Technical presentation on

Consortium for the Execution of Rendezvous and Servicing Operations

Given at the United Nations Committee on the Peaceful Uses of Outer Space

Scientific and Technical Subcommittee

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Brian Weeden, Executive Director

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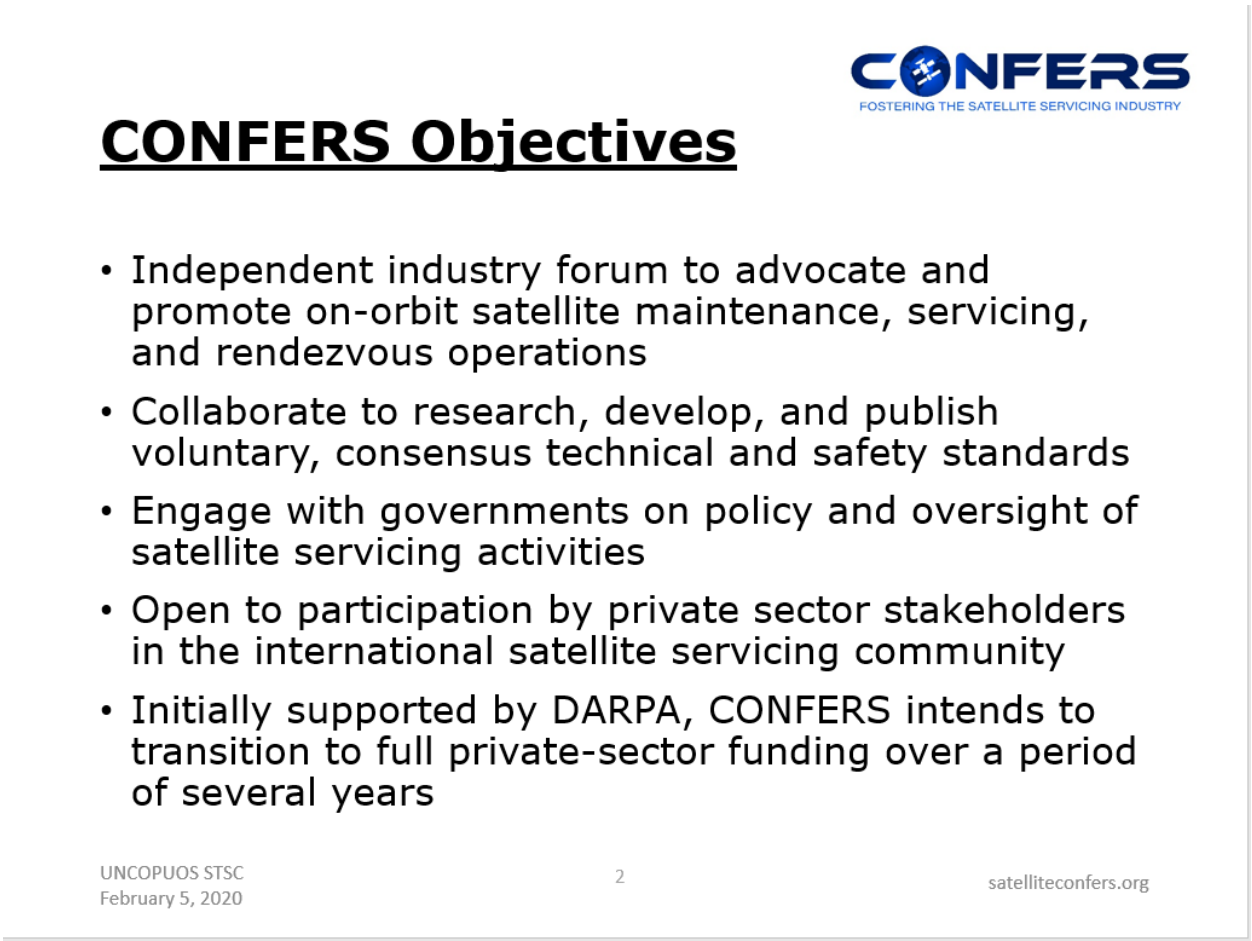
FOSTERING THE SATELLITE SERVICING INDUSTRY

