

## **In-Room Display Technology in the Hospitality Industry: "Changes in the Mirror are Closer Than they Appear"!**

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### **Introduction**

It is a commonplace that in the sectors of hospitality that focus on higher-margin guests (e.g. business travelers and vacationers) the in-room display is a key enabler of enhanced guest experience. Whether it is the executive who needs a larger display for her laptop, a parent who needs an ad-hoc game console for his son, or a family who needs access to entertainment (while the rain has postponed the trip to the theme park), the quality and range of services provided through that display can be crucial to customer experience.

But this technology--and the services it fronts--is changing rapidly and dramatically in these times. Both the screen technologies, the interconnections, the network capabilities, and the interaction features with other devices in the room (both guest-owned and venue-owned) are evolving rapidly, producing competitive pressures on venue owners to 'keep up'.

It is well-known that what is a 'strategic advantage' today will become a 'strategic necessity' tomorrow. In the competitive world, advances in the technologies will either be something we choose to adopt to 'get ahead' or something we are forced to adopt to 'keep up' with competition.

In the case of display technologies and services, our goals in hospitality are the same as in every other marketing arena: secure a customer trial, then win customer acceptance, then earn customer preference, and finally generate customer insistence for our brand.

The questions below are designed to help us be prepared for technology advances in the area of in-room and common-area displays. Not all of these changes will be needed, but many will--and to exploit these (or just to 'keep up') will require a nimbleness of infrastructure and financing structures. These questions are worded in terms of 'how soon will we need to...' (i.e. 'keeping up' requirements), but they also represent opportunities to 'get ahead', to differentiate, and--importantly--to monetize these advances! All of these advances will require changes in the display hardware, the infrastructure hardware/software, or both. [Some earlier versions of these may be available already--in specialty devices and markets.]

### **Twenty Areas of Rapid Change**

1. How soon will we need to be able to **exchange data with guest mobile devices using NFC (Near Field Communications)**, for payment and other data transfers? This technology is showing up in mobile devices (e.g. new Google Android devices) and is being used for incidental purchase transactions, data transfer, authentication, and the like. It would require 'reader' technology and secure network connections to financial institutions to be included in the display complex.
2. How soon will we need to be able to **use the TV as a docking station** for smartphones? Small, portable projectors are already showing up for mobile devices--using our display as a docking station (connecting to lobby printers, in-room keyboards, and even re-charging) could be a (monetizable) plus for guests.

3. How soon will we need **touch-sensitive and gesture-sensitive areas of the display**? Touch/gesture features are fast becoming a 'preferred' method of interacting with information-centric and entertainment-centric devices--especially for some of our more tech-affluent guests.
4. How soon will we need to have **full PC-processor cards** (for renting from the front desk) for inserting in the display for guest PC usage? Intel, AMD, and (soon) NVidia offer chips that integrate graphics with processing power, and which are available for embedded designs. It is only a matter of time before these processors show up in cards that plug into our displays, to create a 'full PC' capability. [This is essentially the technology substrate that is used in "thin-client" and "zero-client" architectures.]
5. How soon will we need to offer **3D display in select rooms as 'premium'** upgrade options? 3D displays which do not require glasses (but offer a narrow range of viewing angle) or which do require glasses (offering a 'family size' viewing range) are already available, and will increasingly represent upgrade opportunities for guests who desire such. Although all displays in a facility need not require this (like not all require accessibility features), some footprint will be desirable in the future and the size of this footprint will likely grow (requiring refresh of the display technology).
6. How soon will we need to **embed cell radios in the display**, to facilitate (and monetize) non-ground line phone calls? As cellphone use displaced our PBX-based calling services, revenue was lost. Cellphone radios are very inexpensive today, and we will see these integrated into displays to allow cellular traffic over our displays. This can be monetized, since there will be significant value to a guest for hands-free access (especially if coupled with touch-screen dialing or contact-book connections to their mobile device).
7. How soon (and how often) will we have to include/upgrade to the **newer versions of DisplayPort** (for example 1.2), **HDMI** (with Ethernet pass-through), and upcoming **LightPeak** from Intel? These technologies offer better media performance and are beginning to show up on mobile devices of our guest. Just as we have accommodated them with RCA A/V jacks, VGA connections, and --more recently--HDMI ports, we will be expected to provide these newer connections as well.
8. How soon will it make sense to **route grounded Ethernet through the display** instead of a separate wiring/equipment infrastructure? The newer HDMI cables/technologies can pass Ethernet over the HDMI cable. With the correct network connection technology embedded in the display, there is the possibility that we could collapse/consolidate the now-separate Ethernet and display-distribution cables, equipment, management, and infrastructure into a single mechanism, facilitating lower costs and fewer points of failure.
9. How soon will we have to **support web browsers natively** in/on the display? These are already in consumer TVs--the Opera browser, for example, is showing up in selected TV's and Blu-Ray players. Browsers allow access to emerging standards like HTML5, HbbTV [Hybrid Broadcast Broadband TV], and OPIF [Open IPTV Forum]. Not only does this provide a platform for guest interaction, it also (subject to privacy considerations) allows some visibility into guest preferences and history.

