

Lab 1: Labview and USRP (Warm up)

NTU Communication Laboratory

Outline

- 實驗目的
- Queue 範例
- USRP 範例
- 練習

實驗目的

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 - 熟悉Labview語法與操作

 - 熟悉USRP之操作方法

Queue 範例

◆ 內容:

- Get queue status
- Enqueue
- Dequeue

◆ 目標:

- 熟悉Queue的使用方式
- 使用Queue的結構傳遞資料

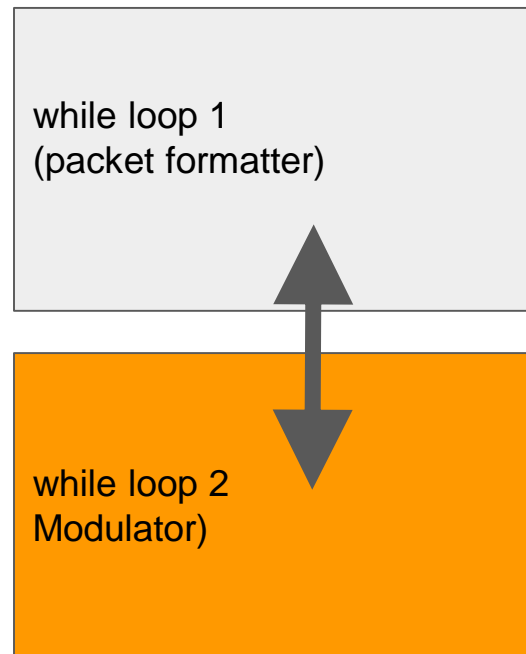
Queue

◆ 為什麼需要使用他?

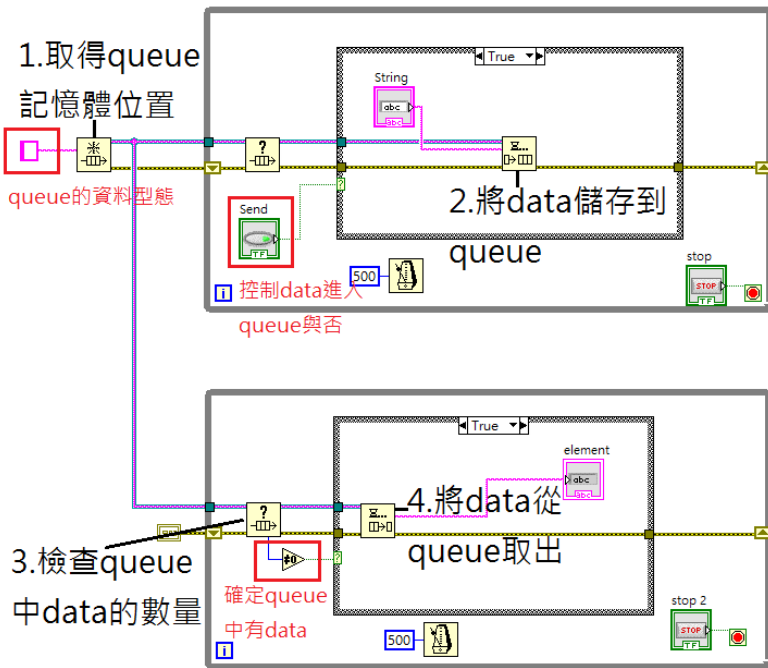
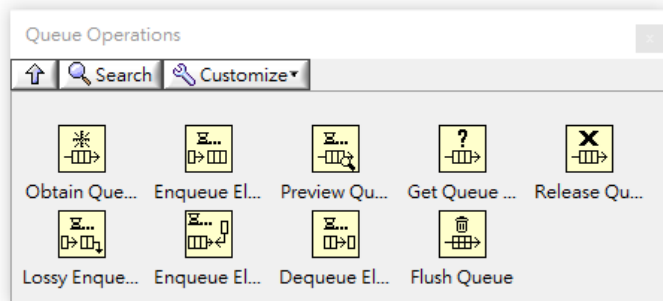
1. 將資料流在不同迴圈中傳遞
2. 使不同資料流獨立運作

◆ 重要概念:

1. Queue本質為一記憶體位置，因此不同迴圈皆可存取
2. 呼叫queue相關函數前必須確定queue status



Queue 範例



USRP範例

- 內容:

- 學習如何整合USRP到LabVIEW程式中並且能夠穩定的運作
- 操作USRP的RF參數以熟悉其功能

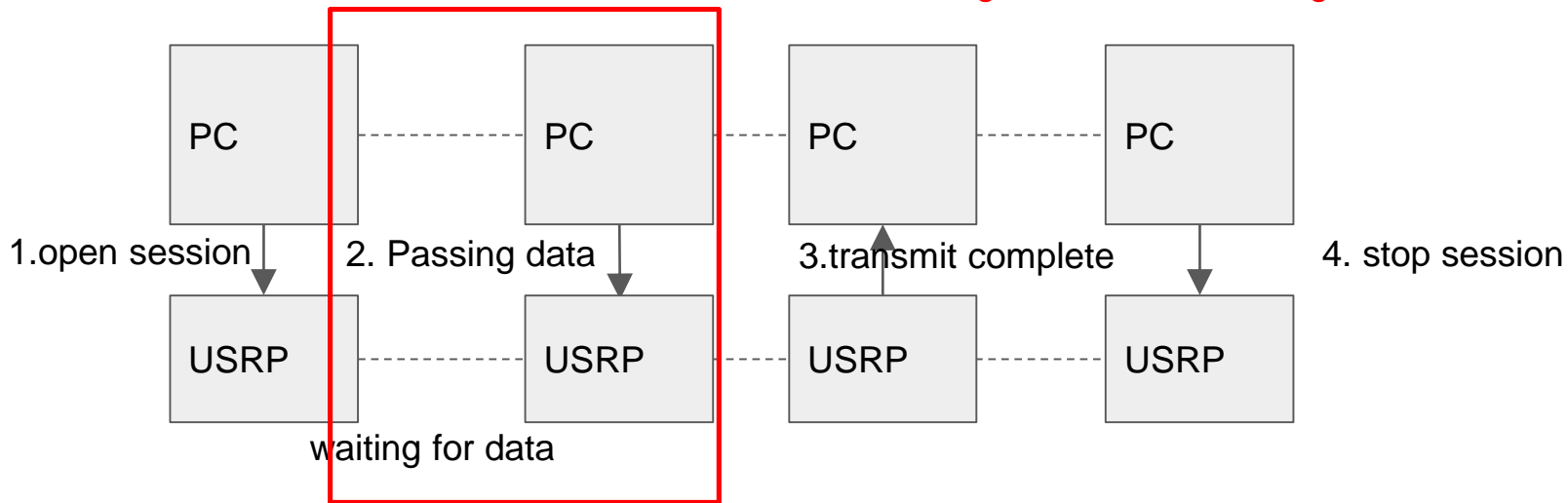
- 目標:

- 了解如何使用LabVIEW來控制USRP之傳收
- 學習如何有效率地將LabVIEW模擬程式，修改成可以USRP實驗的版本

USRP 運作流程

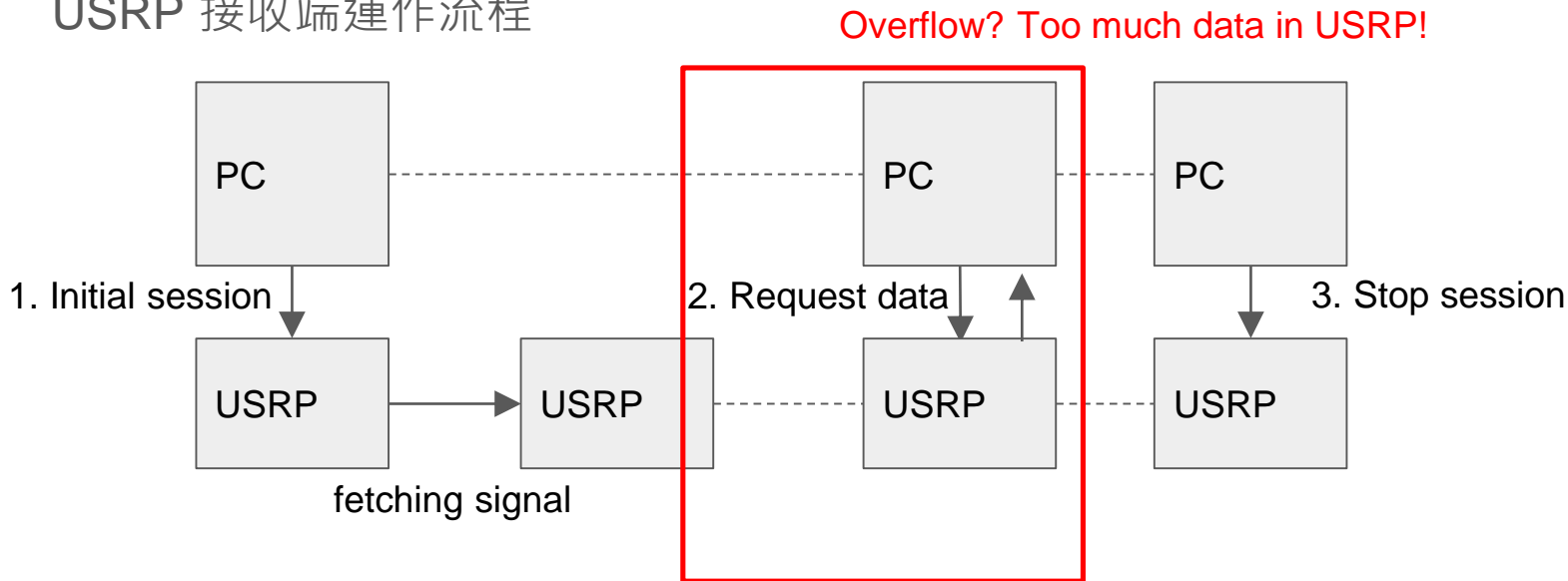
USRP 傳輸端運作流程

Underflow? USRP waiting for data, but nothing return.