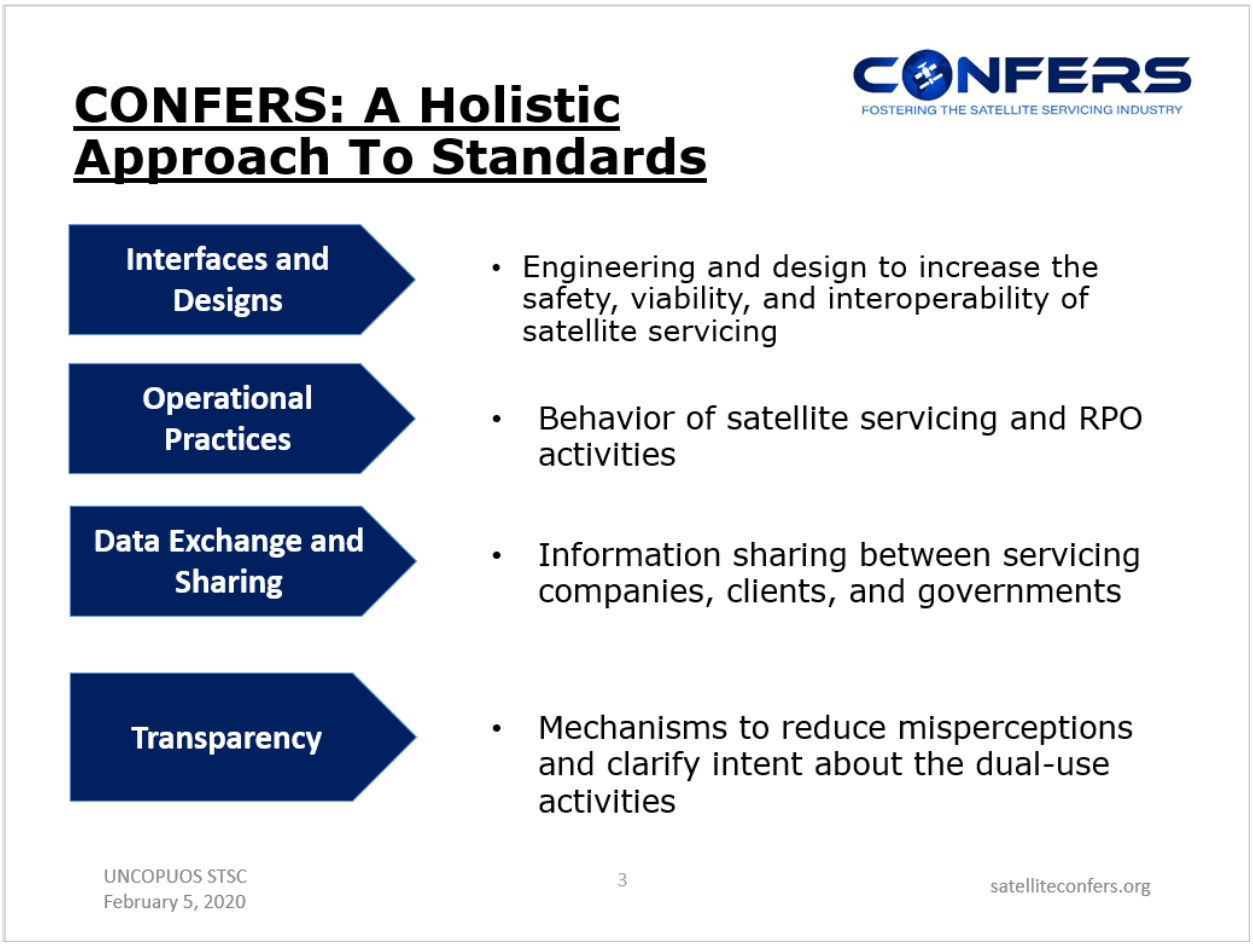
Update on the Consortium for Execution of Rendezvous and Servicing Operations (CONFERS)

Brian Weeden, Ph.D.
Secure World Foundation

Thank you, Madame Chair. Rendezvous and proximity operations (RPO) and on-orbit satellite servicing (OOS) capabilities continue to be refined and developed for a host of government and commercial space applications such as satellite inspections, repair, refueling, life-extension, and on-orbit assembly. Last year, I had the privilege to brief this subcommittee on CONFERS, a new international consortium of companies developing standards and practices for commercial satellite servicing. Today I would like to give a brief update on our activities over the past year.

