



AZURE DAY



# Feature Flags con Microsoft Feature Management

# Thanks to





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🐦 [@bossinigianni](https://twitter.com/bossinigianni)

😍 Sviluppo Software, architetture e metodologie agili





# AGENDA

- Cosa sono i **feature flag**
  - Quando si usano
  - Tipologie
  - Vantaggi e svantaggi
  - Partiamo da una semplice **applicazione console**...
  - ...vediamo come si comportano in una **webapp ASP.NET**
  - Utilizzo di **Feature Filters** e **Custom Feature Filters**
  - Controllo della **consistenza** a livello di request
- Azure ❤️ Feature Flag

STEVE  
MARTIN

CHEVY  
CHASE

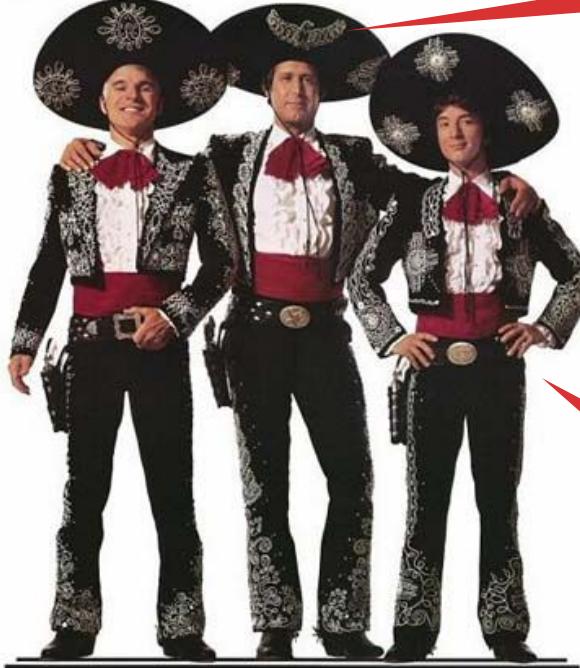
MARTIN  
SHORT

# ¡THREE AMIGOS!

PM

DEV

DEVOP



An L.A. FILMS/LORNE MICHAELS Production A LANDIS/FOLSEY Film *(THREE AMIGOS!*  
ALFONSO ARAU TONY PLANA PATRICK MARTINEZ Songs by RANDY NEWMAN Score by ELMER BERNSTEIN  
Executive Producer STEVE MARTIN Written by STEVE MARTIN • LORNE MICHAELS • RANDY NEWMAN  
Produced by LORNE MICHAELS and GEORGE FOLSEY, JR. Directed by JOHN LANDIS

PG-13 FOR LANGUAGE AND SUGGESTIVE THEMES  
DEAR THEATRE OWNERS: PLEASE USE THIS RELEASE AS YOU SEE fit.  
DOLBY STEREO  
© 1986 Orion Pictures Corporation. An Association With HOME BOX OFFICE.  
ALL RIGHTS RESERVED.

```
File Edit View Search Terminal Help  
abcbuddy@ubuntu:~/git-demo$ abc buddy@ubuntu:~$ mkdir git-demo  
abcbuddy@ubuntu:~$ cd git-demo  
abcbuddy@ubuntu:~/git-demo$ git init  
Initialized empty Git repository in /home/abcbuddy/git-demo/.git/  
abcbuddy@ubuntu:~/git-demo$ dir  
abcbuddy@ubuntu:~/git-demo$ git add .  
abcbuddy@ubuntu:~/git-demo$ git commit -m "First Commit"  
On branch master  
  
Initial commit  
  
nothing to commit
```







## Graph

Short

Merg  
Merg  
Merg  
re#27  
re#27  
origin  
re #2  
Merg  
Revel  
re #2  
re #2  
Squa  
updat  
adde  
Squa  
adde  
Merg  
Squa  
mergi  
mergi  
Merg  
Merg  
Mergi  
comm  
adde  
clean  
Squa  
Squa  
Merg  
Merg







Grazie per la foto a Roberto Graziali



# Feature Flag - Definizione

“

A technique that allow the **modification** of a **deployed application's behaviour**, **without changing code** or **deploy** a **new version** of the application

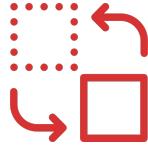
”



