

# Sydney Kotlin Meetup

Building an End to End Secure, Scalable IoT  
Serverless Solution

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<https://github.com/gloveboxes/iot-ttn-kotlin-azure-functions>



# Agenda

- Solution Overview
- Azure Java/Kotlin Support
- Serverless with Functions
- Real-time communications with web apps and SignalR
- Azure Storage and Static Websites





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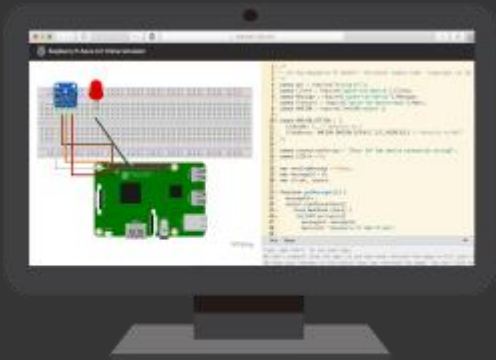
Azure regions in

140

countries

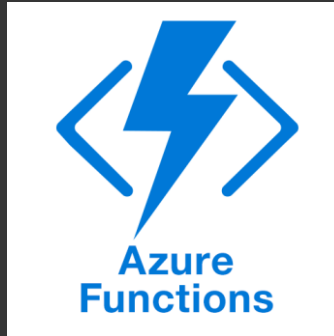
# What we will cover

Simulated  
Raspberry Pi  
(Azure IoT Hub)

