



AP04-QT 二次开发快速人门手册

Version 1.1 (2023.01.01)



目 录

1 Q	「二次开发快速入门手册4
1.1	Qt 软件简介4
1.2	实时定位系统 RTLS 软件功能概述4
1.3	Qt版本信息4
2	软件安装与工程配置5
2.1	QT 在线安装5
2.2	QT 离线安装8
2.3	打开工程8
2.4	配置路径9
3	打包发布 EXE 文件10
3 3.1	打包发布 EXE 文件
3 3.1 3.2	打包发布 EXE 文件
3 3.1 3.2 3.3	打包发布 EXE 文件 10 问题描述
 3.1 3.2 3.3 4 	打包发布 EXE 文件 10 问题描述 10 原因解释 10 使用 windeployqt 工具打包发布 10 安装包制作框架 15
 3.1 3.2 3.3 4 4.1 	打包发布 EXE 文件 10 问题描述 10 原因解释 10 使用 windeployqt 工具打包发布 10 安装包制作框架 15 Qt 版本信息 15
 3.1 3.2 3.3 4 4.1 4.2 	打包发布 EXE 文件 10 问题描述 10 原因解释 10 使用 windeployqt 工具打包发布 10 安装包制作框架 15 Qt 版本信息 15 概述 15
 3.1 3.2 3.3 4 4.1 4.2 4.3 	打包发布 EXE 文件 10 问题描述 10 原因解释 10 使用 windeployqt 工具打包发布 10 安装包制作框架 15 Qt 版本信息 15 概述 15 配置使用 15

免责声明

研创物联有权在不告知客户的前提下更新产品说明。功能及规格的改变将会尽可能发布在 产品勘误表或新版本的文档中。建议客户及时登录研创物联官网 www.ychiot.com 下载最 新产品说明文档。

生命支持政策

研创物联产品未被授权使用在高安全性领域(如对生命有危险的场合),因为产品一旦运行 出现失误可能会导致严重的人身伤害或死亡。假使有客户将研创物联产品用于或出售到高 安全性领域, 客户需要自行承担所有的责任; 如果将本产品用于高安全性领域, 客户需同 意研创物联及其代理商完全无责。



全全 注意!静电敏感设备。在使用该产品时请做好预防措施以防止出现永久性损害。

法规认证

所有使用本模组进行产品开发的用户,在营销或销售产品前都必须经由当地的无线电监督 管理部门的批准,客户必须承担从有关当局获得批准的所有责任。



1 QT 二次开发快速入门手册

1.1 Qt 软件简介

本章节介绍一下 PC 上位机的使用。本上位机软件使用 QT 5.11.3 MinGM 开发,编写语言为 C++。Qt 是一个 1991 年由奇趣科技开发的跨平台 C++图形用户界面应用程序开发框架。它 既可以开发 GUI 程序,也可用于开发非 GUI 程序,比如控制台工具和服务器。Qt 是面向对 象的框架,使用特殊的代码生成扩展(称为元对象编译器)以及一些宏,易于扩展,允许组 件编程。2014 年 4 月,跨平台集成开发环境 Qt Creator 3.1.0 正式发布,实现了对于 iOS 的 完全支持,新增 WinRT、Beautifier 等插件,废弃了无 Python 接口的 GDB 调试支持,集成 了基于 Clang 的 C/C++代码模块,并对 Android 支持做出了调整,至此实现了全面支持 iOS、 Android、WP。

1.2 实时定位系统 RTLS 软件功能概述

本上位机实现的主要功能有:

- 1) 与 UWB 模块的虚拟串口 Virtual COM Port 建立连接;
- 2) 读取来自 UWB 模块的 TOF report message;
- 3) 基站列表,在该列表可以设置基站的实际摆放位置;
- 4) 标签列表, 该列表可以显示标签距离基站的距离、以及标签的位置 (XYZ 坐标);
- 5) 地图显示, 支持自定义导入一张 PNG 格式的地图, 能实现缩放与坐标微调;
- 6) 其他参数设置;

1.3 Qt版本信息

- Qt Creator 4.8.0
- Based on Qt 5.11.3 (MinGW 5.3.0 32bit)

2 软件安装与工程配置

2.1 QT 在线安装

访问 <u>https://www.qt.io/</u>, Download 下载在线安装包,本章节以 qt-unified-windowsx86-3.0.6-online 为例子。



2.1.1 安装软件

打开文件, qt-unified-windows-x86-3.0.6-online, 进行在线安装。以5.11.3版本为例子进行讲解。需要选择的组件是:

- Qt Creator 4.8.0-rc1 (可选)
- Qt 5.11.3 (核心必选)
- Qt Creator 4.8.0 CDB Debugger Support (可选)
- MinGW 5.3.0 32bit (核心必选)
- Qt Installer Framework 3.0 (可选)



