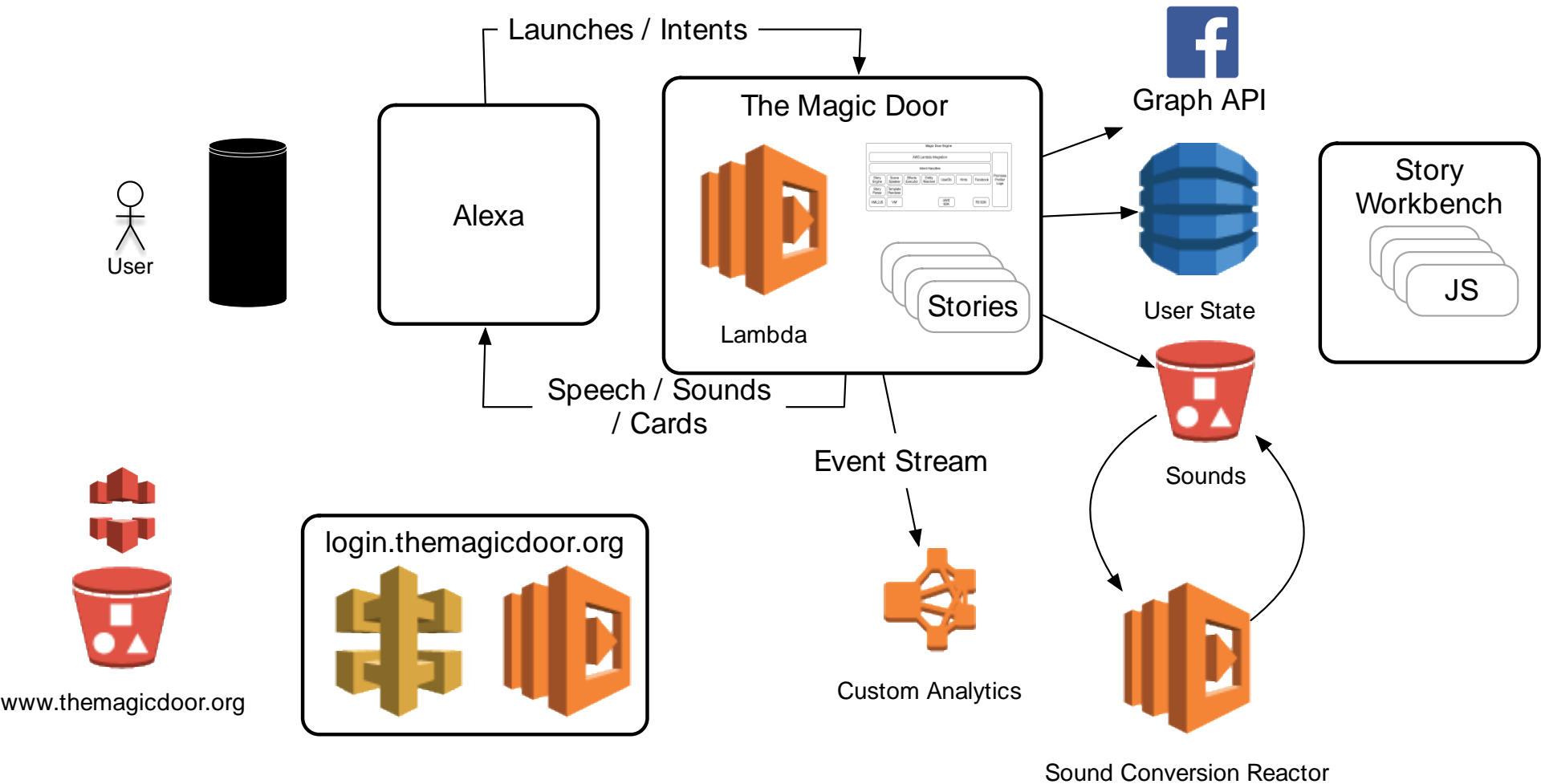
By on November 26, 2016

This is so awesome. There is so much detail in each story and the number of different options is great. I love playing this with my family, it's always lots of fun. I highly recommend this.

★★★★☆ **Cool Idea**

By   on February 24, 2016

This is a super fun choose your own adventure game! However, there are not that many adventures, so it gets boring after about 10 adventures. I'm hoping that they add more to the story line, as this skill has incredible potential!

User

Launches / Intents

The Magic Door

Graph API

Story Workbench

JS

Alexa

Lambda

Stories

User State

Speech / Sounds / Cards

Event Stream

Sounds

www.themagicdoor.org

login.themagicdoor.org

Custom Analytics

Sound Conversion Reactor

Statistics

- 5,537 lines JS (including 2,509 lines of tests)
- 4,533 lines story XML
- < $10/month

- Building V1
  - Working Backward
  - Recognizing User Speech
  - Managing Conversational State
  - Generating Speech
- Continuous Delivery
- Voice Testing
- Making Users Happy

Working Backward (from the story)

ALEXA OPEN THE MAGIC DOOR — Launch phase

The door is open. In front of us are two paths. One is a dirt path leading into the forest. The other is a stone path leading to a flower garden. — Description

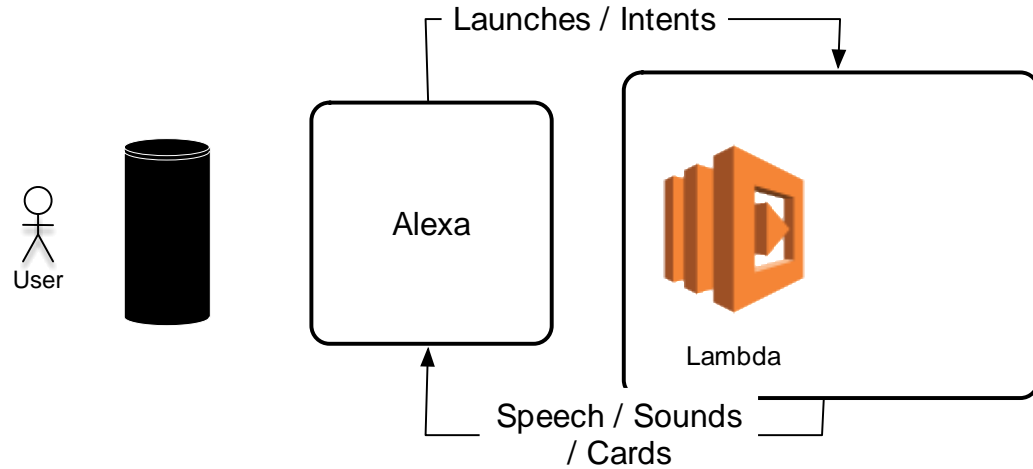Would you like to take the forest path or the garden path? — Prompt

Scene

GARDEN PATH — Choice

Ok, follow me into the flower garden. The stone path wanders past colorful flowers and takes a turn, leading to a wooden fence with
an open gate. Should we go through the gate or stay in the garden?. — Transition

