

Connecting Your ERP with IoT and Ultimately Blockchain

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A featured guest post by Jim Sabogal, the Healthcare/ Lifesciences Vertical Lead for Business Development at T-Systems, North America, on how to use your ERP to support the Internet of Things (IoT), and leverage Blockchain in future.

Most companies have an Enterprise Resource Planning (ERP) software in place to support their business needs. The introduction of IoT with the ERP provides additional real-time data that augments the ERP with live visibility into your products and services. So, how can you connect your ERP to effectively support this IoT data? Further, Blockchain will have a profound impact on many industries in the future. Therefore, we shall holistically review connecting your ERP with IoT data and further layout a plan that allows you to prepare for Blockchain in the future.

Earlier this year [Gartner announced an estimate of 8.4 Billion connected “Things” in use for 2017, up 31% from 2016](#). You may have also heard about Blockchain, a digital network technology which provides a quick, authentic, yet secure mode of managing data flows along the supply chain – something that is already used in transactions of cryptocurrencies like Bitcoins.

The questions on the manufacturing and supply chain side with IoT and Blockchain are: Is your organization prepared to take on the Internet of Things (IoT) and ultimately Blockchain? What are the steps you must take to derive the true benefits of IoT and Blockchain? How to build an integrated, real-time, and secure system for better decision making with your ERP as the core?

To answer these questions holistically, I shall begin by sharing my experience working with my customers and then we will walk through the journey of how ERP was used in the past, how it is currently being used with IoT, and how it will be used in the future with Blockchain.

I have been involved in the ERP and cloud industry for seventeen years. In my current capacity at T-Systems, I am responsible for developing strategies for our cloud solutions within the Healthcare and Life Sciences industry. I've also worked for SAP in the past. This combined experience allows me to appreciate how ERP systems are used to support enterprises. Our firm T-Systems provides cloud infrastructure for many ERP solutions, and we provide data security, with a market offering that is also compliant with both the FDA and EU regulations. The T-System cloud is both “private” and “hybrid” in nature.

T-Systems recently invested in Roambee, a silicon valley IoT company, and thus began my experience in deploying integrated ERP-IoT cloud solutions for my clients.

The ERP of the Past



Many organizations have deployed an ERP solution. These software applications help organize their business and provide data about goods and services that are “pushed” out to their customers. Till date, most of the data entered into the ERP were manual or semi-manual (such as barcodes where physical scanning was required) – until the advent of IoT.

Therefore, the biggest drawback initially with ERP systems was that it lacked real-time, automated data collection to help with prompt decision making.

Advent of Real-Time IoT Visibility

IoT brought in real-time visibility through the use of smart devices and a data analytics platform. At T-Systems, our clients make use of our partner Roambee’s IoT solution to:

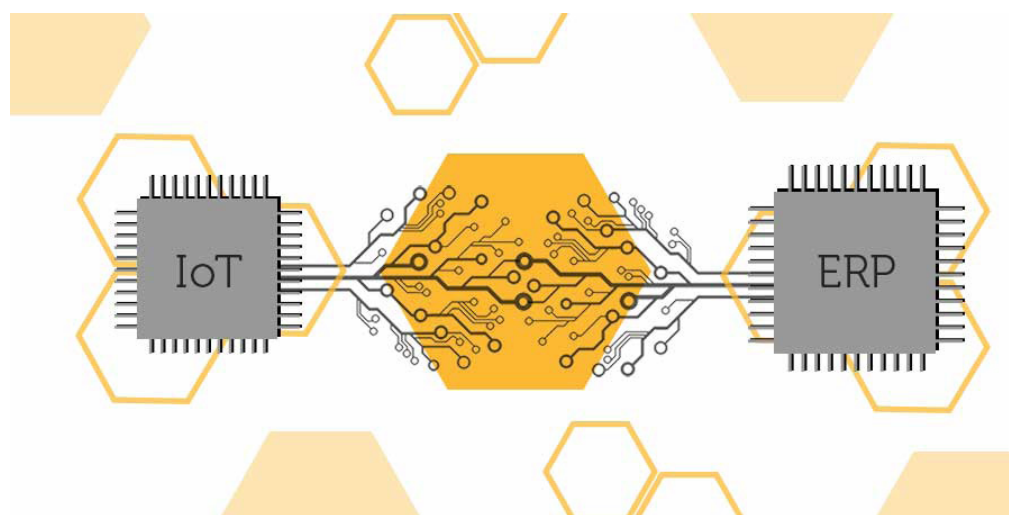
1. **Track and trace** valuable shipments, of pharmaceuticals, food, shipping containers, cars, etc. This is accomplished by using Roambee’s portable IoT device “Bees” that provides both GSM and GPS capabilities – anywhere in the world. You get positioning data for your shipment in real-time, irrespective of the shipping carrier you choose.

[See how the Bee works!](#)

2. **Monitor key physical measurements** such as Temperature, Humidity, Shock, Altitude, etc. Real-time temperature monitoring for food products is a good example. Any deviation from your conditions specifications will result in an alarm providing you with an opportunity to salvage your goods and maintain its quality before.
3. **Protect high-value products against theft** through the use of a tamper (light) sensor. If a container is “Opened” during a shipment before arriving at its destination, you will receive an alert in the form of a text message or an email.

This “IoT real-time visibility” becomes more actionable and when it works in conjunction with the rest of your enterprise data – which resides in your ERP cloud.

