Intelligent Auxiliary Panel Specification
Version 1.0
14th February 2008

In-Room Technology Workgroup
Application and Device Integration Team

About HTNG

Hotel Technology Next Generation ("HTNG") is a nonprofit organization with global scope, formed in 2002 to facilitate the development of next-generation, customer-centric technologies to better meet the needs of the global hotel community. HTNG's mission is to provide leadership that will facilitate the creation of one (or more) industry solution set(s) for the lodging industry that:

• Are modeled around the customer and allow for a rich definition and distribution of hotel products, beyond simply sleeping rooms;
• Comprise best-of-breed software components from existing vendors, and enable vendors to collaboratively produce world-class software products encompassing all major areas of technology spending: hotel operations, telecommunications, in-room entertainment, customer information systems, and electronic distribution;
• Properly exploit and leverage a base system architecture that provides integration and interoperability through messaging; and that provides security, redundancy, and high availability;
• Target the needs of hotel companies up to several hundred properties, that are too small to solve the issues themselves;
• Will reduce technology management cost and complexity while improving reliability and scalability; and
• Can be deployed globally, managed remotely, and outsourced to service providers where needed.

In June 2005, HTNG announced the first-ever "Branding and Certification Program" for hotel technology. This program will enable vendors to certify their products against open HTNG specifications, and to use the "HTNG Certified" logo in their advertising and collateral materials.

It will enable hotels to determine which vendors have completed certification of their products against which specific capabilities, and the environments in which performance is certified. HTNG's vision is to achieve a flexible technical environment that will allow multiple vendors' systems to interoperate and that will facilitate vendor alliances and the consolidation of applications, in order to provide hotels with easily managed, continually evolving, cost-effective solutions to meet their complete technology needs on a global basis.

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1   Document History

1.1   Document Changes

Version	Date	Author	Comments
A Draft	30 Oct 2007	C Corby	Initial Issue
B Draft	19 Dec 2007	C Corby	Changes after review
C Draft	14 Jan 2008	C Corby	Transposed to HTNG preferred template
D Draft	15 Jan 2008	C Corby	Updates from HTNG Dallas Meeting
E Draft	12 Feb 2008	C Corby	Minor typos corrected, redundant Schemas section removed.
1.0	14 Jan 2008	C Corby	Initial Release

2   Document Information

2.1   Document Purpose

The purpose of this document is to provide a specification for implementation of the HTNG standards based solution for an Intelligent Auxiliary Panel (IAP).

An Intelligent Auxiliary Panel fits in a hotel room and allows a guest to connect portable media devices such as an MP3 player, laptop computer or games console to the in-room entertainment system (TV or STB) and to play back audio and/or video content.

This document is based on the HTNG Draft Specification - Auxiliary Panel released by the HTNG ADI WorkGroup [1].

This specification was developed by the Application and Device Integration Team of the HTNG In-Room Technology Workgroup

2.2   Scope

The scope of this document includes, directly or by reference, all information required to implement an IAP as described above. It does not include information needed to implement other specifications developed by the HTNG In-Room Technology any other HTNG workgroup.

2.3   Audience

The intended audience of this document is developers wishing to implement an IAP.

2.4   Overview

Section 3, Business Processes, defines how the IAP is used in a typical hotel environment.

Section 4, Implementation Requirements, defines the mandatory and desirable features of the IAP.

2.5   Document Terms

For the purpose of this document the following terms have been defined as follows:

Term	Definition
Mandatory	This feature must be supported in order to meet the requirements of this specification.
Optional	This feature should be supported if possible (desirable) but is not a mandatory requirement of this specification.
IAP	Intelligent Auxiliary Panel
IRES	In-Room Entertainment System
STB	Set-Top Box – refers to all physical variants, Set Back Box etc.
VOD	Video On Demand

2.6   Referenced Documents

The following table shows the documents upon which this document depends:

Name	Location
HTNG Draft Specification – Auxiliary Panel	ADI Workgroup, 5th March 2007, www.opengroup.org/htng
High Definition Multimedia Interface, Specification Version 1.3a	HDMI Org. 1oth November 2006. www.hdmi.org
HTNG STB Specification V1.0	ADI Workgroup, 25th February 2008, www.opengroup.org/htng

3   Business Process

3.1   Overview

The IAP can be used either directly with a TV where no VOD is used by the hotel, or via an STB where a VOD system is implemented at the hotel.

Messaging between IAP and TV or STB uses the HDMI CEC protocol.

3.2   Use Cases

In **TV mode** the IAP communicates directly to the TV, there is no VOD provider and hence no STB.

