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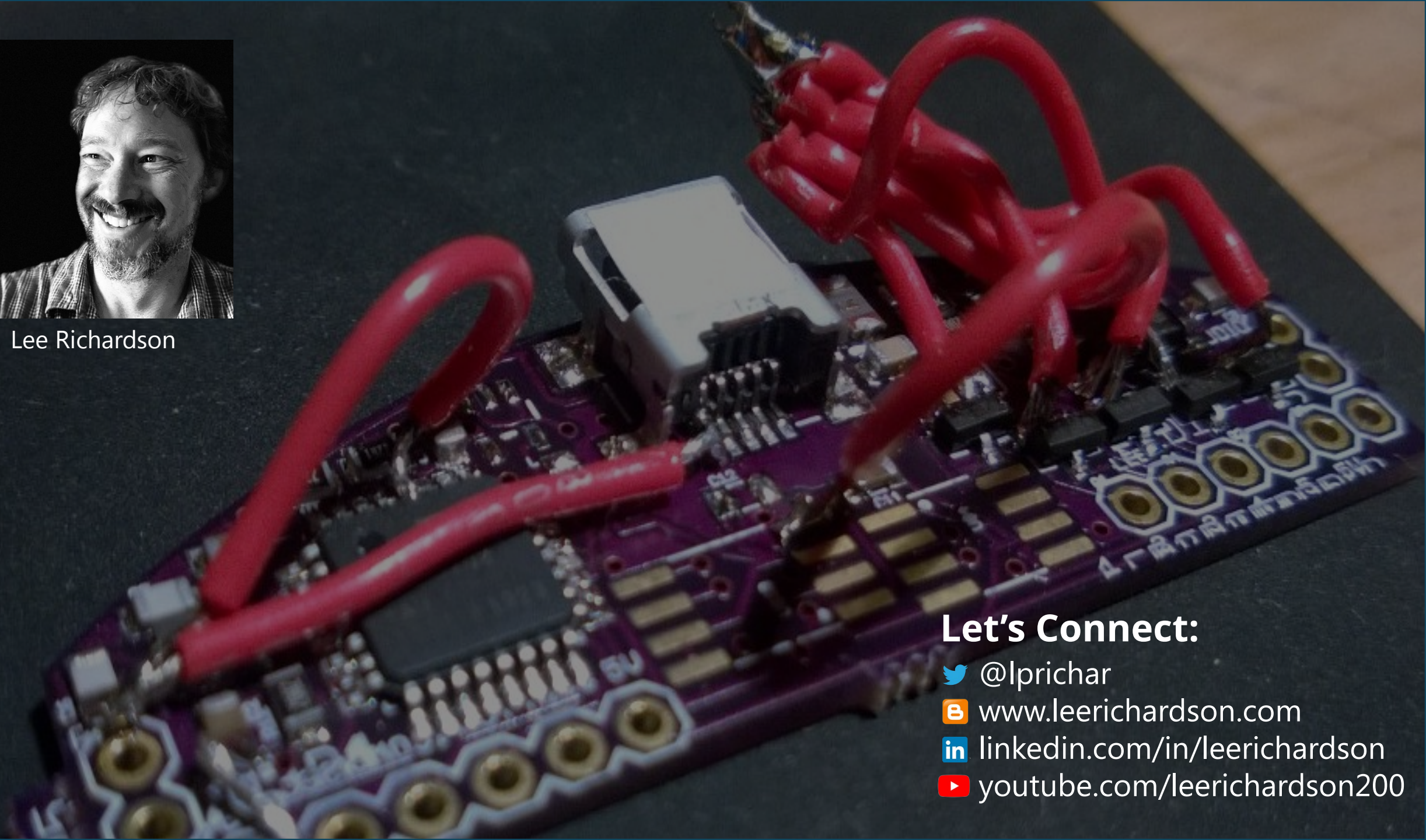
# Increase Observability, Resiliency, and Dev Usability with .NET Aspire

