

合力科技 数字孪生系统

HELITWINX®

HELI TECHNOLOGY HELITWINX®
DIGITAL TWIN SYSTEM



About Us



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科技改变一切

TECHNOLOGY CHANGES
EVERYTHING

HELI DIGITAL



PHYSICAL SPACE

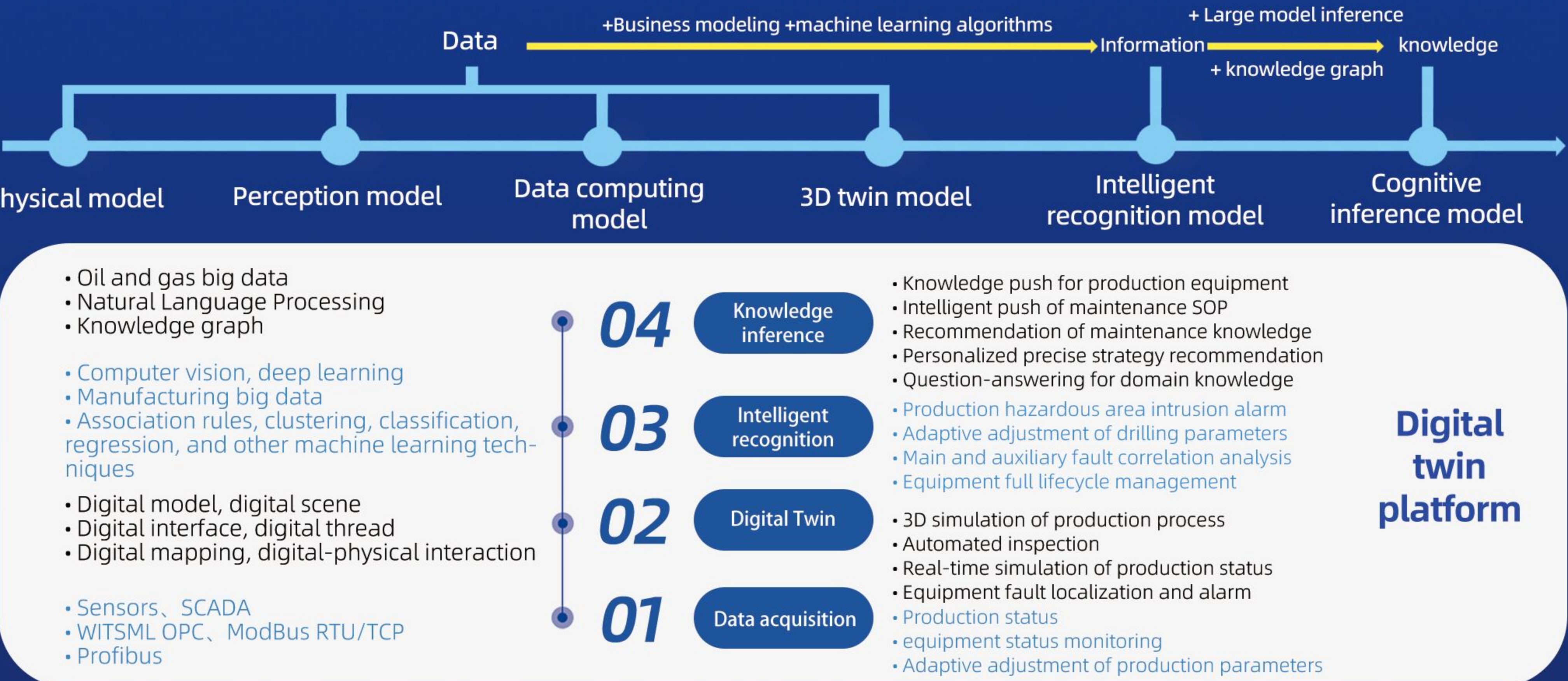
Perception

Mapping



VIRTUAL SPACE

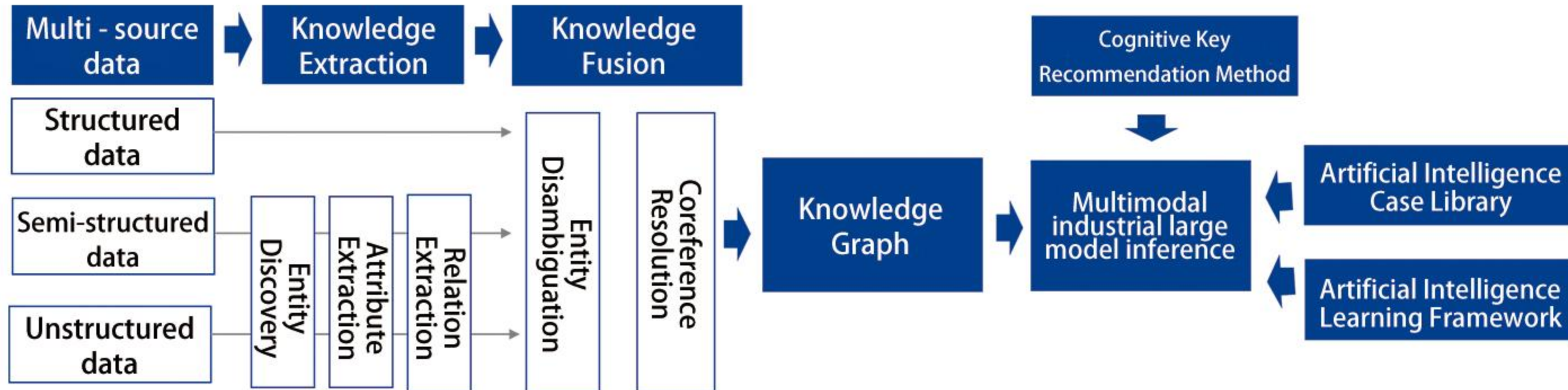
Digital Twin: Data to information ,knowledge



Key driving forces of digital twins

Knowledge graph and large models are key driving forces of digital twins:

- Digital twin is the ultimate form of oil and gas development, representing the mapping of the real world in a digital information network.
- The relationships between industrial entities are recorded using multidimensional indicators, forming "user profiles" stored in the graph, and are updated in real time, creating a real-time graph data warehouse.
- The real-time graph data warehouse integrates the knowledge graph with the real-time data warehouse, targeting IoT-level applications, making the digital scene smarter and closer to the digital twin.



Drilling and completion digital twin



The system also supports VR and AR technologies, allowing operators to intuitively observe and analyze the drilling process, thereby enhancing the accuracy and efficiency of decision-making. It plays a crucial role in improving the safety, efficiency, and economic benefits of drilling operations.

The drilling and completion digital twin system integrates real-time data acquisition, 3D modeling, simulation analysis, and intelligent decision support to construct a virtual drilling and completion operation environment. The system can receive and process multi-source data in real time from downhole sensors, surface equipment, and historical databases. By utilizing high-precision 3D geological models and drilling dynamics models, the system simulates key parameters such as wellbore trajectory, formation pressure, and drill bit wear during the drilling process. Through data fusion and machine learning algorithms, the system can predict potential risks, optimize drilling parameters, and provide real-time operational recommendations.

