



Aerospace Districts: Acceleration of the Strategic Transfer of Regional Advancements

Final report on the SWOT analysis, relevant networks, and innovation barriers mitigation

D2.3 – Final report on the SWOT analysis, relevant networks, and innovation barriers mitigation

Abstract:

Task 2.3 (SWOT analysis) aims at elaborating coherent SWOT in the different ecosystems. Each SWOT was done by each local partner following a framework that was presented in the previous deliverable D2.2. This common framework allowed having a global and coherent view of the different ecosystems, pushing forward future connections or collaborations. This task is complemented by other two tasks (2.2 and 2.4) on external networks and on innovation barriers and mitigation measures, and overall, these elaborations will be completed in two different phases corresponding to two different deliverables. In D2.2 *Initial report on the SWOT analysis, relevant networks, and innovation barriers mitigation*, the common framework for the SWOT analysis was established and presented, to support each partner in the execution and completion of the SWOT analysis for their own ecosystem. The framework included four Strategic Business Areas and a dozen of Key Success Factors for each of them. The analysis was presented in that same deliverable, together with an analysis on external networks and on the innovation barriers and mitigation measures.

In this deliverable D2.3 *Final report on the SWOT analysis, relevant networks, and innovation barriers mitigation*, the SWOT analysis will lead to the definition of the future potential for each partner, namely by establishing a TOWS analysis for each partner, based on the Initial SWOT analysis. This TOWS analysis will help define strategic scenarios for each of the ecosystems. A common SWOT analysis and a common TOWS analysis have been further established, creating a first layer in the elaboration of a common scenario for the five partners of the consortium. This first layer represents the foundation that will be used to develop the final joint action plan: the final result of the project, that will allow the five ecosystems to keep exploiting opportunities, collaborations, key success factors, and external networks, and overcoming threats and innovation barriers

Keywords:

Innovation, regions, aerospace, international cooperation, SWOT analysis, TOWS analysis.

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Acronyms and Terminology

Term	Definition
E-R	Emilia-Romagna
EU	European
HE	Horizon Europe
ICT	Information and Communication technologies
KSF	Key Success Factors
SBA	Strategic Business Area
STEM	Sciences Technology Engineering Mathematics
SWOT	Strengths, Weaknesses, Opportunities and Threats
TOWS	Threats, Opportunities, Weaknesses and Strengths
ART-ER	Attractiveness Research Territory - Emilia-Romagna
DTA	Distretto Tecnologico Aerospaziale
IQ	Innovation Quarter
TM	Toulouse Métropole
UPM	Universidad Politécnica de Madrid



1. Introduction

The AD-ASTRA project involves collaboration among five European regions aiming to enhance their aerospace sectors. The European Innovation Scoreboard 2023 indicates an 8,5% increase in innovation performance in Europe between 2016 and 2023, a trend the AD-ASTRA project seeks to amplify. The project covers regions with diverse innovation profiles, including one Innovation Leader (South Holland), three Strong Innovators (Occitania, Emilia-Romagna, and Madrid) and a Moderate Innovator, the Apulian region. These regions possess varying aerospace capacities, with Emilia-Romagna expressing interest in expanding its aerospace district.

In the set of activities of the AD-ASTRA project, the D2.3 - *Final report on the SWOT analysis, relevant networks, and innovation barriers mitigation* is the result of numerous meetings, collaborative efforts, and knowledge exchange processes among the consortium. As depicted in Figure 1, the project's outset involved the individual contribution of each partner (ART-ER, UPM, DTA, TM, and IQ) to WP1, Tasks 1.1 ÷ 1.3, and more specifically to D1.1- *Innovation inventory*, D1.2 - *Former successful connections and case studies*, and D1.3 - *Megatrends and future developments analysis*. The outcomes of WP1 formed the foundation upon which WP2 was constructed. Particularly, the collected information was further examined and data were used for the elaboration of D2.2 - *Initial report on the SWOT analysis, relevant networks, and innovation barriers mitigation* which received numerous inputs from the co-creation workshops that are fully reported in D2.1 - *Report on the interregional workshops and exchange activities*. Most of the information reported in this document, comes from the previous deliverable (D2.2) where the AD-ASTRA partners conducted an initial SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis using a common framework to evaluate the strengths and weaknesses of each region's aerospace ecosystem. The analysis also considered regional megatrends and identified competitive advantages and critical issues. The identified issues were viewed as potential innovation barriers, representing weaknesses for the regions.

Therefore, previous D2.2 document contained comprehensive SWOT analyses conducted by each partner, highlighting notable patterns. A general comparison revealed high scores in Aeronautics and Space but lower scores in Drones for all regions. Occitania stands out as a leader in aerospace, particularly excelling in Global Support. Despite variations, all regions show a strong interest and potential in aerospace, with shared strengths (*e.g.*, high aerospace education) and weaknesses (*e.g.*, hiring difficulties).

The initial SWOT analysis aimed to provide an overview of each ecosystem, paving the way for the identification of innovation barriers and the formulation of mitigation strategies. The D2.2 therefore identified innovation barriers in the five regions, drawn from megatrends and SWOT analyses and proposed a list of mitigation measures. Conclusions from megatrend analyses are applied to each Strategic Business Area (SBA) in the SWOT analysis. The deliverable also outlined mitigation measures specific to each partner, promoting collaboration to overcome innovation barriers.

Mitigation measures are crucial to overcoming these barriers and unleashing the full potential of the regions. The collaboration also facilitates sharing expertise, allowing disadvantaged regions to draw inspiration and support from stronger counterparts.



Interregional cooperation promotes awareness of barriers, and the exchange of advantages or best practices serves as a solution to overcome weaknesses.

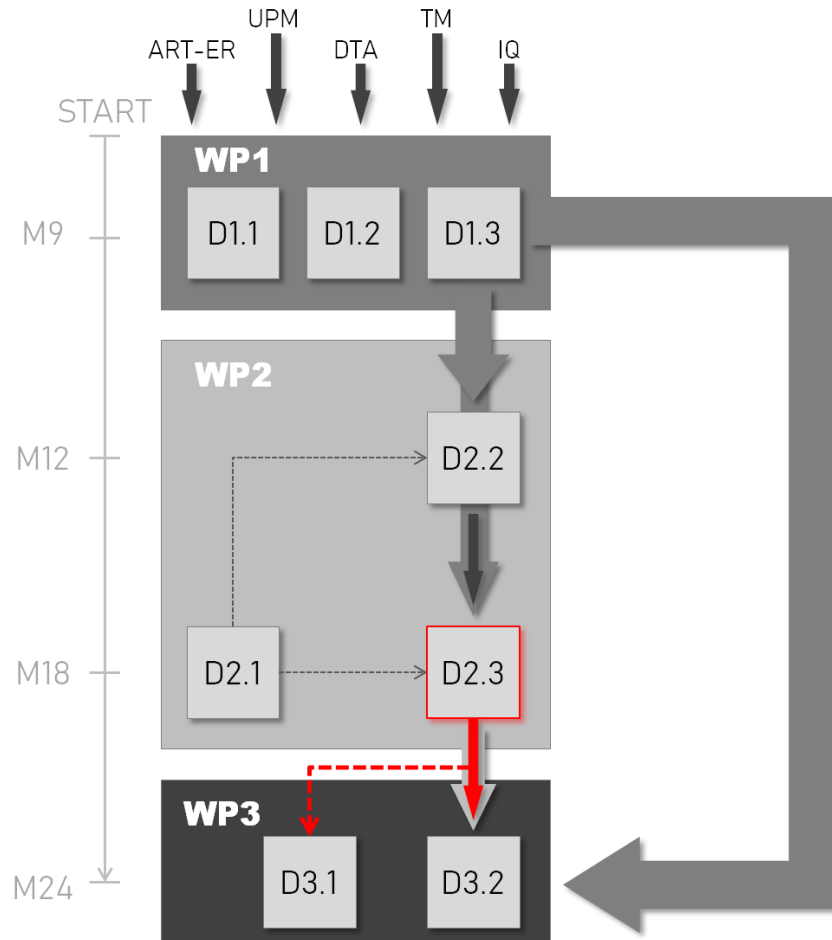


Figure 1. Correlation between WPs and the deliverables belonging to each WP.

As a consequence of the previous studies, this D2.3 deliverable, delves into commonalities and differences in more detail, collecting all the input in a common SWOT analysis for a supra-ecosystem composed of the five regions involved, and presents the strategies that derive from the initial SWOT analyses and can be applied to each region, named TOWS analysis. A common TOWS analysis is attempted, deriving from the individual TOWS strategies conducted by each of the five partner regions. This common strategy could pave the way towards the activities related to WP3, and more specifically to D3.1 - *Joint Action Plan* and D3.2 - *Report on the foreseen impacts and potential beneficiaries*.



2. Initial SWOT analysis by region

Before getting any further in this study, it seems relevant to present again the results of the initial SWOT analysis that were exposed in D2.2, for each of the five regions. Indeed, they were the basis on the one hand of the common SWOT analysis that will follow in the deliverable, and on the other hand of the individual TOWS analyses that each region made for themselves, presenting strategic actions to be followed by each of them.

The initial SWOT analysis focused on four Strategic Business Areas (SBAs) that comprehensively cover the aerospace ecosystem: Aeronautics, Space, Drones, and a more general category named "Global Support." Each SBA was further divided into Key Success Factors (KSFs) tailored to specific aspects of the sector. The aim was to assess the strengths and weaknesses of the five partner regions consistently, with some KSFs applicable across multiple SBAs and others specific to individual areas. This structured approach formed the foundation for the comprehensive initial SWOT analysis in the study.

A standardized scoring system, ranging from -2 to +2 was proposed for evaluating KSFs in each of the four SBAs. To ensure coherence, one or two questions were associated with each KSF in each SBA, and partners assigned scores to their regions. Recognizing the risk of misleading interpretations with a single number, partners provided brief explanations for their chosen scores, considering factors specific to their territories, such as size, population, and Gross Domestic Product (GDP) of each region.

Each partner then wrote their own SWOT analysis on this basis and proposed an overview of their own ecosystem identifying strengths, weaknesses, opportunities and threats as reported in the following Table 1.

Table 1. SWOT analysis

SWOT matrix	
STRENGTHS	WEAKNESSES
OPPORTUNITIES	THREATS

In the figures (Figure 2 – 6) below are reported the results of the initial SWOT analyses of the five regions following the above mentioned pattern.



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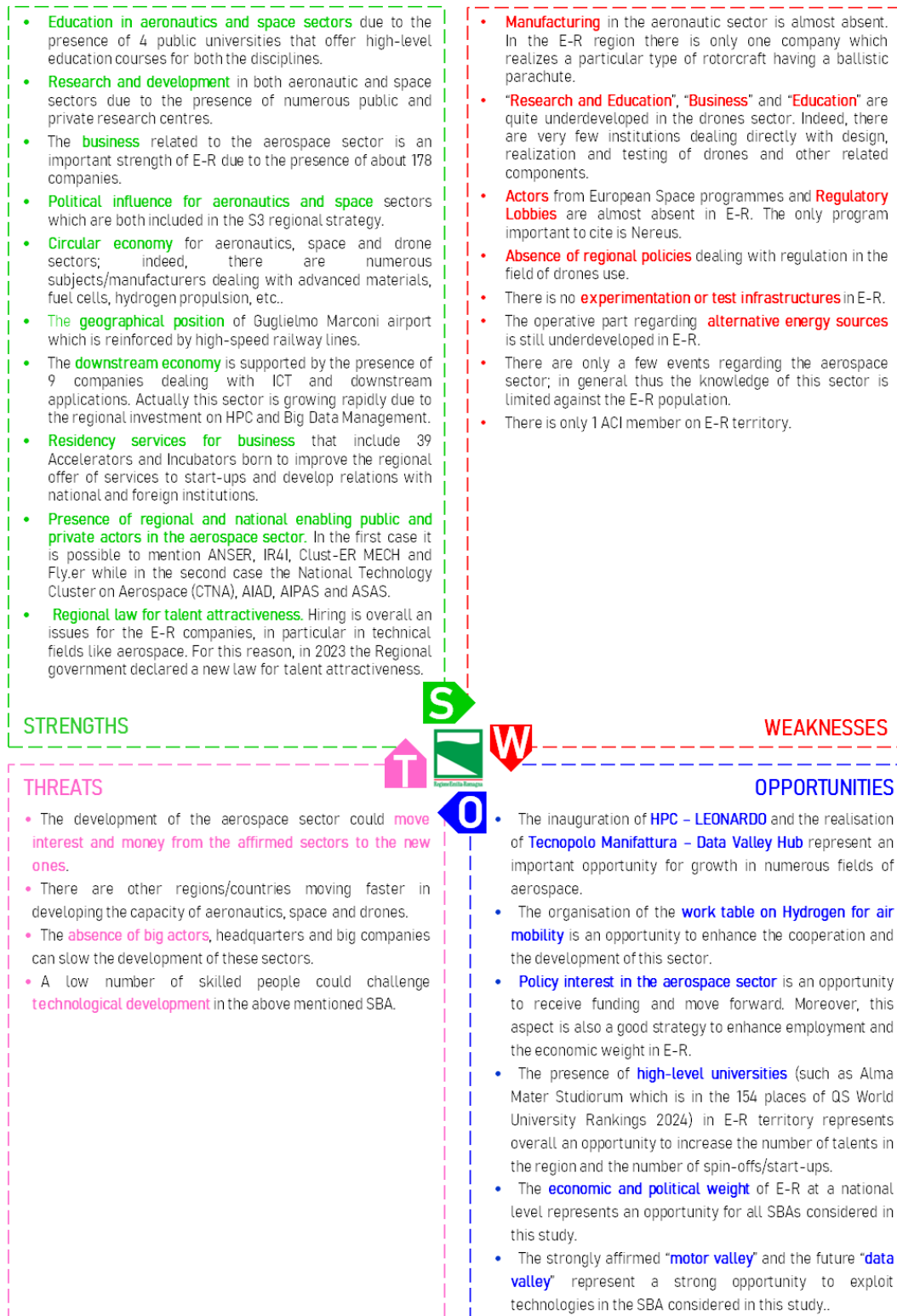


Figure 2. SWOT analysis for Emilia-Romagna region.



