DESTINATION MARS!

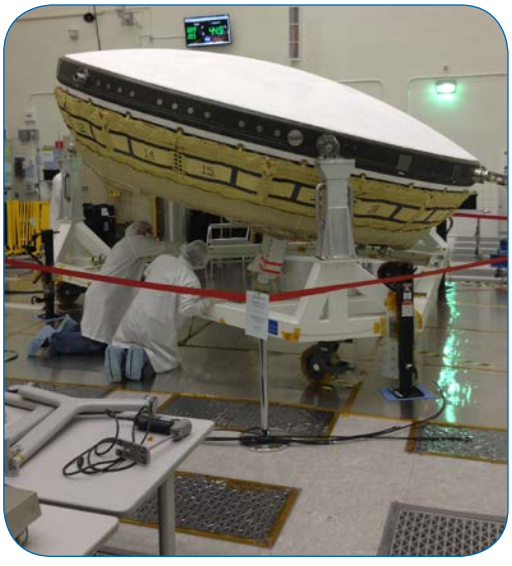
The boss wanted something on transportation for this installment of Power Play.

Trans-por-ta-tion — it's only four syllables, yet a word with nearly boundless application.

Much like an even shorter word — *gear* — the impact wrought by "transportation" in actual practice affects just about everything that happens in everyday life, significant or otherwise. Whether it is commuting to work via car, train or bus, or jetting a harvested kidney from LA to NYC, transportation — or, more precisely — transportation *technology* — has been central to all commerce — licit or illicit — regardless of century or place — in even its crudest forms.

Fact: In the rip-roaring mining towns of the West in the late 1800s, it's common knowledge that the dirt "streets" turned to rivers of mud after a rainfall. But did you know that in true, American entrepreneurial style, sturdy, industrious "teamsters" began charging 25 cents in return for hauling on their backs "commuters" who could afford it across the street — dry as a Presbyterian picnic.

And now in 2014 here we are — when some combination of the words "transportation," "tourists" and "Mars" seem to be appearing with some frequency on the same page in publications other than *National Geographic* or *Travel*. Seemingly overnight, it no longer appears to be a question of *if* — but *when* the Red Planet will finally be within our reach.



Just this month in fact, NASA is testing two experimental, interrelated technologies which, if successful, will help bring a handful of early explorers that much sooner to a Mars landing.

Landing, it so happens, appears to be one of — if not the — most daunting hurdles facing a manned trip to Mars. NASA engineers point out that ships attempting to land on Mars will be carrying significantly heavier payloads than for any past manned Moon or unmanned Mars landing. A partial reason for that may lie in the fact that, according to most press reports, those who choose to make the trip and are selected — through whatever the selection process might be — won't be coming back. Aside from the fact that it seems most of the people interviewed who have a chance of going via one organization or another say they don't *want* to come back, the other reason is that, for now, we can't get here from there. We don't know how. So if you go, expect a long stay and bring a Kindle.

But here's what we do know: to land on Mars carrying a payload of any consequence, a deceleration system operable in a low-density atmosphere is needed.

Which brings us to NASA's LDSD (Low Density Supersonic Decelerator) project; the mission: "Advance the technology of decelerating large payloads traveling at supersonic speeds in thin atmospheres to a new level of performance."

The LDSD is a rocket-powered, quaintly *saucer-shaped* test vehicle. The experimental flight is intended to help test the potential of other new deceleration technologies for help in enabling future manned Mars missions. The LDSD, backed by its Star-48 booster rocket, was built at NASA's Jet Propulsion Laboratory in Pasadena, California, and shipped to Kauai, Hawaii for final assembly and preparations.

"During the experimental flight test, a balloon will carry the test vehicle from the Hawaii Navy facility to an altitude of about 120,000 feet," said Mark Adler, project manager of the LDSD project. "There, it will be dropped and its booster rocket will quickly kick in and carry it to 180,000 feet, accelerating to Mach 4."

This is where it really gets tricky.

In addition to the LDSD vessel are two experimental, balloon-like pressure craft, or, to be NASA-technical — Supersonic Inflatable Aerodynamic Decelerators (SIADs). Pushed beyond the speed of sound, the SIADs will break all speed barriers for such craft. Specifically the other test vessels — 20 (SIAD-R) and 26 (SIAD-E) feet wide — are inflated with pressurized hot gas (SIAD-R) or ram air pressure (SIAD-E). These drag devices, which are attached to the outer rim of a capsule-like atmospheric entry vehicle, will inflate when the test vehicle is flying at Mach 3.5 or greater and decelerate the vehicle to Mach 2, where it becomes safe to deploy a supersonic parachute. Yet another new parachute with a modified design — approximately 100 feet (30.5 meters) in diameter — also will be developed to further slow the entry vehicle from Mach 2 to subsonic speeds.

This reminds of a tune by the obscure-yet-amusing singer-songwriter Dan Hicks. It's about a down-on-his-luck guy trudging along who is confronted by a little green man — a Martian of course — who asks him what he'd do if were asked to accompany the Martian back to his planet Mars. The man's answer?

"Hell, I'd go." **PTE**

(*Editor's Note: Unfortunately, the test flight was scrubbed for the time being, as was announced in a NASA June 13 press release. "NASA did not conduct the flight test of the agency's Low-Density Supersonic Decelerator (LDSD) during its designated launch" window, which closed June 14 due to continuing, "unfavorable weather conditions."*)