Lee Richardson





Lee Richardson



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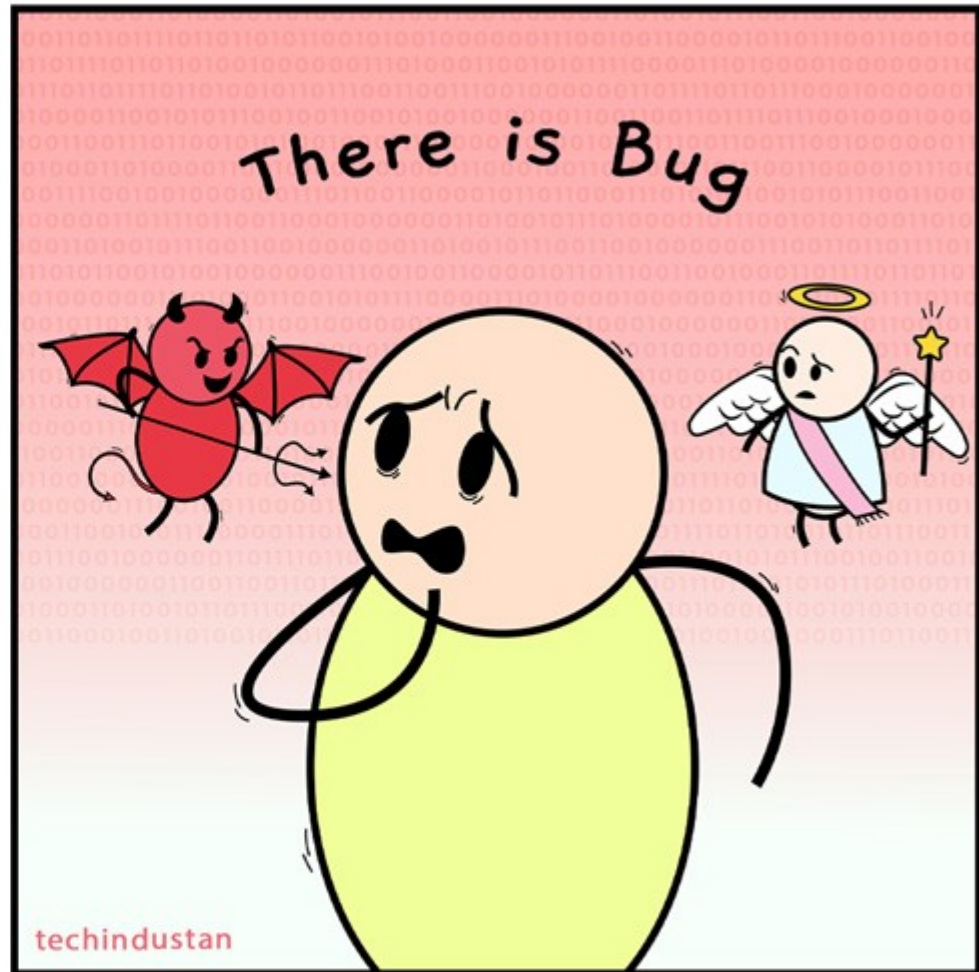
