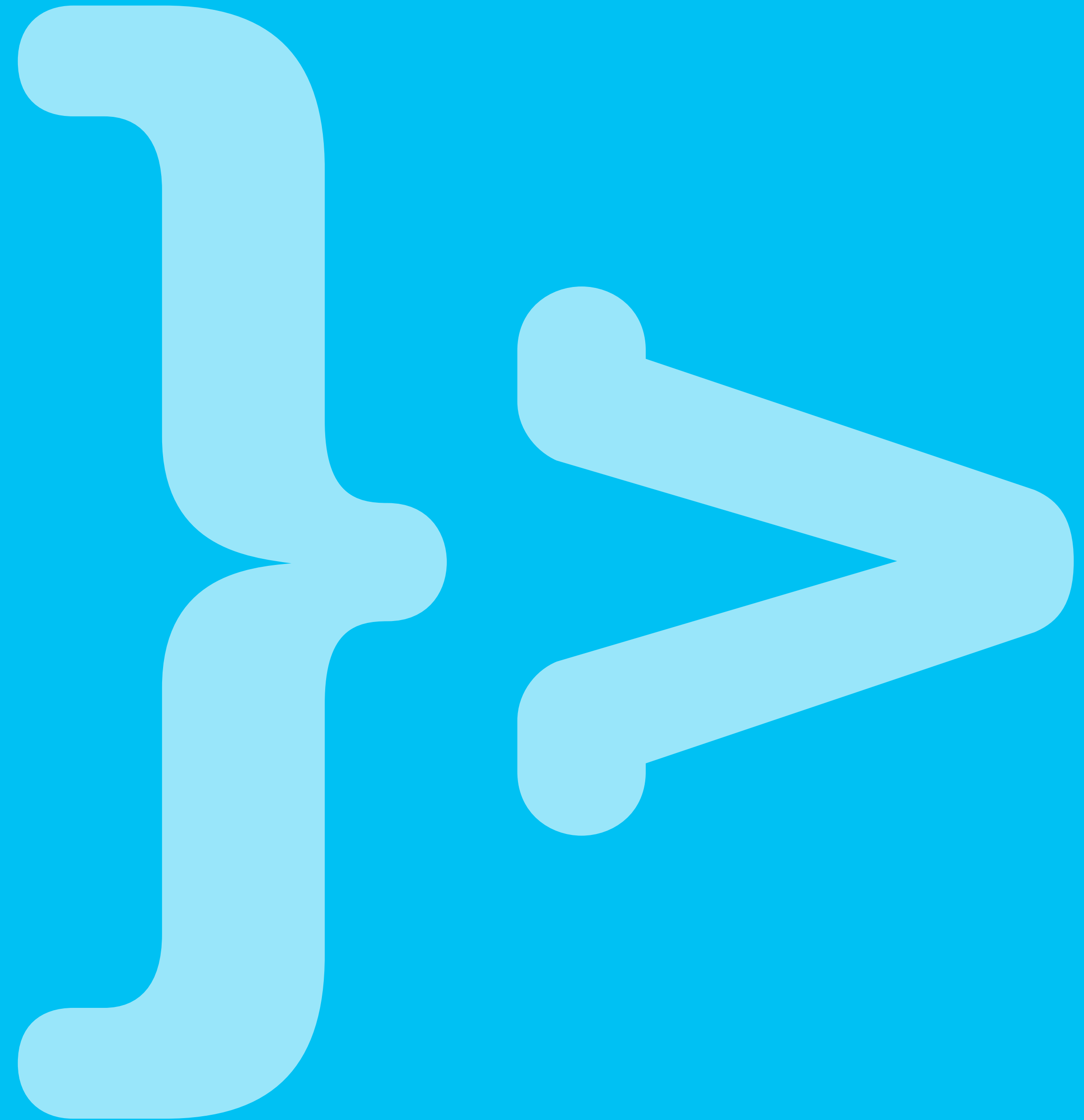


Visualize Your IoT in the Cloud (with Flying Drones)

JavaOne2015 [CON2087]

