

**2015  
EDITION**

**Free  
abstract**

The point of  
reference on  
electronic tolling

# **ELECTRONIC TOLL COLLECTION**



*Transforming road  
charging into a connected  
vehicle service*

# ABOUT PTOLEMUS CONSULTING GROUP

PTOLEMUS is the **first strategy consulting firm entirely focused on the connected vehicle and the Internet of Things.**

We help our clients apply strategic analysis to this fast-moving ecosystem, across all its industries (Automotive, consumer electronics, insurance & assistance, transport, road charging, etc.) and on an international basis.

PTOLEMUS operates worldwide and has Partners in Boston, Brussels, Chicago, Hannover, London, Milan, New York and Paris.

It has also built a network of telematic specialists across the world to be able to analyse and address global mobility issues.

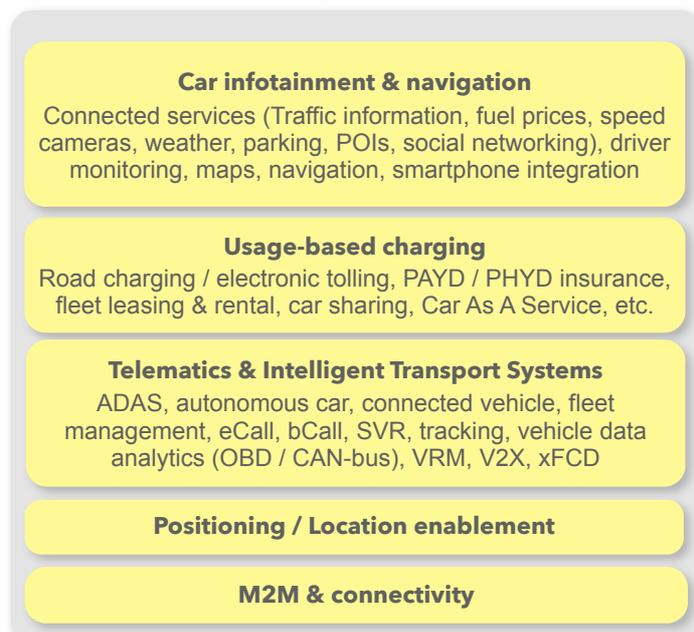
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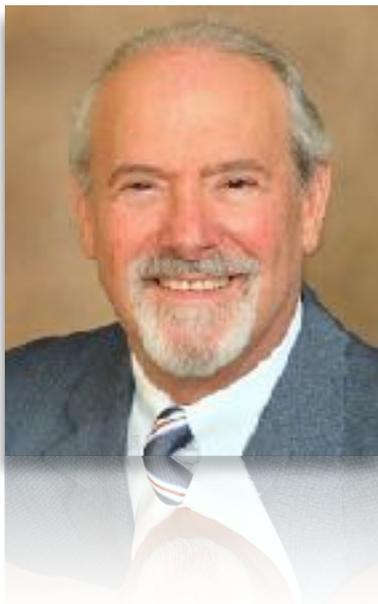
**INTERVIEW WITH**

**MARTIN STONE**

**GENERAL MANAGER, EGIS PROJECTS USA**



*Interview performed on 12<sup>th</sup> and 24<sup>th</sup> March 2015 by Frederic Bruneteau*



**Dear Martin, could you please introduce for us the Egis Group and its North American activities?**

Egis is a worldwide company, 75% owned by Caisse des Dépôts, France's largest financial institution, with \$330 billion in assets and 25% employee-owned.

Egis is involved in the design, construction, operation and maintenance of infrastructure. We are part of the group that runs 35 projects globally in Europe, Asia and the US

**What is Egis' overall strategic position in the tolling value chain? How is that different from Egis' position in Europe?**

In Europe, it is more focused on hard engineering, as well as the operation.

We have 3 projects here in North America: two in Canada and one in

the US. The two projects in Canada are the Golden Ears Bridge and Port Mann Bridge in Vancouver, two very large toll bridges where Egis is either the prime contractor or a JV participant.

In the US, we were selected by the Alliance for Toll Interoperability, an organisation of 38 US public toll agencies across the US and Canada, to operate the ATI hub.

We are also actively pursuing many projects. The company is interested in bringing the different lines of business to the US. We have started with toll operations projects. We are interested in all types of PPPs and concessions: at-risk, PPP investments to those that are more contractual and operational. We will announce other exciting projects in the coming months.

**You have been instrumental in initiating the ATI interoperability initiative. First could you please introduce the ATI Hub?**

The ATI hub is a new venture to exchange and settle toll transactions across jurisdictional lines. For toll customers who are driving outside of their normal regional area, this is a method for toll agencies to exchange the transactions and settle the funds.

