
XST: “On the Shoulders of Giants”

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13 Nov 18

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Overview

- Motivation (Potential EPIC Speed Pacesetter)
- Background (Numerous demands for speed and improvement)
- Concept (Improve developmental test)
- Concurrent Concept Development Mechanics (MIWG 8)
- Way ahead
 - Leverage existing technology, on-going S&T iSA Space Forum discussions (Nov 6-7 2018)
 - Provide link to immediately on ramp concepts and provide new strategic thinking pathfinders



Motivation: SMC 2.0 EPIC SPEED

SPACE AND MISSILE SYSTEMS CENTER



Enterprise

- Shared vision and strategy
- Resilient, multi-layered architectures and infrastructure services
- Ability to dynamically reallocate resources



Partnerships

- A wide network of suppliers including both traditional and innovative start-ups
- Collaboration with Inter-agency and international allies to share costs, move faster, and improve capability



Innovation

- A culture that encourages fast-failure and fast-learning
- **Balanced portfolio providing incremental improvement & opportunities for innovation**
- **Strategic innovative investments in high pay-off tech & game-changing capabilities**



Culture

- Mission-focused, motivated, knowledgeable, and empowered workforce
- A culture of risk-taking and continuous improvement
- Talent management system designed to develop leaders, empower teams, and reward performance



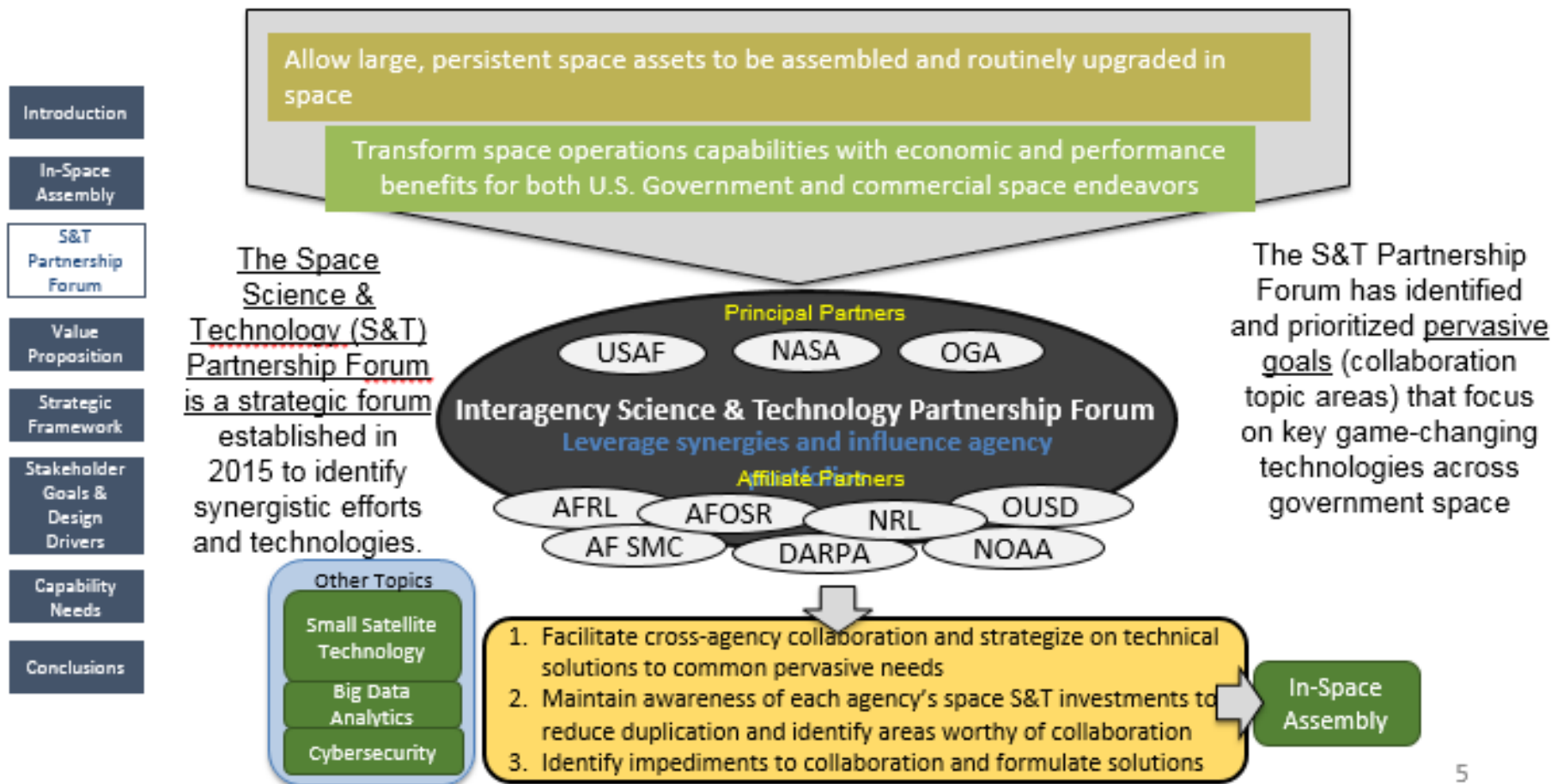
SPEED

- Increase decision-making velocity with flatter organization & delegated authorities
- Streamlined processes, documentation and reviews tailored for the acquisition strategy