TV Mode itself is **optional** but not mandatory, however when it is implemented it is **mandatory** that the IAP can instruct the TV to switch to the HDMI port assigned to the IAP. It is also **mandatory** that the IAP can instruct the TV that the HDMI port assigned to the IAP is no longer active so the TV can revert to another input source.

In normal operation the IAP is the master device and determines which input source is selected. However it is **optional** that the IAP can also accept commands from the TV to switch input sources on the IAP.

It is **mandatory** that the IAP generates a dummy video signal (black) to the TV if no video source is present. This is required as some TV's will not play HDMI audio-only streams.
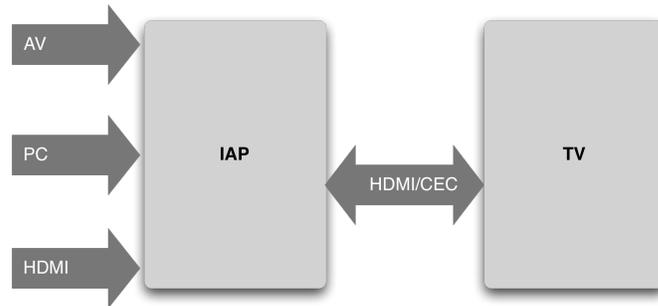

Figure 3.1 TV Mode Operation

It is **optional** that the IAP can activate an OSD on the TV to indicate which source is playing.

In **STB mode** the IAP communicates with an STB. In this configuration the STB is the master device and it controls the IAP.

It is **mandatory** that the IAP can advise the STB when one of the IAP inputs is activated or de-activated (this may be as the result of a user activating or de-activating a switch or as the result of an auto-detection mechanism).

It is **mandatory** that the STB can tell the IAP to switch to a specific input source on the IAP

It is **mandatory** that the IAP generates a dummy video signal (black) to the STB if no video source is present. This is required as some TV's will not play HDMI audio-only streams.
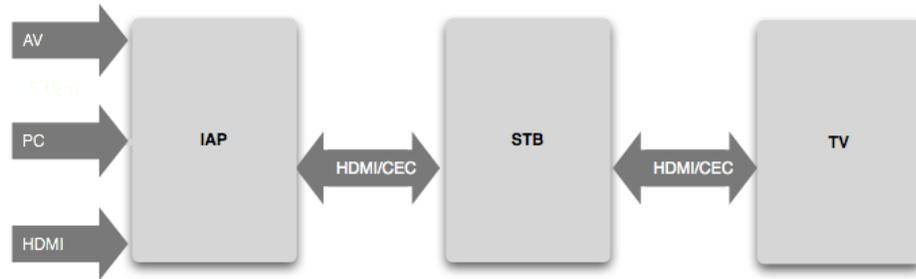
Figure 3.2 STB Mode Operation

<div style="background-color:#4472a8; color:white; padding:2px;">

3.3   Message Flows
</div>

It is mandatory that the back end HDMI link conforms to the HDMI 1.3a specification including CEC as a minimum [1].

To ensure maximum interoperability when in TV Mode it is **mandatory** that the IAP will communicate with the TV using the defined CEC *Active Source*, *Inactive Source* and *Set OSD String* messages.

When in STB Mode additional CEC messages will be required to:

- advise the STB of a request to make an input active (this may be as a result of a guest manually selecting the input or auto-detection),
- allow the STB to request a list of active inputs.

The **mandatory** messages are detailed in Appendix A.

4 Implementation Requirements

4.1 General Requirements

It is **mandatory** that the IAP must:

• provide connectivity for the most common portable media devices, MP3 players, laptops, games consoles,
• allow connectivity at a convenient location in the guest room,
• ensure the integrity of the IRES installation by removing the need for the guest to plug directly into the TV and/or STB,
• be intuitive to use,
• inter-operate with an HTNG compliant VOD STB [3],
• provide a single AV path to the TV or STB using HDMI v1.3a as a minimum,
• encode HD sources using HDCP,
• allow audio only, video only or audio and video content to be played,
• provide a single control path between the IAP and the TV or STB using HDMI/CEC,
• make provision to pass USB data transparently to the TV or STB,
• be firmware upgradeable on-site.

It is **optional** that the IAP should:

• be able to integrate directly to the TV where no STB is used,
• allow audio from one IAP input source to be paired with video from another IAP input source when in STB Mode,
• support mass storage memory cards.
• be firmware upgradeable remotely.

