

# **OVER THE BORDER, INTO ORBIT**

# **GERMANY'S NEWSPACE RISE**



**INNOVATION  
CENTRE  
DENMARK**  
OUTLOOK

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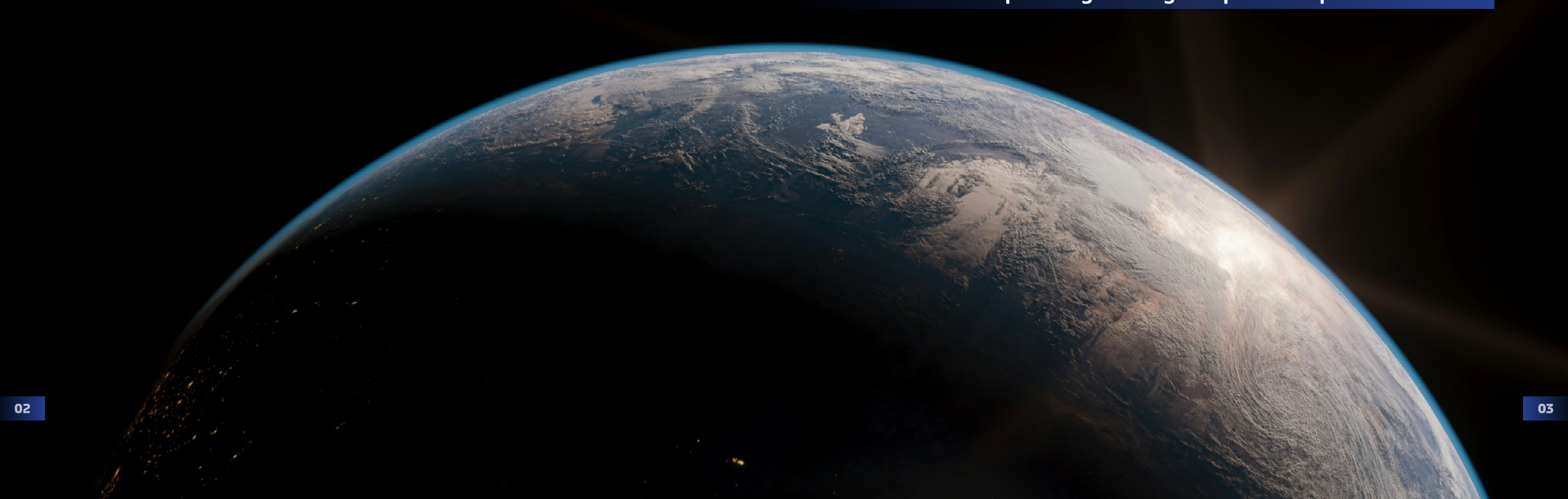
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# EXECUTIVE SUMMARY

Europe has entered a decisive phase in space, where orbit has become a pillar of sovereignty alongside energy and digital infrastructure. Space assets underpin navigation, communication, climate monitoring, and defence — all essential to Europe's resilience and competitiveness. To secure strategic autonomy, Europe must strengthen its industrial base, accelerate

innovation, and align national and regional efforts within a coherent framework.

This publication presents the key actors shaping the Southern German space ecosystem. From leading research institutions and industrial space-tech shapers, while highlighting current trends.

## KEY INSIGHTS

### 1. EUROPE'S STRATEGIC IMPERATIVE

Europe's flagship programmes within space showcase world-leading technology and collaboration. Yet sustaining leadership demands greater investment, faster decision-making, and tighter coordination between the EU, ESA, and member states.

### 2. GERMANY AS THE DRIVING FORCE

Germany spearheads Europe's space ambitions through financial strength, industrial depth, and research excellence. The balanced ecosystem of major companies, SMEs, and startups ensures innovation across the value chain, from navigation and communications to launcher access.

### 3. BAVARIA'S REGIONAL LEADERSHIP

Bavaria exemplifies how regional ecosystems can drive European impact. Anchored by the Technical University of Munich (TUM) and Munich Aerospace, the region connects research, entrepreneurship, and industry to turn innovation into sovereignty.

### 4. UNIVERSITIES AS ENGINES OF THE NEWSPACE ECONOMY

Universities are the backbone of Europe's space future. Through initiatives like TUM Venture Labs, they link research, education, and entrepreneurship, transforming deep-tech innovation into commercial success and nurturing the skills needed for autonomy.

### 5. DENMARK AS A STRATEGIC PARTNER

Denmark brings precision and agility through expertise in photonics, AI, robotics, and nanosatellites. The collaboration with Germany demonstrates how smaller, specialised ecosystems strengthen Europe's industrial scale and technological sovereignty.





# INNOVATION CENTRE DENMARK MUNICH

Connecting Denmark and Southern Germany in Space Innovation

Innovation Centre Denmark (ICDK) operates in seven global innovation hotspots; Munich, Tel Aviv, Bangalore, Seoul, Shanghai, Boston, and Silicon Valley, each chosen for their relevance to Danish research, technology, and business. The goal is to elevate Danish science and innovation to a global scale and to position Denmark as a key partner in solving shared technological and societal challenges.

Based at the Royal Danish Consulate General in Munich, ICDK Munich is a partnership between the Ministry of Foreign Affairs of Denmark and the Ministry of Higher Education and Science. The centre strengthens Denmark's innovation ecosystem by facilitating collaboration with leading scientific and industrial regions, first and foremost Southern Germany (Bavaria and Baden-Württemberg), but also extending to Germany as a whole, Switzerland, and Austria.

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## A BRIDGE FOR SPACE INNOVATION

As Europe accelerates its ambitions for strategic autonomy and competitiveness in space, ICDK Munich engages Danish stakeholders in this transformation. The centre builds long-term partnerships across the space, aerospace, and deep-tech ecosystems, supporting research collaboration, technology transfer, and industrial partnerships that advance Europe's collective capabilities in satellite technology, space-based communications, photonics, AI, and robotics.

Through these activities, ICDK Munich helps strengthen Denmark's position as a trusted innovation partner in the European space domain, connecting Danish excellence in photonics, nanosatellites, AI, and automation with Germany's strong industrial base and research infrastructure. The aim is to lift Denmark's innovation power while contributing to Europe's capacity for sovereign, sustainable, and secure space solutions.

## BRINGING GLOBAL INSIGHTS HOME

ICDK Munich furthermore provides intelligence and network access for Danish universities, companies, and policymakers, offering insights into Southern Germany's rapidly growing space ecosystem. This includes close engagement with regional hubs such as Munich Aerospace, the

Technical University of Munich (TUM), and the European Space Agency's Business Incubation Centre (ESA BIC Bavaria), where academia, startups, and industry intersect to develop the next generation of European space technology.

## OPPORTUNITIES FOR COLLABORATION

With this outlook, ICDK Munich seeks to highlight emerging opportunities for collaboration for:

- Universities and research institutions engaging in joint R&D, talent exchange, and mission development;
- Large companies and corporate R&D units looking to integrate advanced technologies in navigation, Earth observation, or satellite communication;
- Startups, scaleups, and spin-outs pursuing partnerships, investment, or access to European space value chains.

