

# Top-Level Review for Porting AIM GmbH 1553 Programs to Alta Data Technologies

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# Typical RT Applications

## AIM API Functions

### Init Device

- ApiInit()
- ApiOpen()
- ApiCmdIni()
- ApiCmdReset()

### Init RT Function

- ApiCmdRTIni()
- ApiCmdRTBDef()
- ApiCmdBufDef()
- ApiCmdRTSACon()
- Loop on the 3 Functions Above to Define all SA/MC

### Turn On RT

- ApiCmdRTStart()

### Read & Write Data

- **USER APPLICATION CODE GOES HERE**
- ApiCmdBMRTSAActRead()
- ApiCmdBufDef()
- **Very Complex RT Functions and Management. Cannot see transmitted Command or Status Words .**

### Close Function & Card

- ApiCmdRTHalt()
- ApiCmdReset()
- ApiClose()
- Note: Closes ALL Channels on Module – Not Channel Independent

## Alta API Functions

### Init Device

- ADT\_L1\_1553\_InitDefault()
- Alta Channels are Independent Devices! Better.

### Init RT Function

- ADT\_L1\_1553\_RT\_Init()
- ADT\_L1\_1553\_RT\_SA\_CDPAllocate()
- loop for all SAs
- Auto Clears Buffers

### Turn On RT

- ADT\_L1\_1553\_RT\_Enable()
- 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()
- ADT\_L1\_1553\_RT\_MC\_CDPRead/Write()
- Multi Buffering of Mode Codes Available
- 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

## AIM API Functions

### Init Device

- ApiInit()
- ApiOpen()
- ApiCmdIni()
- ApiCmdReset()

### BM Setup

- ApiCmdBCIni()
- ApiCmdBCXferDef()
- ApiCmdBCBHDef()
- ApiCmdBufDef()
  - Loop on 3 Function Above for All Message Definitions
- ApiCmdBCFrameDef()
- ApiCmdBCMFrameDef()

### Turn On BC

- ApiCmdBCStart()

### Read Data

- **USER APPLICATION CODE GOES HERE**
- ApiCmdBCXferRead()
- ApiCmdBufDef()
- Complex Setup and Controls. Overly Structured Framing.

### Close Function & Card

- ApiCmdBCHalt
- ApiCmdReset()
- ApiClose()
- Note: Closes ALL Channels on Module – Not Channel Independent

## Alta API Functions

### Init Device

- ADT\_L1\_1553\_InitDefault()
- Alta Channels are Independent Devices! Better.

### BM Setup

- ADT\_L1\_1553\_BC\_Init()
- Framing is Optional with Common Setup/Controls
- ADT\_L1\_1553\_BC\_CB\_CDPAllocate - Loop
- May Have 1-N Buffers with Full Monitor/Time Stamp
- 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

## AIM API Functions

### Init Device

- ApiInit()
- ApiOpen()
- ApiCmdIni()
- ApiCmdReset()

### BM Setup

- ApiCmdBMIni()
- ApiCmdBMIntrMode()
- ApiCmdBMCapMode()

### Turn On BM

- ApiCmdBMStart()
- AIM Setup and Starting is Very Complicated

### Read Data

- **USER APPLICATION CODE GOES HERE**
- ApiReadRecData()
- Requires User to Perform Buffer/Overflow Checks - Complex

### Close Function & Card

- ApiCmdReset()
- ApiClose()

## Alta API Functions

### Init Device

- ADT\_L1\_1553\_InitDefault()
- 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()

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.**
  - Alta's **Common Data Packet (CDP)** architecture provides a common data structure for all BC, RT and Monitor functions with complete message information – a single data structure makes code development much easier.
- **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 2-3 Days for Most Tasks.**
- **Alta Provides Memory Management Functions. Memory Can be Allocated/Freed as Needed.**
  - AIM Does not Provide Advanced Memory Management
- **Alta Allows for Independent Channel Devices to Support Multi Applications**
  - AIM Treats ALL Channels on a Module as One Device, Which Can Greatly Complicate Multi Applications Scenarios. Not good for Embedded Applications. Other: No Periodic BIT or Auto Transmit Loop-back Verification – poor for embedded applications.
- **Alta's API is a Modular, Multi-Layer API That Can Easily Port to Various Operating Systems.**
  - AIM's API is not multi-layer – AIM's is old monolithic design with OS dependencies scattered through out code. Too Many "#IF DEFS" – Very Complicated 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.**