🔃 Qt Setup	x
Qt Open Source Usage Obligations	Qt
Welcome Open Source Obligations Setup - Qt Installation Folder	Qt Open Source version is available under GNU General Public License v3 and Lesser GNU General Public License v3. A few components are available under GNU General Public License v2. Please read and accept the Open Source Usage Obligations below. Reading the link below helps you choosing the right license for your project. Choosing the right license for your projects Buy Qt
Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	 (Lesser) GNU General Public License v3 obligations You must not combine code developed with a commercial Qt license with code developed with an open source license of Qt in one project or product Provide a license copy & explicitly acknowledge Qt use Make a Qt source code copy available for customers Accept that Qt source code modifications are non-proprietary Make consumer devices, which allow users to access to install and run modified versions of the SW inside them Accept Digital Rights Management terms, please see the GPL FAQ ✓ I have read and approve the obligations of using Open Source Qt Hong Kong University of Science and Technology
	I am an individual person not using Qt for any company
Ŷţţ	Sext Cancel
Qt Setup	×
Contribute to Qt Development	Qt
Welcome Open Source Obligations Setup - Qt Contribute to Ot Development	Help us improve Qt and Qt Creator by allowing tracking of pseudonymous usage data in Qt Creator. The tracking can be disabled at any time. Read the Qt Company data collection privacy statement.
Installation Folder Select Components License Agreement Start Menu shortcuts	 Help us to improve by enabling sending pseudonymous usage statistics in Qt Creator Disable sending pseudonymous usage statistics in Qt Creator



