DEFENCE INDUSTRIAL STRATEGY 2023

MINISTRY OF DEFENCE

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MINISTRY OF DEFENCE

Index

Presentation 5

Introduction 6

1_A strategy to maximise defence investment 9

2_The security and defence policy environment 17

3_Spain's defence industry and its position in Europe 21

4_Principles, pillars and actions 25

5_Ten strategic pillars for effective implementation 29

- Pillar 1: Strategic Defence Industrial Capabilities (SDICs) 30
- Pillar 2: Armament and materiel procurement programmes 36
- Pillar 3: Transversal capability building programmes 39
- Pillar 4: Consortia and strategic alliances 41
- Pillar 5: Territorial cohesion and distribution 44
- Pillar 6: New technologies and the digital challenge 50
- Pillar 7: Talent attraction and defence culture 52
- Pillar 8: Inter-ministerial coordination 55
- Pillar 9: International cooperation and external support 57
- Pillar 10: Industrial knowledge management and dialogue with industry 60

Acronyms 62

References 64

Appendix I: Strategic Defence Industrial Capabilities 66

María Amparo Valcarce García
Secretary of State for Defence

The Government of Spain, in its continuous efforts to protect the interests of citizens, has championed the progressive increase in the defence budget with the dual goals of modernising and improving the military capabilities of our Armed Forces and strengthening the Defence Technological and Industrial Base.

Changes in the global security landscape have reminded us that the development and well-being of society depend on the Spanish State being able to guarantee an adequate level of security. The defence budget in 2023 has been increased by 26%, opening a new investment cycle that marks a stable and transparent budgetary backdrop. The goal of reaching 2% of GDP by 2029 is Spain's commitment to peace in line with that of European Union and NATO members.

Policies carried out in the area of defence serve to strengthen opportunities abroad and highlight the participation of Spain's industry in European projects, such as the European Defence Action Plan (EDAP), Permanent Structured Cooperation (PESCO) and NATO.

One factor that has a radical impact on the provision of security is deterrence, which requires technologically advanced systems and the means for agile and effective decision-making.

The development of technologically advanced products results in the building up of industrial capabilities and the boosting of our economy. This, in turn, generates highly qualified professional jobs, provides substantial economic returns on investments made and has a significant pull effect for our country's local and regional economies. It also facilitates better economic and territorial cohesion and a redistribution of national wealth.

The defence industry in Spain can be grouped into three major industrial corridors: the Northern Corridor, the Central-Mediterranean Corridor and the Southern Corridor. These corridors provide a nationwide network that spreads the benefits of defence investment, allowing companies throughout the country to become part of the defence supply chain.

Presentation

In this line, the Ministry of Defence has launched strategic projects that will become drivers of technology, job creation and national RD&I, such as the Army Logistics Base (BLET) in Cordoba, the new UME Drones Unit (UDRUME) in León and the Technological Centre for Development and Experimentation (CETEDEX) in Jaén.

The defence industry plays an important role in creating high-skilled jobs and is therefore another key economic factor in boosting regional economies. This reality is a clear strength of the sector that needs to be built on.

This is why a strategic commitment is being made to expand these corridors and even create new ones. A fourth corridor, called the Silver Corridor, will be developed; it will extend from north to south from Asturias-León-Zamora to Seville.

Investment in defence is an investment in job creation, the development of national industry, as well as in security and peace. The Ministry of Defence's industrial policy entails an intense line of action to strengthen the Defence Technological and Industrial Base.

A competitive and sustainable Defence Technological and Industrial Base not only provides our Armed Forces with the capabilities they need, but also guarantees freedom of action and strategic independence.

Spanish industry must be developed to establish itself at the technological vanguard of defence and thus be able to operate with the necessary strategic autonomy, both nationally and in Europe.

The Ministry of Defence strongly supports the Spanish defence industry as a key element for the growth and promotion of the Spanish economy and as an indispensable contributor to the European defence pillar.

But this strong support also requires a well-defined policy framework and the new investment cycle calls for maximising the return on the investment planned up to 2030.

This Defence Industrial Strategy is the reference guide for the industrial sector. It provides criteria and guidelines for prioritising strategic capabilities and defining the industrial structure of defence programmes.

In short, the publication of this strategy helps to project Spain's image abroad in the field of defence and provides institutional support to companies which have an important role in revitalising the industrial fabric and its strategic autonomy, and contributing to European defence.

Introduction

Defence industrial policy, within the scope of armaments and materiel policy, aims to safeguard national interests in the strategic technological and industrial areas of national defence.

A solid, competitive and technologically excellent defence industry is a key capability since its existence allows us, now and in the future, to meet effectively, efficiently and swiftly the material needs of our Armed Forces in the fulfilment of their assigned missions and operations.

The national Defence Technological and Industrial Base (DTIB) must contribute to achieving a 'technological edge' for the weapons systems of our Armed Forces and, secondly, to maintaining the appropriate degree of 'industrial sovereignty or autonomy' in their design, production, modernisation and maintenance, in an environmentally friendly manner. In this way, national 'industrial capabilities' make a crucial contribution both to the operational superiority of our 'military capabilities' and to the Government of Spain's freedom to use them in safeguarding our defence and security interests.

It is therefore necessary to permanently align defence industrial capabilities with the weapons systems required by the Armed Forces, as this is an indivisible and essential pairing for national defence. Establishing and updating the strategy to maintain its appropriate overlap and synergy is one of the main concerns of the Directorate General for Armament and Materiel.

Moreover, due to their scope and high technological content, programmes for the procurement, modernisation and support of the Armed Forces are a real driving force and catalyst for national technological development in general, the promotion of dual-use technologies, the creation of highly qualified jobs and supporting the internationalisation of our industry. This closes a virtuous cycle that generates security, well-being, and economic and social prosperity.

The first Defence Industrial Strategy was published in 2015 (DIS 2015). Since then we have lived through the COVID-19 pandemic, the rise of an exponential, global technology race driven by digital and other emerging and disruptive technologies, the supply chain crisis, the war in Ukraine, among other situations.

New battlegrounds (cyber, outer space and cognitive) have also rapidly emerged that are globally accessible, overlap with traditional domains (land, sea and air) and will require military capabilities that enable our military to operate across multiple dimensions.

It is therefore necessary to align the Defence Industrial Strategy with the objective of boosting industrial capabilities associated with the new areas of confrontation.

However, technological edge and strategic autonomy can no longer be achieved unilaterally. Accordingly, in 2016, the Global Strategy for the European Union's Foreign and Security Policy reignited the Common

Admiral Aniceto Rosique Nieto
National Armament Director

Security and Defence Policy with definitive momentum. Since then, several initiatives have been launched to overcome inefficiencies and investment duplications in weapons systems and to start building a truly European DTIB that is sustainable, technologically excellent and globally competitive.

Spain is the fourth largest country in the European Union and we must adjust our Defence Industrial Strategy to contribute to the construction of the European defence industry, at the same time as we seek to take our proper place within it.

In order to achieve these objectives, it is essential to establish the necessary procedures to optimise investments to be made in defence procurement programmes. To this end, tenders and monitoring of industrial projects associated with each programme is an unquestionable requirement, especially in those that involve strategic industrial capabilities and include the largest number of companies in a collaborative and co-responsible spirit. Likewise, the launching of transversal technological and industrial capability building programmes will allow for a consolidated and gradual building of national industry capabilities, thereby obtaining a greater benefit from investments made, as well as a better positioning of our industry in the international market.

In the implementation of these measures, we must seek to strengthen the national DTIB as a whole, including SMEs, which will enable a flow within the industrial fabric that will benefit both national and regional economies, provide territorial cohesion and increase business 'muscle', which will make us more competitive in the face of larger international companies. It is also important to maintain this collaborative spirit with other ministries, institutions, universities, research centres, etc.

1_A strategy to maximise defence investment

EUROMALE

- Description: Class III (long-range) strategic Remotely Piloted Aircraft System.
- Planned investment: €1.429 billion.
- Production: 2023-2034.
- Units: 4 complete systems (ground segment, air segment, liaison and communications).
- Main contractor: Airbus (European collaborative programme with Germany, France and Italy).

Photo courtesy of OCCAR

The Defence Industrial Strategy (DIS 2023) establishes criteria and guidelines for both how strategic industrial capabilities should be prioritised and how the industrial structure of defence programmes should be defined. The importance of DIS 2023 lies in the fact that these criteria and guidelines provide a definite, visible context to the Defence Technological and Industrial Base (DTIB). They inform processes and establish clear benchmarks for the procurement and development of defence capabilities, whether done through national or cooperative projects, or direct procurement.

In accordance with the responsibilities of proposing and managing the defence industrial policy granted to it by Royal Decree 372/2020 of 18 February, as amended by Royal Decree 63/2023 of 8 February, which develops the basic organisational structure of the Ministry of Defence, the **State Secretariat for Defence** is the body responsible for the DIS. Under this regulatory framework, the secretariat establishes the **mission** of making the necessary equipment and systems available to the Armed Forces, while prioritising the strengthening of the national defence industry.

The **vision** behind DIS 2023 is, on the one hand, to add value to national security and defence, demonstrate excellence in the management of defence budgets, and on the other, strengthen and consolidate the national defence industry by enhancing industrial capabilities with broad export capacity, reinforcing international cooperation and increasing external support for the industry. This vision also takes into consideration the guidelines and lines of action set out by the European Union (EU) and the North Atlantic Treaty Organization (NATO) for the construction of strategic sovereignty, the reduction of dependencies and the design of a sustainable model for growth and investment.

The current international landscape is marked by a series of geopolitical changes heralded by the vulnerability of global supply chains exacerbated by the COVID-19 crisis and by the need for increased production of defence capabilities resulting from the war in Ukraine. Against this backdrop, a gradual increase in defence investment has been initiated. The 2023 budget has been increased by 26%, opening a new investment cycle with the objective of reaching 2% of GDP by 2029, thus fulfilling the commitment made to NATO.

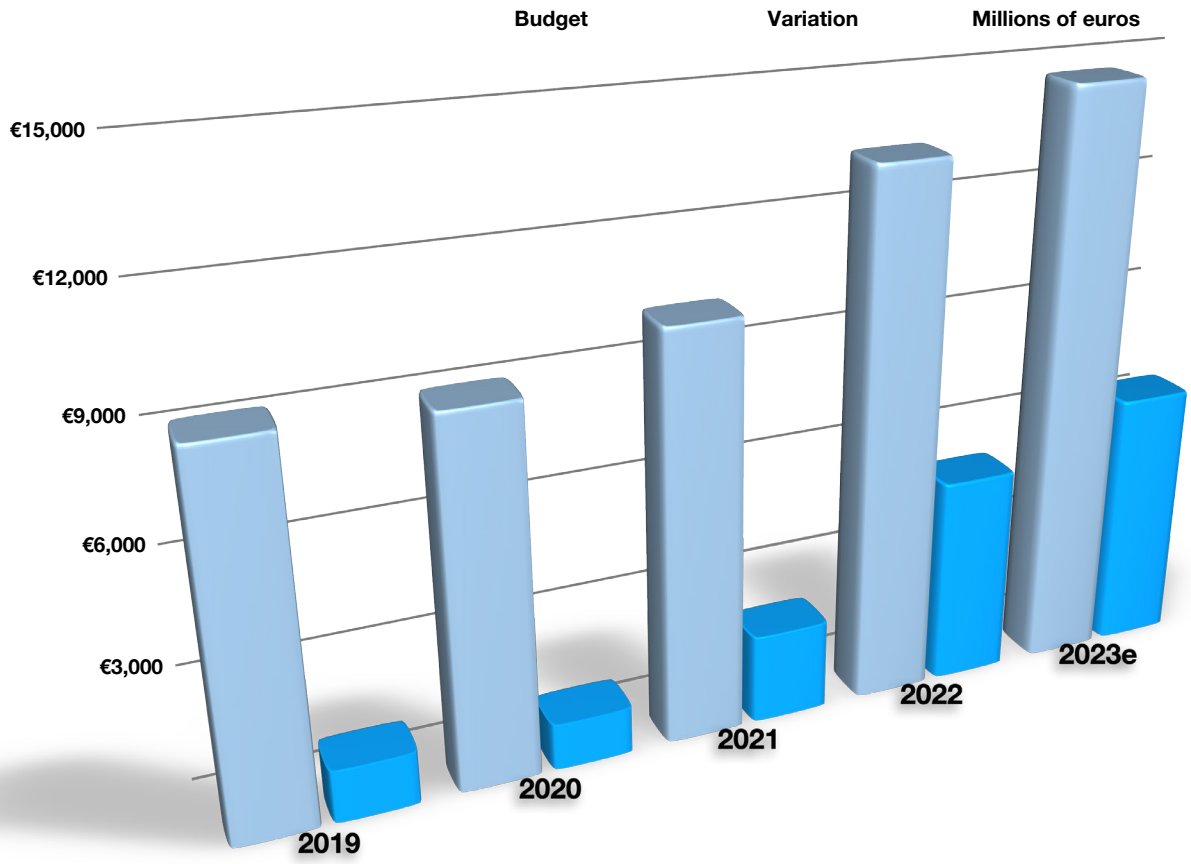
The budget increase, together with the change of context, makes it necessary to comprehensively update DIS 2015 in order to **maximise the return on investment**, **positioning Spanish companies** in the European defence market and its major programmes, which will constitute the sector's main business in the coming years, and **boost the industrial and technological fabric**, which will lead to greater **job** creation and promote **territorial cohesion**.

DIS 2023 is completely permeated by **values** and commitments to sustainability (both in the development of the defence technological and industrial fabric and in economic growth), social commitment, transparency in actions and collaboration between institutions and the private sector.

