



**Satellite Users Interference Reduction Group**

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# **SUIRG Activities**

National Spectrum Managers Association

19-20 May 2009

Washington, DC

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## Satellite Users Interference Reduction Group

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- Agenda
  - SUIRG Background
  - Satellite Interference Initiative (SII)
  - SUIRG's Programs
  - SUIRG's Future

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# SUIRG Background

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- SUIRG's Mission
  - SUIRG is a not-for-profit international assembly of parties, within which members work towards the reduction of radio frequency interference (RFI) through proactive programs and education.

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# Who Belongs

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- Membership down to 30 members due to consolidation and economy
  - Communication Satellite Operators
  - Satellite Service Users
  - Satellite Monitoring Equipment Vendors
  - Other Organizations concerned with Interference
- Founding Members: Intelsat, PanAmSat, Inmarsat, NewSkies, QinetiQ, Glowlink
- Military oriented members: Aerospace Corp., & MITRE

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# What's New

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- Satellite industry has moved Interference to the top of the pile of problems
  - Why?
- Users brought this to light in meetings with operators who agreed to take a more proactive approach against interference
- The ultimate injured party are the Users who lose transactions and other important data

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# Satellite Interference Initiative

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- A number of satellite communications industry entities have been working together on various initiatives targeted at reducing RF Interference (RFI) and established the **Satellite Interference Initiative (SII)** to bring focus on the problem.

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# Satellite Operators' RFI Initiative Summary

- Major Satellite operators such as Intelsat, SES, Eutelsat, JSAT, Telesat, Inmarsat, Hispasat and SatMex are already working together on The Satellite Operators' RFI Initiative
- Existing inter-operator operations relationships have been leveraged to perform these tasks
- This is not a closed club, there is an open (encouraged) invitation to other operators to join
- Today we'll share with you some specific initiatives we're targeting and we like to solicit your support and involvement
- These initiatives are in response to issues raised by our customers – in many cases our shared customers



# Satellite Operators' RFI Initiative

## The Initiatives

The initiatives can be summarized under the following topics:

- Support of standardized training/certification for up-linkers and installers
- The Endorsement of 'carrier ID' technology
  - Operator consensus on influencing adoption
- Data sharing between the Satellite Operators
  - RFI Incident Database for satellite operators
  - Satellite Provider "RFI Alert Network"





# Rallying Industry Support

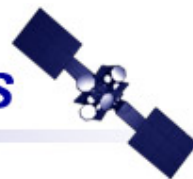
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- There was a meeting of 7 satellite operators who at the end all agreed to support the Satellite Interference Initiatives and urged other operators to join their effort. Operators attending:
  - Intelsat
  - SES
  - JSAT
  - Inmarsat
  - Eutelsat
  - Telesat
  - Hispasat

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- Intelsat's Director of RF Operators, Patty Constantino said, "The level of participation by the operators and the enthusiasm expressed to actively address the issues going forward outstripped our expectations. It was a historic event and I was proud to be part of it."

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## Topic of Discussion at Sat 2009 Conference

### Satellite Users Interference Reduction Group

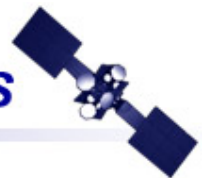
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- A call to arms in creating an interference-free space environment. David McGlade and Romain Bausch, the President and CEO of Intelsat & SES Global, respectively, made a joint declaration for action across the industry for users to take responsibility for inaccurate installations that create interference for users. Creating interference—unintentionally—creates cost for satellite users, operators and even installers—since they may need to revisit a site to correct the offending issue.

■ April 2009 Intelsat Insider

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# Current Satellite Operations

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- Many day-to-day critical operations require detailed cooperation between satellite operators and their customers:
  - Satellite hinder coordination
  - RFI investigation
  - Management of Adjacent Satellite Interference (ASI)
  - Coordination of In Orbit Testing

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# Current Satellite Operations cont.