The concentration of expertise in the region represents one of Europe's most dynamic environments for collaboration. As the ecosystem continues to evolve, ICDK Munich will expand

its network and share new opportunities with Danish stakeholders, ensuring that Denmark remains a visible, connected, and influential partner in shaping Europe's future in space.



# EUROPE'S SPACE MOMENT: FROM EXPLORATION TO SOVEREIGNTY

Europe's space ambitions have entered a decisive phase, where sovereignty, security, and competitiveness converge in orbit. With Germany driving industrial scale and Denmark contributing with sharp technological expertise, Europe's distinctive model of collaborative autonomy is emerging as a cornerstone of its geopolitical strength and strategic resilience.

What was once a domain of exploration has become a pillar of sovereignty, on par with energy and digital infrastructure. If Europe wants to achieve strategic autonomy, and competitiveness, it must move with intent.

"There are many domains that are seen in space as the ones where Europe will want to increase its autonomy, and it is crystal clear in a more volatile geopolitical situation the need for more autonomy is there," Josef Aschbacher, director general of the European Space Agency, said in an interview with the Guardian in April 2025.

Space assets underpin everyday resilience. Navigation and timing, secure communications, climate monitoring, and defence are all vital instruments to secure European sovereignty. Western militaries increasingly regard orbit as a contested and critical space, with allied satellite manoeuvres and surveillance ramping up in response to mounting threats from hostile actors employing anti-satellite capabilities, cyber interference, and space-based intelligence operations.

For decades, close cooperation with the US has been essential to European space science. However, in today's geopolitical climate, Europe cannot rely on others for these core capabilities. ESA's 2025 budget stands at around €7.7 billion<sup>1</sup>, a meaningful sum but still dwarfed by US resources. The headline is not the absolute number, but whether Europe uses this moment to restructure for speed and sovereignty. Aschbacher has been explicit: investment must rise in order to sustain Europe's quality of life and autonomy.

## EUROPE'S DISTINCTIVE MODEL

Europe has built a space strategy that reflects its political DNA: a blend of independence and interdependence. At its core is the conviction that sovereignty does not mean isolation, but rather the ability to act freely and on equal terms with others.

The EU's flagship programmes are the clearest expression of this model. The Galileo programme has given Europe its own global navigation system, ensuring that everything from air traffic to financial transactions does not depend on foreign signals. Copernicus has become the world's leading Earth observation programme, providing climate data that underpins environmental policy, agriculture, and disaster response. And with IRIS<sup>2</sup>, a secure connectivity constellation, Europe is taking the next step.

What makes Europe's approach distinctive is the way civil, commercial, and strategic goals

are integrated. ESA's funding model ensures that national contributions translate into industrial contracts, stimulating innovation and creating a balanced ecosystem across member states. This approach not only sustains Europe's technological base but also opens up opportunities for startups and SMEs, which are increasingly playing a role in delivering space-based services.

Equally important is collaboration. Where other powerful actors rely on vertical integration and centralised authority, Europe thrives on diversity. Multinational missions and industrial partnerships enable countries to pool their expertise, share risks, and spread the benefits. In an era where space is becoming the theatre of geopolitical rivalry, Europe's ability to build resilience through collaboration is both its competitive edge and its political hallmark.

## GERMANY AS THE DRIVING FORCE

Within the European framework, Germany plays a decisive role. In 2025, Germany is expected to contribute nearly €951.6 million to ESA, making it the second biggest single national contributor. In addition to the size of the budget, however, it is the breadth of Germany's industrial base and political ambition that makes it the anchor of Europe's space ambitions.

Bavaria has established itself as Europe's leading hub for satellite navigation, home to a dense cluster of companies and research institutions. Bremen is a "City of Space," where Airbus builds spacecrafts and every upper stage of the Ariane launcher. Baden-Württemberg contributes world-class expertise in robotics and photonics, along with a deep network of SMEs and startups. These hubs make Germany not only a financier

but also a manufacturer and innovator across the entire space value chain.

Policy has followed the industry. Germany has pioneered "anchor customer" models to stimulate its growing "NewSpace" ecosystem, providing startups with early contracts that draw in private investment<sup>2</sup>.

"For us, the focus is on climate action, competition, NewSpace and Europe's sovereignty," said Dr. Anna Christmann, the Federal Government's Aerospace Coordinator, at ESA's most recent ministerial meeting<sup>3</sup>. Her statement reflects Germany's dual ambition: to lead Europe's industrial transformation while embedding it firmly in the collective framework of ESA and the EU.

<sup>1</sup> [https://www.esa.int/About\\_Us/Corporate\\_news/ESA\\_facts](https://www.esa.int/About_Us/Corporate_news/ESA_facts)

<sup>2</sup> The German Federal Government's Space Strategy 2023 - 2025

<sup>3</sup> <https://www.bundeswirtschaftsministerium.de/Redaktion/EN/Pressemitteilungen/2022/11/20221123-space-programmes-for-a-sovereign-europe.html>



## DENMARK: SMALL COUNTRY, SHARP EDGES

Denmark may not match Germany in size, but it brings targeted strengths that are increasingly valuable in Europe's space strategy. Photonics, artificial intelligence, robotics, and nanosatellites are areas where Danish researchers and companies are recognised globally.

The Technical University of Denmark's space department, DTU Space, has contributed with instruments to more than 100 international missions, supporting climate science and Earth observation. The company GomSpace in Aalborg is a global leader in nanosatellites, developing affordable and scalable platforms for both scientific and commercial applications. The company Terma supplies spacecraft electronics and systems that are critical to ESA missions. With *Denmark's Strategy for Space Research and Innovation 2025-2035*<sup>4</sup>, the Danish government has made it clear that space is not just a matter of science, but also of resilience and competitiveness.

"Space research, space tech, and space-based solutions play a key role for our planet, our societies, and our lives," said Christina Egelund, Denmark's Minister for Higher Education and Science, when the strategy was presented

earlier this year. The establishment of Space Denmark as a unifying industry platform further demonstrates the country's ambition to embed itself more deeply into European programmes.

For Denmark, a great opportunity lies in working even more closely with Germany. Joint R&D projects in photonics and robotics, as well as supply-chain integration into Bremen's launcher and spacecraft hubs, and the collaborative use of Copernicus, Galileo, and IRIS<sup>2</sup> data, all offer pathways for Denmark to scale its influence. With Germany as the industrial engine, Denmark can contribute with precision technologies that make the European machine run smoother.

*Denmark's Strategy for Space Research and Innovation 2025-2035* sets a clear course for strengthening the country's role in the global space economy by linking research, technology, and industry to national resilience and competitiveness. The strategy envisions an increase in total public funding for space research, innovation, and technology development from approximately DKK 522 million in 2025 to around DKK 771 million by 2035, marking a significant long-term commitment to expand Denmark's space capabilities and industrial impact.

### WHAT IS "NEWSPACE"?

"NewSpace" refers to the wave of commercialisation and innovation that is transforming the global space sector. Unlike the traditional, government-driven "Old Space" mode, where national agencies commissioned a small number of large contractors to deliver complex mission, NewSpace is characterised by private initiative, venture capital, rapid prototyping, and small, agile companies developing cost-effective technologies. It brings a startup mindset to space: faster development cycles, reusable systems, and applications beyond exploration, including communications, Earth observation, and climate monitoring. Germany's space policy now seeks to bridge these worlds: maintaining its excellence in institutional programs while nurturing a competitive and entrepreneurial ecosystem.

