

# Working Experience @Himax

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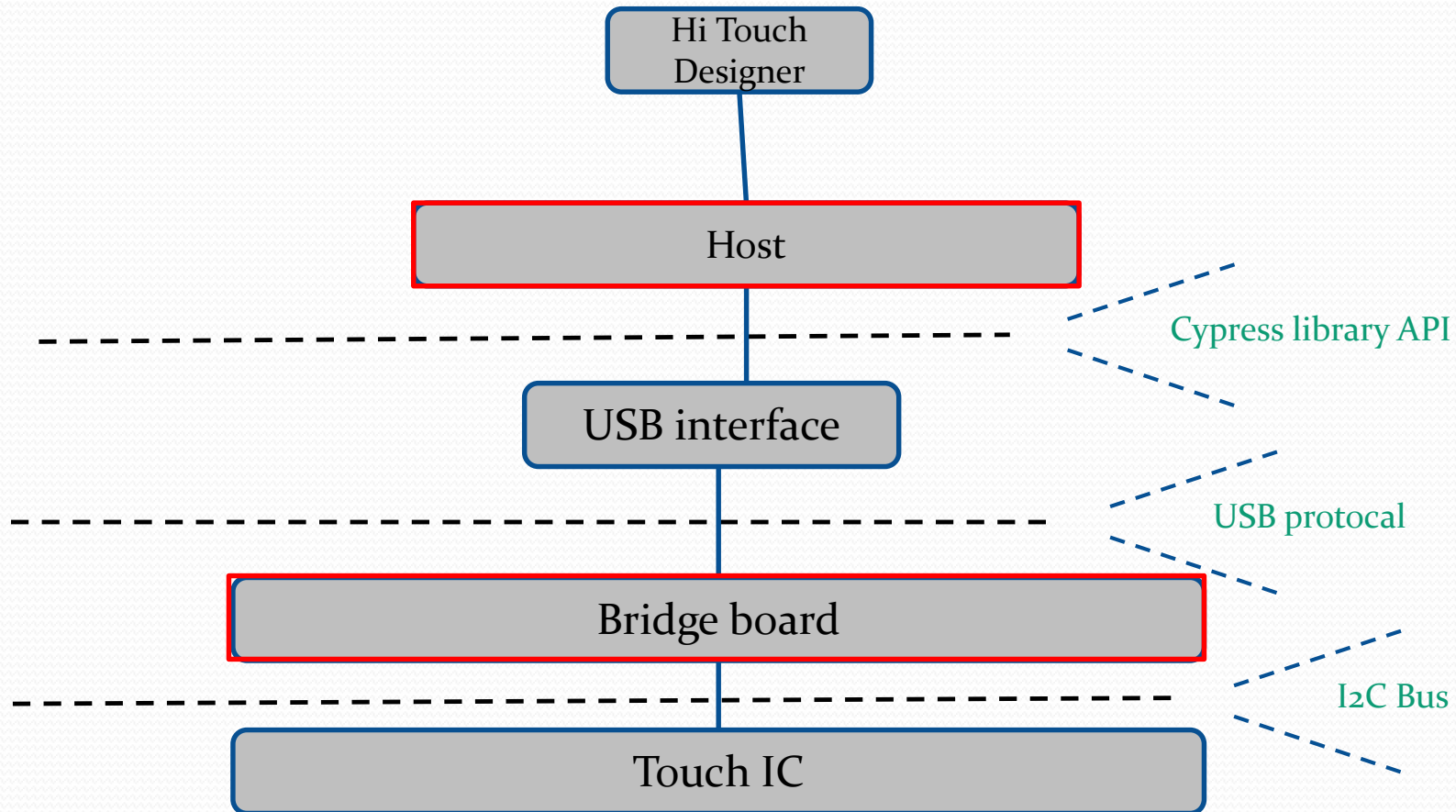
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# Outline

- Hi Touch Designer
- Bridge Board FW
- Windows-based application
- 2nd bridge board FW

