Visual Information Technologies GmbH

A2Lib – ASAP2/Hex Library

The Visu-IT! **A***SAP***2 Lib***rary is a software component which allows to:*
- *Read/Write ASAP2 files*
- *Read/Write Hex files*
- *Combine the ASAP2 information with the Hex data in order to provide 'semantic' access to the Hex file, e.g.:*
    - o *Hex <-> Phys calculations (based on the COMPU_METHOD in the A2L file)*
    - o *Semantic access to Hex file (based on the RECORD_LAYOUT in the A2L file)*

<u>*Focus:*</u>   *software component (.NET and Java) to semantically access both A2L and Hex file*

<u>*Scope:*</u>   *integration into customer's tools*

Key Features
- Read/Write ASAP2 files
- Read/Write Hex files
- Support of more than one Hex- file (at the same time)
- Convenience functionality
    - o "Hex->Phys" and "Phys->Hex" calculation
    - o Semantic access to Hex file, considering:
        - ▪ record layout
        - ▪ memory alignment
        - ▪ byte order (MSB_FIRST vs. MSB_LAST)

Basic Use Cases
The A2Lib supports the following basic use cases:
- Get (calibration-)data from Hex based on A2L file
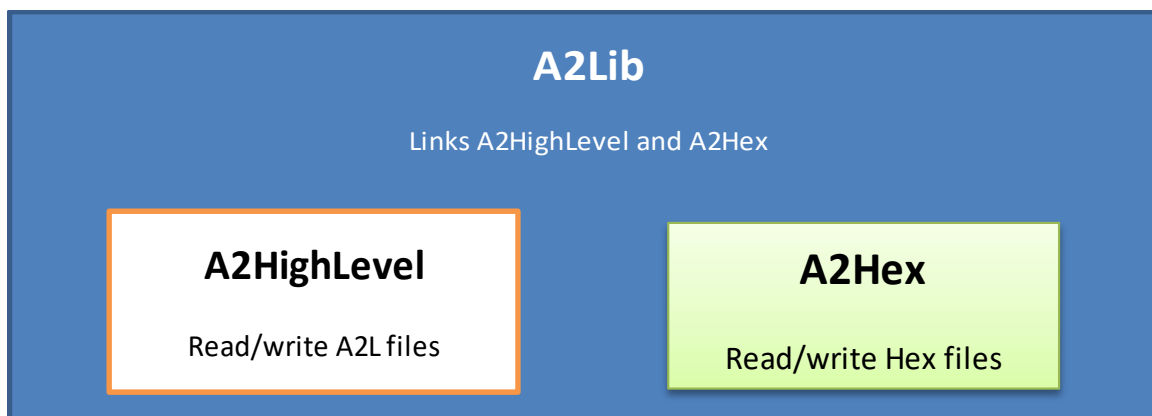- Write/Update (calibration-)data into Hex based on A2L file

<u>Note:</u> Of course, these are the basic use cases of the component itself. For tools using this component, there are additional uses cases like "calibration data management", "simple calibration", etc. supposable.

General Information

Main objective of A2Lib is to provide a high level access to A2L- and Hex- files by an easy to use API.

The A2Lib itself is composed of two other components which can be also used standalone:

1.) A2HighLevel
ASAP2 High Level component providing access to ASAP2 files -> ASAP2 Parser

2.) A2Hex
Component which provides access to Hex file

When using A2Lib, the components "A2HighLevel" and "A2Hex" are implicitly involved.

The following pseudo code snippet shows how the A2Lib could be used to access a characteristic in the Hex file based on the description found in the A2L file.

```
// load A2L file and read the characteristic "myMap"
a2L = A2HighLevel.LoadA2LFile(…)
map = a2L.GetCharacteristic("myMap")

// load corresponding hex file
hex = A2Hex.LoadFile(…)

// link A2L and Hex regarding "myMap"
object = A2Lib(map, hex);
values = object.ReadPhysValues()          // read calibration values from hex
object.WritePhysValue(1.1, 1.2, 1.3)      // write 'new' calibration values to hex

object.Hex2Phys(values, …)                // convenience functionality: hex -> phys calculation
```

To sum up: A2Lib allows to read/write calibration values from/to hex file considering A2L information like alignment, record layout, size, …

Compatibility

The A2Lib processes and generates ASAP2 files which are compliant with the standard ASAM MCD 2MC V1.x.
The ASAM MCD 2MC description files contain information like:

- Measurements and calibration variables (parameters, curves, maps)
- physical addresses, conversion formula, data types, etc…
- ECU interface description (XCP on CAN or ETK)
- Calibration methods (SERAM, SERAP)
- Record layouts
- etc.

Interfaces

- ASAM-MCD-2MC versions 1.7, 1.6, 1.5.1, 1.4.1, 1.3.1, 1.2.1
- Intel Hex or Motorola-S-Record

Terminology

ASAM MCD 2MC	Official name of the standardized description exchange file
ASAP2	Common naming of the "ASAM MCD 2MC" standard
A2L	File suffix of "ASAM MCD 2MC" description file (*.a2l). It is also a common naming for "ASAP2"
Hex	Intel Hex or Motorola-S-Record

System Requirements

Operating System	Windows 7, 8, 10
Environment	.NET Framework V4.0

Contact

Visu-IT! GmbH	Phone:	+49 (0)9947 / 9040004
An der Schergenbreite 1	Fax:	+49 (0)941 / 49082–19
93059 Regensburg	Email:	contact@visu-it.com
	Internet:	http://www.visu-it.com