Resolution 300/09365/23 of 25 May, issued by the Secretary of State for Defence, approving the general guidelines of the Defence Industrial Strategy 2023 establishes three basic principles:

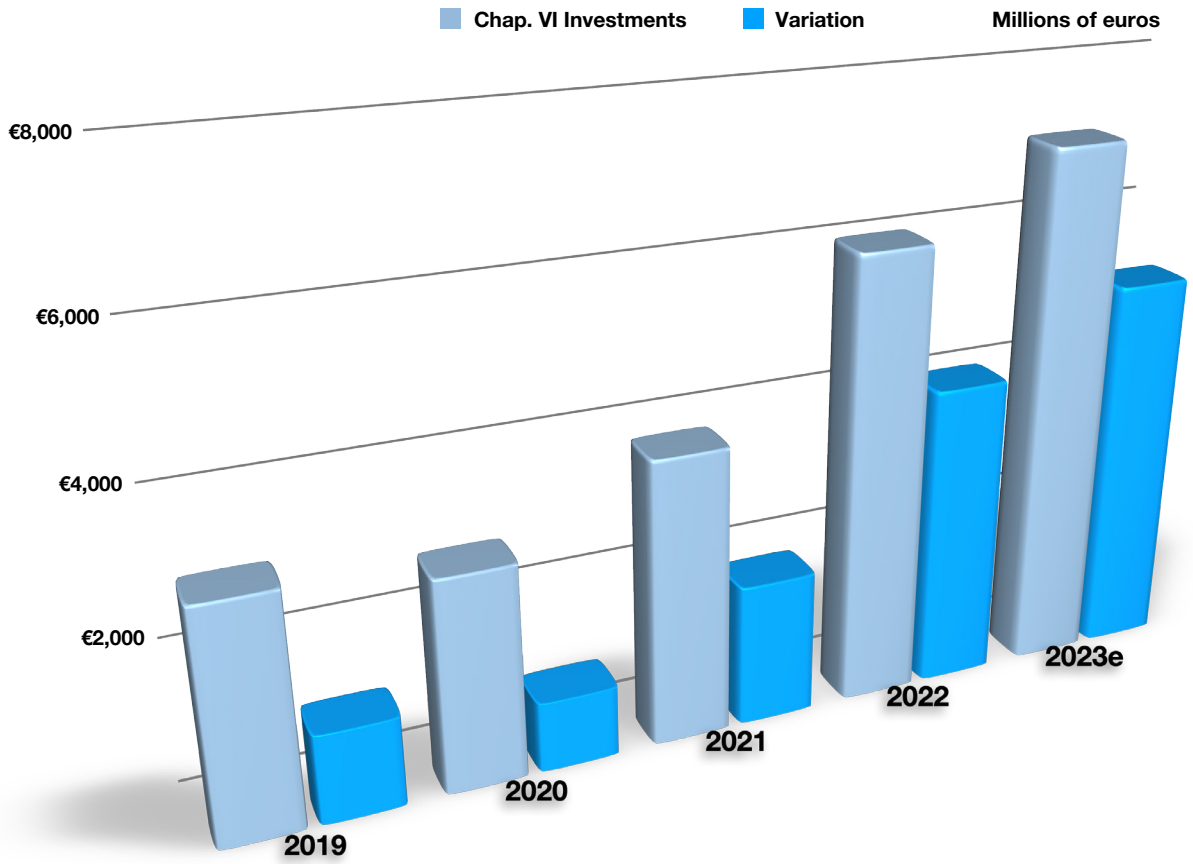
- Increase the level of **strategic autonomy** in the defence industry to reduce dependence on third parties, mainly in relation to Strategic Defence Industrial Capabilities (SDICs).

How the Ministry of Defence's final budget has evolved



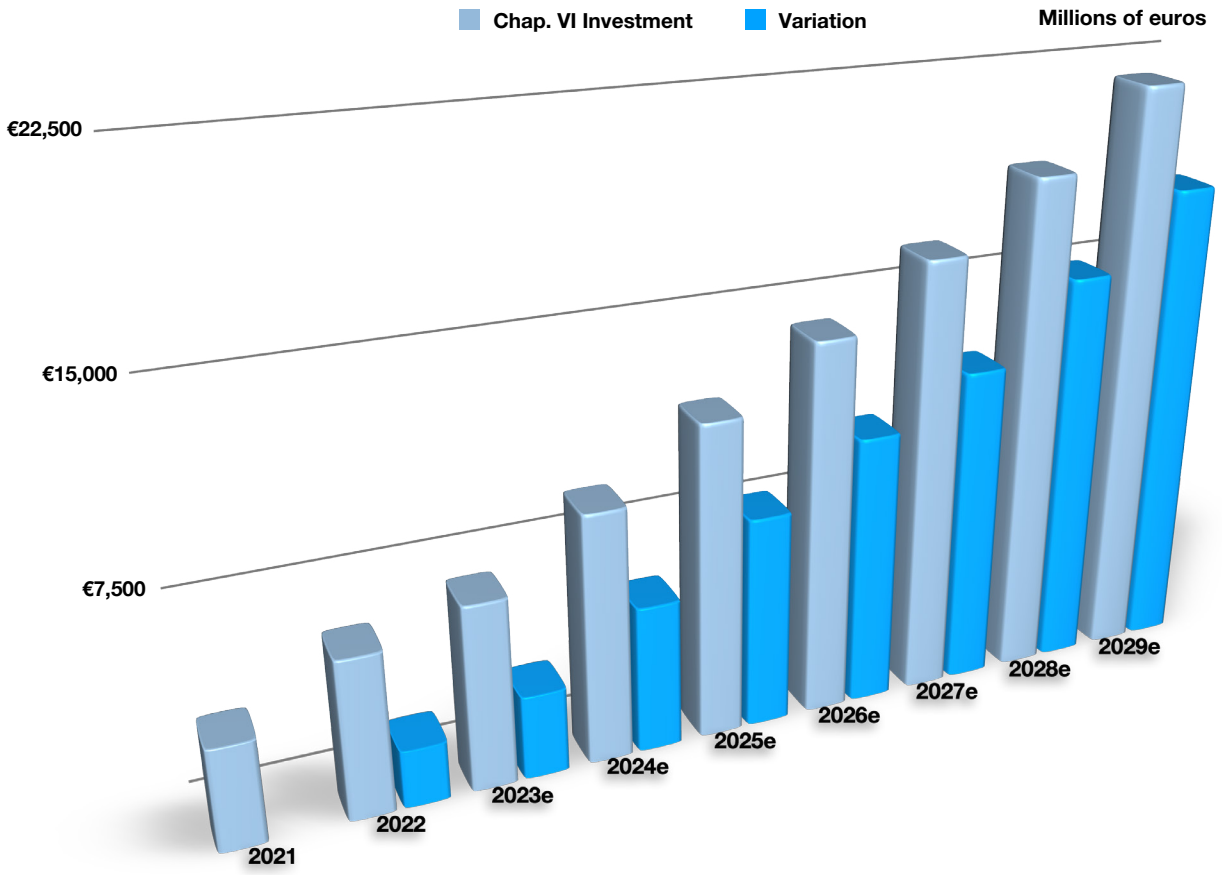
Fiscal year	2019	2020	2021	2022	2023e
Budget	9,437.51	9,282.95	10,389.20	13,433.28	14,758.61
Variation	1,335.25	1,180.69	2,286.94	5,331.02	6,656.35

Change in Ministry of Defence investment loans



Fiscal year	2019	2020	2021	2022	2023e
Chap. VI (Investments)	3,174.12	2,913.47	3,909.05	6,104.87	7,117.35
Variation	1,219.35	958.70	1,954.28	4,150.1	5,162.58

Forecast growth of Ministry of Defence investment loans

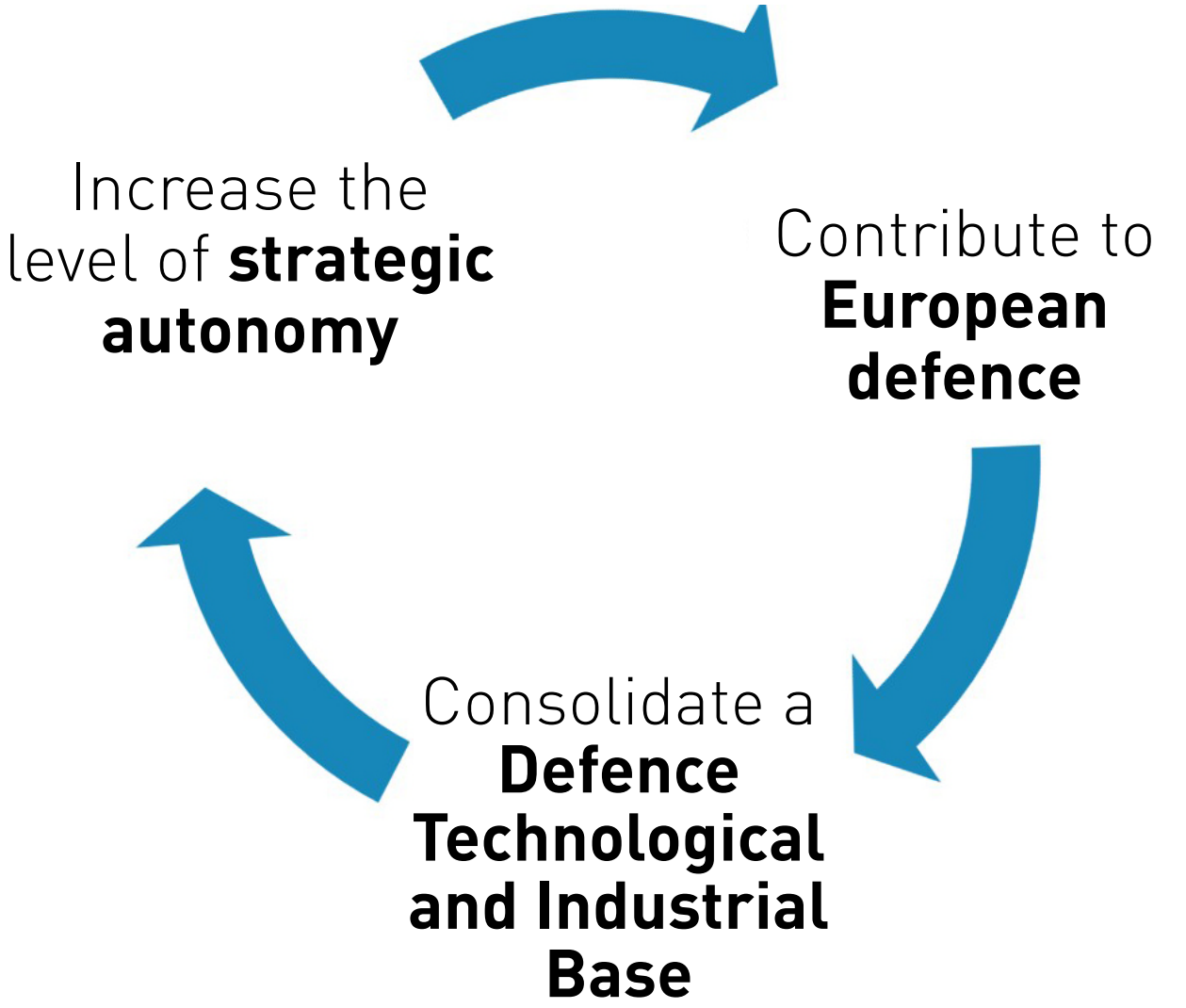


Fiscal year	2021	2022	2023e	2024e	2025e	2026e	2027e	2028e	2029e
Chap. VI (Investments)	3,909.05	6,104.87	7,117.35	9,579.28	12,093.38	14,368.93	16,681.13	19,121.72	21,922.1
Variation		2,195.82	3,208.3	5,670.23	8,184.33	10,459.88	12,272.08	15,212.67	18,013.05

- Contribute to **European defence**. Spain seeks to promote multilateralism and achieve strategic autonomy while maintaining an open economy. As an important member of the EU, MINISDEF will promote Spain's leadership among the principal European countries in advancing the Common Security and Defence Policy (CSDP), and will reorientate its capabilities to contribute to the development of the autonomous strategic capabilities of the European Defence Technological and Industrial Base (EDTIB) and to a more resilient Atlantic Alliance by strengthening its national industrial base.
- Consolidate a competitive and sustainable **DTIB** capable of providing the Spanish Armed Forces with the most appropriate means in terms of equipment and support capabilities, and which can strengthen Spanish companies' positions in the international market.

The time horizon of this DIS 2023 is eight years (2023-2030) in line with the future Industrial Policy Strategy for Spain 2030, the EU Multiannual Financial Framework (2021-2027) and the spending commitment reached with NATO for 2029.

Basic principles of the Defence Industrial Strategy 2023




AIRBUS

2_The security and defence policy environment

SIRTAP

- Description: High-End Tactical Unmanned Aerial System.
- Planned investment: €500 million.
- Production: 2023-2030.
- Units: 9 complete systems (ground segment, air segment, liaison and communications).
- Main contractor: Airbus.

Photo courtesy of Airbus

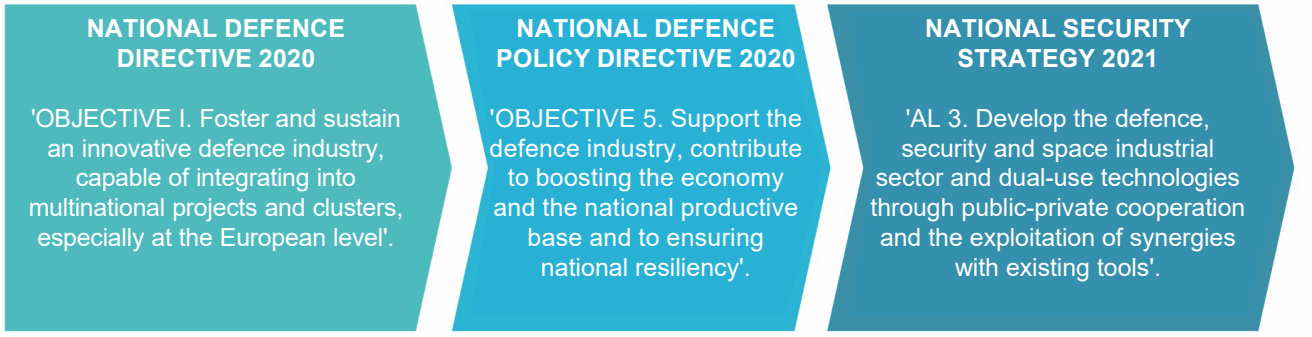
To fulfil the missions tasked to the Armed Forces by the Constitution and Organic Law 5/2005 of 17 November, on National Defence, MINISDEF requires a technological and industrial base tied to its objectives and needs. The DTIB, in addition to being a powerful driving force for technological innovation, economic wealth and job creation, is an essential asset for national defence, ensuring access to the industrial capabilities necessary for the adequate provision of systems and services for the Armed Forces.

This DIS 2023 accepts the strategic guideline of the June 2020 National Defence Directive to prioritise the '*strengthening of the national defence industry and the development of a European Technological and Industrial Base*'.

A large number of nations and regions, alliances and supranational organisations, such as NATO and the EU, have reviewed their strategies and rethought their response models.

At national level, the Government of Spain revised its National Security Strategy (NSS) in 2021. Earlier, in 2020, the government had already updated the June 2020 National Defence Directive, the August 2020 Defence Policy Directive, and the Defence Technology and Innovation Strategy (DTIS). These documents address issues of common interest to the defence industry that are reflected in this DIS 2023. In particular, the NSS sets out a strategic plan to '*develop the security, space and defence industrial sector*' with an explicit mention of public-private cooperation, dual-use technologies and international tools such as the European Defence Fund (EDF) and the European Union's Permanent Structured Cooperation (PESCO).

The EU institutions, especially the Commission and the European Defence Agency (EDA), have developed many initiatives that affect the conditions under which the EDTIB operates. In the first decade of this century, the EU mainly focused on legislative and regulatory aspects relating to the defence industry under its internal market policies. Among the most significant was the set of European Directives on defence procurement, which were transposed into Spanish law through Law 24/2011 of 1 August, on public sector contracts in defence and security.



However, since the adoption of PESCO as a political driver to encourage Member States to cooperate in the development of military capabilities, the EU's role in the defence industry has evolved. With the European Defence Action Plan (EDAP) and the EDF, the EU is moving from being a regulator of procurement conditions to being directly involved in the development of industrial capabilities by funding innovation programmes and the future provision of defence systems.

