Amsterdam GOTO 2018

Develop and Innovate Fast Using a Multi-cloud Platform

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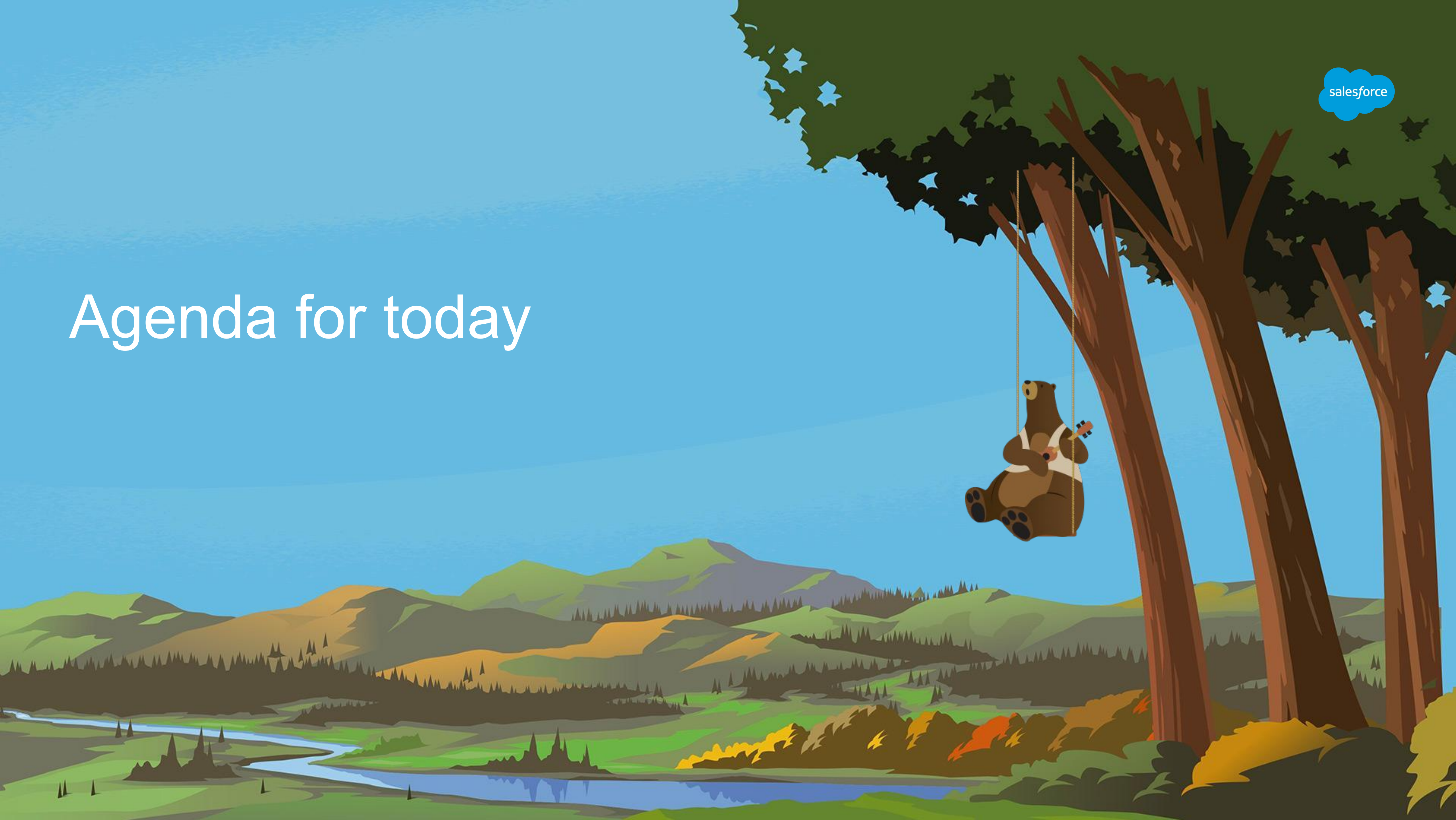
Agenda for today



What we’re covering

Next 40 minutes

What do we mean by multi-cloud platform and why you should care - 15 min

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An Australian airport wants to re-imagine their customer experience - 5 min

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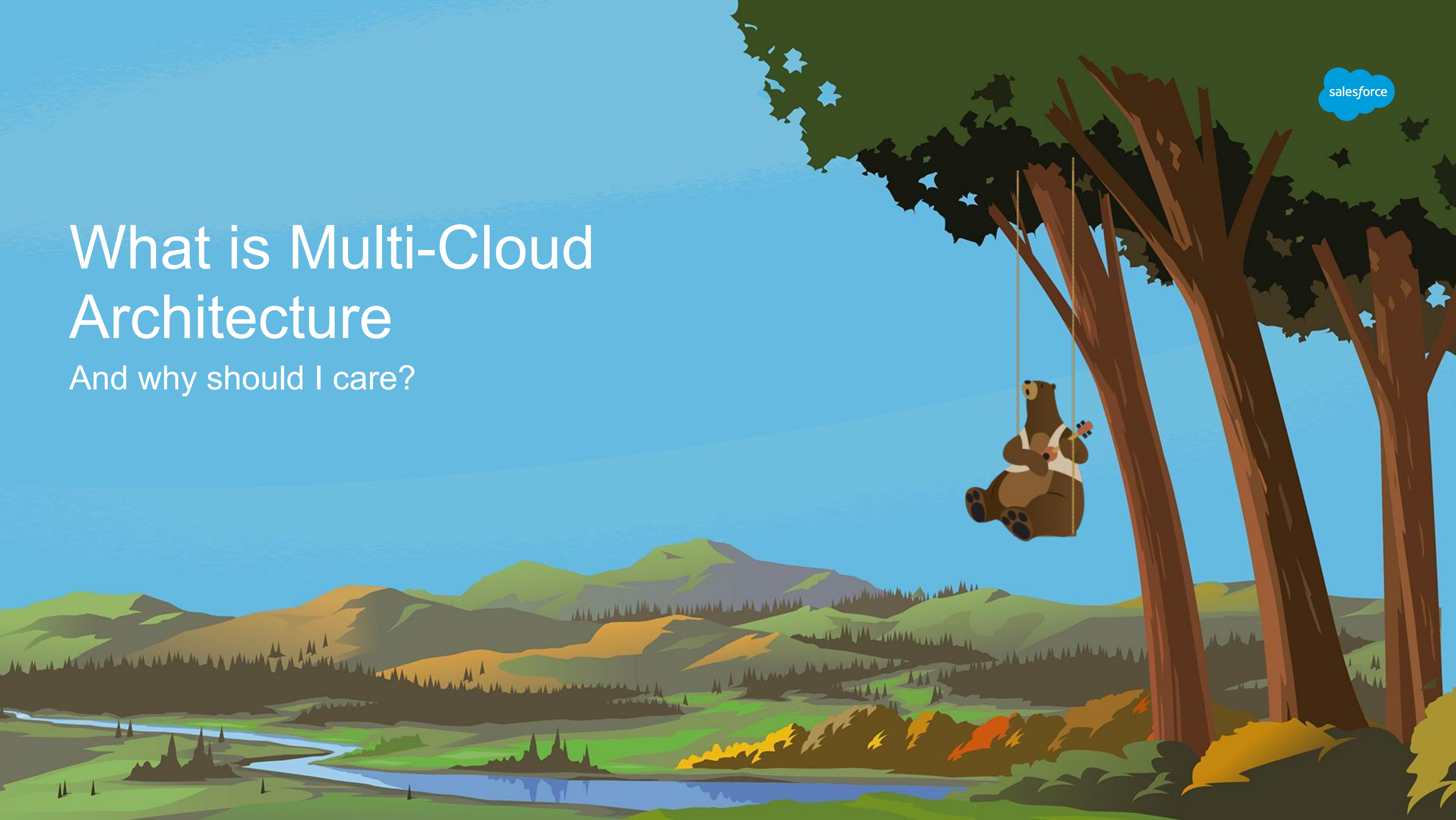
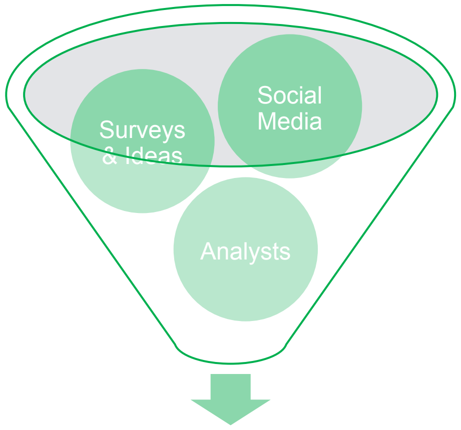
Deploying to Heroku (High-Control PaaS) +
Integrating with the rest of the business on Salesforce (High-Productivity PaaS) - 15 min

What is Multi-Cloud Architecture

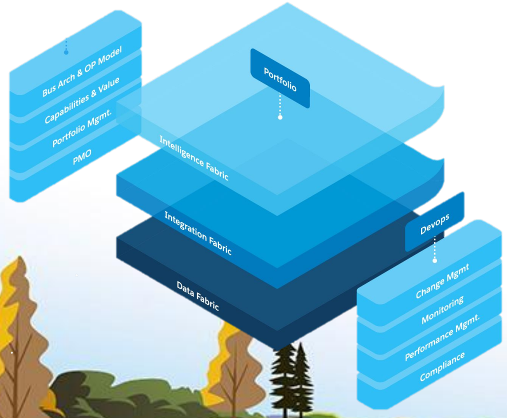
And why should I care?

