DARE TO DREAM

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Envision yourself at the rocket launch. As the countdown begins, you suddenly realize: the past two years of blood, sweat, and tears spent on the project will culminate within seconds. No matter how well prepared you are for this moment, the rush is overwhelming: you know that after the push of the big red button, there is no room for design faults, human error, manufacturing flaws: either it works right the first time, or it never works at all. At T-zero, the igniters are activated and the rocket begins to accelerate off the launch pad. One milestone is achieved: successful liftoff. There is cheering and applause at the spectator area several kilometers away, but the control bunker is dead-silent. First, booster separation and second stage ignition have to be detected. During the second stage burn, the rocket accelerates to nearly three times the speed of sound. After burnout, the rocket begins to coast towards its target altitude; all that there is left to do is wait. When the altitude is finally confirmed by the telemetry station, everyone can breathe again. Cheers, hugs, congratulations: we did it! We dared to dream and made it happen.

The Stratos I launch, described in the paragraph above, was a major milestone for the DARE team: it was the moment that made the impossible possible overnight. Before the moment of the Stratos I apogee, the idea of designing, manufacturing, testing, and successfully launching a rocket into Space with a group of students and no pre-assigned budget would have seemed absurd. At that time, student-built rockets rarely flew higher than a kilometer or two, launches were conducted only on shooting ranges and in large open fields, rockets were launched with fresh paint dripping off them, and any broken parts on a rocket could be mended at the last moment with duct-tape. With the Stratos I rocket, DARE gained experience at rocketry on a whole new level: although the Stratos I only reached the stratosphere, the project proved that it was possible for DARE to build a space-bound rocket "from scratch", then transport it 3000 kilometers to a sounding-rocket range and launch it there. The Stratos I raised the DARE standard bar: we want to design and build complex multiple-stage rockets, we want to work with advanced materials, we want to launch at sounding-rocket ranges, we want to go higher, and now we know we can do it.

Achieving one big dream always leads one to dream bigger, so the Stratos project continues. The Stratos II rocket is already in the making with the ultimate goal of launching a scientific payload to an altitude of 50 kilometers—the edge of the Mesosphere—in early 2012. A dart placed on top of the same propulsion system could reach another boundary—the Karman line at 100 kilometers, which marks the edge of Space.

The new generation Stratos rocket will go higher than its predecessor thanks to a completely new propulsion system currently under development at DARE. In order to control the rocket—which is entirely autonomous from the moment of lift-off—a new electronics system with no analogous off-the shelf components has to be designed and tested as well. DARE will also make use of advanced materials to protect the electronics and payload bay during the fastest moments of the flight, at which the rocket velocity will reach Mach 5. Although the project has officially been going on since February 2010 and a lot of work has been done, there is still a long way to go before the ambitious goal of reaching Space can be achieved.

DARE has a vision: the Stratos II rocket against the backdrop of the silver orb separating the blue Earth and black sky, at the edge of Space. It's an attempt to do something that would have been considered impossible, had we not dared to dream and succeeded at making an earlier dream—the Stratos I—happen . Our destination lies far ahead and we're not sure how we're going to get there, but we're on our way.