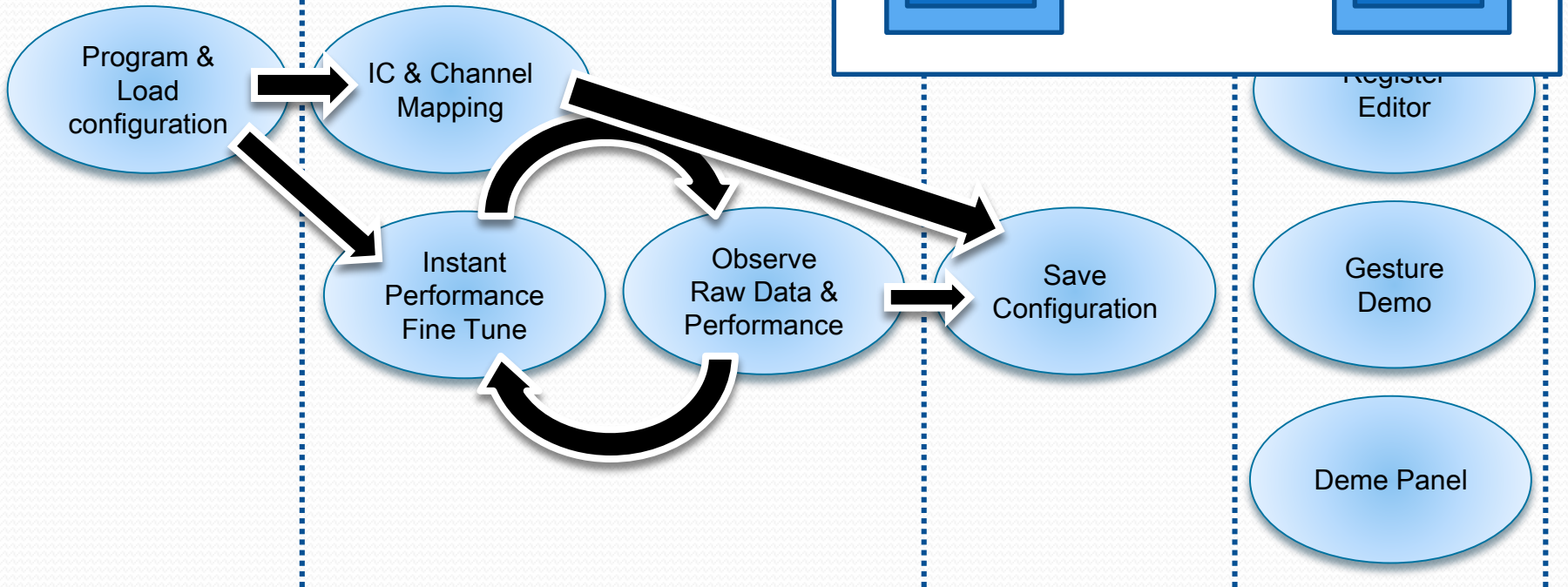
# Hi Touch Designer



Hi Touch Des

Load Config.

Edit Config.



# Hi Touch Designer

- Developed and maintained a large-scale windows-based program.
  - Communicate with the bridge board
  - Set the voltage and launch register r/w command.
  - Get touch IC data from the bridge board for observation
  - Fine-tune the parameter and save it into exported firmware.
  - Refractor and rework for different IC type and FW version.

# Hi Touch Designer

- The outlook of Program & Load FW page

HiTouch Designer Ver.1-5 - Beta 4 PA5731 CRC checksum, Slave\_address = 0x90

Import proj Auto Mode 燒錄連接器程式 燒錄韌體 載入參數設定 感應喚醒 感應關閉 Macro Compare Flash Reload (on) Update FW/Config HW Reset 語言 繁體中文 協助 資訊 HiTouch Himax

燒錄及載入參數 產生對照表 觀察資料 產生設定檔 暫存器讀寫 AutoTunning SPP func

E:\myCode\hitouch\_release\2014-10-16\_hiTouchDesigner V1-5\_Beta 4 - 1\FW\D-chip