## RISING INVESTMENT, RISING STAKES

Europe's space sector is entering a period of renewed momentum. According to the European Space Policy Institute, venture investment in European space startups reached €1.5 billion in 2024, a 56% increase over the previous year. Much of this growth is directed toward security and connectivity, signalling that private capital is aligning with Europe's strategic priorities.

But the risks are equally clear. Delays in the Ariane 6 launcher have forced Europe to depend on non-European rockets, a reminder of the cost of strategic gaps. An EU audit has warned that the Galileo and Copernicus services are underutilised, meaning Europe is not yet fully reaping the benefits of its own investments. And as mega-constellations in the US and China race ahead, Europe risks losing market share and influence unless it can match speed with scale.

## DENMARK'S MOMENT IN EUROPE'S SPACE

Europe's space moment is now. Delay risks irrelevance, dependency, and diminished sovereignty. Germany is already the driving force, investing heavily and cultivating a dynamic industrial base. Denmark, though smaller, has sharp technological strengths that align perfectly with Europe's flagship missions and with Germany's industrial capacity.

For Denmark, the path forward is clear: deepen participation in EU and ESA programmes, integrate into German clusters, and position niche technologies as indispensable components of Europe's collective ambitions. Space is no longer just about satellites. It is about sovereignty, security, and Europe's ability to shape the rules of the future global order.

### ESA'S FUNDING MODEL

ESA's funding model is based on the principle of "geographical return" (geo-return). This means that when a member state contributes to ESA's budget, it can expect that a roughly equivalent share of contracts will flow back to its national industry. This approach has a multiplier effect.

By channelling contracts across member states, ESA spreads technological capabilities widely, reduces the risk of industrial concentration, and strengthens Europe's collective resilience. It also de-risks innovation: small companies can test technologies in ESA projects, building credibility that later helps them secure private capital or expand into commercial markets.

At the ESA ministerial conference in Paris on 22-23 November 2022, Denmark committed approximately DKK 734 million to ESA's space programmes and development activities for the period 2023-2025, which, if distributed evenly, corresponds to roughly DKK 245 million per year (about €33 million annually).<sup>5</sup>



<sup>4</sup> <https://ufm.dk/en/publications/2024/strategy-for-space-research-and-innovation>

<sup>5</sup> Source: <https://ufm.dk/aktuelt/nyheder/2022/danmarks-bidrag-til-esas-rumprogrammer-i-2023-2025>



# GERMANY AS A SPACE LOCATION

Germany is positioning itself as a significant player in the global space industry, with its space sector generating around 3 billion euros in revenue in 2024. The German space industry employs approximately 10,000 people, underscoring its significance in the country's economy. As part of ESA, Germany is a major contributor, pledging 951.6 million euros to ESA's 2025 budget.

The German aerospace and defence manufacturing market, which includes the space sector, is projected to add 18.66 billion USD in value to the economy in 2025, with an expected annual growth rate of 4.89% from 2025 to 2029. This growth is part of a broader trend in Europe's space economy, which generated 12.6 billion euros in 2023.

A mix of established companies and innovative startups characterises Germany's space industry. For example, Isar Aerospace in Munich is developing a launch vehicle for small satellites, showcasing the country's involvement in the NewSpace Economy. This aligns with the global trend of increasing satellite deployments, with projections suggesting the number of satellites will nearly triple to 38,000 by 2033.