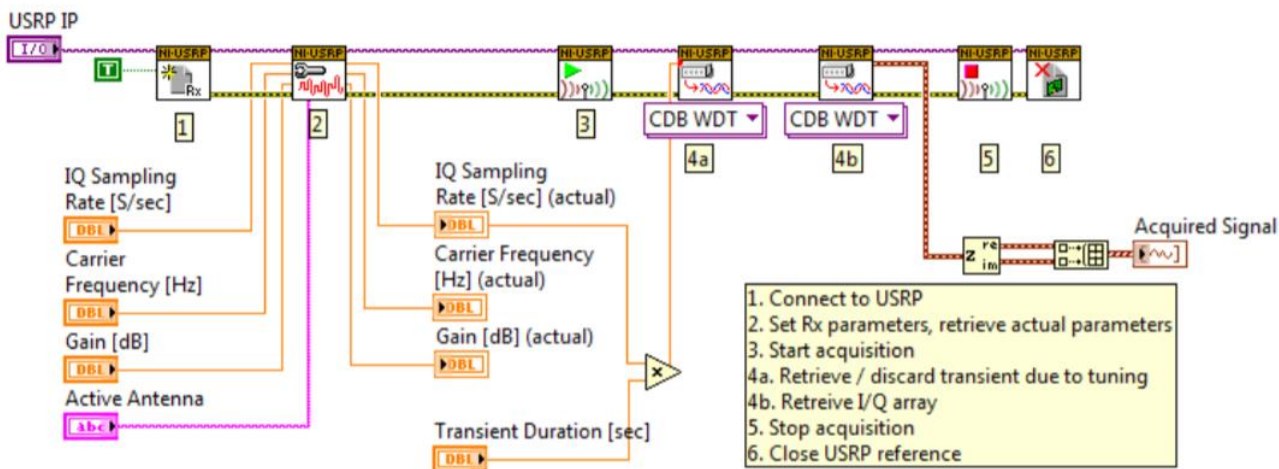
USRP 運作流程

USRP 接收端運作流程

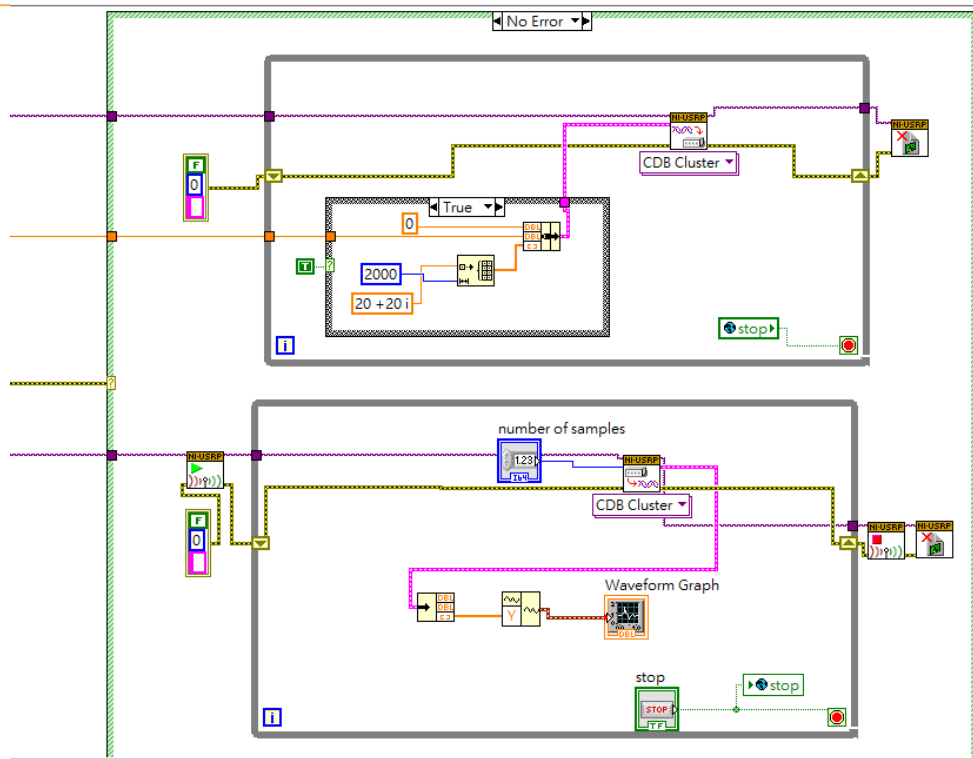


USRP範例

- USRP 模組預設定使用方式



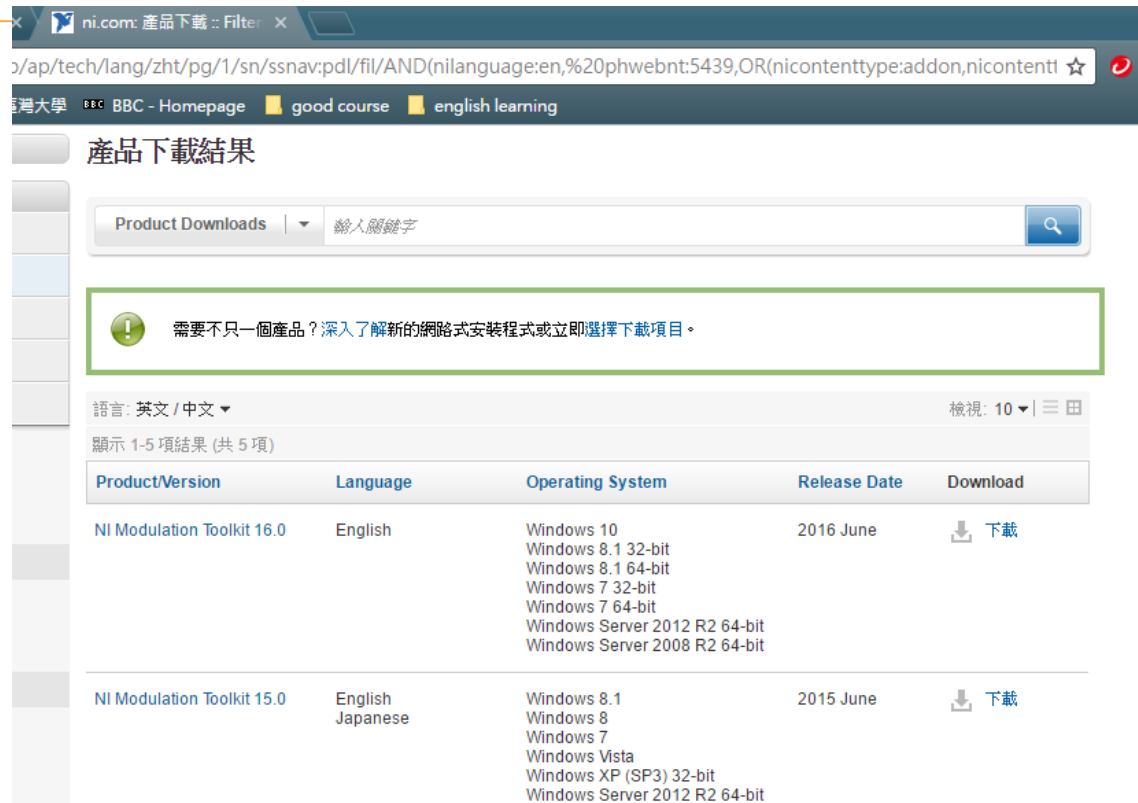
USRP實(2)



NI Modulation Toolkit Installation

NI Modulation toolkit

- Search “NI modulation toolkit” on NI support website
- Download the latest version
- Enter license number (same as LabVIEW 2014)



ni.com: 產品下載 :: Filter

ap/tech/lang/zht/pg/1/sn/ssnav:pdl/fil/AND(nilanguage:en,%20phwebnt:5439,OR(nicontenttype:addon,nicontent

