PSMG consultation paper 2022 review

In the PSMG consultation paper 2022, the AEMO-proposed standard for DLL format and interface has the following features:

- one function for LoadLibrary;

- one function that is called at every time-step;

- one function for FreeLibrary.

While it is often required by the manufacturers to call the control DLL at a given sampling rate, no concept of sampling rate is proposed in the AEMO standard. Having it would make the standard more in-line with the current developments.

The proposed standard allows to pass parameters to the DLL only as inputs, which unnecessarily increases the number of control system signals. Being able to pass parameters once at the beginning of the simulation would accelerate simulations and make interfacing easier if a large number of parameters are used in the DLL.

The DLLs should perform additional steps at the beginning of the simulation, such as checking the validity of data, initialization of internal variables, etc., but no provisions for this are made in the proposed standard.

If the proposed standard evolves and newer versions are developed in the future, it will not be possible to get the version of the standard from the DLL and properly interface with the DLL. Having a function that indicates the version of the standard would be useful.

No information is given regarding the DLLs that depend on other DLLs and how they should be loaded/called. Windows function SetDllDirectory may or may not be required.

The important features mentioned above are currently missing from the AEMO standard. However, they are already available in the standard proposed by the joint IEEE TASS Task Force and Cigre B4.82 Working Group "USE OF REAL-CODE IN EMT MODELS FOR POWER SYSTEM ANALYSIS". The development of the AEMO standard will likely make it look more and more similar to the one proposed by the IEEE/CIGRE joint working group, and thus it is not clear why a new standard with similar scope and requirements is needed. A standard already exists and might be improved to accommodate further needs.