GO THROUGH THE GATE

```xml
<?xml version="1.0"?>
<!DOCTYPE story PUBLIC "-//HUNTWORK.NET/DTD STORY 1.0//EN" "http://s3.amazonaws.com/magicdo
dtd/story.dtd">
<story>
  <id>lobby</id>
  <start>OpenMagicDoor</start>
  <title>The Magic Door</title>
  <end>Exit</end>
  <scene>
    <id>OpenMagicDoor</id>
    <description> In front of us are three roads. One leads to the mountains.  Another lead
    last is a portal leading to the land of the gods.</description>
    <prompt>Would you like to go to the mountains, to the sea, or to the portal?</prompt>
    <defaultTransition>The door is open. A new adventure awaits.</defaultTransition>
    <choice>
      <intent>Mountains</intent>
      <destination>Mountains</destination>
    </choice>
    <choice>
      <intent>Sea</intent>
      <destination><storyRef story="Rainbow" scene="Rainbow"/></destination>
    </choice>
```

ASK Custom Voice Skills

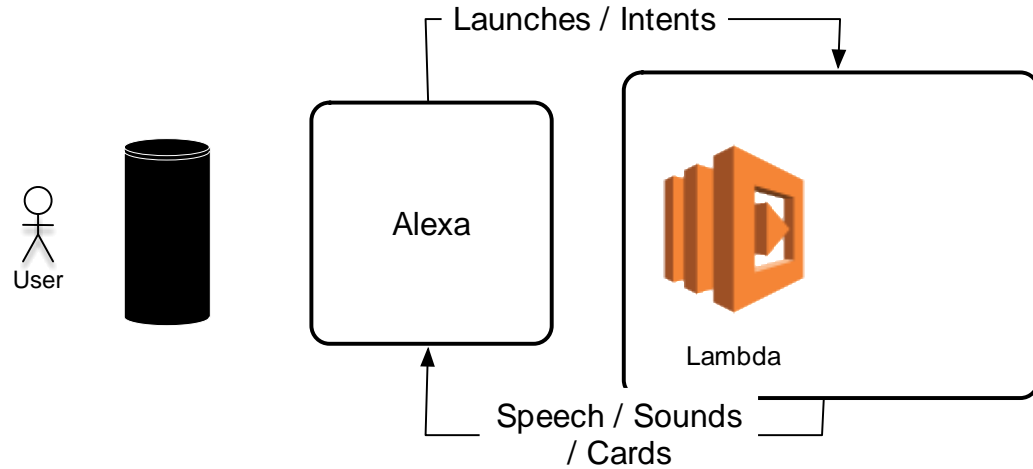|			
OperateDoor	{doorType} door	OperateDoor	open the doorway
OperateDoor	check out the {doorType} door	OperateDoor	open the doorway with the key
OperateDoor	explore the {doorType} door	OperateDoor	the doorway
OperateDoor	go to the {doorType} door	OperateDoor	what's behind doorway
OperateDoor	go through {doorType} door	OperateDoor	what's inside doorway
OperateDoor	look at the {doorType}	**… (64 total lines)**	

Complex or Frequent

- -

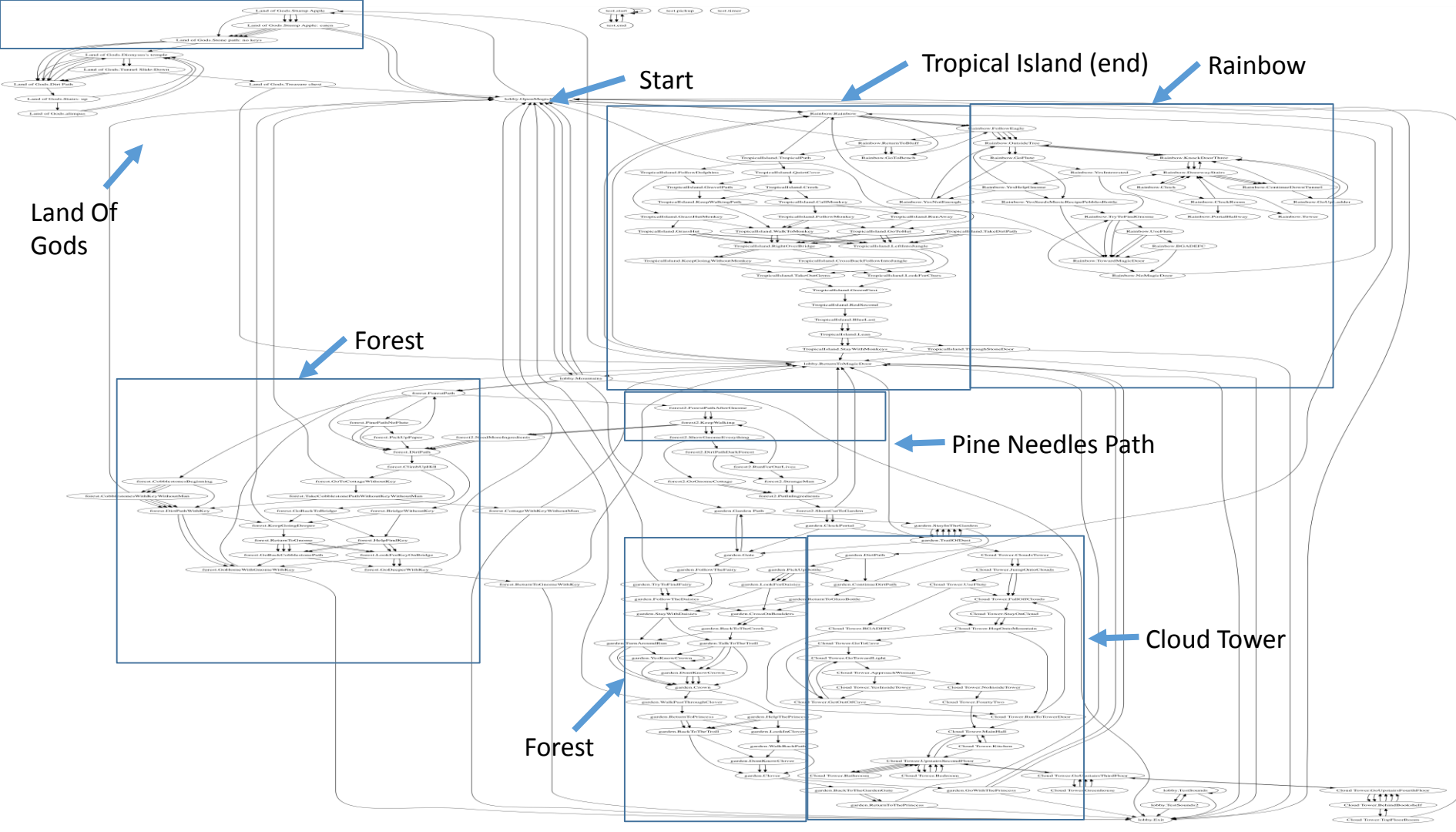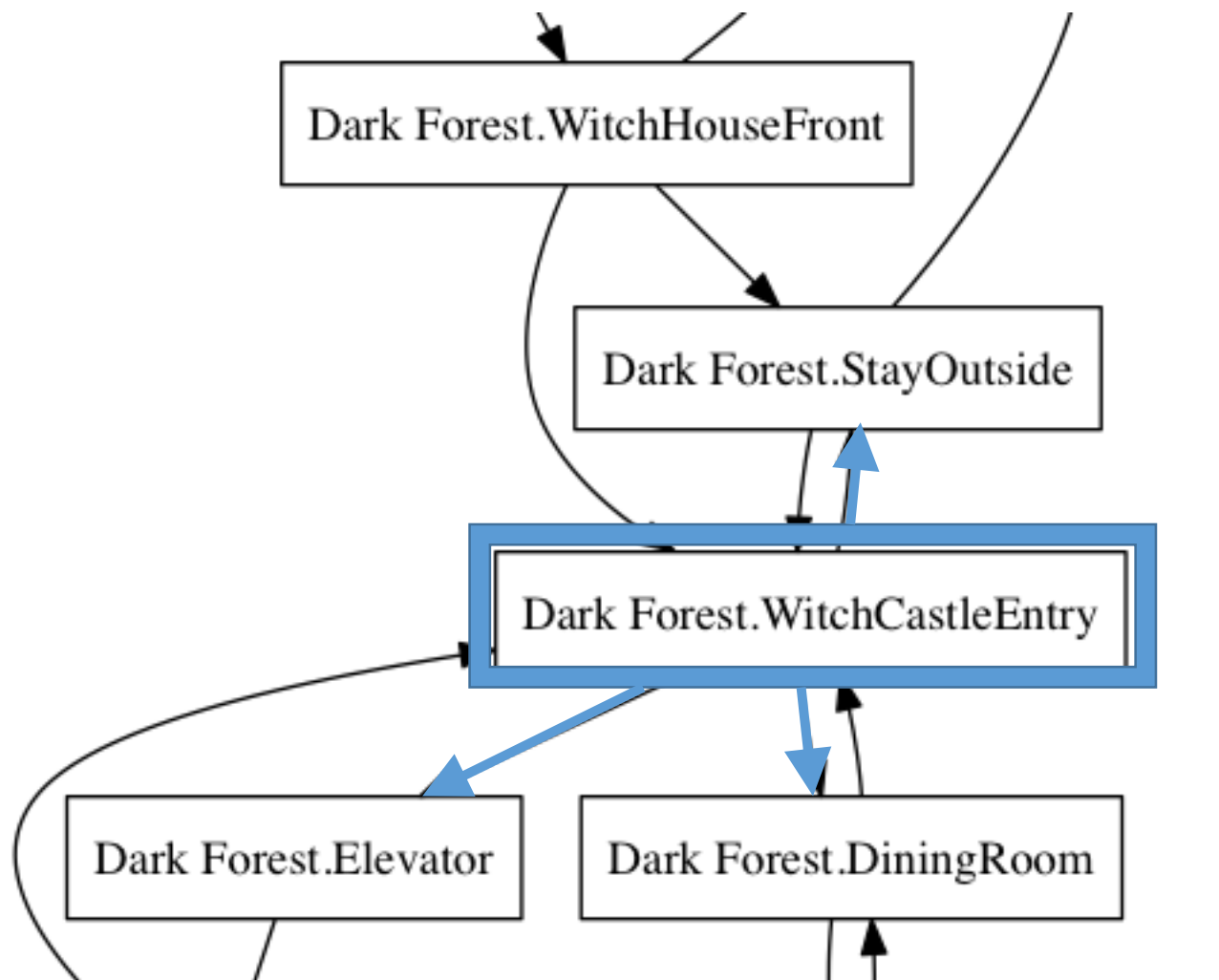**Simple or Infrequent**

