



June 2016

G*VF* *Satellite.
Solutions.
The World.*

Training and Certification Program



ICRC

Presented by:
Claudiu Mateescu
International Committee of the Red Cross



Who we are



- The association of the global satellite communications industry
- Not-for-profit
- 200+ member organizations
- All major satellite operators, manufacturers, & service providers



- Experienced satellite systems engineers
- Instructional designers & Flash developers
- Partnered with GVF
- Training content creation and program administration
- Created content for, and manages, the highly-successful GVF training program (10,000+ trainees, VSAT, marine, mobile)

Who we are



ICRC

– The **International Committee of the Red Cross (ICRC)** is an impartial, neutral and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of armed conflict and other situations of violence and to provide them with assistance.

– The ICRC also endeavours to prevent suffering by promoting and strengthening humanitarian law and universal humanitarian principles.

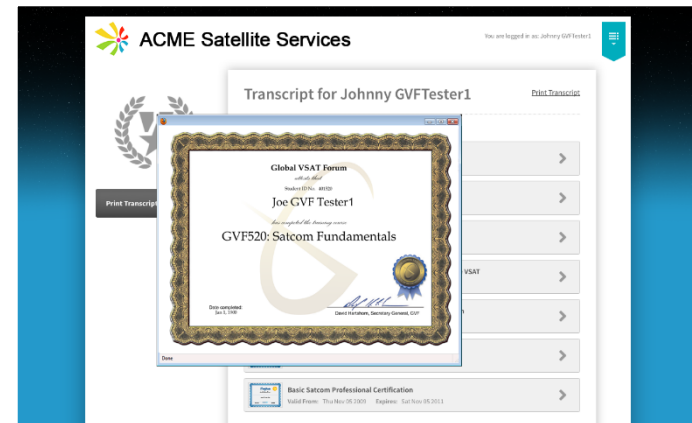
- More than **11'000 staff** in **250 offices** around **80 countries**.

- Around **200 engineers and technicians**
 - **160** registered to **GVF modules**
 - **1 Examiner + 5 Advanced Satcom Professionals**
- Around **130 VSAT terminals**



Why GVF online simulator-based training?

- Global, scalable, low cost
 - Over 10,000 enrolled
- Simulators teach and assess technical skills
- Courses are self-paced, available 24 hrs
- Automatic course and prerequisite linking for certification management
- Registration self service or by order.
- Dedicated student support staff
- Requires only a moderate-speed Internet connection and browser with Flash player
- Simulator skills assessments connect to LMS student scores
- Multi-language instant-switch capability
- Readily customized for each organization



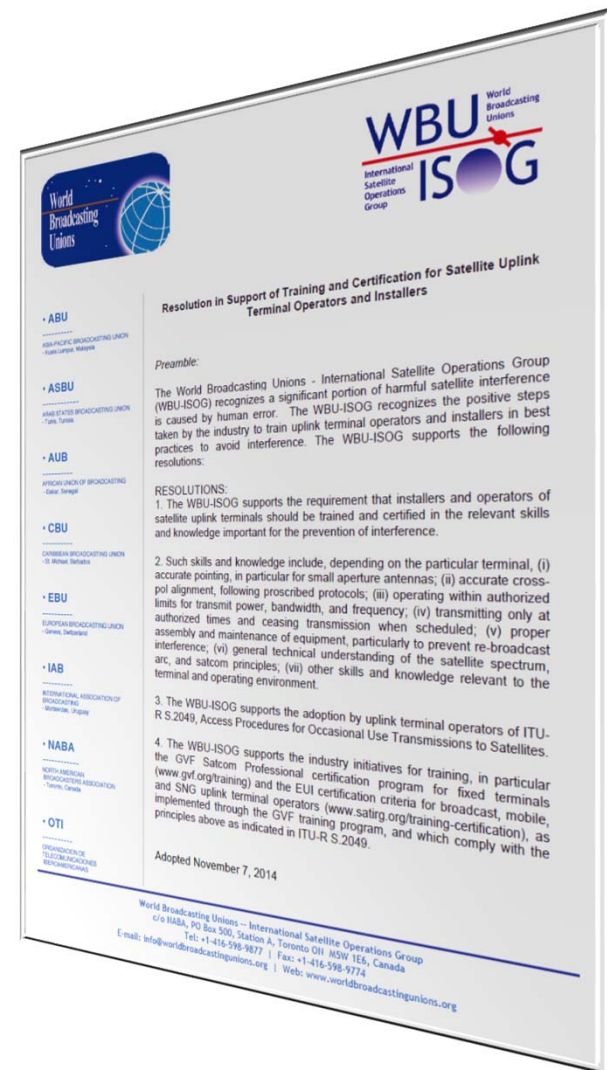
Student learning system user interface, showing customization

Who is using GVF training?



Endorsed by WBU-IMCG

- The International Media Connectivity Group (IMCG, previously ISOG), founded in 1985, is a committee of the World Broadcasting Unions (WBU).
- IMCG provides a global forum for members of the WBU to exchange information, outline requirements and resolve common operational problems. WBU-IMCG's mission includes identifying solutions for all operational matters associated with satellite transmission of broadcast-related data, and to work with all international broadcast groups to achieve these solutions.
- ***In 2014, WBU-IMCG formally endorsed the GVF training and certification program, including the ITU-R S.2049-compliant criteria for certifying operators of broadcast, mobile, and SNG uplink terminals.***

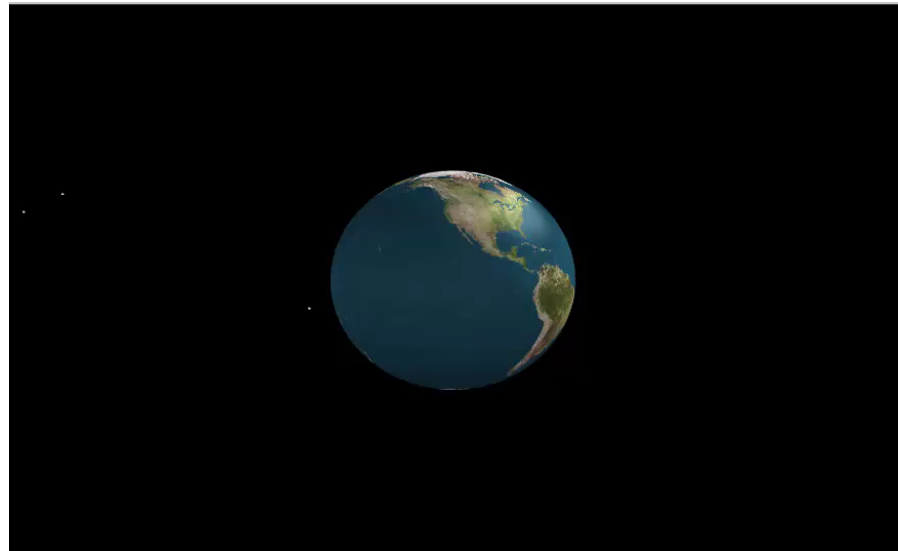


Our mission:

Reach all VSAT installers!