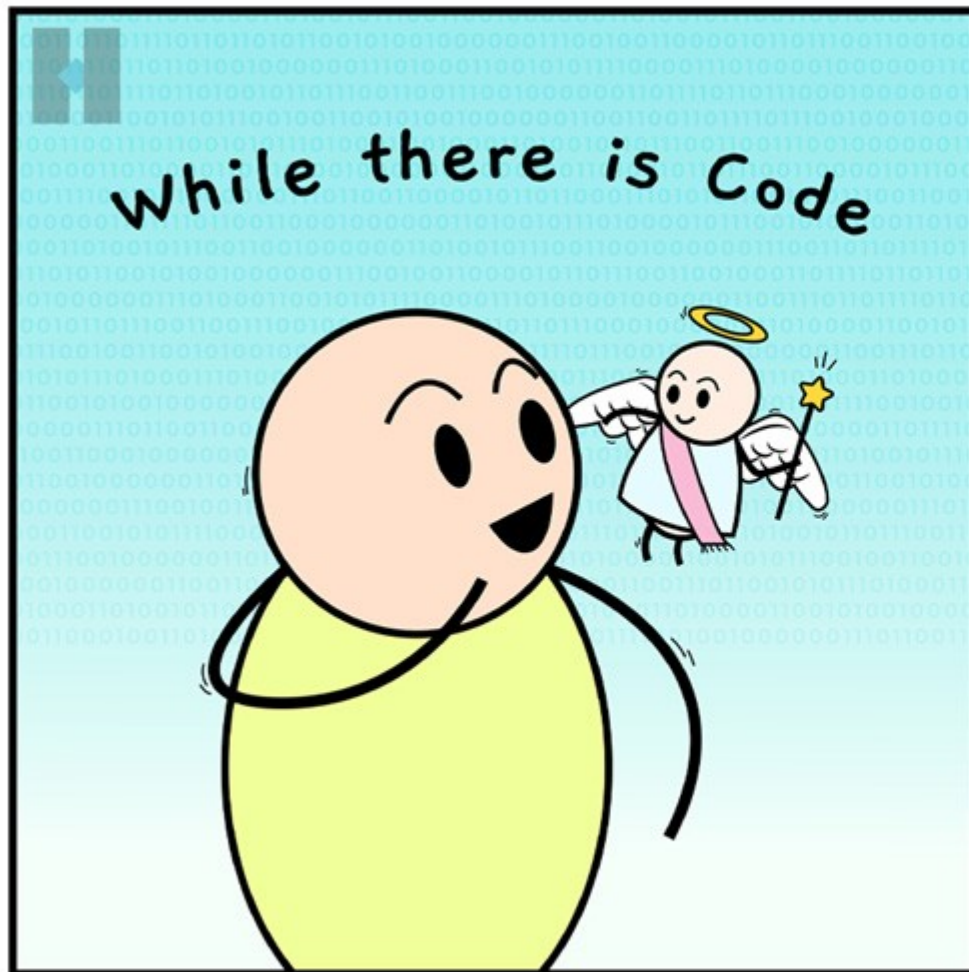
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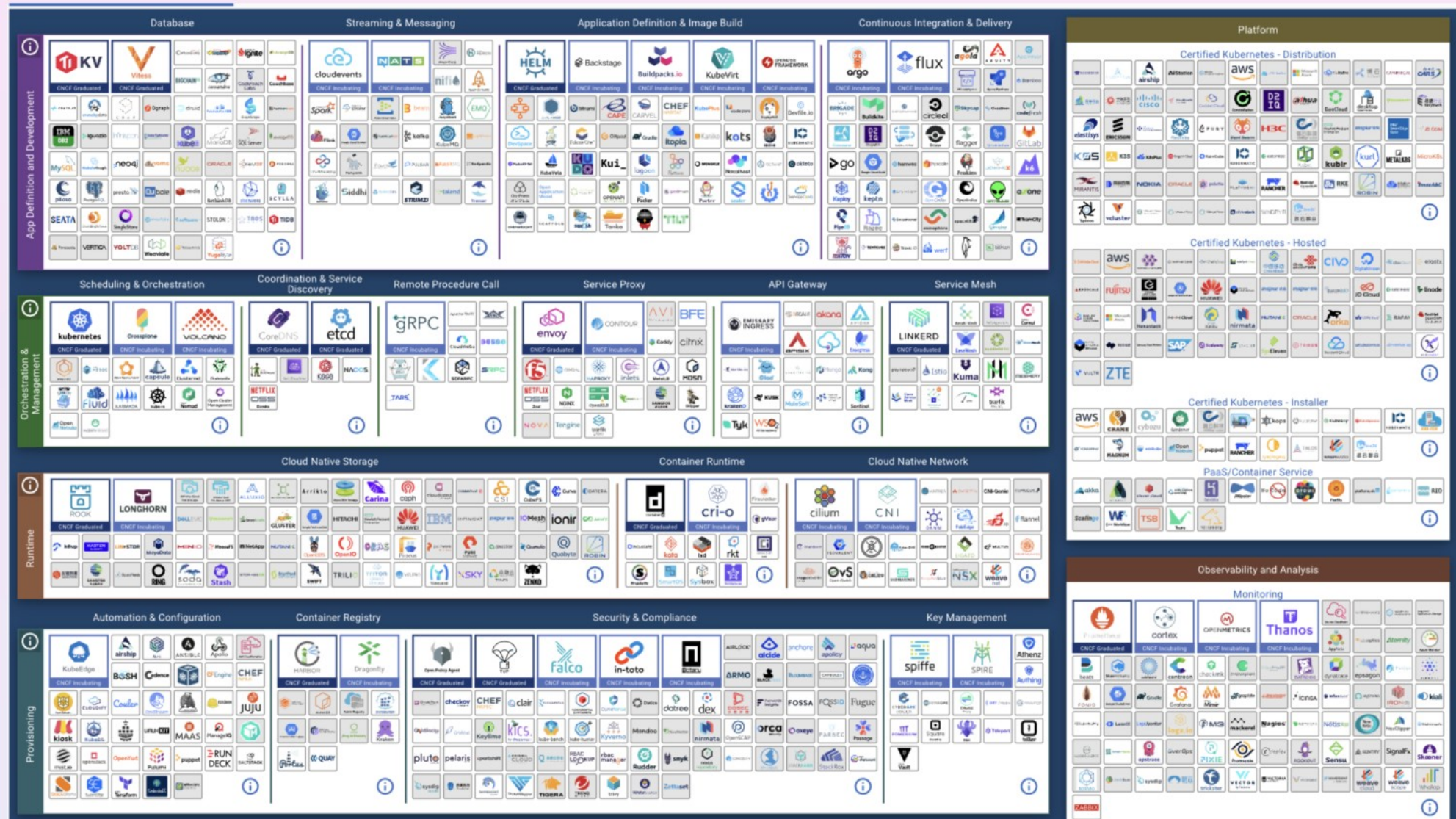




