



INTRODUCTION

Rafael Lin's work experiences in synaptics



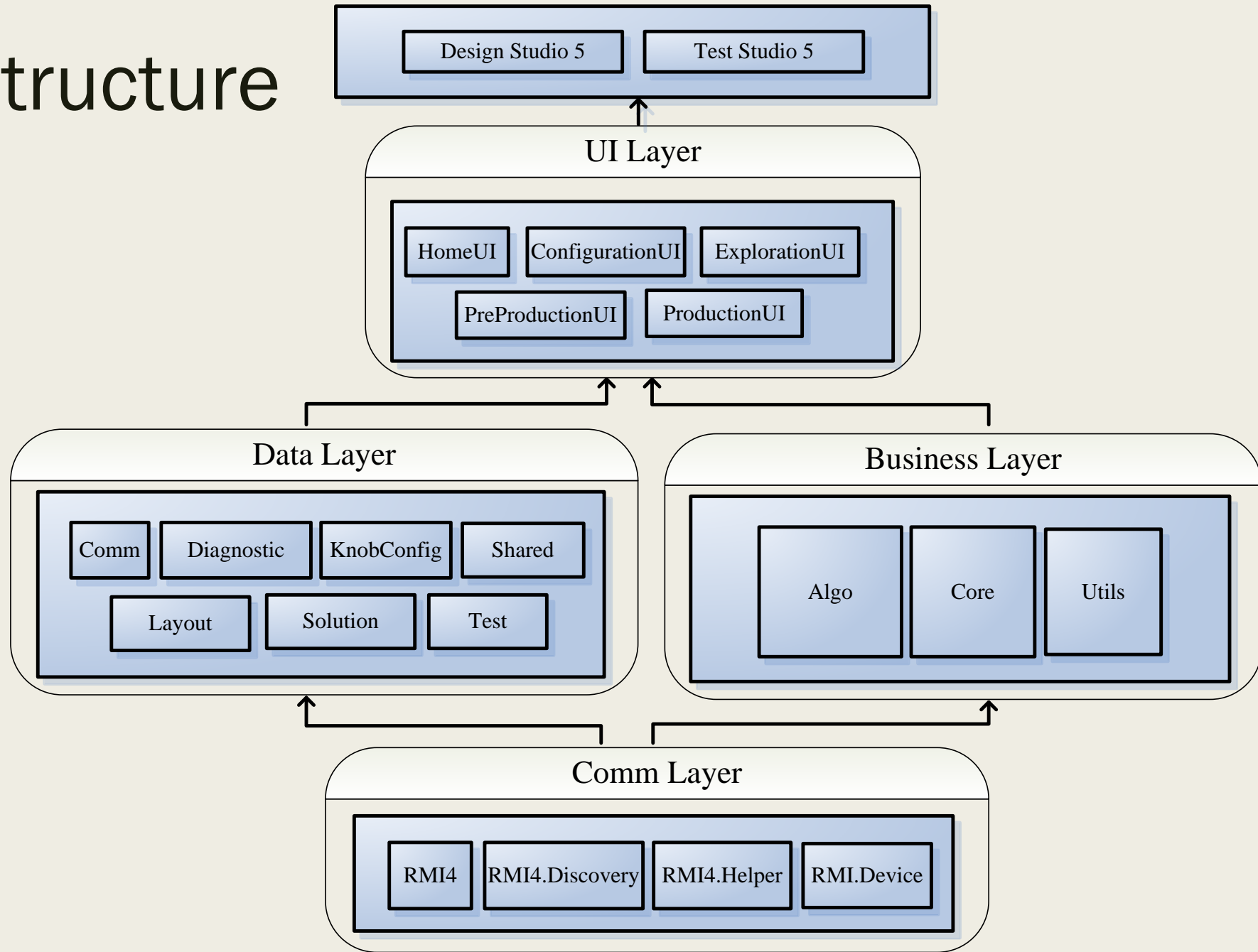
My Responsibility

- Develop application for touch controller, which is used by entire ecosystem. Key features include flash programming, configuration tuning, diagnostic, performance evaluation and production test (WinForm/C# and C++)
- Design and develop in-system firmware update and test application regarding LTS(Large Touch Screen) projects. (C++)
- Design and develop windows library to communicate with touch controller firmware through Socket, I2C, SPI, HID and USB interface (C++)

