TRACSS

Traffic Coordination System for Space

Office of Space Commerce
U.S. Department of Commerce
June 2026

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SSA and the Office of Space Commerce

- **Number of objects in space has been increasing rapidly**

- **OSC supports international coordination and transparency on SSA and the growth of U.S. commercial SSA sector**

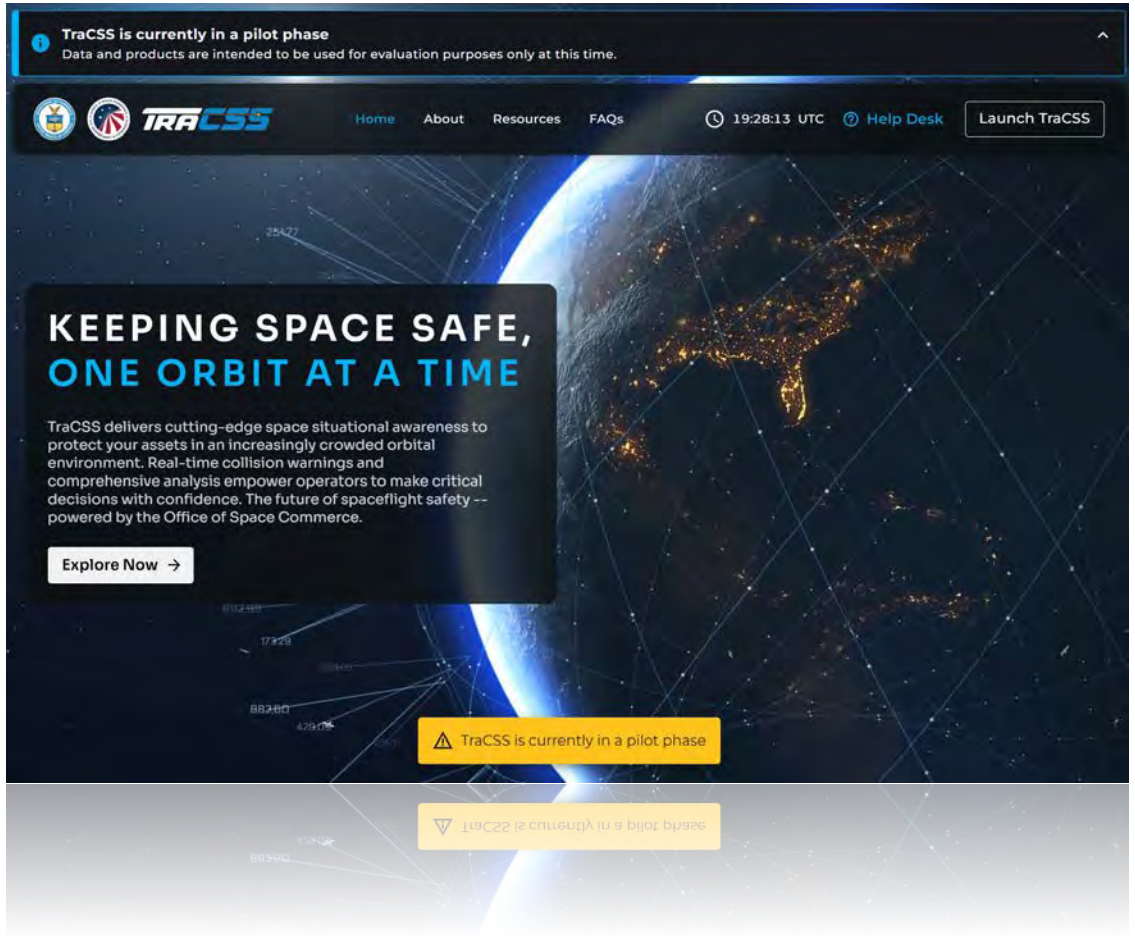
- **SPD-3** (2018) **calls for DoC to take on this responsibility, and *"make available basic SSA data and basic STM services*** *(including conjunction and reentry notifications)**"***
  - Enables improvements in SSA to ensure space safety and ensure continued investment in space

- **Executive Order on "Ensuring American Space Superiority"** (2025) **reaffirmed SPD-3 and called for *"enabling the sustainability of space operations through effective and responsible approaches to space traffic management"***

