IoT Request for Proposal Creation Guide

For Your Real-Time Tracking using GPS/GSM/BLE Beacon Technologies

360° Supply Chain Visibility

roambee

Why Put Out An RFP?

Unless you have subject matter expertise in IoT applications, such as GPS/GSM/BLE Beacon based real-time tracking for warehouses, yards, or shipments, it may be hard to foresee the challenges and benefits an IoT implementation will bring to your business' supply chain or asset tracking needs.

As per Cisco, nearly 75% of IoT projects are failing*. This is not surprising because all-too-often IoT projects are defined by self-limiting parameters:

- The adopted solutions are in beta, where a proof of concept has yet to be established for a particular requirement
- Historical ROI data is unavailable and thereby actual financial value to the company is unclear
- IoT implementation requires effort and training across a wide variety of key stakeholders; many IoT solution providers are not yet ready to provide this service
- Many startups in this space operate on a "build to sell" mindset, and hence client acquisition through discounts are the norm versus proven value-based selling
- IoT applications are diverse and, although companies market themselves as wide-spectrum solution firms, their expertise is actually limited

With increased competition in the IoT arena for GPS, GSM and BLE based technologies, it is worth conducting an Request for Proposal or Request for Information (RFP) to better evaluate marketplace options. Even if all your required information is not yet readily available, you will gain additional knowledge and expertise by utilizing a strategic and informed comparions of credible solution providers.

Even without deep expertise in IoT applications, creating an RFP for IoT services for your shipment, warehouse, and asset monitoring needs is not as difficult as it might seem. In the next section, you'll learn 7 key aspects that should be incorporated into your RFP document to set your organization up for successful end to end supply chain or asset visibility.

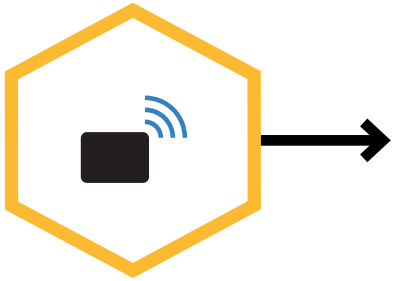
IOT PROJECTS

60% of IoT projects stall at the proof of concept stage, and just 26% are viewed as a complete success (according to a survey of 1,845 IT bods by the biz)

* https://yourstory.com/2017/05/iot-failing/ & https://www.theregister.co.uk/2017/05/23/threequarters_of_iot_projects_are_failing/

How to Issue an RFP

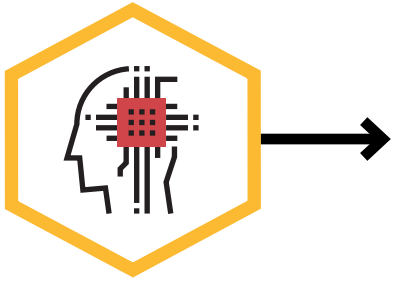
Whether you are looking to monitor your shipments in-transit, improve the indoor conditions in your warehouse using an IoT solution, or better manage assets in-field, the parameters to evaluate your IoT solution are based on 7 important aspects.



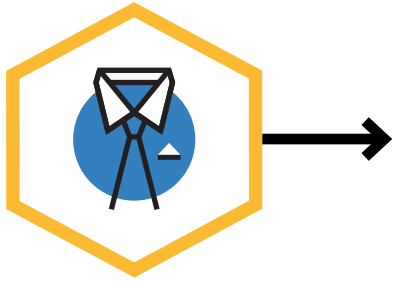
1. BLE BEACONS

2. HOTSPOT GATEWAY IOT DEVICE

3. CONNECTIVITY



4. IOT PLATFORM



5. BUSINESS MODEL & DEVICE REVERSE LOGISTICS MANAGEMENT

6. PUTTING ANALYTICS INTO ACTION

7. COMPANY CREDIBILITY

1. BLE BEACONS

Bluetooth Low Energy (BLE) Beacons or “BLE Beacons” or simply “Beacons” are tags which help you identify packages or items They can be attached to your packages or assets and monitored using a hotspot gateway in their vicinity. Scanning beacons with a hotspot gateway in a particular region gives you insights into the assets or items in that region. Beacons can also have sensors to provide you with deeper insights into the condition of your packages or assets. While choosing the beacons for your application, it is important to evaluate their ease of use and functionality apart from battery life to last you through your application.

