



Qt FlashTool Promotion and User Guide



8/19/2013

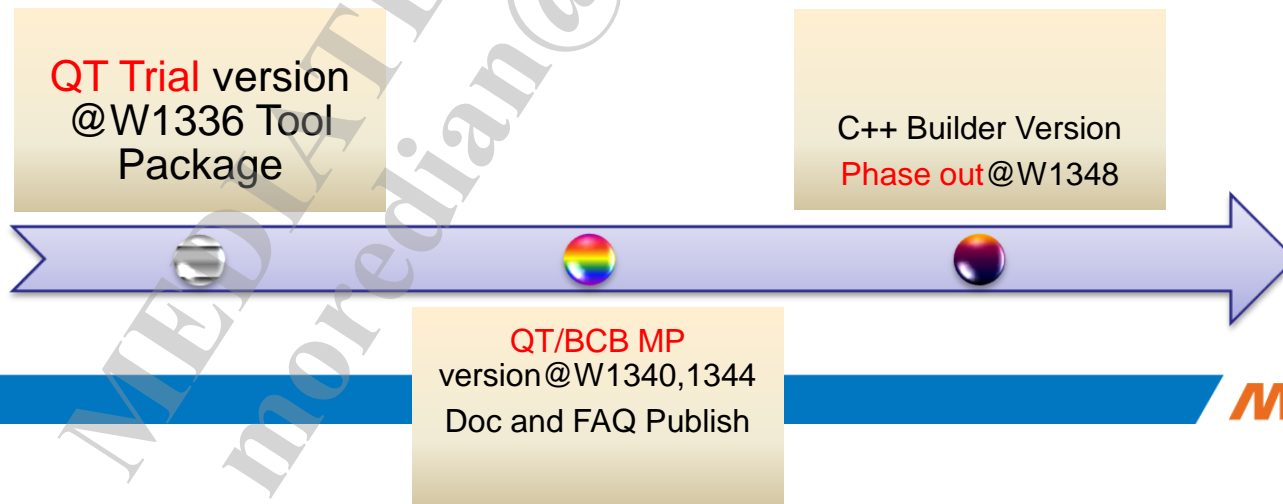
- **Background and Schedule**
- **BCB vs Qt Flashtool Architecture**
 - Flashtool Architecture View
 - Brief Architecture
- **Installation of Qt Flash Tool**
 - Installation on Windows
 - Installation on Linux
- **Qt Flash Tool Usage**
 - Download
 - Firmware Upgrade
 - Readback
 - Format
 - Memory Test
 - Menu Item
- **FAQ**

Background and Schedule

■ QT FlashTool Promotion Background















- Why change build environment from C++ Builder to QT SDK?
 - C++ Builder 6.0 License can't be purchased and supported
 - Android Images are expected to be download with Ubuntu workstation.
 - QT FlashTool support both Linux and Windows
 - Windows: QT SDK + VC2008 Express are free of charge
 - Support Easy and Advanced debugging toolkit (Exception Analysis)

■ QT Version Schedule



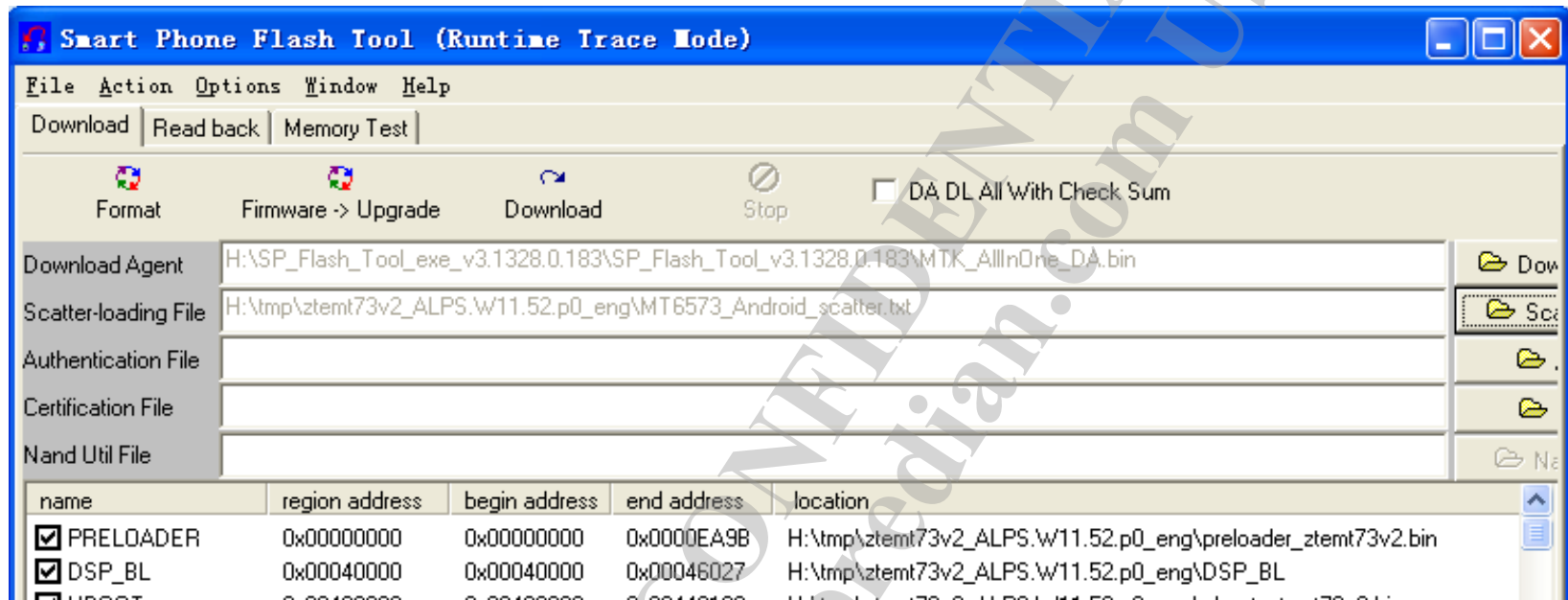
C++ Builder vs Qt Tool Feature Diff

- C++ Builder (W1344) vs. QT (W1348)
 - Support Platform: MT6573->MT6575...->MT6592

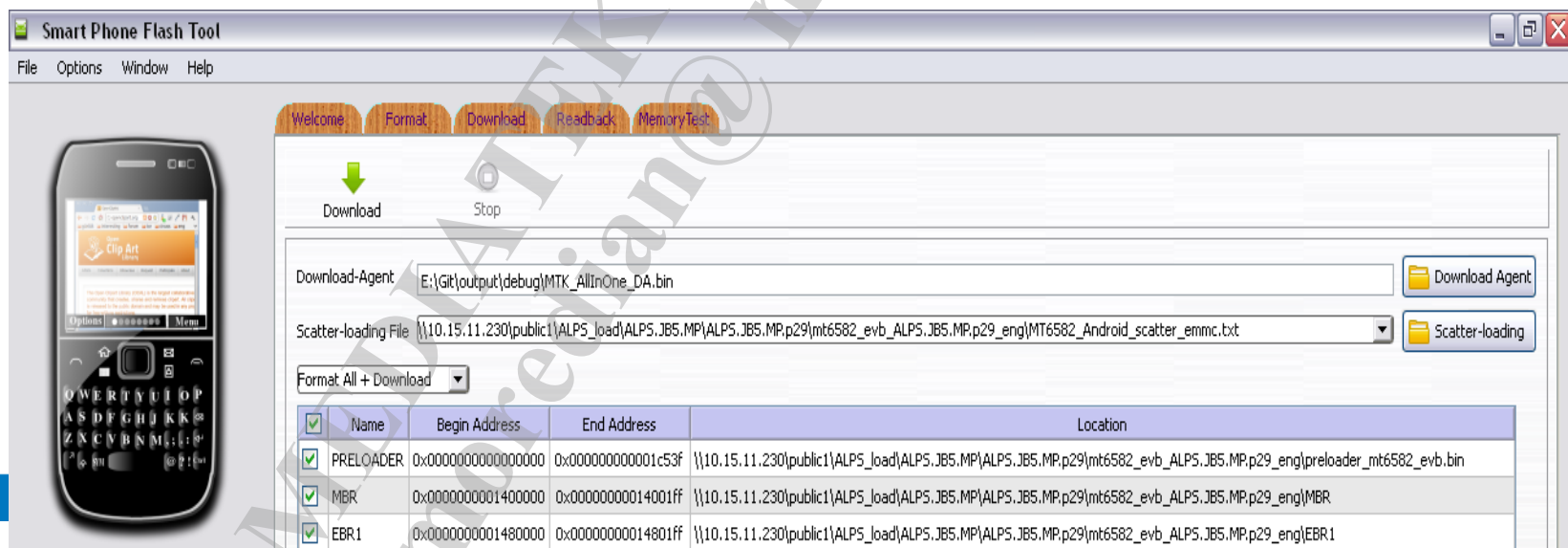
Features		BCB Version	Qt Version
GUI	Download/Format/Readback		
GUI	Memory Test/Memory Write		
DLL	FlashToolLib.dll		
DA	MTK_AllInOne_DA.bin		
GUI	BAT for ETT.bin download		
GUI	Tool help system		
GUI	Tool UI/Architecture Enhancements		

BCB Version

Internal Use

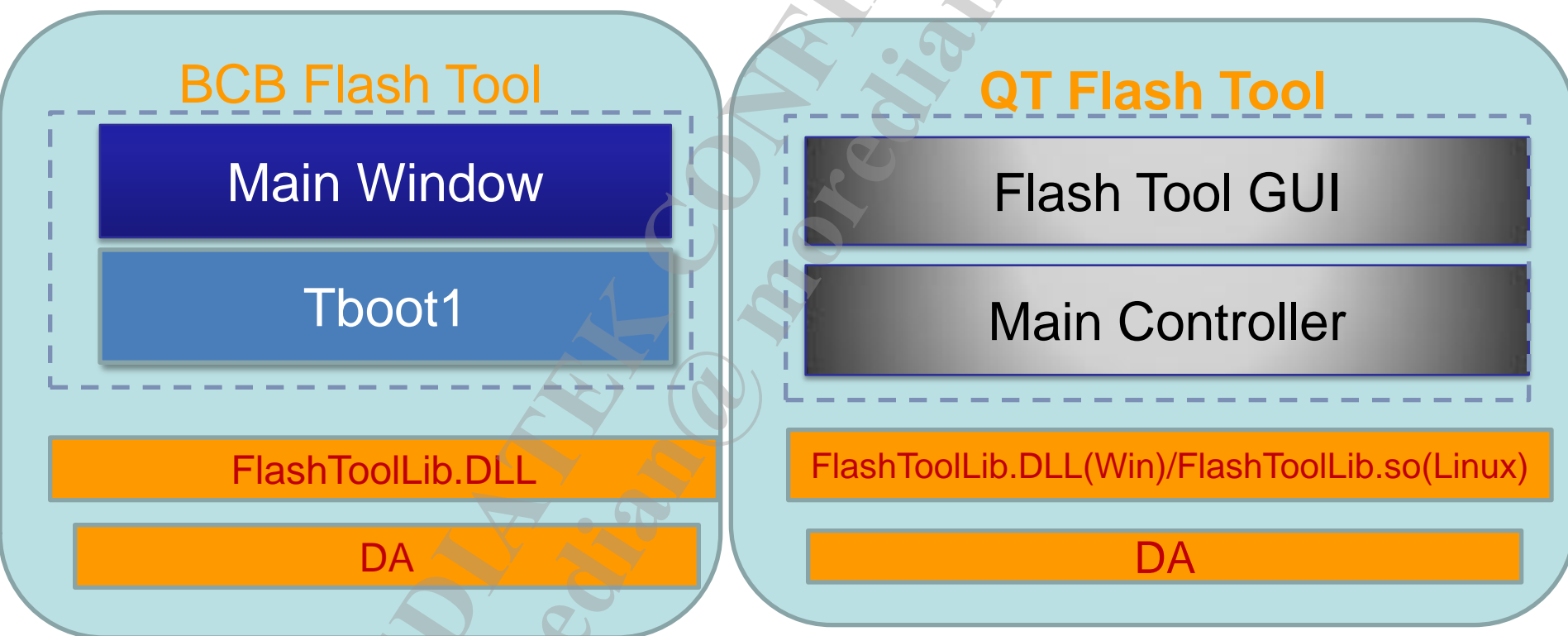


QT Version



BCB vs Qt FlashTool

- SW Architecture



QT Flash Tool Environment

■ Supported Host OS:

- Windows Version:
 - XP+SP3
 - WIN7 32bit and 64bit (Waiting for final confirmation of QC)
- Linux Version:
 - Ubuntu 10.04 (AMD64)

■ Development SDK and Compiler

- Windows Version:
 - QT SDK: 4.7.4
 - Compiler: Qt 4.7.4 for Desktop + VC2008 express + WDK

Ps: WDK and VC express are free to use;
WDK will be removed in the future
- Linux Version:
 - QT SDK: 4.7.3
 - GCC 4.4.3 (X86 32bit)

Custom Introduce and Support

User	Impact and Requirement	Reference
Tool User	Why we need QT FlashTool? Are there any new features and advantage?	QT FlashTool Promotion and User Guide.ppt (released path: DCC)
	How to use QT FlashTool	
Tool Customize	How to install, build and debug with QT SDK environment?	Qt Flashtool Build and Debug.pptx (video) (released path: .pptx→DCC;video→MOL)
	How to use QT UI framework? How to trace QT FlashTool src code?	Qt SDK Getting Start.pptx (video) Qt Flashtool SW Arichetecture and Code Review.pptx(video) (released path: .pptx→DCC;video→MOL)
	How to add and custmoize a widget in QT SDK?	Qt Flashtool Customize demo.pptx(video) (released path: .pptx→DCC;video→MOL)
2 nd Dev. base on DLL	There is no change about DLL/DA.	Refer the Doc and eCourse above, if you need trace source code

Advantage of Qt Flashtool

➤ Cross Platforms: Windows & Linux

Module Name	Compiler		Description
SP Flash Tool GUI	Win Qt	VC2008	Be in charge of GUI interactive among user and FlashToolLib.dll, and flow control
	Linux	g++	
FlashToolLib.dll(lib)	Win	VC2008	Be in charge of providing basic APIs such as format, download, readback to GUI for flow controlling
	Linux	g++	
Download Agent (DA)	<ul style="list-style-type: none"> ▪ RVCT4.1 <ul style="list-style-type: none"> ✓ MT6573 DA ✓ MT6575 DA ✓ MT6577 DA ✓ MT6572 DA ✓ MT6582 DA ▪ DS-5 <ul style="list-style-type: none"> ✓ MT6589 DA 		Program, which runs on ISRAM/DRAM, interacts with FlashToolLib.dll to provide functions such as format, download, readback on target

