

Prevention is the key

Founded in 1990, INTEGRASYS specializes in signal monitoring and the prevention and mitigation of interference. The company is very active in the interference mitigation community and has introduced revolutionary technology to the field. Satellite Evolution speaks to Alvaro Sanchez, Sales and Marketing Manager to discuss their Satmotion Pocket technology and other innovations, as well as the challenges of HTS and plans for the future.

Question: Would you kindly begin by giving our Readers an overview of INTEGRASYS as a company, and its activities?

Alvaro Sanchez: INTEGRASYS was founded in 1990 by Hewlett Packard engineers with expertise on RF measurements for the satellite industry. The company started its business with turnkey projects for government and enterprises in satellite signal monitoring and interference prevention tools.

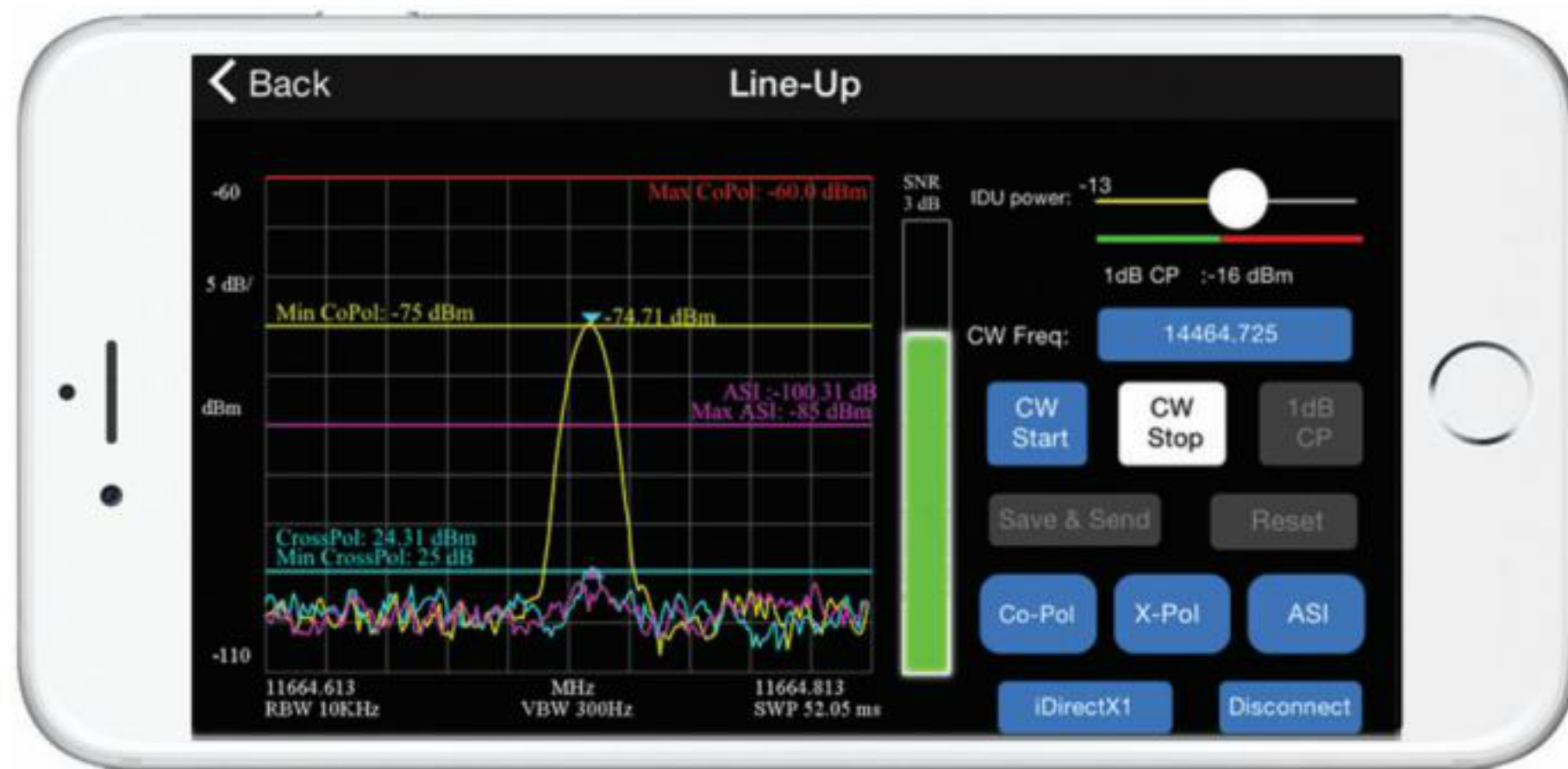
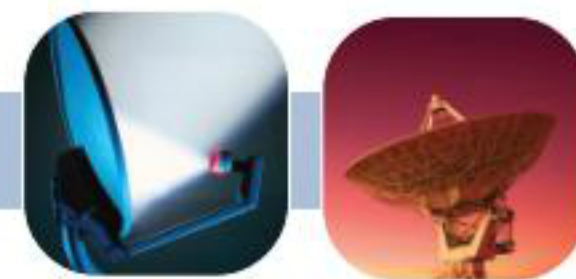
In the past, INTEGRASYS has been

