

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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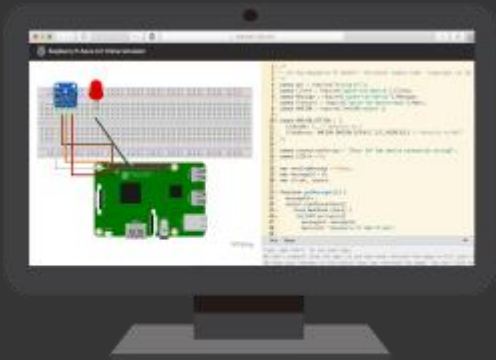
Azure regions in

140

countries

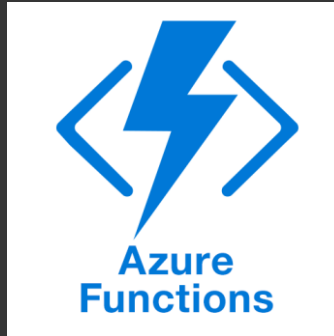
What we will cover

Simulated
Raspberry Pi
(Azure IoT Hub)

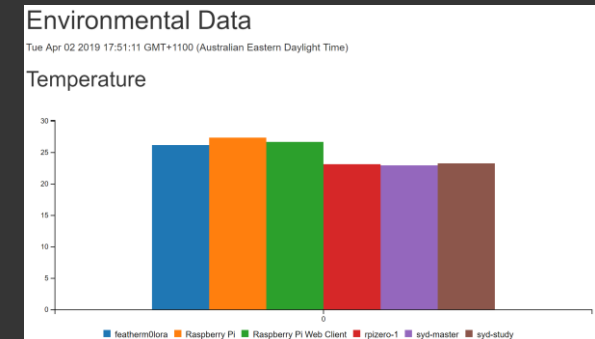


Raspberry Pi Simulator

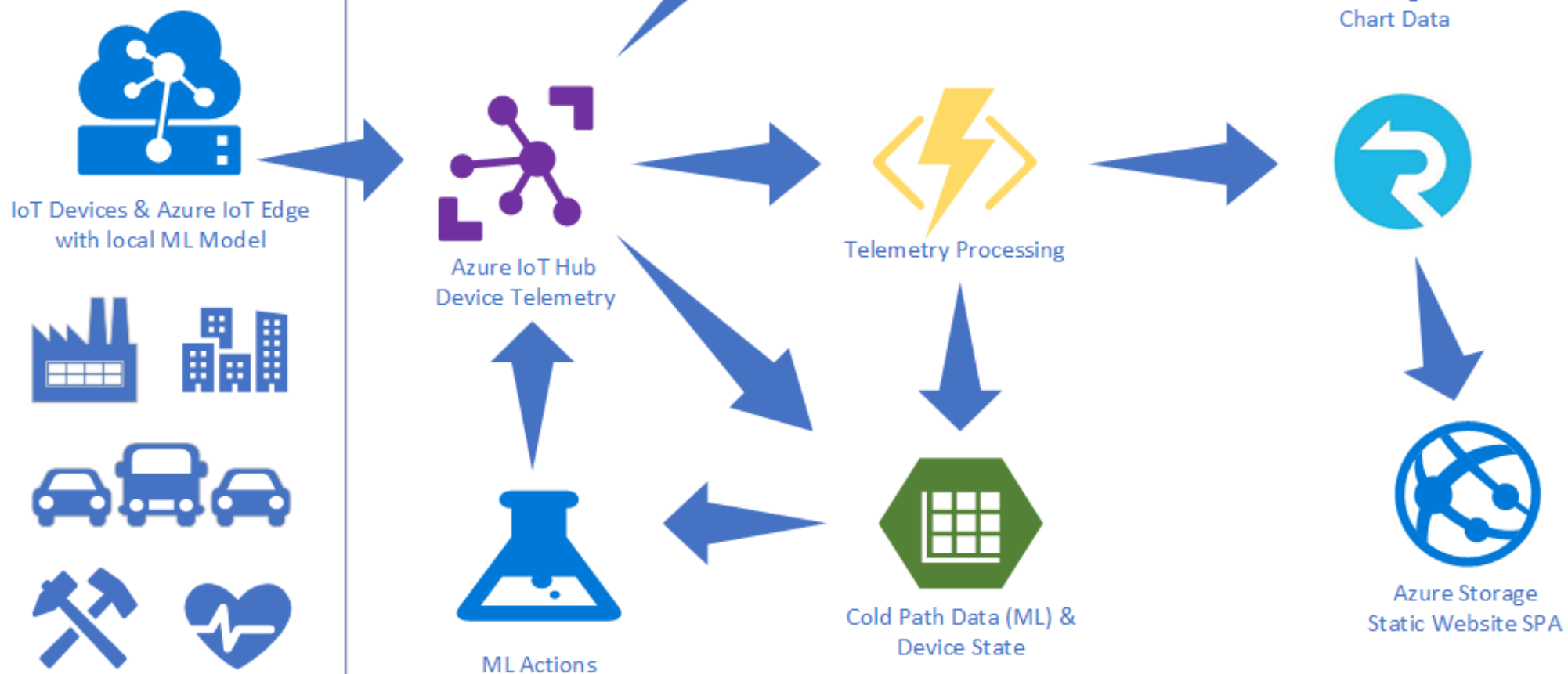
Serverless &
Kotlin Azure
Functions



Serverless Websites
(Azure Storage Static
Websites)