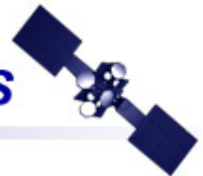
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- The majority of coordination operations are performed without formal agreements and rely on the trust and professionalism of the operators
- Nevertheless, the informal processes are often inefficient and not consistently applied
- Some major operators wish to bring more structure to the inter-operator coordination to improve its efficiency and effectiveness

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# SII with Goals Summarized

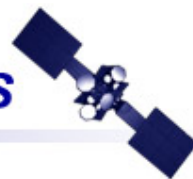
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- 1) Training/certification-** Standardization of installation and uplink site operation with the **goal** of all installation and uplink facility operations staff undergo formal, certified training
- 2) Access Procedures-** All up linkers use approved procedures with the **goal** of reducing human error
- 3) Carrier ID Technology-** Endorse adoption with the **goal** of including this technology in future designs

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# SII with Goals Summarized

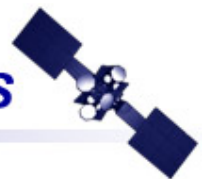
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- 4) **RFI Incident Database-** Develop for satellite operator coordination and archiving of interference events with the **goal** to characterize and identify majority causes of interference to maximize mitigation efforts
- 5) **RFI Alert Network-** Develop for operators and customers with the **goal** of rapidly notifying customers of an interference incident that could impact their service
- 6) **Data sharing-** Share geolocation data with a **goal** to improve, formalize and automate sharing between satellite operators to reduce identification and location time

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# SII vs. SUIRG Actions



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- SUIRG welcomes the recent increased attention to the problem of satellite interference; SUIRG has been addressing and developing solutions since our creation 12 years ago. The following slides will address in detail specifics on what SUIRG is/will be doing to address each initiative.

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# Standardized Training/Certification

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## ■ Training & Certification Program

- Frequency of unintentional interference incidents reduced with proper training
- SUIRG coordinates closely with trainers to ensure their training courses address how interference is caused and how to prevent and resolve issues. To date, there are three SUIRG-certified trainers, with more in the process.

## ■ Certified Trained Operator Registry

- Establish Satellite Operators Certification DB (under development)

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# Access Procedures-

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- Early in its organization, SUIRG developed a Standard Operating Procedures checklist for up linkers. Accepted by the ITU as an international recommendation, the list provides detailed procedures that can be especially helpful for operators working under tight time constraints. Available at [www.suirg.org/uap.shtml](http://www.suirg.org/uap.shtml)

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# Carrier ID Technology

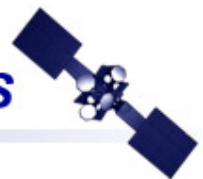
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- Initiatives such as SUIRG's Carrier ID Working Group work directly with equipment vendors and users in implementing state-of-the-art tools for interference detection, analysis and location.
- Embed sender identification data within the encoder is received and decoded with the source contact and location information.
- In late 2006, SUIRG initiated the first live global rapid interference source identification demonstration with assistance from Colem Comm., SES NewSkies, SAT Corp. and SISLink. Since that test, SISLink has upgraded approximately 90 of its SNG trucks and Fixed Stations in Europe with carrier ID capability.

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# Carrier ID Technology (cont.)

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- In 2008 Advent Communications implemented carrier ID in their Video Exciter DVE5000
- Important tool is SAT Corporation's Monics system, which can read the Carrier ID data plus automatically monitor all uplink and downlink carriers as well as the beacon in each satellite.

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# Data sharing

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- Has several aspects for Geo-location Transmitter Location Systems
  - Database of satellite ephemeris data to know future orbital locations (available)
  - Database of reference carriers whose geo-location is known (future)

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# RFI Incident Database



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- SUIRG established the first global geosynchronous satellite empirical database on interference statistics by:
  - Ocean Region
  - Interference Cause Category
  - Uplink Region
  - Antenna Size
  - Antenna Type

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# RFI Alert Network



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- New and welcome initiative
- Allows operators to advise users of possible impacting interference incident
- Allows users to take defensive actions and keeps them informed

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# Additional On-going Programs

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- Regulatory WG
  - BWA shared usage of FSS C-band
  - Active participant in industry with GVF requesting non-approval of petitions requesting approval of C-Band WiMAX systems
  - Advising registration process for registering all antennas with ITU
- Interference Signature & Resolution DB
  - Most interference signals have a signature
  - Database will have samples of signatures along with source and mitigation approach

