The European National Research and Education Networks have a long tradition of shared use of resources, in particular, by deploying alien wavelengths (AWs) that disaggregate the transponders from the optical transport network. This network evolution is being extended by making use of White Boxes and fully disaggregated transport networks. In this paper, management architecture and White Box interoperability scenarios are discussed, and it is shown that a software defined networking based solution can be used to manage selected optical White Boxes. Novel transport network simulation tools are compared with existing tools and validated against physical links to highlight the potential and applicability of such tools for analysis and estimation of performance evolution trends for AW deployments. Results show good correlation between new and existing tools, although initially developed for different purposes.