➤ Easy for Debug

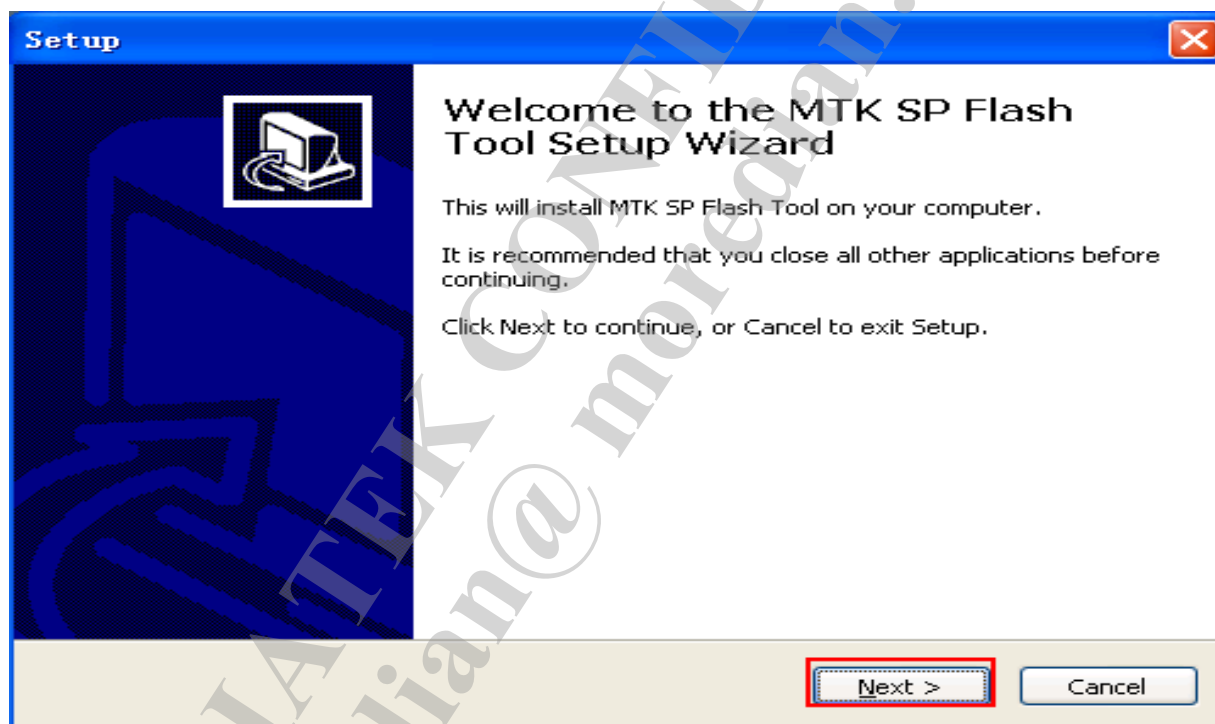
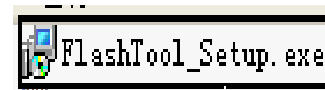
BCB(bcb flashtool) vs VS2008(qt flashtool)

➤ Enhance GUI

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 - **Memory Test**
 - **Menu Item**

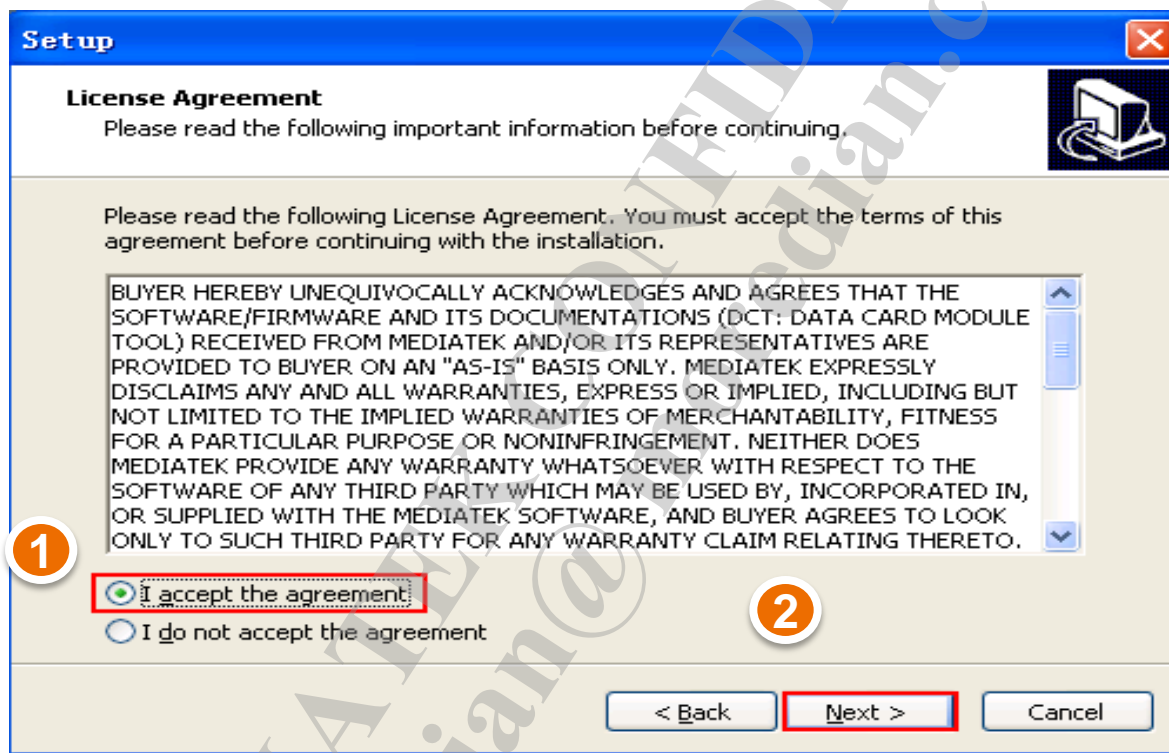
Installation on Windows

- Step1: Double Click “FlashTool_Setup.exe”
- Step2:



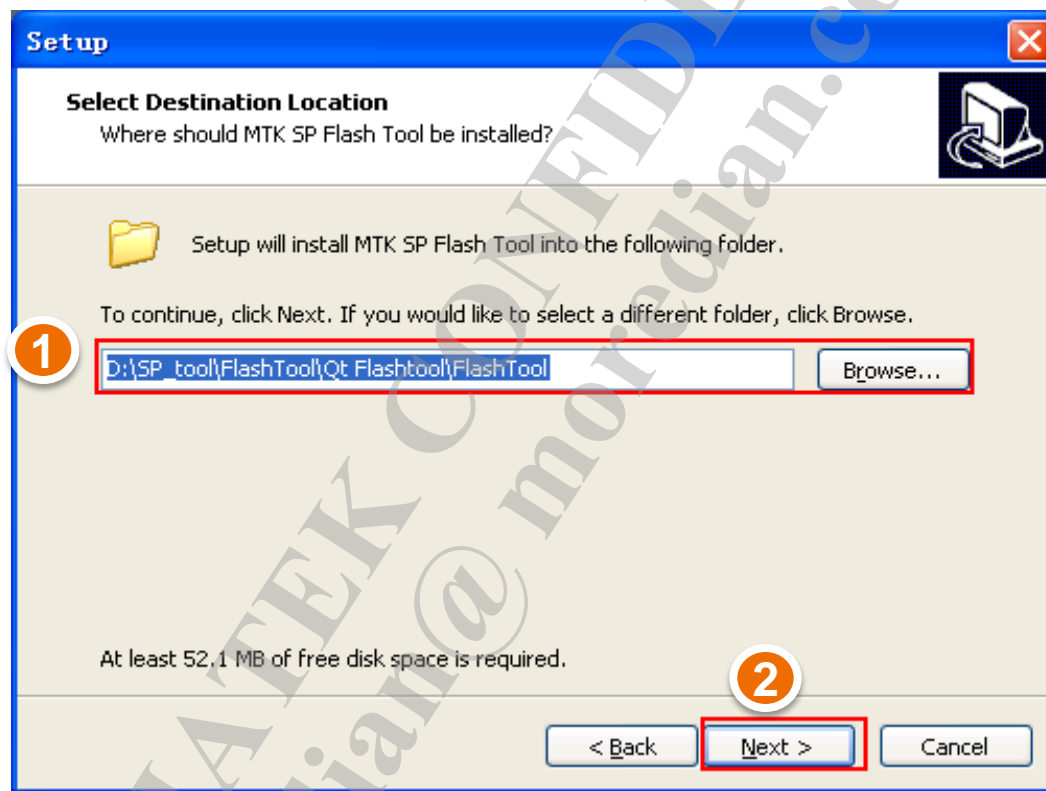
Installation on Windows

- Step3:



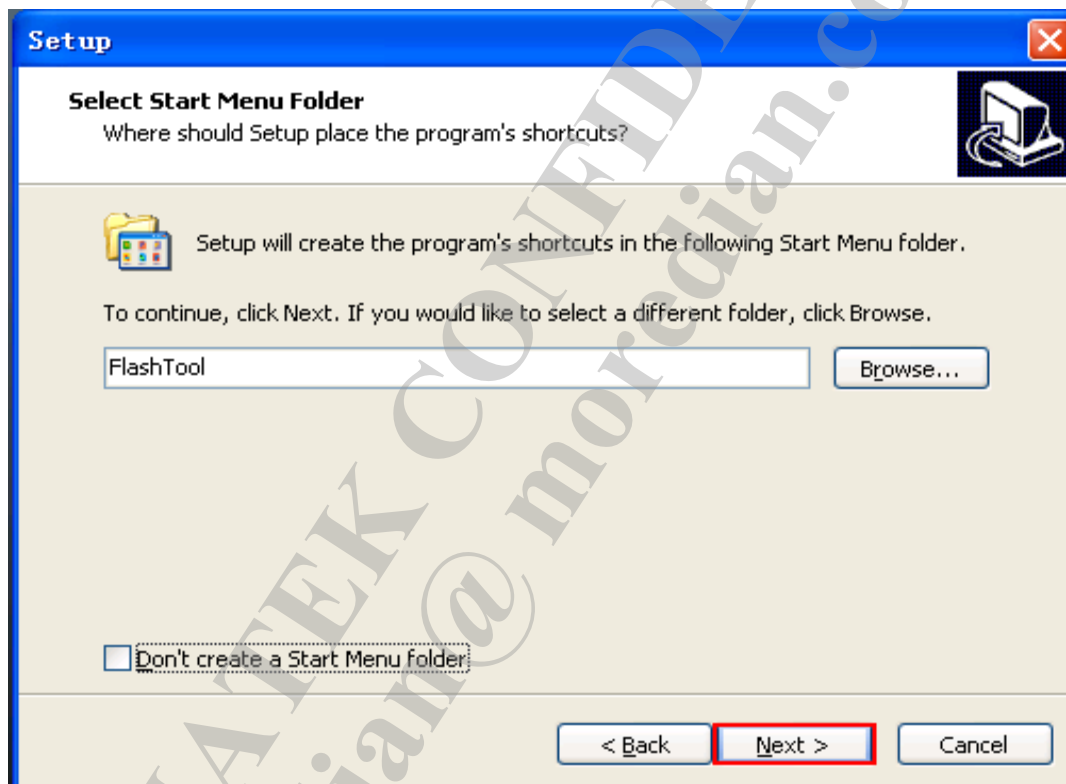
Installation on Windows

- Step4:



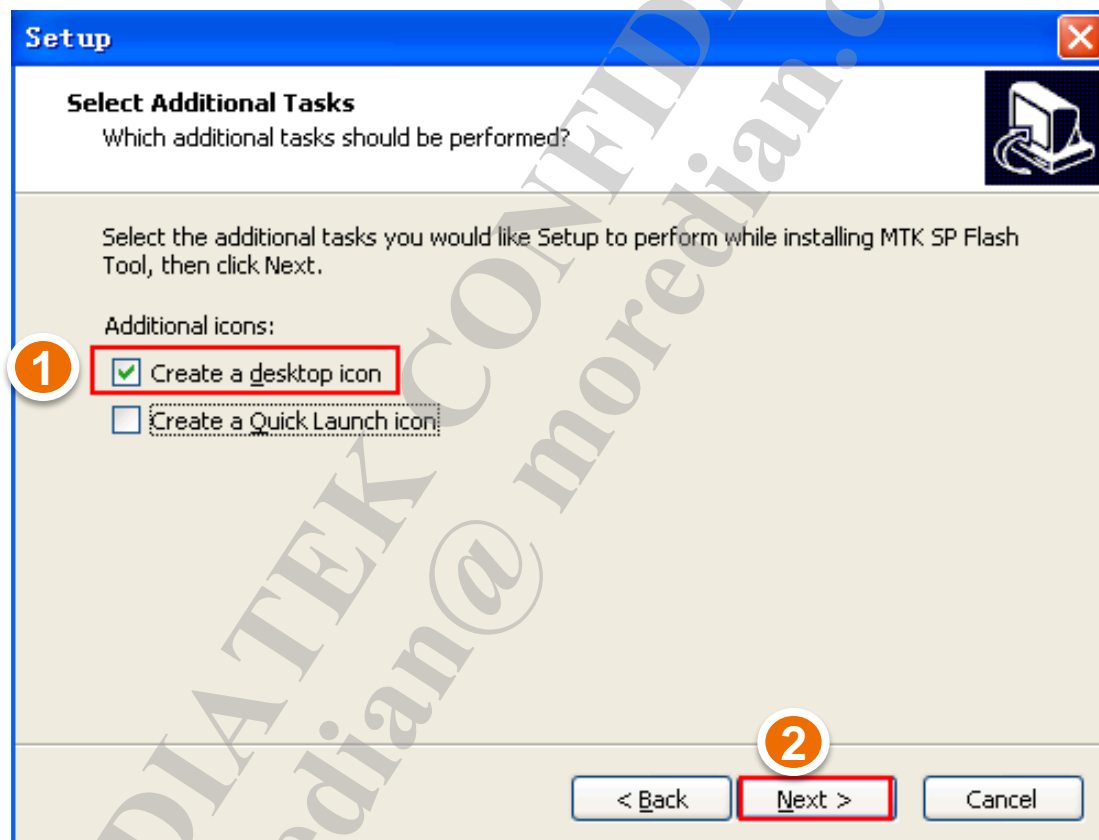
Installation on Windows

- Step5:



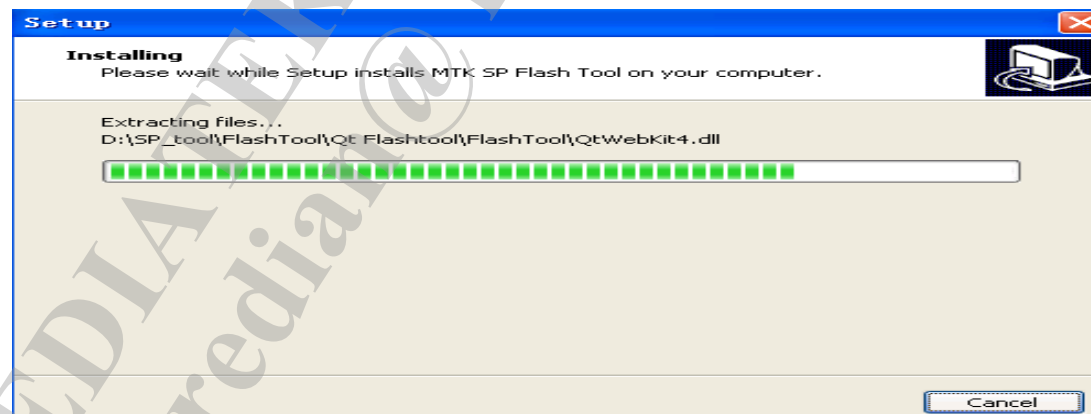
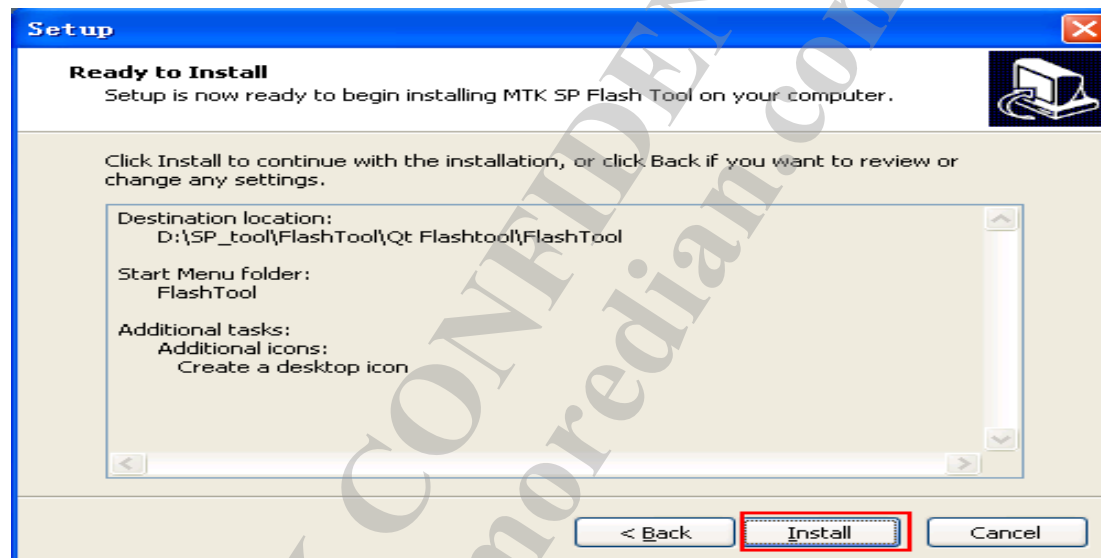
Installation on Windows

- Step6:



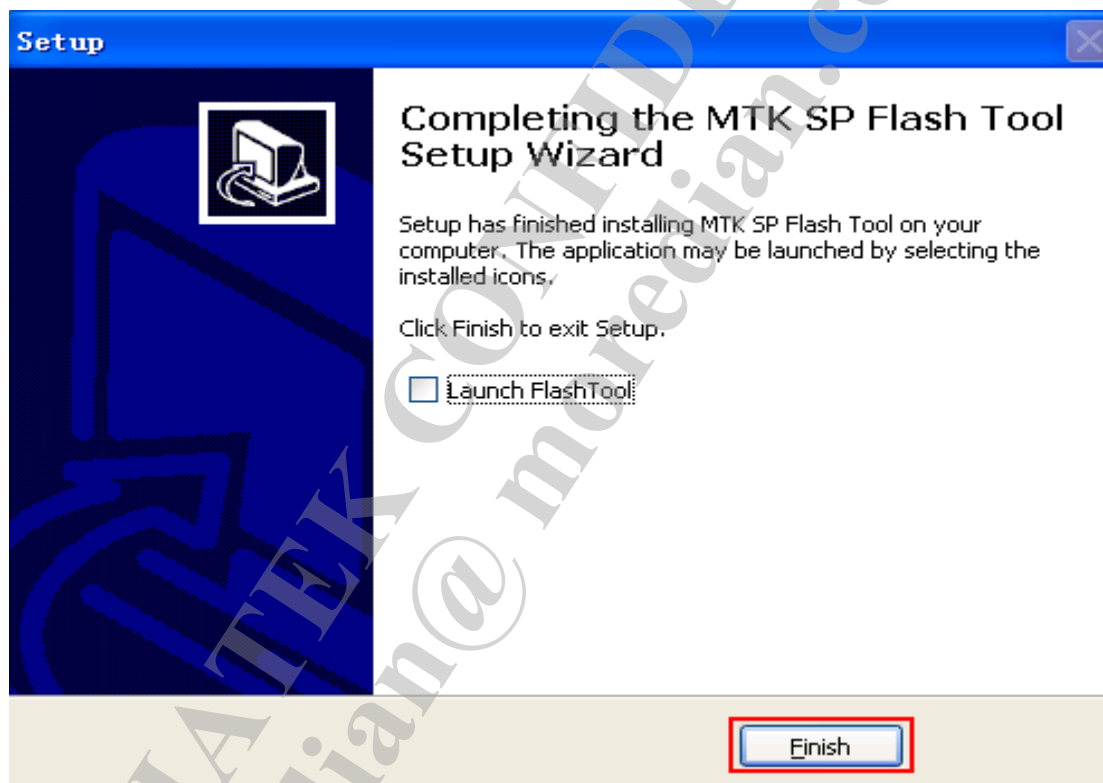
Installation on Windows

- Step7:



Installation on Windows

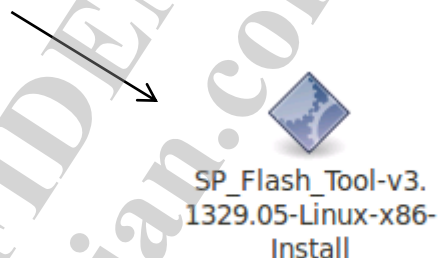
- Step8:



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Installation on Linux

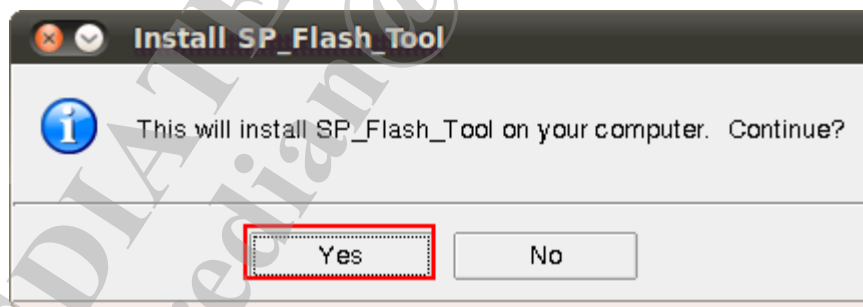
- Step1: Double Click Install File



- Step2:

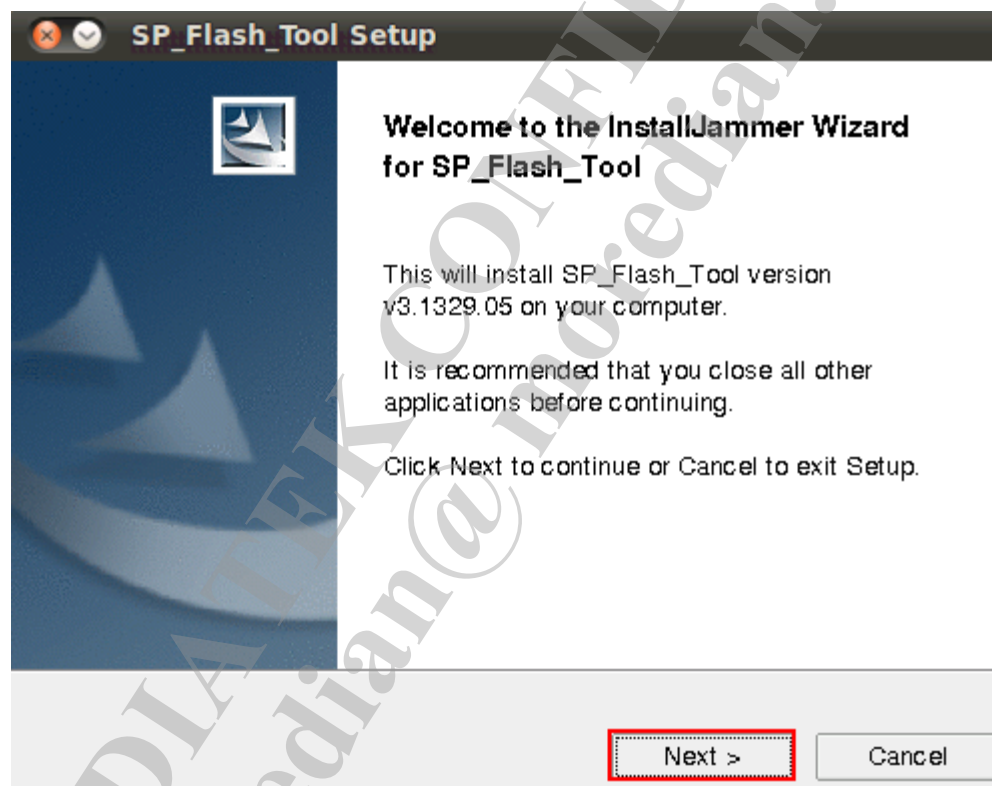


- Step3:



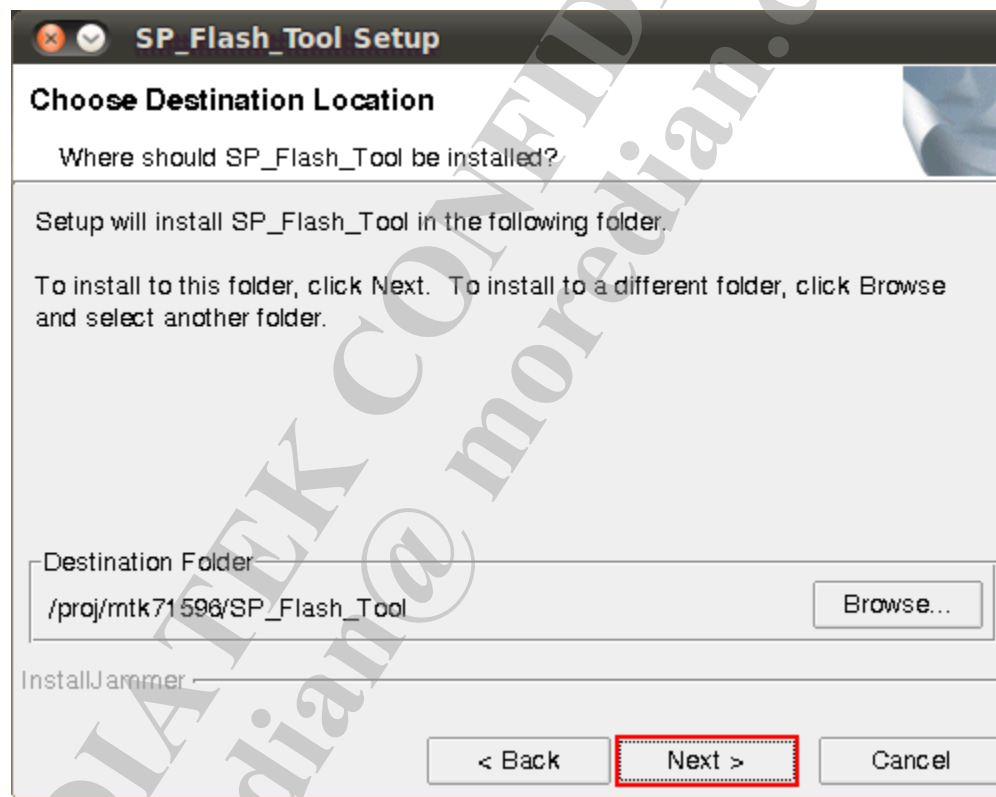
Installation on Linux

- Step4:



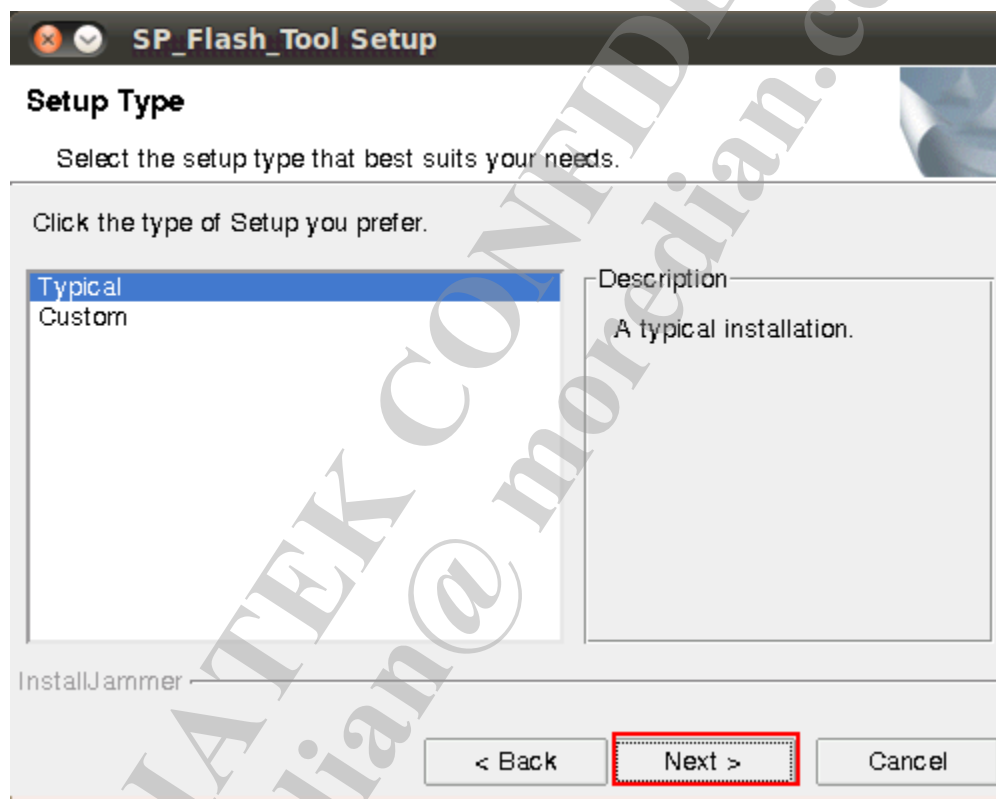
Installation on Linux

- Step5:



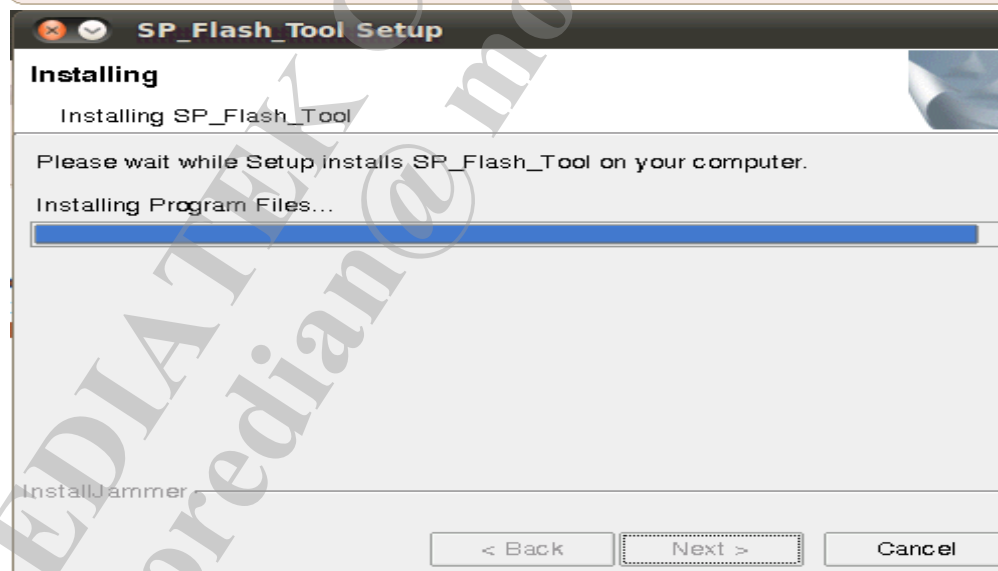
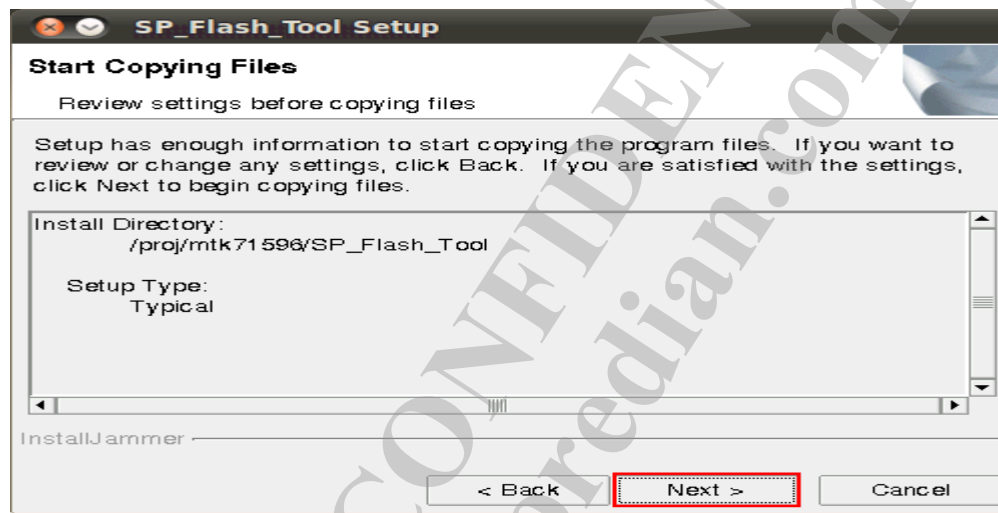
Installation on Linux

- Step6:



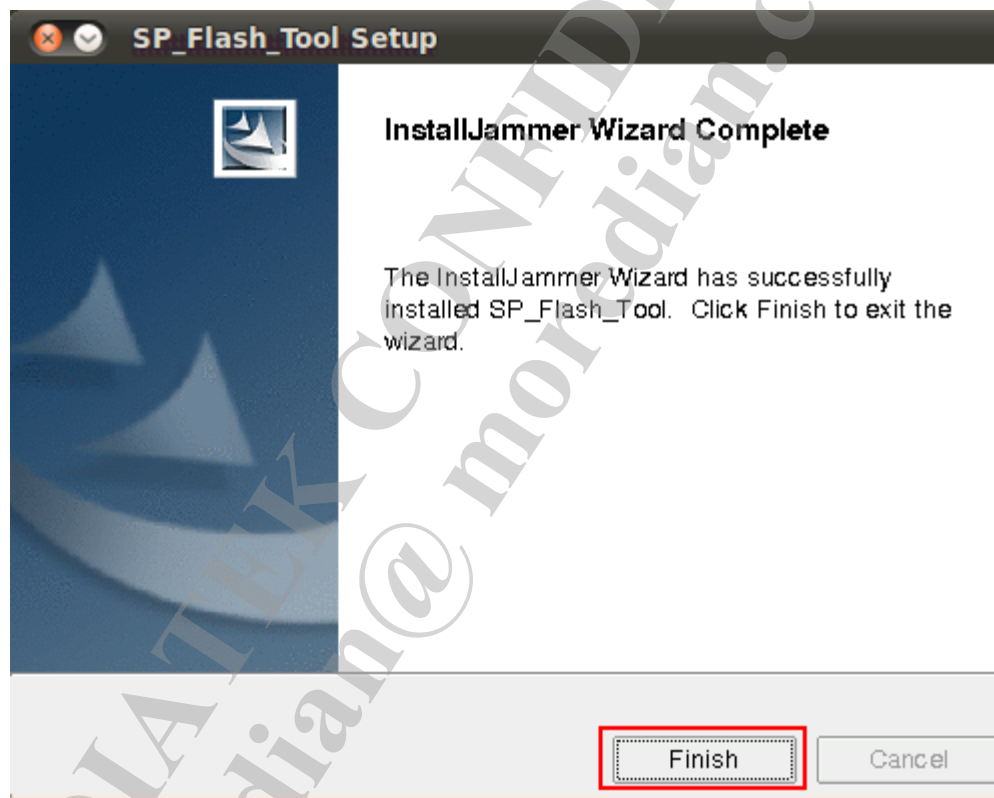
Installation on Linux

- Step7:



Installation on Linux

- Step8:



QT Flash Tool Launch

Internal Use

- FlashTool Linux version
 - Run Flash Tool .sh



flash_tool.sh

File Options Window Help

Welcome Format Download Readback MemoryTest

Download Stop

Download-Agent 1502/Tool/QT_FlashTool/1.1321.03/FlashTool1.1321.03/MTK_AllInOne_DA.bin Download A

Scatter-loading File /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDFD.MP.V1.43/z Scatter-loa

MOTA SIU Like

MOTA SIU Like

Format All + Download

Firmware Upgrade

Download Only

	Address	End Address	Location
	000000	0x0000e817	/release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
	DSP_BL	0x000040000	0x000046027 /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
	UBOOT	0x000420000	0x0004492ab /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
×	BOOTIMG	0x000480000	0x000744fff /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
×	RECOVERY	0x000a80000	0x000dca7ff /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
	SEC_RO	0x01080000	0x0108293f /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
	LOGO	0x01200000	0x012283ef /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
×	ANDROID	0x015a0000	0x0dc048bf /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF
	USRDATA	0x150a0000	0x15331eff /release/public3/ALPS_load/ALPS.GB.TDFD_MP/ALPS.GB.TDF

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Qt flashtool UI

Internal Use

Phone Flash Tool

ptions Window Help

Format Download Readback MemoryTest

4



Download

Press "Download" button to trigger start event

Download Agent

1

Download-Agent

C:\Program Files\FlashTool\MTK_AllInOne_DA.bin



Download

Scatter-loading File

D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\MT6575_Android_scatter.txt

2

Scatter-lo

3

Format All + Download

Select Download Type

Scatter F

<input checked="" type="checkbox"/>	Name	Begin Addr	End Address	Location
<input checked="" type="checkbox"/>	PRELOADER	0x00000000	0x000012753	D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\preloader_eagle75v1_2.bin
<input checked="" type="checkbox"/>	DSP_BL	0x00040000		D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\DSP_BL
<input checked="" type="checkbox"/>	UBOOT	0x00420000		D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\uboot_eagle75v1_2.bin
<input checked="" type="checkbox"/>	BOOTIMG	0x00480000		D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\boot.img
<input checked="" type="checkbox"/>	RECOVERY	0x00980000	0x00d2dfff	D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\recovery.img
<input checked="" type="checkbox"/>	SEC_RO	0x00e80000	0x00e8293f	D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\secro.img
<input checked="" type="checkbox"/>	LOGO	0x01000000	0x0102117f	D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\logo.bin
<input checked="" type="checkbox"/>	ANDROID	0x013a0000	0x0da0383f	D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\system.img
<input checked="" type="checkbox"/>	USRDATA	0x149a0000	0x14c18abf	D:\bin\ eagle75\ eagle75v1_2_ALPS.GB2.FDD.p90_eng_youlan\userdata.img

Qt Flashtool Feature - Download

Internal Use

– Download Type

– MOTA SIU Like

- Only 3 image be download:
 - **BOOTIMG, RECOVERY, ANDROID**
- For OTA RD debugging

– Format All + Download

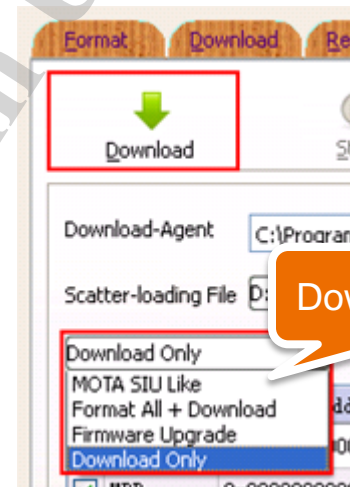
- Format whole flash-> Download all images
- **Warning:**
 - **NVRAM Bin Region will be erased**

– Firmware Upgrade

- See Next Page

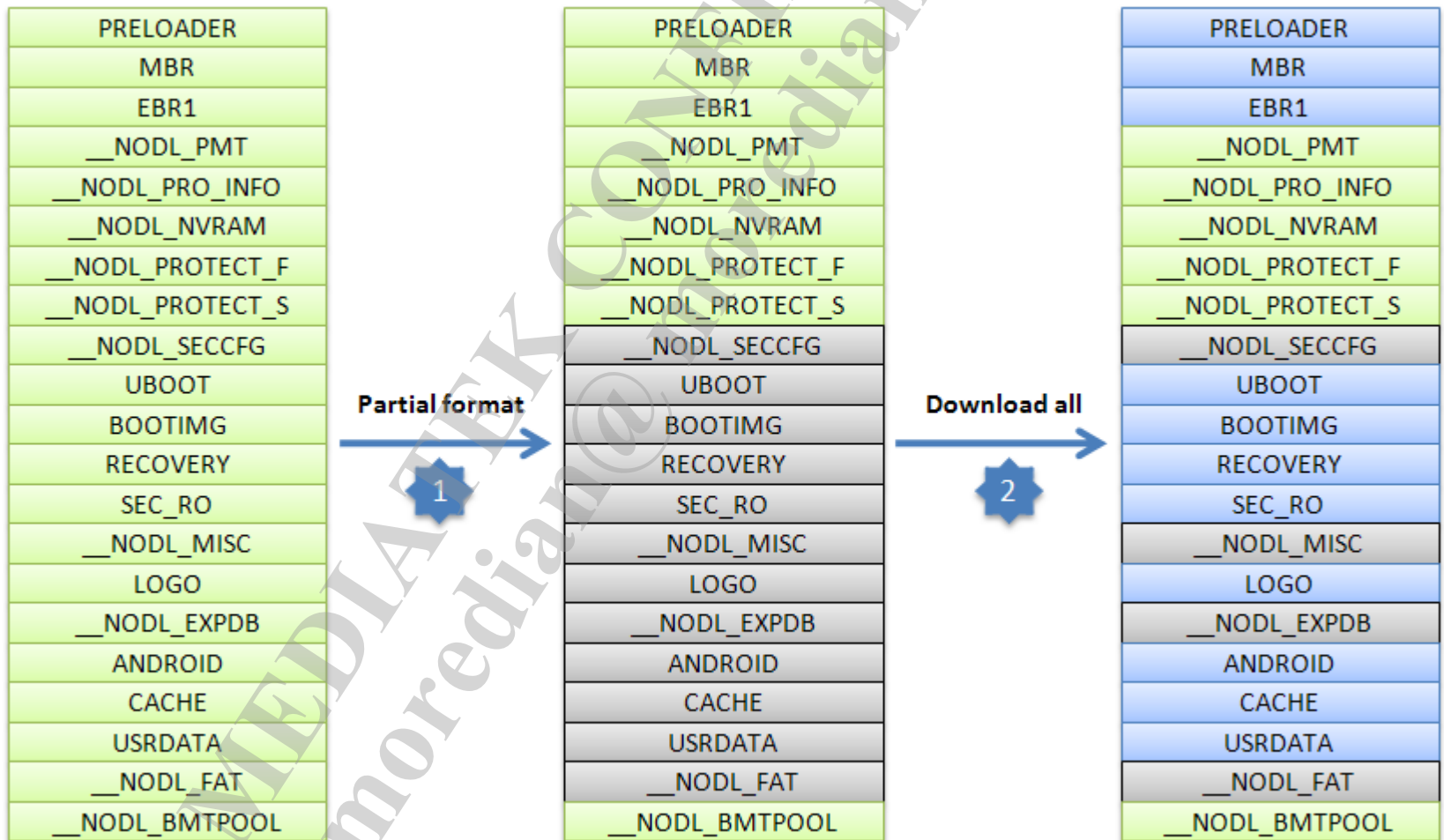
– Download Only

- Only **download partitions** are erased and updated
- **Note:**
 - **NVRAM and No Download Partition data will be keep.**
 - **Partition Layout shouldn't be changed before and after download**