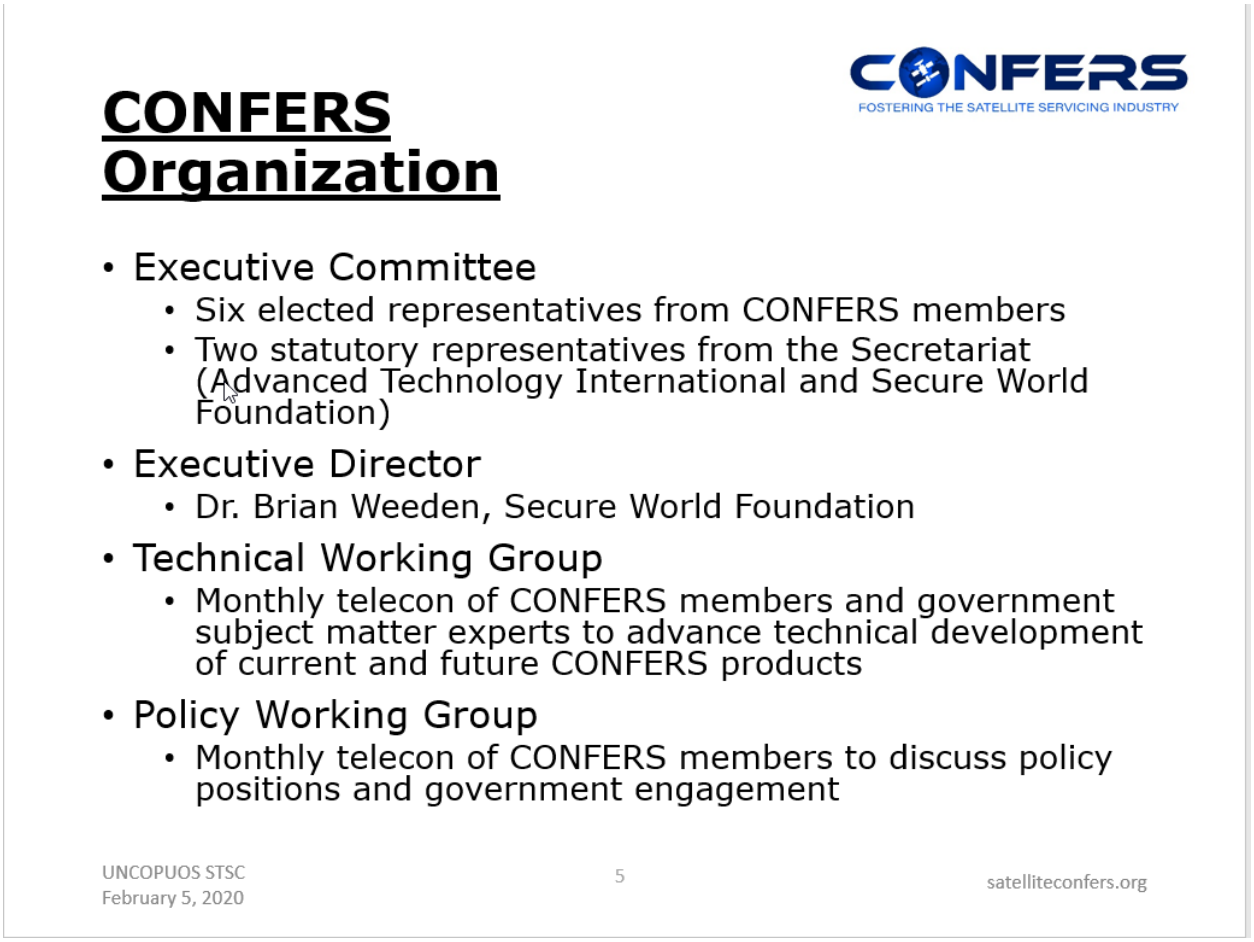


The Consortium for the Execution of Rendezvous and Servicing, or "CONFERS", is an independent industry forum created to advocate for and promote commercial on-orbit satellite maintenance, servicing, and rendezvous operations. Its goal is to bring together experts from industry, academia, and government to research, develop, and publish voluntary, consensus-based technical and safety standards. The Consortium also engages with governments on policy and oversight and licensing of commercial satellite servicing activities. While the initial funding for CONFERS came from the Defense Advanced Research Projects Agency, CONFERS is transitioning to a fully independent, private sector funded entity over the next few years.