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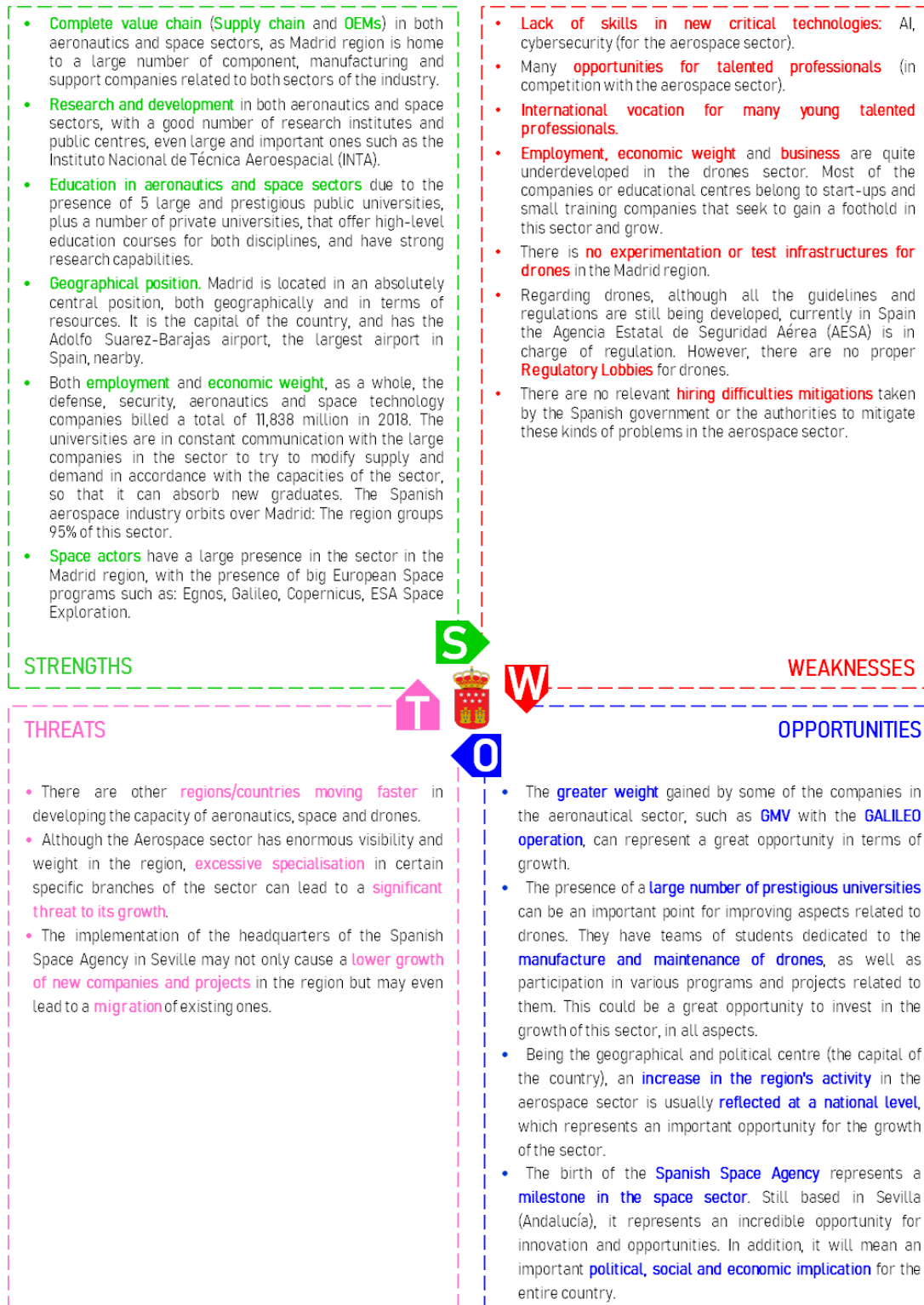


Figure 3. SWOT analysis for Madrid region.



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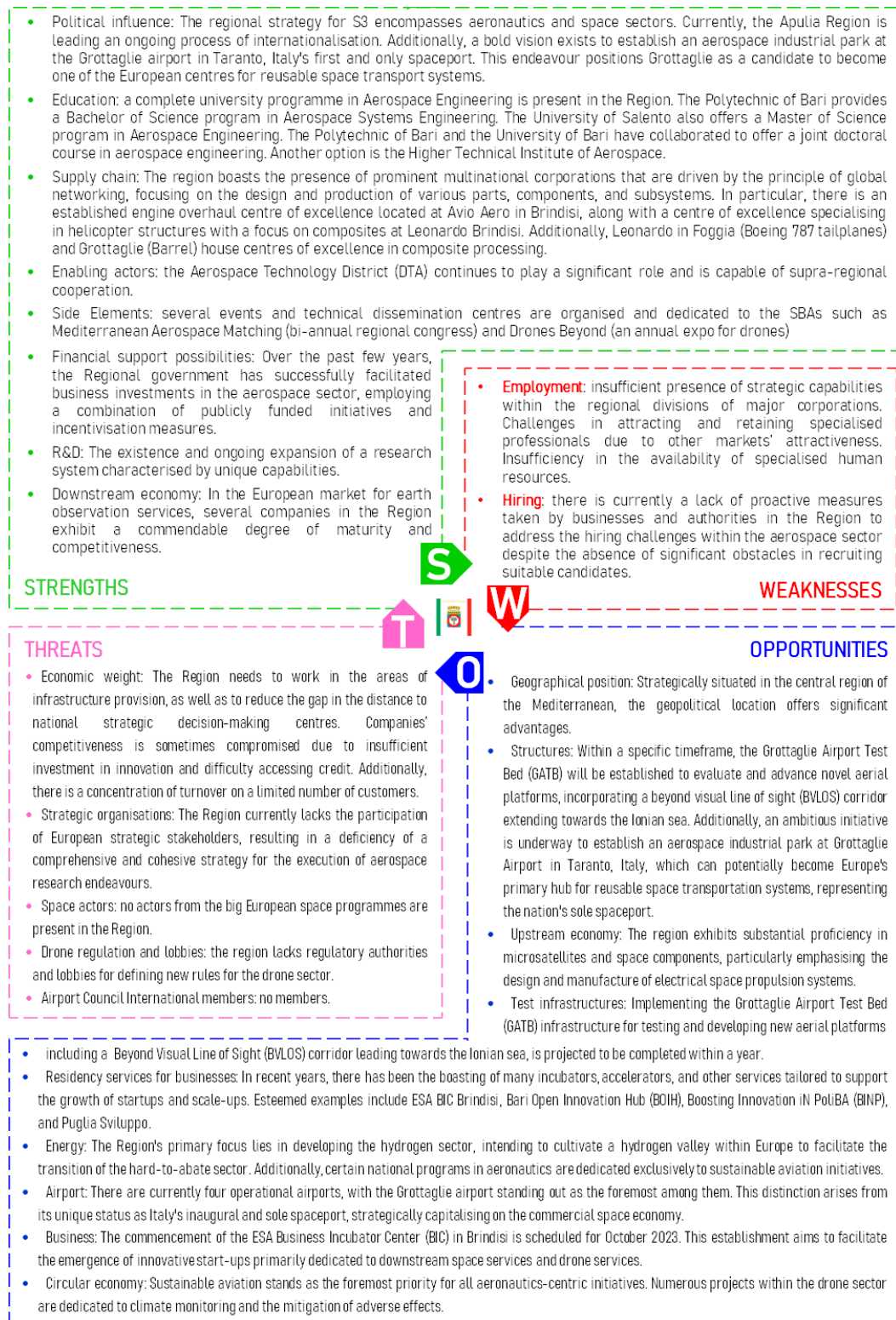


Figure 4. SWOT analysis for Apulia region.



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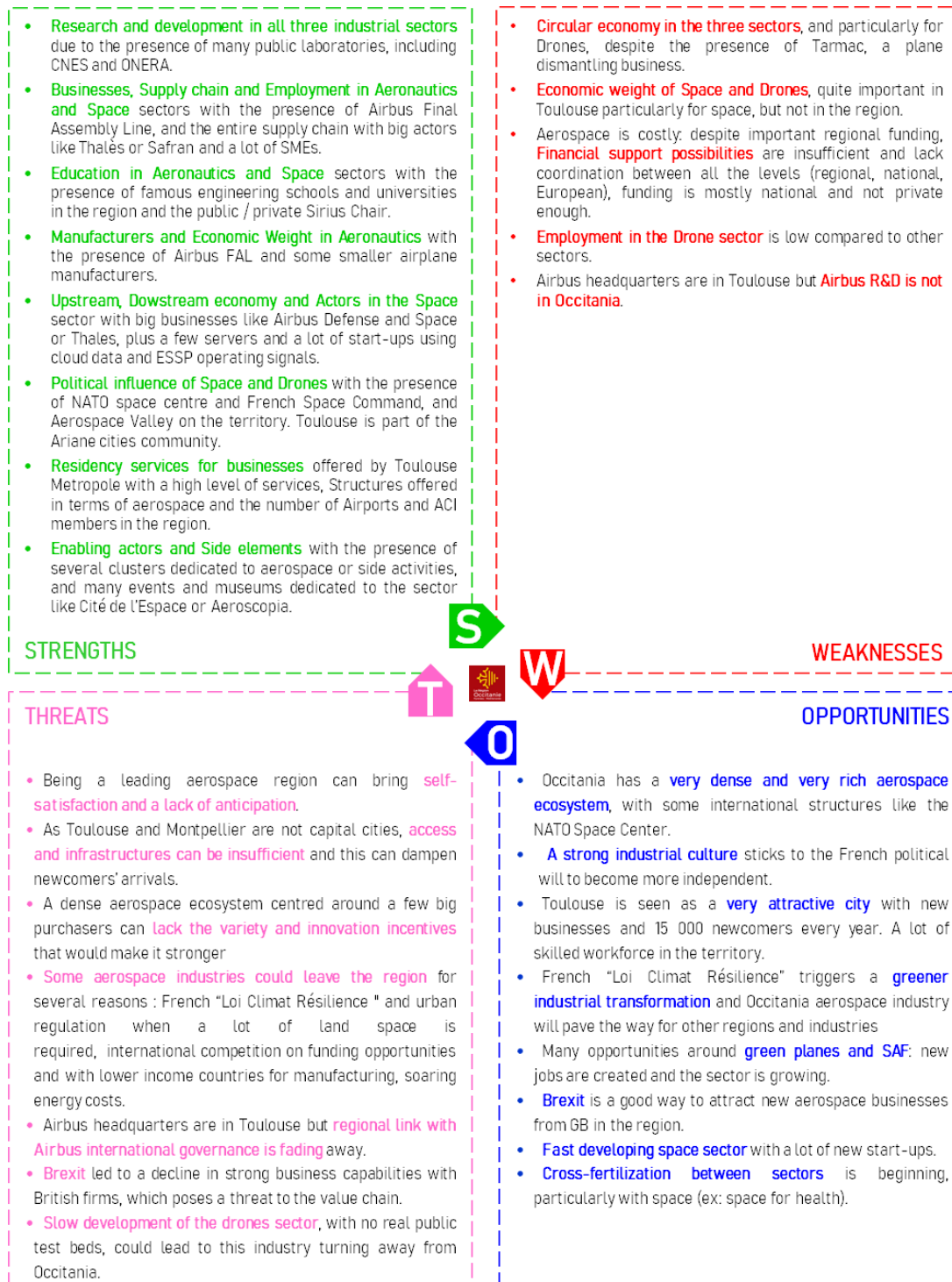


Figure 5. SWOT analysis for Occitania region.