檔案名稱	日期	時間	大小
Bin file			
read_back.bin	2015/1/9	上午 09:25:17	32768 bytes
hTC_MEM_modified.bin	2014/10/29	上午 11:34:49	32768 bytes
hTC_MEM.bin	2014/8/5	下午 08:10:24	32768 bytes
HIMAX_Firmware_20131119_D0306_CID_0004_RX29_TX16.bin	2014/5/6	下午 04:19:27	32512 bytes
HIMAX_Firmware_20131119_D0306_CID_0004_RX24_TX25.bin	2014/5/6	下午 04:19:27	32512 bytes
HIMAX_Firmware_20131119_D0306_CID_0004_RX16_TX29.bin	2014/5/6	下午 04:19:27	32589 bytes
HIMAX_Firmware_20131118_DC1_RX22-TX26.bin	2014/5/6	下午 04:19:27	32768 bytes
HIMAX_Firmware_20131118_DA1_RX26-TX23.bin	2014/5/6	下午 04:19:27	32768 bytes
Himax_D0304_TX25_RX24.bin	2014/2/5	下午 06:29:51	32696 bytes
GN5309_D0303_V0D_NBS_TX29_RX16.bin	2013/12/12	上午 11:30:03	32088 bytes
GN5309_D0303_V0D_NBS_TX25_RX24.bin	2013/12/12	上午 11:30:03	32030 bytes

參數設定資訊

公司: HTC

觸控面板模組: MEM

終端客戶: DC5

參數設定版本: -01

參數設定日期: 2014/02/07

韌體版本: C5

韌體位置

改變檔案位置 開啟目錄

載入參數設定從:

load... 從 Flash 載入參數

存檔

Program...

