

How 26 Billion “Internet of Things” Devices Will Impact The Hotel Industry

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You Say You Want a Revolution? Just watch the travel industry for a few years and you will get one...

Back in 1993 I started my career in travel marketing at a time when airlines paid 10% commission plus overrides – which travel agency owners felt was still too low of compensation. The “state of the art” in travel technology was still in companies like Sabre, Amadeus, PARS, Apollo (remember them?), etc. Prodigy, CompuServe and GEnie were dial-up services who were for the Dungeons & Dragons-playing set and AOL was smaller than those 3 trailblazing companies.

By the end of the decade, in just 7 short years, the travel world was turned completely upside down.

- Airlines that were not at 0% commissions were quickly on their way there,
- AOL had already peaked and was losing share to cable and DSL providers,
- Online travel distribution was poised to be the travel industry revolution of the 2000’s.

So what does my dragging you for a trip down my memory lane have to do with the digital guest experience? Well, I think it is a good way to ask you to prepare yourself for yet another revolution that is already impacting the hotel industry and will only continue to accelerate in the coming decade – the “Internet of Things”.

What is the “Internet of Things”?

First, let’s examine what the Internet of Things (IoT) is defined as:

"The Internet of Things is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. Typically, IoT is expected to offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices is expected to usher in automation in nearly all fields."

Source: Wikipedia

Perhaps it is easier to understand when you consider IoT from an evolutionary standpoint...

RFID-enabled devices are commonplace in today’s world and we find them in everyday applications, security tags, room keys and toll tags. The technology is very simple in that they broadcast a simple identification number – a sort of unique Social Security number that identifies the tag. For the most part, the short-range capability to transmit an ID is all the RFID-tag does.

The basis of IoT is sort of an “RFID tag for the Internet-age”. IoT enabled tags can transmit and receive data and they have some degree of computing power based on the application the tag is intended for. Like RFID tags, IoT tags and devices have low power consumption requirements despite their ability to transmit and receive information using radio communications. But, the most important element of these IoT enabled tags is that they have a unique address that can be identified on the Internet. That makes IoT devices networkable where they can communicate with other Internet connected devices, including other IoT devices, tablets, smartphones, computers and network access points.

With all this capability, an IoT device can not only provide data to a requesting entity, it can also accept instructions and take actions that it was designed for. For example, an IoT enabled light bulb, oven and refrigerator could report their power-consumption to a central server that, in turn, can transmit back to an app on a consumer’s smartphone the hourly cost per that those devices are presently using. The consumer can then set up rules to optimize energy usage:

- Ensure the light bulb is turned off between midnight at 6 AM,
- If the oven is left on for more than 4 hours, send a text message to the owner’s mobile phone,

- If there is a spike in power consumption on the refrigerator lasting more than 2 hours, send a text message to the owner's mobile phone.

The possibilities with IoT connected devices are seemingly endless and are especially exciting about how they could be applied in the hotel industry.

3 Areas Where IoT Will Impact Hotel Operations

Gartner predicts that there will be 26 billion IoT connected devices by 2020. Hence, the adoption of IoT technologies is going to be very quick in the coming years – so many of devices that are put into hotels will be enabled with IoT capabilities. Key hotel mechanical systems like air conditioning, elevators, heaters, thermostats, water chillers, sprinkler systems and more will eventually offer IoT enabled models. However, even simple systems like light bulbs, electrical switches and electrical plugs will eventually be IoT enabled.

Let's consider what will be possible with IoT technology in 3 areas of hotels – Energy Management, Environmental Monitoring & Building Automation/Monitoring. Here are some conceptual use cases of what IoT might bring to the hotel industry.

Energy Management

Despite our best efforts to make our hotels “green” with compact florescent bulbs, LED lights, low flow toilets and (my personal pet peeve) shower heads, hotels can be energy hogs. Especially considering that guests can do nearly anything behind closed doors. Consider how IoT could help improve energy management:

- An IoT enabled power socket could report power usage to the front desk / housekeeping when a power outlet has exceeded a set limit for power consumption over a period of time. This would enable maintenance or housekeeping to go investigate whether there is a problem with something that is plugged in to that outlet.
- An IoT enabled light bulb with a motion sensor and ambient light sensor could be programmed to go into a low power setting when light conditions are bright enough that light is not required. Furthermore, this could be adapted for a nighttime setting that would dim the light until motion is detected and then turn on to the higher power setting to provide additional light.

Environmental Monitoring

Typically when we think of “environmental monitoring” in the context of hotels we tend to focus on heating and cooling. IoT enabled devices will certainly help with these important tasks, but, there are new applications they could enable.

- An IoT enabled device with decibel monitoring capabilities could listen for and proactively report the location of loud noises that might be disturbing guests.
- A more sophisticated sound monitoring IoT device could analyze a noise pattern and identify the sound consistent with that of an overflowing sink/bathtub/toilet, or, an unauthorized pet in a room.

