

Workforce Resiliency - STEM* Talent Cultivation

* Science, Technology, Engineering, and Mathematics

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The Aerospace Corporation

Future SatOps Workshop

Ground System Architectures Workshop (GSAW) 2014

Los Angeles, CA

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STEM Talent – A Critical Source of Resiliency

- SatOps deals with sophisticated technical systems, and with complex interconnected information enterprises
- Skilled, capable individuals are required for all phases of the space system lifecycle, including SatOps
- Humans add a level of human judgment, which is critical to successful SatOps
- We all are beneficiaries of STEM education, and we must individually contribute to STEM education
- The following charts describe examples of such proactive contributions



SMC MIT Space Engineering Academy (SEA)

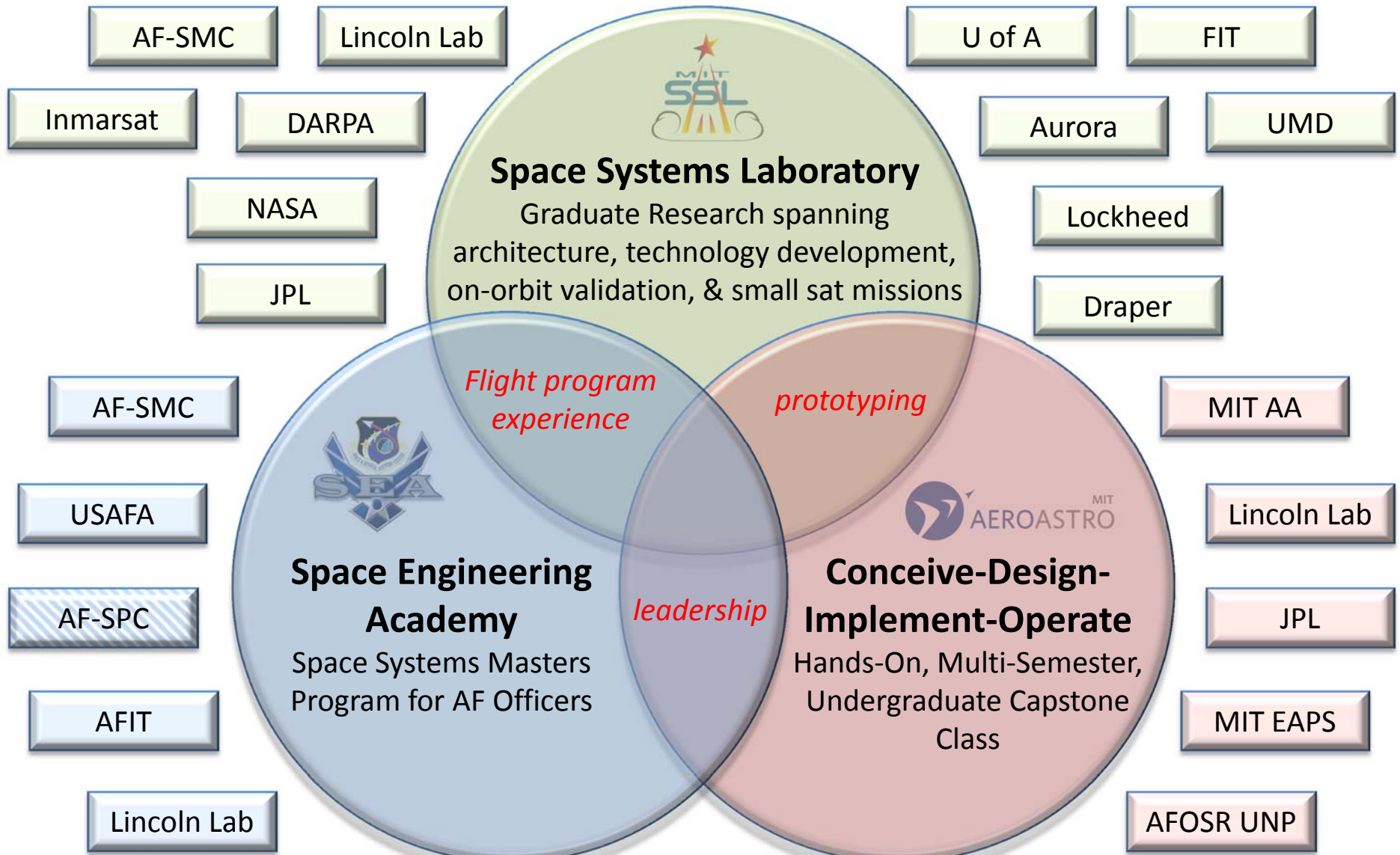
- Top USAF Academy admitted to MIT Aero-Astro Space Systems Laboratory for Masters in Space Systems
- After a 2-year tour at MIT, the SEA graduates report to SMC for their next tour
- So far a dozen officers placed at SMC, with 3 new SEA graduates added annually
- SEA Alums supporting most missions, as well as SMC/XR, development planning
- Prof Dave Miller SEA facilitating recruiting days at MIT
 - *Prof Miller is also the Vice Chair of the USAF Scientific Advisory Board (SAB)*
- SatOps of small SMC or SEA satellites will be described later today





MIT Space Systems Laboratory (SSL)

