



A R R A Y E N T

White Paper:

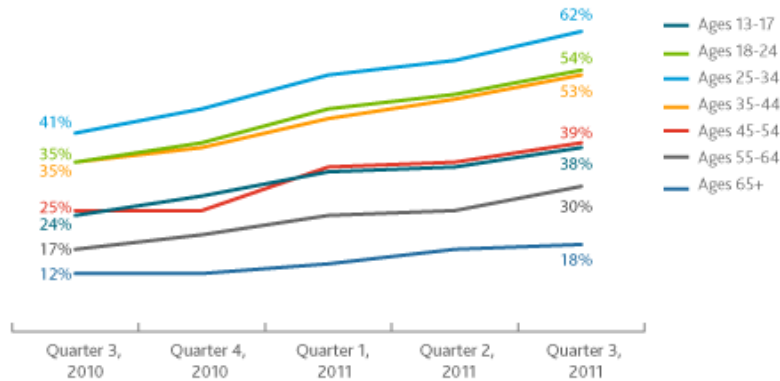
**Transform Your Business in the
Smartphone Age**

Introduction

There's a lot of buzz in the industry these days about "the Internet of things". This emerging trend defines a vision in which virtually every electronic device in your home or workplace will be connected to the Internet, enabling people to interact with those devices from anywhere in the world through browser-based (web) and/or smartphone applications. Already, over 50% of Americans aged 13 to 44 have a smartphone, see Figure 1.

Smartphone Penetration By Age Group

Q3 2010 - Q3 2011, U.S.



Source: Nielsen

nielsen

Figure 1. Nielsen research estimates that over 50% of Americans aged 13 to 44 now own a smartphone.

This vision, clearly emerging at [CES 2012 with over 50% of the products were Internet connected](#), is coming into focus because the cost of Internet connectivity just a few cents per device per month. At such a small incremental cost, manufacturers across a broad range of consumer products categories – including garage door openers, home security systems, energy management, irrigation systems, electronic toys and more – are considering extending their previously unconnected devices with web and mobile applications and services.

Internet connectivity and the applications that are enabled by mobile devices represent a transformative opportunity for brand owners – changing the way they think about their businesses, creating new ways to engage with customers and realizing tangible financial benefits. This white paper explores the range of mobile applications and services that are enabled by Internet connectivity and the direct and indirect business value that they can deliver to product manufacturers.

Exploiting the Smartphone App Opportunity

Manufacturers are always on the lookout for ways to enhance their offerings – to increase the value they deliver to their customers and partners, and create distance between them and their competition. Customer value and competitive differentiation are critical business success factors that drive higher volume, increased revenue, and enhanced margins. With cost effective

Internet connectivity and the apps and services enabled by it, a whole new spectrum of alternatives to add value and create differentiation is emerging.

Enhanced User Experience Value

One area in which Internet connected applications can deliver business impact is user experience. The form factors of many consumer devices restrict user experience flexibility, and a poor user experience often obscures the value of a product. Anyone that has attempted to program a thermostat or irrigation system can attest that a small LCD character display with switches and buttons is often complex and confusing if a user can't figure out how to program a thermostat, then of what value is the programming feature? It comes as no surprise that over half the programmable thermostats installed today are either not programmed or display the incorrect time.

Smartphone and web applications provide a richer, more intuitive palette for user interface development. Imagine what a GUI-based interface for scheduling a thermostat might look, and how much easier it would be to use.



Figure 2: A screenshot of the iPhone GUI for programming the Nest Thermostat illustrates how Internet-connected applications can improve the user experience of core device functions.

Connected Product Value

Mobile applications can also extend the capabilities of electronic devices. For example, a conventional garage door opener typically provides a mechanism to open and close the garage door using a simple button or keypad control panel and one or more “clickers” ad to open and close the garage door from within line of sight view of the door. Chamberlain, the world’s largest garage door opener manufacturer, has extended this baseline functionality by Internet enabling their entire all their MyQ line of garage door openers through a low cost gateway accessory.