**RELIABILITY**



# CNCF Cloud Native Landscape



CNCF Landscape



# What is .NET Aspire?

An opinionated, cloud ready stack for building observable, production ready, distributed applications







# Microsoft Enterprise Library 5.0

Microsoft Enterprise Library is a collection of reusable application blocks designed to assist software developers with common enterprise development challenges.

This release includes: Caching Block, Cryptography Block, Data Access Block, Exception Handling Block, Logging Block, Policy Injection Block, Security Block, Validation Block, and Unity.

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## Details

**Version:**

5.0

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**File Name:**

Enterprise Library 5.0 - Source Code.msi

**File Size:**

5.3 MB

Enterprise Library 5.0.msi

11.0 MB

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This major release of Enterprise Library contains many compelling new features and updates that will make developers more productive. These include:

- Major architectural refactoring that provides improved testability and maintainability through full support of the dependency injection style of development
- Dependency injection container independence (Unity ships with Enterprise Library, but you can replace it with a container of your choice)
- Programmatic configuration support, including a fluent configuration interface and an XSD schema to enable IntelliSense



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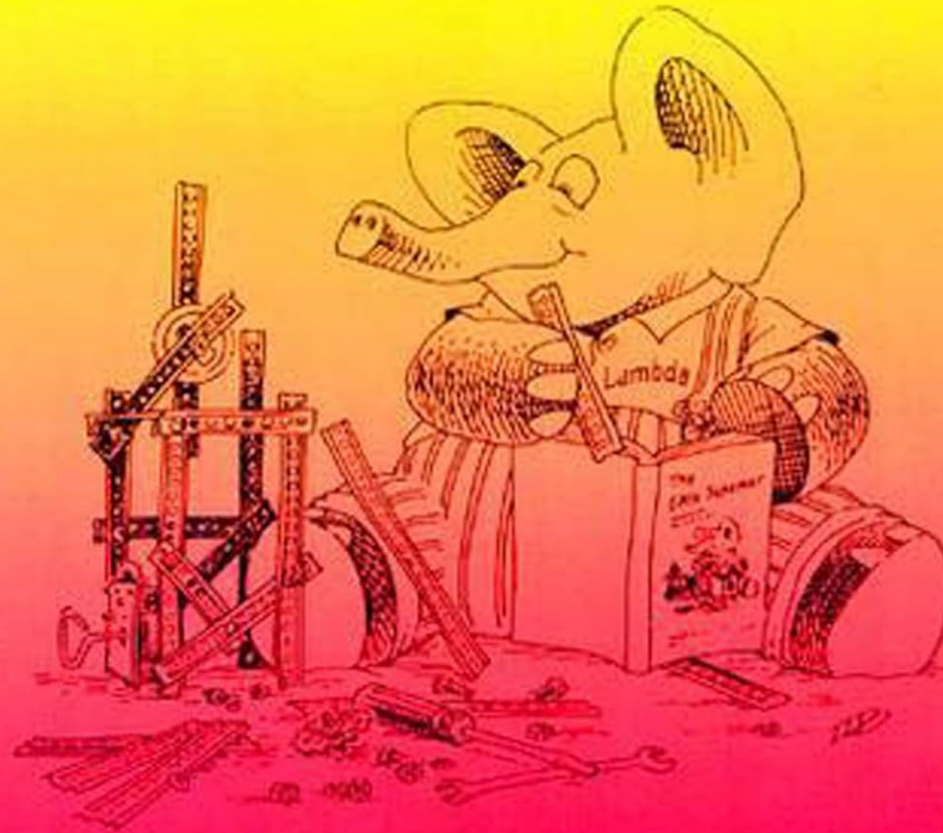
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[jamesmontemagno/TinyShop](https://github.com/jamesmontemagno/TinyShop) | <https://youtu.be/e36NEWqO7GQ> | [Merge Conflict](#)



# The Little Schemer

Fourth Edition



Daniel P. Friedman and Matthias Felleisen

Foreword by Gerald J. Sussman

The Little Schemer - 4th Edition: Daniel P. Friedman, Matthias

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# Install

- .NET 8.0.
- .NET Aspire workload (installed either Visual Studio or the .NET CLI).
- An OCI compliant container runtime, such as:
  - Docker Desktop or Podman. For more information, see Container runtime.
- An Integrated Developer Environment (IDE) or code editor, such as:
  - Visual Studio 2022 version 17.10 or higher (Optional)
  - Visual Studio Code (Optional)
    - C# Dev Kit: Extension (Optional)

[Build your first .NET Aspire solution - .NET Aspire | Microsoft Learn](#)

[.NET Aspire tooling - .NET Aspire | Microsoft Learn](#)



🏆 [2024 OpenTelemetry Community Awards](#) nominations are open!

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High-quality, ubiquitous, and portable telemetry to enable effective observability

