

**SONY**®

**IPELA**  
VISUAL COMMUNICATIONS

**IPELA® Visual Communications  
extends the reach of HD broadcasting  
WHITE PAPER**



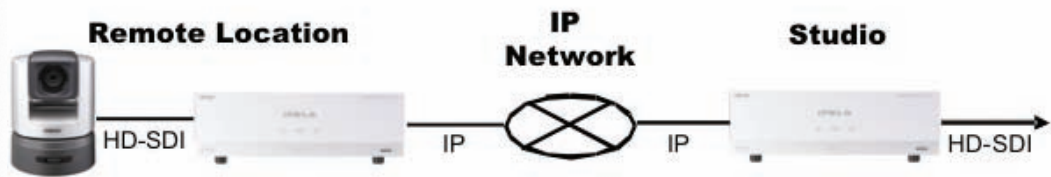
THE NEW WAY OF BUSINESS™

Presented by Sony  
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## A NEW TOOL FOR HD BROADCASTERS

It started with standard definition, when broadcasters discovered the incredible quality and cost-effectiveness of IPELA® Visual Communications. The National Football League uses IPELA to connect every team's coaching staff to national studio based interviewers. The National Basketball Association followed suit. And three major broadcast networks have turned to IPELA Visual Communications to extend their reach.

Now Sony takes the next dramatic step: high definition. The IPELA HD Visual Communications system enables broadcasters to establish live, real-time HD audio/video links to remote locations using cost-effective IP networks. Satellite contribution links are costly, use MPEG-2 compression and typically require 19 Megabits per second. In contrast, the IPELA system is cost-effective, taking advantage of advanced H.264 compression and needing only 8 Megabits per second. As a result, broadcasters can deploy HD remote feeds in more locations at lower cost than ever before.



Overview of the IPELA HD Visual Communications system.

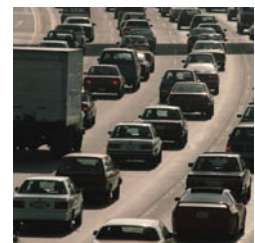
And thanks to Sony's broadcast equipment expertise, the IPELA hardware accepts industry-standard HD-SDI inputs on the far end and delivers an HD-SDI output on the near end, for seamless integration with the full range of broadcast equipment and infrastructure.

## IPELA VISUAL COMMUNICATIONS MEETS THE DEMAND FOR HD PROGRAM ORIGINATION

IPELA HD Visual Communications arrives at an important time in the evolution of HD broadcasting. With an established base of over 10 million HD households and growing, the HD audience is bigger than ever. Competition to provide HD programming has intensified. It started with HD sports and entertainment. And it extends to HD soap operas, game shows, talk shows, sketch comedy shows and morning news. Now affiliate stations are getting into HD production, starting with HD studio cameras for local news.

As the next logical step, news broadcasters will increasingly supplement HD studio shots with HD traffic, HD weather, HD helicopter and HD electronic newsgathering (ENG). IPELA Visual Communications is the cost-effective way to acquire and deliver HD signals from fixed remote sites. It's ideal whenever you need repeated, predictable connections from a known remote point:

- **Sports stadiums.** Enable game clips, after-the-game interviews, coach and player updates in lifelike high definition.
- **City hall and courthouse.** Always ready to report late-breaking developments.
- **Traffic cam and weather cam.** Be first in your market with high definition coverage of the news that affects people directly, every day.
- **State capital and national interviews, Sunday interview shows.** Deliver the political movers and shakers in high definition.



## COMPONENTS OF IPELA HD VISUAL COMMUNICATIONS

### PCS-HG90 codec unit

The heart of the system is the Sony PCS-HG90 codec unit. It reflects decades of Sony innovation in HD signal processing with the powerful A/V compression and decompression necessary to conduct high-quality real-time communications. The unit also houses the intelligence to set up and tear down HD communications links over IP networks.



*The PCS-HG90 codec. Basic operation is provided through the supplied wireless remote control.*

The PCS-HG90 also offers a complete suite of professional A/V inputs and outputs including balanced XLR audio, HD-SDI digital video and analog Y/Pb/Pr video. The VISCA™ interface provides pan/tilt/zoom control for compatible cameras. The system also supports remote switching to another source and options including lavalier microphones and a separate channel for interruptible foldback (IFB) audio from the studio. A 100Base-TX/10Base-T port provides the IP network connection. Basic operation is provided through the supplied wireless remote control. The codec, camera and ancillary equipment are typically integrated into a self-contained, shock-resistant roll-about case that can be placed into secure storage between broadcasts.

