

LEIP: Demonstrating a 'can-do' success in info-sharing

Introduction

With the ever growing excitement around information sharing and the various initiatives that have been spawned as a result, I thought that it was time to provide a state-of-the-union update on the LEIP (Law Enforcement Information Portal) which is now providing real information to the Canadian Law Enforcement community.

The LEIP (Law Enforcement Information Portal), a Versaterm developed product, was intended to be an operational information sharing tool to connect disparate records management systems (RMS) together. Throughout its design and implementation, the key concept of *operational information* sharing has been paramount and is quite different from other information sharing initiatives, such as:

- “integrated justice” which might entail a full integrated justice solution connecting the initial arrest, through prosecution and corrections;
- “analytical information sharing” where crime is analyzed for patterns, for example, across jurisdictional boundaries; and
- “incident command information sharing” where command and control systems (e.g. CAD) are interconnected or information published to a central system to manage resources in the event of a major incident

Each of these three sharing initiatives would typically require unique solutions given that their needs are quite different – you can't expect “one size fits all”.

In contrast, LEIP is targeted for operational information sharing which means, in our view, getting information “right to the street” so that frontline officers and detectives have enough information to make a decision in real time. To meet this need, LEIP encapsulates all involvements including occurrences, street checks/field interviews, tickets and flag records for all persons, businesses and vehicles, from all participating jurisdictions, so they can be delivered in a digestible format to the officer. These *pointers* or involvements contain enough information (description, role in the involvement, case #, etc.), in a summary format, so the officer gets a better picture of who he/she is dealing with. If more is required, the full report can be pulled up (clicking the “hotlink”) and read right in the car through the existing mobile software. All access is controlled and logged by the contributing agency so even though information is shared, the owner of the information still controls its release (electronically without manual intervention). It would be nice to take credit for this as a revolutionary design but one only has to look at how a search engine works (e.g. Yahoo, Google, etc.) to see this concept in action (popup ads notwithstanding).

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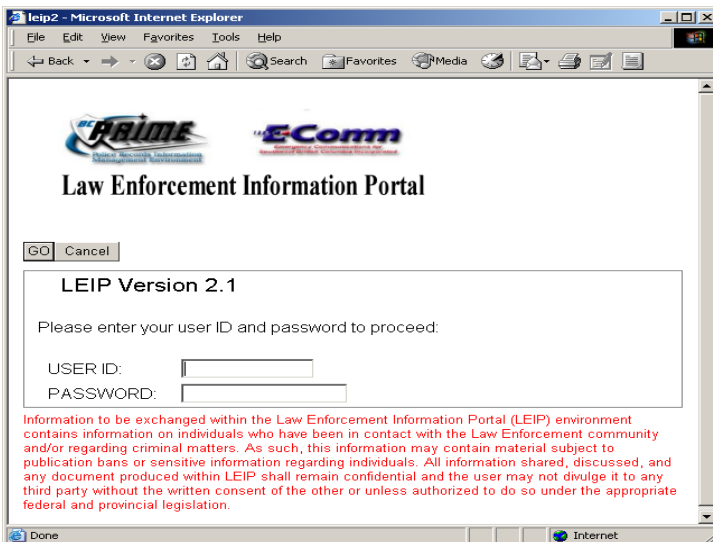


A brief history

The LEIP concept began in 1998 where it was offered as an alternative to a single large multi-jurisdictional RMS – which Versaterm (still) believes will become an unmanageable architecture over the years. It took three years before the concept of “this type of information sharing” gained a foothold and, in early 2001, it was deployed as a method to connect the RCMP (Royal Canadian Mounted Police) detachments and municipal police forces (Vancouver and Port Moody) in the province of British Columbia (the pilot agencies for the PRIME-BC project). As with the other group efforts in 1998, a LEIP-like tool, connecting the dots of information across disparate RMS databases, was not the original intention for PRIME – they too wanted one single RMS to serve the entire province. However, over time, it became difficult to get agreement on the approach of a single RMS because of different and unique procedures, requirements and guidelines between the participating agencies. The concept of LEIP was then adopted allowing different participating agencies to run their own RMS (with their own unique procedures and priorities) but still participate in sharing the information – LEIP appears as a single MNI for people, businesses and vehicles.

However, before LEIP could succeed, it had to be developed and deployed. That next hurdle in defining how it would be integrated and “what problems” it was trying to solve was difficult to nail down. Under the guidance of Bob Currie, a retired RCMP Assistant Commissioner, Versaterm was able to develop a prototype which we believed would meet the many and often conflicting needs (e.g. FOI, security, privacy, young offenders, provincial views, “right to know”/ “need to know”) of operational sharing - we were then in a position to get feedback and direction from the various stakeholders. After numerous meetings, it was becoming ever so difficult for the various players to conceptualize what LEIP was *going to be* (what would it contain, how would it be presented, etc.) – we were all exploring uncharted territories. It became painfully obvious that although sharing may sound simple, it is far from simple - from our experience, it is extremely complex! *Guerrilla* development then took over where Versaterm adopted the system delivery philosophy at times used by Vancouver PD – “ready, fire, aim”. The idea was that 80% of the problems could be solved with 20% of the effort (Pareto’s Law). Too often, large information sharing initiatives have been stalled or, in fact, never got off the drawing board, from both a funding and technical perspective, because the architects got hung up on the remaining 20%. The goal was to place a “stake-in-the-ground” and be prepared to evolve LEIP quickly (be agile) once the users understood how it would really interact with their systems (which had not been fully deployed at the time). Live in 2002, LEIP was a huge success providing fully integrated sharing to the 3 pilot agencies.