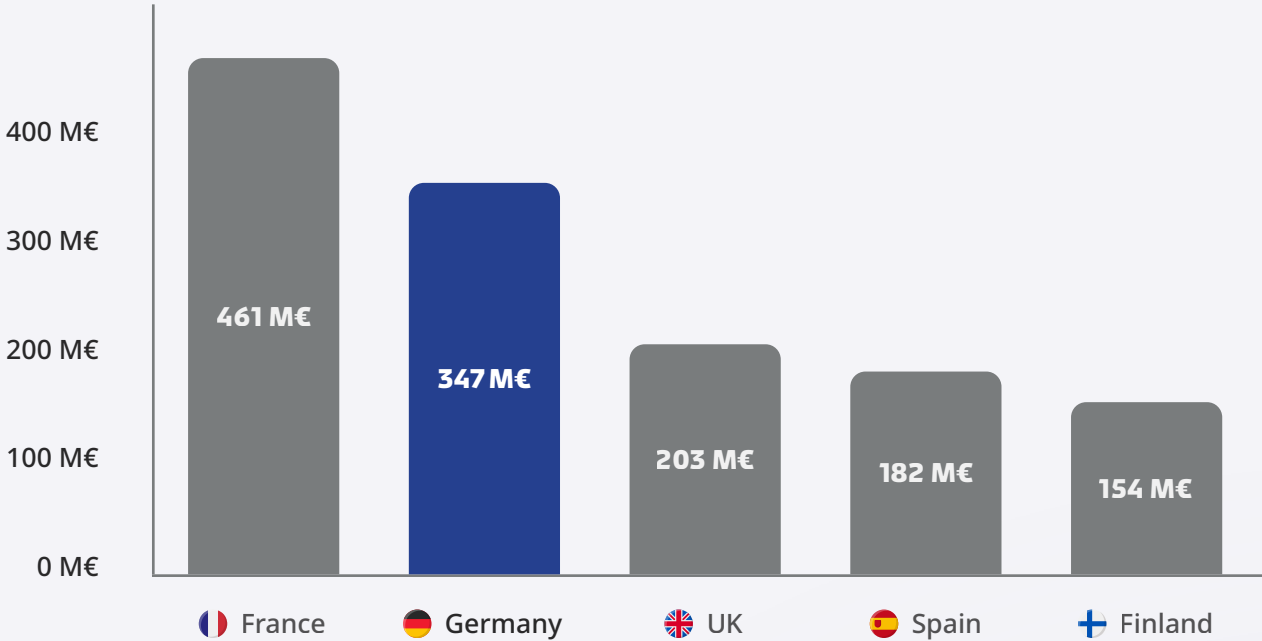


**Manfred Otto**  
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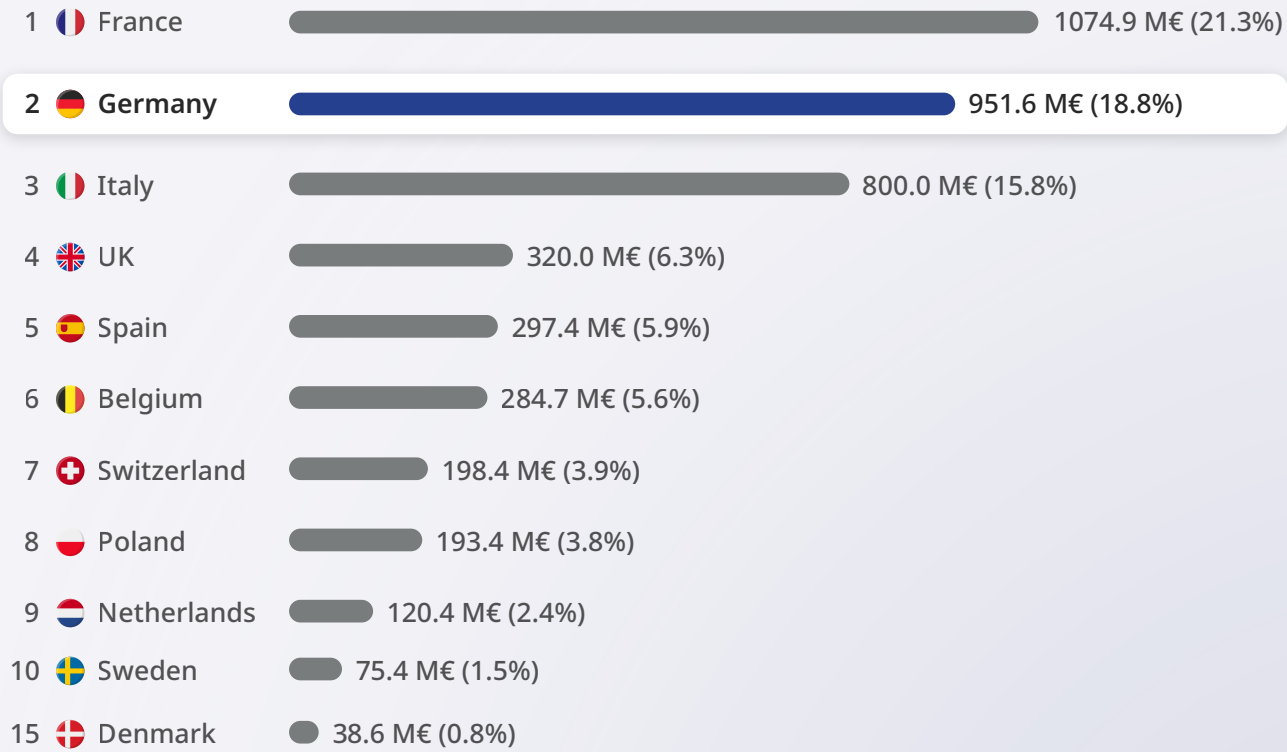
“  
*For decades, Terma has been a trusted partner in the German and European space industry, serving key organizations such as ESA, EUMETSAT, and DLR. Through our advanced Flight and Ground Segment products, we are proud to showcase the strong opportunities for Danish companies to expand and collaborate in one of Europe's most advanced space markets.*

Source: Statista

## EUROPEAN SPACE VENTURE INVESTMENT BY COUNTRY (2024)



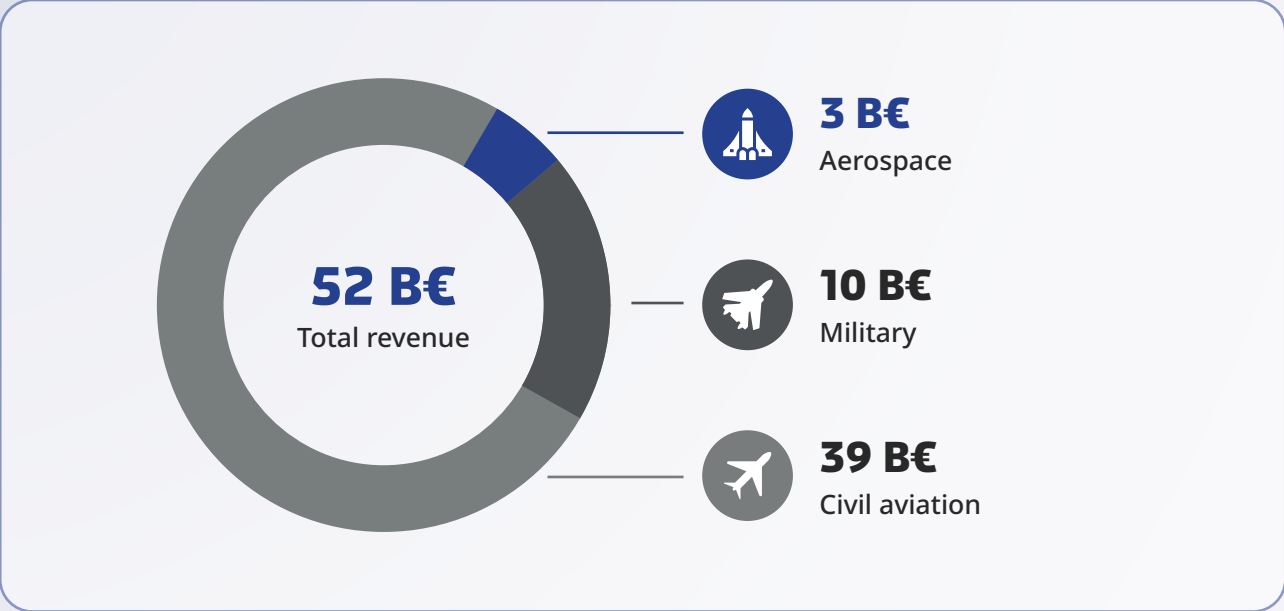
## TOP 10 ESA CONTRIBUTORS (2025)



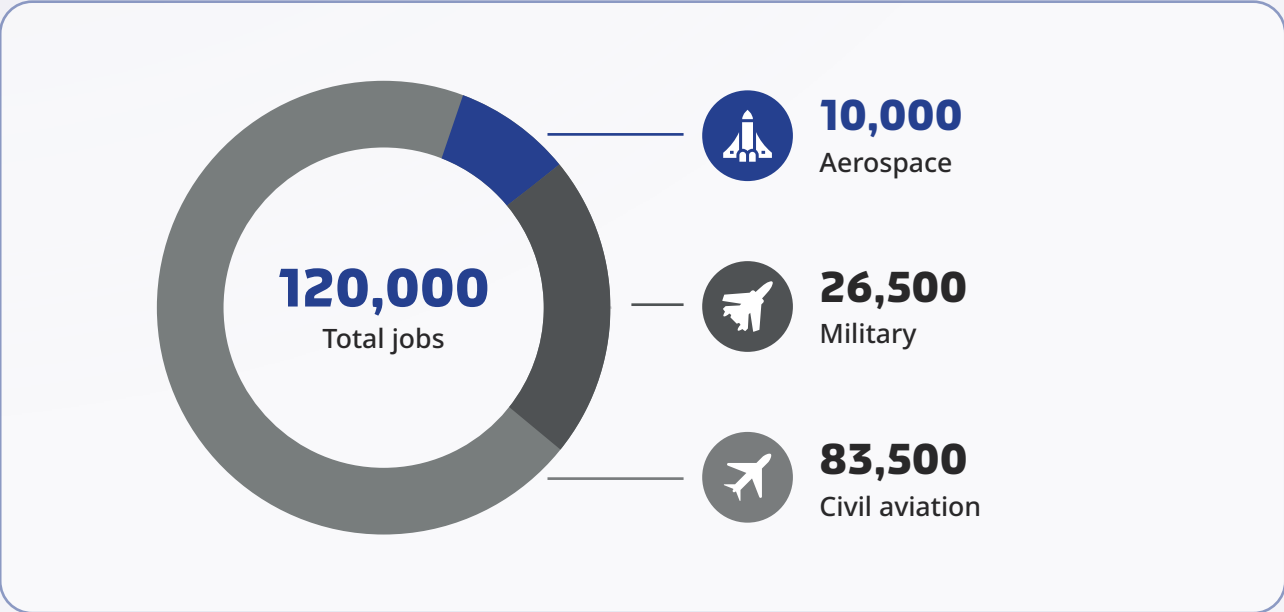
Source: Statista



GERMAN AEROSPACE AND DEFENSE INDUSTRY REVENUE (2024)