Integration IoT and Business



Azure

1st 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>



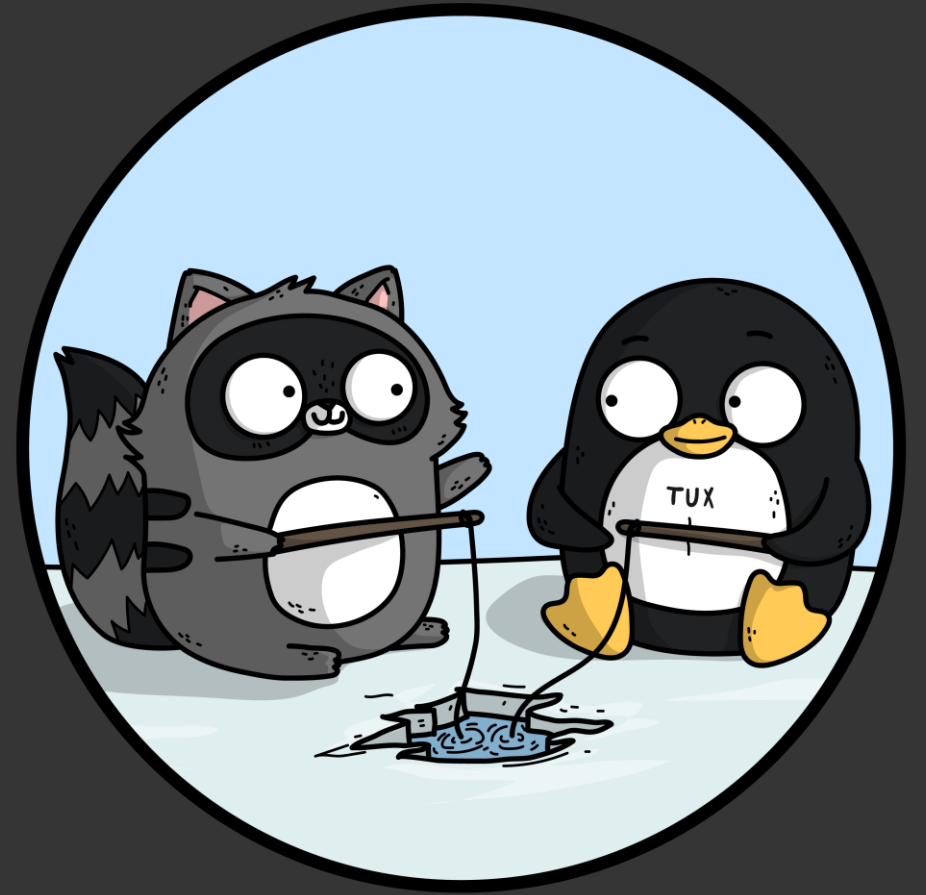
DEMO