			×
Select Components			
Please select the compone	nts you want to install.		Qt
ă B			7
l Welcome		Def <u>a</u> ult <u>S</u> elect All <u>D</u> eselect All	J
Open Source Obligations	Select Categories	Additional libraries	The Qt Installer Framework
Setup - Qt	Archive	 ✓ Qt ▶ □ Qt 6.0.2 	provides a set of tools and utilities to create
Contribute to Qt Development	✓ LTS	▶ □ Qt 5.15.2	installers for the supported desktop Qt
Installation Folder		 Qt 5.15.1 Qt 5.15.0 	platforms: Linux, Microsoft Windows, and macOS.
Select Components	Latest release:	C Qt 5.14.2	
License Agreement	Preview	 Q(3.13.2) Q(5.12.10) 	
Start Menu shortcuts		 Qt 5.12.5 Qt 5.12.4 	
Ready to Install	Filter	 ► Qt 5.12.4 ► Qt 5.12.3 	
Installing		 Qt 5.12.2 Gt 5.9.9 	
Finished		□ MSVC 2015 32-bit	
Finished		 MSVC 2015 64-bit MSVC 2017 64-bit 	
		MinGW 5.3.0 32 bit	This component will occupy
		UWP ARMv7 (MSVC 2015)	your hard disk drive.
20			
		< Back	Next > Cancel
10.250 (0.200) (0.200) (0.250 (200)	oyaaaa saasaa aaqaaga	00080080000000000000000000000000000000	
Qt Setup			×
Qt Setup Select Components			×
Qt Setup Select Components Please select the compone	nts you want to install.		× Qt
Qt Setup Select Components Please select the compone	nts you want to install.		× Qt
Qt Setup Select Components Please select the compone	nts you want to install.	Default Scloot All Developt All	× Qt
Q Qt Setup Select Components Please select the compone Welcome	nts you want to install.		× Qt
Qt Setup Select Components Please select the components Welcome Open Source Obligations	nts you want to install. Select Categories	Default Select All Deselect All MSVC 2013 64-bit Android x86	X Qt 5.9.9 Prebuilt Components for MSUC 2015
Q: Qt Setup Select Components Please select the component Welcome Open Source Obligations Setup - Qt	nts you want to install. Select Categories Archive	Def <u>ault</u> MSVC 2013 64-bit Android x86 Android ARMv7	X Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development	nts you want to install. Select Categories Archive VLTS	Default Select All Deselect All MSVC 2013 64-bit Android x86 Android ARMv7 Sources Ot Charts	X Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder	nts you want to install. Select Categories Archive LTS	Default Select All Deselect All Image: MSVC 2013 64-bit Android x86 Image: Android x86 Android x86	X Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components	nts you want to install. Select Categories Archive LTS Latest release:	Default Select All Deselect All Image: MSVC 2013 64-bit Image: Android x86 Image: Android x86 Image: Android x86	X Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the component Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement	nts you want to install. Select Categories Archive ITS Latest release: Preview	Default Select All Deselect All Image: MSVC 2013 64-bit Image: Android x86 Image: Android x86 Image: Android ARMv7 Image: Sources Image: Android ARMv7 Image: Sources Image: Android ARMv7 Image: Sources Image: Android ARMv7 Image: Image: Android ARMv7 Image: Android ARMv7 Image:	X Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts	nts you want to install. Select Categories Archive LTS Latest release: Preview	Default Select All Deselect All MSVC 2013 64-bit Android x86 Android ARMv7 Sources Qt Charts Qt Charts Qt Data Visualization Qt Purchasing Qt Virtual Keyboard Qt WebEngine Qt Network Authorization Qt Network Authorization 	X Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All MSVC 2013 64-bit Android x86 Android ARMv7 Sources Qt Charts Qt Data Visualization Qt Virtual Keyboard Qt Network Authorization Qt Remote Objects (TP) Qt Speech (TP)	Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing	nts you want to install. Select Categories Archive ITS Latest release: Preview Filter	Default Select All Deselect All Image: MSVC 2013 64-bit Image: Android x86 Image: Android x86 Image: Android x86	Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Einiched	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All Image: MSVC 2013 64-bit Android x86 Android ARMv7 Sources Qt Charts Qt Charts Qt Virtual Keyboard Qt WebEngine Qt Network Authorization Qt Speech (TP) Qt Script (Deprecated) Developer and Designer Tools Qt Creator 4.14.2	Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All Deselect All MSVC 2013 64-bit Android x86 Android x86 Android ARMv7 Sources Qt Charts Qt Data Visualization Qt Purchasing Qt Virtual Keyboard Qt WebEngine Qt Network Authorization Qt Remote Objects (TP) Qt Speech (TP) Qt Script (Deprecated) Developer and Designer Tools Qt Creator 4.14.2 Qt Creator 4.14.2 CDB Debugger Support Debugging Tools for Windrows	Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All Deselect All Image: MSVC 2013 64-bit Android x86 Android x86 Android ARMv7 Sources Qt Charts Qt Data Visualization Qt Data Visualization Qt Virtual Keyboard Qt WebEngine Qt Network Authorization Qt Remote Objects (TP) Qt Script (Deprecated) Qt Script (Deprecated) Qt Creator 4.14.2 Qt Creator 4.14.2 CDB Debugger Support Qbebugging Tools for Windows Qt Creator 4.14.2 Debug Symbols	Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	nts you want to install. Select Categories Archive IITS Latest release: Preview Filter	Default Select All MSVC 2013 64-bit Android x86 Android ARMv7 Sources Qt Charts Qt Data Visualization Qt Virtual Keyboard Qt WebEngine Qt Speech (TP) Qt Speech (TP) Qt Script (Deprecated) Developer and Designer Tools Qt Creator 4.14.2 CDB Debugger Support Debugging Tools for Windows Qt Creator 4.14.2 Plugin Development Qt Script (0.2000 Store)	Qt 5.9.9 Prebuilt Components for MSVC 2015 32-bit
Cellect Components Please select the components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All Deselect All Image: MSVC 2013 64-bit Android x86 Android x86 Android ARMv7 Sources Qt Charts Qt Data Visualization Qt Purchasing Qt Virtual Keyboard Qt WebEngine Qt Network Authorization Qt Remote Objects (TP) Qt Speech (TP) Qt Script (Deprecated) Developer and Designer Tools Qt Creator 4.14.2 Qt Creator 4.14.2 Qt Creator 4.14.2 Debugger Support Qet Creator 4.14.2 Debug Symbols Qt Creator 4.14.2 Plugin Development Qt 3D Studio 2.8.0 Qt 3D Studio 2.8.0	Qt 5, 9, 9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup: Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All Deselect All MSVC 2013 64-bit Android x86 Android ARMv7 Sources Qt Charts Qt Charts Qt Data Visualization Qt Purchasing Qt Virtual Keyboard Qt WebEngine Qt Network Authorization Qt Remote Objects (TP) Qt Speech (TP) Qt Speech (TP) Qt Creator 4.14.2 Qt Creator 4.14.2 CDB Debugger Support Debugging Tools for Windows Qt Creator 4.14.2 Debug Symbols Qt Creator 4.14.2 Plugin Development Qt 3D Studio 2.8.0 	Qt 5. 9. 9 Prebuilt Components for MSVC 2015 32-bit
Qt Setup Select Components Please select the components Welcome Open Source Obligations Setup - Qt Contribute to Qt Development Installation Folder Select Components License Agreement Start Menu shortcuts Ready to Install Installing Finished	nts you want to install. Select Categories Archive LTS Latest release: Preview Filter	Default Select All Deselect All MSVC 2013 64-bit Android x86 Android ARMv7 Sources Qt Charts Qt Charts Qt Data Visualization Qt Purchasing Qt Virtual Keyboard Qt VebEngine Qt Network Authorization Qt Remote Objects (TP) Qt Speech (TP) Qt Speech (TP) Qt Script (Deprecated) Poweloper and Designer Tools Qt Creator 4.14.2 CDB Debugger Support Debugging Tools for Windows Qt Creator 4.14.2 Debug Symbols Qt Creator 4.14.2 Plugin Development Qt 3D Studio 2.8.0 	<pre> Qt 5. 9. 9 Prebuilt Components for MSVC 2015 32-bit Next > Cancel </pre>





