



Commercial Crew Program Status for the NAC

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Program Overview



Fiscal Year

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

Demo/Test Flights

Design/Development/Certification

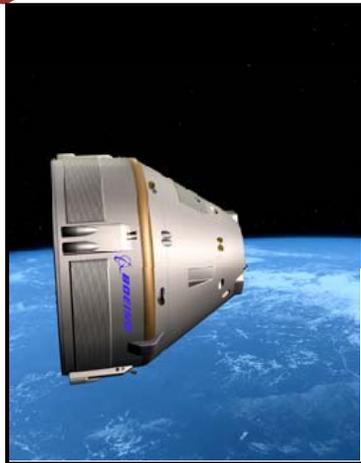


Missions



- The objective of the proposed commercial crew initiative is to facilitate the development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable, and cost effective access to and from low-Earth orbit (LEO) and the International Space Station (ISS).
- The Commercial Crew Program (CCP) intends to use a non-traditional acquisition and partnering approach.
- Competition is a fundamental aspect of the strategy: incentivizes performance, supports cost effectiveness, and eliminates NASA dependence on a single provider.
- The 2010 NASA Authorization Act established commercial crew as the primary means for ISS crew transportation.

Commercial Crew Development CCDev2



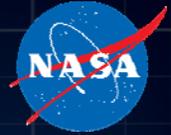
- Four Partners.
- ~\$270M in Space Act Agreements.
- 12 of 40 milestones completed to date.
- Planned completion by May 2012.
- 3 of the 4 Partners will achieve an internal integrated PDR level of maturity.
- 1 of the 4 Partners will achieve an internal SRR level of maturity.



Blue Origin

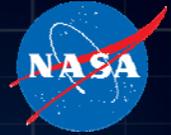


Acquisition Strategy Evolution



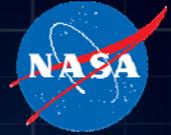
- **Initial indications established Space Act Agreements (SAAs) as a potential instrument to meet Commercial Crew Program and industry needs.**
- **CCDev1 and CCDev2 utilized funded SAAs to allow for Government investment in early commercial concept development and element design.**
 - **These SAAs were awarded to stimulate efforts to further commercial human spaceflight services**
 - **Allowed Industry to make progress while NASA determined best approach for detailed design, development, and certification**
- **In developing a recommendation for the Agency, the CCP evaluated every possible option to use SAAs.**
 - **Several key limitations of SAAs were discovered**
 - **Mitigations were thoroughly examined**
 - **Recognized industry concern with Cost Accounting Standards and other requirements prescribed by Federal Acquisition Regulations (FAR)**

NASA SAA Limitations



- **Requirements and Certification**
 - **Inability to levy certification requirements – could only be reference**
 - **Even as reference, NASA could NOT:**
 - Tie milestone progress and payments to compliance
 - Formally evaluate compliance or non-compliance
 - Approve tailoring, exemptions, or waivers for future phases
 - **Ultimately, NASA could not formally accept the verification of requirements using SAAs, which is necessary for certification**
- **Proposed mitigations could not be fully implemented**
 - **‘Gap analysis’ and ‘risk assessments’ for NASA missions deemed to go beyond ‘public purpose’ under a funded SAA**
- **Data rights limitations under an SAA made a phased competition problematic**