ExploreBench	explore the bench	WalkDownPathToBoat	walk down the path
ExploreBench	explore the bench more	WalkDownPathToBoat	walk to the boat
		WalkDownPathToBoat	walk down the bluff
		WalkDownPathToBoat	walk on the path

ASK Custom Voice Skills

Land of Gods:Stump Apple

Land of Gods:Stump Apple: eaten

Land of Gods:Stone path: no keys

Land of Gods:Humpaac's temple

Land of Gods:Tunnel Slide-Down

Land of Gods:Dirt Path

Land of Gods:Treasure chest

Land of Gods:Stairs: up

Land of Gods:altitude

test.start   test.pickup   test.timer

test.end

Land Of Gods

Start

Tropical Island (end)

Rainbow

Forest

Pine Needles Path

Cloud Tower

Forest

Working Backward (from the story)

ALEXA OPEN THE MAGIC DOOR

The door is open. In front of us are two paths. One is a dirt path leading into the forest. The other is a stone path leading to a flower garden.

Would you like to take the forest path or the garden path?

GARDEN PATH

Ok, follow me into the flower garden. The stone path wanders past colorful flowers and takes a turn, leading to a wooden fence with
an open gate. Should we go through the gate or stay in the garden?.

GO THROUGH THE GATE

SSML

```
<speak>
  Wait. look! Did you just see that? A figure moved
  past that third-floor window. Someone's up there.
  Let's go up the steps and knock on the door.
</speak>
```

```
<speak>
  Wait. <break time="1s"/> look! <break time="1s"/>
  Did you just see that? A figure moved past that third-floor window.
  <break time="1s"/> Someone's up there. Let's go up the steps
  and knock on the door.
</speak>
```

```
<speak>
  Oh my. Do you feel that cold wind?
  It sure is getting dark. **We hear wolves
  howling.** I don't like that.
</speak>
```



```
<speak>
  Oh my. Do you feel that cold wind? It sure is getting dark.
  <audio src="https://s3.amazonaws.com/[…]/creepywolves.mp3"/>
  I don't like that.
</speak>
```

```
<speak>
  Her ethereal face suddenly turns monstrous as she
  stands up and yells, "Everything is not OK. It's a nightmare."
</speak>
```



```
<speak>
  Her ethereal face suddenly turns monstrous as she
  stands up and yells.
  <audio src="https://s3.amazonaws.com/[…]/monstrouswoman2.mp3"/>
</speak>
```

```xml
<scene>
  <id>GoFlute</id>
  <description><choose><when test="sceneStateMatches('TalkedToGnome')"><![CDATA[The flute
  sounds get louder. <audio src="https://s3.amazonaws.com/magicdoor.huntwork.net/
  sounds/20160508/fluteforest.mp3"/> Soon we see the gnome again with a pointed hat. He walks
  briskly toward us, and again greets us, <audio src="https://s3.amazonaws.com/
  magicdoor.huntwork.net/sounds/20160523/ebbygnome3b.mp3"/>]]><!--welcome back fellow
  travelers. where have you been? what have you done? Let me see  what you have gathered
  along the way!--></when><otherwise><![CDATA[The flute sounds get louder. <audio src="https:/
  /s3.amazonaws.com/magicdoor.huntwork.net/sounds/20160508/fluteforest.mp3"/> Soon we see a
  little man with a pointed hat. He is carrying a small flute in one hand and a lantern in
  the other as he walks briskly toward us. He greets us, <audio src="https://s3.amazonaws.com/
  magicdoor.huntwork.net/sounds/20160508/ebbygnome.mp3"/>]]></otherwise></choose></description
  >

<prompt><choose><when test="sceneStateMatches('TalkedToGnome')">Should we show the gnome what
we have?</when><otherwise>I am interested.  Are you interested?</otherwise></choose></prompt>
<defaultTransition><![CDATA[We walk toward the sound of the flute, taking a narrow dirt path
that <w role="ivona:VB">winds</w> around the tree house and into the dense forest. Ahead, we
see a faint light swinging back and forth.  ]]></defaultTransition>
```
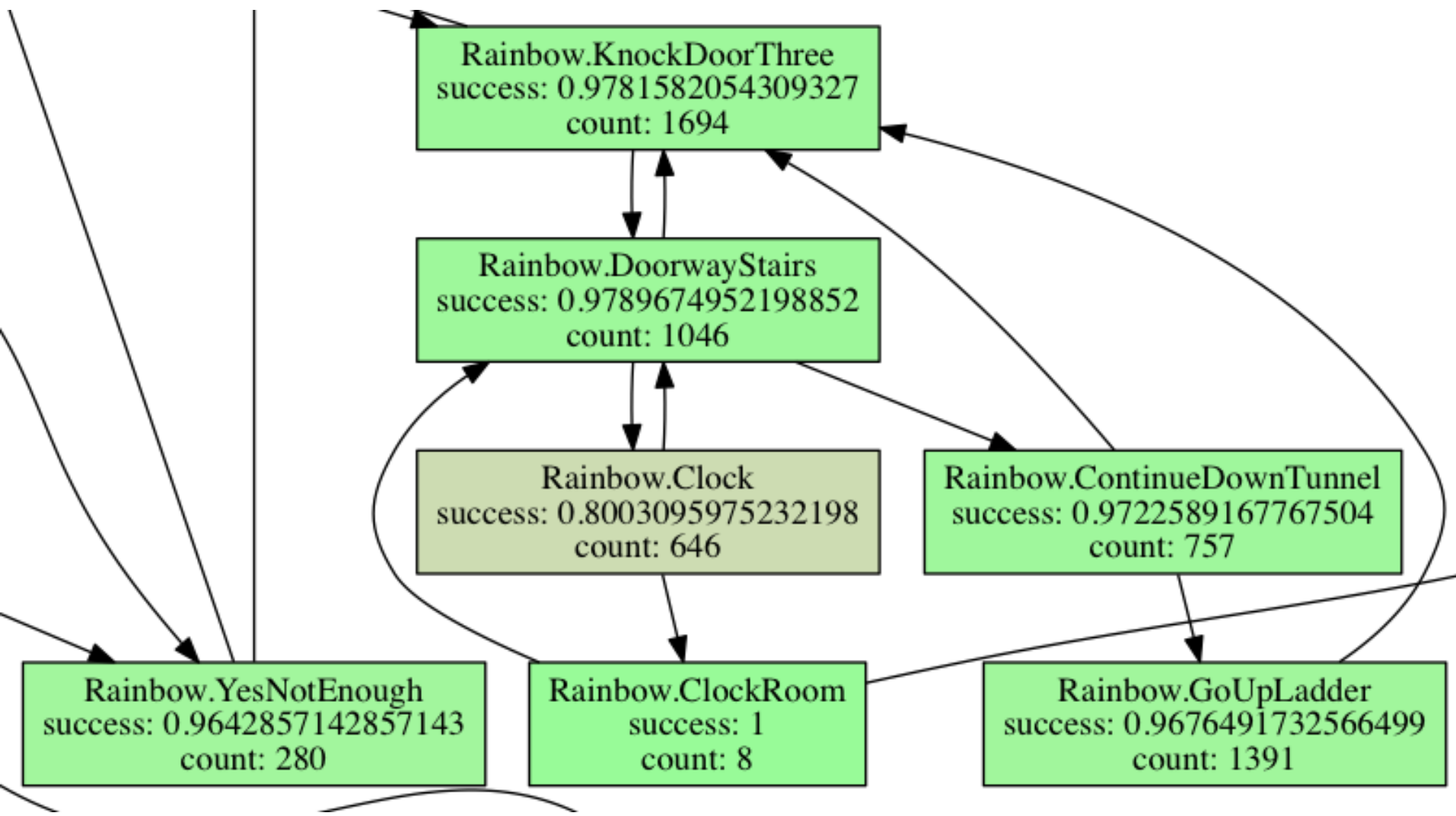
Rainbow.Clock
success: 0.8003095975232198
count: 646

have any idea what the combination might be? If so, tell me the numbers.</prompt>

rhaps we should check our inventory for the numbers if you think we have them.</hint>

have any idea what the combination might be? If so, tell me the numbers. If not, say I don't know.</prompt>