# Feature Flag - Conosciuti anche con il nome di



Feature  
**Toggles**



Feature  
**Switches**



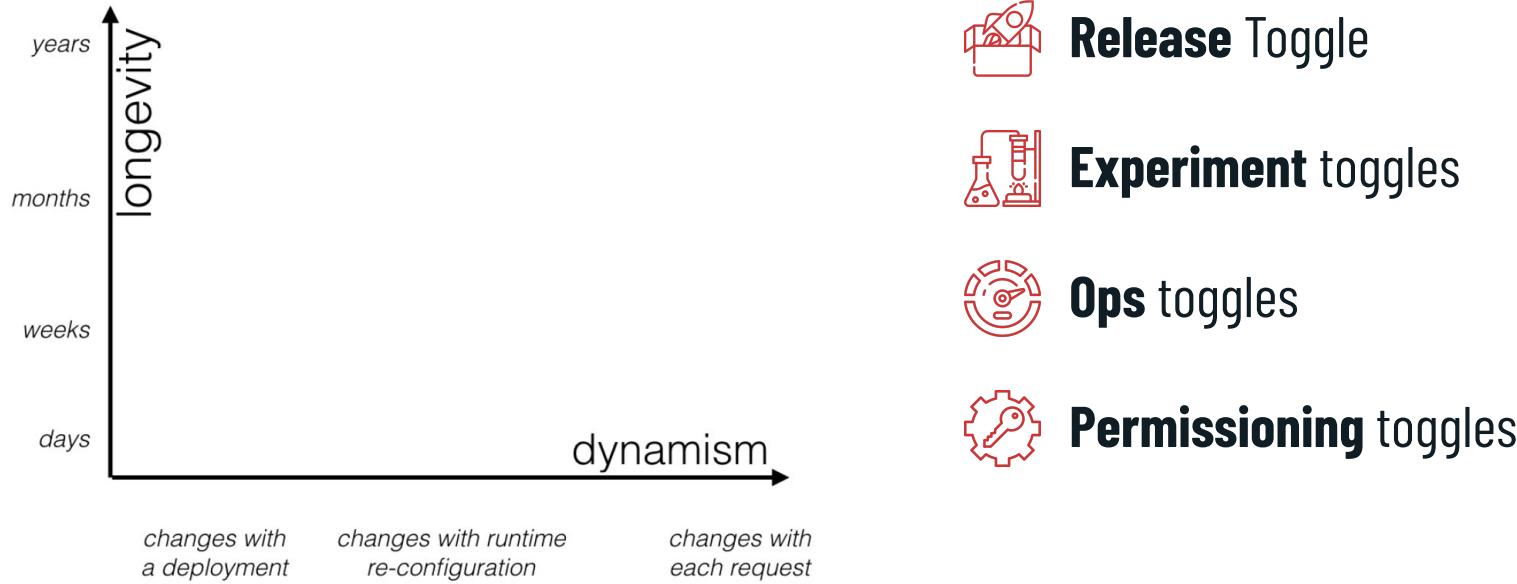
Feature  
**Flippers**



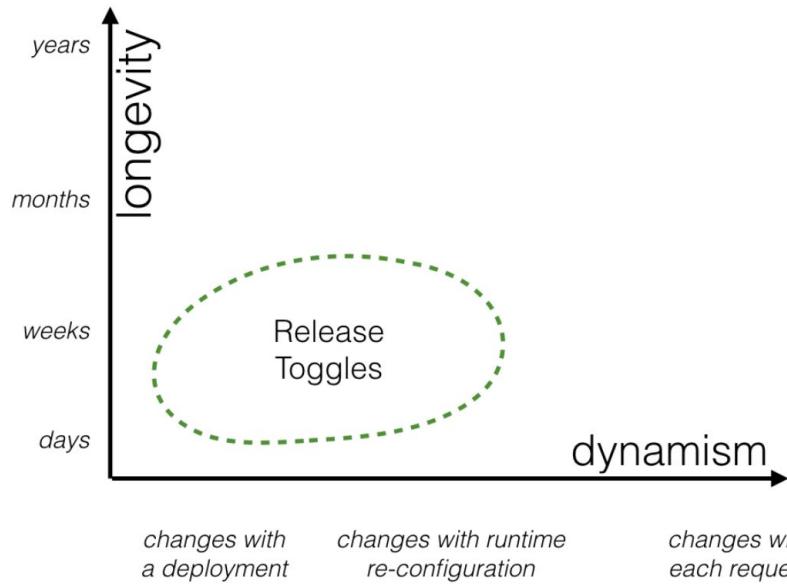
**Conditional**  
**Features**



# Feature Flag - Categorizzazione!



# Feature Flag - Categorizzazione!

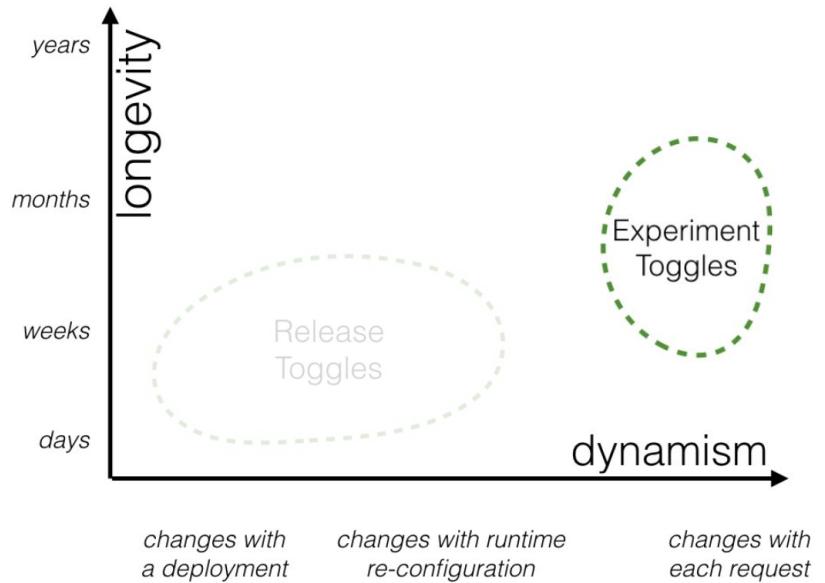


## Release Toggle

- trunk-based development
- separating [feature] release from [code] deployment.