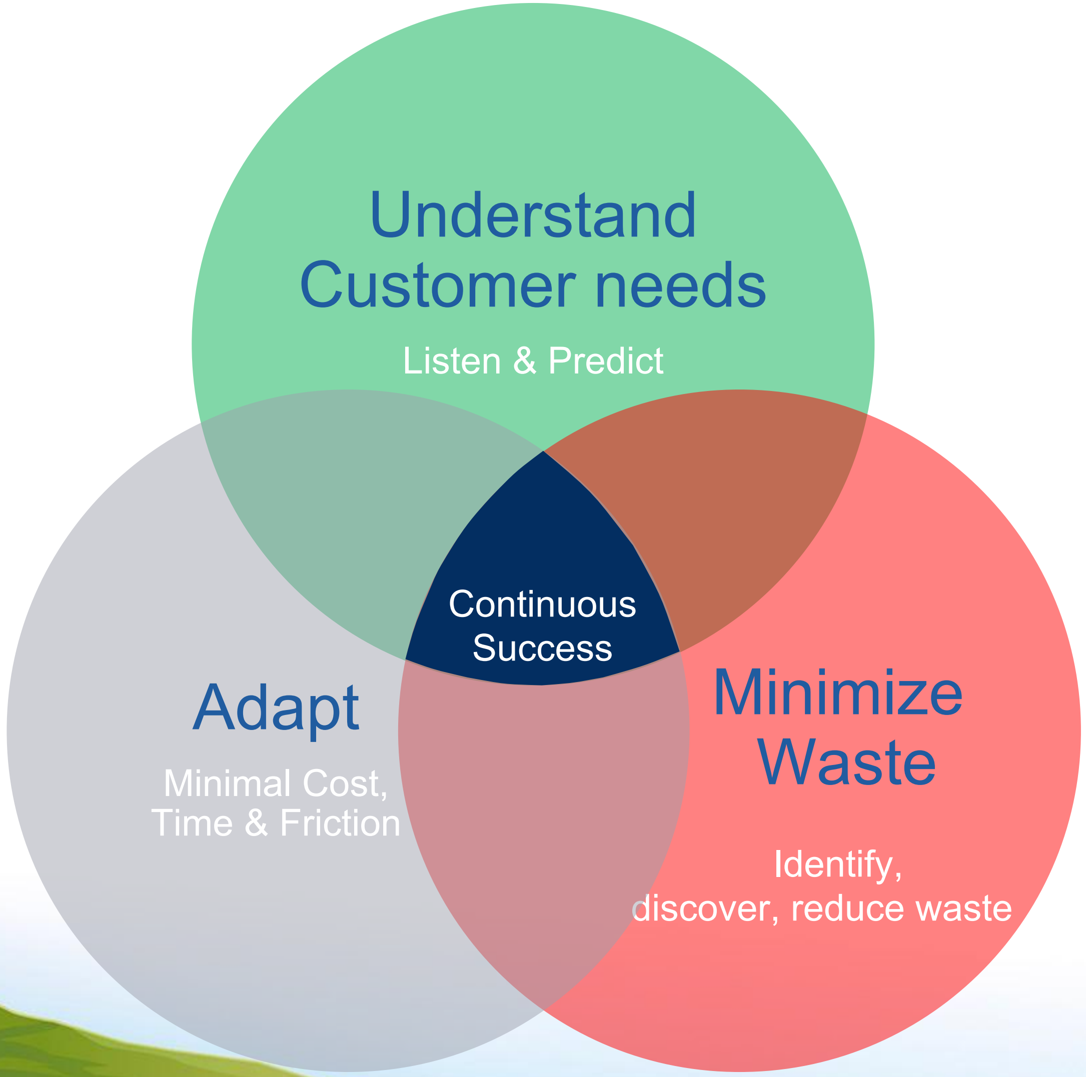


Components contributing to continuous success

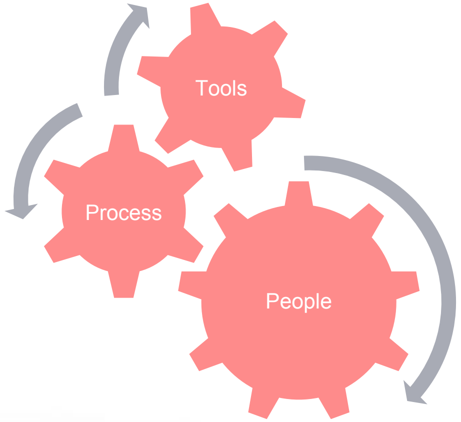


Needs

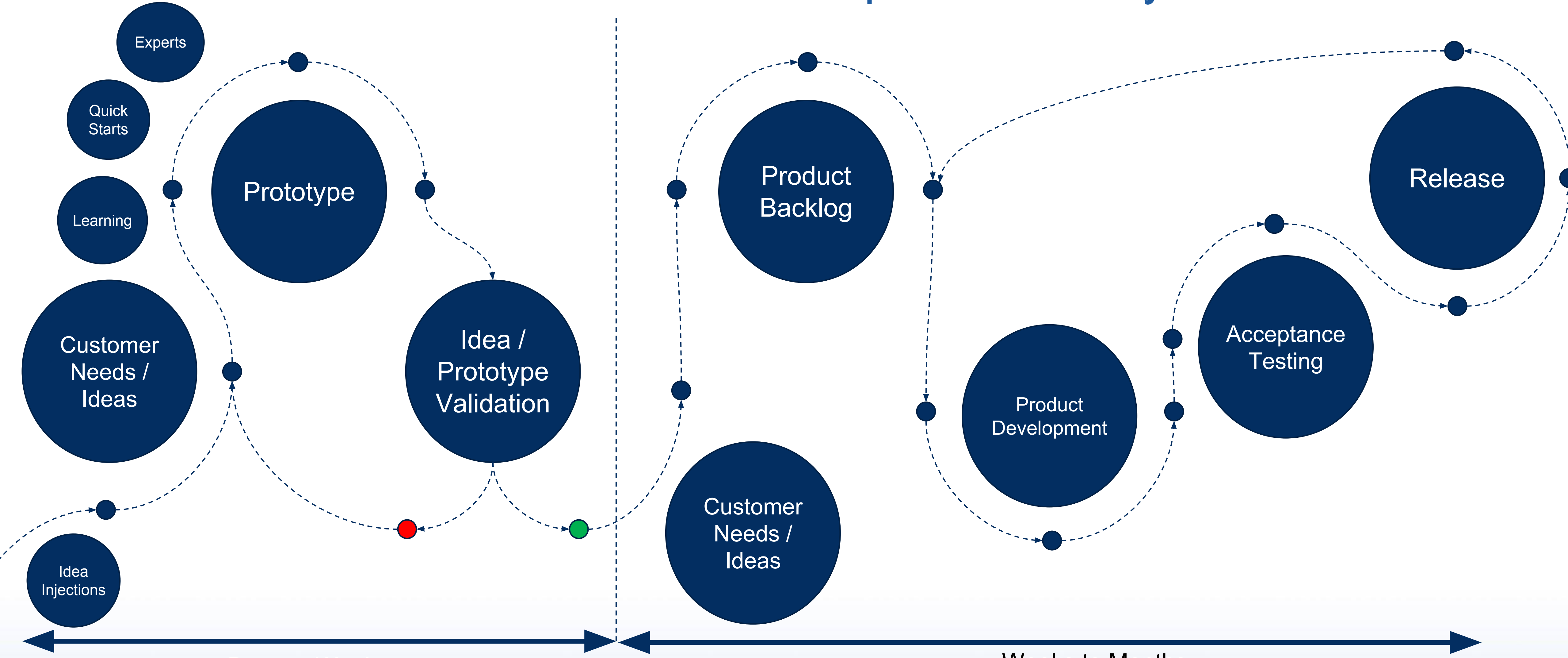




Understand Customer needs
Listen & Predict
Continuous Success
Adapt
Minimal Cost, Time & Friction
Minimize Waste
Identify, discover, reduce waste



Innovation Center & Product Development Life Cycle



Days to Weeks
Fail Fast / Innovation / Experimentation / Validation

Weeks to Months
Agile Product Development Cycle

The right balance between control and speed

- On Premise

The right balance between control and speed

salesforce platform

- **Software as a Service** and...
- **High Productivity Application Platform as a Service. (HpAPaaS)**

- **On Premise**

The right balance between control and speed

salesforce

salesforce platform

- **Software as a Service** and...
- **High <u>Productivity</u> Application Platform as a Service. (HpAPaaS)**

amazon web services

- **Infrastructure as a Service**

- **On Premise**

The right balance between control and speed

salesforce platform

- **Software as a Service** and...
- **High Productivity Application Platform as a Service. (HpAPaaS)**