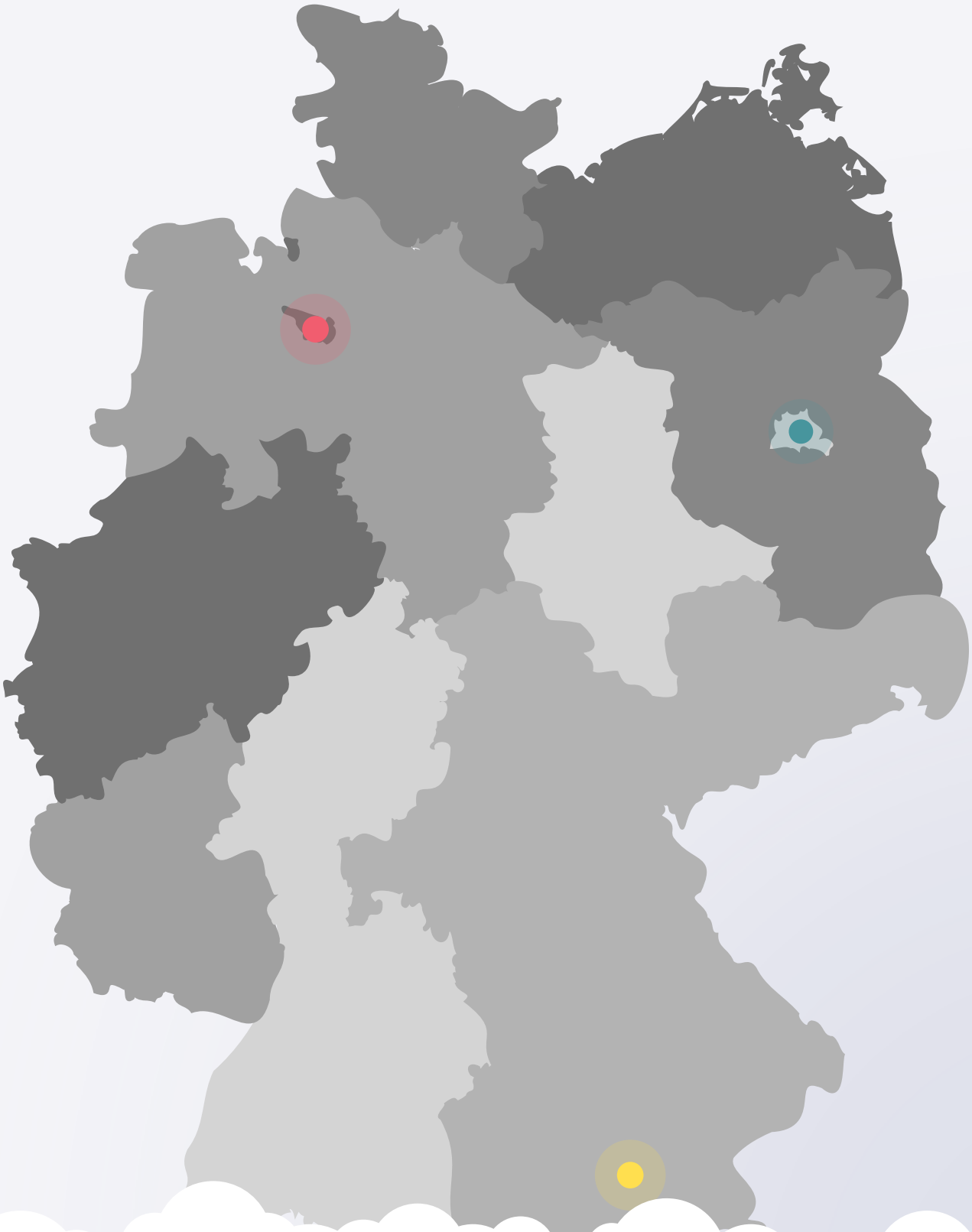


GERMAN AEROSPACE AND DEFENSE INDUSTRY EMPLOYMENT (2024)



Source: Bundesverband der Deutschen luft- und Raumfahrtindustrie e V

DISTRIBUTION OF GERMAN NEWSPACE STARTUPS BY REGION





# BAVARIA'S ROLE IN SHAPING EUROPE'S SPACE FUTURE

**Bavaria is positioning itself as the driving force of Europe's NewSpace era, combining industrial depth, academic excellence, and startup energy to turn sovereignty into a tangible reality. By aligning regional innovation with European ambitions, Bavaria is proving that Europe's future in space will be built not only in Brussels or Berlin, but in the regions where research, talent, and entrepreneurship intersect.**

Bavaria has long been one of Europe's strongest aerospace regions. Still, in the age of NewSpace, it is positioning itself not just as a participant but as a driver of Europe's future capabilities. With its mix of established giants, disruptive startups, and forward-looking policies, Bavaria is laying the foundations for sovereignty, innovation, and global competitiveness in space.



**Tobias Gotthardt**

State Secretary in the Bavarian Ministry of Economic Affairs, Regional Development and Energy

"Bavaria is one of Europe's leading aerospace regions, combining a strong industrial base with a vibrant NewSpace scene," says Tobias Gotthardt, State Secretary in the Bavarian Ministry of Economic Affairs, Regional Development and Energy, and adds:

"This diversity of established industry, SMEs, and new ventures creates a uniquely dynamic ecosystem that covers the entire value chain."

Supported by hubs like the Technical University of Munich, the ESA Business Incubation Center (BIC) Bavaria, and networks such as Munich Aerospace and the Cluster Aerospace, Bavaria's strategy rests on four pillars: investing in research infrastructure, fostering innovation, enabling knowledge transfer, and supporting startups.

## REGIONAL STRENGTHS DRIVING EUROPEAN AMBITIONS

For Gotthardt, regional and local governments are where space ambitions become concrete. "Regional environments are often the level where talent is educated, where infrastructure is built, and where innovation is first tested. No one is closer to entrepreneurs and companies," he explains.

Through networks such as the European Committee of the Regions and NEREUS, Bavaria connects with other European regions to align innovation and funding with Europe's space agenda. This regional anchoring, Gotthardt stresses, is essential for Europe's global competitiveness:

"By coordinating local innovation funding with European programs, regions like Bavaria help Europe remain competitive globally while also creating direct opportunities for cooperation with partners abroad."

Bavaria today ranks as Germany's leading startup region. Initiatives such as "Gründerland

Bayern" and public investment arms like Bayern Kapital are designed to make Bavaria attractive to both foreign and domestic investors.