產品下載結果

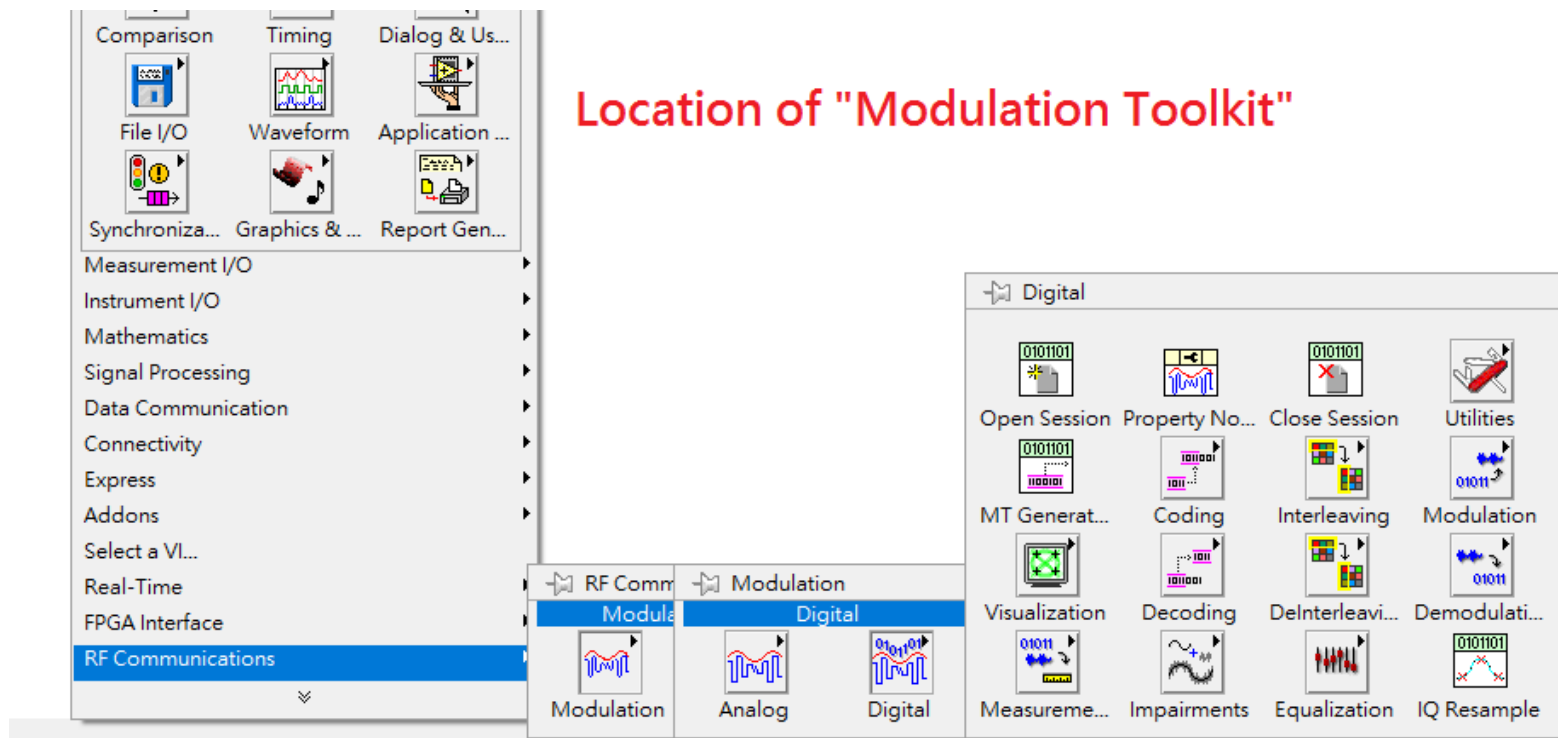
Product Downloads 輸入關鍵字

需要不只一個產品? [深入了解](#)新的網路式安裝程式或立即選擇下載項目。

語言: 英文 / 中文 檢視: 10 顯示 1-5 項結果 (共 5 項)

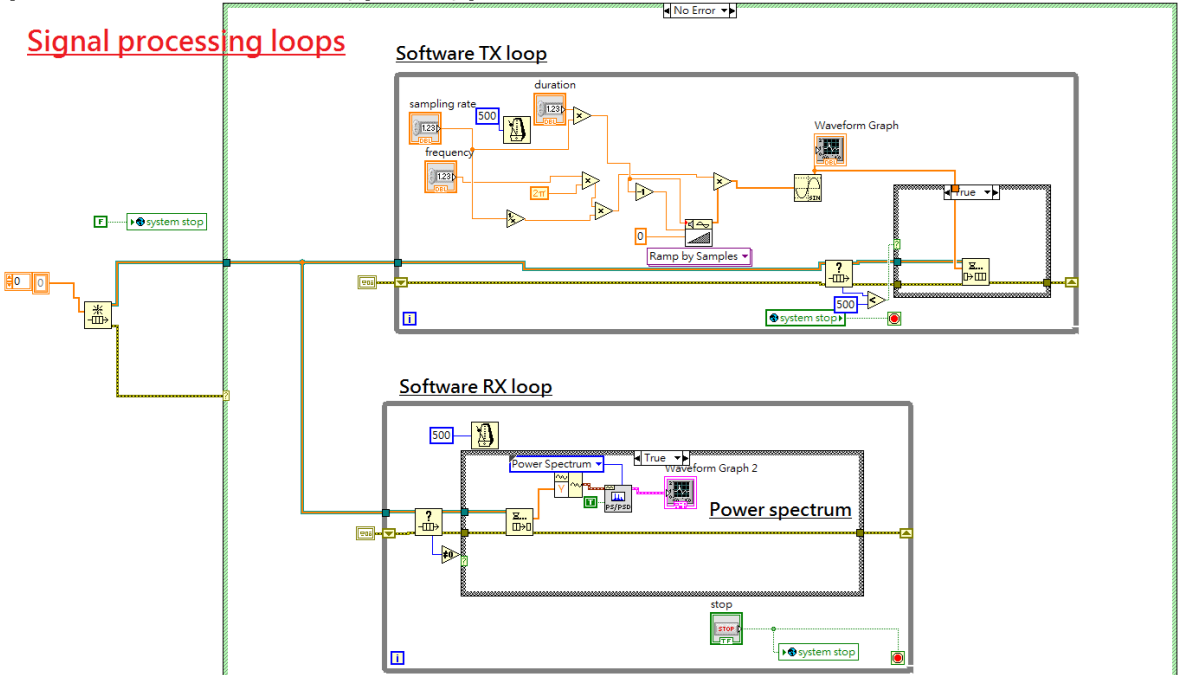
Product/Version	Language	Operating System	Release Date	Download
NI Modulation Toolkit 16.0	English	Windows 10 Windows 8.1 32-bit Windows 8.1 64-bit Windows 7 32-bit Windows 7 64-bit Windows Server 2012 R2 64-bit Windows Server 2008 R2 64-bit	2016 June	下載
NI Modulation Toolkit 15.0	English Japanese	Windows 8.1 Windows 8 Windows 7 Windows Vista Windows XP (SP3) 32-bit Windows Server 2012 R2 64-bit	2015 June	下載