# Feature Flag - Categorizzazione!

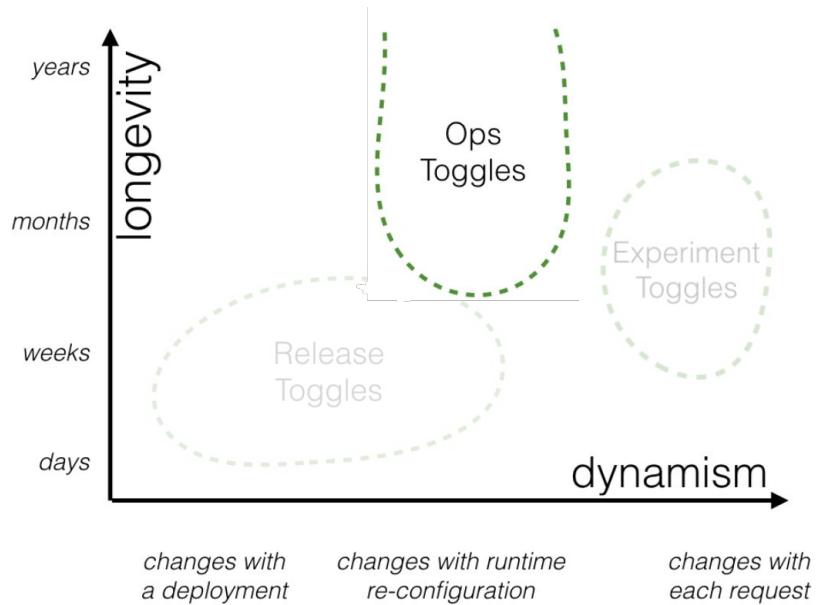


## Experiment toggles

- A/B testing



# Feature Flag - Categorizzazione!

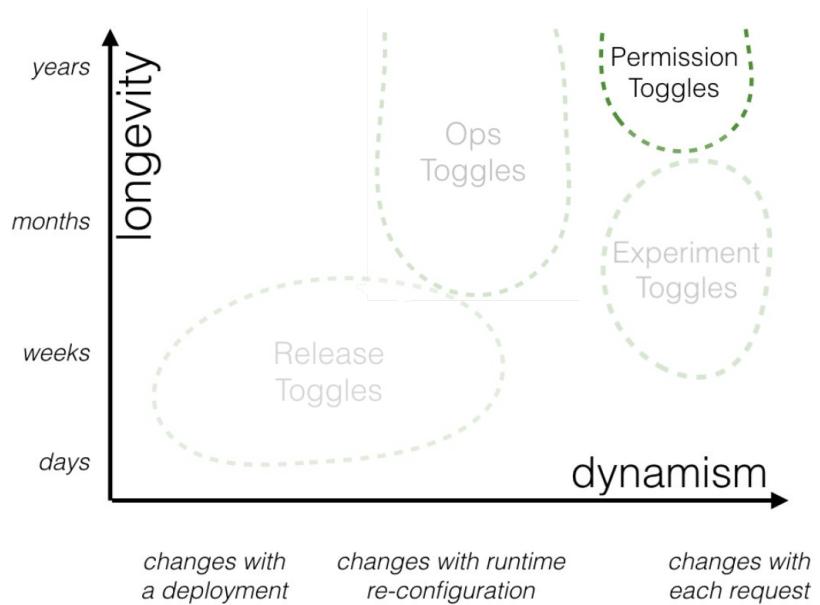


## Ops toggles

- rolling out a new feature which has unclear performance implications
- "Kill Switches"



# Feature Flag - Categorizzazione!



## Permissioning toggles

- change the features or product experience that certain users receive
- "Champagne Brunch"



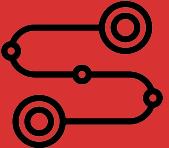
# Feature Flag - Vantaggi

- Abilitare e disabilitare features a **runtime**
- Fare il revert parziale di un rilascio, **evitando** costosi **rollback**
- Nascondere "istantaneamente" una **feature non** adeguatamente **testata**
- Effettuare **A/B testing** in produzione
- Rilascio **graduale** di funzioni
- Attivazione **selettiva delle feature** in base a logiche (ad es, al browser)
- Consentire l'accesso a **features in beta a gruppi** ed utenti
- **Ridurre la complessità della codebase** evitando pesanti merge tra branches



Feature release  $\neq$  Code deployment





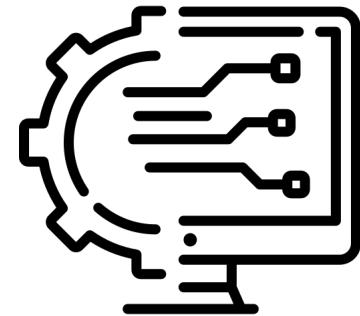
**Being able to ship alternative codepaths within one  
deployable unit and choose between them at runtime.**

<https://www.martinfowler.com/articles/feature-toggles.html>



# Feature Flag - Gestione della configurazione

- **Hardcoded** Toggle Configuration
- **Parameterized** Toggle Configuration
- Toggle Configuration **File**
- Toggle Configuration in **App DB**
- **Distributed** Toggle Configuration



Microsoft ❤️ Linux

...ma anche i Feature Flags!



