It’s About the People
Training the Next Generation of Space Leaders and Entrepreneurs

Andy Aldrin
National Council of Space Grant Directors
September 13, 2018
Waves of Space
Commercialization
The New Space Revolutionaries
The Next Generation of Space Leaders
Qualities of the Next Generation of Leaders

- Leadership Skills
- Business Sense
- Passion for Space
- Entrepreneurship
- Engineering Intuition
- Program Management
- Communication Skills
- Technical Execution
- Policy Understanding
- Teambuilding

Passion for Entrepreneurship
Origins of the Next Wave of Entrepreneurship
<table>
<thead>
<tr>
<th>MEMBER</th>
<th>KEY ROLES</th>
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</thead>
<tbody>
<tr>
<td>Heinlein Institute Space Studies Program (HISSP)</td>
<td>Workshop and event administration and management, HISSP course development and accreditation. Core degree paths: MBA Entrepreneurship, Engineering, Engineering Management.</td>
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<tr>
<td>University of Florida (UF)</td>
<td>Core degree path: MBA. (The University of Florida Innovation and Entrepreneurship Center.)</td>
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<tr>
<td>Purdue University</td>
<td>Core degree path: Masters of Education Program, Aerospace Engineering. Lead instructors space education and space policy.</td>
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<tr>
<td>The Ohio State University</td>
<td>Core degree path: The John Glenn School of Public Policy, School of Engineering (Aero-Astro), Center for Innovation and Entrepreneurship.</td>
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<tr>
<td>Embry-Riddle Aeronautical University</td>
<td>Core degree path: MBA (School of Business.) MOS in Aerospace Engineering, Engineering management, Commercial Space Operations. ERAU incubator/accelerator.</td>
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<tr>
<td>Kennedy Space Center Visitor Complex</td>
<td>Educational facilities, entertainment, transportation, educational programs, events and tours.</td>
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<td>NASA</td>
<td>Hosting launch events; Technical support and mentorship, Swamp Works facilities and technical support.</td>
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<tr>
<td>Space Florida</td>
<td>Facilities, investment support, mentorship.</td>
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<tr>
<td>Aerospace</td>
<td>Workshops. HISSP coursework.</td>
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<td>Space Angels Network</td>
<td>Workshops, team project mentorship and investment.</td>
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<tr>
<td>CASIS</td>
<td>Mentorship and flight opportunities for team projects.</td>
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</tbody>
</table>
The Space Coast
The Commercial and Entrepreneurial Space Studies Program Timeline

**Spring/Summer**
- Recruitment
- Workshop
- Workshop
- Workshop
- Workshop
- Workshop

**Fall**
- Recruitment/Selection
- Workshop
- Workshop
- Workshop
- Workshop
- Workshop
- Orientation

**Spring**
- Home Institution Coursework
- Workshop
- Workshop

**Summer**
- Global Commercial Programs
- Policy and Law
- Technology and systems
- Space Entrepreneurship
- UCF Incubator
For me, I learned my lesson cheering for companies in capital-intensive, emerging industries. I'll let the pioneers take the arrows...

Paul Nesbit
The Next Wave?

Governemental Space Age

1969
Apollo landed on the moon

Entrepreneurial Space Age

2009
SpaceX first successful launch of commercial payload

2010
SpaceX published launch prices enabled brokerage services

2012
SpaceX Dragon becomes first commercial space vehicle to berth with Space Station

2014
NanoRacks launches commercial operations via ISS

2015
Blue Origin demonstrates reusable rockets

Number of Companies Receiving investment

Investment in Space

$12 BILLION

10

50

150

250

USA

EU

Asia

South America

North America

Australia

$0

$2

$6

$10

$12

SEP. 2017

Diversified Capital Market

Magnitude of Investment, Including Debt, Acquisitions, and Offerings, by Type (2000-2017)
Too many launch vehicles?

One man dominates investment

US Center of Mass
Figure 1. The global space economy in context.

$344.5B Global Space Economy

- $29.6B GNSS Chipsets and Related
- $10.7B NASA (Space Only)
- $52.6B GNSS Chipsets
- $5.6B MDA
- $7B USAP
- $18.1B NASA (Space Only)
- $8.3B NOAA
- $10.8B Europe
- $1B Onera
- $32B Personal Navigation Devices and In-Vehicle Systems
- $3B Traffic Information Services
- $3.6B India
- $10.3B Network Equipment
- $3.2B Fleet World
- $13.9B Satellite Manufacturing
- $5.5B Launch Services
- $1.1B Commercial Human Spaceflight
- $17B SVS
- $3B GNSS Agriculture, Avionics, Maritime, and Rail

$97.7B Telecommunications

Non-Satellite Industry

Government Budgets

Non-U.S. Government Budgets

$82.9B Government Budgets

$34B Non-Satellite Industry

$60.8B Satellite Ground Equipment

$32B Broadband

$10B Commercial Internet

$17.4B Internet

$5B Broadband

$5B Broadband
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