COTS Cargo and CCP Differences



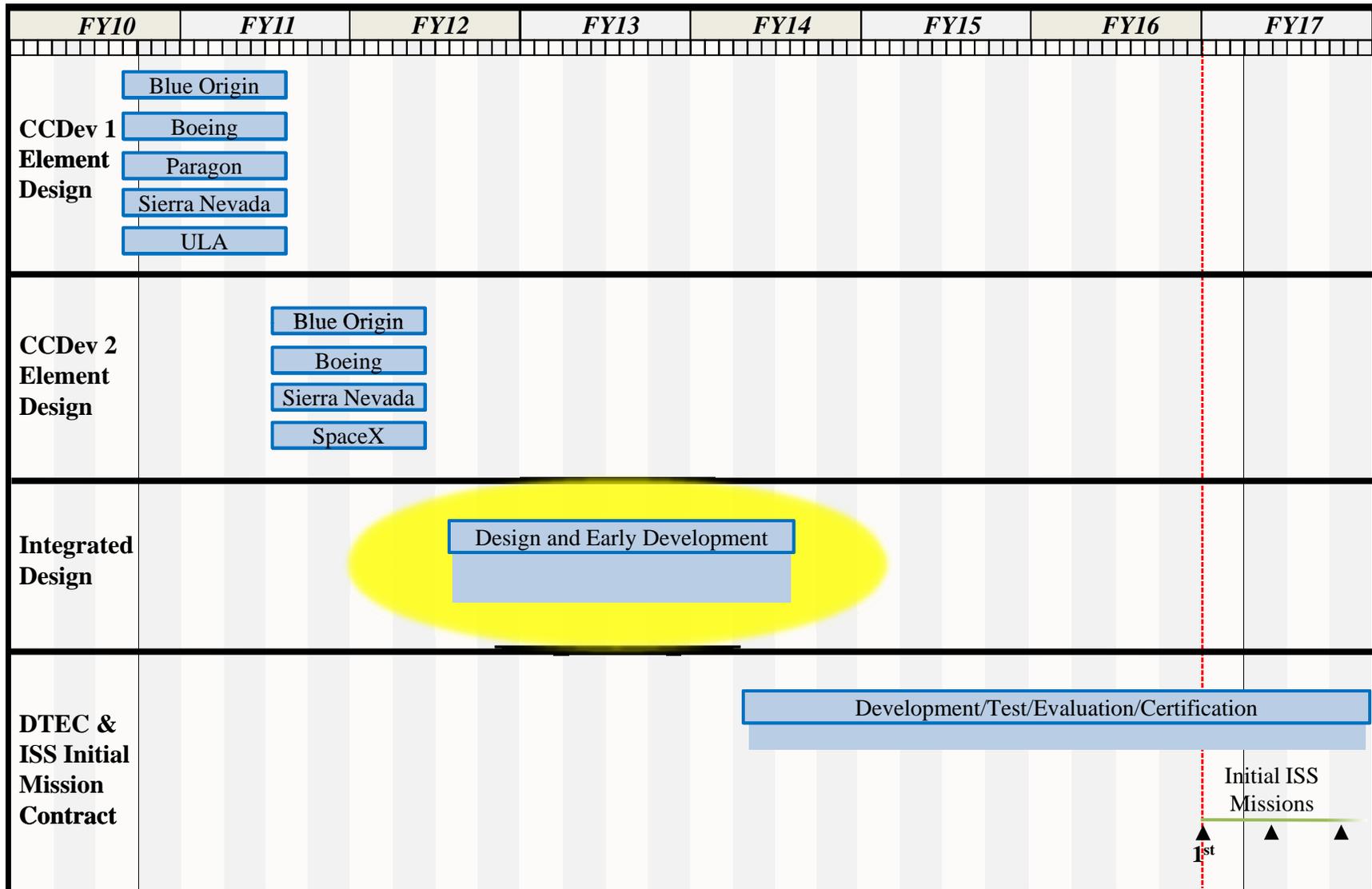
- **None of the COTS Cargo objectives includes anything about NASA's ISS cargo delivery requirements.**
 - **Implement the U.S. Space Exploration policy with investments to stimulate the commercial space industry**
 - **Facilitate U.S. private industry demonstration of cargo and crew space transportation capabilities with the goal of achieving safe, reliable, cost effective access to low-Earth orbit (LEO)**
 - **Create a market environment in which commercial space transportation services are available to Government and private sector customers.**
- **In contrast, the CCP objective explicitly states NASA's need for ISS crew transportation.**
- **In addition, the 2010 NASA Authorization Act established commercial crew as the primary means of ISS crew transportation, further strengthening NASA's requirements as an objective of the Program.**

Proposed Program Strategy



- **The current proposed strategy would use a contract instrument that combines the best elements of SAAs with the features of a contract that allow NASA to approve tailoring of requirements and certify the vehicle for NASA missions**
 - Milestone based payments with fixed government investment
 - Utilize FAR exemption for all Cost Accounting Standards requirements
 - Maximize industry retention of intellectual property rights
 - Encourage partners to market products to other customers
 - NASA control at the “Certification Requirements” level only
 - Provide approval, tailoring, and exceptions/waivers of Industry’s implementation in a crew transportation system
 - NASA will not dictate design solutions
- **This proposed strategy matches the work scope and risk posture within budget and schedule constraints**

Current Proposed Strategy



Differences in Approach



Traditional NASA Development

- Goal: ISS Crew Mission
- Extensive Government Oversight
- Detailed Design Requirements
- Large Sustaining Engineering
- Full Reporting Requirements
- Unlimited Data and Deliverables
- Higher Costs



Non-Traditional Development

- Goal: Commercial Human Transport
- Limited Insight/Oversight
- Tailored Human-Rating Requirements
- Streamline Sustaining Engineering
- Minimal Reporting Requirements
- Limited Deliverables
- Lower Costs



Traditional Contract

- No Cost Sharing
- Requirements & Certification Mgmt
- Government Cost/Schedule Risk
- Full Cost Reporting
- Government Owns IP
- Full Government Involvement

Non-Traditional Contract

- Cost Sharing
- Requirements & Certification Mgmt
- Shared Cost/Schedule Risk
- Minimal Cost Reporting
- Negotiable IP
- Tailored Government Involvement

Space Act Agreement

- Cost Sharing
- No Requirements & Certification Mgmt
- Shared Cost/Schedule Risk
- No Cost Reporting
- Provider Owns IP
- Limited Government Involvement

Conclusion



- **All the original key program attributes are being maintained in the new proposed acquisition strategy**
- **There are currently two organizations in the world that can transport people to low Earth orbit – the governments of Russia and China.**
- **As the primary means for the U.S. to launch crew to low-Earth orbit, the Commercial Crew Program will:**
 - **End the gap in U.S. human access to space and NASA's dependence on Soyuz**
 - **Give us assured access to the International Space Station**
 - **Strengthen America's leadership in space**
 - **Allow NASA to focus on exploration, enabling us to go further, faster**
- **By pushing the boundaries of private enterprise and commerce into**