12,000+

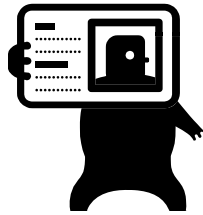
worldwide have
engaged in GVF
training...



*...but there may still be 10,000-40,000 untrained
field technicians still out there.*

How to fight interference

REACTION



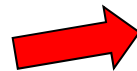
CARRIER ID



GEOLOCATION



COLLABORATION



INTERFERENCE

PREVENTION



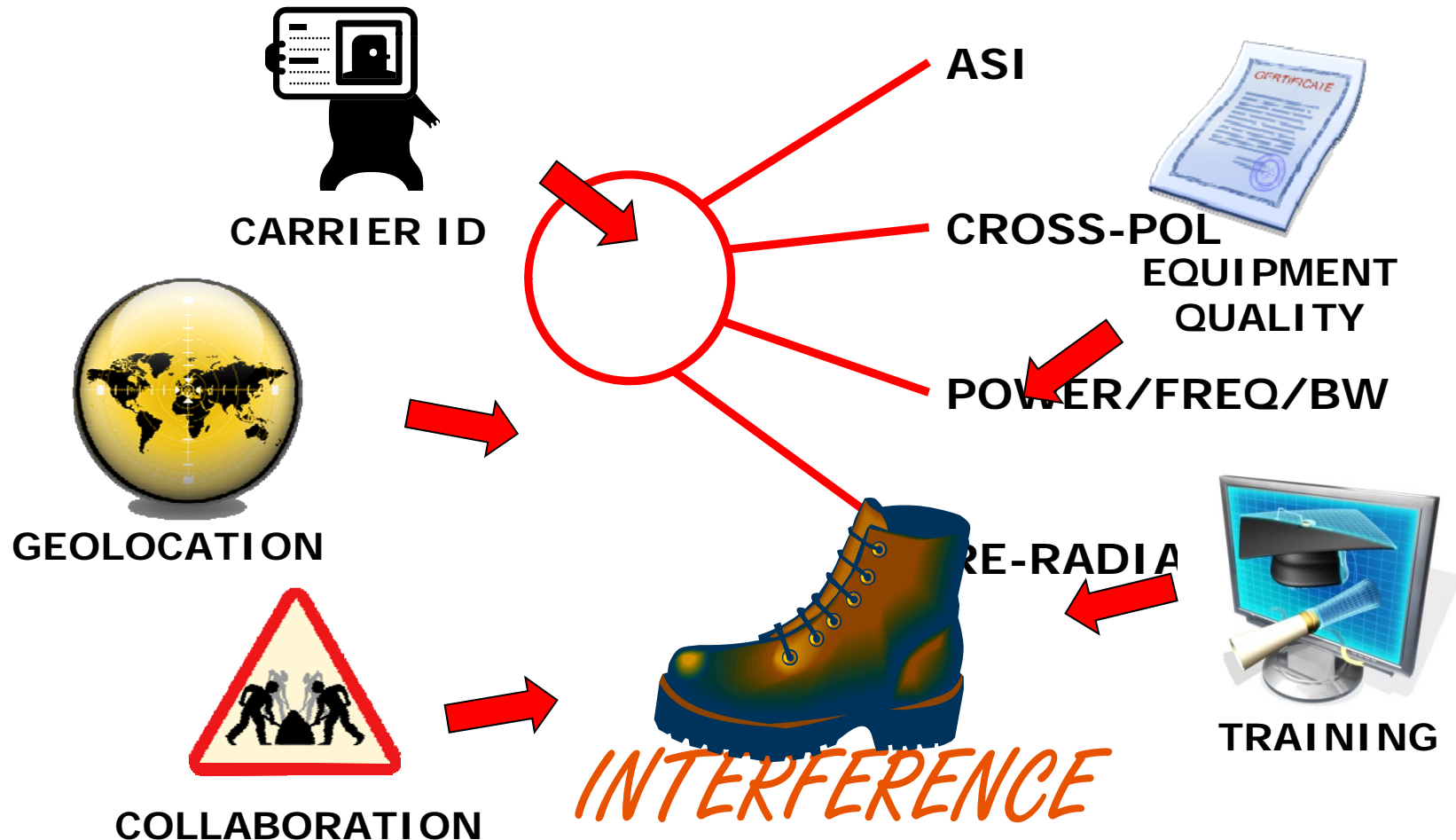
EQUIPMENT
QUALITY



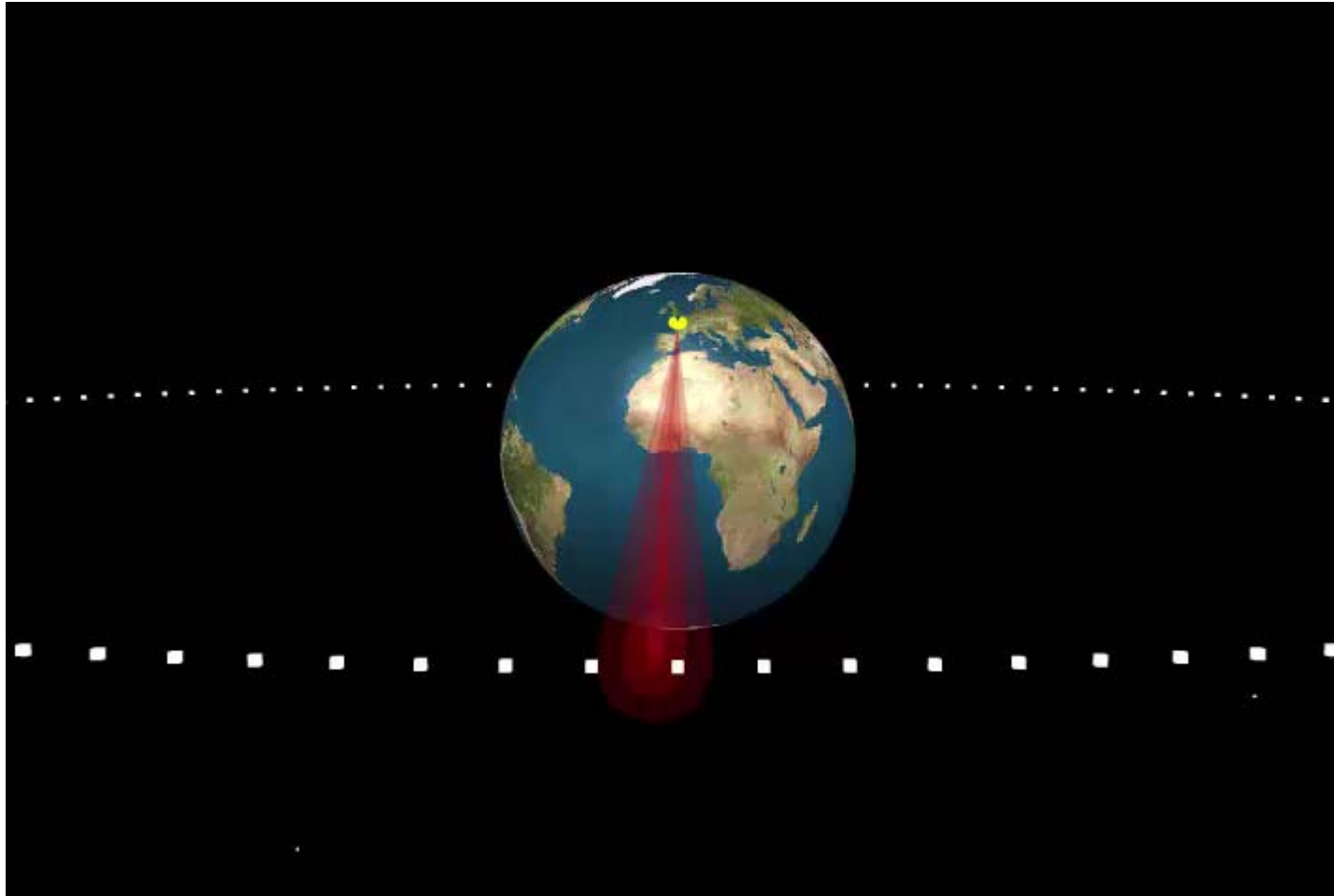
TRAINING



Role of training in interference prevention



