Unified Address parsing and construction library for .NET

Primary Contact:	Nerdbank
Amount requested:	$750 USD (upon completion of grant)
Grant Description:	I would like to kickstart development of Zcash applications built on the .NET platform. I want to start a .NET library that simply can parse Unified Addresses (UAs) into their individual receiver addresses with any other metadata (e.g. preferred order) that the UA embeds. Further, it should be able to construct a UA given a set of addresses. This .NET library will be cross-platform, with automated tests to verify correct functionality on Windows, Linux, Mac. Manual testing on Android will also be done, although I don't expect any problems there. This .NET library will be easily consumable as a NuGet package and pushed to nuget.org, a very popular exchange of (mostly FOSS) software components for building applications. This .NET library may help existing exchanges to support UAs, particularly if those exchanges are written with ASP.NET. The ultimate vision I have is a full featured .NET library delivered as a NuGet package to nuget.org for all applications to use to interact with the Zcash blockchain, functioning as a Lite wallet. A substantial risk with the ultimate vision is whether a .NET implementation of the cryptographic functions can have acceptable performance. I believe most implementations so far have been in native code (C++ or rust). If C# cannot perform with

	acceptable performance, this ultimate vision can be modified to be C# bindings to the existing rust or C++ library to still enable .NET zcash lite wallets, although with a native library dependency. To be clear, this grant is NOT for the ultimate vision. But the UA functionality described in the first paragraph will be housed in a repo, library and nuget package that will be suitable for gradual growth into the ultimate vision, if that vision can be reached (with subsequent grants).
Team:	I'm a team of one at this point. I have been an open-source developer for over 20 years, as well as a professional software engineer at Microsoft for about 17 years. I have a passion for developing OSS software to raise the privacy level for end users, including developing the IronPigeon protocol and library (https://github.com/aarnott/ironpigeon) that features E2E encryption and message routing over a trustless network *without disclosing anything about a person's social network*, and a POC desktop and mobile app to demonstrate it. I also am actively working on a modern personal financial tracking client application (ala Quicken) that I hope can one day consume a .NET Zcash library so that Zcash wallet operations can be done directly from within a full financial tracking application instead of a mere software wallet with the typical functionality that they contain. I love Zcash, but I really don't (yet) understand the deep ZK crypto that it entails. That's why I think starting with just a simple UA library would be a good place to get my feet wet, hopefully leading to much more.