Roland Berger

Key technology enablers for unlocking the potential of the Low Earth Orbit Economy



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An economic revolution in space: The low Earth orbit economy could be worth over a trillion euros to the global economy by 2040

Study Download

- Roland Berger and LEOconomy present new study on the economic potential of the low Earth orbit economy
- The low Earth orbit economy will revolutionize traditional industries; market for microgravity use cases in the

pharmaceutical industry estimated at 30 billion euros Europe can be a leading player in the low Earth orbit economy if it lays the necessary political, technological and financial foundations

<u>Munich, June 2025</u>: The economic utilization of low Earth orbit (between 160 km and 2,000 km above the Earth's surface) is already a reality and will set new standards for our life in the future. In times of geopolitical tension and economic uncertainty, it is now more important than ever to develop the low Earth orbit economy rapidly. In their latest study, Roland Berger and LEOconomy highlight how the low Earth orbit economy can radically change modern economies and point out what foundations need to be in place to reap the potential.

"The low Earth orbit economy is developing into one of the most dynamic markets of the future – with huge innovation potential. It could contribute more than a trillion euros to the global economy by 2040. Driven by technological advancements in the space sector and the political ambitions of spacefaring nations like the United States and China, the low Earth orbit economy has the potential to unlock innovation, redefine traditional 'on-Earth' industries and ultimately create jobs. It is uniquely driving future technologies in areas like telecommunications, energy, environment, agriculture and logistics. Microgravity in particular is opening up brand new possibilities in materials science and medicine – specifically, things that are currently impossible on Earth," says Manfred Hader, Partner at Roland Berger.

In times of geopolitical tension and economic uncertainty, the development of the low Earth orbit economy is strategically important as a way for Europe to reduce its dependency on non-European actors and to permanently strengthen the continent's technological sovereignty. However, successfully developing a low Earth orbit economy in Europe comes with a raft of complex challenges:

Political support is vital in order to encourage European players to actively participate in the development of the low Earth orbit economy. To start with, the establishment of clear and transparent regulations as well as uniform standards will build the necessary basis. Things that need to be permanently regulated include space operations, ownership and usage rights, as well as safety and data processing in low Earth orbit.

Then, publicly funded programs can, at least initially, support the development of cutting-edge technologies such as in-orbit manufacturing capabilities and servicing technology. But securing investments through public-private partnerships and innovative financial instruments is essential to fund large-scale space projects.

Four domains for the low Earth orbit economy

The first domain for the low Earth orbit economy is in-space infrastructure, where the use cases range from constructing spacecraft to building in-orbit logistical hubs to relocating data storage into space as a way to prevent high energy consumption on Earth.

A second key domain is in-space services. Use cases include experimentation under microgravity and the creation of advanced materials with unique properties for industrial applications. For example, the study authors estimate the market for microgravity applications for the pharmaceutical industry to be worth around 30 billion euros.

In-space manufacturing is the third domain, where use cases include among others manufacturing high-quality semiconductor crystals and developing superior pharmaceuticals, such as crystallized proteins, that cannot be produced on Earth.

Finally, the low Earth orbit economy will produce technology spin-offs for Earth applications – for example, use cases for environmental technologies, robotics, or materials originally designed for space missions.

"Europe must take an active and leading position in the low Earth orbit economy – developing it is crucial for our continent's economic growth, technology innovation, climate protection and strategic independence. The space economy is much bigger than the space industry. That is why one of the key tasks is to raise awareness among the various stakeholders and decision-makers, especially those outside of the space industry, and communicate the potential. This calls for extensive cooperation to unlock innovative ideas and associated resources," says Matthias Spott, founder and CEO of LEOconomy.

Roadmap for a successful low Earth orbit economy

Creating a sustainable and viable low Earth orbit economy is a long-term endeavor. The experts from Roland Berger and LEOconomy have identified the following initiatives for the various players as steps toward succeeding in this future market:

For the public sector, including space agencies and regulators, short-term tasks include jointly developing policies that support the growth of commercial space activities while ensuring safety and sustainability. At the same time, these bodies should work toward international harmonization of space activities by establishing standards in order to facilitate global cooperation and innovation.

Banks and other investors can play an active role in developing the low Earth orbit economy by establishing dedicated funds to provide capital for space exploration concerns, as well as fostering partnerships between public and private sector players.

Targeted investments in research and development by the space industry and the non-space industry alike will enable the development of necessary key technologies. Both of these groups of players should also identify new markets for space-based products and services, both in space and on Earth, in order to showcase tangible use cases to the market.

Partnerships between industry and the space sector can enable pilot projects aimed at testing the feasibility and benefits of integrating space technologies in terrestrial operations (and vice versa).

Research institutes and universities also have an important role to play in technology development and basic research. With customized educational programs, they can help to build the next generation of skilled workforce.

About Roland Berger

Roland Berger is one of the world's leading strategy consultancies with a wide-ranging service portfolio for all relevant industries and business functions. Founded in 1967, Roland Berger is headquartered in Munich. Renowned for its expertise in transformation, innovation across all industries and performance improvement, the consultancy has set itself the goal of embedding sustainability in all its projects. Roland Berger generated

revenues of around 1 billion euros in 2024.

About LEOCONOMY HOLDING GMBH

LEOconomy is a strategic space-as-a-service provider that connects traditional industries with the emerging commercial space sector. The company focuses on enabling industrial access to low Earth orbit (LEO), leveraging the unique conditions of space – such as microgravity – to drive innovation, grow business and create tangible economic value on Earth. With a strong emphasis on cross-sector collaboration and commercialization of space infrastructure, LEOconomy is developing practical use cases in various areas. LEOconomy contributes to building a sustainable and application-driven space economy.

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