TraCSS' Safety Services

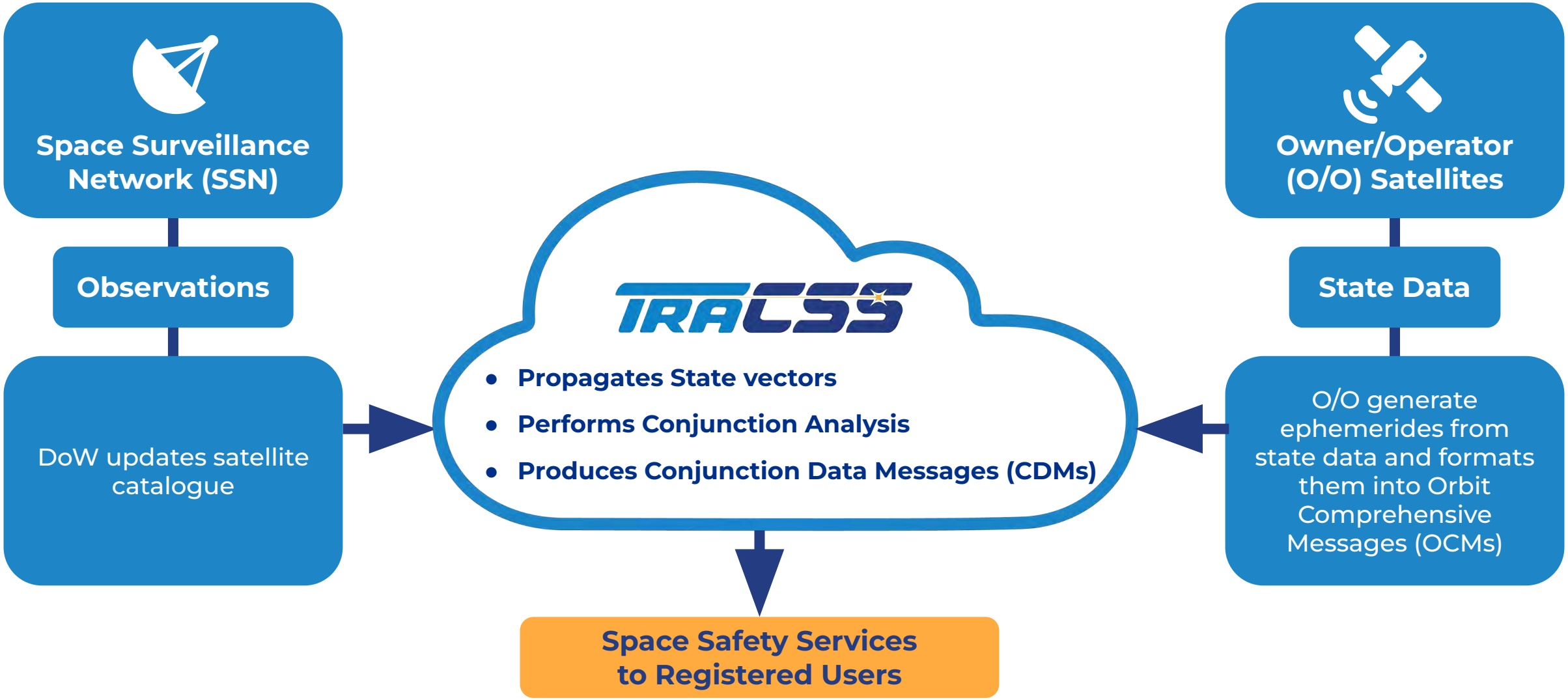
TraCSS provides spacecraft operators with services to support spaceflight safety, including:

- Conjunction screening every four hours using catalog and o/o ephemerides, and updated space weather info
  - Twice as frequent as current system
  - Enables more timely conjunction information
- Candidate maneuver screening (on demand)
  - Results in seconds or minutes, not hours
- Owner/ operator contact directory
  - Enables coordination with other operators
- Public SSA data and information *[Coming Soon]*
  - Facilitates internal analysis and international coordination



TraCSS will evolve using an agile process and incorporate additional capability over time.

Traffic Coordination System for Space



TRACSS Pilot User Map

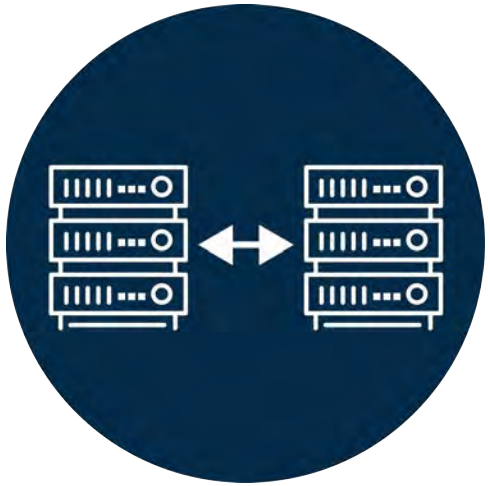
52 Pilot Users across **21** countries and **2** national government accounts | **11,125 Satellites**

TraCSS Public Data

- **In accordance with SPD-3 and U.S. law, TraCSS prioritizes transparency and data sharing**
  - Information is made openly available unless there is a specific security or proprietary need to restrict access

- **Publicly-available data benefits multiple user groups:**
  - Operators that want to do their own analysis
  - Entrepreneurs and commercial SSA providers that use data and information as foundation for new products and services
  - Research community that uses data and information to advance the state of the art for spaceflight safety
  - Other national and regional SSA providers that can use the data and information to improve coordination and alignment among SSA systems to provide more consistent information to spacecraft operators