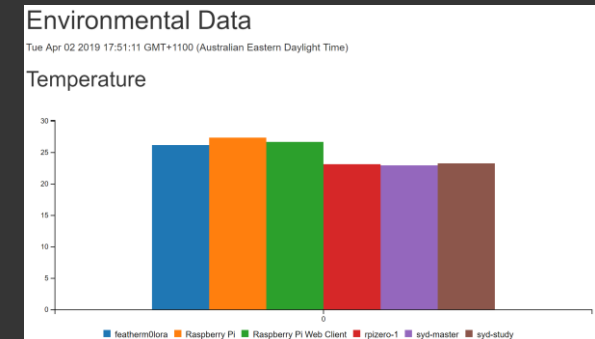


Raspberry Pi Simulator

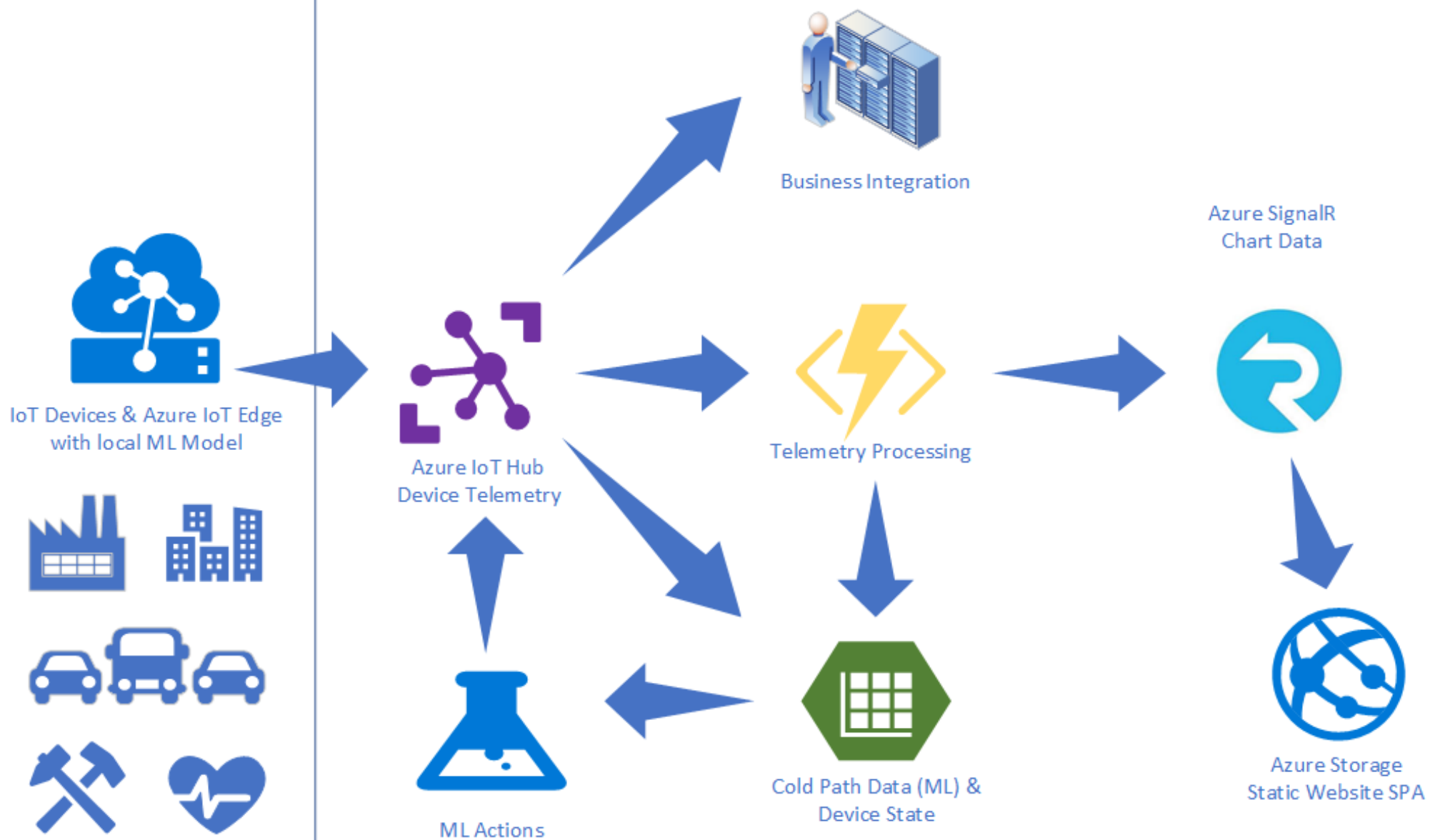
Serverless &  
Kotlin Azure  
Functions



Serverless Websites  
(Azure Storage Static  
Websites)



# Integration IoT and Business



# 1<sup>st</sup> Class Support for Java on Azure Services

Native and idiomatic support for Java applications.



## Azure Functions

- Java SE 8
- Java SDK
- Plugins for Maven, Eclipse, and IntelliJ
- VS Code Extension (manage; local/remote debug)



## Azure Service Fabric

- Java API
- Java SDK
- Maven Dependencies and Plugins
- Eclipse Plugins and VS Code Extensions



## Azure App Service

- Java SE 8
- Tomcat 8.5, 9.0
- Maven Plugin
- Eclipse & IntelliJ Plugins
- VS Code Extension (Manage)



## Azure Cosmos DB

- Java SDK for synchronous connections
- Java SDK for asynchronous (reactive) style
- Support for MongoDB/Cassandra APIs
- Open Source SDKs



## Azure Application Insights

- Java SDK for user-defined instrumentation
- Java Agents for auto instrumentation
- Eclipse Plugin
- Open Source SDKs



## Azure SDKs for Java

- Management APIs (CRUD Azure services)
- REST-to-Java APIs (idiomatic low-level REST)
- Fluent APIs (idiomatic service features)
- **Over 50+ services covered**
- Open Source SDKs

# Serverless with Azure Functions



# What is Serverless?



No  
infrastructure  
**headaches**



**Scales** on  
demand



Very **cheap**  
to run



# Functions as a Service (FaaS)

- Functions as a Service
  - Single Responsibility, Short Lived, Stateless, Event Driven & Scalable
- Azure Functions (Implementation of FaaS)
  - Great Local Developer Experience
  - Hosting Flexible
    - Consumption Plan, App Service Plan, Premium, and Container
  - Consumption plan
    - Free grant of 1 million requests and 400,000 GBs per month
  - Open Source <https://github.com/Azure/Azure-Functions>



