VeriFinger Case Study

Polish Biometric Passport System

Fingerprint Module Based on VeriFinger Technology Implemented by Polish Security Printing Works

VeriFinger Was Selected for Reliability, Speed and Multi-platform Capabilities

Poland, with one of the largest populations in the European Union, issues approximately one million passports annually. Since June 2009, as required by European Union law, all new passports issued in Poland and other Schengen countries include biometric fingerprint information to supplement the facial image and other identifying data.

Polish Security Printing Works, working closely with the Polish government selected Neurotechnology's VeriFinger fingerprint recognition technology to be the verification engine for all newly issued passports. Initial testing of software began midyear in 2008 with a pilot program following early in 2009. The VeriFinger-based fingerprint system has since been implemented as a part of the biometric data capture in all 130 passport offices throughout Poland.

Background

- **The customer:** The Republic of Poland is a nation of 38 million people, one of the most heavily populated countries in the European Union. Approximately 1 million passports are issued annually in Poland's 130 passport offices.
- **The need:** As a member of the European Union Schengen countries, Poland was required to implement biometric fingerprint technology in all passports issued on or after 29 June 2009.
- **The integrator:** Polish Security Printing Works, plc.
- **The solution:** VeriFinger biometric fingerprint recognition technology is now in use in approximately 130 passport offices throughout Poland as the fingerprint verification engine for passport issuance.

A European Council Regulation has established standards for security features and biometrics to be included in passports and other travel documents issued by all European Union member states. Members of the Schengen countries – a group of 25 European nations who, under agreement, have created a borderless zone allowing free travel for citizens among member countries – were required to have fully implemented biometric fingerprint technology in all passports issued on or after 29 June 2009. Poland, a Schengen member, began development of a national biometric passport project in 2008. Polish Security Printing Works was selected as the primary system integrator.

> ***"During tests we noticed that Neurotechnology's fingerprint recognition products are fast and reliable. The time necessary for verification and identification of fingerprints is very low and the process of recognition is very effective. Also the price is reasonable."***
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> Dariusz Nowakowski
> Deputy Director, R&D Department
> Polish Security Printing Works

Polish Security Printing Works selected the VeriFinger Software Development Kit (SDK) for its combination of high accuracy, very fast 1:1 fingerprint matching and the ability to work with a wide variety of programming languages and software platforms. High performance and flexible licensing options enabled Polish Security Printing Works to quickly obtain, develop and implement the technology.

VeriFinger Provides Reliable 1:1 Fingerprint Verification at All Stages of the Passport Application, Generation and Issuance Process

Fingerprint Capturing and Scoring

All newly issued passports in Poland now include a chip on which is saved biometric fingerprint information for the person to whom the passport is issued. When an applicant turns in an application form for a passport, his or her fingerprint image is taken using a Dermalog ZF1 scanner. Once the print image has been captured, VeriFinger is first used to provide a quality score for the fingerprint. If the image has a high enough quality score it is saved for use in the biometric passport chip.

Final Verification and Issuance

The final verification is done when the client receives his or her passport. The applicant enrolls the same set of fingerprints using the scanner. The software application uses VeriFinger to compare these new fingerprint images to the images contained in the passport chip. The application displays on the screen whether the fingerprint images are of good quality and verifies that they match with the initial enrollment embedded in the chip (true/false information). If the fingerprints match, the new biometric passport is issued to the applicant.

System Specifics

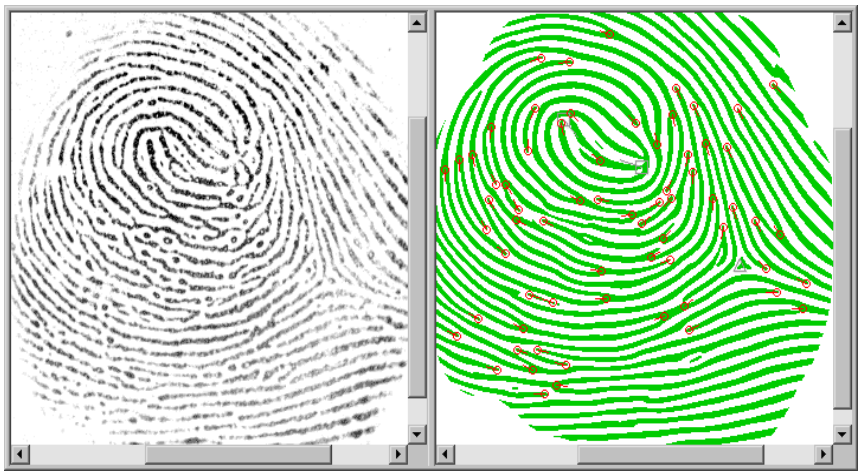
EC Regulation

Council Regulation (EC) No. 2252/2004 required that all Schengen countries issue biometric passports beginning on 29 June 2009. All new passports must contain embedded fingerprint information as well as the facial image. The new biometric passports being issued by the Polish government are equipped with a contactless microprocessor for saving and reading electronic data. Identifying data for each passport holder - surname, given name, birth date, birth place - and other biometrics are stored in the document chip.

