ISS Commercialization Activities

Briefing to NASA Advisory Council
Commercial Space Committee

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Commercial Involvement In The ISS

• CASIS: Commercial Customers
  – Charged with bringing non-traditional users to the ISS
  – Partnerships to date or in work:
    • Merck (protein crystallization)
    • Novartis (rodents)
    • Cobra Puma (materials)
    • Baylor College of Medicine (Omics)
    • MD Anderson (stem cells)
    • Boston Museum of Science, MassChallenge, MIT
  – >$2M outside funds committed to flight opportunities
ISS as a Business Model

• ISS National Lab
  – Encouraging traditional contractors to develop needed capabilities (hardware, onboard analytics, services) using a fee-for-services approach
    • Cost share with NASA, pre-buy of services, or pure commercial funding
    • Requires sharing of risk—difficult for small businesses to accept, and out of the norm for large firms
    • Benefit is multi-level marketing of the ISS—multiple partners with “skin in the game”
ISS as a Business Model

• NanoRacks
  – Only company to own h/w & sell services on ISS
    • Internal (CubeLabs, plate reader, microscopes, centrifuge)
    • External (exposed platform, CubeSat deployer)
  – To date, delivered 91 internal payloads and deployed 1 CubeSat from ISS
  – In pipeline, 70 internal payloads, 50 CubeSats, and 2 external payloads
  – IDIQ contract for services to US Gov’t signed June 2013
  – Continues to seek out new capabilities and opportunities to expand business base
ISS as a Business Model (cont’d)

• Teledyne Brown Engineering
  – Investing ~$20M in partnership with NASA to build, operate, and market a precision external pointing platform (MUSES)
    • Bays for 4 instruments (hyper/multi-spectral, high def visible, etc.)
    • Reached agreement in principle with first external instrument provider
    • Incentive to market use of ISS
Commercial Participation in ISS
Demonstration of Technologies

• Nearly all commercial technology proposals to date have requested or
  required NASA cost sharing. NASA has enabled some of these
  proposals through milestone completion based contracts.

• Technologies therefore have been limited to those for which NASA has
  possible needs.

• Bigelow Expandable Activity Module (BEAM)
  – Largest and most visible example of this cost sharing/contract method and
    in this case, fixed cost.
  – Currently baselined to launch on SpX8 (2015) and will be installed on
    Node 3 Aft. On orbit checkout to take place NLT October 2016.

• The Sabatier system continues to provide current service on ISS and
  was a successful implementation of contract with payments tied to on-
  orbit performance milestones.
Impediments to Commercial Research/Investment on ISS

• Lack of ISS exemption for Intellectual Property rights
  – For non-NASA funded users, IP rights reservation by US Gov’t is problematic
  – Almost a deal breaker for Big Pharma

• Uncertainty as to ISS life extension
  – Hard to sell long term commitment with 2020 end of life
    • For Big Pharma, 10-15 year development cycle
    • For Big Aerospace, uncertain duration for ROI
  – Using micro-g requires different research approach, hard to convince users to change with limited life remaining
  – Catch-22: Life extension based on robust utilization: Fullest utilization based on longer life...
Impediments (cont’d)

• Time from selection to actual flight
  – Ex. rodents—first availability is after Sx6, > 18 mos
  – Not all experiments face this same challenge

• Must continue to evolve onboard capabilities
  – If similar to ground, easier to accept
  – Onboard analytics very important to speed results

• NASA requirements drive costs
  – Must continue to excise extraneous requirements