TraCSS Public Data Cont'd



Open data shared:

- TraCSSCat - List of all unclassified objects in space, including spacecraft attributes provided by owner/ operators, NASA, and other sources
- Spacecraft location information in TLE format (aka TLE catalog)
- High-accuracy spacecraft location (aka SP Ephemerides w/o covariance)
- TraCSS Conjunction Notifications (TCNs): CDMs for events about a set risk threshold
- Owner/ operator ephemerides with maneuver plans: O/o's own information about where they are located and where they are going
  - In-line with industry best practices, we facilitate open sharing of ephemerides - provide them to TraCSS and we make them publicly available
  - Enables operator analysis, ensures commercial and international SSA systems have accurate information without need to upload to every system individually

TraCSS Registered User Account Types

Spacecraft Owner/Operator

Any entity with legal decision-making authority over the operation of a spacecraft (government or private)

- E.g. Iridium, ESA

National Government (Read only)

Governmental entity (or entities) from a single country interested in monitoring the space safety situation of all spacecraft affiliated with their country. This is a 'read-only' account.

- E.g. France, Thailand

TraCSS 3rd-Party Access & Open Data

3rd-Party Provider

3rd-party organizations with a contractual relationship with a TraCSS Registered User

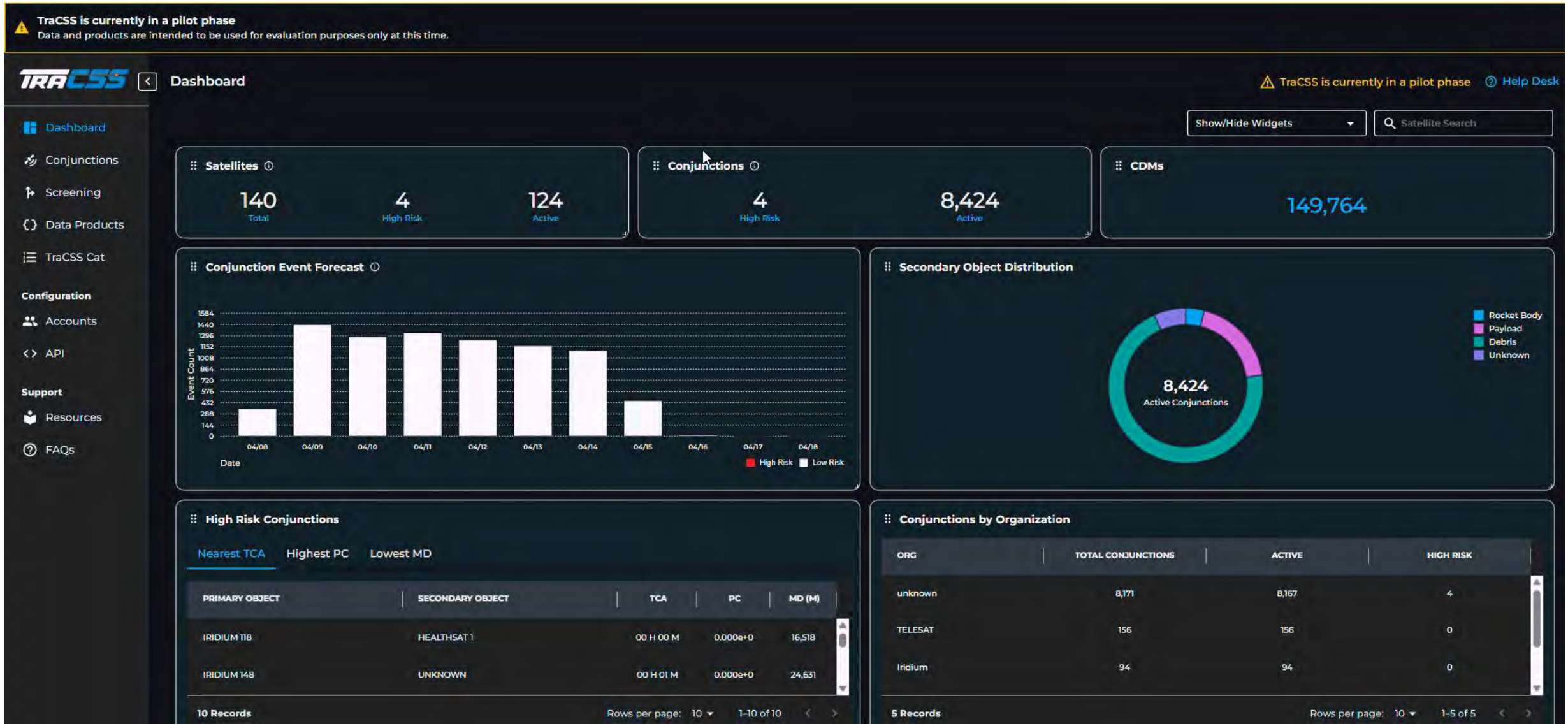
- E.g. Company with a contractual relationship to provide SSA services for Satellite Owner/ Operator
- Added as a sub-user by the satellite owner/ operator
- Provided access to subset of satellites determined by O/O