Two recent EU initiatives stand out in particular: the Strategic Compass for Security and Defence of March 2022, which provides the EU with an action plan to strengthen its defence policy and security, and the Versailles Declaration of March 2022, which addresses the strengthening of defence capabilities. Aiming to ensure that Member States substantially enhance defence spending and strengthen the EU's defence technological and industrial base, these two documents emphasise (1) increasing defence budgets, (2) not sacrificing future capability developments for short-term acquisitions, (3) strengthening the European

defence technological and industrial base while avoiding its fragmentation, (4) dual-use technologies, and (5) increasing cooperation through joint projects.

The May 2022 Joint Communication on the European Commission's analysis of defence investment gaps since the Versailles Declaration identifies a number of key actions for joint procurement: the creation of the European Defence Industry Reinforcement through Common Procurement Act (EDIRPA) for rapid replenishment of capabilities, the creation of the European Defence Investment Programme (EDIP), and the elaboration of a future EU Joint Defence Strategic Programming and Procurement, ensuring joint comprehensive multiannual programming.

Developing a Europe of Defence contributes to Member States' commitment to NATO. As the Joint Communication notes, '*EU initiatives to foster defence cooperation also help reinforce a fairer Transatlantic burden-sharing and a more effective European contribution within NATO*.'

NATO reinforces this idea of interdependence and collaboration between the two organisations. In its new Strategic Concept that emerged from the Madrid Summit in June 2022, NATO confirms the EU as an essential partner while recognising '*the value of a stronger and more capable European defence that contributes positively to transatlantic and global security and is complementary to, and interoperable with NATO*.' NATO is also committed to multinational capabilities cooperation, as reflected in its High Visibility Projects (HVP).

In 2019, the Secretariat of State for Defence already foresaw the need to update DIS 2015. The ministry produced a document entitled 'Defence Industry Outlook' in which it revised its industrial policy guidelines. With the focus on EU investment initiatives and the imminent approval of new major armaments programmes (NGWS/FCAS, EUROMALE, F110 and VCR 8x8), it was intended to guide the immediate update of its industrial strategy. However, the emergence of COVID-19 and the resulting paralysis of industrial and commercial activity across the globe put this initiative on hold. Instead, the strategic efforts of SEDEF and the Directorate General for Armament and Materiel (DGAM) were directed towards monitoring the effects of the pandemic on the DTIB, and several reports and studies were produced containing recommendations on how to mitigate the pandemic's impact.

All the above strategies, documents and initiatives contain a common double recommendation with a particular impact in the strategic defence industrial context. The need, on the one hand, to increase overall defence budget and improve its long-term predictability, and, on the other hand, to optimise this budget increase by converting mere expenditure on equipment into an investment in the country's own industrial capabilities.

In response to its NATO and EU commitments and as an immediate response to the geostrategic context and the threats posed by the war in Ukraine, Spain has increased its real defence spending and started on a budgetary path that is expected to reach 2% of GDP in 2029.

This new DIS is based on the idea that the development of indigenous industrial capabilities cannot be planned separately from military capabilities and will also be linked to the financial planning of defence requirements and the possible financing and industrial support instruments that may be established or used to promote such development. DIS 2023 sets out objectives and general principles to make the processes of defining and achieving military and industrial capabilities a joint, shared and viable long-term reality in the new context.

3_Spain's defence industry and its position in Europe

A400M

- Description: operations transport aircraft.
- Cost until 2023: €5.018 billion.
- Production: until 2030.
- Units: 170 aircraft among all nations.
- Main contractor: Airbus (programme in partnership with Germany, France, UK, Türkiye and Belgium).

Photo courtesy of Airbus

Characteristics of the defence industrial sector

The defence industrial sector has a number of characteristics that differentiate it from other sectors of the economy:

- Firstly, it is closely related to the concept of national sovereignty because of its direct relationship with MINISDEF and the Armed Forces who are, on many occasions, the sole customer—a very demanding customer that defines product specifications, finances the product life cycle from its definition, and regulates the market in which the industrial sector operates.
- It is a highly regulated, controlled sector, with high barriers to entry. It is subject to administrative procedures for operational approval, product certifications and the certification of materials and processes.
- Although it covers a wide and very diverse range of products, many of them are delivered through programmes with long development and delivery timelines and a large number of highly complex technical requirements. It is thus a sector that manages projects of high technical complexity, subject to high risks and contingencies in a highly competitive environment.
- The global DTIB is pyramidal in shape. A small number of countries with a strong capacity to generate cutting-edge technologies influence the rest through their export capacity and their technological and industrial pre-eminence. It is therefore a sector with a high level of competitiveness, in which cooperation is often necessary to overcome certain barriers and where states play a crucial role in terms of external promotion.

The defence industry in Europe and Spain

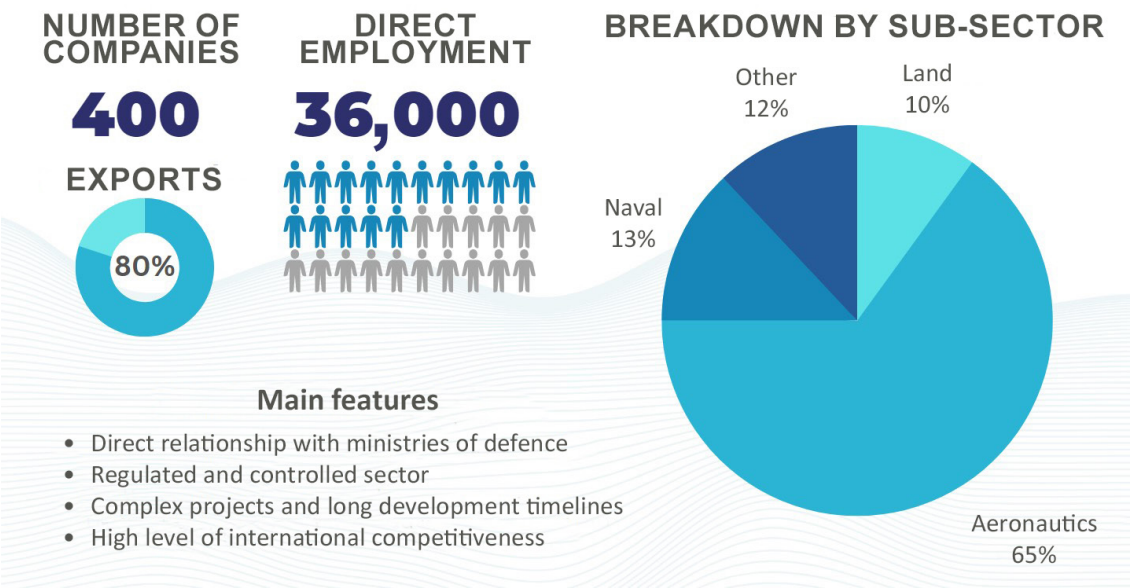
Europe's defence industry is an important vector of economic growth and innovation; it is essential for the technological sovereignty and strategic autonomy that Europe and its Member States pursue. The EDTIB on the whole holds a technological-industrial lead over other regions of the world.

Defence spending by EU countries is the third highest globally, behind only the US and China. However, and largely due to the fragmentation of investment efforts among Member States, the EU as a whole is technologically dependent in certain areas and continues to rely on third party suppliers for the provision of critical technologies, mainly the US and, to a lesser extent, Israel. This fragmentation also results in the production of numerous different weapon systems, which is understood to lead to an inefficient distribution of resources at aggregated European level.

The defence sector is cost-intensive in its research and development and requires significant upfront investments and long cycles for capability development, with no guarantee of commercialisation beyond the original ordering customer to recover development costs. To mitigate technological and financial risks associated with capability development, defence research is often funded by public authorities. A large part of EU initiatives are geared towards these processes of investment in technological capabilities.

The structure of the DTIB is pyramidal. Although its base is very broad and diverse, it has a small number of large companies that act as main contractors and exert a consolidating pull on the rest of the sector. As for the supply chain, it consists of more than 2,000 smaller companies, MIDCAPS, SMEs and emerging start-ups, which supply sub-systems or components to prime contractors.

In general, the defence industry is internationalising, both on the demand and supply side. Major companies in the sector rely heavily on export sales, and their supply chains are becoming increasingly complex, diverse and international.



However, the European defence industry faces a non-homogeneous situation. On the one hand, Member States have very different policies and legislation on arms exports, as well as different criteria for technology transfers to third countries. On the other hand, in recent years there has been a trend towards protectionist policies, perhaps as a side-effect of COVID-19. These circumstances increase the uncertainty inherent in any economic activity and introduce new difficulties and restrictions that could limit the opportunities for the European industry as a whole in the international market.

Also, the defence sector is increasingly dependent on innovation in the civilian sector, so dual-use research provides great opportunities and challenges, given that cutting-edge technologies such as artificial intelligence, unmanned vehicles, big data, quantum computing or nanotechnology are mainly developed and produced in the civilian sector.

The defence sector has consolidated through mergers and acquisitions, culminating in the emergence of a small number of large multinational companies, international alliances, or domestic consolidation processes.

EDTIB is not evenly spread, reflecting the volume, recurrence and structure of national budgets. The defence industry is mainly concentrated in six countries (the UK, France, Italy, Germany, Spain and Sweden).

Over the last thirty years, thanks to an active industrial policy under MINISDEF, the national DTIB has reduced its dependence on third parties and developed its own capabilities in design, production and maintenance. National companies have managed to capitalise on investments by MINISDEF since the launch of the first major programmes in the 1990s, in terms of their own products and capabilities. Improved competitiveness translates into increased international presence and leadership of European consortia, both in complete weapon systems and in specialised product niches.

Compared to the other main European leaders, the size of Spain's DTIB remains far behind its main competitors and partners. In summary, the national DTIB is made up of a small number of large companies (platform and system integrators) that lead the main subsectors of activity and act as the driving force of national industry, followed by Tier 1 suppliers and finally by a large number of smaller companies that complete the supply chain.

This shows that, beyond the large influential companies, the national industry is fragmented and, in many cases, focuses on certain niche industrial capabilities. Thus, in some cases, the capabilities of firms overlap and duplicate each other, and in others, they complement each other. This fragmentation is a barrier to growth and competitiveness that must be overcome.

Characterised by the high qualification of its professionals, the sector faces other challenges such as the need to safeguard defence supply chains, including the securing of raw materials and the balance and conservation of the most critical resources, the availability of human capital (making it necessary to attract and retain talent), and the quality of jobs.

4_Principles, pillars and actions

Principles of DIS 2023

1. Increase strategic autonomy in the defence industry.
2. Contribute to European defence.
3. Consolidate a competitive and sustainable domestic DTIB.

Pillars of DIS 2023	Lines of Action
Pillar 1: Strategic Defence Industrial Capabilities (SDICs)	Continuously advance SDICs to adapt them to the present scenario.
	Develop an analysis on the level of capability building in the SDICs available to the domestic DTIB.
	Define industrial policies, and ensure the use of SDICs as a criterion in all phases of Armaments and Materiel programmes, including at the earliest planning stages.
	Define industrial strategies by sector based on SDICs.
	Monitor and follow-up on SDICs based on industrial observatories and industrial capability studies as main tools.
Pillar 2: Armament and materiel procurement programmes	Define a standard, with legislative adaptations where necessary, and regulatory framework to enable the implementation of the defence industrial strategy in each of the procurement programmes. This standard should be clear and concise on the use of Industrial Participation Schemes (IPSs) and other similar instruments.
	Develop the necessary tools for the efficient management of industrial cooperation.
Pillar 3: Transversal capability building programmes	Define critical industrial capabilities that can be developed through these transversal programmes.
	Define the strategy and planning of transversal programmes based on planning, the needs of MINISDEF, and the scheduling of major defence programmes.
	Define those production capabilities that are considered critical and promote appropriate measures to increase their production capacity.
Pillar 4: Consortia and strategic alliances	Analyse the industrial benefits and dependencies of potential partnerships with other countries as a tool to support decision-making.
	Promote and encourage consortia and joint business participation in defence programmes.
	Conduct a detailed study of the national sector, its strengths, dependencies and future opportunities to assess cooperation between national defence companies with the support of MINISDEF in order to achieve a high added-value positioning and to promote a context in which companies want to participate.
Pillar 5: Territorial cohesion and distribution	Monitor the defence supply chain to promote its security and resilience.
	Adapt applicable circular economy criteria that contribute to reducing the demand for new resources and strategic raw materials.
	Promote energy efficiency and environmental sustainability.

Pillars of DIS 2023	Lines of Action
Pillar 5: Territorial cohesion and distribution	Encourage the creation and expansion of industrial corridors, favouring territorial networks, through the development of strategic projects.
	Establish clauses in administrative management processes that encourage and reward the application of measures that favour initiatives aimed at achieving greater territorial distribution.
Pillar 6: New technologies and the digital challenge	Support industry drivers that promote the digitisation and innovation of production processes and the supply chain, and place a positive value on them in the decision-making stage.
	Facilitate companies and promote their integration in ongoing or future European and national initiatives (Aid for MINCOTUR's Connected Industry 4.0 initiative, NextGenerationEU Funds, etc.).
	Encourage joint initiatives with the civilian sector, and dual-use development programmes or programmes that integrate technologies already developed and tested by that sector (emerging, communications, or cyber) and encourage public-private participation.
Pillar 7: Talent attraction and defence culture	Support the creation of curricula that meet the needs of critical profiles in the medium and long term through collaboration with educational centres, universities and companies.
	Foster scenarios to attract and retain talent by defining requirements to be met by companies within the framework of the programmes and to enhance diversity in the defence workforce through industrial policy.
	Establish the necessary measures to strengthen public administration management capacity.
Pillar 8: Inter-ministerial coordination	Encourage the creation of the necessary inter-ministerial working groups on defence.
	Enhance the work of existing inter-ministerial groups on defence.
Pillar 9: International cooperation and external support	Generate discussion fora within MINISDEF, and together with other involved bodies, for sharing the official position at national level with a view to negotiations and participation in international initiatives.
	Strengthen Spain's presence in international organisations.
	Promote defence exports through international agreements.
	Conduct a continuous assessment of international defence trends to enhance the competitiveness and participation of national companies in order to boost the internationalisation of the DTIB, and increase the volume of exports.
Pillar 10: Industrial knowledge management and dialogue with industry	Bolster the scope and action of the industrial observatories through resources and instruments for the management and monitoring of industrial knowledge.
	Strengthen the strategic vision of the industry's interests for advocacy at government level.
	Foster a fluid, permanent dialogue with DTIB companies, associations and clusters.

5_Ten strategic pillars for effective implementation

NGWS/FCAS

- Description: next-generation weapon system within the future air combat system.
- European programme in collaboration with France and Germany.
- Technology maturation phase and demonstrators
  - Planned investment: €2.5 billion.
  - Period: 2023-2027.
- Main contractors: Indra, Airbus, ITP Aero and the SATNUS consortium (GMV, Tecnobit and Sener).

Photo courtesy of Indra

The objectives set will be achieved through the strategic pillars detailed below, which include a series of actions for their implementation. In turn, and as a complementary measure, a DIS 2023 implementation guide will be prepared. It will define the goals to be achieved and establish indicators to measure the degree to which objectives are fulfilled.