Mr. Ville Ingman
Vaadin Advocate
Vaadin Ltd

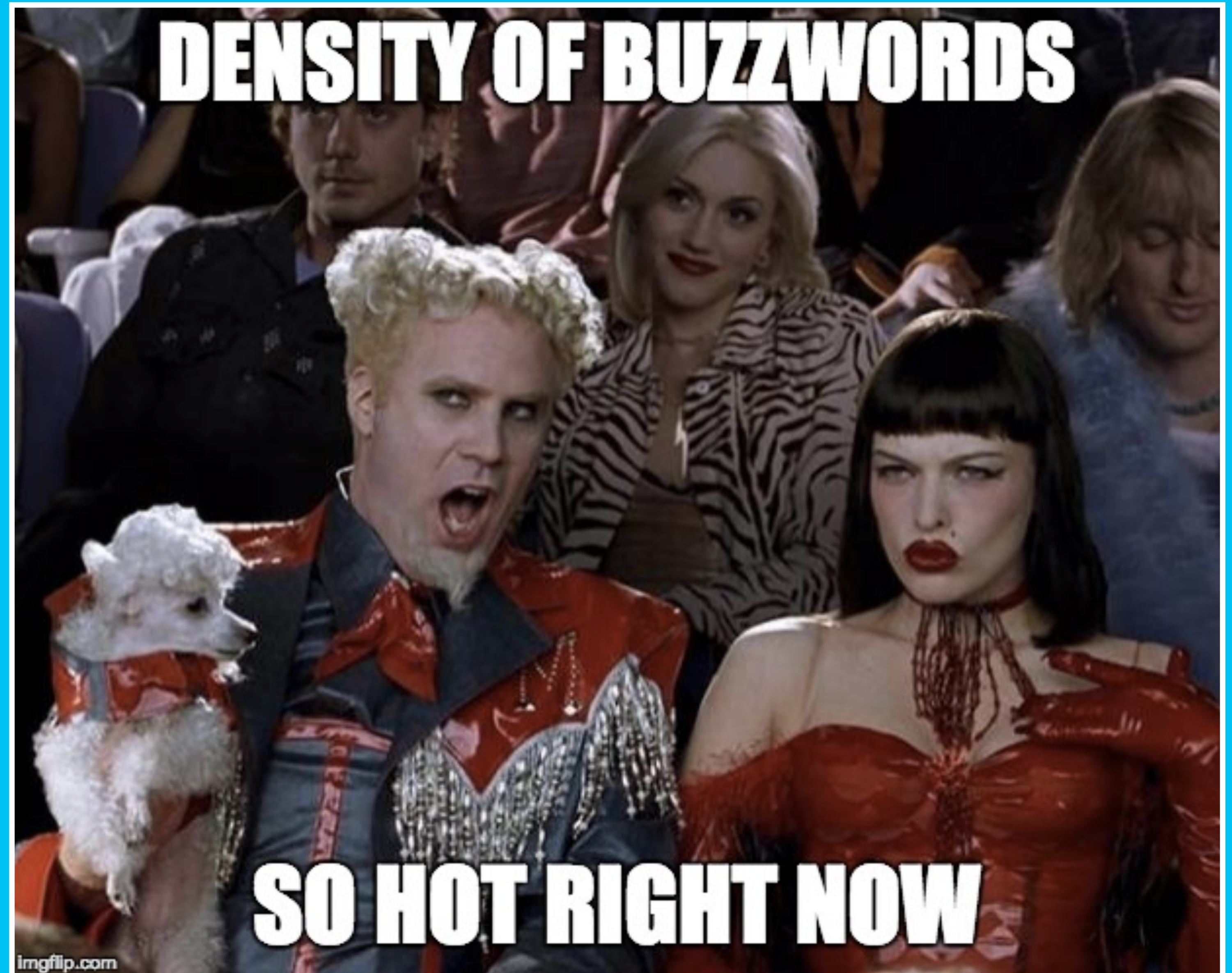


#villeingman

#vaadin

#javaone

IoT
Real-time data
Cloud
Web
Visualization
Drones
Mobile
Twitter



**Real-time
data with
Drones**



**Dashboard UIs
with Vaadin**

**Real-time
data with
Drones**

Real-Time data



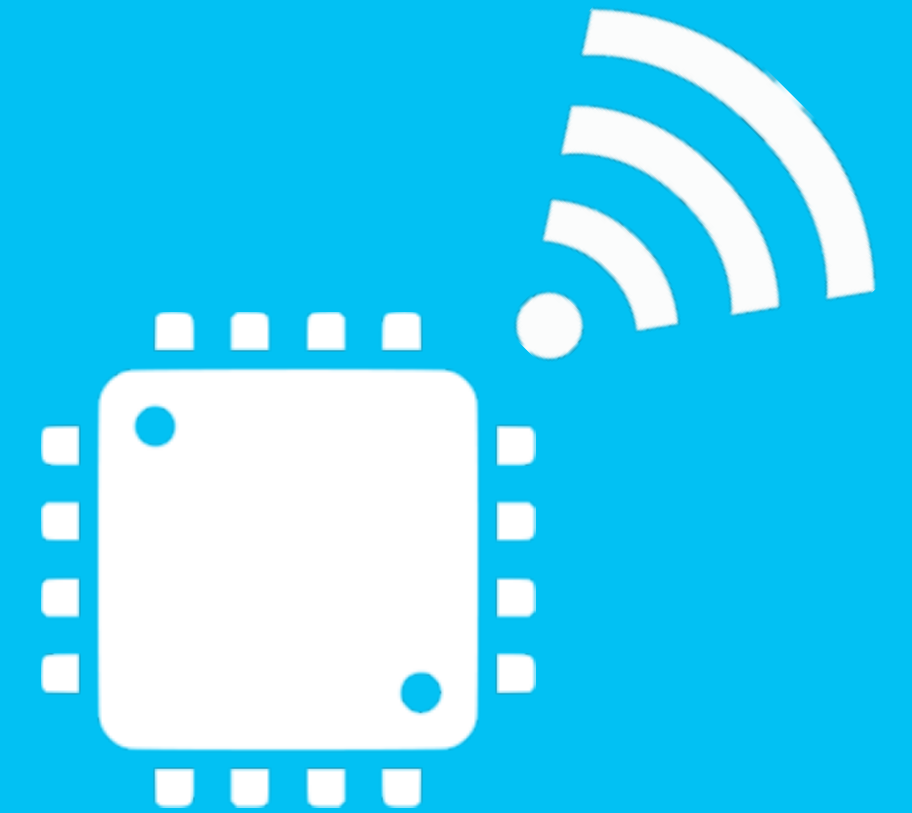
Factory
Process



Network
Monitoring



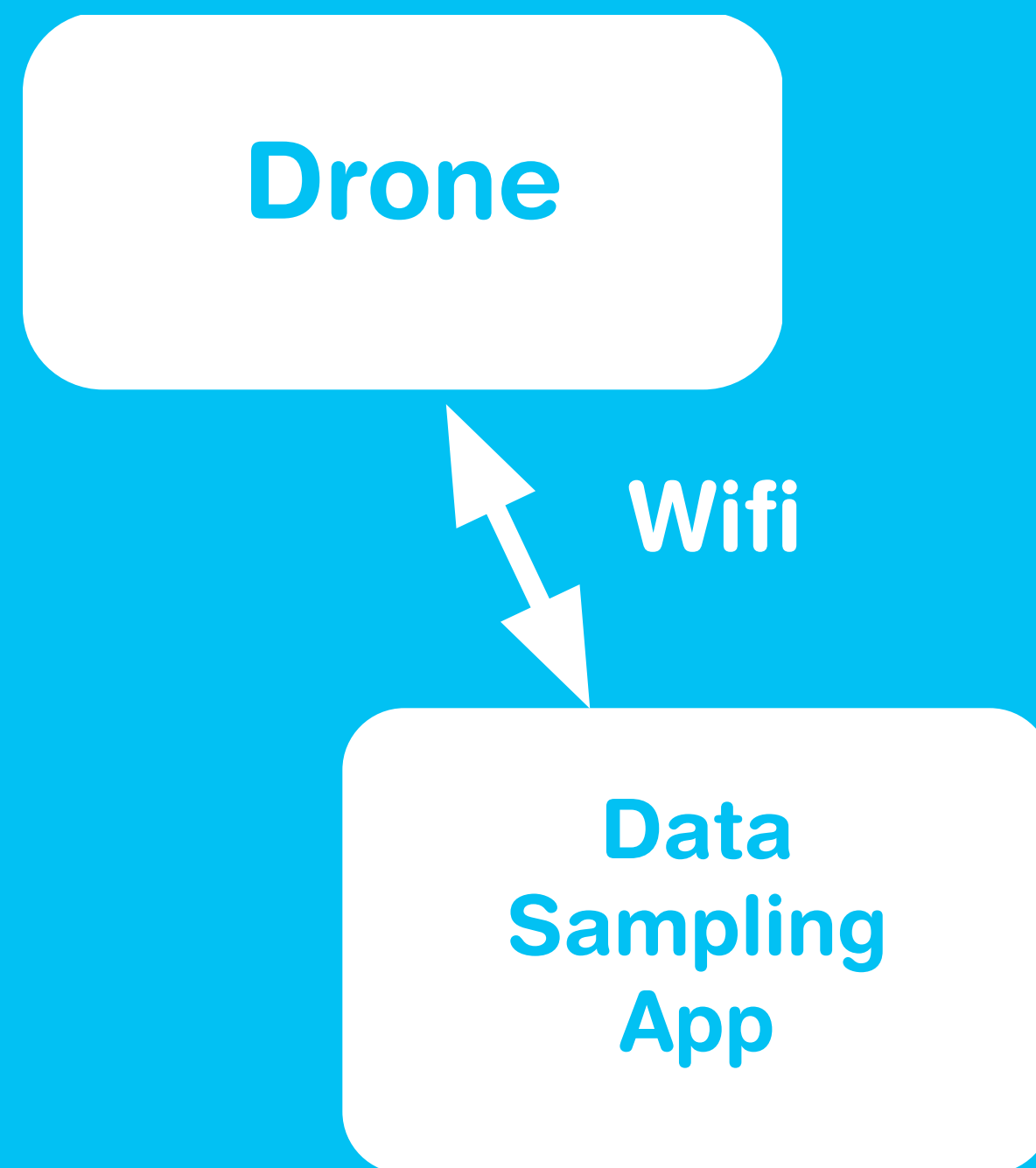
Fraud
Detection



Internet of
Things



Building Blocks



YADrone



Demo:

Raw Data



Real-time data with Drones





Internet of Things

IBM

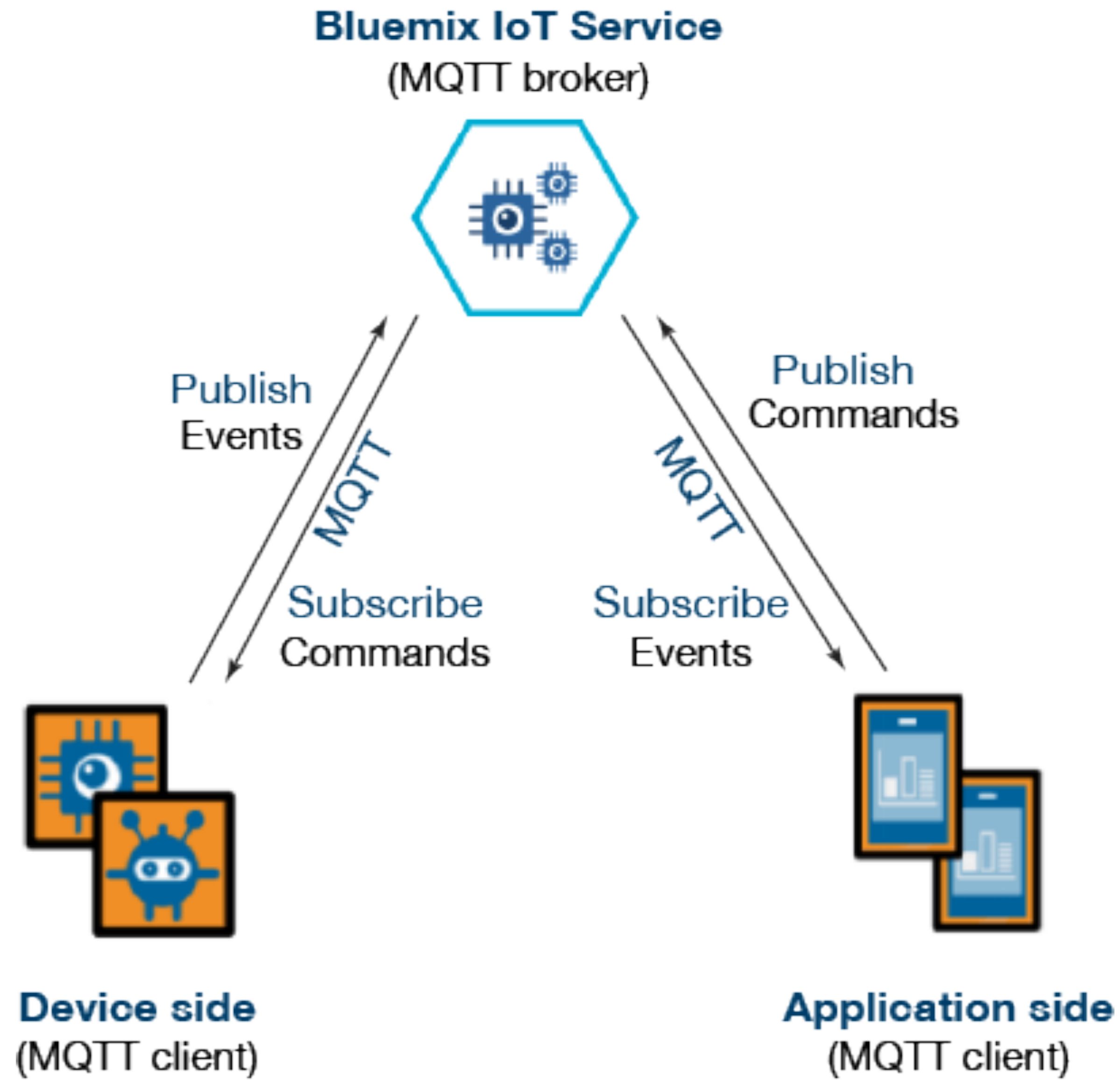
The IBM Internet of Things service lets your apps communicate with and consume data collected by your connected devices, sensors, and gateways. Our recipes make it super easy to get devices connected to our Internet of Things cloud. Your apps can then use our real-time and REST APIs to communicate with your devices and consume the data you've set them up to collect.

- **Connect your devices securely to the cloud**

Before your apps can get to work, you need to get your devices connected up! We have a set of verified instructions, or 'recipes', for connecting devices, sensors and gateways from a variety of partners and individuals.

- **Build an app that talks to your devices**

Communications between your devices and the cloud happen via the open, lightweight MQTT protocol. For example you might have a sensor that collects and sends humidity readings every minute. Our REST and real-time APIs allow you to quickly pull that device data into your apps for further analysis.



Catalog - IBM Bluemix

https://console.ng.bluemix.net/catalog/

IBM Bluemix

DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY

ORG: ville@vaadin.com

Type here to search

Starters

- ☐ Boilerplates

Compute

- ☐ Runtimes
- ☐ Containers

Services

- ☐ Watson
- ☐ Mobile
- ☐ DevOps
- ☐ Web and Application
- ☐ Integration
- ☐ Data and Analytics
- ☐ Security
- ☐ Storage
- ☐ Business Analytics
- ☐ Internet of Things

Provider

- ☐ IBM
- ☐ Third Party

Storage

Reliable, cost-effective cloud data storage

Object Storage
IBM BETA

Business Analytics

Powerful analytics made easy

Embeddable Reporting
IBM BETA

Cupenya Insights
Third Party

Internet of Things

A new generation of applications

Internet of Things Foundation
IBM


IoT Real-Time Insights
IBM


flowthings.io
Third Party

?


Internet of Things Foundati x

← → ↺ 🏠 🔒 https://console.ng.bluemix.net/catalog/internet-of-things-foundation/ ☆ ☰

 **IBM Bluemix**

DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY 

← Back to All Categories



Internet of Things Foundation

IBM

PUBLISH DATE
10/26/2015

AUTHOR
IBM

TYPE
Service

LOCATION
US South

VIEW DOCS

The IBM Internet of Things service lets your apps communicate with and consume data collected by your connected devices, sensors, and gateways. Our recipes make it super easy to get devices connected to our Internet of Things cloud. Your apps can then use our real-time and REST APIs to communicate with your devices and consume the data you've set them up to collect.



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Communications between your devices and the cloud happen via the open, lightweight MQTT protocol. For example you might have a sensor that collects and sends humidity readings every minute. Our REST and real-time APIs allow you to quickly pull that device data into your apps for further analysis.

How it works



Add Service


Space:
dev

App:
Leave unbound

Service name:
Internet of Things Foundation-um

Selected Plan:
Free

CREATE



vaadin }>

Dashboard - IBM Bluemix

https://console.ng.bluemix.net/?direct=classic/#/resources/serviceGuid=f46e0be8-e257-44a1-a525-7dfa1c9749c5&orgGuid=2db11df0-39e9-4cd4...

IBM Bluemix

DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY

Back to Dashboard...

Internet of Things Foundation-um

DOCS

Internet of Things Foundation-...


Manage >

Plan

APPS USING SERVICE

Hi! Welcome to the Internet of Things Foundation

Take a look at the steps below to get you going with your Internet of Things app




Connect your devices

Use our [recipes](#) to find out how to add your devices. We work with partners and have sample connection recipes for many devices.

Launch the Internet of Things Foundation dashboard and add your devices by clicking the 'Add Device' button under the 'Devices' tab.

Launch dashboard




Learn how to build your app

When you have added your devices, you can come back to Bluemix to start building your app using your real-time and historical device data.

Read the docs to find out how to make the most out of your app.


Go to docs




Learn how to extend your app

Use other Bluemix services to extend your app to start creating a great Internet of Things app.


Here are some of the services you could use:




Twilio
Third Party




Cloudant NoSQL
DB
IBM




Dash DB
IBM




Geospatial
Analytics
IBM



Time Series
Database
IBM



IBM Analytics
Hadoop
IBM



Dashboard - IBM Bluemix

IBM Internet of Things Four

← → ↻ 🏠

https://kwxdxh.internetofthings.ibmcloud.com/dashboard/#/overview

☆ ☰

IBM Internet of Things Foundation

Quickstart

Service Status

Documentation

Blog

ville@vaadin.com ▾

⚙️ Bluemix Service Instance

Bluemix Free (go to Bluemix service)

OVERVIEW

DEVICES

ACCESS

USAGE

🔧

Devices

Usage ⓘ

DEVICES

1

Devices registered

dronedatalaptop

1

🟢 All devices are OK

+ Add a device

1

THIS MONTH

0.07

Average devices connected

🐝

PREVIOUS MONTH

0.07

Average devices connected

THIS MONTH

1 MB

Data traffic consumed

🌐

PREVIOUS MONTH

2 MB

Data traffic consumed

THIS MONTH

vaadin }>

Dashboard - IBM Bluemix

IBM Internet of Things Four

← → ↻ 🏠

https://kwxdxh.internetofthings.ibmcloud.com/dashboard/#/devices/browse

☆ ☰

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Quickstart

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⚙️

Bluemix Service Instance

Bluemix Free (go to Bluemix service)

OVERVIEW

DEVICES

ACCESS

USAGE

Browse

Diagnose

Action

Device Types

☐

Device ID ▾

Device Type ▾

Date Added

Location ▾

☰ 🔍 🗑️

Results 1-1 of 1

☐

⚠️

vaadin-villeingman-1

dronedatalaptop

Feb 9, 2015 5:25:54 AM

Add Device

Dashboard - IBM Bluemix

IBM Internet of Things Four

← → ↺ 🏠

https://kwxdxh.internetofthings.ibmcloud.com/dashboard/#/access/apikeys

☆ ☰

IBM Internet of Things Foundation

Quickstart

Service Status

Documentation

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⚙️ Bluemix Service Instance

Bluemix Free (go to Bluemix service)