Qt Flashtool Feature - Download

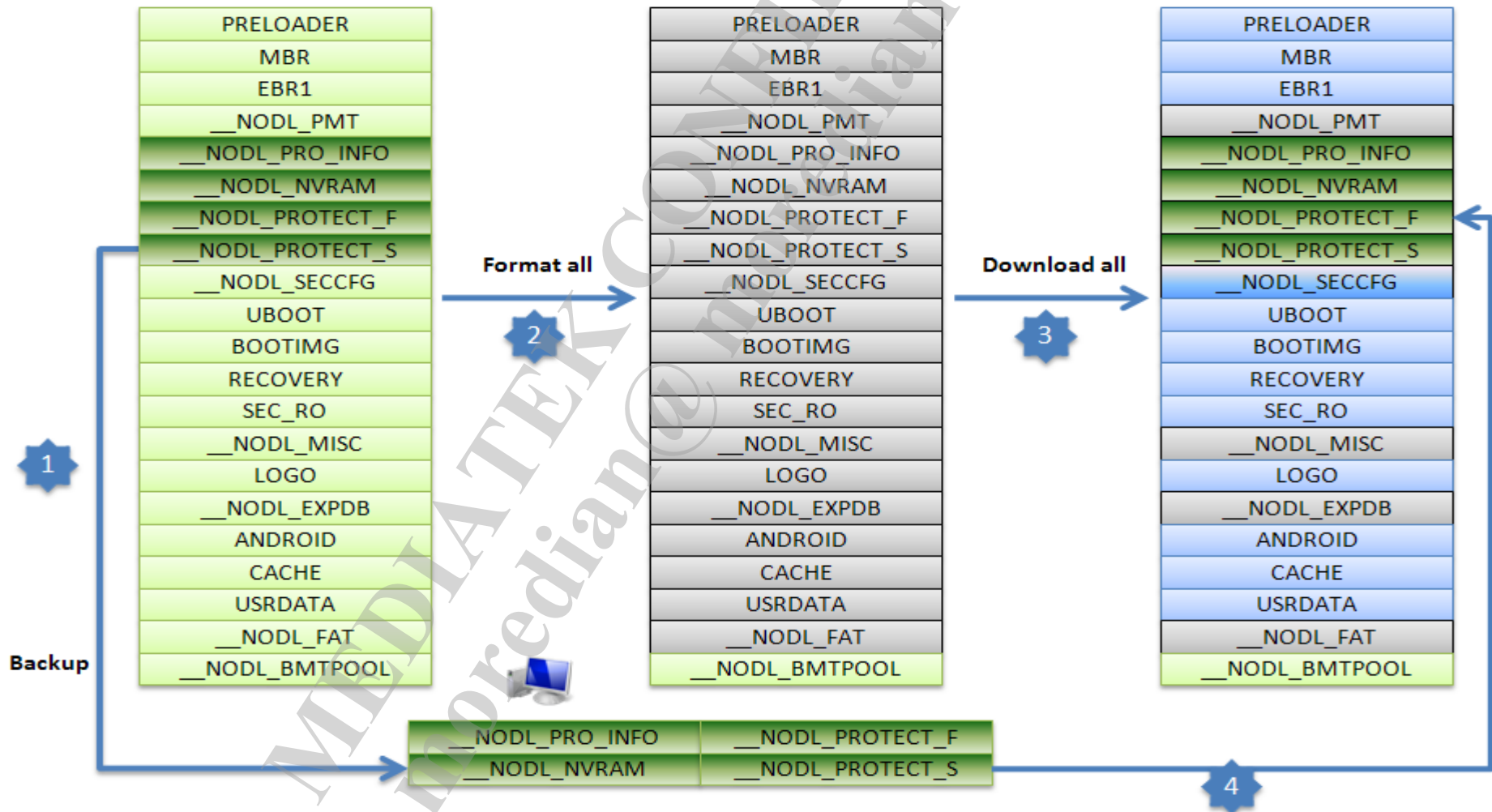
- **Firmware Upgrade Flow**
 - Partitions **not changed**: Partial Erase->DL
 - Partitions **changed**: Backup->Format->DL->Restore



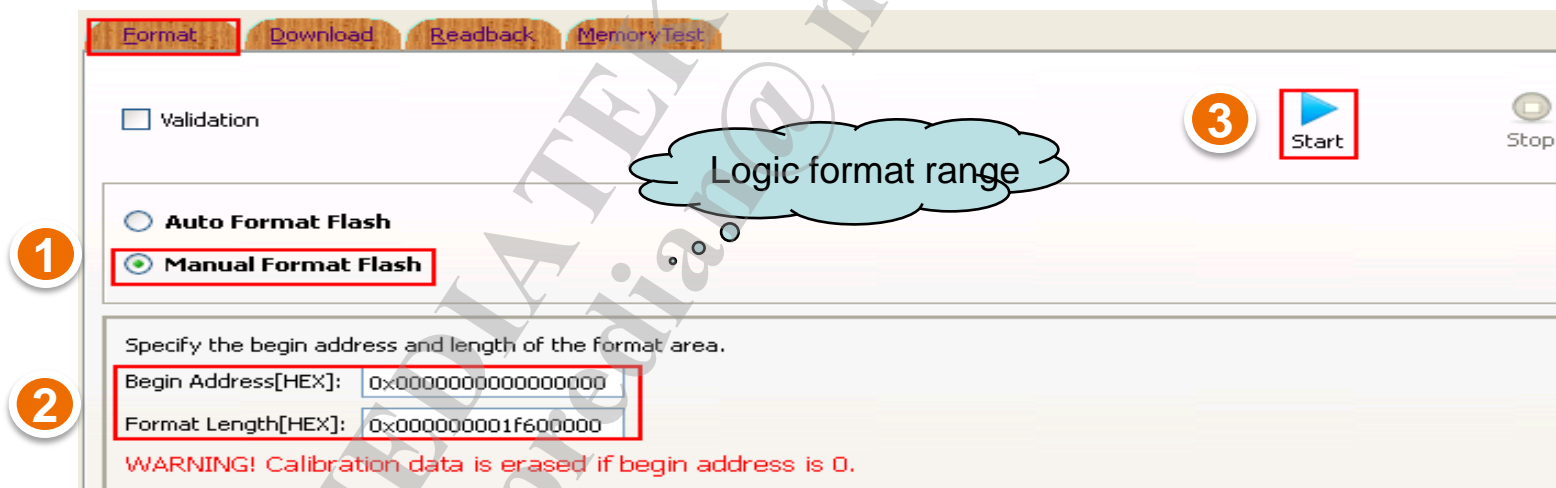
Qt Flashtool Feature - Download

■ Firmware Upgrade Flow

- Partitions **not changed**: Partial Erase->DL
- Partitions **changed**: Backup->Format->DL->Restore

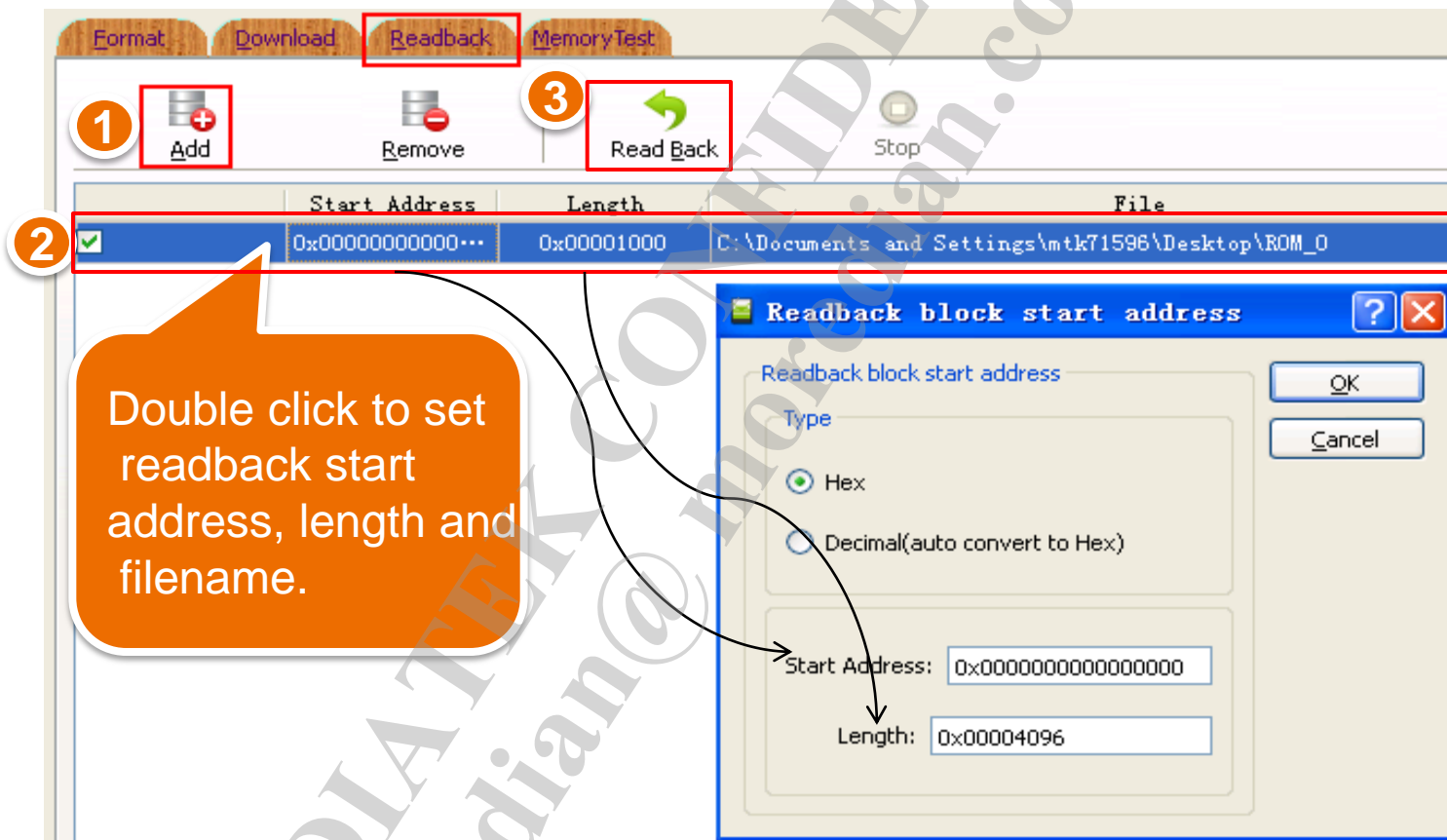


- Format :Erase Flash



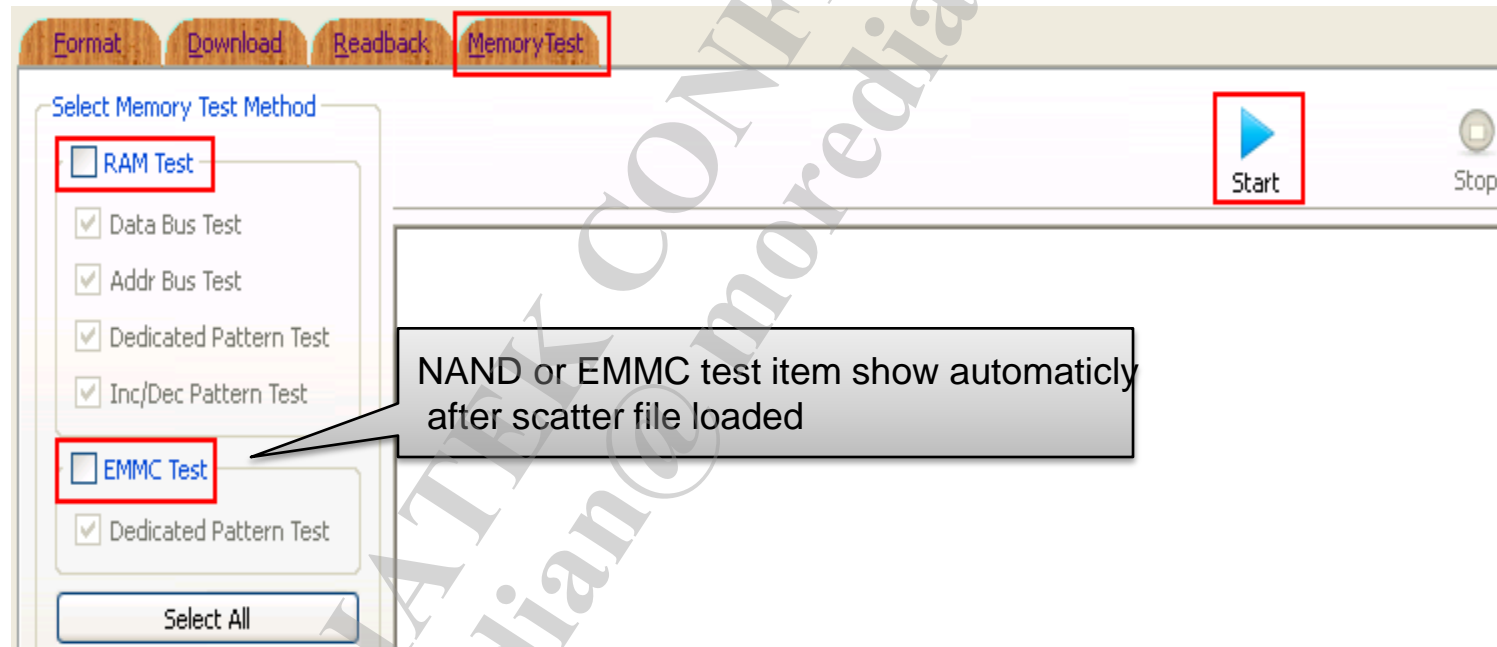
Qt Flashtool Feature - Readback

- Readback :