Open-Data User

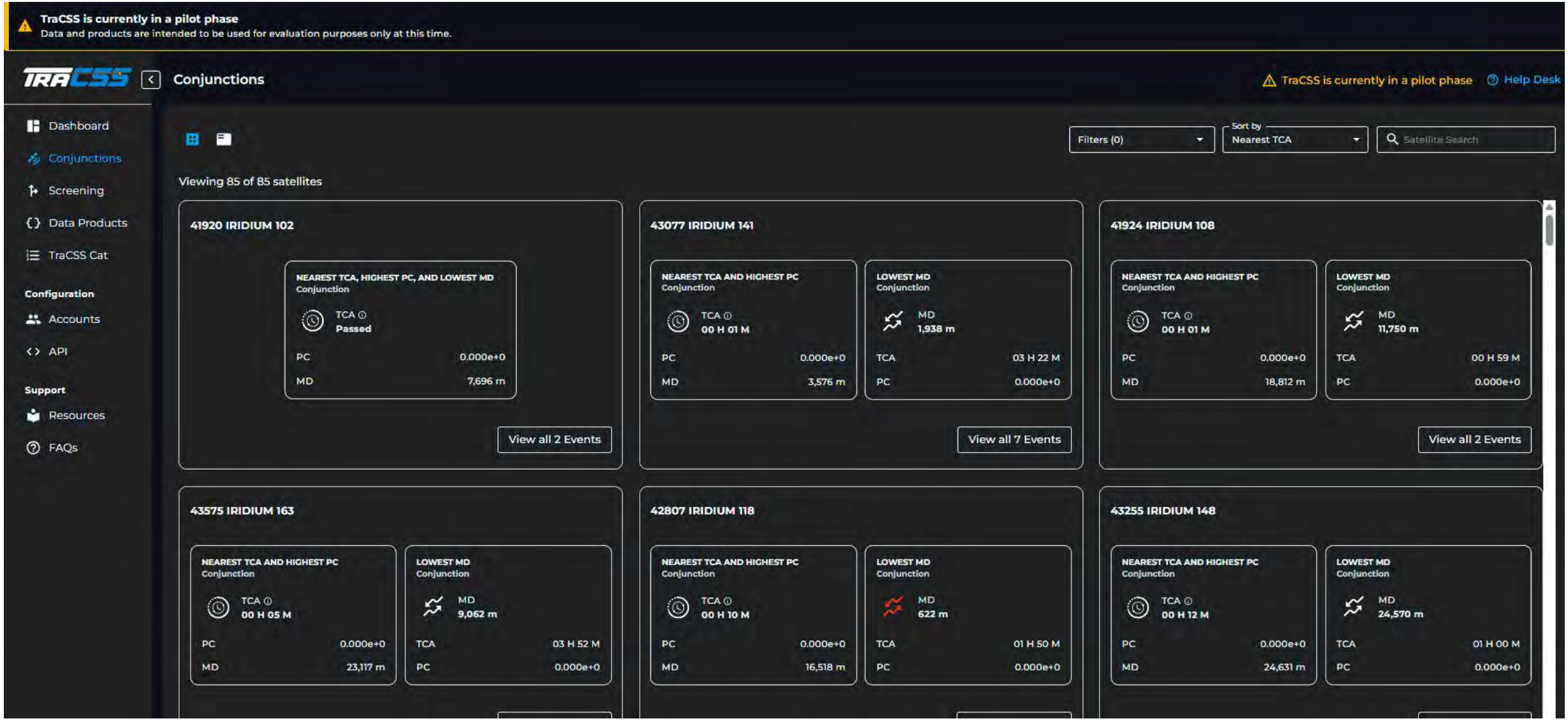
Person(s) or organization(s) that do not fall under the O/O, National Government, or 3rd-Party Provider category

- Registered User account NOT required
- Provided open-data access to publicly available TraCSS data products

TraCSS App - Dashboard Page (GIF)



TraCSS App - Conjunctions Page (GIF)



TraCSS Public vs Registered User API

TraCSS Public API

Available to anyone interested in obtaining TraCSS open data products. A registered user account is not required.

- Available through the Public Data service
- Access / download the TraCSS Cat
- Access / download O/O provided operational ephemeris via the OCM file format with covariance
- Access / download Orbit Mean Elements Messages (OMMs) with Two-Line Elements (TLEs) included
- Access / download Break-Up Notifications (BUNs)

TraCSS Registered User API

Available to Satellite O/Os and 3rd-Party Providers who have registered for an account on TraCSS and claimed operational satellites

- Access to all Public API data and services
- Access / download full CDMs for your spacecraft
- Access to the TraCSS O/O Contact Directory
- Upload ephemeris to TraCSS via the OCM format
    - Routine and On-Demand Screening
        - On-Demand Screening - Candidate and Operational (Singular and Batch screening)
- Access / download Tracking and Impact Prediction Messages (TIPs)

TraCSS and Private Industry

SPD-3 Directed the Office of Space Commerce to foster “continued growth and innovation in the U.S. commercial space sector, which includes S&T, SSA, and STM activities.”