Pillar 1: Strategic Defence Industrial Capabilities (SDICs)

Lines of action

- Continuously advance SDICs to adapt them to the present scenario.
- Develop an analysis on the level of capacity building in the SDICs available to the domestic DTIB.
- Define industrial policies, and ensure the use of SDICs as a criterion in all phases of armaments and materiel programmes, including at the earliest planning stages.
- Define industrial strategies by sector based on SDICs.
- Monitor and follow-up on SDICs based on industrial observatories and industrial capability studies as main tools.

SDICs as a strategic factor

SDICs are those critical and indispensable industrial capabilities for defence, necessary both for the operational needs of the Armed Forces and for strategic autonomy and national sovereignty.

Identifying these capabilities is as important as knowing their level of availability in the domestic industry. This is key to making effective industrial policies and decisions on what procurements to make for each of the capabilities.

In the methodology used to define which industrial capabilities are strategic, the systems and subsystems that are essential to cover operational needs are identified, as well as the level of criticality of the different phases that make up their life cycle (design, development, production, integration and sustainment).

Furthermore, the level of development of these capabilities within the national DTIB are examined, which allows their degree of availability to be identified. When analysing SDICs, the degree to which the national DTIB possesses these capabilities and the state of the art of its developments will result in one of the following scenarios:

i. The nation's industrial capabilities are complete and of a high technological level, placing Spain in a leading or very competitive position in the international market.
ii. The nation's industrial capabilities are partial, comprising only subsystem or component developments.
iii. The nation's industrial capabilities within the DTIB are uncompetitive or non-existent even though they are defined as critical and strategic to national interests.
iv. Other industrial capabilities may or may not be available in the national DTIB, but are left out of the analysis as they are not considered strategic and fall out of the scope of SDICs.

Depending on the case, the strategy to be followed will be different, having an effect on programme planning and contracting, as well as investments. For each of the SDICs, a roadmap is drawn up indicating the starting point, the objective to be reached and all the actions to be taken to achieve the objective. The degree of ambition in each case will be determined by various factors, so the roadmap and the scope of the SDICs should be updated periodically in order to always have a real vision that can redirect, if necessary, the identified actions, as well as adjust the objective according to the needs of a given moment.

Once the map of national industrial capabilities has been defined, an industrial and strategic analysis is carried out with the aim of defining the most appropriate policies in each case, based on **SDICs being a key and determining factor**. This serves to empower the Armed Forces, strengthen and position industry by increasing its export capacity, and fulfil the objectives of defence policies, thereby contributing to the country's technological and economic growth.

This approach was already implemented in DIS 2015, which placed SDICs at the centre of decision-making in defence procurement programmes. SDICs were defined in such a way that their structure would be a key element in articulating the technology, procurement and sustainment programmes, both for major programmes (F110, 8x8, NGWS/FCAS) and in the selection of projects to support in European and NATO initiatives (EDF, PESCO, NSIP, HVP). In both cases, SDICs are used as a tool for assessing the different options available, their impact on the DTIB and critical defence capabilities.

SDIC update

SDICs are subject to a permanent updating process where their degree of validity and applicability is analysed, as well as existing capacity building within the national DTIB. In particular, this need has been identified due to the appearance of emerging and disruptive technologies (EDTs) and the appearance of new threats and operational scenarios facing the Armed Forces.

This review and updating process makes it possible to make SDICs a tool that is consistent with new challenges whose application is key to implementing a DIS aimed at enhancing national strategic autonomy, the positioning of domestic industry in the European and international market, and meeting the current needs of the Armed Forces.

This updating process also takes into account the identification of critical capabilities for the civil and space sector, in order to address the paradigm shift in which overlaps between sectors are increasing, especially in the field of Information and Communication Technologies (ICT) and where they are applied. This update therefore emphasises capabilities such as cloud combat, unmanned vehicles and cyber defence.

In addition to these newly identified capabilities, attention will continue to be paid to those that continue to be fundamental, such as the design, development and integration of critical platforms, development of advanced sensors, command and control systems and communications, among others.

The objective is, on the one hand, to strengthen areas in which the national industry has competitive and high-level technological and industrial capabilities, such as the design and integration of critical platforms (submarines, ships, aircraft and armoured vehicles) or the development and integration of sensors and systems to maintain the national industry's leading position in the international market. And, on the other hand, to strengthen areas in which capabilities are partial or in the process of developing, such as missiles, communications systems, ammunition, engines, etc. To this end, the necessary measures will be adopted to provide technological and industrial training for national industry, thus promoting not only an increase in national strategic autonomy, but also economic, technological and social benefits.

Analysis and prioritisation of SDICs: Industrial policy

Considering the new budgetary circumstances, a process of procurement and development of new systems has been initiated which will facilitate industrial capability building both at European level and in the national sector whose activity will be revived by these investments. This process must be accompanied by a corresponding industrial strategy, which will lead, in the medium and long term, to a strengthening of the national industrial fabric of the sector.

The outcome of this work will provide guidelines for the procurement of the necessary systems and help to plan industrial participation in new development programmes and projects.

Based on the result of the state of the capabilities, procurement policies are established for each SDIC, which will be carried out according to the following premises:

- In the case of **critical capabilities**, the following three assumptions can be set out:
    A. If they are covered by the national DTIB, the choice will be to strengthen and maintain these capabilities, preserving the technological level provided, and focusing on national products that maintain sovereignty.
    B. If the national DTIB provides partial cover, the first option is cooperation at European level, preserving or increasing national capability building. However, in case national capability is sought, such cooperation will be considered as an intermediate and transitional solution, allowing for the option of national developments.
    C. If there is no capability in the national DTIB, nor is investment in a national development considered an option, it will be purchased from foreign companies, with priority given to European companies or NATO preferred partners, where an industrial return for the national DTIB will be sought through tools such as Industrial Participation Schemes (IPSs), which are detailed below.
- For defence-**relevant** but less critical capabilities or technology areas, the European solution will be preferred.
- For **remaining capabilities**, the global market will be used to acquire the products or systems that are most competitive and attractive to national interests.

It is worth highlighting Spain's clear commitment to strengthening not only national but also European strategic autonomy, giving priority to European cooperative developments that strengthen the positioning of the European defence industry in the international market.

As a result of the work described above, the following essential capabilities for defence have been identified: Cyber defence, Encryption and cryptography, Tactical communications, Counter-Unmanned Vehicle System (C-UVS), Electronic warfare, Guided munitions and missiles, Combat cloud, Airborne platforms, Naval platforms, Land platforms, Sensors, Simulators, Anti-missile systems, Combat/Mission systems, Command and control systems, Navigation and control systems, Propulsion systems, Satellite observation and communication systems, and Unmanned vehicles.

Capability procurement policy

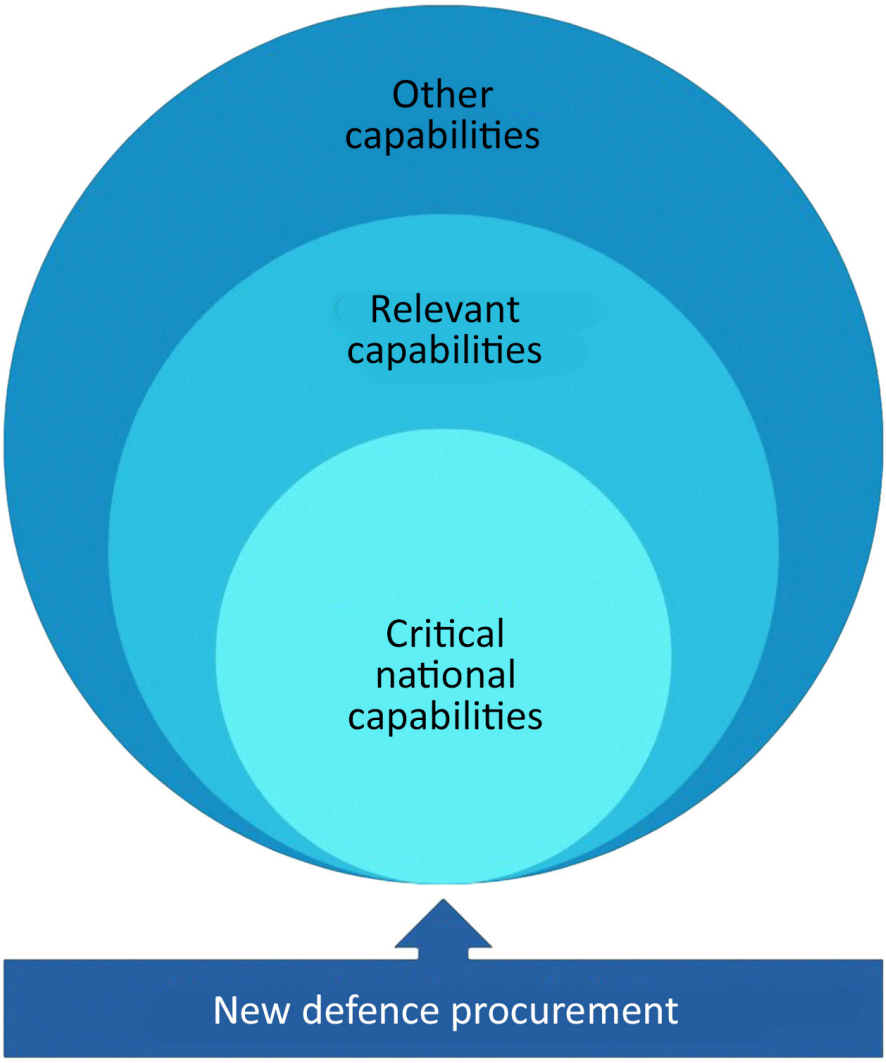


Photo courtesy of Indra

3D Lanza Radar

- Description: replacement of Aerospace Surveillance and Control System radars.
- Planned investment: €117 million.
- Period: 2021-2025.
- Main contractor: Indra.

Appendix I of the document includes a brief description of the key concepts considered in each of the essential capabilities for defence, as well as the technological and industrial challenges to be met.

SDICs and the supply chain: A factor to protect

SDICs by definition have a critical component that needs to be monitored and protected, especially within the supply chain. In order to avoid loss of capacity due to market restructuring and to safeguard SDICs, this sector of the industry needs to be carefully monitored:

- Detection of these critical capabilities and businesses within the DTIB.
- Analysis of their status.
- Enhancing their participation in defence programmes either as contractors or as part of the supply chain of companies acting as main contractors.
- Pursuit of the objective of maximising industrial capabilities (design, development, production, support) available in the national territory associated with these areas, supporting the development of national products and ensuring life-cycle support.

SDICs as a tool for industrial analysis

SDICs are an industrial analysis tool that can characterise critical capabilities available to DTIB companies. The application of this analysis can be used in the following areas:

- The formulation of Armament and Materiel Systems Master Plans, for which industrial analyses are taken into account for each subsector, with the SDICs being an instrument used to detect strengths, dependencies and risks in each of them.
- The negotiation of IPSs, a basic element for industrial cooperation management. IPSs contain both a breakdown of all the companies that will participate as suppliers in a programme, and all the actions or technology transfers that have to be carried out in order for the industrial scheme to be implemented. The IPS allows for a detailed analysis and monitoring of national industry participation in each programme, as well as of the new skills obtained and their origin. Within the framework of this new tool for industrial management, the analysis of the SDICs involved in the activities to be carried out by national companies in armaments and materiel programmes is decisive for achieving the objectives set out in this DIS 2023.

The usefulness of the SDICs as an analytical tool will be demonstrated in the elaboration of the plans described above, again seeking to strengthen the DTIB's capabilities and thus have more capable Armed Forces and greater strategic autonomy.

Pillar 2: Armament and materiel procurement programmes.

Lines of action

- Define a standard, with legislative adaptations where necessary, and regulatory framework to enable the implementation of the DIS in each of the procurement programmes. This standard should be clear and concise on the use of Industrial Participation Schemes (IPSs) and other similar instruments.
- Develop the necessary tools for the efficient management of industrial cooperation.

Photo courtesy of Infodefensa

S-80

- Description: Isaac Peral-class submarine equipped with third-generation air-independent propulsion (AIP) called BEST (Bio-Ethanol Stealth Technology).
- Planned investment: €3.907 billion.
- Production: 2016-2028.
- Units: 4 submarines with delivery of the first unit scheduled for 2023.
- Main contractor: Navantia.

MINISDEF's main instrument for implementing its defence industrial policy and giving effect to the measures set out in this DIS are the armament and materiel procurement programmes. These programmes, and primarily the Special Modernisation Programmes (SMPs), are the vehicle for developing and strengthening national industry capabilities, especially in areas considered strategic. In this way, industrial objectives must be considered a key and determining factor in selecting the final contracting route.

This requires regulations for the management of industrial cooperation and IPSs that are adapted to these needs and reflect the process to be followed in an agile and precise manner. Nor should we lose sight of the driving force behind life cycle support, both in terms of joint programmes (the DGAM's responsibility) and specific programmes, such as the creation of Technical Life Cycle Support Offices (OTACV).

The current scenario, both at national and international level, is one of a generalised increase in investment and an effort to reduce dependence on third countries throughout the supply chain with the aim of achieving strategic autonomy in the areas considered critical. To this end, programmes and support should serve as an instrument to expand the reach of the investment made, even appealing to SMEs and start-ups. This ensures a capable and competitive industrial fabric, which can cover most of the Armed Forces' critical needs.

In order to define the industrial structure of defence programmes in a way that helps to meet the objectives of DIS 2023, the different scenarios that may arise must be taken into account:

A. Project led by a national company or consortium

One of the industrial objectives of the programmes will be to maximise the participation of national industry, especially focused on high value-added and SDIC-related activities, by sourcing, where possible, products developed by the national industry. This would be the most favourable scenario and the medium to long term objective to be achieved in programmes involving SDICs.

The procedure to be followed to select this option is as follows:

- Initially, a study will be carried out to verify that the national industry is capable of supplying a system that meets the established requirements (technical, economic and temporal), always seeking to maximise national content in strategic areas. To this end, IPSs will be requested which will evaluate the available alternatives and ultimately define the contractual industrial scheme.
- In systems where there is insufficient national capacity, or this is of a lower level than that required by the programme, an IPS associated with its supply will be negotiated with the foreign supplier, which should include the necessary training for national industry to maximise its participation and guarantee maintenance and operation during the system's life cycle.
- All companies, both domestic and foreign, should be committed to maximising the participation of domestic industry, especially in areas considered strategic. These IPSs will form part of the contract and will be closely monitored for compliance.

The launching of transversal programmes to enable the progressive development of industrial and technological capacities in national industry will also be assessed.

B. Cooperative project

In case the option of national development is not possible, the possibility of joining a cooperative programme should be considered, if such an option exists. Cooperative projects are a great opportunity for the industrial positioning and capability building of the DTIB, as long as such participation focuses on high added value and strategic areas.

In these cases, negotiation of domestic industry participation in the areas/systems that are considered strategic will be a critical element. To this end, it is necessary to join these programmes from the moment of their conception, thus being able to negotiate, on equal terms with the other participating Member States, a fair industrial distribution in line with the industrial and technological capacities of the national DTIB.

C. Procurement through a foreign company

In these cases, an IPS will be negotiated with the objective that the programme allow the national industry to make a qualitative and quantitative leap in its industrial capacities in design and production, ensuring national maintenance capacity so as to guarantee better and more effective operation of the systems during the life cycle.