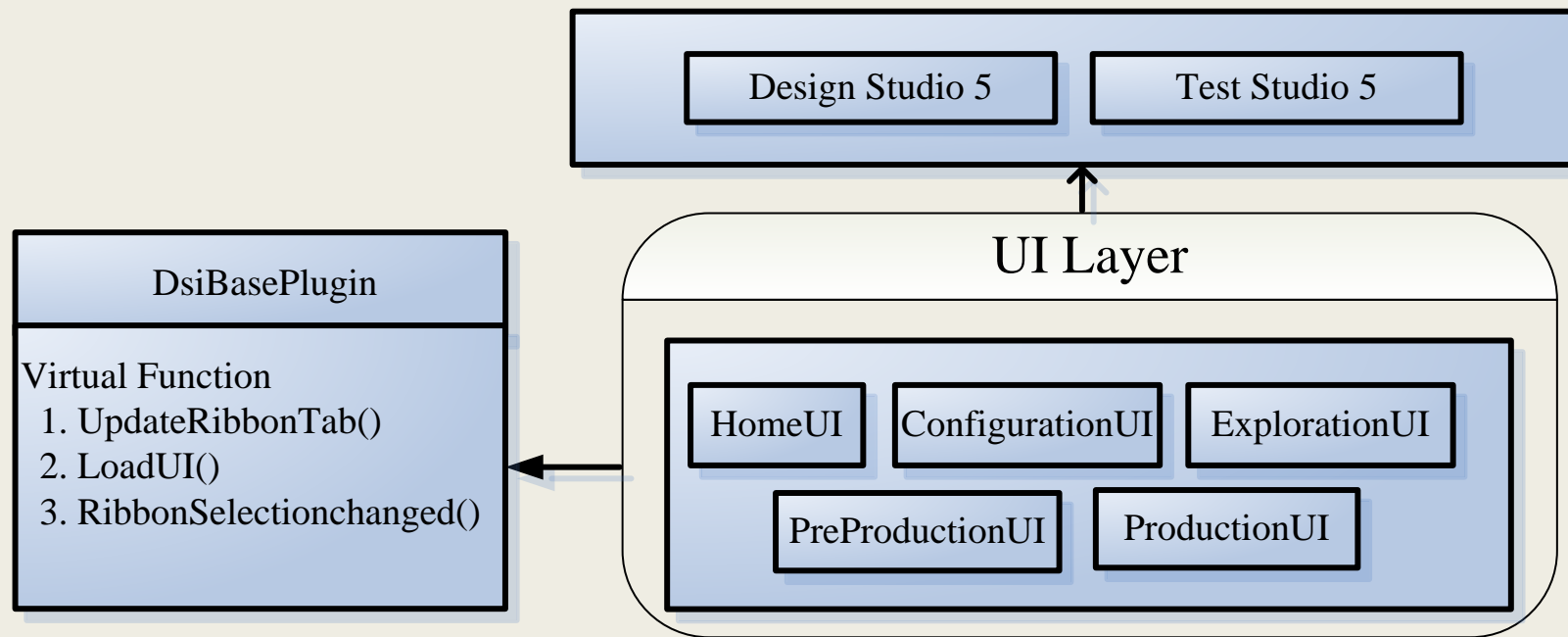
My Responsibility

Platform releases				Customer support
DS4	DS5	DS6	TSLite	Customer issues
DS4 3.5.5 DS4 3.5.6 DS4 4.1.0	DS5 7.0.0 DS5 7.1.0 DS5 7.2.0 DS5 9.1.0 DS5 15.3.0 DS5 12.5.0 DS5 17.1.0 DS5 17.2.0	DS6 1.0.0	TSLite 3.1.0.0 TSLite 3.2.0.0 TSLite 3.3.0.0	DS4/5 X.X.X

