MilSOFT Describes the Unseen Parts of the Iceberg

İsmail Başyiğit, CEO of MilSOFT

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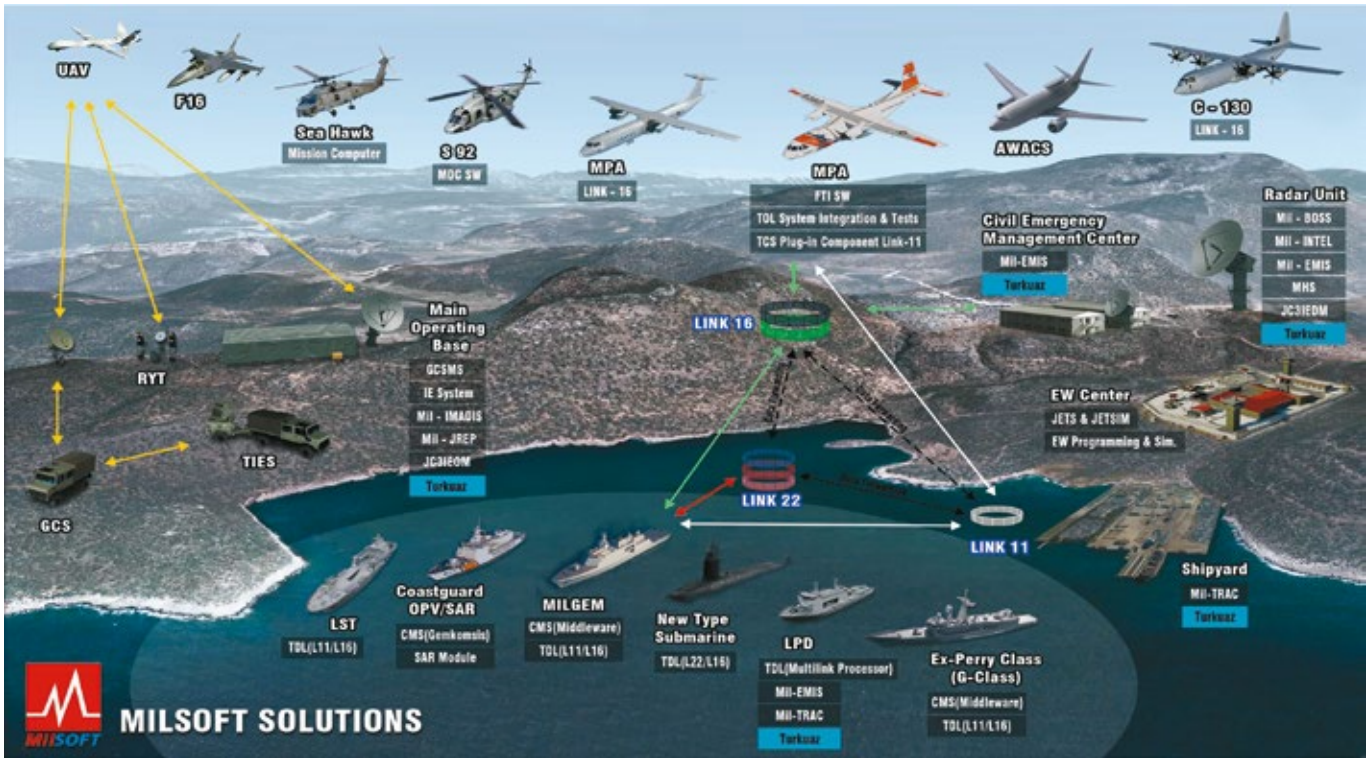
After a long hiatus, MilSOFT once again made an appearance in front of the sector with the Press Meeting held on January 9. A relentless innovator in the field of software technologies, the company used the event as an opportunity to share information about many of its recent moves and developments, of which the sectoral community knew very little. During the event, members of the press were given a general account of MilSOFT's products and technologies, some of which are unique or among a select few at a global level.

Describing the purpose behind the organisation of such an event, İsmail Başyiğit, CEO of MilSOFT, said, "You may already know many of the points we'll be discussing today, but until now, we've never had the opportunity to answer in a thorough yet concise such questions as 'What is MilSOFT? For what purpose was it established? What has it done until now? What is its vision for the future?' Now, we have created such an opportunity." As one of MilSOFT's co-founders who has held the positions of CEO, Member of the Board and Chairman of the Board in the company since its foundation, Başyiğit recounted the story of MilSOFT's inception.