rhaps we should check our inventory for the numbers if you think we have them. Say what's in my inventory to check inventory.</hint>
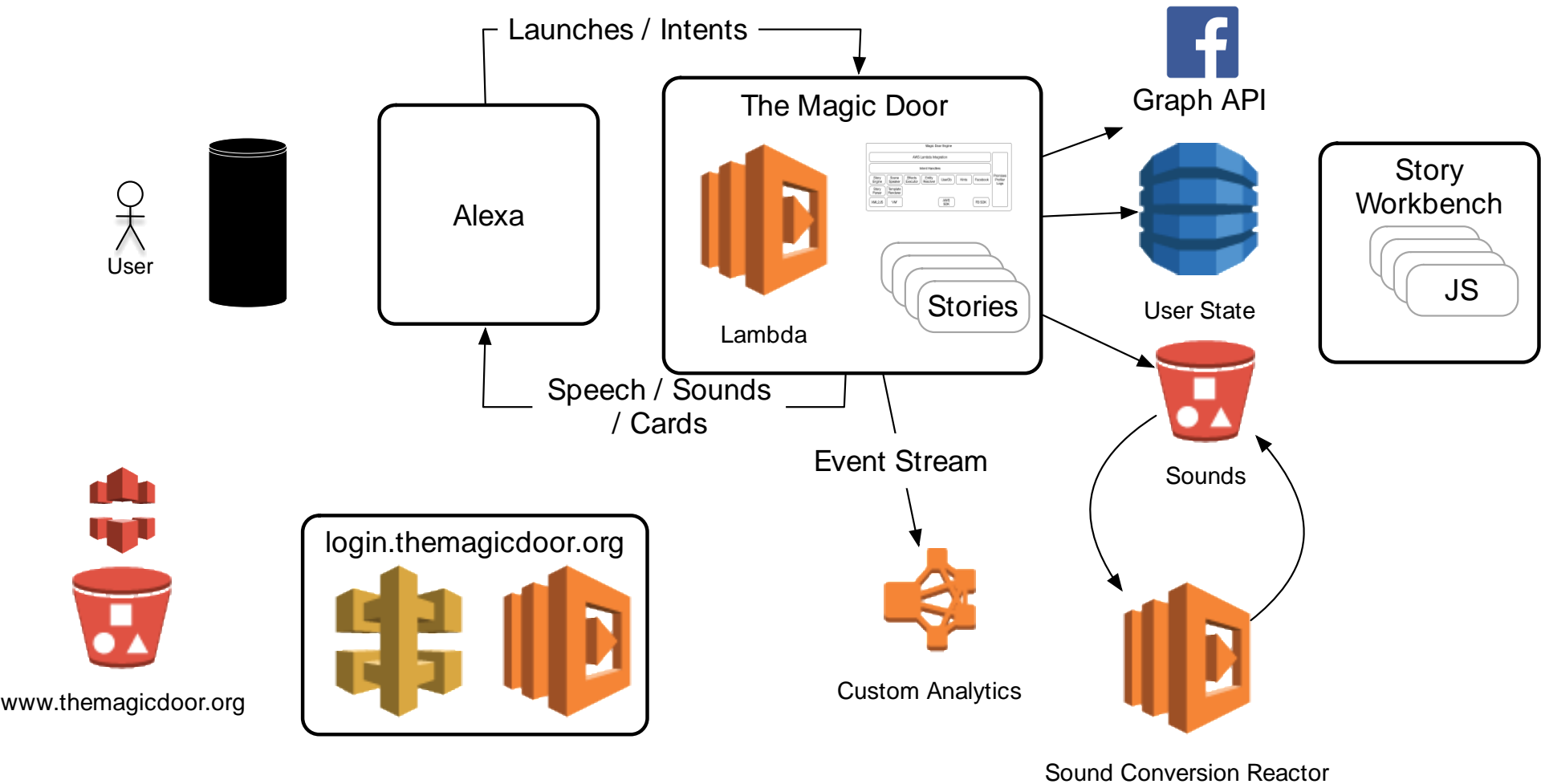
Rainbow.Clock
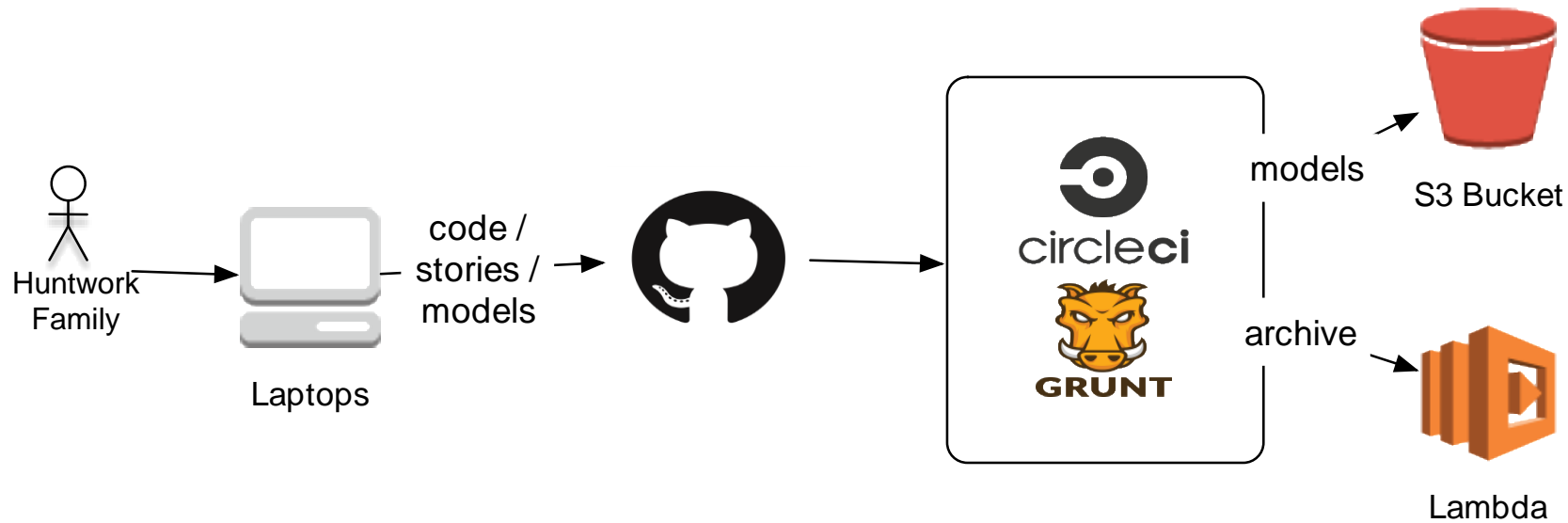success: 0.9428571428571428
count: 140

The Magic Door

Lambda

Stories

Huntwork Family → Laptops — code / stories / models → [GitHub] → [CircleCI / GRUNT] → models → S3 Bucket; archive → Lambda

1. mocha
2. jshint
3. XML syntax
4. missing sounds
5. **Validate Interaction Model**
6. grunt-aws-lambda
7. grunt-aws-s3

http://github.com/ashuntwo/grunt-alexa-interaction-model

http://github.com/ashuntwo/sounds-reactor

- Building V1
  - Working Backward
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  - Generating Speech
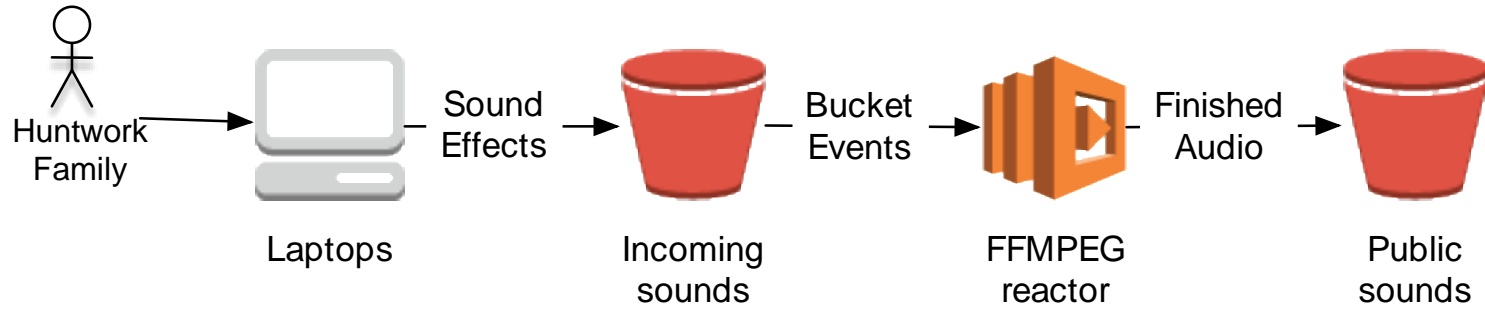- Continuous Delivery
- Voice Testing
- Making Users Happy

"Alexa, set debug on"

http://github.com/ashuntwo/alexa-debug-mode

"Would you like to go to the mountains, to the sea, or to the portal?"


"Crown"

"If you have a bronze key, use it now to unlock this gate."

Certification Testing

- Do you handle a wide variety of possible user input?
- Do your prompts ask a question?
- Do you stop when the user asks you to?
- Do you provide help?
- Do you provide a meaningful description of your skill for the Alexa Skill Store?
- Do your image URLs work?
- Is your interaction model consistent?

(http://amzn.to/2gN8rfZ)