2.2 QT 离线安装

由于 QT 软件服务器在国外,部分用户由于众所周知的网络原因,无法完成 2.1 章节的在线安装,可以采用下载离线安装包的方式进行安装。以 Qt 5.9.9 的版本为例,我们打开链接: https://download.qt.io/archive/qt/

Name	Last modified	Size	Metadata
↑ Parent Directory		-	
5 .9.9/	16-Dec-2019 15:07	-	

选择 qt-opensource-windows-x86-5.9.9.exe,进行下载安装,具体安装步骤同 2.1 节。

2.3 打开工程

解压压缩包, 打开 TREKdisplay (Qt Project file)



n myhelper	2018-08-07 15:04	C++ Header file	3 KB
and the second s	2014-08-15 15:14	QRC 文件	1 KB
••• RTLSDisplayApplication	2018-08-07 15:50	C++ Source file	5 KB
RTLSDisplayApplication	2016-01-21 21:46	C++ Header file	3 KB
TREKanc config	2015-02-04 20:21	XML文档	1 KB
🚾 TREKdisplay	2018-08-11 12:07	Qt Project file	2 KB
TREKdisplay.pro.user	2019-01-06 11:48	每用户项目选项文	24 KB
TREKdisplay.pro.user.4.8-pre1	2019-01-05 10:03	8-PRE1 文件	24 KB
TREKdisplay.pro.user.38a701d	2017-10-29 21:01	38A701D 文件	24 KB

图 2.3 打开工程

2.4 配置路径

选择一个目录,作为编译输出的文件夹,注意:路径中不要有中文。

欢迎	Manage Kits	>	<u>构建设置</u> 使時的波動器、Ralance x 速加 a <u>MB</u> A 孫令々	
日編	Active Project		(現在) (1997年1月17日日) (Nellease - ハル/A - 和助か 里印石 概要	
* 设计	TREKdisplay ~ Import Existing Build	r	Shadow build: 🛛	
û Debug	Build & Run		构建目录: hgpeng\Desktop\build-TREEKdisplay-Desktop_Qt_5_11_3_MinGW_32bit-Release 浏	览
ノ 项目	🖵 Desktop Qt 5.11.3 MinG		作り起ジ第 qmake: qmake.exe TREKdisplay.pro -spec win32-g++ "CONFIG+=qtquickcompiler"	详情 ◄
帮助	➢ Build ► Run		Take: mingv32-make.exe -j4 in C:\Users\linlingpeng\Desktop\build-TREKdisplay	详情 ▼
	Project Settings		₩Albuild## ◆ 清除步骤	
	编辑器代码风格		Take: mingv32-make.exe clean -j4 in C:\Users\linlingpeng\Desktop\build-TREKdisplay	详情 ◄
	依赖天奈 Clang Code Model Clang Tools		WAULIEEET史録。 构建环境	
	, , , , , , , , , , , , , , , , , , ,		使用 系统环境变量	详情▼

图 2.4.1 路径配置

点击运行,等待一会儿,即可完成编译。此后,即可开始 Qt 的编程。



图 2.4.2 运行工程

3 打包发布 EXE 文件

Qt 官方开发环境使用的动态链接库方式,在发布生成的 exe 程序时,需要复制一大堆 dll,如果自己去复制 dll,很可能丢三落四,导致 exe 在别的电脑里无法正常运行。因此 Qt 官方 开发环境里自带了一个工具:windeployqt.exe。

3.1 问题描述

QT 上位机源代码在 Release 或者 Debug 下运行,生成的.exe 文件,无法运行,弹出多个错误对话框,如下图所示。

DecaRangeRTLS.exe - System Error	×
The code execution cannot proceed because Qt5Gui.dll v found. Reinstalling the program may fix this problem.	vas not
	ОК

图 3.1 .dll 库丢失

3.2 原因解释

在相应的文件夹下,需要添加相应的.dll 库。

3.3 使用 windeployqt 工具打包发布

1. Release 编译。在 Projects -> Build Settings 下,选成 Release (如果你觉得这个最后的一个版本,否则请选择 Debug)。再点击左下角的运行。



图 3.3.1 编译工程

2. 进入编译好的 Release 文件夹里面, 找到 DecaRangeRTLS.exe

Name	Date modified	Туре	Size
📙 debug	4/30/2017 8:07 PM	File folder	
release	4/30/2017 9:23 PM	File folder	
📑 .qmake.cache	4/30/2017 8:06 PM	CACHE File	0 KB
🗋 .qmake.stash	4/30/2017 8:06 PM	STASH File	1 KB
🗋 Makefile	4/30/2017 8:07 PM	File	24 KB
🗋 Makefile.Debug	4/30/2017 8:07 PM	DEBUG File	562 KB
Makefile.Release	4/30/2017 8:07 PM	RELEASE File	563 KB
object_script.DecaRangeRTLS.Debug	4/30/2017 8:07 PM	DEBUG File	1 KB
object_script.DecaRangeRTLS.Release	4/30/2017 8:07 PM	RELEASE File	1 KB
TREKview_config	4/30/2017 8:08 PM	XML Document	0 KB
 ui_connectionwidget 	4/30/2017 8:07 PM	C++ Header file	3 KB
 ui_GraphicsWidget 	4/30/2017 8:07 PM	C++ Header file	5 KB
n ui_mainwindow	4/30/2017 8:07 PM	C++ Header file	5 KB
ui_ViewSettingsWidget	4/30/2017 8:07 PM	C++ Header file	20 KB