Background

- Demands by Congress of the Space Community:
 - Space Enterprise must move more quickly
 - Take advantage of commercial capability
 - “Break cycle of increasing costs”
 - Build smarter/more capable acquisition workforce and operational community
 - Create a Space Professional/Operational Entity

Space Science & Technology (S&T) Partnership Forum: Introduction



Aim to identify cross-cutting applications and benefits of developing a robust iSA capability for future space assets

Under iSA Analytics

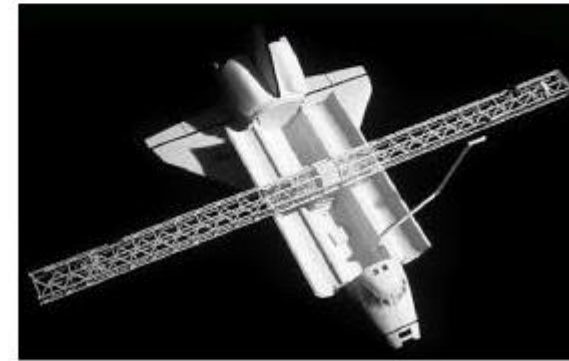
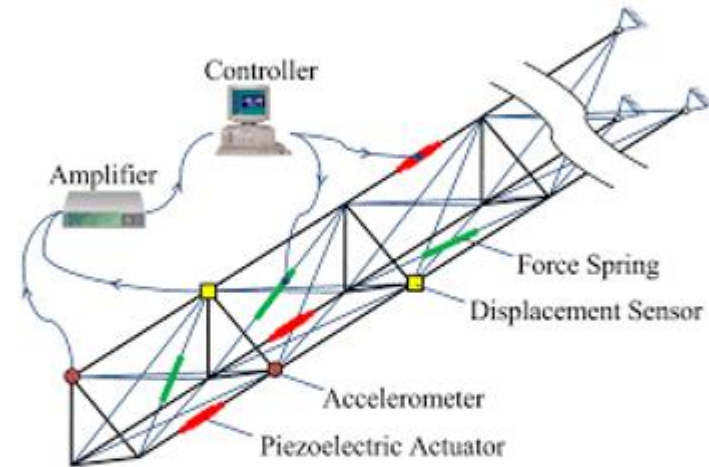
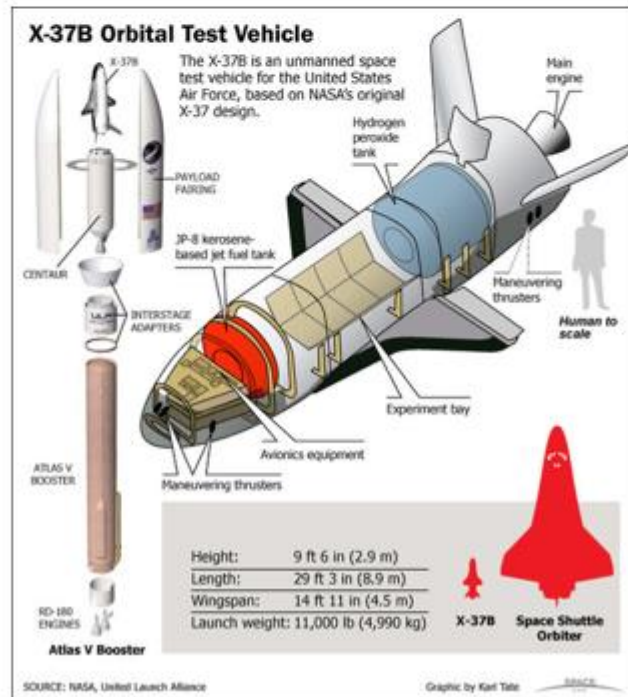
- 4 AF Concepts were considered:
 - Space Logistics (family of technology and program options- Long Term)
 - Developmental Test (key enabler – Short Term emphasis for Innovation Office)
 - Space Power
 - Space Situation Awareness
- These were scored along with the other S and T Forum Concepts
- What follows is the way ahead for one of those: Developmental Test:
Advanced Space Based Testbed (XST)

