

# Unimagined benefits

Posted on 25th April 2018

New monitoring and tracking technology combined with machine learning and analytics will bring unexpected cost advantages to air cargo handlers, as early trials are already demonstrating, Hermes' new CTO Alex Labonne tells *Will Waters*



Alex Labonne's arrival as chief technology officer (CTO) at Hermes Logistics Technologies (HLT) comes as the air freight technology group prepares to roll out the latest version of its cargo management system: Hermes 5. But Labonne also brings a refreshing new perspective from outside air cargo on a sector that seems finally set to go through a major technology transformation in the next few years.

Labonne, who takes over from Oded Lavee, comes from a software development and architecture background and has over 20 years' experience in technology. He has worked as chief architect or CTO and as enterprise architect for companies including BT, GSK, Pfizer and KPMG – and most recently with Hitachi Consulting, working on security and customs, education and government projects.

His role will be to head HLT's team of air cargo technical experts, who are now "following a digital roadmap to use the power of Cloud services, IoT, AI and blockchain technologies".

Indeed, Labonne believes air freight can reap huge benefits from artificial intelligence (AI), the internet of things (IoT), and the ability to analyse large volumes of data generated automatically by the sector's activities once digitalized – for example, using data on weather conditions and political unrest to help predict demand patterns.

"That's one of the paths Hermes is trying to expand now, the machine learning and AI ability, and how to get customers' data and use that to make some good insights," he says. "It's incredibly powerful."

One early observation as a newcomer to air freight is that the sector had a strong focus on the creation of standards – especially within the IATA environment – something he questions the usefulness of in today's fast-changing world.

"When you create a standard, you either enforce it and you have a means to enforce it, or you create a lot of work for yourself, because if you create a standard to say 'a manifest should be exchanged that way', you have to maintain that standard in the future when things are going to change," he says. "Unfortunately for you as a standards agency, technology is moving faster than you can maintain your standards. So what standards tend to do is hamper some things."



Some people then use additional data from the standards, because they have something more, and they create non-standard workarounds. "So you end up with a mix of badly applied standards and non-standards," he observes.

"I've seen that in many worlds, and it makes things very cumbersome. When you look at very big tech companies that have evolved very fast, they embrace the diversity completely. They use the most minimal standards."

One such example is HTTP. "That protocol is extremely basic: connect, get your stuff, disconnect – we're done here. And there are a few commands that you can send across: there are about four or five

commonly used ones; that's it. That's a simple standard everybody uses."

He contrasts that with the air waybill standard, "a massive piece of XML", with all the various permutations – for example, "what if you don't fill that in? The maintenance of all this is extremely heavy."

### **Good interfacing**

Labonne believes instead in good interfacing, highlighting 'Postel's law', a design guideline for software also known as 'the robustness principle'. He adds: "Postel created a law that is very important: be stringent with what you send; be tolerant with what you receive. Sometimes you won't receive exactly what you want; integration allows you to map it, put bits in it, and fix it."

Labonne continues: "The beauty of that is everyone can start working now, and they can do more if they have more to do, or they can do very little. That to me is a natural order, a way for things to be."

He compares this with IATA's 'One record' initiative, which IATA describes as "an end-to-end digital logistics and transport supply chain where data is easily and transparently exchanged in a digital ecosystem of air cargo stakeholders, communities and data platforms". The intention is that this "will drive paperless processes and create a 'plug & play' environment where companies can connect and re-connect their digital relations with ease".

Labonne observes: "I have seen countless IT organisations and businesses saying: 'Everybody will use System or Standard X from now on; let's do a migration of hundreds of systems. And then two years later, they have to say: 'Everybody will now have to use System or Standard Y', but then that is even more difficult, and off we go again... And the cost of that and the waste of energy is absolutely crazy."

In fact, he argues that IT has not given businesses the right tools to do business. "Another very simple example for me is the database, invented by IT people in a long time ago, and it is absolutely horrible for business. And for years, business people have had to deal with these databases and structures that have nothing to do with the real world. We think three-dimensionally, we think topic, and every customer has a name. But instead I have tables that I must join with the address table," he laments.

"And the same goes for standards. To me, this is just not fluid enough. I understand why in the past it was that way; the computer power was just not good enough to deal with the complexity of human data. But these days we have got the cloud; we've got as much computer power as we want. And these blinkers around standards, I think they need to become more human. That's my view. In six months, I will probably be disappointed by everything and will advocate standards..."

### **Suspicion of rigidity**

Nevertheless, his suspicion of rigidity also applies to XML, air cargo's "new" messaging format. "XML comes from a librarian system 30 years ago about tagging pieces of text to give them a sense, and this is extremely old. But modern technology exchanges data these days without XML," he says.

"XML is viewed as cumbersome; and we have accepted that data flows in varying degrees of quality, and it is okay. I understand the cargo rules in trying to make sense with all the entities that deal with an air waybill, a manifest, a plane, and trying to put them in such a format that everybody should be speaking the same language."