Interference impacts all satcom users



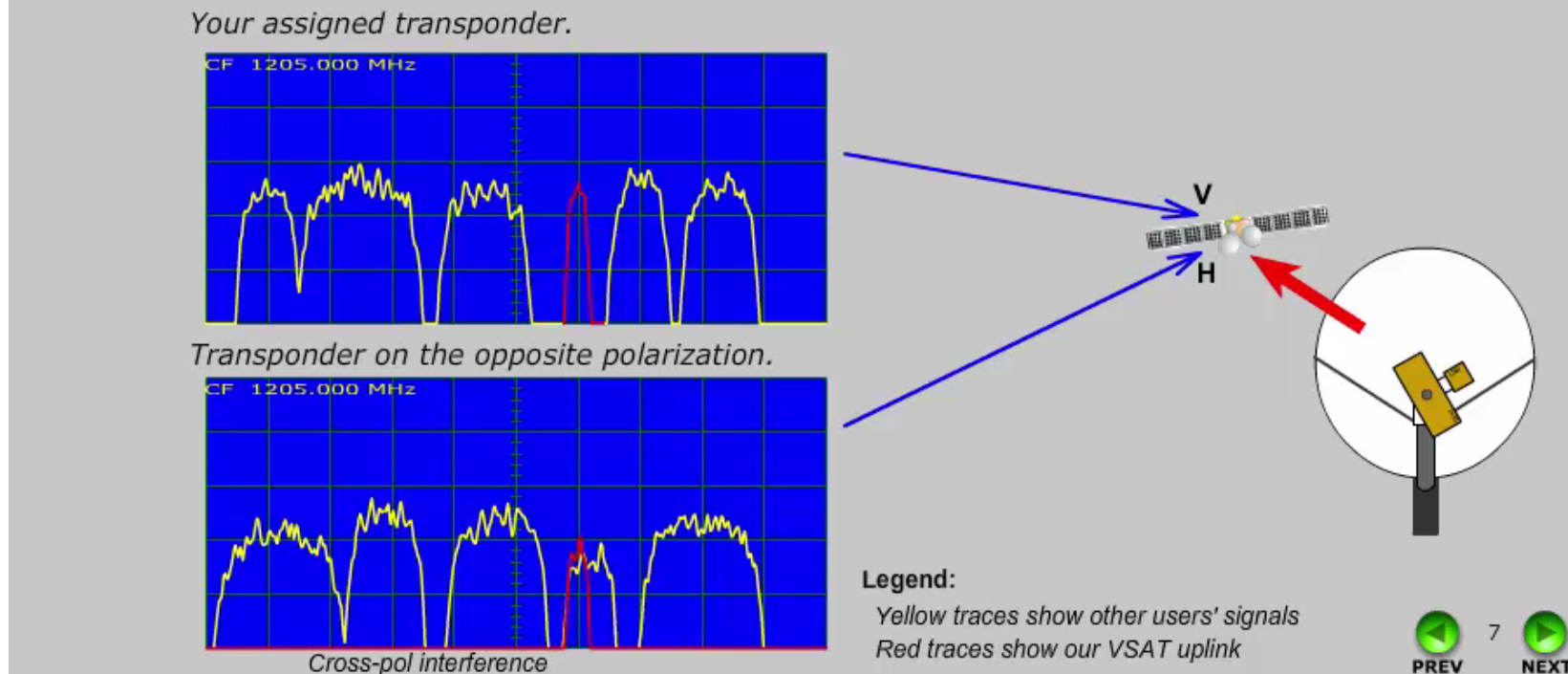
Interference source: Adjacent Satellite (ASI)

Training objective: Beam-balance antenna pointing technique

Interference impacts all satcom users

How cross-pol interference affects other users

Let's rotate the feed left and right, and watch how the cross-pol interference gets stronger and weaker.



Interference source: Cross-pol interference

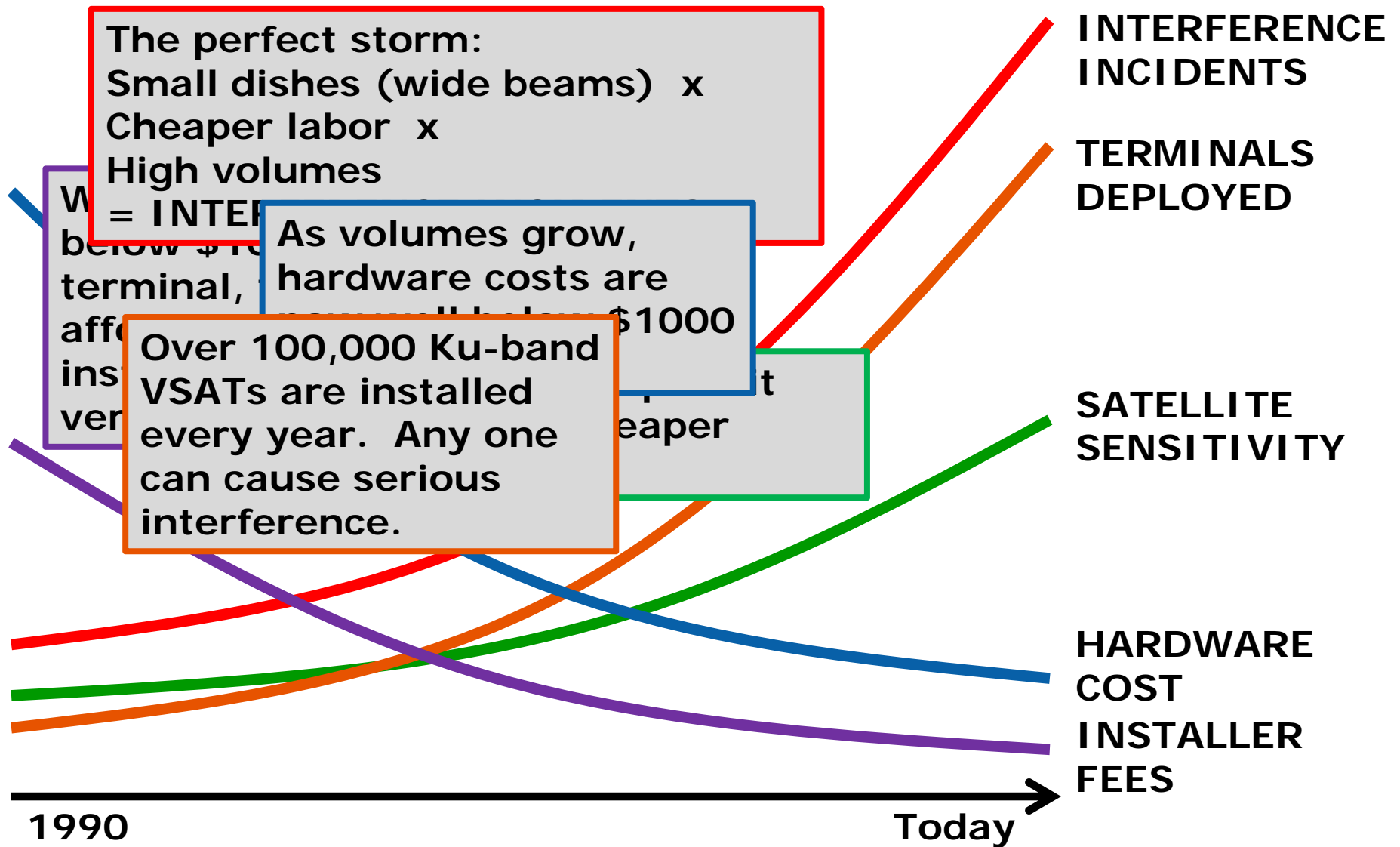
Training objective: Feed alignment and cross-pol test skills

