Introduction to ML.NET

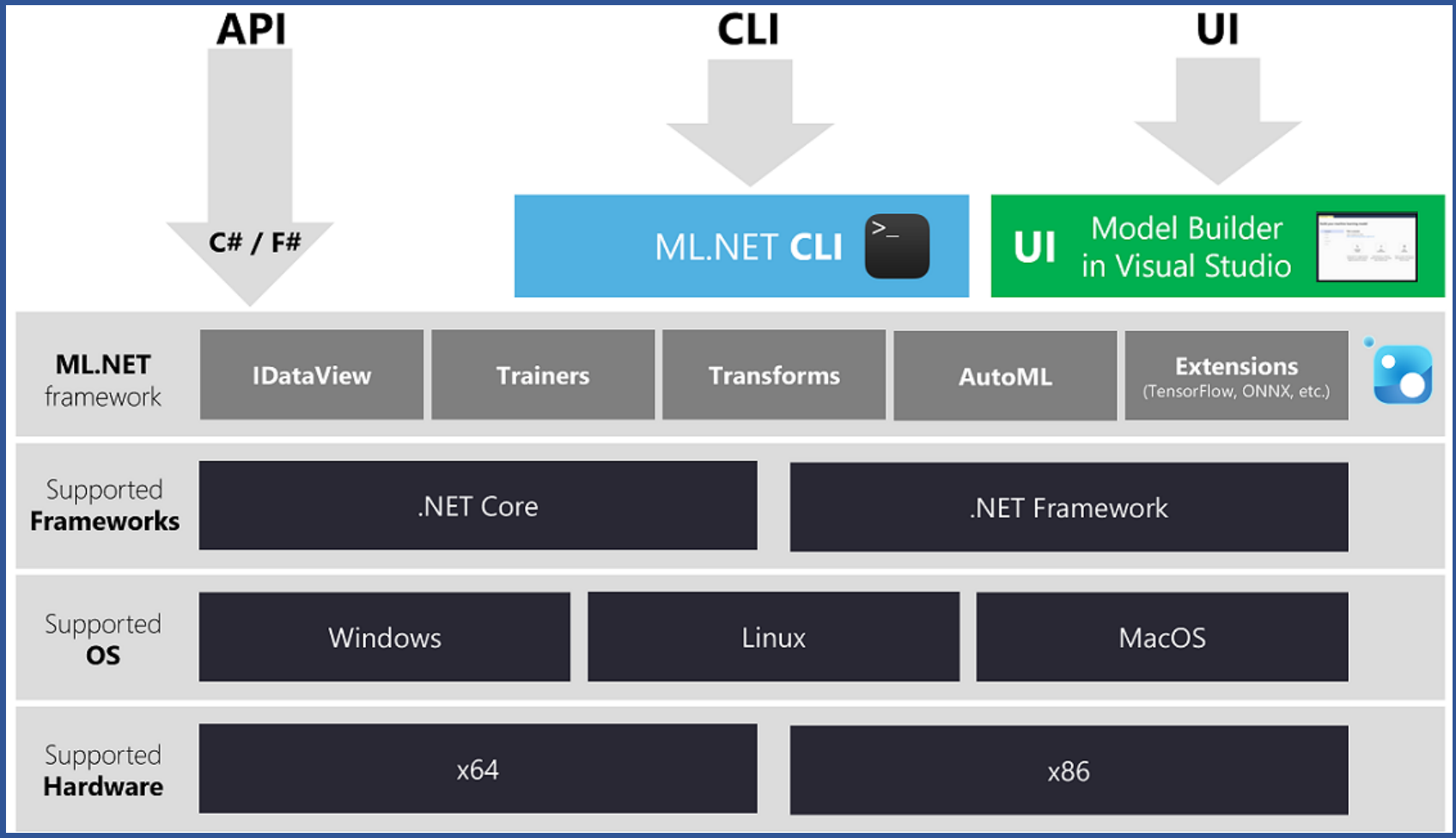
What is ML.NET ?