图 3.3.2 release 文件夹

3. 将这个.exe 复制到一个新的单独的文件夹里用于发布,比如存到:D:\UWB 文件夹里面。

 ҮСНІОТ

~ 名称	修改日期
connectionwidget.o	2019-01-06 11:47
DecaRangeRTLS	2019-01-06 11:48
GraphicsView.o	2019-01-06 11:47
GraphicsWidget.o	2019-01-06 11:47
iconhelper.o	2019-01-06 11:47
🗋 main.o	2019-01-06 11:47
🗋 mainwindow.o	2019-01-06 11:47
🗋 MinimapView.o	2019-01-06 11:47
••• moc_AbstractTool	2019-01-06 11:48
moc_AbstractTool.o	2019-01-06 11:48
moc_connectionwidget	2019-01-06 11:48
moc_connectionwidget.o	2019-01-06 11:48
••• moc_GraphicsView	2019-01-06 11:48
moc_GraphicsView.o	2019-01-06 11:48
🕶 moc_GraphicsWidget	2019-01-06 11:48
moc_GraphicsWidget.o	2019-01-06 11:48

图 3.3.3 等待发布的 DecaRangeRTLS.exe

4. 以官方 Qt 5.11.3+MinGW 开发环境为例,找到 Qt 5.11.3 for Desktop (MinGW 5.3.0 32 bit)



图 3.3.4 Qt 5.11.3 for Desktop

- 5. 可以打开 Qt 命令行,从这里就可以执行 windeployqt 工具。
- 6. 从开始菜单打开 Qt 命令行, 输入命令: cd /d D:\UWB

Setting up environment for Qt usage...

D:\Qt\5.11.3\mingw53_32>cd /d D:\UWB

图 3.3.5 Qt 命令

7. 使用 windeployqt 工具命令: windeployqt DecaRangeRTLS.exe



```
Setting up environment for Qt usage...
D:\Qt\5.11.3\mingw53_32>cd /d D:\UWB
D:\UWB>windeploygt DecaRangeRTLS.exe
D:\UWB\DecaRangeRTLS.exe 32 bit, release executable
Adding Qt5Svg for qsvgicon.dll
Direct dependencies: Qt5Core Qt5Gui Qt5SerialPort Qt5Widgets Qt5Xml
All dependencies
                   : Qt5Core Qt5Gui Qt5SerialPort Qt5Widgets Qt5Xml
To be deployed
                   : Qt5Core Qt5Gui Qt5SerialPort Qt5Svg Qt5Widgets Qt5Xml
Qt5Core.dll is up to date.
Ot5Gui.dll is up to date.
Qt5SerialPort.dll is up to date.
Qt5Svg.dll is up to date.
Qt5Widgets.dll is up to date.
Qt5Xml.dll is up to date.
libGLESV2.dll is up to date.
libEGL.dll is up to date.
D3Dcompiler 47.dll is up to date.
opengl32sw.dll is up to date.
libgcc_s_dw2-1.dll is up to date.
libstdc++-6.dll is up to date.
libwinpthread-1.dll is up to date.
Patching Qt5Core.dll...
qsvgicon.dll is up to date.
qgif.dll is up to date.
qicns.dll is up to date.
qico.dll is up to date.
qjpeg.dll is up to date.
qsvg.dll is up to date.
qtga.dll is up to date.
qtiff.dll is up to date.
qwbmp.dll is up to date.
qwebp.dll is up to date.
qwindows.dll is up to date.
qwindowsvistastyle.dll is up to date.
Creating qt_ar.qm...
Creating qt bg.qm...
Creating qt_ca.qm...
Creating qt_cs.qm...
Creating qt_da.qm...
Creating qt_de.qm...
Creating qt_en.qm...
Creating qt_es.qm...
Creating qt_fi.qm...
Creating qt_fr.qm...
Creating qt_gd.qm...
Creating qt_he.qm...
```

Creating qt_hu.qm... Creating qt_it.qm... Creating qt_ja.qm... Creating qt_ko.qm... Creating qt_lv.qm... Creating qt_pl.qm... Creating qt_ru.qm... Creating qt_sk.qm... Creating qt_uk.qm...