DS5 Structure



Loading UI Plugins



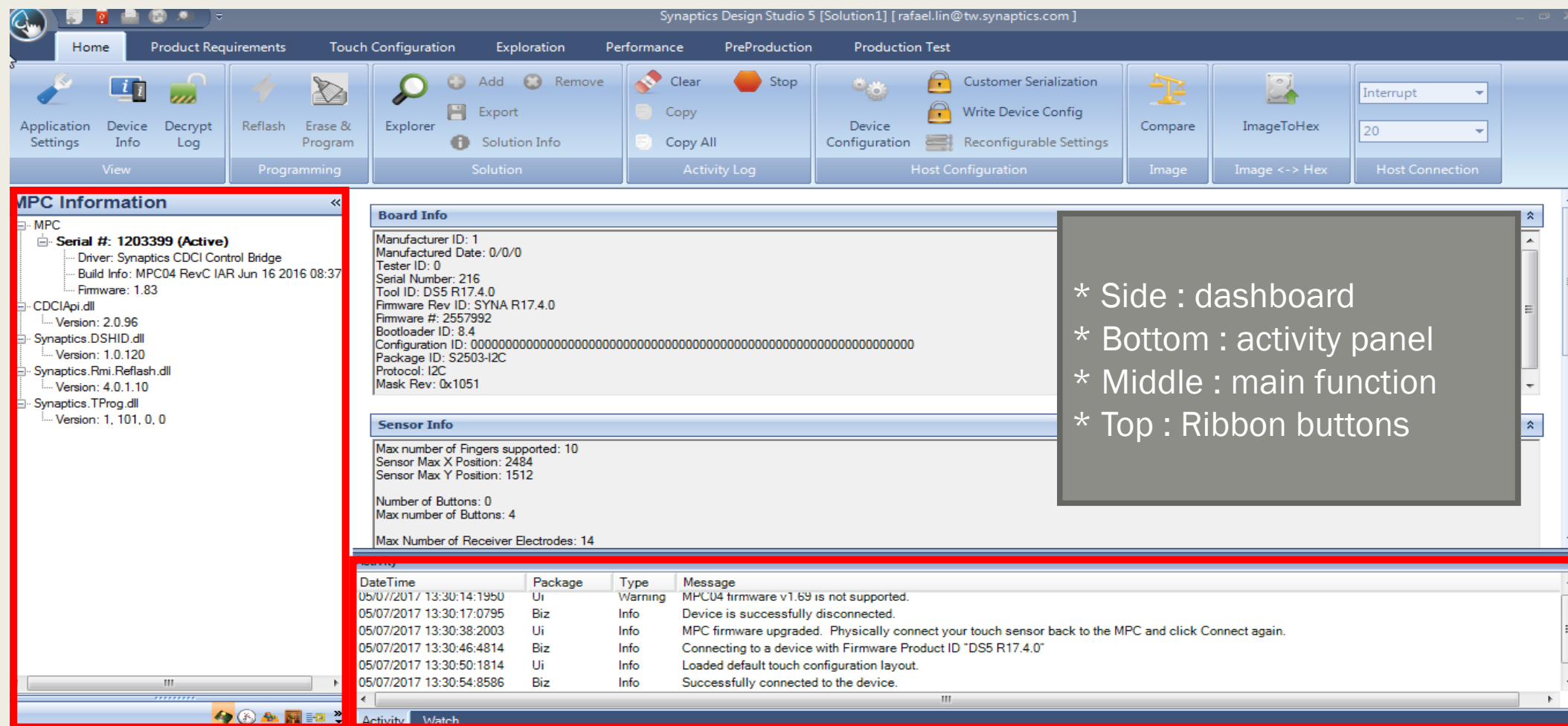
* In DesignStudio5

1. Load each plugin by Assembly Load method
2. Iterate specific files to load the plugins
3. Decouple each plugin to provide flexibility

* Interaction between Plugins

1. Subscribe Events from users and system
2. Once notified, update it's own UI

The look of DS5



Touch Configuration – Advance View

- Tune specific knobs and save it by “WriteToRam” or “WriteToFlash”
 - Use *sqlite* to determine the existence of each knob

Synaptics Design Studio 5 [Solution1]

Home Product Requirements Touch Configuration Exploration Performance

Tx/Rx Analog Tuning Sensor Tuning Noise Tuning Mapping

Save Layout Save Config to Image File Export Config Export Register Map into HTML

Click to populate the advanced view.

