

1 Executive Summary

The central business of the ETSF is the calculation of spectral properties, from the excited states and response functions of materials. It is therefore evident that these quantities are central in the interdependent software used in ETSF projects, and in particular in the exchange of data between programs. This data exchange is achieved through the specifications of the *ETSF File Format (EFF)*, associated to a file Input/Output library, *ETSF_IO*, and plays a major role in the portability and interoperability of ETSF software.

Scientific codes, which are long-term projects, also have to deal with the very high turn-over of their developer bases, mainly composed of PhD students and post-docs. Defining and achieving a minimum level of quality for new software developments is mandatory, in order to allow for an efficient handing over of ongoing efforts to newcomers. In addition, the support of new architectures for high-performance computing requires the intervention of specialists, most of the time external to the developer communities of the codes involved. The *ETSF Coding Standards (ECS)* document aims at addressing these issues by gathering a comprehensive set of guidelines usable by any software developer within the ETSF.

To write the EFF and ECS documents constituting deliverable D8.4, IT8 could rely on the results of the efforts undertaken during the lifespan of Nanoquanta (2004-2008), as well as on the deliverables D8.1 and D8.3 of the current project. The making of these documents is based on consensus, a multiply successful strategy within the network over the past years. Each proposal, reaction, comment, or suggestion, has been examined carefully before updating the documents.

Further work since D8.3 has been carried out to synchronize the ETSF software with the latest versions of the two above documents. Comprehensive testing has performed with the ETSF_IO and LibXC libraries. ETSF codes have also been updated to interface with these specifications and exploit efficiently the added interoperability. Extending the core EFF specifications has been replaced by a procedure to devise EFF extensions. The ECS document has not undergone any further change, as discussions about this topic have concluded that it would not bring anything interesting to the ETSF.