Not all applications may require the use of BLE beacons. For instance, if you are not interested in package-level tracking and only care about your in-transit load as a whole, you can use the hotspot gateway IoT device (described in the next paragraph) as a stand alone solution.

2. HOTSPOT GATEWAY IOT DEVICE

The Hotspot Gateway IoT Device or “Hotspot Gateway Device” or simply “Hotspot Gateway” is your real-time sensor device that collects data from your BLE beacons, as well as any additional information it can collect, such as real-time location, and transmits it over the internet for further analytics. The hotspot gateway needs to have the ability to reliably collect and transfer the type of data you require. Additionally, be sure it has a battery life that lasts long enough for your application.

For example, if you are monitoring a shipment of apples across the country, you need to monitor the temperature and the humidity of the shipment because humidity can accelerate spoilage. Are your automotive goods traveling across the ocean? Then make sure your battery can last up to 90 days.

3. CONNECTIVITY

The device helps you collect useful data and connectivity ensures you transmit that data through the internet for immediate analysis. Hence, it is important to evaluate whether you get consistent and strong connectivity across all the places that you plan to use your IoT solution.

A top-class mobile phone, for instance, is useless without a high-speed data plan. Even with a data plan, it is useless without a signal. Ideal connectivity provides for a variety of scenarios and environments.

4. IOT PLATFORM

The platform is the “brains” behind the IoT application. Having data in an actionable, easy to share format is important. It is also important to get granular data about your item or package, while still getting a birds eye view of your business operation at the same time. Otherwise, you will be chasing unnecessary false emergencies and wrestling with cross-team communications.

For instance, getting an alert that the truck carrying your shipment has been standing at one place for the last two hours, may not be of much value. As compared to knowing whether there is any risk to your shipment due to this delay; if yes, then what that risk might be. And who else on your team needs to know this information quickly!