A Company with a Mission

As is the case with other organisations in the Turkish defence and aerospace sector, the Cyprus Peace Operation of 1974 played an important role in MilSOFT's foundation. Başyiğit described that period as follows: "During this operation, possibly due to the issues with the functioning of our electronic jamming, spoofing or communication systems, we lost one of our vessels, TCG KOCATEPE, to friendly fire. The embargo against Turkey that came in the aftermath of the operation kept many of the aircraft of the Turkish Air Force (TurAF) grounded, unable to take flight. At the time of the operation, I was studying as a military cadet in the Middle East Technical University (METU) Department of Electrical and Electronic Engineering, having entered my senior or fourth year. During the embargo, I was an engineer working on TurAF's logistic system, and so I know very well how many aircraft remained inactive on the ground during the embargo." This experience shaped Başyiğit's views on the need to acquire technology.

In his 20-year career at TurAF, Başyiğit witnessed first-hand the gradually growing importance of software technologies in defence and aerospace systems, and helped to raise awareness in this subject. "At the end of the 1980s, we invited Prof. Dr. Abdullah Atalar and Prof. Dr. Mehmet B. Baray from Bilkent University to better explain the importance of software in defence systems. I worked with them, and finally we drafted a report for the Turkish General Staff. Based on this report, the General Staff issued a directive in 1989 emphasising that 'It is imperative to gain indigenous capabilities for the software of procured defence systems,'" Başyiğit said. Following his retirement from TurAF, Başyiğit served as deputy general manager for four years in a state-affiliated enterprise. Başyiğit eventually came to the conclusion that their target of developing indigenous software technologies through innovative

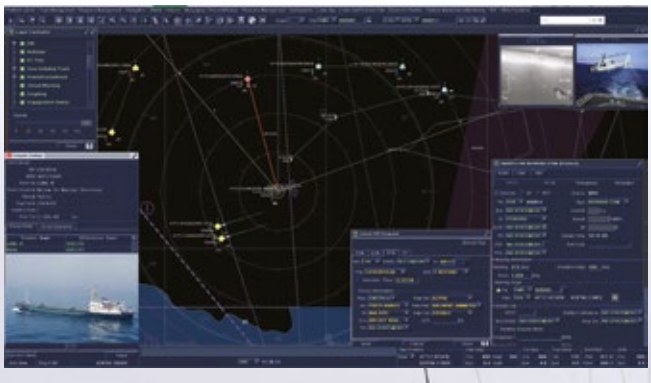


Boasting in-depth experience in tactical data links, MilSOFT's solutions are used extensively by the Turkish Armed Forces.

approaches would only be possible in a private sector company, and so established MilSOFT on August 1998 with the partner company they had at the time.

An Out-of-the-Ordinary Start-Up

MilSOFT followed a different path to many newly-founded companies, in that it was not established to carry out a specific project, and it did not begin engaging in projects immediately after its foundation. Başyiğit described how things went at the time: "Our first goal was to become a system integration and software company that could compete internationally. That was our topmost objective. To compete at an international level, we laid out several principles in support of this broader objective. One of these was 'working in line with international standards, and producing according to international quality standards.' This was the first and most important factor in being able to compete internationally. Second was to become a company that develops its own technologies, particularly state-of-the-art technologies, at an international level that are even more novel than those of its competitors ... To this end, our first act was not to hire software or electronic engineers when we first founded the company, but instead to prepare documents seeking to answer the question 'How can we work according to this and this international standard?'... We set ourselves a grand goal from the outset. We wanted not just to develop a product for a specific field, but to develop general software for use in defence systems ...



MilSOFT's Mil-CMS combat management system, which features an Open Architecture Computing Environment (OACE), is actively used on the corvettes of the Turkish Coast Guard.

© Turkish Coast Guard Command

The MilSOFT team at the Press Meeting event (left to right):Buket Kayhan , Marketing and Business Development Specialist; Sinan Topuz, Business Development Manager; Mehmet Değirmencioğlu, Programmes Director; Hakan Zeren, Vice President Production and Programs; İsmail Başyiğit, CEO; İbrahim Aksu, Business Development and Marketing Director; Air Pilot Brigadier General (R) Sargun Göktun, Consultant to the CEO; Ekrem Serin, Products Director; Burak Baysak, Quality Management Director; and Deniz Küzeci Tura, Contract Manager.

