

Top-Level Review for Porting GE Fanuc/Condor 1553 Programs to Alta Data Technologies

(Please note: GE Fanuc/Condor Function Call Names are Copyright GE Fanuc Intelligent Platforms;
Alta Function Call Names are Copyright Alta Data Technologies LLC)

Typical RT Applications

Condor API Functions

Init Device

- BusTools_FindDevice()
- BusTools_API_OpenChannel()
- BusTools_BM_Init()
 - Must Perform Even Though This is not a BM Application. This is a wasted function.
- BusTools_SetInternalBus()
 - This is a wasted functional because default should be external

Init RT Function

- BusTools_RT_Init()
- BusTools_RT_AbufWrite()
- BusTools_RT_CbufWrite() – Per SA
- BusTools_RT_MessageWrite()
 - Does Not Clear Buffers

Turn On RT

- BusTools_RT_StartStop()
 - Starts All RTs – Does not allow for Individual RT Control

Read & Write Data

- **USER APPLICATION CODE GOES HERE**
- BusTools_RT_MessageWrite()
- BusTools_RT_MessageRead()
- Condor Has Different Data Structures for all 1553 Functions.

Close Function & Card

- BusTools_RT_StartStop()
- BusTools_API_Close()
 - Note: Closes ALL Channels – NOT Channel Independent

Alta API Functions

Init Device

- ADT_L1_1553_InitDefault()
- Alta Init Function Performs All Setup in One Step
- Alta Channels are Independent Devices! Better.

Init RT Function

- ADT_L1_1553_RT_Init()
- ADT_L1_1553_RT_SA_CDPAllocate() – Per SA
 - Auto Clears Buffers

Turn On RT

- ADT_L1_1553_RT_Enable()
 - Alta RTs can be controlled at the RT level – does not have to be global controlled. Better.
- ADT_L1_1553_RT_Start()

Read & Write Data

- **USER APPLICATION CODE GOES HERE**
- ADT_L1_1553_RT_SA_CDPWrite()
- ADT_L1_1553_RT_SA_CDPRead()
- Alta Has Common Data Packets for All 1553 Functions – Better!

Close Function & Device

- ADT_L1_1553_RT_Stop()
- ADT_L1_CloseDevice()
 - Note: Closes on Channel Device. Better.

Alta Functions are Well Designed for Embedded and Test Applications

Typical BC Applications

Condor API Functions

Init Device

- BusTools_FindDevice()
- BusTools_API_OpenChannel()
- BusTools_BM_Init()
 - Must Perform Even Though This is not a BM Application. This is a wasted function.
- BusTools_SetInternalBus()
 - This is a wasted functional because default should be external

BM Setup

- BusTools_BC_Init()
- Forced to Use Framing or One Shot Functions
- BusTools_BC_MessageAlloc()
- Only 2 Buffers Maximum per Message – No Time Stamp
- Does Not Clear Buffers
- Loop and Define Messages - BusTools_BC_MessageWrite()

Turn On BC

- BusTools_BC_StartStop()

Read Data

- **USER APPLICATION CODE GOES HERE**
- BusTools_BC_MessageWrite()
- BusTools_BC_MessageRead()
- Condor Has Different Data Structures for all 1553 Functions.

Close Function & Card

- BusTools_BC_StartStop()
- BusTools_API_Close()
- Note: Closes ALL Channels – NOT Channel Independent

Alta API Functions

Init Device

- ADT_L1_1553_InitDefault()
- Alta Init Function Performs All Setup in One Step
- Alta Channels are Independent Devices! Better.

BM Setup

- ADT_L1_1553_BC_Init()
- Framing is Optional with Common Setup/Controls
- More Advanced Frequency Control Options
- ADT_L1_1553_BC_CB_CDPAllocate
- May Have 1-N Buffers with Full Monitor/Time Stamp
- Auto Clears Buffers
- Loop and Define Messages - ADT_L1_1553_BC_CB_CDPWrite()

Turn On BC

- ADT_L1_1553_BC_Start()

Read Data

- **USER APPLICATION CODE GOES HERE**
- ADT_L1_1553_BC_CB_CDPWrite()
- ADT_L1_1553_BC_CB_CDPRead()
- Alta Has Common Data Packets for All 1553 Functions – Better!

Close Function & Device

- ADT_L1_1553_BC_Stop()
- ADT_L1_CloseDevice()
- Note: Closes Channel Device. Better.

Alta Functions are Well Designed for Embedded and Test Applications

Typical BM Applications

Condor API Functions

Init Device

- BusTools_FindDevice()
- BusTools_API_OpenChannel()
- BusTools_BM_Init()
 - Must Perform Even Though This is not a BM Application. This is a wasted function.
- BusTools_SetInternalBus()
 - This is a wasted functional because default should be external

BM Setup

- BusTools_BM_Init()
- BusTools_BM_MessageAlloc()
 - Does Not Clear buffers

Turn On BM

- BusTools_BM_StartStop()

Read Data

- **USER APPLICATION CODE GOES HERE**
- BusTools_BM_MessageRead()
 - MUCH More Complicated to Read Buffers – Complicated Loop-Pointer Scheme
 - Condor Has Different Data Structures for all 1553 Functions.

Close Function & Card

- BusTools_BM_StartStop()
- BusTools_API_Close()
 - Note: Closes ALL Channels – NOT Channel Independent

Alta API Functions

Init Device

- ADT_L1_1553_InitDefault()
 - Alta Init Function Performs all Setup in One Step
 - Alta Channels are Independent Devices! Better.

BM Setup

- ADT_L1_1553_BM_FilterWrite()
- ADT_L1_1553_BM_BufferCreate()
 - Auto Clears Buffers

Turn On BM

- ADT_L1_1553_BM_Start()

Read Data

- **USER APPLICATION CODE GOES HERE**
- ADT_L1_1553_BM_ReadNewMsgs()
 - Easily Read All Buffers with One Function. Better.
 - Alta Has Common Data Packets for All 1553 Functions – Better!

Close Function & Device

- ADT_L1_1553_BM_Stop()
- ADT_L1_CloseDevice()
 - Note: Closes Channel Device. Better.

Alta Functions are Well Designed for Embedded and Test Applications

Alta API Highlights

- **Alta API Provides Logical, Well Designed Functions. This Should Simplify Porting of Applications and Provide for Better Long Term Support.**
- **In Most Cases, Alta Requires Fewer Steps to Execute the Same Task. This will Simplify Code Logic and Management. Code Porting Time Should Only Be 1-2 Days for Most Tasks.**
- **Alta Provides Memory Management Functions. Memory Can Allocated/Freed as Needed.**
 - Condor Does not Provide Advanced Memory Management
- **Alta Allows for Independent Channel Devices to Support Multi Applications**
 - Condor Treats ALL Channels and Boards as One Device, Which Can Greatly Complicate Multi Channel Applications
- **Alta's API is a Modular, Multi-Layer API That Can Easily Port to Various Operating Systems.**
 - Condor's API is not multi-layer – Condor's is old monolithic design with OS dependencies scattered through out code. Too Many "#IF DEFS" – Very Complicate Code.
- **Alta Provides both ANSI C Level Functions for standard Windows, Linux and RTOS Applications and "Managed" Assemblies for advanced Windows C++/C# Compatible Applications. This greatly reduces integration time for C#, LabVIEW and other advanced software tool sets.**