5. BUSINESS MODEL & DEVICE REVERSE LOGISTICS MANAGEMENT

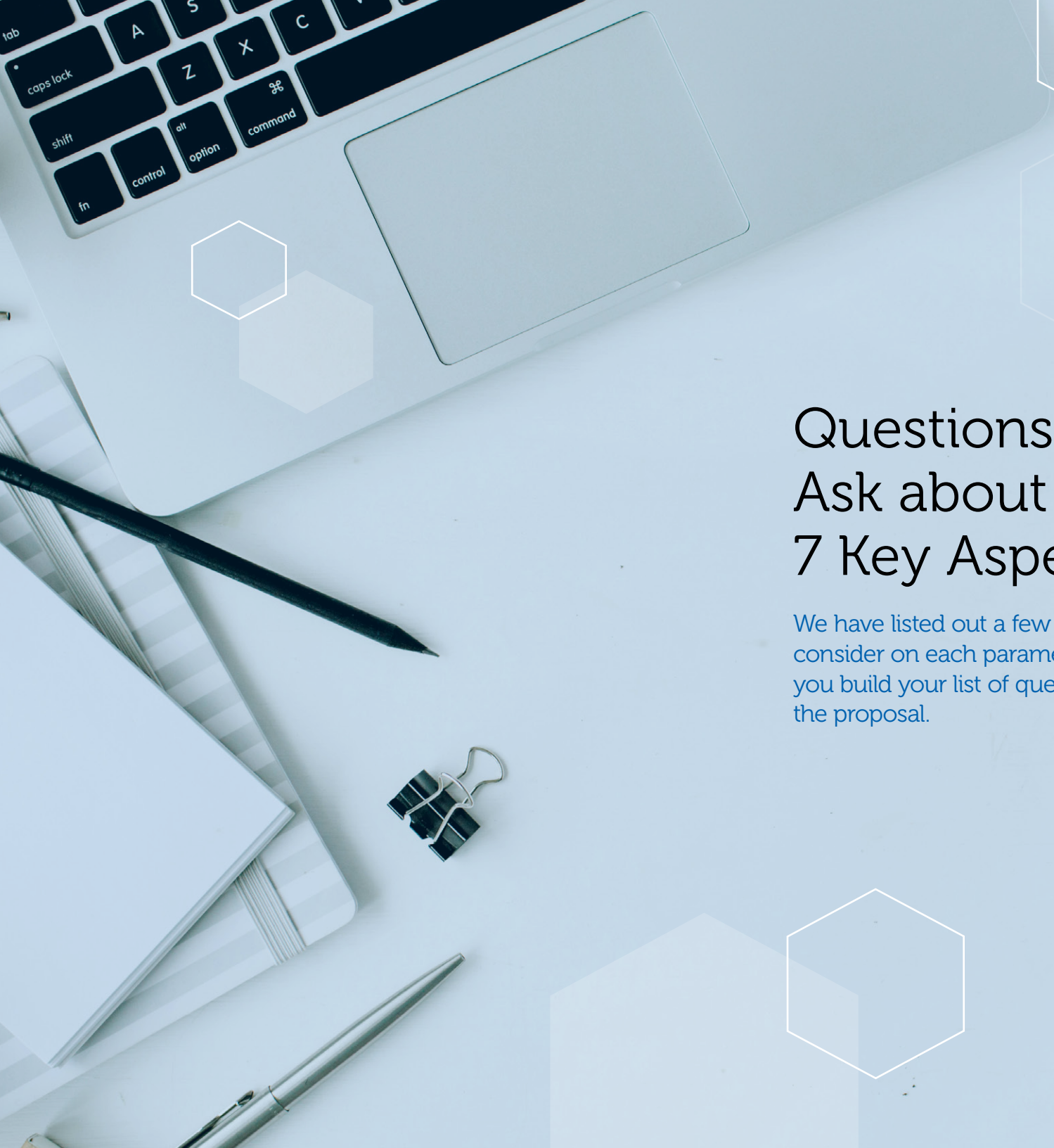
Long-term device management is as important as the immediate plan of how you’ll put the devices to use. What are the critical aspects of the service model that a vendor needs to provide? Are you required to frequently re-invest in hardware innovation, software upgrades, and connectivity plans? Ensure that you are able to stay up-to-date with the technology without taking on the burden of managing device logistics, performance, and “sunk” cost that aren’t recovered even on the long-run.

6. PUTTING ANALYTICS TO ACTION

After successfully implementing an IoT solution and getting needed data insights, companies still fail to realize ROI because they are unable to put insights and learnings from their data into real-time action in their operations and business planning. Putting this intelligence into action can be difficult because it needs a 24x7 proactive approach and manpower. It is important to evaluate how your vendor can help you in this regard, and whether the vendor provides you data that is truly actionable.

7. COMPANY CREDIBILITY

Ensure the company you choose to work with is credible and proven in the IoT arena. Look for their B2B and real-world experience in solving the problems you are facing, and the nuances of generating ROI for your business. Many IoT companies have closed within months of their existence - don’t expose yourself to that risk!



Questions to Ask about these 7 Key Aspects

We have listed out a few questions to consider on each parameter to help you build your list of questions for the proposal.

1. BLE Beacons

BLE Beacons help you collect package or item level data. They transmit data through a hotspot gateway such as a mobile phone or an internet device. To get quality, granular data using beacons, consider asking these questions in your RFP.

What is its battery life?

Battery must last long-enough (preferably throughout the life of the beacon) so you don't need to open them and replace their batteries ever.

What is its ping interval?

Ping interval decides how quickly you can detect the beacons in the room. For instance, if the beacon's ping interval is every 15 seconds, you would need to have the BLE hotspot or phone switched on for twice that time to detect all the beacons in that room or in-transit. It can affect the battery life of the reader – your GSM hotspot device or phone in this case.

Can I change the ping interval remotely?

Changing the ping interval of the beacon using the reader can enable you to optimize for battery life.

What sensors does it support?

