

# *The Vision of a Space Safety Institute*

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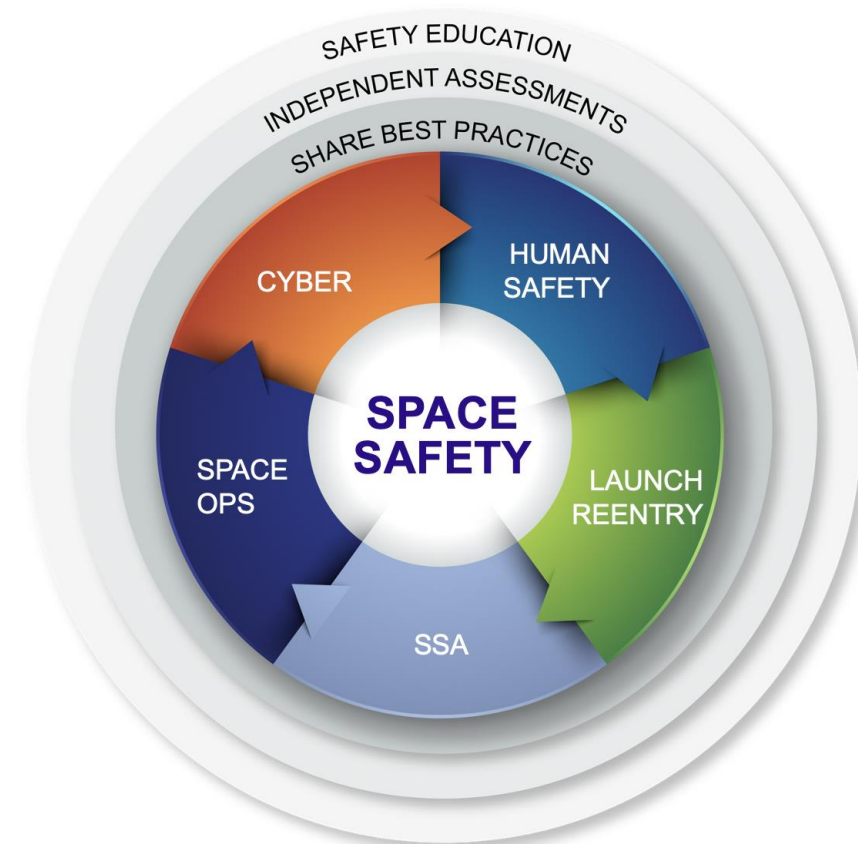
## *The Need for a Space Safety Institute (SSI)*

- Spaceflight offers significant benefits to society, the economy, and security
  - Global space economy could significantly grow over the next 20 years
  - Spaceflight is risk-prone and capital-intensive
  - Regulatory approach shifting from prescriptive to performance-based approach
- Growth of space activities depend on safe and assured space operations



## *The Vision of a Space Safety Institute*

- The Aerospace Corporation, in consultation with IAASS, is standing up a Space Safety Institute, in a phased approach.
- The vision of the SSI is to
  - promote activities that are safe,
  - support economic and scientific development,
  - and foster the long-term sustainable use of outer space.
- SSI will achieve this vision by
  - Providing space actors with sound science and engineering based on deep expertise in all aspects of spaceflight safety and space operations
  - Supporting standards development with technical and independent analysis
  - Educating the next generation of spaceflight safety experts
- SSI will enable and provide capacity building for
  - Commercial, governmental, and international entities



## Key Mission Areas for Spaceflight Safety



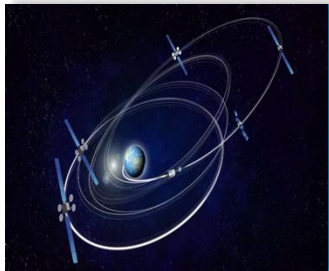
### LAUNCH AND REENTRY SAFETY

- Spaceport safety
- Design for demise
- Collision avoidance
- Reentry analysis



### SPACE SITUATIONAL AWARENESS

- Ground and space-based data collection
- Orbit determination and conjunction analysis
- Event and anomaly analysis



### SPACE OPERATIONS ASSURANCE

- Satellite servicing and active debris removal
- Debris mitigation
- Collision avoidance maneuvers
- Traffic coordination



### CYBER SECURITY IMPLEMENTATION

- Ground-based networking infrastructure
- Ground to space communications
- Space to space communications

### MISSION AREA ACTIVITIES

- Providing Independent Assessments
- Performing Technology Research
- Sharing Infrastructure, Tools and Data
- Supporting the Development of Policy and Strategies
- Supporting the Development of Standards and Best Practices
- Providing Safety Education

## *SSI enabling sharing of infrastructure, tools and methods for space safety capacity building*

- Space technologies are advancing fast and seeking tools, methods, and infrastructure for independent assessments
  - The SSI can provide and enable sharing of safety tools, methods, and infrastructure based on deep technical expertise of Aerospace Corporation and partner organizations
  - Strict policies are in place to protect intellectual property as needed
- Examples of safety relevant infrastructure, tools, and methods include
  - Mission planning tools
  - Design verification tools
  - Testing environments
  - Breakup processor
  - Cyber labs
  - Safety plan templates
- Additional safety education events (workshops, training, publications) will further strengthen the dissemination of safety information
- Sharing these capabilities will accelerate the success rate of nascent participants, build capacity, and benefit all space actors



## *SSI enabling and supporting best practices, guidelines, and standards*

- Space actors have called for best practices and guidelines in space operations for many years
- Example efforts include
  - COPUOS LTS Guidelines, ASTM F47, CONFERS, Space Safety Coalition, Space Sustainability Ratings, and many others
- SSI can support such efforts with technical expertise, tools and methods to create guidelines and standards that are technically informed
- SSI will not duplicate existing standards development but provide the technical foundation to promote their success



## Summary

*Spaceflight Safety calls for a holistic, collaborative and capacity building approach*

- The Space Safety Institute will enable capacity building by sharing capabilities, tools, and expertise based on the broad and deep expertise of the Aerospace Corporation and partner organizations
- The SSI can be an entry point for industry, government, and international entities to accelerate space activities that are safe and encourage space safety-related innovation
- The SSI will be offering safety workshops and training events to educate and inform new space actors
- We welcome collaboration and participation in the Space Safety Institute.



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