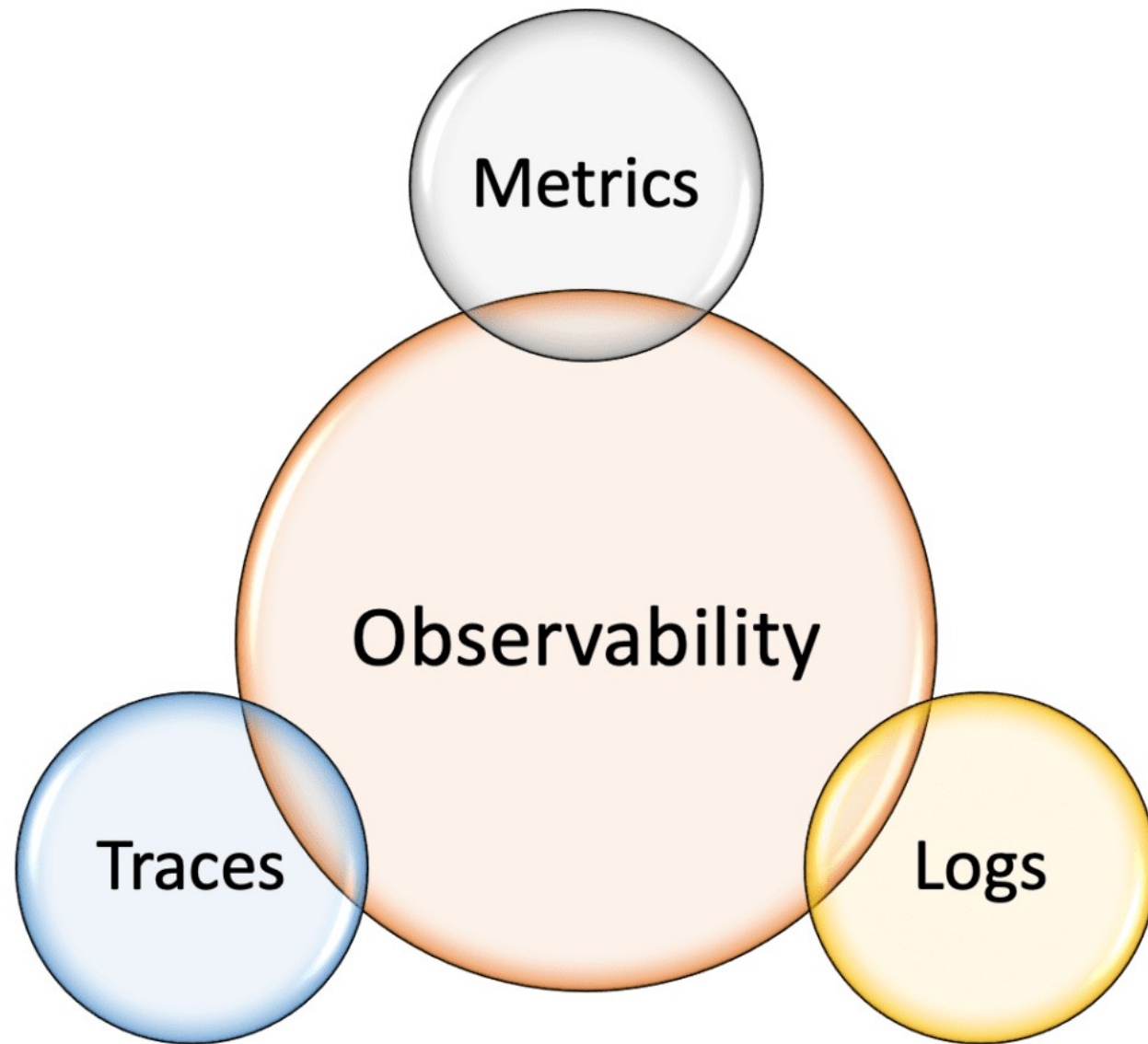
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OpenTelemetry is a collection of APIs, SDKs, and tools. Use it to instrument, generate, collect, and export telemetry data (metrics, logs, and traces) to help you analyze your software's performance and behavior.

OpenTelemetry is [generally available](#) across [several languages](#) and is suitable for production use.

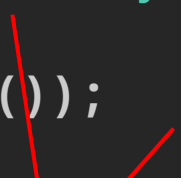




# Serilog Problem

```
<PackageReference Include="Serilog.Sinks.OpenTelemetry"
Version="4.0.0" />

builder.Host.AddAppSettingsSecretsJson()
    .UseAutofac()
    .UseSerilog((context, services, loggerConfiguration) =>
    {
        loggerConfiguration
            .ReadFrom.Configuration(context.Configuration)
            .WriteTo.ApplicationInsights(
                services.GetRequiredService<TelemetryConfiguration>(),
                TelemetryConverter.Traces)
            .WriteTo.Async(c => c.OpenTelemetry()); http.AddStandardResilienceHandler
    });
```



Autofac.Core.Registration.ComponentNotRegisteredException: 'The requested service 'Microsoft.ApplicationInsights.Extensibility.TelemetryConfiguration' has not been registered

[Serilog.Sinks.ApplicationInsights + AddStandardResilienceHandler = ComponentNotRegisteredException - Stack Overflow](#)

# Serilog Solution

```
.WriteTo.ApplicationInsights(  
    MakeTelemetryConfiguration(builder),  
    TelemetryConverter.Traces)  
.WriteTo.Async(c => c.OpenTelemetry());
```

```
private static TelemetryConfiguration MakeTelemetryConfiguration(WebApplicationBuilder builder)  
{  
    var disableAppInsightsTelemetry =  
string.IsNullOrEmpty(builder.Configuration["APPINSIGHTS_INSTRUMENTATIONKEY"]);  
    if (disableAppInsightsTelemetry)  
    {  
        return new TelemetryConfiguration  
        {  
            DisableTelemetry = true,  
        };  
    }  
  
    return new TelemetryConfiguration  
    {  
        InstrumentationKey = builder.Configuration["APPINSIGHTS_INSTRUMENTATIONKEY"],  
    };  
}
```