Chamberlain’s MyQ Internet-enabled garage door opener can sense when the garage door is open and notify home owners to close it. LiftMaster also offers accessories that can control

lighting within your home through the same smartphone app. These extended capabilities allow LiftMaster to clearly distinguish their products from those of their competitors.

Up Sell Value

When devices are connected, it creates an opportunity for manufacturers to continually add value to a product offering over time. For example, take the case of a “smart light switch” – one that incorporates a motion sensor, a light sensor, a power sensor, and an Internet connection enabling the delivery of back-end services. The baseline customer offer may enable energy conservation and remote control – turning off unused lights based on activity levels, and the ability to turn lights on and off remotely from a smartphone. However, over time a smart light switch manufacturer could up sell new value-added services through the original device hardware, such as:

- A security/burglar alarm system that sends a SMS or email when unexpected usage patterns occur.
- Learn and automatically replay lighting patterns when the consumer leaves her home to go on vacation.
- An elderly care monitoring system that notifies a remote caregiver when a loved one’s common routines (e.g. turn on the tea pot at 9:00AM) do not occur.

Additional services such as these could be leveraged either to extend the customer value delivered from the original device purchase, or create up sell opportunities thereby enabling increased revenue from existing customers.

“Connected Customer” Value

An important challenge facing many consumer product manufacturers is that they have limited contact with their end customers. A few customers may visit the manufacturer’s web site prior to purchase, or afterwards to get customer support. In some cases, there may be a direct customer interaction at the time of purchase. But more often than not, a reseller or retailer enables the purchase transaction. As a result, most manufacturers have very little or, in some cases, no direct interaction with the majority of their customers.

Smartphone and browser-based apps create the context for positive, on-going interactions with “connected” customers. Once connected, brand owners can interact with their customers throughout their product’s lifecycle. Every customer interaction presents an opportunity – an opportunity to learn about the customer in order to serve them better, an opportunity to influence them, to satisfy them, and to educate them. Positive customer interactions expand customers’ connection with a brand and deepen manufacturers’ relationships with their customers, resulting in increased customer lifetime value.

IBM’s Institute for Business Value has analyzed the value of connected customers in their report “The connected customer challenge: Extending the electronics experience through services”. In this report, IBM suggests, “to succeed in today’s connected world, [brand owners] need to seek innovative ways to get closer to consumers. Device manufacturers need to focus on creating products and associated services that together meet consumers’ demands for superior experiences, ultimately transforming the way they live, work and entertain themselves.” The report identifies capabilities that manufacturers need to develop to establish differentiation through service excellence, including among others:

- Open collaboration with customers to uncover and test new ideas and deliver innovative services.
- The ability to develop customer insight through the capture of usage data that can be applied to both product development and marketing strategies.

To read the full report, visit: <http://www-935.ibm.com/services/us/gbs/thoughtleadership/ibv-connected-electronics.html>.

Social Network Value

Smartphone apps can be used to enable customers to engage with their peers – other people like them who have purchased the same product. The resulting communities allow customers to share their experiences, learn from each other, and support each other – all of which drive deeper brand loyalty within a customer base.

People Power is a company that offers an energy services platform enabling people to more intelligently manage their home energy consumption. People Power exposes energy usage data users to their customers through a graphical user interface within a mobile app. By tracking energy consumption on their smartphone, customers can continually monitor daily energy consumption, track consumption history, and set budgets for the future. The smartphone app also allows consumers to connect with other People Power customers to share their energy saving experiences with others, and even take part in customer competitions to see who can conserve the most energy. Through this creative smartphone app that enable community connections, People Power hopes to not only create a richer experience for their customers, but also make a difference in reducing energy consumption – both of which deepen customers’ connection with their brand.



Figure 3: People Power’s smartphone app allows users to compete with others in the user community to see who can use energy most efficiently.

Empowering Installer Ecosystems

Professional contractors install many devices used in and around the home – garage door openers, home security systems, commercial washing machines and irrigation systems to name

a few. For manufacturers of professionally installed products, success or failure is often a function of the strength of their relationship with an installer ecosystem. Internet-connected devices can also have a positive impact on a manufacturer's value proposition to its installer base.