HEROKU

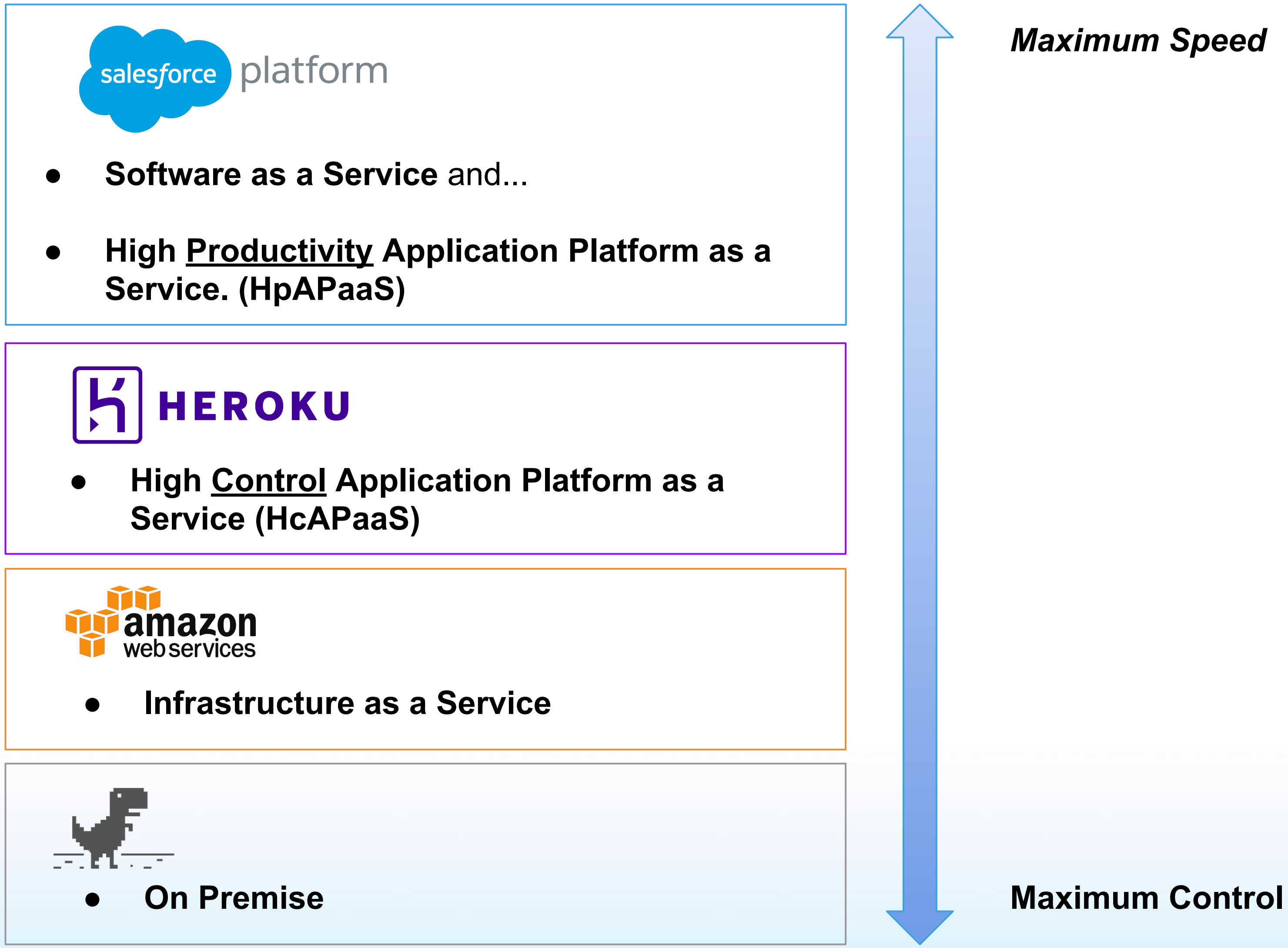
- **High Control Application Platform as a Service (HcAPaaS)**

amazon web services

- **Infrastructure as a Service**

- **On Premise**

The right tool that allows you to be as quick as a possible



salesforce platform

- **Software as a Service** and...
- **High Productivity Application Platform as a Service. (HpAPaaS)**

HEROKU

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amazon web services

- **Infrastructure as a Service**

- **On Premise**

Maximum Speed

Maximum Control

High Productivity VS High Control APaaS

The acronyms actually make sense

No-Code Builders for max speed

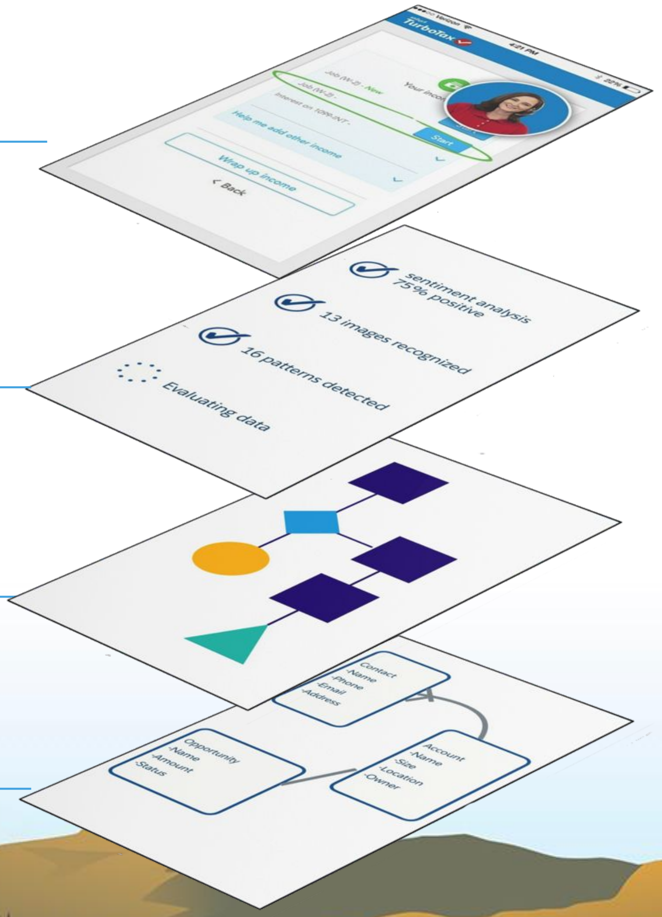
Free-up IT resources for the most critical projects