"In Bavaria, young companies receive early support, mentoring, and access to networks that increase their attractiveness for investors," Gotthardt says, pointing to the ESA BIC Bavaria and TUM Venture Labs as engines of entrepreneurial growth. These, combined with strong industrial links, make Bavaria "an ideal entry point for investors looking to engage in Europe's NewSpace sector."



*In Bavaria, young companies receive early support, mentoring and access to networks that increase their attractiveness for investors*

## BALANCING TRADITION AND DISRUPTION

Balancing Bavaria's aerospace legacy with the momentum for NewSpace startups is a both a challenge and an opportunity for the federal state. Gotthardt outlines a four-pillar approach: investment in research infrastructure, dedicated funding programmes, strong knowledge transfer networks, and startup-friendly incubators.

"This holistic strategy ensures that both established aerospace leaders and emerging NewSpace players in Bavaria can thrive side by side, not in competition, but as complementary forces shaping Europe's future in space," he says.

Since 2018, Bavaria has invested more than €245 million in its space sector.

Like much of Europe, Bavaria faces challenges in regulation, talent, and infrastructure. Traditional approval processes, designed for large-scale

projects, must adapt to the rapid pace of NewSpace. At the same time, global competition for highly skilled talent is intensifying.

"Regulation and approval processes must adapt to the much faster cycles of startups and new ventures," Gotthardt stresses.

Bavaria is responding by expanding training capacities, advocating for innovation-friendly regulation, and investing in infrastructure that supports SMEs and startups.

"Working closely with the German Federal Government, the German Space Agency and European institutions such as ESA, Bavaria helps turn structural challenges into drivers for modernisation and competitiveness," Gotthardt says.





Credit: ESA - Philippe Sebirot  
Josef Aschbacher (left), ESA Director General, welcomes Tobias Gotthardt (right), State Secretary at the Bavarian State Ministry of Economic Affairs, Regional Development and Energy, at ESA's stand at the 75th International Astronautical Congress in Milan.

# COOPERATION BEYOND BORDERS

Regional cooperation is another cornerstone of Bavaria's strategy. Through networks such as NEREUS and initiatives like INTERREG, Bavaria fosters collaboration across regions and countries.

Looking ahead, Gotthardt highlights the Munich Space Summit 2026, organised by Munich Aerospace and the University of the Bundeswehr Munich, as a key event to strengthen cross-border exchange.

"By linking regional strengths and aligning them with European ambitions, we can create a more integrated and competitive European space ecosystem – one that is also open for cooperation with partners like Denmark," he says.

Bavaria already plays a flagship role in European space through the Galileo Control Center in Oberpfaffenhofen. But its ambitions reach further: Bavaria is preparing to host the Human Exploration Control Centre (HECC), which will coordinate future European missions to the Moon and beyond.

"This will mark a new era of exploration and ensure that Bavaria contributes directly to Europe's most ambitious space endeavours," Gotthardt explains.

Alongside exploration, Bavaria is driving innovation in microlaunchers, Earth observation, secure communications, and defence applications.

# PARTNERSHIPS WITH DENMARK AND BEYOND

Gotthardt sees strong complementarities between Bavaria and Denmark.

"Denmark is well known for its expertise in CubeSats, Earth Observation, and maritime and Arctic applications, while Bavaria combines this with a broad industrial base," he says.

This opens opportunities for joint payloads, technology partnerships, and supply-chain integration. Events such as the Munich Space Summit 2026 can further deepen collaboration. By 2030, Gotthardt believes success will be measured not by a single number but by multiple outcomes: sovereignty in launchers and secure communications, a thriving ecosystem



*With us working together, there is no doubt: Europe's sky is open*

of startups and established firms, integration of space services into everyday society, and international recognition of Europe as a leader in space.

"With us working together, there is no doubt: Europe's sky is open," he concludes.



# UNIVERSITIES AS ENGINES OF EUROPE'S SPACE FUTURE

Europe's space sovereignty will not be built in ministries or boardrooms, but in universities where research, talent, and entrepreneurship converge to shape the foundations of the NewSpace economy. By linking science with startups and public ambition with private capital, universities like the Technical University of Munich (TUM) are turning Europe's quest for autonomy in space into a reality grounded in innovation and collaboration.

In the debate on Europe's space sovereignty, one factor is often underestimated: the role of universities. While space agencies and industry incumbents dominate headlines, universities remain the crucibles where innovation is nurtured, talent is trained, and tomorrow's ventures take root.

In the emerging NewSpace economy, driven not only by science and national pride but by commercial applications, universities anchor ecosystems that blend research, entrepreneurship, and cross-border collaboration.

As Florian Dötzer, Head of the TUM Venture Lab Aerospace, puts it:

"Universities are the connectors. They bring together scientists, students, startups, and industry. Without them, there is no foundation for Europe to build independent space capabilities."



*Without universities, there is no foundation for Europe to build independent space capabilities*



**Florian Dötzer**

Head of TUM Venture Lab Aerospace

## FROM RESEARCH LAB TO MARKET IMPACT

The Technical University of Munich (TUM) illustrates this principle. Through its Venture Labs, a joint initiative with UnternehmerTUM, Europe's largest entrepreneurship centre, TUM has built a bridge between fundamental research and market-ready space solutions.

The labs focus on deep-tech domains such as aerospace, quantum, and biotech. They operate closely with academic departments while connecting startups to investors and industry networks.

"We are not silos. Every week, all lab staff spend a full day together to make sure we connect across domains. That becomes one of the biggest assets we have," Dötzer explains.

This model accelerates the transition from university research to commercial applications in areas such as satellite communications, earth observation, and launch technologies.

## UNIVERSITIES AS STRATEGIC ANCHORS

The NewSpace economy is defined by its shift from government-driven projects to commercially viable ventures. Private investment is a catalyst here.

"Space has historically mainly depended on governments and public contracts," Dötzer notes. "But what happened under the buzzword NewSpace is that many things became commercial. SatCom, satellite navigation, earth observation. These are now real businesses, often serving unexpected markets. That opens the door for private capital."

Private investors bring speed and risk appetite. As Dötzer puts it:

"Private money is much faster. I wouldn't say limitless, but from a startup perspective, almost limitless, as long as you have a scalable business case."

This highlights a significant cultural difference between Europe and the United States in terms of innovation and investment. In the US, investors tend to display a much higher tolerance for risk, readily backing ambitious projects even if the outcomes are uncertain. Europe, by contrast, often approaches innovation with greater caution, focusing on ensuring safety, control, and the ability to manage every step.

"This careful approach has its strengths, but it can also limit the speed and scale of growth. For Europe to truly accelerate and compete on a global level, a shift toward embracing more risk-taking will be necessary," Dötzer says.

Beyond providing capital, universities contribute a systemic depth that startups and private investors cannot achieve on their own. Through aerospace research, they generate the intellectual raw material that fuels new ventures, while also cultivating talent pipelines by training the next generation of engineers and entrepreneurs.

At the same time, universities act as connectors within broader collaboration ecosystems, linking ministries, agencies, startups, and established companies. This multifaceted role makes them indispensable in balancing national sovereignty with market dynamics.

"We need to broaden the understanding, that space industry is not about putting astronauts on the moon. It's about securing essential services for our industry and society to be independent. Universities are where the technical foundation is built," says Dötzer.