Advanced Configuration

MPC Information

Configuration ID: HEX 00000000

Device Properties

2D

Name	Value
Negative Finger Amplitude T	64
Tx Low Edge Comp	1
Tx High Edge Comp	1
Rx Low Edge Comp	1
Rx High Edge Comp	1
Slow Relax Rate,IF/s	1
Fast Relax Rate,IF/s	10
Blending Small Corner	1
Blending Large Corner	1

Analog Config

Name	Value
Trans Lap Hef HupF	4.824
Rx Fdbk Cap.pF	30.5
Rf Rx Fdbk Cap.pF	30.5
Trans Cap Gain Stage	2.0
Trans Cap CBC.pF	Click here to see
Bias Current	0
Force Fast Relaxation	<input type="checkbox"/>
No Scan	<input type="checkbox"/>

CBC settings.

Noise

Name	Value
Noise Floor,IF	15
Charger Connected	<input type="checkbox"/>
Num Of Noise Bursts	4
No Noise Mitigation	<input type="checkbox"/>
Med Noise Thresh	65535

Others

Name	Value
Configured	<input checked="" type="checkbox"/>
Report Rate	0
No Sleep	<input checked="" type="checkbox"/>
Sleep Mode	0

Sensor

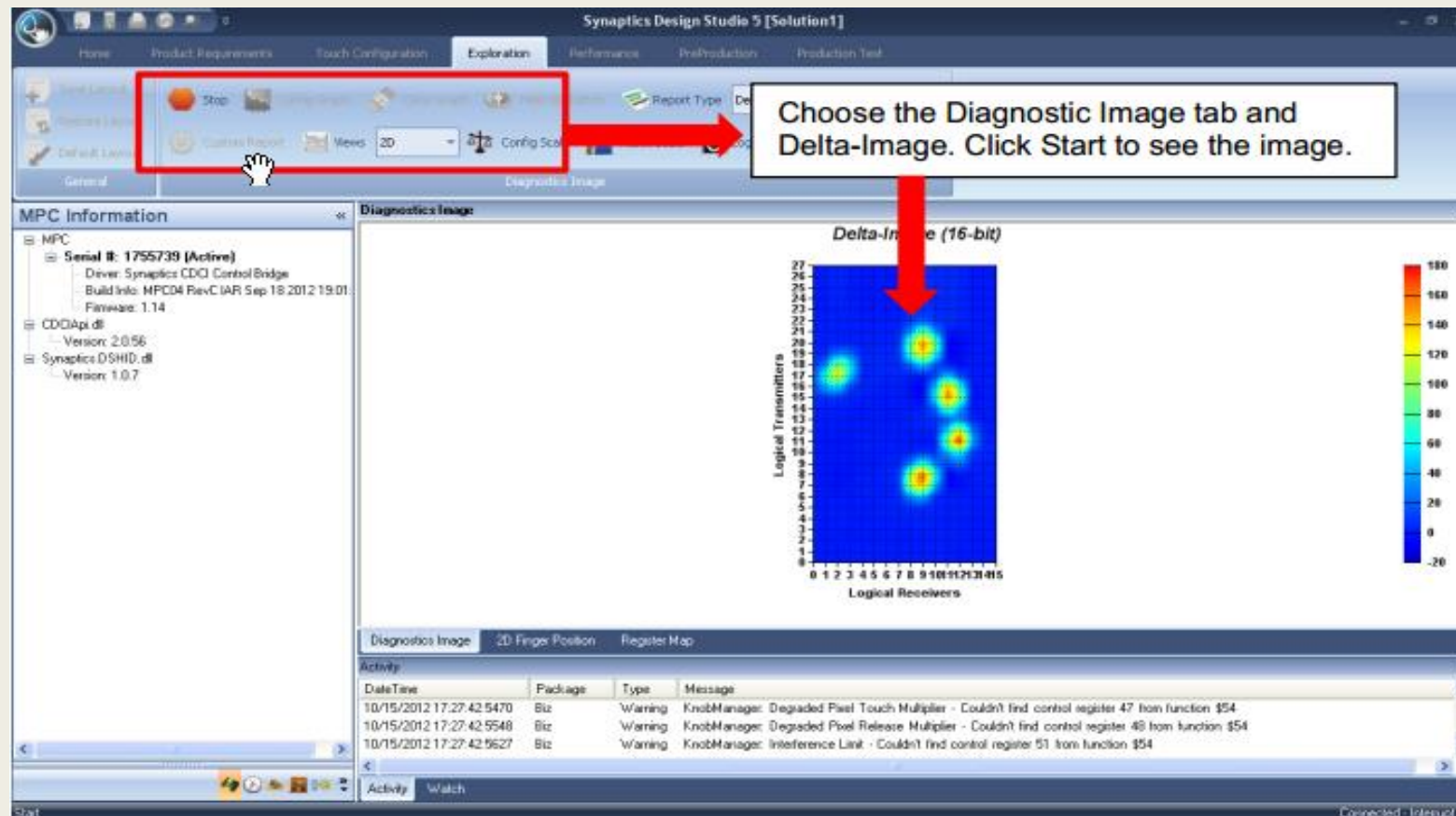
Name	Value
Tx Mapping	49,48,51,50,46,47,45,44,43
Rx Mapping	23,22,25,19,26,17,27,21,28
Physical To Logical Axes	Rx on X-Axis and Tx on Y-Axis
TRX Sense	<input checked="" type="checkbox"/>
TRX Conf	<input type="checkbox"/>