Power Setting

VCCA 3.3 V

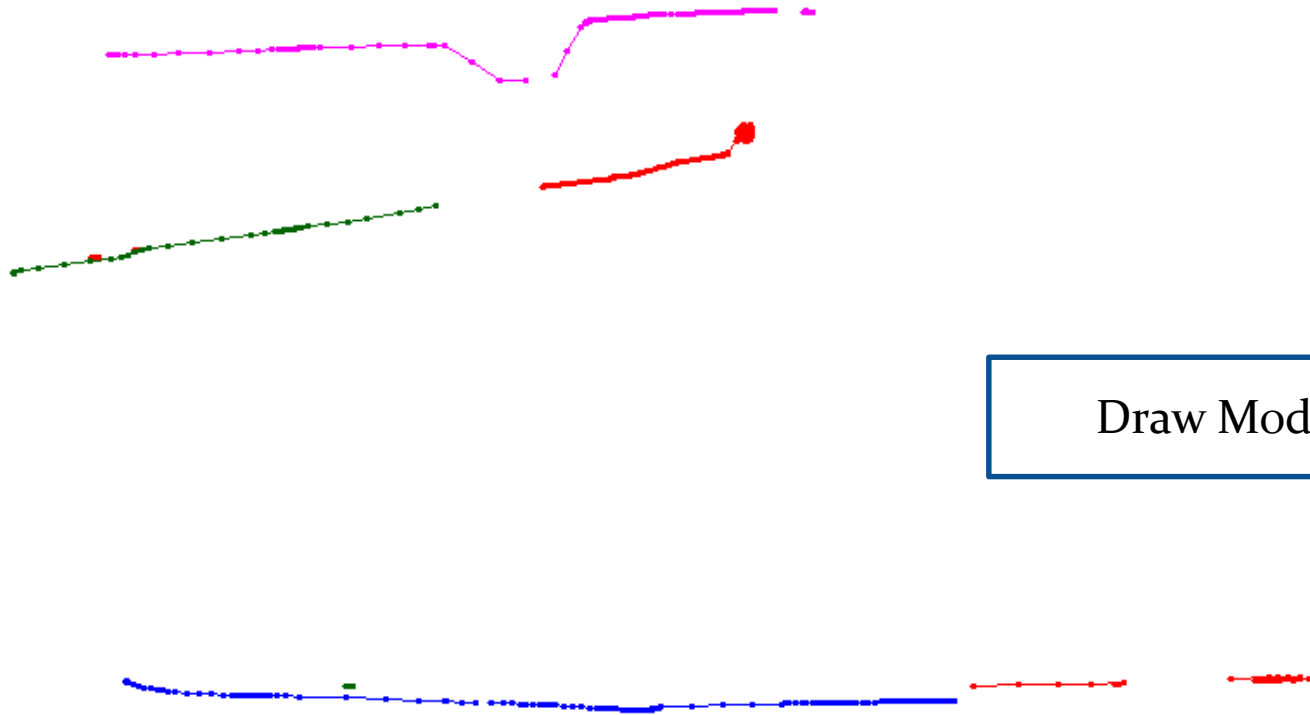
VCCD 3.3 V

APPLY

USB狀態 已連接 (SiliconLab) V0209 IC狀態 HX8526 韌體狀態 DC501 ITO Type general 參數設定狀態 準備完成

目前狀態: 參數設定已經載入完成  
建議: 請跳轉到其他頁面觀察資料

# Hi Touch Designer



## Draw Mode

Report Rate = 14.4 ms (69.3 Hz)

Point 1 X: 589 Y: 411    Point 2 X: 709 Y: 1875    Point 3 X: 361 Y: 1837    Point 4 X: 623 Y: 114    Point 5 X:   Y:    Point 6 X:   Y:    Point 7 X:   Y:    Point 8 X:   Y:    Point 9 X:   Y:    Point 10 X:   Y:

# Hi Touch Designer

The screenshot displays the Hi Touch Designer software interface. The main window features a data table with columns X01 through X11 and rows Y01 through Y19. The table is color-coded: green for the first column (Y01-Y19), blue for the second column (Y01-Y19), and yellow for the third column (Y01-Y19). The data values are as follows:

		0	3	3	6	7	0	18	28	18	20	21
		X01	X02	X03	X04	X05	X06	X07	X08	X09	X10	X11
37	Y01	2	0	0	0	0	0	0	0	0	0	0
125	Y02	0	0	0	0	0	0	27	0	0	0	0
163	Y03	1	0	0	0	0	0	50	30	0	0	0
37	Y04	1	0	0	0	0	0	21	18	8	5	9
0	Y05	0	0	0	0	0	0	0	0	0	0	0
0	Y06	0	0	0	0	0	0	0	0	0	0	0
0	Y07	0	0	0	0	0	0	0	0	0	0	0
0	Y08	3	2	4	2	3	0	2	2	0	0	0
0	Y09	0	0	0	0	0	0	0	0	0	0	0
0	Y10	0	0	0	0	0	0	0	0	0	0	0
0	Y11	0	0	0	0	0	0	0	0	0	0	0
0	Y12	0	0	0	0	0	0	0	2	0	0	0
0	Y13	0	0	0	0	2	0	0	0	0	0	0
0	Y14	2	1	1	3	6	15	9	10	0	0	0
0	Y15	0	0	7	0	0	0	0	0	0	0	0
6	Y16	4	5	13	5	8	13	14	2	0	0	0
0	Y17	0	0	0	0	0	0	0	0	0	0	0
11	Y18	1	4	1	0	0	0	0	0	0	0	0
17	Y19	7	3	4	1	0	0	0	0	0	0	0

The interface includes a toolbar at the top with icons for various functions like '圖表視窗(開啟)', '劃線(開啟)', '控置版面(開啟)', '微調(開啟)', '所有版面開啟', '所有版面關閉', '啟動', 'Receiving..', and 'Mini RegRW'. A secondary toolbar below it contains '燒錄及載入參數', '產生對照表', '調變資料', '產生設定檔', '暫存器讀寫', and 'AutoTuning'. On the right side, there is a settings panel with tabs for 'Threshold', 'Func Enable', 'Alg1', 'Panellayout', and 'Raw Data'. The 'Alg1' tab is active, showing parameters like 'FE(1E)', 'MAX\_DIS\_PR', 'TAP\_DIS\_PR', 'JIT\_RNG\_PR', 'AVG\_DST\_NOR', 'AVG\_ORD\_AC', 'RD\_NOR', and 'AVG\_DYC\_AC'. A red box highlights the settings panel, and a yellow dashed box highlights the '應用設定' (Apply Settings) button. Three instructional steps are overlaid on the interface:

- Step 1.** Tune the specific item. (Points to the 'MAX\_DIS\_PR' slider in the settings panel.)
- Step 2.** Click the apply setting. (Points to the '應用設定' button.)
- Step 3.** Check its efficacy. (Points to the data table.)