# Standard resilience handler defaults

Order	Strategy	Description	Defaults
1	Rate limiter	The rate limiter pipeline limits the maximum number of concurrent requests being sent to the dependency.	Queue: 0 Permit: 1_000
2	Total timeout	The total request timeout pipeline applies an overall timeout to the execution, ensuring that the request, including retry attempts, doesn't exceed the configured limit.	Total timeout: 30s
3	Retry	The retry pipeline retries the request in case the dependency is slow or returns a transient error.	Max retries: 3 Backoff: Exponential Use jitter: true Delay: 2s
4	Circuit breaker	The circuit breaker blocks the execution if too many direct failures or timeouts are detected.	Failure ratio: 10% Min throughput: 100 Sampling duration: 30s Break duration: 5s
5	Attempt timeout	The attempt timeout pipeline limits each request attempt duration and throws if it's exceeded.	Attempt timeout: 10s

# Deployment

```
PS C:\dev\GitHub\TinyShop\AppHost1> azd deploy
```

```
Deploying services (azd deploy)
```

```
(✓) Done: Deploying service cache
```

```
- Endpoint: https://cache.internal.thankfulriver-d5a58736.eastus2.azurecontainerapps.io/
```

```
(✓) Done: Deploying service products
```

```
- Endpoint: https://products.internal.thankfulriver-d5a58736.eastus2.azurecontainerapps.io/
```

```
(✓) Done: Deploying service store
```

```
- Endpoint: https://store.thankfulriver-d5a58736.eastus2.azurecontainerapps.io/
```

```
Aspire Dashboard: https://aspire-dashboard.ext.thankfulriver-d5a58736.eastus2.azurecontainerapps.io
```

```
SUCCESS: Your application was deployed to Azure in 2 minutes 17 seconds.
```

```
You can view the resources created under the resource group rg-tinyshoplr in Azure Portal:
```

```
https://portal.azure.com/#@/resource/subscriptions/d78f609d-b879-48b8-be2a-1f23541035ad/resourceGroups/rg-tinyshoplr/overview
```

```
PS C:\dev\GitHub\TinyShop\AppHost1>
```



# Summary .NET Aspire

- Problems
  - Bugs, Performance, Reliability, Scalability, Complexity
- .NET Aspire Offers
  - Dev Usability
    - Documentation & Onboarding,
    - Ease of Adding Components like Redis
  - Observability
  - Resiliency
    - HTTP Resilience, Health Checks

# Resources

## Conferences

- .NET Aspire Developers Day
- [.NET Conf 2024!](#)

## Docs

- .NET Aspire documentation | Microsoft Learn
- Adding .NET Aspire to your existing .NET apps - .NET Blog (microsoft.com)
- [.NET Aspire service defaults - .NET Aspire | Microsoft Learn](#)
- [Build resilient HTTP apps: Key development patterns - .NET | Microsoft Learn](#)
- .NET Aspire what's new? | Microsoft Learn
- [.NET Aspire manifest format for deployment tool builders - .NET Aspire | Microsoft Learn](#)

## Podcasts

- [Azure & DevOps Podcast: David Fowler: Architecture of .NET Aspire - Episode 322](#)
- Hanselminutes with Scott Hanselman: Introducing .NET Aspire with Damian Edwards
- .NET Rocks!: .NET Aspire with David Fowler

## Videos

- [Migrating From Docker Compose to .NET Aspire \(my experience\)](#)
- Let's Learn .NET Aspire - Start your cloud-native journey live!
- Build Better Apps with .NET Aspire - Complete Beginner's Guide & Tutorial
- [.NET Aspire: How to use Redis step by step](#)
- [.NET 8 .NET: Open Telemetry and .NET with Aspire Dashboard](#)
- [Getting Started with OpenTelemetry in .NET - YouTube](#)

