SPACE DATA ASSOCIATION

JOE CHAN
CHAIRMAN AND EXECUTIVE DIRECTOR

Space Data Association (SDA)

The SDA's charter is to seek and facilitate improvements in the safety and integrity of satellite operations through wider and improved coordination among satellite operators and to facilitate improved management of the shared resources of the space environment.

The SDA was formed in 2009 by satellite operators to improve safe operations through data sharing. SDA's automated space situational awareness system designed to reduce the risks of on-orbit collisions. Initial Space Data Center operations began in July, and full capabilities were online April 2011.

SDA Membership status: 32 participants, 287 GEO and 445 LEO/MEO satellites, 51% of active GEO

Satellite Regime	#
GEO*	287
MEO/LEO	445
Total	732

Approved for public release

SDA Overview

The Space Data Association (SDA) is a formal, non-profit association of civil, commercial and military spacecraft operators that supports the controlled, reliable and efficient sharing of data that is critical to the safety and integrity of satellite operations. The SDA offers:

- An association that directly supports operations; self founded by satellite operators

- Translucent operational data exchange model to help ensure the safety of operations

- Technical support to help secure the integrity of operations

- Shared costs that optimize your participation and reduce individual costs

SDA Objectives

- **Enhance "Safety of flight"**
  - Maintain the long-term viability of satellites and their orbit regimes

- **To improve the accuracy of collision avoidance predictions**
  - Expand satellite operator participation
  - Adopt best practices across industry
  - Provide necessary framework for full operations (legal, technical)
  - Address ops. issues with current cross-industry coord.
    - Reduce false alarms, missed events
    - Minimize member time and resources devoted to CA

- **To take advantage of opportunities for other data sharing**
  - RFI mitigation, including data for RFI geolocation
  - Company contacts
  - General operations data sharing

Conclusion: SDA Enhances Satellite Operations

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SDA: A Trusted Platform

- **Over the years, SDA has built and demonstrated a trusted platform for the secure exchange of satellite operational data**

- Technical infrastructure **of the SDC: security, data access, etc.**

- Legal structure **and agreements that provide protections and enforcement mechanisms to ensure that data is only used for intended purposes**

- **Reliabilities and geographical redundancies to ensure 24x7 uninterrupted operations and member technical supports**

- Collaborative and continuous **development improving techniques and algorithm to refine close approach detections and actions**