Monster Cable manufactures a wide range of power management products for home theaters that are resold and installed by professional contractors. Monster recently introduced an Internet connectivity option for its uninterruptible power supply (UPS) that allows installers to monitor and control home theater components as if the installer were on site. Through a browser-based application, installers can remotely optimize their client's energy use, reboot frozen components, and set up email or SMS notifications to alert customers of energy consumption issues. Being able to manage the system remotely eliminates unnecessary customer visits. The average installer truck roll is time-consuming and costs \$125 – avoiding a trip to the customer site saves the installer both time and money.

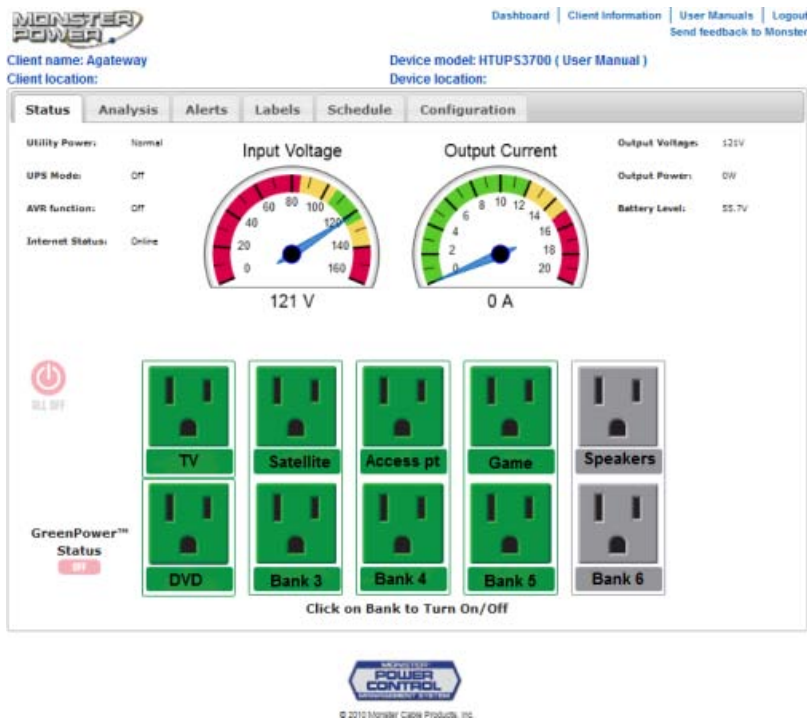


Figure 4: Monster Cable's web interface provides installers with remote access the power management products that they install and support.

Connected devices provide installers the opportunity to increase the value they deliver to their customers, as well as save money and time. Manufacturers that create such opportunities for their installer base not only differentiate themselves from the competition, and they also build brand loyalty within their installer ecosystem.

Conclusion

The world is changing faster than ever before. The Internet is reshaping the way people live, and the way companies do business. By connecting consumer electronic devices to value added applications (web or native smartphone), device manufacturers are presented with an exciting opportunity to disrupt their markets and establish new standards for product capabilities and customer engagement. The result is in increased customer value, differentiation and market share. The innovators will reap the benefits – not only will they have richer relationships with their customers, but they will also create new business models to fuel revenue growth.

About Arrayent

Arrayent (pronounced uh-RAY-ent) sells an Internet-Connect Service that is used by consumer product companies to connect their products to smartphone and web applications in a low cost and reliable way. Arrayent has optimized its Internet-Connect service on two axes: first, very low cost residential gateway and hardware adder to the product, and second, deliver a just-works-install process to ensure low product return rate and customer support load. Arrayent's communication system architecture is LAN technology agnostic (today supporting Ethernet, Wi-Fi and customer proprietary RF LANs) Being LAN agnostic enables Arrayent customers to preserve their growing investment in web and smartphone applications and at the same time, support multiple home area network technologies. Arrayent's cloud computing communication infrastructure is hosted at redundant co-locations to ensure high system reliability. Customers have called Arrayent the "Cisco of small things." For more information please see www.arrayent.com, and e-mail us at info@arrayent.com.