Empower business users

Rapidly prototype app ideas

Access an ecosystem of pre-built apps and components

Rakesh Kumar
Salesforce Admin



User Experience
Lighting App Builder
Lightning Community Builder

Intelligence
Einstein and Dashboards

Logic
Process and Flow Builders

Data Model
Schema Builder

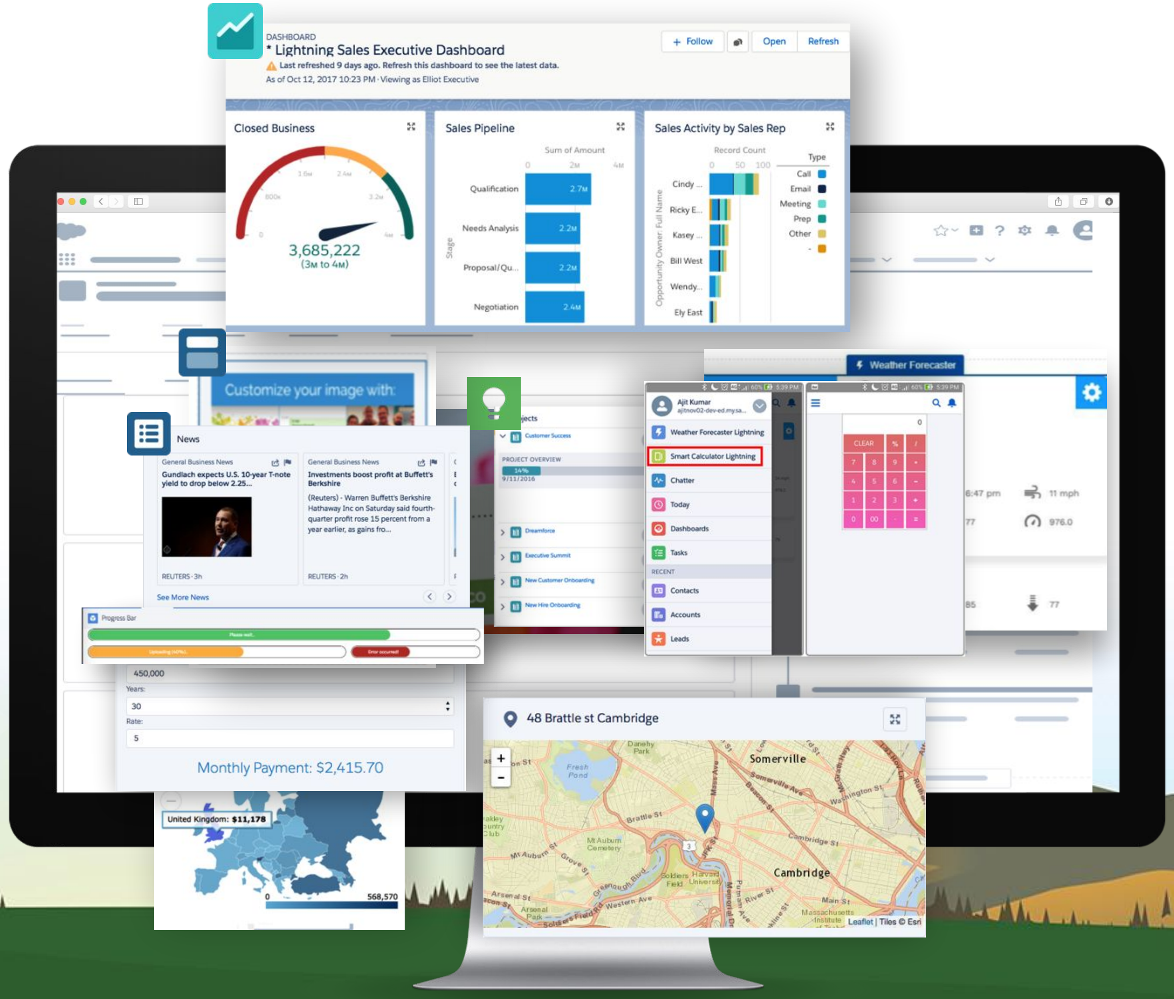
Lightning Components Transform App Dev

Anyone can build faster with a universe of reusable components

Components built by Salesforce, partners and you

Reusable and customizable

Backed by a design system, tools and and ecosystem


DASHBOARD
* Lightning Sales Executive Dashboard
Last refreshed 9 days ago. Refresh this dashboard to see the latest data.
As of Oct 12, 2017 10:23 PM · Viewing as Elliot Executive
+ Follow
Open
Refresh
Closed Business
3,685,222
(3M to 4M)
Sales Pipeline
Sum of Amount
Qualification
Needs Analysis
Proposal/Qu...
Negotiation
2.7M
2.2M
2.2M
2.4M
Sales Activity by Sales Rep
Record Count
Cindy ...
Ricky E...
Kasey ...
Bill West
Wendy...
Ely East
Type
Call
Email
Meeting
Prep
Other
Customize your image with:
News
General Business News
Gundlach expects U.S. 10-year T-note yield to drop below 2.25...
Investments boost profit at Buffett's Berkshire
(Reuters) - Warren Buffett's Berkshire Hathaway Inc on Saturday said fourth-quarter profit rose 15 percent from a year earlier, as gains fro...
REUTERS · 3h
REUTERS · 2h
See More News
Progress Bar
450,000
Years:
30
Rate:
5
Monthly Payment: $2,415.70
United Kingdom: $11,178
568,570
Weather Forecaster
Ajit Kumar
Weather Forecaster Lightning
Smart Calculator Lightning
Chatter
Today
Dashboards
Tasks
RECENT
Contacts
Accounts
Leads
CLEAR
48 Brattle st Cambridge
Somerville
Cambridge
Leaflet | Tiles © Esri

Heroku Enterprise

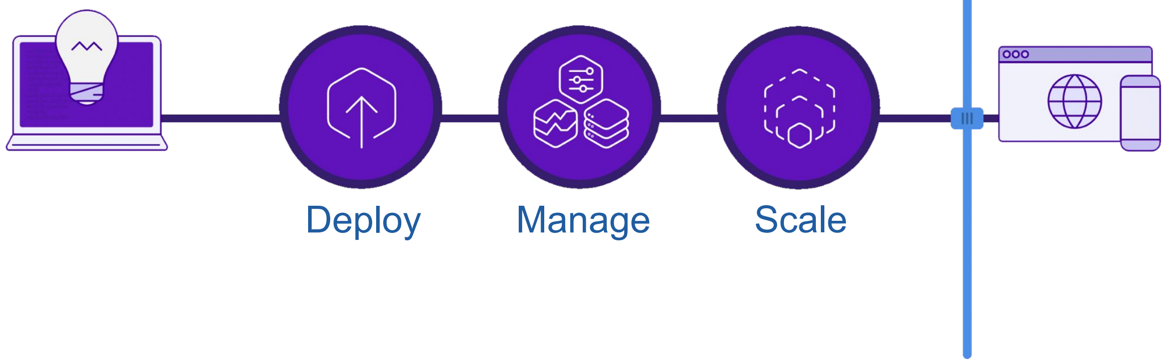
Experience Developers Love…Features Enterprises Need

salesforce

heroku

Build Apps

Not Infrastructure



eclipse

GitHub

Visual Studio

Use any Dev Tool
(open to enterprise)

node.js
Ruby
Java
php
Python
Go
Scala
Clojure

Pick your Language
(buildpacks or Docker)

Elastic Search
Treasure Data
Xplenty ETL
Follow Analytics

Leverage our Elements
(over 150 Add-On Services)

1X
worker
python worker.py
Dyno Count
Set the number of dynos to use for this process.
1
1 unit

Scale with Heroku
(simply with transparency)

Developer PaaS on AWS

Focus: Developer **productivity** with Enterprise **control** and **security**

Accelerate Developer Productivity

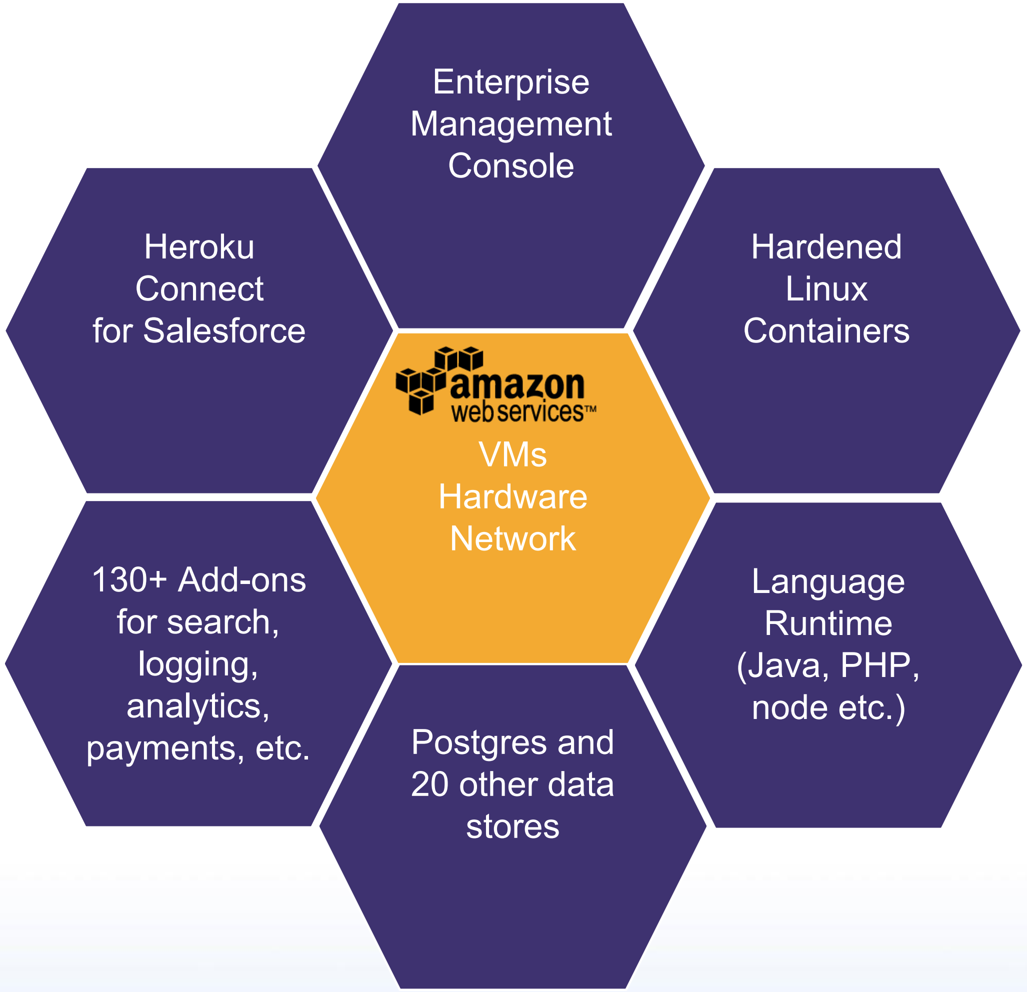
Accelerate time to market through a rich set of app and data services

Lower Operational Complexity

Reduce cloud operations overhead by letting Salesforce manage your platform for you

Lower Operational Risk

Lower your costs on potential outages and security incidents

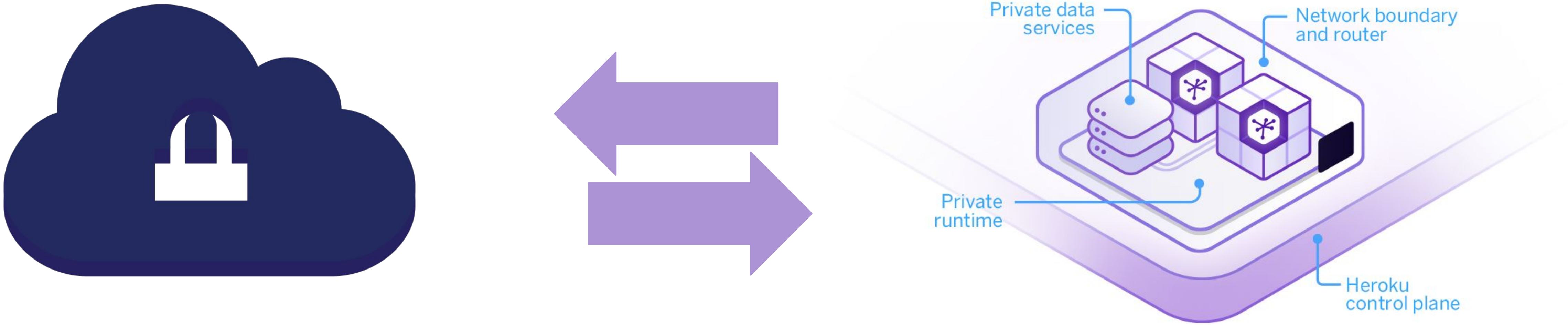

Enterprise Management Console
Heroku Connect for Salesforce
Hardened Linux Containers
amazon web services™
VMs
Hardware
Network
130+ Add-ons for search, logging, analytics, payments, etc.
Language Runtime (Java, PHP, node etc.)
Postgres and 20 other data stores

