

The Future of Space Flight with SpaceX's Reusable Rocket

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Client: TechDigg

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One of the key pieces of space flight has just become reusable: the rocket. Up until now, a rocket was an expensive, one-shot means of getting stuff and people up into space.

Falcon 9 first stage has landed on Of Course I Still Love You — world's first reflight of an orbital class rocket.

— SpaceX (@SpaceX) [March 30, 2017](#)

SpaceX just changed that with the [most recent launch](#) of their Falcon 9 rocket. The rocket's reusable first stage launched from NASA's Kennedy Space Center on Thursday, March 30th, separated from the second stage, and then successfully returned to Earth by landing on a barge out in the ocean.

This marks another milestone in SpaceX's [15-year history](#) of developing its [Falcon 9 rocket](#). The company began with the goal of "revolutionizing" [space technology](#) by developing a reusable rocket that could launch, then relaunch, in the same day.

[The road to here has been rocky](#) for the company, especially when it came to keeping their multi-million-dollar rockets from gloriously exploding. There have even been [plenty of doubters](#). With this last mission, however, SpaceX has overcome a lot of these obstacles.

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More importantly, the Falcon 9 just became a used rocket.

The term **‘used rocket’** might seem like something you’d find in NASA’s junk yard, but the truth is that a reusable rocket will offer a lot of benefits for the future of space flight, both in the short and long term.

Costs of a Rocket Launch

The largest factor that determines how much a rocket launch costs is weight. Since a rocket has to fight against Earth’s gravity, the weight of the rocket and all the equipment or cargo it carries will require more fuel. Fuel is expensive.

You can think of the cost of a rocket launch regarding **cost per pound**. This makes it easy to compare different rockets.

The space shuttle, for example, cost around **\$450 million for a single launch**. That might sound expensive, but it was capable of carrying up to **50,000 pounds of cargo**. That turned out to be a rather good deal, with only **\$9,000 per pound** being required to launch cargo and equipment up into orbit.



A reusable rocket can be less expensive. **SpaceX is aiming** for a cost of \$62 million per launch with a cargo load

of around 18,000 pounds. That's a cost of \$3,390 per pound. SpaceX even hopes to get this cost down to [\\$1,000 per pound](#) with their Falcon Heavy rocket.

Why This Matters

Cheaper rockets make sense on a practical level, sure. If you spend less money sending one rocket up, you have more money for other rockets to send up. At least, that was the old way of thinking.

The future of space-flight will always be influenced by the costs of sending things into space. We've seen this as NASA has [continually had its budget cut year after year](#).

The innovation of the reusable rocket will change the old way of thinking. Costs will be reduced to fuel, maintenance, and other less expensive items.

So yes, SpaceX's latest mission is hopefully a sign of cheaper things to come. But there is more to it than that.



[More: [SpaceX Prepares for Giant Venture of Bringing the Internet to Space](#)]

The fact that SpaceX has successfully reused a rocket for an operational mission shows that innovation is alive and well in the space industry. We are continuing to see the fruits of having independent, non-government entities work on space travel.

Even if NASA continues to [face a diminished future](#), the next few years of space flight are looking positive for achievements like SpaceX's successful mission.

SpaceX's Future

The company's [own future](#) may suggest what we can expect in the next year or two.

In 2017 alone, SpaceX hopes to debut their heavier rocket, the [Falcon Heavy](#). They hope to cut launch costs down with this rocket even more.

They are likely to hit another company goal by [increasing the rate of the launches](#). The company hopes to be launching a rocket every two to three weeks sometime this year.

Finally, SpaceX would eventually like to add a human element into the equation by offering [manned flights and taxi services](#) to the International Space Station for NASA with their [Dragon capsule](#).



Only time will truly tell where SpaceX and [other private companies](#) end up, but if this latest successful mission is any indication, it's going to be good. Who knows, maybe even [Mars](#) is up for grabs.