Location of modulation toolkit in LabVIEW 2014



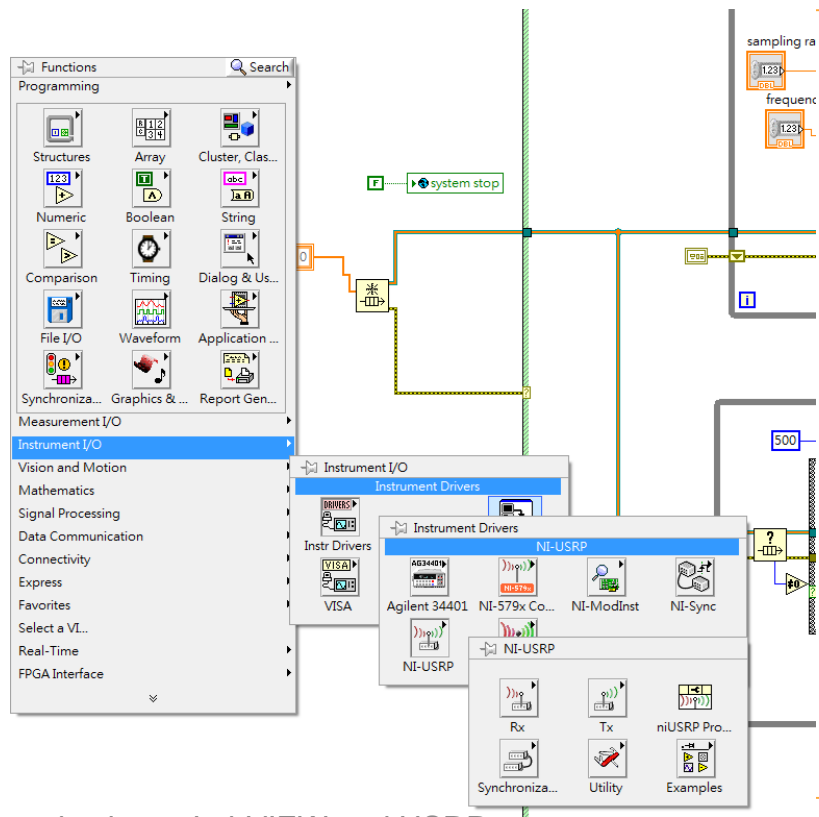
From LabVIEW to USRP

Lab1 example: sinewave signal generator



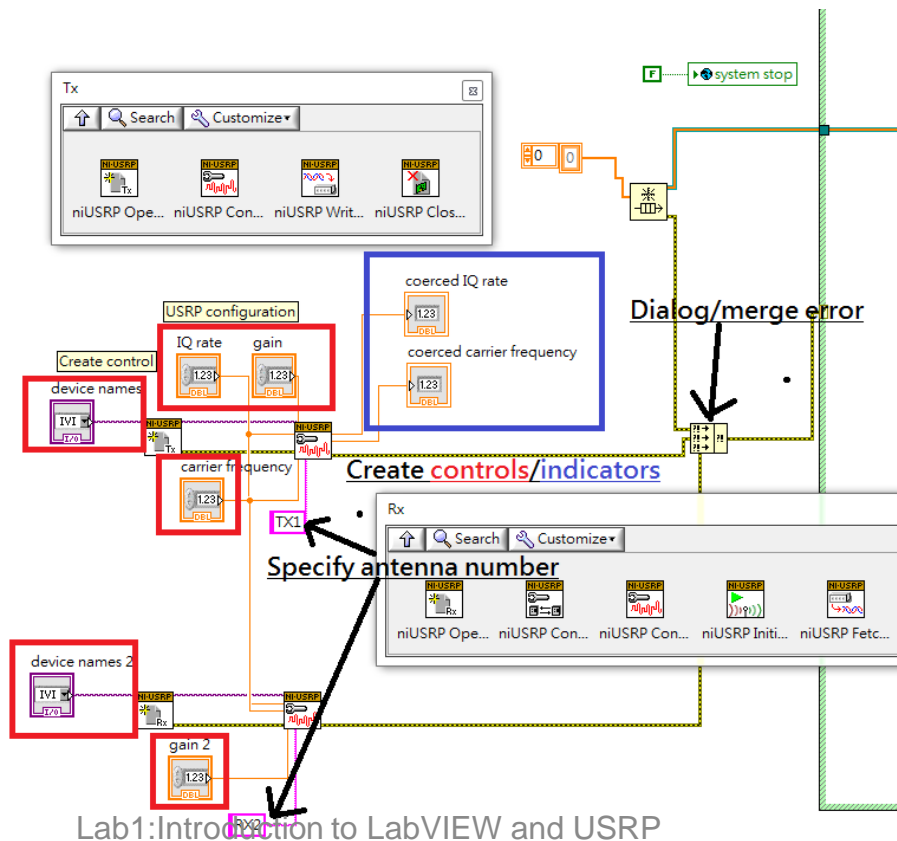