- Building V1
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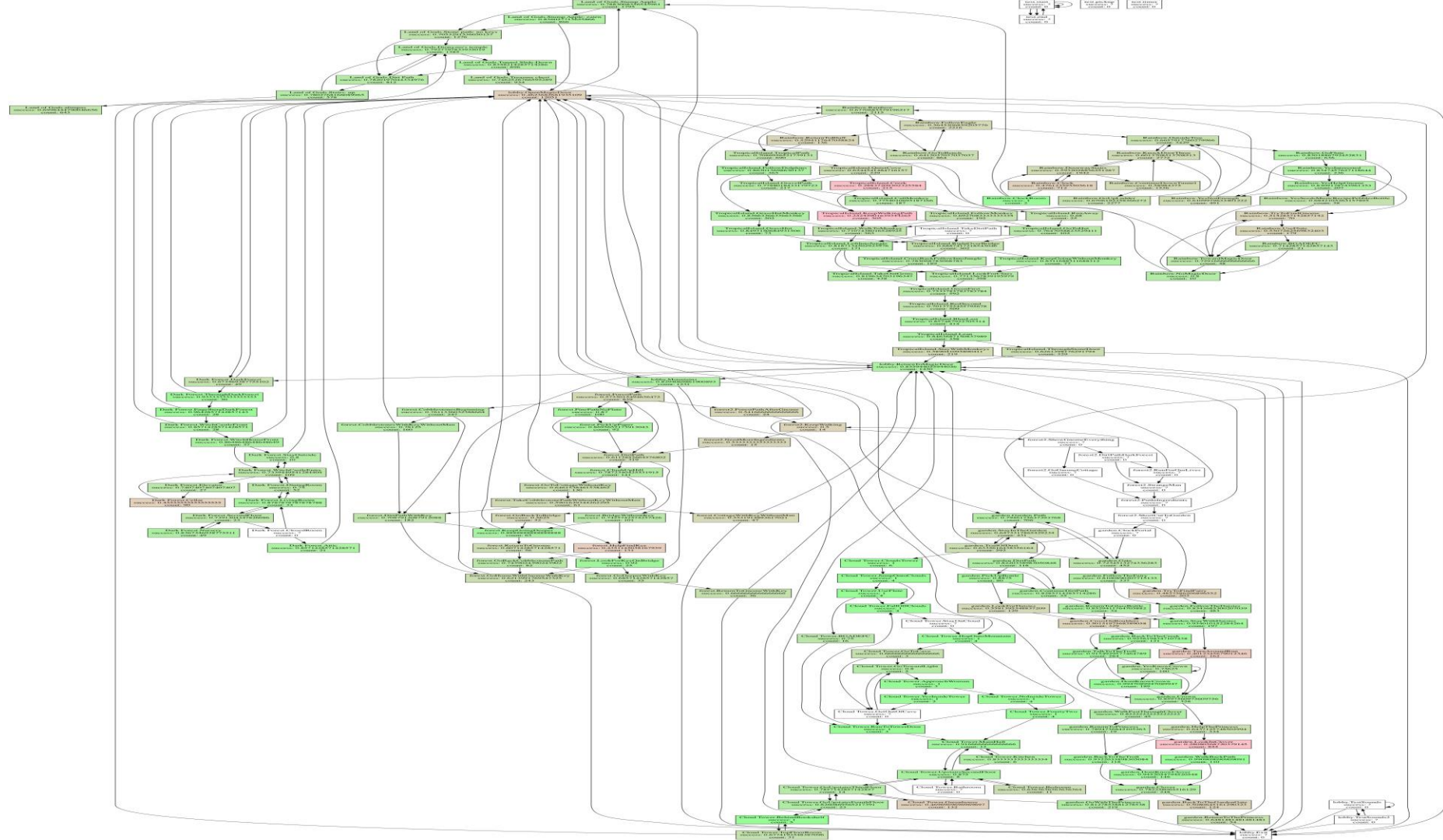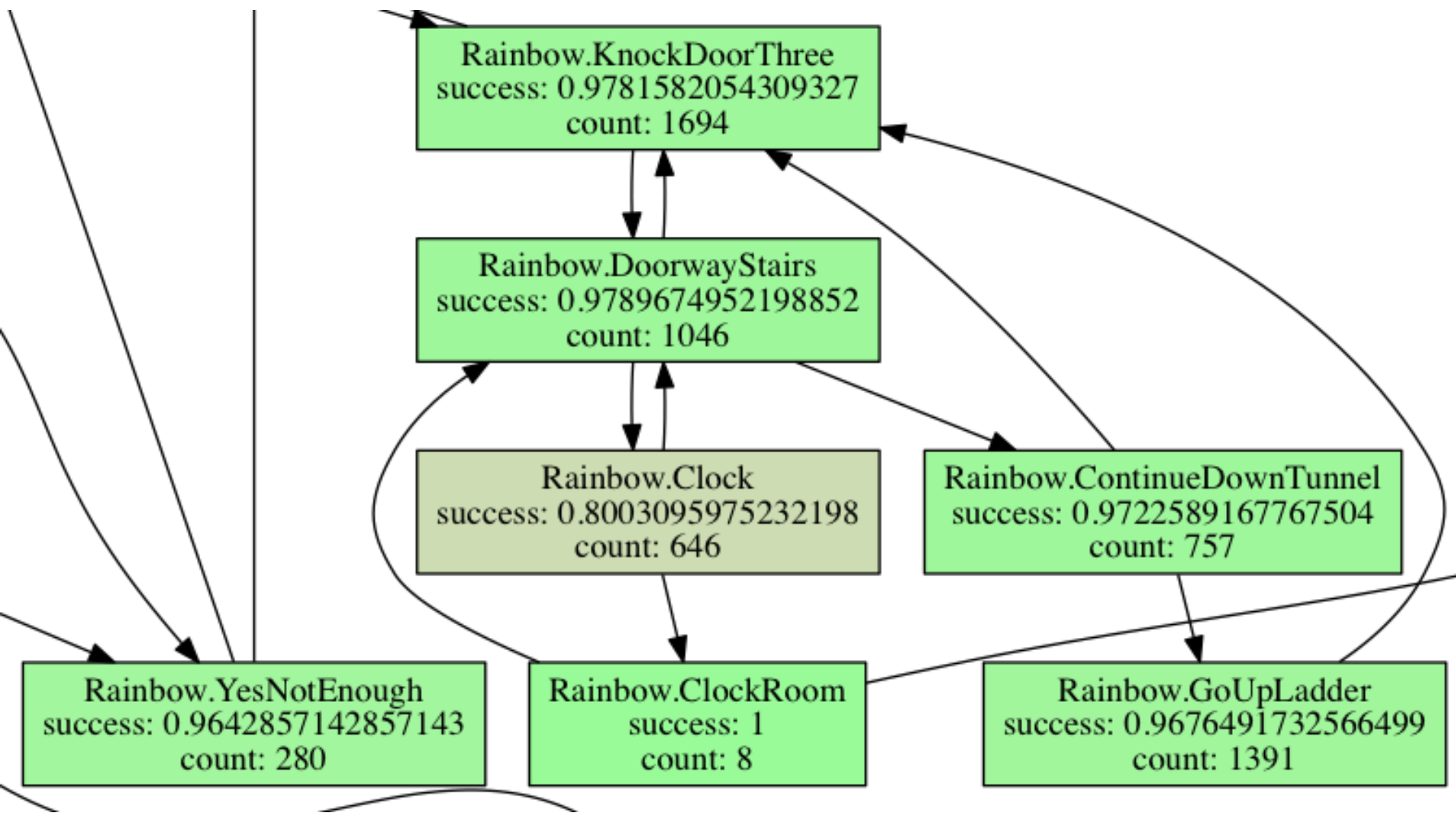
Analytics Stream

```json
{
    "level": "info",
    "msg": "",
    "meta": {
        "eventType": "readTransition",
        "userId": "amzn1.ask.account.AFP3ZWPOS2BGJR7OWJZ3DHPKMOMNWY4AY66FUR7ILBW
        "requestId": "amzn1.echo-api.request.ef4d8074-504d-420d-9819-119d5e902a4
        "scene": "Garden Path",
        "story": "garden",
        "intent": "TalkToRabbit",
        "destinationScene": "Garden Path",
        "destinationStory": "garden"
    }
}
```