Activity

DateTime	Package	Type	Message
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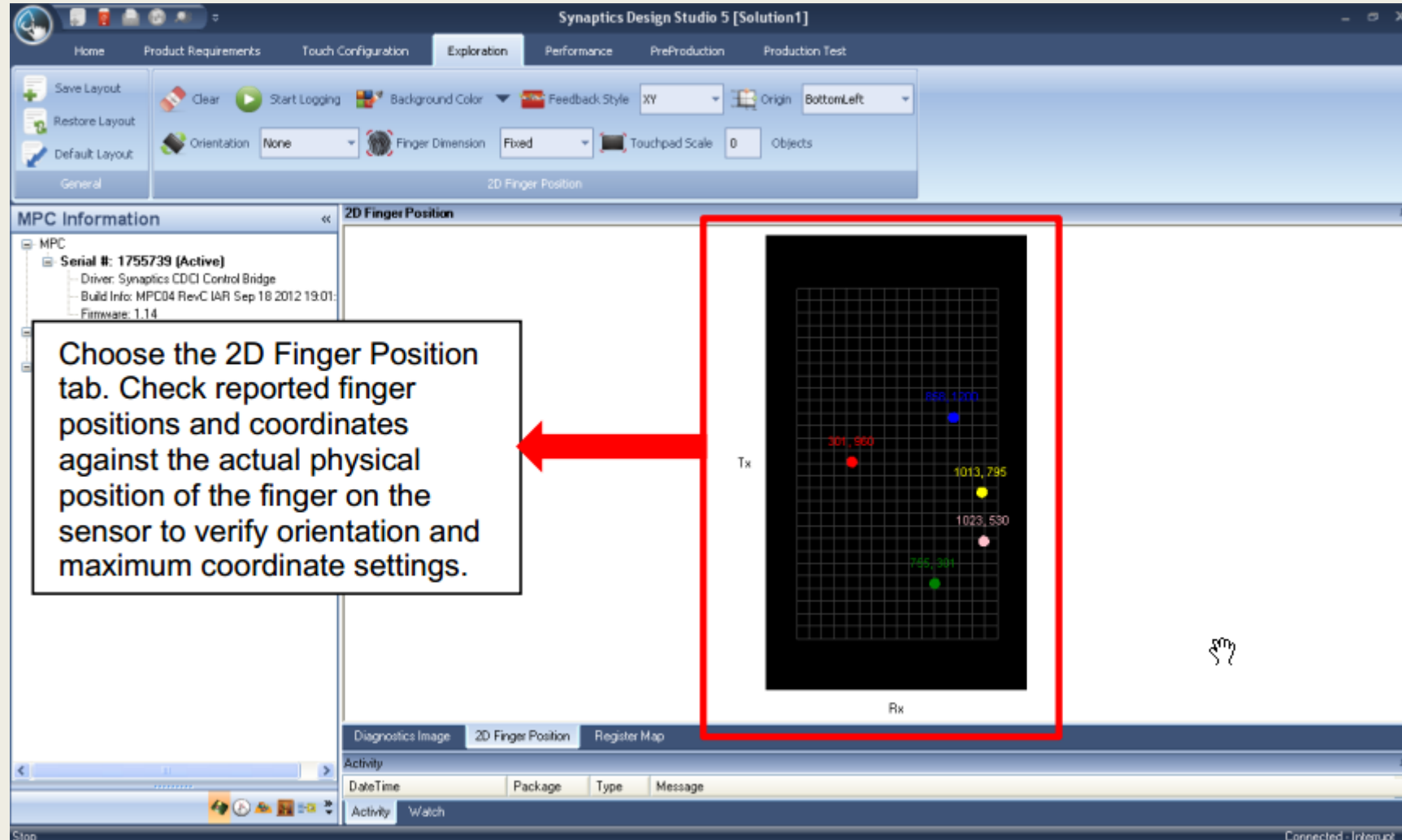
Raw Data Diagnostics