Within this scenario, three scenarios can be distinguished:

- Direct contracts with a European company: Spain is highly committed to strengthening the European defence industry, providing capabilities through its industry and fostering collaboration with European companies. In this type of contract, where a European company acts as the main contractor, an IPP will be requested in order to have detailed knowledge of the national industry's participation. In strategic areas falling within the programme, efforts will be made to maximise national industry participation. In contracts in which, due to their nature, an exception of Law 9/2017 of 8 November, on Public Sector Contracts (LCSP) is applicable, a contractual requirement on the maximisation of national industry participation will be included, with a special emphasis on SDICs.
- Direct contract with a non-EU company: Where procurement from a non-EU company is the most appropriate option, an IPP will be required that includes maximising national industry participation, especially focusing on areas considered strategic and on life cycle support.
- Contract with another government: These contracts are unique in that they are agreed between governments and not directly with the supplying company, such as Foreign Military Sales (FMS) contracts. In such cases, supplying companies will be requested to submit an IPS that considers the involvement of the national DTIB, duly agreed by both parties, with the objective of creating long-term bonds. This encourages the introduction of national companies into the supply chain of these foreign companies, not only for national but also for international programmes.

All of these measures require clear and precise regulations indicating the ways in which these requirements are articulated, as well as the content and scope of the IPSs.

Pillar 3: Transversal capability building programmes

Lines of action

- Define critical industrial capabilities that can be developed through these transversal programmes.
- Define the strategy and planning of transversal programmes based on planning, the needs of MINISDEF, and the scheduling of major defence programmes.
- Define those production capabilities that are considered critical and promote appropriate measures to increase their production capacity.

Photo courtesy of ITP Aero of the Eurofighter EJ200 engine.

EUROFIGHTER – HALCON Project

- Description: multi-role combat aircraft.
- Planned investment: €2.043 billion.
- Production: 2023-2030.
- Units: 20 aircraft.
- Main contractor: Airbus (European programme in partnership with the UK, Germany and Italy).

To achieve the development of critical capabilities common to different sub-sectors, MINISDEF will support and encourage the launch of 'transversal' programmes. By transversal, we mean both its possible integration into various platforms and its use in various sub-sectors. This results in increased Armed Forces capabilities, both in terms of operability and adaptation to different domains and scenarios. The main objectives of this pillar are as follows:

- Achieve a technological leap through the modernisation of the industry to increase its competitiveness.
- Increase production capabilities, not only in terms of volume, but especially in terms of strategic autonomy. This goal is closely linked to supply security, the strengthening of which will create a stable industrial base and reduce dependence on third parties.
- Build up skills in specific market niches that may be common to different sub-sectors, as well as pool funding and development efforts.
- Support the retention of talent in the sector by providing a stable long-term working environment that minimises the impact of periods without production programmes.

With a view to the future and the programmes planned for the coming years, guidelines should be established to direct these initiatives. It should therefore be taken into account that transversal development programmes meet at least the following characteristics:

- These should be DTIB enabling programmes, involving several sub-sectors or platforms.
- They should promote the production of domestic products or services.
- They should help to reduce external dependencies.
- They must meet essential operational needs for defence and security.
- They should cover critical capabilities and be defined by their relationship to SDICs.

Progressive capability building in such transversal systems opens the door to a better use of investments and ensures the development of a national capacity for which there is a recurrent need and which is applicable to many programmes.

Pillar 4: Consortia and strategic alliances

Lines of action

- Analyse the industrial benefits and dependencies of potential partnerships with other countries as a tool to support decision-making.
- Promote and encourage consortia and joint business participation in defence programmes.
- Conduct a detailed study of the national sector, its strengths, dependencies and future opportunities to assess cooperation between national defence companies with the support of MINISDEF in order to achieve a high added-value positioning and to promote a context in which companies want to participate.

Photo courtesy of GDELS-SBS

8x8 Wheeled Combat Vehicle 'DRAGON'.

- Description: Army wheeled combat vehicle.
- Planned investment: first phase €2.1 billion.
- Production: 2020-2037.
- Units: first phase of 348 units with entry into service between 2024 and 2027.
- Main contractor: TESS (Santa Bárbara, Indra, Sapa, Escribano).

Within the current geostrategic context and the increase in defence investments, the role of national companies primarily in the European market but also on the international scene is of utmost importance as it will influence the future capabilities of companies and thus both the Armed Forces and its operability as well as the rest of the supply chain in the national DTIB.

Capability building and looking towards Europe: Alliances and consortia

Spain is committed to multilateralism, the 'Europe of Defence' and strategic bilateral alliances.

Due to the major new challenges facing Europe and the need to break its dependencies in critical areas so as to achieve strategic autonomy, the European Commission is promoting the creation of multi-country consortia of companies to try to promote a pluralistic, robust DTIB, bringing together the capabilities of large and small companies, and eliminating duplication. Spanish companies must therefore be prepared for this scenario and MINISDEF must be ready to guide and support the initiatives that arise in this regard, always in line with the strategy defined for each sector.

NATO also offers its member states' companies a remarkable source of opportunities that can be exploited by the national industry. The alliance's various contracting bodies, including the Communications and Information Agency (NCIA) and its Support and Procurement Agency (NSPA), generate a wide range of requirements, ranging not only from military aspects, but also from food products and consumables to complex technologies and infrastructure.

In order to obtain the maximum benefit from the different funding alternatives and participation in EU (PESCO, EDF, EDIP) and NATO (NSIP, HVP) cooperative projects, the entry of national industry in international consortia will be promoted, always in line with the provisions of DIS 2023.

These cooperative projects will be the ones that will mostly exert a pull on each sub-sector in the coming years. Accordingly, these alliances should be carried out on the basis of the interests and needs arising from the current regulatory framework for security and defence, while with the aim of strengthening SDICs.

It should be noted that a good positioning of the national industry in the market and in international programmes gives Spain greater geostrategic weight. For this reason, it is of great importance to support companies in their external positioning, give priority to systems, sub-systems and equipment with high added value where there is a greater likelihood of competitiveness, as well as in those considered critical and strategic in order to maintain strategic independence at national level.

MINISDEF will continue to ensure the proper positioning of its supplier industry in this important market, and ensure the efficient management of the different regulatory instruments, procedures and existing technical-administrative tools.

As part of establishing and supporting these partnerships, an analysis must be carried out on the industrial capabilities of companies, the sector as a whole and its ability to address national needs. Of these, the criteria on industrial training in the DTIB will be of particular relevance in any decisions.

The most relevant aspects to be taken into account will be:

- Partnerships that enhance SDICs in the national DTIB.
- Partnerships that promote an increase in DTIB capabilities with direct application in current defence programmes, or that form part of MINISDEF's future planning, and contribute to achieving strategic autonomy.
- Partnerships fostering those industrial capabilities or emerging technologies within the DTIB where there is a particular interest in positioning industry in the field in the future.

National environment: Strategic consortia and value-added positioning

The creation of strategic consortia within the national industry should aim at clustering industrial capabilities, obtaining a better positioning in the international market, increasing long-term competitiveness and generating a pull effect on the rest of the DTIB. All this is in addition to providing an effective and advantageous response to the needs of the Armed Forces compared to the products of foreign technology companies.

To define MINISDEF's strategy in its support and promotion of national consortia, the following tools will be used: the analyses of industrial observatories, the medium- and long-term planning of MINISDEF's needs and its ability to bring together industrial capabilities of strategic priority.

These consortia should aim to jointly enhance national strategic capabilities and, thus, contribute to the national interest in the form of enabling the Armed Forces. The objective is to strengthen the industry by achieving a higher level of competitiveness.

The creation of these consortia will make it possible to take on in-house developments for large national programmes, reduce risks and facilitate their management. This environment of cooperation between national companies will make it possible to create frameworks for action in which large companies act as a magnet on SMEs and integrate them into their supply chains. This will harness innovative potential of consortia and revitalise their key role in the national industrial fabric.

Management of consortia and partnerships in the DTIB

In order to generate the aforementioned pull effect of large companies on the rest of the supply chain, MINISDEF must manage industrial relations between companies, bearing in mind that the capacity to influence business decisions depends to a large extent on the goodwill of these companies. For this purpose, the different tools defined earlier will be used:

- Management of industrial cooperation in armament and materiel programmes through the implementation of IPSs.
- Incorporation of industrial participation requirements for major programmes.
- Strengthening business associations and clusters.

Pillar 5: Territorial cohesion and distribution

Lines of action

- Monitor the defence supply chain to promote its security and resilience.
- Adapt applicable circular economy criteria that contribute to reducing the demand for new resources and strategic raw materials.
- Promote energy efficiency and environmental sustainability.
- Encourage the creation and expansion of industrial corridors, favouring territorial networks, through the development of strategic projects.
- Establish clauses in administrative management processes that encourage and reward the application of measures that favour initiatives aimed at achieving greater territorial distribution.

Photo courtesy of Airbus

NH-90

- Description: Tactical transport helicopter designed to provide a common platform to all three armed forces of NATO countries.
- Planned investment: €1.397 billion.
- Production: 2023-2030.
- Units: 45 helicopters.
- Main contractor: Airbus.

Resilient, secure supply chains

A priority for Europe and Spain is the securing of increasingly complex, international and interlinked defence supply chains.

At times, an SME has full or partial knowledge of a strategic capability. However, these companies are often more sensitive to market changes than larger contractors, which could lead to a loss or decrease in capability. It is essential to open up SME access to new opportunities, such as international partnerships, so that they can grow and become strong and resilient which in turn will consolidate a competitive DTIB.

In this line, MINISDEF will promote the inclusion of national SMEs and start-ups in the national DTIB through the Code of Conduct for Defence Contractors, and in the European and international DTIB through the dissemination of their capabilities.

The security and resilience of defence supply chains will also be reinforced. This involves monitoring all elements of the chains, from securing the supply of critical raw materials and microelectronics, to monitoring foreign direct investment (FDI).

Another issue to be addressed is the changes brought about in the sector by the processes of decarbonisation and the ecological transition that seek to mitigate climate change. MINISDEF will seek to guarantee that industry adapts to circular economy criteria that reduce demand for new resources and raw materials and will promote environmental sustainability and energy efficiency, in accordance with the MINISDEF Environmental Management Systems and with Secretary of State for Defence Instruction 59/2014 of 4 December, which amends Instruction 56/2011 of 3 August, on environmental sustainability and energy efficiency within the scope of the Ministry of Defence.

To this end, MINISDEF is aligned with the different initiatives that address this problem at: (i) Public Administration level (for example with the Roadmap for the Sustainable Management of Raw Materials, the Spanish Circular Economy Strategy, 'Circular Spain 2030' published by the Ministry for the Ecological Transition and Demographic Challenge, and the laws that regulate the control of foreign investments); and (ii) EU and NATO level (with the Critical Raw Materials Act or the Action Plans on security of supply of CNAD, the Conference of National Armaments Directors of NATO).

The defence industry as a vehicle for territorial cohesion

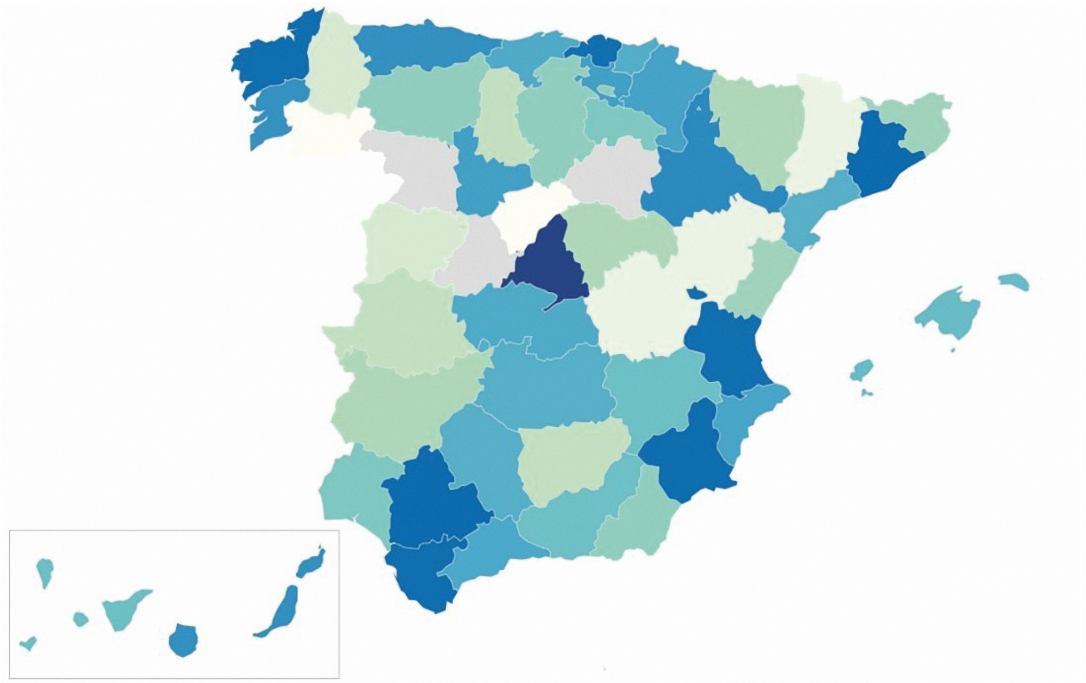
The defence industry plays an important role in shaping the national economy. Due to its characteristics, this is a sector with an important technological component which supplies products with high added value, has a strong export side and requires highly specialised training.

The DTIB is a very significant asset for society as a whole and should be an element of cohesion between the different communities where companies are located. It should also act as an element of wealth distribution in the country through public and private investments in the sector, in such a way as to distribute financing to the downstream supply chain as much as possible within the national territory.

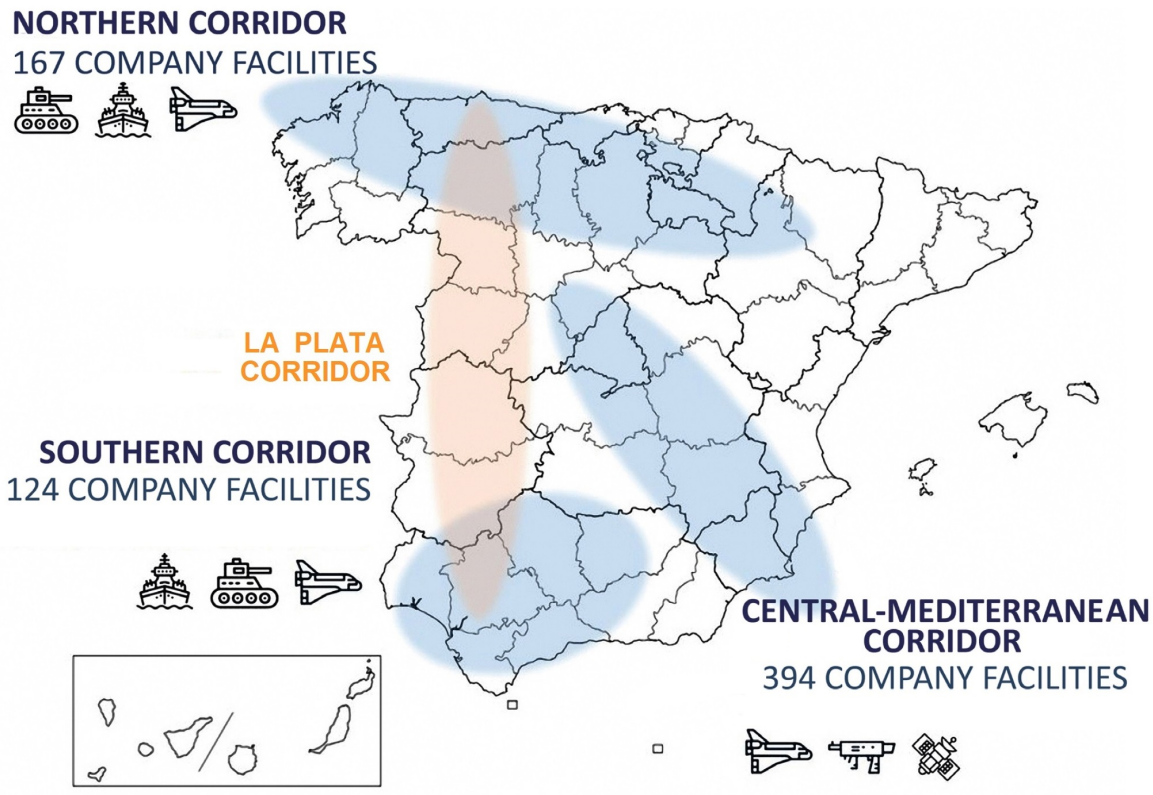
The defence industry in Spain is grouped into **three major industrial corridors**; the Northern Corridor, the Central-Mediterranean Corridor and the Southern Corridor.