Concept: “Advanced Space Based Testbed (XST)”

- Devise an in-space (orbital) facility primarily for developmental test (DT) but allow options for:
 - Joint/Cross Agency T&E
 - Collaboration improves cost effectiveness
 - Operational T&E
 - Can be an off-ramp
 - Pervasive S and T
 - Rapidly leverage 6.1-6.3 (into field faster using 6.4)
 - Technology from Industry (IRAD, CRAD)
 - Move development from primarily industry to industry and government
 - Better understand the intellectual property and data rights
 - Improve requirements generation/refinement earlier and concurrently
 - Training
 - Govt personnel need hands-on knowledge
 - Shortest path to OTE

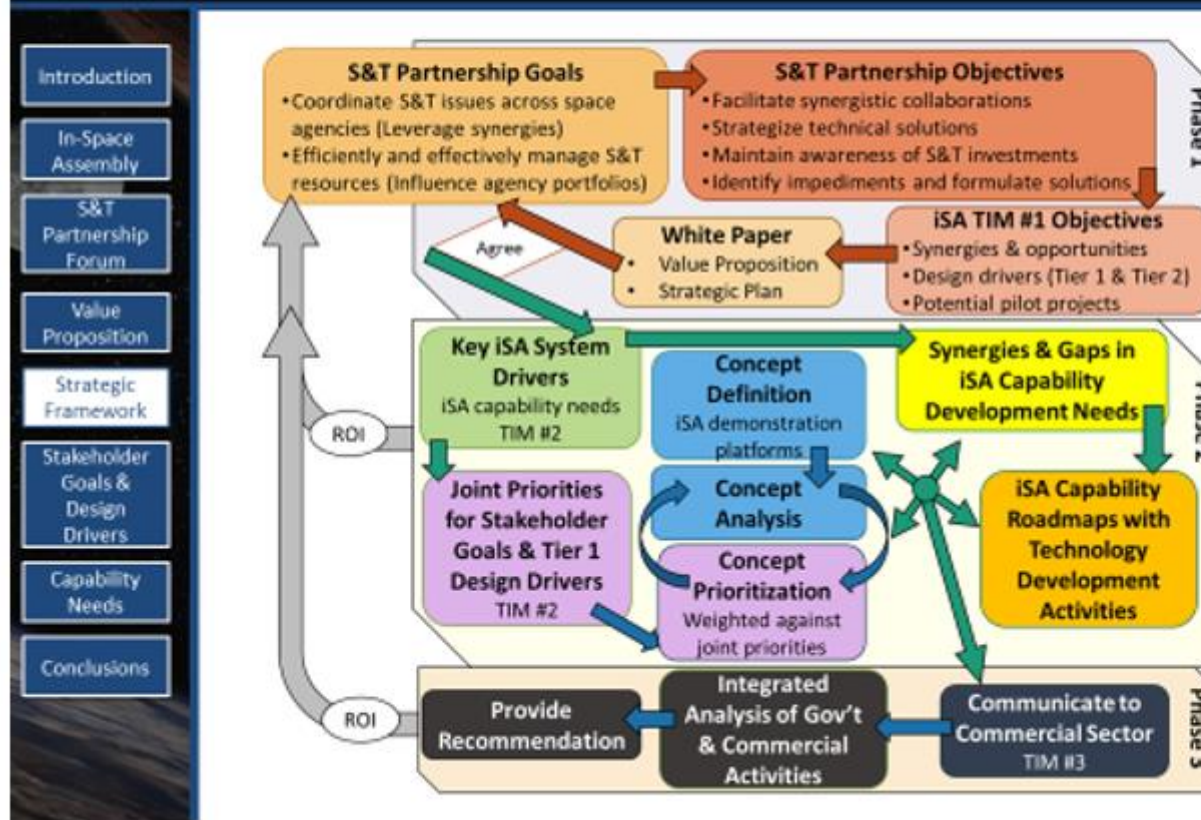
Truss For “XST”

- Basic Truss structure-using iSM and iSA, use iSS (a spaceplane) to:
 - Add Instrumentation/Comms
 - Add ADCS
 - Add UDA points for test candidates/eqt/etc.



