AZURE DAY

Empower every Azure Function to achieve more!!

Massimo Bonanni

Paranormal Trainer, with the head in the Cloud and all the REST in microservices!

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What is serverless?

Full abstraction of servers

Developers can just focus on their code—there are no distractions around server management, capacity planning, or availability.

Instant, event-driven scalability

Application components react to events and triggers in near real-time with virtually unlimited scalability; compute resources are used as needed.

Pay-per-use

Only pay for what you use: billing is typically calculated on the number of function calls, code execution time, and memory used.*

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What are Azure Functions?

Events

React to timers, HTTP, or events from your favorite Azure services, with more on the way

Code

Author functions in C#, F#, Node.JS, Java, and more

Outputs

Send results to an ever-growing collection of services

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Anatomy of an Azure Function

```
[FunctionName("CopyQueueMessage")]
public static void Run(
    [QueueTrigger("myqueue-items-source")] string myQueueItem,
    [Queue("myqueue-items-destination")] out string myQueueItemCopy,
    ILogger log)
{
    log.LogInformation($"CopyQueueMessage function processed: {myQueueItem}");
    myQueueItemCopy = myQueueItem;
}
```

Trigger Attribute

Binding Attribute

Trigger Payload

Binding Payload

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Extend triggers and bindings

All Triggers and Bindings (except for HTTPTrigger and Timer Trigger) are available as **external packages**.

The **Azure Functions SDK** is based on the **Azure WebJobs SDK** and inherits the extension SDK from it.

An extension is a class that implements the **IExtensionConfigProvider** interface.

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Azure Functions lifecycle phases

Startup

The runtime executes this phase only when the host starts.

The runtime registers the built-in binding (TimerTrigger and HttpTrigger).

You must register your custom extensions.

Runtime

The runtime executes this phase every time a function is triggered by an event.

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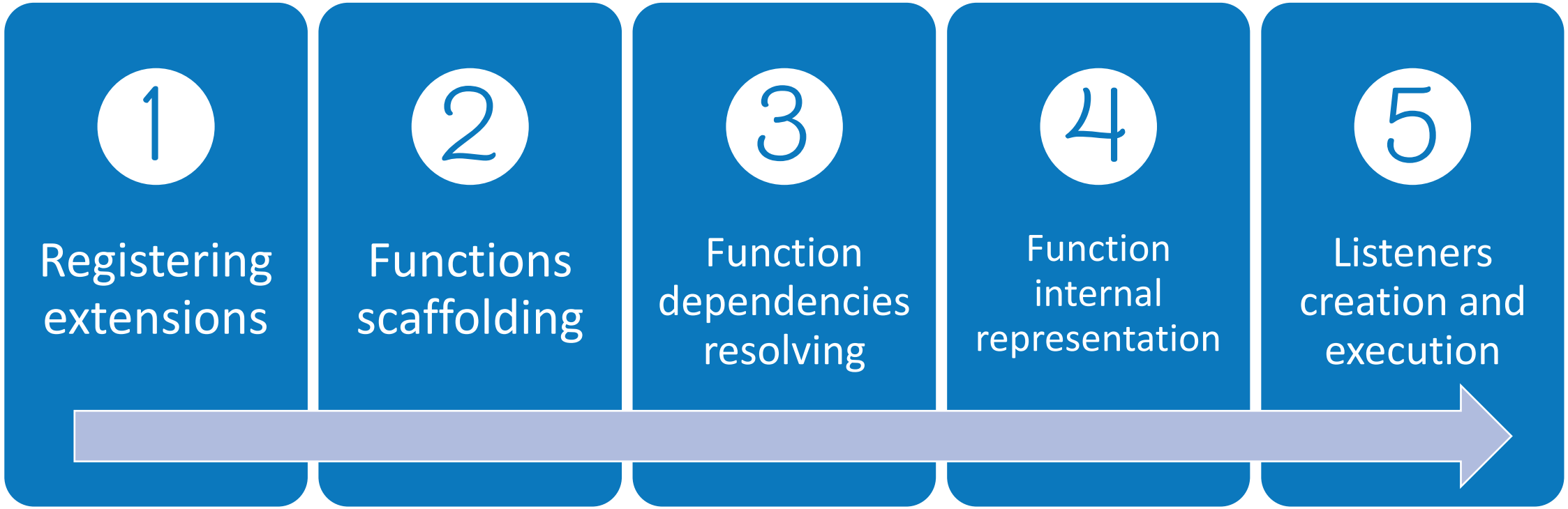
The Startup phase