10. How soon will we need to offer (and monetize) **access to specific social-media sites** (e.g. Facebook and YouTube) via the display? Some consumer displays already have a 'Facebook' button on-screen, allowing non-PC access to the site. Adding a tag line to select postings (think: "posted from the XYZ hotel in beautiful downtown Philadelphia") where possible could help with branding even.
11. How soon will we need to integrate **personalized ad-streams** into the display features? Guests already receive this on their mobile devices, with every search and web session--why cannot we expand our current capabilities for this further, through dedicated circuits in the display?
12. How soon will we need to integrate, offer, and monetize **personalized 'ambient information'** for guests (e.g. newsfeeds, subscriptions, stock quotes, etc)? Ambient information is a new category of data, in which direct attention by the user is not 'demanded' (like an 'alert'). This information would be akin to the information 'background' on their PC at home/office, or the laptop on the guest desk. Twitter feeds, news headlines, weather at home, stock updates--but all keyed to the guest profile and history -- could continually scroll on the display in the main room (and, where available) in the restroom.
13. How soon will we need to **move to IP-TV**, for cost and service reasons? Media content over IP networks is the future, and this will move over Ethernet (both wired and wireless) and not over current cable technologies. IP-TV will offer us an opportunity to leverage new competition in the media markets to lower our costs, and to provide additional entertainment options for guests.
14. How soon will we offer/monetize **e-Magazines and e-Newspapers** on the display? We already are leveraging this in current subscription and distribution arrangements, but this will expand into the digital-only and mobile-mostly media offerings too. Our displays (and supporting systems) will need to be able to render the different formats and handle the different navigation models. This, of course, represents additional opportunities for revenue, both from guests and from media-supply partners.
15. How soon will we need to offer access to various **AppStores** (e.g. Android, Windows, Apple) for download to guest mobile devices? Although many guests will access the various mobile AppStores from their laptop or from their mobile device, using a large screen is always preferable! The ability to browse an AppStore, conduct a financial transaction, and initiate/complete a download to a mobile device would be complex, but also a great service for an info-centric, mobile-oriented guest.
16. How soon might we need to **increase the shielding** in our STB's or displays, to protect from close-range 4G wireless usage? 4G networks are rapidly being installed in most urban settings, but tests by Cobham Technical Services (reported by Ofcom) confirmed that 4G/LTE devices running at full power within one meter of cable TV set top boxes (STBs) caused interference with the signal. This resulted in broken-up TV pictures and loss of bandwidth. Although this technology conflict is not a problem in consumer settings (i.e. mobile devices are not used that close to the display), this could easily become an issue in many current guest room layouts. STB's, cables, and perhaps in-display circuits may need upgrading at some point in the future, to avoid these problems for guest experience.

17. How soon might we need to intelligently connect to a **guest's on-line entertainment subscriptions** (e.g. Netflix, MLB) or preferred freebies (e.g. Pandora)? The Roku-class devices of the world already do this--and guests will increasingly expect hospitality providers to provide this on the large in-room display.
18. How soon will we have to **integrate other PC-type peripherals** into the display (e.g. personal document scanners, digital pens, secure USB devices, security tokens)? Most of these are USB-based or Bluetooth-based devices, but would require additional capability within our displays to accommodate and leverage. Some might be simple uses--e.g. Bluetooth headset for TV audio--but others might require PC-like add-in technology (e.g. viewing video on a USB stick, using a camera in the display to scan a document onto an inserted USB drive).
19. How soon will we have to accommodate the new **Video-over-IP** (e.g. Skype) and **Content-over-IP** (e.g. Google and Apple) into our offerings? In-unit cameras that function as webcams (for Skype video as well as for contacting the Front Desk or Concierge) will become ubiquitous, as well as the technologies required to connect/deliver/report on Internet-only video media offerings (e.g. Apple TV, Google TV, and future entrants).
20. How soon will we need to incorporate new **wireless connection technology** into our displays (e.g. WiGig, WiDi)? We currently have multiple connectors on our in-room displays (e.g. HDMI, RCA), but wireless connections will also have to be supported soon. Intel's WiDi (Wireless Display) and WiGig (4Gbps wireless for single rooms) will be hot technologies in a year or two. These allow very high-speed connections without cables, and without 'leaking' outside the individual guest room (unlike standard WiFi).

### **The Need to Stay Nimble**

Strictly speaking, any one of the above twenty changes might be enough to force us to refresh our display footprint, but chances are that many more than just one will occur! We obviously cannot afford to change all our in-room displays every time the winds of technology change start to blow in a different direction, but we should be realistic that these refreshes are probably going to be needed every 2-3 years.

This will require several management tools and processes:

- A periodic discussion and review of technology directions--with our display partner, our media providers, and a customer-based feedback group;
- An "open enough" infrastructure (both technological and contractual) to allow such change;
- A financial vehicle to facilitate rapid turnover of subsets of our displays within budget constraints.

As our world becomes more and more info-centric and media-centric, the importance of our in-room displays grows. This can become a focal point for guest interaction, entertainment, work-processes, and building customer loyalty and brand insistence. But this means that this key tool must continually be refreshed to reflect both our commitment to guest experience enhancement and our commitment to sound management practices.