8. 将 lapack_win32_MT.dll、blas_win32_MT 复制进来,得到完整的.dll 工程包

📙 iconengines	2019-01-06 13:58	文件夹
📙 imageformats	2019-01-06 13:58	文件夹
📙 platforms	2019-01-06 13:58	文件夹
📕 styles	2019-01-06 13:58	文件夹
📙 translations	2019-01-06 13:58	文件夹
🗟 blas_win32_MT.dll	2015-07-09 15:33	应用程序扩展
D3Dcompiler_47.dll	2014-03-11 18:54	应用程序扩展
DecaRangeRTLS	2019-01-06 11:48	应用程序
🗟 lapack_win32_MT.dll	2015-07-09 15:33	应用程序扩展
🗟 libEGL.dll	2018-11-26 18:04	应用程序扩展
libgcc_s_dw2-1.dll	2015-12-29 6:25	应用程序扩展
🗟 libGLESV2.dll	2018-11-26 18:04	应用程序扩展
🗟 libstdc++-6.dll	2015-12-29 6:25	应用程序扩展
🗟 libwinpthread-1.dll	2015-12-29 6:25	应用程序扩展
🗟 opengl32sw.dll	2016-06-14 21:08	应用程序扩展
🗟 Qt5Core.dll	2019-01-06 13:58	应用程序扩展
🗟 Qt5Gui.dll	2018-11-26 18:08	应用程序扩展
🗟 Qt5SerialPort.dll	2018-11-26 18:25	应用程序扩展
🗟 Qt5Svg.dll	2018-11-26 19:03	应用程序扩展
Qt5Widgets.dll	2018-11-26 18:10	应用程序扩展
🗟 Qt5Xml.dll	2018-11-26 18:05	应用程序扩展
TREKanc_config	2018-12-27 20:17	XML文档
TREKtag_config	2018-12-27 20:17	XML文档
TREKview config	2019-01-06 13:59	XML文档



4 安装包制作框架

4.1 Qt 版本信息

- Qt Creator 4.8.0
- Based on Qt 5.11.3
- Qt Installer Framework 3.0

4.2 概述

使用 Qt 库开发的应用程序, 一般有两种发布方式:

- 静态编译发布。这种方式使得程序在编译的时候会将 Qt 核心库全部编译到一个可执行文件中。其优势是简单单一,所有的依赖库都集中在一起,其缺点也很明显,可执行程序体量较大,光 Qt 核心库加起来就得十多兆。
- 制作安装包发布。这种方式的原理也简单,就是将可执行程序和其依赖的库文件一起打包 压缩,制作成安装包发布。

制作安装包的工具挺多,使用 Qt 官方的安装包制作框架 Qt installer framework 可以完成制作成安装包。

4.3 配置使用

4.3.1 安装 QtInstallerFramework-win-x86

下载,按照步骤流程完成安装。

4.3.2 生成可执行文件

参照章节 3.3.1, 生成正确的可执行.exe 文件。

4.3.3 创建目录

- 在 C:\Qt\QtIFW2.0.3\bin 下, 创建一个 sc 文件夹, sc 文件夹下再创建两个文件夹, 为 config 和 packages;
- config 文件夹下的 config xml 文件从 C:\Qt\QtIFW2.0.3\examples\tutorial\config 中 复制;
- C:\Qt\QtIFW2.0.3\examples\tutorial\packages 的文件夹下的所有文件,复制到
 C:\Qt\QtIFW2.0.3\bin\sc\packages下;



• 结果如下图所示:



图 4.3.3 目录结构

4.3.4 config.xml 文件

在 config 文件夹下创建一个 config.xml 文件,该文件用于定制安装包的 UI 和行为,其基本 格式如下:

```
<?xml version="1.0"?>
<Installer>
    <Name>Some Application</Name>
    <Version>1.0.0</Version>
    <Title>Some Application Setup</Title>
    <Publisher>Your Company</Publisher>
    <ProductUrl>http://www.your-fantastic-company.com</ProductUrl>
    <InstallerWindowIcon>installericon</InstallerWindowIcon>
    <InstallerApplicationIcon>installericon</InstallerApplicationIcon>
    <Logo>logo.png</Logo>
    <Watermark>watermark.png</Watermark>
    <RunProgram></RunProgram>
    <RunProgramArguments></RunProgramArguments>
    <RunProgramDescription></RunProgramDescription>
    <StartMenuDir>Some Application Entry Dir</StartMenuDir>
    <UninstallerName>SDKMaintenanceTool</UninstallerName>
    <AllowNonAsciiCharacters>true</AllowNonAsciiCharacters>
    <Background>background.png</Background>
    <TargetDir>@homeDir@/testinstall</TargetDir>
    <AdminTargetDir>@rootDir@/testinstall</AdminTargetDir>
    <RemoteRepositories>
    <Repository>
    <Url>http://www.your-repo-location/packages/</Url>
    </Repository>
    </RemoteRepositories>
</Installer>
```