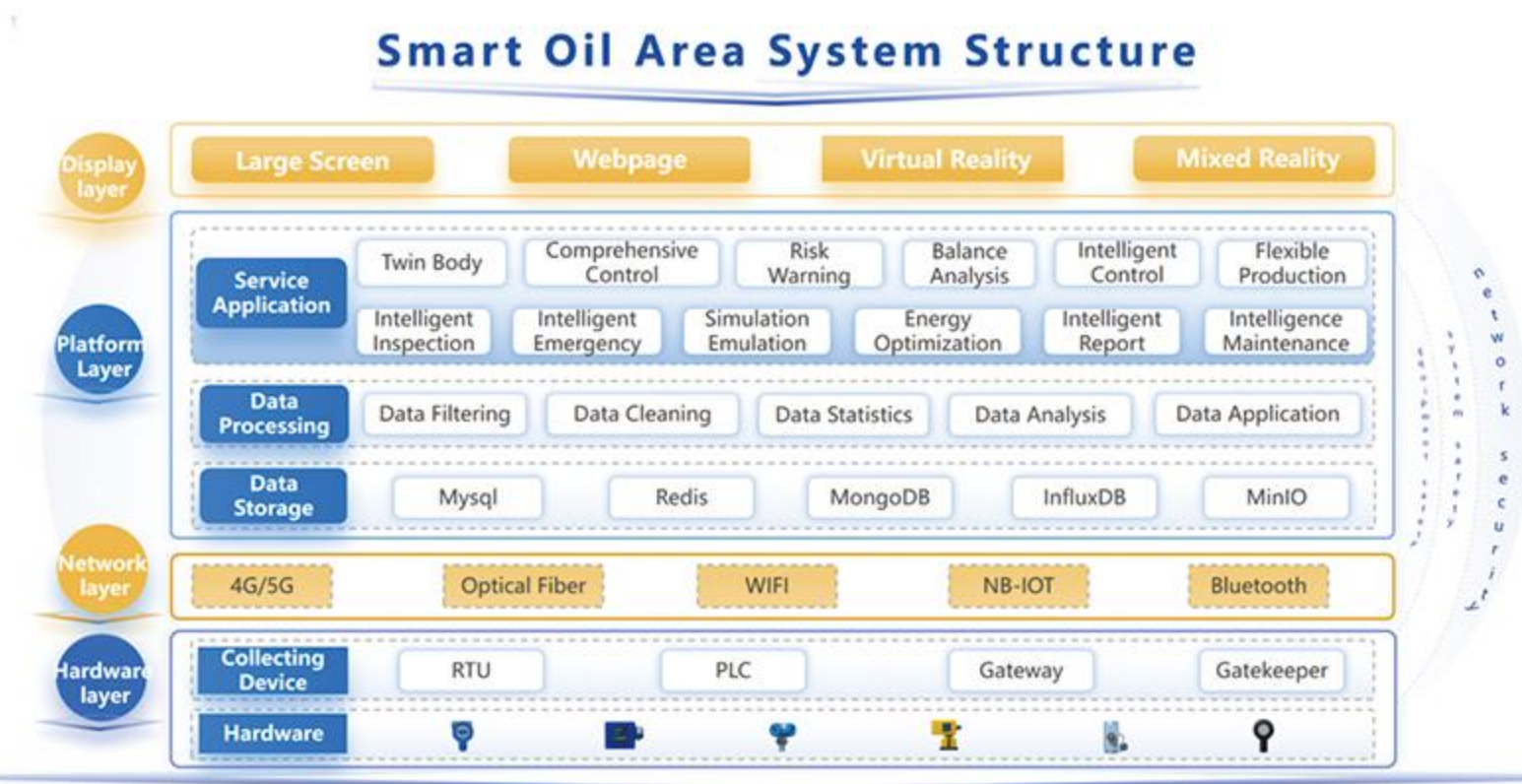
Oil field station and storage digital twin



The system also supports VR and AR technologies, allowing managers to intuitively monitor and operate station and storage equipment, thereby enhancing management efficiency and safety. Through digitalization and intelligent technologies, the system comprehensively improves the technical level and management capabilities of station and storage operations, ensuring safe, efficient, and environmentally friendly operation.

The oil field station and storage digital twin system integrates IoT, big data, 3D modeling, and real-time simulation technologies to construct a highly accurate virtual station and storage environment. The system can collect and process multi-source data in real time from various devices, sensors, and control systems within the station and storage, including key parameters such as flow rate, pressure, temperature, and liquid levels. Using high-fidelity 3D models and physical engines, the system can simulate fluid flow, equipment operation, and environmental changes within the station and storage, achieving a digital mapping of the entire process. Furthermore, the system enables fault diagnosis, performance optimization, and predictive maintenance, providing real-time operational guidance and decision support.

Smart oil field digital twin



The smart oil field digital twin system leverages digitalization and intelligent technologies to comprehensively enhance the precision, intelligence, and sustainability of oil field management, providing strong support for the high-quality development of oilfields.

The smart oil field digital twin system, by integrating IoT, big data, 3D geographic information systems, and real-time simulation technologies, constructs a highly accurate virtual environment that covers all equipment and facilities within the oil field management area, including well sites, pipelines, stations, and storage. The system can collect and process multi-source data in real time from various devices, sensors, and monitoring systems. Using high-precision 3D models and physical engines, the system simulates the entire process of oil and gas production, transportation, and storage within the oil field, achieving a digital mapping of the entire lifecycle of equipment and facilities. Additionally, the system enables production optimization, fault prediction, safety monitoring, and environmental management, providing real-time operational guidance and decision support.