Sensors determine whether the device will be able to service your requirement. For example, temperature for cold chain; light for tamper; shock for damage.

How big and heavy is it?

Device weight will affect the reverse logistics cost and its use on air freight.

What is the ruggedness or IP rating?

IP (or "Ingress Protection") ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). They are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies like tools and dirt and moisture.*

- IP65 Enclosure - IP rated as "dust tight" and protected against water projected from a nozzle.
- IP66 Enclosure - IP rated as "dust tight" and protected against heavy seas or powerful jets of water.
- IP 67 Enclosures - IP rated as "dust tight" and protected against immersion.
- IP 68 Enclosures - IP rated as "dust tight" and protected against complete, continuous submersion in water.

*http://www.enclosurecompany.com/ip-ratings-explained.php

2. Hotspot Gateway Device

The Hotspot Gateway IoT device needs to work as a standalone real-time sensor device or collect the information you need from the Beacons and transmit it over the internet. The hotspot gateway can be a device or your mobile phone. If your Hotspot Gateway is a device, consider asking the following questions in your RFP.

Does it have real-time locating capability?

This is to ensure that the device always provides the live location of the beacons in its vicinity – a must for end to end supply chain visibility beyond just the warehouse.

Is it wireless?

A wireless device works indoors, outdoors, across market vehicles, on the rail, and in air which wired devices cannot accomplish.

What is its battery life?

Battery must last through your shipment or asset monitoring requirement.

What is the ping interval versus battery life?

Ping interval decides the granularity of data collected. For example, if you need data reported every one minute, you will need a device that can sustain this request for your entire shipment without needing a battery recharge.

Can I manage the device remotely?

Remote access allows you to change device behavior in real-time. For example, during a theft, the reporting frequency can be increased for better granularity of data.

What sensors does it support?

Sensors determine whether the device will be able to supplement the beacon data as well as work as a standalone sensor device when there are no beacons use. For example, temperature for cold chain; light for tamper; tilt, Z-Axis for height.

How big and heavy is it?

Device weight will affect the reverse logistics cost and its use on air freight.

How many beacons can it scan together?

Although most device can scan hundreds or thousands of beacons together, this is a question worth asking to ensure you never miss out any packages or items during a scan.

What is the ruggedness or IP rating?

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How easy is it to tamper?

Can an external power switch off the device or a slot for the SIM disable the device? Check to see if it has a covert battery as well.

*http://www.enclosurecompany.com/ip-ratings-explained.php

IF A SMARTPHONE IS THE HOTSPOT GATEWAY

For certain applications such as last mile deliveries with returnable routes or pure warehouse inventory auditing applications, a mobile phone may suffice as a hotspot gateway device. In such instances, it is important to validate if the mobile phone can provide you with uninterrupted data and seamless scanning of beacons (when required).

Does the app have the option to run silently in the background?

This will avoid interference from the driver or operator, or turning it off by mistake.

How hard is it to turn off?

Can you prevent the mobile user from switching off the app intentionally or unintentionally.

What is the data consumption per ping?

Determines the cost of data plan.

What features of the phone can the app leverage in place of sensors?

It is important to check if the app can access your phone apps such as camera, or vibration so that you can collect more data. A good example is an ePOD application.

Does the app support external Bluetooth sensors that can link to your phone?

This helps extend visibility to a package or asset level through the use of beacons or digital locks – if your application demands it.

Does it auto-start upon turning on the phone?

This ensures that the app is automatically up and running even when the phone switches off due to the battery or is restarted.

Can you build additional features/ integrate it with other phone apps through APIs for the APK?

You might need to build custom applications in future, such as a customized e-POD form, or scanning tools.

3. Technology for Data Connectivity

The points to consider under connectivity revolve around how versatile the hotspot gateway device is when it comes to transmitting data across various mediums. The goal of evaluating this parameter is to ensure high-uptime.

Does your hotspot technology use a high-gain GPS antenna for fetching location accuracy indoors for real-time location?

In low GPS environments such as within a container, accuracy is compromised without this feature.

Is cellular triangulation available during the total absence of GPS for real-time location?