- Get report data from Function 54 through polling mode

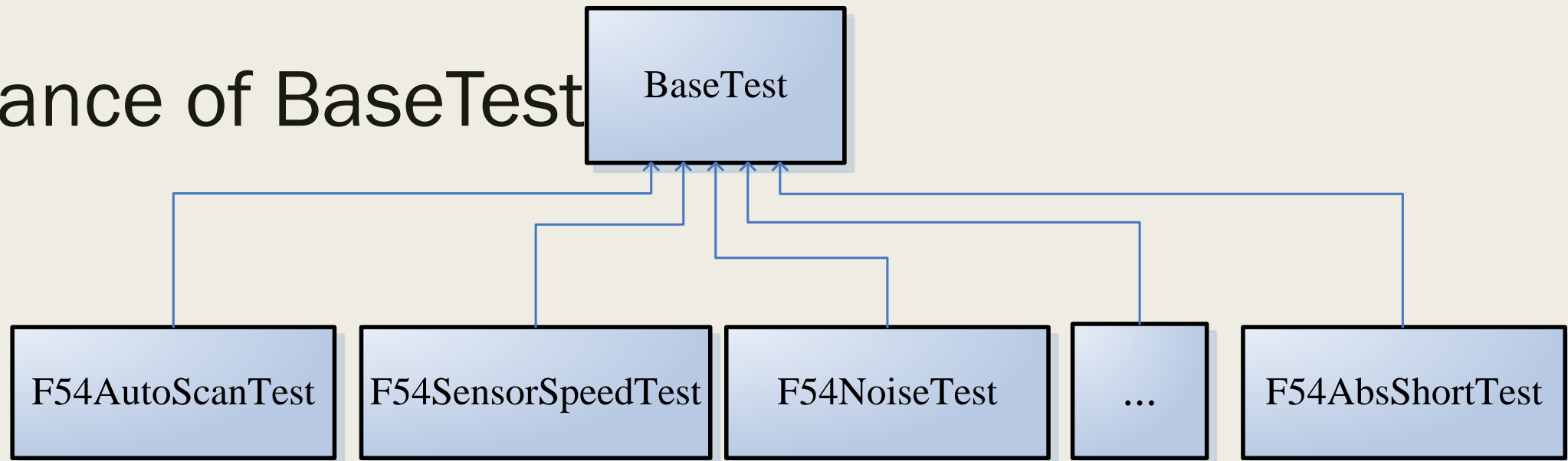


2D Finger position

- Get 2D finger touch position from Function12 through interrupt mode



inheritance of BaseTest



* Override/Virtual Function

1. Run(TestPhase, TestLimit)
2. Run(TestLimit)
3. Run(TestPhase, TestLimit, Samplecount)

* Common used functions :

