

COE CST Fifth Annual Technical Meeting

Space Transportation Industry Viability

**Dr. Scott Benjamin
Taylor Smith
Arion Gray**

***October 27-28, 2015
Arlington, VA***



Agenda

- Team Members
- Task Description
- Schedule
- Goals
- Results
- Conclusions and Future Work

Team Members- People



Dr. Scott Benjamin



Principal Investigator-
Associate Professor at
Florida Institute of
Technology, Director for
the Center of
Entrepreneurship and
New Business

Taylor Smith



Student- Current
Graduate Student
Studying for her
MBA, Expected
Graduation is Fall
2015

Arion Gray



Student- Current
Undergraduate
Student Studying
Aerospace
Engineering,
Expected Graduation
is Spring 2017

Team Members- Partner

Greg Autry



Assistant Professor of Clinical Entrepreneurship at USC Marshall School of Business

Task Description

- To understand the industry structure, conduct and performance of firms in the suborbital space transportation industry by using Porter's Five Forces Model to help develop a general understanding of profitability given the interaction of stakeholders.

Schedule



















Semester and Year	Completed Tasks
Fall 2014	Understanding the Industry Needs
Spring 2015	Literature Review and Data
Summer 2015	Interviews Conducted and Data Analyzed
Fall 2015	Interviews Conducted, Writing Conclusions and Publishing Results

Goals

- To define the industry and its competitors
- Conduct a Porter's Five Forces analysis in order to evaluate competitive rivalry and industry profitability

Results

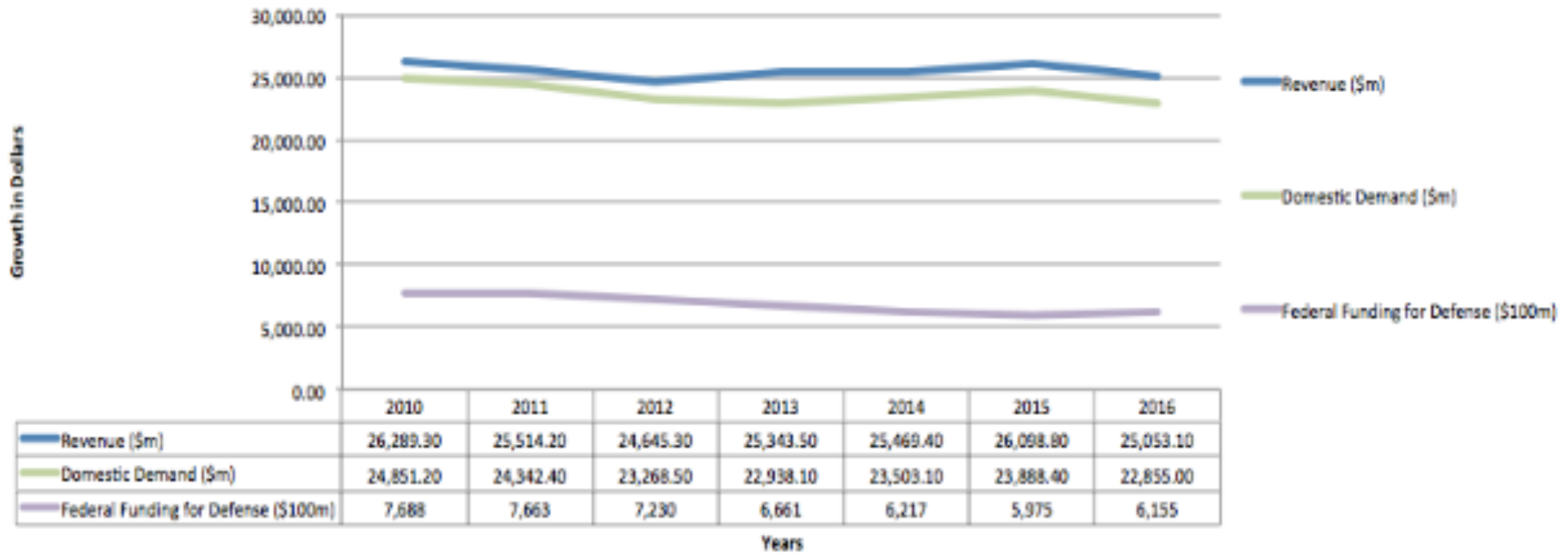
The Current Competitors Within The Industry