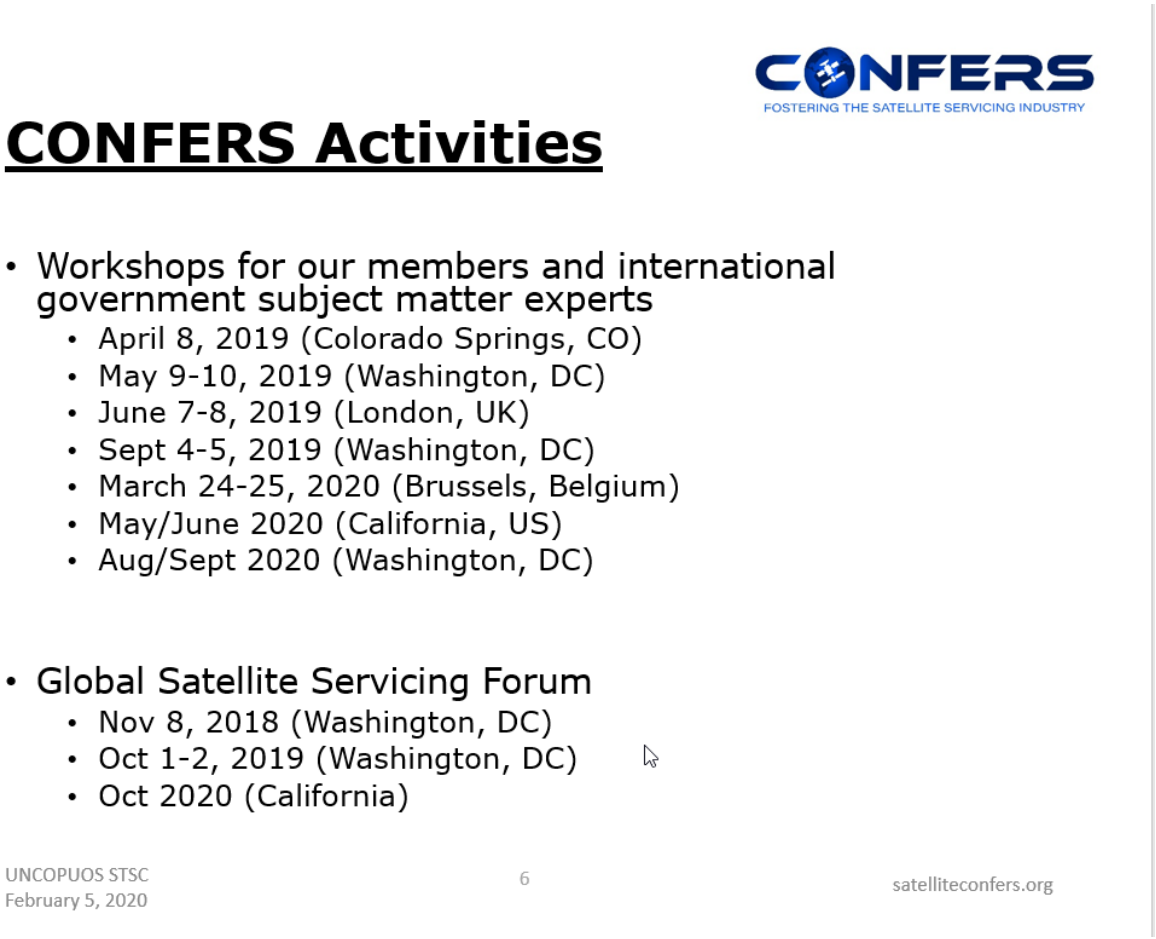


As briefed to this Committee last year, the main mission of the Consortium is to develop voluntary consensus technical standards for commercial satellite servicing in four different categories. The first category are interfaces and designs that can increase the safety, viability, and interoperability of satellite servicing. The second are operational practices that can help establish norms of responsible behavior for close approaches and proximity operations. The third are data exchange and sharing standards that can improve information sharing between servicing companies, clients, and governments. The fourth category are standards that will improve the transparency of commercial servicing activities to reduce misperceptions and clarify intent.