Story Starts vs. Completions

■ MissionsAccomplished ■ StoryStarts
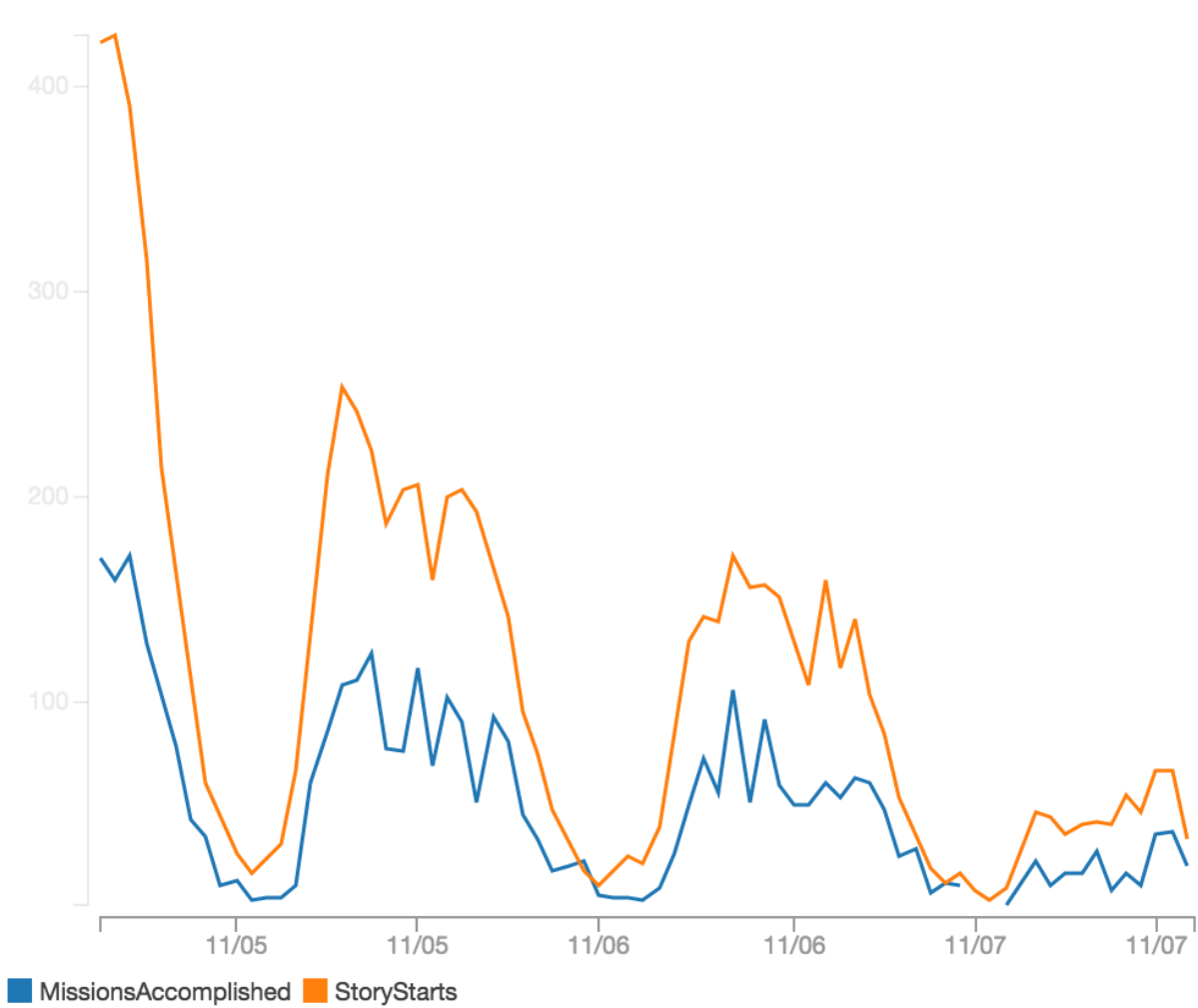
The Magic Door
@AlexaMagicDoor

- Home
- About
- Photos
- Reviews
- Likes
- Posts

Create a Page

👍 Like 💬 Message ➤ Share ••• More ▾

Play Game

The Magic Door
13 hrs · 🌐

We have received some great feedback this weekend from our helpful users. One very helpful user suggested we post a list of all adventures. A detailed list is on our website: http://www.themagicdoor.org. Did you know there are currently 8 adventures?

-Help the Princess beyond the Garden
-Find the Eggs beyond the Garden
-Help the Gnome find his key in the Forest... See More

👍 Like 💬 Comment

App Page

🔍 Search for posts on this Page

PEOPLE ❯

510 likes

ABOUT ❯

"For tips and tricks, visit us on Facebook at facebook.com/AlexaMagicDoor."

"Alexa, who am I?"
"You are G X U Q 5 C"
http://github.com/ashuntwo/alexa-whoami

What's next?

- Analytics
- Social
- Scaling content creation
- Payment

Takeaways

- Work backward from the customer.

- Manage conversational state

- Obsess over SSML

- Test and deploy continuously

- Continuously improve user experience using custom skill analytics

- Get started by building a Decision Tree Skill (http://amzn.to/2gZLkBO)

The Magic Door

Remember to complete your evaluations!

|			
Wednesday	11am	ALX203: Workshop: Creating Voice Experiences with Alexa Skills: From Idea to Testing in Two Hours	Mirage, Jamaica B
	1pm	ALX306: State of the Union: Amazon Alexa and Recent Advances in Conversational AI	Venetian, Level 2, Sands Showroom
	11:30am and 2:30pm	ALX204: Workshop: Build an Alexa-Enabled Product with Raspberry Pi	Mirage, Antigua B
	5pm	ALX301: Alexa in the Enterprise: How JPL Leverages Alexa to Further Space Exploration with Internet of Things	Venetian, Level 2, Venetian B

Thursday	11:30am	ALX202: How Amazon is enabling the future of Automotive	Venetian, Level 3, Lido 3003
	1pm	ALX303: Building a Smarter Home with Alexa	Venetian, Level 3, Murano 3203
	3:30	ALX307: Voice-enabling Your Home and Devices with Amazon Alexa and AWS IoT	Venetian, Level 2, Opaline Theatre
	5pm	ALX302: Build a Serverless Back End for Your Alexa-Based Voice Interactions	Venetian, Level 2, Opaline Theatre
Friday	9:30am	ALX304: Tips and Tricks on Bringing Alexa to Your Products	Venetian, Level 1, Marco Polo 806
	11am	ALX305: From VUI to QA: Building a Voice-Based Adventure Game for Alexa	Venetian, Level 1, Marco Polo 806