OVERVIEW

DEVICES

ACCESS

USAGE

Members

Guests

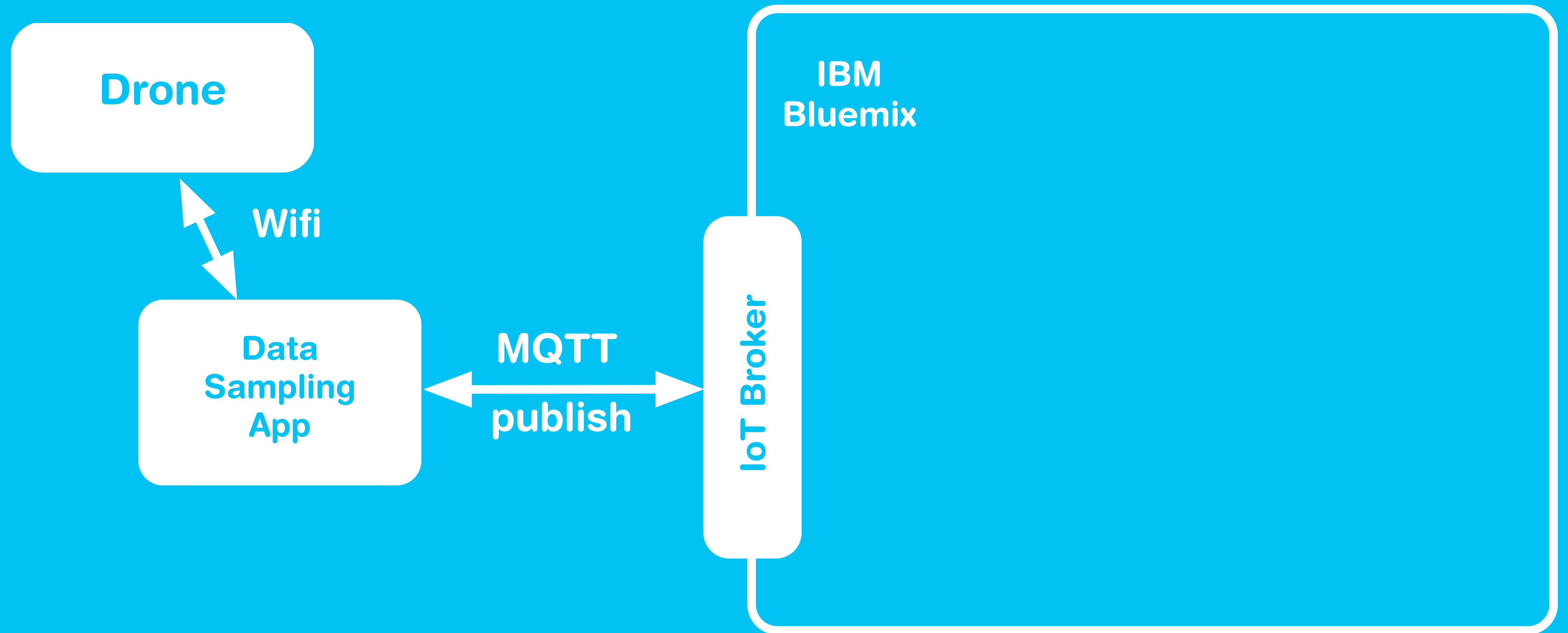
API Keys

Bluemix Apps

<input type="checkbox"/>	Key	Comment	<div><div>i</div><div>🗑️</div></div>
<input type="checkbox"/>	<div><div>🔑</div><div>a-kwxdxh-afewwtma3e</div></div>	-	<div><div>✎</div><div>🗑️</div></div>
<input type="checkbox"/>	<div><div>🔑</div><div>a-kwxdxh-dfax18im0n</div></div>	-	<div><div>✎</div><div>🗑️</div></div>
<input type="checkbox"/>	<div><div>🔑</div><div>a-kwxdxh-fnfttutbtq</div></div>	-	<div><div>✎</div><div>🗑️</div></div>
<input type="checkbox"/>	<div><div>🔑</div><div>a-kwxdxh-qi0ey2hjmh</div></div>	Vaadin Drone Social	<div><div>✎</div><div>🗑️</div></div>
<input type="checkbox"/>	<div><div>🔑</div><div>a-kwxdxh-tucdbcphwr</div></div>	Go visualizer	<div><div>✎</div><div>🗑️</div></div>
<input type="checkbox"/>	<div><div>🔑</div><div>a-kwxdxh-wpqelspxbx</div></div>	Vaadin Drone	<div><div>✎</div><div>🗑️</div></div>

Generate API Key

Building Blocks



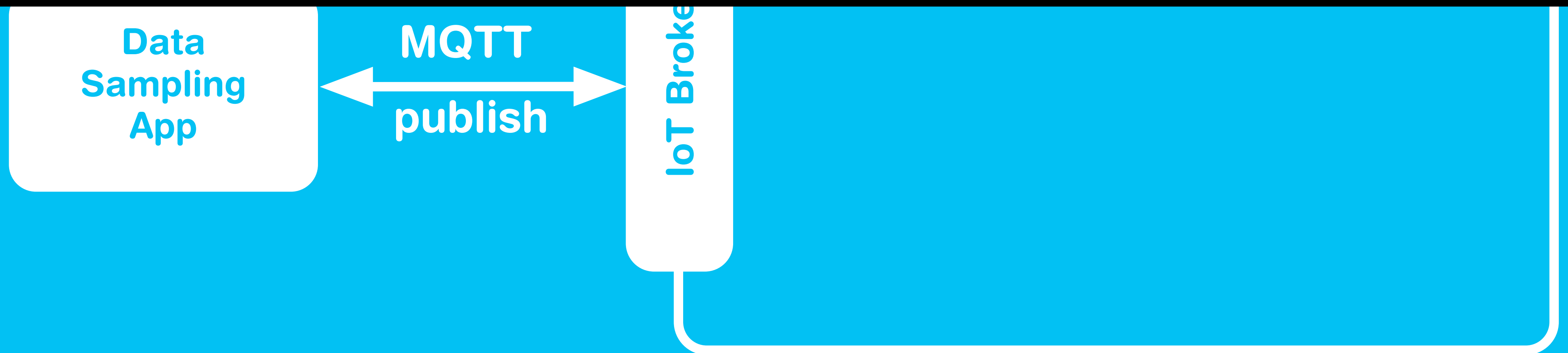


The Paho project provides open-source client implementations of open and standard messaging protocols aimed at new, existing, and emerging applications for Machine-to-Machine (M2M) and Internet of Things (IoT).

Building Blocks

```
MqttClient sampleClient = new MqttClient("tcp://iot.eclipse.org:1883", "SomeClientID");
MqttConnectOptions connOpts = new MqttConnectOptions();

sampleClient.connect(connOpts);
sampleClient.publish("some topic", new MqttMessage("my message".getBytes()));
```



Demo:

Bluemix IoT

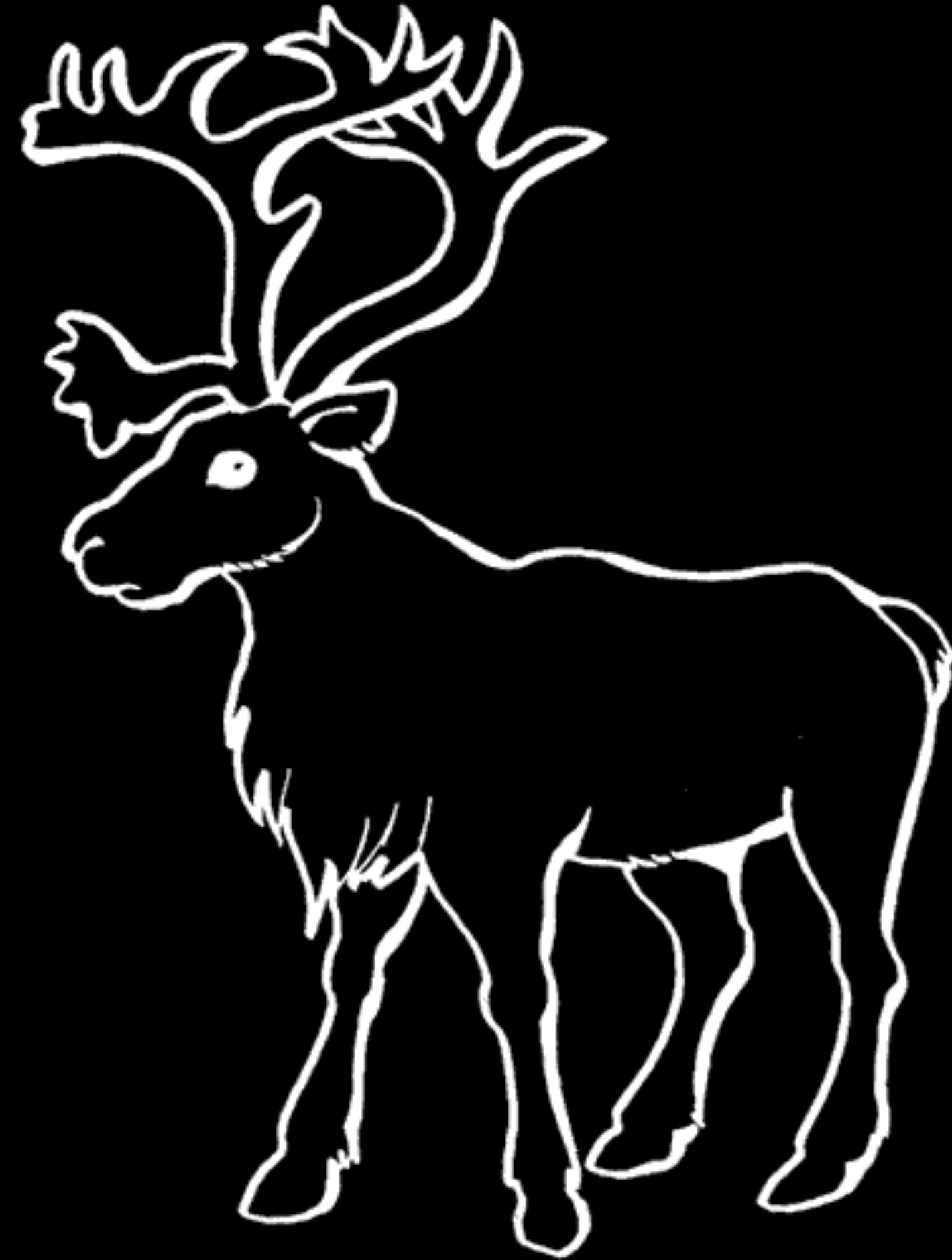


**Real-time
data with
Drones**



**Dashboard UIs
with Vaadin**

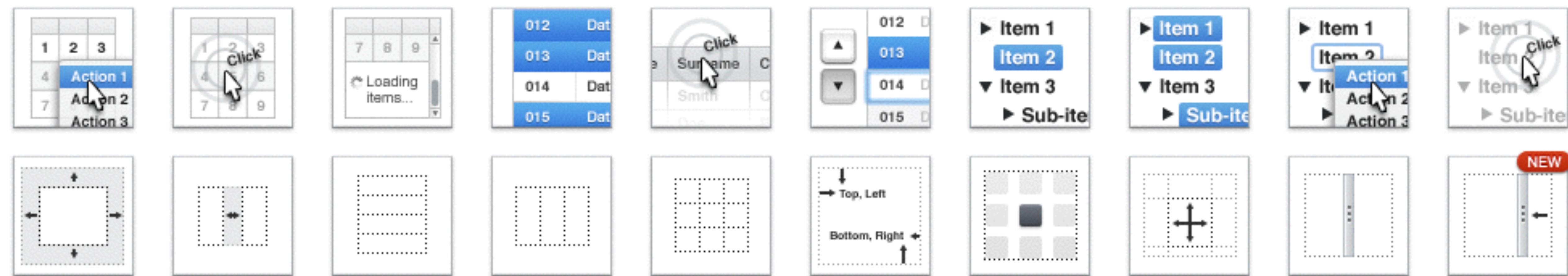
vaadin }>



Open Source Java API for web applications



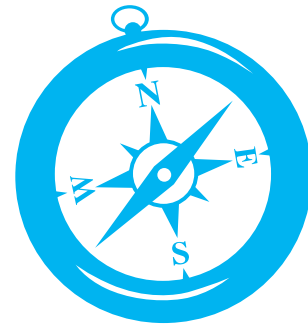
Building blocks



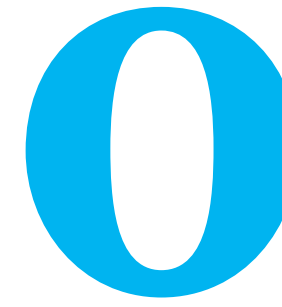
Desktop browsers



IE 6/7



Safari



Opera



IE 8



IE 9



IE 10+



Chrome



Firefox

Tablets

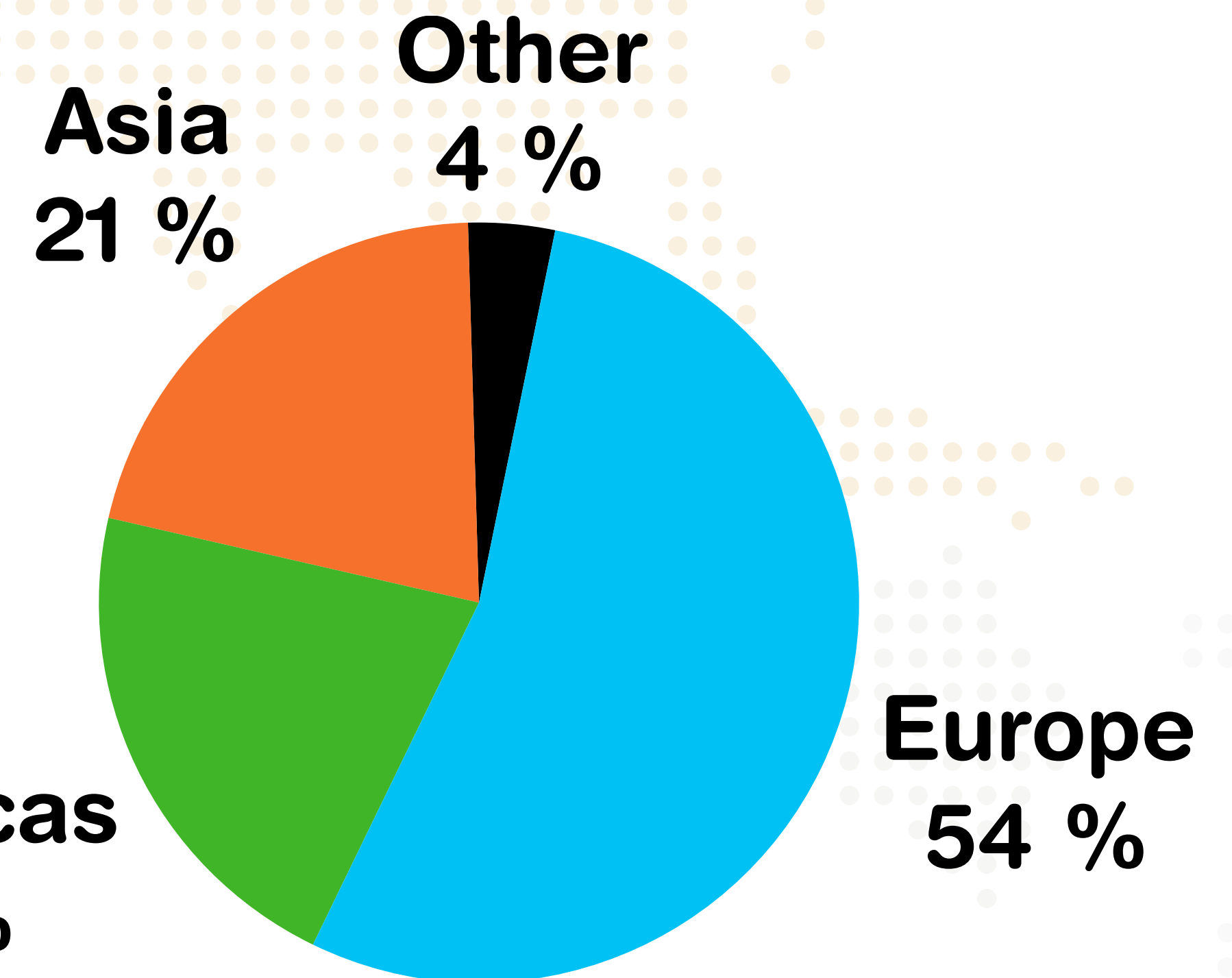
iPad
Android
Windows

Phones

iPhone
Android
WP

Vaadin Ecosystem

- > **130.000** developers from
- > **10.000** cities
- > **500** add-ons in the marketplace