Private Spacecraft Operators

- More than 70% of spacecraft in orbit are non-governmental
- Continued private investment in space requires a safe, sustainable environment
- TraCSS enables this by ensuring that all spacecraft operators around the world have access to the basic safety information they need to avoid collisions
- TraCSS works directly with private industry spacecraft operators to understand their needs

Commercial SSA Providers

- The U.S. currently has a vibrant commercial SSA sector that provides unique data and advanced capabilities
- TraCSS directly incorporates commercial SSA capabilities into its system, for example with its user interface
- TraCSS only provides a core set of safety-oriented services, we recommend owner/operators go to the commercial SSA sector for tailored and advanced services
- We provide access to information (catalog, o/o ephemerides, etc.) that commercial entities can build on and use to provide new innovative products

Need for Improved Global SSA Coordination

Spacecraft operators often aren't able to coordinate effectively with operators in other countries.

Uncoordinated national and regional SSA centers provide potentially conflicting info to operators

Global Coordination Efforts

TraCSS Open and Transparent Data Sharing

- SP Catalog w/o covariance, O.O ephemerides, TraCSSCat, High-Risk CDMs

TraCSS National Government Accounts

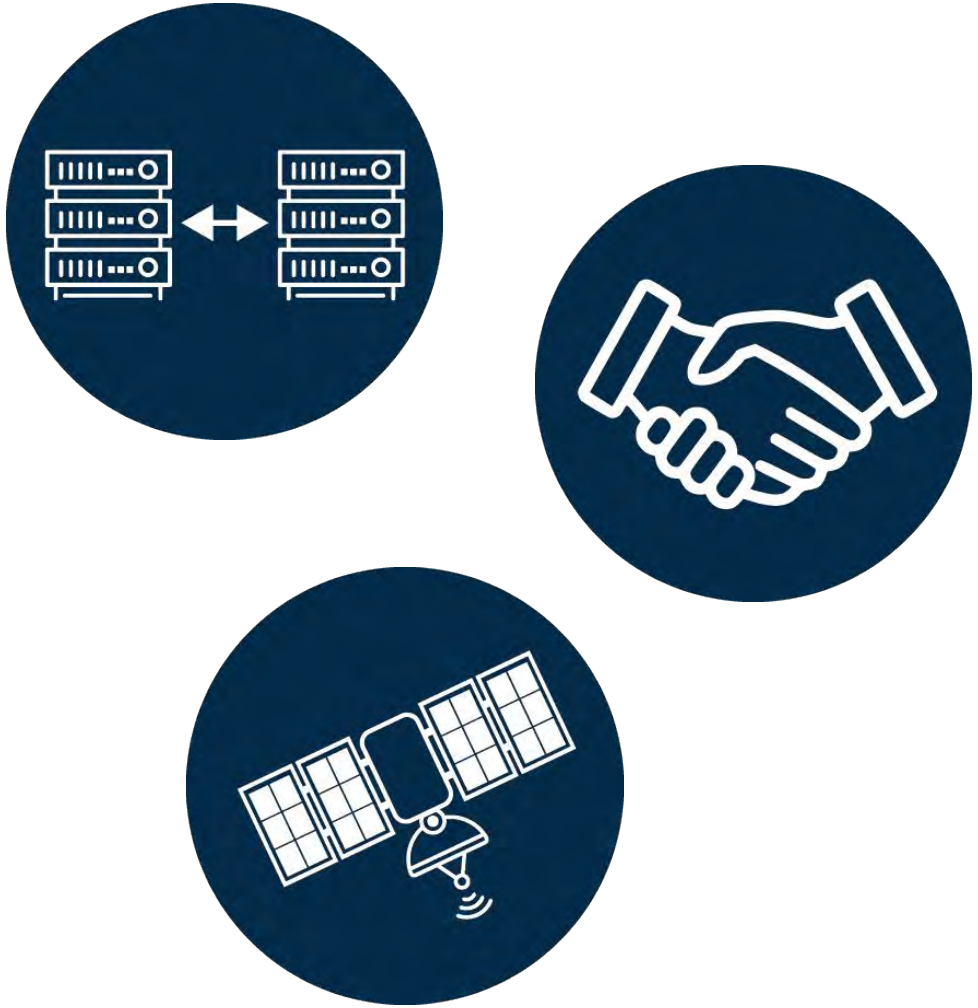
- Provide national insight into space safety
- Increase engagement with space safety

