1 Research background and current situation

Chinese marine engineering manufacturing industry has achieved great progress since the implementation of the national maritime strategy, *Towards Deep Blue*. Guangdong Province has also clearly proposed to actively develop the marine engineering equipment industry in the 13th five-year plan for the development of strategic emerging industries but restricted by severe material failure under complicated marine environment, especially in the South China Sea. Therefore, it is urgent to establish an intelligent evaluation and management system for the service performance of marine engineering equipment materials, so as to provide technical support for their safety service and life extension.

The rapid development of new generation of information technology in recent years makes the appliance of Digital Twin system in industries available.

The engineering material service performance digital twin system proposed in our project