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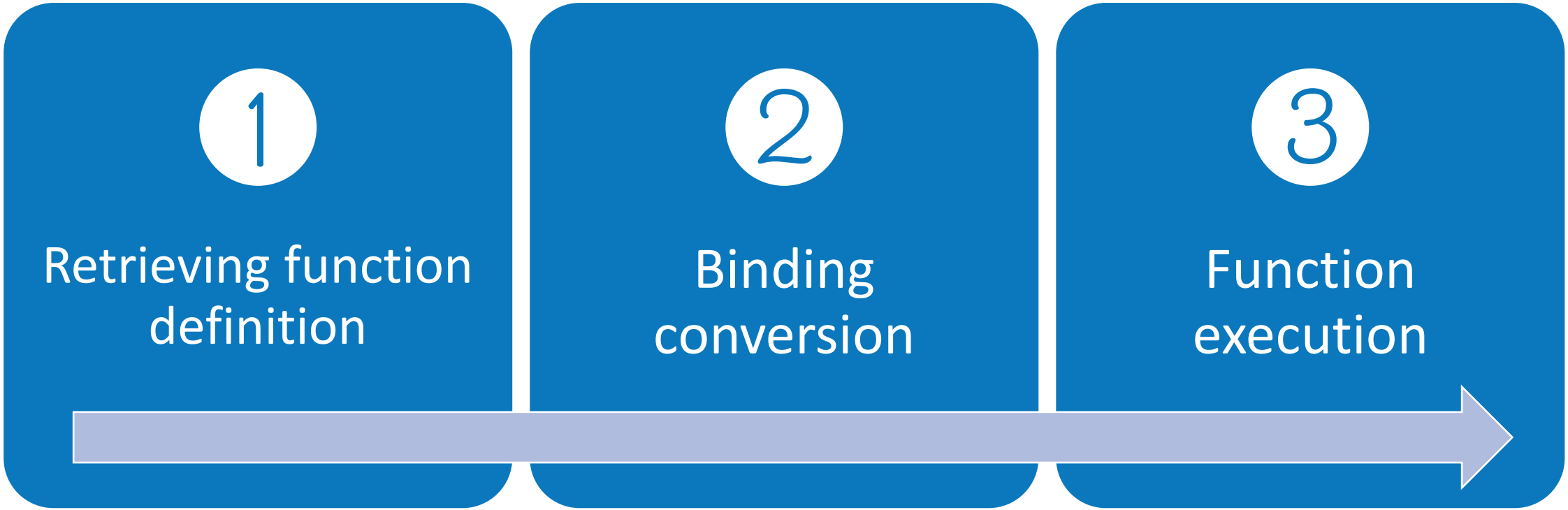
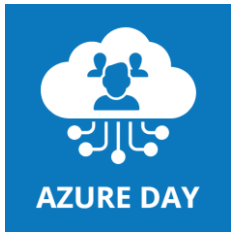
The Runtime phase





Trigger in deep

Classes involved in a Trigger

TriggerAttribute

TriggerConfigProvider

TriggerBindingProvider

TriggerBinding

TriggerListener

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Classes involved in a Trigger

Decorates an argument of a method to identify the trigger.

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Classes involved in a Trigger

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Decorates an argument of a method to identify the trigger.

TriggerConfigProvider

Define the extension (implementing the IExtensionConfigProvider).

TriggerBindingProvider

TriggerBinding

TriggerListener

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Classes involved in a Trigger

TriggerAttribute

Decorates an argument of a method to identify the trigger.

TriggerConfigProvider

Define the extension (implementing the IExtensionConfigProvider).

TriggerBindingProvider

Factory class for creating the actual binding object.

TriggerBinding

TriggerListener

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Classes involved in a Trigger

TriggerAttribute

Decorates an argument of a method to identify the trigger.

TriggerConfigProvider

Define the extension (implementing the IExtensionConfigProvider).

TriggerBindingProvider

Factory class for creating the actual binding object.