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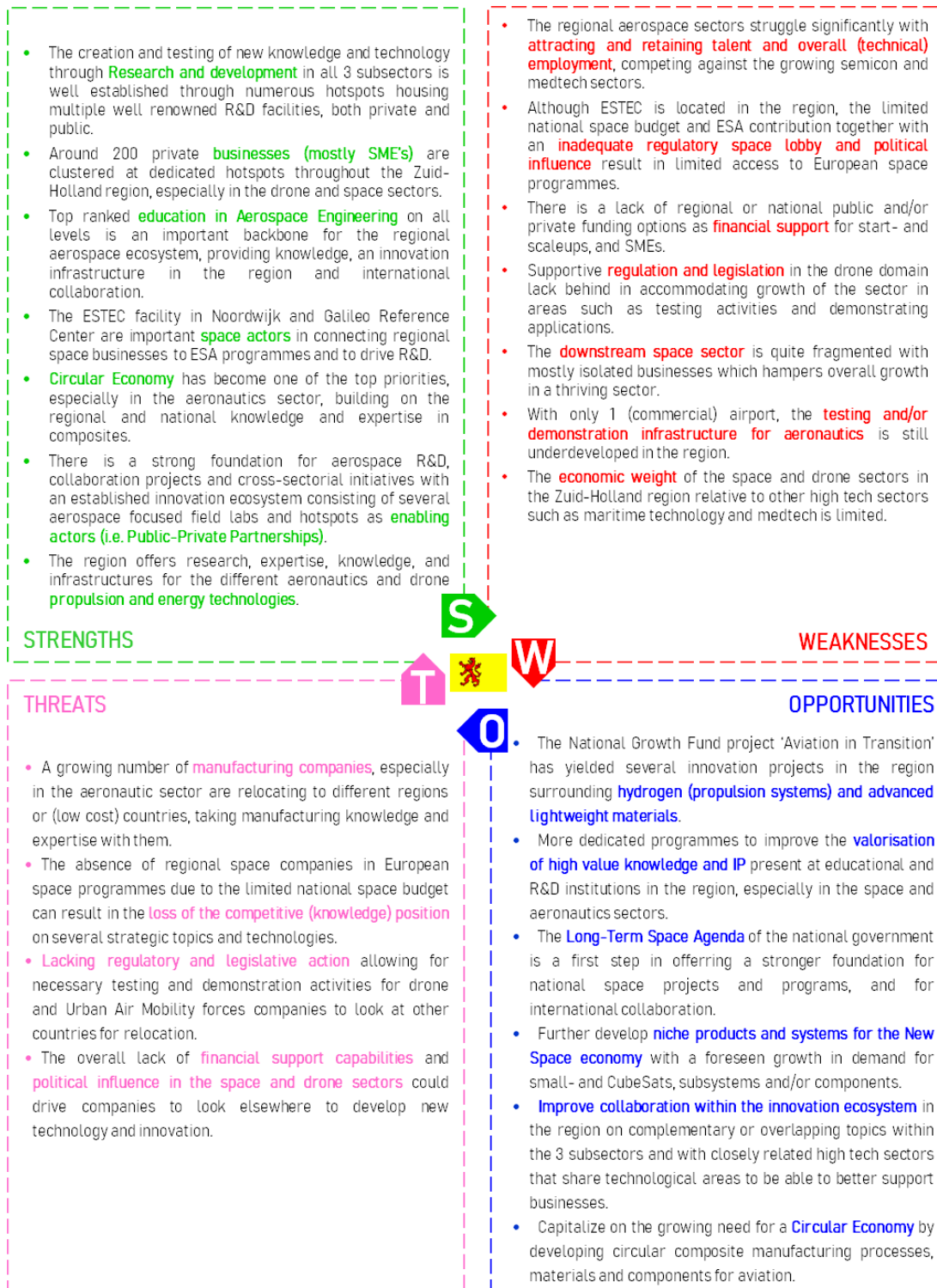


Figure 6. SWOT analysis for South Holland region.



3. Common AD-ASTRA regions SWOT analysis

3.1. Method

AD-ASTRA is a project about the positive interconnection among innovation ecosystems, with a focus on aerospace sectors. The project aims at the development of a connected, competitive, interregional innovation ecosystem between the five European partner regions, with a shared interest in promoting aerospace sectors, enhancing the cross-contamination to and from other innovative sectors (*e.g.*, automotive, biomedical, agri-food, big data), different innovation readiness levels, and aerospace districts with different levels of maturity and consolidation. Combining the information from all regions allows us to identify commonalities and differences, leading to a comprehensive SWOT analysis for the entire AD-ASTRA project ecosystem (Figure 7), first step to identify a common strategy that will lead to a final joint action plan.

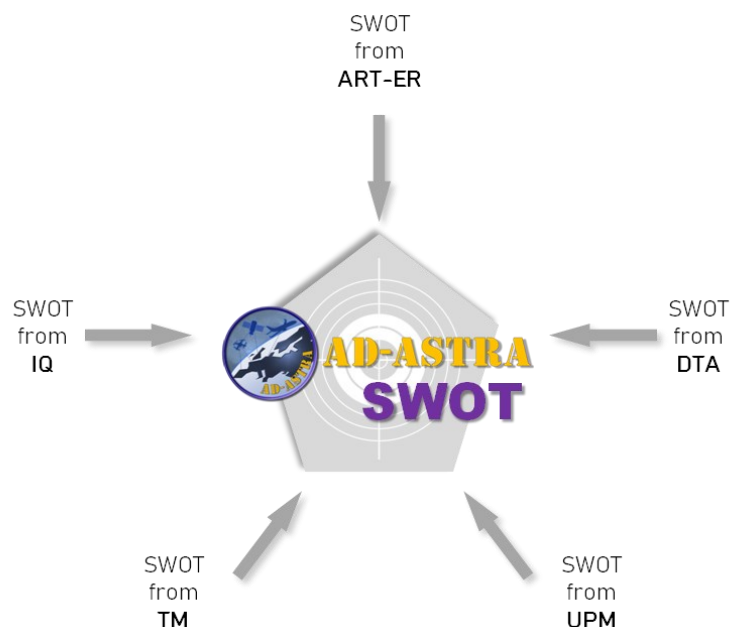


Figure 7. Schematic representation of the common SWOT analysis.

To conduct the common SWOT analysis of the aerospace sector among the five partner regions, the process was to synthesize the information from each region by combining the results of strengths, weaknesses, opportunities and threats in each of the regions in order to identify common themes, areas of overlap, and potential synergies.

Here are the potential benefits that may result from the follow-up actions based on this collaborative analysis:

- **Common Strengths:** by comparing the strengths identified in each region's analysis, shared strengths may be exploited collectively.



- **Common Weaknesses:** similarly, by identifying weaknesses that are common across many of the five partner regions, efforts can be coordinated to face these weaknesses collectively.
- **Common Opportunities:** analyzing opportunities that are relevant to multiple regions can help uncover possibilities for collaboration and mutual benefit.
- **Common Threats:** by identifying threats that affect many of the five regions, they can develop joint strategies to mitigate risks and build resilience.

Collaborating on a common SWOT analysis encouraged dialogue and cooperation among the five partner regions, fostering stronger relationships and facilitating ongoing collaboration in other areas beyond the SWOT analysis itself.

Overall, this common SWOT analysis will help to align priorities and intensify the collective capacity of the regions to take care of challenges and capitalize on opportunities. It serves as a foundation for strategic planning and collaboration to achieve shared goals and mutual benefits. Eventually, and in a nutshell, it will help to identify areas for joint action.

3.2. Common SWOT analysis

In the following paragraphs is reported a detailed list of each area of the common SWOT analysis pattern:

COMMON STRENGTHS

- **Education and Research**
 - Multiple regions have strong educational and research institutions in aerospace sectors.
 - Presence of multiple universities offering high-level education in aerospace sectors.
 - Robust research and development infrastructure in both aeronautic and space fields.
- **Diverse Business Presence**
 - Presence of numerous companies in aerospace sectors across regions.
 - Existence of numerous companies contributing to the aerospace sector's economic weight.
 - Well-established aerospace districts with varying levels of maturity.
- **Political Influence**
 - Political support and inclusion in regional strategies for aerospace sectors.
 - Supportive political environment and policies promoting aerospace growth.



- **Innovation Ecosystems**
 - Presence of enabling actors, accelerators, and incubators supporting innovation and startups, as well as clusters, associations, and accelerators encouraging collaboration and development.
 - Presence of regional and national organizations supporting aerospace innovation
- **Geographical Position**
 - Strategic locations with well-connected transportation infrastructure and with key airports

COMMON WEAKNESSES

- **Skill Gaps**
 - Challenges in attracting and retaining skilled professionals in certain critical technologies.
 - Limited skills in critical technologies like AI and cybersecurity.
- **Manufacturing gaps**
 - Limited manufacturing capabilities in some regions, especially in specific aerospace sectors and particularly in aeronautics.
 - Limited presence of big actors, headquarters, and large aerospace companies in some regions.
- **Regulatory Challenges**
 - Absence of regional policies and regulatory lobbies for drone use in some regions.
- **Infrastructures**
 - Lack of experimentation and test infrastructures for specific applications (*i.e.*, drone testbeds, etc...) in certain regions.
- **Low Awareness**
 - Limited awareness of the aerospace sector among the population.

COMMON OPPORTUNITIES

- **Technological Growth**
 - Growth opportunities in areas like sustainable aviation, hydrogen propulsion, and alternative energy sources.
- **Collaboration Opportunities**
 - Opportunities for interregional collaboration to give impact to each other's strengths and fill gaps and to share resources and expertise.



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- Joint projects stimulating each region's strengths in research and development.
- **Policy Support**
 - Opportunities for funding and growth through regional policy interest in the aerospace sectors.
 - Policy interest in aerospace to secure funding and promote sector growth and use of regional political influence for national and European collaboration.
- **Academic Collaboration**
 - Collaborative programs with high-level universities to reinforce education in specific sectors.
- **Innovation Hubs**
 - Establishment of new innovation hubs and centers to foster technological advancements.
 - Sectorial hubs that might focus on emerging technologies like hydrogen for air mobility.
- **Educational enhancement**
 - High-level universities present in all five regions to increase courses dedicated to emerging sectors like drones.
 - Educational programs to develop skills in new technologies.

COMMON THREATS

- **Global Competition**
 - Competition from other regions/countries advancing faster in aerospace sectors.
 - Potential migration of aerospace businesses to more competitive regions.
- **Talent Challenges**
 - Potential migration of skilled professionals to regions with better opportunities.
 - Low availability of skilled personnel challenging technological development.
 - International vocation of professionals leading to talent competition.
- **Lack of Strategic Players**
 - In some regions, absence of major aerospace companies and headquarters hindering sector development.



- **Economic Shifts**
 - Development of aerospace sectors potentially diverting focus and resources from established sectors.
 - Risk of diverting interest and investment from established sectors to new ones.
 - The risk of losing competitive edge due to the absence of certain industry players.
- **Regulatory and legislative challenges in the drone sector**
 - Challenges in drone regulation and a lack of proper regulatory lobbies.
 - Slow development of supportive regulation for testing and demonstrating drone applications.

As had been done for individual SWOT analyses (Figures 1-6), also in this case the compact pattern of the common SWOT analysis is reported in Figure 8 Common SWOT analysis Figure 8.



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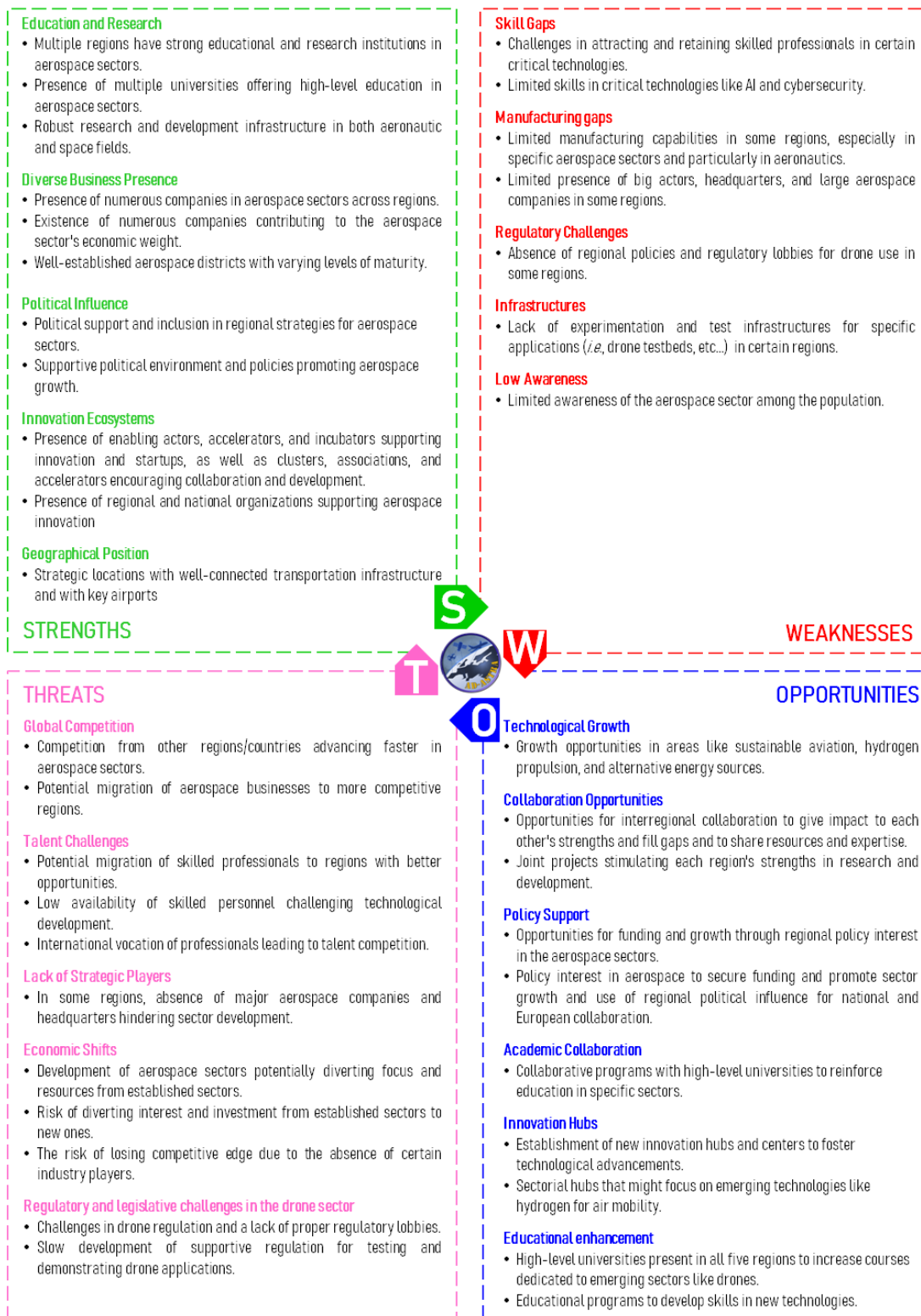


Figure 8 Common SWOT analysis.