Building Automation & Monitoring

As new HVAC models and elevator controls come on the market, many of the more advanced ones are likely to have IoT capabilities that will benefit hotel operations.

- An IoT enabled elevator could send out an error code to the local OTIS, ThyssenKrup or Schindler service center and they could dispatch a technician before anyone at the hotel notices a problem.
- Similarly, a HVAC system that is IoT enabled could report a motor that is showing signs of failing and report it to the maintenance department.

IoT and the Crossroads Between “Big Data” and Hotel Technology

IoT is the perfect match for "big data". IoT enabled devices will be able to spit-out data all day long -- temperature, power consumption, presence of guests and more. There will be endless possibilities of what well-equipped companies will be able to do with all this "big data" provided that they have the right systems in place to capture the data from the IoT enabled devices.

IoT: New Frontiers, Old Risks

Granted, while IoT opens up new possibilities for what is possible, IoT also presents challenges that hotel managers and technology architects will need to deal with.

For example, there is software security (hacking) that will need to be dealt with. A hotel without proper security safeguards could find a hacker that opts to turn the property into a “meat locker” by turning up every air conditioning unit on high. Unfortunately, as with anything you connect to the Internet, the more vulnerabilities there are that must be defended against.

Privacy concerns for guests will be both in the form of how data generated from IoT devices will be used and who has access to that data. As mentioned above, the sensing of loud noises and unauthorized pets might be perceived as a potential invasion of personal privacy more consistent with an authoritarian society. Discretion will need to be exercised in how to use data generated from IoT enabled devices with this type of reporting capability.

Finally, there are the more practical concerns – IoT devices will cost slightly more than devices without IoT onboard. Plus, as an electronic device, it will have a likelihood of failure. The cost-benefit of having an IoT device vs the more reliable, lower cost non-IoT device will need to be taken into account when planning new hotels and capital expenditure budgets on existing hotels.

Companies Building the Backbone of IoT Technology

There are companies that are focusing on building out the communications blocks that enable interaction with IoT devices easy. For example, DeviceHive (<http://devicehive.com>) makes any connected device part of the Internet of Things. It provides the communication layer and control software for smart energy, home automation, remote sensing, remote control and monitoring software. DeviceHive makes it easy for developers to connect with devices and enables them to focus on driving innovation rather than worrying about building-out communications protocols.

In addition to companies like DeviceHive, companies like AT&T, IBM and Cisco are all getting on board with supporting IoT technologies.

How Will IoT Shape the Digital Guest Experience?

The purchasing of IoT enabled devices will not automatically lead to an immediate improvement in the digital guest experience. However, the presence of these devices within a hotel certainly opens up more possibilities for what services and digital capabilities a hotel could offer up to its guests. Controlling the room lights, thermostat, curtains via a smartphone app probably is more gimmicky than it is a valued guest service. But, 10 years from now, the expectations of guests might be along the lines of “they are disappointed if they can’t control all the features of their room from their smartphone”. Tastes change – plan accordingly.

Evaluating and Prioritizing Your IoT Strategy

When considering how IoT fits into your hotel’s strategy, it would be wise to keep in mind the following guidelines:

- 1) Partner with companies for your HMS/PMS/POS who are committed to supporting / adding new technologies that leverage IoT devices.
- 2) When considering buying an IoT device in your hotel, consider whether it is likely to deliver a real cost savings or some other measurable benefit. Remember, the lifespan of an IoT device is likely shorter than a non-IoT device, and, the acquisition cost of the IoT device will almost certainly be higher.
- 3) Purchase your IoT enabled devices from companies who are likely to be around. Yes, there are many startups that will be on the leading edge of producing IoT enabled devices. But, consider whether they are likely to survive and be there to support the device when it comes time to get technical support, repair it or replace it.

Fortunately, an IoT strategy is something that you don't need to go out and plan for in 2015 and execute in 2016. However, for 5 year planning and beyond, it is wise that you understand what IoT could bring to your hotel. From a devices, services and integration perspective, IoT is in its infancy and investing too quickly might put you on "the bleeding edge" of technology (which is often an unprofitable place to be). You should make plans according to both the needs of your hotel and the maturity of the IoT marketplace of devices and services.

David Tossell started in the mailroom of his family's travel agency 20+ years ago and made his way across the industry working for companies such as Sabre, Travelocity and Virtuoso. David joined DataArt in 2014 as Vice President, Travel & Hospitality Practice, having most recently served as Vice President of Marketing for WMPH Vacations / iCruise.com. Mr. Tossell is a serial entrepreneur, with experience ranging from global product marketing & development, to marketing promotions, business operations, SEO/SEM, and email marketing. Over the course of his career, he led many start-up businesses, including the Sabre Rewards travel agent loyalty program, and APInet, the travel distribution industry's first extranet. Most recently, Mr. Tossell oversaw the creation of TimeshareAdvisor – a review website for timeshare owners. Mr. Tossell can be contacted at [**Extended Bio...**](#)

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