mainly focused on the European market, working with several operators and service providers, and ESA (European Space Agency). However, INTEGRASYS now targets the world with a wide range of CMS products that ensure quality of service, interference prevention and mitigation. Our products are fully designed by our expert engineers, who are focused on solving the challenges of the satellite industry for our customers.

In our recent Annual Review, we

showed significant growth of the company by opening a new office in the USA and we have had great success in the US market. Our CEO, Juan Martinez said: "In North America, Satmotion Pocket has had a major impact on Internet service via satellite following an agreement we signed with one of the largest TDMA network manufacturers."

INTEGRASYS has also opened a new office near Washington DC to serve US customers, where demand for our services is growing rapidly."



Service providers allow the end users (field installers or final customers) to use Satmotion Pocket for commissioning the remotes much quicker. The feedback from the industry is impressive and we have had many sales for important projects worldwide which are being deployed in very short time frames. This demand has driven INTEGRASYS to focus on Satmotion Pocket as the key product for INTEGRASYS' success.

Last year we experienced a growth in demand for Satmotion Pocket systems by VSAT equipment manufacturers such as iDirect. iDirect has worked with INTEGRASYS to define and customize Satmotion Pocket for iDirect's customer needs, creating the 'iDirect Remote Commissioning Solution' which allows satellite service providers to deploy large networks saving time and resources.

Question: Can you tell us about the ControlSat and VectorSat products that support the Carrier ID initiative?

Alvaro Sanchez: ControlSat is the core of INTEGRASYS' Carrier Monitoring Systems (CMS) product line. Currently, ControlSat is the fastest CMS on the market, allowing the operator to measure up to 200 measurements per second (20 times more than any competitor on the market) as well as multiple simultaneous users sharing one system's capabilities. Therefore, ControlSat allows the customer significant CAPEX savings by using just one system for multiple satellites, pols and users and OPEX savings through the extremely easy interface for the NOC operators. That said, we have followed the IRG initiative supporting the Carrier ID standard, which is one of the key methodologies to prevent and mitigate interferences on satellite communications. ControlSat CID allows detecting and decoding of the carrier identification when the interference occurs without any limitations on time by wide bandwidth interfering carriers. ControlSat detection capabilities allow decoding in order of minutes instead of several hours with maximum accuracy.

In addition, VectorSat allows the detection of hidden carrier, also known as carrier under carrier scenarios, where transmissions are degraded by a signal hidden inside a customer carrier, degrading the quality of service and affecting the customers' satisfaction.

VectorSat is also capable of detecting CID on a Carrier-Under-

Question: The SatMotion Pocket has taken the satellite world by storm. Can you tell us about the technology and where the idea came from?

Alvaro Sanchez: True, Satmotion Pocket has had major success and industry recognition over the last year. INTEGRASYS was awarded the Most Innovative Product of the Year Vision Award at the SATCON show in New York, and shortlisted for multiple awards for technology.

Satmotion Pocket is a very intuitive tool for the installers to point, peak and pol the dish, minimizing the time expended on the commissioning, and allowing the field operator to commission the satellite access autonomously with just one app on the smartphone, Google Glass or laptop. Satmotion Pocket allows an interference minimization very rapidly while VSAT performances are maximized, because Satmotion provides the feedback from the NOC spectrum measurements to the installer screen. Therefore there is no need for real-time coordination between the NOC and field personnel via phone call.

The concept of Satmotion Pocket was developed by INTEGRASYS' engineers for solving the key challenges on large VSAT networks deployment over short time frames. This system was designed working closely with service providers and satellite operators to fulfill their needs.

VSAT networks create a large number of interference tickets for satellite operators. The fundamental idea for Satmotion Pocket was developed in 2004 and patented in 2005, and INTEGRASYS has been working on developing a much easier way to automate commissioning by adapting the new technologies that allow service providers a much greater

quality of service across their networks.

Question: How long did it take INTEGRASYS to develop the Satmotion Pocket technology?

Alvaro Sanchez: INTEGRASYS has been developing Satmotion Pocket since the 2004, with the first version of the Motorola Accompli 008. However, it was too soon for the technology at this time. The demand for this type of tool was not required until the VSAT networks were large and started to create large numbers of interference tickets. Currently, Satmotion Pocket solves this issue which was predicted by INTEGRASYS and we have developed the technology which addresses the VSAT interference challenge and also allows satellite service providers to deploy their networks much quicker and with better performance.

