SPACE DATA ASSOCIATION

IAA Space Debris Committee

Mark Rawlins, SDA Chairman

21 March 2017

SPACE DATA ASSOCIATION

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
- SDA has a legal structure and agreements that provide protections and enforcement mechanisms to ensure data is only used for intended purposes
- The Space Data Association relies on the Space Data Center (SDC) operated by AGI for flight safety data exchange and processing
- The Space Data Center is reliable, geographically redundant and secure
- The SDC 1.0 relies on:
  - Operator ephemeris with integrated maneuver data for members (most accurate)
  - TLE (Two Line Elements) or SP (Special Perturbation) from JSpOC catalog for all other objects (less accurate)
- The Space Data Association members currently account for 279 GEO satellites, which is about 70% of all active GEO satellites

SDA: 33 participating operators, 614 satellites

SDC 2.0 recently announced

- Utilizes a highly accurate, independently generated catalogue of space objects
- This will grow to include objects larger than 20cm in and traversing the GEO arc
- Transparent and actionable collision warnings
- Functionality to combat Radio Frequency Interference (RFI), including the construction of geolocation scenarios and a Carrier ID database.

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The next generation of Space Traffic Management

FOR IMMEDIATE RELEASE

AGI

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SDA and AGI to launch next generation Space Traffic Management service

AGI's ComSpOC to power a major SDC upgrade to manage space traffic and mitigate the effects of Radio Frequency Interference in the geostationary orbit regime

Isle of Man and Exton, PA, USA (6th March 2017)— The Space Data Association (SDA) and Analytical Graphics, Inc. (AGI) have entered into a long term agreement to launch an upgraded Space Data Center (SDC) Space Traffic Management (STM) service, powered by ComSpOC.

SDC 2.0, which will be available to all members of the SDA, has a highly accurate, independently generated catalogue of space objects which will grow to include objects larger than 20cm in and traversing the GEO arc, and will allow for transparent and actionable collision warnings. The service also features functionality to combat Radio Frequency Interference (RFI), including the construction of geolocation scenarios and a Carrier ID database.

"As satellite operators, it is vitally important that we continually improve the Space Situational Environment to ensure safety of our own missions, continuity of services, and protection of the space environment for all operators. After considerable analysis we have determined that the collision risks are higher than previously understood. We underwent a comprehensive process to determine key requirements, conducted extensive market research and a competitive procurement process, and have concluded that AGI can offer the best STM service to adequately mitigate these risks. AGI clearly understands this critical mission and the SDC 2.0 service, using AGI capabilities, delivers the best value and is timely, validated and reliable," stated Mark Rawlins, SDA Chairman.

"We applaud the leadership of the SDA executive members Eutelsat, Inmarsat, Intelsat, and SES for continuing to set the standard for responsible space operations and traffic management," said Paul Graziani, AGI CEO and founder. "We look forward to extending our trusted working relationship with SDA as its Exclusive STM Services Provider and working in partnership with them to expand the boundaries of STM capability and space safety."

-ENDS-

1 of 2

Why SDC 2.0?

- Collision risks much higher than previously understood – need protection from all threats
- SDC 1.0 limitations:
  - Inter-system biases in operator systems
  - Availability and accuracy limitations of debris data, particularly for sub 1m objects
  - Lack of transparency and consistent availability of government-provided data

SDC 2.0 – the next generation of STM

- Services based on a high-accuracy, independently generated ComSpOC catalogue for objects in and traversing the GEO arc
  - Catalogue will evolve to include all objects >20cm
  - More extensive than available JSpOC/NORAD catalogue
- Advanced non-cooperative maneuver detection and characterisation algorithms ensure with rapid recovery of orbits states during and after maneuvers
- Auditing and verification of maneuver plans, ensure the highest quality of future maneuver information
- Realistic covariances of catalogue objects:
  - Enables realistic estimation of collision probability and actionable conjunction warnings
  - Also enables realistic geolocalisation error ellipses
- Inter-system biases eliminated
- Radio Frequency Interference mitigation functionality:
  - Construction of geolocation scenarios which enable more accurate solutions and in much shorter time frames.
  - Capability for direct scenario data download into SDA member geolocalisation systems.
- Commercial service level agreement and validated processing to ensures:
  - Transparency
  - Reliability
  - Timeliness
  - Independence from government data sources
- Carrier ID database:
  - Central management and coordination of Carrier ID reference numbers

SDA will no longer rely on 3rd-party catalog data – it will independently derive its own catalogue for use in conjunction assessment and warnings