Utterances Per Week

Chart Title
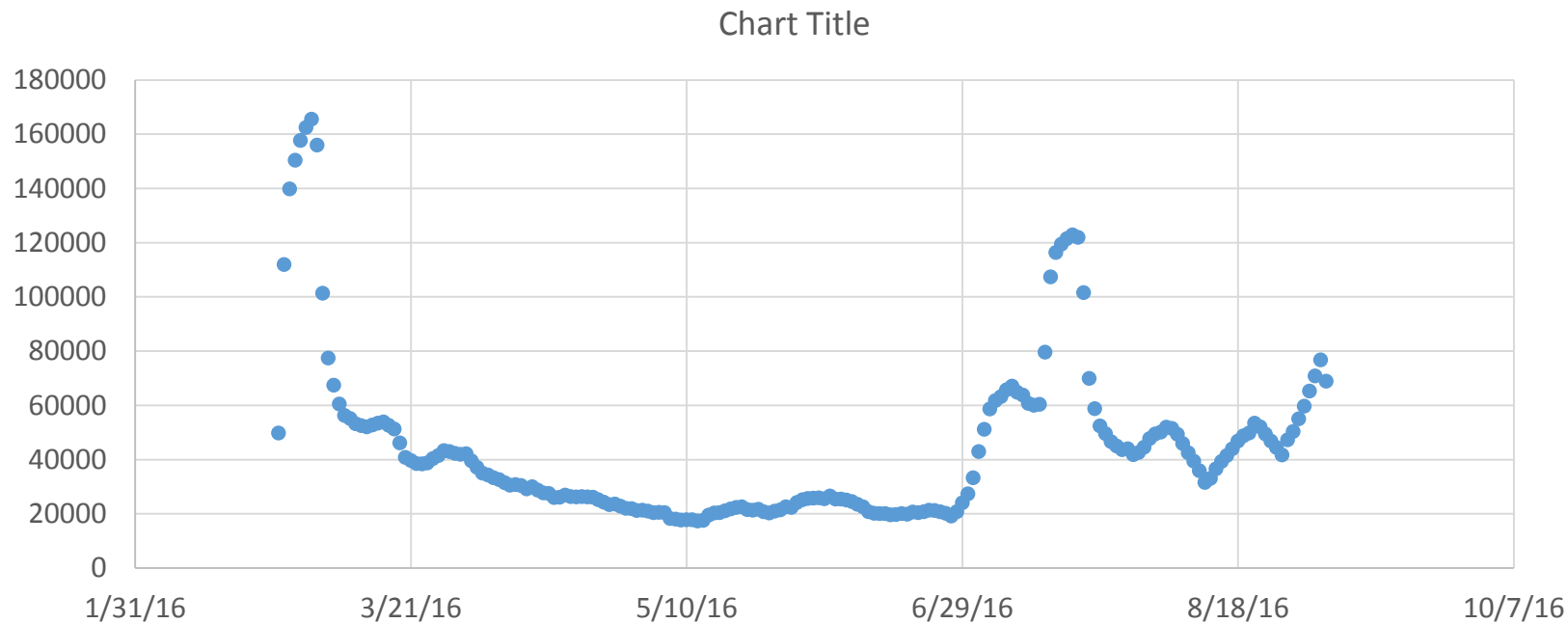
Takeaways

- Work backward from the customer.
- Manage conversational state
- Test and deploy continuously
- Continuously improve user experience using custom skill analytics

Facebook -- Response

- "Alexa, ask the magic door who am I"
- "You are G X U Q 5 C"
- Adding hints.
- Restructuring scenes
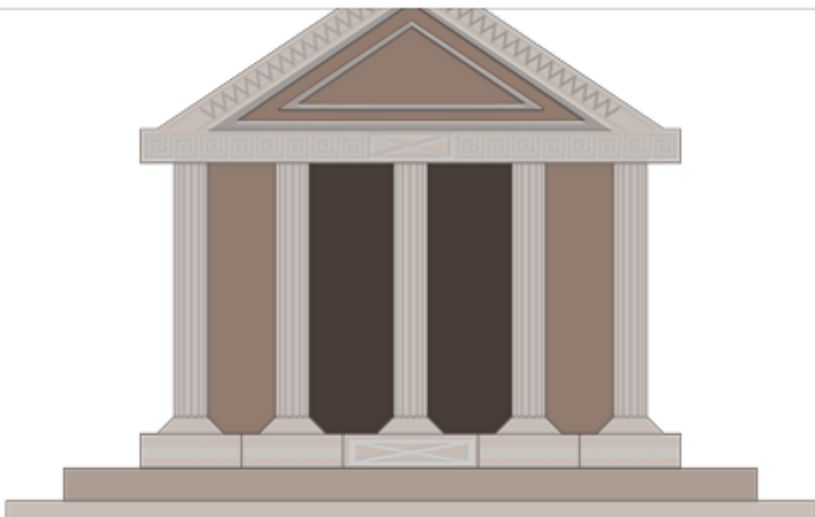- 1 story idea

How to get more players?

Ideas

- Weekly email to Alexa customers
- Skill store main page
- Reddit
- Facebook
- CNN
- Alexa developer forums
- Blogs

"Alexa, share my achievement."

Treasure Hunter

You journeyed to Ancient Rome and discovered treasure.

THEMAGICDOOR.ORG | BY THE MAGIC DOOR
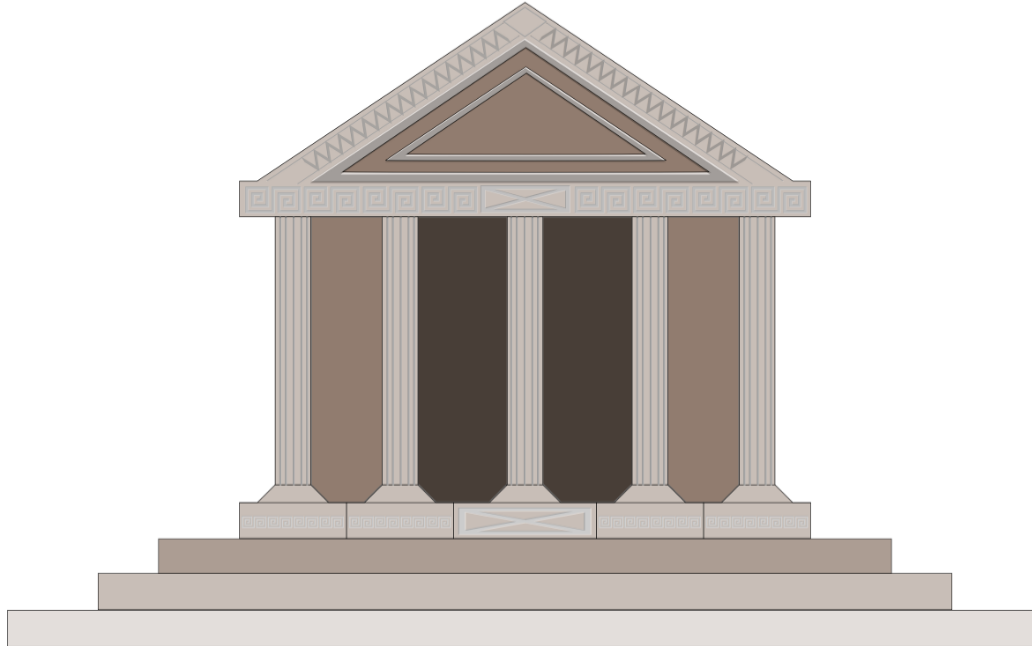
👍 **Like**   💬 **Comment**   ➤ **Share**

Write a comment...

Press Enter to post.

Treasure Hunter

A portal leads to Ancient Rome. You can find treasure if you avoid the wrath of the gods.

What's next for The Magic Door?

- More traffic
- Make Cloud Tower more fun
- Halloween
- Improve the lobby
- Story test framework
- Reduce accidental exits, impossible choices, reprompt failures

- Money
- Better production
- Infinite worlds
- Improved intent matching
- Rewrite JS eval as custom grammar
- Background sound
- Knight support