Mali GPU User Interface Engine Release Note

Media Processing Division

Document Number:	PR389-PRDC-011119
Date of Issue:	1st June 2010
Product	Mali GPU User Interface Engine
Product Version	2.3.1

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Abstract

This document contains notes relating to the version 2.3.1 release of the Mali GPU User Interface Engine.

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General suggestion for additions and improvements are also welcome.

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1 PREFACE

Mali GPU User Interface Engine is a tool for developing User Interfaces that use OpenGL ES 2.0. It provides a C++ library with various modules that abstract out the OpenGL ES 2.0 API and operating systems functions relevant to users of OpenGL ES 2.0. This enables developers to create OpenGL ES 2.0 applications more easily than using just the OpenGL ES API. Currently the supported platforms are Windows XP, Red Hat Enterprise Linux 4 and ARM Embedded Linux. This ensures development of portable applications across these platforms.

This document contains general release information about the Mali GPU User Interface Engine version 2.3 and covers the following topics:

- Deliverables summary
- Known issues

1.1 Change Control

Issue	Date	Change
1.0	September 15, 2009	Release notes for EAC release of Mali GPU Demo Engine version 2.2
2.0	January 25, 2010	Release notes for EAC release of Mali GPU User Interface Engine version 2.3
3.0	June 2, 2010	Release notes for EAC release of Mali GPU User Interface Engine version 2.3.1

1.2 References

This document refers to the following documents.

Ref.	Document No.	Title
1.	PR389-PRDC-011117	Mali GPU User Interface Engine Errata
2.	DUI 0505A	Mali GPU User Interface User Guide

Table 1: Table of References

1.3 Intended Audience

This document is written for developers who wish to use the Mali GPU User Interface Engine to develop OpenGL ES 2.0 applications that are portable across desktop GPUs and Mali GPUs.

2 TERMS AND ABBREVIATIONS

The following terminology is used in this manual.

TERM	MEANING
EAC	Early Access
AEL	ARM Embedded Linux
OpenGLES 2.0	API for Embedded Graphics defined by The Khronos Group (http://khronos.org). Version 2.0.

3 PRODUCT DELIVERABLES

3.1 Files

The deliverables are individually downloadable parts which can be downloaded from http://www.malideveloper.com. The names and description of various deliverables that can be downloaded are as detailed in Table 2.

Deliverable Names	**Description**
Mali_GPU_User_Interface_Engine_Linux_2.3.1.<*build-number*>.tgz	Tar Gzipped package for Mali GPU User Interface Engine for Linux
Mali_GPU_User_Interface_Engine_Win32_2.3.1.<*build-number*>.msi	Windows Installer for Mali GPU User Interface Engine
Mali_GPU_User_Interface_Engine_User_Guide.pdf	User guide for Mali GPU User Interface Engine
Mali_GPU_User_Interface_Engine_Release_Note.pdf	This document
Mali_GPU_User_Interface_Engine_Errata.pdf	Errata for the Mali GPU User Interface Engine

Table 2: List of Parts in the Deliverable

In the table <build-number> is a number that is assigned when the packages are built, and ensures that the build of the package can be uniquely identified.

4 DOCUMENTATION

Documents are supplied as “Adobe PDF” (Portable Document Format) files. These files are readable on most common computer platforms and operating systems using an appropriate file reader. A suitable file reader can be downloaded from the Adobe site at http://www.adobe.com/. Select “Acrobat” and download the reader for your computer platform/operating system.

The Red Hat Linux system contains an inbuilt PDF reader which can be used to open the PDF files. Go to Applications > Graphics > PDF Viewer or type ‘gpdf’ on a Linux terminal to open the viewer.

4.1 Mali GPU User Interface Engine Release Note

This document contains general release information about the Mali GPU User Interace Engine v2.3 product.

4.2 Mali GPU User Interface Engine Errata document

The errata document describes the errata discovered in the Mali GPU User Interface Engine Tool, categorised by level of severity. Each description includes:

- where the implementation deviates from the specification
- the conditions under which erroneous behavior occurs
- the implications of the erratum with respect to typical applications
- the application and limitations of a ‘work-around’ where possible

4.3 Mali GPU User Interface Engine User Guide

This document provides information on how to use the Mali GPU User Interface Engine product.

5 REQUIRED PLATFORM

The Mali GPU User Interface Engine has been tested on the platforms listed below. ARM Limited recommends the use of Mali GPU User Interface Engine on these platforms.

