Companies providing customized products are increasingly applying configurators in order to support the sales and design activities. Yet, especially for engineer-to-order (ETO) companies such activities are often divided across different organizations, where throughout the configuration process product specification has to be retrieved across the supply chains. Therefore, it is required that relevant information from suppliers is included in the configuration process, either as sub-models or by integrating configurators across the supply chains. This study investigates the challenges associated with including suppliers’ product specifications as sub-models and how these can be addressed by integrating configurators across supply chains to receive real-time information from suppliers. Based on established literature on the illustrated technical integration of configurators across the supply chains, this paper contributes with empirical evidence on the overall impact of its implementation. The results presented are based on a case study in an ETO company where it is supported that the complexity of the configuration models can be significantly reduced as well as the time devoted for the modelling and maintaining the systems. Furthermore, with the ability of receiving accurate and up-to-date information from suppliers, the quality of the specifications can be improved, which leads to reduced cost of the overall design.