Using third party DLL in Unity3d Game Engine by Fernando Balandran

Lessons **learned** from trying to interact with a third party DLL in unity3d. I think that many of the links below would probably apply to other scenarios. Many videos online and tutorials talked about creating a DLL from scratch either c# or c++ none of which I needed. Very few talked about actually using a third party native DLL such as the one I needed from Siemens PLC.

The **solution** was actually quite easy after lots of trial and error, and many more reading through the forums and what not. I used tlbimp.exe to generate a type library DLL, then I placed that into the assets/plugins folder also note on unity3d editor properties that the new DLL is treated as managed code. *Note that this particular DLL doesn't work on 64bit Unity Editor and it threw a COMException. However the new type library DLL works fine in 32bit Unity Editor, I imagine that somewhere in the DLL there is an instruction specifying to work only in 32bit.*

https://msdn.microsoft.com/en-us/library/ms973872.aspx [An Overview of Managed/Unmanaged Code Interoperability]

https://msdn.microsoft.com/en-us/library/42b9ea93%28v=vs.110%29.aspx?cs-save-lang=1&cs-lang=csharp#code-snippet-1 [Platform Invoke Examples]

https://msdn.microsoft.com/en-us/library/aa288468%28v=vs.71%29.aspx [Platform invoke tutorial]

http://www.codeproject.com/Articles/990/Understanding-Classic-COM-Interoperability-With-NE

http://www.codeproject.com/Articles/14180/Using-Unmanaged-C-Libraries-DLLs-in-NET-Applicatio#Perform

https://msdn.microsoft.com/library/e753eftz%28v=vs.100%29.aspx [Customizing Runtime Callable Wrappers]

https://msdn.microsoft.com/en-us/library/eaw10et3%28v=vs.110%29.aspx [Interop Marshaling]

https://msdn.microsoft.com/en-us/library/9f9f3yxf%28v=vs.110%29.aspx [Marshaling Data with COM Interop]

https://msdn.microsoft.com/en-us/library/aa645736%28v=vs.71%29.aspx [COM Interop tutorial] *Sample one is the one that lead me in the right direction.*

There is also a very good book by Andrew Troelsen called COM and .NET Interoperability

Terms: Dynamic Linked Library (DLL), Platform Invoke, COM Interop, C++ Interop, Marshalling, DLLImport, InteropServices,

Tools used: Unity3d 32bit and 64bit, Visual Studio 2015, tlbimpl.exe, Ildasm.exe, Visual Studio Develop Cmd Prompt, oleview.exe

Conclusion: Youtube is full of "DLL" using and creating for unity3d use. Most are just creating classes, and methods and wrapping into a DLL mainly for repurposing. What worked for me was COM Interop, and I can create instances, and call methods with no issues. I didn't have to re-write any methods or anything tlbimp.exe took care of all the heavy work. I hope the links help, and good luck!