3.3. Conclusions to common SWOT analysis

This common SWOT analysis provides a comprehensive overview of the strengths, weaknesses, opportunities, and threats shared across the aerospace innovation ecosystems in Emilia-Romagna, Madrid, Apulia, Occitania, and South Holland.

In summary, this analysis reveals a strong foundation in the European aerospace sector with robust education, diverse business presence, political support, and vibrant innovation ecosystems. Opportunities lie in technological growth, collaboration, policy support, academic partnerships, and the establishment of innovation hubs. However, challenges such as skill gaps, manufacturing limitations, regulatory issues, and low awareness need attention. Threats include global competition, talent migration, the absence of strategic players, potential economic shifts, and regulatory and legislative challenges.

Overall, it seems strategic collaboration, targeted skill development, and a proactive approach to regulatory frameworks could improve the resilience and competitiveness of the European aerospace regions in the dynamic global landscape.



4. Individual TOWS analysis

4.1. General introduction for TOWS analysis

A TOWS Analysis is a way of taking a SWOT analysis further, to provide actionable links between the different parts of the specific analyzed scenarios and environment.

In the framework of the AD-ASTRA project, this type of analysis is presented as an extension of the SWOT analysis for each partner region as reported in detail in D2.2 “Initial report on the SWOT analysis, relevant networks, and innovation barriers mitigation” with a summary in the previous chapters of this deliverable.

More in detail, a TOWS analysis is a business strategy that uses the principles of a traditional SWOT analysis in a reverse-engineered approach; indeed, the letters in TOWS (and in SWOT) correspond to Threats, Opportunities, Weaknesses, and Strengths. Thus, a TOWS analysis could be realized starting from the SWOT matrix (Table 1) and rearranging the main elements of it, with a second level of integration (managing separately internal and external factors) as reported in Table 2.

Table 2. TOWS analysis.

TOWS matrix		External factors	
		OPPORTUNITIES	THREATS
Internal factors	STRENGTHS	Strengths/Opportunities (S/O)	Strengths/Threats (S/T)
	WEAKNESSES	Weaknesses/Opportunities (W/O)	Weaknesses/Threats (W/T)

Since a TOWS analysis fits into the SWOT framework, knowing how a SWOT analysis works can help the comparison of the two. Using a conventional SWOT matrix, a general subject looks internally to identify its strengths and weaknesses before considering how those factors drive or give way to opportunities and threats.

In contrast, a TOWS analysis (or TOWS matrix) starts with identifying external threats and opportunities and works backward. Taking the external factors into consideration, decision-makers can strategize how the organization’s internal strengths and weaknesses might be useful for dealing with challenges and exploiting external opportunities. More in detail, the four additional dials could be defined as follows:

- **MAXI-MAXI STRATEGY:** Strengths/Opportunities (S/O) strategies build and boost strengths to expand opportunities. The S/O approach seeks to maximize both strengths and opportunities. Some of the questions to be asked to carry out this strategy are:



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- Can this strength be used to take advantage of the opportunity?
- What actions do we need to take to make use of the strength?
- **MINI-MAXI STRATEGY:** Weaknesses/Opportunities (W/O) strategy aims to counter weaknesses through exploring the opportunities of each ecosystem. The W/O approach seeks to mitigate the shortcomings while capitalizing on its potential. Some of the questions to be asked to carry out this strategy are:
 - Does this weakness prevent or risk this opportunity?
 - Should we address the weakness?
 - What actions do we need to take to remove the weakness?
- **MAXI-MINI STRATEGY:** Strengths/Threat (S/T) strategy uses strengths to minimize threats. The S/T approach seeks to use the capabilities of each ecosystem while reducing the threats suggested by the region's strengths. Some of the questions to be asked to carry out this strategy are:
 - Can this strength reduce or remove this threat?
 - What do we need to do to remove or reduce this threat?
 - Is it a priority?
- **MINI-MINI STRATEGY:** Weakness/Threats (W/T) strategy is concerned with defensive strategies. These strategies counter weaknesses and threats by reducing vulnerabilities. The W/T approach seeks to reduce both weaknesses and threats. Some of the questions to be asked to carry out this strategy are:
 - Which relate to each other?
 - Are there weaknesses that result in threats?
 - Which elements should be dealt with?



4.2. Regional TOWS analysis

4.2.1. TOWS analysis for Emilia-Romagna

As previously mentioned, starting from the SWOT analysis reported in D2.2, the TOWS analysis was performed to define a strategy based on both internal and external factors. For E-R region, the TOWS analysis is reported in the following:

- ***MAXI-MAXI strategy for Emilia-Romagna, obtained from the analysis of Strengths and Opportunities***
 - *Education and talent valorisation*
 - Exploit the strong educational and research facilities in aerospace to further develop courses on specific sectors (*i.e.*, Earth Observation, hydrogen clean aviation, drone applications).
 - Improve the collaboration between national and international high-level universities to create specialized programs on specific technologies (*i.e.* Earth Observation, hydrogen clean aviation, drone applications).
 - Strengthen collaboration between public universities and aerospace companies to tailor educational programs that meet industry needs (reskilling and Lifelong Learning Programmes).
 - *Research and development*
 - Foster partnerships between research centers and aerospace companies for joint R&D projects.
 - Use the focus on Circular Economy to drive innovation in advanced materials, fuel cells, and hydrogen propulsion.
 - *Business Ecosystem Enhancement*
 - Facilitate networking and collaboration among the aerospace companies on E-R territory to realize a cohesive business ecosystem.
 - Encourage the creation of joint ventures and alliances to enhance competitiveness globally.
 - *Political Influence and Fundings*
 - Actively engage with regional and national policymakers to align aerospace priorities with the S3 Regional Strategy.
 - Leverage political interest to secure funding for strategic projects to drive economic growth and employment.



- *Downstream Economy Boost*
 - Support the growth of the ICT and downstream applications sector by aligning it with regional investments in HPC and Big Data Management.
 - Facilitate collaboration between aerospace and downstream sectors for cross-industry innovation.
- *Talent Attraction and Development*
 - Use business residency services and 39 accelerators/incubators to attract and nurture talent and develop new business innovative ideas (eventually promoting the growth of new accelerators/incubators devoted to the aerospace sector).
 - Collaborate with regional and national stakeholders to establish mentorship programs for startups.
- *Technological Hubs Utilization*
 - Use the presence of HPC-LEONARDO and Tecnopolo Manifattura to create technological hubs for aerospace advancements.
 - Establish a Hydrogen for Air Mobility work table to drive collaboration and innovation in sustainable aviation.
- *Exploiting Regional Identity*
 - Use "Motor Valley" and the upcoming "Data Valley" to showcase E-R as a hub for cutting-edge aerospace technologies.
 - Align marketing efforts to emphasize the region's economic and political weight at a national level.
- *Policy Advocacy and Economic Growth*
 - Advocate for policies that support the growth of aerospace sector and, emphasize its positive impact on employment and the regional economy.
 - Collaborate with industry associations (AIAD, AIPAS, ASAS) and CTNA to amplify the collective voice for policy support.
- ***MINI-MAXI strategy for Emilia-Romagna, obtained from the analysis of Weaknesses and Opportunities***
 - *Fostering Aerospace Events and Awareness*
 - Organize events and workshops to increase awareness of the aerospace sector, targeting both citizens and businesses.
 - Exploit existing technological and economic hubs like "Motor Valley" and "Data Valley" to showcase aerospace technologies through exhibitions, in order to make aware of the potentiality of



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transversal technologies (from Motorsport and Data management) in the aerospace sector.

- *Infrastructural Development*
 - *Advocate* for the establishment of experimentation and testing infrastructures in E-R to attract business and research institutions.
- *Regulatory Framework for Drones*
 - Advocate for the development of regional strategies to regulate the use of drones and promote a favourable environment for companies working with drones.
 - Collaborate with regulatory bodies and experts to create a framework that ensures responsible and safe drone operations.
- *Collaboration with European Space Programs*
 - Actively seek partnerships with actors from European Space programs and Regulatory Lobbies to enhance E-R's presence in the broader aerospace community.
 - Participate in programs like Nereus and explore opportunities for collaboration and knowledge exchange.
- ***MAXI-MINI strategy for Emilia-Romagna, obtained from the analysis of Strengths and Threats***
 - *Strengthening Regional Collaboration*
 - Foster collaboration among the regional aerospace companies, public universities, and research centers to create a unified ecosystem.
 - Establish a consortium involving regional and national enabling actors, such as ANSER, IR4I, Clust-ER MECH (Fly.er), Clust-ER Innovate, Regional Strategic Forum on Aerospace, CTNA, etc., for collective growth initiatives.
 - *Accelerating Innovation through Education*
 - Enhance education programs in aeronautics and space sectors by integrating cutting-edge technologies and industry needs.
 - Collaborate with regional accelerators and incubators to bridge the gap between academia and startups, ensuring a seamless flow of talent and ideas.
 - *International Collaboration and Competitiveness*
 - Actively engage in international cooperations to stay competitive using the political influence reported in the S3 regional strategy.



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- Establish partnerships with other regions and countries to share expertise and resources, ensuring E-R remains at the forefront of aerospace development (exploiting AD-ASTRA network).
- *Talent Attraction and Retention*
 - Use residency services and the new regional law for talent attractiveness to attract skilled individuals to the region.
 - Collaborate with universities and research centers to create a talent pipeline that addresses the challenge related to the low number of qualified employees.
- *Continuous Industry Diversification*
 - Mitigate the risk of diverting interest and money from established sectors by implementing policies that encourage diversified investments.
 - Monitor global aerospace trends and adapt regional strategies to align with emerging opportunities and challenges.
- *Large Company Attraction and Support*
 - Develop initiatives to attract large companies and headquarters to the E-R region, offering incentives for establishing a presence in the territory (leveraging on the regional law for attractiveness L14, but also on the assets already existing, on the extremely developed innovation ecosystem and on the presence of sectors extremely developed such as motorsport and automation).
 - Foster an environment that encourages the growth of existing companies while actively seeking opportunities for partnerships with major players in the aerospace industry.
- ***MINI-MINI strategy for Emilia-Romagna, obtained from the analysis of Weaknesses and Threats***
 - *Targeted Skill Development*
 - Prioritize training in aeronautics, space, and drone technologies to meet specific industry needs.
 - *Regulatory Framework Establishment*
 - Mitigate the absence of regional policies for drone regulation by working closely with regulatory bodies (at national and European level) to develop and implement effective frameworks.
 - Ensure that regulations foster innovation while maintaining safety and compliance.



- *Infrastructure Investments*
 - Overcome the lack of experimentation and test infrastructures by investing in specialized facilities for aerospace R&D.
 - Collaborate with existing research centers and businesses to create a shared infrastructure that benefits the entire aerospace community.
- *Collaboration with European Programs*
 - Position E-R as a collaborative hub for European aerospace initiatives.