TriggerBinding

Binding object, creates the actual listener.

TriggerListener

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Classes involved in a Trigger

TriggerAttribute

Decorates an argument of a method to identify the trigger.

TriggerConfigProvider

Define the extension (implementing the IExtensionConfigProvider).

TriggerBindingProvider

Factory class for creating the actual binding object.

TriggerBinding

Binding object, creates the actual listener.

TriggerListener

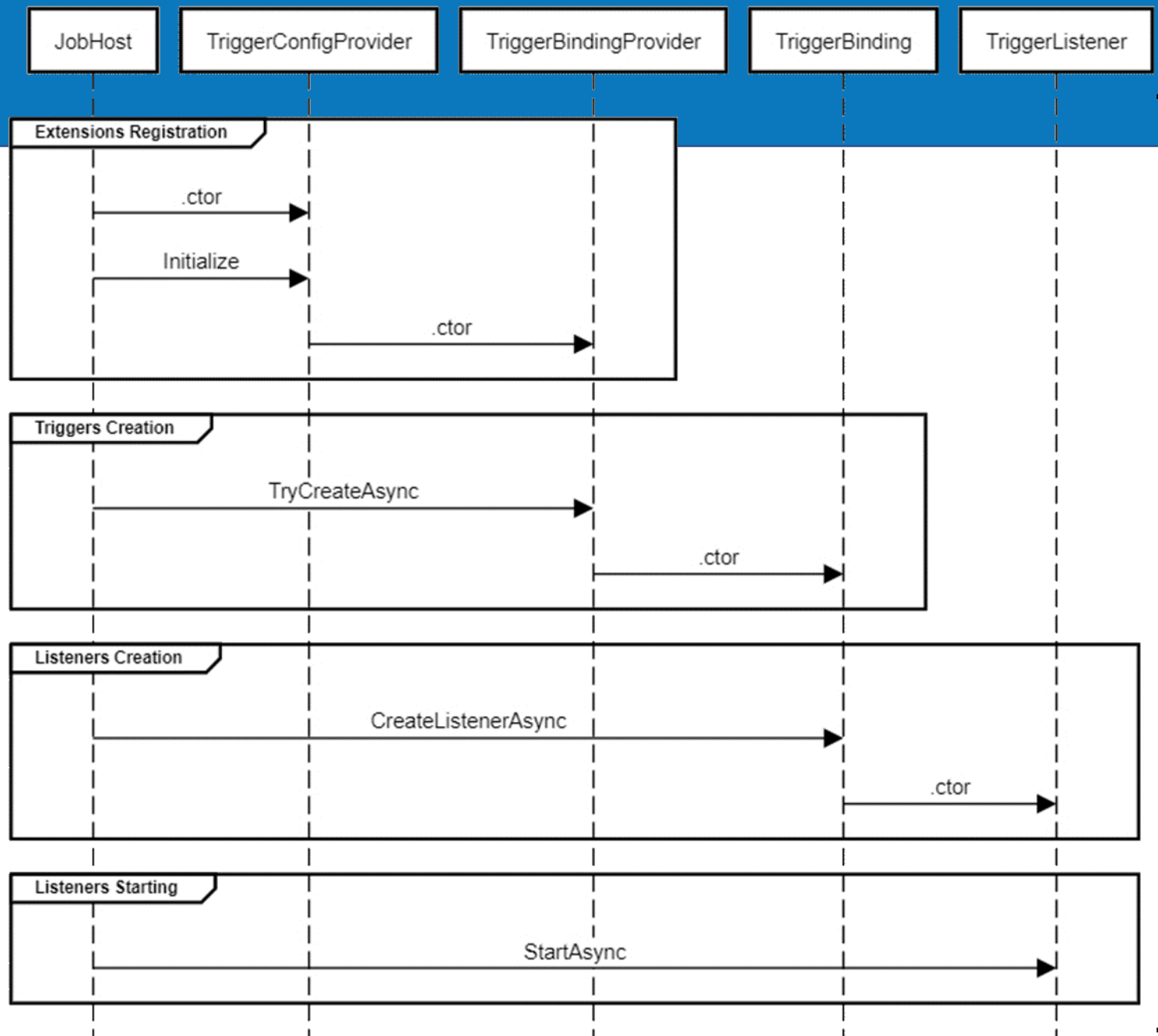
It reacts to events and executing the function.