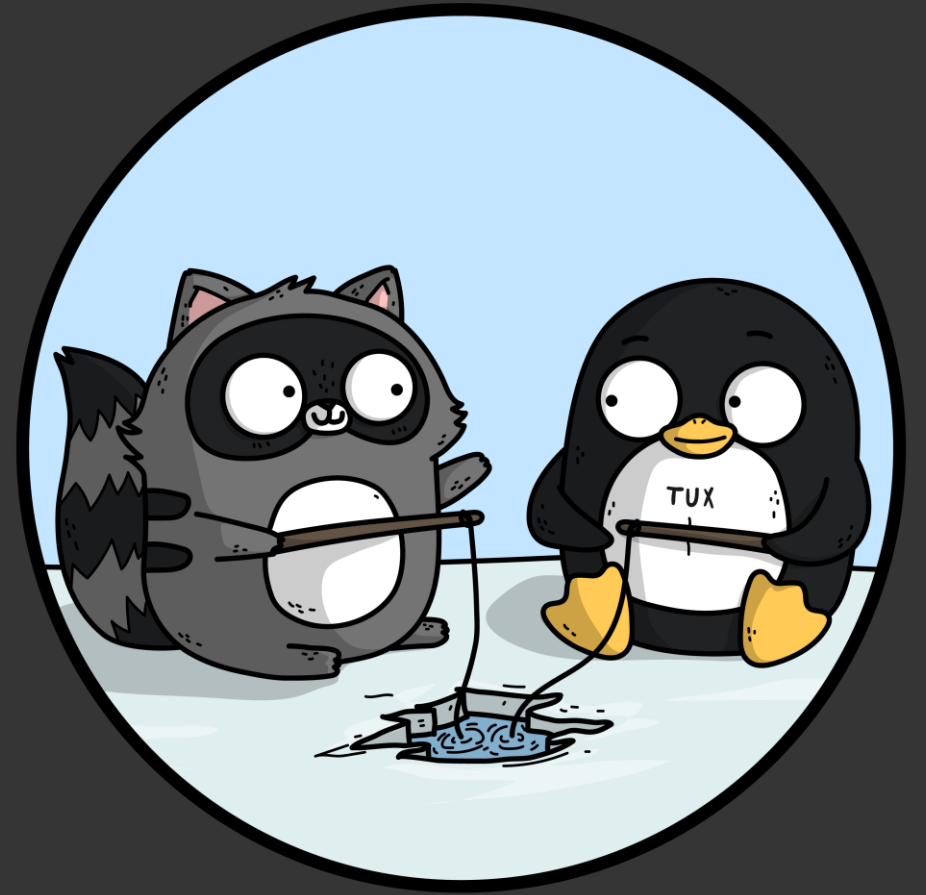
# DEMO



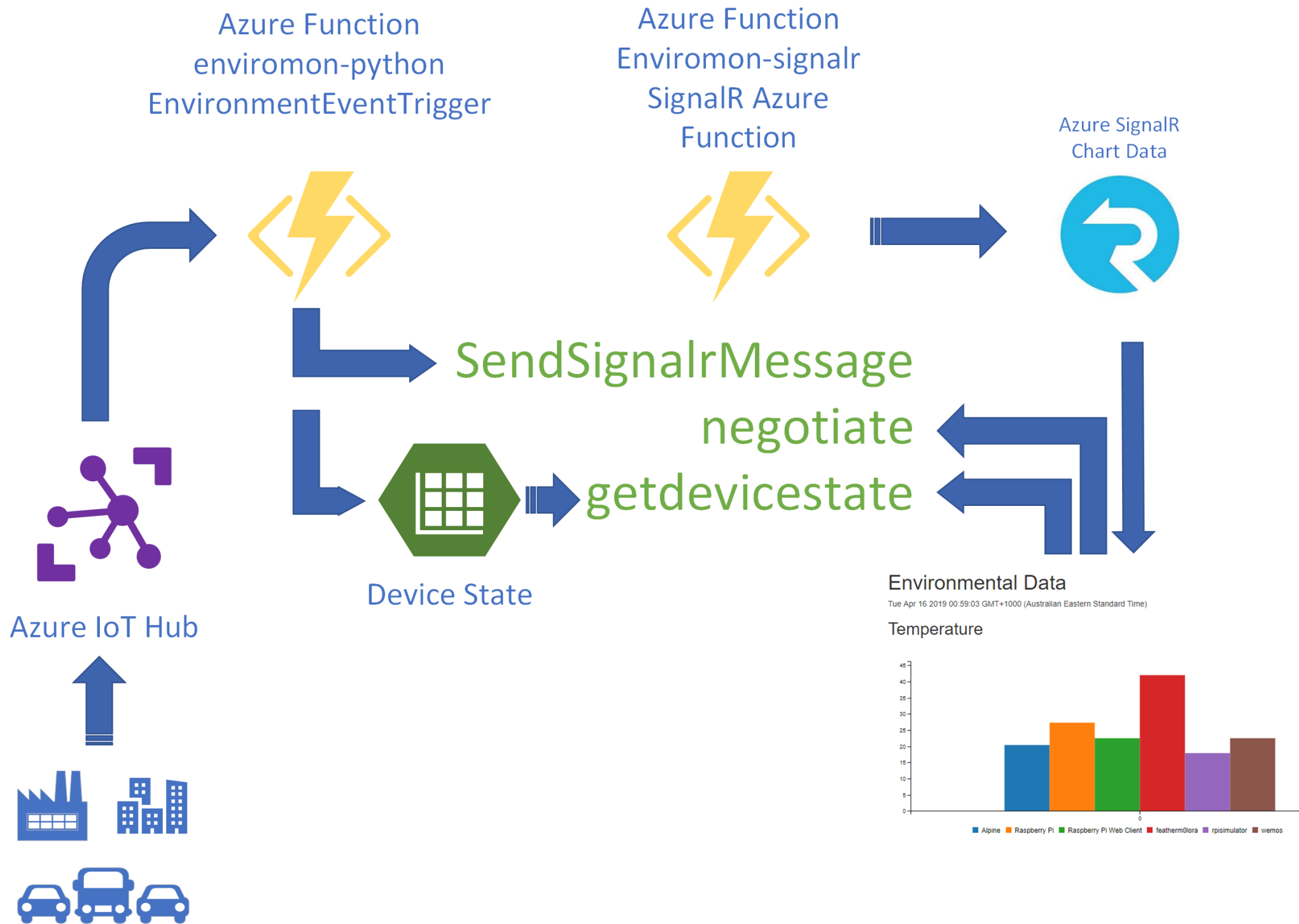
# Demo

- Creating an Azure Function with IntelliJ
  - Adding Maven Archetype
  - Azure-Function:Add
  - Convert to Kotlin
  - Azure-Function:Run
    - -DenableDebug
  - [Raspberry Pi Simulator](#)