Interference impacts all satcom users



Interference source: Excess carrier power intermodulation
Training objective: Transmit power lineup skills

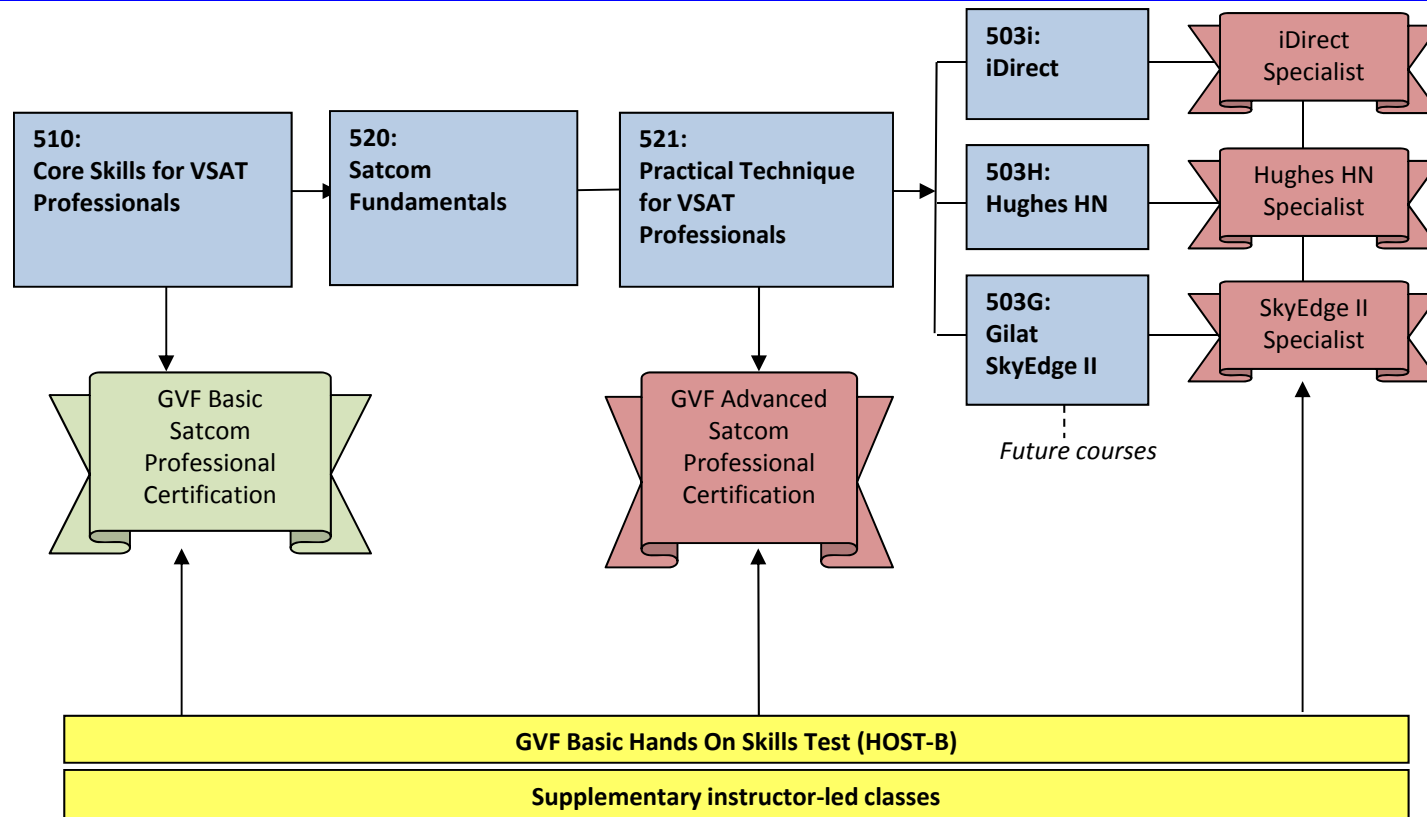
Why is interference increasing?



Satcom Professional program

For installers and field technicians/engineers of fixed VSAT terminals.

Satcom Professional Certifications



Interference-prevention emphasis:

- Beam balance pointing (prevent ASI)
- Cross-pol alignment
- Connector attachment (prevent re-radiation)

