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 require the intervention of specialists, most of the time external to the developer communities of the codes involved. The ***ETSF Coding Standards (ECS)*** document, developed under the present project, aims at addressing these issues by gathering a comprehensive set of guidelines usable by any software developer within the ETSF.

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

Extensive work has been carried out to extend the EFF to spectral and response quantities. The ETSF_IO library now incorporates a preliminary functional version of the new EFF specifications. ETSF codes will also be updated in the coming period to interface with these specifications and exploit efficiently the added interoperability.

In future, we are considering adding more specific extensions, *e.g.* regarding Fortran programming, to the ECS. A companion document will also be published to help the ETSF developers conform to the standards.