iSA Framework is Multi-Purpose

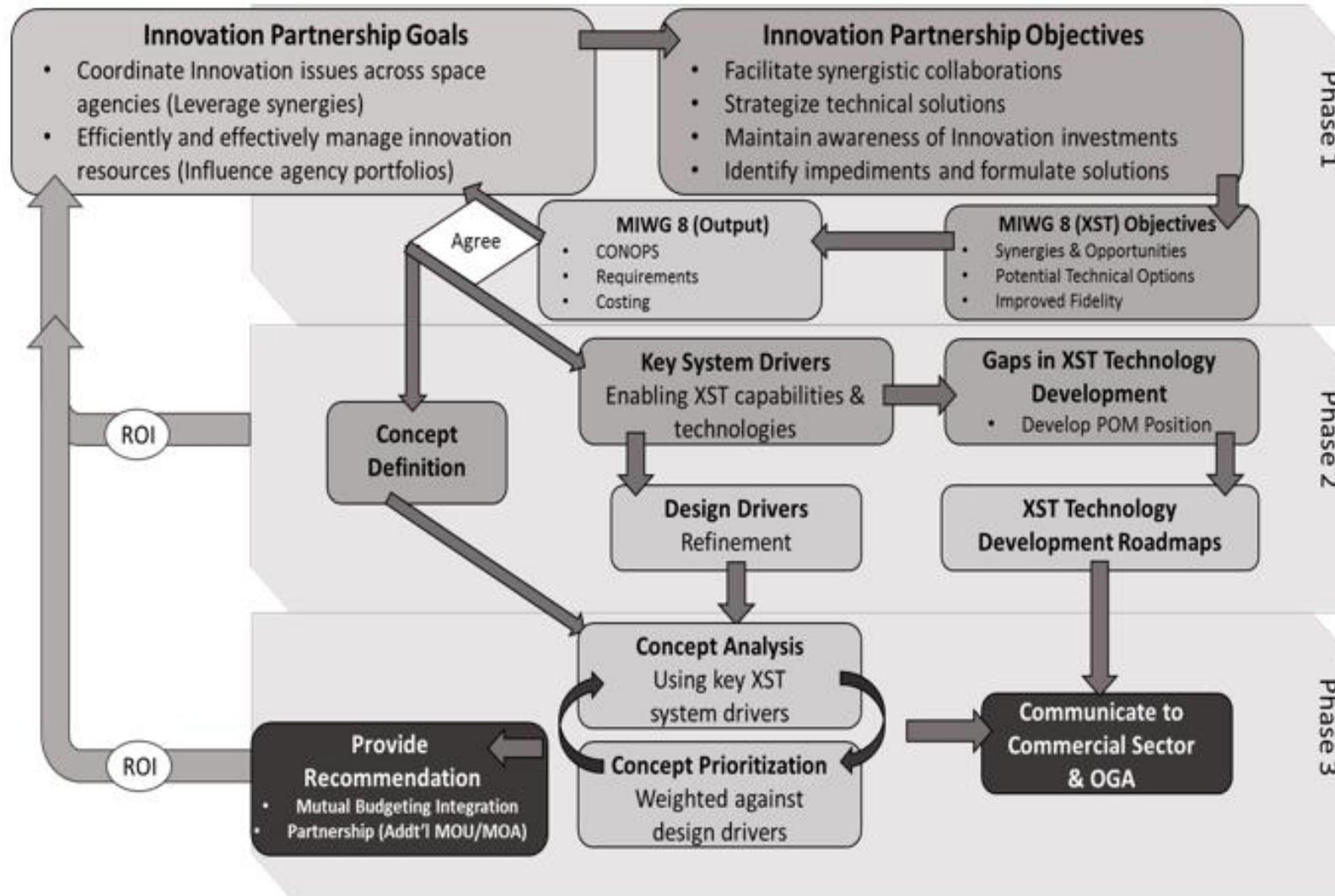
S&T Strategic Framework for iSA: Overview



Strategic Framework:

The strategic framework lays out how the advantages of new robotic technologies with government and commercial engagement will enhance in-space capabilities and reduce future costs.

Modified iSA Flow for XST Use



Conclusion

- Many demand that Space Acquisition needs to change
- One way to increase acquisition speed is to enhance/increase Developmental Test (DT)
- XST concept could rapidly provide that DT
- Large NRE already paid
- S&T iSA Space Forum Collaboration can bring down cost
- Create a broad based platform/facility for energizing rapid space improvements

After Action Observations 6-7 Nov iSA Info Exchange (Live Stream and Recorded)

- Government is interested in developing the XST Concept
 - NASA and OGA feel SMC is in best position to lead (bridge other two)
 - iSA “Mission” is not directly obvious for NASA or OGA
- Numerous Companies presented their responses to a survey (RFI like)
 - Biggest Near Term Impact: Something like “XST”
 - What markets can iSA facilitate: Mega Constellation Mgmt, “Trashman Cometh”, Mega Structures
 - How to accelerate iSA: Rise of the “2 year” refresh cycle
 - Private Public Partnership Suggestions: Robotics Tipping Point Demos, Mega Systems Integration Prototypes
 - Largest Hurdles iSA Faces: Standards/Interfaces, Lack of Costing Info, Getting initial revenue streams