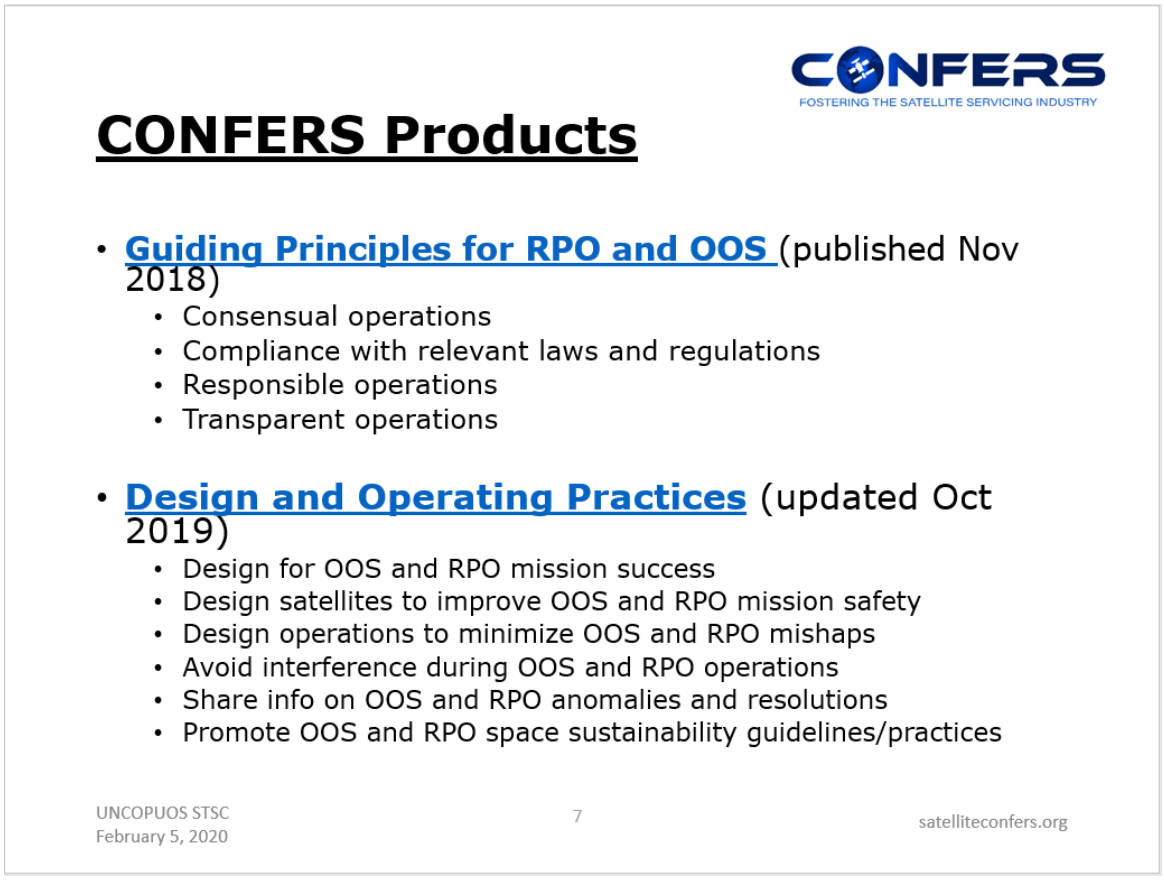
Since its formal launch in May of 2018, we have grown the Consortium to include thirty-five industry members across three different tiers: Sustaining, Contributing, and Observer. Our members represent a diverse cross-section of the global satellite servicing industry and include well-established companies, start-ups, servicing providers, potential servicing clients, manufacturers, and ancillary service providers such as insurance and commercial space situational awareness companies. Our current members are based in Canada, France, Germany, Japan, the United Kingdom, and the United States.



The Consortium is overseen by an Executive Committee made up of six industry representatives from our membership and two representatives from the Secretariat. I serve as the Executive Director of CONFERS, overseeing the day-to-day activities and reporting to the Executive Committee. We also have created two working groups, one on technical issues and one on policy issues, that meet monthly via telecon to discuss details of current and future practices, standards, and policy positions.



Our primary working method is to hold multiple workshops with over the course of the year. The workshops give our members, international government representatives, and subject matter experts a chance to exchange views in person and have focused discussions. We also host an annual Global Satellite Servicing Forum (GSSF), which is quickly becoming the premier annual event for discussing the global satellite servicing technology, market, and policy developments. The 2019 GSSF featured high-level keynote addresses from government leaders from the United States and Japan, panel discussions on the economics and market development of satellite servicing as well as the policy and regulatory impact, and briefings on upcoming on-orbit commercial satellite servicing tests and demonstrations.

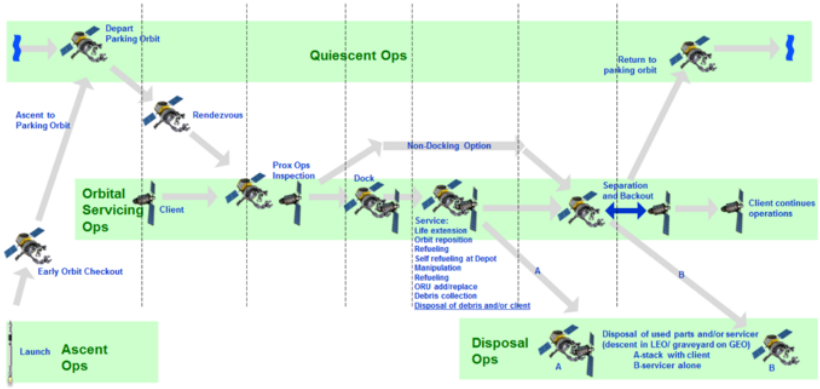


Over the past two years, CONFERS has published several products to advance best practices and standards development on commercial satellite servicing. In November 2018, we published the CONFERS Guiding Principles for Commercial Rendezvous and Proximity Operations (RPO) and On-Orbit Servicing (OOS), which highlights consensual operations, compliance with relevant laws and regulations, responsible operations, and transparency as the key principles that will underpin commercial RPO and OOS.