Numerous success stories ensued with one RCMP member commenting “it is like Christmas every day” (RCMP detachments surrounding Vancouver, prior to LEIP, did not have electronic access to Vancouver data – now all RCMP have access to Vancouver Police historical and current data).



Law Enforcement Information Portal

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One of the key success factors of LEIP in British Columbia was that it was fully integrated within their RMS and mobiles so it did not add any extra workload for the users/agencies – LEIP is seamless within Versadex where information is automatically published to LEIP based on rules set by the contributing (owner) agency. Further, querying LEIP is integrated with the Versadex RMS and mobile product (enter once – query many) so receiving the regional information requires no extra effort – it is a by-product of sending the query. However participation in the information sharing does not require agencies to be using Versadex nor have LEIP-connectivity integrated to their existing systems (although without integration it is impossible to achieve single entry). For those agencies not using Versadex, an API (application programming interface) is offered to allow integration with 3rd party systems – any agency can have the same level of integration as offered by the Versadex suite of products providing they make the programming changes to their existing systems. However, even without the programming, any agency can still participate and receive the benefits of information sharing though a web browser user interface – the cost of participation is really insignificant but the benefits are astronomical.

Following the success in British Columbia, a number of Ontario agencies, led by the London Police Service, “picked up the ball” and followed through with an information sharing initiative using LEIP for Ontario agencies. They too adopted a “get it done with the least amount of impact and minimal cost” approach and had information sharing between London, Windsor and Ottawa within 6 short months of the June 2003 project kickoff. The 4th member to the Ontario LEIP, the Toronto Police Service, began submitting information in March 2004. At the time of this publication, the Ontario LEIP contains almost 4.5 million names and 8.5 million involvements! In British Columbia, the LEIP is connecting all agencies and the integration is automatic as each agency implements PRIME (the Versadex products). Further, CRA (Canada Revenue Agency) investigators have access to LEIP to assist in their investigations and there is an intention to provide LEIP access to bordering US agencies, US Border Patrol, and the FBI - homeland security in action.

The LEIP environment and the tight integration provided the “mechanism” to share, but you can’t share unless the total environment is connected, else you still have islands of information! And fundamentally, the connectivity has to be affordable so the participants can afford to maintain it. On this point, a lot of credit is owed to the RCMP because, looking at sharing from a national perspective, the RCMP stepped up and provided the network (NPS/NPSNet) or the “spine” to really enable sharing. Without the network and the ongoing support from the RCMP, the sharing would have been very limited or simply would not have happened - you can’t connect systems through thin air or, cost effectively, build your own network.

As discussed earlier, Versaterm was prepared to evolve LEIP quickly and the agile development philosophy and design was key. By fall 2003, LEIP version 2 was on the drawing board using the experience and input from the LEIP user committee including representatives from the participating agencies in British Columbia, Ontario and federal policing. Now that it had been in use and well understood, it was much easier to “chart the course”. With success discussed, improvements requested and new features identified, a LEIP v.2 specification was developed (evolution had begun).

Recent Accomplishments

LEIP v.2 went into production on schedule by early summer 2004 and contained the advanced features including radius queries, better search algorithms, full ad-hoc searching and support for mugshots. The most critical enhancement was the underlying design of the “radius query”. The radius query concept is what keeps the information relevant for the user by using a geographical search which varies depending upon jurisdiction. A fundamental design feature for operational sharing, the radius query allows the officer to expand or restrict a query’s radius to search more or fewer jurisdictions relevant to “where they are” – this keeps the results relevant and controls the amount of information returned.

With the radius query design, the underpinnings were now in place to support a cascading query across LEIP servers, not to mention other systems (the server hops are a function of what radius is being searched). Today, the LEIP is configured to permit a Vancouver officer (from the car) to view a mugshot taken as a result of an arrest in Ottawa!