Secure Connections between Heroku & VPCs

VPC Peering — Simply and securely connect Heroku Apps with AWS VPCs

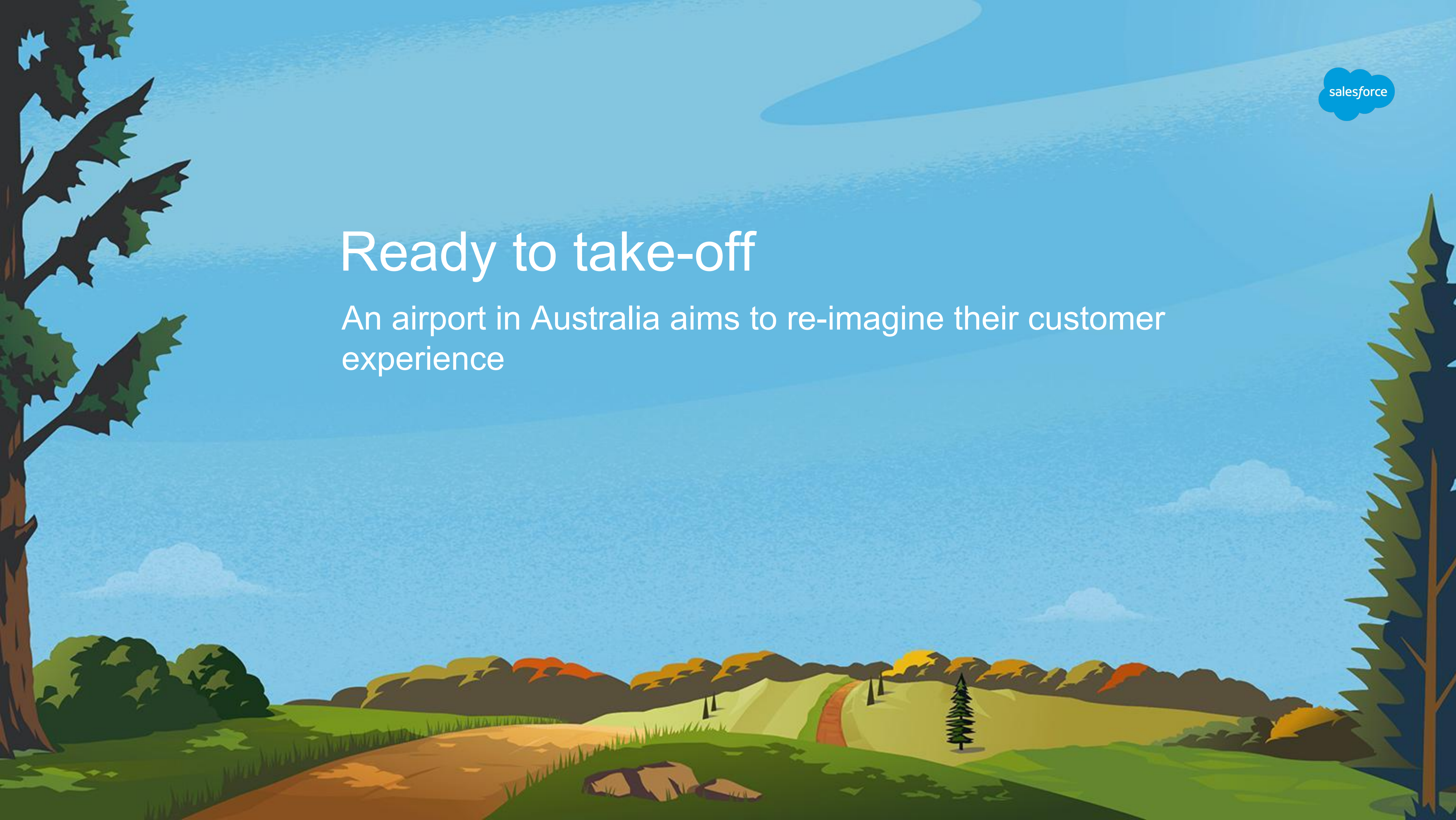
amazon web services

salesforce heroku



AWS Virtual Private Cloud (VPC)

Heroku Private Spaces



Ready to take-off

An airport in Australia aims to re-imagine their customer experience

The “Australian Airport”

We’ll just call it that for now

An airport in Australia re-imagined their customer experience ahead of major international event

- Wanted to become the preferred airport for the region through fantastic customer experiences

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Initially the interest was CRM and Marketing Automation + healthy desire to innovate

- Knowing more about their passengers, automating notifications, measuring improvements
- Building an app

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- Building an app

However there were many moving parts and existing wifi technology

- Data streams and applications: car park, point of sales, arrivals/departures, mobile app, incidents...
- Wifi infrastructure allows for triangulation but nothing had been done with the data
  PS: Amsterdam Centraal also tracks wifi signals!

Initial thoughts on an architecture

Kafka as a Message Bus - publishers push, consumers pull

Kafka originated at LinkedIn to help manage flow of data between increasing number of systems

- Kakfa is a “Distributed Streaming Platform”.
- Several moving parts: Clusters, Brokers, Topics, Partitions, etc
- Heroku offers it as a managed service!

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- Heroku offers it as a managed service!

Would you like to know more?

- https://engineering.linkedin.com/distributed-systems/log-what-every-software-engineer-should-know-about-real-time-datas-unifying
- https://www.youtube.com/watch?v=Rzl4O1oaVy8&index=37&list=PLE7tQUdRKcyak-yFKj5IN3tDYOh5omMrH&t=0s

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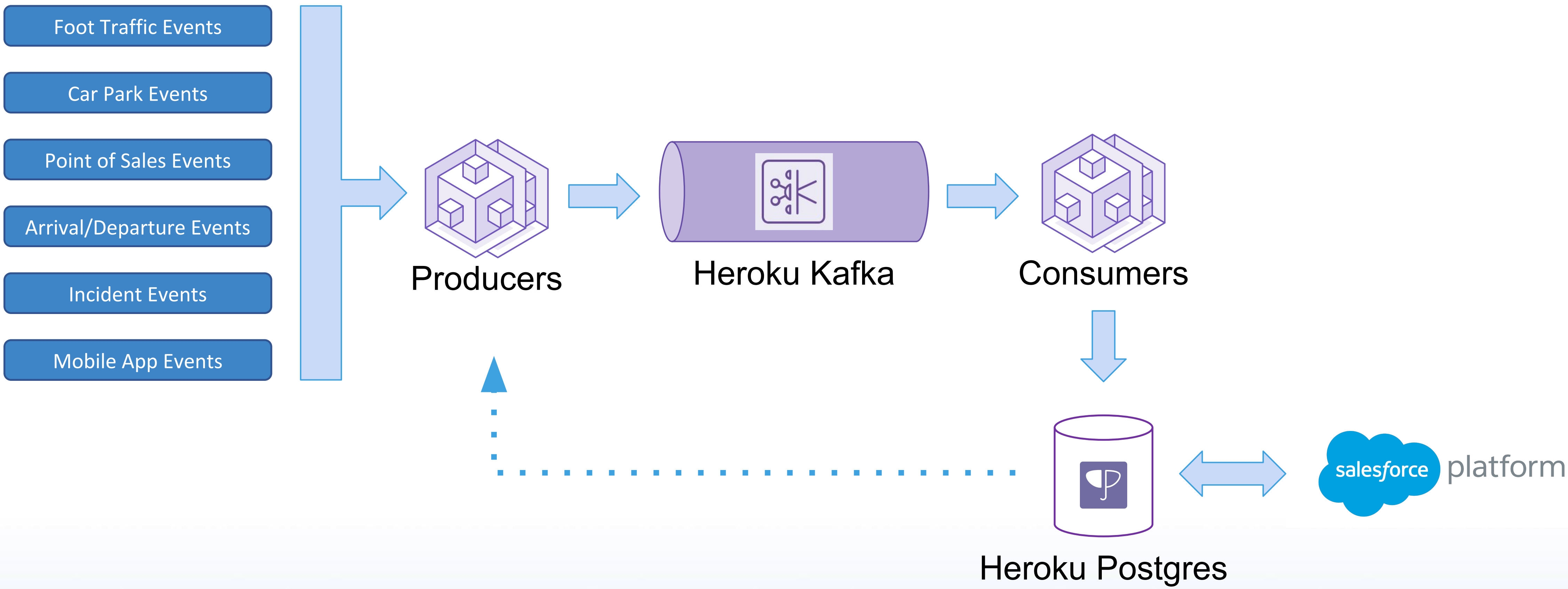

