Case Study | GENKEY

Wibu-Systems and GenKey are a perfect match for large scale voter identification and security

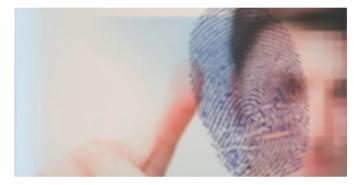## Leading in large-scale ID solutions

The challenge
Elections in the African country Ghana involve some fifteen million voters, each requiring individual fingerprint identity accreditation. The challenge is to prevent fraud and protect the GenKey software in the countrywide deployment of up to 26 thousand voting machines.

The solution
Before a GenKey system is shipped, it is loaded with software that is protected with CodeMeter. This software from Wibu-Systems encrypts the GenKey code, bundling it with a license file into a complete package. When each systems boots up, the embedded software calls up this file, using a digital signature to verify if it is original. No additional hardware is required.

The results
The implementation of CodeMeter eliminates the monumental costs and logistics associated with a national election. It ensures a high level of security and integrity of biometric data, additionally protecting the GenKey software against potential counterfeiting and misuse during polls.

**Tom Kevenaar,
Director Technology, GenKey**

"The development of the GenKey technology required over fifty man-years of research and development so there is a significant value in the software that we put at the disposal of customers in developing countries for democratic elections. Our ultimate goal is to finally stop fraud at the detriment of our software by eradicating the possibility of illegal copy and misuse."

The customer

As a proven provider of large-scale biometric identity solutions, GenKey is a trusted partner with a mission to prevent identity fraud in emerging countries.

GenKey specializes in delivering biometric solutions for Elections, Digital Healthcare and other Identity Management related applications, with a specific focus on emerging economies. The solutions comprise all aspects typical of these scenarios, ranging from biometric registration, deduplication and adjudication, to verification and identification services.

Characterized by its unique strength in high-speed deduplication, GenKey develops complete solutions for voter management, medical ID handling/claim processing and large-scale ID management. More than 50 million people benefit from these high-quality solutions.

genkey

Biometrics is a highly sensitive matter because it affects citizens' privacy, which makes it critical to ensure maximum processing accuracy. With a considerable investment in its proprietary technology, GenKey has developed a unique approach for performing fingerprint matching at extremely high speed rates. Furthermore, it stores biometric line patterns in such a way that the information is intrinsically protected for privacy purposes. By applying multiple security mechanisms, not only do they encrypt their systems with Wibu-Systems software, but they also store biometric data in numerical form, making them impossible to trace.

"Our company is founded on two technological pillars," explains Director Technology Tom Kevenaar of GenKey. "On the one hand, we have originated a special process for biometric data matching which features a speed rate of up to a hundred million fingerprint matches per second on a single CPU, approximately ten thousand times faster than standard techniques. On the other hand, our technology secures the biometric data to the extent that no additional cryptography is required to comply with privacy laws."

In GenKey's field of expertise, being able to roll-out biometric software on a countrywide basis represents an important added value for democracy in evolving nations, where the integrity of the results must be totally above suspicion. At the scale of the distributed computing needs of a national election, authorities also required a creative solution that would minimize hardware installation and maintenance.

To secure its software code, GenKey deploys CodeMeter, Wibu-Systems' flagship product for protection, licensing and security demands. "One of its main advantages is that we can integrate it at the end of our production process. This means, for example, that we don't need to change our own source code. Another benefit is that CodeMeter is a one-stop solution for all our needs: licensing permissions, and code protection, as well as a vehicle to secure others' application data. Moreover, the security solution from Wibu-Systems is hardware independent; the 26 thousand biometric verification devices that were distributed throughout a country like Ghana were protected against reverse engineering through code encryption and file-based secure licensing."

Before a GenKey system is shipped, it is loaded with software. CodeMeter encrypts its code, bundling it with a license file into a complete package. When each systems boots up, the embedded software calls this file, using a digital signature to verify its authenticity. A list of conditions is verified, such as the validity of the license, or the matching of the hardware features that were initially bound to the license during the encryption process.

CodeMeter employs both symmetric and asymmetric encryption. The program code is encrypted using symmetric 128 bit AES encryption. Symmetric methods are better suited as they are less CPU intensive. But upon starting the application, it is the asymmetric encryption of the digital signature which is utilized. For this specific purpose developers can choose the highly secure ECC, 224 bit and RSA, 2048 bit.

"The relationship with Wibu-Systems has given us an edge over the traditional players, especially in challenging situations such as nationwide elections in distant countries. We are pleased to provide a solution which guarantees the core principle of our mission and at the same time preserves our software investments against theft and fraudulent use."

About Wibu-Systems:

WIBU-SYSTEMS AG (WIBU®), a privately held company founded by Oliver Winzenried and Marcellus Buchheit in 1989, is an innovative security technology leader in the global software licensing market. Wibu-Systems' comprehensive and award winning solutions offer unique and internationally patented processes for protection, licensing and security of digital assets and know-how to software publishers and industrial manufacturers who distribute their applications through PC-, embedded-, mobile- and cloud-based models.

Wibu®, CodeMeter®, SmartShelter® and SmartBind® are registered Trademarks of Wibu-Systems.

WIBU-SYSTEMS AG | Rueppurrer Strasse 52-54 | 76137 Karlsruhe, Germany | Tel.: +49 721 931 72-0 | Fax: +49 721 931 72-22 | sales@wibu.com | www.wibu.com