其中, name 和 version 子元素是必需的, 其他子元素则是可选的, 并且顺序可以任意。关于这些配置项的含义, 在官方网站的链接上可以查看。

http://doc.qt.io/qtinstallerframework/ifw-globalconfig.html

4.3.5 packages 文件夹

可以注意到,在 packages 文件夹下每个组件都需要创建两个子文件夹 meta 和 data。meta 目录下用于存放一些配置文件,用于指定安装和部署过程。在 meta 文件夹中至少需要一个 package.xml 及所有在该文件中引用到的资源文件,如脚本文件、界面资源、翻译文件等。 package.xml 文件描述了一个组件的基本信息,其格式如下:

```
<?xml version="1.0"?>
<Package>
        <DisplayName>QtGui</DisplayName>
        <Description>Qt gui libraries</Description>
        <Description xml:Lang="de de">Qt GUI Bibliotheken</Description>
        <Version>1.2.3</Version>
        <ReleaseDate>2009-04-23</ReleaseDate>
        <Name>com.vendor.root.component2</Name>
        <Dependencies>com.vendor.root.component1</Dependencies>
        <Virtual>false</Virtual>
        <Licenses>
            <License name="License Agreement" file="license.txt" />
        </Licenses>
        <<u>Script</u>>installscript.gs</<u>Script</u>>
        <UserInterfaces>
            <UserInterface>specialpage.ui</UserInterface>
            <UserInterface>errorpage.ui</UserInterface>
        </UserInterfaces>
        <Translations>
            <Translation>sv_se.qm</Translation>
            <Translation>de_de.qm</Translation>
        </Translations>
        <DownloadableArchives>component2.7z, component2a.7z</DownloadableArchives>
        <AutoDependOn>com.vendor.root.component3</AutoDependOn>
        <SortingPriority>123</SortingPriority>
        <UpdateText>This changed compared to the last release</UpdateText>
        <Default>false</Default>
        <ForcedInstallation>false</ForcedInstallation>
        <Essential>false</Essential>
        <Replaces>com.vendor.root.component2old</Replaces>
</Package>
```

其中 License 节中指定了协议条款, file 属性指定了协议条款所在的文件。UserInterfaces 和 Translations 节分别指定了界面资源文件和翻译文件。Script 节指定了脚本文件, 在脚本文 件中可以对安装过程进行更为详细的定制。样例中其他元素名称及值都比较容易懂, 对着修 改并不困难。全部选项可以上官网查看。

http://doc.qt.io/qtinstallerframework/ifw-component-description.html#packageinformation-file-syntax

将所有文件复制到 data 子文件夹下,如下图所示。

packages > com.vendor.product > data
Name
🔊 blas_win32_MT.dll
DecaRangeRTLS
installcontent
Iapack_win32_MT.dll
libgcc_s_dw2-1.dll
libstdc++-6.dll
libwinpthread-1.dll
Qt5Core.dll
Qt5Gui.dll
Qt5SerialPort.dll
Qt5Widgets.dll
Qt5Xml.dll
TREKview_config

4.3.6 运行命令

用 Win+R 快速打开,并输入 cmd,如下图所示

🖅 Run		\times
	Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.	
<u>O</u> pen:	cmd	\sim
	OK Cancel <u>B</u> rowse	

图 4.3.6 Cmd 命令打开



4.3.7 进入指定文件夹

输入命令, cd C:\Qt\QtIFW2.0.3\bin,

Microsoft Windows [Version 10.0.15063] (c) 2017 Microsoft Corporation. All rights reserved. C:\Users\linli>cd C:\Qt\QtIFW2.0.3\bin C:\Qt\QtIFW2.0.3\bin>

图 4.3.7 进入 bin 文件夹

4.3.8 binarycreator.exe

输入命令:

binarycreator.exe -c sc\config\config.xml -p sc\packages my_installer.exe -v 结果如下所示: Microsoft Windows [Version 10.0.15063] (c) 2017 Microsoft Corporation. All rights reserved. C:\Qt\QtIFW2.0.3\bin>binarycreator.exe -c sc\config\config.xml -p sc\packages my installer.exe -v [0] Parsed arguments, ok. [3] Collecting information about available packages... [5] found subdirectory 'com.vendor.product' [6] - it provides the package com.vendor.product - 0.1.0-1 [8] Copying component data for "com.vendor.product" [11] Compressing data directory "build-TREKdisplay-Desktop_Qt_5_7_0_MinGW_32bit-Release" [1050] Compressing files found in data directory: ("C:/Qt/QtIFW2.0.3/bin/sc/packages/com.vendor.product/data/installcontent.txt") [1063] Hash is stored in "C:/Users/linli/AppData/Local/Temp/binarycreator-19Mfi9/com.vendor.product/0.1.0-1build-TREKdisplay-Desktop_Qt_5_7_0_MinGW_32bit-Release.7z.sha1" [1068] Creating hash of archive "C:/Users/linli/AppData/Local/Temp/binarycreator-19Mfi9/com.vendor.product/0.1.0-1build-TREKdisplay-Desktop_Qt_5_7_0_MinGW_32bit-Release.7z" [1077] Generated sha1 hash: "d63a8b0b8cde3134bc9eacbfd93d563980e207a4" [1084] Hash is stored in "C:/Users/linli/AppData/Local/Temp/binarycreator-19Mfi9/com.vendor.product/0.1.0-1content.7z.sha1" [1087] Creating hash of archive "C:/Users/linli/AppData/Local/Temp/binarycreator-19Mfi9/com.vendor.product/0.1.0-1content.7z" [1092] Generated sha1 hash: "c8d32a476764d3d60e341d04e3e809dc6b6d9525"