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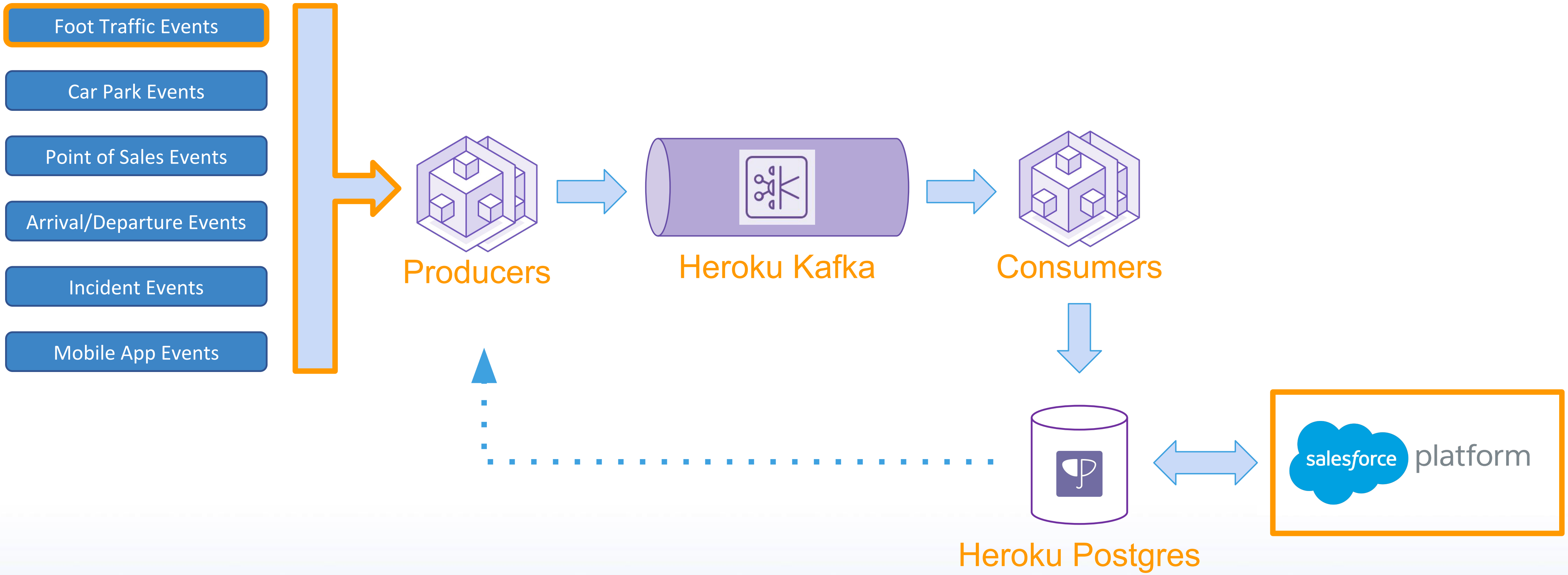

Building a crude prototype on my local machine

Generating synthetic foot traffic or “there’s nothing I won’t try to hack together in Python”

Two main components to the simulation

The Model

Python code with constructs for a 2d map, passengers, walls, exit points, etc

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Pathfinding algorithm to determine how a passenger would get from A to B

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Pathfinding algorithm to determine how a passenger would get from A to B

A timed loop to update every passenger’s position given their path and re-route them if they are stuck behind other passengers.

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Python code with constructs for a 2d map, passengers, walls, exit points, etc

Pathfinding algorithm to determine how a passenger would get from A to B

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The Web app

Websocket server sending movement updates to the browser and plotting movement on a image

Two main components to the simulation

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Python code with constructs for a 2d map, passengers, walls, exit points, etc

Pathfinding algorithm to determine how a passenger would get from A to B

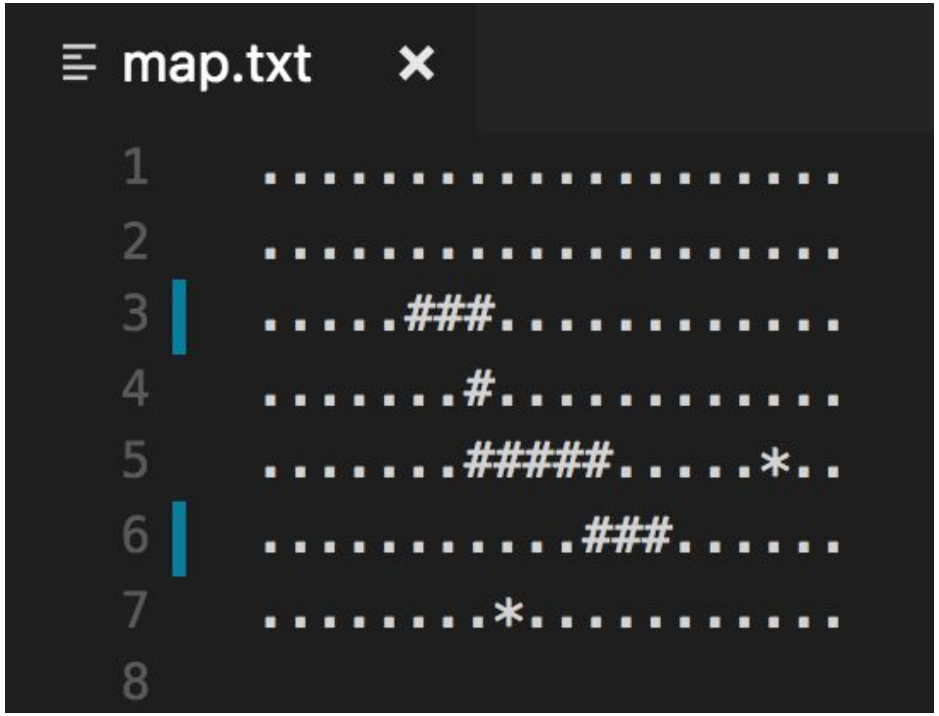
A timed loop to update every passenger’s position given their path and re-route them if they are stuck behind other passengers.

The Web app

Websocket server sending movement updates to the browser and plotting movement on a image

Server acts as a Kafka producer sending X,Y coordinates as events to our Kafka cluster

Two main components to the simulation - #1 The Model



```
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.....###............
.......#............
.......#####.....*..
...........###......
........*...........
```