VeriFinger Incorporation

VeriFinger, from Neurotechnology, provided the fingerprint evaluation and matching component for the document generation system developed by Polish Security Printing Works. The VeriFinger algorithm provides very fast matching with a high degree of accuracy for rolled and flat fingerprint captures and it is tolerant of translation, rotation and deformation of the fingerprint image.

Another aspect of VeriFinger that made it the choice of Polish Security Printing Works was the compatibility with a wide variety of systems for development and implementation. VeriFinger's flexibility meant it would fit, and work within, the solution rather than making the solution fit the specific application.



Key Benefits:

- **Reliability.** VeriFinger provides a high degree of accuracy, even at high matching speeds, and is tolerant to fingerprint translation, rotation and deformation.
- **Flexibility.** The VeriFinger SDK offers multi-platform and multi-language support, enabling the technology to be use on a wide variety of systems.
- **Support.** Neurotechnology provides high quality documentation, samples, tutorials and quick and friendly technical support.
- **Value.** Low cost-per-unit and easy, flexible licensing make it easy to quickly deploy solutions.

About VeriFinger

VeriFinger fingerprint identification technology is available as a software development kit (SDK) for the development of PC- and Web-based solutions on Microsoft Windows, Linux and Mac OS X platforms. VeriFinger supports multiple scanners and programming languages and works with databases of unlimited size, assuring system performance with fast, reliable fingerprint matching in 1-to-1 and 1-to-many modes. The VeriFinger algorithm has been incorporated in more than 1000 end-user product brands in 98 countries over the past 11 years. It has received full NIST MINEX certification and was awarded for its reliability and performance at FVC2006 and FpVTE 2003 biometric algorithm competitions. It has consistently won Fingerprint Verification Competition (FVC) awards since 2000. VeriFinger is capable of fast matching with high reliability and is highly tolerant of rolled and flat fingerprint captures as well as translation, rotation and deformation of the fingerprint image.

For more information about VeriFinger pricing, product capabilities and specifications as well as other products from Neurotechnology, go to: http://www.neurotechnology.com

About Polish Security Printing Works

Polish Security Printing Works (PWPW S.A. - Polska Wytwórnia Papierów Wartościowych S.A.) is a company distinguished in the market by both effective quality and security assurance methods, as well as its unique machine stock. The combination of these elements, along with the experience and commitment of the staff, resulted in PWPW being awarded the ISO 9001, quality system certificate for the first time in December 1999.

In late 2002 PWPW obtained MASTERCARD International certificates for manufacturing of plastic Eurocard-Mastercard bank cards, as well as VISA International certificates for manufacturing bank cards in the VISA system. PWPW is the first and only Polish company to obtain permission to manufacture bank cards in those two popular systems. In November 2005 PWPW S.A. obtained the INTERGRAF certificate for security production. It is an exclusive industry certificate for manufacturers of high security prints.

PWPW has been operating for over 90 years in the elite market of manufacturing highly secured documents and forms. The company is producing Polish banknotes, biometric passports, polycarbonate ID cards, driver's licences, transport documents, visas, postage stamps, excise duty bands, shares, bond, secured paper and bank cards. Since the beginning of 2008 Polish Security Printing Works has delivered five types of biometric documents to the Republic of Lithuania.

Polish Security Printing Works has also worked on a number of other foreign contracts and is also doing system integration in the projects of national eID cards and biometric passports. The company recently successfully developed and implemented biometric passport systems for Republic of Lithuania in BAC (2008) and EAC (2009) versions and for Republic of Poland in EAC version (2009).

About Neurotechnology

Neurotechnology is a provider of high-precision biometric fingerprint, face, iris and palmprint identification algorithms, object recognition technology and software development products. More than 2000 system integrators, security companies and hardware providers integrate Neurotechnology's algorithms into their products. With millions of customer installations worldwide, Neurotechnology's products are used for both civil and forensic applications, including border crossings, criminal investigations, systems for voter registration, verification and duplication checking, passport issuance and other national-scale projects.

Neurotechnology's identification algorithms have consistently earned the highest honors in some of the industry's most rigorous competitions, including the National Institute of Standards and Technology (NIST)'s Fingerprint Vendor Technology Evaluation (FpVTE) and the Fingerprint Verification Competitions (FVC).

Drawing from years of academic research in the fields of neuroinformatics, image processing and pattern recognition, Neurotechnology was founded in 1990 in Vilnius, Lithuania and released its first fingerprint identification system in 1991. Since that time the company has released more than 60 products and version upgrades for identification and verification of objects and personal identity.

For more information, go to: http://www.neurotechnology.com

Neurotechnology media contact:

Jennifer Allen Newton

jennifer (at) bluehousecg.com; +1-503-805-7540