

# ACOS – Card OS for Industry and Government Applications



## ACOS – Operating System Family

- Austria Card's smart card operating system for industry and government applications
- The ACOS core is designed for fast and efficient development of smart card applications
- ACOS has been implemented by Austria Card's research and development team
- ACOS enables the issuer to launch smart card projects fast and efficiently

## Microcontroller Chip

Due to the extensive functionality and the requirement for highest security – in particular for ID, government and payment applications – we make use of the latest chip hardware generations of various semiconductor manufacturers.

## Cryptography

State-of-the-art cryptography algorithms are RSA and ECC – Elliptic curves. ECC is preferred due to the higher performance and due to the mathematical model on which the encryption algorithm is based. Cards used in industry and government programmes shall perform the longest possible lifetime. As such, there is no compromise in the length of cryptographic keys. It is possible to handle ECC keys up to 256 bit and RSA keys up to 2048 bit.

## Certification

Austria Card's operating system was evaluated according to Common Criteria and received Evaluation Assurance Level EAL 4+, PP conformance: Protection Profile BSI-PP-0006-2002 Secure Signature Creation Device Type 3, V 1.05.

## ACOS Features at a Glance

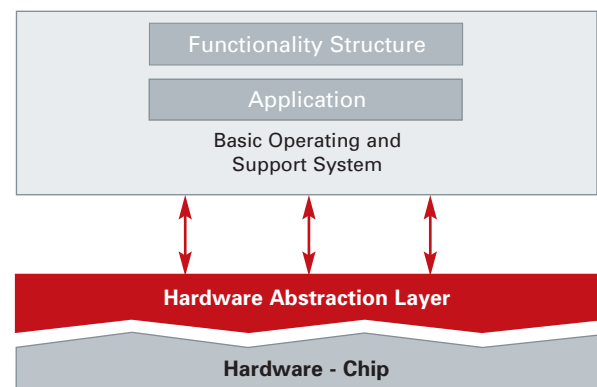
- ☞ Card supports for multiple applications
- ☞ Certified secure digital signature application according to directive 1999/93/EC
- ☞ Smart ID card functionalities
- ☞ PKI enabled crypto-engine
- ☞ Health card functionalities
- ☞ CPA and EMV functionalities as well as electronic purse
- ☞ ISO 7816 compliant smart card operating system
- ☞ Easy and clear file system generation enabled through a file system description tool
- ☞ ECC cryptography with 160 to 256 bit
- ☞ RSA cryptography with 1024 to 2048 bit
- ☞ AIS20/K4 compliant random number generator
- ☞ Fast implementation of cryptographic operations
- ☞ Personalisation solution
- ☞ Protocols T=0, T=1 and T=CL
- ☞ PKCS#11 / #15 and Microsoft® - CSP support

## ACOS Structure – The Need for a Customised Card Operating System

ACOS is based on general market requirements, but its multi-functionality, performance, adaptations and cost-effectiveness are unique in the smart card business. ACOS – as a completely modular system – has combined all hardware related functions in the Hardware Abstraction Layer – HAL.

The HAL enables the operating system to access the memory, communication interfaces, cryptographic coprocessors and further hardware via defined interfaces. Therefore only the HAL has to be updated if an operating system is or has to be transferred to other hardware.

Multi-application capabilities of cards allow the different file structures such as health card applications, identification applications, e-Purse or digital signature to work parallel – depending on which kind of commands or applications are requested. The ACOS programming API provides a "C" language interface, which guarantees easy handling, maintenance and reutilisation. The BOSS – Basic Operating and Support System – has a rich functionality framework for the development and building of applications. ACOS is resistant against SPA/DPA and DFA attacks, which has been successfully tested and approved.



## Technical Data and Security Aspects

ACOS is implemented on Atmel, NXP and Infineon microcontrollers.

Currently implemented versions are available on ICs with an EEPROM size ranging from 4 Kbytes to 80 Kbytes, also including dual interface ICs.

### Information and Contact

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