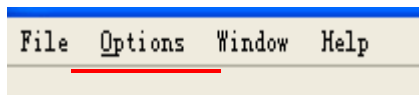


Qt Flashtool feature—Memory Test

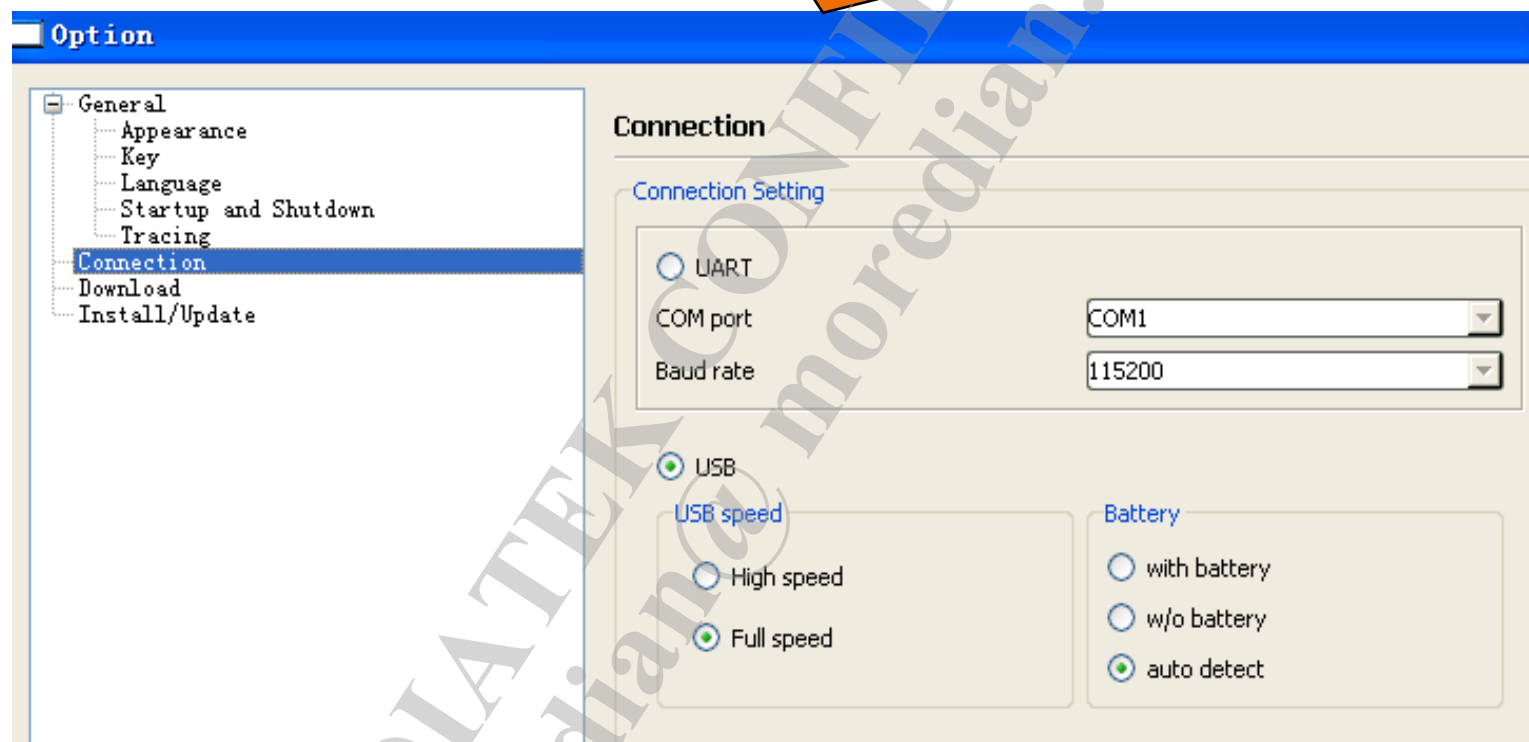
- Memory Test :
 - Basic DRAM/NAND/eMMC r/w IO Test



Menu Item - Option

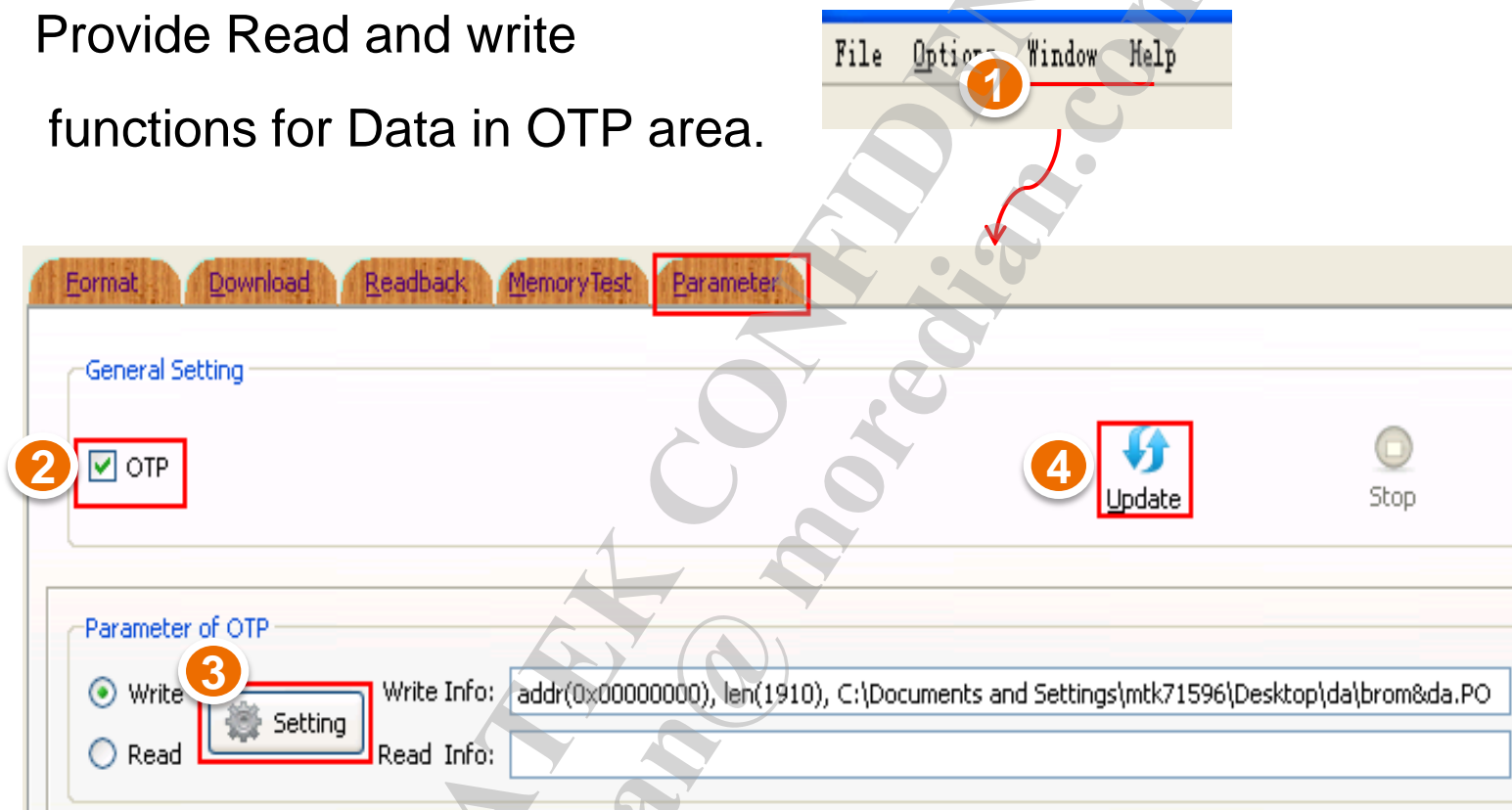


Some Setting for download
Format · readback...operate

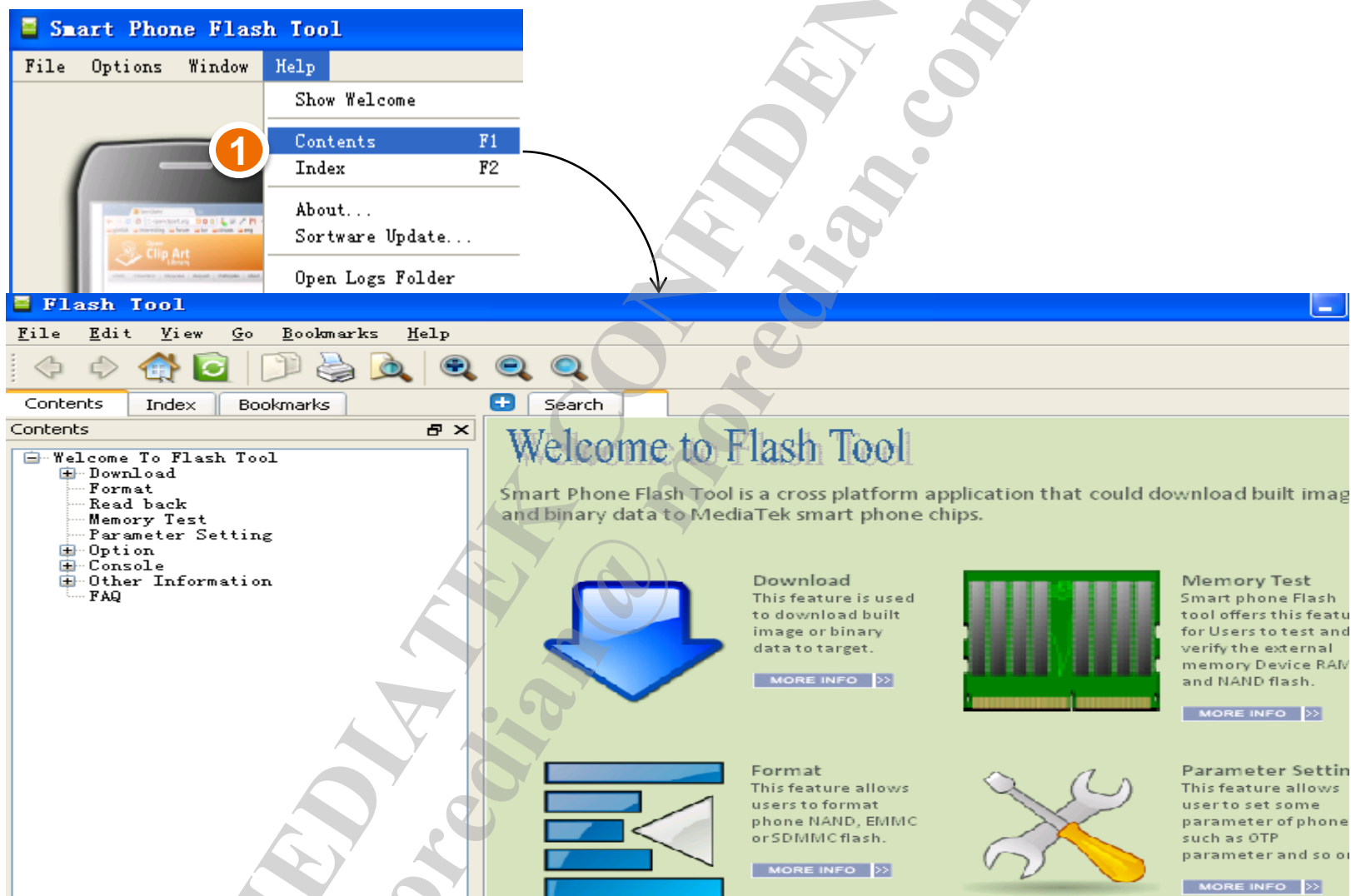


Menu Item - Window

Provide Read and write functions for Data in OTP area.

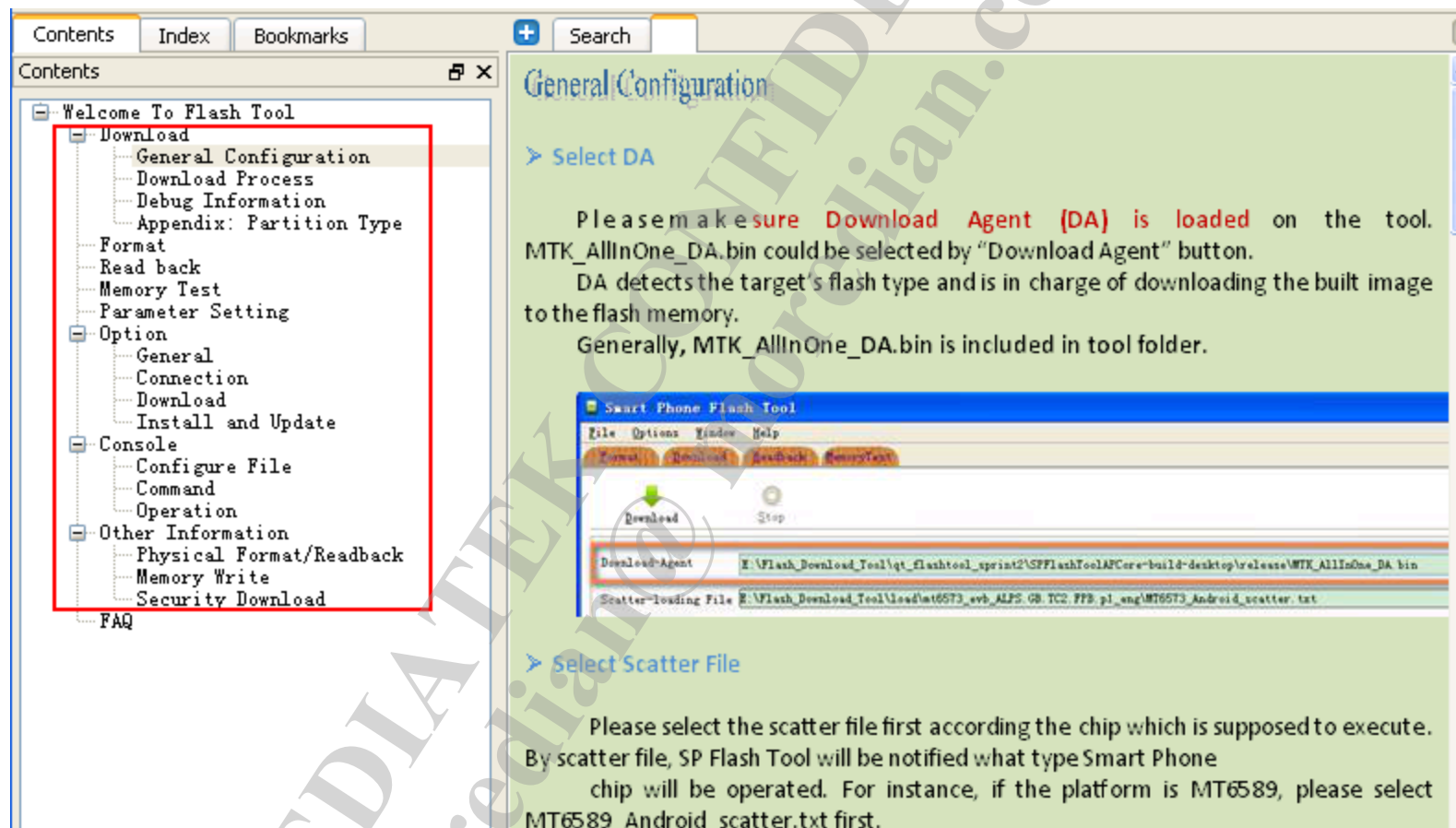


Menu Item - Help(1/3)