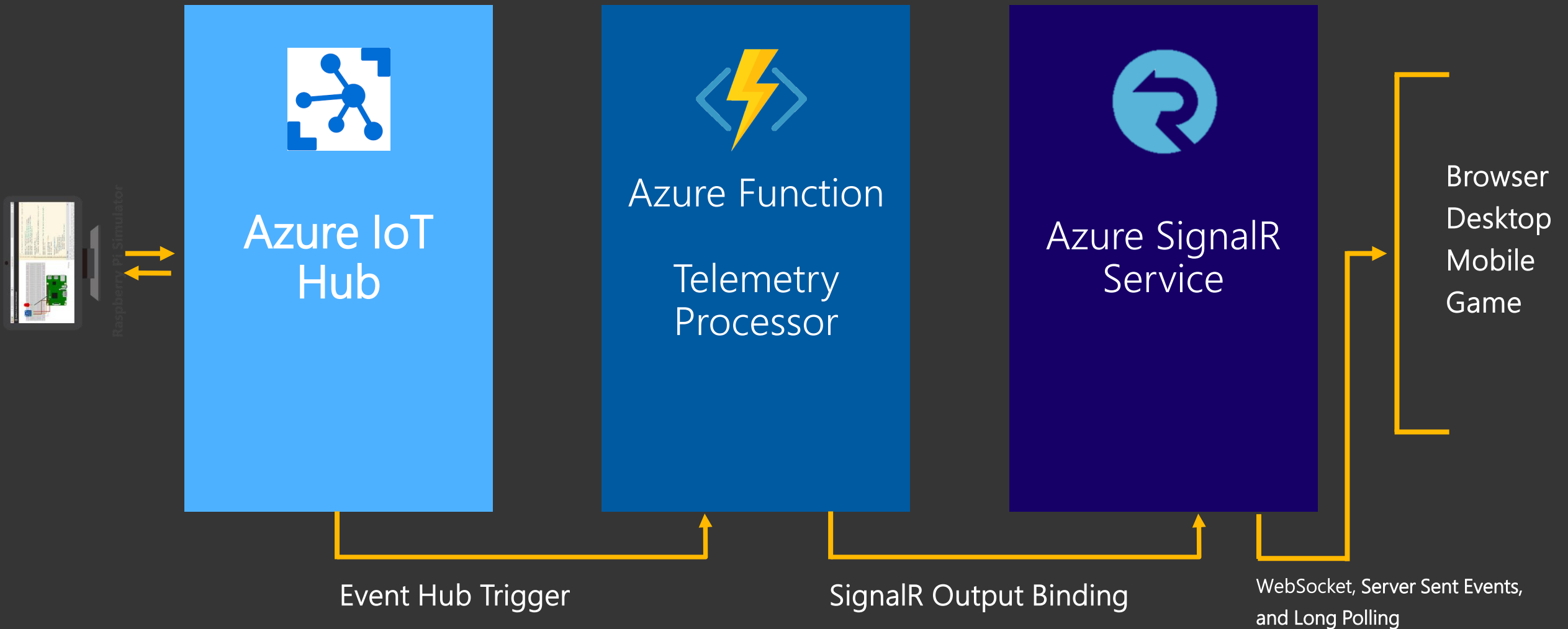
Demo

- 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 Action

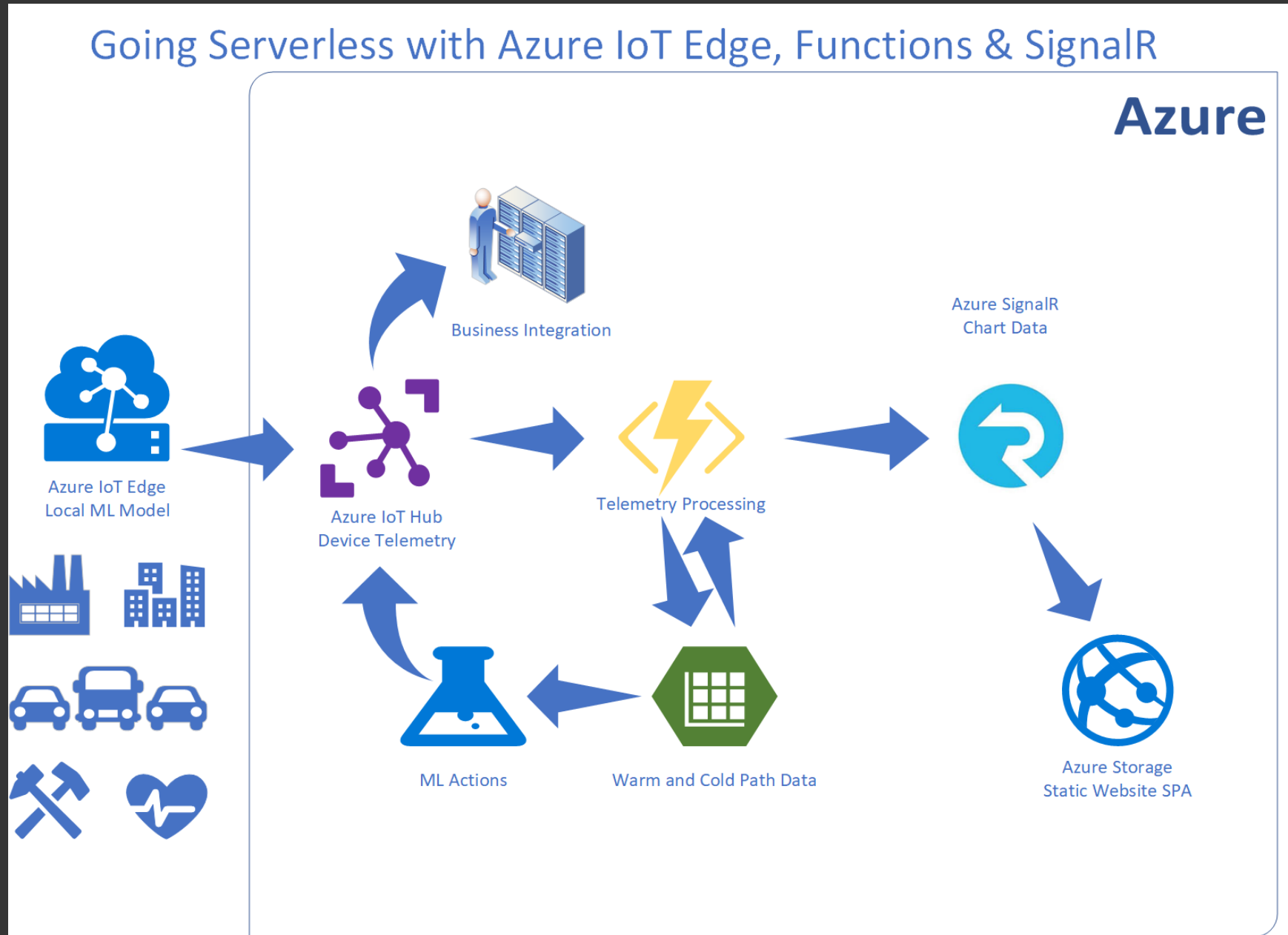


DEMO



Demo

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



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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