## Microsoft.FeatureManagement

2.5.1  Prefix Reserved

.NET 5.0 .NET Core 3.1 .NET Standard 2.0

Package Manager **.NET CLI** PackageReference Paket CLI Script & Interactive Cake

```
> dotnet add package Microsoft.FeatureManagement --version 2.5.1
```

---

 README  Frameworks  Dependencies  Used By  Versions  Release Notes

Version	Downloads	Last updated
2.5.1	400.204	2 months ago
2.5.0	28.292	2 months ago
2.4.0	2.302.852	9 months ago
2.3.0	2.472.191	15/04/2021
2.2.0	3.007.664	16/09/2020
2.2.0-preview	33.560	10/07/2020
2.1.0-preview	19.024	22/04/2020
2.0.0	2.113.900	27/02/2020
2.0.0-preview-010610001-1263	186.208	27/11/2019
1.0.0-preview-009000001-1251	391.515	20/06/2019

## Downloads

[Full stats →](#)Total **11.4M**Current version **400.2K**Per day average **10.0K**

## About

 Last updated 2 months ago Project website License Info Download package (141.09 KB) Open in NuGet Package Explorer Open in FuGet Package Explorer Report package

## Owners

[Contact owners →](#)

Microsoft



Azure-App-Configuration

 Microsoft

FeatureManagement

# Microsoft.FeatureManagement.AspNetCore



## Microsoft.FeatureManagement.AspNetCore

2.5.1

 Prefix Reserved[.NET 5.0](#) [.NET Core 3.1](#) [.NET Standard 2.0](#)[Package Manager](#) [.NET CLI](#) [PackageReference](#) [Paket CLI](#) [Script & Interactive](#) [Cake](#)

```
> dotnet add package Microsoft.FeatureManagement.AspNetCore --version 2.5.1
```

[README](#) [Frameworks](#) [Dependencies](#) [Used By](#) [Versions](#) [Release Notes](#)

Version	Downloads	Last updated
2.5.1	220.419	2 months ago
2.5.0	18.412	2 months ago
2.4.0	1.357.115	9 months ago
2.3.0	1.393.317	16/04/2021
2.2.0	1.908.845	16/09/2020
2.2.0-preview	29.418	10/07/2020
2.1.0-preview	5.075	22/04/2020
2.0.0	1.329.003	27/02/2020
2.0.0-preview-010610001-1263	128.737	27/11/2019

[Downloads](#)[Full stats →](#)Total **6.9M**Current version **220.4K**Per day average **6.1K**

### About

 [Last updated 2 months ago](#) [Project website](#) [License Info](#) [Download package \(112.49 KB\)](#) [Open in NuGet Package Explorer](#) [Open in FuGet Package Explorer](#) [Report package](#)[Owners](#)[Contact owners →](#) [Microsoft](#) [Azure-App-Configuration](#)[Microsoft](#)[FeatureManagement](#)

# Feature Flag - ON / OFF



# Feature Flag

```
builder.Services.AddFeatureManagement();
```

Program.cs

```
"FeatureManagement": {  
    "LogTime": false  
}
```

appsettings.  
json





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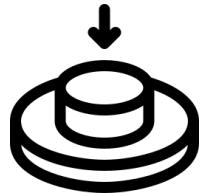
# DEMO



# Feature Filters



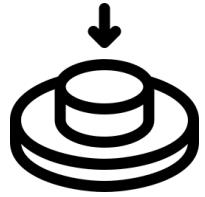
# Feature Filters



**Non solo un bottone**



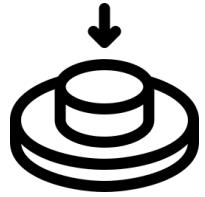
# Feature Filters



Non solo un bottone



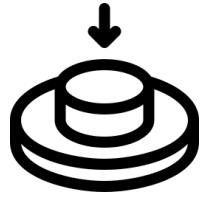
# Feature Filters



Non solo un bottone



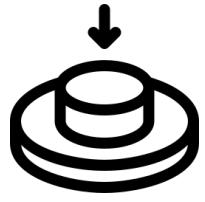
# Feature Filters



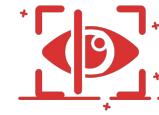
**Non solo un bottone**



# Feature Filters



Non solo un bottone



# Feature Filters

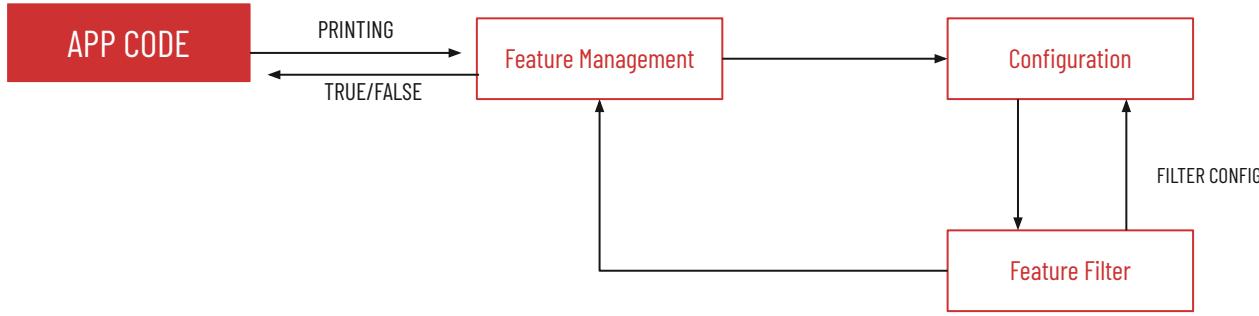
“

A mechanism for determining if a **feature** should be **enabled**, based on something **more than a simple true/false** configuration value