When there is absolutely no GPS signal indoors, inside a container, or in a warehouse, an approximate location helps.

Can the device send data to multiple telecom providers in the same telecom circle?

This is a rare feature but is extremely important in reducing the number of no-network zones.

Can the cellular tower sense the device location without any data transfer?

When there's low signal, the cell tower should be able to sense the device even when there's no data transfer. Sensing the device still gives you an approximate location.

Is there provision for sensor & location data buffering?

Getting the location and condition of shipment during the period when there was no network is important for a complete audit trail.

Is there alternate connectivity in areas where GSM is absent?

There will be many areas where GSM networks are absent. A good solution can leverage Wifi, Bluetooth, or LoRa, or Nb-IoT in such a situation.

4. IoT Platform

The IoT platform must have the inherent ability to collect data from the devices as well as any relevant external data streams. The IoT platform should be able to filter, cleanse and make sense of the data it collects so that you get trusted actionable intelligence. Integration with easy to use APIs for exchanging data is key to enabling a collaborative ecosystem in your enterprise. Lastly, the platform must have the ability to stitch together the data and provide a micro as well as a macro perspective – at a beacon level as well as a broad supply chain or enterprise analytics level.

Is it able to provide micro (item level) analytics and use that to paint a macro (supply chain or enterprise) picture?

This is important as you will be monitoring tens of thousands of items. You will need to dive deep when needed into a particular item, see its link with the load, truck or region, as well as get an immediate picture on how your overall operations are being affected due to an anomaly at an item level. Or else, you may be spending too much time stitching together data analytics modules to make it actionable. For example, you need to know why one box out of 5,000 boxes is not yet delivered and how that will affect the remaining deliveries.

Is it cloud agnostic?

This enables you to host the platform on the cloud of your choice for security and flexibility.

What is the chance of an outage or loss of data?

This is important since all of your data is going digital.

Does the platform's analytics provide foresights and insights?

Features, dashboards, alerts, and reports must translate to trusted foresights (what is going to happen) and insights (exhaustive information on what happened) to deliver value.

Does it have a Rules & Decision Engine?

Most platforms cannot create custom rules and solicit a decision. It is important to have this feature so that you can create the alerts and reports for your specific needs.

Can it build custom dashboards, reports, and alerts?

This is critical when it comes to quickly setting up the system to address your dynamic reporting objectives without involving the service provider every time.

What external data streams can the platform use?

Weather, ocean liner info, flight info, and traffic can impact the actionable intelligence or a prediction. The more data sources, the more accurate the foresight and insights.

Is it secure, single sign-on, multi-user-role based?

This translates into how secure the data is while not compromising the user experience.

Does it have APIs for integrating with your enterprise ecosystems?

APIs are needed to merge the platform with your enterprise ecosystem for better decision-making ability through integrated data analytics.

Does the platform come with pre-integrated plug-ins?

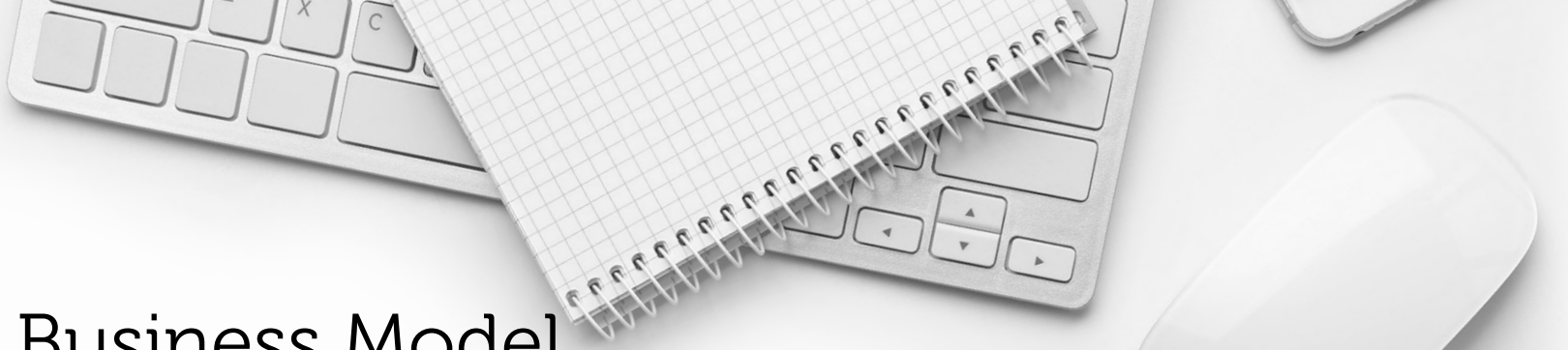
Pre-integrated plug-ins save time. For example, an SAP-integrated solution saves you complex integration work through APIs which will involve your IT or Engineering teams.

