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Erik Seedhouse

Spaceports Around the World, A Global Growth Industry



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Chapter 1

Spaceports: A Primer



Fig. 1.1 Virgin Galactic's SpaceShipOne. Image courtesy of Virgin Galactic

October 2004. The ink was barely dry on the \$10 million Ansari X-Prize winning check before a potentially equally lucrative space race was announced; the competition between spaceports. Kick-starting the contest was Peter Mitchell, director of the New Mexico Office for Space Commercialization, who was present at Mojave Airport on the day that SpaceShipOne (SS1) made history. "Today doesn't belong

to New Mexico, the day belongs to the gentlemen up here ... that made this dream become a reality,” Mitchell told reporters. “Tomorrow, however, we focus on bringing the spoils of this dream to the state of New Mexico”. Not surprisingly, the remark rubbed some people the wrong way, including Dick Rutan, the brother of SS1 designer Burt Rutan, and a member of the Mojave airport district’s board of directors. He promised to give Mitchell a run for his money and so the race was on (Fig. 1.1).

Remember, this was back in 2004, before the suborbital passenger business was even a business. But, with market studies predicting suborbital space tourism could generate more than billion dollars a year in revenues by the year 2021, the nascent industry’s main players reckoned space passenger operations would require upgrades to attract the first wave of deep-pocketed thrill-seekers. After all, these passengers would need a place to train and a suitably high-end resort to stay. Not the sort of facilities you normally find at rocket-launch ranges, which generally have lots of wide-open space but little else. In short, there needed to be a viable tourist destination. And so the spaceport (Table 1.1) was born.

Table 1.1 FAA-licensed commercial spaceports in the United States

Spaceport name	Location	Operator	Services	Commercial license	Orbital	Sub-orbital
California Spaceport	Lompoc, CA	Spaceport Systems International	Payload processing	Issued 1996	Y	N
Mid-Atlantic Regional Spaceport	Wallops Island, VA	Virginia Commercial Space Flight Authority	Commercial, government, scientific, academic	Issued 1997	Y	Y
Kodiak Launch Complex	Kodiak, AK	Alaska Aerospace Corporation	Commercial, government	Issued 1998	Y	Y
Cape Canaveral Spaceport	Cape Canaveral, FL	Space Florida	Government, commercial, payload processing	Issued 1999	Y	Y
Mojave Air and Space Port	Mojave, CA	East Kern Airport District	Research and testing, commercial	Issued 2004	N	Y
Oklahoma Spaceport	Burns Flat, OK	Oklahoma Space Industry Development Authority	Commercial	Issued 2006	N	Y
Spaceport America	Las Cruces, NM	New Mexico Spaceport Authority	Commercial	Issued 2008	N	Y
Cecil Spaceport	Jacksonville, FL	Jacksonville Aviation Authority	Commercial	Issued 2010	Y	Y

The Federal Aviation Administration Office of Commercial Space Transportation (FAA AST) issues licenses to U.S. companies for commercial launches and they issue launch site licenses to spaceports



Fig. 1.2 Spaceport America. Image courtesy of Land Rover MENA

What is a Spaceport?

The truth is spaceports (Fig. 1.2) have been around for a while, but what is a spaceport? Well, it depends on the type of spacecraft and the type of people to some extent. Take the manned suborbital industry for example. We know this industry will depend upon two distinct kinds of space adventurer. First, there will be the wealthy few who can afford to buy a (\$250,000 for suborbital) ticket and then there will be commercial scientist astronauts employed to conduct research and/or fly a payload. That's the first category. The second category of space adventurers are neither rich, nor do they have aspirations to be commercial astronauts, but they hope in turn to be able to afford the experience of a flight when prices come down. This second category will travel to spaceports to witness the experience and will want to feel involved vicariously in the flights. They will spend money on accommodation and food and drink and on souvenirs. So the most important thing is that they are able to get there. And, when they arrive, they will want to feel relaxed and welcome. An environment similar to a commercial airport, or a cruise ship terminal, will be needed.

Next are the training facilities (Fig. 1.3). Future spaceflight participants will need training facilities, which will be co-located at the spaceports. Centrifuges, hypobaric chambers, spatial disorientation trainers, classrooms, dunker training equipment; it all needs to be there. And, since some of this training will be stressful, it makes sense to co-locate medical facilities to check the health of the future spaceflight participants

and certify them for space flight. This will be especially true in the early stages of the industry, because wealthy individuals, who can afford the flights, tend to be older and less healthy than average. There will also need to be emergency facilities in case of accidents.