But the idea that everybody should be speaking the same language "works with a government that is very powerful and will make everything the same in their country or in their city. Globally it has never worked; it's a constant struggle," he observes.

"So, I think it is useful for people, perhaps like me, starting in cargo and trying to understand how to exchange data, and IATA provides these things, and as a guide they are very useful. But as a definite way of exchanging data, this and nothing else, it is a total mistake. So, I see them as a guiding standard, but not as an imperative standard, because that would stifle business."

### **H5 upgrade**

This desire and need for more flexibility and interconnectivity is part of the rationale for creating Hermes 5 (H5), along with "some consolidation work" on a product that "has grown heavily in terms of functionality", for example when a customer has wanted something new.

"But beyond that, we had to change the underlying technology to something a lot more modern, and especially compatible with more modern technologies: .net, Java, and so on... And there is also a new concept in it that

allows it to manage tasks and create more-flexible workflows. So, as a cargo handler may choose to weigh that (shipment) further down the line, whereas another customer doesn't. We have now this flexibility to create events 'on-the-fly', and say this has happened. So, Hermes 5 is really supremely flexible. And because of the technology shift, that now gives us the capability to further its integration capabilities."

He continues: "My role in the next year or two years or up to five years, is to open up Hermes 5. I want our customers to be able to use their other systems – and it might be sometimes to our detriment, but I don't think we would be a good supplier if we can't link with other suppliers. We can't really have a customer being forced into Hermes and nothing else; that to me is not good enough technology; we need to integrate more. And Hermes 5 allows the integration far better."



### **Web technology**

It also brings the ability to bring on more web technology. "Today, a lot of the cargo software works very well in the warehouse, but when you start talking globally, disconnected, parallel running all around the world, a lot of them don't execute so well," Labonne notes. "Hermes 5 sets the foundation for that for us. I would like to say there will be no Hermes 6, there will just be the Hermes, and from then on functionalities will come not as a new version, but constantly."

### **Interfacing key**

But the interfacing aspects are the key difference. "A lot of cargo technology has been designed to function in the cargo sheds, and it does what the customer needs it to do, but it is very silo-based; it is very inflexible," he notes. "And the technology used is rather old and cumbersome, which means that when someone from the outside asks 'can you please let me know which ULD you are dealing with right now', for example, it demands quite a technological effort."

"Today's technologies, especially with cloud technologies, you have a lot of tools at your disposal that allow you to develop these interfaces at breakneck speed. I have seen some interfaces being developed in a day. Today a lot of the tech that we use inside the cargo shed is not able to evolve quickly."

### **Data sharing fears**

Like others attempting to modernize and streamline air cargo, he says too many people believe sharing their data means losing it. "But if you don't share it, actually there is no value to it," he notes. While it is understandable that people may not want to share things like pricing information, "you can share data in ways in which you anonymise some elements of it, and other parts you willingly share to get the return".

But the return or value of sharing data is not necessarily fully understood in the air freight sector. "What is the return? That is not very well explained – the power of the cloud, what the cloud can do, and the insights it can find, even from just one customer. Tomorrow, I could take five years of flight arrival times and create predictive analytics that will say: 'With this flight and these weather conditions, don't bother getting your people in right now; it is going to be three hours late.'"

These kinds of technologies are available right now, he says. "And you don't need to be creative with technology to do it; it is pretty self-explanatory on the websites, and you can upload your spreadsheets and let the computer create the logic to turn the ins into the outs. It will advise you on the algorithm that you need. Train it, and the precision gets better. And in two months, you can say: 'What are the odds of this flight being late?' And it constantly learns based on the data coming in, constantly makes predictions, and little by little becomes perfect."

He insists that the more air cargo people share, the more will benefit – but the difficulty is that what those benefits will be are not always clear. "We need to look at the data, learn, and see what insights we're going to find; it is a bit of a leap of faith. But the costs of doing some fairly simple analytics are not huge – we are not talking millions here. This is where the cargo community needs to be better educated on the technology."

He believes new technology-based freight forwarders can help educate the market in that respect, admitting: "We in the technology sector are not always very good at explaining to people the benefits of using the technology."

Other applications in the warehouse might include anticipating the arrival times of trucks, based on factors such as weather and congestion, and get some predictions for landside activities too. “And within the cargo shed, you could start looking at the way pieces are moving around the shed when flights arrived, on what is the most efficient way to put your pallets and ULDs, and so on, to make sure that you’re hitting this door – which is actually nearer. So you can almost leave the data in a machine learning engine for two years, and let it learn, and then one day it can tell you: ‘you have received that cargo, now go and put it over there’.”

The inputs for this would come via automated tracking, “which is the next big thing as well”, he says, adding: “We are looking at doing some proof of concepts with RFID and IoT as well. IoT is another interesting subject, but it is really about the tracking of pieces and ULDs in your warehouse, modelling your warehouse, and looking at activities such as how long does it take you to break down something, and build it up, and try to find insights. And after two years, it can tell you if you had chosen F instead of A, you would have saved so many resources, which translates into this many dollars.”