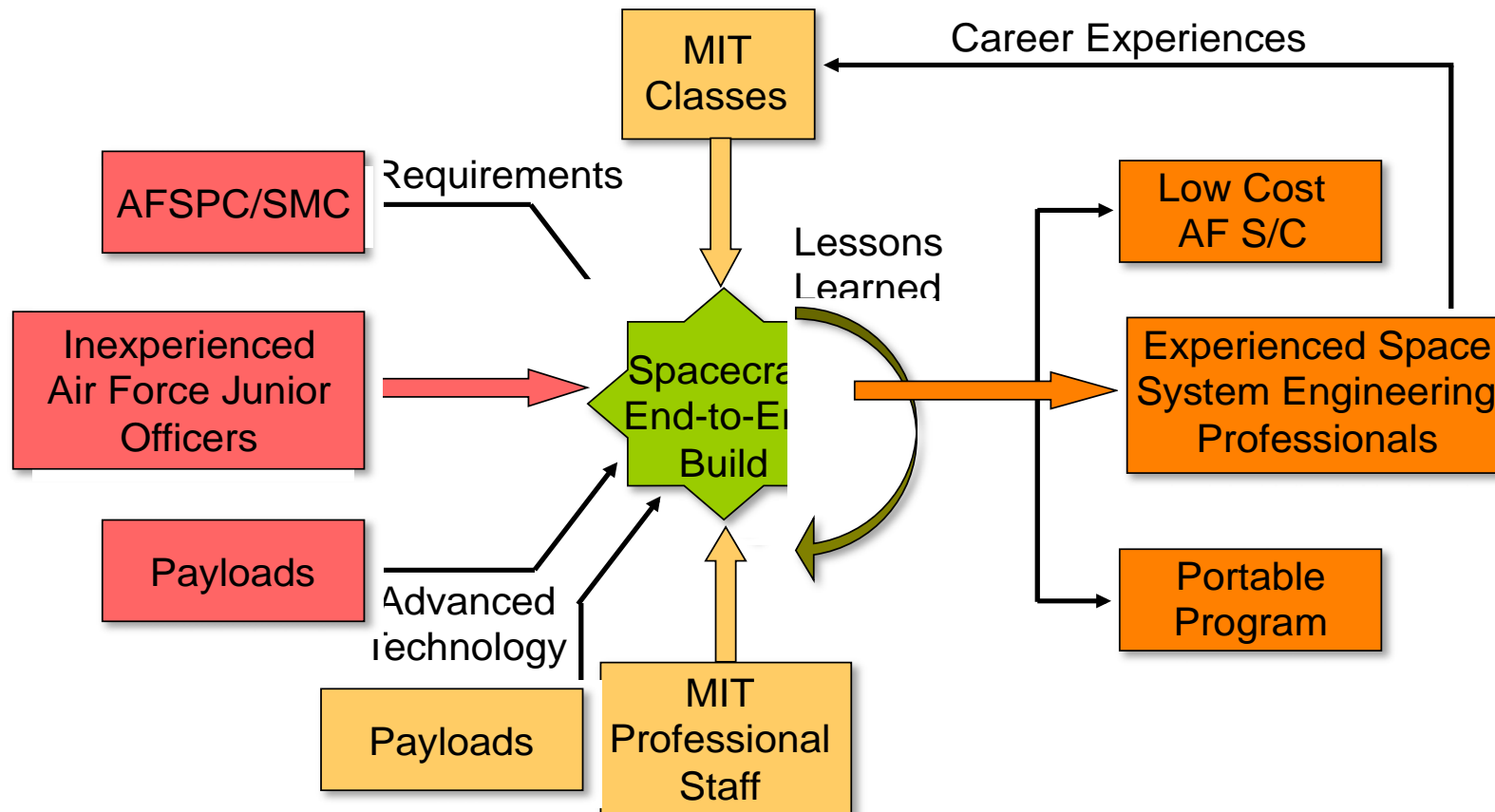
University STEM Education



Used with permission from Prof Dave Miller, Director, MIT-SSL



AF-SSEA Hands-On Approach



Program value continuously assessed by feeding back lessons learned
- Assess how we teach, how we build, and how we validate

Harvey Mudd College (HMC)

- HMC is a top undergraduate engineering college
- Chairing the HMC Engineering Visitors Committee
 - *Advisory role for faculty succession, curriculum, accreditation, and development*
- Leading dozens of Capstone projects (Computer Science and Engineering “Clinics”) over 20 years
- Serving on the Clinic Advisory Committee
- Recruiting dozens of students and faculty over the years

- Joseph Betser, *Knowledge Management (KM) and E-Learning (EL) Growth for Industry and University Outreach Activities via Capstone Projects: Case Studies and Future Trends*, Liebowitz, Jay, and Michael Frank, eds. "Knowledge Management and E-learning", Taylor and Francis Press (2010), ISBN: 978-1-4398-3726-9



UCLA, CalTech, USC, UCSB, UCI, Stanford, CSULA...

- The Aerospace Institute Corporate University Affiliates Program (TAI-CUAP)
 - *Facilitates formal relationships with STEM universities*
 - *Challenging projects of mutual technical interest*
 - *Recruiting at all levels*
- Must engage at all levels of STEM education
- STEM engagement described above at university level
- Research shows that STEM loses the boys at 8th grade and the girls at 5th grade
 - *STEM activities are encouraged at all levels*
 - *SMC and Aerospace are engaged at all levels*



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