Eventually, we came up with several R&D projects for which we applied to TÜBİTAK [for grants]. To date, none of the projects for which we've applied to TÜBİTAK have been rejected. We've envisaged at number of R&D projects in our own area, and have gained experience in applying international standards while working on them." Highlighting the importance of infrastructure, Başyiğit said: "When you have foreign companies looking for subcontractors in Turkey for their software-related needs, they're not really interested in the capabilities of the candidate subcontractor, or how knowledgeable its engineers might be. We haven't seen a single example of this in 20 years. Instead, what all the companies ask about is the infrastructure held by the software developing company. 'Is this infrastructure conformant with international standards or not?' they ask. MilSOFT always turned out to be what they were looking for. It was in this way that we were able to receive our first international job in the early 2000s from Sikorsky. At the time, they were in the process of digitalising the cockpit of the SEAHAWK helicopter, and one of our teams worked together with them on this task. Through this cooperation, they saw that we fully met their standards, and they understood the competency of our engineers. They later invited us to join a tender pertaining to S-92 helicopters, which we also won. For the S-92, it was MilSOFT who developed the system that retrieves information from all other systems, and that reports on the information and records when a malfunction occurs. The system we developed was certified by the FAA, which represented a first for Turkey.

A Pioneer in Software Technologies

In line with its founding philosophy, MilSOFT today plays a pioneering role in software technologies. Three examples that can be given in this respect are listed as follows:

1. With regards to software systems, MilSOFT has its own original solution named Mil-DDS that serves as a middle layer software (middleware) that provides the infrastructure for application software. Aside from defence and aerospace applications, Mil-DDS can also be adapted for use in such areas as transportation, smart cities, medical devices, industrial automation, test and simulation. MilSOFT stands as the only company in the Turkish defence and aerospace sector to have its own original middleware, which it offers to the service of other companies in the sector.
2. In recent times, MilSOFT has joined the ranks of the first companies to implement the Open Architecture Computing Environment (OACE), which is a new concept in naval platforms. The combat management systems supplied by MilSOFT to the Turkish Coast Guard's corvettes make use of this concept. With its

Overview of MilSOFT

Founded in Ankara in 1998, MilSOFT carries out its operations from its facilities in METU Teknokent and Teknopark İstanbul with around 200 personnel. The company's areas of activity are listed as follows:

- Command and Control
- Tactical Data Links and Messaging
- Intelligence and Image Exploitation Systems
- Electronic Warfare
- Modelling and Simulation
- Embedded Systems
- Information Technology Solutions
- Cybersecurity

Since its founding, MilSOFT has handled projects with a total value of approximately $231 million, while the value of its currently ongoing projects stands at about $123 million, around 31 percent of which are export-related.

The event was followed by the tour of an area where MilSOFT's various solutions were on display. Members of the press had the opportunity to closely inspect the consoles of the Mil-DLP tactical data link solution.

open architecture, the OACE allows modifications to be carried out readily and rapidly, making the integration of new technologies and capabilities much easier for the user. The OACE also brings with it scalability, and the same infrastructure can be used in different computer environments, ranging from tablets to ship consoles.

3. For network-centric applications, MilSOFT developed the TURKUAZ infrastructure, which is being used in the Turkish Coast Guard's Surveillance Radar Systems, as well as in other homeland security projects.

Another software-related area where MilSOFT has made a difference is with its CMMI 5 certificate. In 2005, MilSOFT became the first company in Europe, and the 41st around the world, to obtain the fifth level of this certificate.

Always Several Steps Ahead

As another area in which MilSOFT stands out, Başyiğit provided an overview of the R&D studies being conducted: "Thanks to the R&D projects we conducted since 1999 with TÜBİTAK grants, we became, in certain areas, the only company in Turkey that was able to respond to emerging needs in a large number of projects. As a principle, we always pondered, 'What new capabilities could customers need in the future? How can we respond to these needs with technology?' We never opted for what seems to be the best solution based on the present conditions. Thinking about the future, we always try to figure out what would be right and best for the conditions of tomorrow, and that's how we fashion our systems. We have also strived to become the 'best prepared company' whenever a need or opportunity arose, and this approach has made us an almost exclusive supplier in many critical areas."

Başyiğit associated these assets to MilSOFT's innovation-based corporate culture: "One of the pillars of our [corporate] culture is constant innovation. We never repeat anything we've done before, as always think, 'How could we do it differently? How can we benefit in the future from the lessons learned? How can we bring to the Turkish defence and aerospace sector's software systems the concepts and technologies that are newly emerging around the globe?' We always seek answers to these types of questions, and collect the opinions of our own workers in the process ... For us, it is imperative that we develop a technology once every six months to two years. If, at any given time, we're not selling anything, it is normally because we're working in the background on developing something new."