The hub is a first step in developing a national infrastructure to allow the US to move towards a national interoperability.

Of course there are other pieces of that. There is the roadside and in-vehicle technology. Today, in the US, we have 7 different technologies.

Five agencies have formally signed and we have additional commitments and interest from others, including agencies in California, Maryland, Texas, Oklahoma and Kansas).

**Are there links between ATI and IBTTA?**

The relationship is a co-operative relationship that recognises the difference between the 2 organisations.

ATI's overall mission covers more than just interoperability. It is a not-for-profit organisation of public agencies who are looking at a range of services that support interoperability. The objective is to provide combined services to their member agencies at a lower cost than this was done separately, notably thanks to greater purchasing power. This could include the creation of a national licence plate database or the sending of violations on behalf of agencies. It has a very small budget. Most people who work for ATI are volunteers. Its President is a volunteer, JJ Eden, who is a Director of AECOM as well and one of the founders of E-ZPass. Its offices are in Raleigh, North Carolina.

On the other hand, IBTTA is an industry association, which unites both public and private sector

entities. It also plays an important role because it runs the National Interoperability Committee, which I have chaired for almost 5 years. The Committee is focused on technology and business rules. It is in the last step of a process to identify one set of business rules to exchange transactions and the national toll protocol, which will be one of the 7 existing technologies. IBTTA is also busy with creating a national toll symbol, which is very important for customers to understand that their toll account works at a given place.

The main benefit of this national standard is that each agency will be able to keep its existing technology but also accommodate customers from other agencies who use different technologies. Customers who wish to have a national tag will be able to drive across the country with one device and one account.

Both associations work together but ATI provides the infrastructure for interoperability.



**We understand that ATI, Egis, Sanef and all participating toll operators are involved. Could you please describe what is the role of each entity?**

Egis and Sanef ITS have created a 50-50% joint venture, Secure Inter-Agency Flow (SIF). Sanef provides the back-office (computer hardware & software) systems to do the matching and exchange of the transactions. Egis manages the overall management for the ATI hub and runs the operations of the customer service.

**We are not a concession but a contractor** that the ATI board (11 agencies from the US and Canada) has selected.

We do not speak for ATI but we do of course communicate. Our JV operates under a 5-year contract from the effective working date, which has been extended once by 6 months due to the delayed start. The contract can be extended twice.

**What have been your challenges in building the hub?**

We are at the very beginning of the ATI hub project. The challenges have mainly been on ATI to get agencies to sign up for the Hub. Many of the public agencies are wrestling with how to get started or who should go first.

**We understand 8 agencies have signed up and 4 more are in process. Can you tell us what response you are getting from them?**

The contract originally was signed on September 2013. We anticipated that by September 2014, we would be underway. Unfortunately it took almost a year for the ATI to obtain an agreement between the agencies. Meanwhile we developed the system and went through factory acceptance testing.

ATI is responsible for signing up their member agencies and bring them to the hub. And it is our job to service the hub. ATI did not finalize their agency agreement until late summer last year. Then they started to market to their members and by September, they had signed the initial agencies so by October, we started to contact these agencies to go through the connection process.

We found out that many agencies had some technical issues that were slowing them down.

A number of agencies have signed and are interested in getting started. Those agencies include the Florida Sunpass system, which actually is 3 agencies. They will have one connection to the hub.

The Illinois State Highway Authority (ISHTA), a very large toll authority that uses the E-ZPass system, are going through the deployment of a brand new back-office right now. The North West Parkway (Denver, Colorado) also has back office development work at the moment. CTRMA (Central Texas Regional Mobility Authority) was the first to sign up and is now ready to go. The Georgia State Road Authority also signed their agreement...



And we have been talking with a number of agencies around the country. We have the commitment from 4 of the largest agencies in California: The Golden Gate Bridge, BATA, the TCA and SANDAG have committed to join.

I also expect the remainder of Texas agencies to join, but they have technical issues with their internal hub. They have to work through these before they can work with us.

**What kind of challenges are you trying to solve?**

All interfaces are different, as the agencies built their systems independently a long time ago. So we are working on hooking up to each agency, providing the ICD (Interface Document Control), which defines the message that is be sent and received, the

information that is transmitted and how the acknowledgments are undertaken within the systems.

The interfaces are not a huge challenge. We can handle that. The biggest difficulty is that while the ATI hub is important, it is not as important as their existing business so we need to wait for agencies to be ready to hook up. We then have to go through a testing process. We test the connection and the software between the hub and the agencies. To do that, they have to make a commitment to invest some resources in their back office. Virtually every agency has a development or maintenance operation going on in their back office. All agencies have their own way of doing things.

I am optimistic. The hub will get started in the next few months with a small number of agencies and transactions. I think we will begin with Florida and Illinois and add new agencies slowly in the first year.