- **Growing in capabilities, membership and partners**
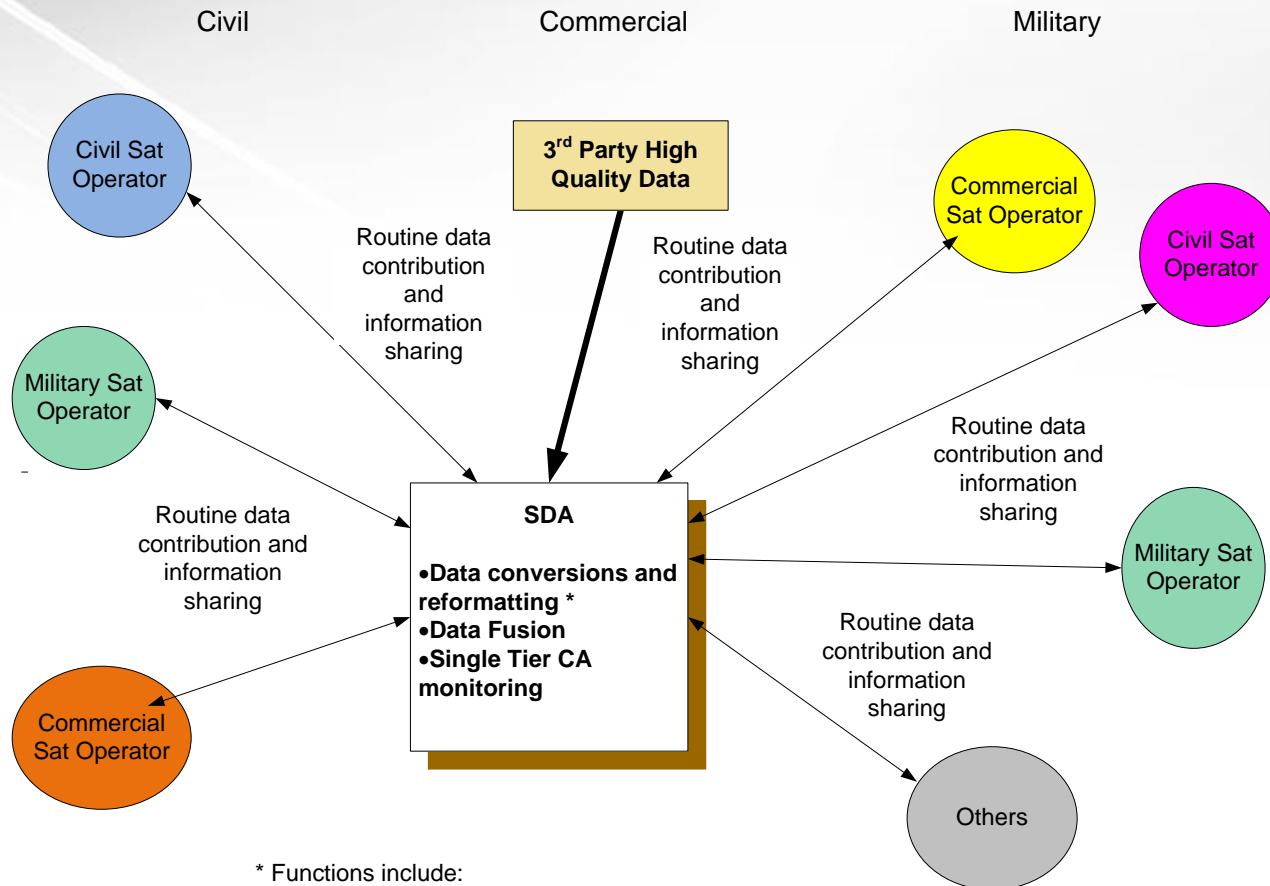
These are UNIQUE CAPABILITIES

SDA: Current Services

- ## Neighbourhood watch

- ## Independent verifications of shared data

  - **Offered as part of SDA's quality assurance focus**

  - **Initial and annual independent verifications**

  - **Ensures proper conversion to common reference frame and time systems**

  - **Identifies sensor and processing issues**

Space Data Center (SDC)

- **SDC is the processing center of the SDA**

- **Key Mission Areas:**
  - Collision avoidance monitoring (Conjunction Assessment)/ Maneuver Planning Validation / Flight Safety
  - Promote and provide guidance for safe space operations
  - Contact information (operations center) for participating satellites

- **Reliable and secure operation:**
  - Geographically-separated redundancy
  - High-level data security and encryption
  - Best practice Information Assurance (IA) based on standards for high level computing systems

SDA Operators Vision for CA

Civil   Commercial   Military

Civil Sat Operator

3rd Party High Quality Data

Commercial Sat Operator

Civil Sat Operator

Military Sat Operator

Routine data contribution and information sharing

Routine data contribution and information sharing

Routine data contribution and information sharing

SDA

- **Data conversions and reformatting ***
- **Data Fusion**
- **Single Tier CA monitoring**

Routine data contribution and information sharing

Military Sat Operator

Commercial Sat Operator

Routine data contribution and information sharing

Others

* Functions include: Data quality control, close approach monitoring and reporting

Conclusions

- **SDA formed to improve space operations**
  - Focused on the present but with an eye to the future

- **SDA's combination of a trusted legal framework and a trusted Space Data Center is unique in highly-competitive space arena**

- **SDA leveraging its experience and capabilities to engage and promote best practices for safety of flight**

- **Opportunity to include RFI analysis capabilities**