Başyiğit went on to emphasise that quality and timely delivery have been integral parts of their corporate culture: "There is perhaps not a single case in which MilSOFT did not meet its delivery schedule in any of the works it has assumed, or failed to deliver the desired system. Our foremost priority is to supply a quality product, at any cost. This is a must for us. Our second priority is schedule-related. It's highly important for us to be able to respond to a need in a timely manner, as a capability provided later than needed can lose all utility. We also never make any concessions on quality. When we have to make a choice between time and cost, we always prioritise time."

MilSOFT boosts it corporate culture with training activities. Providing a summary of the training they provide, Başyiğit said: "We're working on structure that enables young engineers to continue their education after completing school. We try to build upon the information they have. This is an important national duty for a broad range of products, from defence systems to indigenous software."

MilSOFT's Difference Seen Clearly on the Export Front

In line with its goal of becoming an internationally-competitive system integration and software company, MilSOFT has carried out numerous projects with foreign users and companies. Some of these projects were aimed at the systems procured by Turkey from a foreign prime contractor. Whenever foreign companies look for a competent business partner in Turkey, MilSOFT is one of the doors they come knocking at. The projects that the company has completed to date, and their recipients, can be listed as follows:

- **NAVSEA-VSE Corp.**
  ESSM integration to Frigates
- **Thales**
  Link 11 processor and flight test computation software for MELTEM-2 aircraft
- **Leonardo**
  Link 16 processor for MELTEM-2 aircraft
- **TKMS**
  Link 11 and Link 22 processor for submarines constructed as part of the New Type Submarine Project
- **Lockheed Martin (Sikorsky)**
  Mission computer software for the SEAHAWK
- **Elbit**
  Production of avionic video symbols for the ALQ-178, and the modelling of the radar warning receiver.

Our primary goal was to become a system integration and software company that can compete internationally. That was our topmost objective.

Independent of its projects in Turkey, MilSOFT has also carried out, and continues to carry out, numerous projects abroad, with its most important completed projects being listed as follows:

- Command and control solutions for the navy of a friendly and allied Asian country.
- Electronic warfare solutions for the air force of a friendly and allied Middle East country.
- Lockheed Martin (Sikorsky) - Software for the S-92 maintenance data computer
- Lürssen Shipyard - Ship simulator
- IAI Elta - Digital environment simulator
- NATO (NCIA) - Tactical data link simulator

MilSOFT has made a significant mark in its export activities, with high-quality and timely deliveries, as well as a readiness to meet demands. Başyiğit recounted their experience in one particular project: "We were paid a visit by a 14-strong delegation that included some high-ranking officials. We described them our solutions, and provided them with a demonstration. The head of the team then said: 'You've got everything we need; but they're all in separate pieces. We want you to assemble all these parts to give us a full system. We believe you can do this.' They gave us an eight-and-a-half month schedule to finish this, and we indeed completed it in eight-and-a-half months, delivering it in the ninth month. This system is now being used on over 50 platforms."

MilSOFT's export success was also apparent in the figures announced by the Turkish Exporters' Assembly (TİM) in December. Ranking among Turkey's top 500 service exporters, MilSOFT stood in the 170th position the in the general ranking, and 6th in the Software and Informatics Services category. Moreover, if we remove companies operating outside the defence and aerospace sector from the Software and Informatics Services category, it can be seen that MilSOFT ranks second after ASELSAN. According to TİM figures, MilSOFT obtained 60.2 percent of its total $14,612,401 turnover from exports.

Commenting on their ranking on the TİM list, Başyiğit said: "[These numbers] show that we've attained the target we set for ourselves on our day of establishment. It is also reflects the competitiveness of our quality and prices. Having a share of exports in our turnover is vital for the continuity of the Turkish defence and aerospace sector."

Current Events Have No Impact on Ongoing Projects and Services

In recent times, MilSOFT has been tackling a number of problems among its partners other than Başyiğit. Answering a question on this issue, Başyiğit said: "For more than eight years, MilSOFT had to deal with various problems. But never did we pay [our employees'] salaries one day later than they were due, and never did the company deviate from its targets. The company never had an objective other than the one defined in its corporate mission, which is to provide indigenous