**Do you expect all North American agencies to join?**

Yes, I hope that **we can have all of them within 5 years.** At some point, we are going to experience much faster growth. Within 2 years, we believe that most of the agencies will be members.

In the northwest, the state of Washington and the Canadian province of British Columbia would like to use the hub as a way to exchange transactions across the border.

Of course, there could be a competing hub, as is the case in the financial industry where there are several clearing houses. Eventually, agencies will make their choice based on quality and price.

**How does the hub foster interoperability concretely?**

Typically, in the US, when a driver drives on an out-of-state agency without a transponder, a picture of the licence plate is taken and a bill or violation is issued.

In Florida, you must pay a \$25 penalty at the first violation. If it is not paid, you get fined by the local traffic court and must pay a fine of over \$200. These are little bit like the violations for truck tolling in Germany.

ATI want to create a national database of vehicle owner information so that we know who to send the information to.

ATI may send the letter or the violation. It could offer a licence plate reading service. This is particularly nice for small agencies who would benefit from the volume pricing of the Hub.

Today, if you have an agency that has mixed technology (ETC or cash without transponders), customers must pay cash or otherwise they get a violation. These violations come with a steep penalty.

With the ATI hub, we will be able to exchange transactions for those customers who have valid accounts. The receiving agency will submit the transaction to the Hub for matching with other member agencies. This is a much lower cost solution.

**How does the cost of enforcement per transaction compare?**

The benefit is much higher than the cost. The main benefit will be that the Hub will match and settle many transactions that today are

very expensive to collect or are not collected at all.

A transaction fee is paid to ATI by the agency that is receiving the fund. This fee is only applied to matched transactions and is independent on what the toll is.

The level of the fee is based on the total volume of transactions on the hub: from 9 to 4 cts per transaction.

At the lowest volume, it costs 9 cts for ATI to clear the toll. This is the same amount for a \$1-3 toll or a \$8 toll such as the New York bridges and tunnels. It is not a percentage of the toll, which is a very attractive approach for agencies who are clearing transactions for which most of time they are not collecting.



**Could you give a concrete example?**

Yes. With the Hub, if a car from Florida with a SunPass account travels to Illinois, the Illinois Tollway will submit the transaction to the Hub which will match the trip to the valid SunPass account and later settle the funds.

This is exactly like a retail model: the customer goes into a store, pays the merchant and the merchant pays the credit card fee. The bank who is holding the credit card account is just doing the payment. But contrarily to a bank, public agencies do not make money on holding customer accounts.

If a transaction cannot be matched on an account in the hub, it is up to

the Tollway to take the licence plate, find the customer and to send them a bill or a violation. They typically go to either their in-state Department of Motor Vehicles or otherwise to private information providers for out-of-state customers. This costs them \$1.10-.1.25 to obtain owner information. If the customer is a New York customer, he / she gets a notice and people tend to pay immediately. For out-of-state customers, this is more expensive.

Illinois sends a violation notice in the mail, which often does not get paid. Most of our states do not have a way to enforce violations across state lines. A couple of states have started working on that. The best known example is between Massachusetts, Maine and New Hampshire. They have signed an agreement to process the violations across state lines by creating a 'registration hold'. If the owner does not pay, the 'home' state can put his/her registration on hold. The next time that a customer comes in to renew their licence plate for their vehicle, the state will ask for the bill to be cleared up.

Each agency has different business rules and costs. The cost depends on whether it has its own staff or works with contractors or outsourced mailing houses. The unit cost is generally \$1 or higher.

To compensate, certain agencies will ask for an administrative fee. These fees could be as much as \$5. The penalty fee itself may reach \$25. The DMV (Department of Motor Vehicles) may charge them to have their registration hold.

So the ATI hub is looking for a way to create a national consolidated database so as to obtain a much lower nominal cost.

**We are working with the American Association of Motor Vehicle**

**Administrators to create a national database of out-of-state owner information.**

#### **What are the KPIs of the hub?**

There aren't strictly speaking KPIs for the ATI hub.

This is not unusual for clearing houses, as agencies voluntarily sign up for the Hub. It is different from a public agency contract to a service provider.

One of the requirements is that agencies have to submit their transactions within 60 days of the transaction occurring on the roadway. We then batch-process these transactions overnight.



**What are the actual mechanisms at play against fraud within the ATI hub?**

First, let us say that the ATI hub is not an enforcement operation, although we could offer that. Our main objective is to reduce the number of violations and increase agency revenues by matching transactions to customers who have valid toll accounts with other agencies.

Someone could create a false transaction, either by playing with the OBU or by changing licence plate. We have not seen too much of the former because the benefit is low compared to the cost to do it.