”



# Feature Filters



- Devono essere registrati
- Possono richiedere configurazioni aggiuntive
- Alcuni sono built-in
- ...altri custom



# Built-In Feature Filters - Percentage Filter

```
builder.Services.AddFeatureManagement()  
    .AddFeatureFilter<PercentageFilter>();
```

Program.cs

```
"FeatureManagement": {  
    "SlowEnabled": {  
        "EnabledFor": [ {  
            "Name": "Microsoft.Percentage",  
            "Parameters": {  
                "Value": 50  
            }  
        } ]  
    }  
}
```

appsettings.  
json



# Built-In Feature Filters - Time Window

```
builder.Services.AddFeatureManagement()
    .AddFeatureFilter<TimeWindowFilter>();
```

Program.cs

```
"FeatureManagement": {
    "SlowEnabled": {
        "EnabledFor": [
            {
                "Name": "Microsoft.TimeWindow",
                "Parameters": {
                    "Start": "2022-01-26T09:00:00+00:00",
                    "End": "2022-01-26T18:00:00+00:00"
                }
            }
        ]
    }
}
```

appsettings.json



# Built-In Feature Filters - Targeting

```
builder.Services.AddFeatureManagement()
    .AddFeatureFilter<TargetingFilter>();
```

Program.cs

```
"FeatureManagement": {
    "GiannisPage": {
        "EnabledFor": [
            {
                "Name": "Microsoft.Targeting",
                "Parameters": {
                    "Audience": {
                        "DefaultRolloutPercentage": 100,
                        "Users": [ "gianni.bossini@codiceplastico.com" ],
                        "Groups": []
                    }
                }
            }
        ]
    }
}
```

appsettings.json



# Built-In Feature Filters - Custom

```
builder.Services.AddFeatureManagement()  
    .AddFeatureFilter<BrowserFeatureFilter>();
```

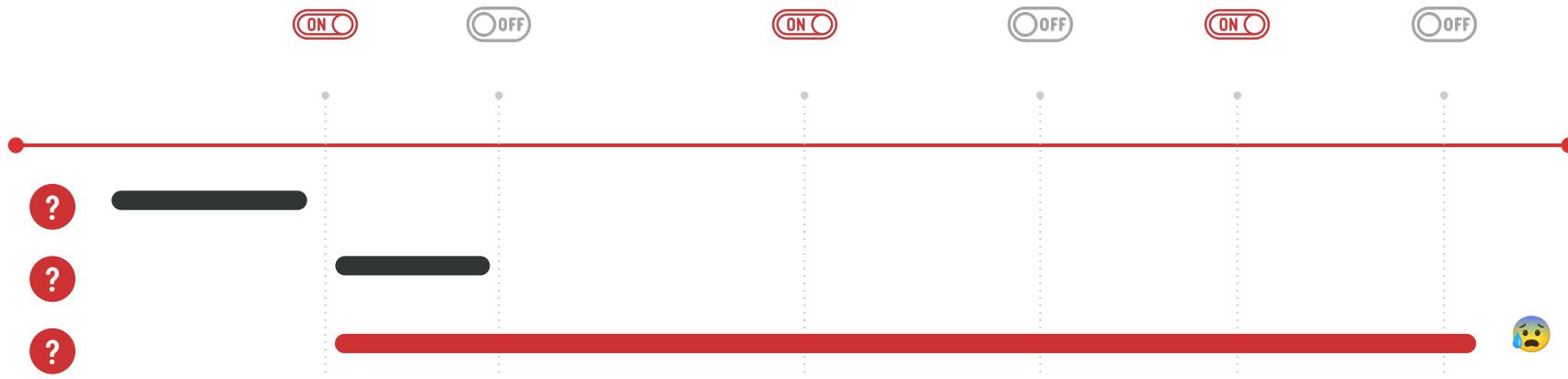
Program.cs

```
"FeatureManagement": {  
    "BrowsersAllowed": {  
        "EnabledFor": [  
            {  
                "Name": "BrowsersFilter",  
                "Parameters": {  
                    "Browsers": [ "Chrome" ]  
                }  
            }  
        ]  
    }  
}
```

appsettings.json



# E se nel tempo i flag cambiano stato?





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# DEMO





❤️ Feature Flags!



 Azure Explore v Products v Solutions v Pricing v Partners v Resources v [Free account](#)

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# App Configuration

Fast, scalable parameter storage for app configuration

[Start free](#)

[Product overview](#) [Features](#) [Security](#) [Pricing](#) [Getting started](#) [FAQs](#)

**Configure, store, and retrieve parameters and settings**

Store configuration for all your Azure apps in a universal, hosted location. Manage configurations effectively and reliably, in real time, without affecting customers by avoiding time-consuming redeployments. Azure App Configuration is built for speed, scalability, and security.



## Azure services



Create a  
resource



App  
Configuration



Function App



Resource  
groups



App  
registrations



Subscriptions



Tenant  
properties



Azure Active  
Directory



More services

## Resources

Recent

Favorite

Name

DistributedConfiguration

Type

App Configuration

Last Viewed

20 minutes ago

See all



# DistributedConfiguration | Access keys

App Configuration

Search (Ctrl+ /)

Values

Feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Quick start

Events

Settings

Access keys

Scale up

Identity

Encryption

Networking

Properties

Locks

Operations

Configuration explorer

Feature manager

Restore

Compare

## Access keys

Read-write keys

Read-only keys

Endpoint

https://distributedconfiguration.azconfig.io



Primary key

Regenerate

Id (credential)



Secret

.....