ap04-QT 二次开发快速入门手册 V1.1



```
[1100] Copy meta data for package 'com.vendor.product' using
'sc/packages/com.vendor.product/meta/package.xml'.
[1105] calculate size of directory: C:/Users/linli/AppData/Local/Temp/binarycreator-
19Mfi9/com.vendor.product/data
[1145] Copying associated script file
'sc/packages/com.vendor.product/meta/installscript.qs'
[1150] done.
[1152] Copying associated user interface file
'sc/packages/com.vendor.product/meta/page.ui'
[1159] done.
[1161] Copying associated license file
'sc/packages/com.vendor.product/meta/license.txt'
[1168] done.
[1174] Begin to copy configuration file and data.
[1176] Copying associated configuration file
'C:/Qt/QtIFW2.0.3/bin/sc/config/config.xml'
[1180] done.
[1185] Read dom element: <Name>Your application</Name>.
[1186] Read dom element: <Version>1.0.0</Version>.
[1188] Read dom element: <Title>Your application Installer</Title>.
[1190] Read dom element: <Publisher>Your vendor</Publisher>.
[1192] Read dom element: <StartMenuDir>Super App</StartMenuDir>.
[1194] Read dom element: <TargetDir>@HomeDir@/InstallationDirectory</TargetDir>.
[1197] done.
[1246] Creating the binary
[1414] Creating resource archive for "com.vendor.product"
[1416] Appending C:/Users/linli/AppData/Local/Temp/binarycreator-
19Mfi9/com.vendor.product/0.1.0-1build-TREKdisplay-Desktop_Qt_5_7_0_MinGW_32bit-
Release.7z (661.19 KiB)
[1421] Appending C:/Users/linli/AppData/Local/Temp/binarycreator-
19Mfi9/com.vendor.product/0.1.0-1build-TREKdisplay-Desktop_Qt_5_7_0_MinGW_32bit-
Release.7z.sha1 (40.00 bytes)
[1426] Appending C:/Users/linli/AppData/Local/Temp/binarycreator-
19Mfi9/com.vendor.product/0.1.0-1content.7z (217.00 bytes)
[1432] Appending C:/Users/linli/AppData/Local/Temp/binarycreator-
19Mfi9/com.vendor.product/0.1.0-1content.7z.sha1 (40.00 bytes)
[1475] Cleaning up...
```

C:\Qt\QtIFW2.0.3\bin>

4.3.9 测试

在 C:\Qt\QtIFW2.0.3\bin 文件夹下, 会生成一个 my_installer.exe 的文件, 这个就是安装包。 此后, 点击, 即可完成安装。

Name	Date modified	Туре
📜 sc	4/30/2017 8:23 PM	File folde
📧 archivegen	5/2/2016 9:16 PM	Applicat
binarycreator	5/1/2017 10:36 AM	Applicat
🗋 cd	5/1/2017 10:36 AM	File
📧 devtool	5/2/2016 9:17 PM	Applicat
🔯 installerbase	5/2/2016 9:16 PM	Applicat
Microsoft	5/1/2017 10:36 AM	File
🔯 my_installer	5/1/2017 10:31 AM	Applicat
💷 repogen	5/2/2016 9:17 PM	Applicat

图 4.3.9 使用安装包



5 文档管理信息表

主题	QT 二次开发快速入门手册	
版本	V1.1	
参考文档	https://blog.csdn.net/sinat_36264666/article/details/73305712	
	https://www.qt.io/	
创建时间	2018/06/01	
创建人	Lynn	
最新发布日期	2023/01/01	

更改人	日期	文档变更纪录
Lynn	2019-01-06	 <u>V1.0</u> QT 二次开发快速入门手册 [停止更新] aps001-QT 生成 exe 文件库丢失问题 [停止更新] aps002-QT 安装包制作框架
Lynn	2023-01-01	<u>V1.1</u> 新增 2.2 章节离线安装方法 修改格式,研创 23 年全新文档视觉