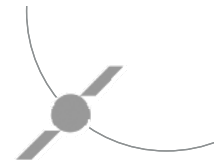


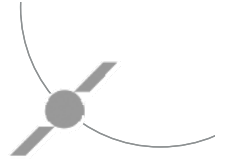
# ● Satellite Interference: an Operator's Perspective

10 June 2013



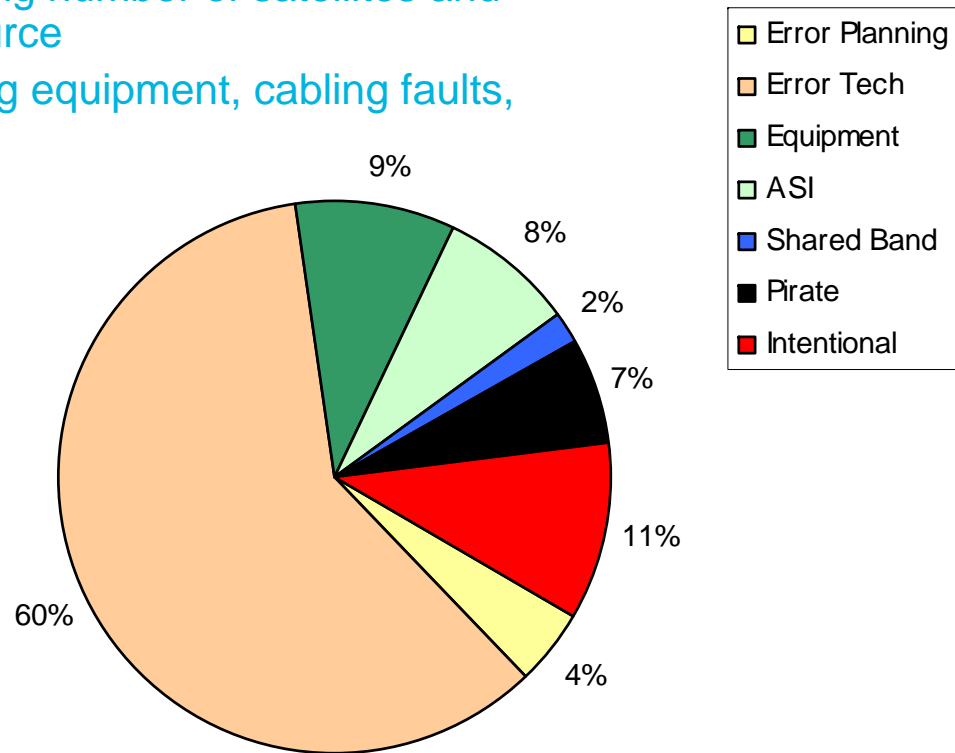
## Why are we here?

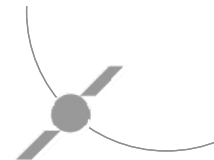
- **Addressing concerns of satellite industry, policymakers and citizens**
- **Satellite Operator Mission:**
  - provide customers access to working infrastructure
  - Provide reliable access to ensure performance, availability, sustainability
- **Interference of all natures threatens our missions and warrantees**
- **Targeted, or Intentional interference has grown significantly over the past years**



## The causes of Interference – An overview

- **There are a variety of causes of satellite interference...**
  - For the majority of cases, human error - and a consequence of the increasing number of satellites and users sharing a limited resource
  - Poor quality or malfunctioning equipment, cabling faults, etc. contribute as well.
- **Operator response can vary greatly depending on the nature of the interference**
- **Generally operators know what is needed, and are working on effective tools and procedures**
- **However certain types of interference are more 'challenging'...**