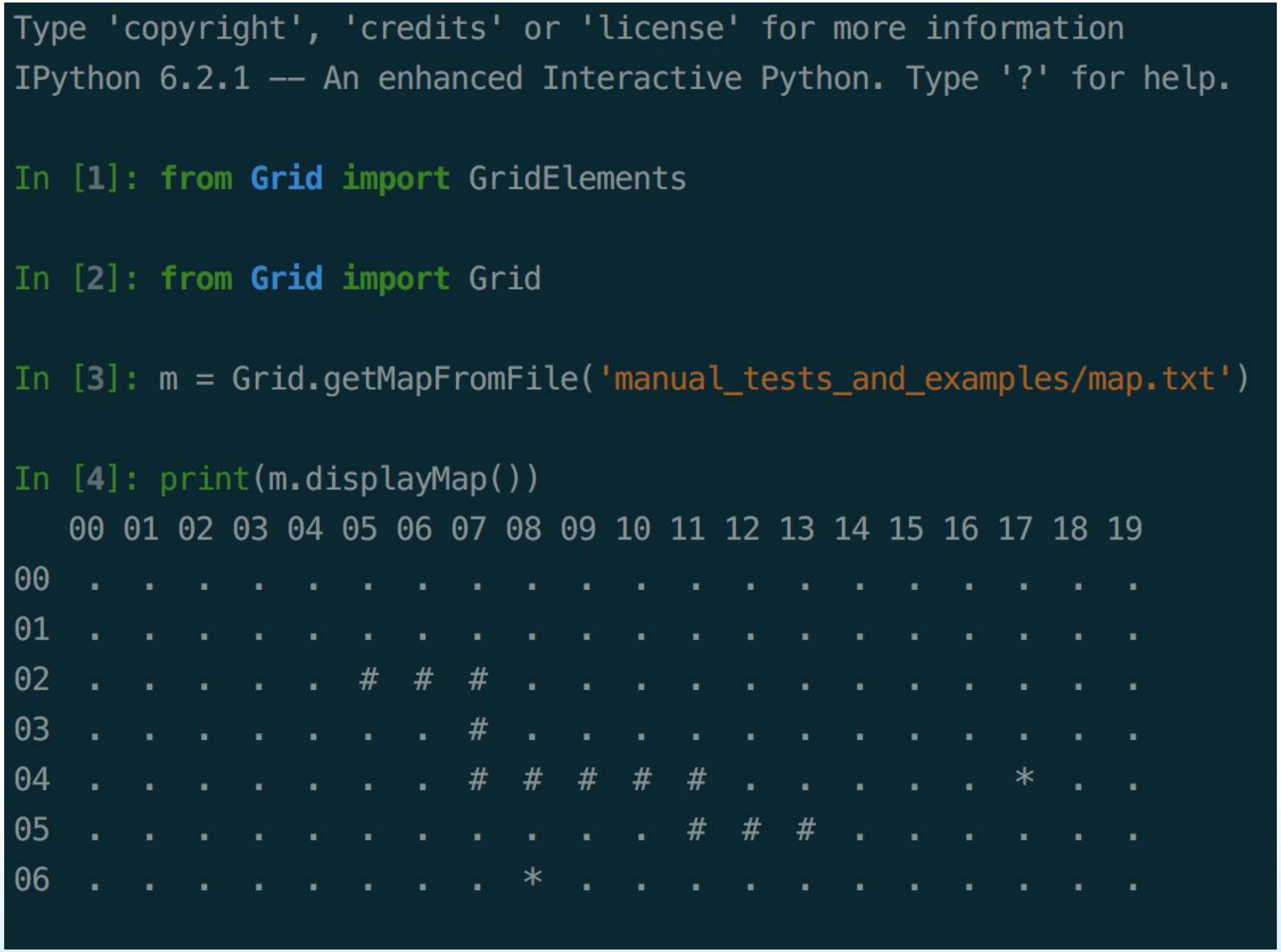

```
Type 'copyright', 'credits' or 'license' for more information
IPython 6.2.1 -- An enhanced Interactive Python. Type '?' for help.

In [1]: from Grid import GridElements

In [2]: from Grid import Grid

In [3]: m = Grid.getMapFromFile('manual_tests_and_examples/map.txt')

In [4]: print(m.displayMap())
   00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19
00  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
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```
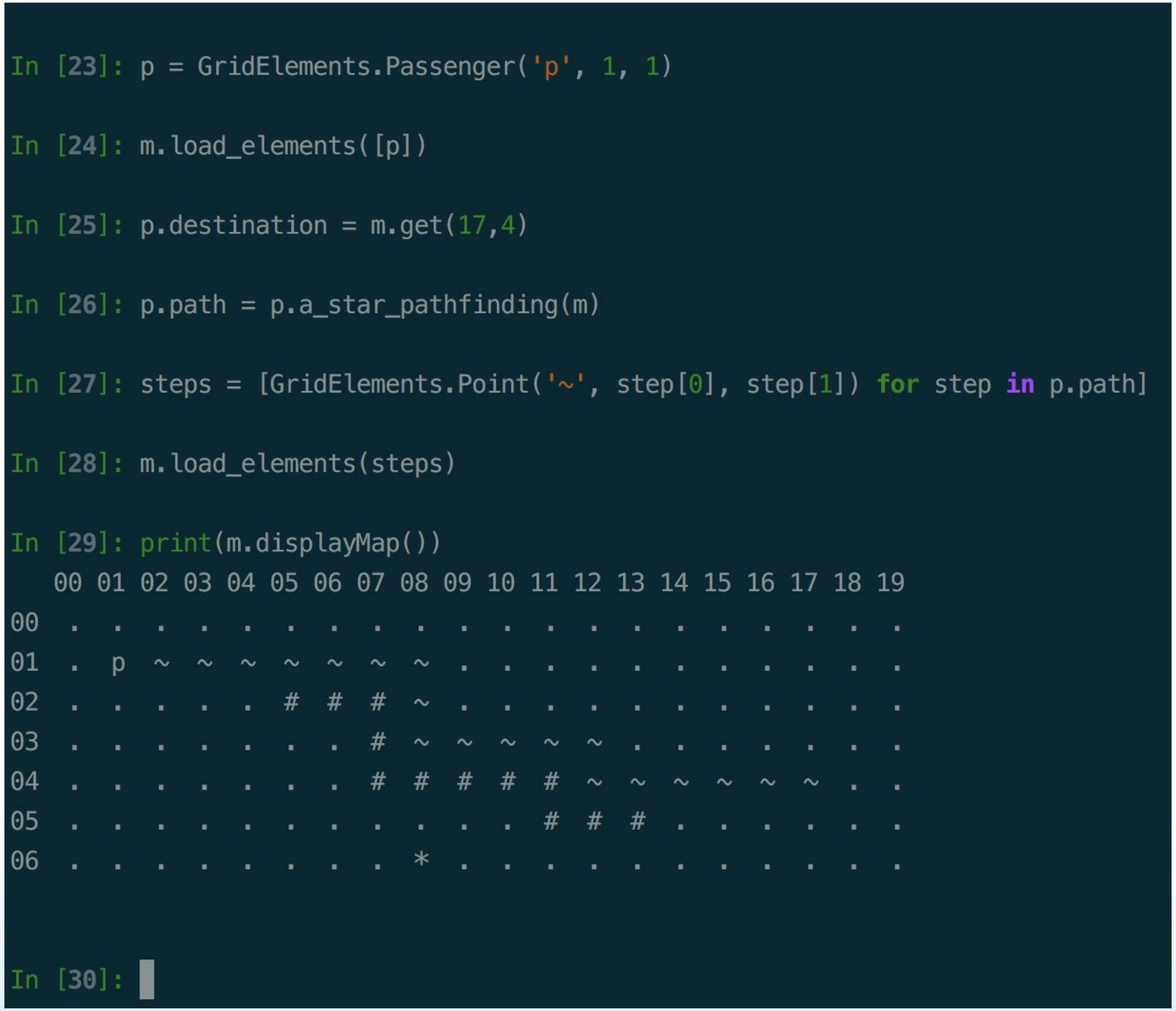

Two main components to the simulation - #1 The Model



```
In [23]: p = GridElements.Passenger('p', 1, 1)

In [24]: m.load_elements([p])

In [25]: p.destination = m.get(17,4)

In [26]: p.path = p.a_star_pathfinding(m)

In [27]: steps = [GridElements.Point('~', step[0], step[1]) for step in p.path]

In [28]: m.load_elements(steps)

In [29]: print(m.displayMap())
   00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19
00  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
01  .  p  ~  ~  ~  ~  ~  ~  ~  .  .  .  .  .  .  .  .  .  .  .
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05  .  .  .  .  .  .  .  .  .  .  .  #  #  #  .  .  .  .  .  .
06  .  .  .  .  .  .  .  .  *  .  .  .  .  .  .  .  .  .  .  .


In [30]: 
```

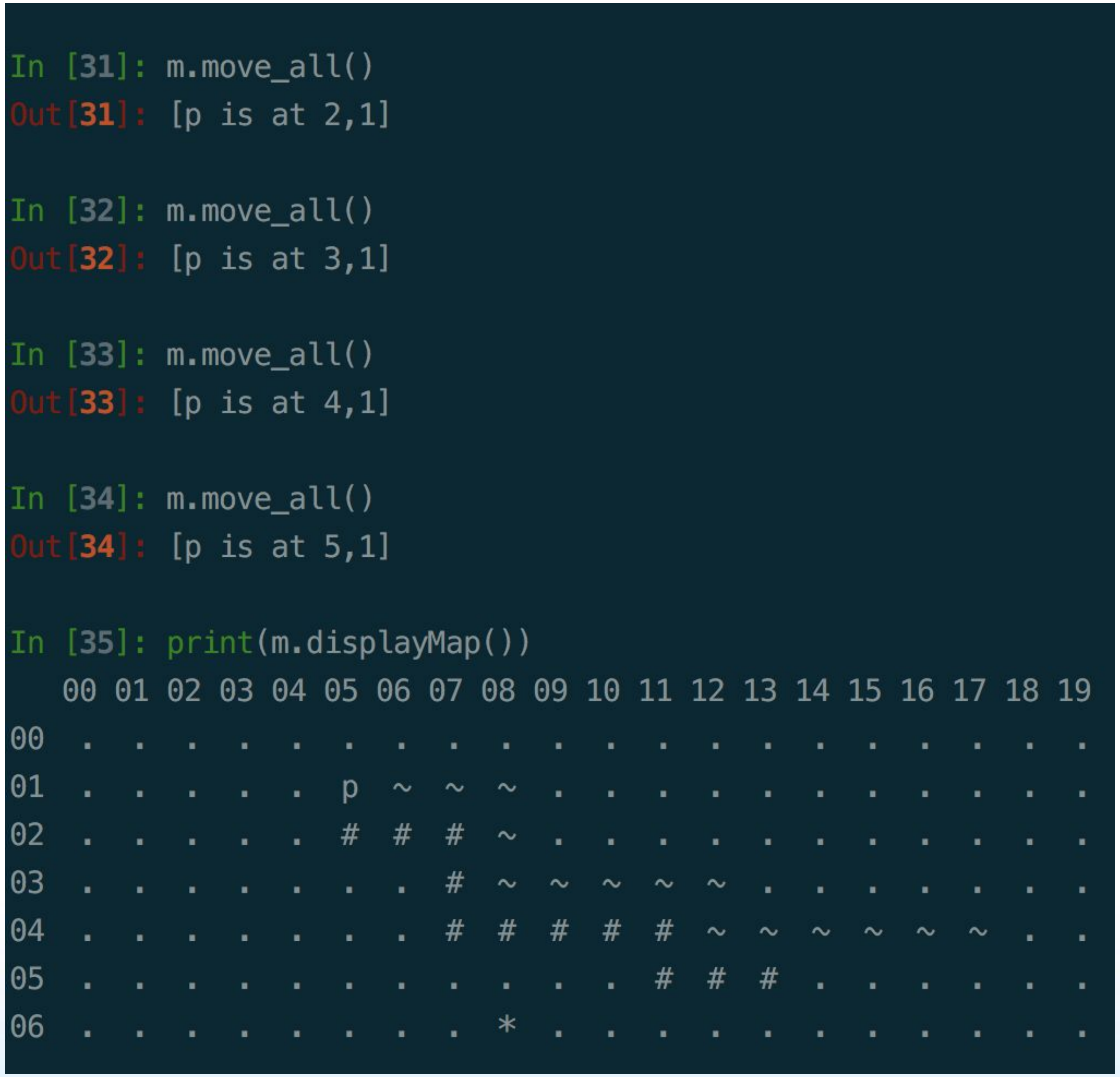

```
In [31]: m.move_all()
Out[31]: [p is at 2,1]

In [32]: m.move_all()
Out[32]: [p is at 3,1]

In [33]: m.move_all()
Out[33]: [p is at 4,1]

In [34]: m.move_all()
Out[34]: [p is at 5,1]