The **Northern Corridor**, located on the Cantabrian coast and extending as far as Zaragoza, has capabilities in various fields. On the one hand, in the north-west along the Ferrol estuary, there is a naval hub with a

DEFENCE BUSINESS DENSITY BY PROVINCE



DEFENCE INDUSTRIAL CORRIDORS



ship design and production capability, especially for escort ships. For example, the manufacture of F-100 and F-110 frigates in its shipyards generates an important pull on all companies involved in the naval sub-sector. In addition to the naval hub, the north-west has important capabilities in the production of land vehicles, on which there is also an important focus in the centre-north of the peninsula.

To complete the capabilities of this corridor, it is necessary to mention the production capacities of ammunition and weapons components, as well as components and sub-components for the aeronautical sector such as aerostructures or related to propulsion systems, along with the development of aerospace systems.

The **Central-Mediterranean Corridor** is the most numerous in terms of both the number of companies and the number of jobs created; it is the support point from which the network effect spreads throughout the rest of the country. Given its size, it covers practically all the capabilities of the national DTIB. The Cartagena naval cluster specialises in submarine design and support. The Region of Murcia also has production capabilities for ammunition and gunpowder. Castilla La Mancha holds an important niche in the aeronautical sector, such as helicopter production capacity, to which can be added capabilities related to aeronautics, armament and optronics.

To close this corridor, the centre of the peninsula bears mention: the largest companies in the sector are located in the Community of Madrid where, in some case, they hold their headquarters and production centres. The centre is an important aeronautical hub with production and maintenance capabilities for fighter aircraft such as the Eurofighter and transport aircraft such as the MRTT. In addition, engineering development is beginning for the future sixth-generation FCAS fighter aircraft. All these programmes have a great impact and generate an industrial support and supply framework within the aeronautical sub-sector.

Photo courtesy of Airbus

MRTT (Multi Role Tanker Transport)

- Description: strategic airlifter and in-flight refuelling aircraft.
- Planned investment: €675 million.
- Production: 2023-2025.
- Units: 3 aircraft.
- Main contractor: Airbus.

Continuing with the capabilities located in this corridor, the centre is the home to the principal companies involved in communications, on-board systems on high value-added platforms such as all those related to optronics systems, weapons systems and propulsion systems. It should be noted that the central area is also the main hub for sensors and the space sub-sector.

In the **Southern Corridor**, the naval hub in the Bay of Cadiz should be highlighted as it specialises in the design and manufacture of patrol vessels for both domestic use, such as maritime action ships (MAS), and exports. This naval hub provides an important industrial framework for shipyards as well as for the supply chain and companies supplying other products and services. In Seville, the aeronautical cluster is remarkable since it participates in major national programmes such as the A400M. This cluster has a magnetic effect for ancillary companies and also for the supply chain.

It is also worth highlighting recently launched initiatives such as the creation of the Technological Centre for Development and Experimentation (CETEDEX) to be installed in the capital of Jaén, which will generate technological developments in strategic defence areas focused on anti-drone defence systems, smart vehicles, artificial intelligence and big data. Finally, capabilities for the testing and sustainment of ground vehicles are also found in this southern corridor.

Furthermore, these corridors exert a **nationwide network effect** that spreads the benefits of defence investment, allowing companies throughout the country to become part of the defence supply chain. This gives the sector another important role in the creating high-skilled jobs and therefore as a key economic factor in boosting regional economies. This reality is a clear strength of the sector that needs to be built on.

The aim is to increase this ability to expand by extending these corridors and even creating new ones, while always bearing in mind the aim of promoting the industrial and technological sector and the creation of highly skilled jobs.

A fourth corridor, called the **Silver Corridor**, will be developed; it will extend from north to south from Asturias to Seville. The land sector is particularly important in this corridor, with the Trubia arms factory in the north, near Oviedo, where part of the production of the VCR 8x8 Dragon is being carried out, and Alcalá de Guadaira (Seville), where the VCR is being assembled.

Between those two points are other important centres for contributing to the defence industry. In Cuadros (León), the National Institute for Aerospace Technology (INTA) has a test laboratory, where research and certifications related to thermal shocks, altitude or vibrations are carried out, both for the civil and military fields, as well as certain tests related to the design and manufacture of missiles.

The Emergency Military Unit (UME) has an emergency battalion located at the 'Conde Gazola' military base (in Ferral del Bernesga), where it will soon host the UME Drone Unit (UDRUME), which will make an important contribution to the local economy. The future reopening of the Monte la Reina barracks in Toro (Zamora) will also boost the defence industry, create jobs and contribute to the reindustrialisation and a reviving of services.

This corridor would also include manufacturing capabilities in ammunition and weapons components located in different locations in Extremadura and Castilla y León.

It is also necessary to boost synergies with the civil and space sectors by creating technology clusters concentrating design and development capabilities, mainly in disruptive technologies for future application in different sectors. As a result, a higher return on investment should be achieved and the positioning of national companies improved.

In addition, the need for key supplies must be emphasised in order to reduce dependencies on third parties, contributing to strategic autonomy at European level. One example is the case of semiconductors.

The goal is to achieve an equitable distribution of all skills across the national territory, making the most of the available human talent, while at the same time distributing the benefits derived from investments, providing a focus for creating value, promoting training and increasing employment, which also serves to combat the problem of talent flight. All this certainly represents the defence industry's contribution to improving the socio-economic conditions of the country.

On the other hand, the current geopolitical situation and the situation resulting from the war in Ukraine have highlighted the need for sufficient industrial capability in the field of arms production. Against this background, and in response to this need for international cooperation, the European Commission presented on 3 May 2023 a policy proposal to facilitate the increase of the EU's production capacity for munitions and missiles, in order to ensure that the European defence industry can better assist Ukraine and EU Member States.

In the case of Spain, following Europe's lead, it is necessary to strengthen industrial structures and the capacity to manufacture and supply ammunition and missiles to meet the increase in present and future demand, both nationally to guarantee the availability and reserves necessary for its Armed Forces, and internationally to meet the needs of its partners and allies.

To this end, this DIS 2023 will work with the DTIB on two dimensions: increasing the manufacturing capacity of existing sites and fostering new industrial and technological capabilities. In this sense, MINISDEF will ensure that, as far as possible, these are established in locations that contribute to territorial cohesion and distribution.

Pillar 6: New technologies and the digital challenge

Lines of action

- Support industry drivers that promote the digitisation and innovation of production processes and the supply chain, and place a positive value on them in the decision-making stage.
- Facilitate companies and promote their integration in ongoing or future European and national initiatives (Aid for the MINCOTUR's Connected Industry 4.0 initiative, NextGenerationEU Funds, etc.).
- Encourage joint initiatives with the civilian sector, and dual-use development programmes or programmes that integrate technologies already developed and tested by that sector (emerging, communications, or cyber) and encourage public-private participation.

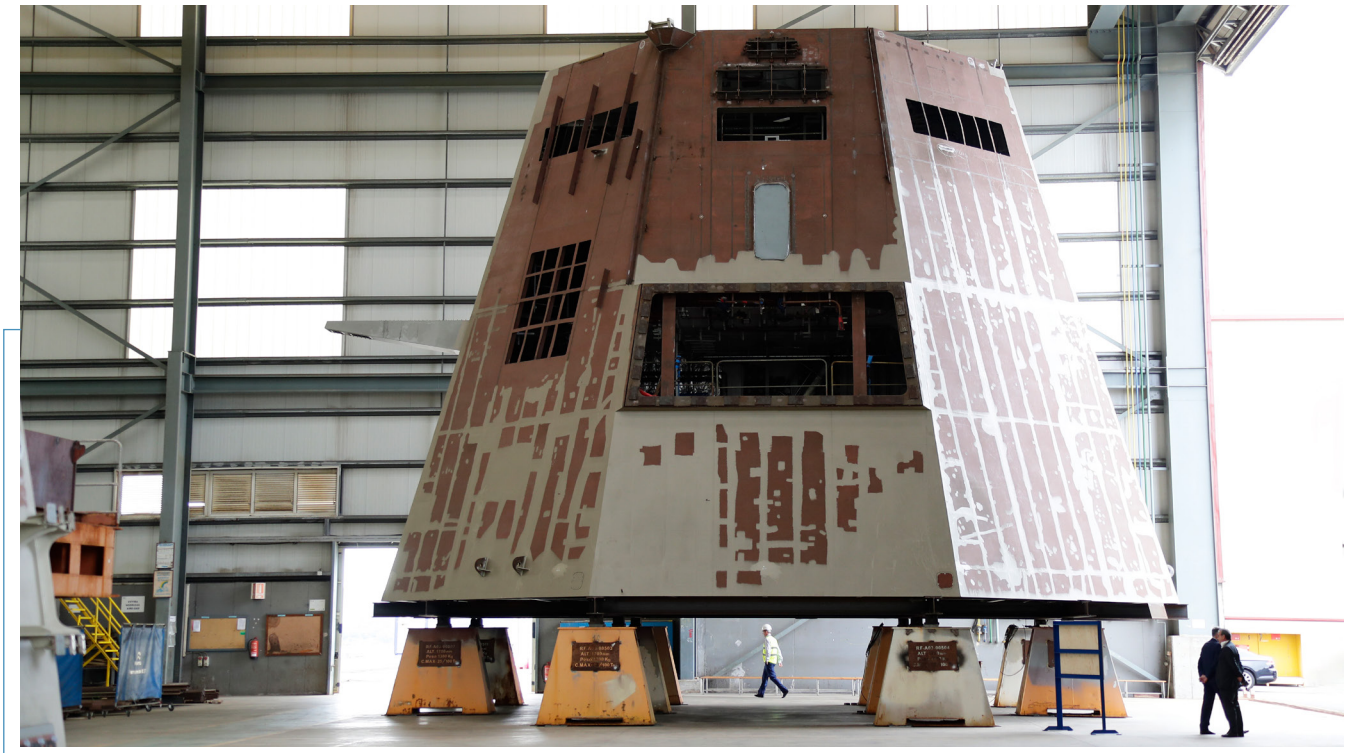


Photo of the mast section of the F-110 technology project courtesy of Infodefensa.

F-110

- Description: Bonifaz-class frigate intended to replace the Santa María-class frigate.
- Planned investment: €4 million.
- Production: 2019-2032.
- Units: 5 frigates with entry into service of the first unit expected in 2028.
- Main contractor: Navantia.

The world in general and industry in particular is going through a period of transformation and change in the digital revolution towards the so-called Industry 4.0. This digital transformation is a challenge for both industries and MINISDEF. The latter will have to promote the development and implementation of these technologies and the regulatory framework necessary to meet the digital challenge.

EDTs, such as 5G, artificial intelligence, big data, nanotechnology, cloud or quantum technology, allow a better approach to current and future challenges, including the interconnection between multiple platforms in collaborative environments, directed energy weapons and their application to defence, and cyberspace.

At international level, several initiatives have been launched to identify critical technologies, enhance civilian and defence RD&I synergies and mitigate strategic dependencies: the Defence Innovation Accelerator for the North Atlantic (DIANA) by NATO, HEDI (Hub for European Defence Innovation) by the EDA, and EUDIS (EU Defence for Innovation Scheme) and CASSINI (Competitive Space Start-ups for Innovation) by the European Commission.

Moreover, a change is necessary within the current investment cycle in order to be able to compete in the European and international markets, both in terms of cost and technology, in an increasingly competitive geopolitical context.

The DTIB is both a provider of technology solutions and a link for the transfer of new developments in the civilian domain to military applications. This last aspect represents a paradigm shift: the civilian sector and not, as previously, the defence sector acts as a magnet on emerging and disruptive technology developments.

These cutting-edge technological breakthroughs are often developed by start-ups, which are more exposed to foreign direct investment. This potential vulnerability highlights the need to ensure supply chain security.

The move of industry towards digital must be accompanied by an increase in the digital skills of staff involved. Therefore, launching national and collaborative programmes with a high technology content and involving developments in these technologies will contribute to the further empowerment of the industry.

In order to meet the needs of the Armed Forces, industry requires access to information such as the operational, technical, logistical and physical requirements of systems, access to test facilities with operational environments, and access to operational validation environments.

MINISDEF already launched the DTIS in 2020, and in line with it, communication with companies will be enhanced to promote transparency on end-user needs, and be able to adequately transfer civilian developments or dual-use technologies to military applications.

Pillar 7: Talent attraction and defence culture

Lines of action

- Support the creation of curricula that meet the needs of critical profiles in the medium and long term through collaboration with educational centres, universities and companies.
- Foster scenarios to attract and retain talent by defining requirements to be met by companies within the framework of the programmes and to enhance diversity in the defence workforce through industrial policy.
- Establish the necessary measures to strengthen public administration management capacity.

Photo courtesy of Tecnobit - Grupo Oesía

Clean room technology

Technical profiles: Added value for the country

There is strong competition to attract and retain talent in the labour market with the civilian sector and foreign countries being very attractive, especially for those specialising in STEM (science, technology, engineering and mathematics). All the more so when the rapid technological change of systems progressively increases their demand.

In addition to this, the current paradigm is shifting. The civilian sector is the driving force behind most of the current technological challenges and advances (big data, artificial intelligence, etc.), which has caused the defence industry to lose its position as a leader in technological innovation.

To mitigate this, action is needed in two areas: on the one hand, boosting the defence sector and its attractiveness. Keeping existing talent from moving to foreign companies or into the civilian sector requires a long-term and highly attractive career path with industrially and operationally leading programmes. On the other hand, it is necessary to promote the training of critical profiles in the long term, analyse future needs and promote educational programmes that cover these areas of knowledge, thereby ensuring these profiles have a long future ahead.

