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CMSI Translations #4: Charging into Battle—A Deeply Entwined Network: A Profile of Wang Chengfei, Director of a Research Office at the Naval Research Academy

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Charging into Battle—A Deeply Entwined Network: Anchoring Victory, Filling Many Gaps. A Profile of Wang Chengfei, Director of a Research Office at the Naval Research Academy[1]

By Wang Kun and Ye Zhong, and Zhou Huaiping

Wang Chengfei, Director of a research office and senior engineer at the Naval Research Academy, has presided over the initiation and evaluation of several major comprehensive information system equipment projects. He has compiled a development guide and technical requirements for Navy unmanned intelligent equipment technology systems, filled many specifications gaps, won a second-class Military Science and Technology Progress Award, obtained eight national defense patents, and was once awarded a third-class citation.

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[1] 王昆 [Wang Kun], 叶忠 [Ye Zhong], and 周怀平 [Zhou Huaiping], 向战冲锋一"网"情深 锚定胜战，填补多项空白 海军研究院某室主任王成飞 ["Charging into Battle—A Deeply Entwined Network: Anchoring Victory, Filling Many Gaps. A Profile of Wang Chengfei, Director of a Research Unit at the Naval Research Academy"], 人民海军 [*People's Navy*], 13 December 2022, p. 1.

Late at night, over the South China Sea, the stars are twinkling. The clock points to 2 am, and the light is still on in an office on a certain [PLA-occupied] reef.

"Based on the collected data, this information flow can still be optimized..." Wang Chengfei, the director of a research office at the Naval Research Academy, is focused on comparing and analyzing data charts, carefully modifying the assessment report.

As an expert member of an evaluation group for a major exercise, he leads other members in living, eating, and training with the officers and men, staying on the reef for over a month. During the day, he stays at various battle positions to record exercise data, and conducts in-depth evaluation analysis at night.

For ten years, this fast-paced, fully-loaded state has been the norm in Wang Chengfei's scientific research career. During a phone interview while on a break from work, the first thing he said to the reporter was: "Being able to realize the dream of wearing a military uniform and being a scientist at the same time is the greatest happiness of my life."

In 2011, after earning his doctorate degree, Wang Chengfei was assigned to a research institute. He was deeply inspired by the growing maturity and strength of the Navy's fleet. However, his urgent sense of mission was stimulated by research gaps in areas such as how to construct and use a future far-seas combat command system and how to better leverage combat capabilities.

At that time, some people believed that information systems were merely a tool for operational command. However, Wang Chengfei firmly believed that network information systems are informatized operations systems, information is the key to victory, and systems (*tixi*) are the key to winning.

The research path for creating the "combat information network" (*zuozhan xinxi wangluo*) led from here. He closely followed the forefront of military science and technology, kept pace with the development of the Navy, and continuously paid attention to and thought about the issue of building far-seas ship formations. In order to solve core issues such as formation command and weapon coordination control, he led the team step-by-step to design a ship formation information system, reshape the system architecture, optimize the information process, and explore feasible paths. He took the lead in completing the first type of armament on the sea that is solely an information system, deeply integrating naval combat power and combat elements into the whole-of-military network information system.

Establishing integrated links between the combat command system and the equipment training system is a key component of the smooth operation of the "combat information network." Wang Chengfei had the team engage deeply with operational units, and after more than two months, trying and adjusting seven times, they finally successfully established information links between each key system.

In late autumn last year, a major exercise was in full swing in a certain sea area. A certain assessment system made its debut, providing multi-element support for the exercise from

aspects such as virtual and real opposition-force engagements, information connectivity, and battle result assessment.

After the exercise, the commanding officer of a participating ship offered repeated praise: "It was really tense and exhilarating. The dense stream of missiles on the radar display screen and the alarm sound of reconnaissance equipment enabled the ship's company to experience a new sense of urgency and the taste of actual combat." Receiving affirmation from frontline commanders, Wang Chengfei and team members felt gratified. They considered this to be the "highest praise" for scientific researchers.

"In future maritime battlefields, we need not only the power to face war directly, but also talented personnel to design war. The victor will definitely be the one who understands the rules of the contest of naval warfare." As the head of the theoretical evaluation team for a maritime battlefield network information system, Wang Chengfei knows well that naval operations need to establish a "network" of ship formation command information systems, and scientific research must build a good cross-domain, cross-unit integrated collaborative "network."

In recent years, he has fully utilized the research advantages of the two-level system of institutes, actively assumed the responsibility of the leading work unit for comprehensive [research] topics, jointly concentrated on exploring the core support role of the network information system for naval operations with research teams in the fields of surface, underwater, and air [warfare], and successively led and participated in dozens of top-level tasks of the network information system.

One time he went to front line operations to investigate and received feedback from some units that there are more and more types of unmanned platforms, but the armament model standards and technical systems are different, and there is a lack top-level specifications, making it difficult to effectively integrate them into manned combat systems and limiting their effectiveness when used by units.

Wang Chengfei led the research group in deeply analyzing the technical issues affecting "integration," and finally found the key to interconnection and interoperability. However, in the specific implementation process, the research group found that the involved specialist fields were too broad and there were too many related work units. A single work unit struggling alone could not complete the project.

"How can the strengths of various fields be brought together to fully realize consensus in the field?" Wang Chengfei and his team conducted extensive investigations and research and communication, overcoming numerous difficulties, and jointly coordinated nearly a hundred domestic scientific research defense industry work units to form a top-level planning team across research work units. Through the unremitting efforts of team members, they were the first in China to publish an unmanned equipment interoperability technical guide and standard specifications, filling in many blanks in the standard specifications of the unmanned equipment field, and laying a solid foundation for the construction and development of maritime unmanned equipment.

The battlefield is ever-changing, and war is never constant. Changes in technology, changes in war, and changes in one's opponents compel military research and researchers to shift [their work] in a timely, proactive, and comprehensive manner. Over the years, Wang Chengfei has transitioned from frontline research to research management, and then returned to frontline research to become an excellent leader of a research team. He has been constantly upgrading his personal capabilities.

Not long ago, Wang Chengfei returned from a [PLA-occupied] reef and took on the responsibility of a major scientific research project. For more than 10 years, he has been devoted to the scientific research pursuit of building an informatized Navy and winning informatized naval battles. He always harbors dreams of scientific research and strengthening the military, using his wholehearted sincerity to create a future-winning Navy network information system.