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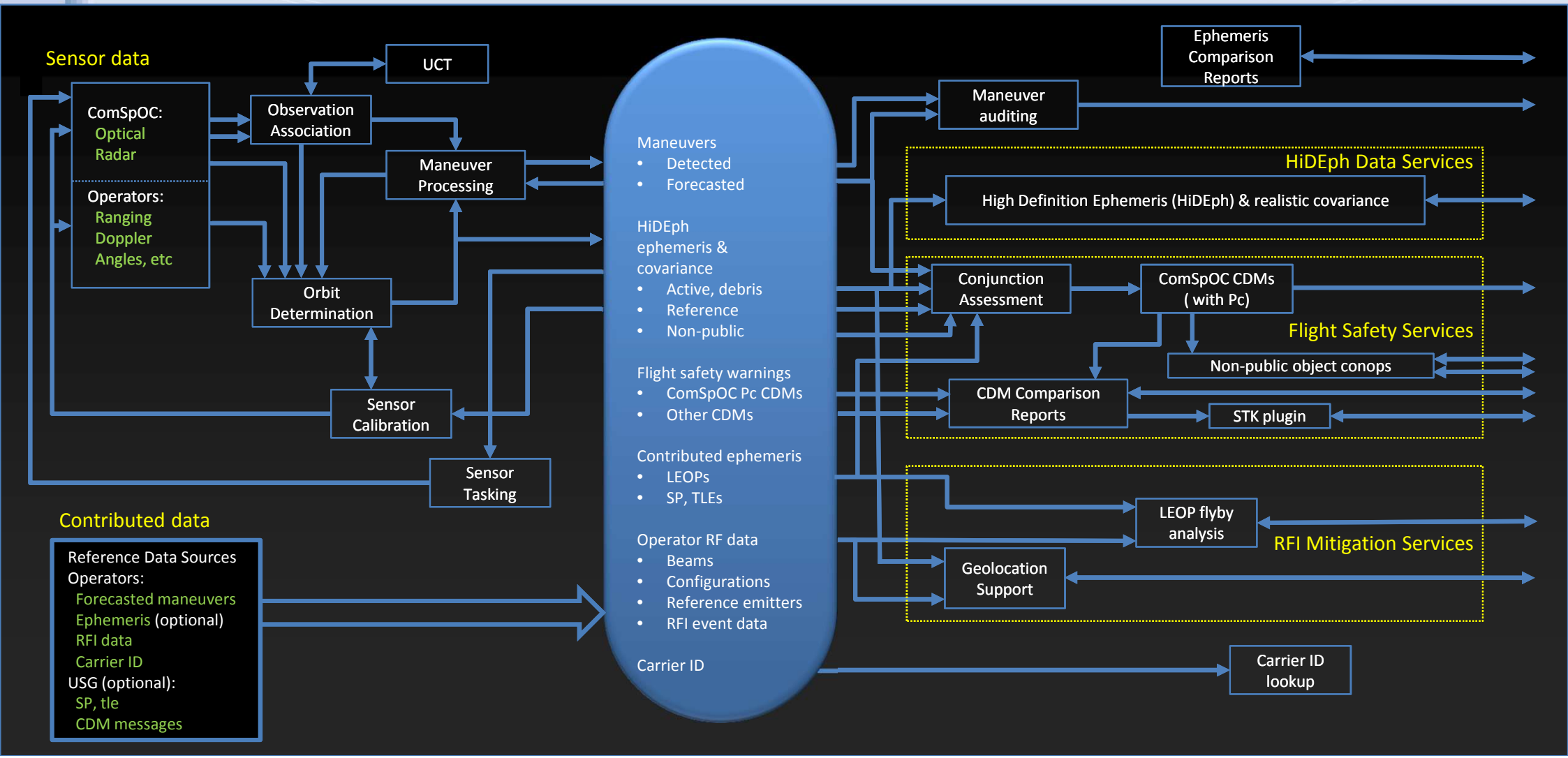
SDC 2.0 functional diagram



Responsible behaviour

- Development of and adherence to space standards, best practices and established norms of behavior
- Tireless pursuit of the best, most actionable and timely collision avoidance SSA data, techniques and mitigation strategies;
- Collaborative, mutual and transparent sharing of key satellite operations elements of information, including planned maneuvers
- Adherence to stationkeeping boxes, RF levels and national, international and organizational space debris and RFI mitigation policies and practices
- ***Utilization of the SDC 2.0 service to achieve the objectives above***