And using the cloud, you need far fewer IT resources to achieve this. “20 years ago, you needed a whole load of IT people and servers to do that,” he notes. “Today, that is all there in the cloud – on Azure, or on AWS/Amazon, or Google. The data support, the backup, this is all taken care of.”

### **Unimagined benefits**

He says machine learning and analytics will bring so many benefits that we can’t even think of yet. “We started a proof of concept with Bluetooth monitoring for temperature, and accelerometer, on a container, and the discoveries that we can made are incredible,” he explains. For example, it showed patterns of temperature in within the warehouse at different times that could eliminate the need to put shipments in a cooler.

That study was done with a cargo company in a cargo shed, “a pure experiment, to generate some real-time statistics”, he notes. “Once it was put into graphical view, it was fairly obvious where the areas of cost-cutting would be.”

He believes IT companies need to take more of a leading role in showing return on investments, something “that we are maybe not that great at. A lot of our customers, I think, are not all great innovators – people who are actually spending money and time on innovation, meaning that half of your endeavours will fail and the other half will bear fruit, that you have to take the punt. And this is fair enough; they have very real problems and they are firefighting a lot of the time.

“So it is really up to us to now work very hard on proving returns on investments. If you can tell someone ‘this is going to cost so much over five years, but after a year this is the return’, that’s where somebody will invest. And you can say: ‘By the way, this is based on real data taken from your company – we didn’t make it up, or put a finger in the air; we took your own data, you told us how much time you spent breaking this down, how much time you spend looking for missing pieces, put it all in one place and we can easily tell you that within two years you will be shaving off half £1 million, and you will be getting fewer claims, so again your shave off some more’.

“So, we have to get better at that, and this is difficult within IT companies because this is not IT; this is a pure business financial activity.”

### **Data concerns**

How you get that data takes us back to companies understandable concerns about sharing data, although “much of the concern about sharing data disappear if you can show how they’re going to save £2 million”, Labonne observes. “And sharing data can also be done in very secure ways as well as in a very compliant way – for example, with GDPR (General Data Protection Regulation).

“For example, we can take the client data and put it into their own cloud; they control the account, but they let us manage it, and they can at any moment pull the plug. There are ways to move data in encrypted ways, in obfuscated ways, because they may not want to expose their air waybill numbers – which is not what we are interested in. So, we can just take the data that is good for the right purpose – which is what the law tells us. And things that identify people, that can be obfuscated or anonymised.”

### **RFID vs Bluetooth**

He sees a place for both RFID and Bluetooth in the air cargo warehouse. “They are very different technologies and have very different price points. A passive RFID tag will cost you between five cents and 20 cents. The problem of RFID is that the antenna technology involves radio frequencies, so if you have a lot of metal around,

you have to survey things very well to make sure that you pick up everything,” Labonne observes. “Bluetooth is a bit more like your mobile phone; the device itself is able to measure temperature and shocks, but it is a lot more expensive. If you put that in a container, once it goes, you really want to pick it up. But what you need there is Wi-Fi; you no longer need RFID antennas.

“Our brief experience with Bluetooth was great when you talk about vulnerable or perishable goods; where the implications of loss are very high, or the value is very high as well; that I think will become more common. I can almost see companies asking their customers: do you want Bluetooth tracking? Yes please. Surcharge, X. And then you would have a process to take that container or device back.

“For tracking lots of very small pieces, RFID is probably better. With e-commerce traffic, this is not new. And now this is becoming very big (within air freight), RFID is probably the way to go. We have a proof of concept that we are going to work on with one of our clients that is very interested in the technology, and we’re going to work with a partner because it demands a lot of hardware and on-the-ground knowledge and assessment. We are a software company; we do play with all sorts of technology, but we have a partner that does RFID very well.” Nevertheless, RFID is still not a cheap technology. “If you’re talking about equipping a warehouse of a certain size, you’re talking in the millions of dollars; maybe \$4 million to \$6 million. It is not something that you can do with a few hundred thousand dollars.”

He continues: “It is heavily used by much bigger companies. I think that for cargo companies, to be able to say that we have got full RFID tracking of everything – plus the alerts it can give about risks or exceptions – that would be a valuable differentiator. If I know that my neighbour doesn’t have RFID and I have full tracking, I know the kinds of companies that would be coming to me rather than to my neighbour.

“So, this is definitely interesting. And this couples with our IoT strategy. That is another thing that we have not talked about a lot within air cargo. It is coming, and it is a technology that makes measuring your outputs and your inputs much better and making your work far more efficient.”

Within the cargo warehouse, he would see that being deployed in things such as “the maintenance of hardware, dollies and forklifts, maybe computer equipment as well”. He says people tend to think IoT is just devices talking constantly, but it is a lot more than that.

“You can send maintenance commands and remote commands for devices to switch themselves off, for example. So, IoT is a two-way thing. But the costs of using it so far are still high, and the kinds of companies using it are companies like heavy machinery, water companies, energy companies... Today in cargo, maybe the price points will have to reduce a bit first. But that does tend to happen.”