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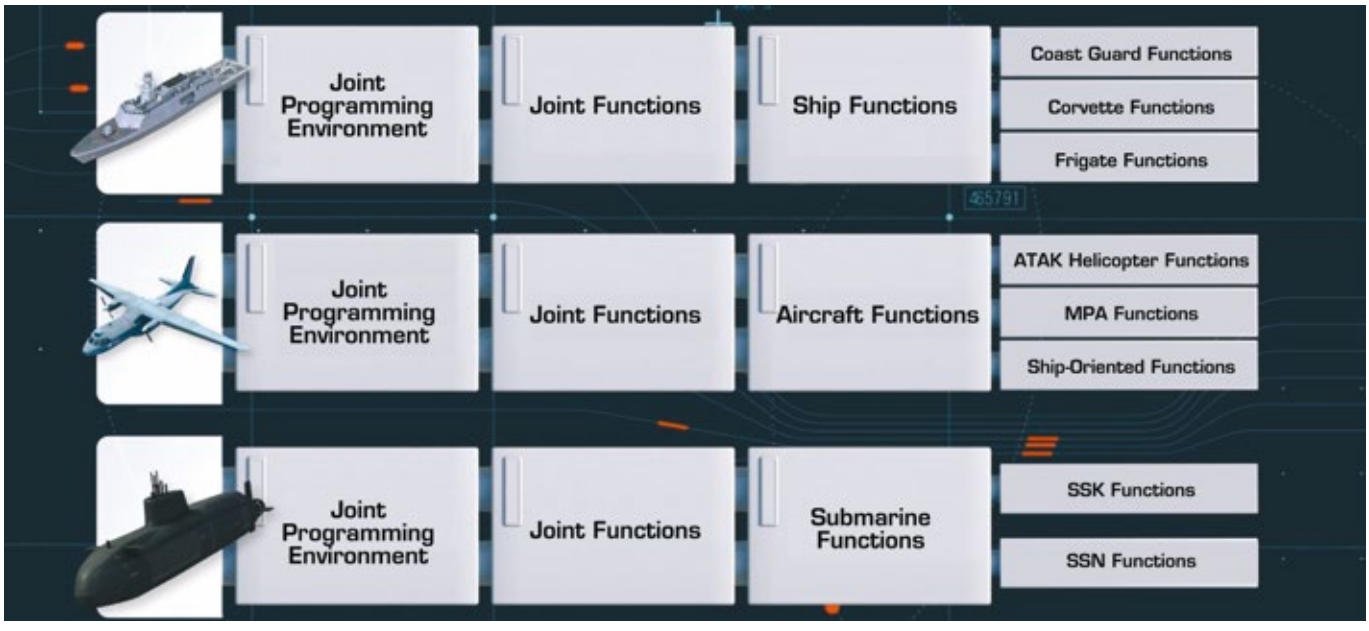

MilSOFT officials, seen together with the members of the press who joined the event.

software capabilities to the defence sector. Offering indigenous software for indigenous defence systems has always been the sole target on our minds."

> Thinking about the future, we always try to figure out what would be right and best for the conditions of tomorrow, and that's how we fashion our systems. We also sought to become the 'best prepared company' whenever a need or opportunity emerged. This approach has nearly made us the exclusive supplier in many critical areas."

Deep Experience in Tactical Data Link

The MilSOFT Press Meeting event also saw a presentation by İbrahim Aksu, Business Development and Marketing Director at MilSOFT, who introduced the company and its projects.

The presentation highlighted MilSOFT's expertise and experience in the field of tactical data links, for which the company is providing the software.

MilSOFT launched its works in this area between 2001 and 2002, receiving its first project in 2006 and making its first delivery in 2009. The company has already rolled out products for the Link 11, Link 16, Link 22 and JRE (which are international standards), and these have already made their way into the inventories of the Turkish Armed Forces and international users.

Harnessing its experience in this area, MilSOFT later developed and launched its own indigenous tactical data link, the Mil-Link/Link-M. The Mil-Link/Link-M can operate with modems and with HF and VHF radios, and trials have shown it to be capable of establishing communications over distances of approximately 260 nautical miles. The data-link software used in the KEMENT project is also MilSOFT-made.

MilSOFT is updating its Naval Information Exchange System (NIXS) with a new web-based architecture.

Projects Continue at Full Pace

The event also served as a platform for the disclosure of information about MilSOFT's latest project, which was launched last November, and which includes:

- The contract signed with ASELSAN on November 20, 2018, for the provision of tactical data links under the "35 mm Air Defence System Modernisation Project".
- The contract signed with ASELSAN on November 22, 2018, for the provision of a tactical data link solution under the "Air Defence Early Warning and Command and Control System, Control and Control Equipment and Hardware (HERİKSS-6) Project".

Aside from these, MilSOFT's ongoing R&D projects include:

- The Autonomous Swarm UAV System
- The Indigenous Blockchain Infrastructure Project
- The Indigenous Multiple Tactical Data Link Processor
- The New Generation Tactical Data Link Processor Project ◆