The system requires two codec units: one at the near end and one at the far end. In multi-point systems, a single near-end codec unit can manage communications with up to four simultaneous remote locations.



*The PCS-HG90 has a complete suite of broadcast audio and video interfaces.*



### PCSA-CHG90 Pan/Tilt/Zoom HD camera

Thanks to its HD-SDI input, the codec unit can work with any broadcast HD camera. Many users will choose to connect the matching PCSA-CHG90 pan/tilt/zoom camera. Small enough to hide behind a sheet of standard letter paper, this self-contained unit offers 340 degrees of pan, 115 degrees of tilt and a Carl Zeiss® Vario-Sonnar® T\* 12x optical zoom lens. Drawing on decades of Sony leadership in HD cameras and HD image sensors, the camera features three Sony 1/3-inch type Interline Transfer CCDs, each with 1440 H x 1080 V effective pixels. As you would expect, the camera's VISCA interface accepts pan/tilt/zoom control from the PCS-HG90 codec.

*Compact as it is, Sony's PCSA-CHG90 camera achieves exceptional performance with three Sony interline transfer CCDs and a Carl Zeiss Vario-Sonnar lens with T\* anti-glare coatings.*

### IP network

The IPELA HD Visual Communications system functions over standard IP data networks. While baseband high definition video requires 1.2 Gigabits per second, and common MPEG-2 satellite compression reduces this to 19 Megabits per second, the IPELA Visual Communications system delivers a broadcast-quality high definition signal at a network-friendly 8 megabits per second. In fact, you may well be able to deploy IPELA HD Visual Communications as another application on the broadband network facilities you already have in place.

Encode/decode latency is a mere 200 milliseconds, not including network latency. This is 80% less delay than satellite transmission (1050 milliseconds).

Sony also protects your video signal with sophisticated Quality of Service (QoS) technology. For example, Adaptive Rate Control (ARC) adjusts the transmission rate according to IP network conditions. Real-time Automatic Repeat reQuest (ARQ) and Adaptive Forward Error Correction (Adaptive FEC) protect the integrity of the picture. The system even analyzes Round Trip Time (RTT) across the IP network to strike the optimum balance between ARQ and Adaptive FEC. The result is an amazingly robust, broadcast-quality HD signal.

### Management and control

The PCS-HG90 also offers powerful network management including remote management and device monitoring via web browser and Simple Network Management Protocol (SNMP). In a similar way, the operating software can be upgraded via File Transfer Protocol (FTP) or Memory Stick® media card. The PCS-HG90 also integrates with third-party conference room control systems from AMX and Crestron, which can operate the codec unit via telnet or RS-232C.

## PERFORMANCE OF THE IPELA SYSTEM

### Compression

Conventional satellite contribution feeds are limited by the MPEG-2 compression family, which depends on technology developed in the 1990s. Sony's IPELA HD Visual Communications system leverages the latest MPEG-4 or "AVC" compression technology, which has been standardized in the telecommunications industry under the designation "H.264." Using a newer set of compression tools, the H.264 codec is twice as efficient as MPEG-2 compression. In other words, it can deliver comparable picture quality at half the bitrate.

### Picture quality

The IPELA HD Visual Communications codec transmits 1280 H x 720 V effective pixels at 60 or 30 progressive frames per second. In this way, your studio receives a robust picture capable of being switched into 720p or 1080i HD broadcasts. Using the Sony PCSA-CHG90 camera, fine detail is spectacular. And color gamut is exceptional.

### Sound quality

The system's MPEG-4 AAC coding transmits stereo digital audio with frequency response up to 44 kHz (auxiliary input) or 22 kHz (mic input). Echo cancellation, noise suppression and automatic gain control facilities are included.

### Return on Investment

A microwave truck can cost \$2,000 for a ten-hour day. Satellite trucks can be ever more expensive. And the satellite link itself can cost more than \$350 per hour. Sony IPELA HD Visual Communications replaces these costs with a fixed cost for hardware and relatively low monthly costs for broadband IP service. In this way, the IPELA system can quickly pay for itself and start saving money where broadcasters are currently spending for frequent, predictable satellite or microwave links. These applications can include sports venues, court-houses, city halls and state capitals, plus traffic cam and weather cam. **For more information, speak to your Sony Representative or visit [www.sony.com/conferencesolutions](http://www.sony.com/conferencesolutions).**

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