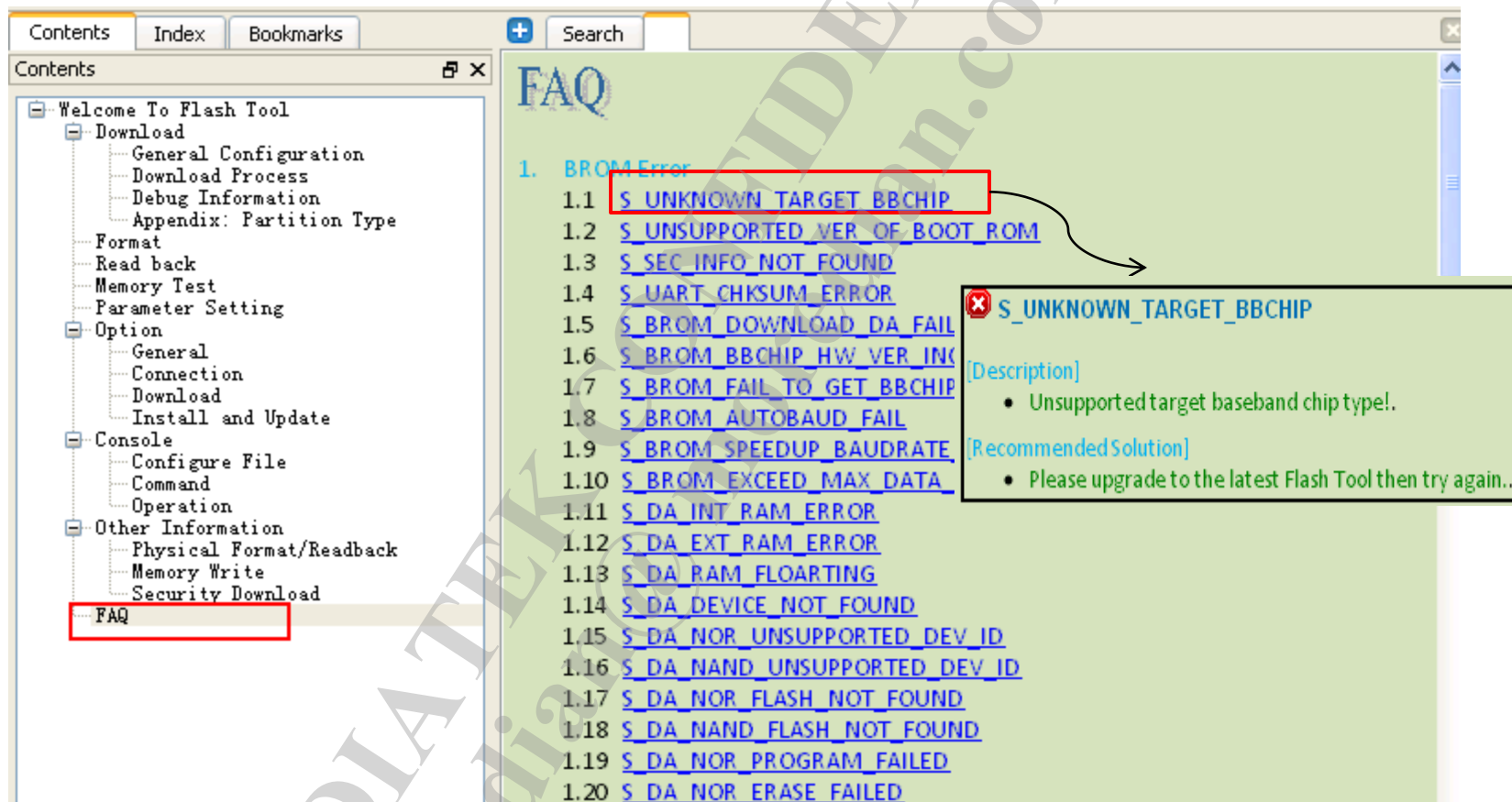
Menu Item---Help(2/3)

Description of all operating functions



Menu Item---Help(3/3)

FAQ: According to ERROR CODE ,It is useful for Preliminary analysis



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- **FAQ**

Feature Support---DA CheckSum

■ Background

- FTP channel is not stable
- Methods Memory of Industrial Machine is not stable
- Device Dram is not stable
- Device Storage(NAND/eMMC/SD...) is not stable
- Issue device mistakenly flow to next work site by human error

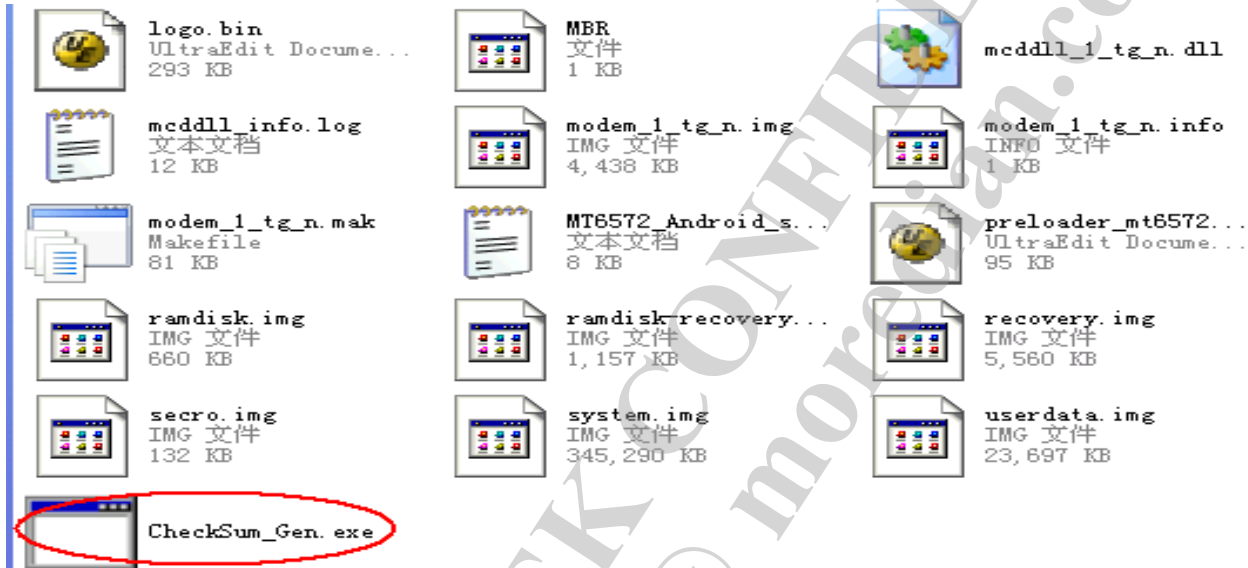
Those cases will cause image data flip/broken and write the wrong contents

■ Solution

- Add CheckSum4PCMemoryBuffer function
 - Copy CheckSum_Gen.exe to Where the Scatter file is
 - Using CheckSum_Gen.exe to generate CheckSum.ini file
 - Enable Option→Download→DA DL All with CheckSum

How to generate checksum.ini(1/2)

- Copy CheckSum_Gen.exe to image folder



- Double Click CheckSum_Gen.exe

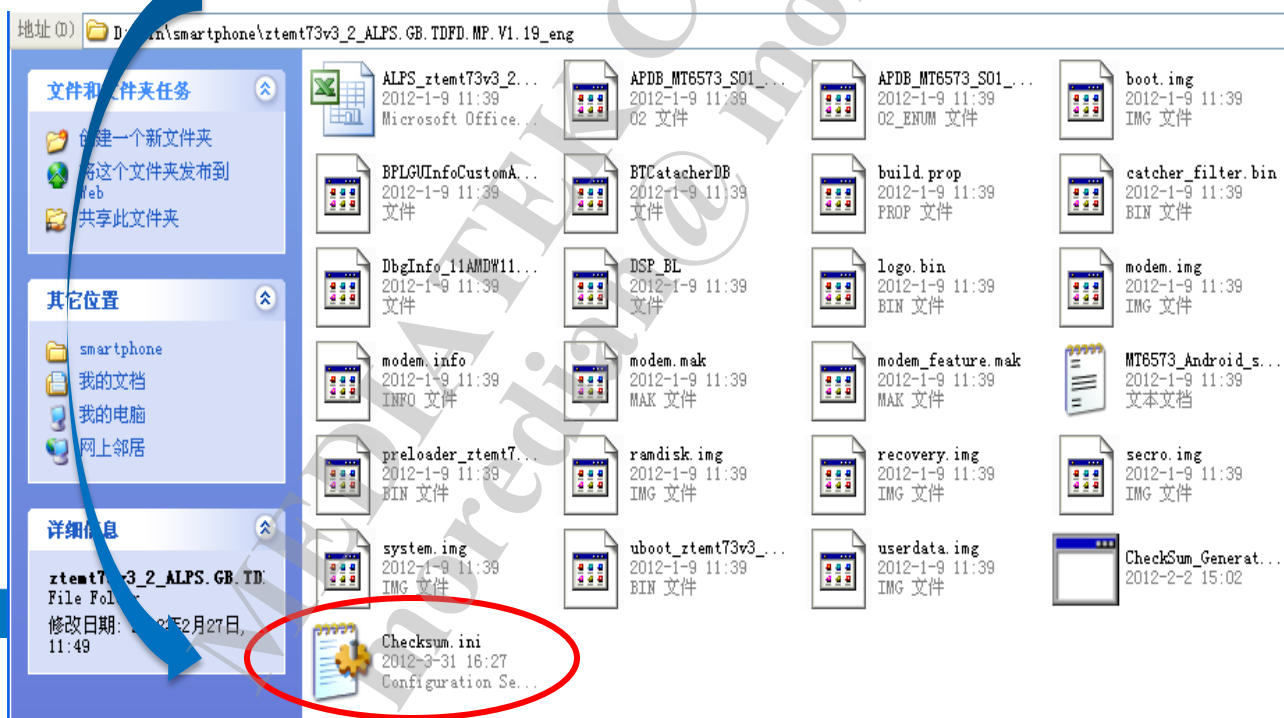
How to generate checksum.ini(2/2)

```

delete file: D:\bin\72\nt6572tdv1_phone[geminil]_ALPS_JB3.TDD.M
ini!
PRELOADER: ==== 0x00009f83
UBOOT: ==== 0x00001213
LOGO: ==== 0x0000f7d7
BOOTIMG: ==== 0x0000a016
RECOVERY: ==== 0x000025ec
SEC_RO: ==== 0x000016c5
ANDROID: ==== 0x0000c782
USRDATA: ==== 0x0000bb1f
MBR: ==== 0x0000072c
EBR1: ==== 0x000008db
CACHE: ==== 0x0000fd0a

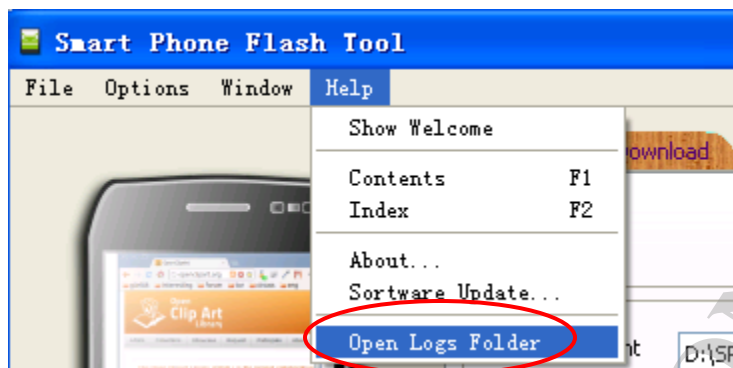
Check Sum Write to ini File Finished.
Press any key to continue.

```

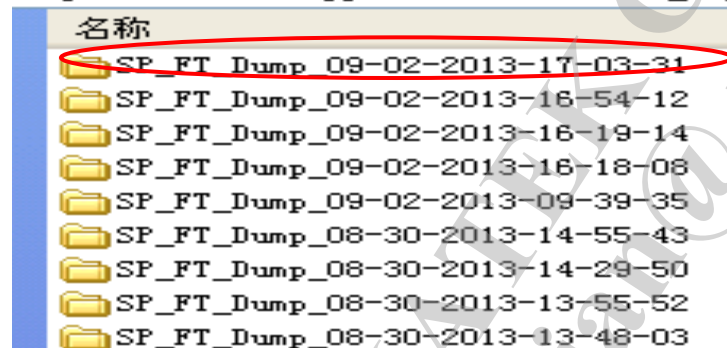


Feature Support – How to find logs

■ SP FlashTool



...ings\All Users\Application Data\SP_FT_



Folder named according to the time

DL and Firmware Update Summary

- 1. 工廠端，第一次download使用: **FORMAT + Download** ;
 - =>[Download] DA完成对整个NAND的erase操作，并将image 下载到手机中去 [Bootup] 此后开机bootup到bootimg
- 2. 工厂,售后, 透过DL Tool进行 **USB update image**, 选择 **Firmware Update**.
 - =>[Update] USB download 覆盖上一个版本的相关image区域, 保留nvram区域. 如果您还在flash tool勾选了user image, user data数据会被擦除更新掉，否则不会.
 - [Bootup] 此后开机bootup到新bootimg
- 3. 客戶或工厂，使用 **Android 內的 Setting -> privacy -> restore factory 的選項reset Factory (Clean Boot)**
 - => [Recovery] 重新Reset，bootup到 Recovery image，清除 user data, Cache 区域. 保留NVRAM参数.
 - 然后重新bootup到bootimg(有断电处理，当看到下一次开机跑bootloader，就可以关机了)
- 4. End User端，透过**SD image update**
 - =>[update] 按特定key，进入recovery image，升级Boot.img, recovery.img, system.img，保留nvram, user data区域(有断电处理)
 - [Bootup] 此后开机bootup到新bootimg

FAQ(1)

■ Get DRAM Setting Fail or Set DRAM Setting Fail

— [Cause]

- Get dram setting fail一般是preloader中的flash id配置不正确，或者是emi timing配置错误

— [Solution]

- 请客户的驱动工程师检查memory的配置

FAQ(2)

■ Title: How to know the real FlashID and is it support or not?