What we do see is errors in the licence plate recognition. If an agency cannot recognise the transponder, makes a mistake and send a wrong plate number, another customer gets invoiced. If this out-of-state customer refuses

to pay, saying he/she wasn't there, the transaction can be suspended through the Hub's dispute process.

This is the same as when someone stole my credit card number and made two refuellings of \$400, probably a trucker. I asked my bank to block the transaction.

Today, there is no fraud investigation within the ATI hub. The ATI does the notification of the dispute, i.e. sends the message: "This transaction has been disputed". The two agencies, e.g. Florida and Illinois then talk to each other and resolve the disputed transaction.

Generally, this leads to a manual review of the licence plate to make sure it matches Florida's record. The responsibility for investigating the possible fraud lies with the agency creating the transaction. If an agency continuously makes errors because they have poor equipment, ATI can turn them off. This is the right of any clearing house.

#### **What are your next milestones?**

The hub has not started yet so our next step is to go live. We are now in the process of working with agencies' back offices and the start is a few months away. 10 agencies are in the first group and should have joined by year end. Once agencies see the hub working, we believe most of them will join.

**The current ATI hub is based what we call "database roaming". Is it good enough or should we expect customers to be able to use the same device across North America?**

For us, a clearing house is a way to exchange and settle transactions. But it does not depend on whether there is only one device. It is device-independent. The IBTTA Interoperability Committee is currently working on the

identification of a national protocol for transponders.

In the long term, we would like to get to one transponder. This device has to follow an open architecture, i.e. its specifications must be published and there can't be any impediment to other manufacturers. For example, if Transcore's 6B protocol would be selected as a provider, it may charge a small royalty but should allow the manufacturing by others. We are interested in a competitive environment for both the OBUs and the roadside equipment, where most of the costs are.

IBTTA has short-listed it down to 3 protocols today: 6B, 6C and the E-Zpass / IAG, developed by Mark IV and now owned by Kapsch. Kapsch has already published specifications for that architecture and made it royalty-free so they have met the requirements. The 3 protocols will be evaluated and the Committee will make a recommendation within the next year.

Agencies won't have to adopt it immediately. They will then evolve towards it by either continue to use their own (if it is the selected protocol), sell the national protocol as a second tag in their own region or continue to use licence plate photography. **Long term, we do want one protocol from multiple manufacturers that meet certifications of interoperability** to be sold and used in the US. That will dramatically simplify the American toll market.

But behind that, **we want one account because it is really the account that is the issue.** Today if a truck has 10 OBUs in their cab, its company will have 10 accounts... With a single protocol or multi-protocol transponders, we should be able to move a single account.

**There is a growing number of wireless payment services being launched. Do you think they will influence the e-tolling market and accelerate the use of smartphones as toll-capable OBUs?**

We are seeing a wide number of these applications being developed for the tolling space. The smartphone is just a communications device. What is smart is the app.

There are some key hurdles, i.e. potential duplication (several phones being charged in the same car) and operational issues but I am sure smart people will figure it out. However, you must remember that agencies have spent a lot of time and money embedding their existing technologies into the tolling infrastructure.



Smartphones will need to accommodate the existing infrastructure. So it may take 10-15 years for this to happen. That said, most of us believe that the future for mobile payments will be a platform in the vehicle.

**Should we expect electronic tolling to be included as a standard in new cars?**

This is really the future. We have been talking about it since the mid-90s. The car companies are also talking about it. They are waiting for IBTTA to identify the national protocol. Once this is done, I believe they will start embedding it on their windshields. This is going to happen. **ATI has**

**been in direct conversation with both automobile manufacturers and electronic suppliers.**

**Overall what are your ambitions for the tolling market in North America?**

Today there are 42-45 million transponders / active tolling accounts in North America, spread across 100-120 toll agencies. Maybe 40-50 agencies are medium-sized to large. Others are pretty small. Overall, the industry generates more than \$10 billion in revenues annually. This already represents 1/3 of federal gas tax revenues while less than 5% of limited access highways are tolled in the US and Canada. I do not see the US Congress have the fortitude to raise the gas tax and the state DoT do not have the funds to create new projects.

**We see the toll market double in the next 10 years.** This growth is driven by the growth of managed lanes. High speed express lanes on interstates are taking off in particular.

**What role do you expect Egis to play into it?**

Of course, as a toll operator, we are excited by this. We are now looking to do more than toll collection. For example we manage highways, bridges, tunnels and airports in Europe and should be able to bring that business to North America. We are at the beginning. In some areas, Europe is ahead for example in the provision by the private industry of services and funding, for example in concessions or PPPs at risk. It is also better at supporting VAS (Value Added Services) such as driver information or mobile commerce.

On the other hand, the US is now taking the lead on interoperability, as EETS has not taken off yet in Europe.