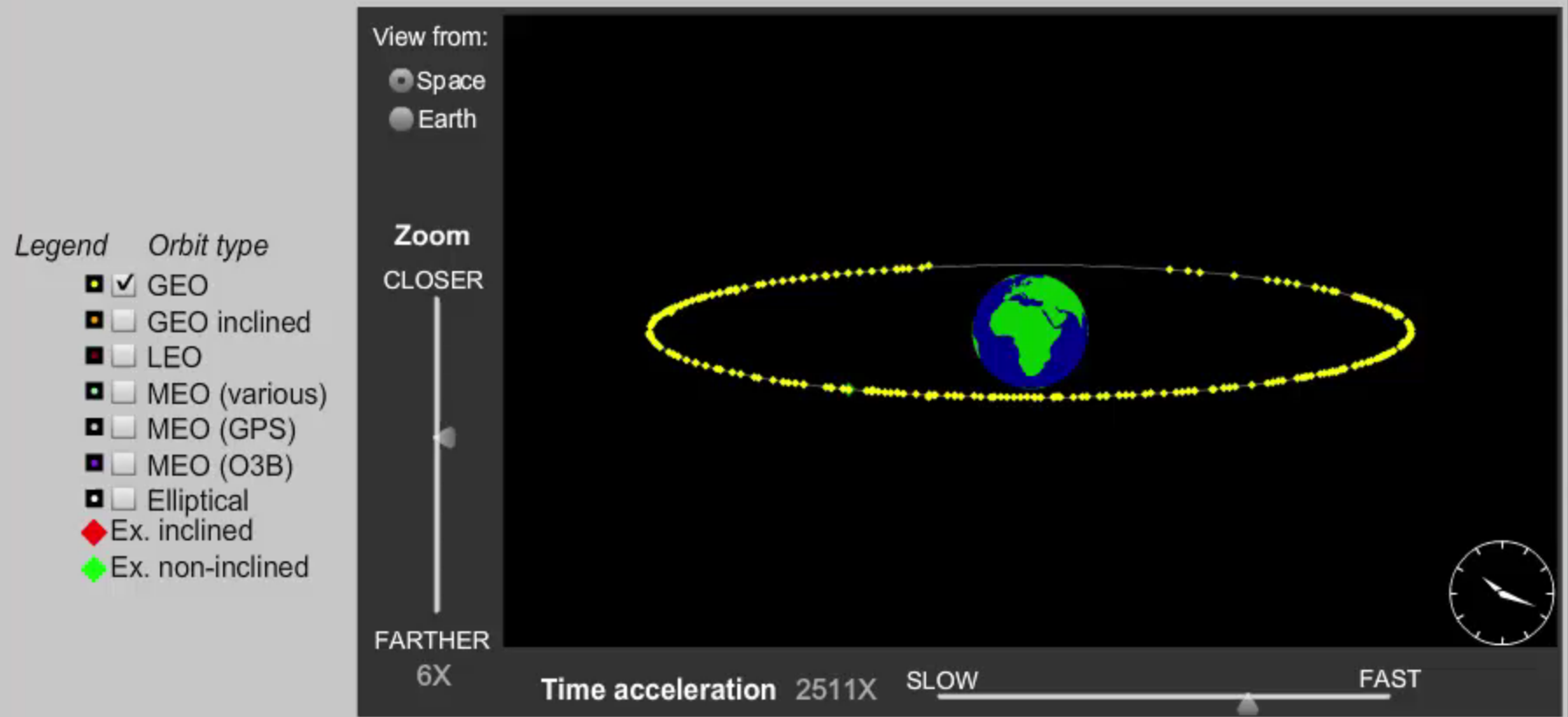
Sample learning page (GVF 561)

Satellites in orbit

Constellation8_demo

© 2012 SatProf, Inc.

VSAT's almost always use satellites in "GEO" orbit. There are other kinds of orbits used for satellites, too. Click NEXT to learn more.



Dynamic language switching

Exercise: find and peak

You must **find** the satellite and perform the **initial peak in azimuth and elevation**. You may assume the following:

Your location is 165 deg W, 37 deg N. The satellite is at 175 deg W. The VSAT will use H downlink polarization. Pointing angles from your look angle calculator: True azimuth = 196, Elevation = 46, Polarization = 13.

Remember your steps:

1. Preset the polarization. Use the Quick Reference Sheet to help make sure you are turning the right way.
2. Preset your elevation.
3. Scan coarse az to find the satellite. Step elevation up and down and scan az again if needed
4. Peak it with the el and fine az adjusters.
5. **Lock the coarse azimuth clamps.**

When you have finished, or you need a hint, click the SHOW MY RESULTS button.

Pointing59-GN_Lexer
© 2010 SatProf, Inc. en

Signal ID Meter

Total power
ID signal 11.1

Look at	Pol	Show	Actions
<input checked="" type="radio"/> Antenna	<input checked="" type="checkbox"/> Adjust	<input type="checkbox"/> Compass	<input checked="" type="checkbox"/> Pencil Mark
<input checked="" type="radio"/> Az/EI	<input checked="" type="checkbox"/> Inclinometer	<input type="checkbox"/> Labels	<input checked="" type="checkbox"/> Remove Tool
<input checked="" type="radio"/> Feed			

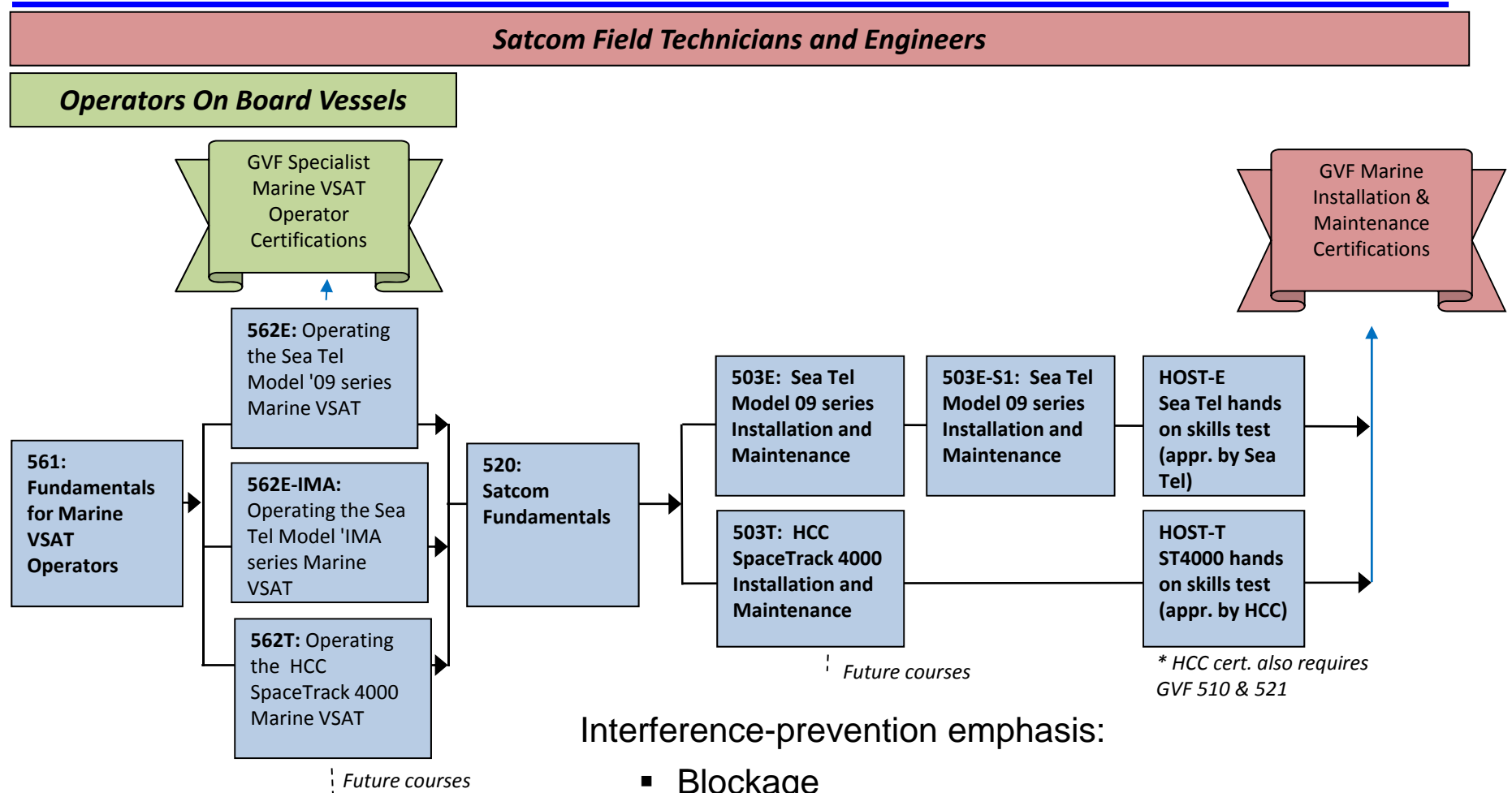
? HELP

SHOW MY RESULTS

Marine program

For operators (seafarers) and field engineers (installers and maintainers) of marine stabilized-antenna terminals.