4.2.2. TOWS analysis for Madrid

Starting from the SWOT analysis reported in D2.2, the TOWS analysis was performed to define a strategy based on both internal and external factors. For Madrid region, the TOWS analysis is reported in the following:

- ***MAXI-MAXI Strategy for Madrid's Aerospace Sector, obtained from the analysis of Strengths and Opportunities***
 - *Diversification and Innovation in Aeronautics and Space Technologies:*
 - Use the complete value chain and strong research and development capabilities to promote innovation in both the aeronautics and space sectors.
 - Establish joint initiatives between companies, research institutes, and universities to create cutting-edge technologies and solutions.
 - Encourage cross-disciplinary projects, such as integrating space technologies into aeronautics and vice versa, to extend the use of existing capabilities.
 - *Strategic Partnerships and Alliances:*
 - Form strategic partnerships with major aerospace companies, particularly those gaining significance in the aeronautical sector, like GMV with GALILEO.
 - Collaborate with international space programs, including Egnos, Galileo, Copernicus, and ESA, to strengthen Madrid's position as a key player in the global aerospace industry.
 - Establish partnerships with other regions or countries to exchange knowledge, technology, and resources, enhancing competitiveness and fostering a global presence.
 - *Investment in Drone Technology:*
 - Take advantage of the presence of prestigious universities and their expertise in drone technology.



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- Create a dedicated initiative or center focused on drone research, development, and manufacturing, leveraging the talent pool from universities.
- Explore applications of drone technology in various sectors, such as agriculture, logistics, and surveillance, to expand economic opportunities.
- *Education and Workforce Development.*
 - Strengthen cooperation between universities and industry to align education programs with industry needs, ensuring a skilled workforce for the aerospace sector.
 - Establish internship programs, scholarships, and industry-sponsored research projects to bridge the gap between academia and industry.
 - Promote continuous learning and upskilling programs to adapt to evolving technological advancements in the aerospace field.
- *National and Regional Advocacy.*
 - Make use of Madrid's central position and political importance to advocate for increased national investment in the aerospace sector.
 - Actively engage with the Spanish Space Agency, based in Seville, to ensure Madrid's active involvement and contribution to national space initiatives.
 - Work together with regional and national government bodies to create a conducive policy environment, offering incentives for aerospace companies and stimulating growth in the sector.
- *Infrastructure Development.*
 - Invest in infrastructure projects to enhance the capabilities of Madrid's aerospace sector.
 - Expand and modernize facilities at the Adolfo Suarez-Barajas airport to support increased aerospace activities.
 - Develop specialized research and testing facilities to attract international collaborations and projects.
- *Community Engagement and Awareness*
 - Develop community awareness and support for the aerospace sector's economic and social contributions.
 - Engage in outreach programs to schools and communities to promote STEM education and inspire future generations to pursue careers in aerospace.



- Showcase the region's achievements in aerospace through events, exhibitions, and media coverage to strengthen its reputation on a national and international scale.

By implementing this maxi-maxi strategy, Madrid can exploit its existing strengths and opportunities to become a global hub for innovation, research, and economic growth in the aerospace sector.

- ***MINI-MAXI Strategy for Madrid's Aerospace Sector, obtained from the analysis of Weaknesses and Opportunities:***

- *Skill Development and Talent Retention:*

- Establish partnerships between aerospace companies, universities, and government bodies to create specialized training programs focused on critical technologies such as AI and cyber security.
- Provide incentives for aerospace professionals to acquire new skills through continuous learning and development programs.
- Work together with international organizations to attract and retain young talent, emphasizing the unique opportunities available in Madrid's aerospace sector.

- *Promotion of Drone Sector Development:*

- Invest in research and development initiatives in collaboration with universities to address the underdeveloped state of the drone sector in Madrid.
- Facilitate partnerships between established aerospace companies and drone startups or small training companies to spur growth and innovation in the sector.
- Advocate for the creation of experimentation and test infrastructures for drones in the region, attracting both local and international businesses and research initiatives.

- *Regulatory Advocacy and Development:*

- Work with the aerospace sector, universities, and regulatory bodies to establish proper regulatory lobbies for drones, ensuring a conducive and regulated environment for growth.
- Collaborate with the Agencia Estatal de Seguridad Aérea (AESA) to actively contribute to the development of drone regulations, ensuring they align with industry needs and standards.

- *National and Regional Collaboration:*

- Actively engage with the Spanish Space Agency to explore joint initiatives that can benefit Madrid's aerospace sector.



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- Advocate for increased government support and policies that address the specific challenges faced by the aerospace industry, including skill shortages and regulatory concerns.
 - Exploit the growth of major companies in the aeronautical sector, such as GMV with the GALILEO operation, to create opportunities for skill enhancement and talent acquisition.
 - Establish internship programs and joint projects between universities and these companies to bridge the skills gap and promote knowledge transfer.
- *Public-Private Partnerships for Innovation:*
 - Encourage public-private partnerships to fund and support innovation in critical technologies, particularly AI and cyber security.
 - Establish innovation hubs or centers of excellence to bring together companies, academia, and government in joint initiatives aimed at addressing skill gaps and fostering technological advancements.
 - *Community Awareness and Support:*
 - Increase awareness within the local community about the importance of the aerospace sector and its potential for economic growth.
 - Collaborate with educational institutions to promote STEM education and generate interest in aerospace-related careers, addressing the competition for talented professionals.

By focusing on these mini-maxi strategies, Madrid can address its weaknesses in skill development and regulatory frameworks, while capitalizing on existing opportunities to intensify the aerospace sector's growth and competitiveness.

- ***MAXI-MINI Strategy for Madrid's Aerospace Sector, obtained from the analysis of Strengths and Threats:***
 - *Diversification of Specializations*
 - Use the existing strengths in the complete value chain and research and development capabilities to diversify specializations within the aerospace sector.
 - Encourage cooperation between companies and research institutes to explore new areas of innovation, reducing the risk of over-specialization in specific branches.
 - Establish a task force to monitor industry trends and identify emerging opportunities for diversification.



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- *Global Collaboration and Benchmarking*
 - Establish international collaborations and partnerships with regions/countries leading in aeronautics, space, and drone development.
 - Conduct regular benchmarking exercises to assess Madrid's aerospace sector's competitiveness and identify areas for improvement based on global standards and advancements.
- *Innovation and Technology Transfer*
 - Promote technology transfer and knowledge-sharing between research institutes, universities, and industry players to stay at the forefront of technological advancements.
 - Develop incentive programs to encourage companies to adopt and implement cutting-edge technologies, ensuring Madrid remains a hub for innovation in aerospace.
- *Regional Growth Strategies*
 - Collaborate with regional and national governments to develop comprehensive growth strategies for the aerospace sector, ensuring a balanced approach that considers the entire value chain.
 - Advocate for policies that promote a conducive business environment, attracting new companies and projects while retaining existing ones.
- *Talent Retention and Attraction*
 - Implement targeted programs to retain and attract top talent in critical areas such as AI, cyber security, and drone technology.
 - Work closely with universities to align educational programs with industry needs, addressing skill gaps and ensuring a continuous supply of skilled professionals.
- *Adaptation to Spanish Space Agency's Presence*
 - Establish strategic partnerships with the Spanish Space Agency (based in Seville) to ensure Madrid remains a key player in national space initiatives.
 - Explore opportunities for collaboration on joint projects, leveraging Madrid's existing expertise and capabilities to complement the agency's activities.
- *Continuous Monitoring and Adaptation*
 - Implement a continuous monitoring system to track regional and global developments in the aerospace sector.



- Stay agile and adaptive, adjusting strategies and priorities based on emerging threats and opportunities to maintain a competitive edge.
 - By adopting this maxi-mini strategy, Madrid can navigate the threats posed by the rapid development in other regions, potential over-specialization, and the presence of the Spanish Space Agency in Seville, while maximizing its existing strengths to ensure sustained growth and leadership in the aerospace sector.
- ***MINI-MINI Strategy for Madrid's Aerospace Sector, obtained from the analysis of Weaknesses and Threats:***
 - *Skills Development and Retention Programs*
 - Implement targeted training programs to address the lack of skills in AI and cyber security for the aerospace sector.
 - Establish retention programs within aerospace companies, offering continuous learning opportunities, mentorship, and career advancement to retain skilled professionals.
 - *Strategic Talent Management*
 - Develop a comprehensive talent management strategy to effectively compete for skilled professionals against other industries.
 - Leverage the international vocation of young professionals by promoting Madrid's unique advantages in the aerospace sector through targeted recruitment campaigns.
 - *Promotion of Drone Sector Growth*
 - Create incentives and support mechanisms to attract investment and promote the growth of the underdeveloped drone sector.
 - Facilitate joint initiatives between established aerospace companies and startups in the drone sector to stimulate innovation and business development.
 - *Establishment of Drone Testing Facilities*
 - Advocate for the creation of experimentation and test infrastructures for drones together with industry stakeholders and government bodies.
 - Explore public-private partnerships to fund the development of drone testing facilities, addressing the current lack of infrastructure in the Madrid region.



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- *Regulatory Advocacy for Drones*
 - Collaborate with the Agencia Estatal de Seguridad Aérea (AESA) to actively participate in the development of drone regulations.
 - Advocate for the establishment of regulatory lobbies specifically focused on drones to ensure a supportive regulatory environment that promotes industry growth.
- *Industry-Government Collaboration for Hiring Difficulties*
 - Engage with the Spanish government and authorities to address hiring difficulties in the aerospace sector.
 - Advocate for targeted policies and initiatives, such as training subsidies or internship programs, to mitigate hiring challenges and foster a skilled workforce.
- *Mitigation of Specialization Risks*
 - Monitor and assess the specialization trends within the aerospace sector to identify potential risks.
 - Encourage diversification and joint work across different branches of the sector to mitigate the threat of excessive specialization.
- *Proactive Response to External Threats*
 - Stay informed about developments in other regions/countries in aeronautics, space, and drones.
 - Proactively respond to external threats by adapting strategies, fostering innovation, and maintaining a competitive edge in the aerospace sector.

By focusing on these mini-mini strategies, Madrid can address specific weaknesses and threats, incrementally improving its aerospace sector's resilience, competitiveness, and growth potential.

4.2.3. TOWS analysis for Apulia

Starting from the SWOT analysis reported in D2.2, the TOWS analysis was performed to define a strategy based on both internal and external factors. For Apulia region, the TOWS analysis is reported in the following:

- ***MAXI-MAXI strategies for Apulia obtained from the analysis of Strengths and Opportunities***
 - *Political Influence and Fundings*
 - Leverage political influence and regional strategy to attract investment and partnerships from strategic European players, thereby enhancing research and development efforts.



- Take advantage of funding opportunities and publicly-funded initiatives to promote innovation, research and development, and entrepreneurship in aerospace.
- *Education and talent valorisation*
 - Strengthen the education system by working with universities and institutions to reduce the gap between the supply of skilled human resources and the needs of industry.
- *Strategic Partnerships and Alliances*
 - Leverage the presence of multinational companies and established supply chains to develop a comprehensive aerospace industrial park at Grottaglie Airport, positioning it as a European hub for aerospace transportation systems such as unmanned aerial vehicles, aircraft disassembly and cargo space vehicles (since Grottaglie Airport is the only Italian spaceport).
- ***MINI-MAXI strategies for Apulia obtained from the analysis of Weaknesses and Opportunities***
 - *Skill Development and Talent Retention*
 - Implement proactive measures by companies and government agencies in the region to address aerospace recruitment challenges and to attract and retain skilled workers.
 - Leverage the presence of incubators, accelerators and other start-up support services to foster the growth of aerospace start-ups and scale-ups.
 - Leverage the region's expertise in microsatellites and space components to build partnerships with European space actors and enhance upstream economic collaboration.
- ***MAXI-MINI strategies for Apulia obtained from the analysis of Strengths and Threats***
 - *Accelerating Innovation through Education*
 - Collaborate with existing research systems to attract European strategic stakeholders and establish a cohesive strategy for aerospace research endeavours.
 - *International Collaboration and Competitiveness*
 - Strengthen innovation and access to credit by creating partnerships between companies and financial institutions to support the competitiveness of aerospace businesses.



- *Strategic Support for Increased Space Budget*
 - Establish lobby for the development of drone regulations, and collaborate with industry stakeholders to define new rules for the sector.
- *National and International Collaboration Advocacy*
 - Promote regional infrastructure development and foster closer proximity to national strategic decision-making centers to enhance competitiveness and access to potential customers.
- ***MINI-MINI strategies for Apulia obtained from the analysis of Weaknesses and Threats***
 - *Collaboration with European Programs*
 - Collaborate with regional and national entities to address the lack of participation from European strategic stakeholders, ensuring the development of a comprehensive and cohesive aerospace research strategy.
 - *International Collaborations*
 - Foster partnerships with existing Airport Council International members to leverage their industry presence and enhance the region's competitiveness.

4.2.4. TOWS analysis for Occitania

The TOWS analysis for Occitania is reported below, elaborated from the SWOT analysis reported in D2.2.

- ***MAXI-MAXI strategy for Occitania region, obtained from the analysis of Strengths and Opportunities***
 - *Research and Development Synergies*
 - by making the most of the presence of public laboratories, such as CNES and ONERA, foster collaboration between academia and industry and facilitate joint R&D initiatives among aerospace businesses, educational institutions, and research centres to drive innovation.
 - *Integrated Value Chain*
 - strengthen partnerships across the entire aerospace value chain, from OEMs like Airbus and Thalès to SMEs, to improve cooperation and efficiency, and develop initiatives that encourage knowledge exchange and technology transfer between large manufacturers and smaller enterprises.



