32 versus 64 bit development

The AvaSpec development package is available in both a 32 bit and a 64 bit version.

1) Choice of development environment

Choosing which version of the DLL to use can depend on the following factors:

- **Compatibility**: 64 bit programs are mainly attractive because they enable the use of a much larger memory address space. E.g. if your project is doing large amounts of calculations, then it could profit from using 64 bit. Development environments like MATLAB or LabVIEW are now available in 64 bit. If you want to use the AvaSpec in such an environment, you will need the 64 bit version of the DLL, otherwise your program will not be able to load the DLL. Note that you do not need the 64 bit version of the DLL, just because you are using a 64 bit version of Windows. The 32 bit DLL works just fine with 32 bit programs under 64 bit Windows, in the WoW64 mode.

- **Performance**: In theory, 64 bit programs are faster than 32 bit ones, but in practice, there is also a larger amount of overhead involved. Do not expect the 64 bit data acquisition itself to be faster than the 32 bit one.

So mainly, the choice will be driven by the development environment that you already use. Note that the MATLAB setup does not even show that it is installing a 64 bit MATLAB version on 64 bit versions of Windows. If in doubt, please consult the About box of the program, which will announce the fact if it is a 64 bit version.
It is perfectly possible to install 32 bit versions of e.g. MATLAB or LabVIEW on a 64 bit version of Windows and continue 32 bit development.

At present, our own software development continues to be in 32 bit, as there are no compelling reasons for using the 64 bit Delphi development environment.

Besides cross-platform compatibility, you will have to factor in points like the expertise of your programmers or the availability of ready-made components.

2) Setup of your Visual Studio configuration

The default target setting of Visual Studio is ‘Any CPU’. This means your program will run as a 32 bit executable on 32 bit versions of Windows, and as a 64 bit executable on 64 bit versions of Windows. However, if you want to develop a 32 bit application on a 64 bit operating system (using the avaspec.dll rather than avaspecx64.dll), then this setting will result in a run time error at the startup of your program, as the program then will not load the 32 bit DLL.
If you do 32 bit development with Visual Studio and the AvaSpec DLL on a 64 bit version of Windows, you will have to use the Configuration Manager and generate a 32 bit x86 configuration. Note that this will also generate a new ‘debug’ and ‘release’ subdirectory for the compiled binaries (one level down a new ‘x86’ subdirectory). Make sure that the avaspec.dll is available to the programs in these new subdirectories e.g. by copying the DLL file into them.