

Building ASP.NET Core Hosted Services and .NET Core Worker Services

ADDING BACKGROUND TASKS TO ASP.NET CORE APPLICATIONS



Steve Gordon

MICROSOFT DEVELOPER TECHNOLOGIES MVP

@stevejgordon www.stevejgordon.co.uk



Overview



Creating hosted services in ASP.NET Core

- Interval based workloads
- Transfer data between web requests and hosted services
- Registering hosted services



Later in This Course



Building .NET Core worker services



Advanced hosted service concepts



Running worker services in production



Before We Begin



Follow along: Download the solution from the exercise files



The solution relies on the .NET Core 3.1 SDK



I'm using Visual Studio 2019 (16.4.x)



ASP.NET Core and .NET Core 3.1

Released: December 2019



ASP.NET Core and .NET Core 2.1

Released: May 2018



Introducing the Tennis Booking Application



Demo



Creating a hosted service

- Periodically perform background work





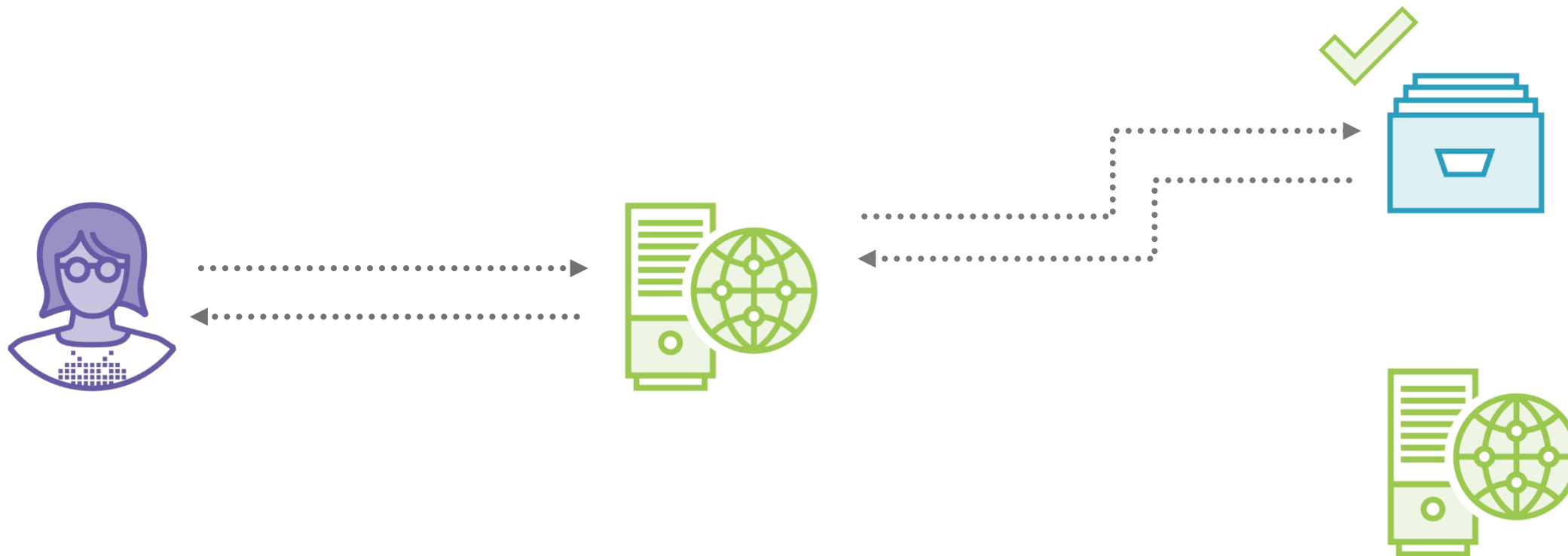
Terminology

Hosted service

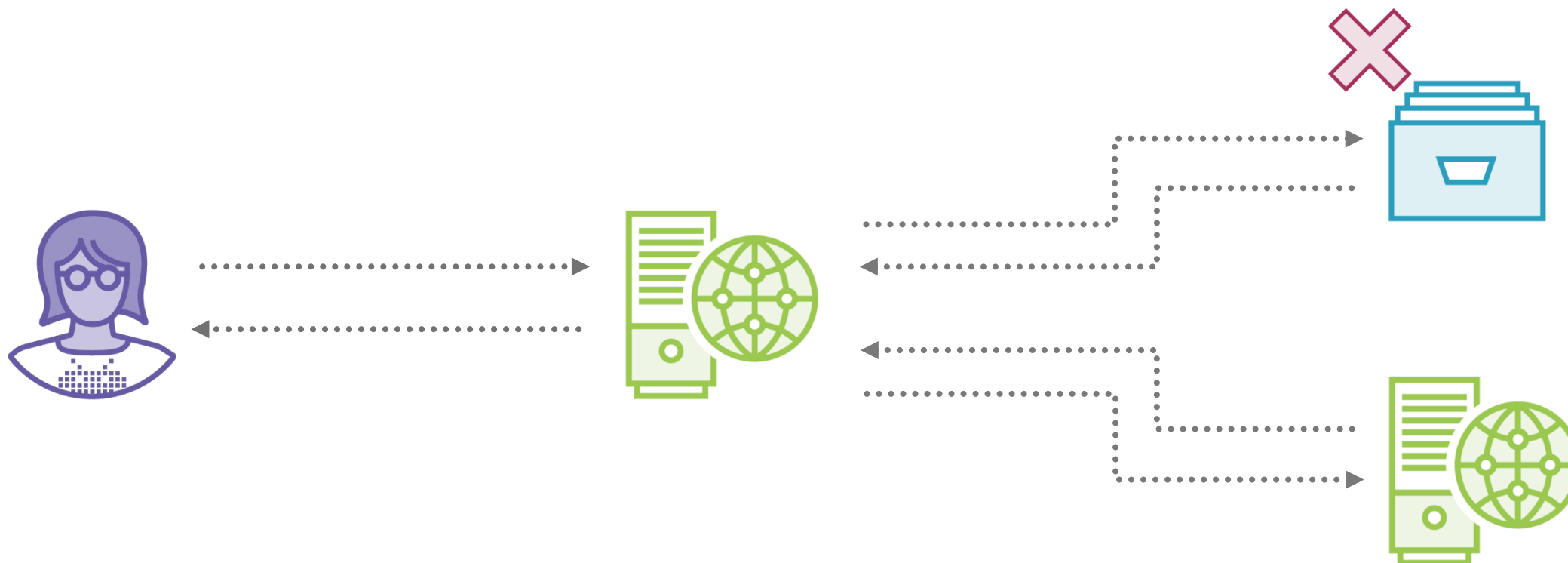
Background service



Home Page Requests



Home Page Requests



What Are Hosted Services?



Use Cases



Polling for data from an external service



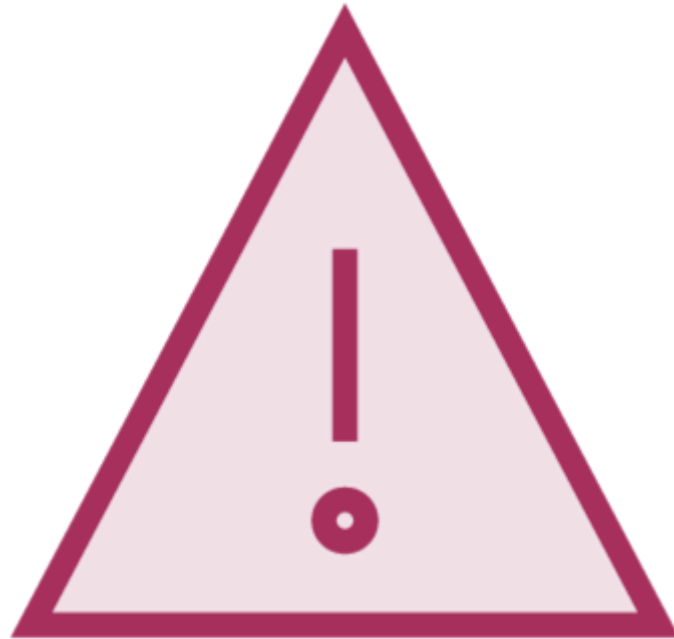
Responding to external messages or events