The runtime creates the factory for binding

The runtime uses the factory to create the binding instance

The runtime uses binding class to create the listener

The runtime starts the listener



Startup Phase

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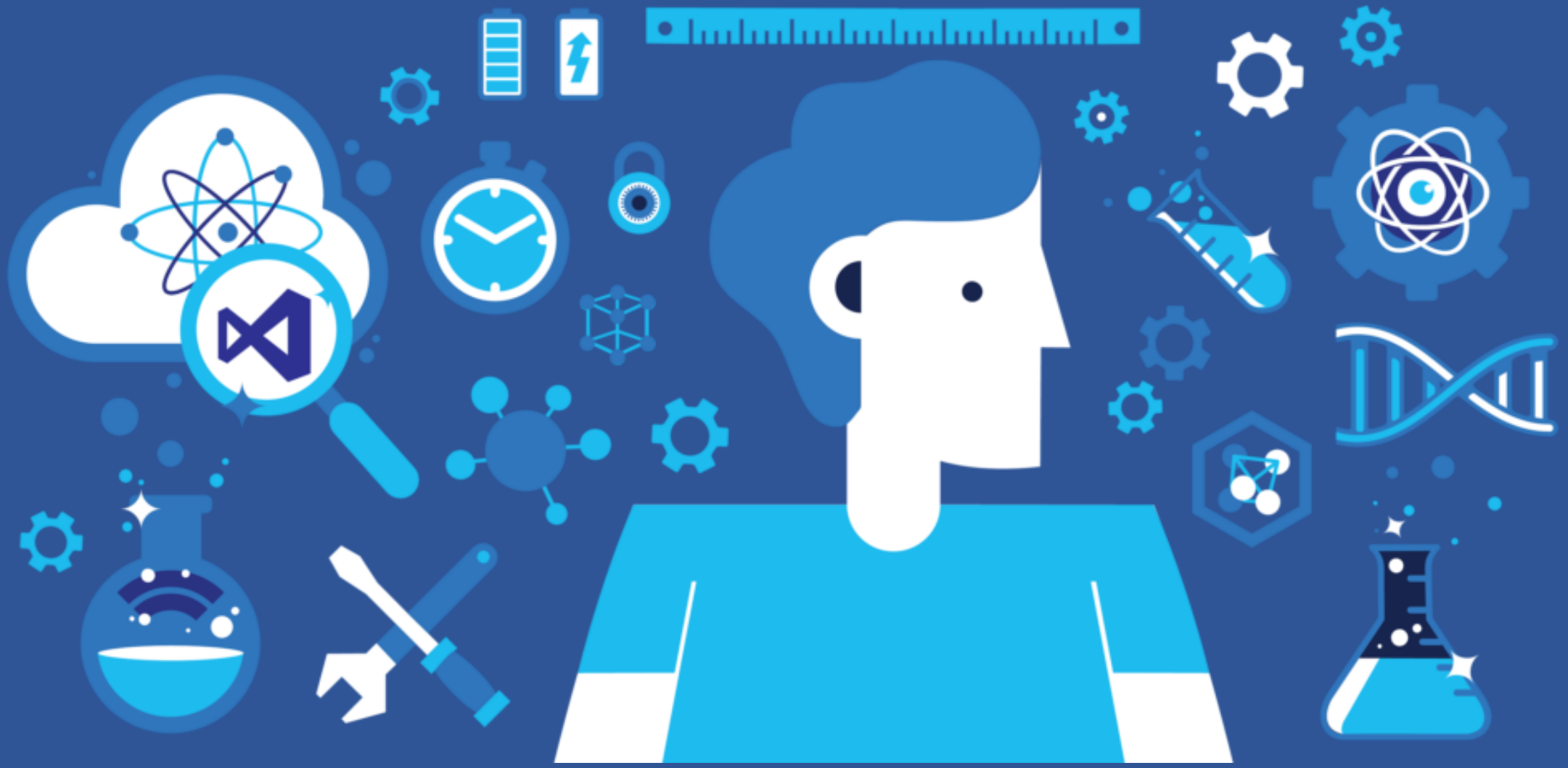
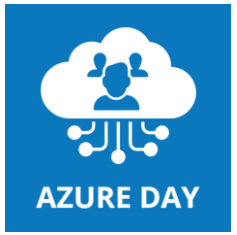
Weather Trigger





Binding in deep

Classes involved in a Binding

BindingAttribute

BindingConfigProvider

BindingConverter

Binding class

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Classes involved in a Binding

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Decorates an argument of a method to identify the binding.