Bilateral Partnerships and Technical Coordination

- Coordination with many countries
- Joint technical studies with EU SST

UN COPUOS SSA Expert Group

- Active engagement of OSC and private sector



Sign Up for TraCSS

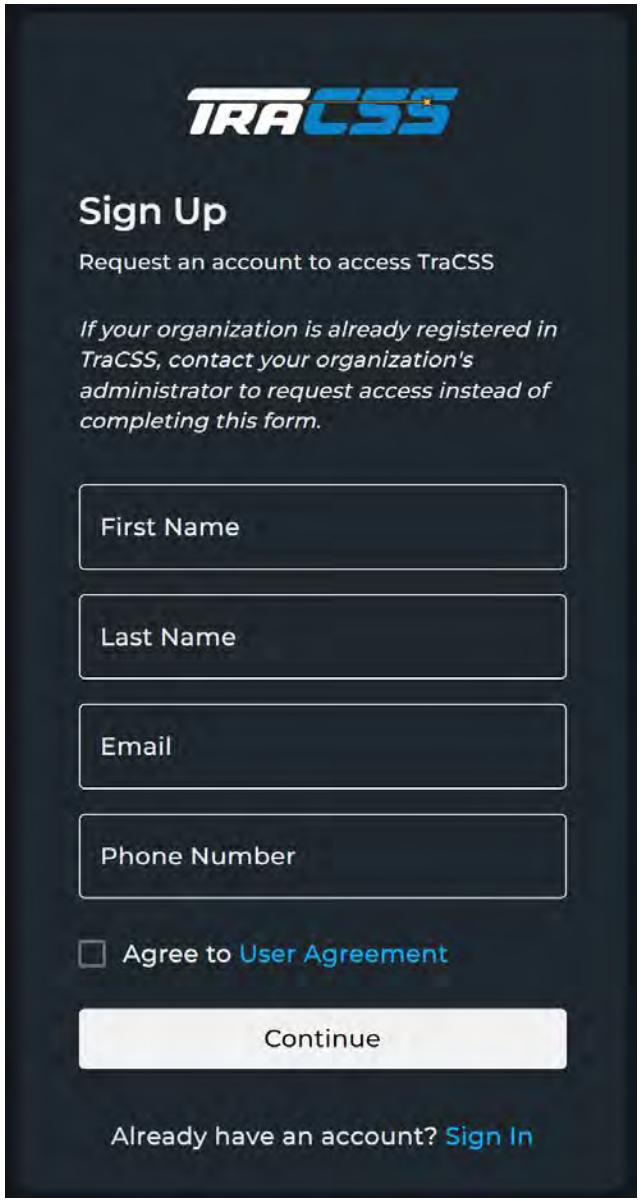
Sign up for TraCSS

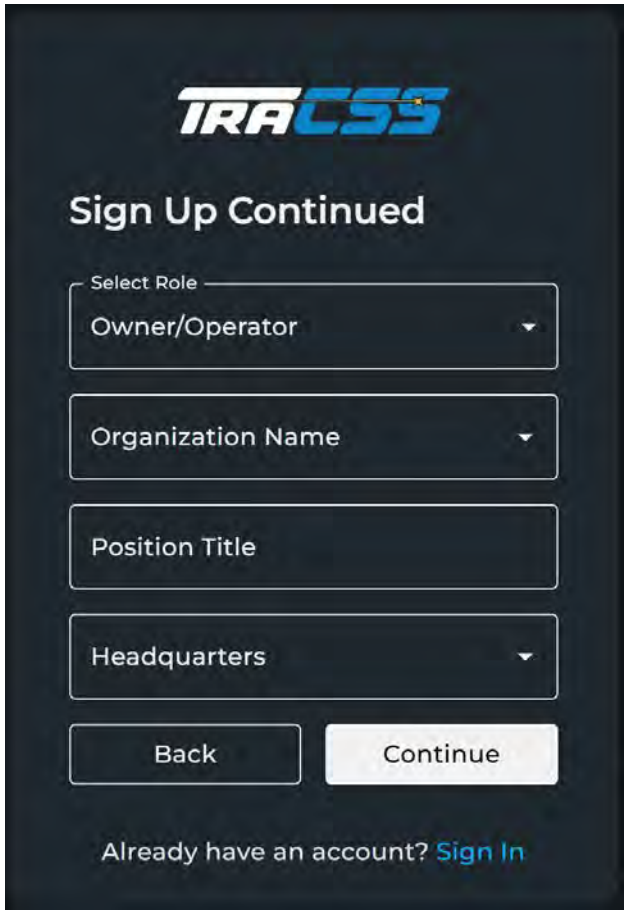
Onboarding is available for spacecraft owner/ operators and national government users.