Performing data-intensive work, outside of the request lifecycle



Architecture Warning



BackgroundService

Abstract base class for creation of background services

BackgroundService.cs

```
public abstract class BackgroundService : IHostedService, IDisposable
{
    protected BackgroundService();
    public virtual void Dispose();
    public virtual Task StartAsync(CancellationToken cancellationToken);
    public virtual Task StopAsync(CancellationToken cancellationToken);
    protected abstract Task ExecuteAsync(CancellationToken stoppingToken);
}
```

Demo

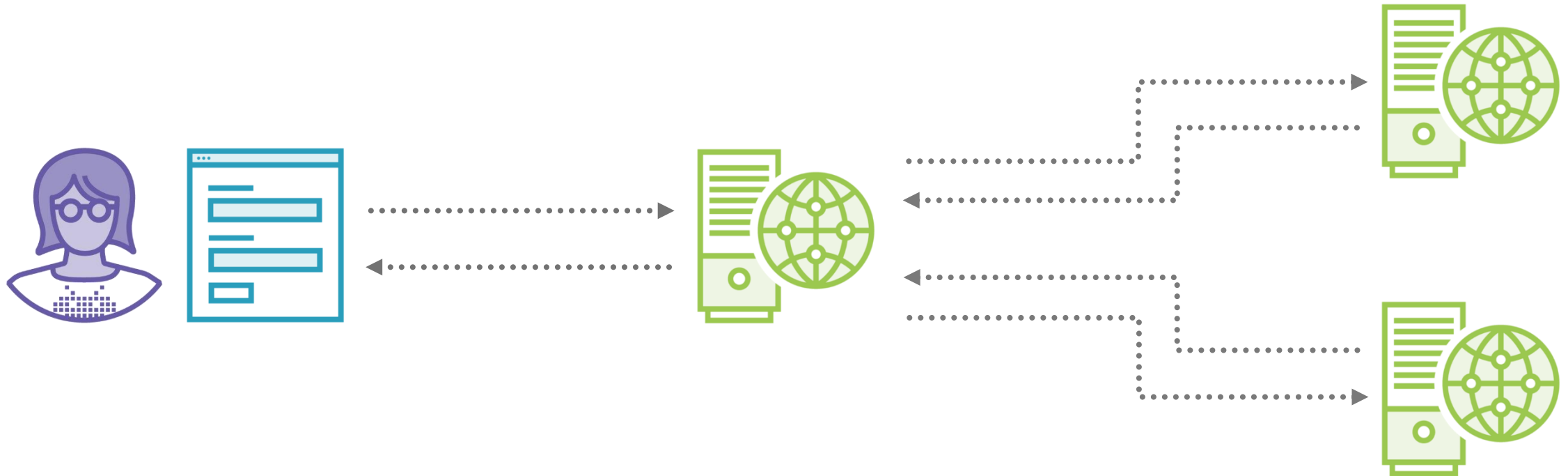


Coordinating between requests and hosted services

- Using channels to transfer data
- Improve response times



V1 Workflow



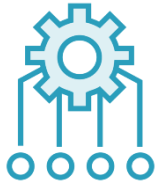
V2 Workflow



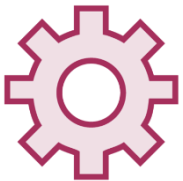