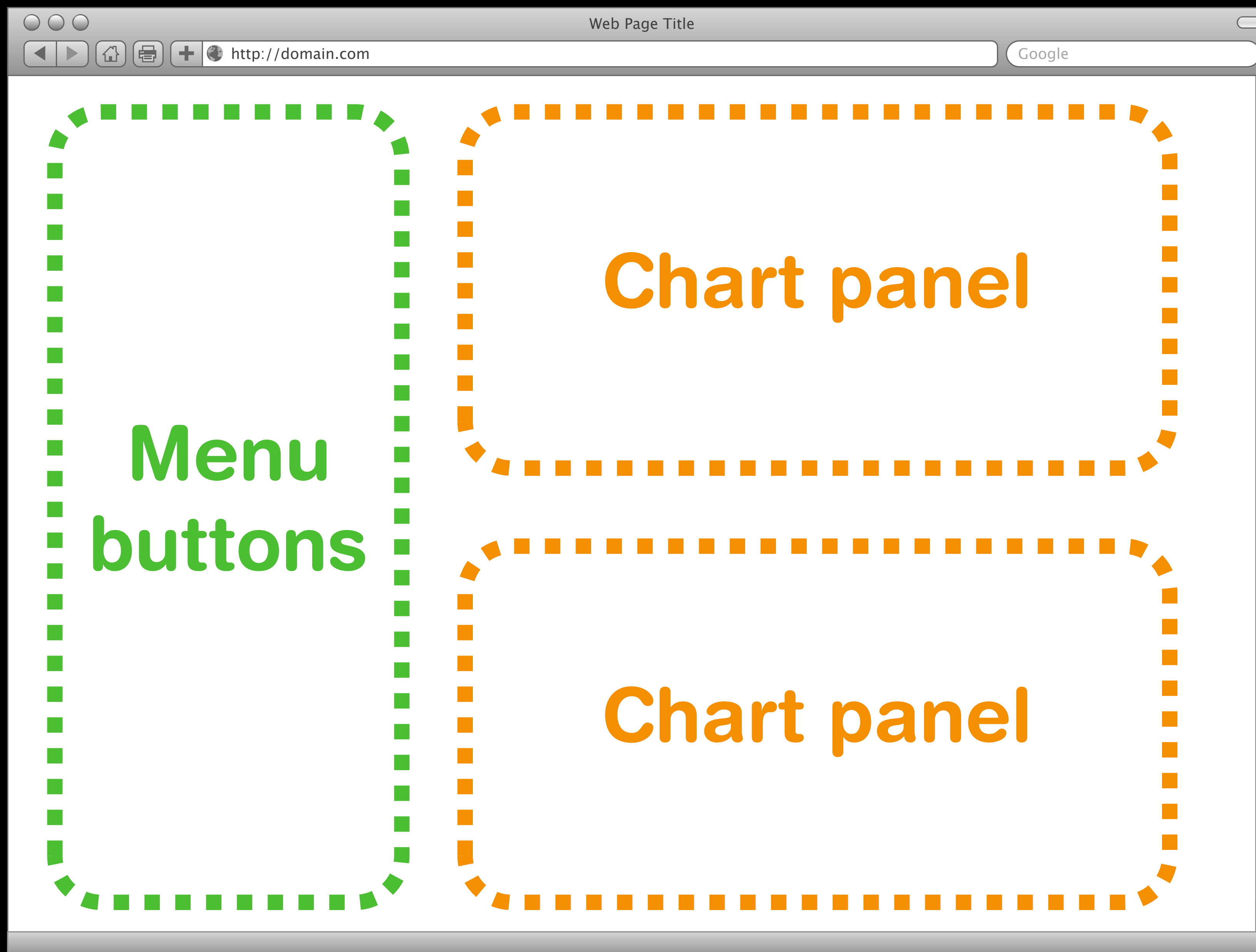
Apache-licensed

40%

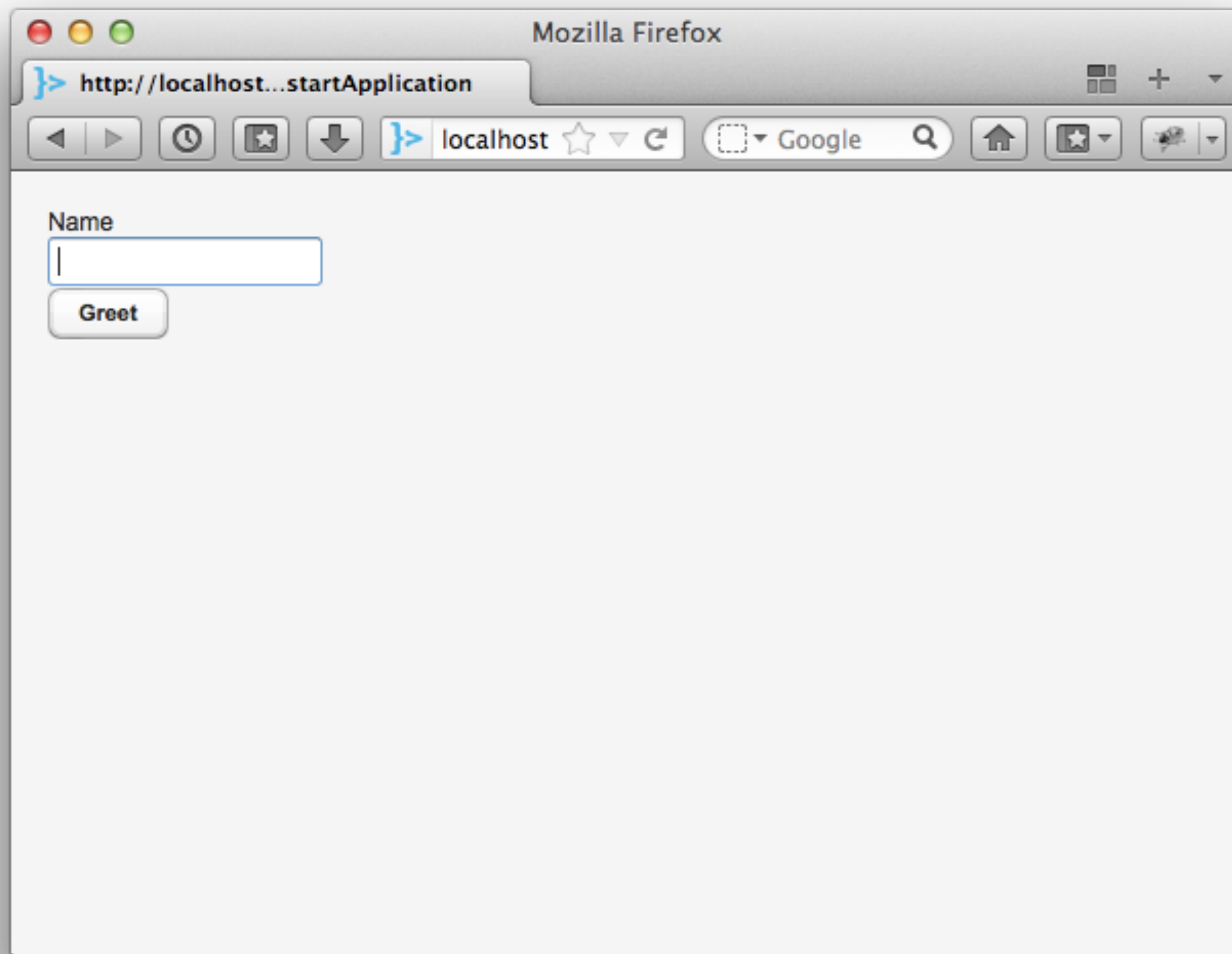
of Fortune 100

**Typical use-cases are
ERPs, Financial and Intranet/Extranet
services i.e. Business Applications**

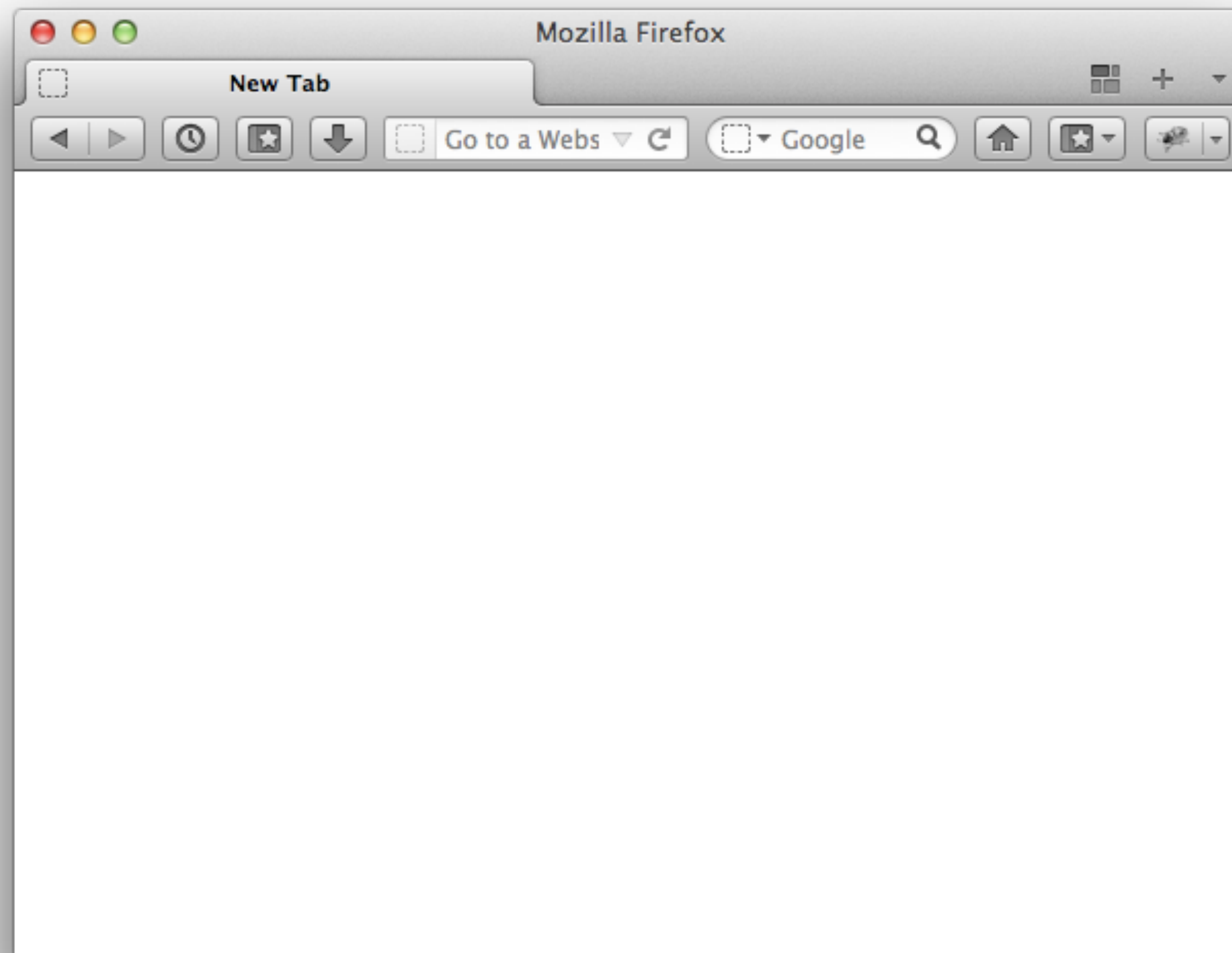
Developer + Rich
Productivity + UX



How does it work?

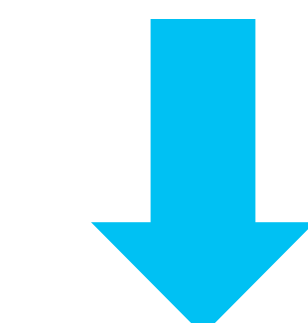


```
TextField name = new TextField("Name");  
Button greetButton = new Button("Greet");  
  
layout.addComponent(name, greetButton);  
  
greetButton.addClickListener(  
    e -> Notification.show("Hi " + name.getValue()));
```

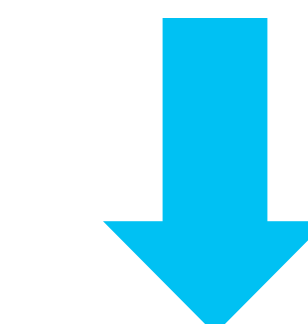
- 
- Initial HTML
 - CSS (theme)
 - Images
 - JavaScript