O/O Sign-Up Process

Visit app.tracss.gov and select "Sign-Up"

- Organization Name
  - If not in drop down, please contact the TraCSS team to be added at tracss.outreach@noaa.gov
  - Name can be changed after sign-up
- User Agreement
  - You must scroll through to acknowledge
- First person to sign-up will be granted admin role
- Subsequent users should not register for an account, they should be added by the organization's admin(s)

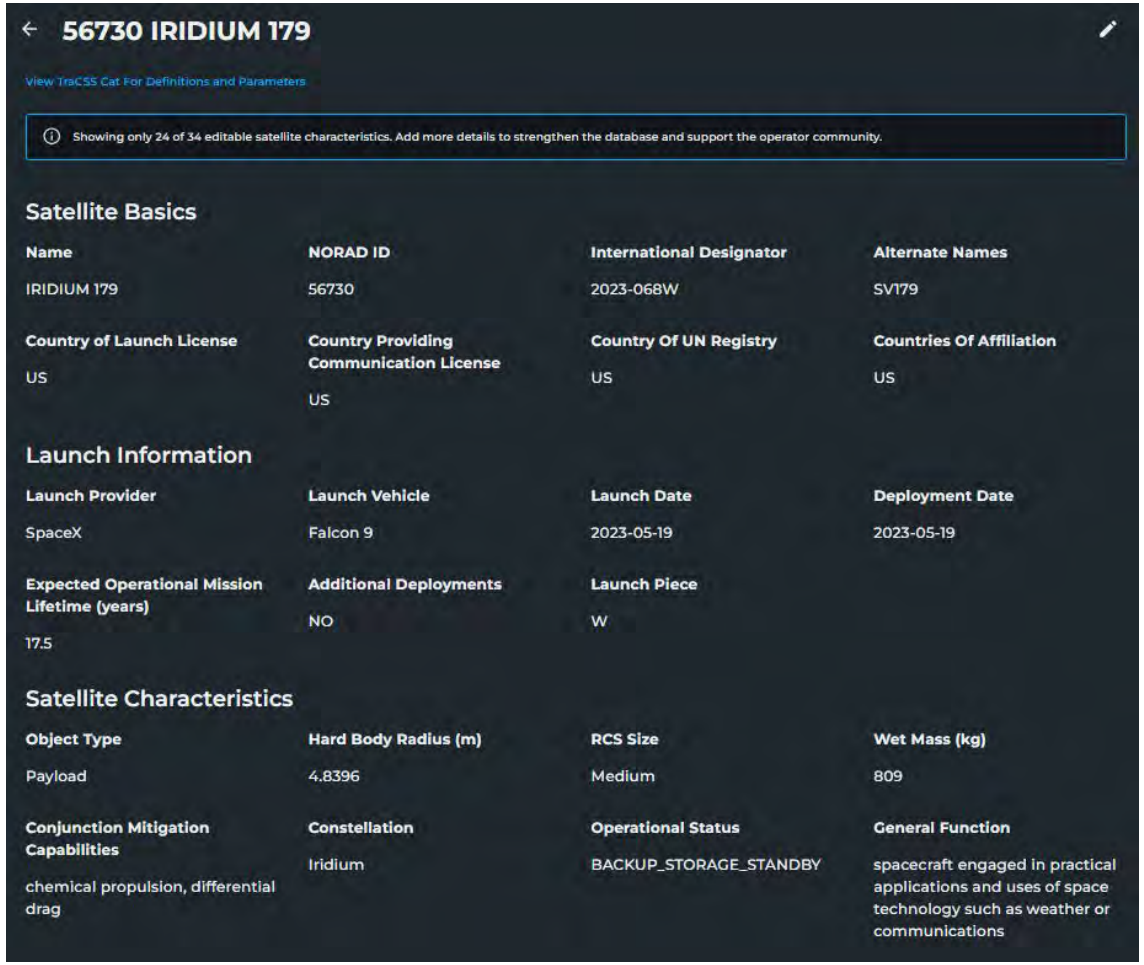




O/O Sign-Up Process - TraCSS Satellite File

Complete the TraCSS Satellite File

- Template provided in the sign-up page
- For cataloged objects, it provides an opportunity to update outdated information in the TraCSSCat
- For new objects, enables O/Os to share information about their spacecraft
- Minimum required fields:
  - NORAD ID and Satellite Name
- Highly encouraged to provide as much information as possible
- Some TraCSSCat fields accept binned values
  - Hard Body Radius (HBR) - small, medium, large
- For guidance, see the "How To Complete Your TraCSS Satellite File" document on tracss.gov/resources



56730 IRIDIUM 179

View TraCSS Cat For Definitions and Parameters

Showing only 24 of 34 editable satellite characteristics. Add more details to strengthen the database and support the operator community.