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- *Aerospace Education Hub*
 - promote the region as a global hub for aerospace education, emphasising collaboration between industry and educational institutions. Also, establish programs that align with emerging skills in eVTOL, cyber activities, maintenance, and hydrogen, attracting students and meeting industry demands.
- *Green Industrial Transformation*
 - make the most of the opportunities induced by the French Loi Climat Résilience to transition towards greener aerospace practices. Invest in sustainable aviation initiatives and SAF technologies to align with the global push for environmentally friendly solutions.
- *Space Sector Growth*
 - support the development of start-ups in the space sector, encouraging innovation and creating a favourable environment for entrepreneurship.
- *Cross-Sector Collaboration*
 - promote collaboration and knowledge-sharing between different sectors, particularly between aerospace and other industries (*e.g.*, space applications for health) to optimise the impact of the aerospace ecosystem on broader economic development.
- *International Attractiveness*
 - promote Occitania as an attractive destination for aerospace businesses, making the most of the dense and rich aerospace ecosystem, skilled workforce, and supportive infrastructure, and join forces with international organisations, such as the NATO Space Center, to enrich Occitania's global standing in the aerospace industry.
- *Skilled Workforce and Local Talent*
 - by cooperating with regional training facilities, ensure they align their programs with the evolving needs of the aerospace industry.
- *Residency Services and Support*
 - intensify and promote residency services provided by Toulouse Métropole and other cities in the region to attract and support businesses. By continuously improving the overall business environment, by providing high-level services, make Occitania an even more appealing place for aerospace companies to establish and grow.



- ***MINI-MAXI strategy for Occitania region, obtained from the analysis of Weaknesses and Opportunities***
 - *Circular Economy and Sustainable Practices*
 - Prioritize the structuring of the circular economy in the aerospace sectors, focusing on sustainable practices that align with the global push for eco-friendly solutions. Use the dense aerospace ecosystem to establish collaborative initiatives and share best practices for circular economy development.
 - *Local Economic Imbalance, Space and Drone Opportunities*
 - Develop strategies to amplify the economic weight of Space and Drones beyond Toulouse, tapping into the opportunities presented by the dense aerospace ecosystem.
 - *Financial Support Gaps*
 - Streamline financial support possibilities by improving coordination between regional, national, and European levels, reducing gaps in funding. Explore avenues for increased private funding to complement existing regional support, ensuring a robust financial backing for aerospace initiatives.
 - *R&D Disconnection, Airbus Collaboration*
 - Explore opportunities to maximize collaboration with Airbus in research and development, making the most of the presence of Airbus headquarters in Toulouse. Facilitate dialogue and initiatives to encourage Airbus R&D activities in Occitania, creating synergies with the local aerospace ecosystem.
 - *Historical roots*
 - Use Occitania's dense aerospace ecosystem and global attractiveness to attract new businesses and talents. Actively promote the region as an independent hub for aerospace innovation, going beyond historical dependencies on Airbus.
 - *Green Transformation*
 - Seize the opportunities presented by the French Loi Climat Résilience to trigger a greener industrial transformation within the aerospace industry. Showcase Occitania's commitment to sustainability to attract new industries and position the region as a leader in eco-friendly aviation practices.
 - *Regional Training Impact*
 - Align regional training facilities with the emerging skills in eVTOL, cyber activities, maintenance, and hydrogen to answer



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industry needs. Maximize the impact of regional training programs in attracting and nurturing new talents that meet the evolving demands of the aerospace sector.

- *Cross-Sector Collaboration*
 - Stimulate cross-fertilization between aerospace sectors, particularly with space, by promoting joint initiatives and knowledge-sharing. Encourage innovation at the intersection of different sectors, such as the emerging collaboration between space and health.
- ***MAXI-MINI strategy for Occitania region, obtained from the analysis of Strengths and Threats***
 - *Complacency*
 - Establish mechanisms to continually challenge existing norms and encourage anticipation to avoid stagnation.
 - *Diversity in the Aerospace Ecosystem*
 - Promote initiatives that diversify the aerospace ecosystem to counter the risk associated with dependence on a few major purchasers and encourage innovation incentives for SMEs and startups to support variety and creativity within the region.
 - *Infrastructure Access*
 - Invest in improving access and infrastructure in non-capital cities like Toulouse and Montpellier to mitigate potential barriers for newcomers.
 - *Resilience to Industry Shifts*
 - Develop contingency plans to counter potential aerospace industry shifts, such as companies leaving the region due to regulatory challenges or international competition and improve the adaptability of the aerospace ecosystem.
 - *International Collaboration*
 - Strengthen international collaborations beyond traditional partnerships, considering potential shifts in Airbus's governance that may weaken historical regional ties.
 - *Collaboration in Drone Sector*
 - Accelerate the development of the drone sector by establishing public test beds and promoting cooperation between industry and research institutions.



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- *Hiring Challenges*
 - Strengthen initiatives for talent retention by improving residency services and by creating a supportive environment for businesses. Implement programs to answer hiring difficulties, ensuring a continuous influx of skilled professionals to the aerospace sector in the region.
- *Adaptability*
 - Implement measures to facilitate adaptability within the aerospace ecosystem to respond quickly to industry changes and challenges, and speed up the development of the drone sector, ensuring Occitania remains at the forefront of innovation in the aerospace industry.
- ***MINI-MINI strategy for Occitania region, obtained from the analysis of Weaknesses and Threats***
 - *Economic Imbalance*
 - Highlight the economic weight of Space and Drones in Toulouse and develop strategies to diversify and strengthen these sectors in the broader region. Explore opportunities for joint initiatives with other regions to balance the economic impact across multiple aerospace sectors.
 - *Funding Gaps*
 - Optimize the coordination of financial support at regional, national, and European levels to avoid gaps in funding opportunities. Streamline funding processes and promote private investment to reduce reliance on public funding sources.
 - *Hiring Challenges*
 - Address hiring difficulties in the aeronautics sector by implementing targeted measures to match skilled workers with available positions. Evaluate and refine mitigation measures to ensure they effectively answer the specific hiring challenges faced by the aerospace industry in the region.
 - *Complacency Risks, Anticipation Lapses*
 - Implement programs and incentives to counteract the risks associated with being a leading aerospace region, promoting a culture of continuous improvement and anticipation. Encourage regular assessments and feedback loops to identify areas for improvement and innovation within the aerospace ecosystem.



- *Infrastructure Challenges*
 - Advocate for targeted investments in infrastructure improvements to ensure the region remains attractive for businesses and skilled professionals and to minimize barriers for newcomers.

4.2.5. TOWS analysis for South Holland

Starting from the SWOT analysis reported in D2.2, the TOWS analysis for **South Holland** is reported in the following:

- ***MAXI MAXI strategies obtained from the analysis of Strengths and Opportunities***, aim to maximize the strengths of the South Holland region in aerospace while taking advantage of the identified opportunities to drive innovation, collaboration, and sustainable growth:
 - *Leverage Regional Aerospace R&D Excellence*
 - Capitalize on the well-established research and development ecosystem in Zuid-Holland to raise innovation levels in aerospace.
 - Establish collaborative projects with educational institutions, SMEs, and public-private partnerships to harness the potential of advanced technologies in aviation, aeronautics, space, and drones.
 - *Strengthen Regional Space Industry Collaboration*
 - Enhance collaboration between ESTEC facility, Galileo Reference Center, and regional space businesses to actively participate in ESA programs and drive joint R&D initiatives.
 - Stimulate networking events and initiatives to facilitate knowledge sharing and strengthen ties between public and private space entities.
 - *Develop Circular Economy Solutions in Aeronautics*
 - Build upon the regional expertise in circular economy and composites to lead in sustainable practices within the aeronautics sector.
 - Collaborate with businesses, research institutions, and government bodies to pioneer circular composite manufacturing processes, materials, and components for aviation.
 - *Innovation Hub for New Space Economy*
 - Establish the region as an innovation hub for the New Space economy by developing niche products and systems, especially for small- and CubeSats.



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- Attract investments and talent to drive the growth of the aerospace industry in response to the increasing demand for advanced lightweight materials and propulsion systems.
- *Educational and Industrial Valorization Programs*
 - Implement dedicated programs to enhance the valorization of high-value knowledge and intellectual property generated by educational and R&D institutions in the region.
 - Facilitate partnerships between academia and industry to translate research findings into commercially viable products and technologies.
- *National and International Collaboration Advocacy*
 - Advocate for increased collaboration within the innovation ecosystem, emphasizing complementary efforts and knowledge exchange within the three aerospace subsectors.
 - Actively participate in national and international collaborations to enhance the region's influence and contribution to the global aerospace community.
- *Strategic Alignment of Long-Term Aerospace Delta Agenda with National Agendas*
 - Align regional initiatives with the goals outlined in the various national longer term agendas of the three subsectors to secure a stronger foundation for aerospace projects and programs.
 - Seek opportunities for active involvement in shaping and implementing national policies to create regional growth and international collaboration.
- *Propulsion Systems and Hydrogen Innovation Center*
 - Establish a center of excellence for propulsion systems and hydrogen innovation, capitalizing on the outcomes of the 'Aviation in Transition' project.
 - Encourage collaboration between businesses, educational institutions, and research centers to further advance technologies related to hydrogen propulsion systems and lightweight materials.
- ***MINI-MAXI strategies, obtained from the analysis of Weaknesses and Opportunities***, aim to capitalize on the identified opportunities to mitigate weaknesses, promoting a more resilient, innovative, and collaborative aerospace ecosystem in the South Holland region:



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- *Talent Attraction and Retention Initiatives*
 - Develop targeted programs to attract and retain talent in the aerospace sectors, countering competition from industries like semicon, high-tech and medtech.
 - Collaborate with educational institutions to create internship programs, skill development initiatives, and promotional campaigns to enhance the region's appeal for aerospace professionals.
- *Strategic Support for Increased Space Budget*
 - Address the limitation of access to European space programs by strategically advocating for increased national space budget and ESA contributions.
 - Establish a collaborative platform involving industry leaders, research institutions, and government bodies to influence regulatory space lobby and political decisions.
- *Innovation Fund for Aerospace Start-ups*
 - Mitigate the lack of regional or national funding options by attracting or creating more innovation funds specifically tailored for aerospace start-ups, scale-ups, and SMEs.
 - Collaborate better with financial institutions, venture capitalists, and governmental bodies to ensure a sustainable and accessible funding ecosystem for aerospace businesses.
- *Regulatory Framework Enhancement for Drone Sector*
 - Overcome challenges in the drone domain by actively engaging with regulatory bodies to improve supportive regulations.
 - Collaborate with industry experts, policymakers, and regulators to develop a conducive regulatory framework, accommodating the growth of the drone sector, particularly in testing activities and applications.
- *Integrated Initiatives for Downstream Space Sector*
 - Address the fragmentation in the downstream space sector by initiating integrated collaborative initiatives.
 - Establish forums, industry clusters, and joint projects to encourage networking and knowledge-sharing among isolated businesses within the downstream space sector.
- *Development of Aeronautics Testing Hub*
 - Address the underdeveloped testing infrastructure for aeronautics by strategically developing a testing hub, for instance at Rotterdam The Hague Airport



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- Collaborate with stakeholders to establish a centralized testing facility that caters to the needs of multiple aerospace companies, promoting efficient use of resources and fostering collaborative research efforts.
- **MAXI MINI strategies, obtained from the analysis of Strengths and Threats,** aim to maximize the strengths of the South Holland region while minimizing the impact of identified threats, encouraging resilience, innovation, and sustainable growth in the aerospace ecosystem:
 - *Establish One Regional Knowledge and Innovation Initiative*
 - Maximize the strength of well-established R&D facilities and hotspots by creating a regional knowledge and innovation initiative which combines all sectors under 1 umbrella
 - Mitigate the threat of manufacturing companies relocating by focusing on knowledge-intensive activities, promote collaboration between educational institutions, businesses, and R&D facilities to retain and attract talent.
 - *Enhance Regional Space Collaboration Initiatives*
 - Leverage the strength of the ESTEC facility and the Galileo Reference Center to enhance regional collaboration in space-related activities.
 - Mitigate the threat of the absence of regional companies in European space programs by establishing initiatives that pool resources, share expertise, and collectively participate in strategic space projects.
 - *Advocate for Regulatory Reforms in Drone Sector*
 - Maximize the strength of a strong foundation for aerospace R&D and collaboration projects to advocate for regulatory reforms in the drone sector.
 - Mitigate the threat of companies relocating due to regulatory constraints by actively engaging with regulatory bodies, proposing necessary changes to enable testing and demonstration activities for drones and Urban Air Mobility within the region.
 - *Strengthen Regional Political (and Financial) Support*
 - Maximize the strength of existing aerospace-focused field labs, hotspots, and partnerships by leveraging them to strengthen regional financial and political support.
 - Mitigate the threat of companies seeking support elsewhere by enhancing the region's financial capabilities and political influence in the aeronautics, space and drone sectors through collaborative efforts and targeted advocacy.