Create USRP interface

Step 1: find USRP modules



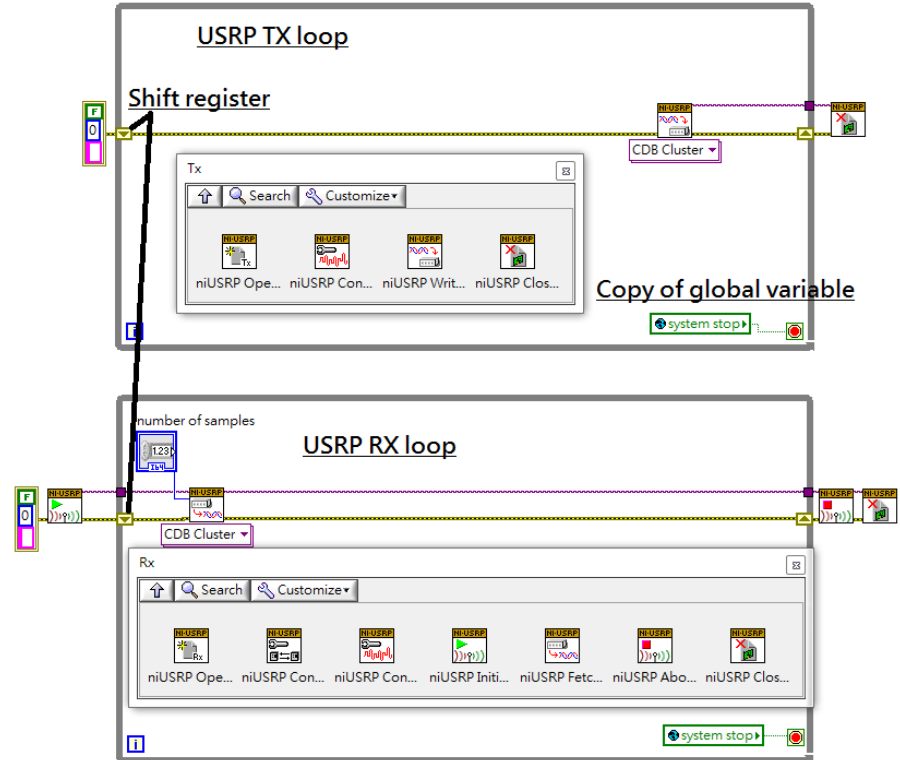
USRP configuration interface

Step 2: config. blocks

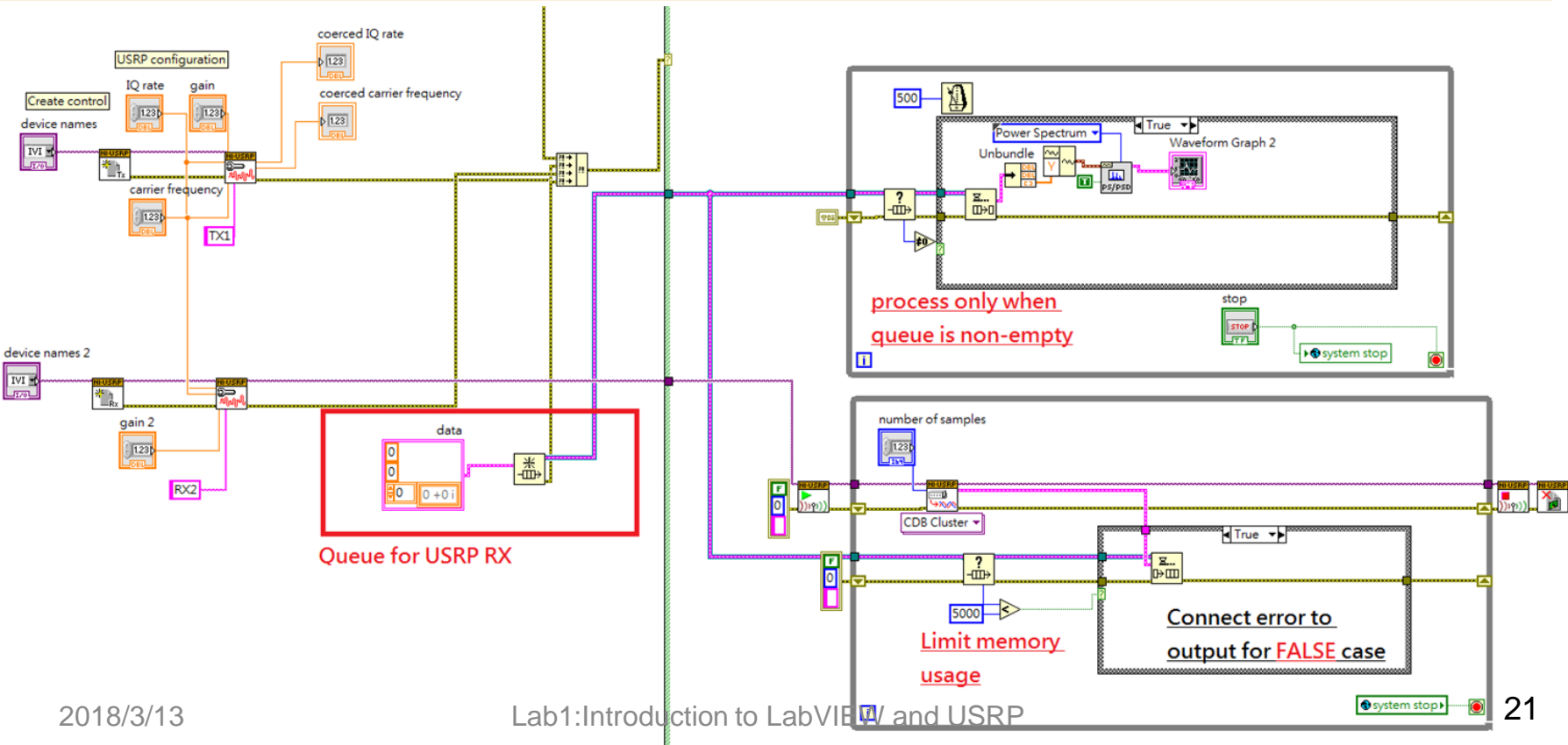