Indeed, Satmotion is a product in motion, which is being customized to different complementary applications. The best example will be Satmotion SNG, for SNG fleets, which address the issues on the broadcaster satellite access and interference. We will be releasing Satmotion SNG in March. The SNG broadcasters can benefit with significantly easier line ups without scheduling and calling to the NOC or PMOC.

We foresee a long life for Satmotion products.

Question: Who are the typical users of the Satmotion Pocket and what level of interest have you had in the technology?

Alvaro Sanchez: Our customers are satellite service providers that can benefit through much greater network performance as the VSATs are more accurately pointed for transmission.



Carrier satellite interference scenario with maximum accuracy.

Question: The emergence of HTS is creating a new set of challenges in terms of ground stations. What are these challenges and how is INTEGRASYS addressing these?

Alvaro Sanchez: Correct, high throughput satellites are creating a new set of challenges in terms of ground station monitoring. Today HTS provides much more capacity than the traditional satellite technology. This is achieved by high level frequency re-use and spot beam technology which enables frequency re-use across multiple narrowly focused, spot beams (usually in the order of 100s of kilometres). By contrast, traditional satellite technology utilizes a broad single beam (usually in the order of 1,000s of kilometres) to cover wide regions or even entire continents. In the ground station field, HTS brings many advantages however also brings complexity, therefore INTEGRASYS has been working on the best systems for HTS ever built.

A fundamental difference to existing satellites is the fact that HTS are linked to ground infrastructure through a feeder link using a regional spot beam dictating the location of possible teleports.

This issue brings a huge complexity designing gateways and expensive monitoring systems for each beam. Therefore INTEGRASYS has upgraded the Controlsat Carrier Monitoring System for a high throughput satellite cost effective solution. After the ground station is planned by GeoBeam Link Budget calculation software, taking in to account the Satellite antenna patterns, Controlsat minimizes the investment significantly by using the HTS cost effective solution.

When the project is properly planned, INTEGRASYS installs Controlsat, the carrier monitoring system customized specially for HTS. This solution is a client/server architecture, which controls all beams from the same location in real time. Controlsat is able to monitor transmission in Ka or Ku, while downlink spot beams are monitored remotely by down converting to L-band for minimizing the investment. This allows the satellite operator to monitor all the downlink beams from the full spacecraft and all pols simultaneously, saving time and investment.

In order to provide an affordable solution, INTEGRASYS has decided to monitor multiple low cost spectrum analyzers with good performances from

the same location in real time using TCP/IP protocol. This capability minimizes the cost and installation effort, because many beams will not have a teleport located in that region because the beam covers remote locations (footprints of hundreds of kilometres). In many instances, the only way to monitor these beams will be a remote installation and satellite link; therefore the minimum equipment with maximum performance is required.

Question: How successfully do you feel that the satellite industry is addressing the issue of interference? What work still needs to be done to combat the interference issue?

Alvaro Sanchez: The satellite industry is doing a good job in terms of solving interference. This is one of the key initiatives making satellite more reliable and cost effective as interferences occupy bandwidth which cannot be sold, increasing the cost per Hz. At the GVF HTS conference in London, I was part of the new technologies panel. In that discussion, it was mentioned that satellite operators were losing around a million US dollars per satellite per year; which is a significant amount to large operators.