## BALANCING INCUMBENTS AND STARTUPS

Europe cannot rely on external providers. Dötzer points to Starlink as the prime example:

"There are about 13,000 satellites in orbit, and 9,000 belong to one company. That can't be good, whether it's American or not."

Universities help Europe design sovereignty into its space systems from the start. They work on technologies and standards within open, transparent frameworks, ensuring that Europe retains control over the DNA of its space infrastructure.

Government also has a role; not to replace markets, but to enable them.

"When it comes to sovereignty issues, private companies won't enter because there's no market. That's where government must step in. In a growing number of cases however, it's

more about market access, where government can play a vital role as an anchor customer, for example, underwriting the first rocket launches so startups can get insurance," Dötzer notes.

Europe's space ecosystem includes both long-established aerospace players and agile startups. Managing this balance is critical.

"There will be friction between incumbents and new entrants," Dötzer admits and adds: "But space is not an industry where startups can replace everything. Established players also have an important role in testing, verifying, and qualifying. The problem is when lobbying by incumbents only seeks more government money for old programmes. That doesn't scale."

The challenge is to create models that enable startups to compete for larger contracts without being hindered by outdated rules or gatekeepers.

## COLLABORATION POTENTIAL

Europe's strength lies in collaboration across regions and specialisations.

"Every region has its own strengths. The first step is a sound strategy of what you do, and what you don't do, so others can come in. That creates win-win scenarios," says Dötzer.

He points to the strong potential for collaboration between the German and Danish ecosystems. With DTU's expertise in areas such as photonics, AI, and nanosatellites complementing Munich's focus areas, the two regions are naturally aligned. Universities, with their openness to collaboration, serve as ideal entry points for building these cross-border partnerships.

This principle extends beyond national borders: "From a commercial point of view, we don't see country boundaries. Whether I collaborate with a team in Bremen, Copenhagen, or Stockholm doesn't matter. What matters is the business reason. That's why we have the EU," Dötzer says. Bavaria is a leading example of space hotspots, but not the only ones. Bremen is another stronghold, with its own niche.



*Every region has its own strengths. The first step is a sound strategy of what you do, and what you don't do, so others can come in. That creates win-win scenarios*

"There will always be hotspots," Dötzer reflects and adds: "The key is that they focus on their specific strengths, not try to do everything under the sun. And then we connect them. That's how Europe becomes competitive."

Europe's competitiveness in space will not be determined solely by agencies or incumbents. It will be shaped in classrooms, labs, and venture hubs, where universities cultivate the talent, ideas, and startups that define the NewSpace age.

"If we want European sovereignty in space, it starts at the universities. Without them, we have no foundation to build on."

## UNIVERSITIES DEMONSTRATE HOW EUROPE CAN EMBED SOVEREIGNTY INTO ITS SPACE AMBITIONS:

- Anchor ecosystems in universities, where knowledge, talent, and collaboration converge.
- Leverage private capital while using government as an enabler, not a substitute.
- Balance incumbents and startups, ensuring rules allow new entrants to scale.
- Build sovereignty by design, reducing dependence on non-European providers.
- Connect regional hotspots, leveraging local strengths to drive European competitiveness.



Credit: TUM Venture Lab Aerospace

### TUM VENTURE LAB AEROSPACE

TUM Venture Lab Aerospace is part of a network of 12 Venture Labs at the Technical University of Munich (TUM), developed in collaboration with UnternehmerTUM, Europe's largest entrepreneurship centre. These labs are not "labs" in the traditional sense, but ecosystem hubs designed to accelerate deep-tech startups.

TUM Venture Lab Aerospace serves as Munich's innovation hub for aerospace entrepreneurship, transforming university research into market-ready space technologies, providing startups with resources and networks, and integrating them into both the German and European space ecosystems.



# GERMANY'S BIG LEAP: THE ENGINE BEHIND EUROPE'S SPACE RACE

Germany has become the anchor of Europe's space ambitions, combining financial strength, industrial depth, and scientific excellence to turn sovereignty into strategy. By linking national investment with European cooperation, Germany is shaping a space ecosystem in which research, startups, and industry work together to secure Europe's autonomy, competitiveness, and leadership in orbit and beyond.

Germany is on track to become one of ESA's most significant financial contributors in 2025, committing nearly €952 million. This commitment goes beyond numbers. It reflects a vision for Europe's leadership in space in a time of global competition.

"The financial commitment to ESA is more than a budget line. It is a strategic investment into Europe's capacity to remain a strong and independent space power," says Dr. Andreas

Lermann, Managing Director at Munich Aerospace.

Munich Aerospace serves as a bridge between academia, research, and industry, ensuring that innovations transition smoothly from the lab to the market.

According to Lermann, the investment fuels Europe's flagship space programmes, from satellite navigation and Earth observation to secure communications, while opening new frontiers in orbital sustainability and commercial access to space.

"Germany's strong contribution also enables it to influence the strategic direction of ESA, to strengthen its industrial base, and to help set the standards that will shape the next generation of technologies. In short, it reflects Germany's determination to ensure that Europe is not simply a participant, but a leader, in the global space race," Lermann says.



**Dr. Andreas Lermann**  
Managing Director at Munich Aerospace

## ANCHORING AUTONOMY AND BUILDING REGIONAL STRENGTHS

For Lermann, strategic autonomy in space is not about isolation but about ensuring resilience and freedom of action. Germany plays a pivotal role by combining industrial strength, research excellence, and political credibility within the European framework. By driving flagship programmes such as Galileo and IRIS<sup>2</sup>, Germany helps secure Europe's independent capabilities in navigation, secure communications, and launcher access.

"Germany ensures that Europe maintains its own navigation systems, Earth observation capabilities, and increasingly also secure communications and launcher access," he explains and adds: "The balancing act between reliability and agility is central to Europe's ability to stand on equal footing with the US and China."

Bavaria, in particular, illustrates how this vision can be grounded in a regional context. The state's dense ecosystem of universities, research organisations, industrial champions, and startups creates fertile ground for innovation. According to Lermann, Bavaria is powerful in optical and secure satellite communications, resilient navigation and timing systems, and advanced manufacturing.

"Its real strength is the integration of proven German engineering quality with the agility demanded by the NewSpace economy," he stresses.

Germany's other hubs, such as Bremen and Baden-Württemberg, play equally vital roles in creating Europe's competitive edge. Together, these regions shorten the path from research to market and reduce fragmentation by fostering collaboration between academia, research organisations, and industry. They act not only as national but European engines of innovation.



*Its real strength is the integration of proven German engineering quality with the agility demanded by the NewSpace economy*







## AN ECOSYSTEM OF GIANTS, STARTUPS, AND INVESTORS

Germany's space sector demonstrates how established aerospace giants and startups complement one another rather than compete. Large companies provide expertise, capacity, and global reach, while startups inject creativity, speed, and disruptive solutions.

"The German space sector shows that established giants and startups are not competitors in a zero-sum game but rather complementary forces in one ecosystem. Large companies bring long-standing expertise and global networks. Startups bring speed, creativity, and disruptive

ideas. When these elements are combined, Europe gains both credibility and dynamism," Lermann explains.

