Stanford eCorner

Decreasing Costs in Space Travel

08-10-2003

URL: https://stvp.stanford.edu/blog/videos/decreasing-costs-in-space-travel

Musk talks about how there's no one area where costs were reduced in space travel, rather it was every decision across the board. The focus was on simplicity–and simplicity reduces costs. For example, fewer components means fewer components to repair, and to purchase, as well as to test. The avionics vehicles communicate via ethernet–while not novel, it is unheard of, compared to other systems that use cables, he says. In addition, overhead at a 30 person company is much cheaper than at Lockheed or Boeing, he notes.

Transcript

Well, like I said, there's no silver bullet that I can point to as to why our vehicle is a lot cheaper.. We're really focused on reducing the cost across the board.. I mean one thing, our overhead in a 30-person company is in order of magnitude less than it is in Lockheed or Boeing just for starters.. So even if we did everything the same in both the same launch vehicles, we'd be conservatively cheaper.. Every decision we've made has been with consideration to simplicity and the reason for simplicity is because that both improves reliability as well as reduce your costs.. If you've got fewer components that's fewer components to go wrong and fewer components to buy.. I think a fairly significant innovation in our airframe which is semiprecious stabilized monocoque with variable skin thickness and a common bulkhead, if you know what that means.. I'll need a diagram to explain at all but the net result is that it's very cheap and it's very mass efficient and I think easy to test and quite reliable.. Our avionic system, I'll give you another example, we use an Ethernet on the vehicle to communicate.. That may not sound like a great innovation but it is in launch vehicles..

All the other launch vehicles communicate in the vehicle by these serial cables that run the entire length of the vehicle, so you've got these giant copper bundles as thick as your arm running up and down the vehicle.. It makes it heavy, it makes it expensive.. So there are things like that which when you add them all up, it makes a huge difference...