The ERP of the Present: A Marriage with IoT



Businesses today are evolving rapidly; they are becoming more engaged with their customers. ERP applications were never meant to receive external data from sensors initially, but as organizations transition to becoming more “digital,” there is a need to adopt data from IoT devices and platforms.

Integration of your IoT application with your ERP offers your company a new avenue for “customer service” and “potentially new business opportunities.”

For instance, the three benefits of the Roambee solution around track and trace, monitoring key physical parameters, and theft prevention which our customers enjoy are fulfilling a larger business need for them when working together with their ERP data. This happens by translating real-time visibility into actionable data for the concerned teams, and tying the real-time intelligence with the end to end supply chain digital data for multiple stakeholders to benefit.

1. **Competitive edge through “Track and Trace”:** Have your customers ever asked you “Where is my product?” Thanks to the e-commerce experience, even business consumers are eager to know the status of their deliveries. Extend this to global supply chains where ocean shipments are commonplace – not only can the Roambee device measure temperature – it can provide you with location information around the world and across multiple modes of transport.
2. **Improved product quality in the cold chain:** There are shipments that must be maintained under specific temperature thresholds, such as food products, medicines or organ transplants. Deviation from the temperature specifications at the warehouse or in-transit could make your product unusable. The real-time sensor feature of the Roambee IoT solution safeguards your shipments against these risks and maintains its quality.

3. **Brand integrity:** High-value shipments that could be stolen. The Bee provides an immediate alert if your shipment is diverted or a box is opened unexpectedly. Risk managers can derive the brand protection they need.

Another key advantage of Roambee's IoT solution when integrated with your ERP is from a "productivity" perspective. Let us assume you have many shipments that your Logistics, Shipping, and Warehouse departments keep track of on a daily basis. You are alerted when those specific shipments deviate from your prescribed thresholds. These alarms come in the form of a text message or an email. While reacting on-demand to an email alert, you can simultaneously access the data from an entire supply chain perspective for "audit" purposes, check up on your shipping providers, or know the stakeholders who will be affected – all on your ERP.

The ERP provides you with overall business data while an IoT solution (such as Roambee) provides you with real-time insights.

Tips To Ensure a Successful IoT-ERP Marriage



We discussed the value-add that an integrated ERP-IoT solution brings. Considering you already have an ERP in place, what steps can you take to gain full advantage of an IoT product like Roambee? Let us take a look at the most important steps you need to accomplish "from a business stand-point" to set up a successful ERP-IoT integrated solution.

1. **Realize that becoming "digital" does not mean you need to change your ERP system.** Rather, identify the key business objective where an IoT solution can add value to your business.

The business objective could be to monitor the temperature of shipments, or implement theft protection for highly priced medicines, or to keep track of assets in the field if you are a construction company dealing with expensive equipment.

2. **Test before you buy.** Run a "proof-of-concept (POC)" with several test IoT devices.

- a. Define your criteria for “success” as well as a timeline for your POC (could be from days to weeks).
- b. Define which mode of transport is key to your business. (Truck, air, ocean, train or multi-modal).
- c. Determine if this test will be done “locally” or “globally.”

2. Check during the POC whether the introduction of the IoT device creates any teething issues with your shipping and logistics teams around adoption.

How will it work in your warehouse? How to attach the device to your shipping containers?

There are a variety of ways to incorporate IoT into your shipments. For example, a beer manufacturer is accommodating the Roambee IoT device on every refrigerated container with a slot created on the side of each unit.

4. Get management buy-in based on the results of the POC. Are there any new services you can provide to your end customer to add value or increase revenues? For example, high end automobiles can be tracked from the manufacturing site to the customers’ – a value-added service.

5. Decide on “Buy versus Rent” or “Capex versus Opex.” Renting devices allows for greater flexibility for your business. You may have seasonal fluctuations – making the Opex model a better fit for your company.

With our partners Roambee, the model is not only an opex one, but the IoT device is “reusable,” and has an inbuilt battery onboard, which means they can be rotated out of circulation when it needs “re-charging.” Also, there are additional pick-up and drop off services for the device included in the cost of the Roambee solution.

6. Check for regulatory compliances. When you think you are good to go, the last thing you would need to confirm is that the regulatory requirements for your industry are in place. For instance, FDA compliance may require that each material lot needs to be temperature tracked and the summary data documented in the form of an audit report which is in-turn tied to the lot number and batch.

Integrating an IoT solution like Roambee to your data warehouse within your ERP will not only allow you to maximize the value of your enterprise data but also help you tie the savings to every shipment or product your company makes from a business stand-point.

Integration is best done via APIs so this data flow is seamless.

The ERP of the Future: “Blockchain of Things”

Earlier this year I had presented on several industry panels the need to implement IoT before Blockchain. There are multiple sources where you can learn about Blockchain, and not what I wish to discuss. What I am suggesting is that a “Blockchain of Things” revolution will happen.

Blockchain may be the independent technology that connects your product to the end customer. Blockchain will facilitate the movement of key data along with the status of the shipment. As many companies start using IoT devices the value of this data will prove to be very important.



Blockchain will also provide the IoT device the security it needs for ensuring that the data is not tampered; it will prevent a counterfeit product from being introduced into your supply chain.

Therefore, it is important that you prepare for using Blockchain technology.

Closing Comment

In my experience, using the Roambee IoT solution in connection with ERP has helped companies become more customer focused and improved their supply chain visibility using this real-time data feedback. Based on the number of customers using the “Bee” to augment their ERP, it proves that IoT can be connected to any ERP business system. This is also a great way to prepare for using Blockchain in the future.





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