



# MULTOS Product Directory

*Section 5*

**Development Tools**

v7.00



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## Development Tools

Barnes International Ltd.

Card-Lab

GTI (UK) Ltd.

MAOSCO Ltd. - MULTOS Consortium

StepNexus Ltd.





**Barnes International Limited**



## CAT3000v3 EMV Card Personalisation Validation Test and Test Script Development Tool



### Description of Functionality and Benefits:

- Powerful analysis features for investigative and development purposes
- Validate data to all EMV specifications and payment scheme requirements (Visa, MasterCard, JCB, Amex, Discover and Interac, etc.)
- Confirm correct Issuer personalisation data format and content
- Confirm Chip/Mag-stripe/Embossing correlation, identifying incorrect data
- Multiple Application data validation capability on single card insertion
- Test script customisation and development
- Host Simulation and integrated Testing with Thales and Safenet HSM
- Direct link to Visa VSDC Personalization Assistant (VPA)
- Qualified for MasterCard CPV Test Tool
- Fastest Personalisation Validation Tool available (Contact/ Contactless)

### Contact Details

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## Northwest Simulations

Developer of MULTOS smart card application testing and validation tools.



**Card-Lab** is an extremely powerful system that transforms your PC into a virtual MULTOS smart card. It enables you to execute your smart card applications within a completely visible and controllable environment and whilst in direct communication with your target IFD. This allows you to achieve a higher degree of confidence in your smart card applications before loading them onto a real MULTOS smart card.

The **Card-Lab** system consists of a Windows based software application and an external hardware device. The Windows software simulates a MULTOS smart card operating system and allows you to monitor, modify and control all aspects of its operation. This enables you to test and debug your smart card applications within a completely transparent MULTOS environment.

The external hardware device emulates a MULTOS smart card ISO 7816 interface. Your target smart card reader or other IFD will be unable to distinguish it from a real MULTOS smart card. This allows the **Card-Lab** software to communicate directly with your target IFD and enables your smart card applications to receive and respond to ISO messages sent by your target IFD. Similarly, your target IFD will be able to receive and respond to ISO messages sent by your smart card applications. This system completely eliminates the use of artificially generated ISO messages.

The external hardware device connects to the PC through a standard serial port.

- Emulate multiple standard applications.
- Emulate multiple codelet applications.
- Emulate shell applications.
- Cryptographic and other primitives.
- Application delegation.
- Data and event logging.
- No more 'crash and burn' debugging.
- Configurable MULTOS operating system.
- Source level application debugging using breakpoints, single-stepping, pausing, run-to-cursor, Etc.
- Memory and variable display and editing facility.
- Compatible with SmartWorks, MALT, MDS and Winmalt development tools.
- Application code coverage and tracing facility.
- ISO file support.
- Comprehensive and easy to use Graphical User Interface.

### Contact Details:

[www.card-lab.com](http://www.card-lab.com)

contact@card-lab.com

GTI (UK) Ltd



MDS is the only set of tools you will need to create and debug MULTOS applications and download them to MULTOS Application Development Cards. MDS is also the only MULTOS application development system to include facilities to personalise applications and prepare them for mass issuance. The tools run on PCs under Windows™ 95, 98 or NT4.

MDS provides a complete set of integrated tools including:

- C Compiler
- MEL Assembler
- MULTOS simulator and debugger
- Personalisation facility
- Card loader
- A terminal simulator.

MDS version 2 includes powerful new features to help you develop, test, build, load and issue your MULTOS applications. These include:

- Optimising C Compiler which now produces significantly more compact and faster MEL code
- PC/SC Drivers
- A new Terminal Simulator (SoftTerminal) which can direct APDUs to both MDS and to an application loaded onto a test card, enabling testing of your applications in real MULTOS environments
- Dual Channel terminal simulation for testing card to card applications
- Scripted APDU exchange both with MDS and the application on a card.
- APDU cut and paste facilities for hand crafting APDUs.
- COM interface to SoftTerminal, so that you can construct your own test driver, using your own favourite development tools.
- Fast compile and assembly times
- Simulator support for MULTOS Version 4 (including transparent delegation between MDS projects)
- Development Card load/delete for both version 3 and version 4 (Siemens & Hitachi) MULTOS cards.
- Example code provided to get you up and running quickly
- Automatic certificate generation for development cards
- Generation of CA format Alus
- Seamless integration with SoftCard Solutions' MULTOS Application builder and card management solution 'SoftManager'.

MDS version 2 is the improved version of the original MDS toolkit from Mondex International. As with the original toolkit, version 2 sets new standards in functionality and usability for smart card application development. Its unique combination of powerful development environment, application personalisation and integration with deployment tools provide a complete solution to all your development needs.

MDS version 2 may be ordered now from GTI, for further information visit our web-site or e-mail us at one of the addresses below.

**Available for free download from: [www.multos.com/developer](http://www.multos.com/developer)**

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**MAOSCO Ltd.**



MAOSCO Ltd., the operating company of the MULTOS Consortium, offers a wide range of documentation, advice and information on products and services for application developers and organisations wishing to develop applications, systems and other products and services that incorporates the MULTOS operating system.

In order to have access to the documentation, products & services, and information on organisations working with MULTOS, please visit [www.multos.com/developer](http://www.multos.com/developer)

The following are available from the Technical Library:

#### **Documentation**

- Application Programmer's Reference Manual
- Guide to Generating Application Load Units
- Guide to Loading and Deleting Applications
- MULTOS Developer's Guide
- MULTOS Developer's Reference Manual
- MULTOS File Interface Formats
- MULTOS Implementation Report
- MULTOS Standard C API
- MULTOS SmartDeck Manual

- How to Enable live MULTOS cards
- How to Build Applications that communicate with each other using Delegation
- How to use Shell Applications to meet non-standard requirements

#### **Other**

- Application Development Cards & Load & Delete certificates
- Technical Support via e-mail ([dev.support@multos.com](mailto:dev.support@multos.com))

#### **Free MULTOS Developer on-line Training**

MAOSCO Ltd. also offer free MULTOS developer on-line training in 6 different languages. To take advantage of the on-line training, please visit:

<http://training.multos.com/MultosLogin/>

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StepNexus Ltd.

STEP NEXUS



## Application Developer Cards

StepNexus Ltd. provides a range of special cards for use by application developers and other organisations wishing to develop applications, systems and other products and services that incorporate MULTOS smart cards.

Developer cards differ from “live” MULTOS cards:

- The Application Load Certificates and Application Delete Certificates used to provide control of loading and deleting applications are different.
- Card applications may be freely loaded and deleted from these cards using Developer ALC's & ADC's.
- It is possible to change the application and reload to the card using the same Application Load Certificate providing that sufficient space is allocated by the ALC being used and there is space on the card.

Developer Cards are the same as live cards in the following respects:

- The operating system on Development cards is the same as live cards so applications run the same.
- The load and delete process is the same.
- An Application Load Unit (ALU) and an Application Load Certificate (ALC) is needed for loading applications

There are two main types of card – Strong & Weak:

- Strong Cryptography - These cards will accept keys supplied by the application and perform cryptography using those keys. These cards ARE subject to export control to certain countries. See the One Stop Shop for more details.
- Weak Cryptography – These cards will NOT accept keys supplied by the application and will either substitute the key with a standard key or abnormally end the applications execution. The standard keys are published and hence the cards are deemed “weak”. These cards ARE NOT subject to export control. However, an End User Undertaking Form must be completed with each order.

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