Create USRP-LabVIEW interface

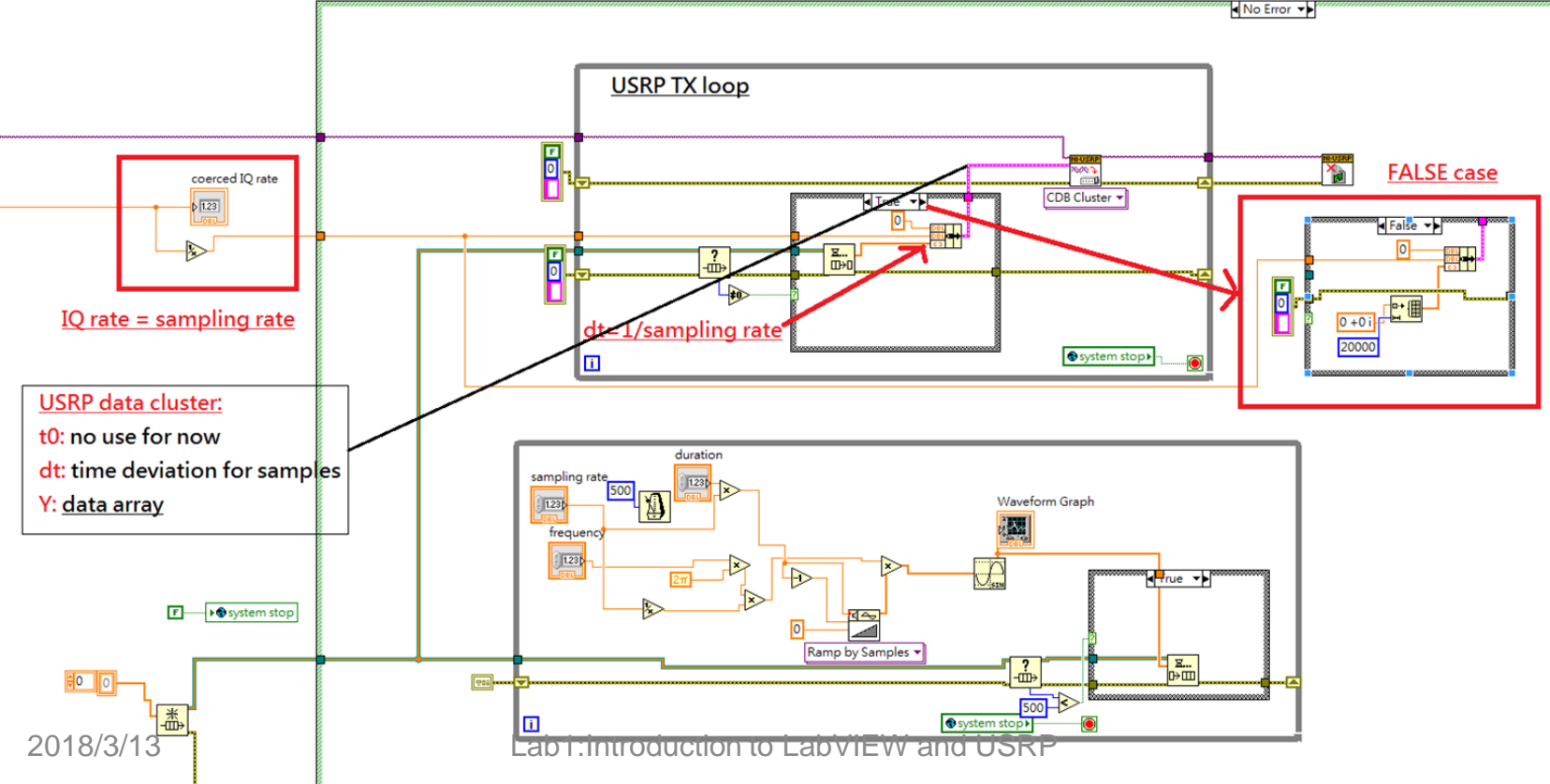
Step 3: create TX/RX loops



Modify RX loops



Modify TX loops



Modify signal processing loops

