For advanced lithography equipment with high system availability requirements, customers have service contracts with ASML, with commitments on spare parts availability. ASML operates a service network to support these logistic contracts. To determine spare parts stock levels ASML needs to forecast spare parts demand. An important input for this forecast is the service Bill of Material (BOM) per installed machine in the field, which specifies the applicable spare parts for a machine, and is usually derived from the machine configuration. Because of a growing installed base, increasing machine complexity, and an increasing number of machine variants, defining and maintaining machine configurations becomes a challenge, which is why the service BOM is not always in line with the actual installed machine. An incorrect service BOM results in either a too low or a too high forecast for spare parts demand, and will result in under- or overstock.

We designed a method to generate alerts for possible errors in the service BOM. This method builds on multiple sources of machine information. Our method was tested in a pilot study, and found to be very effective. 95% of the generated alerts were correctly triggered and did result in actions that improved the service BOM. As a result, the method has been implemented by ASML. By this method, ASML reduced spare part non-availabilities by approximately 4-5 percent per year.