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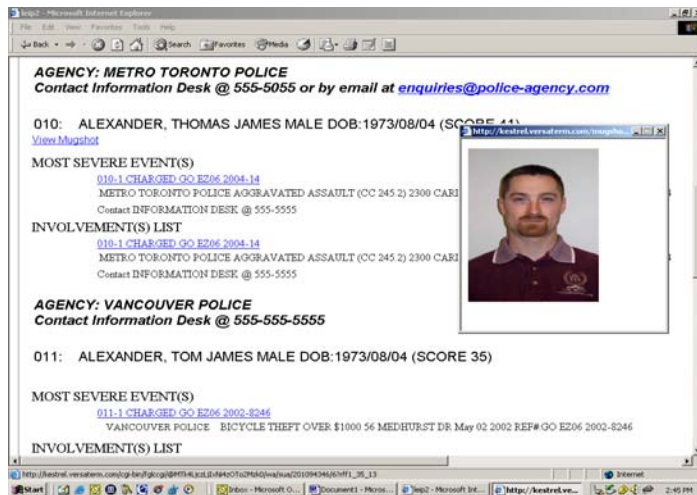
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The following screen shot illustrates a response and mugshot as seen through the web browser interface – all data is fictitious.



Combined with information categories (so individual contributors can designate required security or roles to access the information), the radius queries provide maximum flexibility for information delivery (and protection). This geographic or radius query capability allows regions to be designated, even across provincial, state and national borders, therefore providing true regional information sharing.

LEIP v.2 is a milestone in police operational information sharing – it exists to provide the information required so an officer can make a decision. The BC LEIP server alone handles over 14,000 queries per day and has been credited in solving crimes and making arrests that would not have occurred unless the officer had the information to make an informed decision. As more agencies begin to connect to LEIP, the number of daily queries is expected to increase proportionally – “why wouldn’t you want the information?” The same holds true for the LEIP in Ontario – it has already assisted in solving crime and as more agencies around Toronto participate, more information barriers are being torn down.

The (Near) Future

LEIP v.3 is already on the drawing board and evolutionary development has begun. The current LEIP architecture allows it to scale very easily by providing multiple regional servers. The next step is to expand on that approach by supporting a full server farm approach (like Google) where multiple servers contain replicated data so a query is handled or distributed across servers. This will allow LEIP to keep growing and scaling to handle the ever growing workload but, most importantly, it allows the LEIP to grow in small and affordable increments by simply adding another server to handle more workload – old servers, for example, can be deployed into the server farm (the current Ontario LEIP server is a retired RMS server which is over 5 years old!). A server farm enables growth while minimizing costs – very expensive *killer* servers are not required.

LEIP v.3 will use a proven open source database which will further reduce licensing costs which impacts both startup and scalability costs – we want to remove any barriers to information sharing. The open source database choice is a natural selection in today’s environment and deploying a database and server architecture modeled after such successes as Google, Amazon.com and Sabre seems like a sound approach.

The new architecture will also support web services, an industry standard permitting 3rd party RMS, mobile and other applications to interface to LEIP using a proven standard. Web services are not magical, but they certainly facilitate system interconnectivity while providing a level of insulation between the systems – it is application-to-application communication vs. application-to-database communication so controls are maintained in the business logic of the system and the interface remains manageable year after year. The first planned deployment of the web services will allow the Toronto Police Service to connect their home-grown RMS to LEIP (supporting hot-links into their data and eventual integrated queries). Given that TPS already publish data to LEIP through batch submissions of XML files, making their data accessible to all, the hotlink will electronically deliver reports back to the requester and save the phone call to TPS!

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The architectural change that is currently underway is a simple migration and a demonstration of the agile development methods used to build the system. All told, there is less than 4 person years of effort invested in building and deploying LEIP! A remarkably small investment for the results delivered!

Next, the web service will soon allow other information systems to connect, including Peel Regional Police Service, CELTS (Child Exploitation and Linkage Tracking System) and perhaps, in the future, the RCMP IQT or NIII product as those specs get hardened. Other agencies in Southern Ontario are already aboard or soon will be – the greater the participation, the better it makes it for all! Further, planning for an Atlantic LEIP is underway which will then connect Halifax, NS right through to Victoria, BC (coast-to-coast)! LEIP can be compared to a snowball rolling down a mountain – the scope and size of LEIP has definitely outgrown the initial expectations.

Initial discussions have already taken place about deploying a LEIP solution in the Denver metropolitan area (initially to connect Denver and Aurora PD's) which will only strengthen the development direction – we have found that cross-pollination of ideas across the Canada-US border has a tremendous advantage in product development and direction.

Conclusion

Information sharing continues to be a challenge – everybody has their own idea of how to do it and who should control it. These challenges will be discussed at this year's IACP (International Association of Chiefs of Police) conference held in Los Angeles, CA, where a number of the founding members of the LEIP initiatives in Canada will be presenting the “can do” approach and how the simple concept of “just doing” information sharing has helped them fight real crime. Why did it succeed? Simply put, the success in information sharing was a community effort - not a patriarchal dictatorship.

What started as a proof of concept, has migrated to an “if you build it, they will come” solution. Is LEIP perfect? Absolutely not! But the architecture, the experience and, most importantly, the cross-section of involvement from those who use it day-to-day will continue to make it better – it will rapidly improve because the ideas come from those who actually use it.

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