System	Graphics Hardware	OS	Graphics Driver Version	
PC	ATI Mobility FireGL V5700	Microsoft Windows XP SP3	8.633.0.0	Using ARM's **OpenGL ES 2.0 Emulator v1.2 Beta**
PC	NVIDIA Quadro FX570M	Microsoft Windows XP SP3	6.14.11.9562	Using ARM's **OpenGL ES 2.0 Emulator v1.2 Beta**
PC	ATI Radion HD 2600 Pro	Linux Ubuntu 10.04	8.723-100406a-099494c-ATI	Using ARM's **OpenGL ES 2.0 Emulator v1.2 Beta**
PC	NVIDIA GeForce 9500 GT	Linux Ubuntu 10.04	195.36.15	Using ARM's **OpenGL ES 2.0 Emulator v1.2 Beta**
Telechips TCC8900 development platform	Mali 200	Arm Embedded Linux 2.6.28	r2p0	
ARM RealView PB11MPCore baseboard with M200 Testchip daughterboard	Mali 200 Testchip (Mali 200 r0p1)	Arm Embedded Linux 2.6.28.10-arm2	r1p1-05rel0	
ARM RealView PB11MPCore baseboard with LT-XC5VLX330 Logic Tile	Mali 200 FPGA image (Mali 200 r0p5)	Arm Embedded Linux 2.6.28.10-arm2	r1p1-05rel0	
ARM RealView PB11MPCore baseboard with LT-XC5VLX330 Logic Tile	Mali 400 FPGA image (Mali 400 r1p0)	Arm Embedded Linux 2.6.28.10-arm2	r1p1-05rel0	

6 INSTALLATION

6.1 Installation Procedure

For a description on how to install the Mali GPU Engine, see the Mali GPU User Interface Engine User Guide section 2.2 for Windows and section 2.3 for Linux platforms.

7 BUILDING

For a description on how to build the Mali GPU User Interface Engine library and its examples, see the Mali GPU User Interface Engine User Guide, Section 3.1 for windows and section 3.3 and 3.5 for Linux builds.

Note that the build system for these components differ on Windows and Linux. On Windows the build system is a MS Visual Studio 2005 solution which links to a series of Visual Studio projects. See section 3.1 of the Mali GPU User Interface Engine User Guide for details.

On Linux the build system is a GNU Makefile in the bundle and a set of sub-Makefiles, one for each folder in the directory tree that the top level Makefile includes. The top level Makefile provides a set of targets, allowing you to build various parts of the user interface engine and its examples. See section 3.3 and 3.5 of the Mali GPU User Interface Engine User Guide for details.

8 DIFFERENCES FROM PREVIOUS RELEASES

8.1 Notable changes from Mali GPU Demo Engine v2.3

Change	Description
Addition of bounding box support	The function MDE::GeometryAsset::GetBoundingBox() has been added to the Geometry Asset interface. This returns a bounding box for the geometry asset, for use in culling algorithms or similar.

In addition this release fixes a number of bugs that existed in previous releases, and it has been tested in a wider range of platforms.

8.2 Notable changes from Mali GPU Demo Engine v2.2

Change	Description
Name changed	The name has been changed to Mali GPU User Interface Engine to better reflect the functionality provided by the tool
Support of event driven mouse handling	The engine now supports event driven mouse handling using the observer pattern, in addition to polling the state of the mouse.
LotionUI example application added	This example demonstrates how to use the engine to write a configurable, portable user interface. It replaces GUIDemo.

9 KNOWN ISSUES AND LIMITATIONS

Issues related to this release are documented in the Mali GPU User Interface Engine Errata document. In addition, due to hardware limitations, some of the test platforms will not run some of the User Interface Engine examples:

- The Telechips TC8900 development board has insufficient graphics memory to run the `slideshow` applet of Lotion UI. On this board start the lotion UI with the `-applets` option to select the set of applets to be run.
- When using the Mali200 test chip the shaders for `Test 10_advanced_mba_scene_rendering`, `lightshow` and lotion UI's `lightshow` applet do not compile due to a known hardware limitation in Mali200 r0p1. This issue has been resolved in later revisions of Mali 200.
- On ARM Embedded Linux the UI Engine uses the Linux input event interface for mouse and touchpad input. This is an optional feature in some versions of Linux. When building Linux for use with the UI Engine include the input event driver in the build, and create an input event device file for each physical input device (mouse, keyboard, touchpad etc.).
    - Input event device files may be created in Linux using the command

      ```
      mknod /dev/input/event<n> c 13 <m>
      ```

      where <n> is in the range 0 to 63, and <m> = <n>+64.

Please contact malidevelopers@arm.com regarding any issues with the installation and content of this release.