# Serverless Web Pages & Azure SignalR



# SignalR in Actions



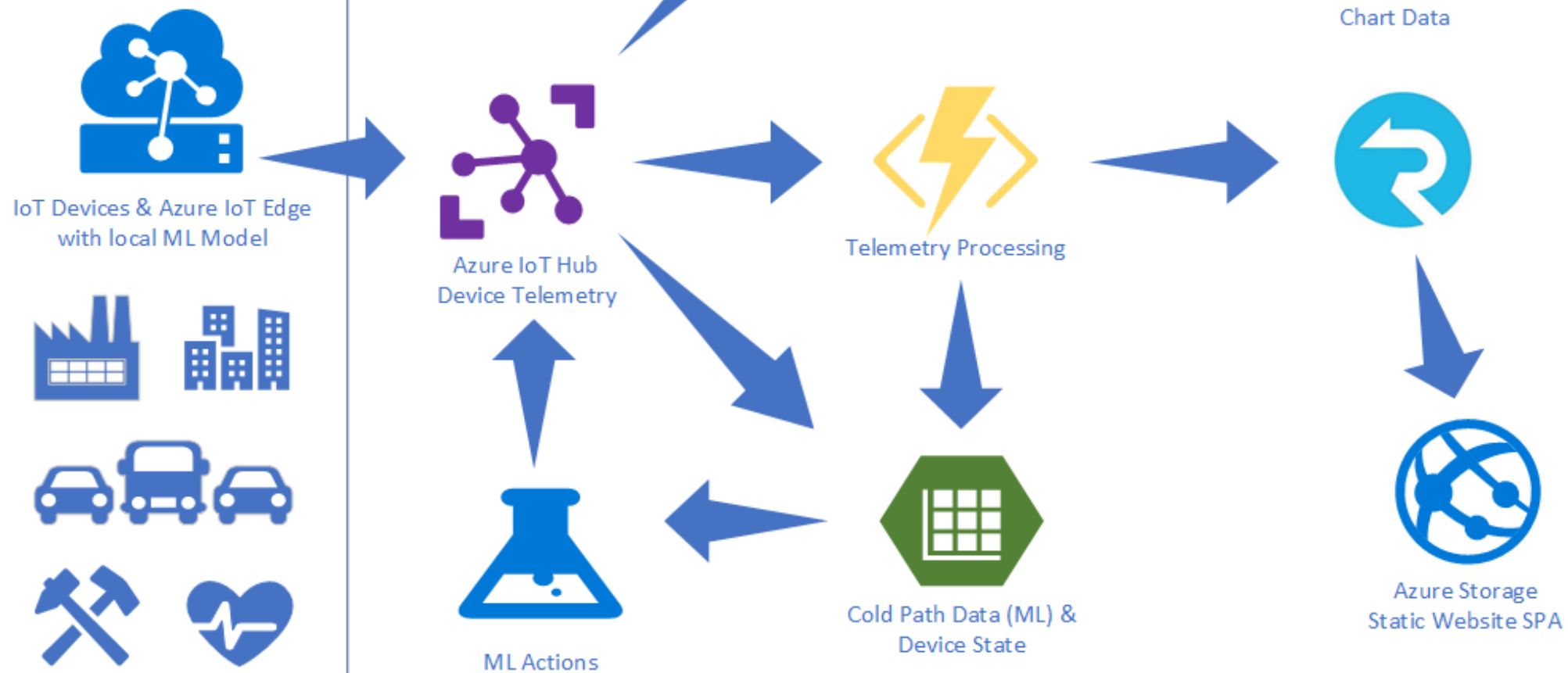
# DEMO



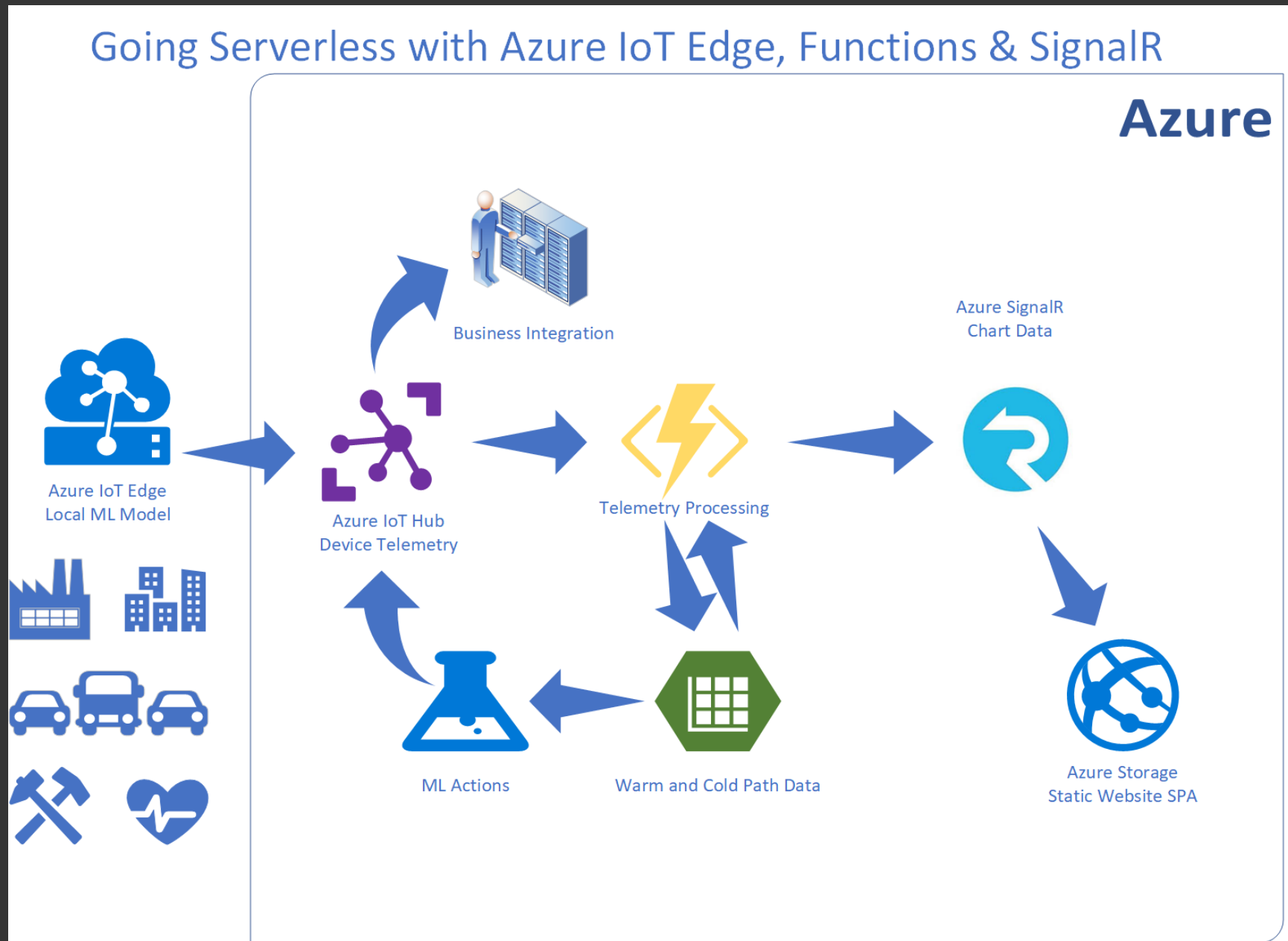
# Demo

- SignalR Trigger
- Azure Storage Static Websites and Single Page Apps

# Session Summary







# Resources

- [Create your first Azure function with Java and IntelliJ](#)
- [Create your first function with Java and Maven](#)
- [Maven Archetype For Azure Functions](#)
- [Microsoft Azure Storage Client SDK](#)
- [Azure SignalR Service Documentation](#)
- [Static website hosting in Azure Storage](#)
- [Demoed Solution on GitHub](#) (gloveboxes)
- [Remote Debugging Java Azure Functions](#)



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