



Figure 4.1 3D data utilization at Toyota

Lightweight XVL is used at Toyota's design department, for the automated review of large-scale designs and assemblies. XVL and the XVL applications allow accurate and very rapid review of assembly data of entire car designs. In the company's design review process, automatic checks of all possible interferences between all parts allow design quality to be significantly improved in the design phases. Use of XVL for repeated design reviews means that there is greater identification and prevention of problems which can often occur in downstream processes. Since cars comprise about 30,000 parts, the time it takes to collect all the related CAD models is enormous, and although Toyota's database contains data on thousands of very similar parts, the 3D representation for each part has to be confirmed by hand. Since XVL is able to display any 3D data instantaneously, especially compared to the speed of a CAD platform, it is an effective tool for this kind of manual part checking. XVL can also significantly reduce the man-hours required for collecting CAD models from various sources. By integrating XVL with 3D CAD data, a company can effectively use 3D digital data in realistic settings.

In Toyota, digital manufacturing processes based on 3D data are aggressively promoted by top management. This in turn encourages business process innovation at the workplace, based on 3D data, and then the sharing of successful experiences and tasks between departments leads to further improvements. During the exhibition at Toyota, enthusiastic discussions between Toyota staff and the visitors were held. Also present were the CEOs of supplier companies. Activities such as this help increase digital literacy in the manufacturing workplace, as well as promote the understanding by top management of those supplier companies. Toyota's well-known Just-In-Time production method involves all related parts manufacturers, so by expanding the suppliers' active approach in using 3D data, Toyota is working hard to further enhance the productivity of the whole group, worldwide.