1. BeginTesting()
2. EndTesting()

* Private

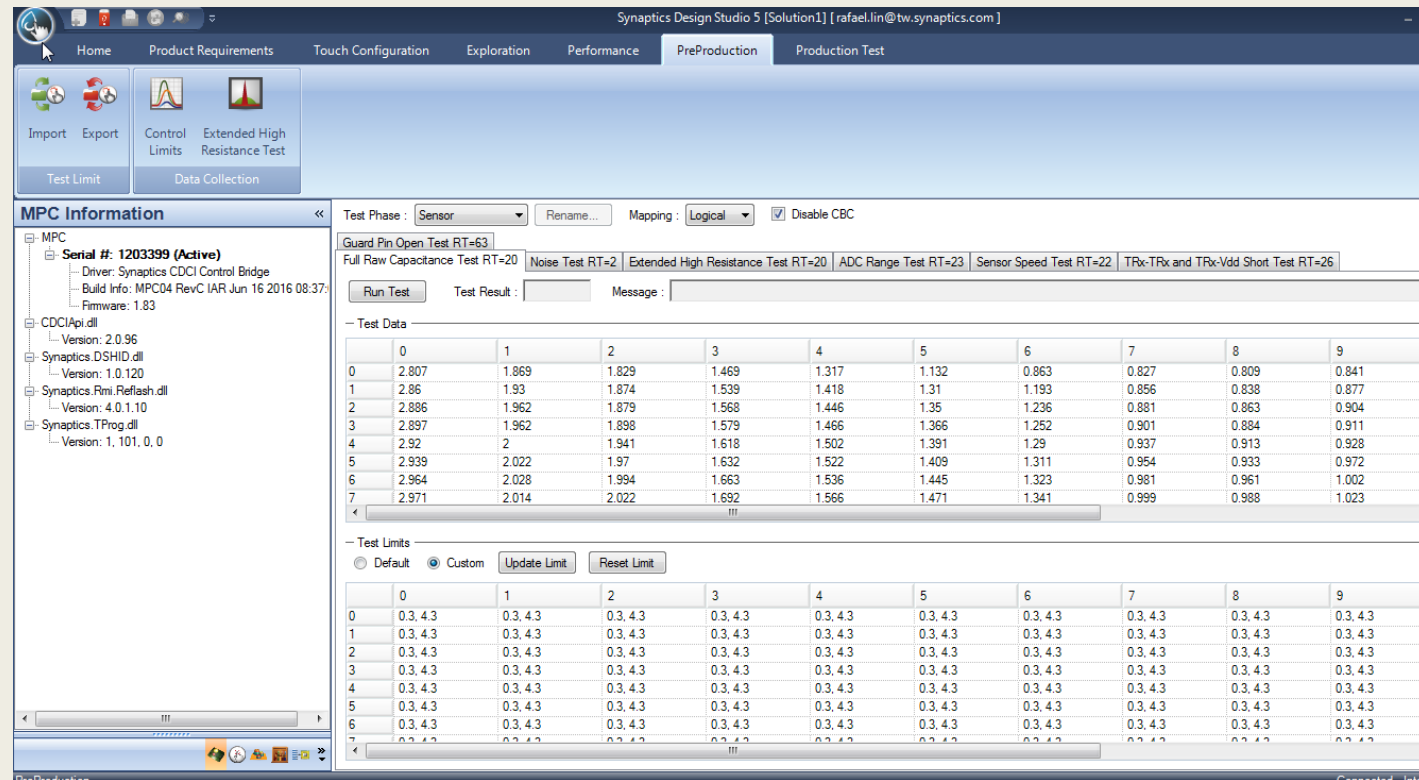
1. _original0dCbcFlag
2. _originalNoSleep
3. _OrigInterrupt

* Protected

1. Bin_Num
2. _TestState
3. _TestErrorMessage

Preproduction

- Pre-run the test flow to see whether the defect block would be detected or not
 - *Load the test limit and could dynamically modify and save it at run time*



Software Release Life Cycle