## When Interference happens – What do we do?

### ▶ Identifying the problem of interference

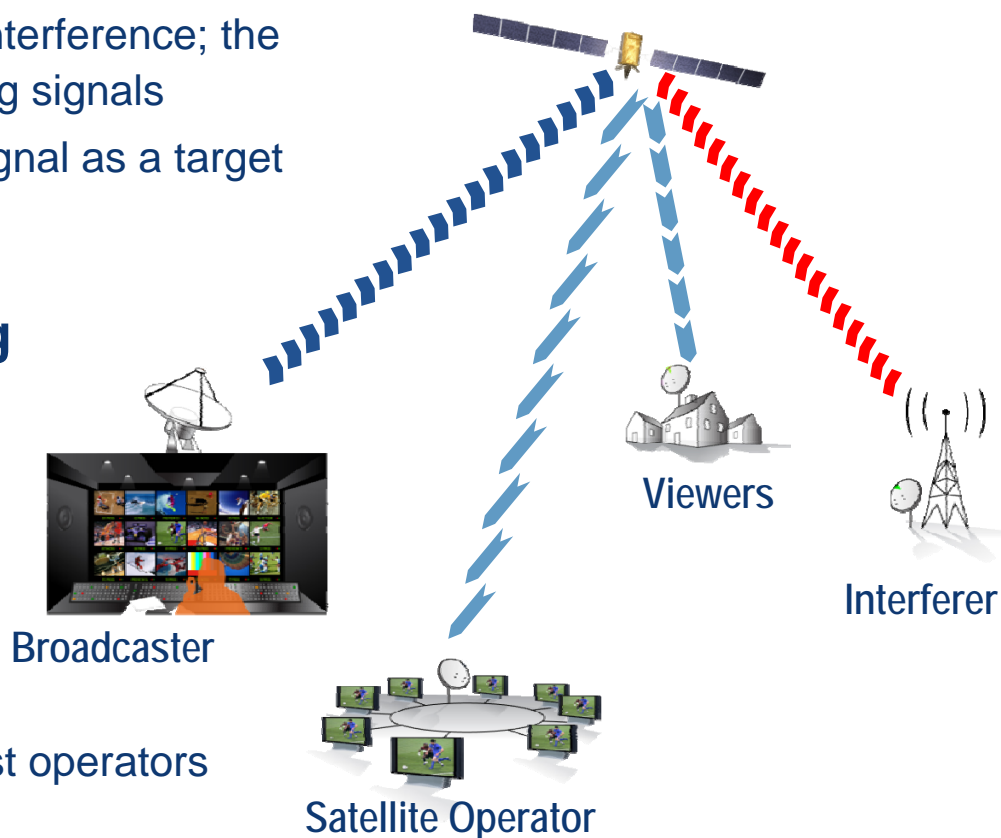
- ▶ Assessing the likely cause of the interference; the nature and content of the interfering signals
- ▶ Look at content of the interfered signal as a target
- ▶ Origin of the interference

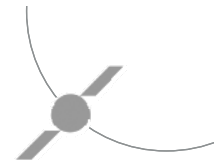
### ▶ Keeping the Services running

- ▶ Reduce sensitivity of the satellite
- ▶ Increasing power levels of the transmission to overcome the interference.

### ▶ Engage with the ITU process

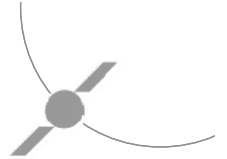
- ▶ if solution cannot be found amongst operators and/or administrations





## Addressing day to day interference

- **Forums and associations to address issues:**
- **SIRG – Satellite Interference Reduction Group**
  - Promote improved practices and investigate new technologies
  - Generalised implementation of Carrier ID – ETSI DVB standard
- **SDA – Satellite Data Association**
  - *Rapid sharing of information amongst satellite operators*
- **GVF – Global VSAT Forum**
  - *Training programs to reduce human error*
  - *Antenna type approvals & ESVA testing to address equipment problems*
- **Communication: Operator to Operator / Admin to Admin dialogue**
- **Response & Mitigation procedures at the Satellite Control Station.**
  - *Resolve errors in pointing / frequency / polarisation / power settings*
  - *Adjust / adapt transmission parameters*
  - *Coordinate scheduling conflicts and accessing at incorrect times*