## Pluralsight

- [Logging and Monitoring in ASP.NET Core | Pluralsight](#)

## .NET Conf 2024

Celebrate and learn about what you can do with .NET 9 at the biggest .NET virtual event **November 12 - 14.**

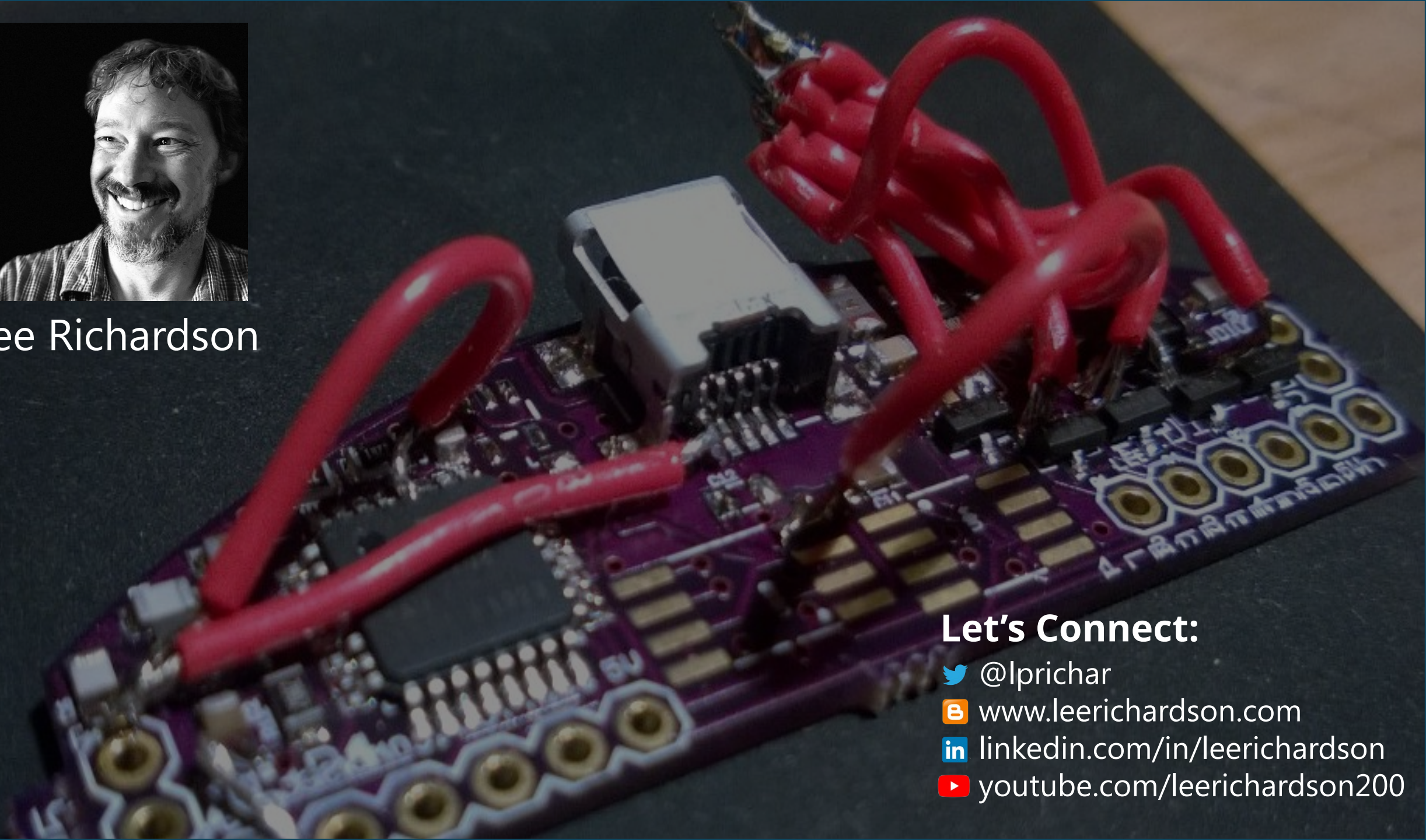
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