Connection string

.....



Secondary key

Regenerate

Id (credential)



Secret

.....



Connection string

.....



## DistributedConfiguration | Feature manager

App Configuration

Search (Ctrl+ /)

Add Edit Columns Refresh Feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Quick start

Events

Settings

Access keys

Scale up

Identity

Encryption

Networking

Properties

Locks

Operations

Configuration explorer

Feature manager

Restore

Compare

...

Authentication method: Access keys ([Switch to Azure AD](#)) ⓘ

3 feature flags loaded

Name	Label	Enabled	Feature filter	Description	Last modified	Key	...
ShowTime	(No label)	<input checked="" type="checkbox"/>	None		6/23/2022, 5:15:27 PM	.appconfig.featureflag>ShowTime	...
ShowTimeAvailability	(No label)	<input type="checkbox"/>	 Time window		6/23/2022, 5:27:01 PM	.appconfig.featureflag>ShowTimeAvailability	...
ShowTimeBrowsersAllowed	(No label)	<input type="checkbox"/>	Custom		6/23/2022, 5:06:07 PM	.appconfig.featureflag>ShowTimeBrowsersAllowed	...



## ShowTimeAvailability | Edit

Edit feature flag

### Feature filters

A Feature filter consistently evaluates the state of a feature flag. Our feature management library supports three types of built-in filters: Targeting, TimeWindow, and Percentage. Custom filters can also be created based on different factors, such as device used, browser types, geographic location, etc. [Learn more](#)

Use feature filter

- Targeting
- Time window
- Custom

Time window filter is a built-in filter that enables features based on a specific period of time. This filter is useful if you create a filter but do not want it to take effect immediately, or you have a specific date when you want it to finish.

 Your time window filter has expired

#### Start date

- On
- Custom

02/28/2022



10:00:00 PM

(UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna



#### Expiry date

- Never
- Custom

02/28/2022



11:00:00 PM

(UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna



# Azure CLI

```
az appconfig feature
```

Comando

## Group

```
az appconfig feature : Manage feature flags stored in an App Configuration.
```

## Subgroups:

```
filter [Preview] : Manage filters associated with feature flags stored in an App Configuration.
```

## Commands:

delete	: Delete feature flag.
disable	: Disable a feature flag to turn it OFF for use.
enable	: Enable a feature flag to turn it ON for use.
list	: List feature flags.
lock	: Lock a feature flag to prohibit write operations.
set	: Set a feature flag.
show	: Show all attributes of a feature flag.
unlock	: Unlock a feature to gain write operations.

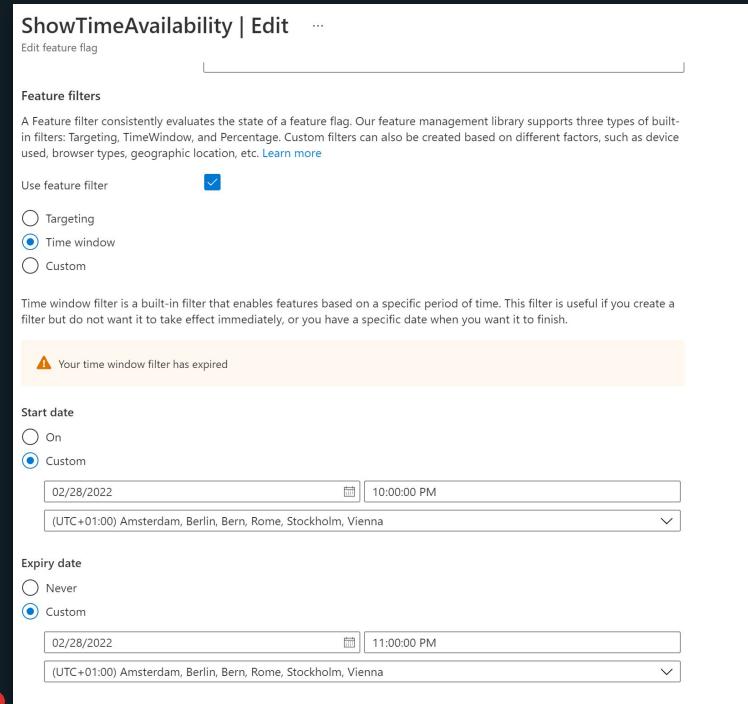


# Azure CLI

```
az appconfig feature show --name DistributedConfiguration  
--key .appconfig.featureflag>ShowTimeAvailability
```

Comando

```
{  
  "conditions": {  
    "client_filters": [  
      {  
        "name": "Microsoft.TimeWindow",  
        "parameters": {  
          "End": "Fri, 24 Jun 2022 18:00:00 GMT",  
          "Start": "Fri, 24 Jun 2022 06:00:00 GMT"  
        }  
      }  
    ]  
  },  
  "description": "",  
  "key": ".appconfig.featureflag>ShowTimeAvailability",  
  "label": null,  
  "lastModified": "2022-06-23T15:27:01+00:00",  
  "locked": false,  
  "name": "ShowTimeAvailability",  
  "state": "off"  
}
```