Marine Certifications



Interference-prevention emphasis:

- Blockage
- Workmanship
- Cross-pol

Sample learning page (GVF503E)

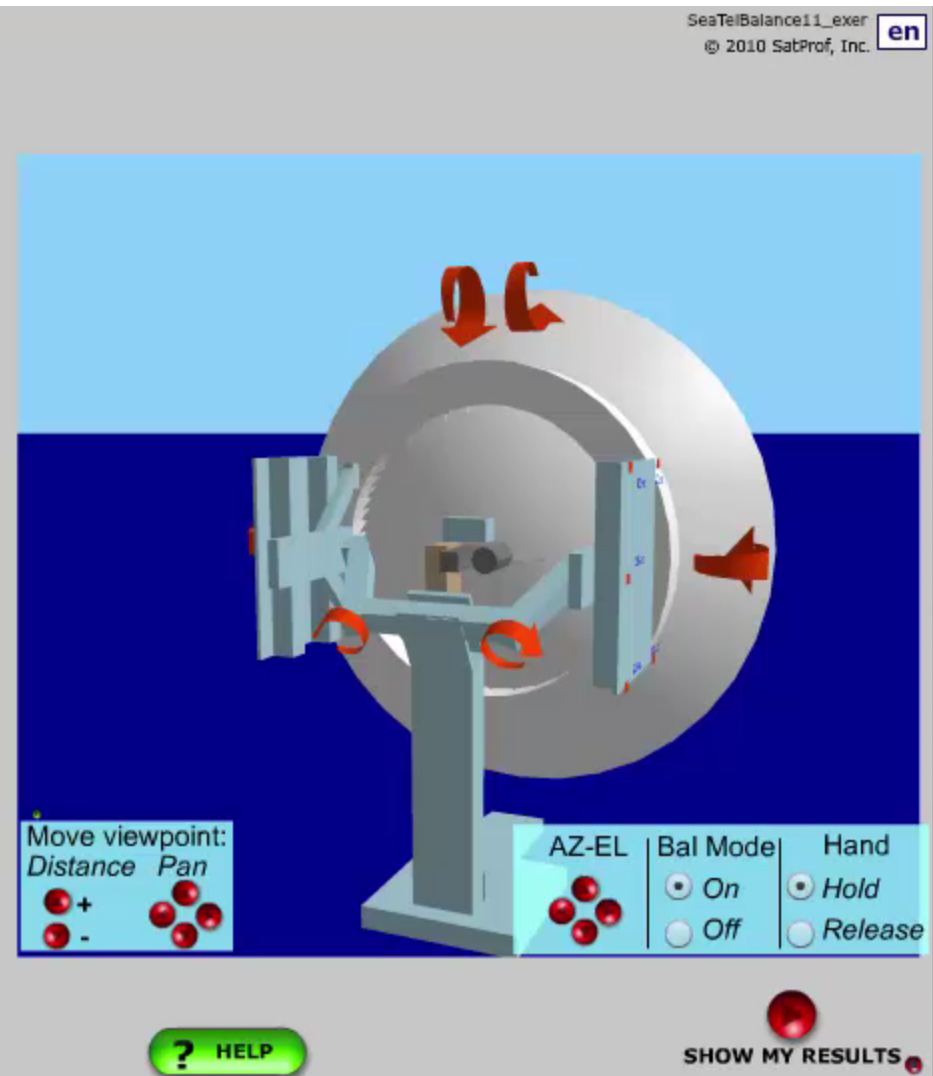
Balancing exercise

This antenna is unbalanced. In this exercise, you must balance it by attaching weights and then test for balance using the procedure you have learned.

When you have finished, or you need a hint, click the SHOW MY RESULTS button.

Passed horizontal balance test? No.

Passed vertical balance test? No.

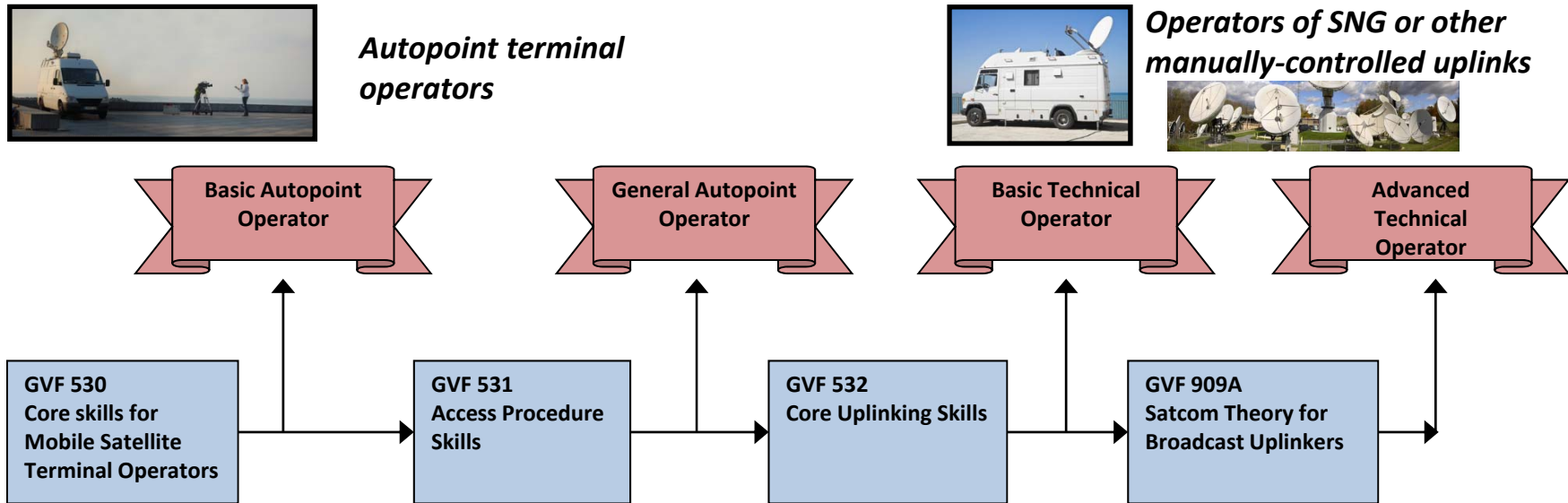


Mobile/SNG/Broadcast program

For operators of:

- **Auto-deploy/auto-point terminals**
- **Uplinkers operating traditional SNG vehicles**
- **Any terminal with manually-controlled modem/RF/antenna equipment and spectrum analyzer for pointing**

Mobile/SNG Certifications



Interference-prevention emphasis:

- Line of sight
- Verify pointing accuracy (beam balance)
- Verify cross-pol
- Identify correct satellite before uplinking
- Follow General Access Procedure
- Control uplink power and avoid IMD
- General theory

Line of sight skills 3-D simulator

Line of Sight (LOS) practice exercise

Which (if any) antenna positions give clear line of sight to your satellite?