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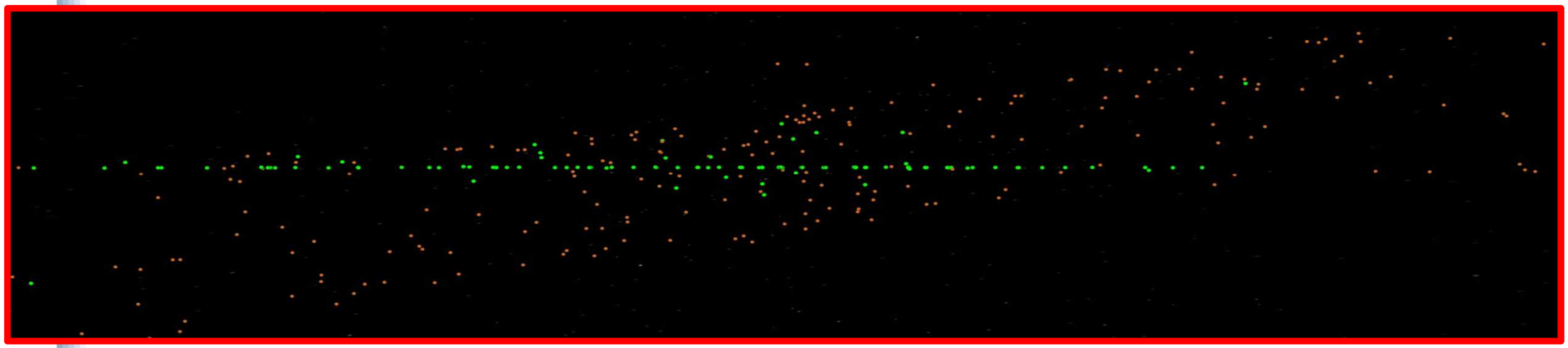
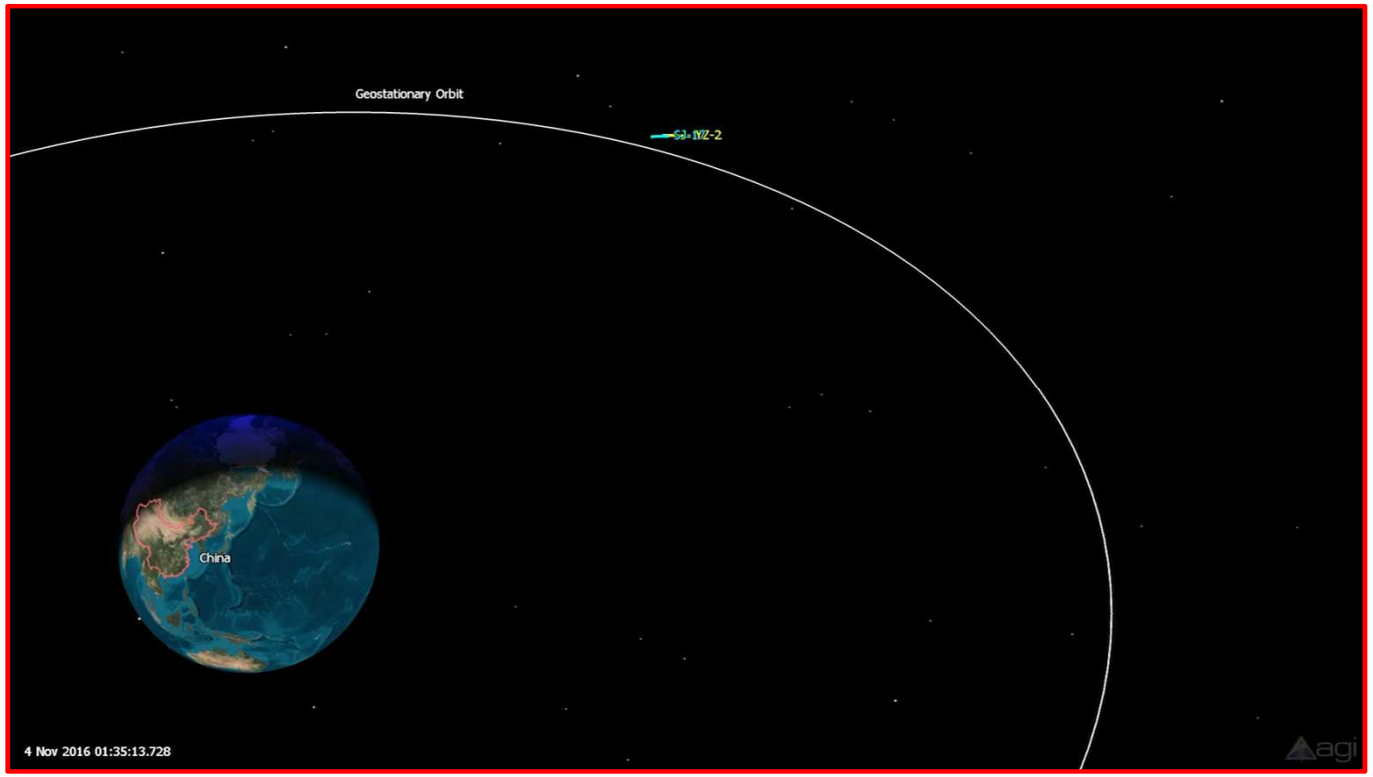
Thank you



Extra slides

Recent space activity



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