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# DEMO



VAMENTO  
ESSIONE  
ERCIATA

CONTROLLO  
LUNGHEZZA  
BAFFI

MODALITA'  
NEGOZIO

RILEVAMENTO  
PRESSIONE  
ESERCITATA

RILEVAMENTO  
STRESS

ACQUISIZIONE  
TOPOLOGIA

FUNZIONE  
MASSAGGIO

CONTROLLO  
CURVATURA  
VISO

CONTROLLO  
SFUMATURA  
BARBA

CONTROLLO  
LUNGHEZZA  
BAFFI

CONTROLLO  
SIMMETRIA  
BARBA

RILEVAMENTO  
TEMPERATURA  
INTERNA

RILEVAMENTO  
TEMPERATURA  
ESTERNA

RILEVAMENTO  
TEMPERATURA  
INTERNA

RILEVAMENTO  
STRESS

ACQUISIZIONE  
TOPOLOGIA

FUNZIONE  
MASSAGGIO

FUNZIONE  
PEELING

TRASF.  
DATI

AUTO-Selfie

BRUSHING



QUANDO AVETE FINITO I TEST  
ANDIAMO IN PRODUZIONE!



QUANDO AVETE FINITO I TEST  
ANDIAMO IN PRODUZIONE!

VAMENTO  
ESSIONE  
ERCITATA

CONTROLLO  
LUNGHEZZA  
BAFFI

MODALITA'  
NEGOZIO

RILEVAMENTO  
PRESSIONE  
ESERCITATA

RILEVAMENTO  
STRESS

ACQUISIZIONE  
TOPOLOGIA

FUNZIONE  
MASSAGGIO

CONTROLLO  
CURVATURA  
VISO

CONTROLLO  
SFUMATURA  
BARBA

CONTROLLO  
LUNGHEZZA  
BAFFI

CONTROLLO  
SIMMETRIA  
BARBA

RILEVAMENTO  
TEMPERATURA  
INTERNA

RILEVAMENTO  
TEMPERATURA  
ESTERNA

RILEVAMENTO  
TEMPERATURA  
INTERNA

RILEVAMENTO  
STRESS

ACQUISIZIONE  
TOPOLOGIA

FUNZIONE  
MASSAGGIO

FUNZIONE  
PEELING

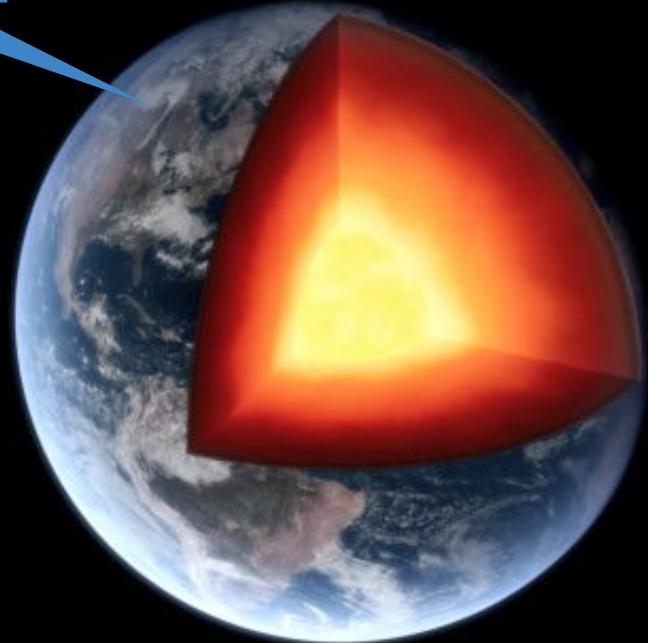
TRASF.  
DATI

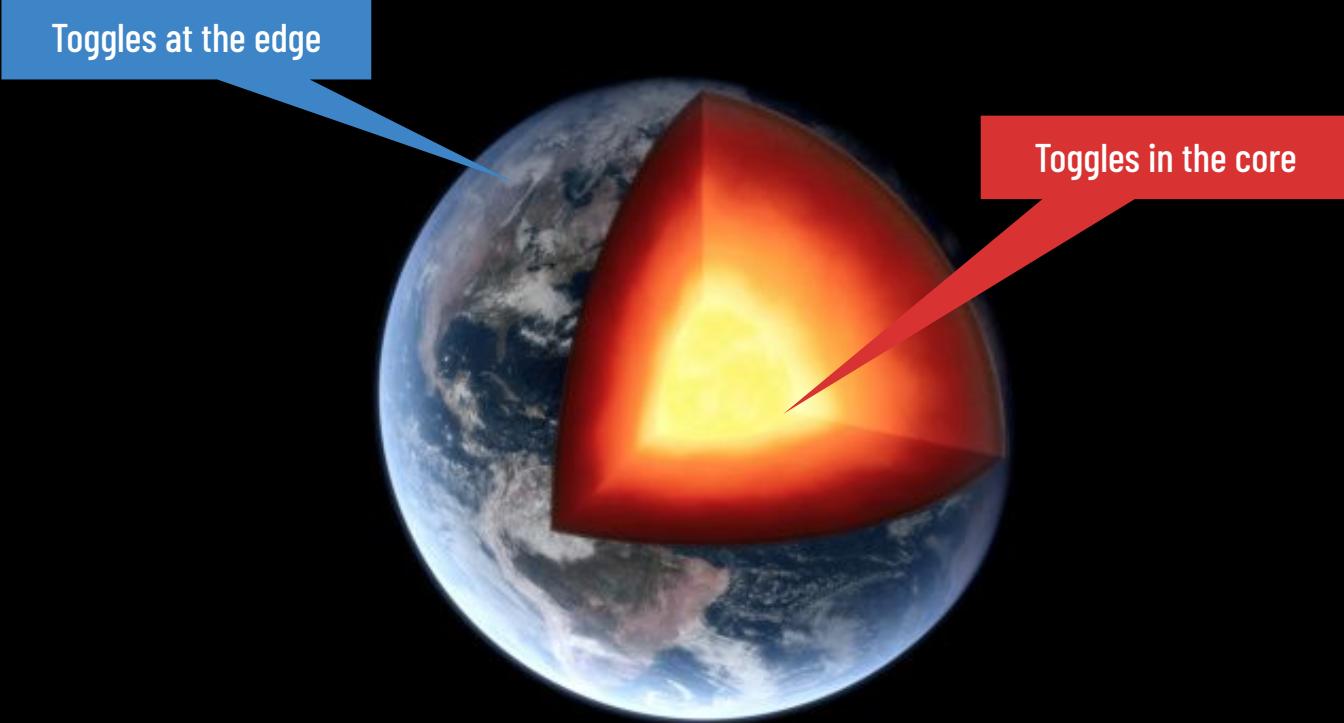
AUTO-SELFIE

15:30



Toggles at the edge





Toggles at the edge

Toggles in the core





# Considerazioni

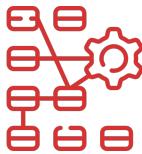


Incrementano **Complessità**  
e **dipendenze** del progetto

I feature flags devono  
essere rimossi in futuro



# Considerazioni



Incrementano **Complessità**  
e **dipendenze** del progetto

I feature flags devono  
essere rimossi in futuro

“

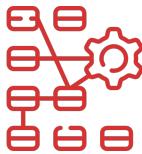
The first symptom of **complexity** is that a seemingly simple change requires code modification in **many different** places

John Ousterhout, A philosophy of software design

”



# Considerazioni



Incrementano **Complessità**  
e **dipendenze** del progetto

I feature flags devono  
essere rimossi in futuro