This last point is significant for the defence sector as the highly specialised knowledge required in some fields of the defence industry sector is acquired over long periods of time, and the difficulties faced by the industry in transferring this knowledge – mainly due to the shortage of profiles – leads to a loss of valuable and strategic knowledge. Moreover, retrieving this knowledge is resource-intensive and time-consuming, even causing delivery delays.

The future appears to be an environment in which defence systems must be able to integrate new technologies into their development and focus efforts on aspects that add value to defence products. Continuous training is therefore necessary, especially in EDTs and key technological niches. Synergies with civil industry need to be sought, and public policies to support training in study centres, universities and academia should be promoted.

Similarly, the recruitment of a diverse pool of talent in the area of STEM subjects ought to be encouraged. The defence sector must therefore join other ministries and organisations in its effort to become an attractive, plural, dynamic sector. It will have to break with certain preconceived ideas that can damage its reputation and convey its innovative spirit with the capacity to adapt to both technological and social demands and expectations.

In line with this objective, MINISDEF has recently launched several projects that seek to become technology drivers, regional job creators and national RD&I vectors: the creation of the new Army Logistics Base (BLET) in Cordoba, the new UME Drone Unit (UDRUME) in León, the Technological Centre for Development and Experimentation (CETEDEX) in Jaén, as well as the future reopening of the Army's Monte la Reina barracks in Toro (Zamora).

Enhancing managerial abilities

Similar to attracting and retaining talent in the defence industry, the Public Administration needs to improve its management capacity in different areas to effectively address the new environment in capability procurement and development. In this regard, the ministerial bodies responsible for managing and procuring armaments and materiel and those for the research and development of technologies, along with the technical services provided to companies by MINISDEF (certification, airworthiness, approval, etc.) will be fostered as an essential factor for positioning and competitiveness.

Defence culture

To achieve the objectives pursued by DIS 2023, it is necessary to take into account whether society accepts defence investments and, on the other hand, how companies in the sector are perceived, what contribution they make to society in the creation of quality jobs and wealth redistribution, and what technological changes they can make to the defence industry and its supply chain.

In the interests of achieving a favourable view from society on defence industrial strategies and policies, and for the sector to be seen as an additional strategic capability for national defence, institutional communication actions developed by this DIS will be promoted and supported.

Pillar 8: Inter-ministerial coordination

Lines of action

- Encourage the creation of the necessary inter-ministerial working groups on defence.
- Enhance the work of existing inter-ministerial groups on defence.

Photo courtesy of ISDEFE

DIS 2023 launch meeting

Secretary of State for Defence, Secretary General of the Department of Economic and G20 Affairs of the Cabinet of the Presidency of the Government, Secretary of State for Foreign and Global Affairs, Secretary of State for Digitalisation and Artificial Intelligence, Secretary General for Industry and SMEs, and President of SEPI at the 20 January 2023 meeting attended by ministerial departments and representatives of Spanish defence companies at which the main outlines of DIS 2023 were presented.

As DIS 2023 is a tool for serving national industrial policy, it is necessary to build a collaborative environment where all stakeholders actively participate and feel involved in the proposals and actions resulting from this strategy and the policies associated with the economic activity of the DTIB.

Economic activity generated by the defence industry contributes to national wealth and to the well-being of society, in the form of employment and territorial cohesion. For these reasons, the sector must obtain the consideration and support of other organisations in order to promote synergies and collaborative actions that will lead to a higher level of protection and empowerment of the sector.

Thus, this common framework requires dialogue between MINISDEF and other ministerial departments such as the Ministry of Economic Affairs and Digital Transformation, the Ministry of Industry, Trade and Tourism, the Ministry of Science and Innovation, the Ministry of Ecological Transition and the Demographic Challenge, the Ministry of Foreign Affairs, European Union and Cooperation and the Ministry of Work and Social Economy.

Continuous dialogue will also be maintained with other actors such as the State Society of Industrial Participations (SEPI), the National Institute for Aerospace Technology (INTA), ISDEFE, regional governments, European and regional organisations, universities and business associations.

The aim of this inter-ministerial and institutional coordination is to promote the sector, increase territorial cohesion and serve as a source of wealth and growth by encouraging Spanish companies to increase their exports and investments in the sector. Funding from national and European programmes, RD&I projects, bilateral programmes with countries outside the EU, or participation in dual-use initiatives, among others, will be considered as an enabling factor to achieve these objectives.

MINISDEF will promote interaction between the Public Administration and the industrial sector, which will act as a framework for the exchange of ideas and proposals, and the uniting of efforts to achieve the objectives established by DIS 2023.

Pillar 9: International cooperation and external support

Lines of action

- Generate discussion fora within MINISDEF, and together with other involved bodies, for the sharing of the official position at the national level with a view to negotiations and participation in international initiatives.
- Strengthen Spain's presence in international organisations.
- Promote defence exports through international agreements.
- Conduct a continuous assessment of international defence trends to enhance the competitiveness and participation of national companies in order to boost the internationalisation of the DTIB, and increase the volume of exports.

Photo courtesy of NABER INTEGRAL

FEINDEF

- Stand of the Ministry of Defence at the International Defence and Security Fair 'FEINDEF 23'.
- Attendance of more than 430 companies, representing an increase of more than 150% compared to the first edition.
- Attended by 94 delegations from 52 countries and 6 international organisations.
- The large attendance reflects the strength of the national defence industry and is an indication of the success of the public-private partnership.

One of the great challenges facing the national defence industry is to achieve a correct positioning in the international markets in order to take advantage of business opportunities and improve its industrial and export capacity.

Given the current backdrop and commitment to collaborative programmes and European or NATO R&D projects, efforts should be focused on this positioning, in addition to promoting a policy of major strategies with companies from EU or NATO member states, which would complement the capabilities of the national DTIB and increase the competitiveness of companies in the international market.

A strategy oriented towards the European market

This newly increased importance on European defence is conducive to a strategic reorientation to a more pro-European direction and will push forward actions that optimise national participation in common initiatives. The main actions proposed under this pillar are:

- Examine trends in industry requirements being promoted by bodies such as the EDA so as to guide industry capability towards these requirements.
- Encourage and support participation in those cooperative programmes that allow the objectives defined in the Military Capabilities Objective (MCO) to be achieved, and which are beneficial for MINISDEF and the DTIB's capabilities.
- Promote an adequate positioning of the national DTIB in cooperative initiatives, such as joint acquisitions and investments (EDIRPA, EDIP, etc.) or cooperative programmes such as the EDF, PESCO, etc.

The European market orientation does not neglect contributing to NATO. Spain is fully integrated into NATO and participates in its procurement initiatives, to which it will continue to be committed:

- NATO Security Investment Programme (NSIP), where it participates in all NATO Capability Packages.
- Multinational High Visibility Projects (HVP), high-impact project frameworks for multinational cooperation, designed to address NATO's Defence Planning Priorities.
- Defence Innovation Accelerator for the North Atlantic (DIANA).
- NATO Innovation Fund that will support start-ups and venture capital funds for the development of emerging dual-use technologies of NATO priority.

Supporting the internationalisation of the DTIB

MINISDEF will continue its active, coordinated participation in the various international defence fora and organisations so as to support the presence of Spanish companies abroad and safeguard their interests by increasing their opportunities overseas. In this regard, the institutional support from MINISDEF for the organisation and expansion of the International Defence and Security Fair (FEINDEF) is noteworthy.

Ministry action will be planned and coordinated to gain institutional support for the internationalisation of the Spanish defence industry, and provide the sector's associations and companies with up-to-date information on foreign markets.

MINISDEF will also continue its efforts to carry out efficient institutional work to support the dissemination and knowledge of the DTIB and its industrial capabilities, both nationally and internationally. This will contribute to the participation of companies in joint initiatives with other countries, and boost the export and global reach of national products.

For all this to be possible, it is also necessary to optimise the processes of coordination and distribution of information within MINISDEF, so that all agents involved have complete and up-to-date information on Spain's defence industry at all times. Only in this way will the ministry be able to make an effective contribution to achieving the objective set out in this strategic pillar.

Pillar 10: Industrial knowledge management and dialogue with industry

Lines of action

- Bolster the scope and action of the industrial observatories, through resources and instruments for the management and monitoring of industrial knowledge.
- Strengthen the strategic vision of the industry's interests for advocacy at government level.
- Foster a fluid, permanent dialogue with DTIB companies, associations and clusters.

Photo courtesy of UROVESA

VAMTAC

Instalaciones UROVESA, company awarded the contract for the supply of High Mobility Tactical Vehicles (VAMTAC) for the Armed Forces.

All the pillars described in this DIS 2023 seek to boost the defence industry in the current investment cycle and to ensure that investments are used in the most efficient and useful way possible for the Armed Forces, industry and society. It is therefore essential for MINISDEF to open up channels of communication with DTIB companies, associations and clusters to facilitate dialogue on the industry's capabilities, strengths and dependencies, and keep this industrial knowledge updated over time.

Industrial observatories as a tool for industrial intelligence

Analysis and communication with industry requires the use of specific tools to manage, channel and evaluate all available information, for which MINISDEF has established a group of industrial observatories.

The industrial observatories are part of the DGAM's Industrial Knowledge Management System and are structured in teams covering the seven main sub-sectors: aeronautics, naval, land, space, C4ISR, armaments and missiles, and other transversal industrial activities. Each observatory will assess and monitor the industrial capabilities of both the national DTIB and the main international companies in the relevant sub-sector.

In this way, it will participate in the analysis of trends and markets, anticipate industry risks and opportunities. This information will facilitate decision-making and will be of great use in assessing SDICs, defining future strategies, providing better positioning, and increasing the competitiveness of the national DTIB on the European and international scene.

Identification and registration of DTIB capabilities

The current changing environment is a consequence of both the dynamic nature of the sector itself and interaction between international actors with very diverse interests. Participation in national and foreign programmes with companies from other countries, and the flow of foreign investment into companies critical to national defence require MINISDEF to coordinate continuous monitoring of critical industrial capabilities in the DTIB and, if necessary, promote and foster these capabilities in the relevant areas.

For this reason, the industrial capabilities studies will continue. These studies analyse the lines of activity, products, assets and strategic capabilities of national companies as a further support tool for defining defence industrial policies and strategies, and which have proven to be a useful and effective instrument for MINISDEF's objectives.

All this work is complemented by the activity of the DGAM's Business Register, a database that serves as a repository and integration tool that is constantly being updated.

Underpinning all these actions, the interests of national industry will be considered in order to represent them effectively at government level by establishing the necessary management structures.

Acronyms

AIP	Air Independent Propulsion
APT	Advanced Persistent Threat
DTIB	Defence Technological and Industrial Base
EDTIB	European Defence Technological and Industrial Base
CASSINI	Competitive Space Start-ups for Innovation
CETEDEX	Technological Centre for Development and Experimentation
SDIC	Strategic Defence Industrial Capabilities
CNAD	Conference of National Armaments Directors of NATO
DGAM	Directorate General for Armament and Materiel
DIANA	Defence Innovation Accelerator of the North Atlantic
D&D	Design and Development
EDA	European Defence Agency
EDAP	European Defence Action Plan
EDF	European Defence Fund
EDIP	European Defence Investment Programme
EDIRPA	European Defence Industry Reinforcement through Common Procurement Act
EDT	Emerging and Disruptive Technologies
DIS	Defence Industrial Strategy
NSS	National Security Strategy
DTIS	Defence Technology and Innovation Strategy
EUDIS	EU Defence for Innovation Scheme
AF	Armed Forces
FCAS	Future Combat Air System
FMS	Foreign Military Sales

HEDI	Hub for European Defence Innovation (within the EDA)
HVP	NATO High Visibility Project
INTA	National Institute for Aerospace Technology
ISR	Intelligence, Surveillance and Reconnaissance
MIDCAPS	Small and mid-cap companies
MINISDEF	Ministry of Defence
NCIA	NATO Communications and Information Agency
NGWS	Next Generation Weapon System
NSIP	NATO Security Investment Programme
NSPA	NATO Support and Procurement Agency
MCO	Military Capabilities Objective
OTACV	Technical Life Cycle Support Office
NATO	North Atlantic Treaty Organization
CSDP	Common Security and Defence Policy
SMP	Special Modernisation Programme
PESCO	Permanent Structured Cooperation
GDP	Gross Domestic Product
IPS	Industrial Participation Scheme
SME	Small and medium-sized enterprise
SEDEF	State Secretariat for Defence
SEPI	State Society of Industrial Participations
STEM	Science, Technology, Engineering and Mathematics
ICT	Information and Communication Technologies
UDRUME	UME Drone Unit

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Appendix I: Strategic Defence Industrial Capabilities

As already stated in the body of DIS 2023, Strategic Defence Industrial Capabilities (SDICs) are those industrial capabilities that are critical and indispensable to the operational needs of the Armed Forces. An empowerment of the SDICs of the national DTIB will lend autonomy in providing systems to the Armed Forces, enable the national DTIB to position itself in international programmes and European consortia, and simultaneously increase the industry's export capacity and contribute to the country's technological and economic growth.

An appropriate level of security and confidentiality is required for the detailed development to SDICs due to the strategic nature of capabilities and their direct influence on key and determining aspects in orientating the efforts needed to ensure strategic autonomy, security and defence, as well as how they boost the operability and resilience of the Armed Forces.

Based on the above principles and considerations, and in the context of approved areas of expertise, this appendix lists and describes the essential capabilities for defence. The objectives of strengthening this indispensable tool for defence industrial policy and ensuring that these capabilities are in line with the new situation of the sector and the needs of the Armed Forces can only be achieved through a process of continuous updating.

