REVEALING RESEARCH & EVALUATION (RREv)

This issue introduces the new government identity management system in B.C. Corrections, provides an overview of the supporting research, and previews the ICON II evaluation.

INTEGRATED CORRECTIONS OPERATIONS NETWORK

ICON II Project Introduces eServices—Overview

The ICON II Project is introducing biometrics (i.e. electronic fingerprinting) and electronic devices called **eDevices** in Provincial Correctional Centres and Community Corrections Offices. These eDevices are part of the electronic services (**eServices)** system that allows inmates and clients (on probation, bail, etc.) to securely access their own Corrections-related information and services through a secure, dedicated, internal network.

eServices: How it Works

On admission to a Correctional Centre or Community Corrections office, inmates and clients enrol a digital representation of six of their fingers (see page 2 for more information). Once enrolled, inmates and clients place their finger on a biometric reader and enter their correctional service number on the touch screen of an eDevice. This verifies the clients identity, providing confidential access to eServices, their personal and legal information.

This biometric identity management system enhances public safety, and offender accountability by using the biometrics to confirm identity for admission to, and release from a custody centre and community office.

Biometrics prevent an offender from successfully using an alias while under the supervision of the Corrections Branch, whether in custody or in the community.

Why implement eServices?

- The Supreme Court of Canada requires the Corrections Branch to provide remanded inmates with appropriate access (i.e. 24/7) to the disclosure materials that will be presented in court.
- In B.C., the majority of evidence gathered by police is electronic, including audio and video surveillance files; eServices will provide inmates with viewing access to these files.
- eServices meets the Supreme Court requirement for providing
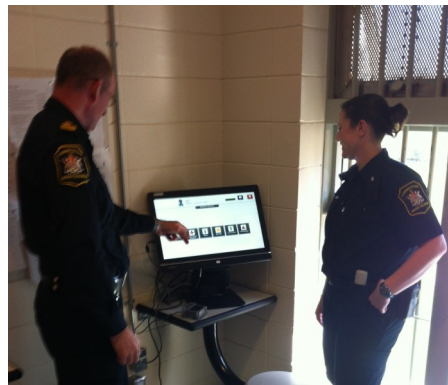
If you would like to know more about eServices check out our Corrpoint [site](#)

eServices access for Community Clients includes:

- electronic reporting (eReporting) (for suitable clients), provides an additional reporting method to Probation Officers for increasing the frequency of contact with clients.
- Personal Corrections Branch information (including court orders and warrants, active or pending conditions, and court dates);
- One-way message service from Community Corrections staff to clients.

eServices access for inmates:

- Electronic legal disclosure (eDisclosure) for remanded inmates;
- Health service requests;
- Trust account information;
- Personal Corrections Branch information (including discharge and court dates);
- Information about scheduled visits (time and date only)
- improves the efficiency and effectiveness of offender case management.

History of Biometrics - Fingerprinting

The term "Biometrics" is derived from the Greek words "**bio**" (life) and **metrics**" (to measure). Automated biometric systems have only become available over the last few decades, due to significant advances in the field of computer processing. Many of these automated techniques, however, are based on ideas that were conceived centuries ago.

The distinctive nature of fingerprints has been known for centuries. For example, the ancient Babylonians pressed the tips of their fingertips into clay to record business transactions. The Chinese used ink-on-paper finger impressions for business and to help identify their children.

In the mid-1800s, French anthropologist **Alphonse Bertillon** developed a system to measure and record certain parts of the body. Applying a mathematical formula, he determined that each person's set of measurements was unique. This method of identification was the only method used to identify inmates in France, Britain,
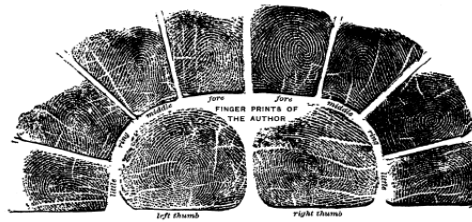

Photo 1: Cover of Sir Francis Galton's (1892) book, "Finger Prints," which contained the first classification system for fingerprints.

and other European countries. In 1887 Major Mc Claughry promoted the adoption of the system by the Wardens Association of the United States and Canada. In 1880, **Dr. Henry Faulds** suggested that the use of fingerprints for identification purposes might be useful. Twelve years later,

Photo 2: Sir Francis Galton's work on scars, ulcers and cuts affecting fingerprints.

Effect of an Ulcer. Finger of a Tailor. Effect of a Cut.

English scientist **Sir Francis Galton** published the book, "Finger Prints", which laid out a classification technique for fingerprints.

In 1896, **Sir Edward Henry** added to Galton's technique, creating his own classification system based on the direction, flow, and pattern (among other characteristics) of the friction ridges in fingerprints.

By the early 1900s, the Bertillon system was still in use in many prisons. However, fingerprinting quickly proved superior. In 1903, **Will West** was sentenced to a term at Leavenworth. Prison officials soon discovered that West was already incarcerated there, according to their records. The Bertillon measurements for **William West**, who was serving a life sentence for murder, were the same as this new inmate's. In fact, the two men looked exactly alike. A fingerprint comparison quickly identified them as two different people, and it was later discovered they were identical twin brothers.

Future Evaluation of ICON II

We are measuring the success of eServices and ICON II through the following methods:

♦ **Staff Readiness Assessment Survey** conducted through an anonymous, electronic survey provided to staff for analysis of their progression stages (awareness, understanding, acceptance and internalization).

♦ **Key Indicators for Pilot Success and Process Success** provided to divisional management committees.

♦ **Community Client/Inmate Hardcopy Survey** to assess ease of use of eServices, satisfaction with eServices and help text.