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Define the extension (implementing the IExtensionConfigProvider).

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Classes involved in a Binding

Decorates an argument of a method to identify the binding.

BindingAttribute

Define the extension (implementing the IExtensionConfigProvider).

BindingConfigProvider

Creates the actual binding class for the binding.

BindingConverter

Binding class

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Classes involved in a Binding

BindingAttribute

Decorates an argument of a method to identify the binding.

BindingConfigProvider

Define the extension (implementing the IExtensionConfigProvider).

BindingConverter

Creates the actual binding class for the binding.

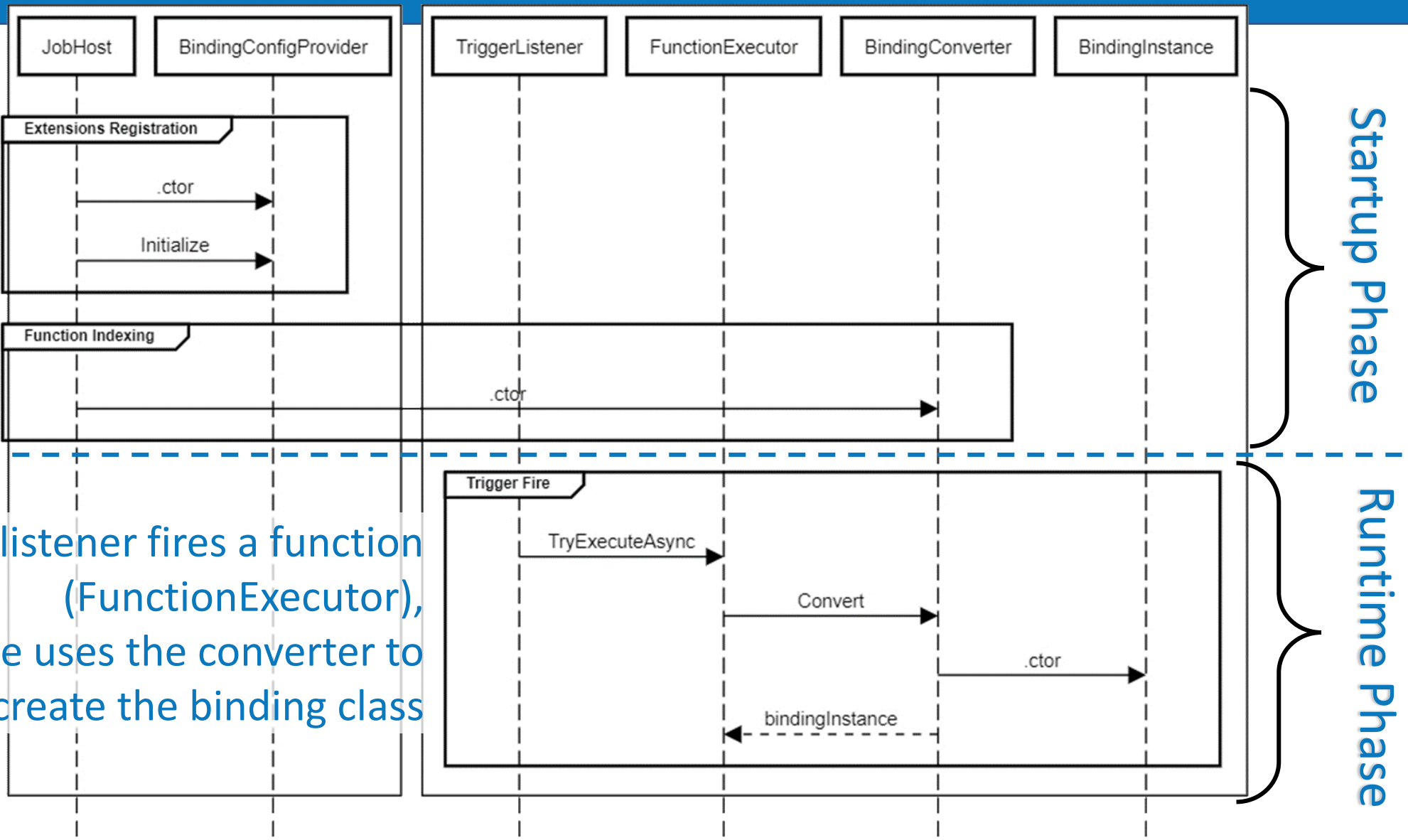
Binding class

The class that actually binds to the data source

The runtime creates the extension

The runtime creates the converter

When the listener fires a function (FunctionExecutor), the runtime uses the converter to create the binding class



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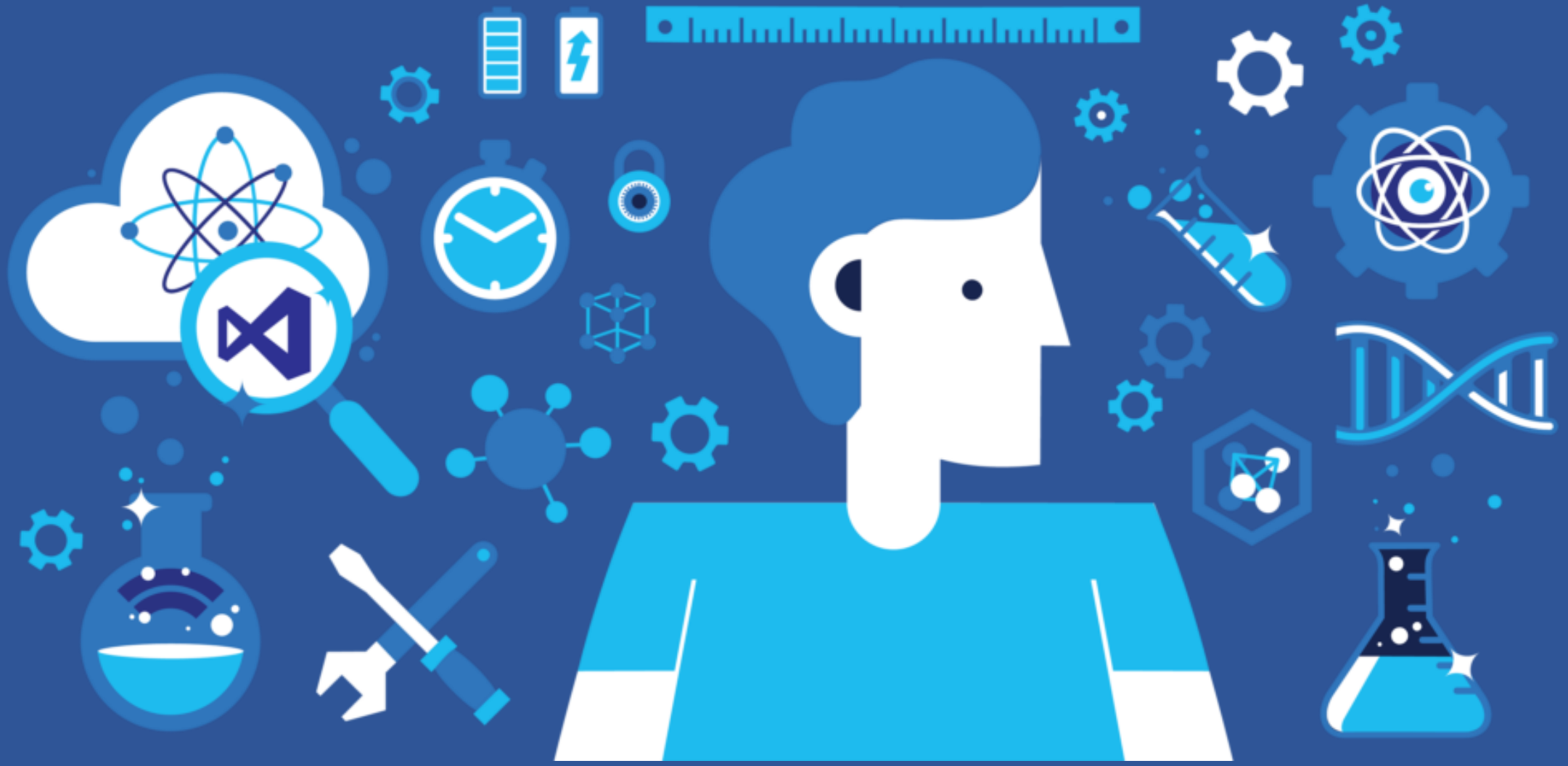
Twitter Binding