The bottom status bar shows the display mode (顯示模式) with options for '繪圖', 'IIR', 'DC', 'Bank', and '(Bank - 32)'. It also includes buttons for 'General', '啟動', '暫停', 'Save all to 2T3R excel', 'Load from 2T3R excel', and '2T3R Decouple'.



# Bridge Board FW

- Maintain and develop Cypress FX2 firmware
  - Reduce code size down to 8k so for getting rid of the external ram
  - Auto-polling slave address.
  - Polling PC command from PC and transfer them into I2C signal
  - By monitor interrupt pin, receive Touch IC data and send them into host application.
  - Become HID device by modifying the descriptor table

# Windows-based application

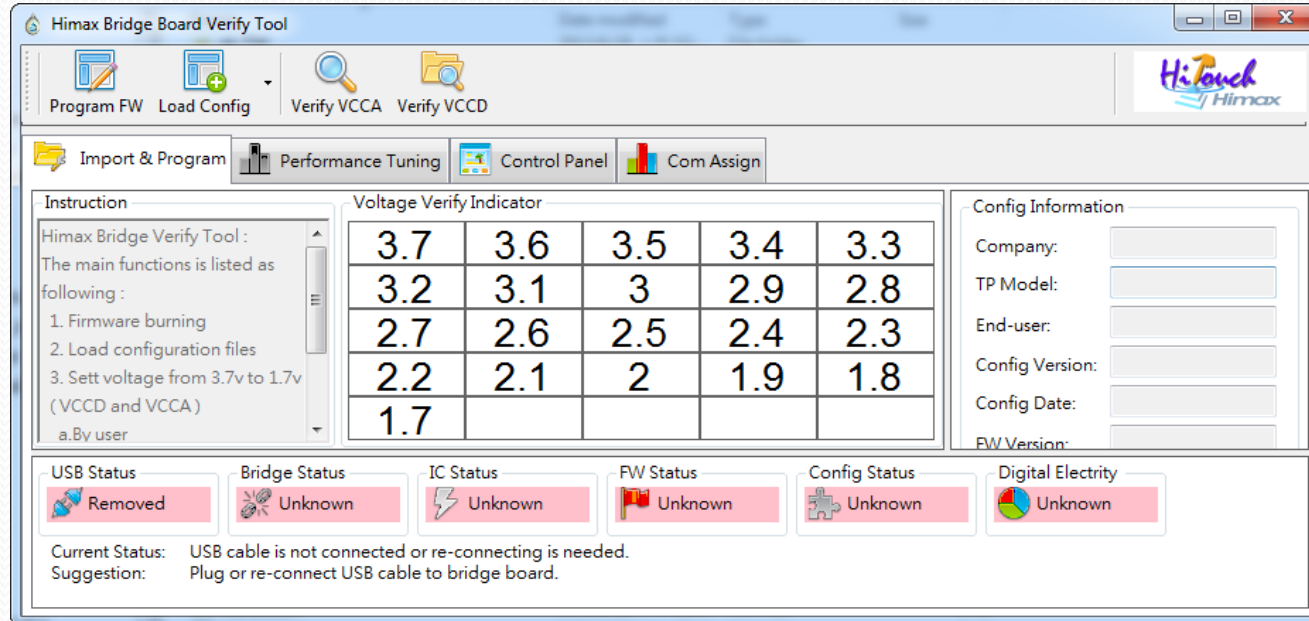
- Incorporate Himax IC and Silicon lab chip to work on Win 8 environment
  - Modified from "USBPcap" open source project to catch the USB packet from USB hub and compose it as a two dimension array.
  - Windows-based multi-thread program.
- BCB program
  - Modified from “simple HID” open source project
  - Has capability to do flash programming and register R/W

# 2<sup>nd</sup> generation bridge board FW

- Porting FW code from Cypress FX2 platform into Silicon Lab chip
  - Since the change of High speed device to full speed device, the composing and dividing operation is necessary.
  - Modify the code of the Host AP and FW, so that the interaction would be compatible.
  - 1-4 flash programming by SW I2C manipulation.
  - Program Touch FW by HW button click without connecting to PC.

# Bridge Board Verification tool

- HiBridge Tool :
  - Verification of the voltage setting of analog and digital by connecting with the digital-Multimeter





# Q&A