- A free software machine learning library for the C#, F# and VB.NET
- Original author(s): .NET Foundation, Microsoft
- Initial release: 7 May 2018
- Stable release: 1.1.0 / 4 June 2019
- Open source

- Operating system: Linux, macOS, Windows
- Built for .NET developers
- Custom ML made easy with AutoML
- Extended with TensorFlow & more
- High performance and accuracy

From v0.1 to 1.0

ML.NET Architecture



Supported in ML.NET

Operating system and framework support:

- Windows, Linux, and macOS using .NET Core
- Windows using .NET Framework.

Hardware / Processor architecture support

- x64 bit is supported on all platforms.
- x86 is supported on Windows, except for TensorFlow, LightGBM, and ONNX related functionality.

.NET versions support

- .NET Core 2.1 or later is supported.
- .NET Framework 4.6.1 or later is supported, but 4.7.2 or later is recommended.
- .NET Stardard 2.x (best choice for class libraries).

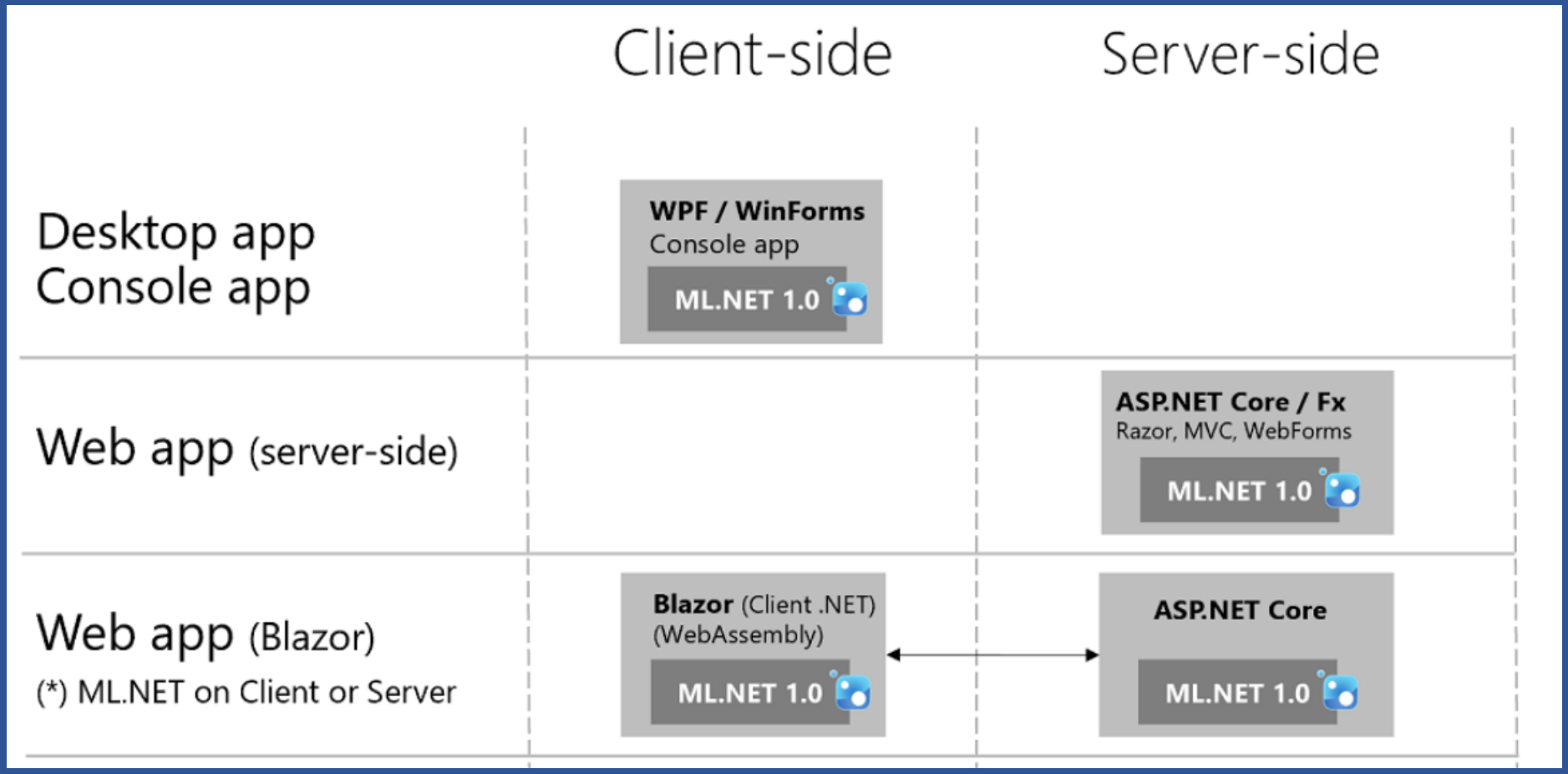
Not supported in ML.NET

- ARM processor architecture
- Xamarin apps (iOS, Android)
- ARM-based IoT devices
- UWP and Unity

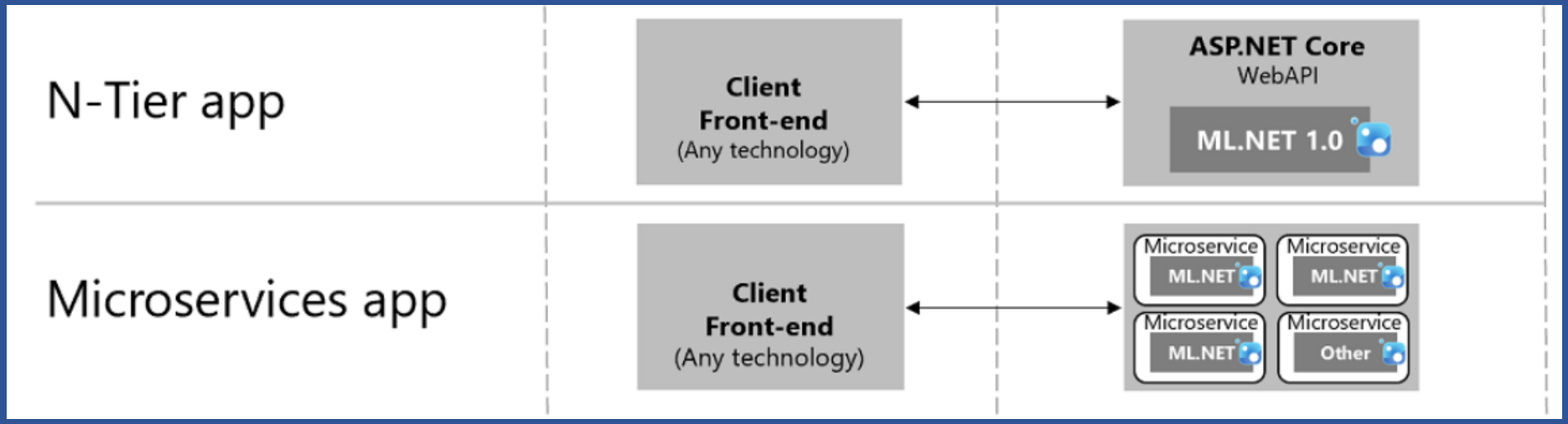
End-user Application Architecture

- ASP.NET Core web apps & WebAPI services
- ASP.NET web apps & WebAPI services
- Azure Functions
- Any other Azure app model app (server side)
- .NET WPF desktop app
- .NET WinForms desktop app
- .NET Core console app (usually for ML model training)
- .NET Framework console app (usually for ML model training)

Multiple possible application architectures



Multiple possible application architectures (continue)



