

## On MULTOS

Secure chip solutions for electronic travel documents



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### The world travels on e-Passport

e-Passport is with us. Acceptable international standards have now been reached, paving the way for countries to implement Issuing and Receiving systems and to begin issuing electronic documents. Many countries have already embarked on these programs as both issuers and receivers, and those just starting out are able to benefit from the experience gained. Keycorp, as one of the world-leading providers of smartcard technology, can now offer a standard and proven product.

### Secure, flexible and high performance solution

Keycorp is offering one of the most secure, flexible and complete solutions available for e-Passport in the market today. The entire solution comprises state of the art, proven technologies.

Keycorp can offer the passport application, chip operating system, chip and inlay as a single integrated and tested product, supporting the ICAO

Logical Data Structure with both Basic Access Control (BAC) and Extended Access Control (EAC).

The Keycorp solution is high performance, reading a typical facial image from a passport in below 4 seconds (using BAC).

Keycorp's partners are also able to offer additional compatible products and services including consultancy, e-Passport personalisation and software for e-Passport Inspection Stations.

### MULTOS Smartcard operating System for e-Passport

Recognised as one of **the world's most secure, open, multi-application smartcard operating systems**, and with Common Criteria-certified security levels, MULTOS is ideally positioned to meet the stringent security requirements imposed on government-issued identity tokens.

### MULTOS offers true end-to-end security:

- Unique identifier and transport key ensure only authorised data can be loaded to the chip after manufacture
- Enablement process locks the MULTOS identity token to the particular Issuer, ensuring only issuer-approved applications can be loaded
- Optional Encryption of the Application Load Unit (ALU—the application combined with personalisation data) enables delivery of applications to the document securely using low-cost, open communications networks if required
- Cryptographically-generated certificates put the authority for loading and deleting of applications in the hands of the Issuer
- Application firewalls ensure an application cannot access another application's code and data



Keycorp's MULTOS end-to-end security provides the flexibility to offer either traditional centralised issuing, or de-centralised (distributed) issuing (using inexpensive infrastructure whilst still ensuring the security and integrity of the data). It also ensures that the identity document, once issued, can be securely updated to keep up with changing standards and technology (such as changes to the LDS, or adding a new e-Visa application)—all without having to recall the document from the field.

### Extensible application

Keycorp's ICAO compliant e-Passport application is made up of two parts:

- e-Passport Core Application
- e-Passport Extended Application

The e-Passport Core performs all the basic data storage functions and supports the ICAO-specified enquiries and cryptography, including BAC and AA.

The e-Passport Extended Application performs the EAC functions endorsed by the European Union and contains the optional data groups. Optional biometric data (fingerprints) is also supported. The Extended Application functions can be loaded either when the passport is issued, or later, in the field.

### Personalisation

One of the key advantages of MULTOS is that personalisation systems are the same for all MULTOS products, so personalisation or card management systems do not have to support multiple versions of the same standard.

### Durable inlay

Keycorp works with several leading antenna specialists to provide a range of inlay options. Inlays are available for use in either data pages or covers.

Logical Data Structure (LDS)
BAC and/or EAC (Security of Electronic Data)
Contactless IC chip in - ISO 14443 type A or type B
Memory capacity of 80 kBytes
Baud rate up to 848 kBaud (Type A or Type B)
Standard MULTOS secure enablement process
Ready for additional applications
Available as chip or inlay
Infineon SLE66CLX800PEM chip
Hardware certified to CC EAL5+
RSA Cryptography support up to 2048 bit key lengths

### Partner Program

Keycorp has worked with its partners to implement e-Passport programs. **Keycorp's partners have a broad experience designing and implementing products that can be used to expedite new programs**, such as:

- ICAO API for use with PC/SC compliant contactless readers
- Software for implementation of EAC at the Document Validator and Inspection Station
- Secure Offline Personalisation of the ICAO e-Passport Application

### Standards

Keycorp's e-Passport solution complies with the following standards:

- ISO 7816
- ISO 14443 type A or type B
- ICAO PKI for MRTD v1.1
- ICAO LDS v1.7
- BSI TR-03110 (if e-Passport Extended Application is included)
- ISO 10373 (as applicable)

### Leading Identity Systems Using MULTOS

- Hong Kong Smart ID Card
- Saudi Arabia ID Card
- Hong Kong e-Passport
- Turkish Military ID Card

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