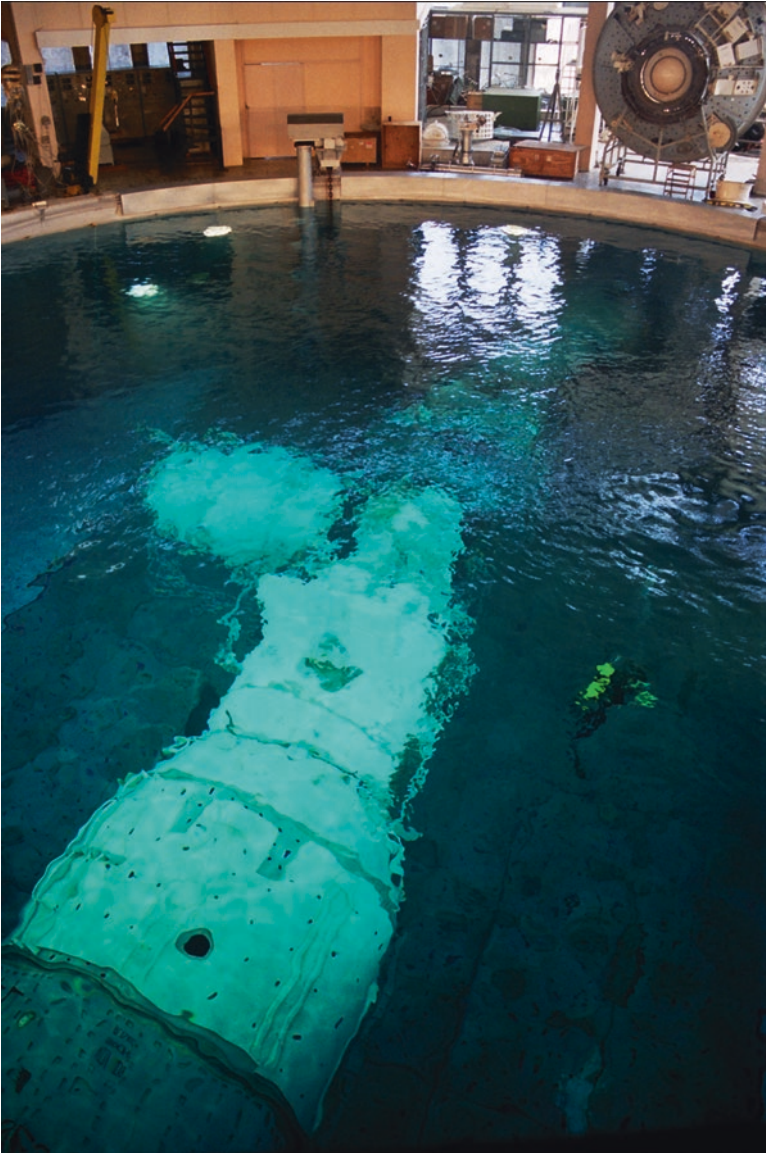


Fig. 1.3 Training in ESA's Neutral Buoyancy Laboratory in Germany. Image courtesy of ESA

After a hard day’s training, our astronauts-to-be and their friends will want to kick back and relax, so hotels will need to be built near, or attached to, the spaceports. Staying with the relaxation theme, it will make sense to co-locate entertainment facilities, so family and friends can occupy themselves during the training. Perhaps an IMAX type theater will be an attraction? Or a space theme park, with rides and space simulations perhaps? If these entertainment facilities are well designed, they could be a destination in themselves, even when there are no launches taking place. For example, the idea of a Space Camp/Academy is a great way to get kids involved and provide them with the opportunity to learn about the suborbital flight experience.

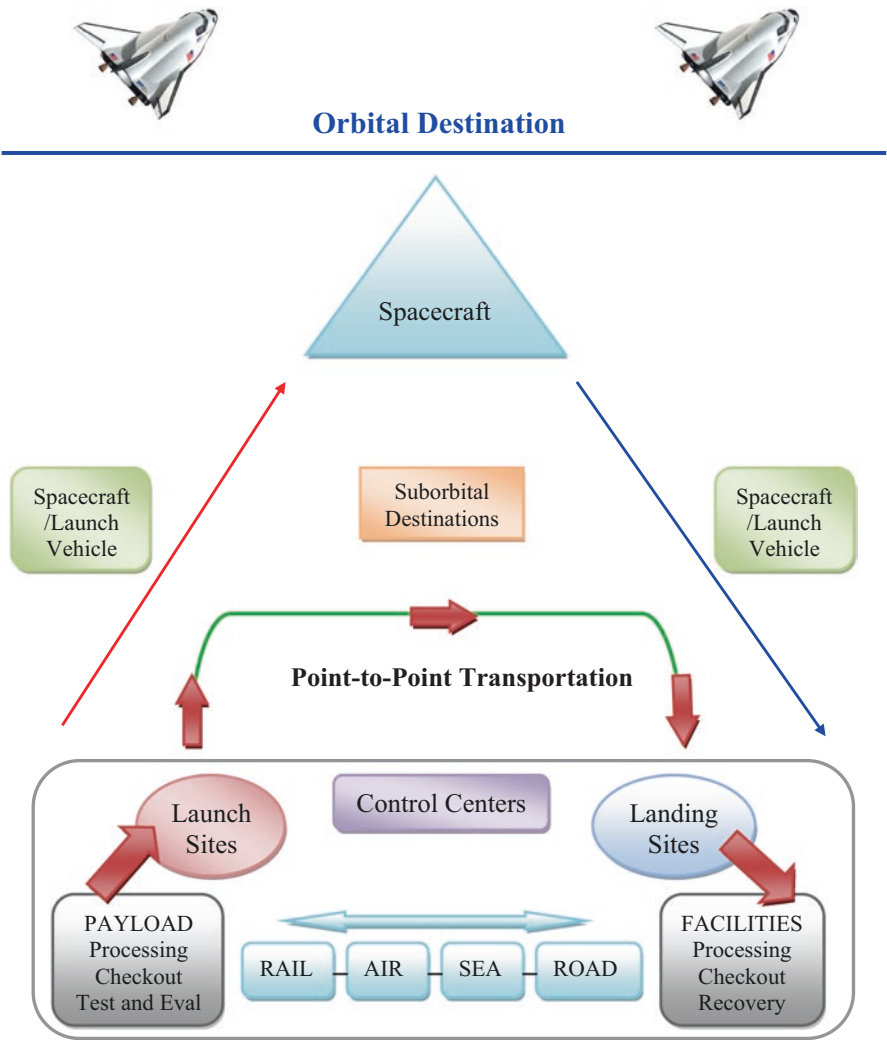


Fig. 1.4 Conceptual spaceport. Image by the author