System.Threading.Channels



Released in May 2018



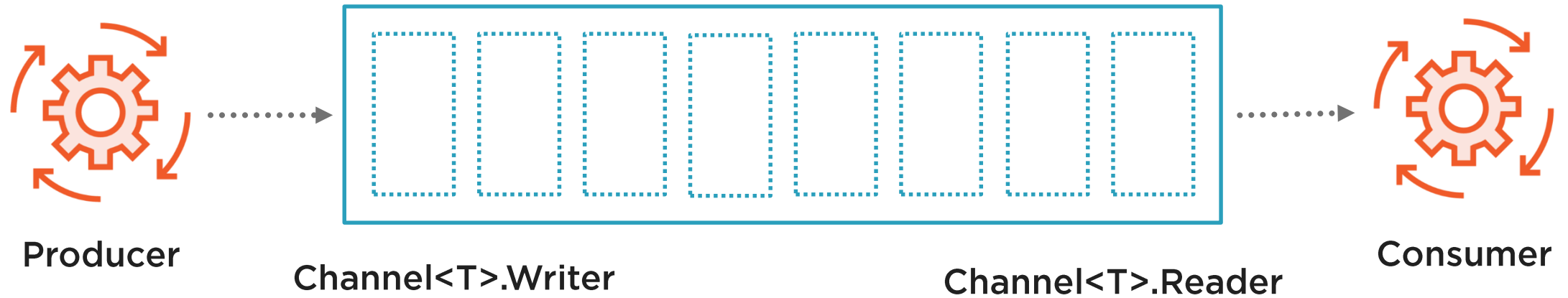
Thread-safe data transfer



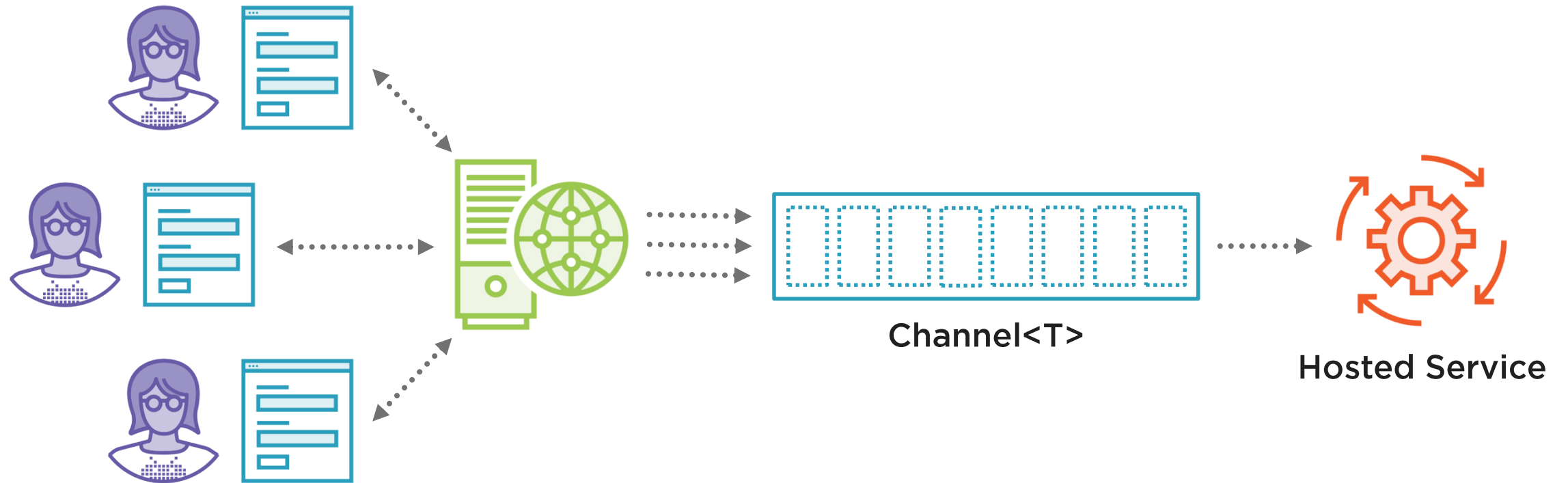
Have one or more producer, and one or more consumer



System.Threading.Channels



Request to Hosted Service Coordination



Demo



Processing data from a channel using a hosted service

- Create a new hosted service
- Read filenames from the channel
- Load and process the uploaded files

Consuming scoped services from hosted services



V2 Workflow



Summary



The IHostedService interface

The BackgroundService abstract class

**Implemented a hosted service
for cache population**

**Triggering hosted services from
web requests**

- Used a channel to transfer request data to a hosted service



Up Next:

Building .NET Core Worker Services