Magnetic azimuth = 184° , Elevation = 48° .

Remember to allow 10° clearance on all sides, and read the HELP carefully before you start!

Position Line of sight?

	No	Yes
1	<input type="radio"/>	<input checked="" type="radio"/>
2	<input type="radio"/>	<input checked="" type="radio"/>
3	<input type="radio"/>	<input checked="" type="radio"/>
4	<input type="radio"/>	<input checked="" type="radio"/>
5	<input type="radio"/>	<input checked="" type="radio"/>
6	<input type="radio"/>	<input checked="" type="radio"/>
7	<input type="radio"/>	<input checked="" type="radio"/>
8	<input type="radio"/>	<input checked="" type="radio"/>



Autopoint acquisition simulator

Manual acquisition skills practice

Your autopoint terminal is trying to point to the wrong satellite. You must put the controller into manual mode, and use the az and el jog controls to find the correct satellite.

When you have finished, or you need a hint, click the SHOW MY RESULTS button.

Autopoint6_exer
© 2013 SatProf, Inc.

Satellite modem receive signal indicator

C/N dB LOCK ☒

Automatic pointing controller

RUN <input checked="" type="radio"/>	AZ	116.4	CCW Pol	↑	CW Pol
	EL	21.2	←	Pol H-V	→
STOP <input checked="" type="radio"/>	POL	0.0	Speed	↓	
JOG SPEED		SLOW			

? HELP

SHOW MY RESULTS ☒

Cross-pol skills simulator (Autopoint)

Adjust cross-pol with SAC

SNGCrossPol2_exer
© 2010 SatProf, Inc.

In this exercise, you must follow the SAC (Satellite Access Center) tech's directions to run a cross-pol check. IMPORTANT: Click TASK for complete details about your assignment, how to pass, and tips. When you have finished, or you need a hint, click the SHOW MY RESULTS button.

SAC: Thank you for calling XYZSat. I would be pleased to help you do an uplink crosspol alignment. Please initiate a CW test carrier at 14174.700 MHz.

← This panel shows your telephone dialog with the SAC technician.

iDirect iSite Cross-Pol panel	RF Uplink Freq.	<input type="text" value="14000.000"/>	MHz	<input type="button" value="Start"/>
	BUC LO Freq.	<input type="text" value="13050.000"/>	MHz	<input type="button" value="Modulate On"/>
	L-Band TX Freq.	<input type="text" value="950.000"/>	MHz	<input type="button" value="Stop"/>
	Transmit Power:	<input type="text" value="-24.0"/>	<input type="button" value="dBm"/>	



This panel represents the controls for transmitting a test signal from your modem. This example is based on iDirect, but every modem will have a similar function via a web page or on its front panel.

Automatic pointing controller	
AZ	147.9
EL	38.5
POL	-24.0
JOG SPEED	SLOW
RUN	
STOP	

↑ This panel represents the controls for the antenna controller in your auto-point terminal.

TASK

SHOW MY RESULTS

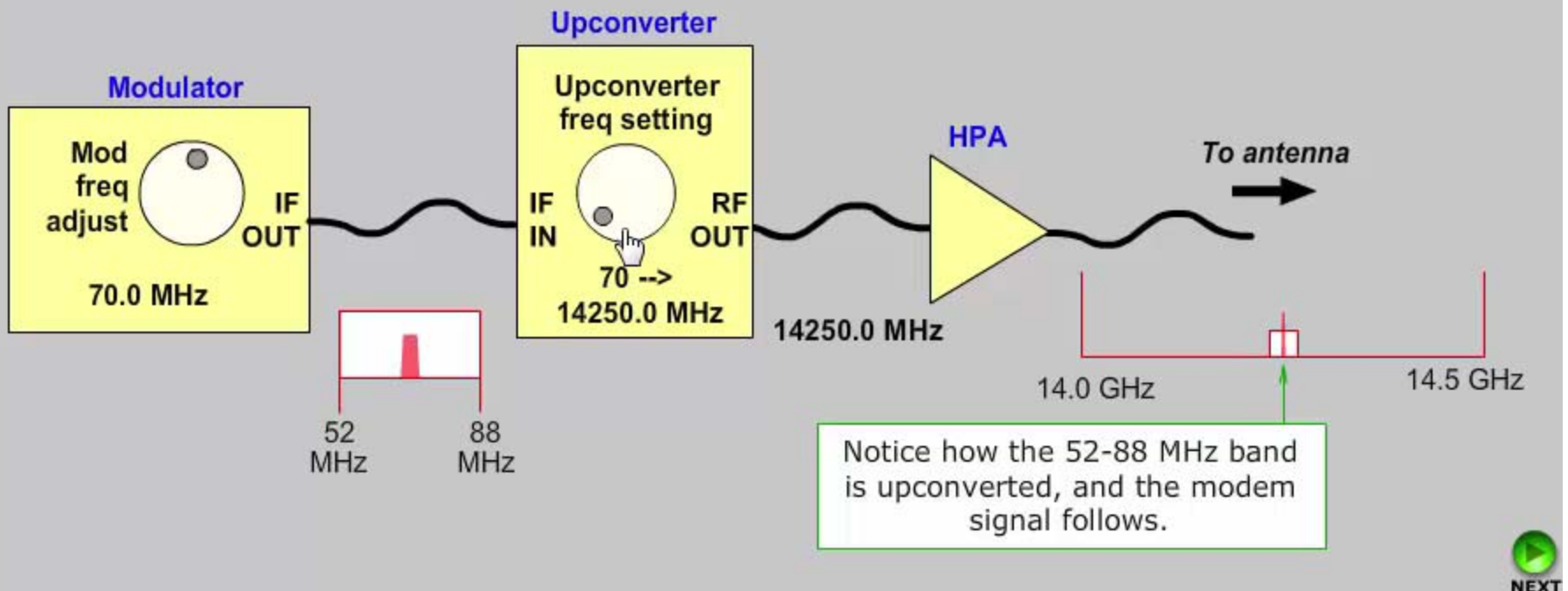
Frequency conversion simulator

What does a 70 MHz upconverter do?

Blockdiagram14
© 2013 SatProf, Inc.

In a "70 MHz" uplink system, the modulator outputs a signal in the neighborhood of 70 MHz. Normally the modulator has a range of only about ± 18 MHz. Therefore, the upconverter must also have a frequency adjustment, so you can choose where in the RF band you want the signal to be placed.

Click NEXT to learn more.