4.2 Implementation

The following implementation is **mandatory**:

• all audio/video signals are switched down a single TV/STB HDMI link,
• if USB data transport is required then there will be a separate TV/STB USB link.
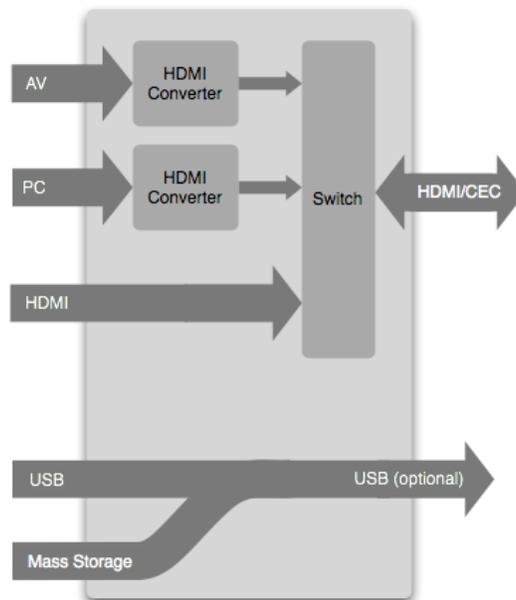• the TV/STB control path will use the HDMI CEC protocol.

Figure 5.1 IAP Implementation

4.3   Physical

It is **optional** (but desirable) that the IAP is:

• modular to allow configuration variants at time of manufacture/assembly.
• can have modules replaced on-site by hotel staff.

4.4   Operation Modes

It is **mandatory** that the IAP is:

• able to work in conjunction with an HTNG compliant STB. When inter-operating with an STB the STB will be the master device and will make all switching decisions.

It is **optional** that:

• the IAP should be able to work directly with a TV if there is no STB.

4.5   Guest Connections

The following guest audio-video connections are **mandatory**:

Video	Audio
Composite (RCA)	L-R (RCA)
VGA (15 D-Sub)	L-R (3.5mm MimiJack)
HDMI V1.3a (Type A)	

The following guest power/data connections are **mandatory**:

Power/Data
USB 2.0 (Type A)

It is **mandatory** that 5V/500mA power on USB is provided locally by the IAP.

The following is a list of **optional** guest connections, note this list is not exhaustive:

• S-Video,
• component video (RGB),
• DVI-I,
• mass storage - Compact Flash(CF), Secure Digital (SD) xD-Picture card (xD), Sony MemoryStick
• ethernet (pass through)
• mains power.

4.6   TV/STB Connections

The following TV/STB connections are **mandatory**:

Video	Audio
HDMI V1.3a with CEC and HDCP for HD sources(Type A)	

The following TV/STB data connections are **mandatory** (this is required as a minimum for software upgradeability):

Data
USB 2.0 (Type A)

4.7   Back-End Cabling

It is **mandatory** that back end cabling up to 5 metres can be accommodated.

4.8   Power

It is **mandatory** that the PSU for the IAP has a wide range input (100-240 VAC, 50-60Hz).

It is **optional** that the IAP supports PoE (802.11af)

4.9   Dimensions

It is **optional** to minimise the overall dimensions of the IAP.

4.10   Styling Customisation

It is **optional** that the styling of the IAP is flexible to take into account the varied requirements of the hospitality industry.

4.11   Input Selection and Indicators

The method of input selection is left to the specific implementation. These may include manual selection via switch, auto-detection and selection via on-screen menus.

It is **optional** that there are indicators on the IAP to show which input if any is active. These indicators must not cause excessive light pollution in the room.

4.12   Video/Audio Pairing

When in STB mode it is **optional** that the IAP can pair one IAP video stream with a different IAP audio stream.

Pairing IAP video with a non-IAP audio stream or vice versa is dependent on the TV and or/STB and is beyond the scope of this specification.

4.13   Advanced Video Features

Advanced video features comprise picture-in-picture, split screen etc.

It is not a requirement that the IAP supports advanced video features for two IAP video streams although the *Vendor Specific* CEC messaging will allow for this possibility.

Support for advanced video features between an IAP video stream and a non-IAP video stream is dependent upon the TV and/or STB and beyond the scope of this specification.

4.14   Maintenance

It is **mandatory** that the IAP is firmware upgradeable via the USB 2.0 connection.

It is **optional** that modules can be replaced on site.

4.15   Compliance Testing

It is **mandatory** that the IAP is approved to applicable safety and environmental standards for the intended geographic markets.

It is **optional** (but recommended) that the ISP is certified by an approved HDMI testing facility.

A   CEC Messages

These messages to be defined as part of the HTNG HDMI CEC initiative.

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