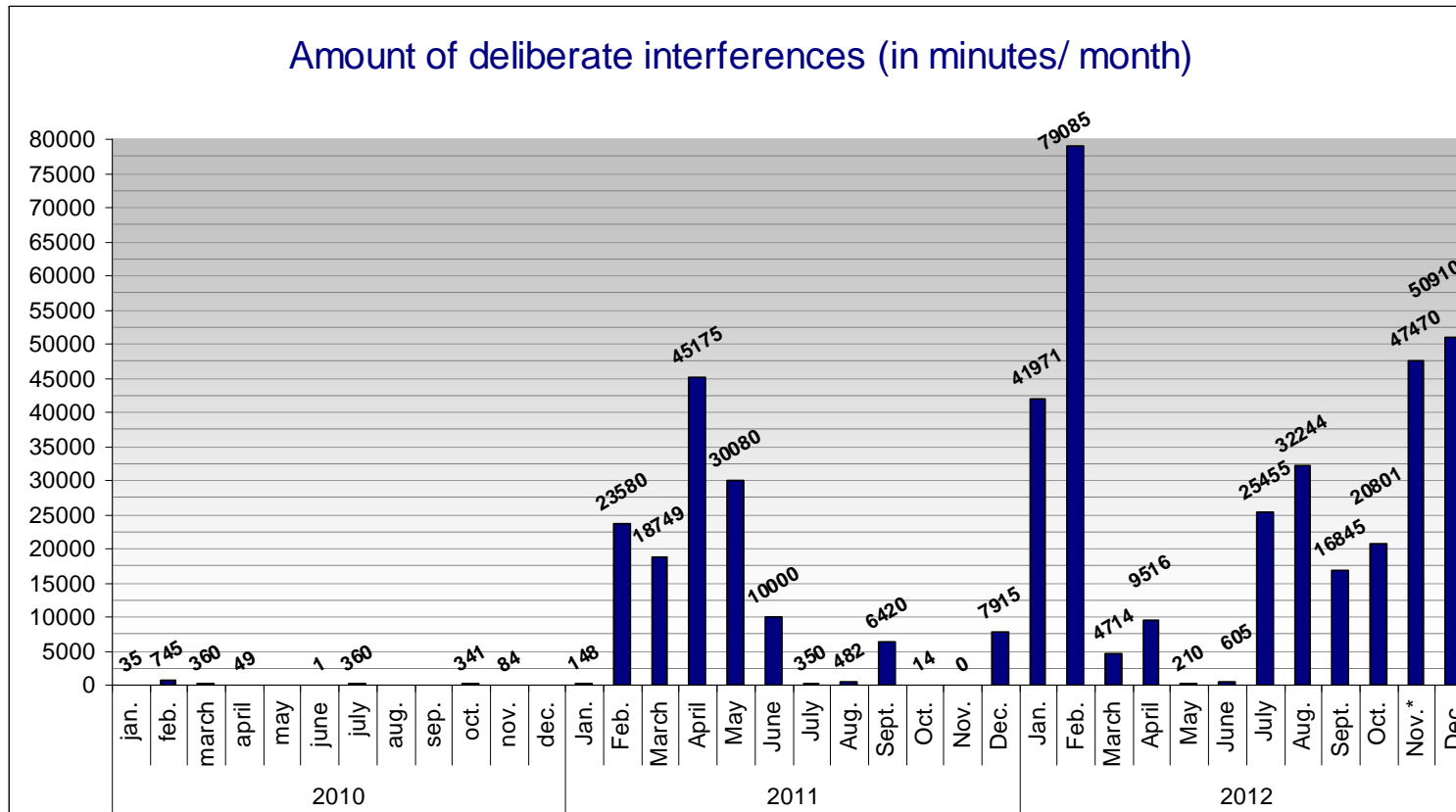


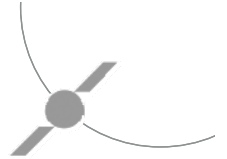
## **Intentional interference:** ***Very different from accidental or unintentional***

- **Does not arise from station that are planned to operate with affected satellite: *transmissions are therefore unnecessary in nature***
- **Interfering transmissions specifically target the affected satellite, and more precisely, specific transponders and their respective content.**
- **Usually presents as an unmodulated carrier, and therefore *does carry any identification or transmit any information***
- **Interferer transmit parameters modified in real time to counter interference mitigation efforts employed by the Operator**
- **Deduced power / antenna characteristics, together with a typically recurring site location, suggest that the interfering station is a fixed, dedicated facility – i.e. not easily hidden.**

# Quantifying the Problem

- **Cases between 2010 and 2012 rose dramatically in quantity & duration**
  - From 1,975 mins in 2010 to 142,913 mins in 2011 (75 times increase)
  - and 329,826 mins in 2012 (more than 150 % increase from previous year)

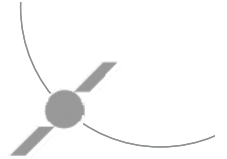




## What are we doing?

- **Raising awareness about the issue**
  - Whenever available, consistently provide precise geolocation and interference data to the BR and concerned Administration
  - Provision of a detailed dossier on the subject to the RRB (Nov '12, March '13)
- **Engaging all stakeholders - Everyone has their part:**
  - Satellite operators, Regulators, Broadcasters
  - UN/ITU, National governments, Institutions, and civil societies
- **Regular meetings and discussion - such as today**
  - Essential to refine processes and follow through on progress
  - Defining and executing actions and solutions to combat problem
- **No single answer and no one solution**
  - Need to manage expectations
  - However a common understanding of issues and possible paths to solutions begin to emerge

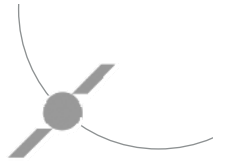




## Going forward and next steps...

- **Continue raising awareness of problem and risks**
- **Refine mechanisms to address the problem**
  - Operational and technical and solutions to improve reactivity and resiliency
  - Document what works, what doesn't
- **Develop an ITU process to certify the geographical origin of intentional interference**
- **Establish historical records and statistics of interference events**
- **Consider means to enhance the Effectiveness of ITU and other institutional mechanisms**

*And workshops such as today's for next steps and further ideas!*



Thanks