**Testing** dell'applicazione  
più **complesso**



# Considerazioni



Incrementano **Complessità**  
e **dipendenze** del progetto

I feature flags devono  
essere rimossi in futuro



**Testing** dell'applicazione  
più **complesso**



Gestione della  
**configurazione**



# Considerazioni



Incrementano **Complessità** e **dipendenze** del progetto

I feature flags devono essere rimossi in futuro



**Testing** dell'applicazione più **complesso**

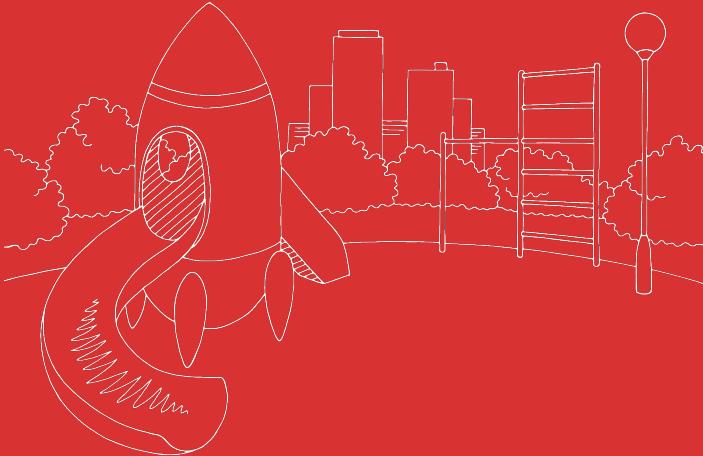


Gestione della **configurazione**



Non **riutilizzare** o ri-brandizzare feature flag esistenti





**[https://github.com/GianniBortoloBossini/  
azureday2022-microsoft-feature-management](https://github.com/GianniBortoloBossini/azureday2022-microsoft-feature-management)**



# Materiale



- Feature management overview,  
<https://docs.microsoft.com/en-us/azure/azure-app-configuration/concept-feature-management>
- Feature flags,  
<https://docs.microsoft.com/en-us/dotnet/architecture/cloud-native/feature-flags>
- Manage feature flags in Azure App Configuration,  
<https://docs.microsoft.com/en-us/azure/azure-app-configuration/manage-feature-flags>
- ASP.NET Core Feature Flags,  
<https://github.com/microsoft/FeatureManagement-Dotnet>
- Feature Flag Fundamentals with Microsoft Feature Management,  
<https://www.pluralsight.com/courses/feature-flag-fundamentals-microsoft-feature-management>
- **Series:** Adding feature flags to an ASP.NET Core app,  
<https://andrewlock.net/series/adding-feature-flags-to-an-asp-net-core-app/>
- The definitive guide to feature management,  
<https://launchdarkly.com/the-definitive-guide-to-feature-management/>
- Feature Toggles (aka Feature Flags),  
<https://www.martinfowler.com/articles/feature-toggles.html>



# Materiale



- How to use feature flags without technical debt (launchdarkly.com),  
<https://news.ycombinator.com/item?id=11715916>
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Per altri articoli nerd (e non solo)  
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# QUESTION TIME





AZURE DAY

# Thank You!!!