The analysis and prioritisation of SDICs should serve to:

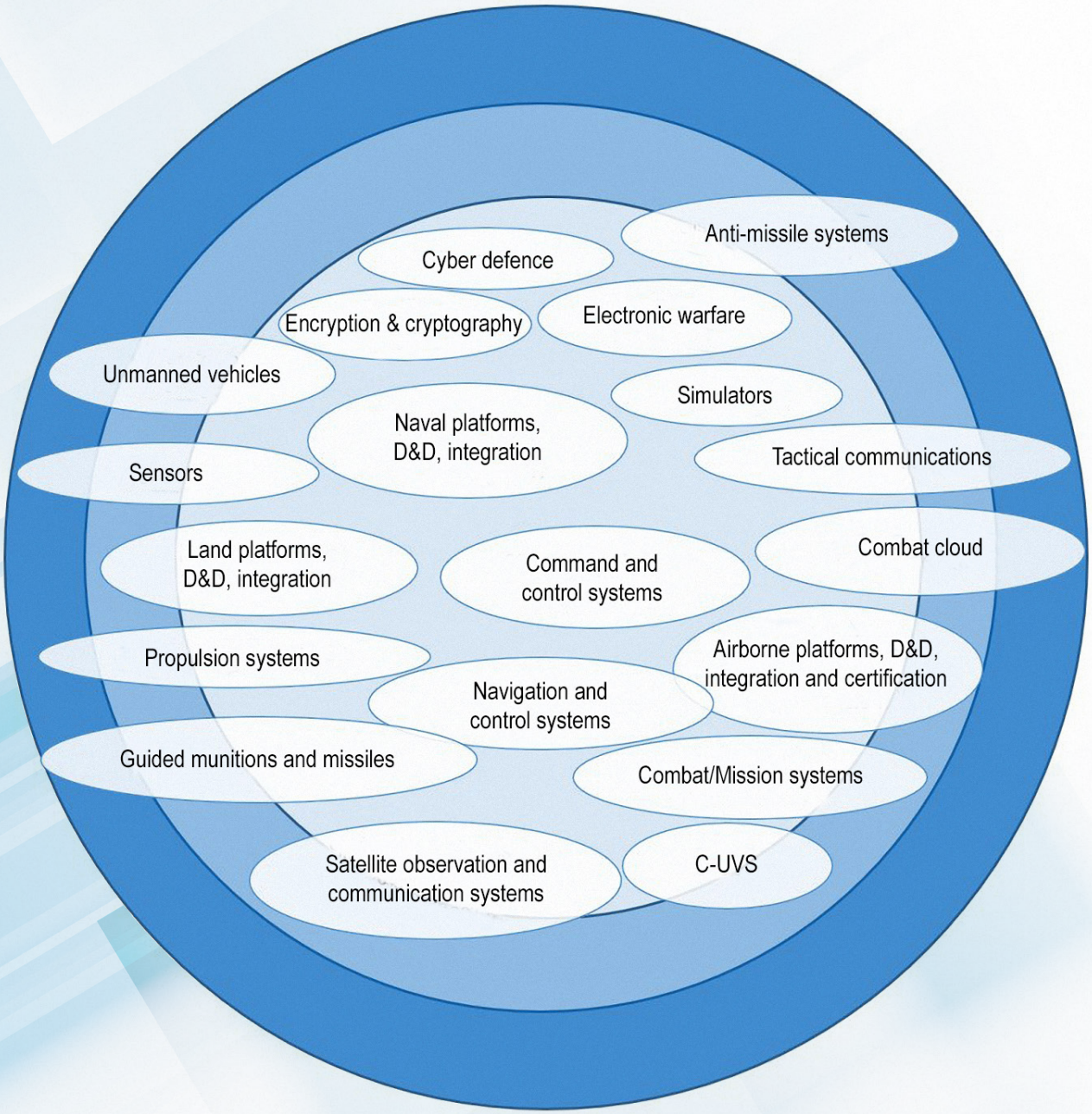
i. Firstly, identify those industrial capabilities in which Spain is a leader or very competitive.
ii. Secondly, identify industrial capabilities in which there are no competitive national companies, or which are absent from the DTIB, even though they are defined as critical and strategic for national interests.
iii. And finally, demarcate the rest of the industrial capabilities that are not considered strategic and therefore would not be included in the SDICs.

Based on this analysis, capabilities will be further prioritised according to the rule followed in procurement programmes:

- For those capabilities that are considered critical and essential for defence, the initial choice will be to maintain national sovereignty. If this is not possible, cooperation at European level, while preserving or increasing national capability building, would be the preferred option. In any case, the solutions adopted will be considered transitional with the aim of possible national development programmes.
- For defence-relevant but less critical capabilities or technology areas, the European solution will be preferred.
- For remaining capabilities, the global market will be used and products or systems that are most competitive and attractive to national interests.

Therefore, priority will be given to national development, and where this is not possible, technology transfers should be sought for the DTIB, in order to increase, at national level, capabilities considered essential. In all cases, investments made will support an increase in the creation of high value-added jobs and increase cohesion throughout the territory through industrial corridors.

ESSENTIAL DEFENCE CAPABILITIES



A. CYBER DEFENCE

The proliferation of global communication and information systems (CIS) has led to cyberspace being recognised as the fifth military domain, making it an integral part of the multi-dimensional battlefield. Cyberspace is particularly relevant for more agile and coordinated decision-making.

The maintenance and enhancement of the national cyber-defence industry is fundamental to maintaining autonomy and strategic sovereignty, as it protects sensitive information and critical assets, allowing operations to be carried out securely against potential threats.

Main industrial capabilities involved

As an industrial capability, the key elements are software developments that allow us to obtain useful tools for the protection of our own information networks, new tools for forensic analysis, advanced persistent threat (APT) detection, malware analysis, intelligence gathering on networks of military interest, and tools that provide us with a response capability. It is considered essential for industry to have in-house design capabilities to ensure the availability of the latest technologies in a sector that is growing exponentially and where, even among allies, state-of-the-art tools will not always be available.

Developments in emerging and disruptive technologies such as blockchain technology, the military Internet of Things, artificial intelligence and machine learning, and quantum computing, will increasingly affect cyber defence.

B. ENCRYPTION AND CRYPTOGRAPHY

Encryption and cryptography enable information to be protected in the field of communications. It also covers data protection, authentication, and network and system protection. Its operational benefit is to protect unauthorised access to data by ensuring the integrity of operations.

Main industrial capabilities involved

Industrial capabilities involved are the development of encryption algorithms, the development of encryption tools, encryption keys, and key and encryption management systems.

C. TACTICAL COMMUNICATIONS

Tactical communications consist of the infrastructure required for connectivity and the systems and equipment necessary to perform military communications, from platforms and bases. In tactical environments, it enables tactical command and control systems, situational awareness, information gathering and dissemination from ISR systems and combat identification systems.

Main industrial capabilities involved

Tactical communications-related capabilities are the design, development, production, integration and sustainment of network software in different communication bands and systems.

D. COUNTER-UNMANNED VEHICLE SYSTEMS (C-UVS)

Counter-unmanned vehicle systems aim to detect, identify and neutralise unmanned vehicles, which gives the advantage of remotely controlling battle scenarios. These systems are a key element in the defence of troops and critical sites and buildings.

Main industrial capabilities involved

They include the development and integration of sensors and detection systems, such as radar, signal tracking, vision systems and acoustic systems. To have identification capability, both software algorithms and the use of artificial intelligence must be developed to cover all operational needs and take full advantage of the technological advances currently available. Also noteworthy is the importance of the development and integration of countermeasure systems that may include conventional or directed energy weaponry such as lasers or microwaves.

E. ELECTRONIC WARFARE

This capability is based on the design and development of electromagnetic signals where both hardware and software components have an impact on signal processing and exploitation. The operational benefit of this capability is the ability to dominate the electromagnetic spectrum on the battlefield, allowing it to attack navigation, detection and communication systems or to defend against enemy attacks.

Main industrial capabilities involved

Related industrial capabilities include: design and production of hardware, development of software and algorithms for signal generation and processing, electromagnetic data processing, and development of countermeasure systems. New developments involving the use of photonics, as well as other EDTs, should also be considered to improve the performance of these systems and increase their security.

F. GUIDED MUNITIONS AND MISSILES

Guided munitions and missiles are precision-guided weapons systems with propulsion systems. Guided munitions allow for increased accuracy and combat effectiveness as an operational benefit. Missiles, on the other hand, provide defence and strike capabilities in the land, naval and air domains, offering deterrence capabilities, flexibility and speed of deployment with long ranges and high levels of accuracy.

Main industrial capabilities involved

They include design, manufacturing and testing capabilities for warheads, components and structures, the development of guidance and control technologies, propulsion systems, and the development and manufacturing of new munitions components.

G. COMBAT CLOUD

The combat cloud is a military cloud computing system that enables enhanced combat capabilities through communications networks. It also supports operations and the battlefield, enables access to and processing of data for effective application, and bolsters interoperability in multi-domain and collaborative combat scenarios.

Main industrial capabilities involved

The industrial capabilities needed are mainly in hardware and software design and development, including development and implementation of secure networks, development of algorithms for cloud storage, development of software related to cybersecurity, definition of communication protocols that allow systems to be interoperable, data analytics processing and development of virtual reality tools.

H. AIRBORNE PLATFORMS, DESIGN AND DEVELOPMENT, INTEGRATION AND CERTIFICATION

These capabilities provide airborne platforms that enable surveillance and reconnaissance, transport, fuel transfer, strike and deterrence capability, and air superiority and defence.

Main industrial capabilities involved

The corresponding industrial capabilities are the design and production of aeronautical structures and components in various materials, the integration of aircraft, the design and manufacture of tooling and equipment necessary for the manufacture of aerostructures and advanced design processes, manufacturing, testing and certification of aircraft.

I. NAVAL PLATFORMS, DESIGN AND DEVELOPMENT, INTEGRATION

The naval platform design and development capability encompasses within its phases the definition of requirements, conceptual and detailed design, production, testing, delivery of platforms and their subsequent sustainment. From an operational point of view, these ships provide power projection, escort and freedom of action capabilities on the high seas, along coasts and on land. In addition to the design and development of the platforms, it must be able to integrate all the systems necessary for the correct functioning of the platform and for carrying out the operations assigned to it.

Main industrial capabilities involved

The industrial capabilities involved are the design and development engineering of platforms and systems that define the forms, various necessary interior spaces and systems, production capabilities involving the manufacture of blocks and sections, components and their integration among various industrial processes. It also includes system and platform testing prior to delivery as well as life cycle support.

New technologies applicable to the different processes such as process automation, robotics, additive manufacturing, logistics management and the digital twin are included in the shipyard 4.0.

J. LAND PLATFORMS, DESIGN AND DEVELOPMENT, INTEGRATION

The critical need for land forces to be equipped with advanced systems makes it essential to have vehicles and tanks of different types and capabilities to be able to cover operational needs in different possible scenarios.

Main industrial capabilities involved

The aim is to have vehicles with the required manoeuvrability capabilities, as well as the possibility of integrating both weapons and surveillance systems, etc. To this end, the design and integration capabilities of the different ground vehicles become a decisive factor. It also entails having production chains that include all the available technological advances that allow for an efficient production line.

K. SENSORS

Sensors are systems whose mission is to detect, collect and transmit information from the tactical environment for surveillance, reconnaissance and intelligence purposes. They include systems such as radar, optronic systems, positioning, navigation and chemical systems, and acoustic systems such as sonar.

Operational benefits relate to improved surveillance and reconnaissance capabilities, target identification and tracking, improved accuracy and efficiency of weaponry and combat systems, and improved situational awareness.

Main industrial capabilities involved

They include the analysis, design, simulation, integration, production and evaluation of hardware and software including radio-determination systems, radar, and signal processing in different bands.

L. SIMULATORS

Simulators are systems used for training personnel in operations and for concept development and battlefield experimentation. The operational advantages are cost reductions with realistic training, flexibility and the ease of experimenting with new techniques and scenarios.

Main industrial capabilities involved

The main capability involved is software development during the different stages of the life cycle: specification, design, development, modernisation. EDTs such as artificial intelligence and big data are applicable.

M. ANTI-MISSILE SYSTEMS

Anti-missile systems provide missile detection, tracking and interception capabilities. Operational benefits include the ability to defend strategic targets such as systems or geographical areas.

Main industrial capabilities involved

The capabilities required are the design and engineering development of the systems, the production of components, the integration of the different sub-systems in particular the sensors into a comprehensive system, laboratory and field testing and validation of these systems, all in an environment protected from cyber threats.

N. COMBAT/MISSION SYSTEMS

The combat/mission system is a set of integrated capabilities within a platform that includes sensors, communication systems, weaponry, and command and control systems. Its operational advantage is that it enables detection, identification, assessment and response to threats providing tactical and strategic capabilities on the battlefield.

Main industrial capabilities involved

The industrial capabilities are based on the design, development, integration, validation and sustainment of software in data processing, on the mission systems that handle information from command and control systems, on the management of weapons launch from the various platforms and on-board communications.

O. COMMAND AND CONTROL SYSTEMS

The theatre of operations increasingly relies on information from different platforms, systems, troops or weapons that require coordination. A high-capacity command and control system is essential for such coordination.

This system has to contribute to the collection of information, the processing, analysis, synthesis, visualisation and dissemination, both vertically and horizontally, of information, planning and decision-making, the transmission of orders to subordinate commanders and, finally, the monitoring of changes to situations on the basis of new data. That is, the Observation-Orientation-Decision-Action cycle known as the OODA loop.

Main industrial capabilities involved

The big challenge is to have a good and fully secure communications system and the ability to manage and analyse a large volume of information in real time. This is the only way to ensure good decision-making. This requires the use of EDTs such as artificial intelligence or big data. It is also important to be able to ensure the security of systems and communications, especially in an increasingly hostile environment in this area. Again, new technological developments and cybersecurity play a key role. Of course, the basis of all good data processing is capable and efficient software with high-speed connectivity.

P. NAVIGATION AND CONTROL SYSTEMS

This capability includes the missile guidance system and its navigation subsystem, air traffic control systems encompassing radar processing and radio communications, and maritime control systems to control communications to optimise navigation. The operational benefits are improved navigation accuracy, route optimisation, improved situational awareness, minimisation of errors and accidents.

Main industrial capabilities involved

The industrial capabilities involved concern the design and manufacture of hardware and software systems and subsystems (algorithms), missile control and actuation systems, autopilot manufacturing, radar data processing systems and communications systems, and the integration of all these systems into the various platforms.

Q. PROPULSION SYSTEMS

This capability covers propulsion systems for all platforms, including engines in aircraft, turbojets, turbines and turboprops, propulsion systems and power plants for naval platforms, encompassing both the different types of electric and combined propulsion, and the choice of final propulsion (propeller). Also within this capability are land vehicle engines and transmissions. The operational benefits are mobility-enabling tactical response, range, logistical projection and other elements such as stealth mobility and infra-red or electromagnetic signature reduction.

Main industrial capabilities involved

The industrial capabilities involved include design, modelling, manufacturing, integration, testing and certification of the different systems, development of new components, and the integration and testing of new materials. Propulsion systems are included in all air, land and naval platforms.

R. SATELLITE OBSERVATION AND COMMUNICATION SYSTEMS

Space has become a critically important domain, where satellite systems provide essential communication capabilities. High-speed connectivity between the different systems is necessary to make them available. Similarly, the information provided by satellite observation systems is essential both on the battlefield and in other situations, such as disaster management. Therefore, its benefit goes beyond the lines of operational needs, being of great use also to the civilian population at critical times.

Main industrial capabilities involved

A complete satellite system requires not only the satellite itself and its payload, which varies according to the tasks to be performed by the satellite, but also a ground control system capable of receiving and processing all information. In-orbit threat detection capabilities (to counter space debris) must also be available to keep systems operational throughout their life cycle.

On the other hand, it is becoming increasingly important to ensure the safety of the transmissions and that no 'unreliable' elements have been introduced during the manufacturing process that could compromise system operability. This calls for developments that make use of the technological advances available both in cybersecurity and in data transmission and processing (quantum technologies or artificial intelligence). There is an increasingly constraining need for satellite launch capacity to enable the use of ever larger constellations, which has an impact on both cost and time, and needs to be considered.

S. UNMANNED VEHICLES

Unmanned vehicles are multi-domain devices that operate without the presence of a person on board, thanks to being equipped with sensor, control and propulsion systems that allow them to be operated remotely or autonomously through programming. Their use provides cost reduction, increased flexibility and manoeuvrability, reduced risk to military personnel, variability in integrated payloads and high integration capability.

Main industrial capabilities involved

The industrial capabilities required are the design, development and production of the platforms including the components of the different systems and sub-systems, the design and integration of propulsion systems, control systems related to software and algorithms, and communication systems. It also includes vehicle testing, validation and certification capabilities.

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