In [35]: print(m.displayMap())
   00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19
00  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
01  .  .  .  .  .  p  ~  ~  ~  .  .  .  .  .  .  .  .  .  .  .
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04  .  .  .  .  .  .  .  #  #  #  #  #  ~  ~  ~  ~  ~  ~  .  .
05  .  .  .  .  .  .  .  .  .  .  .  #  #  #  .  .  .  .  .  .
06  .  .  .  .  .  .  .  .  *  .  .  .  .  .  .  .  .  .  .  .
```
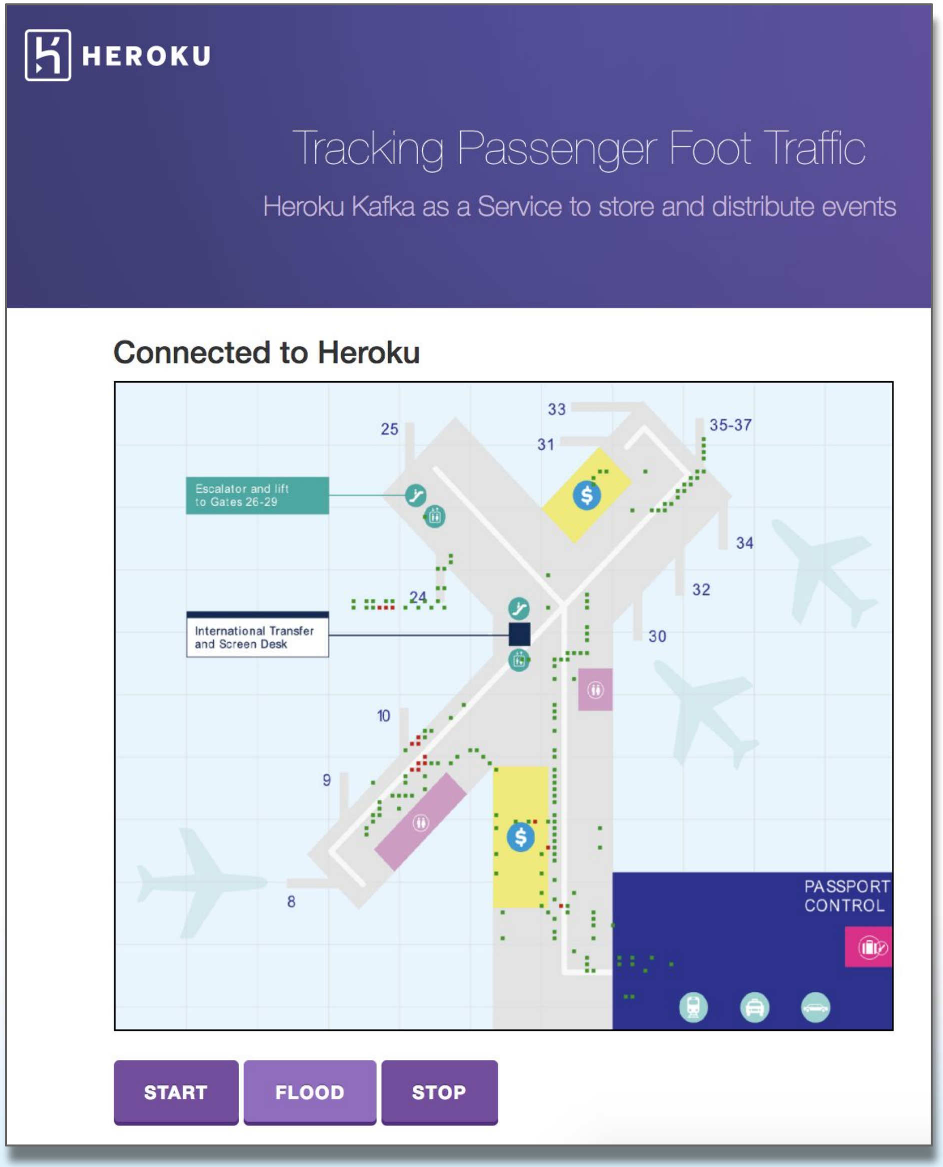

Two main components to the simulation - #2 The Web App



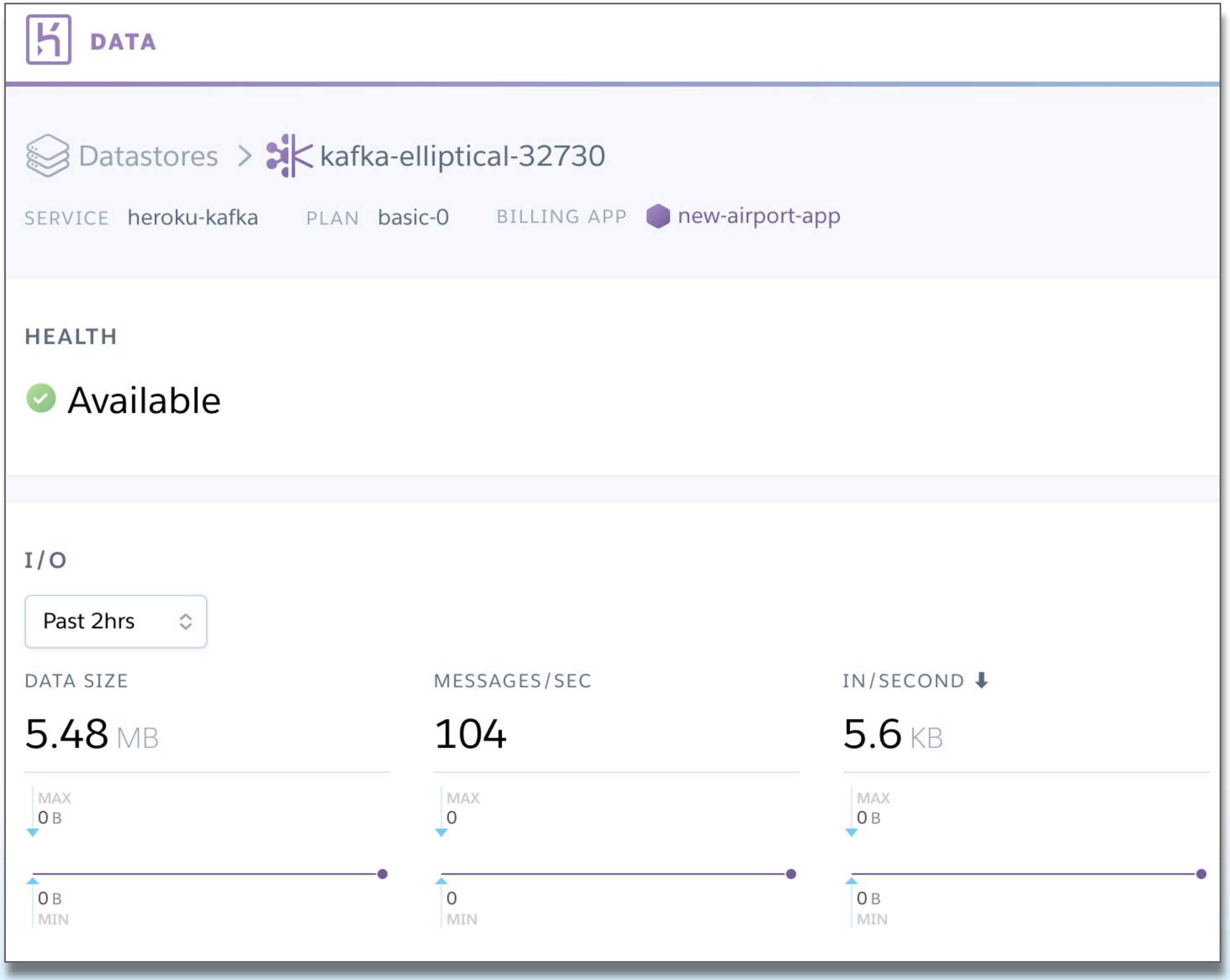
HEROKU

Tracking Passenger Foot Traffic

Heroku Kafka as a Service to store and distribute events

Connected to Heroku

25
33
31
35-37
Escalator and lift to Gates 26-29
34
32
24
International Transfer and Screen Desk
30
10
9
8
PASSPORT CONTROL
START
FLOOD
STOP



DATA

Datastores > kafka-elliptical-32730

SERVICE heroku-kafka PLAN basic-0 BILLING APP new-airport-app

HEALTH

Available

I/O

Past 2hrs

DATA SIZE	MESSAGES/SEC	IN/SECOND
5.48 MB	104	5.6 KB
MAX 0 B	MAX 0	MAX 0 B
0 B MIN	0 MIN	0 B MIN

Deploying it

HC APaaS for the simulation + HP APaaS for the business

Live demo time...

What could go wrong?

Demo 1 checklist

1. Deploy Prototype to Heroku

   a. Create app
   b. Add Kafka - while loading...
   c. Show github repo
   d. Connect to github repo (airport)
   e. Add a topic: movement-keyword
   f. Deploy
   g. Start simulation
   h. Show log + let it run a bit
   i. Back to Kafka for stats

Demo 2 checklist

1. Create consumer and Connect to the Salesforce Platform

   a. Create app
   b. Attach Kafka
   c. Add Config Var = TOPIC = movement-keyword
   d. Add Postgres
   e. Add Heroku Connect
   f. Log into Salesforce Developer Org
   g. Show Schema builder and Custom Object
   h. Create app + upload logo = accounts, event, cases, dashboards, chatter
   i. Back to Heroku Connect create mapping
   j. Sync object + show consumer logs
   k. Run simulation + show consumer logs
   l. Show list view
   m. Switch to old org to show dashboard

THANK YOU