♦ **Community Client/Inmate Focus Group** to enable response from those with low literacy and assess ease of use of eServices, satisfaction with eServices and help text.

ICON II will be evaluated during both pre-Production and Production Verification Testing (PVT), during implementation, and after roll out. There will be anonymous surveys distributed to staff, inmates, and community clients. The PREv will evaluate ICON II on staff readiness, understanding, and acceptance; community clients and inmates will be assessed on ease and satisfaction when using eServices, including those with low literacy.

Look for evaluation results in 2014!

Fingerprinting for Identification

1) How are biometric fingerprints collected?

Biometric fingerprints are collected using a device called a "scanner" or "sensor." The scanners are used to collect the data needed for recognition and to convert the data into a digital algorithm known as a "biometric template" (see graphic below).

The template acts as a unique identifier for the finger within the system, as opposed to the finger-print itself. This ensures that system access will <u>only</u> be granted when the enrolled algorithm matches the data from the finger. The finger becomes the key to the system.

Photo 3:
A biometric scanner

2) Can someone develop a mould or cast of another person's fingerprints?

No, biometric fingerprints are stored in the form of "data points" rather than an image of the fingerprint itself (see image below). A person cannot use biometric fingerprints to create a mould. In addition, the biometric system is able to distinguish between a human body and other materials, such as plastic, on the basis of heat and blood flow, among other characteristics.
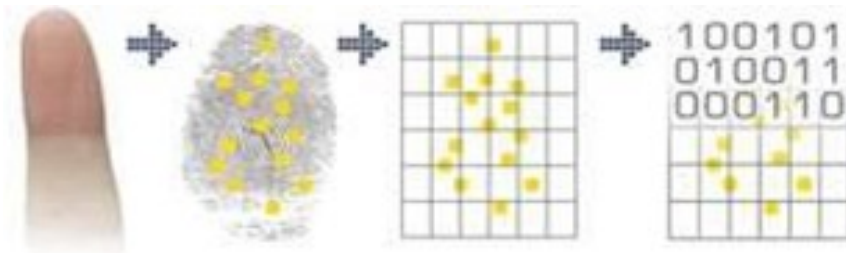
Can you fake 'it' ???

B.C. Corrections is using the latest biometric technology. New biometric readers are much improved compared to the previous technologies.

Chris Gatford, a Director of HackLabs, explains how entry-level and older biometric fingerprint scanners can be fooled: "Whether it can be hacked depends on how clever the device is. If it is a reasonable quality, it will look for blood flow and heat, but entry-level models do not."

For example, in the 1990's, Japanese cryptographer Tsutomu Matsumoto used gelatin to make a replica finger. It fooled 11 commercially available fingerprint scanners. There have been considerable advancements in biometric technology since Matsumoto's 2002 test and the eDevices of B.C. Corrections, cannot be spoofed by gummy fingers or other non-human materials.

Accuracy of Biometrics

Public acceptance of biometrics technology depends on the ability of system designers to demonstrate that these systems are accurate and reliable.
Accuracy in the biometrics industry is evaluated by two measures:

1. **False Rejection Rate (FRR):** denying access to someone who should have access; and

2. **False Acceptance Rate (FAR):** granting access to someone who shouldn't have access.

Generally accepted rates are a 0.2% FRR, meaning the system would not recognize you 1 out of every 500 attempts (a minor inconvenience) and a 1/150,000 FAR, meaning the system would incorrectly grant access 1 out of every 150,000 unauthenticated fingers. This does not mean that if someone, who should not have access, tried to use their finger 150,000 times that person would gain access. It does mean that a person would have to bring a team with 150,000 different fingerprints to try to gain access to the same record.

Biometrics and Privacy

B.C. Corrections is committed to protecting the privacy of clients. The Branch worked closely with the Office Information Privacy Commissioner (OIPC) to ensure the outcomes were designed to protect the privacy and security of all information, especially biometric data.

Steps for Accessing eServices

Step 1: The client enters his or her B.C. Corrections Service Number.

Step 2: The client confirms his or her identity with the biometric reader.

Step 3: The Client now has access to his or her eServices.

Biometric Technology in B.C. Corrections

- This **two-factor authentication** process described above (fingerprint and CS number) reduces the possibility of a false acceptance.
- eServices uses biometric technologies with a False Acceptance Rate (FAR) of less than or equal to 0.0001%. This significantly exceeds the generally accepted 0.2%, FAR.
- Encrypted biometric templates are stored in the high security authorization and authentication network zone provided by Shared Services B.C.

Can the eServices reader be spoofed by a fake finger?

- The biometric reader chosen to connect inmates and clients to eServices will use active sensing technology to determine whether the object placed on the scanner is a live human finger. As a result, the fingerprint scanner rejects non-human materials such as silicone, rubber, gummy candies or play-doh.

Can fingerprints be reproduced?

- The scanner transforms the biometric fingerprint into an encrypted template (an algorithm). It does not capture or display any image of the fingerprint so it is impossible to reconstruct or steal a fingerprint.

By which authority are biometrics being collected?

- Section 26(c) of the *Freedom of Information and Protection of Privacy Act*.

Next Steps

eServices is undergoing Production Verification Testing in two Correctional Centres and five Community Corrections offices. In the near future, selected Crown Counsel offices will join the PVT and electronically deliver confidential legal materials to selected inmates. In the future, the ICON II Project, responsible for delivering eServices, will help the Justice sector with the identification, storage, access, security and management of all important and sensitive operational and legal documentation. This will improve access to services for those involved with the B.C. Correctional system while increasing operational efficiencies across the Justice sector.