Is there an automated ePOD function available?

It helps digitize your manual proof of delivery (POD) process and saves you the order-to-cash cycles - an important point in ROI.

Does it comply with data security laws of the US, EU, Russia, India, and others?

An example is 21CFR Part 11. This ensures that basic security standards are met. Since you are now going digital with your data, any pilferage or loss can negatively impact you.



5. Business Model & Device Reverse Logistics

A pay-as-you-go business model ensures that you receive technology upgrades on your device and platform so your solution never gets outdated. Furthermore, certain IoT applications like smart logistics may require you to send back the devices to your provider (beacons as well as the portable hotspot gateway). Coordinating reverse logistics can lead to loss of valuable manhours if your solution provider does not manage this effectively.

Is the business model on-demand and completely managed?

Device logistics management:

- **What is the lead time to receive a device on-demand?**
- **Is the reverse logistics of device fully managed for the beacons and the hotspot gateway?**
- **Does the serviceability cover all locations and postal codes?**

Can I use it without depending on my vendors or partners?

Can the service provider cater to rise and fall in demand?

Does the service provider offer flexible plans?

For example: When using the device for a shipment monitoring application, the burden of device utilization must not pass on to you.

6. Putting Analytics into Action

Success in real-time IoT implementation can only be obtained when foresight and insights are put into action without a time-lag in your business.

Is the obtained intelligence easy to act on?

Your service provider should be able to provide you alerts and other data in a form that is easy to understand and act on.

Can my service provider help me take action on the foresight and insights in real-time through a command center?

This is a rare service but a valuable one. Real-time action can multiply ROI on the IoT solution when a control tower operation is in place. Round-the-clock control tower operations can be expensive and difficult to setup, but if your service provider can offer this to you in a pay-as-you-go model, it can be a big boost to help you achieve your business objectives from the IoT investment you made.

7. Company Credibility

Many companies in this space are run by first-time entrepreneurs, who do not have B2B or real-world experience in solving problems. Inability to understand the nuances of generating ROI for customers and a lack of experience is seldom overcome by passion for technology. As a result, a number of IoT companies have closed within months of their existence. The obvious way to test the reliability of the firm is to do a due-diligence. These questions can help.

Experience of leadership team

A company is as good as its leader's vision and experience. Make sure you research the leadership team because successful implementation of technology at this scale requires a solid leadership team.

Financial health

It determines if the company can sustain itself through the contract period. Ask for turnover, or in the case of a startup, ask about funding and how they are spending that money.

Number and type of customers

If the company has successfully implemented IoT solutions for major firms, somebody else has most likely done its due diligence. Beware of clients advertised in the name of pilot contracts. Ask for the deal size, the application and references.

Global Presence

If the company is familiar with dealing with global markets or global customers, the chances are they have the capacity and the know-how to implement their solution address a variety of needs.

Conclusion

To make your RFP successful, the questions around the seven parameters, namely the beacons, hotspot gateway device, the connectivity, the platform, the business model, and putting analytics to action, need to be tailored to fit your specific need. This will in turn determine the importance you will assign to each question.

For example, you may need to provide more importance to connectivity when you are shipping materials across multiple cities or countries, while the right set of sensors on your beacons may be more important for you when you are worried about monitoring the condition of high-value packages.

Therefore, when you put these questions in the form of an RFP, ensure you create a template to score each parameter as well.

Know More. Now.

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