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Anthony Young

The Twenty- First Century Commercial Space Imperative



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About the Author

Anthony Young is the author of *Lunar and Planetary Rovers: The Wheels of Apollo and the Quest for Mars* (2007), and *The Saturn V F-1 Engine: Powering Apollo into History* (2009) both published by Springer. He has been a regular contributor to the online weekly *The Space Review* (www.thespacereview.com) since 2004, writing on space policy and commercial space business.

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Chapter 1

From Satellites to Spinoffs: A Brief History of Commercial Space Activity

In the early years of the twenty-first century, a series of unrelated events marked the tipping point in a new era of commercial space business, events that have formed a new commercial space imperative.

In June 2002, Elon Musk established Space Exploration Technologies—SpaceX, for short. He boldly announced he would pursue the construction of a new private launch vehicle to challenge the dominant Delta and Atlas rockets sending payloads to low Earth orbit.

On February 1, 2003, the space shuttle *Columbia* deorbited and began its reentry into Earth's atmosphere to its landing destination at Kennedy Space Center. The left wing leading edge of the shuttle had been damaged during ascent. Upon reentry, *Columbia* suffered structural failure and disintegration along with the loss of the entire crew. In January 2004, President George W. Bush announced the space shuttle would complete assembly of the International Space Station and then cease flight operations. The president also announced the Vision for Space Exploration that would employ new launch vehicles, new spacecraft and new human exploration goals. This set the stage for NASA to consider public-private partnerships to meet its mission needs (Fig. 1.1).

In June of that year, civilian test pilot Mike Melville flew the path-breaking SpaceShipOne to an altitude of 100 km above Earth into suborbital space. He experienced several minutes of weightlessness and then began a gentle aerodynamic reentry as the ship glided back to its departure point at the Mojave Airport. SpaceShipOne and its carrier aircraft WhiteKnightOne were the first privately funded and developed launch vehicles in history. Mike Melville became an astronaut that day.

These events and many others stemming from them indicated the United States in particular was now moving into a time of private space commerce and exploration. Many new businesses and smaller startups saw real possibilities in these developments, and this has been the basis of a new commercial space business economy—a new imperative.

Ever since the late 1950s, a well-defined commercial space launch market has existed in the United States. These private (non-governmental) launch service providers typically launched telecommunication satellites aboard Delta or Atlas rockets. Certain departments of the United States government, such as NASA, the