— [Cause]

- 对于Nand Flash，需要DA Nand table 有支持才能进行下载
- 对于DA没有support的FlashID，也可以从DA report知道实际的FlashID

— [Solution]

- Check DA report in BROM_DLL_V5.log

SyncWithDA(): DA_REPORT: NAND: m_nand_ret="**S_DA_NAND_UNSUPPORTED_DEV_ID**"(3010)

SyncWithDA(): DA_REPORT: NAND: m_nand_chip_select="CS_0"(0x00)

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_id(0xFFFF)="NAND_UNKNOWN"

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_size(0x00000000)

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_dev_code_1(**0x00EC**)

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_dev_code_2(**0x00BC**)

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_dev_code_3(**0x0000**)

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_dev_code_4(**0x006A**)

SyncWithDA(): DA_REPORT: NAND: m_nand_flash_dev_code_5(**0x0056**)

Note: we could know that: the FlashID(ECBC006A56) is not supported by current DA.

FAQ(3)

■ 使用Flash tool，Firmware>upgrade功能，发现nvram里的射频参数、IMEI号全部被删除了，请问是否正常

— [Cause]

- Firmware upgrade的feature是把NVRAM BIN REGION的数据拷贝出来，最后再restore会去
- 使用前提是已经做过校准参数备份，如果使用我们的tool，在两种情况下去备份：
 - 1. ATE校准的最后一个步骤会去备份
 - 2. SN Writer Tool最后会去备份
- 请先确保做过上面的操作，如果没有做过操作，NVRAM Bin region便是空的，即便是选择firmware upgrade，最后restore的数据也是错误的

— [Solution]

- 1. 使用ATE校准
- 2. 使用SN Writer Tool正确完成操作
- 3. 最后再使用flash tool的firmware upgrade

FAQ(4)

■ How to customize flash download tool

— [Solution]

- 参考DCC(或者DMS)的文档：
- 路径：/Product Line/WCX/3G Phone Data/Smart Phone/Direct_Customer/Standard Package/MT65xx SW Doc Package/Tools
- 文档名称：SP_BROM_DLL_Development_Kit_User_Manual.doc

FAQ(5)

■ How to customize the HW reset key in Flash Tool download process?

— [Solution]

- Modify platform.xml file
- “reset_key_configuration” :
 - “PH” : Power + Home Key
 - “P” : Power Key Only
- For Example : reset_key_configuration = "PH"
// PowerKey +HomeKey to achieve HW Reset

.

FAQ(6)

- 在Linux系统使用Qt FlashTool下载，在连接USB后，工具会因为找不到COM口不能download，提示“S_COM_PORT_OPEN_FAIL”

[Solution]

- 1.推荐使用Linux系统的版本为：Ubuntu 10.04
- 2.第一次下载时，使用按Kcol0的下载方式进行download。
 - brom download成功之后，以后就可以不用按键，使用preloader download的下载方式；
 - 如果按Kcol0也不能下载，请多试几次。



Qt FlashTool Promotion (中文版)



9/23/2013

Background and Schedule















■ QT FlashTool Promotion Background

- Why change build environment From C++ Builder to QT SDK?
 - C++ Builder 6.0 License 购买不到, 原厂不再支援
 - 客户研发要求Ubuntu环境 能够进行Android Image下载.
 - QT FlashTool, 可以支持Linux和Windows平台.
 - Windows: QT SDK + VC2008 Express 是免费的.
 - Easy and Advanced debugging toolkit (Exception Analysis)

■ QT Version Schedule

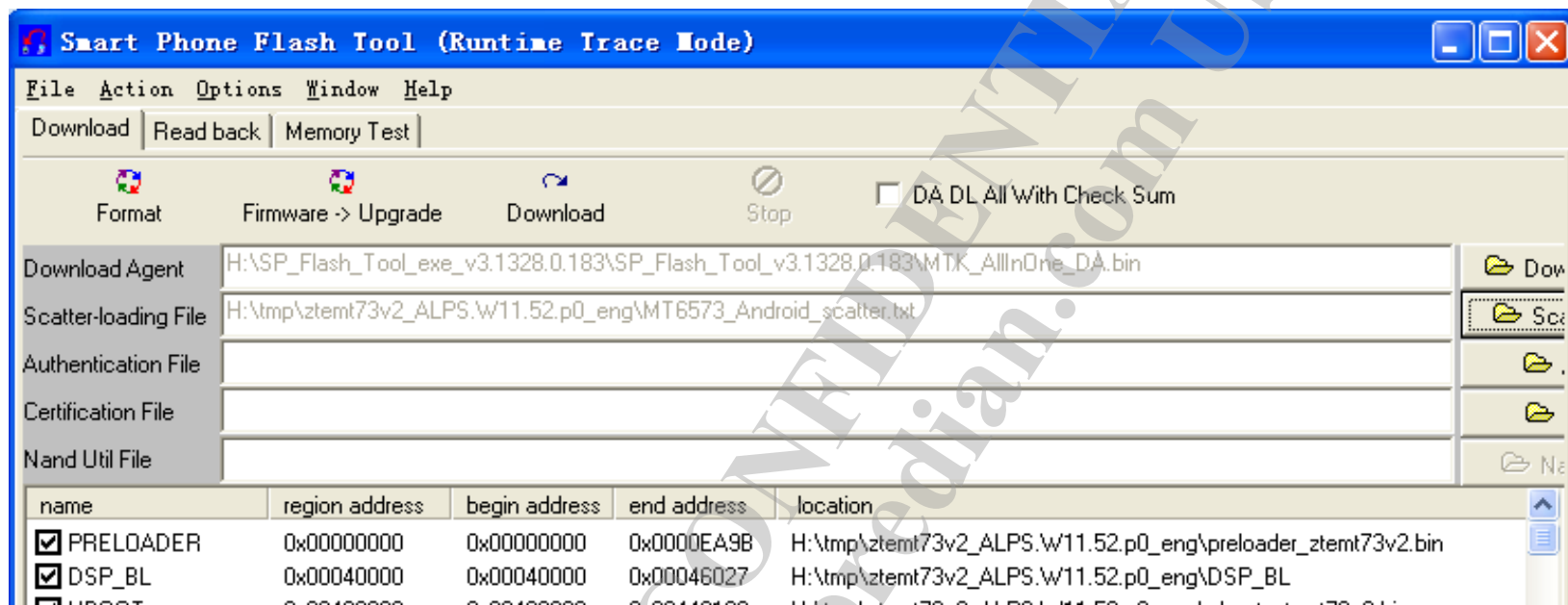
C++ Builder vs Qt Tool Feature Diff

- C++ Builder (W1344) vs. QT (W1348)
 - 支援到的平台: MT6573->MT6575...->MT6592

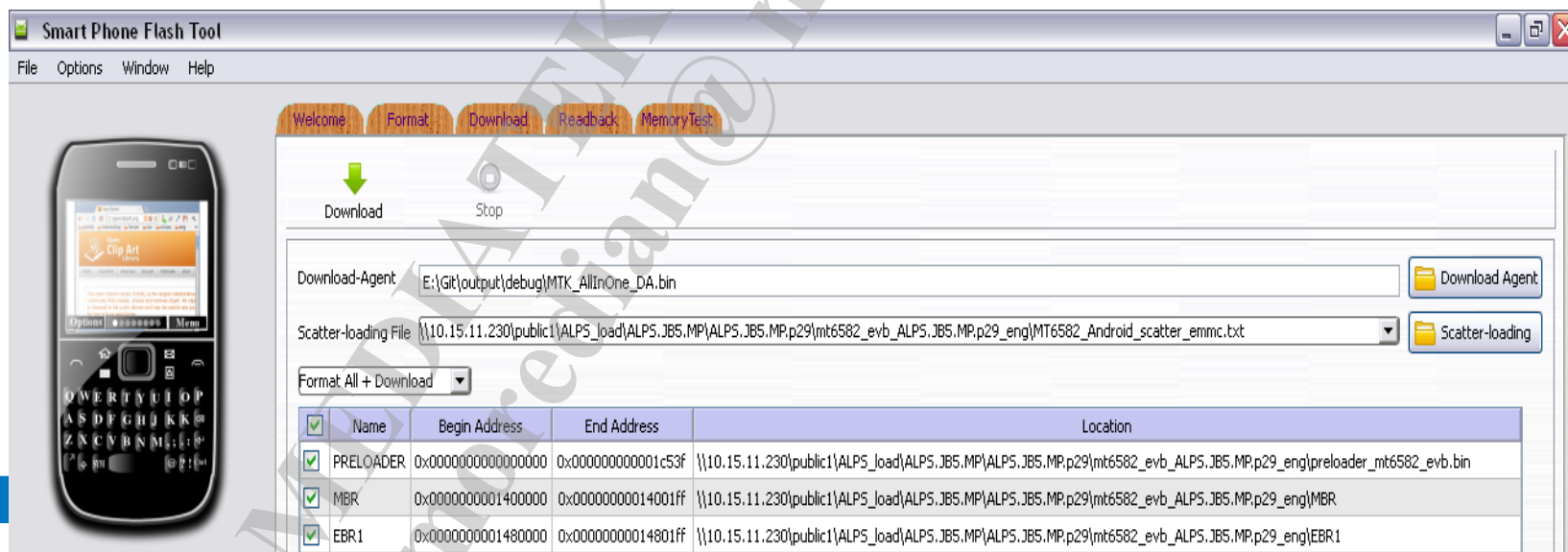
Features		BCB Version	Qt Version
GUI	Download/Format/Readback		
GUI	Memory Test/Memory Write		
DLL	FlashToolLib.dll		
DA	MTK_AllInOne_DA.bin		
GUI	BAT for ETT.bin download		
GUI	Tool help system		
GUI	Tool UI/Architecture Enhancements		

BCB Version

Internal Use

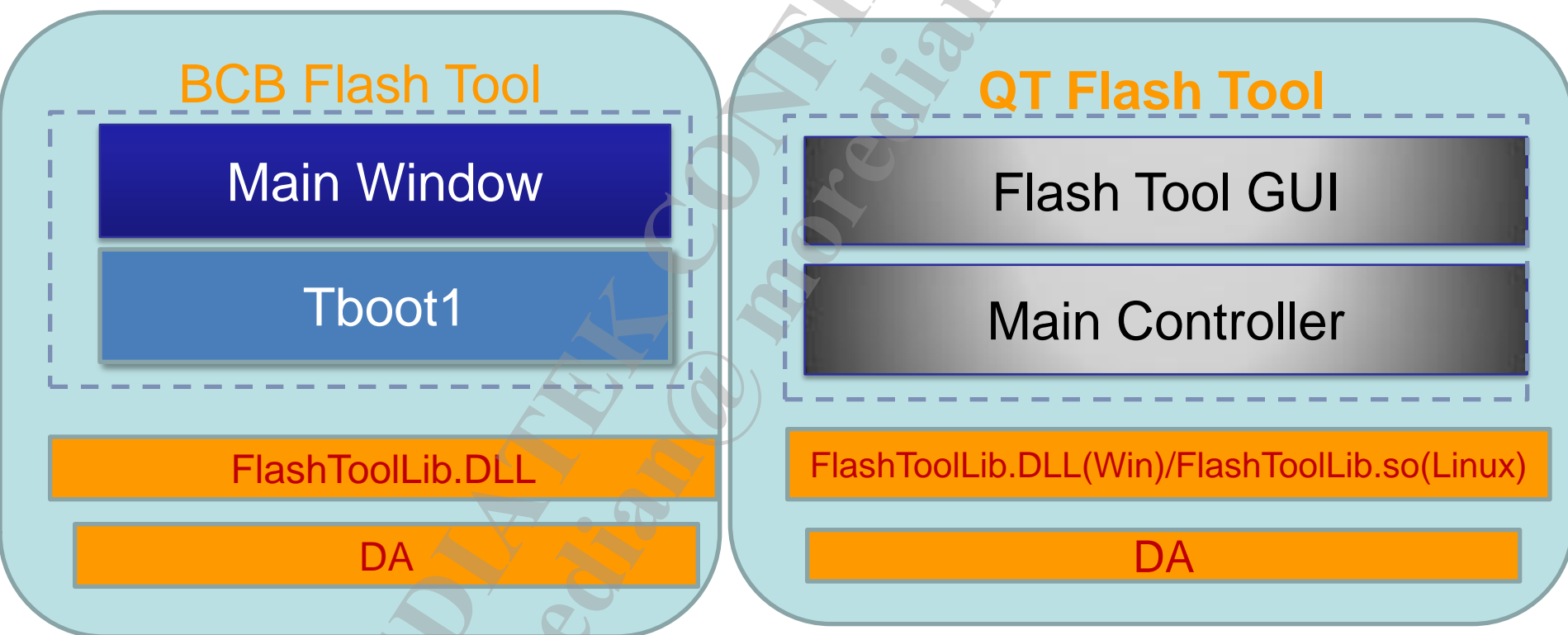


QT Version



BCB vs Qt FlashTool

- SW Architecture



QT Flash Tool Environment

■ Supported Host OS:

- Windows Version:
 - XP+SP3
 - WIN7 32bit and 64bit (评估中,待最终QC确认)
- Linux Version:
 - Ubuntu 10.04 (AMD64)

■ Development SDK and Compiler

- Windows Version:
 - QT SDK: 4.7.4
 - Compiler: Qt 4.7.4 for Desktop + VC2008 express + WDK
 - 注: WDK和VC express版本是免费的; 未来会把WDK 部分移除
- Linux Version:
 - QT SDK: 4.7.3
 - GCC 4.4.3 (X86 32bit)

Custom Introduce and Support

- 新编译环境对三类不同客户需求和支撑资源准备:

Class	Impact and Requirement	Reference
Tool 使用者	了解进版的背景和原因；新旧版本对比，有哪些feature和优点	QT FlashTool Promotion and User Guide.ppt (可在DCC上获取该文档)
	新工具的功能和使用	
简单的客制化	不熟悉QT的安装和开发环境	Qt Flashtool Build and Debug.pptx(录像) (文档可在DCC上获取，录像在MOL上)
	不熟悉代码架构，新的流程和代码入口	Qt SDK Getting Start.pptx(录像) Qt Flashtool SW Arichetecture and Code Review.pptx(录像) (文档可在DCC上获取，录像在MOL上)
	怎样对新工具UI进行客制化	Qt Flashtool Customize demo.pptx(录像) (文档可在DCC上获取，录像在MOL上)
基于DLL二次开发	DLL和DA不变，已开发的工具没有影响。期待阅读QT src code	参考上述文档和录像，阅读source code



Thanks!