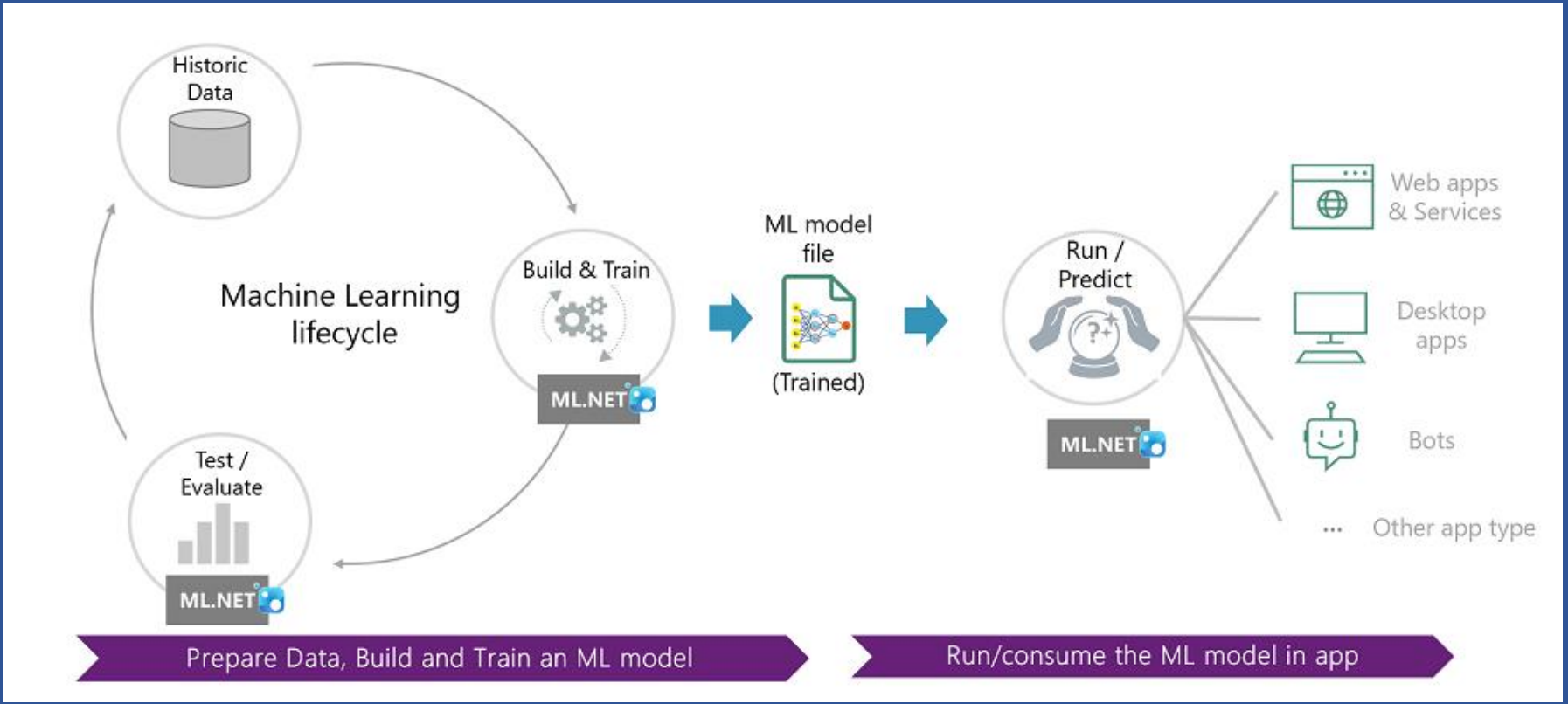
Why ML.NET?