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- *Promote Sustainable Practices in Aerospace*
 - Capitalize on the strength of the region's focus on Circular Economy, especially in the aeronautics sector, as part of the sustainable aviation developments in the region.
 - Mitigate the threat of companies relocating by promoting sustainable practices and innovation in aerospace manufacturing, emphasizing the region's expertise in composites and eco-friendly technologies.
- **MINI MINI strategies, obtained from the analysis of Weaknesses and Threats,** aim to minimize the impact of identified weaknesses and threats while promoting collaboration, innovation, and the overall resilience of the aerospace ecosystem in the South Holland region:
 - *Establish Talent Exchange Programs with Other High-Tech Sectors*
 - Mitigate the weakness of talent attraction and retention challenges in the aerospace sectors by collaborating with other growing high-tech sectors.
 - Develop talent exchange programs with semiconductor, hightech and medtech companies to share expertise, attract a diverse workforce, and address the threat of talent loss to competing industries.
 - *Promote Collaboration Platforms for Downstream Space Sector*
 - Address the weakness of fragmentation in the downstream space sector by creating collaborative platforms.
 - Establish forums, industry-wide initiatives, and joint projects to foster collaboration among isolated businesses, promoting knowledge-sharing and mitigating the threat of stagnation in the sector.
 - *Advocate for Regional Infrastructure Development*
 - Mitigate the weakness of underdeveloped testing infrastructure for aeronautics by advocating for regional infrastructure development.
 - Engage with government bodies, businesses, and stakeholders to advocate for investments in testing and demonstration facilities, minimizing the threat of companies relocating due to inadequate infrastructure.
 - *Strengthen Regional Innovation Ecosystem*
 - Address the weakness of limited economic weight in the space and drone sectors relative to other high-tech industries.
 - Strengthen the regional innovation ecosystem by stimulating collaboration, supporting startups, and attracting investments to



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enhance the competitiveness of especially the space and drone sectors, thereby mitigating the threat of companies seeking development opportunities elsewhere.



4.3. Common TOWS analysis

The common TOWS analysis is based on the separate TOWS analyses that were elaborated by each of the partners, themselves based on the initial SWOT analyses that were presented in Deliverable D2.2.

This common TOWS analysis presents some aspects of a common strategy for the five regions of the consortium. It could therefore serve as another area of interest for the Action Plan that will be delivered in the final Deliverable (D3.1) corresponding to the third work package of the project.

- ***The common MAXI-MAXI strategy makes the most of elements from each region's strengths and opportunities:***
 - *Research and Development Collaboration*
 - Establish collaborative initiatives among research institutions, universities, and aerospace businesses across all regions. Exploit existing R&D excellence to drive innovation in aerospace technologies, including drones, sustainable aviation, propulsion systems, and space economy market. Organize events, workshops, and joint projects to increase awareness, share best practices, and create synergies for innovation and growth.
 - *Education and Talent Development*
 - Strengthen aerospace academic programs by creating specialized courses and training opportunities tailored to industry needs. Stimulate cooperation between national and international high-level universities to develop a skilled workforce equipped with cutting-edge knowledge and expertise, specifically in emerging technologies.
 - *Business Ecosystem Enhancement*
 - Facilitate networking and partnerships among aerospace companies within and across regions to create cohesive business ecosystems in order to reinforce competitiveness globally and attract investments. Promote collaboration and knowledge-sharing between regions and international partners (joint ventures, alliances, etc...).
 - *Regional and National Political Advocacy and Funding*
 - Actively engage with regional and national policymakers to fit aerospace priorities in strategic agendas. Emphasize the positive impact of aerospace projects on economic growth, employment, and technological advancement and advocate for increased funding and support.



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- *Green Industrial Transformation*
 - Develop sustainable practices and technologies to transition towards greener aerospace solutions. Invest in initiatives that promote circular economy principles, reduce environmental impact, and align with global efforts for climate resilience.
- *Cross-Sector Innovation*
 - Encourage collaboration between aerospace and other sectors, such as automotive/motorsport, automation, ICT, health, and agriculture, to drive cross-industry innovation. Explore opportunities to integrate aerospace technologies into various applications to turn to broader societal challenges.

By implementing this MAXI-MAXI strategy, the regions can give impact to their collective strengths and opportunities to establish themselves as global leaders in aerospace innovation, research, and economic growth.

- ***The common MINI-MAXI strategy incorporates the regions' weaknesses and opportunities.***
 - *Educational and Development Initiatives*
 - Develop targeted programs to attract and retain talent in the aerospace sector, joining forces with educational institutions to create internship programs, skill development initiatives, and promotional campaigns. This will help solve the talent shortage and boost the regions' appeal for aerospace professionals.
 - *Regulatory Framework Enhancement*
 - Advocate for the development of regional policies that deal with the regulation of drones and space activities, leading to a favourable environment for businesses. Work together with regulatory bodies, industry experts, and policymakers to develop supportive regulations that accommodate the growth of these sectors.
 - *Infrastructure Development*
 - Invest in infrastructure projects to improve aerospace capabilities and support industry growth, as well as in shared infrastructure, experimentation and test infrastructures in the regions to attract companies and research institutions. Develop specialized facilities for aerospace R&D, testing, and innovation, giving impetus to existing technological and economic hubs and also to attract international partnerships and projects.
 - *Financial Support and Investment*
 - Provide better financial support possibilities by improving coordination between regional, national, and European levels.



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Attract private funding and create innovation funds tailored for aerospace start-ups, scale-ups, and SMEs to ensure a sustainable funding ecosystem.

- *Strategic Partnerships and Alliances*
 - Actively seek partnerships with actors from European aerospace programs, regulatory bodies, and major aerospace companies to strengthen the region's presence in the broader aerospace community. Participate in programs and initiatives that promote collaboration, knowledge exchange, and joint R&D efforts.
- *Promotion of Sector Growth and Community Awareness*
 - Organize promotional activities, exhibitions, and showcases to increase awareness about the aerospace sector among citizens, businesses, and investors. Engage in outreach programs to promote STEM education and inspire future generations to pursue careers in aerospace, improving the region's reputation on a national and international scale. When possible, use historical roots, regional expertise, and global attractiveness to attract new businesses, talents, and investments.

By implementing these MINI-MAXI strategies, the regions can focus on their weaknesses, seize opportunities, and collectively foster growth, innovation, and competitiveness in the aerospace sector with the purpose to transform these weaknesses into strengths.

- ***The common MAXI-MINI strategy for the five regions analyses their strengths and potential threats.***
 - *Regional Collaboration and Innovation Initiatives*
 - Continue to encourage common work among regional aerospace companies, universities, and research centers to create a unified ecosystem for collective growth initiatives. This will reinforce regional strengths in R&D and innovation while mitigating the threat of self-satisfaction and manufacturing companies relocating.
 - *International Collaboration and Competitiveness*
 - Actively engage in international collaborations to stay competitive, using political influence and establishing partnerships with other regions and countries. This will improve global competitiveness and market access.
 - *Talent Attraction and Retention*
 - While developing talent exchange programmes, use residency services and educational alliances to attract skilled individuals



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to the region. Implement programs to deal with hiring challenges and ensure a continuous influx of and retention of skilled professionals, mitigating the threat of hiring difficulties and talent shortages.

- *Continuous Industry Diversification*
 - Implement policies that encourage diversified investments and monitor global aerospace trends as was done in D1.3 *Megatrends and future developments Analysis*. By diversifying specializations and adapting regional strategies, the regions can mitigate the risk of industry shifts or dependence on specific sectors.

By implementing these MAXI-MINI strategies, the regions can give more impact to their strengths in collaboration, innovation, and talent attraction while focusing on potential threats to the aerospace sector, ensuring sustained growth and competitiveness.

- ***The common MINI-MINI strategy for the five regions focuses on addressing weaknesses and threats in their aerospace sectors while making the most of their strengths.***
 - *Regulatory Framework Establishment:*
 - Work closely with regulatory bodies to develop and implement effective frameworks for drone regulation. Advocate for supportive regulatory environments that encourage innovation while ensuring safety and compliance.
 - *Regulatory Advocacy*
 - Campaign for regulatory reforms to support aerospace growth. Work hand in hand with regulatory bodies and industry stakeholders to establish favourable regulations for drones and space activities, mitigating the threat of limited infrastructure access and regulatory constraints.
 - *Infrastructure Development*
 - Invest in specialized infrastructure and in developing manufacturing capabilities in regions lacking such infrastructure, in order to have assets that can mitigate the risk of economic shifts and retain businesses.
 - *Strengthening Regional Innovation Ecosystem*
 - Stimulate collaboration, support startups, and attract investments to improve the competitiveness of the aerospace sectors. Facilitate partnerships with existing industry players to make the most of their presence and enhance the region's overall competitiveness.



By implementing these MINI-MINI strategies, the regions can deal with specific weaknesses and threats while giving impact to their strengths in order to stimulate the overall competitiveness and resilience of their aerospace sectors.

4.4. Conclusion to common TOWS analysis

To conclude, the TOWS analysis has provided valuable insights into designing strategic approaches for the aerospace sectors across the five regions. Each strategy offers a tailored roadmap to benefit from strengths and opportunities, and to take care of weaknesses and threats.

Collaborative efforts, both academically and industrially, along with talent retention or hiring measures and proactive policy advocacy (including financial and regulatory) will contribute to the sustainable growth and competitiveness of the aerospace industry across the regions.

In essence, by implementing these strategic frameworks derived from the common TOWS analysis, the regions could collectively exploit their strengths to deal with the complexities of the aerospace sector, capitalize on opportunities, and mitigate risks, ultimately driving sustainable growth and competitiveness in the global aerospace landscape. This represents a first step towards our future joint action plan. Indeed, all the input coming from the common TOWS analysis are high-level “suggestions” that well cover the overall spectrum of actions that might be taken at regional level to make each aerospace ecosystem growing at regional and global level, but need to be concretized and put in practice with a more detailed and more vertical joint action plan, that will represent the final result of the project AD-ASTRA and will be fully developed in the coming WP3.



5. Relevant networks

In addition to the networks outlined in D2.2, Chapter 5, the consortium of five regions has determined, following the organization of five co-creation workshops involving representatives from each regional aerospace ecosystem, that the interregional connections hold significant potential and can contribute substantial added value. As a result, the consortium partners see themselves capable of playing an active intermediary role between the diverse aerospace ecosystems.

The partners of the AD-ASTRA consortium, can act as "intermediaries" between the various ecosystems and address needs or wishes from a stakeholder in one region to their counterparts in the other regions. Hence, the objective of this task is to establish connections with external networks to create partnerships and potential links with innovation ecosystems at the EU level. These partnerships can provide access to new ideas, resources, and expertise, enabling the partners to remain at the forefront of innovation and drive growth. Additionally, building partnerships with external networks can lead to potential collaborations and joint projects. Aligning goals and resources can lead to the development of innovative solutions, products, or services that address common challenges or meet market demands. Collaborations can enhance competitiveness and increase visibility in innovation.

The objective is to connect with at least three external aerospace excellence networks, identifying two areas of interest that overlap within these networks. Thorough research is the first step in establishing these connections, helping to identify the most relevant and reputable networks in the aerospace industry. Once identified, efforts can be made to establish connections with them.

The co-workshops and site-study visits organized in T2.2 helped establish connections with external networks. During collaborative workshops, participants were able to identify potential opportunities and challenges and compare their regional attitudes towards selected aerospace topics. Site-study visits allowed partners to observe and learn from existing regional aerospace ecosystems. During site visits, AD-ASTRA partners gained firsthand understanding of the key elements contributing to success. This valuable knowledge can be applied to their projects.

The analysis considered the general impressions and suggestions from the five co-creation workshops, as well as all the combined information provided by the partners. An Excel file (shown in Figure 9) was created to compile all the notes and suggestions. The file contains references to various entities related to the space industry and aeronautics, as well as a list of activities and events.



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			Conscious Aerospace	Hydrogen Innovation Aeronautics			
		ISAE-SUPAERO			Space4good	Space Services Innovation PA	
		Aerospace Valley					
		Pangea			ISISpace	Space Systems Innovation Space Economy	
		NOBRAK		Enterprise Europe Network			
		Tailored Fibre Placement		TU Delft			Drones Beyond '23 (Fiera del Levante District at Bari City)
		Alpha Recyclage Composites		Aerospace Innovation Hub			Test Bed service and best practice
INEAI	Space Economy Space Systems Innovation			Province of South Holland		Collaborations btw Industry & University & Clusters	PA Innovation Aviation Test Bed Aeronautic Aviation
Co-creation event - brainstorming session		Co-creation event - brainstorming session		Co-creation event - brainstorming session		Co-creation event - brainstorming session	
MADRID AREA		OCCITANE		ZUID-HOLLAND		EMILIA ROMAGNA	
Co-creation event - Visit on site		Co-creation event - Visit on site		Co-creation event - Visit on site		Co-creation event - Visit on site	
		AIRBUS Saint-Martin plant		Technology Park Ypenburg			
OCCAM Space	Space Systems Manufacturing Space Economy					CIRI Aerospace	GATB
		Vesoconcept		Airborne			
UPM - Centro de Empresas	Space Economy Innovation Entrepreneurship					ENAV	
		TARMAC Aerosave		GTM Advance Structure			Planetek
INTA	R&D Space systems					CURTI spa (Zephyr helicopter)	
							Novotech (SEAGULL aircraft)
ESA - ESAC	R&D Space systems			Unmanned Valley		NPC Spacemind	
INSTER Grupo Oesía	Space Services Space Economy Innovation			ESA ESTEC		Andalò Gianni	
							ESA BIC Brindisi
IDAERO SOLUTIONS	Innovation						
UPM - School of Aerospace Engineering	R&D Education			Next Delft			Bari Open Innovation Hub
							Leonardo Aerostructure

Figure 9. Schematic information on co-creation workshops



The spreadsheet is divided into sections that list entities such as ISAE-SUPAERO, Aerospace Valley, and ESA BIC, along with categorizations or fields of interest such as R&D and Innovation. The second part of the document refers to co-creation events, including a brainstorming session and site visits in certain areas such as MADRID AREA, OCCITANIA, SOUTH-HOLLAND, EMILIA ROMAGNA, and APULIA. From this, important keywords were extracted to identify patterns and make connections. Furthermore, the information presented in D1.1 - *Innovation Inventory* was used to supplement the input collected from the co-creation workshops.