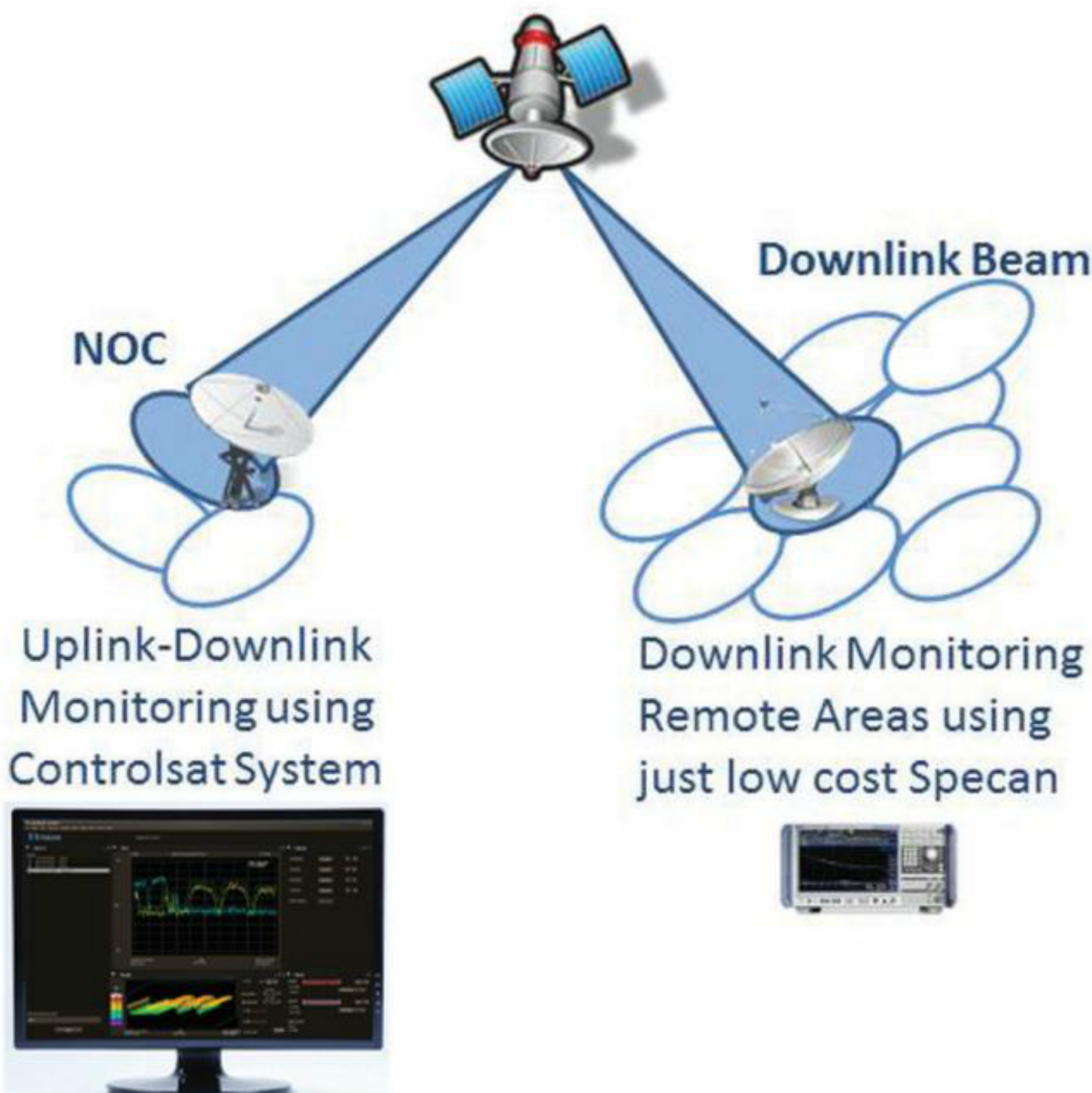
At INTEGRASYS, we are designing and developing the most effective technologies for fighting against interferences with different approaches providing a wide range of products developed for each satellite application.

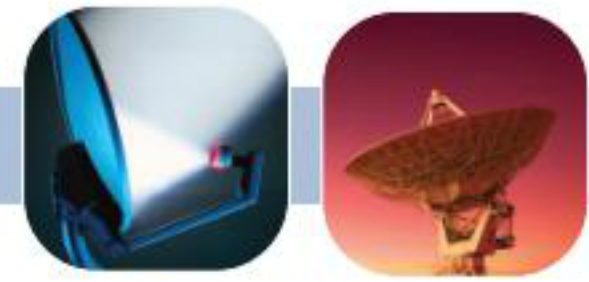
The key technology is Satmotion, which mitigates the three common interferences in Copol, CrossPol and Adjacent Satellite ASI, while the operator accesses the satellite. New technologies are in the pipeline. One example is the interference simulation on link budget planning and network design called GeoBeam.

This allows service providers and satellite operators to maximize their satellite network performance by simulating the communications prior to deploying the network, and enables them to design the coverage of the new satellites so that they may report to the ITU and minimize interferences inter and intra-satellite.

Question: What will your areas of focus be in 2015?

Alvaro Sanchez: 2015 will be INTEGRASYS' 25th anniversary and we will be releasing a large number of new features. At the end of Q1 we will be releasing a new update for our CMS





We will also be launching Satmotion SNG for broadcasters and several kinds of equipment line-ups and commissioning for a much faster access to the satellite without the need to call to the NOC or PMOC and we will keep working on developing new systems which address our main focus to reduce customer OPEX while minimizing satellite interferences. Moreover, in our R&D we are developing a new automated calibration system for Ka-band, calibrating the full Ka-band in a couple of seconds as our CalSat systems already does with C, X, S and Ku-bands.

This new system will allow users to take EIRP measurements on the new HTS gateways worldwide, an important issue today as calibration in Ka takes long time.

Figure 1



graphic user interface, providing our users with a much greater experience at the NOC, using the state of the art

technologies to visualize the spectrum. In Figure 1 you can see an example of the new ControlSat interface.

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