Satellite Basics

Name	NORAD ID	International Designator	Alternate Names
IRIDIUM 179	56730	2023-068W	SV179
Country of Launch License	**Country Providing Communication License**	**Country Of UN Registry**	**Countries Of Affiliation**
US	US	US	US

Launch Information

Launch Provider	Launch Vehicle	Launch Date	Deployment Date
SpaceX	Falcon 9	2023-05-19	2023-05-19
Expected Operational Mission Lifetime (years)	**Additional Deployments**	**Launch Piece**	
17.5	NO	W	

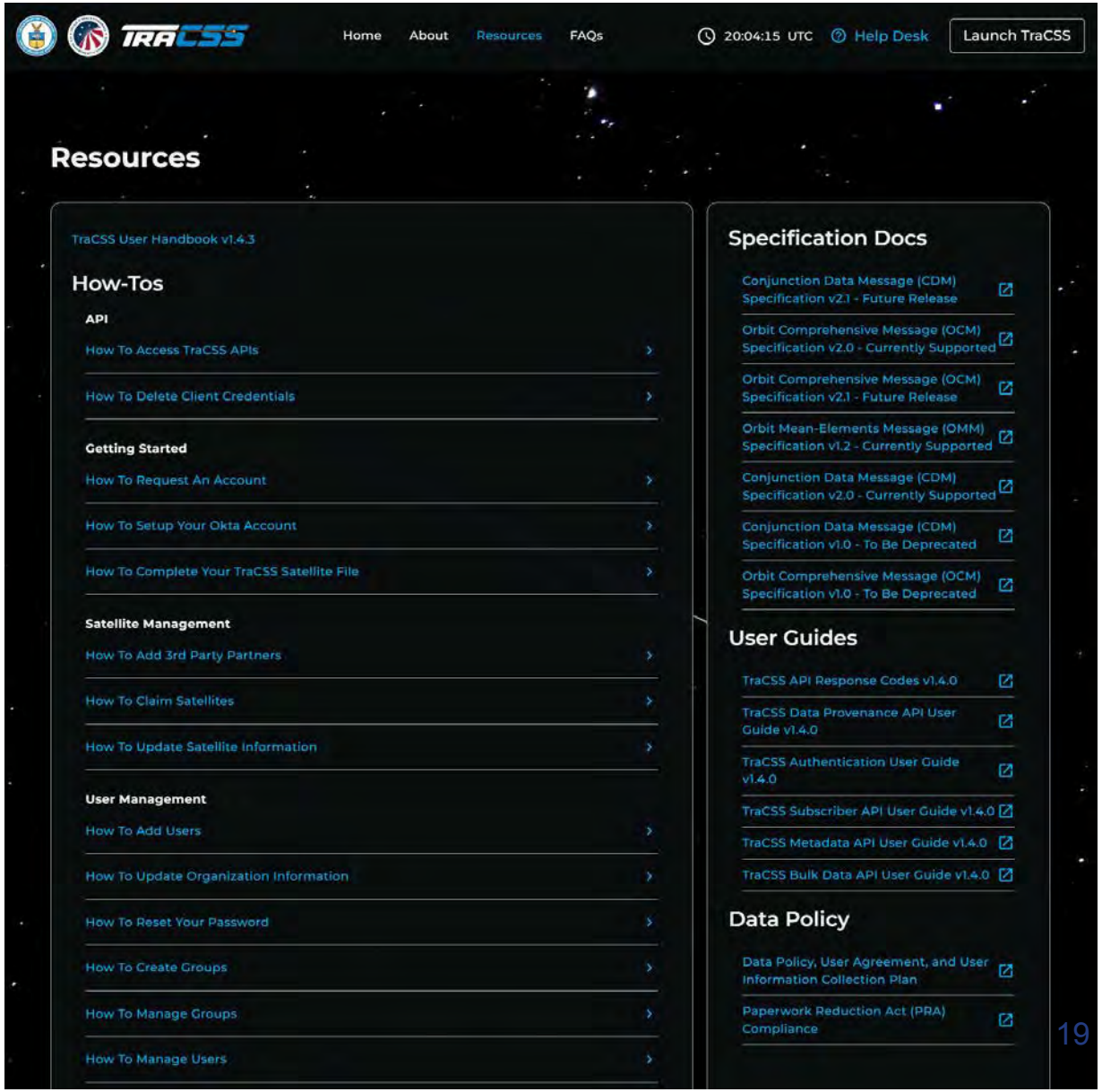
Satellite Characteristics

Object Type	Hard Body Radius (m)	RCS Size	Wet Mass (kg)
Payload	4.8396	Medium	809
Conjunction Mitigation Capabilities	**Constellation**	**Operational Status**	**General Function**
chemical propulsion, differential drag	Iridium	BACKUP_STORAGE_STANDBY	spacecraft engaged in practical applications and uses of space technology such as weather or communications

TraCSS App partial view of TraCSSCat Information

TraCSS Resources

- TraCSS.gov/resources
- **Handbook**
- **“Getting Started Section”**
- **Procedural How-Tos**
- **API User Guides**
- **TraCSS System Specs**



Engage with OSC on TraCSS

TraCSS webpage

TraCSS.gov

News, videos, and information on engagements, including past and upcoming public listening sessions

Email

tracss.outreach@noaa.gov

Submit TraCSS-related questions, comments, & feedback

Thank you