- Create ML models
- Runs as native .NET
- Familiar .NET skills

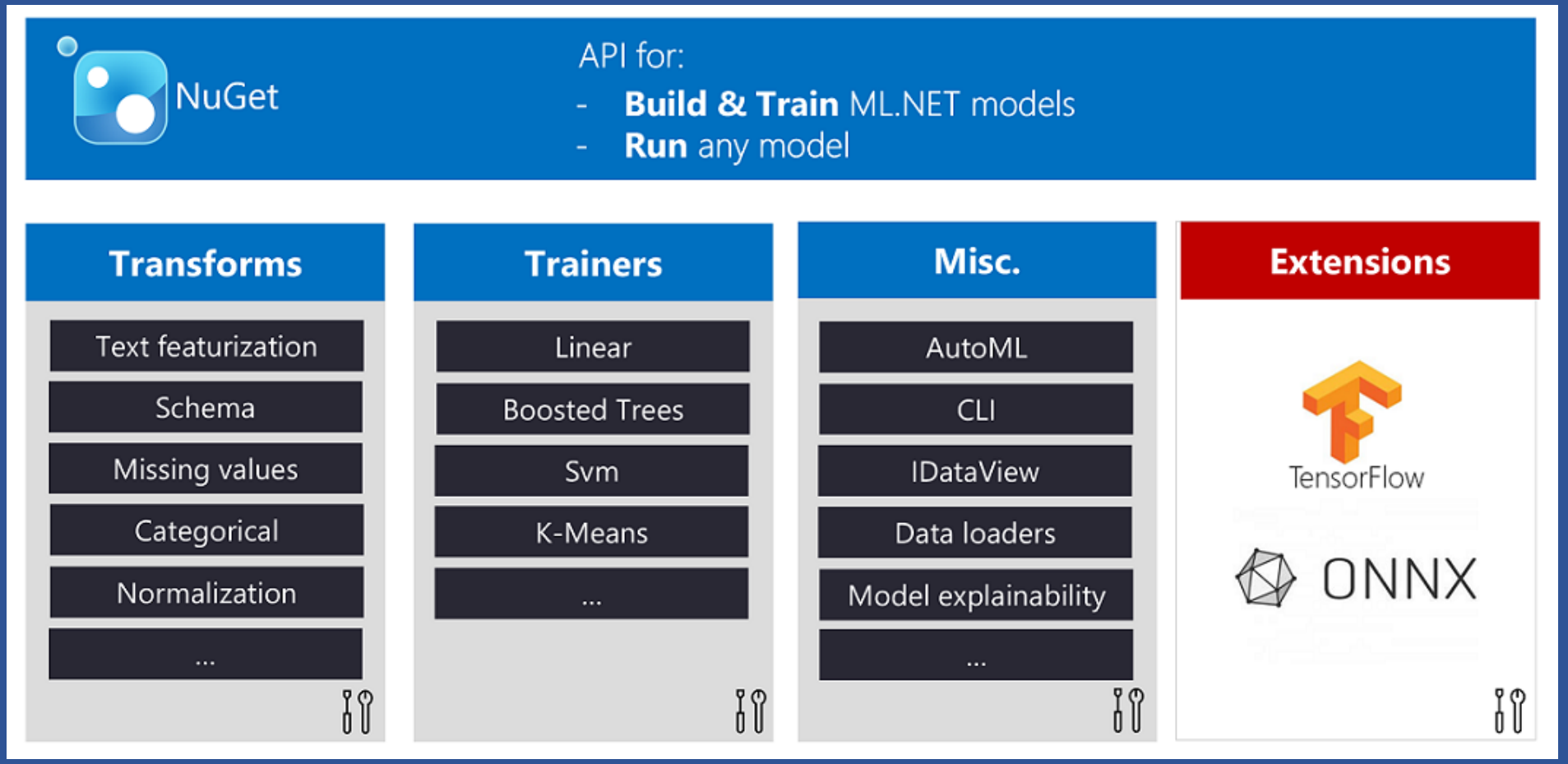
Supported Machine Learning Scenarios

- Binary Classification
- Multi-Class Classification
- Regression
- Recommendation
- Anomaly Detection and Time Series
- Clustering (unsupervised ML)
- Ranking
- Computer Vision in Deep Learning (Integration with TensorFlow and ONNX models)

Creating/training and running ML.NET models



Main components in ML.NET



What's next?

Hello world!