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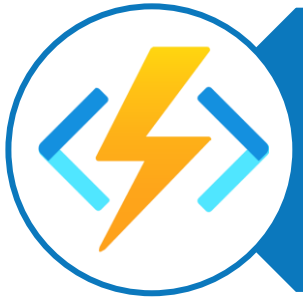
Takeaways

Implementing your own triggers and bindings allows you to abstract the data source with respect to the Azure Function code.



You pay for duration and memory occupation of your function.

Your code must be efficiently and avoid to load assembly that you don’t use.

Trigger listener is one of the most important classes for scalability and performance: write it once and the best you can!!!

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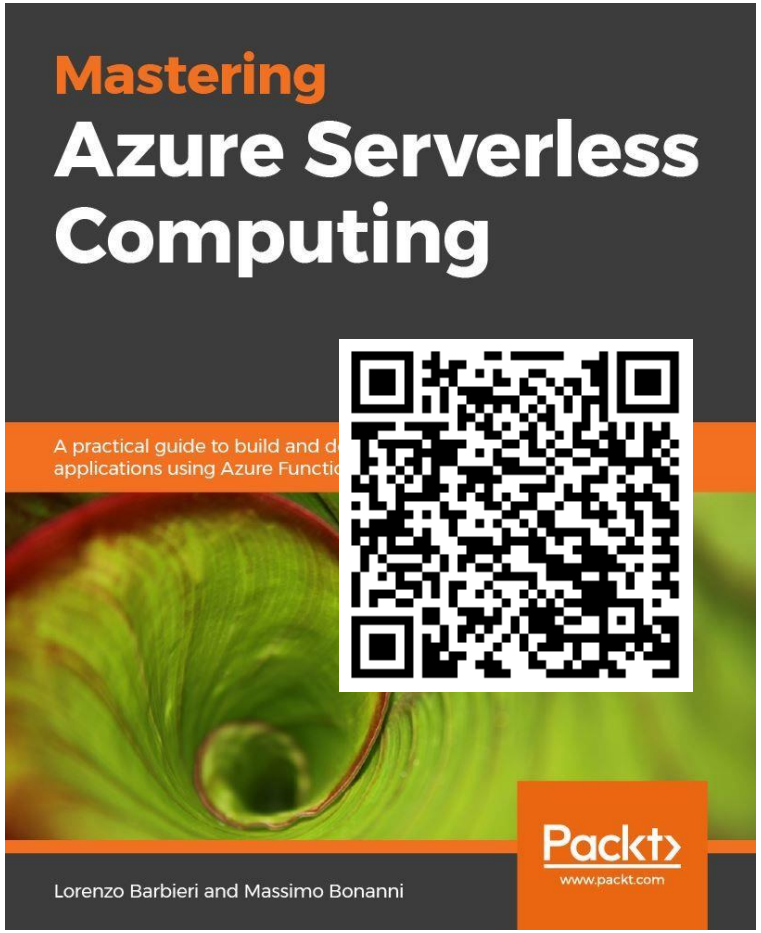
Thanks for your attention!!!!!



http://bit.ly/MasteringServerless

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References

- Azure Functions Documentation

  https://docs.microsoft.com/en-US/azure/azure-functions/

- Azure Functions Code Samples

  https://azure.microsoft.com/en-us/resources/samples/?service=functions&sort=0

- Azure Updates

  https://azure.microsoft.com/en-us/roadmap/?category=compute

- Demo AccuWeather Trigger / Twitter Binding – GitHub

  https://github.com/massimobonanni/AzureFunctionsSamples

- Demo SQL Trigger/Binding – GitHub

  https://github.com/massimobonanni/SQLServerless