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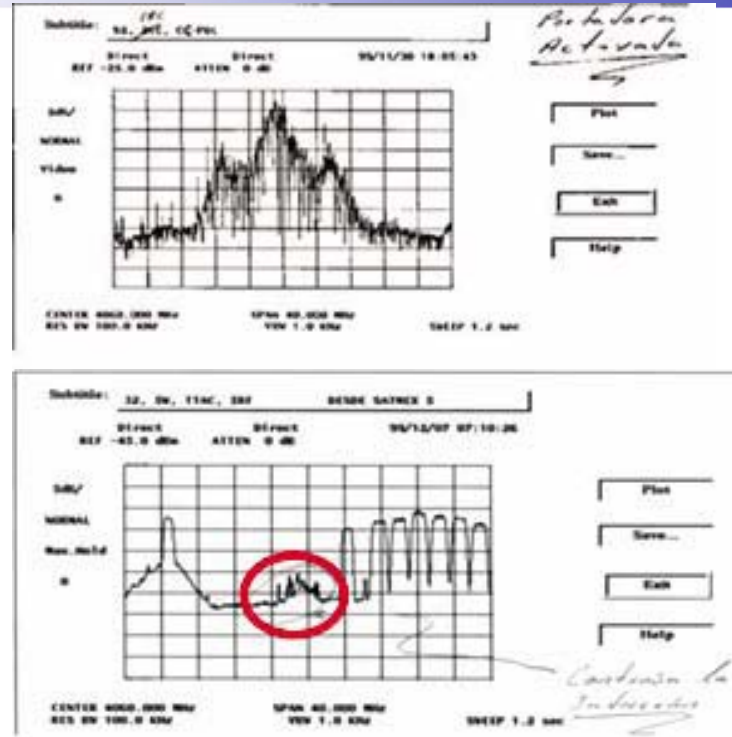
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# Interference Signature example

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Interference by an adjacent satellite RFI (Top screen is the source signal; lower screen shows the transponder impacted by an improperly configured signal from an adjacent satellite.)

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## **Satellite Users Interference Reduction Group**

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- Since the early days, SUIRG has worked tirelessly to develop RFI identification and resolution tools for its members and the industry at large.
- SUIRG has raised awareness and pointed a spotlight on satellite interference, focusing the attention and involvement of companies dealing with interference either as operators or users.
- Now that we have their attention, we hope to increase our membership and, as a result, make better progress against interference.

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# Satellite Operators' RFI Initiative

## Key Goals

1. All uplink facilities to use approved Access Procedures
2. All uplink facility operations staff to undergo formal, certified training
3. Equipment manufacturer adoption of 'Carrier ID' technology
4. Improve, formalise, automate data sharing between satellite operators
  - Develop a RFI Event Database
  - Develop a Satellite Operators RFI Alert Network

**The goals are not limited, nor does the overall initiative have a limited lifetime: we need to keep this activity alive and evolving going forward**





# Space News Editorial Quotes

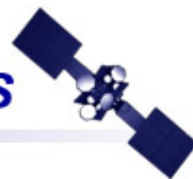
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- “Limiting Interference is an Industry-Wide Affair”
- “Satellite interference is everybody’s problem. It logically follows that everybody in the industry has a responsibility to be part of the solution.”
  - 27 April 2009

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# SUIRG's Future

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- SUIRG applauds and fully supports this new Satellite Interference Initiative.
- Do you have problems with satellite interference?
  - Interference is a Quality of Service issue
- Take a pro-active position to reduce interference by considering SUIRG membership.

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# SUIRG Update

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- 2009 SUIRG Interference Conference/Meeting
  - 27-29 October 2009
  - French Riviera- Cannes
  - Hosted by Thales Alenia Space
  - Minimal non-member attendance fee
  - Check [www.suirg.org](http://www.suirg.org) for details and updates

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# Thank You

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- Interested in SUIRG's activities
  - Bob Ames ([bobames@suirg.org](mailto:bobames@suirg.org))
  - [www.suirg.org](http://www.suirg.org)
  - Sign-up for Interference e-News on web site
  - SUIRG Fact sheet available

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