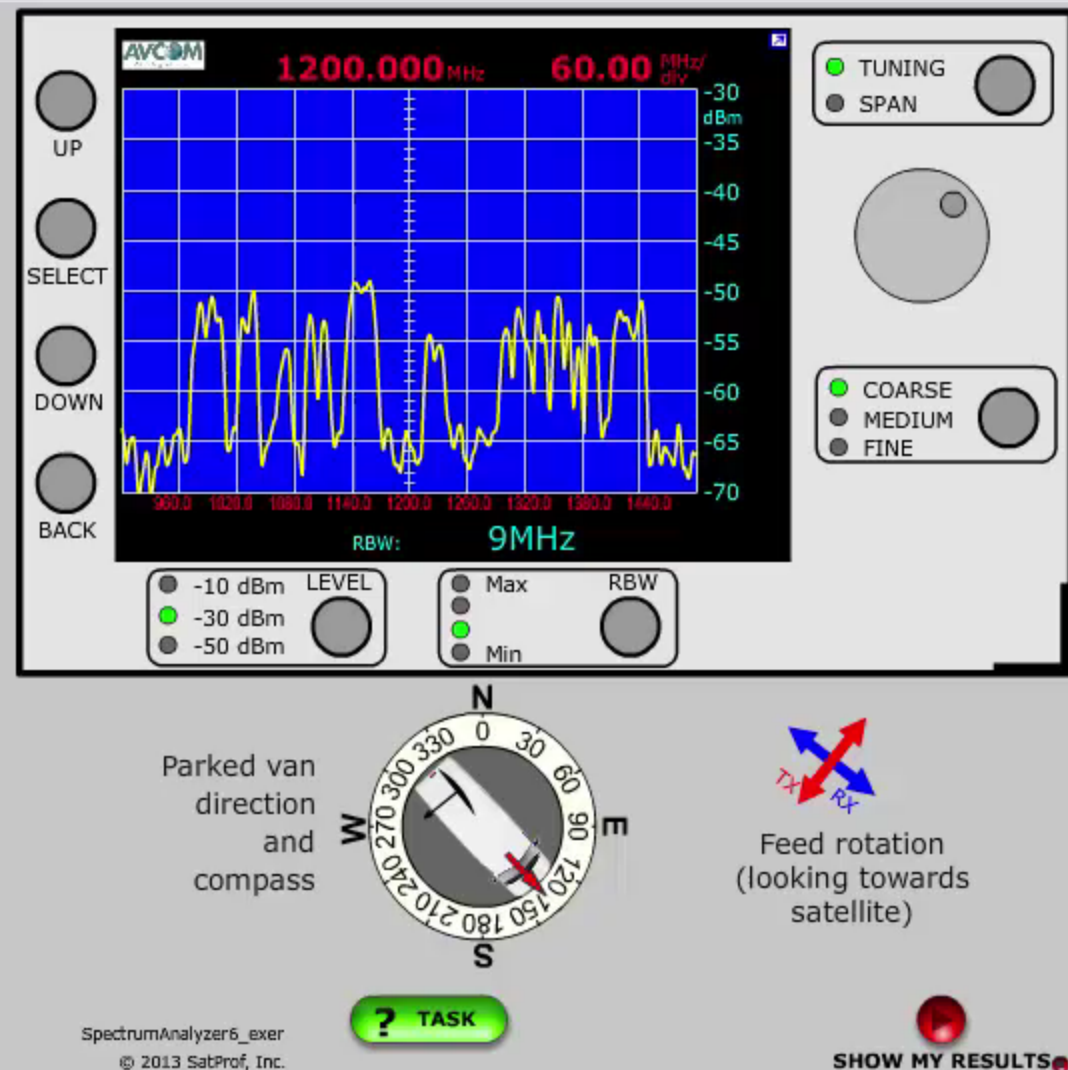
Full-arc spectrum simulator

Find the satellite & point

You must find your assigned satellite and accurately point the antenna. Click TASK for full details of your task assignment and tips. When you are finished click SHOW MY RESULTS.

Antenna position controller	AZ	94.8	CCW Pol	↑	CW Pol
	EL	31.4	←	Pol H-V	→
	POL	38.2	Speed	↓	
	JOG SPEED	SLOW			

Save all changes	Upconverter		HPA	
	CF	14300 MHz	Gain	50 dB
	70 MHz to Ku-band, 1 MHz steps		1 dB steps	
	Modulator 1		Modulation	
	Frequency	69.000 MHz	Carrier Power	-24.0 dBm
			Symbol Rate	4.300 MSPS
			OFF	ON
	Modulator 2		Modulation	
	Frequency	75.123 MHz	Carrier Power	-20.2 dBm
			Symbol Rate	9.0 MSPS
			OFF	ON



Cross-pol skills simulator (SNG)


Access procedure skills test

In this exercise, you must preset your pol, then follow the SAC (Satellite Access Center) tech's directions to run a cross-pol check and bring up your uplink. Assume you have already pointed the antenna in az and el. Click TASK for complete details about your assignment, how to pass, and tips. IMPORTANT: THIS IS A TEST OF YOUR ABILITY TO PRECISELY FOLLOW WRITTEN AND VERBAL INSTRUCTIONS!

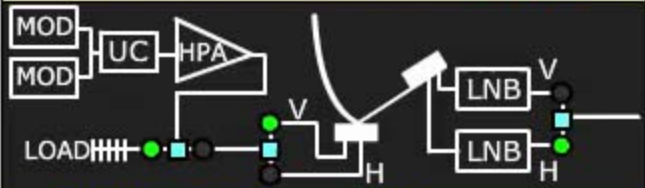
When you have finished, or you need a hint, click the SHOW MY RESULTS button.

SAC: Thank you for calling XYZSat. I would be pleased to help you activate your uplink. We will do a CW uplink crosspol check and alignment, and then bring up your modulated carrier on your assigned frequency to the correct level. First, please PRESET YOUR POLARIZATION angle and assume Vertical downlink and Horizontal uplink. Then when you are ready, go ahead and initiate a low-level CW test carrier at 14204.100 MHz.

SNGCrossPol1_exer
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Feed rotation (looking towards satellite) 

Antenna position controller	
AZ	104.3
EL	37.1
POL	0.0
JOG SPEED	FAST



70MHz/Ku UC	
CF	14300 MHz
1 MHz steps	


HPA	
Gain	50 dB
1 dB steps	

Save all changes

Modulator 1	
Frequency	69.000 MHz
Carrier Power	-24.0 dBm
Modulation	4.300 MSPS
<input type="radio"/> OFF <input checked="" type="radio"/> ON	

Modulator 2	
Frequency	75.123 MHz
Carrier Power	-20.2 dBm
Modulation	9.0 MSPS
<input type="radio"/> OFF <input checked="" type="radio"/> ON	

Unlimited tries are allowed.

 **SHOW MY RESULTS**

What's new?

New online courses:

- **GVF 811: Carrier ID Principles and Operation**
- **GVF 514: Installing VSATs with Integrasys Satmotion**
- **O3b 731: Introduction to O3b Networks**

All are available at no additional charge for GVF Knowledge Center subscribers.

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Thank you!