In October 2019, we published the second iteration of the CONFERS Recommended Design and Operational Practices, which provides more specifics on steps that can be taken to improve the safety, transparency and sustainability of commercial satellite servicing. The practices document, which is also available on the CONFERS website, includes recommendations on how to design for mission success, improve mission safety, minimize mishaps, avoid interference with other space activities, share information on anomalies and their resolutions, and promote space sustainability.

CONFERS Products

- **On-orbit Satellite Servicing Mission Phases** (published Oct 2019)
  - Baseline of mission phases that is intended to describe the functions of all OOS missions



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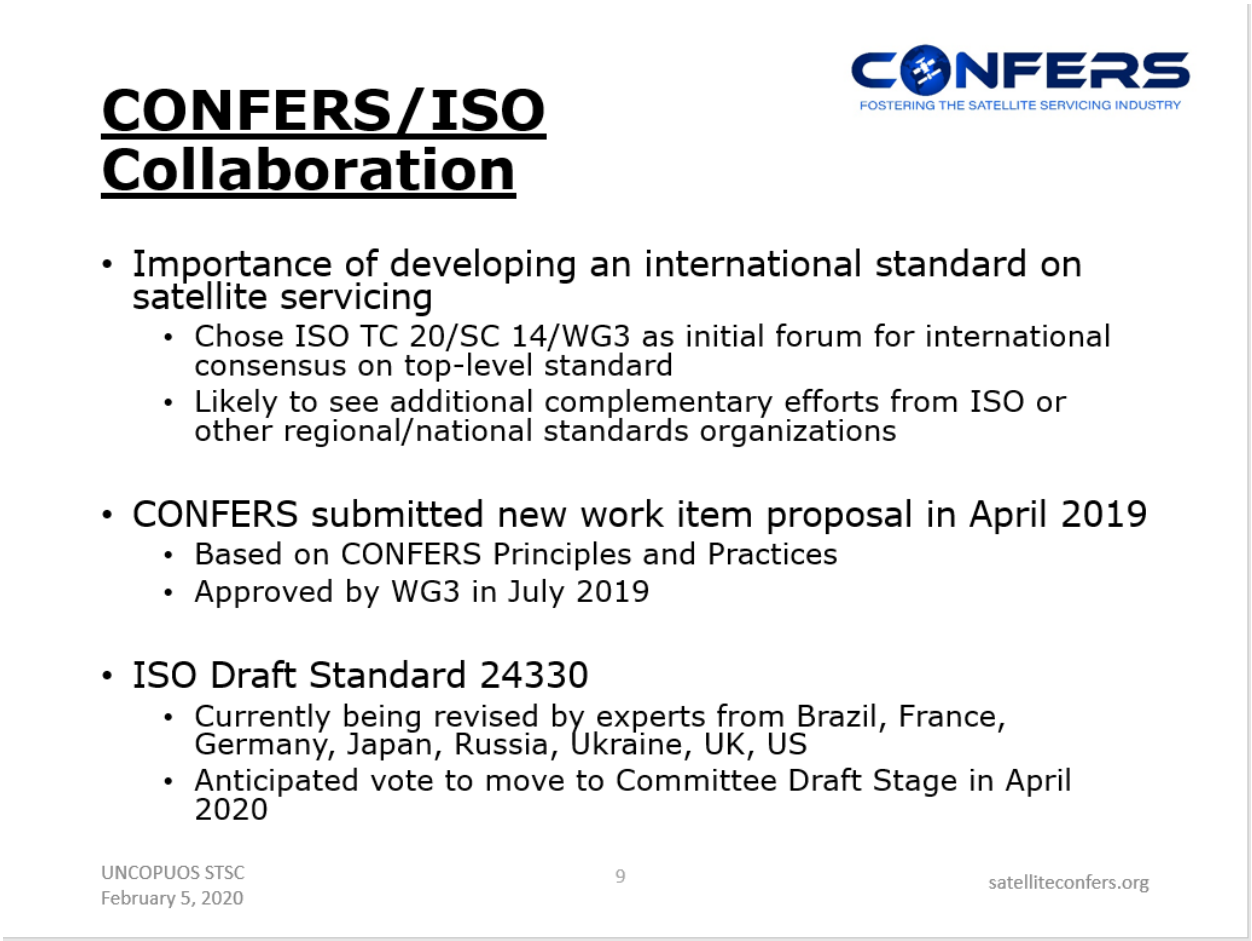
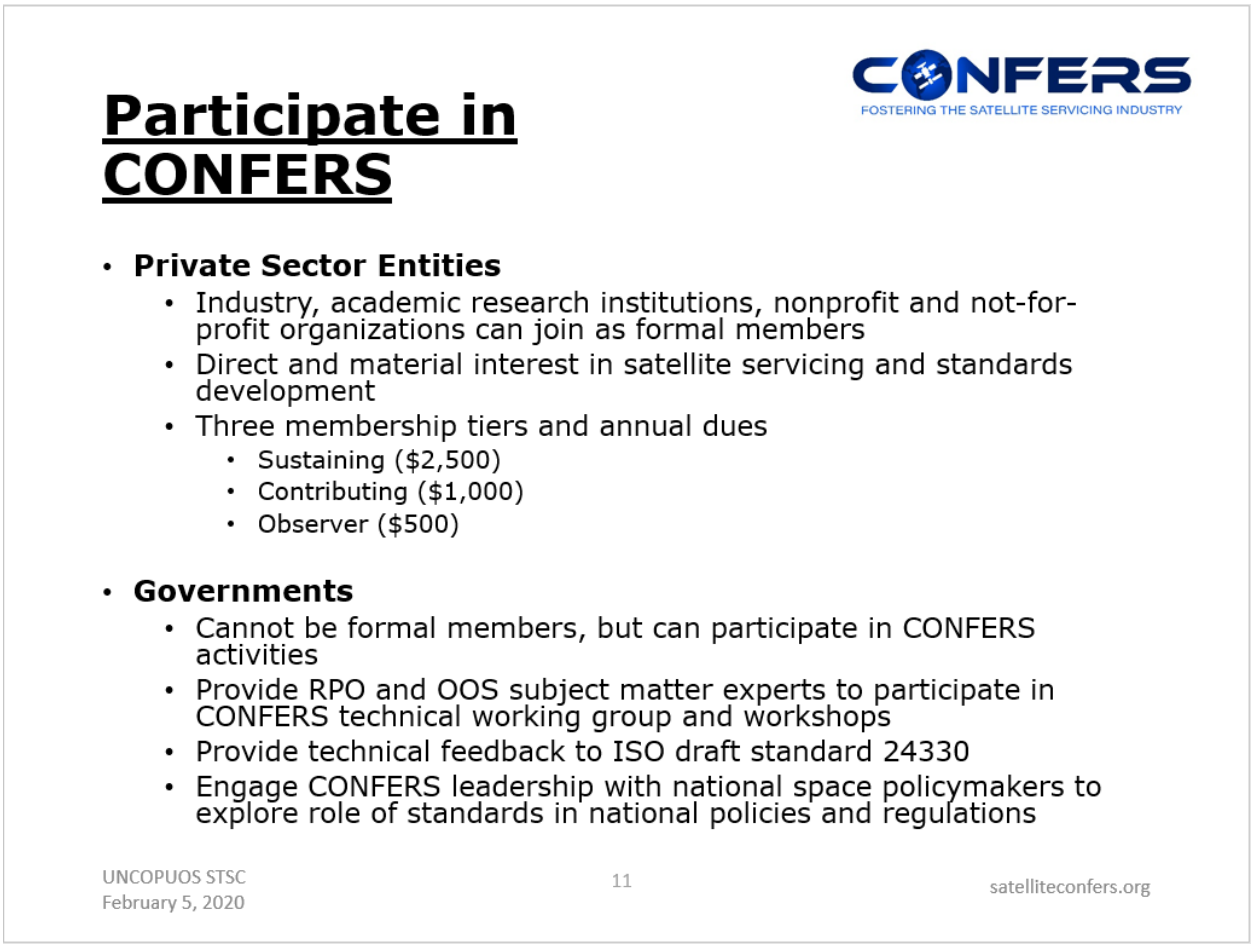
Also in October 2019, we published the first iteration of our On-Orbit Satellite Servicing Mission Phases Diagram. This document creates a baseline of mission phases that describe the functions and activities inherent to all commercial OOS missions. All three of these documents are publicly available on our website at satelliteconfers.org under the Resources section.