1.2M total



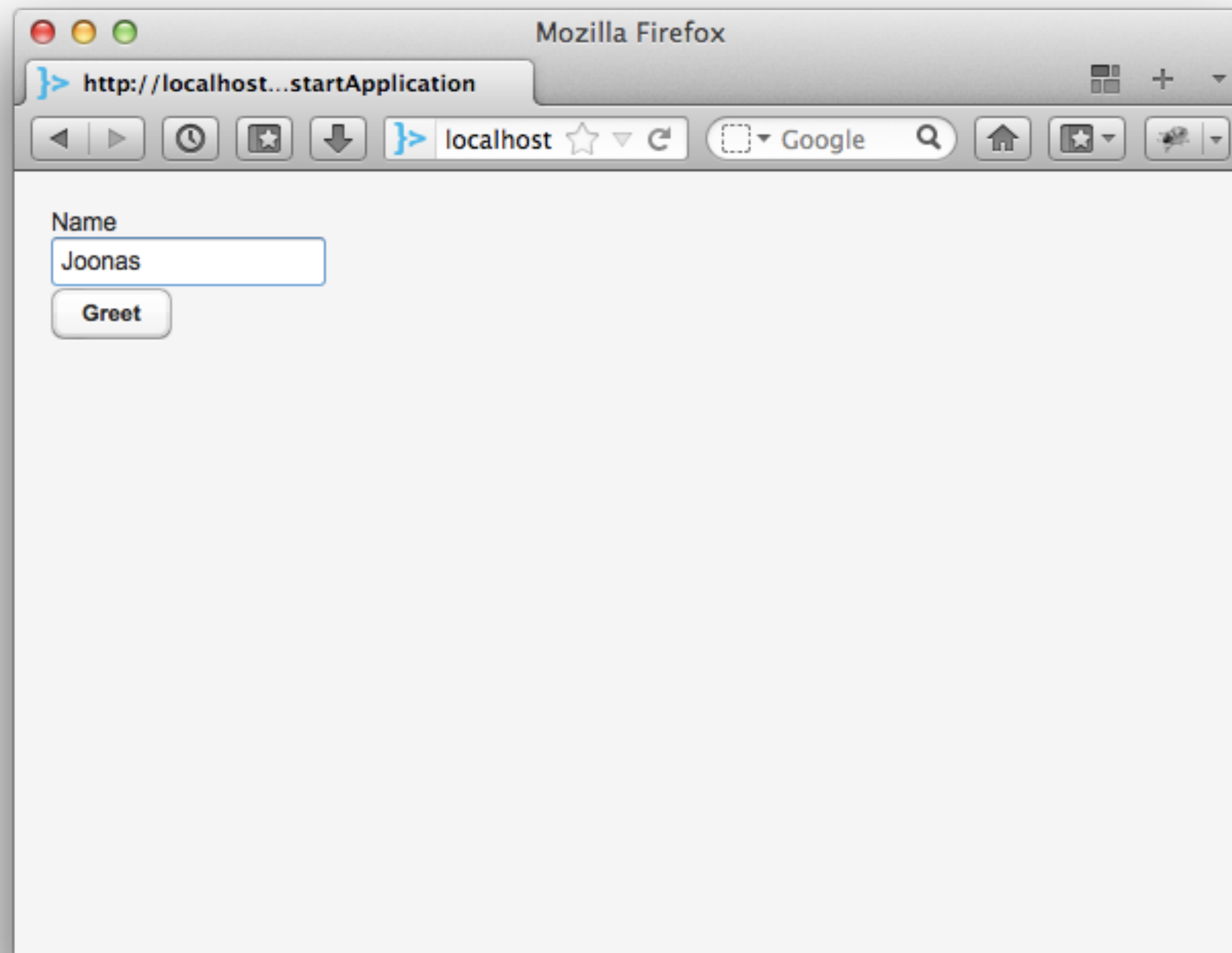
compress

307k



**reduced
widgetset**

135k



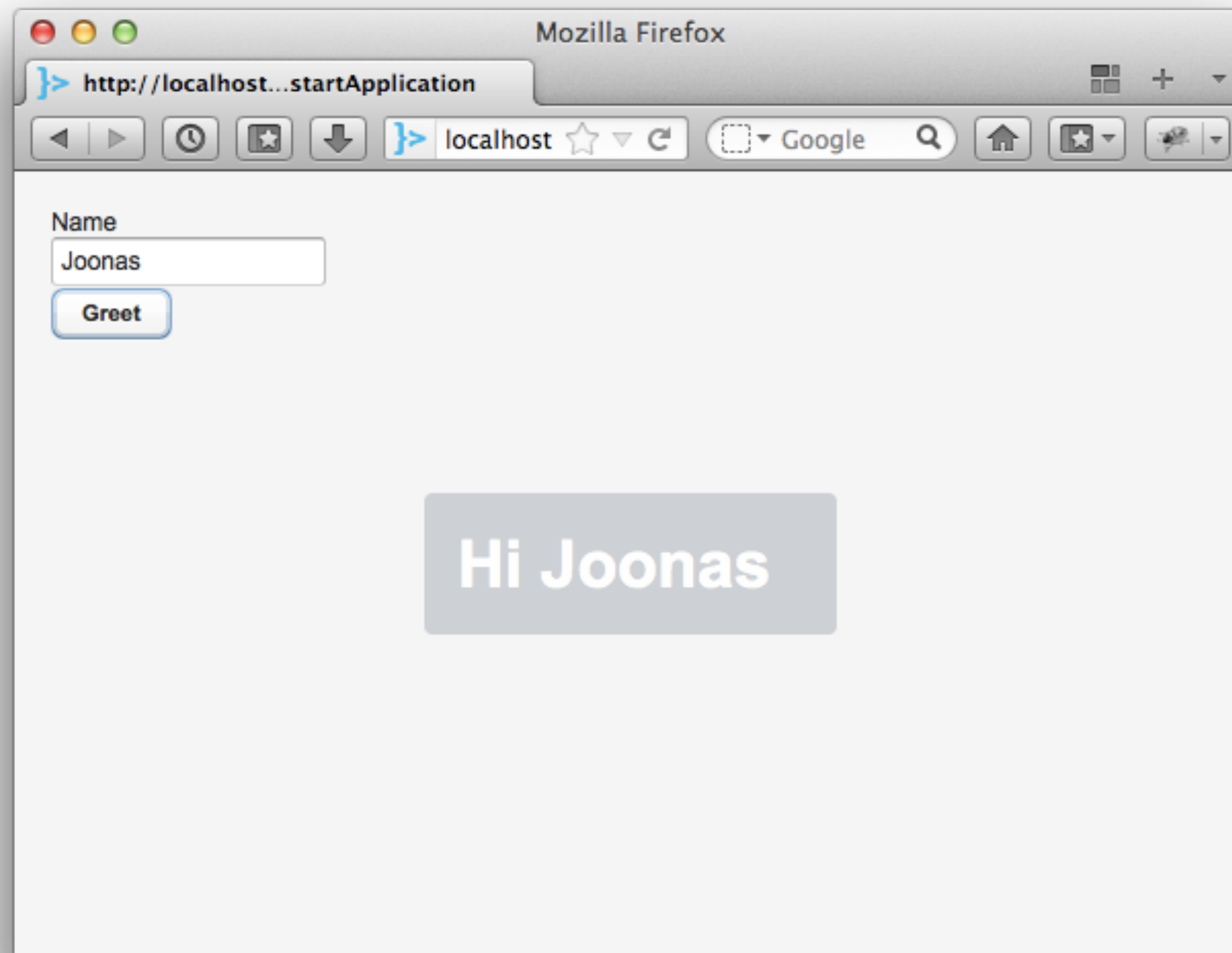
- name="Joonas"
- button clicked


261 bytes

```
TextField name = new TextField("Name");  
Button greetButton = new Button("Greet");
```

```
layout.addComponent(name, greetButton);
```

```
greetButton.addClickListener(  
    e -> Notification.show("Hi " + name.getValue()));
```

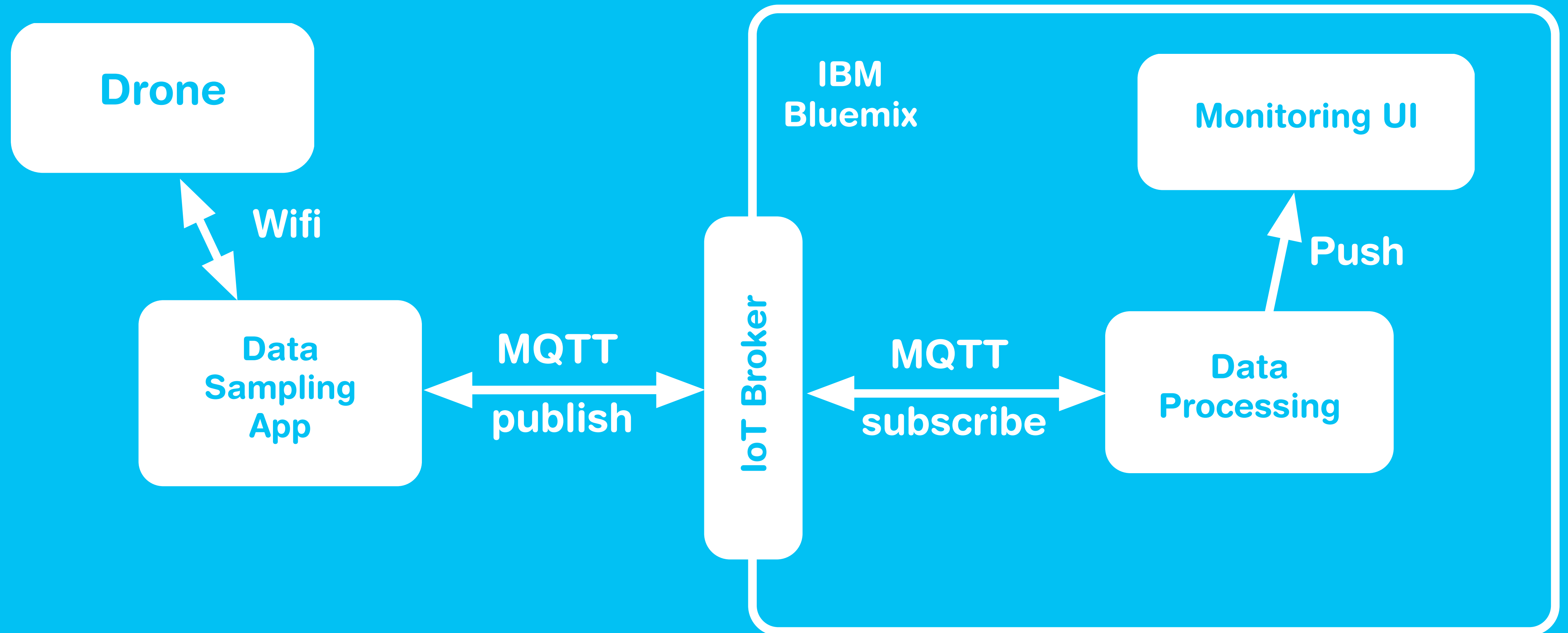
- 
- name="Joonas"
 - button clicked

261 bytes

- 
- Add notification

267 bytes

Building Blocks



Building Blocks

```
... implements MqttCallback  
  
sampleClient.setCallback(this);  
sampleClient.subscribe("some topic to listen");  
  
public void messageArrived(String topic, MqttMessage message) { ... }
```


Demo:

Data Visualization



So how about 2-way data?

bit.ly/vaadindrone-tweet

Blink and get a tweet!

Your Twitter

@your-twitter-handle

Blink

vaadin }> thinking of U and I

vaadin.com/challenge

October 1st - November 30th 2015

Vaadin Challenge

by IBM

Learn to use modern development tools such as Cloud Foundry, Maven, Vaadin, Bluemix and compete for some awesome prizes!

Take the Vaadin Challenge 2015

The
vaadin }>
Challenge



1st prize
Apple Watch
42mm Space Black (~\$563)



2nd prize
Apple iPad Air 2
Wi-Fi 16GB (~\$470)



3rd prize
GoPro Hero+
Action Camera with LCD (~\$300)