	 <small>CENTER OF EXCELLENCE FOR COMMERCIAL SPACE TRANSPORTATION</small> SUBORBITAL SPACE COMPANIES	 GALACTIC	 BLUE ORIGIN	 WORLD VIEW®	 XCOR	 O1100	 zero g
	 <small>SPACESHIP TWO</small>	 <small>NEW SHEPARD</small>	 <small>VOYAGER</small>	 <small>LYRIC</small>	 <small>BALLOON</small>	 <small>G-FORCE ONE</small>	
MAX ALTITUDE	110 KM	110 KM	30 KM	103 KM	36 KM	9.8 KM	
FLIGHT DURATION	⌚ 10 MIN	⌚ 11 MIN	⌚ 6 HOURS	⌚ 60 MIN	⌚ 3 HOURS	⌚ 90 MIN	
MODE OF TRANSPORTATION	PLANE ROCKET	/ ROCKET	BALLOON	ROCKET ENGINE	BALLOON	PLANE	
CAPACITY						27	
COST PER SEAT	\$250K	N/A	\$75K	\$150K	\$120K	\$5K	
PRE-SALES	600+	N/A	N/A	300+	N/A	500+	

Results

Industry Current and Future Growth

Space Vehicle and Missile Manufacturing in the US 2010-2015



Results

THREAT OF NEW ENTRANTS

FINANCIAL, REGULATORY AND PERCEIVED TECHNICAL AND MARKET RISKS PRESENT HIGH BARRIERS TO ENTRY. THE UNKNOWN NATURE OF INDUSTRY PROFITABILITY ALSO PRESENTS A HIGH BARRIER THUS REDUCING THE THREAT OF ENTRY BY NEW FIRMS.

MAIN BARRIERS

- LARGE FINANCIAL CAPITAL REQUIREMENTS
- PERCEIVED TECHNICALS AND MARKET RISKS
- GOVERNMENT POLICIES & REGULATIONS
- ENVIRONMENTAL POLICIES

THREAT OF ENTRY: **LOW**

POWER OF BUYERS

WITH FEW PROVIDERS OF SUBORBITAL TRANSPORTATION SERVICES AND HIGHLY DIFFERENTIATED OFFERINGS, BUYERS HAVE LITTLE POWER TO NEGOTIATE PRICE OR TERMS.

BUYER CHARACTERISTICS:

- SPACE ENTHUSIASTS DESIRE FOR THRILL AND EXCITEMENT IN SPACE
- SHORT FLIGHT DURATION LIMITING BIOLOGICAL RESEARCH
- COMMUNICATION AND SATELLITE COMPANIES LOOKING FOR EXPANSION

BUYER POWER: **LOW**

FEW SUPPLIERS SERVICE THIS NICHE MARKET. TECHNOLOGY IS CHANGING AT A RAPID PACE WHICH MAKES IT HARD FOR SUPPLIERS TO KEEP UP WITH THE LATEST DEMANDS. COMPETITIVE FIRMS EXHIBIT BACKWARDS VERTICAL INTEGRATION BY BRINGING COMPONENT PRODUCTION IN-HOUSE.

SUPPLIER CHARACTERISTICS:

- FEW SUPPLIERS
- INTERNAL PROCESSING FOR EACH SUPPLIER
- EXCESSIVE IP RIGHTS

SUPPLIER POWER: **MODERATE**

THERE ARE CURRENTLY NO ALTERNATIVE SUBSTITUTES THAT CAN MEET THE NEEDS PROVIDED BY SUBORBITAL SPACE TRANSPORTATION FOR EITHER THE TOURISM SEGMENT OR THE PAYLOAD SEGMENT

SUBSTITUTE CHARACTERISTICS:

- FEW TRUE SUBSTITUTES
- SUBSTITUTES ARE MUCH LOWER IN COST

THREAT OF SUBSTITUTES: **LOW**



POWER OF SUPPLIERS

THREAT OF SUBSTITUTES

Conclusions

- Oligopolistic industry in nature
- Growth has remained flat within the industry, though the progression of commercial space flights could bring growth to the industry
- Rivalry among competitors will not be price competitive, instead they will compete on differentiation factors, such as flight path

Conclusions and Future Work

- Future work
 - Industry Adoption: A Comparative Analysis Between Commercial Aviation and Commercial Space Transportation