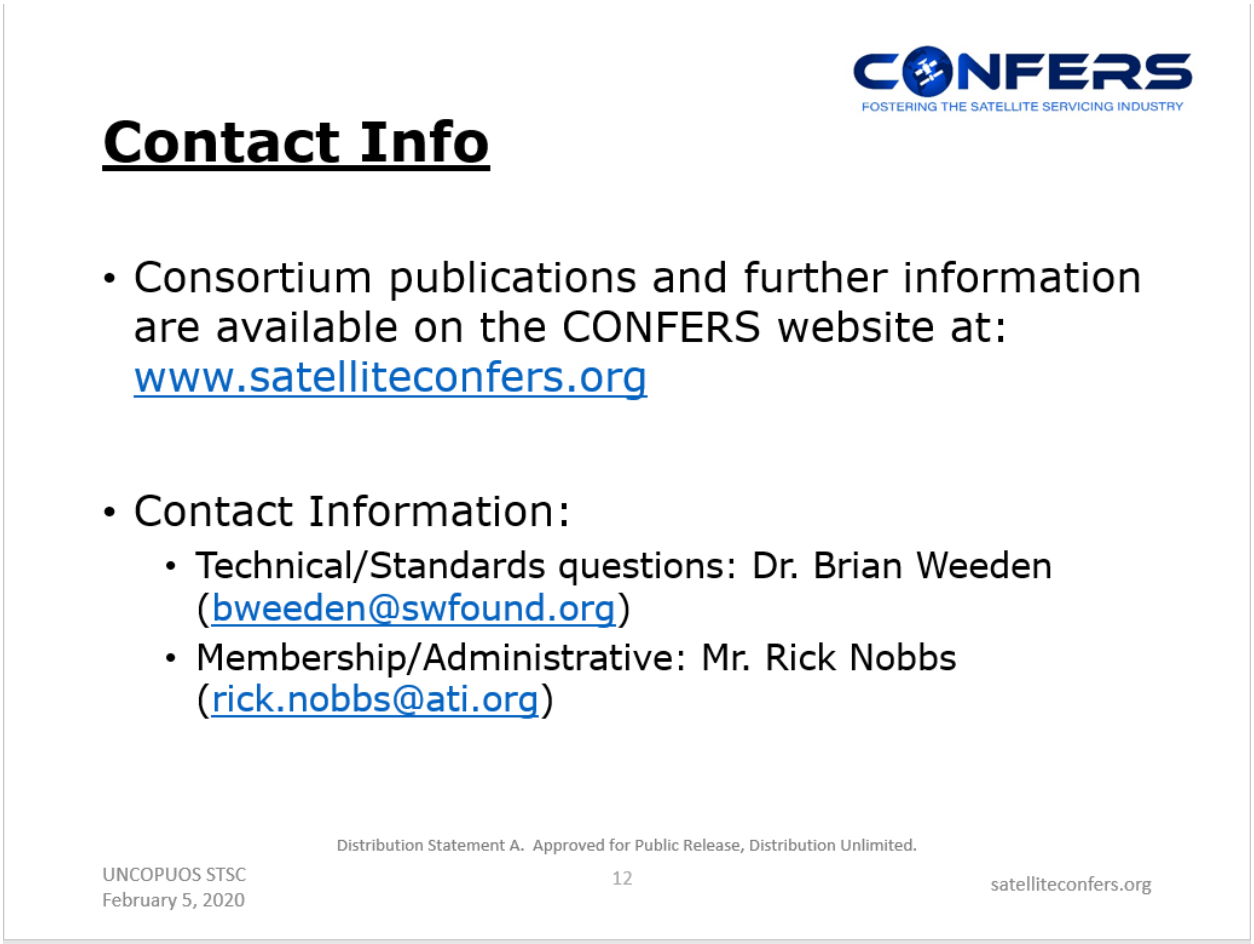
In addition to CONFERS publications, we have also engaged with existing standards development organizations to create formal international standards for satellite servicing. Our initial focus is on working with the International Organization for Standards (ISO) Technical Committee 20, Subcommittee 14 on space missions and operations (TC20/SC14). In April 2019, CONFERS submitted to ISO a new work item request and draft standard on satellite servicing, based on our principles and practices. That request was approved by Working Group 3 of SC14 in July 2019 and is currently being revised by subject matter experts from Brazil, France, Germany, Japan, Russia, Ukraine, the United Kingdom, and the United States as ISO draft standard 24330. We anticipate these countries will vote on moving it to the Committee Draft stage later this spring.

Over the past few years of operations, we have also made international outreach and engagement a priority. RPO and OOS are international capabilities being developed by a wide variety of organizations around the world and it is our goal to engage with as many stakeholders as possible to bring them into the discussion on best practices and standards. Our outreach activities range from formal briefings to individual governments and this Committee as well as participation in international conferences and publication of technical papers.



Private sector and government entities can both participate in CONFERS activities. Industry, academic research institutions, and nonprofit and not-for-profit organizations that have a direct and material interest in satellite servicing and standards development can apply for membership in the Consortium. We have three membership tiers with corresponding annual dues to help support our activities as we transition away from DARPA funding.

While government agencies cannot become formal members in CONFERS at this time, they can still participate in our activities by providing subject matter experts to participate in our workshops and working groups, providing technical feedback on the ISO draft standard, and engaging the CONFERS leadership with policymakers to explore the role of standards in national policies and regulations.



Further information on the Consortium, our activities, our members, and how to join can be found on our website at satelliteconfers.org. The website also has a signup link for our mailing list that we use to announce publications and events.

Thank you for your kind attention, and I look forward to any questions you might have.