Table 3. Set of keywords identified during the co-creation workshops.

Keyword	Number of citations
Innovation	25
Space System	10
Entrepreneurship	8
R&D	7
Space Economy	7
Composites	6
High-Education	6
Aviation	5
Test Bed	4
Aeronautic	4
PA	4
Space Services	3
Hydrogen	2
Employment	1

Identifying common themes and recurring keywords makes it easier to uncover insights and draw meaningful conclusions. This provides a structured framework for organizing and analyzing information effectively. Upon analyzing the keywords, it can be concluded that, excluding the most cited term 'Innovation' and the least cited term 'Employment', the following terms are the most recurring in ascending order: 'Space Systems (9)', 'Entrepreneurship (8)', 'R&D (7)', 'Composites (6)', 'High-education (6)', 'Aviation (5)', 'Space Economy (4)', 'Test Bed (4)', 'Aeronautics (3)', 'Public Administration (3)', and 'Space Services (2)'. Therefore, it is noteworthy that after five regional missions, the topic of **space entrepreneurship based on research and development (R&D)** emerged. This indicates that the space economy is highly regarded in all of AD-ASTRA's project regions.

At the end, the aerospace connections to be explored, based on the extracted keywords will be the following:

- **UAM Initiative Cities Community (UIC2)**, which is a marketplace platform that focuses on developing mobility demonstrators in the third dimension. It arises



from the following keywords: INNOVATION, TEST BED, PUBLIC ADMINISTRATION (PA), AERONAUTIC (in the sense of “unmanned systems”)

- **ESA Business Incubator Centre (ESA BIC)** is the largest network of incubators supporting space-related start-ups in Europe. The objective is to support entrepreneurs with a space-based business idea and help them develop their product while getting their company off the ground. In the process, they create and grow clusters of space-related start-ups across Europe. It arises from the following: INNOVATION, ENTREPRENEURSHIP, SPACE SERVICES, SPACE ECONOMY
- **Enterprise Europe Network (EEN)** is a network to help companies innovate and grow on an international scale. It is the world's largest support network for small and medium-sized enterprises (SMEs) with international ambitions and it has a focus group specifically devoted to Aerospace & Defence. It arises from the following keywords: INNOVATION, ENTREPRENEURSHIP, R&D, AERONAUTIC, SPACE SYSTEMS
- **European Digital Innovation Hub (EDIH)** is designed to help organizations become more competitive by leveraging digital technologies in their business or production processes, products, or services. EDIHs are not only intended to function locally but also play a significant role in pan-European networking and learning. They are expected to increase their capacities to cover activities with a clear European added value, based on networking and promoting the transfer of expertise. It arises from the following keywords: INNOVATION
- **Network of UAS Test Center** is, currently, an informal network and comprises over 25 test centers of varying sizes. These range from large academic labs, which may have closed flight areas, to large airport test centers. The main topics of discussion are: 1) establishing the network (including founders, mission, governance, and management), 2) sharing knowledge of local realities, and 3) improving operational capacity to enhance effectiveness for the industry.

In addition to the networks mentioned above, we could also consider the following networks:

- **Network of European Regions Using Space Technologies (NEREUS)** represents the interests of European regions that use space technologies. It also emphasizes the regional aspect of European space policy and programs.
- **European Aerospace Cluster Partnership (EACP)** aims to exchange information and knowledge among partners and develop concrete steps for long-term transnational cooperation between aerospace clusters and companies. This will strengthen Europe's position in the global aerospace markets.



The AD-ASTRA tool: a concrete action for networks

The external connections mentioned above are also useful to find the “right channel” and animate the “**AD-ASTRA tool**”. The AD-ASTRA partners have collectively designed a “tool” that aims to help make connections between their ecosystems in a more concrete way, thus enabling a bigger number of collaborations. Basically, they figured out a way to make the most of their close relationship. This tool should be implemented in Q1 and Q2 of 2024.

What is called the “AD-ASTRA” tool is not a tool per se but a channel or a way of connection based on the very essence of the AD-ASTRA partnership. Relying on their privileged relationship and their knowledge of each other’s ecosystems, the partners can act as intermediaries between their ecosystems.

The first layer of connection is to be made through, with and for the stakeholders who took part in the co-creation workshops and company visits in each of the five regions. All of them have at one point met all the AD-ASTRA partners. The stakeholders’ company details and contacts will be gathered in a common document. Once it is completed, this document will be shared among the stakeholders of each of the five regions by the relevant AD-ASTRA partner. The stakeholders will therefore benefit from a direct bond to potential European partners, directly derived from their involvement in the AD-ASTRA project.

The second phase of this collaboration channel has a wider scope, of which the AD-ASTRA partnership is the core. By reaching out to their enablers or facilitators for example, the partners can offer the AD-ASTRA collaboration channel to a wider range of potential beneficiaries. Enablers or facilitators perfectly know their ecosystem, are trusted by companies, and can report the European partnerships needs and wishes of the ecosystem actors. They can in turn become new extended links in the collaboration channel, an interface between the ecosystem actors and the AD-ASTRA core. Some of the needs or wishes of local players in the 5 regions can then be addressed through the AD-ASTRA tool. This tool could also be offered to other types of local contacts in events like forums or BtoB events.



6. Innovation barriers mitigation

In Deliverable 2.2, Chapter 6, the Innovation Barriers for each region were identified using the Megatrends analysis combined with the SWOT analysis. As a result mitigation measures were described for each individual region. With the TOWS analysis now completed a more shared vision can be created on topics that can be jointly addressed to resolve various innovation barriers and draw up a common scenario for the five partners of the consortium. This scenario will be further developed in the Joint Action Plan, in order to become an asset for the policy development of each ecosystem.

Below there are reported eight joint challenges and topics that could be addressed in inter-regional cooperation:

- **Business Ecosystem Enhancement**
 - Facilitating partnerships among aerospace companies from the various regions to enhance competitiveness and attract investments. The AD-ASTRA tool can stimulate this inter-regional interaction, especially among SME's.
- **Research and Development Collaboration**
 - Setting up joint inter-regional initiatives between research institutions, universities, and aerospace businesses to drive innovation in aerospace technologies. Again, the AD-ASTRA tool can play a role fostering R&D collaboration between the various knowledge carriers in the regions and bridging challenges providers and solution providers.
- **Education and Talent Development**
 - Strengthening inter-regional aerospace academic programs, promoting cooperation between universities, including the regional aerospace industries to develop a skilled workforce. This can include for instance inter-regional internship exchange programs.
- **Regional Political Advocacy (and Funding)**
 - Engaging policymakers and politicians to prioritise aerospace projects and secure increased funding and support. Involving them more actively in European programming will make them more aware of the potential inter-regional cooperation may have on the beneficial development of their own regional aerospace ecosystems.
- **Green/Sustainable/Circular Industrial Transformation**
 - Investigating what sustainable aerospace solutions are already taking place in the various regions. Exchanging best practices and setting up interregional cooperation to align with global sustainability efforts.
- **Cross-Sector Innovation**
 - Promoting collaboration between aerospace and the various other industries in the 5 regions to enhance innovation and cross-cutting



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development and to address societal challenges. Examples are the Maritime industry in Zuid-Holland or Motor Valley in Emilia-Romagna. Defence will be a sector with growing potential in all 5 regions.

- **Regulatory Framework Enhancement**
 - Advocating for favourable regulations to support aerospace growth. Learning from other regions how beneficial regulations can be implemented and jointly address best practices. Examples are the use of airspace for drone/UAV testing.

- **Strategic Partnerships and Alliances**
 - Seeking collaborations with European aerospace programs and major industry players to strengthen the region's presence globally. Creating a longer-term strategic partnership or alliance between these 5 regions is seen as the ultimate goal of this collaboration program.

By adopting the above topics, these regions can overcome barriers to innovation and maximize their contributions to the European aerospace sector's growth and international competitiveness.



7. Conclusions

This document is the last deliverable of WP2: *Networks Engagement* of the AD-ASTRA project and the closing deliverable of Task 2.3 - *SWOT analysis*. This task focuses on getting a deep knowledge of the five partners' ecosystems in order to have a global view of the different ecosystems, allowing future connections or collaborations.

After conducting a comprehensive SWOT (Strengths, Weaknesses, Opportunities, Threats) in Deliverable D2.2 *Initial report on the SWOT analysis, relevant networks, and innovation barriers mitigation*, it appears that each of the five partner regions of the AD-ASTRA project possesses unique attributes and challenges.

However, a common SWOT analysis was conducted in this De2.3 *Final report on the SWOT analysis, relevant networks, and innovation barriers mitigation* and it highlighted some common elements, like a strong education, decent political support and good innovation ecosystems. Opportunities in technological growth, collaboration, political support and academic partnerships should be seized and common challenges like skill questions, regulatory issues or manufacturing limitations could be worked on collectively. So could the threats of global competition, talent migration and potential economic shifts.

After the common SWOT analysis was elaborated, each region conducted their own individual TOWS (Threats, Opportunities, Weaknesses, Strengths) analysis following a common frame that was described in Chapter 4.1 of this document. Through these varying assessments, we gained valuable insights into the internal capabilities and external factors influencing the five regions and the individual strategies that could be implemented to deal with them.

In summary, after the initial SWOT analysis enabled the partners to identify key strengths that can be given weight to in order to make the most of opportunities, while highlighting weaknesses that need to be addressed to reduce potential threats, the individual TOWS analysis allowed them to formulate strategic actions that align strengths with opportunities, mitigate weaknesses against threats, and ultimately create an initial and wider plan for sustainable development.

These individual strategies were then brought face to face and compared to elaborate a common TOWS analysis for the five regions in order to design strategic approaches for the aerospace sectors of the five regions. The conclusions drawn from this common TOWS analysis provide a solid foundation for the development of the future joint action plan for the five regions that will be detailed in Deliverable 3.1 *Action Plan*. Building upon the results of the analysis, the joint action plan will aim to integrate the various strategies proposed for each region into a shared framework for collective actions.

As far as relevant networks are concerned, the partners have established a strong foundation for collaboration through co-creation workshops and site-study visits. By identifying common possible areas of collaboration such as space entrepreneurship and research and development (R&D), they have pinpointed key themes of interest. Another possible objective is to connect with external aerospace excellence networks, such as UAM Initiative Cities Community (UIC2), ESA Business Incubator Centre (ESA BIC) and others. These connections will not only provide access to new



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ideas and resources but also pave the way for potential collaborations and joint projects, enhancing competitiveness and visibility in the innovation landscape.

Moreover, the AD-ASTRA partners have developed the "AD-ASTRA tool," a collaborative channel designed to facilitate connections between their ecosystems. This tool leverages the consortium's close relationship and knowledge of each other's ecosystems to act as intermediaries. Through this approach, the AD-ASTRA consortium aims to foster a culture of collaboration, innovation, and growth in the aerospace industry across Europe.

Eventually, the consortium, through various analyses such as Megatrends and SWOT identified key innovation barriers and proposed mitigation measures in D2.2, Chapter 6. Moving forward, adding TOWS analysis, a shared vision is emerging as these regions collaborate to address common challenges and opportunities. Eight joint challenges and topics for inter-regional cooperation were identified. By embracing these topics, the consortium regions can overcome innovation barriers and make significant contributions to the European aerospace sector's growth and global competitiveness.

The Joint Action Plan will further refine this vision into a tangible asset for policy development within each ecosystem and outline specific objectives and priorities, operational plans and their implementation (like possible trans-regional policies or collaboration strategies, coordination measures between regions and sector players, mechanisms for sharing resources to ensure effective implementation, possible timelines, monitoring and evaluating progress, etc). Sustainability concerns and future prospects should also be dealt with.

As has been demonstrated in this deliverable, the action plan will emphasize collaboration, coordination, and mutual support among the regions, empowering their respective strengths and dealing with common challenges. By aligning their efforts and resources and using synergies across these regions, the partners can overcome challenges, seize opportunities for growth and development, and foster resilience across the five regions. Collective action can create a brighter future for all aerospace stakeholders involved.