This complementarity also makes Germany highly attractive to investors. The country's reputation for engineering excellence, combined with strong research institutions and a well-educated workforce, gives startups both credibility and the ability to scale. Integration into European programmes further increases the appeal, allowing young companies to expand beyond national borders from the very beginning.

” *The German space sector shows that established giants and startups are not competitors in a zero-sum game*

## CROSS-BORDER PARTNERSHIPS: DENMARK AND GERMANY

Beyond national strengths, Lermann sees strong potential in German-Danish collaboration. "Denmark's agile smallsat platforms and advanced electronics can integrate with Germany's industrial base and access to large-scale production. Together, we can ensure Europe remains competitive against global players," he says.

This type of partnership is just as much about culture as it is about technology. Denmark's speed, flat hierarchies, and openness to experimentation can inspire Germany to move faster, while Germany's scale, industrial reliability, and regulatory expertise can give Danish innovation a path to larger markets.

"Denmark's speed with Germany's scale, agility with reliability, that is a model of European collaboration that is greater than the sum of its parts," Lermann remarks.

By 2030, Lermann envisions Germany not just as a financial contributor but as a recognised leader in shaping Europe's space strategy. Success will be defined by a thriving ecosystem where startups, research institutions, and industry work seamlessly together, by resilience in critical areas such as navigation and communications, and by true European strategic autonomy.

"Ultimately, success will be measured not only by technical achievements but by Europe's ability to collaborate across nations, sectors, and disciplines," Lermann concludes.



# HOW EUROPE IS ENGINEERING ITS SPACE INDEPENDENCE

Europe's future in space will hinge on its ability to turn its scientific excellence and industrial capacity into strategic independence. By combining Germany's scale and systems integration with Denmark's innovation in emerging technologies, Europe is building the capabilities, and the confidence, to act autonomously in orbit and beyond.

Europe has built a strong foundation in space. From pioneering Earth observation missions to shaping the Galileo navigation system and advancing scientific exploration, Europe today ranks among the leading global powers in space technology. For Sabine von der Recke, Member of the Management Board at OHB SE, responsible for Political Relations, Customer Relations, and

Communications, the task ahead is not about catching up, but about building on these unique strengths to secure Europe's strategic autonomy.

"Europe is very, very good when it comes to technology, especially Earth observation. I would say we are nearly the best in the world," von der Recke emphasises. "We have knowledge, heritage, and highly skilled people. These are our strongest assets."

Based in Bremen, OHB SE is one of Europe's foremost space system integrators, shaping many of the satellites and missions that underpin Europe's autonomy in orbit. From Galileo navigation satellites to advanced Earth observation systems, OHB bridges public missions and commercial innovation across the continent.



**Sabine von der Recke**

Member of the Management Board at OHB SE

## GERMANY AS A CORNERSTONE OF EUROPEAN AUTONOMY

Germany sits at the heart of Europe's space ecosystem. As the continent's largest economy, it provides the industrial capacity, research excellence, and political commitment needed to secure sovereignty in space.

"We need more space for sovereignty in Europe, not only for sovereignty in space, but for overall sovereignty," von der Recke says. "Germany, with its industry, ideas, and increasing budgets, is well-positioned to provide that."

Germany is home to multiple system integrators such as OHB and Airbus, supported by a strong network of suppliers and payload specialists.

"We have a very, very broad skill set. We have outstanding suppliers, especially when it comes to payloads, instruments, and everything you need if you want to go to space," she says.



*Launchers are the crucial part of space. Here, too, we see cooperation between system integrators, startups, and SMEs closing important gaps*

Germany also has a deep heritage in launchers, both through long-standing contributions to the Ariane programme and through new initiatives like Rocket Factory Augsburg.

"Launchers are the crucial part of space. Here, too, we see cooperation between system integrators, startups, and SMEs closing important gaps," von der Recke adds.

## THE ENGINE OF RESILIENCE

Another defining feature of Germany's space ecosystem is the Mittelstand, the family-owned, long-standing companies that form the backbone of the country's industrial strength. These firms are often deeply rooted in their regions and play a crucial role in ensuring resilience and continuity.

"They are essential in the German ecosystem, not only in space. Most of them are family-run, they have a very long history, and they invest not only for themselves but also for their country," von der Recke says.

What makes this tradition even more effective is Germany's strong culture of competition. Large system integrators, suppliers, SMEs, and startups all operate in an environment where innovation is rewarded, and barriers to entry are relatively low.

"What is always very important in Germany is competition. We try to have competitive systems as often as possible. That results in a very healthy industrial environment, because everybody is aware that if you have a good product, good people, and a bit of luck, then you can succeed. It's not a closed shop," she adds.





## FROM LAB TO LAUNCHPAD

Germany's research landscape is another defining strength of its space ecosystem. Bavaria has emerged as a hub, with leading universities driving deep-tech research, nurturing startups, and collaborating closely with industry.

"In Munich, you have TUM, the Technical University of Munich, and LMU, Ludwig Maximilian University. They collaborate very strongly with industry and startups, and they are really fostering the transfer of technology directly into business. That kind of cooperation with spin-offs moving from university into industry is really a key factor," von der Recke says.

The University of the Bundeswehr Munich further strengthens this ecosystem with a dedicated space centre, the SPACE Research Centre.

"They support their students to create something out of their research. It's about ensuring innovation does not just stay in the lab but is turned into applications," von der Recke adds.

Such close cooperation between academia and industry has been critical for Germany's rise in space, even when public budgets for space programs were modest. The result is a steady talent pipeline of engineers, scientists, and entrepreneurs feeding into the German space ecosystem.

"This is one of the reasons why we have such highly skilled people. It's a strength that gives us resilience, because knowledge and talent are just as important as hardware," von der Recke explains.

## SYNERGIES WITH DENMARK

Germany's strong industrial base creates natural openings for cooperation with Denmark, particularly in areas where Danish research and companies excel.

"AI and robotics are areas where we clearly need to integrate much more into our missions," von der Recke says. "Photonics, meanwhile, will be essential for the development of optical communication systems."

These domains are already shaping the future of space: autonomous satellites will rely on AI to process data and respond in real time, robotics will enable in-orbit servicing and exploration, and photonics will provide secure, high-capacity links across satellite constellations. Denmark's expertise in these areas makes it an ideal complement to Germany's large-scale industrial and research capabilities.

Danish-German cooperation in space is not just a future possibility; it is already happening. OHB has collaborated with a Danish student group on a planned launch mission and is working on

maritime-space solutions, such as ship tracking, where Denmark's strengths in maritime technology naturally align with space-based applications.

Danish suppliers also play a role in OHB's supply chain, showing how even smaller actors with niche strengths can become part of Europe's major space projects.

"We already have a stable relationship," von der Recke notes. "And since the space sector is booming, I am sure that cooperation between German and Danish companies will only grow."

Europe already has the technology, talent, and industrial base to be a leader in space. Germany's scale and capabilities make it the cornerstone of this ecosystem, while Denmark's strengths in photonics, AI, and robotics add complementary value.

"Europe has the knowledge and the people. Now we must continue to build on these strengths and take the next steps," von der Recke concludes.



